

TEST REPORT

Project No.: TM-2311000389P

Applicant: TRACO ELECTRONIC AG

Address: Sihlbruggstrasse 111, CH-6340 Baar, SWITZERLAND

Manufacturer: TRACO ELECTRONIC AG

Address: Sihlbruggstrasse 111, CH-6340 Baar, SWITZERLAND

Equipment Under Test (EUT):

Name: Open Frame Power Supply



Brand Name:

Model No.: TXO 60-y-Jzzzzz (y=112, 115, 124, 136, 148, 156; z can be any alphanumeric or dash or blank)

Added Model(s): TXO 45-y-Jzzzzz (y=112, 115, 124, 136, 148, 156; z can be any alphanumeric or dash or blank)

Standards:

EN 55032: 2015 + A11: 2020, Class B BS EN 55032: 2015 + A11: 2020 CISPR 32: 2015	AS/NZS CISPR 32: 2015 + A1: 2020 CISPR 32: 2015 + A1: 2019
EN IEC 61000-3-2: 2019 + A1: 2021	BS EN IEC 61000-3-2: 2019 + A1: 2021
EN 61000-3-3: 2013 + A1: 2019 + A2: 2021	BS EN 61000-3-3: 2013 + A1: 2019 + A2: 2021
EN 55035: 2017 + A11: 2020	BS EN 55035: 2017 + A11: 2020
IEC 61000-4-2: 2008	IEC 61000-4-6: 2013 + COR1: 2015
IEC 61000-4-3: 2020 (Ed. 4.0)	IEC 61000-4-8: 2009
IEC 61000-4-4: 2012	IEC 61000-4-11: 2020 + COR1: 2020 + COR2: 2022 (Ed. 3.0)
IEC 61000-4-5: 2014 + A1: 2017	

Date of Sample Receipt : November 23, 2023

Date of Test : December 6, 2023 ~ January 18, 2024

Date of Issue : March 21, 2024

Remarks:

This test report can be used for CE and UKCA marking application which is based on equivalent requirements between UK and EU. It is appropriate using designated standards to provide presumption of conformity with GB law.

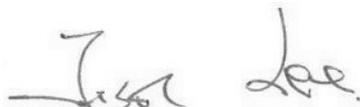
This report shall not be reproduced except in full, without approval of the Compliance Certification Services Inc. in writing.

This document may be altered or revised by Compliance Certification Services Inc. personnel only. The applicant should not use it to claim product endorsement by TAF or any other Government agencies.

Disclaimer

Variants information between/among model numbers / trademarks is provided by the applicant, test results of this test report are applicable to the sample EUT received of main test model name.

Approved By


Jason Lee (Section Manager)

Date

March 21, 2024



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留 90 天。本報告未經本公司書面許可，不可部份複製。

This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com.tw/Terms-and-Conditions> and, for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com.tw/Terms-and-Conditions>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of client's instruction, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced, except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



Revision History

Revision	Report Number	Description	Issue Date
00	TMXD2311004824DE	Original.	March 21, 2024

Note:

Contents

1. GENERAL DESCRIPTION	4
1.1 GENERAL DESCRIPTION OF EUT	4
1.2 DETAILS OF EUT	5
1.3 DESCRIPTION OF SUPPORT UNITS	5
1.4 I/O PORT DESCRIPTION.....	5
1.5 DECISION OF TEST MODE.....	6
1.6 THE FINAL TEST MODE OF THE EUT	7
1.7 CONFIGURATION OF TESTED SYSTEM	7
1.8 OPERATION PROCEDURE	7
1.9 SUMMARY OF RESULTS	8
1.10 REPORTING STATEMENTS OF CONFORMITY	8
1.11 DEVIATION.....	8
2. EMISSION.....	9
2.1 LIMIT	9
2.2 CONDUCTED EMISSION	12
2.3 RADIATED EMISSION	16
3. HARMONICS	20
3.1 TEST INSTRUMENTS	20
3.2 MEASUREMENT DATA.....	21
4. FLICKER.....	24
4.1 TEST INSTRUMENTS	24
4.2 MEASUREMENT DATA.....	25
5. IMMUNITY	26
5.1 STANDARD PERFORMANCE CRITERIA DESCRIPTION.....	26
5.2 SPECIAL PERFORMANCE CRITERIA DESCRIPTION	27
5.3 TEST OF IEC 61000-4-2	33
5.4 TEST OF IEC 61000-4-3	36
5.5 TEST OF IEC 61000-4-4	38
5.6 TEST OF IEC 61000-4-5	39
5.7 TEST OF IEC 61000-4-6	40
5.8 TEST OF IEC 61000-4-8	41
5.9 TEST OF IEC 61000-4-11	42
APPENDIX.....	43
PHOTOGRAPH OF TESTING GENERAL SET-UP	43
PHOTOGRAPHS OF EUT UNIT.....	49

1. General Description

1.1 General Description of EUT

Name of EUT	Open Frame Power Supply
Brand Name	
Model No.(s)	TXO 60-y-Jzzzzz (y=112, 115, 124, 136, 148, 156; z can be any alphanumeric or dash or blank)
Added Model(s)	TXO 45-y-Jzzzzz (y=112, 115, 124, 136, 148, 156; z can be any alphanumeric or dash or blank)

Variant Description

Model	Difference			
	Input Rating	Output Rating		
		O/P (Vdc)	O/P (A)	O/P (W)
TXO 60-112-J	100-240Vac 50/60Hz 1.5A max	12	5	60
TXO 60-115-J		15	4	60
TXO 60-124-J		24	2.5	60
TXO 60-136-J		36	1.67	60.12
TXO 60-148-J		48	1.25	60
TXO 60-156-J		56	1.07	59.92
TXO 45-112-J	100-240Vac 50/60Hz 1.2A max	12	3.80	45
TXO 45-115-J		15	3.00	45
TXO 45-124-J		24	1.90	45
TXO 45-136-J		36	1.25	45
TXO 45-148-J		48	0.94	45
TXO 45-156-J		56	0.80	45
TXO 60-y-Jzzzzz; TXO 45-y-Jzzzzz	1. y=112, 115, 124, 136, 148, 156; z can be any alphanumeric or dash or blank 2. For marketing purpose only.			

1.2 Details of EUT

EUT Power Rating	TXO 60-y-Jzzzzz: Input Rating: 100-240Vac 50/60Hz 1.5A max TXO 45-y-Jzzzzz: Input Rating: 100-240Vac 50/60Hz 1.2A max Output Rating: Please see the model differences
Highest internal frequency	70kHz

Accessories Cable List

Cable Type	Core	Length	Category	Shielding/Non-shielding

1.3 Description of Support Units

Peripherals Devices:

No.	PRODUCT	MANUFACTURER	MODEL NO.	SERIAL NO.
1	Variable resistor	N/A	N/A	N/A

Support Equipment Used in Tested Cable

No.	Cable Type	Core	Length	Shielding/Non-shielding
1	Power cord	N/A	0.27m	Non-shielding

1.4 I/O Port Description

I/O Port Types	Q'TY

1.5 Decision of Test Mode

The test configuration/ modes are as the following:

Modes:

1	TXO 60-112-J	W/ Ground	Full Rated Load Mode	100VAC / 50Hz
2				230VAC / 50Hz
3		W/O Ground		100VAC / 50Hz
4				230VAC / 50Hz
5	TXO 60-115-J	W/ Ground	Full Rated Load Mode	100VAC / 50Hz
6				230VAC / 50Hz
7		W/O Ground		100VAC / 50Hz
8				230VAC / 50Hz
9	TXO 60-124-J	W/ Ground	Full Rated Load Mode	100VAC / 50Hz
10				230VAC / 50Hz
11		W/O Ground		100VAC / 50Hz
12				230VAC / 50Hz
13	TXO 60-136-J	W/ Ground	Full Rated Load Mode	100VAC / 50Hz
14				230VAC / 50Hz
15		W/O Ground		100VAC / 50Hz
16				230VAC / 50Hz
17	TXO 60-148-J	W/ Ground	Full Rated Load Mode	100VAC / 50Hz
18				230VAC / 50Hz
19		W/O Ground		100VAC / 50Hz
20				230VAC / 50Hz
21	TXO 60-156-J	W/ Ground	Full Rated Load Mode	100VAC / 50Hz
22				230VAC / 50Hz
23		W/O Ground		100VAC / 50Hz
24				230VAC / 50Hz
25	TXO 45-112-J	W/ Ground	Full Rated Load Mode	100VAC / 50Hz
26				230VAC / 50Hz
27		W/O Ground		100VAC / 50Hz
28				230VAC / 50Hz
29	TXO 45-115-J	W/ Ground	Full Rated Load Mode	100VAC / 50Hz
30				230VAC / 50Hz
31		W/O Ground		100VAC / 50Hz
32				230VAC / 50Hz

33	TXO 45-124-J	W/ Ground	Full Rated Load Mode	100VAC / 50Hz
34				230VAC / 50Hz
35		W/O Ground		100VAC / 50Hz
36				230VAC / 50Hz
37	TXO 45-136-J	W/ Ground	Full Rated Load Mode	100VAC / 50Hz
38				230VAC / 50Hz
39		W/O Ground		100VAC / 50Hz
40				230VAC / 50Hz
41	TXO 45-148-J	W/ Ground	Full Rated Load Mode	100VAC / 50Hz
42				230VAC / 50Hz
43		W/O Ground		100VAC / 50Hz
44				230VAC / 50Hz
45	TXO 45-156-J	W/ Ground	Full Rated Load Mode	100VAC / 50Hz
46				230VAC / 50Hz
47		W/O Ground		100VAC / 50Hz
48				230VAC / 50Hz

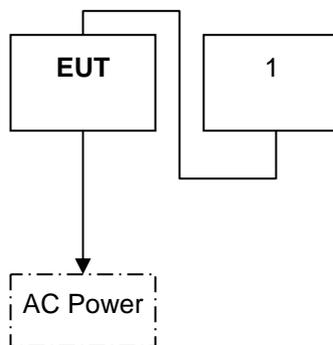
1.6 The Final Test Mode of the EUT

After the preliminary scan, the following test mode was found to produce the highest emission level.

Final Test Mode	
Conducted Emission	Mode 14
ISN	N/A
Radiated Emission Below 1GHz	Mode 14
Radiated Emission Above 1GHz	N/A
Harmonics & Flicker	Mode 14
Immunity	Mode 14

Then, the above highest emission mode of the configuration of the EUT and cable was chosen for all final test items.

1.7 Configuration of Tested System



1.8 Operation Procedure

1. To adjust variable resistor to test full rated load mode.

1.9 Summary of Results

Emission		
Standard	Test Type	Result
EN 55032: 2015 + A11: 2020 BS EN 55032: 2015 + A11: 2020 CISPR 32: 2015	Conducted Emission	PASS
AS/NZS CISPR 32: 2015 + A1: 2020 CISPR 32: 2015 + A1: 2019	ISN	N/A
EN IEC 61000-3-2: 2019 + A1: 2021 BS EN IEC 61000-3-2: 2019 + A1: 2021	Radiated Emission	PASS
EN IEC 61000-3-2: 2019 + A1: 2021 BS EN IEC 61000-3-2: 2019 + A1: 2021	Harmonic current emissions	PASS
EN 61000-3-3: 2013 + A1: 2019 + A2: 2021 BS EN 61000-3-3: 2013 + A1: 2019 + A2: 2021	Voltage changes, voltage fluctuations & flicker	PASS

Immunity			
Standard	Test Type	Result	Performance Criteria
IEC 61000-4-2: 2008	ESD	PASS	B
IEC 61000-4-3: 2020 (Ed. 4.0)	RS	PASS	A
IEC 61000-4-4: 2012	EFT	PASS	B
IEC 61000-4-5: 2014 + A1: 2017	Surge	PASS	B
IEC 61000-4-6: 2013 + COR1: 2015	CS	PASS	A
IEC 61000-4-8: 2009	PFMF	PASS	A
IEC 61000-4-11: 2020 + COR1: 2020 + COR2: 2022 (Ed. 3.0)	DIP	PASS	C/C/B

1.10 Reporting Statements of Conformity

The conformity statement in this report is based solely on the test results, measurement uncertainty is excluded.

1.11 Deviation

No deviation from the mentioned test methods and applicable standards.

2. EMISSION

2.1 Limit

Maximum permissible level of Line Conducted Emission

FREQUENCY (MHz)	Class A(dBuV)		Class B(dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Note: The lower limit shall apply at the transition frequency.

Maximum permissible level of Common Mode Conducted Emission (Asymmetric Mode)

Class A

FREQUENCY (MHz)	Voltage Limit(dBuV)		Current Limit(dBuA)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	97 - 87	84 - 74	53 - 43	40 - 30
0.5 - 30.0	87	74	43	30

Class B

FREQUENCY (MHz)	Voltage Limit(dBuV)		Current Limit(dBuA)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	84 - 74	74 - 64	40 - 30	30 - 20
0.5 - 30.0	74	64	30	20

Note: The lower limit shall apply at the transition frequency.

Maximum permissible level of Radiated Emission measured at 10 meter

FREQUENCY (MHz)	Class A(dBuV/m)	Class B(dBuV/m)
	Quasi - peak	Quasi - peak
30 - 230	40	30
230 - 1000	47	37

Note: The lower limit shall apply at the transition frequency.

Maximum permissible level of Radiated Emission measured at 3 meter

Frequency range (MHz)	Class A(dBuV/m)	Class B(dBuV/m)
	Quasi - peak	Quasi - peak
30 - 230	50	40
230 - 1000	57	47

Note: The lower limit shall apply at the transition frequency.

Limits above 1 GHz

EN 55032: 2015 + A11: 2020; BS EN 55032: 2015 + A11: 2020; CISPR 32: 2015

Limits for radiated disturbance of Class A ITE at a measurement distance of 3m

Frequency range (GHz)	Average Limit dB(μ V/m)	Peak Limit dB(μ V/m)
1 - 3	56	76
3 - 6	60	80

Note: The lower limit applies at the transition frequency.

Limits for radiated disturbance of Class B ITE at a measurement distance of 3m

Frequency range (GHz)	Average Limit dB(μ V/m)	Peak Limit dB(μ V/m)
1 - 3	50	70
3 - 6	54	74

Note: The lower limit applies at the transition frequency.

AS/NZS CISPR 32: 2015 + A1: 2020; CISPR 32: 2015 + A1: 2019

Limits for radiated disturbance of Class A ITE at a measurement distance of 3m

Frequency range (GHz)	Average Limit dB(μ V/m)	Peak Limit dB(μ V/m)
1 - 3	60	80
3 - 6	60	80

Note: The lower limit applies at the transition frequency.

Limits for radiated disturbance of Class B ITE at a measurement distance of 3m

Frequency range (GHz)	Average Limit dB(μ V/m)	Peak Limit dB(μ V/m)
1 - 3	54	74
3 - 6	54	74

Note: The lower limit applies at the transition frequency.

Requirements for radiated emissions from FM receivers

Frequency range (MHz)	Measurement				Class B Limit dB(μ V/m)	
	Facility	Distance (m)	Detector type / Bandwidth	Fundamental	Harmonics	
30 - 230	OATS/SAC	10	Quasi Peak / 120 kHz	50	42	
230 - 300					42	
300 - 1000					46	
30 - 230	OATS/SAC	3	Quasi Peak / 120 kHz	60	52	
230 - 300					52	
300 - 1000					56	

These relaxed limits apply only to emissions at the fundamental and harmonic frequencies of the LO. Signals at all other frequencies shall be compliant with the limits

Note: SAC: Semi Anechoic Chamber
 OATS: Open Area Test Site

2.2 Conducted Emission

2.2.1 Test Instruments

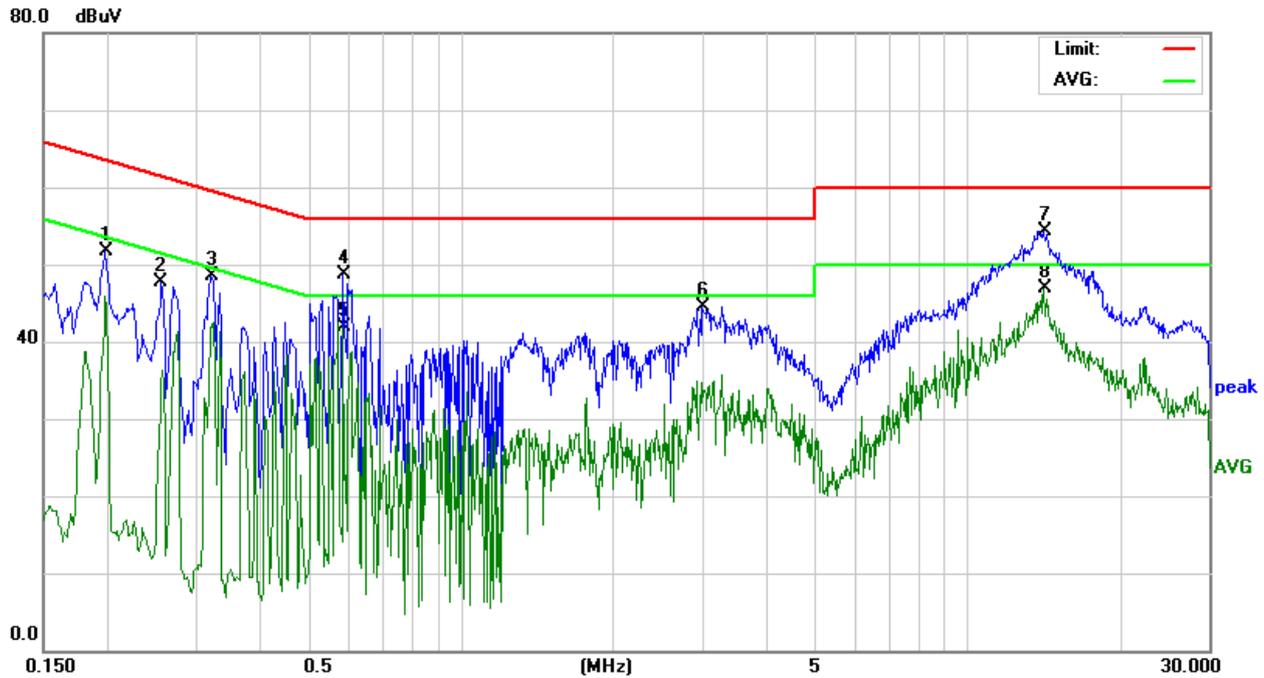
Conducted Emission Room # B					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Attenuator	MCL	HAT-10	SD-C012	03/20/2023	03/19/2024
BNC Cable	EMEC	CFD300-NL	SD-C020	12/28/2023	12/27/2024
EMI Test Receiver	R&S	ESR3	102166	03/14/2023	03/13/2024
LISN	Schwarzbeck	NSLK 8127	01082	03/22/2023	03/21/2024
LISN(EUT)	Schwarzbeck	NSLK 8127	01084	03/22/2023	03/21/2024
Thermo-Hygro Meter	Wisewind	N/A	SD-S017	08/16/2023	08/15/2024
Test S/W	EZ-EMC Ver.CCS-03A1				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					
Measurement Uncertainty of Conducted Emission					
Expanded uncertainty U _{lab} (k=2) of Conducted Emission is 2.8 dB.					
Expanded uncertainty U _{lab} (k=2) of ISN Conducted Emission is N/A dB					
Expanded uncertainty CISPR 16-4-2:2011+A1:2014+A2:2018 (k=2) of Conducted Emission measurement is 3.8 dB.					
Expanded uncertainty CISPR 16-4-2:2011+A1:2014+A2:2018 (k=2) of ISN Conducted Emission measurement is N/A dB.					

