



TEST REPORT
ETSI EN 300 422-1 V2.2.1 (2021-11)

Report Reference No......: **CTA24082301201**

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Date of issue.....: Aug. 30, 2024

Testing Laboratory Name: **Shenzhen CTA Testing Technology Co., Ltd.**

Address.....: Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name: **Η εταιρεία Κ. ΜΙΧΟΣ και ΣΙΑ Ο.Ε.**

Address.....: Chalandriou Str. 5, Ag. Paraskevi Athens 15343, Greece

Test specification :

Standard: **ETSI EN 300 422-1 V2.2.1 (2021-11)**

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Test item description : **UHF wireless microphone**

Trade Mark: GILBORD

Manufacturer.....: Η εταιρεία Κ. ΜΙΧΟΣ και ΣΙΑ Ο.Ε.

Model/Type reference.....: WRL718+BP30

List Model: WRL838+BP20, WRL838TDV+BP10, WRL858+BP15, WRL868 INSTR+BP25, WRL738+BP30, WRL728+TR510, REC650+TR650, WRL750+BP35, REC850+WRLM-5

Modulation: FM

Operation Frequency.....: 660.1-689.5MHz, 660.5-689.9MHz

Hardware version: V1.0

Software version.....: V1.0

Ratings.....: TX: DC 3.0V From battery

RX: DC 3.7V From battery and DC 5.0V From external circuit

Result.....: PASS

TEST REPORT

Equipment under Test : UHF wireless microphone

Model /Type : WRL718+BP30

Listed Models : WRL838+BP20, WRL838TDV+BP10, WRL858+BP15,
WRL868 INSTR+BP25, WRL738+BP30, WRL728+TR510,
REC650+TR650, WRL750+BP35, REC850+WRLM-5

Applicant : **Η εταιρεία Κ. ΜΙΧΟΣ και ΣΙΑ Ο.Ε.**

Address : Chalandriou Str. 5, Ag. Paraskevi Athens 15343, Greece

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Address : Chalandriou Str. 5, Ag. Paraskevi Athens 15343, Greece

Test Result	PASS
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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.

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1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

[ETSI EN 300 422-1 V2.2.1 \(2021-11\)](#) Wireless Microphone's; Audio PMSE up to 3 GHz; Part 1: Audio PMSE Equipment up to 3 GHz; Harmonised Standard for access to radio spectrum

1.2. Test Description

Item	Reference	Result
Frequency stability	ETSI EN 300 422-1 V2.2.1 (2021-11) Sub-clause 4.2.2	PASS
RF Output Power	ETSI EN 300 422-1 V2.2.1 (2021-11) Sub-clause 4.2.1	PASS
Necessary bandwidth transmitter	ETSI EN 300 422-1 V2.2.1 (2021-11) Sub-clause 4.2.3	PASS
Spurious emissions transmitter	ETSI EN 300 422-1 V2.2.1 (2021-11) Sub-clause 4.2.4	PASS
Transmitter intermeditation distortion	ETSI EN 300 422-1 V2.2.1 (2021-11) Sub-clause 4.2.5	PASS
Spurious emissions receiver	ETSI EN 300 422-1 V2.2.1 (2021-11) Sub-clause 4.3.5	PASS
Receiver sensitivity	ETSI EN 300 422-1 V2.2.1 (2021-11) Sub-clause 4.3.2	PASS
Receiver adjacent channel selectivity	ETSI EN 300 422-1 V2.2.1 (2021-11) Sub-clause 4.3.3	PASS
Receiver Blocking	ETSI EN 300 422-1 V2.2.1 (2021-11) Sub-clause 4.3.4	PASS

1.3. Test Laboratory

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

FCC-Registration No.: 517856 Designation Number: CN1318

Shenzhen CTA Testing Technology Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

A2LA-Lab Cert. No.: 6534.01

Shenzhen CTA Testing Technology Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010

1.4. Statement of the 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 Shenzhen CTA Testing Technology Co., Ltd. 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. Hereafter the best measurement capability for Shenzhen CTA Testing Technology Co., Ltd.

Shenzhen CTA Testing Technology Co., Ltd.

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Test	Range	Measurement Uncertainty	Notes
Radiated Emission	9KHz~30MHz	3.02 dB	(1)
Radiated Emission	30~1000MHz	4.06 dB	(1)
Radiated Emission	1~18GHz	5.14 dB	(1)
Radiated Emission	18-40GHz	5.38 dB	(1)
Conducted Disturbance	0.15~30MHz	2.14 dB	(1)
Output Peak power	30MHz~18GHz	0.55 dB	(1)
Power spectral density	/	0.57 dB	(1)
Spectrum bandwidth	/	1.1%	(1)
Radiated spurious emission (30MHz-1GHz)	30~1000MHz	4.10 dB	(1)
Radiated spurious emission (1GHz-18GHz)	1~18GHz	4.32 dB	(1)
Radiated spurious emission (18GHz-40GHz)	18-40GHz	5.54 dB	(1)

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

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Aug. 24, 2024
Testing commenced on	:	Aug. 24, 2024
Testing concluded on	:	Aug. 30, 2024

2.2. Product Description

Product Name:	UHF wireless microphone
Model/Type reference:	WRL718+BP30
Power supply:	TX: DC 3.0V From battery RX: DC 3.7V From battery and DC 5.0V From external circuit
Adapter information (Auxiliary test supplied by test Lab) :	Model: EP-TA20CBC Input: AC 100-240V 50/60HZ Output: DC 5V 2A
Wireless Microphone	
Operation frequency:	660.1-689.5MHz, 660.5-689.9MHz
Modulation Type:	FM
Hardware Version:	V1.0
Software Version:	V1.0
Antenna	TX: Internal antenna, 1.3dBi (Max) RX: Internal antenna, 1.6dBi (Max)

2.3. Equipment Under Test

Power supply system utilised

Power supply voltage	:	<input type="radio"/> 230V / 50 Hz	<input type="radio"/> 120V / 60Hz
		<input type="radio"/> 12 V DC	<input type="radio"/> 24 V DC
		<input checked="" type="radio"/> Other (specified in blank below)	

TX: DC 3.0V From battery

RX: DC 3.7V From battery and DC 5.0V From external circuit

2.4. Description of Test Modes and Test Frequency

The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing. There is 100 channels provided to the EUT. Channel Low, Mid, High was selected to test

Channel A	Frequency(MHz)	Channel B	Frequency(MHz)
1	660.1	1	660.5
2	660.7	2	661.1
3	661.3	3	661.7
4	661.9	4	662.3
5	662.5	5	662.9
6	663.1	6	663.5
7	663.7	7	664.1
8	664.3	8	664.7
9	664.9	9	665.3
10	665.5	10	665.9
11	666.1	11	666.5
12	666.7	12	667.1
13	667.3	13	667.7
14	667.9	14	668.3
15	668.5	15	668.9
16	669.1	16	669.5
17	669.7	17	670.1
18	670.3	18	670.7
19	670.9	19	671.3
20	671.5	20	671.9
21	672.1	21	672.5
22	672.7	22	673.1
23	673.3	23	673.7
24	673.9	24	674.3
25	674.5	25	674.9
26	675.1	26	675.5
27	675.7	27	676.1
28	676.3	28	676.7
29	676.9	29	677.3
30	677.5	30	677.9
31	678.1	31	678.5
32	678.7	32	679.1
33	679.3	33	679.7
34	679.9	34	680.3
35	680.5	35	680.9
36	681.1	36	681.5
37	681.7	37	682.1
38	682.3	38	682.7
39	682.9	39	683.3
40	683.5	40	683.9
41	684.1	41	684.5
42	684.7	42	685.1
43	685.3	43	685.7
44	685.9	44	686.3
45	686.5	45	686.9
46	687.1	46	687.5
47	687.7	47	688.1
48	688.3	48	688.7
49	688.9	49	689.3
50	689.5	50	689.9

Testing Frequency List

Channel A:

Channel	Frequency(MHz)
Low	660.10
Mid	674.50
High	689.50

Channel B:

Channel	Frequency(MHz)
Low	660.50
Mid	674.90
High	689.90

2.5. Equipments Used during the Test

3. Test Equipment	Manufacturer	Model No.	Equipment No.	Calibration Date	Calibration Due Date
LISN	R&S	ENV216	CTA-308	2024/08/03	2025/08/02
LISN	R&S	ENV216	CTA-314	2024/08/03	2025/08/02
EMI Test Receiver	R&S	ESPI	CTA-307	2024/08/03	2025/08/02
EMI Test Receiver	R&S	ESCI	CTA-306	2024/08/03	2025/08/02
Spectrum Analyzer	Agilent	N9020A	CTA-301	2024/08/03	2025/08/02
Spectrum Analyzer	R&S	FSU	CTA-337	2024/08/03	2025/08/02
Vector Signal generator	Agilent	N5182A	CTA-305	2024/08/03	2025/08/02
Analog Signal Generator	R&S	SML03	CTA-304	2024/08/03	2025/08/02
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	R&S	CTA-302	2024/08/03	2025/08/02
Temperature and humidity meter	Chigo	ZG-7020	CTA-326	2024/08/03	2025/08/02
Ultra-Broadband Antenna	Schwarzbeck	VULB9163	CTA-310	2023/10/17	2024/10/16
Horn Antenna	Schwarzbeck	BBHA 9120D	CTA-309	2023/10/13	2024/10/12
Loop Antenna	Zhinan	ZN30900C	CTA-311	2023/10/17	2024/10/16
Horn Antenna	Beijing Hangwei Dayang	OBH100400	CTA-336	2023/10/17	2024/10/16
Amplifier	Schwarzbeck	BBV 9745	CTA-312	2024/08/03	2025/08/02
Amplifier	Taiwan chengyi	EMC051845B	CTA-313	2024/08/03	2025/08/02
Directional coupler	NARDA	4226-10	CTA-303	2024/08/03	2025/08/02
High-Pass Filter	XingBo	XBLBQ-GTA18	CTA-402	2024/08/03	2025/08/02
High-Pass Filter	XingBo	XBLBQ-GTA27	CTA-403	2024/08/03	2025/08/02
Automated filter bank	Tonscend	JS0806-F	CTA-404	2024/08/03	2025/08/02
Power Sensor	Agilent	U2021XA	CTA-405	2024/08/03	2025/08/02
Amplifier	Schwarzbeck	BBV9719	CTA-406	2024/08/03	2025/08/02

