

TEST REPORT

Client Name	ThinkRace Technology Co., Limited
Name of product	GPS Tracker
Manufacturer	Shenzhen Guanaixing Technology Co. , Ltd.
Model	TR40/TR50/TR60/TR41/TR42
Test Sort	Commission Test



Shenzhen Huaxin Information Technology Sverice Co., Ltd

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**Shenzhen Huaxin Information Technology Sverice Co., Ltd****TEST REPORT**

Name of product	GPS Tracker		Trade mark	----	
Manufacturer	Shenzhen Guanaixing Technology Co. , Ltd.		Model	TR40/TR50/TR60/TR41/TR42	
Client	ThinkRace Technology Co., Limited		Sampling method	Sent by Client	
Sampler	----		Amount of samples	----	
Sampling place	----		Quantity of samples	1Pcs	
Production date	----	Sampling date	----	Application data	2022-03-01
Test date	2022-03-01~2022-03-07		Environment condition	15-35℃, 45-75% RH	

Sample description:

One sample, in good condition before test. Number: 1#.

Test item:

Conducted Emission,Radiated Emission (30MHz~1000MHz),Radiated Emission (>1GHz) , RF- Common Mode,RF Electromagnetic Field,Electrostatic Discharge,Surges,Fast Transients Common Mode,Voltage Dips and Interruptions.

Reference documents:

CISPR 22:2006 Information technology equipment-Radio disturbance characteristics-Limits and methods of measurement.

IEC61000-4-6:2006 Electromagnetic compatibility(EMC)-Part 4-6:Testing and measurement techniques-Immunity to conducted disturbances,induced by radio-frequency fields.

IEC61000-4-3:2002 Electromagnetic compatibility(EMC)-Part 4-3:Testing and measurement techniques-Radiated,radio-frequency,electromagnetic field immunity test.

IEC61000-4-2:2001 Testing and measurement techniques-Electrostatic discharge immunity test.

IEC61000-4-5:2005 Testing and measurement techniques-surge immunity test.

IEC61000-4-4:2004 Electromagnetic compatibility(EMC)-Part 4-4:Testing and measurement techniques-electrical fast transient/burst immunity test.

IEC61000-4-11:1999 Electromagnetic compatibility(EMC)-Part 4-11:Testing and measurement techniques-Voltage dips,short interruptions and voltage variations immunity tests.

Summary:

According to the requirement, sample has been tested for temperature, humidity, vibration and so on. The appearance and function of sample are both normal after test, refer to followed report for detail.

Test conclusion:

Pass.



Tested by:

Inspected by:

Approved by:

2022 Y 03 M 09 D

2022 Y 03 M 09 D

2022 Y 03 M 09 D



Test Result

No.	Test Item	Test Requirement	Test Result
			1#
1	Conducted Emission	Test items 1	Pass
2	Radiated Emission (30MHz~1000MHz)	Test items 2	Pass
3	Radiated Emission (>1GHz)	Test items 3	Pass
4	RF- Common Mode	Test items 4	Pass
5	RF Electromagnetic Field	Test items 5	Pass
6	Electrostatic Discharge	Test items 6	Pass
7	Surges	Test items 7	Pass
8	Fast Transients Common Mode	Test items 8	Pass
9	Voltage Dips and Interruptions	Test items 9	Pass





Test Result

Test items 1: Conducted Emission

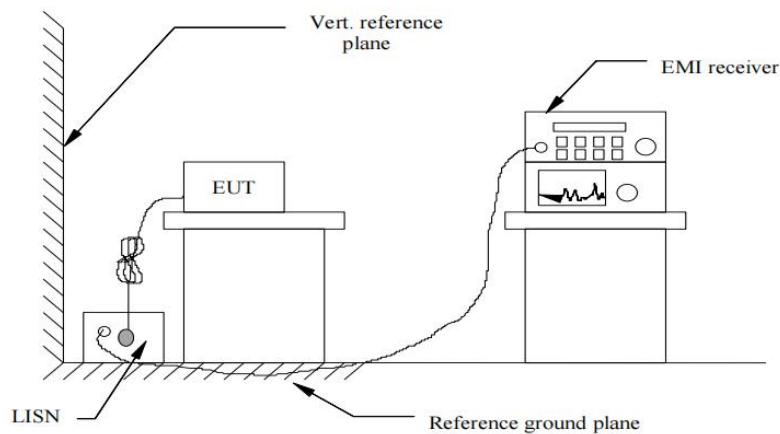
Environmental conditions:

Temperature: 15-35 °C, Humidity: 45-75 %RH.

Reference documents:

CISPR 22:2006 Information technology equipment-Radio disturbance characteristics-Limits and methods of measurement.

Test arrangement:



Sample state:

Sample is in good condition before test.

Test conditions:

The test sample is in normal state.

Frequency (150kHz ~ 30MHz).

Test acceptance requirements:

Class B.

Test result:

Class B.

Test conclusion:

Pass.

Please refer to the below test data:

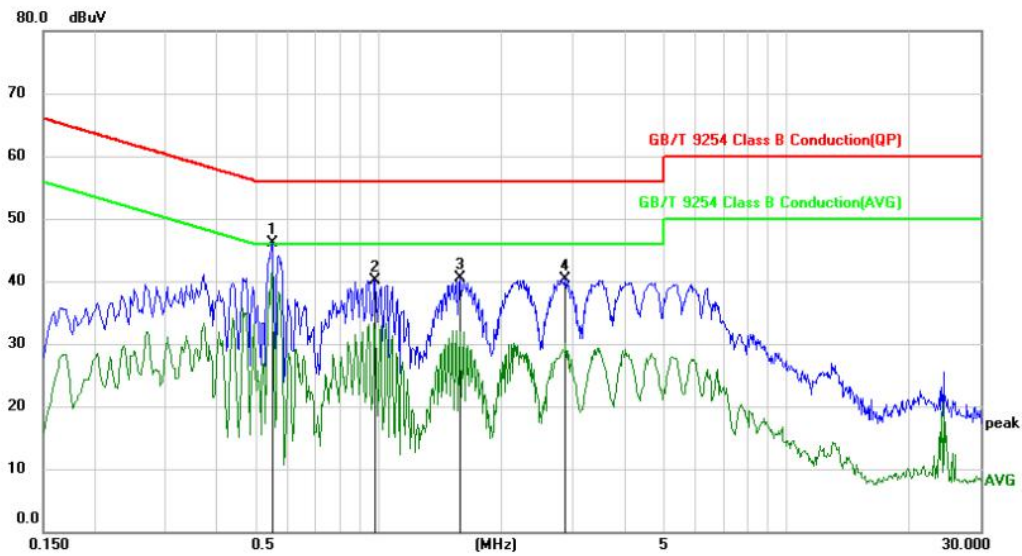




Test Result

Test items 1: Conducted Emission

Polarization: L



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.5490	36.12	9.94	46.06	56.00	-9.94	peak	
2		0.9810	30.27	9.93	40.20	56.00	-15.80	peak	
3		1.5840	30.65	9.89	40.54	56.00	-15.46	peak	
4		2.8710	30.44	9.94	40.38	56.00	-15.62	peak	

