



TEST REPORT

for

Product: Fast car charger triple output with PD

Model: P302.26X

Report No.: PTC20022802801E-EM01

Issued for

Issued by

Precise Testing & Certification (Guangdong) Co., Ltd.

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1 TEST CERTIFICATION

Product: Fast car charger triple output with PD
Model: P302.26X、
Applicant :
Address:

Manufacturer:
Address:

Test Date: March 20, 2020 to March 23, 2020
Issue Date: March 23, 2020
Test Voltage: DC 12V,DC 24V
Applicable Standards: EMC Directive 2014/30/EU
EN 50498:2010

The above equipment has been tested by Precise Testing & Certification (Guangdong) Co., Ltd. and found compliance with the requirements in the technical standards mentioned above. The test results presented in this report only relate to the product/system tested. The Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Test Engineer:

Technical Manager:

Leo Yang
Leo Yang / Engineer

Chris Du / Manager





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2 TEST SUMMARY

Electromagnetic Interference (EMI)				
Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emissions (30-1000MHz)	EN 50498:2010	2004/104/EC Clause 6.5 and 6.6	Table 1 for broad band Table 2 for narrow band	PASS
Transient Conducted Emissions	EN 50498:2010	2004/104/EC & ISO 7637-2:2011	Table 3	N/A

Electromagnetic Susceptibility (EMS)				
Test	Test Requirement	Test Method	Class / Severity	Result
Transient Conducted Immunity	EN 50498:2010	2004/104/EC & ISO 7637-2:2011	Table 4	PASS

Note: 1) **EUT**: In this whole report EUT means Equipment Under Test.



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3 TEST SITE

3.1. TEST FACILITY

Precise Testing & Certification (Guangdong) Co., Ltd.

Address: Building 1, No. 6, Tongxin Road, Dongcheng Street, Dongguan, Guangdong, China.

☆ CNAS Registration No.: CNAS L5772

☆ FCC Registration No.: 790290

☆ A2LA Certificate No.: 4408.01

☆ IC Registration No.: 12191A-1

3.2. LIST OF TEST AND MEASUREMENT INSTRUMENTS

3.2.1. For radiated emission test (30MHz-1GHz)

Name of Equipment	Manufacturer	Model	Serial No.	Calibration Due
EMI Test Receiver	Rohde&Schwarz	ESCI	101417	Aug. 28, 2020
Trilog Broadband Antenna	SCHWARZBECK	VULB9160	9160-3355	Aug. 22, 2020

3.2.2. For ISO7637-2 Transient Conducted Immunity

Name of Equipment	Manufacturer	Model	Serial No.	Calibration Due
Ultra Compact Simulator	EM Test/AG	UCS 200M	V0725102618	Aug. 22, 2020
Voltage Drop Generator	EM Test/AG	VDS 200 B2	V0725102619	Aug. 22, 2020



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4 EUT DESCRIPTION

Product	Fast car charger triple output with PD
Model	P302.26X、ECC17-767-B
Supplied Voltage	DC 12-24V,2.9A-1.5A
Power	N/A

I/O PORT

I/O PORT TYPES	Q'TY	TESTED WITH
USB Port	1	<input type="checkbox"/>
DC Port	1	<input checked="" type="checkbox"/>

Models Difference

The model names are different and the others are the same.



5 EMI and EMS Test Results

5.1. Radiated Emissions (30 MHz to 1 GHz)

Result	: Pass
Test Requirement	: EN 50498
Test Method	: Clause 6.5 and 6.6 of 2004/104/EC
Test Voltage	: DC 12V, DC 24V
Frequency Range	: 30 MHz to 1 GHz
Measurement Distance	: 1 meter
Limits	: Table 1 of EN 50498 (for broadband emissions)

Frequency range F MHz	Limits Quasi peak dB μ V/m
30 to 75	62-52 ^a
75 to 400	52-63 ^b
400 to 1000	63
^a Decreasing linearly with the log of the frequency.	
^b Increasing linearly with the log of the frequency.	

