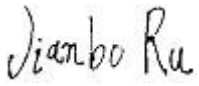
TEST REPORT
ELECTROMAGNETIC COMPATIBILITY (EMC) AND ASSESSMENT RELATED TO HUMAN EXPOSURE TO ELECTROMAGNETIC FIELDS (EMF)

Report Reference No.....:	**454784/EMC+EMF**
Supervised by (name & signature) ...:	Jianbo Ru 
Approved by (name & signature).....:	Juno Wong 
Date of issue.....:	2021-11-19
Report issued by.....:	**Nemko Shanghai Ltd Shenzhen Branch**
Address.....:	**Unit C&D, Floor 10, Tower 2, Financial Base, Kefa Road 8#, Hi-Technology Park, Nanshan District, Shenzhen 518057, China**
Testing procedure.....:	Supervised testing at external laboratory
Testing location/ address.....:	See page 11
Applicant's name.....:	**MPL Power Elektro Sp. z o.o.**
Address.....:	**ul. Handlowa 13 41-807 Zabrze VAT id PL6312457646, Poland**
Test specification:	
Standards of EMC .....:	**EN IEC 55015:2019+A11:2020** **EN IEC 61000-3-2:2019+A1:2021** **EN 61000-3-3:2013+A1:2019** **EN 61547:2009**
Standards of EMF.....:	**EN 62493:2015**
Arrival of EUT .....:	2017-10-18, 2021-10-19
Test date of EUT	2017-10-19 to 2017-10-30, 2021-10-20 to 2021-11-19
Test item description ..... :	**LED Driver**
Trade Mark .....:	GLP GLOBAL LEADER POWER
Manufacturer.....:	**Xiamen AcTEC Electronics Co., Ltd.**
Address .....:	**No.4, Tongfu Road, Tong'an Industrial Center, Tong'an District, Xiamen, China**
Type.....:	**GTPC-xxx-yy-S series**
Serial number .....:	See page 10

Index of the test report:

1 Summary Emission of EN IEC 55015

1.1 Standards

Generic standard	**EN 61000-3-3:2013+A1:2019**
	EN IEC 61000-3-2:2019+A1:2021
Product or product family standard	**EN IEC 55015:2019+A11:2020**
Product category	**Independent auxiliaries**

1.2 Results

Environmental phenomena	Port / Test module	Basic standard and test setup	Limit class	Result
Conducted Emission	AC input power ports	EN IEC 55015/CISPR 16	**Table 1**	**Pass**
Conducted Emission	wired network ports	EN IEC 55015/CISPR 16	**Table 2 or Table 3**	**N/A**
Radiated emission	Enclosure port	EN IEC 55015/CISPR 16	**Table 10(3m)**	**Pass**
Radiated Electromagnetic Disturbance	Enclosure port	EN IEC 55015/CISPR 16	**Table 8**	**Pass**
Harmonic current emission	AC input power ports	EN 61000-3-2: 2019+A1:2021	**Class C**	**Pass***
Voltage fluctuations and flicker	AC input power ports	EN 61000-3-3: 2013+A1:2019	**Clause 5**	**N/A****

Remarks: N/A-Not Applicable

***)** For the following categories of equipment, limits are not specified in this document:

-lighting equipment with a rated power less than but not equal to 5W;

-equipment with a rated power of 75W or less, other than lighting equipment;

****)** LED luminaires with ratings less than or equal to 200 W, are deemed to comply with the dmax limits in this standard and are not required to be tested.

2 Summary Immunity of EN 61547

2.1 Standards

Generic standard **/**

Product or product family standard **EN 61547:2009**

Product category: **/**

Performance criteria: **See as below**

2.2 Results

Environmental phenomena	Port / Test module	Basic standard and test setup	Performance criteria	Result
Electrostatic Discharge	Enclosure port	EN 61000-4-2:2009	**B**	**Pass**
Radiated Electromagnetic field Susceptibility Test	Enclosure port	EN IEC 61000-4-3:2020	**A**	**Pass**
Electrical Fast Transient /Burst Test	Input Ac Power port DC output port	EN 61000-4-4:2012	**B**	**Pass**
Surge Test	Input Ac Power port	EN 61000-4-5:2014	**C**	**Pass**
Conducted Susceptibility Test	Input Ac Power port DC output port	EN 61000-4-6:2014	**A**	**Pass**
Voltage Dips and Interruptions Test	Input Ac Power port	EN IEC 61000-4-11:2004	**Table 11 of EN61547:C Table 12 of EN61547:B**	**Pass**
Power frequency magnetic fields	Enclosure port	EN 61000-4-8:2010	**A**	**N/A*** **

Remarks: N/A-Not Applicable

***）not contain components susceptible to magnetic fields

2.3 Performance criteria according to product or product family standards

Performance criterion A

During the test no change of the luminous intensity shall be observed and the regulating control, if any shall operate during the test as intended.

Performance criterion B

During the test the luminous intensity may change to any value. After the test the luminous intensity shall be restored to its initial value within 1 min. Regulating controls need not function during the test, but after the test the mode of the control shall be the same as before the test provided that during the test no mode changing commands were given.

Performance criterion C

During and after the test any change of the luminous intensity is allowed and the lamp(s) may be extinguished. After the test, within 30 min,all functions shall return to normal if necessary by temporary interruption of the mains supply and/or operating the regulating control. Additional requirement for lighting equipment incorporating a starting device: After the test the lighting equipment is switched off. After half an hour it is switched on again. The lighting equipment shall start and operate as intended.

3 Summary EMF of EN 62493

3.1 Standards

Generic standard	**/**
Product or product family standard	**EN62493:2015**
Product category	**/**

3.2 Results

Environmental phenomena	Port / Test module	Basic standard and test setup	Test frequency range	Result
Induced current density	Enclosure port	EN62493	**20 kHz to 10 MHz**	**Pass**

Remarks:
The fmains contribution of the induced current density due to the magnetic Field and the electric Field can be neglected.

4 General information

4.1 Description of Equipment under test (EUT)

Type of equipment

Self-ballasted lamps and semi-luminaires	☐
Independent auxiliaries	☒
Luminaries or equivalent appliances	☐

The EUT is LED Driver

Model: GTPC-xxx-yy-S series
The “xxx” in the type designation can be 30, 45, 60, 75 or 100, indicating the maximum output wattage
The “yy” can be 12, 24 or 48, indicating the rated output voltage in Volt.

Model list:

Model name	Input voltage	Input current (A)	Output voltage (V)	Output current (A)	Rated output wattage (W)	ta (°C)	tc (°C)	Circuit diagram / PCB layout	Size (mm)
GTPC-30-12-S	220-240V 50/60Hz	0.18	12	2.5	30	-20 ... +50	90	Same	251x30x16
GTPC-30-24-S			24	1.25					
GTPC-45-12-S		0.27	12	3.75	45		90		
GTPC-45-24-S			24	1.87				Same	
GTPC-60-12-S		0.32	12	5	60		75	Same ***1)***	305x30x17
GTPC-60-24-S			24	2.5					
GTPC-60-48-S			48	1.25				Same ***1)***	
GTPC-75-12-S		0.5	12	6.25	75		90	Same	
GTPC-75-24-S			24	3.125					
GTPC-100-12-S		0.55	12	8.34	100	-20 ... +45	90	Same ***2)***	312x30x18.2
GTPC-100-24-S			24	4.17					
GTPC-100-48-S			48	2.08				Same ***2)***	

Rating:
PRI: max. 0.55A, 220-240V~, 50/60Hz
SEC: 12/24/48V, Max. 100W, Cl. II

Remark:
This report 454784 is in the basis of the original report 450634, change the Applicant, trademark and model name. additional test is not need, all test data are from the original report

4.2 Measurement uncertainty

Conducted Emission:	**9kHz~150kHz**	**2.77dB**
Conducted Emission:	**0.15MHz~30MHz**	**2.63dB**
Radiated Emission:	**30MHz~1000MHz**	**4.64dB**
Magnetic Field Emission:	**9KHz ~ 30MHz**	**3.46dB**

4.3 Test Mode (TM)

TM 1 230VAC 50Hz, Working mode with full dummy resistance load
Remark: According to the requirement of the manufacturer, test with the EUT loads with dummy resistance load, which are provided by the manufacturer.

By pre-scan, only list the mode which test result is worst in report.

4.4 Climatic conditions

parameter	admissible range	actual range	
Ambient temperature	**15 °C - 25 °C**	**24-25°C**	**OK**
Relative humidity	**30 % - 60 %RH**	**46-50%RH**	**OK**
Atmospheric pressure	**86-106kPa**	**101.1-101.2kPa**	**OK**

4.5 Testing location

AUDIX Technology (Shenzhen) Co., Ltd.

No.6, Ke Feng Rd.,52 Block, Shenzhen Science & Industrial Park, Nantou, Shenzhen, Guangdong, China. – ELA 135

Nemko Shanghai Ltd Shenzhen Branch

Unit C&D, Floor 10, Tower 2, Financial Base, Kefa Road 8#, Hi-Technology Park, Nanshan District, Shenzhen 518057, China

Shenzhen Southern LCS compliance testing Laboratory Ltd.

1-2F, B Area, Building B, Zhongyu Green High-tech Industrial Park, Wenge Road, Heshuikou, Gongming Street, Guangming New District, Shenzhen, Guangdong, China
Remark: All tests have been supervised by a Nemko engineer.

5 Measurement of Conducted Disturbance

5.1 Standards

Generic standard	**/**
Product or product family standard	**EN IEC 55015:2019+A11:2020**
Limit class	**Table 1 of EN IEC 55015**
Basic standard	**CISPR 16**
Date of testing	**2017-10-19, 2021-11-10 to 2021-11-16**

5.2 Measurement equipment

	Equipment	Manufacturer	Type	Serial No.	Calibration due
☒	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100657	2022.01.07
☒	Artificial Mains	ROHDE & SCHWARZ	ENV216	100065	2022.01.07
☒	Pulse Limiter	ROHDE & SCHWARZ	ESH3-Z2	100860	2022.01.07
☒	EMI Test Software	ROHDE & SCHWARZ	EMC32	N/A	N/A

5.3 Test set-up

Annex B with a photo or a rough figure of the test set-up is attached.
The test has been performed as following:

The cable connecting to the V-network shall not exceed 0,8 m. The lamp is placed 0,4 m above a metal plate of dimensions at least 2 m × 2 m and shall be kept at least 0,8 m from any other earthed conducting surface. The artificial mains network (V-network) shall also be placed at a distance of at least 0,8 m from the lamp . The plate shall be connected to the reference earth of the V-network.
A EMI test receiver used to test the emission from both side of AC line.

Scan setting:
For AC input port:

Freq range			Receiver setting		
Start	Stop	Step	IF BW	Detector	Meas Time
9k	150k	100Hz	200Hz	PK+AV	10ms
150k	30M	4.5k	9k	PK+AV	10ms

Final measurement:

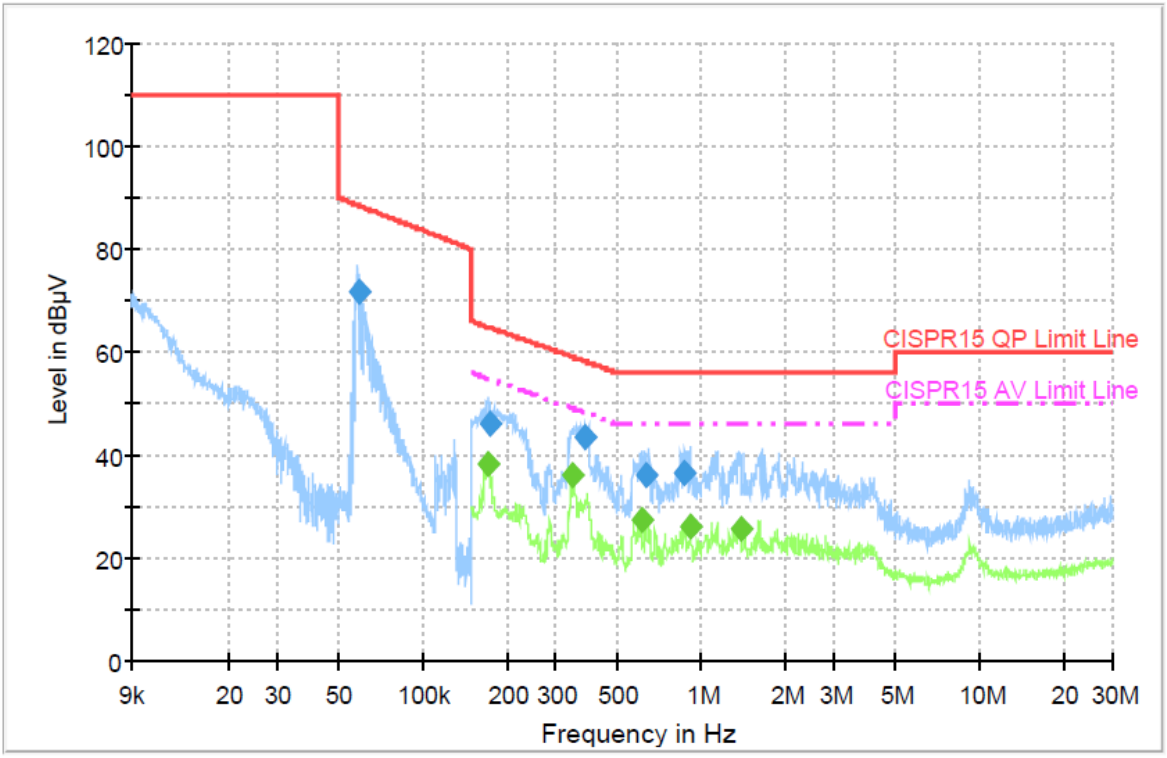
Detector	Meas time
QP/AV	1s

5.4 Test result

Model	Test mode	Test port	Diagrams	Remarks	Result
GTPC-45-12-S	TM1	AC input port	001	Line L	**Pass**
			002	Line N	**Pass**
GTPC-45-24-S	TM1	AC input port	003	Line L	**Pass**
			004	Line N	**Pass**
GTPC-60-12-S	TM1	AC input port	005	Line L	**Pass**
			006	Line N	**Pass**
GTPC-60-24-S	TM1	AC input port	007	Line L	**Pass**
			008	Line N	**Pass**
GTPC-75-12-S	TM1	AC input port	009	Line L	**Pass**
			010	Line N	**Pass**
GTPC-75-24-S	TM1	AC input port	011	Line L	**Pass**
			012	Line N	**Pass**
GTPC-100-12-S	TM1	AC input port	013	Line L	**Pass**
			014	Line N	**Pass**
GTPC-100-24-S	TM1	AC input port	015	Line L	**Pass**
			016	Line N	**Pass**
GTPC-60-48-S	TM1	AC input port	017	Line L	**Pass**
			018	Line N	**Pass**
GTPC-100-48-S	TM1	AC input port	019	Line L	**Pass**
			020	Line N	**Pass**
Remark:	When PK level is lower than AV limit, then QP and AV is deemed to comply with its limit.				

5.5 Diagrams

5.5.1 Diagram 001



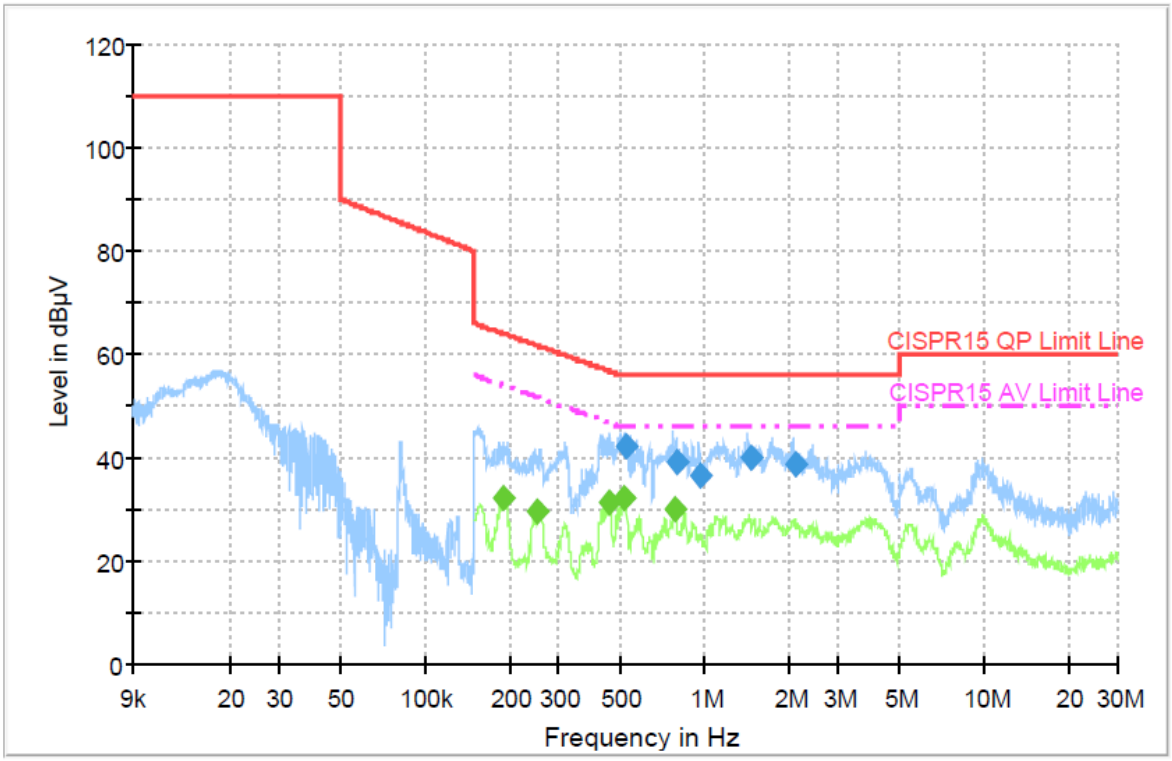
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.059136	71.9	1000.000	0.200	Off	L1	19.1	16.6	88.5	
0.173900	45.9	1000.000	9.000	Off	L1	19.3	18.9	64.8	
0.386132	43.4	1000.000	9.000	Off	L1	19.4	14.7	58.1	
0.638436	36.3	1000.000	9.000	Off	L1	19.4	19.7	56.0	
0.870212	36.6	1000.000	9.000	Off	L1	19.4	19.4	56.0	

Final Result 2

Frequency (MHz)	Average (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.172900	38.4	1000.000	9.000	Off	L1	19.3	16.4	54.8	
0.345427	36.2	1000.000	9.000	Off	L1	19.4	12.9	49.1	
0.609682	27.5	1000.000	9.000	Off	L1	19.4	18.5	46.0	

5.5.2 Diagram 002



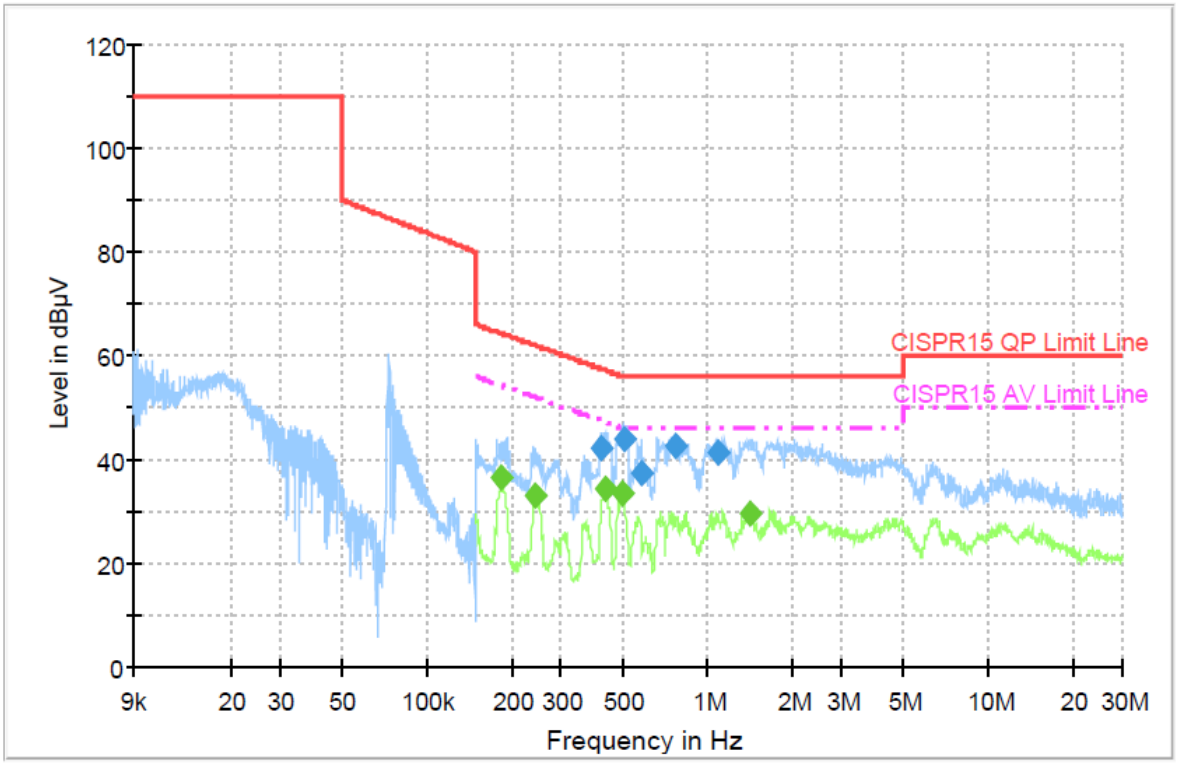
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.522907	42.3	N	19.4	13.7	56.0
0.792710	39.1	N	19.4	16.9	56.0
0.963725	36.5	N	19.4	19.5	56.0
1.461233	39.9	N	19.4	16.1	56.0
2.107304	38.7	N	19.5	17.3	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.190700	32.1	N	19.3	21.9	54.0
0.253977	29.8	N	19.4	21.8	51.6
0.451933	31.1	N	19.4	15.7	46.8
0.517501	32.0	N	19.4	14.0	46.0
0.783318	30.1	N	19.4	15.9	46.0

5.5.3 Diagram 003



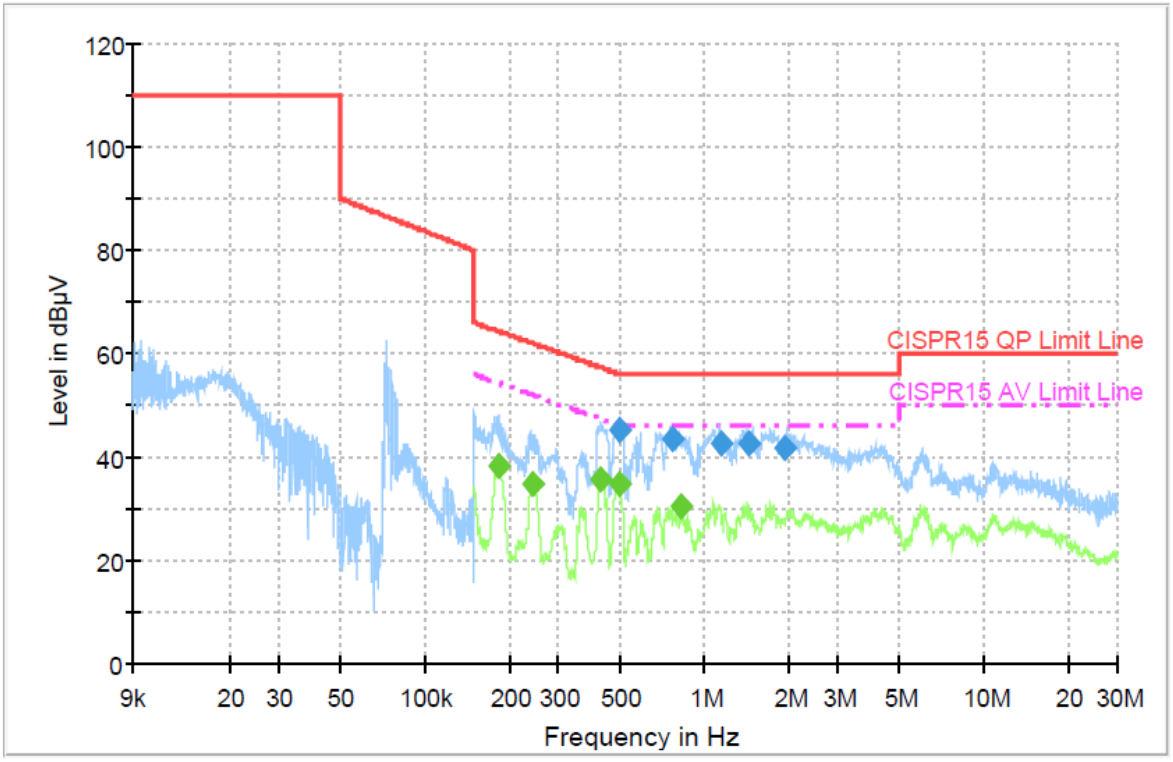
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.418790	42.4	L1	19.4	15.1	57.5
0.507813	43.9	L1	19.4	12.1	56.0
0.580390	37.6	L1	19.4	18.4	56.0
0.765565	42.7	L1	19.4	13.3	56.0
1.092335	41.4	L1	19.4	14.6	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.184000	36.4	L1	19.4	17.9	54.3
0.244175	33.1	L1	19.4	18.9	52.0
0.429344	34.2	L1	19.4	13.1	47.3
0.498013	33.7	L1	19.4	12.3	46.0
1.422804	29.6	L1	19.5	16.4	46.0

5.5.4 Diagram 004



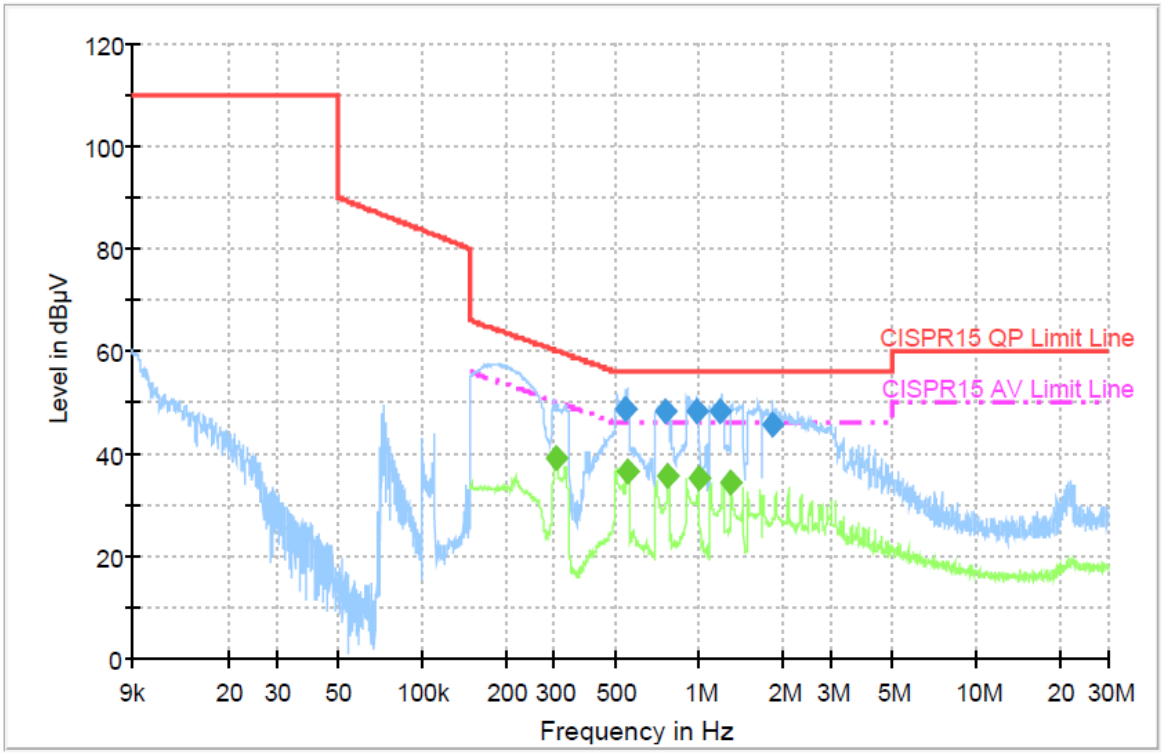
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.498560	45.3	N	19.4	10.7	56.0
0.764570	43.6	N	19.4	12.4	56.0
1.144826	42.7	N	19.4	13.3	56.0
1.436953	42.6	N	19.4	13.4	56.0
1.950021	41.5	N	19.5	14.5	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.183300	38.3	N	19.3	16.0	54.3
0.242812	34.9	N	19.4	17.1	52.0
0.428213	35.6	N	19.4	11.7	47.3
0.495916	34.8	N	19.4	11.3	46.1
0.831973	30.3	N	19.4	15.7	46.0

5.5.5 Diagram 005



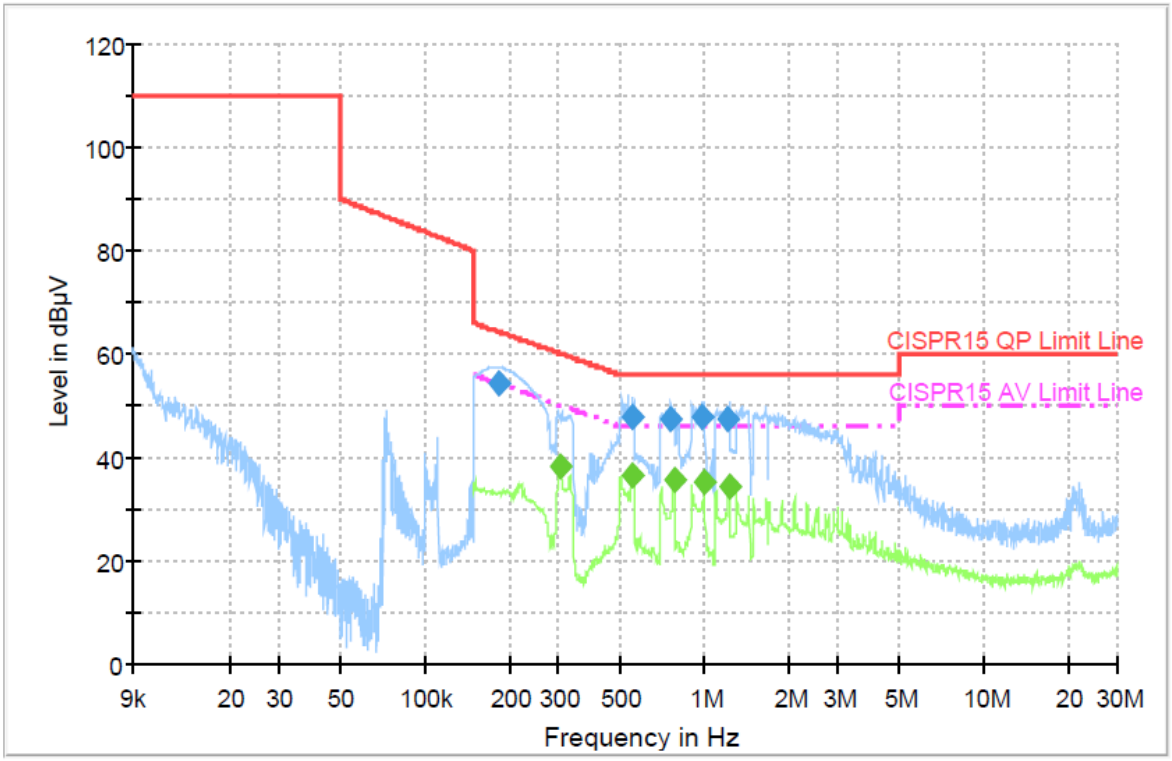
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.543284	48.9	L1	19.4	7.1	56.0
0.759169	48.1	L1	19.4	7.9	56.0
0.979782	48.2	L1	19.4	7.8	56.0
1.198876	48.1	L1	19.4	7.9	56.0
1.838345	45.7	L1	19.5	10.3	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.302756	39.2	L1	19.4	11.0	50.2
0.553491	36.7	L1	19.4	9.3	46.0
0.775202	35.7	L1	19.4	10.3	46.0
0.997686	35.1	L1	19.4	10.9	46.0
1.301465	34.4	L1	19.4	11.6	46.0

5.5.6 Diagram 006



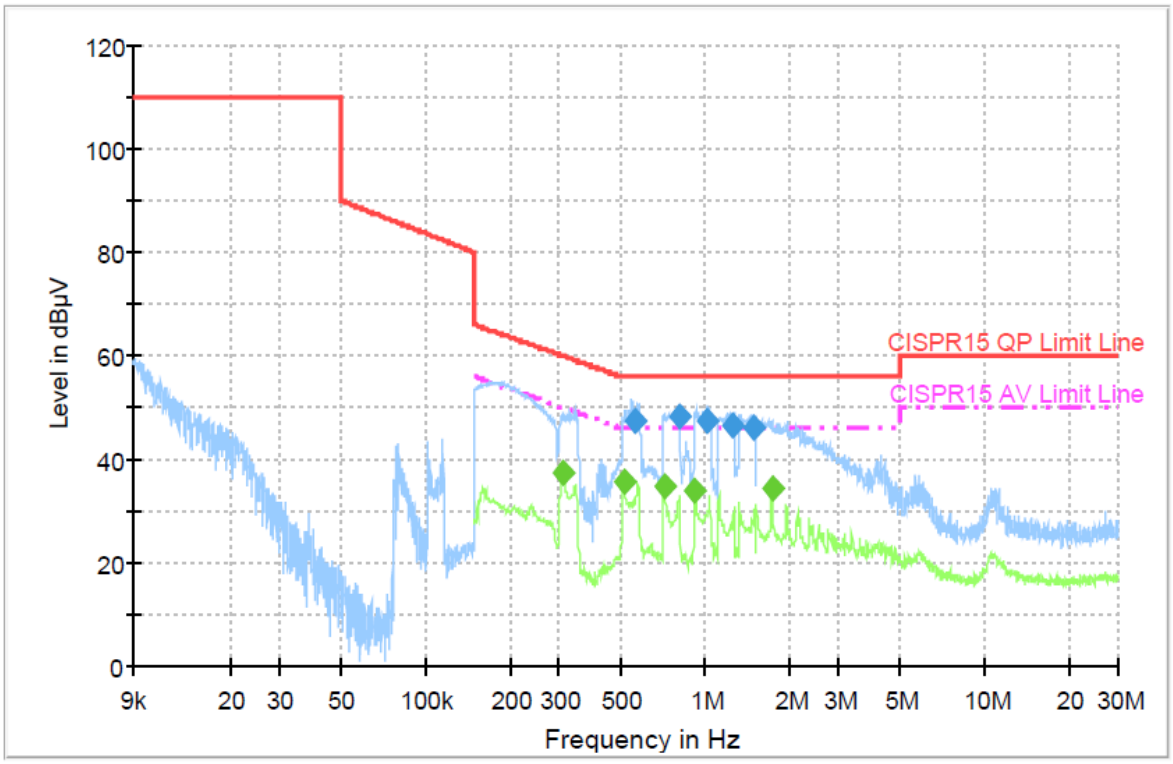
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182500	54.4	N	19.3	10.0	64.4
0.550386	48.0	N	19.4	8.0	56.0
0.761388	47.5	N	19.4	8.5	56.0
0.982492	47.7	N	19.4	8.3	56.0
1.202205	47.3	N	19.4	8.7	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.303156	38.0	N	19.4	12.2	50.2
0.553000	36.7	N	19.4	9.3	46.0
0.776452	35.5	N	19.4	10.5	46.0
0.999586	35.0	N	19.4	11.0	46.0
1.221760	34.5	N	19.4	11.5	46.0

5.5.7 Diagram 007



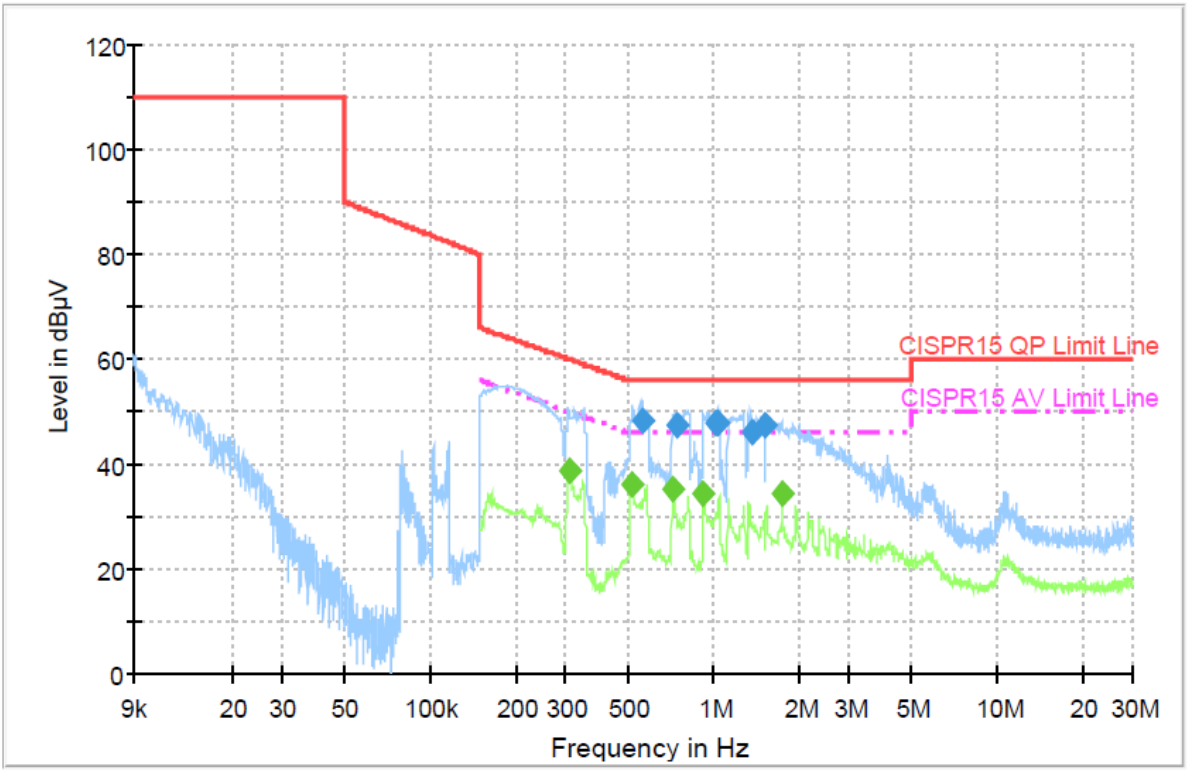
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.559896	47.4	L1	19.4	8.6	56.0
0.813892	48.4	L1	19.4	7.6	56.0
1.023112	47.5	L1	19.4	8.5	56.0
1.256495	46.6	L1	19.4	9.4	56.0
1.502273	46.1	L1	19.5	9.9	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.308260	37.5	L1	19.4	12.5	50.0
0.513332	35.6	L1	19.4	10.4	46.0
0.717238	34.9	L1	19.4	11.1	46.0
0.922476	33.9	L1	19.4	12.1	46.0
1.741405	34.2	L1	19.5	11.8	46.0

5.5.8 Diagram 008



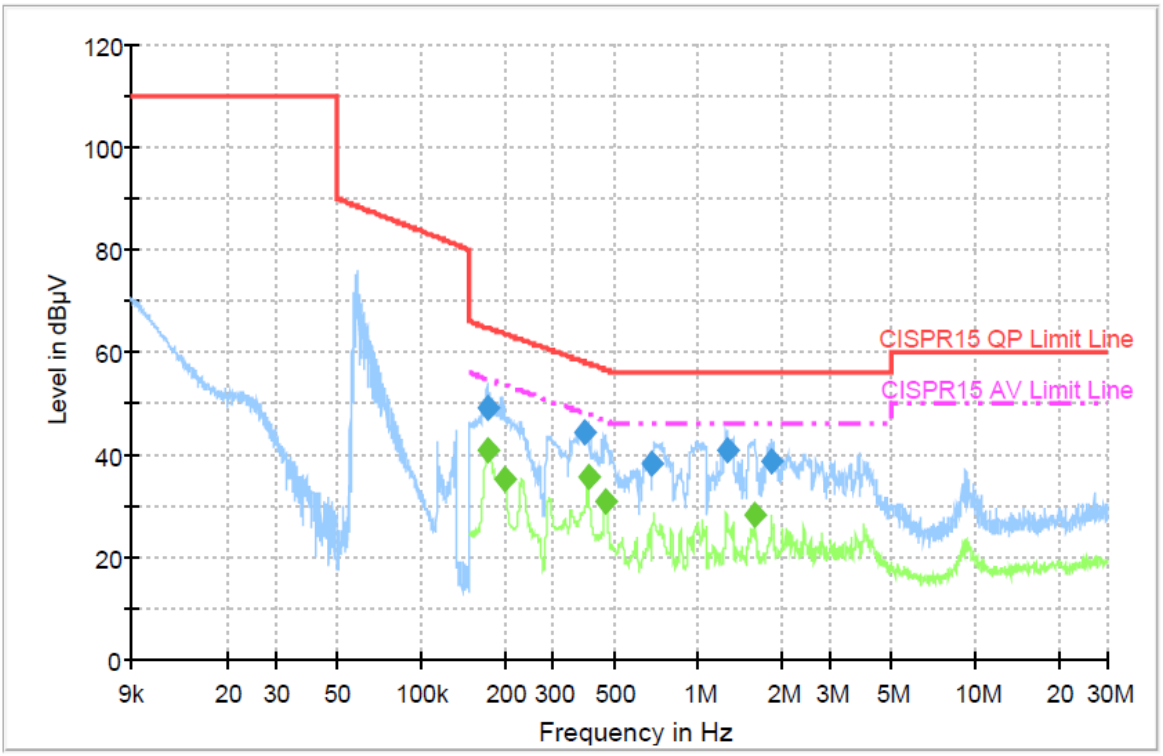
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.563519	48.2	N	19.4	7.8	56.0
0.742429	47.5	N	19.4	8.5	56.0
1.025177	47.6	N	19.4	8.4	56.0
1.027356	47.8	N	19.4	8.2	56.0
1.360890	45.9	N	19.4	10.1	56.0
1.519319	47.3	N	19.4	8.7	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.310515	38.5	N	19.4	11.5	50.0
0.513607	36.1	N	19.4	9.9	46.0
0.719968	35.1	N	19.4	10.9	46.0
0.923454	34.2	N	19.4	11.8	46.0

5.5.9 Diagram 009



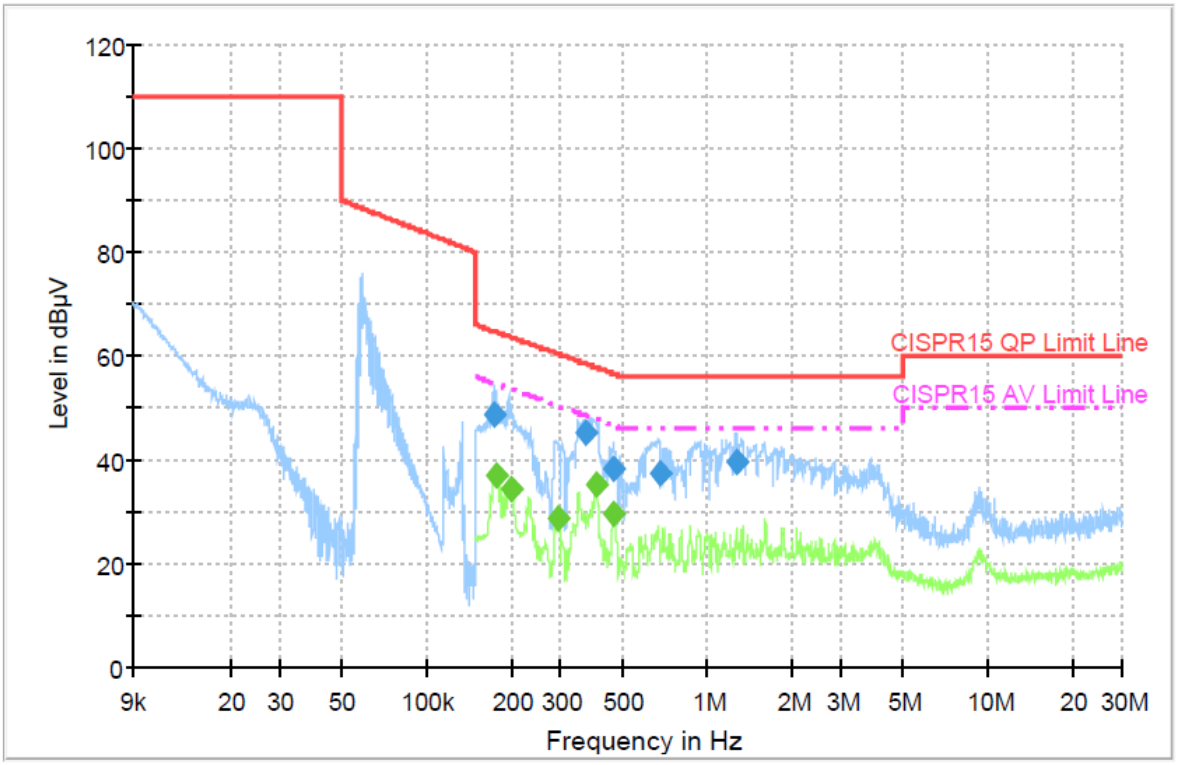
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174500	49.1	L1	19.3	15.6	64.7
0.391982	44.3	L1	19.4	13.7	58.0
0.677528	38.2	L1	19.4	17.8	56.0
1.269855	40.8	L1	19.4	15.2	56.0
1.837477	38.7	L1	19.5	17.3	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.175400	40.9	L1	19.3	13.8	54.7
0.200075	35.0	L1	19.4	18.6	53.6
0.401878	35.6	L1	19.4	12.2	47.8
0.464975	31.0	L1	19.4	15.6	46.6
1.608426	28.4	L1	19.5	17.6	46.0

5.5.10 Diagram 010



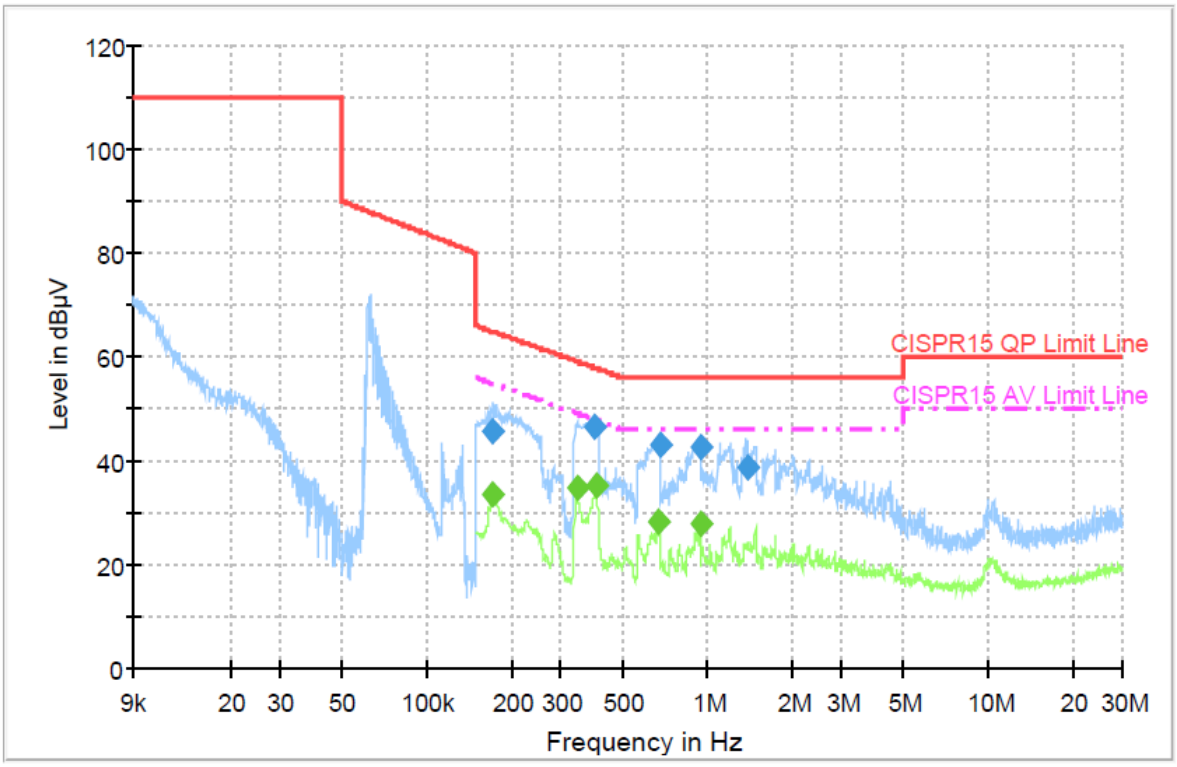
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.175300	48.6	N	19.3	16.1	64.7
0.371420	45.2	N	19.4	13.3	58.5
0.460899	38.2	N	19.4	18.5	56.7
0.683935	37.6	N	19.4	18.4	56.0
1.267721	39.4	N	19.4	16.6	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.176300	36.8	N	19.3	17.9	54.7
0.199204	34.5	N	19.4	19.1	53.6
0.292289	28.9	N	19.4	21.6	50.5
0.402582	35.4	N	19.4	12.4	47.8
0.467514	29.5	N	19.4	17.1	46.6

