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EMC TEST REPORT

For

American Power Conversion Holdings Inc., Taiwan Branch

UPS

Model No.: SURT5KUXI-CH, SRTG5KXLI, SURT5KXLI-CH, SURT6KUXI-CH,
SRTG6KXLI, SURT6KXLI-CH

Prepared for : American Power Conversion Holdings Inc., Taiwan
Branch
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Date of Report : December 02, 2019

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APPENDIX (Photos of the EUT) (5 pages)

TEST REPORT DESCRIPTION

Applicant : American Power Conversion Holdings Inc., Taiwan Branch
 Manufacturer : American Power Conversion Holdings Inc., Taiwan Branch
 Trademark : 
 EUT : UPS
 Model Number : SURT5KUXI-CH, SRTG5KXLI, SURT5KXLI-CH, SURT6KUXI-CH, SRTG6KXLI, SURT6KXLI-CH
 Power Supply : Please see the 2.1 (Page 8)

Measurement Procedure Used:

EN 62040-2: 2018, IEC 62040-2: 2016

EN 61000-3-12: 2011

(IEC 61000-4-2:2008, IEC 61000-4-3:2006+A1:2007+A2:2010, IEC 61000-4-4:2012,

IEC 61000-4-5:2014+A1:2017, IEC 61000-4-6:2013, IEC 61000-4-8:2009, IEC 61000-4-11:2004+A1:2017,

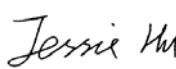
IEC 61000-2-2:2002+A1:2017)

The device described above is tested by EMTEK (SHENZHEN) CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and EMTEK (SHENZHEN) CO., LTD. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the EN 62040-2, EN 61000-3-12 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of EMTEK (SHENZHEN) CO., LTD.

Date of Test : July 07, 2019 to August 08, 2019

Prepared by : 
Winmy Huang/Editor

Reviewer : 
Jessie Hu /Supervisor

Approved & Authorized Signer : 
Lisa Wang/Manager



Modified Information

Version	Report No.	Revision Date	Summary
Ver.1.0	ES190715007E	/	Original Report
Ver.2.0	ES190715007E	2019-12-2	Update the standards

1. DESCRIPTION OF STANDARDS AND RESULTS (EUT)

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted Emissions	EN62040-2: 2018	C3	Pass
Asymmetric mode conducted emissions Wired network ports	EN62040-2: 2018	C3	Pass
Radiated emissions at frequencies up to 1 GHz	EN62040-2: 2018	C3	Pass
Harmonic Current Emissions	EN 61000-3-12:2011	Table 2	Pass
Voltage Fluctuation and Flicker	EN 61000-3-11:2000	-	N/A
IMMUNITY			
Description of Test Item	Basic Standard	Performance Criteria	Results
Electrostatic Discharge (ESD)	IEC 61000-4-2:2008	B	Pass
RF Field Strength Susceptibility (R/S)	IEC 61000-4-3: 2006+A1:2007+A2:2010	A	Pass
Electro Fast Transient (EFT)	IEC 61000-4-4:2012	B	Pass
Surge	IEC 61000-4-5: 2014+A1:2017	B	Pass
Radio-Frequency, Continuous Conducted Disturbance	IEC 61000-4-6:2013	A	Pass
Power Frequency Magnetic Field	IEC 61000-4-8:2009	A	Pass
Voltage Dips and Interruptions	IEC 61000-4-11: 2004+A1:2017	-	Pass
Low Frequency signals	IEC 61000-2-2: 2002+A1:2017	A	Pass
Note: N/A is an abbreviation for Not Applicable. 1) AC output cable, as declared by the manufacturer in the user manual, does not exceed 10 m in length.			

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	: UPS
Model Number	: SURT5KUXI-CH, SRTG5KXLI, SURT5KXLI-CH, SURT6KUXI-CH, SRTG6KXLI, SURT6KXLI-CH Note: These models are identical in circuitry and electrical, mechanical and physical construction; the only differences are power and model number for trading purpose. We prepare SURT6KUXI-CH & SRTG6KXLI for test.
Test Voltage	: AC 230V/50Hz or DC 192V
Power Supply	: Model: SRTG5KXLI , SURT5KXLI-CH Input: AC 220/230/240V, 50/60 Hz 1Φ, 28A max Output: AC 220/230/240V, 50/60 Hz 1Φ, 23A max, 5kVA/5kW Model: SRTG6KXLI, SURT6KXLI-CH Input: AC 220/230/240V, 50/60 Hz 1Φ, 33A max Output: AC 220/230/240V, 50/60 Hz 1Φ, 28A max, 6kVA/6kW Model: SRT5KUXI-CH Input: AC 220/230/240V, 50/60 Hz 1Φ, 30A max Output: AC 220/230/240V, 50/60 Hz 1Φ, 23A max, 5kVA/5kW Model: SRT6KUXI-CH Input: AC 220/230/240V, 50/60 Hz 1Φ, 35A max Output: AC 220/230/240V, 50/60 Hz 1Φ, 28A max, 6kVA/6Kw
Applicant	: American Power Conversion Holdings Inc., Taiwan Branch
Address	: 3F, No. 205, Sec. 3, Beixin Rd., Xindian District, New Taipei City 231, Taiwan
Manufacturer	: American Power Conversion Holdings Inc., Taiwan Branch
Address	: 3F, No. 205, Sec. 3, Beixin Rd., Xindian District, New Taipei City 231, Taiwan
Factory	: Shenzhen KSTAR Science & Technology Co., Ltd. Guangming Branch
Address	: Kstar High Tech Park, Guangming High Technology Town, Gongming Street, Baoan District, Shenzhen, P.R. China
Date of Received	: July 07, 2019
Date of Test	: July 07, 2019 to August 08, 2019

2.2. Independent Operation Modes

- A. On
 - 1. Line Mode
 - 2. Bat Mode
 - 3. ECO Mode
- B. Stand-by
- C. Off

2.3. Test Manner

Test Items	Test Voltage	Operation Modes	Worst case
Conducted disturbance at mains Terminals	AC 230V/50Hz DC 192V	Mode A	Mode A.2 (Model: SRTG6KXLI, DC 192V)
Conducted disturbance at the network ports	AC 230V/50Hz	Mode A	Mode A.1
Radiated emissions at frequencies up to 1 GHz	AC 230V/50Hz DC 192V	Mode A	Mode A.2 (Model: SRTG6KXLI, DC 192V)
Harmonic Current Emissions	AC 230V/50Hz	Mode A.1	Mode A.1
EMS	AC 230V/50Hz DC 192V	Mode A	/

2.4. Description of Support Device

Notebook : Manufacturer: Lenovo
M/N: WB0205140E
S/N: WB06355728
CE, FCC

2.5. Description of Test Facility

Site Description
EMC Lab. : Accredited by CNAS, 2018.11.30
The certificate is valid until 2022.10.28
The Laboratory has been assessed and proved to be in compliance with
CNAS-CL01:2006 (identical to ISO/IEC 17025:2017)
The Certificate Registration Number is L2291

Accredited by TUV Rheinland Shenzhen 2018.3.30
The Laboratory has been assessed according to the requirements ISO/IEC
17025

Accredited by FCC, August 09, 2018
Designation Number: CN1204
Test Firm Registration Number: 882943

Accredited by A2LA, August 08, 2018
The Certificate Registration Number is 4321.01

Accredited by Industry Canada, November 09, 2018
The Certificate Registration Number is CN0008

Name of Firm : EMTEK (SHENZHEN) CO., LTD.
Site Location : Bldg 69, Majialong, Industry Zone, Nanshan District, Shenzhen, Guangdong,
China

2.6. Measurement Uncertainty

Test Item	Uncertainty
Conducted Emission Uncertainty	: 2.08dB(9k~150kHz Conduction 1#) 2.40dB(150k~30MHz Conduction 1#)
Radiated Emission Uncertainty (10m Chamber)	: 4.58dB (30M~1GHz Polarize: H) 4.54dB (30M~1GHz Polarize: V)
Uncertainty for Harmonic test	: 1.8%
Uncertainty for C/S Test	: 1.45(Using CDN Test) 2.37(Using EM Clamp Test)
Uncertainty for R/S Test	: 2.10dB(80MHz-200MHz) 1.76dB(200MHz-1000MHz)
Uncertainty for test site temperature and humidity	: 0.6℃ 4%

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For Conducted Emissions At the Mains Power Ports

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Test Receiver	Rohde & Schwarz	ESCI	26115-010-0027	May 18, 2019	1 Year
☒	L.I.S.N.	Rohde & Schwarz	ENV216	101161	May 18, 2019	1 Year
☒	50Ω Coaxial Switch	Anritsu	MP59B	6100175589	May 18, 2019	1 Year
☒	Voltage Probe	Rohde & Schwarz	ESH2-Z3	100122	May 19, 2019	1 Year

3.2. For Asymmetric Mode Conducted Emissions at Wired Network Ports

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Test Receiver	Rohde & Schwarz	ESCI	26115-010-0027	May 18, 2019	1 Year
☒	AAN	Teseq GmbH	ISN T800	30327	May 19, 2019	1 Year
☒	AAN	Teseq GmbH	T8-CAT6	32186	May 19, 2019	1 Year
☒	50Ω Coaxial Switch	Anritsu	MP59B	6100175589	May 19, 2019	1 Year

3.3. For Radiated Emission Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	EMI Test Receiver	Rohde & Schwarz	ESR3	1316.3003K03-101706-HN	May 18, 2019	1 Year
☒	EMI Test Receiver	Rohde & Schwarz	ESR3	1316.3003K03-101707-Z1	May 18, 2019	1 Year
☒	Pre-Amplifier	Lunar EM	LNA10M1G-40	J1011130912001	May 18, 2019	1 Year
☒	Pre-Amplifier	Lunar EM	LNA10M1G-40	J1011131126002	May 19, 2019	1 Year
☒	Bilog Antenna	Schwarzbeck	VULB9163	659	May 19, 2019	1 Year
☒	Bilog Antenna	Schwarzbeck	VULB9163	661	May 19, 2019	1 Year
☒	Cable	Times Microwave	LMR-240 N-N 1m	SS26-P1	May 19, 2019	1 Year
☒	Cable	Times Microwave	LMR-240 N-N 1m	SS26-P2	May 19, 2019	1 Year
☒	Cable	Times Microwave	LMR-240 N-N 1.5m	N/A	May 19, 2019	1 Year
☒	Cable	Times Microwave	LMR-240 N-N 1.5m	N/A	May 19, 2019	1 Year
☒	Cable	Times Microwave	LMR-240 N-N 12m	N/A	May 19, 2019	1 Year
☒	Cable	Times Microwave	LMR-240 N-N 11m	N/A	May 19, 2019	1 Year

3.4. For Harmonic Current / Flicker Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	45KVA AC Power source	Teseq	NSG 1007-45/45KVA	1305A02873	May 19, 2019	1 Year
☒	Signal conditioning Unit	Teseq	CCN 1000-3	1305A02873	May 19, 2019	1 Year
☒	Three phase impedance network	Teseq/Germany	INA2197/37A	1305A02873	May 19, 2019	1 Year
☒	Three phase impedance network	Teseq/Germany	INA 2196/75A	1305A02874	May 19, 2019	1 Year
☐	Proflin 2100 AC Switching Unit	Teseq/Germany	NSG2200-3	A22714	May 19, 2019	1 Year

3.5. For Electrostatic Discharge Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	ESD Tester	TESEQ AG	NSG 438A	130	May 19, 2019	1 Year
☒	Impulse Module	TESEQ AG	IN NSG 438A A 4380-150pF/3300hm	403-550/1712	May 19, 2019	1 Year

3.6. For RF Strength Susceptibility Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Signal Generator	Agilent	N5181A	MY50145187	May 18, 2019	1 Year
☒	RF Power Meter. Dual Channel	BOONTON	4232A	10539	May 19, 2019	1 Year
☒	50ohm Diode Power Sensor	BOONTON	51011EMC	34236/34238	May 19, 2019	1 Year
☒	Field Strength Meter	DARE	RSS1006A	10100037SO22	May 19, 2019	1 Year
☒	50ohm Diode Power Sensor	BOONTON	51011EMC	36164	May 19, 2019	1 Year
☒	Power Amplifier	MILMEGA	80RF1000-175	1059345	May 18, 2019	1 Year
☐	Power Amplifier	MILMEGA	AS0102-55	1018770	May 18, 2019	1 Year
☐	Power Amplifier	MILMEGA	AS1860-50	1059346	May 18, 2019	1 Year
☒	Log.-Per. Antenna	SCHWARZBECK	VULP 9118E	N/A	May 19, 2019	1 Year
☐	Broad-Band Horn Antenna	SCHWARZBECK	STLP 9149	9149-227	May 19, 2019	1 Year
☒	Multi-function interface system	DARE	CTR1009B	12100250SNO72	N/A	N/A
☒	Automatic switch group	DARE	RSW1004A	N/A	N/A	N/A

3.7. For Electrical Fast Transient / Burst Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Burst Tester	HAEFELY	PEFT4010	080981-16	May 18, 2019	1Year
☒	Coupling Clamp	HAEFELY	IP-4A	147147	May 18, 2019	1Year

3.8. For Surge Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Surge Controller	HAEFELY	Psurge 8000	174031	May 19, 2019	1Year
☒	Impulse Module	HAEFELY	PIM 100	174124	May 18, 2019	1Year
☒	Coupling Decoupling Filter	HAEFELY	PCD 130	172181	May 19, 2019	1Year
☒	Coupling Module	HAEFELY	PCD122	174354	May 18, 2019	1Year
☒	Surge Impulse Module	HAEFELY	PIM 120	174435	May 19, 2019	1Year
☒	Coupling Module	HAEFELY	PCD 126A	174387	May 18, 2019	1Year
☒	Impulse Module	HAEFELY	PIM 110	174391	May 18, 2019	1Year
☒	Impulse Module	HAEFELY	PIM 150	178707	May 19, 2019	1Year

3.9. For Injected Current Susceptibility Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Simulator	EMTEST	CWS500C	0900-12	May 19, 2019	1Year
☐	CDN	EMTEST	CDN-M2	5100100100	May 19, 2019	1 Year
☒	CDN	EMTEST	CDN-M3	0900-11	May 19, 2019	1 Year
☐	Injection Clamp	EMTEST	F-2031-23MM	368	May 19, 2019	1 Year
☒	Attenuator	EMTEST	ATT6	0010222A	May 19, 2019	1Year

3.10. For Magnetic Field Immunity Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Magnetic Field Tester	HAEFELY	MAG100	250040.1	May 18, 2019	1 Year

3.11. For Voltage Dips and Interruptions Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	45KVA AC Power source	Teseq	NSG 1007-45/45K VA	1305A02873	May 19, 2019	1 Year
☐	Signal conditioning Unit	Teseq	CCN 1000-3	1305A02873	May 19, 2019	1 Year
☐	Three phase impedance network	Teseq/Germany	INA2197/37A	1305A02873	May 19, 2019	1 Year
☐	Three phase impedance network	Teseq/Germany	INA 2196/75A	1305A02874	May 19, 2019	1 Year
☒	Proflin 2100 AC Switching Unit	Teseq/Germany	NSG2200-3	A22714	May 19, 2019	1 Year

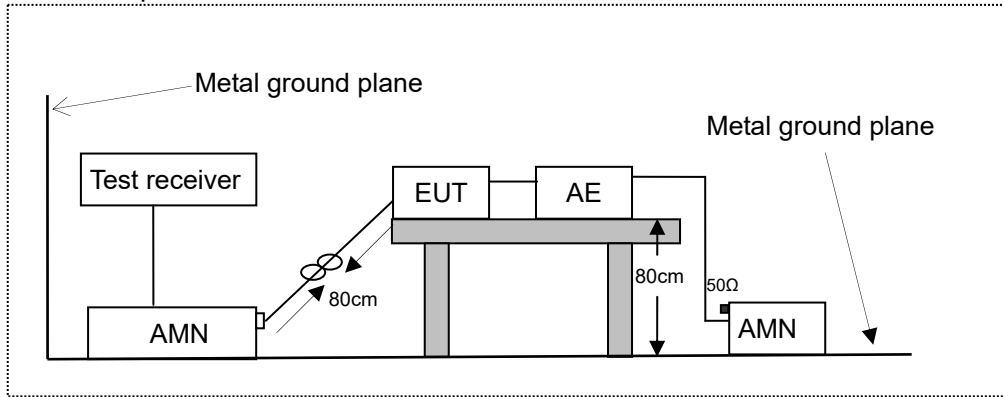
3.12. Low Frequency Signals Test

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Programmable AC Source	CHROMA	6530	/	May 18, 2019	1Year

4. CONDUCTED EMISSIONS FROM THE AC MAINS POWER PORTS

4.1. Block Diagram of Test Setup

For mains port

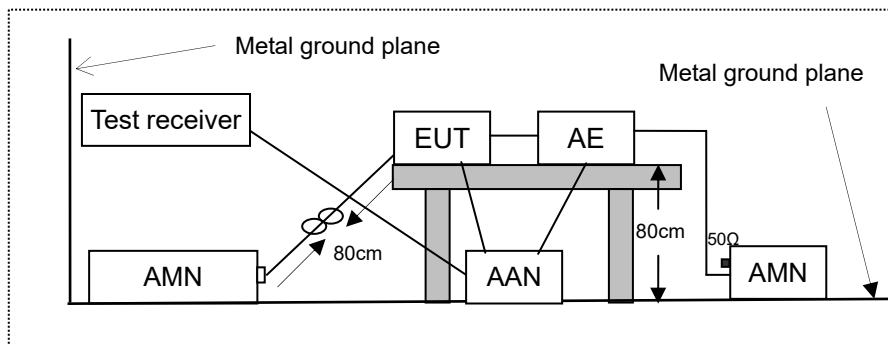


AMN: Artificial Mains Network

AE: Associated equipment

EUT: Equipment under test

For network port:



AMN: Artificial mains network

AE: Associated equipment

EUT: Equipment under test

AAN: Asymmetric artificial network

4.2. Limits

Table 2 – Limits of mains terminal and network port disturbance voltage for category C3 UPS in the frequency range 0,15 MHz to 30 MHz

UPS rated output current A	Frequency range MHz	Limits dB (μV)			
		Mains terminal		Network port	
		Quasi-peak	Average	Quasi-peak	Average
> 16 to 100	0,15 to 0,50 ^b	100	90	110 to 100 ^a	94 to 84 ^a
	0,50 to 5,0 ^b	86	76	100	84
	5,0 to 30,0	90 to 73 ^a	80 to 60 ^a		
> 100	0,15 to 0,50 ^b	130	120	110 to 100 ^a	94 to 84 ^a
	0,50 to 5,0 ^b	125	115	100	84
	5,0 to 30,0	115	105		

^a The limits decrease linearly with the logarithm of the frequency.
^b The lower limit shall apply at the transition frequency.

4.3. Test Procedure

The EUT was placed on a desk 0.8 m height from the metal ground plane and 0.4 m from the conducting wall of the shielding room and it was kept at least 0.8 m from any other grounded conducting surface. The size of the table will nominally be 1.5 m x1.0 m.

The rear of the arrangement shall be flush with the back of the supporting tabletop unless that would not be possible or typical of normal use.

All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units.

Connect EUT to the power mains through a artificial mains network (AMN). Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

All the support units are connecting to the other AMN.

The AMN provides 50 ohm coupling impedance for the measuring instrument.

The CISPR states that the AMN with 50 ohm and 50 microhenry should be used.

Both sides of AC line were checked for maximum conducted interference.

The frequency range from 150 kHz to 30 MHz was sweep.

Set the test-receiver system to quasi peak detect function and average detect function, and to measure the conducted emissions values.

Test results were obtained from the following equation:

Emission Level (dBμV) = AMN Factor (dB) + Cable Loss (dB) + Reading (dBμV)

Margin (dB) = Emission Level (dBμV) - Limit (dBμV)

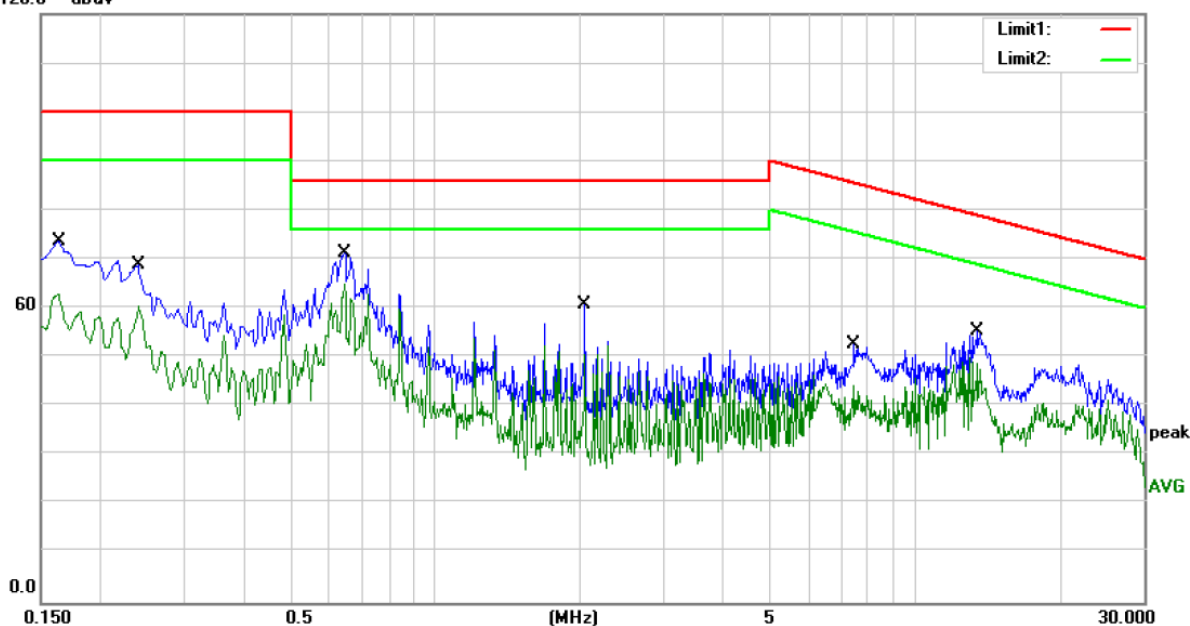
4.4. Measuring Results

PASS.

Please refer to the following pages.

