RF TEST REPORT

The device described below is tested by Dongguan Nore Testing Center Co., Ltd. to determine the maximum emission levels emanating from the device, the severe levels which the device can endure and E.U.T.'s performance criterion. The test results, data evaluation, test procedures, and equipment of configurations shown in this report were made in accordance with the procedures in AS/NZS 4268.

Applicant	:	SHENZHEN INTERTHINGS TECHNOLOGY CO.,LTD.
Address	:	Dreamland international Center 701-702,Longhua District, Shenzhen, China(QingHu Station Exit C, Line-4 MTR)
Manufacturer /Factory	:	SHENZHEN INTERTHINGS TECHNOLOGY CO.,LTD.
Address	:	Dreamland international Center 701-702,Longhua District, Shenzhen, China(QingHu Station Exit C, Line-4 MTR)
E.U.T.	:	IP camera
Brand Name	:	Altec Lansing, Vivitar
Model No.	:	ALT-117, IPC117, IPC130 (For more models information, refer to section 1)
Measurement Standard	:	AS/NZS 4268: 2017
Date of Receiver	:	November 29, 2018
Date of Test	:	November 29, 2018 to December 07, 2018
Date of Report	:	December 07, 2018

This Test Report is Issued Under the Authority of :

Prepared by

Alina Guo / Engineer

Approved & Authorized Signer

Iori Fan / Authorized Signatory

This test report is for the customer shown above and their specific product only. This report applies to above tested sample only and shall not be reproduced in part without written approval of Dongguan Nore Testing Center Co., Ltd.

TEL: +86-769-22022444 FAX: +86-769-22022799 Web: www.ntc-c.com
Address: Building D, Gaosheng Science & Technology Park, Zhouxi Longxi Road, Nancheng District, Dongguan City, Guangdong, China

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Revision History of This Test Report

Report Number	Description	Issued Date
NTC1811450EV00	Initial Issue	2018-12-07

1. GENERAL INFORMATION

PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST

Product name	:	IP camera
Model Name	:	ALT-117
Addition Model Name	:	IPC117, IPC130
Brand Name	:	Altec Lansing, Vivitar
Model difference	:	These models have the same circuity, electrical mechanical, PCB layout and physical construction. The difference in model number.
Power Supply	:	DC 5V Come from Adapter
Adapter	:	Manufacturer: Shenzhen Xinspower Technology Co., Ltd. Model: A062-0501000SS Input: AC100-240V 50/60Hz 0.3A Output: DC 5.0V 1000mA
Test Voltage	:	AC 230V 50Hz
Operating Temperature Range	:	0°C to 45°C (Declaration by manufacturer)
Adaptive/Non-Adaptive Equipment	:	Adaptive equipment
Receiver category	:	Category 2
Hardware version	:	V1.0
Software version	:	V1.0
Note	:	All tests were carried on model ALT-117.
Remake	:	N/A

Technical Specification:

WIFI Function

Frequency	:	2412MHz~2472MHz(802.11b/802.11g/802.11n(HT20)) 2422MHz~2462M(802.11n(HT40))
Modulation Type	:	CCK, DQPSK, DBPSK for 802.11b OFDM for 802.11g/n
Modulation Technology	:	DSSS
Number of Channel	:	13 for 802.11b/g/n(HT20) 9 for 802.11n(HT40)
Channel Space	:	5MHz
Antenna Type	:	Internal
Antenna Gain	:	2.01dBi (Declaration by manufacturer)

SUMMARY OF TEST RESULTS		
Section AS/NZS 4268: 2017(refer to ETSI EN 300328 V2.1.1)	Description of Test	TEST RESULT
4.3.1.2 / 4.3.2.2	RF Output Power	Compliant
4.3.2.3	Power Spectral Density (Modulations other than FHSS equipment)	Compliant
4.3.1.3 / 4.3.2.4	Duty cycle, Tx-Sequence, Tx-gap (Non-adaptive equipment)	N/A see note 1
4.3.1.4	Dwell time, Minimum Frequency Occupation & Hopping Sequence (FHSS equipment)	N/A
4.3.1.5	Hopping Frequency Separation (FHSS equipment)	N/A
4.3.1.6 / 4.3.2.5	Medium Utilisation (Non-adaptive equipment)	N/A see note 2
4.3.1.7 / 4.3.2.6	Adaptivity	N/A see note 4
4.3.1.8 / 4.3.2.7	Occupied Channel Bandwidth	Compliant
4.3.1.9 / 4.3.2.8	Transmitter unwanted emission in the OOB domain	Compliant
4.3.1.10 / 4.3.2.9	Transmitter unwanted emissions in the spurious domain	Compliant
4.3.1.11/4.3.2.10	Receiver spurious emissions	Compliant
4.3.1.12/4.3.2.11	Receiver Blocking	Compliant
4.3.1.13/4.3.2.12	Geo-location capability	N/A see note 3

Note 1: These requirements apply to non-adaptive frequency hopping equipment or to adaptive frequency hopping equipment operating in a non-adaptive mode. This EUT only works in adaptive mode, these tests are not applicable this EUT.

Note 2: This requirement does not apply to adaptive equipment unless operation in non-adaptive mode.

Note 3: Only for equipment with geo-location capability

Note 4: These requirements do not apply for equipment with a maximum declared RF Output power of less than 10dBm EIRP or for equipment when operating in a mode where the RF Output power is less than 10dBm EIRP.

Note 5: According to standard AS/NZS 4268: 2017 clause 6.1, figure1, the product meets the requirements of ETSI stand, it also considered sufficient to compliance with standard AS/NZS 4268:2017.

2. DESCRIPTION OF TEST MODES

The EUT has been tested under Normal Operating condition. Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed. All data rate and modulation type were tested, only the worst-case record in this report.

3. TEST FREQUENCIES AND SOFTWARE

Channel	Frequency MHz
802.11b/g/n(HT20)	
1	2412
7	2442
13	2472
802.11/n(HT40)	
3	2422
7	2442
11	2462

Test Item	Software	Description
Conducted RF Testing and Radiated testing	**SSCOM V5.13.1**	Set the EUT to different modulation and channel

4. TEST FACILITY

Site Description

EMC Lab : Listed by CNAS, August 13, 2018
The certificate is valid until August 13, 2024
The Laboratory has been assessed and proved to be in compliance with CNAS/CL01
The Certificate Registration Number is L5795.

Listed by A2LA, November 01, 2017
The certificate is valid until December 31, 2019
The Laboratory has been assessed and proved to be in compliance with ISO17025
The Certificate Registration Number is 4429.01

Listed by FCC, November 06, 2017
The Designation Number is CN1214
Test Firm Registration Number: 907417

Listed by Industry Canada, June 08, 2017
The Certificate Registration Number. Is 46405-9743

Name of Firm : Dongguan Nore Testing Center Co., Ltd.
(Dongguan NTC Co., Ltd.)

Site Location : Building D, Gaosheng Science & Technology Park, Zhouxi Longxi Road, Nancheng District, Dongguan City, Guangdong Province, China

5. MEASUREMENT UNCERTAINTY

Parameter	Uncertainty
Occupied Channel Bandwidth	±1.42 x10^{-4}%
RF output power, conducted	±1.06dB
Power Spectral Density, conducted	±1.06dB
Unwanted Emissions, conducted	±2.51dB
All emissions, radiated	±3.70dB
Temperature	±0.8℃
Humidity	±3.2%
DC and low frequency voltages	±0.1%
Time	±5%
Duty cycle	±5%

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2

6. SUPPORT EQUIPMENT

Notebook PC	:	Manufacturer: IBM Corporation M/N: R50e S/N: L3-HZNGO P/N: 1834KDC
Adapter	:	Manufacturer: IBM Corporation M/N: 08K8210 Input: AC100-240V 50/60Hz 0.5-1.0A Output: DC 16V 4.5A

7. RF OUTPUT POWER

Limits

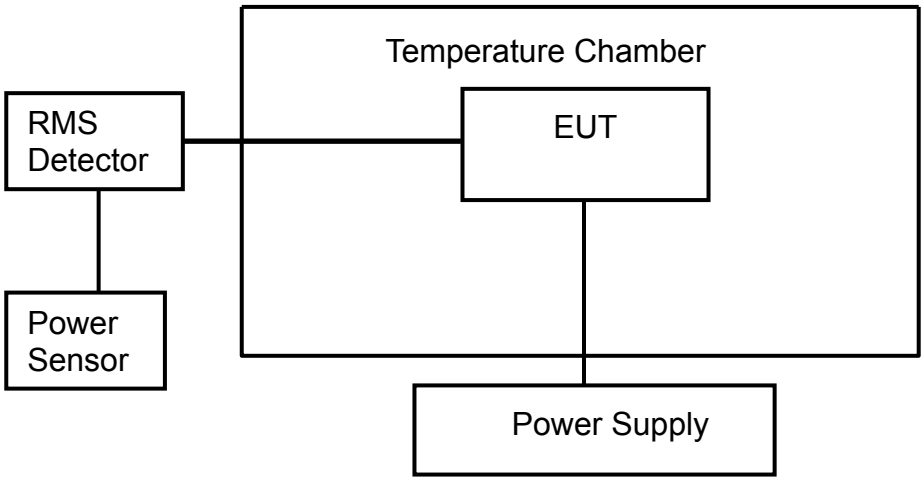
Frequency Band	Limit
2400 ~ 2483.5 MHz Adaptive frequency hopping systems	Equivalent isotropic radiated power (e.i.r.p.) ≤20 dBm

Test Method

1. Please refer to ETSI EN 300328 ($V_{2.1.1}$) clause 4.3.2.2 for conducted measurement method.
2. The measurements shall be performed at both normal environmental conditions and at The extremes of the operating temperature range.

Test Configuration

Temperature and Voltage Measurement



Test Result

Pass.

Please refer to following data tables.

WIFI Mode (802.11b)				
Humidity :	52 %	Temperature :		25 ℃
Test Result:	PASS	Test By:		Sance
Antenna Assembly Gain:				2.01dBi
Cable Loss=				1.5dB
Number of Burst				>20
Temperature (℃)	Test voltage	Reading dBm	EIRP dBm	Limit dBm
Low Channel f_o =2412 MHz				
25	AC 230V	6.09	9.60	20
0	AC 230V	5.94	9.45	20
45	AC 230V	5.92	9.43	20
Middle Channel f_o =2442 MHz				
25	AC 230V	5.85	9.36	20
0	AC 230V	5.80	9.31	20
45	AC 230V	5.81	9.32	20
High Channel f_o =2472 MHz				
25	AC 230V	5.72	9.23	20
0	AC 230V	5.61	9.12	20
45	AC 230V	5.69	9.20	20

Note: Calculated Power(dBm)=Output Power(dBm)+Cable Loss(dB)+Antenna Gain(dBi)

WIFI Mode (802.11g)				
Humidity :	52 %	Temperature :		25 ℃
Test Result:	PASS	Test By:		Sance
Antenna Assembly Gain:				2.01dBi
Cable Loss=				1.5dB
Number of Burst				>20
Temperature (℃)	Test voltage	Reading dBm	EIRP dBm	Limit dBm
Low Channel f_o =2412 MHz				
25	AC 230V	5.78	9.29	20
0	AC 230V	5.62	9.13	20
45	AC 230V	5.64	9.15	20
Middle Channel fo =2442 MHz				
25	AC 230V	5.94	9.45	20
0	AC 230V	5.89	9.40	20
45	AC 230V	5.92	9.43	20
High Channel f_o =2472 MHz				
25	AC 230V	5.73	9.24	20
0	AC 230V	5.70	9.21	20
45	AC 230V	5.65	9.16	20