5.5.11 Diagram 011



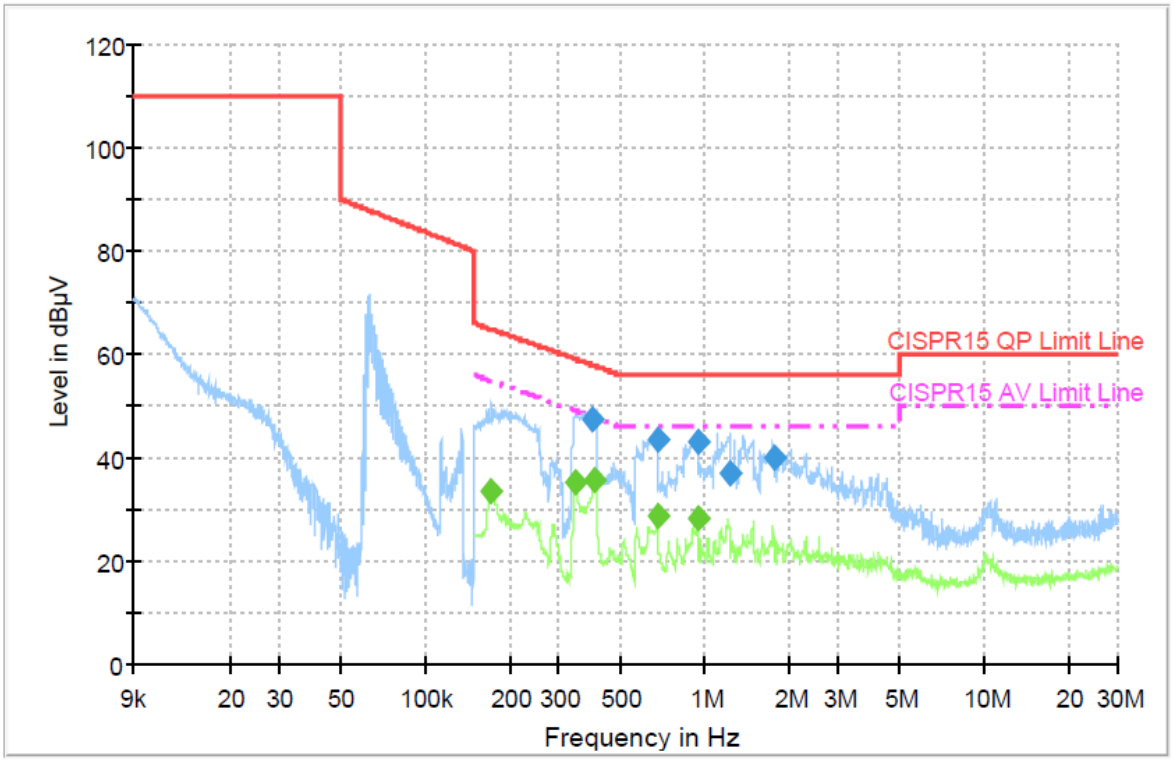
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.172800	45.5	L1	19.3	19.3	64.8
0.398585	46.5	L1	19.4	11.4	57.9
0.676483	43.1	L1	19.4	12.9	56.0
0.946733	42.7	L1	19.4	13.3	56.0
1.380291	38.8	L1	19.5	17.2	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.171900	33.5	L1	19.3	21.4	54.9
0.342559	34.6	L1	19.4	14.5	49.1
0.401982	35.0	L1	19.4	12.8	47.8
0.673890	28.3	L1	19.4	17.7	46.0
0.945647	27.8	L1	19.4	18.2	46.0

5.5.12 Diagram 012



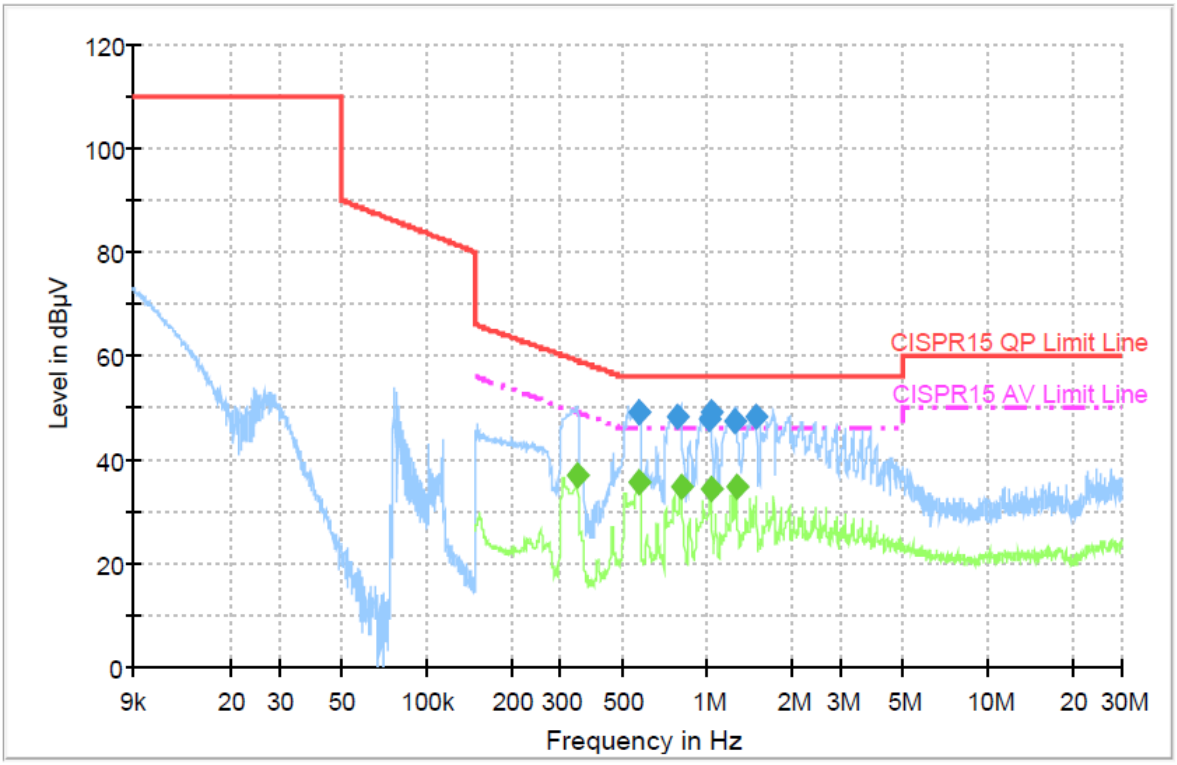
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.399836	47.3	N	19.4	10.6	57.9
0.678887	43.5	N	19.4	12.5	56.0
0.950715	43.1	N	19.4	12.9	56.0
1.236068	36.8	N	19.4	19.2	56.0
1.768344	40.2	N	19.5	15.8	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.173000	33.6	N	19.3	21.2	54.8
0.344327	35.4	N	19.4	13.7	49.1
0.403793	35.6	N	19.4	12.2	47.8
0.676783	28.7	N	19.4	17.3	46.0
0.948822	28.1	N	19.4	17.9	46.0

5.5.13 Diagram 013



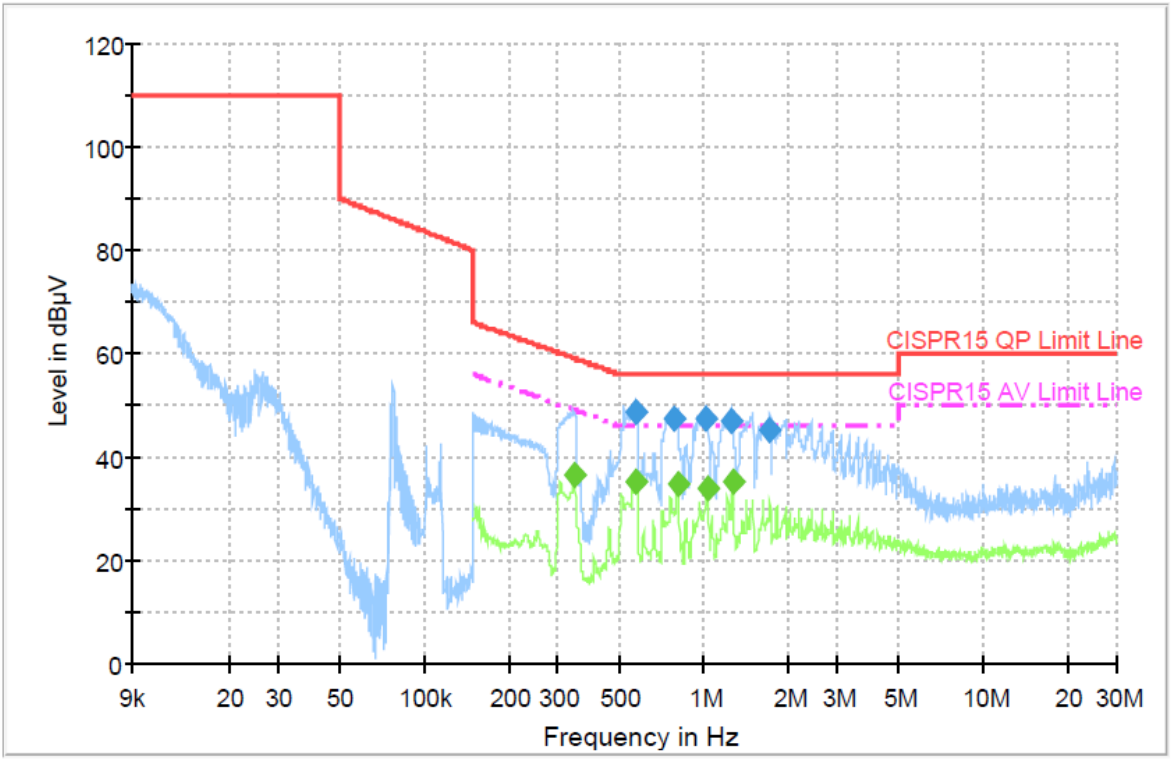
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.576730	49.2	L1	19.4	6.8	56.0
0.785192	48.1	L1	19.4	7.9	56.0
1.013700	47.8	L1	19.4	8.2	56.0
1.038938	48.9	L1	19.4	7.1	56.0
1.243592	47.4	L1	19.4	8.6	56.0
1.500781	48.1	L1	19.5	7.9	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.343113	37.1	L1	19.4	12.0	49.1
0.574881	35.9	L1	19.4	10.1	46.0
0.806002	34.8	L1	19.4	11.2	46.0
1.036038	34.2	L1	19.4	11.8	46.0

5.5.14 Diagram 014



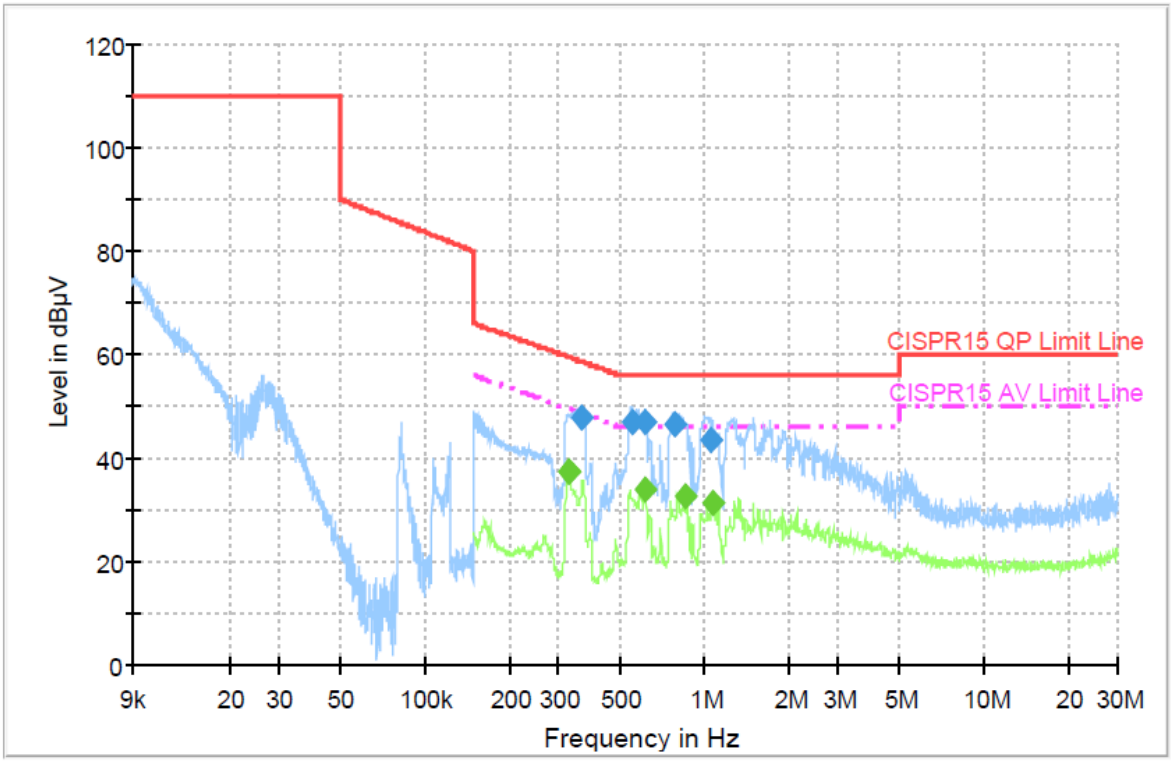
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.576181	48.5	N	19.4	7.5	56.0
0.788332	47.5	N	19.4	8.5	56.0
1.016712	47.2	N	19.4	8.8	56.0
1.246395	46.9	N	19.4	9.1	56.0
1.702244	45.3	N	19.5	10.7	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.343613	36.4	N	19.4	12.7	49.1
0.574381	35.3	N	19.4	10.7	46.0
0.807202	34.6	N	19.4	11.4	46.0
1.036438	33.7	N	19.4	12.3	46.0
1.268755	35.0	N	19.4	11.0	46.0

5.5.15 Diagram 015



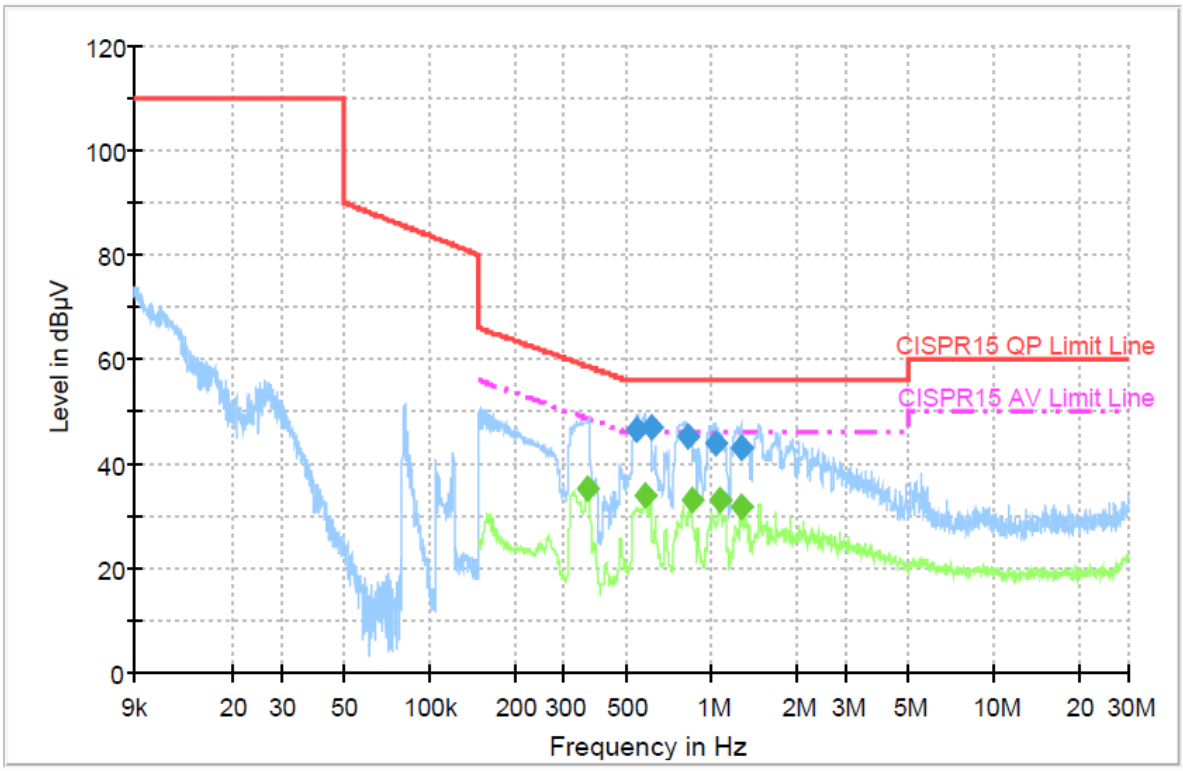
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.365985	47.8	L1	19.4	10.8	58.6
0.548405	47.0	L1	19.4	9.0	56.0
0.615556	47.1	L1	19.4	8.9	56.0
0.776452	46.7	L1	19.4	9.3	56.0
1.052556	43.6	L1	19.4	12.4	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.325574	37.3	L1	19.4	12.3	49.6
0.326362	37.2	L1	19.4	12.3	49.5
0.615356	34.1	L1	19.4	11.9	46.0
0.860464	32.7	L1	19.4	13.3	46.0
1.069807	31.4	L1	19.4	14.6	46.0

5.5.16 Diagram 016



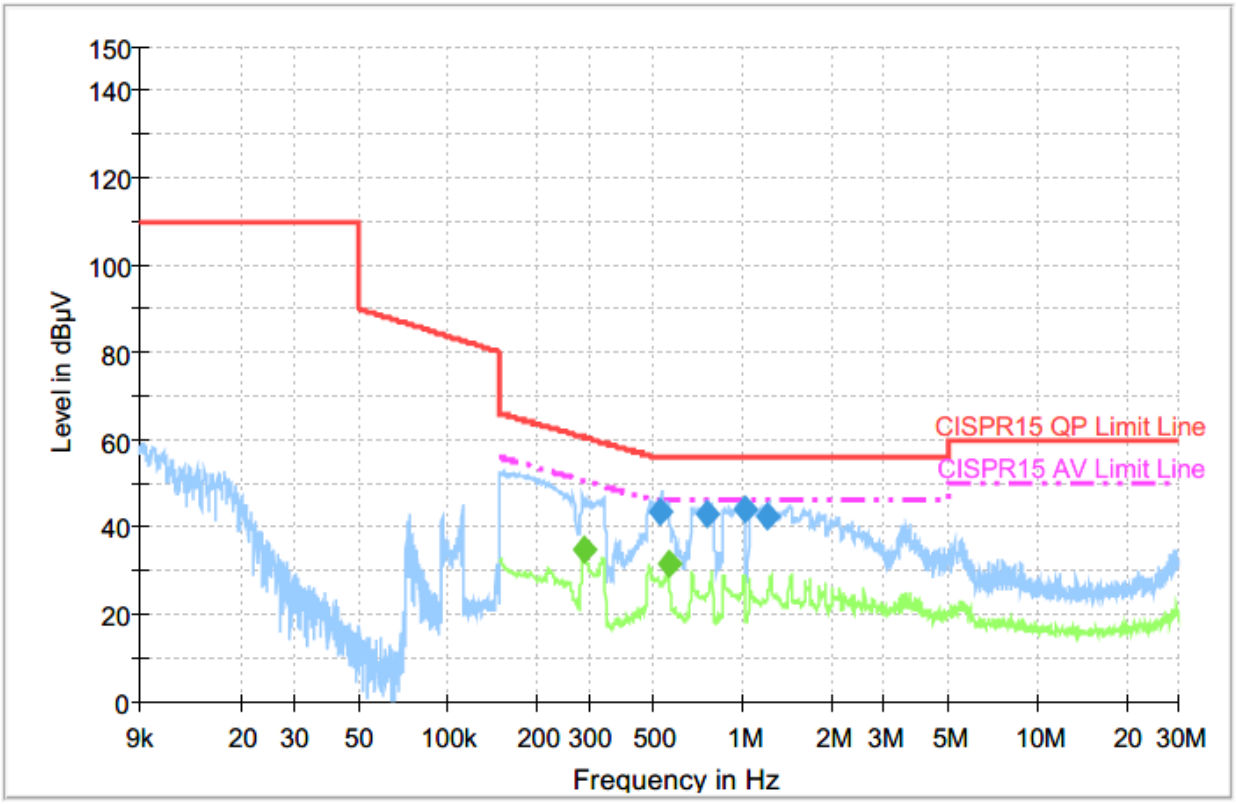
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.544146	46.4	N	19.4	9.6	56.0
0.612682	46.8	N	19.4	9.2	56.0
0.829381	45.1	N	19.4	10.9	56.0
1.043138	43.9	N	19.4	12.1	56.0
1.267855	43.1	N	19.4	12.9	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.365545	35.3	N	19.4	13.3	48.6
0.586703	33.9	N	19.4	12.1	46.0
0.857720	33.1	N	19.4	12.9	46.0
1.064266	33.2	N	19.4	12.8	46.0
1.277955	32.0	N	19.4	14.0	46.0

5.5.17 Diagram 017



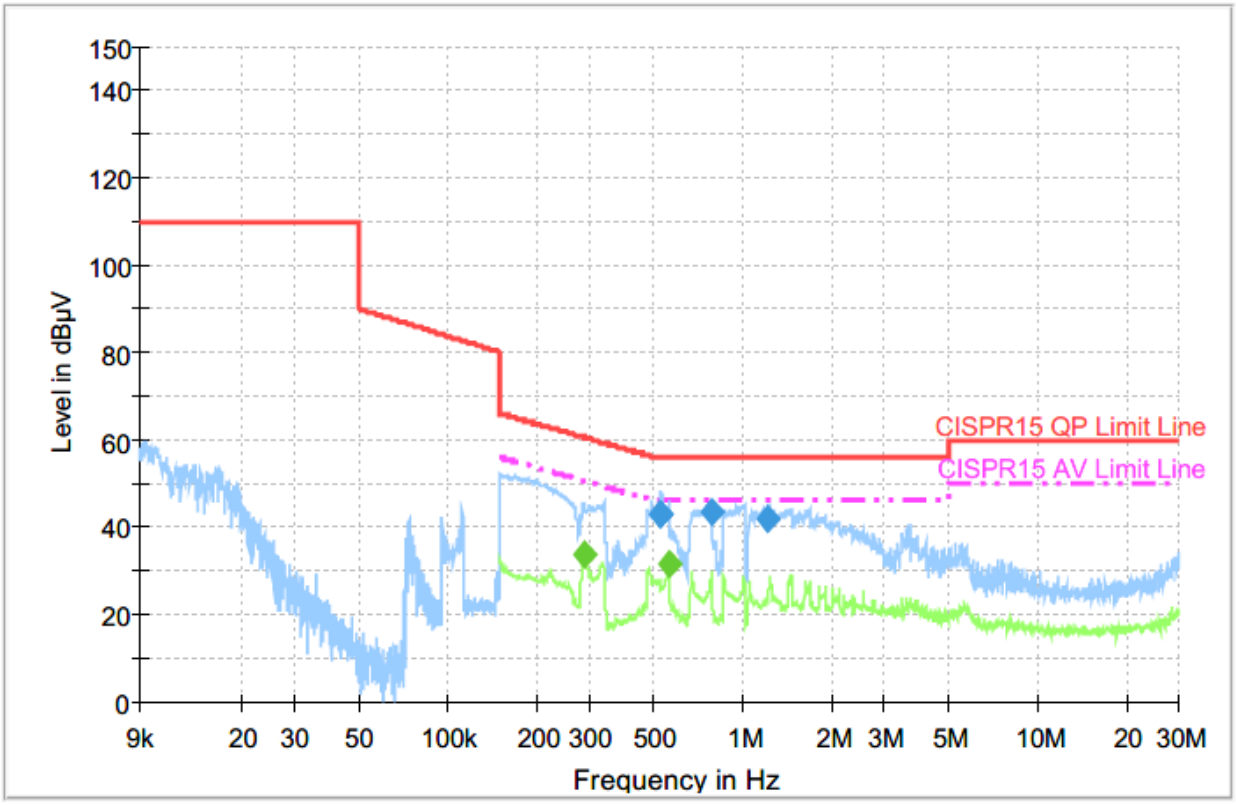
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.528105	43.4	L1	20.0	12.6	56.0
0.759639	42.9	L1	20.0	13.1	56.0
1.012786	44.3	L1	20.0	11.7	56.0
1.203233	42.1	L1	20.0	13.9	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.290371	34.5	L1	19.9	16.0	50.5
0.560155	31.7	L1	20.0	14.3	46.0

5.5.18 Diagram 018



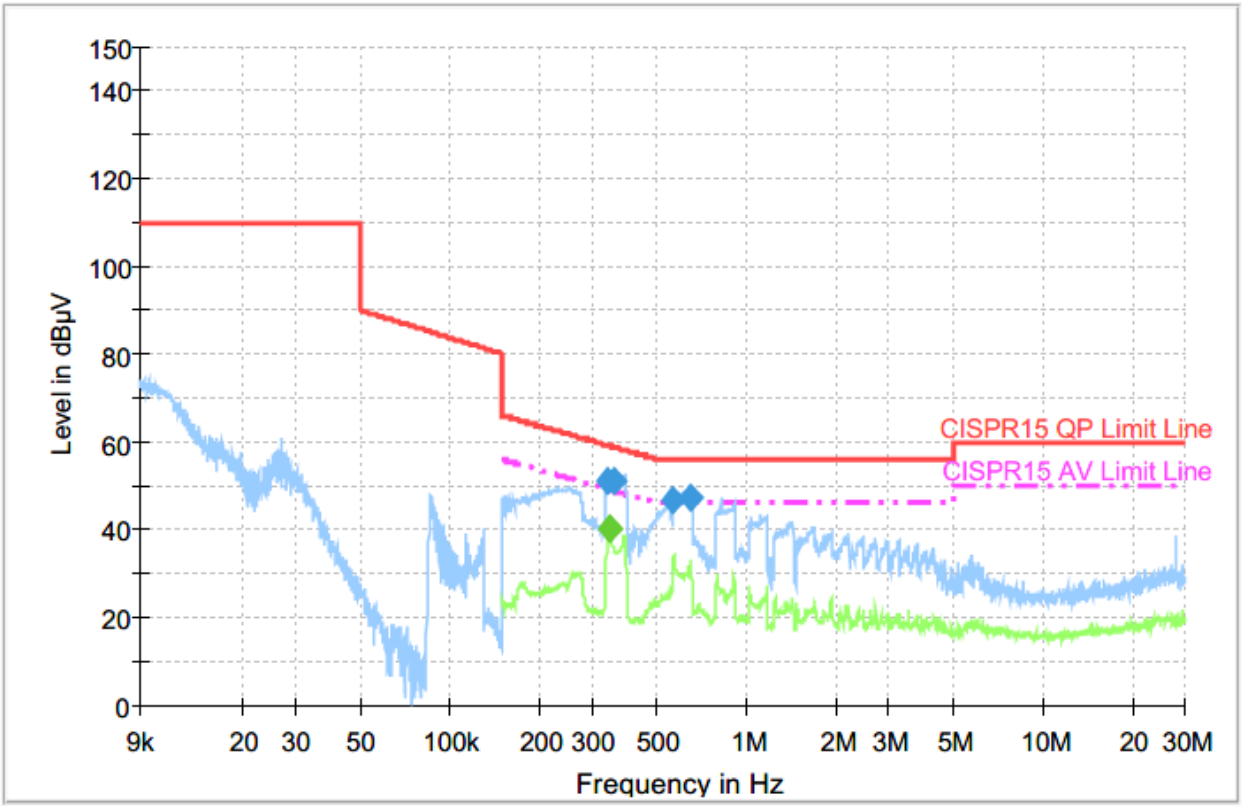
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.526194	43.1	N	20.0	12.9	56.0
0.527251	43.1	N	20.0	12.9	56.0
0.780539	43.5	N	20.0	12.5	56.0
1.202460	41.9	N	20.0	14.1	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.289249	33.6	N	19.9	16.9	50.5
0.557910	31.3	N	20.0	14.7	46.0

5.5.19 Diagram 019



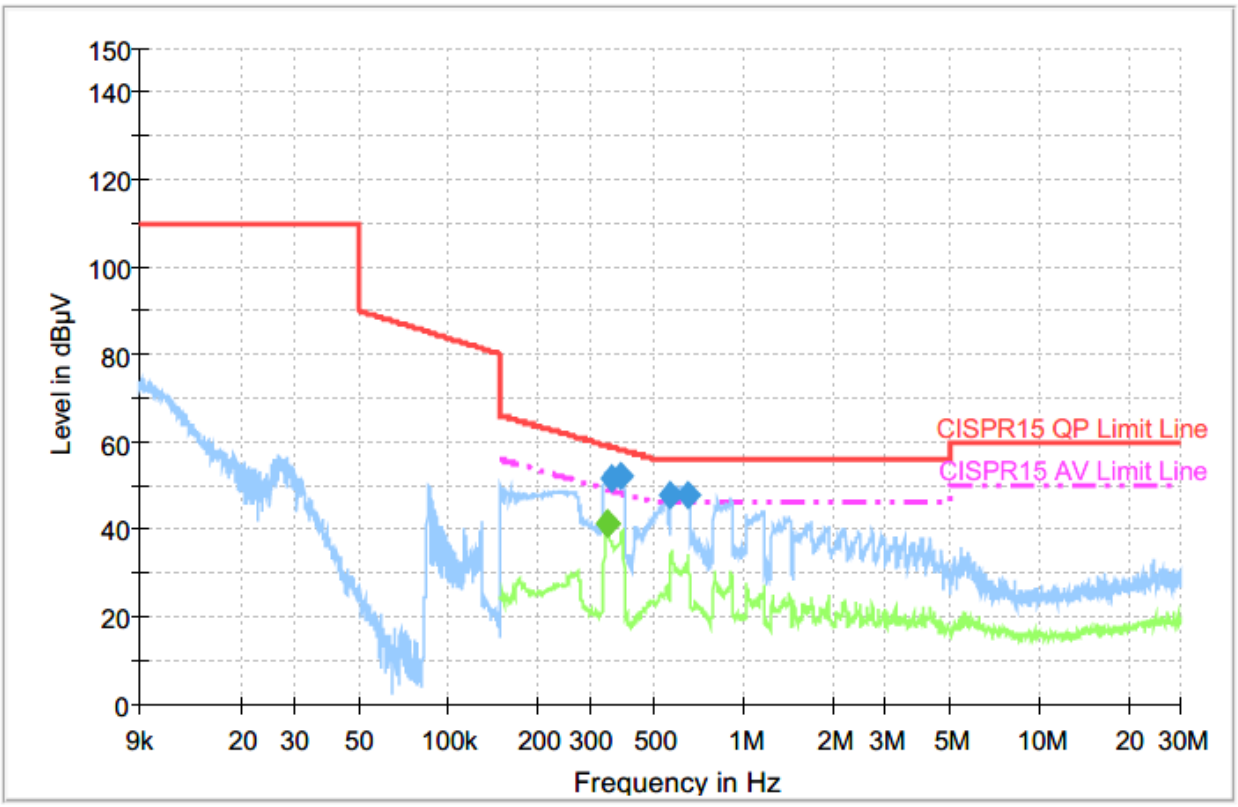
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.339263	50.8	L1	20.0	8.4	59.2
0.354218	50.9	L1	20.0	8.0	58.9
0.565574	46.9	L1	20.0	9.1	56.0
0.646253	47.3	L1	20.0	8.7	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.342344	40.5	L1	20.0	8.6	49.1
0.342659	40.4	L1	20.0	8.7	49.1

5.5.20 Diagram 020



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.354539	51.5	N	20.0	7.4	58.9
0.384640	52.2	N	20.0	6.0	58.2
0.565937	47.6	N	20.0	8.4	56.0
0.644931	48.0	N	20.0	8.0	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.342315	41.1	N	20.0	8.0	49.1
0.342859	41.1	N	20.0	8.0	49.1

6 Measurement of Radiated Emission

6.1 Standards

Generic standard	**/**
Product or product family standard	**EN IEC 55015:2019+A11:2020**
Limit class	**Table 10 of EN IEC 55015**
Basic standard	**CISPR 16**
Date of testing	**2021-10-22 to 2021-11-19**

6.2 Measurement equipment

	Equipment	Manufacturer	Model No.	Serial No.	Cal. due
☒	3#Chamber	AUDIX	N/A	N/A	Nov.23,21
☒	EMI Spectrum	Agilent	E4407B	MY41440292	Jun.18, 22
☒	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	Jun.18, 22
☒	Amplifier	HP	8447D	2648A04738	Jun.18, 22
☒	Bilog Antenna	TESEQ	CBL6112D	35375	Jun.18, 22
☒	RF Cable	MIYAZAKI	CFD400-NL	3# Chamber No.1	Jun.18, 22
☒	Coaxial Switch	Anritsu	MP59B	6200313662	Jun.18, 22
☒	Horn Antenna	ETS	3115	9607-4877	Jun.18, 22

	Equipment	Manufacturer	Model No.	Serial No.	Cal. Due
☒	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2024-06-15
☒	EMI Test Receiver	R&S	ESCI3	101010	2022-06-08
☒	Spectrum analyzer	Agilent	N9020A	MY49100699	2022-06-08
☒	Log per Antenna	SCHWARZBECK	VULB9163	5094	2022-06-23
☒	Horn antenna	ETS-LINDGREN	3115	00034771	2022-06-23
☒	EMI Test Software	EZ	EZ_EMC	N/A	/
☒	Positioning Controller	MF	BK8807-4A-2T	2016-0808-008	/

6.3 Test set-up

The EUT has been tested according to the above-mentioned standard, as following:
The EUT was placed on the top of an insulating table 0.8 meters above the ground at a semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. The antenna is a broadband antenna, and its height is varied from 1 to 4 meter above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to the heights from 1 to 4 meters and the ratable table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to Peak Detector Function and Specified Bandwidth with Maximum Hold Mode.

If more details are necessary, e.g. because of wiring or auxiliary equipment, annex B with a photo or a rough figure of the test set-up is attached.

The test has been performed as following:

1) Preview test; Peak; IF BW=100kHz, VBW=300kHz, Antenna: from 1 to 4m Turntable 0-360deg

2) Find frequencies with maximum emission:

Acceptance-analysis: Limit minus 10 dB

Peak-reduction: Peaks frequency range 30 MHz - 1000 MHz

3) Final test; Quasi-Peak; measuring time 1 s; at frequencies from step 2); Search maximum: vary turntable and antenna position to find the maximum readings

4) If there are more than 10 peaks within the 10 dB margin a manual test with all settings is necessary to find the maximum readings.

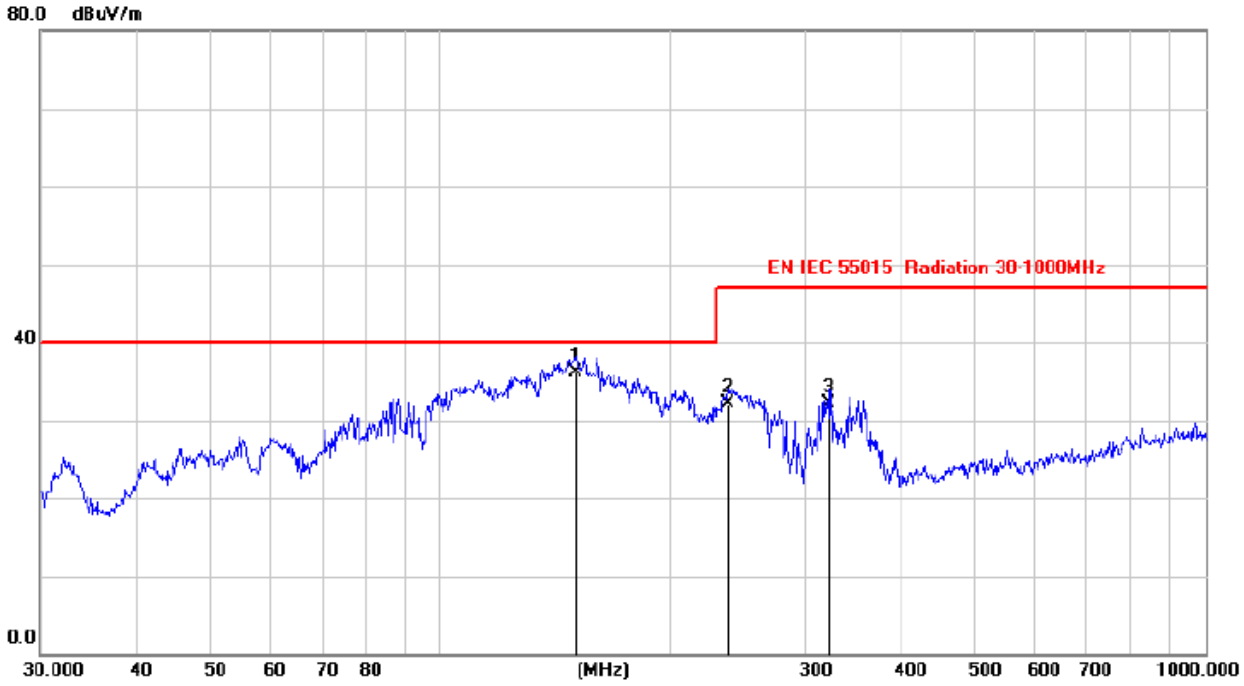
6.4 Test result

Model	Test Mode	Test port	Diagram	Remarks	Result
GTPC-45-12-S	TM1	Enclosure port	021	H	**Pass**
			022	V	**Pass**
GTPC-45-24-S	TM1	Enclosure port	023	H	**Pass**
			024	V	**Pass**
GTPC-60-12-S	TM1	Enclosure port	025	H	**Pass**
			026	V	**Pass**
GTPC-60-24-S	TM1	Enclosure port	027	H	**Pass**
			028	V	**Pass**
GTPC-75-12-S	TM1	Enclosure port	029	H	**Pass**
			030	V	**Pass**
GTPC-75-24-S	TM1	Enclosure port	031	H	**Pass**
			032	V	**Pass**
GTPC-100-12-S	TM1	Enclosure port	033	H	**Pass**
			034	V	**Pass**
GTPC-100-24-S	TM1	Enclosure port	035	H	**Pass**
			036	V	**Pass**
GTPC-60-48-S	TM1	Enclosure port	037	H	**Pass**
			038	V	**Pass**
GTPC-100-48-S	TM1	Enclosure port	039	H	**Pass**
			040	V	**Pass**

Remark: If the peak result is comply with the QP limit, and then the QP is comply with its limit. And then only list the peak value in this report.

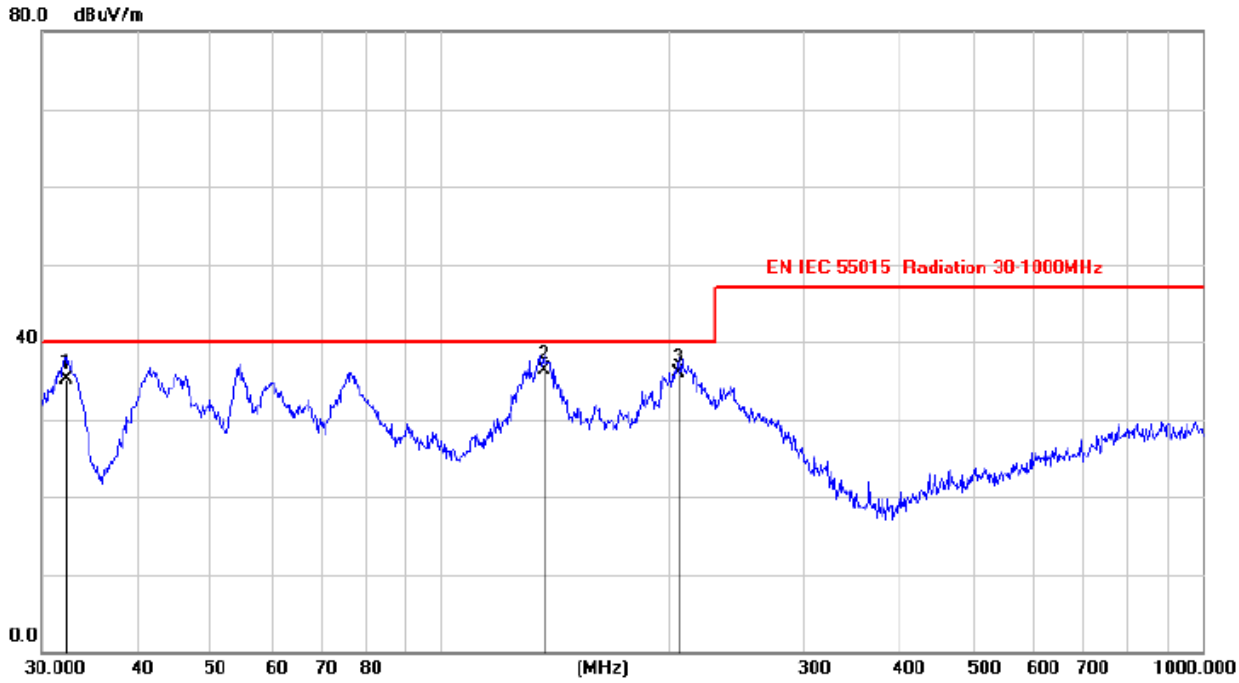
6.5 Diagrams

6.5.1 Diagram 021



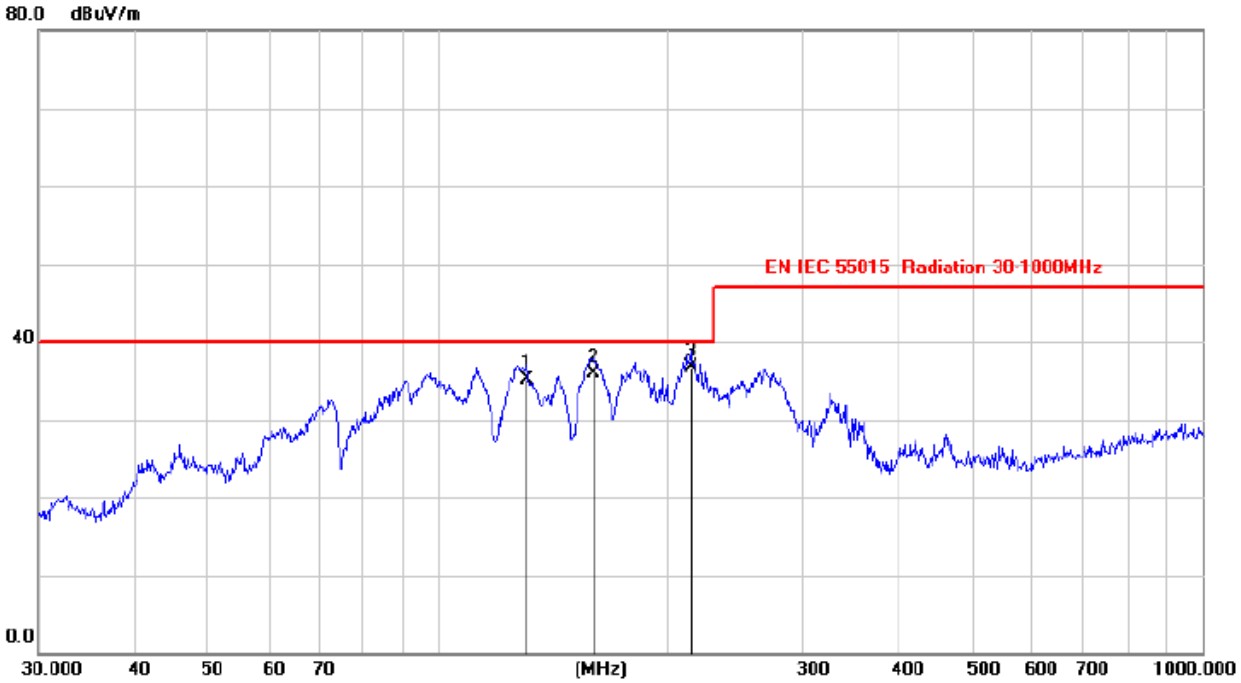
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	150.5377	26.82	9.26	36.08	40.00	-3.92	QP			
2		238.2057	19.67	12.50	32.17	47.00	-14.83	QP			
3		323.1786	17.66	14.37	32.03	47.00	-14.97	QP			

6.5.2 Diagram 022



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		32.2359	26.88	8.24	35.12	40.00	-4.88	QP			
2	*	137.0592	22.94	13.36	36.30	40.00	-3.70	QP			
3		205.0450	26.14	9.79	35.93	40.00	-4.07	QP			

6.5.3 Diagram 023

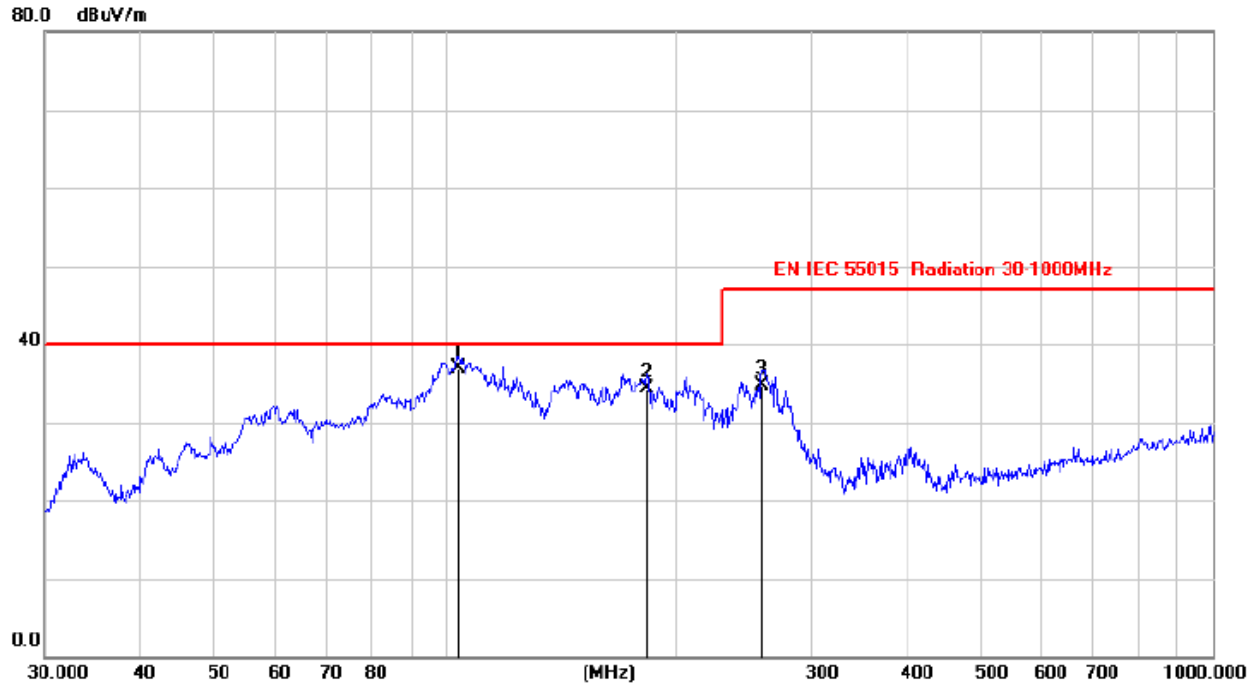


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		130.3788	24.88	10.21	35.09	40.00	-4.91	QP			
2		159.6443	26.06	9.85	35.91	40.00	-4.09	QP			
3	*	213.8571	24.67	12.13	36.80	40.00	-3.20	QP			

6.5.4 Diagram 024

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	42.2280	23.86	12.11	35.97	40.00	-4.03	QP			
2		54.5471	22.25	13.08	35.33	40.00	-4.67	QP			
3		132.0467	22.87	12.99	35.86	40.00	-4.14	QP			

