

TEST REPORT

Application No.: KSEM2407001947AT

Applicant: Qingdao MicroSense Intelligent Technology Co.,Ltd

Address of Applicant: Room 803, Floor 8, Building F, Innovation Park II, No.1, Keyuan Wei 1st Road, Laoshan District, Qingdao, Shandong, China

Manufacturer: Qingdao MicroSense Intelligent Technology Co.,Ltd

Address of Manufacturer: Room 803, Floor 8, Building F, Innovation Park II, No.1, Keyuan Wei 1st Road, Laoshan District, Qingdao, Shandong, China

Factory: Qingdao MicroSense Intelligent Technology Co.,Ltd

Address of Factory: Room 803, Floor 8, Building F, Innovation Park II, No.1, Keyuan Wei 1st Road, Laoshan District, Qingdao, Shandong, China

Equipment Under Test (EUT):

EUT Name: 3D TOF CAMERA

Model No.: NYX650,NYX650S,NYX650L,NYX650N,NYX650H,
NYX660,NYX660S,NYX660L,NYX660N,NYX660H ♣

♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.

Trade Mark: Vzense

Standard(s) : 47 CFR Part 15, Subpart B

Date of Receipt: 2024-07-29

Date of Test: 2024-08-13 to 2024-08-16

Date of Issue: 2024-08-21

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

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Compliance Certification Services (Kunshan) Inc.

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<i>Revision Record</i>			
<i>Version</i>	<i>Description</i>	<i>Date</i>	<i>Remark</i>
00	Original	2024-08-21	/

Authorized for issue by:				
Tested By		<i>Lee Li</i>		
		_____ Lee Li /Project Engineer		
Approved By		<i>Terry Hou</i>		
		_____ Terry Hou /Reviewer		

2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	15.109(b);Class A	Pass
Radiated Emissions (Above 1GHz)		ANSI C63.4:2014	15.109(g);Class A	Pass

Declaration of EUT Family Grouping:

There are series models mentioned in this report and they are the identical in electrical and electronic characters. Only the model NYX650, NYX660 was tested since their differences were the model number and appearance.

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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 12-24V
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4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
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The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty & Decision Rule

Measurement Uncertainty:

No.	Item	Measurement Uncertainty (U_{LAB}) *	U_{CISPR}
1	Conducted Emission at mains port using AMN	2.4dB (9kHz to 150kHz)	3.8dB (9kHz to 150kHz)
		2.2dB (150kHz to 30MHz)	3.4dB (150kHz to 30MHz)
2	Conducted Emission at telecommunication port using AAN	4.0 dB (150kHz to 30MHz)	5.0dB (150kHz to 30MHz)
3	Radiated Power	3.2dB	4.5dB (30MHz to 300MHz)
4	Radiated Emission (10m)	4.1 dB	6.3dB (30MHz-1GHz)
5	Radiated Emission (3m)	4.6 dB (30MHz-1GHz)	6.3dB (30MHz-1GHz)
		5.0dB (1GHz-6GHz)	5.2dB (1GHz-6GHz)
		5.2dB (6GHz-18GHz)	5.5dB (6GHz-18GHz)
		5.3dB (18GHz-40GHz)	N/A

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

Decision Rule:

- CISPR 16-4-2 for emission measurements is as below described.
Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

U_{LAB} less than U_{CISPR} , therefore:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit.
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
- For immunity testing no decision rule is applicable.

4.4 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

Note:

- 1.SGS is not responsible for wrong test results due to incorrect information (e.g., max. internal working frequency, antenna gain, cable loss, etc) is provided by the applicant. (If applicable).
- 2.SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (If applicable).
3. Sample source: sent by customer.

4.5 Test Facility

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

- **A2LA**

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

- **FCC**

Compliance Certification Services (Kunshan) Inc. has been recognized as an accredited testing laboratory. Designation Number: CN1172.

- **ISED**

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 2324E

- **VCCI**

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

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5 Equipment List

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
EMI Test Receiver	R&S	ESCI	KS301196	08/24/2023	08/23/2024
Antenna	TESEQ	CBL 6112D	KUS1806E006	03/23/2024	03/22/2025
Spectrum Analyzer	R&S	FSU26	KS301206	03/19/2024	03/18/2025
Signal Analyzer	R&S	FSV40	KUS1806E003	08/24/2023	08/23/2024
Software	Faratronic	EZ_EMV v 3A1	N/A	N/A	N/A

Radiated Emissions (Above 1GHz)					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Spectrum Analyzer	R&S	FSU26	KS301206	03/19/2024	03/18/2025
Preamplifier	PANSHAN TECHNOLOGY	LNA:1~18G	KSEM010-2	01/15/2024	01/14/2025
Horn-antenna	SCHWARZBECK	BBHA9120D	KS301079	03/19/2024	03/18/2025
Antenna	SCHAFFNER	CBL6143	CZ301091	10/25/2022	10/24/2024
Software	Faratronic	EZ_EMV-v 3A1	N/A	N/A	N/A

General used equipment					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Digital Pressure Meter	Mengde	DYM3	CZ750023	01/15/2024	01/14/2025
Temperature & Humidity Recorder	JDRK	RS-WS-N01-6J	KSEM024-1 KSEM024-2 KSEM024-3 KSEM024-6 KSEM024-7 KSEM024--8 KSEM024--9	03/19/2024	03/18/2025

6 Emission Test Results

6.1 Radiated Emissions (30MHz-1GHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.4:2014

Limit:

