TEST REPORT

Application No.:	SZCR2104020498AT
Applicant:	Smawave Technology Co., Ltd
Address of Applicant:	3/F, Building 8, 1001 North Qinzhou Road, Xuhui District, Shanghai, China
Manufacturer:	Smawave Technology Co., Ltd
Address of Manufacturer:	3/F, Building 8, 1001 North Qinzhou Road, Xuhui District, Shanghai, China
Equipment Under Test (EUT):	
EUT Name:	LTE Indoor CPE
Model No.:	SRT421
FCC ID:	2AU8HSRT421
Standard(s) :	47 CFR Part 15, Subpart B
Date of Receipt:	2021-04-13
Date of Test:	2021-04-17 to 2021-04-20
Date of Issue:	2021-05-18
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Keny Xu
EMC Laboratory Manager

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2021-05-18		Original

Authorized for issue by:				
		Leo Lai/Project Engineer		
		Eric Fu/Reviewer		

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2 Test Summary

Emission Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Radiated Emissions (above 1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (30MHz-1GHz)		ANSI C63.4:2014	Class B	Pass
Conducted Emissions at Mains Terminals (150kHz-30MHz)		ANSI C63.4:2014	Class B	Pass

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4 General Information

4.1 Details of E.U.T.

Test voltage:	120V~60Hz
Power adapter:	Model: ASS67A-120200 Input: 100-120V~50/60Hz 0.8A Output: DC 12V 2A

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Laptop	Lenovo	T430u	REF. No.SEA18B00
Mouse	Lenovo	M-U0025-O	REF. No.:SEA24A00
Router	NETGEAR	DGN2200	REF. No.SEA22A00

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Radiated Emissions (above 1GHz)	± 4.8dB
Radiated Emissions (30MHz-1GHz)	± 4.5dB
Conducted Emissions at Mains Terminals (150kHz-30MHz)	± 3.0dB

Remark:
The U_{lab} (lab Uncertainty) is less than U_{cispr} (CISPR Uncertainty), so the test results
– 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.

4.4 Test Location

All tests were performed at:
SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch
No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.
Tel: +86 755 2601 2053 Fax: +86 755 2671 0594
No tests were sub-contracted.

4.5 Test Facility

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

• A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• VCCI

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• FCC –Designation Number: CN1178

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Equipment List

Radiated Emissions (above 1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2021-03-26	2024-03-25
EXA Signal Analyzer	Agilent Technologies Inc	N9010A	SEM004-12	2021-02-01	2022-01-31
Horn Antenna	Rohde&Schwarz	HF907	SEM003-07	2021-04-14	2024-04-13
Pre-Amplifier	Compliance Directions Systems Inc.	PAP-0126	SEM004-11	2020-09-23	2021-09-22
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2020-07-10	2021-07-09

Radiated Emissions (30MHz-1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2020-07-19	2023-07-18
MXE EMI Receiver	Agilent Technologies	N9038A	SEM004-15	2020-11-02	2021-11-01
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-02	2019-05-24	2022-05-23
Pre-Amplifier	Agilent Technologies	8447D	SEM005-01	2021-03-24	2022-03-23
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2020-07-10	2021-07-09

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2019-06-13	2022-06-12
EMI Test Receiver	Rohde&Schwarz	ESCI	SEM004-02	2021-03-24	2022-03-23
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2020-07-10	2021-07-09
LISN	Rohde&Schwarz	ENV216	SEM007-01	2020-09-23	2021-09-22
LISN	ETS-LINDGREN	3816/2	SEM007-02	2021-03-24	2022-03-25

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General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2020-09-15	2021-09-14
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2020-09-15	2021-09-14
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2021-03-30	2022-03-29

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6 Emission Test Results

6.1 Radiated Emissions (above 1GHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.4:2014

Measurement Distance: 3m

Limit:

Above 1GHz	74(dBμV/m) peak, 54(dBμV/m) average
Detector:	Peak for pre-scan (1000kHz resolution bandwidth) 1000M to18000MHz

