CE EMC Test Report



(Declaration of Conformity) For Electromagnetic Interference Of

Product: Dual car charger

Trade Name : N/A

Model Number : P302.06X

Prepared for

Prepared by

Shenzhen BZT Testing Technology Co., Ltd.

1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street Bao'an District, Shenzhen P.R. China



TEST RESULT CERTIFICATION

Applicant's name:
Address:
Manufacture's Name:
Address:
Product description
Product name Dual car charger
Model and/or type reference : P302.06X
Standards
This device described above has been tested by BZT, and the test results show that the equipment under test (EUT) is in compliance with the 2004/108/EC requirements. And it is applicable only to the tested sample identified in the report.
This report shall not be reproduced except in full, without the written approval of BZT, this document may be altered or revised by BZT, personal only, and shall be noted in the revision of the document.
Date of Test
Date (s) of performance of tests 10 May. 2014 ~26 May. 2014
Date of Issue 26 May. 2014
Test Result Pass
Testing Engineer : Apple Huang
(Apple Huang)
Technical Manager : Jim He
(Jim He)
Authorized Signatory : Korey Jung
(Bovey Yang)



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1. TEST SUMMARY

Test procedures according to the technical standards:

EMC Emission					
Standard	Test Item Judgment Remark				
EN 50498 :2010	Voltage Transient Emissions	oltage Transient Emissions PASS			
EN 30498 .2010	Radiated Emission	PASS	-		
	EMC Immunity				
Section EN 50498 :2010	Test Item	Performance Criteria	Judgn	nent	Remark
ISO 7637-2:2004	Test Pulse 1 D PAS		SS	Note 3	
ISO 7637-2:2004	Test Pulse 2a	D	PASS Note 3		Note 3
ISO 7637-2:2004	Test Pulse 2b	D	PASS Note 3		Note 3
ISO 7637-2:2004	Test Pulse 3a	D	PASS Note 3		Note 3
ISO 7637-2:2004	Test Pulse 3b	D	PASS Note 3		Note 3
ISO 7637-2:2004	Test Pulse 4	Pulse 4 D PASS		Note 3	
ISO 7637-2:2004	Test Pulse 5a	Test Pulse 5a C N/A		Note 3	
ISO 7637-2:2004	Test Pulse 5b	Test Pulse 5b C N/A		4	Note 3

NOTE:

- (1) " N/A" denotes test is not applicable in this Test Report
- (2) For client's request and manual description, the test will not be executed.
- (3) A functional impairment of class C may be acceptable for devices which need not work during the occurrence of distinct pulses.

A functional impairment of class D may be acceptable for devices the malfunction of which does not cause customer annoyance or inconvenience.

A functional impairment of class E is defined primarily for test report purposes and would not normally be acceptable for a device unless under special circumstances.





1.1 TEST FACILITY

NTEK Testing Technology Co., Ltd

Add. : 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China.

FCC FRN Registration Number:238937; IC Registration Number:9270A-1

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of **k=2**, providing a level of confidence of approximately **95** %.

A. Conducted Measurement :

Test Site	Method	Measurement Frequency Range	U , (dB)	NOTE
NTEKC01	ANSI	150 KHz ~ 30MHz	3.2	

B. Radiated Measurement :

Test Site	Method	Measurement Frequency Range	U , (dB)	NOTE
NTEKA01	ANSI	30MHz ~ 1000MHz	4.7	
		1GHz ~6GHz	5.0	

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Dual car charger			
Model Name	P302.06X			
Serial No	N/A			
Model Difference	N/A			
Product Description	The EUT is a Dual car charger. Operating frequency: N/A Connecting I/O port: N/A Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual.			
Power Source	DC Voltage			
Power Rating	12V-24V			



2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description		
Mode 1	Full load		

For Conducted Test				
Final Test Mode Description				
Mode 1	Full load			

For Radiated Test				
Final Test Mode Description				
Mode 1	Full load			

For EMS Test				
Final Test Mode Description				
Mode 1	Full load			



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2.3 DESCRIPTION OF TEST SETUP

Mode :





2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Dual car charger	N/A	P302.06X	N/A	EUT
E-2	Battery	N/A	12V80Ah×2	N/A	
E-3	Load	N/A	N/A	N/A	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	200cm	
C-2	NO	NO	200 cm	

Note:

(1) The support equipment was authorized by Declaration of Confirmation.

(2) For detachable type I/O cable should be specified the length in cm in $\[$ Length $\]$ column.

(3) "YES" is means "shielded" "with core"; "NO" is means "unshielded" "without core".

