

EMC TEST REPORT

Applicant	Asiatelco Technologies Co.
FCC ID	XYO-LM190
Product	Wi-Fi Halow Module
Brand	ATEL
Model	LM190
Report No.	EFTA25090219-IE-01-E1
Issue Date	December 5, 2025

Eurofins TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC Code CFR47 Part15B (2024)/ ANSI C63.4-2014**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

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Summary of measurement results

Number	Test Case	Clause in FCC Rules	Conclusion
1	Radiated Emission	FCC Part15.109, ANSI C63.4-2014	PASS
2	Conducted Emission	FCC Part15.107, ANSI C63.4-2014	PASS
Date of Testing: September 24, 2025 ~ October 16, 2025			
Date of Sample Received: September 12, 2025			
Note: All indications of Pass/Fail in this report are opinions expressed by Eurofins TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.			

1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **Eurofins TA Technology (Shanghai) Co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2 Test Facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

Eurofins TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform measurements.

A2LA (Certificate Number: 3857.01)

Eurofins TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform measurement.

1.3 Testing Location

Company: Eurofins TA Technology (Shanghai) Co., Ltd.
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E-mail: Kain.Xu@cpt.eurofinscn.com

2 General Description of Equipment Under Test

2.1 Applicant and Manufacturer Information

Applicant	Asiatelco Technologies Co.
Applicant address	#289 Bisheng Road, Building-8, 301, China (Shanghai) Pilot Free Trade Zone Pudong, Shanghai 201204, China
Manufacturer	Asiatelco Technologies Co.
Manufacturer address	#289 Bisheng Road, Building-8, 301, China (Shanghai) Pilot Free Trade Zone Pudong, Shanghai 201204, China

2.2 General Information

EUT Description			
Device Type	Module Device		
Model	LM190		
Lab internal SN	EFTA25090219-IE-01/S01		
HW Version	LM190 P3		
SW Version	rel_1_17_0_EA1_NFP_2025_Sep_26		
Power Rating	DC 3.3V		
Connecting I/O Port(s)	Please refer to the User's Manual.		
Antenna Type	External Antenna		
Frequency	Band	Tx (MHz)	Rx (MHz)
	Halow Wi-Fi	902 ~ 928	902 ~ 928
Auxiliary Test Equipment			
Antenna 1	Manufacturer: Shenzhen be-comfortable Technology Co. Ltd. Model: N12-7732-R0A		
Antenna 2	Manufacturer: SHENZHEN STRONGPOWER COMMUNICATION CO.,LTD Model: External Antenna		
Note:			
1. The EUT is sent from the applicant to Eurofins TA and the information of the EUT is declared by the applicant.			

2.3 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards

FCC Code CFR47 Part15B (2024)

ANSI C63.4-2014

2.4 Test Mode

Test Mode	
Mode 1	External Power Supply + EUT + Wi-Fi Receiver

Test Type	Test Mode	Worst Mode
Radiated Emission	Mode 1	Mode 1
Conducted Emission	Mode 1	Mode 1
After technical evaluation or/and preliminary test, the test data of the worst-case condition was recorded in this report.		

3 Test Case Results

3.1 Radiated Emission

Ambient Condition

Temperature	Relative humidity
15°C ~ 35°C	30% ~ 60%

Methods of Measurement

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The distance between EUT and receive antenna should be 3 meters. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier. During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated signal level.

The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. During the test, the EUT is worked at maximum output power.

Set the spectrum analyzer in the following:

Below 1GHz:

RBW=100 kHz / VBW=300 kHz / Sweep=AUTO

Above 1GHz:

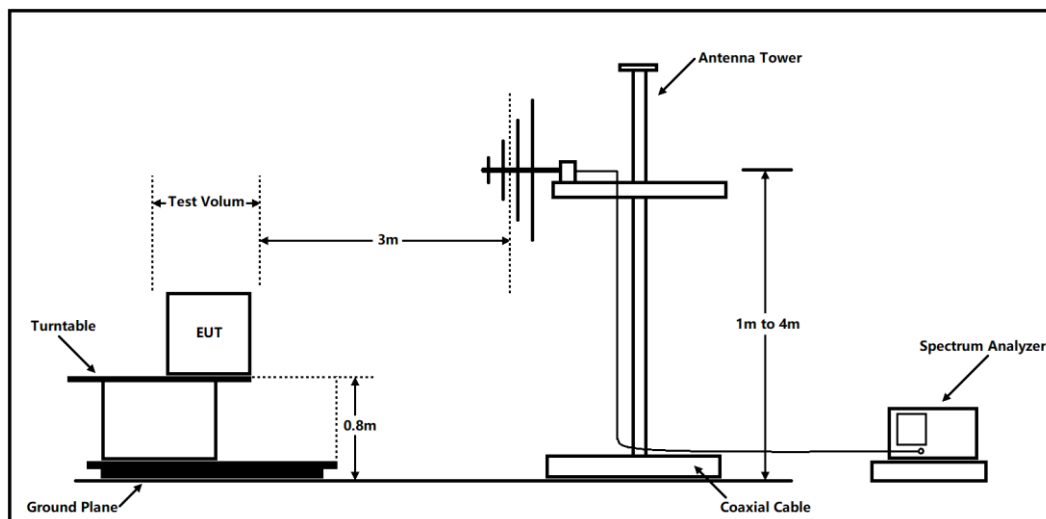
(a) PEAK Detector: RBW=1MHz / VBW=3MHz/ Sweep=AUTO

