



EN300 328 RF TEST REPORT

Applicant	:	Harman International Industries, Inc.
Address of Applicant	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES
Manufacturer	:	Harman International Industries, Inc.
Address of Manufacturer	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES
Equipment under Test	:	Portable Bluetooth Speaker
Model No.	:	BOOMBOX 4C
Test Standard(s)	:	EN 300 328 V2.2.2 (2019-07)
Report No.	:	DDT-RE24112111-1E04
Issue Date	:	2025/05/07
Issued By	:	Guangdong Dongdian Testing Service Co., Ltd. Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808

REPORT

Table of Contents

1.	Summary of Test Results	6
2.	General Test Information.....	7
2.1.	Description of EUT.....	7
2.2.	Accessories of EUT	8
2.3.	Block diagram of EUT configuration for test.....	8
2.4.	Decision of final test mode	8
2.5.	Deviations of test standard	9
2.6.	Test environment conditions.....	9
2.7.	Test laboratory	10
2.8.	Measurement uncertainty	10
3.	Equipment Used During Conductive Test	11
4.	RF Output Power	12
4.1.	Block diagram of test setup	12
4.2.	Limits.....	12
4.3.	Test procedure.....	12
4.4.	Test result	13
4.5.	Test graphs.....	14
5.	Occupied Channel Bandwidth	16
5.1.	Block diagram of test setup	16
5.2.	Limits.....	16
5.3.	Test procedure.....	16
5.4.	Test result	17
5.5.	Test graphs.....	18
6.	Accumulated Transmit Time, Frequency Occupation & Hopping Sequence.....	20
6.1.	Block diagram of test setup	20
6.2.	Limits.....	20
6.3.	Test procedure.....	20
6.4.	Test result	21
6.5.	Test graphs.....	22
7.	Hopping Frequency Separation.....	28
7.1.	Block diagram of test setup	28
7.2.	Limits.....	28
7.3.	Test procedure.....	28
7.4.	Test result	29
7.5.	Test graphs.....	30
8.	Transmitter Unwanted Emissions in The Out-of-band Domain.....	31

8.1.	Block diagram of test setup	31
8.2.	Limits.....	31
8.3.	Test procedure.....	31
8.4.	Test result	32
8.5.	Test graphs.....	33
9.	Receiver Blocking	35
9.1.	Block diagram of test setup	35
9.2.	Limits.....	35
9.3.	Test procedure.....	38
9.4.	Test result	39
9.5.	Test graphs.....	40
10.	Adaptivity	42
10.1.	Block diagram of test setup	42
10.2.	Requirement	42
10.3.	Test procedure.....	44
10.4.	Test result	44
10.5.	Test graphs.....	45
11.	Transmitter unwanted emissions in the spurious domain	52
11.1.	Test equipment	52
11.2.	Block diagram of test setup	53
11.3.	Limits.....	53
11.4.	Assistant equipment used for test	54
11.5.	Test procedure.....	54
11.6.	Test result	54
11.7.	Test data	55
12.	Receiver spurious emissions.....	71
12.1.	Test equipment	71
12.2.	Block diagram of test setup	72
12.3.	Limits.....	72
12.4.	Assistant equipment used for test	73
12.5.	Test procedure.....	73
12.6.	Test result	73
12.7.	Test data	74
13.	Test Setup Photograph.....	90
14.	Photos of the EUT	92

Test Report Declare

Applicant	:	Harman International Industries, Inc.
Address of Applicant	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES
Equipment under Test	:	Portable Bluetooth Speaker
Model No.	:	BOOMBOX 4C
Manufacturer	:	Harman International Industries, Inc.
Address of Manufacturer	:	8500 Balboa Boulevard, Northridge, CA 91329, UNITED STATES

Test Standard Used:
EN 300 328 V2.2.2 (2019-07)

We Declare:
The equipment described above is tested by Guangdong Dongdian Testing Service Co., Ltd. and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Guangdong Dongdian Testing Service Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

Report No.:	DDT-RE24112111-1E04		
Date of Receipt:	2025/03/05	Date of Test:	2025/03/05 - 2025/04/25

Created: Bobo Chen	Reviewed: Ella Gong	Approved: Damon Hu
		
2025/04/25	2025/05/07	2025/05/07

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Guangdong Dongdian Testing Service Co., Ltd.

Revision History

Version	Revision Content	Issue Date	Approved
---	Initial issue	2025/05/07	

1. Summary of Test Results

No.	Test Parameter	Clause No.	Condition	Result
1	RF output power	4.3.1.2 or 4.3.2.2	Apply all equipment	Pass
2	Power Spectral Density	4.3.2.3	Only for equipment using wide band modulations other than FHSS	N/A
3	Duty Cycle, Tx-Sequence, Tx-gap	4.3.1.3 or 4.3.2.4	Only for non-adaptive equipment	N/A
4	Accumulated Transmit time, Frequency Occupation & Hopping Sequence	4.3.1.4	Only for FHSS equipment	Pass
5	Hopping Frequency Separation	4.3.1.5	Only for FHSS	Pass
6	Medium Utilisation	4.3.1.6 or 4.3.2.5	Only for non-adaptive equipment	N/A
7	Adaptive	4.3.1.7 or 4.3.2.6	Only for adaptive equipment	Pass
8	Occupied Channel Bandwidth	4.3.1.8 or 4.3.2.7	Apply all equipment	Pass
9	Transmitter unwanted emissions in the OOB domain	4.3.1.9 or 4.3.2.8	Apply all equipment	Pass
10	Transmitter unwanted emissions in the spurious domain	4.3.1.10 or 4.3.2.9	Apply all equipment	Pass
11	Receiver spurious emissions	4.3.1.11 or 4.3.2.10	Apply all equipment	Pass
12	Receiver Blocking	4.3.1.12 or 4.3.2.11	Apply all equipment	Pass
13	Geo-location capability	4.3.1.13 or 4.3.2.12	Only for equipment with geo-location capability	N/A
Note: N/A is an abbreviation for Not Applicable, and means this item is not applicable for this device or no need to test according to standard.				

2. General Test Information

2.1. Description of EUT

EUT Name	: Portable Bluetooth Speaker
Model Number	: BOOMBOX 4C
EUT Function Description	: Please reference user manual of this device
Power Supply	: Input: AC 100-240V ~ 50/60Hz, 150W Internal battery: Rechargeable Li-ion Battery Pack 99.02 Wh (equivalent to 21.6 V / 4584 mAh)
Hardware Version	: 2.0.1
Software Version	: V250430
Antenna Type	: FPC
Max Antenna Gain(dBi)	: 2.48

Radio Specification	: Bluetooth LE
Operation Frequency	: 2402 MHz to 2480 MHz
Modulation	: GFSK

Bluetooth LE 1Mbps Channel information					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	14	2430	28	2458
1	2404	15	2432	29	2460
2	2406	16	2434	30	2462
3	2408	17	2436	31	2464
4	2410	18	2438	32	2466
5	2412	19	2440	33	2468
6	2414	20	2442	34	2470
7	2416	21	2444	35	2472
8	2418	22	2446	36	2474
9	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	39	2480
12	2426	26	2454		
13	2428	27	2456		
Bluetooth LE 2Mbps Channel information					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	14	2430	28	2458
1	2404	15	2432	29	2460
2	2406	16	2434	30	2462
3	2408	17	2436	31	2464

4	2410	18	2438	32	2466
5	2412	19	2440	33	2468
6	2414	20	2442	34	2470
7	2416	21	2444	35	2472
8	2418	22	2446	36	2474
9	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	39	2480
12	2426	26	2454	/	
13	2428	27	2456	/	
The channels denoted with the grey background are excluded, because they are primary advertising channel only for the Bluetooth LE 1Mbps according to the Bluetooth Core Specification.					

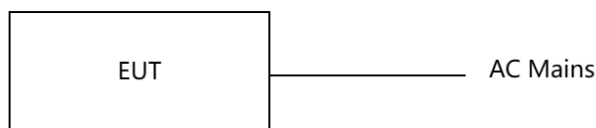
Note: The above EUT information is declared by manufacturer and for more detailed features description please refer to the manufacturer's specifications or User's Manual. The above Antenna information is declared by manufacturer and for more detailed features description please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

“☑” means to be chosen or applicable; “☐” means don't to be chosen or not applicable; This note applies to entire report.

2.2. Accessories of EUT

Accessories	Manufacturer	Model number	Description
AC cable	Harman	N/A	Length: 2.0 m

2.3. Block diagram of EUT configuration for test



2.4. Decision of final test mode

According pre-test, the worst test modes were reported as below:

Test software: FCC_Tool_V3.0.exe

The test software was used to control EUT work in Continuous Tx mode and Rx mode, and select test channel, wireless mode as below table.

The pathloss of external cable: 0.5dB (According to the manufacturer's claims)

Tested mode, Tx Power Setting, Channel, and Frequency			
Mode	Setting Tx Power	Channel	Frequency (MHz)
GFSK_1M Tx mode	11	CH0	2402
	11	CH19	2440
	11	CH39	2480
GFSK_2M Tx mode	11	CH1	2404
	11	CH19	2440
	11	CH38	2478
GFSK_1M Rx mode	/	CH0	2402
	/	CH19	2440
	/	CH39	2480
GFSK_2M Rx mode	/	CH1	2404
	/	CH19	2440
	/	CH38	2478

2.5. Deviations of test standard

No deviation.

2.6. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

/	Normal Conditions	Extreme Conditions
Temperature range	15 °C to 35 °C	0 °C to +45 °C
Humidity range	20% to 75%	N/A
Pressure range	86-106 kPa	N/A
Power supply	NV: AC 230V/50Hz	N/A
Note 1: The Extreme temperature range and extreme voltages are declared by the manufacturer. Note 2: NTNV: Normal Temperature Normal Voltage, LTNV: Low Temperature Normal Voltage, HTNV: High Temperature Normal Voltage.		

Note: The specific temperature and humidity information of each test item refers to the temperature and humidity record in the corresponding test data.

2.7. Test laboratory

Guangdong Dongdian Testing Service Co., Ltd.

Add.: Unit 2, Building 1, No. 17, Zongbu 2nd Road, Songshan Lake Park, Dongguan, Guangdong, China, 523808.

Tel.: +86-0769-38826678, <http://www.dgddt.com>, Email: ddt@dgddt.com.

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, R-20240, G-20118

2.8. Measurement uncertainty

Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum analyzer)	0.86 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$);
	1.38 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$);
	1.38 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$)
Frequencies Stability	6.7×10^{-8} (Antenna couple method)
	5.5×10^{-8} (Conducted method)
Conducted spurious emissions	0.86 dB ($10 \text{ MHz} \leq f < 3.6 \text{ GHz}$);
	1.40 dB ($3.6 \text{ GHz} \leq f < 8 \text{ GHz}$)
	1.66 dB ($8 \text{ GHz} \leq f < 26.5 \text{ GHz}$)
Uncertainty for radio frequency (RBW < 20 kHz)	3×10^{-8}
Temperature	0.4 °C
Humidity	2 %
Uncertainty for Radiation Emission test (9 kHz – 30 MHz)	3.44 dB
Uncertainty for Radiation Emission test (30 MHz - 1 GHz)	4.70 dB (Antenna Polarize: V)
	4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission test (1 GHz - 40 GHz)	4.10 dB (1 - 6 GHz)
	4.40 dB (6 GHz - 18 GHz)
	3.54 dB (18 GHz - 26 GHz)
	4.30 dB (26 GHz - 40 GHz)
Uncertainty for Power line conduction emission test	3.34dB (150KHz-30MHz)
	3.72dB (9KHz-150KHz)

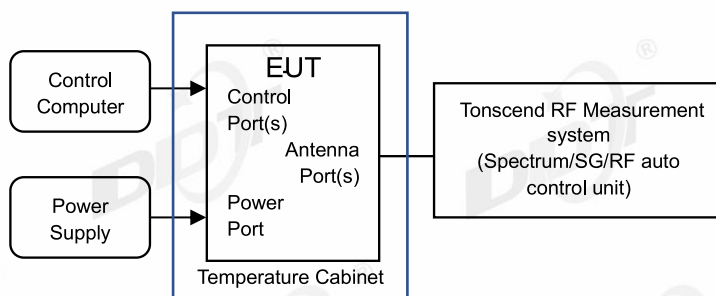
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3. Equipment Used During Conductive Test

Equipment	Manufacturer	Model No.	Serial Number	Due Date
☑RF Connected Test (RF Measurement System 3#)				
SIGNAL ANALYZER	R&S	FSV40	101407	2025/07/08
Wideband Radio Communication Tester	R&S	CMW500	117491	2026/03/28
EXG Analog Signal Generator	KEYSIGHT	N5173B	MY62153058	2025/07/08
MXG Vector Signal Generator	Agilent	N5182A	MY48180912	2026/03/28
RF Control Unit	Tonscend	JS0806-2	20C8060230	2026/03/28
TEMP&HUMI Programmable Chamber	ZHIXIANG	ZXGDJS-150L	ZX170110-A	2026/03/28
Test Software	Tonscend	JS1120-3	Ver.3.2.22	N/A
☑RF Connected Test (RF Measurement System 4#)				
Signal &Spectrum Analyzer	R&S	FSV3044	101173	2026/03/28
Wideband Radio Communication Tester	R&S	CMW500	168801	2026/03/28
MXG Vector Signal Generator	Agilent	N5182A	MY48180737	2026/03/28
PSG Vector Signal Generator	Agilent	E8267D	US49060192	2025/08/25
RF Control Unit	Tonsend	JS0806-2	2118060485	2026/03/28
TEMP&HUMI Programmable Chamber	ZHIXIANG	ZXGDJS-150L	ZX170110-A	2026/03/28
Test Software	Tonscend	JS1120-3	Ver.3.2.22	N/A

4. RF Output Power

4.1. Block diagram of test setup



4.2. Limits

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 this equipment shall be equal to or less than the value declared by the manufacturer. This declared value shall be equal to or less than 20 dBm.

This limit shall apply for any combination of power level and intended antenna assembly.

4.3. Test procedure

- (1) The test according to EN 300 328 V2.2.2 Clause 5.4.2.2.1.
- (2) Connect EUT's antenna output to power sensor by RF cable, the path loss was compensated to the results.
- (3) For FHSS equipment, the measurements shall be performed during normal operation (hopping) and the equipment is assumed to have no blacklisted frequencies (operating on all hopping frequencies).
- (4) For adaptive equipment, the measurement duration shall be long enough to ensure a minimum number of bursts (at least 10) is captured.
- (5) The measurements for RF output power shall be performed at both normal environmental conditions and at the extremes of the operating temperature range.

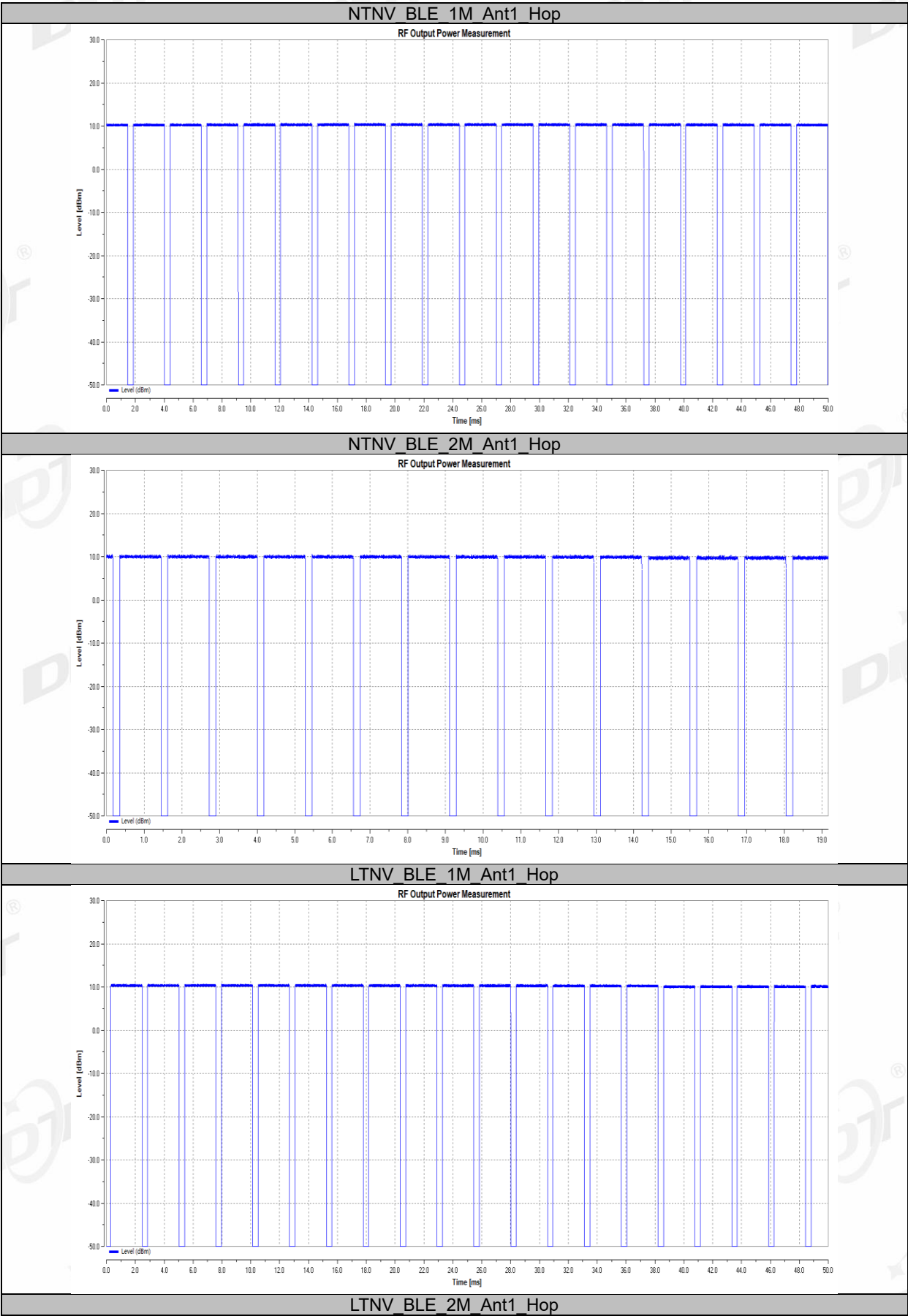
4.4. Test result

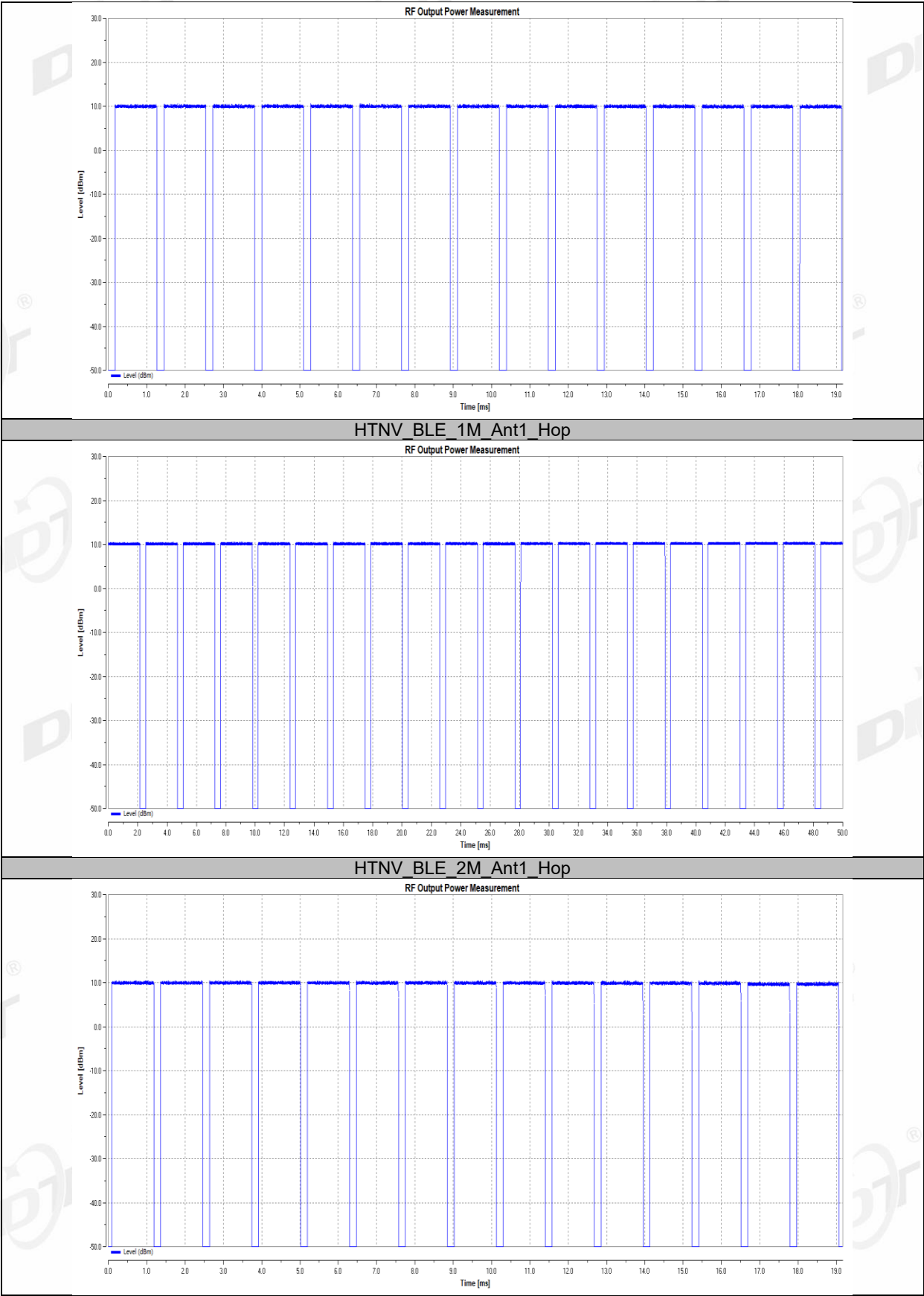
Test Engineer:	Zoe	Test Site:	RF Measurement System 4#
Ambient Condition:	25.9℃,45.6%RH	Test Date:	2025.04.17
Test Power Supply:	AC 230V/50Hz	Sample Number:	S24112111-032

Test Condition	Test Mode	Antenna	Frequency[MHz]	Burst Power [dBm]	EIRP [dBm]	EIRP Limit [dBm]	Verdict
NTNV	BLE_1M	Ant1	Hop	10.38	12.86	20	PASS
	BLE_2M	Ant1	Hop	10.03	12.51	20	PASS
LTVN	BLE_1M	Ant1	Hop	10.39	12.87	20	PASS
	BLE_2M	Ant1	Hop	10.04	12.52	20	PASS
HTNV	BLE_1M	Ant1	Hop	10.30	12.78	20	PASS
	BLE_2M	Ant1	Hop	10.00	12.48	20	PASS

Note: EIRP = Measured Highest Pburst Values + Antenna Gain

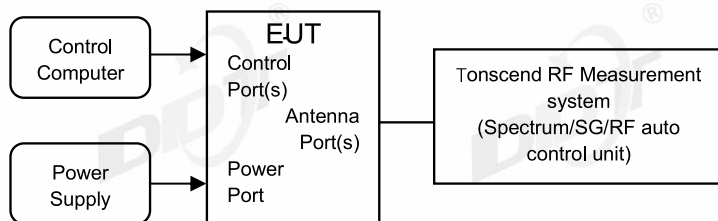
4.5. Test graphs





5. Occupied Channel Bandwidth

5.1. Block diagram of test setup



5.2. Limits

The Occupied Channel Bandwidth for each hopping frequency shall fall completely within the band 2400 MHz to 2483.5 MHz for this device.

5.3. Test procedure

- (1) The test according to EN 300 328 V2.2.2 Clause 5.4.7.2.1.
- (2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results.
- (3) For FHSS equipment having overlapping channels, special software might be required to force the UUT to hop or transmit on a single Hopping Frequency. The measurement shall be performed only on the lowest and the highest frequency within the stated frequency range.
- (4) The frequencies on which the tests were performed shall be recorded.
- (5) Set the spectrum analyzer as follows:

Centre Frequency:	The centre frequency of the channel under test
Frequency Span:	2 × Nominal Channel Bandwidth
RBW:	~ 1 % of the span without going below 1 %
VBW:	3 × RBW
Detector Mode:	RMS
Sweep time:	1s
Trace Mode:	Max Hold

When the trace has completed, use the 99% bandwidth function of the spectrum analyzer to measure the occupied channel bandwidth of the EUT.

5.4. Test result

Test Engineer:	Gen Liu	Test Site:	RF Measurement System 3#
Ambient Condition:	23.8℃,49.8%RH	Test Date:	2025.03.12
Test Power Supply:	AC 230V/50Hz	Sample Number:	S24112111-032

Test Mode	Antenna	Frequency [MHz]	OCB[MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	1.047	2401.4765	2402.5235	2400 to 2483.5	PASS
		2440	1.047	2439.4805	2440.5275	2400 to 2483.5	PASS
		2480	1.047	2479.4765	2480.5235	2400 to 2483.5	PASS
BLE_2M	Ant1	2404	1.994	2403.0050	2404.9990	2400 to 2483.5	PASS
		2440	1.994	2439.0050	2440.9990	2400 to 2483.5	PASS
		2478	1.994	2477.0010	2478.9950	2400 to 2483.5	PASS

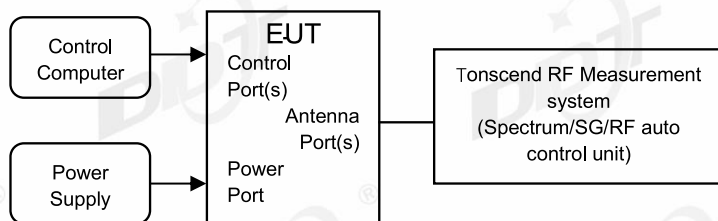
5.5. Test graphs





6. Accumulated Transmit Time, Frequency Occupation & Hopping Sequence

6.1. Block diagram of test setup



6.2. Limits

The Dwell Time is the time that a particular hopping frequency would be occupied by the transmitter during a single hop. The equipment itself is not required to transmit on this hopping frequency during the Dwell Time.

