RADIO TEST REPORT

For

Shenzhen Xinyicheng Acoustic Electronics Co., Ltd.

Bluetooth speaker

Test Model: F12

Additional model: JYR-J5306, BLIK-BOOM MAX

Prepared for	:	Shenzhen Xinyicheng Acoustic Electronics Co., Ltd.
Address	:	4th Floor, No. 8 Liaokeng Avenue, Baoyuan Community, Baoyuan Community, Shiyan Street, Baoan District, 518108, Shenzhen City, Guangdong Province
Prepared by	:	Shenzhen SIT Testing Technology Co., Ltd.
Address	:	Room 401, Building A2, The 2nd Industrial Zone of Zhu′ao, Gushu, Xixiang, Bao′an District, Shenzhen, Guangdong, China
Date of receipt of test sample	:	September 23, 2026
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	September 23, 2026 -October 09, 2026
Date of Report	:	October 09, 2026

RADIO TEST REPORT
ETSI EN 300 328 V2.2.2 (2019-07)

Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering the essential requirements of article 3.2 of the CE-RED Directive

Report Reference No.	**:**	**SIT260922160507ER-1**
Date of Issue	:	October 09, 2026
Testing Laboratory Name.....	**:**	**Shenzhen SIT Testing Technology Co., Ltd.**
Address	:	Room 401, Building A2, The 2nd Industrial Zone of Zhu'ao, Gushu, Xixiang, Bao'an District, Shenzhen, Guangdong, China
Testing Location/ Procedure.....	:	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name.....	**:**	**Shenzhen Xinyicheng Acoustic Electronics Co., Ltd.**
Address	:	4th Floor, No. 8 Liaokeng Avenue, Baoyuan Community, Baoyuan Community, Shiyan Street, Baoan District, 518108, Shenzhen City, Guangdong Province
Test Specification		
Standard	:	ETSI EN 300 328 V2.2.2 (2019-07)
Test Report Form No.	:	SITEMC-1.0
TRF Originator	:	Shenzhen SIT Testing Technology Co., Ltd.
Master TRF	:	Dated 2016-04

Shenzhen SIT Testing Technology Co., Ltd. All rights reserved.
This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen SIT Testing Technology Co., Ltd. is acknowledged as copyright owner and source of the material. Shenzhen SIT Testing Technology Co., Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Test Item Description.	**:**	**Bluetooth speaker**
Trade Mark.....	:	YIBOLANG
Model/ Type Reference	:	F12, JYR-J5306, BLIK-BOOM MAX
Ratings	:	Input: 5V⎓3A
**Result ……..... **	**:**	**Positive**

Tested By:	**Reviewed By:**	**Approved By:**
Tom / Test Engineer	Leon Li / Project Engineer	Kevin Sun /Manager

RADIO -- TEST REPORT

Test Report No.: SIT260922160507ER-1	October 09, 2026 Date of issue

Test Model.....	:	F12
EUT.....	:	Bluetooth speaker
Applicant.....	**:**	**Shenzhen Xinyicheng Acoustic Electronics Co., Ltd.**
Address.....	:	4th Floor, No. 8 Liaokeng Avenue, Baoyuan Community, Baoyuan Community, Shiyan Street, Baoan District, 518108, Shenzhen City, Guangdong Province
Telephone.....	:	/
Fax.....	:	/
Manufacturer.....	**:**	**Shenzhen Xinyicheng Acoustic Electronics Co., Ltd.**
Address.....	:	4th Floor, No. 8 Liaokeng Avenue, Baoyuan Community, Baoyuan Community, Shiyan Street, Baoan District, 518108, Shenzhen City, Guangdong Province
Telephone.....	:	/
Fax.....	:	/

Test Result	PASS

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Revision	Issue Date	Revisions	Revised By
00	October 08, 2026	Initial Issue	Kevin Sun

TABLE OF CONTENTS

Test Report Description Page

1. GENERAL INFORMATION 7
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) 7
OBJECTIVE 7
RELATED SUBMITTAL(S)/GRANT(S) 7
TEST METHODOLOGY 7
DESCRIPTION OF TEST FACILITY 8
SUPPORT EQUIPMENT LIST 8
EXTERNAL I/O 8
LIST OF MEASURING EQUIPMENT 9
MEASUREMENT UNCERTAINTY 10
TEST ENVIRONMENT 10
DESCRIPTION OF TEST MODES 10
2. SYSTEM TEST CONFIGURATION 11
JUSTIFICATION 11
EUT EXERCISE SOFTWARE 11
SPECIAL ACCESSORIES 11
BLOCK DIAGRAM/SCHEMATICS 11
EQUIPMENT MODIFICATIONS 11
CONFIGURATION OF TEST SETUP 11
3. SUMMARY OF TEST RESULT 12
4. RF OUTPUT POWER 13
LIMIT 13
TEST SETUP 13
TEST PROCEDURE 14
TEST RESULT 15
5. DUTY CYCLE, TX-SEQUENCE, TX-GAP 18
LIMIT 18
TEST SETUP 18
TEST PROCEDURE 18
TEST RESULT 18
6. ACCUMULATED TRANSMIT TIME, FREQUENCY OCCUPATION AND HOPPING SEQUENCE .. 19
LIMIT 19
TEST SETUP 20
TEST PROCEDURE 20
TEST RESULT 22
7. HOPPING FREQUENCY SEPARATION 23
LIMIT 23
TEST SETUP 23
TEST PROCEDURE 24
TEST RESULT 24
8. MEDIUM UTILISATION (MU) FACTOR 25
LIMIT 25
TEST SETUP 25
TEST PROCEDURE 25
TEST RESULT 25
9. ADAPTIVITY (ADAPTIVE FREQUENCY HOPPING) 26
LIMIT 26
TEST SETUP 26
TEST PROCEDURE 27
TEST RESULT 27
10. OCCUPIED CHANNEL BANDWIDTH 28

LIMIT....28
TEST SETUP....28
TEST PROCEDURE....28
TEST RESULT....29

11. TRANSMITTER UNWANTED EMISSIONS IN THE OUT-OF-BAND DOMAIN....30

LIMIT....30
TEST SETUP....30
TEST PROCEDURE....31
TEST RESULT....33

12. TRANSMITTER UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN....36

LIMIT....36
TEST SETUP....36
TEST PROCEDURE....37
TEST RESULT....38

13. RECEIVER SPURIOUS EMISSIONS....41

LIMIT....41
TEST SETUP....41
TEST PROCEDURE....42
TEST RESULT....43

14. RECEIVER BLOCKING....46

LIMIT....46
TEST SETUP....46
TEST PROCEDURE....47
TEST RESULT....47

15. PHOTOGRAPHS OF TEST SETUP.... 48

1. GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

EUT	: Bluetooth speaker
Test Model	: F12
Power Supply	: Input: 5V⎓3A
Hardware Version	: ------
Software Version	: ------

Bluetooth	:
Frequency Range	: 2.402-2.480GHz
Channel Number	: 79 channels
Channel Spacing	: 1MHz
Modulation Type	: GFSK, 8DPSK, π /4 QPSK
Bluetooth Version	: 5.0
Antenna Description	: PCB Antenna, 0.5dBi(Max.)

Objective

This Type approval report is prepared on behalf of **Shenzhen Xinyicheng Acoustic Electronics Co., Ltd.** in accordance with ETSI EN 300 328 V2.2.2 (2019-07), Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering the essential requirements of article
3.2 of the CE-RED Directive.

The objective is to determine compliance with ETSI EN 300 328 V2.2.2 (2019-07).

Related Submittal(s)/Grant(s)

No Related Submittals.

Test Methodology

All measurements contained in this report were conducted with ETSI EN 300 328 V2.2.2 (2019-07).

Support equipment List

Manufacturer	Description	Model	Serial Number	Certificate
--	--	--	--	--

External I/O

I/O Port Description	Quantity	Cable
Type C Input	1	N/A
USB Input	1	N/A
TF port	1	N/A
AUX	1	N/A

List Of Measuring Equipment

Description	Manufacturer	Model	Serial Number	Cal. Date	Due Date
X-series USB Peak and Average Power Sensor Agilent	Agilent	U2021XA	MY54080022	2025/12/09	2026/12/08
4 Ch.Simultaneous Sampling 14 Bits 2 MS/s	Agilent	U2531A	MY54080016	2025/12/09	2026/12/08
Test Software	Ascentest	AF1290-SW	20141230	2025/12/21	2026/12/20
MXA Signal Analyzer	Agilent	N9020A	MY50510140	2025/12/27	2026/12/26
Vector Signal Generator	Agilent	E4438C	MY42081396	2025/12/28	2026/12/27
Vector Signal Generator	Agilent	N5182A	MY47071151	2025/12/28	2026/12/27
10dB Coaxial Coupler	Agilent	87300C	MY44300299	2025/12/27	2026/12/26
Temperature/Humidity Meter	zhicheng	ZC1-2	TR8-TH	2025/12/07	2026/12/06
Splitter /Combiner (Qty: 2)	Mini-Circuits	ZAPD-50W 4.2-6.0 GHz	NN256400424	2025/12/27	2026/12/26
Splitter/Combine (Qty: 2)	MCLI	PS3-7	4463/4464	2025/12/27	2026/12/26
ATT (Qty: 1)	Mini-Circuits	VAT-30+	30912	2025/12/27	2026/12/26
RF Cable (Qty: 6)	Mini-Circuits	N/A	DFS-1~6	2025/12/27	2026/12/26
DC Power Supply	IDRC	CD-035-020PR	977272	2025/12/15	2026/12/14
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2025/12/18	2026/12/17
Amplifier	SCHAFFNER	COA9231A	18667	2025/12/18	2026/12/18
Amplifier	Agilent	8449B	3008A02120	2025/12/16	2026/12/16
Amplifier	MITEQ	AMF-6F-260400	9121372	2025/12/16	2026/12/15
Spectrum Analyzer	Agilent	E4407B	MY41440292	2025/12/16	2026/12/15
Signal analyzer	Agilent	E4448A(External mixers to 40GHz)	US44300469	2025/12/16	2026/12/15
Loop Antenna	R&S	HFH2-Z2	860004/001	2025/12/18	2026/12/17
By-log Antenna	SCH	VULB9163	9163-470	2025/12/10	2026/12/09
Horn Antenna	EMC	3115	6741	2025/12/10	2026/12/09
Horn Antenna	SCH	BBHA9170	BBHA9170154	2025/12/10	2026/12/09
RF Cable-R03m	Jye Bao	RG142	CB021	2025/12/18	2026/12/17
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2025/12/18	2026/12/17
Signal Generator	R&S	SMR40	10016	2025/12/16	2026/12/15

Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

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

Test Environment

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	21
Humidity (%RH)	25-75	50
Barometric pressure (mbar)	860-1060	950-1000

ription Of Test Modes

SIT has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Mode 1: Transmit by DH1
Mode 1: Transmit by DH1
Mode 3: Transmit by 3DH1
Mode 4: Receive by DH1
Mode 5: Receive by 2DH1
Mode 4: Receive by 3DH1

Note:

(1) For portable device, radiated spurious emission was verified over X, Y, Z Axis, and shown the worst case on this report.

(2) Regards to the frequency band operation for systems using FHSS modulation: normal operation (hopping) was selected to test for conducted, and the lowest, highest frequency channel for radiation spurious test.

