

EMC Test Report

Report No.: AGC04158151001EE01

PRODUCT DESIGNATION : Car charger
BRAND NAME : N/A
MODEL NAME : BM2127R
CLIENT :
DATE OF ISSUE : Oct.22, 2015
STANDARD(S) : EN 50498:2010
REPORT VERSION : V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

CAUTION:

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Oct.22, 2015	Valid	Original Report

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TABLE OF CONTENTS

1. VERIFICATION OF CONFORMITY	4
2. SYSTEM DESCRIPTION	5
3. MEASUREMENT UNCERTAINTY	5
4. PRODUCT INFORMATION	6
5. SUPPORT EQUIPMENT	7
6. TEST FACILITY	8
7. RADIATED EMISSION TEST (Test method according to CISPR 25:2008)	9
7.1 DESCRIPTION OF THE TEST LOCATION.....	9
7.2 PHOTO DOCUMENTATION OF THE TEST SET-UP	9
7.3 TEST SPECIFICATION:.....	10
7.4 TEST RESULT	10
7.5 TEST PROTOCOL	11
8. TRANSIENT EMISSION TEST (Test method according to 7637-2:2011)	18
8.1 DESCRIPTION OF THE TEST LOCATION.....	19
8.2 PHOTO DOCUMENTATION OF THE TEST SET-UP	19
8.3 TEST SPECIFICATION:.....	19
8.4 TEST RESULT	19
8.5 TEST PROTOCOL	20
9. TRANSIENT IMMUNITY TEST (Test method according to 7637-2:2011)	24
9.1 DESCRIPTION OF THE TEST LOCATION.....	24
9.2 PHOTO DOCUMENTATION OF THE TEST SET-UP	24
9.3 TEST SPECIFICATION:.....	24
9.4 TEST RESULT	25
9.5 CLASSIFICATION OF FUNCTIONAL STATUS.....	25
APPENDIX A: PHOTOGRAPHS OF EUT	26


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1. VERIFICATION OF CONFORMITY

Applicant	
Address	
Manufacturer	
Address	
Product Designation	Car charger
Brand Name	N/A
Test Model	BM2127R
Series Model	BM2127B
Model Difference	All the same except for the model name and the color of light.
Date of test	Oct.16, 2015 to Oct.21, 2015
Deviation	None
Condition of Test Sample	Normal
Report Template	AGCRT-EC-AM/DC(2013-09-01)

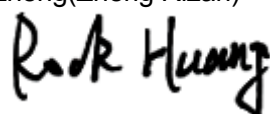
The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. For compliance with the requirements set forth in the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements. The test results of this report relate only to the tested sample identified in this report.

Tested By


 Sam Zheng(Zheng Rizan)

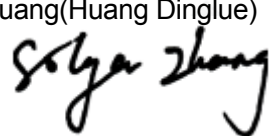
Oct.22, 2015

Reviewed By


 Rock Huang(Huang Dinglue)

Oct.22, 2015

Approved By


 Solger Zhang(Zhang Hongyi)
 Authorized Officer

Oct.22, 2015

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2. SYSTEM DESCRIPTION

NO.	TEST MODE DESCRIPTION
1	Full load for 12V
2	Full load for 24V

Note: 1) Only worst mode data recorded in the test report.

2) During test, the battery voltage is 13.5V for 12V, the battery voltage is 27V for 24V.

3. MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in measurement” (GUM) published by ISO.

- Uncertainty of Radiated Emission, $U_c = \pm 3.2$ dB

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4. PRODUCT INFORMATION

Housing Type	Plastic and metal
EUT Input Rating	DC 10V-24V/10A DC 5V-400mA
EUT Output Rating	DC 5V-1A(Max)

I/O Port Information (☒ Applicable ☐ Not Applicable)

I/O Port of EUT			
I/O Port Type	Number	Cable Description	Tested With
DC input port	2	unshielded	2
DC output port	1	unshielded	1

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5. SUPPORT EQUIPMENT

Device Type	Description	Number
Resistor	5Ω	1

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6. TEST FACILITY

Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	B112-B113, Building 12, Baoan Building Materials Center, No.1 of Xixiang Inner Ring Road, Baoan District, Shenzhen, Guangdong, P.R.China
Description	Test Method according to ISO7637-2:2011 & CISPR 25:2008

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	2015.07.31	2016.07.30
V-network	R&S	ESH3-Z6	2015.08.31	2016.08.30
V-network	R&S	ESH3-Z6	2015.08.31	2016.08.30
Biconical Antenna	SCHWARZBECK	VHBB 9124	2015.03.19	2016.03.18
WIDEBAND REQUENCY ANTENNA	SCHWARZBECK	VULB9168	2015.03.20	2016.03.19

TEST EQUIPMENT OF TRANSIENT EMISSION

Equipment	Manufacturer	Model	Cal. Date	Cal. Due
Digital Oscilloscope	Yokogawa	DL9140	2015.07.29	2016.07.28
Switch Simulator	Schaffner	NSG417	2015.09.05	2016.09.04
V-network	R&S	ESH3-Z6	2015.08.31	2016.08.30

TEST EQUIPMENT OF TRANSIENT IMMUNITY TEST

Description	Manufacturer	Model	Cal. Date	Cal. Due
Voltage Drop Simulator	EM Test	VDS 200	2015.08.31	2016.08.30
Electrical Fast Transient Generator	EM Test	EFT 200	2015.08.31	2016.08.30
Micropulse Generator	EM Test	MPG 200	2015.08.31	2016.08.30

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7. RADIATED EMISSION TEST (Test method according to CISPR 25:2008)

