

TEST REPORT

Application No.: KSEM2407001941AT
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.: DS86, DS87
Trade Mark: Vzense
Standard(s) : 47 CFR Part 15, Subpart B
Date of Receipt: 2023-07-03
Date of Test: 2023-07-13 to 2023-07-19
Date of Issue: 2024-08-07

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

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.



Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSEM240700194101

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<i>Revision Record</i>			
<i>Version</i>	<i>Description</i>	<i>Date</i>	<i>Remark</i>
00	Co-license	2024-08-07	Based on KSEM230600147301

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



Compliance Certification Services (Kunshan) Inc.

CCSEM-TRF-001 Rev. 02 Sep 01, 2023

Report No.: KSEM240700194101

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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

Note: This report was an additional report copied from the report KSEM230600147301, just changing the applicant, manufacturer and factory.

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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.
Notebook	XIAOMI	Pro15	00342-35744-35614-AAOEM

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

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	08/22/2022	08/21/2023
Antenna	TESEQ	CBL 6112D	KUS1806E006	03/05/2022	03/04/2024
Spectrum Analyzer	R&S	FSU26	KS301206	03/16/2023	03/15/2024
Signal Analyzer	R&S	FSV40	KUS1806E003	08/22/2022	08/21/2023
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	03/16/2023	03/15/2024
Preamplifier	PANSHAN TECHNOLOGY	LNA:1~18G	KSEM010-2	01/17/2023	01/16/2024
Horn-antenna	SCHWARZBECK	BBHA9120D	KS301079	04/02/2022	04/01/2024
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	01/31/2023	01/30/2024
Temperature & Humidity Recorder	Anymetre	TH603	CZ720001-1 CZ720001-2 CZ720001-3 CZ720001-4 CZ720001-5 CZ720001-6 CZ720001-7	10/13/2022	10/12/2023

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:

Test Distance: 3m

30MHz -88MHz 40.0(dBμV/m) quasi-peak

88MHz-216MHz 43.5(dBμV/m) quasi-peak

216MHz-960MHz 46.0(dBμV/m) quasi-peak

960MHz-1000MHz 54.0(dBμV/m) quasi-peak

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

6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 23.2 °C

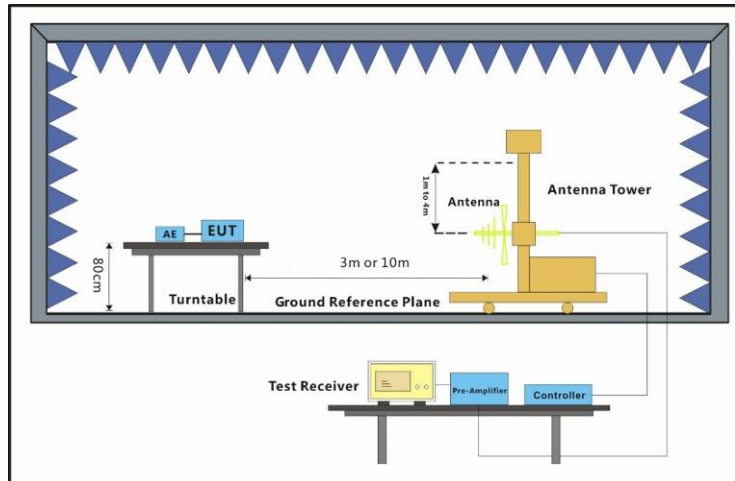
Humidity: 61.7 % RH

Atmospheric Pressure: 1010 mbar

6.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT1-DS86 working continuously with Auxiliary equipment
Final test	01	Keep EUT2-DS87 working continuously with Auxiliary equipment