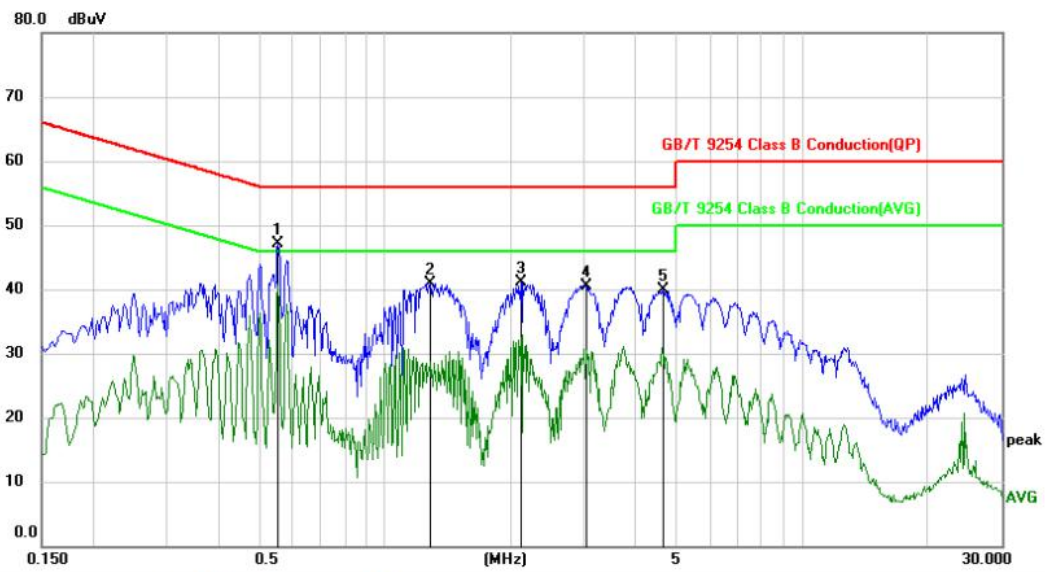




Test Result

Test items 1: Conducted Emission

Polarization: N



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1	*	0.5550	37.26	9.94	47.20	56.00	-8.80	peak	
2		1.2870	31.04	9.89	40.93	56.00	-15.07	peak	
3		2.1120	31.28	9.88	41.16	56.00	-14.84	peak	
4		3.0300	30.62	9.95	40.57	56.00	-15.43	peak	
5		4.6380	29.85	10.02	39.87	56.00	-16.13	peak	

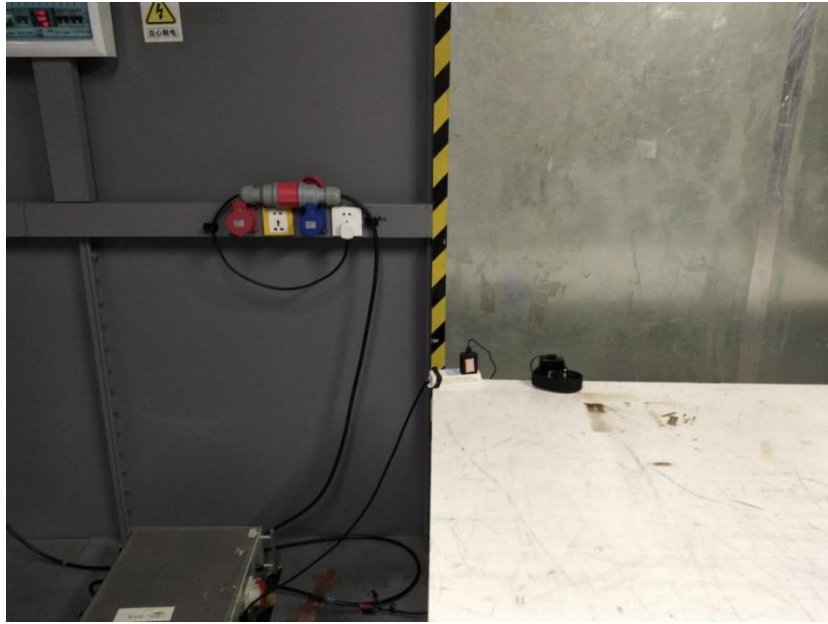




Test Result

Test items 1: Conducted Emission

Test photo :





Test Result

Test items 2: Radiated Emission (30MHz~1000MHz)

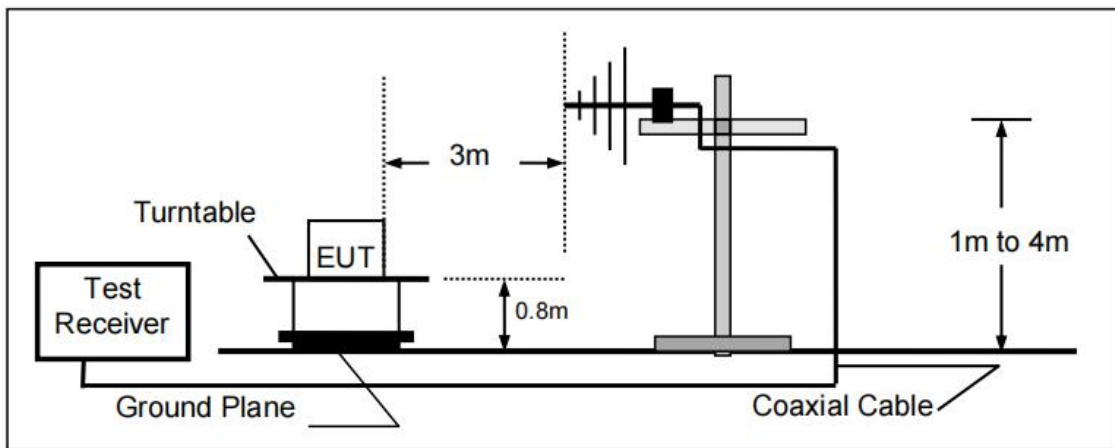
Environmental conditions:

Temperature: 15-35 °C, Humidity: 45-75 %RH.

Reference documents:

CISPR 22:2006 Information technology equipment-Radio disturbance characteristics-Limits and methods of measurement.

Test arrangement:



Sample state:

Sample is in good condition before test.

Test conditions:

The test sample is in normal state.

Frequency (30MHz ~ 1000MHz).

Test acceptance requirements:

Class B.

Test result:

Class B.

Test conclusion:

Pass.

Please refer to the below test data:

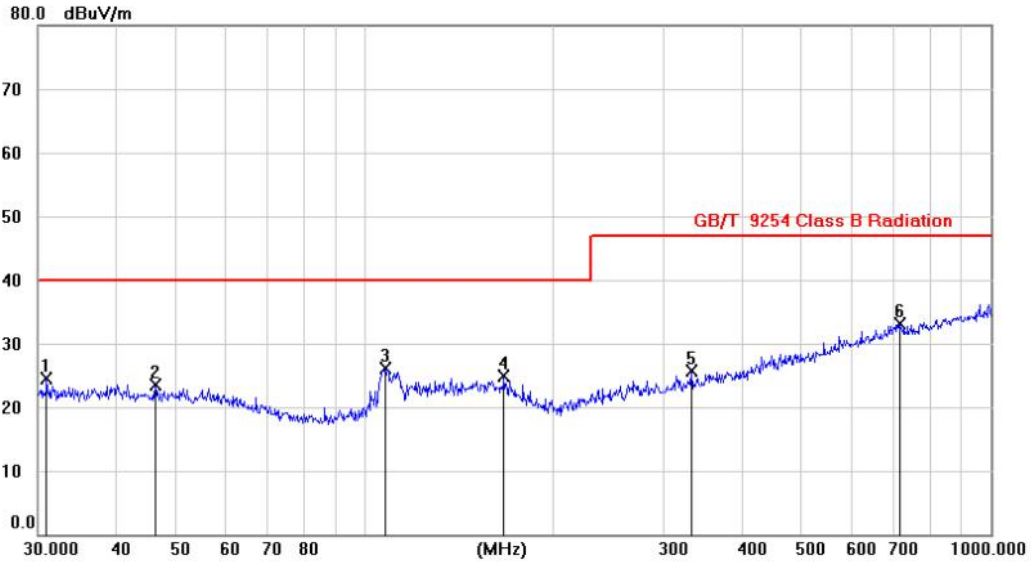




Test Result

Test items 2: Radiated Emission (30MHz~1000MHz)

