Test Report

Applicant	Schneider Electric (China) Company Limited Shanghai Branch
Product	UPS (Uninterruptible Power System)
Model	SMTL3000RMI2UCNC; SMTL2200RMI2UCNC
Model Series	SMTL2200RMI2UCXXXXXXXXXX; SMTL3000RMI2UCXXXXXXXXXX (X= A~Z, a-z, 0~9, +, *, #, _, -or blank)
Report No.	Y2302A0132-E1
Date of issue	March 9, 2023

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Summary of Measurement Results

No.	Test Type	Standard	Conclusion
1	Radiated Emission	EN IEC 62040-2: 2018 IEC 62040-2: 2016	PASS
2	Conducted Emission	EN IEC 62040-2: 2018 IEC 62040-2: 2016	PASS
3	Harmonic Current Emission	EN IEC 61000-3-2: 2019 + A1: 2021	PASS
4	Voltage Fluctuation and Flicker	EN 61000-3-3: 2013 + A1: 2019	PASS
5	RF Electromagnetic Field	EN IEC 61000-4-3: 2020	PASS
6	Electrostatic Discharge	EN 61000-4-2: 2009	PASS
7	Fast Transients Common Mode	EN 61000-4-4: 2012	PASS
8	Radio Frequency Common Mode	EN 61000-4-6: 2014/ AC: 2015	PASS
9	Surge	EN 61000-4-5: 2014 + A1: 2017	PASS
10	Power Frequency Magnetic Field	EN 61000-4-8: 2010	PASS
11	Low frequency signals	EN IEC 62040-2: 2018 (EN 61000-4-16: 2016)	PASS
Date of Testing: February 15, 2023 ~ March 6, 2023 Date of Sample Received: February 13, 2023			
Note: NA = Not Applicable. All indications of Pass/Fail in this report are opinions expressed by 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.			

Testing location

Test Items	Test location
Radiated Emission	Company: TA Technology (Shanghai) Co., Ltd. Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong, Shanghai, P.R.China
Conducted Emission	
Harmonic Current Emission	
Voltage fluctuation and flicker	
RF electromagnetic Field	
Electrostatic discharge	
Fast transients common mode	
Radio frequency common mode	
Surge	
Power Frequency Magnetic Field	
Low frequency signals	Company: Shanghai Institute of Measurement and Testing Technology (SIMT) Address: 400 Hongcao Road, Xuhui District, Shanghai, P.R.China

TABLE OF CONTENT

1. Test Laboratory 5
1.1. Notes of the Test Report 5
1.2. Testing Location 5
2. General Description of Equipment Under Test 6
2.1. Applicant and Manufacturer Information 6
2.2. General Information 6
2.3. Applied Standards 7
2.4. Test Mode 8
3. Test results 9
3.1. Radiated Emission 9
3.2. Conducted Emission 17
3.3. Harmonic Current Emission 31
3.4. Voltage Fluctuation and Flicker 45
3.5. Electrostatic Discharge 47
3.6. RF Electromagnetic Field (RS) 49
3.7. Fast Transients Common Mode (EFT) 53
3.8. Surge 55
3.9. Radio Frequency Common Mode (CS) 57
3.10. Power Frequency Magnetic Field 59
3.11. Low frequency signals 61
4. Main Test Instruments 63
ANNEX A：Test Configuration 65

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 **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. Testing Location

Company:	TA Technology (Shanghai) Co., Ltd.
Address:	Building 3, No.145, Jintang Rd, Pudong Shanghai, P.R.China
City:	Shanghai
Post code:	201201
Country:	P. R. China
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Website:	http://www.ta-shanghai.com
E-mail:	fanguangchang@ta-shanghai.com

2. General Description of Equipment Under Test

2.1. Applicant and Manufacturer Information

Applicant	Schneider Electric(China) Company Limited Shanghai Branch
Applicant address	Building 9, No.3000, Long Dong Avenue, Pudong New Area, 201203, Shanghai, China
Manufacturer	Schneider Electric(China) Company Limited Shanghai Branch
Manufacturer address	Building 9, No.3000, Long Dong Avenue, Pudong New Area, 201203, Shanghai, China

2.2. General Information

Model	SMTL3000RMI2UCNC; SMTL2200RMI2UCNC
Model Series	SMTL2200RMI2UCXXXXXXXXXX; SMTL3000RMI2UCXXXXXXXXXX (X= A~Z, a-z, 0~9, +, *, #, _, -or blank)
SN	SMTL3000RMI2UCNC: AS2251154595 SMTL2200RMI2UCNC: AS2250253281
HW Version	Main board: 640-3102E-Z_REV08 Control board: TME14898_REV02
SW Version	UPS01.4
Input	220~240VAC, 50/60Hz
Output	SMTL3000RMI2UCNC: 220~240VAC, 50/60Hz, 3000VA, 2700W SMTL2200RMI2UCNC: 220~240VAC, 50/60Hz, 2200VA, 1980W
UPS Category	☐ C1 ☒ C2 ☐ C3
Note: 1.The EUT is sent from the applicant to 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
EN IEC 62040-2: 2018
IEC 62040-2: 2016
EN IEC 61000-3-2: 2019 + A1: 2021
EN 61000-3-3: 2013 + A1: 2019
EN 61000-4-2: 2009
EN IEC 61000-4-3: 2020
EN 61000-4-4: 2012
EN 61000-4-5: 2014 + A1: 2017
EN 61000-4-6: 2014/AC: 2015
EN 61000-4-8: 2010
EN 61000-4-16: 2016

2.4. Test Mode

Test Mode		
Mode 1	Online mode:	AC Power Supply + EUT with battery + 100% load
Mode 2	Battery mode:	AC Power off + EUT with battery + 100% load
Mode 3	Green mode:	AC Power Supply + EUT with battery + 100% load

3. Test results

3.1. Radiated Emission

Ambient Condition

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

Methods of Measurement

Procedure of Preliminary Test

● The equipment was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane. When the EUT is a floor standing equipment, it is placed on the ground plane which has a 15cm non-conductive covering to insulate the EUT from the ground plane.

● Support equipment, if needed, was placed as per EN 62040-2.

● All I/O cables were positioned to simulate typical usage as per EN 62040-2.

● The EUT received AC power source from the outlet socket under the turntable. All support equipment power received from another socket under the turntable.

● The antenna was placed at 3 meter away from the EUT as stated in EN 62040-2. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.

● The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

● After the preliminary scan, the worst configuration of EUT and cable of the highest emission level were recorded for the final test.

Procedure of Final Test

● EUT and support equipment were set up on the turntable as per the configuration with highest emission level in the preliminary test.

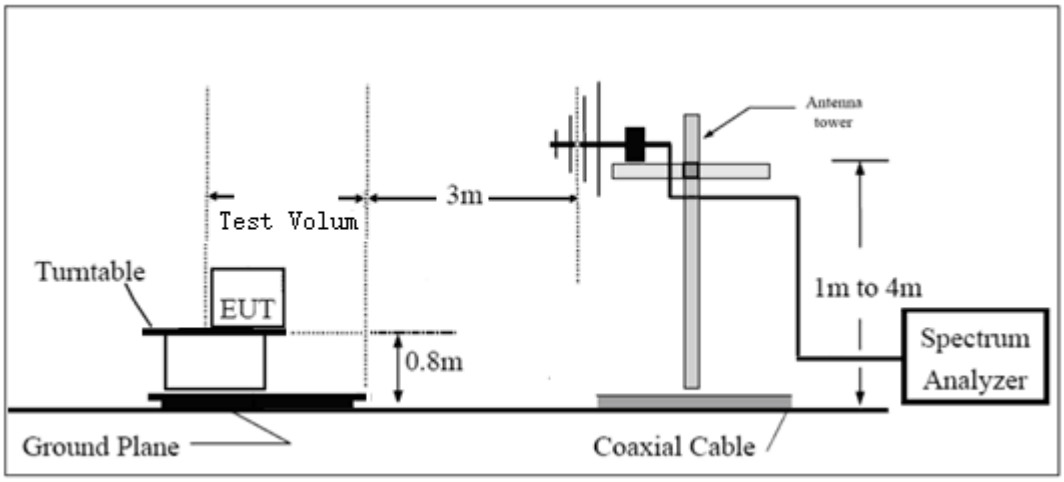
● The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

● Recording at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.

● The test data of the worst-case condition(s) was recorded.

Test Setup

Below 1 GHz



Note: Area side: 2.4mX3.6m

Limits

Frequency (MHz)	Quasi-peak (dBμV/m) At 3m			Measurement distance (m)
	Category C1	Category C2	Category C3	
30 -230	40	50	60	3
230-1000	47	57	70	3

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor *k* = 1.96.

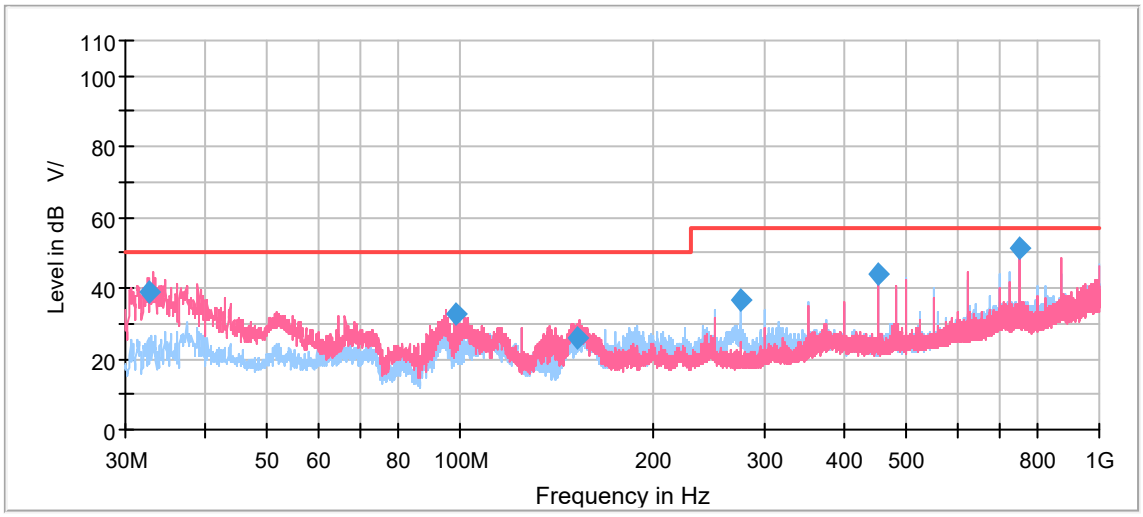
Frequency	Uncertainty
30MHz~200MHz	4.17 dB
200MHz~1000MHz	4.84 dB

Test Results:

A symbol (dB V/) in the test plot below means (dBμV/m)

SMTL3000RMI2UCNC

Online mode



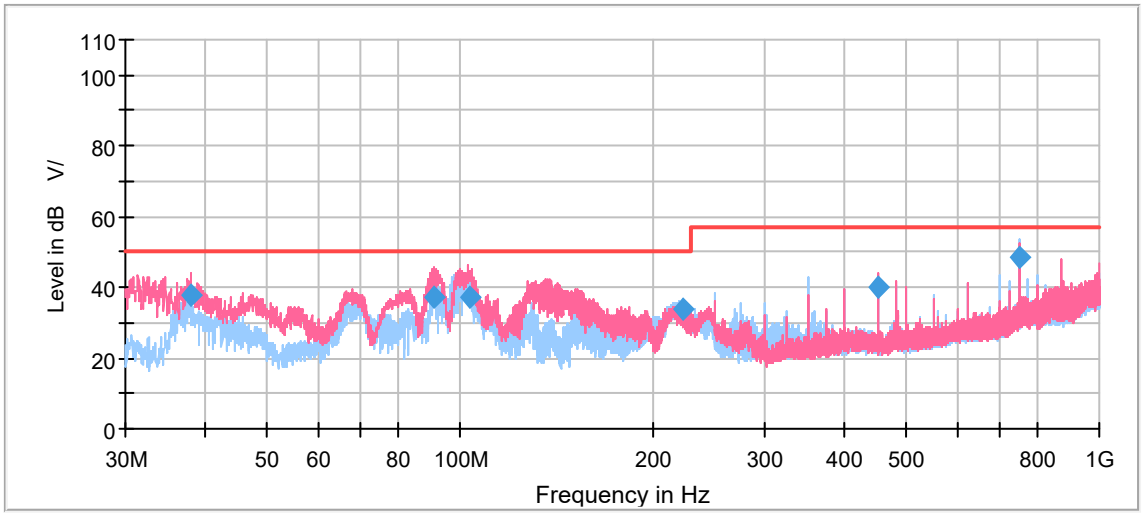
Radiated Emission 30M-1GHz

Frequency (MHz)	Quasi-Peak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
32.608667	39.01	50.00	10.99	109.0	V	218.0	17.0
98.417333	32.72	50.00	17.28	175.0	V	74.0	18.6
153.210333	26.09	50.00	23.91	100.0	V	187.0	14.9
275.029667	36.66	57.00	20.34	100.0	H	0.0	19.8
450.010000	43.77	57.00	13.23	100.0	H	126.0	23.8
749.991000	51.25	57.00	5.75	100.0	H	235.0	29.0

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

2. Margin = Limit – Quasi-Peak

Battery mode



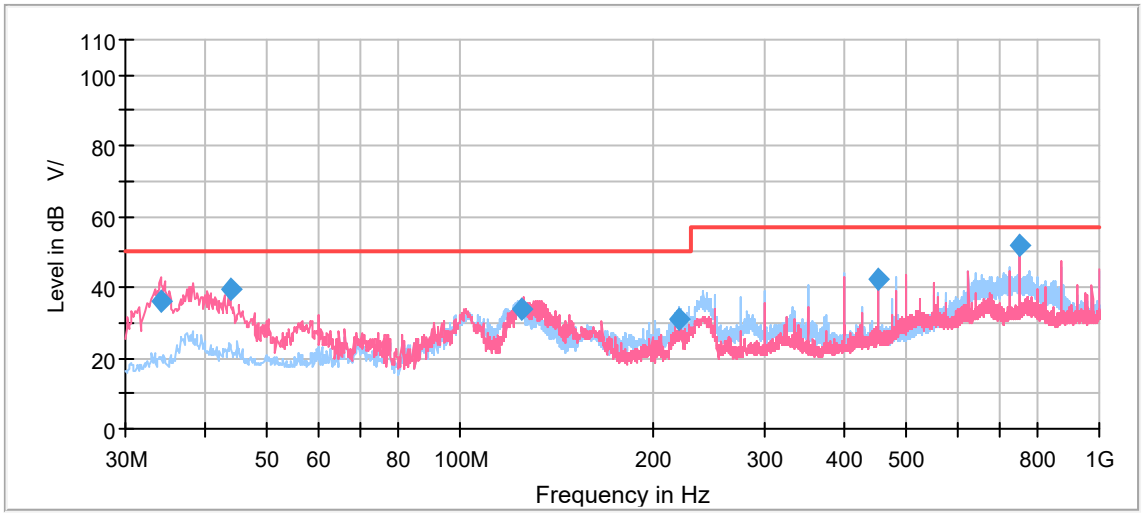
Radiated Emission 30M-1GHz

Frequency (MHz)	Quasi-Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
38.058667	37.77	50.00	12.23	100.0	V	98.0	18.9
91.479333	36.99	50.00	13.01	100.0	V	217.0	16.8
103.867333	37.09	50.00	12.91	100.0	V	175.0	18.8
223.460667	33.74	50.00	16.26	109.0	H	337.0	18.4
450.010000	39.92	57.00	17.08	100.0	V	217.0	23.8
750.063333	48.75	57.00	8.25	100.0	H	130.0	29.0

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

2. Margin = Limit – Quasi-Peak

Green mode



Radiated Emission 30M-1GHz

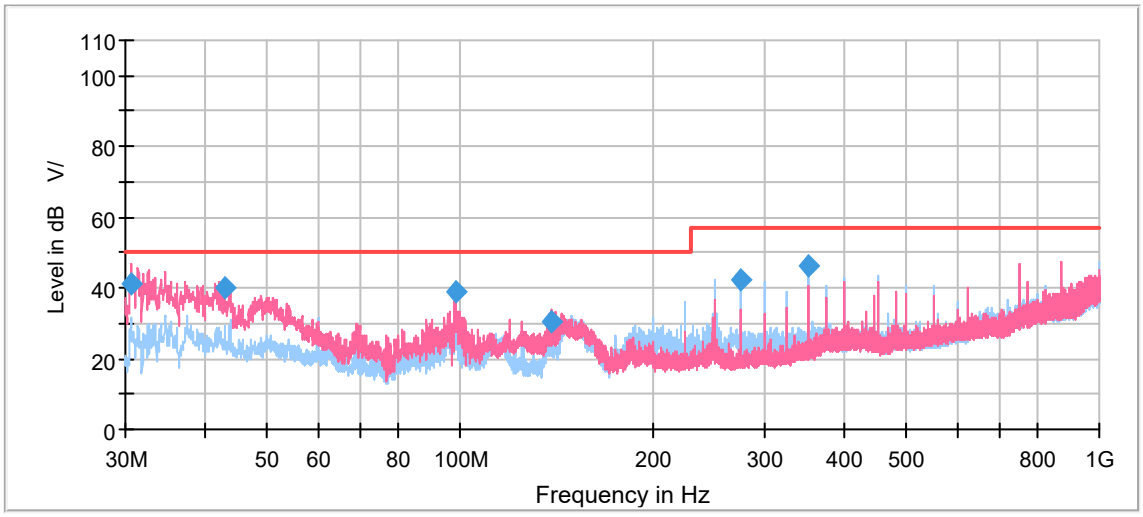
Frequency (MHz)	Quasi-Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
34.111888	36.28	50.00	13.72	100.0	V	349.0	17.4
43.803388	39.21	50.00	10.79	109.0	V	65.0	20.3
125.037750	33.91	50.00	16.09	100.0	V	110.0	15.7
220.018750	30.84	50.00	19.17	125.0	H	190.0	18.1
450.040000	42.12	57.00	14.88	100.0	V	207.0	23.7
749.992500	52.12	57.00	4.88	110.0	V	166.0	28.9

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

2. Margin = Limit – Quasi-Peak

SMTL2200RMI2UCNC

Online mode



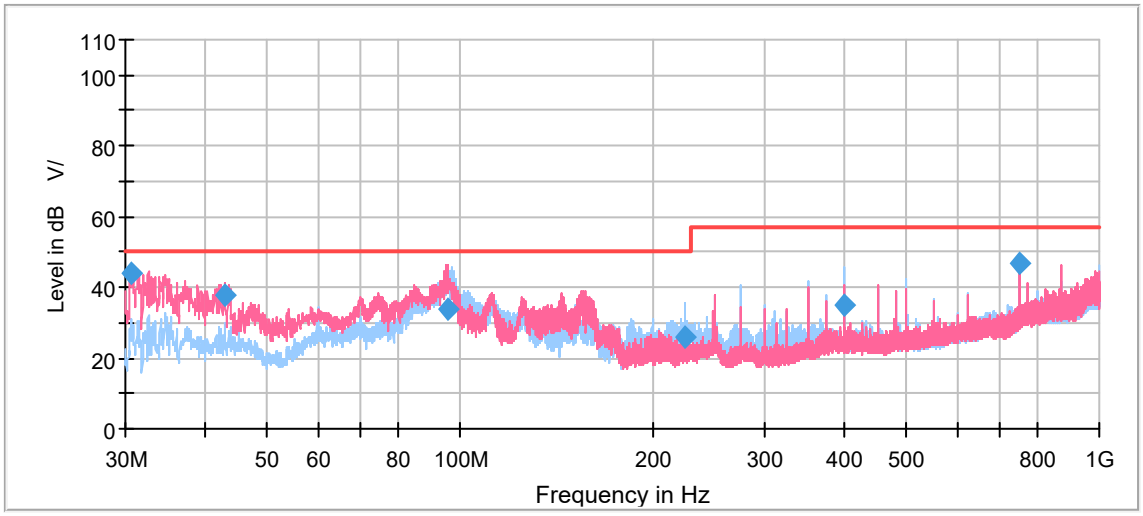
Radiated Emission 30M-1GHz

Frequency (MHz)	Quasi-Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
30.654333	41.31	50.00	8.69	100.0	V	165.0	17.0
42.973333	39.88	50.00	10.12	100.0	V	78.0	20.2
98.442000	38.65	50.00	11.35	100.0	V	82.0	18.6
139.189667	30.73	50.00	19.27	100.0	V	108.0	14.9
275.029667	42.03	57.00	14.97	100.0	H	1.0	19.8
350.003000	46.23	57.00	10.77	100.0	H	27.0	22.2