6.1.3 Test Setup Diagram

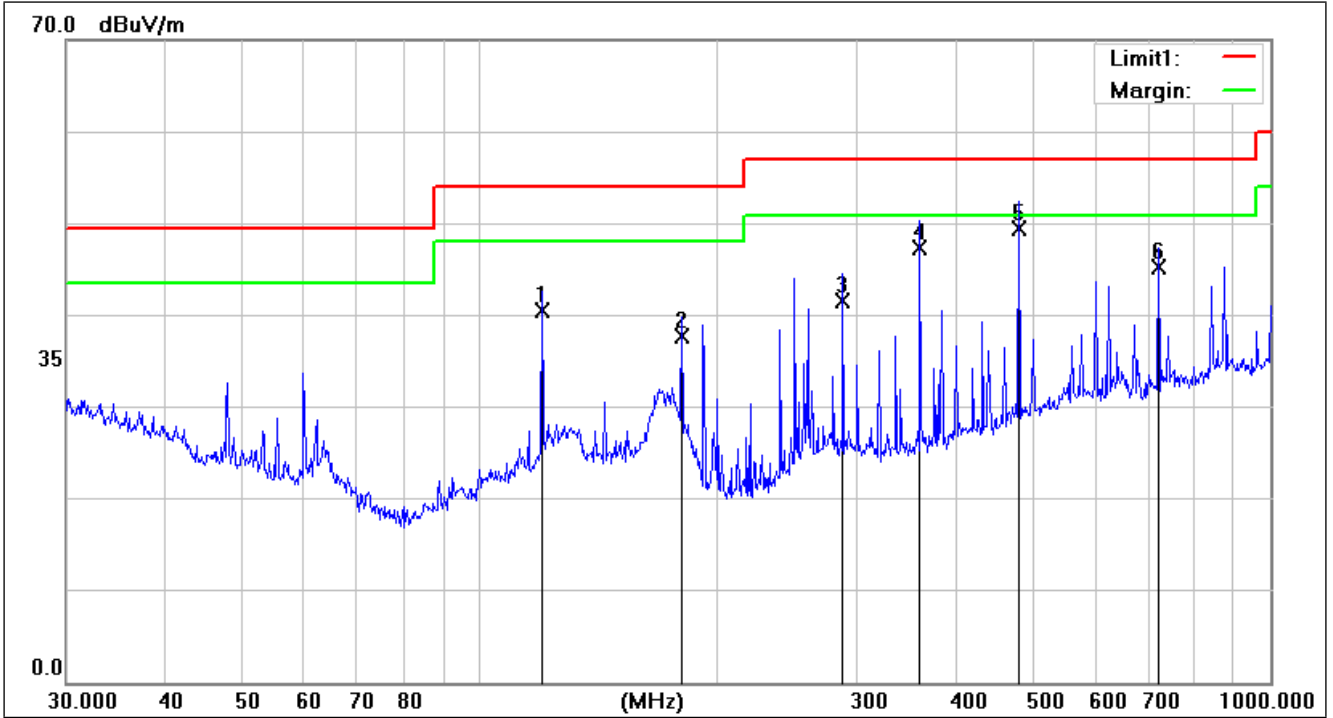


6.1.4 Measurement Procedure and Data

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.

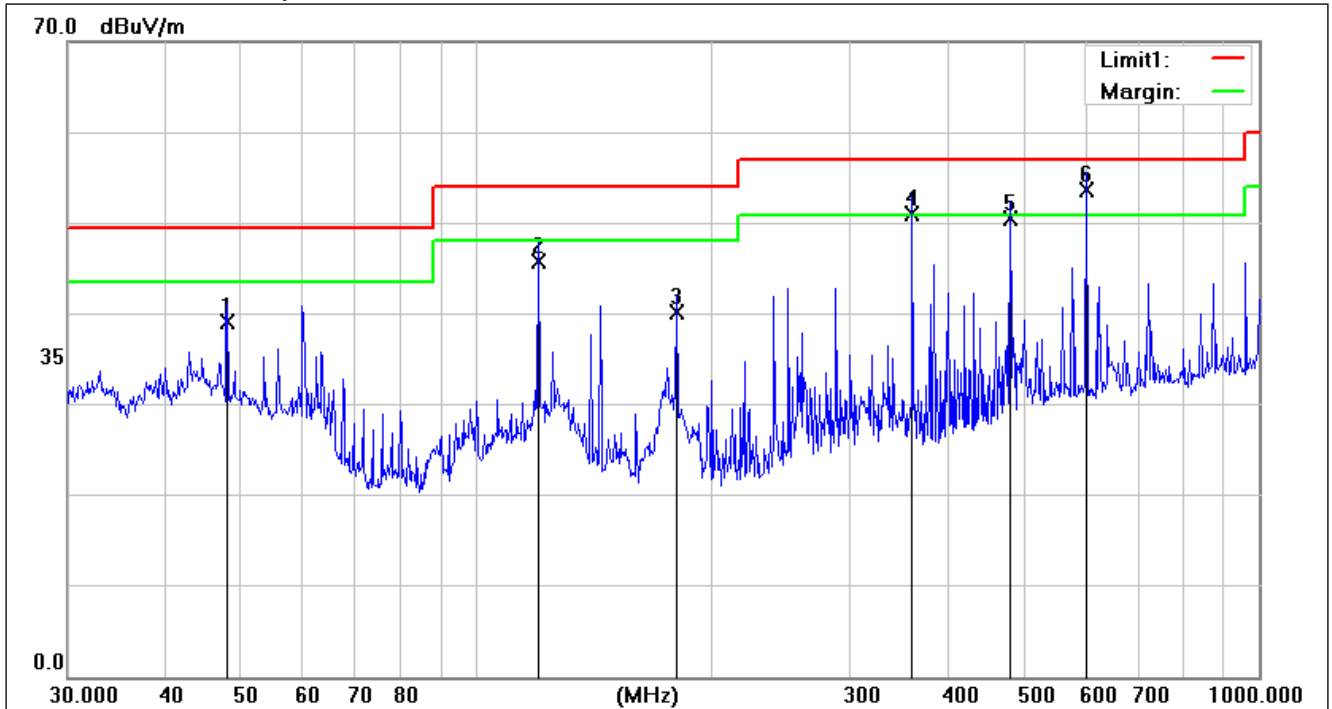
Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Test Mode: 00; Polarity: Horizontal