Test Equipment	Manufacturer	Model No.	Version number	Calibration Date	Calibration Due Date
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EMI Test Software	Tonscend	TS@JS32-RE	5.0.0.2	N/A	N/A
EMI Test Software	Tonscend	TS@JS32-CE	5.0.0.1	N/A	N/A
RF Test Software	Tonscend	TS@JS1120-3	3.1.65	N/A	N/A
RF Test Software	Tonscend	TS@JS1120	3.1.46	N/A	N/A

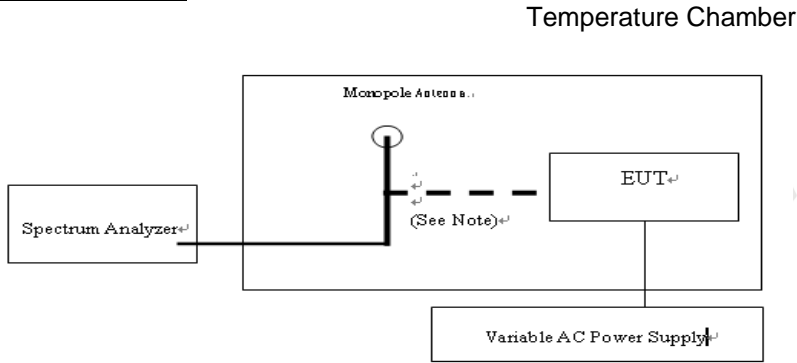
4. TEST CONDITIONS AND RESULTS

4.1. Frequency stability

LIMIT

The frequency error shall not exceed 20 parts per million for frequencies below 1 GHz, 15 parts per million between 1 GHz and 2 GHz, and 10 ppm above 2 GHz.

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 300 422-1 clause 5.1 for the test conditions.
2. Please refer to ETSI EN 300 422-1 clause 5.4.2 for the measurement method.

TEST RESULTS

Bodypack microphone:
Channel A:

Test Frequency (MHz)	Temperature (°C)	DC Power	Frequency error(KHz)	Frequency error(ppm)	Limit (ppm)	Verdict
660.10	25°C	3.00 V	2.6	3.94	20	PASS
	+45°C	3.30 V	1.4	2.12		
	-10°C	2.70 V	2.7	4.09		
	+45°C	3.30 V	1.6	2.42		
	-10°C	2.70 V	3.0	4.54		
674.50	25°C	3.00 V	3.6	5.33	20	PASS
	+45°C	3.30 V	2.6	3.85		
	-10°C	2.70 V	4.0	5.92		
	+45°C	3.30 V	2.2	3.26		
	-10°C	2.70 V	3.6	5.33		
689.50	25°C	3.00 V	3.2	4.64	20	PASS
	+45°C	3.30 V	3.0	4.35		
	-10°C	2.70 V	5.0	7.25		
	+45°C	3.30 V	3.3	4.79		
	-10°C	2.70 V	2.3	3.34		

Channel B:

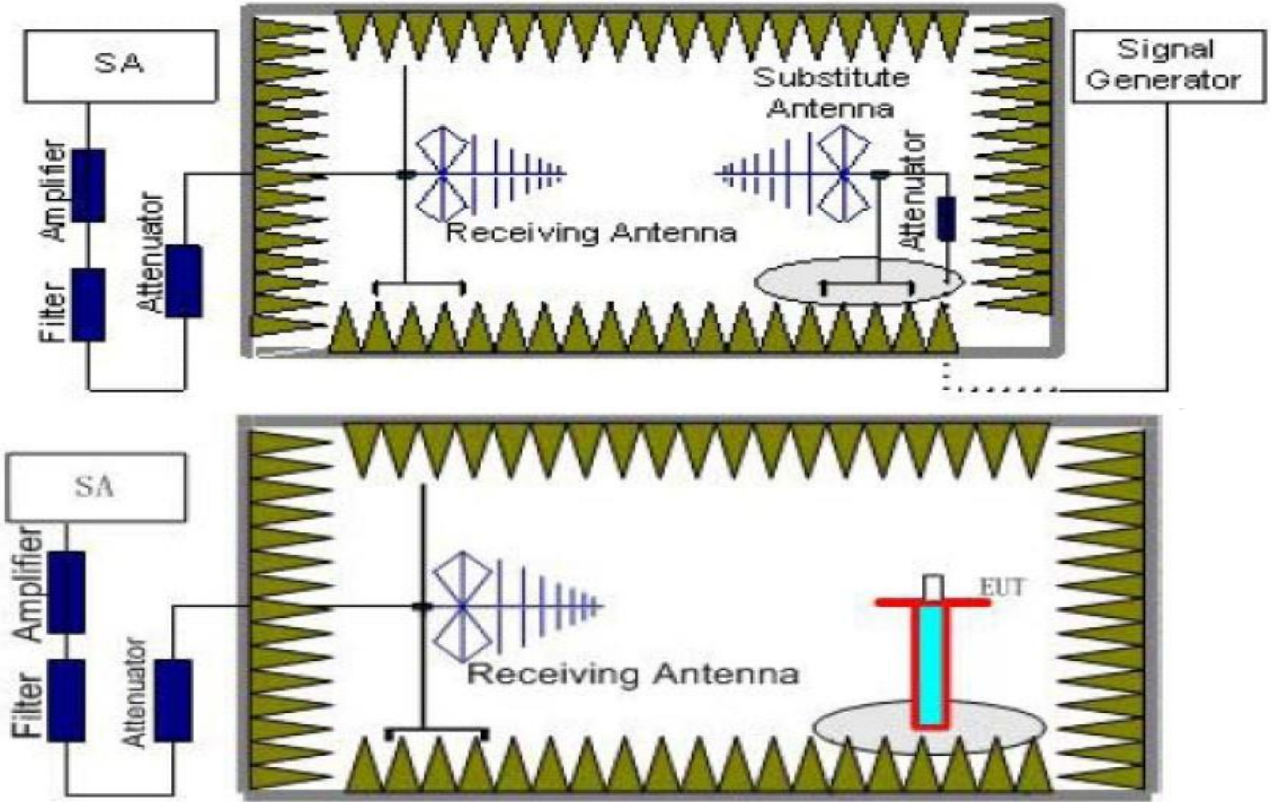
Test Frequency (MHz)	Temperature (°C)	DC Power	Frequency error(KHz)	Frequency error(ppm)	Limit (ppm)	Verdict
660.50	25°C	3.00 V	2.2	3.33	20	PASS
	+45°C	3.30 V	1.6	2.42		
	-10°C	2.70 V	2.4	3.63		
	+45°C	3.30 V	2.0	3.03		
	-10°C	2.70 V	3.3	5.00		
674.90	25°C	3.00 V	3.3	4.89	20	PASS
	+45°C	3.30 V	2.6	3.85		
	-10°C	2.70 V	4.6	6.81		
	+45°C	3.30 V	2.1	3.11		
	-10°C	2.70 V	3.7	5.48		
689.90	25°C	3.00 V	3.5	5.07	20	PASS
	+45°C	3.30 V	2.4	3.48		
	-10°C	2.70 V	4.3	6.23		
	+45°C	3.30 V	3.9	5.65		
	-10°C	2.70 V	2.3	3.33		

4.2. Rated output power

LIMIT

The measured value shall be within +20 % and -50 % of the manufacturer's declared rated output power.

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 300 422-1 clause 5.1 for the test conditions.
2. Please refer to ETSI EN 300 422-1 clause 5.4.1 for the measurement method.

TEST RESULTS

**Bodypack microphone:
Channel A:**

Channel (MHz)	Antenna Polarity	ERP (dBm)	Rated output power (dBm)	Tolerance (%)	Limit	Result
660.10	V	8.57	10.00	-14.30%	-50%~20%	Pass
	H	9.62	10.00	-3.80%		
674.50	V	9.05	10.00	-9.50%	-50%~20%	Pass
	H	9.73	10.00	-2.70%		
689.50	V	9.06	10.00	-9.40%	-50%~20%	Pass
	H	9.86	10.00	-1.40%		

Channel B:

Channel (MHz)	Antenna Polarity	ERP (dBm)	Rated output power (dBm)	Tolerance (%)	Limit	Result
660.50	V	8.44	10.00	-15.60%	-50%~20%	Pass
	H	9.76	10.00	-2.40%		
674.90	V	8.96	10.00	-10.40%	-50%~20%	Pass
	H	9.38	10.00	-6.20%		
689.90	V	8.76	10.00	-12.40%	-50%~20%	Pass
	H	9.39	10.00	-6.10%		

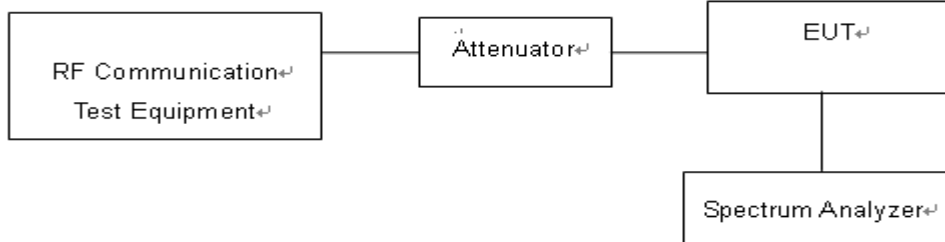
4.3. Necessary bandwidth

LIMIT

ETSI EN 300422-1 Sub-clause 4.2.3

The transmitter output spectrum shall be within the mask defined in figure 3 where B is the declared channel bandwidth

TEST CONFIGURATION



TEST PROCEDURE

1. With the Low Frequency (LF) audio signal generator set to 500 Hz, the audio input level to the EUT shall be Adjusted to 8 dB below the limiting threshold (-8dB limit) as declared by the manufacturer.
2. The corresponding audio output level from the demodulator shall be measured and recorded.
3. The input impedance of the noise meter shall be sufficiently high to avoid more than 0.1 dB changes in input level when the meter is switched between input and output.
4. The audio input level shall be increased by 20 dB, i.e. to 12 dB (lim), and the corresponding change in output level shall be measured.
5. It shall be checked that the audio output level has increased by ≤ 10 dB.
6. If the step 5 is not met, the initial audio input level shall be increased from -8 dB (lim) in 1 dB steps until the above condition is fulfilled, and the input level recorded in the test report. This level replaces the value derived from the manufacturer's declaration and is defined as -8dB (lim).
7. Measure the input level at the transmitter required to give +12 dB (lim) and record the EUT output level test plots by the spectrum analyzer.