Note: Calculated Power(dBm)=Output Power(dBm)+Cable Loss(dB)+Antenna Gain(dBi)

WIFI Mode (802.11n(HT20))				
Humidity :	52 %	Temperature :		25 ℃
Test Result:	PASS	Test By:		Sance
Antenna Assembly Gain:				2.01dBi
Cable Loss=				1.5dB
Number of Burst				>20
Temperature (℃)	Test voltage	Reading dBm	EIRP dBm	Limit dBm
Low Channel f_o =2412 MHz				
25	AC 230V	5.90	9.41	20
0	AC 230V	5.89	9.40	20
45	AC 230V	5.84	9.35	20
Middle Channel f_o =2442 MHz				
25	AC 230V	5.84	9.35	20
0	AC 230V	5.63	9.14	20
45	AC 230V	5.72	9.23	20
High Channel f_o =2472 MHz				
25	AC 230V	5.70	9.21	20
0	AC 230V	5.62	9.13	20
45	AC 230V	5.57	9.08	20

Note: Calculated Power(dBm)=Output Power(dBm)+Cable Loss(dB)+Antenna Gain(dBi)

WIFI Mode (802.11n(HT40))				
Humidity :	52 %	Temperature :		25 ℃
Test Result:	PASS	Test By:		Sance
Antenna Assembly Gain:				2.01dBi
Cable Loss=				1.5dB
Number of Burst				>20
Temperature (℃)	Test voltage	Reading dBm	EIRP dBm	Limit dBm
Low Channel f_o =2422 MHz				
25	AC 230V	5.84	9.35	20
0	AC 230V	5.80	9.31	20
45	AC 230V	5.69	9.20	20
Middle Channel f_o =2442 MHz				
25	AC 230V	5.5	9.01	20
0	AC 230V	5.49	9.00	20
45	AC 230V	5.50	9.01	20
High Channel f_o =2462 MHz				
25	AC 230V	5.97	9.48	20
0	AC 230V	5.73	9.24	20
45	AC 230V	5.90	9.41	20

Note: Calculated Power(dBm)=Output Power(dBm)+Cable Loss(dB)+Antenna Gain(dBi)

8. POWER SPECTRAL DENSITY

Limits

Frequency Band	Limit
2400 ~ 2483.5 MHz	Equivalent isotropic radiated power (e.i.r.p.) 10 dBm / MHz

Test Method

1. Please refer to ETSI EN 300328 ($V_{2.1.1}$) clause 4.3.2.3 for conducted measurement method.
2. The measurements shall be performed at normal environmental condition.

Test Configuration

Test Result

Pass.

Please refer to following data table.

Temperature:	25℃	Test Date:	December 05, 2018
Humidity:	56%	Test By:	Sance
RBW:	10KHz	VBW:	30KHz

TEST CONDITION	Measured data (dBm/MHz) Limited	(dBm/MHz)
WIFI Mode 802.11b		
2412	0.80	10
2442	0.72	10
2472	0.57	10
802.11g		
2412	-2.40	10
2442	-2.26	10
2472	-2.52	10
802.11n(HT20)		
2412	-2.69	10
2442	-2.67	10
2472	-2.87	10
802.11n(HT40)		
2422	-5.42	10
2442	-6.79	10
2462	-5.17	10

9. OCCUPIED CHANNEL BANDWIDTH

Limits

Condition	Limit
All types of equipment	Shall fall completely within the band 2400 to 2483.5 MHz
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

Test Method

1. Please refer to ETSI EN 300328 ($V_{2.1.1}$) clause 4.3.2.7 for conducted measurement method.
2. The measurements shall be performed at normal environmental condition.

Test Configuration

Test Result

Pass.

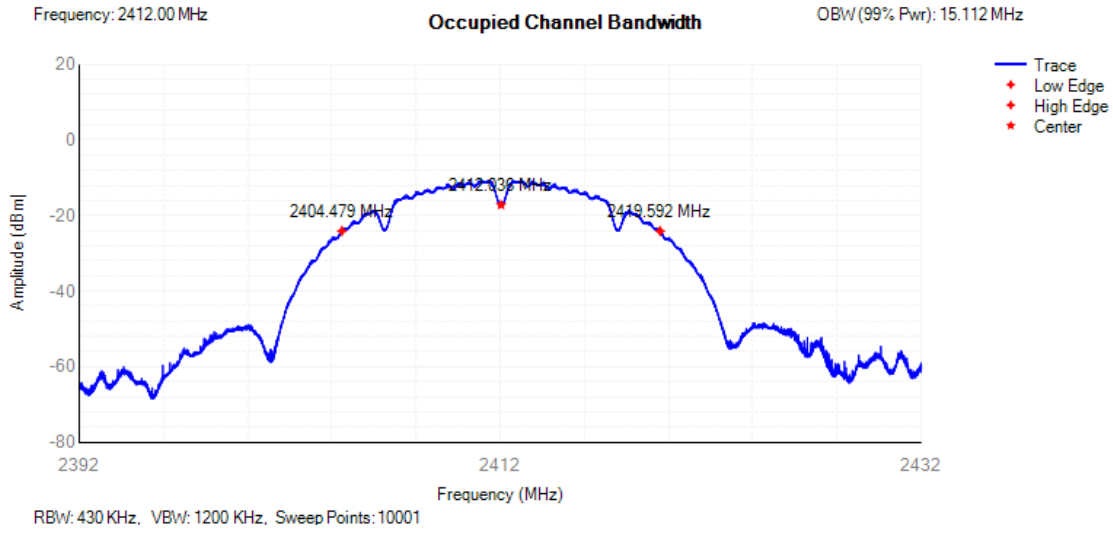
Please refer to following data tables and test plots.

Temperature :	25 ℃	Humidity :	56%
Test Date:	December 05, 2018	Test Result:	PASS
Test By:	Sance		

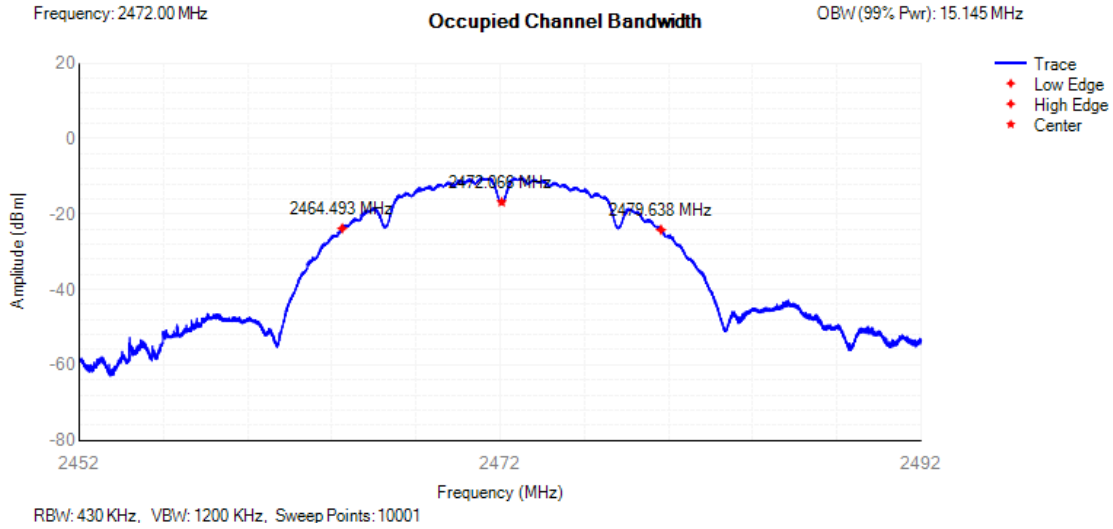
Channel frequency (MHz)	99% Bandwidth (MHz)	FL at 99% BW (KHz)	FH at 99% BW (KHz)	Limit	Result
WIFI Mode (802.11b)					
2412	15.112	2404.479	2419.592	FL > 2.4 GHz and FH < 2.4835 GHz	Pass
2472	15.145	2464.493	2479.638		Pass
WIFI Mode (802.11g)					
2412	16.699	2403.709	2420.409	FL > 2.4 GHz and FH < 2.4835 GHz	Pass
2472	16.754	2463.69	2480.445		Pass
WIFI Mode (802.11n(HT20))					
2412	17.92	2403.068	2420.989	FL > 2.4 GHz and FH < 2.4835 GHz	Pass
2472	17.911	2463.112	2481.023		Pass
WIFI Mode (802.11n(HT40))					
2422	36.191	2403.964	2440.156	FL > 2.4 GHz and FH < 2.4835 GHz	Pass
2462	36.278	2443.918	2480.197		Pass

Note: FL is the lowest frequency of the 99% occupied bandwidth of power envelope.
FH is the highest frequency of the 99% occupied bandwidth of power envelope.