2.2.2 Measurement Level Calculation

Factor = LISN insertion loss + Cable loss + Pulse Limiter insertion loss
 Measurement Level = Reading Level + Factor
 Over (Margin) = Measurement Level – Limit

2.2.3 Measurement Data (CE)

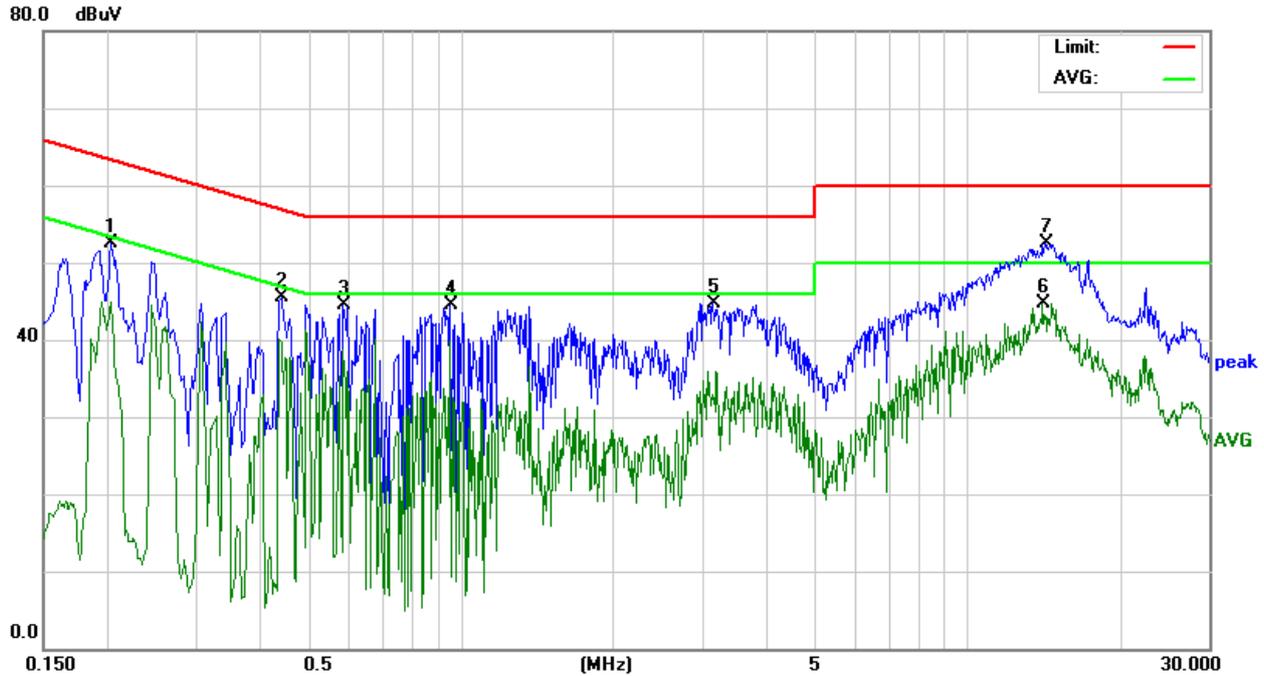
Model No.	TXO 60-136-J	6dB Bandwidth	9 kHz
Environmental Conditions	19.5°C, 53% RH	Test Mode	Mode 14
Tested by	Jacky Lin	Phase	L1
Standard	EN 55032 CLASS B		



Conducted Emission Readings							
Frequency Range Investigated				150 kHz to 30 MHz			
Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector (P/Q/A)	Line (L1/L2)
0.1995	41.67	10.08	51.75	63.63	-11.88	P	L1
0.2560	37.59	10.08	47.67	61.56	-13.89	P	L1
0.3209	38.50	10.09	48.59	59.68	-11.09	P	L1
0.5864	38.63	10.12	48.75	56.00	-7.25	P	L1
0.5864	31.79	10.12	41.91	46.00	-4.09	A	L1
3.0073	34.20	10.25	44.45	56.00	-11.55	P	L1
14.1808	43.87	10.52	54.39	60.00	-5.61	P	L1
14.1808	36.31	10.52	46.83	50.00	-3.17	A	L1

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

Model No.	TXO 60-136-J	6dB Bandwidth	9 kHz
Environmental Conditions	19.5°C, 53% RH	Test Mode	Mode 14
Tested by	Jacky Lin	Phase	L2
Standard	EN 55032 CLASS B		



Conducted Emission Readings							
Frequency Range Investigated				150 kHz to 30 MHz			
Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector (P/Q/A)	Line (L1/L2)
0.2039	42.48	10.08	52.56	63.45	-10.89	P	L2
0.4425	35.38	10.08	45.46	57.01	-11.55	P	L2
0.5864	34.38	10.11	44.49	56.00	-11.51	P	L2
0.9554	34.27	10.14	44.41	56.00	-11.59	P	L2
3.1469	34.54	10.26	44.80	56.00	-11.20	P	L2
14.0685	34.26	10.53	44.79	50.00	-5.21	A	L2
14.2530	41.93	10.53	52.46	60.00	-7.54	P	L2

Note: 1. L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

2.2.4 Measurement Data (ISN)

Model No.	N/A	6dB Bandwidth	N/A
Environmental Conditions	N/A	Test Mode	N/A
Tested by	N/A		

Note: No applicable, the EUT doesn't have LAN Port or Modem port.

2.3 Radiated Emission

2.3.1 Test Instruments

Below 1GHz

Open Area Test Site # H					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Bilog Antenna	Teseq	CBL 6112D	35411	05/04/2023	05/03/2024
Cable	EMEC	CFD400E-LW	SD-R074	08/10/2023	08/09/2024
EMI Test Receiver	R&S	ESCI	101340	02/04/2023	02/03/2024
Pre-Amplifier	HP	8447D	1937A01554	09/21/2023	09/20/2024
Thermo-Hygro Meter	Wisewind	201A	No. 03	05/23/2023	05/22/2024
Test S/W	EZ-EMC Ver.CCS-03A1				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					
Measurement Uncertainty of Radiated Emission					
Expanded uncertainty Ulab (k=2) of Radiated Emission is 5.1 dB.(30MHz-1000MHz)					
Expanded uncertainty CISPR 16-4-2:2011+A1:2014+A2:2018 (k=2) of Radiated Emission measurement is 5.2 dB.(30MHz-1000MHz)					

Above 1GHz

Chamber #					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Test S/W					
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					
Measurement Uncertainty of Radiated Emission					
Expanded uncertainty (k=2) of Radiated Emission measurement is N/A dB.(1-6GHz)					
Expanded uncertainty CISPR 16-4-2:2011+A1:2014+A2:2018 (k=2) of Radiated Emission measurement is 5.5 dB.(1-6GHz)					

2.3.2 Measurement Level Calculation

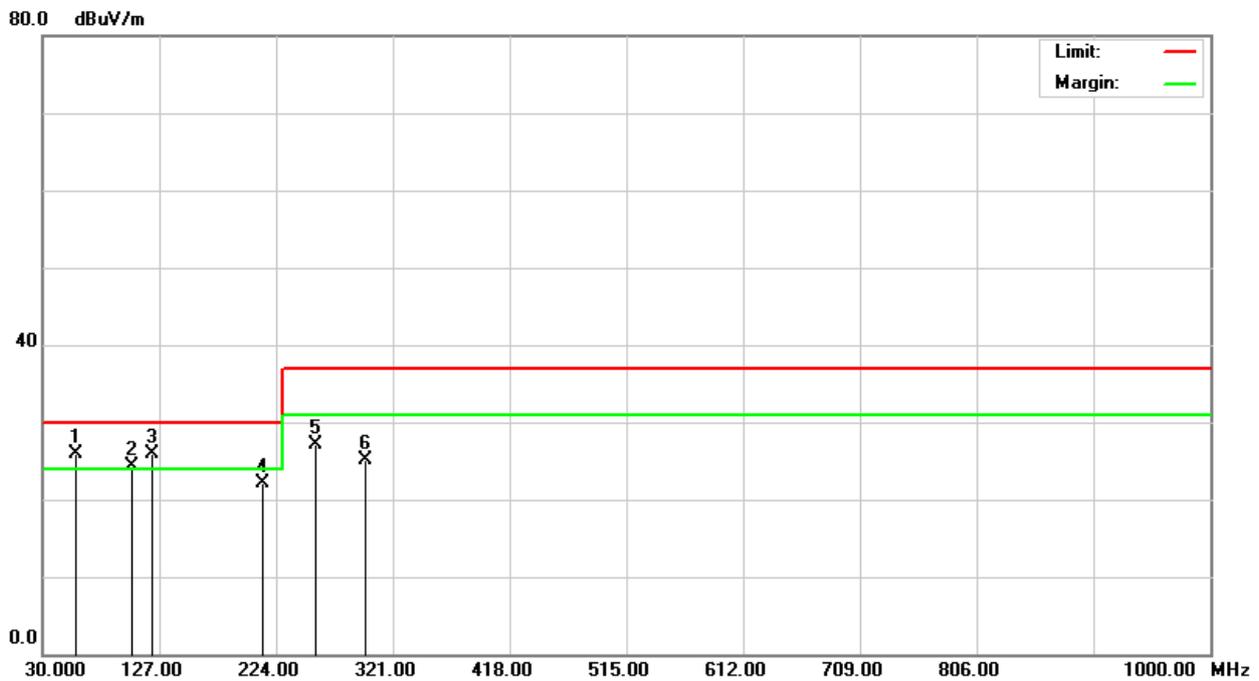
Correction Factor = Antenna Factor + Cable loss- Amplifier Gain

Measurement Level = Reading Level + Correction Factor

Over (Margin) = Measurement Level – Limit

2.3.3 Measurement Data Below 1GHz

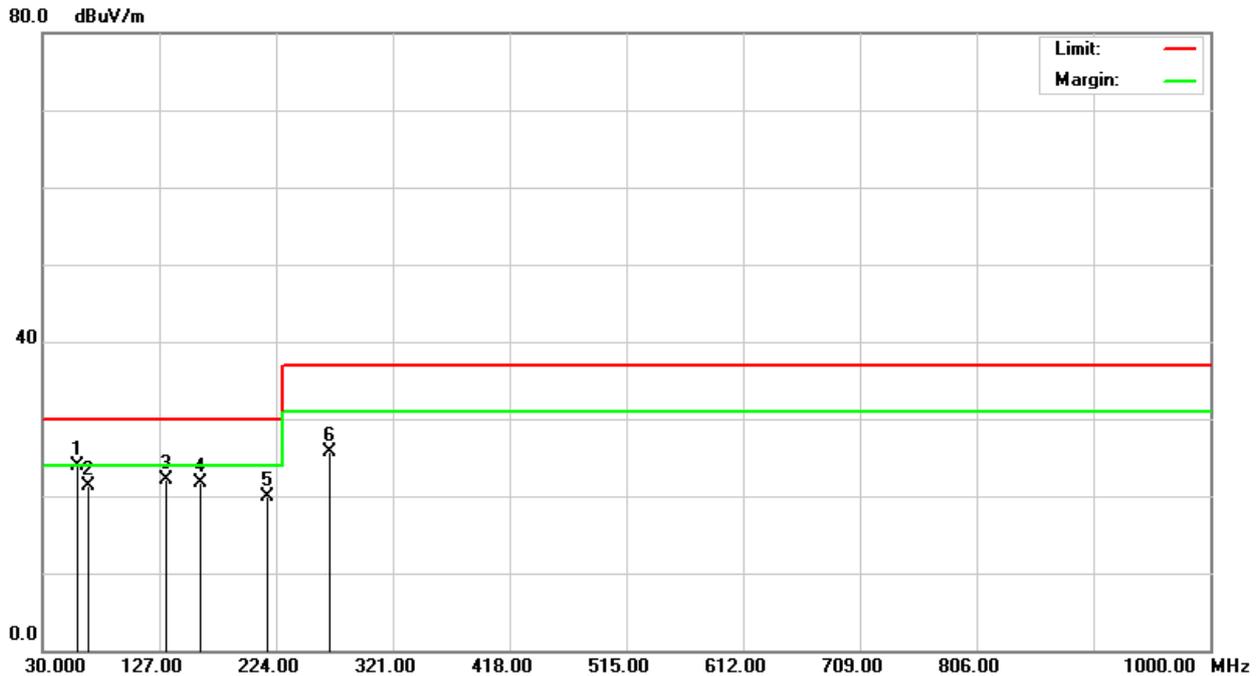
Model No.	TXO 60-136-J	Test Mode	Mode 14
Environmental Conditions	17.2°C, 78% RH	6dB Bandwidth	120 kHz
Antenna Pole	Vertical	Antenna Distance	10m
Detector Function	Quasi-peak.	Tested by	Jacky Lin
Standard	EN 55032 CLASS B		



Radiated Emission Readings									
Frequency Range Investigated				30 MHz to 1000 MHz at 10m					
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Detector (P/Q)	Pol. (H/V)
57.4300	39.90	-14.02	25.88	30.00	-4.12	100	111	Q	V
104.5500	32.90	-8.65	24.25	30.00	-5.75	100	203	Q	V
121.6100	33.80	-7.85	25.95	30.00	-4.05	100	26	Q	V
212.7800	32.60	-10.55	22.05	30.00	-7.95	100	245	Q	V
256.9600	32.90	-5.72	27.18	37.00	-9.82	100	339	Q	V
298.1300	30.90	-5.83	25.07	37.00	-11.93	100	182	Q	V

Note: 1. P= Peak Reading; Q= Quasi-peak Reading.

Model No.	TXO 60-136-J	Test Mode	Mode 14
Environmental Conditions	17.2°C, 78% RH	6dB Bandwidth	120 kHz
Antenna Pole	Horizontal	Antenna Distance	10m
Detector Function	Quasi-peak.	Tested by	Jacky Lin
Standard	EN 55032 CLASS B		



Radiated Emission Readings									
Frequency Range Investigated				30 MHz to 1000 MHz at 10m					
Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Height (cm)	Degree (°)	Detector (P/Q)	Pol. (H/V)
59.1600	38.20	-14.23	23.97	30.00	-6.03	400	102	Q	H
68.2699	35.30	-14.00	21.30	30.00	-8.70	400	78	Q	H
132.6400	30.10	-8.05	22.05	30.00	-7.95	400	335	Q	H
160.9500	31.50	-9.80	21.70	30.00	-8.30	400	20	Q	H
217.3800	30.30	-10.37	19.93	30.00	-10.07	400	298	Q	H
269.1200	31.80	-6.07	25.73	37.00	-11.27	400	133	Q	H

Note: 1. P= Peak Reading; Q= Quasi-peak Reading.

Above 1GHz

Model No.	TXO 60-136-J	Test Mode	N/A
Environmental Conditions	N/A	6dB Bandwidth	N/A
Antenna Pole	N/A	Antenna Distance	N/A
Highest frequency generated or used	70kHz	Upper frequency	See note
Detector Function	N/A	Tested by	N/A

Note: No applicable, when the highest frequency of the internal sources of the EUT is less than 108MHz, the measurement shall only be made up to 1 GHz.

3. Harmonics

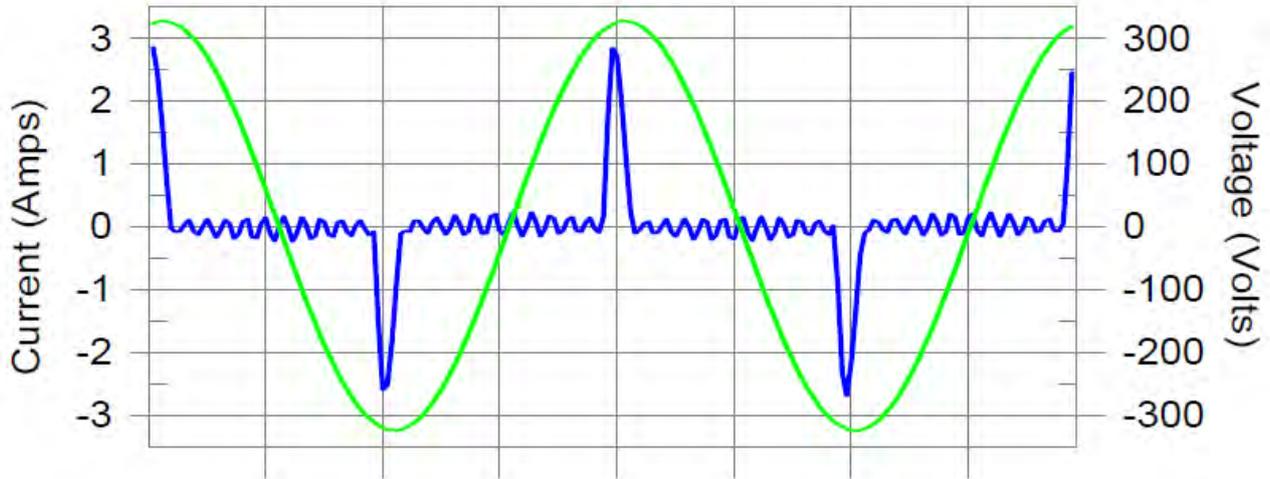
3.1 Test Instruments

Immunity A					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
5kVA Power Source	Teseq	NSG 1007-5	1537A01296	03/03/2023	03/02/2024
Signal Conditioning Unit	Teseq	CCN 1000-1	1846A01831	03/03/2023	03/02/2024
Test Software	WIN2100V4 Ver. 4.22				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

3.2 Measurement Data

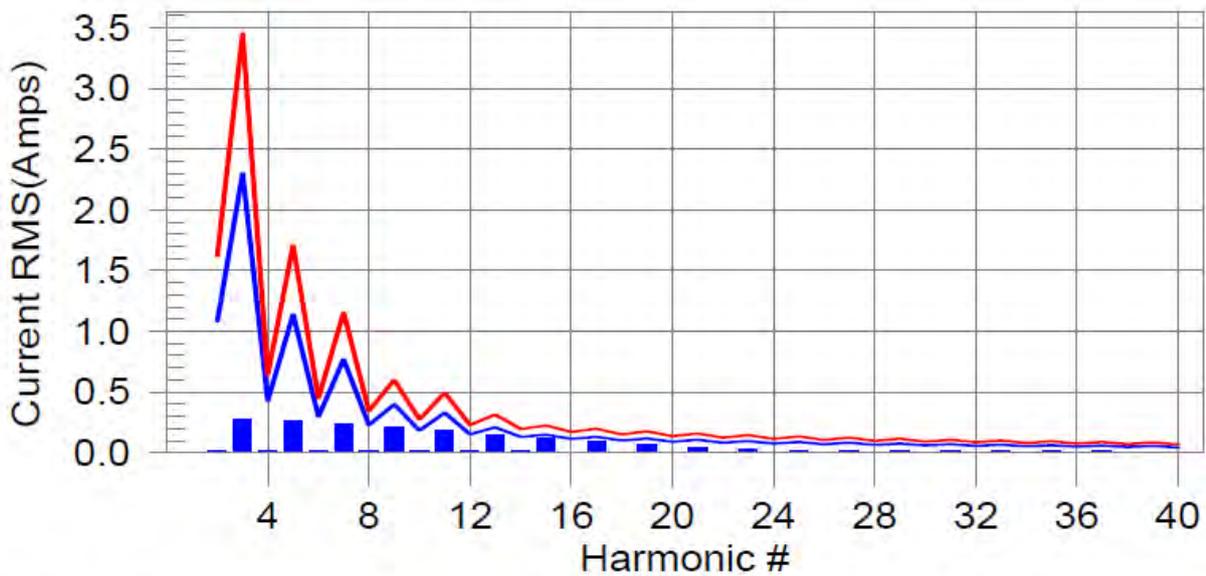
Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line

European Limits



Test result: Pass Worst harmonics H15-55.7% of 150% limit, H15-79.4% of 100% limit

Test Result: Pass Source qualification: Normal
 THC(A): 0.574 I-THD(%): 201.8 POHC(A): 0.075 POHC Limit(A): 0.251

Highest parameter values during test:

V_RMS (Volts):	229.84	Frequency(Hz):	50.00
I_Peak (Amps):	2.922	I_RMS (Amps):	0.659
I_Fund (Amps):	0.285	Crest Factor:	4.440
Power (Watts):	64.1	Power Factor:	0.451