(3) The extreme test condition for voltage and temperature were declared by the manufacturer.

2. SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in engineering mode.

EUT Exercise Software

N/A.

Special Accessories

N/A.

Block Diagram/Schematics

Please refer to the related document.

Equipment Modifications

Shenzhen SIT Testing Technology Co., Ltd. has not done any modification on the EUT.

Configuration of Test Setup

Please refer to the test setup photo.

3. SUMMARY OF TEST RESULT

— No deviations from the test standards
— Deviations from the test standards as below description:

Technical requirements for Frequency Hopping equipment:

Performed Test Item	Normative References	Test Performed	Deviation
RF Output Power	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Duty cycle, Tx-Sequence, Tx-gap	ETSI EN 300 328 V2.2.2 (2019-07)	N/A	N/A
Accumulated Transmit Time, Frequency Occupation and Hopping Sequence	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Hopping Frequency Separation	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Medium Utilisation (MU) factor	ETSI EN 300 328 V2.2.2 (2019-07)	N/A	N/A
Adaptivity (Adaptive Frequency Hopping)	ETSI EN 300 328 V2.2.2 (2019-07)	N/A	N/A
Occupied Channel Bandwidth	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Transmitter unwanted emissions in the out-of-band domain	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Transmitter unwanted emissions in the spurious domain	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Receiver Spurious Emissions	ETSI EN 300 328 V2.2.2 (2019-07)	Yes	No
Receiver Blocking	ETSI EN 300 328 V2.2.2 (2019-07)	N/A	N/A

Note:
The EUT can operate in an adaptive mode, and can’t operate in a non-adaptive mode which is stated by the supplier.

4. RF OUTPUT POWER

Limit

For non-adaptive frequency hopping systems

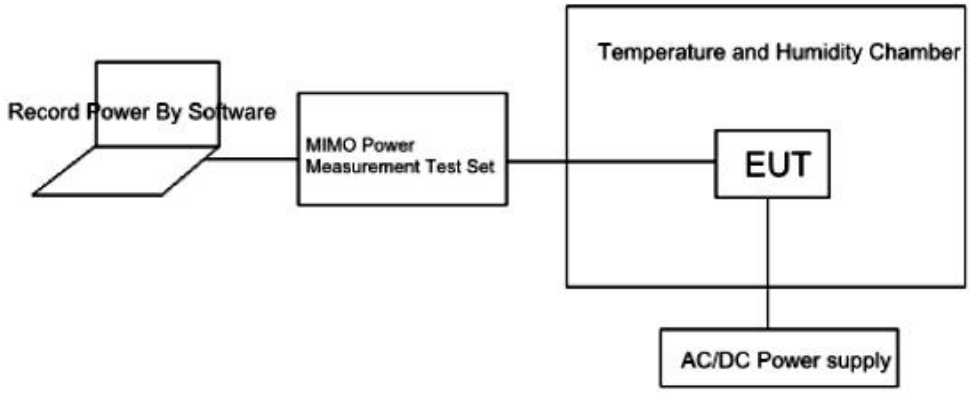
The maximum RF output power for non-adaptive Frequency Hopping equipment shall be declared by the supplier. The maximum RF output power for this equipment shall be equal to or less than the value declared by the supplier. This declared value shall be equal to or less than 20 dBm.

For adaptive frequency hopping systems

The maximum RF output power for adaptive Frequency Hopping equipment shall be equal to or less than 20 dBm.

Test Setup

For Conducted Measurement



Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.3.2

Step 1:

• The fast power sensor use the following setting: Sample speed 1 MS/s.

Step 2:

• Connect the power sensor to the transmit port, sample the transmit signal and store the raw data. Use these stored samples in all following steps.

Step 3:

• Find the start and stop times of each burst in the stored measurement samples.

Step 4:

• Between the start and stop times of each individual burst calculate the RMS power over the burst. Save these P_{burst} values, as well as the start and stop times for each burst.

Step 5:

• The highest of all P_{burst} values (value "A" in dBm) will be used for maximum e.i.r.p. calculations.

Step 6:

• Add the (stated) antenna assembly gain "G" in dBi of the individual antenna.

• If applicable, add the additional beamforming gain "Y" in dB.

The RF Output Power (P) shall be calculated using the formula below:

$P = A + G + Y$

Test Result

Pass

***Note: 20 bursts had been captured for power measurement.

Product	:	Bluetooth speaker
Test Item	:	RF Output Power
Test Mode	:	Mode 1: Transmit by DH1

Test Conditions		Frequency (MHz)	RF Output Power EIRP	Limit (dBm)
Tnom (25℃)	Vnom (DC 3.7V)	2402	0.98	20
		2441	0.88	
		2480	0.96	
Tmax (40℃)	Vmax (DC 5V)	2402	0.84	20
		2441	0.82	
		2480	0.81	
Tmax (40℃)	Vmin (DC 3.3V)	2402	0.72	20
		2441	0.68	
		2480	0.69	
Tmin (-20℃)	Vmax (DC 5V)	2402	0.57	20
		2441	0.62	
		2480	0.64	
Tmin (-20℃)	Vmin (DC 3.3V)	2402	0.69	20
		2441	0.72	
		2480	0.65	

Product	:	Bluetooth speaker
Test Item	:	RF Output Power
Test Mode	:	Mode 2: Transmit by 2DH1

Test Conditions		Frequency (MHz)	RF Output Power EIRP	Limit (dBm)
Tnom (25℃)	Vnom (DC 3.7V)	2402	0.86	20
		2441	0.84	
		2480	0.89	
Tmax (40℃)	Vmax (DC 5V)	2402	-0.14	20
		2441	-0.26	
		2480	-0.27	
Tmax (40℃)	Vmin (DC 3.3V)	2402	-0.14	20
		2441	-0.32	
		2480	-0.16	
Tmin (-20℃)	Vmax (DC 5V)	2402	-0.26	20
		2441	-0.22	
		2480	-0.24	
Tmin (-20℃)	Vmin (DC 3.3V)	2402	-0.29	20
		2441	-0.25	
		2480	-0.14	

Product	:	Bluetooth speaker
Test Item	:	RF Output Power
Test Mode	:	Mode 3: Transmit by 3DH1

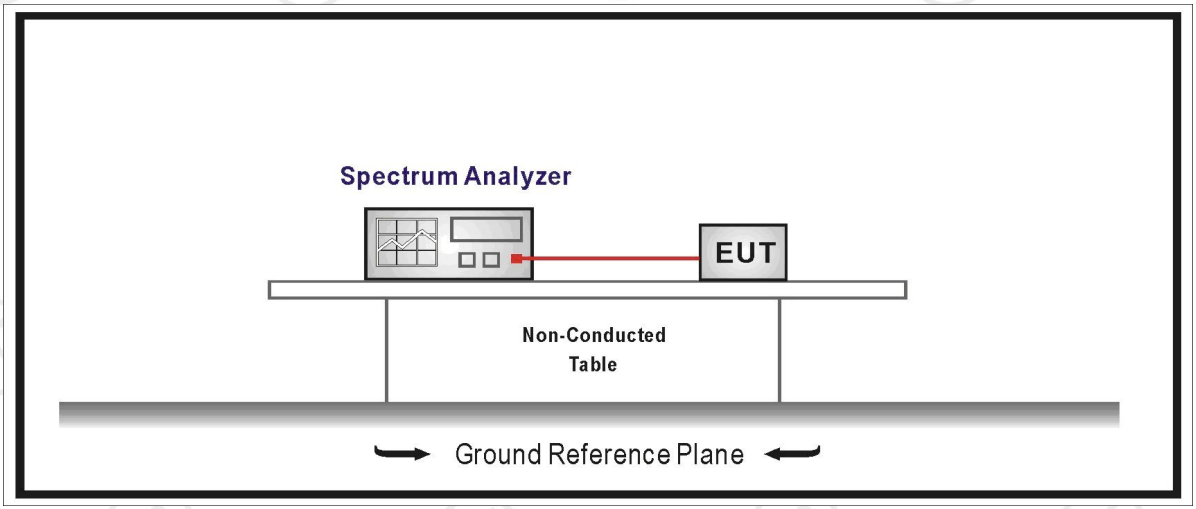
Test Conditions		Frequency (MHz)	RF Output Power EIRP	Limit (dBm)
Tnom (25℃)	Vnom (DC 3.7V)	2402	-0.21	20
		2441	-0.32	
		2480	-0.39	
Tmax (40℃)	Vmax (DC 5V)	2402	-0.24	20
		2441	-0.35	
		2480	-0.37	
Tmax (40℃)	Vmin (DC 3.3V)	2402	-0.45	20
		2441	-0.41	
		2480	-0.46	
Tmin (-20℃)	Vmax (DC 5V)	2402	-0.35	20
		2441	-0.52	
		2480	-0.61	
Tmin (-20℃)	Vmin (DC 3.3V)	2402	-0.34	20
		2441	-0.26	
		2480	-0.29	

5. DUTY CYCLE, TX-SEQUENCE, TX-GAP

Limit

For non-adaptive FHSS equipment, the Duty Cycle shall be equal to or less than the maximum value declared by the supplier. In addition, the maximum Tx-sequence time shall be 5 ms while the minimum Tx-gap time shall be 5 ms.

Test Setup



Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.3.2

Test Result

These requirements apply to non-adaptive frequency hopping equipment or to adaptive frequency hopping equipment operating in a non-adaptive mode.
These requirements do not apply for equipment with a maximum declared RF Output power of less than 10dBm E.I.R.P. or for equipment when operating in a mode where the RF Output power is less than 10dBm E.I.R.P.
No applicable.

6. ACCUMULATED TRANSMIT TIME, FREQUENCY OCCUPATION AND HOPPING SEQUENCE

Limit

For non-adaptive frequency hopping systems

The Accumulated Transmit Time on any hopping frequency shall not be greater than 15 ms within any observation period of 15 ms multiplied by the minimum number of hopping frequencies (N) that have to be used.

In order for the equipment to comply with the Frequency Occupation requirement, it shall meet either of the following two options:

Option 1: Each hopping frequency of the hopping sequence shall be occupied at least once within a period not exceeding four times the product of the dwell time and the number of hopping frequencies in use.

Option 2: The occupation probability for each frequency shall be between ((1 / U) × 25 %) and 77 % where U is the number of hopping frequencies in use.

The hopping sequence(s) shall contain at least N hopping frequencies where N is 15 or 15 divided by the minimum Hopping Frequency Separation in MHz, whichever is the greater.

For adaptive frequency hopping systems

Adaptive Frequency Hopping systems shall be capable of operating over a minimum of 70 % of the band.

The Accumulated Transmit Time on any hopping frequency shall not be greater than 400 ms within any observation period of 400 ms multiplied by the minimum number of hopping frequencies (N) that have to be used.