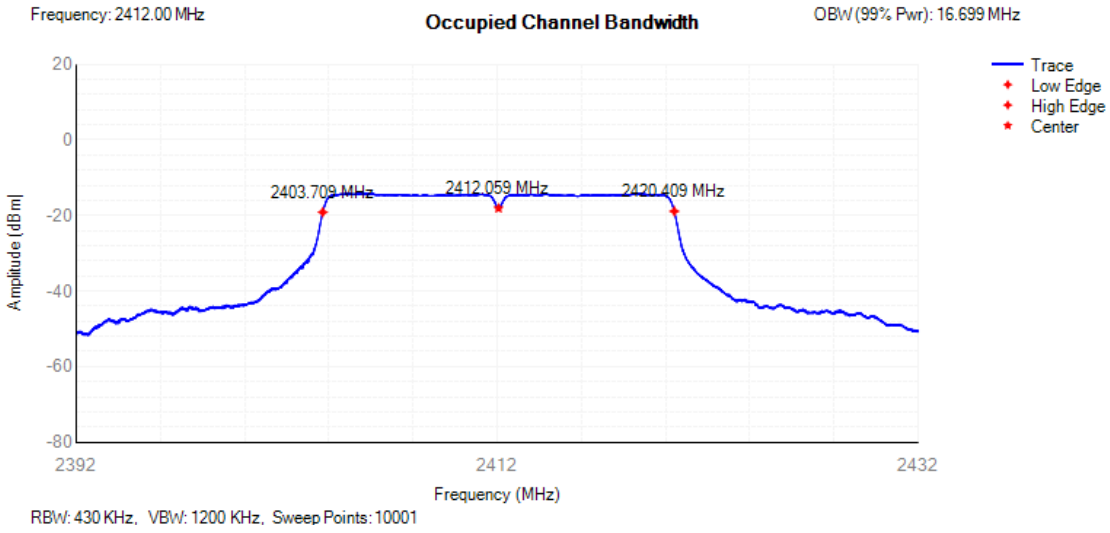
WIFI Mode 802.11b Lowest Channel



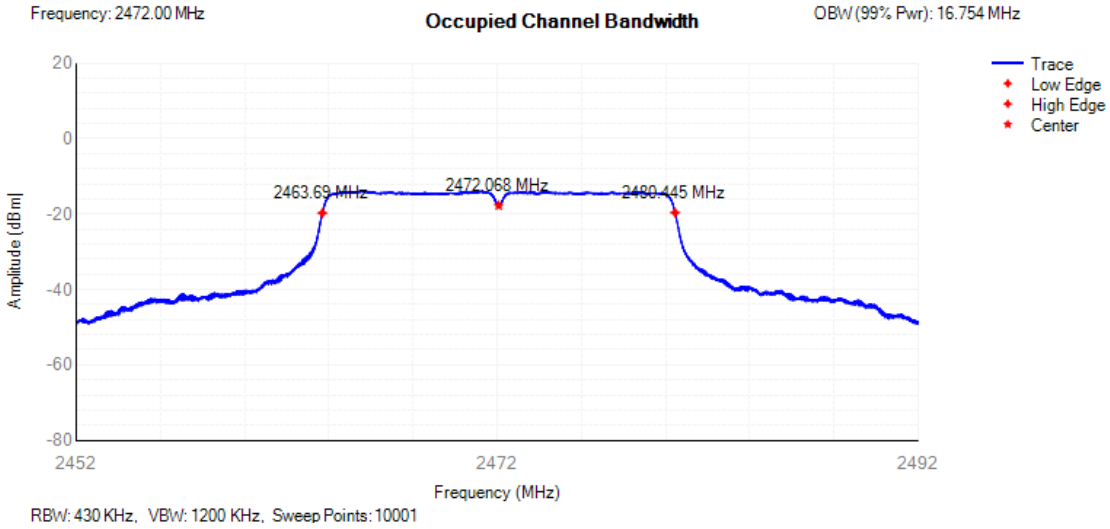
WIFI Mode 802.11b Highest Channel



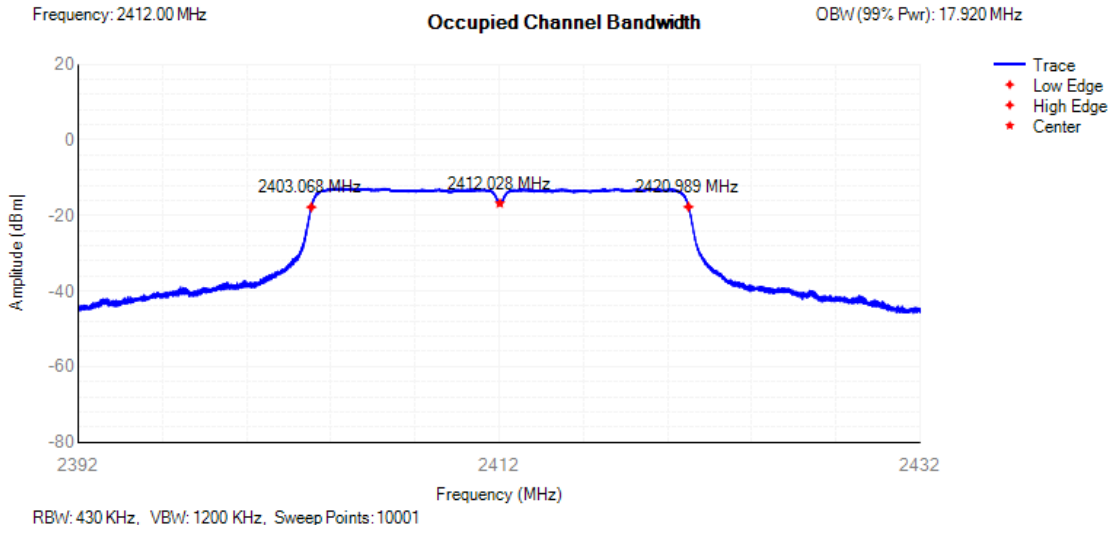
WIFI Mode 802.11g Lowest Channel



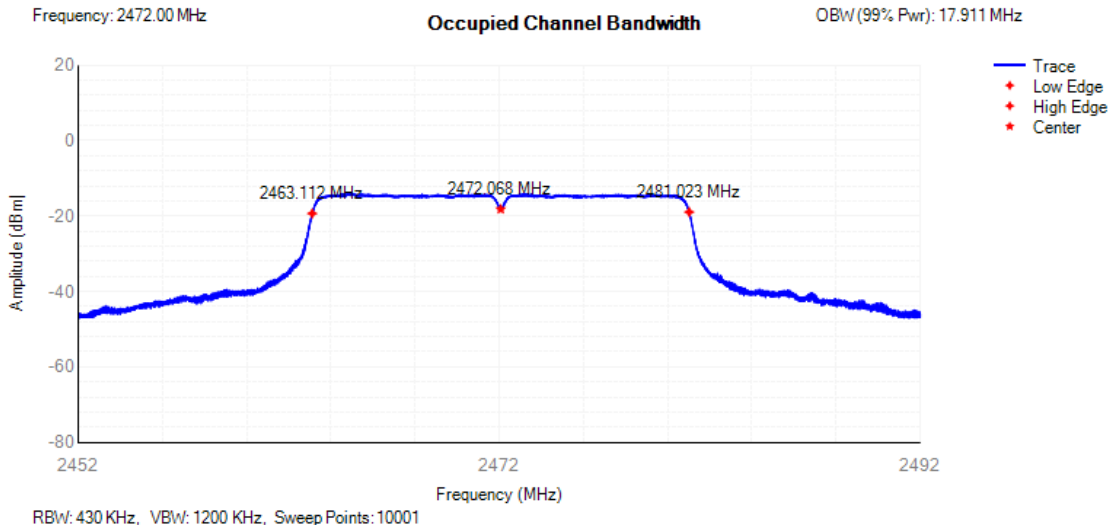
WIFI Mode 802.11g Highest Channel



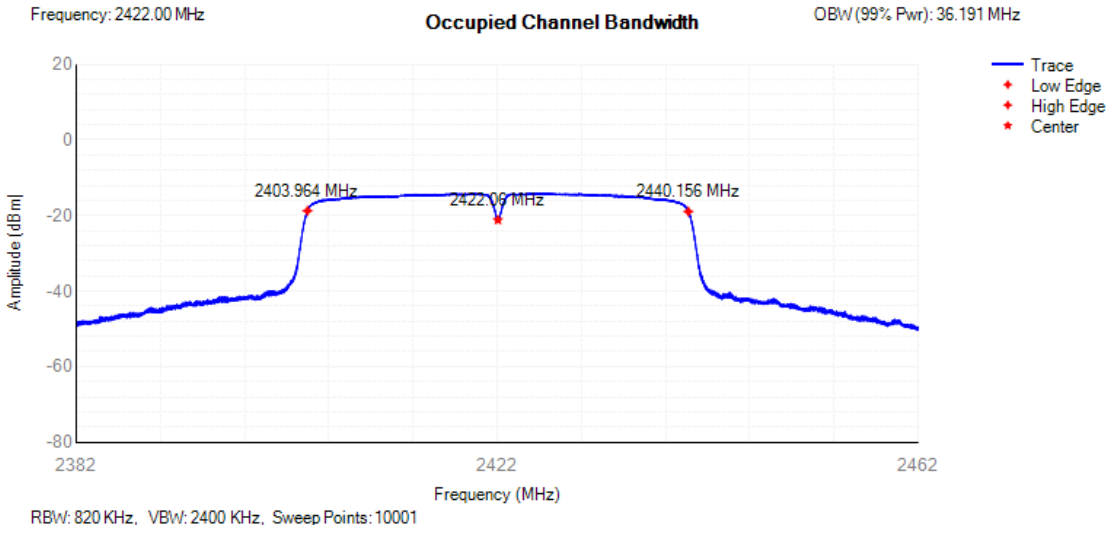
WIFI Mode 802.11n(HT20) Lowest Channel



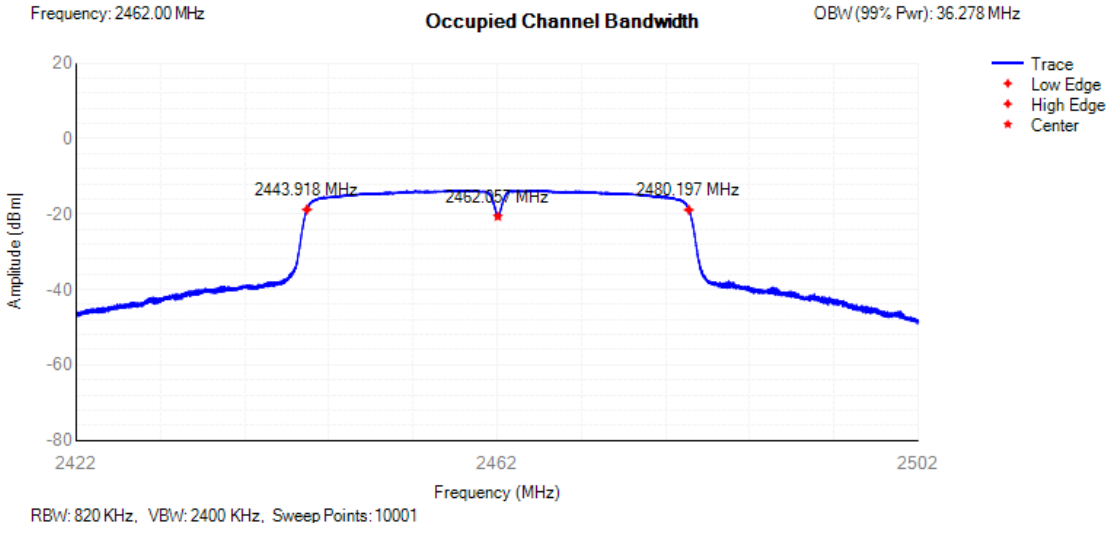
WIFI Mode 802.11n(HT20) Highest Channel



WIFI Mode 802.11n(HT40) Lowest Channel



WIFI Mode 802.11n(HT40) Highest Channel

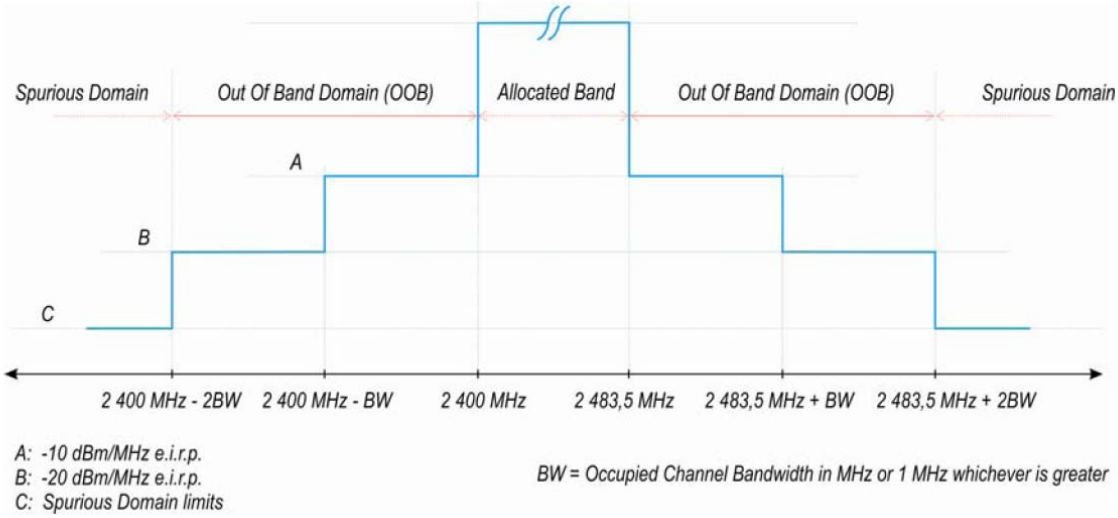


11. TRANSMITTER UNWANTED EMISSIONS IN THE OUT-OF BAND DOMAIN

Limits

The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided by the mask

Transmit mask



Test Method

1. Please refer to ETSI EN 300328 ($V_{2.1.1}$) clause 4.3.2.8 for conducted measurement method.
2. The measurements shall be performed at both normal environmental conditions.

