Test Report

According to

MIL-STD-461E
(CE102; RE102; RS103)

Product： Rugged Fanless computer

Trade Name： N/A

Model Number： SR-800

Prepared for

7Starlake Co., Ltd.

2F., No. 190, Sec. 2, Zhongxing Rd., Xindian Dist.,
New Taipei City 23146, Taiwan (R.O.C.)

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Issued by

Interocean EMC Technology Corp.
Interocean EMC Technology Tin-Fu Laboratory
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TEL.: +886 2 2600 6861
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Remark:

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The test result in this report is only subjected to the test sample.

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Statement of Compliance

Applicant： **7Starlake Co., Ltd.**
2F., No. 190, Sec. 2, Zhongxing Rd., Xindian Dist., New Taipei City 23146, Taiwan (R.O.C.)

Manufacturer： **7Starlake Co., Ltd.**
2F., No. 190, Sec. 2, Zhongxing Rd., Xindian Dist., New Taipei City 23146, Taiwan (R.O.C.)

Product： Rugged Fanless computer

Model No.： SR-800

Additional Description：
1.) The test model is "**SR-800**" and included in this report.
2.) SR-800-XXXX(X= 0~9 , A~Z, a~z, - or blank)
the differences for all models included in this report are for different markets.
3.) For more detail specification about EUT, please refer to the user's manual.

Tested Power Voltage： DC 28 V

Date of Test： Sep. 18 ~ 24, 2020

Revision of Report: Rev. 01

Measurement Procedures and Standards Used：

☒ Test result is compliance with MIL-STD-461E (CE102; RE102; RS103)

Applicable Standards			
Standard	**Special**	**Location of Test**	**Test Result**
MIL-STD-461E (CE102)	Frequency Range: 10 kHz - 30 MHz	IETC LAB	PASS
MIL-STD-461E (RE102)	Frequency Range: 30 MHz - 5 GHz	IETC LAB	PASS
MIL-STD-461E (RS103)	Frequency Range: 80 MHz – 3 GHz	IETC LAB	PASS

The measurement results in this test report were performed at Interocean EMC Technology Corp. the responsibility of measurement result is only subjected to the tested sample. This report shows the EUT is technically compliance with the above official standards. This report shall not be partial reproduced without written approval by Interocean EMC Technology Corporation. Judgment of conformity is based on test result, regardless of measurement uncertainty.

Report Issued: 2020/10/07

Project Engineer: Harvey Tsai (Harvey Tasi) Approved: Vin Chou (Vin Chou)

Test Facility

Site Description : ☒Chamber 3 & 6

Name of Firm : Interocean EMC Technology Corp.

Company web : http://www.ietc.com.tw

Location : No. 5-2, Lin 1, Tin-Fu, Lin-Kou Dist., New Taipei City, Taiwan 244, R.O.C.

Site Filing :

- Federal Communication Commissions – USA
  Designation No.: TW1020 (Test Firm Registration #: 651092)
  Designation No.: TW1113 (Test Firm Registration #: 959554)
- Innovation, Science and Economic Development Canada (ISED)
  CAB identifier: TW1113 (Ref. No 14962756)
- Voluntary Control Council for Interference by Information Technology Equipment (VCCI) – Japan
  Member No.: 1349
  Registration No. (Conducted Room): C-11094
  Registration No. (Conducted Room): T-11562
  Registration No. (OATS 1): R-11040
  Registration No. (Chamber 3): G-20080

Site Accreditation :

- Bureau of Standards and Metrology and Inspection (BSMI) – Taiwan, R.O.C.
  Accreditation No.:
  SL2-IN-E-0026 for CNS 13438 / CISPR 22
  SL2-R1-E-0026 for CNS 13439 / CISPR 13
  SL2-R2-E-0026 for CNS 13439 / CISPR 13
  SL2-L1-E-0026 for CNS 14115 / CISPR 15
- Taiwan Accreditation Foundation (TAF)
  Accreditation No.: 1113
- American Association for Laboratory Accreditation (A2LA)
  Certificate Number: 4891.01
- Vehicle Safety Certification Center (VSCC)
  Approval No.: TW16-11

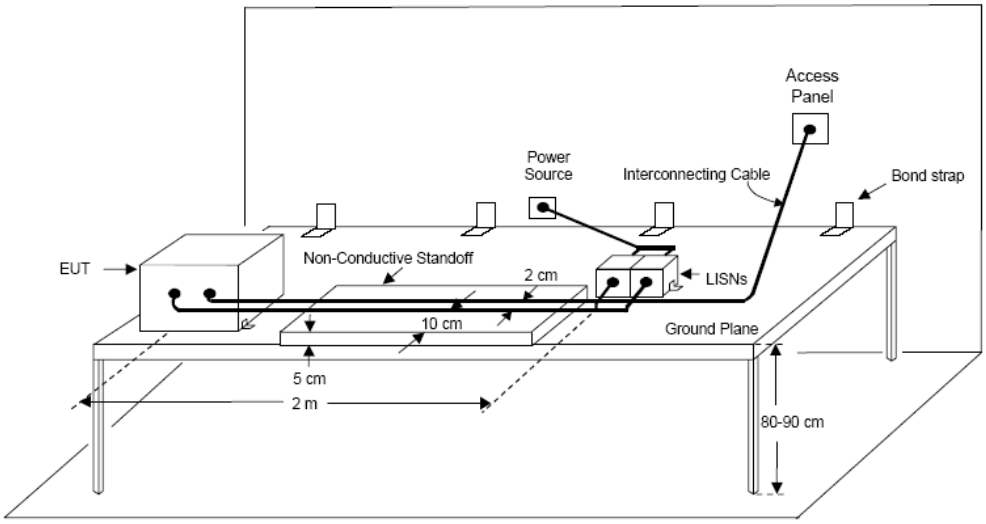
1 Conducted emissions, power leads Test (CE102)

1.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
EMI Test Receiver	Rohde & Schwarz	ESR7	101422	2020/12/08
DC LISN	Schwarzbeck	NNBL 8226-HV	05037	2020/12/05
DC LISN	Schwarzbeck	NNBL 8226-HV	05039	2020/12/05
RF Cable	EMCI	EMC104	CBL63	2021/03/09
RF Cable	EMCI	EMC104	CBL64	2021/03/09

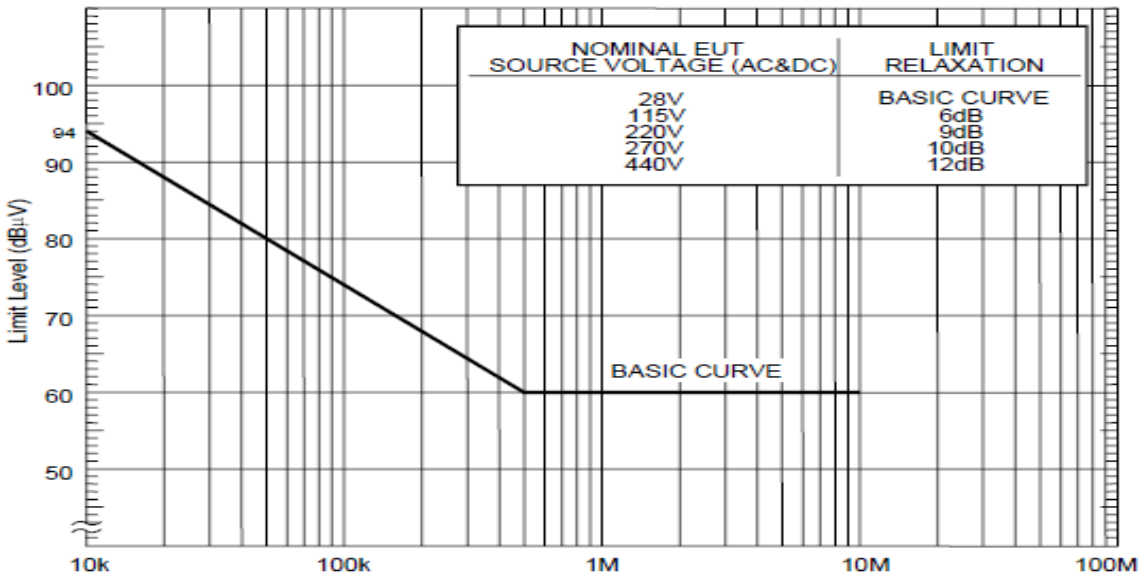
Note: The above equipments are within the valid calibration period.

1.2 Block Diagram of Test Configuration



1.3 Test Limit

This Limit level is according to **MIL-STD-461E** sub clause 5.5.2 **CE102 limit figure CE102-1**.



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1.4 Configuration of Measurement

1.4.1 Calibration. Perform the measurement system check using the measurement system check setup of MIL-STD-461E Figure CE102-2.

(a) Turn on the measurement equipment and allow a sufficient time for stabilization.

(b) Apply a signal level that is at least 6 dB below the limit at 10 kHz, 100 kHz, 2 MHz and 10 MHz to the power output terminal of the LISN. At 10 kHz and 100 kHz, use an oscilloscope to calibrate the signal level and verify that it is sinusoidal. At 2 MHz and 10 MHz, use a calibrated output level directly from a 50Ω signal generator.

(c) Scan the measurement receiver for each frequency in the same manner as a normal data scan. Verify that the measurement receiver indicates a level within ±3 dB of the injected level. Correction factors shall be applied for the 20 dB attenuator and the voltage drop due to the LISN 0.25 μF coupling capacitor.

(d) If readings are obtained which deviate by more than ±3 dB, locate the source of the error and correct the deficiency prior to proceeding with the testing.

(e) Repeat MIL-STD-461E sub clause 5.5.3.4a(2) through MIL-STD-461E sub clause 5.5.3.4a(4) for each LISN.

1.4.2 EUT testing. Perform emission data scans using the measurement setup of **MIL-STD-461E Figure CE102-3**.

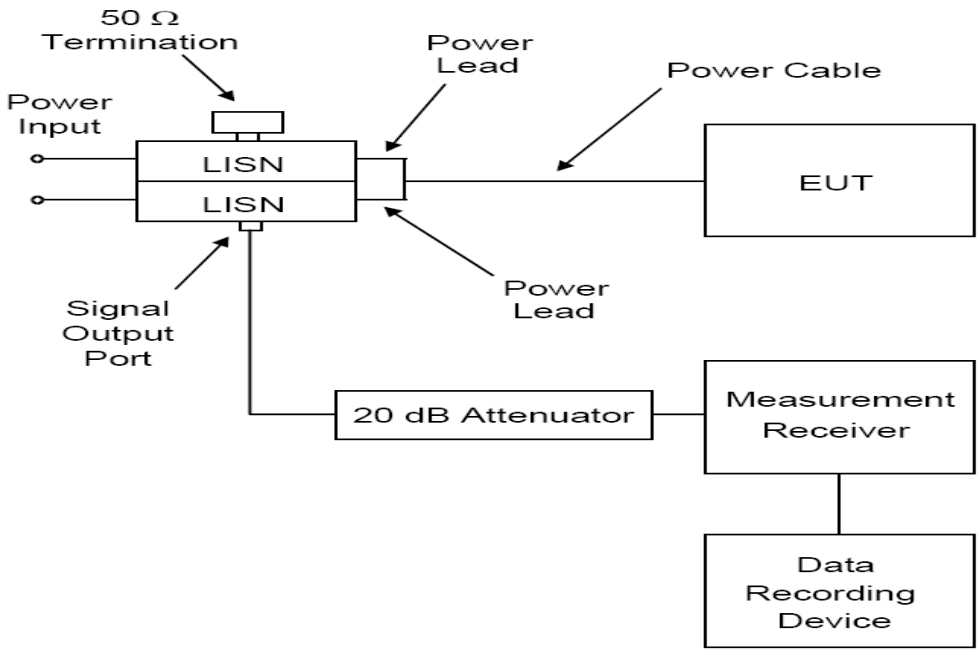
(a) Turn on the EUT and allow a sufficient time for stabilization.

(b) Select an appropriate lead for testing.

(c) Scan the measurement receiver over the applicable frequency range, using the bandwidths and minimum measurement times in the MIL-STD-461E Table II.

(d) Repeat MIL-STD-461E sub clause 5.5.3.4b(2) and MIL-STD-461E sub clause 5.5.3.4b(3) for each power lead.

FIGURE CE102-3. Measurement setup.



