TEST REPORT

Reference No.	:	WTX24X09218316W003
Manufacturer	:	Portable Multimedia Limited
Address	:	Unit 2, Caerphilly Business Park, Caerphilly, Mid Glamorgan CF83 3ED United Kingdom
Product Name	:	Dash Cam
Model No.	:	NBPICO2
Standards	:	**ETSI EN 303 413 V1.2.1 (2021-04)**
Date of Receipt sample	:	2024-09-18
Date of Test	:	2024-09-18 to 2024-09-29
Date of Issue	:	2024-09-29
Test Report Form No.	:	WTX_ETSI EN 303 413_2017W
Test Result	:	**Pass**

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

Prepared By:

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Tested by:

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Approved by:

Jason Su

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Report version

Version No.	Date of issue	Description
Rev.00	2024-09-29	Original
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1 GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	Dash Cam
Trade Name:	Nextbase
Model No.:	NBPICO2
Adding Model(s):	NBPICO1, NBPIQO1, NBPIQO2, NBPICO1-32 NBPICO1-64, NBPICO1-128, NBPICO1-256, NBPICO1-PP, NBPICO1-CLC, NBPICO1-PIC, NBPICO1-QIC, NBPICO1-32PP, NBPICO1-64PP, NBPICO1-128PP, NBPICO1-256PP, NBPICO1-32PPQIC, NBPICO1-64PPQIC, NBPICO1-32PPPIC, NBPICO1-64PPPIC, NBPICO2-32, NBPICO2-64, NBPICO2-128, NBPICO2-256, NBPICO2-PP, NBPICO2-CLC, NBPICO2-PIC, NBPICO2-QIC, NBPICO2-32PP, NBPICO2-64PP, NBPICO2-128PP, NBPICO2-256PP, NBPICO2-32PPQIC, NBPICO2-64PPQIC, NBPICO2-32PPPIC, NBPICO2-64PPPIC
Rated Voltage:	Car charger power 5V 2.4A
Power adapter:	Input: 12-24Vdc Output: 5V 2.4A Max
Battery Capacity:	/
Software Version:	/
Hardware Version:	/
Note: The test data is gathered from a production sample provided by the manufacturer. The appearance of others models listed in the report is different from main-test model NBPICO2, but the circuit and the electronic construction do not change, declared by the manufacturer.	

Technical Characteristics of EUT	
Frequency Range:	1575.42MHz Receiving

1.2 Test Standards

The tests were performed according to following standards:

ETSI EN 303 413 V1.2.1 (2021-04): Satellite Earth Stations and Systems (SES);Global Navigation Satellite System (GNSS) receivers; Radio equipment operating in the 1 164 MHz to 1 300 MHz and 1 559 MHz to 1 610 MHz frequency bands; Harmonised Standard for access to radio spectrum

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the immunity should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ETSI EN 303 413, the equipment under test (EUT) was configured to measure its highest possible emission level. For more detail refer to the Operating Instructions.

1.4 Test Facility

Address of the test laboratory

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

1.5 EUT Setup and Test Mode

The equipment under test (EUT) was configured to measure its highest possible emission/immunity level. The test modes were adapted according to the operation manual for use, the EUT was operated in the engineering mode to fix the Rx frequency that was for the purpose of the measurements, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	GPS Receiving	1575.42MHz

Test Conditions	
Temperature:	22-25 °C
Relative Humidity:	45-55%.
ATM Pressure:	1019 mbar

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
Type-C Cable	4.0	Unshielded	Without Ferrite

Auxiliary Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
iPhone	Apple	MGC33CH/A	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Uncertainty	Note
Receiver blocking test	0.82dB	(1)
Receiver spurious emissions test	30-200MHz ±4.52dB	(1)
	0.2-1GHz ±5.56dB	(1)
	1-6GHz ±3.84dB	(1)
	6-18GHz ±3.92dB	(1)