Class A

Test Distance: 3m

30MHz -88MHz 49.5 (dB μ V/m) quasi-peak

88MHz-216MHz 54.0 (dB μ V/m) quasi-peak

216MHz-960MHz 56.9 (dB μ V/m) quasi-peak

960MHz-1000MHz 60.0 (dB μ V/m) quasi-peak

Detector: Peak for pre-scan (120kHz resolution bandwidth) 30MHz to1000MHz

6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 23.1 °C

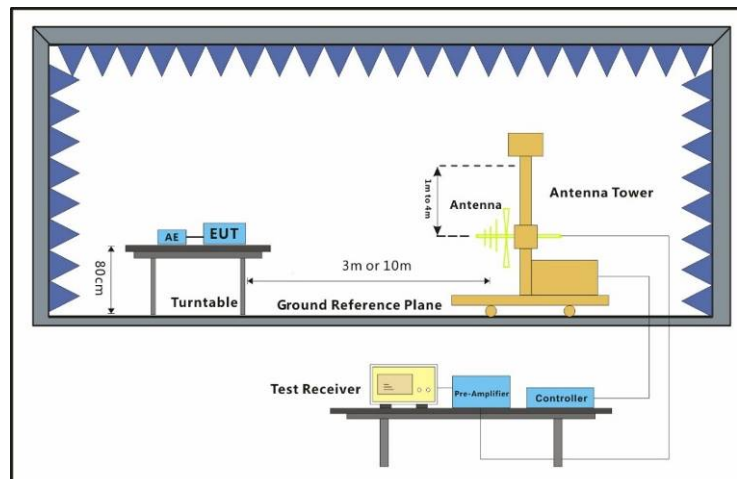
Humidity: 56.0 % RH

Atmospheric Pressure: 1010 mbar

6.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT1_(NYX660) working continuously with Auxiliary equipment
Final test	01	Keep EUT2_(NYX650) working continuously with Auxiliary equipment

6.1.3 Test Setup Diagram



6.1.4 Measurement Procedure and Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

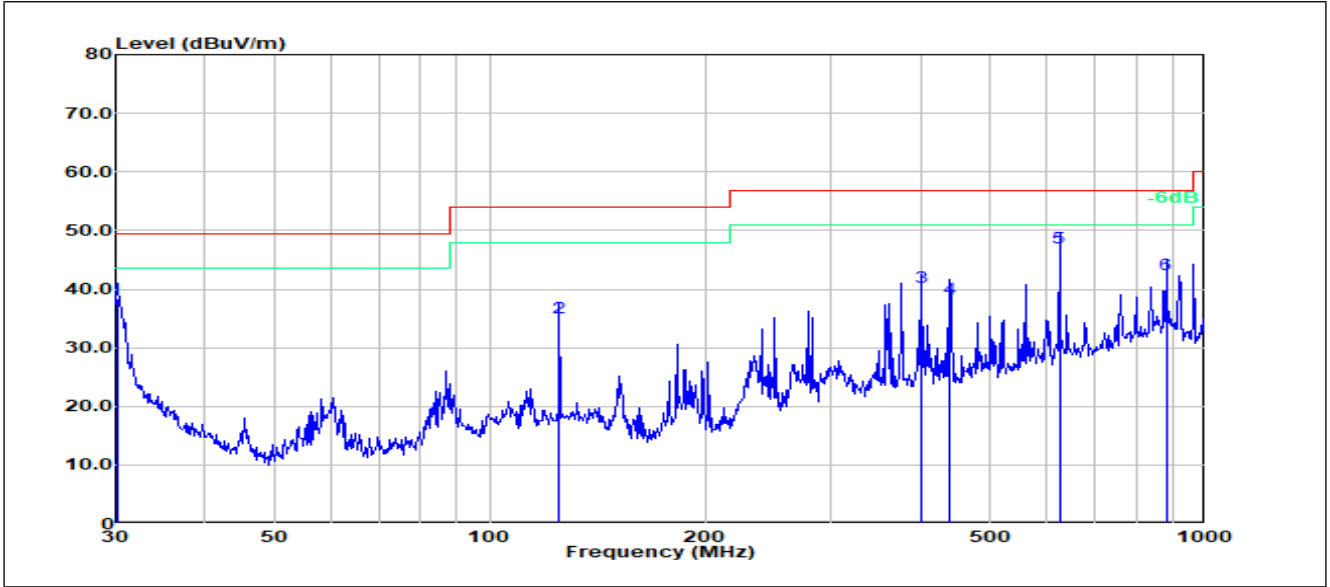
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Test Mode: 00; Polarity: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	30.1054	19.08	19.34	38.42	49.50	-11.08	100	0	QP
2	125.0066	20.49	14.70	35.19	54.00	-18.81	100	359	QP
3	400.4319	22.33	17.98	40.31	56.90	-16.59	100	1	QP
4	438.6554	19.26	19.16	38.42	56.90	-18.48	100	1	QP
5	625.0781	24.20	22.91	47.11	56.90	-9.79	100	206	QP
6	881.4067	16.97	25.58	42.55	56.90	-14.35	200	350	QP