1.5 System Calibration Check

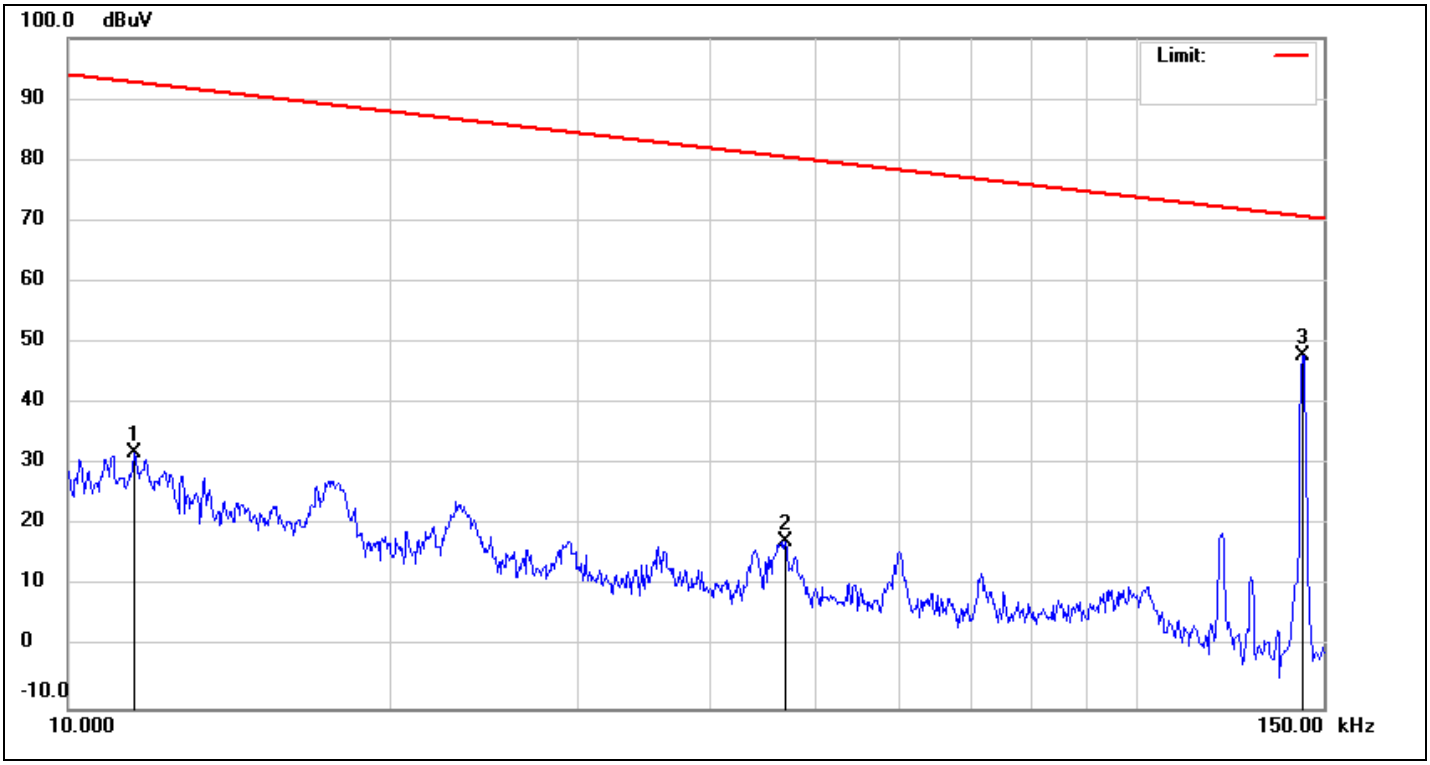
Based on MIL-STD-461E sub clause 5.5.3.4 system calibration requirement to verify the calibration level within ±3 dB at 10 kHz, 100 kHz, 2 MHz and 10 MHz.

1.6 Test Result

The final test data is shown as following pages.

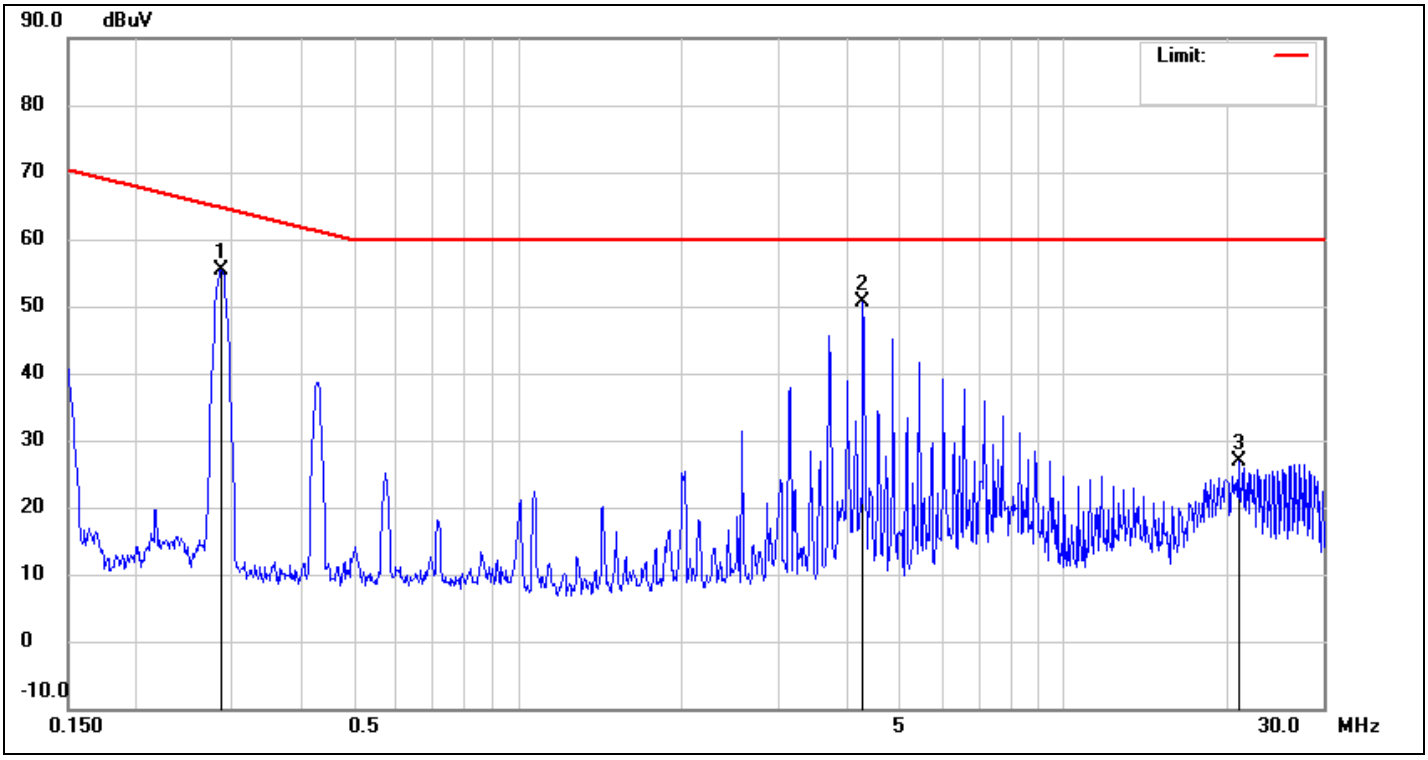
Test Mode: SR-800 (L)

Job No.:	**20A090101V**	**Polarization:**	**L1**
Standard:	**MIL-STD-461E (1999)_CE102_28V_0.01~30M**	**Power Source:**	**DC 28V**
Test item:	**Conduction Test**	**Date:**	**2020 / 9 / 18**
Temp.(℃)/Hum.(%):	**22.5 (℃) / 50 %**	**Time:**	**PM 04:39:07**
Company:	**7Starlake Co., Ltd.**	**Engineer Signature:**	**Harvey Tsai**
Product:	**Rugged Fanless computer**	**Distance:**	**None**
Model:	**SR-800**	**RBW: 1kHz**	**VBW: 1kHz**
Description:			



No.	Frequency (KHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	11.5430	26.64	5.20	31.84	92.75	-60.91	peak	P	
2	46.9410	16.83	0.53	17.36	80.56	-63.20	peak	P	
3	143.2510	47.79	0.13	47.92	70.86	-22.94	peak	P	

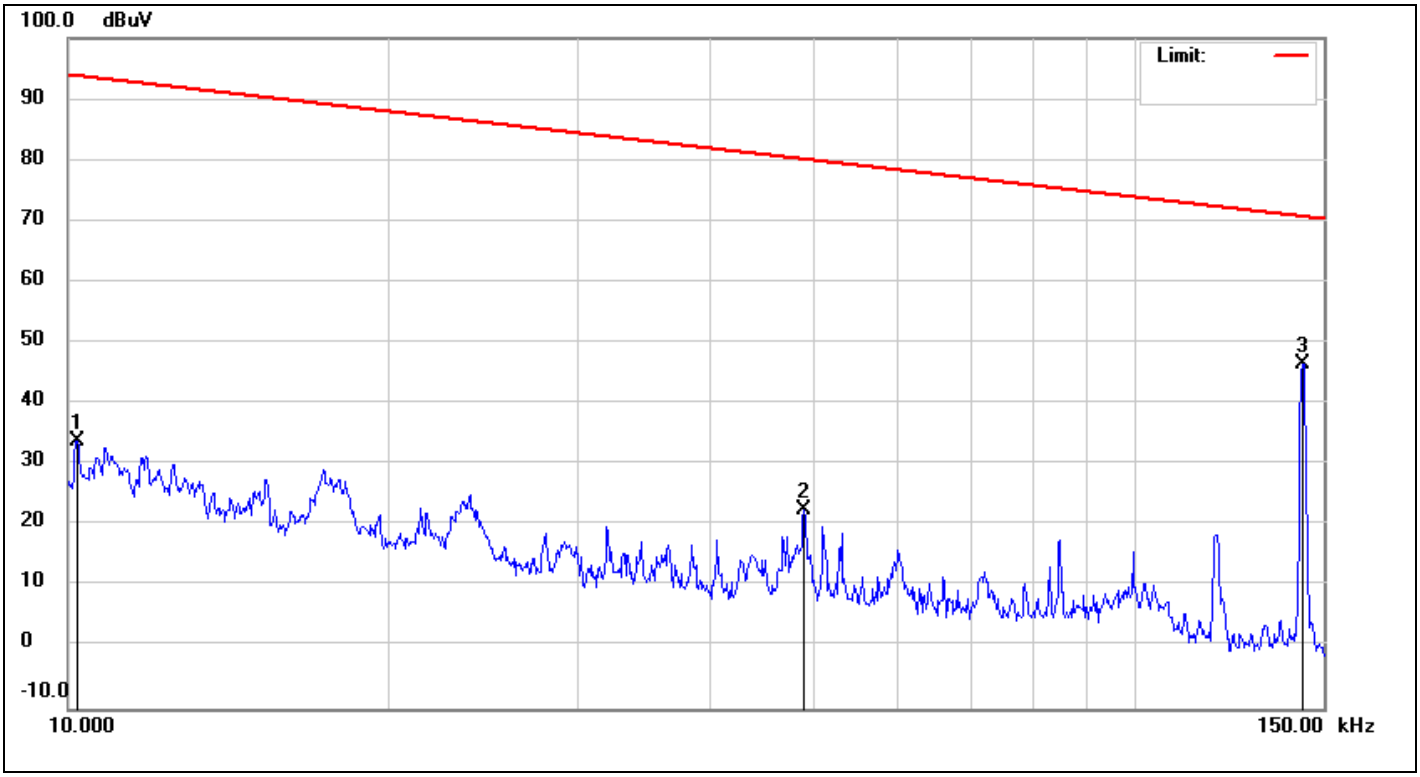
Job No.:	**20A090101V**	**Polarization:**	**L1**
Standard:	**MIL-STD-461E (1999)_CE102_28V_0.01~30M**	**Power Source:**	**DC 28V**
Test item:	**Conduction Test**	**Date:**	**2020 / 9 / 18**
Temp.(℃)/Hum.(%):	**22.5 (℃) / 50 %**	**Time:**	**PM 04:41:47**
Company:	**7Starlake Co., Ltd.**	**Engineer Signature:**	**Harvey Tsai**
Product:	**Rugged Fanless computer**	**Distance:**	**None**
Model:	**SR-800**	**RBW: 10kHz**	**VBW: 10kHz**
Description:			



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2863	55.38	0.10	55.48	64.84	-9.36	peak	P	
2	4.2918	50.47	0.16	50.63	60.00	-9.37	peak	P	
3	20.9243	26.25	0.57	26.82	60.00	-33.18	peak	P	