6.5.5 Diagram 025

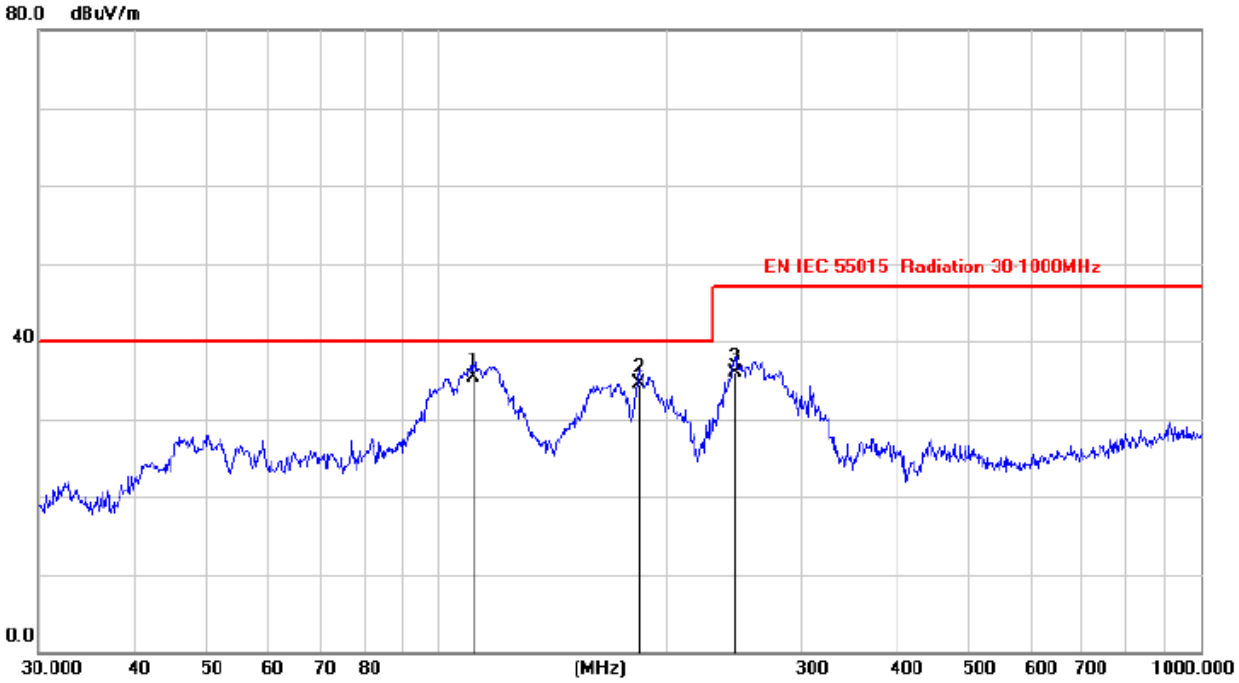


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	104.0331	23.88	13.12	37.00	40.00	-3.00	QP			
2		182.7193	23.40	10.85	34.25	40.00	-5.75	QP			
3		258.7795	21.81	12.97	34.78	47.00	-12.22	QP			

6.5.6 Diagram 026

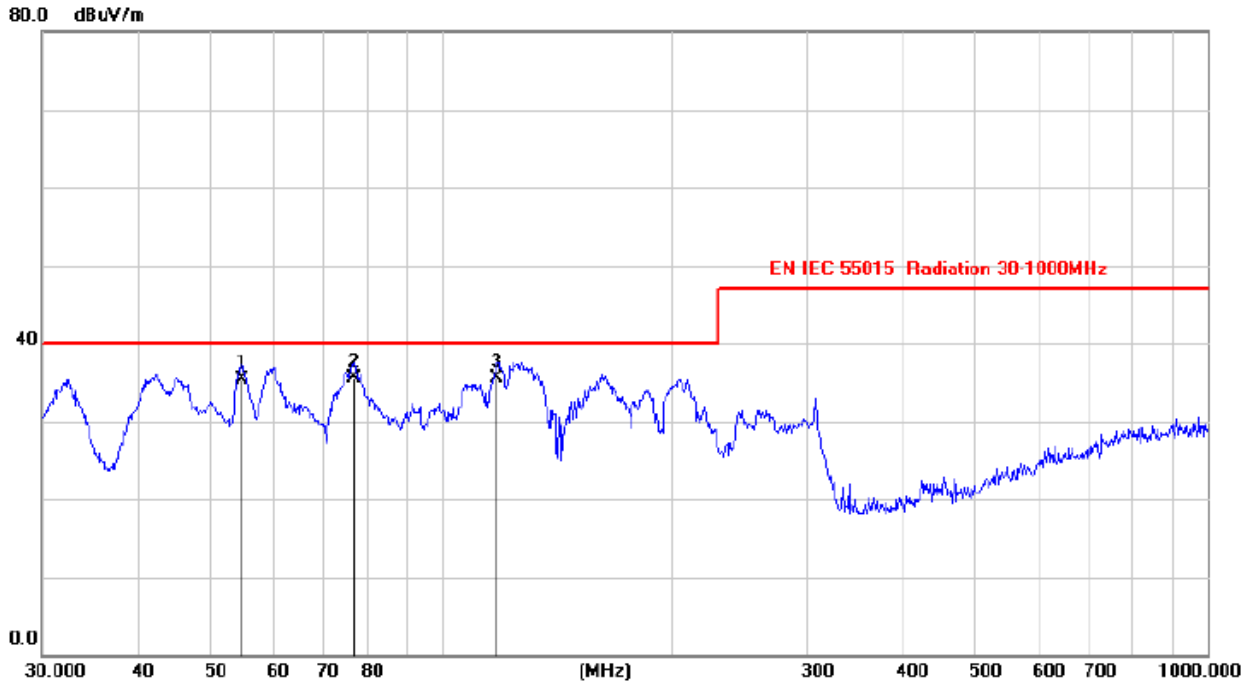
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	33.0949	26.77	8.59	35.36	40.00	-4.64	QP			
2		59.6492	22.17	13.02	35.19	40.00	-4.81	QP			
3		133.4430	22.02	13.10	35.12	40.00	-4.88	QP			

6.5.7 Diagram 027



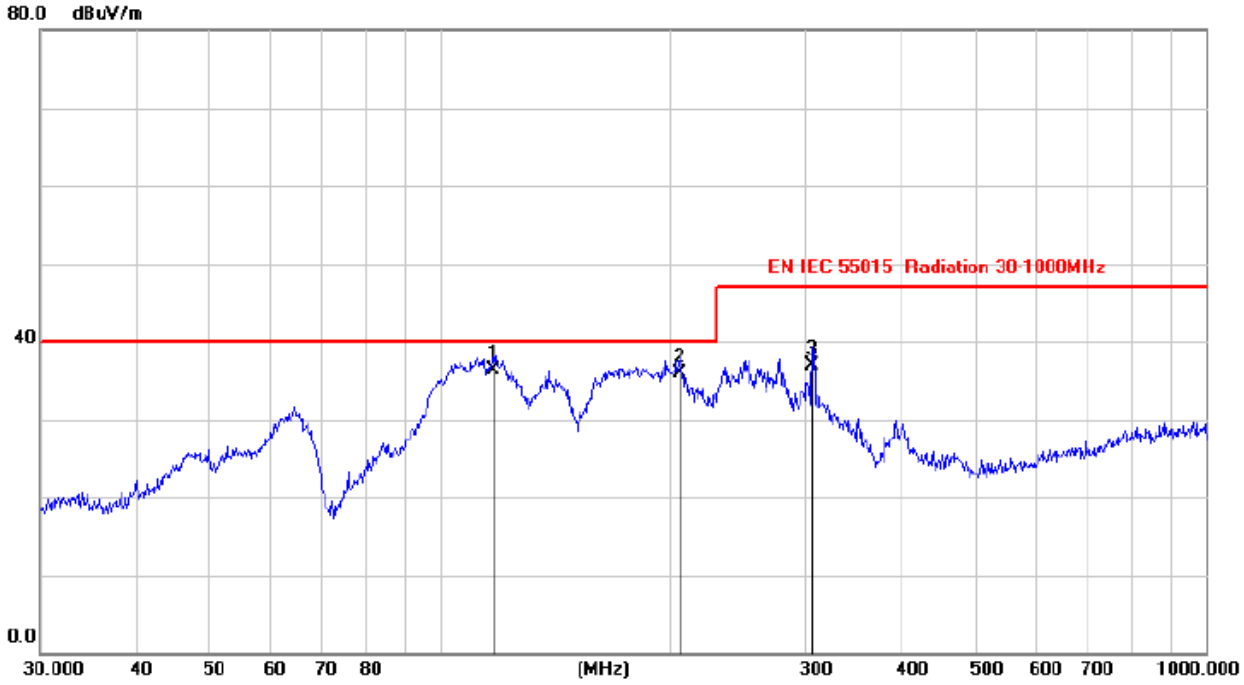
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	111.4933	22.76	12.61	35.37	40.00	-4.63	QP			
2		183.7633	23.63	10.91	34.54	40.00	-5.46	QP			
3		245.8430	23.29	12.65	35.94	47.00	-11.06	QP			

6.5.8 Diagram 028



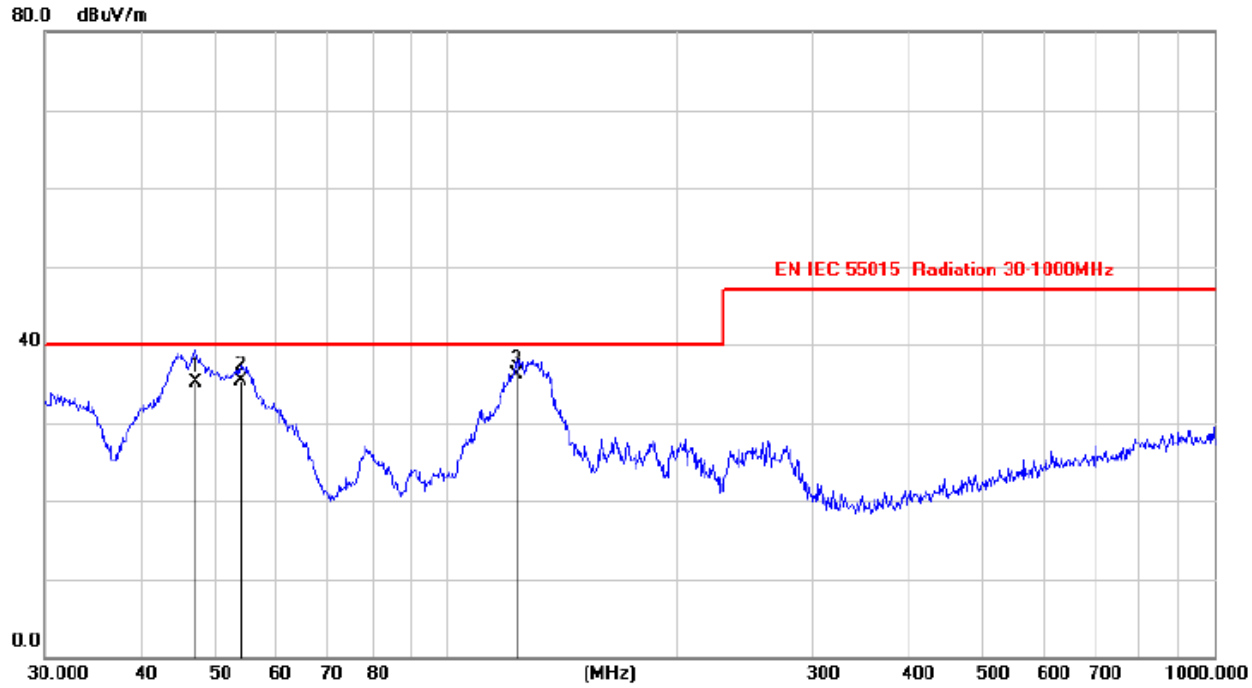
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		54.7867	22.25	13.08	35.33	40.00	-4.67	QP			
2		76.5790	25.38	10.06	35.44	40.00	-4.56	QP			
3	*	118.0825	23.09	12.38	35.47	40.00	-4.53	QP			

6.5.9 Diagram 029



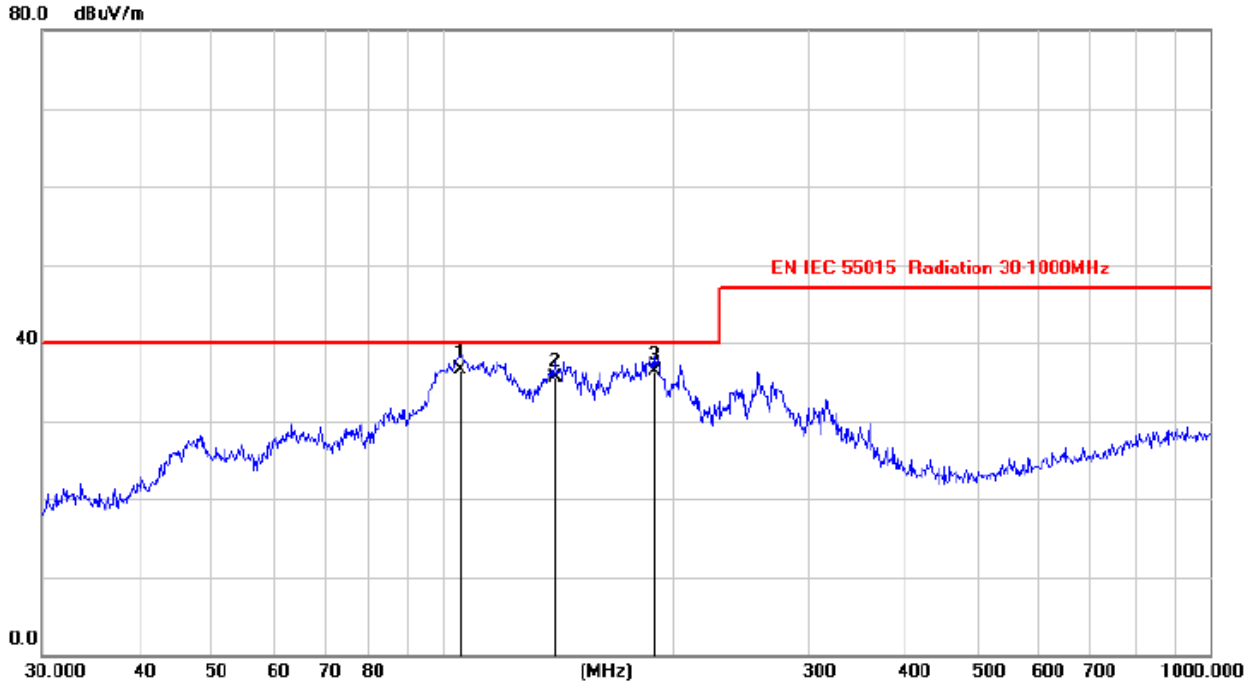
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	117.2574	24.39	11.84	36.23	40.00	-3.77	QP			
2		205.6751	23.97	11.84	35.81	40.00	-4.19	QP			
3		306.6193	23.73	13.27	37.00	47.00	-10.00	QP			

6.5.10 Diagram 030



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		47.1805	21.98	13.12	35.10	40.00	-4.90	QP			
2		54.0237	22.17	13.09	35.26	40.00	-4.74	QP			
3	*	123.6442	23.50	12.63	36.13	40.00	-3.87	QP			

6.5.11 Diagram 031

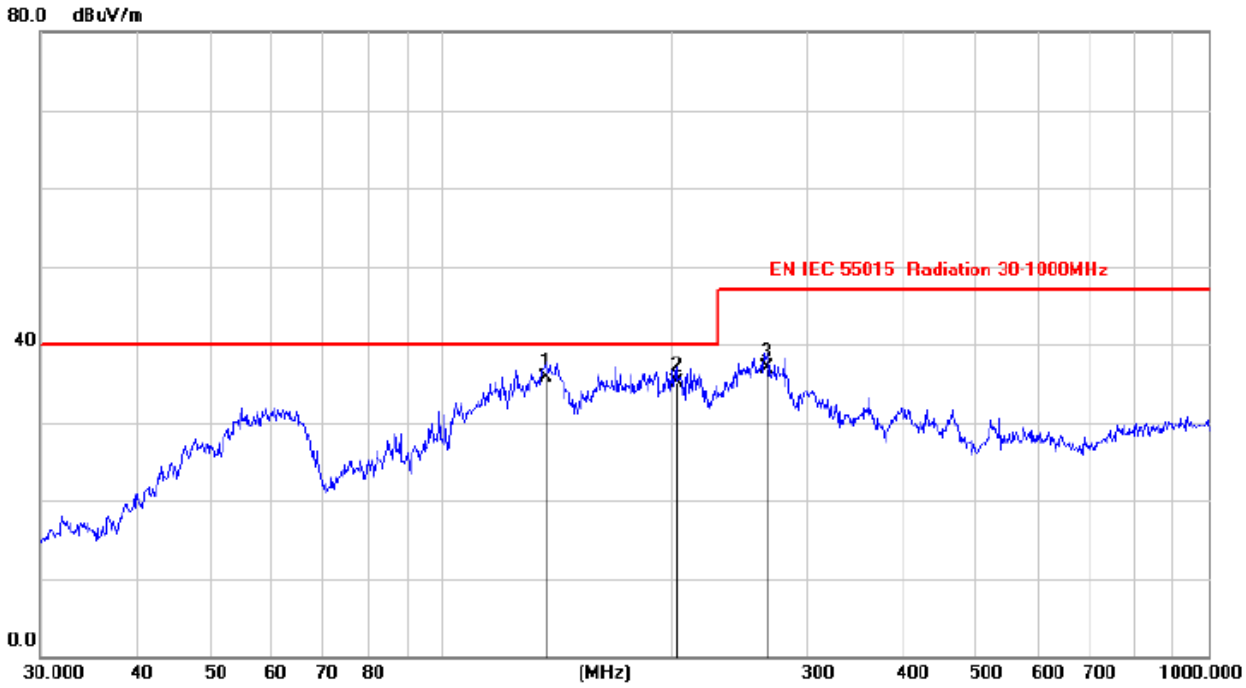


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	105.3179	23.46	13.05	36.51	40.00	-3.49	QP			
2		140.2191	25.57	9.95	35.52	40.00	-4.48	QP			
3		188.8259	25.19	11.19	36.38	40.00	-3.62	QP			

6.5.12 Diagram 032

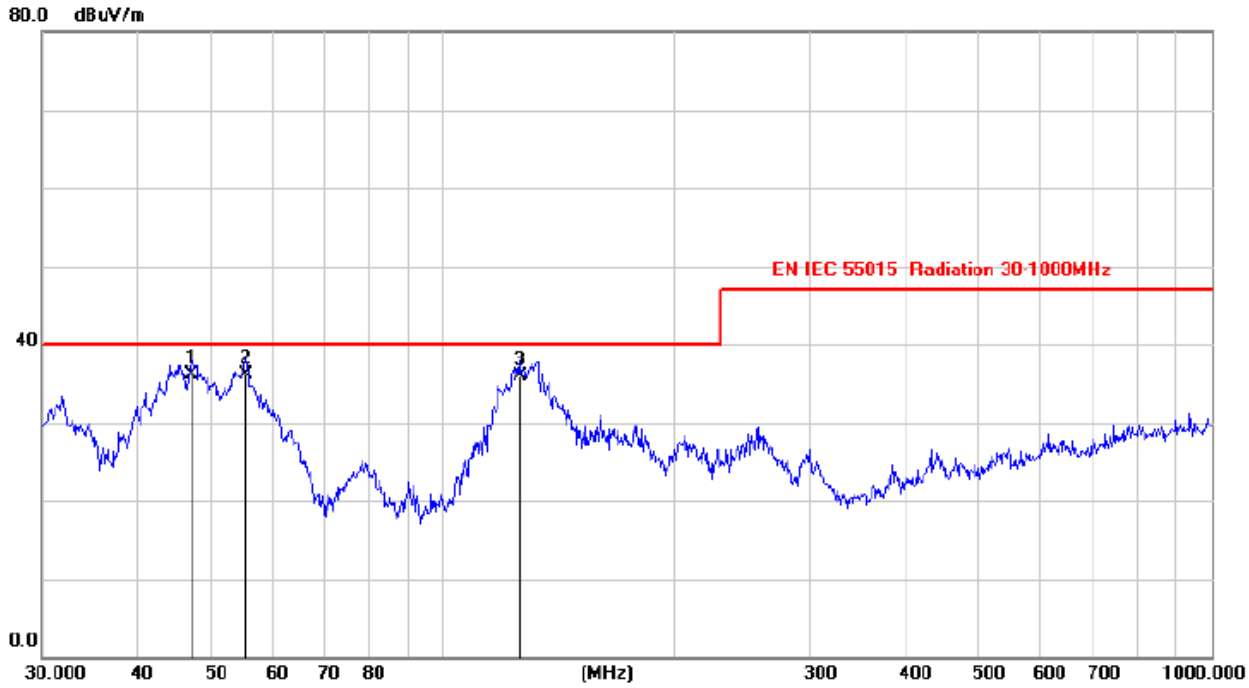
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	45.0781	23.00	13.10	36.10	40.00	-3.90	QP			
2		47.0154	22.88	13.12	36.00	40.00	-4.00	QP			
3		123.3735	22.97	12.62	35.59	40.00	-4.41	QP			

6.5.13 Diagram 033



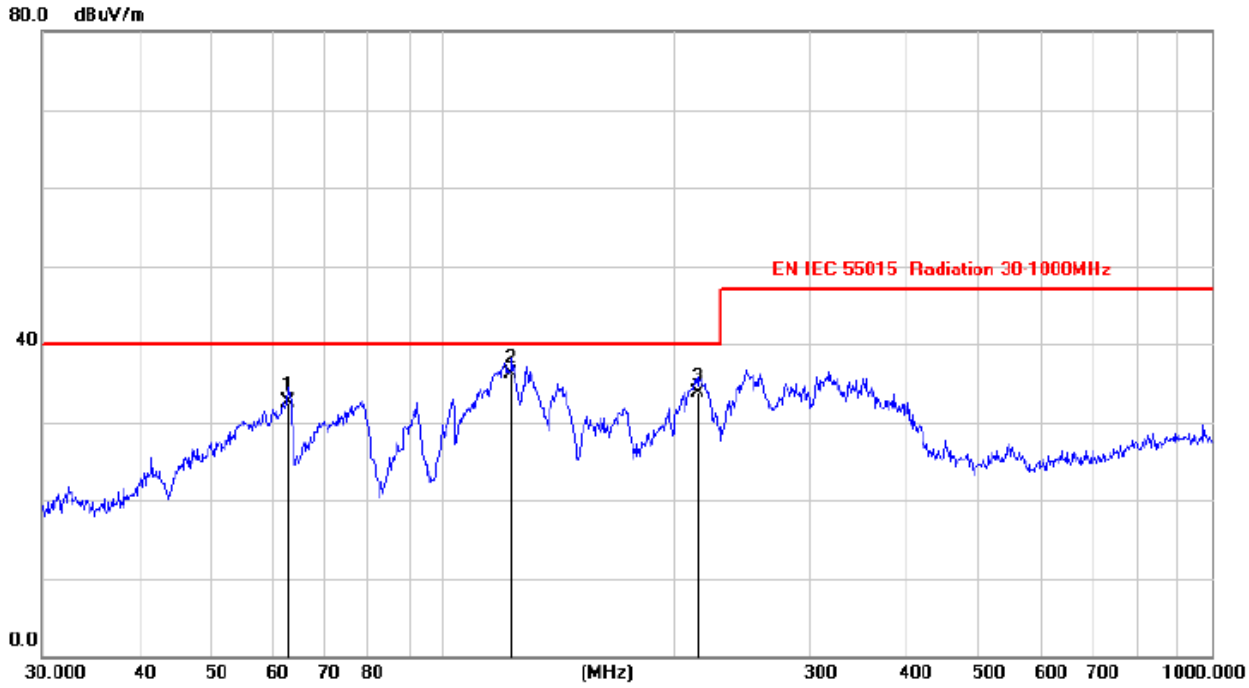
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	137.1193	25.61	10.05	35.66	40.00	-4.34	QP			
2		202.3662	23.42	11.70	35.12	40.00	-4.88	QP			
3		265.9087	23.72	13.15	36.87	47.00	-10.13	QP			

6.5.14 Diagram 034



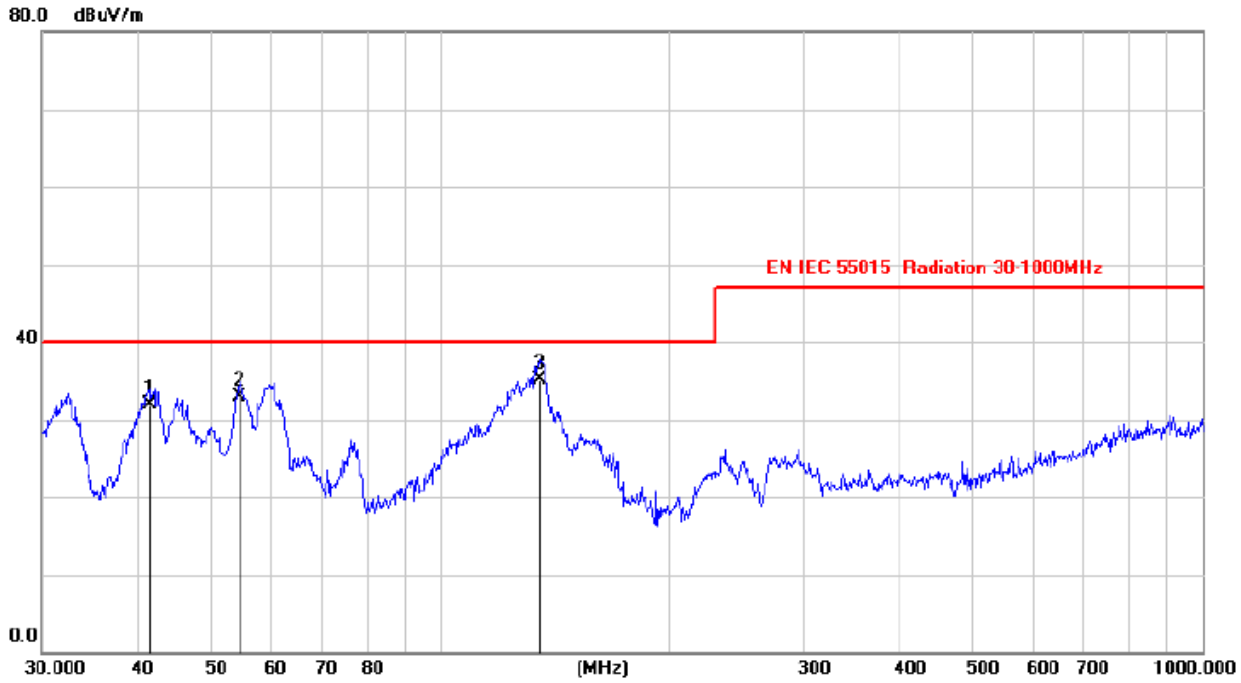
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	46.8918	23.00	13.12	36.12	40.00	-3.88	QP			
2		55.2449	23.01	13.08	36.09	40.00	-3.91	QP			
3		125.5006	23.23	12.69	35.92	40.00	-4.08	QP			

6.5.15 Diagram 035



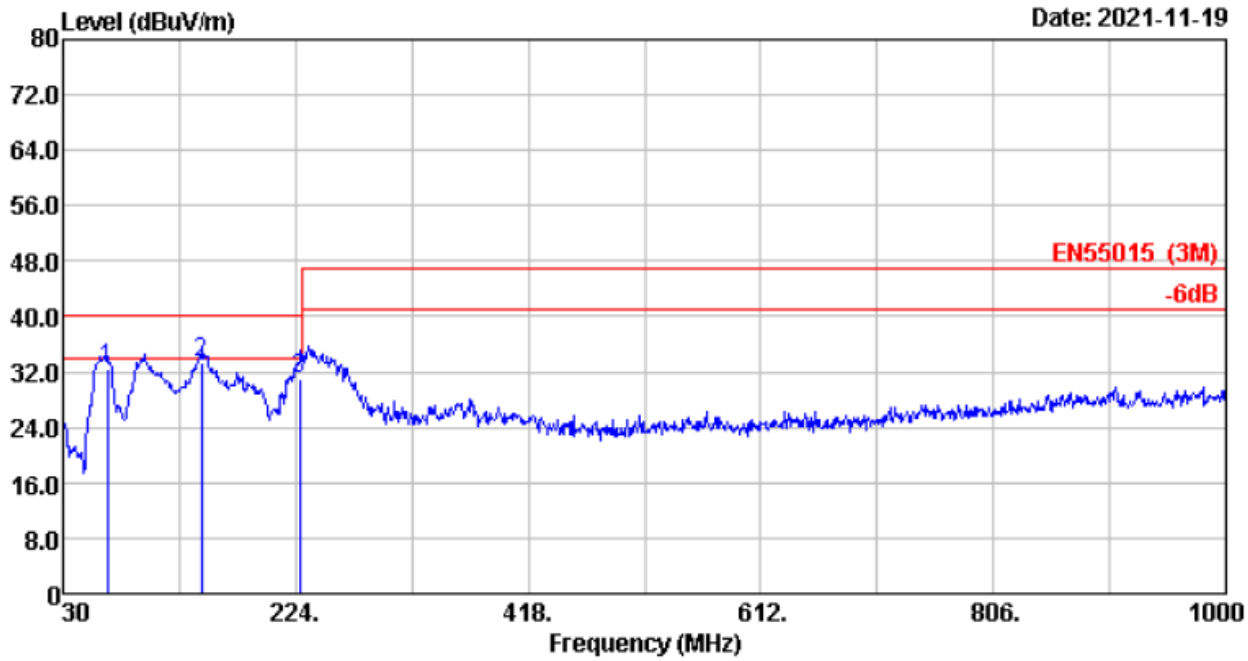
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		62.8706	20.81	11.77	32.58	40.00	-7.42	QP			
2	*	122.5113	24.92	11.17	36.09	40.00	-3.91	QP			
3		214.6083	21.55	12.16	33.71	40.00	-6.29	QP			

6.5.16 Diagram 036



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		41.4579	20.07	11.83	31.90	40.00	-8.10	QP			
2		54.4755	19.77	13.08	32.85	40.00	-7.15	QP			
3	*	135.2688	21.78	13.23	35.01	40.00	-4.99	QP			

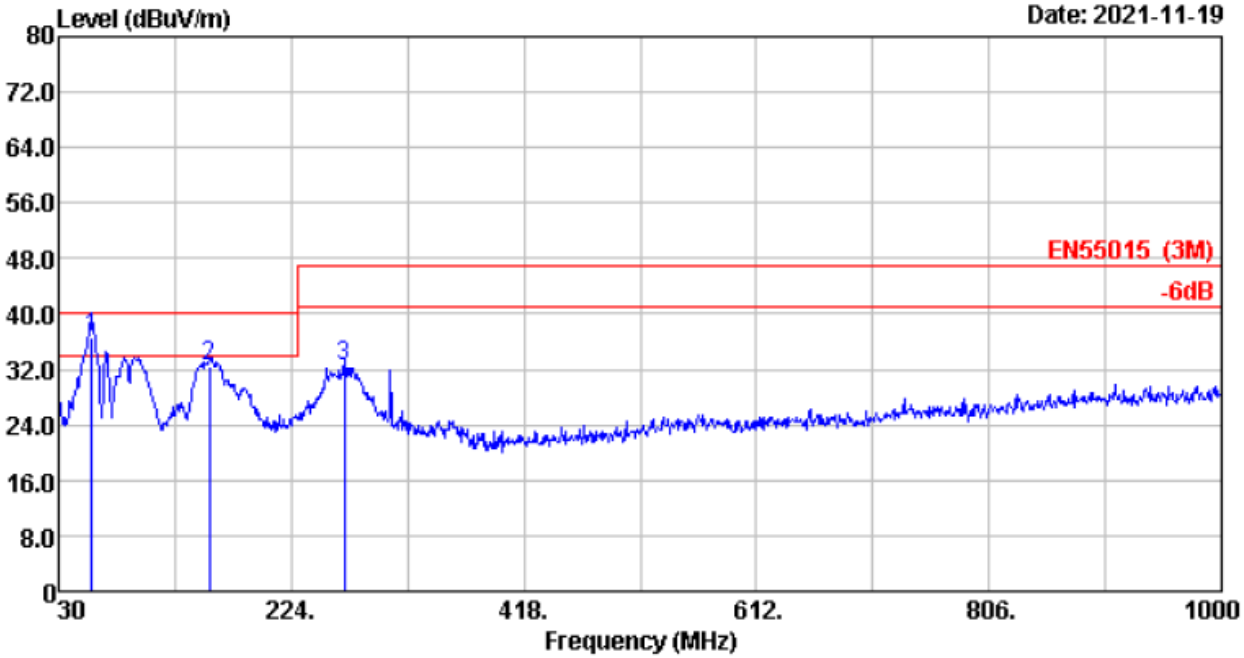
6.5.17 Diagram 037



No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	66.860	12.40	0.81	0.00	19.16	32.37	40.00	7.63	QP
2	145.430	16.65	1.19	0.00	15.40	33.24	40.00	6.76	QP
3	227.554	16.84	1.50	0.00	12.80	31.14	40.00	8.86	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp Factor
2. The emission levels that are 20dB below the official limit are not reported.

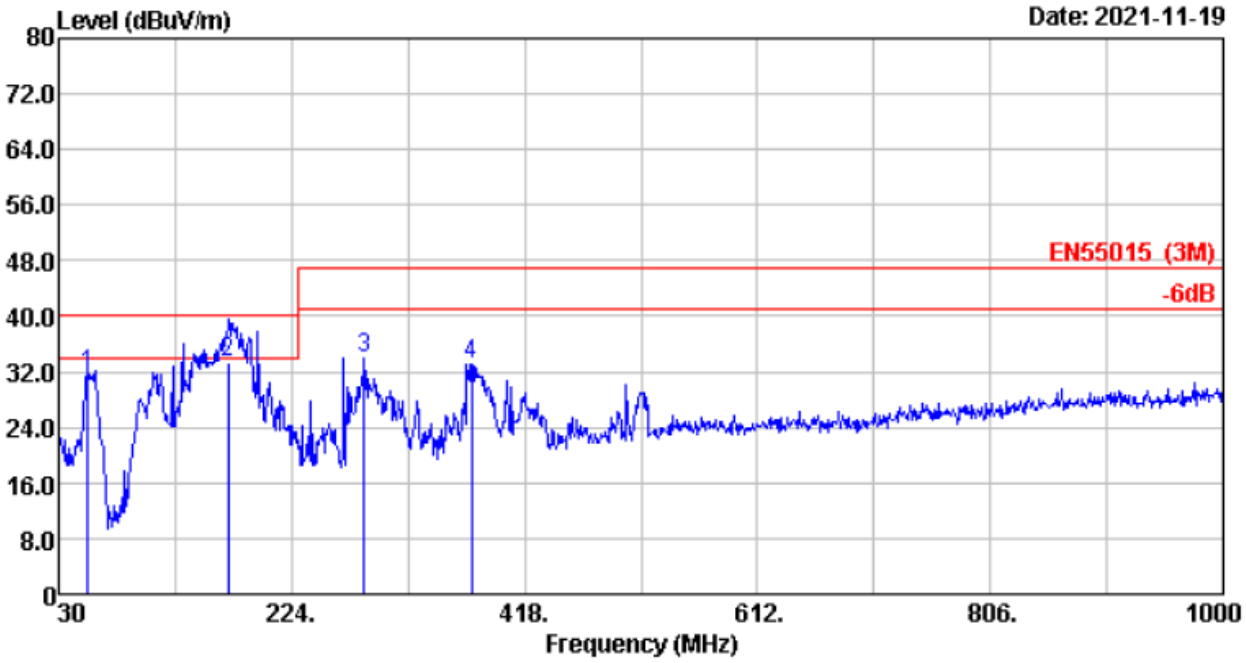
6.5.18 Diagram 038



No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	57.919	12.74	0.78	0.00	23.00	36.52	40.00	3.48	QP
2	156.100	15.90	1.24	0.00	15.45	32.59	40.00	7.41	QP
3	268.620	18.52	1.64	0.00	12.31	32.47	47.00	14.53	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp Factor
2. The emission levels that are 20dB below the official limit are not reported.

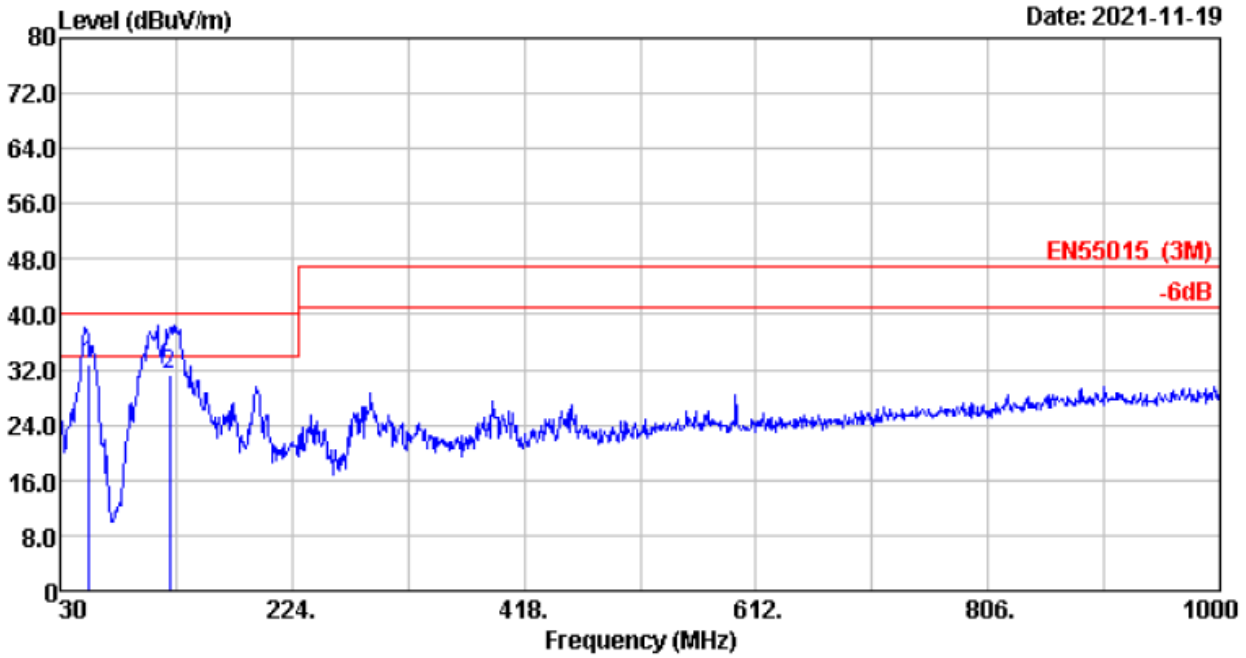
6.5.19 Diagram 039



No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	54.250	13.42	0.77	0.00	17.42	31.61	40.00	8.39	QP
2	171.060	15.36	1.32	0.00	16.80	33.48	40.00	6.52	QP
3	284.140	18.71	1.70	0.00	13.46	33.87	47.00	13.13	QP
4	374.350	20.79	1.95	0.00	10.37	33.11	47.00	13.89	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp Factor
2. The emission levels that are 20dB below the official limit are not reported.

6.5.20 Diagram 040



No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	AMP factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	54.226	13.42	0.77	0.00	18.60	32.79	40.00	7.21	QP
2	122.014	17.82	1.11	0.00	12.40	31.33	40.00	8.67	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading -Amp Factor
2. The emission levels that are 20dB below the official limit are not reported.

7 Measurement of Radiated Electromagnetic Disturbances

7.1 Standards

Generic standard	**/**
Product or product family standard	**EN IEC 55015:2019+A11:2020**
Limit class	**Table 8 of EN IEC 55015**
Basic standard	**CISPR 16**
Date of testing	**2017-10-19, 2021-11-10 to 2021-11-16**

7.2 Measurement equipment

	Equipment	Manufacturer	Type	Serial No.	Calibration due
☒	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	100657	2022.01.07
☒	Triple Loop Antenna	ROHDE & SCHWARZ	HM020	100043	2022.01.07
☒	EMI Test Software	ROHDE & SCHWARZ	EMC32	N/A	N/A

7.3 Test set-up

Annex B with a photo or a rough figure of the test set-up is attached.
The test has been performed as following:
The magnetic component shall be measured by means of a loop antenna as described in EN 55015.
The lighting equipment shall be placed in the center of the antenna, and the position is not critical.

The inducted current in the loop antenna is measured by means of a current probe(1V/A) and the CISPR measuring receiver. By means of a coaxial switch the three field directions can be measured in sequence. Each value shall fulfil the requirements given.

Self-ballasted lamps and semi-luminaries shall be measured when inserted in a relevant lamp-holder, mounted on a piece of insulating material.

Scan setting:

Freq range			Receiver setting		
Start	Stop	Step	IF BW	Detector	Meas Time
9k	150k	100Hz	200Hz	PK	10ms
150k	30M	4.5k	9k	PK	20ms

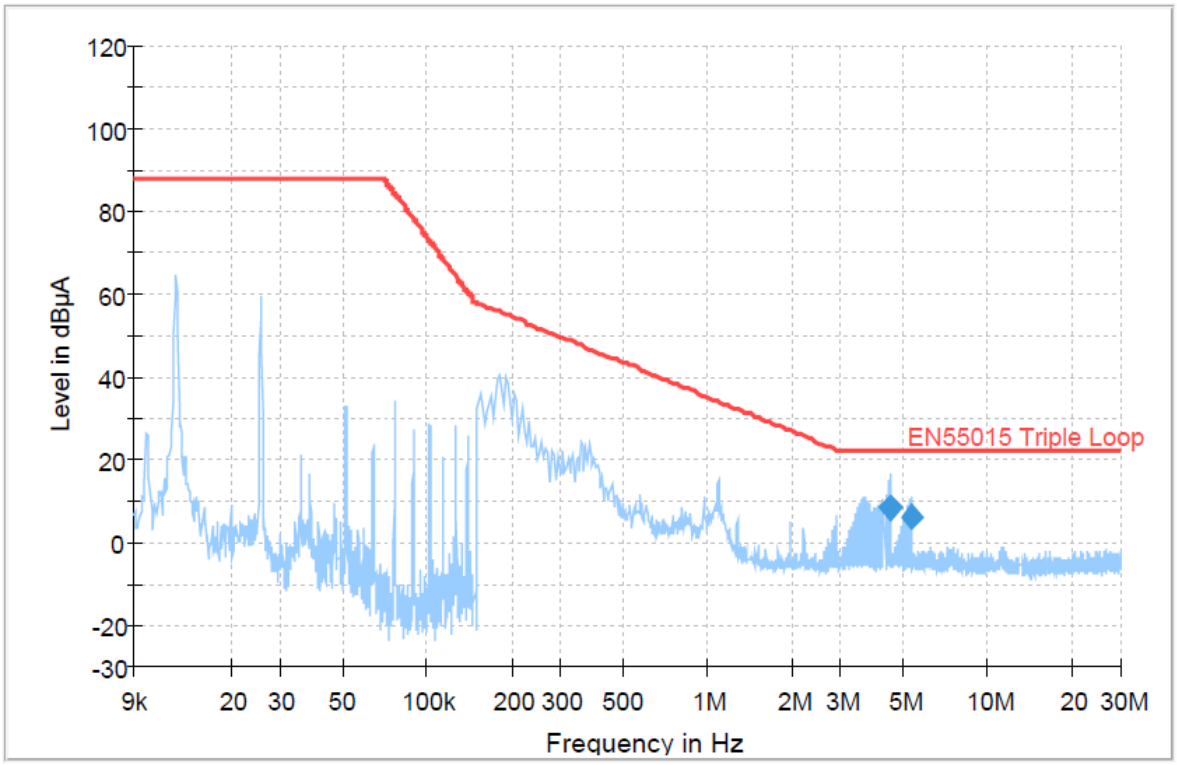
Final measurement:
Meas time: 1s
Detector QP

7.4 Test result

Test port:			**Enclosure**	
Model	**Test mode**	**Diagram**	**Remarks**	**Result**
GTPC-45-12-S	TM1	041	X	**Pass**
		042	Y	**Pass**
		043	Z	**Pass**
GTPC-45-24-S	TM1	044	X	**Pass**
		045	Y	**Pass**
		046	Z	**Pass**
GTPC-60-12-S	TM1	047	X	**Pass**
		048	Y	**Pass**
		049	Z	**Pass**
GTPC-60-24-S	TM1	050	X	**Pass**
		051	Y	**Pass**
		052	Z	**Pass**
GTPC-75-12-S	TM1	053	X	**Pass**
		054	Y	**Pass**
		055	Z	**Pass**
GTPC-75-24-S	TM1	056	X	**Pass**
		057	Y	**Pass**
		058	Z	**Pass**
GTPC-100-12-S	TM1	059	X	**Pass**
		060	Y	**Pass**
		061	Z	**Pass**
GTPC-100-24-S	TM1	062	X	**Pass**
		063	Y	**Pass**
		064	Z	**Pass**
GTPC-60-48-S	TM1	065	X	**Pass**
		066	Y	**Pass**
		067	Z	**Pass**
GTPC-100-48-S	TM1	068	X	**Pass**
		069	Y	**Pass**
		070	Z	**Pass**
Remark: If the Peak measurement value is comply with the QP Limit, then QP value deem to comply with QP limit. then only list the diagram in the report				

7.5 Diagrams

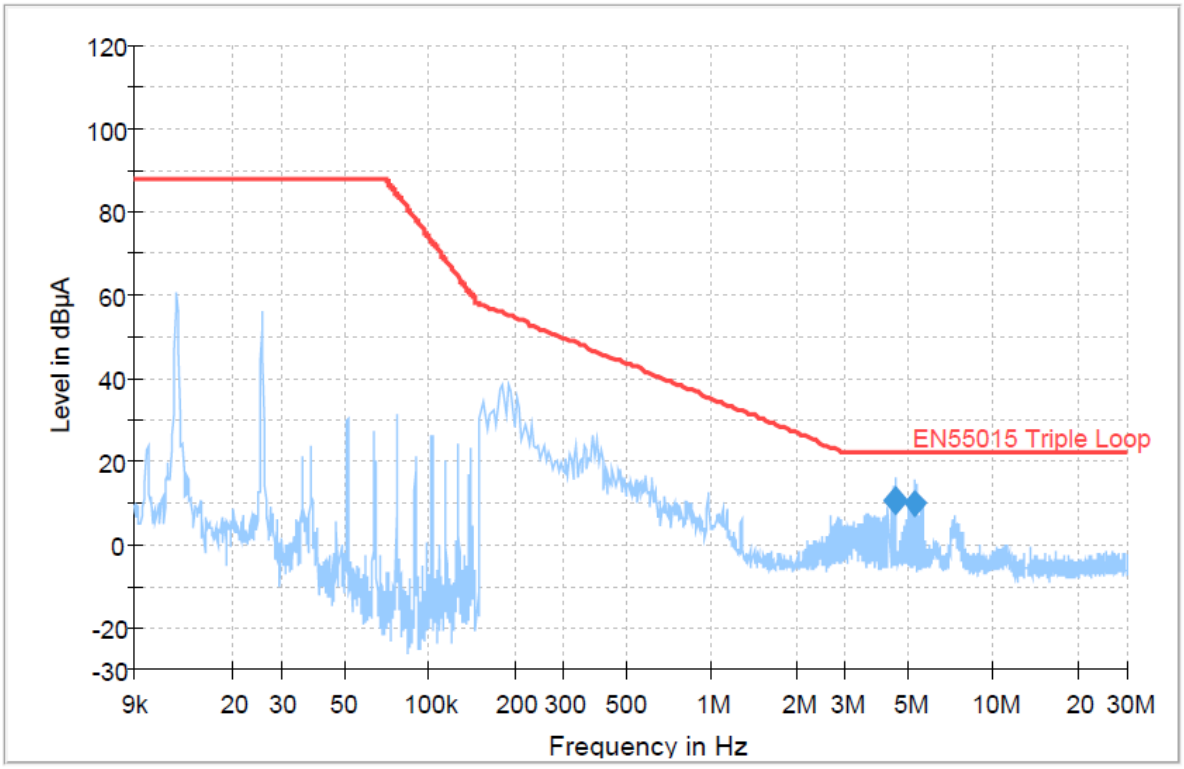
7.5.1 Diagram 041



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
4.479000	8.6	X	0.3	13.4	22.0
5.289000	6.0	X	0.3	16.0	22.0