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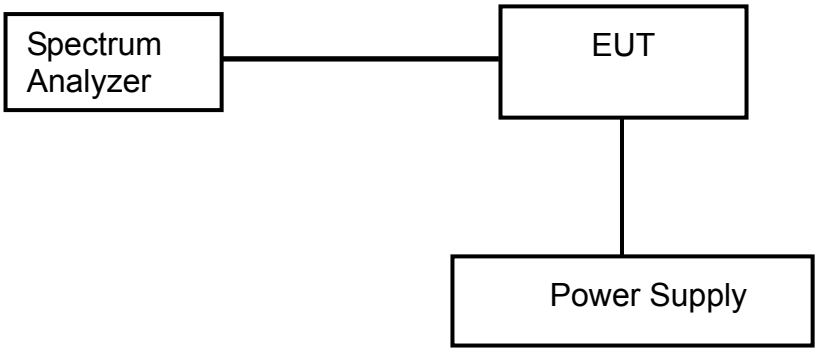
Test Configuration

Temperature and Voltage Measurement



Test Result

Pass.

Please refer to following data tables.

Temperature :	25 ℃	Humidity :	56%
Test Date :	December 05, 2018	Test Result:	PASS
RBW:	1MHz	VBW:	3MHz
Test By:	Sance		

Condition		2400-BW~2400 / 2483.5+BW ~2483.5 (dBm/MHz)	Limit (dBm/MHz)	2400-2*BW~2400-BW / 2483.5+2*BW ~2483.5+BW (dBm/MHz)	Limit (dBm/MHz)	Result
Temperature (℃)	Test voltage					
WIFI Mode – 802.11b (2412MHz)						
25	AC 230V	-39.12	-10	-61.91	-20	PASS
WIFI Mode – 802.11b (2472MHz)						
25	AC 230V	-36.05	-10	-44.68	-20	PASS
WIFI Mode – 802.11g (2412MHz)						
25	AC 230V	-33.87	-10	-46.84	-20	PASS
WIFI Mode – 802.11g (2472MHz)						
25	AC 230V	-29.84	-10	-45.26	-20	PASS
WIFI Mode –802.11n(HT20) (2412MHz)						
25	AC 230V	-28.71	-10	-45.74	-20	PASS
WIFI Mode –802.11n(HT20) (2472MHz)						
25	AC 230V	-29.50	-10	-45.45	-20	PASS
WIFI Mode –802.11n(HT40) (2422MHz)						
25	AC 230V	-33.77	-10	-47.49	-20	PASS
WIFI Mode –802.11n(HT40) (2462MHz)						
25	AC 230V	-31.32	-10	-46.47	-20	PASS

12. TRANSIMITTER SPURIOUS EMISSIONS

Limits:

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

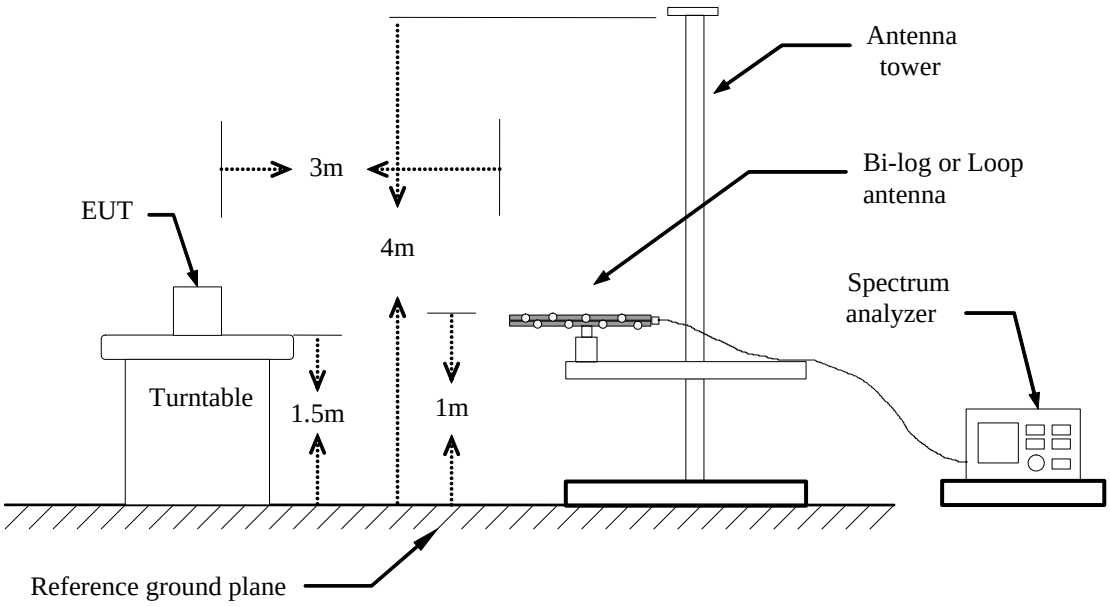
Frequency Range	Maximum power e.r.p. (≤ 1 GHz) e.i.r.p. (> 1 GHz)	Bandwidth
30 MHz to 47MHz	-36 dBm	100KHz
47 MHz to 74MHz	-54 dBm	100KHz
74 MHz to 87.5MHz	-36 dBm	100KHz
87.5 MHz to 118MHz	-54 dBm	100KHz
118 MHz to 174MHz	-36 dBm	100KHz
174 MHz to 230MHz	-54 dBm	100KHz
230 MHz to 470MHz	-36 dBm	100KHz
470 MHz to 862MHz	-54 dBm	100KHz
862 MHz to 1GHz	-36 dBm	100KHz
1GHz to 12.75GHz	-30 dBm	1MHz

Test Method

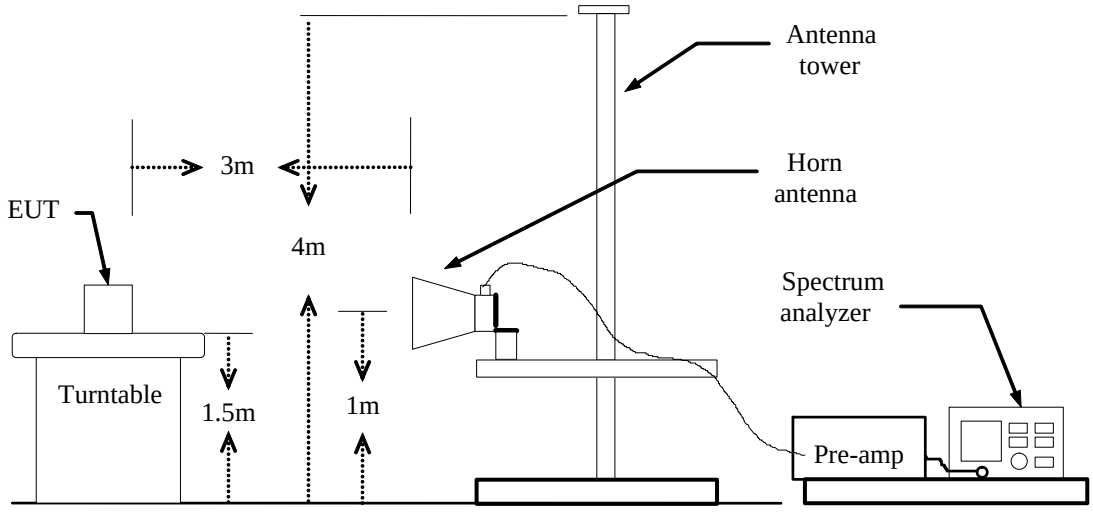
1. Please refer to ETSI EN 300328 ($V_{2.1.1}$) clause 4.3.2.9 for radiated measurement and clause 4.3.2.9 for conducted measurement method.
2. The measurements shall be performed at normal environmental condition.

Test Configuration

Below 1GHz



Above 1GHz



Test Result

Pass.

Please refer to following data tables of the worst case: 802.11b.

Below 1GHz Low channel				
Humidity : 52 %		Temperature : 26 ℃		
Test Result: PASS		Test By: Sance		
RBW: 100KHz		VBW: 300KHz		
Test Mode: TX				
Frequency (MHz)	**Antenna Polarization**	**Emission level (dBm)**	**Limit (dBm)**	**Margin (dB)**
716.7600	Vertical	-71.46	-54.00	-17.46
857.4100	Vertical	-67.46	-54.00	-13.46

825.4000	Horizontal	-62.03	-54.00	-8.03
733.2500	Horizontal	-68.60	-54.00	-14.60

Below 1GHz High channel				
Humidity : 53 %		Temperature : 22 ℃		
Test Result: PASS		Test By: Sance		
RBW: 100KHz		VBW: 300KHz		
Test Mode: TX				
Frequency (MHz)	**Antenna Polarization**	**Emission level (dBm)**	**Limit (dBm)**	**Margin (dB)**
733.2500	Vertical	-71.36	-54.00	-17.36
857.4100	Vertical	-64.99	-54.00	-10.99

600.3600	Horizontal	-68.47	-54.00	-14.47
685.7199	Horizontal	-70.34	-54.00	-16.34

Note: 1. Emission Level (dBm) = Reading level (dBm)+Correction Factor (dB)
2. Data of measurement within this frequency range shown " ---" in the table above means the reading of emissions are attenuated more than 10dB below the permissible limits.
3. The Test frequency range is 30MHz to12.75GHz.

Above 1GHz Low channel				
Humidity : 52 %		Temperature : 26 ℃		
Test Result: PASS		Test By: Sance		
RBW: 1MHz		VBW: 3MHz		
Test Mode: TX				
Frequency (MHz)	**Antenna Polarization**	**Emission level (dBm)**	**Limit (dBm)**	**Margin (dB)**
4844	Vertical	-44.53	-30	-14.53
7266	Vertical	-40.14	-30	-10.14

4844	Horizontal	-44.34	-30	-14.34
7266	Horizontal	-40.76	-30	-10.76

Above 1GHz High channel				
Humidity : 53 %		Temperature : 22 ℃		
Test Result: PASS		Test By: Sance		
RBW: 1MHz		VBW: 3MHz		
Test Mode: TX				
Frequency (MHz)	**Antenna Polarization**	**Emission level (dBm)**	**Limit (dBm)**	**Margin (dB)**
4944	Vertical	-44.42	-30.00	-14.42
7416	Vertical	-40.05	-30.00	-10.05

4944	Horizontal	-44.28	-30.00	-14.28
7416	Horizontal	-40.06	-30.00	-10.06

Note: 1. Emission Level (dBm) = Reading level (dBm)+Correction Factor (dB)
2. Data of measurement within this frequency range shown " ---" in the table above means the reading of emissions are attenuated more than 10dB below the permissible limits.
3. The Test frequency range is 30MHz to12.75GHz.

13. RECEIVER SPURIOUS EMISSIONS

Limits

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

Test Method

1. Please refer to ETSI EN 300328 ($V_{2.1.1}$) clause 4.3.2.10 for radiated measurement method.
2. The measurements shall be performed at normal environmental condition.

Test Configuration

(Same as section 12 in this test report)

Test Result

Pass.

Please refer to following data tables of the worst case: 802.11b.