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

2. Margin = Limit – Quasi-Peak

Battery mode



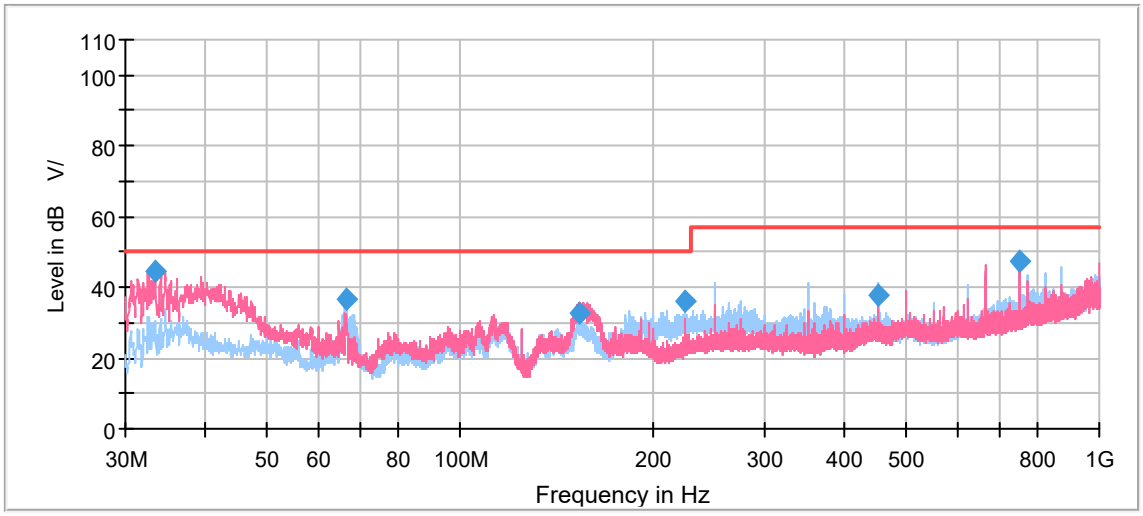
Radiated Emission 30M-1GHz

Frequency (MHz)	Quasi-Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
30.640000	44.28	50.00	5.72	100.0	V	237.0	17.0
42.923000	37.80	50.00	12.20	125.0	V	39.0	20.2
95.756667	33.89	50.00	16.11	100.0	V	126.0	18.1
225.002333	25.84	50.00	24.16	184.0	H	9.0	18.5
400.022667	34.75	57.00	22.25	225.0	H	41.0	23.1
749.998667	46.61	57.00	10.39	125.0	V	62.0	29.0

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

2. Margin = Limit – Quasi-Peak

Green mode



Radiated Emission 30M-1GHz

Frequency (MHz)	Quasi-Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)
33.459667	44.41	50.00	5.59	100.0	V	67.0	17.2
66.262667	36.69	50.00	13.31	400.0	H	0.0	17.6
154.048667	32.70	50.00	17.30	100.0	V	220.0	14.9
225.002333	36.17	50.00	13.83	125.0	H	44.0	18.5
450.050000	37.74	57.00	19.26	100.0	H	122.0	23.8
749.998667	47.31	57.00	9.69	100.0	H	140.0	29.0

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

2. Margin = Limit – Quasi-Peak

3.2. Conducted Emission

Ambient Condition

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

Methods of Measurement

Procedure of Preliminary Test

● The EUT and support equipment, if needed, were set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per EN 62040-2 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor standing equipment, it is placed on the ground plane, which has a 15cm non-conductive covering to insulate the EUT from the ground plane.

● All I/O cables were positioned to simulate typical actual usage as per EN 62040-2.

● The EUT installed by AC main power, through a Line Impedance Stabilization Network (LISN), which was supplied power source and was grounded to the ground plane.

● All support equipment power by a second LISN.

● The test program of the EUT was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

● The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.

● During the above scans, the emissions were maximized by cable manipulation.

● After the preliminary scan, the worst configuration of EUT and cable of the highest emission level were recorded for reference of the final test.

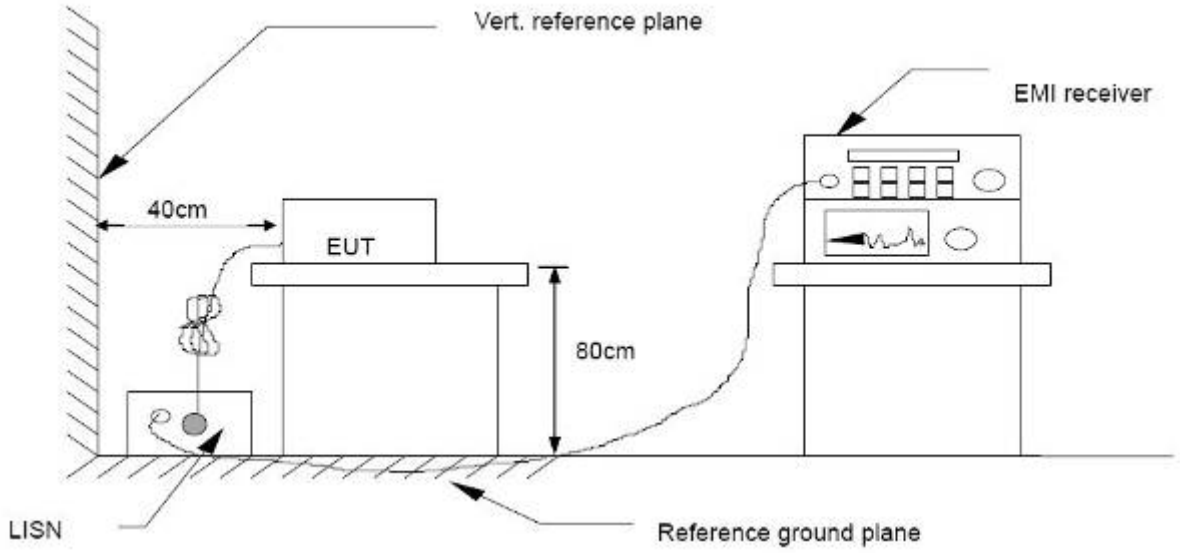
Procedure of Final Test

● EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

● A scan was taken on both power lines, L and N, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

● The test data of the worst-case condition(s) was recorded.

Test Setup



Limits

Frequency (MHz)	Category C1 UPS				Category C2 UPS			
	Mains terminal		Network port		Mains terminal		Network port	
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46	84 - 74	74 - 64	79	66	97 - 87	84 - 74
0.5 - 5.0	56	46	74	64	73	60	87	74
5.0 - 30.0	60	50			73	60		

UPS rated output current (A)	Frequency (MHz)	Category C3 UPS			
		Mains terminal		Network port	
		Quasi-peak	Average	Quasi-peak	Average
16 - 100	0.15 - 0.5	100	90	110 - 100	94 - 84
	0.5 - 5.0	86	76	100	84
	5.0 - 30.0	90 - 73	80 - 60		
> 100	0.15 - 0.5	130	120	110 - 100	94 - 84
	0.5 - 5.0	125	115	100	84
	5.0 - 30.0	115	105		

Note: The EUT should meet C2 limit

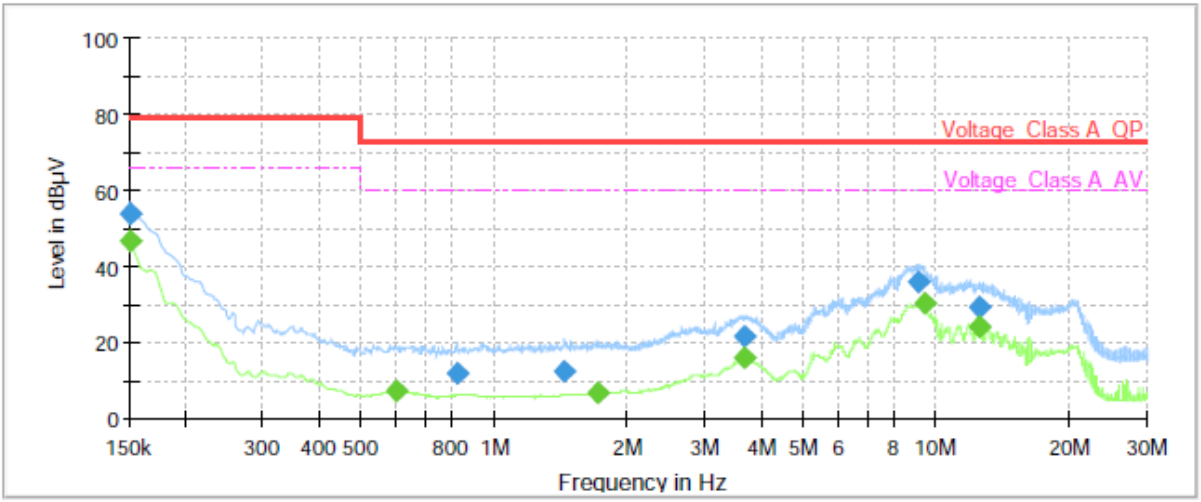
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96. U= 2.69 dB.

Test Results:

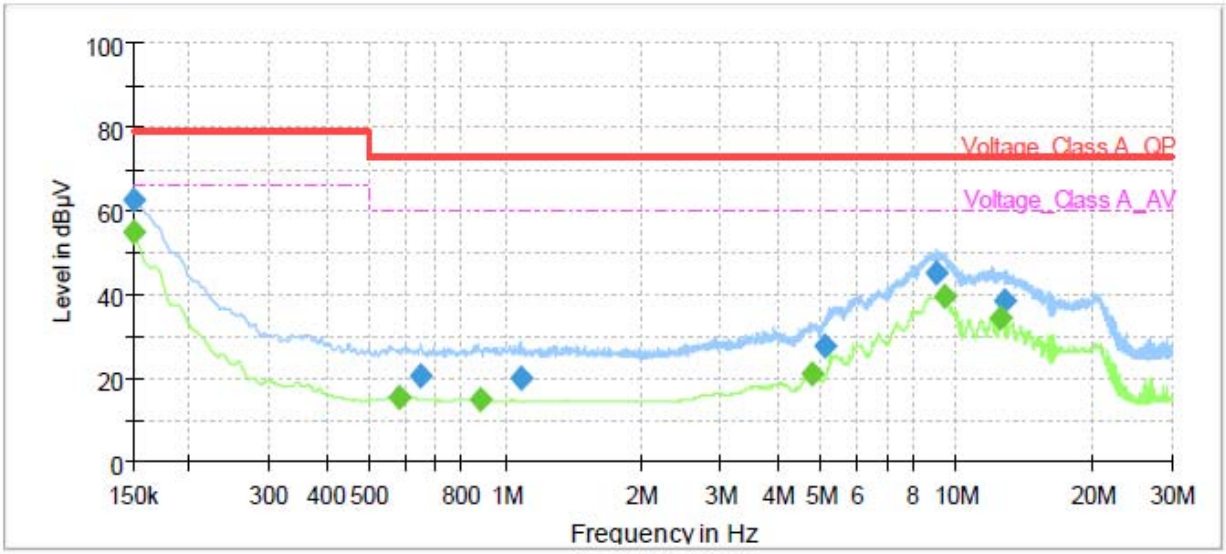
SMTL3000RMI2UCNC

Online mode



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	53.93	---	79.00	25.07	1000.0	9.000	L1	ON	11.3
0.15	---	46.53	66.00	19.47	1000.0	9.000	L1	ON	11.3
0.60	---	7.05	60.00	52.95	1000.0	9.000	L1	ON	11.1
0.82	11.86	---	73.00	61.14	1000.0	9.000	L1	ON	10.7
1.44	12.55	---	73.00	60.45	1000.0	9.000	L1	ON	10.3
1.71	---	6.78	60.00	53.22	1000.0	9.000	L1	ON	10.2
3.67	21.53	---	73.00	51.47	1000.0	9.000	L1	ON	9.8
3.68	---	15.76	60.00	44.24	1000.0	9.000	L1	ON	9.8
9.08	35.83	---	73.00	37.17	1000.0	9.000	L1	ON	9.8
9.39	---	30.38	60.00	29.62	1000.0	9.000	L1	ON	9.8
12.55	29.03	---	73.00	43.97	1000.0	9.000	L1	ON	9.8
12.55	---	23.86	60.00	36.14	1000.0	9.000	L1	ON	9.8

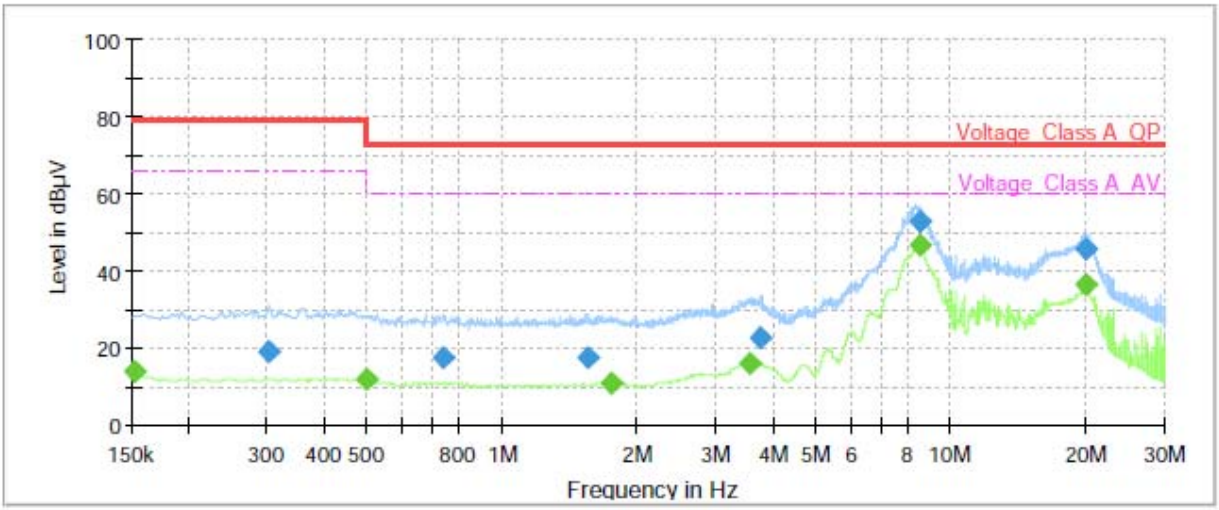
Note: Blue trace uses the peak detection Green trace uses the average detection
L Line



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	62.63	---	79.00	16.37	1000.0	9.000	N	ON	21.0
0.15	---	54.99	66.00	11.01	1000.0	9.000	N	ON	21.0
0.58	---	15.35	60.00	44.65	1000.0	9.000	N	ON	20.8
0.65	20.55	---	73.00	52.45	1000.0	9.000	N	ON	20.7
0.88	---	14.84	60.00	45.16	1000.0	9.000	N	ON	20.3
1.08	20.10	---	73.00	52.90	1000.0	9.000	N	ON	20.2
4.78	---	21.17	60.00	38.83	1000.0	9.000	N	ON	19.5
5.09	27.71	---	73.00	45.29	1000.0	9.000	N	ON	19.5
9.04	45.03	---	73.00	27.97	1000.0	9.000	N	ON	19.6
9.39	---	39.45	60.00	20.55	1000.0	9.000	N	ON	19.6
12.54	---	34.28	60.00	25.72	1000.0	9.000	N	ON	19.6
12.75	38.38	---	73.00	34.62	1000.0	9.000	N	ON	19.6

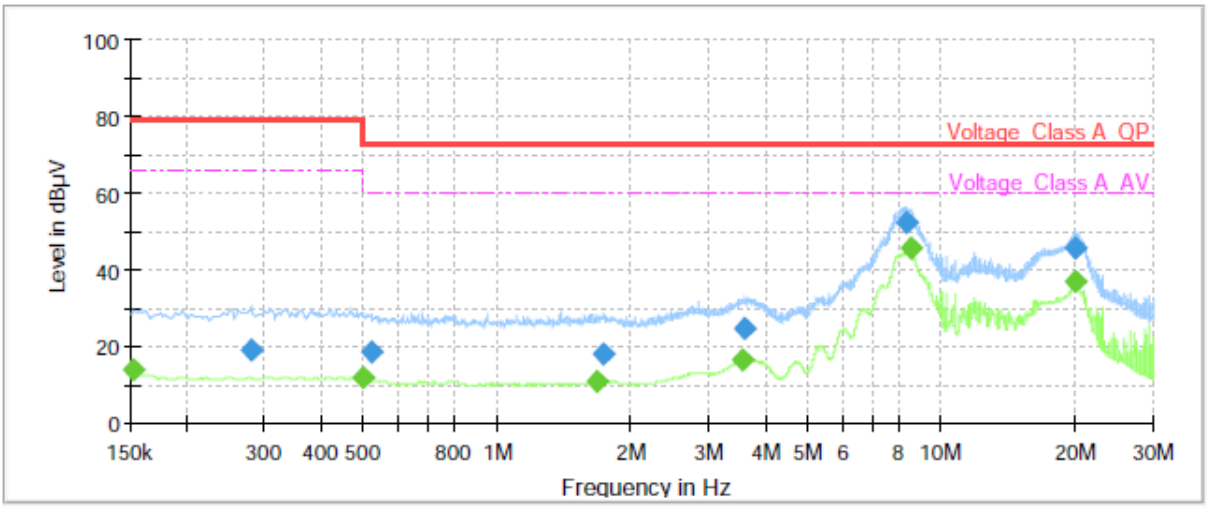
Note: Blue trace uses the peak detection Green trace uses the average detection
N Line

Battery mode



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	---	13.69	66.00	52.31	1000.0	9.000	L1	ON	21.0
0.30	19.02	---	79.00	59.98	1000.0	9.000	L1	ON	21.0
0.50	---	11.60	60.00	48.40	1000.0	9.000	L1	ON	20.9
0.74	17.49	---	73.00	55.51	1000.0	9.000	L1	ON	20.5
1.55	17.53	---	73.00	55.47	1000.0	9.000	L1	ON	19.9
1.75	---	10.89	60.00	49.11	1000.0	9.000	L1	ON	19.8
3.56	---	15.76	60.00	44.24	1000.0	9.000	L1	ON	19.5
3.78	22.32	---	73.00	50.68	1000.0	9.000	L1	ON	19.5
8.50	---	46.56	60.00	13.44	1000.0	9.000	L1	ON	19.5
8.50	52.73	---	73.00	20.27	1000.0	9.000	L1	ON	19.5
19.98	45.69	---	73.00	27.31	1000.0	9.000	L1	ON	19.7
20.00	---	36.30	60.00	23.70	1000.0	9.000	L1	ON	19.7