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.015	1.080	1.4	0.016	1.620	1.0	Pass
3	0.273	2.300	11.8	0.274	3.450	7.9	Pass
4	0.014	0.430	3.3	0.015	0.645	2.3	Pass
5	0.258	1.140	22.6	0.259	1.710	15.2	Pass
6	0.014	0.300	4.6	0.015	0.450	3.3	Pass
7	0.237	0.770	30.7	0.239	1.155	20.7	Pass
8	0.013	0.230	5.8	0.014	0.345	4.1	Pass
9	0.211	0.400	52.6	0.214	0.600	35.7	Pass
10	0.013	0.184	6.8	0.014	0.276	4.9	Pass
11	0.181	0.330	54.9	0.186	0.495	37.5	Pass
12	0.012	0.153	7.6	0.013	0.230	5.6	Pass
13	0.150	0.210	71.5	0.156	0.315	49.4	Pass
14	0.011	0.131	8.2	0.012	0.197	6.1	Pass
15	0.119	0.150	79.4	0.125	0.225	55.7	Pass
16	0.010	0.115	8.5	0.011	0.173	6.5	Pass
17	0.090	0.132	68.0	0.096	0.198	48.6	Pass
18	0.009	0.102	8.6	0.010	0.153	6.8	Pass
19	0.064	0.118	53.9	0.070	0.178	39.4	Pass
20	0.008	0.092	8.6	0.010	0.138	6.9	Pass
21	0.043	0.107	39.9	0.048	0.161	30.0	Pass
22	0.007	0.084	8.5	0.009	0.125	6.9	Pass
23	0.028	0.098	29.0	0.032	0.147	21.8	Pass
24	0.006	0.077	8.3	0.008	0.115	6.8	Pass
25	0.022	0.090	24.6	0.023	0.135	17.2	Pass
26	0.006	0.071	8.1	0.007	0.107	6.6	Pass
27	0.022	0.083	26.5	0.025	0.125	20.4	Pass
28	0.005	0.066	8.0	0.006	0.099	6.4	Pass
29	0.023	0.078	29.7	0.024	0.116	20.9	Pass
30	0.005	0.061	N/A	0.006	0.092	N/A	Pass
31	0.023	0.073	31.2	0.023	0.109	21.3	Pass
32	0.004	0.058	N/A	0.005	0.086	N/A	Pass
33	0.020	0.068	29.9	0.021	0.102	20.7	Pass
34	0.004	0.054	N/A	0.004	0.081	N/A	Pass
35	0.017	0.064	25.9	0.018	0.096	18.6	Pass
36	0.003	0.051	N/A	0.004	0.077	N/A	Pass
37	0.012	0.061	20.0	0.014	0.091	15.1	Pass
38	0.003	0.048	N/A	0.004	0.073	N/A	Pass
39	0.008	0.058	13.5	0.009	0.087	10.7	Pass
40	0.003	0.046	N/A	0.003	0.069	N/A	Pass

Test Result: Pass Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms):	229.84	Frequency(Hz):	50.00
I_Peak (Amps):	2.922	I_RMS (Amps):	0.659
I_Fund (Amps):	0.285	Crest Factor:	4.440
Power (Watts):	64.1	Power Factor:	0.451

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.033	0.460	7.08	OK
3	0.027	2.068	1.29	OK
4	0.020	0.460	4.27	OK
5	0.181	0.919	19.66	OK
6	0.028	0.460	6.06	OK
7	0.075	0.689	10.95	OK
8	0.007	0.460	1.46	OK
9	0.075	0.460	16.38	OK
10	0.010	0.460	2.25	OK
11	0.080	0.230	34.89	OK
12	0.021	0.230	8.96	OK
13	0.072	0.230	31.15	OK
14	0.008	0.230	3.55	OK
15	0.067	0.230	29.21	OK
16	0.007	0.230	3.17	OK
17	0.058	0.230	25.10	OK
18	0.013	0.230	5.78	OK
19	0.052	0.230	22.67	OK
20	0.027	0.230	11.79	OK
21	0.043	0.230	18.65	OK
22	0.008	0.230	3.40	OK
23	0.028	0.230	12.02	OK
24	0.008	0.230	3.44	OK
25	0.021	0.230	9.20	OK
26	0.007	0.230	3.21	OK
27	0.029	0.230	12.51	OK
28	0.008	0.230	3.35	OK
29	0.022	0.230	9.64	OK
30	0.008	0.230	3.46	OK
31	0.026	0.230	11.48	OK
32	0.007	0.230	2.84	OK
33	0.026	0.230	11.15	OK
34	0.006	0.230	2.57	OK
35	0.023	0.230	10.20	OK
36	0.006	0.230	2.72	OK
37	0.019	0.230	8.19	OK
38	0.007	0.230	2.96	OK
39	0.015	0.230	6.64	OK
40	0.017	0.230	7.21	OK

4. Flicker

4.1 Test Instruments

Immunity A					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
5kVA Power Source	Teseq	NSG 1007-5	1537A01296	03/03/2023	03/02/2024
Signal Conditioning Unit	Teseq	CCN 1000-1	1846A01831	03/03/2023	03/02/2024
Test Software	WIN2100V4 Ver. 4.22				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					



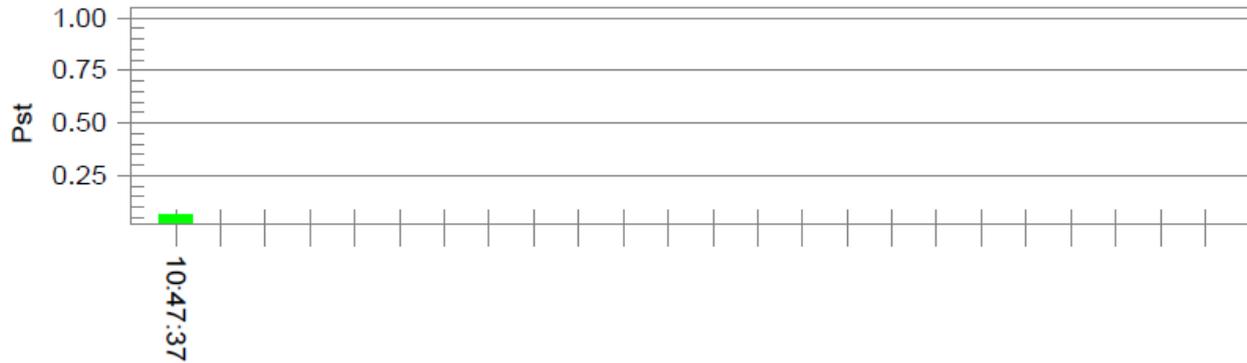
4.2 Measurement Data

Test Result: Pass

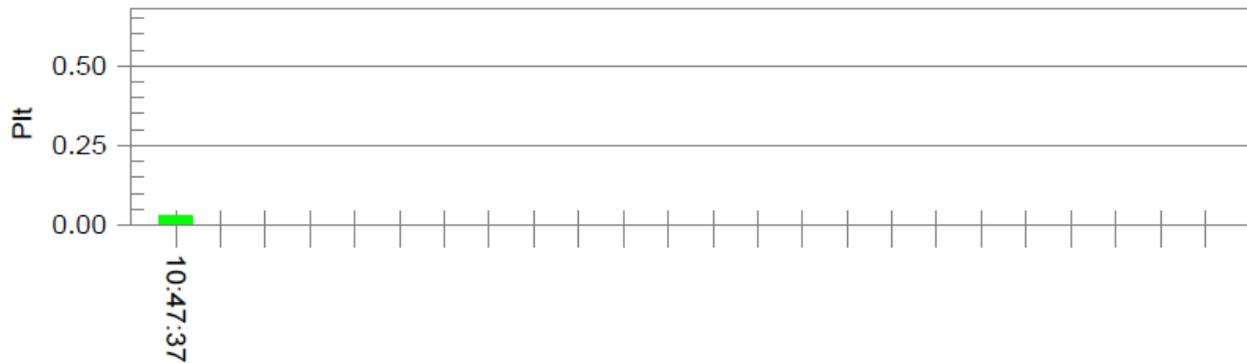
Status: Test Completed

Pst and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 229.72

Highest dt (%):

T-max (mS): 0

Highest dc (%): 0.00

Highest dmax (%): 0.00

Highest Pst (10 min. period): 0.064

Highest Plt (2 hr. period): 0.028

Test limit (%):

Test limit (mS): 500.0 Pass

Test limit (%): 3.30 Pass

Test limit (%): 4.00 Pass

Test limit: 1.000 Pass

Test limit: 0.650 Pass

5. IMMUNITY

5.1 STANDARD PERFORMANCE CRITERIA DESCRIPTION

- Criterion A - The apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.
- Criterion B - The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.
- Criterion C - Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

5.2 SPECIAL PERFORMANCE CRITERIA DESCRIPTION

5.2.1 Performance Criteria Description for Print function

Criterion A - Apply criterion A as defined in 8.2. Additionally, the following shall not occur as a consequence of the application of the disturbance:

- change of operating state;
- unintended pausing of the print operation;
- a change of print quality or legibility, as appropriate to the test pattern;
- change of character font;
- unintended line feed;
- unintended page feed;
- paper feed failure.

Criterion B - Apply criterion B as defined in 8.3 with the following specifics and additional limitations. Paper feed failures are allowed only if, after removal of the jammed sheets, the job is automatically recovered and there is no loss of printed information. Any low-quality print output caused by the application of the disturbance shall not continue beyond the sheet of media being printed, or beyond the typical length of a finished page or sheet printed from continuous roll media. False indicators are permitted during the test provided that a normal operator response to that false indicator is simple (such as pressing a button). False indicators are not acceptable if they would cause the user to discard printing supplies such as ink, toner or paper, when those supplies are actually not empty or faulty. Any false indicator shall either clear automatically or after the operator's response. After the disturbance, the print function may print the remainder of the print job at a quality level within the manufacturer's specifications. Alternately, the print function may halt processing of a print job as a result of the disturbance, but only if the operator is capable of reprinting the job (for example, a fax printing job where the image to be printed still resides in local memory). Automatically restarting the print job from the beginning is also acceptable. In any scenario, the pairing of front and back images during double-sided printing shall be correct.

Criterion C - Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

5.2.2 Performance Criteria Description for Scan function

- Criterion A - Apply criterion A as defined in 8.2. Additionally, the following shall not occur as a consequence of the application of the test:
- change of settings, such as which side(s) of the page to be scanned, colour or monochrome, and resolution;
 - corruption of the image, for example stretching, compressing or change in colour;
 - paper feed failures;
 - errors in the reading of bar codes.
- Criterion B - Apply criterion B as defined in 8.3 with the following specifics and additional limitations.
- Document feed failures are allowed only if the original documents are undamaged and, after removal of the jammed sheets, the job is automatically recovered and there is no loss of scanned information.
 - During the test, the representation of the image shall not be degraded such that reading mistakes occur.
- Criterion C - Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

5.2.3 Performance Criteria Description for Display and display output function

- Criterion A - Apply criterion A as defined in 8.2. Additionally, an increase in any degradation greater than just perceptible by observation of the image shall not occur as a consequence of the application of the test. Examples of such degradations are:
- superimposed patterning;
 - positional disturbances due to synchronisation errors;
 - geometric distortion;
 - change of contrast or brightness;
 - picture artefacts;
 - freezing or disturbance of motion;
 - image loss;
 - video data or decoding errors.
- Criterion B - The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.
- Criterion C - Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

5.2.4 Performance Criteria Description for Musical tone generating function

- Criterion A - Performance criterion A is subdivided according to the type of equipment and its use. Three subgroups corresponding to different equipment types are defined in Table E.1 and have corresponding performance criteria A1, A2 and A3. The relevant subgroup shall be selected by the manufacturer in accordance with the product specification. The description of criteria A1, A2 and A3 are presented in Table E.2.
- Criterion B - During the test, degradation of performance beyond that defined in criterion A1 of Table E.2 is allowed. However, sudden amplification of tone to a level that exceeds the expected level by more than 6 dB is not allowed. After the test, normal operation of the EUT shall be self-recovered. In the case of unintended tone holding caused by a MIDI protocol communication error, the EUT can be re-initialised by the operation of the controls by the user controls in accordance with the manufacturer's instructions. Due to the nature of the MIDI protocol, it is necessary to modify the performance criterion B to allow user intervention when the unintended tone holding is caused by a missing MIDI communication error (for example missing a 'NOTE OFF' message).
- Criterion C - Degradation of the performance beyond that defined in criterion A1 of Table E.2 is permitted provided that the normal operation of the EUT can be restored after the test by operator intervention. However, sudden amplification of tone to a level that exceeds the expected level by more than 6 dB is not allowed.

5.2.5 Performance Criteria Description for Networking function

Criterion A - Where relevant, during the application of the test the network function shall, as a minimum, operate ensuring that:

- established connections shall be maintained throughout the application of the test;
- no change of operational state or corruption of stored data occurs;
- no increase in error rate above the figure defined by the manufacturer occurs. The manufacturer should select the most appropriate performance measurement criteria for the product or system, for example bit error rate, block error rate;
- no request for retry above the figure defined by the manufacturer;.
- the data transmission rate does not reduce below the figure defined by the manufacturer;
- no protocol failure occurs;
- the audio noise level at a two-wire analogue interface (supporting telephony) shall satisfy the requirements of Table G.3. The audio level measurements shall be performed at the demodulated frequency of the disturbance using a narrowband filter with a 3 dB bandwidth of 100 Hz using the method defined in table clause G.1.4. See G.6.1. As described in the example given in J.3.5 the networking function is monitored during testing using direct functions specified elsewhere in this document. If needed to verify the operation of the protocol, the following functions shall be verified as described in Table H.1 when performing the additional spot frequency tests contained in Clause 5:
 - ability to establish a connection,
 - ability to clear a connection.

Where an EUT has supervisory functions they shall not be affected. Elements that should be monitored include, but are not limited to:

- alarms,
- signalling lamps,
- printer output errors,
- network traffic rates,
- network monitor errors,
- measured network parameters.

Criterion B - Established connections shall be maintained throughout the test, or shall self-recover in a way and timescale that is imperceptible to the user.

The error rate, request for retry and data transmission rates may be degraded during the application of the test. Degradation of the performance as described in criterion A is permitted, provided that the normal operation of the EUT is self-recoverable to the condition established prior to the application of the test. Where required, as defined in Clause 5, the acceptable operation of the function shall be verified at the completion of the test as described in Table H.1, by confirming the following:

- the EUT's ability to establish a connection,
- the EUT's ability to clear a connection.

During surge testing disconnection is allowed on the analogue/digital data port being tested. If the EUT is a supervisory equipment, it shall not impact the normal operation of the network being monitored. In addition, any supervisory functions impacted during the period of the test shall return to the state prior to the test. Elements to consider include:

- alarms,
- signalling lamps,
- printer output,
- network traffic rates,
- network monitoring. is used as intended.

Criterion C - Degradation of performance as described in criteria A and B is permitted provided that the normal operation of the EUT is self-recoverable to the condition immediately before the application of the test, or can be restored after the test by the operator.

5.2.6 Performance Criteria Description for Audio output function

Criterion A - The interference ratio (electrical or acoustic) shall meet the limits in column 3; or,
the acoustic level of the demodulated audio shall be less than the limits in column 4; or,
the digitally coded level of demodulated audio shall be less than limits in column 5; or,
the analogue level of the demodulated audio shall be less than the limits in column 6.

Criterion B - The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Criterion C - Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

5.2.7 Performance Criteria Description for Telephony function

Function to be exercised	Performance criteria		
	A	B	C
Establish new communication	At the additional spot frequency tests a, c	Performed before and after the application of the test or disturbance	Performed before and after the application of the test or disturbance
Maintain established communication	Yes In addition, the requirements of Annex G for the audio output function shall be satisfied c	Yes b	No
Terminate established communication	At the additional spot frequency tests a, c	Performed before and after the application of the test or disturbance	Performed before and after the application of the test or disturbance

Communication refers to a telephone call or other form of voice connection.

a Applicable to TTE with a dial function that provides dedicated emergency service/safety of life call capability. Where the EUT does not provide this functionality, this limitation shall be stated in the equipment user manual.

b Communication shall be established prior to the application of the disturbance, the communication shall be maintained and the quality of that communication (for example, volume setting, the level of background noise) shall be maintained after completion of the test or disturbance.

c Where defined in Clause 5 (for the tests in Table 1 to Table 4), these functional tests shall be performed during the additional spot frequency tests.

5.3 Test of IEC 61000-4-2

5.3.1 Test Instruments

Immunity Shielded Room					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Aneroid Barometer	SATO	7610-20	89090	07/24/2023	07/23/2024
ESD Simulator	Teseq	NSG 438	1581	07/09/2023	07/08/2024
Thermo-Hygro Meter	Wisewind	201A	SD-S041	12/12/2023	12/11/2024

Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan

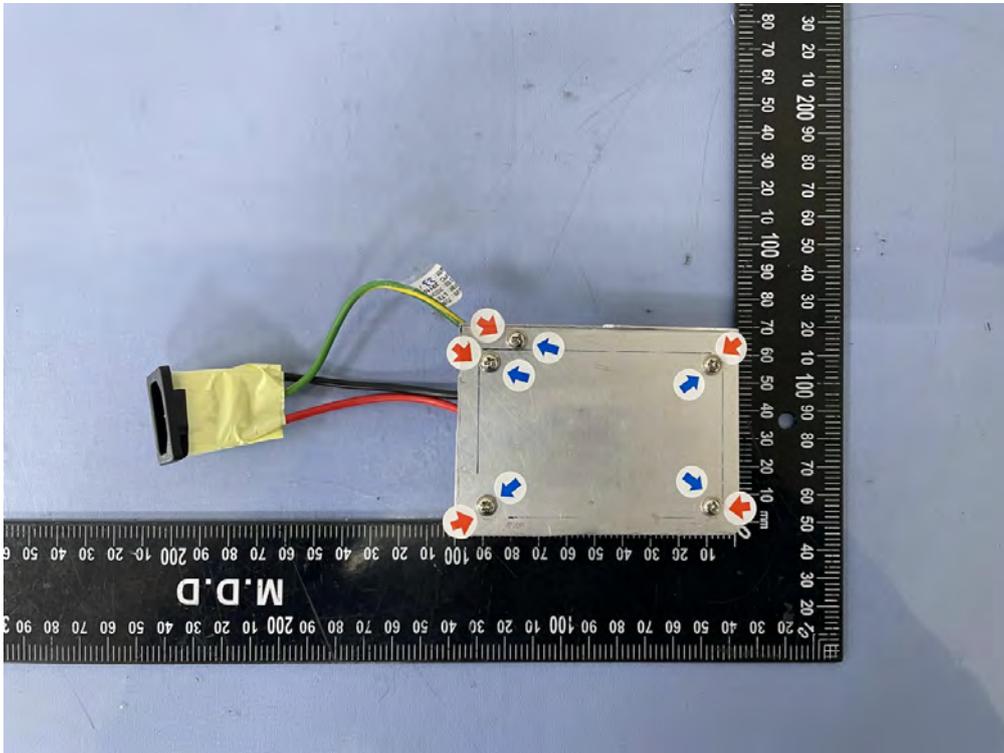
5.3.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
18.4 °C	51 %RH	1008 hpa

ESD Test point

Bottom



Air Discharge: 
Contact Discharge: 

5.4 Test of IEC 61000-4-3

5.4.1 Test Instruments

844 RS Chamber					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Electric Field Probe	AR	FL7006	0356656	03/19/2023	03/18/2024
Field of Calibration	CCS	Chamber#RS	80-1000MHz	02/20/2023	02/19/2024
RF Power Meter	Boonton	4242	17419	02/14/2023	02/13/2024
Power Sensor	Boonton	51011A-EMC	36833	02/14/2023	02/13/2024
Power Sensor	Boonton	51011A-EMC	36834	02/14/2023	02/13/2024
Thermo-Hygro Meter	Wisewind	N/A	SD-S019	09/21/2023	09/20/2024
Broadband Antenna	AR	AT1080	311819	N.C.R	N.C.R
Power Amplifier	Teseq	CBA1G-600D	1098099	N.C.R	N.C.R
Analog Signal Generator	Agilent	E8257D	MY48051214	06/05/2023	06/04/2024
Field of Calibration	CCS	Chamber#RS	1000-6000MHz	02/17/2023	02/16/2024
Microwave Antenna	Schwarzbeck	STLP 9149	767	N.C.R	N.C.R
Power Amplifier	Teseq	CBA6G-100D	1087370	N.C.R	N.C.R
Test Software	EmcwareVer. 2.6.0.16				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

5.4.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
23.6 °C	57 %RH	1010 hpa

5.4.3 Results of Radiated Radio Frequency Electromagnetic (RS)

Model No. : TXO 60-136-J
 Tested By : Jim Lian
 Tested Date : December 7, 2023
 Test Mode : Mode 14
 Basic Standard : IEC 61000-4-3
 Frequency range : 80 MHz - 1000 MHz
 Frequency range : 1800 MHz, 2600 MHz, 3500 MHz, 5000 MHz ($\pm 1\%$)
 Field strength : 3 V/m
 Modulation : 80% AM (1kHz)
 Frequency step : 1 % of fundamental
 Polarity of Antenna : Horizontal and Vertical
 Dwell Time : 3 seconds
 Test distance : 3 m

No.	Frequency (MHz)	Antenna Orientation	Observation	EUT Orientation
1	80 - 1000	Vertical/Horizontal	A	0 degree
2	80 - 1000	Vertical/Horizontal	A	90 degree
3	80 - 1000	Vertical/Horizontal	A	180 degree
4	80 - 1000	Vertical/Horizontal	A	270 degree

Remark: A: No degradation of performance or loss of function.