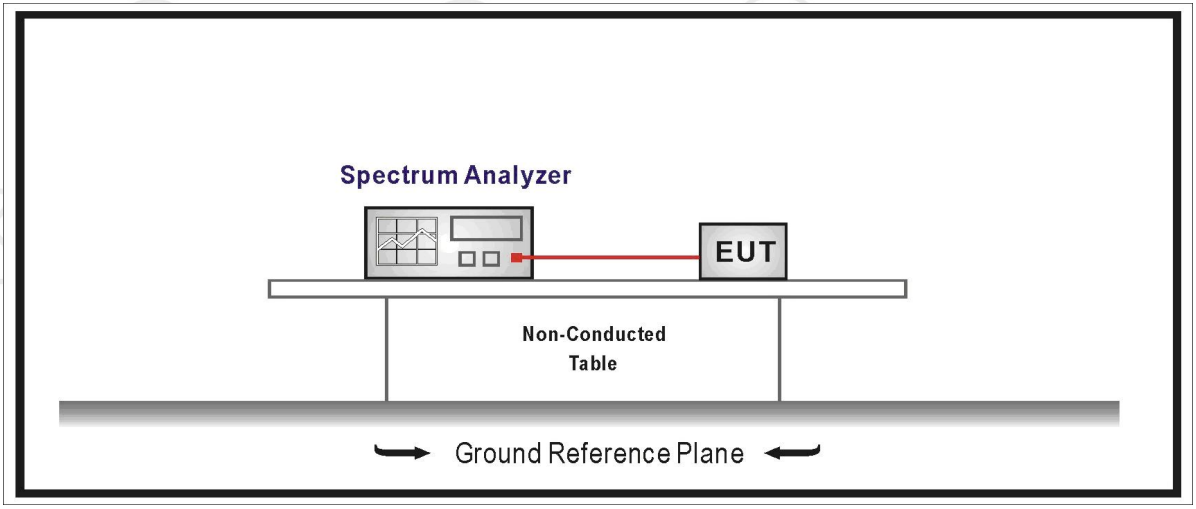
In order for the equipment to comply with the Frequency Occupation requirement, it shall meet either of the following two options:

Option 1: Each hopping frequency of the hopping sequence shall be occupied at least once within a period not exceeding four times the product of the dwell time and the number of hopping frequencies in use.

Option 2: The occupation probability for each frequency shall be between ((1 / U) × 25 %) and 77 % where U is the number of hopping frequencies in use.

The hopping sequence(s) shall contain at least N hopping frequencies at all times, where N is 15 or 15 divided by the minimum Hopping Frequency Separation in MHz, whichever is the greater.

Test Setup



Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.3.4

Step 1:

• The output of the transmitter shall be connected to a spectrum analyzer or equivalent.

• The analyzer shall be set as follows:

- Centre Frequency: Equal to the hopping frequency being investigated
- Frequency Span: 0 Hz
- RBW: ~ 50 % of the Occupied Channel Bandwidth(we set RBW=510KHz)
- VBW: ≥ RBW(we set RBW=1500KHz)
- Detector Mode: RMS
- Sweep time: Equal to the applicable observation period (we set 400ms ×79=31600ms)
- Number of sweep points: 30 000
- Trace mode: Clear / Write
- Trigger: Free Run

Step 2:

• Save the trace data to a file for further analysis by a computing device using an appropriate software application or program.

Step 3:

• Indentify the data points related to the frequency being investigated by applying a threshold.

The data points resulting from transmissions on the hopping frequency being investigated are assumed to have much higher levels compared to data points resulting from transmissions on adjacent hopping frequencies. If a clear determination between these transmissions is not possible, the RBW in step 1 shall be further reduced. In addition, a channel filter may be used.

• Count the number of data points identified as resulting from transmissions on the frequency being investigated and multiply this number by the time difference between two consecutive data points.

Step 4:

• The result in step 3 is the Accumulated Transmit Time which shall comply with the limit provided in clause 4.3.1.4.3.1 or clause 4.3.1.4.3.2 and which shall be recorded in the test report.

Step 5:

• Make the following changes on the analyzer and repeat steps 2 and 3.

Sweep time: 4 × Dwell Time × Actual number of hopping frequencies in use

The hopping frequencies occupied by the equipment without having transmissions during the dwell time (blacklisted frequencies) should be taken into account in the actual number of hopping frequencies in use. If this number cannot be determined (number of blacklisted frequencies unknown) it shall be assumed that the equipment uses the maximum possible number of hopping frequencies.

• The result shall be compared to the limit for the Frequency Occupation defined in clause 4.3.1.4.3.1 or clause 4.3.1.4.3.2. The result of this comparison shall be recorded in the test report.

Step 6:

• Make the following changes on the analyzer:

- Start Frequency: 2 400 MHz
- Stop Frequency: 2 483,5 MHz
- RBW: ~ 50 % of the Occupied Channel Bandwidth (single hop) (we set RBW=510KHz)
- VBW: ≥ RBW (we set RBW=1500KHz)
- Detector Mode: RMS
- Sweep time: 1s
- Trace Mode: Max Hold
- Trigger: Free Run

• Wait for the trace to stabilize. Identify the number of hopping frequencies used by the hopping sequence.

• The result shall be compared to the limit (value N) defined in clause 4.3.1.4.3.1 or clause 4.3.1.4.3.2. This value shall be recorded in the test report. For equipment with blacklisted frequencies, it might not be possible to verify the number of hopping frequencies in use. However they shall comply with the requirement for Accumulated Transmit Time and Frequency Occupation assuming the minimum number of hopping frequencies (N) defined in clause 4.3.1.4.3.1 or clause 4.3.1.4.3.2 is used.

Step 7:

• For adaptive equipment, using the lowest and highest -20 dB points from the total spectrum envelope obtained in step 6, it shall be verified whether the equipment uses 70 % of the band specified in clause 1. The result shall be recorded in the test report.

Test Result

Product	:	Bluetooth speaker
Test Result	:	Pass

Accumulated Transmit Time

Packet	One Pulse time (ms)	Accumulated Dwell Time (ms)	Measure Time (ms)	Limit	Conclusion
DH1	0.38	121.60	31600	<400ms	PASS
DH3	1.62	246.24			
DH5	2.87	289.87			
Remark: Only record the worst data.					

Min. Frequency Occupation Time

Mode	Min. frequency occupation Time(ms)	Measure Time (ms)	Conclusion
DH1	0.38	120.08	PASS
DH3	4.86	511.92	PASS
DH5	5.74	906.92	PASS
Remark: Only record the worst data.			

Hopping Channel & Hopping Sequence

Mode	Number of hopping channel	Limit	Conclusion
GFSK	79	>15	PASS
Mode	Hopping Sequence(%)	Limit	Conclusion
GFSK	95.41%	>70%	PASS

7. HOPPING FREQUENCY SEPARATION

Limit

For non-adaptive equipment

For non-adaptive Frequency Hopping equipment, the Hopping Frequency Separation shall be equal or greater than the Occupied Channel Bandwidth, with a minimum separation of 100 kHz.

For equipment with a maximum declared RF Output power level of less than 10 dBm e.i.r.p. or for non-adaptive Frequency Hopping equipment operating in a mode where the RF Output power is less than 10 dBm e.i.r.p. only the minimum Hopping Frequency Separation of 100 kHz applies.

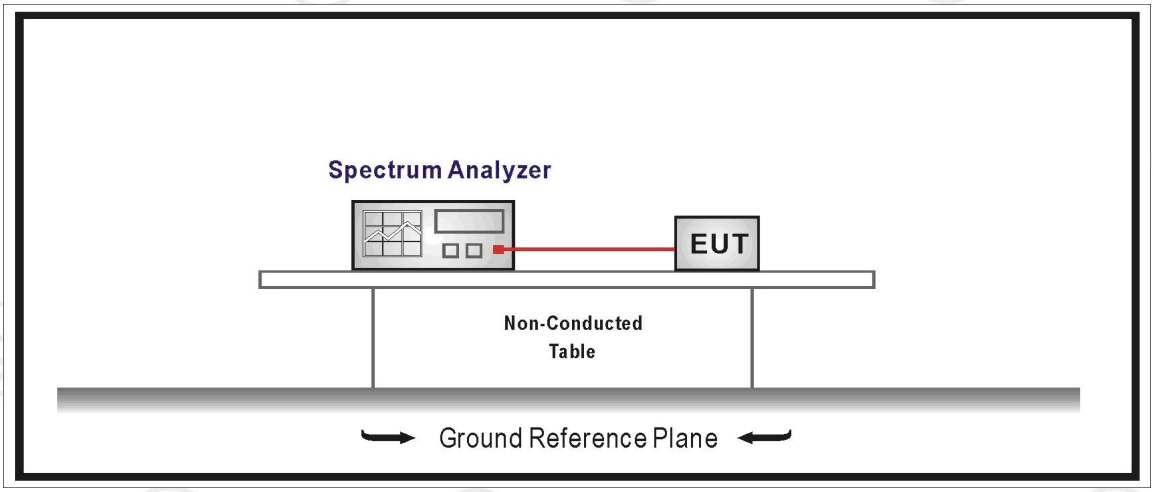
For adaptive equipment

For adaptive Frequency Hopping equipment, the minimum Hopping Frequency Separation shall be 100 kHz.

Adaptive Frequency Hopping equipment, which for one or more hopping frequencies, has switched to a non-adaptive mode because interference was detected on all these hopping positions with a level above the threshold level defined in clause 4.3.1.7.2.2 or clause 4.3.1.7.3.2, is allowed to continue to operate with a minimum Hopping Frequency Separation of 100 kHz on these hopping frequencies as long as the interference is present on these frequencies. The equipment shall continue to operate in an adaptive mode on other hopping frequencies.

Adaptive Frequency Hopping equipment which decided to operate in a non-adaptive mode on one or more hopping frequencies without the presence of interference, shall comply with the limit in clause 4.3.1.5.3.1 for these hopping frequencies as well as with all other requirements applicable to non-adaptive frequency hopping equipment.

Test Setup



Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.3.5

The analyzer was setting as follow:
- Centre Frequency: Centre of the two adjacent hopping frequencies
- Frequency Span: Sufficient to see the complete power envelope of both hopping frequencies
- RBW: 1 % of the span (we set RBW=30KHz)
- VBW: 3 × RBW (we set VBW=91KHz)
- Detector Mode: RMS
- Trace Mode: Max Hold
- Sweep time: 1s

Test Result

Product	:	Bluetooth speaker
Test Item	:	Hopping Frequency Separation
Test Result	:	Pass

Mode	Result (MHz)	Limit (MHz)	Conclusion
DH1	0.98	>=0.1	PASS
2DH1	1.03	>=0.1	
3DH1	0.98	>=0.1	

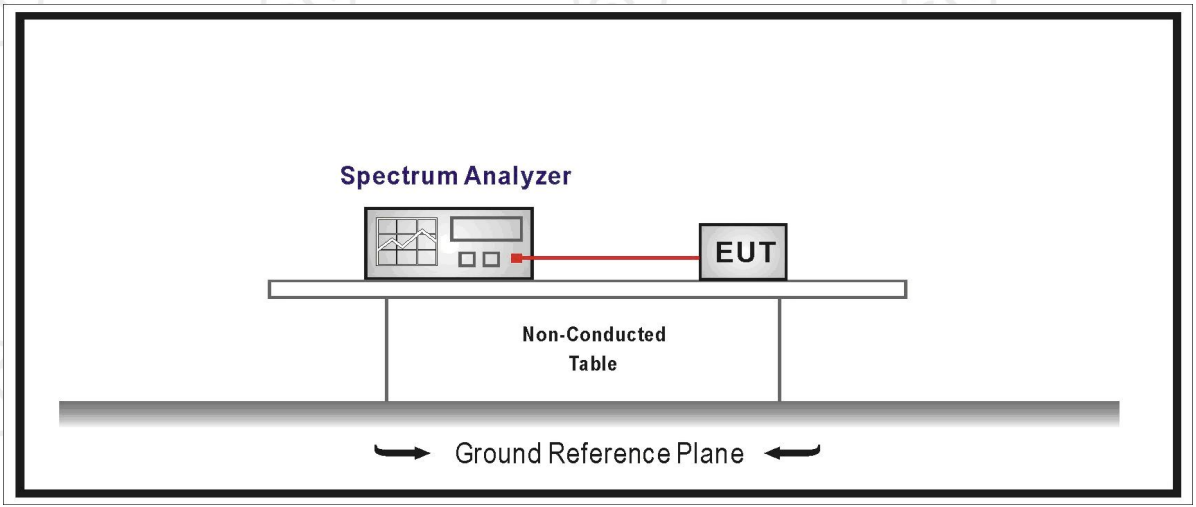
8. MEDIUM UTILISATION (MU) FACTOR

Limit

For non-adaptive equipment

The maximum Medium Utilization factor for non-adaptive Frequency Hopping equipment shall be 10 %.