SURT6KUXI-CH

120.0 dBuV



Site 10m Chamber 1#

Phase: **L1**

Temperature: 24.9

Limit: (CE)EN62040-2 C3_QP

Power: AC 230V/50Hz

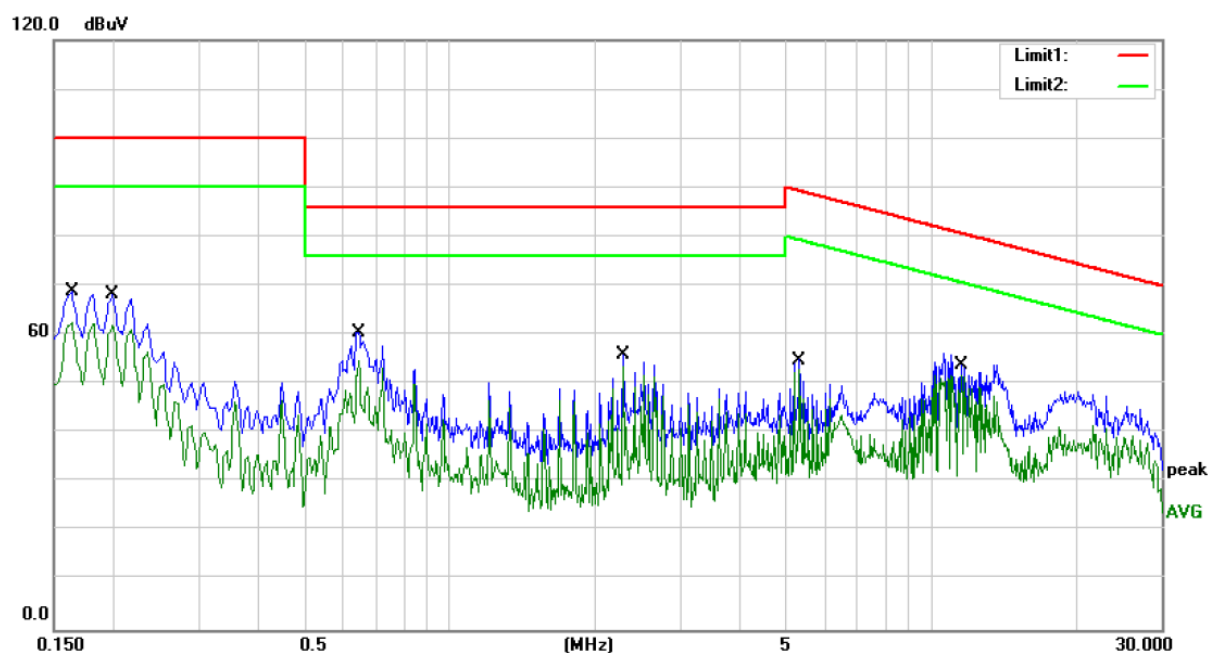
Humidity: 54 %

Mode: LINE MODE

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1635	63.85	9.89	73.74	100.00	-26.26	QP	
2		0.1635	53.02	9.89	62.91	90.00	-27.09	AVG	
3		0.2400	58.84	9.90	68.74	100.00	-31.26	QP	
4		0.2400	50.51	9.90	60.41	90.00	-29.59	AVG	
5		0.6450	61.35	9.93	71.28	86.00	-14.72	QP	
6	*	0.6450	54.96	9.93	64.89	76.00	-11.11	AVG	
7		2.0445	50.88	9.97	60.85	86.00	-25.15	QP	
8		2.0445	40.58	9.97	50.55	76.00	-25.45	AVG	
9		7.4760	42.47	10.04	52.51	85.51	-33.00	QP	
10		7.4760	34.17	10.04	44.21	75.51	-31.30	AVG	
11		13.5060	45.11	10.10	55.21	78.91	-23.70	QP	
12		13.5060	39.84	10.10	49.94	68.91	-18.97	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LEJ



Site 10m Chamber 1#

Phase: **N**

Temperature: 24.9

Limit: (CE)EN62040-2 C3_QP

Power: AC 230V/50Hz

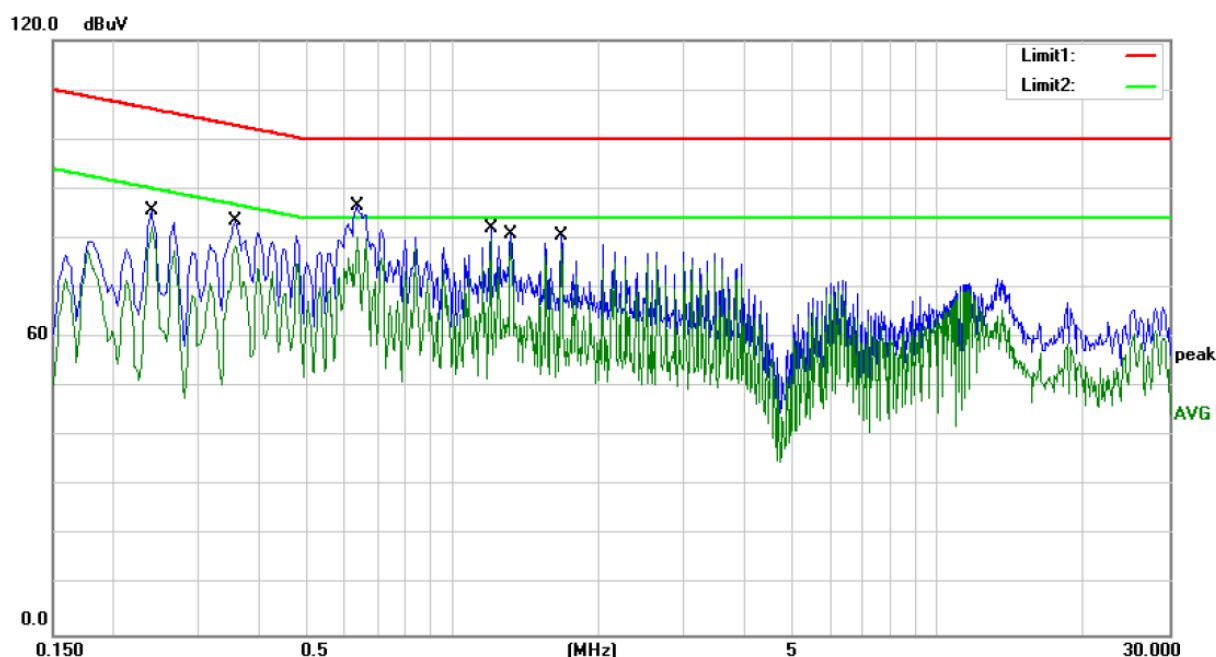
Humidity: 54 %

Mode: LINE MODE

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1635	58.93	9.89	68.82	100.00	-31.18	QP	
2		0.1635	52.80	9.89	62.69	90.00	-27.31	AVG	
3		0.1995	58.31	9.89	68.20	100.00	-31.80	QP	
4		0.1995	52.15	9.89	62.04	90.00	-27.96	AVG	
5		0.6450	50.66	9.93	60.59	86.00	-25.41	QP	
6		0.6450	44.72	9.93	54.65	76.00	-21.35	AVG	
7		2.2920	45.91	9.97	55.88	86.00	-30.12	QP	
8		2.2920	43.63	9.97	53.60	76.00	-22.40	AVG	
9		5.3070	44.89	10.01	54.90	89.33	-34.43	QP	
10		5.3070	42.94	10.01	52.95	79.33	-26.38	AVG	
11		11.5125	43.75	10.08	53.83	80.69	-26.86	QP	
12	*	11.5125	41.74	10.08	51.82	70.69	-18.87	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LEJ



Site 10m Chamber 1#

Phase:

Temperature: 24.9

Limit: (CE)EN62040-2 C3 Network_QP

Power: AC 230V/50Hz

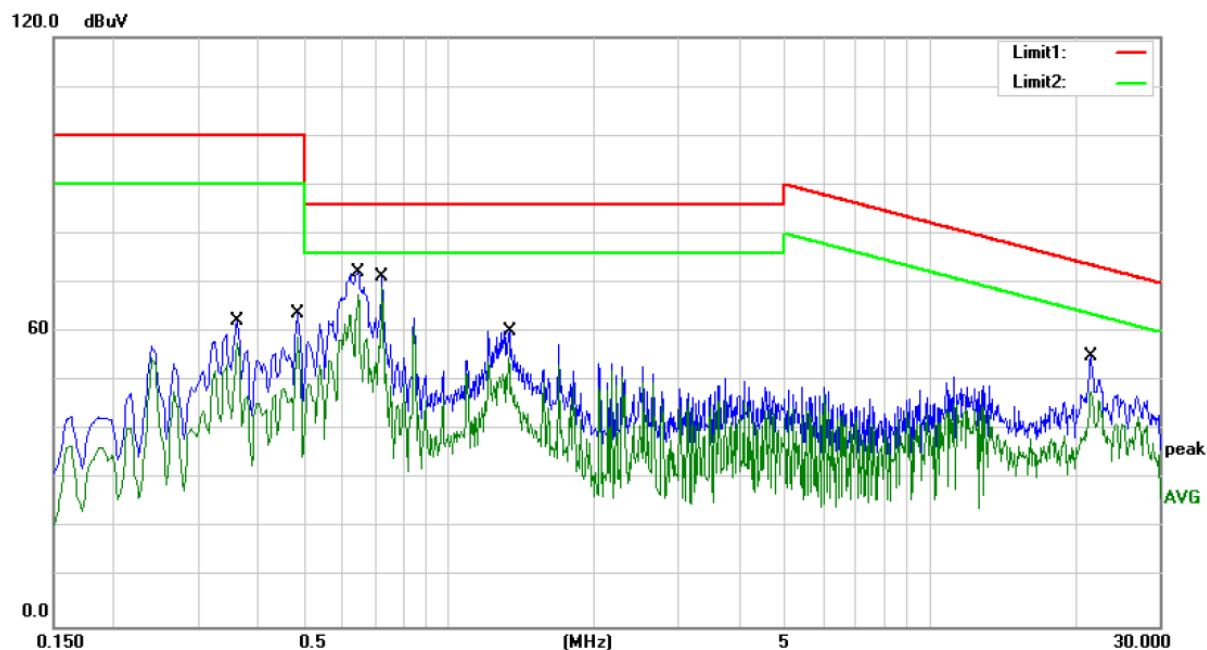
Humidity: 54 %

Mode: LINE MODE

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2400	75.88	9.90	85.78	106.10	-20.32	QP	
2		0.2400	72.57	9.90	82.47	90.10	-7.63	AVG	
3		0.3570	73.60	9.91	83.51	102.80	-19.29	QP	
4		0.3570	68.56	9.91	78.47	86.80	-8.33	AVG	
5		0.6360	79.53	9.93	89.46	100.00	-10.54	QP	
6	*	0.6360	70.28	9.93	80.21	84.00	-3.79	AVG	
7		1.1985	72.15	9.96	82.11	100.00	-17.89	QP	
8		1.1985	69.85	9.96	79.81	84.00	-4.19	AVG	
9		1.3200	70.84	9.96	80.80	100.00	-19.20	QP	
10		1.3200	68.98	9.96	78.94	84.00	-5.06	AVG	
11		1.6800	70.47	9.97	80.44	100.00	-19.56	QP	
12		1.6800	67.89	9.97	77.86	84.00	-6.14	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LEJ



Site 10m Chamber 1#

Phase: **L1**

Temperature: 24.9

Limit: (CE)EN62040-2 C3_QP

Power: DC 192V

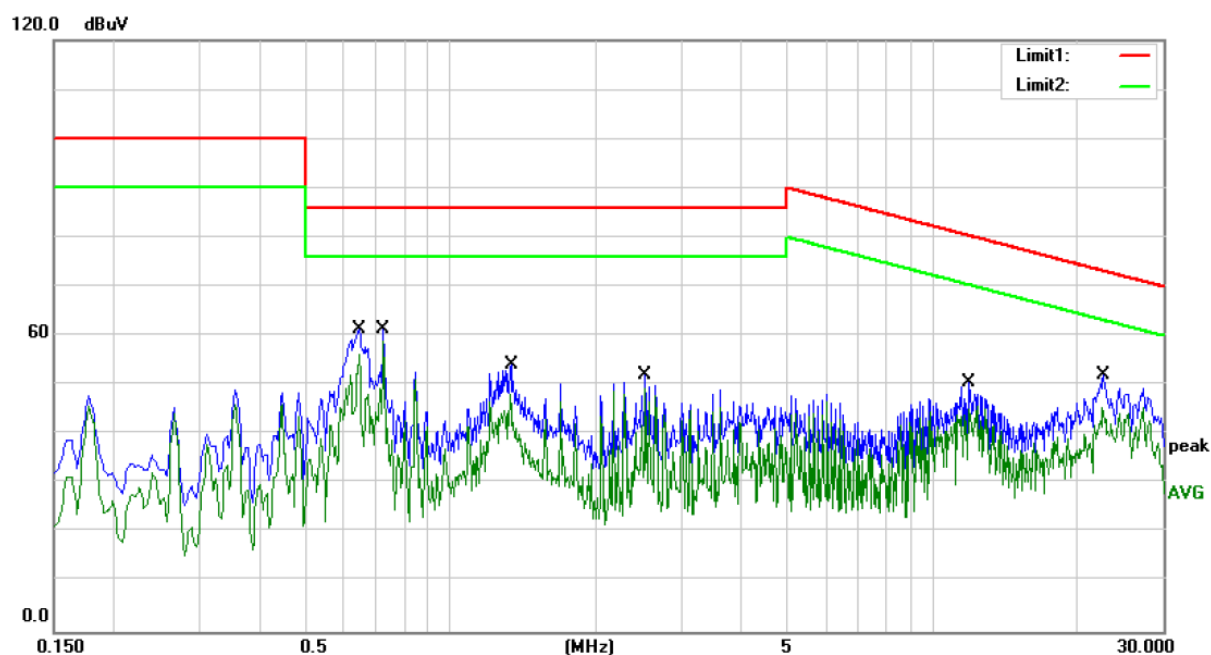
Humidity: 54 %

Mode: BAT MODE

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.3615	52.26	9.91	62.17	100.00	-37.83	QP	
2		0.3615	47.73	9.91	57.64	90.00	-32.36	AVG	
3		0.4830	49.09	9.92	59.01	100.00	-40.99	QP	
4		0.4830	53.87	9.92	63.79	90.00	-26.21	AVG	
5		0.6450	62.21	9.93	72.14	86.00	-13.86	QP	
6		0.6450	57.63	9.93	67.56	76.00	-8.44	AVG	
7		0.7260	61.23	9.94	71.17	86.00	-14.83	QP	
8	*	0.7260	59.15	9.94	69.09	76.00	-6.91	AVG	
9		1.3335	50.27	9.96	60.23	86.00	-25.77	QP	
10		1.3335	44.93	9.96	54.89	76.00	-21.11	AVG	
11		21.6330	44.97	10.19	55.16	73.65	-18.49	QP	
12		21.6330	37.52	10.19	47.71	63.65	-15.94	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LEJ



Site 10m Chamber 1#

Phase: N

Temperature: 24.9

Limit: (CE)EN62040-2 C3_QP

Power: DC 192V

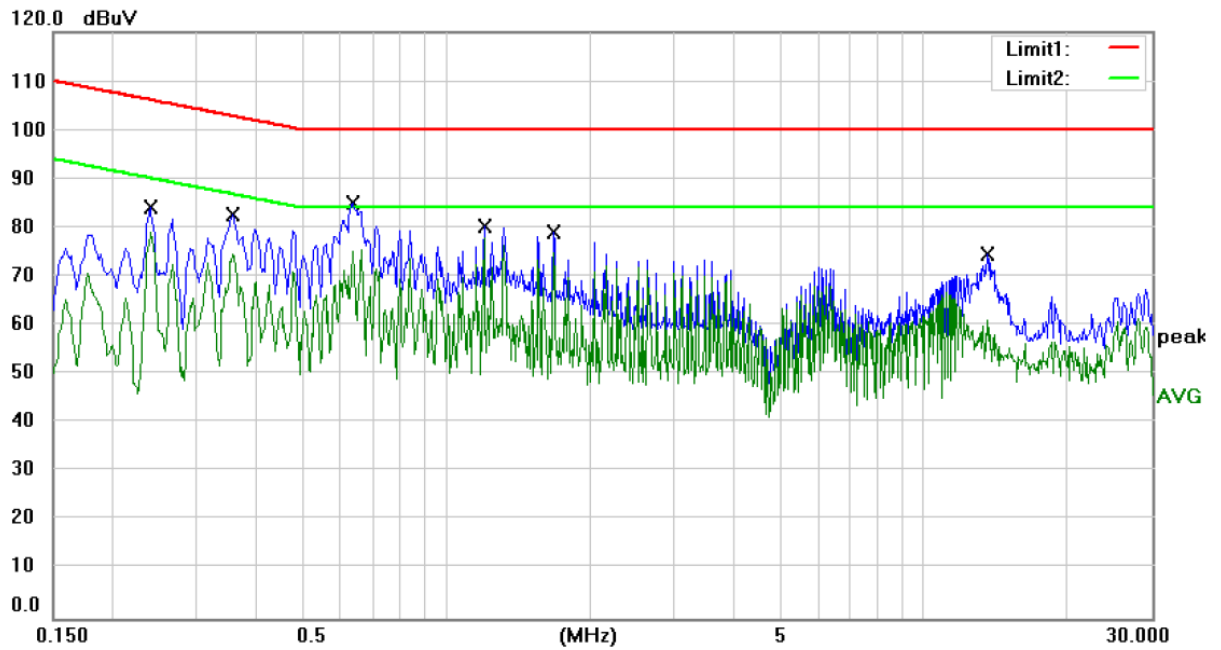
Humidity: 54 %

Mode: BAT MODE

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.6406	50.74	9.93	60.67	86.00	-25.33	QP	
2		0.6406	46.25	9.93	56.18	76.00	-19.82	AVG	
3		0.7260	51.30	9.94	61.24	86.00	-24.76	QP	
4	*	0.7260	49.03	9.94	58.97	76.00	-17.03	AVG	
5		1.3335	44.29	9.96	54.25	86.00	-31.75	QP	
6		1.3335	38.11	9.96	48.07	76.00	-27.93	AVG	
7		2.5395	42.02	9.98	52.00	86.00	-34.00	QP	
8		2.5395	39.28	9.98	49.26	76.00	-26.74	AVG	
9		11.8320	40.37	10.08	50.45	80.39	-29.94	QP	
10		11.8320	35.77	10.08	45.85	70.39	-24.54	AVG	
11		22.5780	41.90	10.21	52.11	73.17	-21.06	QP	
12		22.5780	35.29	10.21	45.50	63.17	-17.67	AVG	

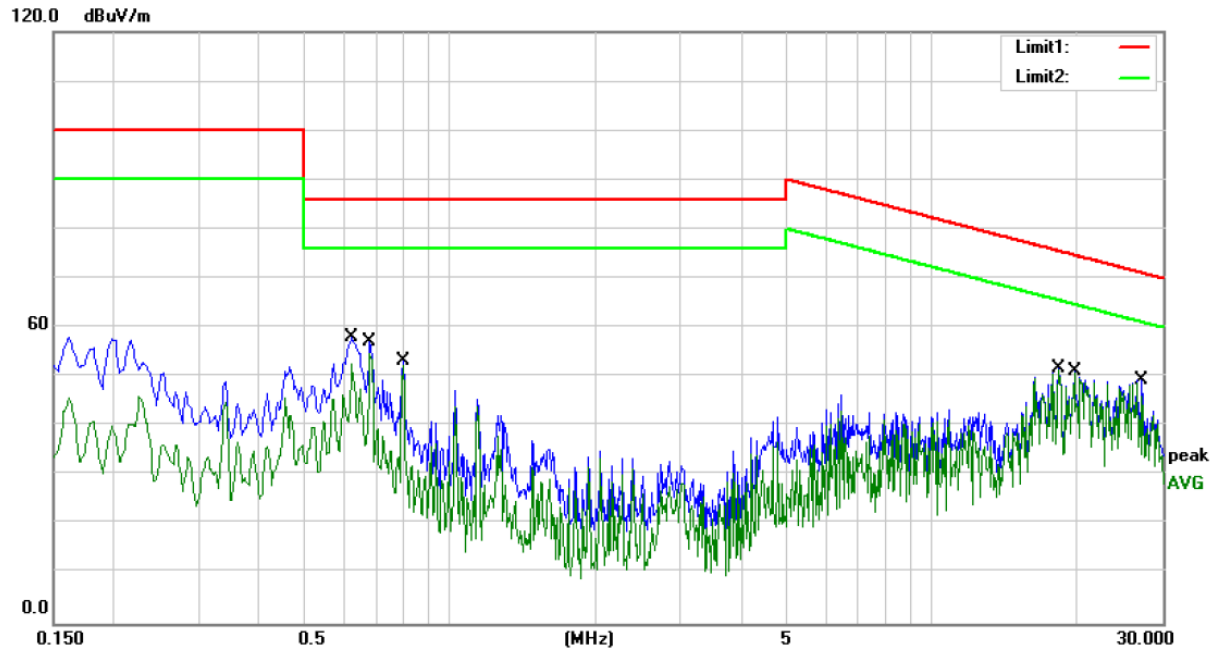
*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LEJ



Site 10m Chamber 1# Phase: Temperature: 24.9 C
 Limit: (CE)EN62040-2 C3 Network_QP Power: AC 230V/50Hz Humidity: 54 %
 Mode: Bat mode
 Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.2400	74.38	9.90	84.28	106.10	-21.82	QP	
2		0.2400	69.12	9.90	79.02	90.10	-11.08	AVG	
3		0.3570	72.60	9.91	82.51	102.80	-20.29	QP	
4		0.3570	64.56	9.91	74.47	86.80	-12.33	AVG	
5		0.6360	75.03	9.93	84.96	100.00	-15.04	QP	
6		0.6360	65.43	9.93	75.36	84.00	-8.64	AVG	
7		1.1980	70.15	9.96	80.11	100.00	-19.89	QP	
8	*	1.1980	67.85	9.96	77.81	84.00	-6.19	AVG	
9		1.6800	68.97	9.97	78.94	100.00	-21.06	QP	
10		1.6800	64.89	9.97	74.86	84.00	-9.14	AVG	
11		13.5600	64.36	10.10	74.46	100.00	-25.54	QP	
12		13.5600	53.79	10.10	63.89	84.00	-20.11	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LEJ



Site 10m Chamber 1#

Phase: **L1**

Temperature: 24.9

Limit: (CE)EN62040-2 C3_QP

Power: AC 230V/50Hz

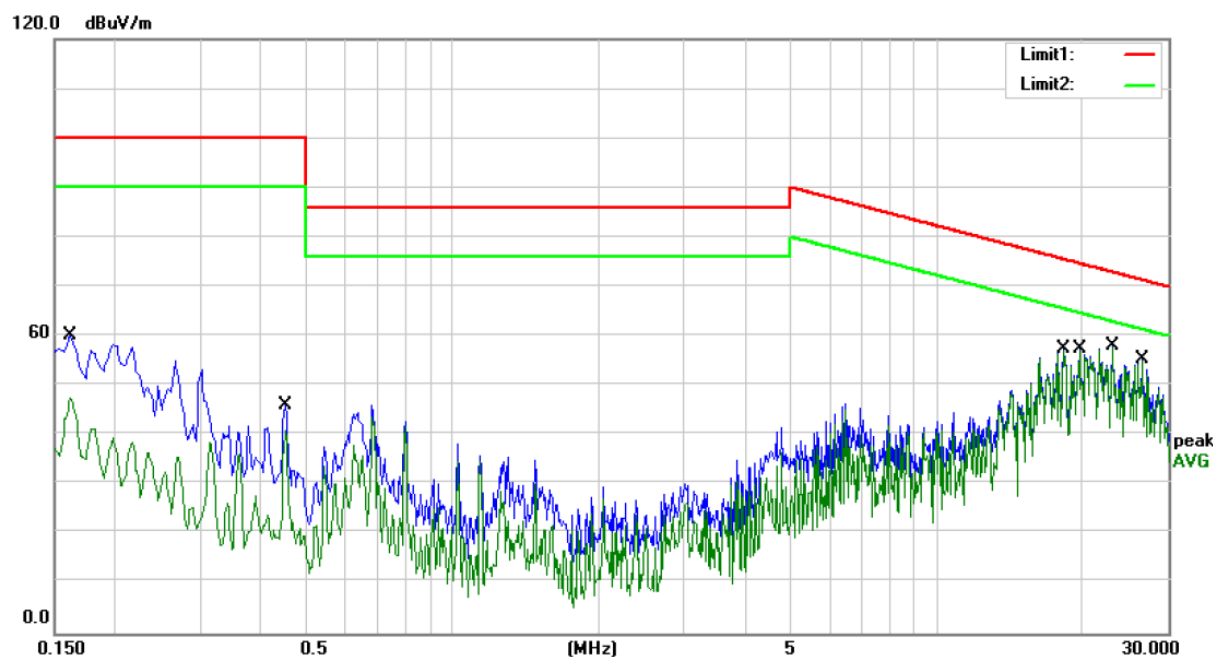
Humidity: 54 %

Mode: ECO MODE

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		0.6260	48.09	9.93	58.02	86.00	-27.98	QP	
2		0.6260	42.64	9.93	52.57	76.00	-23.43	AVG	
3		0.6820	47.21	9.94	57.15	86.00	-28.85	QP	
4		0.6820	44.83	9.94	54.77	76.00	-21.23	AVG	
5		0.7980	43.33	9.95	53.28	86.00	-32.72	QP	
6		0.7980	42.27	9.95	52.22	76.00	-23.78	AVG	
7		18.2460	41.62	10.15	51.77	75.55	-23.78	QP	
8		18.2460	41.34	10.15	51.49	65.55	-14.06	AVG	
9		19.7100	41.07	10.17	51.24	74.69	-23.45	QP	
10		19.7100	40.72	10.17	50.89	64.69	-13.80	AVG	
11		27.1580	39.15	10.27	49.42	71.11	-21.69	QP	
12	*	27.1580	38.47	10.27	48.74	61.11	-12.37	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LEJ