Below 1GHz Low channel				
Humidity : 52 %		Temperature : 26 ℃		
Test Result: PASS		Test By: Sance		
RBW: 100KHz		VBW: 300KHz		
Test Mode: RX				
Frequency (MHz)	**Antenna Polarization**	**Emission level (dBm)**	**Limit (dBm)**	**Margin (dB)**
857.4100	Vertical	-65.59	-57.00	-8.59
960.2300	Vertical	-66.52	-57.00	-9.52

960.2300	Horizontal	-62.68	-57.00	-5.68
999.0300	Horizontal	-70.16	-57.00	-13.16

Below 1GHz High channel				
Humidity : 53 %		Temperature : 22 ℃		
Test Result: PASS		Test By: Sance		
RBW: 100KHz		VBW: 300KHz		
Test Mode: RX				
Frequency (MHz)	**Antenna Polarization**	**Emission level (dBm)**	**Limit (dBm)**	**Margin (dB)**
857.4100	Vertical	-65.45	-57.00	-8.45
960.2300	Vertical	-64.48	-57.00	-7.48

888.4500	Horizontal	-68.90	-57.00	-11.90
960.2300	Horizontal	-61.35	-57.00	-4.35

Above 1GHz Low channel				
Humidity : 52 %		Temperature : 26 ℃		
Test Result: PASS		Test By: Sance		
RBW: 1MHz		VBW: 3MHz		
Test Mode: RX				
Frequency (MHz)	**Antenna Polarization**	**Emission level (dBm)**	**Limit (dBm)**	**Margin (dB)**
4884	Vertical	-59.66	-47.00	-12.66

4884	Horizontal	-59.53	-47.00	-12.53

Above 1GHz High channel				
Humidity : 53 %		Temperature : 22 ℃		
Test Result: PASS		Test By: Sance		
RBW: 1MHz		VBW: 3MHz		
Test Mode: RX				
Frequency (MHz)	**Antenna Polarization**	**Emission level (dBm)**	**Limit (dBm)**	**Margin (dB)**
2472	Vertical	-59.39	-47	-12.39

2472	Horizontal	-59.18	-47	-12.18

NOTE: 1. The test frequency range is 1GHz to 12.75GHz.
2. Remark “---” means that the other spurious emissions are not found.
3. Emission Level (dBm) = Reading level (dBm) + Correction Factor (dB)

14. RECEIVER BLOCKING

Limits

Adaptive equipment using wide band modulations, shall comply with the requirements defined in clauses 4.3.2.11.3 and clauses 4.3.2.11.4 in the presence of a blocking signal with characteristics as below table.

(1) Receiver Blocking parameters for Receiver Category 1 equipment

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	Type of blocking signal
Pmin + 6 dB	2 380 2 503,5	-53	CW
Pmin + 6 dB	2 300 2 330 2 360	-47	CW
Pmin + 6 dB	2 523,5 2 553,5 2 583,5 2 613,5 2 643,5 2 673,5	-47	CW
NOTE 1: Pmin is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.2.11.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

(2) Receiver Blocking parameters receiver category 2 equipment

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	Type of blocking signal
Pmin + 6 dB	2 380 2 503,5	-57	CW
Pmin + 6 dB	2 300 2 583,5	-47	CW
NOTE 1: Pmin is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.2.11.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

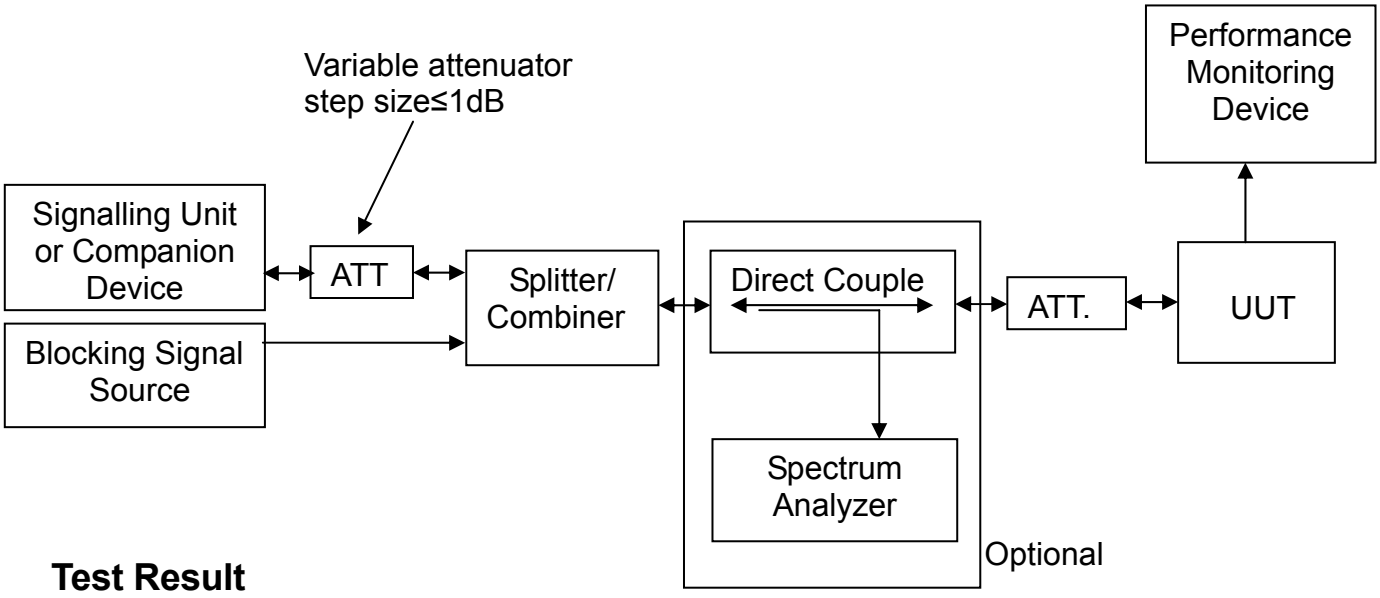
(3) Receiver Blocking parameters receiver category 3 equipment

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	Type of blocking signal
Pmin + 12 dB	2 380 2 503,5	-57	CW
Pmin + 12 dB	2 300 2 583,5	-47	CW
NOTE 1: Pmin is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.2.11.3 in the absence of any blocking signal. NOTE 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.			

Test Method

1. Please refer to ETSI EN 300328 ($V_{2.1.1}$) clause 5.4.11.2.1 for conducted measurement method.
2. The measurements shall be performed at normal environmental condition.

Test Configuration



Test Result

Pass.

Please refer to following data tables.

Humidity :	52 %	Temperature :	22 ℃
Test Result:	PASS	Test By	Sance
Antenna Assembly Gain:			2.01dBi
Pmin			-74.7dBm for 802.11b -72.9dBm for 802.11g
☒ category 1	☐ category 2		☐ category 3

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm)	PER(%)	PER Limit (%)
802.11b				
Pmin + 6 dB	2 380 2 503,5	-50.99	1.3	10
Pmin + 6 dB	2 300 2 330 2 360	-44.99	1.0	10
Pmin + 6 dB	2 523,5 2 553,5 2 583,5 2 613,5 2 643,5 2 673,5	-44.99	0.8	10
802.11g				
Pmin + 6 dB	2 380 2 503,5	-50.99	0.8	10
Pmin + 6 dB	2 300 2 330 2 360	-44.99	1.2	10
Pmin + 6 dB	2 523,5 2 553,5 2 583,5 2 613,5 2 643,5 2 673,5	-44.99	1.1	10

Humidity :	52 %	Temperature :	22 ℃
Test Result:	PASS	Test By	Sance
Antenna Assembly Gain:		2.01dBi	
Pmin		-71.5dBm for 802.11n(HT20) -70.1dBm for 802.11n(HT40)	
☒ category 1	☐ category 2	☐ category 3	

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm)	PER(%)	PER Limit (%)
802.11n(HT20)				
Pmin + 6 dB	2 380 2 503,5	-50.99	0.7	10
Pmin + 6 dB	2 300 2 330 2 360	-44.99	1.1	10
Pmin + 6 dB	2 523,5 2 553,5 2 583,5 2 613,5 2 643,5 2 673,5	-44.99	1.3	10
802.11n(HT40)				
Pmin + 6 dB	2 380 2 503,5	-50.99	1.3	10
Pmin + 6 dB	2 300 2 330 2 360	-44.99	1.4	10
Pmin + 6 dB	2 523,5 2 553,5 2 583,5 2 613,5 2 643,5 2 673,5	-44.99	0.9	10

15. TEST EQUIPMENT LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI7	100837	Mar. 14, 2018	1 Year
2.	Antenna	Schwarzbeck	VULB9162	9162-010	Mar. 23, 2018	1 Year
3.	Spectrum Analyzer	Rohde & Schwarz	FSU26	200409/026	Mar. 14, 2018	1 Year
4.	Spectrum Analyzer	Keysight	N9020A	MY54200831	Apr. 24, 2018	1 Year
5.	Signal generator	Agilent	E4421B	MY41000708	Mar. 14, 2018	1 Year
6.	Signal generat or	Agilent	N5182A	MY48180739	Mar. 14, 2018	1 Year
7.	Power Sensor	DARE	RPR3006W	15I00041SNO 64	Mar. 14, 2018	1 Year
8.	Power Sensor	DARE	RPR3006W	15I00041SNO 65	Mar. 14, 2018	1 Year
9.	Communicati on Tester	Rohde & Schwarz	CMW500	149004	Mar. 14, 2018	1 Year
10.	Horn Antenna	COM-Power	AH-118	071078	Mar. 23, 2018	1 Year
11.	Pre-Amplifier	HP	HP 8449B	3008A00964	Mar. 14, 2018	1 Year
12.	Pre-Amplifier	HP	HP 8447D	1145A00203	Mar. 14, 2018	1 Year
13.	Temperature & Humidity Chamber	REMAFEE	SYHR225L	N/A	Apr. 24, 2018	1 Year
14.	DC Source	Maynuo	MY8811	N/A	Mar.23,2018	1 Year
15.	Horn Antenna	Schwarzbeck	BBHA9170	9170-372	Oct.24, 2017	1 Year
16.	Spectrum Analyzer	Rohde & Schwarz	FSV40	100003	Apr.09, 2018	1 Year
16.	Test Software	EZ	EZ_EMC	N/A	N/A	N/A
17.	Test Software	MWRF	MWRF_V1.0	N/A	N/A	N/A

APPENDIX I

INFORMATION AS REQUIRED BY AS/NZS 4268(REFER ETSI EN 300328 V2.1.1)

In accordance with EN 300 328, clause 5.4.1, the following information is provided by the supplier.