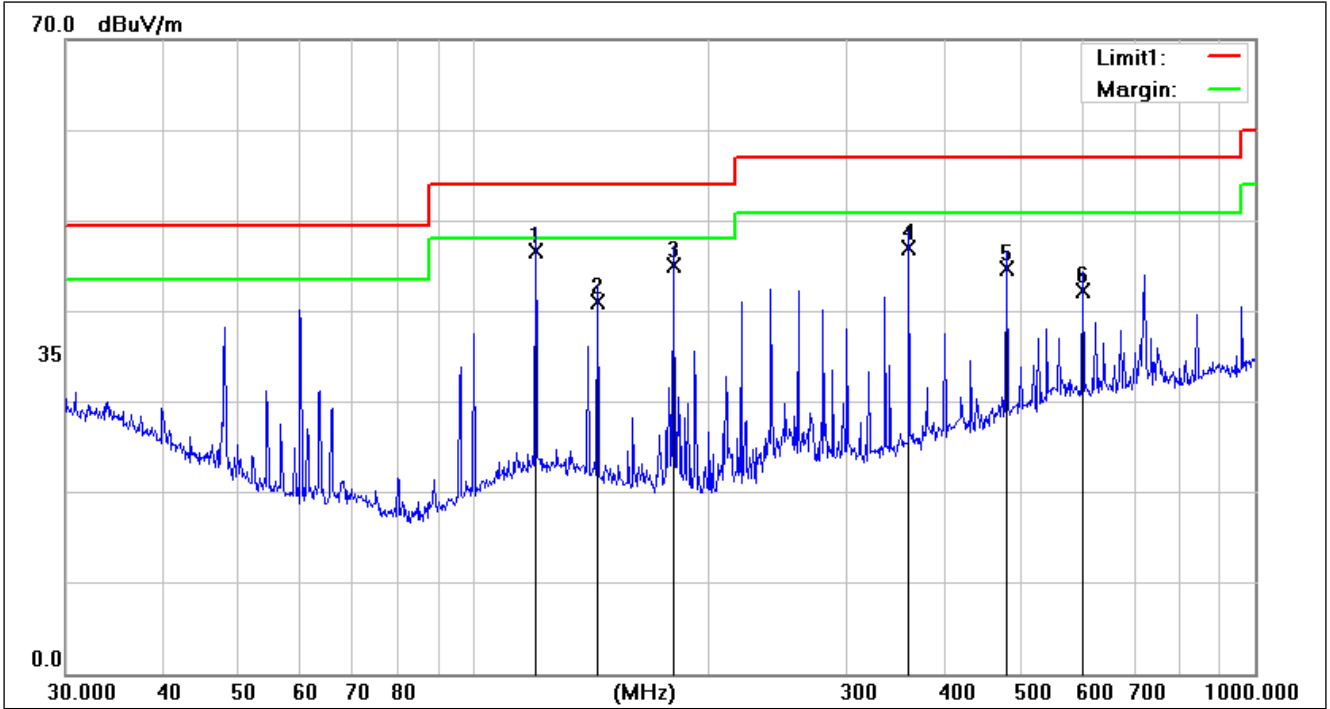
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	119.8556	21.16	19.41	40.57	54.00	-13.43	200	360	QP
2	180.0165	21.07	16.66	37.73	54.00	-16.27	200	79	QP
3	287.9904	21.19	20.40	41.59	56.90	-15.31	100	262	QP
4	360.4476	25.15	22.19	47.34	56.90	-9.56	100	45	QP
5	480.5276	24.23	25.22	49.45	56.90	-7.45	200	63	QP
6	721.7259	17.29	27.97	45.26	56.90	-11.64	100	73	QP

Test Mode: 00; Polarity: Vertical



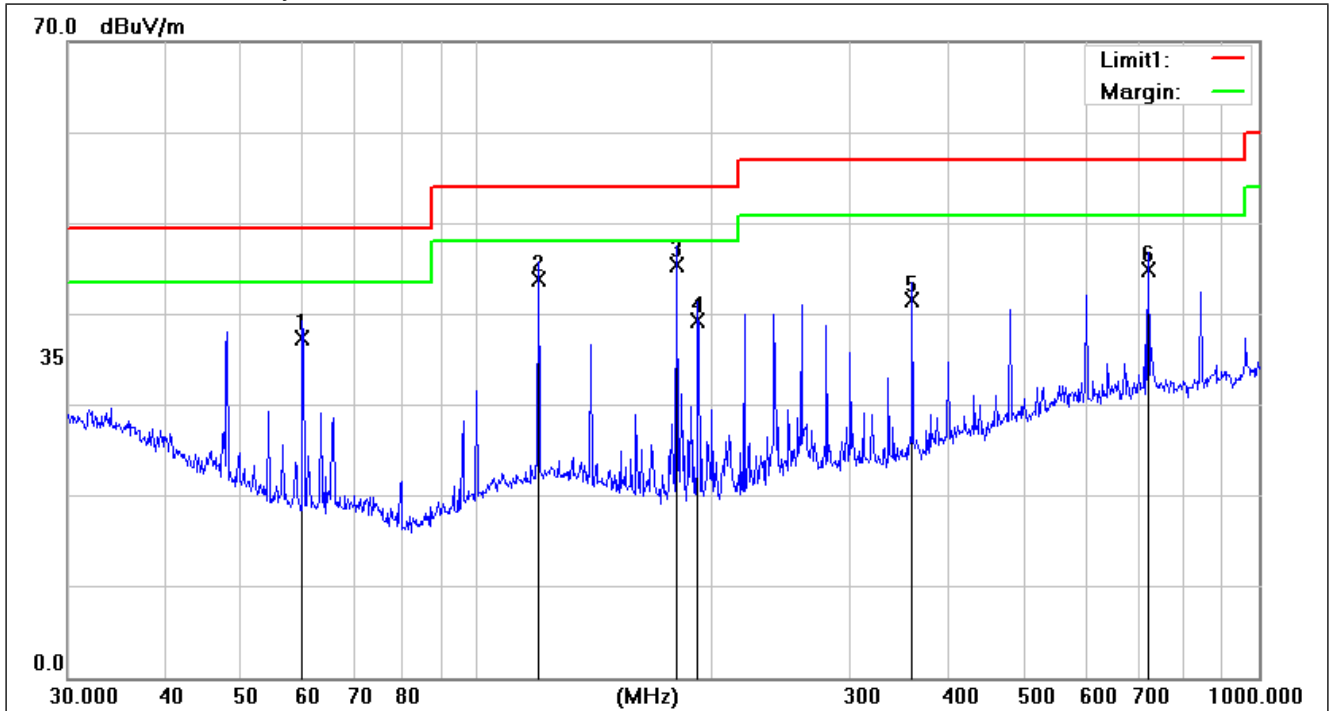
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	47.9940	20.57	18.57	39.14	49.50	-10.36	100	2	QP
2	119.8556	26.38	19.41	45.79	54.00	-8.21	100	87	QP
3	180.0165	23.43	16.66	40.09	54.00	-13.91	200	80	QP
4	360.4476	28.91	22.19	51.10	56.90	-5.80	200	360	QP
5	480.5276	25.25	25.22	50.47	56.90	-6.43	100	2	QP
6	601.4265	26.40	27.17	53.57	56.90	-3.33	100	220	QP