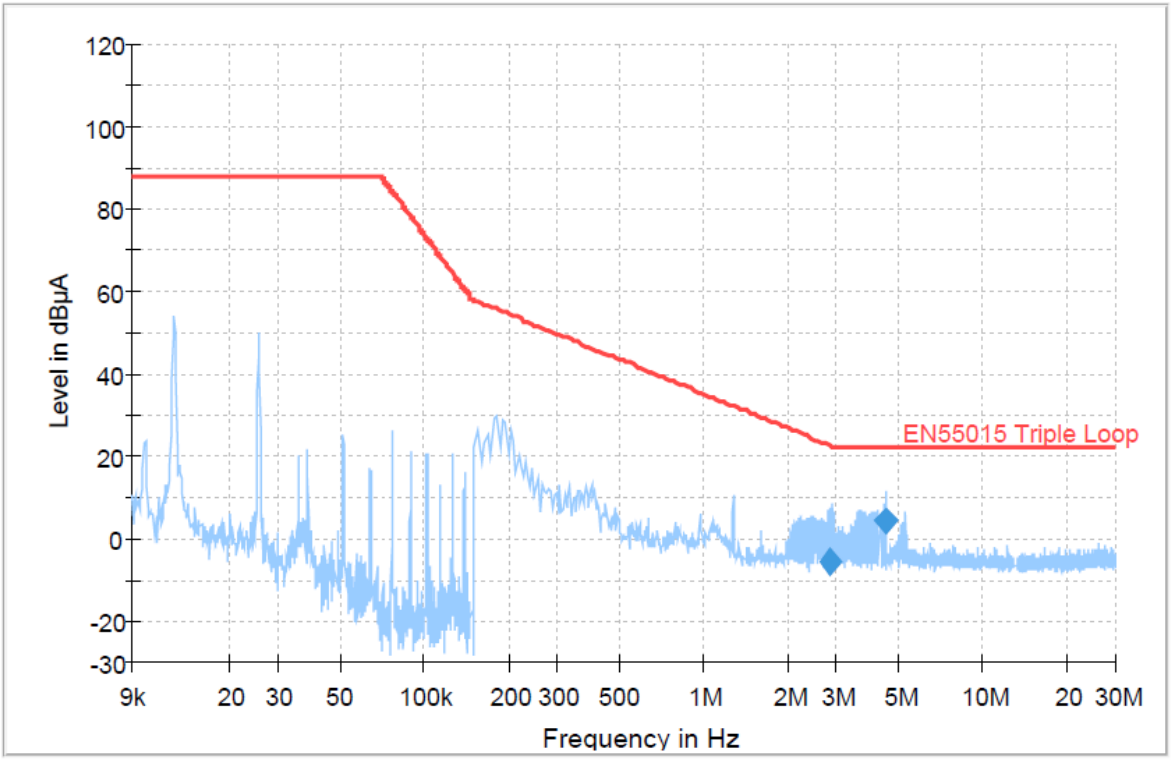
7.5.2 Diagram 042



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
4.470000	10.5	Y	0.3	11.5	22.0
5.280000	9.9	Y	0.3	12.1	22.0

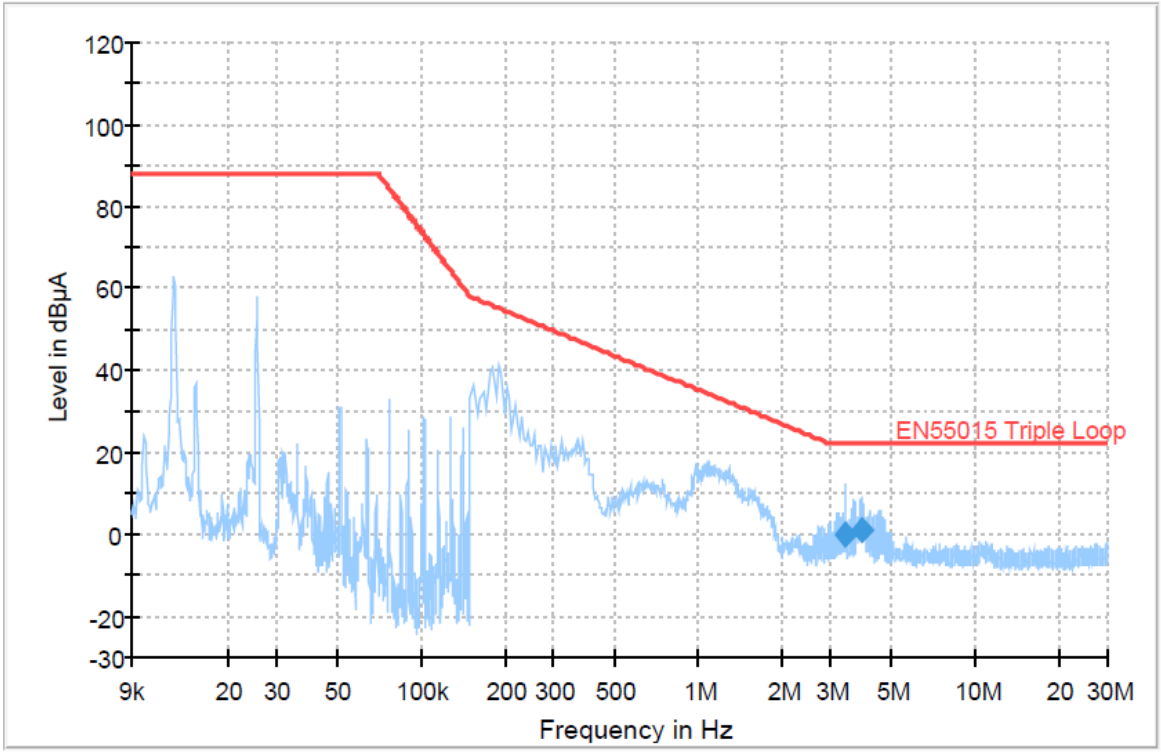
7.5.3 Diagram 043



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
2.827500	-5.6	Z	0.3	28.3	22.7
4.474500	4.6	Z	0.3	17.4	22.0

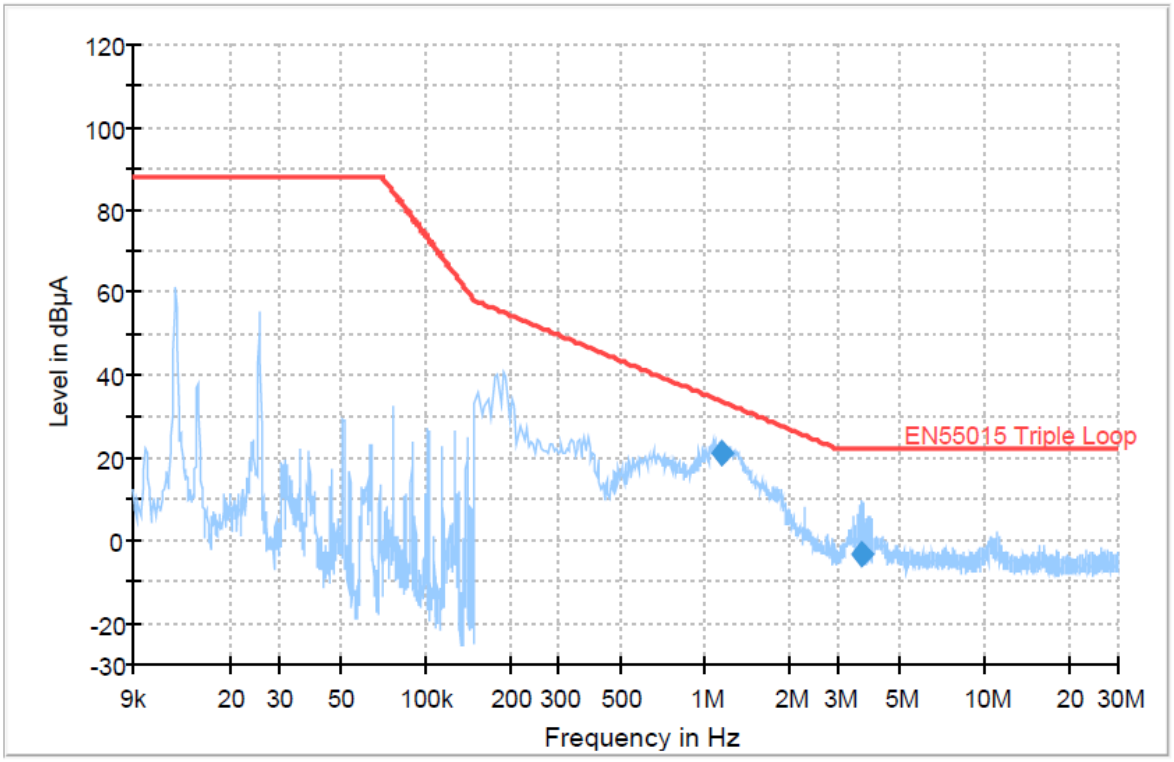
7.5.4 Diagram 044



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Meas. Time (ms)	Bandwidth (kHz)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)	Comment
3.399000	-0.1	1000.000	9.000	X	0.1	22.1	22.0	
3.921000	1.1	1000.000	9.000	X	0.1	20.9	22.0	

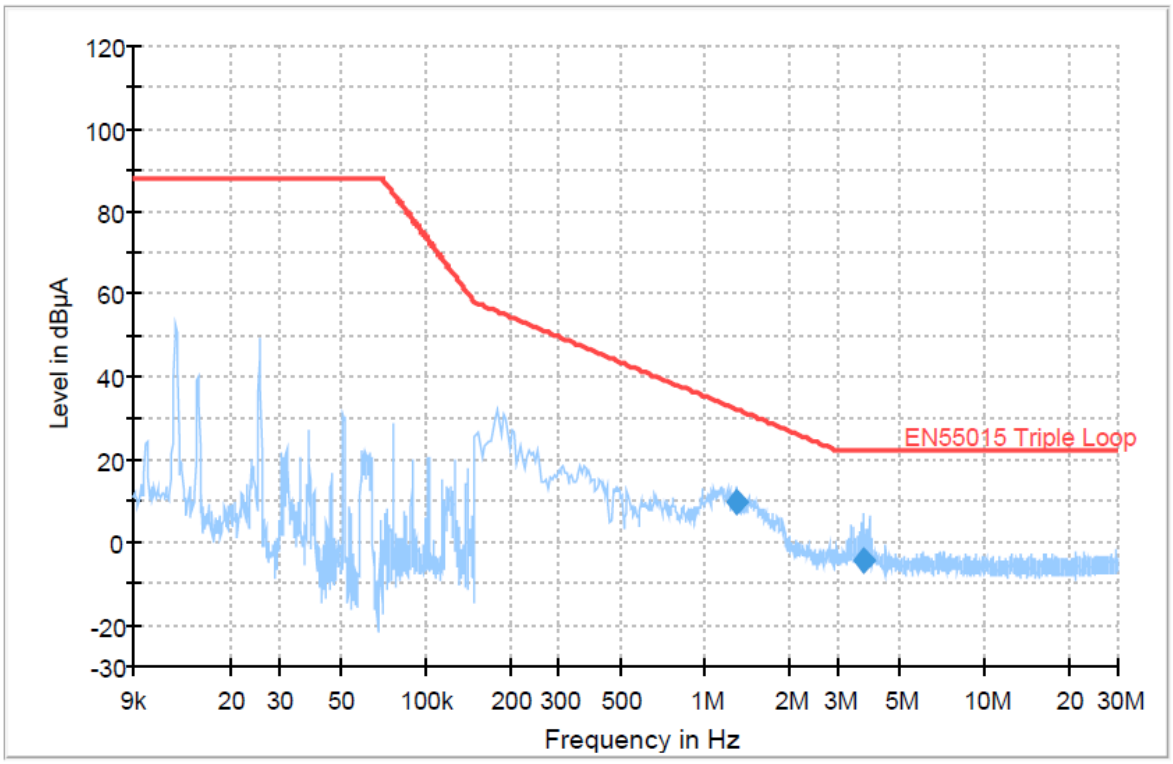
7.5.5 Diagram 045



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
1.140000	20.9	Y	0.1	12.7	33.6
3.619500	-3.6	Y	0.1	25.6	22.0

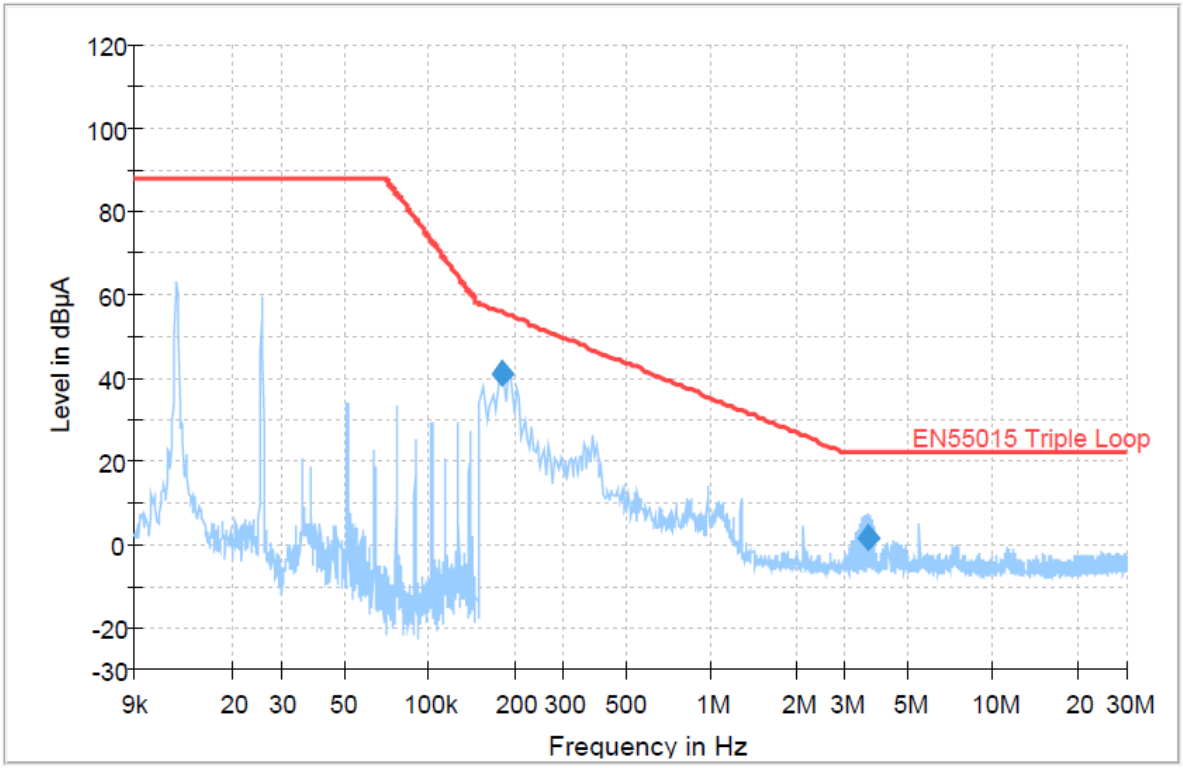
7.5.6 Diagram 046



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
1.288500	9.7	Z	0.1	22.5	32.2
3.691500	-4.4	Z	0.1	26.4	22.0

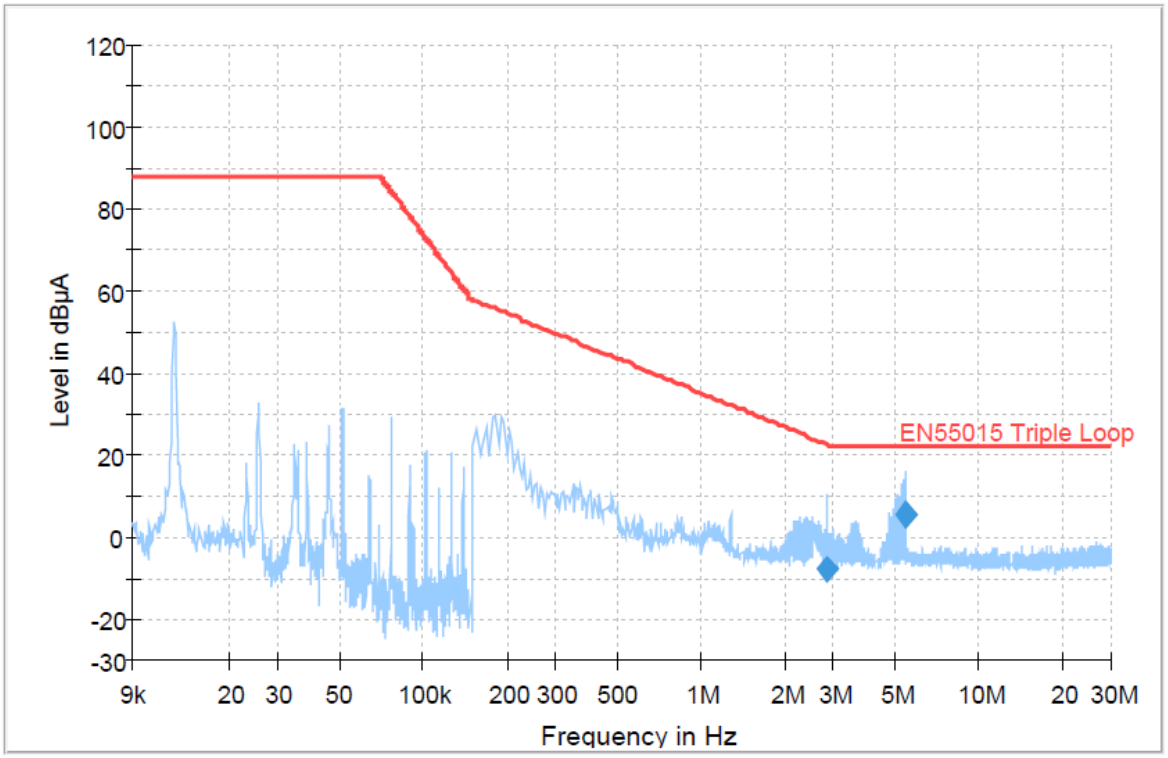
7.5.7 Diagram 047



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
0.181500	41.3	X	0.3	14.4	55.7
3.610500	1.8	X	0.3	20.2	22.0

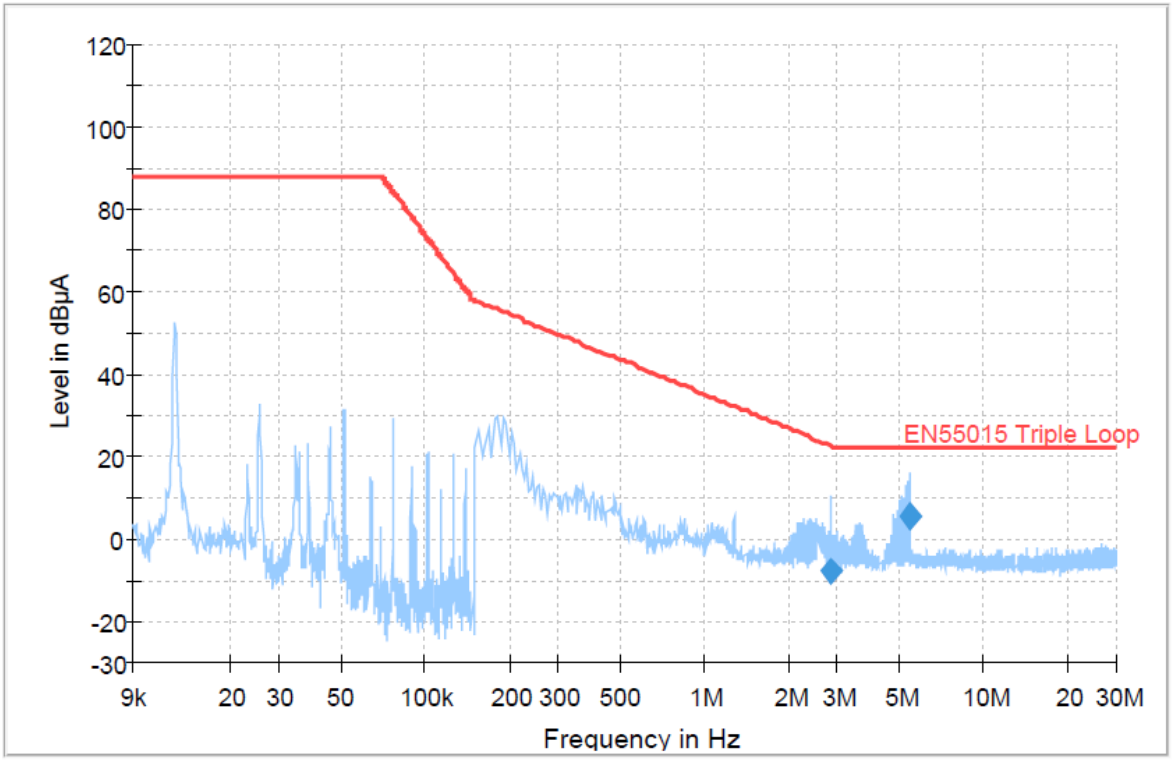
7.5.8 Diagram 048



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
2.863500	-7.7	Y	0.3	30.3	22.6
5.437500	5.4	Y	0.3	16.6	22.0

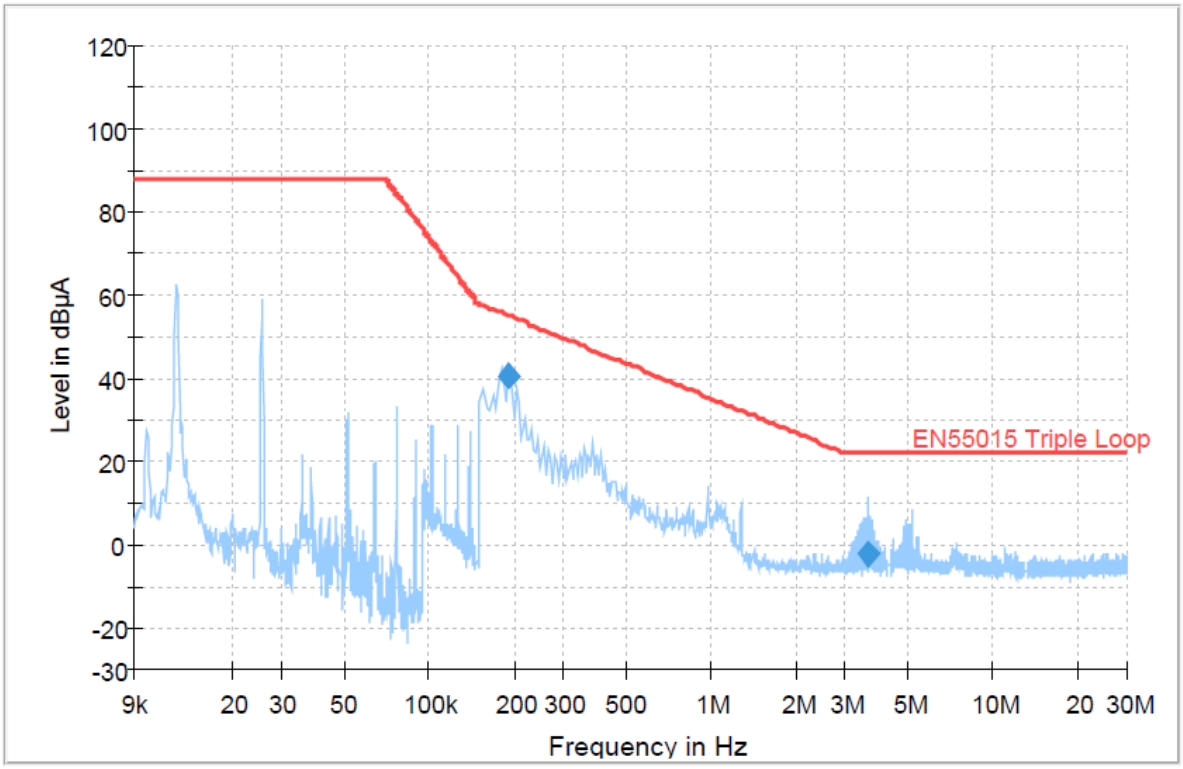
7.5.9 Diagram 049



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
2.863500	-7.7	Z	0.3	30.3	22.6
5.437500	5.4	Z	0.3	16.6	22.0

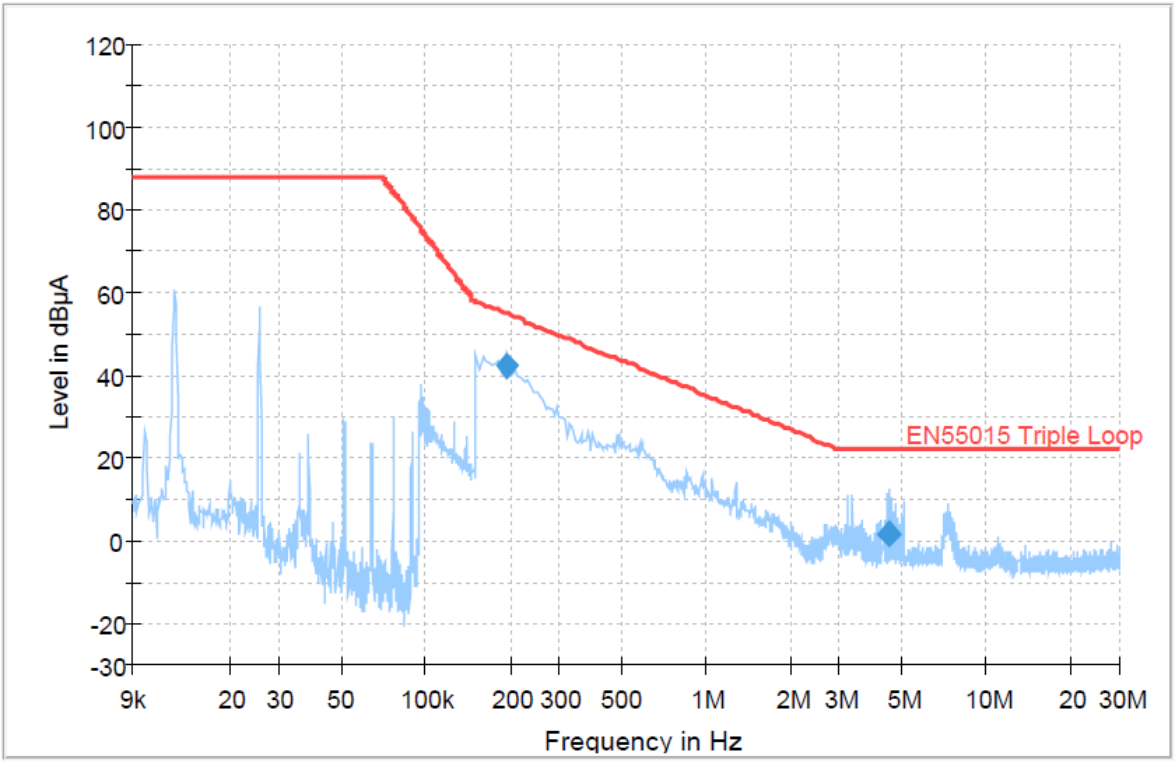
7.5.10 Diagram 050



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
0.190500	40.6	X	0.3	14.5	55.1
3.633000	-2.1	X	0.3	24.1	22.0

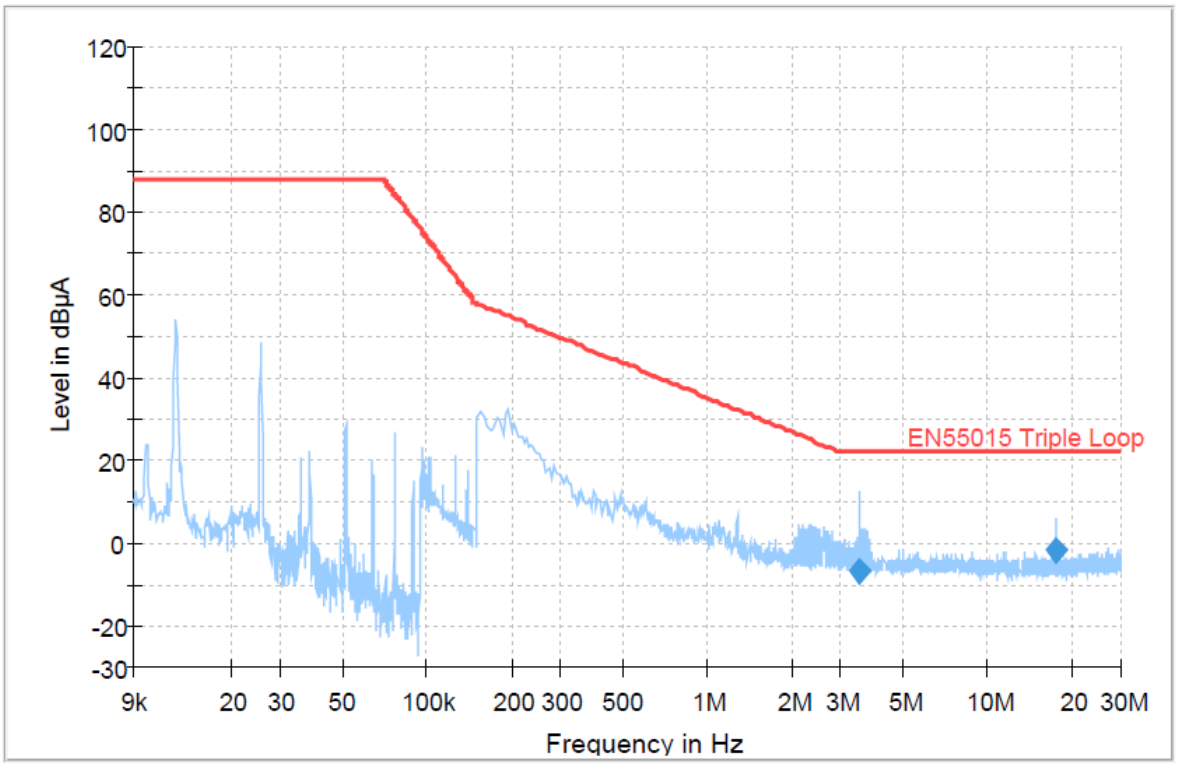
7.5.11 Diagram 051



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
0.195000	42.5	Y	0.3	12.3	54.8
4.452000	1.7	Y	0.3	20.3	22.0

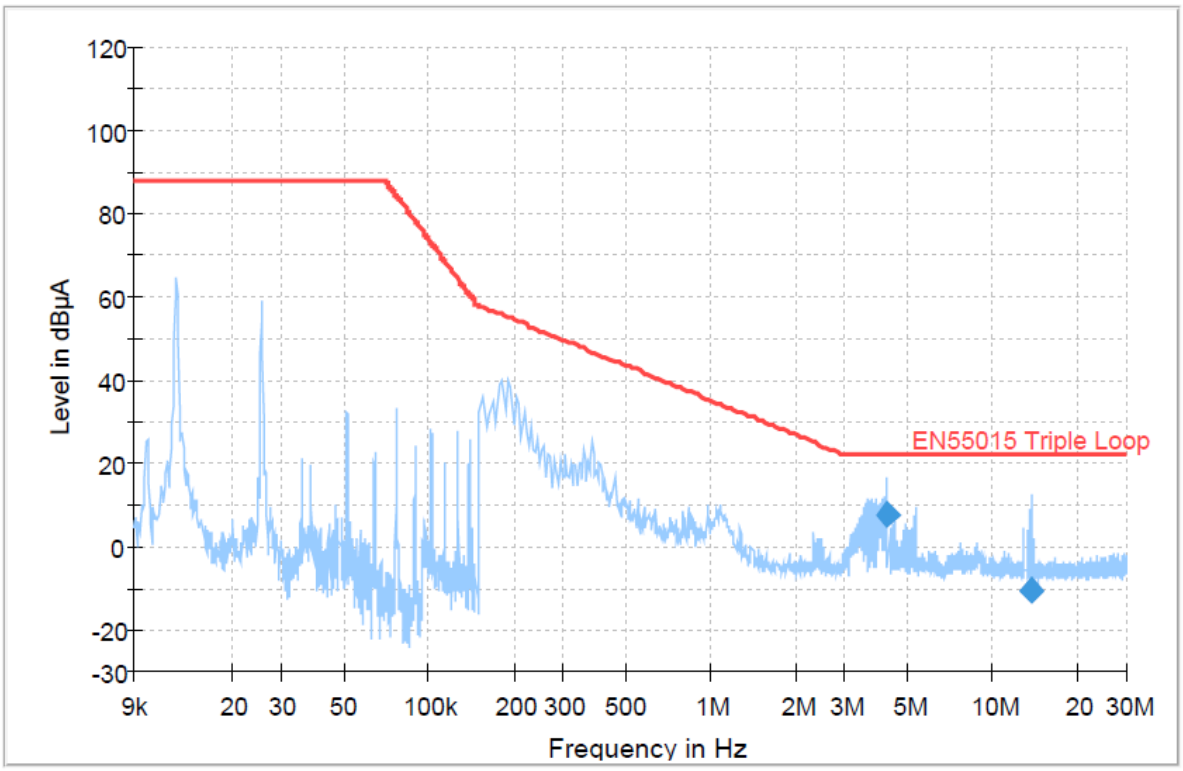
7.5.12 Diagram 052



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
3.502500	-6.6	Z	0.3	28.6	22.0
17.488500	-1.8	Z	0.6	23.8	22.0

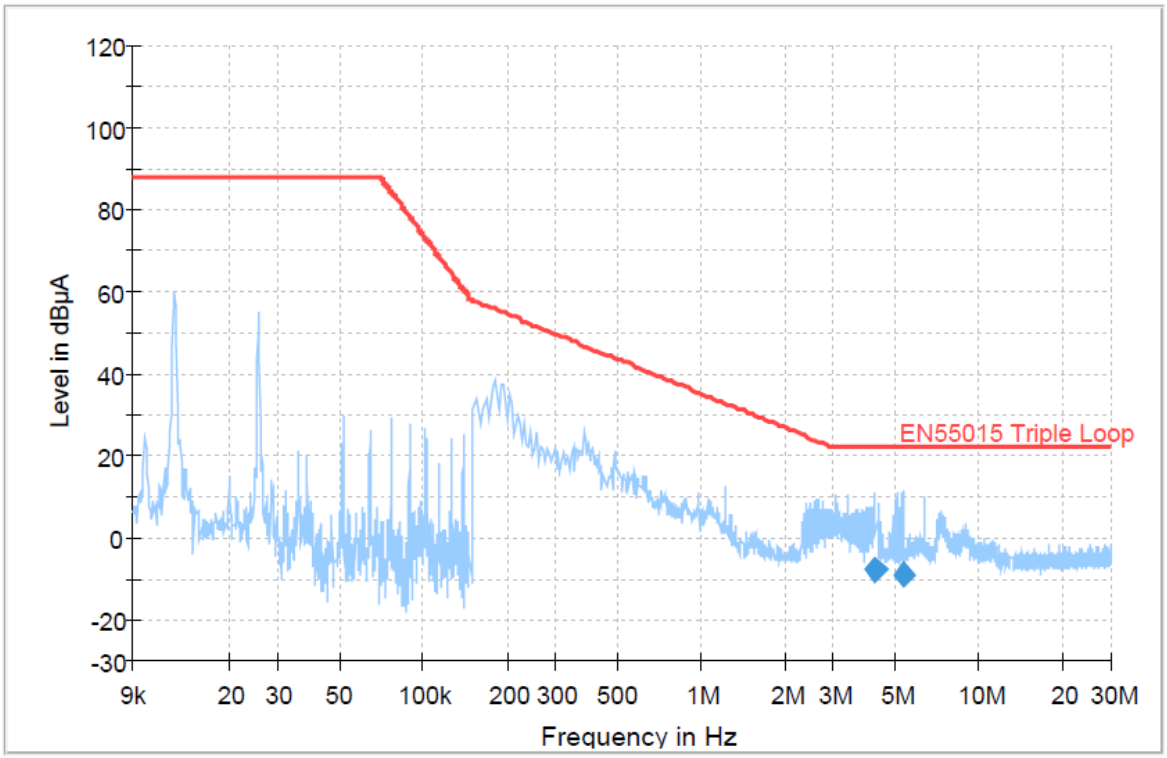
7.5.13 Diagram 053



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
4.267500	8.1	X	0.3	13.9	22.0
13.587000	-10.4	X	0.5	32.4	22.0

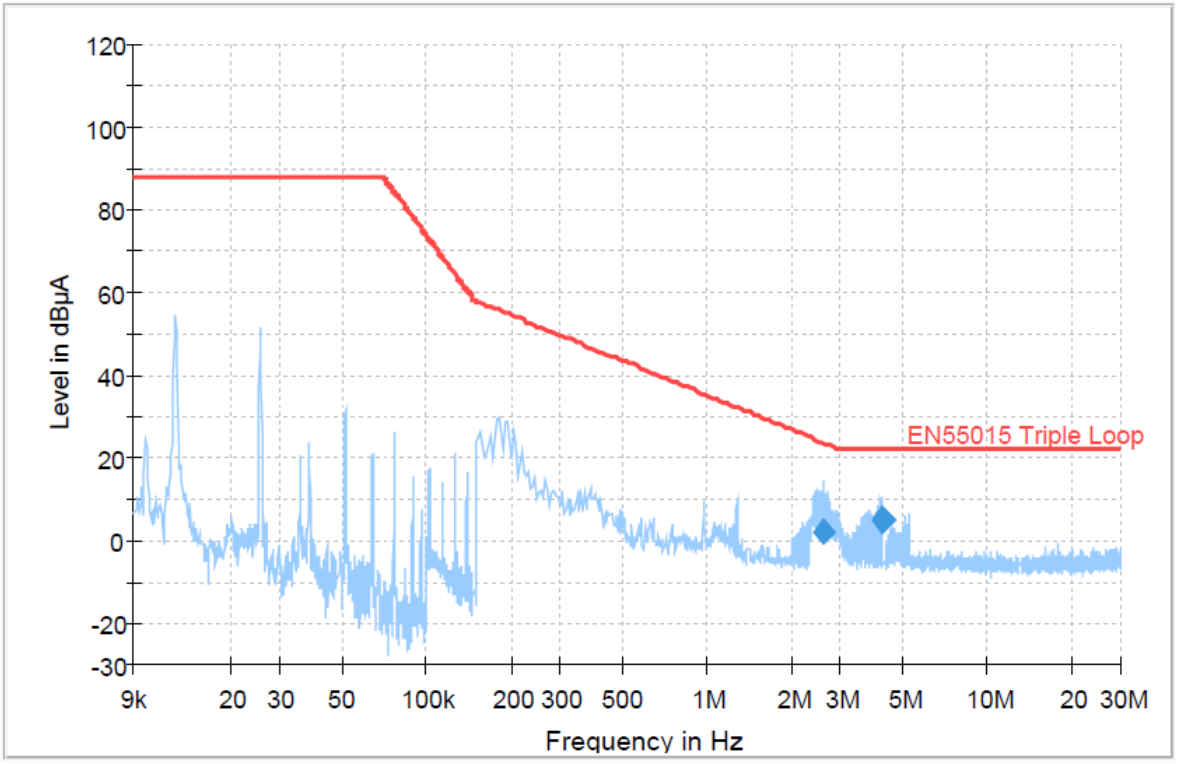
7.5.14 Diagram 054



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
4.263000	-7.8	Y	0.3	29.8	22.0
5.302500	-8.7	Y	0.3	30.7	22.0

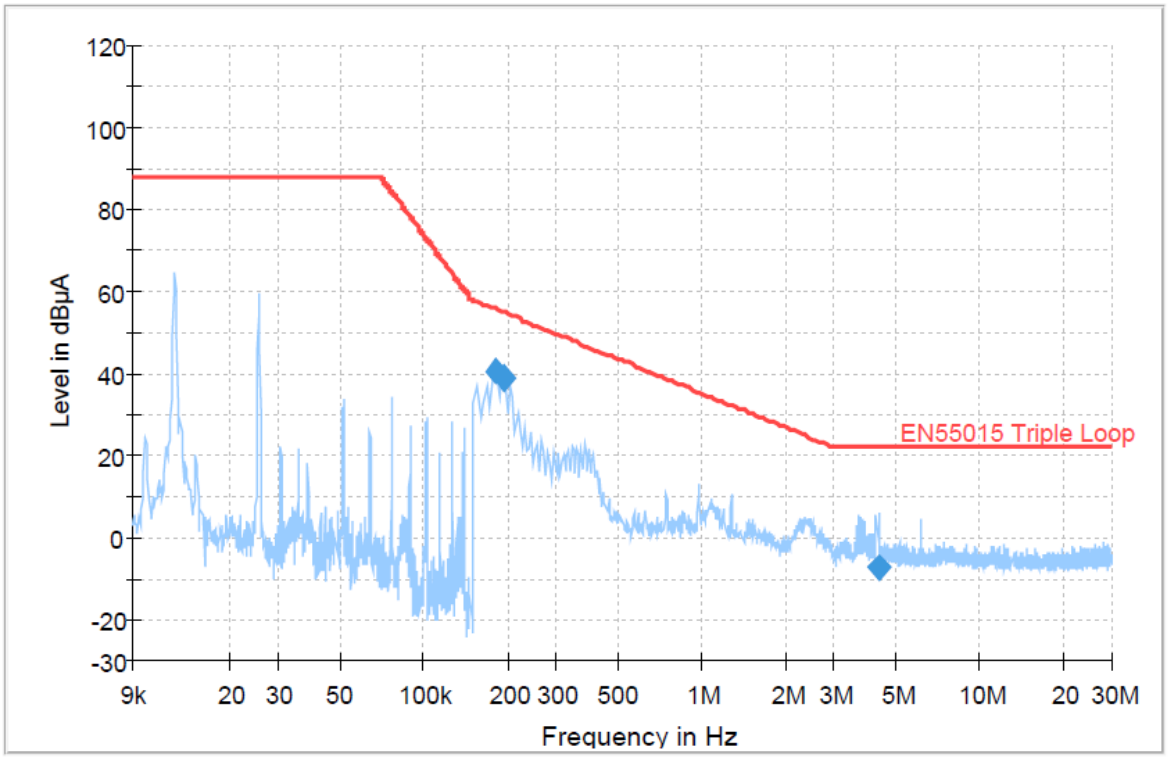
7.5.15 Diagram 055



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
2.593500	2.0	Z	0.4	21.7	23.7
4.236000	5.3	Z	0.3	16.7	22.0

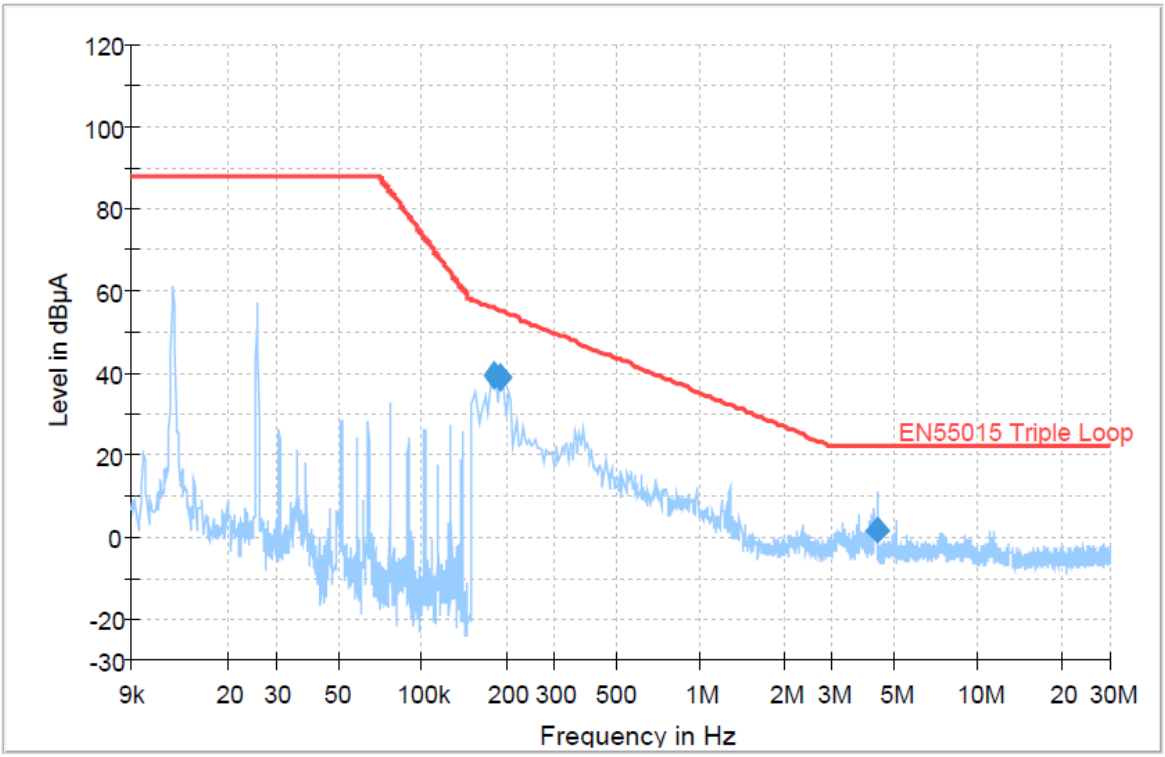
7.5.16 Diagram 056



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
0.181500	40.6	X	0.3	15.1	55.7
0.195000	38.9	X	0.3	15.9	54.8
4.303500	-7.3	X	0.3	29.3	22.0

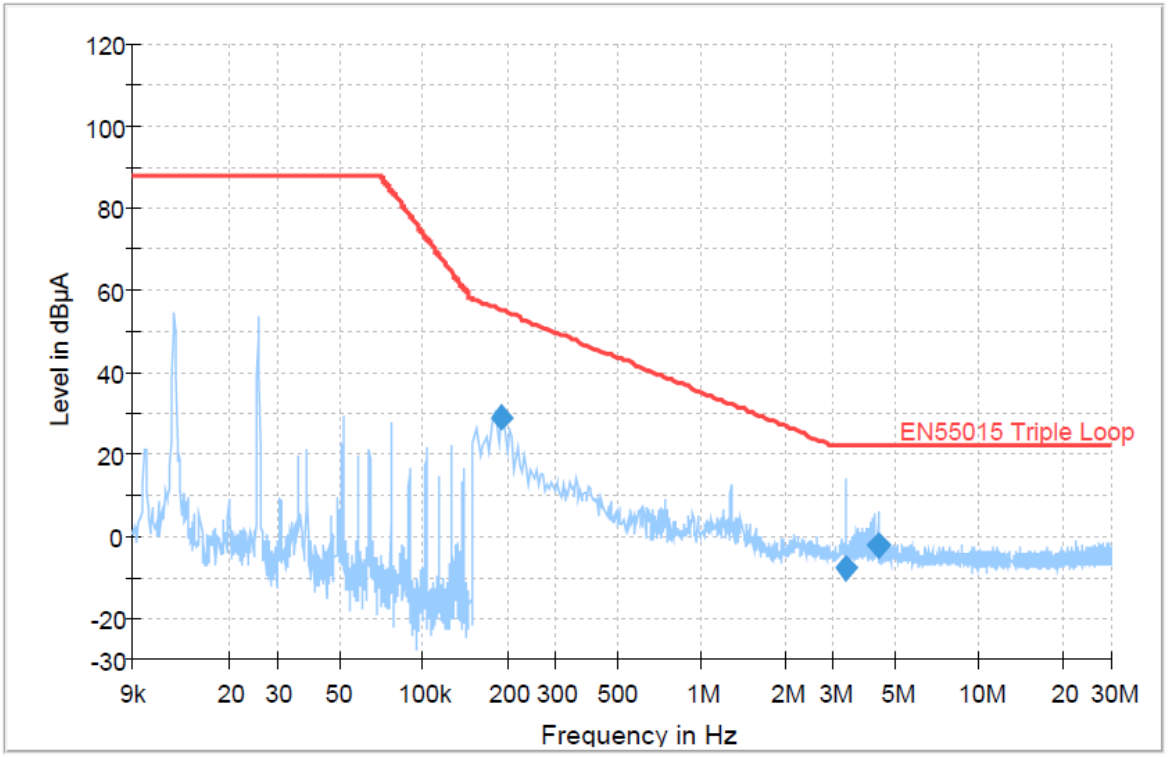
7.5.17 Diagram 057



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
0.181500	39.3	Y	0.3	16.4	55.7
0.190500	39.0	Y	0.3	16.1	55.1
4.335000	1.9	Y	0.3	20.1	22.0