For this Adaptive frequency hopping systems, the maximum accumulated dwell time on any hopping frequency shall be 400 ms within any period of 400 ms multiplied by the minimum number of hopping frequencies (79) that have to be used.

The Minimum Frequency Occupation Time shall be equal to one dwell time within a period not exceeding four times the product of the dwell time per hop and the number of hopping frequencies in use.

6.3. Test procedure

- (1) The test according to EN 300 328 V2.2.2 Clause 5.4.4.2.1.
- (2) Connect EUT's antenna output to spectrum analyzer by RF cable.
- (3) JS Tonscend test software is used to control the spectrum analyzer to use the following settings:

Accumulated Transmit Time settings:

Centre Frequency:	Equal to the hopping frequency being investigated
Frequency Span:	0 Hz
RBW:	~ 50 % of the Occupied Channel Bandwidth
VBW:	≥ RBW
Detector Mode:	RMS
Sweep time:	Equal to the applicable observation period
Trace Mode	Clear/Write

Frequency Occupation settings:

Centre Frequency:	Equal to the hopping frequency being investigated
Frequency Span:	0 Hz
RBW:	~ 50 % of the Occupied Channel Bandwidth
VBW:	≥ RBW
Detector Mode:	RMS
Sweep time:	4 × dwell time × Actual number of hopping frequencies in use
Trace Mode:	Clear/Write

Hopping Sequence settings:

Start Frequency:	2 400 MHz
Stop Frequency:	2 483,5 MHz
RBW:	~ 50 % of the Occupied Channel Bandwidth
VBW:	≥ RBW
Detector Mode:	Peak
Sweep time:	1 s
Number of sweep points:	~ 400 / Occupied Channel Bandwidth (MHz); the number of sweep points may need to be further increased in case of overlapping channels
Trace Mode:	Max Hold

6.4. Test result

Test Engineer:	Gen Liu	Test Site:	RF Measurement System 3#
Ambient Condition:	23.8℃,49.8%RH	Test Date:	2025.03.12
Test Power Supply:	AC 230V/50Hz	Sample Number:	S24112111-032

Accumulated Transmit Time

Test Mode	Antenna	Frequency[MHz]	Result [ms]	Limit[ms]	Verdict
BLE_1M	Ant1	Hop_2402	331.179	400	PASS
		Hop_2480	330.113	400	PASS
BLE_2M	Ant1	Hop_2404	222.972	400	PASS
		Hop_2478	203.240	400	PASS

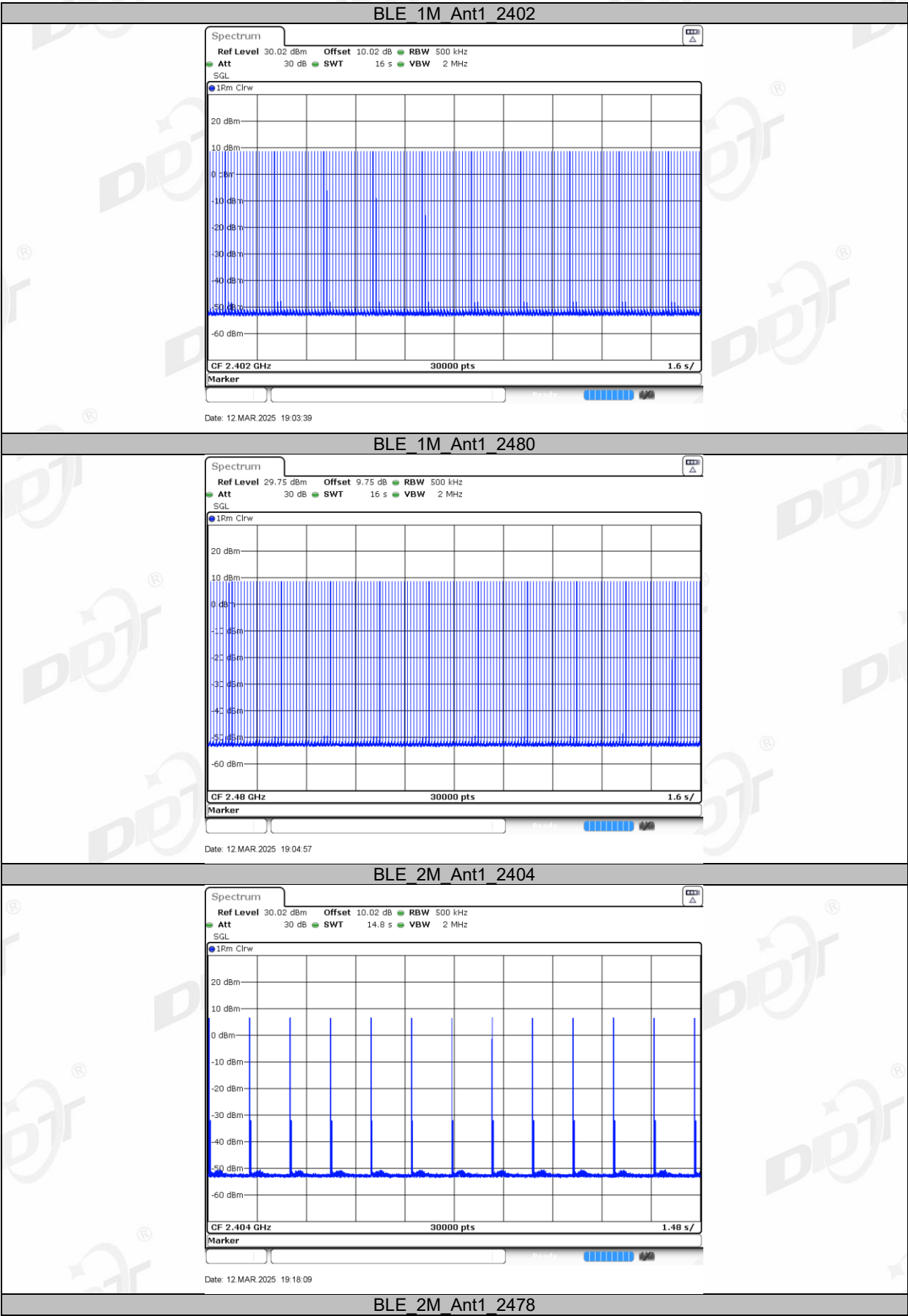
Frequency Occupation

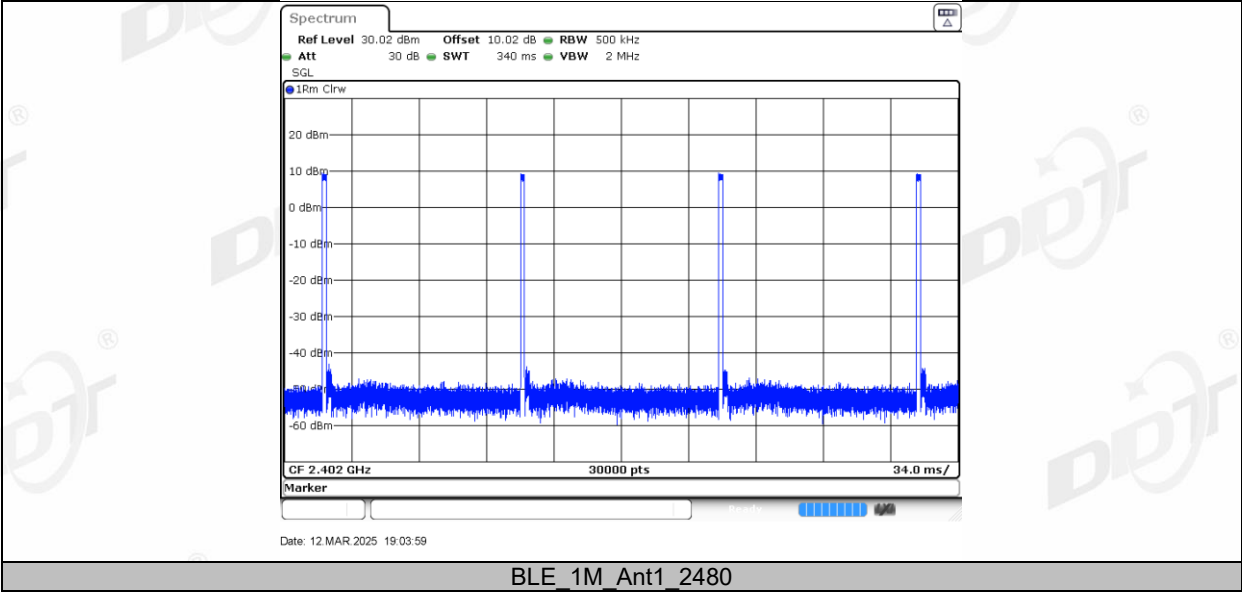
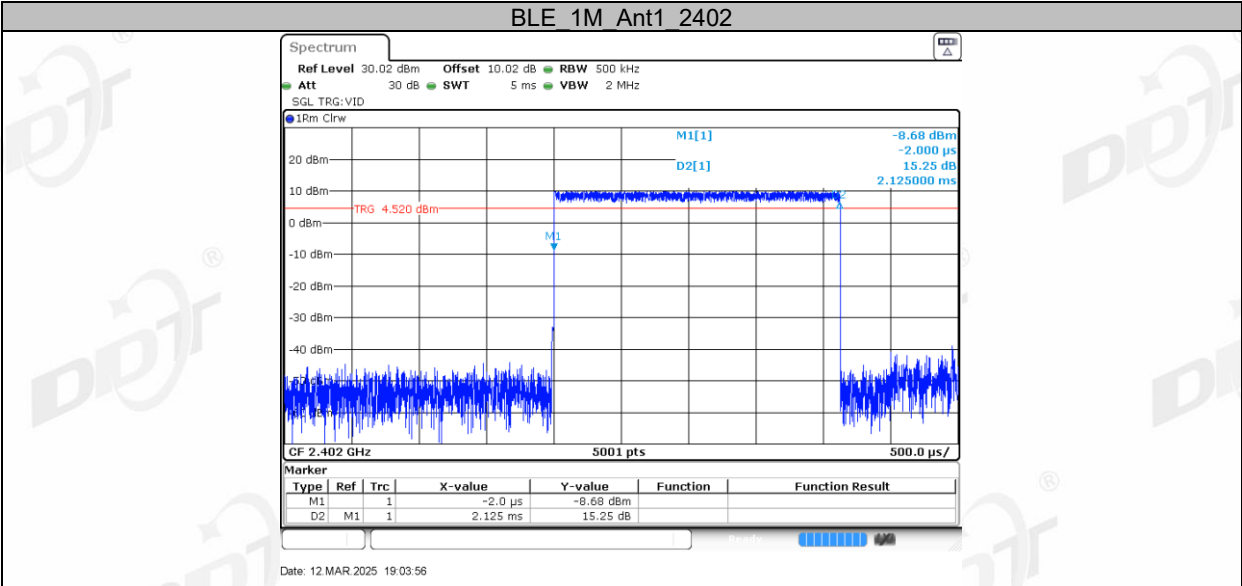
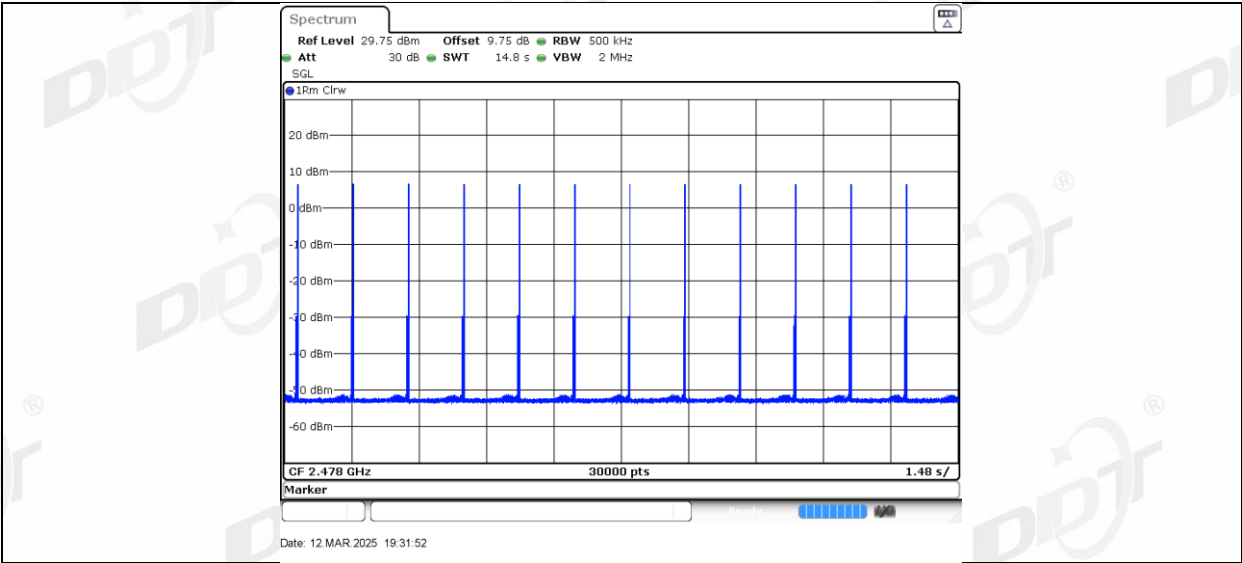
Test Mode	Antenna	Frequency[MHz]	Result [Num.]	Limit [Num.]	Verdict
BLE_1M	Ant1	Hop_2402	4	1	PASS
		Hop_2480	3	1	PASS
BLE_2M	Ant1	Hop_2404	14	1	PASS
		Hop_2478	14	1	PASS

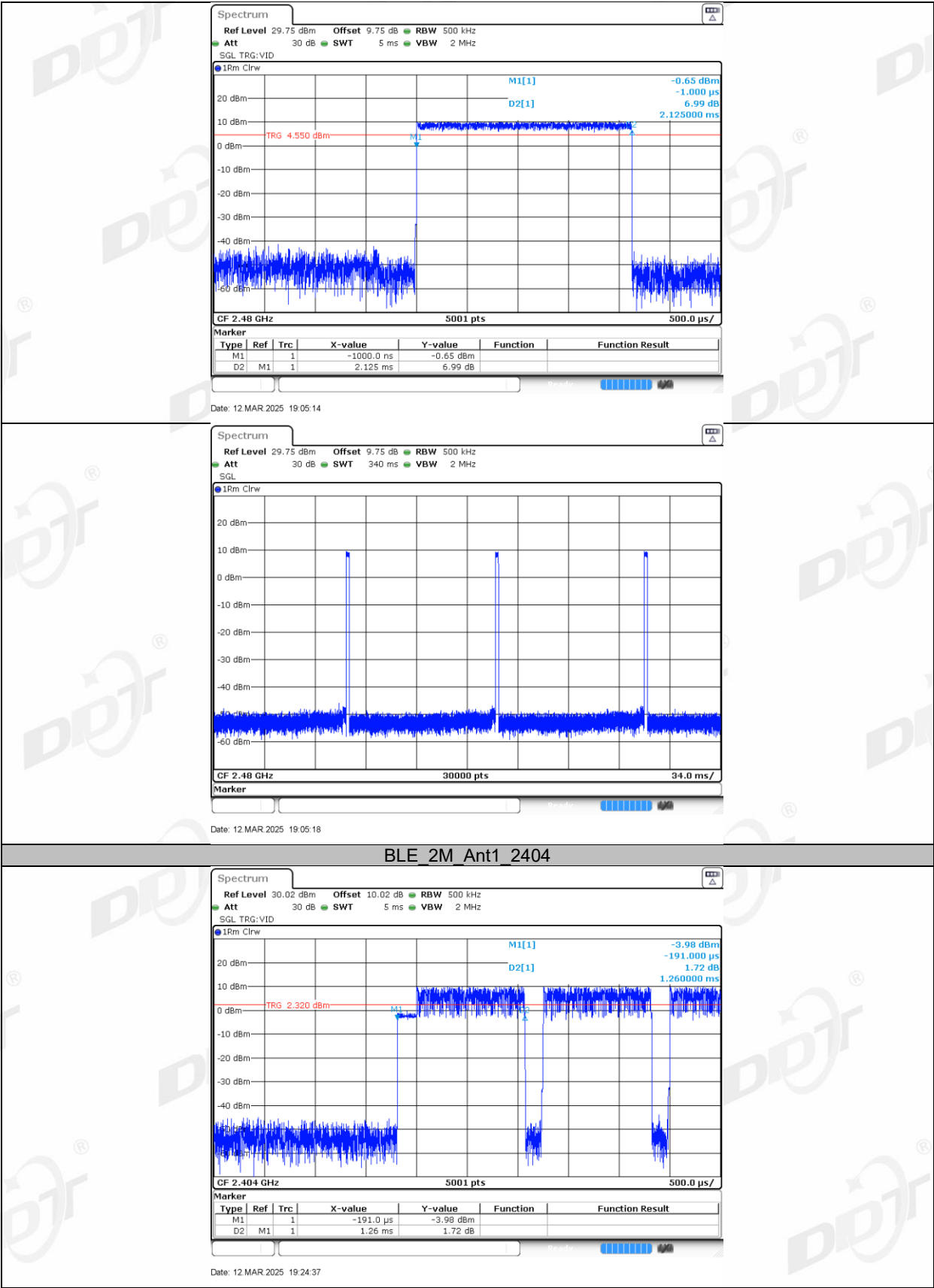
Hopping Sequence

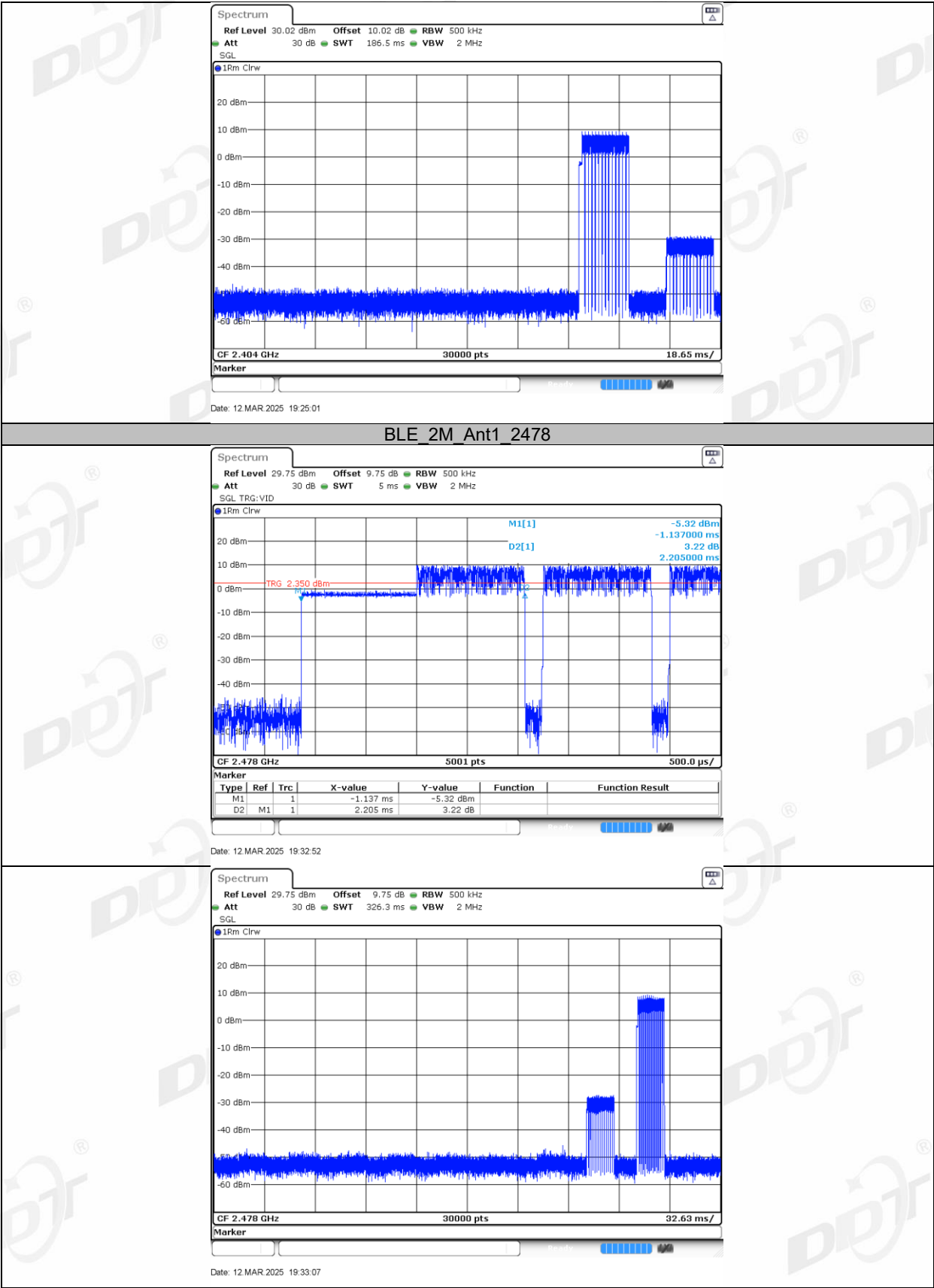
Test Mode	Antenna	Channel	Hop. [Num.]	Limit[Num.]	Band Use [%]	Limit [%]	Verdict
BLE_1M	Ant1	2402	40	15	96.00	70	PASS
		2480	40	15	96.00	70	PASS
BLE_2M	Ant1	2404	38	15	92.10	70	PASS
		2478	38	15	92.20	70	PASS

6.5. Test graphs

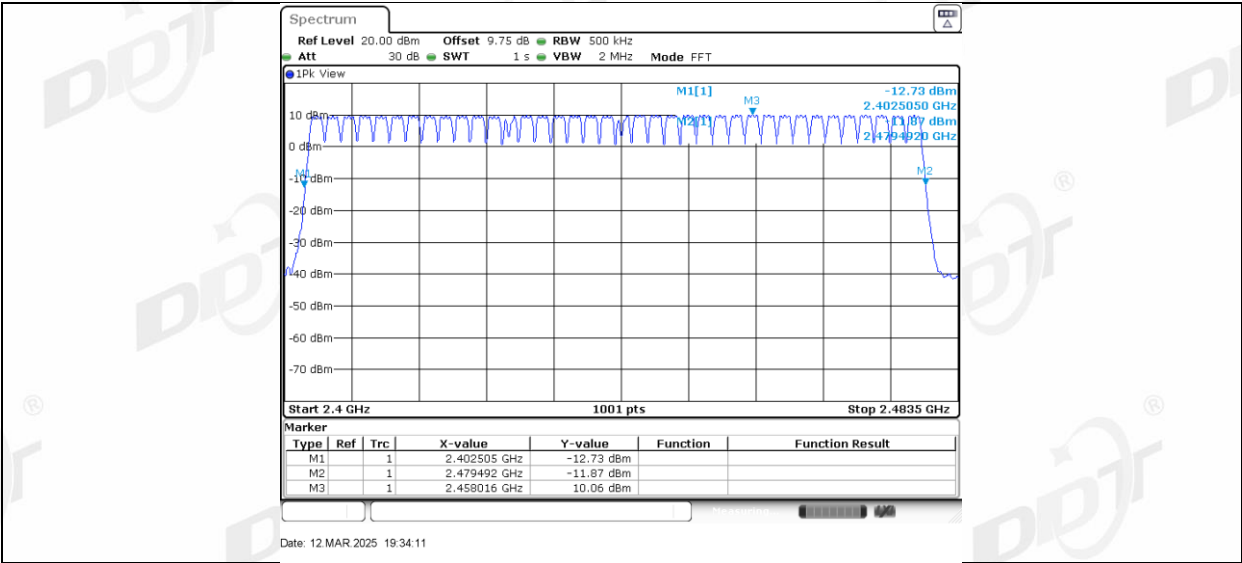






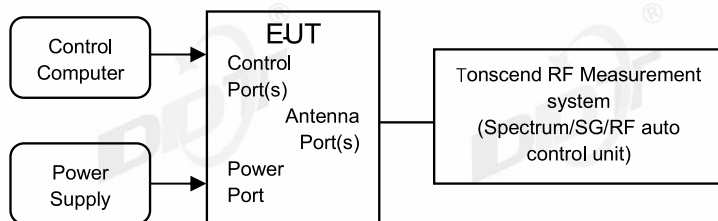






7. Hopping Frequency Separation

7.1. Block diagram of test setup



7.2. Limits

- (1) For adaptive frequency hopping systems the minimum hopping frequency separation shall be 100 kHz.
- (2) For equipment with a maximum declared RF Output power level of less than 10 dBm e.i.r.p. or for non-adaptive Frequency Hopping equipment operating in a mode where the RF Output power is less than 10 dBm e.i.r.p. only the minimum Hopping Frequency Separation of 100 kHz applies.

7.3. Test procedure

- (1) The test according to EN 300 328 V2.2.2 Clause 5.4.5.2.1.
- (2) Connect EUT's antenna output to spectrum analyzer by RF cable.
- (3) Configure EUT work in normal hopping mode.
- (4) Set the spectrum analyzer as follows:

Centre Frequency:	Centre of the two adjacent hopping frequencies
Frequency Span:	Sufficient to see the complete power envelope of both hopping frequencies
RBW:	1 % of the Span
VBW:	3 × RBW
Detector Mode:	Max Peak
Sweep time:	Auto
Trace Mode:	Max Hold

When the trace has completed, Use the marker-delta function to determine the Hopping Frequency Separation between the peaks of the two adjacent hopping frequencies.

