



Test Report

Applicant : Shenzhen Jiawei Hengxin Technology Co., Ltd
Floor 4 Building 6, MaSha Xuda High-tech Industrial Park,
Education North Road, Pingdi Town, Longgang District,
Shenzhen city, GD, China

Manufacturer : Shenzhen Jiawei Hengxin Technology Co., Ltd
Floor 4 Building 6, MaSha Xuda High-tech Industrial Park,
Education North Road, Pingdi Town, Longgang District,
Shenzhen city, GD, China

Product Name : Car Diagnostic Scanner

Trademark : KONNWEI

Model(s) : KW850

Standard(s) : EN 50498:2010

Result : PASS

Date of Test : March 12, 2021 to March 17, 2021

Report issued Dated : March 18, 2021

The report shall not be reproduced except in full, without the written approval of the CTL TESTING TECHNICAL.

The results in this report apply only to the sample(s) tested. The production units are required to conform to the initial sample as received when the units are placed in the market.

Responsible : W12
Engineer

Approved by : Bob Li
Technical manager

Date : Mar. 18, 2021

Date





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1. Description of the Test Site

1.1 Test Site Location:

Laboratory : Shenzhen CTL Testing Technical Services Co., Ltd.

Address : No. 101, Building 1, Phase 1, Longbang Industrial Park, No. 8 Tianyuan Road, Shutianpu Community, Matian Street, Guangming District, Shenzhen, China.

Phone no. : 0755-21380337

Fax no. :

Email :

1.2 Site Registration

CNAS	:	CNAS L14175

1.3 Test Scope

EMC and RF testing according to national / international standards



2. Description of the Tested Samples

2.1 Customer Information

Company Name : Shenzhen Jiawei Hengxin Technology Co.,Ltd
Address : Floor 4 Building 6, MaSha Xuda High-tech Industrial Park,
Education North Road, Pingdi Town, Longgang District,
Shenzhen city , GD, China
Tel No. : N/A
Fax No. : N/A

2.2 Identification of EUT

Brand Name : KONNWEI
Model(s) : KW850
Serial(s) : KW100, KW101, KW102, KW103, KW104, KW105, KW106,
KW108, KW109, KW130, KW140, KW150, KW160, KW170,
KW180, KW190, KW201, KW202, KW203, KW204, KW205,
KW206, KW208, KW210, KW212, KW220, KW221, KW230,
KW240, KW251, KW260, KW280, KW281, KW213, KW215,
KW218, KW219, KW225, KW226, KW300, KW301, KW305,
KW309, KW310, KW320, KW330, KW340, KW350, KW351,
KW360, KW361, KW370, KW371, KW375, KW380, KW381,
KW390, KW400, KW410, KW420, KW420, KW421, KW430,
KW431, KW450, KW451, KW460, KW470, KW480, KW481,
KW490, KW491, KW510, KW520, KW530, KW540, KW550,
KW560, KW570, KW580, KW590, KW581, KW591, KW600,
KW610, KW620, KW630, KW640, KW650, KW660, KW670,
KW680, KW681, KW690, KW601, KW602, KW603, KW605,
KW607, KW608, KW609, KW700, KW701, KW702, KW703,
KW704, KW705, KW706, KW707, KW708, KW709, KW710,
KW720, KW730, KW740, KW750, KW760, KW780, KW800,
KW805, KW806, KW807, KW808, KW809, KW810, KW812,
KW813, KW815, KW816, KW817, KW818, KW819, KW820,
KW822, KW825, KW826, KW828, KW829, KW830, KW836,
KW838, KW840, KW858, KW860, KW861, KW868, KW870,
KW880, KW881, KW885, KW888, KW890, KW891, KW900,
KW910, KW900, KW910, KW920, KW930, KW931, KW940,
KW950, KW960, KW970, KW980, KW991, KW992, KW993,
KW994, KW995, KW996, KW997, KW998



2.3 Power Rating

Input Power : DC 12V 0.96W
Output Power : N/A
Adaptor information : Input:100-240V AC
Output: 12V 2A DC

2.4 Description of Support units

The EUT has been tested as a dependent 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.

■- supplied by the manufacturer

o - supplied by the lab

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.

2.5 Test Standards List

EN 50498:2010

Electromagnetic compatibility(EMC)- Product family standard for aftermarket electronic equipment in vehicles



2.6 Summary of Test results

Emission

Test Item	Standard	Limit	Conclusion
Radiated Emission	EN 50498:2010	7.1, 7.2	PASS
Transient Conducted Emission	EN 50498:2010 (ISO 7637-2:2004)	7.3	PASS

Immunity

Test Item	Standard	Customer Criteria	Result	Conclusion
Electrical transient transmission (Pulse 1)	ISO 7637-2:2004	Class D	Class C	PASS
Electrical transient transmission (Pulse 2a)	ISO 7637-2:2004	Class D	Class C	PASS
Electrical transient transmission (Pulse 2b)	ISO 7637-2:2004	Class D	Class A	PASS
Electrical transient transmission (Pulse 3a)	ISO 7637-2:2004	Class D	Class A	PASS
Electrical transient transmission (Pulse 3b)	ISO 7637-2:2004	Class D	Class A	PASS
Electrical transient transmission (Pulse 4)	ISO 7637-2:2004	Class D	Class B	PASS

Note: The EUT is not related to immunity related functions.



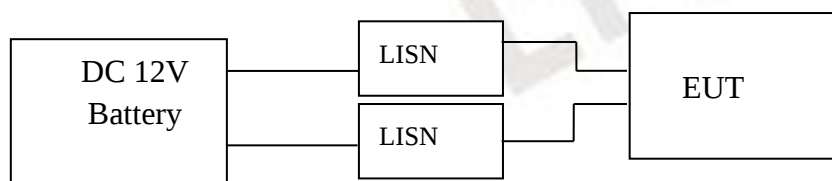
3. Test Result(EMI)

3.1 Radiated Emission

3.1.1 Test Summary

Test Room	:	964- shielding room
Power Source	:	DC 12V
Standards	:	EN 50498:2010
Antenna Height	:	0.95m
Antenna Polarization	:	Horizontal & Vertical
EUT Type	:	Desk Top (Height 0.95m)
EUT configuration	:	EUT's highest possible radiation level

3.1.2 Block diagram of test setup



3.1.3 Measurement method

The Measurement method see CISPR 25 ALSE, the Limit is same as EN 50498. Radiated emissions from 30 MHz to 1000 MHz were measured with a bandwidth of 120 kHz according to the methods defined in CISPR25:2008. The EUT was placed on a nonmetallic table in the semi-anechoic chamber, 1.0 meter above the ground plane. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions