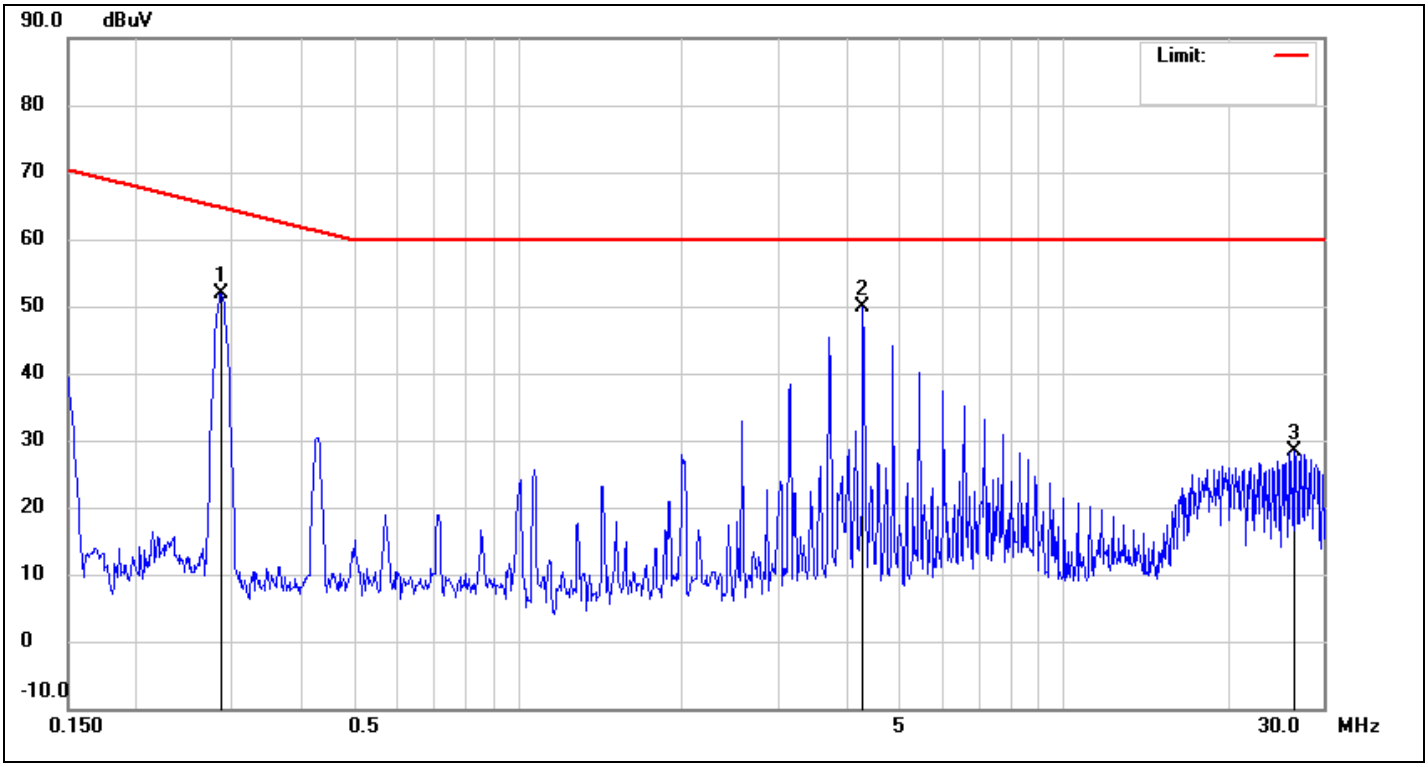
Test Mode: SR-800 (N)

Job No.:	**20A090101V**	**Polarization:**	**N**
Standard:	**MIL-STD-461E (1999)_CE102_28V_0.01~30M**	**Power Source:**	**DC 28V**
Test item:	**Conduction Test**	**Date:**	**2020 / 9 / 18**
Temp.(℃)/Hum.(%):	**22.5 (℃) / 50 %**	**Time:**	**PM 04:55:32**
Company:	**7Starlake Co., Ltd.**	**Engineer Signature:**	**Harvey Tsai**
Product:	**Rugged Fanless computer**	**Distance:**	**None**
Model:	**SR-800**	**RBW: 1kHz**	**VBW: 1kHz**
Description:			



No.	Frequency (KHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	10.1910	28.35	5.59	33.94	93.84	-59.90	peak	P	
2	48.8870	22.14	0.45	22.59	80.21	-57.62	peak	P	
3	143.2510	46.54	0.11	46.65	70.86	-24.21	peak	P	

Job No.:	**20A090101V**	**Polarization:**	**N**
Standard:	**MIL-STD-461E (1999)_CE102_28V_0.01~30M**	**Power Source:**	**DC 28V**
Test item:	**Conduction Test**	**Date:**	**2020 / 9 / 18**
Temp.(℃)/Hum.(%):	**22.5 (℃) / 50 %**	**Time:**	**PM 04:53:52**
Company:	**7Starlake Co., Ltd.**	**Engineer Signature:**	**Harvey Tsai**
Product:	**Rugged Fanless computer**	**Distance:**	**None**
Model:	**SR-800**	**RBW: 10kHz**	**VBW: 10kHz**
Description:			



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2863	51.91	0.09	52.00	64.84	-12.84	peak	P	
2	4.2918	49.69	0.15	49.84	60.00	-10.16	peak	P	
3	26.4178	27.61	0.69	28.30	60.00	-31.70	peak	P	

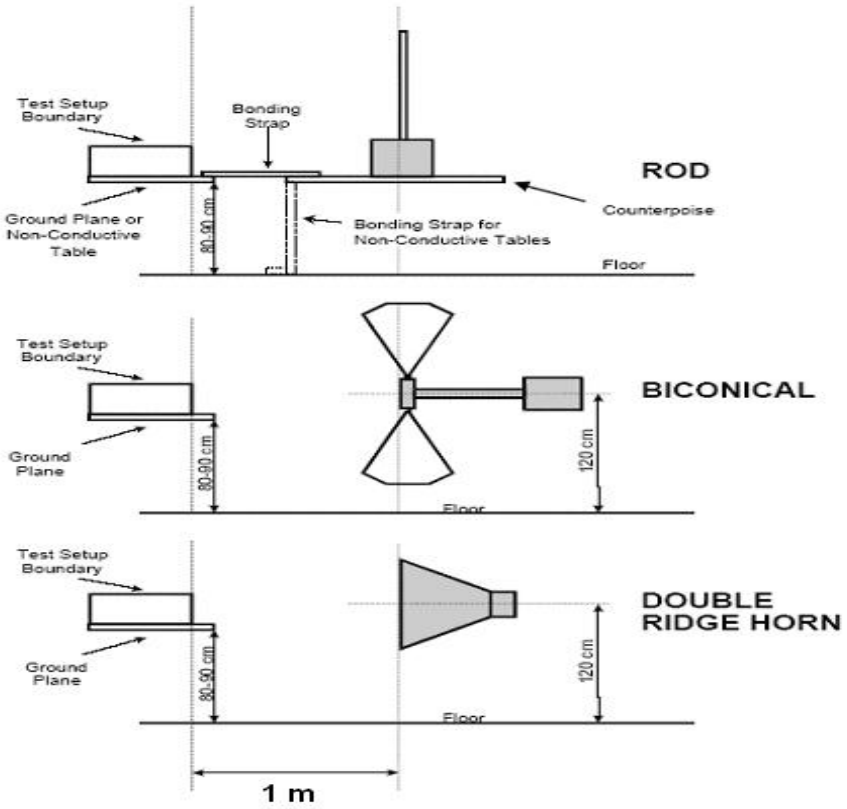
2 Radiated emissions, electric field Test (RE102)

2.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
Monopole Antenna	ETS-Lindgren	3301C	00211334	2020/12/08
Biconical Antenna	Schwarzbeck	VHBB 9124	9124-537	2021/02/05
Horn Antenna	ETS-Lindgren	3106B	00224879	2021/08/24
Horn Antenna	COM-POWER	AH-118	10081	2020/09/25
Pre-Amplifier	EM Electronics	EM330	060797	2021/05/26
Pre-Amplifier	EMCI	EMC051845	980131	2021/05/19
EMI Test Receiver	Rohde & Schwarz	ESR7	101422	2020/12/08
Spectrum Analyzer	R&S	FSP30	100002	2021/05/12
DC LISN	Schwarzbeck	NNBL 8226-HV	05037	2020/12/05
DC LISN	Schwarzbeck	NNBL 8226-HV	05039	2020/12/05
RF Cable	EMCI	EMC104	CBL63	2021/03/09
RF Cable	EMCI	EMC104	CBL64	2021/03/09
RF Cable	EMCI	EMC104	CBL61	2021/03/09

Note: The above equipments are within the valid calibration period.

2.2 Block Diagram of Test Configuration



2.3 RE102 Application

2.3.1 This requirement is applicable for radiated emissions from equipment and subsystem enclosures, all interconnecting cables, and antennas designed to be permanently mounted to EUTs (receivers and transmitters in standby mode). The requirement does not apply at the transmitter fundamental frequencies. The requirement is applicable as follows:

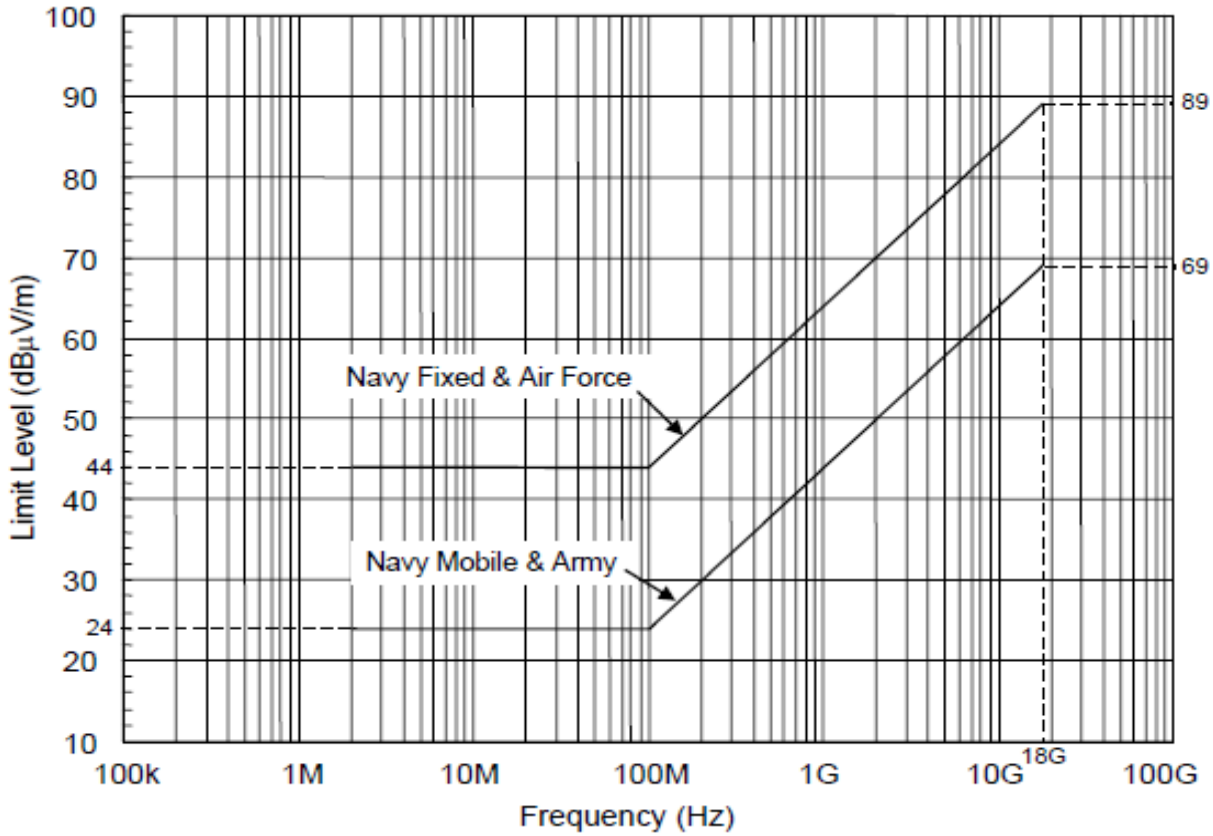
☒	Ground	2 MHz to 18 GHz*
☐	Ships, surface	10 kHz to 18 GHz
☐	Submarines	10 kHz to 18 GHz
☐	Aircraft (Army)	10 kHz to 18 GHz
☐	Aircraft (Air Force and Navy)	2 MHz to 18 GHz
☐	Space	10 kHz to 18 GHz

* EUT highest intentionally generated frequency is 2.3GHz.

* Testing is required up to 1 GHz or 10 times the highest intentionally generated frequency within the EUT, whichever is greater. Measurements beyond 18 GHz are not required.

* Testing is required 2MHz to 18 GHz, according to special request by client, the test frequency is from 30 MHz to 5 GHz.

FIGURE: RE102-4. RE102 limit for ground applications



2.4 Configuration of Measurement

2.4.1 Verify that the ambient requirements specified in MIL-STD-461E sub clause 4.3.4 are met. Take plots of the ambient when required by the referenced paragraph.