(b) AVERAGE Detector: RBW=1MHz / VBW=3MHz / Sweep=AUTO

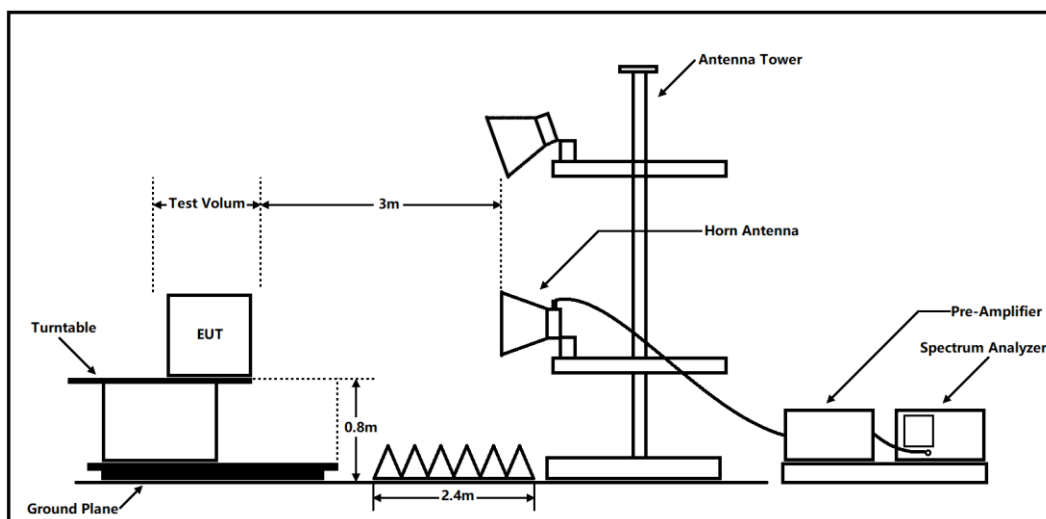
The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

Test Setup

Below 1GHz



Above 1GHz



Note: Area side: 2.4mX3.6m

Antenna Tower meets ANSI C63.4 requirements for measurements above 1 GHz by keeping the antenna aimed at the EUT during the antenna's ascent/ descent along the antenna mast.

Limits

Class B

Frequency (MHz)	Field Strength (dB μ V/m)	Detector
30 -88	40.0	Quasi-peak
88-216	43.5	Quasi-peak
216 – 960	46.0	Quasi-peak
960-1000	54.0	Quasi-peak
1000-5 th harmonic of the highest frequency or 40GHz, which is lower	54 74	Average Peak

Frequency range of radiated measurements

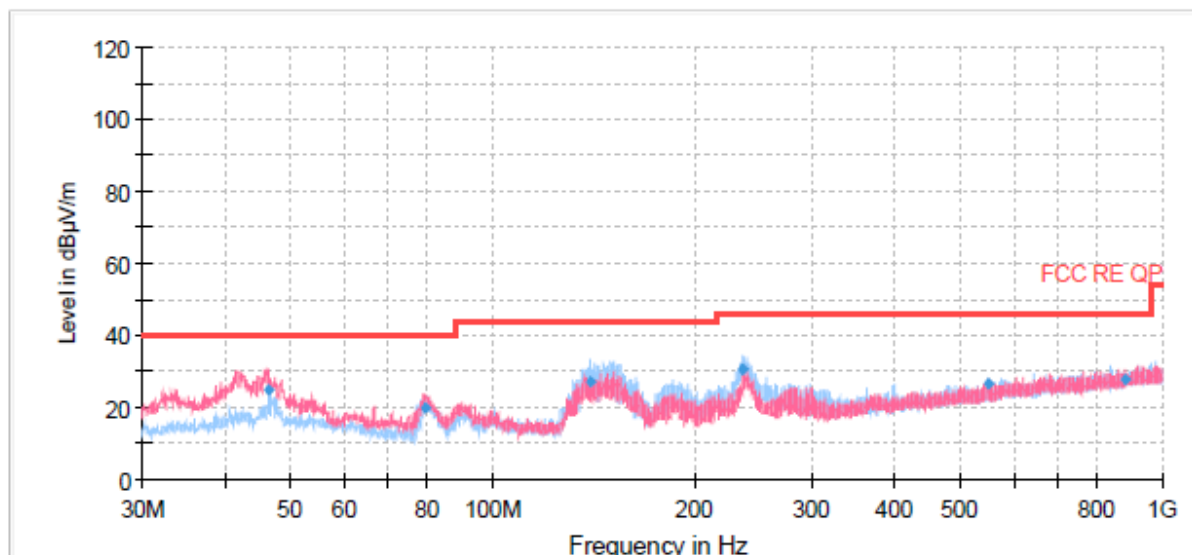
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705-108	1000
108-500	2000
500-1000	5000
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower.

