

EMC Measurement and Test Report

For

ZhuHai Bcom Electronic Technology Co., Ltd.

**501 Room, 6 Building, No 19 YongTian Road, XiangZhou District, ZhuHai
City, GuangDong Province, China**

Test Standards: EN 55032:2015
EN 61000-3-2:2014
EN 61000-3-3:2013
EN 55024:2010+A1:2015

Product Description: Indoor Monitor

Tested Model: 84706

Report No.: STR17088192E

Tested Date: 2017-08-14 to 2017-08-15

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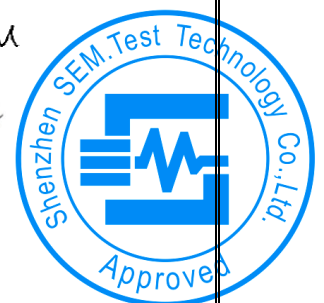
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM.Test Technology Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: ZhuHai Bcom Electronic Technology Co., Ltd.
 Address of applicant: 501 Room, 6 Building, No 19 YongTian Road, XiangZhou District, ZhuHai City, GuangDong Province, China

Manufacturer: ZhuHai Bcom Electronic Technology Co., Ltd.
 Address of manufacturer: 501 Room, 6 Building, No 19 YongTian Road, XiangZhou District, ZhuHai City, GuangDong Province, China

General Description of EUT		
Product Name:	Indoor Monitor	
Trade Name:	Bcomtech	
Model No.:	84706	
Adding Model(s):	Main test models:84706	
	8XYZ:8 mean video or audio intercom, A mean series number, X mean monitor screen size or other, YZ mean the series different appearance. (notice: The number 0 in A mean access control system, 2 Mean analog 2 wire video intercom system, 4 mean analog 4 wire video intercom system, 5 mean analog multi Building system, 6 mean IP doorbell system, 7 mean digital video intercom system, 8 mean smart home System; the number 1 in X mean 10 inch 3 screen, Mean converter,4 mean 4 inch screen,5 mean audio,7 mean 7 inch screen; the number 00 to 99 in YZ mean different apperance.)	
	<p><i>Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model 84706, but the circuit and the electronic construction do not change, declared by the manufacturer.</i></p>	

Technical Characteristics of EUT	
Rated Voltage:	DC 12V
Rated Current:	1000mA
Rated Power:	/
Power Adaptor Model:	/
Highest Internal Frequency:	Below 108MHz
Classification of Equipment:	Class B

1.2 Test Standards

The following report is prepared on behalf of the ZhuHai Bcom Electronic Technology Co., Ltd. in accordance with EN55032, Electromagnetic compatibility of multimedia equipment - Emission requirements and EN55024, Immunity characteristics Limits and methods of measurement.

The objective of the manufacturer is to demonstrate compliance with the standards EN55032 and EN55024 for multimedia equipment.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission/immunity should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with the standards EN55032 and EN55024 for Information Technology Equipment, and all related testing and measurement techniques intentional standards.

1.4 Test Facility

FCC – Registration No.: 934118

Shenzhen SEM.Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 934118.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

CNAS Registration No.: L4062

Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101).

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission/immunity level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Camera	Connect to display
TM2	Working	/

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
Display	DELL	U2410f	50642P246601H(B) ZL

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Audio cable	0.8	Unshielded	Without Core

1.6 Performance Criteria for EMS

All the test data has been collected, reduced, and analyzed within this report in accordance with Immunity requires the following as specific performance criteria:

- A. The apparatus shall continue to operate as intended during and after the test. The manufacturer specifies some minimum performance level. The performance level may be specified by the manufacturer as a permissible loss of performance.
- B. The apparatus shall continue to operate as intended after the test. This indicates that the EUT does not need to function at normal performance levels during the test, but must recover. Again some minimal performance is defined by the manufacture. No change in operating state or loss or data is permitted.
- C. Temporary loss of function is allowed. Operation of the EUT may stop as long as it is either automatically reset or can be manually restored by operation of the controls.

1.7 Test Equipment List and Details

No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due. Date
SEMT-1031	Spectrum Analyzer	Rohde & Schwarz	FSP	836079/035	2017-06-12	2018-06-11
SEMT-1007	EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2017-06-12	2018-06-11
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2017-06-12	2018-06-11
SEMT-1043	Amplifier	C&D	PAP-1G18	2002	2017-06-12	2018-06-11
SEMT-1011	Trilog Broadband Antenna	Schwarz beck	VULB9163	9163-333	2017-06-12	2018-06-11
SEMT-1068	Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-333	2017-06-12	2018-06-11
SEMT-1042	Horn Antenna	ETS	3117	00086197	2017-06-12	2018-06-11
SEMT-1069	Loop Antenna	Schwarz beck	FMZB 1516	9773	2017-06-12	2018-06-11
SEMT-1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2017-06-12	2018-06-11
SEMT-1066	EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2017-06-12	2018-06-11
SEMT-1002	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2017-06-12	2018-06-11
SEMT-1003	AC LISN	Schwarz beck	NSLK8126	8126-224	2017-06-12	2018-06-11
SEMT-1060	DC LISN	Schwarz beck	NNBM8126D	279	2017-06-12	2018-06-11
SEMT-1061	DC LISN	Schwarz beck	NNBM8126D	280	2017-06-12	2018-06-11
SEMT-1085	8-WIRE LISN	Schwarz beck	8158	CAT3-8158-0059	2017-06-12	2018-06-11
SEMT-1086	8-WIRE LISN	Schwarz beck	8158	CAT5-8158-0117	2017-06-12	2018-06-11
SEMT-1005	Clamp	Schwarz beck	MDS21	3809	2017-06-12	2018-06-11
SEMT-1014	Loop Antenna	EVERFINE	LLA-2	711001	2017-06-12	2018-06-11
SEMT-1071	VDH Test Head	AFJ	VDH 30	SC022Z	2017-06-12	2018-06-11
SEMT-1056	Digital Power Analyzer	California Instrument	CTS	72831	2017-06-12	2018-06-11
SEMT-1057	Power Source	California Instrument	5001IX-CTS-400	25965	2017-06-12	2018-06-11
SEMT-1027	ESD Generator	TESQ AG	NSG 437	161	2017-06-12	2018-06-11
SEMT-1055	Signal Generator	HP	8648A	3642U01277	2017-06-12	2018-06-11
SEMT-1008	Amplifier	Agilent	8447F	3113A06717	2017-06-12	2018-06-11
SEMT-1067	Amplifier	Agilent	8447D	2944A10179	2017-06-12	2018-06-11
SEMT-1024	Transient 2000	EMC PARTNER	TRA2000	863	2017-06-12	2018-06-11
SEMT-1045	CS Immunity Tester	EMTEST	CWS500	0900-03	2017-06-12	2018-06-11

2. SUMMARY OF TEST RESULTS

Standards	Description of Test Item	Result
EN55032	Conducted Emission	Compliant
	Radiated Emission	Compliant
EN61000-3-2	Harmonic Current Emission	N/A
EN61000-3-3	Voltage Fluctuation and Flicker	Compliant
EN55024	Electrostatic Discharge Immunity in accordance with IEC 61000-4-2	Compliant
	Continuous Radiated Disturbances Immunity in accordance with IEC 61000-4-3	Compliant
	Electrical Fast Transient/Burst Immunity in accordance with IEC 61000-4-4	Compliant
	Surges Immunity in accordance with IEC 61000-4-5	Compliant
	Continuous Conducted Disturbances Immunity in accordance with IEC 61000-4-6	Compliant
	Power-frequency Magnetic Fields Immunity in accordance with IEC 61000-4-8	N/A
	Voltage Dips/Interruptions Immunity in accordance with IEC 61000-4-11	Compliant

