TEST REPORT

Report No. .....:	**CTC2024287507**
Applicant .....:	**XonTel Technology Trd. Co. W.L.L**
Address.....:	Office 21 - Justice Tower - Ali Al Salem St. - Qibla - Kuwait City - State Of Kuwait
Manufacturer.....:	XonTel Technology Trd. Co. W.L.L
Address.....:	Office 21 - Justice Tower - Ali Al Salem St. - Qibla - Kuwait City - State Of Kuwait
Product Name .....:	**Prime Business Phone**
Trade Mark .....:	XonTel
Model/Type reference.....:	XT-24G
Listed Model(s) .....:	/
Standard .....:	**ETSI EN 300 440 V2.2.1: 2018-07**
Test Report Form No .....:	CTC-TR-054_A1
Master TRF.....:	Dated 2024-09-20
Date of receipt of test sample…:	Jan. 18, 2022
Date of testing……..:	Jan. 19, 2022 ~ Feb. 21, 2022
Date of issue……....:	Dec. 20, 2024
Result……:	**PASS**

Compiled by: (Printed name+signature)	Jim Jiang	Jim Jiang
Supervised by: (Printed name+signature)	Eric Zhang	Eric Zhang
Approved by: (Printed name+signature)	Totti Zhao	Totti Zhao

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1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

ETSI EN 300 440 V2.2.1: 2018-07 – Short Range Devices (SRD); Radio equipment to be used in the 1 GHz to 40 GHz frequency range; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU.

1.2. Report version

Revised No.	Report No.	Date of issue	Description
01	CTC2024287507	Dec. 20, 2024	On the basis of the original report CTC20220136E12, update the applicant, manufacturer, trademark and model number., no testing involved.

1.3. Test Description

Radio Spectrum Matter (RSM) Part of Transmitter			
Test Item	**Test require**	**Result**	**Test Engineer**
Equivalent isotropic ally radiated power (e.i.r.p.)	Sub-clause 4.2.2	Pass	Alicia Liu
Permitted range of operating frequencies	Sub-clause 4.2.3	Pass	Alicia Liu
Unwanted emissions in the spurious domain	Sub-clause 4.2.4	Pass	Alicia Liu
Duty cycle	Sub-clause 4.2.5	N/A	N/A
Additional requirements for FHSS equipment	Sub-clause 4.2.6	N/A	N/A
Radio Spectrum Matter (RSM) Part of Receiver			
Test Item	**Test require**	**Result**	**Test Engineer**
Adjacent channel selectivity	Sub-clause 4.3.3	N/A	N/A
Blocking or desensitization	Sub-clause 4.3.4	Pass	Alicia Liu
Receiver spurious emissions	Sub-clause 4.3.5	Pass	Alicia Liu
Spectrum access techniques	Sub-clause 4.4	Pass	Alicia Liu

Note:
1. The measurement uncertainty is not included in the test result.
2. N/A: means this test item is not applicable for this device according to the technology characteristic of device.

1.4. Test Facility

Address of the report laboratory

CTC Laboratories, Inc.

Add: Room 101 of Building B, Room 107, 108, 207, 208 of Building A, No. 7, Lanqing 1st Road, Luhu Community, Guanhu Subdistrict, Longhua District, Shenzhen, Guangdong, China

Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

A2LA-Lab Cert. No.: 4340.01

CTC Laboratories, Inc. EMC Laboratory has been accredited by A2LA for technical competence in the field of
electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identif ied field of testing.

Industry Canada (Registration No.: 9783A, CAB Identifier: CN0029)

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Indus try Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

FCC (Registration No.: 951311, Designation Number CN1208)

CTC Laboratories, Inc. EMC Laboratory has been registered and fully described in a report filed with the (F CC) Federal Communications Commission. The acceptance letter from the FCC is maintained inour files. Registration 951311, Aug 26, 2017.

1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM);Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the CTC Laboratories, Inc. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for CTC Laboratories, Inc.

Test Items	Measurement Uncertainty	Notes
Maximum transmit power	±1.5dB	(1)
Power Spectral Density	±1.5dB	(1)
Duty Cycle, Tx-sequence, Tx-gap	±5%	(1)
Accumulated Transmit Time, Frequency Occupation and Hopping Sequence	±5%	(1)
Hopping Frequency Separation	±5%	(1)
Medium Utilisation (MU) factor	±5%	(1)
Adaptively	±5%	(1)
Occupied Channel Bandwidth	±5%	(1)
Transmitter unwanted emissions in the out-of-band domain	±2.8dB	(1)
Transmitter unwanted emissions in the spurious domain	±2.8dB	(1)
Receiver spurious emissions	±2.8dB	(1)
Receiver Blocking	±2.8dB	(1)

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

1.6. Environmental conditions

Normal Condition	Temperature	15 °C to 35 °C	
	Relative humidity	20 % to 75 %.	
	Voltage	☒Mains voltage	Nominal mains voltage
		☐Lead-acid battery	1.1 * the nominal voltage of the battery
		☐Other	The normal test voltage shall be that declared by the equipment provider
Extreme Condition	Temperature	☒The temperature range as declared by the manufacturer	
		☐Temperature category I (General): -20 °C to +55 °C	
		☐Temperature category II (Portable): -10 °C to +55 °C	
		☐Temperature category III (Equipment for normal indoor use): 5 °C to +35 °C	
	Voltage	☒Mains voltage	±10 %* the nominal mains voltage
		☐Lead-acid battery	1,3 and 0,9 multiplied by the nominal voltage of the battery
		☐Leclanché or the lithium battery	Lower extreme voltage: 0.85*the nominal voltage upper extreme voltage: The nominal voltage
		☐Nickel-cadmium battery	Lower extreme voltage: 0.9*the nominal voltage upper extreme voltage: The nominal voltage
		☐Other	The normal test voltage shall be that declared by the equipment provider

Normal Condition	V_N=Normal Voltage	DC 5.0V
	T_N=Normal Temperature	25 °C
Extreme Condition	V_L=Lower Voltage	DC 4.5V
	V_H=Higher Voltage	DC 5.5V
	T_L=Lower Temperature	0 °C
	T_H=Higher Temperature	45 °C

2. GENERAL INFORMATION

2.1. Client Information

Applicant:	XonTel Technology Trd. Co. W.L.L
Address:	Office 21 - Justice Tower - Ali Al Salem St. - Qibla - Kuwait City - State Of Kuwait
Manufacturer:	XonTel Technology Trd. Co. W.L.L
Address:	Office 21 - Justice Tower - Ali Al Salem St. - Qibla - Kuwait City - State Of Kuwait

2.2. General Description of EUT

Product Name:	Prime Business Phone				
Trade Mark:	XonTel				
Model/Type reference:	XT-24G				
Listed Model(s):	/				
Power supply:	5Vdc/2A from AC/DC Adapter 48Vdc/0.3A from POE				
Adapter 1 Model:	F12W8-050200SPAV Input: 100-240V~ 50/60Hz 0.6A Output: 5Vdc/2A				
Adapter 2 Model:	F12W8-050200SPAB Input: 100-240V~ 50/60Hz 0.6A Output: 5Vdc/2A				
Adapter 3 Model:	F12W8-050200SPAS Input: 100-240V~ 50/60Hz 0.6A Output: 5Vdc/2A				
Adapter Difference:	All these models are identical in the same PCB, Layout and electrical circuit, The only difference is plugs.				
Hardware version:	V1.0				
Software version:	T0.0.9.5.1				
RF Specification					
Support type:	☒ 802.11a	☒ 802.11n	☒ 802.11ac		
Support bandwidth:	802.11a	☒ 20MHz			
	802.11n	☒ 20MHz	☒ 40MHz		
	802.11ac	☒ 20MHz	☒ 40MHz	☒ 80MHz	☐ 160MHz
Operation frequency:	☒Higher Band: 5725MHz-5850MHz				
Modulation:	☒BPSK	☒QPSK	☒16QAM	☒64QAM	
Antenna Type:	FPC Antenna				
Antenna gain:	5.8dBi				

Operation Frequency List:

Band (MHz)	20MHz Bandwidth		40MHz Bandwidth		80MHz Bandwidth	
	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
5725MHz-5850MHz	149	5745	151	5755	155	5775
	153	5765				
	157	5785	159	5795		
	161	5805				
	165	5825				

Test channel is below:

Band(MHz)	Test Channel	Frequency		
		20MHz	40MHz	80MHz
5725MHz-5850MHz	CH_L	5745	5755	-
	CH_M	5785	-	5775
	CH_H	5825	5795	-

2.3. EUT operation mode

Mode 1	The EUT has been tested under test mode condition. The Applicant provides software to control the EUT for staying in continuous transmitting and receiving mode for testing.
Mode 2	Normal communication for test channel

2.4. Measurement Instruments List

Tonscend JS0806-2 Test system					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Spectrum Analyzer	KEYSIGHT	N9020A	100231	Dec. 23, 2022
2	Spectrum Analyzer	Rohde & Schwarz	FUV40-N	101331	Mar. 15, 2022
3	MXG Vector Signal Generator	Agilent	N5182A	MY47420864	Dec. 23, 2022
4	Signal Generator	Agilent	E8257D	MY46521908	Dec. 23, 2022
5	Power Sensor	Agilent	U2021XA	MY5365004	Mar. 15, 2022
6	Power Sensor	Agilent	U2021XA	MY5365006	Mar. 15, 2022
7	High and low temperature box	ESPEC	MT3035	N/A	Mar. 24, 2022
8	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	102414	Dec. 23, 2022
9	300328 v2.2.2 test system	TONSCEND	v2.6	/	/

Radiated emission(3m chamber 2)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-1013	Jan. 12, 2023
2	Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-647	Dec. 23, 2022
3	Spectrum Analyzer	R&S	FSU26	100105	Dec. 23, 2022
4	Spectrum Analyzer	R&S	FSV40-N	101331	Mar. 15, 2022
5	Pre-Amplifier	SONOMA	310	186194	Dec. 23, 2022
6	Low Noise Pre-Amplifier	EMCI	EMC051835	980075	Dec. 23, 2022
7	Test Receiver	R&S	ESCI7	100967	Dec. 23, 2022

Radiated emission(3m chamber 3)					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-759	Nov. 09, 2022
2	Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-647	Dec. 23, 2022
3	Test Receiver	Keysight	N9038A	MY56400071	Dec. 23, 2022
4	Broadband Premplifier	SCHWARZBECK	BBV9743B	259	Dec. 23, 2022
5	Mirowave Broadband Amplifier	SCHWARZBECK	BBV9718C	111	Dec. 23, 2022

Note: The cable loss has calculated in test result which connection between each test instruments.

3. TEST ITEM AND RESULTS

3.1. Equivalent isotropically radiated power (e.i.r.p.)

Limit

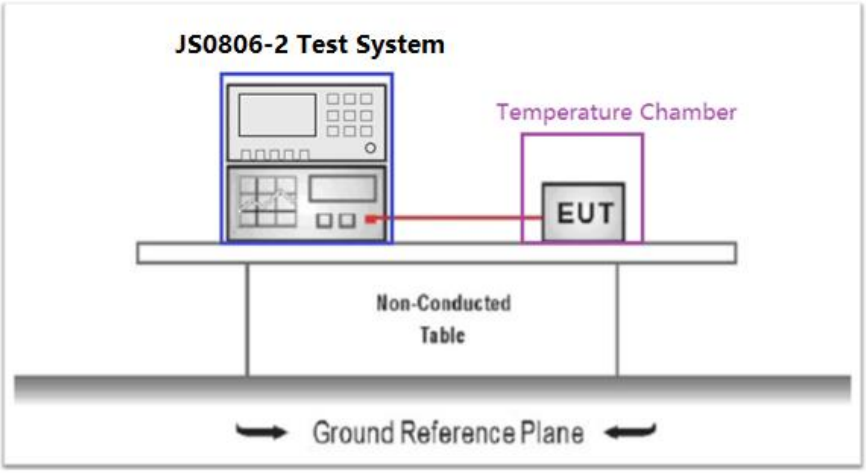
ETSI EN 300 440 Sub-clause 4.2.2.4

The transmitter maximum e.i.r.p. under normal and extreme test conditions is provided in table 2.