a) The type of modulation used by the equipment:	☐ FHSS ☒ other forms of modulation
b) In case of FHSS modulation:	• In case of non-Adaptive Frequency Hopping equipment: The number of Hopping Frequencies: _____
	• In case of Adaptive Frequency Hopping Equipment: The maximum number of Hopping Frequencies:_____ The minimum number of Hopping Frequencies:_____
	• The (Average) Dwell Time: _____
c) Adaptive / non-adaptive equipment:	☐ non-adaptive Equipment ☒ adaptive Equipment without the possibility to switch to a non-adaptive mode ☐ adaptive Equipment which can also operate in a non-adaptive mode
d) In case of adaptive equipment:	The Channel Occupancy Time implemented by the equipment: _____ ms ☐ The equipment has implemented an LBT based DAA mechanism
	•In case of equipment using modulation different from FHSS: ☐ The equipment is Frame Based equipment ☒ The equipment is Load Based equipment ☐ The equipment can switch dynamically between Frame Based and Load Based equipment
	The CCA time implemented by the equipment:_____ µs
	☐ The equipment has implemented an non-LBT based DAA mechanism ☐ The equipment can operate in more than one adaptive mode
e) In case of non-adaptive Equipment:	The maximum RF Output Power (e.i.r.p.): _____dBm
	The maximum (corresponding) Duty Cycle: _____ %
	Equipment with dynamic behaviour, that behaviour is described here. (e.g. the different combinations of duty cycle and orresponding power levels to be declared):
f) The worst case operational mode for each of the following tests:	• RF Output Power 802.11b CH1
	• Power Spectral Density 802.11b CH1
	• Duty cycle, Tx-Sequence, Tx-gap N/A
	• Accumulated Transmit time, Frequency Occupation & Hopping Sequence (only for FHSS equipment) N/A
	• Hopping Frequency Separation (only for FHSS equipment)_____
	• Medium Utilisation N/A
	• Adaptivity & Receiver Blocking 802.11n(HT40)
	• Nominal Channel Bandwidth 802.11n(HT40) CH11
	• Transmitter unwanted emissions in the OOB domain 802.11n(HT20) CH1
	• Transmitter unwanted emissions in the spurious domain 802.11b CH1
	• Receiver spurious emissions 802.11b CH1

g) The different transmit operating modes (tick all that apply):	☒ Operating mode 1: Single Antenna Equipment ☒ Equipment with only 1 antenna ☐ Equipment with 2 diversity antennas but only 1 antenna active at any moment in time ☐ Smart Antenna Systems with 2 or more antennas, but operating in a (legacy) mode where only 1 antenna is used. (e.g. IEEE 802.11™ [i.3] legacy mode in smart antenna systems)
	☐ Operating mode 2: Smart Antenna Systems - Multiple Antennas without beam forming ☐ Single spatial stream / Standard throughput / (e.g. IEEE 802.11™ [i.3] legacy mode) ☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 1 ☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 2 NOTE: Add more lines if more channel bandwidths are supported.
	☐ Operating mode 3: Smart Antenna Systems - Multiple Antennas with beam forming ☐ Single spatial stream / Standard throughput / (e.g. IEEE 802.11™ [i.3] legacy mode) ☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 1 ☐ High Throughput (> 1 spatial stream) using Occupied Channel Bandwidth 2 NOTE: Add more lines if more channel bandwidths are supported.
h) In case of Smart Antenna Systems:	•The number of Receive chains: _____
	•The number of Transmit chains: _____ ☐ symmetrical power distribution ☐ asymmetrical power distribution
	In case of beam forming, the maximum beam forming gain: _____ NOTE: Beam forming gain does not include the basic gain of a single antenna.
i) Operating Frequency Range(s) of the equipment:	•Operating Frequency Range 1: 2412 MHz to 2472 MHz •Operating Frequency Range 2: 2422 MHz to 2462 MHz NOTE: Add more lines if more Frequency Ranges are supported.
j) Occupied Channel Bandwidth(s):	•Nominal Channel Bandwidth 1: 15.145 MHz •Nominal Channel Bandwidth 2: 16.754 MHz •Nominal Channel Bandwidth 3: 17.920 MHz •Nominal Channel Bandwidth 4: 36.278 MHz NOTE: Add more lines if more channel bandwidths are supported.
k) Type of Equipment (stand-alone, combined, plug-in radio device, etc.): Stand-alone	☒ Stand-alone ☐ Combined Equipment (Equipment where the radio part is fully integrated within another type of equipment) ☐ Plug-in radio device (Equipment intended for a variety of host systems) ☐ Other _____

l) The extreme operating conditions that apply to the equipment:

Normal operating conditions (if applicable):
Operating temperature range: 25 ° C
Other (please specify if applicable):
Extreme operating conditions:
Operating temperature range: Minimum: 0 ° C Maximum: 45 ° C
Other (please specify if applicable): Minimum: ____ ° C Maximum: ____ ° C

Details provided are for the:
- ☐ stand-alone equipment
- ☒ combined (or host) equipment
- ☒ test jig

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

•Antenna Type:

☒ PCB Antenna:

Antenna Gain: 2.01 dBi

If applicable, additional beamforming gain (excluding basic antenna gain): ____ dB

- ☐ Temporary RF connector provided
- ☐ No temporary RF connector provided

☐ Dedicated Antennas (equipment with antenna connector)

- ☐ Single power level with corresponding antenna(s)
- ☐ Multiple power settings and corresponding antenna(s)

Number of different Power Levels: _____

Power Level 1: _____ dBm

Power Level 2: _____ dBm

Power Level 3: _____ dBm

NOTE 1: Add more lines in case the equipment has more power levels.

NOTE 2: These power levels are conducted power levels (at antenna connector).

• For each of the Power Levels, provide the intended antenna assemblies, their corresponding gains (G) and the resulting e.i.r.p. levels also taking into account the beamforming gain (Y) if applicable

Power Level 1: _____

Number of antenna assemblies provided for this power level:

Assembly #	Gain (dBi)	e.i.r.p.(dBm)	Part number or model name
1			
2			
3			
4			

Note: Add more rows in case more antenna assemblies are supported for this power level.

Power Level 2: _____

Number of antenna assemblies provided for this power level:

Assembly #	Gain (dBi)	e.i.r.p.(dBm)	Part number or model name
1			
2			
3			
4			

Note: Add more rows in case more antenna assemblies are supported for this power level.

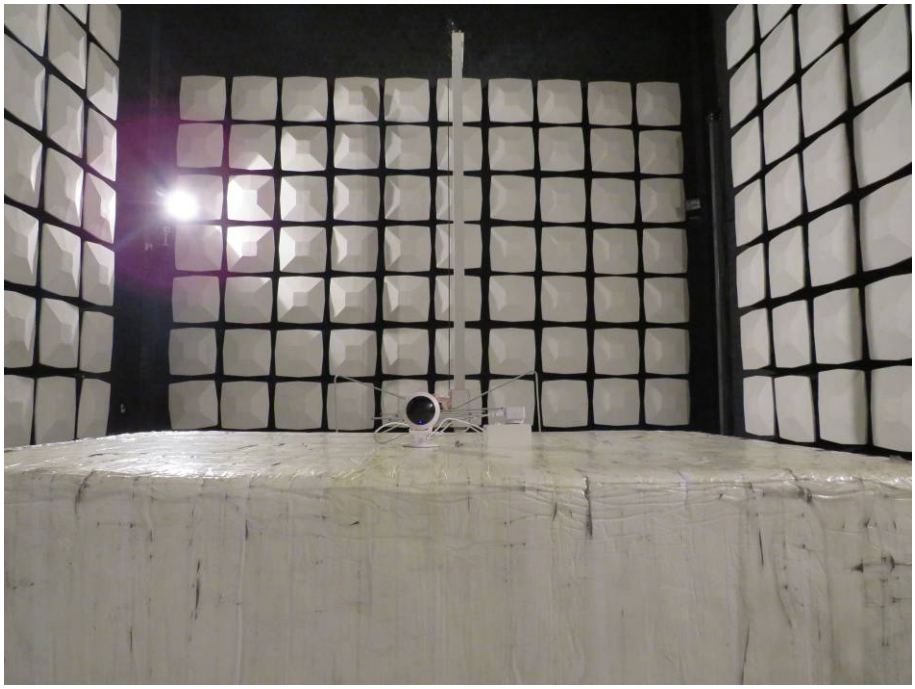
<table>
<tr><td></td><td>
Power Level 3:_____
Number of antenna assemblies provided for this power level:
<table>
<tr><th>Assembly #</th><th>Gain (dBi)</th><th>e.i.r.p.(dBm)</th><th>Part number or model name</th></tr>
<tr><td>1</td><td></td><td></td><td></td></tr>
<tr><td>2</td><td></td><td></td><td></td></tr>
<tr><td>3</td><td></td><td></td><td></td></tr>
<tr><td>4</td><td></td><td></td><td></td></tr>
</table>
Note: Add more rows in case more antenna assemblies are supported for this power level.
</td></tr>
<tr><td>n) The nominal voltages of the stand-alone radio equipment or the nominal voltages of the combined (host) equipment or test jig in case of plug-in devices:</td><td>
Details provided are for the: ☒ stand-alone equipment
☐ combined (or host) equipment
☐ test jig
Supply Voltage ☐ AC mains State AC voltage _____ V
☒ DC State DC voltage 5 V
In case of DC, indicate the type of power source
☐ Internal Power Supply
☒ External Power Supply or AC/DC adapter
☐ Battery
☐ Other: _____
</td></tr>
<tr><td>o) Describe the test modes available which can facilitate testing:</td><td>The EUT provides TX Mode to control RF signal transmission</td></tr>
<tr><td>p) The equipment type (e.g. Bluetooth®, IEEE 802.11™ [i.3], proprietary, etc.):</td><td>IEEE 802.11™ [i.3]</td></tr>
<tr><td>q) If applicable, the statistical analysis referred to in clause 5.3.1 q)</td><td>(to be provided as separate attachment)</td></tr>
<tr><td>r) If applicable, the statistical analysis referred to in clause 5.3.1 r)</td><td>(to be provided as separate attachment)</td></tr>
<tr><td>s) Geo-location capability supported by the equipment:</td><td>
☐ Yes
☐ The geographical location determined by the equipment as defined in clause 4.3.1.13.2 or clause 4.3.2.12.2 is not accessible to the user.
☐ No
</td></tr>
</table>

E.2 Combination for testing	Highest overall e.i.r.p. value: 9.60 dBm
	Corresponding Antenna assembly gain: 2.01 dBi
	Corresponding conducted power setting: (also the power level to be used for testing) _____ dBm
	Antenna Assembly #_____
	Listed as Power Setting #: _____
E.3 Additional information provided by the applicant	
E.3.1 Modulation:	ITU Class(es) of emission: DSSS Can the transmitter operate unmodulated? ☒ yes ☐ no
E.3.2 Duty Cycle	The transmitter is intended for: ☐ Continuous duty ☐ Intermittent duty ☒ Continuous operation possible for testing purposes
E.3.3 About the UUT	☒ The equipment submitted are representative production models ☐ If not, the equipment submitted are pre-production models ? ☐ If pre-production equipment are submitted, the final production equipment will be identical in all respects with the equipment tested ☐ If not, supply full details ☒ The equipment submitted is CE marked ☐ In addition to the CE mark, the Class-II identifier (Alert Sign) is affixed.
E.3.4 Additional items and/or supporting equipment provided	☐ Spare batteries (e.g. for portable equipment) ☐ Battery charging device ☒ External Power Supply or AC/DC adapter ☐ Test Jig or interface box ☐ RF test fixture (for equipment with integrated antennas) ☐ Host System Manufacturer:_____ Model #:_____ Model name:_____ ☐Combined equipment Manufacturer:_____ Model #:_____ Model name:_____ ☒ User Manual ☒ Technical documentation (Handbook and circuit diagrams)