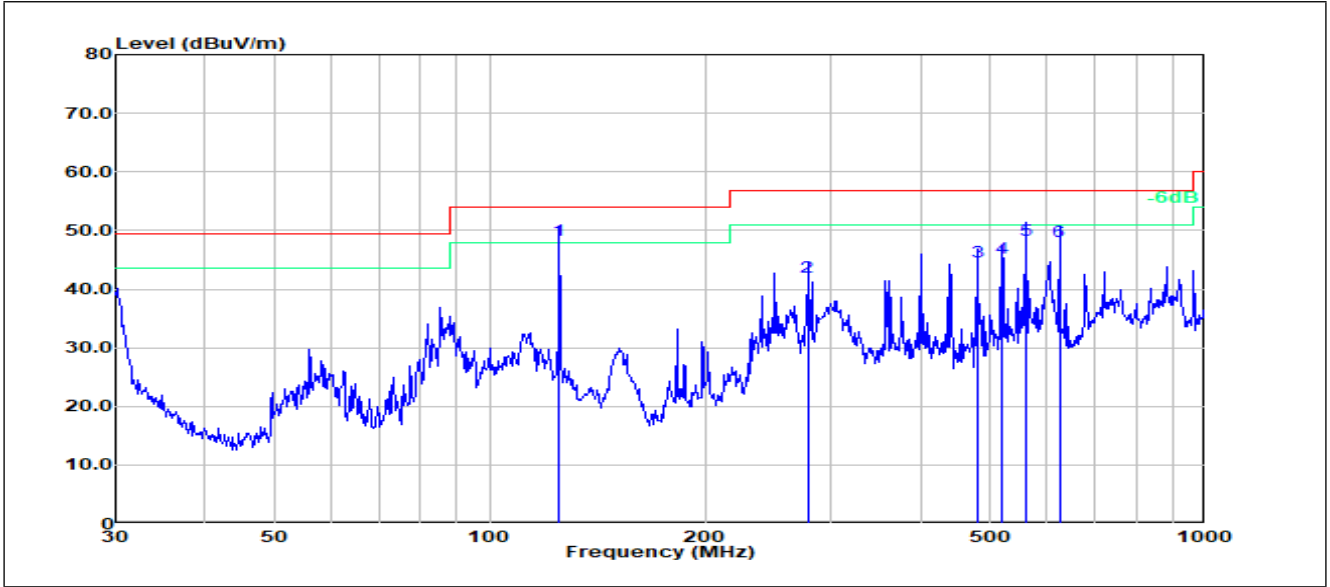
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Test Mode: 00; Polarity: Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	125.0066	33.62	14.70	48.32	54.00	-5.68	100	292	QP
2	278.0669	26.67	15.38	42.05	56.90	-14.85	100	59	QP
3	480.5276	24.44	20.18	44.62	56.90	-12.28	100	360	QP
4	519.0649	23.76	21.47	45.23	56.90	-11.67	100	31	QP
5	560.6928	25.97	22.40	48.37	56.90	-8.53	200	3	QP
6	625.0781	25.20	22.91	48.11	56.90	-8.79	100	272	QP

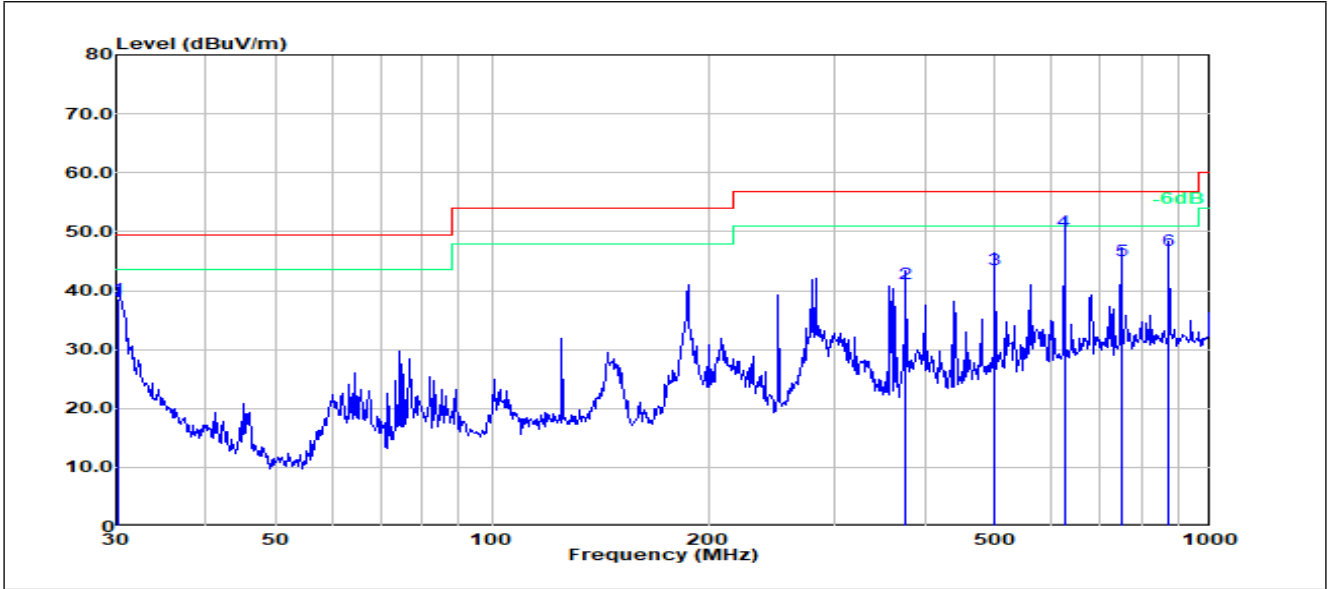
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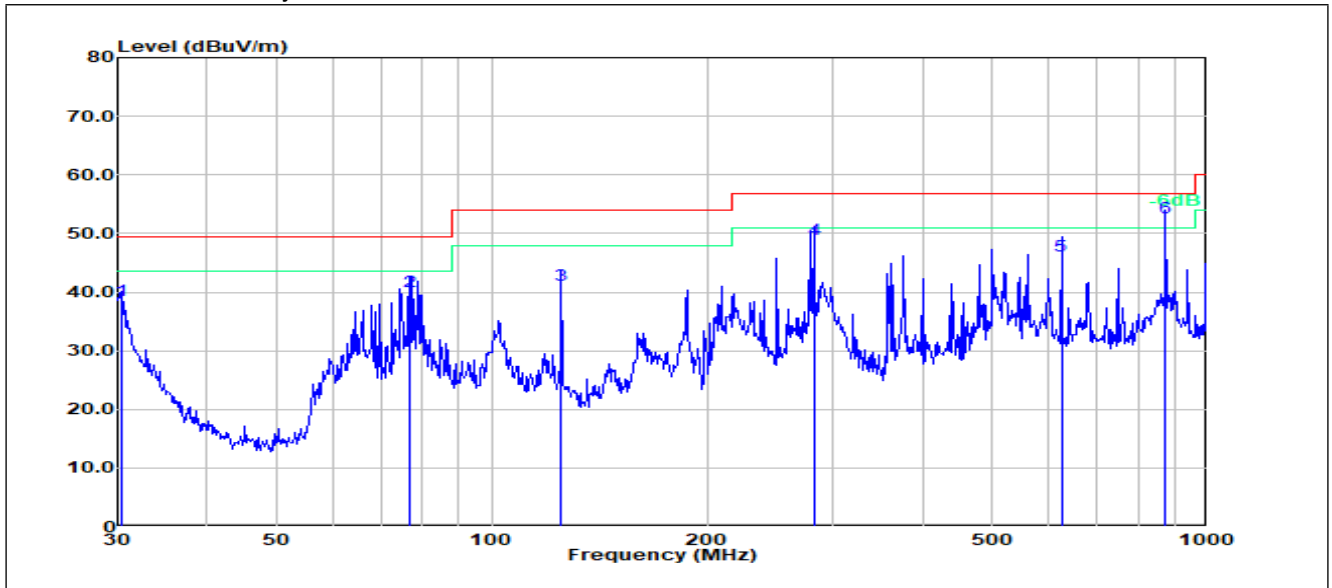
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Test Mode: 01; Polarity: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	30.2111	19.41	19.25	38.66	49.50	-10.84	100	13	QP
2	375.9390	24.31	16.99	41.30	56.90	-15.60	200	347	QP
3	501.1790	22.71	20.91	43.62	56.90	-13.28	100	293	QP
4	625.0780	27.21	22.91	50.12	56.90	-6.78	100	69	QP
5	750.1080	20.81	24.29	45.10	56.90	-11.80	100	283	QP
6	875.2470	21.56	25.26	46.82	56.90	-10.08	100	41	QP