TEST RESULTS

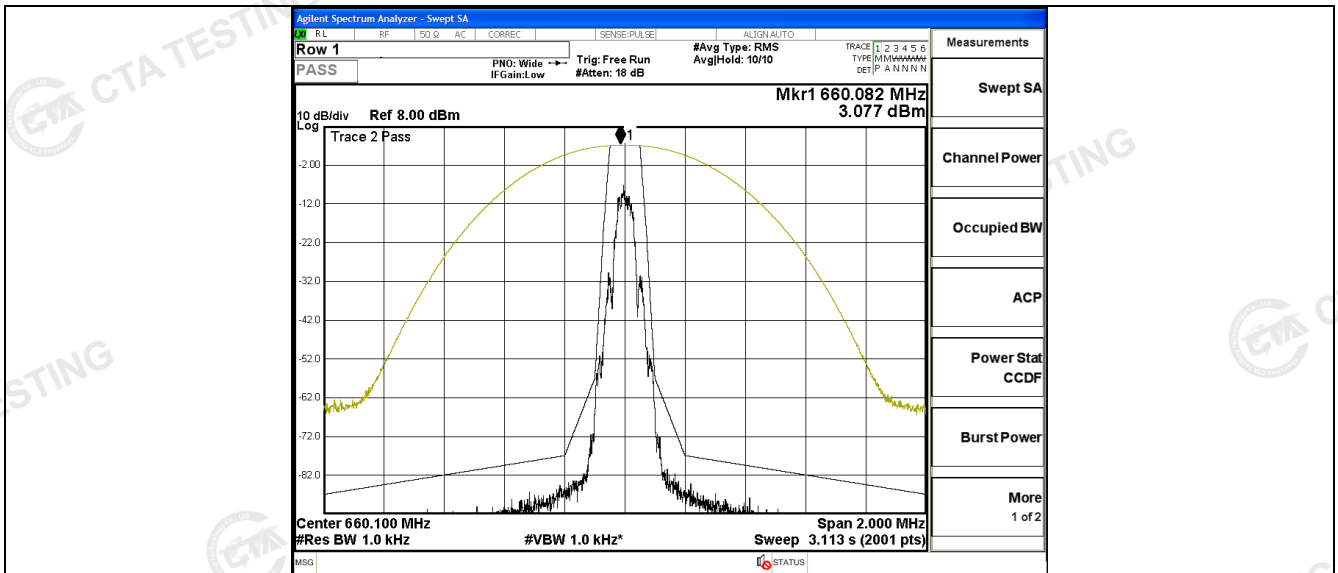
Note:

	Bandwidth(B)	B/2	0.35B
Manufacturer declare	100 KHz	50KHz	30KHz

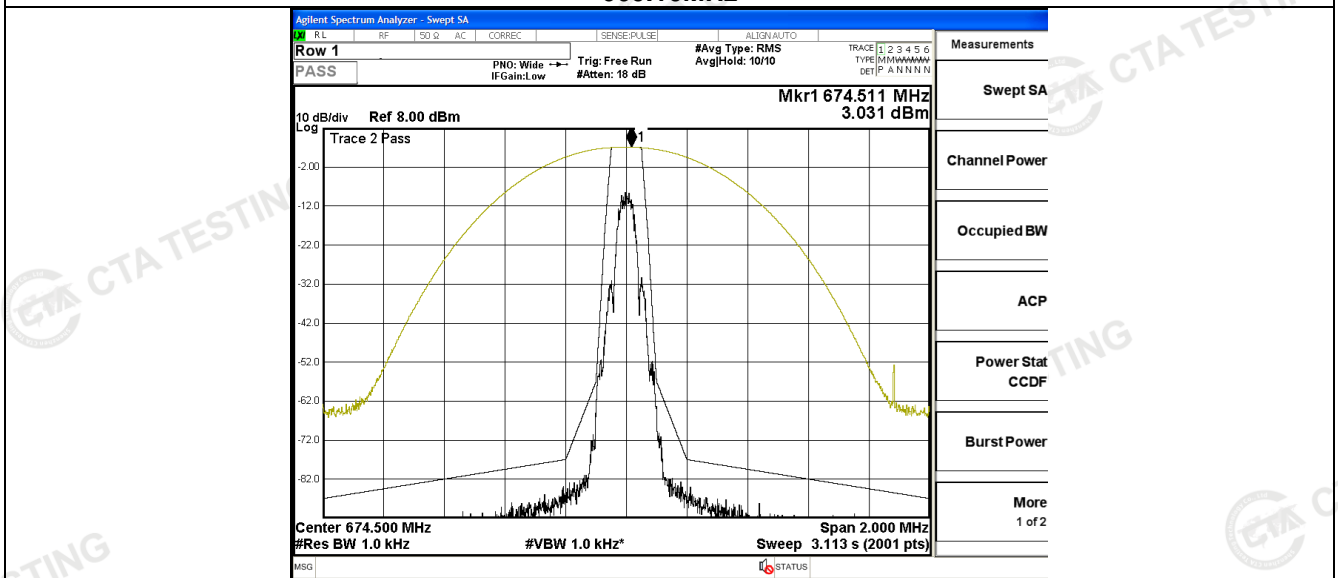
Pass

Note 1: We tested the Hand-held microphone and Bodypack microphone recorded the worst case at the Hand-held microphone.

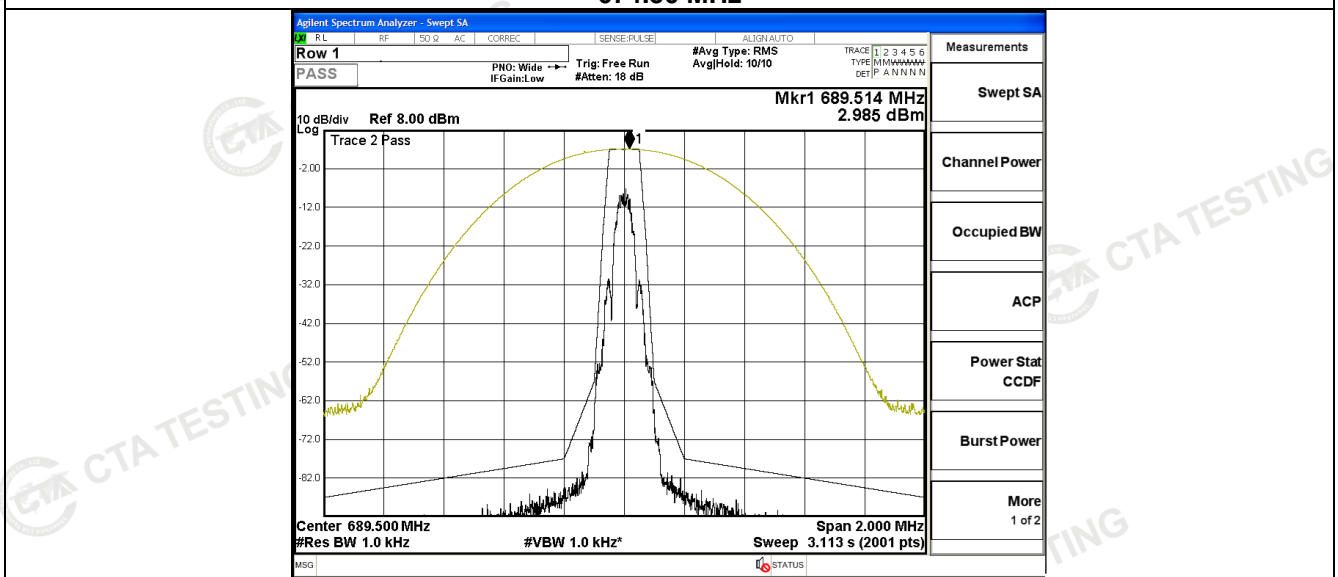
Note 2: We tested the Channel A and B and recorded the worst case at the channel A.