Test Setup



Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.3.2

Test Result

This requirement does not apply to adaptive equipment unless operating in a non-adaptive mode.
In addition, this requirement does not apply for equipment with a maximum declared RF Output power level of less than 10dBm E.I.R.P. or for equipment when operating in a mode where the RF Output power is less than 10dBm E.I.R.P.
No applicable.

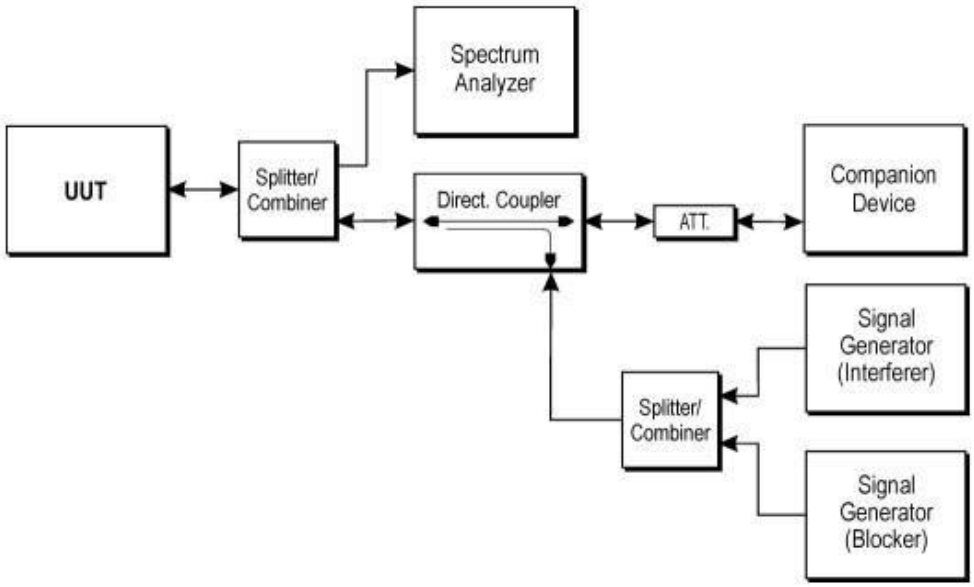
9. ADAPTIVITY (ADAPTIVE FREQUENCY HOPPING)

Limit

Adaptivity Limit
— LBT based Detect and Avoid --- The CCA observation time shall be not less than 0,2 % of the Channel Occupancy Time with a minimum of 18 μs.; --- COT ≤ 60 ms; --- Idle Period = 5% of COT with a minimum of 100 μs; --- Detection threshold level = -70 dBm/MHz + (20 dBm - Pout e.i.r.p)/1 MHz (Pout in dBm)
— Non-LBT based Detect and Avoid --- The frequency shall remain unavailable for a minimum time equal to 1 second or 5 times the actual number of hopping frequencies in the current (adapted) channel map used by the equipment, multiplied with the Channel Occupancy Time whichever is the longest. --- COT ≤ 40 ms; --- For equipment using a dwell time > 40 ms that want to have other transmissions during the same hop (dwell time) an Idle Period (no transmissions) of minimum 5 % of the Channel Occupancy Period with a minimum of 100 μs shall be implemented. --- Detection threshold level = -70 dBm/MHz + (20 dBm - Pout e.i.r.p.)/1 MHz (Pout in dBm)
— Short Control Signalling Transmissions: --- Short Control Signalling Transmissions shall have a maximum TxOn / (TxOn + TxOff) ratio of 10 % within any observation period of 50 ms or within an observation period equal to the dwell time, whichever is the shorter.

Test Setup

Conducted measurements



Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.3.7

Test Result

This requirement does not apply to non-adaptive equipment or adaptive equipment operating in a non-adaptive mode providing the equipment complies with the requirements and/or restrictions applicable to non-adaptive equipment.
In addition, this requirement does not apply for equipment with a maximum declared RF Output power level of less than 10dBm E.I.R.P. or for equipment when operating in a mode where the RF Output power is less than 10dBm E.I.R.P.
No applicable.

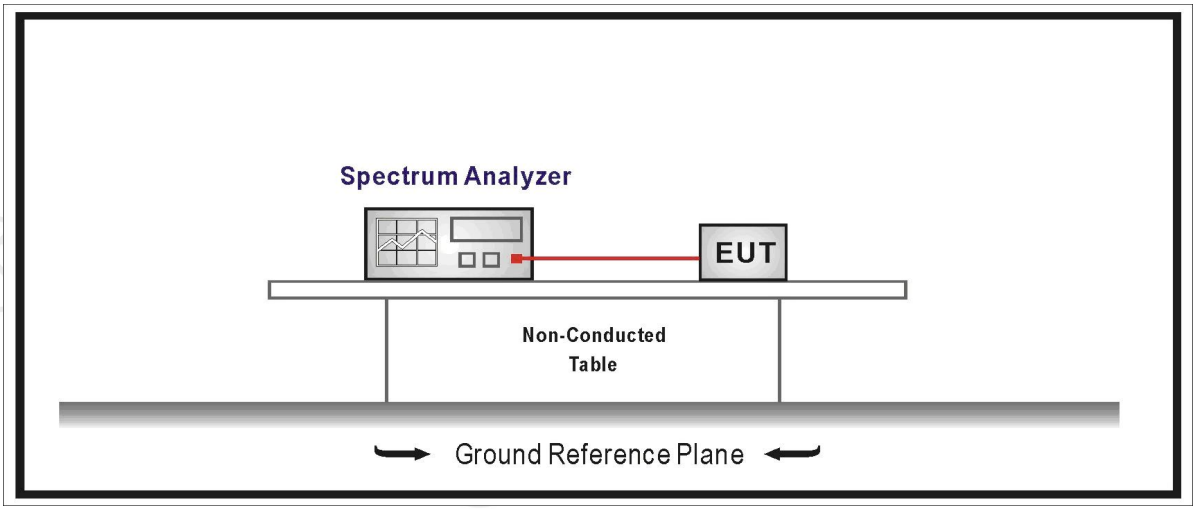
10. OCCUPIED CHANNEL BANDWIDTH

Limit

The Occupied Channel Bandwidth for each hopping frequency shall fall completely within the band 2.4GHz to 2.4835GHz.

For non-adaptive Frequency Hopping equipment with E.I.R.P greater than 10dBm, the Occupied Channel Bandwidth for every occupied hopping frequency shall be equal to or less than the value declared by the supplier. This declared value shall not be greater than 5 MHz.

Test Setup



Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.3.8

Step 1:

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

- Centre Frequency: The centre frequency of the channel under test
- Resolution BW: ~ 1 % of the span without going below 1 % (We set RBW=20KHz)
- Video BW: 3 × RBW (We set VBW=62KHz)
- Frequency Span: 2 × Occupied Channel Bandwidth (We set Span=2MHz)
- Detector Mode: RMS
- Trace Mode: Max Hold

Step 2:

Wait until the trace is completed. Find the peak value of the trace and place the analyser marker on this peak.

Step 3:

Use the 99 % bandwidth function of the spectrum analyser to measure the Occupied Channel Bandwidth of the UUT. This value shall be recorded.

Test Result

Product	:	Bluetooth speaker
Test Item	:	Occupied Channel Bandwidth
Test Mode	:	Mode 1: Transmit by DH1

Channel No.	Frequency (MHz)	99% Bandwidth (MHz)	Limit
00	2402	0.87	Within the band 2400.0MHz~2483.5MHz
79	2480	0.87	

Product	:	Bluetooth speaker
Test Item	:	Occupied Channel Bandwidth
Test Mode	:	Mode 2: Transmit by 2DH1

Channel No.	Frequency (MHz)	99% Bandwidth (MHz)	Limit
00	2402	1.08	Within the band 2400.0MHz~2483.5MHz
79	2480	1.07	

Product	:	Bluetooth speaker
Test Item	:	Occupied Channel Bandwidth
Test Mode	:	Mode 3: Transmit by 3DH1

Channel No.	Frequency (MHz)	99% Bandwidth (MHz)	Limit
00	2402	1.09	Within the band 2400.0MHz~2483.5MHz
79	2480	1.08	

Test Result	:	Pass

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

Limit

The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided by the mask in figure 1.

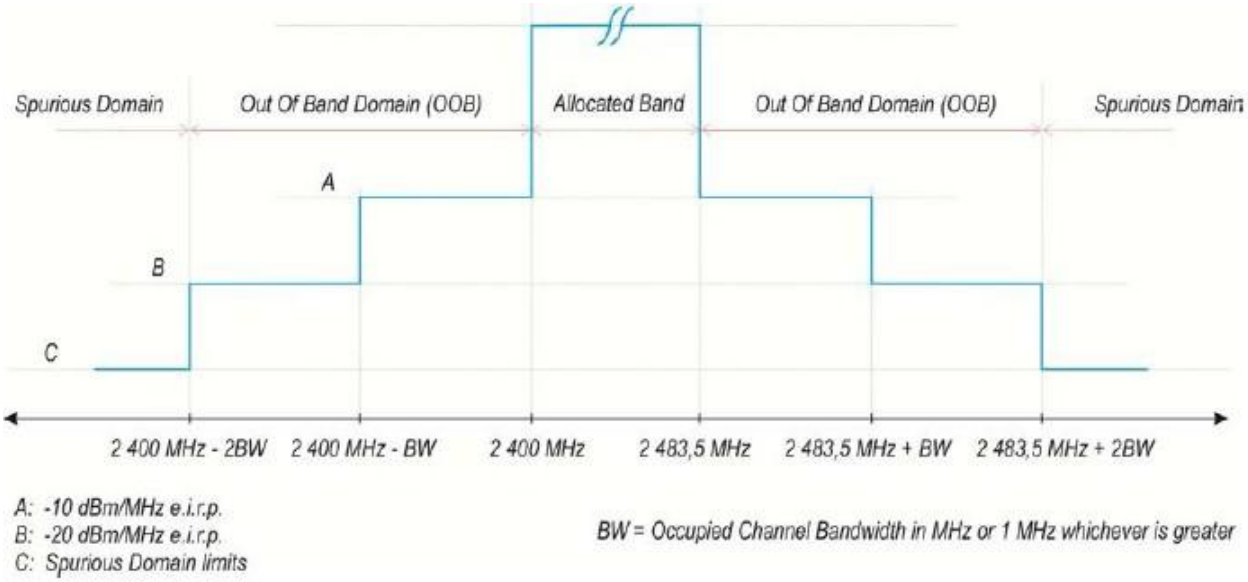
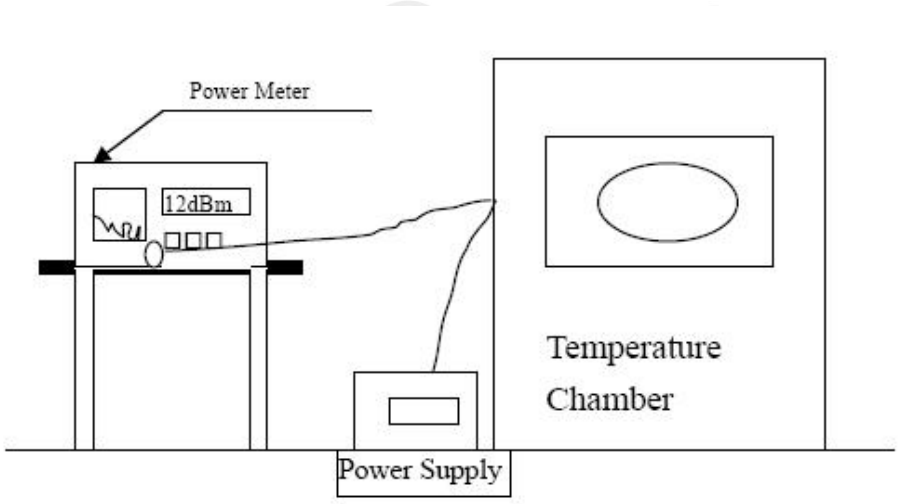