N/A: not applicable

3. Conducted Emission

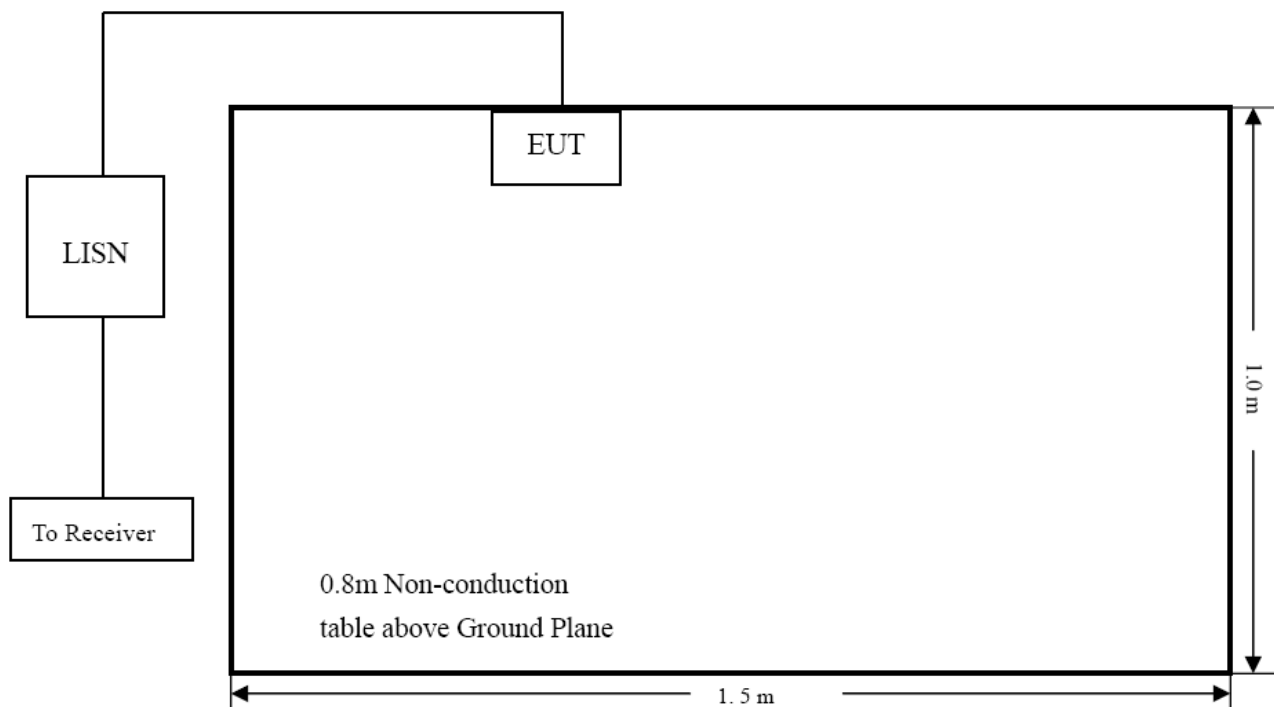
3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 dB.

3.2 Test Procedure

Test is conducting under the description of EN55032 Annex A.3.5.

3.3 Basic Test Setup Block Diagram



3.4 Environmental Conditions

Temperature:	22 ° C
Relative Humidity:	55 %
ATM Pressure:	1015 mbar

3.5 Summary of Test Results/Plots

According to the data in section 3.6, the EUT complied with the EN55032 Conducted margin for a Class B device, with the *worst* margin reading of:

-12.05 dB at 0.1860 MHz in the TM1 mode, peak detector, 0.15-30MHz

3.6 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

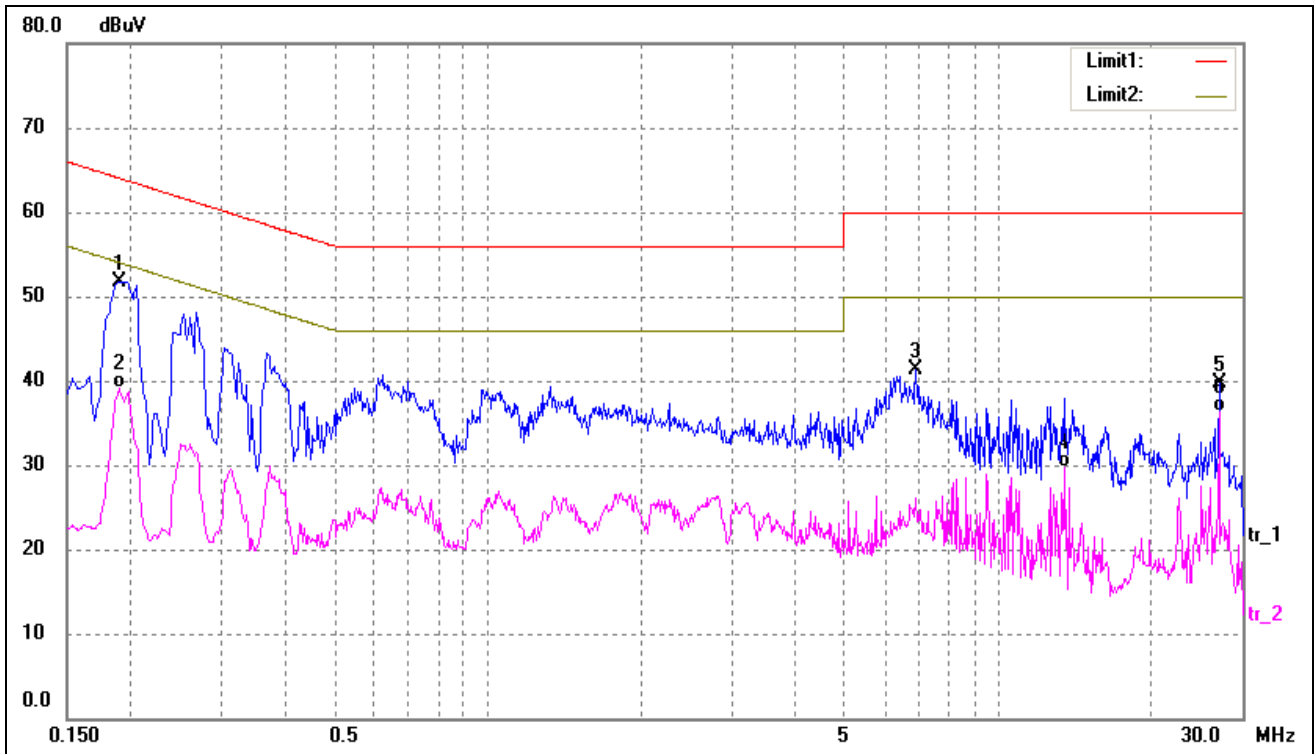
EUT: Indoor Monitor

Tested Model: 84706

Operating Condition: TMI

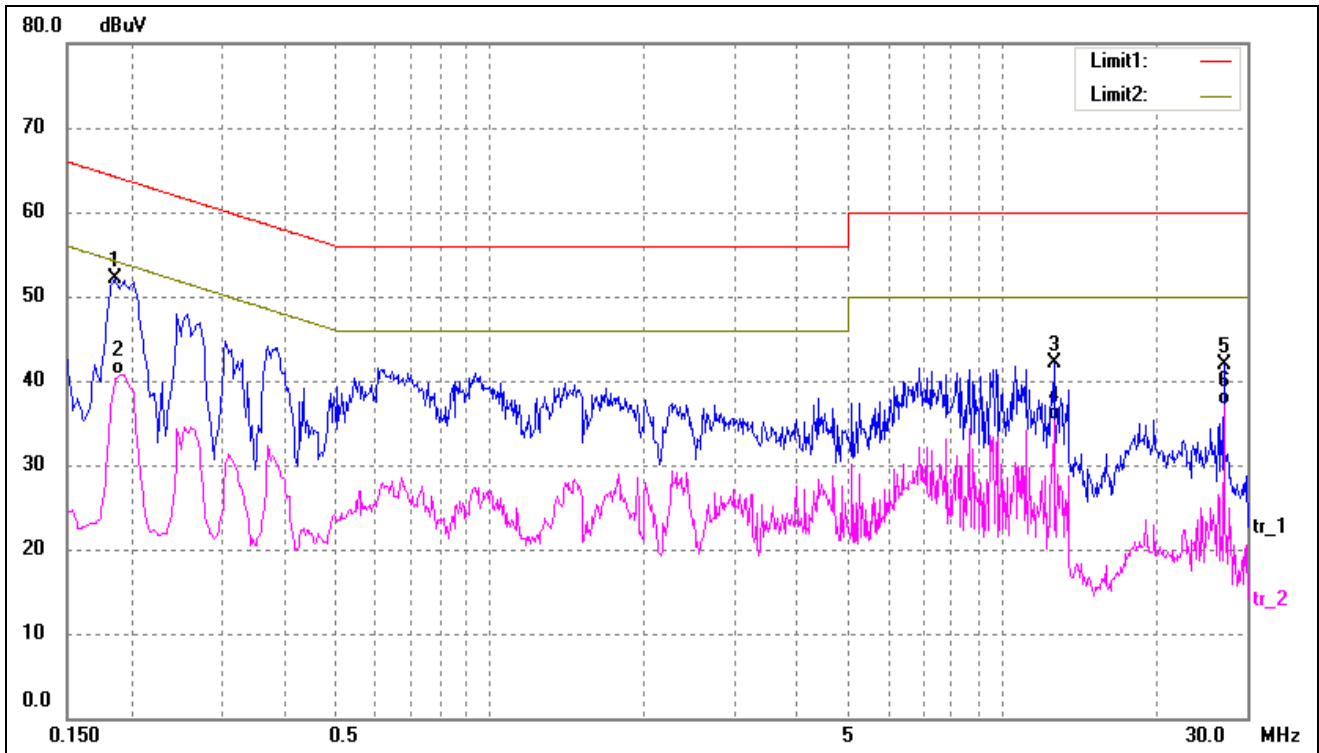
Comment: AC 230V/50Hz

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1900	42.25	9.50	51.75	64.04	-12.29	QP
2	0.1900	29.54	9.50	39.04	54.04	-15.00	AVG
3	6.8820	31.34	10.00	41.34	60.00	-18.66	QP
4	13.4340	18.99	10.69	29.68	50.00	-20.32	AVG
5	27.0020	26.64	13.00	39.64	60.00	-20.36	QP
6	27.0020	23.35	13.00	36.35	50.00	-13.65	AVG