2.4.2 Turn on the measurement equipment and allow a sufficient time for stabilization.

2.4.3 Using the system check path of MIL-STD-461E Figure RE102-5, perform the following evaluation of the overall measurement system from each antenna to the data output device at the highest measurement frequency of the antenna. For rod antennas that use passive matching networks, the evaluation shall be performed at the center frequency of each band. For active rod antennas, the evaluation shall be performed at the lowest frequency of test, at a mid-band frequency, and at the highest frequency of test.

2.4.4 Turn on the measurement equipment and allow sufficient time for stabilization.

(a) Apply a calibrated signal level, which is at least 6 dB below the limit (limit minus antenna factor), to the coaxial cable at the antenna connection point.

(b) Scan the measurement receiver in the same manner as a normal data scan. Verify that the data recording device indicates a level within ±3 dB of the injected signal level.

(c) For the 104 cm rod antenna, remove the rod element and apply the signal to the antenna matching network through a 10 pF capacitor connected to the rod mount.

(d) If readings are obtained which deviate by more than ±3 dB, locate the source of the error and correct the deficiency prior to proceeding with the testing.

2.4.5 Using the measurement path of MIL-STD-461E Figure RE102-5, perform the following evaluation for each antenna to demonstrate that there is electrical continuity through the antenna.

(a) Radiate a signal using an antenna or stub radiator at the highest measurement frequency of each antenna.

(b) Tune the measurement receiver to the frequency of the applied signal and verify that a received signal of appropriate amplitude is present. Note: This evaluation is intended to provide a coarse indication that the antenna is functioning properly. There is no requirement to accurately measure the signal level.

2.4.6 Turn on the EUT and allow sufficient time for stabilization.

2.4.7 Using the measurement path of MIL-STD-461E Figure RE102-5, determine the radiated emissions from the EUT and its associated cabling.

(a) Scan the measurement receiver for each applicable frequency range, using the bandwidths and minimum measurement times in Table II.

(b) Above 30 MHz, orient the antennas for both horizontally and vertically polarized fields.

(c) Take measurements for each antenna position determined under MIL-STD-461E sub clause 5.16.3.3c(2)(c) above.

2.5 System Calibration Check

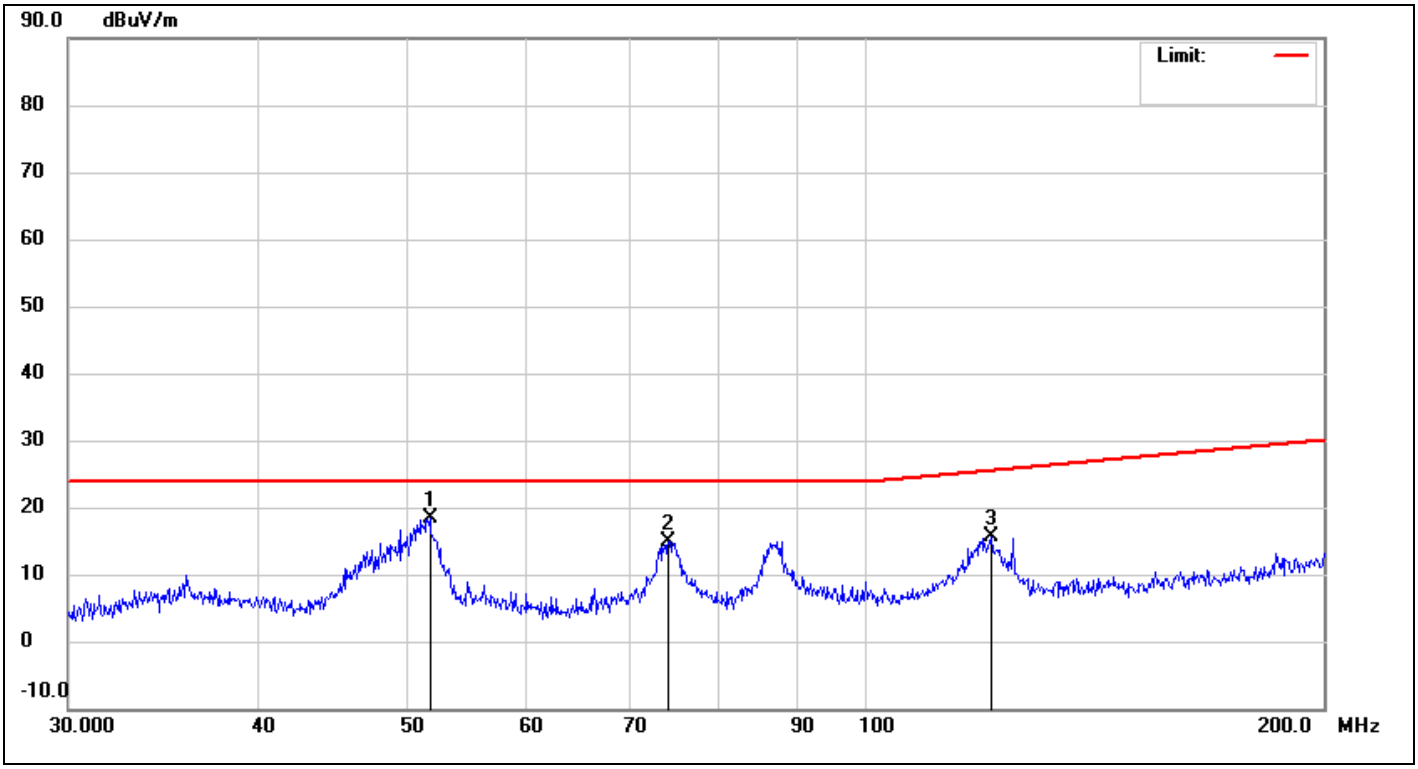
Based on MIL-STD-461E sub clause 5.16.3.4 system calibration requirement to verify the calibration level within ±3 dB in all test frequency.

2.6 Test Result

The final test data is shown as following pages.

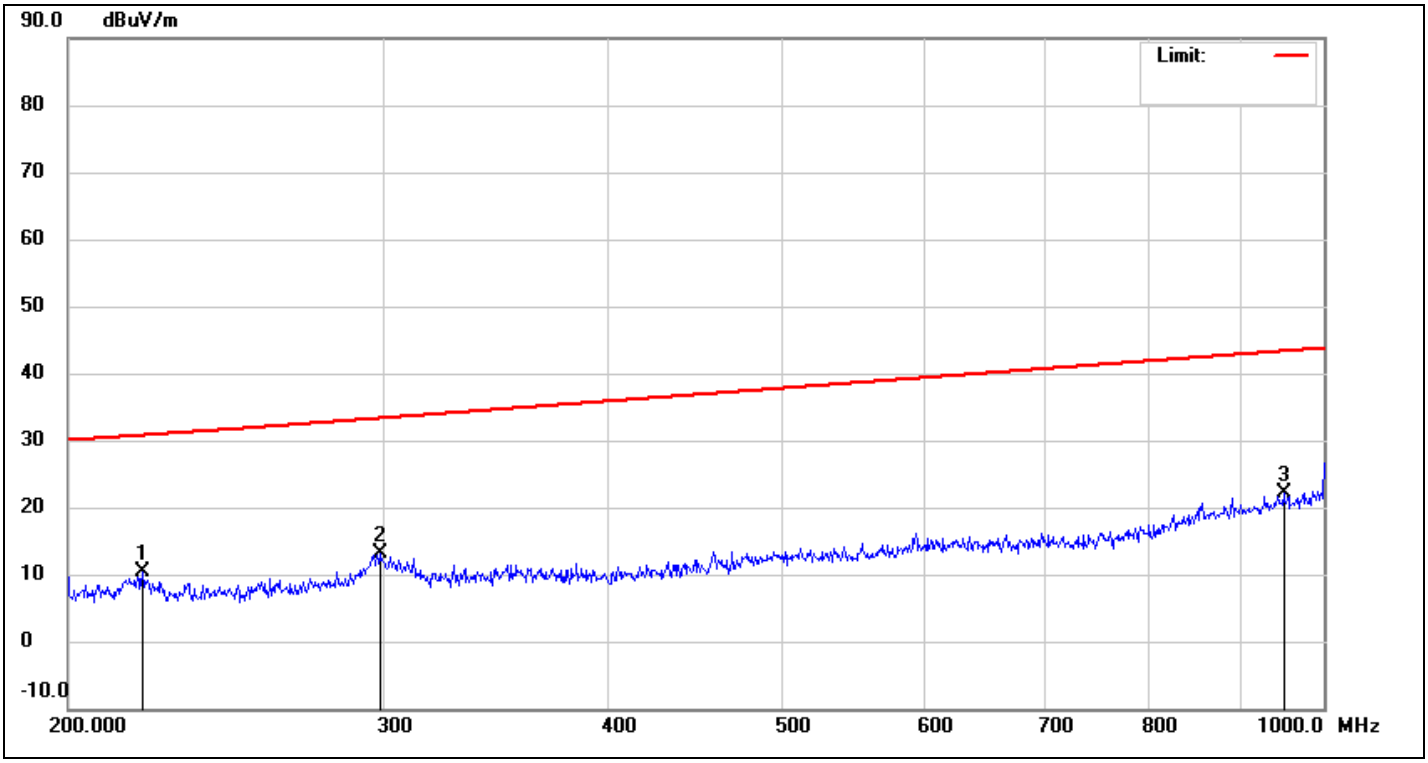
Test Mode: SR-800

Job No.:	**20A090101V**	**Polarization:**	**Horizontal**
Standard:	**MIL-STD-461E (1999)_RE102_Ground**	**Power Source:**	**DC 28V**
Test item:	**Radiation Test**	**Date:**	**2020 / 9 / 18**
Temp.(℃)/Hum.(%):	**22.5 (℃) / 50 %**	**Time:**	**PM 05:21:36**
Company:	**7Starlake Co., Ltd.**	**Engineer Signature:**	**Harvey Tsai**
Product:	**Rugged Fanless computer**	**Distance:**	**1 m**
Model:	**SR-800**	**RBW: 100kHz**	**VBW: 100kHz**
Description:			



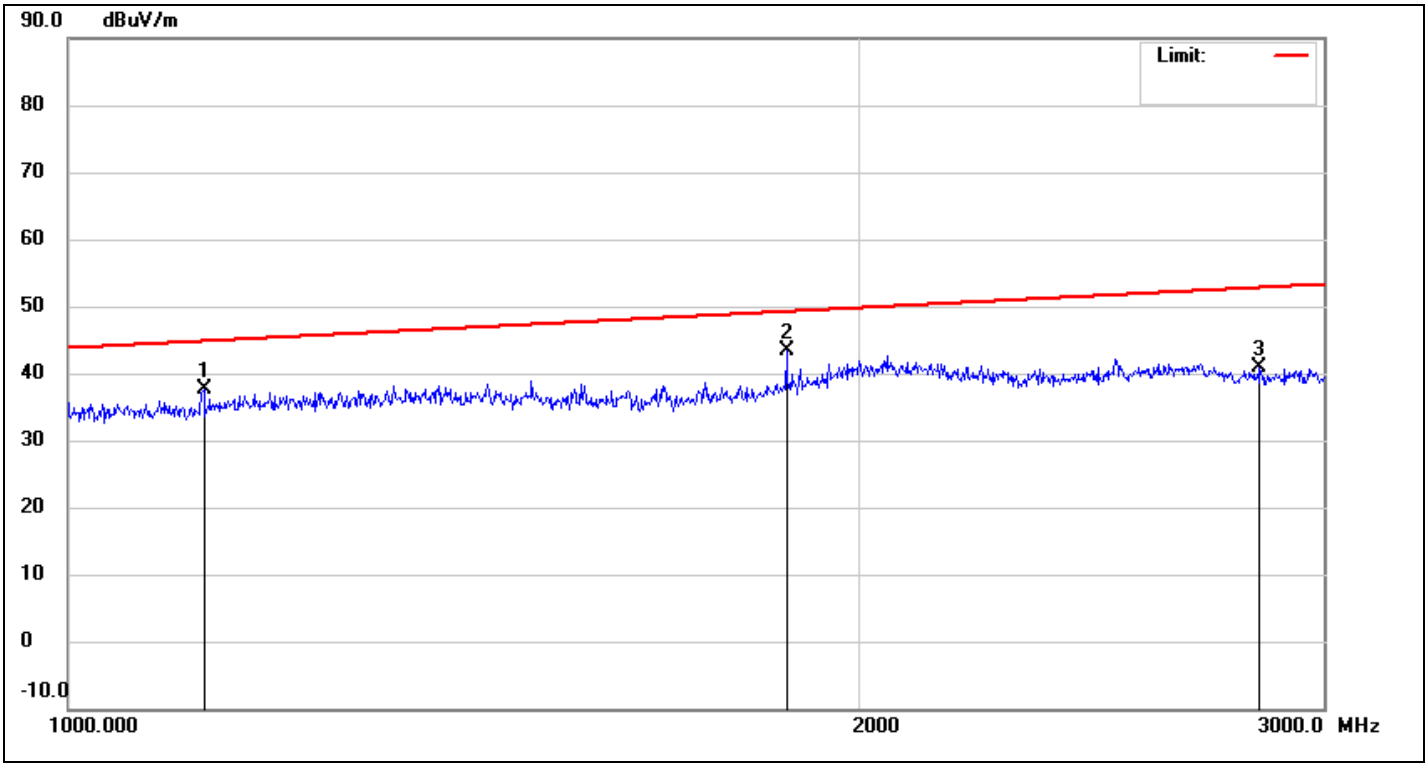
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	51.8092	59.15	-40.84	18.31	24.00	-5.69	peak	P	
2	74.2933	56.56	-41.63	14.93	24.00	-9.07	peak	P	
3	120.9746	55.22	-39.52	15.70	25.65	-9.95	peak	P	