No.	Frequency (MHz)	Antenna Orientation	Observation	EUT Orientation
1	1800, 2600, 3500, 5000 ($\pm 1\%$)	Vertical/Horizontal	A	0 degree
2	1800, 2600, 3500, 5000 ($\pm 1\%$)	Vertical/Horizontal	A	90 degree
3	1800, 2600, 3500, 5000 ($\pm 1\%$)	Vertical/Horizontal	A	180 degree
4	1800, 2600, 3500, 5000 ($\pm 1\%$)	Vertical/Horizontal	A	270 degree

Remark: A: No degradation of performance or loss of function.

5.5 Test of IEC 61000-4-4

5.5.1 Test Instruments

Immunity Shield Room					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
Capacitive Clamp	EMC-Partner	CN-EFT1000	589	02/21/2023	02/20/2024
EMC Test System	Teseq	NSG 3060	1718	11/23/2023	11/22/2024
Software	WIN 3000Ver. 1.3.2				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

5.5.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
18.6 °C	48 %RH	1010 hpa

5.5.3 Results of Electrical Fast Transient (EFT)

Model No. : TXO 60-136-J
 Tested By : Ian Su
 Tested Date : December 7, 2023
 Test Mode : Mode 14
 Basic Standard : IEC 61000-4-4
 Test Voltage : AC Input: ± 1 kV
 Signal/Comm. : N/A
 Polarity : Positive/Negative
 Impulse Frequency : 2.5 kHz
 Tr/Th : 5/50ns
 Burst : 15ms/300ms

Observation:

Test Point	Polarity	Test Level (kV)	Results
L	+/-	1	A
N	+/-	1	A
PE	+/-	1	A
L-N	+/-	1	A
L-PE	+/-	1	A
N-PE	+/-	1	A
L-N-PE	+/-	1	A

Remark: A: No degradation of performance or loss of function

5.6 Test of IEC 61000-4-5

5.6.1 Test Instruments

Immunity Shield Room					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
CDN	EMC-Partner	CDN-UTP8	1505	11/23/2023	11/22/2024
EMC Test System	Teseq	NSG 3060	1718	11/23/2023	11/22/2024
Software	WIN 3000Ver. 1.3.2				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

5.6.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
18.6 °C	48 %RH	1010 hpa

5.6.3 Results of Surge Test

Model No. : TXO 60-136-J
 Tested By : Ian Su
 Tested Date : December 7, 2023
 Test Mode : Mode 14
 Basic Standard : IEC 61000-4-5
 Test Rate : 1 pulse every minute
 No. of Tests : 5 positive and 5 negative pulses
 Waveform : 1.2/50µs (8/20µs)

Observation Description

AC input line:

Test Point	Phase Angle (degree)	Polarity (+/-)	Test Level (kV)	Observation
L – N	0, 90, 180, 270	+/-	1	A
L – PE	0, 90, 180, 270	+/-	2	A
N – PE	0, 90, 180, 270	+/-	2	A

Remark: A: No degradation of performance or loss of function.

5.7 Test of IEC 61000-4-6

5.7.1 Test Instruments

CS Room					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
CDN	Teseq	CDN S751A	46649	10/13/2023	10/12/2024
CDN	Teseq	CDN M016	35821	10/13/2023	10/12/2024
CDN	FCC	FCC-801-M3-25A	9973	10/13/2023	10/12/2024
Compact Immunity Test System	TESEQ	NSG 4070B-35	39581	10/12/2023	10/11/2024
Test Software	NSG 4070 Control Program V1.2.0				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

5.7.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
22.8 °C	52 %RH	1010 hpa

5.7.3 Results of Immunity to Conducted Disturbances (CS)

Model No. : TXO 60-136-J
 Tested By : Jim Lian
 Tested Date : December 7, 2023
 Test Mode : Mode 14
 Basic Standard : IEC 61000-4-6
 Frequency range : 0.15 MHz -10 MHz
 Field strength : 3 Vrms
 Frequency range : 10 MHz - 30 MHz
 Field strength : 3 V to 1Vrms
 Frequency range : 30 MHz - 80 MHz
 Field strength : 1 Vrms
 Modulation : 80% AM, 1 kHz Sinewave
 Frequency step : 1 % of fundamental
 Dwell Time : 3 seconds
 Coupling Method : CDN-M3

Cable Description	Frequency (MHz)	Observation
AC input	0.15 – 80	A

Remark: A: No degradation of performance or loss of function.

5.8 Test of IEC 61000-4-8

5.8.1 Test Instruments

Immunity Shield Room					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
5kVA Power Source	Teseq	5001IX-208-SCH	1207A03643	09/15/2022	09/14/2024
AC/DC Clamp Meter	Fluke	353	33360025	06/09/2023	06/08/2024
Magnetic Field Coil	Teseq	INA 703 W/ 2141	1976 / 1413	02/22/2023	02/21/2024
Magnetic Field Meter	Sypris	4080	0247	11/14/2023	11/13/2024
Test Software	Win2120Ver. 5.0				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

5.8.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
22.8 °C	52 %RH	1010 hpa

5.8.3 Result of Immunity to Power Frequency Magnetic Field

Model No. : TXO 60-136-J
 Tested By : Jim Lian
 Tested Date : December 7, 2023
 Test Mode : Mode 14
 Basic Standard : IEC 61000-4-8
 Power Frequency : 50 Hz
 Magnetic Field : 1 A/m(r.m.s)
 Coil Orientation : X, Y, Z Axis
 Observation : A

Remark: A: No degradation of performance or loss of function.

5.9 Test of IEC 61000-4-11

5.9.1 Test Instruments

Immunity Shielded Room					
EQUIPMENT TYPE	Manufacturer	Model Number	Serial Number	Calibration Date	Calibration Due
AC/DC Clamp Meter	Lutron	CM-9930R	I.200121	03/27/2023	03/26/2024
EMC Test System	Teseq	NSG 3060	1718	11/23/2023	11/22/2024
Software	WIN 3000Ver. 1.3.2				
Testing Site : No.163-1, Jhongsheng Rd., Xindian Dist., New Taipei City, Taiwan					

5.9.2 EUT Operating Condition

Environment:

Temperature	Humidity	Air Pressure
18.6 °C	48 %RH	1010 hpa

5.9.3 Results of Voltage Dips Immunity Test

Model No. : TXO 60-136-J
 Tested By : Ian Su
 Tested Date : December 7, 2023
 Test Mode : Mode 14
 Basic Standard : IEC 61000-4-11
 EUT Rated Voltage : 230 Volts.
 Reduction Voltage : 30, >95 % Ut
 Phase Angle : 0,180 degree
 Total events : 3 dropouts
 Event interval : 10 seconds

Test Power: 230Vac, 50Hz			
Environmental phenomena	Test specification (% reduction)	Duration (in periods of the rated frequency)	Observation
Voltage Interruptions	>95	250	B
Voltage dips	30	25	A
	>95	0.5	A

Test Power: 230Vac, 60Hz			
Environmental phenomena	Test specification (% reduction)	Duration (in periods of the rated frequency)	Observation
Voltage Interruptions	>95	300	B
Voltage dips	30	30	A

Remark: A: No degradation of performance or loss of function.
 B: EUT shut down, but it could recover automatically afterwards.

APPENDIX

Photograph of Testing General Set-up

CE Testing Set-up



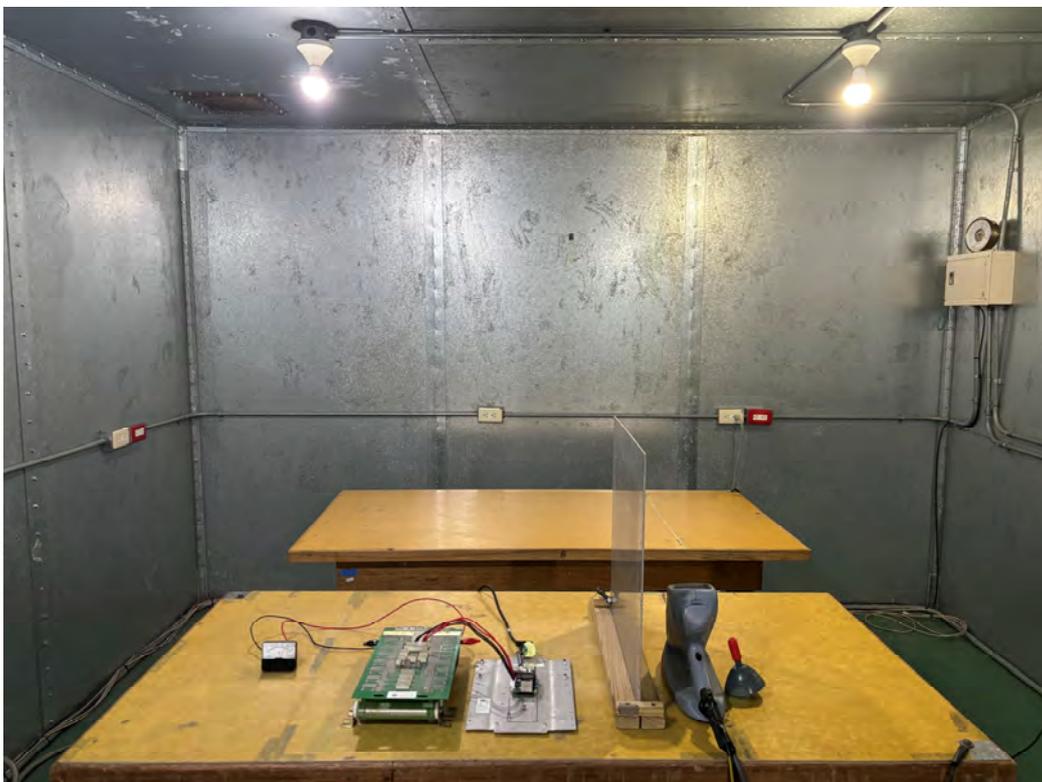
**RE Testing Set-up
Below 1GHz**



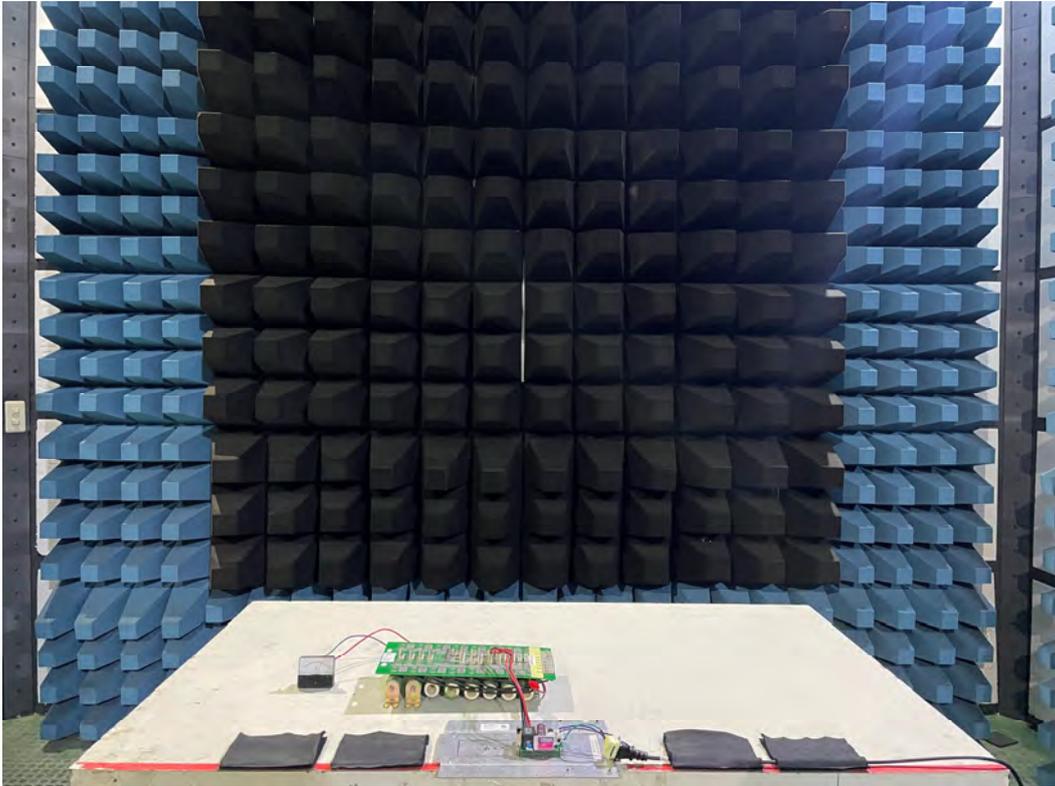
HARMONIC & FLICKER Testing Set-up



ESD Testing Set-up



RS Testing Set-up



EFT Testing Set-up



Surge Testing Set-up



CS Testing Set-up



PFMF Testing Set-up



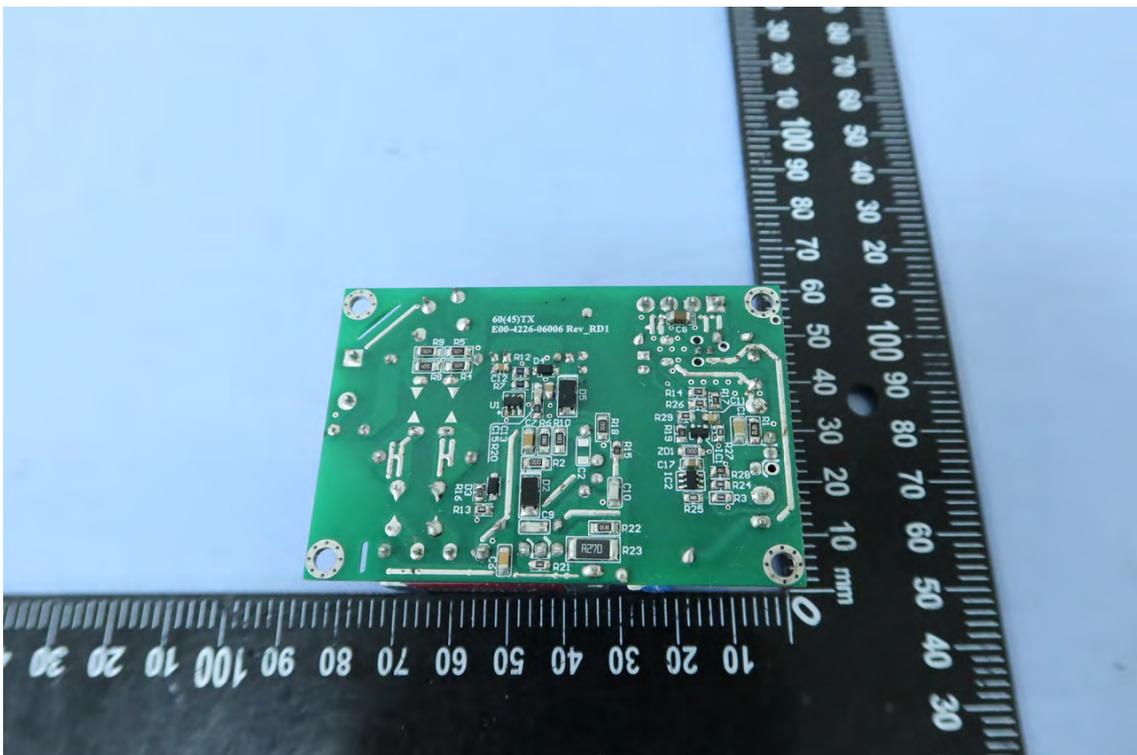
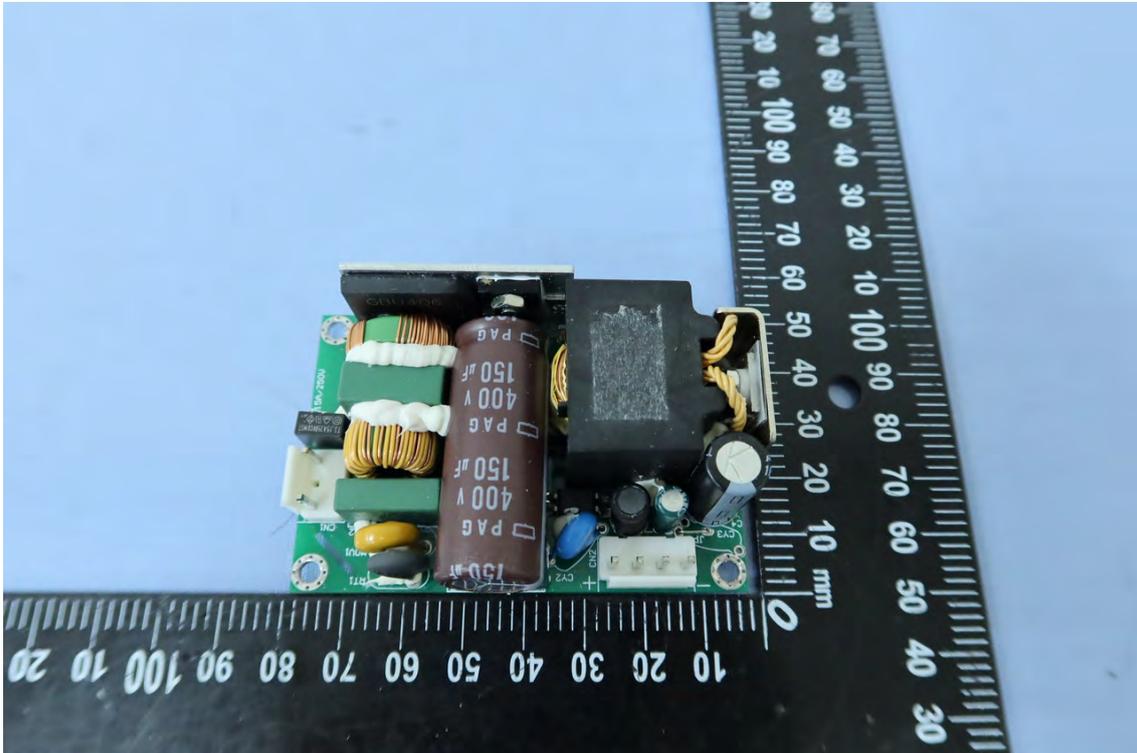
DIP Testing Set-up