2.5 MEASUREMENT INSTRUMENTS LIST

2.5.1 CONDUCTED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	LISN	R&S	ENV216	101313	Jul. 06, 2014
2	LISN	EMCO	3816/2	00042990	Jul. 06, 2014
3	50Ω Switch	ANRITSU CORP	MP59B	6200983704	Jul. 06, 2014
4	Test Cable	N/A	C01	N/A	Jul. 06, 2014
5	Test Cable	N/A	C02	N/A	Jul. 06, 2014
6	Test Cable	N/A	C03	N/A	Jul. 06, 2014
7	EMI Test Receiver	R&S	ESCI	101160	Jul. 06, 2014
8	Passive Voltage Probe	ESH2-Z3	R&S	100196	Jul. 06, 2014
9	Triple-Loop Antenna	EVERFINE	LIA-2	11020003	Jul. 06, 2014
10	Absorbing Clamp	R&S	MDS-21	100423	Jul. 08, 2013

2.5.2 RADIATED TEST SITE

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Bilog Antenna	TESEQ	CBL6111D	31216	Jul. 06, 2014
2	Test Cable	N/A	R-01	N/A	Jul. 06, 2014
3	Test Cable	N/A	R-02	N/A	Jul. 06, 2014
4	EMI Test Receiver	R&S	ESCI-7	101318	Jul. 06, 2014
5	Antenna Mast	EM	SC100_1	N/A	N/A
6	Turn Table	EM	SC100	060531	N/A
7	50Ω Switch	Anritsu Corp	MP59B	6200983705	Jul. 06, 2014
8	Spectrum Analyzer	Aglient	E4407B	MY45108040	Jul. 06. 2013
9	Horn Antenna	EM	EM-AH-1018 0	2011071402	Jul. 06. 2013
10	Amplifier	EM	EM-30180	060538	Jul. 06. 2013

2.5.3 P1,P2,P3,P4,P5

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Speed Recovering DC Power Supply	EVERFINE	N/A	N/A	N/A
2	Automotive EMS Test Systems	EVERFINE	EMS7637-P5 a5b	1103001	Jul. 06, 2014
3	Automotive Ems Test Systems	EVERFINE	EMS7637-P3 a3b	1103001	Jul. 06, 2014
4	Automotive EMS Test Systems	EVERFINE	EMS7637-P2 bP4-V100	1101001	Jul. 06, 2014
5	Automotive EMS Test Systems	EVERFINE	EMS7637-P1 P2a	1102001	Jul. 06, 2014

3. EMC EMISSION TEST

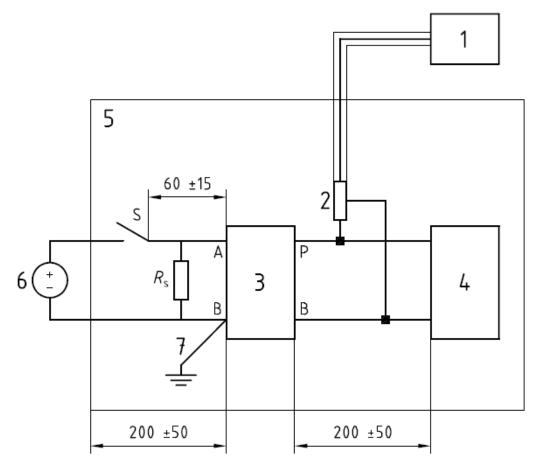
3.1 VOLTAGE TRANSIENT EMISSIONS

3.1.1 LIMIT

Polarity of pulse	Maximum allowed pulse amplitude for					
amplitude	Vehicles with 12V system	Vehicles with 24V system				
Positive	+ 75	+ 150				
Negative	- 100	- 450				

3.1.2 TEST CONFIGURATION

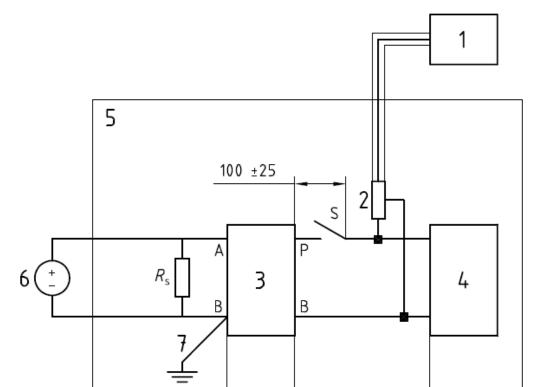
3.1.2.1 Slow Pulses (millisecond range or slower)



BZT

3.1.2.2 Fast Pulses (nanosecond-to-microsecond range) 1 5 100 ±25 2 S Ρ A

	200 ±50		200 ±50
1	oscilloscope or equivalent	5	ground plane
2	2 voltage probe		power supply
3	artificial network		Ground connection; length < 100 mm
4	DUT (source of transient)		