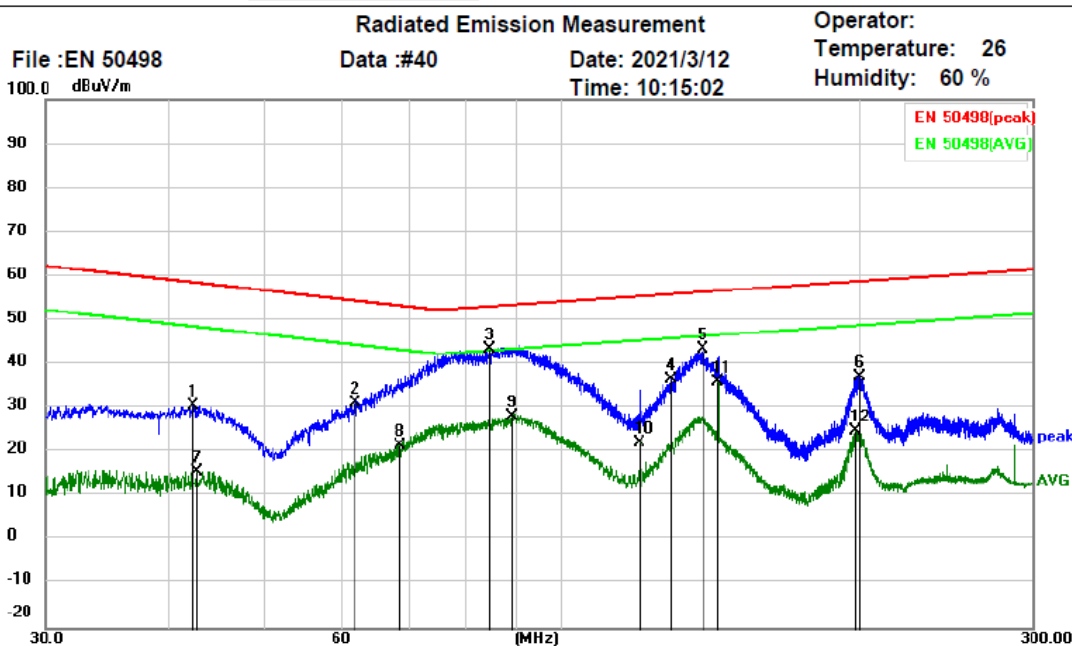
3.1.4 Result

PASS



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CTL TESTING TECHNICAL

SHENZHEN CTL TESTING TECHNICAL SERVICES CO., LTD.
Longbang Industrial Park, No. 8 Tianyuan Road, Guangming District, Shenzhen.
<http://www.sz-ctl.com> Tel: 0755-21380337



Site : 964 Chamber

Polarization: Vertical

Condition : EN 50498

EUT : Car Diagnostic Scanner

Power : DC12V

Model: KW850

Test Mode : WORKING

Company :

Note : Shenzhen Jiawei Hengxin Technology Co.,Ltd

Mk.	No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Comment
	1	42.400000	47.70	peak	-17.10	30.60	58.22	-27.62	
	2	61.800000	49.61	peak	-18.31	31.30	54.11	-22.81	
*	3	84.600000	62.05	peak	-18.65	43.40	52.79	-9.39	
	4	129.200000	52.80	peak	-16.30	36.50	55.57	-19.07	
	5	138.900000	59.13	peak	-15.73	43.40	56.05	-12.65	
	6	200.050000	49.56	peak	-12.26	37.30	58.45	-21.15	
	7	42.750000	32.73	AVG	-17.13	15.60	48.13	-32.53	
	8	68.627200	40.31	AVG	-18.61	21.70	42.97	-21.27	
	9	89.150000	46.63	AVG	-18.43	28.20	43.14	-14.94	
	10	120.000000	38.93	AVG	-16.83	22.10	45.09	-22.99	
	11	144.000000	51.53	AVG	-15.43	36.10	46.29	-10.19	
	12	198.700000	37.25	AVG	-12.35	24.90	48.40	-23.50	