7.4. Test result

Test Engineer:	Gen Liu	Test Site:	RF Measurement System 3#
Ambient Condition:	23.8℃,49.8%RH	Test Date:	2025.03.12
Test Power Supply:	AC 230V/50Hz	Sample Number:	S24112111-032

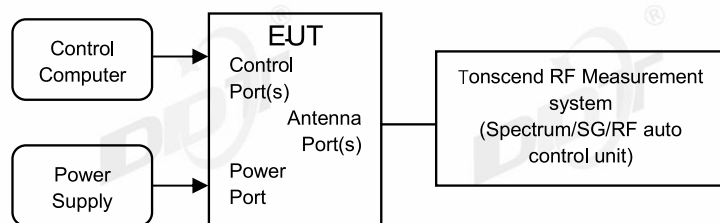
Test Mode	Antenna	Frequency [MHz]	Result [MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	Hop	1.994	0.100	PASS
BLE_2M	Ant1	Hop	2.006	0.100	PASS

7.5. Test graphs



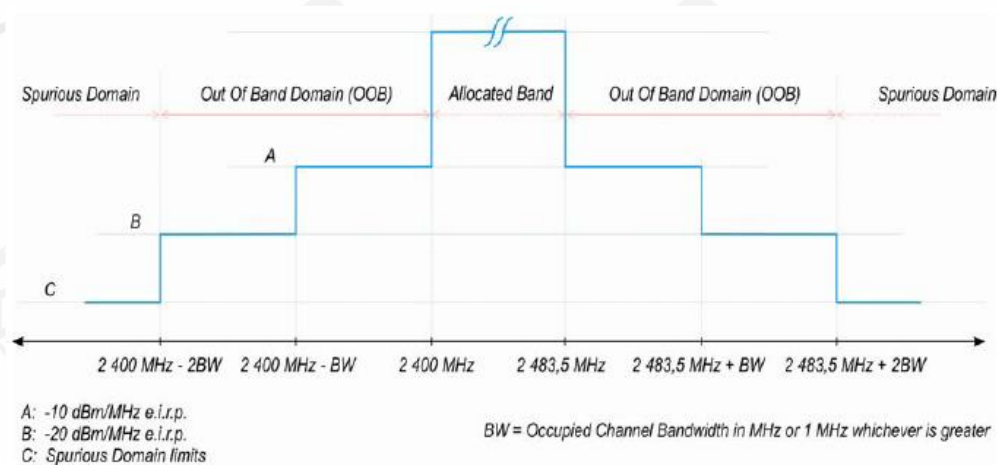
8. Transmitter Unwanted Emissions in The Out-of-band Domain

8.1. Block diagram of test setup



8.2. Limits

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



8.3. Test procedure

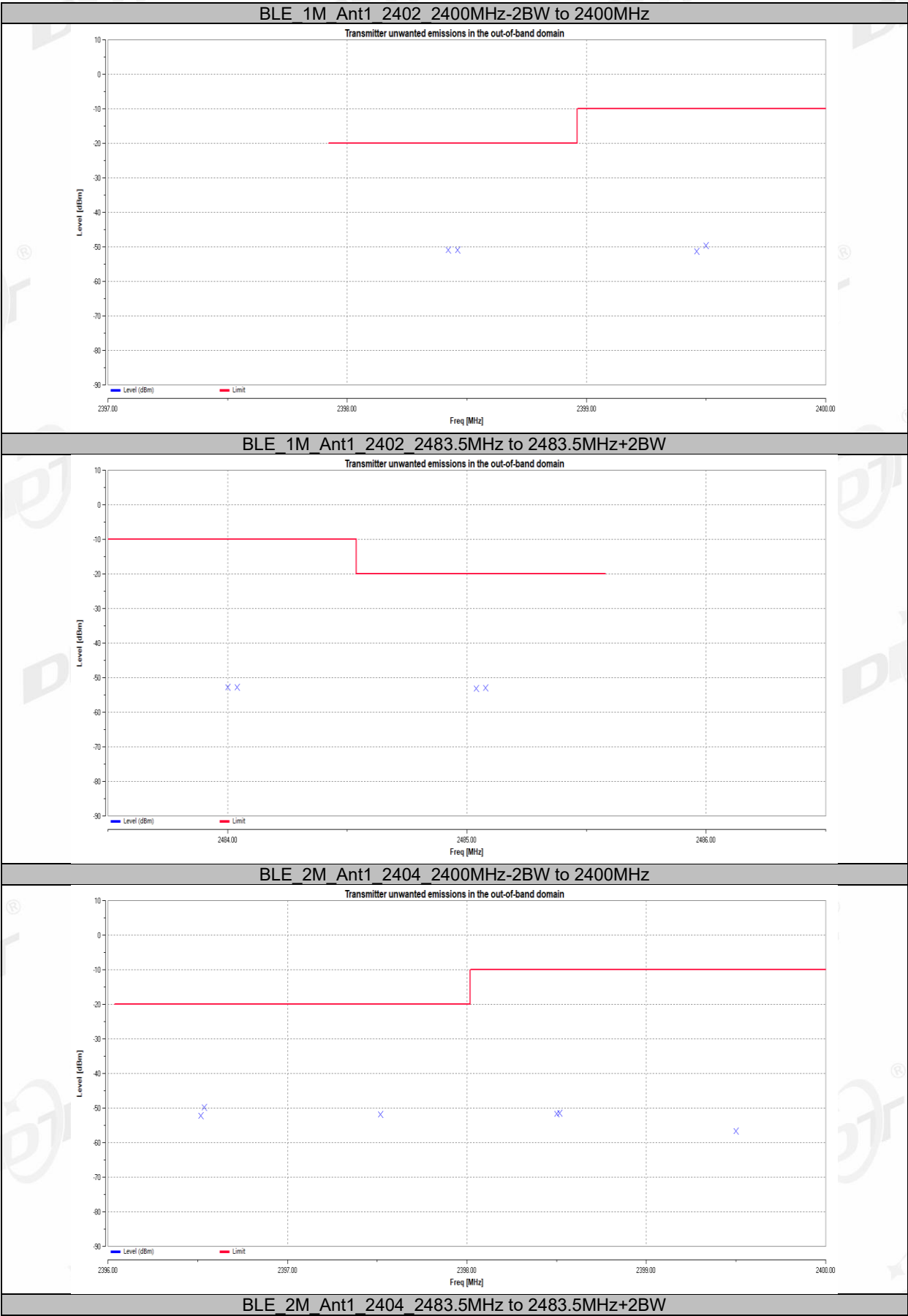
- (1) The test according to EN 300 328 V2.2.2 Clause 5.4.8.2.1.
- (2) Connect EUT's antenna output to spectrum analyzer by RF cable, the path loss was compensated to the results.
- (3) Configure EUT work in normal hopping mode.

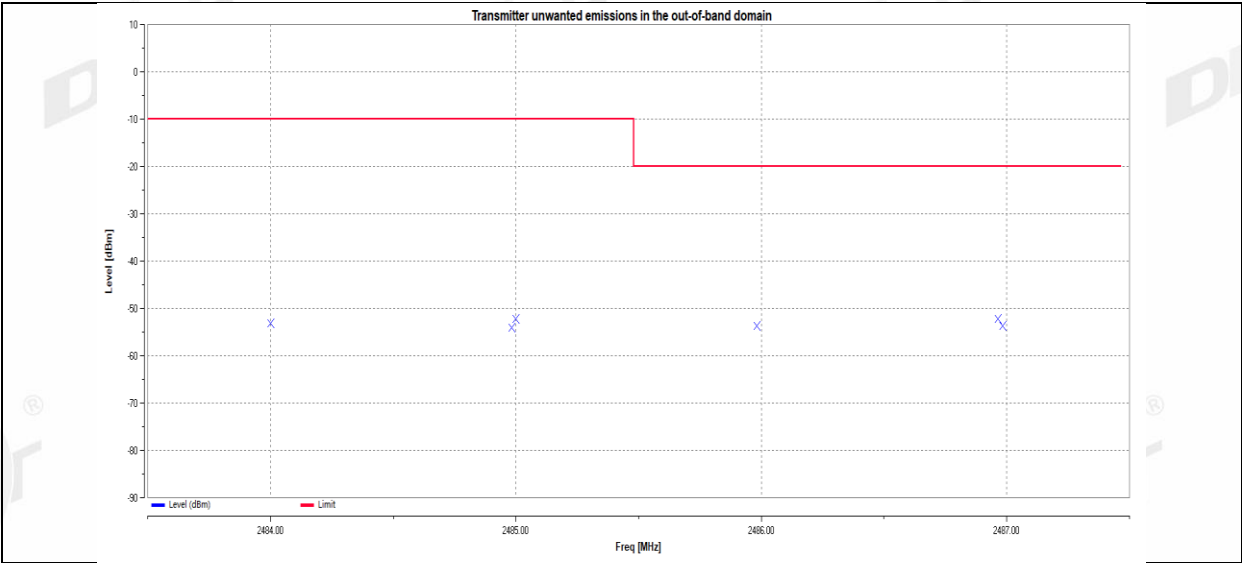
8.4. Test result

Test Engineer:	Gen Liu	Test Site:	RF Measurement System 3#
Ambient Condition:	23.8℃,49.8%RH	Test Date:	2025.03.12
Test Power Supply:	AC 230V/50Hz	Sample Number:	S24112111-032

Test Mode	Antenna	Frequency[MHz]	Freq. [MHz]	Level[dBm]	Limit[dBm]	Verdict
BLE_1M	Ant1	2404	2398.422	-50.88	-20.00	PASS
			2398.461	-50.93	-20.00	PASS
			2399.461	-51.25	-10.00	PASS
			2399.5	-49.71	-10.00	PASS
			2484	-52.69	-10.00	PASS
			2484.039	-52.84	-10.00	PASS
			2485.039	-53.12	-20.00	PASS
			2485.078	-53.04	-20.00	PASS
BLE_2M	Ant1	2404	2396.518	-52.18	-20.00	PASS
			2396.536	-49.86	-20.00	PASS
			2397.518	-51.88	-20.00	PASS
			2398.5	-51.72	-10.00	PASS
			2398.518	-51.47	-10.00	PASS
			2399.5	-56.68	-10.00	PASS
			2484	-53.17	-10.00	PASS
			2484.982	-54.10	-10.00	PASS
			2485	-52.28	-10.00	PASS
			2485.982	-53.66	-20.00	PASS
			2486.964	-52.20	-20.00	PASS
			2486.982	-53.62	-20.00	PASS

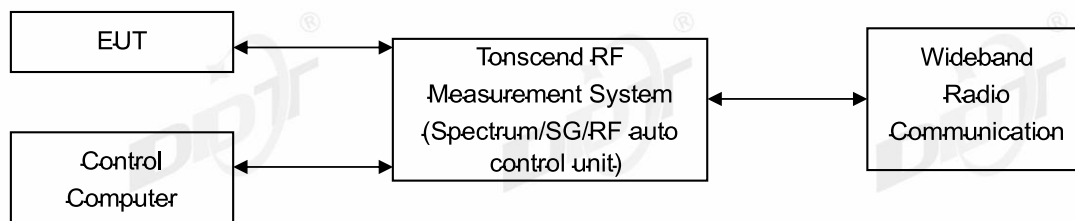
8.5. Test graphs





9. Receiver Blocking

9.1. Block diagram of test setup



9.2. Limits

This EUT belongs to:

☒ Receiver category 1

The following equipment shall be categorized as receiver category 1 equipment:

- Adaptive equipment with a maximum RF output power greater than 10 dBm e.i.r.p.

NOTE: Non-adaptive equipment is categorized as receiver category 2 or receiver category 3.

☐ Receiver category 2

The following equipment shall be categorized as receiver category 2 equipment:

- non-adaptive equipment with a Medium Utilization (MU) factor greater than 1 % and less than or equal to 10 % (irrespective of the maximum RF output power); or
- equipment (adaptive or non-adaptive) with a maximum RF output power greater than 0 dBm e.i.r.p. and less than or equal to 10 dBm e.i.r.p.

☐ Receiver category 3

The following equipment shall be categorized as receiver category 3 equipment:

- non-adaptive equipment with a maximum Medium Utilization (MU) factor of 1 % (irrespective of the maximum RF output power); or
- equipment (adaptive or non-adaptive) with a maximum RF output power of 0 dBm e.i.r.p.

Table 6: Receiver Blocking parameters for Receiver Category 1 equipment

Table 5: 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)	2380 2504	-34	CW
(-139 dBm + 10 × log10(OCBW)) or -74 dBm whichever is less (see note 3)	2300 2330 2360 2524 2584 2674		
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 P _{min} + 26 dB where P _{min} 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 P _{min} + 20 dB where P _{min} 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.			

Table 7: Receiver Blocking parameters 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
$(-139 \text{ dBm} + 10 \times \log_{10}(\text{OCBW}) + 10 \text{ dB})$ or $(-74 \text{ dBm} + 10 \text{ dB})$ whichever is less (see note 2)	2380 2504 2300 2584	-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 the test may be performed using a wanted signal up to $P_{\min} + 30 \text{ dB}$ where $P_{\min}$ 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.

Table 8: Receiver Blocking parameters 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
$(-139 \text{ dBm} + 10 \times \log_{10}(\text{OCBW}) + 20 \text{ dB})$ or $(-74 \text{ dBm} + 20 \text{ dB})$ whichever is less (see note 2)	2380 2504 2300 2584	-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 the test may be performed using a wanted signal up to $P_{\min} + 30 \text{ dB}$ where $P_{\min}$ 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.

Performance Criteria:

The minimum performance criterion shall be a PER less than or equal to 10 %.

9.3. Test procedure

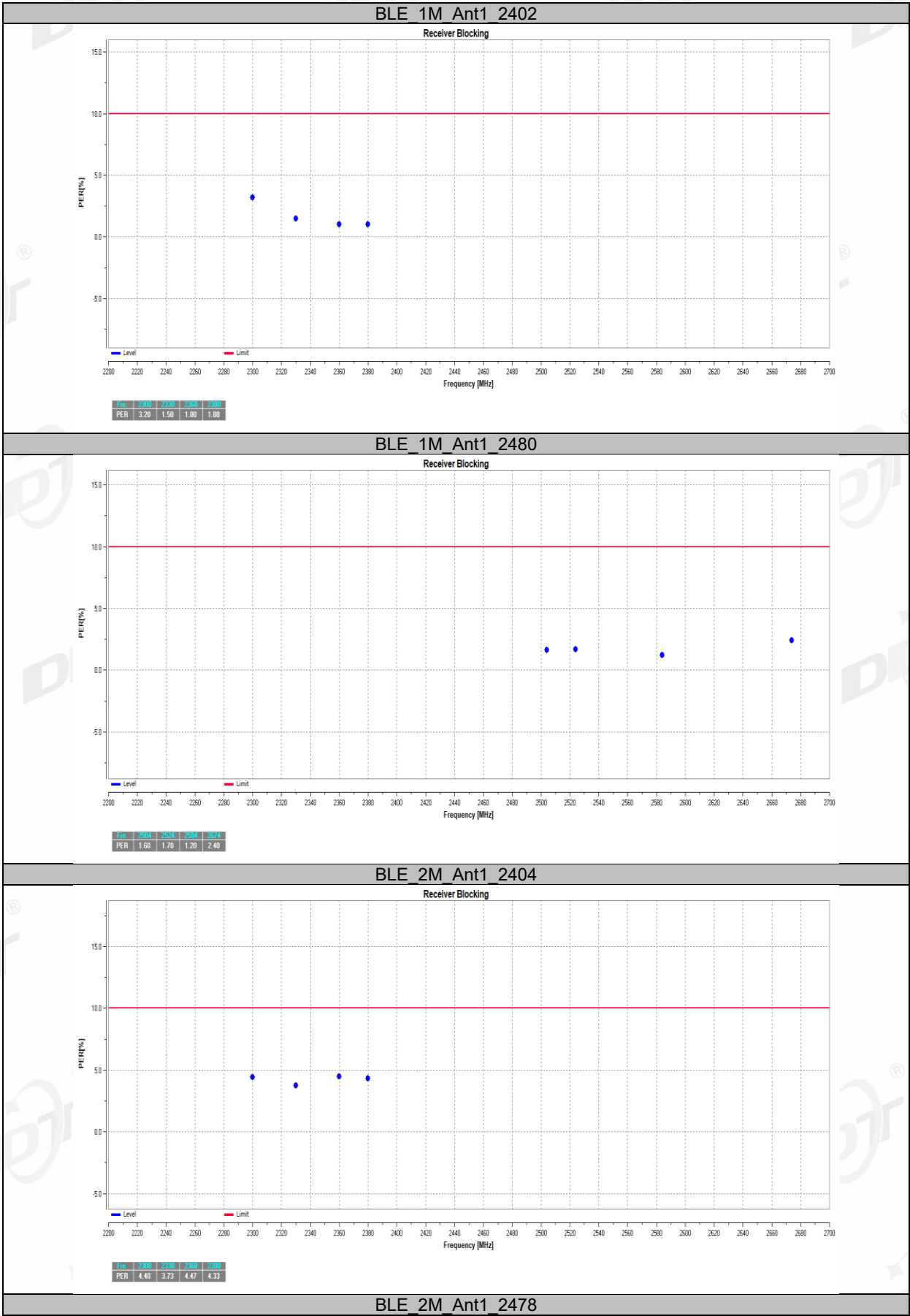
Refer to EN 300 328 V2.2.2 clause 5.4.11.2.1

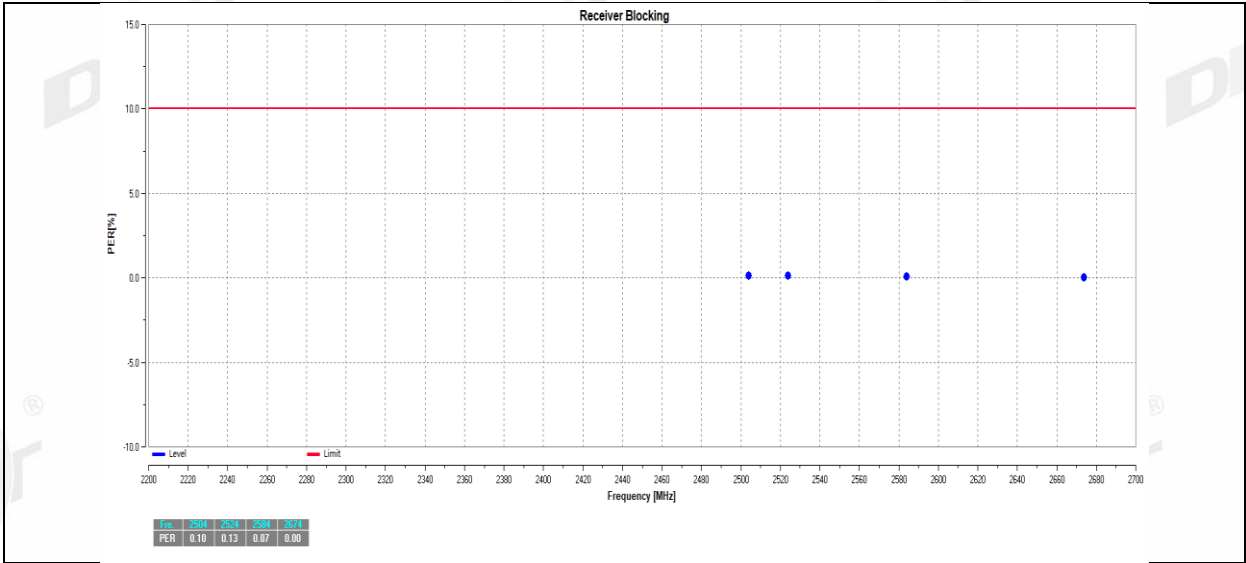
9.4. Test result

Test Engineer:	Zoe	Test Site:	RF Measurement System 4#
Ambient Condition:	25.9℃,45.6%RH	Test Date:	2025.03.26
Test Power Supply:	AC 230V/50Hz	Sample Number:	S24112111-032

Test Mode	Antenna	Frequenc y[MHz]	Pmin [dBm]	Wanted signal [dBm]	Freq. [MHz]	CW [dBm]	PER [%]	Limit [%]	Verdict
BLE_1M	Ant1	2402	---	-73.52	2300	-31.52	3.20	≤10	PASS
			---	-73.52	2330	-31.52	1.50	≤10	PASS
			---	-73.52	2360	-31.52	1.00	≤10	PASS
			---	-67.52	2380	-31.52	1.00	≤10	PASS
		2480	---	-67.52	2504	-31.52	1.60	≤10	PASS
			---	-73.52	2524	-31.52	1.70	≤10	PASS
			---	-73.52	2584	-31.52	1.20	≤10	PASS
			---	-73.52	2674	-31.52	2.40	≤10	PASS
BLE_2M	Ant1	2404	---	-73.52	2300	-31.52	4.40	≤10	PASS
			---	-73.52	2330	-31.52	3.73	≤10	PASS
			---	-73.52	2360	-31.52	4.47	≤10	PASS
			---	-67.52	2380	-31.52	4.33	≤10	PASS
		2478	---	-67.52	2504	-31.52	0.10	≤10	PASS
			---	-73.52	2524	-31.52	0.13	≤10	PASS
			---	-73.52	2584	-31.52	0.07	≤10	PASS
			---	-73.52	2674	-31.52	0.00	≤10	PASS

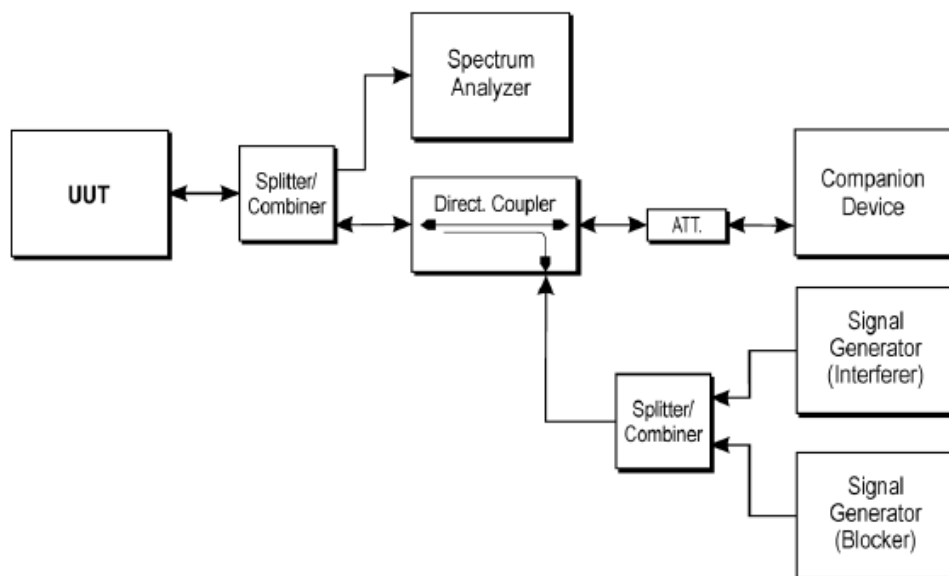
9.5. Test graphs





10. Adaptivity

10.1. Block diagram of test setup



10.2. Requirement

Adaptive Frequency Hopping equipment using non-LBT based DAA, shall comply with the following minimum set of requirements:

- (1) During normal operation, the equipment shall evaluate the presence of a signal for each of its hopping frequencies. If it is determined that a signal is present with a level above the detection threshold defined in step 5 the hopping frequency shall be marked as 'unavailable'.
- (2) The hopping frequency shall remain unavailable for a minimum time equal to 1 second or 5 times the actual number of hopping frequencies in the current (adapted) channel map used by the equipment, multiplied with the Channel Occupancy Time whichever is greater. There shall be no transmissions during this period on this hopping frequency. After this, the hopping frequency may be considered again as an 'available' frequency.
- (3) The total time during which an equipment has transmissions on a given hopping frequency without re-evaluating the availability of that hopping frequency is defined as the Channel Occupancy Time.

The Channel Occupancy Time for a given hopping frequency shall be less than 40 ms. For equipment using a dwell time > 40 ms that wants to have other transmissions during the same hop (dwell time) an Idle Period (no transmissions) of minimum 5 % of the Channel Occupancy Period with a minimum of 100 μ s shall be implemented. After the Idle Period has expired, the procedure as in step 1 needs to be repeated before having new transmissions on this hopping frequency during the same dwell time.

For non-LBT based frequency hopping equipment with a dwell time < 40 ms, the maximum Channel Occupancy Time may be non-contiguous, i.e. spread over a number of hopping sequences (equal to 40 ms divided by the dwell time [ms]).

- (4) 'Unavailable' channels may be removed from or may remain in the hopping sequence, but in any case:
 - apart from the Short Control Signalling Transmissions referred to in clause 4.3.1.7.4 of ETSI 300 328 V2.2.2, there shall be no transmissions on 'unavailable' channels;
 - a minimum of N hopping frequencies as defined in clause 4.3.1.4.3.2 (ETSI 300 328 V2.2.2)

shall always be maintained.

- (5) The detection threshold shall be proportional to the transmit power of the transmitter: for a 20 dBm e.i.r.p. transmitter the detection threshold level (TL) shall be equal to or less than -70 dBm/MHz at the input to the receiver assuming a 0 dBi (receive) antenna assembly. This threshold level (TL) may be corrected for the (receive) antenna assembly gain (G); however, beamforming gain (Y) shall not be taken into account. For power levels below 20 dBm e.i.r.p., the detection threshold level may be relaxed to:

$$TL = -70 \text{ dBm/MHz} + 10 \times \log_{10} (100 \text{ mW} / P_{out})$$

The equipment shall comply with the requirements defined in step 1 to step 4 of the present clause in the presence of an unwanted CW signal as defined as below table.

Wanted signal mean power from companion device (dBm)	Unwanted signal frequency (MHz)	Unwanted CW signal power (dBm)
-30 (see note 2)	2 395 or 2 488,5 (see note 1)	-35 (see note 2)
NOTE 1: The highest frequency shall be used for testing operating channels within the range 2 400 MHz to 2 442 MHz, while the lowest frequency shall be used for testing operating channels within the range 2 442 MHz to 2 483,5 MHz. See clause 5.4.6.1.		
NOTE 2: 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 in front of the UUT antenna (see example below).		