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	119.9956	27.24	19.41	46.65	54.00	-7.35	200	210	QP
2	143.8294	22.75	18.20	40.95	54.00	-13.05	200	140	QP
3	180.0165	28.42	16.66	45.08	54.00	-8.92	100	360	QP
4	360.4476	24.79	22.19	46.98	56.90	-9.92	100	359	QP
5	480.5276	19.49	25.22	44.71	56.90	-12.19	200	43	QP
6	601.4265	15.12	27.17	42.29	56.90	-14.61	100	359	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	59.8588	22.27	15.01	37.28	49.50	-12.22	100	336	QP
2	119.8556	24.41	19.41	43.82	54.00	-10.18	100	60	QP
3	180.0165	28.83	16.66	45.49	54.00	-8.51	100	40	QP
4	191.7450	22.97	16.39	39.36	54.00	-14.64	200	53	QP
5	360.4476	19.35	22.19	41.54	56.90	-15.36	200	149	QP
6	721.7259	16.85	27.97	44.82	56.90	-12.08	100	299	QP

6.2 Radiated Emissions (Above 1GHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.4:2014

Limit:

Above 1GHz 74(dBµV/m) peak, 54(dBµV/m) average

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

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.1 °C

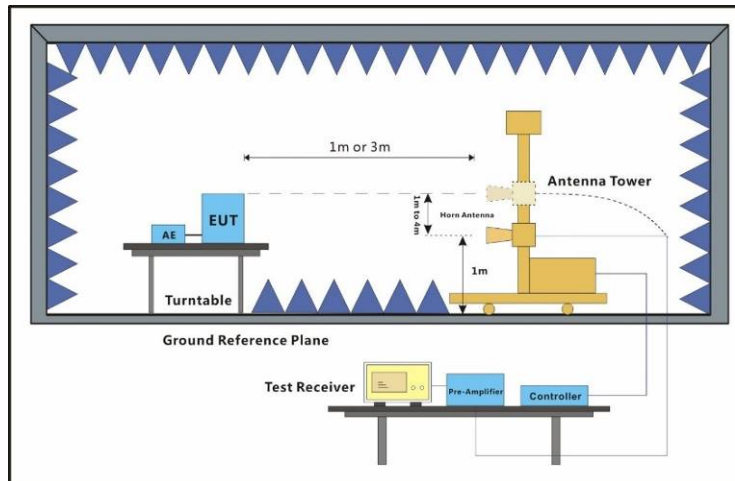
Humidity: 46 % RH

Atmospheric Pressure: 1010 mbar

6.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT1-DS86 working continuously with Auxiliary equipment
Final test	01	Keep EUT2-DS87 working continuously with Auxiliary equipment