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1860	42.66	9.50	52.16	64.21	-12.05	QP
2	0.1900	31.29	9.50	40.79	54.04	-13.25	AVG
3	12.6300	31.62	10.53	42.15	60.00	-17.85	QP
4	12.6300	24.81	10.53	35.34	50.00	-14.66	AVG
5	27.0020	28.85	13.00	41.85	60.00	-18.15	QP
6	27.0020	24.16	13.00	37.16	50.00	-12.84	AVG

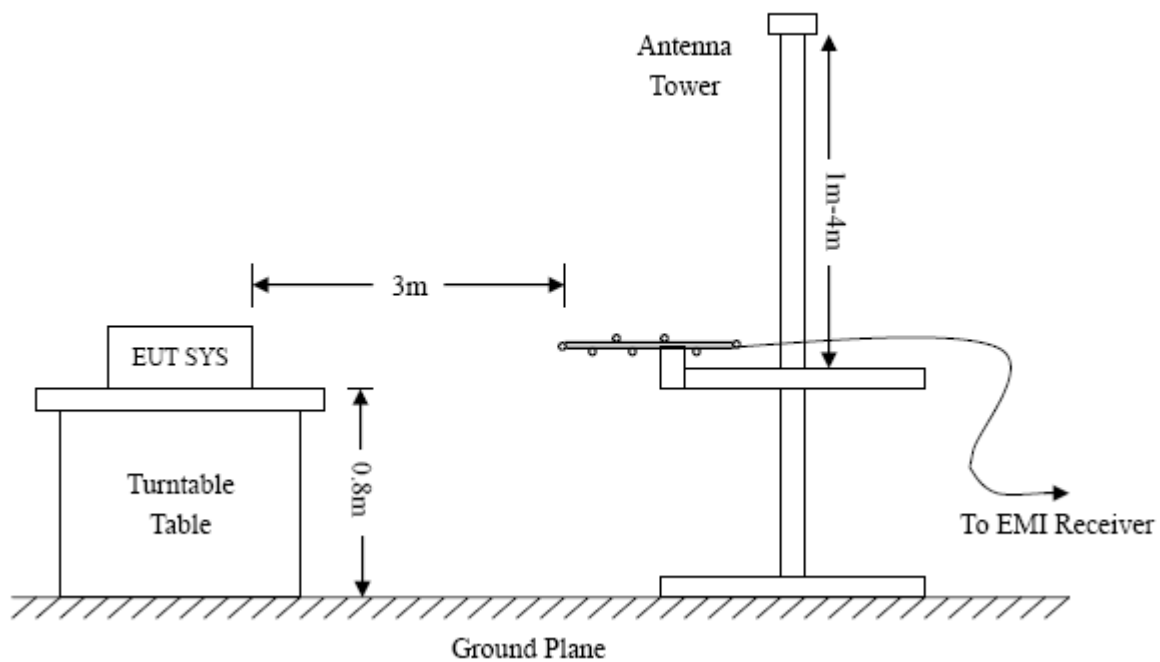
4. Radiated Emission

4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Procedure

Test is conducting under the description of EN55032 Annex A.3.4.



4.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{EN55032 Class B Limit}$$

4.4 Environmental Conditions

Temperature:	23° C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

4.5 Summary of Test Results/Plots

According to the data in section 3.5, the EUT complied with the EN55032 Class B standards, and had the worst margin is:

-3.08 dB at 217.5442MHz in the Horizontal polarization, 30 MHz to 1 GHz, 3Meters

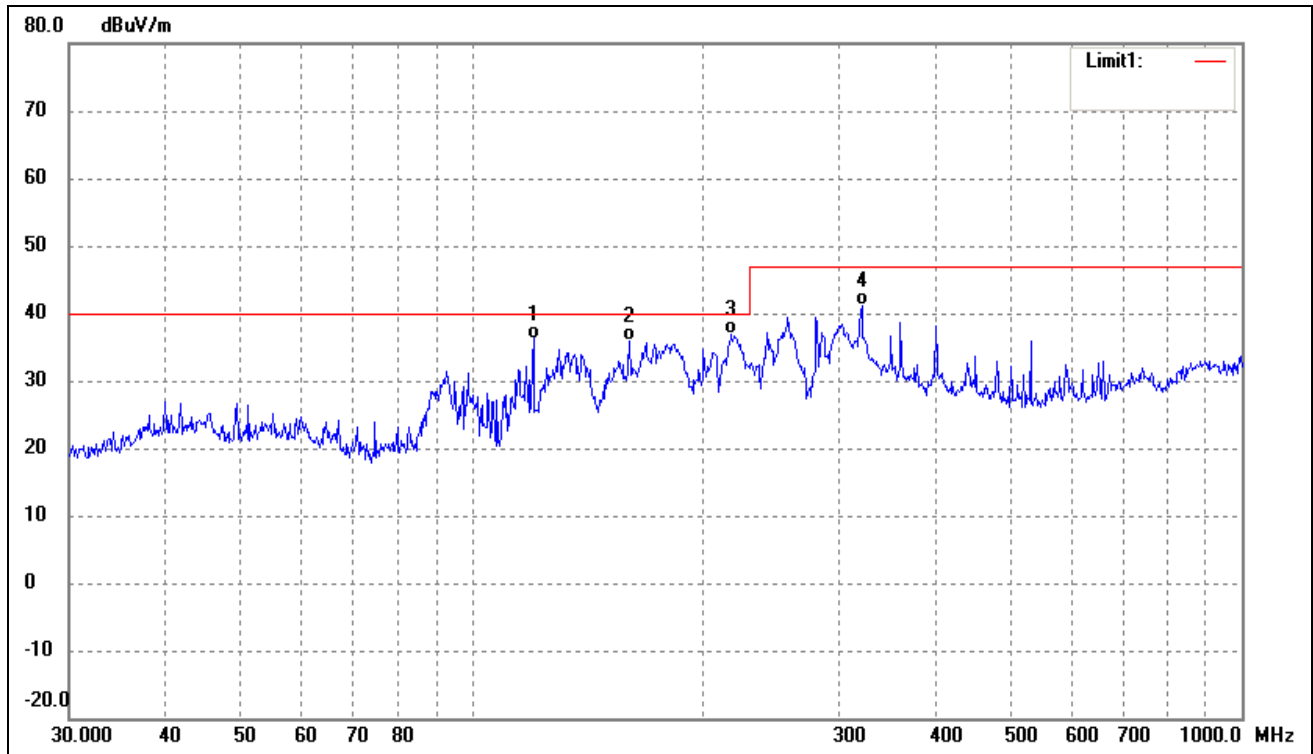
Plot of Radiated Emissions Test Data

 EUT: *Indoor Monitor*

 Tested Model: *84706*

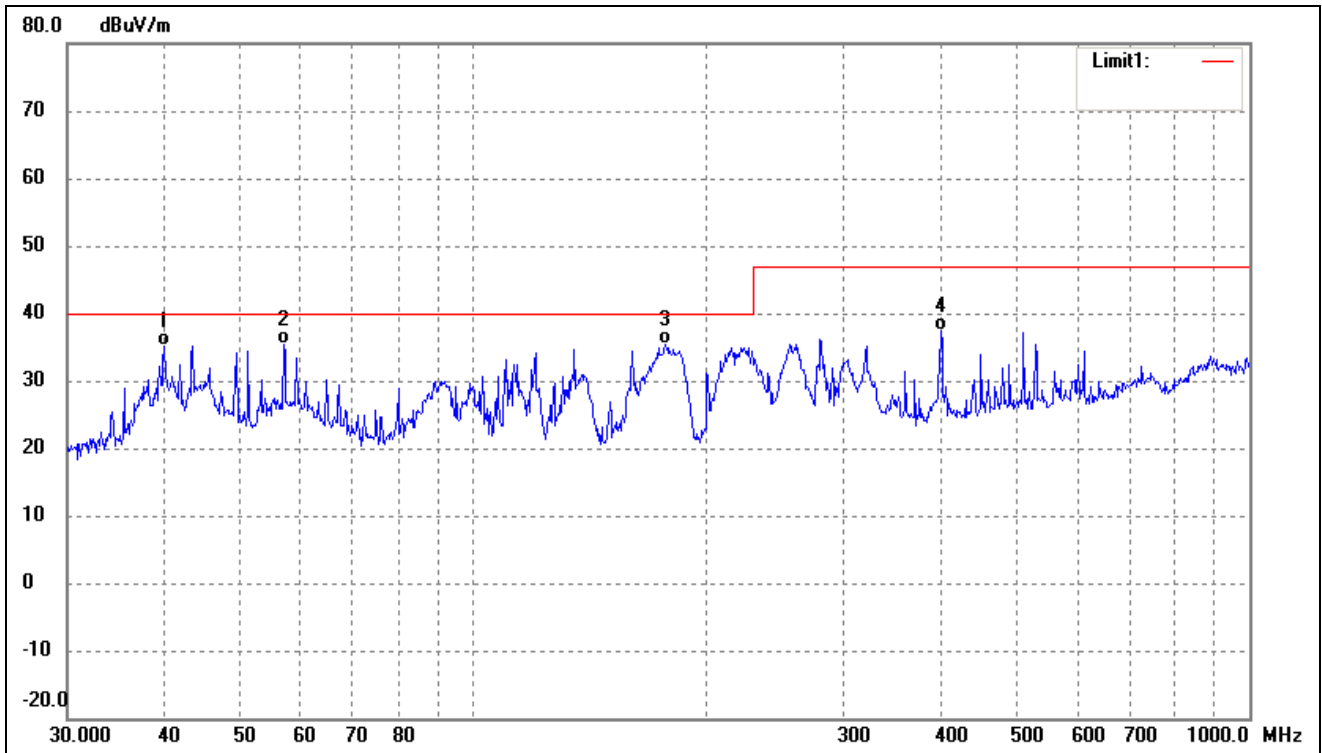
 Operating Condition: *TM1*

 Comment: *AC 230V/50Hz*

 Test Specification: *Horizontal*


No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	120.2766	32.25	4.00	36.25	40.00	-3.75	320	100	QP
2	160.3456	33.21	2.62	35.83	40.00	-4.17	102	100	QP
3	217.5442	31.99	4.93	36.92	40.00	-3.08	62	100	QP
4	321.0607	31.84	9.26	41.10	47.00	-5.90	250	100	QP

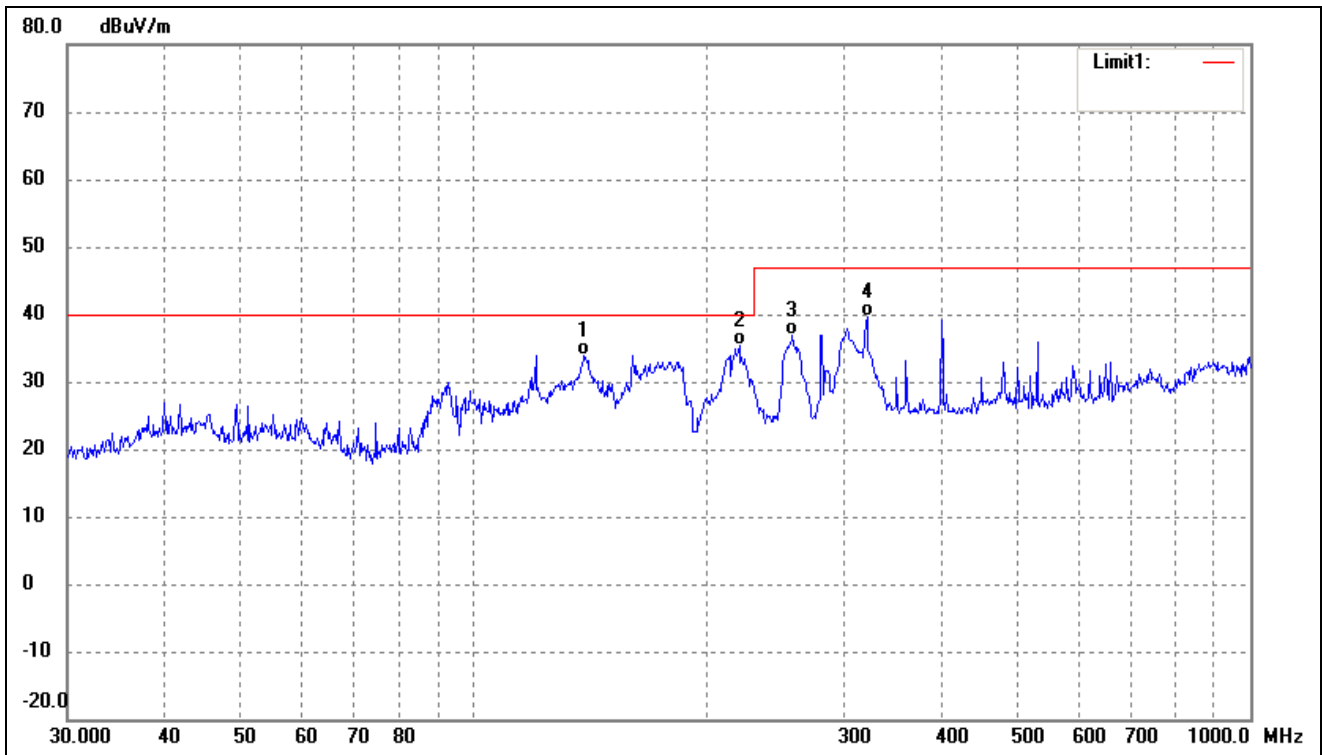
Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	39.9941	26.81	8.25	35.06	40.00	-4.94	150	100	QP
2	56.9911	27.97	7.34	35.31	40.00	-4.69	200	100	QP
3	176.8877	32.54	2.73	35.27	40.00	-4.73	300	100	QP
4	400.4318	27.28	10.12	37.40	47.00	-9.60	10	100	QP

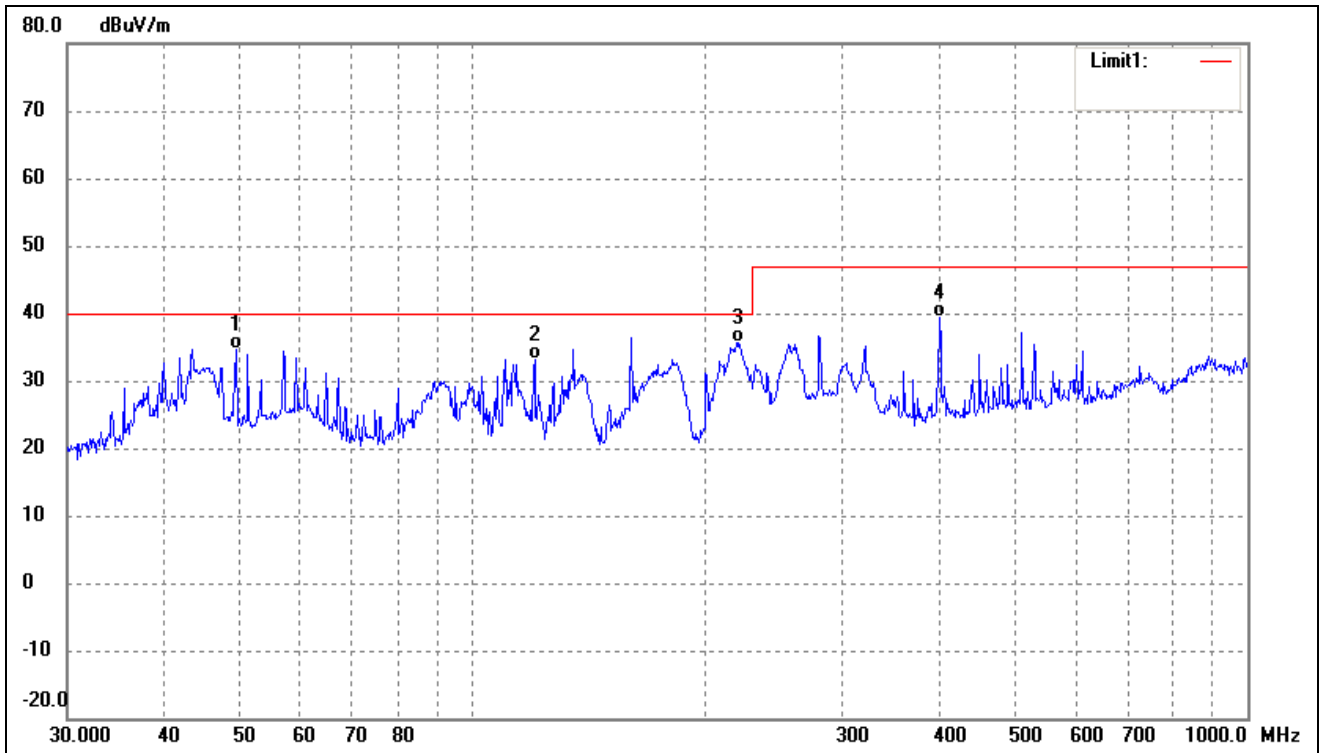
EUT: *Indoor Monitor*
 Tested Model: *84706*
 Operating Condition: *TM2*
 Comment: *AC 230V/50Hz*