Table 2 of EN 50498 (for narrowband emissions)

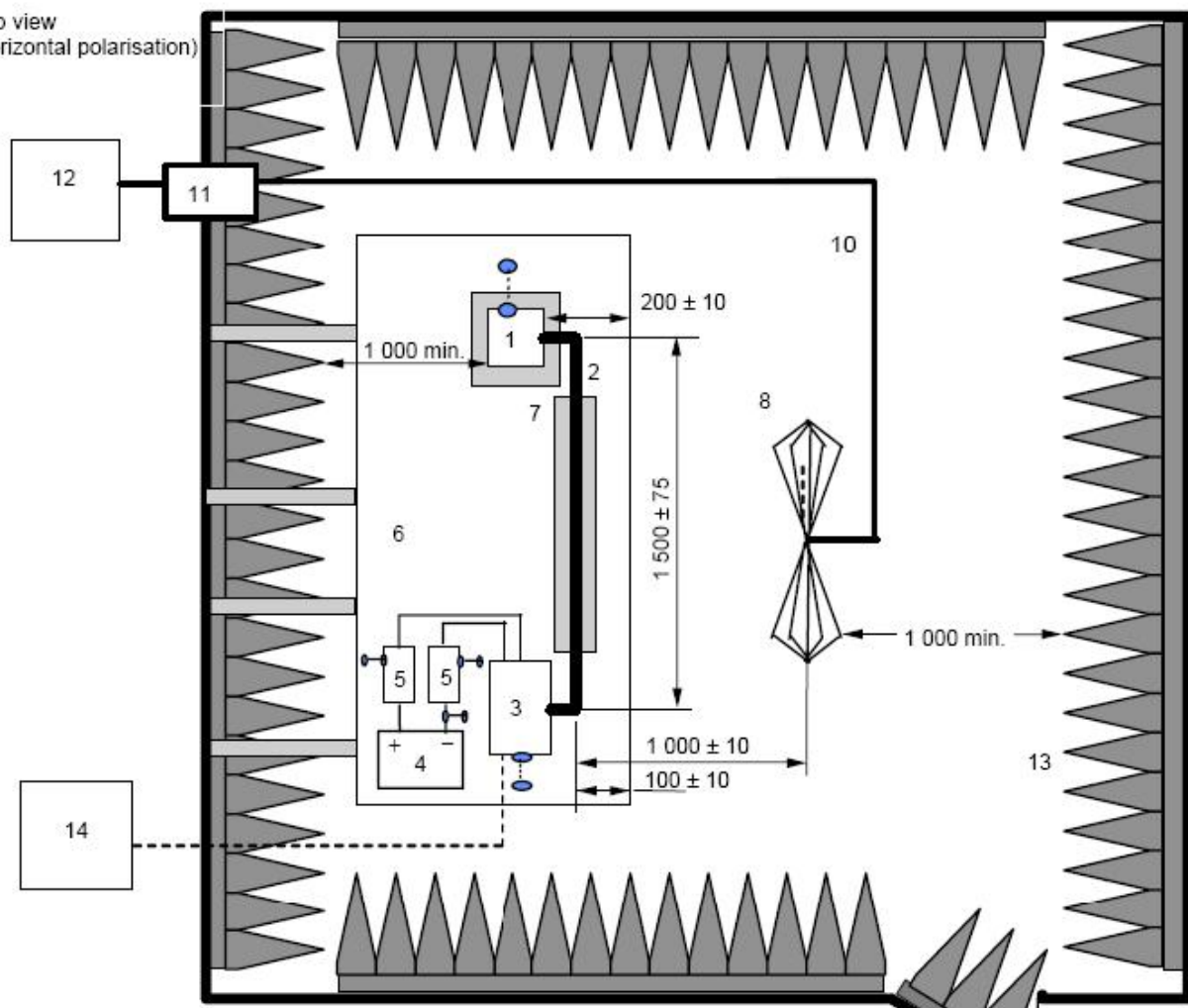
Frequency range F MHz	Limits Average dB μ V/m
30 to 75	52-42 ^a
75 to 400	42-53 ^b
400 to 1000	53
^a Decreasing linearly with the log of the frequency.	
^b Increasing linearly with the log of the frequency.	

Detector:	: Peak for pre-scan (120 kHz resolution bandwidth) Quasi-Peak for broadband emissions Average for narrowband emissions
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5.1.1 Test Setup and Procedure

The EUT was insulated placed 50 mm above the ground plane, the ground plane was in a height of 1 m to the reference plane of semi-anechoic chamber and with electrical connection. No additional electric connection was made between the EUT and ground plane as the EUT will not be intended to be bonded to the bodywork of the vehicle. The EUT was powered by DC 12 V and DC 24V vehicle batteries through 5 uH/50 ohm LISN.