Polarization: Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Antenna Height cm	Table Degree	Comment
1		30.9872	10.99	13.59	24.58	40.00	-15.42			peak
2		46.2104	9.36	14.10	23.46	40.00	-16.54			peak
3		108.2414	14.36	11.66	26.02	40.00	-13.98			peak
4		167.0414	10.62	14.36	24.98	40.00	-15.02			peak
5		332.5576	10.78	14.89	25.67	47.00	-21.33			peak
6	*	716.7658	11.12	21.97	33.09	47.00	-13.91			peak

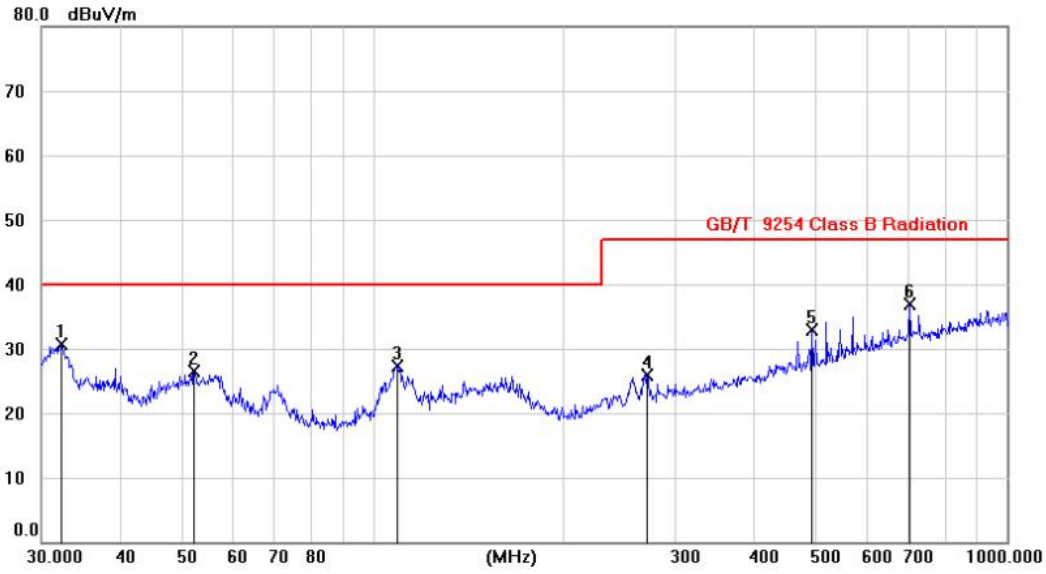




Test Result

Test items 2: Radiated Emission (30MHz~1000MHz)

Polarization: Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1	*	32.3794	17.06	13.62	30.68	40.00	-9.32			peak
2		52.3545	12.66	13.82	26.48	40.00	-13.52			peak
3		109.7062	15.42	11.80	27.22	40.00	-12.78			peak
4		271.0076	12.61	13.32	25.93	47.00	-21.07			peak
5		494.0251	14.76	18.13	32.89	47.00	-14.11			peak
6		702.0071	15.14	21.77	36.91	47.00	-10.09			peak

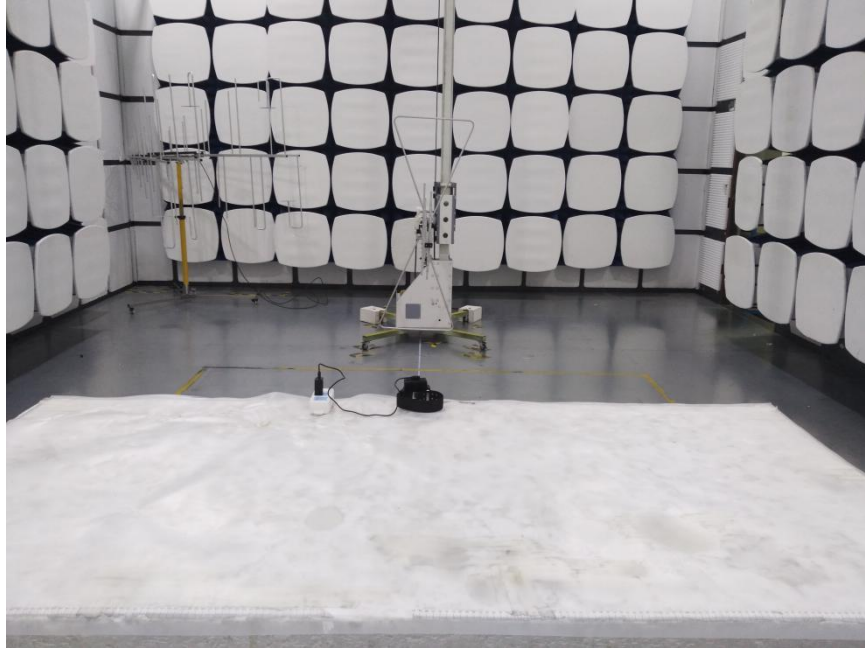




Test Result

Test items 2: Radiated Emission (30MHz~1000MHz)

Test photo :





Test Result

Test items 3: Radiated Emission (>1GHz)

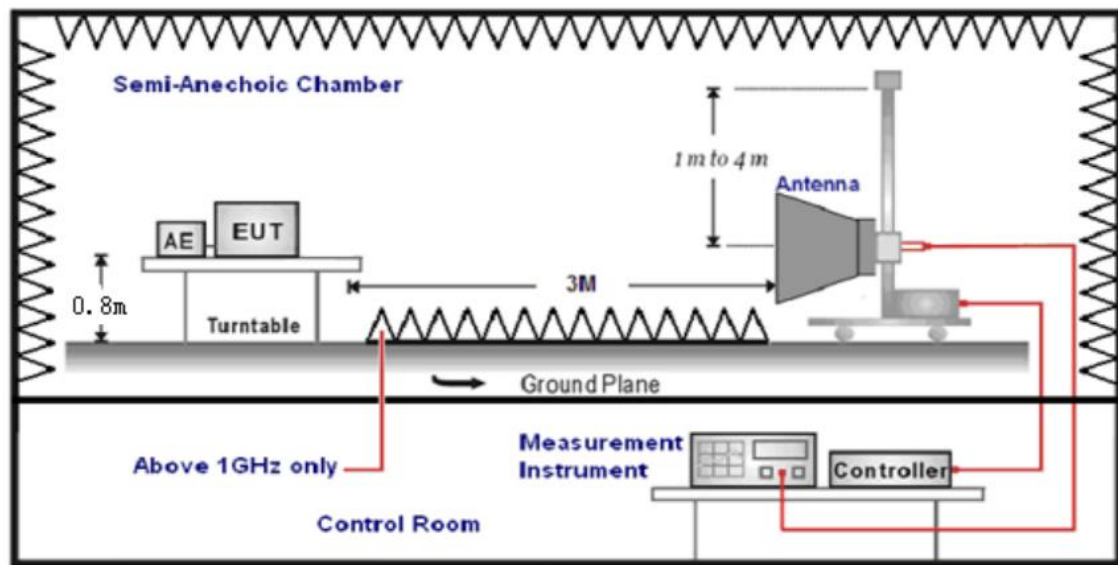
Environmental conditions:

Temperature: 15-35 °C, Humidity: 45-75 %RH.

Reference documents:

CISPR 22:2006 Information technology equipment-Radio disturbance characteristics-Limits and methods of measurement.

Test arrangement:



Sample state:

Sample is in good condition before test.