Test Specification: *Horizontal*



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	138.8735	31.25	2.51	33.76	40.00	-6.24	109	100	QP
2	219.8448	30.30	5.09	35.39	40.00	-4.61	290	100	QP
3	257.4221	29.99	6.95	36.94	47.00	-10.06	360	100	QP
4	321.0607	30.34	9.26	39.60	47.00	-7.40	21	100	QP

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	49.5328	27.23	7.31	34.54	40.00	-5.46	145	100	QP
2	120.2766	29.22	4.00	33.22	40.00	-6.78	260	100	QP
3	219.8448	30.60	5.09	35.69	40.00	-4.31	358	100	QP
4	400.4318	29.28	10.12	39.40	47.00	-7.60	44	100	QP

5. Harmonic Current Emissions

5.1 Test Procedure

Test is conducting under the description of EN61000-3-2.

5.2 Test Standards

EN61000-3-2, Clause 7.1 Limits for Class A equipment.

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	48%
ATM Pressure:	1022 mbar

5.3 Harmonic Current Emissions Test Data

According to Clause 7 of EN61000-3-2, the rated power of the EUT is less than 75W, belong to 'equipment with a rated power of 75W or less', therefore 'limits are not specified in this edition of the standards'. It is deem to full fit the requirements of the standards.

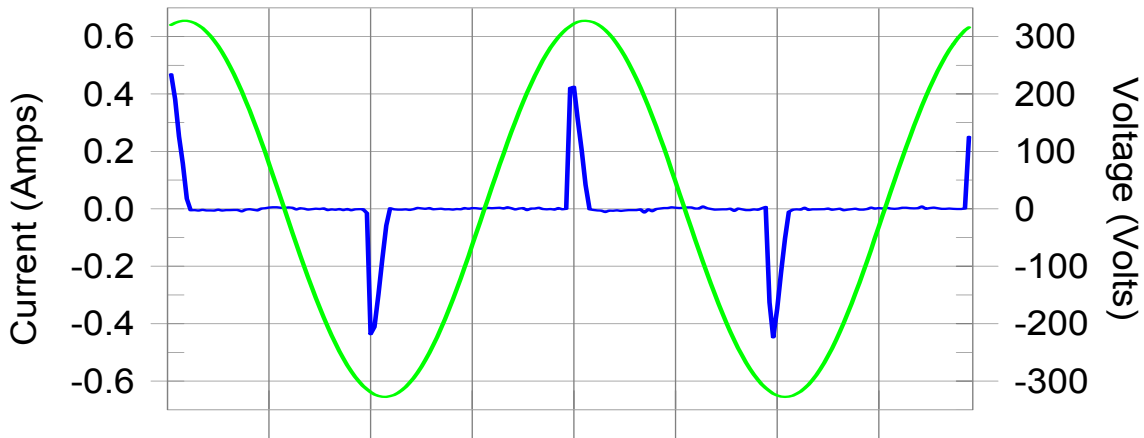
Result: The EUT is compliance with the requirements of this section.

Harmonics – Class-A per Ed. 3.2 (Run time)

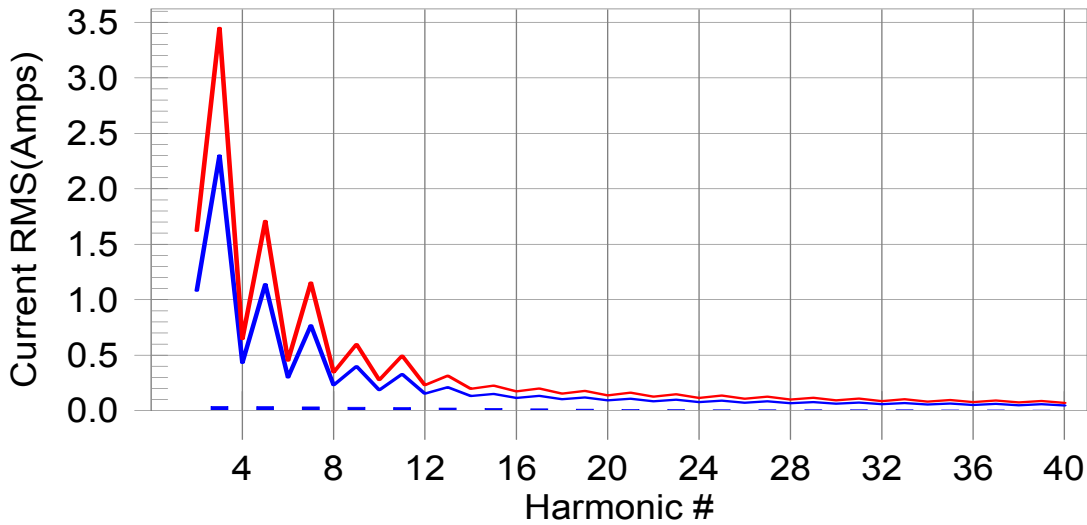
EUT: 84706 **Tested by: rode**
Test category: Class-A per Ed. 3.2 (European limits) **Test Margin: 100**
Test date: 2017-8-14 **Start time: 05:39:16 PM** **End time: 05:42:07 PM**
Test duration (min): 2.5 **Data file name: H-000393.cts_data**
Comment: Comment
Customer: Customer

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass **Worst harmonic was #15 with 12.62% of the limit.**

Current Test Result Summary (Run time)

EUT: 84706 Tested by: rode
 Test category: Class-A per Ed. 3.2 (European limits) Test Margin: 100
 Test date: 2017-8-14 Start time: 05:39:16 PM End time: 05:42:07 PM
 Test duration (min): 2.5 Data file name: H-000393.cts_data
 Comment: Comment
 Customer: Customer

Test Result: Pass Source qualification: Normal
 THC(A): 0.08 I-THD(%): 229.70 POHC(A): 0.021 POHC Limit(A): 0.256
 Highest parameter values during test:
 V_RMS (Volts): 231.72 Frequency(Hz): 50.00
 I_Peak (Amps): 0.476 I_RMS (Amps): 0.097
 I_Fund (Amps): 0.038 Crest Factor: 5.852
 Power (Watts): 8.6 Power Factor: 0.401

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	0.0	0.001	1.620	0.07	Pass
3	0.034	2.300	1.5	0.038	3.450	1.10	Pass
4	0.001	0.430	0.0	0.001	0.645	0.13	Pass
5	0.032	1.140	2.8	0.036	1.710	2.10	Pass
6	0.000	0.300	0.0	0.001	0.450	0.13	Pass
7	0.030	0.770	3.9	0.033	1.155	2.89	Pass
8	0.000	0.230	0.0	0.001	0.345	0.16	Pass
9	0.028	0.400	7.0	0.031	0.600	5.08	Pass
10	0.001	0.184	0.0	0.001	0.276	0.21	Pass
11	0.025	0.330	7.6	0.027	0.495	5.48	Pass
12	0.001	0.153	0.0	0.001	0.230	0.26	Pass
13	0.022	0.210	10.5	0.024	0.315	7.48	Pass
14	0.000	0.131	0.0	0.001	0.197	0.29	Pass
15	0.019	0.150	12.6	0.020	0.225	8.85	Pass
16	0.000	0.115	0.0	0.001	0.173	0.33	Pass
17	0.016	0.132	12.0	0.016	0.199	8.24	Pass
18	0.000	0.102	0.0	0.001	0.153	0.36	Pass
19	0.013	0.118	11.0	0.013	0.178	7.44	Pass
20	0.000	0.092	0.0	0.001	0.138	0.40	Pass
21	0.010	0.107	9.8	0.011	0.161	6.60	Pass
22	0.000	0.084	0.0	0.001	0.125	0.43	Pass
23	0.008	0.098	8.7	0.009	0.147	5.86	Pass
24	0.000	0.077	0.0	0.001	0.115	0.47	Pass
25	0.007	0.090	7.9	0.007	0.135	5.45	Pass
26	0.000	0.071	0.0	0.001	0.106	0.50	Pass