Radiated Emission Measurement

Operator:
Temperature: 26
Humidity: 60 %

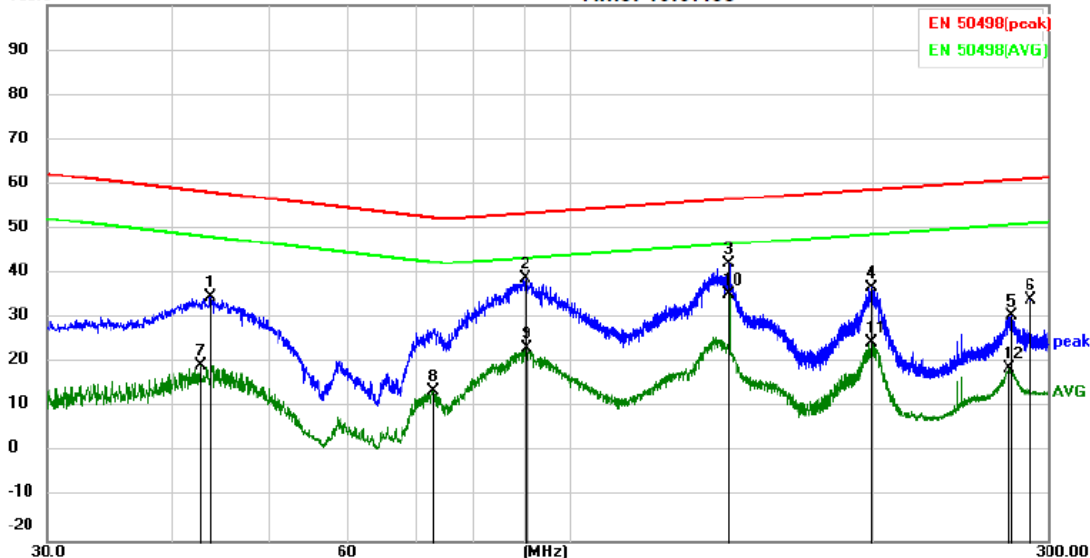
File :EN 50498

Data :#39

Date: 2021/3/12

Time: 10:07:58

100.0 dBuV/m



Site : 964 Chamber

Polarization: *Horizontal*

Condition : EN 50498

EUT : Car Diagnostic Scanner

Power : DC12V

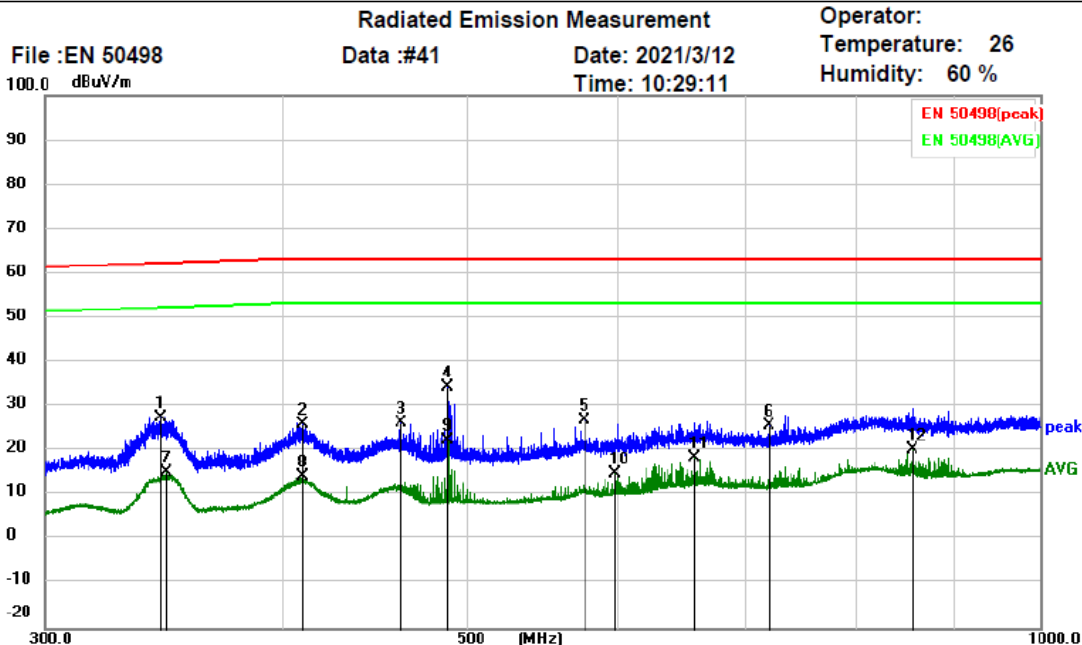
Model: KW850

Test Mode : WORKING

Company :

Note : Shenzhen Jiawei Hengxin Technology Co.,Ltd

Mk.	No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Comment
	1	43.650000	51.99	peak	-17.19	34.80	57.91	-23.11	
	2	90.100000	57.40	peak	-18.40	39.00	53.21	-14.21	
	3	144.000000	57.63	peak	-15.43	42.20	56.29	-14.09	
	4	199.800000	49.17	peak	-12.27	36.90	58.44	-21.54	
	5	275.700000	38.24	peak	-7.64	30.60	60.55	-29.95	
	6	288.050000	40.72	peak	-6.62	34.10	60.84	-26.74	
	7	42.750000	36.73	AVG	-17.13	19.60	48.13	-28.53	
	8	72.850000	32.66	AVG	-18.76	13.90	42.32	-28.42	
	9	90.500000	41.67	AVG	-18.37	23.30	43.23	-19.93	
*	10	144.000000	50.63	AVG	-15.43	35.20	46.29	-11.09	
	11	199.850000	36.87	AVG	-12.27	24.60	48.44	-23.84	
	12	274.100000	26.75	AVG	-7.75	19.00	50.52	-31.52	



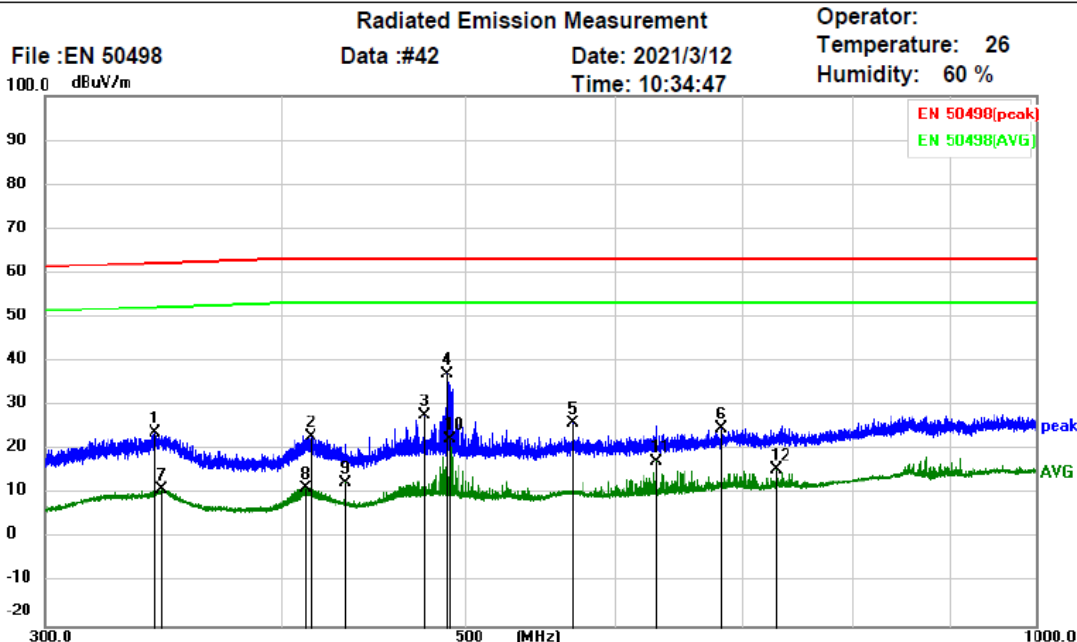
Site : 964 Chamber
Condition : EN 50498
EUT : Car Diagnostic Scanner
Model: KW850
Test Mode : WORKING
Company :

Polarization: **Vertical**

Power : DC12V

Note : Shenzhen Jiawei Hengxin Technology Co.,Ltd

Mk.	No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Comment
	1	345.000000	40.01	peak	-12.31	27.70	62.03	-34.33	
	2	410.150000	37.57	peak	-11.37	26.20	63.00	-36.80	
	3	461.900000	37.30	peak	-10.80	26.50	63.00	-36.50	
*	4	488.450000	44.63	peak	-10.13	34.50	63.00	-28.50	
	5	576.150000	35.92	peak	-9.02	26.90	63.00	-36.10	
	6	720.050000	32.51	peak	-6.81	25.70	63.00	-37.30	
	7	347.550000	27.46	AVG	-12.26	15.20	52.08	-36.88	
	8	410.100000	25.67	AVG	-11.37	14.30	53.00	-38.70	
	9	488.450000	32.53	AVG	-10.13	22.40	53.00	-30.60	
	10	597.550000	23.34	AVG	-8.44	14.90	53.00	-38.10	
	11	658.200000	26.28	AVG	-7.78	18.50	53.00	-34.50	
	12	856.450000	25.26	AVG	-4.76	20.50	53.00	-32.50	



Site : 964 Chamber

Polarization: **Horizontal**

Condition : EN 50498

EUT : Car Diagnostic Scanner

Power : DC12V

Model: KW850

Test Mode : WORKING

Company :