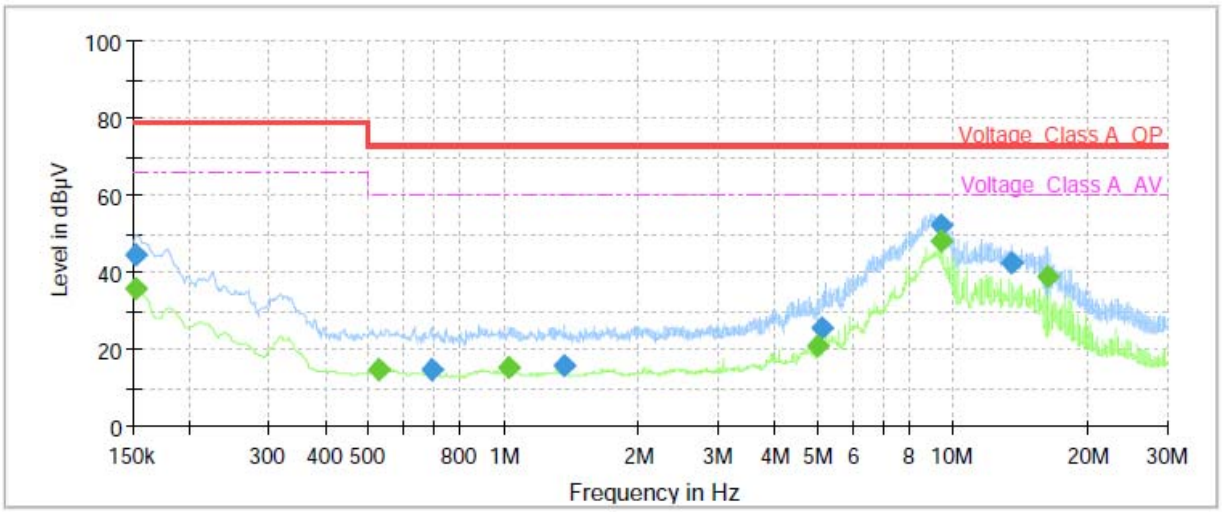
Note: Blue trace uses the peak detection Green trace uses the average detection
L Line



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	---	13.75	66.00	52.25	1000.0	9.000	N	ON	21.0
0.28	18.84	---	79.00	60.16	1000.0	9.000	N	ON	21.1
0.50	---	11.77	60.00	48.23	1000.0	9.000	N	ON	20.9
0.52	18.47	---	73.00	54.53	1000.0	9.000	N	ON	20.8
1.67	---	10.82	60.00	49.18	1000.0	9.000	N	ON	19.8
1.74	17.79	---	73.00	55.21	1000.0	9.000	N	ON	19.8
3.57	---	16.41	60.00	43.59	1000.0	9.000	N	ON	19.5
3.59	24.45	---	73.00	48.55	1000.0	9.000	N	ON	19.5
8.35	52.43	---	73.00	20.57	1000.0	9.000	N	ON	19.5
8.50	---	45.83	60.00	14.17	1000.0	9.000	N	ON	19.5
20.00	45.69	---	73.00	27.31	1000.0	9.000	N	ON	19.8
20.00	---	36.74	60.00	23.26	1000.0	9.000	N	ON	19.8

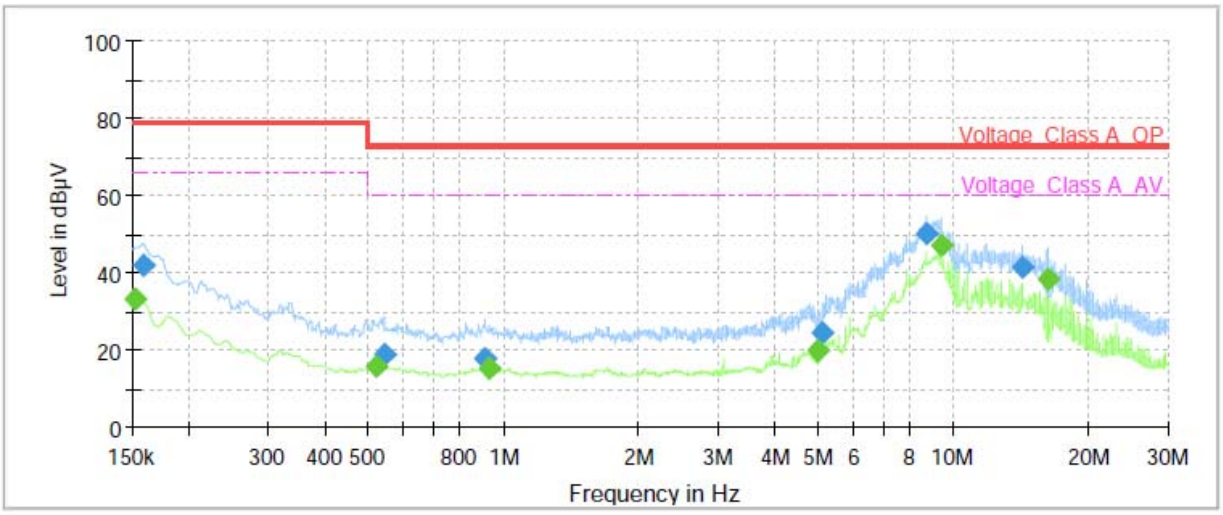
Note: Blue trace uses the peak detection Green trace uses the average detection
N Line

Green mode



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	---	35.87	66.00	30.13	1000.0	9.000	L1	ON	21.0
0.15	44.61	---	79.00	34.39	1000.0	9.000	L1	ON	21.0
0.53	---	14.97	60.00	45.03	1000.0	9.000	L1	ON	20.8
0.69	14.91	---	73.00	58.09	1000.0	9.000	L1	ON	20.7
1.03	---	15.40	60.00	44.60	1000.0	9.000	L1	ON	20.2
1.36	15.66	---	73.00	57.34	1000.0	9.000	L1	ON	20.0
5.02	---	20.89	60.00	39.11	1000.0	9.000	L1	ON	19.5
5.11	25.70	---	73.00	47.30	1000.0	9.000	L1	ON	19.5
9.39	52.30	---	73.00	20.70	1000.0	9.000	L1	ON	19.5
9.39	---	48.03	60.00	11.97	1000.0	9.000	L1	ON	19.5
13.48	42.35	---	73.00	30.65	1000.0	9.000	L1	ON	19.6
16.23	---	38.78	60.00	21.22	1000.0	9.000	L1	ON	19.6

Note: Blue trace uses the peak detection Green trace uses the average detection
L Line

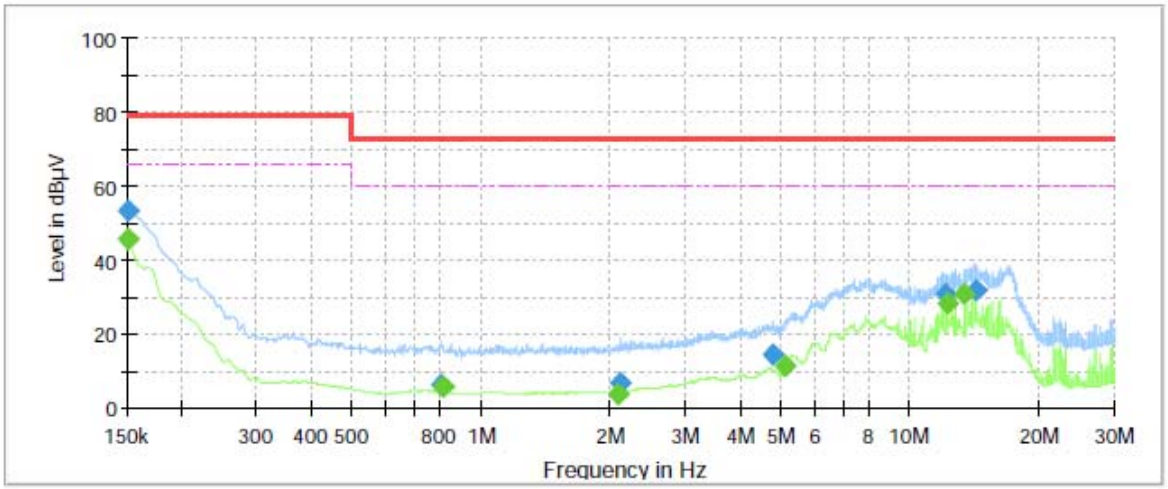


Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	---	33.56	66.00	32.44	1000.0	9.000	N	ON	21.0
0.16	41.85	---	79.00	37.15	1000.0	9.000	N	ON	21.0
0.52	---	15.69	60.00	44.31	1000.0	9.000	N	ON	20.8
0.54	19.01	---	73.00	53.99	1000.0	9.000	N	ON	20.8
0.91	18.16	---	73.00	54.84	1000.0	9.000	N	ON	20.3
0.93	---	15.22	60.00	44.78	1000.0	9.000	N	ON	20.3
5.02	---	19.99	60.00	40.01	1000.0	9.000	N	ON	19.5
5.13	24.84	---	73.00	48.16	1000.0	9.000	N	ON	19.5
8.72	50.13	---	73.00	22.87	1000.0	9.000	N	ON	19.5
9.39	---	47.18	60.00	12.82	1000.0	9.000	N	ON	19.6
14.27	41.55	---	73.00	31.45	1000.0	9.000	N	ON	19.6
16.23	---	38.25	60.00	21.75	1000.0	9.000	N	ON	19.7

Note: Blue trace uses the peak detection Green trace uses the average detection
N Line

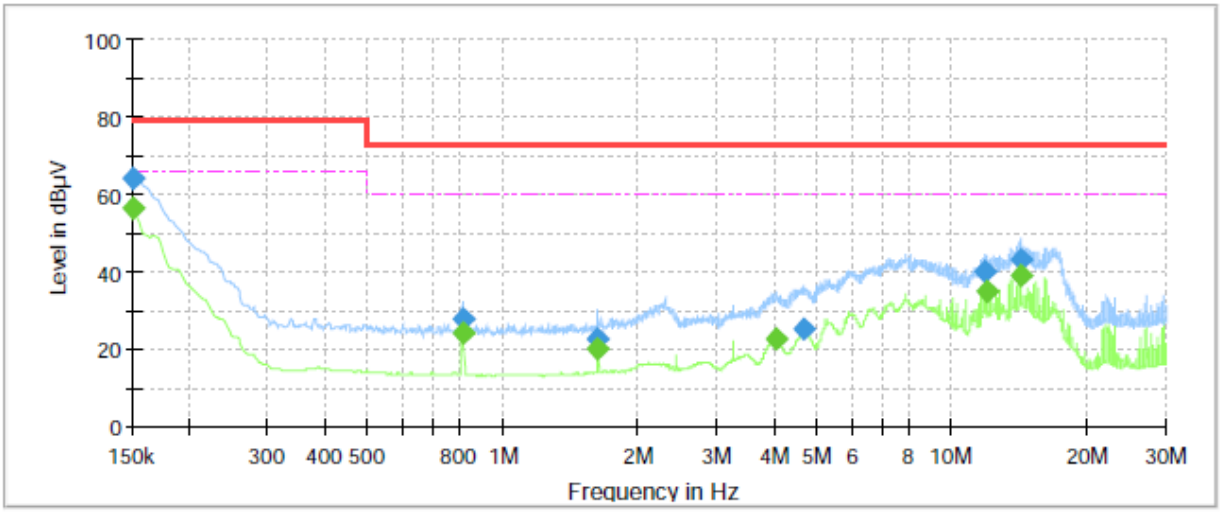
SMTL2200RMI2UCNC

Online mode



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	53.43	---	79.00	25.57	1000.0	9.000	L1	ON	11.3
0.15	---	45.81	66.00	20.19	1000.0	9.000	L1	ON	11.3
0.80	6.13	---	73.00	66.87	1000.0	9.000	L1	ON	10.7
0.81	---	5.68	60.00	54.32	1000.0	9.000	L1	ON	10.7
2.08	---	3.68	60.00	56.32	1000.0	9.000	L1	ON	10.0
2.11	6.79	---	73.00	66.21	1000.0	9.000	L1	ON	10.0
4.77	14.52	---	73.00	58.48	1000.0	9.000	L1	ON	9.8
5.12	---	11.49	60.00	48.51	1000.0	9.000	L1	ON	9.8
12.14	30.74	---	73.00	42.26	1000.0	9.000	L1	ON	9.8
12.20	---	28.30	60.00	31.70	1000.0	9.000	L1	ON	9.8
13.42	---	30.79	60.00	29.21	1000.0	9.000	L1	ON	9.8
14.28	31.99	---	73.00	41.01	1000.0	9.000	L1	ON	9.8

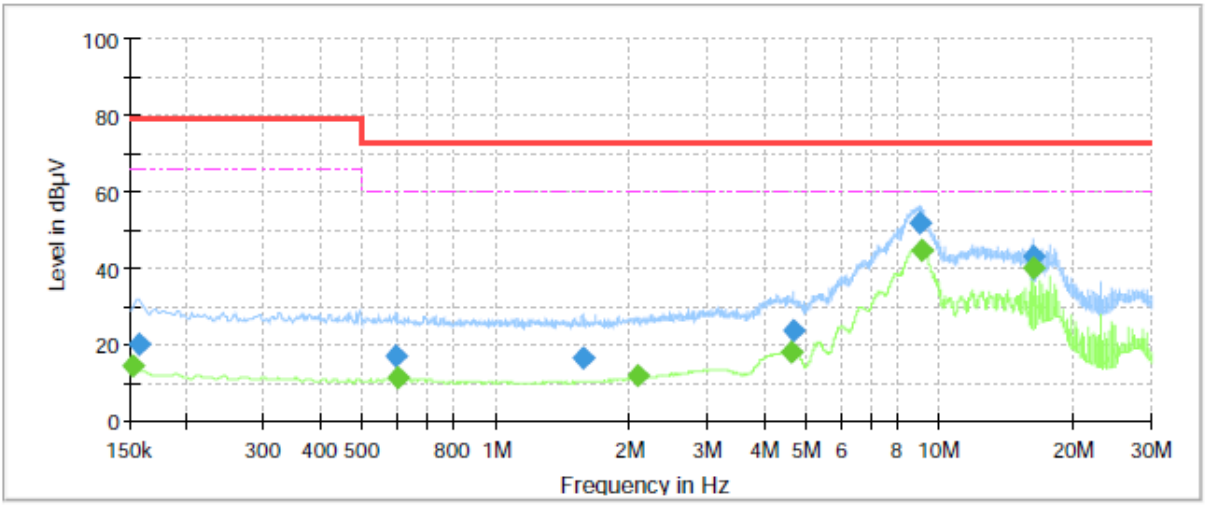
Note: Blue trace uses the peak detection Green trace uses the average detection
L Line



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	64.07	---	79.00	14.93	1000.0	9.000	N	ON	21.0
0.15	---	56.49	66.00	9.51	1000.0	9.000	N	ON	21.0
0.81	27.90	---	73.00	45.10	1000.0	9.000	N	ON	20.4
0.81	---	24.25	60.00	35.75	1000.0	9.000	N	ON	20.4
1.63	22.44	---	73.00	50.56	1000.0	9.000	N	ON	19.8
1.63	---	19.86	60.00	40.14	1000.0	9.000	N	ON	19.8
4.07	---	22.62	60.00	37.38	1000.0	9.000	N	ON	19.5
4.70	25.18	---	73.00	47.82	1000.0	9.000	N	ON	19.5
11.89	40.17	---	73.00	32.83	1000.0	9.000	N	ON	19.6
11.95	---	35.09	60.00	24.91	1000.0	9.000	N	ON	19.6
14.21	43.09	---	73.00	29.91	1000.0	9.000	N	ON	19.6
14.21	---	39.19	60.00	20.81	1000.0	9.000	N	ON	19.6

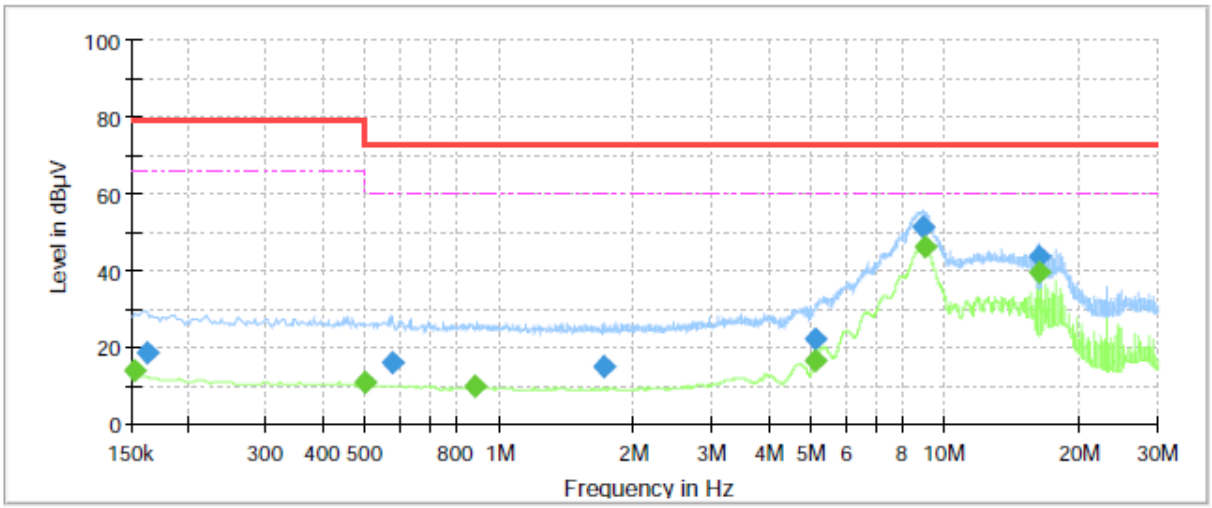
Note: Blue trace uses the peak detection Green trace uses the average detection
N Line

Battery mode



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	---	14.25	66.00	51.75	1000.0	9.000	L1	ON	21.0
0.16	20.00	---	79.00	59.00	1000.0	9.000	L1	ON	21.0
0.60	16.93	---	73.00	56.07	1000.0	9.000	L1	ON	20.8
0.60	---	11.33	60.00	48.67	1000.0	9.000	L1	ON	20.8
1.56	16.28	---	73.00	56.72	1000.0	9.000	L1	ON	19.9
2.08	---	11.62	60.00	48.38	1000.0	9.000	L1	ON	19.7
4.63	---	17.86	60.00	42.14	1000.0	9.000	L1	ON	19.5
4.67	23.61	---	73.00	49.39	1000.0	9.000	L1	ON	19.5
9.02	51.56	---	73.00	21.44	1000.0	9.000	L1	ON	19.5
9.11	---	44.50	60.00	15.50	1000.0	9.000	L1	ON	19.5
16.23	---	39.99	60.00	20.01	1000.0	9.000	L1	ON	19.6
16.23	42.88	---	73.00	30.12	1000.0	9.000	L1	ON	19.6

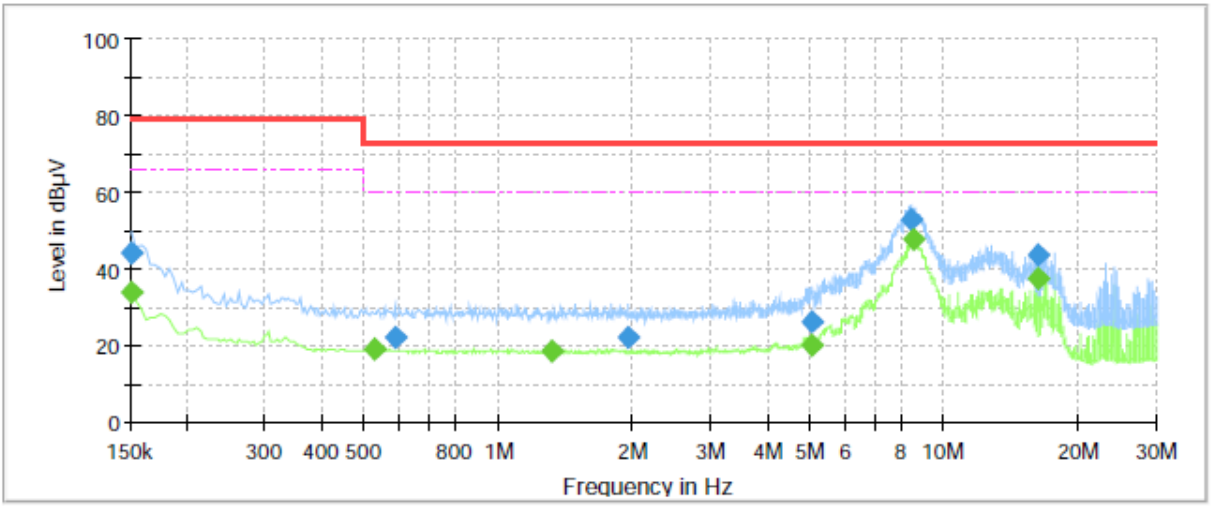
Note: Blue trace uses the peak detection Green trace uses the average detection
L Line