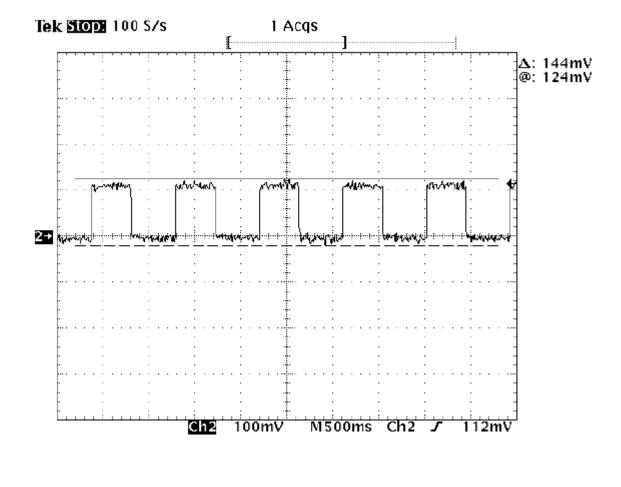


3.1.3 TEST RESULTS

EUT :	Dual car charger	Model Name. :	P302.06X
Temperature :	26 ℃	Relative Humidity :	54%
Pressure :	1010hPa	Test Date :	2014-03-25
Test Mode :	Full load		
Test Voltage :	DC 12V From Battery		

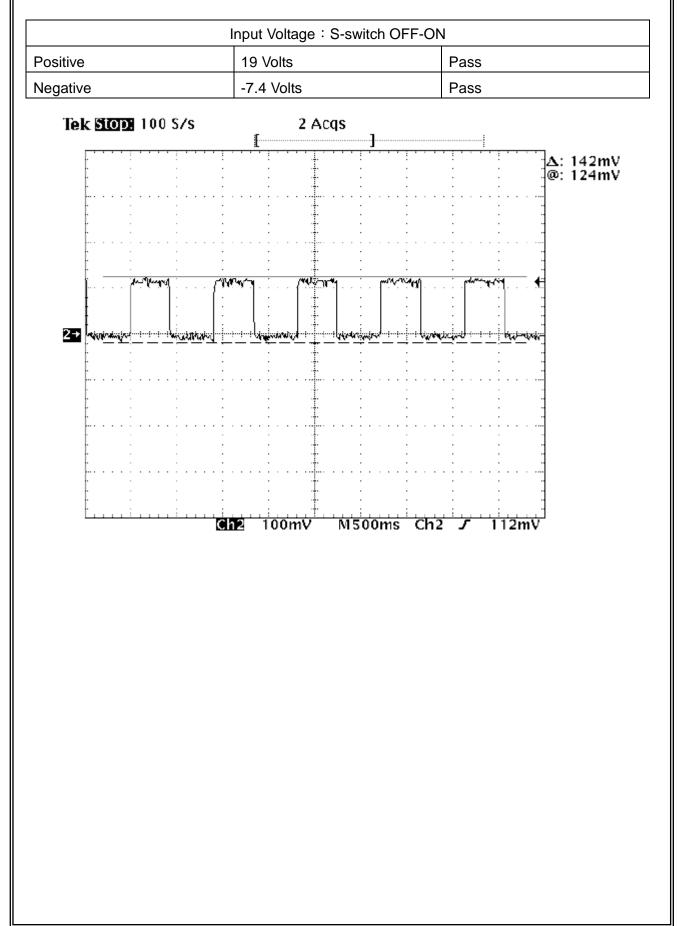
3.1.3.1 Slow Pulse

Input Voltage : S-switch OFF-ON					
Positive 14 Volts Pass					
Negative	-8.0 Volts	Pass			





3.1.3.2 Fast Pulse



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF BROADBAND RADIATED DISTURBANCES

FREQUENCY (MHz)	QP		
	dBuV/m		
30 – 75	62 – 52		
75 – 400	52 –63		
400 –1000	63		

3.2.2 LIMITS OF NARROWBAND DISTURBANCES

FREQUENCY (MHz)	AVG
	dBuV/m
30 – 75	52 – 42
75 – 400	42 –53
400 –1000	53

Notes:

- (1) The limit for radiated test was performed according to as following: CISPR 25.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