Test Results

Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier.

The following graphs display the maximum values of horizontal and vertical by software.

Antenna 1



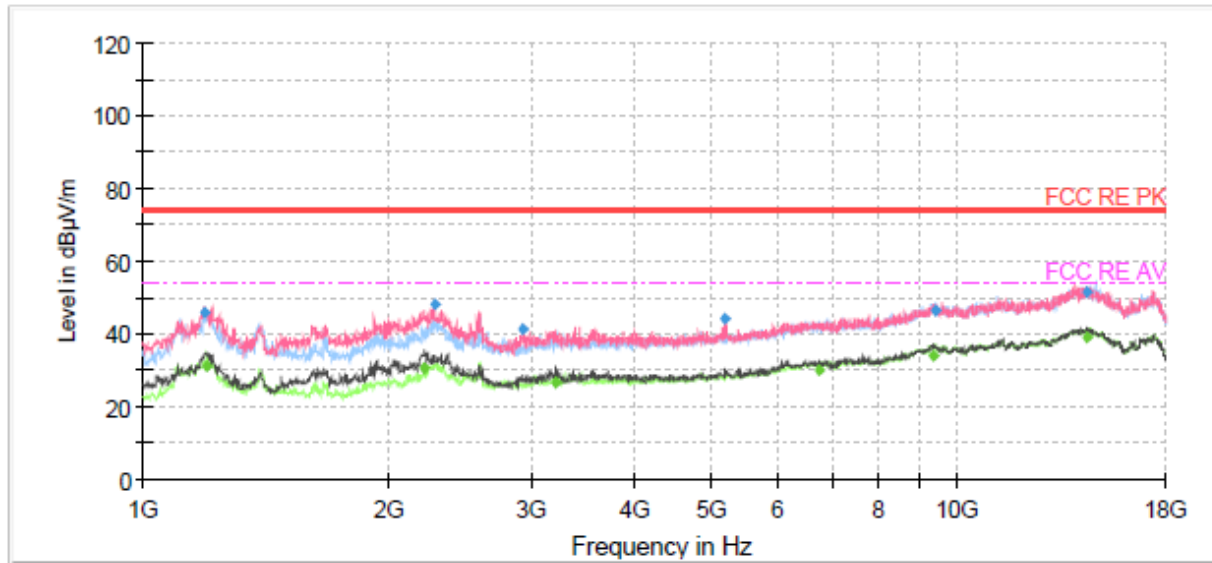
~ QP Level @Spectrum Overview H
 ~ QP Level @Spectrum Overview V
 ◆ QP Level @Final Results
 — QP Limit

Radiated Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
46.19	25.02	40.00	14.98	100.0	V	64.00	20
79.16	19.75	40.00	20.25	174.0	V	207.00	15
139.59	27.04	43.50	16.46	175.0	H	98.00	15
235.96	30.52	46.00	15.48	125.0	H	282.00	19
549.97	26.49	46.00	19.51	100.0	H	118.00	26
879.79	27.88	46.00	18.12	174.0	V	147.00	30

Remark: 1. Correction Factor = Antenna factor + Insertion loss(cable loss+amplifier gain)

2. Margin = Limit – Quasi-Peak



~ PK Level @Spectrum Overview H
 ~ PK Level @Spectrum Overview V
 ◆ PK Level @Final Results
 — PK Limit
~ AVG Level @Spectrum Overview H
 ~ AVG Level @Spectrum Overview V
 ◆ AVG Level @Final Results
 — AVG Limit