Site 10m Chamber 1#

Phase: **N**

Temperature: 24.9

Limit: (CE)EN62040-2 C3_QP

Power: AC 230V/50Hz

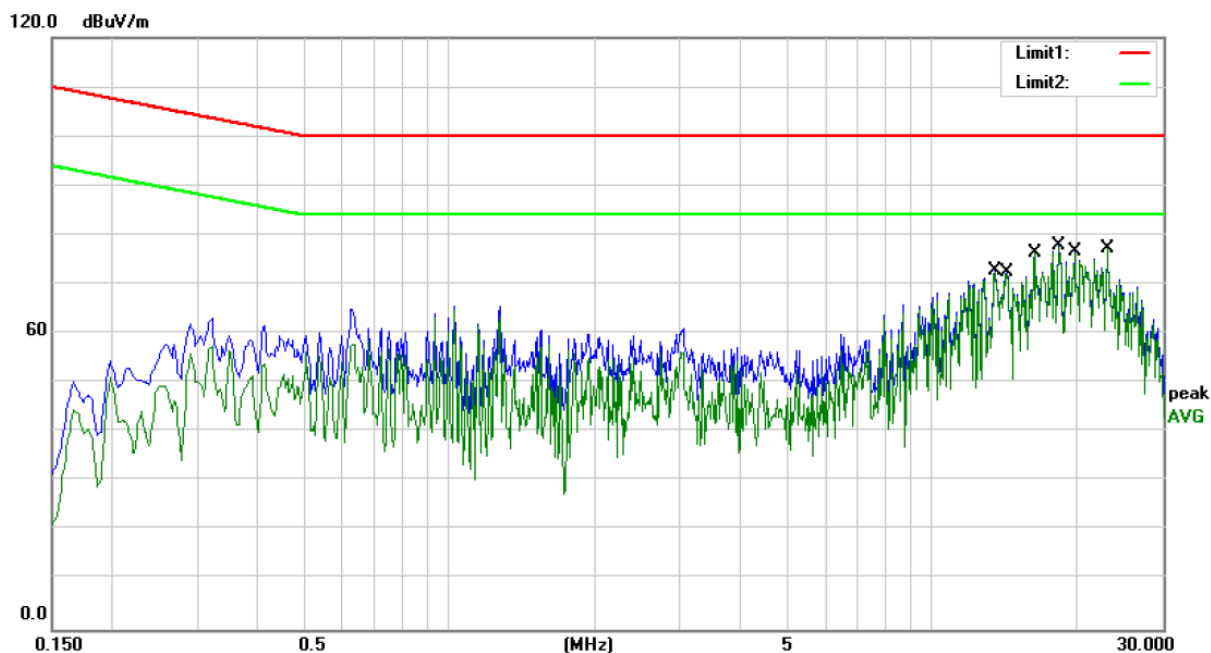
Humidity: 54 %

Mode: ECO MODE

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		0.1620	50.36	9.89	60.25	100.00	-39.75	QP	
2		0.1620	37.73	9.89	47.62	90.00	-42.38	AVG	
3		0.4500	36.13	9.92	46.05	100.00	-53.95	QP	
4		0.4500	31.05	9.92	40.97	90.00	-49.03	AVG	
5		18.2460	47.37	10.15	57.52	75.55	-18.03	QP	
6		18.2460	47.13	10.15	57.28	65.55	-8.27	AVG	
7		19.7100	47.26	10.17	57.43	74.69	-17.26	QP	
8		19.7100	46.95	10.17	57.12	64.69	-7.57	AVG	
9		23.1300	47.80	10.21	58.01	72.90	-14.89	QP	
10	*	23.1300	47.51	10.21	57.72	62.90	-5.18	AVG	
11		26.6100	45.03	10.26	55.29	71.34	-16.05	QP	
12		26.6100	44.69	10.26	54.95	61.34	-6.39	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LEJ

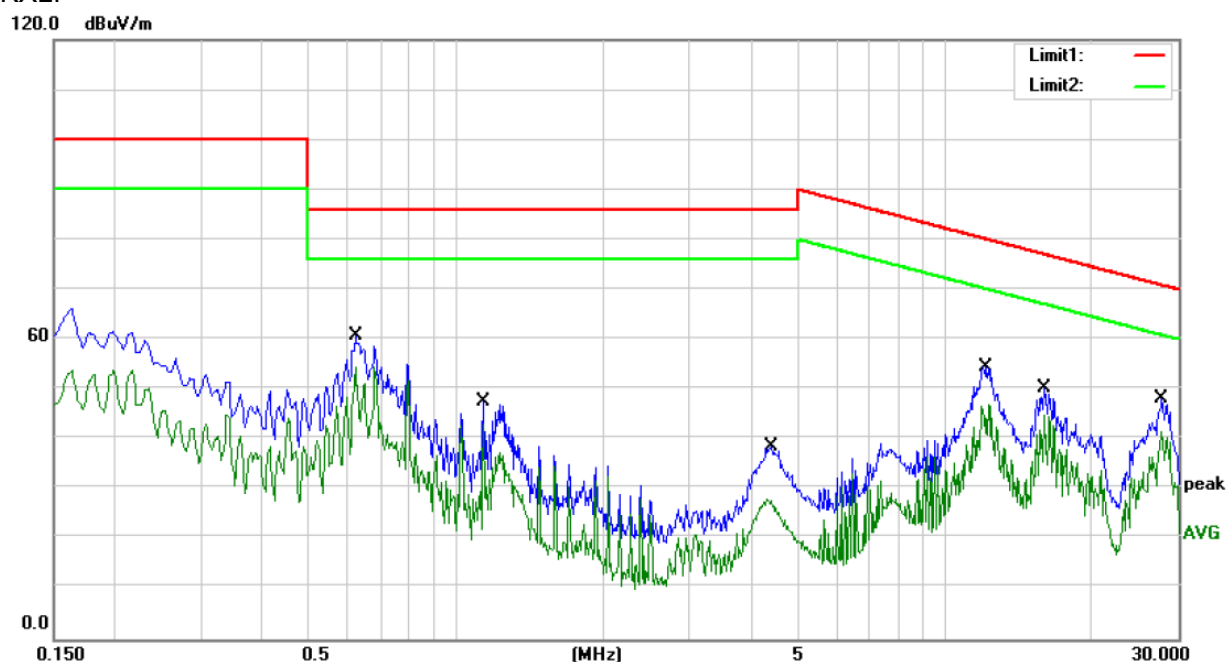


Site 10m Chamber 1# Phase: Temperature: 24.9
 Limit: (CE)EN62040-2 C3 Network_QP Power: AC 230V/50Hz Humidity: 54 %
 Mode: ECO MODE
 Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		13.4820	53.13	19.77	72.90	100.00	-27.10	QP	
2		13.4820	52.64	19.77	72.41	84.00	-11.59	AVG	
3		14.2140	52.64	19.78	72.42	100.00	-27.58	QP	
4		14.2140	52.39	19.78	72.17	84.00	-11.83	AVG	
5		16.2300	56.52	19.83	76.35	100.00	-23.65	QP	
6		16.2300	56.38	19.83	76.21	84.00	-7.79	AVG	
7		18.2460	57.83	19.90	77.73	100.00	-22.27	QP	
8	*	18.2460	57.63	19.90	77.53	84.00	-6.47	AVG	
9		19.7100	56.61	19.95	76.56	100.00	-23.44	QP	
10		19.7100	56.37	19.95	76.32	84.00	-7.68	AVG	
11		23.1300	57.21	20.09	77.30	100.00	-22.70	QP	
12		23.1300	57.03	20.09	77.12	84.00	-6.88	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LEJ

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Site 10m Chamber 1#

Phase: **L1**

Temperature: 24.9

Limit: (CE)EN62040-2 C3_QP

Power: AC 230V/50Hz

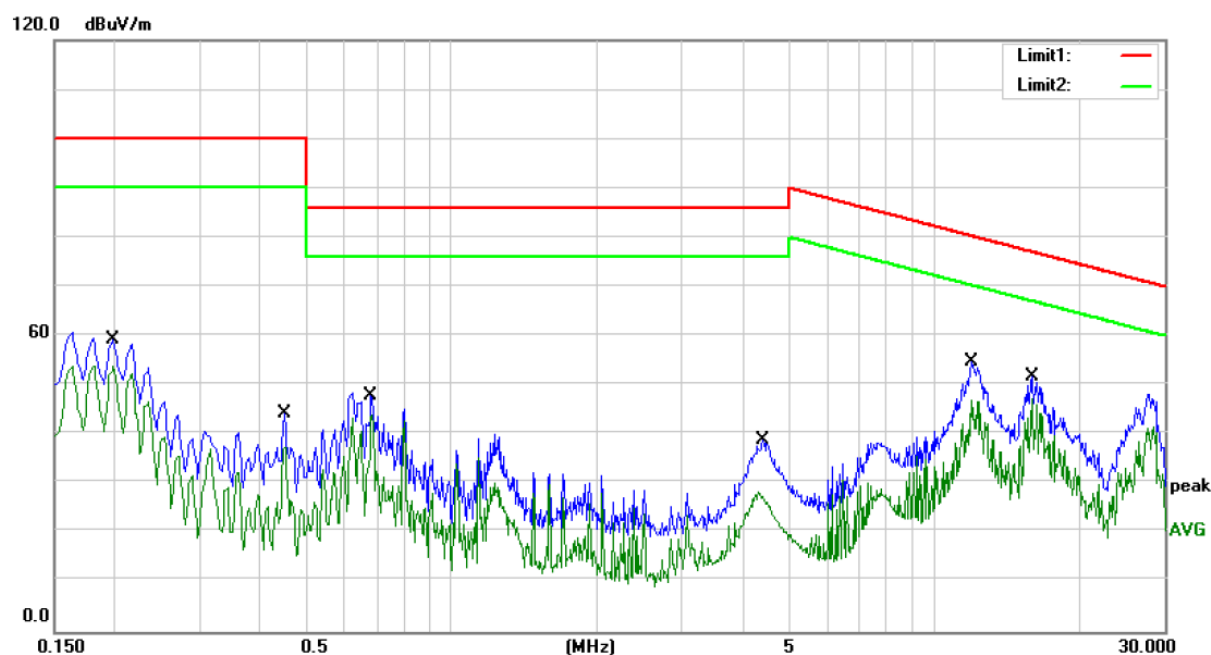
Humidity: 54 %

Mode: LINE MODE

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		0.6225	50.80	9.93	60.73	86.00	-25.27	QP	
2		0.6225	44.41	9.93	54.34	76.00	-21.66	AVG	
3		1.1355	37.45	9.96	47.41	86.00	-38.59	QP	
4		1.1355	33.09	9.96	43.05	76.00	-32.95	AVG	
5		4.4115	28.65	10.00	38.65	86.00	-47.35	QP	
6		4.4115	18.05	10.00	28.05	76.00	-47.95	AVG	
7		12.1605	44.48	10.09	54.57	80.08	-25.51	QP	
8		12.1605	36.85	10.09	46.94	70.08	-23.14	AVG	
9		15.9090	40.00	10.12	50.12	77.08	-26.96	QP	
10		15.9090	34.84	10.12	44.96	67.08	-22.12	AVG	
11		27.8520	37.97	10.28	48.25	70.83	-22.58	QP	
12	*	27.8520	30.21	10.28	40.49	60.83	-20.34	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LEJ



Site 10m Chamber 1#

Phase: **N**

Temperature: 24.9

Limit: (CE)EN62040-2 C3_QP

Power: AC 230V/50Hz

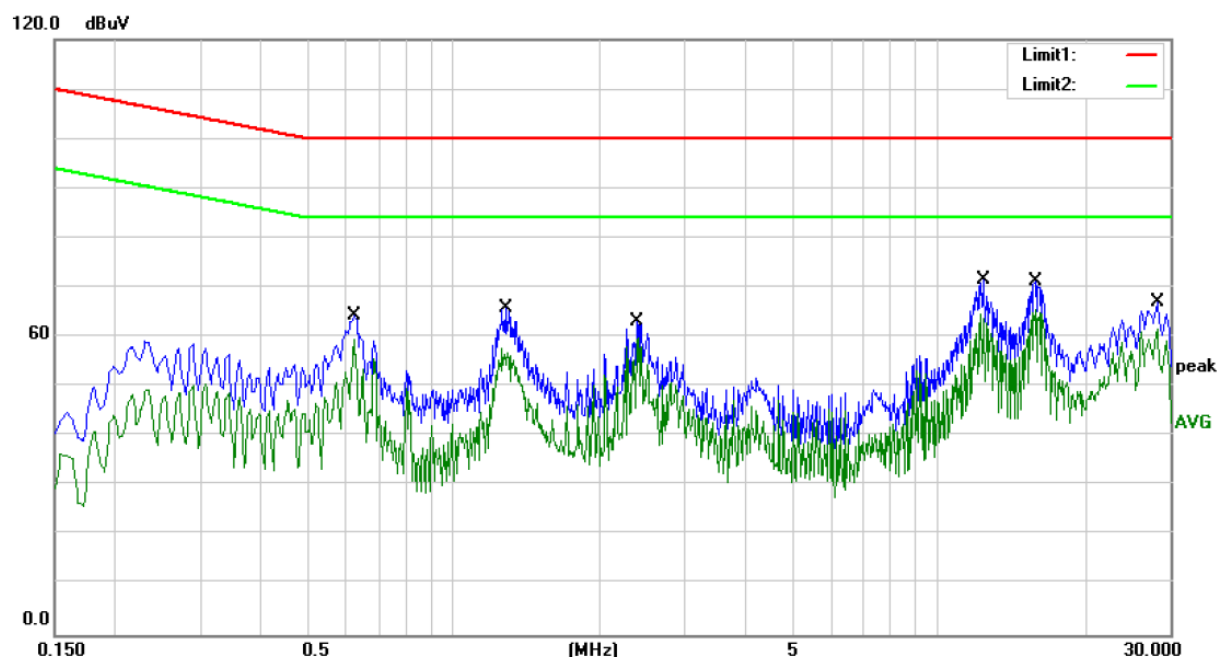
Humidity: 54 %

Mode: LINE MODE

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		0.1995	49.46	9.89	59.35	100.00	-40.65	QP	
2		0.1995	43.82	9.89	53.71	90.00	-36.29	AVG	
3		0.4515	34.19	9.92	44.11	100.00	-55.89	QP	
4		0.4515	27.43	9.92	37.35	90.00	-52.65	AVG	
5		0.6855	37.49	9.94	47.43	86.00	-38.57	QP	
6		0.6855	34.06	9.94	44.00	76.00	-32.00	AVG	
7		4.4115	28.71	10.00	38.71	86.00	-47.29	QP	
8		4.4115	18.39	10.00	28.39	76.00	-47.61	AVG	
9		11.9445	44.59	10.09	54.68	80.28	-25.60	QP	
10		11.9445	36.75	10.09	46.84	70.28	-23.44	AVG	
11		15.9225	41.51	10.12	51.63	77.07	-25.44	QP	
12	*	15.9225	37.17	10.12	47.29	67.07	-19.78	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LEJ



Site 10m Chamber 1#

Phase:

Temperature: 24.9

Limit: (CE)EN62040-2 C3 Network_QP

Power: AC 230V/50Hz

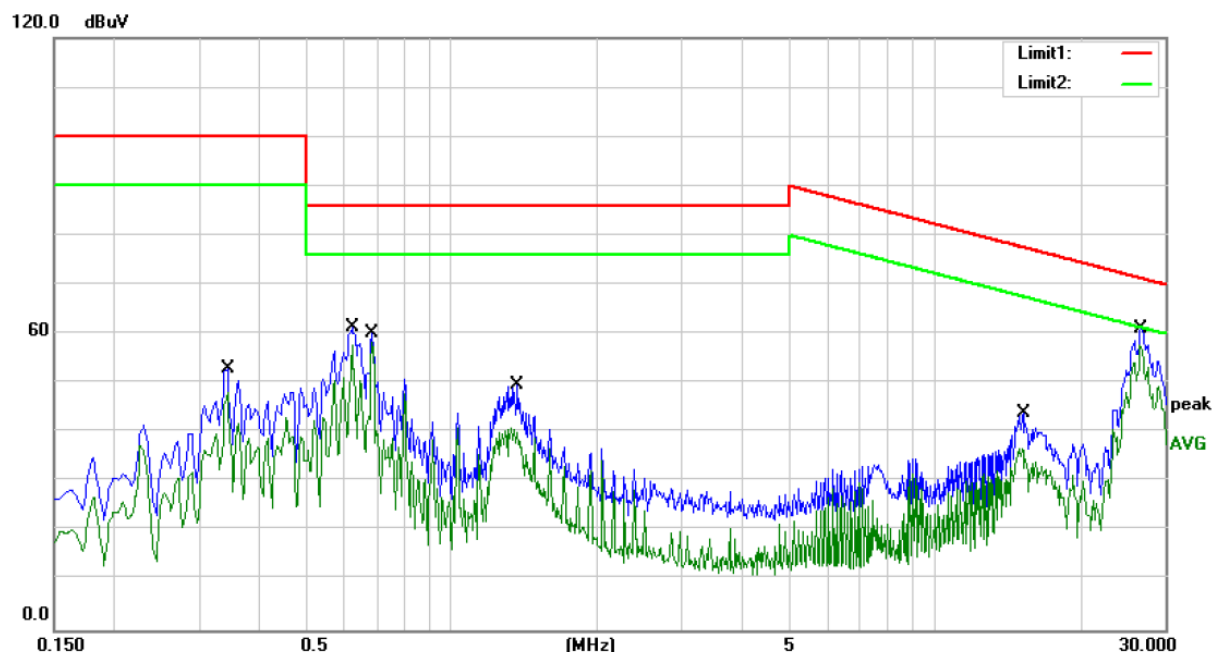
Humidity: 54 %

Mode: LINE MODE

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.6225	54.35	9.93	64.28	100.00	-35.72	QP	
2		0.6225	49.53	9.93	59.46	84.00	-24.54	AVG	
3		1.2795	55.96	9.96	65.92	100.00	-34.08	QP	
4		1.2795	47.75	9.96	57.71	84.00	-26.29	AVG	
5		2.3955	53.15	9.97	63.12	100.00	-36.88	QP	
6		2.3955	49.86	9.97	59.83	84.00	-24.17	AVG	
7		12.3270	61.48	10.09	71.57	100.00	-28.43	QP	
8		12.3270	54.66	10.09	64.75	84.00	-19.25	AVG	
9		15.8685	61.09	10.12	71.21	100.00	-28.79	QP	
10	*	15.8685	55.29	10.12	65.41	84.00	-18.59	AVG	
11		28.2030	56.90	10.28	67.18	100.00	-32.82	QP	
12		28.2030	51.28	10.28	61.56	84.00	-22.44	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LEJ



Site 10m Chamber 1#

Phase: **L1**

Temperature: 24.9

Limit: (CE)EN62040-2 C3 QP

Power: DC 192V

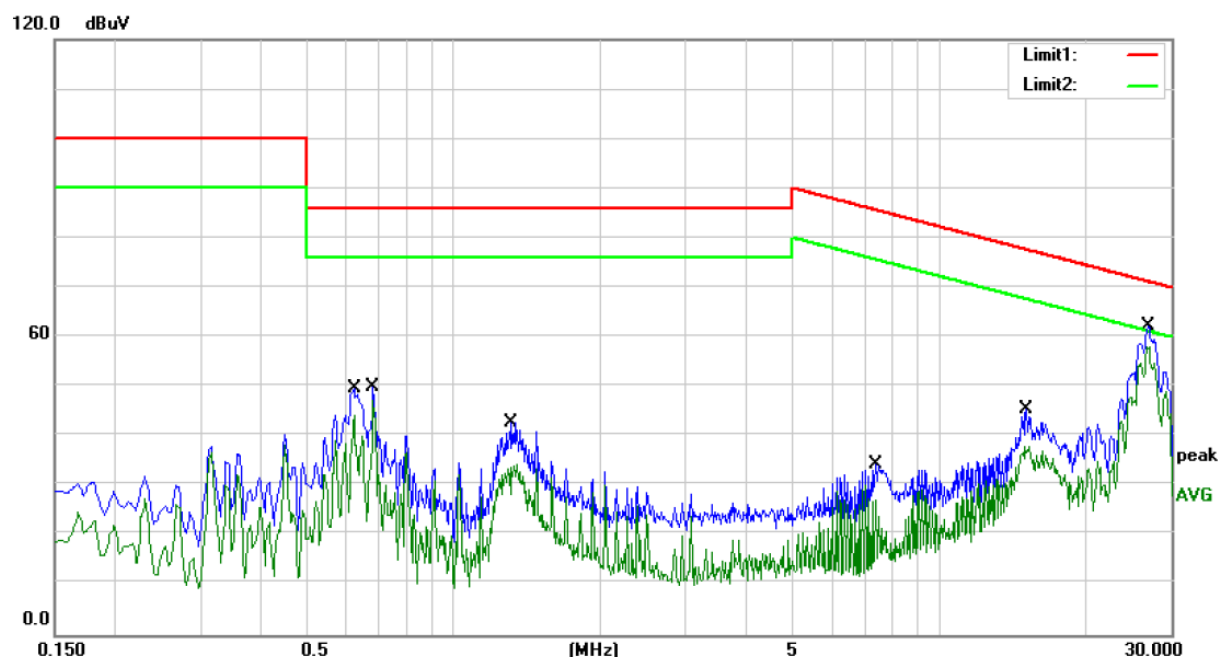
Humidity: 54 %

Mode: BAT MODE

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.3435	43.05	9.90	52.95	100.00	-47.05	QP	
2		0.3435	38.30	9.90	48.20	90.00	-41.80	AVG	
3		0.6225	51.39	9.93	61.32	86.00	-24.68	QP	
4		0.6225	47.82	9.93	57.75	76.00	-18.25	AVG	
5		0.6855	50.29	9.94	60.23	86.00	-25.77	QP	
6		0.6855	48.32	9.94	58.26	76.00	-17.74	AVG	
7		1.3695	39.54	9.96	49.50	86.00	-36.50	QP	
8		1.3695	30.97	9.96	40.93	76.00	-35.07	AVG	
9		15.2835	33.90	10.11	44.01	77.53	-33.52	QP	
10		15.2835	26.67	10.11	36.78	67.53	-30.75	AVG	
11		26.8125	50.85	10.27	61.12	71.25	-10.13	QP	
12	*	26.8125	47.36	10.27	57.63	61.25	-3.62	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LEJ