Job No.:	**20A090101V**	**Polarization:**	**Horizontal**
Standard:	**MIL-STD-461E (1999)_RE102_Ground**	**Power Source:**	**DC 28V**
Test item:	**Radiation Test**	**Date:**	**2020 / 9 / 18**
Temp.(℃)/Hum.(%):	**22.5 (℃) / 50 %**	**Time:**	**PM 05:33:58**
Company:	**7Starlake Co., Ltd.**	**Engineer Signature:**	**Harvey Tsai**
Product:	**Rugged Fanless computer**	**Distance:**	**1 m**
Model:	**SR-800**	**RBW: 100kHz**	**VBW: 100kHz**
Description:			



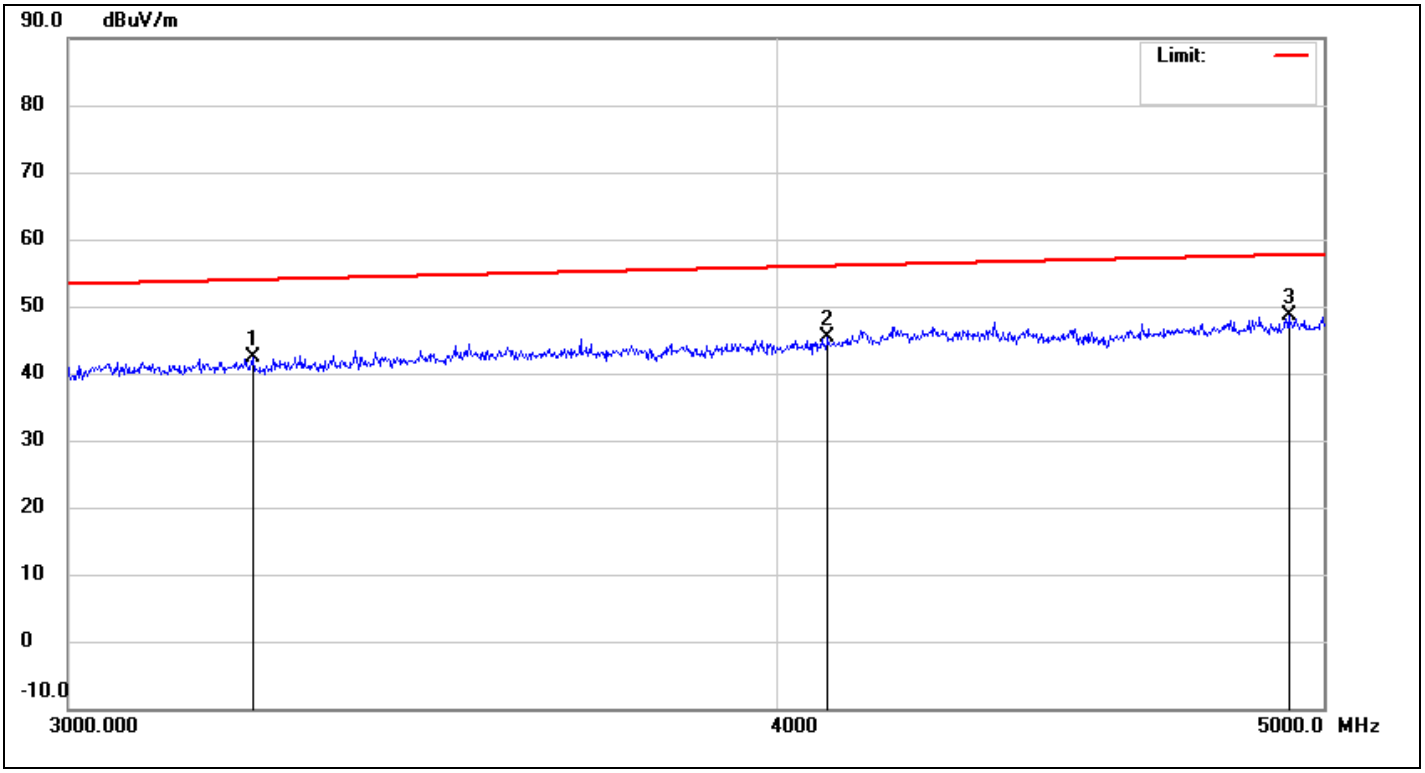
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	219.9223	49.71	-39.40	10.31	30.83	-20.52	peak	P	
2	298.1086	50.48	-37.39	13.09	33.46	-20.37	peak	P	
3	949.8017	47.34	-25.31	22.03	43.50	-21.47	peak	P	

Job No.:	**20A090101V**	**Polarization:**	**Horizontal**
Standard:	**MIL-STD-461E (1999)_RE102_Ground**	**Power Source:**	**DC 28V**
Test item:	**Radiation Test**	**Date:**	**2020 / 9 / 18**
Temp.(℃)/Hum.(%):	**22.5 (℃) / 50 %**	**Time:**	**PM 06:31:26**
Company:	**7Starlake Co., Ltd.**	**Engineer Signature:**	**Harvey Tsai**
Product:	**Rugged Fanless computer**	**Distance:**	**1 m**
Model:	**SR-800**	**RBW: 1000kHz**	**VBW: 1000kHz**
Description:			



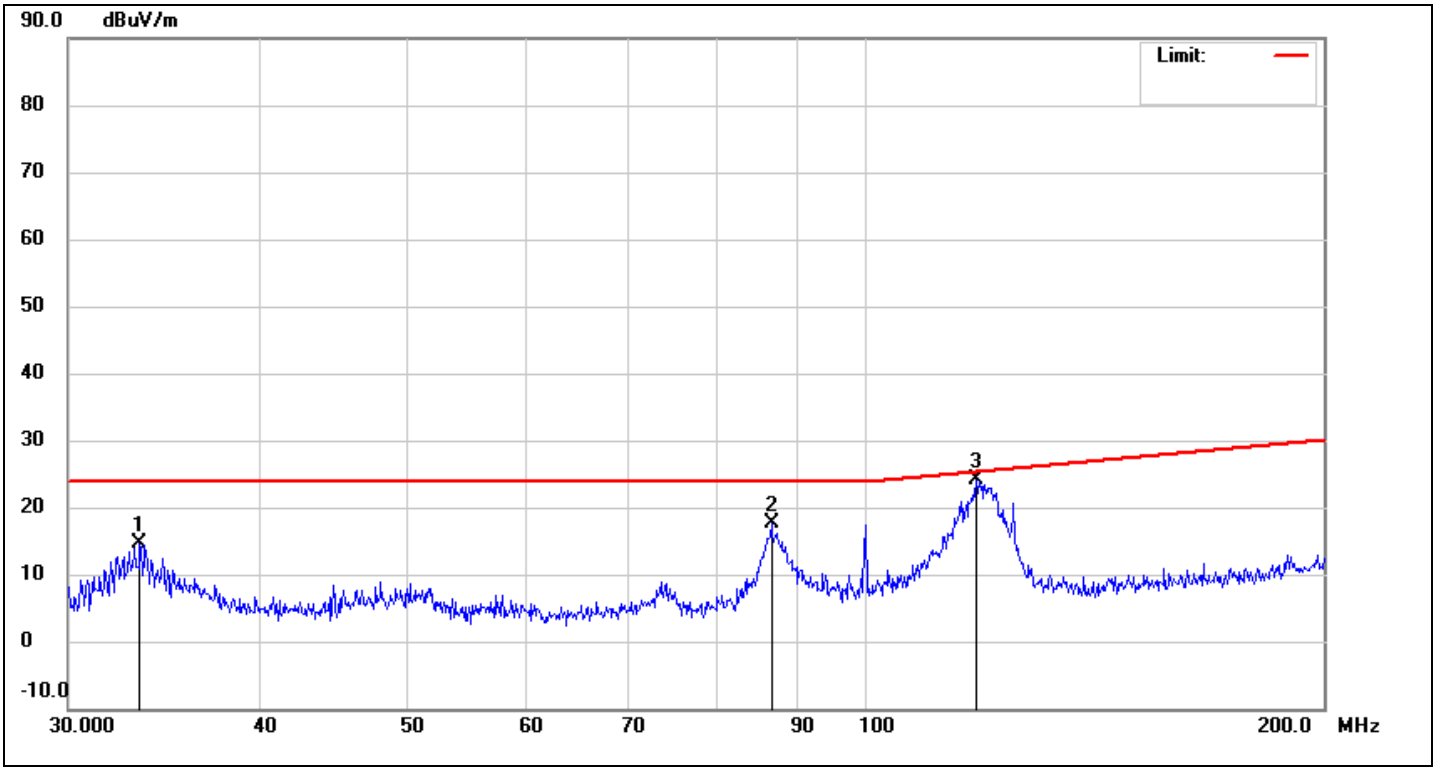
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	1125.9759	50.47	-12.91	37.56	44.98	-7.42	peak	P	
2	1874.6205	53.47	-10.19	43.28	49.40	-6.12	peak	P	
3	2836.5345	48.64	-7.86	40.78	52.98	-12.20	peak	P	

Job No.:	**20A090101V**	**Polarization:**	**Horizontal**
Standard:	**MIL-STD-461E (1999)_RE102_Ground**	**Power Source:**	**DC 28V**
Test item:	**Radiation Test**	**Date:**	**2020 / 9 / 18**
Temp.(℃)/Hum.(%):	**22.5 (℃) / 50 %**	**Time:**	**PM 06:28:24**
Company:	**7Starlake Co., Ltd.**	**Engineer Signature:**	**Harvey Tsai**
Product:	**Rugged Fanless computer**	**Distance:**	**1 m**
Model:	**SR-800**	**RBW: 1000kHz**	**VBW: 1000kHz**
Description:			



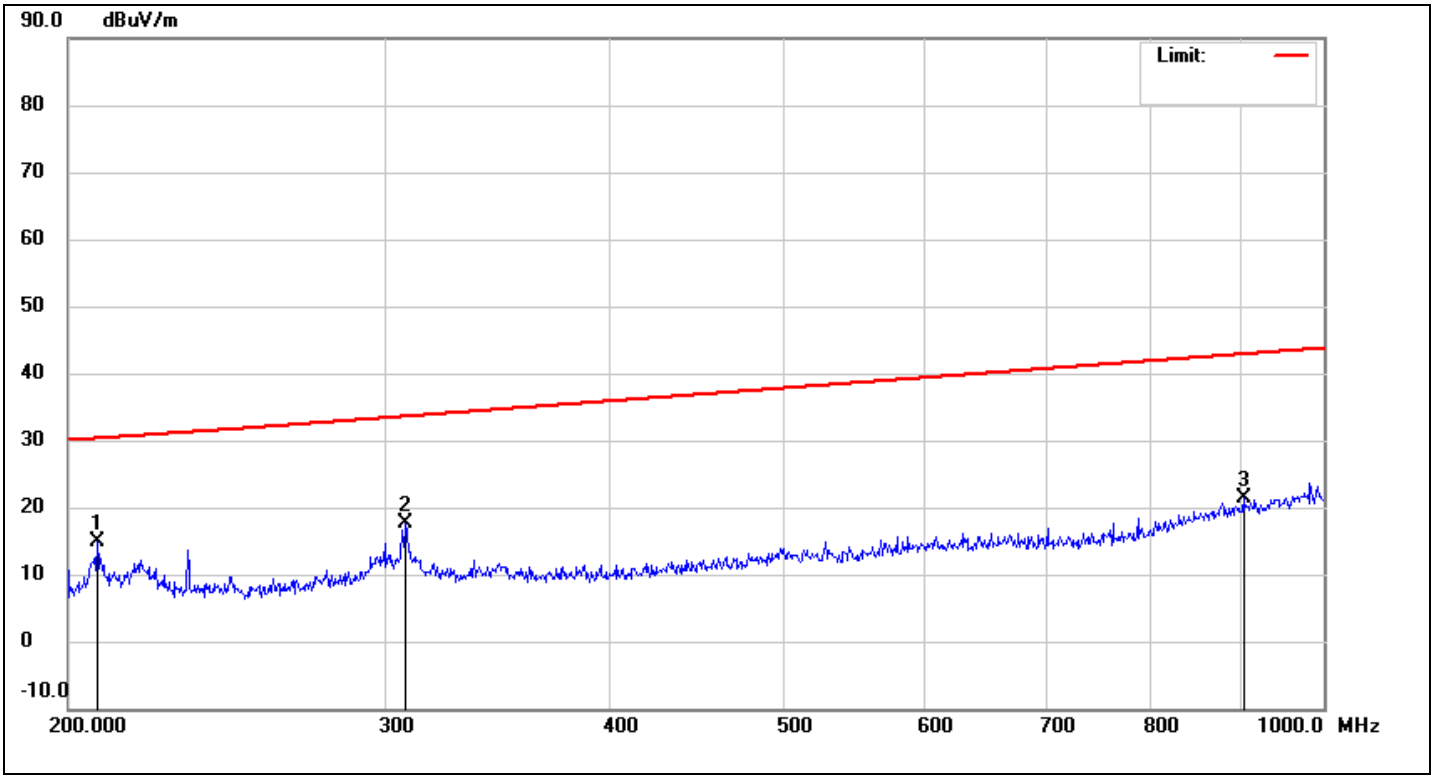
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	3233.9479	49.46	-7.20	42.26	54.12	-11.86	peak	P	
2	4086.3894	48.87	-3.47	45.40	56.15	-10.75	peak	P	
3	4928.9934	49.67	-1.12	48.55	57.78	-9.23	peak	P	