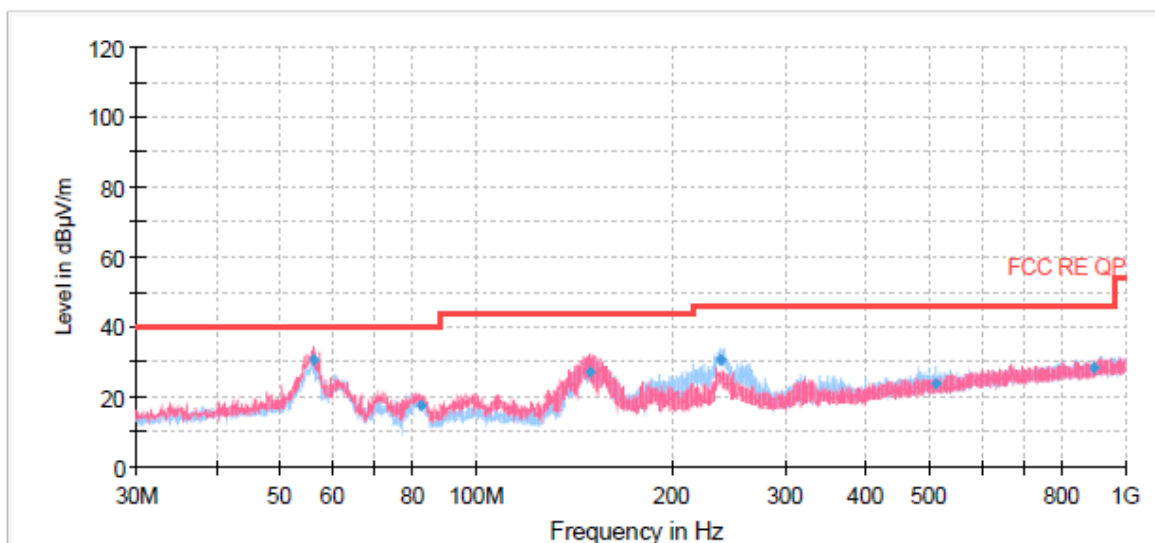
Radiated Emission from 1GHz to 18GHz

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1187.00	46.11	---	74.00	27.89	1000.00	125.0	V	0.00	-16
1197.63	---	31.15	54.00	22.85	1000.00	219.0	V	351.00	-16
2209.13	---	30.41	54.00	23.59	1000.00	101.0	V	1.00	-11
2275.00	47.89	---	74.00	26.11	1000.00	204.0	V	224.00	-11
2921.00	41.51	---	74.00	32.49	1000.00	104.0	V	75.00	-9
3218.50	---	26.33	54.00	27.67	1000.00	102.0	V	280.00	-9
5175.63	43.92	---	74.00	30.08	1000.00	102.0	V	119.00	-4
6756.63	---	30.10	54.00	23.90	1000.00	101.0	V	75.00	0
9302.38	---	34.07	54.00	19.93	1000.00	211.0	V	194.00	5
9406.50	46.65	---	74.00	27.35	1000.00	115.0	H	214.00	5
14359.88	51.29	---	74.00	22.71	1000.00	206.0	H	22.00	9
14374.75	---	39.12	54.00	14.88	1000.00	177.0	V	80.00	9

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

2. Margin = Limit – MaxPeak / Average

Antenna 2



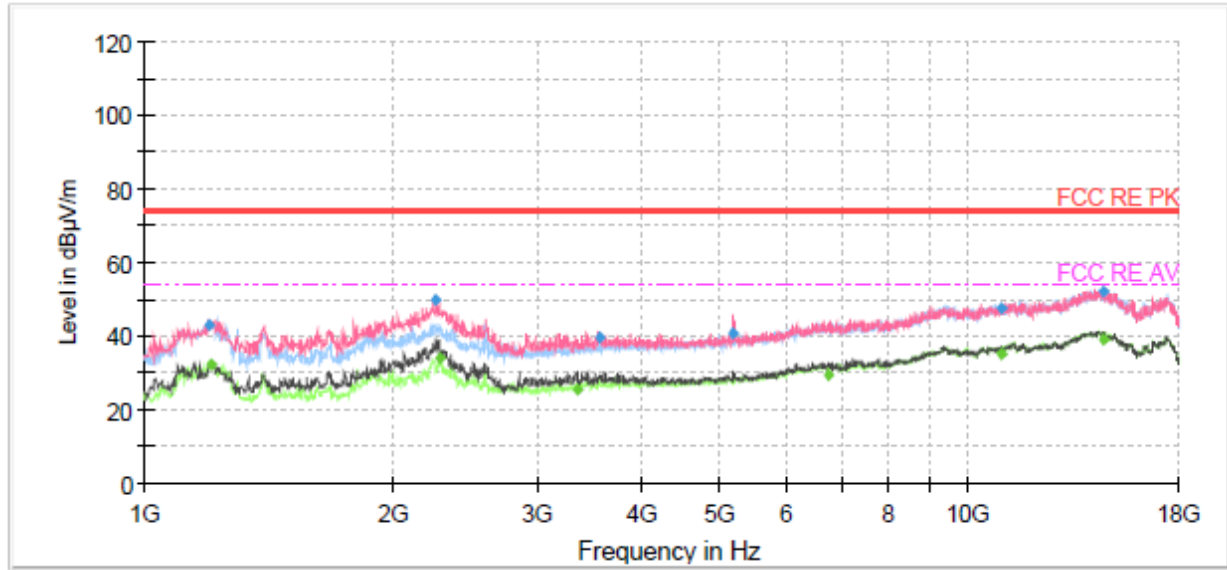
QP Level @Spectrum Overview H QP Level @Spectrum Overview V QP Level @Final Results QP Limit