Test Mode: 01; Polarity: Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	30.4238	19.54	19.08	38.62	49.50	-10.88	100	65	QP
2	76.7808	30.59	9.62	40.21	49.50	-9.29	100	18	QP
3	125.0066	26.41	14.70	41.11	54.00	-12.89	100	8	QP
4	281.9946	33.48	15.48	48.96	56.90	-7.94	100	167	QP
5	625.0781	23.37	22.91	46.28	56.90	-10.62	100	253	QP
6	875.2469	27.35	25.26	52.61	56.90	-4.29	100	28	QP

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6.2 Radiated Emissions (Above 1GHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.4:2014

Limit:

Class A

Above 1GHz 80(dB μ V/m) peak, 60(dB μ V/m) average

Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000M to18000MHz

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24.5 °C

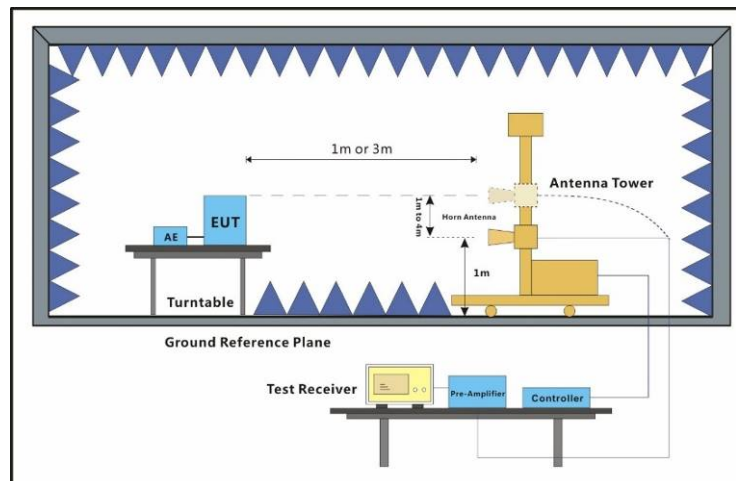
Humidity: 51.2 % RH

Atmospheric Pressure: 1010 mbar

6.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT1_(NYX660) working continuously with Auxiliary equipment
Final test	01	Keep EUT2_(NYX650) working continuously with Auxiliary equipment

6.2.3 Test Setup Diagram



6.2.4 Measurement Procedure and Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn antenna with 2 orthogonal polarities.

The red line show in graphic is the limit in standard used in this section.

Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

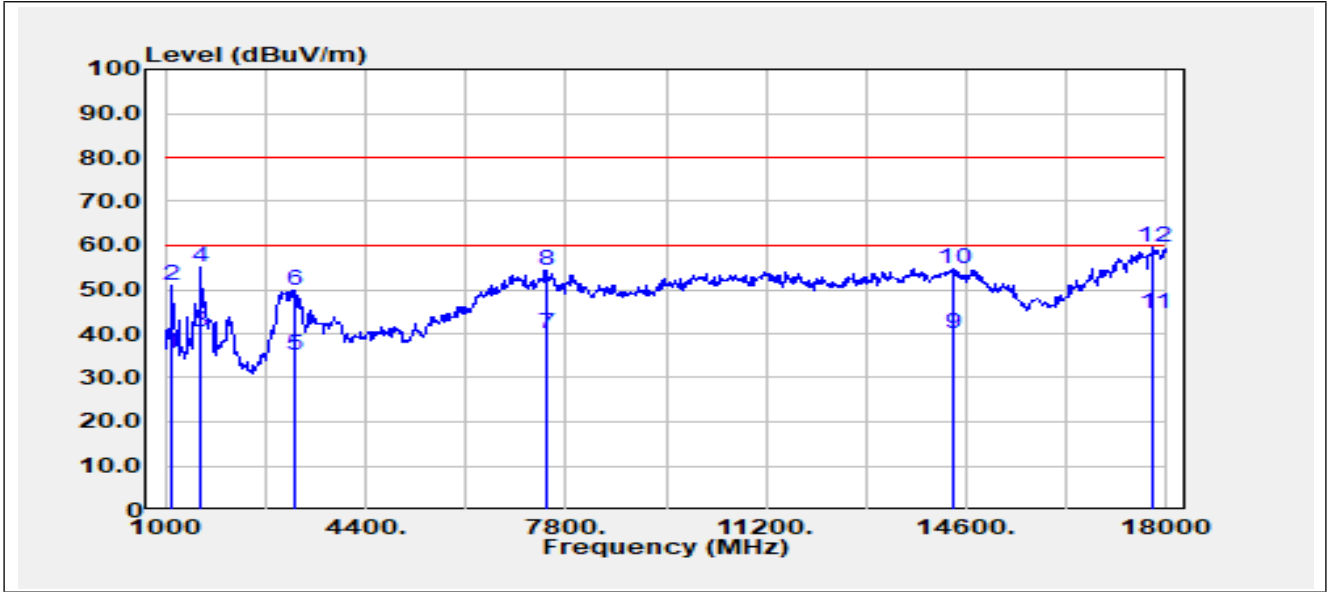
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No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	1119.00	58.30	-22.64	35.66	60.00	-24.34	100	247	Average
2	1119.00	73.42	-22.64	50.78	80.00	-29.22	100	247	Peak
3	1612.00	61.03	-20.56	40.47	60.00	-19.53	200	87	Average
4	1612.00	75.71	-20.56	55.15	80.00	-24.85	200	87	Peak
5	3210.00	50.42	-15.44	34.98	60.00	-25.02	100	146	Average
6	3210.00	65.19	-15.44	49.75	80.00	-30.25	100	146	Peak
7	7477.00	41.01	-0.88	40.13	60.00	-19.87	100	51	Average
8	7477.00	55.23	-0.88	54.35	80.00	-25.65	100	51	Peak
9	14362.00	36.04	3.83	39.87	60.00	-20.13	100	210	Average
10	14362.00	50.80	3.83	54.63	80.00	-25.37	100	210	Peak
11	17779.00	34.60	10.09	44.69	60.00	-15.31	100	61	Average
12	17779.00	49.50	10.09	59.59	80.00	-20.41	100	61	Peak

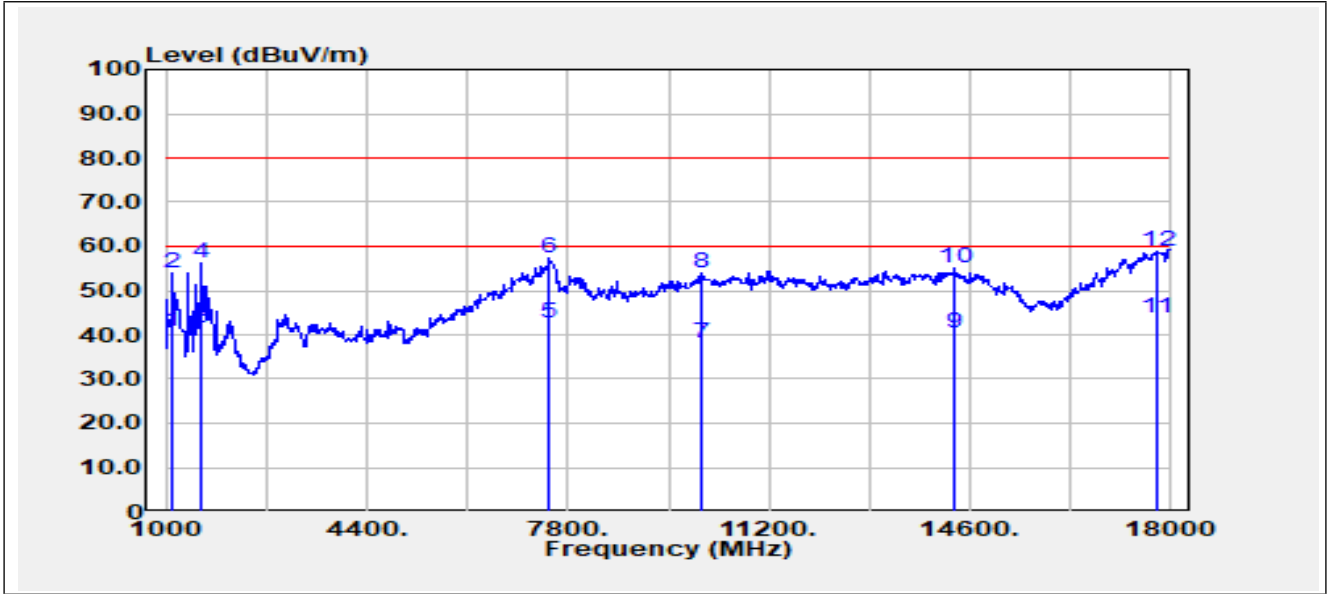
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Test Mode: 00; Polarity: Vertical