660.10MHz



674.50 MHz



689.50MHz

4.4. Transmitter spurious emissions

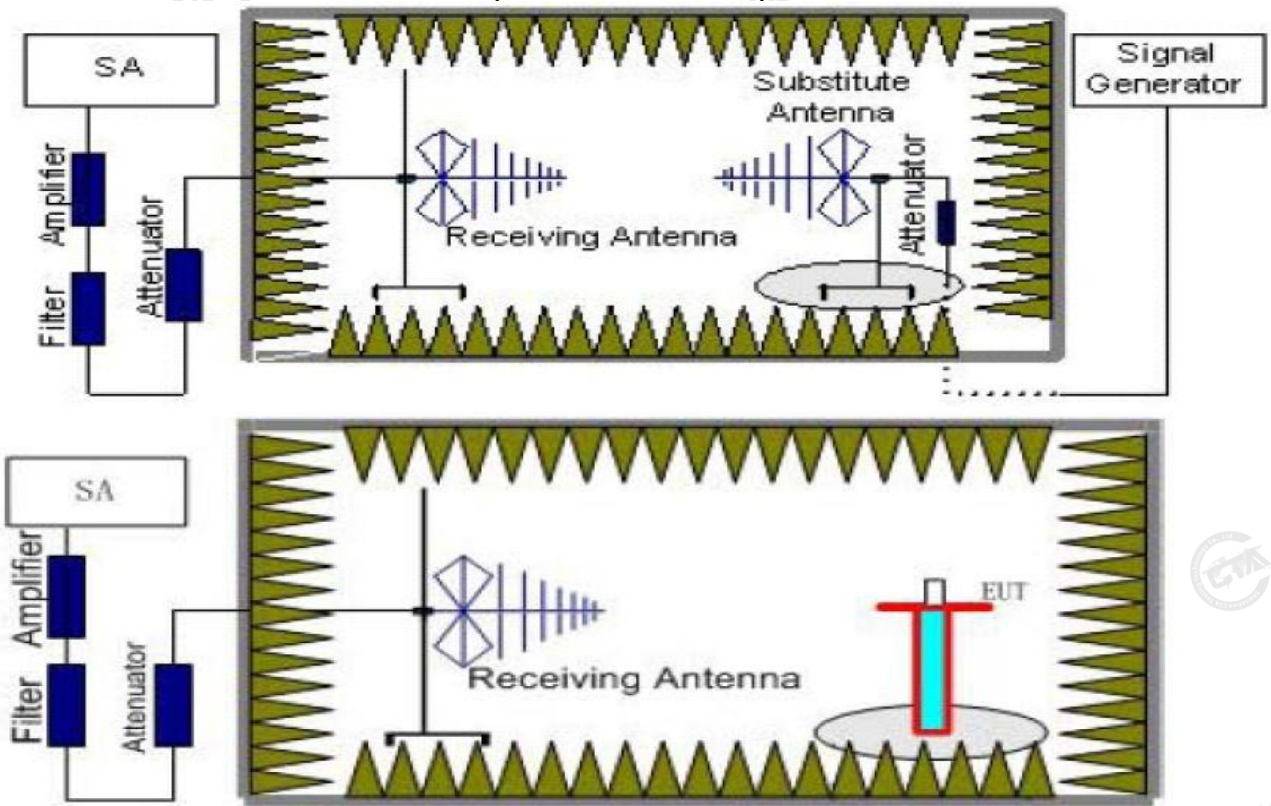
LIMIT

Spurious emissions are emissions outside the frequency range(s) of the equipment. The power of the spurious emissions shall not exceed the limits of table as below:

State	Frequency		
	47 MHz to 74 MHz 87,5 MHz to 137 MHz 174 MHz to 230 MHz 470 MHz to 862 MHz	Other Frequencies below 1 000 MHz	Frequencies above 1 000 MHz
Operation	4 nW	250 nW	1 μW
Standby	2 nW	2 nW	20 nW

TEST CONFIGURATION

Effective Radiated Power measurement (30 MHz to 12.75 GHz)



TEST PROCEDURE

1. Please refer to ETSI EN 300 422-1 clause 5.1 for the test conditions.
2. Please refer to ETSI EN 300 422-1 clause 5.4.4 for the measurement method.

TEST RESULTS

The test frequency range from 25MHz to 10GHz and recorded worst at below:

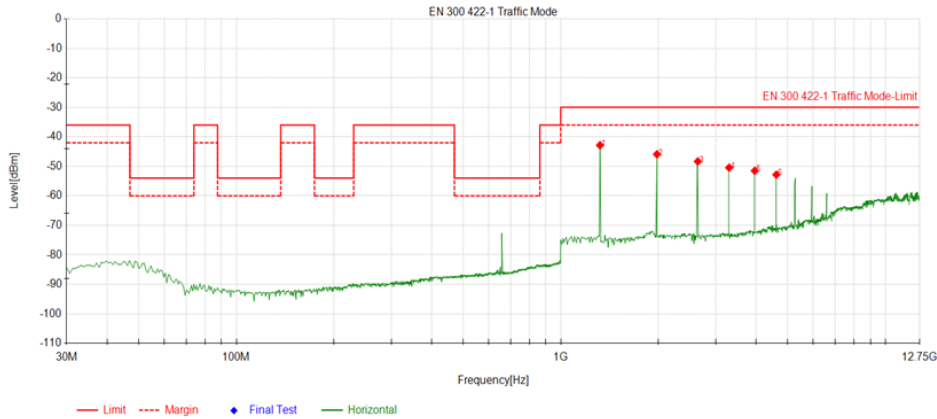
Note 1: While performing the testing, the notch filter is used for avoiding test instrument overload.

Note 2: This test was performed with EUT in X, Y, Z position and the worst case was found when EUT in X position.

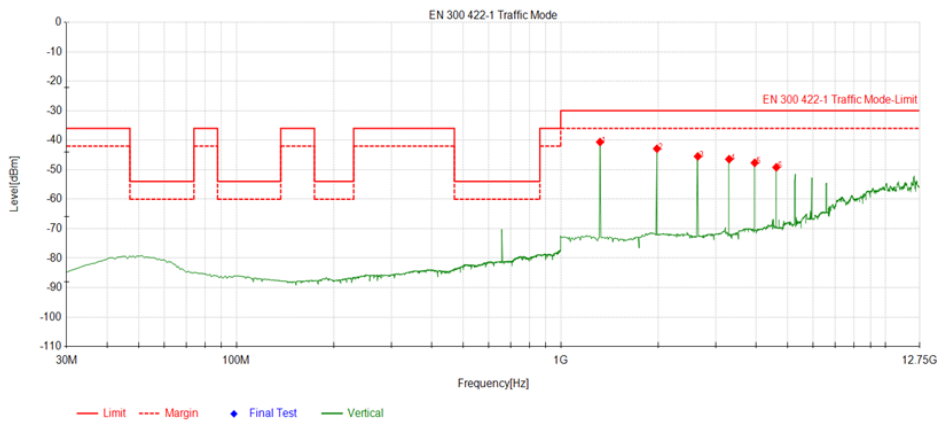
Note 3: We tested the Hand-held microphone and Bodypack microphone recorded the worst case at the Hand-held microphone.

Note 4: We tested the Channel A and B and recorded the worst case at the channel A.

Tx in operation mode lowest carrier = 660.10MHz

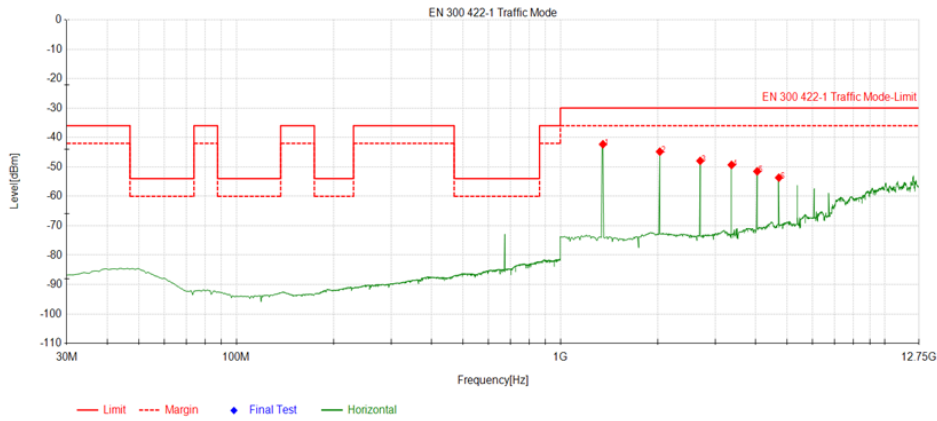


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Polarity
1	1320.2	-29.92	-42.84	-30.00	12.84	-12.92	-48.63	Horizontal
2	1990.3	-36.15	-45.91	-30.00	15.91	-9.76	-49.03	Horizontal
3	2640.4	-36.09	-48.33	-30.00	18.33	-12.24	-49.20	Horizontal
4	3300.5	-39.61	-50.45	-30.00	20.45	-10.84	-48.60	Horizontal
5	3960.6	-41.13	-51.50	-30.00	21.50	-10.37	-48.23	Horizontal
6	4620.7	-44.04	-52.83	-30.00	22.83	-8.79	-48.00	Horizontal

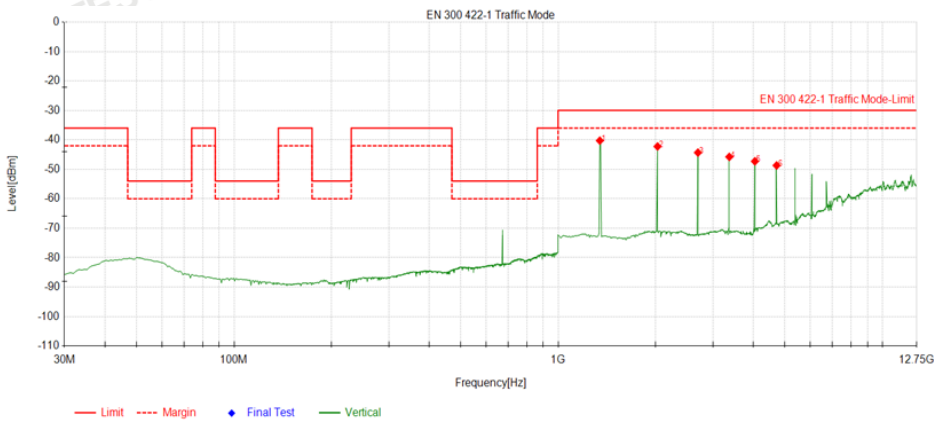


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Polarity
1	1320.2	-27.81	-40.61	-30.00	10.61	-12.80	-48.63	Vertical
2	1990.3	-31.73	-42.89	-30.00	12.89	-11.16	-49.03	Vertical
3	2640.4	-33.13	-45.49	-30.00	15.49	-12.36	-49.20	Vertical
4	3300.5	-35.32	-46.43	-30.00	16.43	-11.11	-48.60	Vertical
5	3960.6	-37.45	-47.67	-30.00	17.67	-10.22	-48.23	Vertical
6	4620.7	-39.96	-49.19	-30.00	19.19	-9.23	-48.00	Vertical