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

1.7 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
Spectrum Analyzer	Agilent	N9020A	US47140102	2024-03-19	2025-03-18
Signal Generator	Agilent	83752A	3610A01453	2024-02-24	2025-02-23
Vector Signal Generator	Agilent	N5182A	MY47070202	2024-02-24	2025-02-23
Temperature&Humidity Chamber	/	HTC-1	/	2024-02-24	2025-02-23
Universal Radio Communication Tester	Rohde & Schwarz	CMW500	148650	2024-02-24	2025-02-23
☐Chamber A: Below 1GHz					
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2024-02-24	2025-02-23
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2024-03-19	2025-03-18
Amplifier	HP	8447F	2805A03475	2024-02-24	2025-02-23
Loop Antenna	Schwarz beck	FMZB 1516	9773	2024-02-26	2025-02-25
Trilog Broadband Antenna	Schwarz beck	VULB9163	9163-333	2024-02-24	2025-02-23
☐Chamber A: Above 1GHz					
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2024-02-24	2025-02-23
Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2024-02-27	2025-02-26
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2024-03-19	2025-03-18
Amplifier	C&D	PAP-1G18	2002	2024-02-27	2025-02-26
Horn Antenna	ETS	3117	00086197	2024-02-26	2025-02-25
DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2024-03-17	2025-03-16
Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2024-02-29	2025-02-28
☐Chamber B:Below 1GHz					
Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2024-03-17	2027-03-16
Amplifier	Agilent	8447D	2944A10457	2024-02-24	2025-02-23
EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2024-02-24	2025-02-23
☒Chamber C:Below 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2024-02-27	2025-02-26
Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2024-04-18	2027-04-17
Loop Antenna	Schwarz beck	FMZB 1516	9773	2024-02-26	2025-02-25
Amplifier	HP	8447F	2944A03869	2024-02-24	2025-02-23
☒Chamber C: Above 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2024-02-27	2025-02-26

Horn Antenna	POAM	RTF-118A	1820	2023-03-10	2026-03-09
Amplifier	Tonscend	TAP01018050	AP22E806235	2024-02-27	2025-02-26
DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2024-03-17	2025-03-16
Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2024-02-29	2025-02-28

Software List			
Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission A)*	Farad	EZ-EMC	RA-03A1 (1.1.4.2)
EMI Test Software (Radiated Emission B)*	Farad	EZ-EMC	RA-03A1 (1.1.4.2)
EMI Test Software (Radiated Emission C)*	Farad	EZ-EMC	RA-03A1-2 (1.1.4.2)

*Remark: indicates software version used in the compliance certification testing.

2. SUMMARY OF TEST RESULTS

Standards	Reference	Description of Test Item	Result
ETSI EN 303 413	5.4	Receiver blocking test	Pass
	5.5	Receiver Spurious Radiations test	Pass
Pass: The EUT complies with the essential requirements in the standard. Fail: The EUT does not comply with the essential requirements in the standard. N/A: not applicable.			

3. Receiver blocking test

3.1 General

According to the ETSI EN 303 413 section Clause 5.4 contains the procedure for testing the receiver blocking.

3.2 Test Procedure

1) Configure the GNSS signal generator to simulate the GNSS constellations and GNSS signals from table 4-1 declared as supported by the GUE, with power levels and other details as specified in clause B.2.
2) With the blocking signal switched off, the EUT shall be given sufficient time to acquire all simulated satellites from the declared GNSS constellations.
3) Record the C/N0 value(s) reported by the EUT under the condition in step 2). Sufficient filtering shall be used to obtain stable value(s). C/N0 may be averaged over time and across all the simulated satellites for a particular GNSS constellation and GNSS signal. However, C/N0 shall not be averaged across different satellite signals in the same GNSS constellation or across different GNSS constellations. For a multi-GNSS constellation and/or multi-GNSS signal EUT, there shall be a separate C/N0 value recorded for each GNSS constellation and each GNSS signal supported.
4) The blocking signal generator shall be configured to generate the signal defined in table 4-4, at the first test point centre frequency and signal power level as specified in table 4-2.
5) The blocking signal shall be switched on, and the EUT's C/N0 value(s) recorded as in step 3). The difference(s) between this value(s) and the value(s) recorded in step 3) is the C/N0 degradation caused by the blocking signal for this test point.
6) Test point Pass/Fail Criteria: If the C/N0 degradation from step 5) does not exceed the value in equation (4-1), then this test point is set to "pass". If the C/N0 degradation exceeds the value in equation (4-1), then this test point is set to "fail". For a multi-GNSS constellation and/or multi-GNSS signal EUT, there shall be a separate pass/fail determination for each GNSS constellation and for each GNSS signal supported. If the C/N0 degradation exceeds the value in equation (4-1) for any supported GNSS constellation or supported GNSS signal, then this test point is set to "fail".
7) Step 1) through step 6) shall be repeated for all test point centre frequencies (and associated signal power level) specified in table 4-2.