Table 2: Maximum radiated power (e.i.r.p.)

Entry	Frequency Bands	Power	Application	Notes
1	2 400 MHz to 2 483,5 MHz	10 mW e.i.r.p.	Non-specific short range devices	
2	2 400 MHz to 2 483,5 MHz	25 mW e.i.r.p.	Radiodetermination devices	
3	(a) 2 446 MHz to 2 454 MHz	500 mW e.i.r.p.	Radio Frequency Identification (RFID) devices	See also table 4 and Annex G
4	(b) 2 446 MHz to 2 454 MHz	4 W e.i.r.p.	Radio Frequency Identification (RFID) devices	See also table 4 and Annex G
5	5 725 MHz to 5 875 MHz	25 mW e.i.r.p.	Non-specific short range devices	
6	9 200 MHz to 9 500 MHz	25 mW e.i.r.p.	Radiodetermination devices	
7	9 500 MHz to 9 975 MHz	25 mW e.i.r.p.	Radiodetermination devices	
8	10,5 GHz to 10,6 GHz	500 mW e.i.r.p.	Radiodetermination devices	
9	13,4 GHz to 14,0 GHz	25 mW e.i.r.p.	Radiodetermination devices	
10	17,1 GHz to 17,3 GHz	400 mW e.i.r.p.	Radiodetermination devices	See Annex H
11	24,00 GHz to 24,25 GHz	100 mW e.i.r.p.	Non-specific short range devices and radiodetermination devices	
NOTE:	The spectrum ranges in some entries are not harmonised throughout all EU territory, specifically entries 4, 9, and 11 have been identified as such. Implementers are cautioned to refer to CEPT/ERC Recommendation 70-03 [i.2] as well as current National Radio plans to verify acceptance within intended regions of use.			

Test Configuration



Test Procedure

Please refer to ETSI EN 300 440 Sub-clause 4.2.2.3.2 for the measurement method.

Test Mode

Please reference to the section 2.3 mode 1.

Test Results

Test Condition	Test Mode	Channel	TPC	EIRP [dBm]	Limit [dBm]	Verdict
NTNV	802.11a	5745	NA	11.86	14.00	PASS
		5785	NA	10.95	14.00	PASS
		5825	NA	10.21	14.00	PASS
	802.11n(HT20)	5745	NA	11.49	14.00	PASS
		5785	NA	10.63	14.00	PASS
		5825	NA	10.16	14.00	PASS
	802.11n(HT40)	5755	NA	11.65	14.00	PASS
		5795	NA	11.17	14.00	PASS
	802.11ac(VHT20)	5745	NA	11.52	14.00	PASS
		5785	NA	10.92	14.00	PASS
		5825	NA	10.15	14.00	PASS
	802.11ac(VHT40)	5755	NA	11.92	14.00	PASS
		5795	NA	11.54	14.00	PASS
	802.11ac(VHT80)	5775	NA	11.41	14.00	PASS
LTLV	802.11a	5745	NA	11.80	14.00	PASS
		5785	NA	10.98	14.00	PASS
		5825	NA	10.28	14.00	PASS
	802.11n(HT20)	5745	NA	11.50	14.00	PASS
		5785	NA	10.64	14.00	PASS
		5825	NA	10.19	14.00	PASS
	802.11n(HT40)	5755	NA	11.64	14.00	PASS
		5795	NA	11.13	14.00	PASS
	802.11ac(VHT20)	5745	NA	11.48	14.00	PASS
		5785	NA	10.95	14.00	PASS
		5825	NA	10.08	14.00	PASS
	802.11ac(VHT40)	5755	NA	11.94	14.00	PASS
		5795	NA	11.50	14.00	PASS
	802.11ac(VHT80)	5775	NA	11.41	14.00	PASS
LTHV	802.11a	5745	NA	11.78	14.00	PASS
		5785	NA	11.27	14.00	PASS
		5825	NA	10.27	14.00	PASS
	802.11n(HT20)	5745	NA	11.54	14.00	PASS
		5785	NA	10.61	14.00	PASS
		5825	NA	10.16	14.00	PASS
	802.11n(HT40)	5755	NA	11.58	14.00	PASS
		5795	NA	11.15	14.00	PASS
	802.11ac(VHT20)	5745	NA	11.51	14.00	PASS

		5785	NA	10.89	14.00	PASS
		5825	NA	10.11	14.00	PASS
	802.11ac(VHT40)	5755	NA	11.96	14.00	PASS
		5795	NA	11.64	14.00	PASS
	802.11ac(VHT80)	5775	NA	11.39	14.00	PASS
HTLV	802.11a	5745	NA	11.83	14.00	PASS
		5785	NA	10.94	14.00	PASS
		5825	NA	10.23	14.00	PASS
	802.11n(HT20)	5745	NA	11.55	14.00	PASS
		5785	NA	10.64	14.00	PASS
		5825	NA	10.15	14.00	PASS
	802.11n(HT40)	5755	NA	11.62	14.00	PASS
		5795	NA	11.11	14.00	PASS
	802.11ac(VHT20)	5745	NA	11.51	14.00	PASS
		5785	NA	10.94	14.00	PASS
		5825	NA	10.16	14.00	PASS
	802.11ac(VHT40)	5755	NA	11.96	14.00	PASS
		5795	NA	11.48	14.00	PASS
	802.11ac(VHT80)	5775	NA	11.40	14.00	PASS
HTHV	802.11a	5745	NA	11.77	14.00	PASS
		5785	NA	10.98	14.00	PASS
		5825	NA	10.24	14.00	PASS
	802.11n(HT20)	5745	NA	11.54	14.00	PASS
		5785	NA	10.62	14.00	PASS
		5825	NA	10.12	14.00	PASS
	802.11n(HT40)	5755	NA	11.68	14.00	PASS
		5795	NA	11.13	14.00	PASS
	802.11ac(VHT20)	5745	NA	11.51	14.00	PASS
		5785	NA	10.95	14.00	PASS
		5825	NA	10.15	14.00	PASS
	802.11ac(VHT40)	5755	NA	11.90	14.00	PASS
		5795	NA	11.64	14.00	PASS
	802.11ac(VHT80)	5775	NA	11.33	14.00	PASS

3.2. Permitted range of operating frequencies

Limit

ETSI EN 300 440 Sub-clause 4.2.3.5

The width of the power spectrum envelope is f_H -f_L for a given operating frequency. In equipment that allows adjustment or selection of different operating frequencies, the power envelope takes up different positions in the allowed band. The frequency range is determined by the lowest value of f_L and the highest value of f_H resulting from the adjustment of the equipment to the lowest and highest operating frequencies.

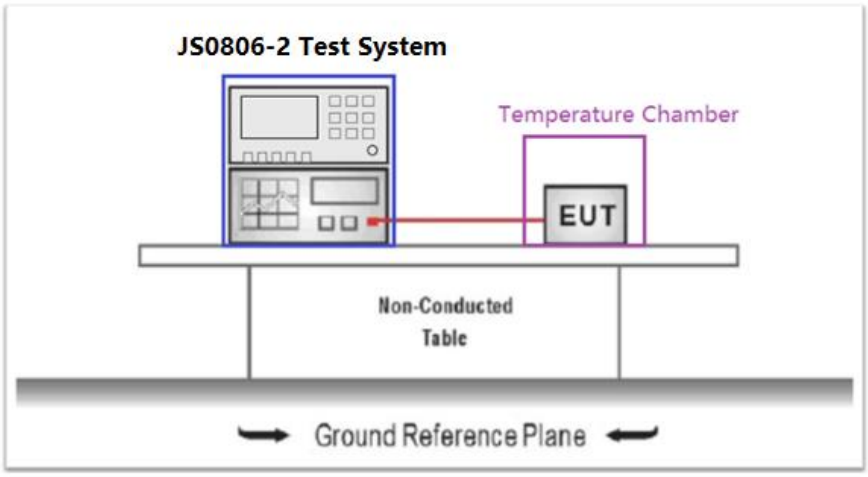
The occupied bandwidth (i.e. the bandwidth in which 99 % of the wanted emission is contained) of the transmitter shall fall within the assigned frequency band.

For all equipment the frequency range shall lie within the frequency band given by clause 4.2.2.4, table 2. For non-harmonized frequency bands the available frequency range may differ between national administrations.

Table 2: Maximum radiated peak power (e.i.r.p.)

Frequency Bands	Power	Application	Notes
2 400 MHz to 2 483,5 MHz	10 mW e.i.r.p.	Non-specific short range devices	
2 400 MHz to 2 483,5 MHz	25 mW e.i.r.p.	Radio determination devices	
(a) 2 446 MHz to 2 454 MHz	500 mW e.i.r.p.	Radio Frequency Identification (RFID) devices	See also table 4 and annex D
(b) 2 446 MHz to 2 454 MHz	4 W e.i.r.p.	Radio Frequency Identification (RFID) devices	See also table 4 and annex D
5 725 MHz to 5 875 MHz	25 mW e.i.r.p.	Non-specific short range devices	
9 200 MHz to 9 500 MHz	25 mW e.i.r.p.	Radio determination devices	
9 500 MHz to 9 975 MHz	25 mW e.i.r.p.	Radio determination devices	
10,5 GHz to 10,6 GHz	500 mW e.i.r.p.	Radio determination devices	
13,4 GHz to 14,0 GHz	25 mW e.i.r.p.	Radio determination devices	
17,1 GHz to 17,3 GHz	400 mW e.i.r.p.	Radio determination devices	See annex F
24,00 GHz to 24,25 GHz	100 mW e.i.r.p.	Non-specific short range devices and Radio determination devices	

Test Configuration



Test Procedure

Please refer to ETSI EN 300 440 Sub-clause 4.2.3.3 for the measurement method.

Test Mode

Please reference to the section 2.3 mode 1.