27	0.006	0.083	7.6	0.007	0.125	5.46	Pass
28	0.000	0.066	0.0	0.001	0.099	0.56	Pass
29	0.006	0.078	7.7	0.007	0.116	5.72	Pass
30	0.000	0.061	0.0	0.001	0.092	0.60	Pass
31	0.006	0.073	8.0	0.006	0.109	5.95	Pass
32	0.000	0.058	0.0	0.001	0.086	0.63	Pass
33	0.006	0.068	8.3	0.006	0.102	6.11	Pass
34	0.000	0.054	0.0	0.001	0.081	0.65	Pass
35	0.005	0.064	8.3	0.006	0.096	6.08	Pass
36	0.000	0.051	0.0	0.001	0.077	0.66	Pass
37	0.005	0.061	8.2	0.005	0.091	5.80	Pass
38	0.000	0.048	0.0	0.000	0.073	0.66	Pass
39	0.004	0.058	0.0	0.005	0.087	5.36	Pass
40	0.000	0.046	0.0	0.000	0.069	0.64	Pass

Voltage Source Verification Data (Run time)

EUT: 84706 **Tested by: rode**
Test category: Class-A per Ed. 3.2 (European limits) **Test Margin: 100**
Test date: 2017-8-14 **Start time: 05:39:16 PM** **End time: 05:42:07 PM**
Test duration (min): 2.5 **Data file name: H-000393.cts_data**
Comment: Comment
Customer: Customer

Test Result: Pass **Source qualification: Normal**

Highest parameter values during test:

Voltage (Vrms): 231.72	Frequency(Hz): 50.00
I_Peak (Amps): 0.476	I_RMS (Amps): 0.097
I_Fund (Amps): 0.038	Crest Factor: 5.852
Power (Watts): 8.6	Power Factor: 0.401

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.063	0.463	13.64	OK
3	0.553	2.085	26.52	OK
4	0.056	0.463	12.04	OK
5	0.073	0.927	7.84	OK
6	0.030	0.463	6.51	OK
7	0.019	0.695	2.72	OK
8	0.015	0.463	3.24	OK
9	0.019	0.463	4.14	OK
10	0.009	0.463	1.89	OK
11	0.025	0.232	11.00	OK
12	0.008	0.232	3.44	OK
13	0.017	0.232	7.38	OK
14	0.006	0.232	2.52	OK
15	0.019	0.232	8.12	OK
16	0.008	0.232	3.59	OK
17	0.010	0.232	4.36	OK
18	0.009	0.232	3.98	OK
19	0.021	0.232	8.89	OK
20	0.015	0.232	6.60	OK
21	0.015	0.232	6.63	OK
22	0.005	0.232	2.23	OK
23	0.012	0.232	5.14	OK
24	0.003	0.232	1.48	OK
25	0.010	0.232	4.43	OK
26	0.003	0.232	1.31	OK
27	0.014	0.232	5.90	OK

28	0.004	0.232	1.94	OK
29	0.009	0.232	3.76	OK
30	0.004	0.232	1.82	OK
31	0.010	0.232	4.16	OK
32	0.003	0.232	1.32	OK
33	0.010	0.232	4.30	OK
34	0.004	0.232	1.54	OK
35	0.011	0.232	4.54	OK
36	0.003	0.232	1.32	OK
37	0.012	0.232	5.13	OK
38	0.003	0.232	1.35	OK
39	0.013	0.232	5.51	OK
40	0.009	0.232	3.80	OK

6. Voltage Fluctuation Flicker

6.1 Test Procedure

Test is conducting under the description of EN61000-3-3.

6.2 Test Standards

EN61000-3-3, Limit: Clause 5.

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	48%
ATM Pressure:	1022 mbar

6.3 Voltage Fluctuation and Flicker Test Data

According to clause 6.1 of EN 61000-3-3:2013, “Tests need not be made on equipment which is unlikely to produce significant voltage fluctuations or flicker.”

The max.rated input power of the EUTs is about 75W only, which unlikely to produce significant voltage fluctuation. Therefore no test was applied.

Result: The EUT is compliance with the requirements of this section.

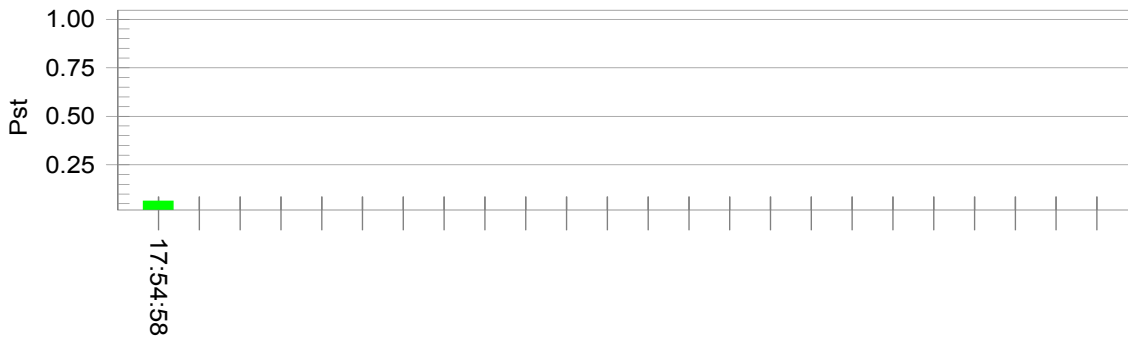
Flicker Test Summary per EN/IEC61000-3-3 (Run time)

EUT: 84706 **Tested by: rode**
Test category: All parameters (European limits) **Test Margin: 100**
Test date: 2017-8-14 **Start time: 05:44:38 PM** **End time: 05:54:59 PM**
Test duration (min): 10 **Data file name: F-000395.cts_data**
Comment: WORKING
Customer: Customer

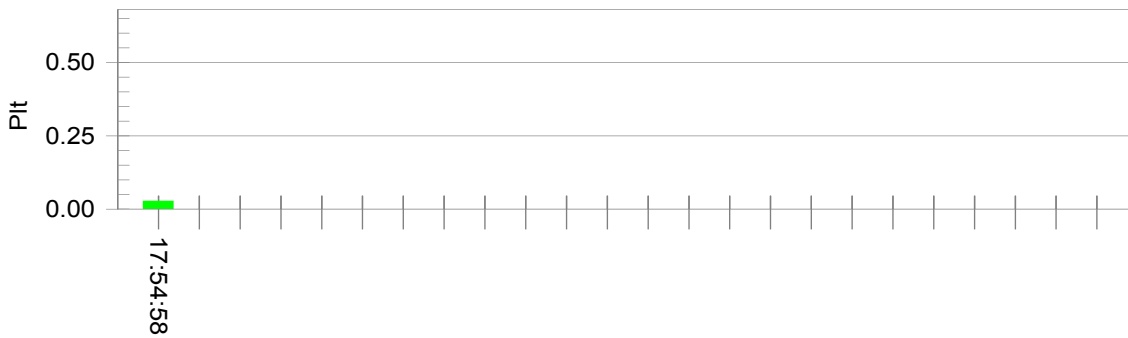
Test Result: Pass **Status: Test Completed**

Pst_i and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	231.71			
Highest dt (%):	0.00	Test limit (%):	3.30	Pass
Time(mS) > dt:	0.0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.00	Test limit (%):	3.30	Pass
Highest dmax (%):	0.00	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.064	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.028	Test limit:	0.650	Pass

7. Electrostatic Discharges (ESD)

7.1 Test Procedure

Test is conducting under the description of IEC61000-4-2.