Test conditions:

The test sample is in normal state.
Frequency (1GHz ~ 6GHz).

Test acceptance requirements:

Class B.

Test result:

Class B.

Test conclusion:

Pass.

Please refer to the below test data:

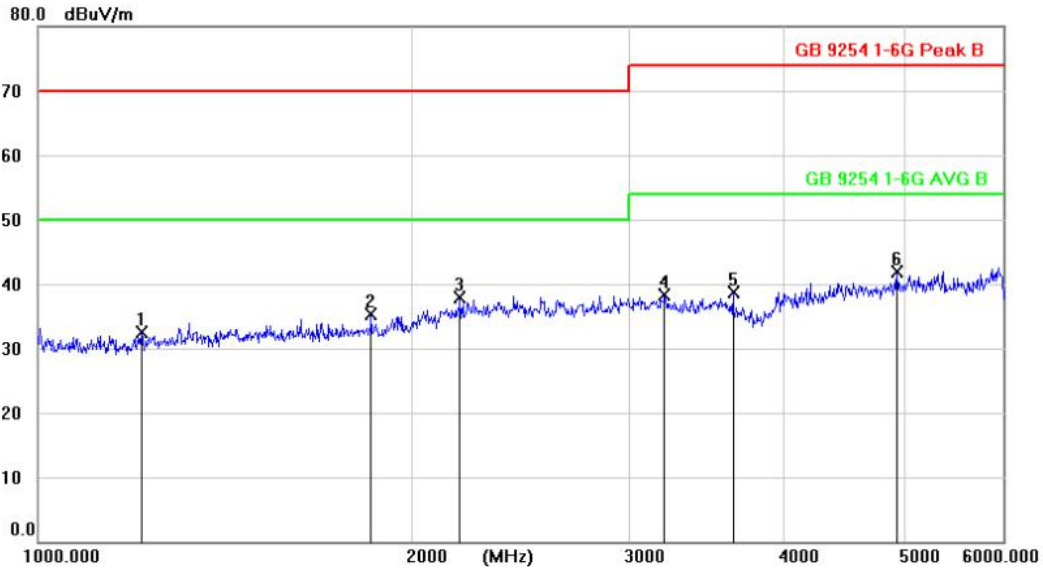




Test Result

Test items 3: Radiated Emission (>1GHz)

Polarization: Horizontal



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Antenna Height cm	Table Degree	Comment
1		1211.402	51.26	-18.83	32.43	70.00	-37.57	peak		
2		1855.505	51.29	-16.05	35.24	70.00	-34.76	peak		
3		2189.985	50.71	-12.88	37.83	70.00	-32.17	peak		
4		3199.044	48.37	-10.03	38.34	74.00	-35.66	peak		
5		3633.680	52.80	-14.17	38.63	74.00	-35.37	peak		
6	*	4933.455	52.85	-11.01	41.84	74.00	-32.16	peak		

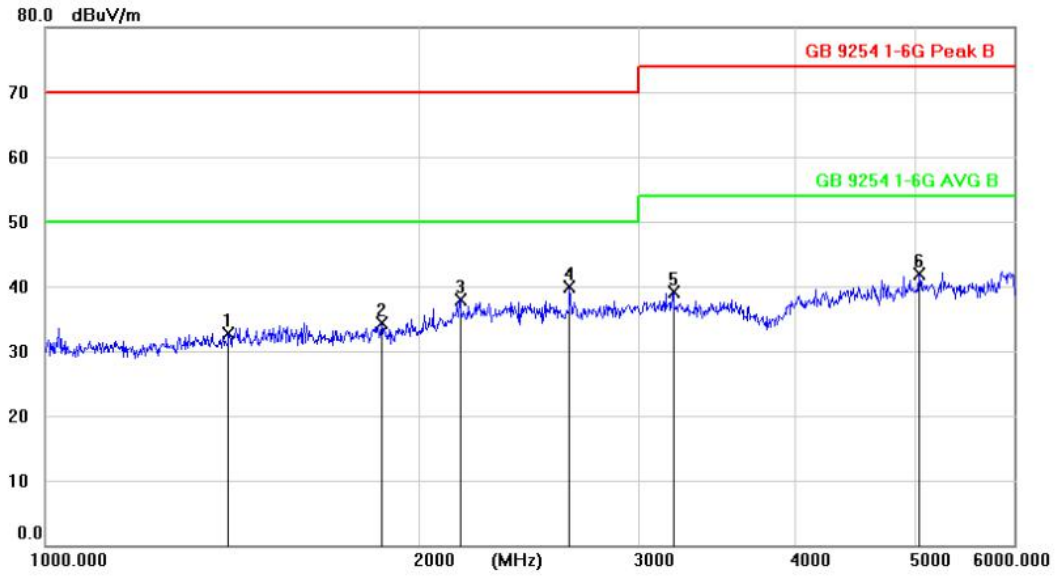




Test Result

Test items 3: Radiated Emission (>1GHz)

Polarization: Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		1403.209	50.27	-17.47	32.80	70.00	-37.20			peak
2		1864.503	50.38	-16.01	34.37	70.00	-35.63			peak
3		2153.409	51.09	-13.21	37.88	70.00	-32.12			peak
4	*	2638.887	51.84	-11.86	39.98	70.00	-30.02			peak
5		3198.279	49.18	-10.04	39.14	74.00	-34.86			peak
6		5040.077	52.75	-10.91	41.84	74.00	-32.16			peak

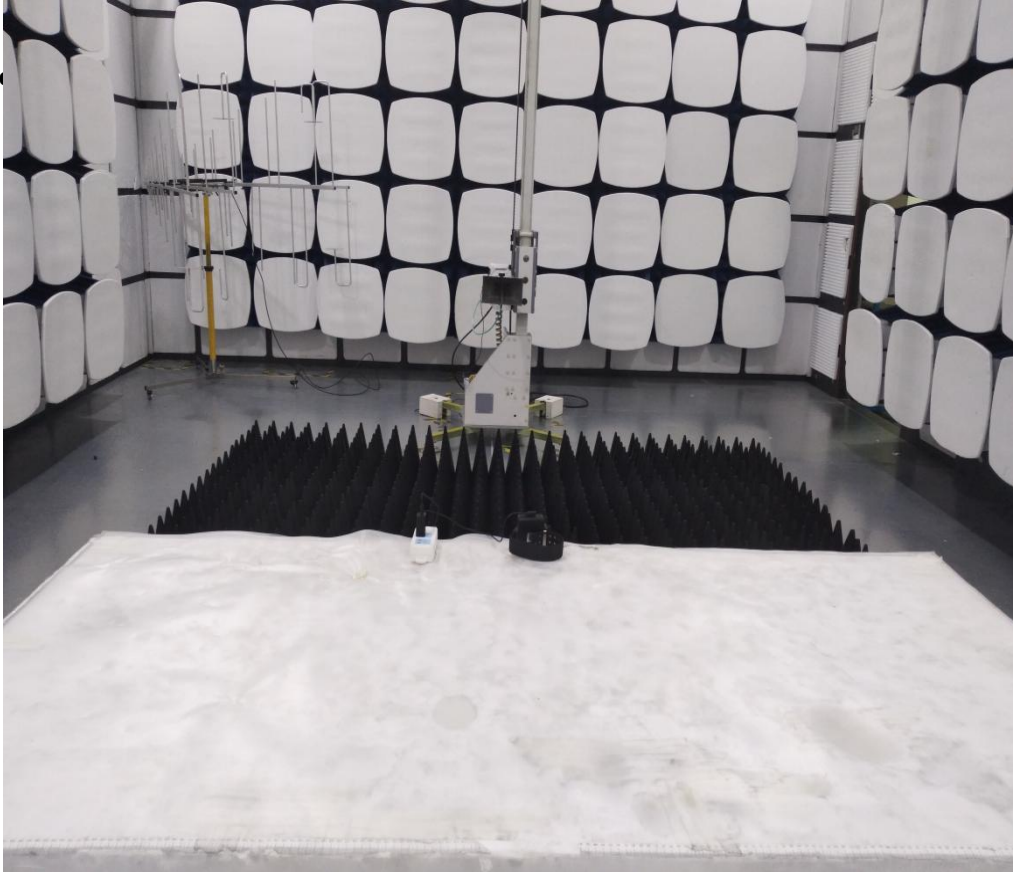




Test Result

Test items 3: Radiated Emission (>1GHz)