Test Results

Permitted range of operating frequencies

Mode	Test conditions		Channel	f_L (MHz)	f_H (MHz)	Limit	Result
	Temp	Vol					
802.11a	T_N	V_N	CH_L	5745.12	-	f_L≥5.725GHz and f_H≤5.850GHz	Pass
			CH_H	-	5825.10		
	T_L	V_L	CH_L	5744.96	-		
			CH_H	-	5824.99		
		V_H	CH_L	5745.02	-		
			CH_H	-	5825.03		
	T_H	V_L	CH_L	5745.03	-		
			CH_H	-	5825.02		
		V_H	CH_L	5744.99	-		
			CH_H	-	5825.00		
802.11n (HT20)	T_N	V_N	CH_L	5744.89	-	f_L≥5.725GHz and f_H≤5.850GHz	Pass
			CH_H	-	5825.11		
	T_L	V_L	CH_L	5744.86	-		
			CH_H	-	5825.12		
		V_H	CH_L	5745.02	-		
			CH_H	-	5824.96		
	T_H	V_L	CH_L	5745.03	-		
			CH_H	-	5824.99		
		V_H	CH_L	5745.00	-		
			CH_H	-	5825.03		
802.11ac (VHT20)	T_N	V_N	CH_L	5745.01	-	f_L≥5.725GHz and f_H≤5.850GHz	Pass
			CH_H	-	5825.62		
	T_L	V_L	CH_L	5745.00	-		
			CH_L	5745.01	-		
			CH_H	-	5825.44		
		V_H	CH_L	5745.04	-		
			CH_H	-	5824.86		
	T_H	V_L	CH_L	5744.68	-		
			CH_H	-	5825.11		
		V_H	CH_L	5744.87	-		

			CH_H	-	5824.78		
802.11n (HT40)	T_N	V_N	CH_L	5754.88	-	f_L≥5.725GHz and f_H≤5.850GHz	Pass
			CH_H	-	5795.02		
	T_L	V_L	CH_L	5755.12	-		
			CH_H	-	5794.89		
		V_H	CH_L	5755.03	-		
			CH_H	-	5794.85		
	T_H	V_L	CH_L	5755.06	-		
			CH_H	-	5795.13		
		V_H	CH_L	5754.86	-		
			CH_H	-	5795.02		
802.11ac (VHT40)	T_N	V_N	CH_L	5755.11	-	f_L≥5.725GHz and f_H≤5.850GHz	Pass
			CH_H	-	5794.95		
	T_L	V_L	CH_L	5755.10	-		
			CH_H	-	5795.32		
		V_H	CH_L	5755.03	-		
			CH_H	-	5795.16		
	T_H	V_L	CH_L	5754.87	-		
			CH_H	-	5794.86		
		V_H	CH_L	5754.96	-		
			CH_H	-	5794.79		
			CH_H	-	5794.78		
802.11ac (VHT80)	T_N	V_N	CH_L	5775.12	-	f_L≥5.725GHz and f_H≤5.850GHz	Pass
		V_H	CH_L	5775.06	-		
	T_H	V_L	CH_L	5775.11	-		
		V_H	CH_L	5774.96	-		

99% Occupied bandwidth

Test Mode	Channel	OCB[MHz]	Limit[MHz]	Verdict
802.11a	5745	16.427	f_L≥5.725GHz and f_H≤5.850GHz	PASS
	5785	16.428		
	5825	16.430		
802.11n(HT20)	5745	17.557	f_L≥5.725GHz and f_H≤5.850GHz	PASS
	5785	17.553		
	5825	17.551		
802.11n(HT40)	5755	36.042	fL≥5.725GHz and fH≤5.850GHz	PASS
	5795	36.027		
802.11ac(VHT20)	5745	17.551	f_L≥5.725GHz and f_H≤5.850GHz	PASS
	5785	17.553		
	5825	17.550		
802.11ac(VHT40)	5755	36.034	f_L≥5.725GHz and f_H≤5.850GHz	PASS
	5795	36.023		
802.11ac(VHT80)	5775	75.085	f_L≥5.725GHz and f_H≤5.850GHz	

3.3. Unwanted emissions in the spurious domain

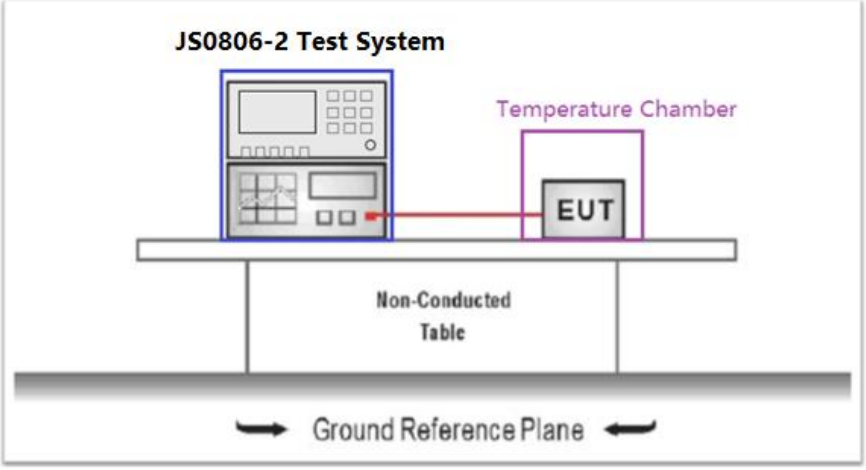
Limit

ETSI EN 300 440 Sub-clause 4.2.4.4

The maximum power limits of any unwanted emissions in the spurious domain are given in the below table

State	47MHz to 74MHz 87.5 to 118MHz 174MHz to 230MHz 470MHz to 862MHz	Other frequencies ≤ 1000MHz	Frequencies > 1000MHz
Operating	4nW / -54dBm	250nW / -36dBm	1μW / -30dBm
Standby	2nW / -57dBm	2nW / -57dBm	20nW / -47dBm

Test Configuration



Test Procedure

Please refer to ETSI EN 300 440 Sub-clause 4.2.4.3.1 for the measurement method.

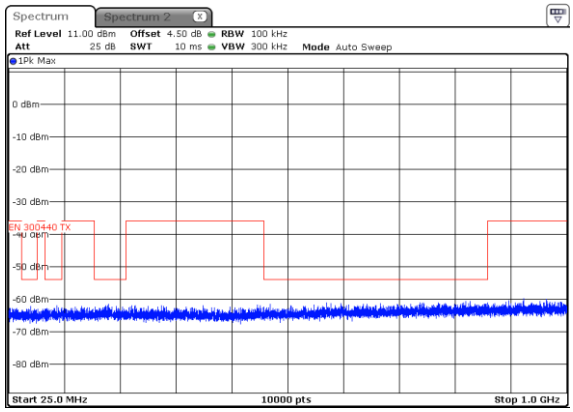
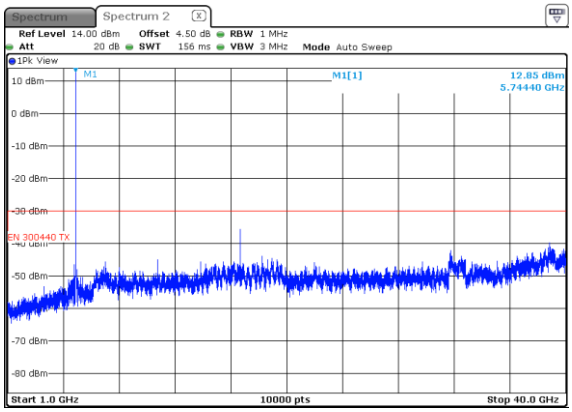
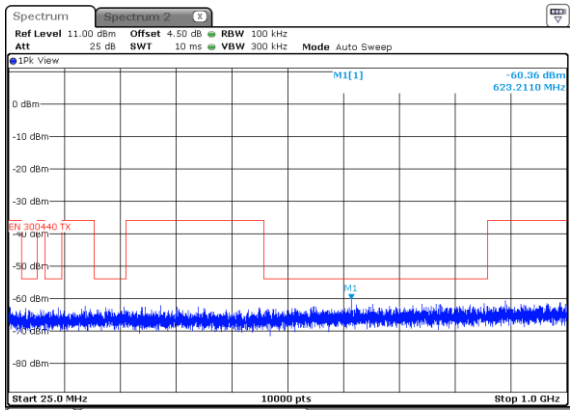
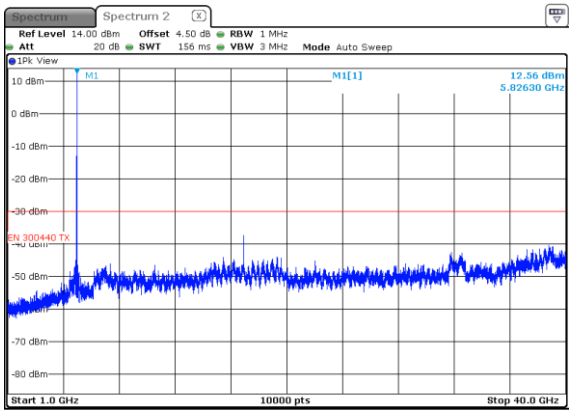
Test Mode

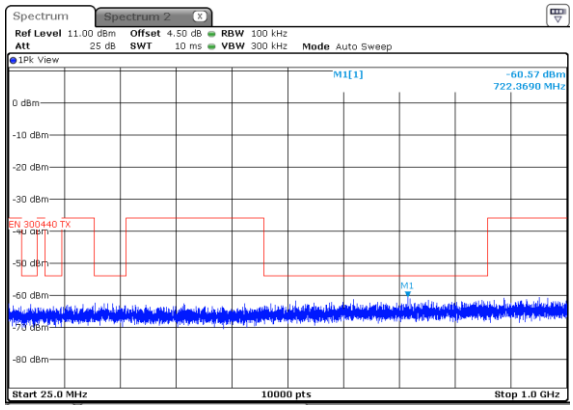
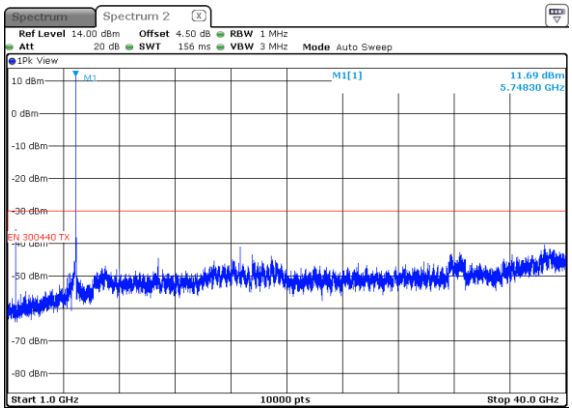
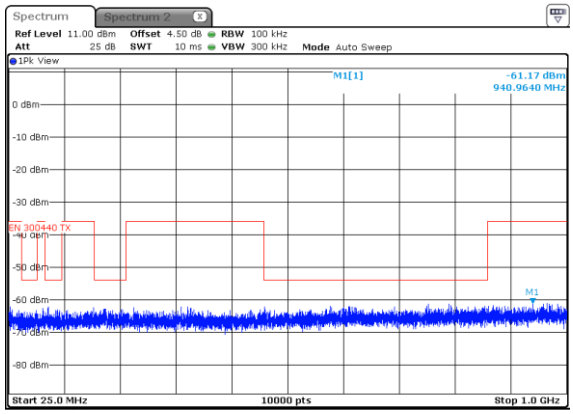
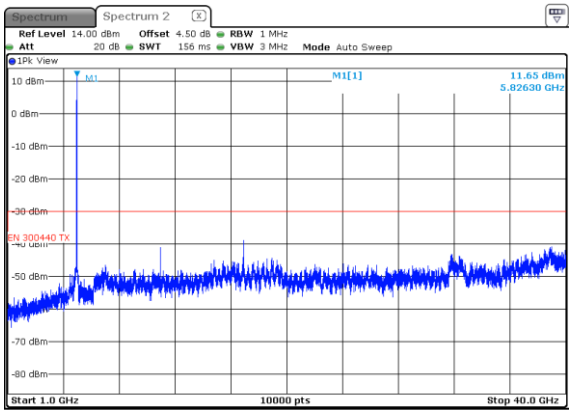
Please reference to the section 2.3 mode 1.

