RF Test Report

Report No.: AGC08009201201EE04A

PRODUCT DESIGNATION	:	BLUETOOTH SPEAKER
BRAND NAME	:	N/A
MODEL NAME	:	MO9609
APPLACANT	:	Mid Ocean Brands B.V.
DATE OF ISSUE	:	Dec. 25, 2020
STANDARD(S)	:	ETSI EN 300 328 V2.2.2 (2019-07)
REPORT VERSION	:	V1.0

***A**ttestation of **G**lobal Compliance (Shenzhen) Co., Ltd*

REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Dec. 25, 2020	Valid	Re-certification Report

Note:

The original test report Ref. No. AGC08009201201EE04 dated on Dec. 17, 2020 was modified on Dec. 25, 2020 to include the following changes:

-Changed the model name;

-Changed the appearance of the product material;

-Updated the EUT photo;

Retest all EMC test item.

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1. TEST RESULT CERTIFICATION

Applicant	Mid Ocean Brands B.V.
Address	7/F., King Tower, 111 King Lam Street, Cheung ShaWan, Kowloon, HongKong.
manufacturer	Mid Ocean Brands B.V.
Address	7/F., King Tower, 111 King Lam Street, Cheung ShaWan, Kowloon, HongKong.
Factory	Mid Ocean Brands B.V.
Address	7/F., King Tower, 111 King Lam Street, Cheung ShaWan, Kowloon, HongKong.
Product Designation	BLUETOOTH SPEAKER
Brand Name	N/A
Test Model	MO9609
Date of test	Dec. 08, 2020 to Dec. 25, 2020
Deviation	None
Condition of Test Sample	Normal
Test Result	Pass
Report Template	AGCRT-EC-BR/RF

We (AGC), Attestation of Global Compliance (Shenzhen) Co., Ltd. for compliance with the requirements set forth in the European Standard ETSI EN 300 328 V2.2.2. The results of test in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Prepared By	Thea Huang Project Engineer	Dec. 25, 2020
Reviewed By	Max Zhang Reviewer	Dec. 25, 2020
Approved By	Forrest Lei Authorized Officer	Dec. 25, 2020

2. TECHNICAL INFORMATION

2.1. EUT DESCRIPTION

Operating Frequency Range(s)	2402MHz~2480MHz
The type of the equipment	FHSS adaptive equipment with only one antenna
Modulation	☒GFSK , ☒π /4-DQPSK, ☐8DPSK
Bluetooth Version	V5.1
The number of Hopping Frequencies	79
Nominal Channel Bandwidth	1MHz
The maximum RF Output Power	3.43dBm
Hardware Version	V1.2
Software Version	V5.1
Antenna Type	Integral Antenna
Antenna gain	3dBi
Power Supply	DC 3.7V by battery or DC 5V by adapter
The extreme operating conditions	Operating temperature range: -10°C~45°C
Geo-location capability	☐Yes ☒No

Note:

1. The above information was declared by the manufacturer.
2. The equipment submitted representative production models.
3. The EUT cannot operated unmodulated.
4. The EUT provides Bluetooth wireless interface operating at 2.4G ISM band (2402MHz-2480MHz).
5. Only the Bluetooth was tested according the standard requirement.
6. The EUT is a stand-alone and portable equipment according to ETSI EN 300 328 V2.2.2.
7. For more details, please refer to the User's manual of the EUT.
8. The EUT doesn't support 8DPSK and BLE.

2.2. SUPPORT EQUIPMENT

Item	Equipment	Mfr/Brand	Model/Type No.	Remark
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2.3. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	Low channel TX
2	Middle channel TX
3	High channel TX
4	Normal Hopping
5	Low channel (Receiver Mode)
6	Middle channel (Receiver Mode)
7	High channel (Receiver Mode)

Note:
1. All the transmit mode would tested with each modulation (GFSK, π /4-DQPSK).
2. All modes have been tested and the worst mode test data recording in the test report, if no any other data.

2.4. OBJECTIVE

Perform Radio Spectrum tests for CE Marking according to the provisions of article 3.2 of the Radio Equipment Directive (2014/53/EU) for the BT function of the EUT.

2.5. TEST ITEMS AND THE RESULTS

The EUT has been tested according to ETSI EN 300 328 V2.2.2(2019-07).

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

Test items and the results are as bellow:

№	Basic Standard	Test Type	Test Mode	Result
1	ETSI EN 300 328 4.3.1.2	RF Output Power	Mode 4	Pass
2	ETSI EN 300 328 4.3.1.3	Duty Cycle,Tx-sequence,Tx-gap	N/A	N/A
3	ETSI EN 300 328 4.3.1.4	Accumulated transmit time, Frequency Occupation and hopping sequence	Mode 4	Pass
4	ETSI EN 300 328 4.3.1.5	Hopping Frequency Separation	Mode 4	Pass
5	ETSI EN 300 328 4.3.1.6	Medium Utilisation	N/A	N/A
6	ETSI EN 300 328 4.3.1.7	Adaptivity (Adaptive Frequency Hopping)	N/A	N/A
7	ETSI EN 300 328 4.3.1.8	Occupied Channel Bandwidth	Mode 1,3	Pass
8	ETSI EN 300 328 4.3.1.9	Transmitter unwanted emission in the out of band domain	Mode 1,3	Pass
9	ETSI EN 300 328 4.3.1.10	Transmitter unwanted emission in the Spurious domain	Mode 1,3	Pass
10	ETSI EN 300 328 4.3.1.11	Receiver Spurious emissions	Mode 5,7	Pass
11	ETSI EN 300 328 4.3.1.12	Receiver Blocking	Mode 4	Pass

Note:

1. N/A means it's not applicable to this item.
2. Owing to the maximum declared RF Output power (e.i.r.p.) less than 10 dBm, so the item 2, 5, 6 are not applicable.

2.6. ENVIRONMENTAL CONDITIONS

- Temperature: 15-35ºC
- Relative Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

3. MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in Measurement” (GUM) published by ISO.

-Uncertainty of Radio Frequency, Uc=±1 x 10-7

- Uncertainty of total RF power, conducted, Uc = ±0.8dB
- Uncertainty of RF power density, conducted, Uc = ±2.6dB
- Uncertainty of spurious emissions, conducted, Uc = ±2.7dB
- Uncertainty of spurious emissions, radiated, Uc = ±5.4dB
- Uncertainty of Temperature: ±0.5° C
- Uncertainty of Humidity: ±1 %
- Uncertainty of DC and low frequency voltages: ±2%

4. IDENTIFICATION OF THE RESPONSIBLE TESTING LOCATION

Site	Attestation of Global Compliance(Shenzhen) Co., Ltd.
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

LIST OF EQUIPMENTS USED

Description	Manufacturer	Model No.	S/N	Cal. Date	Cal. Due
MXG X-Series Vector Signal Generator	Agilent	N5182B	MY53050647	Aug. 21,2020	Aug. 20,2021
Signal Generator	Agilent	N5171B	MY53050474	Aug. 21,2020	Aug. 20,2021
EXA Signal Analyzer	Agilent	N9020A	MY49100060	Aug. 21,2020	Aug. 20,2021
USB Wideband Power Sensor	Agilent	U2021XA	MY54110007	Jun. 08,2020	Jun. 07,2021
USB Wideband Power Sensor	Agilent	U2021XA	MY54110009	Jun. 08,2020	Jun. 07,2021
RF Communication Tester	R&S	CMW270	101933	Aug. 21,2020	Aug. 20,2021
Attenuator	Wariors	W13	11324	N/A	N/A
Power spliter	Mini-Circuits	ZFRSC-183-s	3122	N/A	N/A
2.4G Band Fliter	EM Electronics	2400-2500	N/A	Mar. 23, 2020	Mar. 22, 2022
Small environment tester	ESPEC	SH-242	N/A	Sep. 03, 2020	Sep. 02, 2022
AMPLIFIER	ETS-LINDGREN	3117PA	00225134	Sep. 03, 2020	Sep. 02, 2022
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 09, 2019	Jan. 08, 2021
ANTENNA	ETS-LINDGREN	3142C	00060447	May 17, 2019	May 16, 2021
HORN ANTENNA	ETS-LINDGREN	3117	00154520	Oct. 26, 2019	Oct. 25, 2021
HORN ANTENNA	ETS-LINDGREN	3117	00034609	May 17, 2019	May 16, 2021
RF Cable	Harbour	SHWCB-3000-N	N/A	May 15, 2020	May 14, 2022

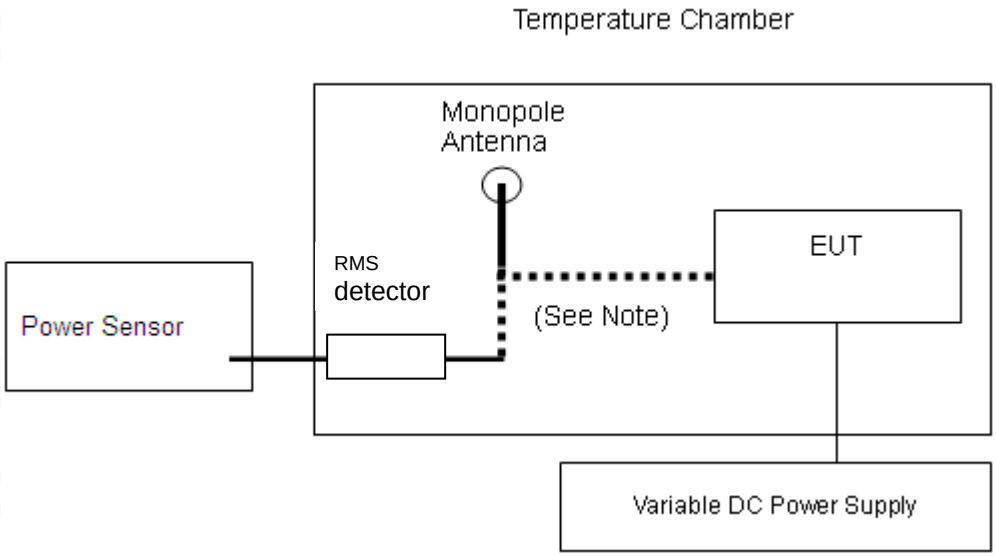
5. ETSI EN 300 328 REQUIREMENTS

5.1. RF OUTPUT POWER

EN 300 328 Clause 4.3.1.2

The maximum RF output power for adaptive Frequency Hopping equipment shall be equal to or less than 20 dBm.The maximum RF output power for non-adaptive Frequency Hopping equipment, shall be declared by the supplier. See clause 5.3.1 m). 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.

Test Configuration



Remarks:
EUT was direct connected to test equipment through coupling device.