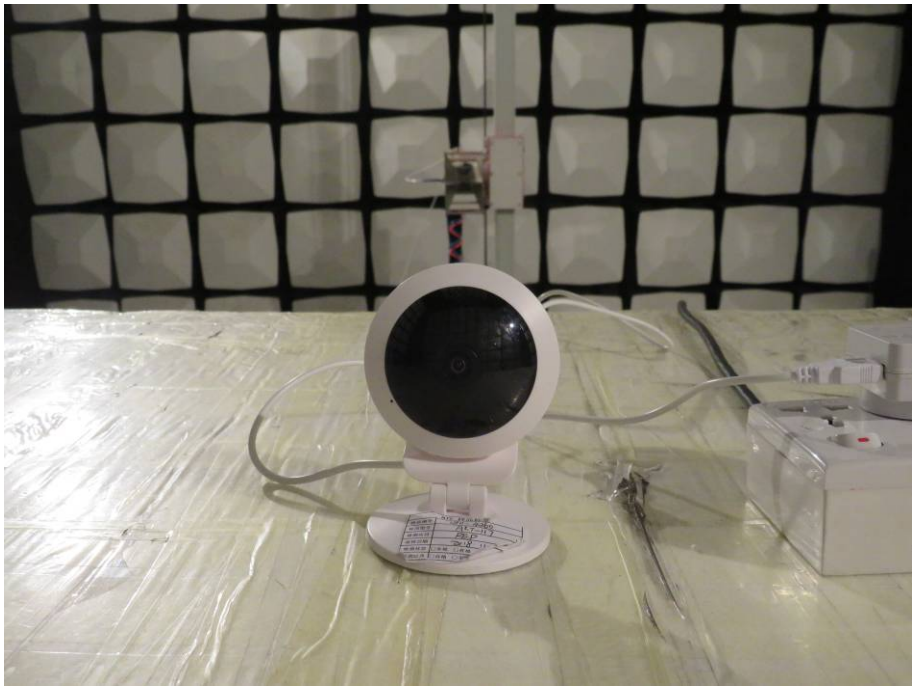
APPENDIX II

PHOTOGRPHS OF TEST SETUP

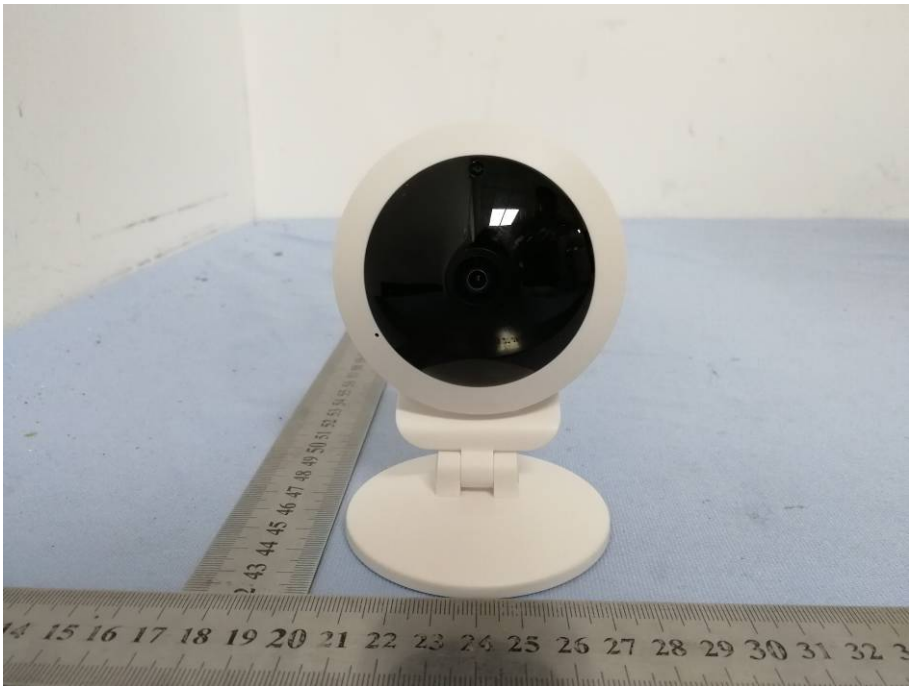
Radiated Emission Below 1 GHz

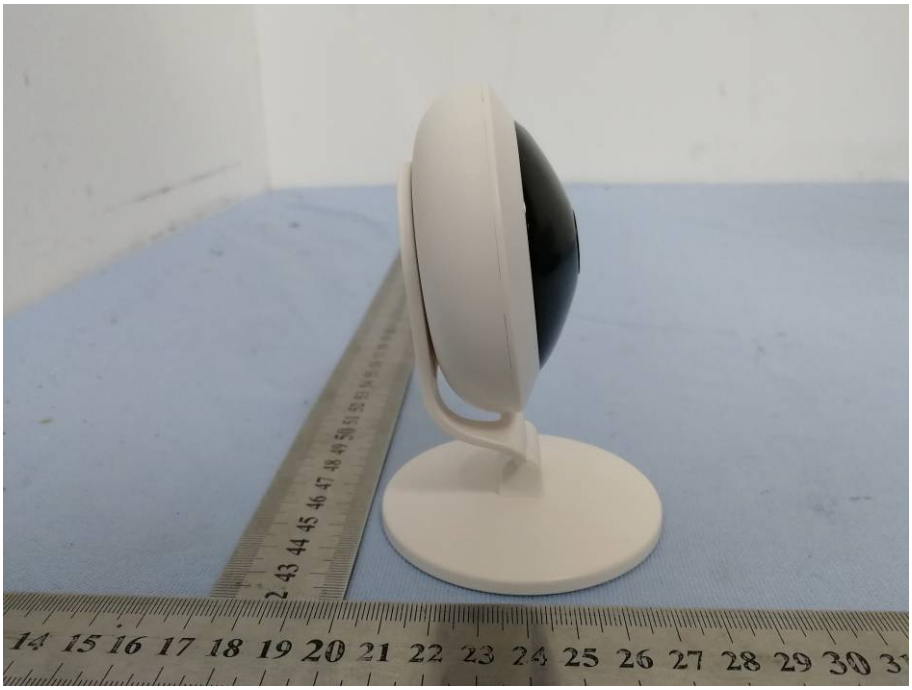


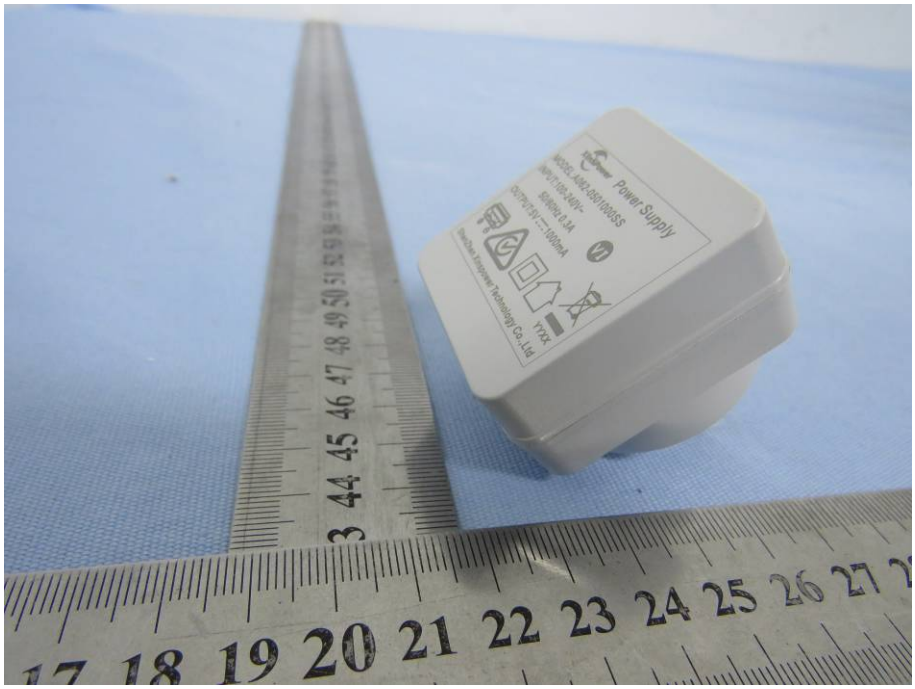
Radiated Emission Above 1 GHz

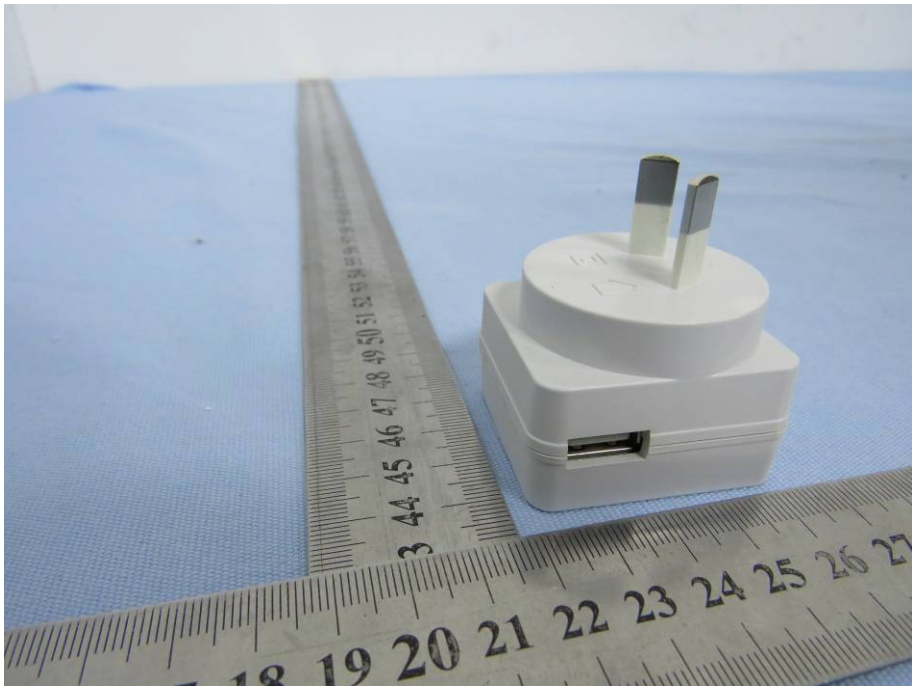


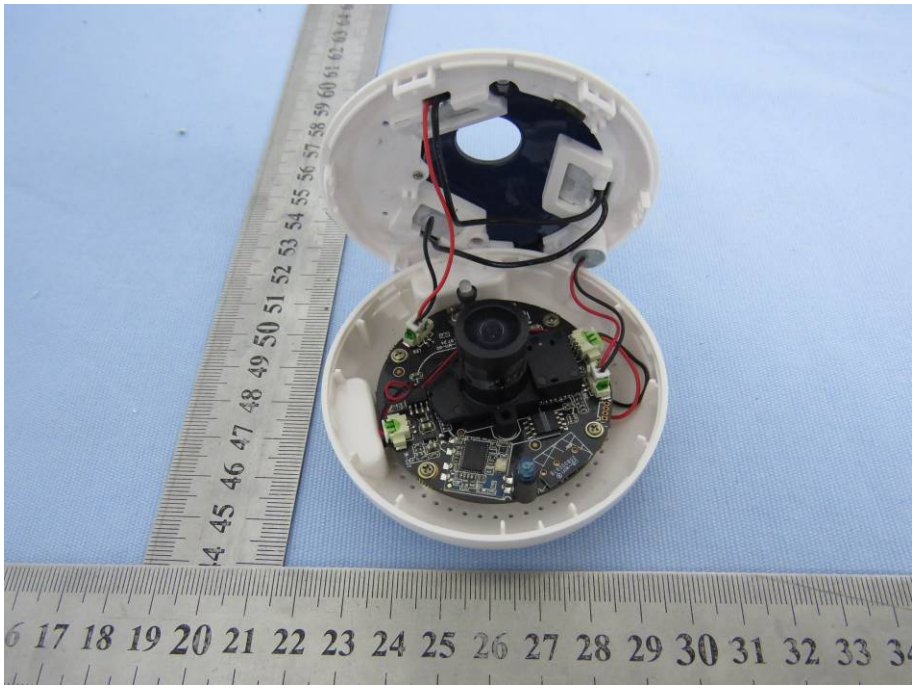
General Appearance of the E.U.T.