6.2.3 Test Setup Diagram



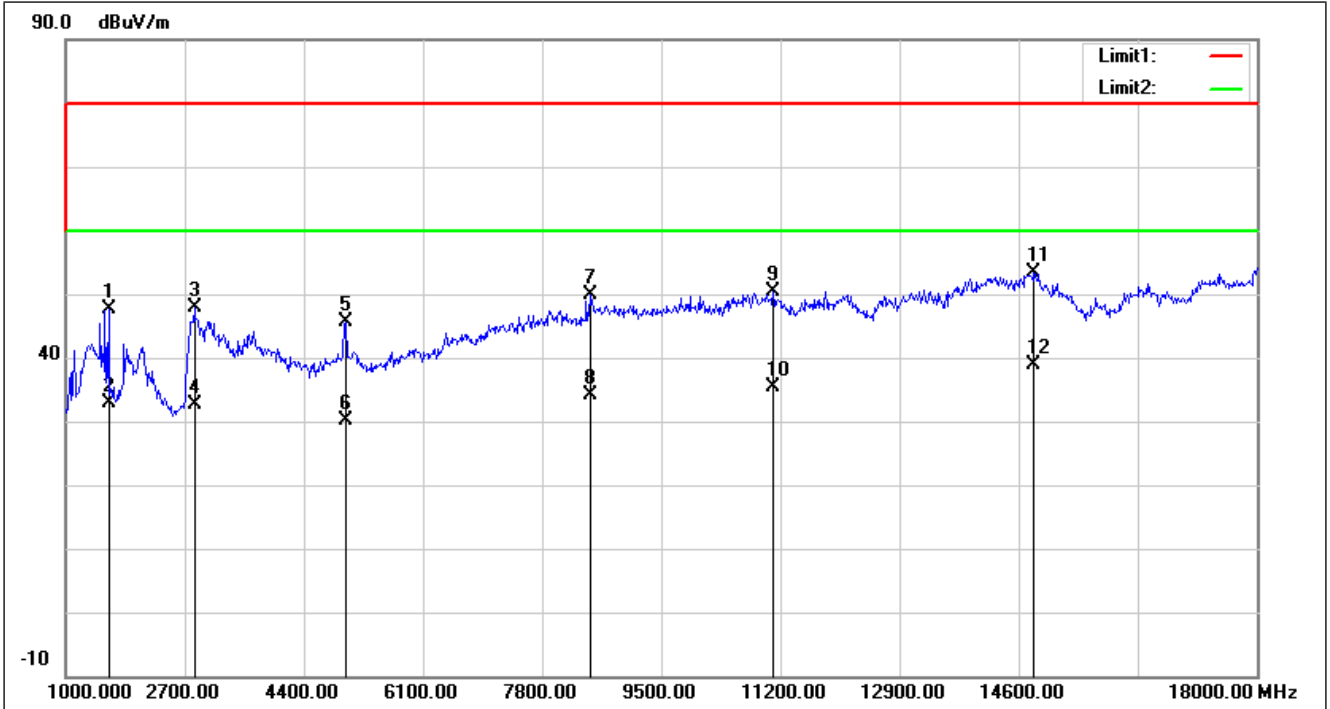
6.2.4 Measurement Procedure and Data

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.

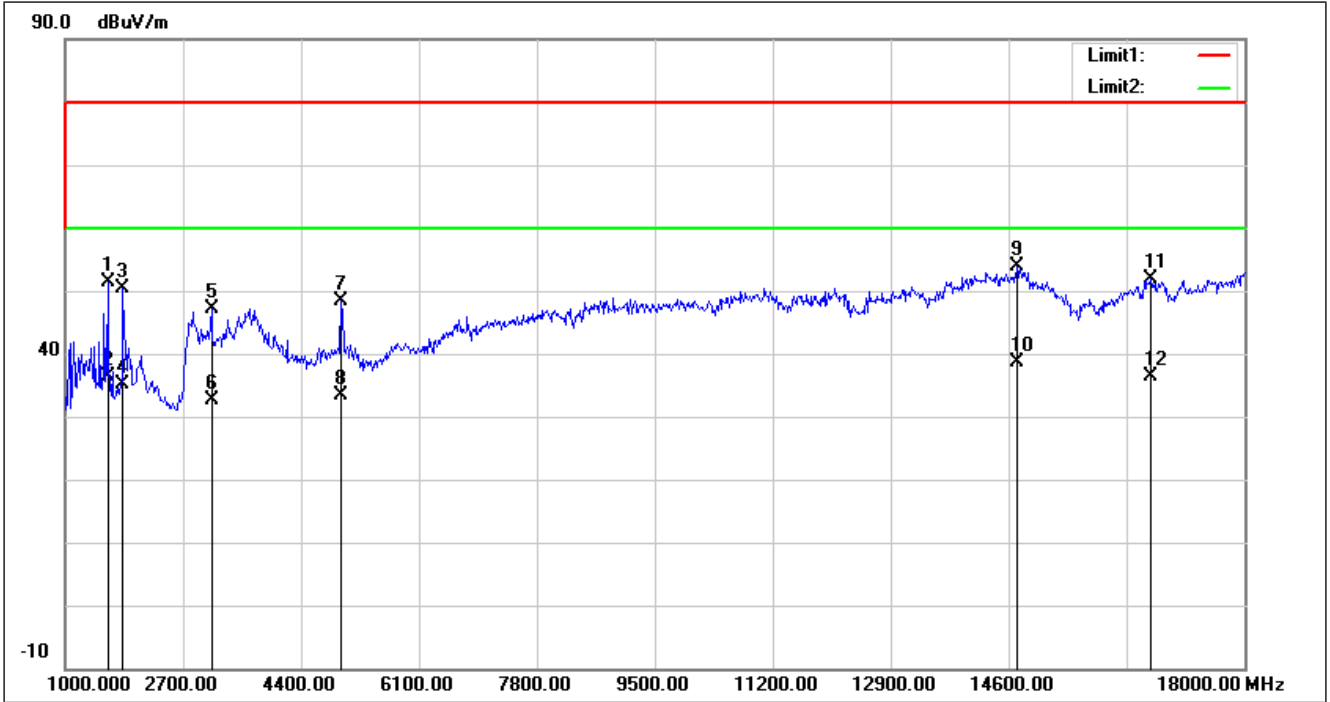
Remark: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Test Mode: 00; Polarity: Horizontal