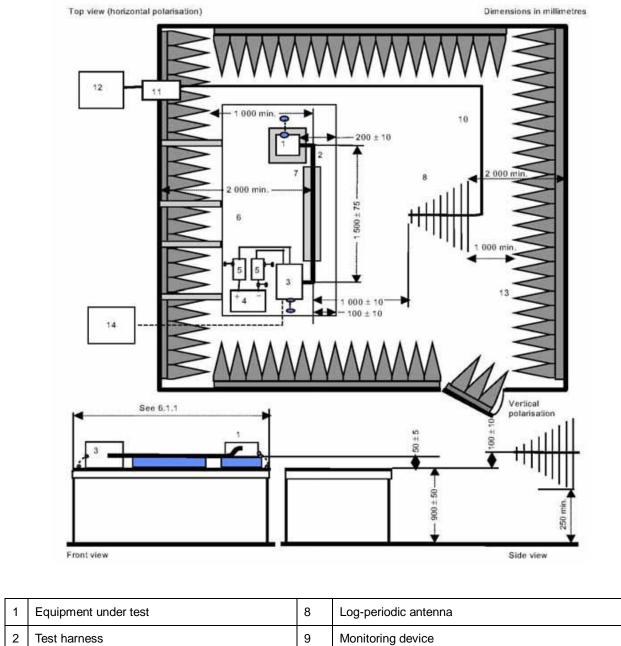
3.2.3 TEST PROCEDURE

- a. The measuring distance of at 1 m shall be used for measurements.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. The initial step in collecting conducted emission data is a spectrum analyzer Quasi Peak (broadband) and AVG (narrowban) detector mode pre-scanning the measurement frequency range.



3.2.4 TEST SETUP

(A) Radiated Emission Test Set-Up Frequency

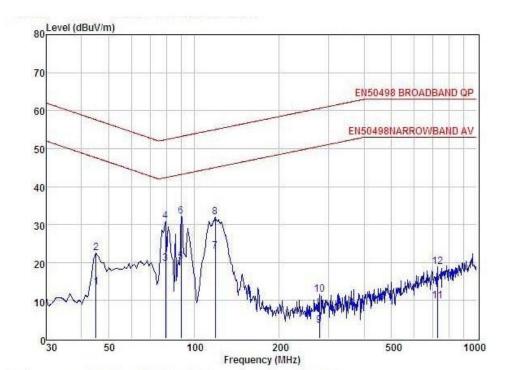


2	Test harness	9 Monitoring device	
3	Load simulator	10	High quality double-shielded coaxial cable (50 Ω)
4	Battery	11	Bulkhead connector
5	Artificial mains network (AN)	12	Measuring instrument
6	Ground plane	13	RF absorber material
7	Low relative permittivity support ($\varepsilon r \le 1.4$)	14	Stimulation and monitoring system



3.2.5 TEST RESULTS(30-1000MHz)

EUT :	Dual car charger	Model Name :	P302.06X
Temperature :	24 ℃	Relative Humidity :	54%
Pressure :	1010 hPa	Test Date :	2014-03-25
Test Mode :	Full load	Polarization :	Horizontal
Test Power :	DC 12V From Battery		



Conditio	on :	EN50498 BF	OADBAND QP	3m :	POL: HORI	ZONTAL			
Item	Freq	Read	Antenna	Preamp	Cable	Level	Limit	Margin	Remark
		Level	Factor	Factor	Loss				
	MHz	dBuV	dB	dB	dB	dBuV	dBuV	dBuV	
1	45.06	27.62	13.65	27.82	0.05	13.50	47.56	-34.06	Average
2	45.06	36.62	13.65	27.82	0.05	22.50	57.56	-35.06	QP
3	79.24	37.06	9.29	26.79	0.23	19.79	42.36	-22.57	Average
4	79.24	48.06	9.29	26.79	0.23	30.79	52.36	-21.57	QP
5	89.90	37.26	9.44	26.82	0.34	20.22	43.19	-22.97	Average
6	89.90	49.26	9.44	26.82	0.34	32.22	53.19	-20.97	QP
7	119.02	37.38	12.06	26.88	0.33	22.89	45.03	-22.14	Average
8	119.02	46.38	12.06	26.88	0.33	31.89	55.03	-23,14	QP
9	278.07	17.85	12.31	27.15	0.53	3.54	50.61	-47.07	Average
10	278.07	25.85	12.31	27.15	0.53	11.54	60.61	-49.07	QP
11	726.81	16.10	19.99	27.72	1.42	9.79	53.00	-43.21	Average
12	726.81	25.10	19.99	27.72	1.42	18.79	63.00	-44.21	QF