Job No.:	**20A090101V**	**Polarization:**	**Vertical**
Standard:	**MIL-STD-461E (1999)_RE102_Ground**	**Power Source:**	**DC 28V**
Test item:	**Radiation Test**	**Date:**	**2020 / 9 / 18**
Temp.(℃)/Hum.(%):	**22.5 (℃) / 50 %**	**Time:**	**PM 05:17:11**
Company:	**7Starlake Co., Ltd.**	**Engineer Signature:**	**Harvey Tsai**
Product:	**Rugged Fanless computer**	**Distance:**	**1 m**
Model:	**SR-800**	**RBW: 100kHz**	**VBW: 100kHz**
Description:			



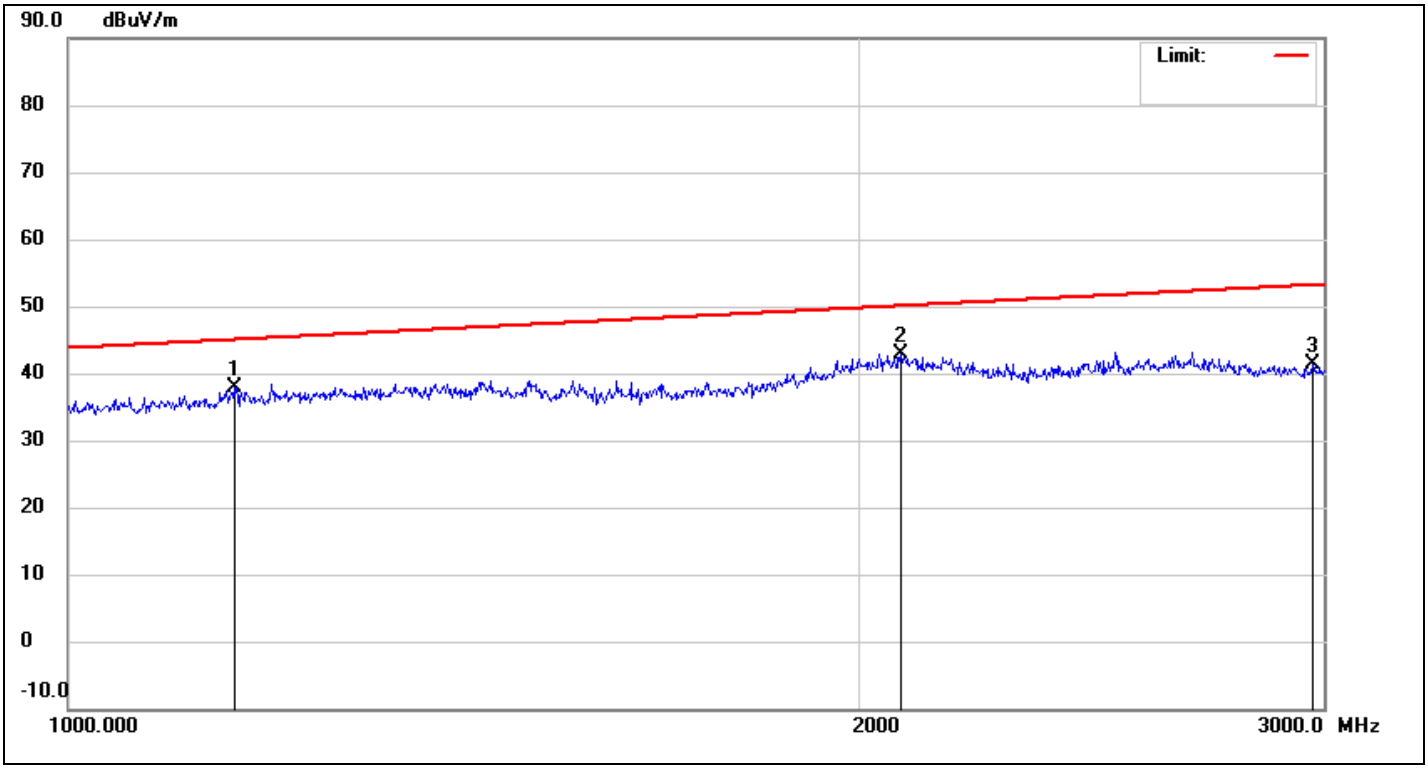
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	33.4260	54.78	-40.18	14.60	24.00	-9.40	peak	P	
2	86.7981	58.94	-41.30	17.64	24.00	-6.36	peak	P	
3	118.2517	63.70	-39.67	24.03	25.45	-1.42	peak	P	

Job No.:	**20A090101V**	**Polarization:**	**Vertical**
Standard:	**MIL-STD-461E (1999)_RE102_Ground**	**Power Source:**	**DC 28V**
Test item:	**Radiation Test**	**Date:**	**2020 / 9 / 18**
Temp.(℃)/Hum.(%):	**22.5 (℃) / 50 %**	**Time:**	**PM 05:30:19**
Company:	**7Starlake Co., Ltd.**	**Engineer Signature:**	**Harvey Tsai**
Product:	**Rugged Fanless computer**	**Distance:**	**1 m**
Model:	**SR-800**	**RBW: 100kHz**	**VBW: 100kHz**
Description:			



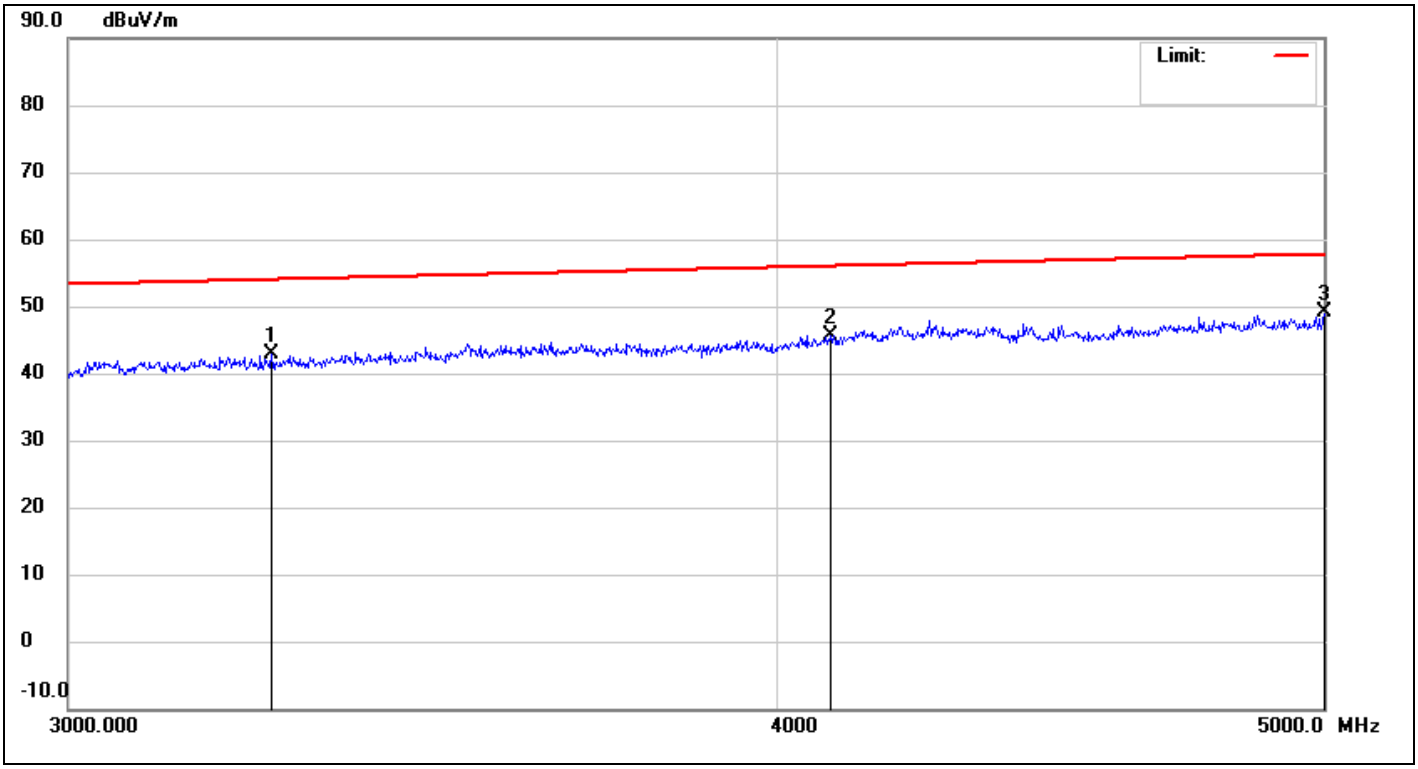
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	207.5421	54.22	-39.37	14.85	30.33	-15.48	peak	P	
2	308.3564	54.86	-37.23	17.63	33.76	-16.13	peak	P	
3	902.1233	47.76	-26.49	21.27	43.06	-21.79	peak	P	

Job No.:	**20A090101V**	**Polarization:**	**Vertical**
Standard:	**MIL-STD-461E (1999)_RE102_Ground**	**Power Source:**	**DC 28V**
Test item:	**Radiation Test**	**Date:**	**2020 / 9 / 18**
Temp.(℃)/Hum.(%):	**22.5 (℃) / 50 %**	**Time:**	**PM 06:11:04**
Company:	**7Starlake Co., Ltd.**	**Engineer Signature:**	**Harvey Tsai**
Product:	**Rugged Fanless computer**	**Distance:**	**1 m**
Model:	**SR-800**	**RBW: 1000kHz**	**VBW: 1000kHz**
Description:			



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	1156.0590	50.42	-12.51	37.91	45.21	-7.30	peak	P	
2	2071.7216	49.76	-6.88	42.88	50.26	-7.38	peak	P	
3	2970.4836	49.32	-7.99	41.33	53.38	-12.05	peak	P	

Job No.:	**20A090101V**	**Polarization:**	**Vertical**
Standard:	**MIL-STD-461E (1999)_RE102_Ground**	**Power Source:**	**DC 28V**
Test item:	**Radiation Test**	**Date:**	**2020 / 9 / 18**
Temp.(℃)/Hum.(%):	**22.5 (℃) / 50 %**	**Time:**	**PM 06:15:01**
Company:	**7Starlake Co., Ltd.**	**Engineer Signature:**	**Harvey Tsai**
Product:	**Rugged Fanless computer**	**Distance:**	**1 m**
Model:	**SR-800**	**RBW: 1000kHz**	**VBW: 1000kHz**
Description:			



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	3258.8228	49.98	-7.09	42.89	54.19	-11.30	peak	P	
2	4090.5664	48.96	-3.44	45.52	56.16	-10.64	peak	P	
3	5000.0000	49.94	-0.85	49.09	57.90	-8.81	peak	P	