No.	Frequency (MHz)	Reading (dBUV)	Correct Factor(dB/m)	Result (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	1119.00	63.33	-22.64	40.69	60.00	-19.31	100	347	Average
2	1119.00	76.77	-22.64	54.13	80.00	-25.87	100	347	Peak
3	1612.00	62.24	-20.56	41.68	60.00	-18.32	100	259	Average
4	1612.00	76.77	-20.56	56.21	80.00	-23.79	100	259	Peak
5	7494.00	43.46	-0.88	42.58	60.00	-17.42	200	259	Average
6	7494.00	58.34	-0.88	57.46	80.00	-22.54	200	259	Peak
7	10061.00	36.41	1.71	38.12	60.00	-21.88	100	147	Average
8	10061.00	52.27	1.71	53.98	80.00	-26.02	100	147	Peak
9	14328.00	36.64	3.75	40.39	60.00	-19.61	300	90	Average
10	14328.00	51.32	3.75	55.07	80.00	-24.93	300	90	Peak
11	17745.00	34.00	9.77	43.77	60.00	-16.23	100	0	Average
12	17745.00	49.04	9.77	58.81	80.00	-21.19	100	0	Peak

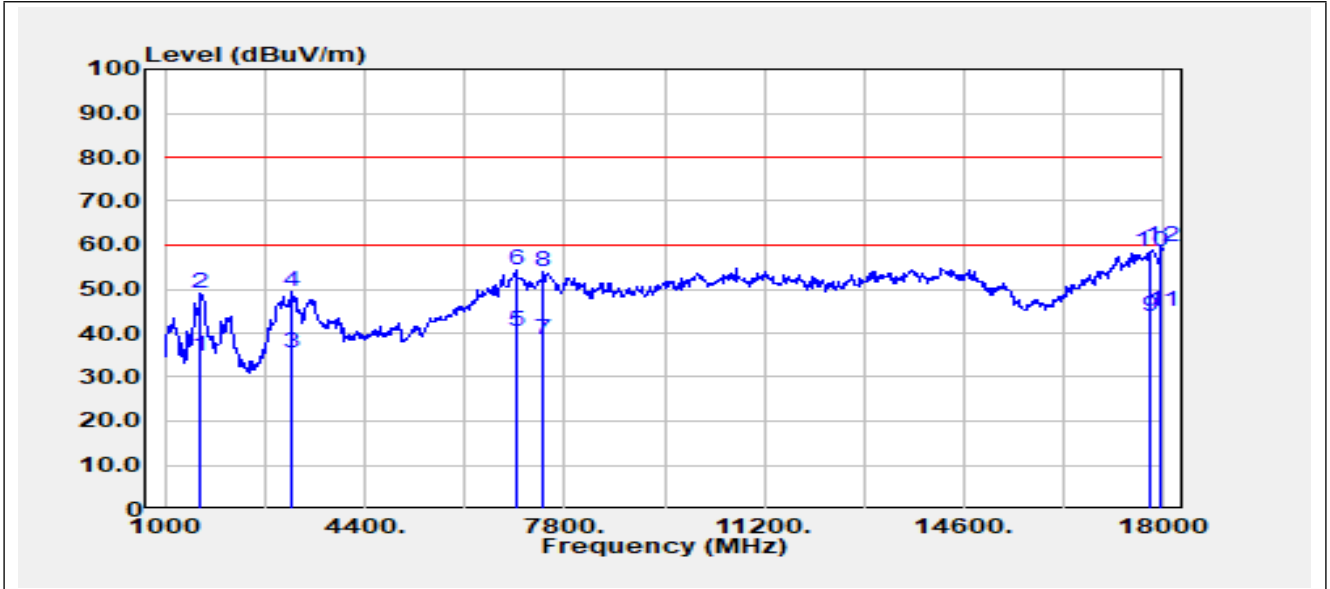
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No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	1612.00	55.45	-20.56	34.89	60.00	-25.11	100	164	Average
2	1612.00	69.78	-20.56	49.22	80.00	-30.78	100	164	Peak
3	3159.00	50.82	-15.51	35.31	60.00	-24.69	100	150	Average
4	3159.00	65.11	-15.51	49.60	80.00	-30.40	100	150	Peak
5	6967.00	41.37	-1.06	40.31	60.00	-19.69	200	100	Average
6	6967.00	55.25	-1.06	54.19	80.00	-25.81	200	100	Peak
7	7426.00	39.52	-0.88	38.64	60.00	-21.36	100	100	Average
8	7426.00	54.67	-0.88	53.79	80.00	-26.21	100	100	Peak
9	17745.00	34.10	9.77	43.87	60.00	-16.13	300	360	Average
10	17745.00	48.79	9.77	58.56	80.00	-21.44	300	360	Peak
11	17949.00	33.26	11.71	44.97	60.00	-15.03	100	118	Average
12	17949.00	47.87	11.71	59.58	80.00	-20.42	100	118	Peak