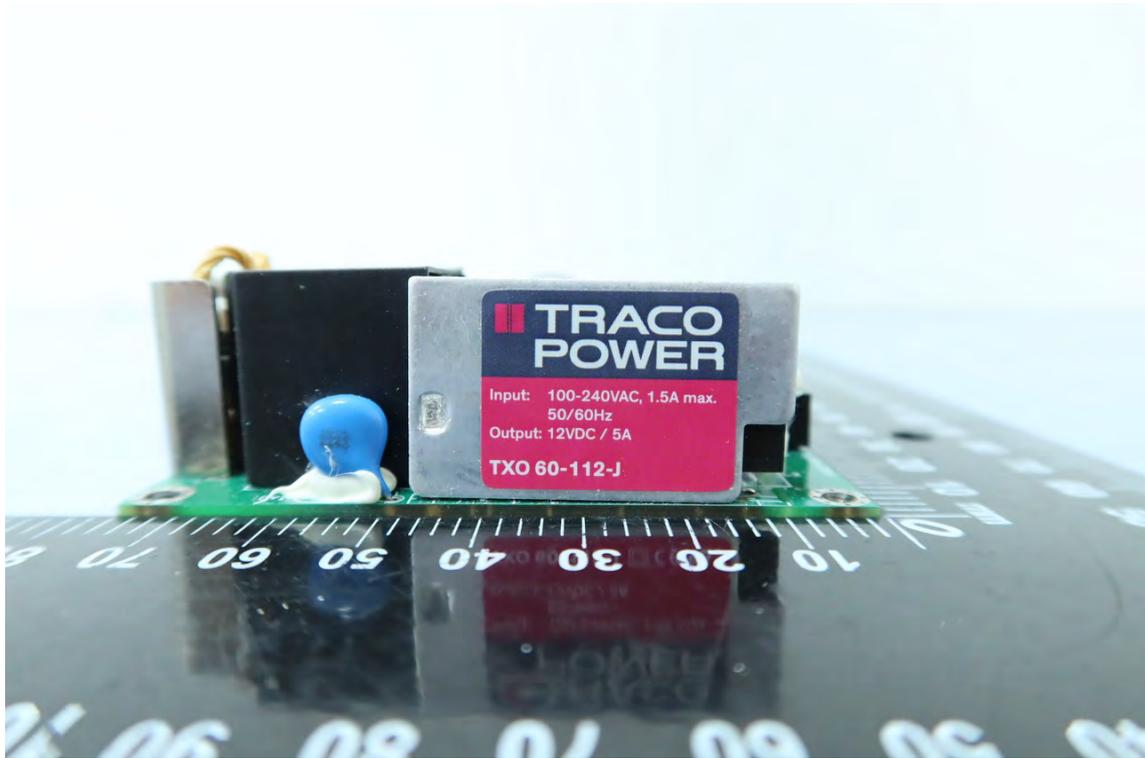


Photographs of EUT Unit

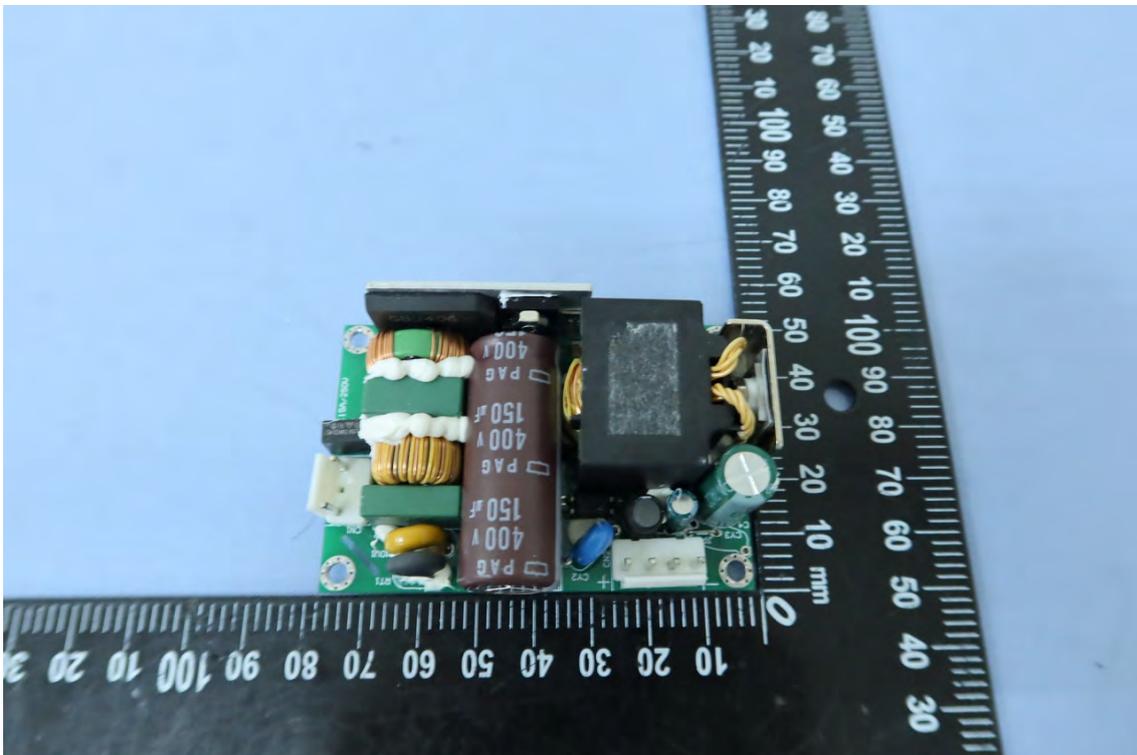
Exterior

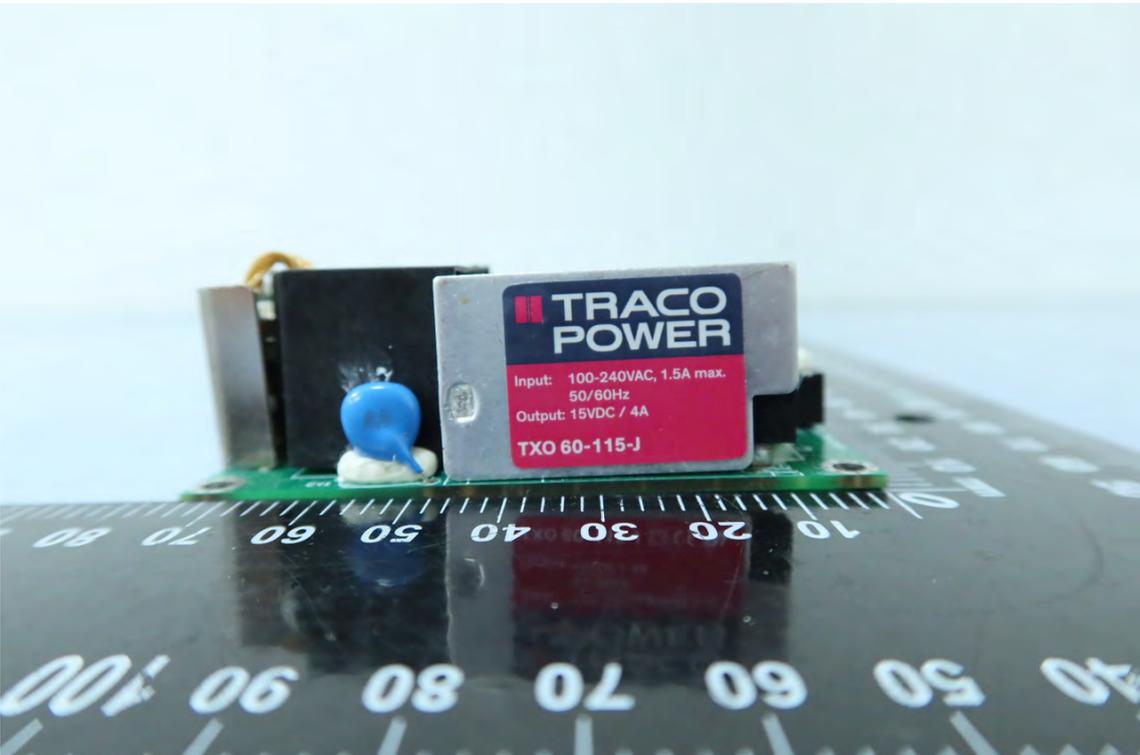
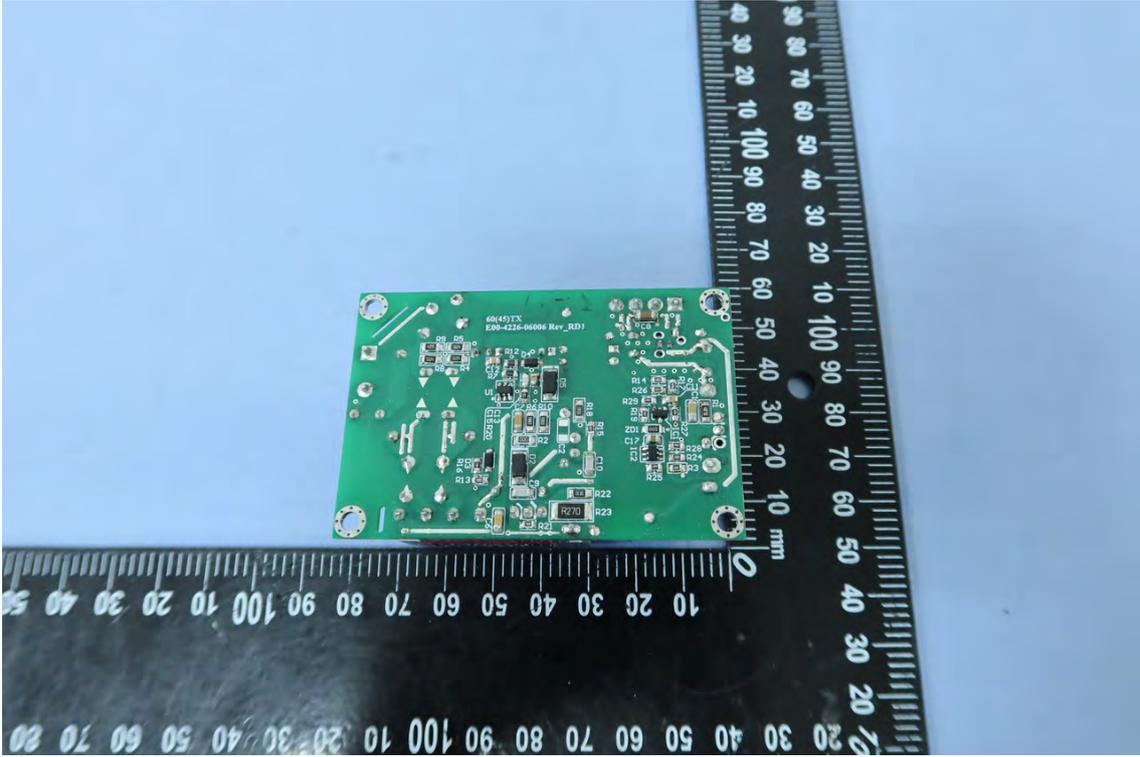
TXO 60-112-J



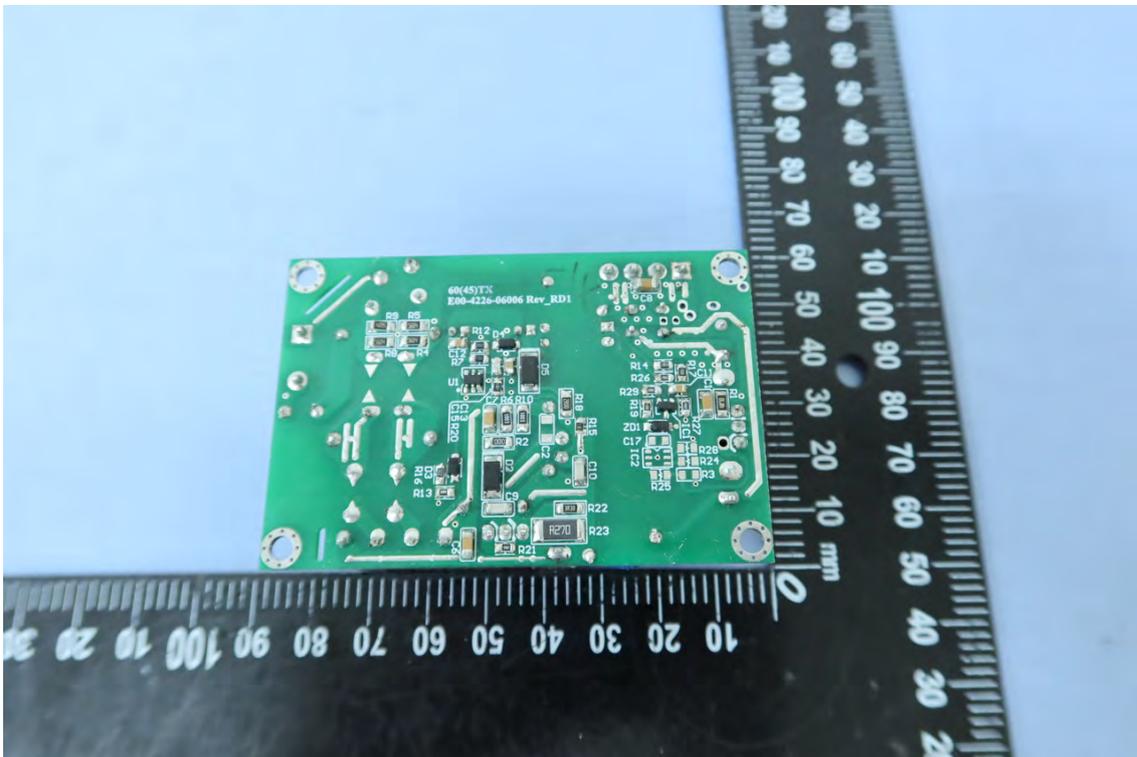
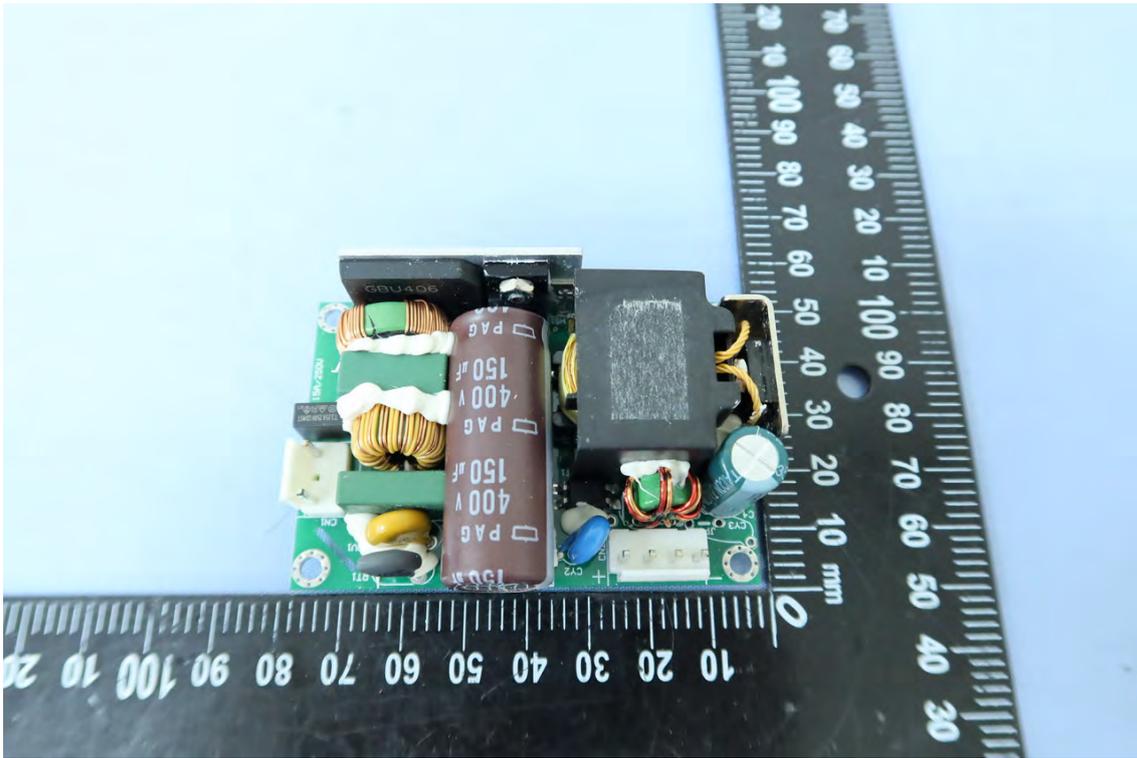