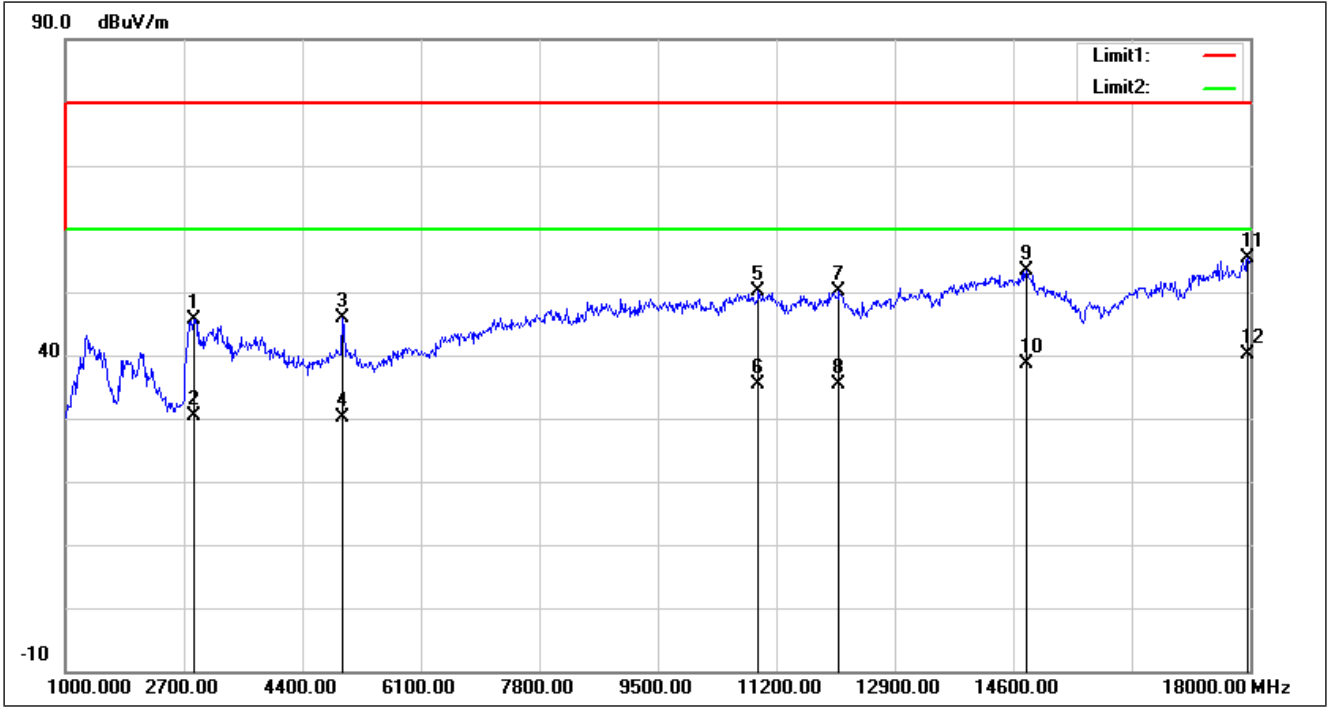
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	1612.000	69.87	-22.20	47.67	80.00	-32.33	200	302	peak
2	1612.000	55.00	-22.20	32.80	60.00	-27.20	200	302	AVG
3	2836.000	65.60	-17.78	47.82	80.00	-32.18	100	299	peak
4	2836.000	50.47	-17.78	32.69	60.00	-27.31	100	299	AVG
5	4995.000	58.37	-12.86	45.51	80.00	-34.49	200	233	peak
6	4995.000	42.92	-12.86	30.06	60.00	-29.94	200	233	AVG
7	8480.000	54.67	-4.84	49.83	80.00	-30.17	100	279	peak
8	8480.000	38.94	-4.84	34.10	60.00	-25.90	100	279	AVG
9	11098.000	52.14	-1.78	50.36	80.00	-29.64	100	118	peak
10	11098.000	37.04	-1.78	35.26	60.00	-24.74	100	118	AVG
11	14821.000	51.76	1.73	53.49	80.00	-26.51	200	285	peak
12	14821.000	37.09	1.73	38.82	60.00	-21.18	200	285	AVG

Test Mode: 00; Polarity: Vertical



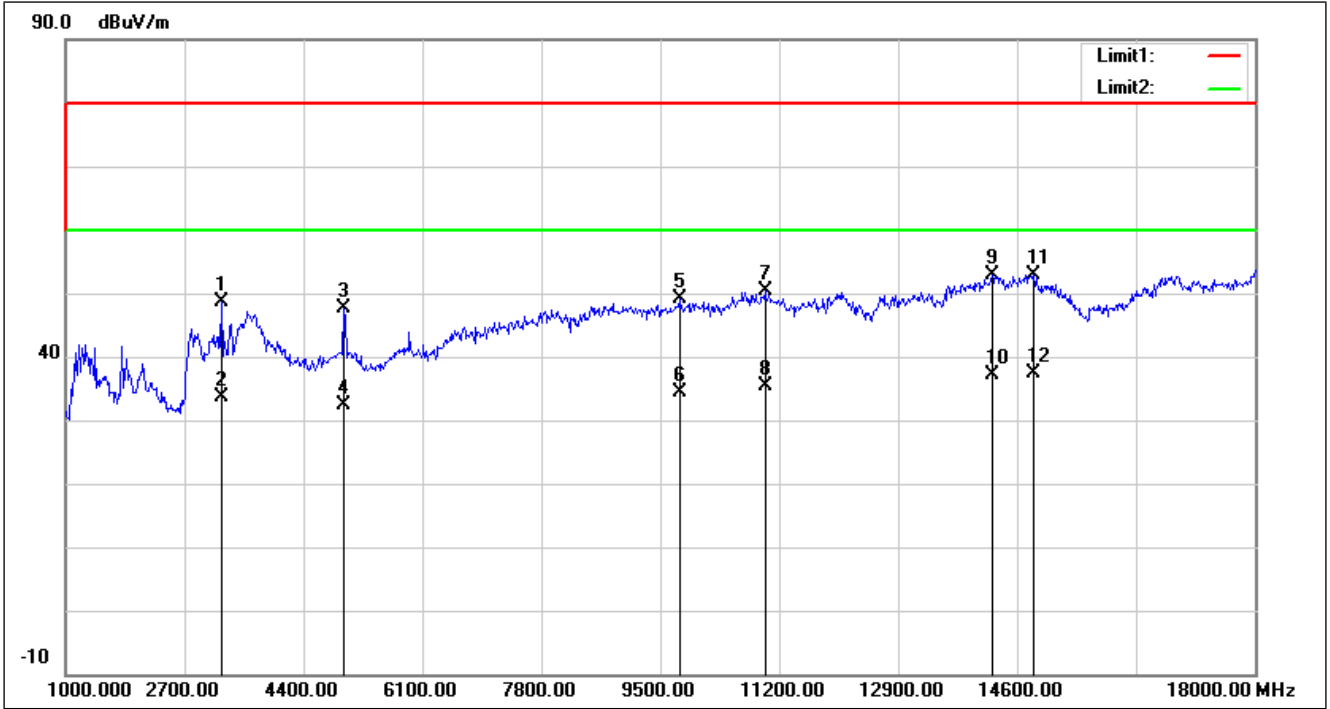
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	1612.000	73.62	-22.20	51.42	80.00	-28.58	100	98	peak
2	1612.000	58.70	-22.20	36.50	60.00	-23.50	100	98	AVG
3	1833.000	72.23	-21.79	50.44	80.00	-29.56	100	258	peak
4	1833.000	56.82	-21.79	35.03	60.00	-24.97	100	258	AVG
5	3108.000	64.26	-17.03	47.23	80.00	-32.77	100	4	peak
6	3108.000	49.72	-17.03	32.69	60.00	-27.31	100	4	AVG
7	4978.000	61.21	-12.91	48.30	80.00	-31.70	200	98	peak
8	4978.000	46.31	-12.91	33.40	60.00	-26.60	200	98	AVG
9	14719.000	52.11	1.81	53.92	80.00	-26.08	200	49	peak
10	14719.000	36.89	1.81	38.70	60.00	-21.30	200	49	AVG
11	16657.000	50.36	1.55	51.91	80.00	-28.09	100	1	peak
12	16657.000	34.91	1.55	36.46	60.00	-23.54	100	1	AVG