10.3. Test procedure

The analyser shall be set as follows:

- RBW: use next available RBW setting below the measured Occupied Channel Bandwidth
- Filter type: Channel Filter
- VBW: ≥ RBW
- Detector Mode: RMS
- Centre Frequency: Equal to the hopping frequency to be tested
- Span: 0 Hz
- Sweep time: > Channel Occupancy Time of the UUT. If the Channel Occupancy Time is non-contiguous (non-LBT based equipment), the sweep time shall be sufficient to cover the period over which the Channel Occupancy Time is spread out
- Trace Mode: Clear/Write
- Trigger Mode: Video

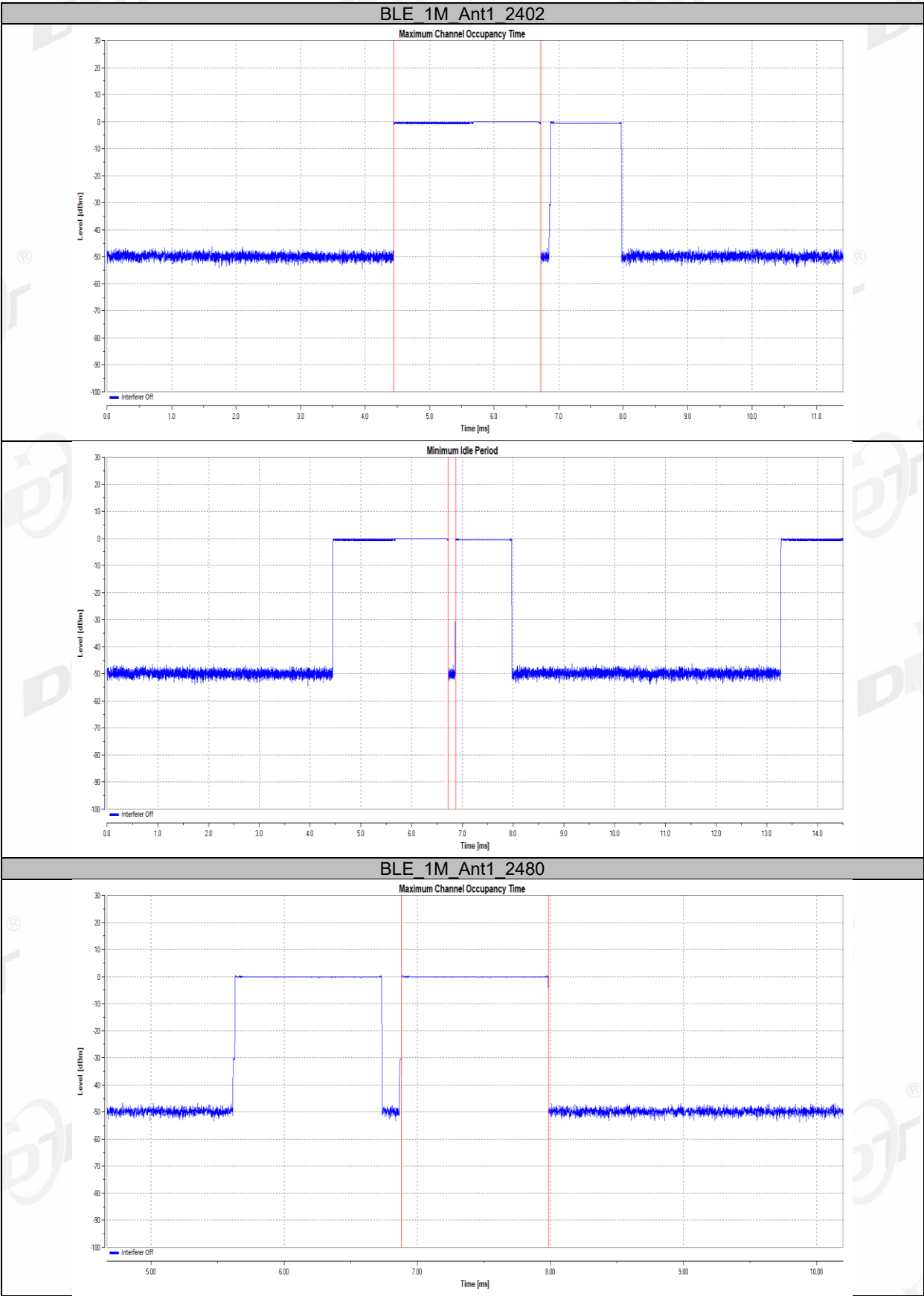
10.4. Test result

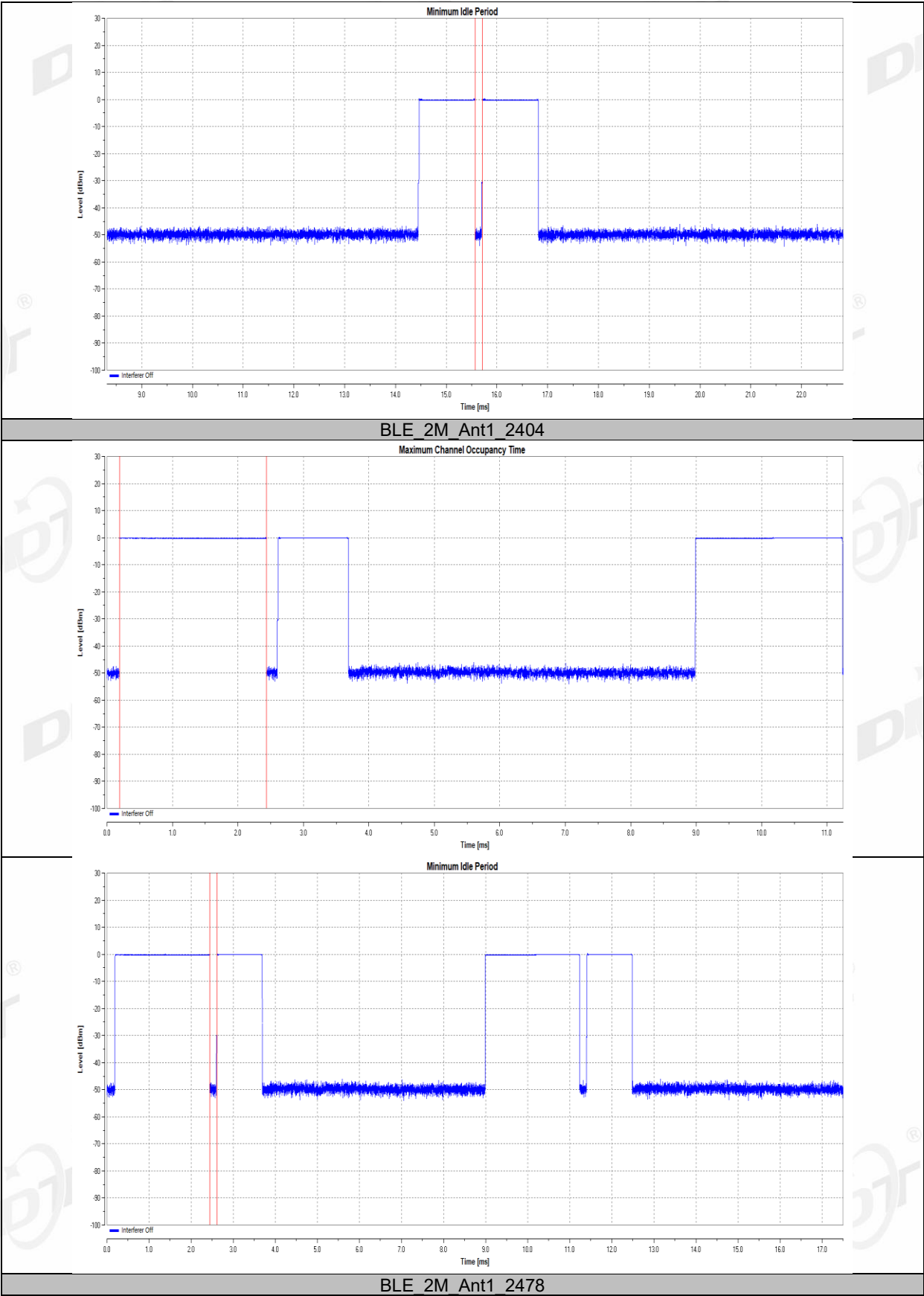
Test Engineer:	Zoe	Test Site:	RF Measurement System 4#
Ambient Condition:	25.9℃,45.6%RH	Test Date:	2025.03.26
Test Power Supply:	AC 230V/50Hz	Sample Number:	S24112111-032

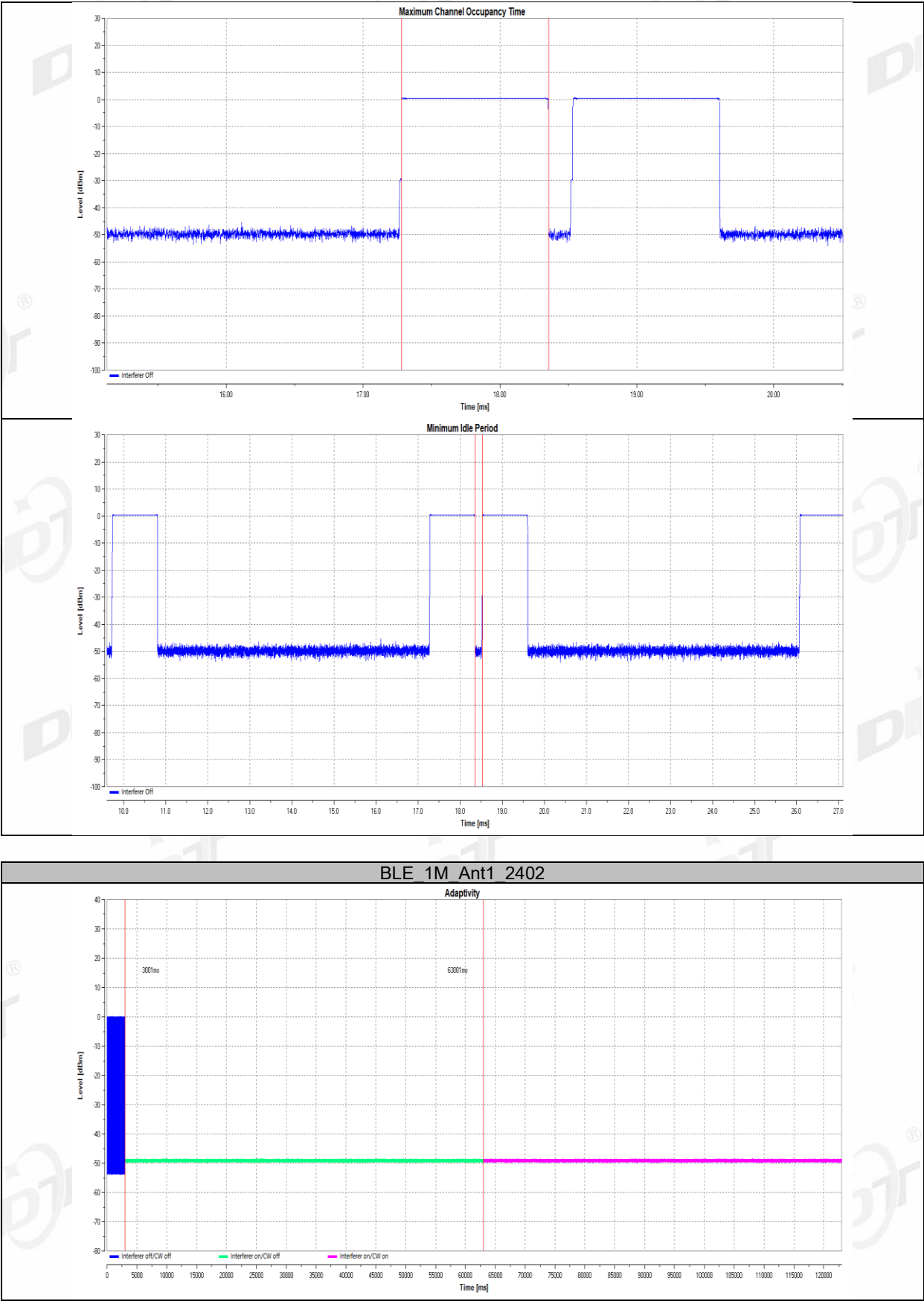
Test Mode	Antenna	Frequency [MHz]	Max.COT [ms]	Limit[ms]	Min.Idel Time[ms]	Limit[ms]	Verdict
BLE_1M	Ant1	2402	2.282	13	0.145	0.018	PASS
		2480	1.105	13	0.145	0.018	PASS
BLE_2M	Ant1	2404	2.249	13	0.175	0.018	PASS
		2478	1.075	13	0.175	0.018	PASS

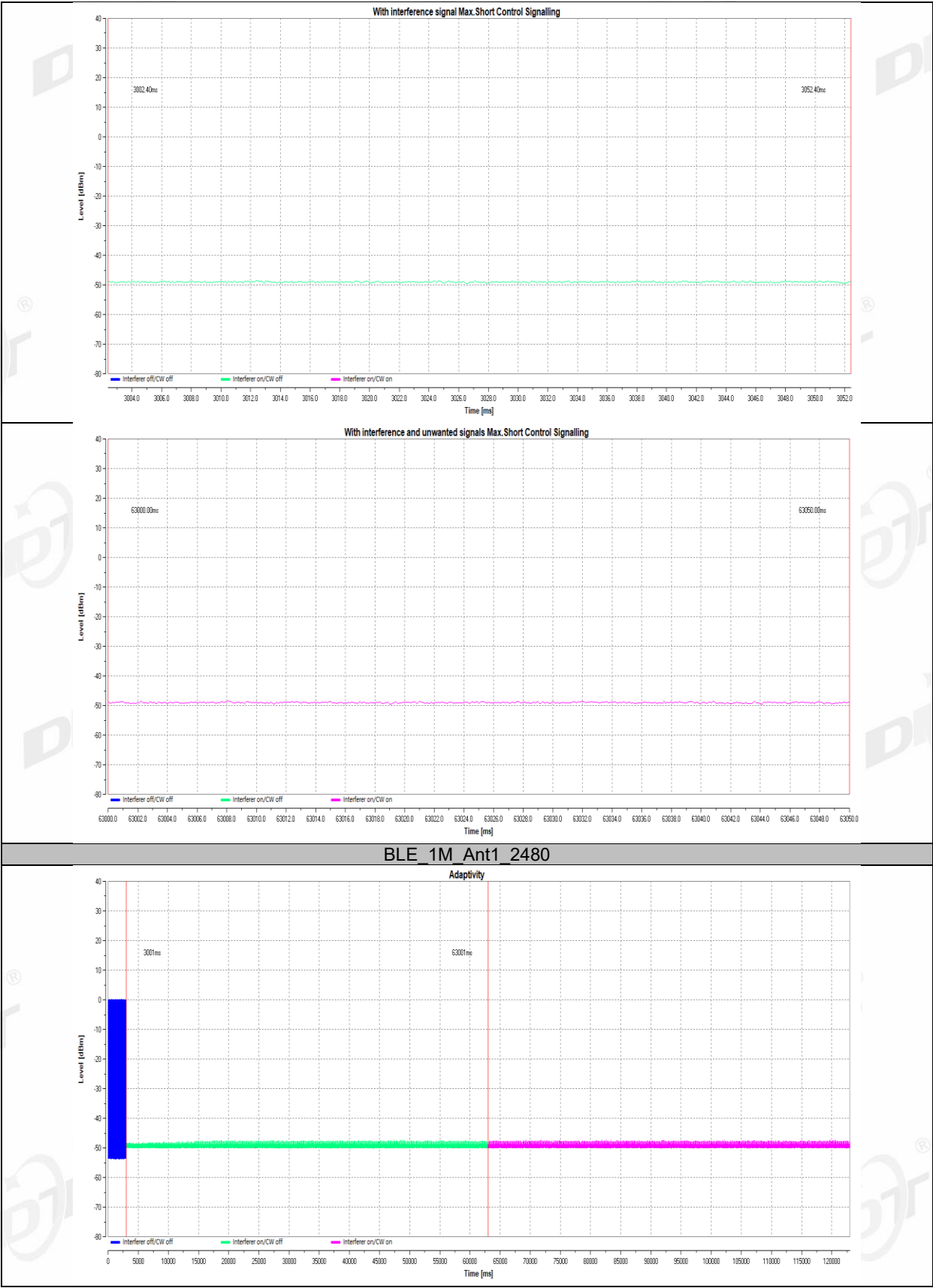
Test Mode	Antenna	Frequency [MHz]	Add Signal Type	Add Signal Time[ms]	Add Signal Level[dbm]	Max. Short Time [%]	Limit [%]	Verdict
BLE_1M	Ant1	2402	AWGN	3001	-60.19	0.00	10	PASS
			CW	63001	-32.52	0.00	10	PASS
		2480	AWGN	3001	-60.19	0.00	10	PASS
			CW	63001	-32.52	0.00	10	PASS
BLE_2M	Ant1	2404	AWGN	3001	-59.87	0.00	10	PASS
			CW	63001	-32.52	0.00	10	PASS
		2478	AWGN	3001	-59.87	0.00	10	PASS
			CW	63001	-32.52	0.00	10	PASS