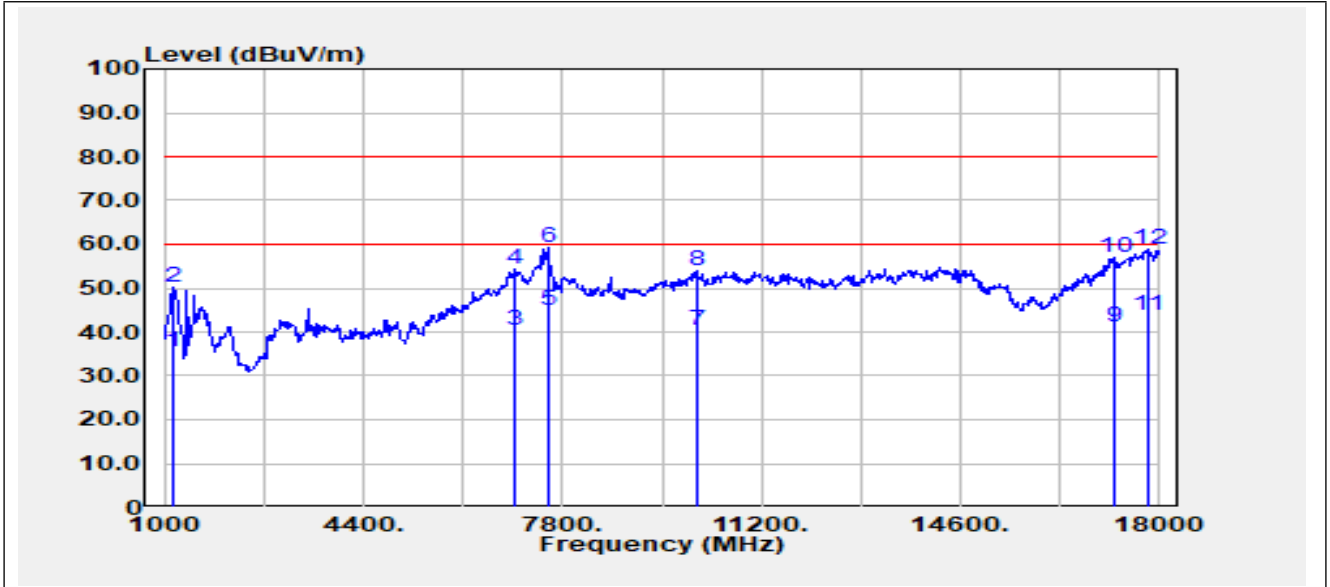
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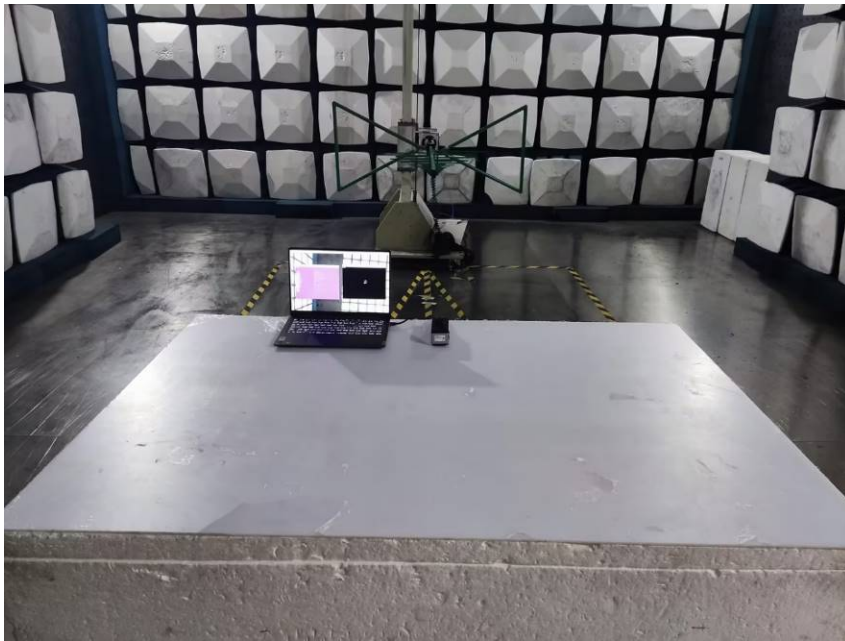
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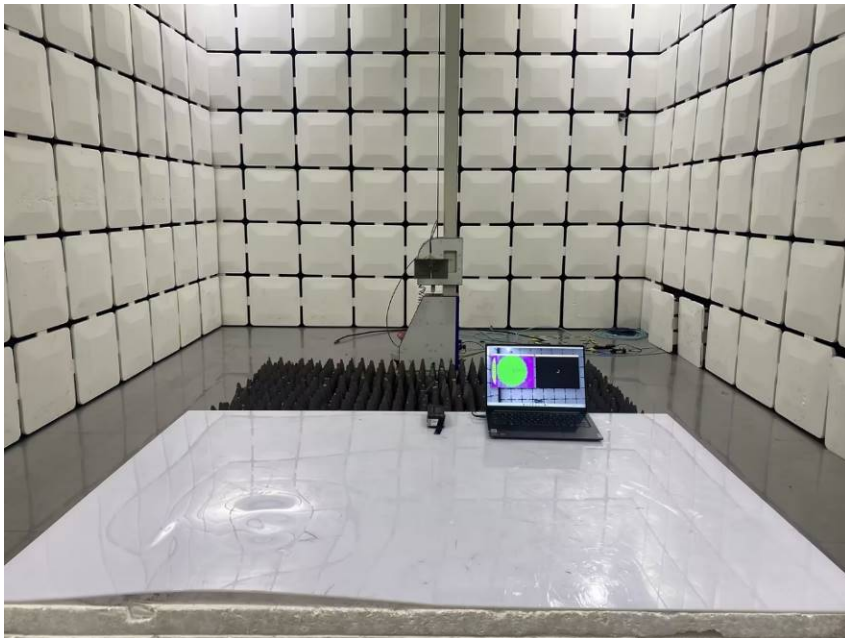
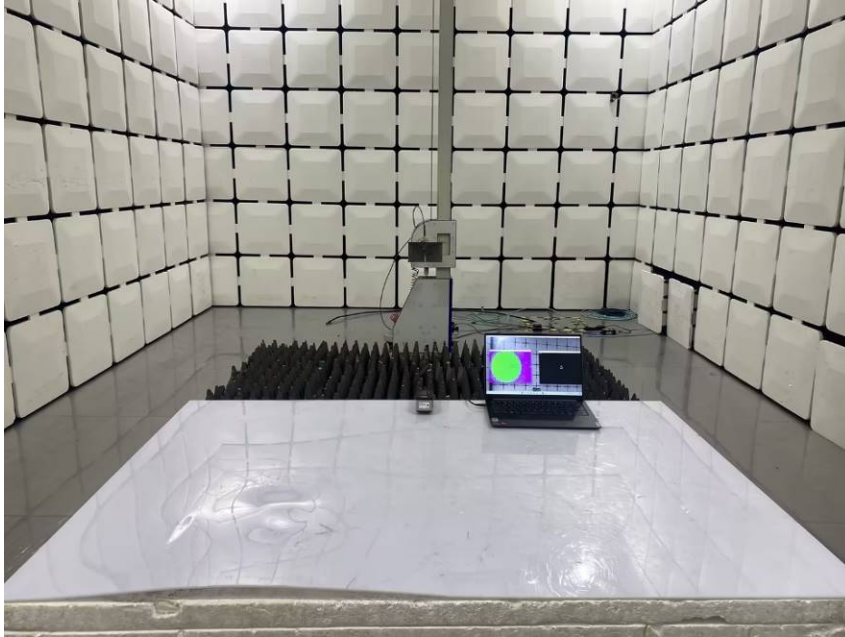
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	1170.00	57.68	-22.39	35.29	60.00	-24.71	100	356	Average
2	1170.00	72.55	-22.39	50.16	80.00	-29.84	100	356	Peak
3	6967.00	41.39	-1.06	40.33	60.00	-19.67	100	92	Average
4	6967.00	55.30	-1.06	54.24	80.00	-25.76	100	92	Peak
5	7545.00	45.72	-0.94	44.78	60.00	-15.22	100	90	Average
6	7545.00	60.13	-0.94	59.19	80.00	-20.81	100	90	Peak
7	10095.00	38.60	1.71	40.31	60.00	-19.69	300	3	Average
8	10095.00	52.41	1.71	54.12	80.00	-25.88	300	3	Peak
9	17218.00	34.86	6.34	41.20	60.00	-18.80	100	76	Average
10	17218.00	50.55	6.34	56.89	80.00	-23.11	100	76	Peak
11	17796.00	33.53	10.25	43.78	60.00	-16.22	200	98	Average
12	17796.00	48.66	10.25	58.91	80.00	-21.09	200	98	Peak