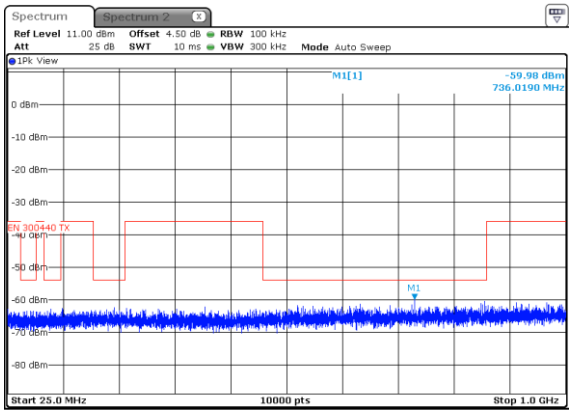
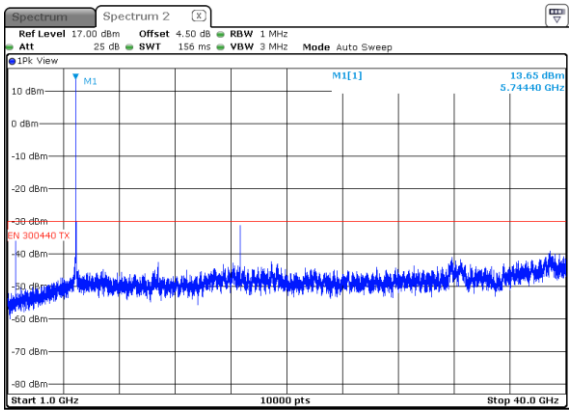
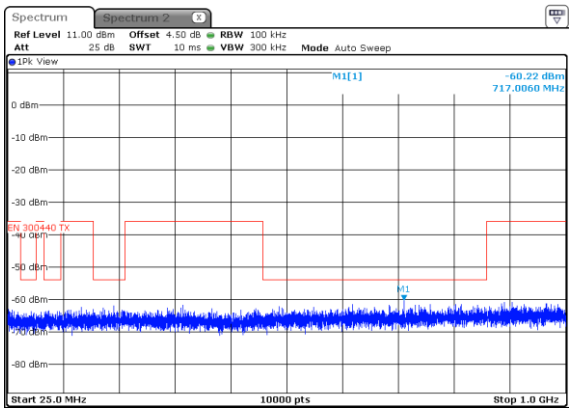
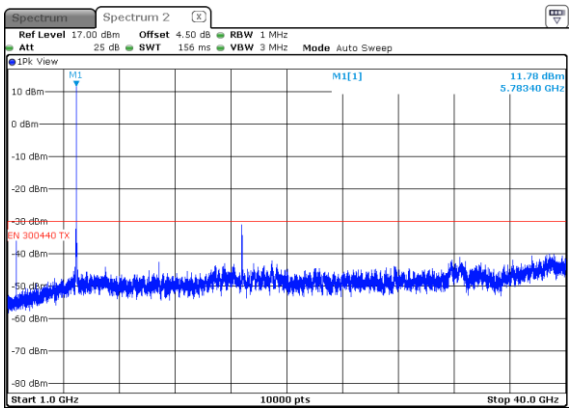
Test Result

Note: 1. Pre-scan all of 802.11a, 802.11n (HT20), 802.11n (HT40), 802.11ac (HT20), 802.11ac (HT40), 802.11ac (HT80) mode, and found the 20MHz mode which were the worst case, so only show the test data for worst case.

2.The signal which over the limit is the main wave signal.

Mode	802.11a	bandwidth:	20MHz
CH_L			
CH_H			

Mode	802.11n(HT20)	bandwidth:	20MHz
CH_L			
CH_H			

Mode	802.11ac(HT20)	bandwidth:	20MHz
CH_L			
CH_H			

3.4. Transmitter unwanted emissions in the spurious domain-Radiated measurements

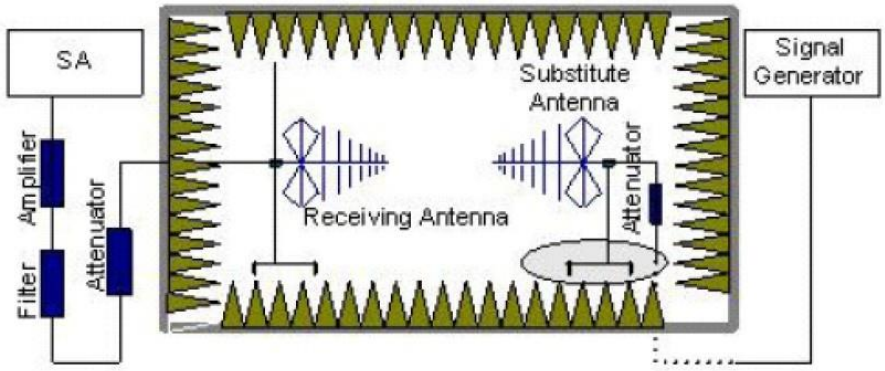
Limit

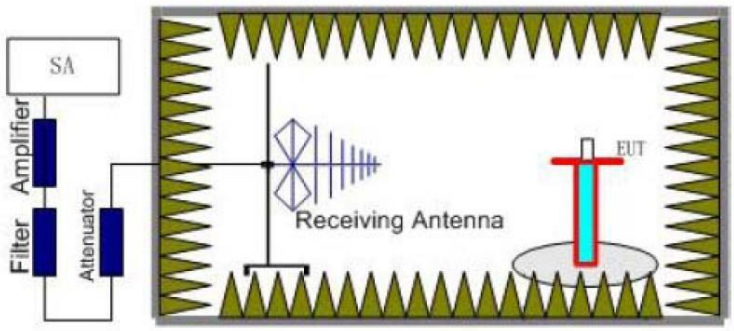
ETSI EN 300 440 Sub-clause 4.2.4.4

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

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 862 MHz	-54 dBm	100 kHz
862 MHz to 1 GHz	-36 dBm	100 kHz
1 GHz to 40 GHz	-30 dBm	1 MHz

Test Configuration





Test Procedure

Please refer to ETSI EN 301 893 Sub-clause 5.4.5.2.1 for the measurement method.

Test Mode

Continuous transmitting.

Test Result

Note:

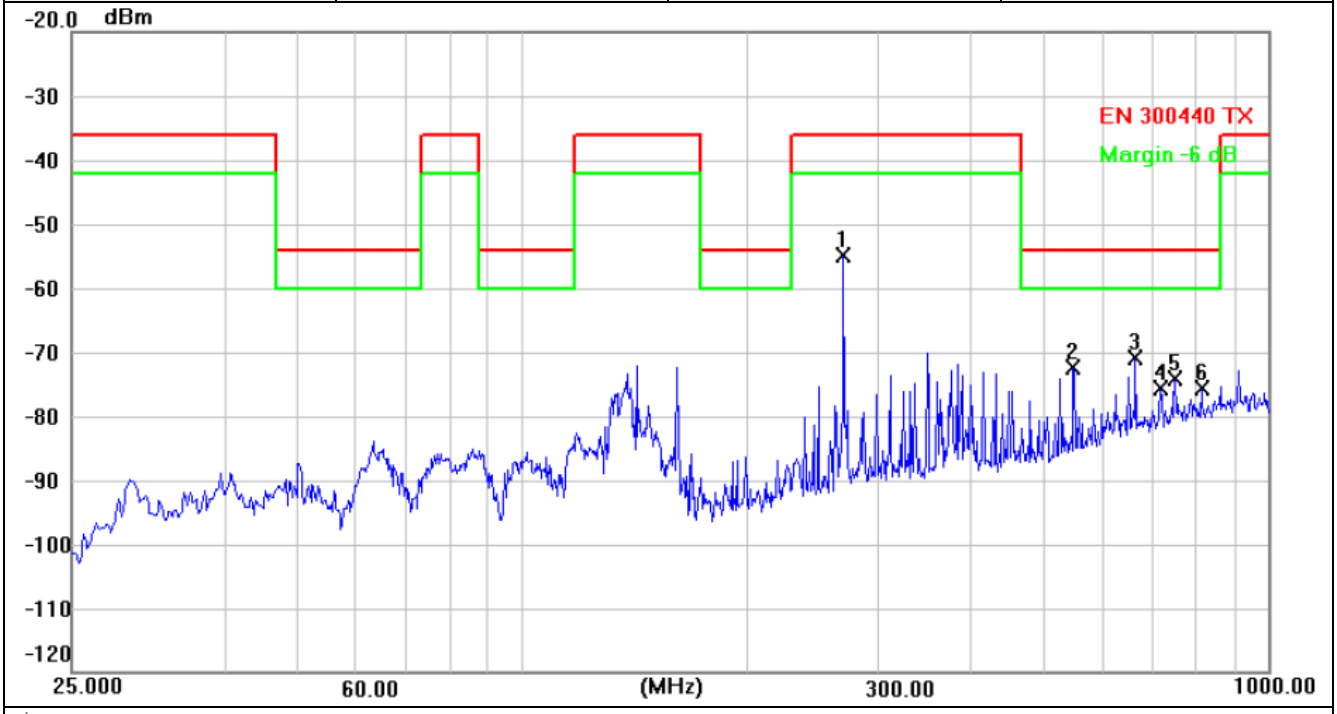
1. By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that “Z axis” position was the worst, and test data recorded in this report.
2. Pre-scan all bandwidth found the 20MHz CH100 which it is worse case, so only show the test data for

worse case.

3. 18GHz ~ 40GHz(10 times the carrier frequency)
The EUT was pre-scanned the frequency band (18GHz~40GHz), found the radiated level (Background noise) lower than the limit, so don't show on the report.

(1) Below 1G

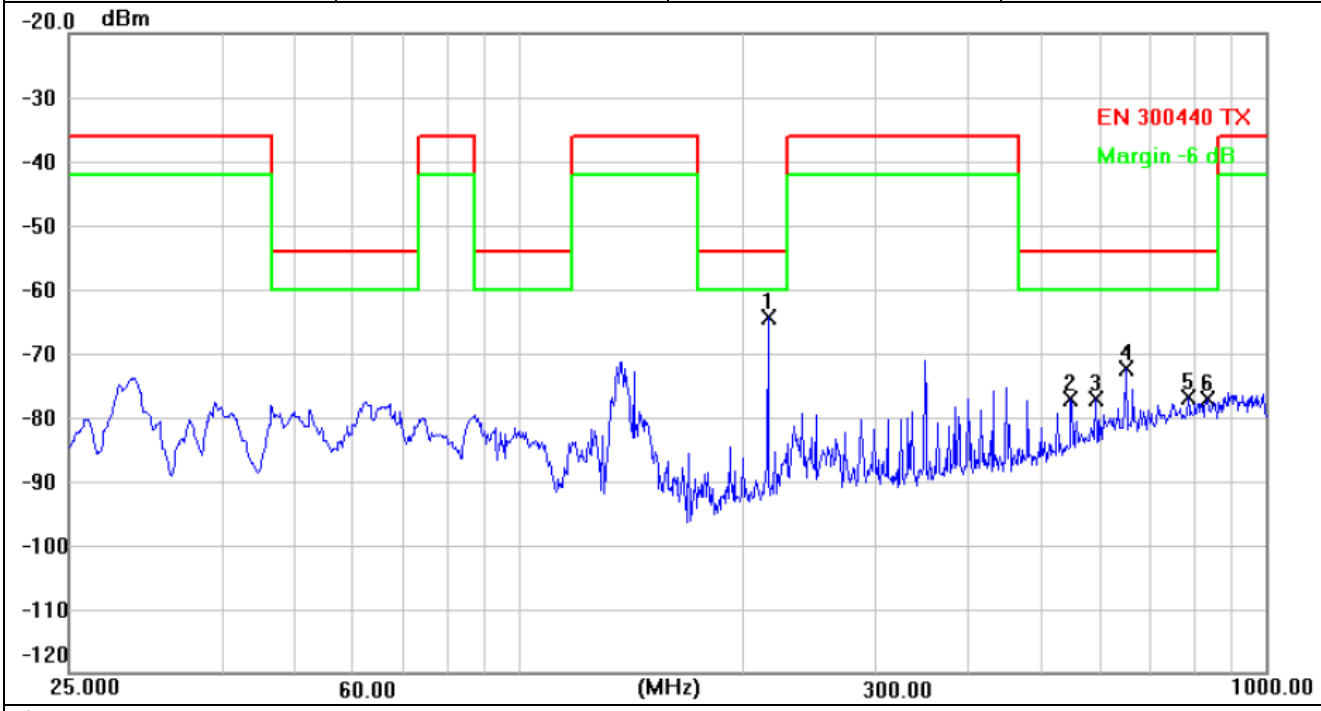
Test Channel:	149	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector
1	270.0500	-40.74	-14.20	-54.94	-36.00	-18.94	peak
2	549.8750	-64.47	-7.94	-72.41	-54.00	-18.41	peak
3 *	666.2250	-65.01	-5.92	-70.93	-54.00	-16.93	peak
4	719.8500	-70.37	-5.25	-75.62	-54.00	-21.62	peak
5	750.0750	-69.28	-4.82	-74.10	-54.00	-20.10	peak
6	816.0500	-71.67	-3.87	-75.54	-54.00	-21.54	peak