Top view
(horizontal polarisation)



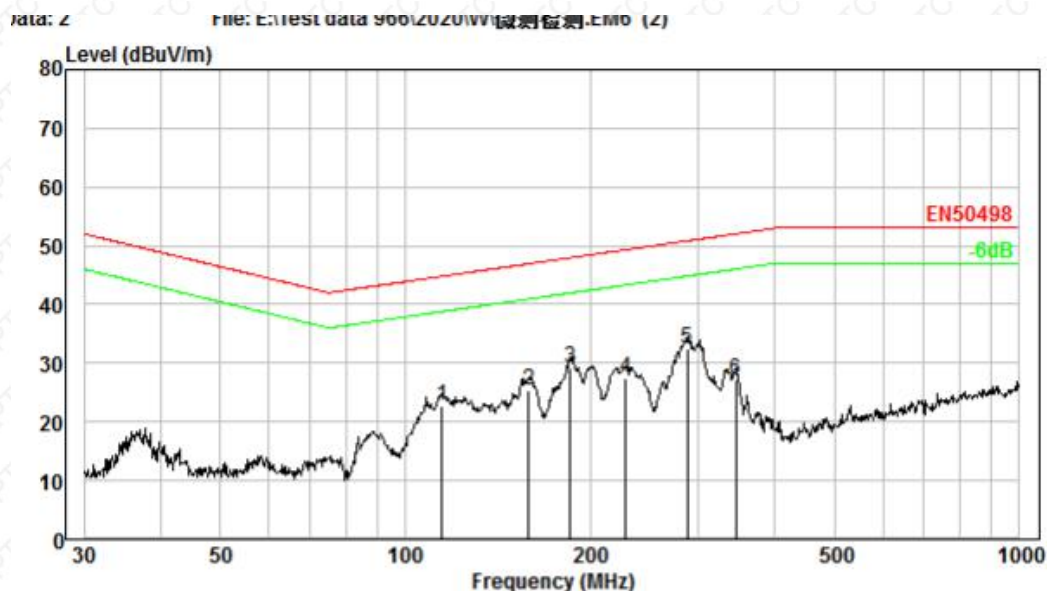
Key

- | | |
|--|---------------------------------------|
| 1. EUT (grounded locally if required in test plan) | 8. Antenna |
| 2. Test harness | 10. High-quality coaxial cable |
| 3. Load simulator | 11. Bulkhead connector |
| 4. Power supply (location optional) | 12. Measuring instrument |
| 5. Artificial network (AN) | 13. RF absorber material |
| 6. Ground plane (bonded to shielded enclosure) | 14. Stimulation and monitoring system |
| 7. Low relative permittivity support. | |