Radiated Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
56.30	30.73	40.00	9.27	101.0	V	282.00	20
82.26	17.77	40.00	22.23	125.0	V	212.00	15
149.24	27.33	43.50	16.17	101.0	V	306.00	15
237.76	30.54	46.00	15.46	124.0	H	274.00	19
509.11	23.51	46.00	22.49	175.0	H	132.00	25
890.99	28.14	46.00	17.86	211.0	H	96.00	30

Remark: 1. Correction Factor = Antenna factor + Insertion loss(cable loss+amplifier gain)

2. Margin = Limit – Quasi-Peak



~ PK Level @Spectrum Overview H ~ PK Level @Spectrum Overview V ◆ PK Level @Final Results — PK Limit
~ AVG Level @Spectrum Overview H ~ AVG Level @Spectrum Overview V ◆ AVG Level @Final Results - - - AVG Limit

Radiated Emission from 1GHz to 18GHz

Frequency (MHz)	MaxPeak (dBμV/m)	Average (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
1197.63	42.74	---	74.00	31.26	1000.00	183.0	V	329.00	-16
1204.00	---	32.50	54.00	21.50	1000.00	176.0	H	285.00	-16
2260.13	49.60	---	74.00	24.40	1000.00	108.0	V	26.00	-11
2279.25	---	34.11	54.00	19.89	1000.00	125.0	V	14.00	-11
3341.75	---	25.20	54.00	28.80	1000.00	109.0	V	116.00	-9
3564.88	39.66	---	74.00	34.34	1000.00	101.0	V	22.00	-8
5169.25	40.62	---	74.00	33.38	1000.00	108.0	V	296.00	-4
6739.63	---	29.51	54.00	24.49	1000.00	100.0	V	24.00	0
10938.63	47.70	---	74.00	26.30	1000.00	176.0	V	0.00	5
10949.25	---	34.93	54.00	19.07	1000.00	194.0	V	351.00	6
14576.63	51.88	---	74.00	22.12	1000.00	125.0	H	268.00	9
14606.38	---	38.88	54.00	15.12	1000.00	100.0	V	2.00	9

Remark: 1. Correction Factor = Antenna factor + Insertion loss (cable loss + amplifier gain)

2. Margin = Limit – MaxPeak / Average

3.2 Conducted Emission

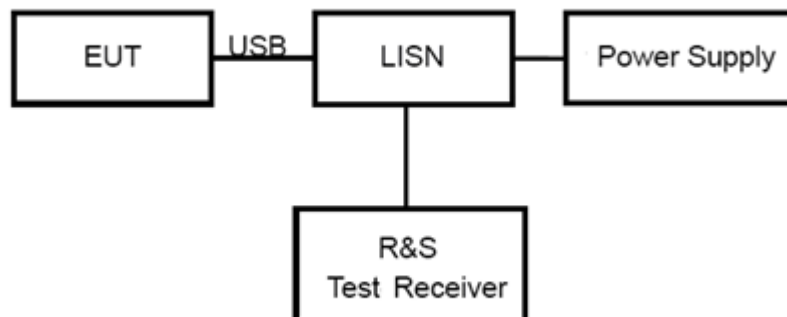
Ambient Condition

Temperature	Relative humidity
15°C ~ 35°C	30% ~ 60%

Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz. The measurement result should include both L line and N line.

Test Setup



Note: Power Supply is AC Power source and it is used to change the voltage 120V/60Hz.