Tx in operation mode lowest carrier = 674.50MHz

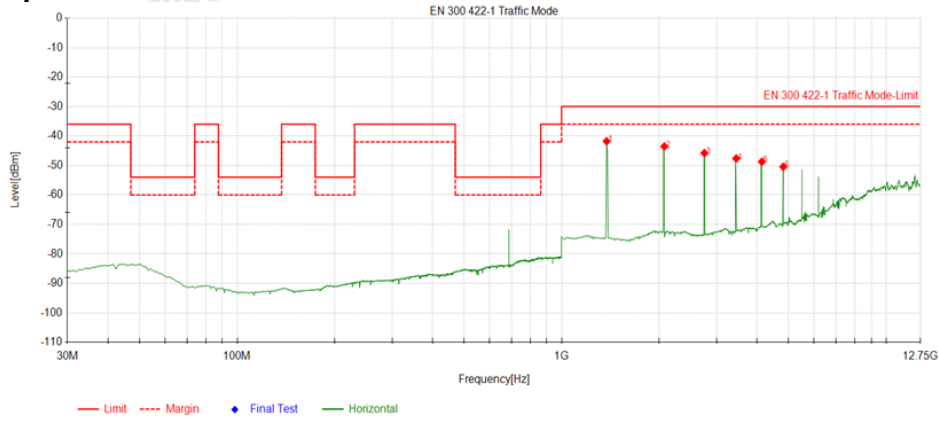


NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Polarity
1	1349	-29.56	-42.29	-30.00	12.29	-12.73	-48.43	Horizontal
2	2023.5	-33.62	-44.81	-30.00	14.81	-11.19	-49.04	Horizontal
3	2698	-35.63	-47.93	-30.00	17.93	-12.30	-49.17	Horizontal
4	3372.5	-38.12	-49.31	-30.00	19.31	-11.19	-48.51	Horizontal
5	4047	-41.56	-51.50	-30.00	21.50	-9.94	-48.16	Horizontal
6	4721.5	-45.20	-53.66	-30.00	23.66	-8.46	-47.55	Horizontal

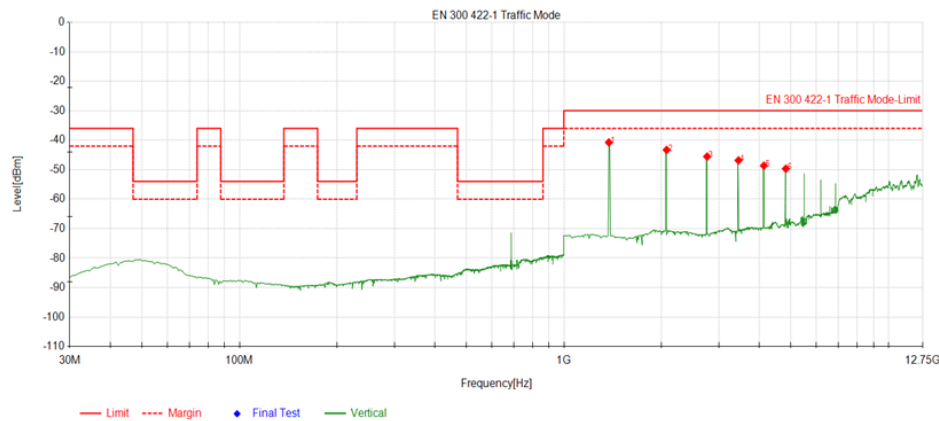


NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Polarity
1	1349	-27.49	-40.24	-30.00	10.24	-12.75	-48.48	Vertical
2	2023.5	-31.03	-42.22	-30.00	12.22	-11.19	-49.04	Vertical
3	2698	-32.01	-44.31	-30.00	14.31	-12.30	-49.17	Vertical
4	3372.5	-34.58	-45.77	-30.00	15.77	-11.19	-48.51	Vertical
5	4047	-37.33	-47.27	-30.00	17.27	-9.94	-48.16	Vertical
6	4721.5	-40.21	-48.67	-30.00	18.67	-8.46	-47.55	Vertical

Tx in operation mode lowest carrier = 689.50MHz



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Polarity
1	1379	-29.09	-41.76	-30.00	11.76	-12.67	-48.28	Horizontal
2	2068.5	-32.48	-43.54	-30.00	13.54	-11.06	-48.67	Horizontal
3	2758	-33.62	-45.79	-30.00	15.79	-12.17	-49.25	Horizontal
4	3447.5	-36.72	-47.63	-30.00	17.63	-10.91	-48.48	Horizontal
5	4137	-39.25	-48.72	-30.00	18.72	-9.47	-48.02	Horizontal
6	4826.5	-41.96	-50.44	-30.00	20.44	-8.48	-47.59	Horizontal



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Polarity
1	1379	-28.07	-40.74	-30.00	10.74	-12.67	-48.28	Vertical
2	2068.5	-32.22	-43.28	-30.00	13.28	-11.06	-48.67	Vertical
3	2758	-33.40	-45.55	-30.00	15.55	-12.15	-49.26	Vertical
4	3447.5	-35.93	-46.84	-30.00	16.84	-10.91	-48.48	Vertical
5	4137	-39.18	-48.64	-30.00	18.64	-9.46	-48.02	Vertical
6	4826.5	-41.23	-49.67	-30.00	19.67	-8.44	-47.59	Vertical

Remark:

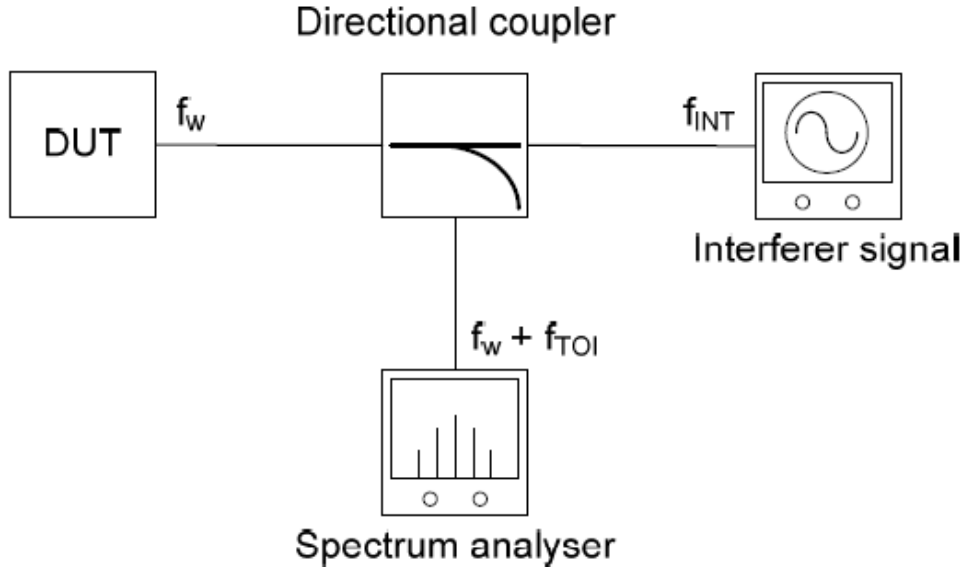
- The test frequency range from 25MHz to 10GHz, RBW/VBW: 100 KHz/300KHz below 1GHz, RBW/VBW: 1000 KHz/3000KHz above 1GHz.
 "--Other emission levels were very low against the limit and not reported.
- All modes were tested, only recorded the worst case data in the test report.

4.5. Transmitter intermodulation distortion

LIMIT

The maximum resulting IMD product shall be at least 40 dB below the output power of the DUT.

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 300 422-1 clause 5.1 for the test conditions.
2. Please refer to ETSI EN 300 422-1 clause 5.4.5 for the measurement method.