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

Test Channel:	149	Polarity:	Vertical

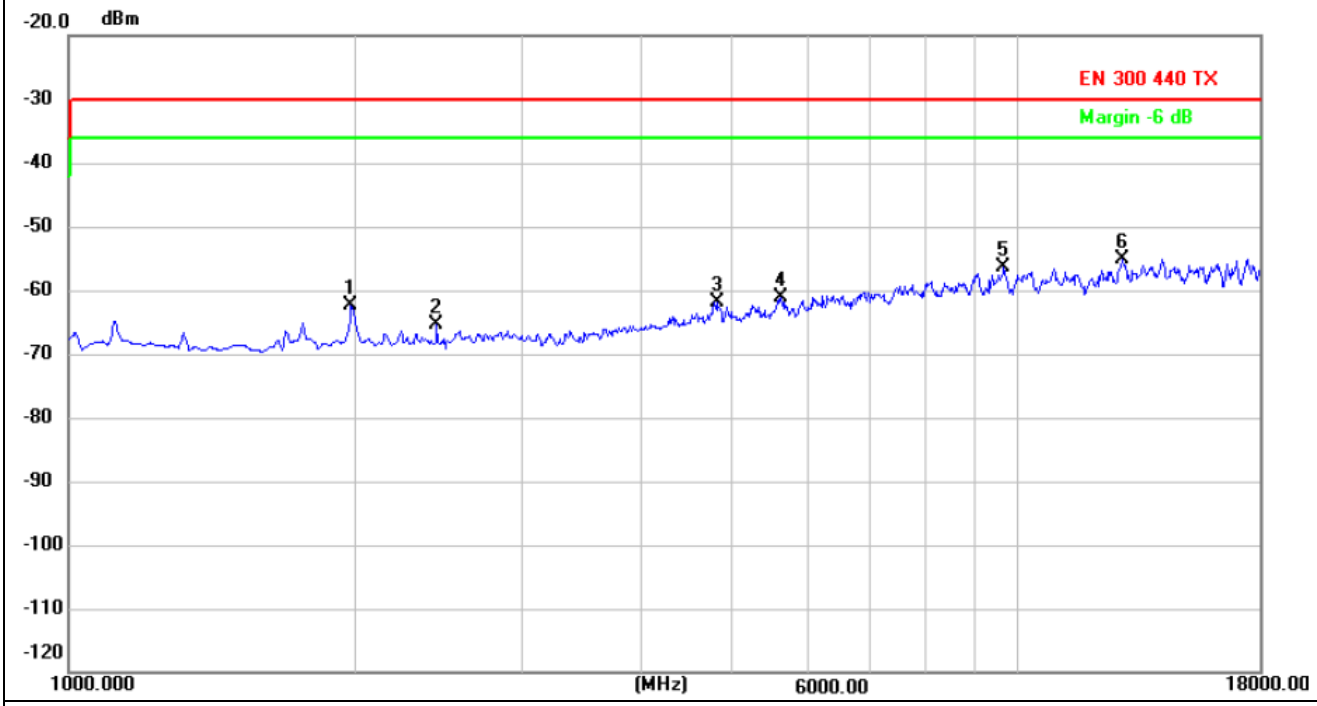


No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector
1 *	216.1000	-48.88	-15.61	-64.49	-54.00	-10.49	peak
2	549.8750	-69.13	-7.94	-77.07	-54.00	-23.07	peak
3	594.0750	-70.30	-6.84	-77.14	-54.00	-23.14	peak
4	649.9750	-66.35	-6.11	-72.46	-54.00	-18.46	peak
5	789.4000	-72.71	-4.27	-76.98	-54.00	-22.98	peak
6	835.5500	-73.56	-3.56	-77.12	-54.00	-23.12	peak

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

(2) Above 1G

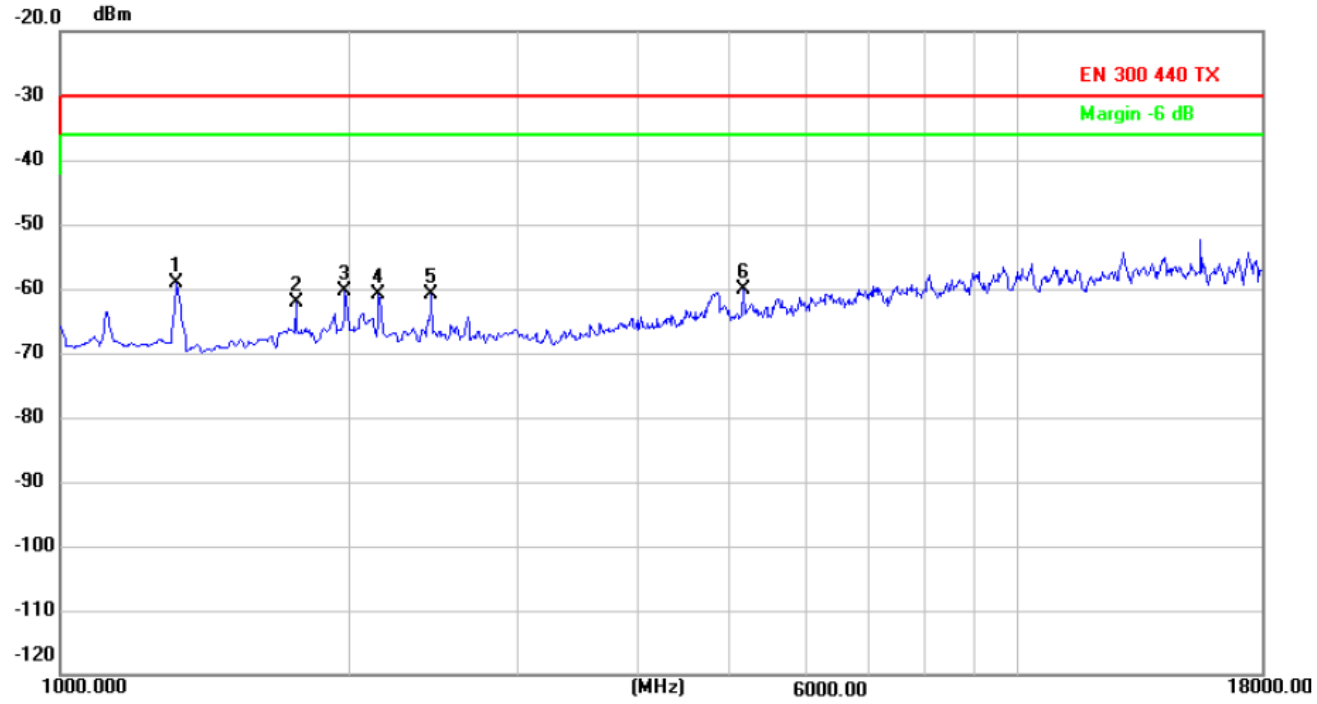
Test Channel:	149	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector
1	1986.000	-52.33	-9.94	-62.27	-30.00	-32.27	peak
2	2445.000	-57.43	-7.86	-65.29	-30.00	-35.29	peak
3	4825.000	-59.08	-2.76	-61.84	-30.00	-31.84	peak
4	5641.000	-60.31	-0.83	-61.14	-30.00	-31.14	peak
5	9670.000	-59.81	3.47	-56.34	-30.00	-26.34	peak
6 *	12934.000	-59.56	4.32	-55.24	-30.00	-25.24	peak

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

Test Channel:	149	Polarity:	Vertical



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector
1 *	1323.000	-47.47	-11.55	-59.02	-30.00	-29.02	peak
2	1765.000	-51.07	-10.99	-62.06	-30.00	-32.06	peak
3	1986.000	-50.33	-9.94	-60.27	-30.00	-30.27	peak
4	2156.000	-51.81	-9.16	-60.97	-30.00	-30.97	peak
5	2445.000	-52.90	-7.86	-60.76	-30.00	-30.76	peak
6	5165.000	-58.18	-1.89	-60.07	-30.00	-30.07	peak

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

3.5. Duty Cycle

Limit

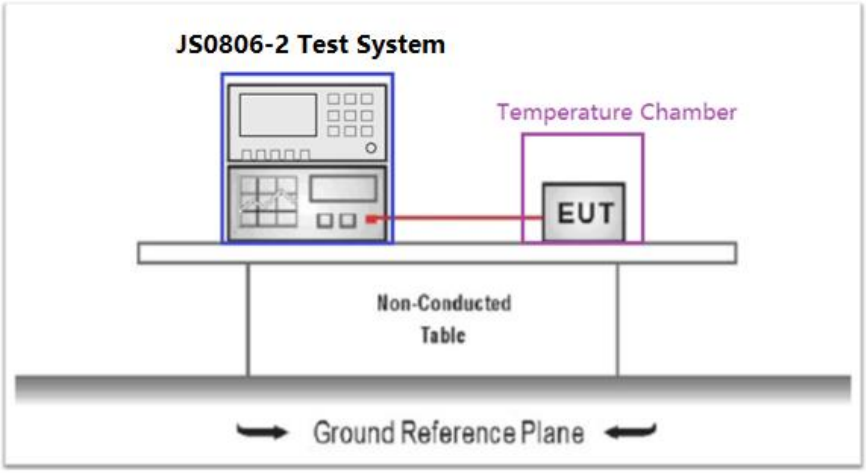
ETSI EN 300 440 Sub-clause 4.2.5.4

Table 4 defines the maximum duty cycle within a 1 hour period.

Table 4: Duty cycle limits

Frequency Band	Duty cycle	Application	Notes
2 400 MHz to 2 483,5 MHz	No Restriction	Generic use	
2 400 MHz to 2 483,5 MHz	No Restriction	Detection, movement and alert applications	
(a) 2 446 MHz to 2 454 MHz	No Restriction	RFID	Limits shown in annex D shall apply
(b) 2 446 MHz to 2 454 MHz	≤ 15 %	RFID	Limits shown in annex D shall apply
5 725 MHz to 5 875 MHz	No Restriction	Generic use	
9 200 MHz to 9 500 MHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
9 500 MHz to 9 975 MHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
10,5 GHz to 10,6 GHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
13,4 GHz to 14,0 GHz	No Restriction	Radiodetermination: radar, detection, movement and alert applications	
17,1 GHz to 17,3 GHz	DAA or equivalent techniques	Radiodetermination: GBSAR detecting and movement and alert applications	Limits shown in annex F shall apply
24,00 GHz to 24,25 GHz	No Restriction	Generic use and for Radiodetermination: radar, detection, movement and alert applications	

Test Configuration



Test Procedure

Please refer to ETSI EN 300 440 Sub-clause 4.2.5.3 for the measurement method.