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	---	13.64	66.00	52.36	1000.0	9.000	N	ON	21.0
0.16	18.61	---	79.00	60.39	1000.0	9.000	N	ON	21.0
0.50	---	10.60	60.00	49.40	1000.0	9.000	N	ON	20.9
0.58	16.06	---	73.00	56.94	1000.0	9.000	N	ON	20.8
0.88	---	9.88	60.00	50.12	1000.0	9.000	N	ON	20.3
1.71	14.68	---	73.00	58.32	1000.0	9.000	N	ON	19.8
5.10	21.81	---	73.00	51.19	1000.0	9.000	N	ON	19.5
5.13	---	16.66	60.00	43.34	1000.0	9.000	N	ON	19.5
8.93	51.05	---	73.00	21.95	1000.0	9.000	N	ON	19.5
9.02	---	45.92	60.00	14.08	1000.0	9.000	N	ON	19.5
16.23	---	39.50	60.00	20.50	1000.0	9.000	N	ON	19.7
16.23	43.64	---	73.00	29.36	1000.0	9.000	N	ON	19.7

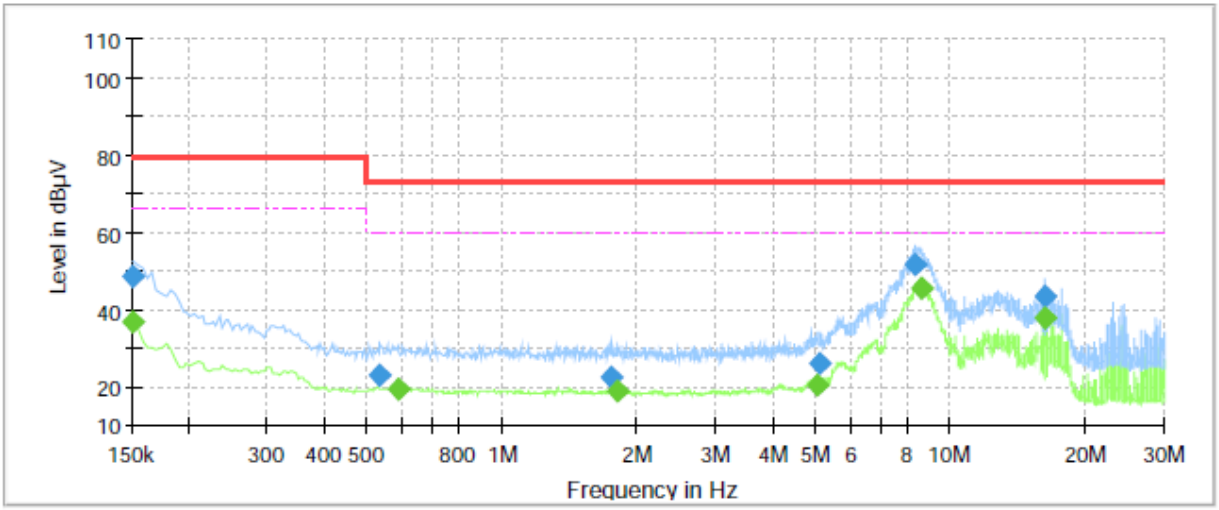
Note: Blue trace uses the peak detection Green trace uses the average detection
N Line

Green mode



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	---	33.73	66.00	32.27	1000.0	9.000	L1	ON	21.0
0.15	43.90	---	79.00	35.10	1000.0	9.000	L1	ON	21.0
0.53	---	18.97	60.00	41.03	1000.0	9.000	L1	ON	20.8
0.59	22.25	---	73.00	50.75	1000.0	9.000	L1	ON	20.8
1.33	---	18.31	60.00	41.69	1000.0	9.000	L1	ON	20.0
1.96	22.14	---	73.00	50.86	1000.0	9.000	L1	ON	19.7
5.06	26.26	---	73.00	46.74	1000.0	9.000	L1	ON	19.5
5.07	---	20.11	60.00	39.89	1000.0	9.000	L1	ON	19.5
8.45	52.69	---	73.00	20.31	1000.0	9.000	L1	ON	19.5
8.57	---	47.55	60.00	12.45	1000.0	9.000	L1	ON	19.5
16.23	---	37.65	60.00	22.35	1000.0	9.000	L1	ON	19.6
16.23	43.38	---	73.00	29.62	1000.0	9.000	L1	ON	19.6

Note: Blue trace uses the peak detection Green trace uses the average detection
L Line



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.15	---	36.92	66.00	29.08	1000.0	9.000	N	ON	21.0
0.15	48.42	---	79.00	30.58	1000.0	9.000	N	ON	21.0
0.53	22.97	---	73.00	50.03	1000.0	9.000	N	ON	20.8
0.59	---	19.28	60.00	40.72	1000.0	9.000	N	ON	20.8
1.76	22.37	---	73.00	50.63	1000.0	9.000	N	ON	19.8
1.81	---	18.54	60.00	41.46	1000.0	9.000	N	ON	19.8
5.03	---	20.16	60.00	39.84	1000.0	9.000	N	ON	19.5
5.12	25.70	---	73.00	47.30	1000.0	9.000	N	ON	19.5
8.36	51.75	---	73.00	21.25	1000.0	9.000	N	ON	19.5
8.61	---	45.60	60.00	14.40	1000.0	9.000	N	ON	19.5
16.23	---	37.61	60.00	22.39	1000.0	9.000	N	ON	19.7
16.23	43.37	---	73.00	29.63	1000.0	9.000	N	ON	19.7

Note: Blue trace uses the peak detection Green trace uses the average detection
N Line

3.3. Harmonic Current Emission

Ambient Condition

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

Methods of Measurement

●The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn.

●The classification of EUT is according to section 5 of EN IEC 61000-3-2.

● The EUT is classified as follows:

Class A: Balanced three-phase equipment, household appliances excluding equipment as Class D, tools excluding portable tools, dimmers for incandescent lamps,audio equipment, equipment not specified in one of the three other classes.

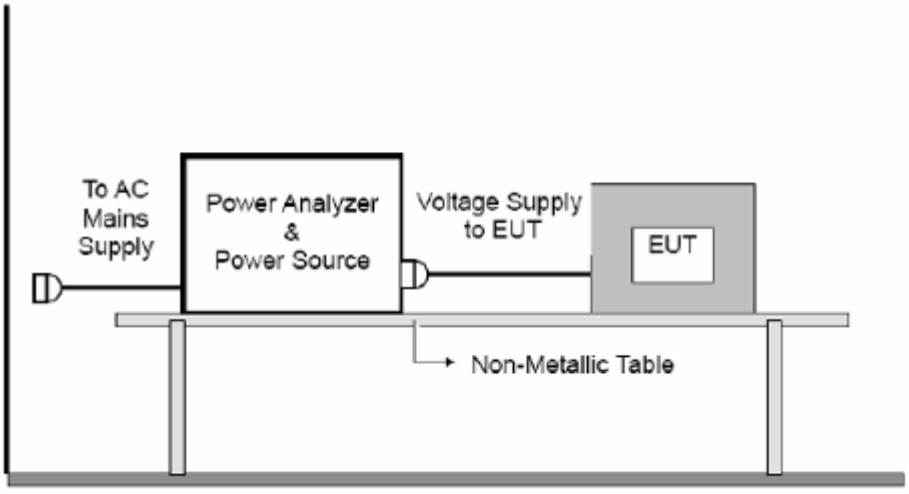
Class B: Portable tools; Arc welding equipment which is not professional equipment.

Class C: Lighting equipment.

Class D: Equipment having a specified power less than or equal to 600 W of the following types: Personal computers and personal computer monitors and television receivers.

● The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.

Test Setup



Limits

Limits for Class A equipment	
Harmonic order n	**Maximum permissible Harmonic current A**
Odd Harmonics only	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13≤n≤39 (odd harmonics only)	$0.15\frac{15}{n}$
Even Harmonics only	
2	1.08
4	0.43
6	0.30
8≤n≤40	$0.23\frac{8}{n}$

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96. U= 5.31%.

Test Results:

SMTL3000RMI2UCNC

Online mode

Average harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	10.943			
2	6.658E-3	0.685	972.00E-3	PASS
3	250.710E-3	12.112	2.07	PASS
4	2.463E-3	0.636	387.00E-3	PASS
5	48.666E-3	4.743	1.03	PASS
6	1.177E-3	0.436	270.00E-3	PASS
7	7.332E-3	1.058	693.00E-3	PASS
8	2.379E-3	1.150	207.00E-3	PASS
9	6.672E-3	1.853	360.00E-3	PASS
10	639.251E-6	0.386	165.60E-3	PASS
11	5.248E-3	1.767	297.00E-3	PASS
12	471.558E-6	0.342	138.00E-3	PASS
13	8.384E-3	4.436	189.00E-3	PASS
14	2.381E-3	2.013	118.29E-3	PASS
15	9.119E-3	6.755	135.00E-3	PASS
16	1.205E-3	1.164	103.50E-3	PASS
17	2.663E-3	2.236	119.11E-3	PASS
18	1.156E-3	1.257	92.00E-3	PASS
19	8.450E-3	7.928	106.58E-3	PASS
20	1.835E-3	2.216	82.80E-3	PASS
21	6.516E-3	6.758	96.43E-3	PASS
22	591.772E-6	0.786	75.28E-3	PASS
23	4.915E-3	5.582	88.05E-3	PASS
24	658.304E-6	0.954	68.99E-3	PASS
25	7.458E-3	9.208	81.00E-3	PASS
26	1.477E-3	2.318	63.69E-3	PASS
27	11.882E-3	15.844	75.00E-3	PASS
28	686.369E-6	1.161	59.14E-3	PASS
29	5.149E-3	7.374	69.83E-3	PASS
30	750.811E-6	1.360	55.20E-3	PASS
31	6.867E-3	10.513	65.32E-3	PASS
32	612.120E-6	1.183	51.75E-3	PASS
33	520.868E-6	0.849	61.36E-3	PASS
34	964.354E-6	1.980	48.71E-3	PASS
35	6.777E-3	11.712	57.86E-3	PASS
36	485.716E-6	1.056	46.00E-3	PASS
37	6.270E-3	11.456	54.73E-3	PASS
38	1.822E-3	4.182	43.58E-3	PASS
39	12.093E-3	23.291	51.92E-3	PASS
40	1.652E-3	3.990	41.40E-3	PASS

Maximum harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	10.978			
2	8.027E-3	0.372	2.16	PASS
3	251.594E-3	5.469	4.60	PASS
4	2.754E-3	0.320	860.00E-3	PASS
5	49.145E-3	2.155	2.28	PASS
6	1.328E-3	0.221	600.00E-3	PASS
7	7.523E-3	0.489	1.54	PASS
8	2.490E-3	0.541	460.00E-3	PASS
9	6.995E-3	0.874	800.00E-3	PASS
10	759.526E-6	0.206	368.00E-3	PASS
11	5.526E-3	0.837	660.00E-3	PASS
12	574.047E-6	0.187	306.66E-3	PASS
13	8.735E-3	2.080	420.00E-3	PASS
14	2.478E-3	0.943	262.86E-3	PASS
15	9.324E-3	3.108	300.00E-3	PASS
16	1.358E-3	0.590	230.00E-3	PASS
17	3.243E-3	1.225	264.70E-3	PASS
18	1.255E-3	0.614	204.44E-3	PASS
19	8.773E-3	3.704	236.84E-3	PASS
20	1.947E-3	1.058	184.00E-3	PASS
21	6.963E-3	3.250	214.28E-3	PASS
22	738.393E-6	0.441	167.28E-3	PASS
23	5.269E-3	2.693	195.66E-3	PASS
24	769.808E-6	0.502	153.32E-3	PASS
25	8.245E-3	4.580	180.00E-3	PASS
26	1.574E-3	1.112	141.54E-3	PASS
27	12.104E-3	7.263	166.66E-3	PASS
28	850.215E-6	0.647	131.42E-3	PASS
29	5.668E-3	3.653	155.18E-3	PASS
30	849.443E-6	0.693	122.66E-3	PASS
31	7.963E-3	5.486	145.16E-3	PASS
32	726.504E-6	0.632	115.00E-3	PASS
33	1.799E-3	1.319	136.36E-3	PASS
34	1.126E-3	1.040	108.24E-3	PASS
35	7.271E-3	5.655	128.58E-3	PASS
36	591.627E-6	0.579	102.22E-3	PASS
37	6.712E-3	5.519	121.62E-3	PASS
38	1.973E-3	2.037	96.84E-3	PASS
39	12.485E-3	10.821	115.38E-3	PASS
40	1.814E-3	1.972	92.00E-3	PASS

Maximum harmonic voltage results

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.06	100.025		
2	58.94E-3	0.026	0.2	PASS
3	75.81E-3	0.033	0.9	PASS
4	46.42E-3	0.020	0.2	PASS
5	80.59E-3	0.035	0.4	PASS
6	33.67E-3	0.015	0.2	PASS
7	38.13E-3	0.017	0.3	PASS
8	25.07E-3	0.011	0.2	PASS
9	36.17E-3	0.016	0.2	PASS
10	9.27E-3	0.004	0.2	PASS
11	63.02E-3	0.027	0.1	PASS
12	12.33E-3	0.005	0.1	PASS
13	92.78E-3	0.040	0.1	PASS
14	27.67E-3	0.012	0.1	PASS
15	86.96E-3	0.038	0.1	PASS
16	27.93E-3	0.012	0.1	PASS
17	83.22E-3	0.036	0.1	PASS
18	12.72E-3	0.006	0.1	PASS
19	49.40E-3	0.021	0.1	PASS
20	20.25E-3	0.009	0.1	PASS
21	36.17E-3	0.016	0.1	PASS
22	12.40E-3	0.005	0.1	PASS
23	69.80E-3	0.030	0.1	PASS
24	9.93E-3	0.004	0.1	PASS
25	79.55E-3	0.035	0.1	PASS
26	15.75E-3	0.007	0.1	PASS
27	91.47E-3	0.040	0.1	PASS
28	7.91E-3	0.003	0.1	PASS
29	78.85E-3	0.034	0.1	PASS
30	7.68E-3	0.003	0.1	PASS
31	46.89E-3	0.020	0.1	PASS
32	8.77E-3	0.004	0.1	PASS
33	22.27E-3	0.010	0.1	PASS
34	11.51E-3	0.005	0.1	PASS
35	48.17E-3	0.021	0.1	PASS
36	5.77E-3	0.003	0.1	PASS
37	62.41E-3	0.027	0.1	PASS
38	17.92E-3	0.008	0.1	PASS
39	72.90E-3	0.032	0.1	PASS
40	13.68E-3	0.006	0.1	PASS

Green mode

Average harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	12.315			
2	5.795E-3	0.596	972.00E-3	PASS
3	93.531E-3	4.518	2.07	PASS
4	1.833E-3	0.474	387.00E-3	PASS
5	43.545E-3	4.244	1.03	PASS
6	1.581E-3	0.586	270.00E-3	PASS
7	41.922E-3	6.049	693.00E-3	PASS
8	1.108E-3	0.535	207.00E-3	PASS
9	37.560E-3	10.433	360.00E-3	PASS
10	497.267E-6	0.300	165.60E-3	PASS
11	34.885E-3	11.746	297.00E-3	PASS
12	1.123E-3	0.814	138.00E-3	PASS
13	28.185E-3	14.913	189.00E-3	PASS
14	1.057E-3	0.893	118.29E-3	PASS
15	25.666E-3	19.012	135.00E-3	PASS
16	1.693E-3	1.635	103.50E-3	PASS
17	22.572E-3	18.950	119.11E-3	PASS
18	1.021E-3	1.110	92.00E-3	PASS
19	15.969E-3	14.983	106.58E-3	PASS
20	1.575E-3	1.903	82.80E-3	PASS
21	14.881E-3	15.432	96.43E-3	PASS
22	447.620E-6	0.595	75.28E-3	PASS
23	11.380E-3	12.925	88.05E-3	PASS
24	576.013E-6	0.835	68.99E-3	PASS
25	11.259E-3	13.900	81.00E-3	PASS
26	1.397E-3	2.193	63.69E-3	PASS
27	11.439E-3	15.253	75.00E-3	PASS
28	792.916E-6	1.341	59.14E-3	PASS
29	9.420E-3	13.490	69.83E-3	PASS
30	795.437E-6	1.441	55.20E-3	PASS
31	13.726E-3	21.012	65.32E-3	PASS
32	536.208E-6	1.036	51.75E-3	PASS
33	8.582E-3	13.986	61.36E-3	PASS
34	1.079E-3	2.215	48.71E-3	PASS
35	12.988E-3	22.446	57.86E-3	PASS
36	516.936E-6	1.124	46.00E-3	PASS
37	7.034E-3	12.853	54.73E-3	PASS
38	975.593E-6	2.239	43.58E-3	PASS
39	9.159E-3	17.641	51.92E-3	PASS
40	828.428E-6	2.001	41.40E-3	PASS

Maximum harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	12.316			
2	6.071E-3	0.281	2.16	PASS
3	94.124E-3	2.046	4.60	PASS
4	1.968E-3	0.229	860.00E-3	PASS
5	44.143E-3	1.936	2.28	PASS
6	1.724E-3	0.287	600.00E-3	PASS
7	42.174E-3	2.739	1.54	PASS
8	1.228E-3	0.267	460.00E-3	PASS
9	37.971E-3	4.746	800.00E-3	PASS
10	624.076E-6	0.170	368.00E-3	PASS
11	35.092E-3	5.317	660.00E-3	PASS
12	1.217E-3	0.397	306.66E-3	PASS
13	28.476E-3	6.780	420.00E-3	PASS
14	1.152E-3	0.438	262.86E-3	PASS
15	25.955E-3	8.652	300.00E-3	PASS
16	1.811E-3	0.787	230.00E-3	PASS
17	22.938E-3	8.666	264.70E-3	PASS
18	1.122E-3	0.549	204.44E-3	PASS
19	16.270E-3	6.870	236.84E-3	PASS
20	1.708E-3	0.928	184.00E-3	PASS
21	15.177E-3	7.083	214.28E-3	PASS
22	541.632E-6	0.324	167.28E-3	PASS
23	11.631E-3	5.944	195.66E-3	PASS
24	678.946E-6	0.443	153.32E-3	PASS
25	11.460E-3	6.367	180.00E-3	PASS
26	1.497E-3	1.058	141.54E-3	PASS
27	11.561E-3	6.937	166.66E-3	PASS
28	948.670E-6	0.722	131.42E-3	PASS
29	9.586E-3	6.177	155.18E-3	PASS
30	935.853E-6	0.763	122.66E-3	PASS
31	14.030E-3	9.665	145.16E-3	PASS
32	682.863E-6	0.594	115.00E-3	PASS
33	8.797E-3	6.451	136.36E-3	PASS
34	1.183E-3	1.093	108.24E-3	PASS
35	13.170E-3	10.242	128.58E-3	PASS
36	612.646E-6	0.599	102.22E-3	PASS
37	7.233E-3	5.947	121.62E-3	PASS
38	1.062E-3	1.097	96.84E-3	PASS
39	9.377E-3	8.127	115.38E-3	PASS
40	981.641E-6	1.067	92.00E-3	PASS