Figure 1: Transmit mask

Test Setup

For Conducted Measurement



Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.3.9

Step 1:

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

- Centre Frequency: 2 484 MHz
- Span: 0 Hz
- Resolution BW: 1 MHz
- Filter mode: Channel filter
- Video BW: 3 MHz
- Detector Mode: RMS
- Trace Mode: Clear / Write
- Sweep Mode: Continuous
- Sweep Points: Sweep Time [s] / (1 μs) or 5 000 whichever is greater
- Trigger Mode: Video trigger

NOTE 1: In case video triggering is not possible, an external trigger source may be used.

- Sweep Time: > 120 % of the duration of the longest burst detected during the measurement of the RF Output Power

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

• Adjust the trigger level to select the transmissions with the highest power level.

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

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

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

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

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

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

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

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

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

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

Step 6:

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

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

Comparison with the applicable limits shall be done using any of the options given below:

- Option 1: the results for each of the transmit chains for the corresponding 1 MHz segments shall be added. The additional beamforming gain "Y" in dB shall be added as well and the resulting values compared with the limits provided by the mask given in figures 1 or 3.
- Option 2: the limits provided by the mask given in figures 1 or 3 shall be reduced by 10 x log10(Ach) and the additional beamforming gain "Y" in dB. The results for each of the transmit chains shall be individually compared with these reduced limits.

NOTE 2: Ach refers to the number of active transmit chains.

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

11.5. Test Result

Product	:	Bluetooth speaker
Test Item	:	Transmitter unwanted emissions in the out-of-band domain
Test Mode	:	Mode 1: Transmit by DH1

Frequency (MHz)	Test Conditions (℃)	Max measured Values (dBm/MHz)	Limit (dBm/MHz)
2400–2BW~ 2400-BW	25	-62.34	-20
2400–BW~2400	25	-61.25	-10
2483.5~ 2483.5+BW	25	-64.27	-10
2483.5+BW~ 2483.5+2BW	25	-63.35	-20
2400–2BW~ 2400-BW	-20	-61.42	-20
2400–BW~2400	-20	-62.39	-10
2483.5~ 2483.5+BW	-20	-62.78	-10
2483.5+BW~ 2483.5+2BW	-20	-63.57	-20
2400–2BW~ 2400-BW	40	-63.21	-20
2400–BW~2400	40	-62.79	-10
2483.5~ 2483.5+BW	40	-61.25	-10
2483.5+BW~ 2483.5+2BW	40	-61.32	-20

Product	:	Bluetooth speaker
Test Item	:	Transmitter unwanted emissions in the out-of-band domain
Test Mode	:	Mode 2: Transmit by 2DH1

Frequency (MHz)	Test Conditions (℃)	Max measured Values (dBm/MHz)	Limit (dBm/MHz)
2400–2BW~ 2400-BW	25	-62.34	-20
2400–BW~2400	25	-63.12	-10
2483.5~ 2483.5+BW	25	-64.28	-10
2483.5+BW~ 2483.5+2BW	25	-61.47	-20
2400–2BW~ 2400-BW	-20	-62.33	-20
2400–BW~2400	-20	-62.59	-10
2483.5~ 2483.5+BW	-20	-62.47	-10
2483.5+BW~ 2483.5+2BW	-20	-61.05	-20
2400–2BW~ 2400-BW	40	-62.37	-20
2400–BW~2400	40	-58.91	-10
2483.5~ 2483.5+BW	40	-63.37	-10
2483.5+BW~ 2483.5+2BW	40	-61.25	-20

Product	:	Bluetooth speaker
Test Item	:	Transmitter unwanted emissions in the out-of-band domain
Test Mode	:	Mode 3: Transmit by 3DH1

Frequency (MHz)	Test Conditions (℃)	Max measured Values (dBm/MHz)	Limit (dBm/MHz)
2400–2BW~ 2400-BW	25	-59.67	-20
2400–BW~2400	25	-62.52	-10
2483.5~ 2483.5+BW	25	-61.34	-10
2483.5+BW~ 2483.5+2BW	25	-62.55	-20
2400–2BW~ 2400-BW	-20	-59.68	-20
2400–BW~2400	-20	-63.17	-10
2483.5~ 2483.5+BW	-20	-62.76	-10
2483.5+BW~ 2483.5+2BW	-20	-62.52	-20
2400–2BW~ 2400-BW	40	-64.25	-20
2400–BW~2400	40	-60.69	-10
2483.5~ 2483.5+BW	40	-59.62	-10
2483.5+BW~ 2483.5+2BW	40	-58.71	-20

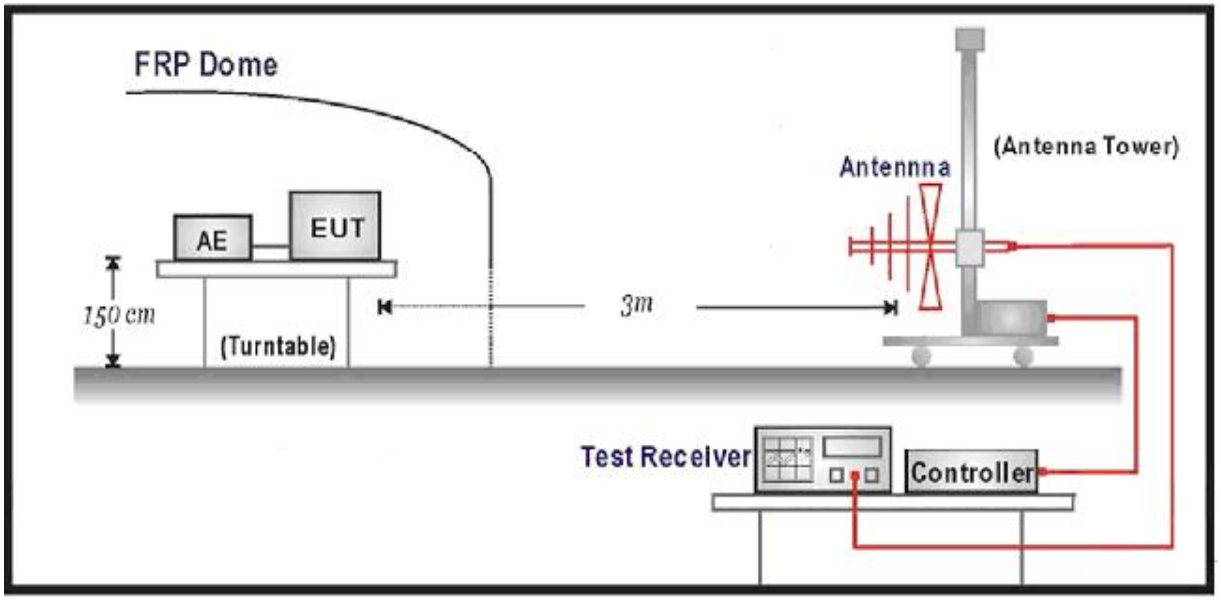
12. TRANSMITTER UNWANTED EMISSIONS IN THE SPURIOUS DOMAIN

Limit

Transmitter Limits for Spurious Emissions		
Frequency Range	Maximum power E.R.P. (≤ 1GHz) E.I.R.P. (> 1GHz)	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 12,75 GHz	-30 dBm	1 MHz

Test Setup

For Radiated Measurement



Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.3.10

Step 1:

The sensitivity of the spectrum analyser should be such that the noise floor is at least 12 dB below the limits given in tables 1 or 4.

Step 2:

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

Spectrum analyser settings:

• Resolution bandwidth: 100 kHz

• Video bandwidth: 300 kHz

• Detector mode: Peak

• Trace Mode: Max Hold

• Sweep Points: ≥ 19400

NOTE 1: For spectrum analysers not supporting this high number of sweep points, the frequency band may need to be segmented.

• Sweep time: For non continuous transmissions (duty cycle less than 100 %), the sweep time shall be sufficiently long, such that for each 100 kHz frequency step, the measurement time is greater than two transmissions of the UUT. For Frequency Hopping equipment operating in a normal operating (hopping not disabled) mode, the sweep time shall be further increased to capture multiple transmissions on the same hopping frequency in different hopping sequences. Allow the trace to stabilize. Any emissions identified during the sweeps above and that fall within the 6 dB range below the applicable limit or above, shall be individually measured using the procedure in clause 5.3.10.2.1.3 and compared to the limits given in tables 1 or 4.

Step 3:

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

Spectrum analyser settings:

• Resolution bandwidth: 1 MHz

• Video bandwidth: 3 MHz

• Detector mode: Peak

• Trace Mode: Max Hold

• Sweep Points: ≥ 23500

NOTE 2: For spectrum analysers not supporting this high number of sweep points, the frequency band may need to be segmented.

• Sweep time: For non continuous transmissions (duty cycle less than 100 %), the sweep time shall be sufficiently long, such that for each 1 MHz frequency step, the measurement time is greater than two transmissions of the UUT.