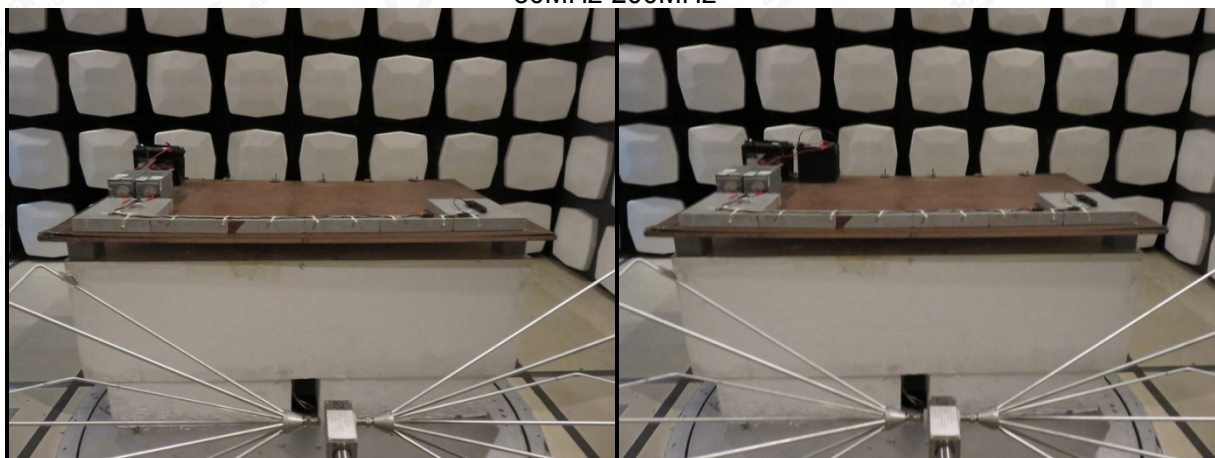
7.1 DESCRIPTION OF THE TEST LOCATION

Test location: Semi-anechoic Chamber

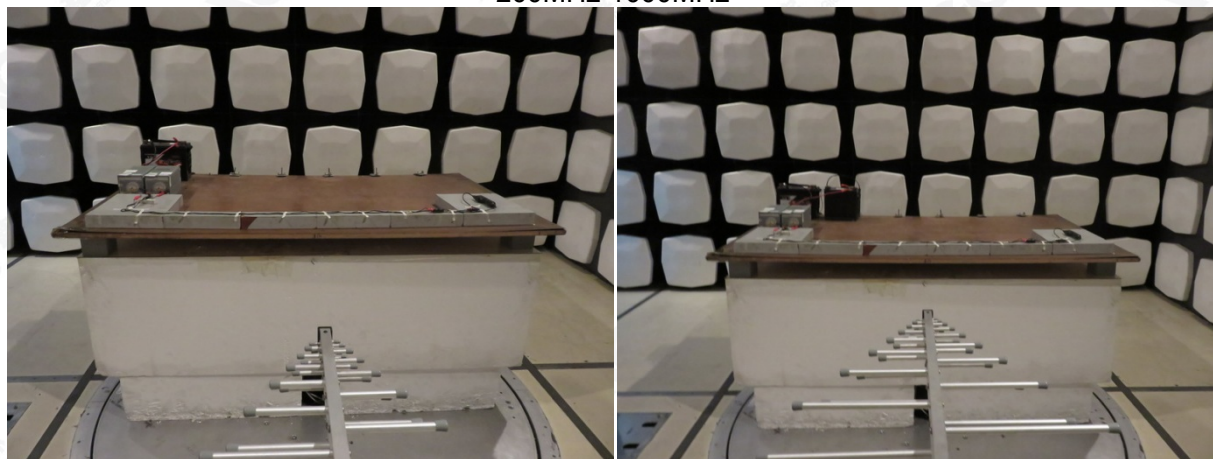
Test distance: 1 meter

7.2 PHOTO DOCUMENTATION OF THE TEST SET-UP

30MHz-200MHz



200MHz-1000MHz



- Note: (1) The ESA was placed in a height of 5 cm, isolated to the ground plane. There was no connection to the ground plane. The ESA has to be installed isolated from the vehicle ground.
- (2) Cables which are longer than 2m have been bundled to a length of 2 m.

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7.3 TEST SPECIFICATION:

Frequency range: 30MHz – 1000MHz

The test was carried out in the following operation mode(s):

- Full load for 12V_{DC}
- Full Load for 24V_{DC}

7.4 TEST RESULT

Min. limit margin for QP +9.5dB

Min. limit margin for AV +3.9dB

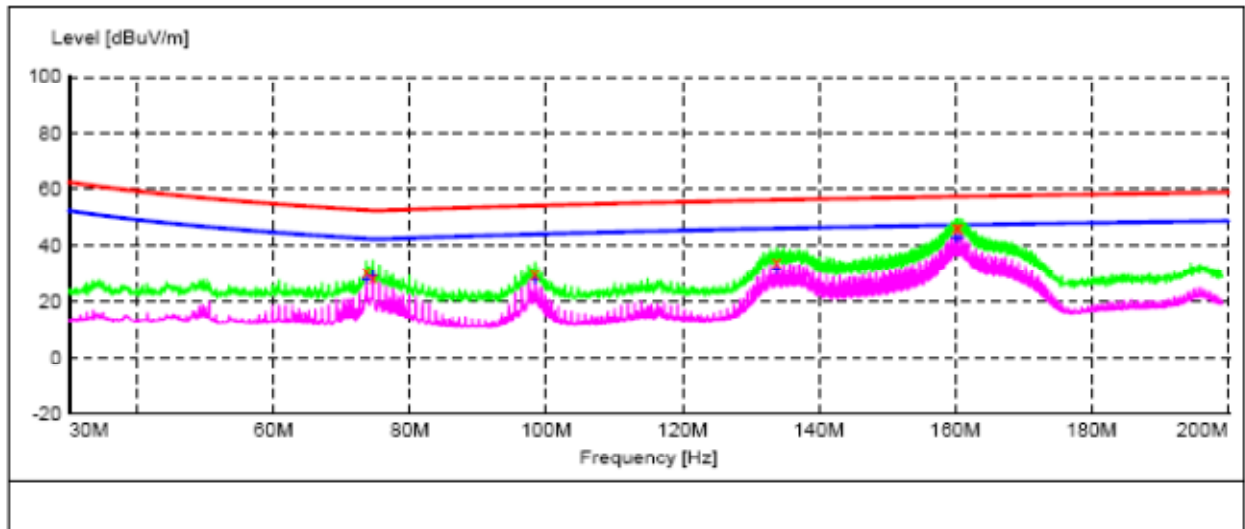
The requirements are **FULFILLED**

Remarks:	

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7.5 TEST PROTOCOL

Antenna polarisation:	Horizontal	Date:	Oct.19, 2015
Frequency range:	30MHz-200MHz	Tested by:	Sam
Operation mode:	Full load for 12V _{DC}	Result:	Pass



MEASUREMENT RESULT:

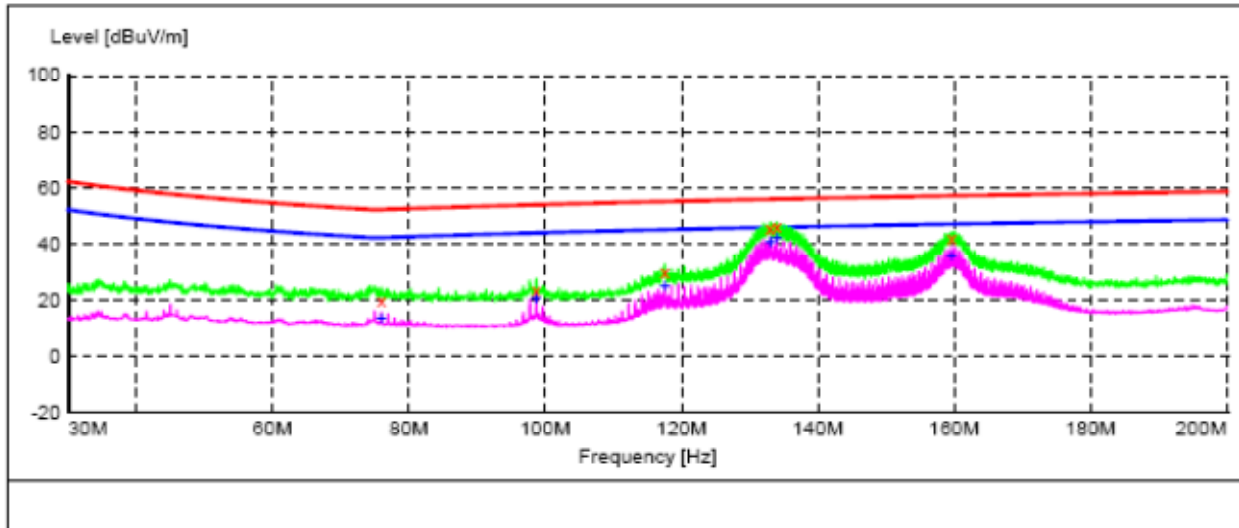
Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Detector	P
73.600000	30.30	11.1	52.2	21.9	QP	H
74.550000	28.60	11.1	52.1	23.5	QP	H
98.350000	29.60	11.5	53.8	24.2	QP	H
133.800000	34.30	13.4	55.8	21.5	QP	H
160.100000	46.50	14.7	57.0	10.5	QP	H
160.500000	46.30	14.8	57.0	10.7	QP	H

MEASUREMENT RESULT:

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Detector	P
73.600000	27.40	11.1	42.2	14.8	AV	H
74.550000	28.80	11.1	42.1	13.3	AV	H
98.350000	28.00	11.5	43.8	15.8	AV	H
133.800000	31.30	13.4	45.8	14.5	AV	H
160.050000	42.90	14.7	47.0	4.1	AV	H
160.550000	42.90	14.8	47.0	4.1	AV	H