Maximum harmonic voltage results

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	229.95	99.979		
2	78.47E-3	0.034	0.2	PASS
3	60.75E-3	0.026	0.9	PASS
4	45.21E-3	0.020	0.2	PASS
5	60.64E-3	0.026	0.4	PASS
6	31.74E-3	0.014	0.2	PASS
7	56.13E-3	0.024	0.3	PASS
8	25.16E-3	0.011	0.2	PASS
9	25.16E-3	0.011	0.2	PASS
10	8.94E-3	0.004	0.2	PASS
11	21.23E-3	0.009	0.1	PASS
12	12.68E-3	0.006	0.1	PASS
13	84.70E-3	0.037	0.1	PASS
14	28.06E-3	0.012	0.1	PASS
15	71.56E-3	0.031	0.1	PASS
16	27.60E-3	0.012	0.1	PASS
17	104.11E-3	0.045	0.1	PASS
18	10.96E-3	0.005	0.1	PASS
19	94.09E-3	0.041	0.1	PASS
20	20.11E-3	0.009	0.1	PASS
21	66.47E-3	0.029	0.1	PASS
22	12.84E-3	0.006	0.1	PASS
23	16.33E-3	0.007	0.1	PASS
24	9.05E-3	0.004	0.1	PASS
25	14.93E-3	0.006	0.1	PASS
26	15.05E-3	0.007	0.1	PASS
27	47.92E-3	0.021	0.1	PASS
28	5.95E-3	0.003	0.1	PASS
29	65.25E-3	0.028	0.1	PASS
30	5.50E-3	0.002	0.1	PASS
31	91.18E-3	0.040	0.1	PASS
32	9.80E-3	0.004	0.1	PASS
33	82.23E-3	0.036	0.1	PASS
34	10.60E-3	0.005	0.1	PASS
35	76.13E-3	0.033	0.1	PASS
36	6.76E-3	0.003	0.1	PASS
37	46.57E-3	0.020	0.1	PASS
38	15.25E-3	0.007	0.1	PASS
39	31.27E-3	0.014	0.1	PASS
40	12.95E-3	0.006	0.1	PASS

SMTL2200RMI2UCNC

Online mode

Average harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	9.171			
2	4.704E-3	0.484	972.00E-3	PASS
3	78.974E-3	3.815	2.07	PASS
4	1.370E-3	0.354	387.00E-3	PASS
5	43.029E-3	4.194	1.03	PASS
6	1.255E-3	0.465	270.00E-3	PASS
7	42.758E-3	6.170	693.00E-3	PASS
8	1.004E-3	0.485	207.00E-3	PASS
9	39.087E-3	10.858	360.00E-3	PASS
10	533.779E-6	0.322	165.60E-3	PASS
11	31.463E-3	10.594	297.00E-3	PASS
12	904.391E-6	0.655	138.00E-3	PASS
13	32.597E-3	17.247	189.00E-3	PASS
14	746.629E-6	0.631	118.29E-3	PASS
15	22.774E-3	16.869	135.00E-3	PASS
16	1.426E-3	1.378	103.50E-3	PASS
17	21.765E-3	18.272	119.11E-3	PASS
18	1.107E-3	1.203	92.00E-3	PASS
19	17.520E-3	16.439	106.58E-3	PASS
20	1.409E-3	1.701	82.80E-3	PASS
21	13.224E-3	13.714	96.43E-3	PASS
22	510.924E-6	0.679	75.28E-3	PASS
23	12.776E-3	14.510	88.05E-3	PASS
24	627.983E-6	0.910	68.99E-3	PASS
25	12.533E-3	15.472	81.00E-3	PASS
26	1.414E-3	2.220	63.69E-3	PASS
27	10.357E-3	13.809	75.00E-3	PASS
28	671.664E-6	1.136	59.14E-3	PASS
29	9.678E-3	13.860	69.83E-3	PASS
30	872.952E-6	1.582	55.20E-3	PASS
31	13.971E-3	21.388	65.32E-3	PASS
32	542.139E-6	1.048	51.75E-3	PASS
33	6.064E-3	9.882	61.36E-3	PASS
34	970.741E-6	1.993	48.71E-3	PASS
35	13.691E-3	23.661	57.86E-3	PASS
36	631.221E-6	1.372	46.00E-3	PASS
37	7.276E-3	13.295	54.73E-3	PASS
38	715.521E-6	1.642	43.58E-3	PASS
39	8.607E-3	16.578	51.92E-3	PASS
40	715.769E-6	1.729	41.40E-3	PASS

Maximum harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	9.172			
2	4.984E-3	0.231	2.16	PASS
3	79.490E-3	1.728	4.60	PASS
4	1.530E-3	0.178	860.00E-3	PASS
5	43.569E-3	1.911	2.28	PASS
6	1.358E-3	0.226	600.00E-3	PASS
7	42.967E-3	2.790	1.54	PASS
8	1.131E-3	0.246	460.00E-3	PASS
9	39.357E-3	4.920	800.00E-3	PASS
10	634.892E-6	0.173	368.00E-3	PASS
11	31.716E-3	4.806	660.00E-3	PASS
12	0.998E-3	0.325	306.66E-3	PASS
13	32.833E-3	7.817	420.00E-3	PASS
14	865.180E-6	0.329	262.86E-3	PASS
15	22.957E-3	7.652	300.00E-3	PASS
16	1.545E-3	0.672	230.00E-3	PASS
17	22.108E-3	8.352	264.70E-3	PASS
18	1.242E-3	0.607	204.44E-3	PASS
19	17.711E-3	7.478	236.84E-3	PASS
20	1.518E-3	0.825	184.00E-3	PASS
21	13.462E-3	6.282	214.28E-3	PASS
22	606.893E-6	0.363	167.28E-3	PASS
23	13.031E-3	6.660	195.66E-3	PASS
24	744.028E-6	0.485	153.32E-3	PASS
25	12.722E-3	7.068	180.00E-3	PASS
26	1.544E-3	1.091	141.54E-3	PASS
27	10.527E-3	6.317	166.66E-3	PASS
28	769.217E-6	0.585	131.42E-3	PASS
29	9.942E-3	6.407	155.18E-3	PASS
30	996.697E-6	0.813	122.66E-3	PASS
31	14.131E-3	9.735	145.16E-3	PASS
32	620.721E-6	0.540	115.00E-3	PASS
33	6.259E-3	4.590	136.36E-3	PASS
34	1.059E-3	0.979	108.24E-3	PASS
35	13.846E-3	10.769	128.58E-3	PASS
36	718.966E-6	0.703	102.22E-3	PASS
37	7.440E-3	6.117	121.62E-3	PASS
38	819.984E-6	0.847	96.84E-3	PASS
39	8.806E-3	7.633	115.38E-3	PASS
40	781.925E-6	0.850	92.00E-3	PASS

Maximum harmonic voltage results

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.10	100.042		
2	61.94E-3	0.027	0.2	PASS
3	65.22E-3	0.028	0.9	PASS
4	46.54E-3	0.020	0.2	PASS
5	69.27E-3	0.030	0.4	PASS
6	34.45E-3	0.015	0.2	PASS
7	28.07E-3	0.012	0.3	PASS
8	25.69E-3	0.011	0.2	PASS
9	63.96E-3	0.028	0.2	PASS
10	8.02E-3	0.003	0.2	PASS
11	78.77E-3	0.034	0.1	PASS
12	10.54E-3	0.005	0.1	PASS
13	82.57E-3	0.036	0.1	PASS
14	25.61E-3	0.011	0.1	PASS
15	67.16E-3	0.029	0.1	PASS
16	28.58E-3	0.012	0.1	PASS
17	28.86E-3	0.013	0.1	PASS
18	13.57E-3	0.006	0.1	PASS
19	48.56E-3	0.021	0.1	PASS
20	19.74E-3	0.009	0.1	PASS
21	92.84E-3	0.040	0.1	PASS
22	13.45E-3	0.006	0.1	PASS
23	69.31E-3	0.030	0.1	PASS
24	8.90E-3	0.004	0.1	PASS
25	73.08E-3	0.032	0.1	PASS
26	17.66E-3	0.008	0.1	PASS
27	28.69E-3	0.012	0.1	PASS
28	7.72E-3	0.003	0.1	PASS
29	28.72E-3	0.012	0.1	PASS
30	5.86E-3	0.003	0.1	PASS
31	74.53E-3	0.032	0.1	PASS
32	9.24E-3	0.004	0.1	PASS
33	77.21E-3	0.034	0.1	PASS
34	8.96E-3	0.004	0.1	PASS
35	70.47E-3	0.031	0.1	PASS
36	6.24E-3	0.003	0.1	PASS
37	50.32E-3	0.022	0.1	PASS
38	12.98E-3	0.006	0.1	PASS
39	11.64E-3	0.005	0.1	PASS
40	11.10E-3	0.005	0.1	PASS

Green mode

Average harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	8.545			
2	4.473E-3	0.460	972.00E-3	PASS
3	80.437E-3	3.886	2.07	PASS
4	1.268E-3	0.328	387.00E-3	PASS
5	44.103E-3	4.299	1.03	PASS
6	1.180E-3	0.437	270.00E-3	PASS
7	43.327E-3	6.252	693.00E-3	PASS
8	960.221E-6	0.464	207.00E-3	PASS
9	40.494E-3	11.248	360.00E-3	PASS
10	505.191E-6	0.305	165.60E-3	PASS
11	31.601E-3	10.640	297.00E-3	PASS
12	891.664E-6	0.646	138.00E-3	PASS
13	32.239E-3	17.058	189.00E-3	PASS
14	763.183E-6	0.645	118.29E-3	PASS
15	24.423E-3	18.091	135.00E-3	PASS
16	1.356E-3	1.310	103.50E-3	PASS
17	21.104E-3	17.717	119.11E-3	PASS
18	1.077E-3	1.170	92.00E-3	PASS
19	16.711E-3	15.680	106.58E-3	PASS
20	1.387E-3	1.675	82.80E-3	PASS
21	15.716E-3	16.299	96.43E-3	PASS
22	555.771E-6	0.738	75.28E-3	PASS
23	10.185E-3	11.567	88.05E-3	PASS
24	613.892E-6	0.890	68.99E-3	PASS
25	12.746E-3	15.736	81.00E-3	PASS
26	1.371E-3	2.152	63.69E-3	PASS
27	12.192E-3	16.257	75.00E-3	PASS
28	689.950E-6	1.167	59.14E-3	PASS
29	7.288E-3	10.436	69.83E-3	PASS
30	790.552E-6	1.432	55.20E-3	PASS
31	14.938E-3	22.868	65.32E-3	PASS
32	502.772E-6	0.972	51.75E-3	PASS
33	8.537E-3	13.913	61.36E-3	PASS
34	970.379E-6	1.992	48.71E-3	PASS
35	10.309E-3	17.816	57.86E-3	PASS
36	609.954E-6	1.326	46.00E-3	PASS
37	8.946E-3	16.346	54.73E-3	PASS
38	822.184E-6	1.887	43.58E-3	PASS
39	10.096E-3	19.445	51.92E-3	PASS
40	657.677E-6	1.589	41.40E-3	PASS

Maximum harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	8.546			
2	4.656E-3	0.216	2.16	PASS
3	80.794E-3	1.756	4.60	PASS
4	1.396E-3	0.162	860.00E-3	PASS
5	44.496E-3	1.952	2.28	PASS
6	1.257E-3	0.209	600.00E-3	PASS
7	43.463E-3	2.822	1.54	PASS
8	1.054E-3	0.229	460.00E-3	PASS
9	40.736E-3	5.092	800.00E-3	PASS
10	609.609E-6	0.166	368.00E-3	PASS
11	31.771E-3	4.814	660.00E-3	PASS
12	1.005E-3	0.328	306.66E-3	PASS
13	32.433E-3	7.722	420.00E-3	PASS
14	837.994E-6	0.319	262.86E-3	PASS
15	24.624E-3	8.208	300.00E-3	PASS
16	1.459E-3	0.634	230.00E-3	PASS
17	21.389E-3	8.081	264.70E-3	PASS
18	1.185E-3	0.580	204.44E-3	PASS
19	16.930E-3	7.148	236.84E-3	PASS
20	1.487E-3	0.808	184.00E-3	PASS
21	15.915E-3	7.427	214.28E-3	PASS
22	677.537E-6	0.405	167.28E-3	PASS
23	10.430E-3	5.331	195.66E-3	PASS
24	727.563E-6	0.475	153.32E-3	PASS
25	12.998E-3	7.221	180.00E-3	PASS
26	1.489E-3	1.052	141.54E-3	PASS
27	12.323E-3	7.394	166.66E-3	PASS
28	767.420E-6	0.584	131.42E-3	PASS
29	7.517E-3	4.844	155.18E-3	PASS
30	887.667E-6	0.724	122.66E-3	PASS
31	15.111E-3	10.410	145.16E-3	PASS
32	621.859E-6	0.541	115.00E-3	PASS
33	8.719E-3	6.394	136.36E-3	PASS
34	1.050E-3	0.970	108.24E-3	PASS
35	10.443E-3	8.122	128.58E-3	PASS
36	738.688E-6	0.723	102.22E-3	PASS
37	9.071E-3	7.458	121.62E-3	PASS
38	902.434E-6	0.932	96.84E-3	PASS
39	10.302E-3	8.929	115.38E-3	PASS
40	742.900E-6	0.807	92.00E-3	PASS

Maximum harmonic voltage results

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	230.09	100.040		
2	78.61E-3	0.034	0.2	PASS
3	63.15E-3	0.027	0.9	PASS
4	45.50E-3	0.020	0.2	PASS
5	65.89E-3	0.029	0.4	PASS
6	32.41E-3	0.014	0.2	PASS
7	17.14E-3	0.007	0.3	PASS
8	24.63E-3	0.011	0.2	PASS
9	73.06E-3	0.032	0.2	PASS
10	8.51E-3	0.004	0.2	PASS
11	87.24E-3	0.038	0.1	PASS
12	11.41E-3	0.005	0.1	PASS
13	64.89E-3	0.028	0.1	PASS
14	26.85E-3	0.012	0.1	PASS
15	42.82E-3	0.019	0.1	PASS
16	28.67E-3	0.012	0.1	PASS
17	42.81E-3	0.019	0.1	PASS
18	11.88E-3	0.005	0.1	PASS
19	87.09E-3	0.038	0.1	PASS
20	18.60E-3	0.008	0.1	PASS
21	100.97E-3	0.044	0.1	PASS
22	11.52E-3	0.005	0.1	PASS
23	62.62E-3	0.027	0.1	PASS
24	9.60E-3	0.004	0.1	PASS
25	37.52E-3	0.016	0.1	PASS
26	16.78E-3	0.007	0.1	PASS
27	32.34E-3	0.014	0.1	PASS
28	7.34E-3	0.003	0.1	PASS
29	72.64E-3	0.032	0.1	PASS
30	6.20E-3	0.003	0.1	PASS
31	82.90E-3	0.036	0.1	PASS
32	8.42E-3	0.004	0.1	PASS
33	65.36E-3	0.028	0.1	PASS
34	8.86E-3	0.004	0.1	PASS
35	26.71E-3	0.012	0.1	PASS
36	6.92E-3	0.003	0.1	PASS
37	10.08E-3	0.004	0.1	PASS
38	12.54E-3	0.005	0.1	PASS
39	51.12E-3	0.022	0.1	PASS
40	12.27E-3	0.005	0.1	PASS

3.4. Voltage Fluctuation and Flicker

Ambient Condition

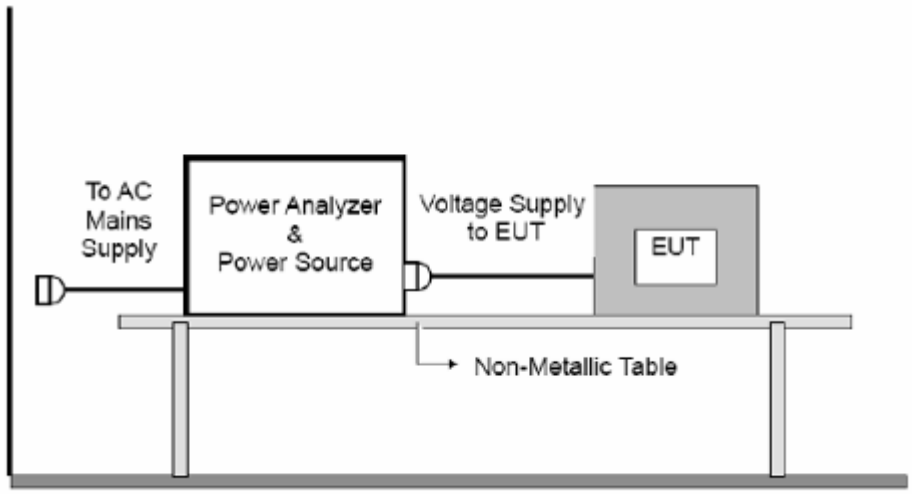
Temperature	Relative humidity	Pressure
15°C ~35°C	30%~60%	101.5kPa

Methods of Measurement

●The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the most unfavorable sequence of voltage changes under normal operating conditions.

● During the flick measurement, the measure time shall include that part of whole operation cycle in which the EUT produce the most unfavorable sequence of voltage changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

Test Setup



Limits

Test Item	Limit	Remark
P_{st}	1.0	Pst means short-term flicker indicator.
P_{lt}	0.65	Plt means long-term flicker indicator.
T_{dt}(ms)	500	Tdt means maximum time that dt exceeds 3.3 %.
d_{max}(%)	4%	dmax means maximum relative voltage change.
dc(%)	3.3%	dc means relative steady-state voltage change

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96. U=7.64%.

Test Results:

SMTL3000RMI2UCNC

Online mode

	EUT values	Limit	Result
Pst	0.037	1.00	PASS
Plt	0.037	0.65	PASS
dc [%]	0.104	3.30	PASS
dmax [%]	0.169	4.00	PASS
dt [s]	0.000	0.50	PASS

Green mode

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.064	4.00	PASS
dt [s]	0.000	0.50	PASS

SMTL2200RMI2UCNC

Online mode

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.054	4.00	PASS
dt [s]	0.000	0.50	PASS

Green mode

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.000	3.30	PASS
dmax [%]	0.062	4.00	PASS
dt [s]	0.000	0.50	PASS

3.5. Electrostatic Discharge

Ambient Condition

Temperature	Relative humidity	Pressure
15°C ~35°C	30%~60%	101.5kPa

Methods of Measurement

The basic test procedure was in accordance with IEC 61000-4-2:

a) The EUT was located 0.1 m minimum from all side of the HCP (dimensions 1.6m x0.8m).

b) The support units were located another table 30 cm away from the EUT, but direct support unit was/were located at same location as EUT on the HCP and keep at a distance of 10 cm with EUT.

c) The time interval between two successive single discharges was at least 1 second.

d) Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.

e) Air discharges were applied with the round discharge tip of the discharge electrode approaching the EUT as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator was removed from the EUT and re-triggered for a new single discharge. The test was repeated until all discharges were complete.

f) At least ten single discharges (in the most sensitive polarity) were applied at the front edge of each HCP opposite the center point of each unit of the EUT and 0.1 meters from the front of the EUT. The long axis of the discharge electrode was in the plane of the HCP and perpendicular to its front edge during the discharge.

g) At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the Vertical Coupling Plane (VCP) in sufficiently different positions that the four faces of the EUT were completely illuminated. The VCP (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the EUT.

Test Results

SMTL3000RMI2UCNC

Online mode / Battery mode / Green mode

Test point	Coupling	Voltage	Discharge Number	Performance Criterion	Required Passing Criterion	Results
Screw, metal shell, Other metallic parts	Contact Discharge	±2kV	10	A	B	PASS
		±4kV	10	A	B	PASS
Screen, Key, Gap, Other non-metallic parts	Air Discharge	±2kV	10	A	B	PASS
		±4kV	10	A	B	PASS
		±8kV	10	A	B	PASS
Horizontal Coupling Plane		±2kV	10	A	B	PASS
		±4kV	10	A	B	PASS
Vertical Coupling Plane		±2kV	10	A	B	PASS
		±4kV	10	A	B	PASS

SMTL2200RMI2UCNC

Online mode / Battery mode / Green mode

Test point	Coupling	Voltage	Discharge Number	Performance Criterion	Required Passing Criterion	Results
Screw, metal shell, Other metallic parts	Contact Discharge	±2kV	10	A	B	PASS
		±4kV	10	A	B	PASS
Screen, Key, Gap, Other non-metallic parts	Air Discharge	±2kV	10	A	B	PASS
		±4kV	10	A	B	PASS
		±8kV	10	A	B	PASS
Horizontal Coupling Plane		±2kV	10	A	B	PASS
		±4kV	10	A	B	PASS
Vertical Coupling Plane		±2kV	10	A	B	PASS
		±4kV	10	A	B	PASS

3.6. RF Electromagnetic Field (RS)

Ambient Condition

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

General

The test procedure was in accordance with EN 61000-4-3

a) The testing was performed in a fully anechoic chamber. The transmit antenna was located at a distance of 3 meters from the EUT.

b) The frequency range is swept from 80 MHz to 1000 MHz, with the signal 80% amplitude modulated with a 1kHz sine-wave. The rate of sweep did not exceed 1.5 x 10 -3 decade/s,where the frequency range is swept incrementally, the step size was 1% of preceding frequency value.

c) The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.

e) The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

Test Specifications

Criteria	During test	After Test
A	Shall operate as intended May show degradation of performance Shall be no loss of function Shall be no unintentional transmissions	Shall operate as intended May show degradation of performance Shall be no loss of function Shall be no loss of stored data or user programmable functions
B	May show loss of function (one or more) May show degradation of performance No unintentional all transmissions	Function shall be self-recoverable Shall operate as intended after recovering Shall be no degradation of performance Shall be no loss of stored data or user Programmable functions
C	May be loss of function (one or more)	Functions shall be recoverable by the operator Shall operate as intended after recovering Shall be degradation of performance

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96, U= 2.60dB.