Remark: Level = Read Level + Antenna Factor - Freamp Factor + Cable Loss



		Dual car charger				Name :		2.06X	
Femperature :	24 ℃				Relative	e Humidit	y: 54%	1	
Pressure :	1010	hPa			Test Da	te :	2014	1-03-27	
Test Mode :	Full lo	bad			Polariza	ation :	Verti	cal	
Test Power :	DC 1	2V From	Battery	·			•		
	80 Level (dE 70 60 50 40	3uV/m)					50498 BROA 0498NARRO		
	30 20 10	2 A		munu	www.white	us norski gjeljet	10 Www.hund	12 when the second	
	20 10	50			8 Wind Minday	er, annturgi flagd, et	10 10 10 10 10 10 10 10 10 10 10 10 10 1	12 12 12 12 1000	
-22. (2001)	20 10 0 30			0 Freque	200 ncy (MHz)				
Conditi Item	20 10 0 30		4 4 5 100 OADBAND QF Antenna	0 Freque 3m	200	ZONTAL			
14	20 10 0 30 0 5 req	EN50498 BR Read Level	OADBAND QF Antenna Factor	0 Freque 3m Preamp Factor	200 ncy(MHz) POL: HORI Cable Loss	ZONTAL Level	500 Limit	1000 Margin	D
Item	20 10 0 30 on : Freq MHz	EN50498 BR Read Level dBuV	OADBAND QP Antenna Factor dB	0 Freques 3m Preamp Factor dB	200 ncy(MHz) POL: HORI Cable Loss dB	ZONTAL Level dBuV	500 Limit dBuV	Margin dBuV	Remark
Item1	20 10 0 30 cn : Freq MHz 63.09	EN50498 BR Read Level dBuV 29.02	OADBAND QP Antenna Factor dB 11.98	0 Freque 3m Preamp Factor dB 	200 ncy(MHz) POL: HORI Cable Loss dB 0,21	ZONTAL Level dBuV 13.78	500 Limit dBuV 43.89	1000 Margin 	Remark Average
Item 1 2	20 10 0 30 on : Freq MHz 63.09 63.09	EN50498 BR Read Level dBuV 29.02 39.02	OADBAND QP Antenna Factor dB 11.98 11.98	0 Freques 3m Preamp Factor dB 	200 ncy(MHz) POL: HORI Cable Loss dB - 0.21 0.21	ZONTAL Level dBuV 	500 Limit dBuV 43.89 53.89	1000 Margin 	Remark Average QP
Item 1 2 3	20 10 0 30 on : Freq MHz 63.09 63.09 80.64	EN50498 BR Read Level dBuV 29.02 39.02 37.01	OADBAND QP Antenna Factor dB 11.98 11.98 9.32	0 Freques 3m Preamp Factor dB 27.43 27.43 26.80	200 ncy (MHz) POL: HORI Cable Loss dB - 0.21 0.21 0.14	ZONTAL Level dBuV 13.78 23.78 19.67	500 Limit dBuV 43.89 53.89 42.48	Margin <u>dBuV</u> 	Remark Average QP Average
Item 1 2 3 4	20 10 0 30 on : Freq MHz 63.09 63.09 80.64 80.64	EN50498 BR Read Level dBuV 29.02 39.02 37.01 47.01	OADBAND QP Antenna Factor dB 11.98 11.98 9.32 9.32	0 Freques 3m Preamp Factor dB 27.43 27.43 26.80 26.80	200 ncy (MHz) POL: HORI Cable Loss dB - 0.21 0.21 0.14 0.14 0.14	ZONTAL Level dBuV 	500 Limit dBuV 43.89 53.89 42.48 52.48	Margin dBuV 	Remark Average QP Average QP
Item 1 2 3 4 5	20 10 0 30 on : Freq MHz 63.09 63.09 63.09 80.64 80.64 96.10	EN50498 BR Read Level dBuV 29.02 39.02 37.01 47.01 28.75	OADBAND QF Antenna Factor dB 11.98 11.98 9.32 9.32 9.32 9.87	0 Freques 3m Preamp Factor dB 27.43 27.43 27.43 26.80 26.80 26.83	200 ncy (MHz) POL: HORI Cable Loss dB - 0.21 0.21 0.14 0.14 0.14 0.41	ZONTAL Level dBuV 13.78 23.78 19.67 29.67 12.20	500 Limit dBuV 43.89 53.89 42.48 52.48 43.63	Margin dBuV 	Remark Average QP Average QP Average Average
Item 1 2 3 4 5 6	20 10 0 30 0 5 5 7 6 3.09 6 6 3.09 6 3.09 6 3.09 6 6 1.09 6 3.09 6 3.09 6 6 1.09 6 6 1.09 1.09 1	EN50498 BR Read Level dBuV 29.02 39.02 37.01 47.01 28.75 38.75	OADBAND QP Antenna Factor dB 11.98 11.98 9.32 9.32 9.32 9.87 9.87	0 Freques 3m Preamp Factor dB 27.43 27.43 26.80 26.83 26.83	200 ncy (MHz) POL: HORI Cable Loss dB - 0.21 0.21 0.21 0.14 0.14 0.41 0.41	ZONTAL Level dBuV 	500 Limit dBuV 	Margin dBuV 	Remark Average QP Average QP Average QP Average QP