Test Performance

Performance Criterion: B

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

7.2 Electrostatic Discharge Immunity Test Data

Table 1: Electrostatic Discharge Immunity (Air Discharge)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Surface	A	A	A	A	A	A	A	A	/	/
LCD	A	A	A	A	A	A	A	A	/	/

Table 2: Electrostatic Discharge Immunity (Direct Contact)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Metal port	A	A	A	A	/	/	/	/	/	/

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A	/	/	/	/	/	/
Top Side	A	A	A	A	/	/	/	/	/	/
Back Side	A	A	A	A	/	/	/	/	/	/
Left Side	A	A	A	A	/	/	/	/	/	/
Right Side	A	A	A	A	/	/	/	/	/	/

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A	/	/	/	/	/	/
Top Side	A	A	A	A	/	/	/	/	/	/
Back Side	A	A	A	A	/	/	/	/	/	/
Left Side	A	A	A	A	/	/	/	/	/	/
Right Side	A	A	A	A	/	/	/	/	/	/

Test Result: Pass

8. Continuous Radiated Disturbances (R/S)

8.1 Test Procedure

Test is conducting under the description of IEC61000-4-3.

Test Performance

Performance Criterion: A

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1010 mbar

8.2 Continuous Radiated Disturbances Test Data

Frequency step: 1% of fundamental

Dwell time: 1 second

Modulation: AM by 1kHz sine wave with 80% modulation depth

Frequency Range(MHz)	Field (V/m)	Front		Rear		Left Side		Right Side	
		VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	3	A	A	A	A	A	A	A	A

Test Result: Pass

9. Electrical Fast Transients (EFT)

9.1 Test Procedure

Test is conducting under the description of IEC61000-4-4.

Test Performance

Performance Criterion: B

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

9.2 Electrical Fast Transients Test Data

EN 61000-4-4 Test Points		Test Levels (kV)							
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
Power Supply Power Port of EUT	L1	A	A	A	A	/	/	/	/
	L2	A	A	A	A	/	/	/	/
	PE	/	/	/	/	/	/	/	/
	L1+L2	A	A	A	A	/	/	/	/
	L1 + PE					/	/	/	/
	L2 + PE					/	/	/	/
	L1+L2+PE					/	/	/	/
Signal ports	/	/	/	/	/	/	/	/	

Test Result: Pass

10. Surges

10.1 Test Procedure

Test is conducting under the description of IEC 61000-4-5.

Test Performance

Performance Criterion: B

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

10.2 Surge Test Data

Level	Voltage	Poll	Path	Pass	Fail
1	0.5kV	±	L-N	A	/
2	1kV	±	L-N	A	/
3	2kV	±	L-PE, N-PE	/	/
4	4kV	±	L-N, L-PE, N-PE	/	/

Test Result: Pass

11. Continuous Conducted Disturbances (C/S)

11.1 Test Procedure

Test is conducting under the description of IEC 61000-4-6.

Test Performance

Performance Criterion: A

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

11.2 Continuous Conducted Disturbances Test Data

Sweep frequency range: 150kHz~80MHz

Frequency step: 1% of fundamental

Dwell time: 1 second

Level	Voltage Level (e.m.f.) U_0	Modulation:	Pass	Fail
1	1	AM 80%, 1kHz sinewave	/	/
2	3	AM 80%, 1kHz sinewave	A	/
3	10	AM 80%, 1kHz sinewave	/	/
X	Special	/	/	/

Test Result: Pass

12. Voltage Dips and Interruptions

13.1 Test Procedure

Test is conducting under the description of IEC 61000-4-11.

Test Performance

Performance Criterion: B/C

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50%
ATM Pressure:	1011 mbar

12.2 Voltage Dips And Interruptions Test Data

U: Voltage dips in % U_T (U_T is rated voltage for the EUT)

T: Test duration

Level	U	T	Phase Angle	N	Pass	Fail
1	0%	10ms	0/90/180/270	3	A	/
2	30%	500ms	0/90/180/270	3	A	/
3	100%	5000ms	0/90/180/270	3	A	/

Test Result: Pass

EXHIBIT 1 - PRODUCT LABELING

Proposed CE Label Format



Specifications: Text is Black in color and is justified. Labels are printed in indelible ink on permanent adhesive backing or silk-screened onto the EUT or shall be affixed at a conspicuous location on the EUT. The ‘CE’ marking must be affixed to the EUT or to its data plate. Where this is not possible or not warranted on account of the nature of the apparatus, it must be affixed to the packaging, if any, and to the accompanying documents. The ‘CE’ marking is allowed less than 5 mm but must clear. If the ‘CE’ marking is reduced or enlarged the proportions given in the above graduated drawing must be respected. The Importer name, address and Manufacturer name and address should indicate on marking label or packaging or in a document accompanying