Table 4-1: GNSS constellations, GNSS signals and RNSS frequency bands

GNSS	GNSS Signal Designations	RNSS Frequency Band (MHz)
BDS	B1I	1559 to 1610
Galileo	E1	1559 to 1610
	E5a	1164 to 1215
	E5b	1164 to 1215
	E6	1215 to 1300
GLONASS	G1	1559 to 1610
	G2	1215 to 1300
GPS	L1	1559 to 1610
	L2	1215 to 1300
	L5	1164 to 1215
SBAS	L1	1559 to 1610
	L5	1164 to 1215

Table 4-2: Frequency bands, Blocking signal test point centre frequencies and power levels for the 1 559 MHz to 1 610 MHz RNSS band

Frequency band (MHz)	Test point centre frequency (MHz)	Blocking signal power level (dBm)	Comments
1518 to 1525	1524	-65	MSS (space-to-Earth) band
1525 to 1549	1548	-95	MSS (space-to-Earth) band
1549 to 1559	1554	-105	MSS (space-to-Earth) band
1559 to 1610	GUE RNSS band under test		
1610 to 1626	1615	-105	MSS (Earth-to-space) band
1626 to 1640	1627	-85	MSS (Earth-to-space) band

Table 4-3: Frequency bands, Blocking signal test point centre frequencies and power levels for the 1 164 MHz to 1 300 MHz RNSS band

Frequency band (MHz)	Test point centre frequency (MHz)	Blocking signal power level (dBm)	Comments
960 to 1164	1154	-75	AM(R)S, ARNS band
1164 to 1215	GUE RNSS band under test		
1215 to 1260	GUE RNSS band under test		
1260 to 1300	GUE RNSS band under test		
1300 to 1350	1310	-85	Radiolocation, ARNS, RNSS (Earth-to-space) band

Table 4-4: Blocking signal

Parameter	Value	Comments
Frequency	See table 4-2 and table 4-3	
Power level	See table 4-2 and table 4-3	
Bandwidth	1 MHz	See clause B.1 for details
Format	AWGN	

3.3 Summary of Test Results/Plots

GPS : L1(1 559 to 1 610MHz)

Frequency band (MHz)	Test point centre Frequency (MHz)	Blocking signal power level (dBm)	Measured C/N0 (dB-Hz)			
	From table 2	From table 2	No interfering signal	With interfering signal	Decrease of C/N0	Decrease ≤ 1 dB?
1 518 to 1 525	1 524	-65	47.76	47.24	0.53	GPS Pass
1 525 to 1 549	1 548	-95	46.50	45.77	0.73	GPS Pass
1 549 to 1 559	1 554	-105	46.97	46.46	0.51	GPS Pass
1 610 to 1 626	1 615	-105	47.76	47.74	0.02	GPS Pass
1 626 to 1 640	1 627	-85	46.97	46.27	0.70	GPS Pass
Final test results for 1 559 MHz to 1 610 MHz RNSS band: Pass						

4. Receiver Spurious Emissions

4.1 Limit of Spurious Emissions

Frequency range	Maximum power	Bandwidth
30MHz to 1GHz	-57 dBm	100kHz
1GHz to 8.3GHz	-47 dBm	1MHz