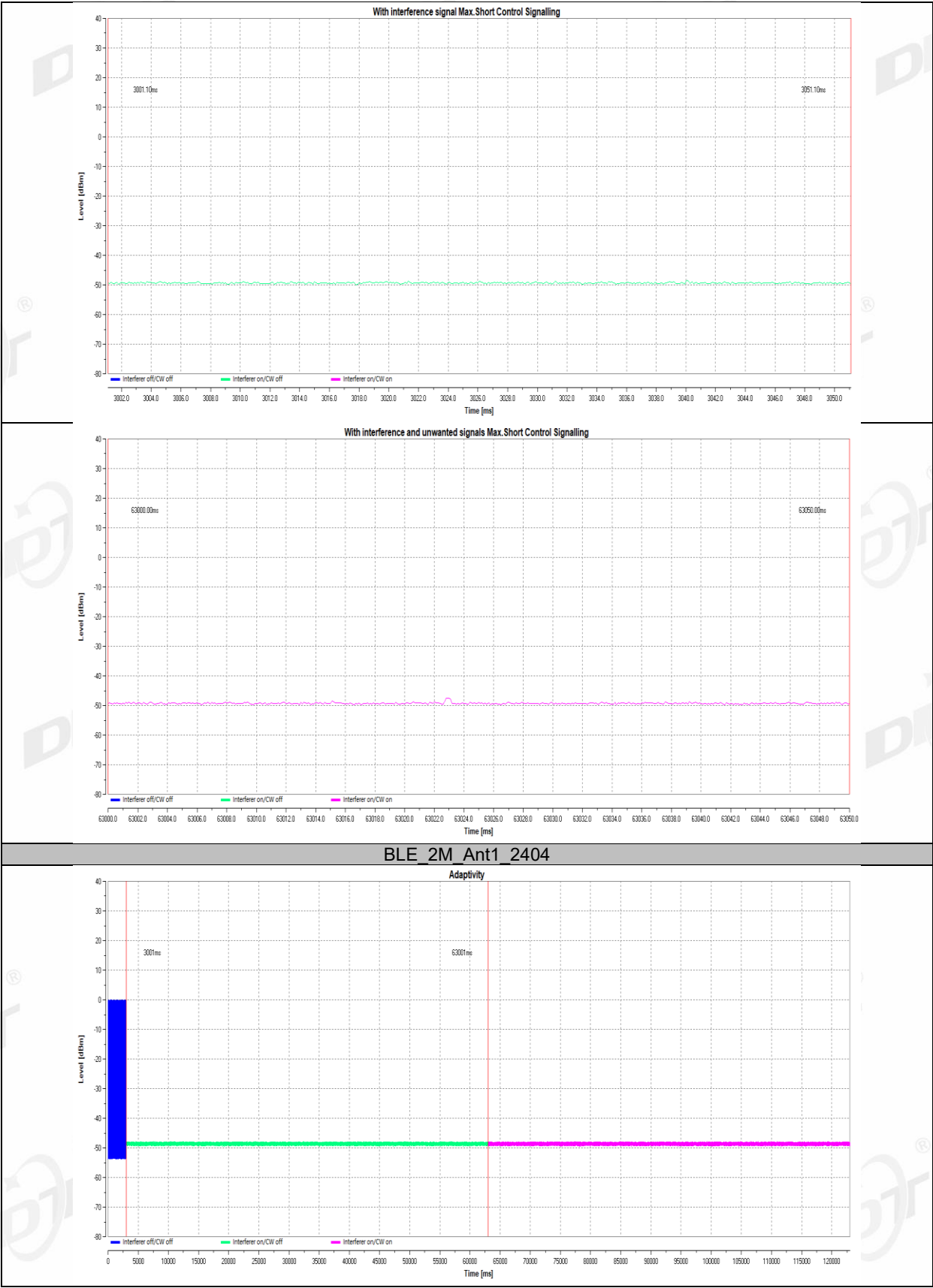
10.5. Test graphs

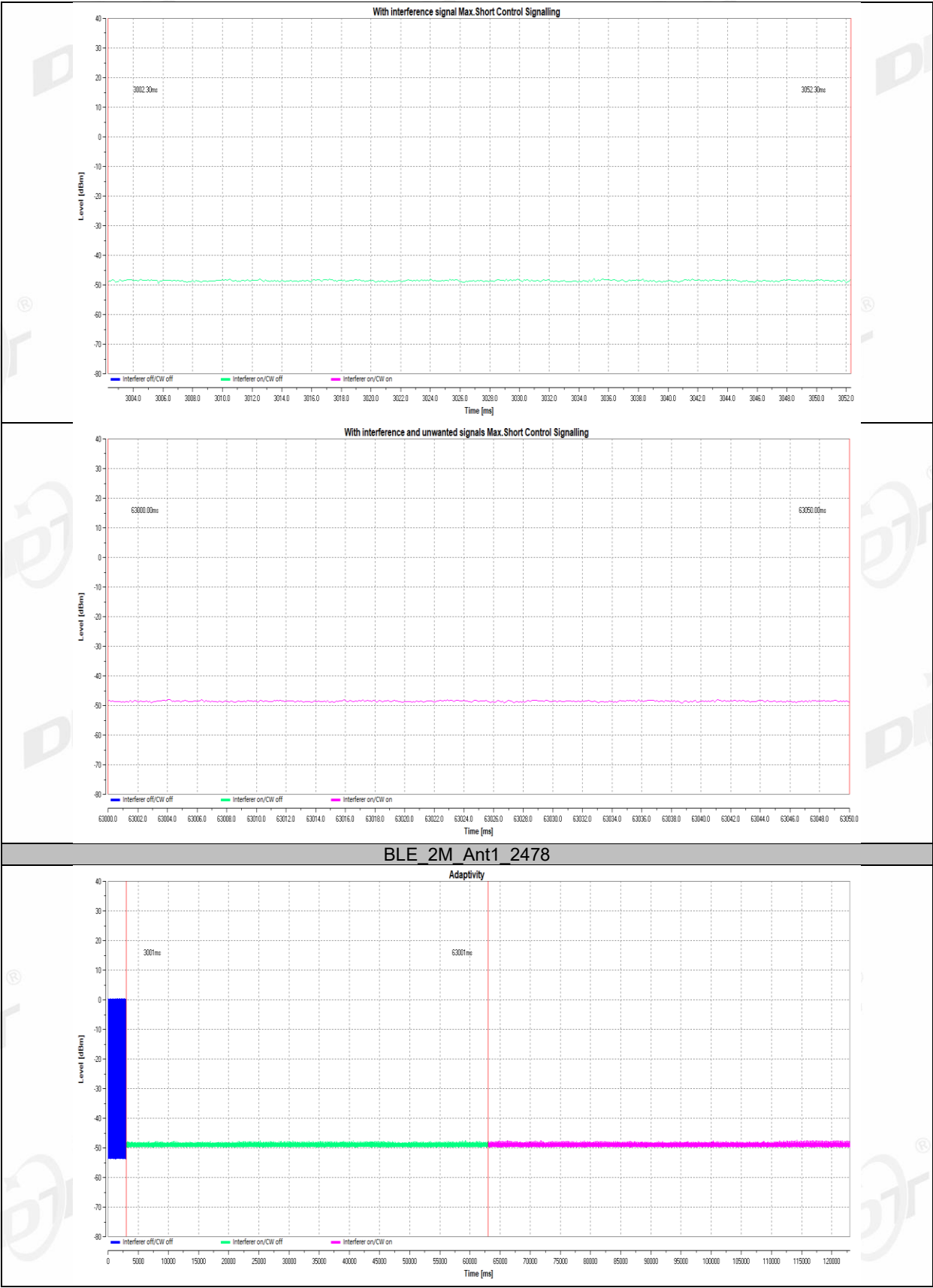


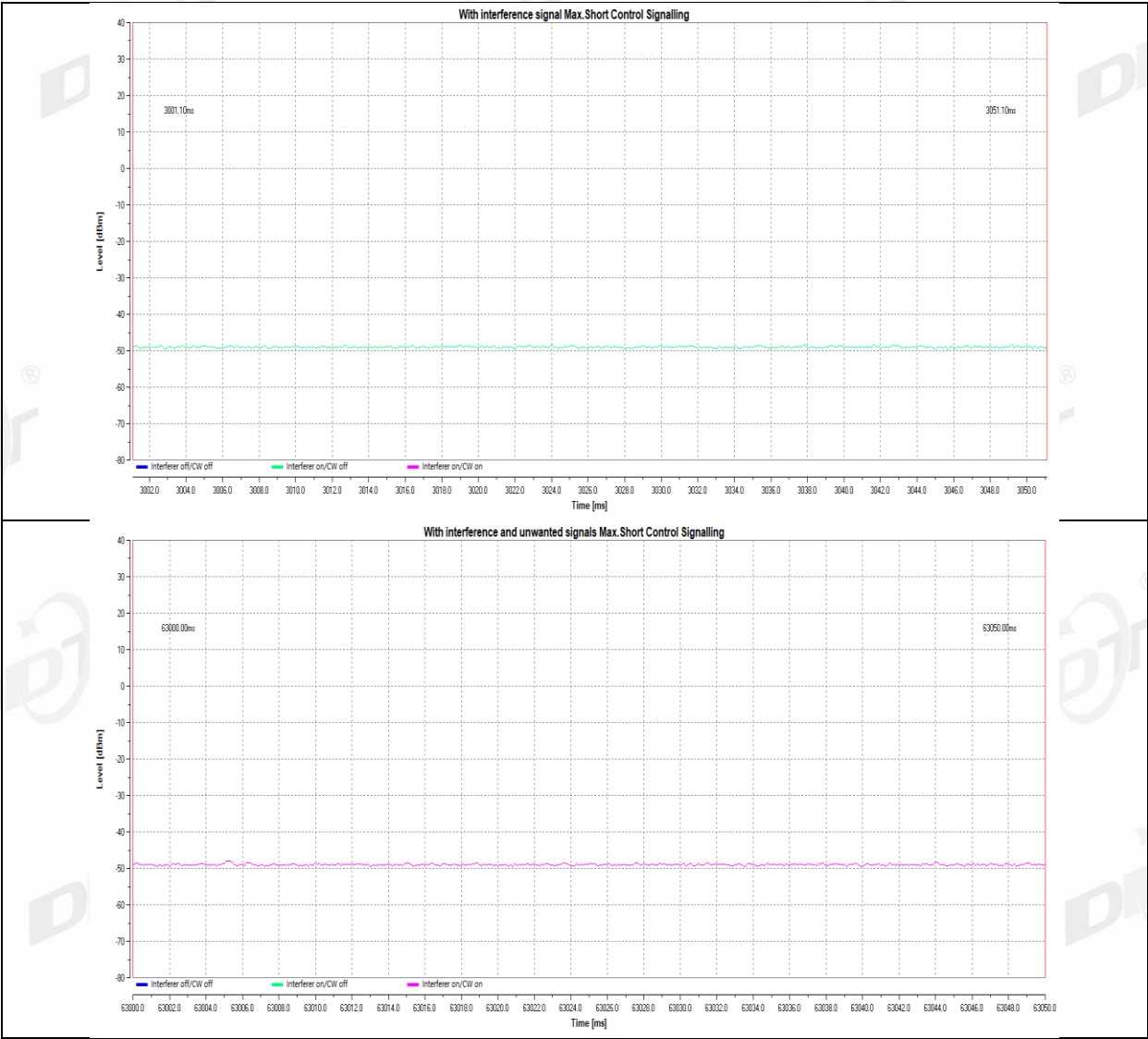










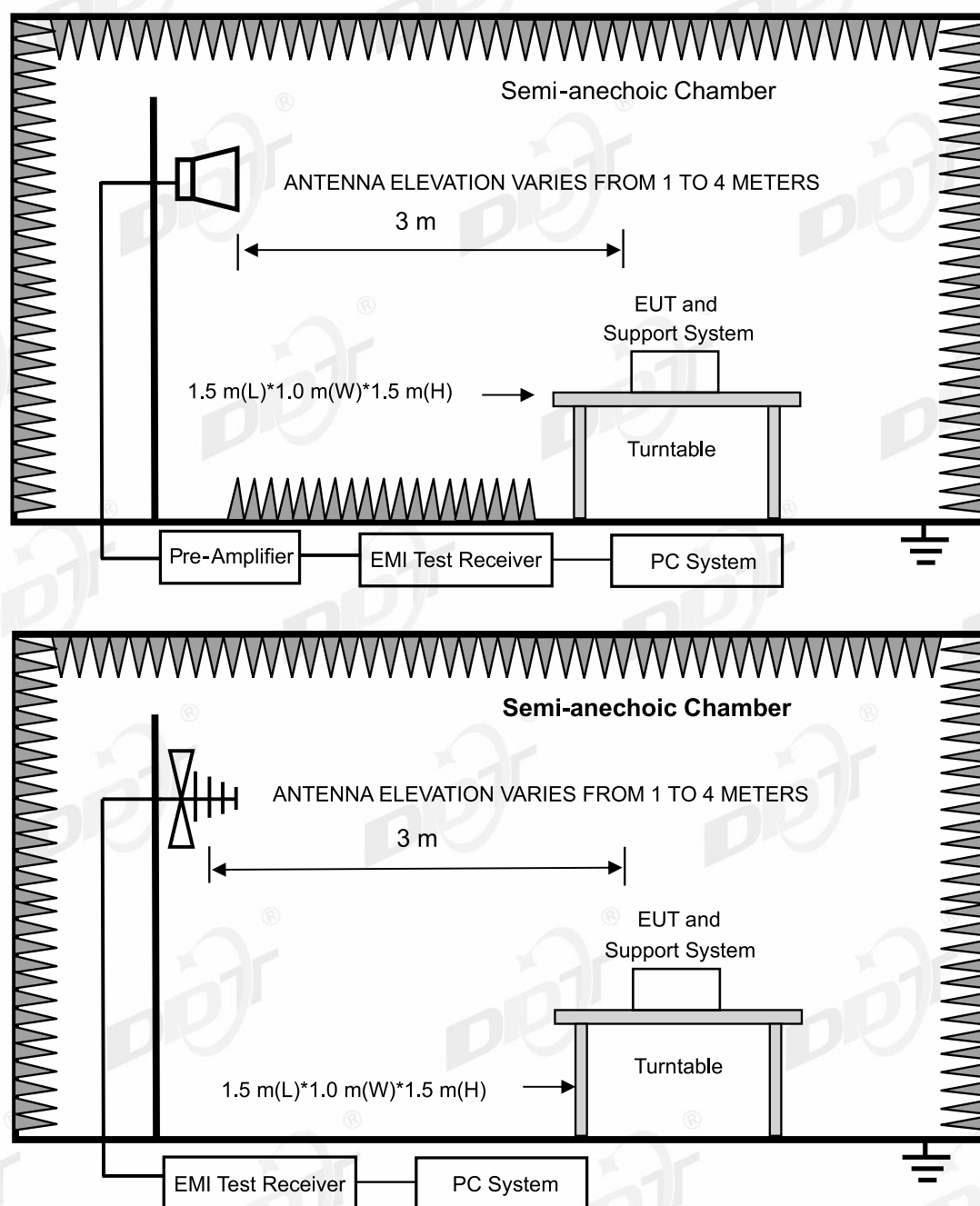


11. Transmitter unwanted emissions in the spurious domain

11.1. Test equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal Due To
RF cable	Yuhu Technology	JCTB810-NJ-NJ-9M	DDT-ZC02538	2026/03/28
RF cable	Zhongke Junchuang	JCT26S-NJ-NJ-1.5M	DDT-ZC02762	2026/03/28
Pre-amplifier	COM-POWER	PAM-118A	DDT-ZC01293	2025/08/25
High pass filter	Micro-Tronics	HPM50102	DDT-ZC00561	2026/03/28
Hochgewinn-Hornantenne	SCHWARZBEC K	BBHA 9120 D	DDT-ZC02129	2025/09/18
High pass filter	Micro-Tronics	HPM50108	DDT-ZC00560	2026/03/28
RF Cable	N/A	W24.02 HL-562	DDT-ZC04022	2026/03/28
PSA Series Spectrum Analyzer	Agilent	E4447A	DDT-ZC00517	2026/03/28
Pre-amplifier	COM-POWER	PAM-840A	DDT-ZC01693	2026/03/28
RF Cable	N/A	W13.02 AP1-X2	DDT-ZC04023	2026/03/28
High Pass filter	Xi'an Xingbo	XBLBQ-GTA67	DDT-ZC02179	2026/03/28
RF cable	Yuhu Technology	ZT26S-SMAJ-SMAJ-1M	DDT-ZC02037	2026/03/28
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	DDT-ZC00506	2027/04/01
Micro-Tronics filters	REBES	BRM50716	DDT-ZC03240	/
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	DDT-ZC02050	2025/07/11
Active Loop Antenna	Schwarzbeck	FMZB1519	DDT-ZC00524	2025/09/11
EMI TEST RECEIVER	R&S	ESU26	DDT-ZC01909	2026/03/28
Micro-Tronics filters	REBES	BRM50702	DDT-ZC03242	/

11.2. Block diagram of test setup



11.3. Limits

Frequency Range	Maximum power, e.r.p (≤ 1 GHz); e.i.r.p (>1 GHz)	Bandwidth
30MHz to 47MHz	-36 dBm	100kHz
47MHz to 74MHz	-54 dBm	100kHz
74MHz to 87.5MHz	-36 dBm	100kHz
87.5MHz to 118MHz	-54 dBm	100kHz
118MHz to 174MHz	-36 dBm	100kHz
174MHz to 230MHz	-54 dBm	100kHz
230MHz to 470MHz	-36 dBm	100kHz
470 MHz to 694 MHz	-54 dBm	100kHz
694 MHz to 1 GHz	-36 dBm	100kHz

1GHz to 12.75GHz	-30 dBm	1MHz
------------------	---------	------

11.4. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	Description	other
/	/	/	/	/

11.5. Test procedure

- (1) EUT was placed on a non-metallic table, 1.5m above the ground plane inside a semi-anechoic chamber.
- (2) Test antenna was located 3m from the EUT on an adjustable mast, and the antenna used as below table.

Test frequency range	Test antenna used
30MHz-1GHz	Trilog Broadband Antenna
1GHz-12.75GHz	Double Ridged Horn Antenna

- (3) Set EUT work in fixed channel transmitting mode.
- (4) All the emissions from 30MHz to 12.75GHz at 3m distance was measured and recorded with receive antenna in both vertical and horizontal and varied from 1 m to 4 m. in height above the reference ground plane, and rotating the turntable obtain the maximum signal strength., the test spectrum analyser was set as below

Frequency band	RBW	VBW	Detector mode
30MHz-1GHz	100kHz	300kHz	Peak
1GHz-12.75GHz	1MHz	3MHz	Peak

Note: For harmonic emissions test an appropriate high pass filter was inserted in the input port of AMP.

- (5) A correction values from a verified site calibration was used to calculate the spurious emissions of EUT.
- (6) Scan with all mode, the worst case is recorded in this report.

11.6. Test result

PASS. (See below detailed test result)

11.7. Test data

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

TX BLE 1M 2402MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

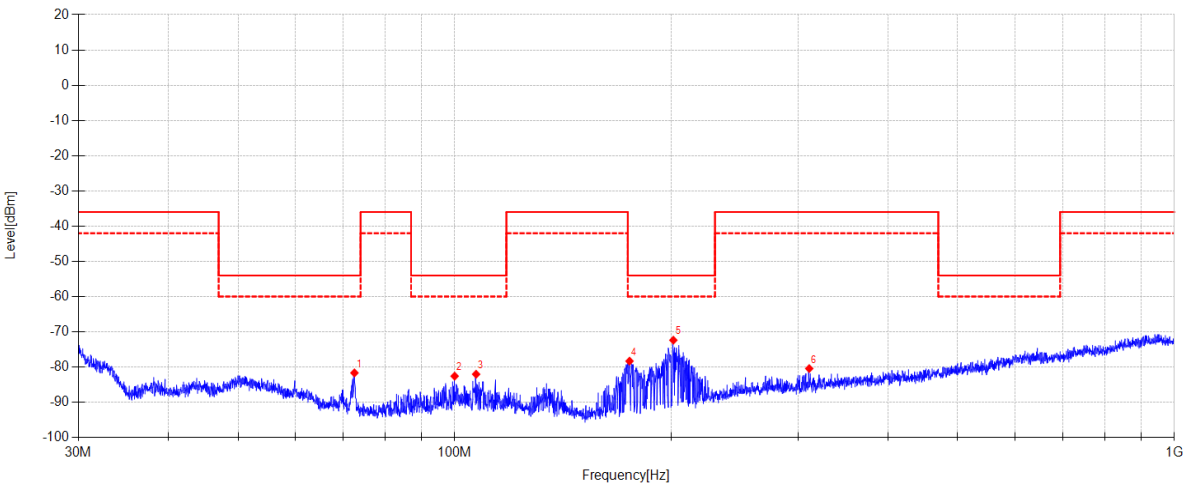
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Below 1G BLE\15

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	72.579	35.84	-117.48	-81.64	-54.00	27.64	PK	Horizontal	ERP
2	99.994	32.51	-115.07	-82.56	-54.00	28.56	PK	Horizontal	ERP
3	107.106	33.51	-115.52	-82.01	-54.00	28.01	PK	Horizontal	ERP
4	174.975	38.43	-116.73	-78.30	-54.00	24.30	PK	Horizontal	ERP
5	201.316	42.75	-115.10	-72.35	-54.00	18.35	PK	Horizontal	ERP
6	310.941	30.07	-110.48	-80.41	-36.00	44.41	PK	Horizontal	ERP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 100 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

TX BLE 1M 2402MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

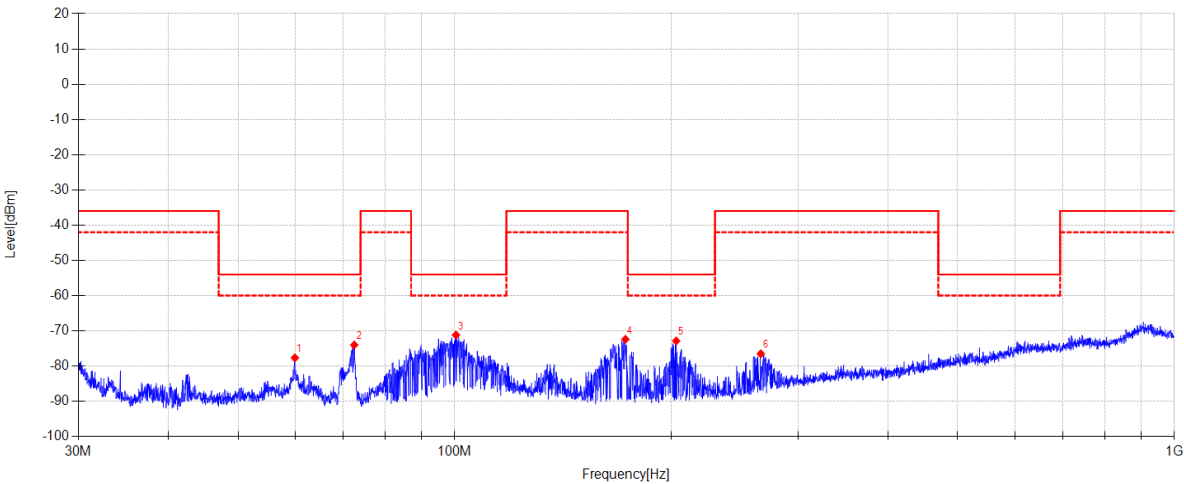
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Below 1G BLE\16

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	59.977	37.08	-114.74	-77.66	-54.00	23.66	PK	Vertical	ERP
2	72.528	43.41	-117.42	-74.01	-54.00	20.01	PK	Vertical	ERP
3	100.415	38.96	-110.13	-71.17	-54.00	17.17	PK	Vertical	ERP
4	172.659	41.21	-113.59	-72.38	-36.00	36.38	PK	Vertical	ERP
5	203.160	40.62	-113.47	-72.85	-54.00	18.85	PK	Vertical	ERP
6	266.306	34.74	-111.24	-76.50	-36.00	40.50	PK	Vertical	ERP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 100 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

TX BLE 1M 2480MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

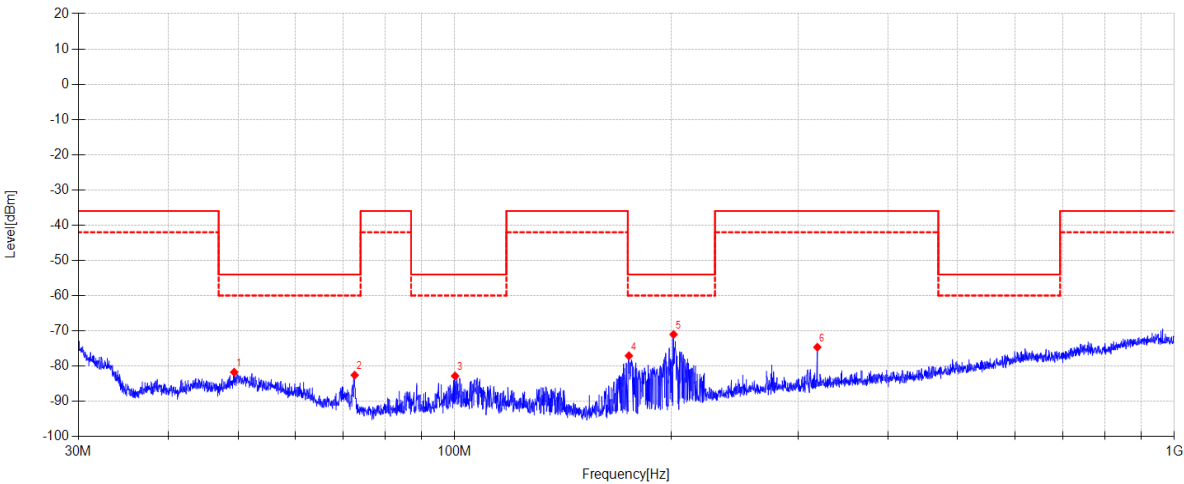
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Below 1G BLE\13

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	49.389	28.36	-110.09	-81.73	-54.00	27.73	PK	Horizontal	ERP
2	72.630	34.93	-117.48	-82.55	-54.00	28.55	PK	Horizontal	ERP
3	100.134	32.27	-115.08	-82.81	-54.00	28.81	PK	Horizontal	ERP
4	174.607	39.68	-116.75	-77.07	-54.00	23.07	PK	Horizontal	ERP
5	201.458	44.09	-115.10	-71.01	-54.00	17.01	PK	Horizontal	ERP
6	319.114	35.59	-110.22	-74.63	-36.00	38.63	PK	Horizontal	ERP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 100 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

TX BLE 1M 2480MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

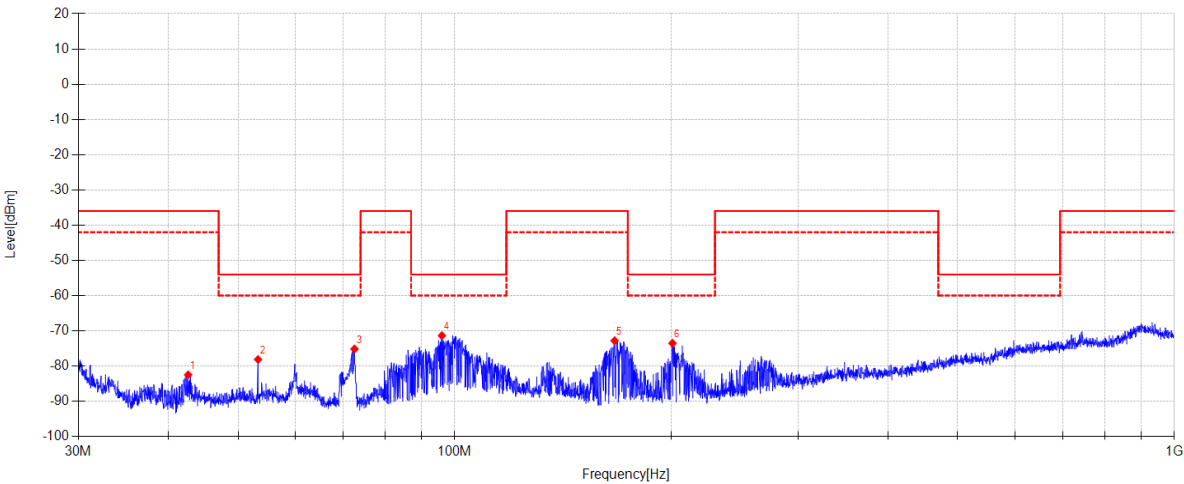
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Below 1G BLE\14

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	42.627	32.99	-115.47	-82.48	-36.00	46.48	PK	Vertical	ERP
2	53.312	36.67	-114.79	-78.12	-54.00	24.12	PK	Vertical	ERP
3	72.579	42.28	-117.42	-75.14	-54.00	21.14	PK	Vertical	ERP
4	96.009	39.51	-110.85	-71.34	-54.00	17.34	PK	Vertical	ERP
5	166.828	40.81	-113.61	-72.80	-36.00	36.80	PK	Vertical	ERP
6	200.753	40.01	-113.52	-73.51	-54.00	19.51	PK	Vertical	ERP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 100 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4CC

Test Mode:

TX BLE 2M 2404MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

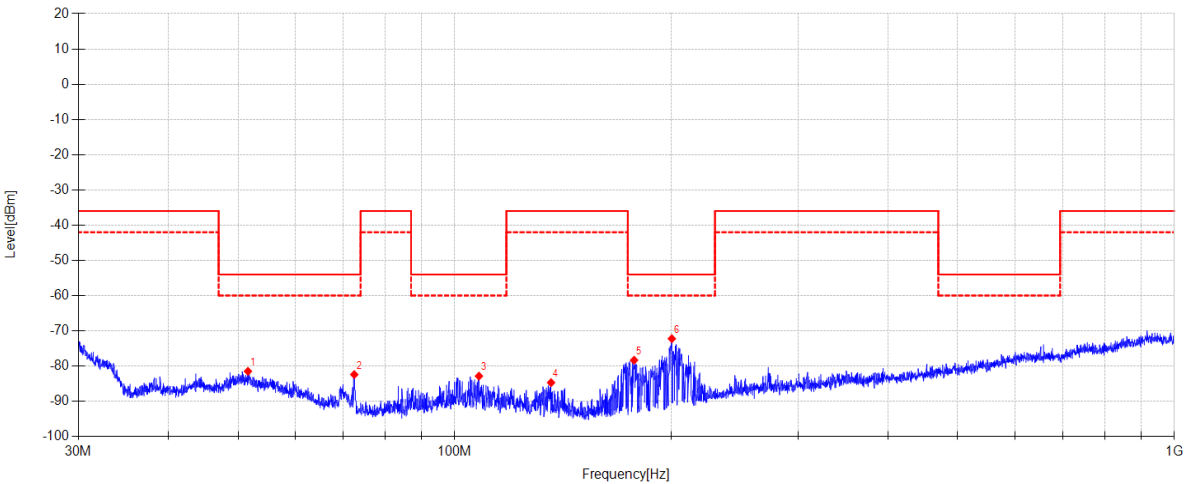
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Below 1G BLE\9

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	51.620	28.95	-110.42	-81.47	-54.00	27.47	PK	Horizontal	ERP
2	72.528	35.09	-117.48	-82.39	-54.00	28.39	PK	Horizontal	ERP
3	108.087	32.75	-115.59	-82.84	-54.00	28.84	PK	Horizontal	ERP
4	136.132	32.69	-117.37	-84.68	-36.00	48.68	PK	Horizontal	ERP
5	177.571	38.26	-116.57	-78.31	-54.00	24.31	PK	Horizontal	ERP
6	200.331	42.97	-115.18	-72.21	-54.00	18.21	PK	Horizontal	ERP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 100 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

TX BLE 2M 2404MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

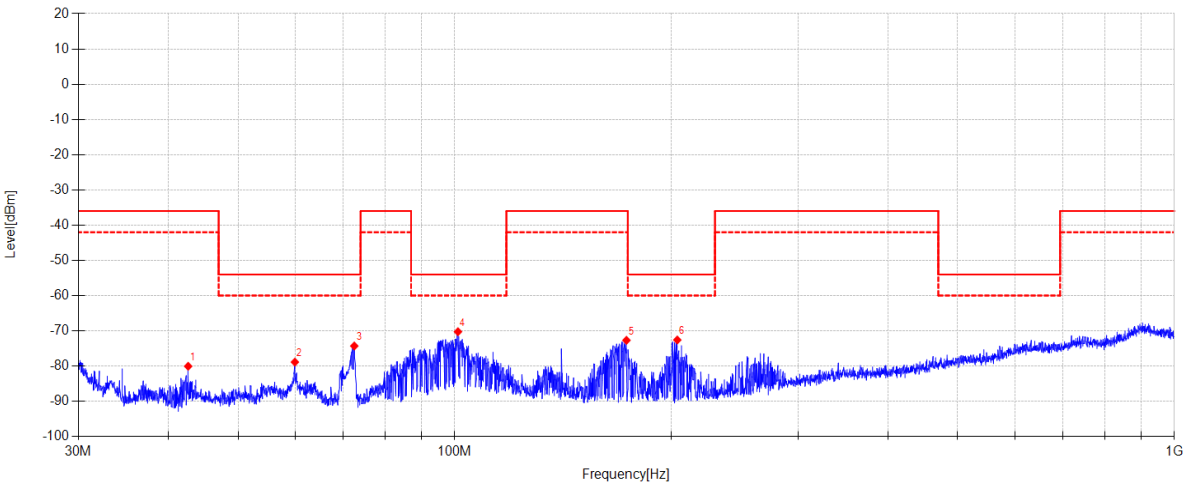
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Below 1G BLE\10

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	42.627	35.43	-115.47	-80.04	-36.00	44.04	PK	Vertical	ERP
2	59.977	35.88	-114.74	-78.86	-54.00	24.86	PK	Vertical	ERP
3	72.528	43.13	-117.42	-74.29	-54.00	20.29	PK	Vertical	ERP
4	101.051	39.93	-110.17	-70.24	-54.00	16.24	PK	Vertical	ERP
5	173.266	40.92	-113.59	-72.67	-36.00	36.67	PK	Vertical	ERP
6	203.873	40.86	-113.44	-72.58	-54.00	18.58	PK	Vertical	ERP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 100 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

TX BLE 2M 2478MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

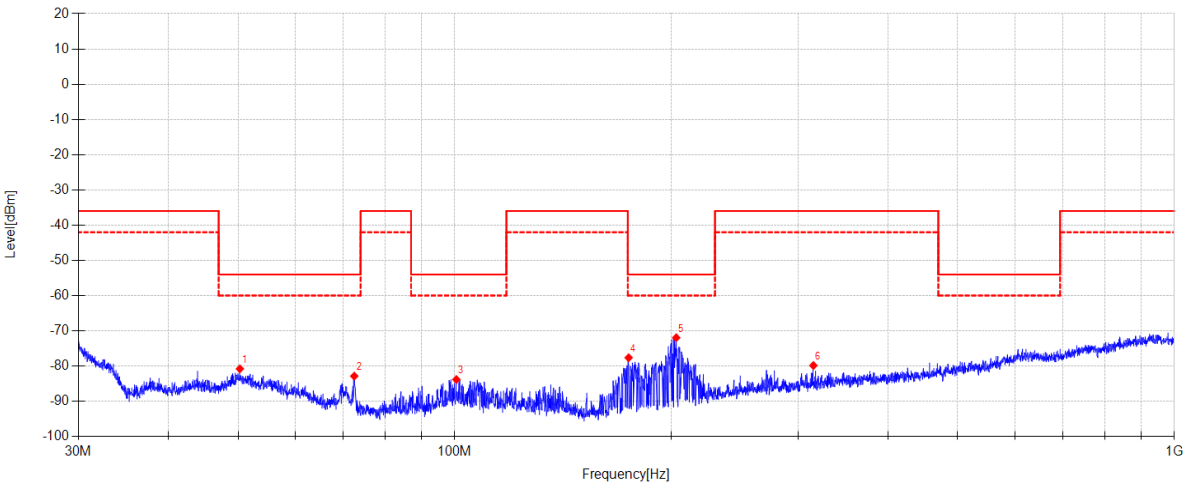
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Below 1G BLE\11