Site 10m Chamber 1#

Phase: **N**

Temperature: 24.9

Limit: (CE)EN62040-2 C3_QP

Power: DC 192V

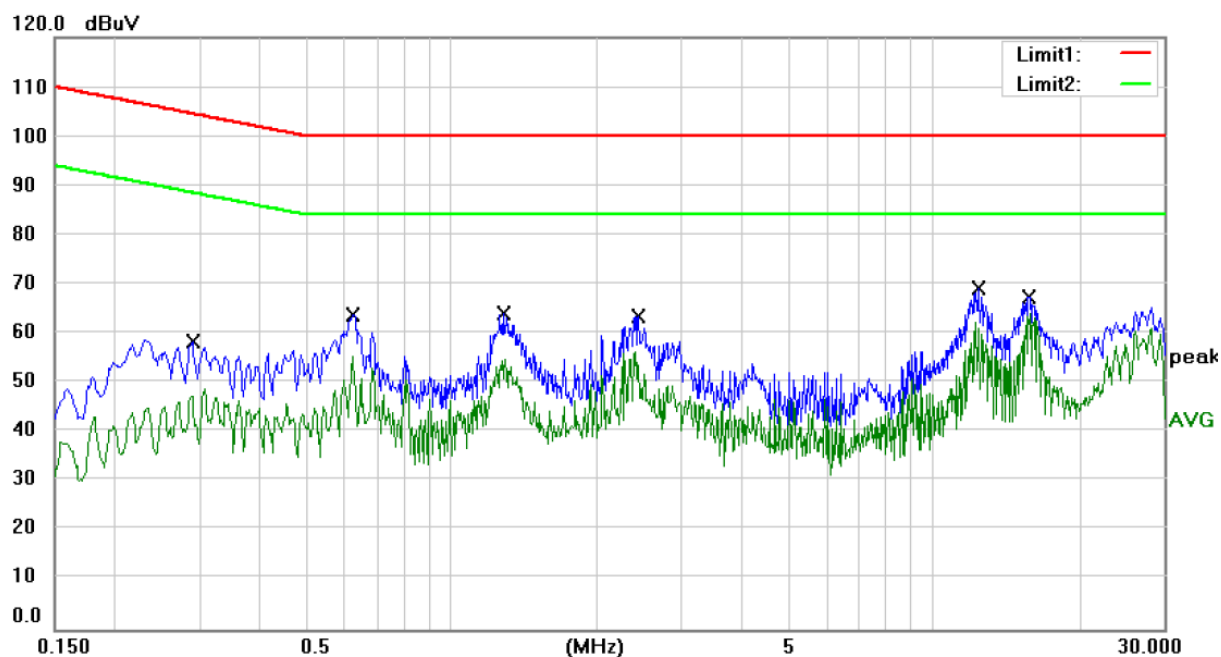
Humidity: 54 %

Mode: BAT MODE

Note:

No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over		
		MHz	dBuV	Factor	ment	dBuV	dB	Detector	Comment
1		0.6225	39.68	9.93	49.61	86.00	-36.39	QP	
2		0.6225	34.19	9.93	44.12	76.00	-31.88	AVG	
3		0.6810	39.88	9.94	49.82	86.00	-36.18	QP	
4		0.6810	37.22	9.94	47.16	76.00	-28.84	AVG	
5		1.3110	32.83	9.96	42.79	86.00	-43.21	QP	
6		1.3110	24.24	9.96	34.20	76.00	-41.80	AVG	
7		7.3860	24.16	10.04	34.20	85.65	-51.45	QP	
8		7.3860	17.35	10.04	27.39	75.65	-48.26	AVG	
9		15.1215	35.28	10.11	45.39	77.65	-32.26	QP	
10		15.1215	27.98	10.11	38.09	67.65	-29.56	AVG	
11		26.9700	51.89	10.27	62.16	71.19	-9.03	QP	
12	*	26.9700	47.23	10.27	57.50	61.19	-3.69	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LEJ



Site 10m Chamber 1#

Phase:

Temperature: 24.9 C

Limit: (CE)EN62040-2 C3 Network_QP

Power: AC 230V/50Hz

Humidity: 54 %

Mode: Bat mode

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2893	48.38	9.90	58.28	104.54	-46.26	QP	
2		0.2893	38.72	9.90	48.62	88.54	-39.92	AVG	
3		0.6221	53.85	9.93	63.78	100.00	-36.22	QP	
4		0.6221	45.53	9.93	55.46	84.00	-28.54	AVG	
5		1.2794	53.96	9.96	63.92	100.00	-36.08	QP	
6		1.2794	44.90	9.96	54.86	84.00	-29.14	AVG	
7		2.4360	53.44	9.97	63.41	100.00	-36.59	QP	
8		2.4360	46.36	9.97	56.33	84.00	-27.67	AVG	
9		12.3270	58.98	10.09	69.07	100.00	-30.93	QP	
10		12.3270	52.16	10.09	62.25	84.00	-21.75	AVG	
11		15.7515	57.33	10.12	67.45	100.00	-32.55	QP	
12	*	15.7515	53.79	10.12	63.91	84.00	-20.09	AVG	

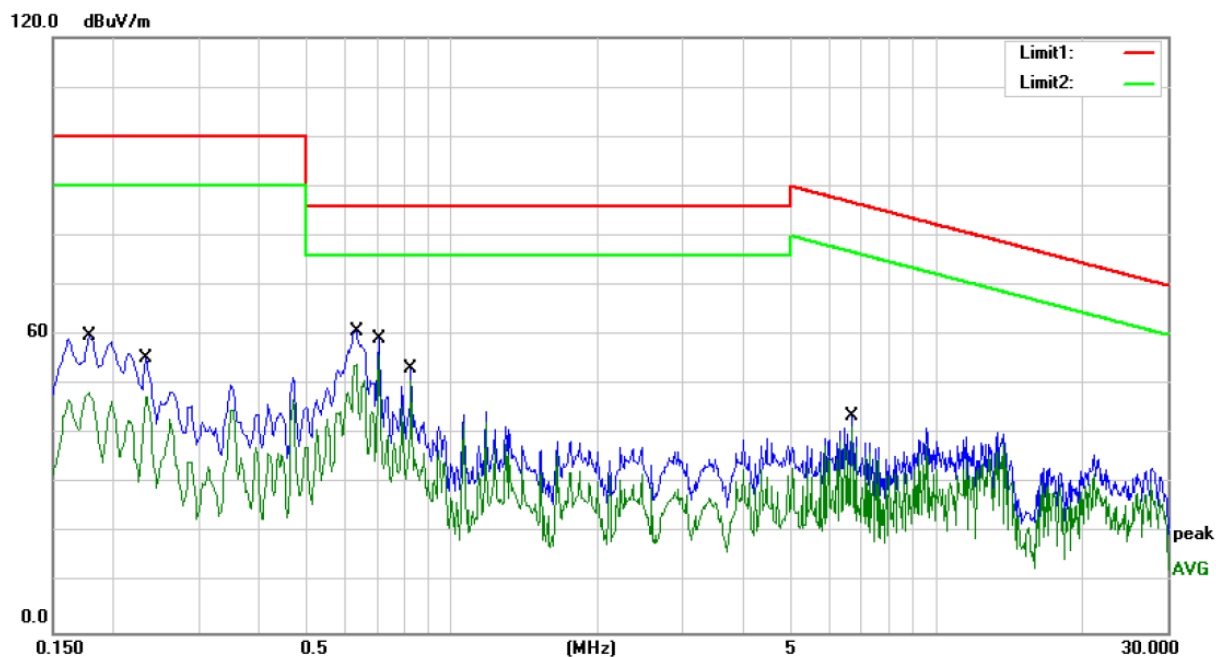
*:Maximum data

x:Over limit

!:over margin

Comment: Factor build in receiver.

Operator: LEJ



Site 10m Chamber 1#

Phase: **L1**

Temperature: 24.9

Limit: (CE)EN62040-2 C3_QP

Power: AC 230V/50Hz

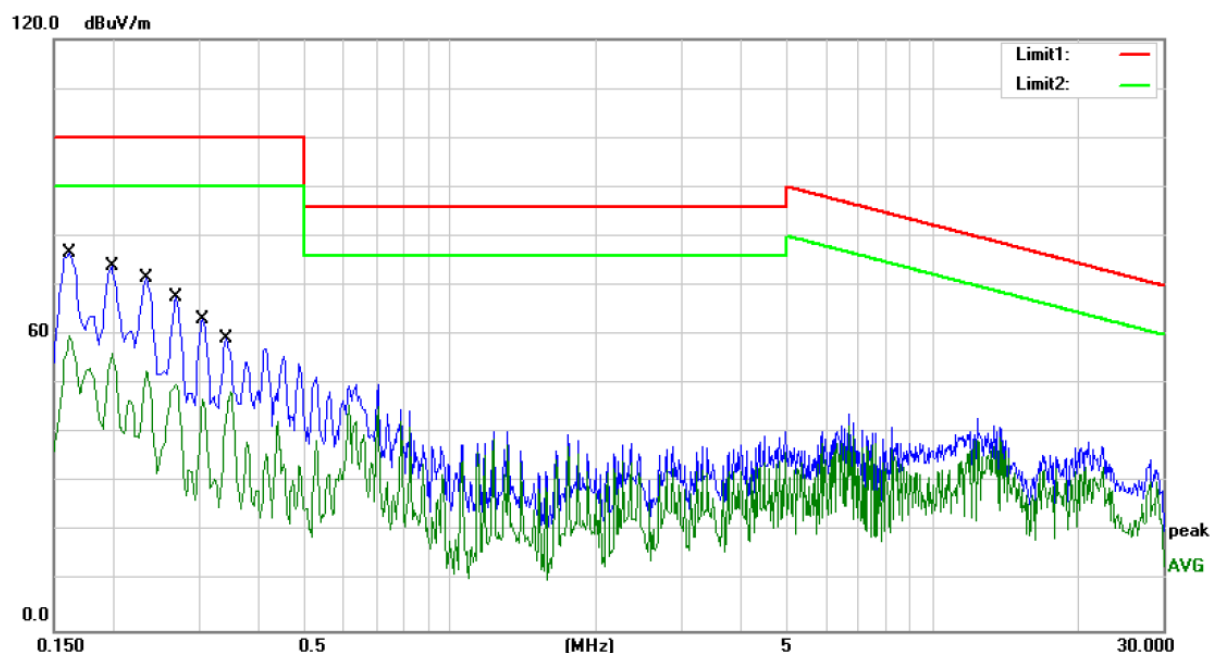
Humidity: 54 %

Mode: ECO MODE

Note:

No. Mk.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	0.1780	49.90	9.89	59.79	100.00	-40.21	QP	
2	0.1780	38.51	9.89	48.40	90.00	-41.60	AVG	
3	0.2353	43.44	9.90	53.34	100.00	-46.66	QP	
4	0.2353	37.65	9.90	47.55	90.00	-42.45	AVG	
5	0.6340	50.97	9.93	60.90	86.00	-25.10	QP	
6	0.6340	44.30	9.93	54.23	76.00	-21.77	AVG	
7	0.7060	49.26	9.94	59.20	86.00	-26.80	QP	
8 *	0.7060	46.11	9.94	56.05	76.00	-19.95	AVG	
9	0.8260	43.21	9.95	53.16	86.00	-32.84	QP	
10	0.8260	40.99	9.95	50.94	76.00	-25.06	AVG	
11	6.6940	33.68	10.03	43.71	86.74	-43.03	QP	
12	6.6940	31.58	10.03	41.61	76.74	-35.13	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LEJ



Site 10m Chamber 1#

Phase: **N**

Temperature: 24.9

Limit: (CE)EN62040-2 C3_QP

Power: AC 230V/50Hz

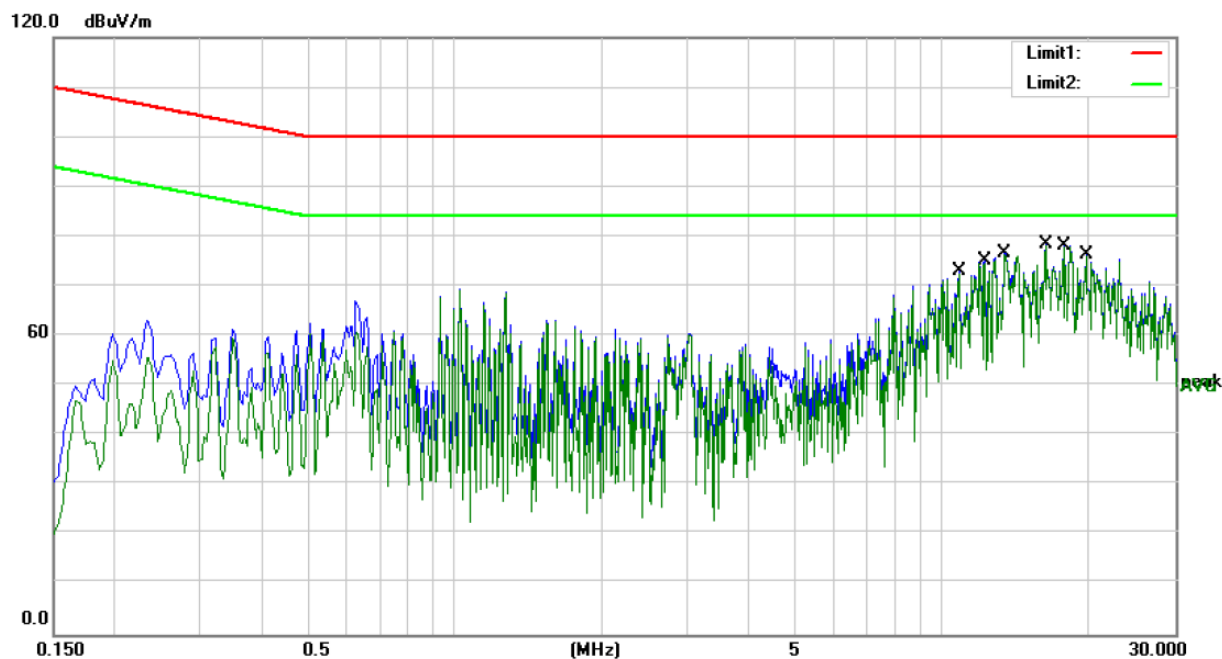
Humidity: 54 %

Mode: ECO MODE

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV/m	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1	*	0.1620	66.78	9.89	76.67	100.00	-23.33	QP	
2		0.1620	49.87	9.89	59.76	90.00	-30.24	AVG	
3		0.1980	64.10	9.89	73.99	100.00	-26.01	QP	
4		0.1980	46.50	9.89	56.39	90.00	-33.61	AVG	
5		0.2340	61.54	9.90	71.44	100.00	-28.56	QP	
6		0.2340	42.68	9.90	52.58	90.00	-37.42	AVG	
7		0.2700	57.73	9.90	67.63	100.00	-32.37	QP	
8		0.2700	39.99	9.90	49.89	90.00	-40.11	AVG	
9		0.3060	53.27	9.90	63.17	100.00	-36.83	QP	
10		0.3060	37.15	9.90	47.05	90.00	-42.95	AVG	
11		0.3420	49.29	9.90	59.19	100.00	-40.81	QP	
12		0.3420	38.56	9.90	48.46	90.00	-41.54	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LEJ



Site 10m Chamber 1#

Phase:

Temperature: 24.9

Limit: (CE)EN62040-2 C3 Network_QP

Power: AC 230V/50Hz

Humidity: 54 %

Mode: ECO MODE

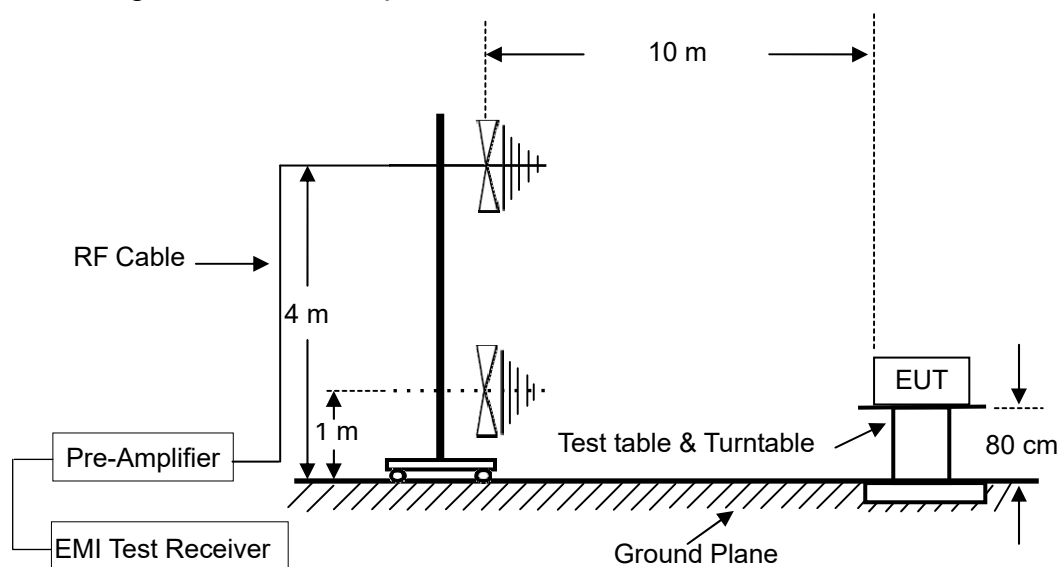
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over		
		MHz	dBuV/m	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		10.7940	53.30	19.72	73.02	100.00	-26.98	QP	
2		10.7940	52.86	19.72	72.58	84.00	-11.42	AVG	
3		12.1980	55.33	19.75	75.08	100.00	-24.92	QP	
4		12.1980	54.67	19.75	74.42	84.00	-9.58	AVG	
5		13.3580	56.84	19.76	76.60	100.00	-23.40	QP	
6		13.3580	56.50	19.76	76.26	84.00	-7.74	AVG	
7		16.2300	58.59	19.83	78.42	100.00	-21.58	QP	
8	*	16.2300	58.28	19.83	78.11	84.00	-5.89	AVG	
9		17.6940	58.23	19.88	78.11	100.00	-21.89	QP	
10		17.6940	57.98	19.88	77.86	84.00	-6.14	AVG	
11		19.7100	56.30	19.95	76.25	100.00	-23.75	QP	
12		19.7100	55.97	19.95	75.92	84.00	-8.08	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: LEJ

5. RADIATED EMISSION MEASUREMENT (UP TO 1GHz)

5.1. Block Diagram of Test Setup



5.2. Radiated Limit

Table 3 – Limits of radiated emission in the frequency range 30 MHz to 1 000 MHz

Frequency range MHz	Quasi-peak limits dB (μV/m)		
	Category C1 UPS	Category C2 UPS	Category C3 UPS
30 to 230 ^a	30	40	50
230 to 1 000	37	47	60

^a The lower limit shall apply at the transition frequency.

5.3. Test Procedure

The EUT was placed on a non-conductive table whose total height equaled 80cm. All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units. Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

The EUT was set 3 meters (or 10 meters) away from the receiving antenna that was mounted on a non-conductive mast. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level.

The turntable can rotate 360 degree to determine the position of the maximum emission level.

The initial testing identified the frequency that has the highest disturbance relative to the limit while operating the EUT in typical modes of operation and cable positions in a test setup representative of typical system configuration.

The identification of the frequency of highest emission with respect to the limit was found by investigating emissions at a number of significant frequencies. The probable frequency of maximum emission had

been found and that the associated cable and EUT configuration and mode of operation had been identified.

The bandwidth of the Receiver is set at 120 kHz.

Test results were obtained from the following equation:

Emission level (dB μ V/m) = Antenna Factor - Amp Factor + Cable Loss + Reading

Margin (dB) = Emission Level (dB μ V/m) - Limit (dB μ V/m)

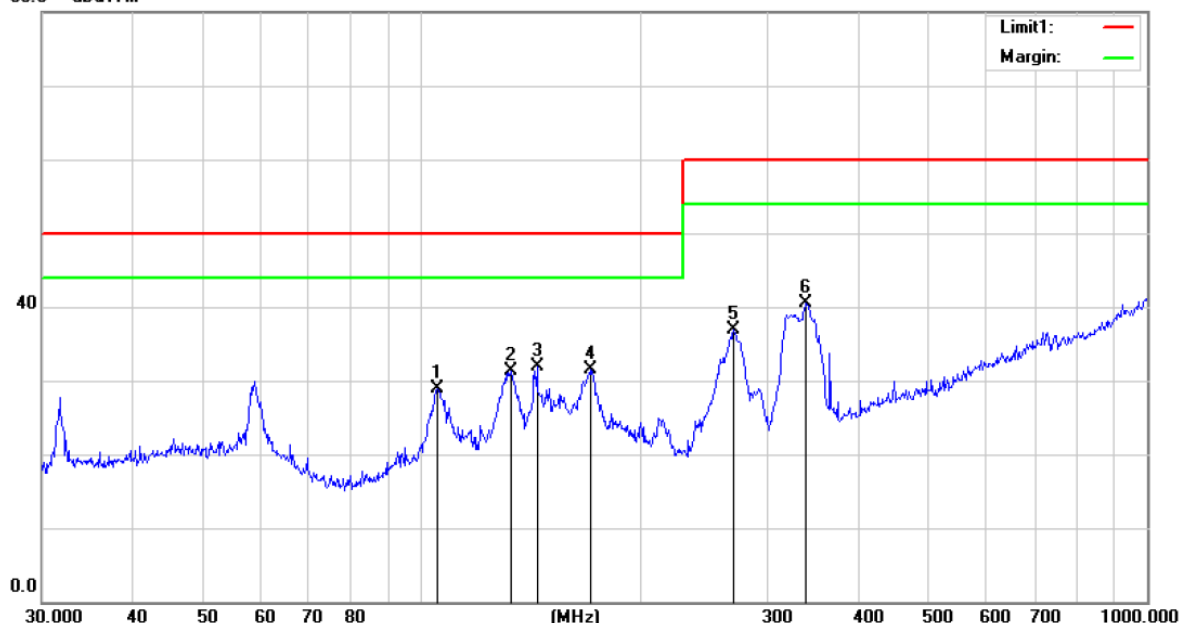
5.4. Measuring Results

PASS.

Please refer to the following pages.