6.1.1 E.U.T. Operation

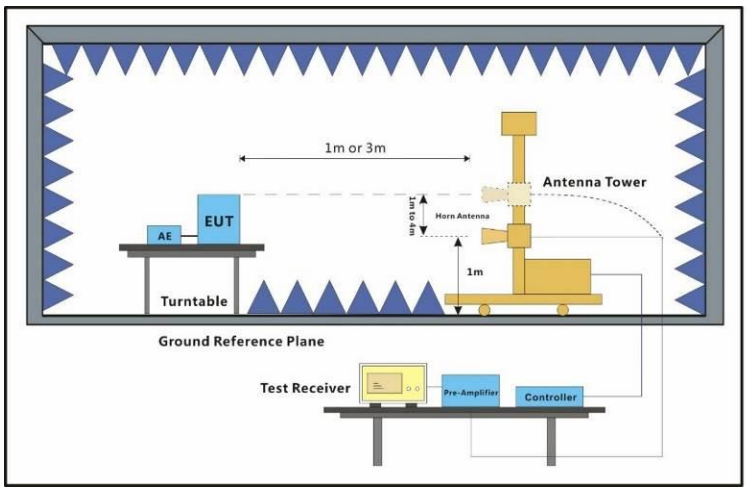
Operating Environment:

Temperature: 23.4 °C Humidity: 53.9 % RH Atmospheric Pressure: 1010 mbar

6.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	Normal Operation_Keep the EUT in data transfer with PC

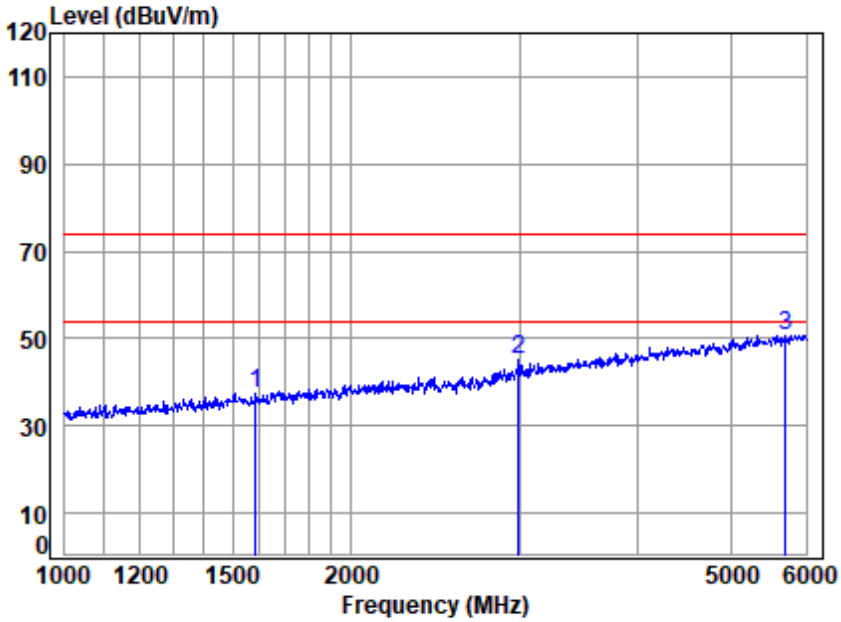
6.1.3 Test Setup Diagram



6.1.4 Measurement Procedure and Data

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

Test Mode: 04; Polarity: Horizontal



Site : chamber
Condition: 3m HORIZONTAL
Job No : 20498AT
Mode : 04

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1587.680	3.34	26.19	40.00	48.06	37.59	74.00	-36.41	Peak
2	2993.840	4.86	30.88	40.70	49.94	44.98	74.00	-29.02	Peak
3	5706.411	8.21	34.81	42.37	50.12	50.77	74.00	-23.23	Peak

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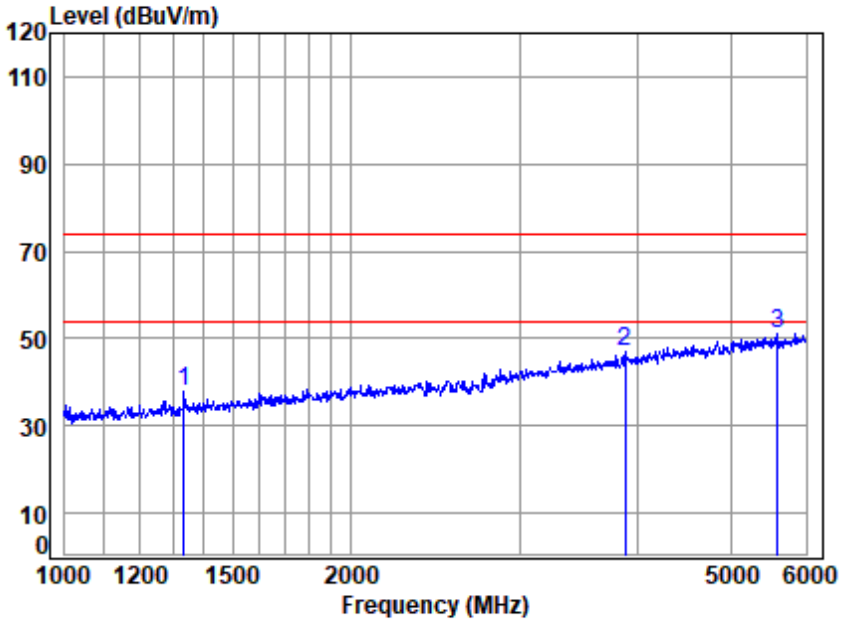
Test Mode: 04; Polarity: Vertical