4.2 Test Procedure

1. The test conditions.

☒Normal condition ☐Extreme conditions

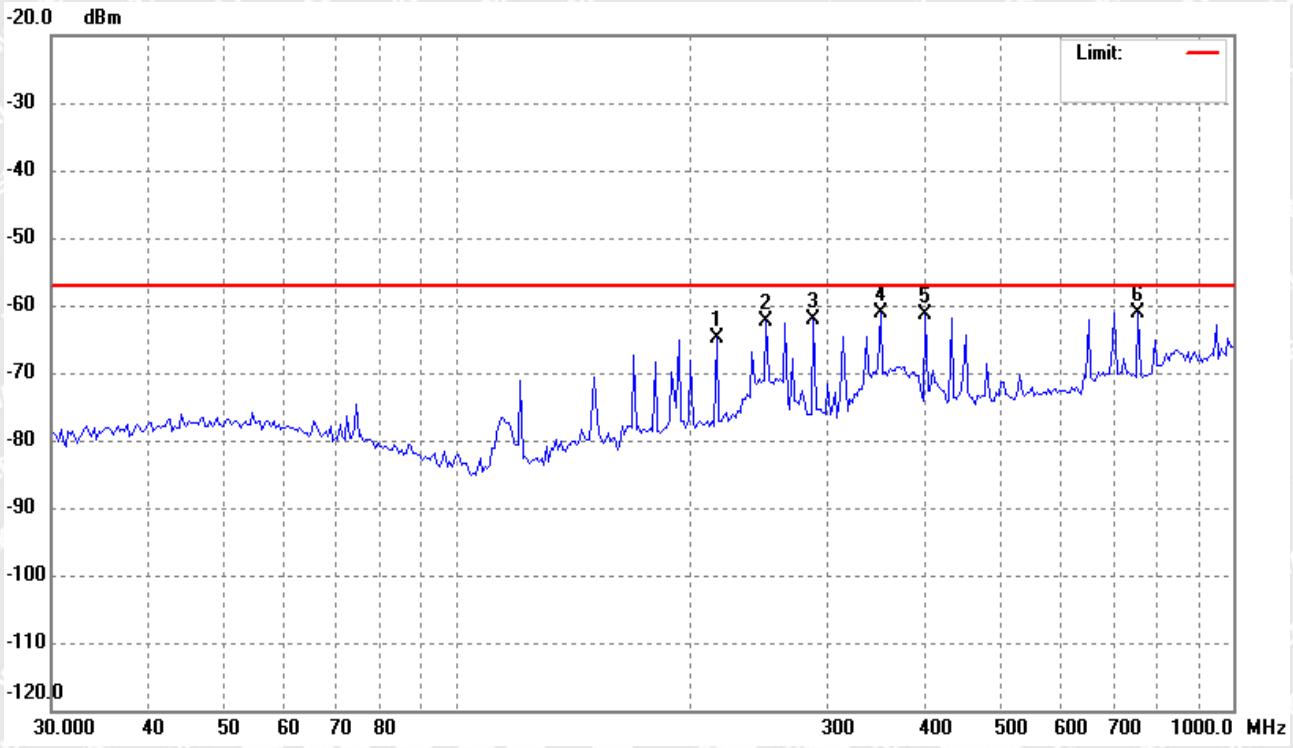
2. Please refer to ETSI EN 303 413 Sub-clause 5.5.2.2 for the measurement method.

4.3 Summary of Test Results/Plots

According to the data sheet, the EUT complied with the EN 303 413 standards, and had the worst margin of:

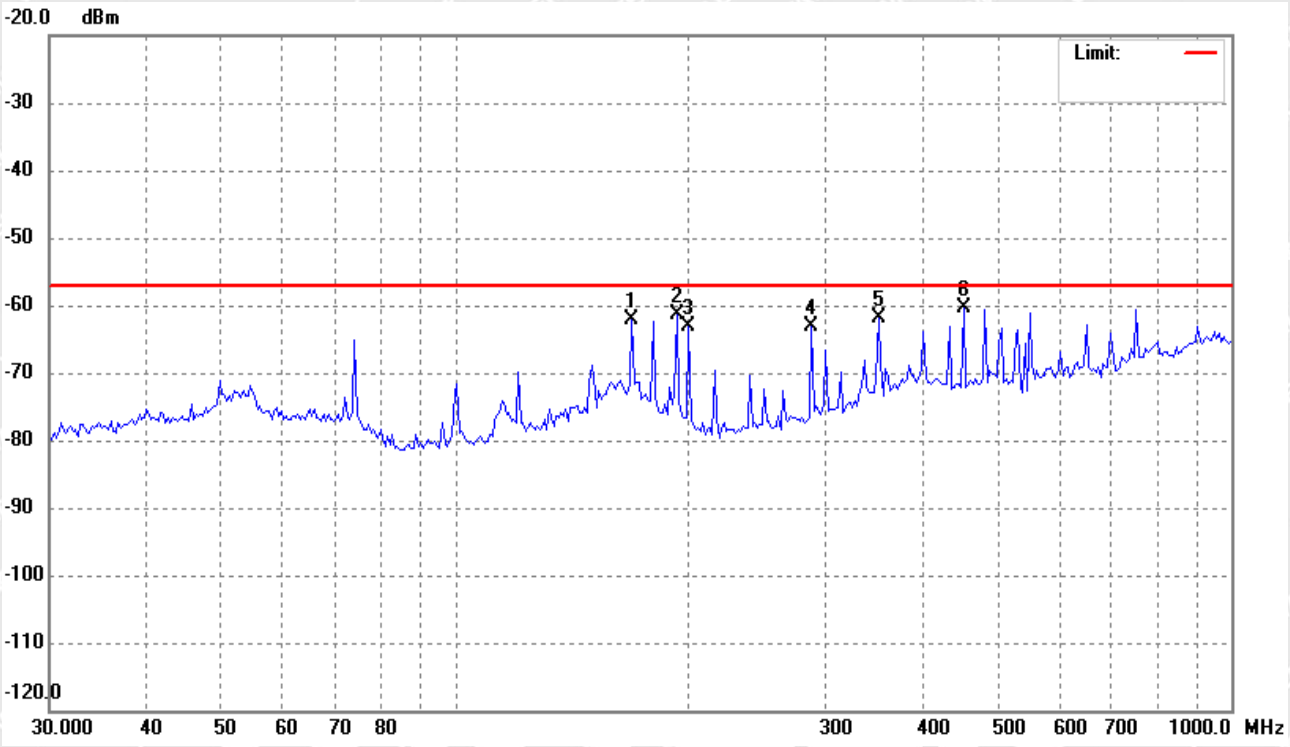
Receiver spurious emission from 30MHz to 1GHz

GPS Receiving mode			
Test Channel:	/	Polarity:	Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
1	216.1197	-67.68	2.74	-64.94	-57.00	-7.94	ERP
2	250.4859	-70.84	8.51	-62.33	-57.00	-5.33	ERP
3	288.2840	-67.39	5.36	-62.03	-57.00	-5.03	ERP
4	350.9722	-65.70	4.52	-61.18	-57.00	-4.18	ERP
5	401.1050	-66.06	4.67	-61.39	-57.00	-4.39	ERP
6	754.9628	-72.23	11.20	-61.03	-57.00	-4.03	ERP

Test Channel:	/	Polarity:	Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBm)	(dB)	(dBm)	(dBm)	(dB)	
1	168.9970	-68.40	6.35	-62.05	-57.00	-5.05	ERP
2	193.1366	-63.71	2.33	-61.38	-57.00	-4.38	ERP
3	200.0432	-64.27	1.24	-63.03	-57.00	-6.03	ERP
4	288.2840	-65.77	2.74	-63.03	-57.00	-6.03	ERP
5	350.9722	-66.22	4.36	-61.86	-57.00	-4.86	ERP
6	452.0013	-66.78	6.31	-60.47	-57.00	-3.47	ERP