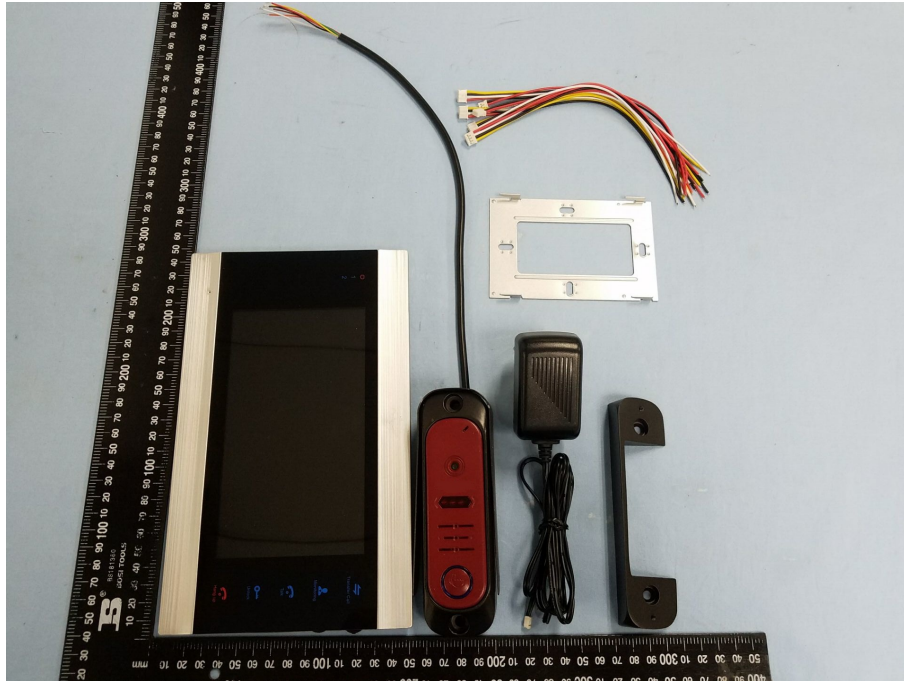
Proposed Label Location on EUT

CE Label Location



EXHIBIT 2 - EUT PHOTOGRAPHS

EUT View 1



EUT View 2



EUT View 3



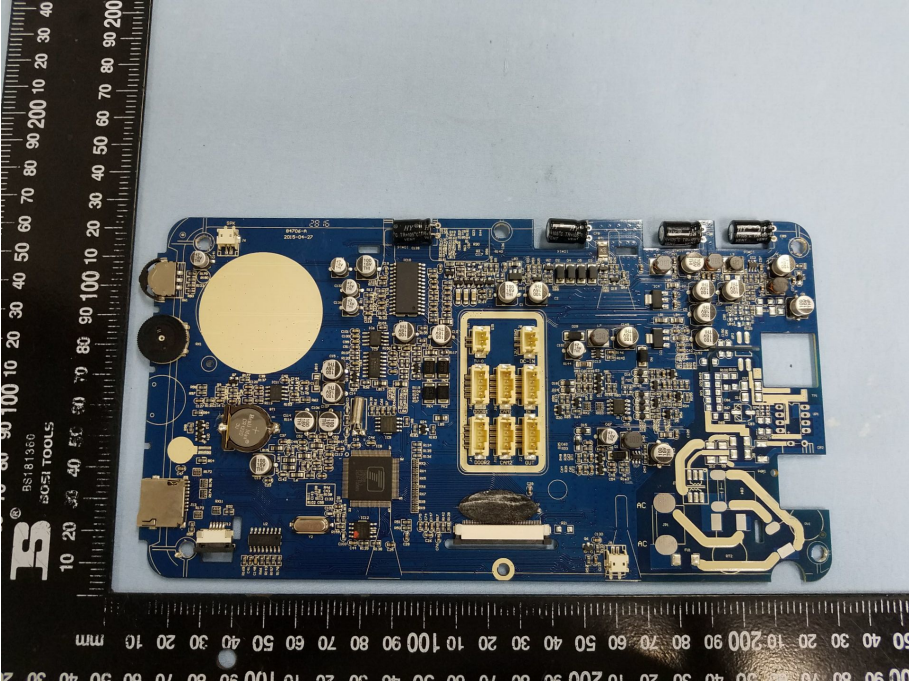
EUT View 4



EUT Housing and Board View 1



Solder Board-Component View 1



Solder Board-Component View 2

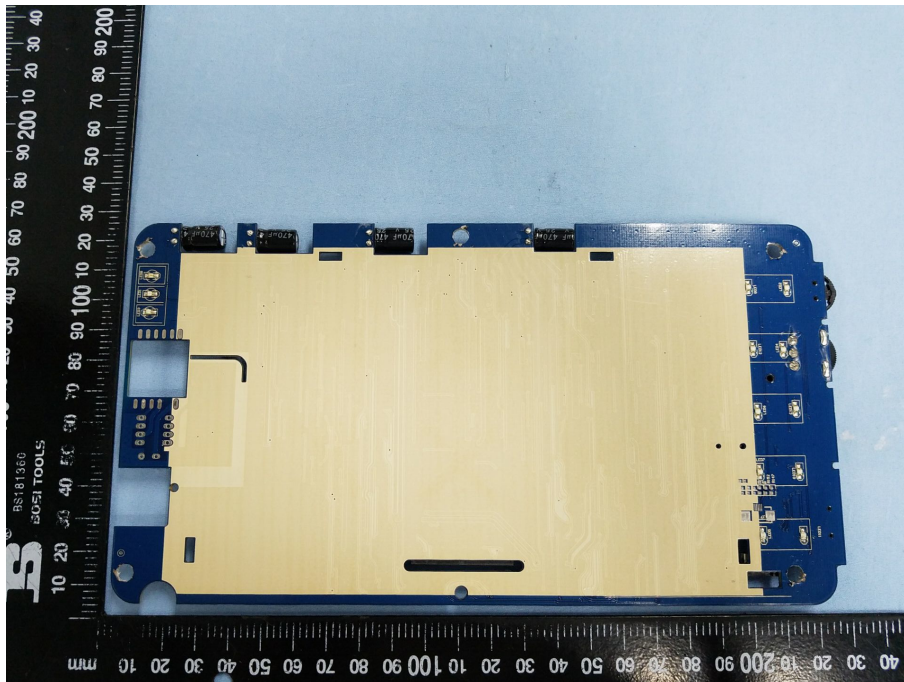
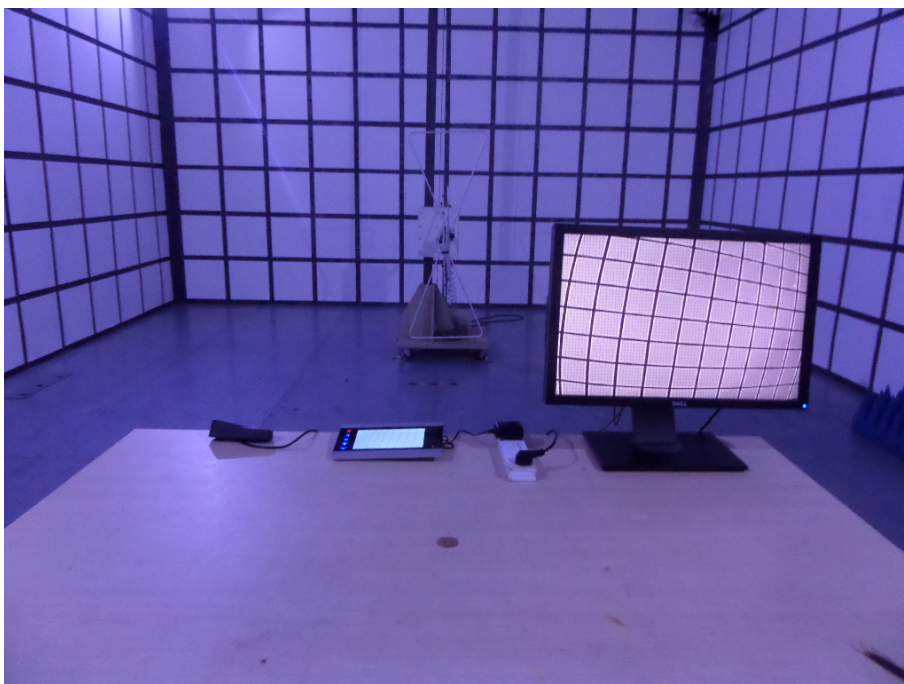


EXHIBIT 3 - TEST SETUP PHOTOGRAPHS

Conduction Emission Test View



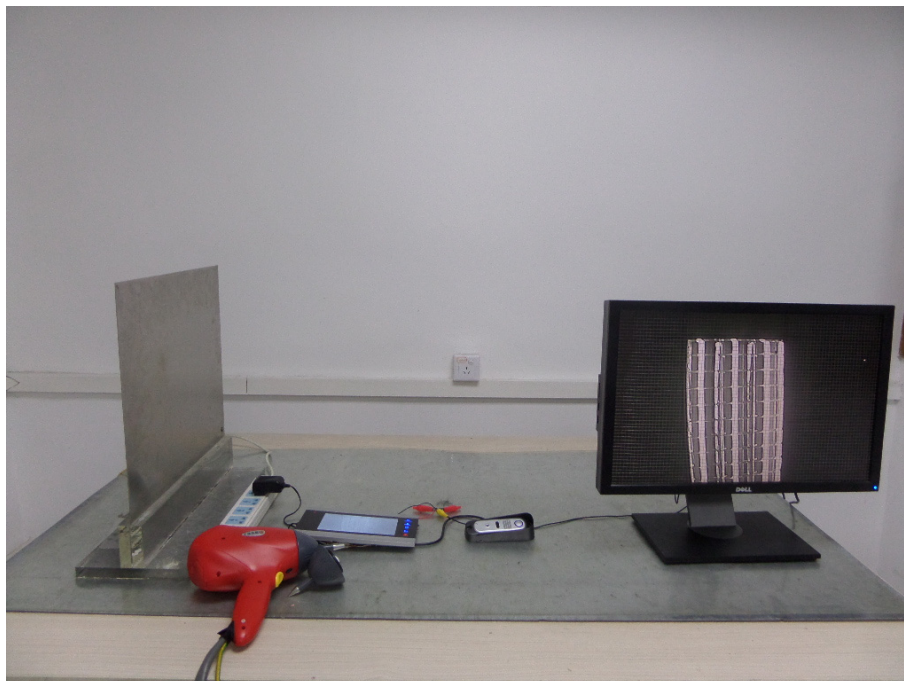
Radiation Emission Test View

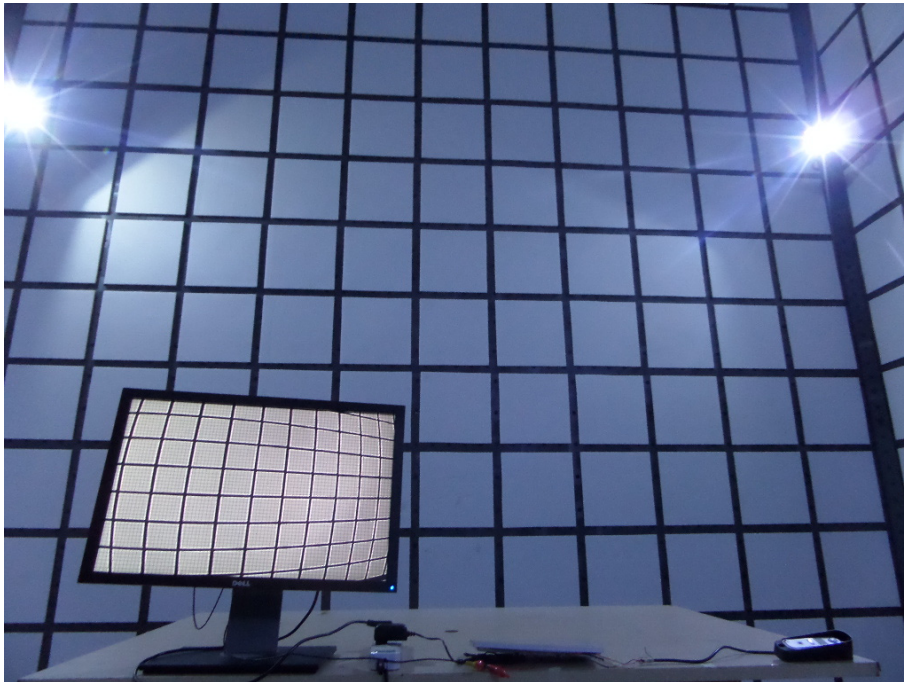


Harmonic/Flicker Test View



IEC61000-4-2 Test View



IEC61000-4-3 Test View**IEC61000-4-4/5/11 Test View**

IEC61000-4-6 Test View

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