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5.1.2 Measurement Data

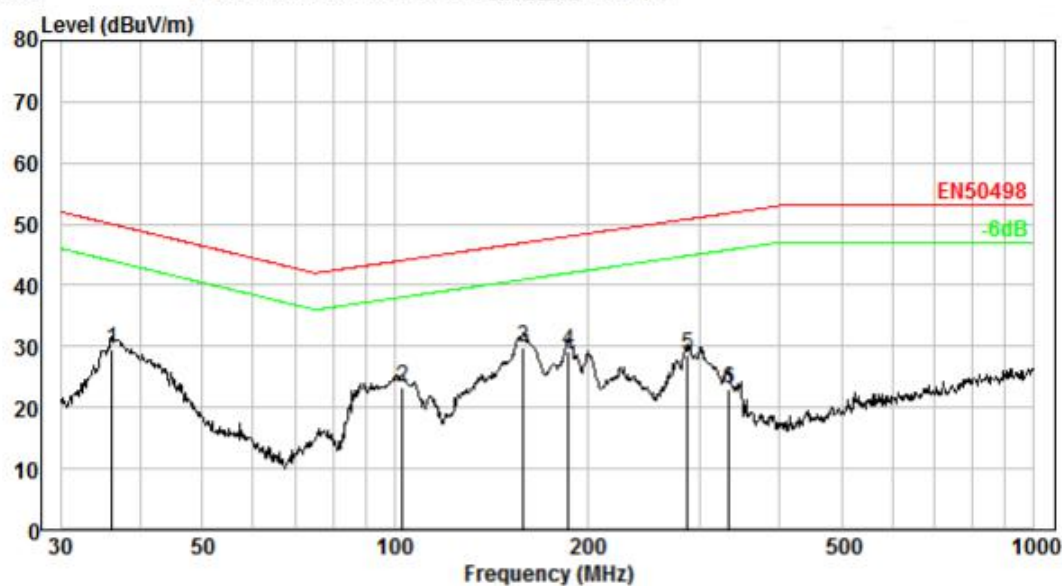


Test Site : 3m Chamber
Dis. / Ant. : 3m ANT-RE-L
Test Phase : HORIZONTAL
Power Input : DC 12V

No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	114.917	3.51	11.40	37.88	30.00	22.79	44.80	-22.01	QP
2.	158.668	4.07	14.05	37.40	30.02	25.50	46.92	-21.42	QP
3.	185.788	4.33	12.05	42.73	30.03	29.08	47.96	-18.88	QP
4.	228.490	4.69	11.90	40.99	30.13	27.45	49.32	-21.87	QP
5.	287.990	5.09	13.04	44.69	30.29	32.53	50.84	-18.31	QP
6.	345.595	5.41	14.30	38.00	30.51	27.20	52.04	-24.84	QP



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Test Site : 3m Chamber
 Dis. / Ant. : 3m ANT-RE-L
 Test Phase : VERTICAL
 Power Input : DC 12V

No.	Freq MHz	Cable Loss dB	ANT Factor dB/m	Receiver Reading dBuV	Preamp Factor dB	Emission Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark
1.	36.127	1.52	12.18	45.83	29.90	29.63	49.97	-20.34	QP
2.	102.719	3.32	9.94	40.19	29.99	23.46	44.07	-20.61	QP
3.	158.668	4.07	14.05	41.82	30.02	29.92	46.92	-17.00	QP
4.	187.096	4.35	11.95	42.96	30.04	29.22	48.01	-18.79	QP
5.	286.982	5.08	13.03	40.73	30.29	28.55	50.82	-22.27	QP
6.	333.687	5.34	14.03	34.24	30.46	23.15	51.81	-28.66	QP



5.2. Transient Conducted Emissions Test

There is no need for Transient conducted emission test to be performed on this product in accordance with 7.3 of this Standard (EN 50498):

“ESAs that are not switched, contain no switches or do not include inductive loads need not be tested for conducted emission and shall be deemed to comply with paragraph 7.3 of this Standard (EN 50498).”

Performance Criteria Description in A.4 of ISO 7637-2

Criterion A:

all functions of a device/system perform as designed during and after exposure to disturbance.

Criterion B:

all functions of a device/system perform as designed during exposure. However, one or more of them can go beyond specified tolerance. All functions return automatically to within normal limits after exposure is removed. Memory functions shall remain class A.

Criterion C:

one or more functions of a device/system do not perform as designed during exposure but return automatically to normal operation after exposure is removed.

Criterion D:

one or more functions of a device/system do not perform as designed during exposure and do not return to normal operation until exposure is removed and the device/system is reset by simple “operator/use” action.

Criterion E:

one or more functions of a device/system do not perform as designed during and after exposure and cannot be returned to proper operation without repairing or replacing the device/system.

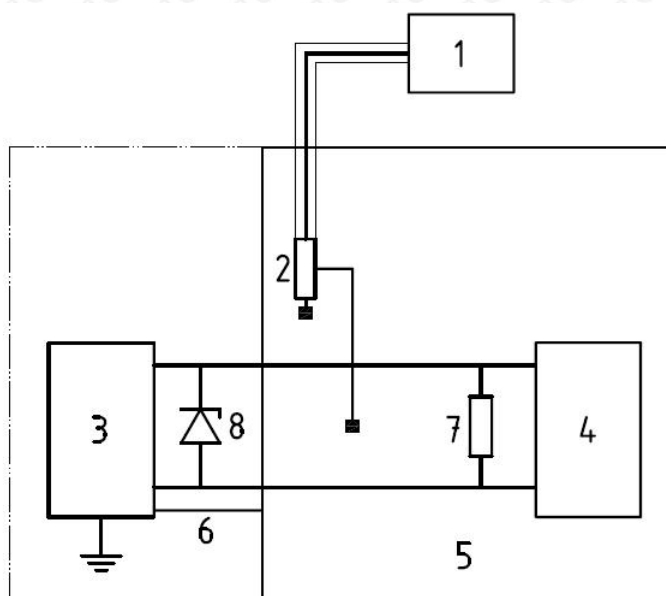
5.3 Transient Conducted Immunity

Result	: Pass
Test Requirement	: EN 50498
Test Method	: Clause 6.8 2004/104/EC & ISO 7637-2
Test Voltage	: DC 12V, DC 24V
Test Limit	: Table 4 of EN50498