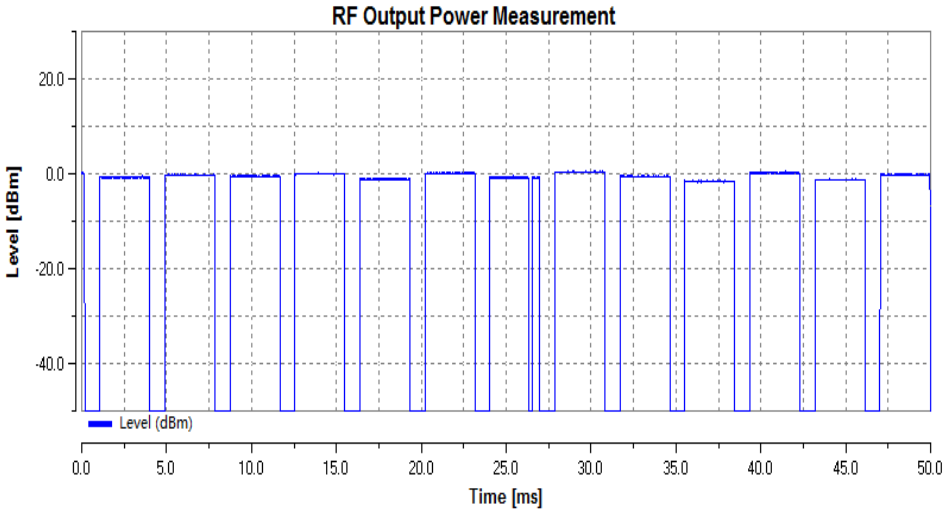
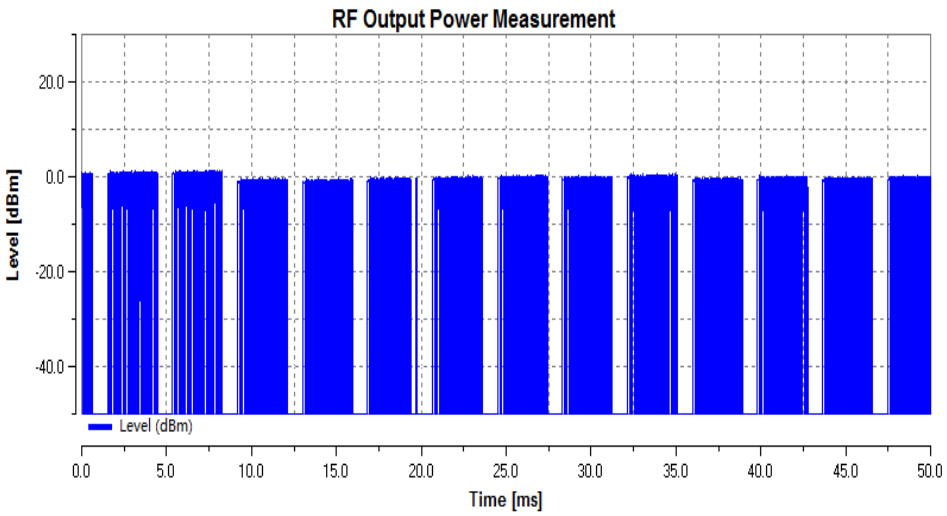
TEST PROCEDURE

1. Please refer to ETSI EN 300 328 (V2.2.2) clause 5.4.2.1 for the test conditions.
2. Please refer to ETSI EN 300 328 (V2.2.2) clause 5.4.2.2.1 for the measurement method.

TEST RESULTS

Operation Mode:	Hopping mode	Test Date:	Dec. 14, 2020
Temperature:	25°C	Tested by:	Thea
Humidity:	55 % RH		
Number of Burst		= 13	
Measurement Time		= 50ms	

TEST CONDITIONS	RF OUTPUT POWERMEASUREMENT RESULT (dBm)		
	Temp (25)°C	Temp (-10)°C	Temp (45)°C
FOR GFSK MOUDULATION	3.43	3.42	3.40
Π/4-DQPSK MOUDULATION	2.44	2.41	2.43
Limit	20dBm		

GFSK	
π /4-DQPSK	

Note: Result=Reading+ Ant. Gain
Only the worst case recorded in the test report.

Conclusion: PASS

5.2. ACCUMULATED TRANSMIT TIME, FREQUENCY OCCUPIATION AND HOPPING SEQUENCE

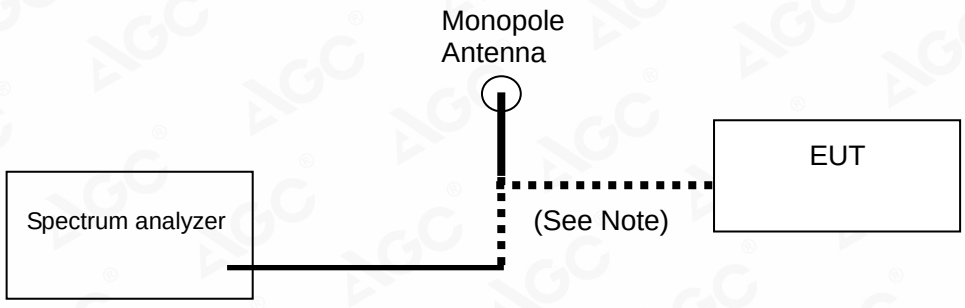
ETSI EN 300 328 SUBCLAUSE 4.3.1.4

ACCUMULATED TRANSMIT TIME	
CONDITION	**LIMIT**
☐Non-adaptive frequency hopping systems	≤ 15 ms
☒Adaptive frequency hopping systems	≤ 400 ms

FREQUENCY OCCUPATION	
CONDITION	**LIMIT(OPTION 1)**
☐Non-adaptive frequency hopping systems	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.
☒Adaptive frequency hopping systems	

HOPPING SEQUENCE(S)	
CONDITION	**LIMIT**
☐Non-adaptive frequency hopping systems	≥5 hopping frequencies or 5/minimum Hopping Frequency Separation in MHz , whichever is the greater.
☒Adaptive frequency hopping systems	Operating frequency band ≥58.45MHz (Operating over a minimum of 70 % of the operating in the band 2,4 GHz to 2,4835 GHz)
	≥15 hopping frequencies or 15/minimum Hopping Frequency Separation in MHz , whichever is the greater.

TEST CONFIGURATION



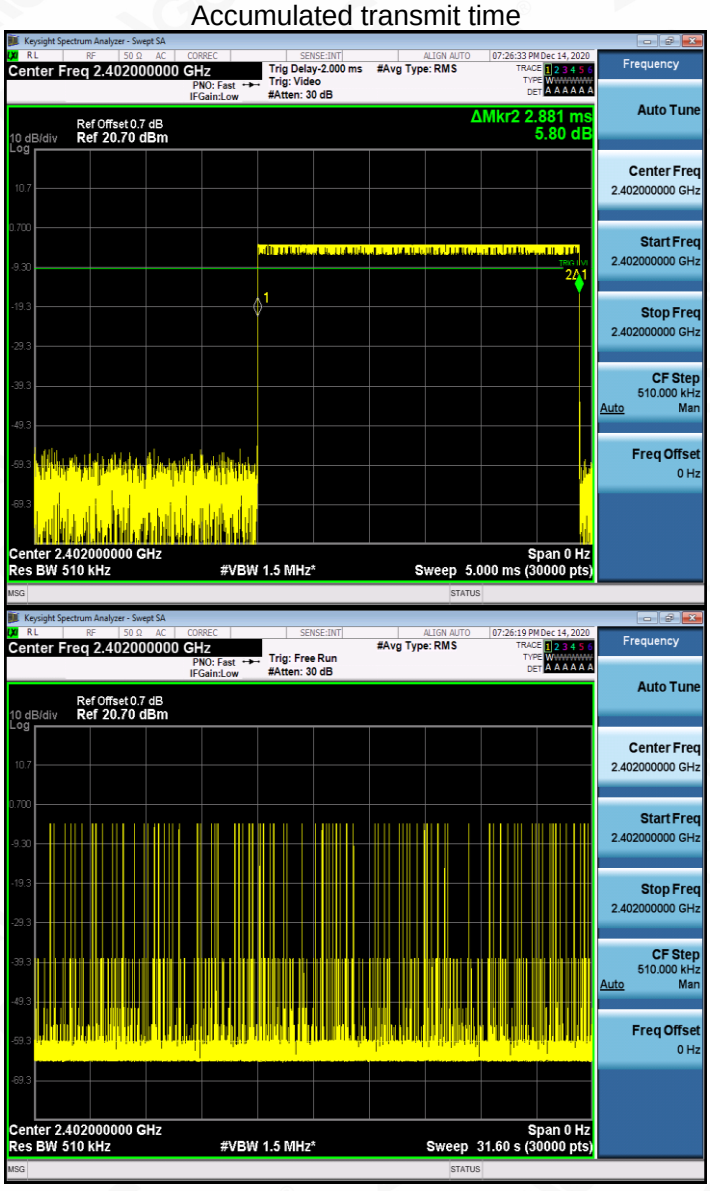
TEST PROCEDURE
Please refer to ETSI EN300328 V2.2.2 Section 5.4.4

TEST RESULT FOR ACCUMULATED TRANSMIT TIME

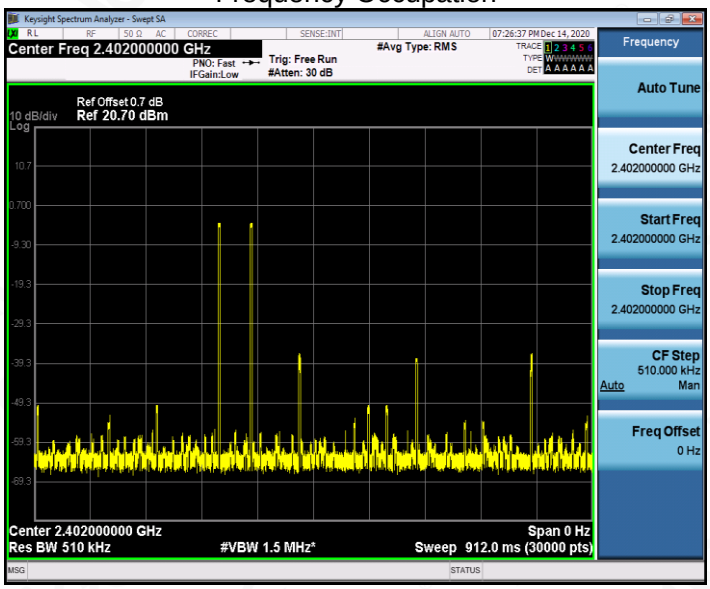
Bluetooth 1Mbps（DH5）Test Result

Channel	Accumulated transmit time (ms)	Limit (ms)	Frequency Occupation (pcs)	Limit (pcs)
Low	306.529	≤400	2	≥1