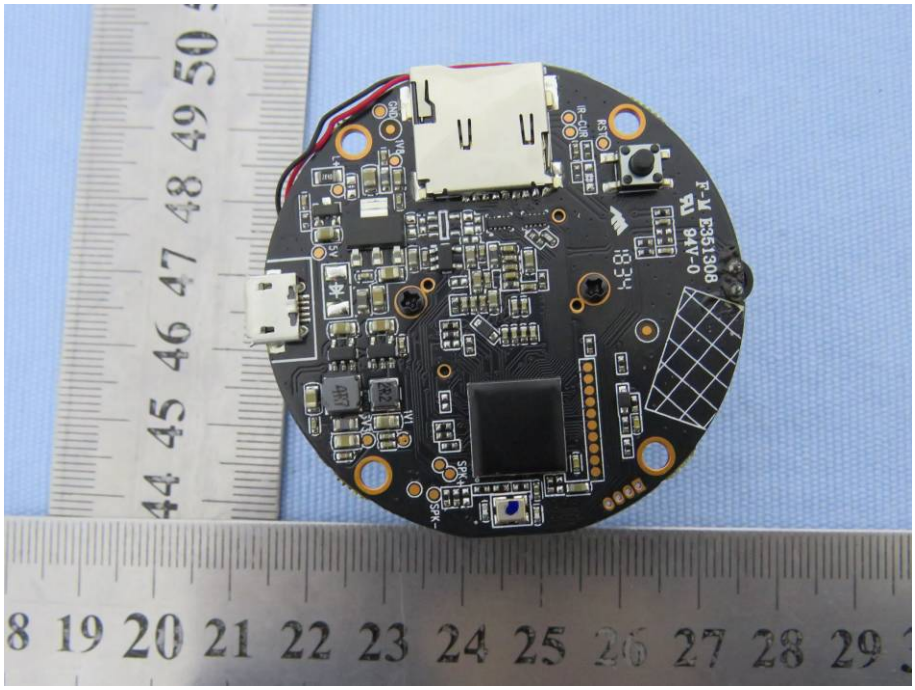


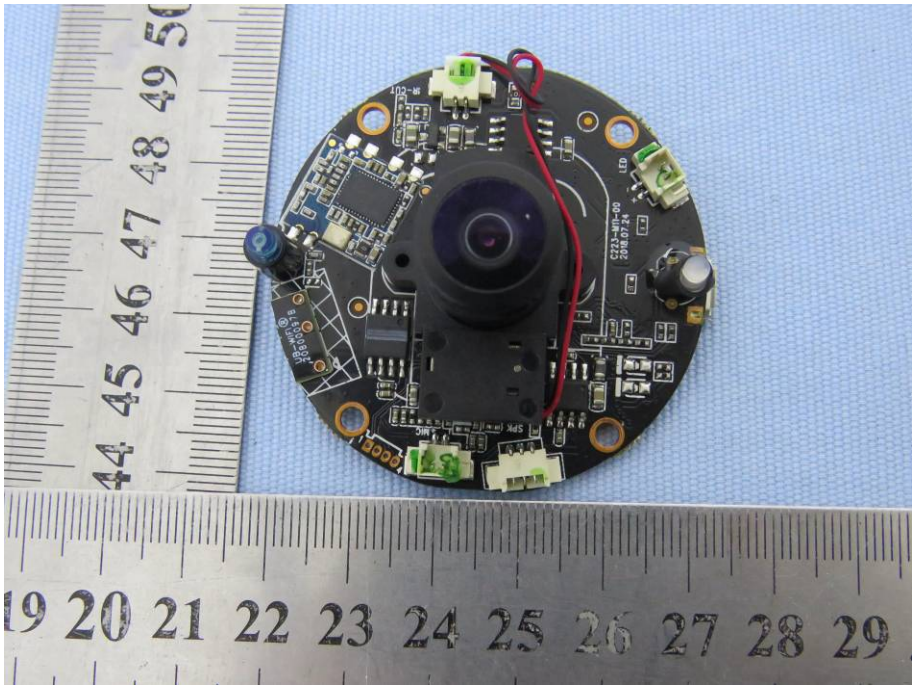


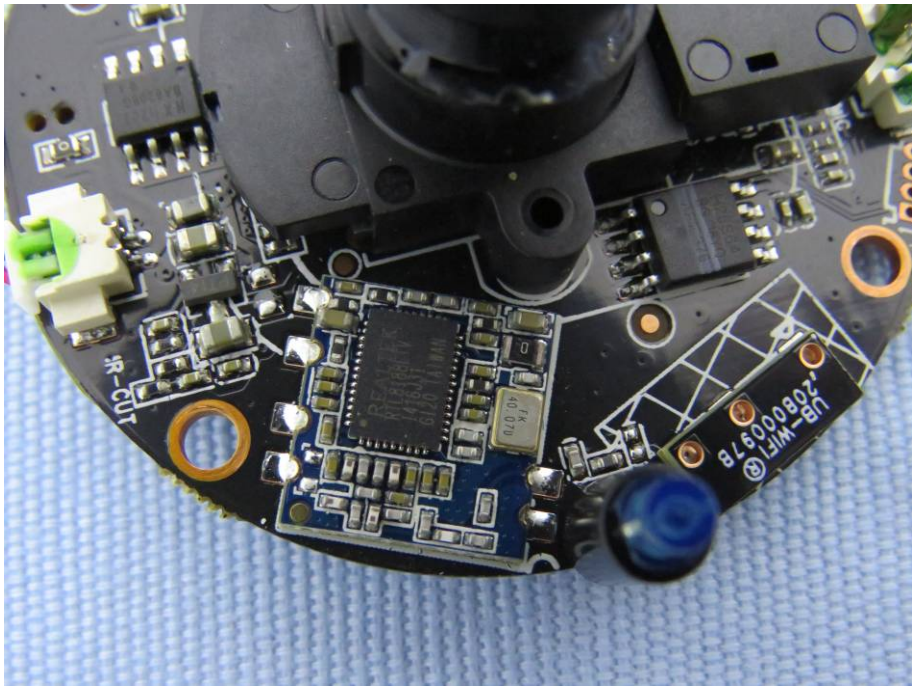

Power Supply

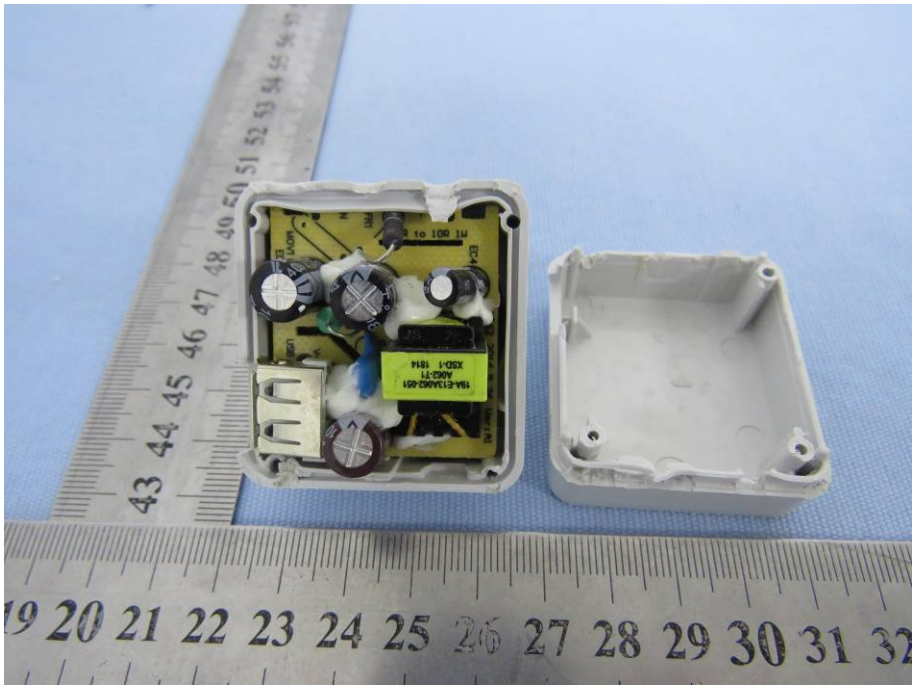


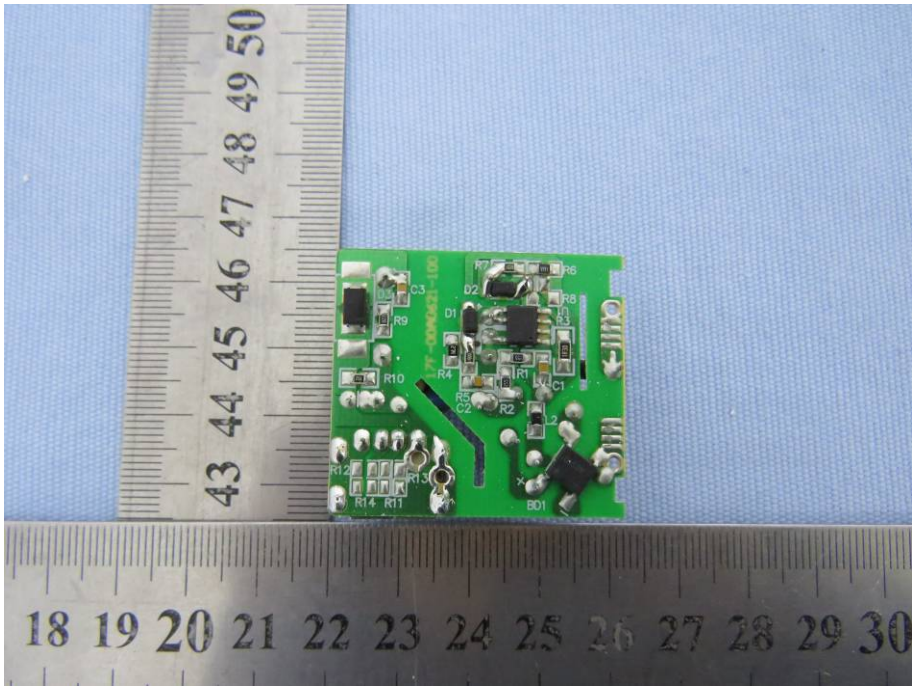


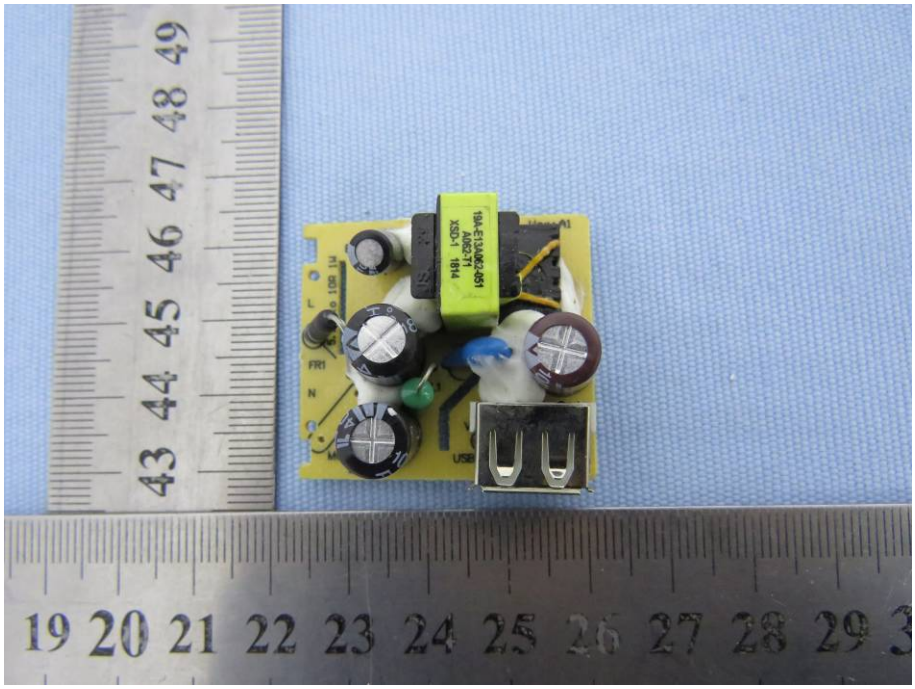












---End---