5.3.1 E.U.T. Operation

One mode, full load offers 12V and 24V.

5.3.2 Test Setup



Key

- 1. oscilloscope
- 2. voltage probe
- 3. test pulse generator with internal power supply resistance R_i
- 4. EUT
- 5. ground plane
- 6. Ground connection
- 7. optional resistor (R_v)
a For simulation of vehicle system loading for load dump test pulses 5a and 5b only. If used, the value of R_v shall be specified in the test plan (typical value 0,7 ohm to 40 ohm).
- 8. optional diode bridge
b For simulation of load dump waveform for alternator with centralized load dump



suppression for pulse 5b only.

5.3.3 Transient Conducted Immunity Limits

Test pulse number	Immunity test level	Functional status for systems	
		Related to immunity-related functions	Not related to immunity-related functions
1	III	C	D
2a	III	B	D
2b	III	C	D
3a	III	A	D
3b	III	A	D
4	III	B for ESA which must be operational during engine start phases or C for other ESAs	D

5.3.4 Test Result

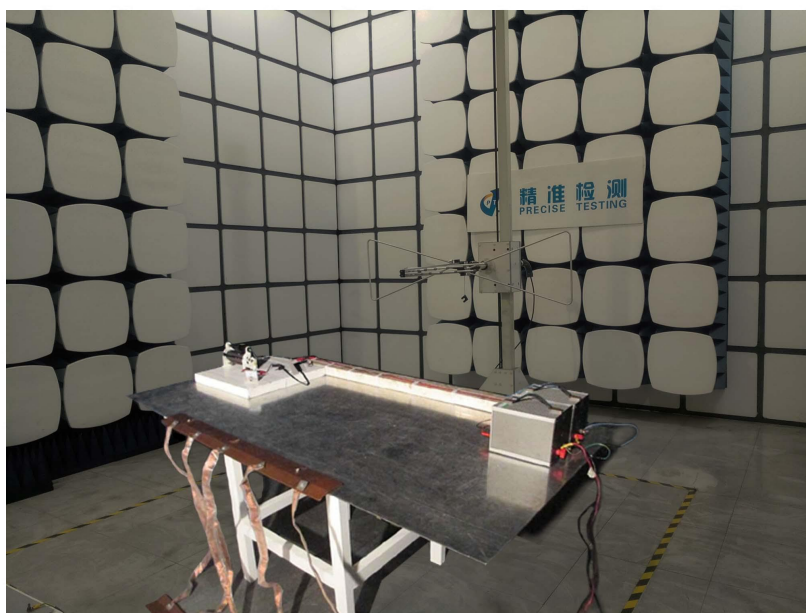
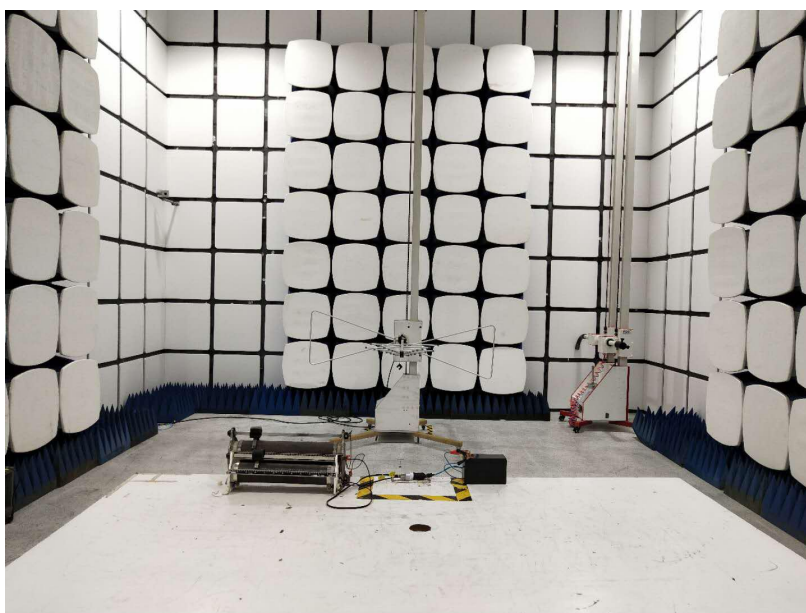
System:

Test pulse number	Immunity Test Level for 12V(min. voltage)	Number of pulses / duration	Required functional status	Functional status of the systems during the test
1	-75 V	5000	D	A
2a	+37V	5000	D	A
2b	+10V	10	D	A
3a	-112V	1h	D	A
3b	+75 V	1h	D	A
4	-6 V	1	D	B



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6 PHOTOGRAPHS OF THE TEST CONFIGURATION RE TEST





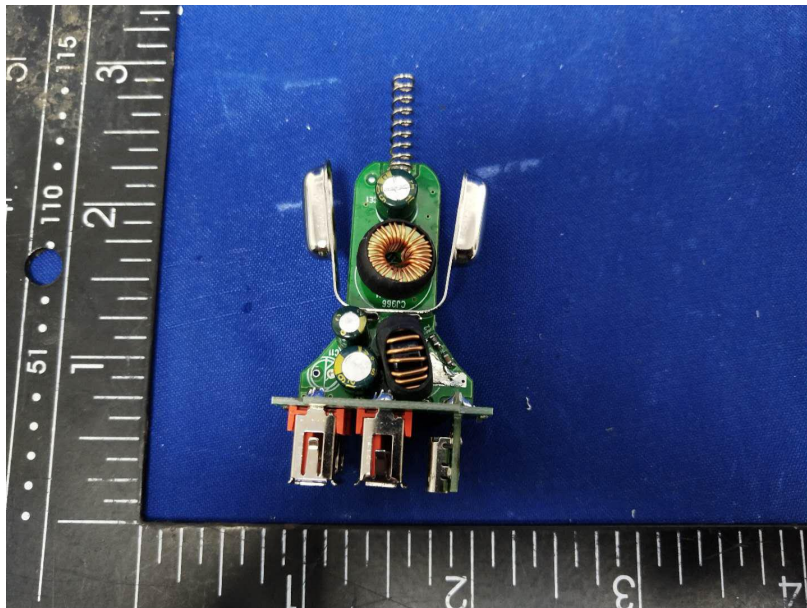
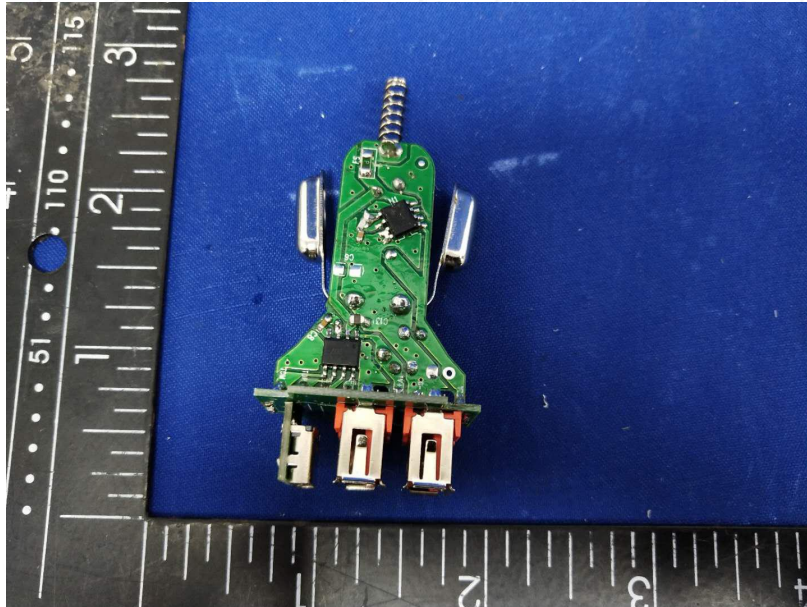
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7 PHOTOGRAPHS OF EUT





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