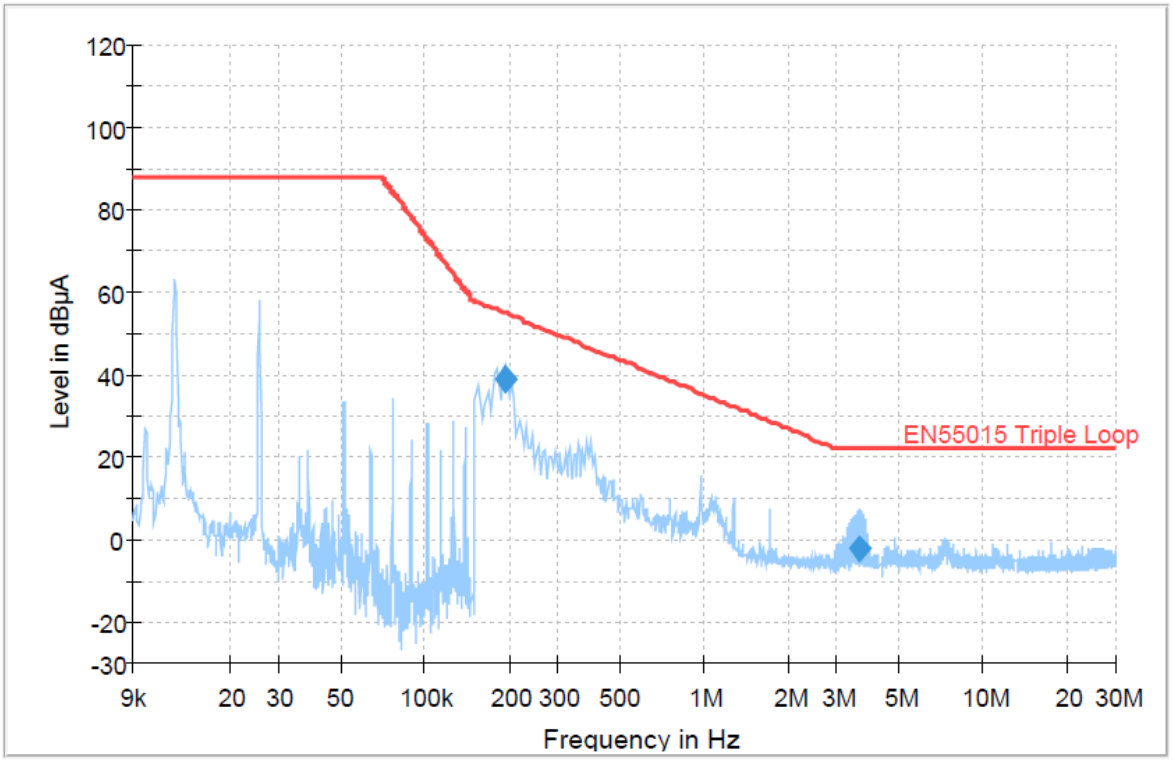
7.5.18 Diagram 058



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
0.190500	28.7	Z	0.3	26.4	55.1
3.313500	-7.5	Z	0.3	29.5	22.0
4.330500	-2.1	Z	0.3	24.1	22.0

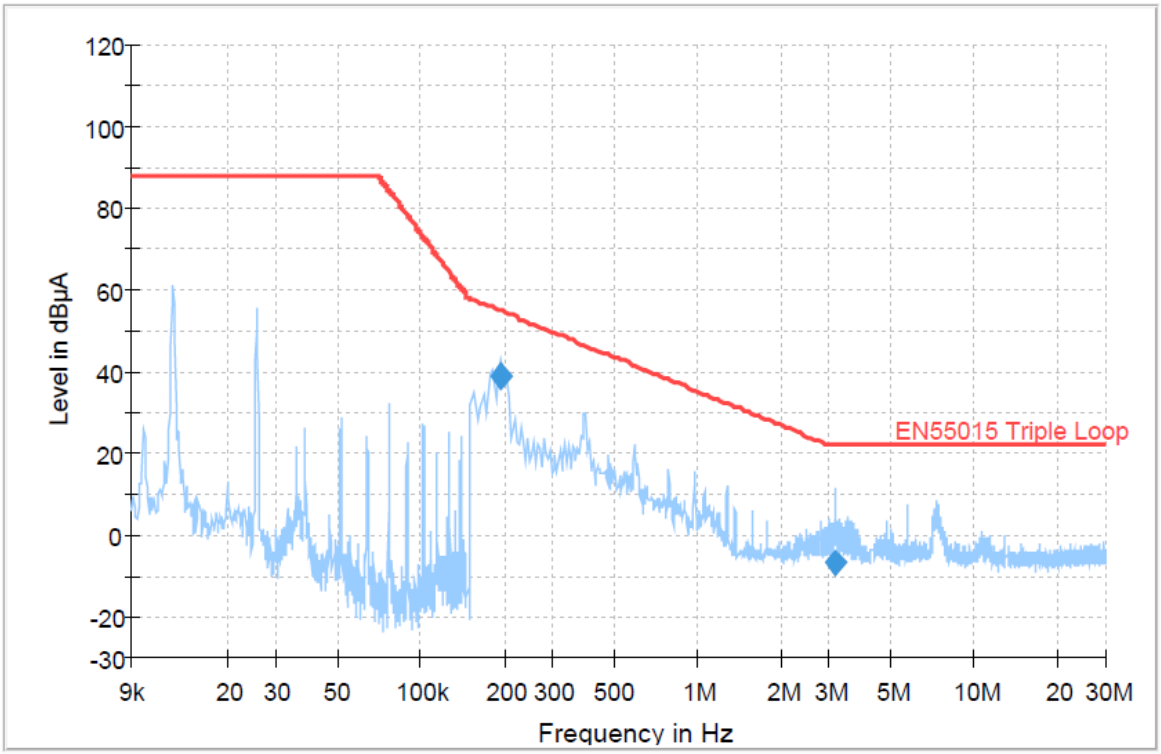
7.5.19 Diagram 059



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
0.195000	38.9	X	0.3	15.9	54.8
3.637500	-2.5	X	0.3	24.5	22.0

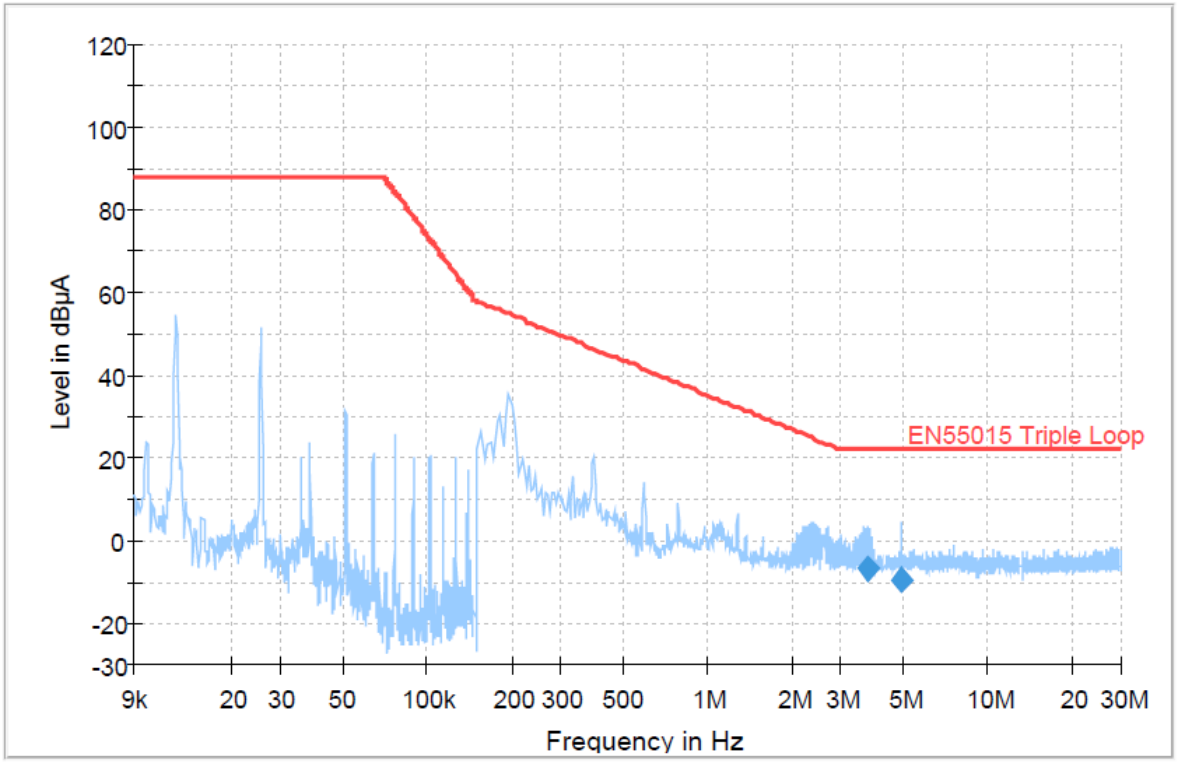
7.5.20 Diagram 060



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
0.195000	38.8	Y	0.3	16.0	54.8
3.160500	-6.6	Y	0.3	28.6	22.0

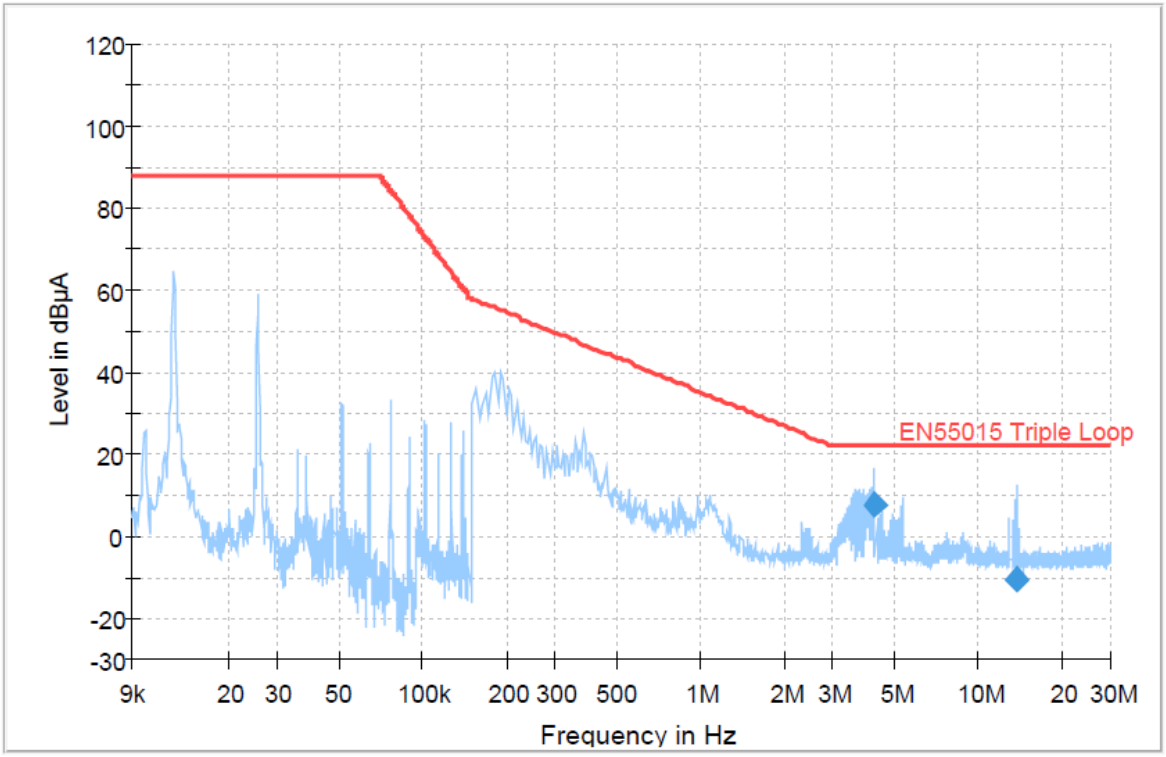
7.5.21 Diagram 061



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
3.736500	-6.7	Z	0.3	28.7	22.0
4.906500	-9.4	Z	0.3	31.4	22.0

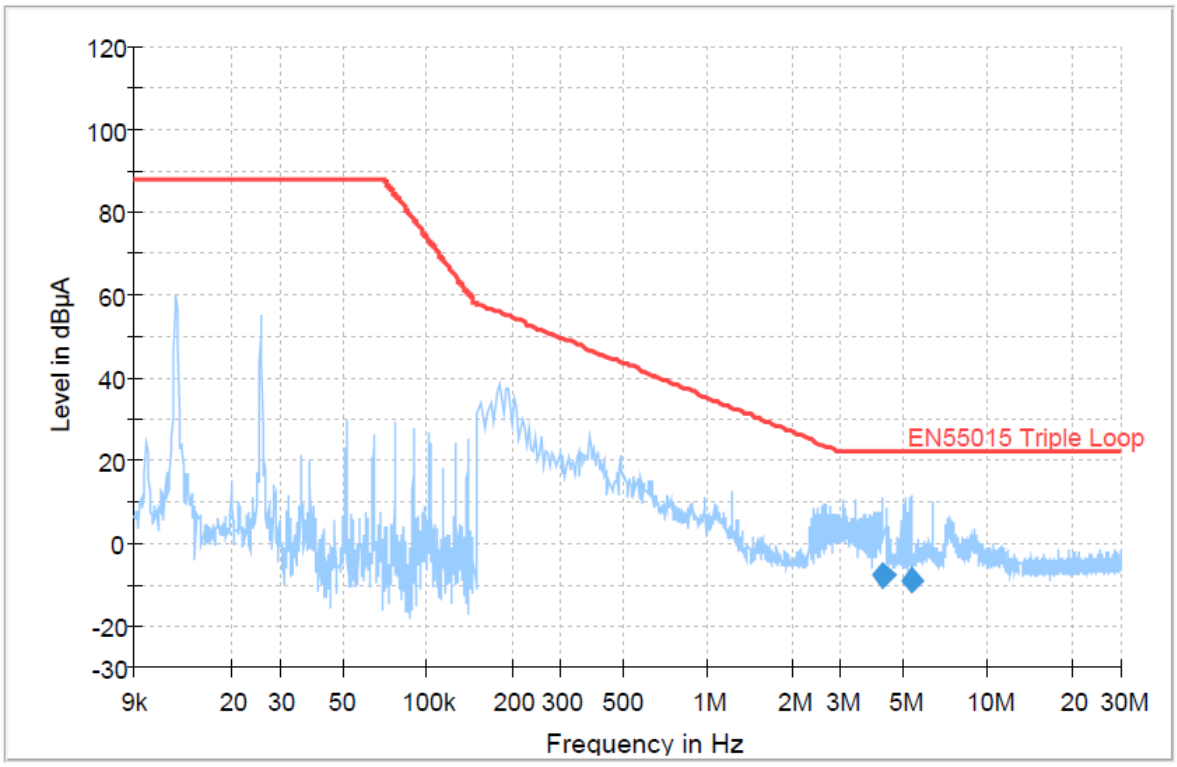
7.5.22 Diagram 062



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
4.267500	8.1	X	0.3	13.9	22.0
13.587000	-10.4	X	0.5	32.4	22.0

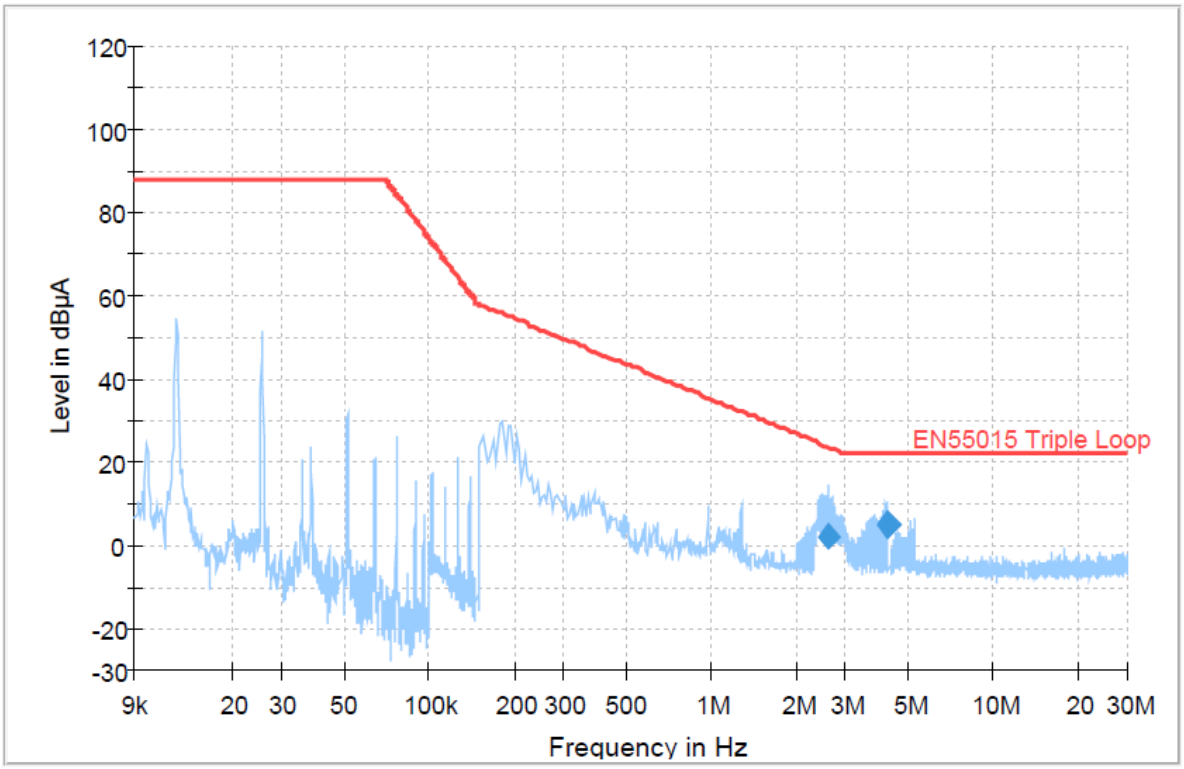
7.5.23 Diagram 063



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
4.263000	-7.8	Y	0.3	29.8	22.0
5.302500	-8.7	Y	0.3	30.7	22.0

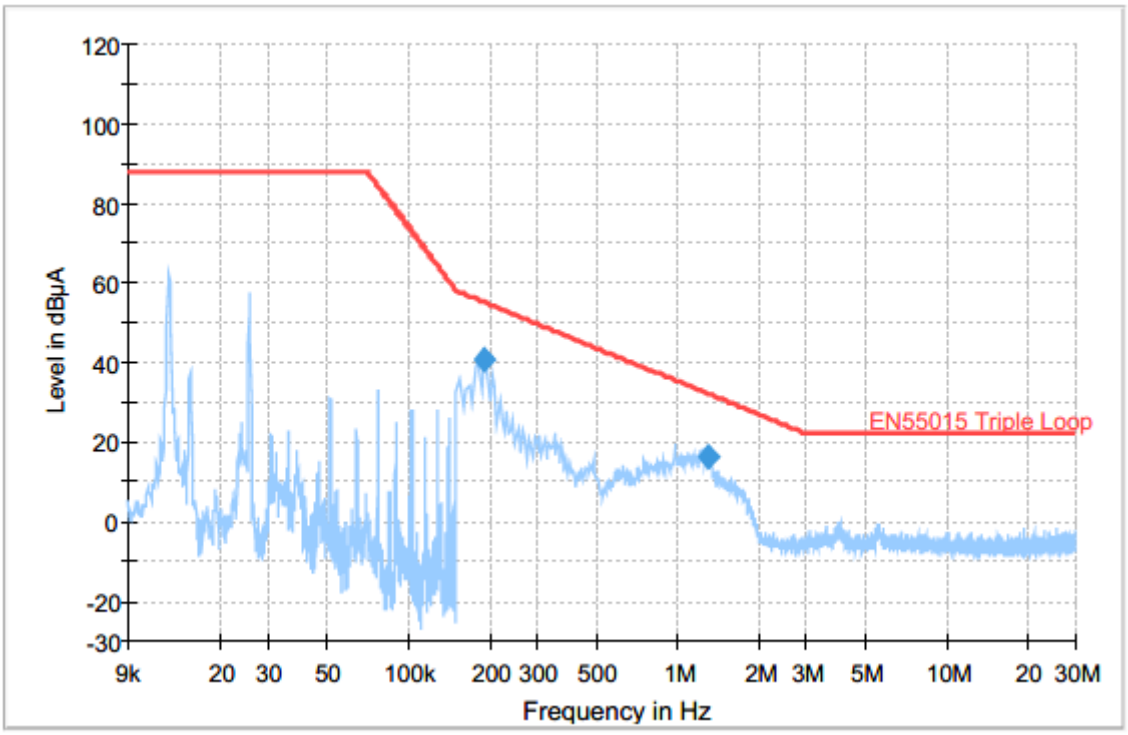
7.5.24 Diagram 064



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
2.593500	2.0	Z	0.4	21.7	23.7
4.236000	5.3	Z	0.3	16.7	22.0

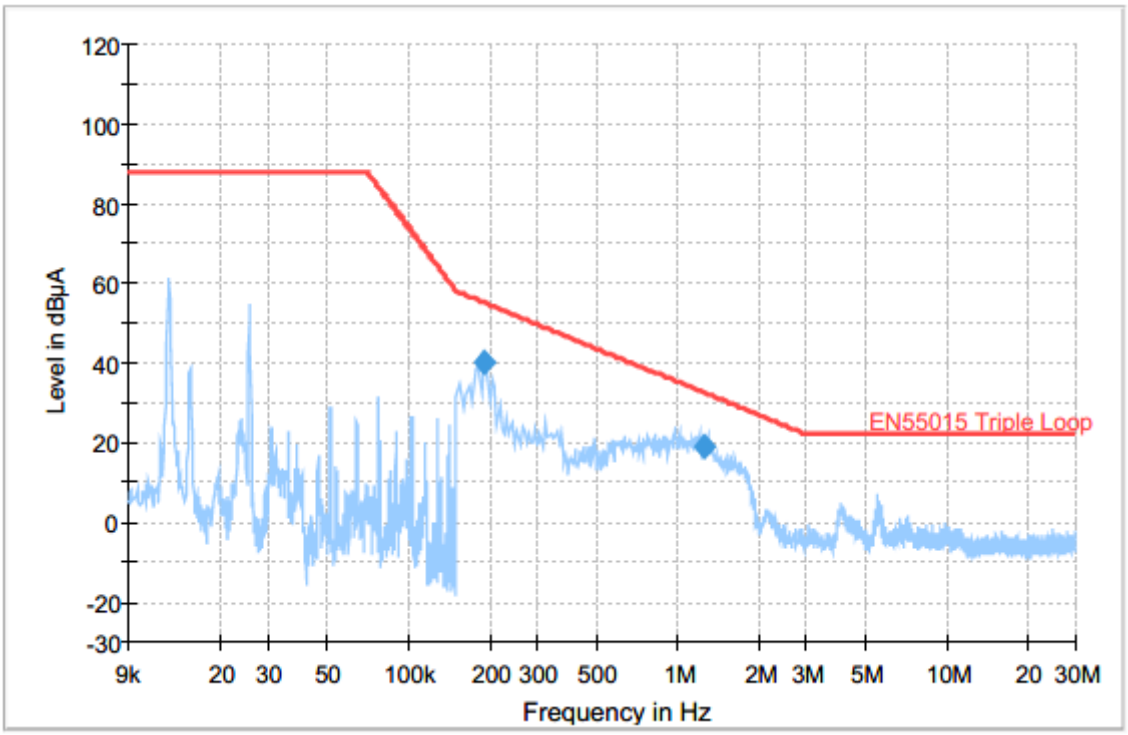
7.5.25 Diagram 065



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
0.190500	40.6	X	0.1	14.5	55.1
1.288500	15.9	X	0.2	16.3	32.2

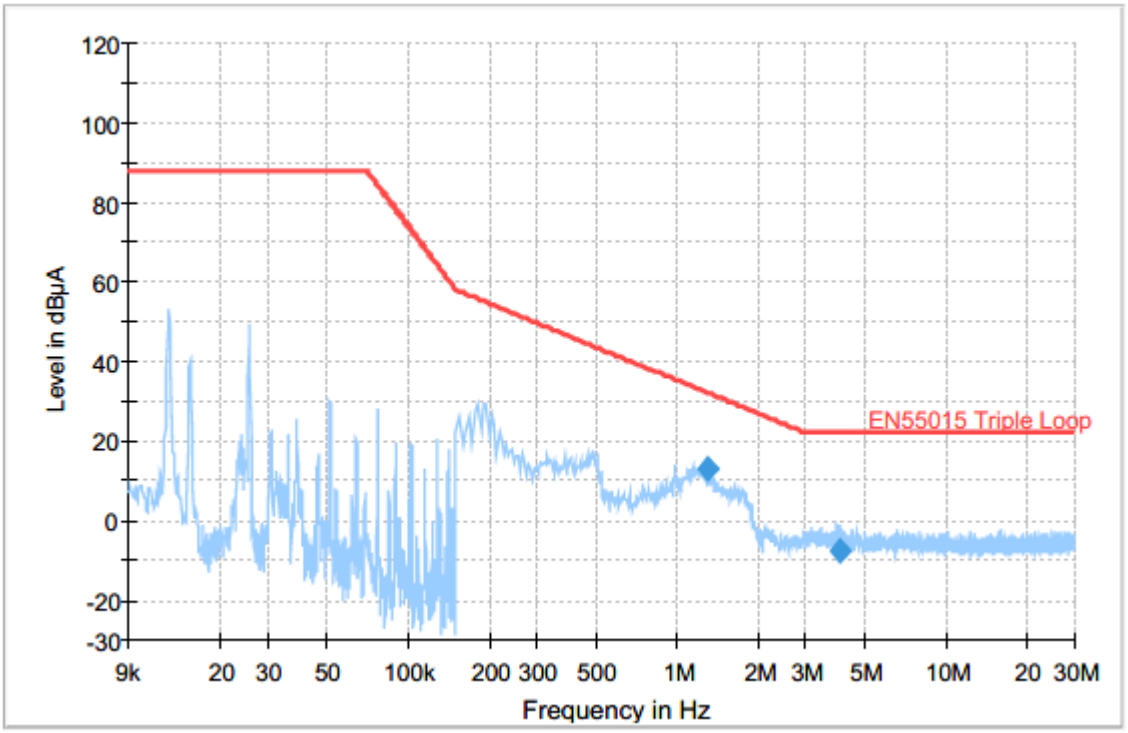
7.5.26 Diagram 066



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
0.190500	39.9	Y	0.1	15.2	55.1
1.248000	18.7	Y	0.2	13.8	32.5

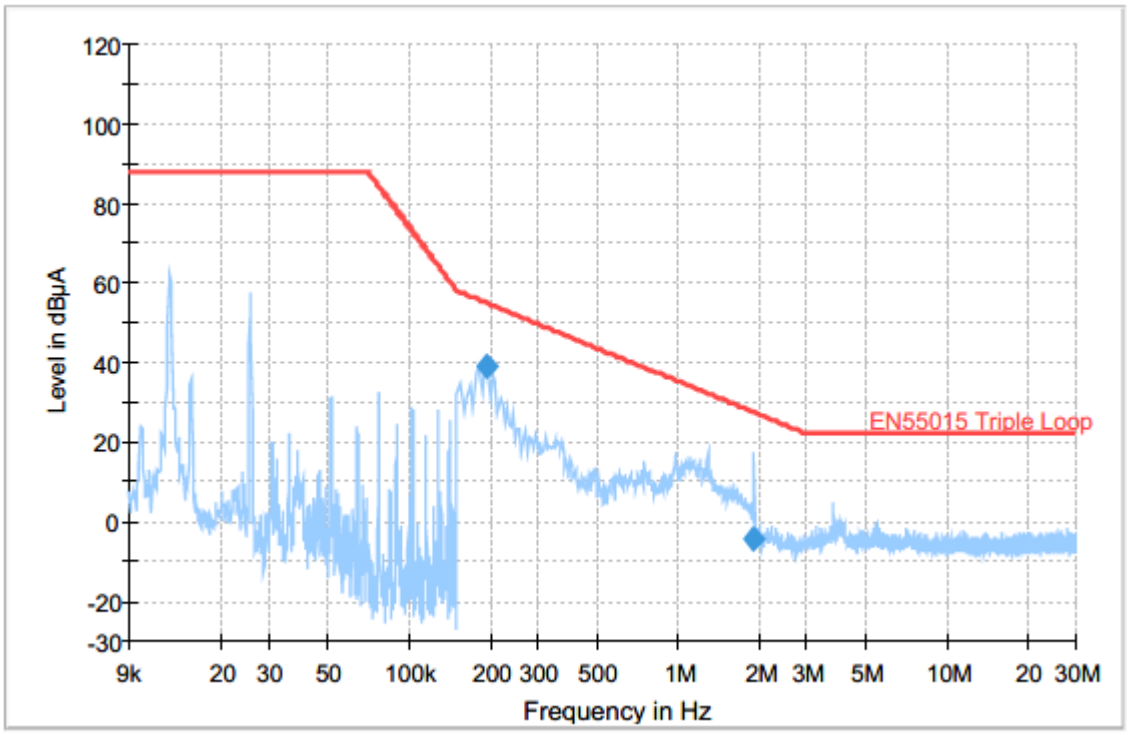
7.5.27 Diagram 067



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
1.288500	12.9	Z	0.2	19.3	32.2
4.015500	-7.5	Z	0.2	29.5	22.0

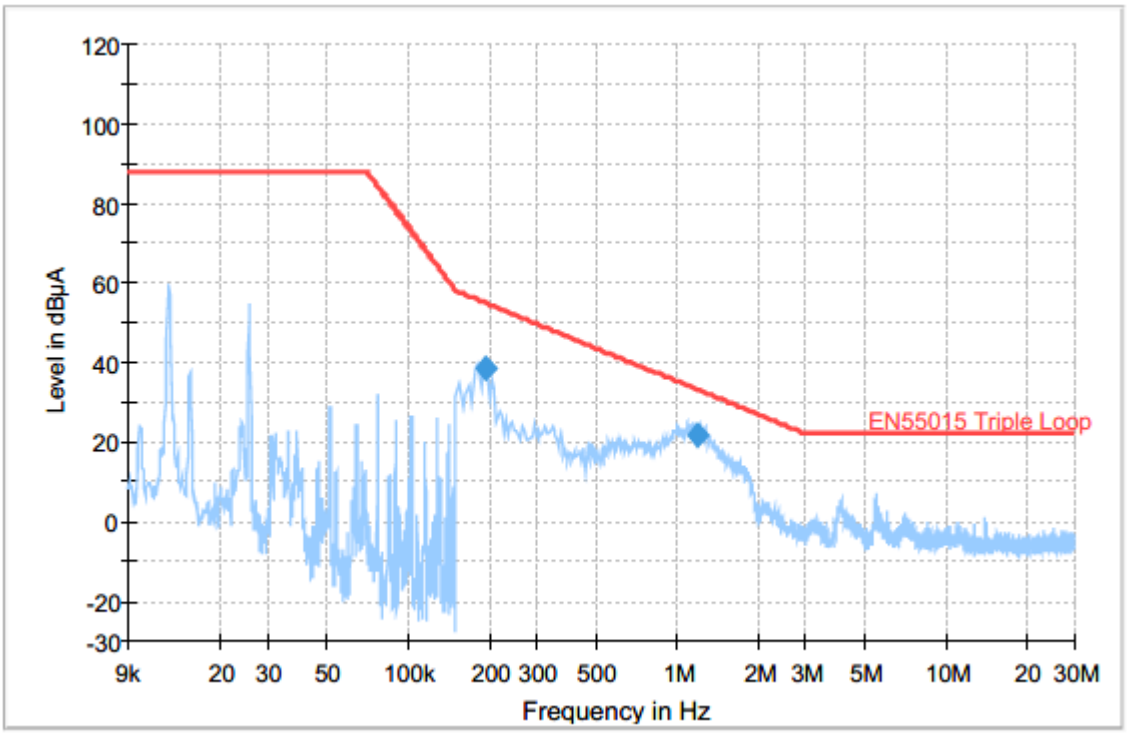
7.5.28 Diagram 068



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
0.195000	38.9	X	0.1	15.9	54.8
1.918500	-4.5	X	0.1	31.9	27.4

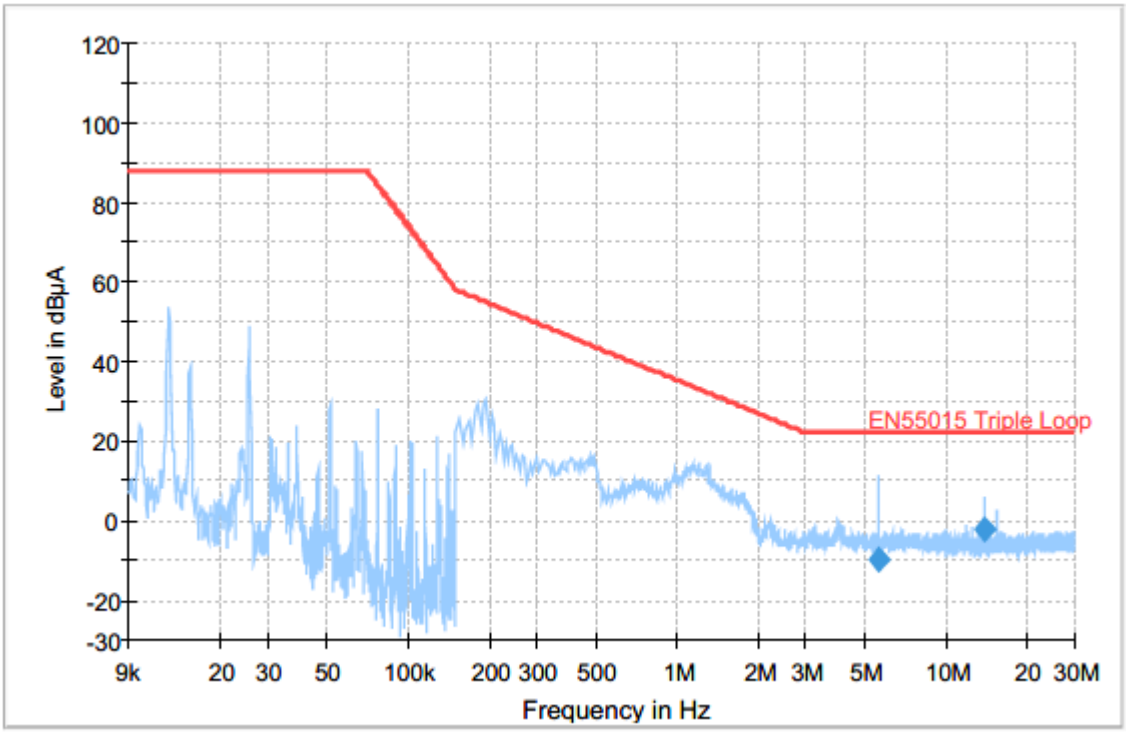
7.5.29 Diagram 069



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
0.195000	38.4	Y	0.1	16.4	54.8
1.189500	21.4	Y	0.1	11.7	33.1

7.5.30 Diagram 070



Final Result 1

Frequency (MHz)	QuasiPeak (dBµA)	Triple Loop frame	Corr. (dB)	Margin (dB)	Limit (dBµA)
5.640000	-9.9	Z	0.1	31.9	22.0
13.852500	-2.4	Z	0.1	24.4	22.0

8 Induced current density

8.1 Standard

Generic standard **EN 62493:2015**

Date of testing **N/A**

8.2 Measurement equipment

	Equipment	Calibration due	Type	Serial No.	Manufacturer
☒	EMI Test Receiver	2022.01.07	ESCI	100657	ROHDE & SCHWARZ
☒	Protection Network for "Van der Hoofden" Test-Head	2022.01.07	VDH30	SC069O	AFJ
☒	EMI Test Software	N/A	EMC32	N/A	ROHDE & SCHWARZ

8.3 Test set-up

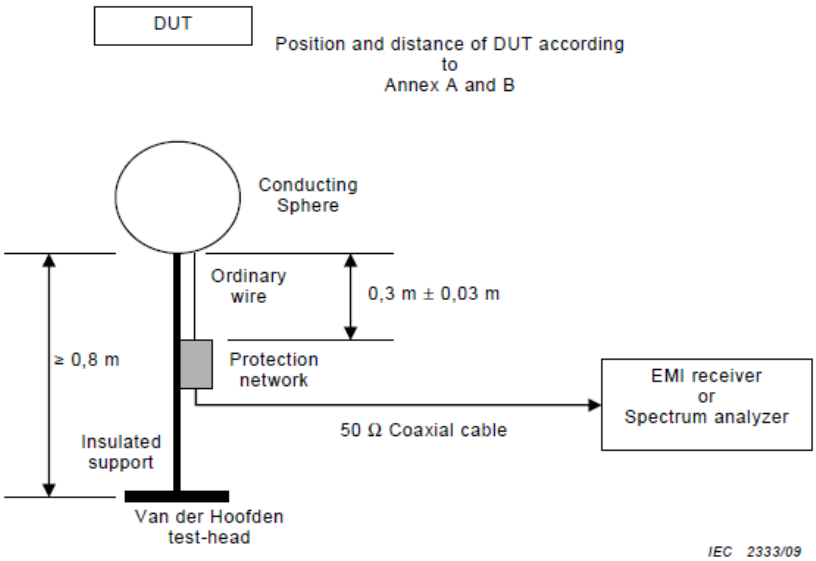
Annex B with a photo or a rough figure of the test set-up is attached.

30mins stabilisation time.

Receiver setting :

Frequency range	B_6 according to CISPR 16-1-1	Measurement time	f_{step}	Detector
20 kHz – 150 kHz	200 Hz	100 ms	220 Hz	Peak
150 kHz – 10 MHz	9 kHz	20 ms	10 kHz	Peak

Measurement setup:



If the lighting equipment is provided with an earthing terminal, the lighting equipment shall be connected by means of an earth conductor contained in the power cable to the lighting equipment.

During the tests no conductive plane or object or human being should be closer to the lighting equipment than 0,8 m.
The height of the insulated support is minimum 0,8 m. The conducting sphere is connected to

the protection network via an ordinary wire of length 30 cm ± 3 cm. The protection network is then connected to the EMI receiver, or spectrum analyser, by a 50 Ω coaxial cable having a maximum cable loss of 0,2 dB and a d.c. resistance of ≤10Ω.

$$\sum_{\substack{f_i=20\text{kHz} \\ \text{Step}=220\text{Hz}}}^{150\text{kHz}} \frac{E_{\text{cap}}(f_i,d)}{E_{\text{Lim}}(f_i)} + \sum_{\substack{f_i=150\text{kHz} \\ \text{Step}=10\text{kHz}}}^{10\text{MHz}} \frac{E_{\text{cap}}(f_i,d)}{E_{\text{Lim}}(f_i)} \leq 1$$

8.4 Test results

N/A*
It is a LED-light-source technology, is deemed to comply with the requirements of this standard without testing

9 Harmonic current

9.1 Standard

Generic standard	**EN IEC 61000-3-2:2019+A1:2021**
Limit class	**Class C**
Date of testing	**2021-10-20 to 2021-11-16**

9.2 Measurement equipment

	Equipment	Manufacturer	Type	Serial No.	Calibration due
☒	Harmonic Current and Flicker Test System	HTEC	AC2000A	/	2022-06-08
☒	Linear variable frequency power supply	HTEC	HHF-5010	/	2022-06-08

	Equipment	Manufacturer	Type	Serial No.	Calibration due
☒	AC Power Source	SCHAFFNER	NSG 1007	57877	2022.01.07
☒	Signal Conditioning unit	SCHAFFNER	CCN1000-1	72538	2022.01.07

9.3 Test set-up

Annex B with a photo or a rough figure of the test set-up is attached.

Devices with an active input power of P < 5 W		☐
Balanced three-phase equipment and all other equipment, expect that stated in one of the following classes	**Class A**	☐
Portable tools	**Class B**	☐
Lighting equipment, including dimming devices	**Class C**	☒
Equipment having an input current with a "special wave shape" as defined in figure 1 in the standard and an active input power, P ≤ 600 W and motor driven with phase angle control	**Class D**	☐

The power cord of the EUT is connected to the output of the test systems, Turn on the power of the EUT and use the test system to test the harmonic current level. Observation time: 150s

If Harmonic current less than 0.6% of the input current measured under the test condition, or less than 5mA, then whichever is greater, are disregarded.

9.4 Test results

Model	Test mode	Table	Test port	Power	Result
GTPC-45-12-S	TM1	071	AC Input	47.0W	**Pass**
GTPC-45-24-S	TM1	072	AC Input	46.8W	**Pass**
GTPC-60-12-S	TM1	073	AC Input	61.8W	**Pass**
GTPC-60-24-S	TM1	074	AC Input	60.8W	**Pass**
GTPC-75-12-S	TM1	075	AC Input	74.4W	**Pass**
GTPC-75-24-S	TM1	076	AC Input	76.8W	**Pass**

GTPC-100-12-S	TM1	077	AC Input	96.8W	**Pass**
GTPC-100-24-S	TM1	078	AC Input	101.3W	**Pass**
GTPC-60-48-S	TM1	079	AC Input	61.1W	**Pass**
GTPC-100-48-S	TM1	080	AC Input	98.3W	**Pass**

9.5 Tables

9.5.1 Table 071

Test Report

EUT: LED Driver **Operator: Zom Zhang**

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W **Model/Type: 45-12**

Measurement standard: IEC 61000-4-7 Ed2:1:2009 **Serial number:**

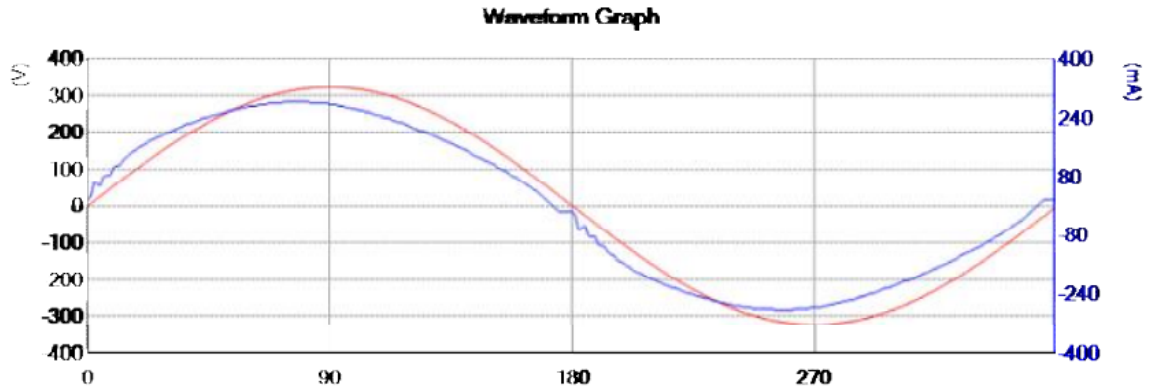
Test date:2021-10-20 **Start time: 11:19:09** **End time: 11:21:41**

Test duration (sec):150

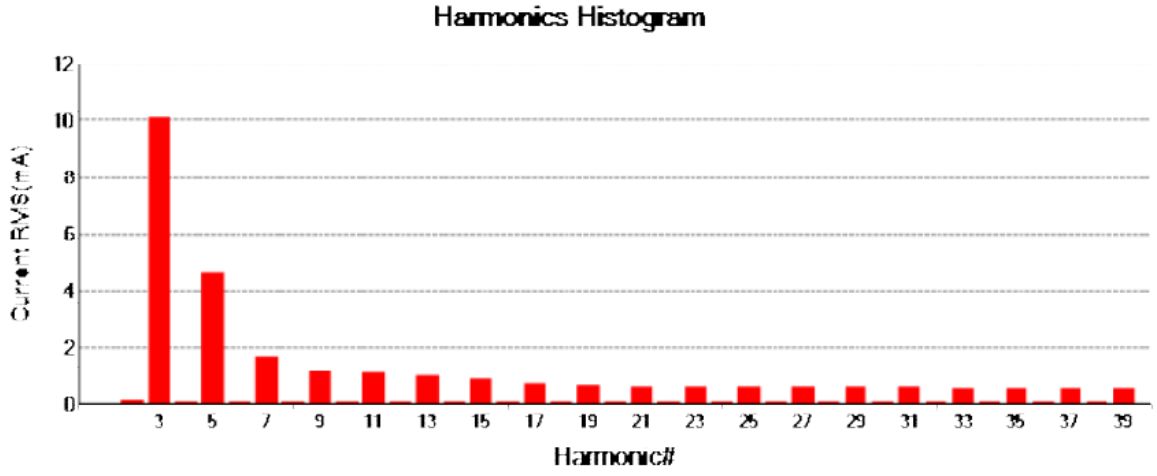
Describe:

Test Result: pass **Source qualification(Power Off Load): Idle - Pass**

Current & voltage waveforms



Harmonics and Class C limit line (>25W)



Harmonics Test Sumary

EUT: LED Driver **Operator: Zom Zhang**

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W **Model/Type: 45-12**

Measurement standard: IEC 61000-4-7 Ed2:1:2009 **Serial number:**

Test date:2021-10-20 **Start time: 11:19:09** **End time: 11:21:41**

Test duration (sec):150

Describe:

Test Result: pass **Source qualification(Power Off Load): Idle - Pass**

THC(mA): 11.550 **I - THD(%): 5.6** **POHC(mA):1.800** **POHC Limit(mA):19.135**

Parameter values during test:

V_RMS (Volts): 229.4 **Frequency(Hz): 50.0**

I_RMS(mA): 205.8 **Crest Factor: 1.380**

Power (Watts): 47.0 **Power Factor: 0.988**

Harm#	Harms(filtered) (mA)	Limit (mA)	Harms(avg) (mA)	100%Limit	Harms(max) (mA)	150%Limit	Status
I_Fund	201.700						
2	0.100	4.034	0.100	2.479	0.140	2.314	Pass
3	10.070	54.459	10.000	18.362	10.480	12.829	Pass
4	0.030	-	0.000	-	0.050	-	N/A
5	4.610	20.170	4.600	22.806	4.750	15.700	Pass
6	0.020	-	0.000	-	0.040	-	N/A
7	1.690	14.119	1.700	12.041	1.700	8.027	Pass
8	0.020	-	0.000	-	0.030	-	N/A
9	1.110	10.085	1.100	10.907	1.160	7.668	Pass
10	0.030	-	0.000	-	0.040	-	N/A
11	1.040	6.051	1.100	18.179	1.070	11.789	Pass
12	0.010	-	0.000	-	0.020	-	N/A
13	0.940	6.051	1.000	16.526	0.970	10.687	Pass
14	0.010	-	0.000	-	0.020	-	N/A
15	0.820	6.051	0.800	13.221	0.840	9.255	Pass
16	0.010	-	0.000	-	0.030	-	N/A
17	0.690	6.051	0.700	11.568	0.730	8.043	Pass
18	0.010	-	0.000	-	0.020	-	N/A
19	0.610	6.051	0.600	9.916	0.650	7.161	Pass
20	0.010	-	0.000	-	0.020	-	N/A
21	0.580	6.051	0.600	9.916	0.620	6.831	Pass
22	0.010	-	0.000	-	0.020	-	N/A
23	0.570	6.051	0.600	9.916	0.600	6.610	Pass
24	0.010	-	0.000	-	0.020	-	N/A
25	0.570	6.051	0.600	9.916	0.610	6.721	Pass
26	0.010	-	0.000	-	0.020	-	N/A
27	0.570	6.051	0.600	9.916	0.600	6.610	Pass
28	0.010	-	0.000	-	0.020	-	N/A
29	0.560	6.051	0.600	9.916	0.590	6.500	Pass
30	0.010	-	0.000	-	0.020	-	N/A
31	0.560	6.051	0.600	9.916	0.580	6.390	Pass
32	0.020	-	0.000	-	0.020	-	N/A
33	0.530	6.051	0.500	8.263	0.560	6.170	Pass
34	0.010	-	0.000	-	0.020	-	N/A
35	0.510	6.051	0.500	8.263	0.520	5.729	Pass
36	0.020	-	0.000	-	0.030	-	N/A
37	0.500	6.051	0.500	8.263	0.520	5.729	Pass
38	0.020	-	0.000	-	0.020	-	N/A
39	0.480	6.051	0.500	8.263	0.490	5.399	Pass
40	0.010	-	0.000	-	0.020	-	N/A

Note: All harmonics are below the minimum limits and are ignored.