Accumulated transmit time



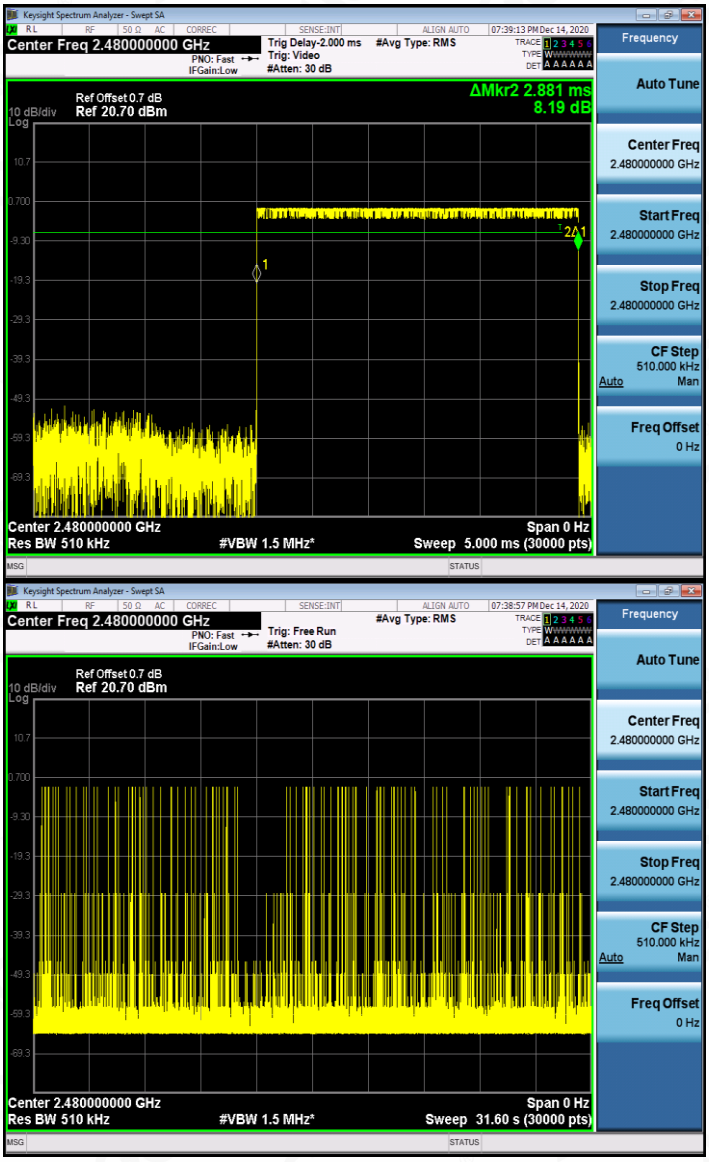
Frequency Occupation



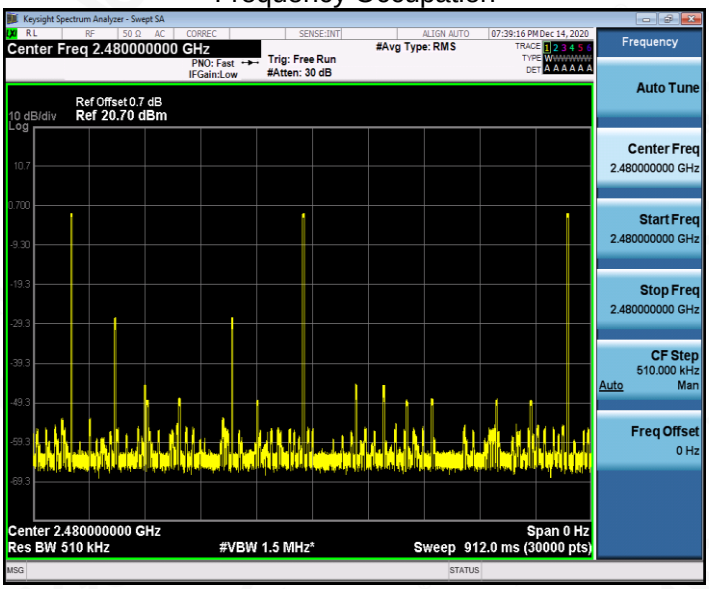
Bluetooth 1Mbps(DH5) Test Result

Channel	Accumulated transmit time (ms)	Limit (ms)	Frequency Occupation (pcs)	Limit (pcs)
High	288.622	≤400	3	≥1

Accumulated transmit time



Frequency Occupation



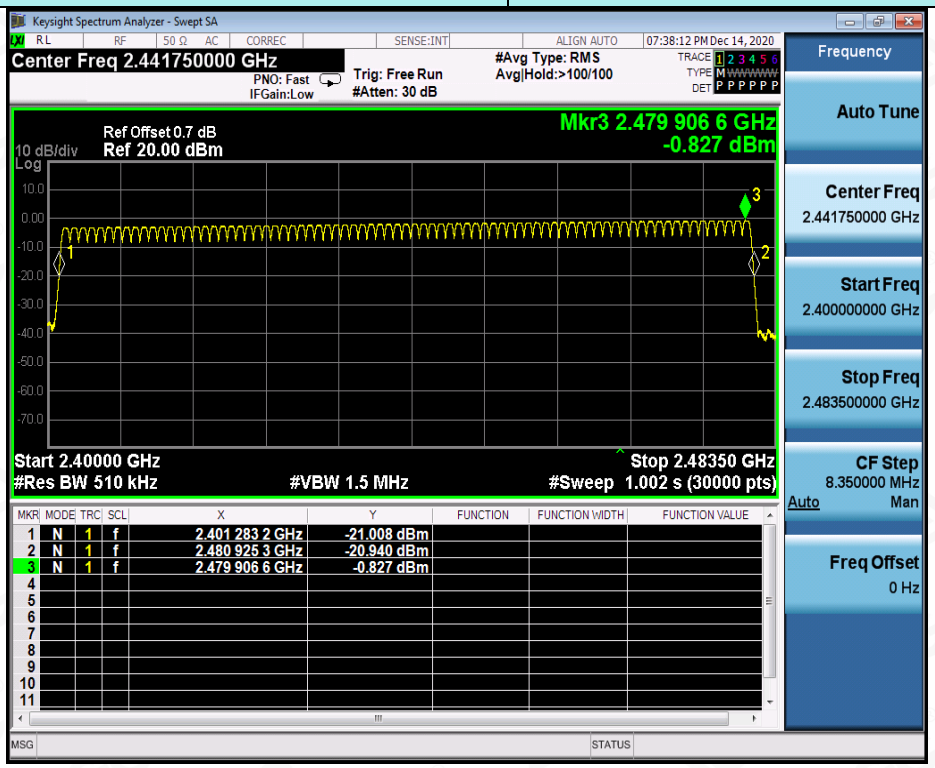
Note: 1) All the modes had been tested, but only the worst data recorded in the report.
2) The Accumulated transmit time and Dwell Time are calculated by a computing device using an appropriate software application or program.
3) Sweep time for Frequency Occupation= Dwell Time*4*79

TEST RESULT FOR HOPPING SEQUENCE

Channel	Frequency (GHz)	Channel	Frequency (GHz)
01	2.402	42	2.443
02	2.403	43	2.444
03	2.404	44	2.445
04	2.405	45	2.446
05	2.406	46	2.447
06	2.407	47	2.448
07	2.408	48	2.449
08	2.409	49	2.450
09	2.410	50	2.451
10	2.411	51	2.452
11	2.412	52	2.453
12	2.413	53	2.454
13	2.414	54	2.455
14	2.415	55	2.456
15	2.416	56	2.457
16	2.417	57	2.458
17	2.418	58	2.459
18	2.419	59	2.460
19	2.420	60	2.461
20	2.421	61	2.462
21	2.422	62	2.463
22	2.423	63	2.464
23	2.424	64	2.465
24	2.420	65	2.466
25	2.426	66	2.467
26	2.427	67	2.468
27	2.428	68	2.469
28	2.429	69	2.470
29	2.430	70	2.471
30	2.431	71	2.472
31	2.432	72	2.473
32	2.433	73	2.474
33	2.434	74	2.475
34	2.435	75	2.476
35	2.436	76	2.477
36	2.437	77	2.478
37	2.438	78	2.479
38	2.439	79	2.480
39	2.440		
40	2.441		
41	2.442		

Hopping Channel Test Plot

Hopping Sequence (MHz)	79.6421
Hopping Number	79



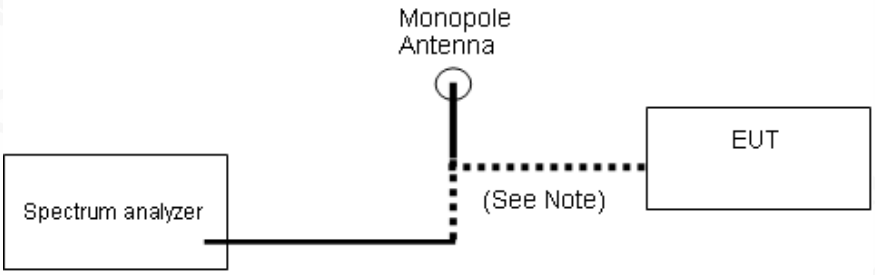
5.3. HOPPING FREQUENCY SEPARATION

ETSI EN 300 328 SUBCLAUSE **4.3.1.5**

For Non-adaptive frequency hopping systems:
The minimum Hopping Frequency Separation shall be equal to Occupied Channel Bandwidth (see clause 4.3.1.7) of a single hop, with a minimum separation of 100 kHz.

For Adaptive frequency hopping systems:
The minimum Hopping Frequency Separation shall be 100 kHz.

CONFIGURATION



TEST PROCEDURE
Test Procedure please refer to clause 5.4.5.2.1

TEST RESULT

Hopping Frequency Separation (MHz)	0.999

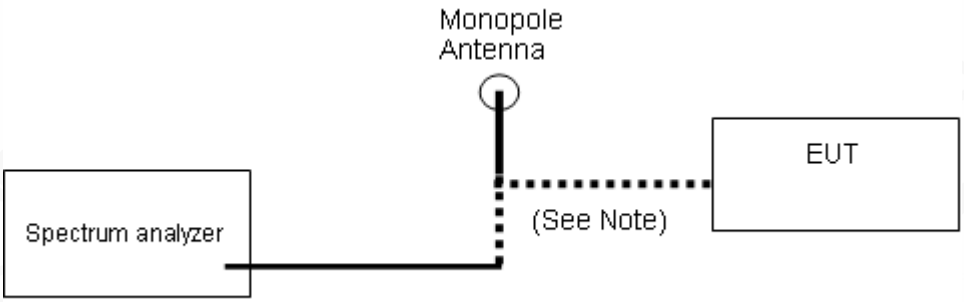
Note: The modulation used during test is GFSK and this is the worst case.
Conclusion: PASS

5.4. OCCUPIED CHANNEL BANDWIDTH

EN300328 4.3.1.4 OCCUPIED CHANNEL BANDWIDTH

The Occupied Channel Bandwidth is the bandwidth that contains 99 % of the power of the signal.

CONFIGURATION



TEST PROCEDURE

1. Please refer to ETSI EN 300 328 (V2.2.2) clause 5.4.7.1 for the test conditions.
2. Please refer to ETSI EN 300 328 (V2.2.2) clause 5.4.7.2 the measurement method.
3. The Test equipment information as following
   Centre frequency: 2402MHz,2480MHz
   Resolution bandwidth: 20kHz
   Video bandwidth: 62kHz
   Detector mode :RMS
   Trace mode :Max Hold

TEST RESULTS

Modulation	Channel	OBW [MHz]	FL@OBW	FH@OBW	Verdict
GFSK	LCH	0.86975	2401.64	2402.51	PASS
GFSK	HCH	0.86990	2479.64	2480.51	PASS
π/4DQPSK	LCH	1.1948	2401.48	2402.68	PASS
π/4DQPSK	HCH	1.1962	2479.48	2480.68	PASS