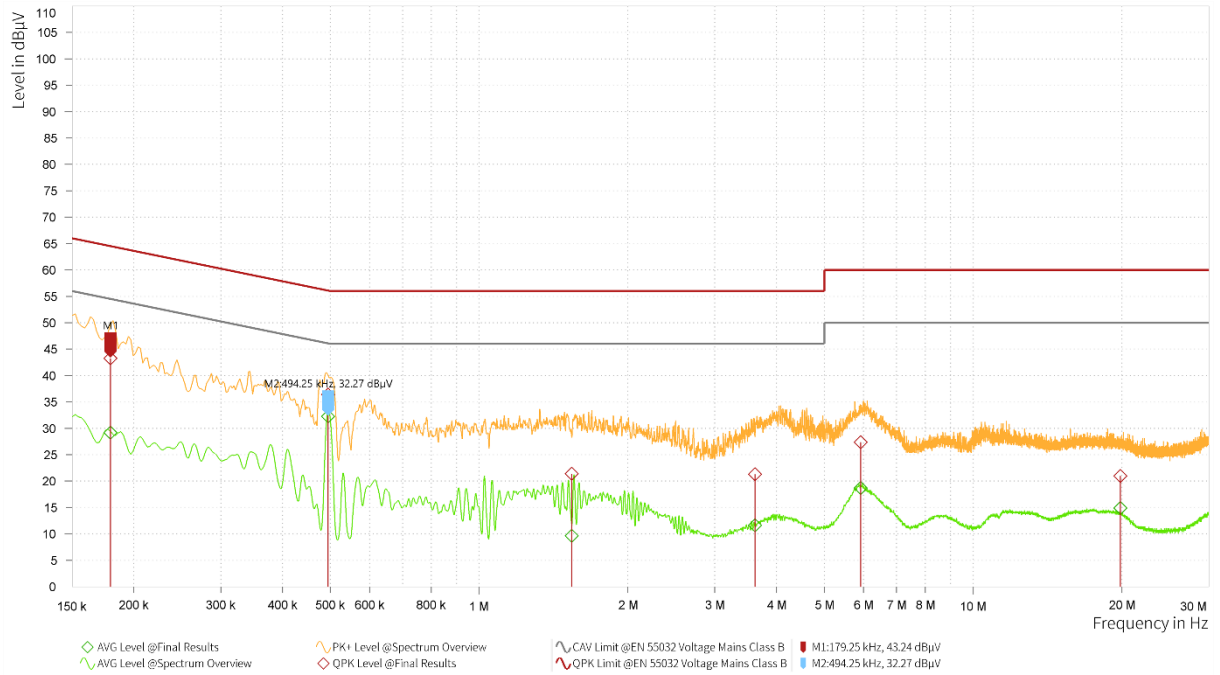
Limits

Frequency (MHz)	Class A (dBμV)		Class B (dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 to 56 *	56 to 46*
0.5 - 5	73	60	56	46
5 - 30	73	60	60	50
*: Decreases with the logarithm of the frequency.				

Note: The EUT should meet CLASS B limit.

Test Results

Antenna 1



Frequency [MHz]	QPK Level [dBμV]	QPK Limit [dBμV]	QPK Margin [dB]	AVG Level [dBμV]	AVG: CAV Limit [dBμV]	AVG Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]	Meas. Time [s]
0.179	43.24	64.52	21.28	29.17	54.52	25.35	21.03	L1	9.000	1.000
0.494	36.40	56.10	19.70	32.27	46.10	13.83	20.78	L1	9.000	1.000
1.541	21.37	56.00	34.63	9.63	46.00	36.37	19.82	L1	9.000	1.000
3.617	21.30	56.00	34.70	11.64	46.00	34.36	19.44	L1	9.000	1.000
5.921	27.36	60.00	32.64	18.67	50.00	31.33	19.40	L1	9.000	1.000
19.880	20.95	60.00	39.05	14.88	50.00	35.12	19.65	L1	9.000	1.000