Note : Shenzhen Jiawei Hengxin Technology Co.,Ltd

Mk.	No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Correction factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Comment
	1	343.200000	36.43	peak	-12.33	24.10	61.99	-37.89	
	2	414.700000	34.47	peak	-11.27	23.20	63.00	-39.80	
	3	476.050000	38.20	peak	-10.40	27.80	63.00	-35.20	
*	4	488.850000	47.22	peak	-10.12	37.10	63.00	-25.90	
	5	569.900000	35.39	peak	-9.19	26.20	63.00	-36.80	
	6	681.600000	32.33	peak	-7.43	24.90	63.00	-38.10	
	7	345.600000	23.49	AVG	-12.29	11.20	52.04	-40.84	
	8	411.700000	22.83	AVG	-11.33	11.50	53.00	-41.50	
	9	432.100000	23.75	AVG	-11.05	12.70	53.00	-40.30	
	10	490.650000	32.59	AVG	-10.09	22.50	53.00	-30.50	
	11	630.000000	25.59	AVG	-8.09	17.50	53.00	-35.50	
	12	729.400000	22.15	AVG	-6.65	15.50	53.00	-37.50	

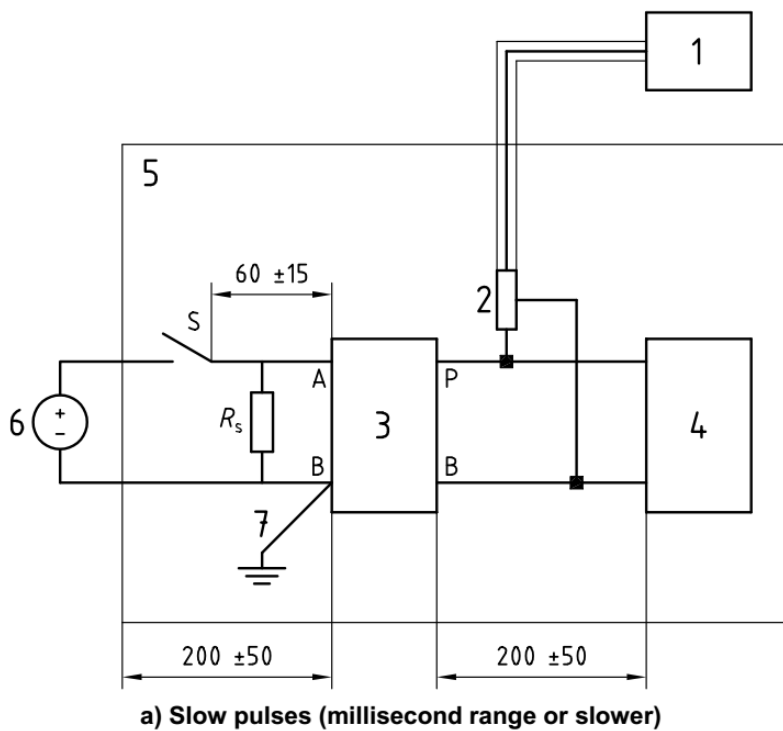
3.2 Transient Conducted Emission (T.CE)

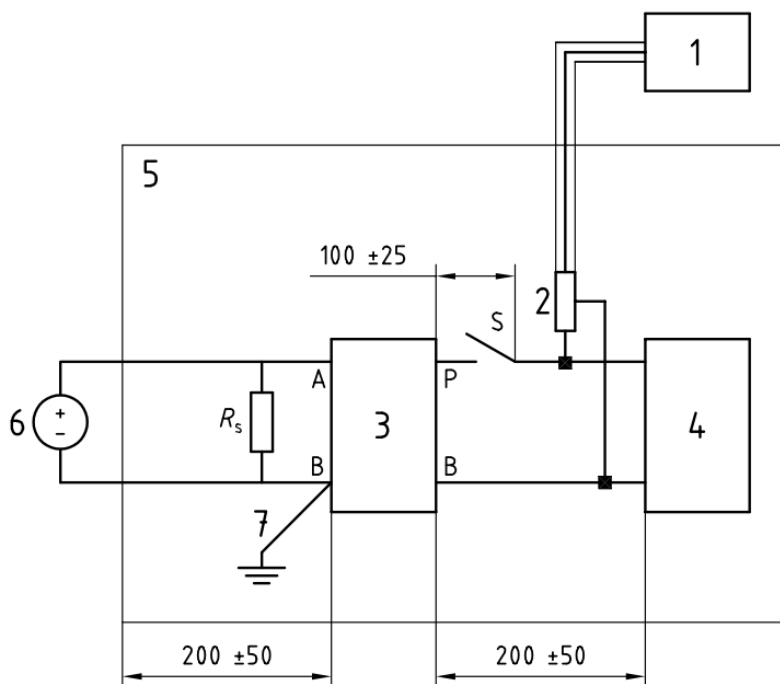
3.2.1 Test Summary

Test Room	:	2# EMC shielding room
Power Source	:	DC 12V
Standards	:	EN 50498:2010
Table Height	:	0.90m
EUT Type	:	Desk Top (Height 0.90m)
EUT configuration	:	EUT's highest possible radiation level

3.2.2 Block diagram of test setup

Dimensions in millimetres
Drawing not to scale





b) Fast pulses (nanosecond-to-microsecond range)

Key

- | | | | |
|---|----------------------------|---|------------------------------------|
| 1 | oscilloscope or equivalent | 5 | ground plane |
| 2 | voltage probe | 6 | power supply |
| 3 | artificial network | 7 | Ground connection; length < 100 mm |
| 4 | DUT (source of transient) | | |

NOTE For A, B, P, see Figure 3.

Figure 1 — Transient emission test set-up



3.2.3 Result

PASS



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CTL TESTING TECHNICAL

Shenzhen CTL Testing Technical Services Co., Ltd.