Graphs		
GFSK/LCH		
GFSK/HCH		

π/4DQPSK/LCH		
π/4DQPSK/HCH		

5.5. TRANSMITTER UNWANTED EMISSIONS IN THE OUT OF BAND DOMAIN

EN300328 4.3.1.9 TRANSMITTER UNWANTED EMISSIONS IN THE OUT OF BAND DOMAIN

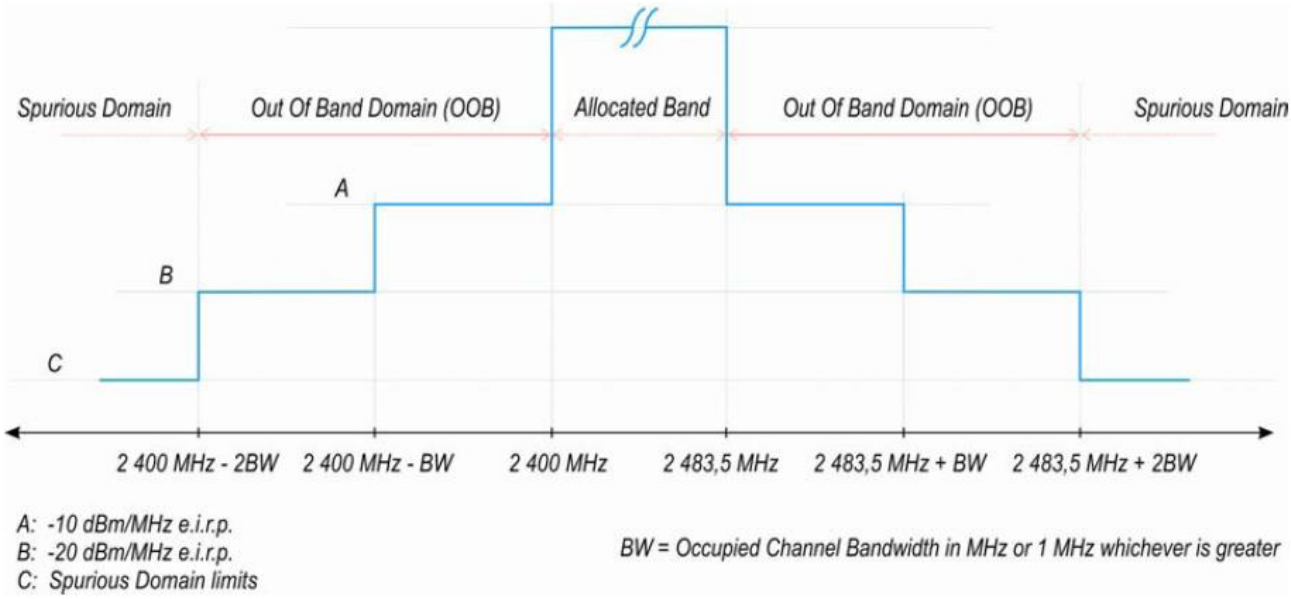
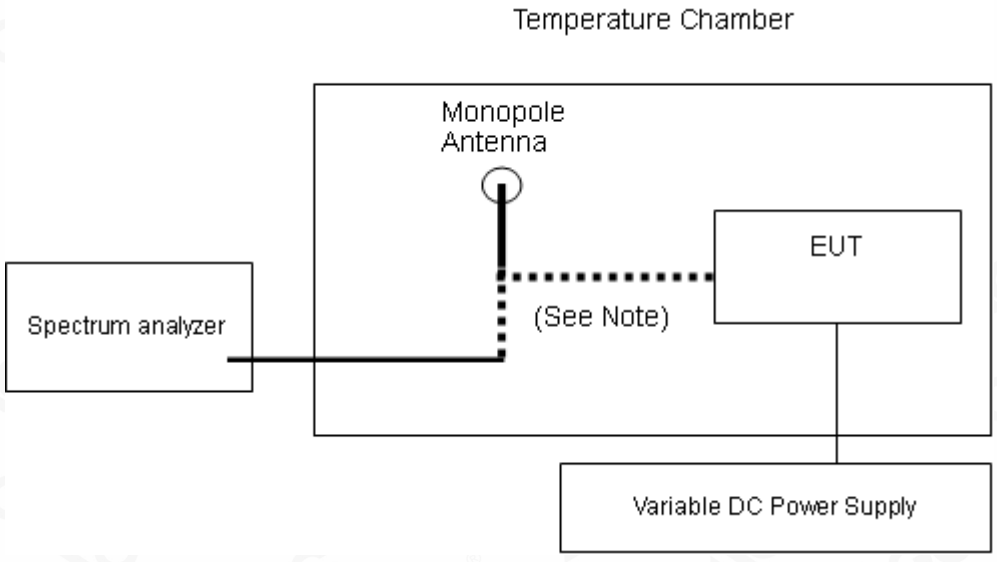


Figure 1: Transmit mask

TEST CONFIGURATION



For have temporary antenna connector product

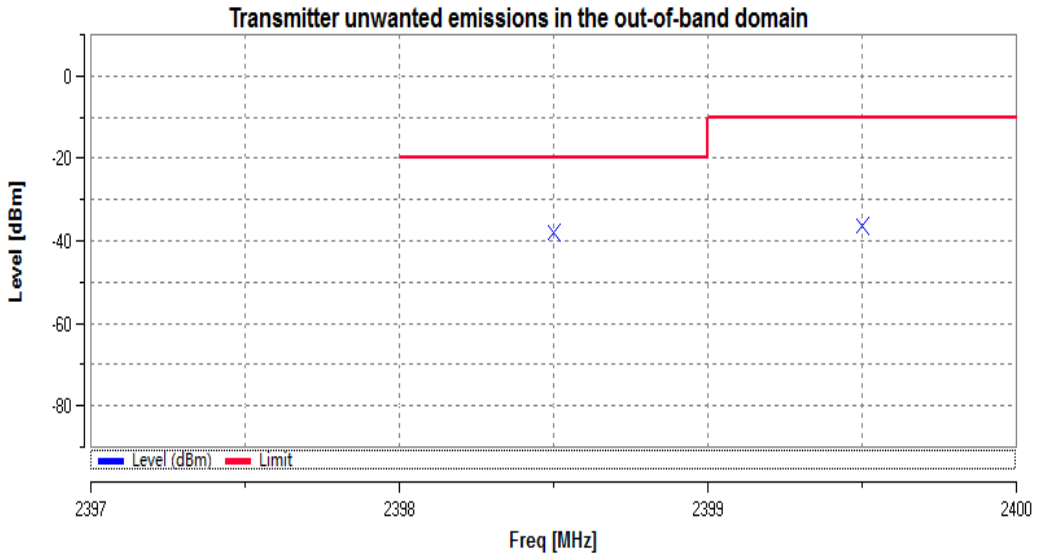
TEST PROCEDURE

Test Procedure Please refer to ETSI EN 300 328 (V2.2.2) Clause 5.4.8.2.1

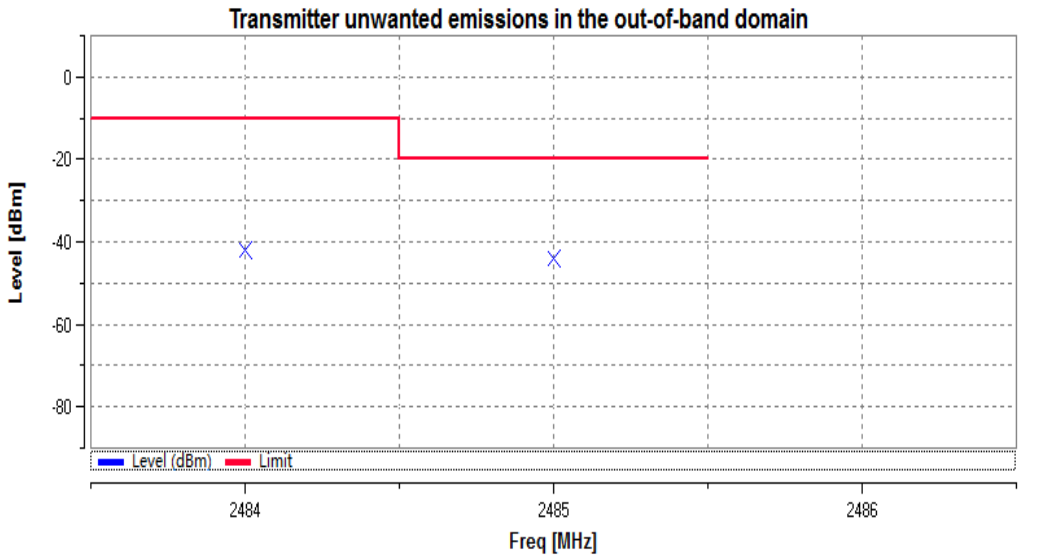
TEST RESULT

TEST CONDITIONS	Hopping mode		
	Temp (25)°C	Temp (-10)°C	Temp (45)°C
GFSK MOUDULATION	PASS	PASS	PASS
Π/4-DQPSK MOUDULATION	PASS	PASS	PASS

GFSK-LOW BAND



GFSK-HIGH BAND



Note: All the modes had been tested, but only the worst data recorded in the report.
Conclusion: PASS

5.6. TRANSMITTER SPURIOUS EMISSIONS

Spurious emissions are emissions outside the frequency range(s) of the equipment as defined in Clause 4.3.1.10.

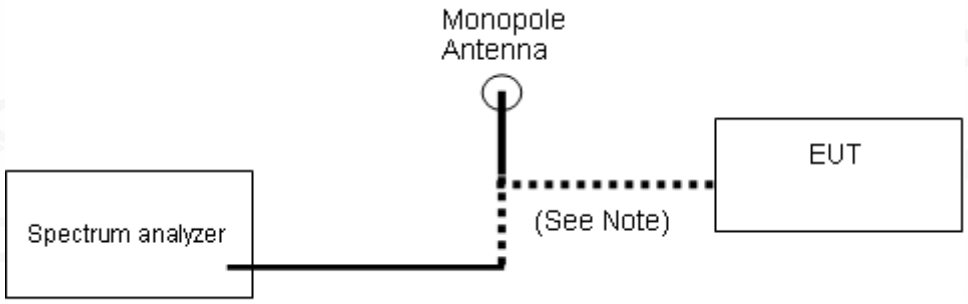
The spurious emissions of the transmitter shall not exceed the values in tables in the indicated bands:

Frequency Range	Maximum Power e.r.p(<=1GHz)/e.i.r.p(>1GHz)	Bandwidth
30MHz to 47MHz	-36dBm	100kHz
47MHz to 74MHz	-54dBm	100kHz
74MHz to 87.5MHz	-36dBm	100kHz
87.5MHz to 118MHz	-54dBm	100kHz
118MHz to 174MHz	-36dBm	100kHz
174 MHz to 230MHz	-54dBm	100kHz
230 MHz to 470MHz	-36dBm	100kHz
470 MHz to 694MHz	-54dBm	100kHz
694 MHz to 1GHZ	-36dBm	100kHz
1 GHZ to 12.75GHZ	-30dBm	1MHz

TEST PROCEDURE

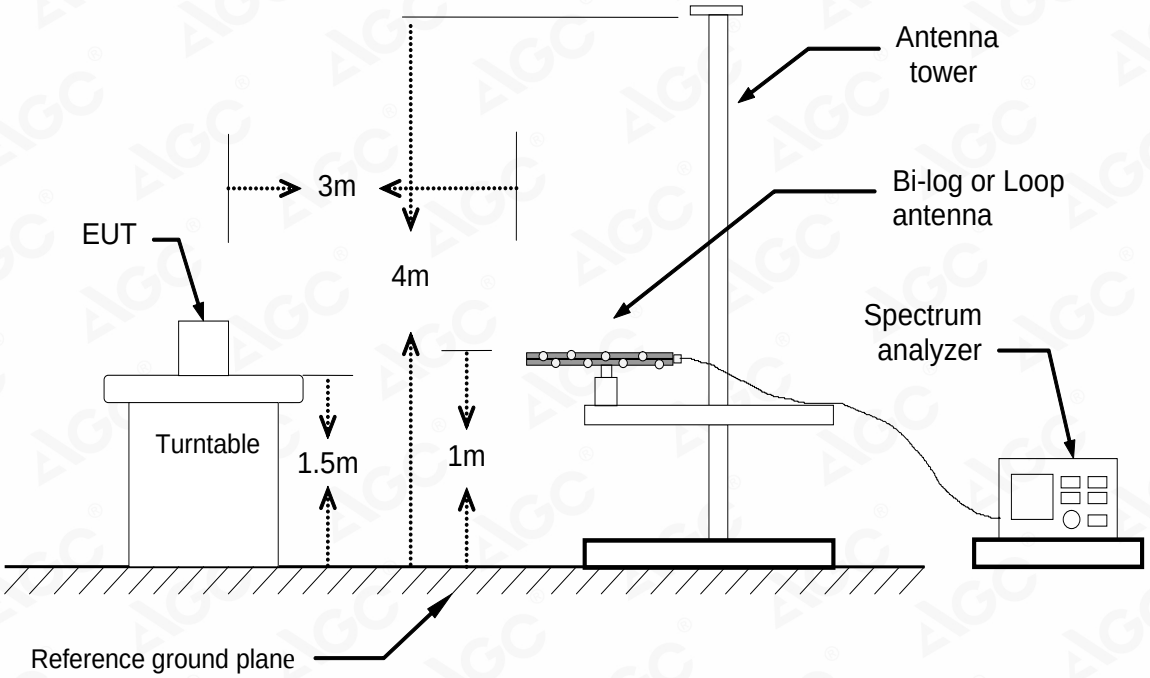
1) The emissions over the range 30 MHz to 1 000 MHz shall be identified.
2) Spectrum analyzer settings:
   Resolution bandwidth: 100 kHz
   Video bandwidth: 300 kHz
   Detector mode: Peak
   Sweep Points: ≥ 19 400
   Trace Mode: Max Hold
3) Allow the trace to stabilize. Any emissions identified during the sweeps above and that fall within the 6 dB range below the applicable limit or above, shall be individually measured using RMS detector and compared to the limits.
4) The emissions over the range 1 GHz to 12,75 GHz shall be identified.
5) Resolution bandwidth: 1 MHz
   Video bandwidth: 3 MHz
   Detector mode: Peak
   Trace Mode: Max Hold
   Sweep Points: ≥ 23 500
6) 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 RMS detector and compared to the limits.
7) For radiated method, the applicable measurement procedures as described in the EN 300 328 V2.2.2 annex C.2 and C.4 are used.