Test Result

Product	:	Bluetooth speaker
Test Item	:	Transmitter spurious emissions
Test Mode	:	Mode 1: Transmit by DH1

Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 0 (2402MHz)					
165.52	H	-65.29	-36	-29.29	PK
61.18	V	-75.64	-54	-21.64	PK
920.2	H	-63.35	-36	-27.35	PK
912.49	V	-62.48	-36	-26.48	PK
4804.23	H	-63.24	-30	-33.24	PK
4801.58	V	-59.66	-30	-29.66	PK
7205.1	H	-54.18	-30	-24.18	PK
7205.43	V	-57.62	-30	-27.62	PK
Channel 78 (2480MHz)					
165.47	H	-64.18	-36	-28.18	PK
61.1	V	-72.96	-54	-18.96	PK
920.82	H	-65.34	-36	-29.34	PK
911.88	V	-61.05	-36	-25.05	PK
4956.32	H	-59.78	-30	-29.78	PK
4962.99	V	-56.32	-30	-26.32	PK
7438.69	H	-53.48	-30	-23.48	PK
7440.72	V	-54.17	-30	-24.17	PK

Product	:	Bluetooth speaker
Test Item	:	Transmitter spurious emissions
Test Mode	:	Mode 2: Transmit by 2DH1

Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 0 (2402MHz)					
165.31	H	-63.25	-36	-27.25	PK
60.32	V	-73.34	-54	-19.34	PK
919.87	H	-62.79	-36	-26.79	PK
912.82	V	-62.14	-36	-26.14	PK
4804.82	H	-59.63	-30	-29.63	PK
4811.37	V	-56.37	-30	-26.37	PK
7205.99	H	-54.17	-30	-24.17	PK
7197.32	V	-55.62	-30	-25.62	PK
Channel 78 (2480MHz)					
164.21	H	-59.62	-36	-23.62	PK
61.41	V	-72.36	-54	-18.36	PK
919.29	H	-63.24	-36	-27.24	PK
912.97	V	-59.38	-36	-23.38	PK
4952.5	H	-63.27	-30	-33.27	PK
4956.78	V	-56.12	-30	-26.12	PK
7431.61	H	-58.36	-30	-28.36	PK
7444.52	V	-55.81	-30	-25.81	PK

Product	:	Bluetooth speaker
Test Item	:	Transmitter spurious emissions
Test Mode	:	Mode 3: Transmit by 3DH1

Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 0 (2402MHz)					
163.82	H	-63.34	-36	-27.34	PK
60.98	V	-72.46	-54	-18.46	PK
921.03	H	-62.49	-36	-26.49	PK
912.88	V	-61.02	-36	-25.02	PK
4803.4	H	-62.58	-30	-32.58	PK
4801.3	V	-64.37	-30	-34.37	PK
7210.69	H	-62.59	-30	-32.59	PK
7204.19	V	-65.38	-30	-35.38	PK
Channel 78 (2480MHz)					
165.11	H	-63.35	-36	-27.35	PK
60.28	V	-72.48	-54	-18.48	PK
921	H	-63.59	-36	-27.59	PK
912.3	V	-66.12	-36	-30.12	PK
4959.33	H	-65.37	-30	-35.37	PK
4956.42	V	-65.44	-30	-35.44	PK
7439.31	H	-61.26	-30	-31.26	PK
7431.28	V	-56.37	-30	-26.37	PK

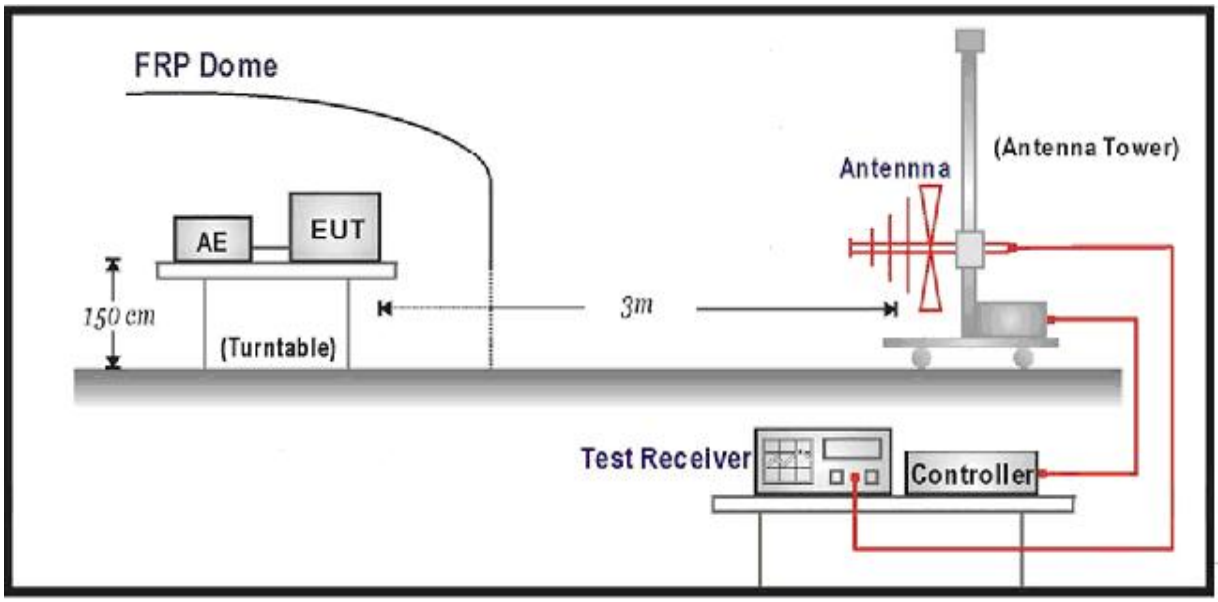
13. RECEIVER SPURIOUS EMISSIONS

Limit

Spurious emissions limits for receivers		
Frequency Range	Maximum power E.R.P. (≤ 1GHz) E.I.R.P. (> 1GHz)	Measurement bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 12.75 GHz	-47 dBm	1 MHz

Test Setup

For Radiated Measurement



Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.3.11

Step 1:

The sensitivity of the spectrum analyser should be such that the noise floor is at least 12 dB below the limits given in tables 2 or 5.

Step 2:

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

Spectrum analyser settings:

• Resolution bandwidth: 100 kHz
• Video bandwidth: 300 kHz
• Detector mode: Peak
• Trace Mode: Max Hold
• Sweep Points: ≥ 19400
• Sweep time: Auto

Allow the trace to stabilize. Any emissions identified during the sweeps above and that fall within the 6 dB range below the applicable limit or above, shall be individually measured using the procedure in clause 5.3.11.2.1.3 and compared to the limits given in tables 2 or 5.

Step 3:

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

Spectrum analyser settings:

• Resolution bandwidth: 1 MHz
• Video bandwidth: 3 MHz
• Detector mode: Peak
• Trace Mode: Max Hold
• Sweep Points: ≥ 23500
• Sweep time: Auto

Allow the trace to stabilize. Any emissions identified during the sweeps above that fall within the 6 dB range below the applicable limit or above, shall be individually measured using the procedure in clause 5.3.11.2.1.3 and compared to the limits given in tables 2 or 5. Frequency Hopping equipment may generate a block (or several blocks) of spurious emissions anywhere within the spurious domain. If this is the case, only the highest peak of each block of emissions shall be measured using the procedure in clause 5.3.11.2.1.3.

Step 4:

• In case of conducted measurements on smart antenna systems (equipment with multiple receive chains), the steps 2 and 3 need to be repeated for each of the active receive chains (Ach).The limits used to identify emissions during this pre-scan need to be reduced with 10 × log10 (Ach) (number of active receive chains).

Test Result

Product	:	Bluetooth speaker
Test Item	:	Receiver spurious emissions
Test Mode	:	Mode 4: Receive by DH1

Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 0 (2402MHz)					
164.37	H	-75.36	-57	-18.36	PK
61.32	V	-72.42	-57	-15.42	PK
919.41	H	-83.16	-57	-26.16	PK
911.62	V	-81.27	-57	-24.27	PK
1236.43	H	-74.53	-47	-27.53	PK
1259.57	V	-65.19	-47	-18.19	PK
2223.62	H	-63.54	-47	-16.54	PK
2032.72	V	-62.05	-47	-15.05	PK
Channel 78 (2480MHz)					
164.02	H	-77.69	-57	-20.69	PK
61.92	V	-75.62	-57	-18.62	PK
920.42	H	-74.13	-57	-17.13	PK
911.61	V	-73.26	-57	-16.26	PK
1226.81	H	-72.14	-47	-25.14	PK
1247.43	V	-73.63	-47	-26.63	PK
2272.9	H	-71.15	-47	-24.15	PK
2004.99	V	-72.32	-47	-25.32	PK

Product	:	Bluetooth speaker
Test Item	:	Receiver spurious emissions
Test Mode	:	Mode 5: Receive by 2DH1

Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 0 (2402MHz)					
165.51	H	-71.23	-57	-14.23	PK
62.22	V	-72.64	-57	-15.64	PK
919.69	H	-79.11	-57	-22.11	PK
913.32	V	-75.36	-57	-18.36	PK
1220.38	H	-75.21	-47	-28.21	PK
1235.98	V	-72.33	-47	-25.33	PK
2270.58	H	-73.36	-47	-26.36	PK
1976.4	V	-72.14	-47	-25.14	PK
Channel 78 (2480MHz)					
164.38	H	-75.36	-57	-18.36	PK
60.3	V	-74.14	-57	-17.14	PK
920.1	H	-72.36	-57	-15.36	PK
913.19	V	-74.12	-57	-17.12	PK
1248.82	H	-73.59	-47	-26.59	PK
1251.13	V	-72.35	-47	-25.35	PK
2283.19	H	-72.14	-47	-25.14	PK
2211.81	V	-73.36	-47	-26.36	PK

Product	:	Bluetooth speaker
Test Item	:	Receiver spurious emissions
Test Mode	:	Mode 6: Receive by 3DH1

Frequency (MHz)	Polarization (H/V)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector
Channel 0 (2402MHz)					
165.28	H	-83.36	-57	-26.36	PK
61.09	V	-82.57	-57	-25.57	PK
921.23	H	-83.62	-57	-26.62	PK
912.5	V	-79.84	-57	-22.84	PK
1234.7	H	-78.62	-47	-31.62	PK
1246.83	V	-76.34	-47	-29.34	PK
2048.88	H	-73.15	-47	-26.15	PK
2118.68	V	-72.69	-47	-25.69	PK
Channel 78 (2480MHz)					
165	H	-81.55	-57	-24.55	PK
61.42	V	-82.67	-57	-25.67	PK
921.29	H	-79.54	-57	-22.54	PK
911.79	V	-76.36	-57	-19.36	PK
1365.59	H	-72.14	-47	-25.14	PK
1302.39	V	-72.33	-47	-25.33	PK
2220.68	H	-75.48	-47	-28.48	PK
2254.68	V	-73.36	-47	-26.36	PK

14. RECEIVER BLOCKING

Limit

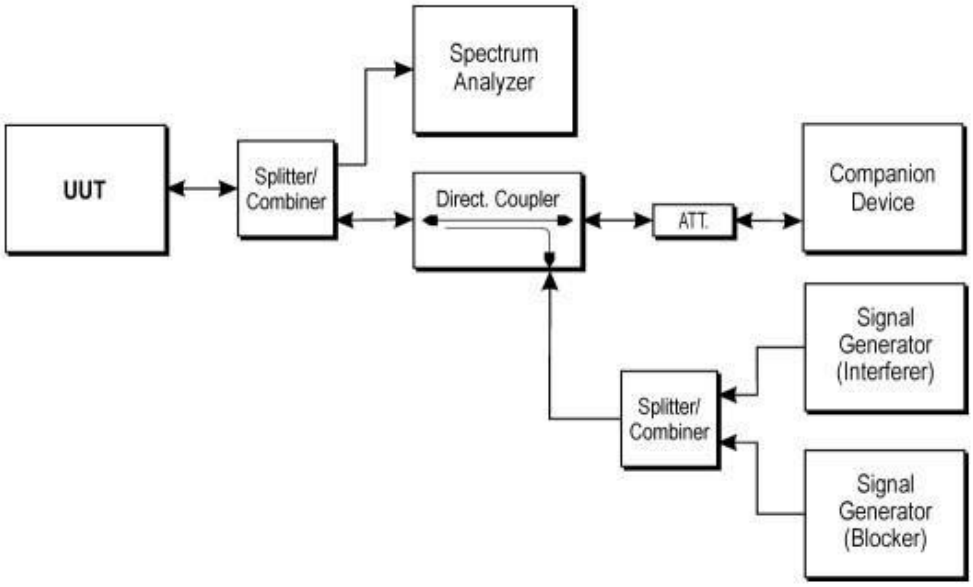
Adaptive Frequency Hopping equipment shall comply with the requirements defined in clause 4.3.1.7.2 (LBT based DAA) or clause 4.3.1.7.3 (non-LBT based DAA) in the presence of a blocking signal with characteristics as provided in table 3.