Test photo





Test Result

Test items 4: RF- Common Mode

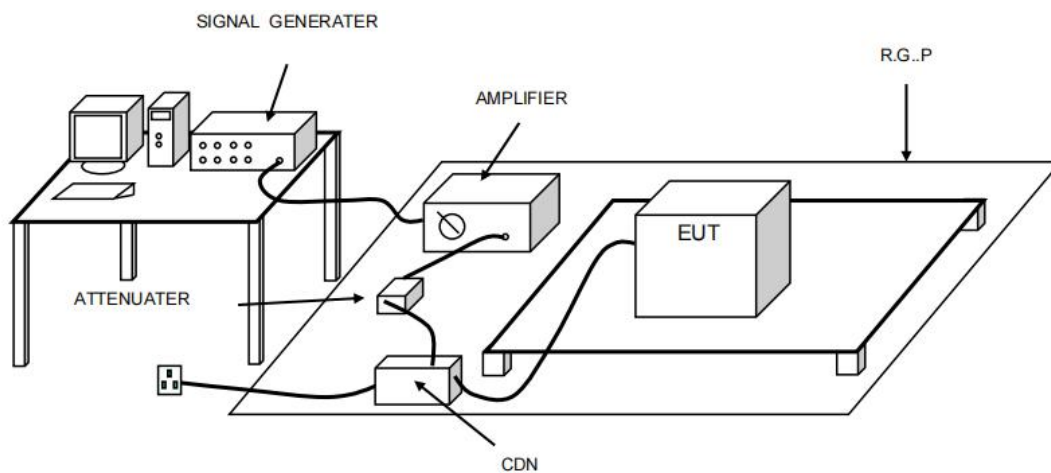
Environmental conditions:

Temperature: 15-35 °C, Humidity: 45-75 %RH.

Reference documents:

IEC61000-4-6:2006 Electromagnetic compatibility(EMC)-Part 4-6:Testing and measurement techniques-Immunity to conducted disturbances,induced by radio-frequency fields.

Test arrangement:



Test conditions:

The test sample is in normal state.

Frequency: (150kHz ~ 80MHz).

3Vrms on power port (80%, 1kHz Amplitude Modulation).

General performance criteria:

Performance criteria A for immunity tests with phenomena of a continuous nature;

Performance criteria B for immunity tests with phenomena of a transient nature;

Performance criteria C for immunity tests with power interruptions exceeding a certain time.

Test acceptance requirements:

Criteria A.

Test result:

Criteria A.

Test conclusion:

Pass.

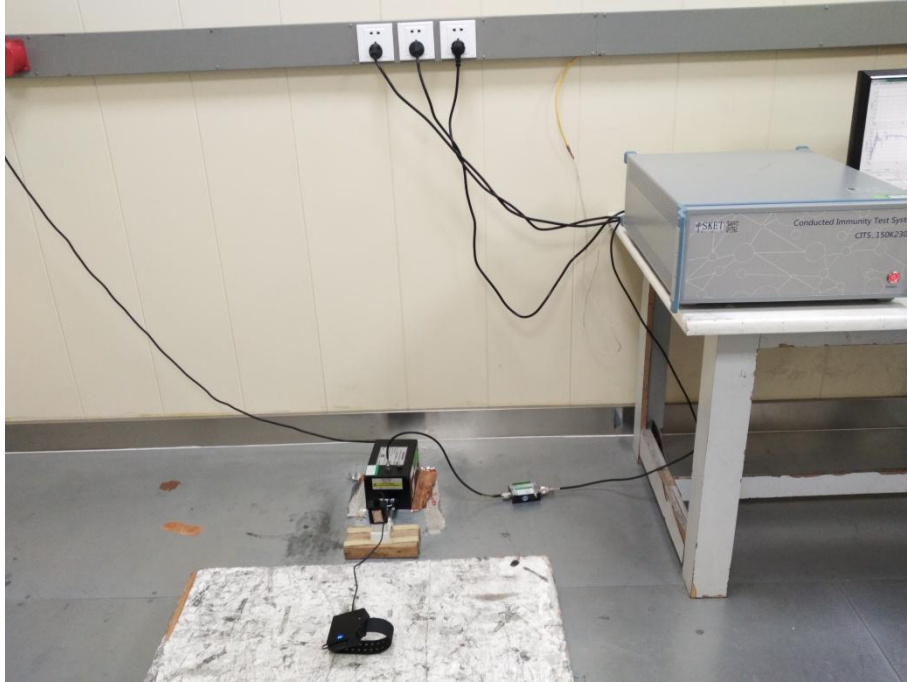




Test Result

Test items 4: RF- Common Mode

Test photo :





Test Result

Test items 5: RF Electromagnetic Field

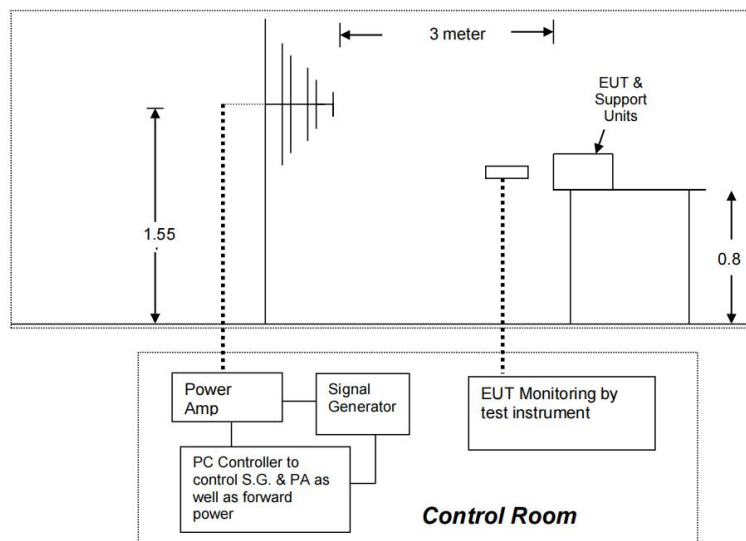
Environmental conditions:

Temperature: 15-35 °C, Humidity: 45-75 %RH.

Reference documents:

IEC61000-4-3:2002 Electromagnetic compatibility(EMC)-Part 4-3:Testing and measurement techniques-Radiated,radio-frequency,electromagnetic field immunity test.

Test arrangement:



Test conditions:

- 80M~800MHz,3V/m ;
- 800M~960MHz,10V/m ;
- 960M~1400MHz,3V/m ;
- 1400M~2500MHz,10V/m ;
- 2500M~2700MHz,3V/m.

General performance criteria:

- Performance criteria A for immunity tests with phenomena of a continuous nature;
- Performance criteria B for immunity tests with phenomena of a transient nature;
- Performance criteria C for immunity tests with power interruptions exceeding a certain time.

Test acceptance requirements:

Criteria A.

Test result:

Criteria A.

Test conclusion:

Pass.