Item 1 2 3 4 5 6 7	20 10 0 30 con : Freq MHz 63.09 63.09 80.64 80.64 96.10 96.10 202.81	EN50498 BR Read Level dBuV 29.02 39.02 37.01 47.01 28.75 38.75 28.64	OADBAND QP Antenna Factor dB 11.98 11.98 9.32 9.32 9.87 9.87 9.87 9.93	0 Freque 3m Preamp Factor dB 27.43 27.43 26.80 26.83 26.83 26.83 26.83	200 ncy (MHz) POL: HORI Cable Loss dB 0.21 0.14 0.14 0.41 0.41 0.41 0.44	ZONTAL Level dBuV 13.78 23.78 19.67 29.67 12.20 22.20 12.03	500 Limit dBuV 	Margin dBuV 	Remark Average QP Average QP Average QP Average QP Average
Item 1 2 3 4 5 6 7 8	20 10 0 30 con : Freq MHz 63.09 63.09 80.64 96.10 96.10 202.81 202.81	EN50498 BR Read Level dBuV 29.02 39.02 37.01 47.01 28.75 28.64 36.64	OADBAND QP Antenna Factor dB 11.98 11.98 9.32 9.32 9.87 9.87 9.87 9.93 9.93	0 Freque 3m Preamp Factor dB 27.43 27.43 27.43 26.80 26.83 26.83 26.83 26.98 26.98	200 ncy (MHz) POL: HORI Cable Loss dB 0.21 0.14 0.41 0.41 0.41 0.44 0.44 0.44	ZONTAL Level dBuV 13.78 23.78 19.67 29.67 12.20 22.20 12.03 20.03	500 Limit dBuV 43.89 53.89 42.48 43.63 53.63 48.54 58.54	Margin dBuV 	Remark Average QP Average QP Average QP Average QP
Item 1 2 3 4 5 6 7	20 10 0 30 on : Freq MHz 63.09 63.09 63.09 63.09 63.09 63.09 610 96.10 96.10 202.81 202.81 202.81 431.03	EN50498 BR Read Level dBuV 29.02 39.02 37.01 47.01 28.75 28.64 36.64	OADBAND QP Antenna Factor dB 11.98 11.98 9.32 9.32 9.87 9.87 9.87 9.93	0 Freque 3m Preamp Factor dB 27.43 27.43 26.80 26.83 26.83 26.83 26.83	200 ncy (MHz) POL: HORI Cable Loss dB 0.21 0.14 0.14 0.41 0.41 0.41 0.44	ZONTAL Level dBuV 13.78 23.78 19.67 29.67 12.20 22.20 12.03	500 Limit dBuV 	Margin dBuV 	Remark Average QP Average QP Average QP Average QP
Item 1 2 3 4 5 6 7 8	20 10 0 30 on : Freq MHz 63.09 63.09 63.09 80.64 80.64 96.10 96.10 96.10 202.81 202.81 202.81 431.03	EN50498 BR Read Level dBuV 29.02 39.02 37.01 47.01 28.75 28.64 36.64	OADBAND QP Antenna Factor dB 11.98 11.98 9.32 9.32 9.87 9.87 9.87 9.93 9.93	0 Freques 3m Preamp Factor dB 27.43 27.43 27.43 26.80 26.80 26.83 26.83 26.98 26.98 27.46 27.46 27.46	200 ncy (MHz) POL: HORI Cable Loss dB 0.21 0.21 0.14 0.41 0.41 0.41 0.41 0.44 0.44 0.4	ZONTAL Level dBuV 13.78 23.78 19.67 29.67 12.20 22.20 12.03 20.03	500 Limit dBuV 43.89 53.89 42.48 43.63 53.63 48.54 58.54	Margin dBuV -30.11 -22.81 -22.81 -31.43 -31.43 -36.51 -38.51 -46.98	Remark Average QP Average QP Average QP Average QP Average
Item 1 2 3 4 5 6 7 8 9	20 10 0 30 on : Freq MHz 63.09 63.09 63.09 80.64 80.64 96.10 202.81 202.81 431.03 431.03	EN50498 BR Read Level dBuV 29.02 39.02 37.01 47.01 28.75 38.75 28.64 36.64 17.22 25.22	OADBAND QP Antenna Factor dB 11.98 11.98 9.32 9.32 9.87 9.87 9.87 9.93 9.93 15.53	0 Freque 3m Preamp Factor dB 27.43 27.43 26.80 26.83 26.83 26.98 26.98 26.98 27.46	200 ncy (MHz) POL: HORI Cable Loss dB 0.21 0.21 0.14 0.41 0.41 0.41 0.41 0.44 0.44 0.4	ZONTAL Level dBuV 13.78 23.78 19.67 29.67 12.20 22.20 12.03 20.03 6.02	500 Limit dBuV 43.89 53.89 42.48 53.63 42.48 53.63 48.54 53.63 48.54 58.54 53.00	Margin dBuV -30.11 -22.81 -22.81 -31.43 -31.43 -36.51 -38.51 -46.98	Remark Average QP Average QP Average QP Average QP Average QP Average