Remark: Correct factor=cable loss + LISN factor

L line

Conducted Emission from 150 kHz to 30 MHz



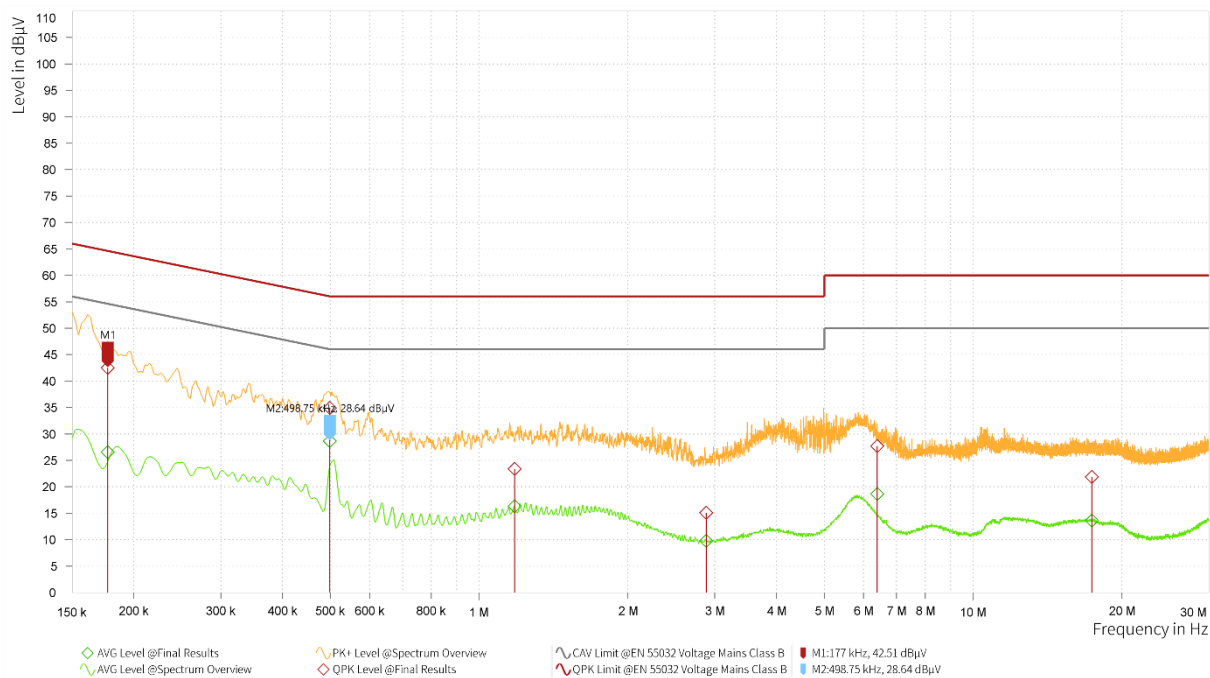
Frequency [MHz]	QPK Level [dBμV]	QPK Limit [dBμV]	QPK Margin [dB]	AVG Level [dBμV]	AVG: CAV Limit [dBμV]	AVG Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]	Meas. Time [s]
0.177	42.83	64.63	21.80	27.09	54.63	27.53	21.04	N	9.000	1.000
0.490	36.27	56.17	19.90	28.34	46.17	17.83	20.80	N	9.000	1.000
1.021	28.79	56.00	27.21	17.32	46.00	28.68	20.15	N	9.000	1.000
2.531	19.35	56.00	36.65	10.75	46.00	35.25	19.55	N	9.000	1.000
5.962	26.30	60.00	33.70	18.47	50.00	31.53	19.41	N	9.000	1.000
15.308	19.41	60.00	40.59	13.93	50.00	36.07	19.54	N	9.000	1.000