Test Mode

Please reference to the section 2.3 mode 1.

Test Result

☒ **Not Applicable**

3.6. Receiver category

The product family of short range radio devices is divided into three receiver categories, see table 5, each having a set of relevant receiver requirements and minimum performance criteria. The set of receiver requirements depends on the choice of receiver category by the equipment manufacturer.

Table 5: Receiver categories

Receiver category	Relevant receiver clauses	Risk assessment of receiver performance
1	4.3.3, 4.3.4 and 4.3.5	Highly reliable SRD communication media; e.g. serving human life inherent systems (may result in a physical risk to a person).
2	4.3.4 and 4.3.5	Medium reliable SRD communication media e.g. causing inconvenience to persons, which cannot simply be overcome by other means.
3	4.3.5	Standard reliable SRD communication media e.g. Inconvenience to persons, which can simply be overcome by other means (e.g. manual).

The product is belong to receiver category 2 by the manufacturer declare.

3.7. Adjacent channel selectivity

Limit

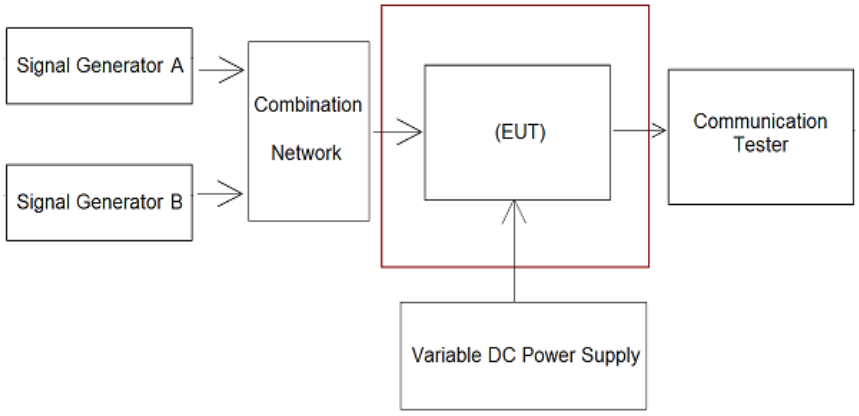
ETSI EN 300 440 Sub-clause 4.3.3.4

The adjacent channel selectivity of the equipment under specified conditions shall not be less than -30 dBm + k.

Receiver category	Limit
1	≥-30dBm + k
2	No Limit
3	No Limit

The correction factor, k, is as follows: k = -20log f -10logBW
Where:
- f is the frequency in GHz;
- BW is the channel bandwidth in MHz.

Test Configuration



Test Procedure

Please refer to ETSI EN 300 440 Sub-clause 4.3.3.3 for the measurement method.

Test Mode

Please reference to the section 2.3 mode 2.

Test Result

☒ **Not Applicable**

3.8. Blocking or desensitization

Limit

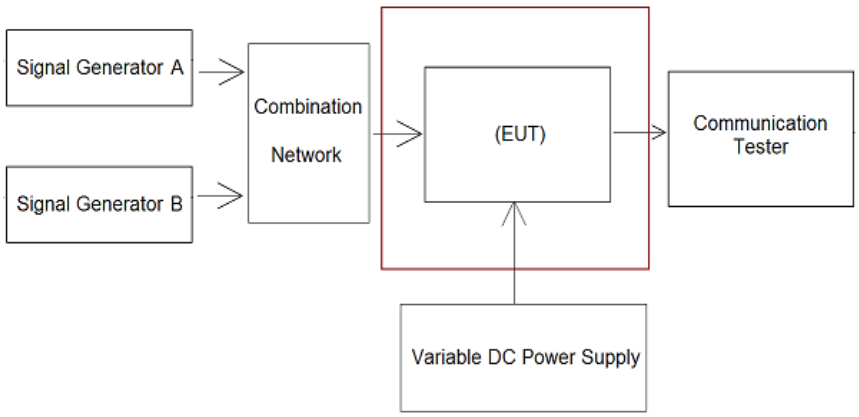
ETSI EN 300 440 Sub-clause 4.3.4.4

The blocking level, for any frequency within the specified ranges, shall not be less than the values given in table, except at frequencies on which spurious responses are found.

Receiver category	Limit
1	≥-30 dBm+k
2	≥-45 dBm+k
3	≥-60 dBm+k

The correction factor, k, is as follows: $k = -20\log f - 10\log BW$
Where:
- f is the frequency in GHz;
- BW is the channel bandwidth in MHz.

Test Configuration



Test Procedure

Please refer to ETSI EN 300 440 Sub-clause 4.3.4.3 for the measurement method.

Test Mode

Please reference to the section 2.3 mode 2.

Test Result

Type	Bandwidth (MHz)	Test Frequency (GHz)	K (correction factor)	Blocking Frequency(MHz)	Blocking Level(dBm)	Limit (dBm)	Result
802.11a	20	CH_L	-28.20	6745	-24.35	-73.20	Pass
				6145	-24.16		
				5945	-20.16		
				5545	-18.23		
				5345	-19.31		
				4745	-24.20		
		CH_M	-28.26	6785	-26.20	-73.26	
				6185	-23.06		
				5985	-20.16		
				5585	-18.60		
				5385	-18.03		
				4785	-20.63		
		CH_H	-28.32	6825	-25.16	-73.32	
				6225	-24.55		
				6025	-17.82		
				5625	-20.56		
				5425	-21.63		
				4825	-22.56		
802.11n	20	CH_L	-28.20	6745	-24.87	-73.20	Pass
				6145	-23.59		
				5945	-19.32		
				5545	-17.65		
				5345	-20.52		
				4745	-22.59		
		CH_M	-28.26	6785	-27.10	-73.26	
				6185	-24.38		
				5985	-16.92		
				5585	-19.28		
				5385	-24.30		
				4785	-26.10		
		CH_H	-28.32	6825	-26.31	-73.32	
				6225	-25.10		
				6025	-18.20		
				5625	-17.62		
				5425	-20.33		
				4825	-24.25		
	40	CH_L	-31.22	7755	-28.06	-76.22	Pass
				6555	-26.38		
				6155	-20.68		
				5355	-19.32		
				4955	-19.98		
				3755	-23.40		
		CH_H	-31.28	7795	-28.63	-76.28	

				6595	-27.51		
				6195	-22.03		
				5395	-21.30		
				4995	-24.03		
				3795	-24.16		
802.11ac	20	CH_L	-28.20	6745	-26.32	-73.20	Pass
				6145	-25.12		
				5945	-21.03		
				5545	-18.72		
				5345	-21.02		
				4745	-20.00		
		CH_M	-28.26	6785	-25.30	-73.26	
				6185	-22.05		
				5985	-18.65		
				5585	-18.52		
				5385	-21.02		
				4785	-22.00		
		CH_H	-28.32	6825	-24.59	-73.32	
				6225	-23.22		
				6025	-19.32		
				5625	-19.66		
				5425	-21.32		
				4825	-24.00		
	40	CH_L	-31.22	7755	-24.36	-76.22	Pass
				6555	-23.55		
				6155	-19.36		
				5355	-18.69		
				4955	-20.16		
				3755	-22.36		
		CH_H	-31.28	7795	-25.38	-76.28	
				6595	-23.69		
				6195	-19.48		
				5395	-19.56		
				4995	-21.68		
				3795	-22.09		
	80	CH_L	34.26	9775	-26.35	-79.26	Pass
				7375	-24.26		
				6575	--19.36		
				4975	-18.69		
				4175	-21.30		
				1775	-23.05		
Test Signal Generator A= -76.65dBm; The Bandwidth declared by the manufacturer.							

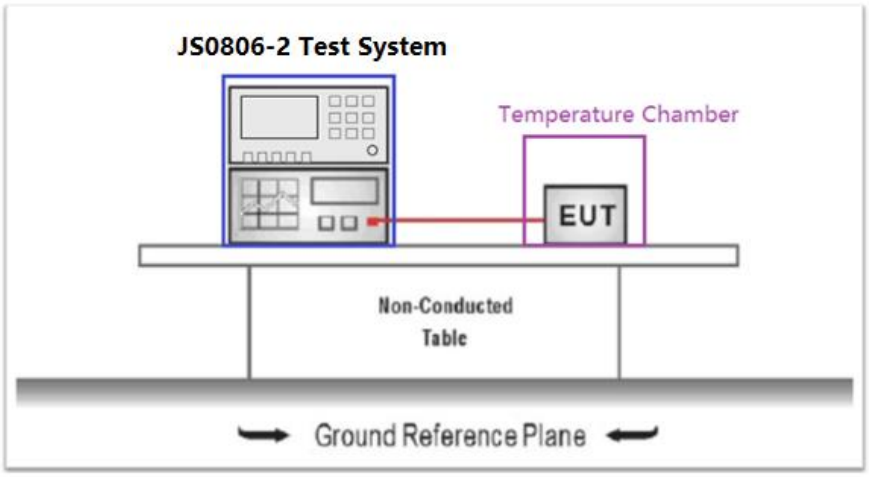
3.9. Receiver spurious radiation

LIMIT

ETSI EN 300 440 Sub-clause 4.3.5.4

Frequency range	Level
25MHz to 1000MHz	2 nW / -57dBm
Above 1000MHz	20 nW / -47dBm

Test Configuration



Test Procedure

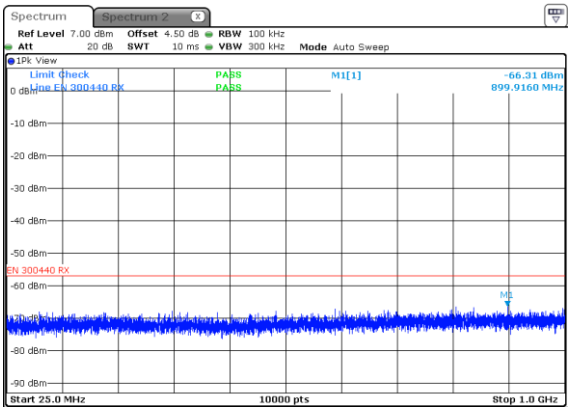
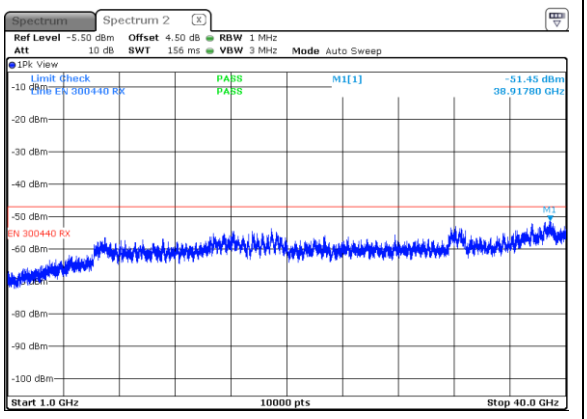
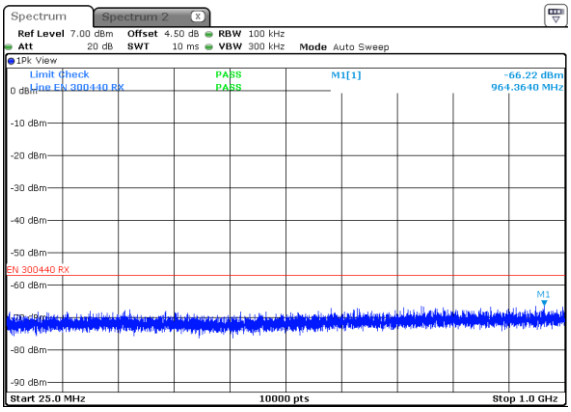
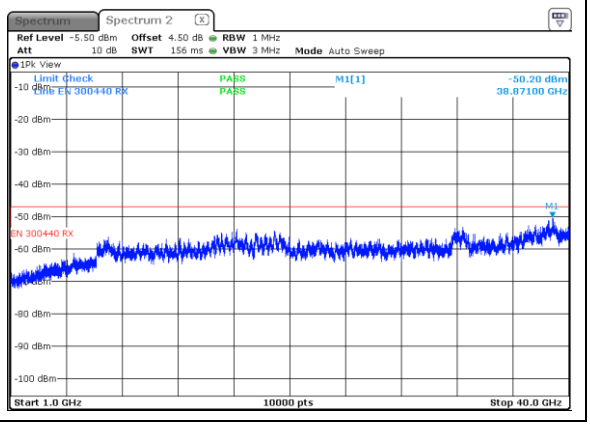
Please refer to ETSI EN 300 440 Sub-clause 4.3.5.3.1 for the measurement method.