Test Configuration

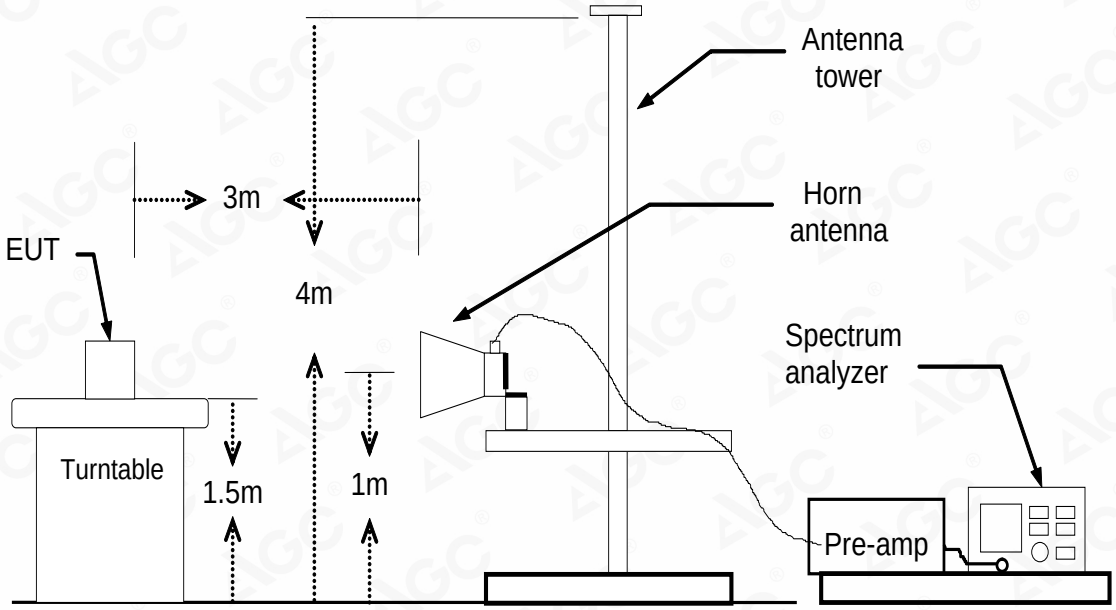


Conducted Method

Below 1GHz



Above 1GHz

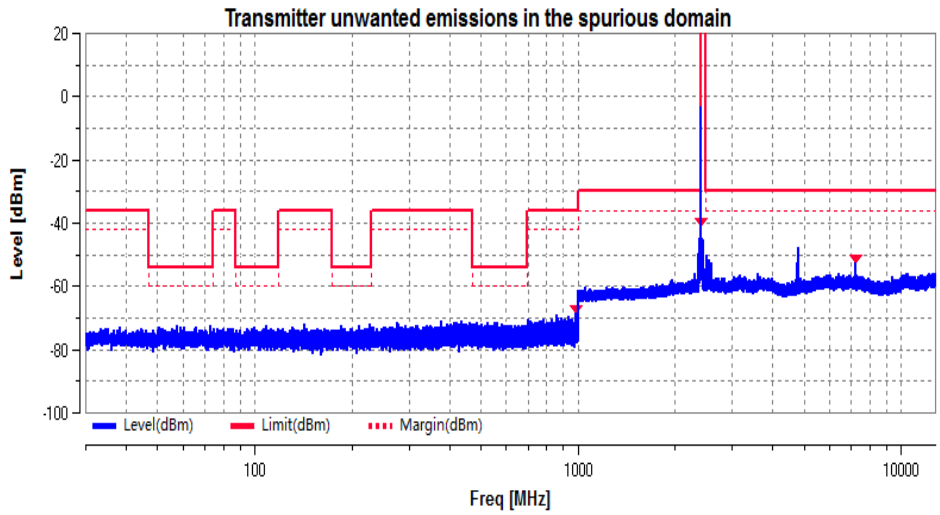


Radiated Method

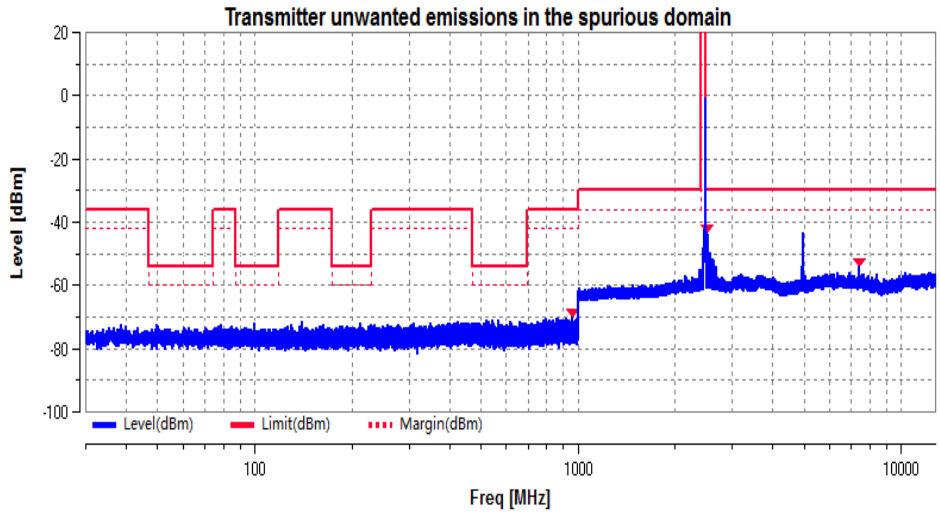
CONDUCTED RESULTS:

Test Mode	Channel	Freq. [MHz]	Level[dBm]	Limit[dBm]	Verdict
DH5	2402	989.56	-68.73	-36	PASS
		2398.21	-40.82	100	PASS
		7199.96	-52.63	-30	PASS
	2480	960.07	-69.87	-36	PASS
		2503.88	-43.35	-30	PASS
		7433.97	-54.09	-30	PASS

(Worst Case: Low channel, 1Mbps)



(Worst Case: High channel, 1Mbps)



Note: 1. All the modes had been test but only the worst data record in the report.

2. The 2.4G fundamental frequency is not considered to compare with the limit.

RADIATED RESUILTS:
(Worst Case: Low channel, 1Mbps)

Transmitter Spurious Emission below 1GHz (30MHz-1GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuV/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
84.63	30.56	V	-61.62	0.48	0.54	-61.56	-36.00	25.56
130.40	30.93	V	-61.26	0.49	0.10	-61.65	-36.00	25.65
239.94	31.03	V	-67.52	0.52	6.60	-61.44	-36.00	25.44
326.42	30.75	V	-65.34	0.53	6.10	-59.77	-36.00	23.77
335.19	31.19	V	-64.96	0.53	5.90	-59.59	-36.00	23.59
827.39	31.32	V	-65.57	0.66	6.45	-59.77	-36.00	23.77
Other(30-1000)	--	V	--	--	--	--	-36.00/-54.00	--
83.53	32.41	H	-58.02	0.48	0.38	-58.12	-36.00	22.12
130.97	30.23	H	-62.29	0.49	0.10	-62.68	-36.00	26.68
242.62	30.05	H	-68.20	0.52	6.72	-62.00	-36.00	26.00
325.68	30.50	H	-65.55	0.53	6.10	-59.98	-36.00	23.98
735.58	30.73	H	-67.93	0.59	6.60	-61.92	-36.00	25.92
828.16	30.80	H	-66.96	0.66	6.40	-61.22	-36.00	25.22
Other(30-1000)	--	H	--	--	--	--	-36.00/-54.00	--

Transmitter Spurious Emission above 1GHz (1GHz-12.75GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuV/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
4804	45.57	V	-48.67	2.64	9.30	-42.01	-30.00	12.01
7206	31.02	V	-57.20	3.11	11.45	-48.86	-30.00	18.86
Other(1000-12750)	--	V	--	--	--	--	-30.00	--
4804	41.39	H	-48.78	2.64	9.30	-42.11	-30.00	12.11
7206	31.07	H	-58.31	3.13	11.34	-50.10	-30.00	20.10
Other(1000-12750)	--	H	--	--	--	--	-30.00	--

Note: 1.The margins of the other spectrum are not exceeding the minimum value of margin, and this part of the results without recording in the test report.

2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “--” remark, if no specific emission from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that’s already beyond the background noise floor.

(Worst Case: High channel, 1Mbps)

Transmitter Spurious Emission below 1GHz (30MHz-1GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuV/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
84.67	30.51	V	-61.78	0.48	0.54	-61.72	-36.00	25.72
130.17	31.02	V	-60.80	0.49	0.10	-61.19	-36.00	25.19
240.24	31.20	V	-67.42	0.52	6.60	-61.34	-36.00	25.34
326.22	30.00	V	-66.04	0.53	6.10	-60.47	-36.00	24.47
334.83	31.70	V	-66.83	0.53	5.94	-61.42	-36.00	25.42
827.53	31.65	V	-63.38	0.66	6.45	-57.58	-36.00	21.58
Other(30-1000)	--	V	--	--	--	--	-36.00/-54.00	--
84.09	32.05	H	-58.46	0.48	0.54	-58.40	-36.00	22.40
131.02	30.65	H	-59.25	0.49	0.08	-59.66	-36.00	23.66
243.10	30.47	H	-67.58	0.52	6.78	-61.32	-36.00	25.32
325.46	31.27	H	-63.67	0.53	6.10	-58.10	-36.00	22.10
735.50	30.69	H	-68.22	0.59	6.60	-62.21	-36.00	26.21
827.88	31.37	H	-65.93	0.66	6.45	-60.13	-36.00	24.13
Other(30-1000)	--	H	--	--	--	--	-36.00/-54.00	--

Transmitter Spurious Emission above 1GHz (1GHz-12.75GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuV/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
4960	45.62	V	-48.75	2.64	9.30	-42.09	-30.00	12.09
7440	30.87	V	-67.48	3.09	11.59	-58.98	-30.00	28.98
Other(1000-12750)	--	V	--	--	--	--	-30.00	--
4960	41.01	H	-49.04	2.64	9.30	-42.38	-30.00	12.38
7440	41.22	H	-58.39	3.11	11.46	-50.04	-30.00	20.04
Other(1000-12750)	--	H	--	--	--	--	-30.00	--

Note: 1.The margins of the other spectrum are not exceeding the minimum value of margin, and this part of the results without recording in the test report.

2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "--" remark, if no specific emission from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

Conclusion: PASS

5.7. RECEIVER SPURIOUS EMISSIONS

ETSI EN300328 SUBCLAUSE 4.3.1.11

Receiver spurious emissions are emissions at any frequency when the equipment is in receive mode.
The spurious emissions of the receiver shall not exceed the values given in table.

Frequency Range	Maximum Power e.r.p(<=1GHz)/e.i.r.p(>1GHz)	Measurement Bandwidth
30MHz to 1000MHz	-57dBm	100kHz
1GHz to 12.75GHz	-47dBm	1MHz

Test Configuration

Same as 5.6.