7 Test Setup Photo

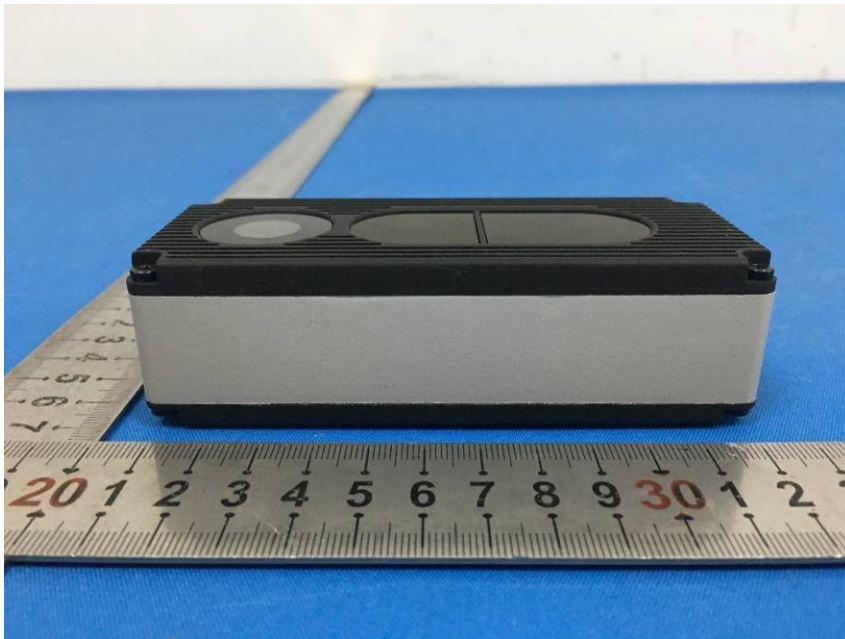
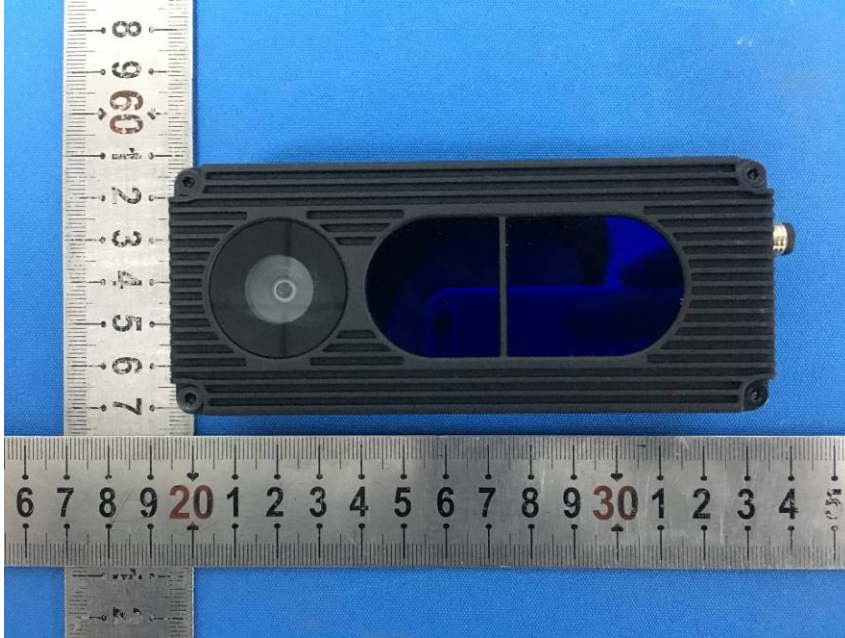
Radiated Emissions (30MHz-1GHz)



Radiated Emissions (Above 1GHz)



8 EUT Constructional Details (EUT Photos)



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