Test Results:

SMTL3000RMI2UCNC

Online mode

Frequency	Field	Testing Status	Test Position	Polarization	Description
80MHz-1GHz	10V/m	Online Mode	Back	Horizontal	A
				Vertical	
	10V/m	Online Mode	Left	Horizontal	A
				Vertical	
	10V/m	Online Mode	Front	Horizontal	A
				Vertical	
	10V/m	Online Mode	Right	Horizontal	A
				Vertical	
	10V/m	Online Mode	Up	Horizontal	A
				Vertical	
	10V/m	Online Mode	Down	Horizontal	A
				Vertical	

Battery mode

Frequency	Field	Testing Status	Test Position	Polarization	Description
80MHz-1GHz	10V/m	Battery Mode	Back	Horizontal	A
				Vertical	
	10V/m	Battery Mode	Left	Horizontal	A
				Vertical	
	10V/m	Battery Mode	Front	Horizontal	A
				Vertical	
	10V/m	Battery Mode	Right	Horizontal	A
				Vertical	
	10V/m	Battery Mode	Up	Horizontal	A
				Vertical	
	10V/m	Battery Mode	Down	Horizontal	A
				Vertical	

Green mode

Frequency	Field	Testing Status	Test Position	Polarization	Description
80MHz-1GHz	10V/m	Green Mode	Back	Horizontal	A
				Vertical	
	10V/m	Green Mode	Left	Horizontal	A
				Vertical	
	10V/m	Green Mode	Front	Horizontal	A
				Vertical	
	10V/m	Green Mode	Right	Horizontal	A
				Vertical	
	10V/m	Green Mode	Up	Horizontal	A
				Vertical	
	10V/m	Green Mode	Down	Horizontal	A
				Vertical	

SMTL2200RMI2UCNC

Online mode

Frequency	Field	Testing Status	Test Position	Polarization	Description
80MHz-1GHz	10V/m	Online Mode	Back	Horizontal	A
				Vertical	
	10V/m	Online Mode	Left	Horizontal	A
				Vertical	
	10V/m	Online Mode	Front	Horizontal	A
				Vertical	
	10V/m	Online Mode	Right	Horizontal	A
				Vertical	
	10V/m	Online Mode	Up	Horizontal	A
				Vertical	
	10V/m	Online Mode	Down	Horizontal	A
				Vertical	

Battery mode

Frequency	Field	Testing Status	Test Position	Polarization	Description
80MHz-1GHz	10V/m	Battery Mode	Back	Horizontal	A
				Vertical	
	10V/m	Battery Mode	Left	Horizontal	A
				Vertical	
	10V/m	Battery Mode	Front	Horizontal	A
				Vertical	
	10V/m	Battery Mode	Right	Horizontal	A
				Vertical	
	10V/m	Battery Mode	Up	Horizontal	A
				Vertical	
	10V/m	Battery Mode	Down	Horizontal	A
				Vertical	

Green mode

Frequency	Field	Testing Status	Test Position	Polarization	Description
80MHz-1GHz	10V/m	Green Mode	Back	Horizontal	A
				Vertical	
	10V/m	Green Mode	Left	Horizontal	A
				Vertical	
	10V/m	Green Mode	Front	Horizontal	A
				Vertical	
	10V/m	Green Mode	Right	Horizontal	A
				Vertical	
	10V/m	Green Mode	Up	Horizontal	A
				Vertical	
	10V/m	Green Mode	Down	Horizontal	A
				Vertical	

3.7. Fast Transients Common Mode (EFT)

Ambient Condition

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

General

The test intended to show the immunity of the EUT when subjected to type of transient interference such as originating from switching transients. Bursts consisting of a number of transient are employed, coupled into power supply, control and signal inputs of EUT, The transients must be short rise-time, the repetition rate and the low energy. A performance criteria is classified as A, B, C, the recommendation is criteria B.

The EUT is arranged and connected according to its normal installation requirements. The length of the signal and power lines between the coupling device (clamp) and the EUT is 0.5m±0.05m. If a non-detachable cable more than 0.5m long with the equipment, the excess length of this cable is gathered into a flat coil with 0.4m diameter and situated at a distance of 0.1m above the ground reference plane. Bursts of 5ns/50ns pluses at a repetition rate of 5kHz with a duration of 15ms and period of 300ms, applied in both polarities between power supply terminals (including the protective earth) and a reference ground plane, or via a capacitate coupling clamp onto I/O circuits and communication lines for 3 minutes. The test level is 1kV on power supply, 0.5kV on I/O signal, data and control lines. The 0.5kV is applicable only to ports interfacing with cables whose total length according to the manufacturer’s functional specification may exceed 3m.

Results

SMTL3000RMI2UCNC

Online mode

Connected	Test Mode	Voltage	Test Line	Description
Power Port	Online Mode	±2 kV (5kHz)	L, N, L+N, PE, L+PE, N+PE, L+N+PE	A
Network Port	Online Mode	±1 kV (5kHz)	Capacitive coupling clamp	A

Green mode

Connected	Test Mode	Voltage	Test Line	Description
Power Port	Green Mode	±2 kV (5kHz)	L, N, L+N, PE, L+PE, N+PE, L+N+PE	A
Network Port	Green Mode	±1 kV (5kHz)	Capacitive coupling clamp	A

SMTL2200RMI2UCNC

Online mode

Connected	Test Mode	Voltage	Test Line	Description
Power Port	Online Mode	±2 kV (5kHz)	L, N, L+N, PE, L+PE, N+PE, L+N+PE	A
Network Port	Online Mode	±1 kV (5kHz)	Capacitive coupling clamp	A

Green mode

Connected	Test Mode	Voltage	Test Line	Description
Power Port	Green Mode	±2 kV (5kHz)	L, N, L+N, PE, L+PE, N+PE, L+N+PE	A
Network Port	Green Mode	±1 kV (5kHz)	Capacitive coupling clamp	A

3.8. Surge

Ambient Condition

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

General

a) For EUT power supply:

The surge is applied to the EUT power supply terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave. The power cord between the EUT and the coupling/decoupling networks was shorter than 2 meters in length.

b) For test applied to unshielded un-symmetrically operated interconnection lines of EUT:

The surge was applied to the lines via the capacitive coupling. The coupling /decoupling networks didn't influence the specified functional conditions of the EUT. The interconnection line between the EUT and the coupling/decoupling networks was shorter than 2 meters in length.

c) For test applied to unshielded symmetrically operated interconnection /telecommunication lines of EUT:

The surge was applied to the lines via gas arrestors coupling. Test levels below the ignition point of the coupling arrestor were not specified. The interconnection line between the EUT and the coupling/decoupling networks was shorter than 2 meters in length.

Results

SMTL3000RMI2UCNC

Online mode

Connected	Test Mode	Voltage	Coupled Mode	Angle	Description
Power Port	Online Mode	±1.0kV	L-N	0°,90°, 180°,270°	A
Power Port	Online Mode	±2.0kV	L-PE, N-PE, L+N-PE	0°,90°, 180°,270°	A

Green mode

Connected	Test Mode	Voltage	Coupled Mode	Angle	Description
Power Port	Green Mode	±1.0kV	L-N	0°,90°, 180°,270°	A
Power Port	Green Mode	±2.0kV	L-PE, N-PE, L+N-PE	0°,90°, 180°,270°	A

SMTL2200RMI2UCNC

Online mode

Connected	Test Mode	Voltage	Coupled Mode	Angle	Description
Power Port	Online Mode	±1.0kV	L-N	0°,90°, 180°,270°	A
Power Port	Online Mode	±2.0kV	L-PE, N-PE, L+N-PE	0°,90°, 180°,270°	A

Green mode

Connected	Test Mode	Voltage	Coupled Mode	Angle	Description
Power Port	Green Mode	±1.0kV	L-N	0°,90°, 180°,270°	A
Power Port	Green Mode	±2.0kV	L-PE, N-PE, L+N-PE	0°,90°, 180°,270°	A

3.9. Radio Frequency Common Mode (CS)

Ambient Condition

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

General

The EUT shall be tested within its intended operating and climatic conditions.

The test shell performed with the test generator connected to each of the coupling and decoupling devices in turn, while the other non-excited RF input ports of the coupling devices are terminated by a 50-ohm load resistor.

The frequency range was swept from 150 kHz to 80 MHz, using the signal level established during the setting process and with a disturbance signal of 80 % amplitude. The signal was modulated with a 1 kHz sine wave, pausing to adjust the RF signal level or the switch coupling devices as necessary. Where the frequency range is swept incrementally, the step size was 1 % of preceding frequency value from 150 kHz to 80 MHz.

The dwell time at each frequency was less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies such as clock frequency(ies) and harmonics or frequencies of dominant interest, was analyzed separately. Attempts was made to fully exercise the EUT during testing, and to fully interrogate all exercise modes selected for susceptibility.

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor k = 1.96, U= 2.76dB.

Test Results:

SMTL3000RMI2UCNC

Online mode

Frequency (MHz)	Test Mode	Level	Coupled Mode	Tested Line	Description	Note
0.15-80	Online Mode	10 Vrms	CDN	Power Port	A	/
0.15-80	Online Mode	10 Vrms	T800	Network Port	A	/

Green mode

Frequency (MHz)	Test Mode	Level	Coupled Mode	Tested Line	Description	Note
0.15-80	Green Mode	10 Vrms	CDN	Power Port	A	/
0.15-80	Green Mode	10 Vrms	T800	Network Port	A	/

SMTL2200RMI2UCNC

Online mode

Frequency (MHz)	Test Mode	Level	Coupled Mode	Tested Line	Description	Note
0.15-80	Online Mode	10 Vrms	CDN	Power Port	A	/
0.15-80	Online Mode	10 Vrms	T800	Network Port	A	/

Green mode

Frequency (MHz)	Test Mode	Level	Coupled Mode	Tested Line	Description	Note
0.15-80	Green Mode	10 Vrms	CDN	Power Port	A	/
0.15-80	Green Mode	10 Vrms	T800	Network Port	A	/

3.10. Power Frequency Magnetic Field

Ambient Condition

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

Methods of Measurement

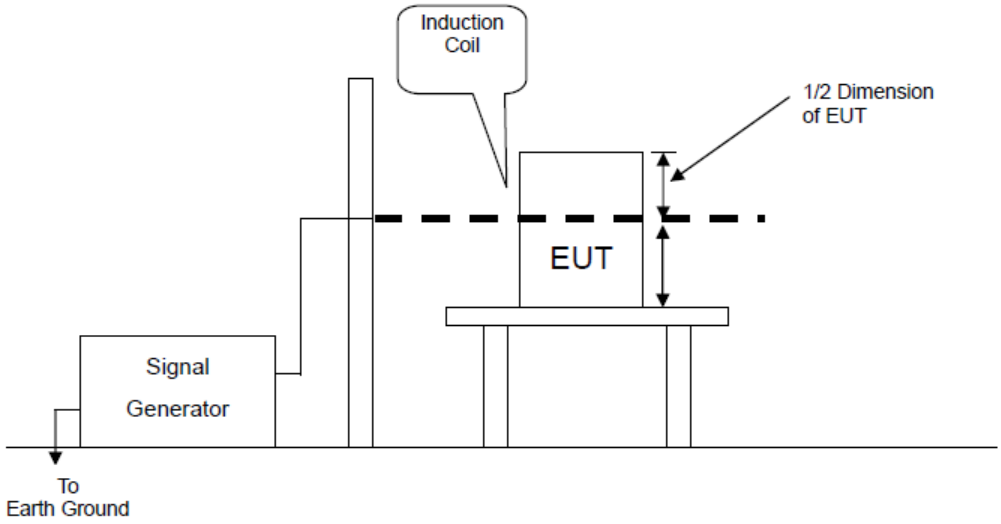
● The equipment was configured and connected to satisfy its functional requirements. It shall be placed on the GRP with the interposition of a 0.1m-thick insulating support.

● The equipment cabinets shall be connected to the safety earth directly on the GRP via the earth terminal of the EUT.

● The power supply, input and output circuits shall be connected to the sources of power supply, control and signal.

● The cables supplied or recommended by the equipment manufacturer shall be used. 1 meter of all cables used shall be exposed to the magnetic field.

Test Setup



Test Results

SMTL3000RMI2UCNC

Online mode

Direction	Field Strength	Performance Criterion	Required Passing Criterion	Results
X	30 A/m	A	A	PASS
Y	30 A/m	A	A	PASS
Z	30 A/m	A	A	PASS

Green mode

Direction	Field Strength	Performance Criterion	Required Passing Criterion	Results
X	30 A/m	A	A	PASS
Y	30 A/m	A	A	PASS
Z	30 A/m	A	A	PASS

SMTL2200RMI2UCNC

Online mode

Direction	Field Strength	Performance Criterion	Required Passing Criterion	Results
X	30 A/m	A	A	PASS
Y	30 A/m	A	A	PASS
Z	30 A/m	A	A	PASS

Green mode

Direction	Field Strength	Performance Criterion	Required Passing Criterion	Results
X	30 A/m	A	A	PASS
Y	30 A/m	A	A	PASS
Z	30 A/m	A	A	PASS

Low frequency signals

3.11. Low frequency signals

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

General

● According to EN61000-4-16, EUT, AE and test equipment must connected with the GRP, the grounding wire is less than 1m.

● Power, control, signal, communication port using common mode voltage test test

Test Specifications

Criteria	Test Specification	Performance Criteria
Single-phase equipment	The test as a minimum shall be performed with a single sinusoidal disturbing voltage of 10 V, at a frequency which is slowly varied from 140 Hz to360 Hz. Use can be made of a series injection cir-cuit where the mains supplies 50/60Hz power and the amplifier delivers only the harmonics	A
Three-phase equipment	The test set-up and voltage level for each phase is identical to the set-up for single-phase equipment; however, a three-phase variable frequency generator is used (static or rotating). The frequency is slowly varied from 140 Hz to 360 Hz	A

Test Results

SMTL3000RMI2UCNC

Online mode

Frequency Range (Hz)	Test Terminal	Coupled Mode	Test Type	Test Period	Test Level	Description	Results
140-360	Power	CN	/	3 s	10 V	A	PASS

SMTL2200RMI2UCNC

Online mode

Frequency Range (Hz)	Test Terminal	Coupled Mode	Test Type	Test Period	Test Level	Description	Results
140-360	Power	CN	/	3 s	10 V	A	PASS

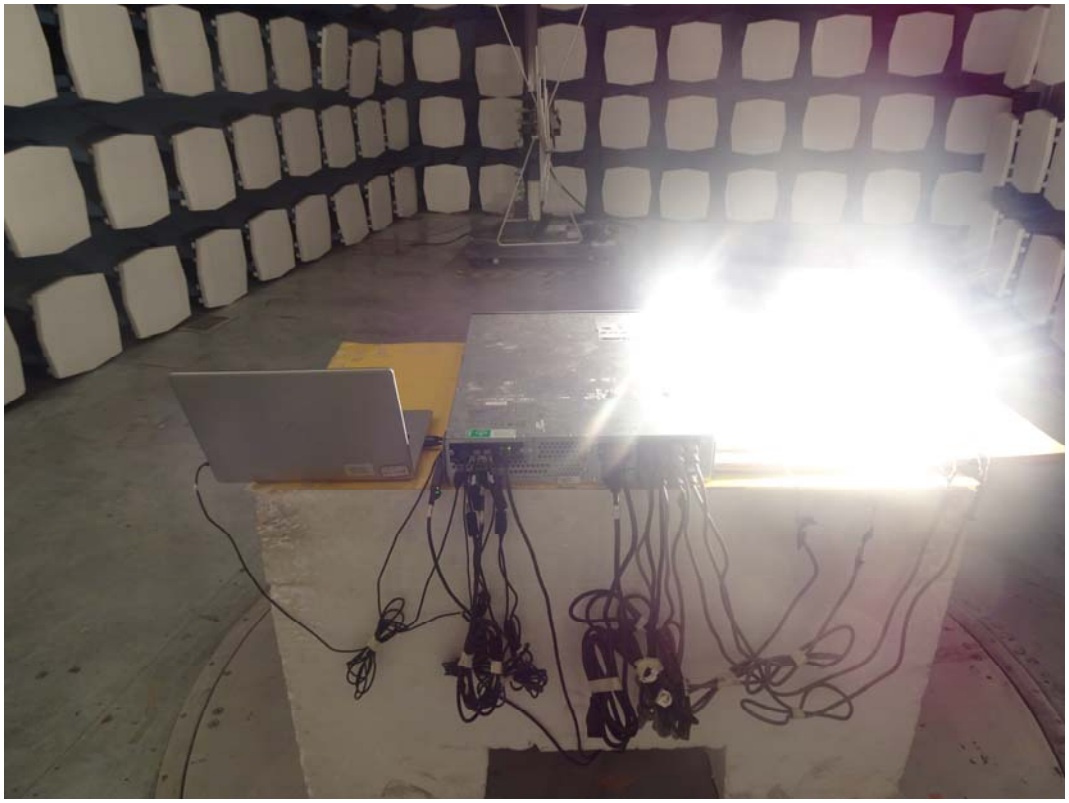
4. Main Test Instruments

Name of Equipment	Manufacturer	Type/Model	Serial Number	Calibration Date	Expiration Time
Radiated Emission					
EMI Test Receiver	R&S	ESR	102389	2022-05-25	2023-05-24
Signal Analyzer	R&S	FSV40	101186	2022-05-14	2023-05-13
TRILOG Broadband Antenna	SCHWARZBECK	VULB 9163	1023	2020-05-05	2023-05-04
Software	R&S	EMC32	9.26.01	/	/
Conducted Emission					
Artificial main network	R&S	ENV216	102191	2022-12-13	2024-12-09
EMI Test Receiver	R&S	ESR	101667	2022-05-25	2023-05-24
Software	R&S	EMC32	10.35.10	/	/
Harmonic & Flicker					
Single phase Harmonics & Flicker Analyzer	EM Test	DPA500N	V0902104586	2022-01-21	2023-01-20
AC Source	EM Test	ACS 500N6	V0902104587	2022-01-21	2023-01-20
Software	EM Test	DAPACONTROL	5.0.2.0	/	/
Radiated RF electromagnetic Field (RS)					
Signal Generator	R&S	SMB 100A	102594	2022-05-14	2023-05-13
Power Amplifier	BONN	BLWA 0830-160-100-40C	097490	NA	NA
High Gain Log-Periodic Antenna	R&S	HL046E	100063	NA	NA
Power Sensor	R&S	NRP	102186	2022-05-14	2023-05-13
Software	R&S	EMC32	10.35.10	/	/
Electrostatic discharge (ESD)					
Electro-Static Discharger Generator	Noiseken	ESS-2002EX	ESS1111144	2022-05-14	2023-05-13
Electrical Fast transients common mode (EFT)					
Combined waveform generator	EM Test	UCS 500N6	V0902104581	2022-05-14	2023-05-13
Software	EM Test	IECCONTROL	5.0.5.0	/	/
Conducted Radio frequency common mode (CS)					
Power Sensor	R&S	NRP	102186	2022-05-14	2023-05-13
Power Amplifier	AR	75A250A	0331553	NA	NA
Signal Generator	R&S	SBM100A	102594	2022-05-14	2023-05-13