Site : chamber
Condition: 3m VERTICAL
Job No : 20498AT
Mode : 04

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1334.389	3.00	25.17	39.85	49.33	37.65	74.00	-36.35	Peak
2	3875.095	6.10	32.46	41.32	49.63	46.87	74.00	-27.13	Peak
3	5605.076	8.20	34.71	42.36	50.42	50.97	74.00	-23.03	Peak

6.2 Radiated Emissions (30MHz-1GHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.4:2014

Measurement Distance: 3m

Limit:

FREQUENCY (MHz)	dBμV/m (At 10m)	dBμV/m (At 3m)
	Class B	Class B
30MHz -88MHz	29.5	40.0
88MHz-216MHz	33.1	43.5
216MHz-960MHz	35.6	46.0
960MHz-1000MHz	43.5	54.0
Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz		

6.2.1 E.U.T. Operation

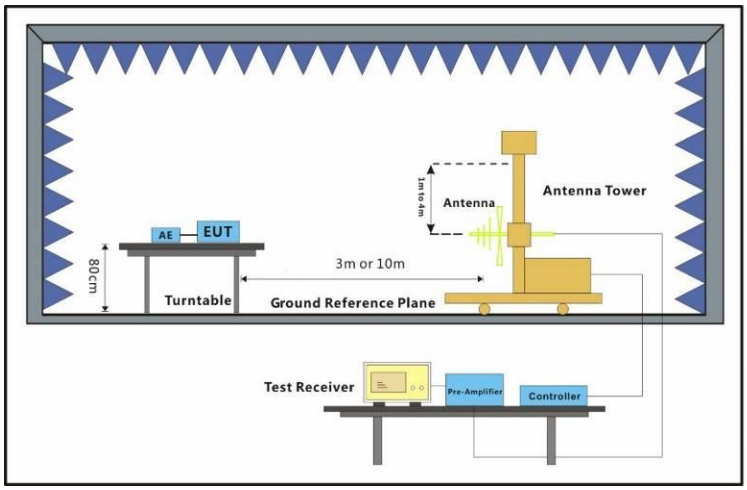
Operating Environment:

Temperature: 24.6 °C Humidity: 64.0 % RH Atmospheric Pressure: 1010 mbar

6.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	Normal Operation_Keep the EUT in data transfer with PC