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Antenna polarisation:	Vertical	Date:	Oct.19, 2015
Frequency range:	30MHz-200MHz	Tested by:	Sam
Operation mode:	Full load for 12V _{DC}	Result:	Pass



MEASUREMENT RESULT:

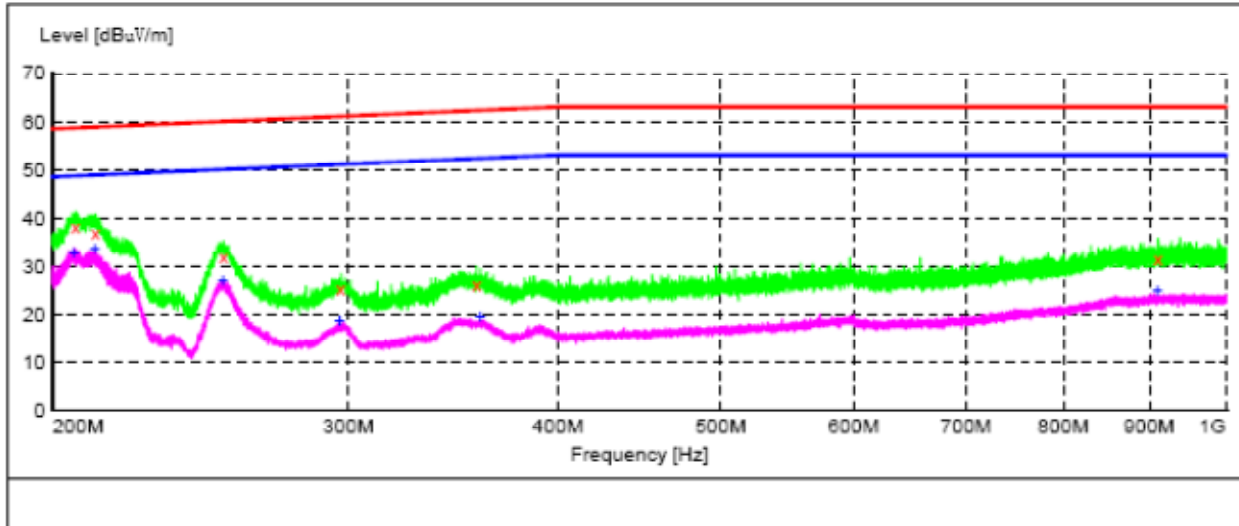
Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Detector	P
75.950000	20.00	11.1	52.1	32.1	QP	V
98.700000	23.40	11.5	53.8	30.4	QP	V
117.500000	29.90	12.5	55.0	25.1	QP	V
133.000000	45.80	13.4	55.8	10.0	QP	V
133.950000	46.30	13.4	55.8	9.5	QP	V
159.650000	41.60	14.7	57.0	15.4	QP	V

MEASUREMENT RESULT:

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Detector	P
75.950000	13.40	11.1	42.1	28.7	AV	V
98.650000	20.60	11.5	43.8	23.2	AV	V
117.500000	24.80	12.5	45.0	20.2	AV	V
133.000000	40.60	13.4	45.8	5.2	AV	V
133.950000	41.90	13.4	45.8	3.9	AV	V
159.600000	35.80	14.7	47.0	11.2	AV	V

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Antenna polarisation:	Horizontal	Date:	Oct.19, 2015
Frequency range:	200MHz-1000MHz	Tested by:	Sam
Operation mode:	Full load for 12V _{DC}	Result:	Pass



MEASUREMENT RESULT:

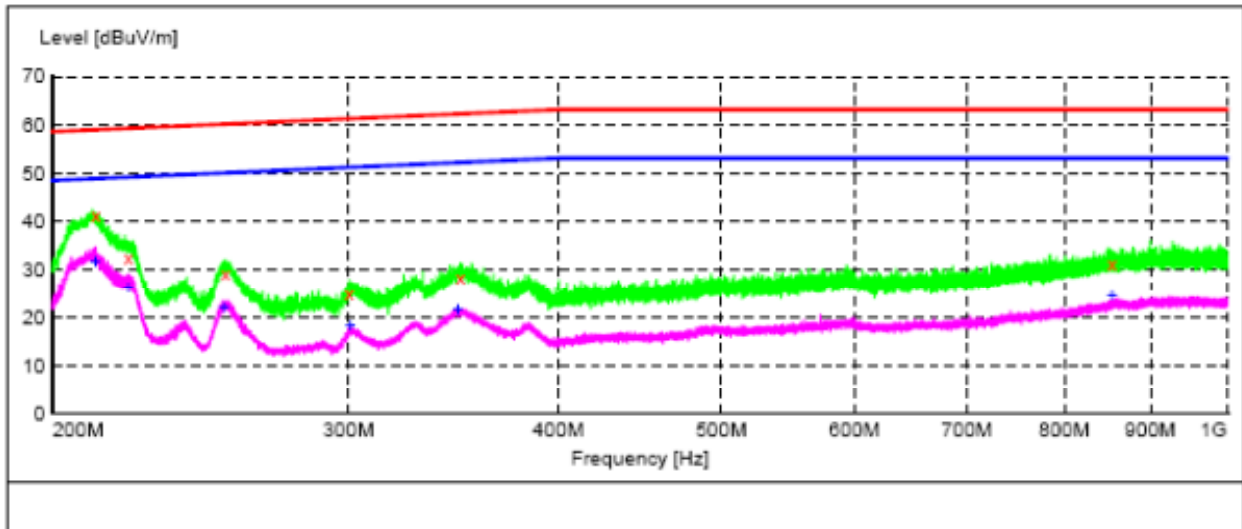
Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Detector	P
206.350000	38.30	13.6	58.7	20.4	QP	H
212.050000	37.00	13.5	58.8	21.8	QP	H
252.750000	31.90	14.6	60.0	28.1	QP	H
296.850000	25.20	15.7	61.0	35.8	QP	H
357.750000	26.00	16.9	62.3	36.3	QP	H
910.650000	31.40	24.1	63.0	31.6	QP	H

MEASUREMENT RESULT:

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Detector	P
205.900000	33.00	13.6	48.6	15.6	AV	H
211.950000	33.60	13.5	48.8	15.2	AV	H
252.650000	27.10	14.6	50.0	22.9	AV	H
296.400000	18.60	15.7	51.0	32.4	AV	H
359.350000	19.30	16.9	52.3	33.0	AV	H
910.300000	24.70	24.1	53.0	28.3	AV	H

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Antenna polarisation:	Vertical	Date:	Oct.19, 2015
Frequency range:	200MHz-1000MHz	Tested by:	Sam
Operation mode:	Full load for 12VDC	Result:	Pass



MEASUREMENT RESULT:

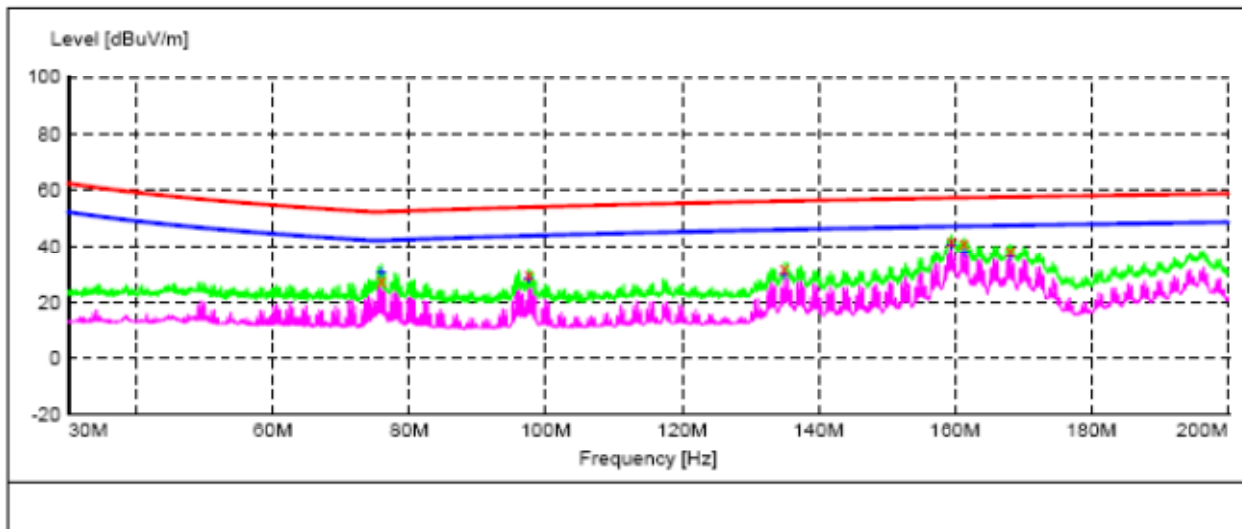
Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Detector	P
212.150000	40.90	13.5	58.8	17.9	QP	V
221.800000	32.40	13.5	59.1	26.7	QP	V
253.450000	28.90	14.6	60.0	31.1	QP	V
300.300000	25.00	15.7	61.1	36.1	QP	V
349.600000	28.10	16.7	62.1	34.0	QP	V
854.200000	31.20	23.7	63.0	31.8	QP	V

MEASUREMENT RESULT:

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Detector	P
212.100000	31.60	13.5	48.8	17.2	AV	V
221.800000	26.10	13.5	49.1	23.0	AV	V
253.050000	22.20	14.6	50.0	27.8	AV	V
300.600000	18.30	15.7	51.1	32.8	AV	V
348.450000	21.60	16.7	52.1	30.5	AV	V
853.850000	24.30	23.7	53.0	28.7	AV	V

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Antenna polarisation:	Horizontal	Date:	Oct.19, 2015
Frequency range:	30MHz-200MHz	Tested by:	Sam
Operation mode:	Full load for 24V _{DC}	Result:	Pass



MEASUREMENT RESULT:

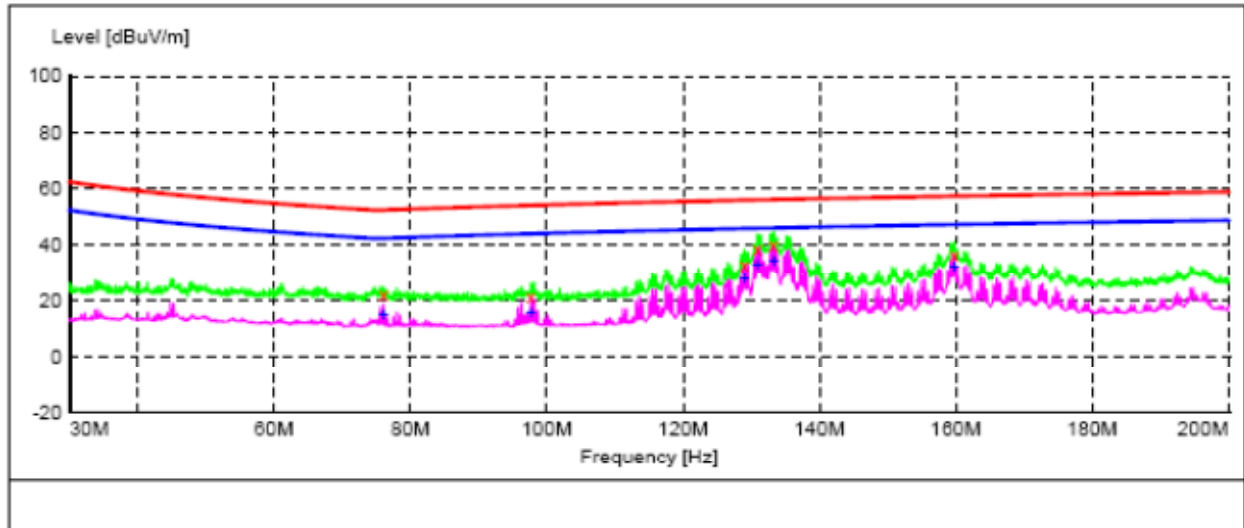
Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Detector	P
75.900000	28.00	11.1	52.1	24.1	QP	H
97.500000	29.90	11.5	53.7	23.8	QP	H
134.950000	32.20	13.5	55.9	23.7	QP	H
159.500000	42.10	14.7	57.0	14.9	QP	H
161.350000	41.50	14.8	57.0	15.5	QP	H
168.150000	38.40	15.3	57.3	18.9	QP	H

MEASUREMENT RESULT:

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Detector	P
75.900000	30.40	11.1	42.1	11.7	AV	H
97.500000	28.30	11.5	43.7	15.4	AV	H
134.950000	30.10	13.5	45.9	15.8	AV	H
159.450000	40.30	14.7	47.0	6.7	AV	H
161.400000	37.70	14.8	47.0	9.3	AV	H
168.100000	36.50	15.3	47.3	10.8	AV	H

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Antenna polarisation:	Vertical	Date:	Oct.19, 2015
Frequency range:	30MHz-200MHz	Tested by:	Sam
Operation mode:	Full load for 24V _{DC}	Result:	Pass



MEASUREMENT RESULT:

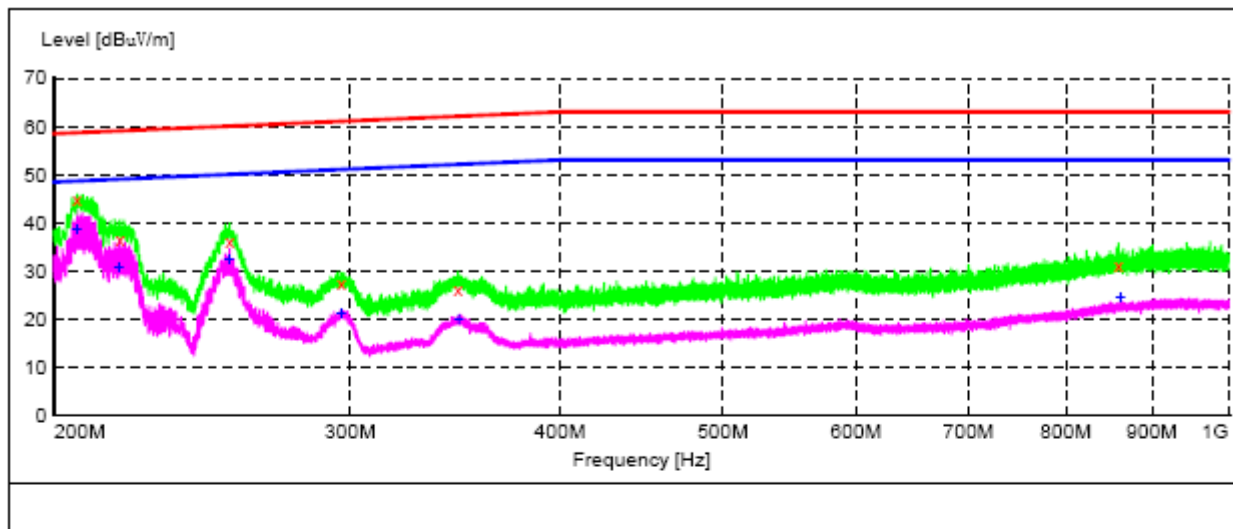
Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Detector	P
76.050000	21.80	11.1	52.1	30.3	QP	V
97.650000	21.50	11.5	53.7	32.2	QP	V
129.000000	32.80	13.1	55.6	22.8	QP	V
130.900000	38.40	13.2	55.7	17.3	QP	V
133.250000	39.90	13.4	55.8	15.9	QP	V
159.750000	36.30	14.7	57.0	24.7	QP	V