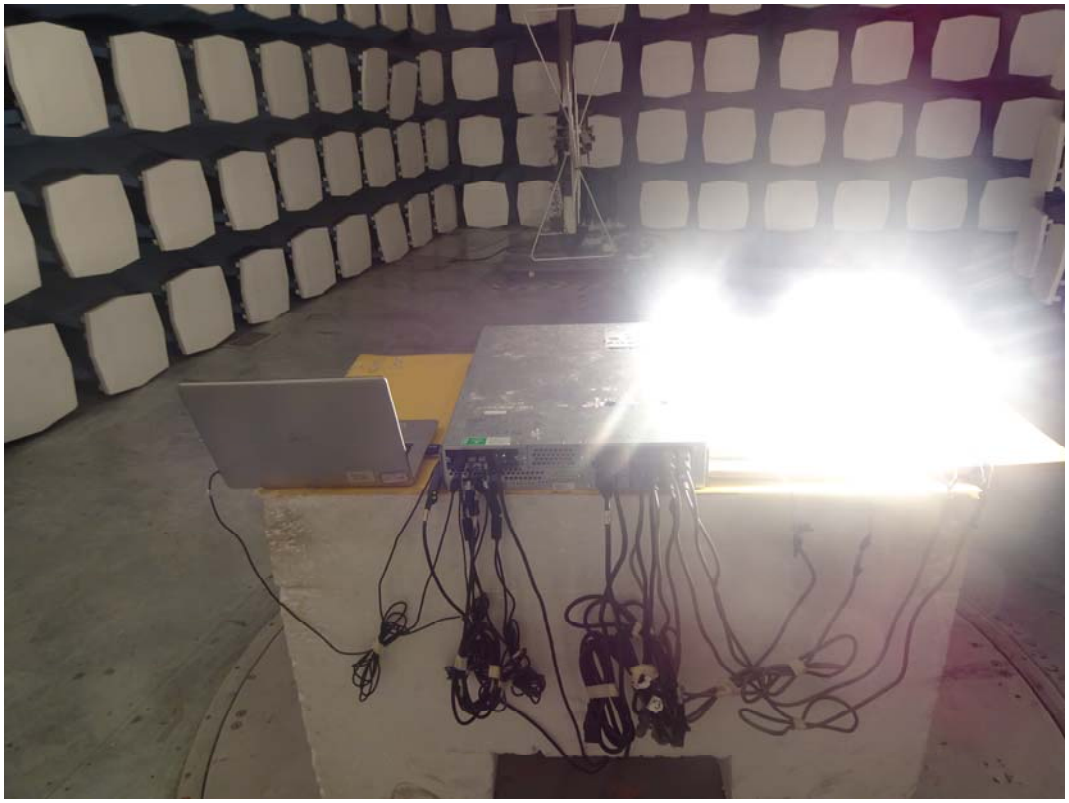
CDN	FCC	FCC-801-M2-M3-16A	091293	2022-05-14	2024-05-13
CDN	TESEQ	CDN T800	30830	2022-05-14	2024-05-13
Software	R&S	EMC32	10.35.10	/	/
Voltage dips and interruptions (DIPS)					
Combined waveform generator	EM Test	UCS 500N6	V0902104581	2022-05-14	2023-05-13
Software	EM Test	IECCONTROL	5.0.5.0	/	/
Surge					
Combined waveform generator	EM Test	UCS 500N6	V0902104581	2022-05-14	2023-05-13
Software	EM Test	IECCONTROL	5.0.5.0	/	/
Power Frequency Magnetic Field					
Combined waveform generator	EM Test	UCS 500N6	V0902104581	2022-05-14	2023-05-13
Magnetic Antenna	EM Test	MS100	0708-27	2022-05-14	2023-05-13
Software	EM Test	IECCONTROL	5.0.5.0	/	/
Common Mode Disturbances					
Continuous Wave Simulator for Low Frequencies	EM Test	CWS 500N4	V0937105130	2022-07-01	2024-06-30
2kVA Single AC Power Supply	EM Test	ACS 500N2.1	V0937105131	2022-07-01	2024-06-30
Coupling Network for 2&4Lines	EM Test	CN16-L2-L4	0909-01	2022-07-01	2023-05-20

ANNEX A：Test Configuration

SMTL3000RMI2UCNC

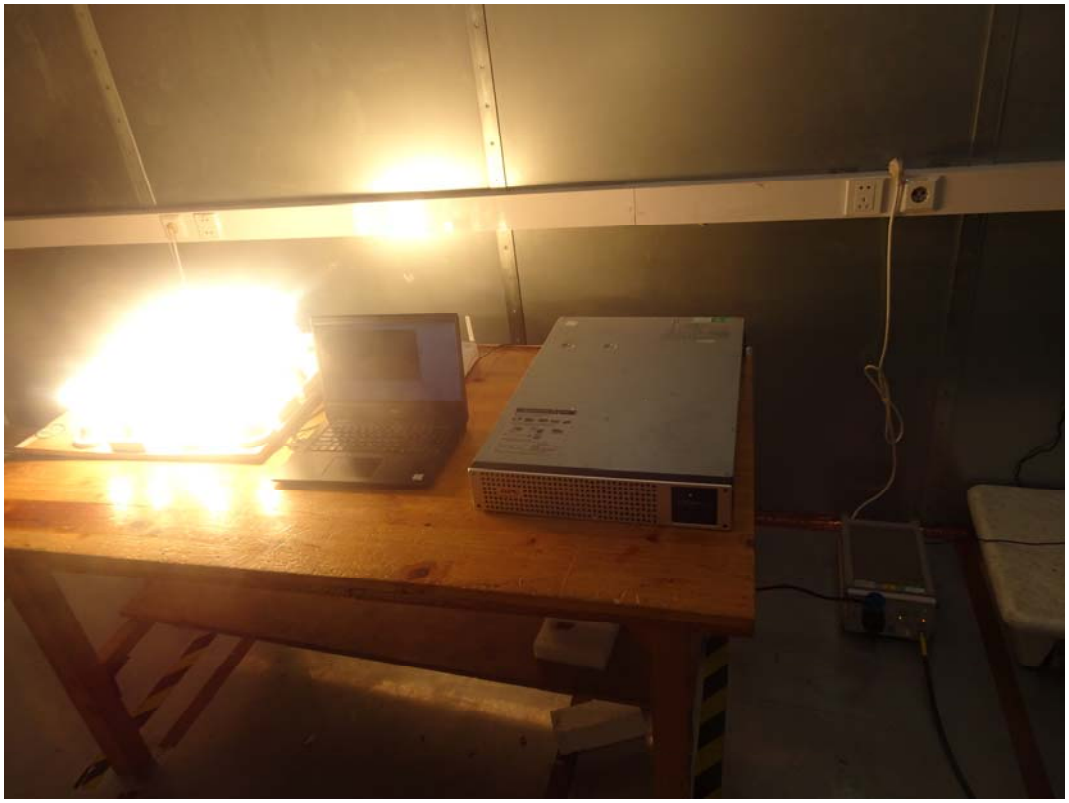


SMTL2200RMI2UCNC



Picture 1 Radiated Emission Test Setup

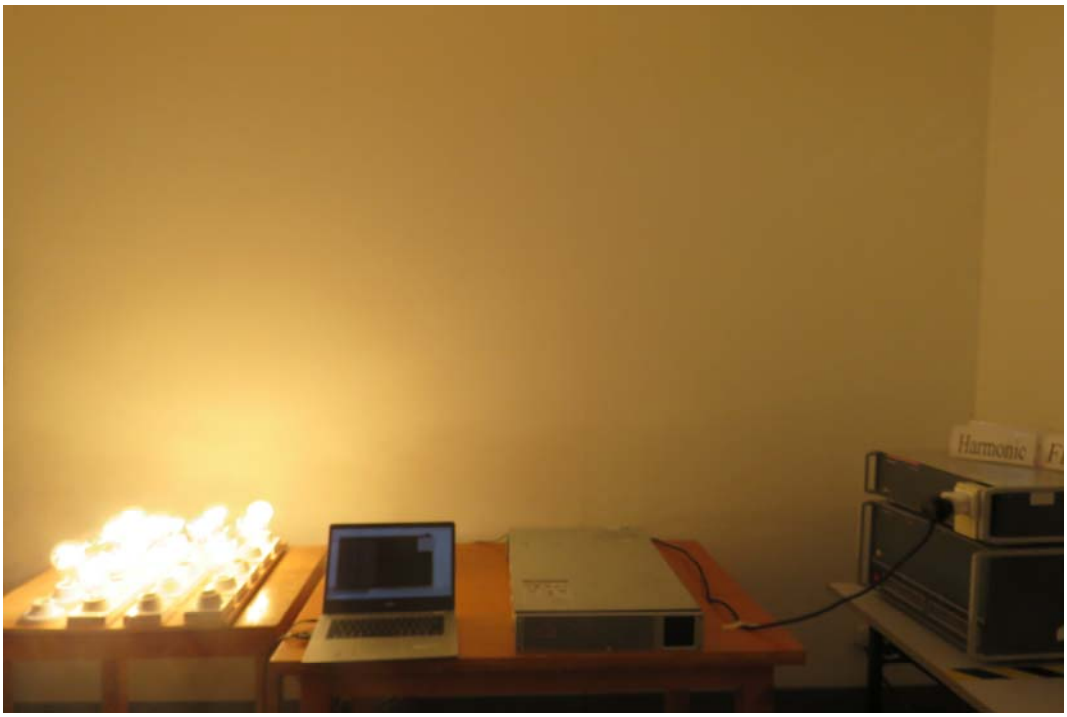
SMTL3000RMI2UCNC



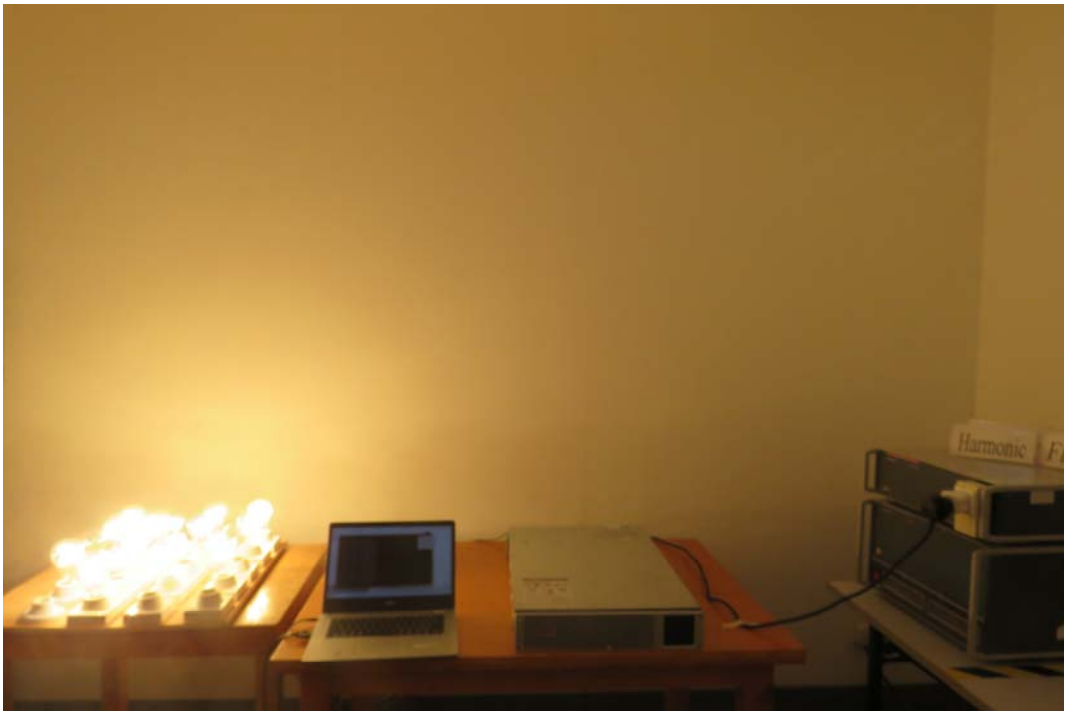
SMTL2200RMI2UCNC

Picture 2 Conducted Emission Test Setup

SMTL3000RMI2UCNC



SMTL2200RMI2UCNC



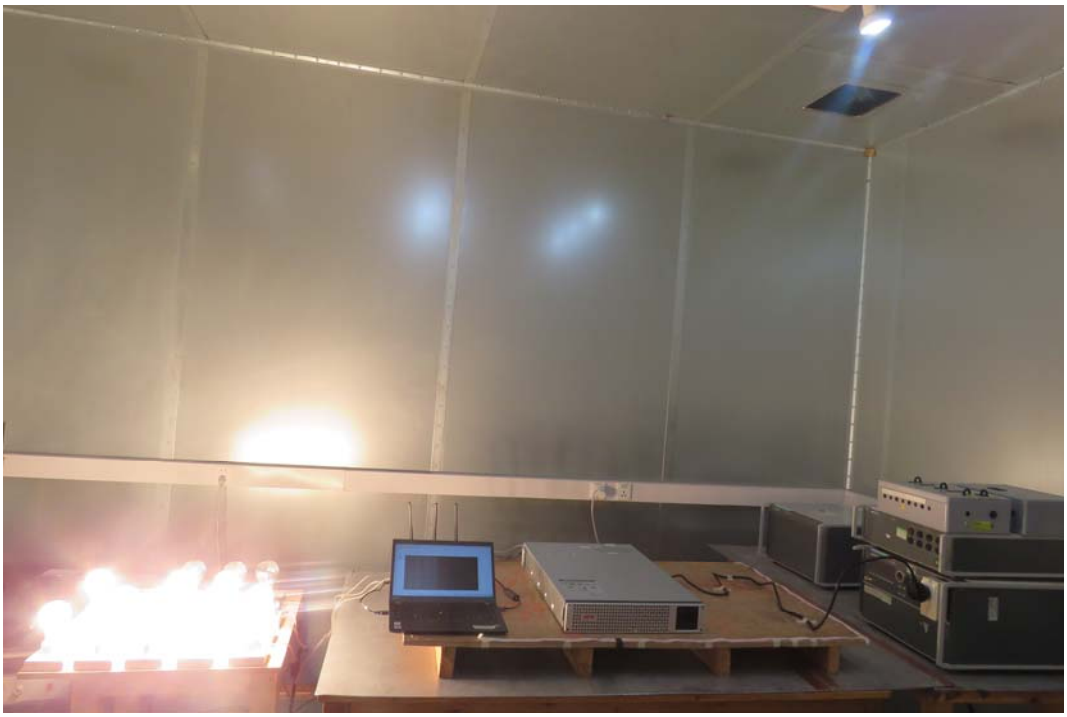
Picture 3 Harmonic Current Emission & Voltage Fluctuation and Flicker Test Setup