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	2836.000	63.51	-17.78	45.73	80.00	-34.27	100	205	peak
2	2836.000	48.09	-17.78	30.31	60.00	-29.69	100	205	AVG
3	4978.000	58.72	-12.91	45.81	80.00	-34.19	200	241	peak
4	4978.000	43.13	-12.91	30.22	60.00	-29.78	200	241	AVG
5	10945.000	51.33	-1.27	50.06	80.00	-29.94	100	3	peak
6	10945.000	36.67	-1.27	35.40	60.00	-24.60	100	3	AVG
7	12101.000	52.51	-2.38	50.13	80.00	-29.87	200	1	peak
8	12101.000	37.88	-2.38	35.50	60.00	-24.50	200	1	AVG
9	14787.000	51.55	1.76	53.31	80.00	-26.69	100	15	peak
10	14787.000	36.93	1.76	38.69	60.00	-21.31	100	15	AVG
11	17966.000	43.46	11.91	55.37	80.00	-24.63	200	111	peak
12	17966.000	28.28	11.91	40.19	60.00	-19.81	200	111	AVG

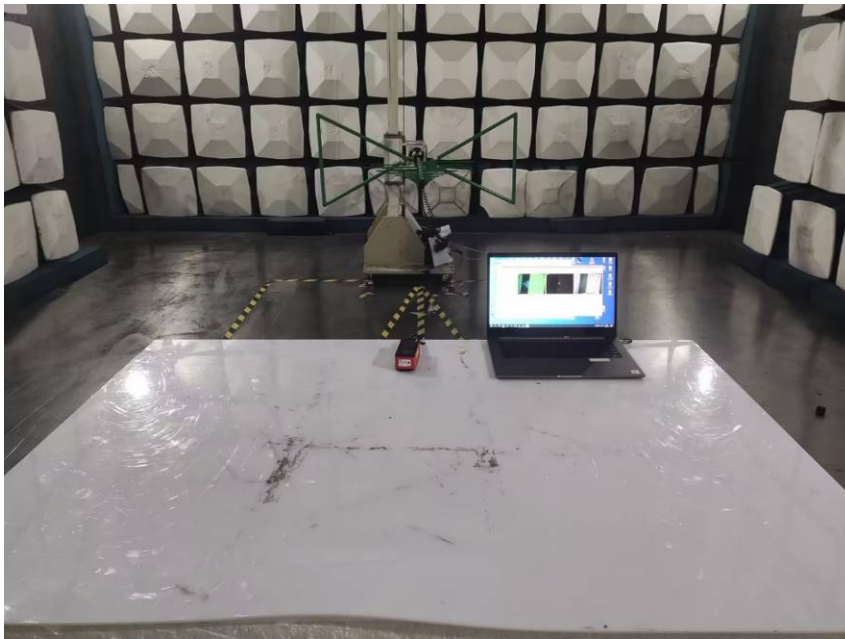
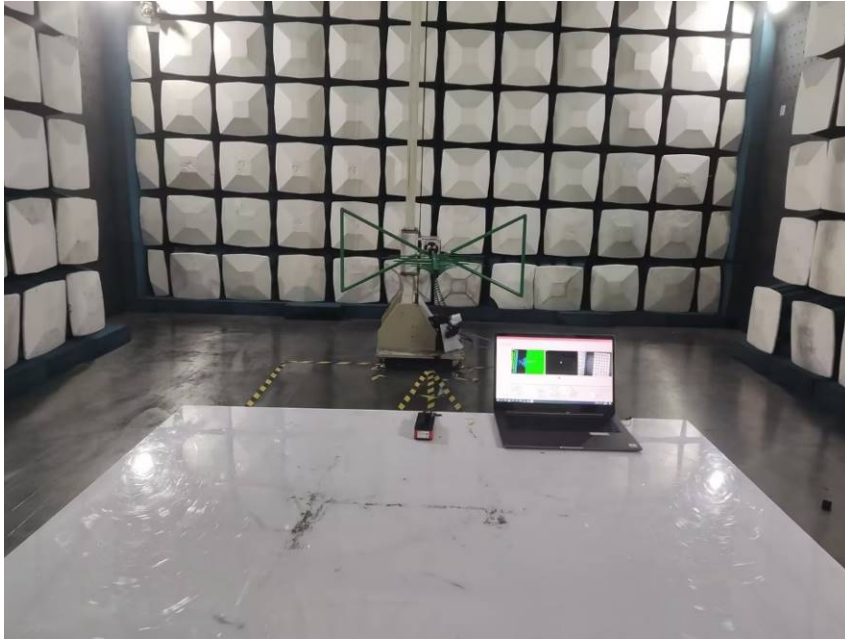
Test Mode: 01; Polarity: Vertical