MEASUREMENT RESULT:

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Detector	P
76.050000	14.80	11.1	42.1	27.3	AV	V
97.700000	15.70	11.5	38.7	33.0	AV	V
128.950000	27.40	13.1	45.6	18.2	AV	V
130.900000	32.90	13.2	45.7	12.8	AV	V
133.300000	33.90	13.4	45.8	11.9	AV	V
159.750000	32.00	14.7	47.0	15.0	AV	V

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Antenna polarisation:	Horizontal	Date:	Oct.19, 2015
Frequency range:	200MHz-1000MHz	Tested by:	Sam
Operation mode:	Full load for 24V _{DC}	Result:	Pass



MEASUREMENT RESULT:

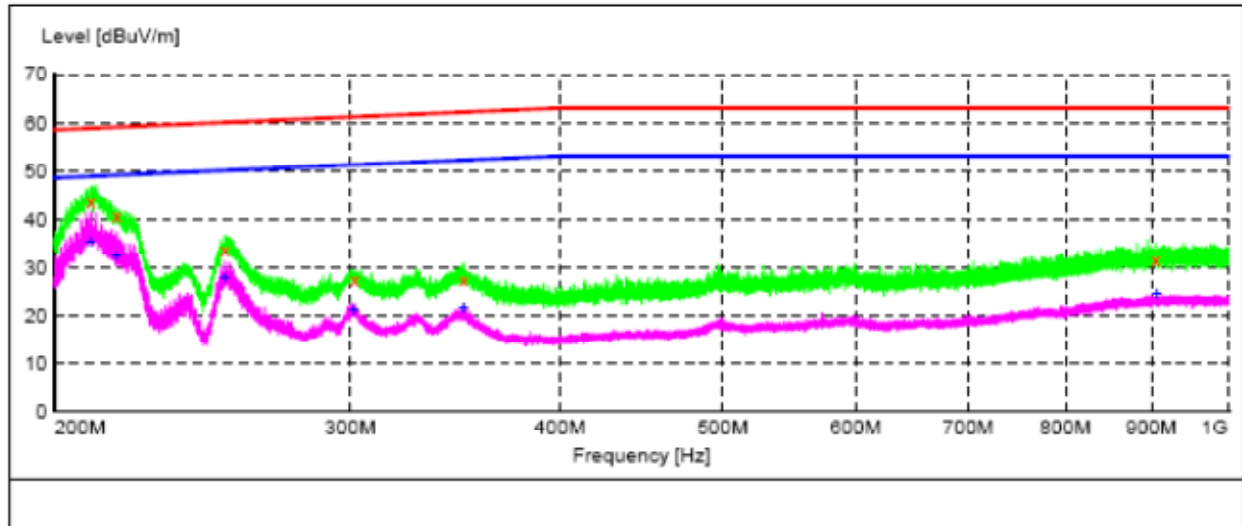
Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Detector	P
206.350000	44.70	13.6	58.7	14.0	QP	H
218.850000	36.60	13.4	59.0	22.4	QP	H
254.300000	36.10	14.6	60.0	23.9	QP	H
296.350000	27.20	15.7	61.0	33.8	QP	H
347.850000	26.30	16.6	62.1	35.8	QP	H
859.800000	31.20	23.8	63.0	31.8	QP	H

MEASUREMENT RESULT:

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Detector	P
206.350000	38.40	13.6	48.7	10.3	AV	H
218.600000	30.90	13.4	49.0	18.1	AV	H
254.250000	32.50	14.6	50.0	17.5	AV	H
296.400000	21.30	15.7	51.0	29.7	AV	H
348.350000	19.90	16.7	52.1	32.2	AV	H
862.100000	24.40	23.8	53.0	28.6	AV	H

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Antenna polarisation:	Vertical	Date:	Oct.19, 2015
Frequency range:	200MHz-1000MHz	Tested by:	Sam
Operation mode:	Full load for 24V _{DC}	Result:	Pass



MEASUREMENT RESULT:

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Detector	P
210.200000	43.40	13.5	58.8	15.4	QP	V
217.750000	40.70	13.4	59.0	18.3	QP	V
252.550000	33.50	14.6	60.0	26.5	QP	V
301.650000	27.20	15.8	61.1	33.9	QP	V
350.300000	27.40	16.7	62.1	34.7	QP	V
905.100000	31.50	24.1	63.0	31.5	QP	V

MEASUREMENT RESULT:

Frequency MHz	Level dBuV/m	Transd dB	Limit dBuV/m	Margin dB	Detector	P
210.250000	35.50	13.5	48.8	13.3	AV	V
217.700000	32.40	13.4	49.0	16.6	AV	V
252.600000	28.00	14.6	50.0	22.0	AV	V
301.650000	21.30	15.8	51.1	29.8	AV	V
350.500000	21.50	16.7	52.1	30.6	AV	V
906.400000	24.60	24.1	53.0	28.4	AV	V

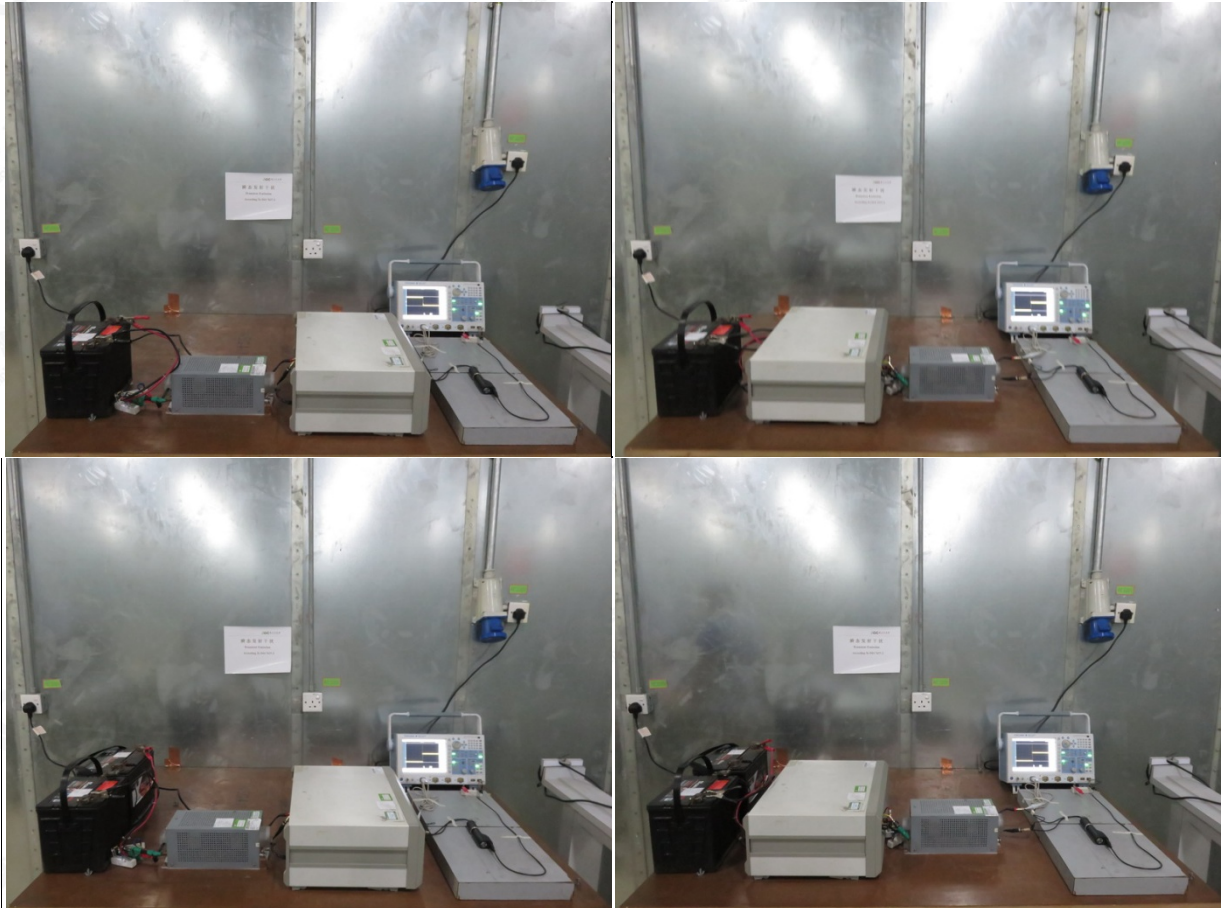
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8. TRANSIENT EMISSION TEST (Test method according to 7637-2:2011)