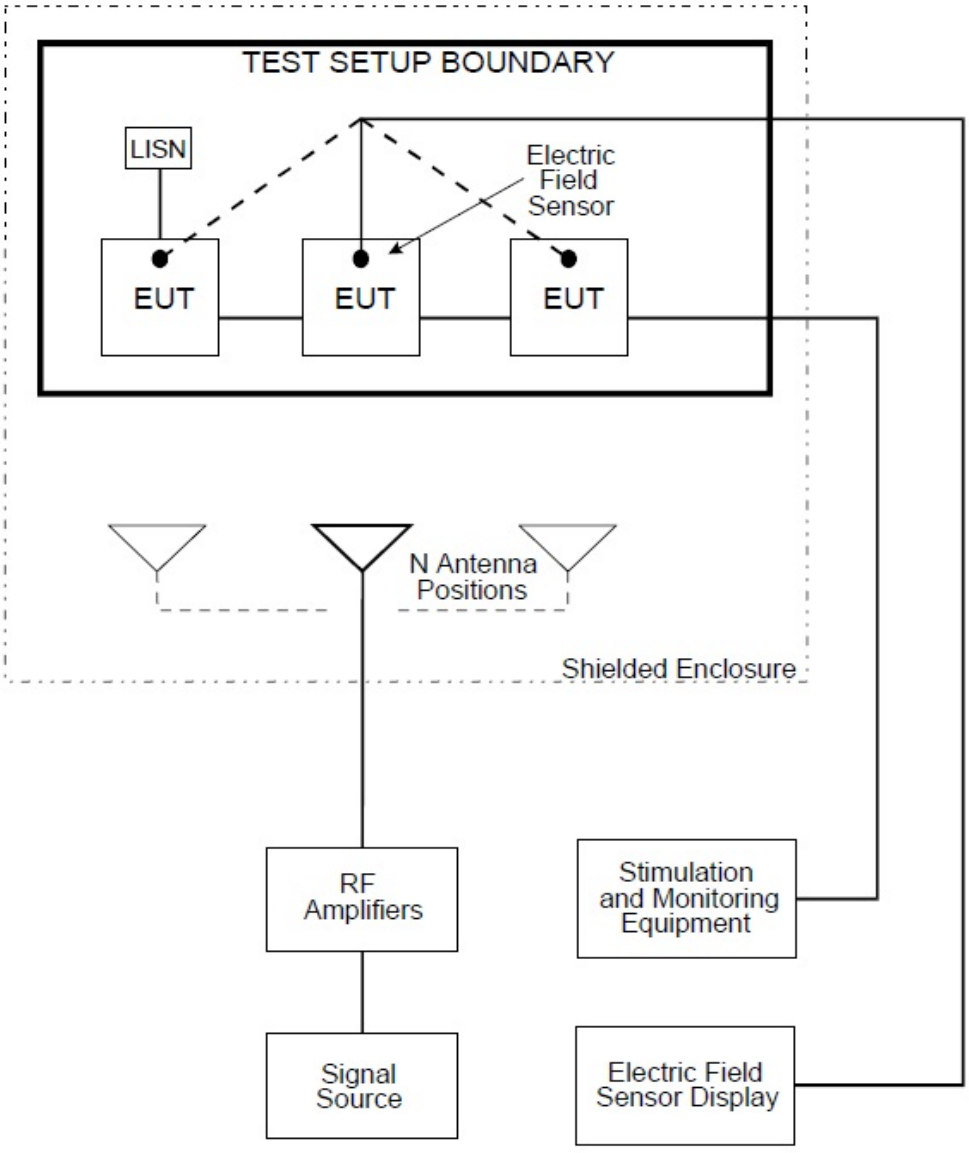
3 Radiated susceptibility, electric field Test (RS103)

3.1 Instrument

Instrument	Manufacturer	Model	Serial No.	Next Cal. Date
Signal Generator	KEYSIGHT	N5171B	MY53051802	2021/03/03
RF Power Amplifier	R&K	A080M102-5555R	B30850	N.C.R.
RF Power Amplifier	R&K	A701M402-4747R	B30850	N.C.R.
Attenuator	SCHAFFNER	ATN6075	22300	N.C.R.
Horn Antenna	ETS-Lindgren	3106B	00154771	N.C.R.
Horn Antenna	Schwarzbeck	BBHA 9120 E	BBHA9120E 586	N.C.R.
DC LISN	Schwarzbeck	NNBL 8225	8225-120	2021/04/12
DC LISN	Schwarzbeck	NNBL 8225	8225-121	2021/04/12

Note: The above equipments are within the valid calibration period.

3.2 Block Diagram of Test Configuration



3.3 Test Limit

According to MIL-STD-461E sub clause 5.19.2 RS103 limit.

3.4 Configuration of Measurement

3.4.1 Turn on the measurement equipment and EUT and allow a sufficient time for stabilization.

3.4.2 Assess the test area for potential RF hazards and take necessary precautionary steps to assure safety of test personnel.

3.4.3 Calibration.

(a) Electric field sensor procedure. Record the amplitude shown on the electric field sensor display unit due to EUT ambient. Reposition the sensor, as necessary, until this level is < 10% of the applicable field strength to be used for testing.

(b) Receive antenna procedure (> 1 GHz), according to MIL-STD-461E sub clause 5.19.3.4 c. (2)(a)~(e).

3.4.4 EUT Testing.

(a) E-Field sensor procedure.

- Set the signal source to 1 kHz pulse modulation, 50% duty cycle, and using appropriate amplifier and transmit antenna, establish an electric field at the test start frequency. Gradually increase the electric field level until it reaches the applicable limit.

- Scan the required frequency ranges in accordance with the rates and durations specified in Table III. Maintain field strength levels in accordance with the applicable limit. Monitor EUT performance for susceptibility effects.

(b) Receive antenna procedure. According to MIL-STD-461E sub clause 5.19.3.4 d. (2)(a)~(c).

(c) If susceptibility is noted, determine the threshold level in accordance with MIL-STD-461E sub clause 4.3.10.4.3 and verify that it is above the limit.

(d) Perform testing over the required frequency range with the transmit antenna vertically polarized. Repeat the testing above 30 MHz with the transmit antenna horizontally polarized.

(e) Repeat MIL-STD-461E sub clause 5.19.3.4d for each transmit antenna position required by MIL-STD-461E sub clause 5.19.3.3e.

3.5 Test Result

The final test data is shown as following pages.

Test Mode : RS-800

Applicant：7Starlake Co., Ltd.			Date of Measurement：2020 / 09 / 24		
EUT：Rugged Fanless computer			Temp./Humidity/Atm.press.：25.8°C / 41% / 996hPa		
M/N：SR-800			Test Mode：Working MODE		
Input Voltage：DC 28 V			Test Engineer：Scott Chang		
Frequency Range (MHz)	Field Strength (V/m)	Modulation	Antenna Polarity		Results
			Horizontal	Vertical	
80 – 3000	50	PM 50%	○	○	Class A

■ Class A: All functions of a device / system perform as designed during and after exposure to a disturbance.

NOTE：

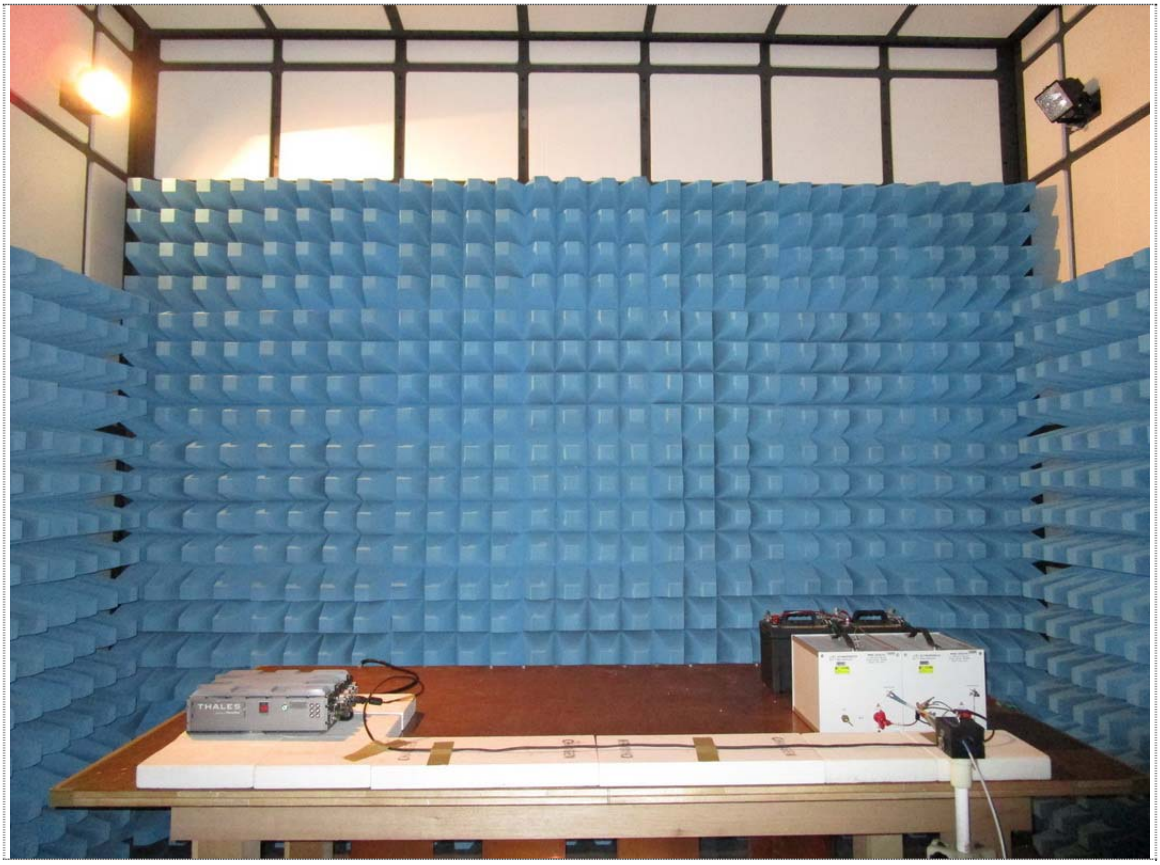
■ Army_Ground

■ Monitoring method: Observe screen then record the phenomena.

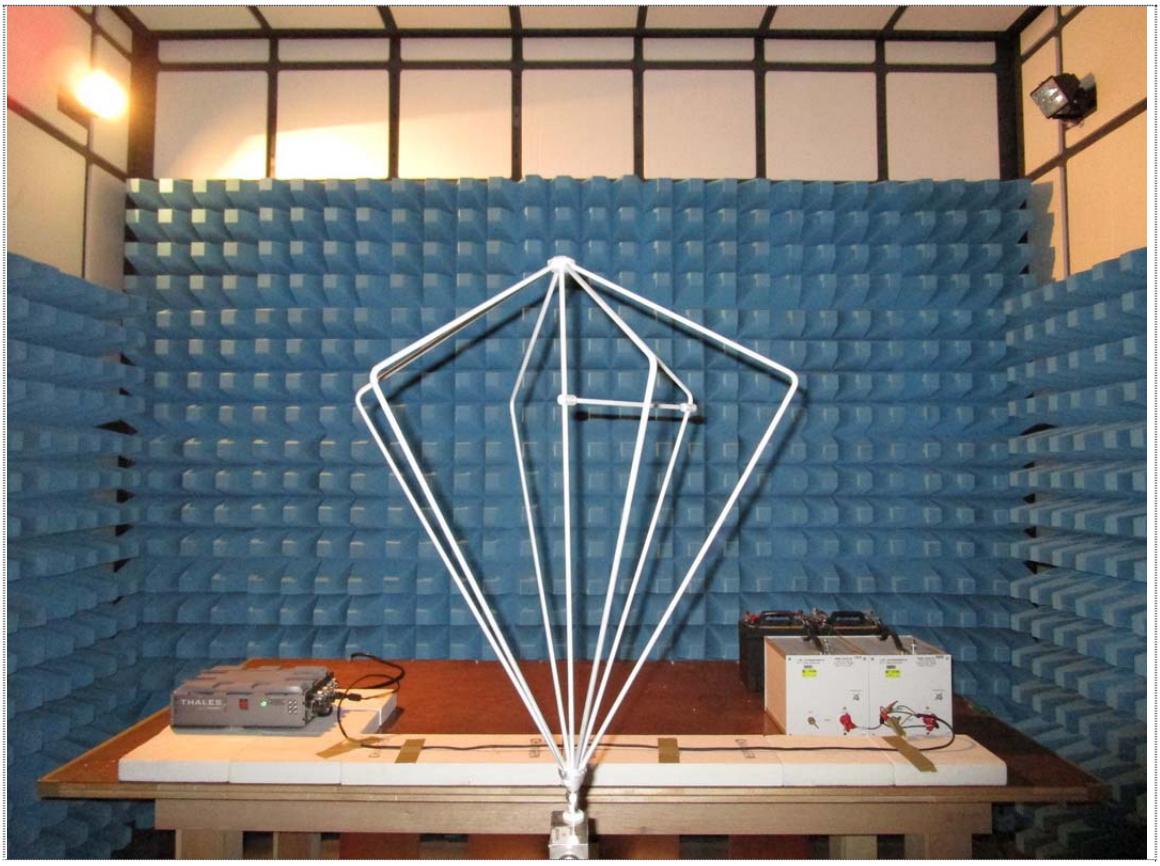
■ Before the test: The screen shows image is in normal state.
■ During the test: The screen shows image is in normal state.
■ After the test: The screen shows image is in normal state.