SURT6KUXI-CH

80.0 dBuV/m



Site 10m Chamber 1#

Polarization: **Horizontal**

Temperature: 26

Limit: (RE10M)EN62040-2_C3

Power: AC 230V/50Hz

Humidity: 60 %

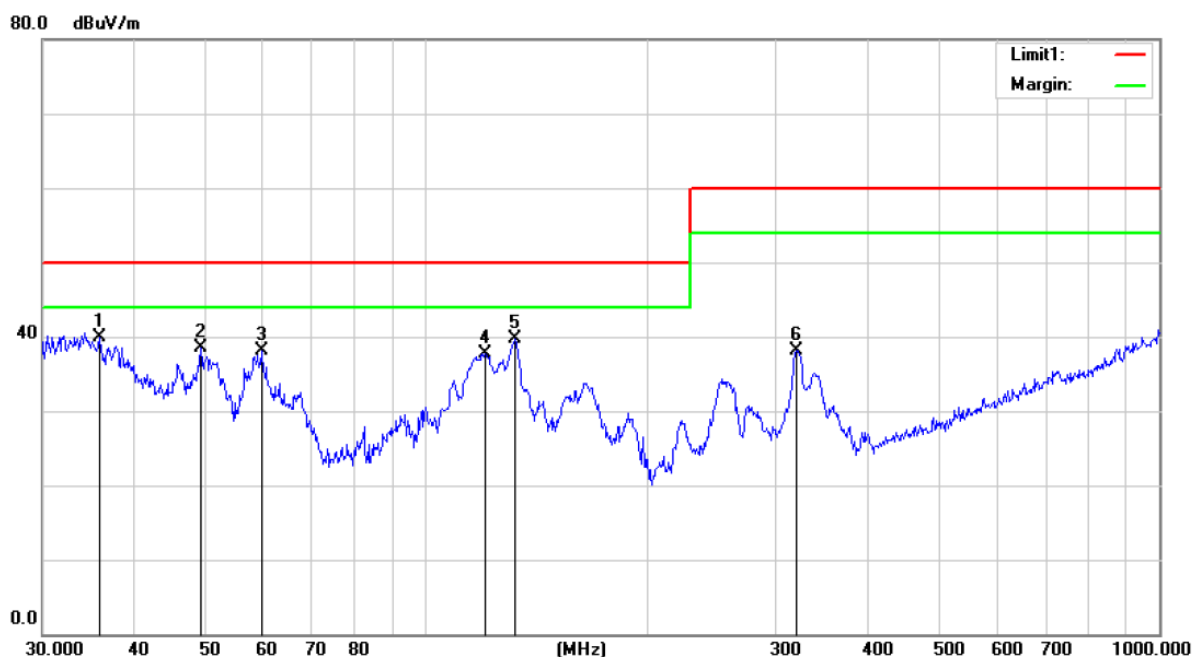
Mode: LINE MODE

Note:

No.	Mk.	Freq.	Reading Level	Ant. Factor	Pre Amp Gain	Cable loss	Measurement	Limit	Over		HI	Degree	
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	cm	deg.	Comment
1		105.2718	59.33	11.77	43.57	1.41	28.94	50.00	-21.06	QP	297	272	
2		132.6850	65.14	8.04	43.44	1.51	31.25	50.00	-18.75	QP	199	53	
3	*	144.3348	65.92	7.74	43.38	1.56	31.84	50.00	-18.16	QP	297	292	
4		171.3926	64.48	8.76	43.24	1.55	31.55	50.00	-18.45	QP	297	306	
5		269.4284	64.87	12.88	42.75	1.87	36.87	60.00	-23.13	QP	297	187	
6		338.4001	64.91	14.69	42.52	3.41	40.49	60.00	-19.51	QP	199	174	

*:Maximum data x:Over limit !:over margin

Operator: LEJ



Site 10m Chamber 1#

Polarization: Vertical

Temperature: 26

Limit: (RE10M)EN62040-2_C3

Power: AC 230V/50Hz

Humidity: 60 %

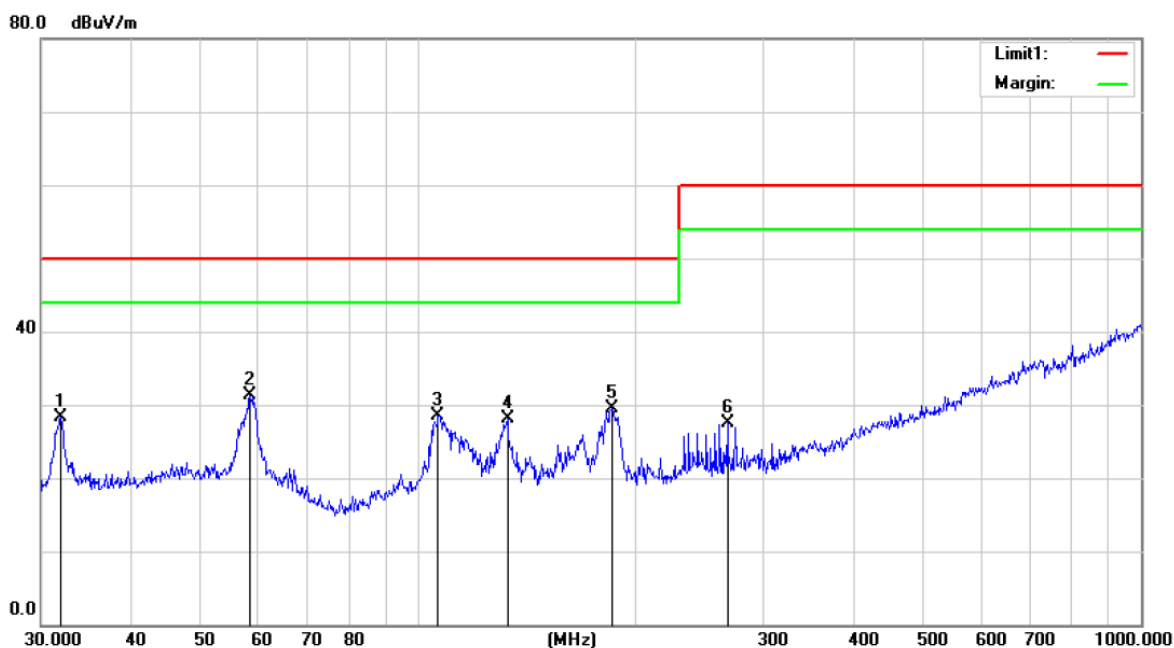
Mode: LINE MODE

Note:

No.	Mk.	Freq.	Reading	Ant.	Pre Amp	Cable	Measure-	Limit	Over	HI	Degree	
		MHz	Level	Factor	Gain	loss	ment					Comment
			dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	cm	deg.
1	*	35.8746	70.57	11.37	43.04	1.01	39.91	50.00	-10.09	QP	299	241
2		49.3594	66.82	13.83	43.12	1.06	38.59	50.00	-11.41	QP	299	359
3		59.6493	67.95	12.15	43.18	1.22	38.14	50.00	-11.86	QP	100	98
4		120.2766	69.24	9.74	43.36	2.08	37.70	50.00	-12.30	QP	100	151
5		132.2206	72.87	7.97	43.34	2.19	39.69	50.00	-10.31	QP	100	214
6		319.9370	62.76	13.8	42.92	4.52	38.16	60.00	-21.84	QP	100	160

*:Maximum data x:Over limit !:over margin

Operator: LEJ



Site 10m Chamber 1#

Polarization: **Horizontal**

Temperature: 26

Limit: (RE10M)EN62040-2_C3

Power: DC 192V

Humidity: 60 %

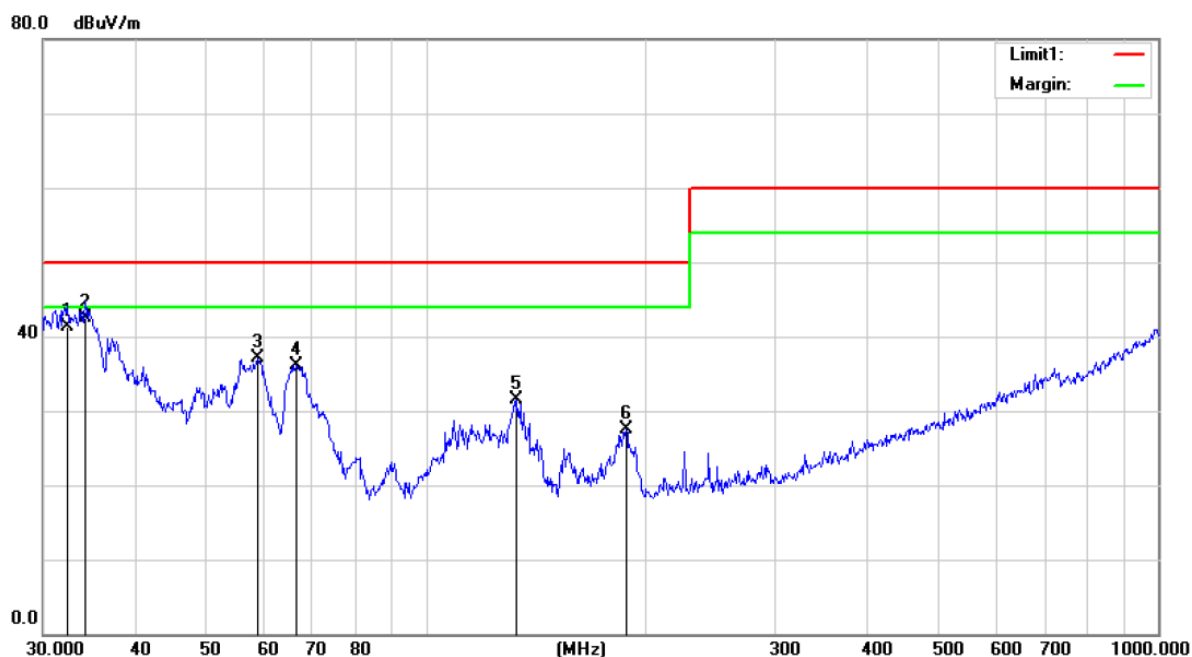
Mode:BAT MODE

Note:

No.	Mk.	Freq.	Reading Level	Ant. Factor	Pre Amp Gain	Cable loss	Measure-ment	Limit	Over		HI	Degree	
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	cm	deg.	Comment
1		31.9546	59.80	10.91	43.3	0.8	28.21	50.00	-21.79	QP	299	99	
2	*	58.4074	61.35	12.46	43.42	0.87	31.26	50.00	-18.74	QP	399	76	
3		106.3850	59.09	11.66	43.57	1.41	28.59	50.00	-21.41	QP	399	79	
4		132.6850	62.07	8.04	43.44	1.51	28.18	50.00	-21.82	QP	399	52	
5		185.1380	61.39	9.71	43.17	1.52	29.45	50.00	-20.55	QP	399	307	
6		267.5455	55.62	12.8	42.76	1.84	27.50	60.00	-32.50	QP	399	0	

*:Maximum data x:Over limit !:over margin

Operator: LEJ



Site 10m Chamber 1#

Polarization: Vertical

Temperature: 26

Limit: (RE10M)EN62040-2_C3

Power: DC 192V

Humidity: 60 %

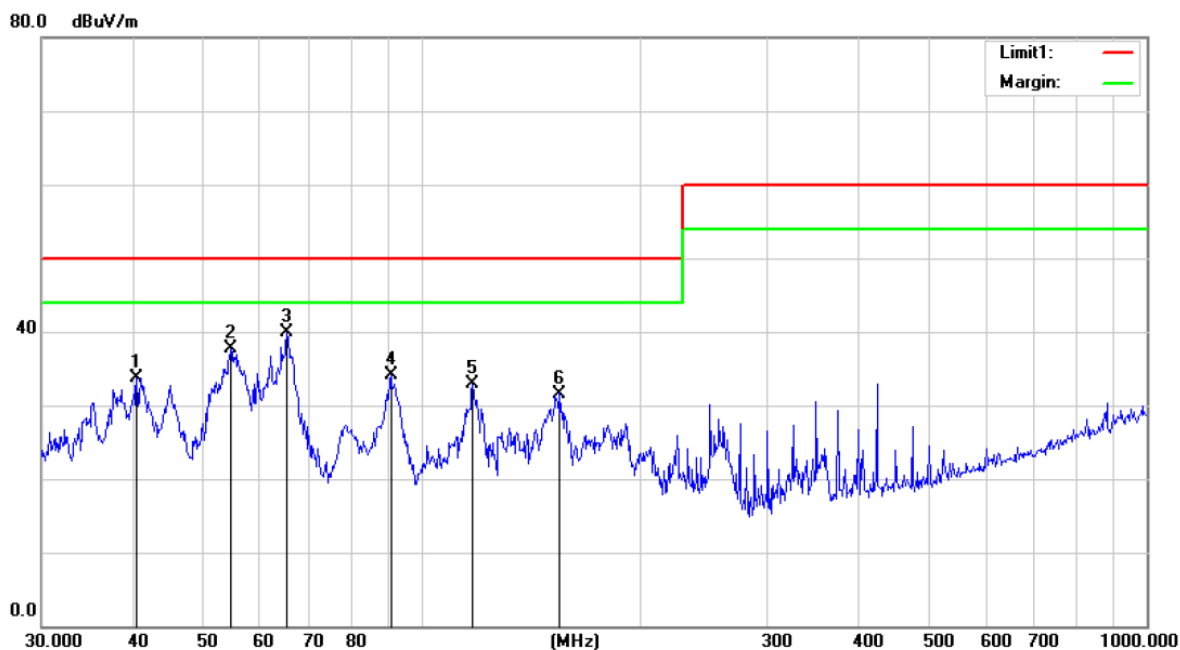
Mode: BAT MODE

Note:

No.	Mk.	Freq.	Reading	Ant.	Pre Amp	Cable	Measure-	Limit	Over	HI	Degree	
		MHz	Level	Factor	Gain	loss	ment					Comment
			dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	cm	deg.
1		32.4060	72.50	10.82	43.02	1	41.30	50.00	-8.70	QP	100	215
2	*	34.2760	73.56	10.97	43.03	1	42.50	50.00	-7.50	QP	199	261
3		59.0251	66.84	12.25	43.17	1.21	37.13	50.00	-12.87	QP	100	67
4		66.4990	67.11	10.83	43.21	1.33	36.06	50.00	-13.94	QP	299	359
5		133.1511	64.73	7.91	43.33	2.2	31.51	50.00	-18.49	QP	100	266
6		187.7530	58.20	10.08	43.22	2.39	27.45	50.00	-22.55	QP	100	309

*:Maximum data x:Over limit !:over margin

Operator: LEJ



Site 10m Chamber 1#

Polarization: **Horizontal**

Temperature: 26

Limit: (RE10M)EN62040-2_C3

Power: AC 230V/50Hz

Humidity: 60 %

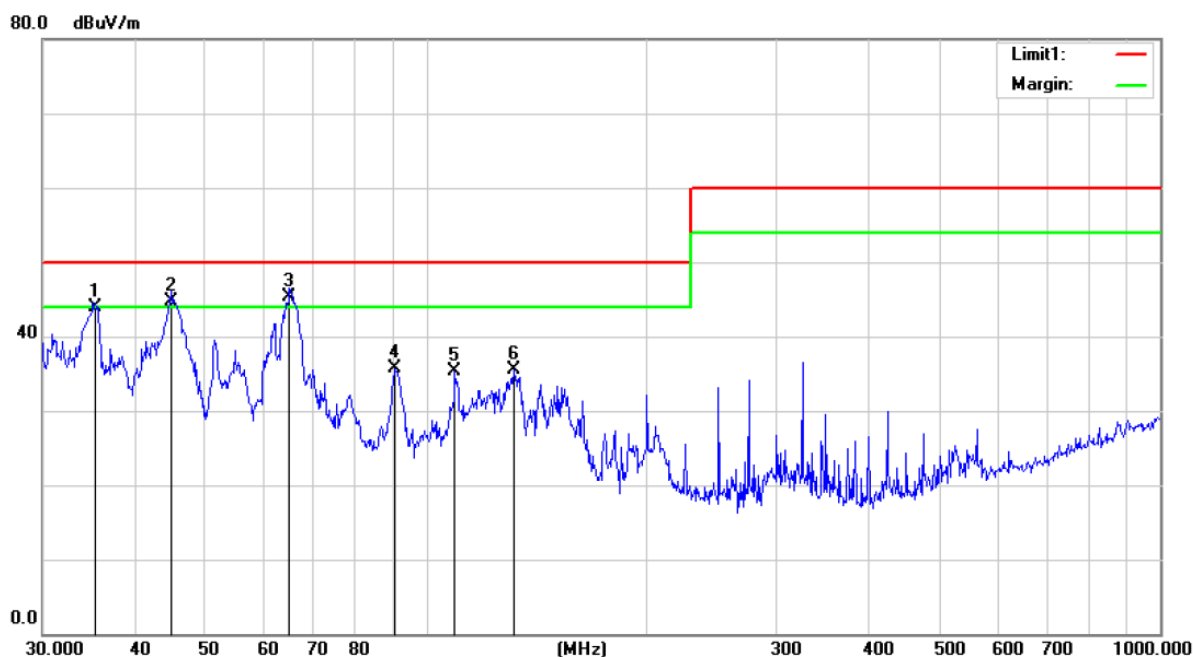
Mode: ECO MODE

Note:

No.	Mk.	Freq.	Reading Level	Ant. Factor	Pre Amp Gain	Cable loss	Measure-ment	Limit	Over	HI	Degree		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	cm	deg.	Comment
1		40.5591	63.04	13	43.34	1.03	33.73	50.00	-16.27	peak	100	171	
2		54.6430	66.39	13.51	43.4	1.14	37.64	50.00	-12.36	peak	100	175	
3	*	65.3432	70.83	11.27	43.45	1.31	39.96	50.00	-10.04	peak	100	121	
4		90.8554	66.13	9.81	43.56	1.74	34.12	50.00	-15.88	peak	100	78	
5		117.7725	64.12	10.2	43.55	2.06	32.83	50.00	-17.17	peak	100	114	
6		155.3644	64.56	8.11	43.43	2.36	31.60	50.00	-18.40	peak	100	118	

*:Maximum data x:Over limit !:over margin

Operator: LEJ



Site 10m Chamber 1#

Polarization: Vertical

Temperature: 26

Limit: (RE10M)EN62040-2_C3

Power: AC 230V/50Hz

Humidity: 60 %

Mode: ECO MODE

Note:

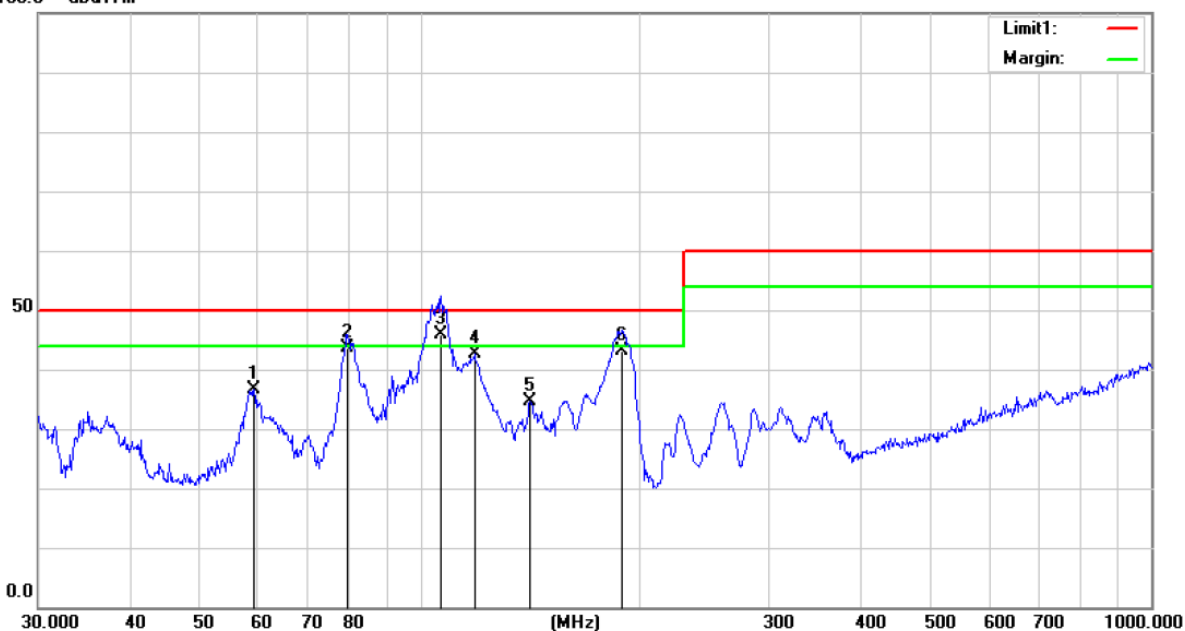
No.	Mk.	Freq.	Reading	Ant.	Pre Amp	Cable	Measure-	Limit	Over		HI	Degree
		MHz	dBuV	Factor	Gain	loss	ment	dBuV/m	dB	Detector	cm	deg.
1		35.3750	74.96	11.24	43.31	1.01	43.90	50.00	-6.10	QP	100	65
2	!	44.9006	73.33	13.79	43.36	1.04	44.80	50.00	-5.20	QP	100	69
3	*	65.1145	76.07	11.36	43.44	1.31	45.30	50.00	-4.70	QP	199	57
4		90.5374	67.85	9.73	43.56	1.73	35.75	50.00	-14.25	QP	168	359
5		109.4116	65.51	11.34	43.57	1.98	35.26	50.00	-14.74	QP	100	86
6		131.7577	68.86	7.99	43.5	2.19	35.54	50.00	-14.46	QP	199	125

*:Maximum data x:Over limit !:over margin

Operator: LEJ

SRTG6KXLI

100.0 dBuV/m



Site 10m Chamber 1#

Polarization: **Horizontal**

Temperature: 26

Limit: (RE10M)EN62040-2_C3

Power: AC 230V/50Hz

Humidity: 60 %

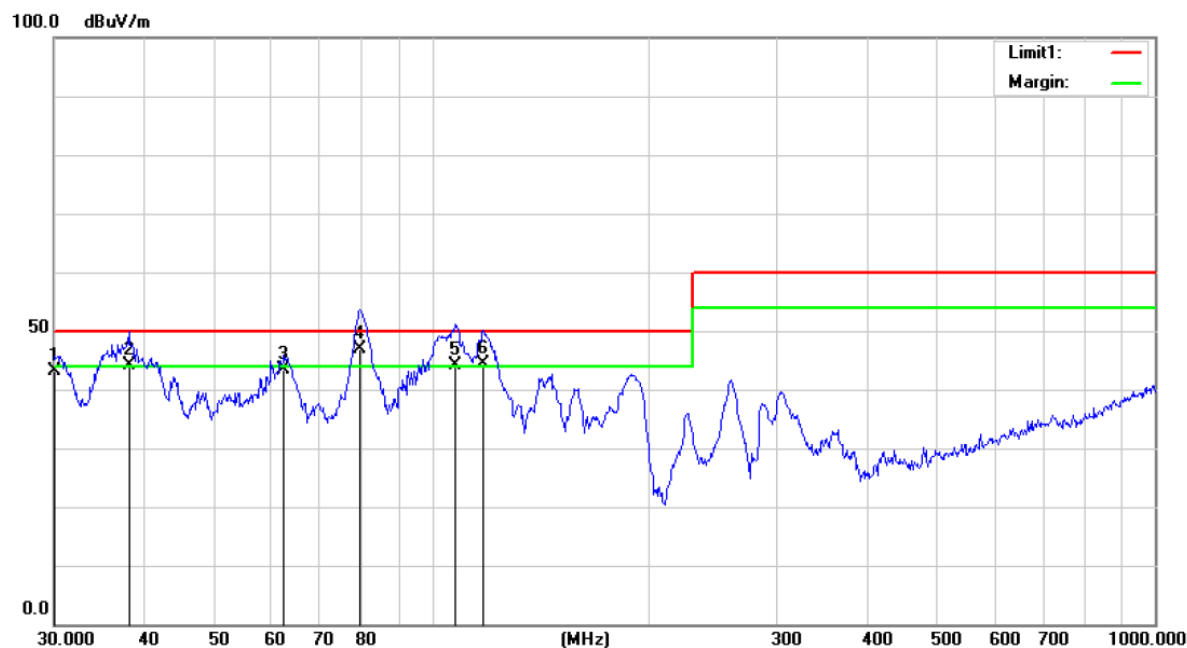
Mode: LINE MODE

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Ant. Factor dB/m	Pre Amp Gain dB	Cable loss dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	HI	Degree	Comment
1		59.2325	66.80	12.38	43.42	0.88	36.64	50.00	-13.36	QP		
2		79.5210	78.35	7.63	43.51	1.13	43.60	50.00	-6.40	QP		
3	*	106.7587	76.43	11.62	43.57	1.42	45.90	50.00	-4.10	QP		
4		118.6014	74.45	10.25	43.51	1.46	42.65	50.00	-7.35	QP		
5		141.3298	68.61	7.92	43.39	1.55	34.69	50.00	-15.31	QP		
6		189.0743	74.80	10.03	43.15	1.52	43.20	50.00	-6.80	QP		