SMTL3000RMI2UCNC

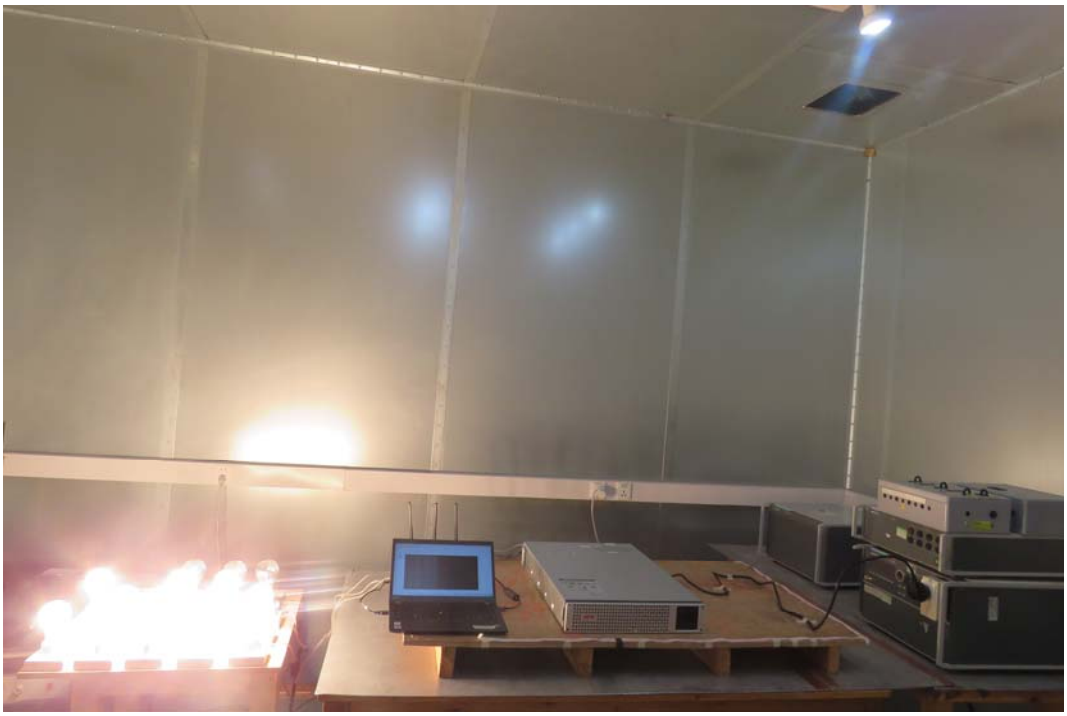
SMTL2200RMI2UCNC

Picture 4 Electrostatic Discharge Test Setup

SMTL3000RMI2UCNC

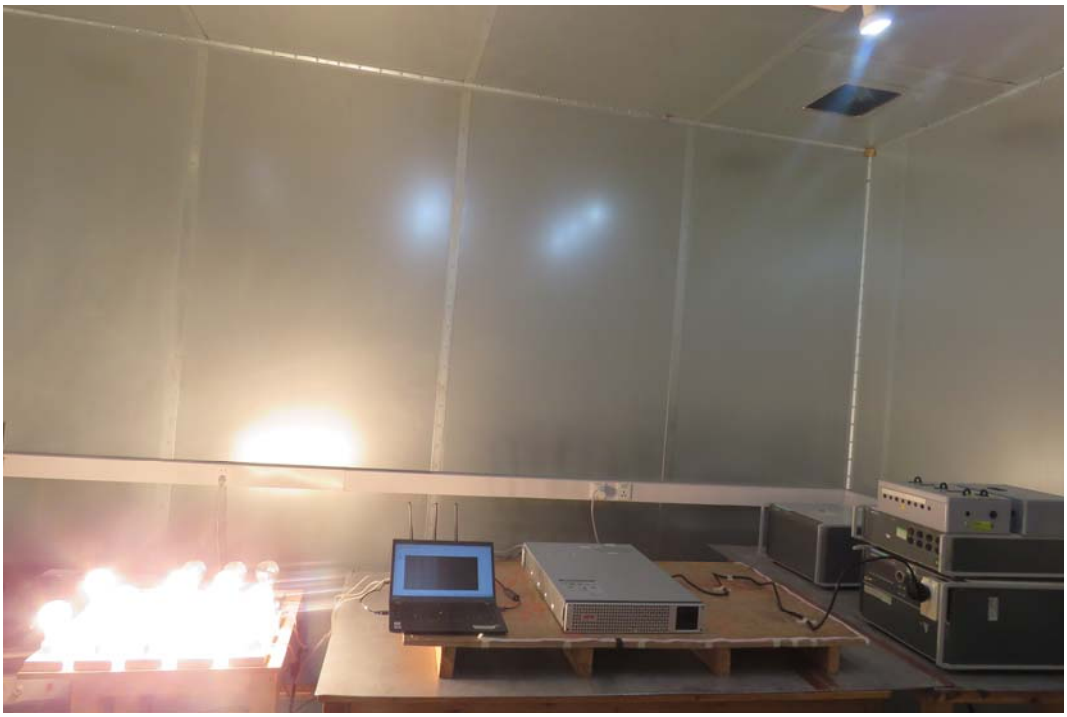


SMTL2200RMI2UCNC

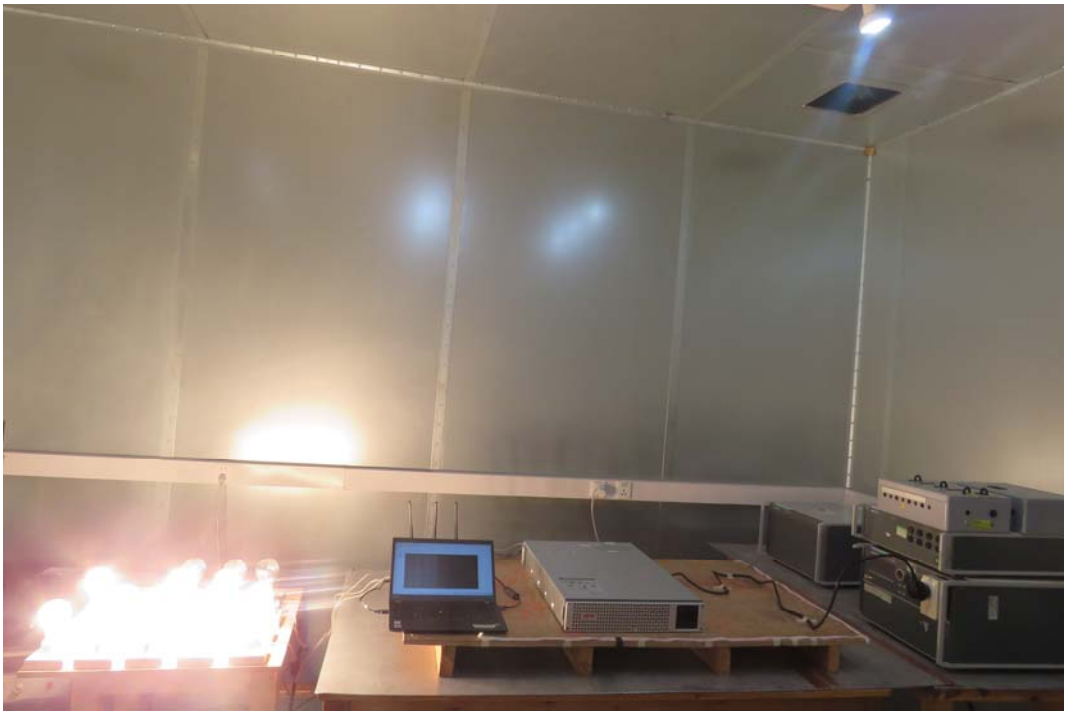


Picture 5 EFT Test Setup

SMTL3000RMI2UCNC



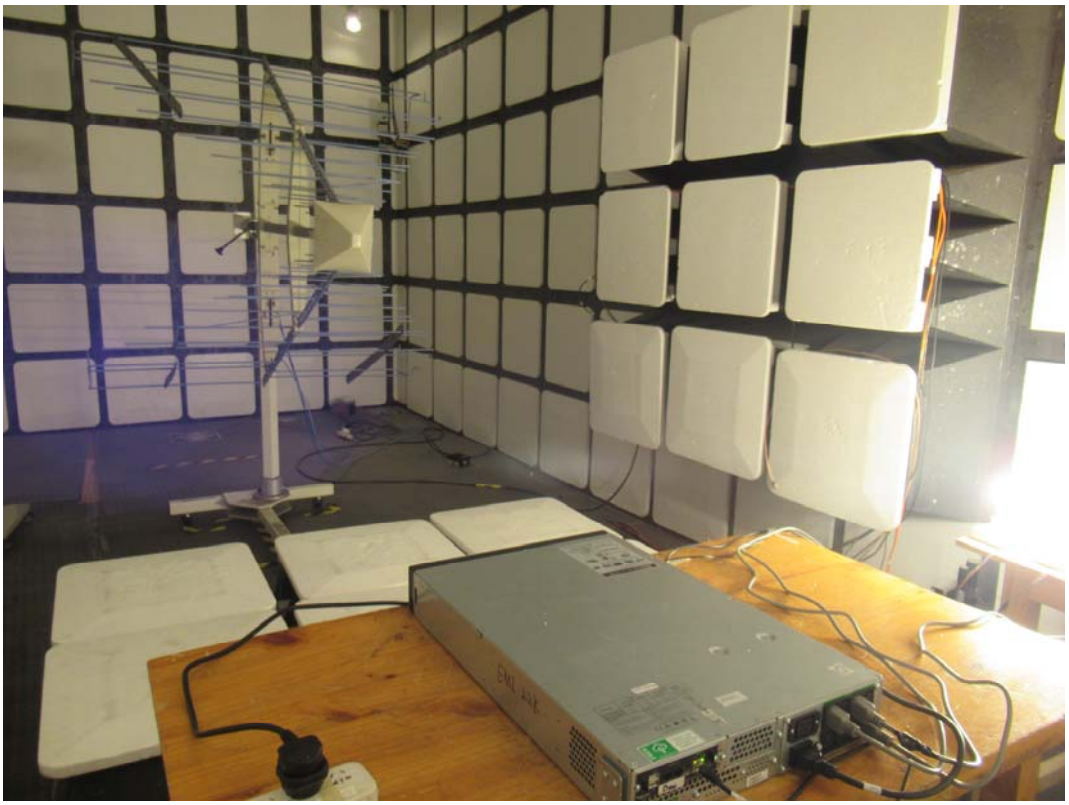
SMTL2200RMI2UCNC



Picture 6 Surge & Dips Test Setup

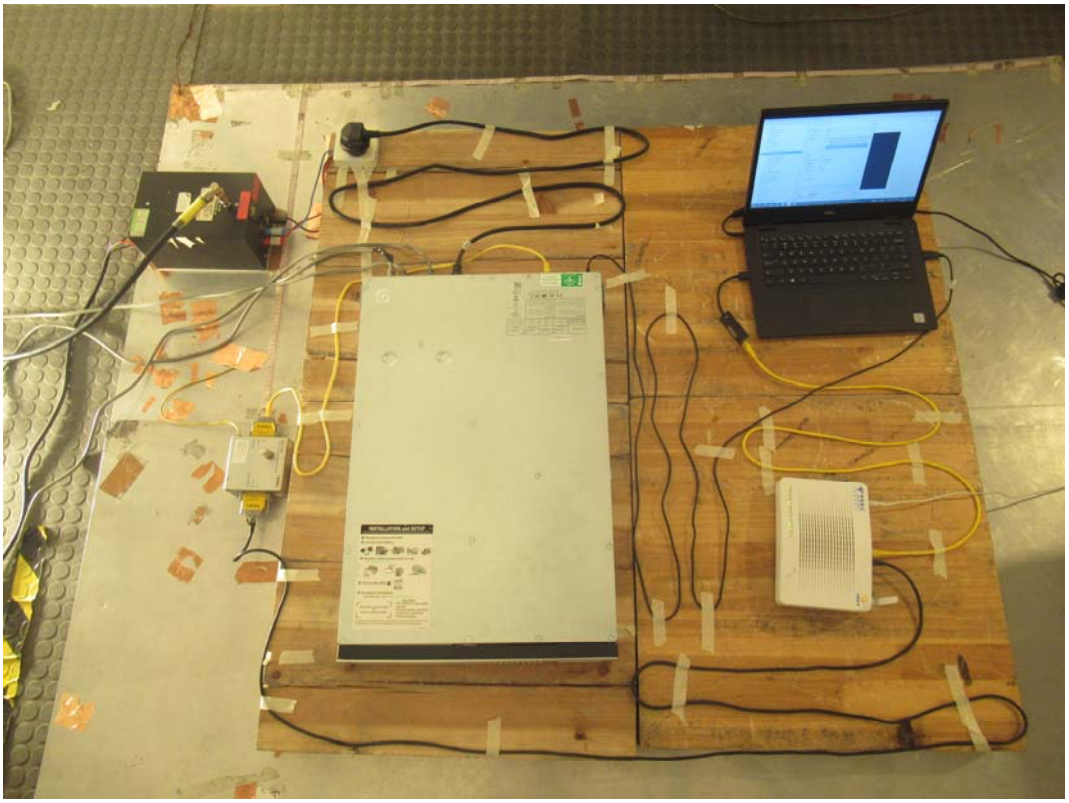
SMTL3000RMI2UCNC

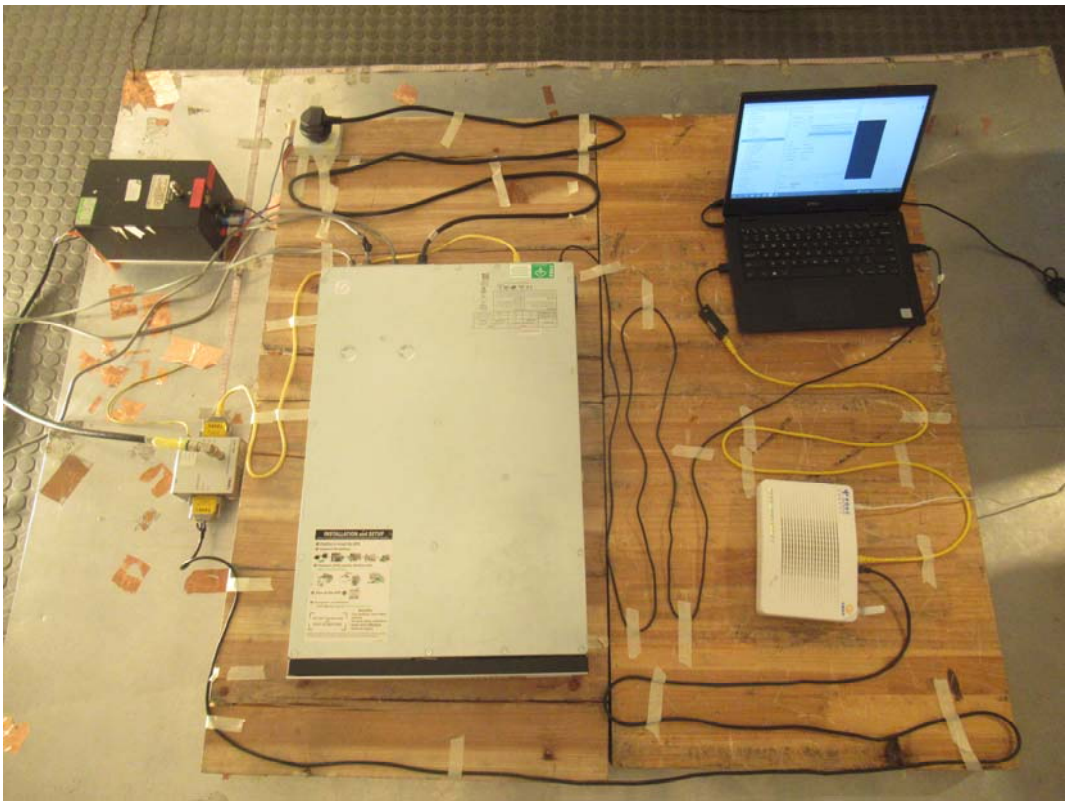
SMTL2200RMI2UCNC



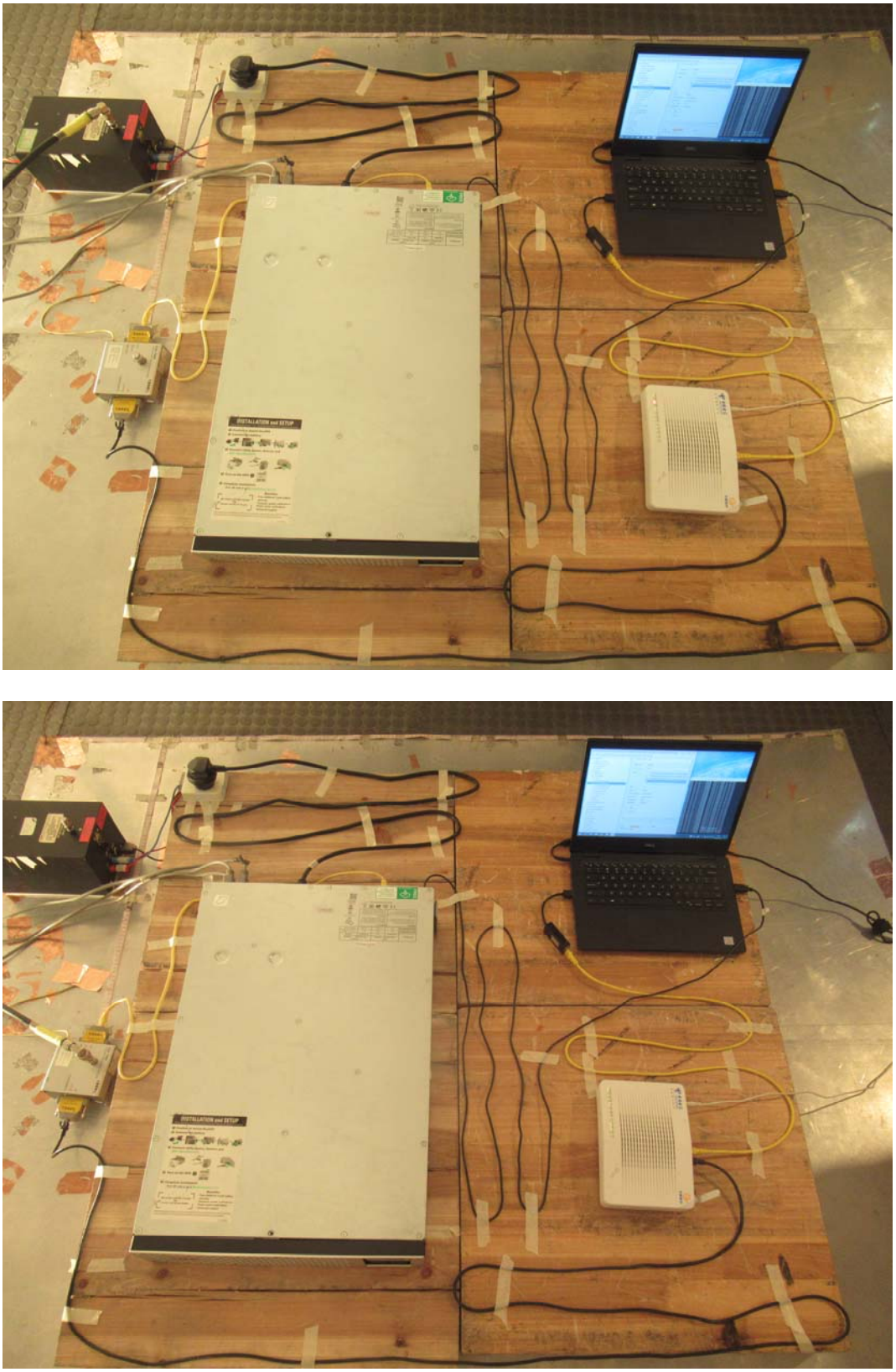
Picture 7 RF Electromagnetic Field (RS) Test Setup

SMTL3000RMI2UCNC



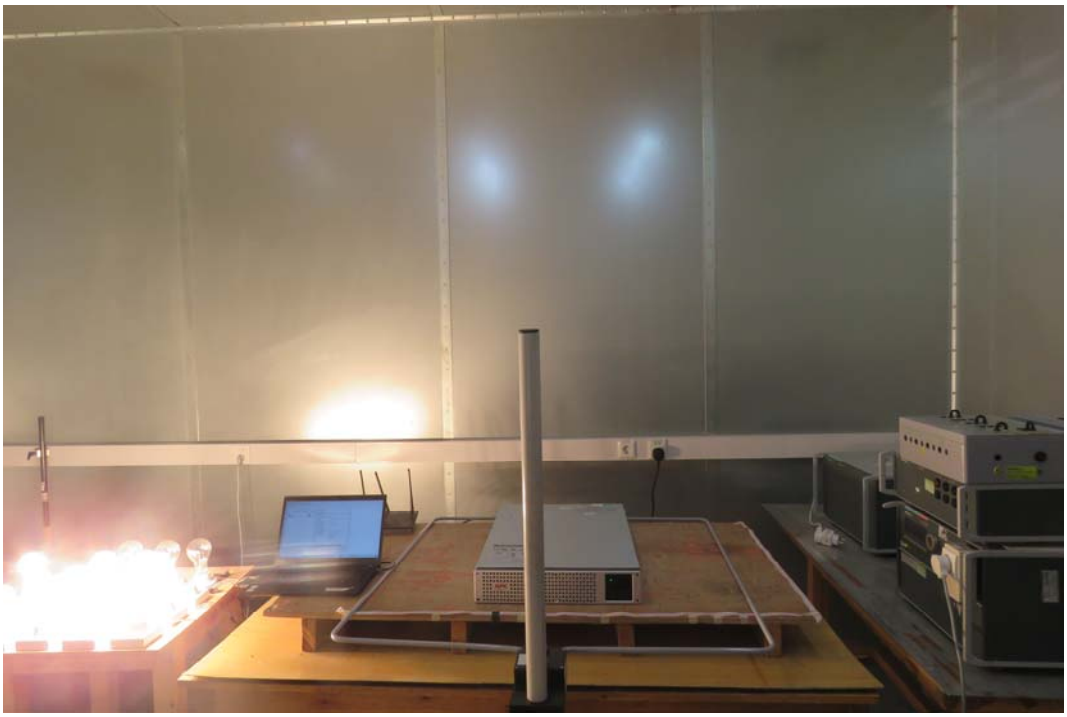


SMTL2200RMI2UCNC



Picture 8: Radio Frequency Common Mode (CS) Test Setup

SMTL3000RMI2UCNC



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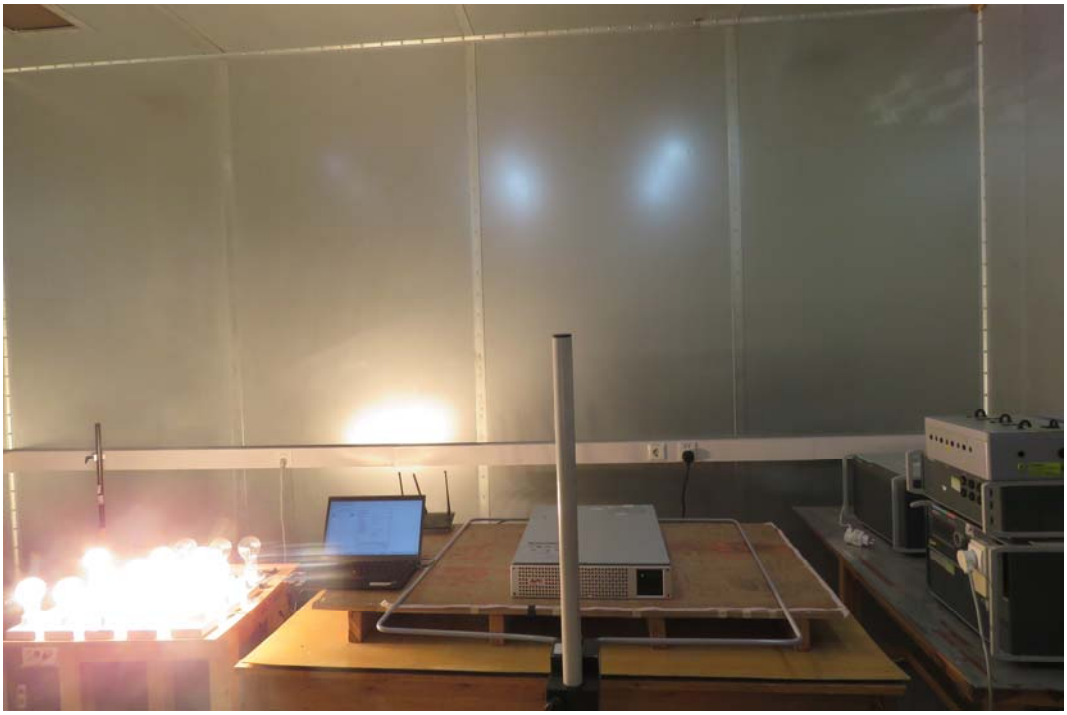

Picture 9 Power Frequency Magnetic Field Test Setup

SMTL3000RMI2UCNC

SMTL2200RMI2UCNC

Picture 10 Common Mode Disturbances Test Setup

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