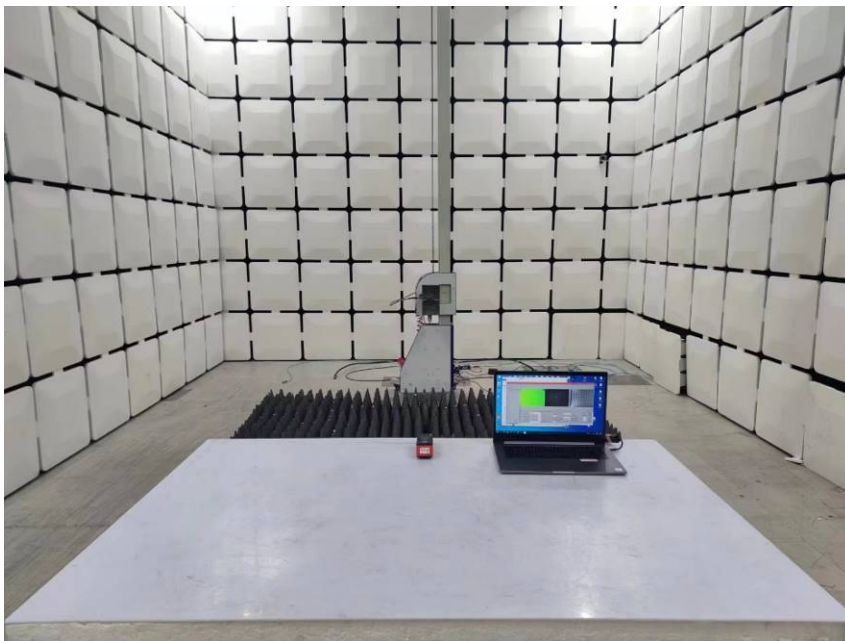
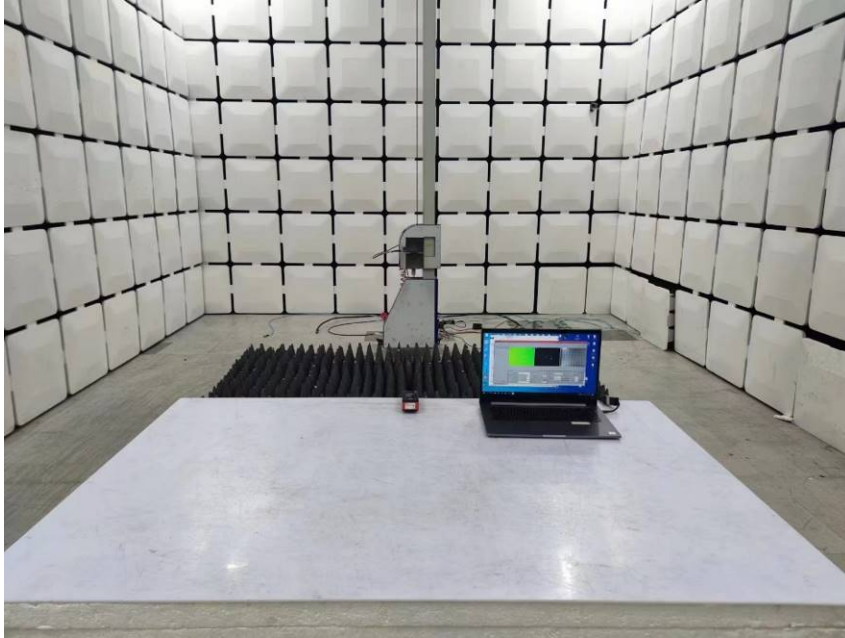
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Remark
1	3227.000	65.64	-17.09	48.55	80.00	-31.45	100	0	peak
2	3227.000	50.74	-17.09	33.65	60.00	-26.35	100	0	AVG
3	4978.000	60.47	-12.91	47.56	80.00	-32.44	200	86	peak
4	4978.000	45.38	-12.91	32.47	60.00	-27.53	200	86	AVG
5	9772.000	52.66	-3.61	49.05	80.00	-30.95	100	323	peak
6	9772.000	38.02	-3.61	34.41	60.00	-25.59	100	323	AVG
7	10996.000	51.62	-1.17	50.45	80.00	-29.55	200	232	peak
8	10996.000	36.67	-1.17	35.50	60.00	-24.50	200	232	AVG
9	14243.000	51.34	1.47	52.81	80.00	-27.19	200	359	peak
10	14243.000	35.69	1.47	37.16	60.00	-22.84	200	359	AVG
11	14838.000	51.22	1.73	52.95	80.00	-27.05	100	55	peak
12	14838.000	35.53	1.73	37.26	60.00	-22.74	100	55	AVG

7 Test Setup Photo

Radiated Emissions (30MHz-1GHz)



Radiated Emissions (Above 1GHz)



8 EUT Constructional Details (EUT Photos)