Transient Conducted Emission Test Data

TR-4-036 Rev A/0

Emission	Transient Conducted		Reference Standard: ☒ ISO 7637-2: 2004 ☐ _____ ☐ Other: _____
Manufacturer: <u>Shenzhen Jiawei Hengxin Technology Co.,Ltd</u>			☒ Pass / ☐ Fail
EUT: <u>Car Diagnostic Scanner</u> M/N: <u>KW850</u>			
Power Supply: <u>DC 12V</u> Ambient Condition : <u>25</u> °C <u>55</u> %RH			
Operation Mode: <u>WORKING</u>			
Pulse(us)	Limit	Result	Pass/Fail
Positive slow pulses	+75V	+14.2V	Pass
Negative slow pulses	-100V	-13.4V	Pass
Positive fast pulses	+75V	+14.3V	Pass
Negative fast pulses	-100V	-13.5V	Pass
Pulse(us)	Limit	Result	Pass/Fail
Positive slow pulses			
Negative slow pulses			
Positive fast pulses			
Negative fast pulses			
Note:			
Test Equipment :	AMETEK CTS: Single-Line Artificial Network(AN 200N100), Electronic Switch(BS 200N100.1), Mechanical Switch(BSM 200N40) Load Impedance(RS-BOX) Tektronix: Oscilloscope(DPO4101), Probe(P5100A)		

Date : 2021.3.17

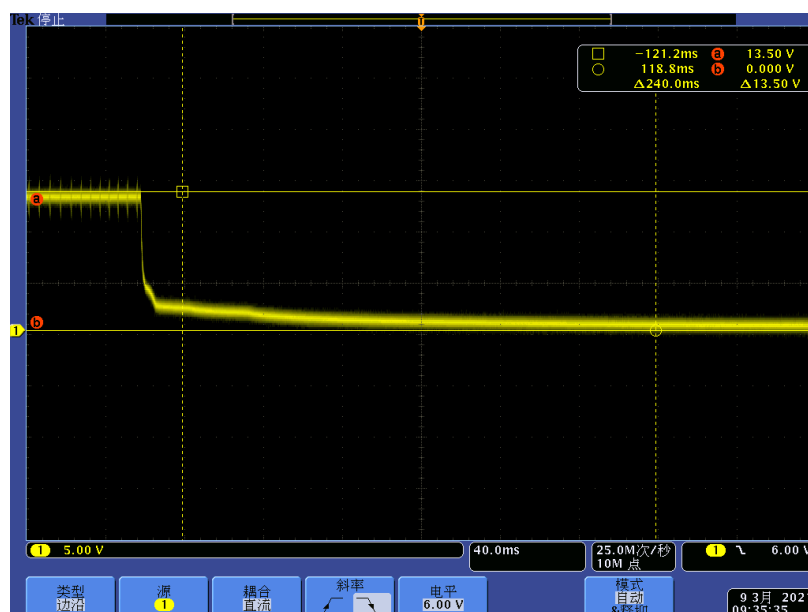
Test Engineer WIZ



Fast pulse:



off to on



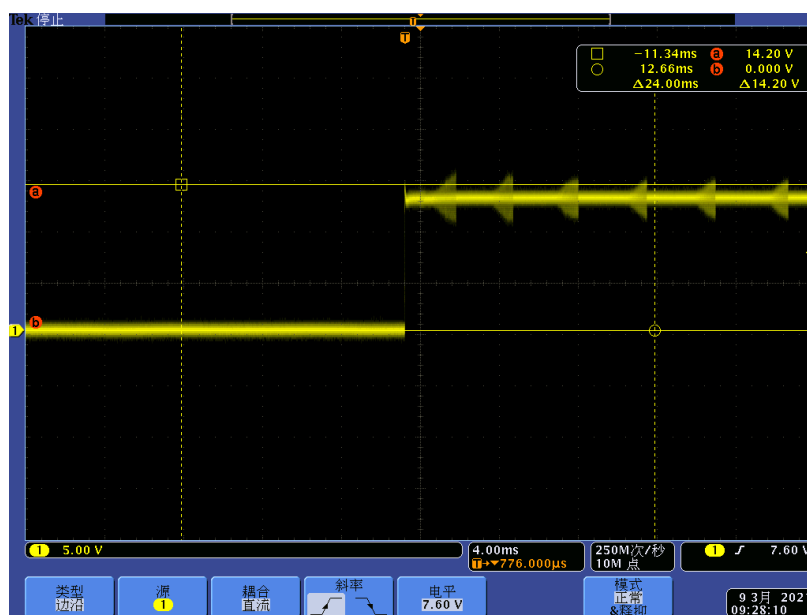
on to off



Slow pulse:



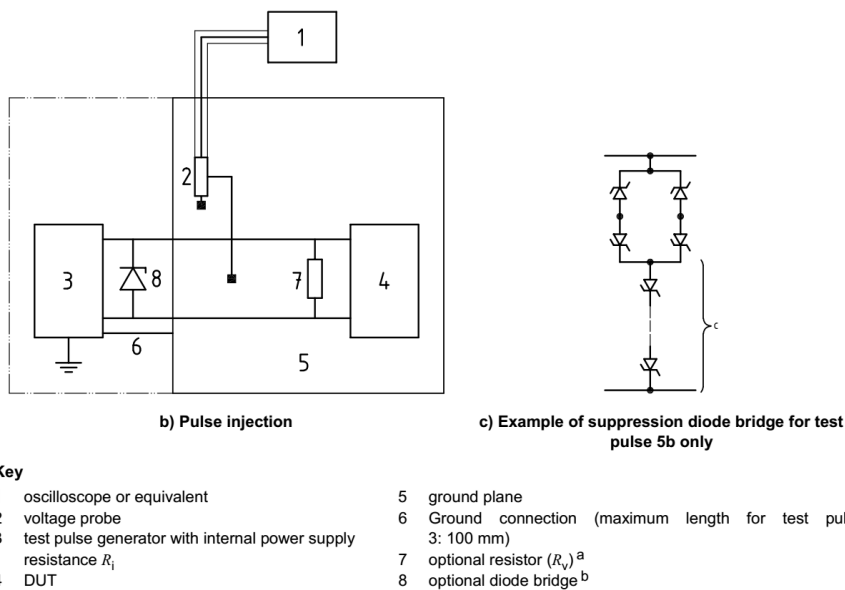
on to off



off to on

4. Transient Immunity

4.1 Block diagram of test setup



- ^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 Ω to 40 Ω).
- ^b For simulation of load dump waveform for alternator with centralized load dump suppression for pulse 5b only [see Figure 2 c)].
- ^c Add forward biased diodes as required to achieve max. open-circuit (suppressed) voltage.

Figure 2 — Transient immunity test set-up

4.2 Limit

Table A.1 — Suggested test levels for 12 V system

Test pulse ^a	Selected test level ^b	Test level, U_s^c V				Min. number of pulses or test time ^f	Burst cycle/pulse repetition time	
		I	II	III min.	IV max.		min.	max.
1		g	g	- 75	- 100	5 000 pulses	0,5 s	5 s
2a		g	g	+ 37	+ 50	5 000 pulses	0,2 s	5 s
2b		g	g	+ 10	+ 10	10 pulses	0,5 s	5 s
3a		g	g	- 112	- 150	1 h	90 ms	100 ms
3b		g	g	+ 75	+ 100	1 h	90 ms	100 ms
4		g	g	- 6	- 7	1 pulse	d	d
5 ^e		g	g	+ 65	+ 87	1 pulse	d	d

- ^a Test pulses as in 5.6.
- ^b Values agreed to between vehicle manufacturer and equipment supplier.
- ^c The amplitudes are the values of U_s as defined for each test pulse in 5.6.
- ^d Since the minimum number of test pulses is 1, no pulse cycle time is given. When several pulses are to be applied, a minimum delay of 1 min between pulses shall be allowed.
- ^e See 5.6.5 c). The test levels reflect the situation of load dump at generator rated speed. If a central load dump protection is used, apply test pulse 5b as defined in Figure 12 and use the values in table 10.
- ^f The number of pulses/time is for durability test purposes.
- ^g The former levels I and II were deleted because they do not ensure sufficient immunity in road vehicles.