*:Maximum data x:Over limit !:over margin

Operator: LEJ



Site 10m Chamber 1#

Polarization: **Vertical**

Temperature: 26

Limit: (RE10M)EN62040-2_C3

Power: AC 230V/50Hz

Humidity: 60 %

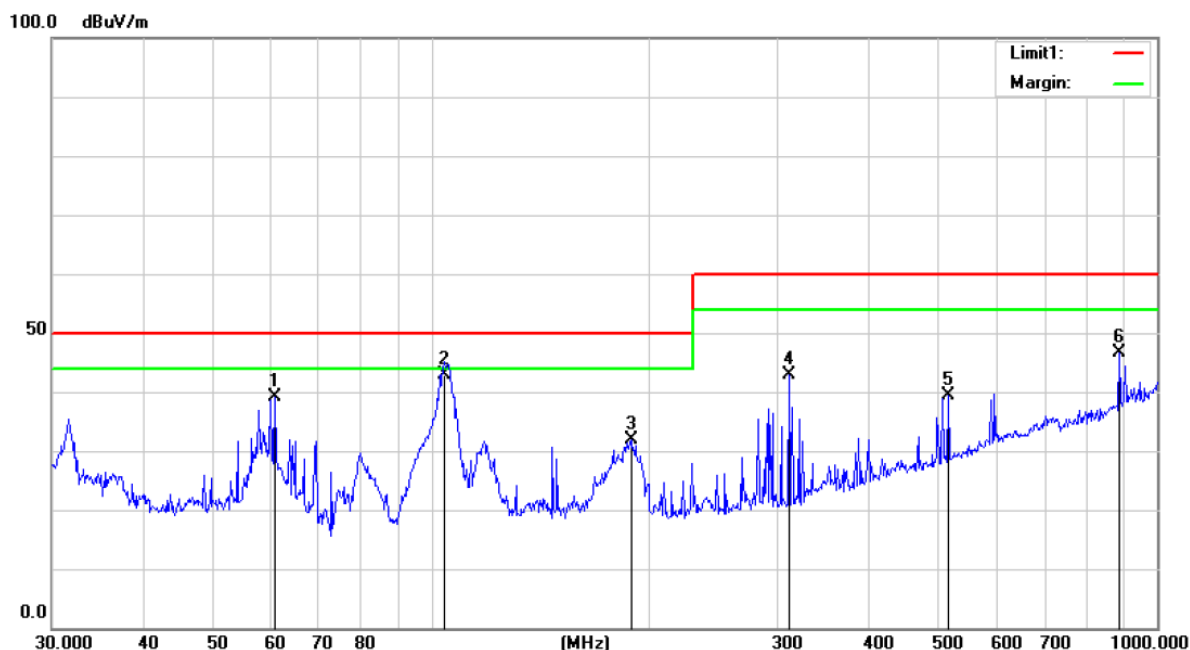
Mode: LINE MODE

Note:

No.	Mk.	Freq.	Reading	Ant.	Pre Amp	Cable	Measure-	Limit	Over	HI	Degree	
		MHz	dBuV	Factor	Gain	loss	ment	dBuV/m	dB	Detector	cm	deg. Comment
1		30.0000	74.12	11	43.01	0.99	43.10	50.00	-6.90	QP		
2	!	38.0783	73.82	12.42	43.06	1.02	44.20	50.00	-5.80	QP		
3		62.4314	73.66	11.76	43.19	1.27	43.50	50.00	-6.50	QP		
4	*	79.5210	81.00	7.54	43.29	1.55	46.80	50.00	-3.20	QP		
5	!	107.5101	74.07	11.45	43.38	1.96	44.10	50.00	-5.90	QP		
6	!	117.7725	75.60	10.2	43.36	2.06	44.50	50.00	-5.50	QP		

*:Maximum data x:Over limit !:over margin

Operator: LEJ



Site 10m Chamber 1#

Polarization: **Horizontal**

Temperature: 26

Limit: (RE10M)EN62040-2_C3

Power: DC 192V

Humidity: 60 %

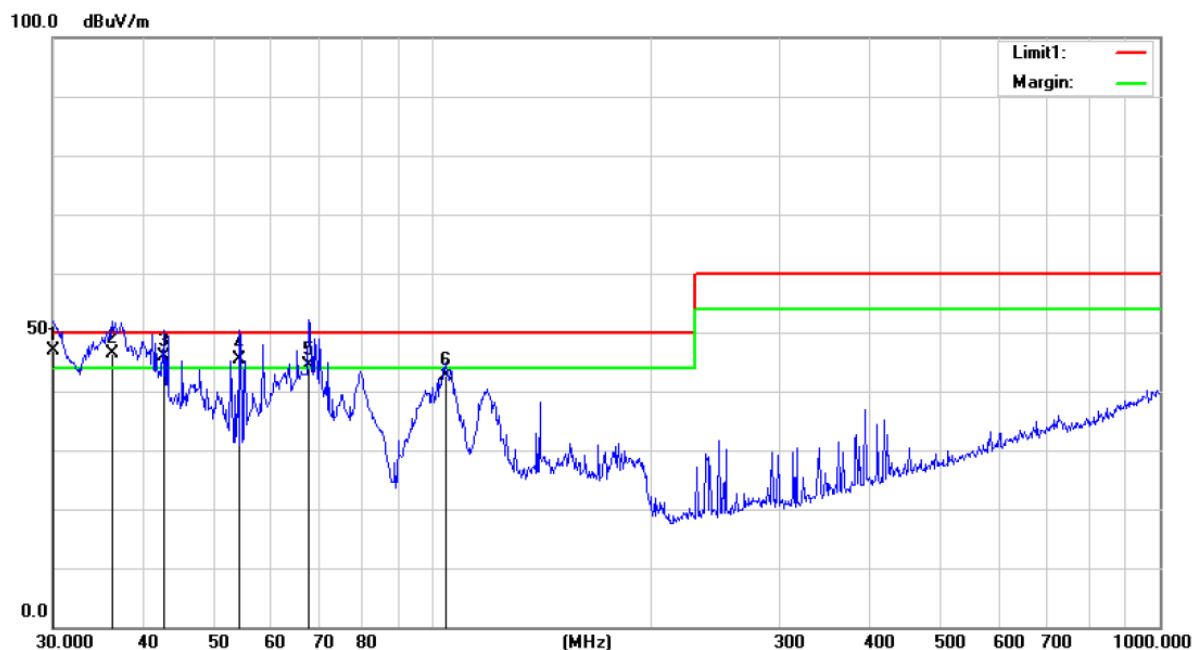
Mode: BAT MODE

Note:

No.	Mk.	Freq.	Reading Level	Ant. Factor	Pre Amp Gain	Cable loss	Measure-ment	Limit	Over	HI	Degree		
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	cm	deg.	Comment
1		60.9176	69.47	12.17	43.43	0.9	39.11	50.00	-10.89	QP			
2	*	104.1701	73.14	11.83	43.58	1.41	42.80	50.00	-7.20	QP			
3		188.4122	63.46	9.97	43.16	1.52	31.79	50.00	-18.21	QP			
4		311.0867	69.47	13.43	42.58	2.64	42.96	60.00	-17.04	QP			
5		515.4374	59.43	17.42	42.17	4.74	39.42	60.00	-20.58	QP			
6		887.6100	58.25	22.45	40.43	6.45	46.72	60.00	-13.28	QP			

*:Maximum data x:Over limit !:over margin

Operator: LEJ



Site 10m Chamber 1#

Polarization: **Vertical**

Temperature: 26

Limit: (RE10M)EN62040-2_C3

Power: DC 192V

Humidity: 60 %

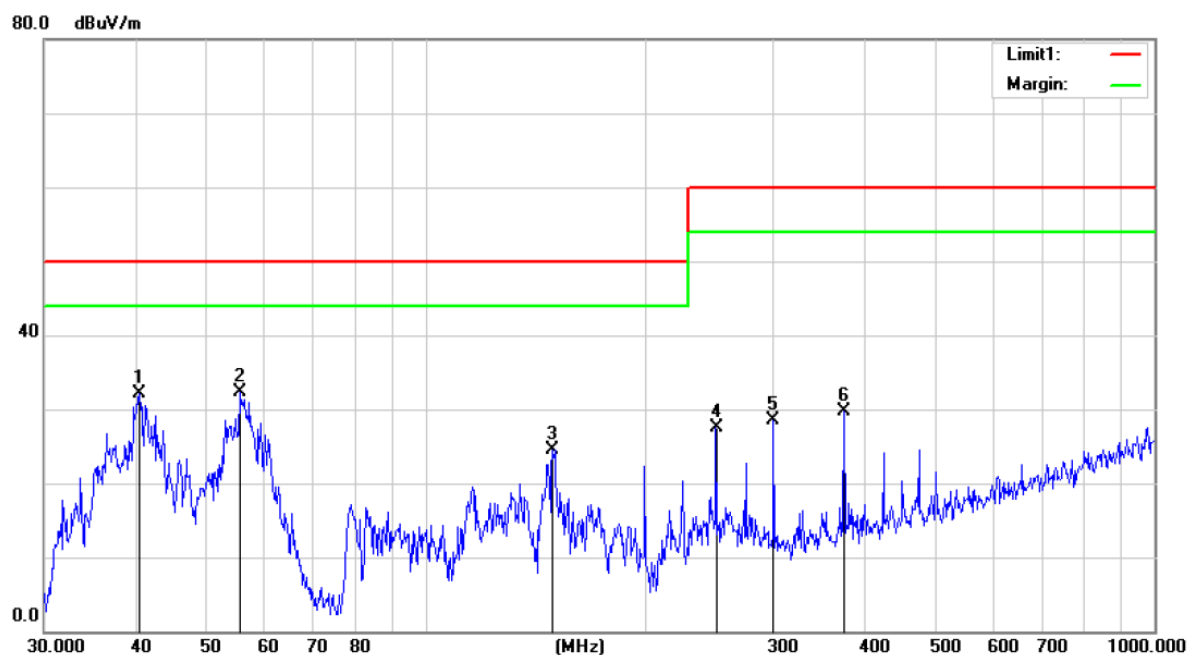
Mode: BAT MODE

Note:

No.	Mk.	Freq.	Reading Level	Ant. Factor	Pre Amp Gain	Cable loss	Measure-ment	Limit	Over	HI	Degree	
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	cm	deg. Comment
1	*	30.1051	78.03	10.99	43.01	0.99	47.00	50.00	-3.00	QP		
2	!	36.2541	76.81	11.53	43.05	1.01	46.30	50.00	-3.70	QP		
3	!	42.7496	74.28	13.57	43.08	1.03	45.80	50.00	-4.20	QP		
4	!	54.2610	73.90	13.62	43.15	1.13	45.50	50.00	-4.50	QP		
5	!	67.4381	75.70	10.47	43.22	1.35	44.30	50.00	-5.70	QP		
6		104.1701	72.48	11.58	43.39	1.93	42.60	50.00	-7.40	QP		

*:Maximum data x:Over limit !:over margin

Operator: LEJ



Site 10m Chamber 1#

Polarization: Horizontal

Temperature: 26

Limit: (RE10M)EN62040-2_C3

Power: AC 230V/50Hz

Humidity: 60 %

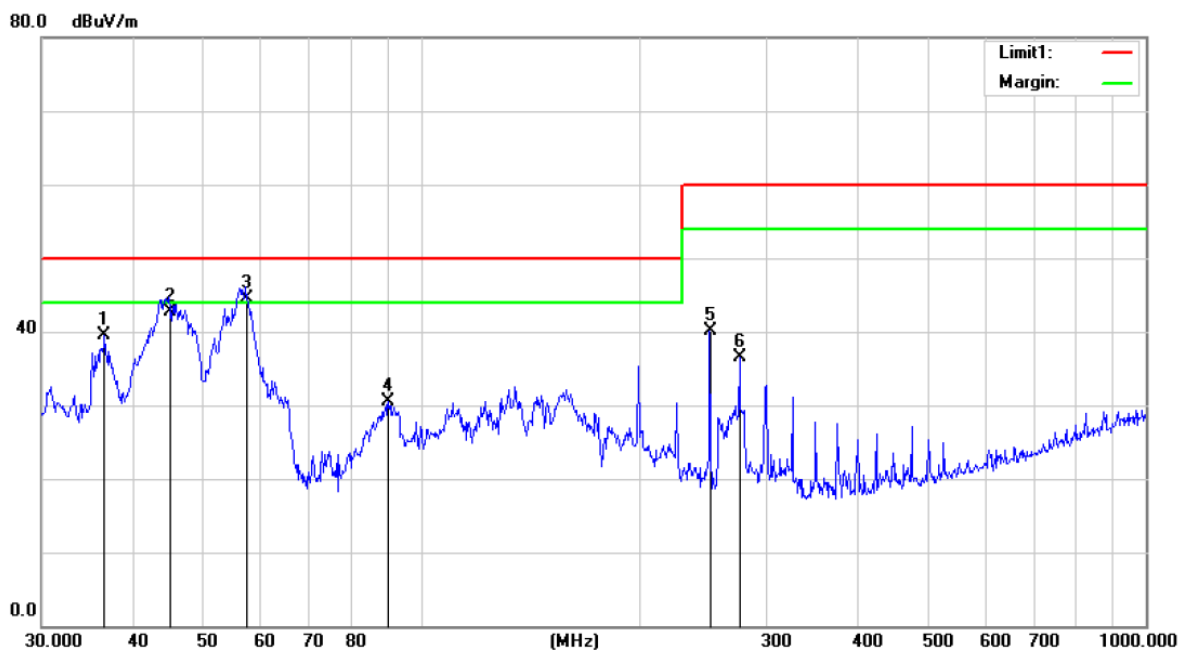
Mode: ECO MODE

Note:

No.	Mk.	Freq.	Reading Level	Ant. Factor	Pre Amp Gain	Cable loss	Measure-ment	Limit	Over	HI	Degree	
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	Detector	cm	deg.
1		40.5591	61.38	13	43.34	1.03	32.07	50.00	-17.93	QP	100	143
2	*	55.6094	61.39	13.22	43.4	1.15	32.36	50.00	-17.64	QP	100	129
3		149.4857	57.73	7.89	43.45	2.36	24.53	50.00	-25.47	QP	100	183
4		250.3012	55.15	12.5	43.1	2.89	27.44	60.00	-32.56	QP	100	129
5		300.3672	53.75	13.6	42.9	4.14	28.59	60.00	-31.41	QP	100	320
6		374.6225	51.65	15.22	42.53	5.43	29.77	60.00	-30.23	QP	100	152

*:Maximum data x:Over limit !:over margin

Operator: LEJ



Site 10m Chamber 1#

Polarization: **Vertical**

Temperature: 26

Limit: (RE10M)EN62040-2_C3

Power: AC 230V/50Hz

Humidity: 60 %

Mode: ECO MODE

Note:

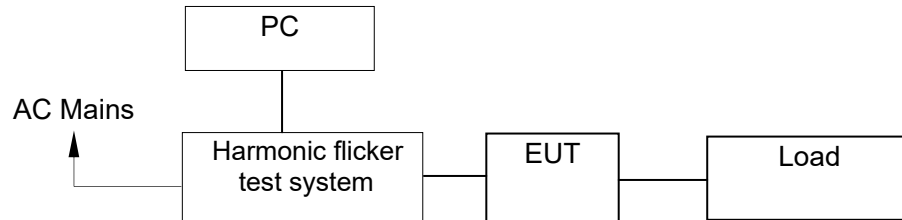
No.	Mk.	Freq. MHz	Reading Level dBuV	Ant. Factor dB/m	Pre Amp Gain dB	Cable loss dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	HI cm	Degree deg.	Comment
1		36.6375	70.13	11.72	43.32	1.01	39.54	50.00	-10.46	QP	199	83	
2		44.9006	71.23	13.79	43.36	1.04	42.70	50.00	-7.30	QP	100	78	
3	*	57.3923	74.12	12.61	43.41	1.18	44.50	50.00	-5.50	QP	100	332	
4		90.2205	62.62	9.65	43.56	1.73	30.44	50.00	-19.56	QP	100	163	
5		250.3012	67.72	12.5	43.1	2.89	40.01	60.00	-19.99	QP	100	129	
6		275.1570	62.89	13.2	43	3.51	36.60	60.00	-23.40	QP	100	149	

*:Maximum data x:Over limit !:over margin

Operator: LEJ

6. HARMONIC CURRENT EMISSION MEASUREMENT

6.1. Block Diagram of Test Setup



6.2. Measuring Standard

EN 61000-3-12: 2011 Table 2

6.3. Operation Condition of EUT

6.3.1. Setup the EUT as shown on Section 6.1.

6.3.2. Turn on the power of all equipments.

6.3.3. Let the EUT work in measuring mode (Line Mode) and measure it.

6.4. Measuring Results

Pass.

Please refer to the following pages.

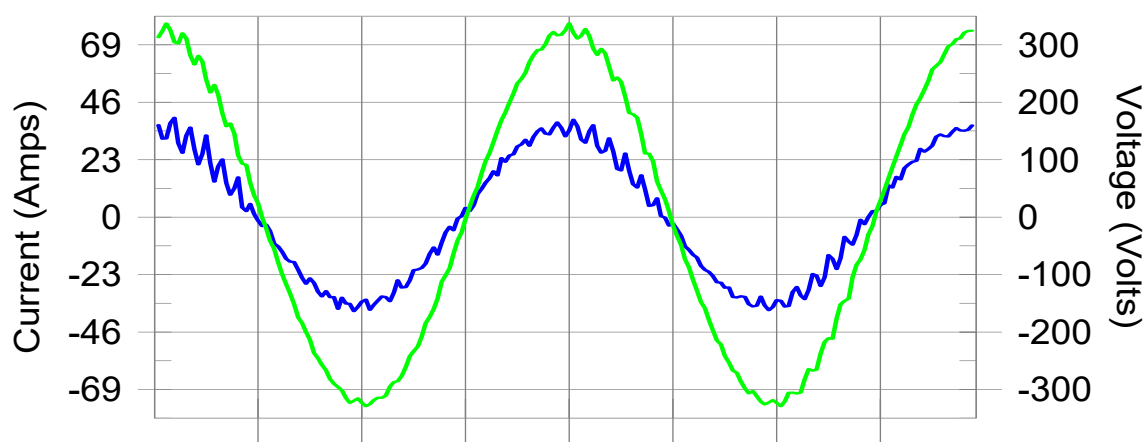
Harmonics – Per EN/IEC61000-3-12(Run time)

EUT: UPS(SURT6KUXI-CH) Tested by: LQZ
 Test category: Table:2, Rsce=33, Inter-Harm, Test Margin: 100
 Test date: 2019/7/27 Start time: 10:48:16 End time: 10:51:08
 Test duration (min): 2.5 Data file name: WIN2106_H-000127.cts_data
 Comment: Line Mode
 Customer: American Power Conversion Holdings Inc., Taiwan Branch

Test Result: Pass

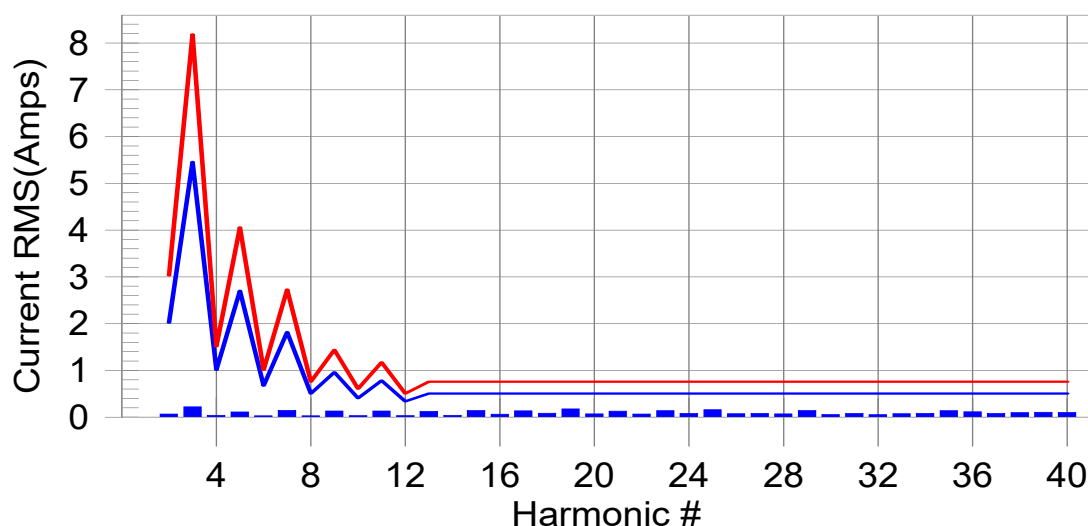
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class 2 limit line

European Limits



Test result: Pass

Worst harmonic was #13 with 24.32 % of the limit.

Current Test Result Summary (Run time)

EUT: UPS(SURT6KUXI-CH) **Tested by:** LQZ
Test category: Table:2, Rsce=33, Inter-Harm, **Test Margin:** 100
Test date: 2019/7/27 **Start time:** 10:48:16 **End time:** 10:51:08
Test duration (min): 2.5 **Data file name:** WIN2106_H-000127.cts_data
Comment: Line Mode
Customer: American Power Conversion Holdings Inc., Taiwan Branch

Test Result: Pass **Measured I-ref:** 25.252 Amp rms **Source:** Normal
I-THC(%): 2.7 **Limit(%):** 23.0 **PWHC(%):** 11.2 **PWHC Limit(%):** 23.0

Highest parameter values during test:

V_RMS (Volts): 229.86	Frequency(Hz): 50.00
I_Peak (Amps): 46.105	I_RMS (Amps): 25.537
I_Fund (Amps): 25.252	Crest Factor: 1.813
Power (Watts): 5781	Power Factor: 0.994

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.067	2.021	3.3	0.079	3.031	2.6	Pass
3	0.221	5.456	4.1	0.291	8.185	3.6	Pass
4	0.040	1.010	4.0	0.050	1.516	3.3	Pass
5	0.112	2.703	4.2	0.163	4.054	4.0	Pass
6	0.032	0.674	4.7	0.042	1.010	4.1	Pass
7	0.147	1.819	8.1	0.175	2.728	6.4	Pass
8	0.029	0.505	5.7	0.036	0.758	4.8	Pass
9	0.134	0.960	14.0	0.158	1.440	11.0	Pass
10	0.033	0.404	8.1	0.062	0.606	10.3	Pass
11	0.132	0.783	16.8	0.153	1.175	13.0	Pass
12	0.034	0.337	10.1	0.072	0.505	14.2	Pass
13	0.124	0.505	24.4	0.143	0.758	18.9	Pass
14	0.041	N/A	N/A	0.072	N/A	N/A	N/A
15	0.144	N/A	N/A	0.169	N/A	N/A	N/A
16	0.064	N/A	N/A	0.103	N/A	N/A	N/A
17	0.137	N/A	N/A	0.169	N/A	N/A	N/A
18	0.085	N/A	N/A	0.122	N/A	N/A	N/A
19	0.175	N/A	N/A	0.211	N/A	N/A	N/A
20	0.072	N/A	N/A	0.146	N/A	N/A	N/A
21	0.129	N/A	N/A	0.168	N/A	N/A	N/A
22	0.067	N/A	N/A	0.108	N/A	N/A	N/A
23	0.138	N/A	N/A	0.164	N/A	N/A	N/A
24	0.081	N/A	N/A	0.123	N/A	N/A	N/A
25	0.160	N/A	N/A	0.193	N/A	N/A	N/A
26	0.075	N/A	N/A	0.124	N/A	N/A	N/A
27	0.081	N/A	N/A	0.115	N/A	N/A	N/A
28	0.072	N/A	N/A	0.097	N/A	N/A	N/A
29	0.144	N/A	N/A	0.156	N/A	N/A	N/A
30	0.059	N/A	N/A	0.087	N/A	N/A	N/A
31	0.083	N/A	N/A	0.108	N/A	N/A	N/A
32	0.053	N/A	N/A	0.084	N/A	N/A	N/A
33	0.074	N/A	N/A	0.092	N/A	N/A	N/A
34	0.082	N/A	N/A	0.109	N/A	N/A	N/A
35	0.140	N/A	N/A	0.175	N/A	N/A	N/A
36	0.114	N/A	N/A	0.198	N/A	N/A	N/A
37	0.083	N/A	N/A	0.180	N/A	N/A	N/A
38	0.098	N/A	N/A	0.206	N/A	N/A	N/A
39	0.104	N/A	N/A	0.207	N/A	N/A	N/A
40	0.102	N/A	N/A	0.199	N/A	N/A	N/A

Note: Measured I-ref was applied for this test.