Test Mode

Please reference to the section 2.3 mode 1.

Test Result

Note: Pre-scan all of 802.11a, 802.11n (HT20), 802.11n(HT40), 802.11ac(HT20), 802.11ac(HT40), 802.11ac (HT80) mode, and found the 802.11a mode which were the worst case, so only show the test data for worst case.

Mode	802.11a	bandwidth:	20MHz
CH_L		
CH_H		

3.10. Receiver spurious emissions-Radiated measurements

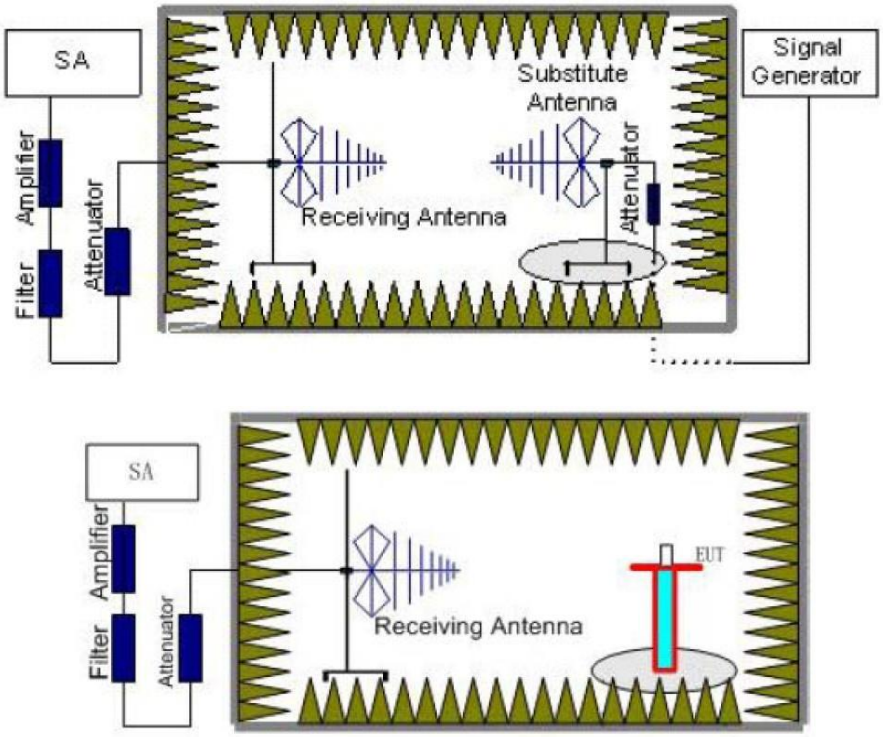
Limit

ETSI EN 300 440 Sub-clause 4.3.5.4

The spurious emissions of the receiver shall not exceed the values given in the below table

Frequency range	Maximum power	Measurement bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 40 GHz	-47 dBm	1 MHz

Test Configuration



Test Procedure

Please refer to ETSI EN 301 893 Sub-clause 5.4.6.2.1 for the measurement method.

Test Mode

Continuous receiving.

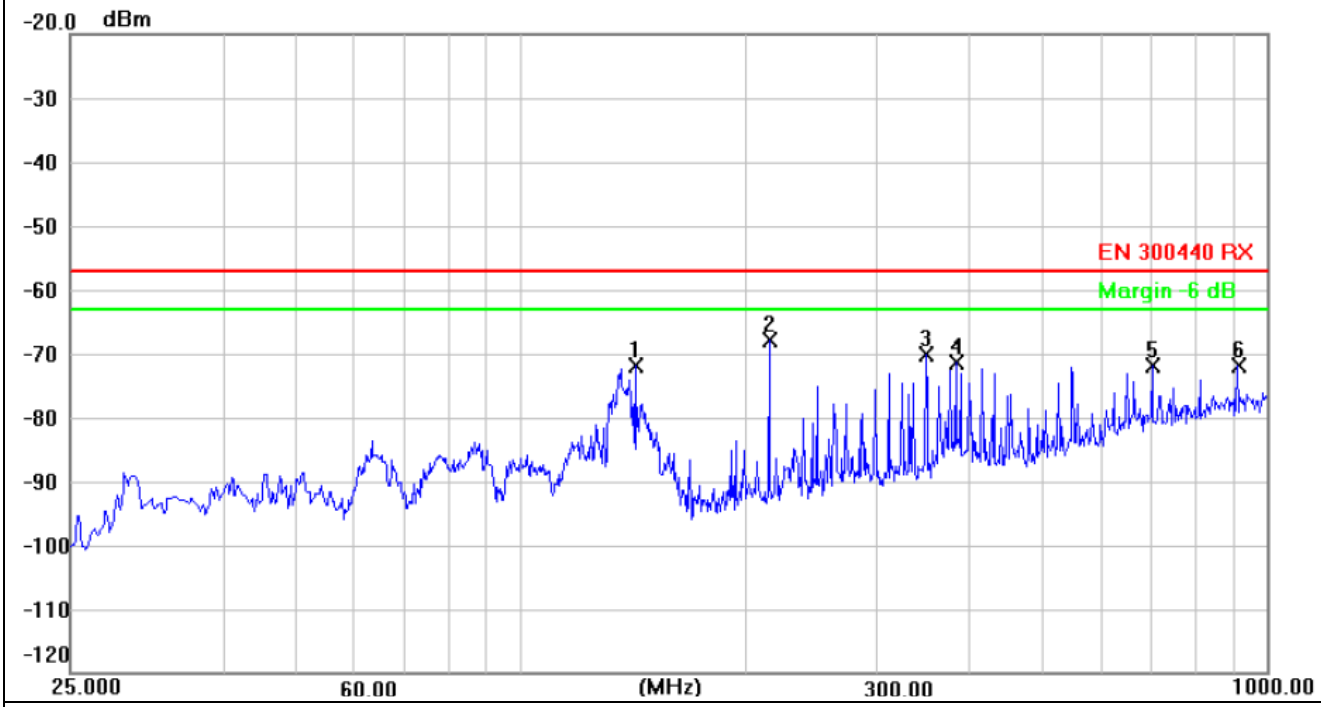
Test Result

Note:

1. By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that “Z axis” position was the worst, and test data recorded in this report.
2. Pre-scan all bandwidth found the 20MHz CH149 which it is worse case, so only show the test data for worse case.
3. 18GHz ~ 40GHz(10 times the carrier frequency)
   The EUT was pre-scanned the frequency band (18GHz~40GHz), found the radiated level (Background noise) lower than the limit, so don’t show on the report.

(1) Below 1G

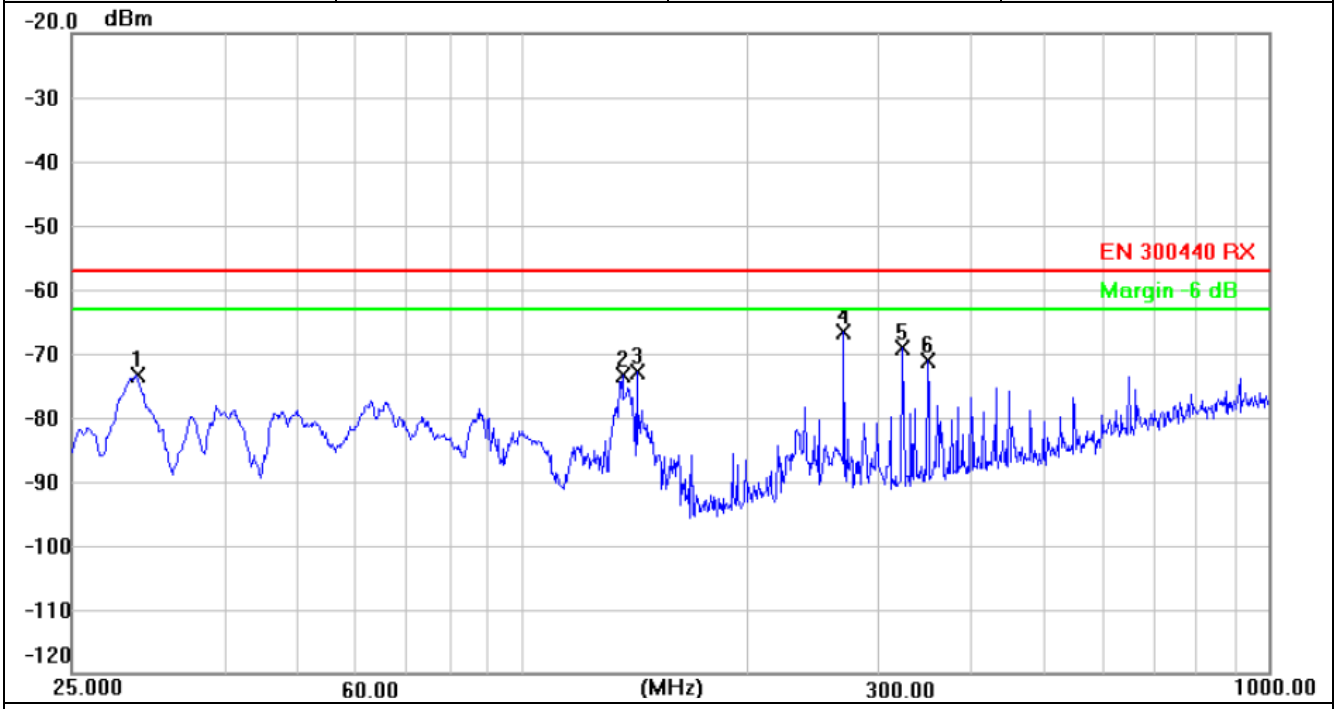
Test Channel:	149	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector
1	142.9750	-51.96	-19.88	-71.84	-57.00	-14.84	peak
2 *	216.1000	-52.23	-15.61	-67.84	-57.00	-10.84	peak
3	350.0000	-57.72	-12.30	-70.02	-57.00	-13.02	peak
4	384.1250	-59.80	-11.45	-71.25	-57.00	-14.25	peak
5	701.9750	-66.24	-5.52	-71.76	-57.00	-14.76	peak
6	911.9250	-69.38	-2.52	-71.90	-57.00	-14.90	peak