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	50.298	29.33	-110.10	-80.77	-54.00	26.77	PK	Horizontal	ERP
2	72.528	34.65	-117.48	-82.83	-54.00	28.83	PK	Horizontal	ERP
3	100.556	31.31	-115.11	-83.80	-54.00	29.80	PK	Horizontal	ERP
4	174.485	39.13	-116.75	-77.62	-54.00	23.62	PK	Horizontal	ERP
5	203.160	43.05	-114.99	-71.94	-54.00	17.94	PK	Horizontal	ERP
6	315.111	30.52	-110.35	-79.83	-36.00	43.83	PK	Horizontal	ERP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 100 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date: 2025-03-12 Tested By: Lin Guoyaun

EUT: Portable Bluetooth Speaker Model Number: BOOMBOX 4C

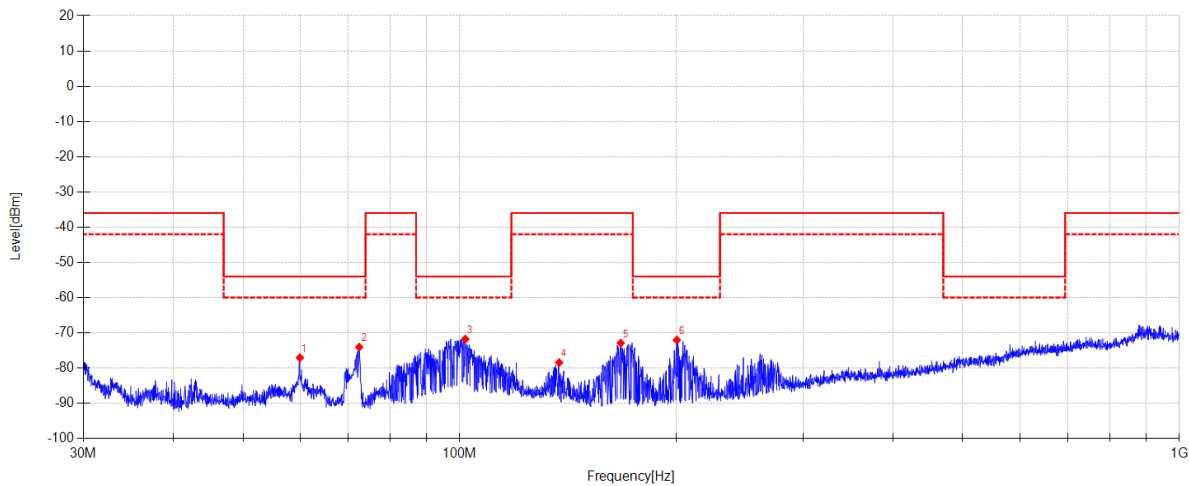
Test Mode: TX BLE 2M 2478MHz Mode Power Supply: AC 230V/50Hz

Condition: Temp:21.3°C;Humi:47.4% Test Site: DDT 3# Chamber

File Path: d:\ts\2024 report data\Q24112111-1E\CE Below 1G BLE\12

Memo: Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	59.977	37.69	-114.74	-77.05	-54.00	23.05	PK	Vertical	ERP
2	72.528	43.39	-117.42	-74.03	-54.00	20.03	PK	Vertical	ERP
3	101.833	38.47	-110.23	-71.76	-54.00	17.76	PK	Vertical	ERP
4	137.475	34.32	-112.76	-78.44	-36.00	42.44	PK	Vertical	ERP
5	167.414	40.70	-113.61	-72.91	-36.00	36.91	PK	Vertical	ERP
6	200.331	41.50	-113.53	-72.03	-54.00	18.03	PK	Vertical	ERP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 100 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

TX BLE 1M 2402MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

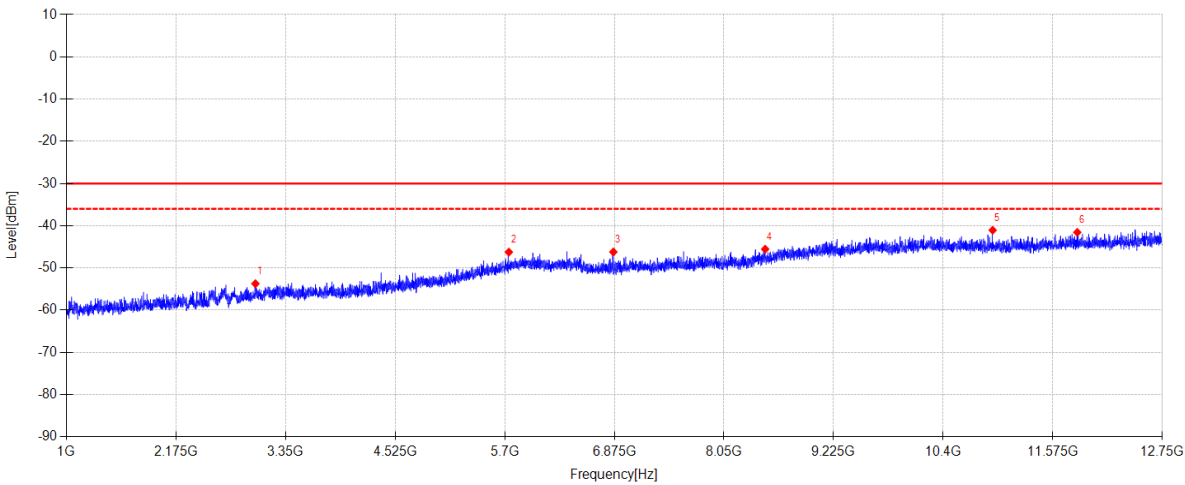
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Above 1G BLE\1

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	3026.875	48.28	-102.01	-53.73	-30.00	23.73	PK	Horizontal	EIRP
2	5743.475	48.38	-94.63	-46.25	-30.00	16.25	PK	Horizontal	EIRP
3	6864.425	48.57	-94.78	-46.21	-30.00	16.21	PK	Horizontal	EIRP
4	8491.800	45.53	-91.08	-45.55	-30.00	15.55	PK	Horizontal	EIRP
5	10931.100	47.01	-88.07	-41.06	-30.00	11.06	PK	Horizontal	EIRP
6	11838.200	46.35	-87.92	-41.57	-30.00	11.57	PK	Horizontal	EIRP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss + Filter Factor - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

TX BLE 1M 2402MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

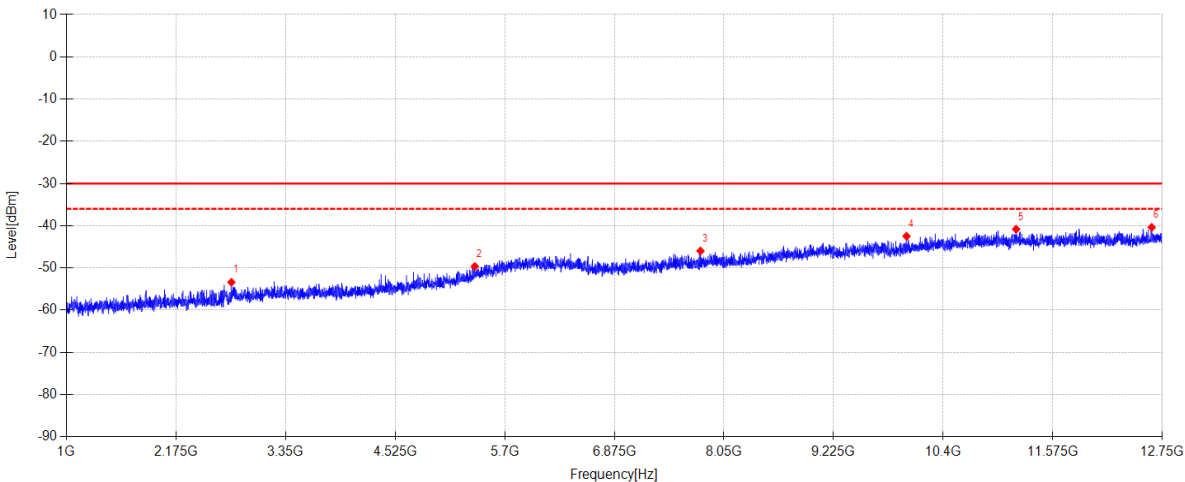
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Above 1G BLE\2

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	2769.550	48.88	-102.27	-53.39	-30.00	23.39	PK	Vertical	EIRP
2	5379.225	46.80	-96.45	-49.65	-30.00	19.65	PK	Vertical	EIRP
3	7798.550	46.91	-92.89	-45.98	-30.00	15.98	PK	Vertical	EIRP
4	10007.550	46.00	-88.49	-42.49	-30.00	12.49	PK	Vertical	EIRP
5	11182.550	46.01	-86.83	-40.82	-30.00	10.82	PK	Vertical	EIRP
6	12636.025	47.23	-87.61	-40.38	-30.00	10.38	PK	Vertical	EIRP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss + Filter Factor - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

TX BLE 1M 2480MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

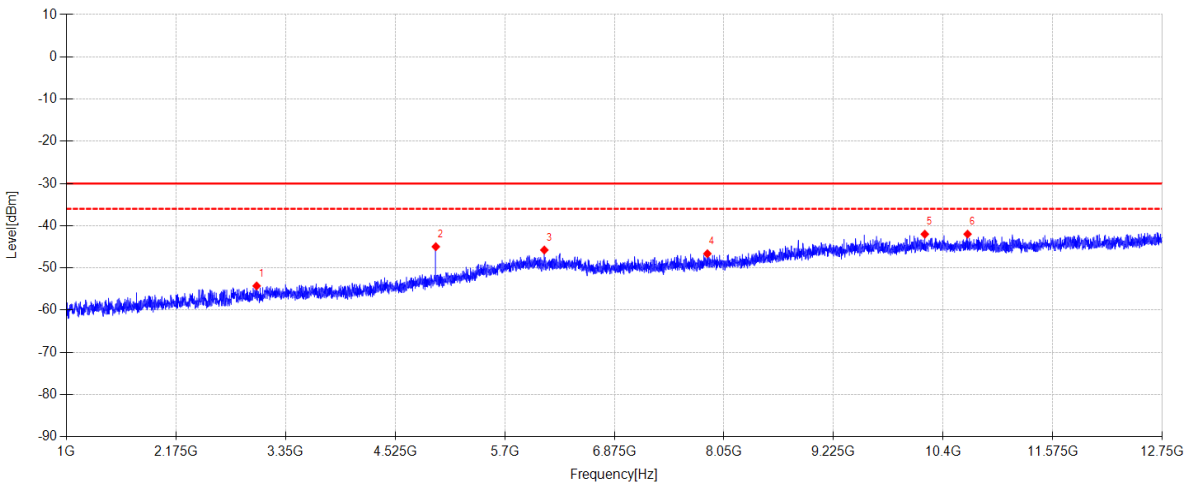
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Above 1G BLE\3

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	3039.800	47.74	-102.00	-54.26	-30.00	24.26	PK	Horizontal	EIRP
2	4960.925	52.87	-97.84	-44.97	-30.00	14.97	PK	Horizontal	EIRP
3	6124.175	47.96	-93.72	-45.76	-30.00	15.76	PK	Horizontal	EIRP
4	7872.575	46.40	-93.02	-46.62	-30.00	16.62	PK	Horizontal	EIRP
5	10203.775	46.02	-88.02	-42.00	-30.00	12.00	PK	Horizontal	EIRP
6	10662.025	46.06	-88.05	-41.99	-30.00	11.99	PK	Horizontal	EIRP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss + Filter Factor - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

TX BLE 1M 2480MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

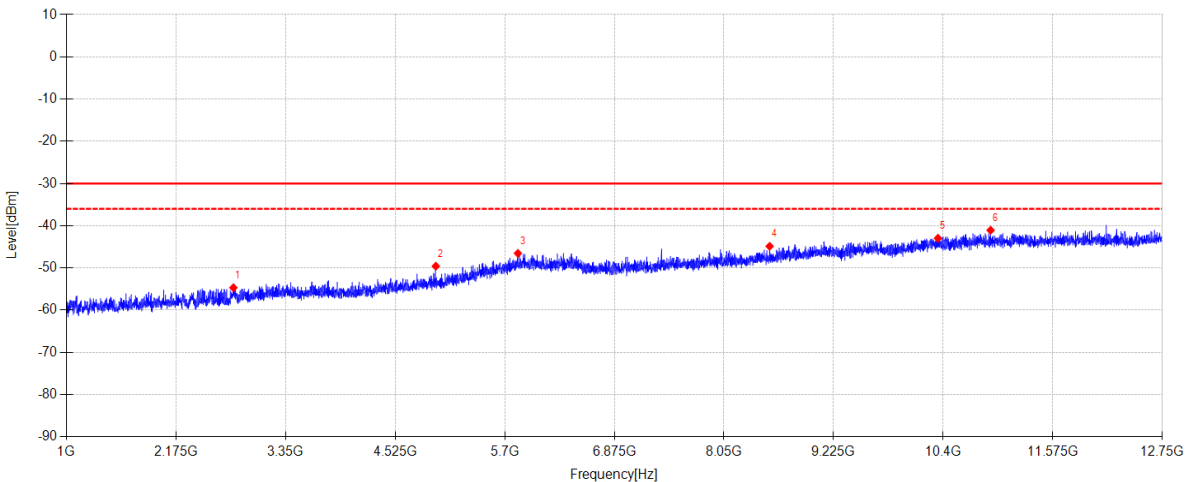
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Above 1G BLE4

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	2790.700	47.56	-102.24	-54.68	-30.00	24.68	PK	Vertical	EIRP
2	4960.925	48.75	-98.33	-49.58	-30.00	19.58	PK	Vertical	EIRP
3	5841.000	47.73	-94.27	-46.54	-30.00	16.54	PK	Vertical	EIRP
4	8539.975	46.04	-90.91	-44.87	-30.00	14.87	PK	Vertical	EIRP
5	10344.775	44.92	-87.89	-42.97	-30.00	12.97	PK	Vertical	EIRP
6	10908.775	45.80	-86.88	-41.08	-30.00	11.08	PK	Vertical	EIRP

Note:

1. Level = Reading + Factor.

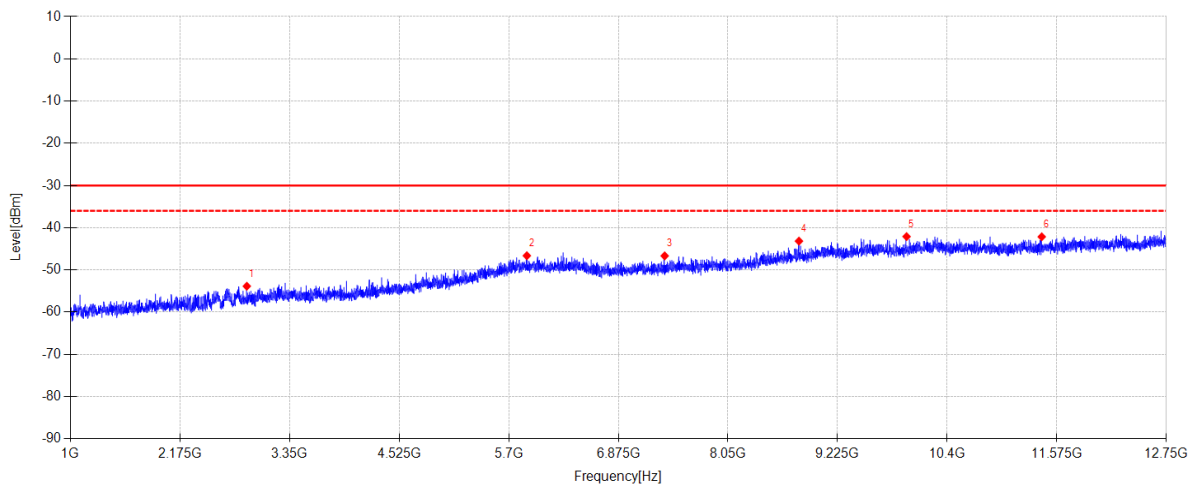
2. Factor = Antenna Factor + Cable Loss + Filter Factor - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date: 2025-03-12 Tested By: Lin Guoyaun
EUT: Portable Bluetooth Speaker Model Number: BOOMBOX 4C
Test Mode: TX BLE 2M 2404MHz Mode Power Supply: AC 230V/50Hz
Condition: Temp:21.3°C;Humi:47.4% Test Site: DDT 3# Chamber
File Path: d:\ts\2024 report data\Q24112111-1E\CE Above 1G BLE\7
Memo: Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	2891.750	48.35	-102.20	-53.85	-30.00	23.85	PK	Horizontal	EIRP
2	5893.875	47.37	-94.00	-46.63	-30.00	16.63	PK	Horizontal	EIRP
3	7372.025	47.47	-94.14	-46.67	-30.00	16.67	PK	Horizontal	EIRP
4	8811.400	46.83	-90.00	-43.17	-30.00	13.17	PK	Horizontal	EIRP
5	9965.250	45.94	-88.04	-42.10	-30.00	12.10	PK	Horizontal	EIRP
6	11414.025	45.85	-88.00	-42.15	-30.00	12.15	PK	Horizontal	EIRP

Note:
1. Level = Reading + Factor.
2. Factor = Antenna Factor + Cable Loss + Filter Factor - Preamp Gain + Site Loss Factor - 107.
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

TX BLE 2M 2404MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

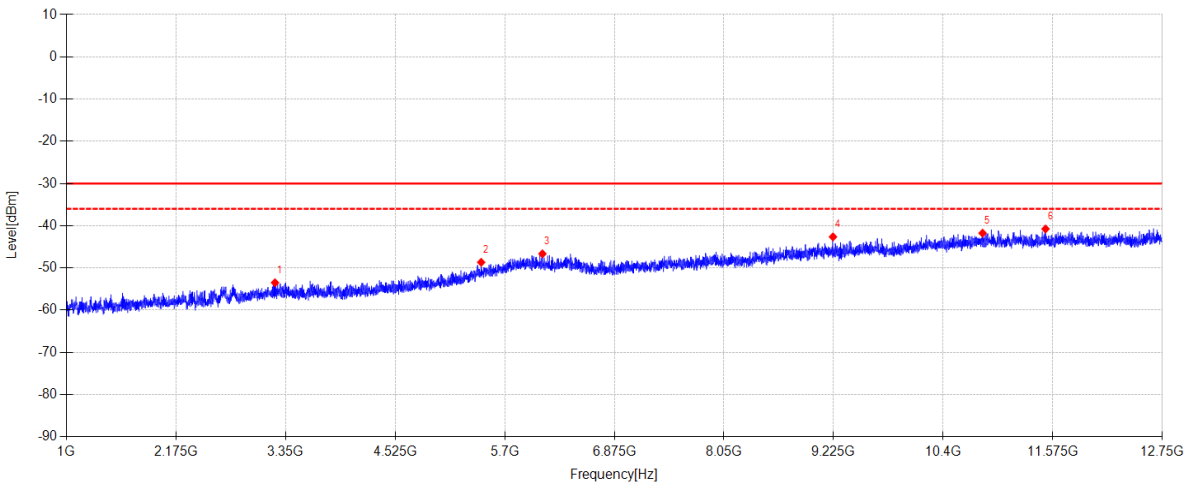
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Above 1G BLE\8

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	3237.200	48.17	-101.67	-53.50	-30.00	23.50	PK	Vertical	EIRP
2	5447.375	47.46	-96.13	-48.67	-30.00	18.67	PK	Vertical	EIRP
3	6104.200	47.04	-93.69	-46.65	-30.00	16.65	PK	Vertical	EIRP
4	9219.125	46.80	-89.44	-42.64	-30.00	12.64	PK	Vertical	EIRP
5	10823.000	45.28	-87.04	-41.76	-30.00	11.76	PK	Vertical	EIRP
6	11497.450	46.28	-87.04	-40.76	-30.00	10.76	PK	Vertical	EIRP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss + Filter Factor - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

TX BLE 2M 2478MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

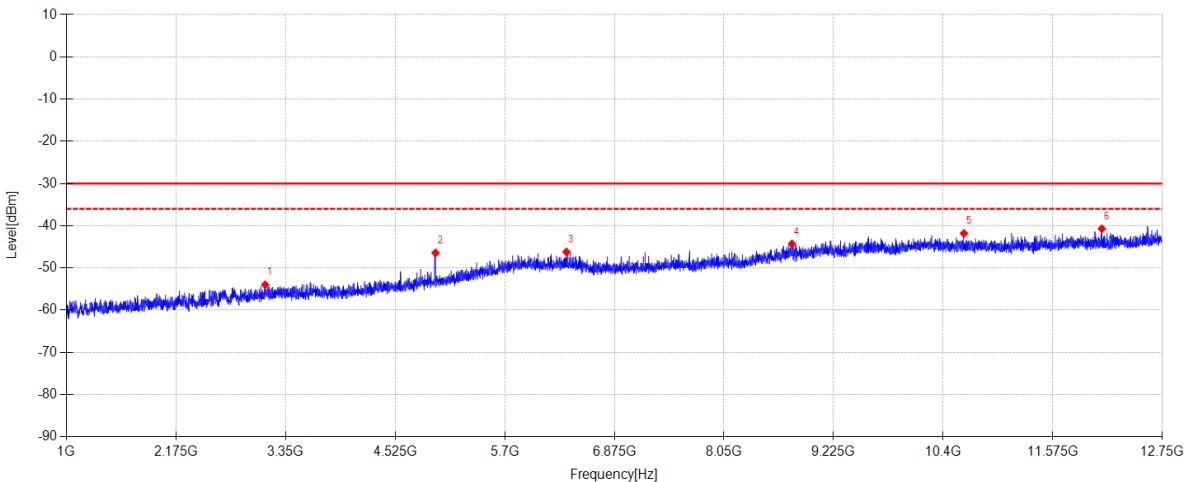
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Above 1G BLE\5

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	3131.450	47.86	-101.85	-53.99	-30.00	23.99	PK	Horizontal	EIRP
2	4957.400	51.42	-97.86	-46.44	-30.00	16.44	PK	Horizontal	EIRP
3	6361.525	47.87	-94.07	-46.20	-30.00	16.20	PK	Horizontal	EIRP
4	8779.675	45.81	-90.11	-44.30	-30.00	14.30	PK	Horizontal	EIRP
5	10623.250	46.25	-88.06	-41.81	-30.00	11.81	PK	Horizontal	EIRP
6	12101.400	47.18	-87.90	-40.72	-30.00	10.72	PK	Horizontal	EIRP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss + Filter Factor - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

TX BLE 2M 2478MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

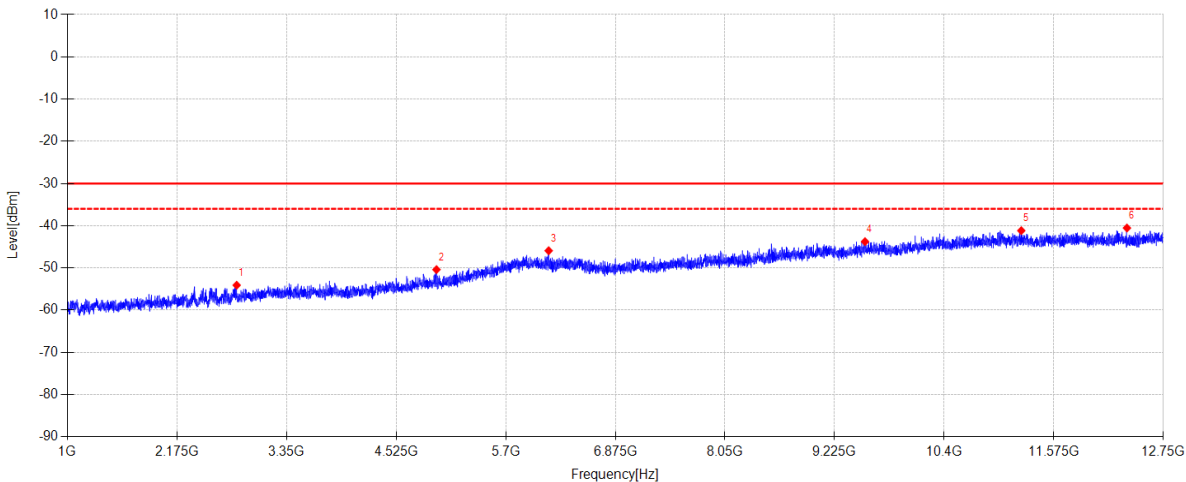
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Above 1G BLE\6

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	2815.375	48.13	-102.22	-54.09	-30.00	24.09	PK	Vertical	EIRP
2	4957.400	47.95	-98.34	-50.39	-30.00	20.39	PK	Vertical	EIRP
3	6160.600	47.85	-93.77	-45.92	-30.00	15.92	PK	Vertical	EIRP
4	9551.650	45.28	-89.04	-43.76	-30.00	13.76	PK	Vertical	EIRP
5	11227.200	45.71	-86.87	-41.16	-30.00	11.16	PK	Vertical	EIRP
6	12359.900	46.96	-87.50	-40.54	-30.00	10.54	PK	Vertical	EIRP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss + Filter Factor - Preamp Gain + Site Loss Factor - 107.