Voltage Source Verification Data (Run time)

EUT: UPS(SURT6KUXI-CH) Tested by: LQZ
 Test category: Table:2, Rsce=33, Inter-Harm, Test Margin: 100
 Test date: 2019/7/27 Start time: 10:48:16 End time: 10:51:08
 Test duration (min): 2.5 Data file name: WIN2106_H-000127.cts_data
 Comment: Line Mode
 Customer: American Power Conversion Holdings Inc., Taiwan Branch

Test Result: Pass Source qualification: Normal
 Measured source distortion is within the requirements of the standards
 Measurements are compliant with IEC/EN61000-3-12 Ed.2 (2011) & IEC/EN61000-4-7

Highest parameter values during test:

Voltage (Vrms): 229.86	Frequency(Hz): 50.00
I_Peak (Amps): 46.105	I_RMS (Amps): 25.537
I_Fund (Amps): 25.252	Crest Factor: 1.813
Power (Watts): 5781	Power Factor: 0.994

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.098	0.919	10.65	OK
3	0.172	2.872	5.98	OK
4	0.034	0.919	3.65	OK
5	0.102	3.447	2.96	OK
6	0.019	0.919	2.07	OK
7	0.101	2.872	3.53	OK
8	0.023	0.919	2.48	OK
9	0.100	1.379	7.27	OK
10	0.031	0.919	3.40	OK
11	0.076	1.608	4.70	OK
12	0.040	0.689	5.75	OK
13	0.098	1.378	7.08	OK
14	0.040	0.689	5.79	OK
15	0.147	0.689	21.37	OK
16	0.074	0.689	10.72	OK
17	0.178	0.689	25.85	OK
18	0.095	0.689	13.83	OK
19	0.255	0.690	36.92	OK
20	0.134	0.689	19.42	OK
21	0.222	0.689	32.24	OK
22	0.093	0.689	13.49	OK
23	0.243	0.689	35.27	OK
24	0.106	0.689	15.37	OK
25	0.305	0.689	44.26	OK
26	0.122	0.689	17.63	OK
27	0.177	0.689	25.66	OK
28	0.097	0.689	14.01	OK
29	0.245	0.689	35.61	OK
30	0.108	0.689	15.62	OK
31	0.174	0.689	25.31	OK
32	0.082	0.689	11.93	OK
33	0.157	0.689	22.84	OK
34	0.153	0.689	22.12	OK
35	0.299	0.689	43.34	OK
36	0.279	0.689	40.41	OK
37	0.261	0.689	37.84	OK
38	0.308	0.689	44.70	OK
39	0.321	0.689	46.56	OK
40	0.320	0.689	46.40	OK

Minimum Rsce required: Rsce = 16.066
Phase A = 48.7% of tested Rsce = 33.000, Rsce = 16.066

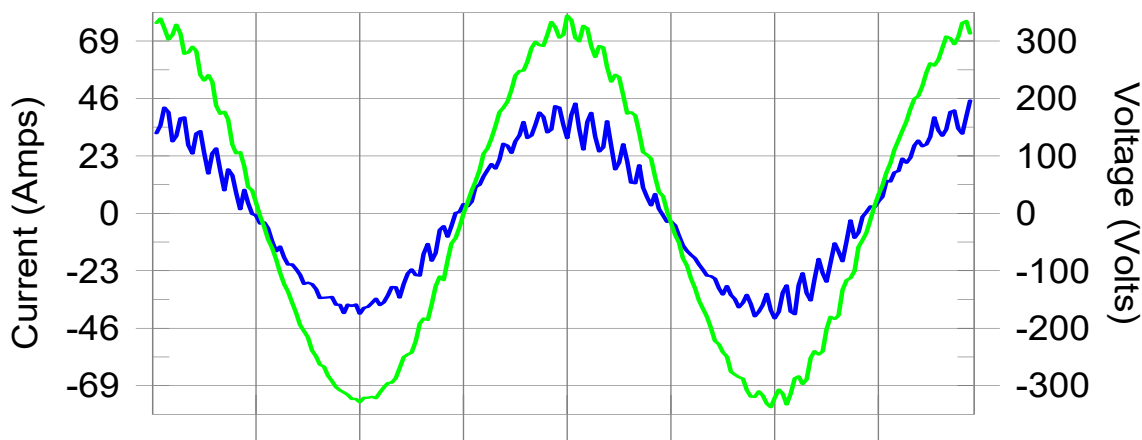
Harmonics – Per EN/IEC61000-3-12(Run time)

EUT: UPS(SRTG6KXLI) Tested by: LQZ
 Test category: Table:2, Rsce=33, Inter-Harm, Test Margin: 100
 Test date: 2019/7/30 Start time: 17:44:54 End time: 17:47:47
 Test duration (min): 2.5 Data file name: WIN2106_H-000144.cts_data
 Comment: Line mode
 Customer: American Power Conversion Holdings Inc., Taiwan Branch

Test Result: Pass

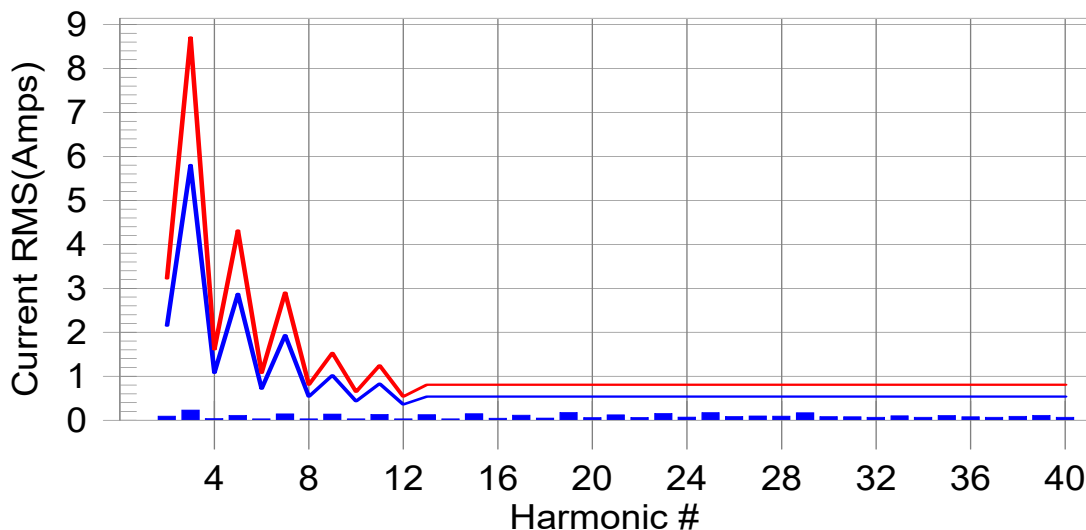
Source qualification: Normal

Current & voltage waveforms



Harmonics and Class 2 limit line

European Limits



Test result: Pass

Worst harmonic was #13 with 25.93 % of the limit.

Current Test Result Summary (Run time)

EUT: UPS(SRTG6KXLI) **Tested by:** LQZ
Test category: Table:2, **Rsce=33, Inter-Harm,** **Test Margin:** 100
Test date: 2019/7/30 **Start time:** 17:44:54 **End time:** 17:47:47
Test duration (min): 2.5 **Data file name:** WIN2106_H-000144.cts_data
Comment: Line mode
Customer: American Power Conversion Holdings Inc., Taiwan Branch

Test Result: Pass **Measured I-ref:** 26.870 Amp rms **Source:** Normal
I-THC(%): 2.5 **Limit(%):** 23.0 **PWHC(%):** 10.4 **PWHC Limit(%):** 23.0

Highest parameter values during test:

V_RMS (Volts): 229.82	Frequency(Hz): 50.00
I_Peak (Amps): 48.480	I_RMS (Amps): 27.021
I_Fund (Amps): 26.870	Crest Factor: 1.800
Power (Watts): 6128	Power Factor: 0.992

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.093	2.150	4.3	0.105	3.225	3.3	Pass
3	0.232	5.806	4.0	0.310	8.709	3.6	Pass
4	0.040	1.075	3.7	0.080	1.613	5.0	Pass
5	0.111	2.876	3.8	0.175	4.314	4.1	Pass
6	0.033	0.717	4.6	0.068	1.075	6.4	Pass
7	0.146	1.935	7.6	0.177	2.903	6.1	Pass
8	0.033	0.538	6.1	0.062	0.806	7.7	Pass
9	0.143	1.021	14.0	0.168	1.532	11.0	Pass
10	0.034	0.430	8.0	0.067	0.645	10.4	Pass
11	0.133	0.833	16.0	0.159	1.250	12.8	Pass
12	0.029	0.358	8.1	0.063	0.538	11.7	Pass
13	0.128	0.538	23.8	0.147	0.806	18.2	Pass
14	0.033	N/A	N/A	0.065	N/A	N/A	N/A
15	0.147	N/A	N/A	0.162	N/A	N/A	N/A
16	0.046	N/A	N/A	0.071	N/A	N/A	N/A
17	0.116	N/A	N/A	0.138	N/A	N/A	N/A
18	0.052	N/A	N/A	0.075	N/A	N/A	N/A
19	0.178	N/A	N/A	0.213	N/A	N/A	N/A
20	0.062	N/A	N/A	0.133	N/A	N/A	N/A
21	0.124	N/A	N/A	0.169	N/A	N/A	N/A
22	0.065	N/A	N/A	0.148	N/A	N/A	N/A
23	0.157	N/A	N/A	0.209	N/A	N/A	N/A
24	0.073	N/A	N/A	0.160	N/A	N/A	N/A
25	0.174	N/A	N/A	0.245	N/A	N/A	N/A
26	0.084	N/A	N/A	0.153	N/A	N/A	N/A
27	0.097	N/A	N/A	0.185	N/A	N/A	N/A
28	0.093	N/A	N/A	0.176	N/A	N/A	N/A
29	0.172	N/A	N/A	0.201	N/A	N/A	N/A
30	0.083	N/A	N/A	0.141	N/A	N/A	N/A
31	0.079	N/A	N/A	0.139	N/A	N/A	N/A
32	0.070	N/A	N/A	0.164	N/A	N/A	N/A
33	0.100	N/A	N/A	0.171	N/A	N/A	N/A
34	0.066	N/A	N/A	0.137	N/A	N/A	N/A
35	0.110	N/A	N/A	0.180	N/A	N/A	N/A
36	0.081	N/A	N/A	0.145	N/A	N/A	N/A
37	0.066	N/A	N/A	0.135	N/A	N/A	N/A
38	0.090	N/A	N/A	0.141	N/A	N/A	N/A
39	0.111	N/A	N/A	0.302	N/A	N/A	N/A
40	0.070	N/A	N/A	0.240	N/A	N/A	N/A

Note: Measured I-ref was applied for this test.

Voltage Source Verification Data (Run time)

EUT: UPS(SRTG6KXLI) **Tested by:** LQZ
Test category: Table:2, Rsce=33, Inter-Harm, **Test Margin:** 100
Test date: 2019/7/30 **Start time:** 17:44:54 **End time:** 17:47:47
Test duration (min): 2.5 **Data file name:** WIN2106_H-000144.cts_data
Comment: Line mode
Customer: American Power Conversion Holdings Inc., Taiwan Branch

Test Result: Pass **Source qualification:** Normal
Measured source distortion is within the requirements of the standards
Measurements are compliant with IEC/EN61000-3-12 Ed.2 (2011) & IEC/EN61000-4-7

Highest parameter values during test:

Voltage (Vrms): 229.82	Frequency(Hz): 50.00
I_Peak (Amps): 48.480	I_RMS (Amps): 27.021
I_Fund (Amps): 26.870	Crest Factor: 1.800
Power (Watts): 6128	Power Factor: 0.992

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.093	0.919	10.15	OK
3	0.165	2.872	5.73	OK
4	0.030	0.919	3.24	OK
5	0.103	3.447	2.99	OK
6	0.022	0.919	2.35	OK
7	0.103	2.872	3.59	OK
8	0.025	0.919	2.76	OK
9	0.093	1.378	6.77	OK
10	0.029	0.919	3.20	OK
11	0.077	1.608	4.77	OK
12	0.039	0.689	5.72	OK
13	0.084	1.378	6.13	OK
14	0.040	0.689	5.84	OK
15	0.131	0.689	19.01	OK
16	0.049	0.689	7.17	OK
17	0.129	0.689	18.75	OK
18	0.059	0.689	8.55	OK
19	0.213	0.689	30.91	OK
20	0.138	0.689	19.97	OK
21	0.224	0.689	32.53	OK
22	0.120	0.689	17.42	OK
23	0.300	0.689	43.45	OK
24	0.166	0.689	24.05	OK
25	0.325	0.689	47.11	OK
26	0.160	0.689	23.27	OK
27	0.234	0.689	34.02	OK
28	0.199	0.689	28.94	OK
29	0.307	0.689	44.49	OK
30	0.145	0.689	21.01	OK
31	0.188	0.689	27.29	OK
32	0.186	0.689	27.00	OK
33	0.260	0.689	37.72	OK
34	0.185	0.689	26.79	OK
35	0.312	0.689	45.30	OK
36	0.189	0.689	27.36	OK
37	0.233	0.689	33.77	OK
38	0.185	0.689	26.83	OK
39	0.238	0.689	34.52	OK
40	0.234	0.689	33.94	OK

Minimum Rsce required: Rsce = 14.950
Phase A = 45.3% of tested Rsce = 33.000, Rsce = 14.950

7. IMMUNITY PERFORMANCE CRITERIA DESCRIPTION

Performance Level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance level by its manufacturer or the requestor of the test, or the agreed between the manufacturer and the purchaser of the product.

Definition related to the performance level:

1. Based on the used product standard
2. Based on the declaration of the manufacturer, requestor or purchaser

EN 62040-2:

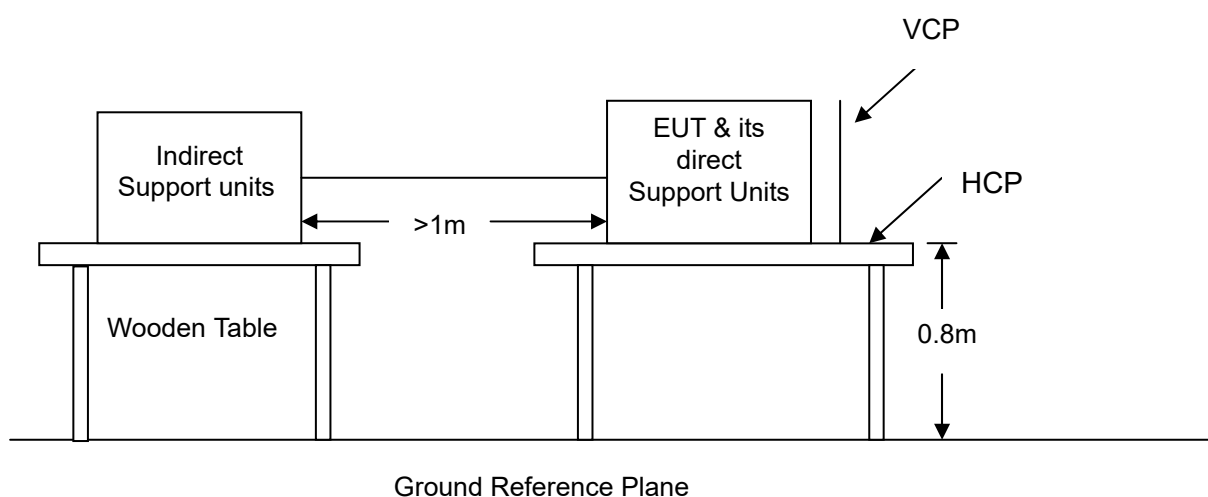
	Criterion A	Criterion B
External and internal indications and metering	Change only during test	Change only during test
Control signals to external devices	No change	Change only temporarily in consistency with the actual UPS mode of operation
Mode of operation ^a	No change	Change only temporarily
a At all times, the UPS shall remain within the performance classification as declared by the UPS manufacturer		

8. ELECTROSTATIC DISCHARGE

8.1. Test Specification

Test Standard	: EN 62040-2
Basic Standard	: IEC 61000-4-2
Performance criterion	: B
Test level	: $\pm 8.0\text{kV}$ (Air discharge) $\pm 8.0\text{kV}$ (Contact discharge)

8.2. Block Diagram of Test Setup



8.3. Test Procedure

- In the case of air discharge testing, the climatic conditions shall be within the following ranges:
 - ambient temperature: 15°C to 35°C ;
 - relative humidity : 30% to 60%;
 - atmospheric pressure : 86 kPa (860 mbar) to 106 kPa (1060 mbar)
- Test programs and software shall be chosen so as to exercise all normal modes of operation of the EUT. The use of special exercising software is encouraged, but permitted only where it can be shown that the EUT is being comprehensively exercised.
- In the case of contact discharges, the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.
- In the case of painted surface covering a conducting substrate, the following procedure shall be adopted :
 - If the coating is not declared to be an insulating coating by the equipment manufacturer, then the pointed tip of the generator shall penetrate the coating so as to make contact with the conducting substrate.
 - Coating declared as insulating by the manufacturer shall only be submitted to the air discharge.
 - The contact discharge test shall not be applied to such surfaces.
- In the case of air discharges, the round discharge tip of the discharge electrode shall be approached as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator (discharge electrode) shall be removed from the EUT. The generator is then retriggered for a new single discharge. This procedure shall be repeated until the discharges are completed. In the case of an air discharge test, the discharge switch, which is used for contact discharge, shall be closed.
- The test voltage shall be increased from the minimum to the selected test severity level, in order to determine any threshold of failure. The final test level should not exceed the product specification value in order to avoid damage to the equipment.
- The test shall be performed with both air discharge and contact discharge. According to the CE severity

level on pre-selected points, at least 10 single discharges (in the most sensitive polarity) shall be applied on air discharge and at least 25 single discharges (in the most sensitive polarity) shall be applied on contact discharge. For the time interval between successive single discharges, an initial value of one second is recommended. Longer intervals may be necessary to determine whether a system failure has occurred.

h. Ensure that the applied charge on the EUT has been dis-charged before next ESD pulse.

8.4. Test Results

PASS

Temperature : 27.1 °C
Humidity : 52%
Atmospheric Pressure : 101kpa
Test Engineer : LQZ
Test Date : 2019-08-12

Air Discharge:

Amount of discharge	Test Voltage	Location	Actual criterion	Required performance criterion	Result (Pass/Fail)
Mini 10 /Point	±8 kV	Slot	A	B	Pass
Mini 10 /Point	±8 kV	Screen	A	B	Pass

Contact Discharge

Amount of discharge	Test Voltage	Location	Actual criterion	Required performance criterion	Result (Pass/Fail)
Mini 25 /Point	±8 kV	Screw, Metal	A	B	Pass
Mini 25 /Point	±8 kV	LAN/USB	A	B	Pass

Indirect Discharge

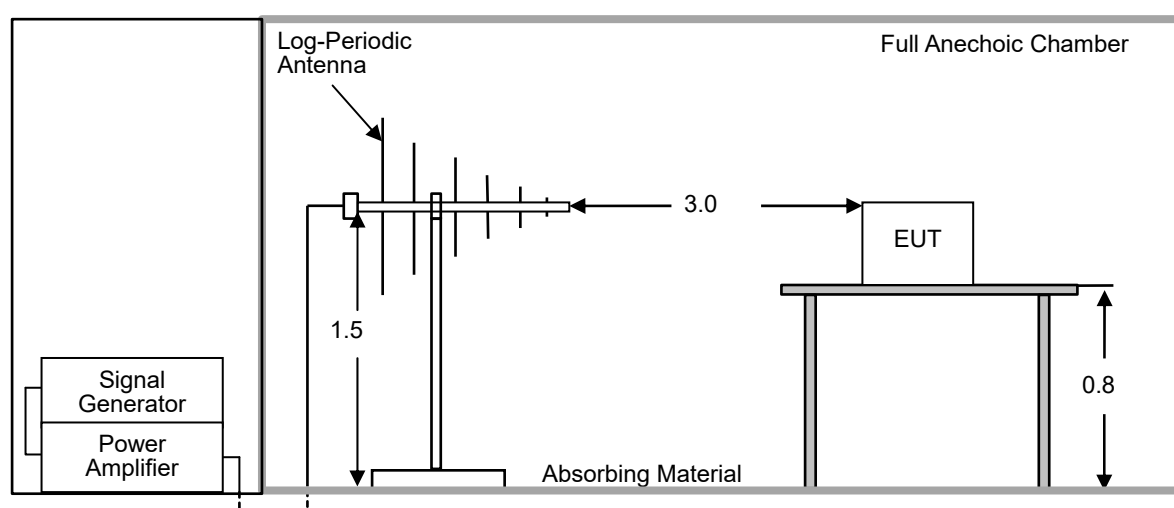
Amount of discharge	Test Voltage	Location	Actual criterion	Required performance criterion	Result (Pass/Fail)
Mini 10 /Point	±8 kV	HCP	A	B	Pass
Mini 10 /Point	±8 kV	VCP	A	B	Pass

9. RF FIELD STRENGTH SUSCEPTIBILITY TEST

9.1. Test Specification

Test Standard	: EN 62040-2
Basic Standard	: IEC 61000-4-3
Performance criterion	: A
Test level	: 10V/m
Frequency Range	: 80M-1000MHz
Modulation	: AM 80%, 1kHz sine-wave

9.2. Block Diagram of Test Setup



9.3. Test procedure

The procedure defined in this part requires the generation of electromagnetic fields within which the test sample is placed and its operation observed. To generate fields that are useful for simulation of actual (field) conditions may require significant antenna drive power and the resultant high field strength levels. To comply with local regulations and to prevent biological hazards to the testing personnel, it is recommended that these tests be carried out in a shielded enclosure or semi-anechoic chamber.

- The antenna which is enabling the complete frequency range of 80-1000 MHz is placed 3m away from the equipment. The required field strength is determined by placing the field strength meter(s) on top of or directly alongside the equipment under test and monitoring the field strength meter via a remote field strength indicator outside the enclosure while adjusting the continuous-wave to the antenna.
- The test is performed with the antenna facing the front and back sides of the EUT with. Both vertical and horizontal polarizations from antenna are tested.