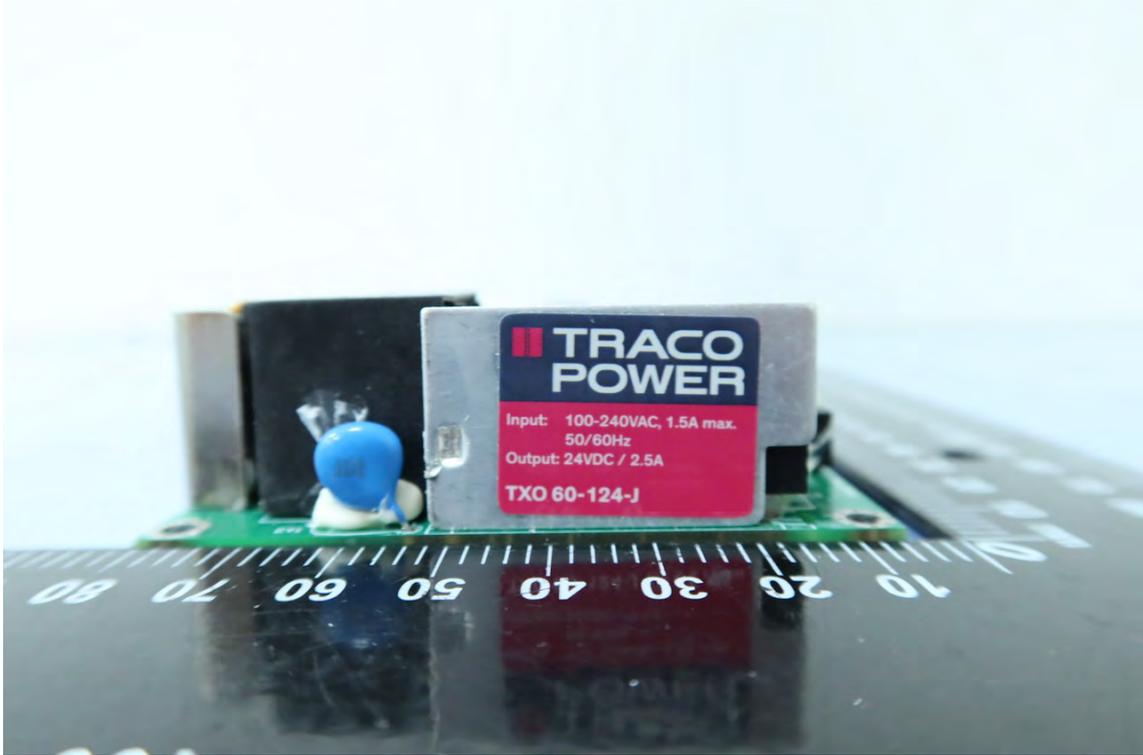
TXO 60-112-J





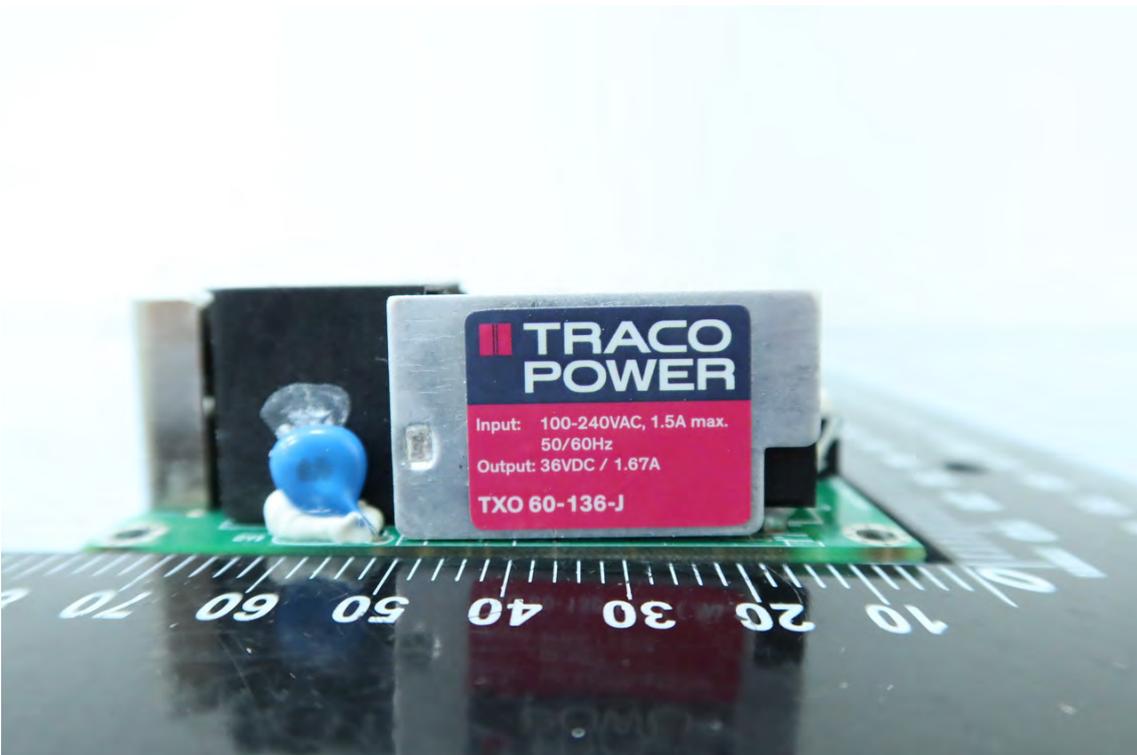
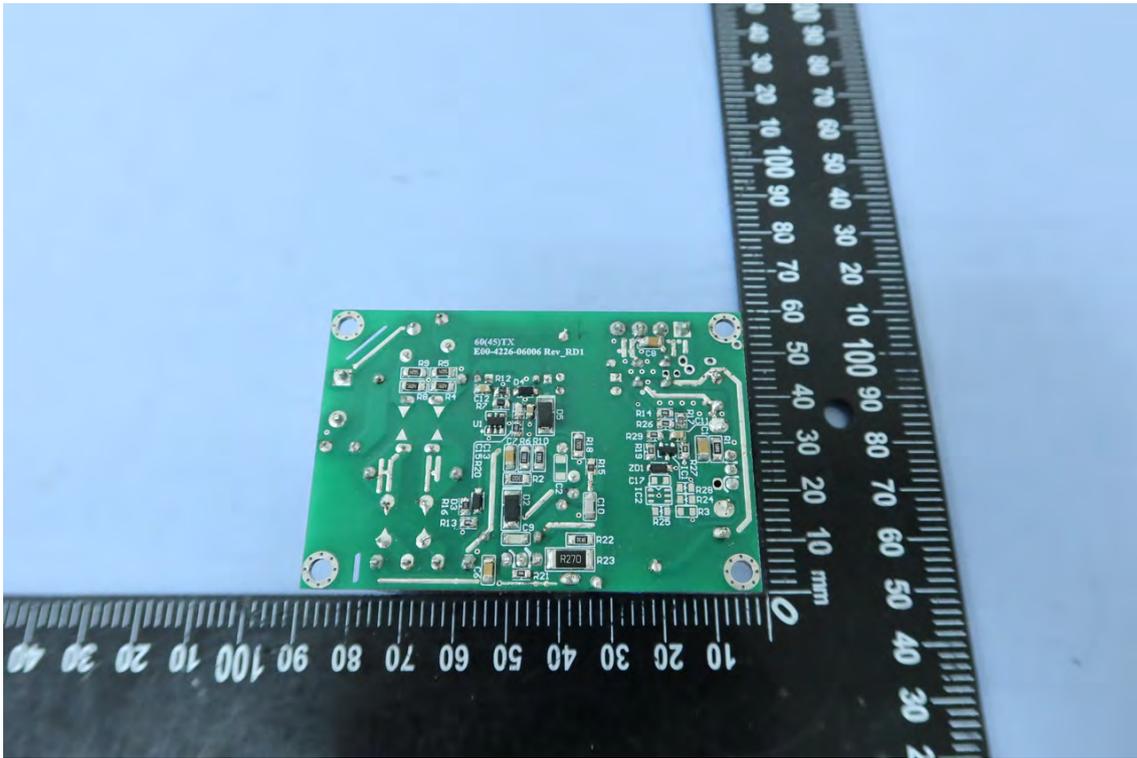
TXO 60-124-J



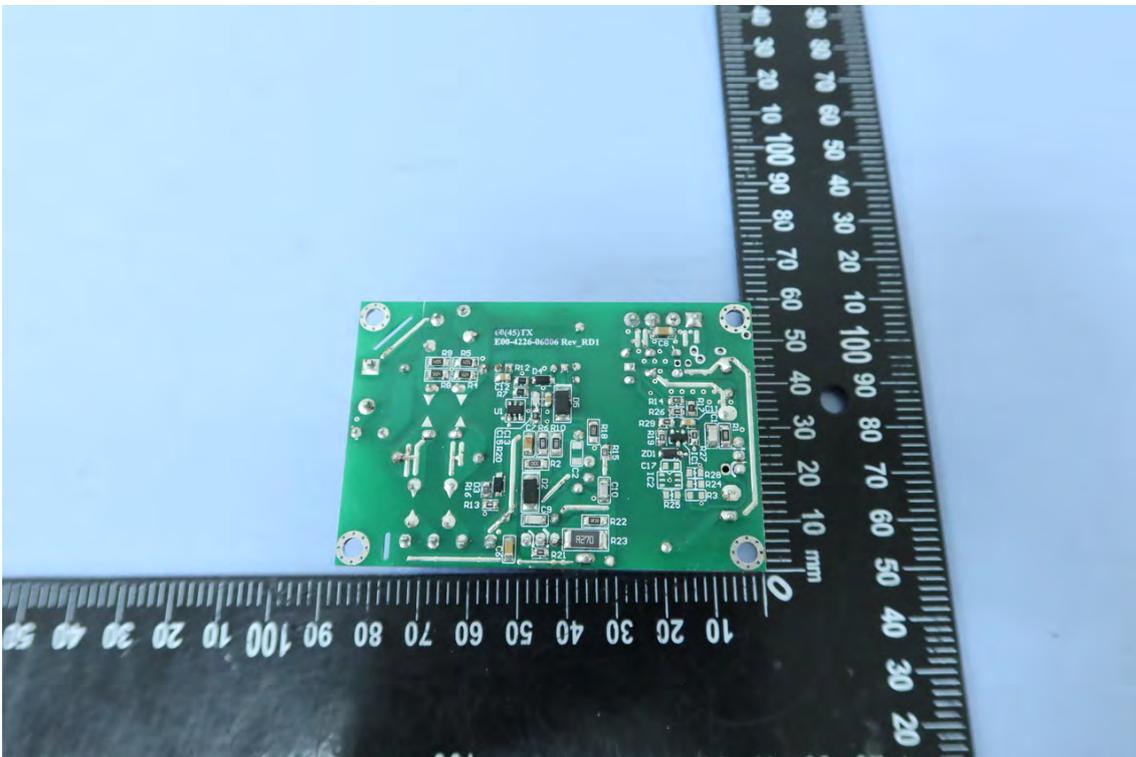
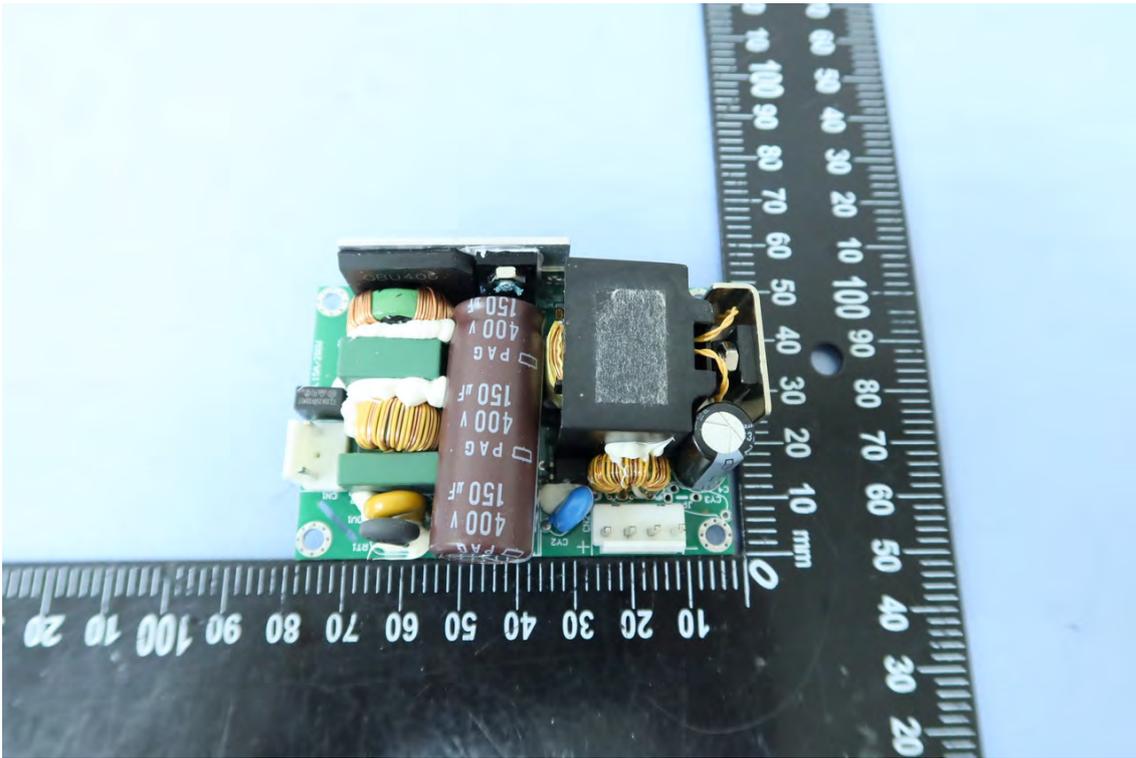


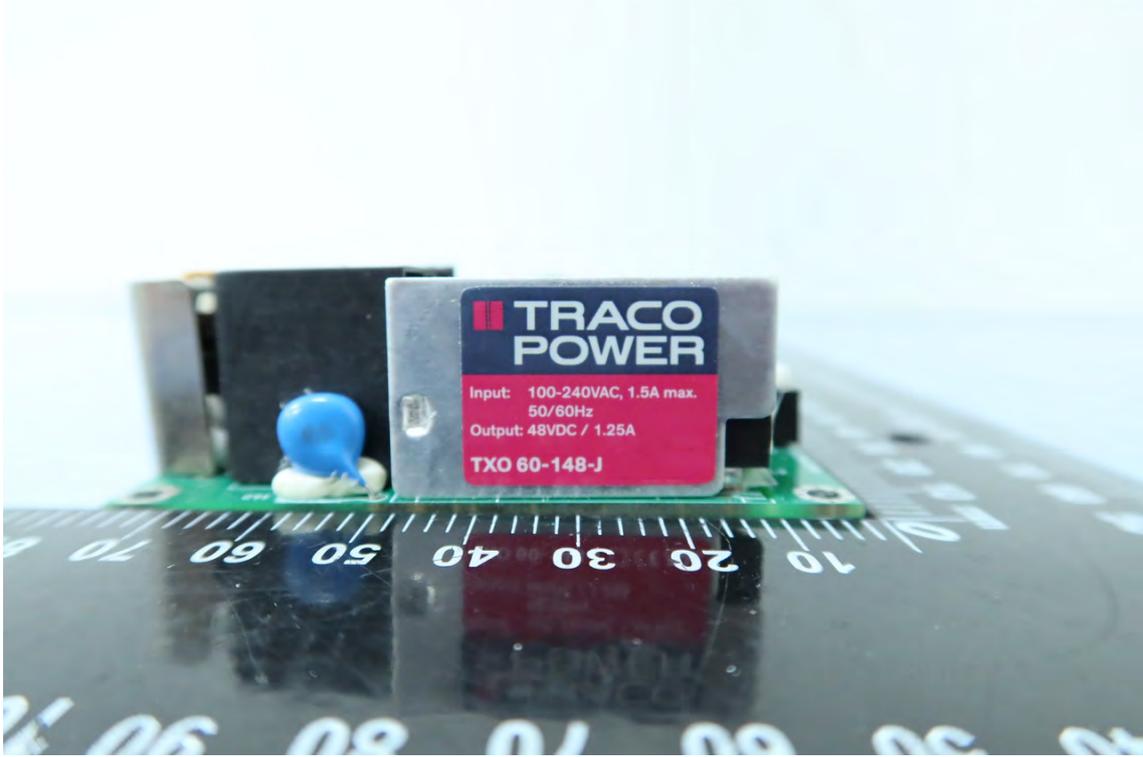
TXO 60-136-J





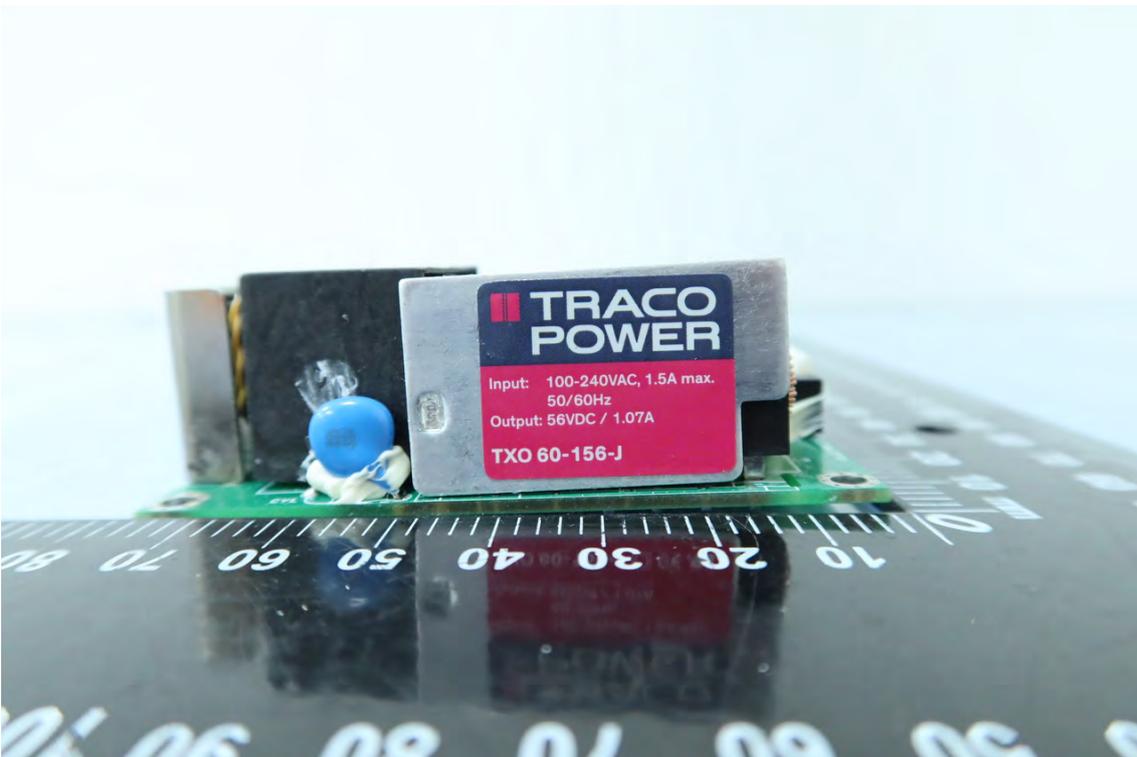
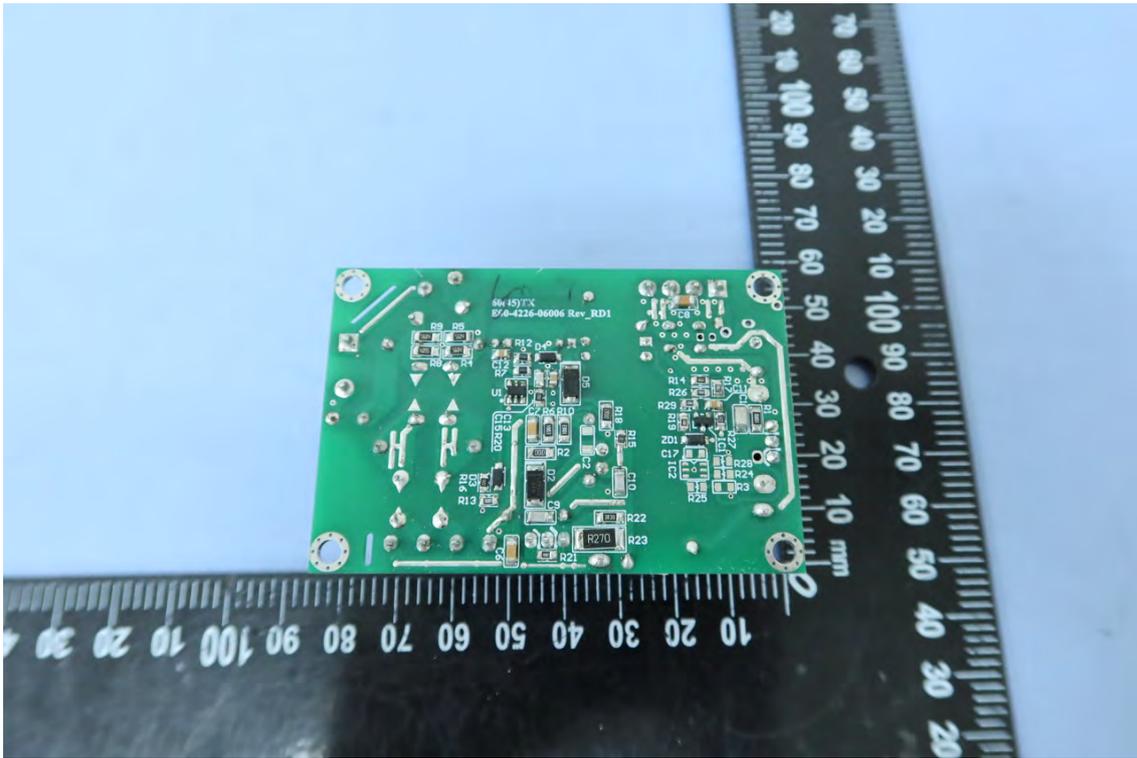
TXO 60-148-J