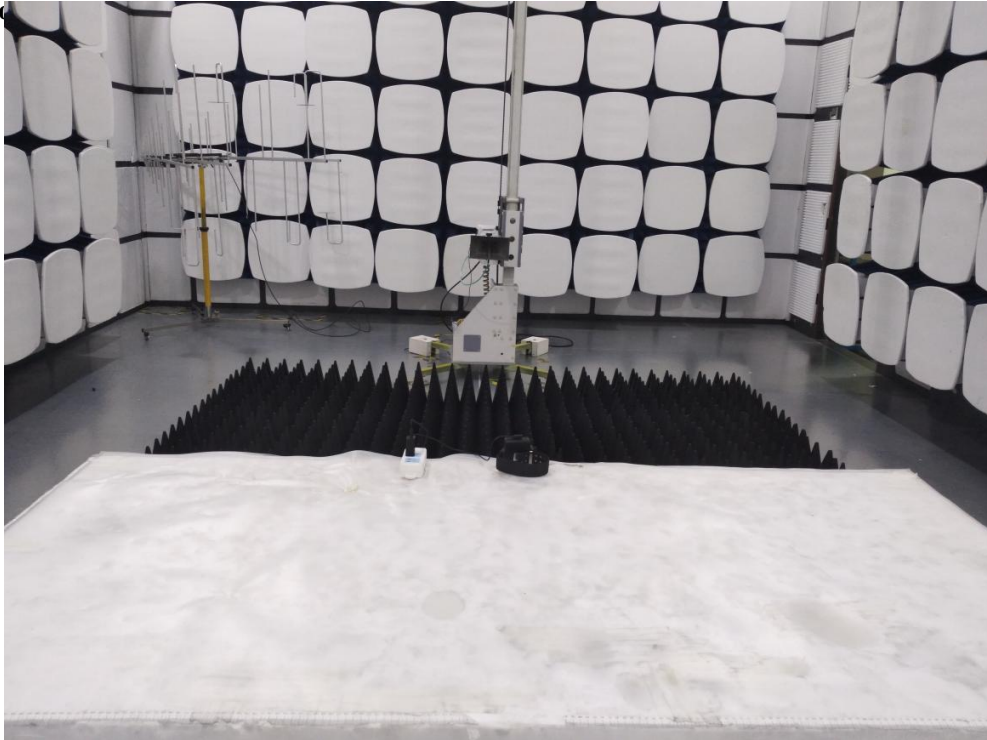




Test Result

Test items 5: RF Electromagnetic Field

Test photo





Test Result

Test items 6: Electrostatic Discharge

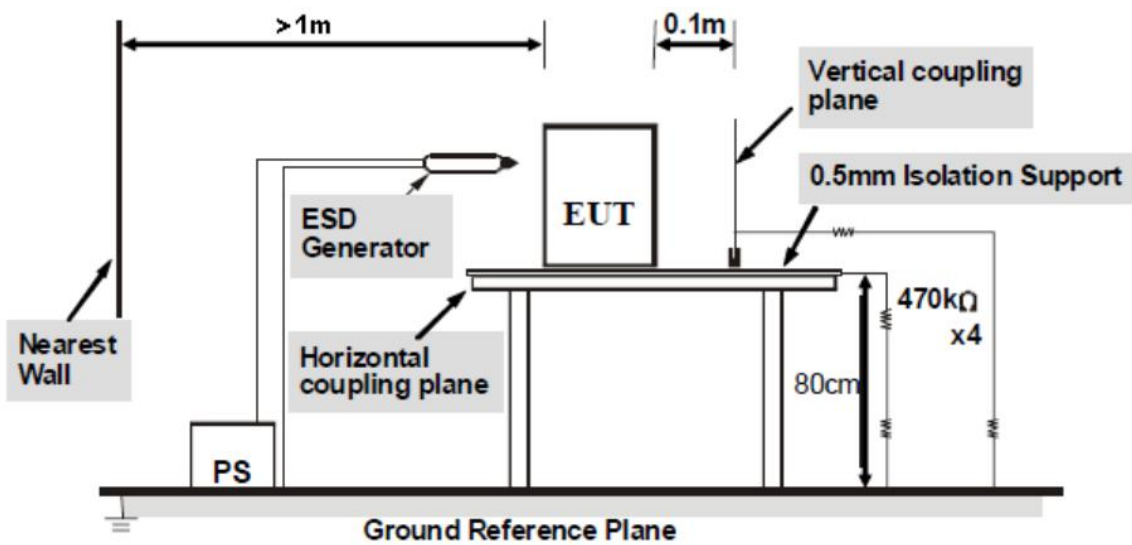
Environmental conditions:

Temperature: 15-35 °C, Humidity: 45-75 %RH.

Reference documents:

IEC61000-4-2:2001 Testing and measurement techniques-Electrostatic discharge immunity test.

Test arrangement:



Test conditions:

Contact discharge: ±2kV、±4kV;

Air discharge: ±2kV、±4kV、±8kV.

General performance criteria:

Performance criteria A for immunity tests with phenomena of a continuous nature;

Performance criteria B for immunity tests with phenomena of a transient nature;

Performance criteria C for immunity tests with power interruptions exceeding a certain time.

Test acceptance requirements:

Criteria B.

Test result:

Criteria B.

Test conclusion:

Pass.





Test Result

Test items 6: Electrostatic Discharge

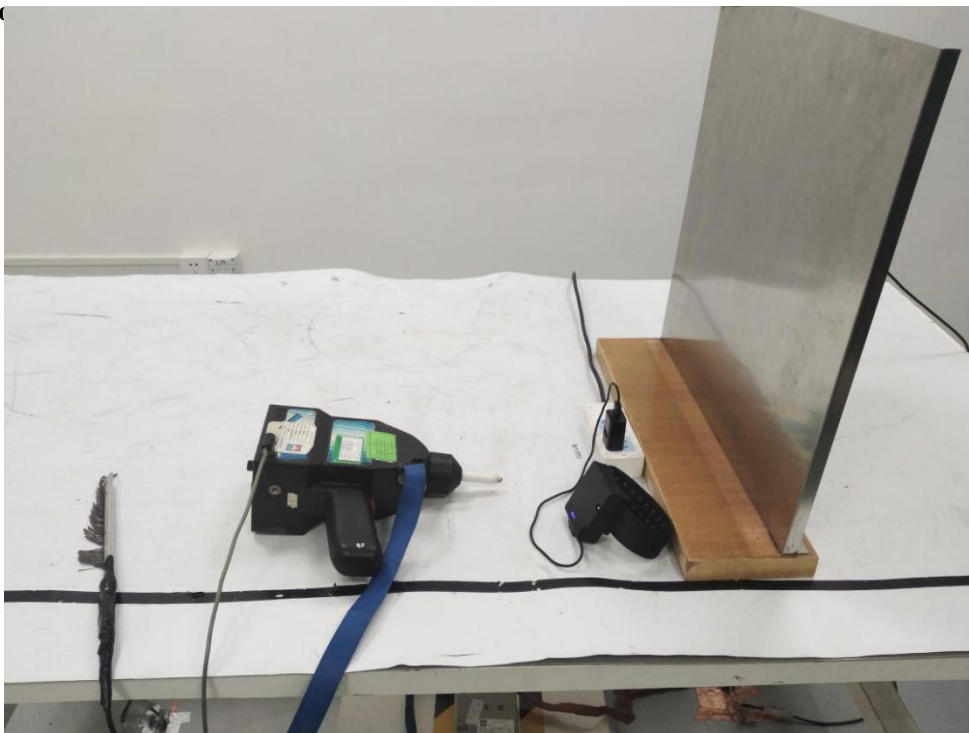
Contact Discharge:

The ESD generator is held perpendicular to the surface to which the discharge is applied and the tip of the discharge electrode touch the surface of EUT. Then turn the discharge switch. The generator is then re-triggered for a new single discharge and repeated at least 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Air Discharge:

Air discharge is used where contact discharge can't be applied. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated at least 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

Test photo





Test Result

Test items 7: Surges

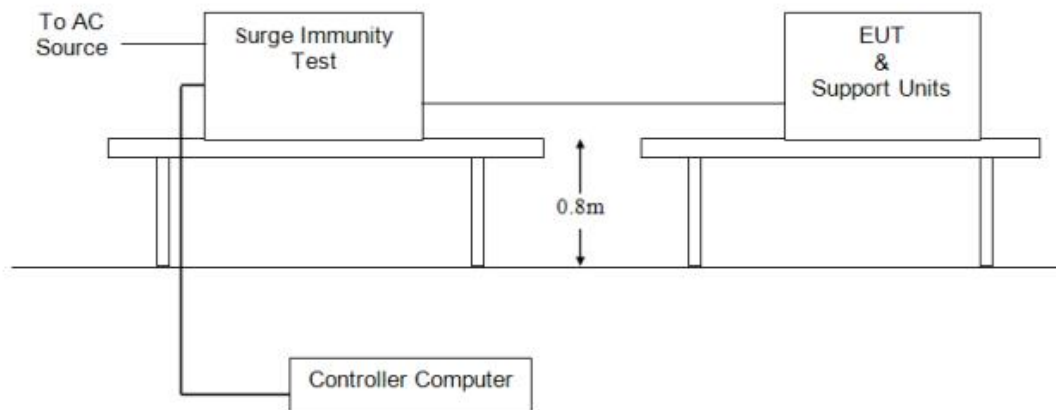
Environmental conditions:

Temperature: 15-35 °C, Humidity: 45-75 %RH.

Reference documents:

IEC61000-4-5:2005 Testing and measurement techniques-surge immunity test.

Test arrangement:



Test conditions:

1kV Line to Line: Differential mode
(Voltage Waveform: 1.2/50 us; Current Waveform: 8/20 us)

General performance criteria:

Performance criteria A for immunity tests with phenomena of a continuous nature;
Performance criteria B for immunity tests with phenomena of a transient nature;
Performance criteria C for immunity tests with power interruptions exceeding a certain time.

Test acceptance requirements:

Criteria B.

Test result:

Criteria A.

Test conclusion:

Pass.





Test Result

Test items 7: Surges

Test photo:





Test Result

Test items 8: Fast Transients Common Mode

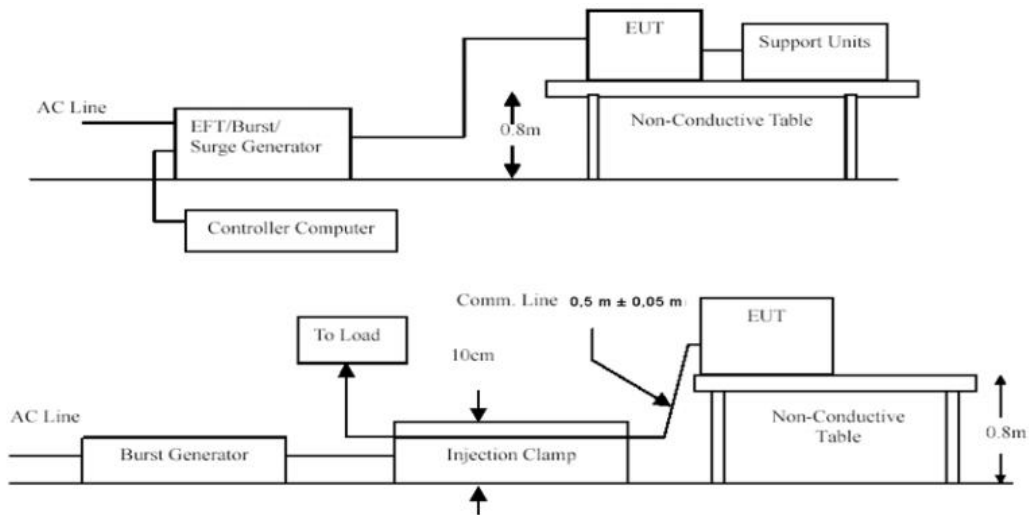
Environmental conditions:

Temperature: 15-35 °C, Humidity: 45-75 %RH.

Reference documents:

IEC61000-4-4:2004 Electromagnetic compatibility(EMC)-Part 4-4:Testing and measurement techniques-electrical fast transient/burst immunity test.

Test arrangement:



Test conditions:

Lead under Test	Level (\pm kV)	Coupling Direct/Clamp
L	\pm 1	Direct
N	\pm 1	Direct
L-N	\pm 1	Direct

General performance criteria:

- Performance criteria A for immunity tests with phenomena of a continuous nature;
- Performance criteria B for immunity tests with phenomena of a transient nature;
- Performance criteria C for immunity tests with power interruptions exceeding a certain time.

Test acceptance requirements:

Criteria B.

Test result:

Criteria A.

Test conclusion:

Pass.





Test Result

Test items 8: Fast Transients Common Mode

Test photo :





Test Result

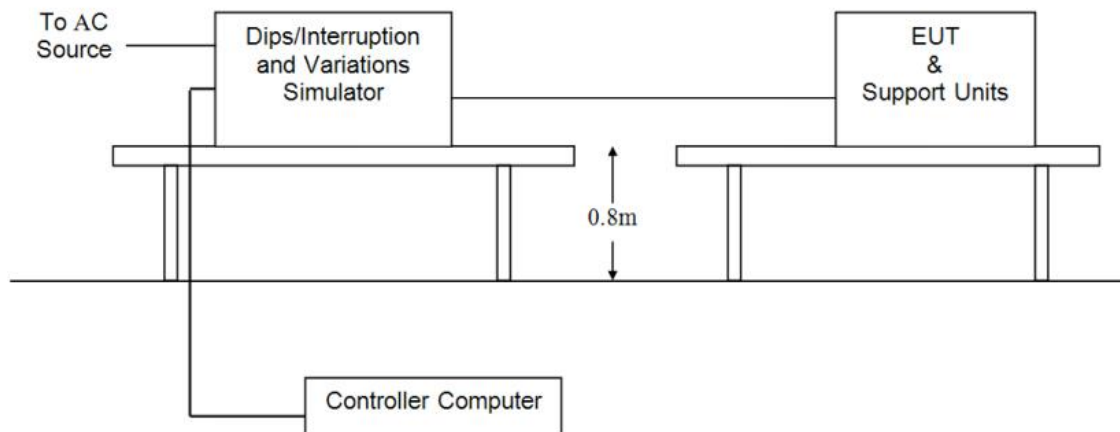
Test items 9: Voltage Dips and Interruptions

Environmental conditions:

Temperature: 15-35 °C, Humidity: 45-75 %RH.

Reference documents:

IEC61000-4-11:1999 Electromagnetic compatibility(EMC)-Part 4-11:Testing and measurement techniques-Voltage dips,short interruptions and voltage variations immunity tests.

Test arrangement:**Test conditions:**

70% of VT(Supply Voltage) for 10ms;
40% of VT(Supply Voltage) for 100ms;
10% of VT(Supply Voltage) for 500ms.

General performance criteria:

Performance criteria A for immunity tests with phenomena of a continuous nature;
Performance criteria B for immunity tests with phenomena of a transient nature;
Performance criteria C for immunity tests with power interruptions exceeding a certain time.

Test acceptance requirements:

Criteria B.

Test result:

Criteria A.

Test conclusion:

Pass.