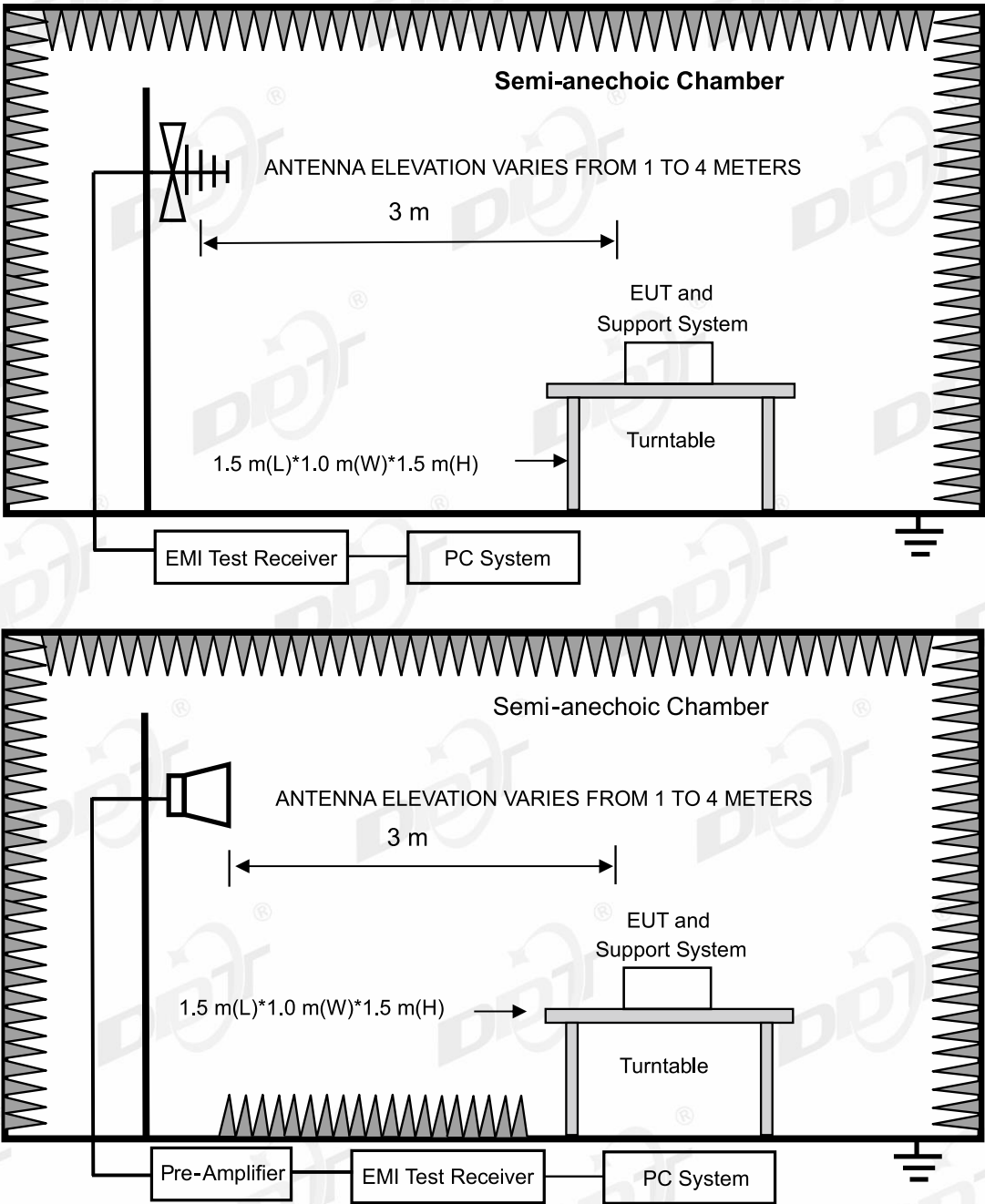
3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

12. Receiver spurious emissions

12.1. Test equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal Due To
Micro-Tronics filters	REBES	BRM50702	DDT-ZC03242	/
RF cable	Yuhu Technology	ZT26S-SMAJ-SMAJ-1M	DDT-ZC02037	2026/03/28
Pre-amplifier	COM-POWER	PAM-840A	DDT-ZC01693	2026/03/28
EMI TEST RECEIVER	R&S	ESU26	DDT-ZC01909	2026/03/28
High pass filter	Micro-Tronics	HPM50108	DDT-ZC00560	2026/03/28
Hochgewinn-Hornantenne	SCHWARZBEC K	BBHA 9120 D	DDT-ZC02129	2025/09/18
PSA Series Spectrum Analyzer	Agilent	E4447A	DDT-ZC00517	2026/03/28
Broad-Band Horn Antenna	Schwarzbeck	BBHA 9170	DDT-ZC00506	2027/04/01
Pre-amplifier	COM-POWER	PAM-118A	DDT-ZC01293	2025/08/25
RF cable	Zhongke Junchuang	JCT26S-NJ-NJ-1.5M	DDT-ZC02762	2026/03/28
RF cable	Yuhu Technology	JCTB810-NJ-NJ-9M	DDT-ZC02538	2026/03/28
Active Loop Antenna	Schwarzbeck	FMZB1519	DDT-ZC00524	2025/09/11
Micro-Tronics filters	REBES	BRM50716	DDT-ZC03240	/
High pass filter	Micro-Tronics	HPM50102	DDT-ZC00561	2026/03/28
RF Cable	N/A	W13.02 AP1-X2	DDT-ZC04023	2026/03/28
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	DDT-ZC02050	2025/07/11
RF Cable	N/A	W24.02 HL-562	DDT-ZC04022	2026/03/28
High Pass filter	Xi'an Xingbo	XBLBQ-GTA67	DDT-ZC02179	2026/03/28

12.2. Block diagram of test setup



12.3. Limits

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

Frequency range	Maximum power	Bandwidth
30 MHz to 1 GHz	-57 dBm	100 kHz
1 GHz to 12,75 GHz	-47 dBm	1 MHz

12.4. Assistant equipment used for test

Assistant equipment	Manufacturer	Model number	Description	other
/	/	/	/	/

12.5. Test procedure

Refer to EN 300 328 V2.2.2 Clause 5.4.10.2

12.6. Test result

PASS. (See below detailed test result)

12.7. Test data

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

RX BLE 1M 2402MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

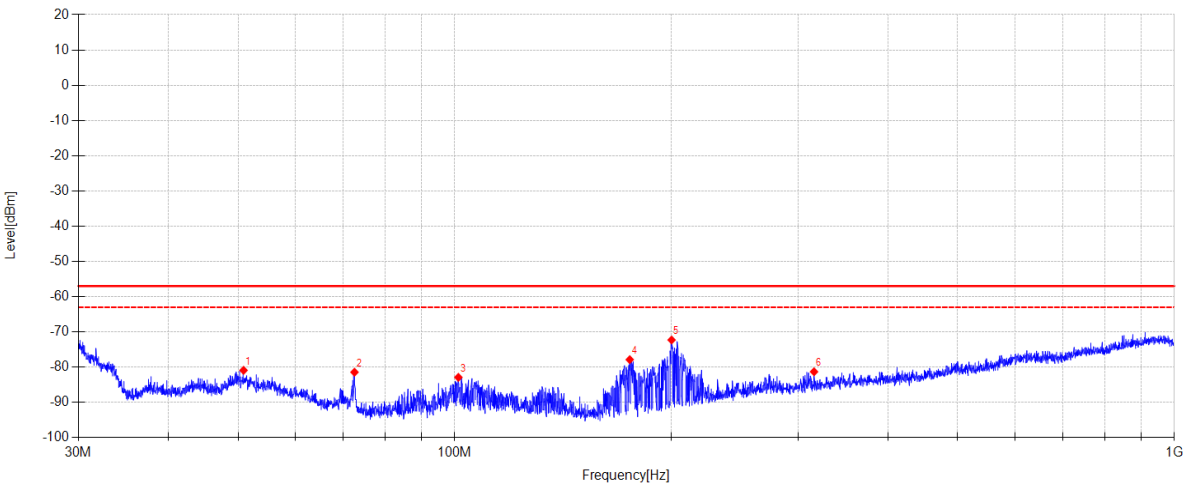
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Below 1G BLE\1

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	50.901	29.33	-110.24	-80.91	-57.00	23.91	PK	Horizontal	ERP
2	72.579	36.04	-117.48	-81.44	-57.00	24.44	PK	Horizontal	ERP
3	101.193	32.23	-115.14	-82.91	-57.00	25.91	PK	Horizontal	ERP
4	175.098	38.85	-116.72	-77.87	-57.00	20.87	PK	Horizontal	ERP
5	200.190	42.89	-115.19	-72.30	-57.00	15.30	PK	Horizontal	ERP
6	315.775	29.02	-110.33	-81.31	-57.00	24.31	PK	Horizontal	ERP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 100 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

RX BLE 1M 2402MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

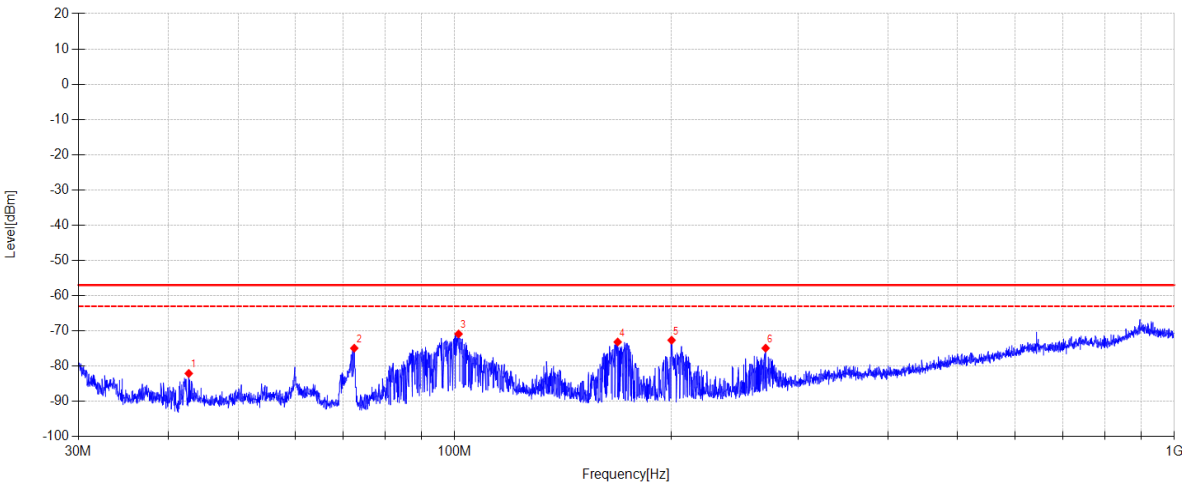
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Below 1G BLE\2

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	42.717	33.38	-115.46	-82.08	-57.00	25.08	PK	Vertical	ERP
2	72.528	42.50	-117.42	-74.92	-57.00	17.92	PK	Vertical	ERP
3	101.264	39.31	-110.19	-70.88	-57.00	13.88	PK	Vertical	ERP
4	168.474	40.43	-113.60	-73.17	-57.00	16.17	PK	Vertical	ERP
5	200.190	40.90	-113.54	-72.64	-57.00	15.64	PK	Vertical	ERP
6	270.446	36.10	-111.00	-74.90	-57.00	17.90	PK	Vertical	ERP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 100 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

RX BLE 1M 2480MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

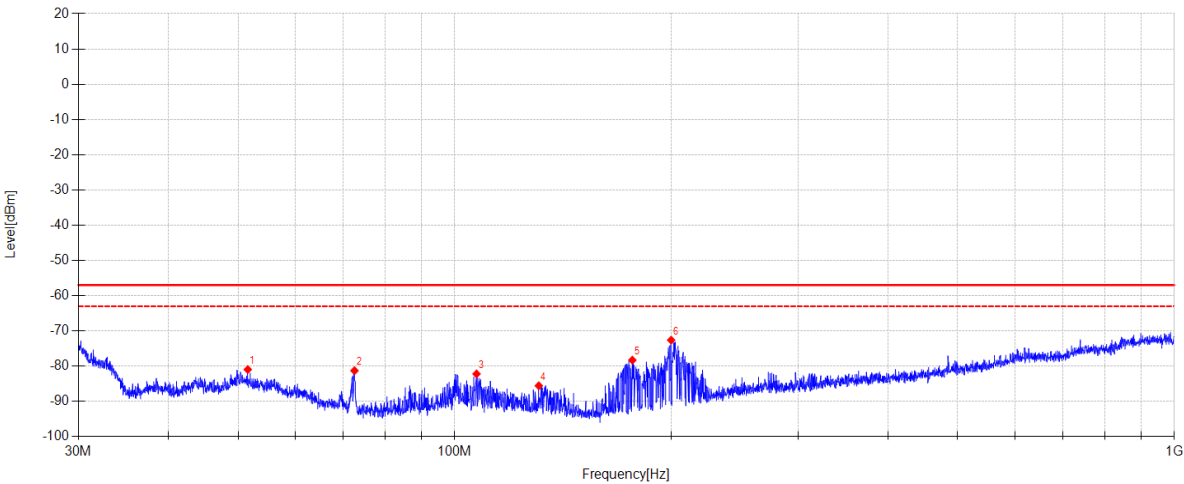
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Below 1G BLE\3

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	51.584	29.45	-110.41	-80.96	-57.00	23.96	PK	Horizontal	ERP
2	72.579	36.19	-117.48	-81.29	-57.00	24.29	PK	Horizontal	ERP
3	107.257	33.32	-115.53	-82.21	-57.00	25.21	PK	Horizontal	ERP
4	130.890	31.45	-117.03	-85.58	-57.00	28.58	PK	Horizontal	ERP
5	176.577	38.34	-116.64	-78.30	-57.00	21.30	PK	Horizontal	ERP
6	199.910	42.59	-115.21	-72.62	-57.00	15.62	PK	Horizontal	ERP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 100 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

RX BLE 1M 2480MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

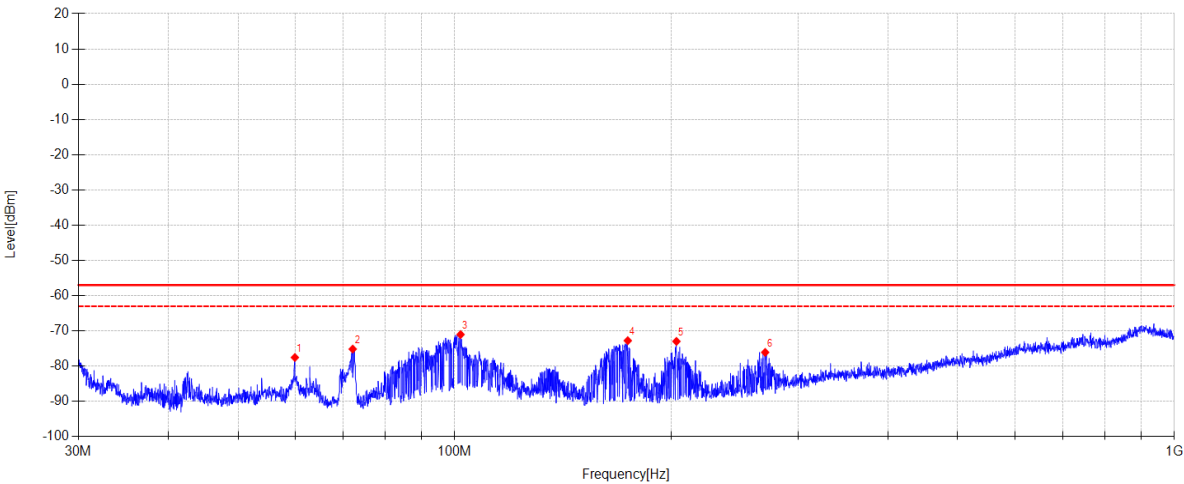
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Below 1G BLEV4

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	59.977	37.19	-114.74	-77.55	-57.00	20.55	PK	Vertical	ERP
2	72.173	42.31	-117.47	-75.16	-57.00	18.16	PK	Vertical	ERP
3	101.905	39.19	-110.23	-71.04	-57.00	14.04	PK	Vertical	ERP
4	173.996	40.82	-113.59	-72.77	-57.00	15.77	PK	Vertical	ERP
5	203.302	40.47	-113.45	-72.98	-57.00	15.98	PK	Vertical	ERP
6	270.067	34.92	-111.02	-76.10	-57.00	19.10	PK	Vertical	ERP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 100 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

RX BLE 2M 2404MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

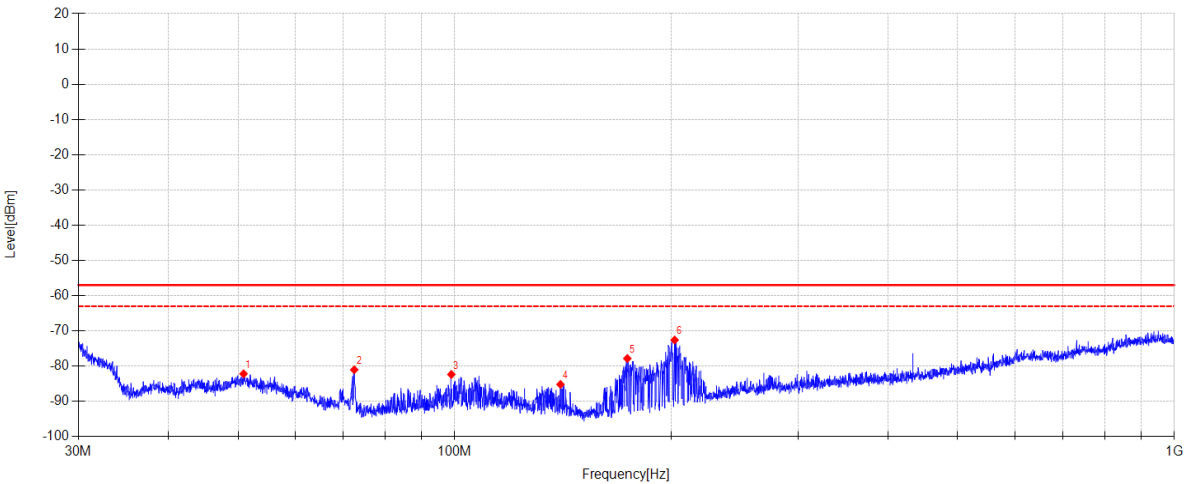
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Below 1G BLE\7

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	50.901	28.05	-110.24	-82.19	-57.00	25.19	PK	Horizontal	ERP
2	72.528	36.44	-117.48	-81.04	-57.00	24.04	PK	Horizontal	ERP
3	98.948	32.89	-115.25	-82.36	-57.00	25.36	PK	Horizontal	ERP
4	140.299	32.43	-117.63	-85.20	-57.00	28.20	PK	Horizontal	ERP
5	173.752	38.97	-116.80	-77.83	-57.00	20.83	PK	Horizontal	ERP
6	202.165	42.45	-115.05	-72.60	-57.00	15.60	PK	Horizontal	ERP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 100 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

RX BLE 2M 2404MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

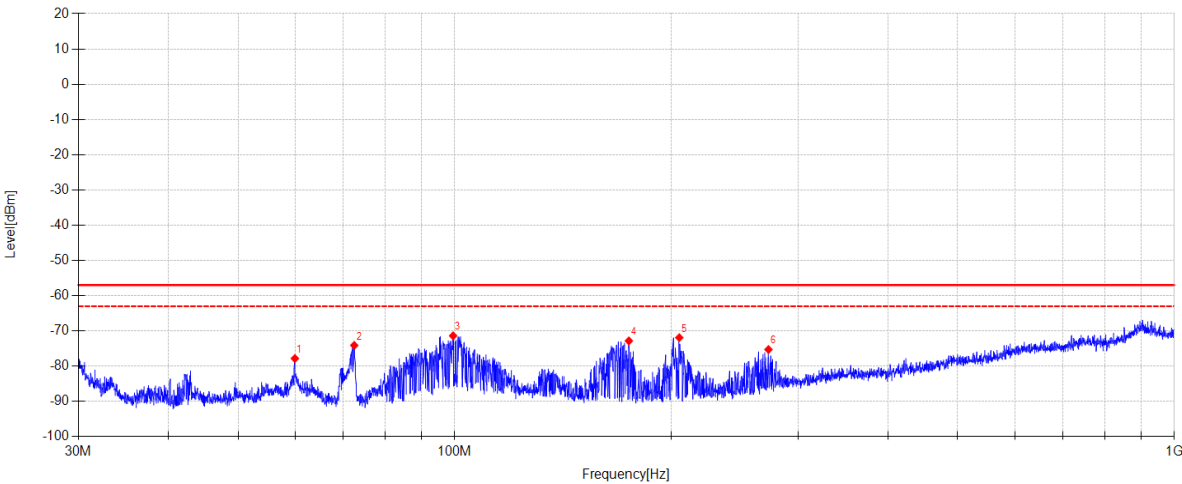
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Below 1G BLE\8

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	59.977	36.90	-114.74	-77.84	-57.00	20.84	PK	Vertical	ERP
2	72.528	43.31	-117.42	-74.11	-57.00	17.11	PK	Vertical	ERP
3	99.504	38.80	-110.19	-71.39	-57.00	14.39	PK	Vertical	ERP
4	174.607	40.74	-113.59	-72.85	-57.00	15.85	PK	Vertical	ERP
5	205.164	41.49	-113.41	-71.92	-57.00	14.92	PK	Vertical	ERP
6	272.922	35.55	-110.84	-75.29	-57.00	18.29	PK	Vertical	ERP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 100 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

RX BLE 2M 2478MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

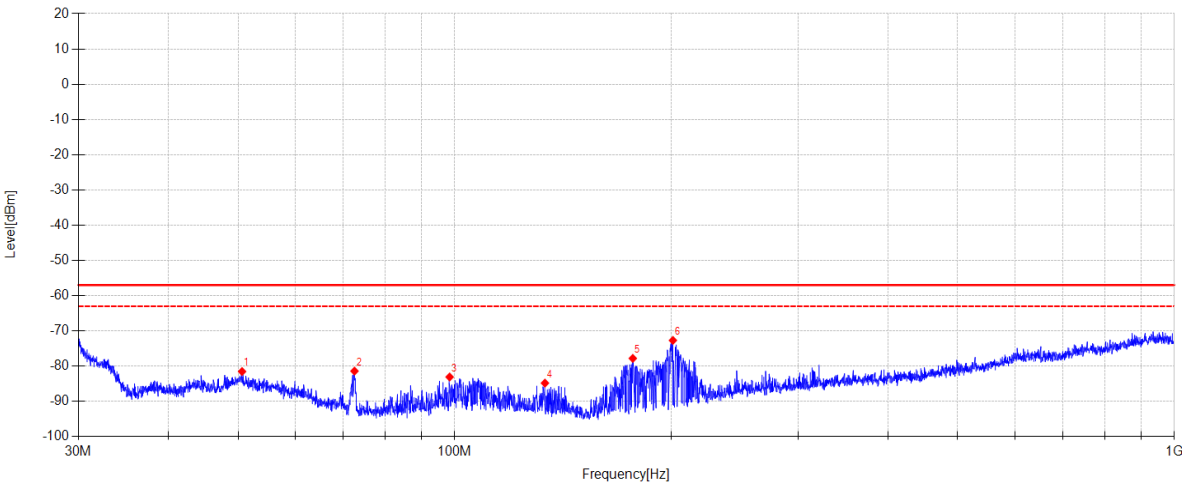
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Below 1G BLEV5

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	50.652	28.64	-110.17	-81.53	-57.00	24.53	PK	Horizontal	ERP
2	72.579	36.07	-117.48	-81.41	-57.00	24.41	PK	Horizontal	ERP
3	98.394	32.25	-115.34	-83.09	-57.00	26.09	PK	Horizontal	ERP
4	133.485	32.38	-117.20	-84.82	-57.00	27.82	PK	Horizontal	ERP
5	176.825	38.82	-116.62	-77.80	-57.00	20.80	PK	Horizontal	ERP
6	201.034	42.43	-115.13	-72.70	-57.00	15.70	PK	Horizontal	ERP

Note:

1. Level = Reading + Factor.
2. Factor = Antenna Factor + Cable Loss - Preamp Gain + Site Loss Factor - 107.
3. Test setup: RBW: 100 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

RX BLE 2M 2478MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

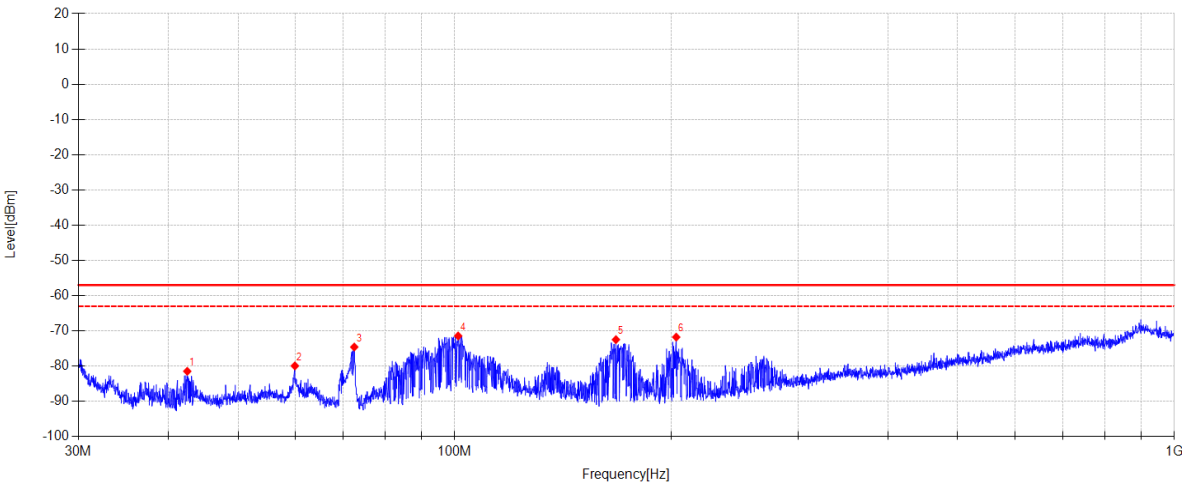
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Below 1G BLE\6

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	42.507	34.01	-115.48	-81.47	-57.00	24.47	PK	Vertical	ERP
2	59.977	34.80	-114.74	-79.94	-57.00	22.94	PK	Vertical	ERP
3	72.528	42.84	-117.42	-74.58	-57.00	17.58	PK	Vertical	ERP
4	101.122	38.74	-110.17	-71.43	-57.00	14.43	PK	Vertical	ERP
5	167.531	41.13	-113.61	-72.48	-57.00	15.48	PK	Vertical	ERP
6	203.160	41.70	-113.47	-71.77	-57.00	14.77	PK	Vertical	ERP

Note:

1. Level = Reading + Factor.
2. Factor = Antenna Factor + Cable Loss - Preamp Gain + Site Loss Factor - 107.
3. Test setup: RBW: 100 kHz, VBW: 300 kHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