Power Supply Quality Data

EUT: LED Driver | Operator: Zom Zhang

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W | Model/Type: 45-12

Measurement standard: IEC 61000-4-7 Ed2:1:2009 | Serial number:

Test date:2021-10-20 | Start time: 11:19:09 | End time: 11:21:41

Test duration (sec):150

Describe:

Source qualification(Power Off Load): Pass

Measurements are compliant with IEC/EN61000-3-2 Ed. 4 & IEC/EN61000-4-7 Ed. 2.1

	Nominal	Measured Low	Measured High	Deviation	Allowed Deviation	Result
Supply Voltage	230	229.29	229.39	-0.70	4.6	Pass
Supply Frequency	50	50.0	50.0	0.0	0.25	Pass
Crest Phase	90.0	89.1	89.3	-0.9	3.0	Pass
Crest Factor	1.414	1.414	1.415	0.001	-0.014//0.006	Pass
Fundamental Voltage	229.32	-	-	-	-	-

Harm#	Harmonics Voltage	Harmonic Ratio	Limit	Result
2	0.090	0.061	0.200	Pass
3	0.140	0.078	0.900	Pass
4	0.020	0.027	0.200	Pass
5	0.070	0.042	0.400	Pass
6	0.010	0.018	0.200	Pass
7	0.020	0.018	0.300	Pass
8	0.000	0.008	0.200	Pass
9	0.010	0.008	0.200	Pass
10	0.020	0.013	0.100	Pass
11	0.020	0.012	0.100	Pass
12	0.000	0.003	0.100	Pass
13	0.010	0.005	0.100	Pass
14	0.000	0.003	0.100	Pass
15	0.000	0.003	0.100	Pass
16	0.000	0.003	0.100	Pass
17	0.000	0.003	0.100	Pass
18	0.000	0.000	0.100	Pass
19	0.000	0.003	0.100	Pass
20	0.000	0.000	0.100	Pass
21	0.000	0.000	0.100	Pass
22	0.000	0.000	0.100	Pass
23	0.000	0.002	0.100	Pass
24	0.000	0.000	0.100	Pass
25	0.000	0.000	0.100	Pass
26	0.000	0.000	0.100	Pass
27	0.000	0.000	0.100	Pass
28	0.000	0.000	0.100	Pass
29	0.000	0.000	0.100	Pass
30	0.000	0.000	0.100	Pass
31	0.000	0.000	0.100	Pass
32	0.000	0.000	0.100	Pass
33	0.000	0.000	0.100	Pass
34	0.000	0.000	0.100	Pass
35	0.000	0.000	0.100	Pass
36	0.000	0.000	0.100	Pass
37	0.000	0.000	0.100	Pass
38	0.000	0.000	0.100	Pass
39	0.000	0.000	0.100	Pass
40	0.000	0.000	0.100	Pass

9.5.2 Table 072

Test Report

EUT: LED Driver **Operator: Zom Zhang**

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W **Model/Type: 45-24**

Measurement standard: IEC 61000-4-7 Ed2:1:2009 **Serial number:**

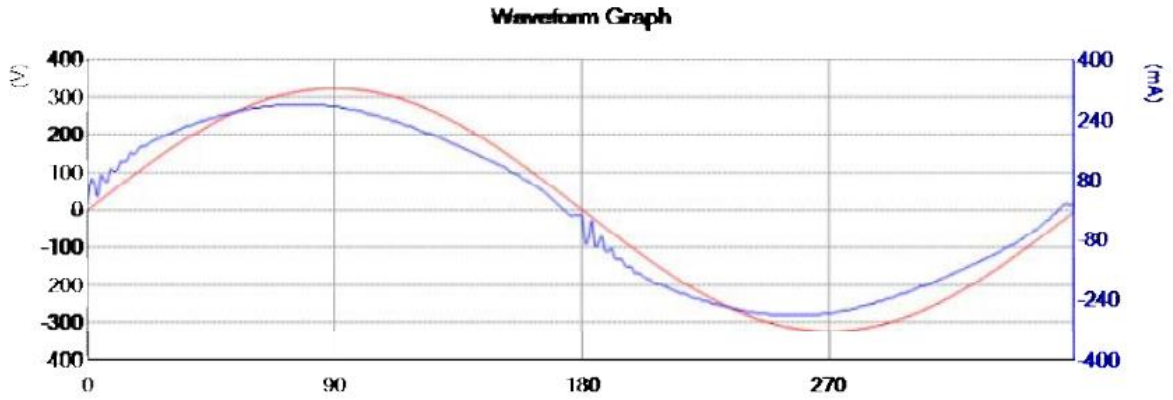
Test date:2021-10-20 **Start time: 11:25:51** **End time: 11:28:23**

Test duration (sec):150

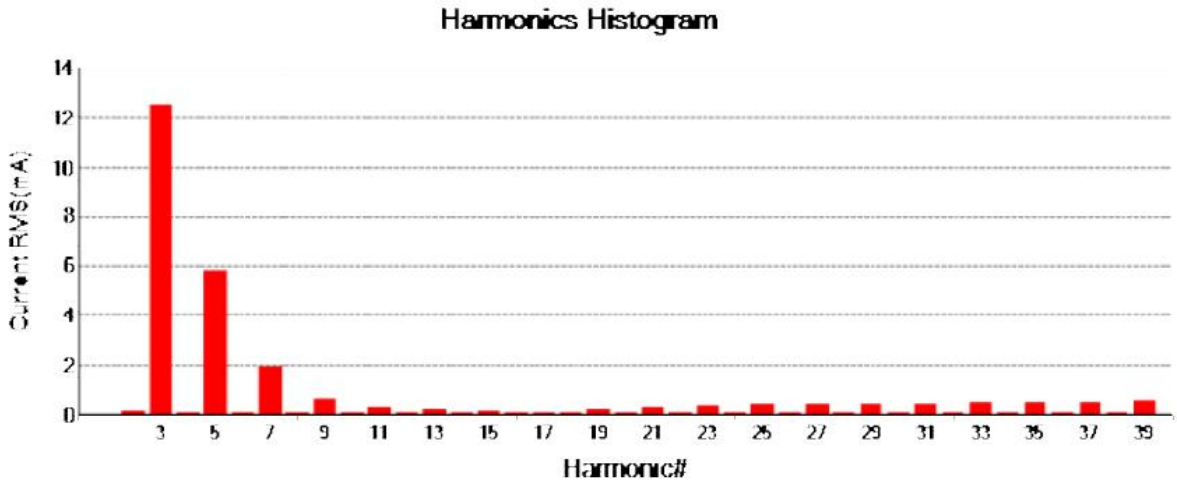
Describe:

Test Result: pass **Source qualification(Power Off Load): Idle - Pass**

Current & voltage waveforms



Harmonics and Class C limit line (>25W)



Harmonics Test Sumary

EUT: LED Driver | Operator: Zom Zhang

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W | Model/Type: 45-24

Measurement standard: IEC 61000-4-7 Ed2:1:2009 | Serial number:

Test date:2021-10-20 | Start time: 11:25:51 | End time: 11:28:23

Test duration (sec):150

Describe:

Test Result: pass | Source qualification(Power Off Load): Idle - Pass

THC(mA): 14.000 | I - THD(%): 6.8 | POHC(mA):1.330 | POHC Limit(mA):19.524

Parameter values during test:

V_RMS (Volts): 229.5 | Frequency(Hz): 50.0

I_RMS(mA): 206.4 | Crest Factor: 1.366

Power (Watts): 46.8 | Power Factor: 0.986

Harm#	Harms(filtered) (mA)	Limit (mA)	Harms(avg) (mA)	100%Limit	Harms(max) (mA)	150%Limit	Status
I_Fund	205.800						
2	0.110	4.116	0.100	2.430	0.160	2.592	Pass
3	12.520	55.566	12.700	22.856	12.900	15.477	Pass
4	0.070	-	0.100	-	0.100	-	N/A
5	5.750	20.580	5.800	28.183	5.830	18.886	Pass
6	0.070	-	0.100	-	0.100	-	N/A
7	1.960	14.406	1.900	13.189	1.970	9.117	Pass
8	0.070	-	0.100	-	0.080	-	N/A
9	0.600	10.290	0.600	5.831	0.610	3.952	Pass
10	0.070	-	0.100	-	0.100	-	N/A
11	0.250	6.174	0.300	4.859	0.290	3.131	Pass
12	0.070	-	0.100	-	0.080	-	N/A
13	0.230	6.174	0.200	3.239	0.260	2.807	Pass
14	0.070	-	0.100	-	0.080	-	N/A
15	0.140	6.174	0.100	1.620	0.160	1.728	Pass
16	0.070	-	0.100	-	0.080	-	N/A
17	0.100	6.174	0.100	1.620	0.120	1.296	Pass
18	0.070	-	0.100	-	0.080	-	N/A
19	0.170	6.174	0.200	3.239	0.220	2.376	Pass
20	0.080	-	0.100	-	0.100	-	N/A
21	0.280	6.174	0.300	4.859	0.300	3.239	Pass
22	0.070	-	0.100	-	0.100	-	N/A
23	0.320	6.174	0.300	4.859	0.350	3.779	Pass
24	0.070	-	0.100	-	0.100	-	N/A
25	0.370	6.174	0.400	6.479	0.380	4.103	Pass
26	0.070	-	0.100	-	0.100	-	N/A
27	0.390	6.174	0.400	6.479	0.400	4.319	Pass
28	0.080	-	0.100	-	0.100	-	N/A
29	0.410	6.174	0.400	6.479	0.420	4.535	Pass
30	0.070	-	0.100	-	0.100	-	N/A
31	0.420	6.174	0.400	6.479	0.430	4.643	Pass
32	0.080	-	0.100	-	0.100	-	N/A
33	0.440	6.174	0.400	6.479	0.470	5.075	Pass
34	0.080	-	0.100	-	0.110	-	N/A
35	0.460	6.174	0.400	6.479	0.460	4.967	Pass
36	0.080	-	0.100	-	0.110	-	N/A
37	0.470	6.174	0.500	8.098	0.490	5.291	Pass
38	0.080	-	0.100	-	0.110	-	N/A
39	0.490	6.174	0.500	8.098	0.510	5.507	Pass
40	0.080	-	0.100	-	0.110	-	N/A

Note: All harmonics are below the minimum limits and are ignored.

Power Supply Quality Data

EUT: LED Driver | Operator: Zom Zhang

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W | Model/Type: 45-24

Measurement standard: IEC 61000-4-7 Ed2:1:2009 | Serial number:

Test date:2021-10-20 | Start time: 11:25:51 | End time: 11:28:23

Test duration (sec):150

Describe:

Source qualification(Power Off Load): Pass

Measurements are compliant with IEC/EN61000-3-2 Ed. 4 & IEC/EN61000-4-7 Ed. 2.1

	Nominal	Measured Low	Measured High	Deviation	Allowed Deviation	Result
Supply Voltage	230	229.39	229.50	-0.61	4.6	Pass
Supply Frequency	50	50.0	50.0	0.0	0.25	Pass
Crest Phase	90.0	89.0	89.4	-1.0	3.0	Pass
Crest Factor	1.414	1.414	1.415	0.001	-0.014//0.006	Pass
Fundamental Voltage	229.42	-	-	-	-	-

Harm#	Harmonics Voltage	Harmonic Ratio	Limit	Result
2	0.070	0.061	0.200	Pass
3	0.150	0.071	0.900	Pass
4	0.040	0.029	0.200	Pass
5	0.050	0.038	0.400	Pass
6	0.020	0.019	0.200	Pass
7	0.020	0.015	0.300	Pass
8	0.000	0.008	0.200	Pass
9	0.010	0.010	0.200	Pass
10	0.020	0.013	0.100	Pass
11	0.010	0.011	0.100	Pass
12	0.000	0.003	0.100	Pass
13	0.000	0.008	0.100	Pass
14	0.000	0.001	0.100	Pass
15	0.000	0.003	0.100	Pass
16	0.000	0.003	0.100	Pass
17	0.000	0.003	0.100	Pass
18	0.000	0.000	0.100	Pass
19	0.000	0.003	0.100	Pass
20	0.000	0.000	0.100	Pass
21	0.000	0.000	0.100	Pass
22	0.000	0.000	0.100	Pass
23	0.000	0.003	0.100	Pass
24	0.000	0.000	0.100	Pass
25	0.000	0.000	0.100	Pass
26	0.000	0.000	0.100	Pass
27	0.000	0.000	0.100	Pass
28	0.000	0.000	0.100	Pass
29	0.000	0.000	0.100	Pass
30	0.000	0.000	0.100	Pass
31	0.000	0.000	0.100	Pass
32	0.000	0.000	0.100	Pass
33	0.000	0.000	0.100	Pass
34	0.000	0.000	0.100	Pass
35	0.000	0.000	0.100	Pass
36	0.000	0.000	0.100	Pass
37	0.000	0.000	0.100	Pass
38	0.000	0.000	0.100	Pass
39	0.000	0.000	0.100	Pass
40	0.000	0.000	0.100	Pass

9.5.3 Table 073

Test Report

EUT: LED Driver **Operator: Zom Zhang**

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W **Model/Type: 60-12**

Measurement standard: IEC 61000-4-7 Ed2:1:2009 **Serial number:**

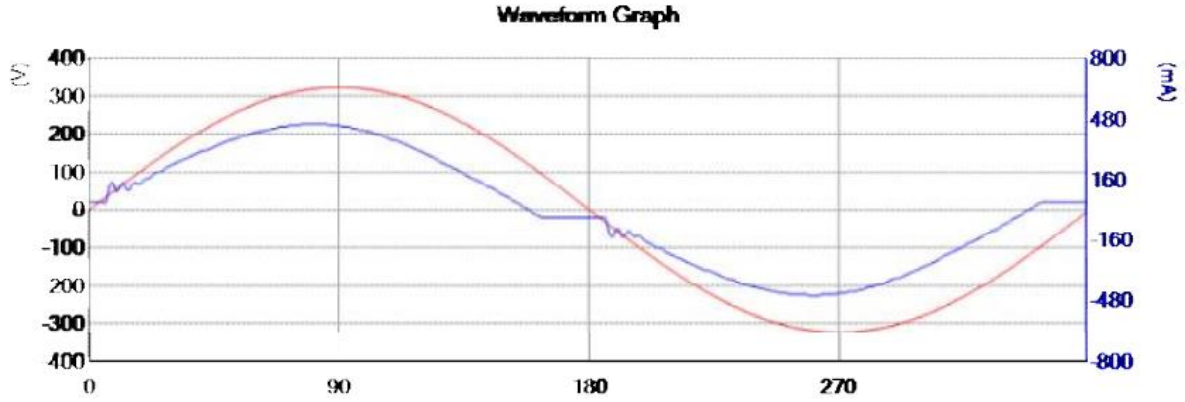
Test date:2021-10-20 **Start time: 18:41:37** **End time: 18:44:09**

Test duration (sec):150

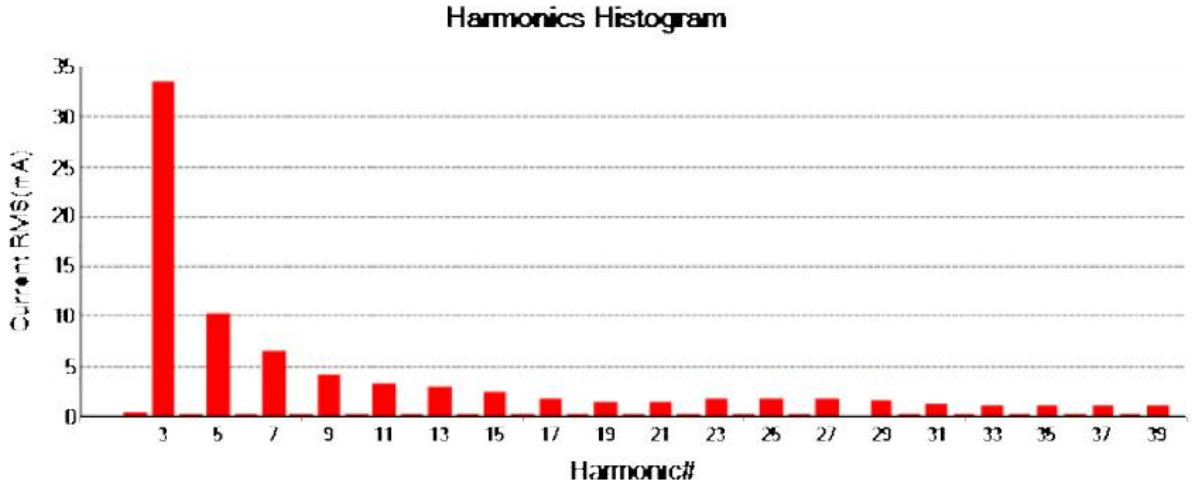
Describe:

Test Result: pass **Source qualification(Power Off Load): Idle - Pass**

Current & voltage waveforms



Harmonics and Class C limit line (>25W)



Harmonics Test Sumary

EUT: LED Driver Operator: Zom Zhang

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W Model/Type: 60-12

Measurement standard: IEC 61000-4-7 Ed2:1:2009 Serial number:

Test date:2021-10-20 Start time: 18:41:37 End time: 18:44:09

Test duration (sec):150

Describe:

Test Result: pass Source qualification(Power Off Load): Idle - Pass

THC(mA): 36.350 I - THD(%): 13.1 POHC(mA):4.200 POHC Limit(mA):26.079

Parameter values during test:

V_RMS (Volts): 229.4 Frequency(Hz): 50.0

I_RMS(mA): 277.7 Crest Factor: 1.534

Power (Watts): 61.8 Power Factor: 0.970

Harm#	Harms(filtered) (mA)	Limit (mA)	Harms(avg) (mA)	100%Limit	Harms(max) (mA)	150%Limit	Status
I_Fund	274.900						
2	0.310	5.498	0.300	5.457	0.330	4.001	Pass
3	33.350	74.223	33.200	44.730	33.350	29.955	Pass
4	0.080	-	0.100	-	0.150	-	N/A
5	10.250	27.490	10.200	37.104	10.270	24.906	Pass
6	0.080	-	0.100	-	0.080	-	N/A
7	6.560	19.243	6.600	34.298	6.580	22.796	Pass
8	0.040	-	0.100	-	0.060	-	N/A
9	4.180	13.745	4.200	30.557	4.200	20.371	Pass
10	0.060	-	0.100	-	0.080	-	N/A
11	3.120	8.247	3.100	37.589	3.160	25.545	Pass
12	0.020	-	0.000	-	0.040	-	N/A
13	2.710	8.247	2.800	33.952	2.780	22.473	Pass
14	0.020	-	0.000	-	0.040	-	N/A
15	2.220	8.247	2.200	26.676	2.290	18.512	Pass
16	0.040	-	0.000	-	0.040	-	N/A
17	1.550	8.247	1.600	19.401	1.610	13.015	Pass
18	0.020	-	0.000	-	0.020	-	N/A
19	1.230	8.247	1.200	14.551	1.250	10.105	Pass
20	0.020	-	0.000	-	0.040	-	N/A
21	1.320	8.247	1.300	15.763	1.340	10.832	Pass
22	0.020	-	0.000	-	0.040	-	N/A
23	1.550	8.247	1.500	18.188	1.570	12.691	Pass
24	0.020	-	0.000	-	0.040	-	N/A
25	1.700	8.247	1.700	20.614	1.730	13.985	Pass
26	0.020	-	0.000	-	0.040	-	N/A
27	1.660	8.247	1.700	20.614	1.700	13.742	Pass
28	0.000	-	0.000	-	0.040	-	N/A
29	1.480	8.247	1.500	18.188	1.520	12.287	Pass
30	0.040	-	0.000	-	0.060	-	N/A
31	1.210	8.247	1.200	14.551	1.280	10.347	Pass
32	0.020	-	0.000	-	0.040	-	N/A
33	0.980	8.247	1.000	12.126	1.030	8.326	Pass
34	0.040	-	0.000	-	0.040	-	N/A
35	0.920	8.247	0.900	10.913	0.960	7.760	Pass
36	0.040	-	0.000	-	0.040	-	N/A
37	0.960	8.247	0.900	10.913	0.960	7.760	Pass
38	0.040	-	0.000	-	0.040	-	N/A
39	0.980	8.247	1.000	12.126	1.010	8.165	Pass
40	0.040	-	0.000	-	0.040	-	N/A

Note: All harmonics are below the minimum limits and are ignored.

Power Supply Quality Data

EUT: LED Driver | Operator: Zom Zhang

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W | Model/Type: 60-12

Measurement standard: IEC 61000-4-7 Ed2:1:2009 | Serial number:

Test date:2021-10-20 | Start time: 18:41:37 | End time: 18:44:09

Test duration (sec):150

Describe:

Source qualification(Power Off Load): Pass

Measurements are compliant with IEC/EN61000-3-2 Ed. 4 & IEC/EN61000-4-7 Ed. 2.1

	Nominal	Measured Low	Measured High	Deviation	Allowed Deviation	Result
Supply Voltage	230	0.00	0.00	0.00	4.6	Pass
Supply Frequency	50	0.0	0.0	0.0	0.25	Pass
Crest Phase	90.0	0.0	0.0	0.0	3.0	Pass
Crest Factor	1.414	0.000	0.000	0.000	-0.014//0.006	Pass
Fundamental Voltage	0.00	-	-	-	-	-

Harm#	Harmonics Voltage	Harmonic Ratio	Limit	Result
2	0.000	0.000	0.200	Pass
3	0.000	0.000	0.900	Pass
4	0.000	0.000	0.200	Pass
5	0.000	0.000	0.400	Pass
6	0.000	0.000	0.200	Pass
7	0.000	0.000	0.300	Pass
8	0.000	0.000	0.200	Pass
9	0.000	0.000	0.200	Pass
10	0.000	0.000	0.100	Pass
11	0.000	0.000	0.100	Pass
12	0.000	0.000	0.100	Pass
13	0.000	0.000	0.100	Pass
14	0.000	0.000	0.100	Pass
15	0.000	0.000	0.100	Pass
16	0.000	0.000	0.100	Pass
17	0.000	0.000	0.100	Pass
18	0.000	0.000	0.100	Pass
19	0.000	0.000	0.100	Pass
20	0.000	0.000	0.100	Pass
21	0.000	0.000	0.100	Pass
22	0.000	0.000	0.100	Pass
23	0.000	0.000	0.100	Pass
24	0.000	0.000	0.100	Pass
25	0.000	0.000	0.100	Pass
26	0.000	0.000	0.100	Pass
27	0.000	0.000	0.100	Pass
28	0.000	0.000	0.100	Pass
29	0.000	0.000	0.100	Pass
30	0.000	0.000	0.100	Pass
31	0.000	0.000	0.100	Pass
32	0.000	0.000	0.100	Pass
33	0.000	0.000	0.100	Pass
34	0.000	0.000	0.100	Pass
35	0.000	0.000	0.100	Pass
36	0.000	0.000	0.100	Pass
37	0.000	0.000	0.100	Pass
38	0.000	0.000	0.100	Pass
39	0.000	0.000	0.100	Pass
40	0.000	0.000	0.100	Pass

9.5.4 Table 074

Test Report

EUT: LED Driver **Operator: Zom Zhang**

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W **Model/Type: 60-24**

Measurement standard: IEC 61000-4-7 Ed2:1:2009 **Serial number:**

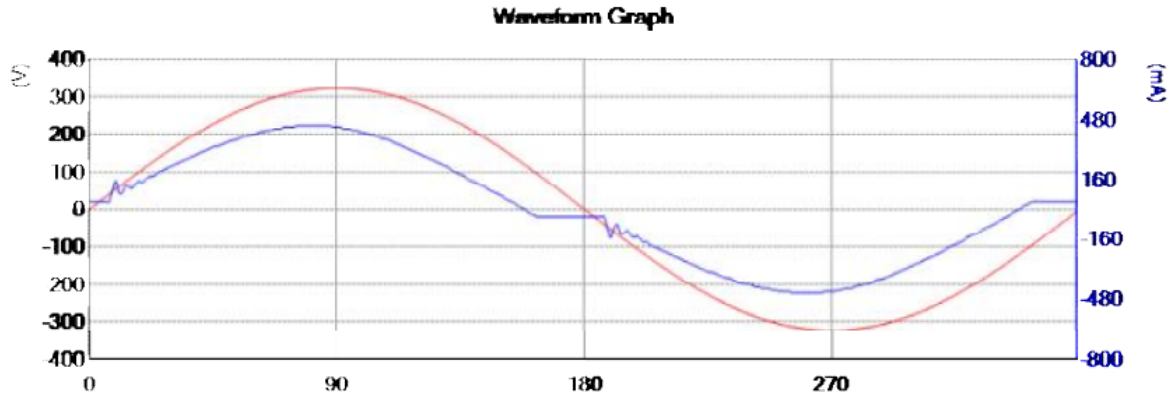
Test date:2021-10-20 **Start time: 14:57:24** **End time: 14:59:56**

Test duration (sec):150

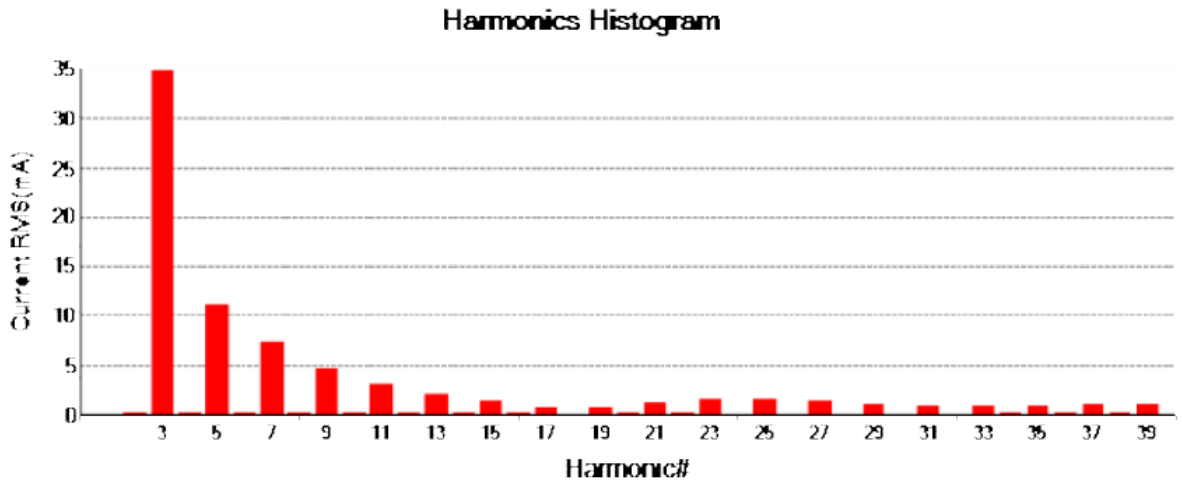
Describe:

Test Result: pass **Source qualification(Power Off Load): Idle - Pass**

Current & voltage waveforms



Harmonics and Class C limit line (>25W)



Harmonics Test Sumary

EUT: LED Driver Operator: Zom Zhang

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W Model/Type: 60-24

Measurement standard: IEC 61000-4-7 Ed2:1:2009 Serial number:

Test date:2021-10-20 Start time: 14:57:24 End time: 14:59:56

Test duration (sec):150

Describe:

Test Result: pass Source qualification(Power Off Load): Idle - Pass

THC(mA): 37.880 I - THD(%): 13.9 POHC(mA):3.550 POHC Limit(mA):25.652

Parameter values during test:

V_RMS (Volts): 229.5 Frequency(Hz): 50.0

I_RMS(mA): 273.2 Crest Factor: 1.540

Power (Watts): 60.8 Power Factor: 0.970

Harm#	Harms(filtered) (mA)	Limit (mA)	Harms(avg) (mA)	100%Limit	Harms(max) (mA)	150%Limit	Status
I_Fund	270.400						
2	0.170	5.408	0.300	5.547	0.870	10.725	Pass
3	34.750	73.008	34.600	47.392	34.750	31.732	Pass
4	0.080	-	0.100	-	0.220	-	N/A
5	11.140	27.040	11.100	41.050	11.170	27.539	Pass
6	0.060	-	0.100	-	0.200	-	N/A
7	7.350	18.928	7.300	38.567	7.370	25.958	Pass
8	0.020	-	0.000	-	0.200	-	N/A
9	4.670	13.520	4.700	34.763	4.670	23.028	Pass
10	0.040	-	0.100	-	0.200	-	N/A
11	2.980	8.112	3.000	36.982	3.030	24.901	Pass
12	0.020	-	0.000	-	0.170	-	N/A
13	1.970	8.112	2.000	24.655	2.040	16.765	Pass
14	0.020	-	0.000	-	0.110	-	N/A
15	1.250	8.112	1.300	16.026	1.340	11.012	Pass
16	0.020	-	0.000	-	0.060	-	N/A
17	0.620	8.112	0.700	8.629	0.690	5.671	Pass
18	0.000	-	0.000	-	0.040	-	N/A
19	0.670	8.112	0.700	8.629	0.690	5.671	Pass
20	0.020	-	0.000	-	0.080	-	N/A
21	1.140	8.112	1.100	13.560	1.140	9.369	Pass
22	0.020	-	0.000	-	0.110	-	N/A
23	1.390	8.112	1.400	17.258	1.390	11.423	Pass
24	0.000	-	0.000	-	0.080	-	N/A
25	1.390	8.112	1.400	17.258	1.410	11.588	Pass
26	0.000	-	0.000	-	0.060	-	N/A
27	1.250	8.112	1.300	16.026	1.280	10.519	Pass
28	0.000	-	0.000	-	0.060	-	N/A
29	1.050	8.112	1.100	13.560	1.100	9.040	Pass
30	0.000	-	0.000	-	0.060	-	N/A
31	0.890	8.112	0.900	11.095	0.920	7.561	Pass
32	0.000	-	0.000	-	0.080	-	N/A
33	0.800	8.112	0.800	9.862	0.850	6.986	Pass
34	0.020	-	0.000	-	0.060	-	N/A
35	0.890	8.112	0.900	11.095	0.920	7.561	Pass
36	0.020	-	0.000	-	0.060	-	N/A
37	1.010	8.112	1.000	12.327	1.030	8.465	Pass
38	0.020	-	0.000	-	0.080	-	N/A
39	1.030	8.112	1.000	12.327	1.050	8.629	Pass
40	0.000	-	0.000	-	0.080	-	N/A

Note: All harmonics are below the minimum limits and are ignored.

Power Supply Quality Data

EUT: LED Driver **Operator: Zom Zhang**

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W **Model/Type: 60-24**

Measurement standard: IEC 61000-4-7 Ed2:1:2009 **Serial number:**

Test date:2021-10-20 **Start time: 14:57:24** **End time: 14:59:56**

Test duration (sec):150

Describe:

Source qualification(Power Off Load): Pass

Measurements are compliant with IEC/EN61000-3-2 Ed. 4 & IEC/EN61000-4-7 Ed. 2.1

	Nominal	Measured Low	Measured High	Deviation	Allowed Deviation	Result
Supply Voltage	230	229.36	229.53	-0.63	4.6	Pass
Supply Frequency	50	50.0	50.0	0.0	0.25	Pass
Crest Phase	90.0	89.4	90.4	-0.6	3.0	Pass
Crest Factor	1.414	1.414	1.414	0.000	-0.014//0.006	Pass
Fundamental Voltage	229.39	-	-	-	-	-

Harm#	Harmonics Voltage	Harmonic Ratio	Limit	Result
2	0.070	0.124	0.200	Pass
3	0.140	0.084	0.900	Pass
4	0.040	0.041	0.200	Pass
5	0.030	0.037	0.400	Pass
6	0.020	0.028	0.200	Pass
7	0.010	0.020	0.300	Pass
8	0.010	0.015	0.200	Pass
9	0.000	0.013	0.200	Pass
10	0.020	0.015	0.100	Pass
11	0.020	0.016	0.100	Pass
12	0.000	0.010	0.100	Pass
13	0.010	0.009	0.100	Pass
14	0.000	0.008	0.100	Pass
15	0.000	0.008	0.100	Pass
16	0.000	0.008	0.100	Pass
17	0.000	0.007	0.100	Pass
18	0.000	0.006	0.100	Pass
19	0.000	0.007	0.100	Pass
20	0.000	0.005	0.100	Pass
21	0.000	0.004	0.100	Pass
22	0.000	0.004	0.100	Pass
23	0.000	0.006	0.100	Pass
24	0.000	0.004	0.100	Pass
25	0.000	0.004	0.100	Pass
26	0.000	0.004	0.100	Pass
27	0.000	0.006	0.100	Pass
28	0.000	0.004	0.100	Pass
29	0.000	0.003	0.100	Pass
30	0.000	0.003	0.100	Pass
31	0.000	0.003	0.100	Pass
32	0.000	0.003	0.100	Pass
33	0.000	0.003	0.100	Pass
34	0.000	0.003	0.100	Pass
35	0.010	0.005	0.100	Pass
36	0.000	0.003	0.100	Pass
37	0.000	0.003	0.100	Pass
38	0.000	0.003	0.100	Pass
39	0.000	0.003	0.100	Pass
40	0.000	0.003	0.100	Pass

9.5.5 Table 075

Test Report

EUT: LED Driver **Operator: Zom Zhang**

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W **Model/Type: 75-12**

Measurement standard: IEC 61000-4-7 Ed2:1:2009 **Serial number:**

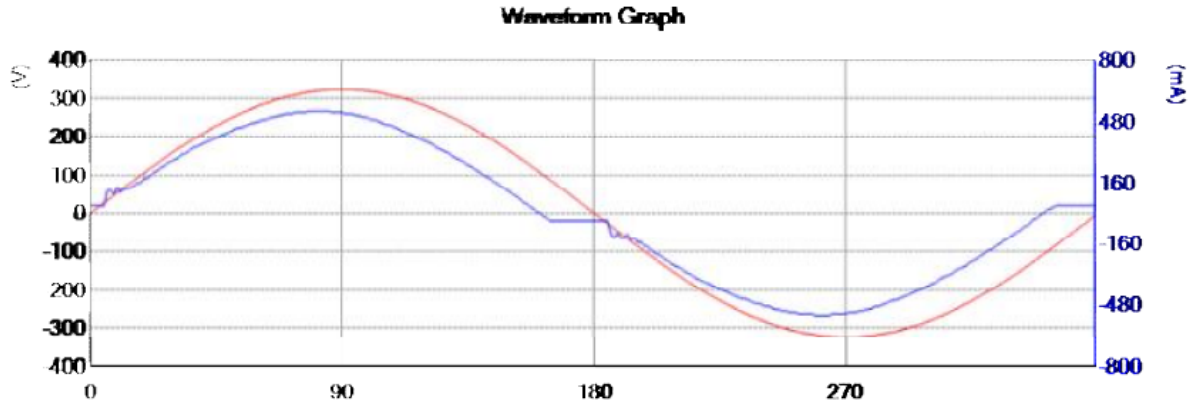
Test date:2021-10-20 **Start time: 18:28:47** **End time: 18:31:19**

Test duration (sec):150

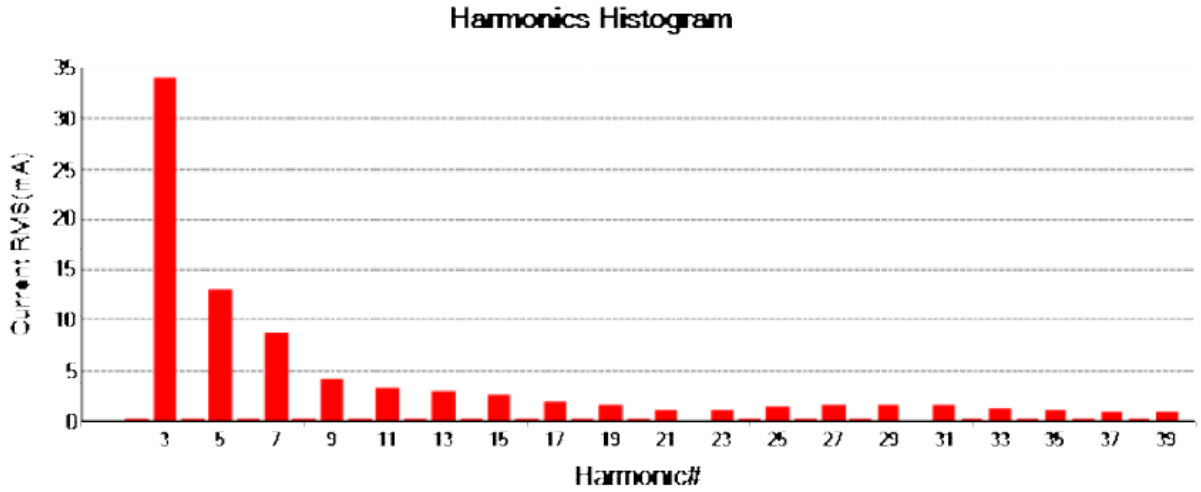
Describe:

Test Result: pass **Source qualification(Power Off Load): Idle - Pass**

Current & voltage waveforms



Harmonics and Class C limit line (>25W)



Harmonics Test Sumary

EUT: LED Driver Operator: Zom Zhang

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W Model/Type: 75-12

Measurement standard: IEC 61000-4-7 Ed2:1:2009 Serial number:

Test date:2021-10-20 Start time: 18:28:47 End time: 18:31:19

Test duration (sec):150

Describe:

Test Result: pass Source qualification(Power Off Load): Idle - Pass

THC(mA): 38.170 I - THD(%): 11.6 POHC(mA):3.770 POHC Limit(mA):31.164

Parameter values during test:

V_RMS (Volts): 229.7 Frequency(Hz): 50.0

I_RMS(mA): 331.3 Crest Factor: 1.515

Power (Watts): 74.4 Power Factor: 0.978

Harm#	Harms(filtered) (mA)	Limit (mA)	Harms(avg) (mA)	100%Limit	Harms(max) (mA)	150%Limit	Status
I_Fund	328.500						
2	0.220	6.570	0.300	4.566	0.350	3.551	Pass
3	33.940	88.695	33.600	37.883	33.960	25.526	Pass
4	0.080	-	0.100	-	0.170	-	N/A
5	13.050	32.850	12.900	39.269	13.080	26.545	Pass
6	0.040	-	0.100	-	0.110	-	N/A
7	8.630	22.995	8.600	37.399	8.630	25.020	Pass
8	0.020	-	0.000	-	0.040	-	N/A
9	4.180	16.425	4.200	25.571	4.240	17.210	Pass
10	0.040	-	0.100	-	0.060	-	N/A
11	3.010	9.855	3.000	30.441	3.030	20.497	Pass
12	0.020	-	0.000	-	0.060	-	N/A
13	2.760	9.855	2.800	28.412	2.830	19.144	Pass
14	0.020	-	0.000	-	0.040	-	N/A
15	2.360	9.855	2.400	24.353	2.420	16.371	Pass
16	0.020	-	0.000	-	0.020	-	N/A
17	1.860	9.855	1.900	19.280	1.930	13.056	Pass
18	0.020	-	0.000	-	0.040	-	N/A
19	1.430	9.855	1.500	15.221	1.500	10.147	Pass
20	0.020	-	0.000	-	0.040	-	N/A
21	1.050	9.855	1.100	11.162	1.120	7.577	Pass
22	0.000	-	0.000	-	0.020	-	N/A
23	1.010	9.855	1.000	10.147	1.050	7.103	Pass
24	0.020	-	0.000	-	0.040	-	N/A
25	1.280	9.855	1.300	13.191	1.300	8.794	Pass
26	0.020	-	0.000	-	0.040	-	N/A
27	1.460	9.855	1.400	14.206	1.460	9.877	Pass
28	0.020	-	0.000	-	0.040	-	N/A
29	1.500	9.855	1.500	15.221	1.500	10.147	Pass
30	0.000	-	0.000	-	0.020	-	N/A
31	1.410	9.855	1.400	14.206	1.430	9.674	Pass
32	0.020	-	0.000	-	0.040	-	N/A
33	1.210	9.855	1.200	12.177	1.250	8.456	Pass
34	0.020	-	0.000	-	0.020	-	N/A
35	1.010	9.855	1.000	10.147	1.050	7.103	Pass
36	0.020	-	0.000	-	0.020	-	N/A
37	0.850	9.855	0.900	9.132	0.870	5.885	Pass
38	0.020	-	0.000	-	0.040	-	N/A
39	0.740	9.855	0.700	7.103	0.760	5.141	Pass
40	0.020	-	0.000	-	0.040	-	N/A

Note: All harmonics are below the minimum limits and are ignored.

Power Supply Quality Data

EUT: LED Driver | Operator: Zom Zhang

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W | Model/Type: 75-12

Measurement standard: IEC 61000-4-7 Ed2:1:2009 | Serial number:

Test date:2021-10-20 | Start time: 18:28:47 | End time: 18:31:19

Test duration (sec):150

Describe:

Source qualification(Power Off Load): Pass

Measurements are compliant with IEC/EN61000-3-2 Ed. 4 & IEC/EN61000-4-7 Ed. 2.1

	Nominal	Measured Low	Measured High	Deviation	Allowed Deviation	Result
Supply Voltage	230	229.58	229.69	-0.42	4.6	Pass
Supply Frequency	50	50.0	50.0	0.0	0.25	Pass
Crest Phase	90.0	89.2	89.6	-0.8	3.0	Pass
Crest Factor	1.414	1.414	1.415	0.001	-0.014//0.006	Pass
Fundamental Voltage	229.59	-	-	-	-	-

Harm#	Harmonics Voltage	Harmonic Ratio	Limit	Result
2	0.080	0.060	0.200	Pass
3	0.140	0.065	0.900	Pass
4	0.030	0.026	0.200	Pass
5	0.020	0.019	0.400	Pass
6	0.020	0.018	0.200	Pass
7	0.010	0.012	0.300	Pass
8	0.000	0.008	0.200	Pass
9	0.000	0.007	0.200	Pass
10	0.010	0.010	0.100	Pass
11	0.020	0.012	0.100	Pass
12	0.000	0.003	0.100	Pass
13	0.010	0.010	0.100	Pass
14	0.000	0.003	0.100	Pass
15	0.000	0.003	0.100	Pass
16	0.000	0.003	0.100	Pass
17	0.000	0.003	0.100	Pass
18	0.000	0.000	0.100	Pass
19	0.000	0.003	0.100	Pass
20	0.000	0.000	0.100	Pass
21	0.000	0.000	0.100	Pass
22	0.000	0.000	0.100	Pass
23	0.000	0.003	0.100	Pass
24	0.000	0.000	0.100	Pass
25	0.000	0.001	0.100	Pass
26	0.000	0.000	0.100	Pass
27	0.000	0.003	0.100	Pass
28	0.000	0.000	0.100	Pass
29	0.000	0.003	0.100	Pass
30	0.000	0.000	0.100	Pass
31	0.000	0.003	0.100	Pass
32	0.000	0.000	0.100	Pass
33	0.000	0.003	0.100	Pass
34	0.000	0.000	0.100	Pass
35	0.000	0.003	0.100	Pass
36	0.000	0.000	0.100	Pass
37	0.000	0.001	0.100	Pass
38	0.000	0.000	0.100	Pass
39	0.000	0.001	0.100	Pass
40	0.000	0.000	0.100	Pass

9.5.6 Table 076

Test Report

EUT: LED Driver **Operator: Zom Zhang**

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W **Model/Type: 75-24**

Measurement standard: IEC 61000-4-7 Ed2:1:2009 **Serial number:**

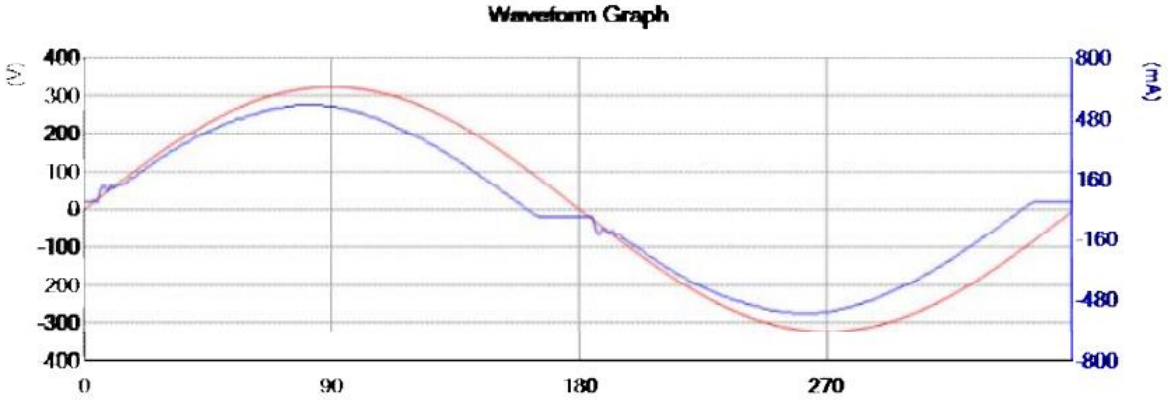
Test date:2021-10-20 **Start time: 18:35:18** **End time: 18:37:50**

Test duration (sec):150

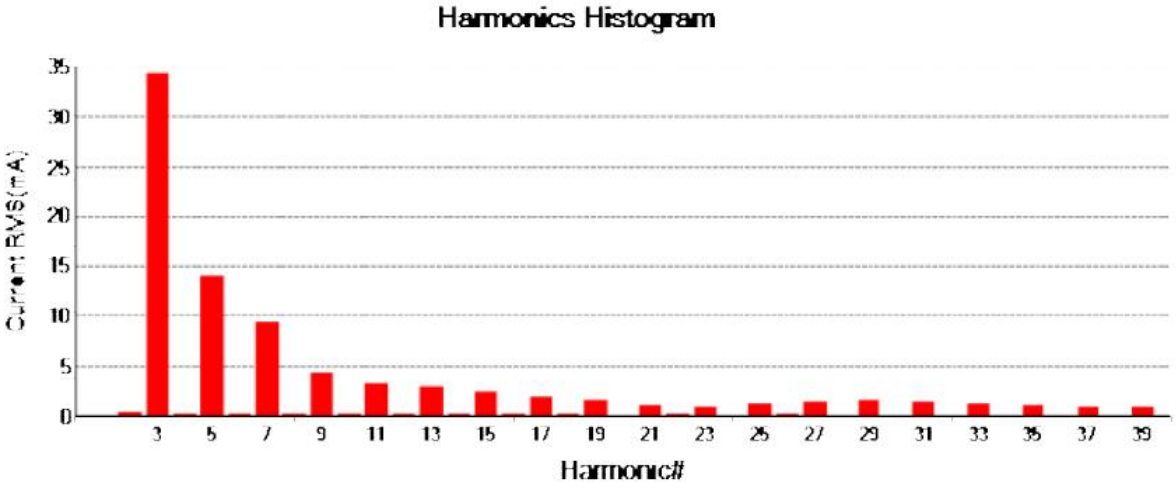
Describe:

Test Result: pass **Source qualification(Power Off Load): Idle - Pass**

Current & voltage waveforms



Harmonics and Class C limit line (>25W)



Harmonics Test Sumary

EUT: LED Driver — Operator: Zom Zhang

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W — Model/Type: 75-24

Measurement standard: IEC 61000-4-7 Ed2:1:2009 — Serial number:

Test date:2021-10-20 — Start time: 18:35:18 — End time: 18:37:50

Test duration (sec):150

Describe:

Test Result: pass — Source qualification(Power Off Load): Idle - Pass

THC(mA): 38.870 — I - THD(%): 11.4 — POHC(mA):3.570 — POHC Limit(mA):32.141

Parameter values during test:

V_RMS (Volts): 229.5 — Frequency(Hz): 50.0

I_RMS(mA): 341.3 — Crest Factor: 1.510

Power (Watts): 76.8 — Power Factor: 0.979

Harm#	Harms(filtered) (mA)	Limit (mA)	Harms(avg) (mA)	100%Limit	Harms(max) (mA)	150%Limit	Status
I_Fund	338.800						
2	0.260	6.776	0.300	4.427	0.380	3.739	Pass
3	34.250	91.476	33.800	36.950	34.250	24.961	Pass
4	0.060	-	0.100	-	0.170	-	N/A
5	13.910	33.880	13.700	40.437	13.950	27.450	Pass
6	0.060	-	0.100	-	0.110	-	N/A
7	9.190	23.716	9.100	38.371	9.190	25.833	Pass
8	0.060	-	0.000	-	0.060	-	N/A
9	4.380	16.940	4.400	25.974	4.450	17.513	Pass
10	0.060	-	0.100	-	0.060	-	N/A
11	3.070	10.164	3.100	30.500	3.100	20.333	Pass
12	0.040	-	0.000	-	0.040	-	N/A
13	2.710	10.164	2.700	26.564	2.760	18.103	Pass
14	0.020	-	0.000	-	0.040	-	N/A
15	2.200	10.164	2.200	21.645	2.270	14.889	Pass
16	0.020	-	0.000	-	0.040	-	N/A
17	1.770	10.164	1.800	17.710	1.840	12.069	Pass
18	0.020	-	0.000	-	0.020	-	N/A
19	1.390	10.164	1.400	13.774	1.460	9.576	Pass
20	0.000	-	0.000	-	0.020	-	N/A
21	0.920	10.164	1.000	9.839	1.010	6.625	Pass
22	0.020	-	0.000	-	0.040	-	N/A
23	0.870	10.164	0.900	8.855	0.870	5.706	Pass
24	0.000	-	0.000	-	0.020	-	N/A
25	1.140	10.164	1.100	10.823	1.140	7.477	Pass
26	0.020	-	0.000	-	0.040	-	N/A
27	1.320	10.164	1.300	12.790	1.340	8.789	Pass
28	0.000	-	0.000	-	0.020	-	N/A
29	1.410	10.164	1.400	13.774	1.430	9.380	Pass
30	0.000	-	0.000	-	0.040	-	N/A
31	1.370	10.164	1.400	13.774	1.390	9.117	Pass
32	0.000	-	0.000	-	0.020	-	N/A
33	1.210	10.164	1.200	11.806	1.230	8.068	Pass
34	0.000	-	0.000	-	0.020	-	N/A
35	1.050	10.164	1.100	10.823	1.100	7.215	Pass
36	0.000	-	0.000	-	0.020	-	N/A
37	0.850	10.164	0.900	8.855	0.890	5.838	Pass
38	0.000	-	0.000	-	0.020	-	N/A
39	0.740	10.164	0.700	6.887	0.760	4.985	Pass
40	0.000	-	0.000	-	0.020	-	N/A

Note: All harmonics are below the minimum limits and are ignored.