Receiver spurious emission from above 1GHz

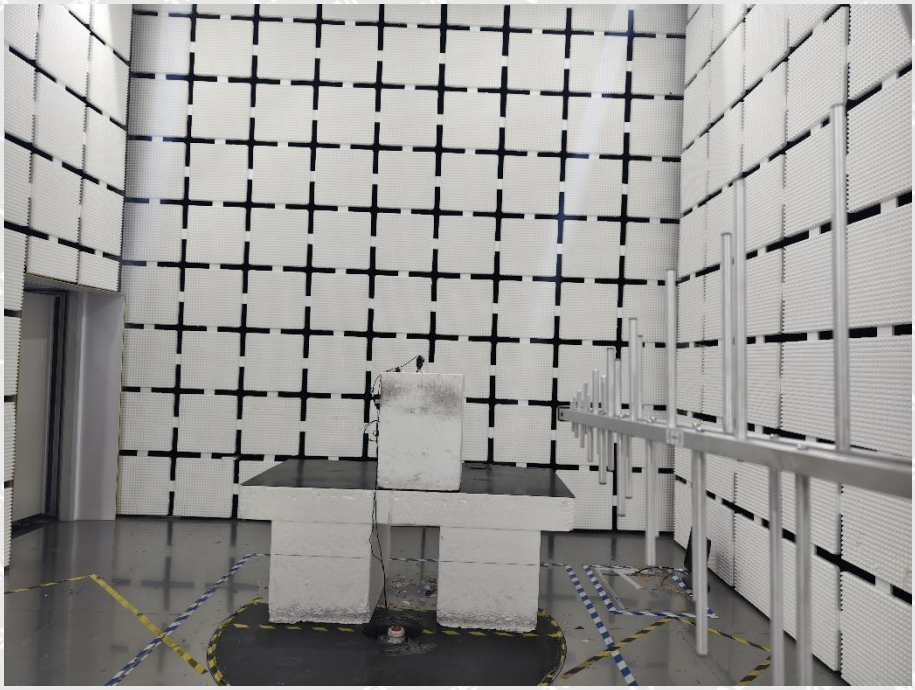
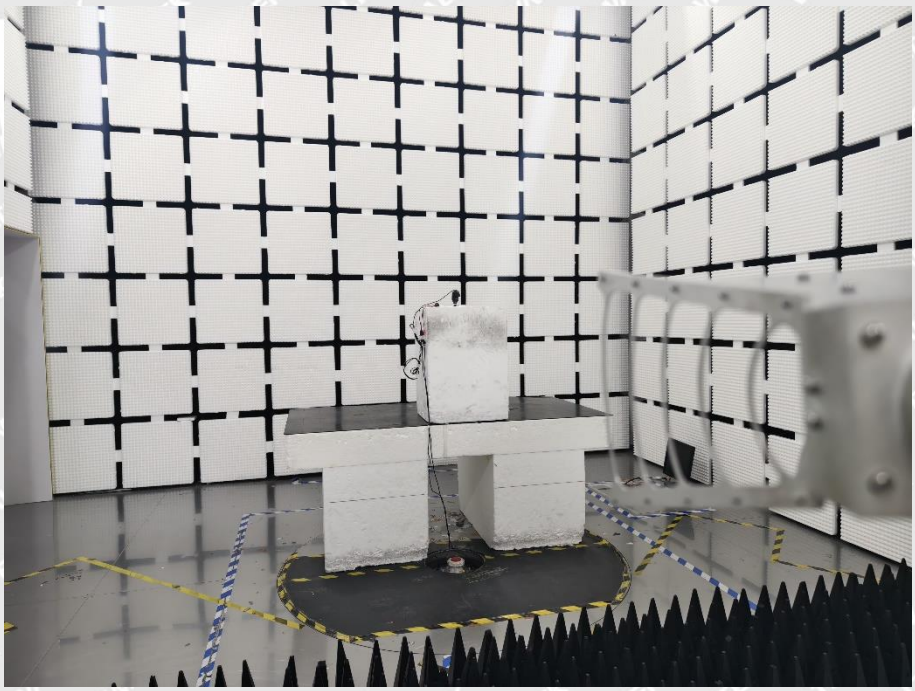
Frequency	Result	Limit	Margin	Polar
(MHz)	(dBm)	(dBm)	(dB)	H/V
1550.93	-60.43	-47.00	-13.43	H
2630.37	-61.73	-47.00	-14.73	H
1808.41	-61.09	-47.00	-14.09	V
3168.22	-62.36	-47.00	-15.36	V

Note: Testing is carried out with frequency rang 30MHz to 8.3GHz

EXHIBIT 1 - EUT PHOTOGRAPHS

Please refer to “ANNEX”.

EXHIBIT 2 - TEST SETUP PHOTOGRAPHS

Spurious Emission Test Setup (Below 1GHz)	
Spurious Emission Test Setup (Above 1GHz)	

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