4. EMC IMMUNITY TEST

4.1 GENERAL PERFORMANCE CRITERIA

According to ISO 7637-2 standard, the general performance criteria as following:

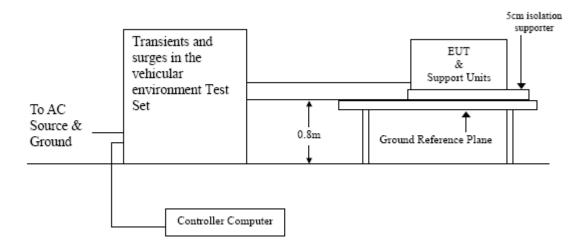
Criterion A	All functions of a device/system perform as designed during and after exposure
	to disturbance.
Criterion B	All functions of a device/system perform as designed during exposure. However, one or more of them can go beyond specified tolerance. All functions return automatically to within normal 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.
OTE The wo	ord "function" in this context refers only to the function performed by the electron
system	L.
2 GENERAL	PERFORMANCE CRITERIA TEST SETUP
	ed system was configured as the statements of 2.3 Unless otherwise a spec
erating cond	lition is specified in the follows during the testing.

4.3 TRANSIENTS IMMUNITY TEST

4.3.1 LIMIT

Test pulse number	Immunity test level	Functional status for systems
1	III	D
2a	III	D
2b	III	D
3a/3b	III	D
4	III	D

4.3.2 TEST CONFIGURATION



4.3.3 TEST PROCEDURE

The immunity of ESA representative of its type shall be tested by the method(s) according to ISO 7637-2:2004 as described in COMMISION DIRECTIVE 2004/104/EC.



4.3.4 TEST RESULTS

EUT :	Dual car charger	Model Name :	P302.06X
Temperature :	25 ℃	Relative Humidity :	60%
Pressure :	1010 hPa	Test Date :	2014-03-25
Test Mode :	Full load		
Test Power :	DC 12V From Battery		

Test Pulses	Test Level (V)	Test time	standard	Test Result	Observation
1	-450	5000 pulses	D	D	During the test, abnormal operation occurred to EUT, caused by interference. The EUT has to be reset to recover to normal operation.
2a	+37	5000 pulses	D	А	Normal
2b	+20	10 pulses	D	D	During the test, abnormal operation occurred to EUT, caused by interference. The EUT has to be reset to recover to normal operation.
За	-150	1H	D	А	Normal
3b	+150	1H	D	A	Normal
4	-12	1 pulses	D	D	During the test, abnormal operation occurred to EUT, caused by interference. The EUT has to be reset to recover to normal operation.



4.4.4.1 Test Pulse 1

Test Number 1							
Test Type		MT 55	MT 5511 Pulse 1 ISO (Generic 2 and 6 ms transients)				
Sequence Repetition		Count	5000				
Test Status		D	1				
Parameter	Operation	1	From	То	Step Size	Fail Value	
Pulse Voltage (Us)	Static		-450 V				
Pulse Period (t1)	Static		0.5 Secs				
General			Value				
Rise Time (tr)			3 us				
Output Resistance ((Ri)		50 ohms				
Pulse Width (td)			1 ms				
DC Power Reductio	n (t2)		200ms				
Surge Delay (t3)			50 us				
Polarity/Coupling			Negative Parallel				
Battery							
Battery State			UPC/Time				
Voltage			12 V				
Current Limit			30.0 A				
End of Test Voltage	· · · · · · · · · · · · · · · · · · ·		12 V				
Ext.Resistance (Ri)						
External Resistance	Inactive						
Comments:							

4.4.4.2 Test Pulse 2a

Test Number 2							
Test Type MT :		MT 55	5511 Pulse 1 ISO (Generic 2 and 6 ms transients)				
Sequence Repetition	n	Count	5000				
Test Status		А		<u>.</u>			
Parameter	Operation	1	From	То	Step Size	Fail Value	
Pulse Voltage (Us)	Static		+37 V				
Pulse Period (t1)	Static		0.5 Secs				
General			Value				
Rise Time (tr)			1 us				
Output Resistance (Ri)		2 ohms				
Pulse Width (td)			0.05 ms				
Polarity/Coupling			Positive Serial				
Battery							
Battery State			On				
Voltage			12 V				
Current Limit			30.0 A				
End of Test Voltage			12 V				
Ext.Resistance (Ri)						
External Resistance	Inactive						
Comments:							



4.4.4.3 Test Pulse 2b

Test Number 3					
Test Type	NSG 5	5600 Pulse 2B (SVV)			
Sequence Repetition	Count	10			
Test Status	D				
Voltage					
Static Voltage (Ua)		13 V			
Pulse Voltage (Us)		10 V			
Timing					
Voltage Delay (t6)		1 ms			
Rise Time (tr)		1 ms			
Pulse Width (td)		200 ms			
Voltage Dips Time (t12)		1 ms			
Resistance					
Output Resistance (Ri)		0 ohms			
Battery					
Current Limit		30 A			
End of Test Voltage		12 V			
Comments:					