TEST RESULTS

**Bodypack microphone:
Channel A**

Test frequency (MHz)	Maximum Tx-IMD (dBc)	LIMIT (dBc)	Result
660.10	45	40	Pass
674.50	49	40	Pass
689.50	44	40	Pass

Channel B

Test frequency (MHz)	Maximum Tx-IMD (dBc)	LIMIT (dBc)	Result
660.50	43	40	Pass
674.90	47	40	Pass
689.90	43	40	Pass

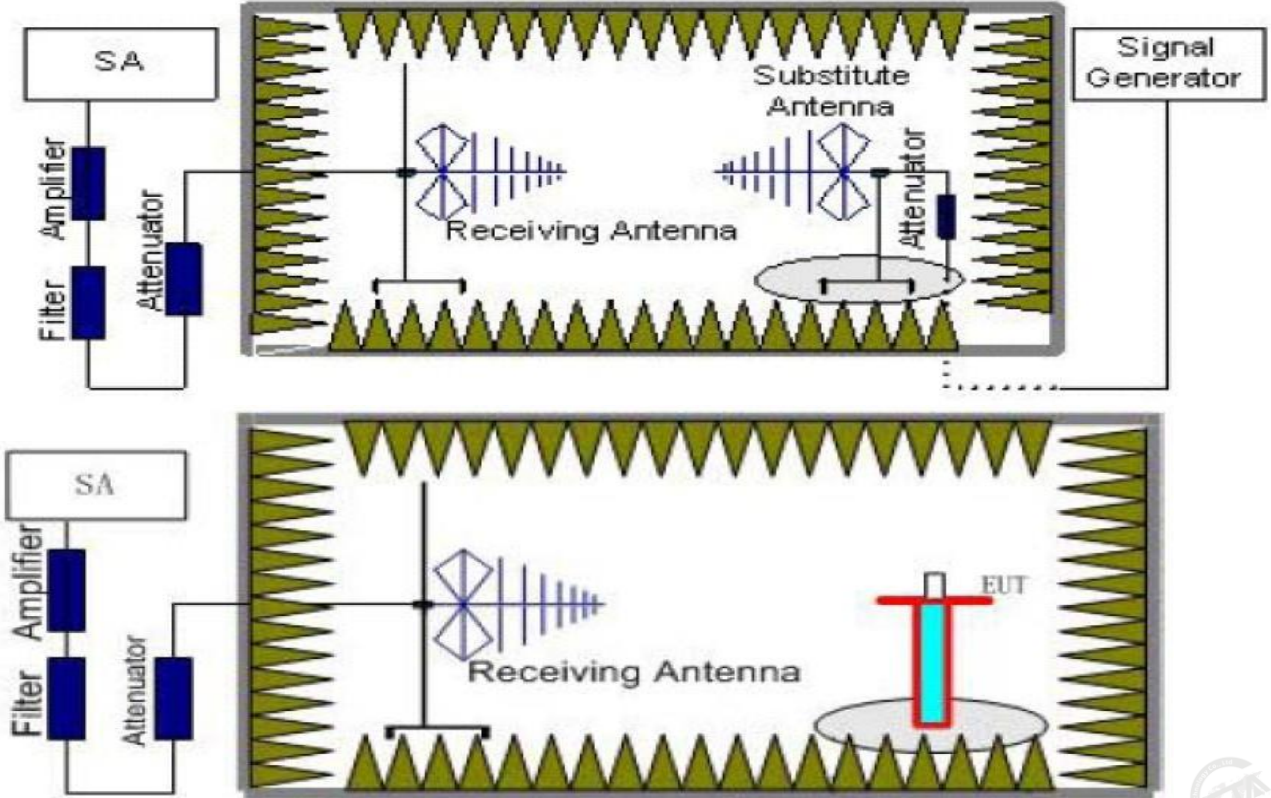
4.6. Receiver spurious emissions

LIMIT

The power of the spurious emissions shall not exceed the limits of table as below:

Frequency range	Level
30 MHz to 1 GHz	-57 dBm
1 GHz to 12.75GHz	-47 dBm

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 300 422-1 clause 5.1 for the test conditions.
2. Please refer to ETSI EN 300 422-1 clause 5.5.4 for the measurement method.

TEST RESULTS

The test frequency range from 25MHz to 10GHz and recorded worst at below:

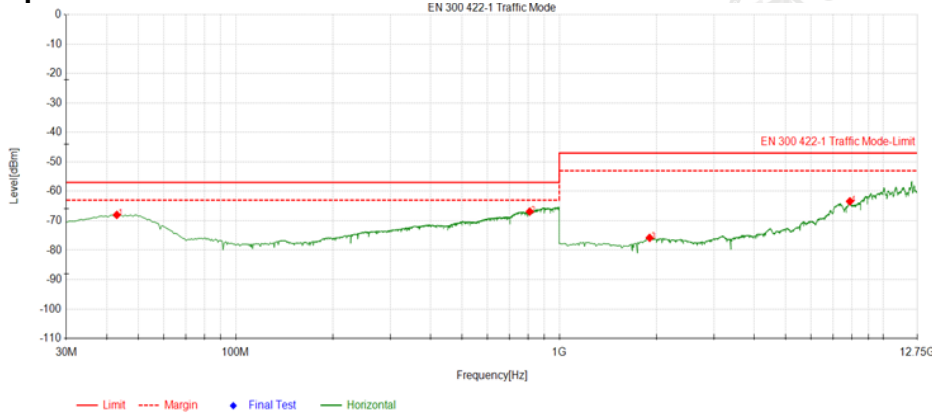
Note 1: While performing the testing, the notch filter is used for avoiding test instrument overload.

Note 2: This test was performed with EUT in X, Y, Z position and the worst case was found when EUT in X position.

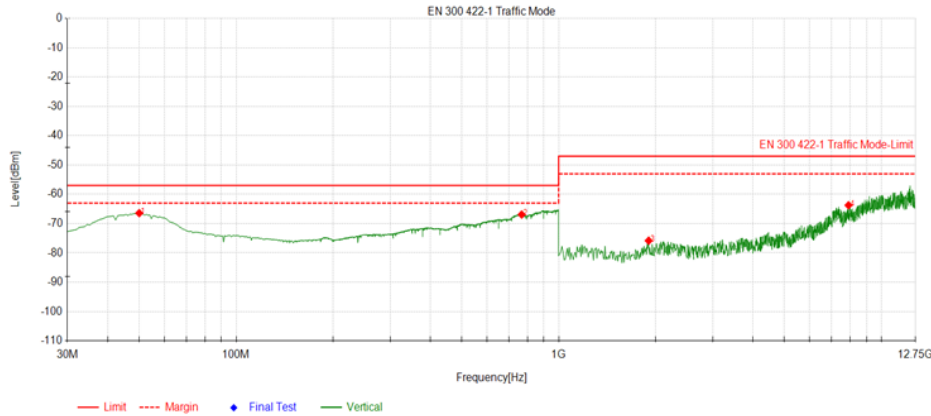
Note 3: We tested the Channel A and B and recorded the worst case at the channel A.

The test frequency range from 25MHz to 10 GHz and recorded worst at below:

Rx in operation mode lowest carrier = 660.10MHz

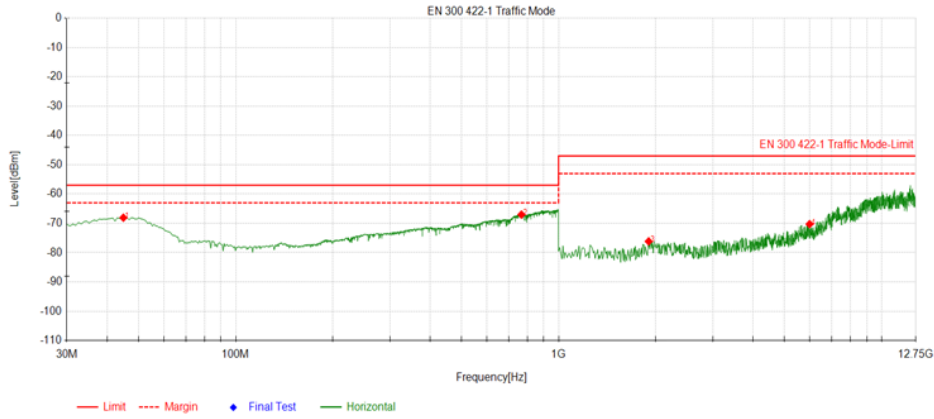


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Polarity
1	42.9333	-65.01	-68.01	-57.00	11.01	-3.00	-30.61	Horizontal
2	809.88	-65.03	-66.89	-57.00	9.89	-1.86	-30.32	Horizontal
3	1900.833	-65.05	-75.81	-47.00	28.81	-10.76	-48.22	Horizontal
4	7901.166	-65.08	-63.42	-47.00	16.42	1.66	-43.86	Horizontal

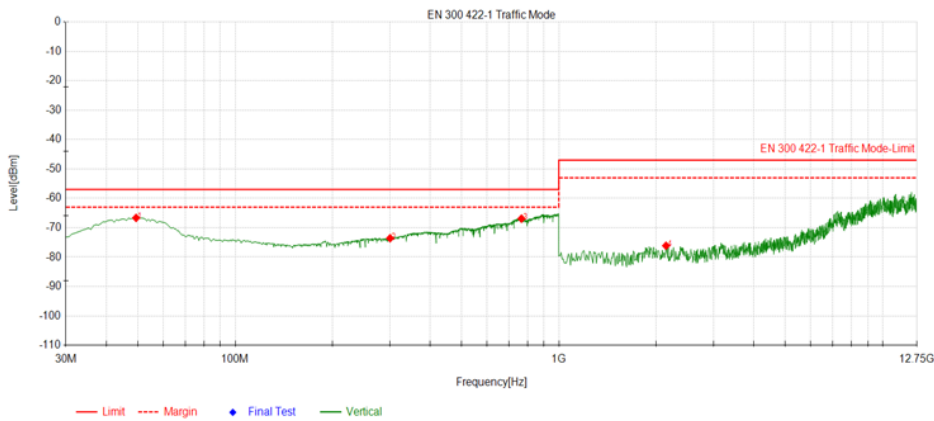


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Polarity
1	50.0467	-65.04	-66.43	-57.00	9.43	-1.39	-30.42	Vertical
2	767.8467	-65.02	-66.92	-57.00	9.92	-1.90	-30.41	Vertical
3	1900.833	-65.07	-75.83	-47.00	28.83	-10.76	-48.22	Vertical
4	7916.833	-65.21	-63.75	-47.00	16.75	1.46	-43.80	Vertical