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

Test Channel:	149	Polarity:	Vertical

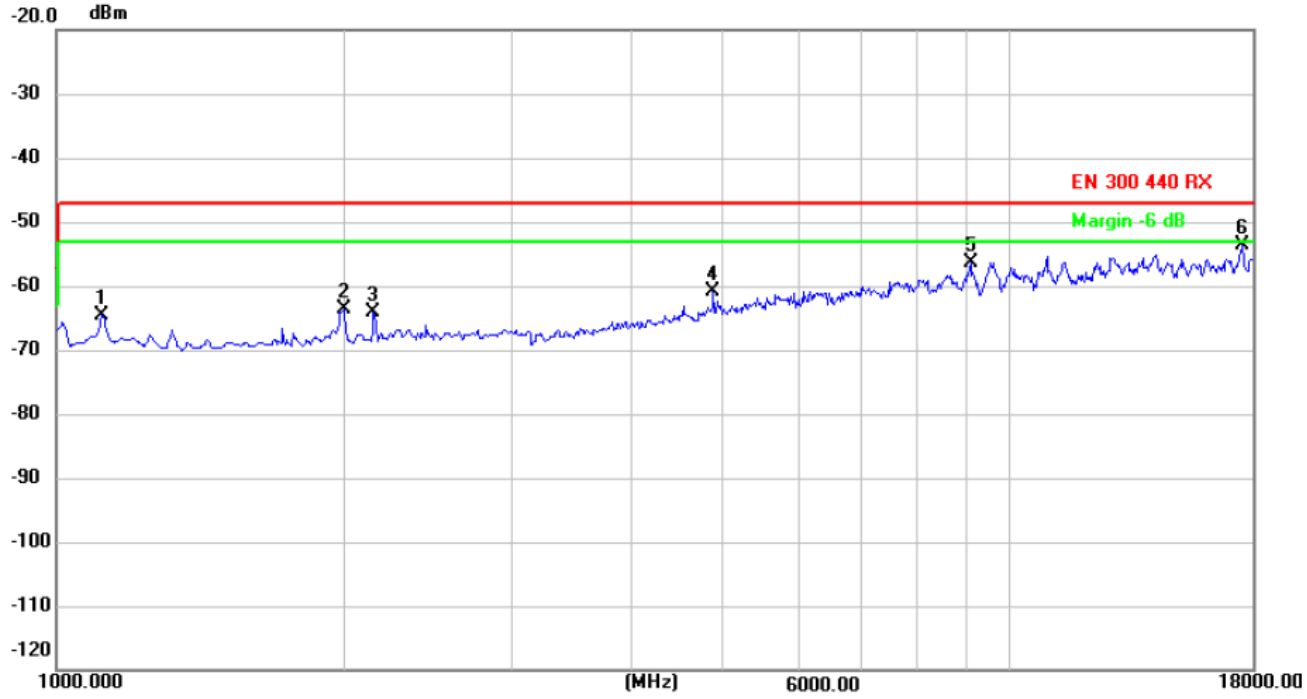


No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector
1	30.5250	-57.37	-16.02	-73.39	-57.00	-16.39	peak
2	136.4750	-53.53	-19.83	-73.36	-57.00	-16.36	peak
3	142.9750	-52.87	-19.88	-72.75	-57.00	-15.75	peak
4 *	270.0500	-52.35	-14.20	-66.55	-57.00	-9.55	peak
5	324.0000	-56.26	-12.94	-69.20	-57.00	-12.20	peak
6	350.0000	-58.93	-12.30	-71.23	-57.00	-14.23	peak

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

(2) Above 1G

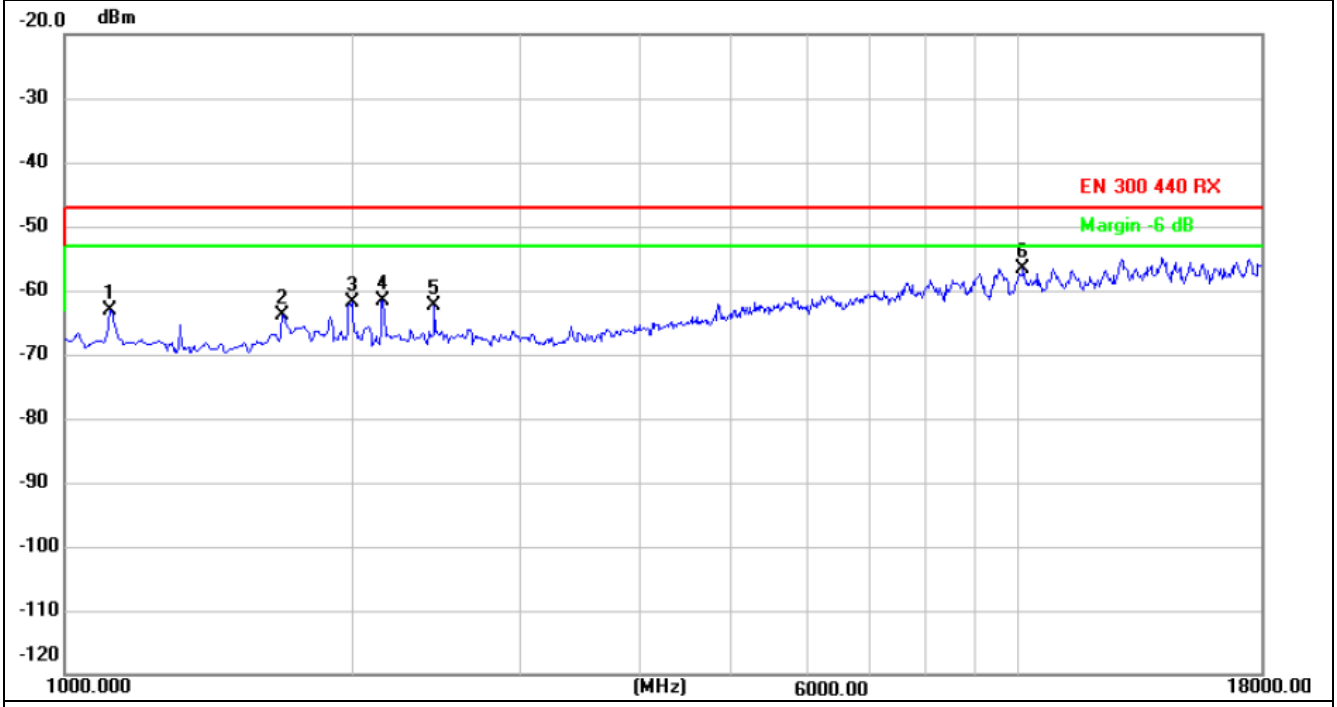
Test Channel:	149	Polarity:	Horizontal



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector
1	1119.000	-52.32	-12.24	-64.56	-47.00	-17.56	peak
2	2003.000	-53.71	-9.86	-63.57	-47.00	-16.57	peak
3	2156.000	-55.00	-9.16	-64.16	-47.00	-17.16	peak
4	4893.000	-58.41	-2.56	-60.97	-47.00	-13.97	peak
5	9126.000	-59.56	3.15	-56.41	-47.00	-9.41	peak
6 *	17541.000	-57.48	3.92	-53.56	-47.00	-6.56	peak

Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

Test Channel:	149	Polarity:	Vertical



No.	Frequency (MHz)	Reading (dBm)	Factor (dB)	Level (dBm)	Limit (dBm)	Margin (dB)	Detector
1	1119.000	-50.81	-12.24	-63.05	-47.00	-16.05	peak
2	1697.000	-52.80	-11.06	-63.86	-47.00	-16.86	peak
3	2003.000	-52.03	-9.86	-61.89	-47.00	-14.89	peak
4	2157.260	-52.49	-9.16	-61.65	-47.00	-14.65	peak
5	2445.000	-54.51	-7.86	-62.37	-47.00	-15.37	peak
6 *	10146.000	-60.00	3.41	-56.59	-47.00	-9.59	peak

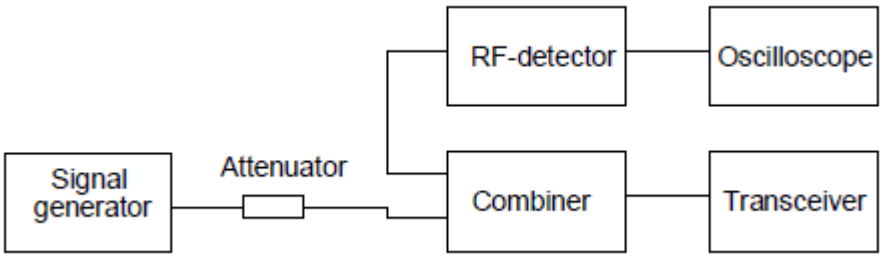
Remarks:
1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
2.Margin value = Level -Limit value

3.11. Spectrum access techniques

Limit

Shall be declared in the test report by the equipment provider.

Test Configuration



Test Procedure

Please refer to ETSI EN 300 440 Sub-clause 4.4.2.2.2 for the measurement method.

Test Mode

Please reference to the section 2.3 mode 1.

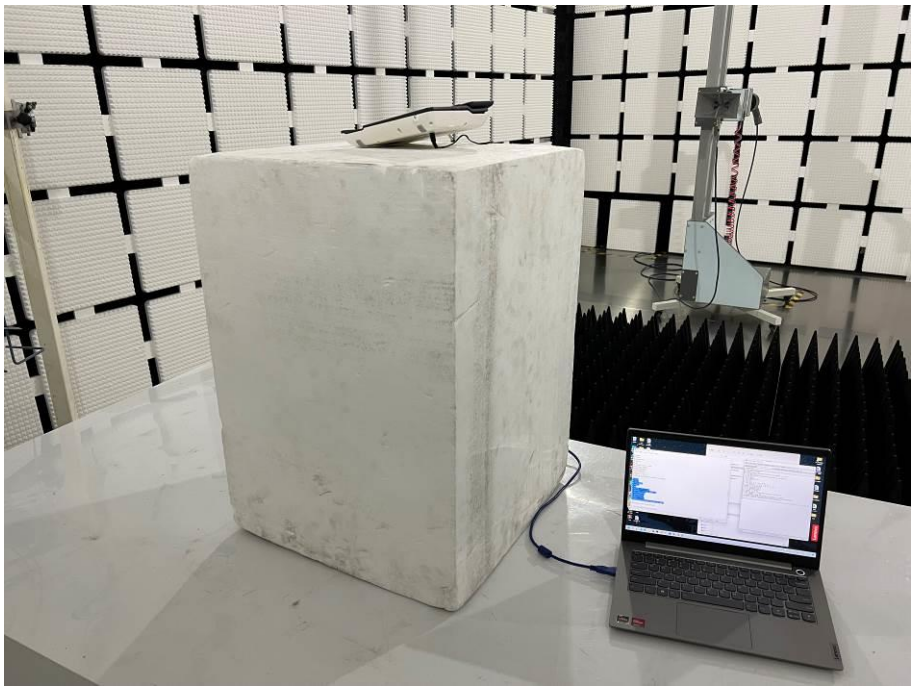
Test Result

The product is belong to Spectrum access techniques by the manufacturer declare.

4. EUT TEST PHOTOS

Radiated Measurements

Below 1GHz



Above 1GHz

**********THE END**********