4.4.4.4 Test Pulse 3a

Test Number 4							
Test Type F		FT 55	FT 5530 Pulse 3A/B (Burst)				
Sequence Repetition		Hours	1				
Test Status		А					
Parameter	Operation	1	From	То	Step Size	Fail Value	
Pulse Voltage (Us)	Static		-150 V				
Pulse Freq (1/t1)	Static		10 kHz				
General			Value				
Rise Time (tr)			5 ns				
Output Resistance (Ri)		50 ohms				
Pulse Width (td)			100 ns				
Burst Interval(t5)			0.09 Seconds				
Output Mode			NORMAL				
No Pulses (t4/t1)			T				
No of Pulses (Np)			100				
Burst Duration (t4)			10 ms				
Battery			I				
Battery State			On				
Voltage			12 V				
Current Limit			30.0 A				
End of Test Voltage			12 V				
Polarity	Polarity						
Polarity			Negative				
Comments:							



4.4.4.5 Test Pulse 3b

Test Number 5							
Test Type F		FT 55	FT 5530 Pulse 3A/B (Burst)				
Sequence Repetition		Hours	1				
Test Status		А		-			
Parameter	Operation	1	From	То	Step Size	Fail Value	
Pulse Voltage (Us)	Static		+150 V				
Pulse Freq (1/t1)	Static		10 kHz				
General			Value				
Rise Time (tr)			5 ns				
Output Resistance (Ri)		50 ohms				
Pulse Width (td)			100 ns				
Burst Interval(t5)			0.09 Seconds				
Output Mode			NORMAL				
No Pulses (t4/t1)							
No of Pulses (Np)			100				
Burst Duration (t4)			10 mS				
Battery			Γ				
Battery State			On				
Voltage			12 V				
Current Limit			30.0 A				
End of Test Voltage			12 V				
Polarity							
Polarity			Positive				
Comments:							



4.4.4.6 Test Pulse 4

Test Number 6							
Test Type		Double Arb : Master -> NSG 5600 Pulse 4C (SVV)					
Sequence Repetition		Count	: 1				
Test Status		А					
Parameter	Operation	1	From	То	Step Size	Fail Value	
Pulse Voltage (Us)	Static		-12V				
Pulse Freq (1/t1)	Static		10 kHz				
General			Value				
First Rise Time (t8)			50 ms				
Second Rise Time (t11)		50 ms				
Output Resistance (Ri)		0 ohms				
First Pulse Voltage	(Us)		-12 V				
Second Pulse Volta	ge (U _A)		-5 V				
First Static Time (t7))		50 ms				
Second Static Time	(t9)		5 s				
Battery							
Battery State			On				
Voltage			12 V				
Current Limit			30.0 A				
End of Test Voltage			12 V				
Polarity			1				
Polarity	Positive						
Comments:							



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5. EUT TEST PHOTO

Radiated Measurement Photos





ATTACHMENT PHOTOGRAPHS OF EUT

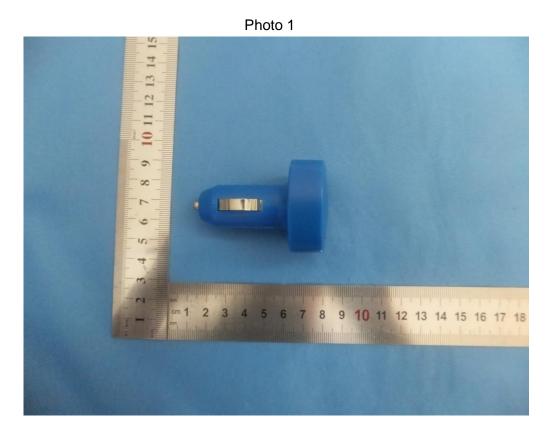








Photo 3



Photo 4







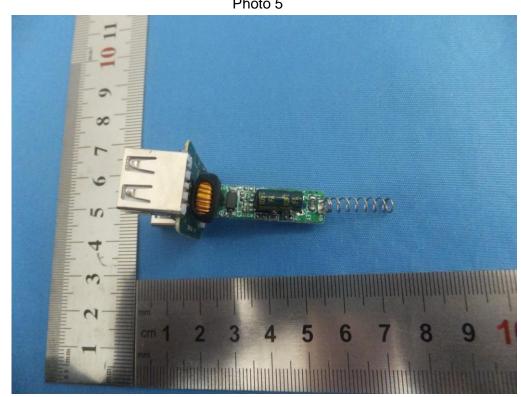


Photo 6