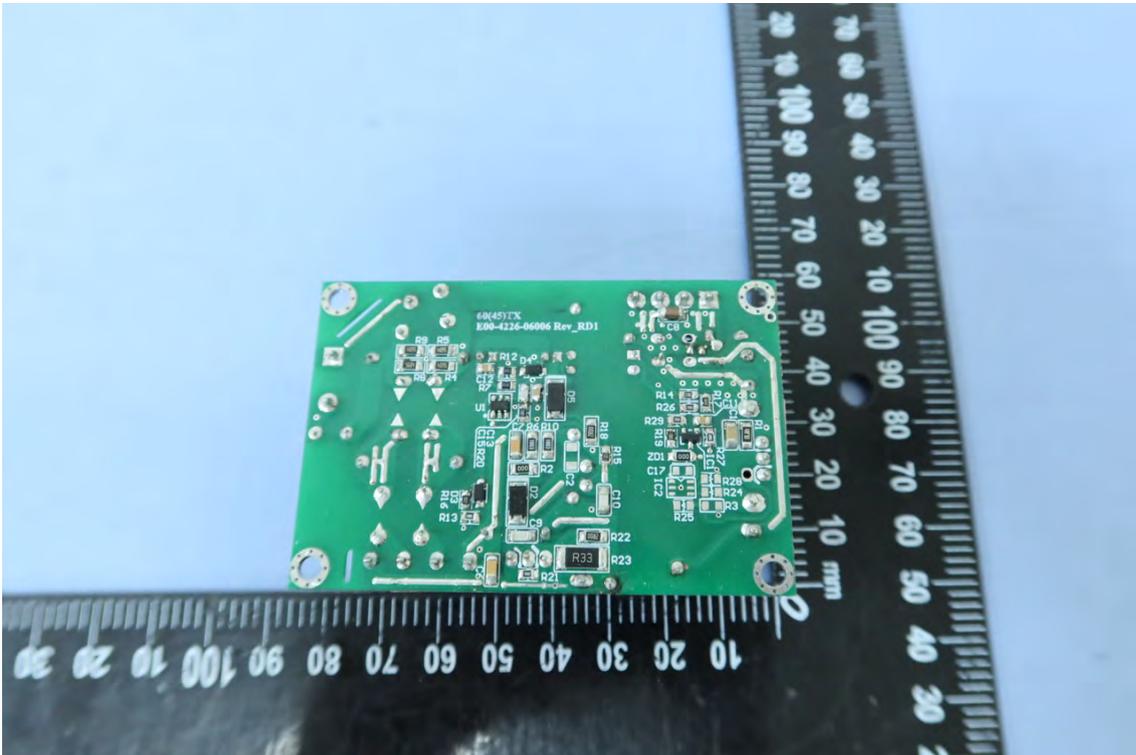
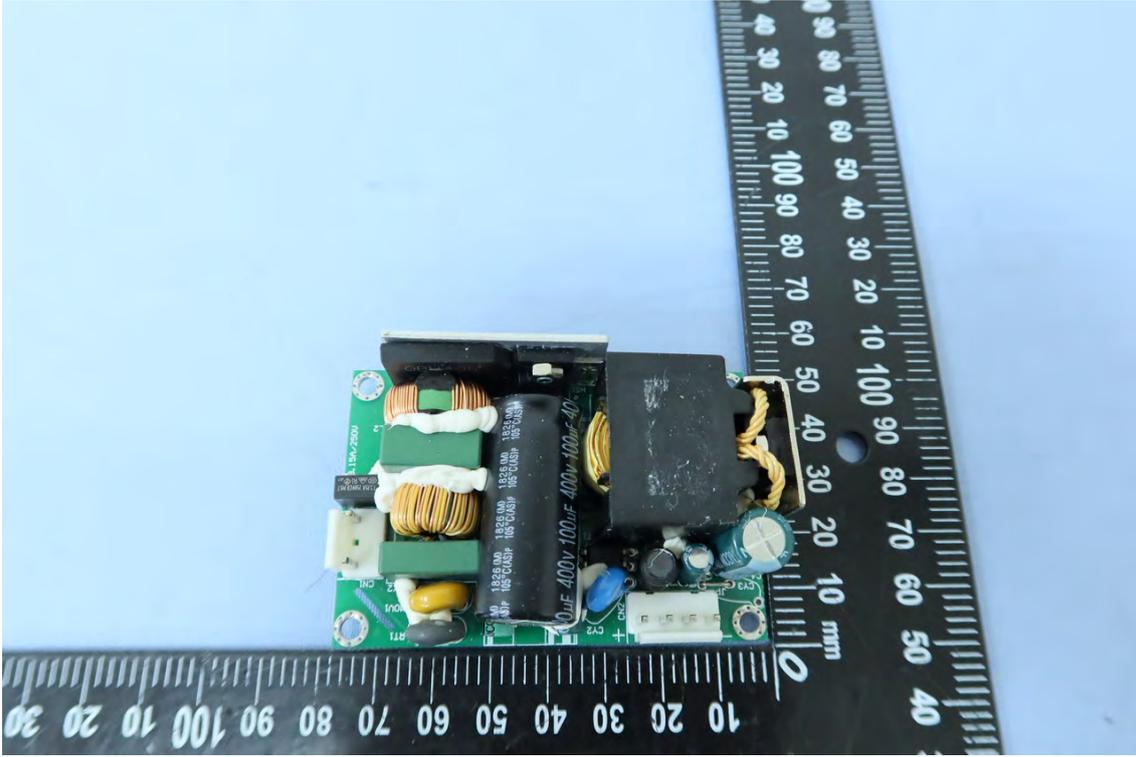


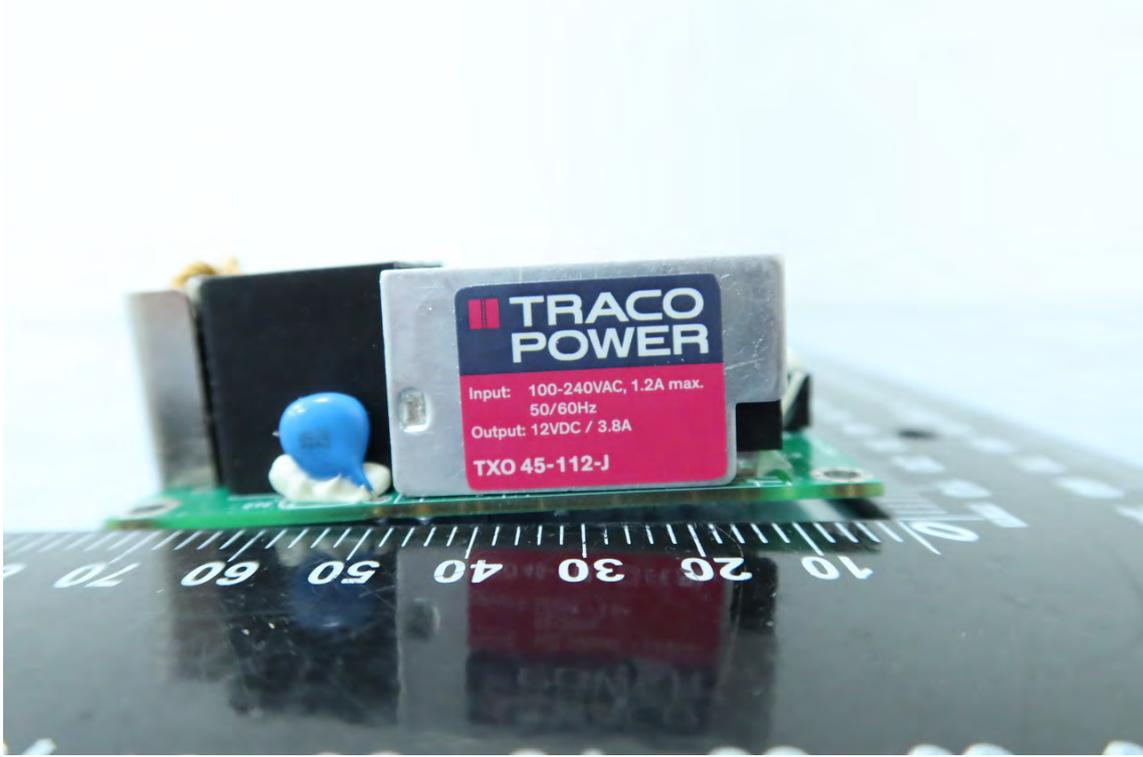
TXO 60-156-J



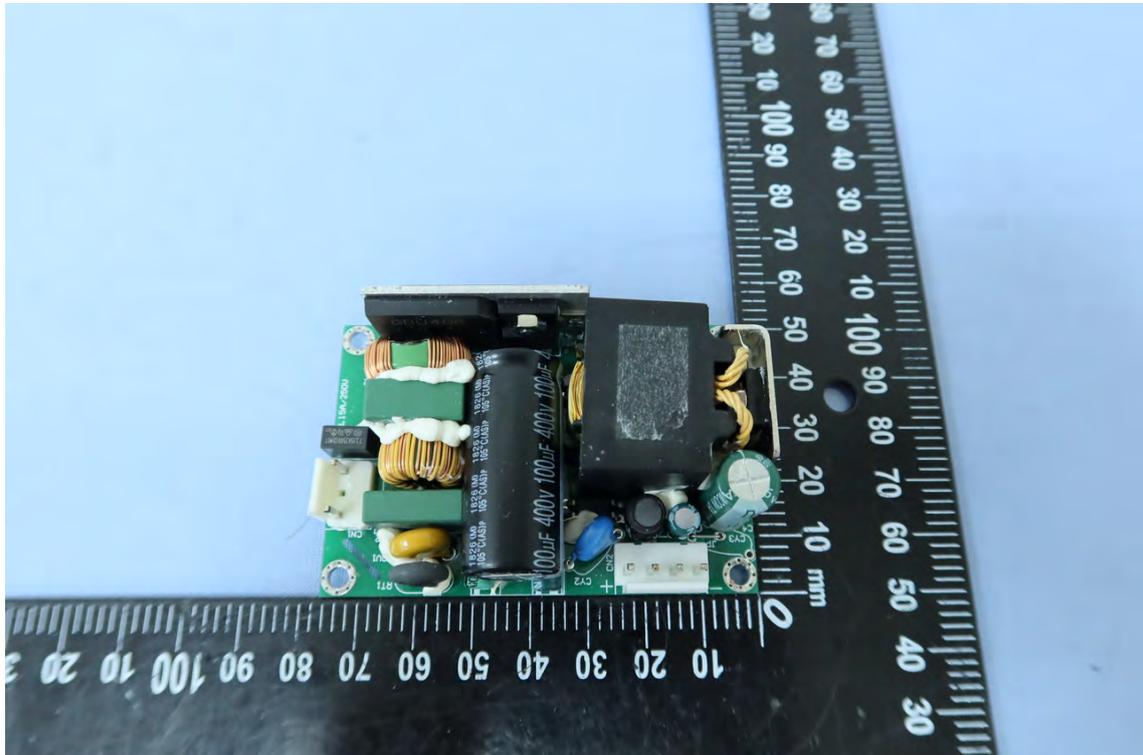


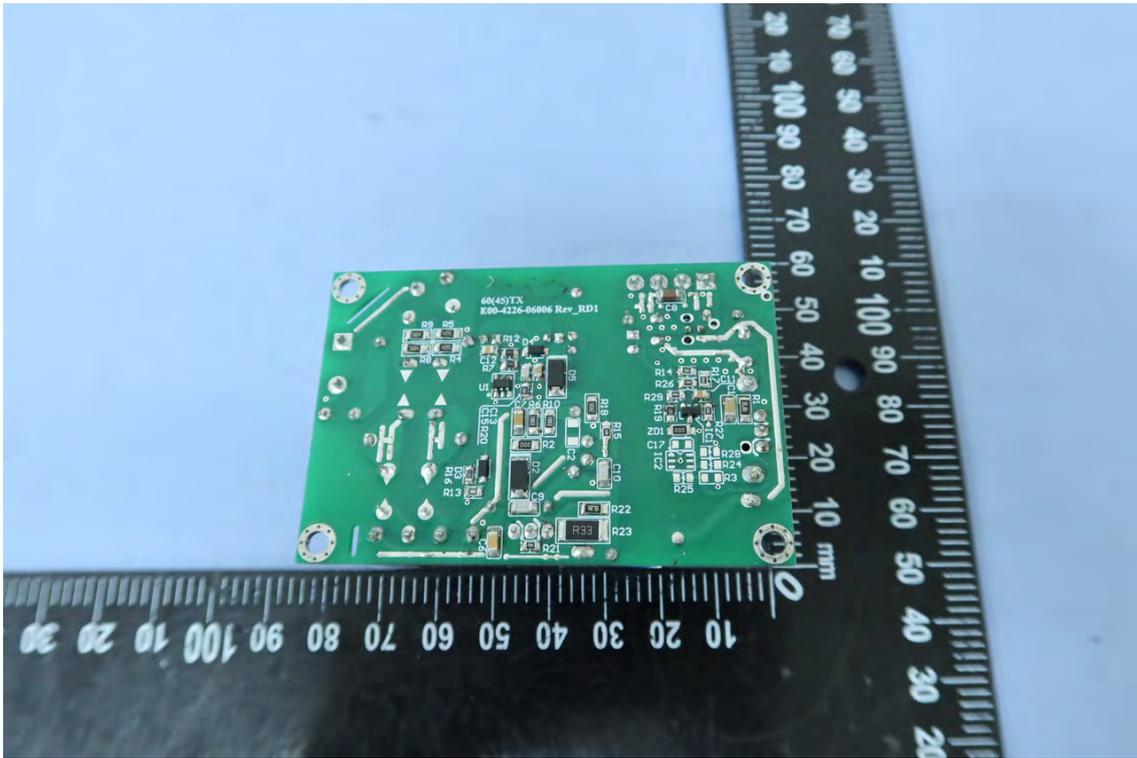
TXO 45-112-J



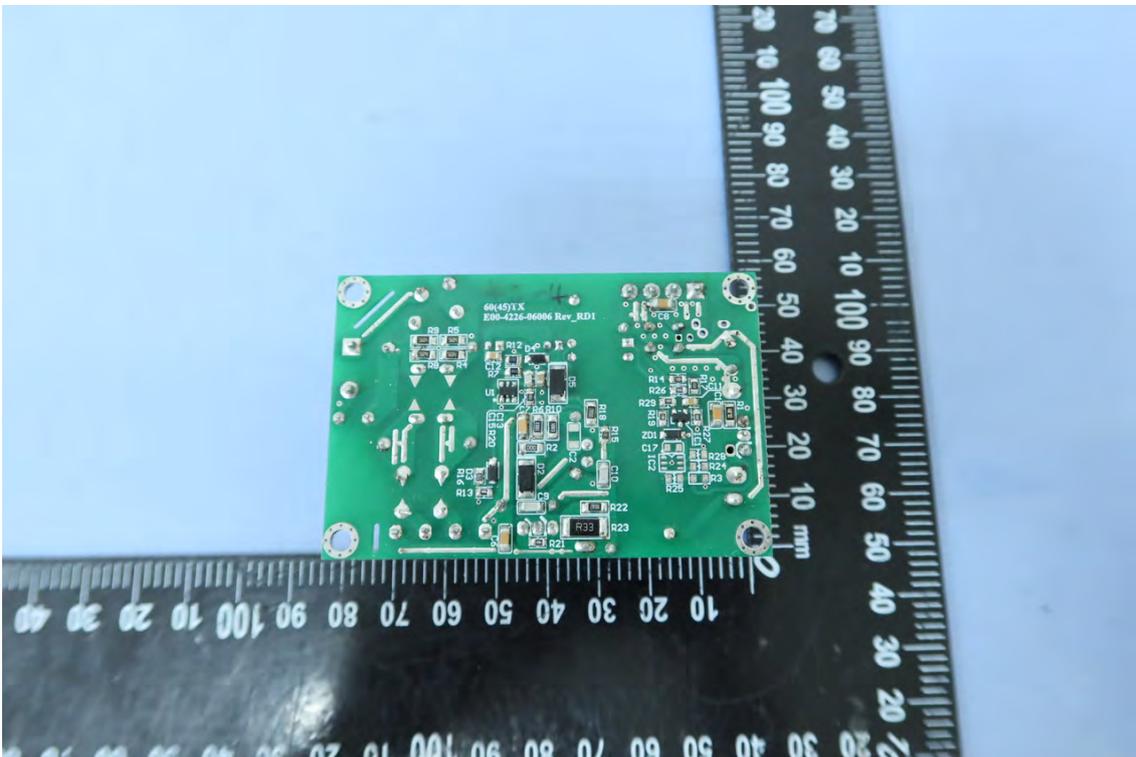
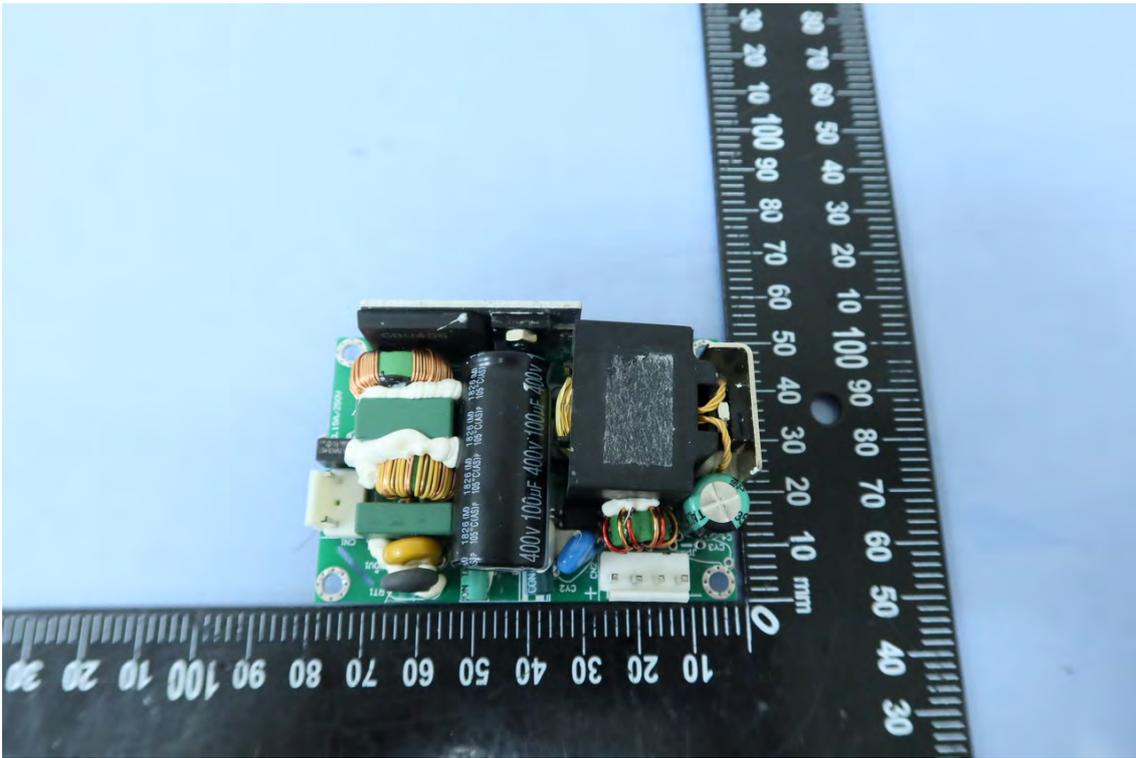