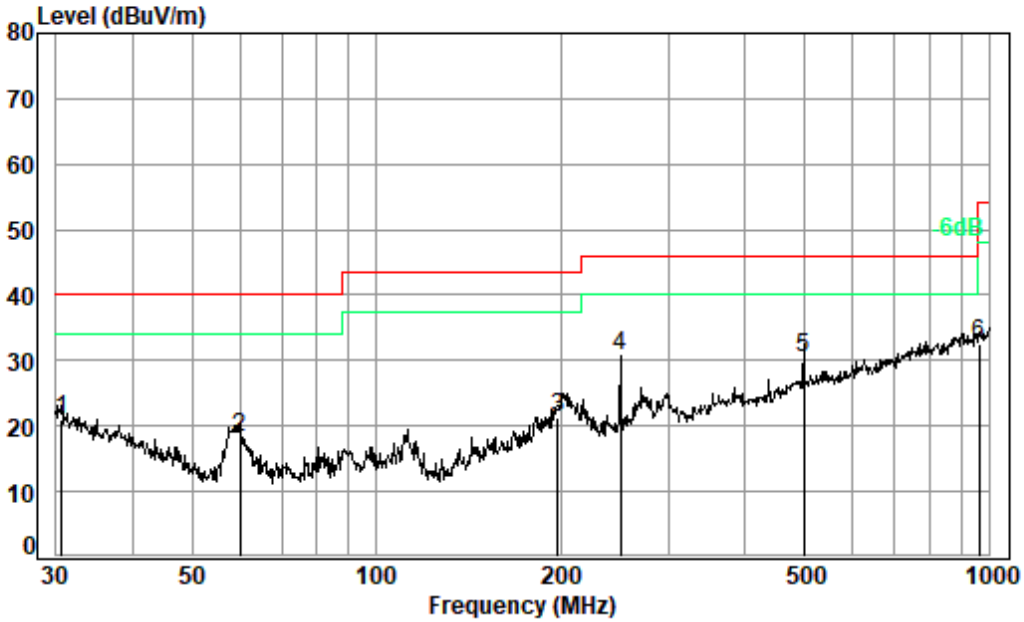
6.2.3 Test Setup Diagram



6.2.4 Measurement Procedure and Data

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

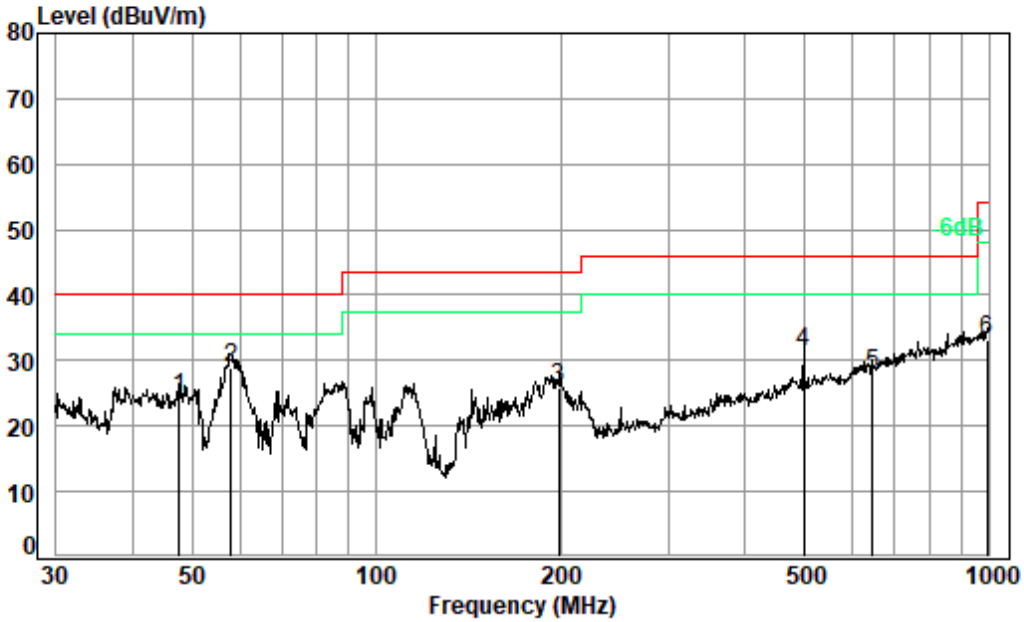
Test Mode: 04; Polarity: Horizontal



Condition: 3m HORIZONTAL
Job No. : 20498AT
Test Mode: 04

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	30.64	0.61	22.51	27.73	25.68	21.07	40.00	-18.93	QP
2	59.86	0.80	12.83	27.66	32.32	18.29	40.00	-21.71	QP
3	197.89	1.20	15.74	27.15	31.38	21.17	43.50	-22.33	QP
4 pp	250.30	1.64	18.20	26.99	37.77	30.62	46.00	-15.38	QP
5	499.42	2.50	24.11	27.80	31.70	30.51	46.00	-15.49	QP
6	965.54	3.57	29.50	26.83	26.26	32.50	54.00	-21.50	QP

Test Mode: 04; Polarity: Vertical



Condition: 3m VERTICAL
Job No. : 20498AT
Test Mode: 04

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	47.66	0.70	14.77	27.69	36.61	24.39	40.00	-15.61	QP
2 pp	58.00	0.78	13.20	27.67	42.71	29.02	40.00	-10.98	QP
3	198.59	1.20	15.76	27.15	36.07	25.88	43.50	-17.62	QP
4	499.42	2.50	24.11	27.80	32.45	31.26	46.00	-14.74	QP
5	645.12	2.79	26.25	28.03	27.09	28.10	46.00	-17.90	QP
6	993.01	3.59	29.70	26.69	26.50	33.10	54.00	-20.90	QP