8.1 DESCRIPTION OF THE TEST LOCATION

Test location: Shielded room

8.2 PHOTO DOCUMENTATION OF THE TEST SET-UP



8.3 TEST SPECIFICATION:

The test was carried out in the following operation mode(s):

- Full load for 12V_{DC}
- Full load for 24V_{DC}

8.4 TEST RESULT

Min. limit margin (positive) +11.20 V
Min. limit margin (negative) -25.70V

The requirements are **FULFILLED**

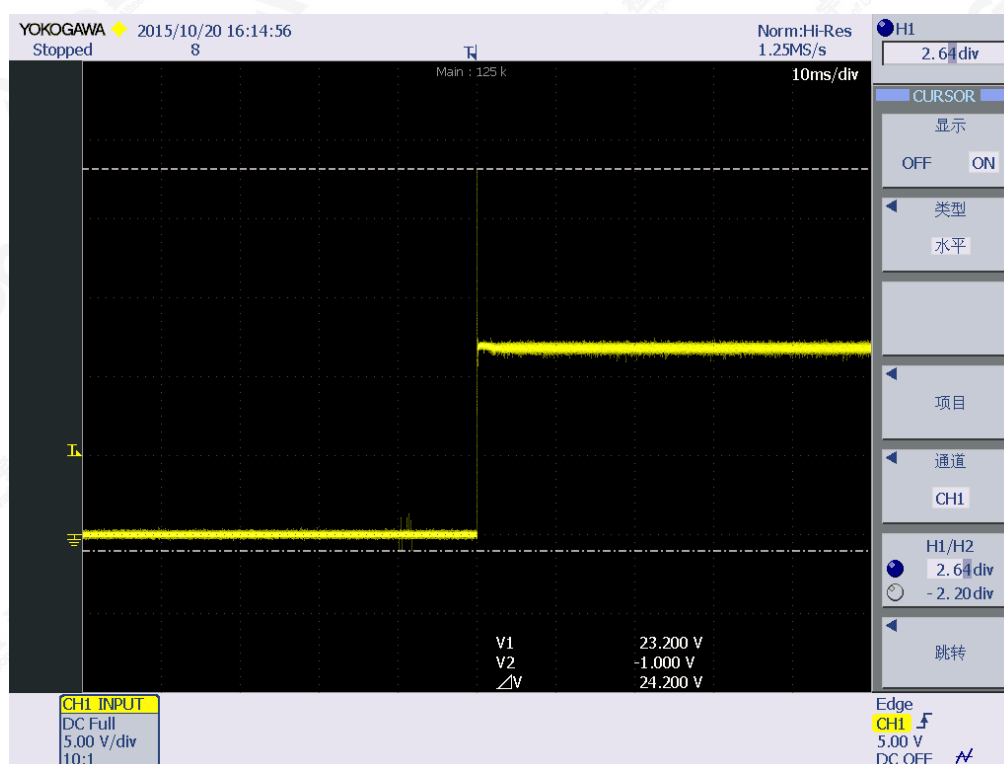
Remarks:	

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8.5 TEST PROTOCOL

Operation mode:	Full load for 12VDC	Tested by:	Sam
Remarks:	Maximum positive amplitude	Result:	Pass
Date:	Oct.20, 2015		

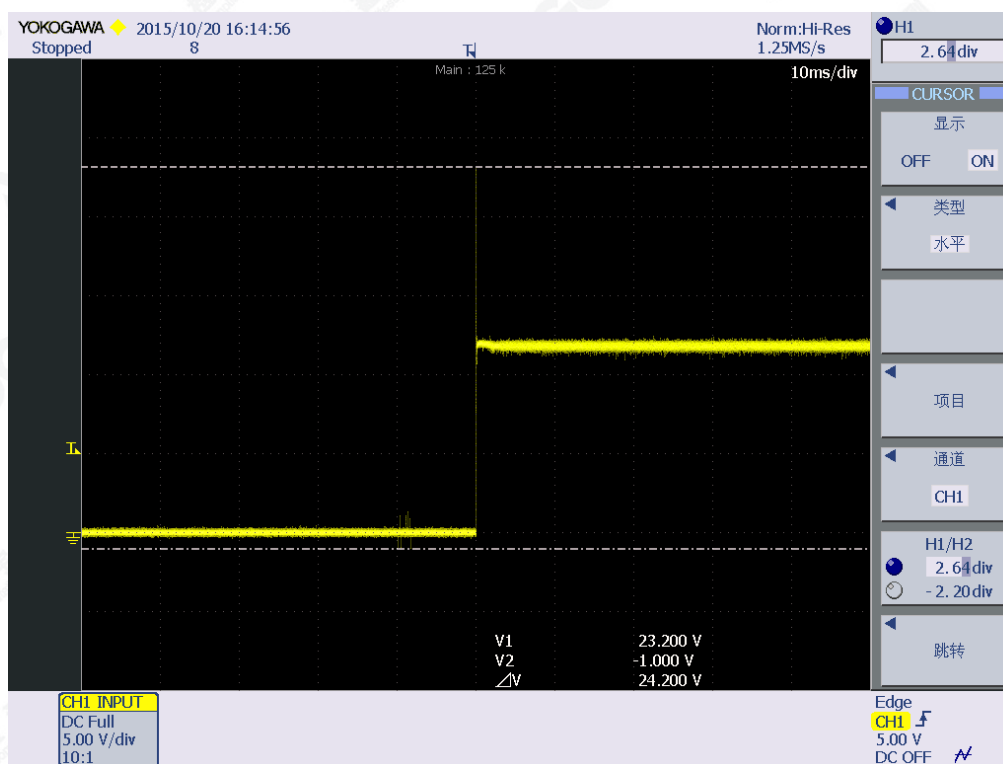
Pulse type	Limit [V]	Result [V]
Fast pulses	+75	+11.20



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Operation mode:	Full load for 12V _{DC}	Tested by:	Sam
Remarks:	Maximum negative amplitude	Result:	Pass
Date:	Oct.20, 2015		