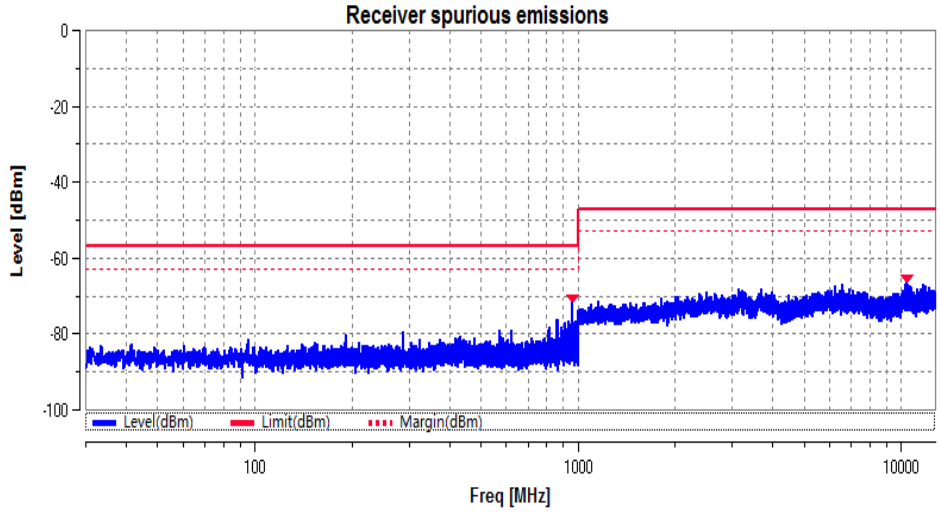
TEST PROCEDURE

1) The emissions over the range 30 MHz to 1 000 MHz shall be identified.
2) Spectrum analyzer settings:
   Resolution bandwidth: 100 kHz
   Video bandwidth: 300 kHz
   Detector mode: Peak
   Sweep Points: ≥ 19 400
   Trace Mode: Max Hold
3) 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 RMS detector and compared to the limits.
4) The emissions over the range 1 GHz to 12,75 GHz shall be identified.
5) Resolution bandwidth: 1 MHz
   Video bandwidth: 3 MHz
   Detector mode: Peak
   Trace Mode: Max Hold
   Sweep Points: ≥ 23 500
6) 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 RMS detector and compared to the limits.
7) For radiated method, the applicable measurement procedures as described in the EN 300 328 V2.2.2 annex C.2 and C.4 are used.

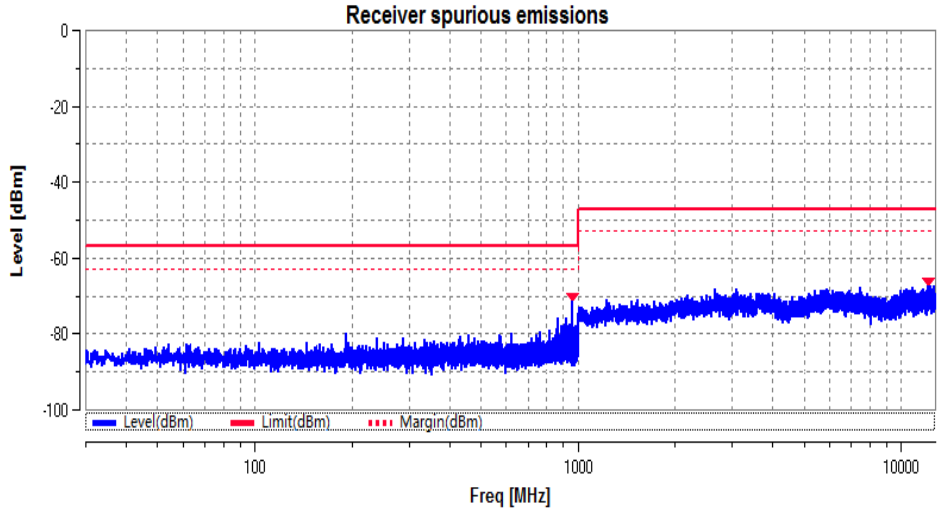
TEST RESULTS FOR CONDUCTED METHOD

Test Mode	Channel	Freq. [MHz]	Level[dBm]	Limit[dBm]	Verdict
DH5	2402	959.99	-71.73	-57.00	PASS
		10447	-66.61	-47.00	PASS
	2480	959.99	-71.38	-57.00	PASS
		12115.5	-67.41	-47.00	PASS

RECEIVER MODE (Worst Case: Low channel, 1Mbps)



RECEIVER MODE (Worst Case: High channel, 1Mbps)



Note: 1. All the modes had been test but only the worst data record in the report.

TEST RESULTS FOR RADIATED METHOD
(Worst Case: Low channel, 1Mbps)

Receiver Spurious Emission below 1GHz (30MHz-1GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuV/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
114.62	31.29	V	-71.96	0.48	1.40	-71.04	-57.00	14.04
176.45	32.00	V	-73.10	0.51	2.88	-70.73	-57.00	13.73
228.97	29.65	V	-77.81	0.52	7.08	-71.25	-57.00	14.25
495.99	30.08	V	-77.01	0.56	7.05	-70.52	-57.00	13.52
665.27	31.00	V	-77.53	0.59	6.95	-71.17	-57.00	14.17
879.84	30.69	V	-76.04	0.69	5.87	-70.86	-57.00	13.86
Other(30-1000)	--	V	--	--	--	--	-57.00	--
84.74	32.14	H	-71.26	0.48	0.54	-71.20	-57.00	14.20
110.54	30.77	H	-72.30	0.48	1.40	-71.38	-57.00	14.38
218.67	30.73	H	-77.67	0.52	7.46	-70.73	-57.00	13.73
484.91	30.73	H	-77.56	0.56	6.98	-71.14	-57.00	14.14
554.73	30.66	H	-80.08	0.57	6.78	-73.87	-57.00	16.87
634.81	31.26	H	-78.60	0.58	7.22	-71.96	-57.00	14.96
Other(30-1000)	--	H	--	--	--	--	-57.00	--

Receiver Spurious Emission above 1GHz (1GHz-12.75GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuV/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
4947.76	29.07	V	-69.17	2.74	9.58	-62.33	-47.00	15.33
--	--	V	--	--	--	--	--	--
Other(1000-12750)	--	V	--	--	--	--	-47.00	--
4952.38	30.22	H	-68.94	2.74	9.60	-62.08	-47.00	15.08
--	--	H	--	--	--	--	--	--
Other(1000-12750)	--	H	--	--	--	--	-47.00	--

Note: 1.The margins of the other spectrum are not exceeding the minimum value of margin, and this part of the results without recording in the test report.

2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “--” remark, if no specific emission from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that’s already beyond the background noise floor.

(Worst Case: High channel, 1Mbps)

Receiver Spurious Emission below 1GHz (30MHz-1GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuV/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
114.67	30.57	V	-72.36	0.48	1.40	-71.44	-57.00	14.44
176.66	31.80	V	-72.99	0.51	2.88	-70.62	-57.00	13.62
229.82	29.91	V	-77.73	0.52	6.84	-71.41	-57.00	14.41
495.83	30.59	V	-76.99	0.56	7.05	-70.50	-57.00	13.50
664.39	30.90	V	-76.92	0.59	6.98	-70.53	-57.00	13.53
879.43	30.36	V	-75.79	0.69	5.87	-70.61	-57.00	13.61
Other(30-1000)	--	V	--	--	--	--	-57.00	--
84.03	32.41	H	-71.38	0.48	0.54	-71.32	-57.00	14.32
110.40	31.23	H	-71.64	0.48	1.40	-70.72	-57.00	13.72
219.41	31.09	H	-77.62	0.52	7.38	-70.76	-57.00	13.76
485.52	30.46	H	-77.48	0.56	7.00	-71.04	-57.00	14.04
554.80	31.03	H	-80.25	0.57	6.78	-74.04	-57.00	17.04
635.20	30.77	H	-78.56	0.58	7.20	-71.94	-57.00	14.94
Other(30-1000)	--	H	--	--	--	--	-57.00	--

Receiver Spurious Emission above 1GHz (1GHz-12.75GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuV/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
4947.93	28.86	V	-68.23	2.74	9.58	-61.39	-47.00	14.39
--	--	V	--	--	--	--	--	--
Other(1000-12750)	--	V	--	--	--	--	-47.00	--
4952.86	30.22	H	-69.01	2.74	9.60	-62.16	-47.00	15.16
--	--	H	--	--	--	--	--	--
Other(1000-12750)	--	H	--	--	--	--	-47.00	--

Note: 1.The margins of the other spectrum are not exceeding the minimum value of margin, and this part of the results without recording in the test report.

2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “--” remark, if no specific emission from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that’s already beyond the background noise floor.

Conclusion: PASS

5.8. RECEIVER BLOCKING

☐Receiver Blocking parameters for Receiver Category 1 equipment

Wanted signal mean power from companion device (dBm) (see notes 1 and 4)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 4)	Type of blocking signal
(-133 dBm + 10 × log10(OCBW)) or -68 dBm whichever is less (see note 2)	2 380 2 504	-34	CW
(-139 dBm + 10 × log10(OCBW)) or -74 dBm whichever is less (see note 3)	2 300 2 330 2 360 2 524 2 584 2 674		

NOTE 1: OCBW is in Hz.

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to Pmin + 26 dB where Pmin is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 3: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to Pmin + 20 dB where Pmin is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 4: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

☒Receiver Blocking parameters for Receiver Category 2 equipment

Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
(-139 dBm + 10 × log10(OCBW) + 10 dB) or (-74 dBm + 10 dB) whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW

NOTE 1: OCBW is in Hz.

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to Pmin + 26 dB where Pmin is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

☐Receiver Blocking parameters for Receiver Category 3 equipment

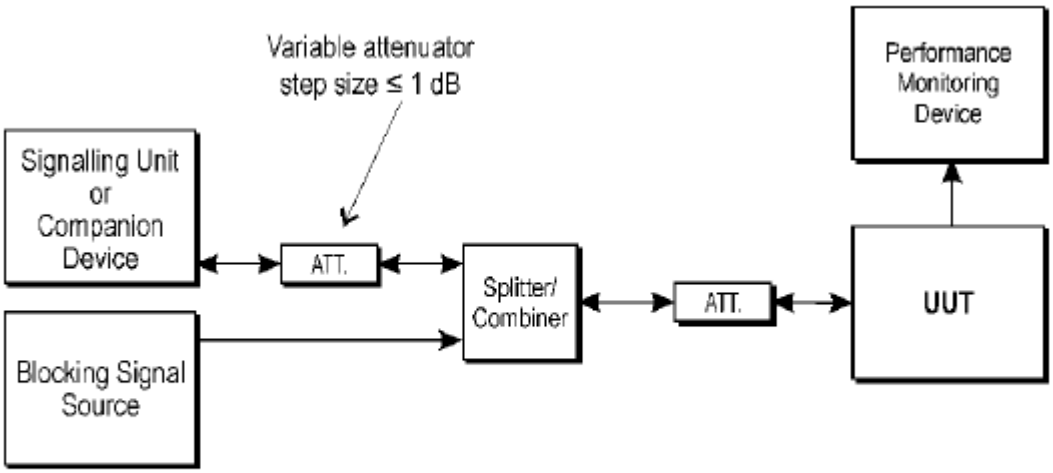
Wanted signal mean power from companion device (dBm) (see notes 1 and 3)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 3)	Type of blocking signal
(-139 dBm + 10 × log10(OCBW) + 20 dB) or (-74 dBm + 20 dB) whichever is less (see note 2)	2 380 2 504 2 300 2 584	-34	CW

NOTE 1: OCBW is in Hz.

NOTE 2: In case of radiated measurements using a companion device and the level of the wanted signal from the companion device cannot be determined, a relative test may be performed using a wanted signal up to Pmin + 30 dB where Pmin is the minimum level of wanted signal required to meet the minimum performance criteria as defined in clause 4.3.1.12.3 in the absence of any blocking signal.

NOTE 3: The level specified is the level at the UUT receiver input assuming a 0 dBi antenna assembly gain. In case of conducted measurements, this level has to be corrected for the (in-band) antenna assembly gain (G). In case of radiated measurements, this level is equivalent to a power flux density (PFD) in front of the UUT antenna with the UUT being configured/positioned as recorded in clause 5.4.3.2.2.