TXO 45-115-J



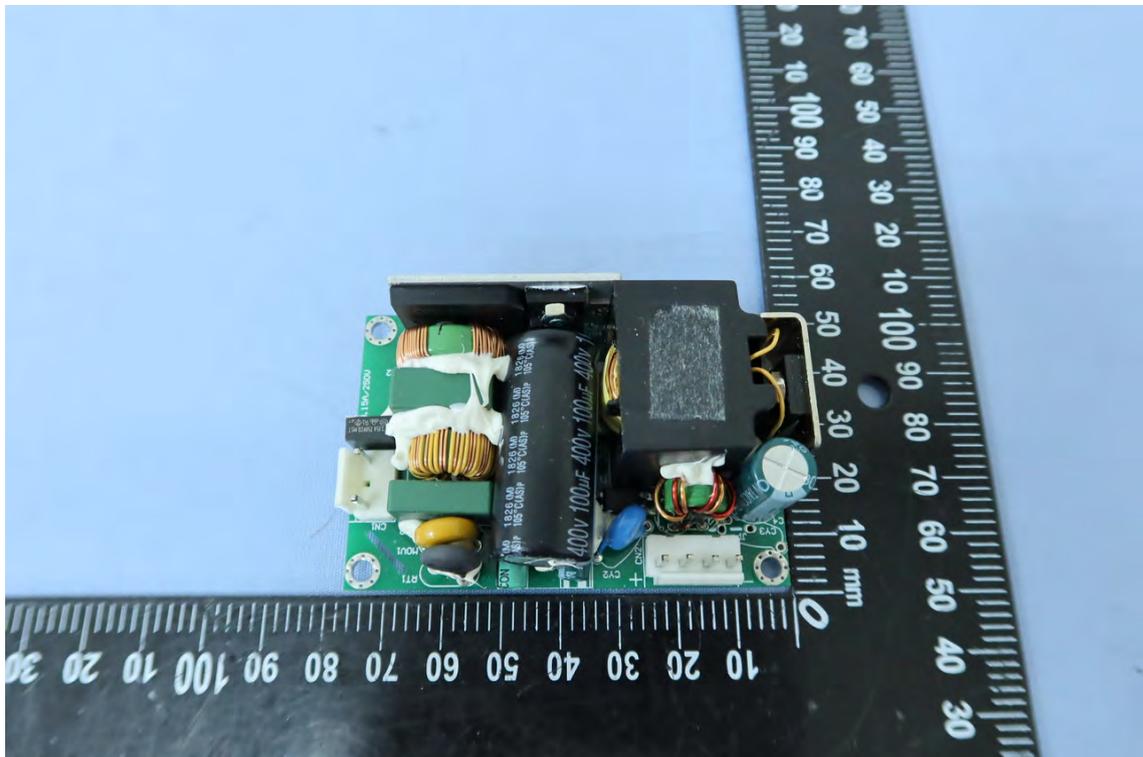


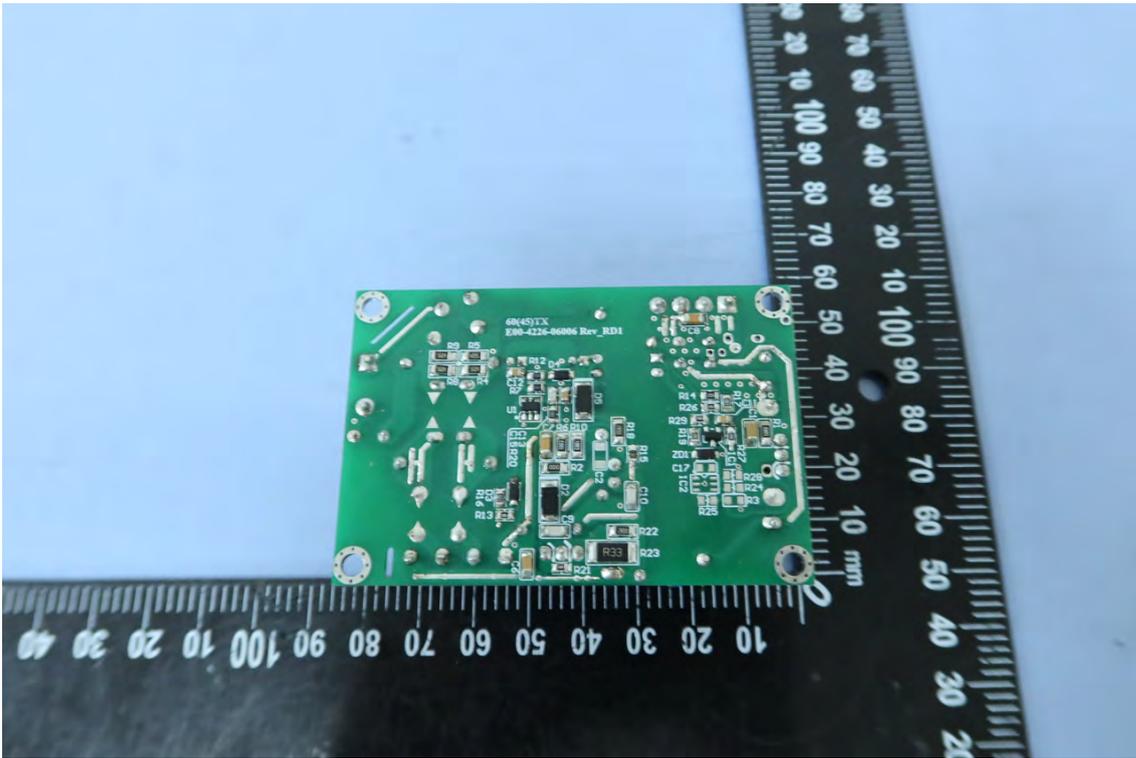
TXO 45-124-J



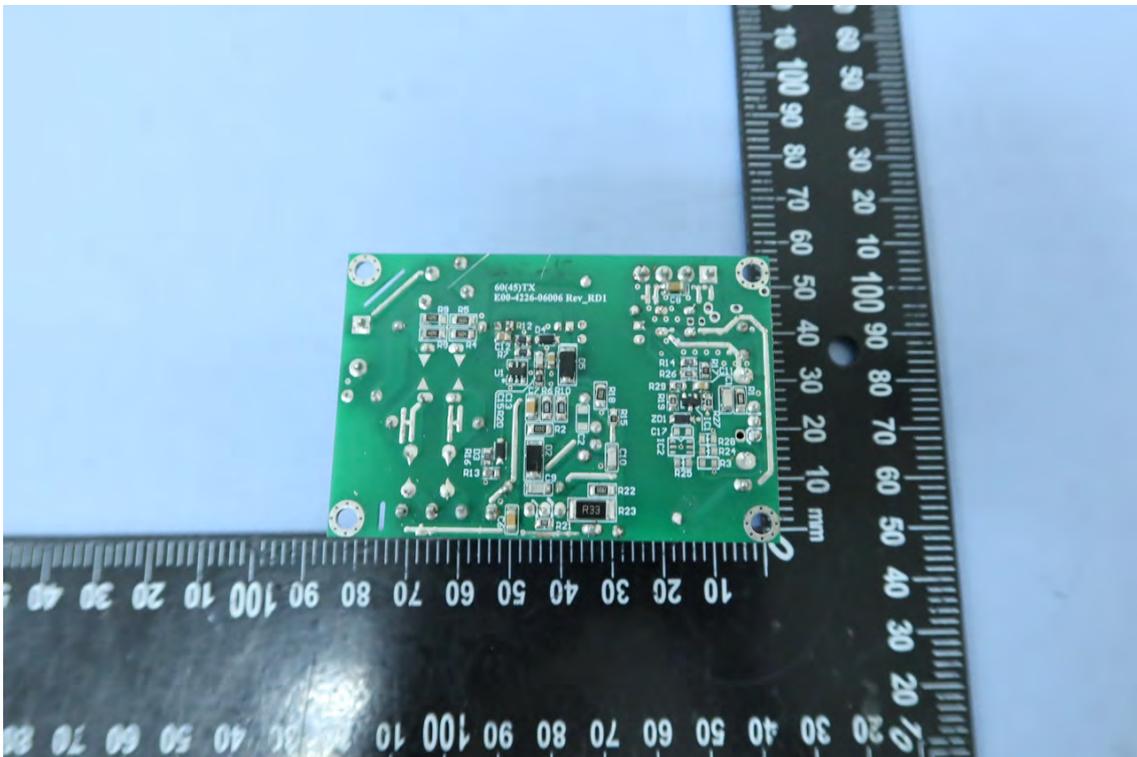
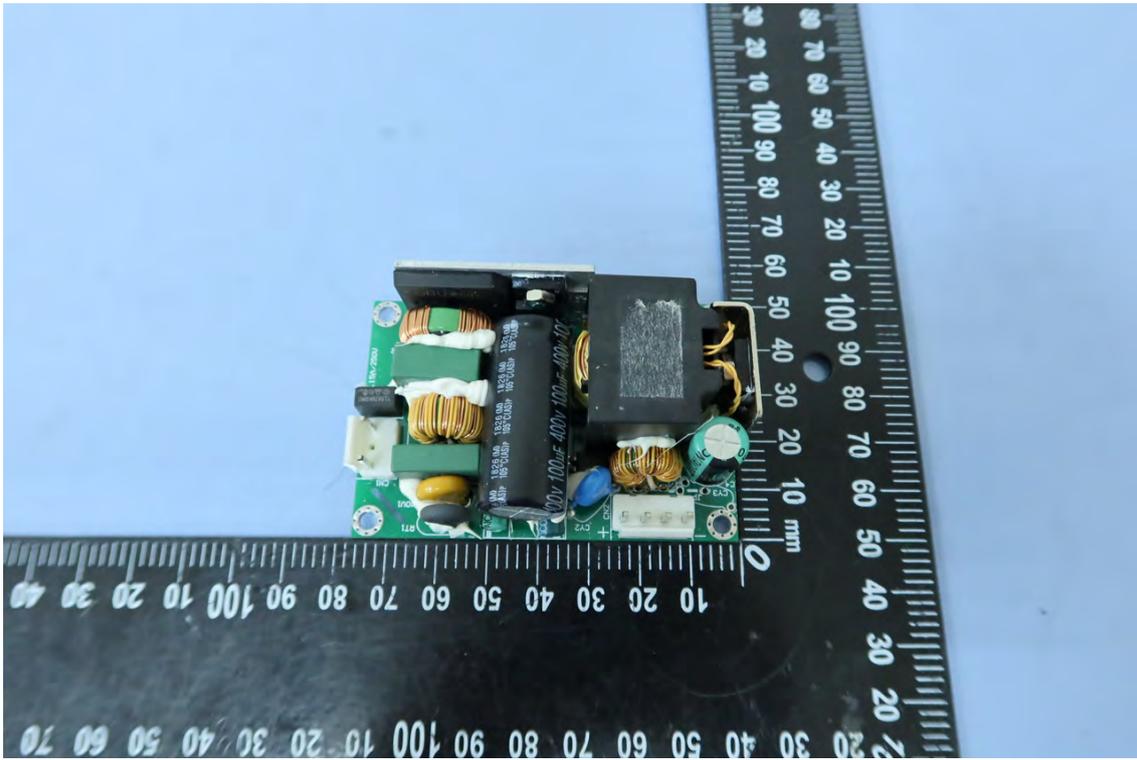


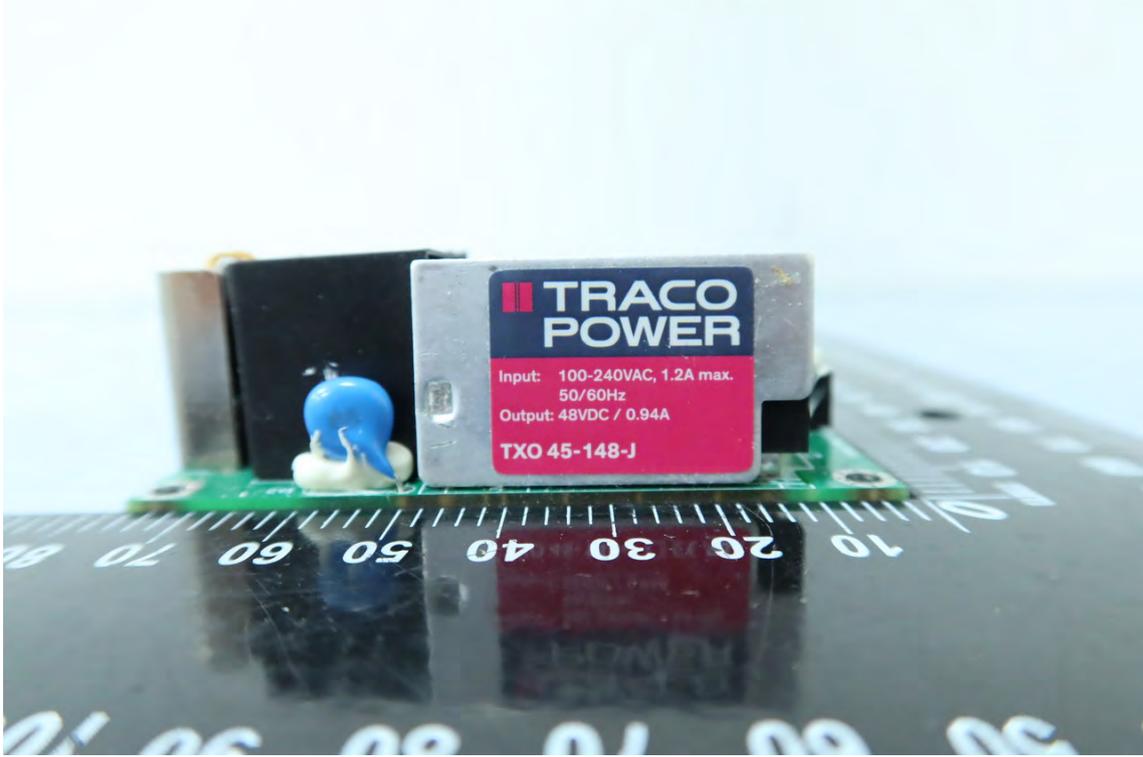
TXO 45-136-J



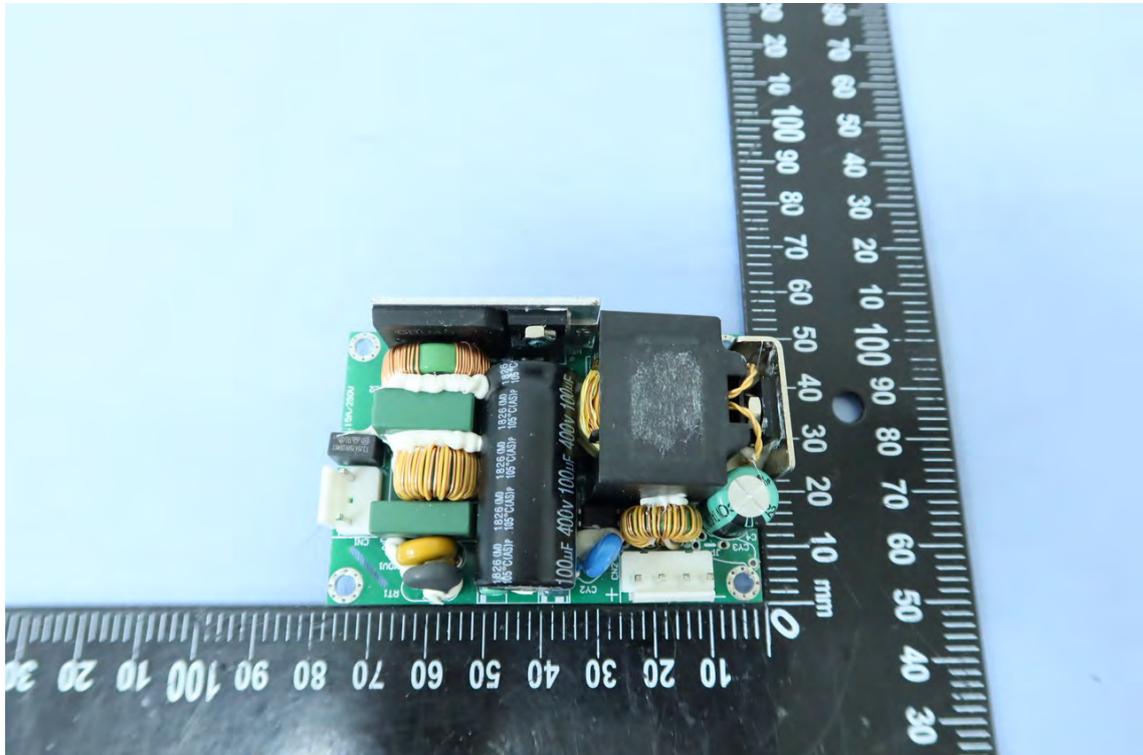


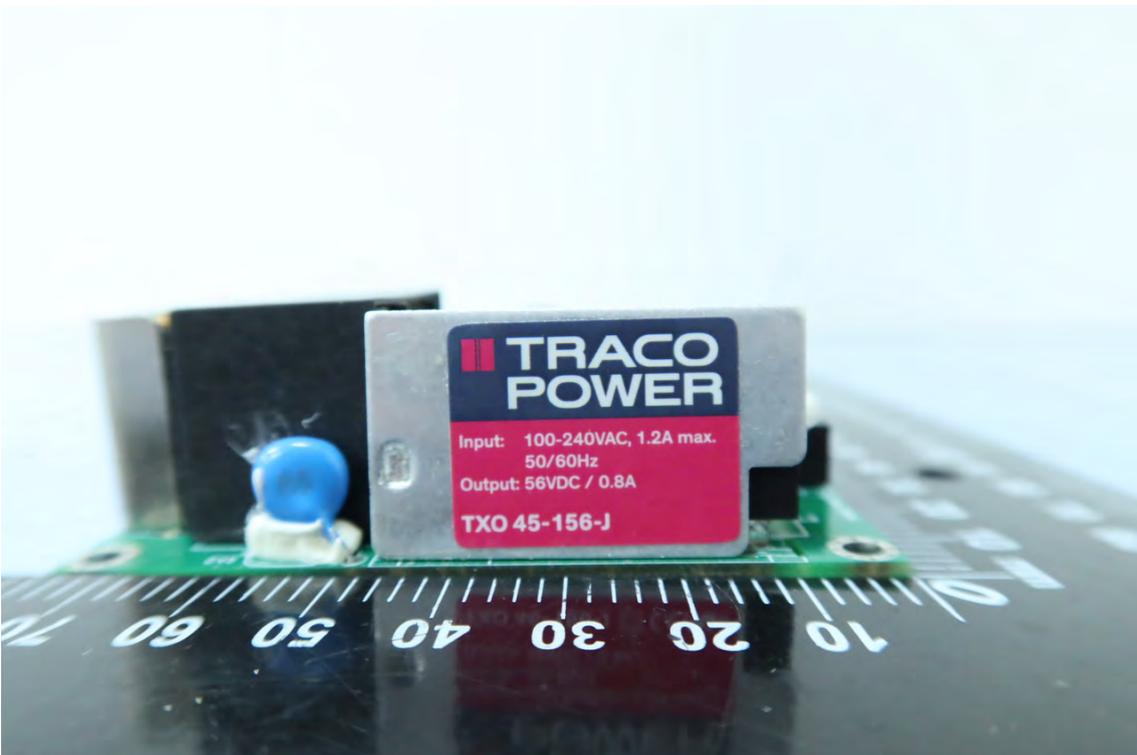
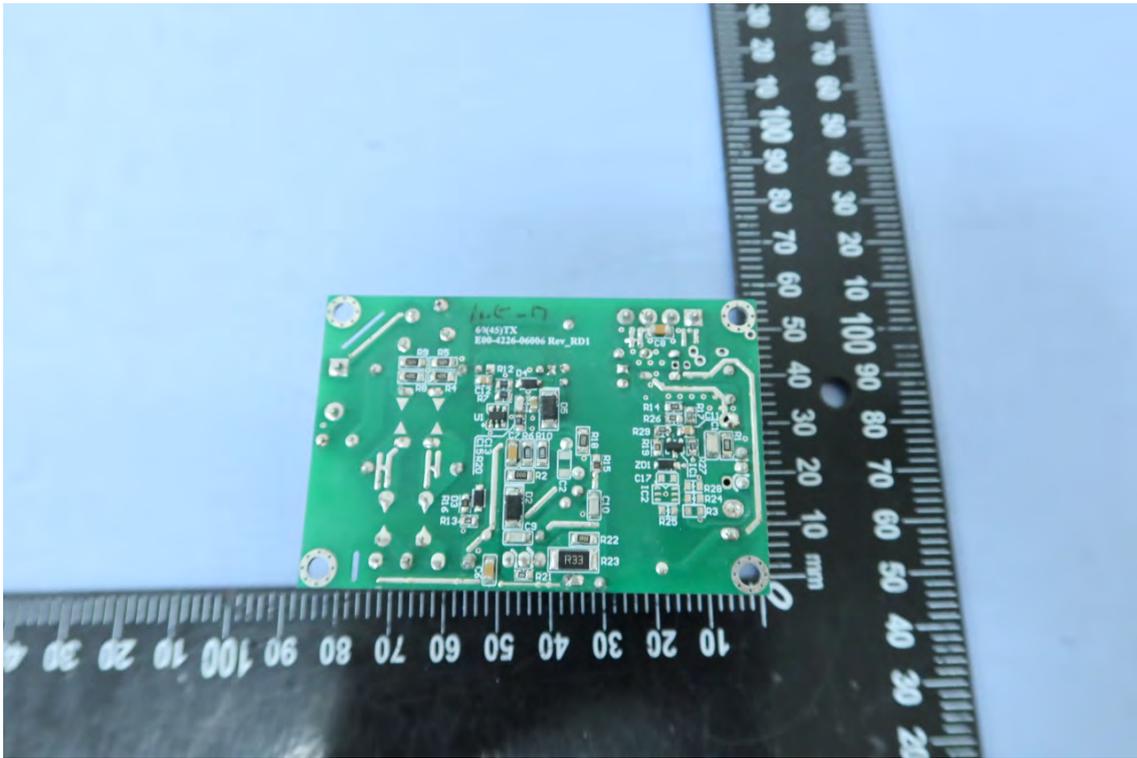
TXO 45-148-J





TXO 45-156-J





**** End of Report ****