Power Supply Quality Data

EUT: LED Driver | Operator: Zom Zhang

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W | Model/Type: 75-24

Measurement standard: IEC 61000-4-7 Ed2:1:2009 | Serial number:

Test date:2021-10-20 | Start time: 18:35:18 | End time: 18:37:50

Test duration (sec):150

Describe:

Source qualification(Power Off Load): Pass

Measurements are compliant with IEC/EN61000-3-2 Ed. 4 & IEC/EN61000-4-7 Ed. 2.1

	Nominal	Measured Low	Measured High	Deviation	Allowed Deviation	Result
Supply Voltage	230	229.37	229.57	-0.62	4.6	Pass
Supply Frequency	50	50.0	50.0	0.0	0.25	Pass
Crest Phase	90.0	89.2	89.8	-0.8	3.0	Pass
Crest Factor	1.414	1.414	1.414	0.000	-0.014//0.006	Pass
Fundamental Voltage	229.38	-	-	-	-	-

Harm#	Harmonics Voltage	Harmonic Ratio	Limit	Result
2	0.090	0.060	0.200	Pass
3	0.130	0.066	0.900	Pass
4	0.020	0.027	0.200	Pass
5	0.030	0.031	0.400	Pass
6	0.010	0.018	0.200	Pass
7	0.020	0.013	0.300	Pass
8	0.010	0.008	0.200	Pass
9	0.010	0.008	0.200	Pass
10	0.010	0.012	0.100	Pass
11	0.020	0.010	0.100	Pass
12	0.000	0.003	0.100	Pass
13	0.000	0.007	0.100	Pass
14	0.000	0.003	0.100	Pass
15	0.000	0.005	0.100	Pass
16	0.000	0.003	0.100	Pass
17	0.000	0.003	0.100	Pass
18	0.000	0.000	0.100	Pass
19	0.000	0.005	0.100	Pass
20	0.000	0.000	0.100	Pass
21	0.000	0.000	0.100	Pass
22	0.000	0.000	0.100	Pass
23	0.000	0.002	0.100	Pass
24	0.000	0.000	0.100	Pass
25	0.000	0.000	0.100	Pass
26	0.000	0.000	0.100	Pass
27	0.000	0.003	0.100	Pass
28	0.000	0.000	0.100	Pass
29	0.000	0.003	0.100	Pass
30	0.000	0.000	0.100	Pass
31	0.000	0.003	0.100	Pass
32	0.000	0.000	0.100	Pass
33	0.000	0.003	0.100	Pass
34	0.000	0.000	0.100	Pass
35	0.000	0.001	0.100	Pass
36	0.000	0.000	0.100	Pass
37	0.000	0.003	0.100	Pass
38	0.000	0.000	0.100	Pass
39	0.000	0.003	0.100	Pass
40	0.000	0.000	0.100	Pass

9.5.7 Table 077

Test Report

EUT: LED Driver **Operator: Zom Zhang**

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W **Model/Type: 100-12**

Measurement standard: IEC 61000-4-7 Ed2:1:2009 **Serial number:**

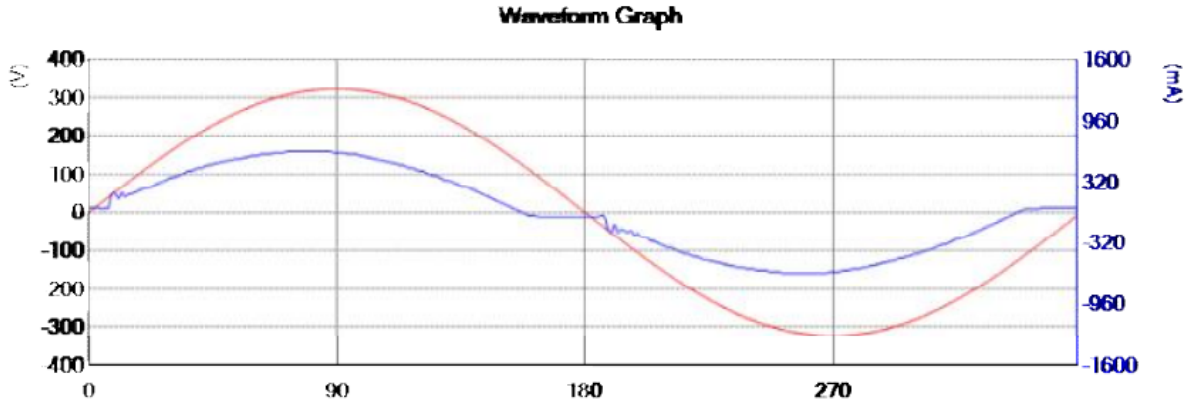
Test date:2021-10-20 **Start time: 14:43:37** **End time: 14:46:09**

Test duration (sec):150

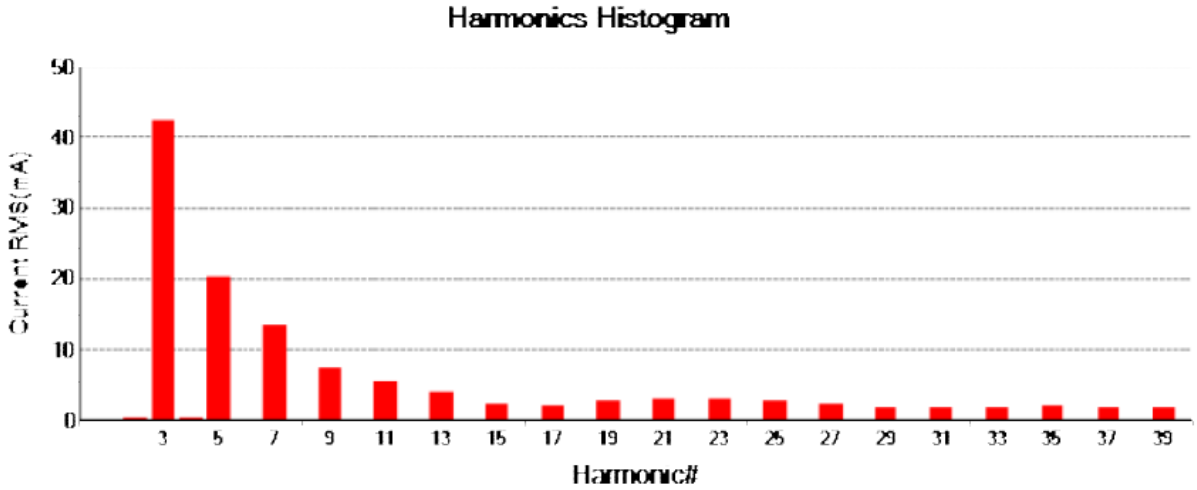
Describe:

Test Result: pass **Source qualification(Power Off Load): Idle - Pass**

Current & voltage waveforms



Harmonics and Class C limit line (>25W)



Harmonics Test Sumary

EUT: LED Driver Operator: Zom Zhang

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W Model/Type: 100-12

Measurement standard: IEC 61000-4-7 Ed2:1:2009 Serial number:

Test date:2021-10-20 Start time: 14:43:37 End time: 14:46:09

Test duration (sec):150

Describe:

Test Result: pass Source qualification(Power Off Load): Idle - Pass

THC(mA): 50.200 I - THD(%): 12.6 POHC(mA):6.900 POHC Limit(mA):38.611

Parameter values during test:

V_RMS (Volts): 229.3 Frequency(Hz): 50.0

I_RMS(mA): 433.2 Crest Factor: 1.508

Power (Watts): 96.8 Power Factor: 0.974

Harm#	Harms(filtered) (mA)	Limit (mA)	Harms(avg) (mA)	100%Limit	Harms(max) (mA)	150%Limit	Status
I_Fund	407.000						
2	0.200	8.140	0.400	4.914	0.400	3.276	Pass
3	42.100	109.890	42.100	38.311	42.700	25.905	Pass
4	0.100	-	0.100	-	0.200	-	N/A
5	20.100	40.700	20.200	49.631	20.400	33.415	Pass
6	0.000	-	0.100	-	0.100	-	N/A
7	13.100	28.490	13.400	47.034	14.000	32.760	Pass
8	0.000	-	0.000	-	0.000	-	N/A
9	7.500	20.350	7.700	37.838	8.000	26.208	Pass
10	0.000	-	0.100	-	0.000	-	N/A
11	5.500	12.210	5.700	46.683	5.800	31.668	Pass
12	0.000	-	0.000	-	0.000	-	N/A
13	3.700	12.210	4.000	32.760	4.200	22.932	Pass
14	0.000	-	0.000	-	0.000	-	N/A
15	2.000	12.210	2.300	18.837	2.500	13.650	Pass
16	0.000	-	0.000	-	0.000	-	N/A
17	1.900	12.210	1.900	15.561	1.900	10.374	Pass
18	0.000	-	0.000	-	0.000	-	N/A
19	2.500	12.210	2.300	18.837	2.500	13.650	Pass
20	0.000	-	0.000	-	0.000	-	N/A
21	2.800	12.210	2.700	22.113	2.800	15.288	Pass
22	0.000	-	0.000	-	0.000	-	N/A
23	2.900	12.210	2.900	23.751	3.000	16.380	Pass
24	0.000	-	0.000	-	0.000	-	N/A
25	2.600	12.210	2.800	22.932	2.800	15.288	Pass
26	0.000	-	0.000	-	0.000	-	N/A
27	2.100	12.210	2.300	18.837	2.500	13.650	Pass
28	0.000	-	0.000	-	0.000	-	N/A
29	1.600	12.210	1.800	14.742	1.900	10.374	Pass
30	0.000	-	0.000	-	0.000	-	N/A
31	1.600	12.210	1.600	13.104	1.600	8.736	Pass
32	0.000	-	0.000	-	0.000	-	N/A
33	1.700	12.210	1.700	13.923	1.800	9.828	Pass
34	0.000	-	0.000	-	0.000	-	N/A
35	1.800	12.210	1.900	15.561	1.800	9.828	Pass
36	0.000	-	0.000	-	0.000	-	N/A
37	1.700	12.210	1.800	14.742	1.800	9.828	Pass
38	0.000	-	0.000	-	0.000	-	N/A
39	1.600	12.210	1.700	13.923	1.700	9.282	Pass
40	0.000	-	0.000	-	0.000	-	N/A

Note: All harmonics are below the minimum limits and are ignored.

Power Supply Quality Data

EUT: LED Driver | Operator: Zom Zhang

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W | Model/Type: 100-12

Measurement standard: IEC 61000-4-7 Ed2:1:2009 | Serial number:

Test date:2021-10-20 | Start time: 14:43:37 | End time: 14:46:09

Test duration (sec):150

Describe:

Source qualification(Power Off Load): Pass

Measurements are compliant with IEC/EN61000-3-2 Ed. 4 & IEC/EN61000-4-7 Ed. 2.1

	Nominal	Measured Low	Measured High	Deviation	Allowed Deviation	Result
Supply Voltage	230	229.25	229.55	-0.74	4.6	Pass
Supply Frequency	50	50.0	50.0	0.0	0.25	Pass
Crest Phase	90.0	89.6	90.1	-0.4	3.0	Pass
Crest Factor	1.414	1.414	1.414	0.000	-0.014//0.006	Pass
Fundamental Voltage	229.43	-	-	-	-	-

Harm#	Harmonics Voltage	Harmonic Ratio	Limit	Result
2	0.050	0.060	0.200	Pass
3	0.140	0.079	0.900	Pass
4	0.040	0.029	0.200	Pass
5	0.040	0.031	0.400	Pass
6	0.020	0.018	0.200	Pass
7	0.020	0.013	0.300	Pass
8	0.000	0.008	0.200	Pass
9	0.000	0.008	0.200	Pass
10	0.020	0.016	0.100	Pass
11	0.020	0.010	0.100	Pass
12	0.000	0.003	0.100	Pass
13	0.010	0.007	0.100	Pass
14	0.000	0.003	0.100	Pass
15	0.000	0.003	0.100	Pass
16	0.000	0.003	0.100	Pass
17	0.000	0.003	0.100	Pass
18	0.000	0.000	0.100	Pass
19	0.000	0.003	0.100	Pass
20	0.000	0.000	0.100	Pass
21	0.000	0.003	0.100	Pass
22	0.000	0.000	0.100	Pass
23	0.000	0.003	0.100	Pass
24	0.000	0.000	0.100	Pass
25	0.000	0.003	0.100	Pass
26	0.000	0.000	0.100	Pass
27	0.000	0.003	0.100	Pass
28	0.000	0.000	0.100	Pass
29	0.000	0.003	0.100	Pass
30	0.000	0.000	0.100	Pass
31	0.000	0.003	0.100	Pass
32	0.000	0.000	0.100	Pass
33	0.000	0.003	0.100	Pass
34	0.000	0.000	0.100	Pass
35	0.000	0.003	0.100	Pass
36	0.000	0.000	0.100	Pass
37	0.000	0.003	0.100	Pass
38	0.000	0.000	0.100	Pass
39	0.000	0.003	0.100	Pass
40	0.000	0.000	0.100	Pass

9.5.8 Table 078

Test Report

EUT: LED Driver **Operator: Zom Zhang**

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W **Model/Type: 100-24**

Measurement standard: IEC 61000-4-7 Ed2:1:2009 **Serial number:**

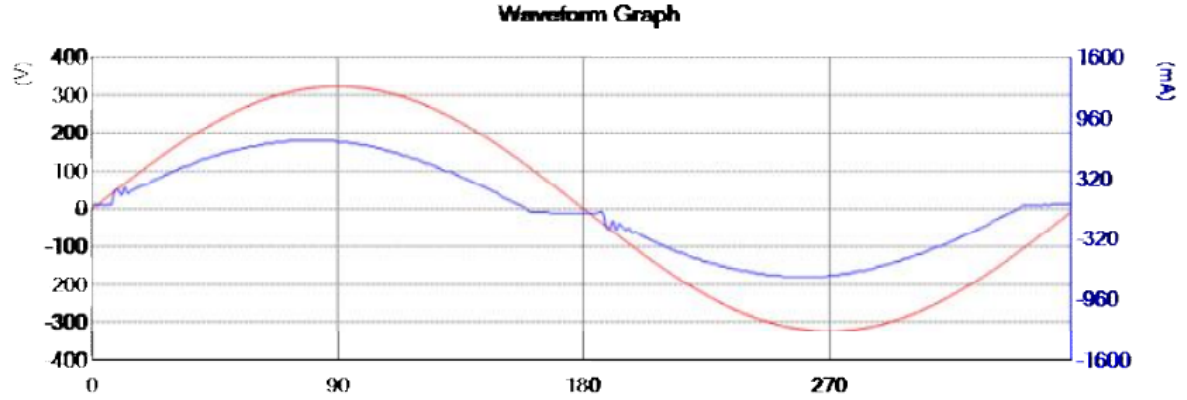
Test date:2021-10-20 **Start time: 14:50:14** **End time: 14:52:47**

Test duration (sec):150

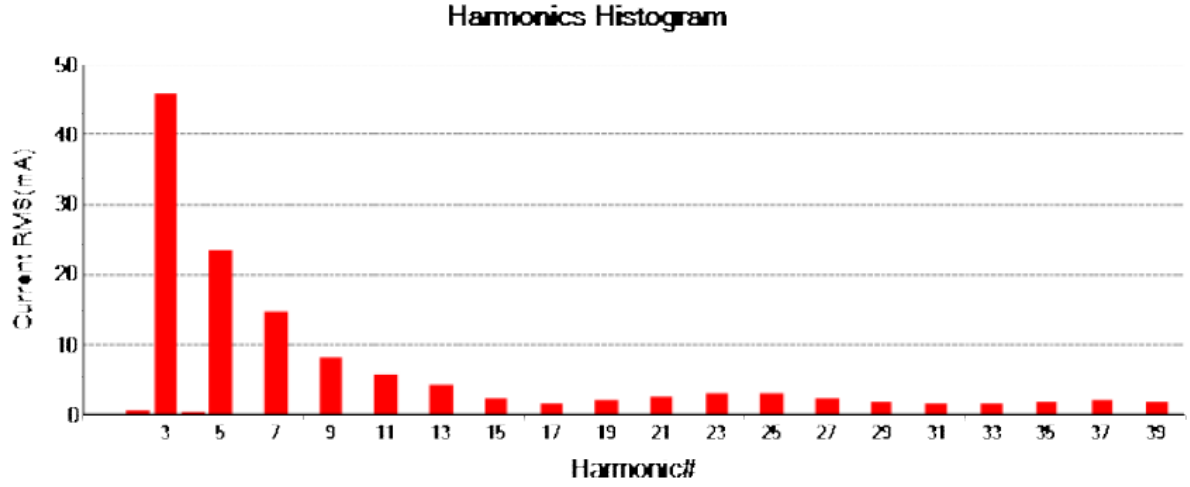
Describe:

Test Result: pass **Source qualification(Power Off Load): Idle - Pass**

Current & voltage waveforms



Harmonics and Class C limit line (>25W)



Harmonics Test Sumary

EUT: LED Driver **Operator: Zom Zhang**

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W **Model/Type: 100-24**

Measurement standard: IEC 61000-4-7 Ed2:1:2009 **Serial number:**

Test date:2021-10-20 **Start time: 14:50:14** **End time: 14:52:47**

Test duration (sec):150

Describe:

Test Result: pass **Source qualification(Power Off Load): Idle - Pass**

THC(mA): 55.100 **I - THD(%): 12.2** **POHC(mA):6.800** **POHC Limit(mA):42.074**

Parameter values during test:

V_RMS (Volts): 229.4 **Frequency(Hz): 50.0**

I_RMS(mA): 446.7 **Crest Factor: 1.503**

Power (Watts): 101.3 **Power Factor: 0.976**

Harm#	Harms(filtered) (mA)	Limit (mA)	Harms(avg) (mA)	100%Limit	Harms(max) (mA)	150%Limit	Status
I_Fund	443.500						
2	0.400	8.870	0.400	4.510	0.400	3.006	Pass
3	45.900	119.745	45.000	37.580	45.900	25.554	Pass
4	0.100	-	0.200	-	0.200	-	N/A
5	23.100	44.350	22.700	51.184	23.100	34.724	Pass
6	0.000	-	0.100	-	0.100	-	N/A
7	14.700	31.045	14.500	46.706	14.700	31.567	Pass
8	0.000	-	0.100	-	0.000	-	N/A
9	8.100	22.175	8.100	36.528	8.100	24.352	Pass
10	0.000	-	0.100	-	0.000	-	N/A
11	5.700	13.305	5.800	43.593	5.900	29.563	Pass
12	0.000	-	0.000	-	0.000	-	N/A
13	3.900	13.305	4.000	30.064	4.100	20.544	Pass
14	0.000	-	0.000	-	0.000	-	N/A
15	2.200	13.305	2.300	17.287	2.400	12.026	Pass
16	0.000	-	0.000	-	0.000	-	N/A
17	1.500	13.305	1.600	12.026	1.600	8.017	Pass
18	0.000	-	0.000	-	0.000	-	N/A
19	1.800	13.305	1.900	14.280	1.900	9.520	Pass
20	0.000	-	0.000	-	0.000	-	N/A
21	2.400	13.305	2.500	18.790	2.500	12.527	Pass
22	0.000	-	0.000	-	0.000	-	N/A
23	2.800	13.305	2.900	21.796	2.900	14.531	Pass
24	0.000	-	0.000	-	0.000	-	N/A
25	2.700	13.305	2.800	21.045	2.800	14.030	Pass
26	0.000	-	0.000	-	0.000	-	N/A
27	2.200	13.305	2.300	17.287	2.400	12.026	Pass
28	0.000	-	0.000	-	0.000	-	N/A
29	1.700	13.305	1.800	13.529	1.900	9.520	Pass
30	0.000	-	0.000	-	0.000	-	N/A
31	1.500	13.305	1.600	12.026	1.600	8.017	Pass
32	0.000	-	0.000	-	0.000	-	N/A
33	1.500	13.305	1.600	12.026	1.600	8.017	Pass
34	0.000	-	0.000	-	0.000	-	N/A
35	1.700	13.305	1.700	12.777	1.700	8.518	Pass
36	0.000	-	0.000	-	0.000	-	N/A
37	1.800	13.305	1.800	13.529	1.800	9.019	Pass
38	0.000	-	0.000	-	0.000	-	N/A
39	1.700	13.305	1.800	13.529	1.700	8.518	Pass
40	0.000	-	0.000	-	0.000	-	N/A

Note: All harmonics are below the minimum limits and are ignored.

Power Supply Quality Data

EUT: LED Driver | Operator: Zom Zhang

Test category: IEC/EN 61000-3-2:2019+A1:2021 Class C>25W | Model/Type: 100-24

Measurement standard: IEC 61000-4-7 Ed2:1:2009 | Serial number:

Test date:2021-10-20 | Start time: 14:50:14 | End time: 14:52:47

Test duration (sec):150

Describe:

Source qualification(Power Off Load): Pass

Measurements are compliant with IEC/EN61000-3-2 Ed. 4 & IEC/EN61000-4-7 Ed. 2.1

	Nominal	Measured Low	Measured High	Deviation	Allowed Deviation	Result
Supply Voltage	230	229.24	229.45	-0.75	4.6	Pass
Supply Frequency	50	50.0	50.0	0.0	0.25	Pass
Crest Phase	90.0	89.6	90.0	-0.4	3.0	Pass
Crest Factor	1.414	1.414	1.414	0.000	-0.014//0.006	Pass
Fundamental Voltage	229.44	-	-	-	-	-

Harm#	Harmonics Voltage	Harmonic Ratio	Limit	Result
2	0.130	0.060	0.200	Pass
3	0.130	0.071	0.900	Pass
4	0.040	0.029	0.200	Pass
5	0.030	0.031	0.400	Pass
6	0.020	0.021	0.200	Pass
7	0.020	0.013	0.300	Pass
8	0.000	0.006	0.200	Pass
9	0.000	0.008	0.200	Pass
10	0.020	0.015	0.100	Pass
11	0.020	0.009	0.100	Pass
12	0.000	0.003	0.100	Pass
13	0.010	0.008	0.100	Pass
14	0.000	0.003	0.100	Pass
15	0.010	0.003	0.100	Pass
16	0.000	0.003	0.100	Pass
17	0.000	0.005	0.100	Pass
18	0.000	0.000	0.100	Pass
19	0.000	0.003	0.100	Pass
20	0.000	0.000	0.100	Pass
21	0.000	0.003	0.100	Pass
22	0.000	0.000	0.100	Pass
23	0.000	0.003	0.100	Pass
24	0.000	0.000	0.100	Pass
25	0.000	0.003	0.100	Pass
26	0.000	0.000	0.100	Pass
27	0.000	0.003	0.100	Pass
28	0.000	0.000	0.100	Pass
29	0.000	0.002	0.100	Pass
30	0.000	0.000	0.100	Pass
31	0.000	0.003	0.100	Pass
32	0.000	0.000	0.100	Pass
33	0.000	0.001	0.100	Pass
34	0.000	0.000	0.100	Pass
35	0.000	0.000	0.100	Pass
36	0.000	0.000	0.100	Pass
37	0.000	0.003	0.100	Pass
38	0.000	0.000	0.100	Pass
39	0.000	0.003	0.100	Pass
40	0.000	0.000	0.100	Pass

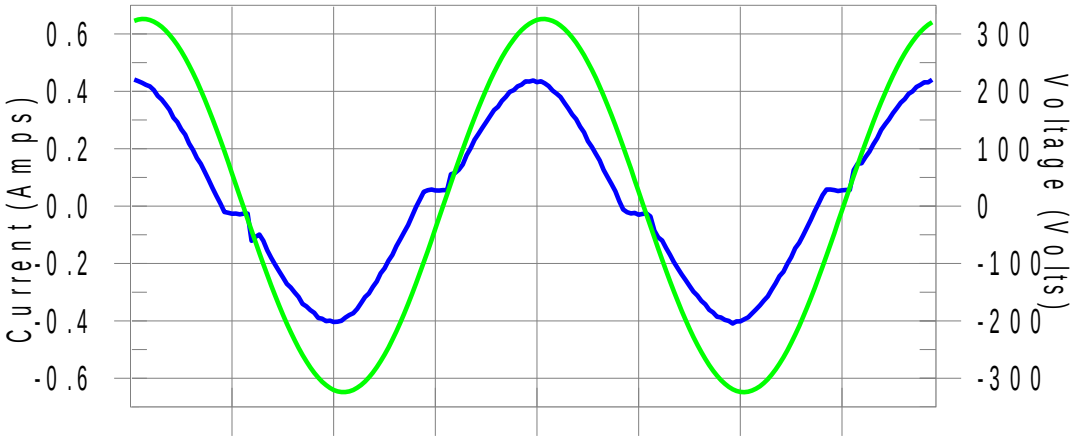
9.5.9 Table 079

Harmonics – Class-C per IEC 61000-3-2:2018/AMD1:2020(Run time)

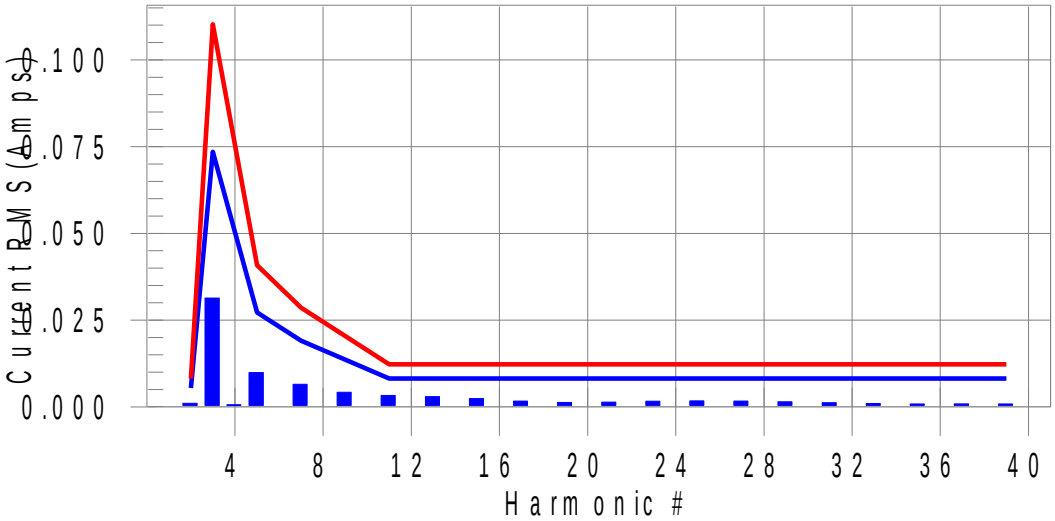
EUT: GTPC-60-48-S **Tested by: RJB**
Test category: Class-C (European limits) **Test Margin: 100**
Test date: 2021/11/16 **Start time: 14:19:06** **End time: 14:21:47**
Test duration (min): 2.5 **Data file name: H-006679.cts_data**
Comment: Full Load
Customer: Customer information

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

Current & voltage waveforms



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



Test result: Pass Worst harmonics H3-29.6% of 150% limit, H3-42.7% of 100% limit

Current Test Result Summary (Run time)

EUT: GTPC-60-48-S **Tested by: RJB**
Test category: Class-C (European limits) **Test Margin: 100**
Test date: 2021/11/16 **Start time: 14:19:06** **End time: 14:21:47**
Test duration (min): 2.5 **Data file name: H-006679.cts_data**
Comment: Full Load
Customer: Customer information

Test Result: Pass **Source qualification: Normal**
THC(A): 0.035 **I-THD(%): 12.7** **POHC(A): 0.004** **POHC Limit(A): 0.026**

Highest parameter values during test:

V_RMS (Volts):	230.00	Frequency(Hz):	50.00
I_Peak (Amps):	0.445	I_RMS (Amps):	0.275
I_Fund (Amps):	0.272	Crest Factor:	1.622
Power (Watts):	61.1	Power Factor:	0.968

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	0.005	N/A	0.001	0.008	N/A	Pass
3	0.031	0.074	42.7	0.033	0.110	29.6	Pass
4	0.001	0.000	N/A	0.001	0.000	N/A	Pass
5	0.010	0.027	36.4	0.010	0.041	25.5	Pass
6	0.000	0.000	N/A	0.000	0.000	N/A	Pass
7	0.007	0.019	34.3	0.007	0.029	24.4	Pass
8	0.000	0.000	N/A	0.000	0.000	N/A	Pass
9	0.004	0.014	N/A	0.004	0.020	N/A	Pass
10	0.000	0.000	N/A	0.000	0.000	N/A	Pass
11	0.003	0.008	N/A	0.003	0.012	N/A	Pass
12	0.000	0.000	N/A	0.000	0.000	N/A	Pass
13	0.003	0.008	N/A	0.003	0.012	N/A	Pass
14	0.000	0.000	N/A	0.000	0.000	N/A	Pass
15	0.002	0.008	N/A	0.002	0.012	N/A	Pass
16	0.000	0.000	N/A	0.000	0.000	N/A	Pass
17	0.002	0.008	N/A	0.002	0.012	N/A	Pass
18	0.000	0.000	N/A	0.000	0.000	N/A	Pass
19	0.001	0.008	N/A	0.001	0.012	N/A	Pass
20	0.000	0.000	N/A	0.000	0.000	N/A	Pass
21	0.001	0.008	N/A	0.001	0.012	N/A	Pass
22	0.000	0.000	N/A	0.000	0.000	N/A	Pass
23	0.002	0.008	N/A	0.002	0.012	N/A	Pass
24	0.000	0.000	N/A	0.000	0.000	N/A	Pass
25	0.002	0.008	N/A	0.002	0.012	N/A	Pass
26	0.000	0.000	N/A	0.000	0.000	N/A	Pass
27	0.002	0.008	N/A	0.002	0.012	N/A	Pass
28	0.000	0.000	N/A	0.000	0.000	N/A	Pass
29	0.001	0.008	N/A	0.002	0.012	N/A	Pass
30	0.000	0.000	N/A	0.000	0.000	N/A	Pass
31	0.001	0.008	N/A	0.001	0.012	N/A	Pass
32	0.000	0.000	N/A	0.000	0.000	N/A	Pass
33	0.001	0.008	N/A	0.001	0.012	N/A	Pass
34	0.000	0.000	N/A	0.000	0.000	N/A	Pass
35	0.001	0.008	N/A	0.001	0.012	N/A	Pass
36	0.000	0.000	N/A	0.000	0.000	N/A	Pass
37	0.001	0.008	N/A	0.001	0.012	N/A	Pass
38	0.000	0.000	N/A	0.000	0.000	N/A	Pass
39	0.001	0.008	N/A	0.001	0.012	N/A	Pass
40	0.000	0.000	N/A	0.000	0.000	N/A	Pass

Note: Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

Voltage Source Verification Data (Run time)

EUT: GTPC-60-48-S **Tested by: RJB**
Test category: Class-C (European limits) **Test Margin: 100**
Test date: 2021/11/16 **Start time: 14:19:06** **End time: 14:21:47**
Test duration (min): 2.5 **Data file name: H-006679.cts_data**
Comment: Full Load
Customer: Customer information

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

Highest parameter values during test:

Voltage (Vrms):	**230.00**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**0.445**	**I_RMS (Amps):**	**0.275**
I_Fund (Amps):	**0.272**	**Crest Factor:**	**1.622**
Power (Watts):	**61.1**	**Power Factor:**	**0.968**

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.079	0.460	17.09	OK
3	0.463	2.070	22.39	OK
4	0.083	0.460	18.06	OK
5	0.049	0.920	5.28	OK
6	0.050	0.460	10.90	OK
7	0.058	0.690	8.42	OK
8	0.025	0.460	5.43	OK
9	0.032	0.460	7.00	OK
10	0.017	0.460	3.63	OK
11	0.018	0.230	7.89	OK
12	0.013	0.230	5.58	OK
13	0.013	0.230	5.49	OK
14	0.007	0.230	3.07	OK
15	0.010	0.230	4.40	OK
16	0.011	0.230	4.79	OK
17	0.005	0.230	2.15	OK
18	0.012	0.230	5.10	OK
19	0.008	0.230	3.56	OK
20	0.023	0.230	9.88	OK
21	0.008	0.230	3.39	OK
22	0.006	0.230	2.72	OK
23	0.004	0.230	1.81	OK
24	0.002	0.230	1.04	OK
25	0.003	0.230	1.44	OK
26	0.003	0.230	1.20	OK
27	0.006	0.230	2.62	OK
28	0.003	0.230	1.25	OK
29	0.005	0.230	2.23	OK
30	0.003	0.230	1.24	OK
31	0.003	0.230	1.13	OK
32	0.002	0.230	0.84	OK
33	0.004	0.230	1.74	OK
34	0.003	0.230	1.18	OK
35	0.002	0.230	1.08	OK
36	0.002	0.230	0.81	OK
37	0.004	0.230	1.75	OK
38	0.002	0.230	0.83	OK
39	0.005	0.230	2.14	OK
40	0.012	0.230	5.17	OK

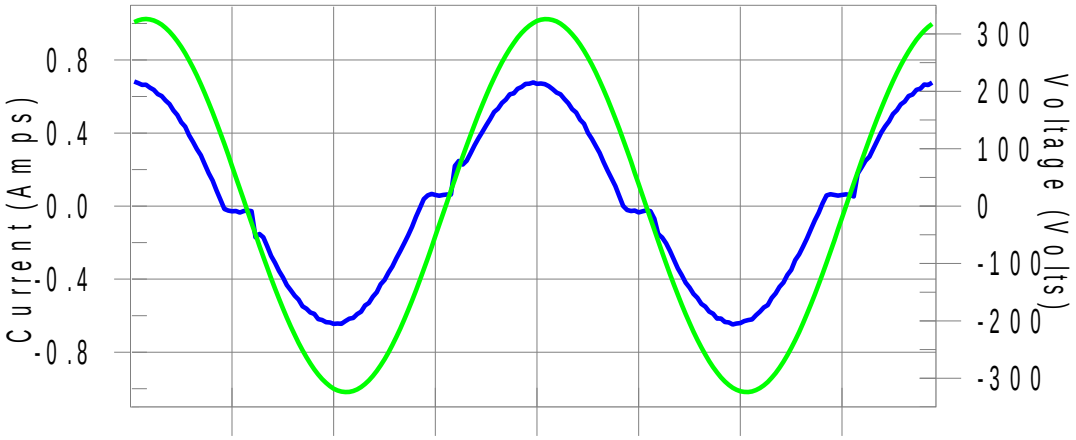
9.5.10 Table 080

Harmonics – Class-C per IEC 61000-3-2:2018/AMD1:2020(Run time)

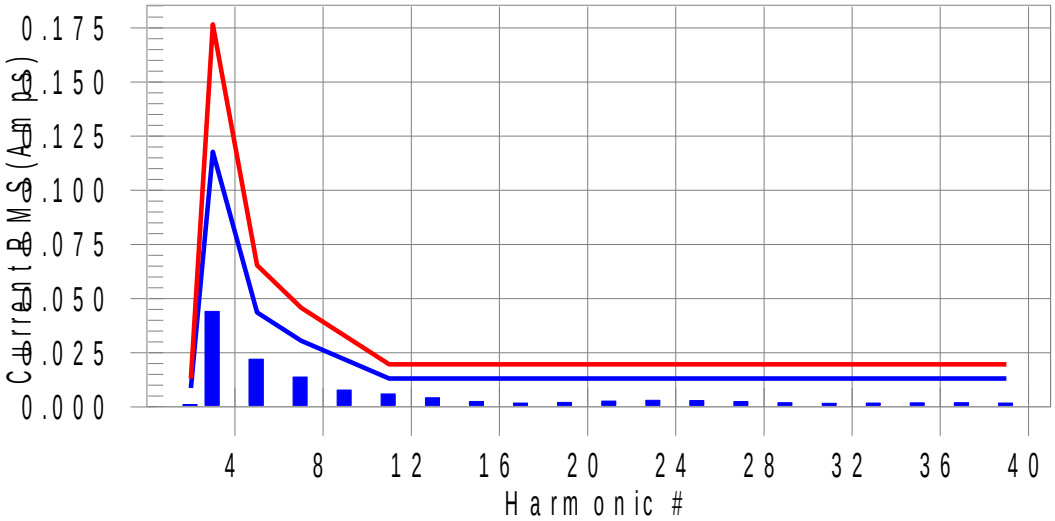
EUT: GTPC-100-48-S **Tested by: RJB**
Test category: Class-C (European limits) **Test Margin: 100**
Test date: 2021/11/16 **Start time: 13:59:01** **End time: 14:01:42**
Test duration (min): 2.5 **Data file name: H-006676.cts_data**
Comment: Full Load
Customer: Customer information

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

Current & voltage waveforms



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



Test result: Pass Worst harmonics H5-35.1% of 150% limit, H5-50.5% of 100% limit

Current Test Result Summary (Run time)

EUT: GTPC-100-48-S **Tested by: RJB**
Test category: Class-C (European limits) **Test Margin: 100**
Test date: 2021/11/16 **Start time: 13:59:01** **End time: 14:01:42**
Test duration (min): 2.5 **Data file name: H-006676.cts_data**
Comment: Full Load
Customer: Customer information

Test Result: Pass **Source qualification: Normal**
THC(A): 0.053 **I-THD(%): 12.1** **POHC(A): 0.007** **POHC Limit(A): 0.041**

Highest parameter values during test:

V_RMS (Volts):	229.97	Frequency(Hz):	50.00
I_Peak (Amps):	0.691	I_RMS (Amps):	0.440
I_Fund (Amps):	0.436	Crest Factor:	1.579
Power (Watts):	98.3	Power Factor:	0.973

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	0.009	N/A	0.001	0.013	N/A	Pass
3	0.044	0.118	37.4	0.046	0.177	26.0	Pass
4	0.001	0.000	N/A	0.001	0.000	N/A	Pass
5	0.022	0.044	50.5	0.023	0.065	35.1	Pass
6	0.000	0.000	N/A	0.000	0.000	N/A	Pass
7	0.014	0.031	45.2	0.014	0.046	31.2	Pass
8	0.000	0.000	N/A	0.000	0.000	N/A	Pass
9	0.008	0.022	35.8	0.008	0.033	24.7	Pass
10	0.000	0.000	N/A	0.000	0.000	N/A	Pass
11	0.006	0.013	45.6	0.006	0.020	31.5	Pass
12	0.000	0.000	N/A	0.000	0.000	N/A	Pass
13	0.004	0.013	N/A	0.004	0.020	N/A	Pass
14	0.000	0.000	N/A	0.000	0.000	N/A	Pass
15	0.003	0.013	N/A	0.003	0.020	N/A	Pass
16	0.000	0.000	N/A	0.000	0.000	N/A	Pass
17	0.002	0.013	N/A	0.002	0.020	N/A	Pass
18	0.000	0.000	N/A	0.000	0.000	N/A	Pass
19	0.002	0.013	N/A	0.002	0.020	N/A	Pass
20	0.000	0.000	N/A	0.000	0.000	N/A	Pass
21	0.003	0.013	N/A	0.003	0.020	N/A	Pass
22	0.000	0.000	N/A	0.000	0.000	N/A	Pass
23	0.003	0.013	N/A	0.003	0.020	N/A	Pass
24	0.000	0.000	N/A	0.000	0.000	N/A	Pass
25	0.003	0.013	N/A	0.003	0.020	N/A	Pass
26	0.000	0.000	N/A	0.000	0.000	N/A	Pass
27	0.002	0.013	N/A	0.003	0.020	N/A	Pass
28	0.000	0.000	N/A	0.000	0.000	N/A	Pass
29	0.002	0.013	N/A	0.002	0.020	N/A	Pass
30	0.000	0.000	N/A	0.000	0.000	N/A	Pass
31	0.002	0.013	N/A	0.002	0.020	N/A	Pass
32	0.000	0.000	N/A	0.000	0.000	N/A	Pass
33	0.002	0.013	N/A	0.002	0.020	N/A	Pass
34	0.000	0.000	N/A	0.000	0.000	N/A	Pass
35	0.002	0.013	N/A	0.002	0.020	N/A	Pass
36	0.000	0.000	N/A	0.000	0.000	N/A	Pass
37	0.002	0.013	N/A	0.002	0.020	N/A	Pass
38	0.000	0.000	N/A	0.000	0.000	N/A	Pass
39	0.002	0.013	N/A	0.002	0.020	N/A	Pass
40	0.000	0.000	N/A	0.000	0.000	N/A	Pass

Note: Dynamic limits were applied for this test. The highest harmonics values in the above table may not occur at the same window as the maximum harmonics/limit ratio.

Voltage Source Verification Data (Run time)

EUT: GTPC-100-48-S **Tested by: RJB**
Test category: Class-C (European limits) **Test Margin: 100**
Test date: 2021/11/16 **Start time: 13:59:01** **End time: 14:01:42**
Test duration (min): 2.5 **Data file name: H-006676.cts_data**
Comment: Full Load
Customer: Customer information

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

Highest parameter values during test:

Voltage (Vrms):	229.97	Frequency(Hz):	50.00
I_Peak (Amps):	0.691	I_RMS (Amps):	0.440
I_Fund (Amps):	0.436	Crest Factor:	1.579
Power (Watts):	98.3	Power Factor:	0.973

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.086	0.460	18.79	OK
3	0.462	2.069	22.35	OK
4	0.087	0.460	18.88	OK
5	0.050	0.920	5.49	OK
6	0.051	0.460	10.99	OK
7	0.058	0.690	8.45	OK
8	0.023	0.460	5.10	OK
9	0.033	0.460	7.26	OK
10	0.017	0.460	3.78	OK
11	0.019	0.230	8.24	OK
12	0.012	0.230	5.33	OK
13	0.013	0.230	5.65	OK
14	0.007	0.230	3.01	OK
15	0.010	0.230	4.50	OK
16	0.012	0.230	5.03	OK
17	0.004	0.230	1.91	OK
18	0.012	0.230	5.35	OK
19	0.009	0.230	3.75	OK
20	0.025	0.230	10.89	OK
21	0.009	0.230	3.81	OK
22	0.006	0.230	2.41	OK
23	0.005	0.230	2.21	OK
24	0.003	0.230	1.36	OK
25	0.004	0.230	1.79	OK
26	0.002	0.230	1.07	OK
27	0.007	0.230	2.96	OK
28	0.003	0.230	1.10	OK
29	0.006	0.230	2.53	OK
30	0.003	0.230	1.37	OK
31	0.003	0.230	1.15	OK
32	0.002	0.230	0.93	OK
33	0.005	0.230	2.19	OK
34	0.002	0.230	1.07	OK
35	0.003	0.230	1.40	OK
36	0.002	0.230	0.91	OK
37	0.005	0.230	2.39	OK
38	0.002	0.230	0.89	OK
39	0.005	0.230	2.09	OK
40	0.012	0.230	5.39	OK

10 Voltage fluctuations and flicker

10.1 Standard

Generic standard **EN 61000-3-3:2013+A1:2019**

Date of testing **N/A**

10.2 Measurement equipment

	Equipment	Manufacturer	Type	Serial No.	Calibration due
☒	AC Power Source	SCHAFFNER	NSG 1007	57877	2022-01-07
☒	Signal Conditioning unit	SCHAFFNER	CCN1000-1	72538	2022-01-07

10.3 Test set-up

Annex B with a photo or a rough figure of the test set-up is attached.

The power cord of the EUT is connected to the output of the test systems, Turn on the power of the EUT and use the test system to test the voltage fluctuation and flicker.

There is no testing required if the device does not generate any significant voltage fluctuations or flicker. A short time measurement confirmed the assumption that this is the fact. The details in the test module are representing the results of the short time measurement.

Short time (Pst): 10 min

10.4 Test results

Remark:
LED luminaires with ratings less than or equal to 200 W, are deemed to comply with the dmax limits in this standard and are not required to be tested.

11 Electrostatic Discharge

11.1 Standard

Generic standard **EN 61000-4-2:2009**

Date of testing **2017-10-25, 2021-11-12**

Performance criteria: **B**

11.2 Measurement equipment

	Equipment	Manufacturer	Type	Serial No.	Calibration due.
☒	ESD generator power	TESEQ	NSG437	161	2022.01.07
☒	ESD generator	TESEQ	NSG437	130-149	2022.01.07

11.3 Test set-up

Annex B with a photo or a rough figure of the test set-up is attached.

These tests are carried out according to IEC 61000-4-2, with test levels as given in Table 1 of this standard. Contact discharge is the preferred test method. Twenty discharges (10 with positive and 10 with negative polarity) shall be applied on each accessible metallic part of the enclosure (terminals are excluded). Air discharges shall be used where contact discharges cannot be applied. Discharges shall be applied on the horizontal or vertical coupling planes, as specified in IEC 61000-4-2.

Contact Discharge: The ESD generator is held perpendicular to the surface to which the discharge is applied and the tip of the discharge electrode touch the surface of EUT. Then turn the discharge switch. The generator is then re-triggered for a new single discharge and repeated 20 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Air Discharge: Air discharge is used where contact discharge can't be applied. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed. Indirect discharge for horizontal coupling plane At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. Indirect discharge for vertical coupling plane At least 20 single discharge shall be applied to the centre of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

11.4 Test results

Port: Enclosure			
Model	**Test Mode**	**Table**	**Result**
GTPC-45-12-S, GTPC-45-24-S, GTPC-60-12-S, GTPC-60-24-S, GTPC-75-12-S, GTPC-75-24-S GTPC-100-12-S, GTPC-100-24-S, GTPC-60-48-S, GTPC-100-48-S	TM1	081	**Pass**

11.5 Table

11.5.1 Table 081

Location	Voltage	Amount of test points	Discharge Method	Performance
Conductive Enclosure: screws	±2,4kV	4	Contact	A
Nonconductive Enclosure: slot	±2,4,8kV	6	Air	A
HCP	±2,4kV	4	Contact	A
VCP	±2,4kV	4	Contact	A

12 Radiated Electromagnetic Field Immunity

12.1 Standard

Generic standard **EN IEC 61000-4-3:2020**

Date of testing **2017-10-25, 2021-11-12**

Performance criteria: **A**

12.2 Measurement equipment

	Equipment	Manufacturer	Model No.	Serial No.	Calibration due
☒	2#Chamber	AUDIX	N/A	N/A	Apr.28,22
☒	Signal Generator	Agilent	N5181A	MY49061013	Oct.29,22
☒	Amplifier	A&R	100W/1000M1	17028	NCR
☒	Power Meter	Anritsu	ML2487A	6K00002472	Aug.20,22
☒	Power Sensor	Anritsu	MA2491A	032516	Aug.20,22
☒	Log-periodic Antenna	A&R	AT1080	16512	NCR
☒	Test Software	AUDIX	I2	3.2010-1-8	N/A

	Equipment	Manufacturer	Model No.	Serial No.	Calibration due
☒	RS Test Software	Tonscend	/	/	N/A
☒	ESG Vector Signal Generator	Agilent	E4438C	MY42081396	2021-11-14
☒	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2023-06-11
☒	RF POWER AMPLIFIER	OPHIR	5225R	1052	2021-11-21
☒	RF POWER AMPLIFIER	OPHIR	5273F	1019	2021-11-21
☒	Stacked Broadband Log Periodic Antenna	SCHWARZBECK	STLP 9128	9128ES-145	2021-11-21
☒	Stacked Mikrowellen Log.-Per Antenna	SCHWARZBECK	STLP 9149	9149-484	2021-11-21

12.3 Test set-up

Annex B with a photo or a rough figure of the test set-up is attached.

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. EUT is set 3 meter away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on Test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually. In order to judge the EUT performance, a CCD camera is used to monitor EUT screen.

12.4 Test results

Model	Test Mode	Table	Description	Result
GTPC-45-12-S, GTPC-45-24-S, GTPC-60-12-S, GTPC-60-24-S, GTPC-75-12-S, GTPC-75-24-S GTPC-100-12-S, GTPC-100-24-S, GTPC-60-48-S, GTPC-100-48-S	TM1	082	Enclosure Port	**Pass**

12.5 Table

12.5.1 Table 082

Frequency Range (MHz)	80-1000MHz	
Field Strength(V/m)	3V/m; 1kHz 80%AM (sine wave)	
Steps (%)	1%	
Dwell time	1s	
Polarization	Horizontal	Vertical
Front	A	A
Rear	A	A
Left	A	A
Right	A	A

13 Electrical Fast Transients/Bursts Immunity

13.1 Standard

Generic standard	**EN 61000-4-4:2012**
Date of testing	**2017-10-26, 2021-11-19**
Performance criteria:	**B**

13.2 Measurement equipment

	Equipment	Calibration due	Type	Serial No.	Manufacturer
☒	Multi-function generator	2022.01.07	NSG 3060	083	TESEQ
☒	Coupling- decoupling Network	2022.01.07	CDN 3061	083	TESEQ
☒	EM Clamp	2022.01.07	CDN 8014	25468	TESEQ

13.3 Test set-up

Annex B with a photo or a rough figure of the test set-up is attached.

The EUT located 0.1m±0.01m above the ground reference plane. The ground reference plane shall project beyond the EUT at least 0.1m on all side, All cables to the EUT shall be placed on the insulation support 0.1m above the ground reference plane.

When using the coupling clamp, the minimum distance between the coupling plates and all other conductive surfaces, except the ground reference plane beneath the coupling clamp, shall be 0,5 m. Unless otherwise specified in the product standard or the product family standard, the length of the signal and power lines between the coupling device and the EUT shall be 0,5 m ± 0,05 m. If the manufacturer provides a non-detachable supply cable more than 0,5 m ± 0,05 m long with the equipment, the excess length of this cable shall be folded to avoid a flat coil and situated at a distance of 0,1 m above the ground reference plane.