ISO7637-2:2004



Table A.2 — Suggested test levels for 24 V system

Test pulse ^a	Selected test level ^b	Test level, U_s^c V				Min. number of pulses or test time ^f	Burst cycle/pulse repetition time	
		I	II	III min.	IV max.		min.	max.
1		g	g	– 450	– 600	5 000 pulses	0,5 s	5 s
2a		g	g	+ 37	+ 50	5 000 pulses	0,2 s	5 s
2b		g	g	+ 20	+ 20	10 pulses	0,5 s	5 s
3a		g	g	– 150	– 200	1 h	90 ms	100 ms
3b		g	g	+ 150	+ 200	1 h	90 ms	100 ms
4		g	g	– 12	– 16	1 pulse	d	d
5 ^e		g	g	+ 123	+ 173	1 pulse	d	d

^a Test pulses as in 5.6.
^b Values agreed to between vehicle manufacturer and equipment supplier.
^c The amplitudes are the values of U_s as defined for each test pulse in 5.6.
^d Since the minimum number of test pulses is 1, no pulse cycle time is given. When several pulses are to be applied, a minimum delay of 1 min between pulses shall be allowed.
^e See 5.6.5 c). The test levels reflect the situation of load dump at generator rated speed. If a central load dump protection is used, apply test pulse 5b as defined in Figure 12 and use the values in Table 10.
^f The number of pulses/time is for durability test purposes.
^g The former levels I and II were deleted because they do not ensure sufficient immunity in road vehicles.

ISO7637-2:2004

Table A.1 — Examples of test pulse severity levels for nominal 12 V system

Test pulse ^a	Selected test level ^b	Test pulse severity level, U_s^{cd} V			Min. number of pulses or test time	Burst cycle/pulse repetition time	
		IV	III	I / II		min.	max.
1		–150	–112	–75	500 pulses	0,5 s	^e
2a		+112	+55	+37	500 pulses	0,2 s	5 s
2b		+10	+10	+10	10 pulses	0,5 s	5 s
3a		–220	–165	–112	1 h	90 ms	100 ms
3b		+150	+112	+75	1 h	90 ms	100 ms

^a Test pulses as in 5.6.
^b Values agreed between vehicle manufacturer and equipment supplier.
^c The amplitudes are the values of U_s as defined for each test pulse in 5.6.
^d The former levels I and II are revised because they did not ensure sufficient immunity in subsequent road vehicles' design.
^e The maximum pulse repetition time shall be chosen such that it is the minimum time for the DUT to be correctly initialized before the application of the next pulse and shall be $\geq 0,5$ s.

ISO7637-2:2004



Table A.2 — Suggested test pulse severity levels for nominal 24 V system

Test pulse ^a	Selected test level ^b	Test pulse severity level, U_s^{cd} V			Min. number of pulses or test time	Burst cycle/ pulse repetition time	
		IV	III	I / II		min.	max.
1		−600	−450	−300	500 pulses	0,5 s	^e
2a		+112	+55	+37	500 pulses	0,2 s	5 s
2b		+20	+20	+20	10 pulses	0,5 s	5 s
3a		−300	−220	−150	1 h	90 ms	100 ms
3b		+300	+220	+150	1 h	90 ms	100 ms
^a Test pulses as in 5.6. ^b Values agreed between vehicle manufacturer and equipment supplier. ^c The amplitudes are the values of U_s as defined for each test pulse in 5.6. ^d The former levels I and II are revised because they did not ensure sufficient immunity in subsequent road vehicles' design. ^e The maximum pulse repetition time shall be chosen such that it is the minimum time for the DUT to be correctly initialized before the application of the next pulse and shall be $\geq 0,5$ s.							

ISO7637-2:2004

* to meet both ISO 7637-2:2004 & ISO 7637-2:2004, apply the higher voltage and more pulses for same level(III) with same test pulse number.



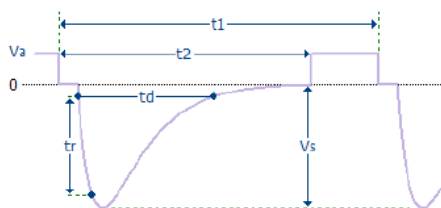
4.3 Result

P1

D . U . T	
Name:	Car Diagnostic Scanner
Serial Number:	/
Operation Mode:	WORKING
Description:	/

Test Procedure			
Pulse Name:	ISO 7637-2 (2004-06) : 4.6.1 Pulse 1		
Test Generator:	UCS200N100	Software No.:	001065
Firmware:	2.52a12		
Coupling network:	UCS200N100	Serial No.:	
Va (Alternator):	13.5 V	Current limit:	2 A
Software:	iso.control	Version:	7.1.0

Test Setup			
Vs:	-75	V	
t1:	0.5	s	
t2:	200	ms	
tr:	1	us	
td:	2000	us	
Ri:	10	Ohm	
Coupling:	Battery		
Events:	5000		
Test duration:	00:41:40	h	



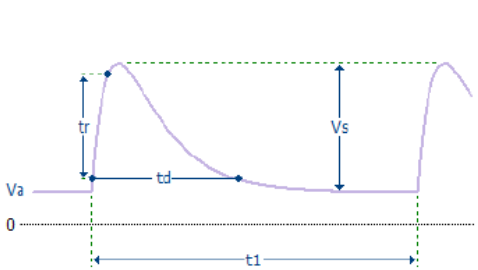
Test Result	
Pulses:	5000
Result:	Test passed! pass



P2a

D.U.T	
Name:	Car Diagnostic Scanner
Serial Number:	/
Operation Mode:	WORKING
Description:	/

Test Procedure			
Pulse Name:	ISO 7637-2 (2004-06) : 4.6.2 Pulse 2a		
Test Generator:	UCS200N100	Software No.:	001065
Firmware:	2.52a12		
Coupling network:	UCS200N100	Serial No.:	
Va (Alternator):	13.5 V	Current limit:	2 A
Software:	iso.control	Version:	7.1.0

Test Setup		
Vs:	+37 V	
t1:	0.2 s	
tr:	1 us	
td:	50 us	
Ri:	2 Ohm	
Coupling:	Battery	
Events:	5000	
Test duration:	00:16:40 h	