9.4. Test results

PASS

Temperature : 24 °C
 Humidity : 50%
 Atmospheric Pressure : 101kpa
 Test Engineer : LQZ
 Test Date : 2019-07-31

Freq. Range (MHz)	Field	Modulation	Polarity	Position (°)	Actual criterion	Required performance criterion	Result
80-1000	10V/m	AM	H / V	Front	A	A	Pass
80-1000	10V/m	AM	H / V	Right	A	A	Pass
80-1000	10V/m	AM	H / V	Back	A	A	Pass
80-1000	10V/m	AM	H / V	Left	A	A	Pass

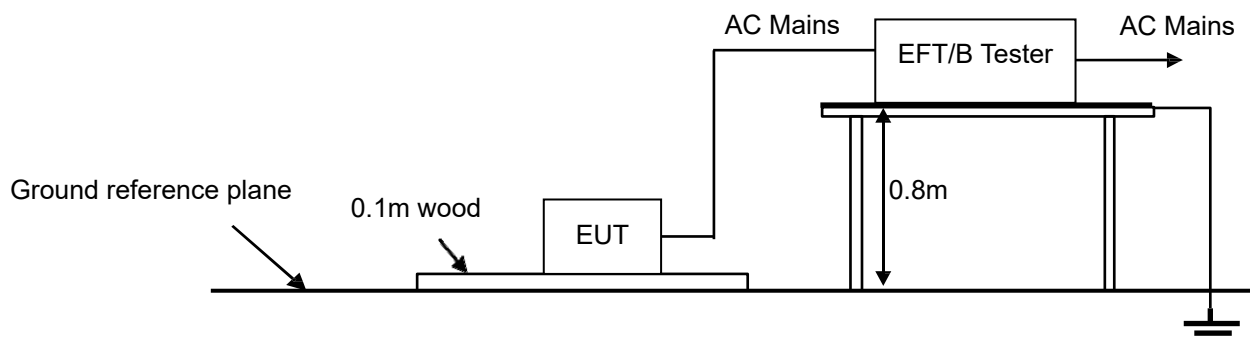
10. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

10.1. Test Specification

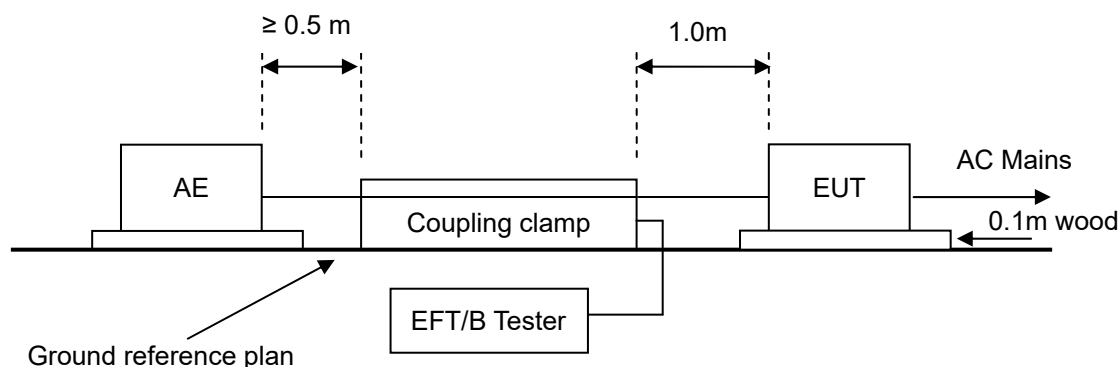
Test Standard	: EN 62040-2
Basic Standard	: IEC 61000-4-4
Performance criterion	: B
Test level	: ☒ 4kV, AC input power ports ☒ 4kV, AC output power ports ☐ 2kV, DC port ☒ 2kV, Network port
Repetition frequency	: ☒ 5kHz, ☐ 100kHz
Tr/Th:	: 5/50ns
Burst Period	: 300ms
Test Time :	: 120s

10.2. Block Diagram of Test Setup

AC Lines:



Signal lines:



10.3. Test Procedure

The EUT is put on the wood that is 0.1 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

10.4. Test Results

PASS

Temperature : 23.5 °C
Humidity : 52%
Atmospheric Pressure : 101kpa
Test Engineer : LQZ
Test Date : 2019-07-31

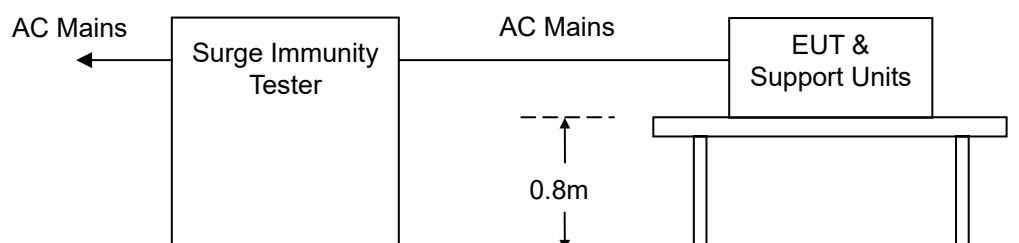
Injection Line	Voltage (kV)	Injected Method	Actual criterion	Required performance criterion	Result (Pass/Fail)
☒ AC input power ports	± 4	☒ CDN ☐ Direct injection ☐ Capacitive coupling clamp	A	B	Pass
☒ AC output power ports	± 4	☒ CDN ☐ Direct injection ☐ Capacitive coupling clamp	A	B	Pass
☐ DC port	± 4	☐ CDN ☐ Direct injection ☐ Capacitive coupling clamp	N/A	N/A	N/A
☒ Network port	± 2	☐ CDN ☐ Direct injection ☒ Capacitive coupling clamp	A	B	Pass

11. SURGE IMMUNITY TEST

11.1. Test Specification

Test Standard	: EN 62040-2
Basic Standard	: IEC 61000-4-5
Test level	: ☒ 4.0kV, Line - Line, AC input power ports, Criterion B ☒ 4.0kV, Line - Earth, AC input power ports, Criterion B ☒ 4.0kV, Line - Line, AC output power ports, Criterion B ☒ 4.0kV, Line - Earth, AC output power ports, Criterion B ☐ 1.0kV, Line - Line, DC port, Criterion B ☐ 2.0kV, Line - Earth, DC port, Criterion B ☒ 1.0kV, Network ports, Criterion B
Number of surges	: 5 (for each combination of parameters)
Repetition rate	: 1 minute / time
Polarity:	: Positive / Negative
Phase angle:	: 0°, 90°, 180°, 270°

11.2. Block Diagram of Test Setup



11.3. Test Procedure

This test simulates a lightning event by inducing transients onto the AC/DC power supply lines in common mode (Line to Ground) and differential mode (Line to Line). Each device was tested in a total of two surge configurations: Line to Ground (L-G): Combination Wave, Line to Protective Earth with 9uF and 10Ohm and Neutral to Protective Earth with 9uF and 10Ohm, common mode, generator earthed.

Line to Line (L-L): Combination Wave,

Line to Neutral with 18uF, differential mode, generator floated.

2 ohm : the source impedance of the low-voltage power supply network.

12 ohm : the source impedance of the low-voltage power supply network and ground.

- If not otherwise specified the surges have to be applied synchronized to the voltage phase at the zero-crossing and the peak value of the a.c. voltage wave (positive and negative).
- The surges have to be applied line to line and line to earth. When testing line to earth, the test voltage has to be applied successively between each of the lines and earth, if there is no other specification.
- The test procedure shall also consider the non-linear current-voltage characteristics of the equipment under test. Therefore the test voltage has to be increased by steps up to the test level specified in the product standard or test plan. All lower levels including the selected test level shall be satisfied.
- For testing the secondary protection, the output voltage of the generator shall be increased up to the worst-case voltage breakdown level (let-through level) of the primary protection.
- Testing shall be performed according to a Test Plan, which shall be included in the test report.
- To find all critical points of the duty cycle of the equipment, a sufficient number of positive and negative test pulses shall be applied.

11.4. Test results

PASS

Temperature : 25.1 °C
Humidity : 52%
Atmospheric Pressure : 101kpa
Test Engineer : LQZ
Test Date : 2019-08-12

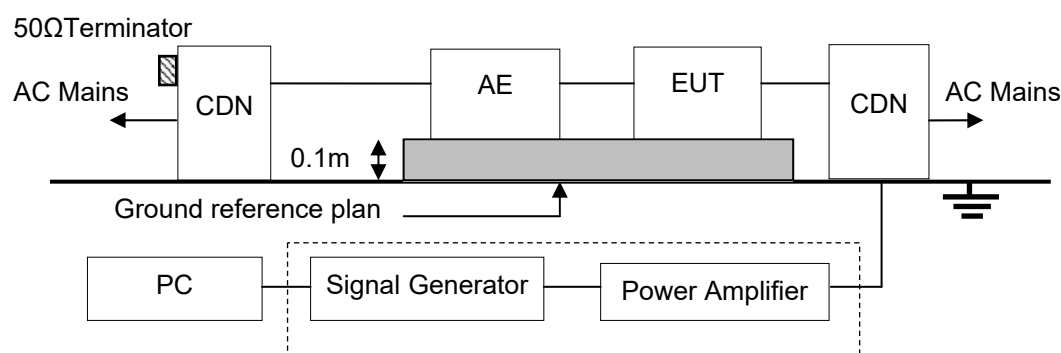
Coupling Line	Voltage (kV)	Waveform (μs)	Polarity	Actual criterion	Required performance criterion	Result (Pass/Fail)
☒ AC input power ports (Line to line)	4	1.2/50 (8/20)	Pos./ Neg.	A	B	Pass
☒ AC input power ports (Line to earth)	4	1.2/50 (8/20)	Pos./ Neg.	A	B	Pass
☒ AC output power ports (Line to line)	4	1.2/50 (8/20)	Pos./ Neg.	A	B	Pass
☒ AC output power ports (Line to earth)	4	1.2/50 (8/20)	Pos./ Neg.	A	B	Pass
☐ DC port (Line to line)	0.5, 1	1.2/50 (8/20)	Pos./ Neg.	N/A	B	N/A
☐ DC port (Line to earth)	0.5, 1, 2	1.2/50 (8/20)	Pos./ Neg.	N/A	B	N/A
☒ Network Ports	1	1.2/50 (8/20)	Pos./ Neg.	A	B	Pass

12. INJECTED CURRENTS SUSCEPTIBILITY TEST

12.1. Test Specification

Test Standard	: EN 62040-2
Basic Standard	: IEC 61000-4-6
Performance criterion	: A
Test level	: 10V
Frequency Range	: 0.15M-80MHz
Modulation	: AM 80%, 1kHz sine-wave
Frequency Step	: 1% of fundamental

12.2. Block Diagram of Test Setup



12.3. Test Procedure

- The EUT shall be operated within its intended climatic conditions. The temperature and relative humidity should be recorded.
- The EUT is placed on a 0.1m high test table, and a well grounded cable is connected to metallic plane above the test table.
- All cables/wires must be laid out on test plate (3cm in thickness), and the EUT is set up on test plate (10 cm in thickness) as shown in test setup photo, and the cables/wires must not be in mid-air, they should be touching the surface of test plate. Ensure that the EUT is properly connected to the accessory equipment.
- The test shall be 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 is swept from 150 kHz to 80 MHz, using the signal levels established during the setting process, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave, pausing to adjust the RF-signal level or to switch coupling devices as necessary. The rate of sweep shall no exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall no exceed 1% of the start and thereafter 1% of the preceding frequency value.
- The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies e.g. clock frequency (ies) and harmonics or frequencies of dominant interest shall be analyzed separately.
- Attempts should be made to fully exercise the EUT during testing, and to fully interrogate all exercise modes selected for susceptibility
- Testing shall be performed according to a Test Plan, which shall be included in the test report.

12.4. Test results

PASS

Temperature : 23.5 °C
Humidity : 52%
Atmospheric Pressure : 101kpa
Test Engineer : LQZ
Test Date : 2019-07-31

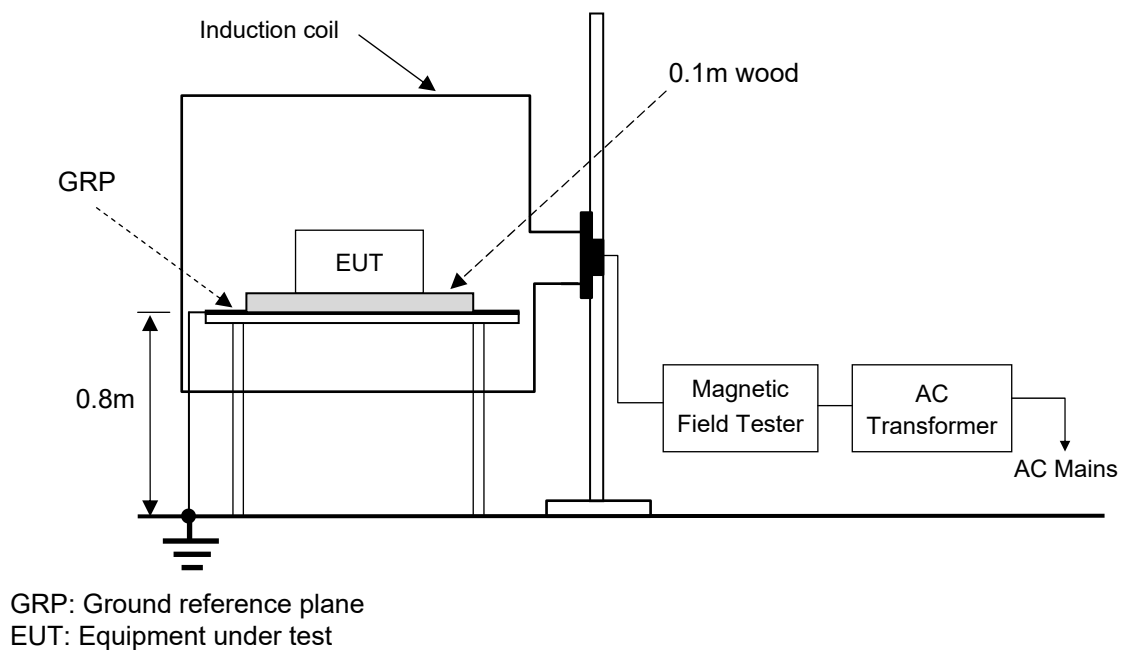
Range (MHz)	Levers	Injection port	Coupling type	Actual criterion	Required performance criterion	Result (Pass/Fail)
0.15-80	10V	☒ AC input power ports ☒ AC output power ports ☐ DC port ☐ Network port	☒ CDN ☐ EM Clamp ☐ Current Clamp ☐ Direct injection	A	A	Pass
0.15-80	10V	☐ AC input power ports ☐ AC output power ports ☐ DC port ☒ Network port	☐ CDN ☒ EM Clamp ☐ Current Clamp ☐ Direct injection	A	A	Pass

13. MAGNETIC FIELD SUSCEPTIBILITY TEST

13.1. Test Specification

Test Standard	: EN 62040-2
Basic Standard	: IEC 61000-4-8
Performance criterion	: A
Test level	: 30A/m

13.2. Block Diagram of Test Setup



13.3. Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) wood, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

13.4. Test Results

PASS

Temperature : 23.5 °C
 Humidity : 52%
 Atmospheric Pressure : 101kpa
 Test Engineer : LQZ
 Test Date : 2019-07-31

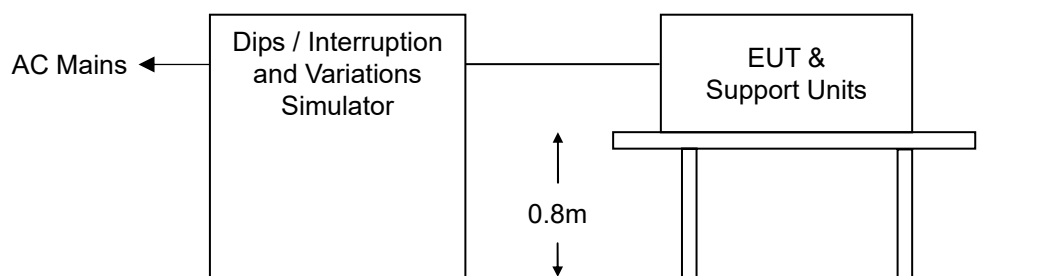
Test Level (A/m)	Frequency	Testing Duration	Coil Orientation	Actual criterion	Required performance criterion	Result (Pass/Fail)
30	☒ 50Hz ☒ 60Hz	5 mins	☒ x-axis ☒ y-axis ☒ z-axis	A	A	Pass

14. VOLTAGE DIPS AND INTERRUPTIONS TEST

14.1. Test Specification

Test Standard : EN 62040-2
Basic Standard : IEC 61000-4-11

14.2. Block Diagram of Test Setup



14.3. Test Procedure

- a. Where the equipment has a rated voltage the following shall apply - If the voltage range does not exceed 20% of the lower voltage specified for the rated voltage range, a single voltage within that range may be specified as a basis for test level specification.
 - In all other cases, the test procedure shall be applied for both the lowest and highest voltages declared in the voltage range.
- b. Test Conditions
 - Select operated voltage and frequency of EUT - Test of interval : 10 sec.
 - Level and duration : Sequence of 3 dips/interrupts.
 - Voltage rise (and fall) time : 1.5 μ s.

14.4. Test results

PASS

Temperature : 23.5 °C
 Humidity : 52%
 Atmospheric Pressure : 101kpa
 Test Engineer : LQZ
 Test Date : 2019-07-31

	Test Level (% UT)	Phase angle (°)	Reduction (%)	Duration (periods)	Actual criterion	Required performance criterion	Result (Pass/Fail)
Voltage Dips	0%	0°, 180°	100%	0.5	A	B	Pass
	70%	0°, 180°	30%	25	A	C	Pass
Voltage Interruption	0%	0°, 180°	100%	250	B	C	Pass

Immunity to voltage dips, short interruptions and voltage variations characterize intrinsic SURT5KUXIG, SURT5KXLIG, SURT6KUXI-CH, SRTG6KXLI performance, and no specific EMC tests are required.

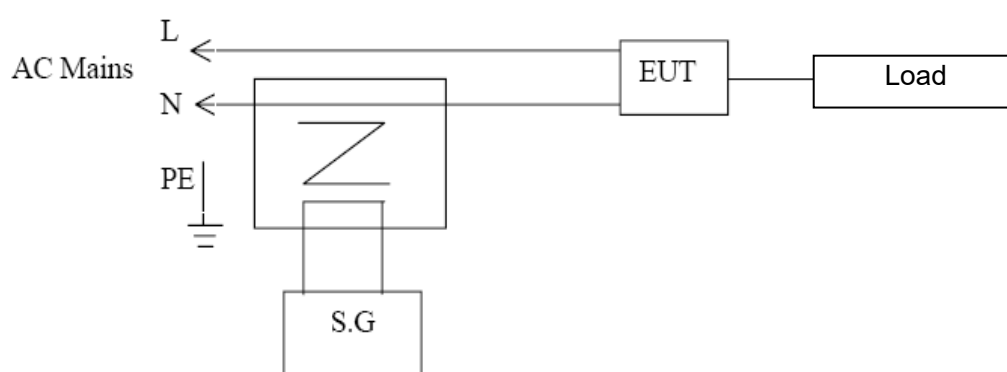
Note: Dips to 0%, Duration 250P, EUT stopped operation, but it can be resumed by itself after test.

15. LOW FREQUENCY SIGNALS TEST

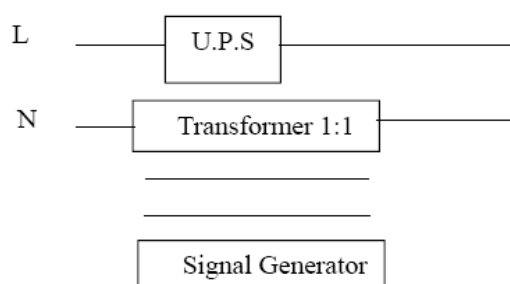
15.1. Test Specification

Test Standard	: EN 62040-2
Basic Standard	: IEC 61000-2-2
Performance criterion	: A
Test frequency	: 140-360Hz
Test level	: 10V(rms)Sinusoidal

15.2. Block Diagram of Test Setup



Isolation transformer
Primary: Secondary=1:1



15.3. Test Procedure

- 1) Set up the EUT and test generator as shown on Block diagram.
- 2) Add the 10V (rms) Sinusoidal interference signal and the interference signal frequency from 140Hz ~ 360Hz to L terminus.
- 3) Repeat the second step at the N-terminus.

15.4. Test Results

PASS.

Temperature : 23.5 °C
Humidity : 52%
Atmospheric Pressure : 101kpa
Test Engineer : LQZ
Test Date : 2019-07-31

Frequency Range (Hz)	Step (Hz)	Position	Strength	Result	Note
140	10	L,N	10V(rms) Sinusoidal	P	A
160				P	A
200				P	A
240				P	A
280				P	A
320				P	A
360				P	A

16. PHOTOGRAPHS

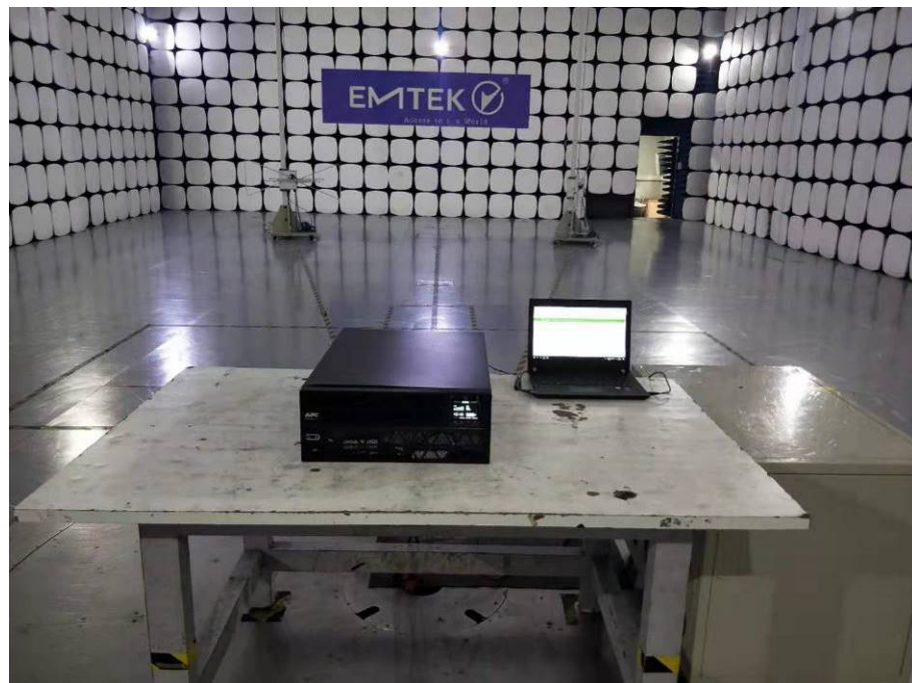
16.1. Photos of Conducted Emissions



16.2.Photos of Asymmetric Mode Conducted Emissions at Wired Network Ports



16.3.Photos of Radiation Emission Measurement





16.4.Photo of Harmonic / Flicker Measurement



16.5.Photo of Electrostatic Discharge Test



16.6.Photo of RF Field Strength Susceptibility Test



16.7.Photos of Electrical Fast Transient / Burst Test



16.8.Photos of Surge Test



16.9.Photos of Injected Currents Susceptibility Test



16.10.Photo of Magnetic Field Susceptibility Test



16.11.Photo of Voltage Dips and Interruption Immunity Test



16.12.Photo of Low Frequency Signals Test



APPENDIX (PHOTOS OF EUT)

SURT6KUXI-CH







SRTG6KXLI







---The end---