Fast transients are carried out during 2min with a positive polarity and during 2min with a negative polarity.

Test level at input is as below:
1kV (peak); 5/50ns;5kHz

and Test level output dc. power ports is as below:
0.5kV (peak); 5/50ns;5kHz

13.4 Test results

Model	Test Mode	Test port	Table	Result
GTPC-45-12-S, GTPC-45-24-S, GTPC-60-12-S, GTPC-60-24-S, GTPC-75-12-S, GTPC-75-24-S GTPC-100-12-S, GTPC-100-24-S, GTPC-60-48-S, GTPC-100-48-S	TM1	AC Input port; DC Output port	083	**Pass**

13.5 Table

13.5.1 Table 083

Test specification	AC input port: 1KV; 5/50ns Tr/Th;5kHz repetition frequency DC output port: 0.5KV; 5/50ns Tr/Th;5kHz repetition frequency			
Injected Line	Voltage (kV)	Test Time (s)	Injected Method	Performance
L	+1	120	Direct	A
	-1	120	Direct	A
N	+1	120	Direct	A
	-1	120	Direct	A
L, N	+1	120	Direct	A
	-1	120	Direct	A
DC output port	+0.5	120	Clamp	A
	-0.5	120	Clamp	A

14 Surge Immunity

14.1 Standard

Basic standard **EN 61000-4-5:2014+A1:2017**

Date of testing **2017-10-27, 2021-11-19**

Performance criteria: **C**

14.2 Measurement equipment

	Equipment	Calibration due	Type	Serial No.	Manufacturer
☒	Multi-function generator	2022.01.07	NSG 3060	083	TESEQ
☒	Coupling- decoupling Network	2022.01.07	CDN 3061	083	TESEQ

14.3 Test set-up

Annex B with a photo or a rough figure of the test set-up is attached.

If not otherwise specified the power cord between the EUT and the coupling/decoupling network shall not exceed 2m in length.

These tests are carried out according to IEC 61000-4-5, with test levels as given in Table 10 of this standard. Lower levels need not to be tested. Pulses shall be applied to the a.c. voltage wave as follows; five positive polarity pulses at the 90º phase angle, five negative polarity pulses at the 270º phase angle. Two test levels are given for different types of lighting equipment.

14.4 Test results

Port: AC input				
Model	**Test Mode**	**Table**	**Test specification**	**Result**
GTPC-45-12-S, GTPC-45-24-S, GTPC-60-12-S, GTPC-60-24-S, GTPC-75-12-S, GTPC-75-24-S GTPC-100-12-S, GTPC-100-24-S, GTPC-60-48-S, GTPC-100-48-S	TM1	084	Input AC power Port 1.2/50(8/20) μs Tr/Th □<=25W 0.5KV L-N ■>25W 1.0KV L-N.	**Pass**

14.5 Table

14.5.1 Table 084

Injected Line	Wave Form	Voltage(kV)	Phase	Number of Pulse/per phase	Interval time	Performance
L-N	1.2/50μs	+1.0	90°	5	60s	A
		-1.0	270°	5	60s	A

15 Conducted Immunity

15.1 Standard

Basic standard **EN 61000-4-6:2014**

Date of testing **2017-10-28, 2021-11-19**

Performance criteria: **A**

15.2 Measurement equipment

	Equipment	Calibration due	Type	Serial No.	Manufacturer
☒	Conducted immunity test system	2022.01.07	NSG4070	25795	SCHAFFNER
☒	Attenuator	2022.01.07	ATN6075	25366	TESEQ
☒	CDN	2022.01.07	M016	25127	TESEQ
☒	EM Injection Clamp	2022.01.07	KEMZ 801	25468	TESEQ

15.3 Test set-up

Annex B with a photo or a rough figure of the test set-up is attached.

Set up the EUT, CDN and test generators as shown above. The equipment to be tested is placed on an insulating support of 0.1m height above a ground reference plane, all cable exiting the EUT shall be supported at a height of at least 30mm above the ground reference plane.

The test is performed with the generator contacted to each CDN in turn. The frequency range is swept from 150kHz to 80MHz, using the signal levels established during the setting process, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.

15.4 Test results

Port：AC input /DC output				
Model	**Test Mode**	**Table**	**Test specification**	**Result**
GTPC-45-12-S, GTPC-45-24-S, GTPC-60-12-S, GTPC-60-24-S, GTPC-75-12-S, GTPC-75-24-S GTPC-100-12-S, GTPC-100-24-S, GTPC-60-48-S, GTPC-100-48-S	TM1	085	0.15MHz~80MHz 3V(r.m.s.) (unmodulated) 1kHz ,80%AM, sine wave Source impedance 150Ω	**Pass**

15.5 Table

15.5.1 Table 085

Frequency Range (MHz)	Injecteded Position	Strength	Performance
0.15MHz ~ 80MHz	AC input power port; DC output power port	3V(r.m.s, Unmodulated)	A
Dwell time: 1s; Steps: 1%			

16 Voltage dips and interruptions Immunity

16.1 Standard

Basic standard **EN IEC 61000-4-11:2020**

Date of testing **2017-10-28, 2021-11-19**

Performance criteria: **C, B**

16.2 Measurement equipment

	Equipment	Calibration due	Type	Serial No.	Manufacturer
☒	Multi-function generator	2022.01.07	NSG 3060	083	TESEQ
☒	Coupling- decoupling Network	2022.01.07	CDN 3061	083	TESEQ
☒	Automated Step transformer	2022.01.07	INA 6502	112	TESEQ

16.3 Test set-up

Annex B with a photo or a rough figure of the test set-up is attached.

The EUT is tested for each selected combination of test level and duration with a sequence of three dips/interruptions with intervals of 10s minimum. Changes to the voltage level shall occur at a zero crossing point in the a.c. voltage waveform.

16.4 Test results

Port: AC input				
Model	**Test Mode**	**Table**	**Test specification**	**Result**
GTPC-45-12-S, GTPC-45-24-S, GTPC-60-12-S, GTPC-60-24-S, GTPC-75-12-S, GTPC-75-24-S GTPC-100-12-S, GTPC-100-24-S, GTPC-60-48-S, GTPC-100-48-S	TM1	086	Voltage reduction 30% Number of periods 10 Performance criteria: C Voltage reduction 100% Number of periods 0.5 Performance criteria: B.	**Pass**

16.5 Table

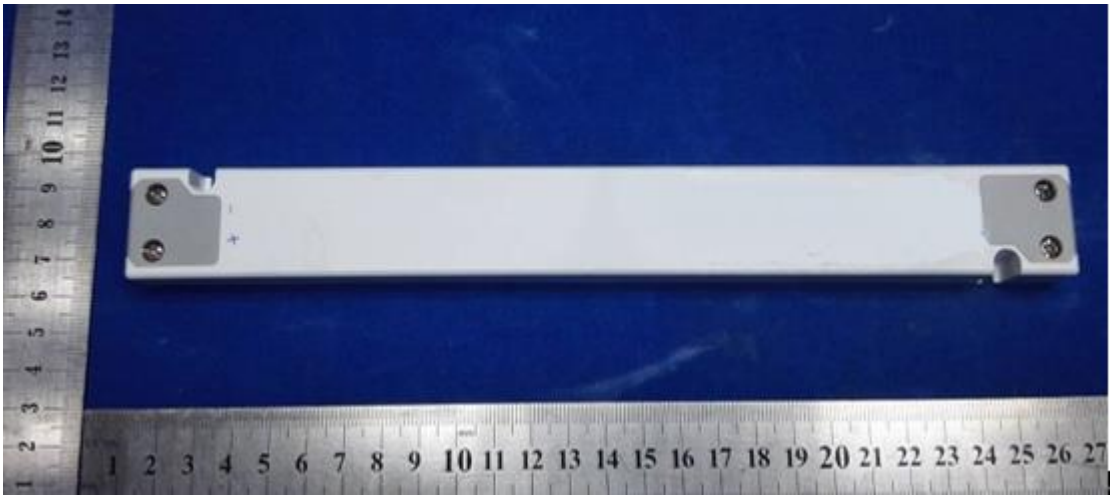
16.5.1 Table 086

Test level $\%U_T$	Voltage Dips & Short Interruptions $\% U_T$	Duration (ms)	Phase Angle	Performance
0	100	10	0°,180°	B
70	30	200	0°,180°	B

Annex A

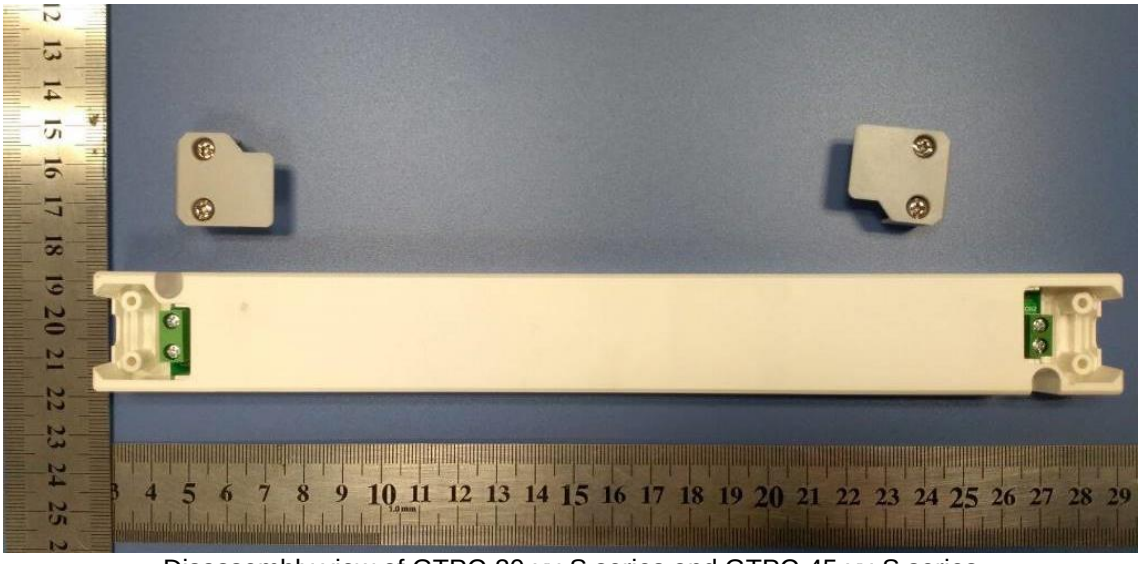
EUT / technical data

Port	**Label**	**Description**		
Enclosure	GH	Enclosure port Plastic		
Mains input AC	NAC.E	220-240V~, 50/60Hz		
Mains input DC	NDC.E	N.A		
Mains output AC	NAC.E	N.A		
Mains output DC	NAC.A	N.A		
Process measurement and control ports	PMS.E/A	N.A		
I/O and communication ports	SD.E/A	N.A		
Protective earth connection	EA	N.A		
Interface Cables	**Length**	**Shielded**	**Type**	**Special**
		☐	☐	☐

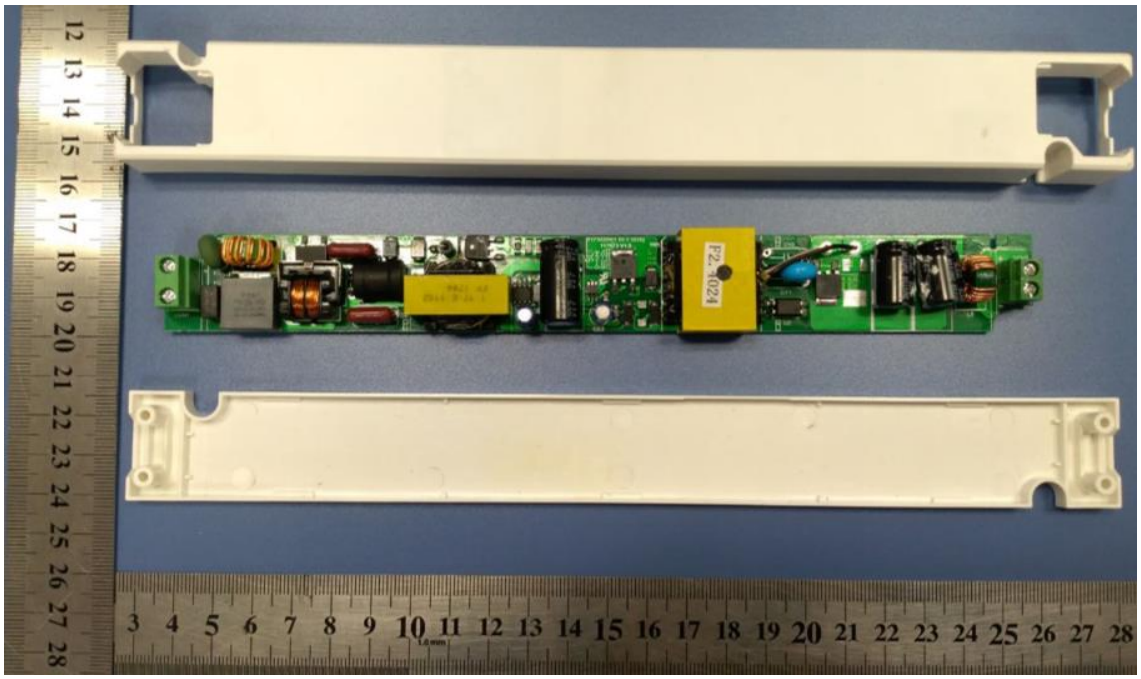


Enclosure of GTPC-30-yy-S series and GTPC-45-yy-S series

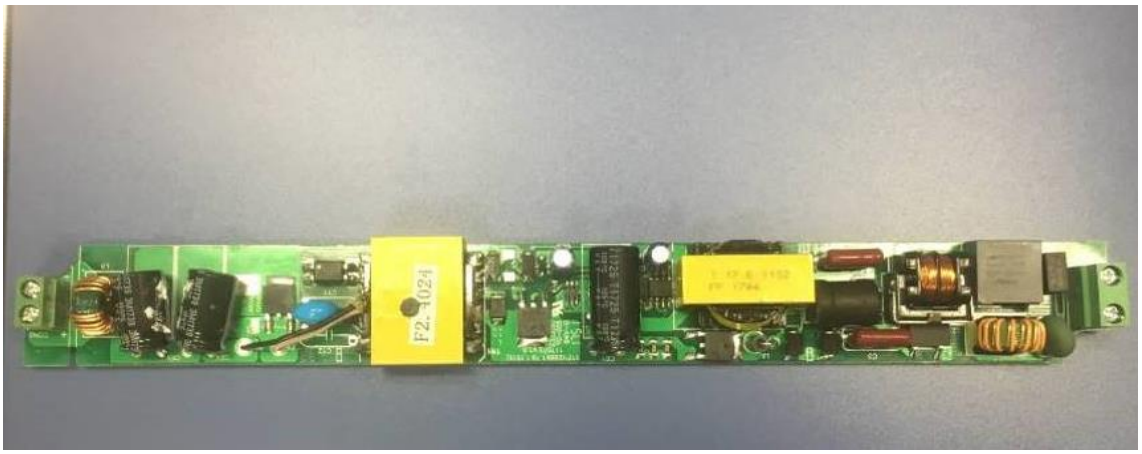
Enclosure of GTPC-30-yy-S series and GTPC-45-yy-S series



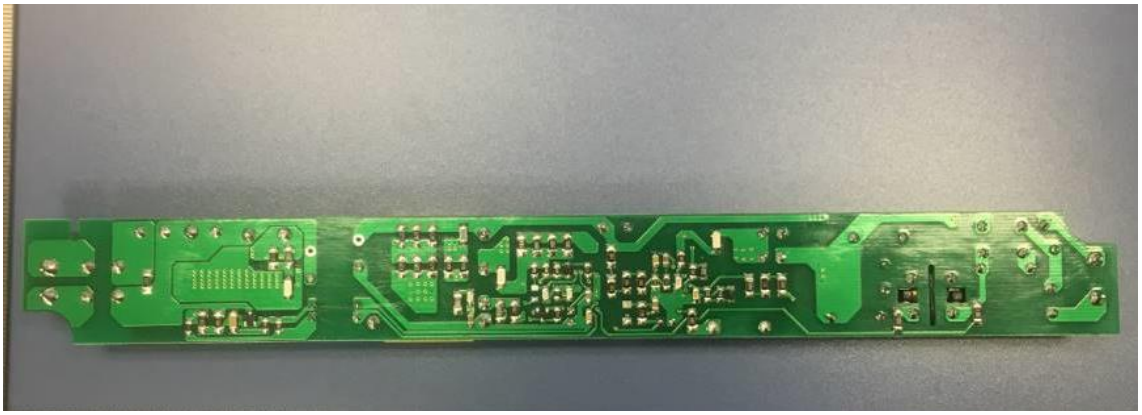
Disassembly view of GTPC-30-yy-S series and GTPC-45-yy-S series



Disassembly view of GTPC-30-yy-S series and GTPC-45-yy-S series

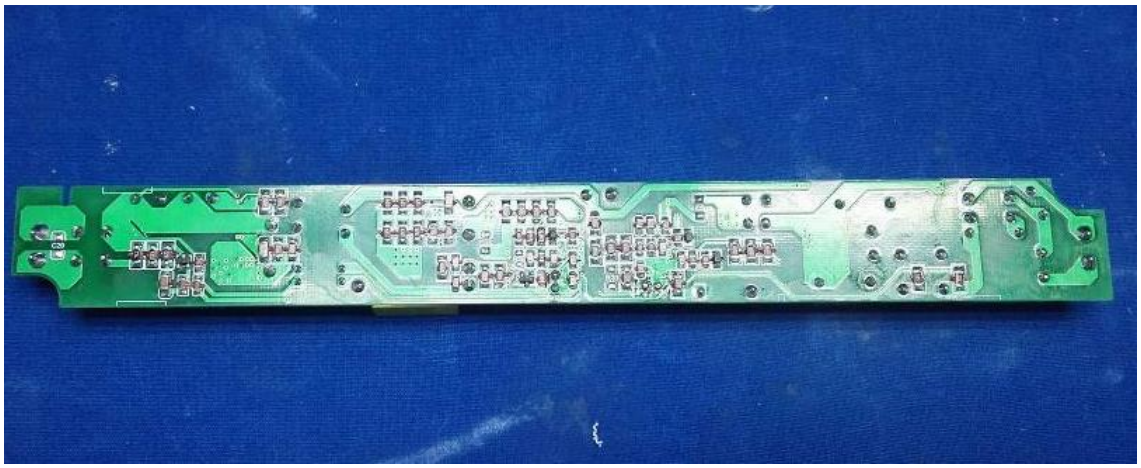


Components side of GTPC-30-yy-S series and GTPC-45-yy-S series
(GTPC-30-yy-S have only one Y1 capacitor (CY1))



Solder side of GTPC-30-yy-S series and GTPC-45-yy-S series

Components side of GTPC-45-12-S



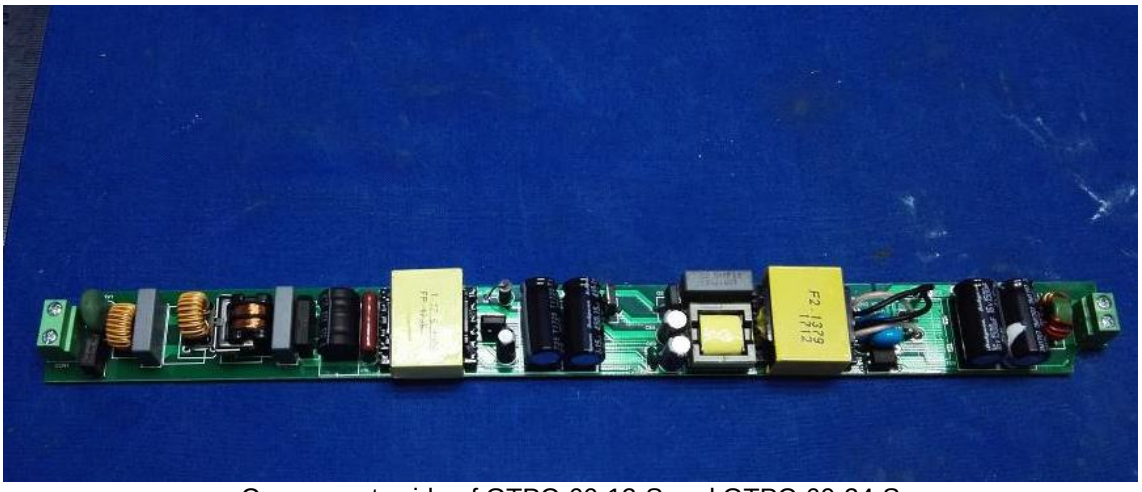
Solder side of GTPC-45-12-S

Enclosure of GTPC-60-yy-S and GTPC-75-yy-S series

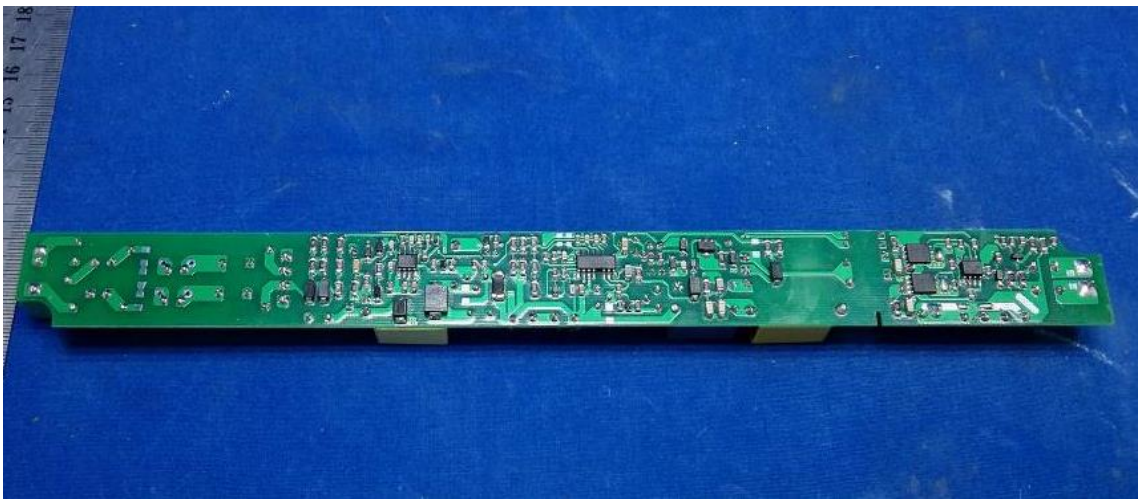
Enclosure of GTPC-60-yy-S and GTPC-75-yy-S series

Disassembly view of GTPC-60-yy-S and GTPC-75-yy-S series

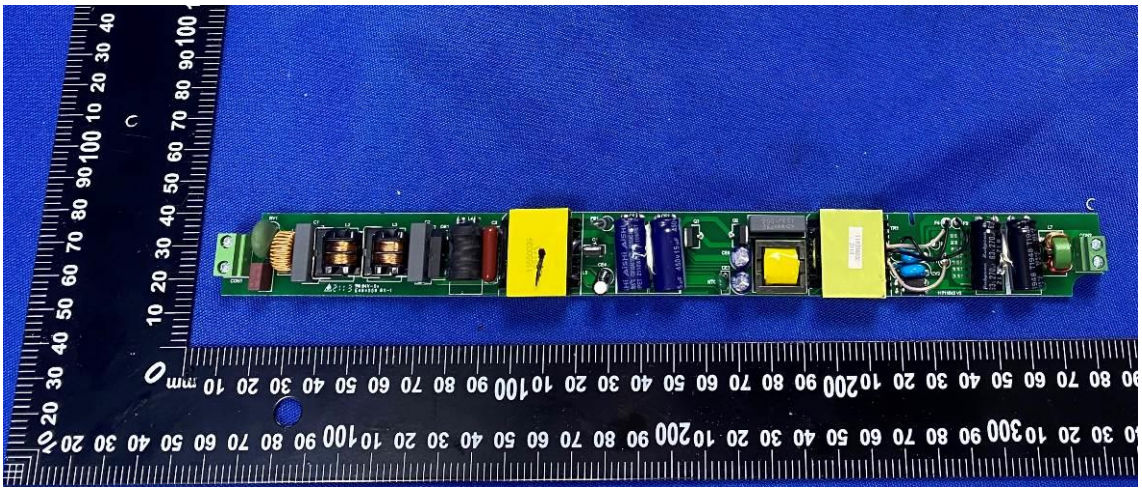
Disassembly view of GTPC-60-yy-S and GTPC-75-yy-S series



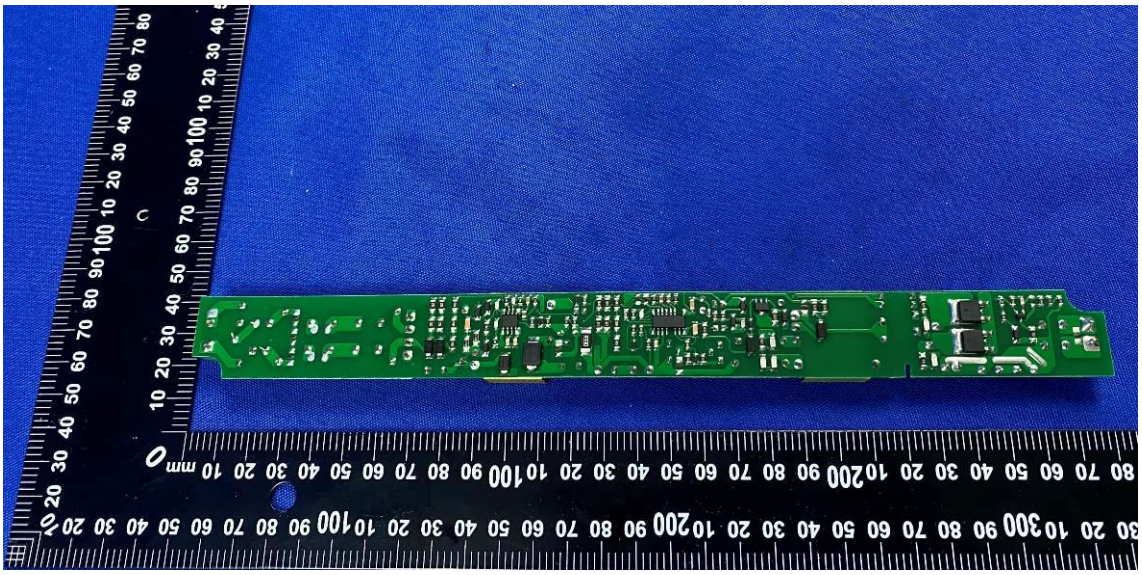
Components side of GTPC-60-12-S and GTPC-60-24-S



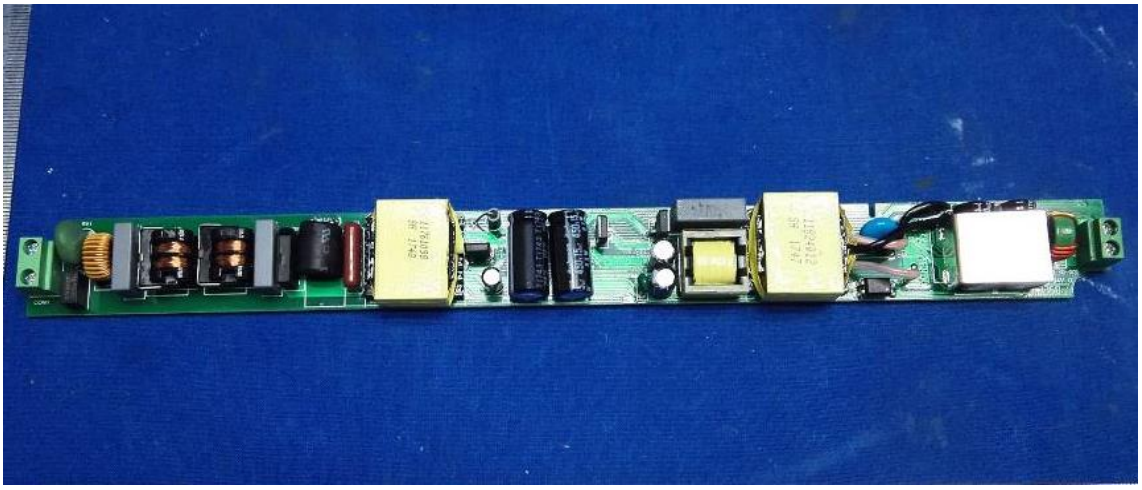
Solder side of GTPC-60-12-S and GTPC-60-24-S



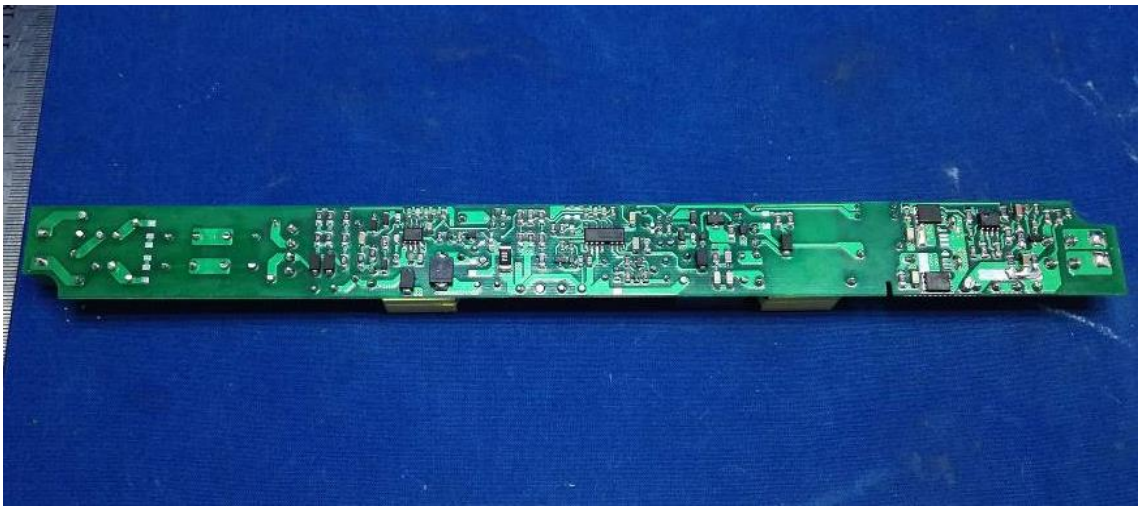
Components side of GTPC-60-48-S



Solder side of GTPC-60-48-S



Components side of GTPC-75-yy-S series



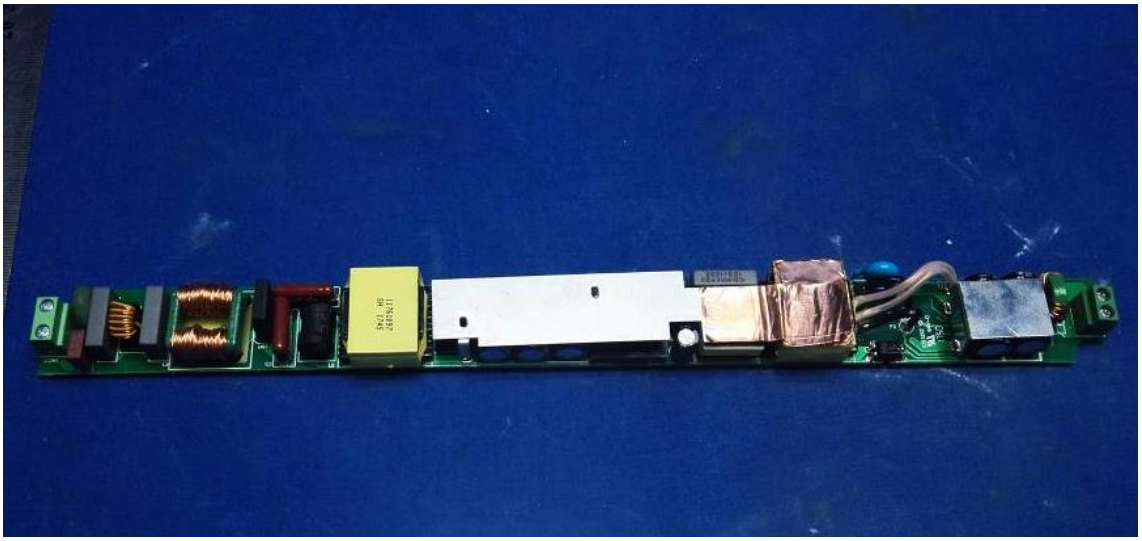
Solder side of GTPC-75-yy-S series

Enclosure of GTPC-100-yy-S series

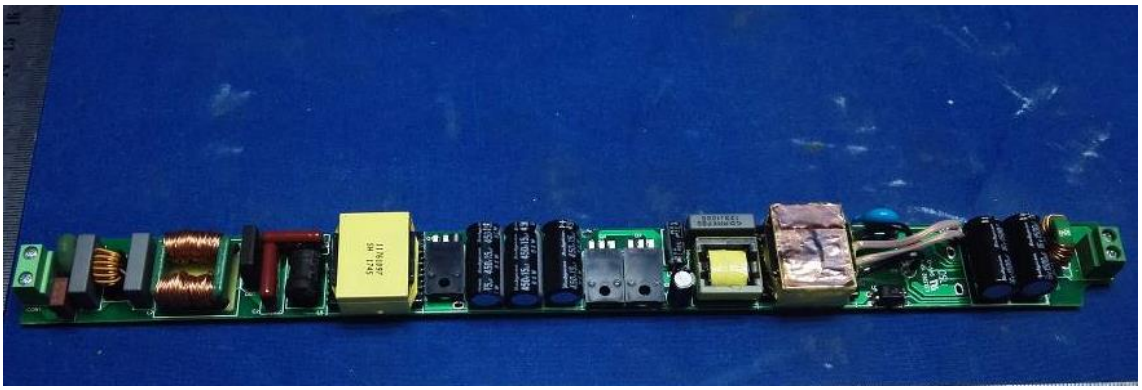
Enclosure of GTPC-100-yy-S series

Disassembly view of GTPC-100-yy-S series

Disassembly view of GTPC-100-yy-S series

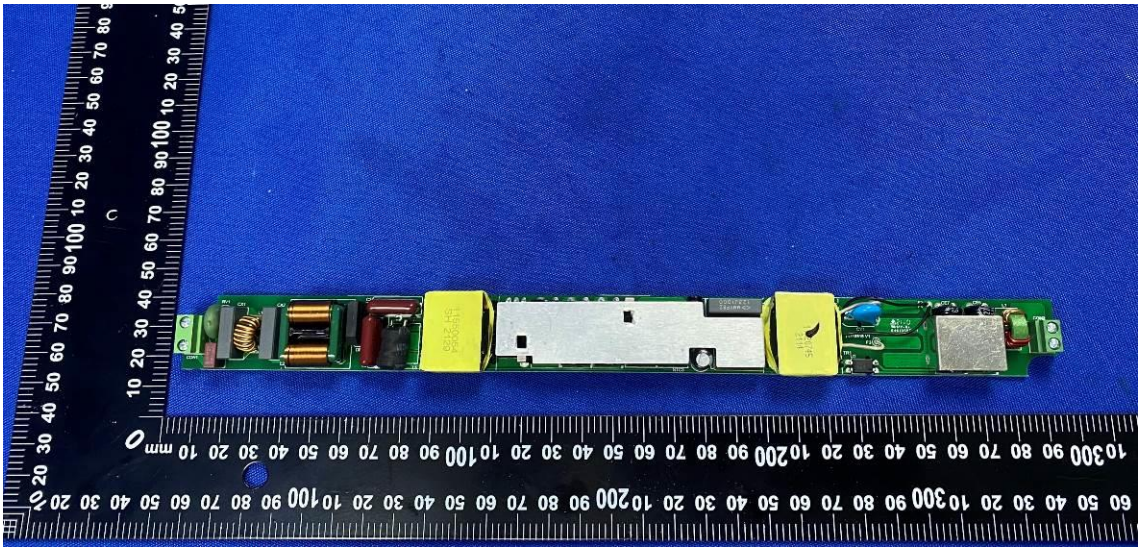


Component side of GTPC-100-12-S and GTPC-100-24-S series

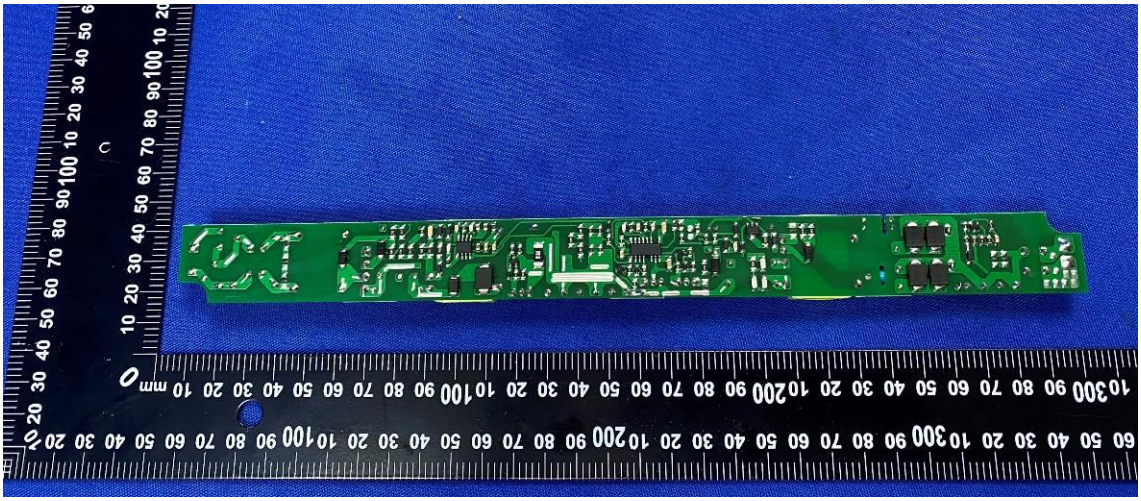


Component side of GTPC-100-12-S and GTPC-100-24-S (heat sink removed)

Solder side of GTPC-100-12-S and GTPC-100-24-S



Component side of GTPC-100-48-S



Component side of GTPC-100-48-S

Annex B

EUT set-up -details-

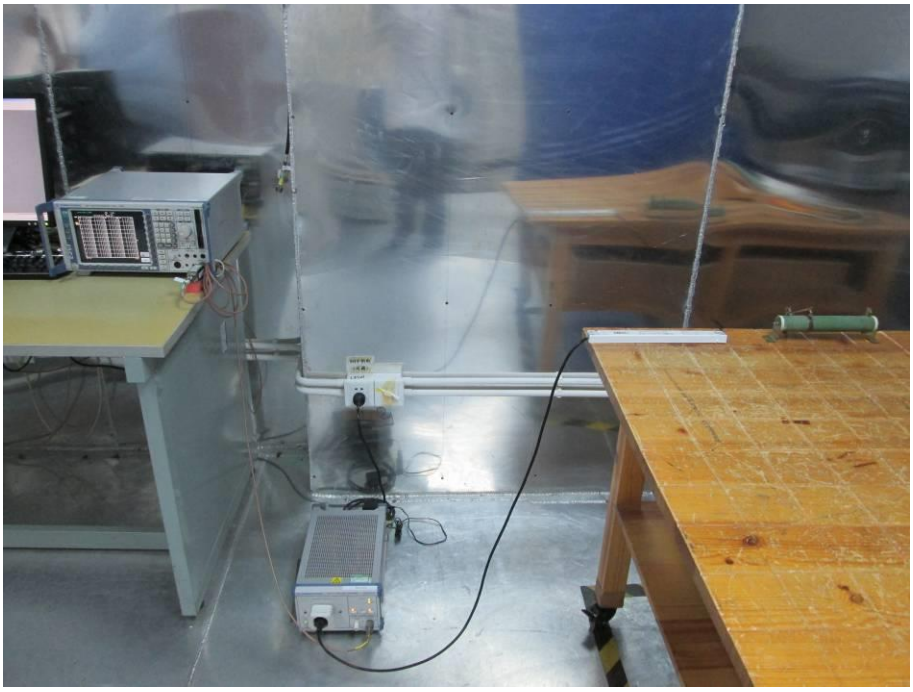


Figure B-1 Setup for Conducted Emission

Figure B-2 Setup for Radiated Emission

Figure B-3 Setup for Radiated Electromagnetic Disturbances

Figure B-4 Setup for Harmonic current emission & Voltage fluctuations and flicker

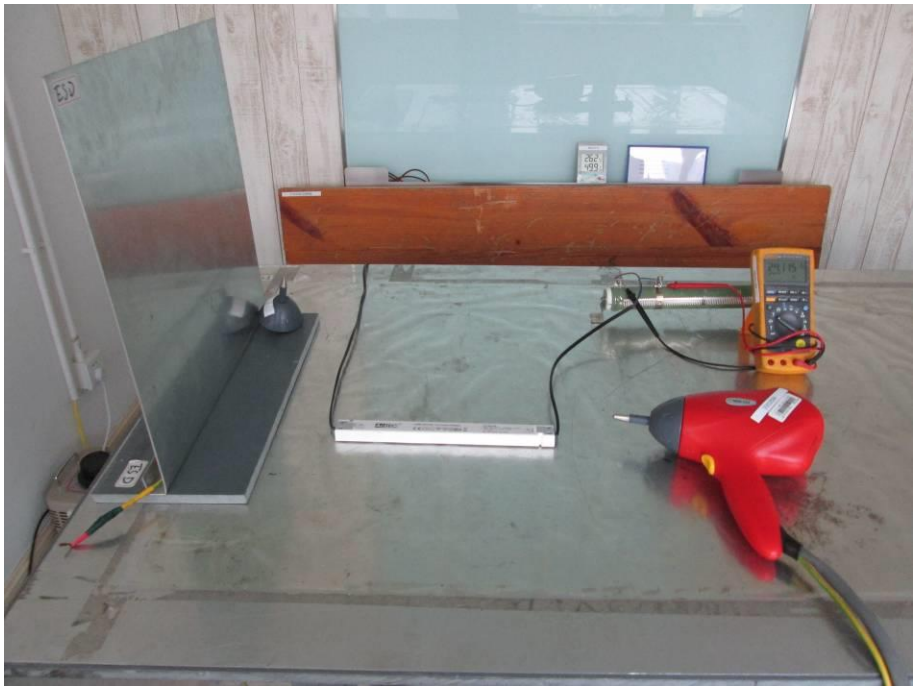


Figure B-5 Setup for Electrostatic Discharge

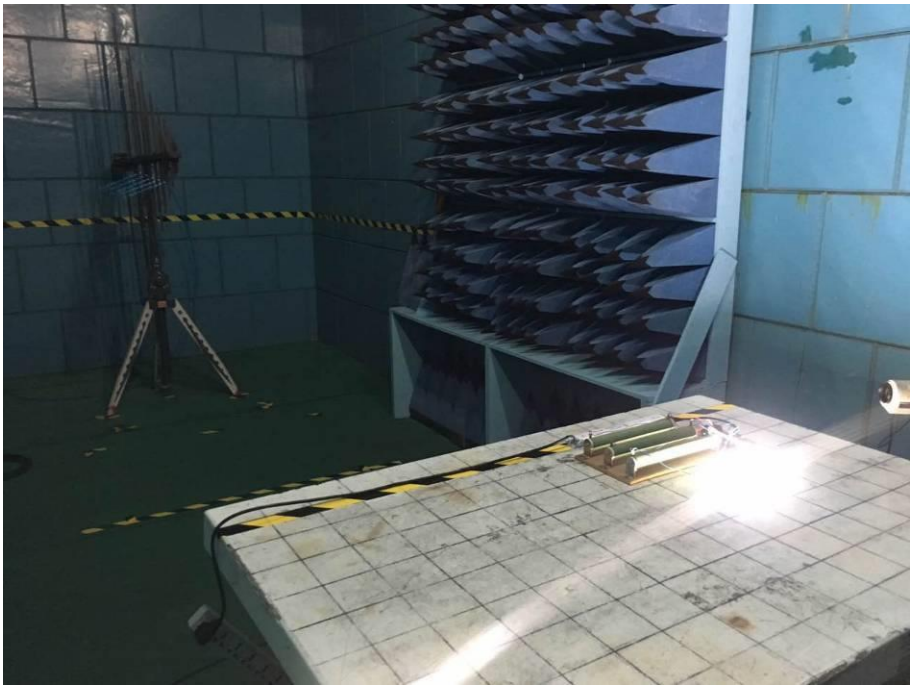


Figure B-6 Setup for Radiated immunity

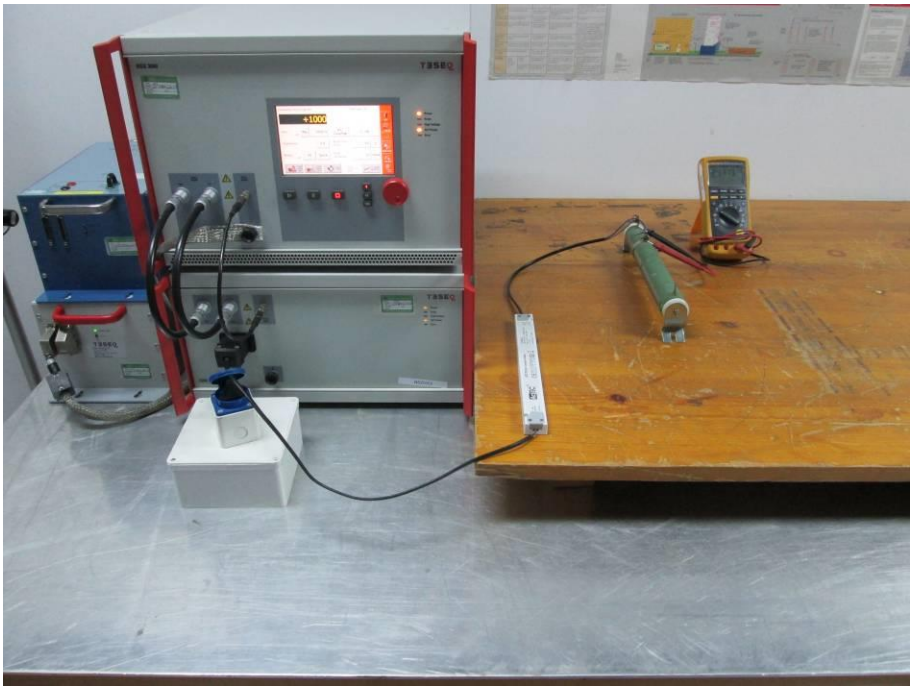


Figure B-7 Setup for Electrical Fast Transients/Bursts, Surge, Dips & interruption

Figure B-8 Setup for Electrical Fast Transients/Bursts (DC output port)

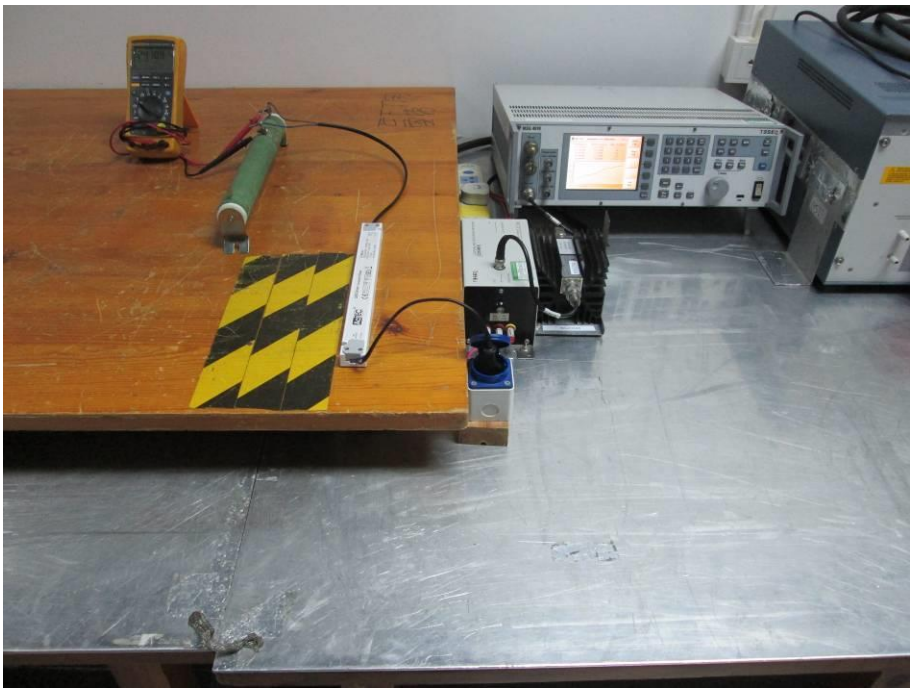


Figure B-9 Setup for Conducted immunity (AC input port)

Figure B-10 Setup for Conducted immunity (DC output port)

Figure B-11 Setup for Induced current density

******* End of Test Report *******