Rx in operation mode lowest carrier = 674.50MHz

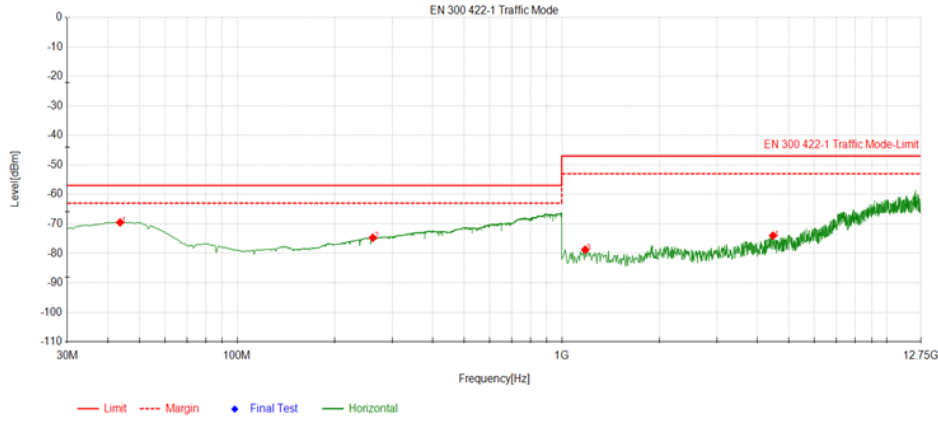


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Polarity
1	44.8733	-65.08	-68.08	-57.00	11.08	-3.00	-30.56	Horizontal
2	767.2	-65.03	-67.01	-57.00	10.01	-1.98	-30.42	Horizontal
3	1900.833	-65.39	-76.15	-47.00	29.15	-10.76	-48.22	Horizontal
4	5989.833	-65.04	-70.28	-47.00	23.28	-5.24	-46.53	Horizontal

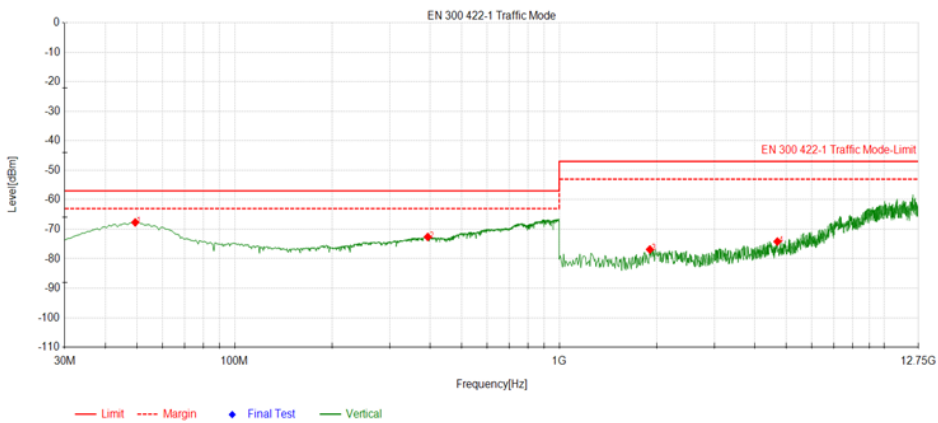


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Polarity
1	49.4	-65.21	-66.66	-57.00	9.66	-1.45	-30.44	Vertical
2	300.9533	-65.03	-73.58	-57.00	16.58	-8.55	-30.37	Vertical
3	766.5533	-65.01	-66.91	-57.00	9.91	-1.90	-30.43	Vertical
4	2143.666	-65.01	-76.14	-47.00	29.14	-11.13	-48.84	Vertical

Rx in operation mode lowest carrier = 689.50MHz



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Polarity
1	43.58	-66.52	-69.52	-57.00	12.52	-3.00	-30.59	Horizontal
2	261.5067	-66.03	-74.71	-57.00	17.71	-8.68	-30.40	Horizontal
3	1180.166	-66.53	-78.77	-47.00	31.77	-12.24	-48.64	Horizontal
4	4470.166	-66.30	-74.04	-47.00	27.04	-7.74	-47.57	Horizontal



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Path [dB]	Polarity
1	49.4	-66.23	-67.68	-57.00	10.68	-1.45	-30.44	Vertical
2	393.4267	-66.22	-72.61	-57.00	15.61	-6.39	-30.49	Vertical
3	1900.833	-66.09	-76.85	-47.00	29.85	-10.76	-48.22	Vertical
4	4697.333	-65.71	-74.17	-47.00	27.17	-8.46	-47.56	Vertical

Remark:

- The test frequency range from 25MHz to 10GHz, RBW/VBW: 100 KHz/300KHz below 1GHz, RBW/VBW: 1000 KHz/3000KHz above 1GHz.
- “--“Other emission levels were very low against the limit and not reported.

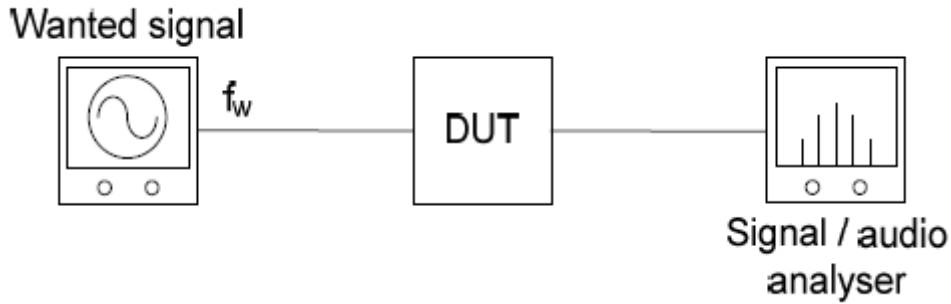
4.7. Receiver sensitivity

LIMIT

Receiver sensitivity shall be classified according to the limits as below:

Receiver category	Limits
A	$R_{Xsensitivity} \leq -90 \text{ dBm}$
B	$-90 \text{ dBm} < R_{Xsensitivity} \leq -70 \text{ dBm}$
C	$-70 \text{ dBm} < R_{Xsensitivity} \leq -50 \text{ dBm}$

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 300 422-1 clause 5.1 for the test conditions.
2. Please refer to ETSI EN 300 422-1 clause 5.5.1 for the measurement method.

TEST RESULTS

Channel A:

Test frequency (MHz)	Measurement Receiver sensitivity (dBm)	Limit	Test result
660.10	-104	$R_{Xsensitivity} \leq -90 \text{ dBm}$	PASS
674.50	-109		PASS
689.50	-101		PASS

Channel B:

Test frequency (MHz)	Measurement Receiver sensitivity (dBm)	Limit	Test result
660.50	-110	$R_{Xsensitivity} \leq -90 \text{ dBm}$	PASS
674.90	-101		PASS
689.90	-107		PASS

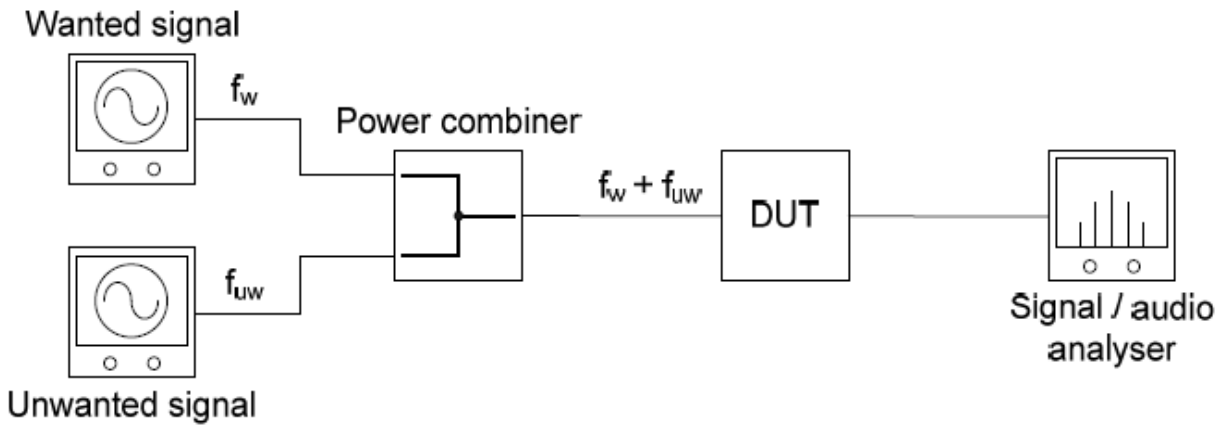
4.8. Receiver adjacent channel selectivity

LIMIT

Receiver adjacent channel selectivity shall be classified according to the limits as below:

Receiver category	Limits
A	30 dB
B	See ETSI EN 300 422-2 [i.20]
C	See ETSI EN 300 422-3 [i.21]

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 300 422-1 clause 5.1 for the test conditions.
2. Please refer to ETSI EN 300 422-1 clause 5.5.2 for the measurement method.

TEST RESULTS

Channel A:

Test frequency (MHz)	Wanted signal (dBm)	Measurement Unwanted signal (dBm)		The Ratio of Unwanted signal to Wanted signal (dB)		Limit	Test result
		Lower adjacent channel	Upper adjacent channel	Lower adjacent channel	Upper adjacent channel		
660.10	-97	-55	-57	42	40	30 dB	PASS
674.50	-97	-55	-52	42	45	30 dB	PASS
689.50	-97	-52	-53	45	44	30 dB	PASS

Channel B:

Test frequency (MHz)	Wanted signal (dBm)	Measurement Unwanted signal (dBm)		The Ratio of Unwanted signal to Wanted signal (dB)		Limit	Test result
		Lower adjacent channel	Upper adjacent channel	Lower adjacent channel	Upper adjacent channel		
660.50	-97	-53	-57	44	40	30 dB	PASS
674.90	-97	-56	-52	41	45	30 dB	PASS
689.90	-97	-52	-57	45	40	30 dB	PASS

Note: Test wanted signal is set to 3 dB above RX_{sensitivity}.