Table 3: Receiver Blocking parameters

Equipment type (LBT/non-LBT)	Wanted signal mean power from companion device	Blocking signal Frequency [MHz]	Blocking signal power [dBm]	Type of interfering signal
LBT	Sufficient to maintain the link (see note2)	2 395 or 2 488,5 (see note 1)	-35	CW
Non-LBT	-30 dBm			
NOTE 1: The highest blocking frequency shall be used for testing hopping frequencies within the range 2 400 MHz TO 2 442 MHz, while the lowest blocking frequency shall be used for testing hopping frequencies within the range 2 442 MHz to 2 483,5 MHz See clause 5.3.7.1.				
NOTE 2: A typical value which can be used in most cases is -50 dBm/MHz.				

Test Setup

Conducted measurements



Test Procedure

Refer to ETSI EN 300 328 V2.2.2 (2019-07)Clause 5.3.7

Test Result

This requirement does not apply for equipment with a maximum declared RF Output power level of less than 10dBm E.I.R.P. or for equipment when operating in a mode where the RF Output power is less than 10dBm E.I.R.P.

The RF Output power level of this equipment is less than 10dBm, so this item does not need to test.

No applicable.

15. PHOTOGRAPHS OF TEST SETUP

RADIATED EMISSION TEST



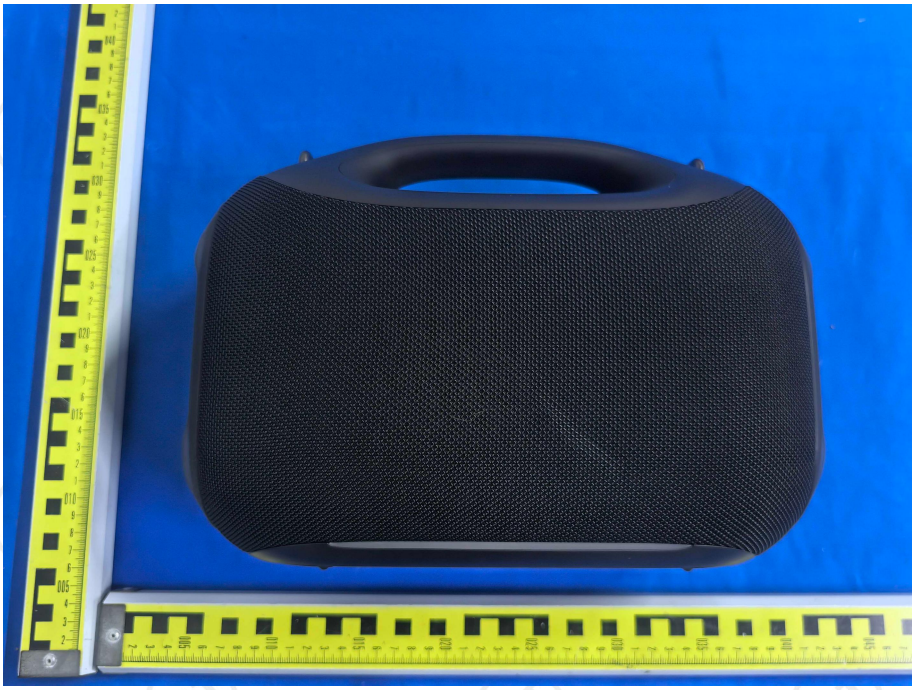


Fig.1



Fig.2

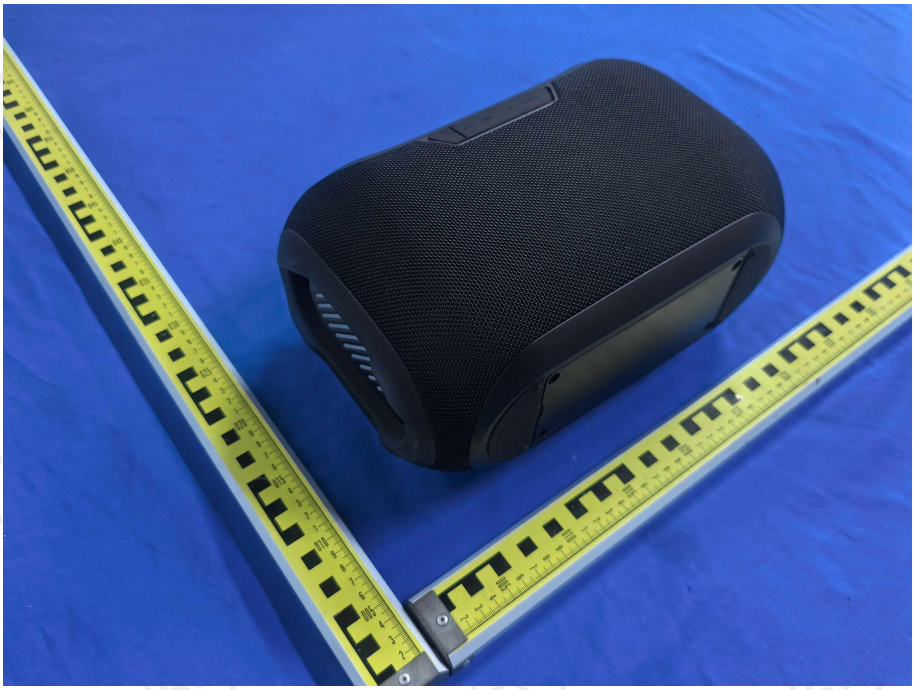


Fig.3



Fig.4

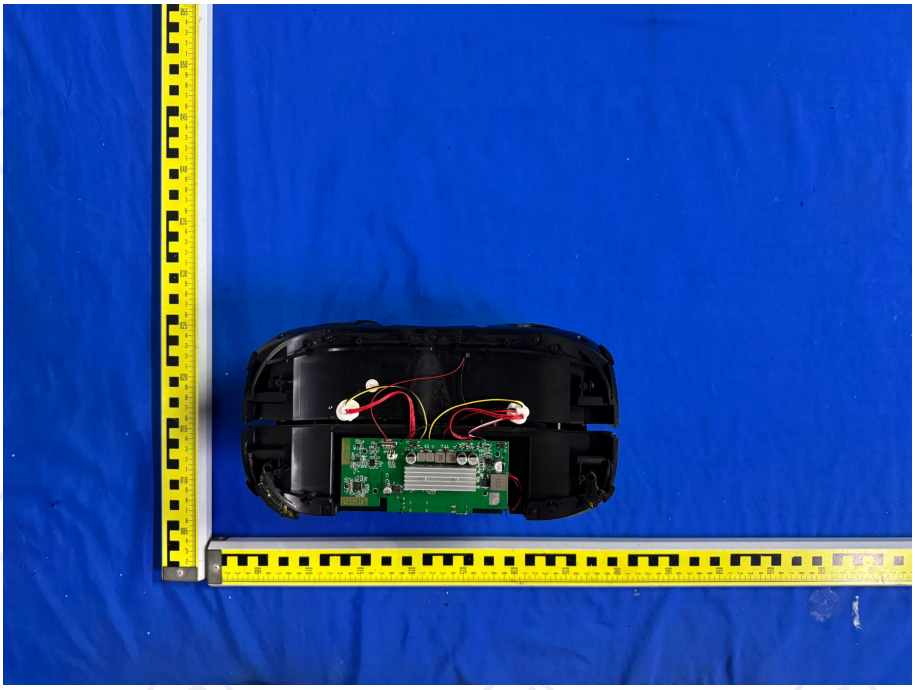


Fig.5

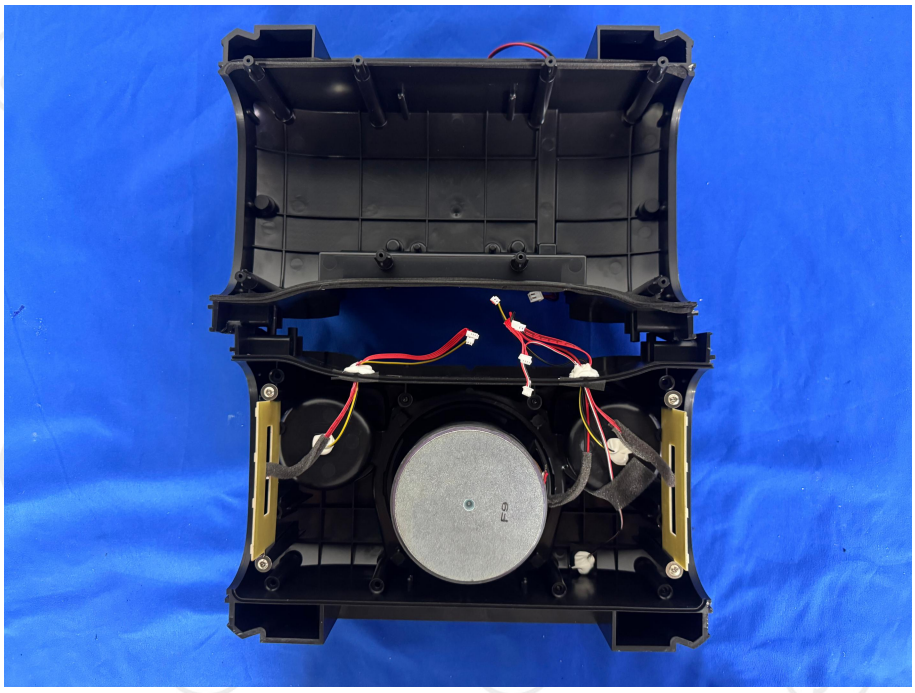


Fig.6

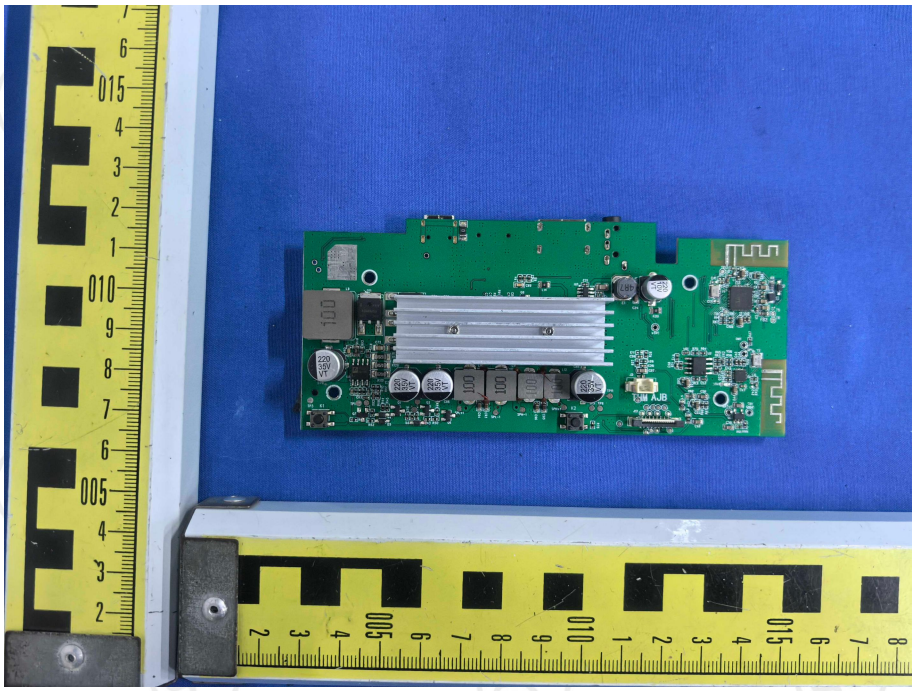


Fig.7

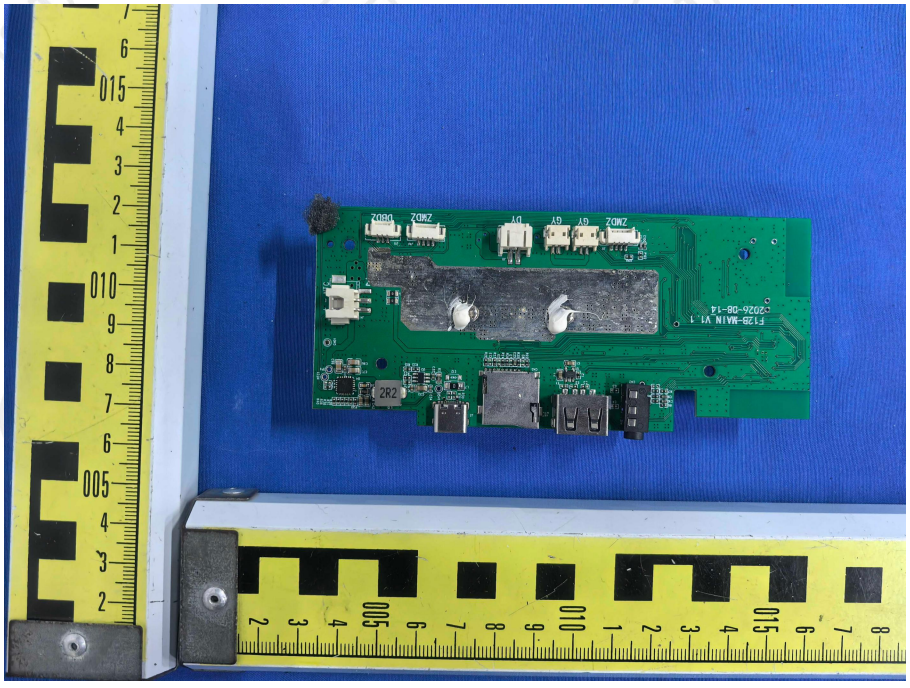


Fig.8

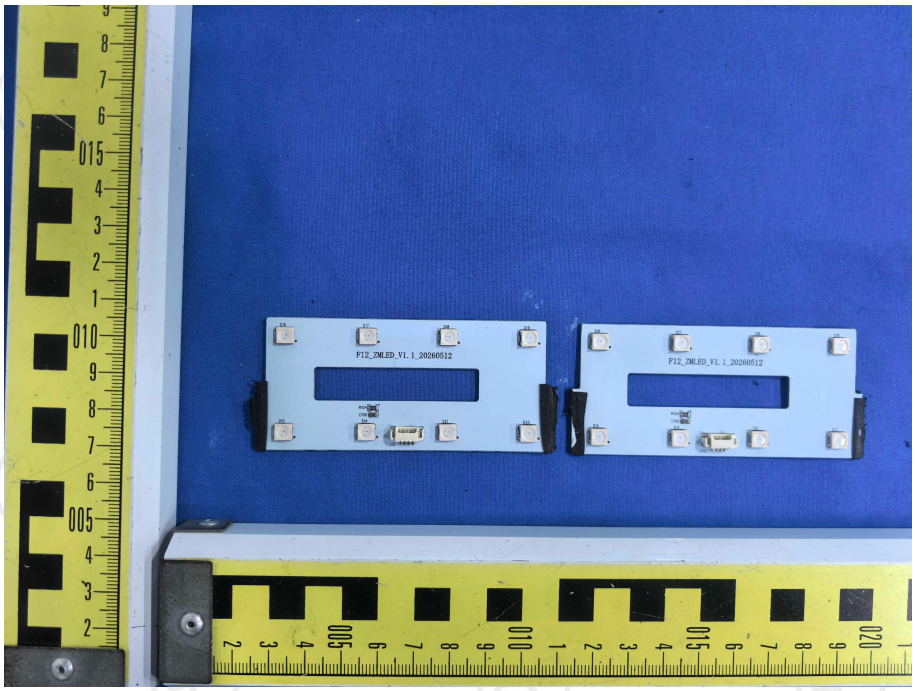


Fig.9

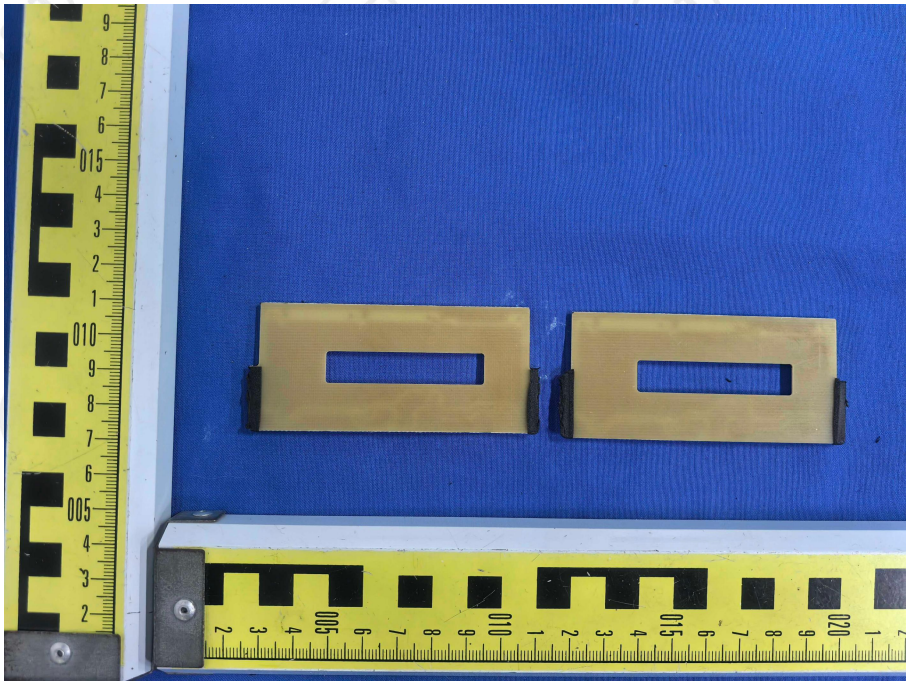


Fig.10

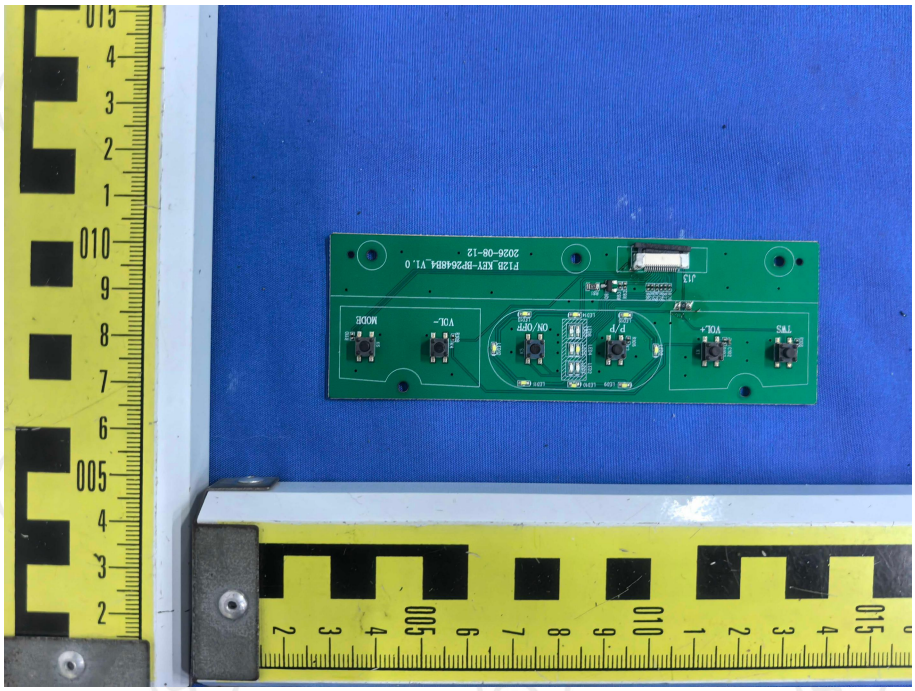


Fig.11



Fig.12

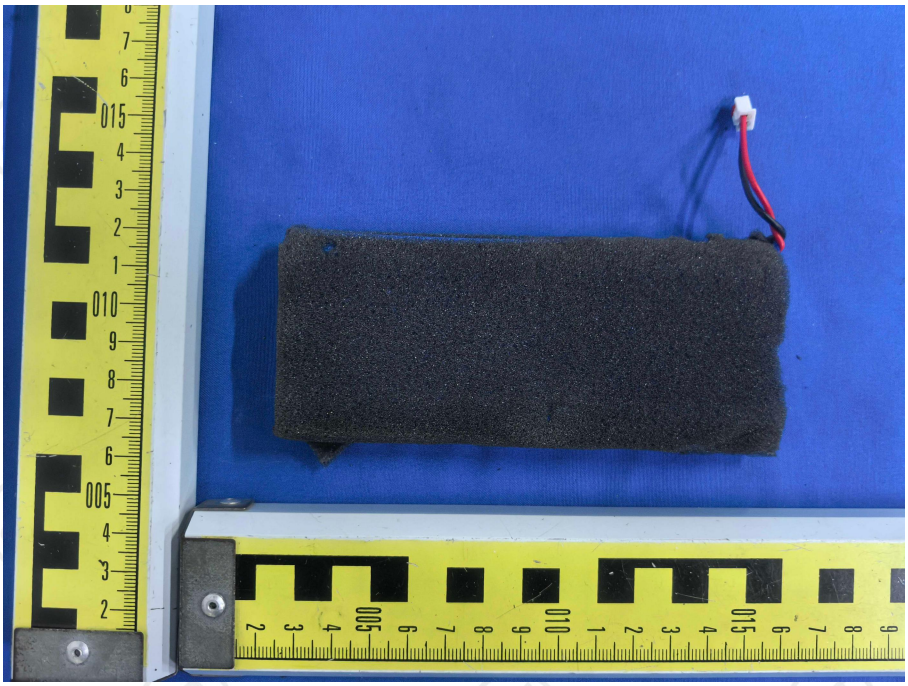


Fig.13

----------THE END OF REPORT---------