Test Result	
Pulses:	5000
Result:	Test passed! pass

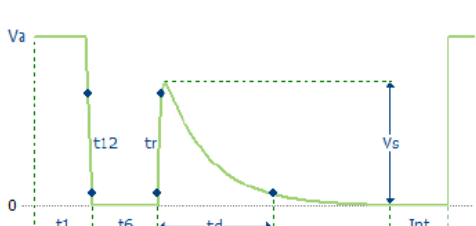


P2b

D.U.T	
Name:	Car Diagnostic Scanner
Serial Number:	/
Operation Mode:	WORKING
Description:	/

Test Procedure			
Pulse Name:	ISO 7637-2 (2004-06) : 4.6.2 Pulse 2b		
Test Generator:	VDS200Q100	Software No.:	001519
Firmware:	1.04.00		
Coupling network:	UCS200N100	Serial No.:	
Va (Alternator):	13.5 V	Current limit:	100 A
Software:	iso.control	Version:	7.1.0

Test Setup		
Vs:	10.0 V	
t1:	1.0 s	
t6:	1 ms	
td:	200 ms	
Int:	1.0 s	
Ri:	0.05 Ohm	
t12:	1 ms	
tr:	1 ms	
Events:	10	
Test duration:	00:00:28 h	



Test Result	
Pulses:	10
Result:	Test passed! pass

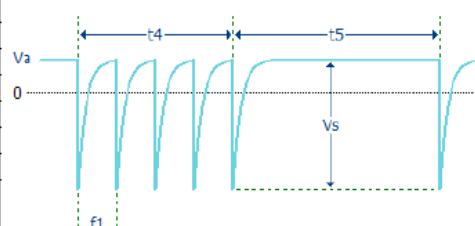


P3a

D.U.T	
Name:	Car Diagnostic Scanner
Serial Number:	/
Operation Mode:	WORKING
Description:	/

Test Procedure			
Pulse Name:	ISO 7637-2 (2004-06) : 4.6.3 Pulse 3a		
Test Generator:	UCS200N100	Software No.:	001065
Firmware:	2.52a12		
Va (Alternator):	13.5 V	Current limit:	2 A
Software:	iso.control	Version:	7.1.0

Test Setup		
Vs:	-112	V
f1:	10	kHz
t4:	10	ms
t5:	90	ms
tr:	5	ns
td:	100	ns
Ri:	50	Ohm
Coupling:	Battery	
Test duration:	1	h



The diagram illustrates a periodic waveform labeled 'Pulse 3a'. The vertical axis represents voltage, with a peak value V_a and an average value V_s indicated by a double-headed arrow. The horizontal axis represents time, with a frequency f_1 marked at the start of a cycle. The waveform consists of a series of pulses, each with a duration t_4 , followed by a longer interval t_5 where the voltage is zero. The pulses are shown as sharp, narrow spikes, and the average voltage V_s is indicated by a dashed line.

Test Break Off		
Test stopped!	Elapsed test time:	00:58:00
Result:	Test passed! pass	

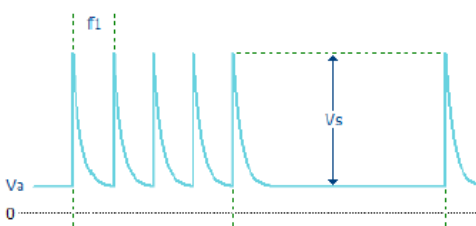


P3b

D.U.T	
Name:	Car Diagnostic Scanner
Serial Number:	/
Operation Mode:	WORKING
Description:	/

Test Procedure			
Pulse Name:	ISO 7637-2 (2004-06) : 4.6.3 Pulse 3b		
Test Generator:	UCS200N100	Software No.:	001065
Firmware:	2.52a12		
Va (Alternator):	13.5 V	Current limit:	2 A
Software:	iso.control	Version:	7.1.0

Test Setup		
Vs:	+75	V
f1:	10	kHz
t4:	10	ms
t5:	90	ms
tr:	5	ns
td:	100	ns
Ri:	50	Ohm
Coupling:	Battery	
Test duration:	1	h



Test Result	
Test duration:	01:00:00 h
Result:	Test passed! PASS

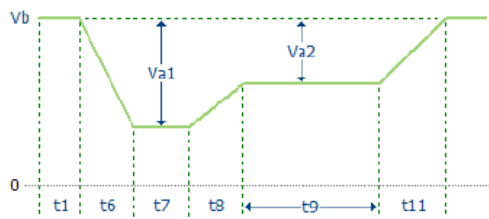


P4

D.U.T	
Name:	Car Diagnostic Scanner
Serial Number:	/
Operation Mode:	WORKING
Description:	/

Test Procedure			
Pulse Name:	ISO 7637-2 (2004-06) : 4.6.4 Pulse 4		
Test Generator:	VDS200Q100	Software No.:	001519
Firmware:	1.04.00		
Coupling network:	UCS200N100	Serial No.:	
Vb (Battery):	12.0 V	Current limit:	2 A
Software:	iso.control	Version:	7.1.0

Test Setup		
Va1:	-7.0	V
Va2:	-2.5	V
t1:	1.0	s
t6:	5	ms
t7:	15	ms
t8:	50	ms
t9:	0.5	s
t11:	5	ms
Events:	1	
Test duration:	00:00:02	h



Test Result	
Pulses:	1
Result:	Test passed!