RX BLE 1M 2402MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

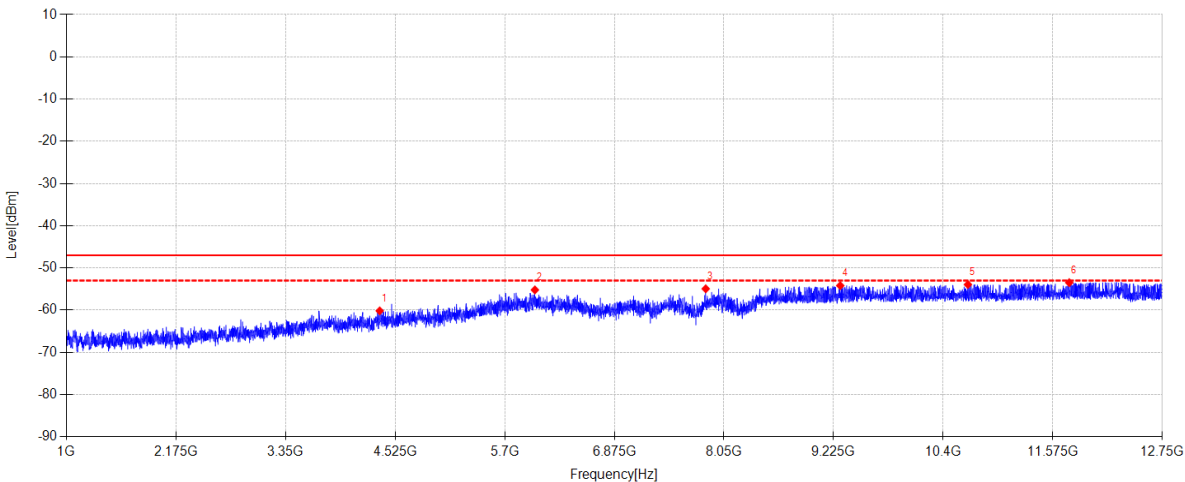
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Above 1G BLE\15

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	4359.325	39.90	-100.07	-60.17	-47.00	13.17	PK	Horizontal	EIRP
2	6023.125	38.72	-93.93	-55.21	-47.00	8.21	PK	Horizontal	EIRP
3	7854.950	38.52	-93.46	-54.94	-47.00	7.94	PK	Horizontal	EIRP
4	9296.675	35.15	-89.34	-54.19	-47.00	7.19	PK	Horizontal	EIRP
5	10665.550	34.82	-88.75	-53.93	-47.00	6.93	PK	Horizontal	EIRP
6	11752.425	35.22	-88.70	-53.48	-47.00	6.48	PK	Horizontal	EIRP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss + Filter Factor - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

RX BLE 1M 2402MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

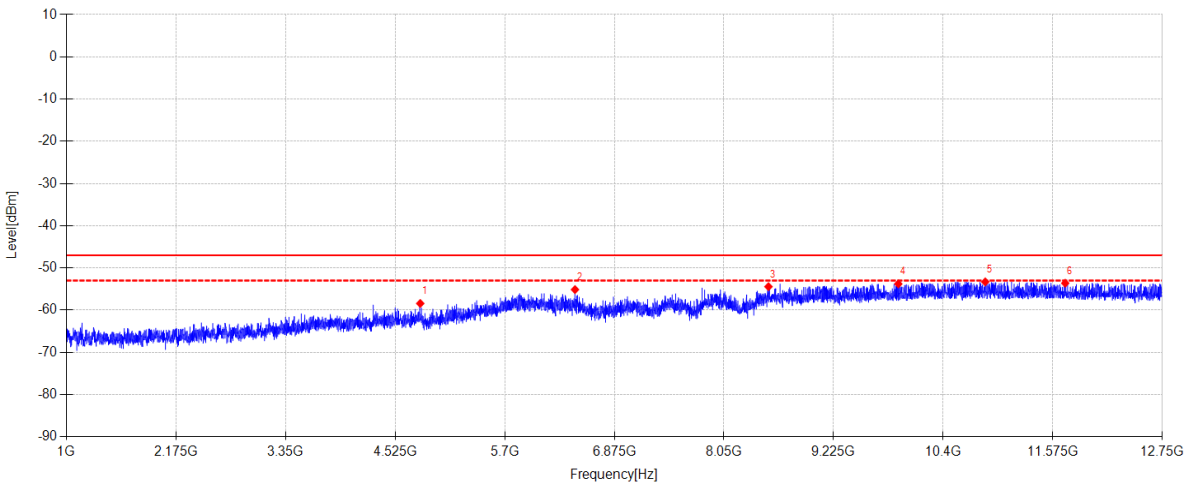
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Above 1G BLE\16

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	4794.075	40.80	-99.22	-58.42	-47.00	11.42	PK	Vertical	EIRP
2	6453.175	39.53	-94.66	-55.13	-47.00	8.13	PK	Vertical	EIRP
3	8527.050	36.84	-91.27	-54.43	-47.00	7.43	PK	Vertical	EIRP
4	9919.425	35.36	-89.14	-53.78	-47.00	6.78	PK	Vertical	EIRP
5	10851.200	34.41	-87.71	-53.30	-47.00	6.30	PK	Vertical	EIRP
6	11708.950	34.31	-87.93	-53.62	-47.00	6.62	PK	Vertical	EIRP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss + Filter Factor - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date: 2025-03-12 Tested By: Lin Guoyaun

EUT: Portable Bluetooth Speaker Model Number: BOOMBOX 4C

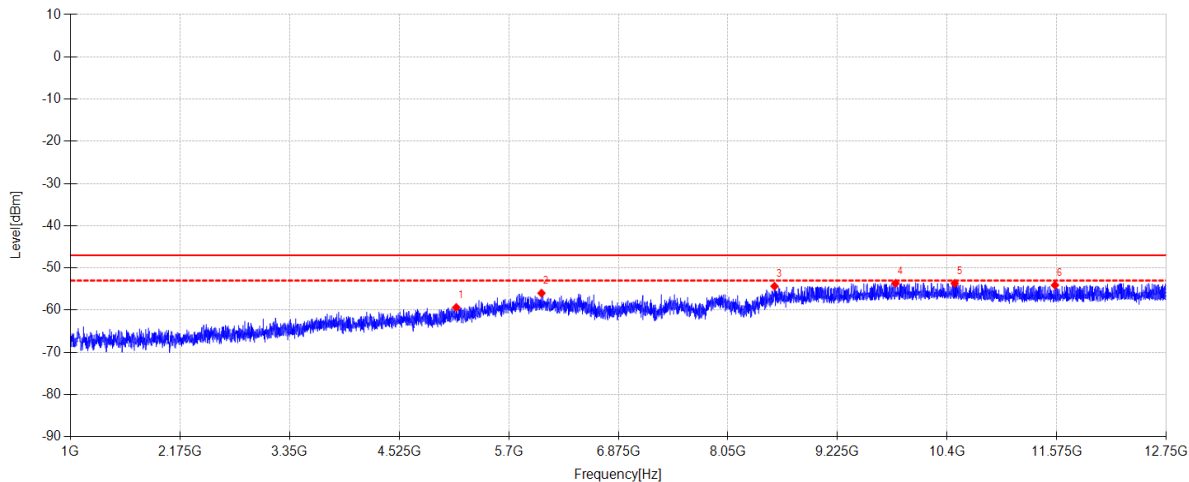
Test Mode: RX BLE 1M 2480MHz Mode Power Supply: AC 230V/50Hz

Condition: Temp:21.3°C;Humi:47.4% Test Site: DDT 3# Chamber

File Path: d:\ts\2024 report data\Q24112111-1E\CE Above 1G BLE\13

Memo: Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	5137.175	38.26	-97.62	-59.36	-47.00	12.36	PK	Horizontal	EIRP
2	6051.325	38.00	-93.97	-55.97	-47.00	8.97	PK	Horizontal	EIRP
3	8549.375	36.88	-91.22	-54.34	-47.00	7.34	PK	Horizontal	EIRP
4	9846.575	35.09	-88.74	-53.65	-47.00	6.65	PK	Horizontal	EIRP
5	10481.075	35.06	-88.70	-53.64	-47.00	6.64	PK	Horizontal	EIRP
6	11556.200	34.66	-88.74	-54.08	-47.00	7.08	PK	Horizontal	EIRP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss + Filter Factor - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

RX BLE 1M 2480MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

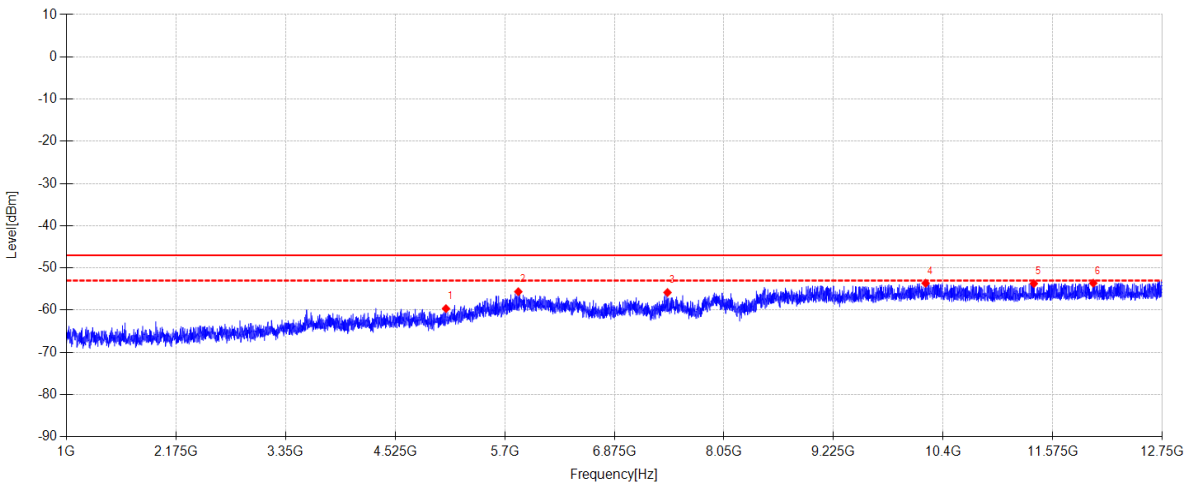
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Above 1G BLE\14

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	5070.200	38.73	-98.37	-59.64	-47.00	12.64	PK	Vertical	EIRP
2	5845.700	38.98	-94.61	-55.63	-47.00	8.63	PK	Vertical	EIRP
3	7444.875	38.51	-94.33	-55.82	-47.00	8.82	PK	Vertical	EIRP
4	10212.000	35.10	-88.73	-53.63	-47.00	6.63	PK	Vertical	EIRP
5	11371.725	34.00	-87.71	-53.71	-47.00	6.71	PK	Vertical	EIRP
6	12009.750	34.52	-88.13	-53.61	-47.00	6.61	PK	Vertical	EIRP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss + Filter Factor - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

RX BLE 2M 2404MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

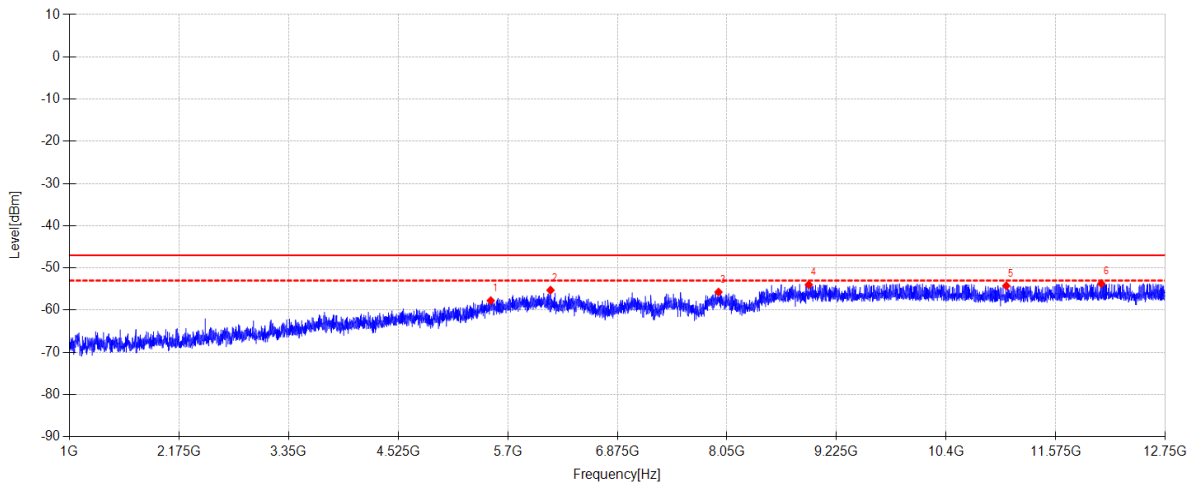
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Above 1G BLE\9

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	5517.875	38.23	-95.97	-57.74	-47.00	10.74	PK	Horizontal	EIRP
2	6158.250	38.87	-94.14	-55.27	-47.00	8.27	PK	Horizontal	EIRP
3	7959.525	37.50	-93.21	-55.71	-47.00	8.71	PK	Horizontal	EIRP
4	8927.725	35.94	-89.91	-53.97	-47.00	6.97	PK	Horizontal	EIRP
5	11045.075	34.59	-88.82	-54.23	-47.00	7.23	PK	Horizontal	EIRP
6	12063.800	34.94	-88.67	-53.73	-47.00	6.73	PK	Horizontal	EIRP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss + Filter Factor - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

RX BLE 2M 2404MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

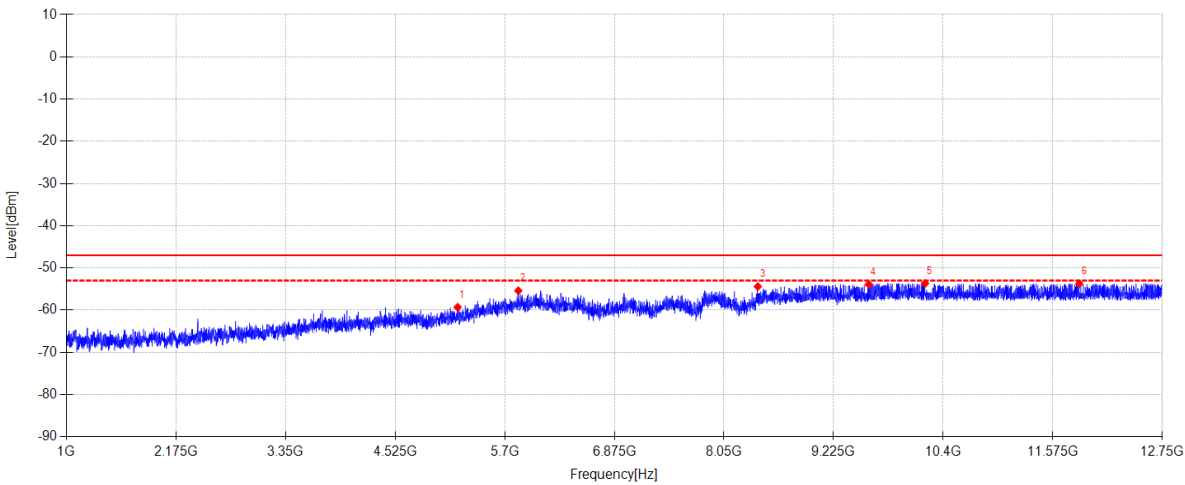
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Above 1G BLE\10

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	5194.750	38.44	-97.76	-59.32	-47.00	12.32	PK	Vertical	EIRP
2	5845.700	39.21	-94.61	-55.40	-47.00	8.40	PK	Vertical	EIRP
3	8413.075	37.18	-91.58	-54.40	-47.00	7.40	PK	Vertical	EIRP
4	9602.175	35.53	-89.43	-53.90	-47.00	6.90	PK	Vertical	EIRP
5	10204.950	35.06	-88.74	-53.68	-47.00	6.68	PK	Vertical	EIRP
6	11860.525	34.28	-88.03	-53.75	-47.00	6.75	PK	Vertical	EIRP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss + Filter Factor - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date: 2025-03-12 Tested By: Lin Guoyaun

EUT: Portable Bluetooth Speaker Model Number: BOOMBOX 4C

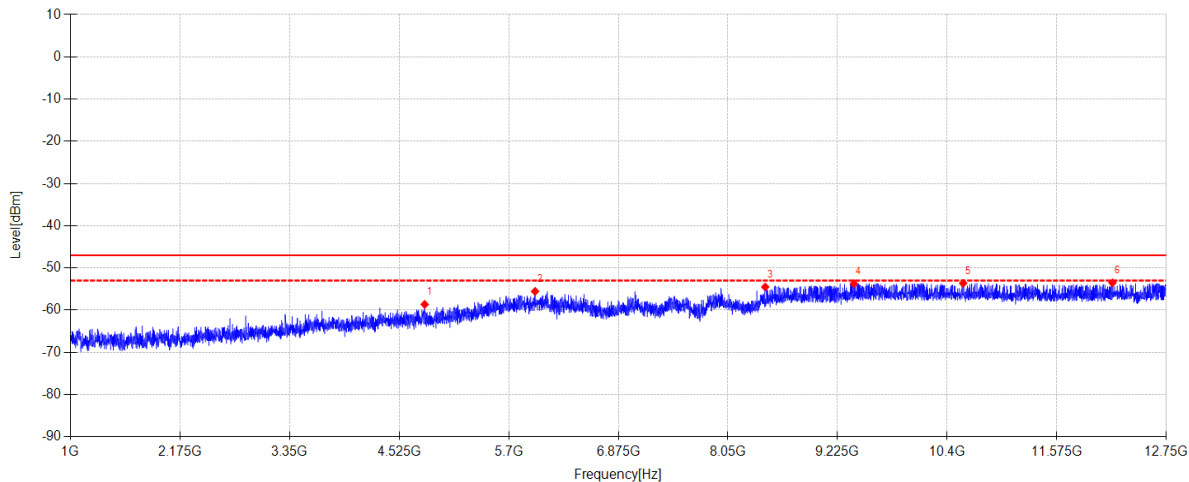
Test Mode: RX BLE 2M 2478MHz Mode Power Supply: AC 230V/50Hz

Condition: Temp:21.3°C;Humi:47.4% Test Site: DDT 3# Chamber

File Path: d:\ts\2024 report data\Q24112111-1E\CE Above 1G BLE\11

Memo: Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	4798.775	40.16	-98.80	-58.64	-47.00	11.64	PK	Horizontal	EIRP
2	5982.000	38.42	-93.97	-55.55	-47.00	8.55	PK	Horizontal	EIRP
3	8449.500	37.05	-91.56	-54.51	-47.00	7.51	PK	Horizontal	EIRP
4	9400.075	35.51	-89.23	-53.72	-47.00	6.72	PK	Horizontal	EIRP
5	10571.550	35.08	-88.72	-53.64	-47.00	6.64	PK	Horizontal	EIRP
6	12171.900	35.17	-88.69	-53.52	-47.00	6.52	PK	Horizontal	EIRP

Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss + Filter Factor - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TR-4-E-009 Radiated Emission Test Result

Test Date:

2025-03-12

Tested By:

Lin Guoyaun

EUT:

Portable Bluetooth Speaker

Model Number:

BOOMBOX 4C

Test Mode:

RX BLE 2M 2478MHz Mode

Power Supply:

AC 230V/50Hz

Condition:

Temp:21.3°C;Humi:47.4%

Test Site:

DDT 3# Chamber

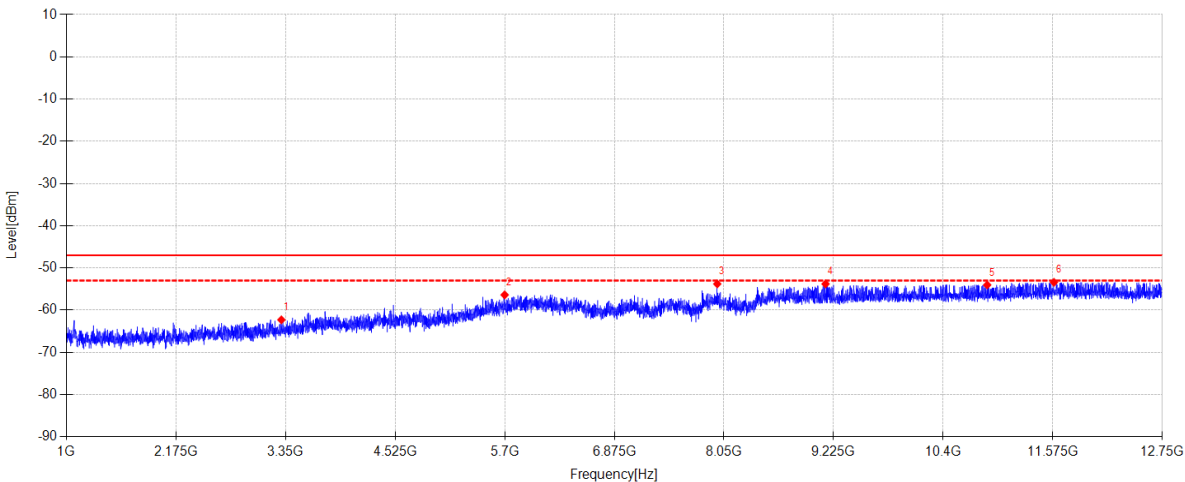
File Path:

d:\ts\2024 report data\Q24112111-1E\CE Above 1G BLE\12

Memo:

Sample Number: S24112111-015

Test Graph



Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	Factor [dB]	Level [dBm]	Limit [dBm]	Margin [dB]	Detector	Polarity	Type
1	3305.350	40.35	-102.64	-62.29	-47.00	15.29	PK	Vertical	EIRP
2	5698.825	38.93	-95.32	-56.39	-47.00	9.39	PK	Vertical	EIRP
3	7978.325	38.98	-92.76	-53.78	-47.00	6.78	PK	Vertical	EIRP
4	9139.225	36.08	-89.87	-53.79	-47.00	6.79	PK	Vertical	EIRP
5	10872.350	33.65	-87.68	-54.03	-47.00	7.03	PK	Vertical	EIRP
6	11587.925	34.45	-87.85	-53.40	-47.00	6.40	PK	Vertical	EIRP

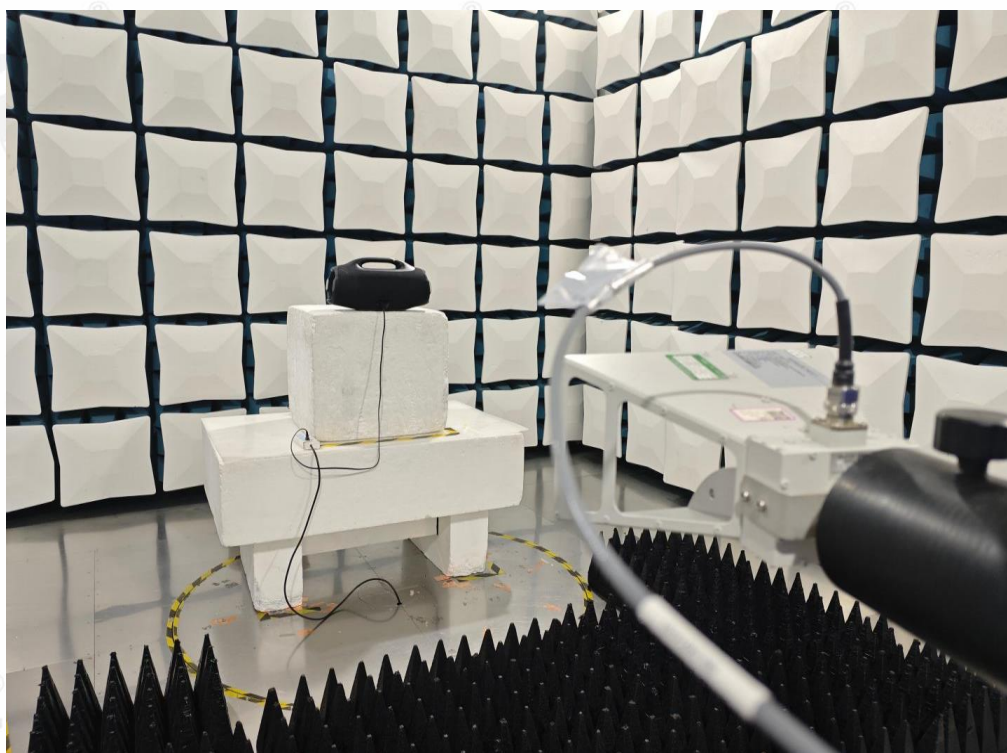
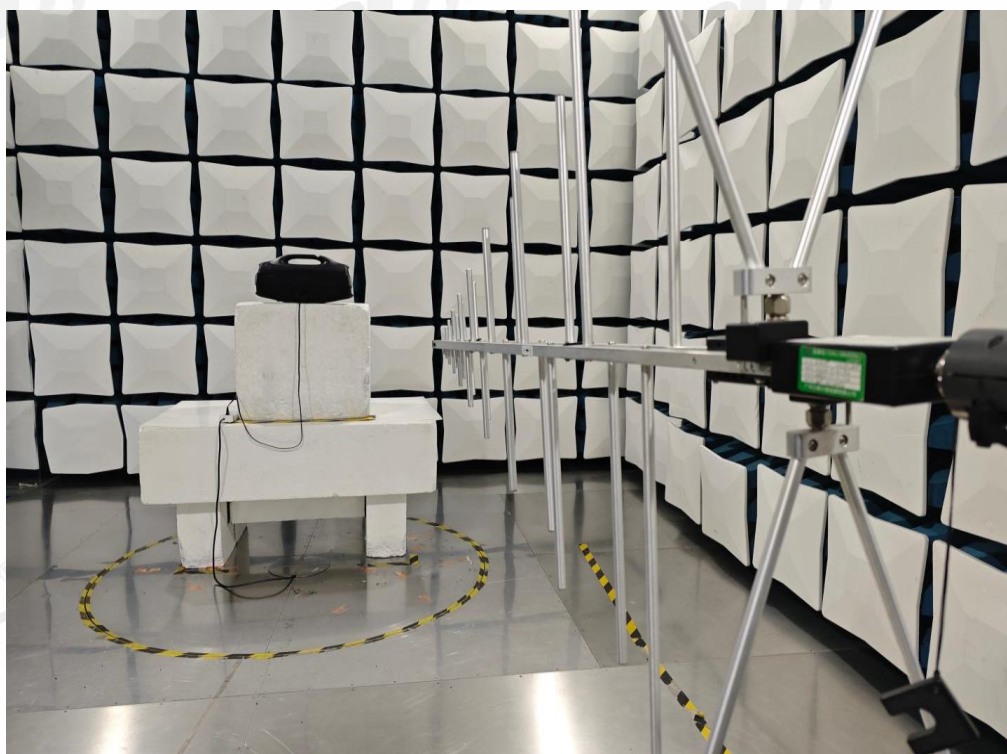
Note:

1. Level = Reading + Factor.

2. Factor = Antenna Factor + Cable Loss + Filter Factor - Preamp Gain + Site Loss Factor - 107.

3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

13. Test Setup Photograph





14. Photos of the EUT

Please refer to DDT-Q24112111-2E appendix I

-----End Report-----