Test Result

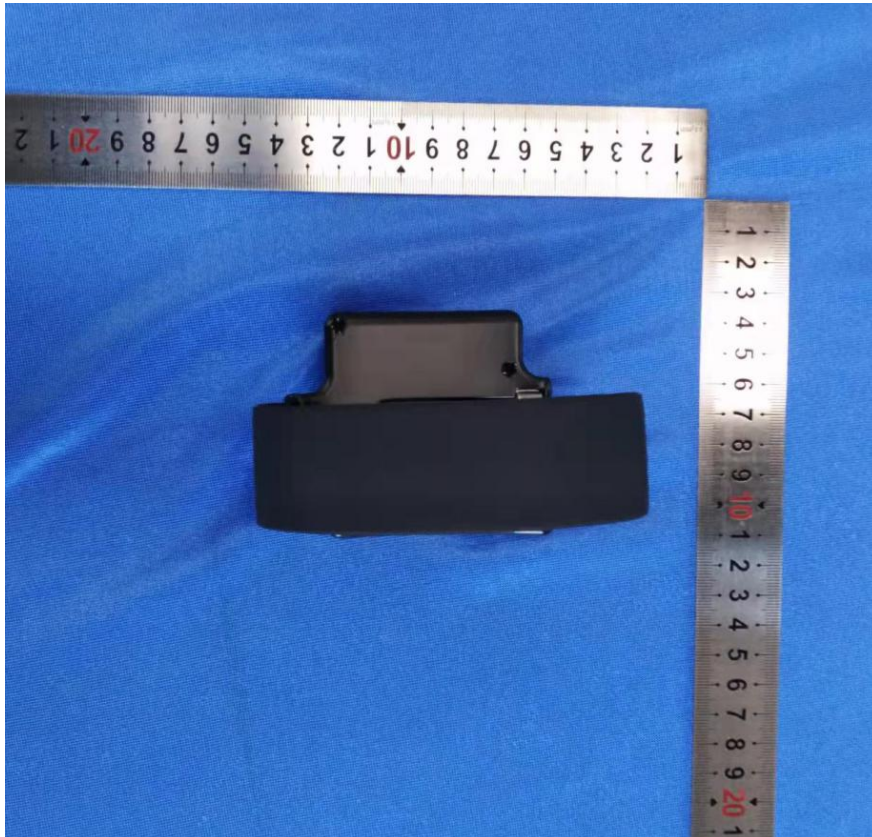
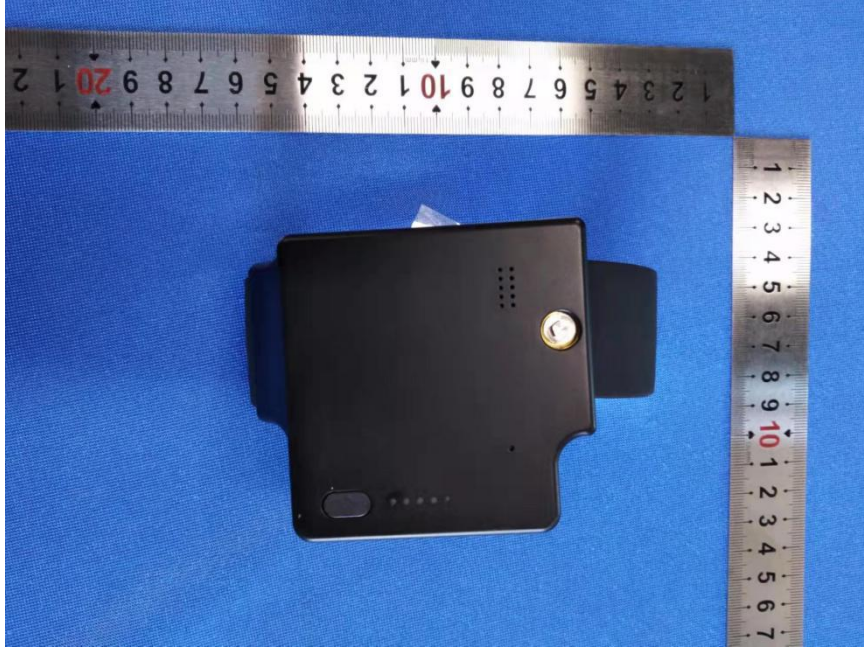
Test items 9: Voltage Dips and Interruptions

Test photo

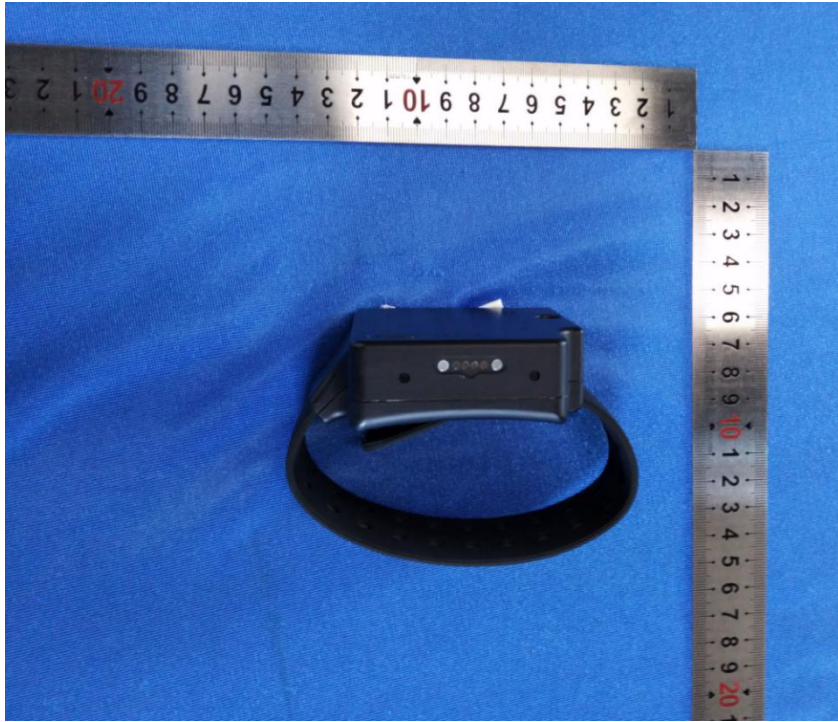




Sample photo



Sample photo





List of Measurement Equipments Used

No.	Description	Model No.	Serial No.	Cal. Due to
1	EMI Test Receiver	ESCI	Aa-EE048	2022.08.21
2	Artificial Mains	ENV216	Aa-EE049	2022.08.21
3	Pulse Limiter	ENY41	Aa-EE051	2022.08.21
4	Broadband antenna	VULB 9168	Aa-EE052	2022.08.21
5	Multifunctional compact immunity test system	CCS 600	Aa-EE057	2022.08.21
6	Surge Generator	SG-5006G	Aa-EE013	2022.08.21
7	Surge CDN	VDG-1105G	Aa-EE010	2022.08.21
8	ESD Tester	PESD 1610	Aa-EE009	2022.08.21
9	Conducted Immunity test System	CITS-150K230M	Aa-EE086	2022.08.21
10	Vector Signal Generator	E4438C	Aa-EE046	2022.08.21
11	Compling Decoupling Network	SEPN3832T	Aa-EE058	2022.08.21

Notes: The above instrument is within the metering test cycle.

*******END OF REPORT*******





STATEMENT

1. **The test report is invalid without stamp of laboratory.**
2. **The test report is invalid without signature of person(s) testing and authorizing.**
3. **The test report is invalid if erased and corrected.**
4. **Test results of the report is valid to the test samples for sampling by client.**
5. **The test report shall not be reproduced except in full, without written approval of the laboratory.**
6. **If there is any objection to report, the client should inform issuing laboratory within 15 days from the date of receiving test report.**



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