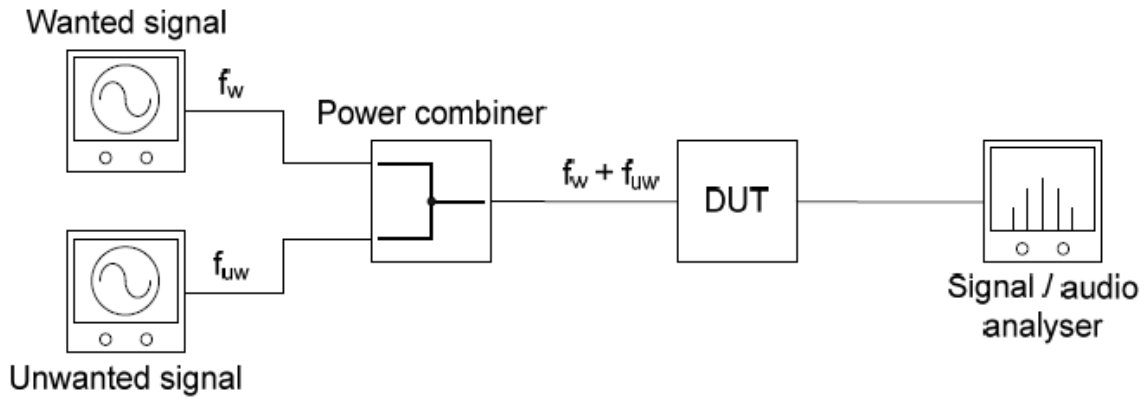
4.9. Receiver blocking

LIMIT

Receiver blocking shall be classified according to the limits as below:

Receiver category	Limits
A	40 dB
B	See ETSI EN 300 422-2 [i.20]
C	See ETSI EN 300 422-3 [i.21]

TEST CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 300 422-1 clause 5.1 for the test conditions.
2. Please refer to ETSI EN 300 422-1 clause 5.5.3 for the measurement method.

TEST RESULTS

Channel A:

Test Frequency (MHz)	Frequency Offset	Wanted signal (dBm)	Measurement Unwanted signal (dBm)	The Ratio of Unwanted signal to Wanted signal (dB)	Limit (dB)	Result
660.10	25 × B	-97	-41	56	40	PASS
	10 × B	-97	-47	50	40	PASS
	5 × B	-97	-40	57	40	PASS
	3 × B	-97	-40	57	40	PASS
	3 × B	-97	-48	49	40	PASS
	5 × B	-97	-49	48	40	PASS
	10 × B	-97	-41	56	40	PASS
25 × B	-97	-43	54	40	PASS	

Test Frequency (MHz)	Frequency Offset	Wanted signal (dBm)	Measurement Unwanted signal (dBm)	The Ratio of Unwanted signal to Wanted signal (dB)	Limit (dB)	Result
674.50	25 × B	-97	-42	55	40	PASS
	10 × B	-97	-48	49	40	PASS
	5 × B	-97	-45	52	40	PASS
	3 × B	-97	-45	52	40	PASS
	3 × B	-97	-50	47	40	PASS
	5 × B	-97	-49	48	40	PASS
	10 × B	-97	-46	51	40	PASS
25 × B	-97	-45	52	40	PASS	

Test Frequency (MHz)	Frequency Offset	Wanted signal (dBm)	Measurement Unwanted signal (dBm)	The Ratio of Unwanted signal to Wanted signal (dB)	Limit (dB)	Result
689.50	25 × B	-97	-40	57	40	PASS
	10 × B	-97	-41	56	40	PASS
	5 × B	-97	-45	52	40	PASS
	3 × B	-97	-43	54	40	PASS
	3 × B	-97	-49	48	40	PASS
	5 × B	-97	-43	54	40	PASS
	10 × B	-97	-43	54	40	PASS
	25 × B	-97	-49	48	40	PASS

Channel B:

Test Frequency (MHz)	Frequency Offset	Wanted signal (dBm)	Measurement Unwanted signal (dBm)	The Ratio of Unwanted signal to Wanted signal (dB)	Limit (dB)	Result
660.50	25 × B	-97	-43	54	40	PASS
	10 × B	-97	-43	54	40	PASS
	5 × B	-97	-41	56	40	PASS
	3 × B	-97	-42	55	40	PASS
	3 × B	-97	-43	54	40	PASS
	5 × B	-97	-42	55	40	PASS
	10 × B	-97	-44	53	40	PASS
	25 × B	-97	-40	57	40	PASS

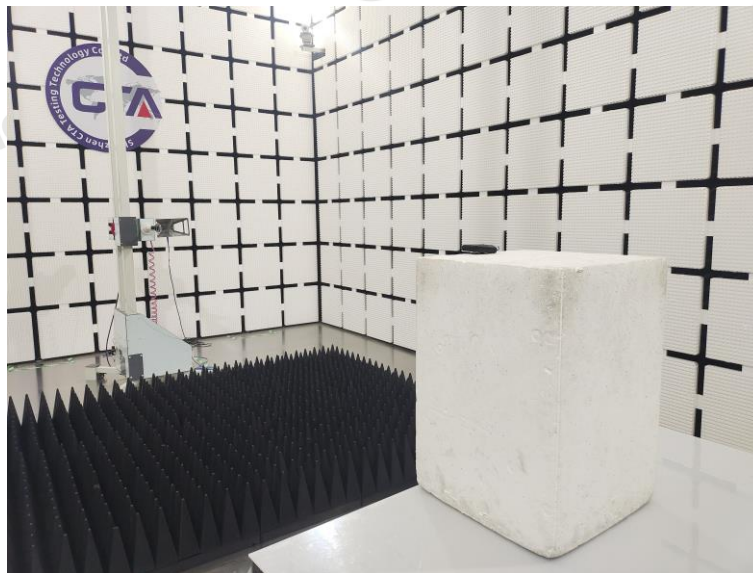
Test Frequency (MHz)	Frequency Offset	Wanted signal (dBm)	Measurement Unwanted signal (dBm)	The Ratio of Unwanted signal to Wanted signal (dB)	Limit (dB)	Result
674.90	25 × B	-97	-48	49	40	PASS
	10 × B	-97	-48	49	40	PASS
	5 × B	-97	-49	48	40	PASS
	3 × B	-97	-48	49	40	PASS
	3 × B	-97	-47	50	40	PASS
	5 × B	-97	-49	48	40	PASS
	10 × B	-97	-43	54	40	PASS
	25 × B	-97	-41	56	40	PASS
Test Frequency (MHz)	Frequency Offset	Wanted signal (dBm)	Measurement Unwanted signal (dBm)	The Ratio of Unwanted signal to Wanted signal (dB)	Limit (dB)	Result
689.90	25 × B	-97	-47	50	40	PASS
	10 × B	-97	-42	55	40	PASS
	5 × B	-97	-46	51	40	PASS
	3 × B	-97	-46	51	40	PASS
	3 × B	-97	-43	54	40	PASS
	5 × B	-97	-46	51	40	PASS
	10 × B	-97	-48	49	40	PASS
	25 × B	-97	-48	49	40	PASS

Note:

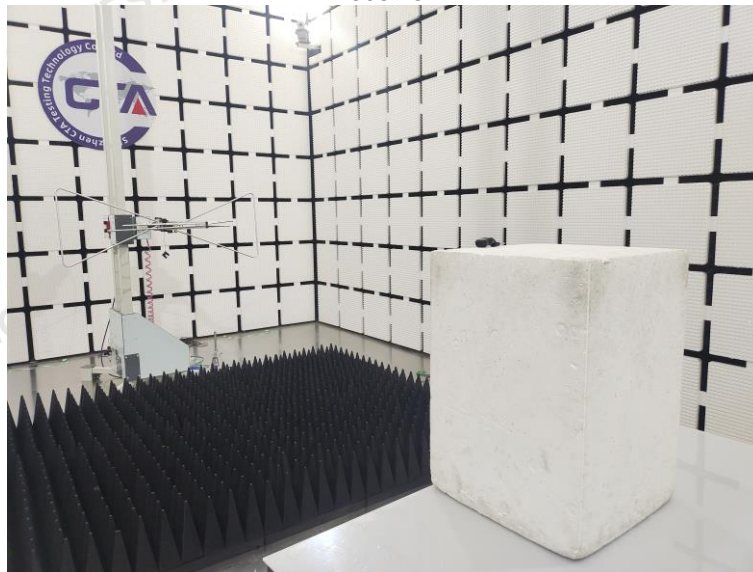
1. Test wanted signal is set to 3 dB above $RX_{sensitivity}$.
2. Where B is the channel Bandwidth Declared by the manufacturer.

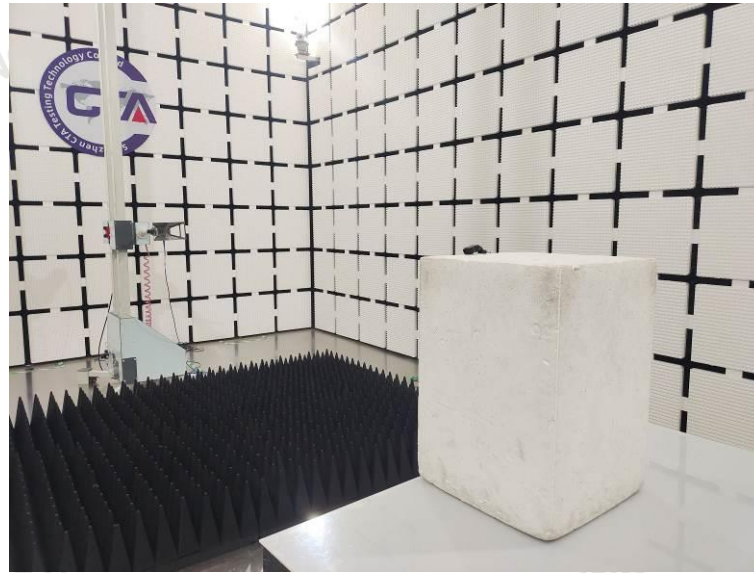
5. Test Setup Photos of the EUT

Bodypack microphone



Receiver:





6. External and Internal Photos of the EUT

Reference to the test report No. CTA24082301202

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