5. Photographs

5.1 Test setup photos



Radiated emission 30-300MHz



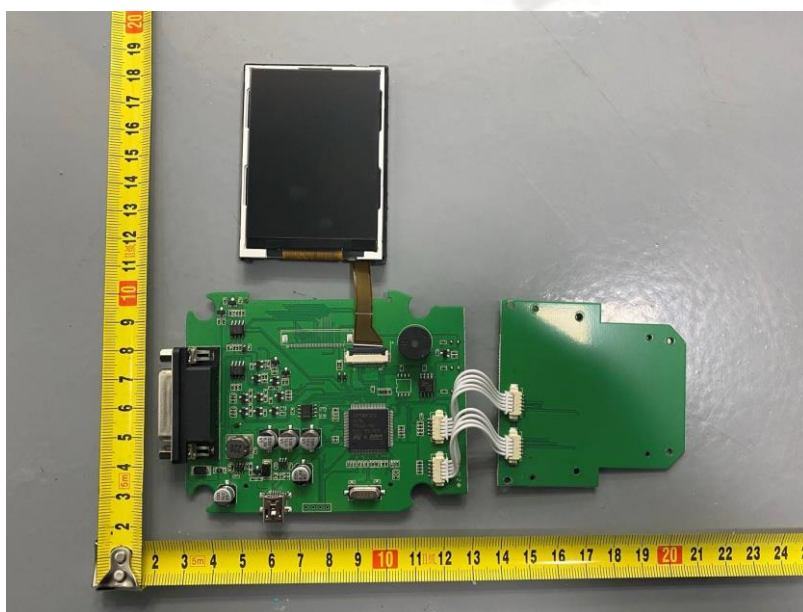
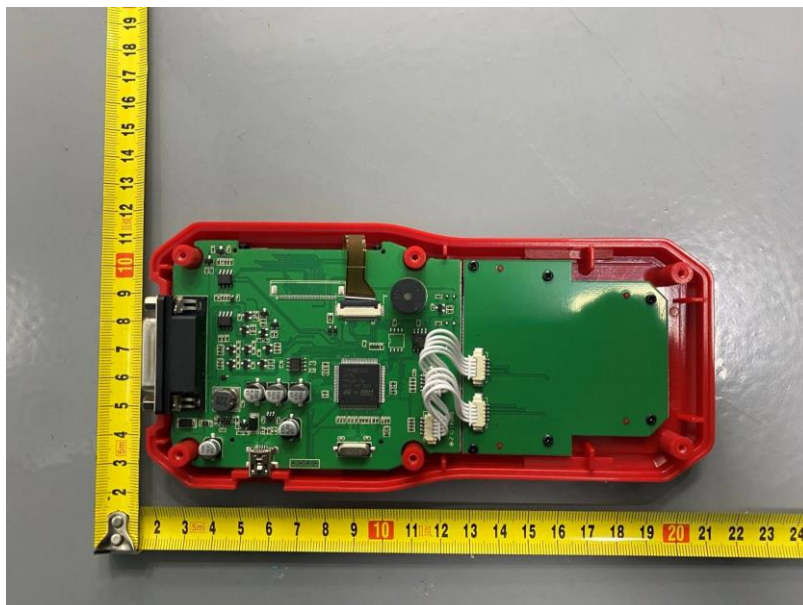
Radiated emission 300-1000MHz

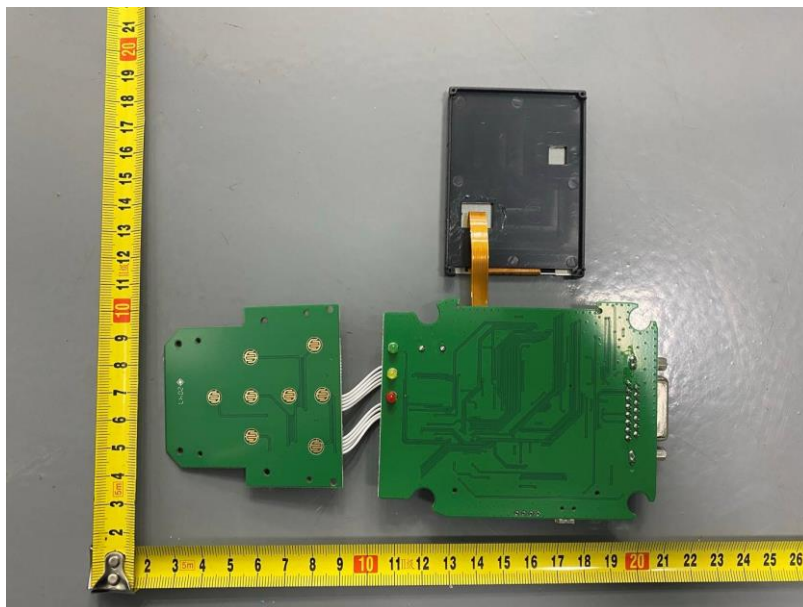


5.2 EUT Photos











6. Equipment List

6.1 Radiated Emission

No.	Equipment	Manufacturer	Model	Serial No.	Calibration date	Cal.Due
1	Biconical antenna	SCHWARZBECK	BBA 9106+VHBB 9124	01366	2020/09/11	2023/09/10
2	Logarithmic antenna	SCHWARZBECK	VUSLP 9111B	461	2020/09/11	2023/09/10
3	Rod antenna	SCHWARZBECK	VAMP 9243B	01344	2020/09/11	2023/09/10
4	Loop antenna	SCHWARZBECK	FMZB 1519B	00148		
5	Horn antenna	SCHWARZBECK	BBHA 9120 D	02192	2020/09/11	2023/09/10
6	EMI Test Receiver	ROHDE & SCHWARZ	ESU	100184	2020/09/07	2021/09/06
7	RF Pre-amplifier	Emtrace	RP01A	02517	2020/09/07	2021/09/06
8	RF Pre-amplifier	Emtrace	RP06A	01517	2020/09/07	2021/09/06

6.2 Transient Emission

No.	Equipment	Manufacturer	Model	Serial No.	Calibration date	Cal.Due
1	Single-Line Artificial Network	AMETEK CTS	AN 200N100	P1943233996	2020/9/8	2021/9/7
2	Electronic Switch	AMETEK CTS	BS 200N100.1	P1921229946	2020/9/14	2021/9/13
3	Mechanical Switch	AMETEK CTS	BSM 200N40	P2002236727	2020/9/14	2021/9/13
4	Load Impedance for BS200N semiconductor switch	AMETEK CTS	RS-BOX	P1941233530	2020/9/8	2021/9/7



6.3 Transient Immunity

No.	Equipment	Manufacturer	Model	Serial No.	Calibration date	Cal.Due
1	Ultra Compact Simulator	AMETEK CTS	UCS 200N100	P2003236831	2020/09/11	2021/09/10
2	Load Dump Generator	AMETEK CTS	LD 200N	P1951236218	2020/09/11	2021/09/10
3	DC power supply (7637)	AMETEK CTS	VDS 200Q100-400	P2011239850	2020/09/11	2021/09/10
4	Wave Generator	AMETEK CTS	VDS 200Q100	P2004237451	2020/09/11	2021/09/10
5	Wave Generator	AMETEK CTS	Auto Wave	P2004237791	2020/09/11	2021/09/10
6	Coupling clamp 7637-3 CCC	AMETEK CTS		P2006238395	2020/09/08	2021/09/07

7. Test Uncertainty

Test	Confidence Level	CISPR Uncertainty	Our Uncertainty
Radiated emission 30-1000MHz	95%	5.2dB	3.5dB
Conducted Emission (Mains) 0.15- 30MHz	95%	3.6dB	2.46dB

8. Appendix

8.1 Confirmation of Compliance within the Limits

8.1.1 Method of calculating measurement result

Radiated Emission

For example:

$$\text{Reading} + \text{Antenna factor} + \text{Cable loss} - \text{Gain} = \text{Result}$$

$$\text{Example } 44.5 + 8.9 + 7.4 - 31.6 = 29.2$$

Conducted Emission

For example:

$$\text{Reading} + \text{C. FACTOR} = \text{Result}$$

$$\text{Example } 56.1 + 15.6 = 71.7$$