6.3 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.4:2014

Limit:

0.15M-0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

6.3.1 E.U.T. Operation

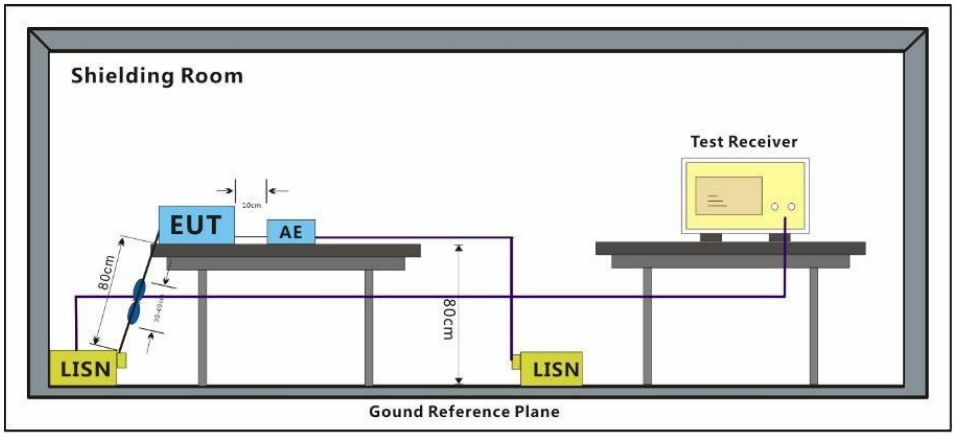
Operating Environment:

Temperature: 23.2 °C Humidity: 57.9 % RH Atmospheric Pressure: 1010 mbar

6.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	04	Normal Operation_Keep the EUT in data transfer with PC

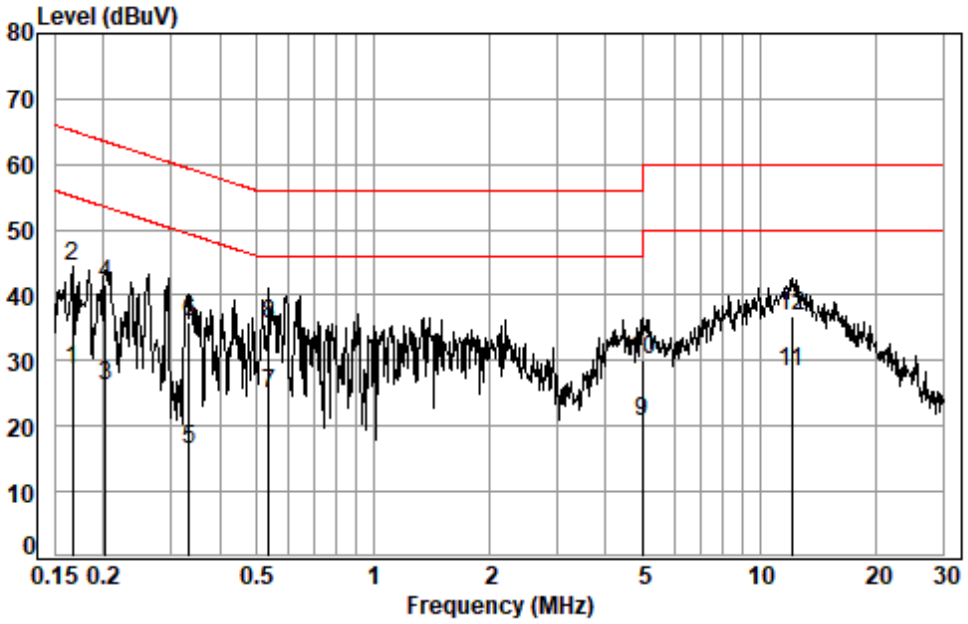
6.3.3 Test Setup Diagram



6.3.4 Measurement Procedure and Data

An initial pre-scan was performed with peak detector.Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