Remark: Correct factor=cable loss + LISN factor

N line

Conducted Emission from 150 kHz to 30 MHz

Antenna 2

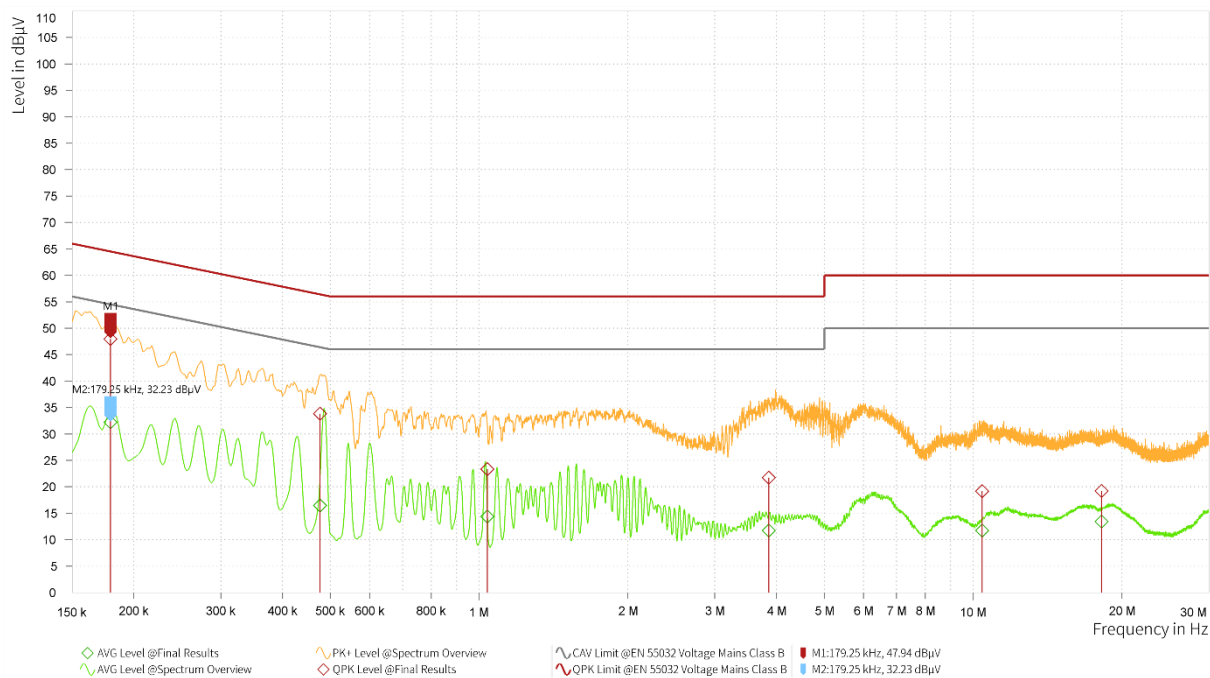


Frequency [MHz]	QPK Level [dBµV]	QPK Limit [dBµV]	QPK Margin [dB]	AVG Level [dBµV]	AVG: CAV Limit [dBµV]	AVG Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]	Meas. Time [s]
0.177	42.51	64.63	22.11	26.57	54.63	28.06	21.03	L1	9.000	1.000
0.499	34.92	56.02	21.10	28.64	46.02	17.38	20.78	L1	9.000	1.000
1.181	23.38	56.00	32.62	16.31	46.00	29.69	20.03	L1	9.000	1.000
2.882	15.10	56.00	40.90	9.79	46.00	36.21	19.50	L1	9.000	1.000
6.394	27.69	60.00	32.31	18.62	50.00	31.38	19.40	L1	9.000	1.000
17.387	21.85	60.00	38.15	13.60	50.00	36.40	19.58	L1	9.000	1.000

Remark: Correct factor=cable loss + LISN factor

L line

Conducted Emission from 150 kHz to 30 MHz



Frequency [MHz]	QPK Level [dBμV]	QPK Limit [dBμV]	QPK Margin [dB]	AVG Level [dBμV]	AVG: CAV Limit [dBμV]	AVG Margin [dB]	Correction [dB]	Line	Meas. BW [kHz]	Meas. Time [s]
0.179	47.94	64.52	16.58	32.23	54.52	22.29	21.04	N	9.000	1.000
0.476	33.84	56.40	22.57	16.45	46.40	29.95	20.81	N	9.000	1.000
1.039	23.32	56.00	32.68	14.38	46.00	31.62	20.14	N	9.000	1.000
3.858	21.72	56.00	34.28	11.73	46.00	34.27	19.44	N	9.000	1.000
10.435	19.18	60.00	40.82	11.70	50.00	38.31	19.44	N	9.000	1.000
18.209	19.21	60.00	40.79	13.43	50.00	36.57	19.65	N	9.000	1.000

Remark: Correct factor=cable loss + LISN factor

N line

Conducted Emission from 150 kHz to 30 MHz

4 Uncertainty Measurement

Case	Uncertainty	Factor k
Radiated Emission 30MHz – 200MHz	4.17 dB	1.96
Radiated Emission 200MHz – 1GHz	4.84 dB	1.96
Radiated Emission 1GHz – 18GHz	4.35 dB	1.96
Conducted Emission	2.57 dB	2

5 Main Test Instruments

Name of Equipment	Manufacturer	Type/Model	Serial Number	Calibration Date	Expiration Time
Radiated Emission					
EMI Test Receiver	R&S	ESCI3	100948	2025-05-07	2026-05-06
Signal Analyzer	R&S	FSV40	101186	2025-05-06	2026-05-05
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	1023	2023-07-14	2026-07-13
Horn Antenna	SCHWARZBECK	BBHA 9120D	430	2024-07-18	2027-07-17
Amplifier	R&S	SCU18F	101022	2025-05-06	2026-05-05
Software	R&S	EMC32	9.26.01	/	/
Conducted Emission					
Artificial main network	R&S	ENV216	102191	2024-12-02	2026-12-01
EMI Test Receiver	R&S	ESR	101667	2025-05-06	2026-05-05
Software	R&S	EMC32	10.35.10	/	/

6 The EUT Appearance

Refer to *EUT Appearance*.

7 Test Setup Photos

Refer to *EMC Test Setup*.

***** END OF REPORT *****