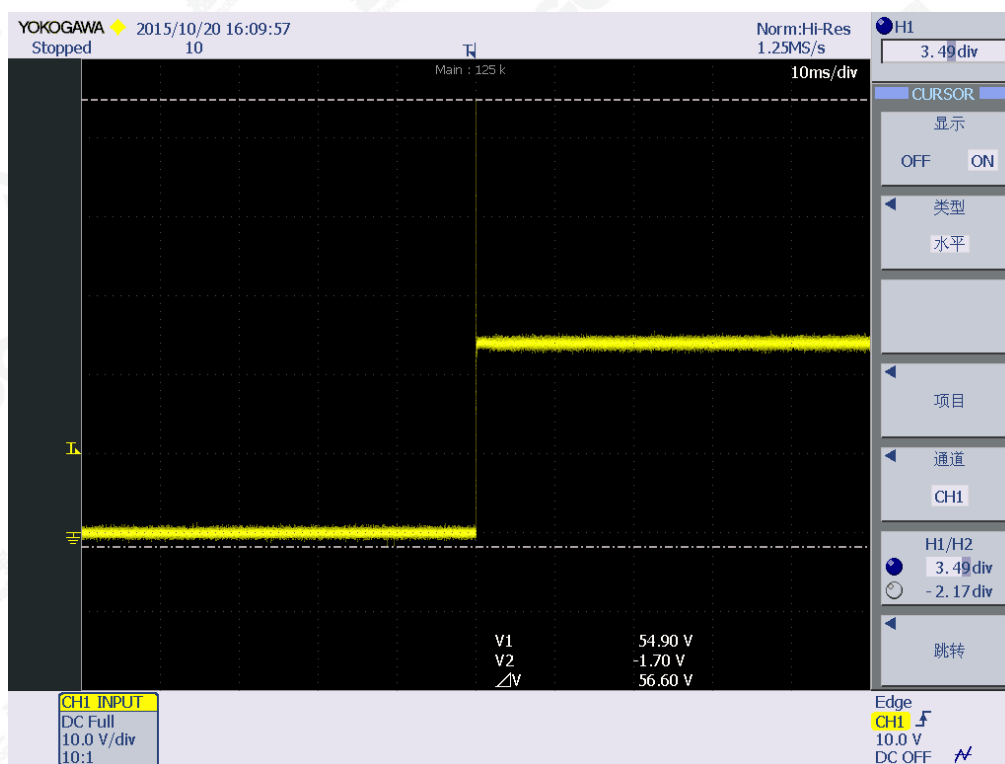
Pulse type	Limit [V]	Result [V]
Fast pulses	-100	-13.00



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Operation mode:	Full load for 24V _{DC}	Tested by:	Sam
Remarks:	Maximum positive amplitude	Result:	Pass
Date:	Oct.20, 2015		

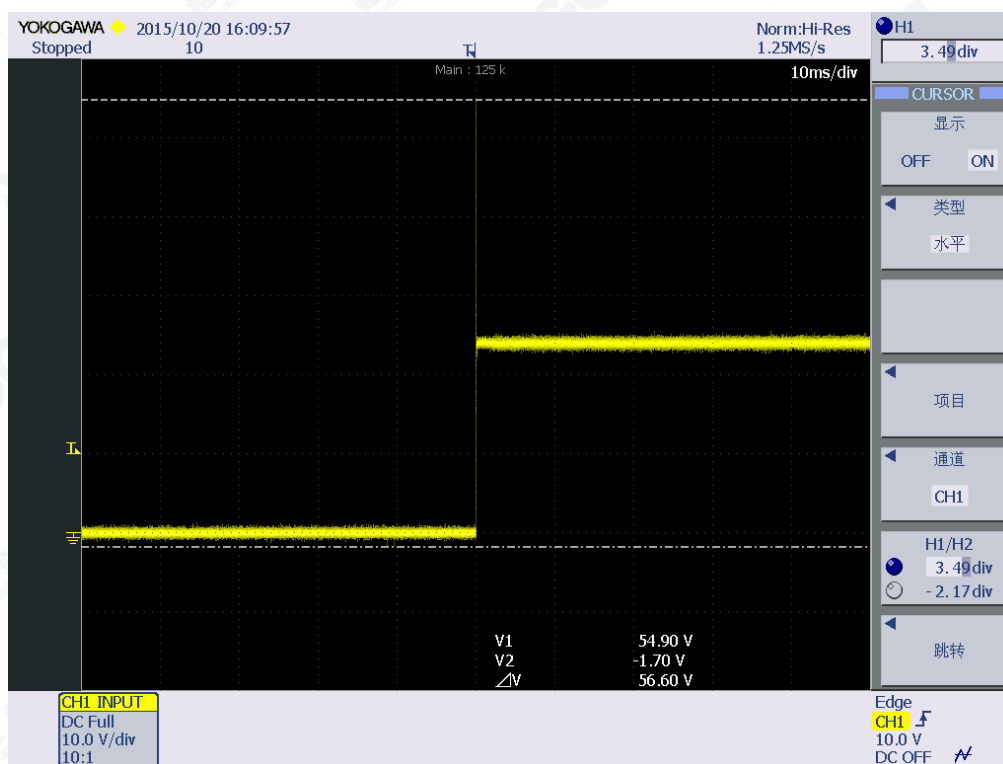
Pulse type	Limit [V]	Result [V]
Fast pulses	+150	+30.90



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Operation mode:	Full load for 24V _{DC}	Tested by:	Sam
Remarks:	Maximum negative amplitude	Result:	Pass
Date:	Oct.20, 2015		

Pulse type	Limit [V]	Result [V]
Fast pulses	-450	-25.70



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9. TRANSIENT IMMUNITY TEST (Test method according to 7637-2:2011)

9.1 DESCRIPTION OF THE TEST LOCATION

Test location: Test Room 2

9.2 PHOTO DOCUMENTATION OF THE TEST SET-UP



9.3 TEST SPECIFICATION:

Pulse 1:	Level:	III
	Test level:	-75 V(12V _{DC}), -450V(24V _{DC})
	Number of pulses:	500
Pulse 2a:	Level:	III
	Test level:	+37 V(12V _{DC}), +37V(24V _{DC})
	Number of pulses:	500
Pulse 2b:	Level:	III
	Test level:	+10 V(12V _{DC}), +20V(24V _{DC})
	Number of pulses:	10
Pulse 3a:	Level:	III
	Test level:	-112 V(12V _{DC}), -150V(24V _{DC})
	Coupling duration:	1 h
Pulse 3b:	Level:	III
	Test level:	+75 V(12V _{DC}), +150V(24V _{DC})
	Coupling duration:	1 h
Pulse 4:	Level:	III
	Test level:	-6 V(12V _{DC}), -12V(24V _{DC})
	Number of pulses:	1
Operation mode:		- Full load for 12V _{DC} - Full load for 24V _{DC}

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9.4 TEST RESULT

Test pulse number	Test voltage	Number of pulses / duration	Required functional status	Functional status of the systems during the test
1 (12V)	-75 V	500	D	C
1 (24V)	-450 V	500	D	C
2a (12V)	+37 V	500	D	A
2a (24V)	+37 V	500	D	A
2b (12V)	+10 V	10	D	C
2b (24V)	+20 V	10	D	C
3a (12V)	-112 V	1 h	D	A
3a (24V)	-150 V	1 h	D	A
3b (12V)	+75 V	1 h	D	A
3b (24V)	+150 V	1 h	D	A
4 (12V)	-6 V	1	D	B
4 (24V)	-12 V	1	D	B

9.5 CLASSIFICATION OF FUNCTIONAL STATUS

<input checked="" type="checkbox"/> Criteria A:	All functions of a device/system perform as designed during and after exposure to disturbance.
<input checked="" type="checkbox"/> Criteria 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.
<input checked="" type="checkbox"/> Criteria 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.
<input type="checkbox"/> Criteria 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.
<input type="checkbox"/> Criteria 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.