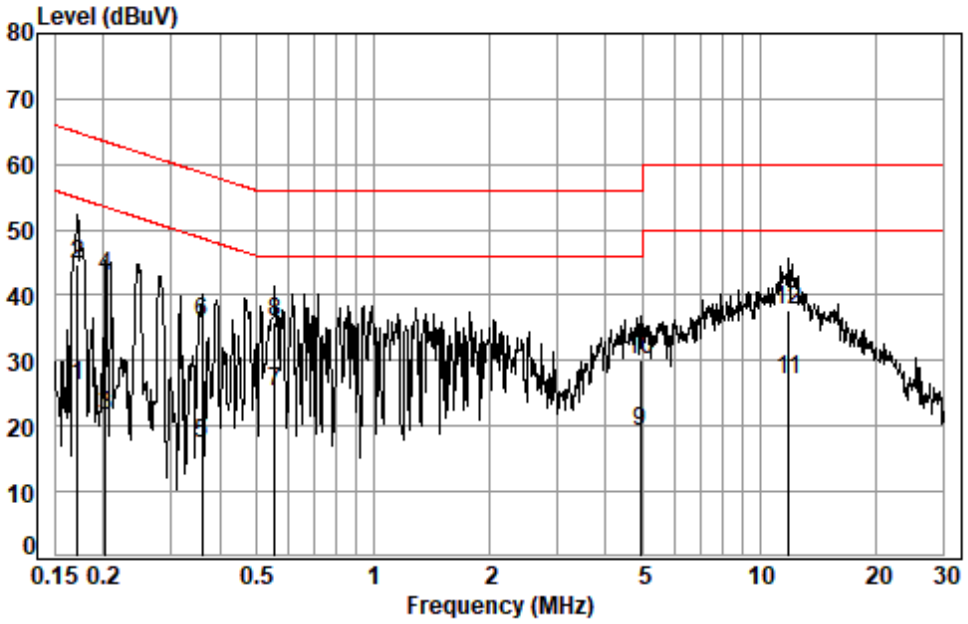
Test Mode: 04; Line: Live line



Site : Shielding Room
Condition: Line
Job No. : 20498AT
Test mode: 04

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1668	0.03	9.71	18.92	28.66	55.12	-26.46	Average
2	0.1668	0.03	9.71	34.59	44.33	65.12	-20.79	QP
3	0.2029	0.04	9.72	16.29	26.05	53.49	-27.44	Average
4	0.2029	0.04	9.72	31.87	41.63	63.49	-21.86	QP
5	0.3338	0.06	9.75	6.68	16.49	49.35	-32.86	Average
6	0.3338	0.06	9.75	26.00	35.81	59.35	-23.54	QP
7	0.5378	0.08	9.77	15.22	25.07	46.00	-20.93	Average
8	0.5378	0.08	9.77	25.64	35.49	56.00	-20.51	QP
9	4.9782	0.16	9.93	10.69	20.78	46.00	-25.22	Average
10	4.9782	0.16	9.93	20.12	30.21	56.00	-25.79	QP
11	12.1240	0.16	10.35	17.83	28.34	50.00	-21.66	Average
12	12.1240	0.16	10.35	26.32	36.83	60.00	-23.17	QP

Test Mode: 04; Line: Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 20498AT
Test mode: 04

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.1712	0.03	9.71	16.40	26.14	54.90	-28.76	Average
2	0.1712	0.03	9.71	34.89	44.63	64.90	-20.27	QP
3	0.2029	0.04	9.72	11.92	21.68	53.49	-31.81	Average
4	0.2029	0.04	9.72	33.23	42.99	63.49	-20.50	QP
5	0.3596	0.06	9.75	7.54	17.35	48.74	-31.39	Average
6	0.3596	0.06	9.75	26.19	36.00	58.74	-22.74	QP
7	0.5552	0.08	9.77	15.31	25.16	46.00	-20.84	Average
8	0.5552	0.08	9.77	26.18	36.03	56.00	-19.97	QP
9	4.9257	0.16	9.93	9.10	19.19	46.00	-26.81	Average
10	4.9257	0.16	9.93	19.95	30.04	56.00	-25.96	QP
11	11.9328	0.16	10.35	16.49	27.00	50.00	-23.00	Average
12	11.9328	0.16	10.35	27.14	37.65	60.00	-22.35	QP

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7 Test Setup Photo

Radiated Emissions (30MHz-1GHz)
Conducted Emissions at Mains Terminals (150kHz-30MHz)

8 EUT Constructional Details (EUT Photos)

- End of the Report -

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