TEST CONFIGURATION



Test Set-up for receiver blocking

TEST PROCEDURE

The simplified conducted measure procedures are as follows:

1) he UUT shall be set to hopping mode.

2) The blocking signal generator is set to the first frequency as defined in the appropriate table corresponding to the receiver category and type of equipment.

3)With the blocking signal generator switched off, a communication link is established between the UUT and the associated companion device using the test setup. The level of the wanted signal shall be set to the value provided in the table corresponding to the receiver category and type of equipment. This level may be measured directly at the output of the companion device and a correction is made for the coupling loss into the UUT. The actual level for the wanted signal shall be recorded in the test report.

4) The blocking signal at the UUT is set to the level provided in the table corresponding to the receiver category and type of equipment. It shall be verified and recorded in the test report that the performance criteria is met.

5) Repeat step 4 for each remaining combination of frequency and level for the blocking signal as provided in the table corresponding to the receiver category and type of equipment.

TEST RESULT

Test Condition	Blocking Signal Frequency(MHz)	Blocking Signal Power(dBm)	Wanted signal mean power from companion device(dBm)	Performance PER	Limit PER	Result
GFSK Hopping Mode	2 300	-31.00	-66.60	1.33%	10%	Pass
	2 380	-31.00	-66.60	1.10%	10%	
	2 504	-31.00	-66.60	1.83%	10%	
	2 584	-31.00	-66.60	0.61%	10%	

Test Condition	Blocking Signal Frequency(MHz)	Blocking Signal Power(dBm)	Wanted signal mean power from companion device(dBm)	Performance PER	Limit PER	Result
π /4-DQPSK Hopping Mode	2 300	-31.00	-65.23	1.35%	10%	Pass
	2 380	-31.00	-65.23	0.93%	10%	
	2 504	-31.00	-65.22	1.81%	10%	
	2 584	-31.00	-65.22	0.52%	10%	

Note: The levels of the blocking signal and wanted signal have to be corrected for the (in-band) antenna assembly gain.

APPENDIX A: PHOTOGRAPHS OF THE TEST SETUP

Refer to the Report No.: APPENDIX I

APPENDIX B: PHOTOGRAPHS OF EUT

Refer to the Report No.: APPENDIX I

----END OF REPORT----

Conditions of Issuance of Test Reports

1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").

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3.The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.

4. The non-CMA report issued by AGC is only permitted to be used by the client as internal reference use and shall not be used for public demonstration purpose.

5. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.

6. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.

7. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.

8.Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.

9. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.

10. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.

RF Test Report

Report No.: AGC08009201201EE14A

PRODUCT DESIGNATION	:	BLUETOOTH SPEAKER
BRAND NAME	:	N/A
TEST MODEL	:	MO9609
APPLICANT	:	Mid Ocean Brands B.V.
DATE OF ISSUE	:	Dec. 25, 2020
STANDARD(S)	:	ETSI EN 303 345-1 V1.1.1 (2019-06) Draft ETSI EN 303 345-3 V1.1.0 (2019-11)
REPORT VERSION	:	V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd.

Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Dec. 25, 2020	Valid	Re-certification Report

Note:

The original test report Ref. No. AGC08009201201EE14 dated on Dec. 17, 2020 was modified on Dec. 25, 2020 to include the following changes:

-Changed the model name;

-Changed the appearance of the product material;

-Updated FM test photo and the EUT photo;

Retest all FM test item.

TABLE OF CONTENTS

1. TEST RESULT CERTIFICATION

Applicant	Mid Ocean Brands B.V.
Address	7/F., King Tower, 111 King Lam Street, Cheung ShaWan, Kowloon, HongKong.
Manufacturer	Mid Ocean Brands B.V.
Address	7/F., King Tower, 111 King Lam Street, Cheung ShaWan, Kowloon, HongKong.
Factory	Mid Ocean Brands B.V.
Address	7/F., King Tower, 111 King Lam Street, Cheung ShaWan, Kowloon, HongKong.
Product Designation	BLUETOOTH SPEAKER
Brand Name	N/A
Test Model	MO9609
Date of test	Dec. 08, 2020 to Dec. 25, 2020
Deviation	None
Test Result	Pass

The above equipment was tested by ATTESTATION OF GLOBAL COMPLIANCE (SHENZHEN) CO., LTD. for compliance with the requirements set forth in the European Standard ETSI EN 303 345-3. The results of testing in this report apply to the product/system which was tested only. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Prepared By	Thea Huang Project Engineer	Dec. 25, 2020
Reviewed By	Max Zhang Reviewer	Dec. 25, 2020
Approved By	Forrest Lei Authorized Officer	Dec. 25, 2020

2. TECHNICAL INFORMATION

2.1. EUT DESCRIPTION

Details of technical specification refer to the description in follows:

Hardware Version	V1.2
Software Version	V5.1
Modulation method	Frequency modulation (FM)
Frequency band	VHF band II: 87.5 MHz to 108 MHz
Antenna Type	Integral antenna
Power Supply	DC 3.7V by battery or DC 5V by adapter

NOTE: 1. Using Micro-B as FM antenna.
2. For more information, please refer to User's Manual.

2.2. OBJECTIVE

Perform Radio Spectrum tests for CE Marking according to the provisions of article 3.2 of the Radio Equipment Directive (2014/53/EU) for the broadcast sound receivers.

2.3. TEST SIGNAL CONFIGURATIONS

The generated FM signals (wanted and unwanted) and the blocking signal shall be in accordance with table The configuration is based on Recommendation ITU-R BS.641.

Parameter	**FM signals**		**AM signal**
	Wanted	**Unwanted**	**Blocking**
Audio modulation	1 kHz tone	Weighted noise Recommendation ITU-R BS.559-2 [3], clause 1, band limited to 15 kHz (see note 1)	1 kHz tone
Other modulation parameters	±60,8 kHz peak deviation	15,9 kHz RMS deviation (see note 2)	80 % depth
Pilot tone	None	None	None
NOTE 1: The filter shall have a cut-off frequency of 15 kHz and a minimum roll-off of 60 dB/octave. NOTE 2: This is equivalent to a quasi-peak deviation of 34,8 kHz and has pre-emphasis enabled. The quasi-peak level measurement is defined by Recommendation ITU-R BS.641 [i.5], clause 5; with pre-emphasis disabled the quasi-peak deviation is 32 kHz (14,5 kHz RMS).			

2.4. TEST ITEMS AND THE RESULTS

Test items and the results are as bellow:

Basic Standard	Test Type	Result
EN 303 345-3 Clause 4.2	Sensitivity	Pass
EN 303 345-3 Clause 4.3	Adjacent channel selectivity and blocking	Pass

2.5. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION
1	FM receiving mode at 98MHz

2.6. ENVIRONMENTAL CONDITIONS

- Temperature: 15-35ºC
- Relative humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

3. TEST FACILITY

Test Site:	Attestation of Global Compliance (Shenzhen) Co., Ltd.
Address:	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

4. MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in measurement” (GUM) published by ISO.

- Uncertainty of Sensitivity, Uc = ±3.8dB
- Uncertainty of Adjacent channel selectivity and blocking, Uc = ±3.8dB

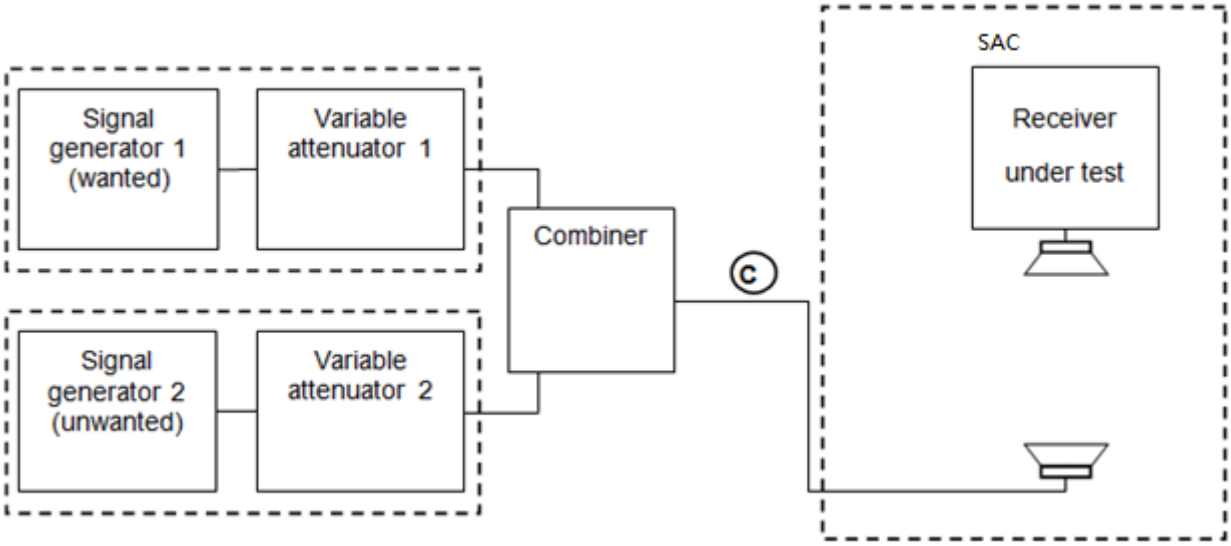
5. TECHNICAL REQUIREMENTS

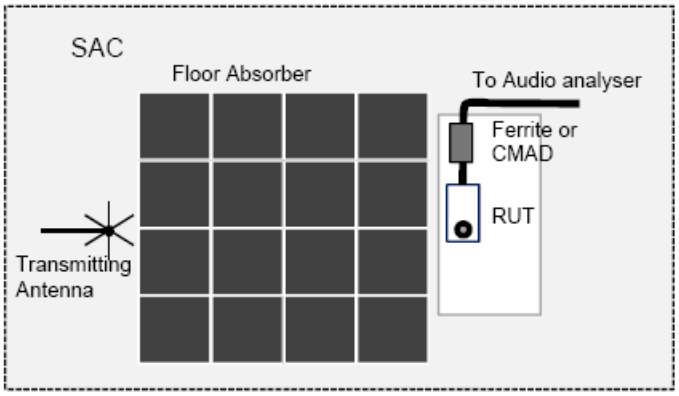
5.1 SENSITIVITY

5.1.1 MEASUREMENT EQUIPMENT USED:

Description	Manufacturer	Model No.	Calibration Date	Calibration Due.
MXG X-Series Vector Signal Generator	Agilent	N5182B	Aug. 21,2020	Aug. 20,2021
MXG X-Series Vector Signal Generator	Agilent	N5182A	Aug. 21,2020	Aug. 20,2021
Audio Analyzer	R&S	UPV	Sep. 02, 2019	Sep. 01, 2021
ANTENNA	SCHWARZBECK	VULB9168	Jan. 09, 2019	Jan. 08, 2021

5.1.2 TEST SETUP:





5.1.3 TEST LIMITS:

The limits for sensitivity specified in the table shall apply. Each figure quoted is the required level of wanted signal which provides a given level of audio quality. The audio impairment criteria relevant for these tests is that the audio SNR ≥ 40 dBQ ref ±60,8 kHz deviation, and that there shall be 10 seconds of audio with no subjective impairments (e.g. clicks resulting from FM threshold effects).

FM sensitivity requirements

De-modulation	Tuned frequency band	Wanted signal Centre frequency (MHz)	Required sensitivity limit	
			Conducted (dBm)	Radiated (dB μ V/m)
FM	VHF band II	98	-90	50 (see note)
NOTE: For products with an integral antenna, the requirement is relaxed to 67 dBμV/m.				

5.1.4 TEST PROCEDURE:

1. For radiated testing, the EUT is placed in semi anechoic chamber (SAC). The field strength generated by the signal generator applying to the EUT at 3 meters distance from the antenna is pre-calibrated before testing.