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APPENDIX A: PHOTOGRAPHS OF EUT

ALL VIEW OF EUT



TOP VIEW OF EUT



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BOTTOM VIEW OF EUT



FRONT VIEW OF EUT



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BACK VIEW OF EUT



LEFT VIEW OF EUT



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RIGHT VIEW OF EUT

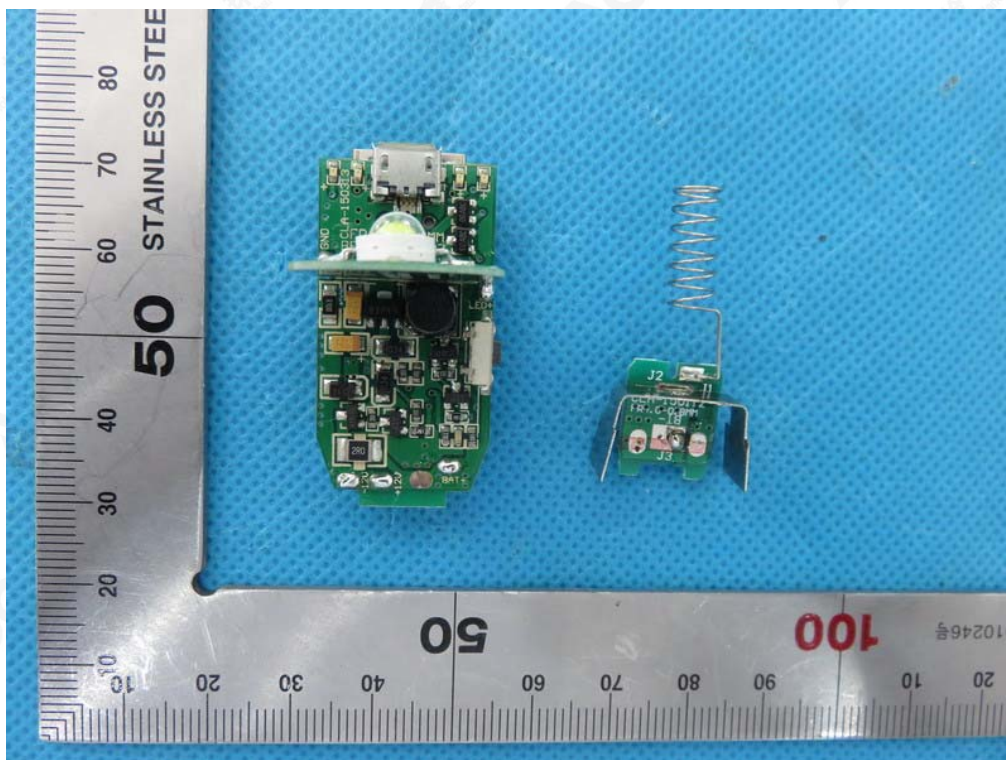


OPEN VIEW OF EUT

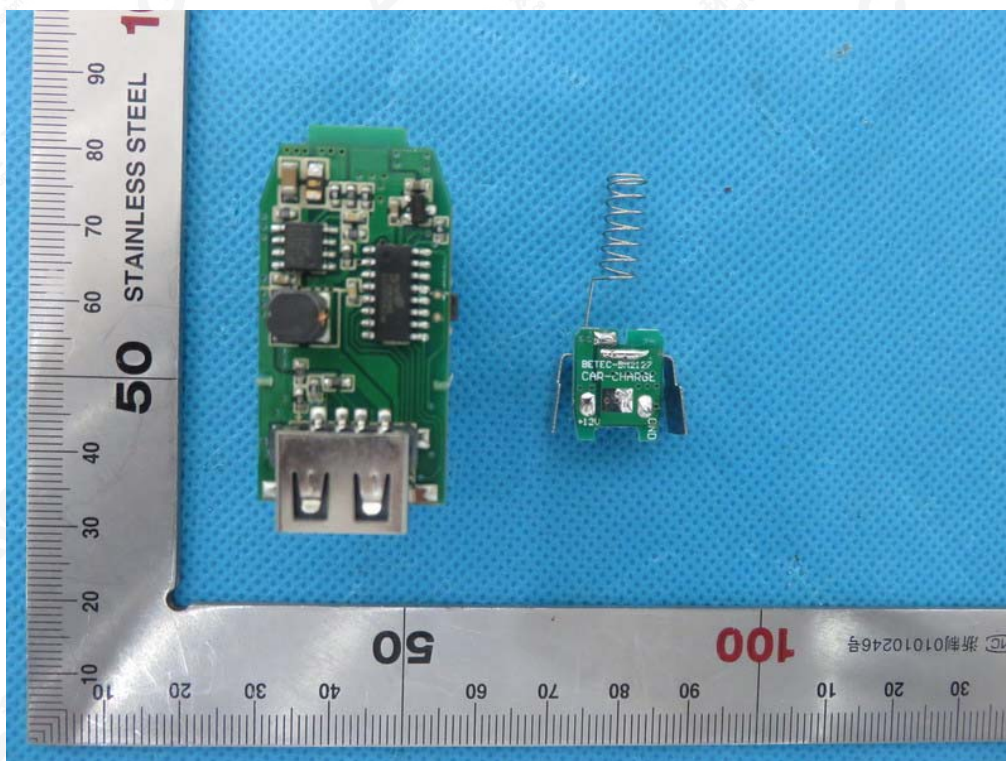


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INTERNAL VIEW OF EUT-1



INTERNAL VIEW OF EUT-2

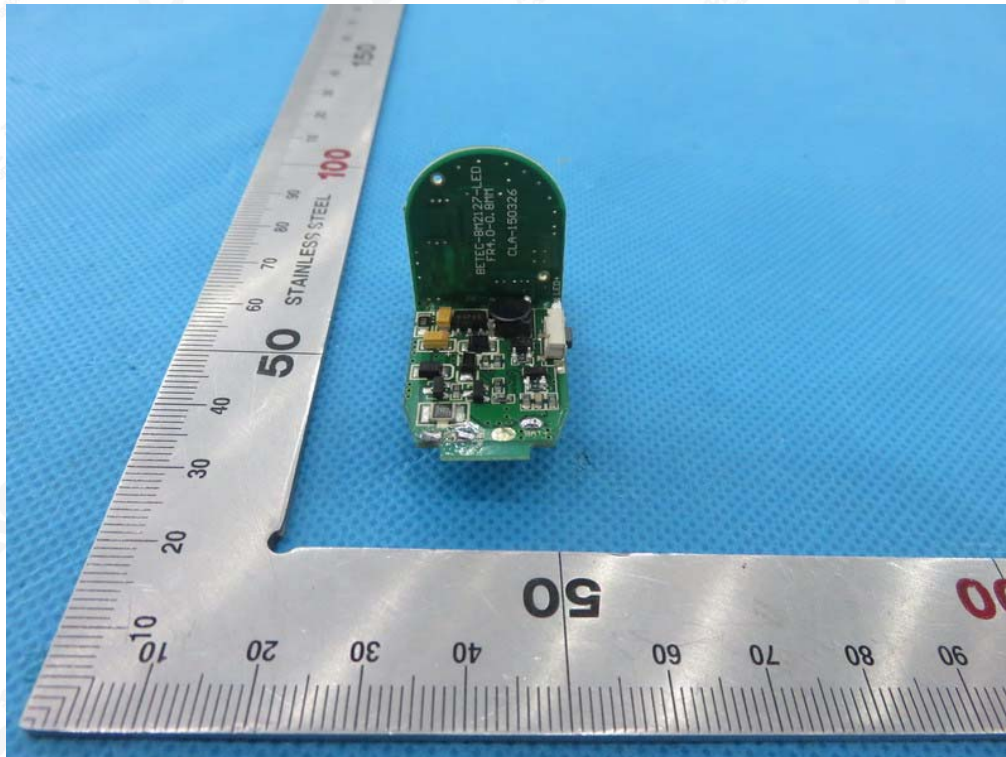


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INTERNAL VIEW OF EUT-3



INTERNAL VIEW OF EUT-4



----END OF REPORT----

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