2. The 'unwanted' signal generator remains switched off for the duration of the test.

3. The 'wanted' signal generator is set to the required modulation method and test configuration as specified, and to the frequency specified. The signal level is adjusted to provide the level, as measured at ©, specified plus 30 dB.

4. The receiver (EUT) is tuned to the frequency of the 'wanted' signal generator. The audio level shall be set so as to provide clean 1 kHz audio tone at the audio output (that is less than 10 % total harmonic distortion) but of sufficient level to drive the measurement device.
5. The level of the 'wanted' signal generator is adjusted to provide the level, as measured at ©

6. The audio output, measured using the measurement device, is recorded as the signal level, S.

7. The modulating audio signal for the 'wanted' signal generator is removed. The audio output, measured using the measurement device, is recorded as the noise level, N.

8. If the impairment criteria given are met then the receiver has passed the test.

5.1.5 TEST RESULTS:

FM (Integral antenna) VHF band II 98MHz					
Wanted Signal Level at © (dBμV/m)	S (mV)	N (mV)	SNR (dBQ)	Limit (dBQ)	Result
67	53.23	0.06	58.96	≥ 40	Pass

5.2 ADJACENT CHANNEL SELECTIVITY AND BLOCKING

5.2.1 MEASUREMENT EQUIPMENT USED:

Same as 5.1.1

5.2.2 TEST SETUP:

Same as 5.1.2

5.2.3 TEST LIMITS:

The limits for selectivity and blocking specified in the first table shall apply with the channel spacings given in the second table. Each figure quoted is the minimum acceptable level of unwanted signal, relative to that of the wanted signal, which provides a given level of audio quality. The audio impairment criteria relevant for these tests is that the audio SNR ⩾ 40 dBQ ref ±60,8 kHz deviation, and that there shall be 10 seconds of audio with no subjective impairments (e.g. clicks resulting from FM threshold effects).

Channel spacing for adjacent channel selectivity and blocking

Demodulation	Tuned frequency band	Unwanted frequency (N = 2, 3, 4)	Unwanted frequency (blocking)
FM	VHF band II	±N × 100 kHz	±800 kHz

Adjacent channel selectivity and blocking requirements

Demodulation (see note 1)	Tuned frequency band	C Wanted signal centre frequency (MHz)	C Wanted signal level		Required I/C ratio (see notes 2 and 3)			
			Conducted (dBm)	Radiated (dB μ V/m)	N = 2 (dB)	N = 3 (dB)	N = 4 (dB)	Blocking (dB)
FM (built-in or integral antenna)	VHF band II	98	n/a	56 (see note 4)	-15	-3	8	20
FM (external antenna)	VHF band II	98	-84	n/a	3	17	30	30

NOTE 1: The ACS and blocking requirements are currently separated into different limits for radiated and conducted testing methods. These limits are likely to be unified in a future revision of the present document. Users of the present document should consult frequently the latest list published in the Official Journal of the European Union.
NOTE 2: The frequency of the interferer shall be calculated using the channel spacing data in table 3 for each of the 6 defined adjacent channels N = {-4, -3, -2, +2, +3, +4} and the two blocking offsets. Each row of table 4 thus defines 8 individual tests.
NOTE 3: The minimum level of I for the relevant level of impairment is calculated by adding the I/C ratio to the wanted C level.
NOTE 4: The wanted signal level for receivers with integral antenna is 73 dB μ V/m.

5.2.4 TEST PROCEDURE:

1. For radiated testing, the EUT is placed in semi anechoic chamber (SAC). The field strength generated by the signal generator applying to the EUT at 3 meters distance from the antenna is pre-calibrated before testing.

2. The 'wanted' signal generator is set to the required modulation method and test configuration as specified, and to the frequency specified. The signal level is adjusted to provide the level, as measured at ©, specified in above table, with the 'unwanted' generator switched off

3. The receiver (EUT) is tuned to the frequency of the 'wanted' signal generator. The audio level shall be set so as to provide clean 1 kHz audio tone at the audio output (that is less than 10 % total harmonic distortion) but of sufficient level to drive the measurement device.

4. The 'unwanted' signal generator is set to the required modulation method and test configuration as specified. and to the frequency calculated from the wanted signal centre frequency and the required offset specified in above Table. The signal level is adjusted to provide the level, as measured at ©, specified in above Table, with the 'wanted' generator switched off. For the blocking test only, the audio modulation of the 'unwanted' signal shall be removed whilst measuring the level at ©.

5. The 'wanted' signal generator is switched back on.

6. The audio output, measured using the measurement device, is recorded as the signal level, S.

7. The modulating audio signal for the 'wanted' signal generator is removed. The audio output, measured using the measurement device, is recorded as the noise level, N.

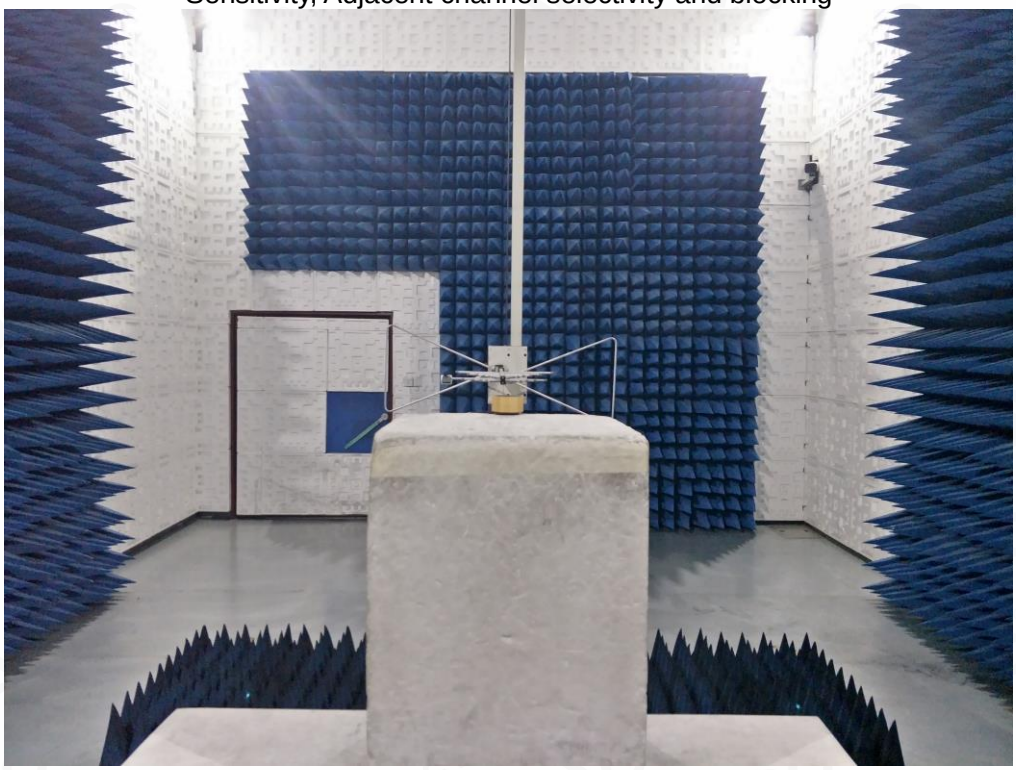
8. If the impairment criteria given are met then the receiver has passed the test.

5.2.5 TEST RESULTS:

FM (Integral antenna) VHF band II 98MHz								
Adjacency and Blocking	C Wanted signal level at © (dBμV/m)	I Unwanted Signal Level at © (dBμV/m)	Required I/C ratio(dB)	S(mV)	N(mV)	SNR (dBQ)	Limit (dBQ)	Result
97.8 MHz	73	58	-15	33.12	0.06	54.84	≥ 40	Pass
98.2 MHz	73	58	-15	33.12	0.06	54.84	≥ 40	Pass
97.7 MHz	73	70	-3	33.12	0.06	54.84	≥ 40	Pass
98.3 MHz	73	70	-3	33.12	0.06	54.84	≥ 40	Pass
97.6 MHz	73	81	8	33.12	0.06	54.84	≥ 40	Pass
98.4 MHz	73	81	8	33.12	0.06	54.84	≥ 40	Pass
97.2 MHz	73	93	20	33.12	0.06	54.84	≥ 40	Pass
98.8 MHz	73	93	20	33.12	0.06	54.84	≥ 40	Pass

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Sensitivity, Adjacent channel selectivity and blocking



APPENDIX B: PHOTOGRAPHS OF THE EUT

Refer to Attached file (APPENDIX I).

----END OF REPORT----

Conditions of Issuance of Test Reports

1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").

2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.

3.The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.

4. The non-CMA report issued by AGC is only permitted to be used by the client as internal reference use and shall not be used for public demonstration purpose.

5. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.

6. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.

7. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.

8.Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.

9. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.

10. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.

Health Test Report

Report No.: AGC08009201201EH02A

PRODUCT DESIGNATION	:	BLUETOOTH SPEAKER
BRAND NAME	:	N/A
MODEL NAME	:	MO9609
APPLICANT	:	Mid Ocean Brands B.V.
DATE OF ISSUE	:	Dec. 25, 2020
STANDARD(S)	:	EN 62479:2010 EN 50663:2017
REPORT VERSION	:	V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Dec. 25, 2020	Valid	Re-certification Report

Note:

The original test report Ref. No. AGC08009201201EH02 dated on Dec. 17, 2020 was modified on Dec. 25, 2020 to include the following changes:

-Changed the model name;

-Changed the appearance of the product material;

-Updated the EUT photo;

Retest all EMC test item.

TABLE OF CONTENTS

1. TEST REPORT CERTIFICATION

Applicant	Mid Ocean Brands B.V.
Address	7/F., King Tower, 111 King Lam Street, Cheung ShaWan, Kowloon, HongKong.
Manufacturer	Mid Ocean Brands B.V.
Address	7/F., King Tower, 111 King Lam Street, Cheung ShaWan, Kowloon, HongKong.
Factory	Mid Ocean Brands B.V.
Address	7/F., King Tower, 111 King Lam Street, Cheung ShaWan, Kowloon, HongKong.
Product Designation	BLUETOOTH SPEAKER
Brand Name	N/A
Test Model	MO9609
Date of test	Dec. 08, 2020 to Dec. 25, 2020
Test Result	Pass

We, Attestation of Global Compliance (Shenzhen) Co., Ltd. for compliance with the requirements set forth in the European Standard EN 62479. The results of testing in this report apply to the product/system which was tested only. The test results of this report relate only to the tested sample identified in this report.

Prepared By	Thea Huang Project Engineer	Dec. 25, 2020
Reviewed By	Max Zhang Reviewer	Dec. 25, 2020
Approved By	Forrest Lei Authorized Officer	Dec. 25, 2020

2. GENERAL INFORMATION

The following data is based on the information by the applicant.

Operating Frequency	2.402 GHz to 2.480GHz
Bluetooth Version	V5.1
Modulation	BR ☒GFSK, EDR ☒π /4-DQPSK, ☐8DPSK BLE ☐GFSK 1Mbps ☐GFSK 2Mbps
Hardware Version	V1.2
Software Version	V5.1
Antenna designation	Integral Antenna
Number of channels	79 for BR/EDR
Antenna Gain	3dBi
Power Supply	DC 3.7V by battery or DC 5V by adapter

Note: 1. The EUT provides Bluetooth wireless interface operating at 2.4G ISM band (2402MHz-2480MHz).
2. The EUT doesn't support 8DPSK and BLE.

3. TEST RESULT

The maximum output power of Bluetooth is **3.43dBm (2.20mW which is less than 20mW).** Please refer to ETSI EN 300 328 (V2.2.2) Test report (AGC08009201201EE04A) for the result of Maximum Transmit Power, which deemed to comply with the basic restrictions without testing.

Conditions of Issuance of Test Reports

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