4 Photographs of Test

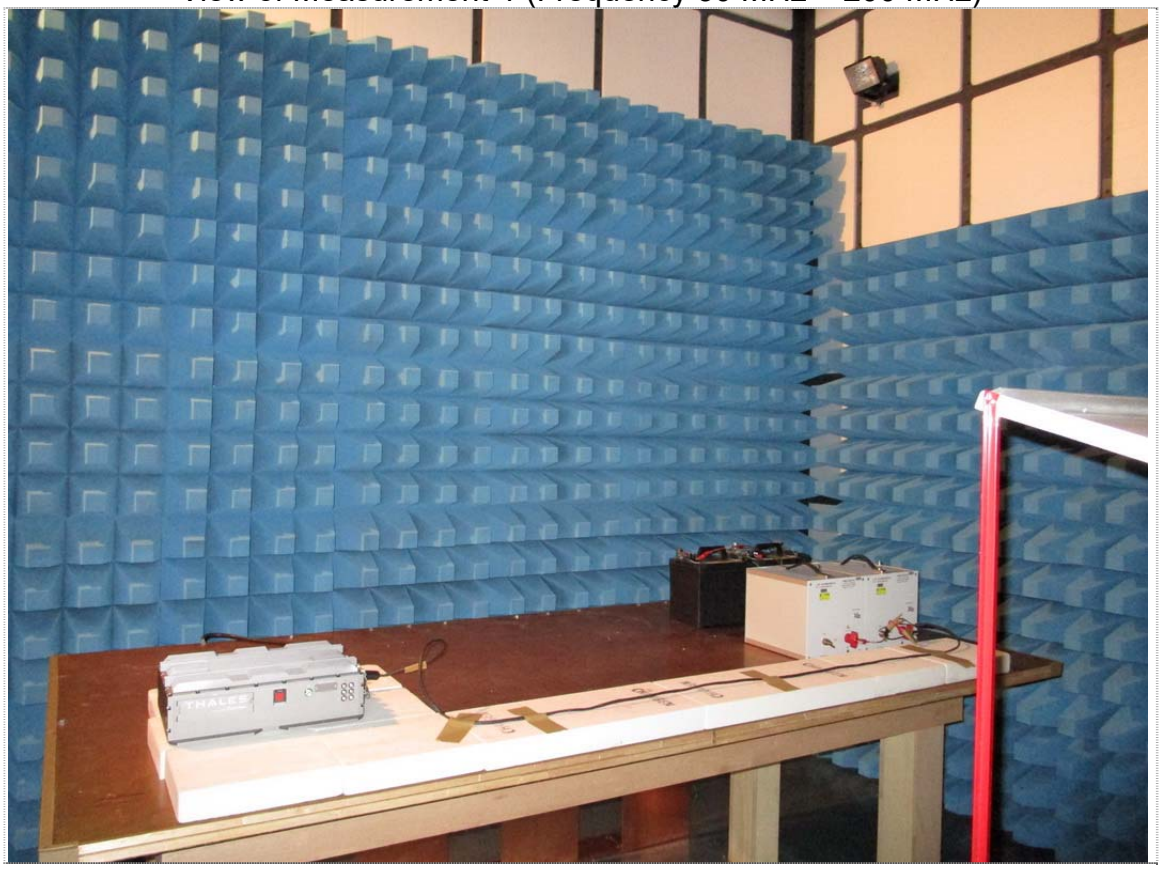
4.1 Conducted emissions, power leads Test (CE102)



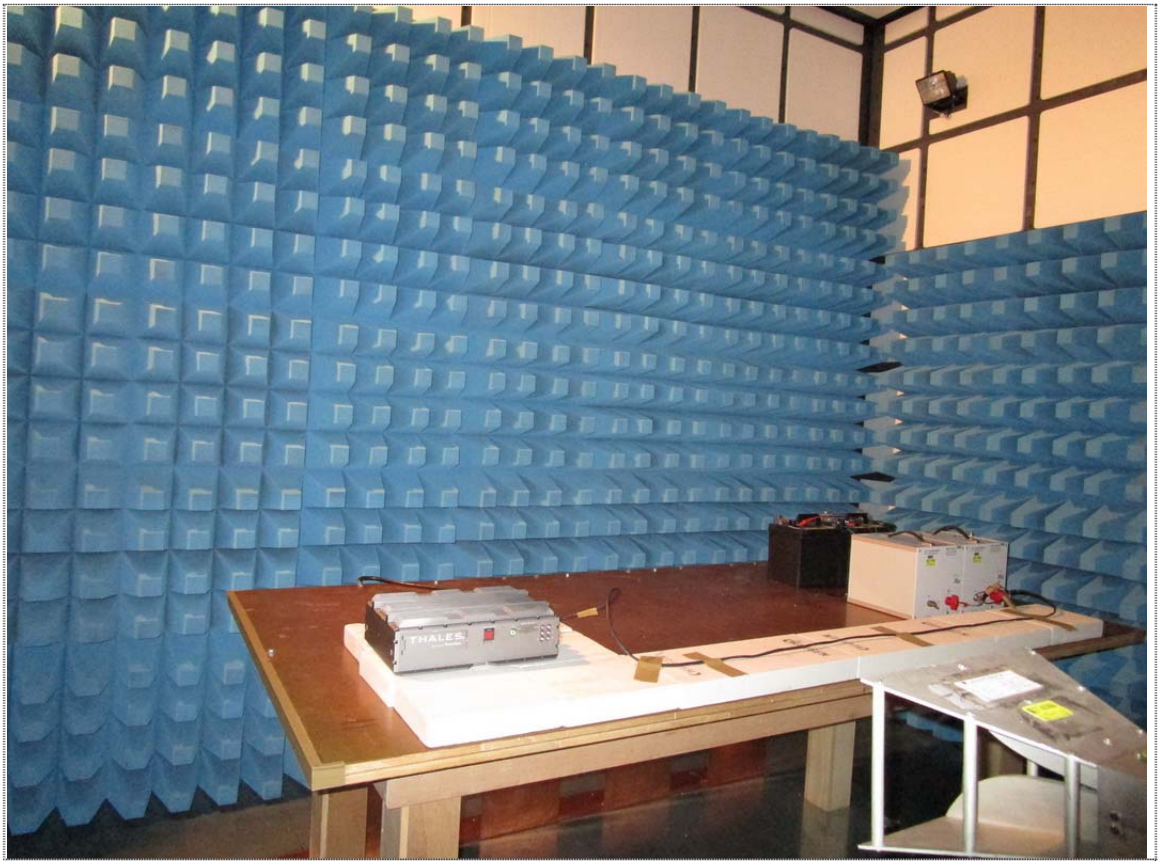
4.2 Radiated emissions, electric field Test (RE102)



View of Measurement-1 (Frequency 30 MHz ~ 200 MHz)

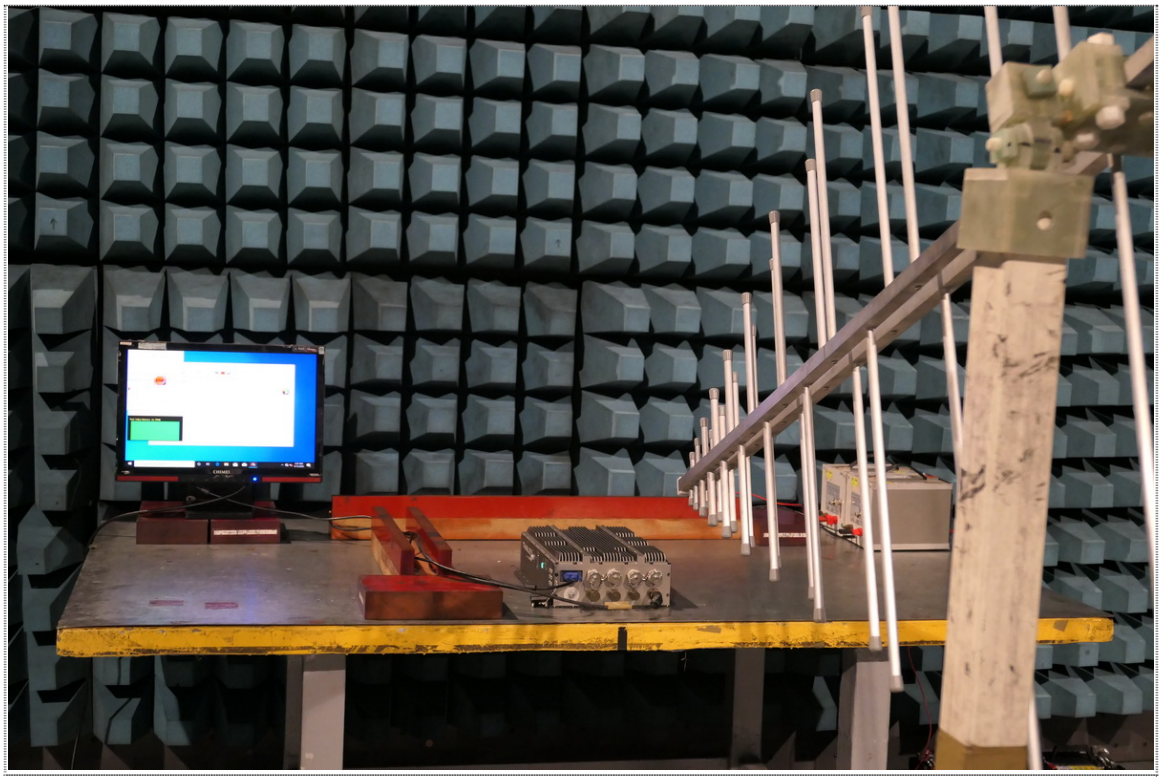


View of Measurement-2 (Frequency 200 MHz ~ 1 GHz)

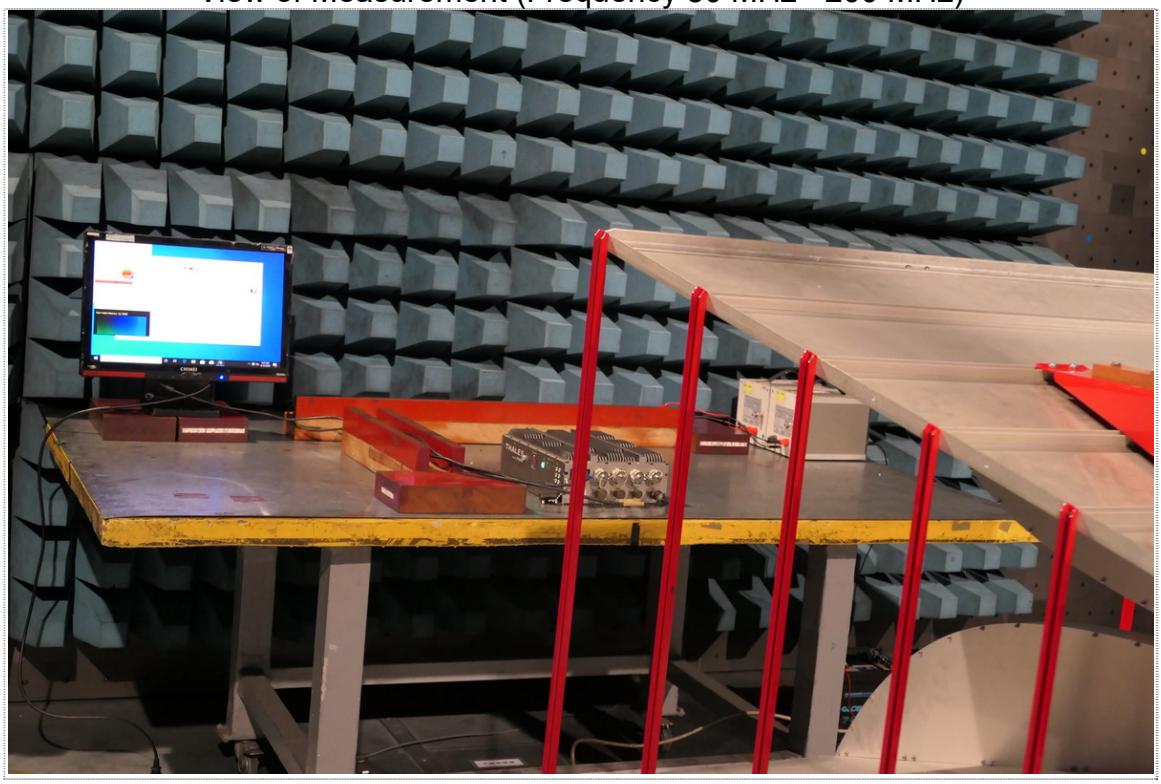


View of Measurement-3 (Frequency 1 GHz ~ 5 GHz)

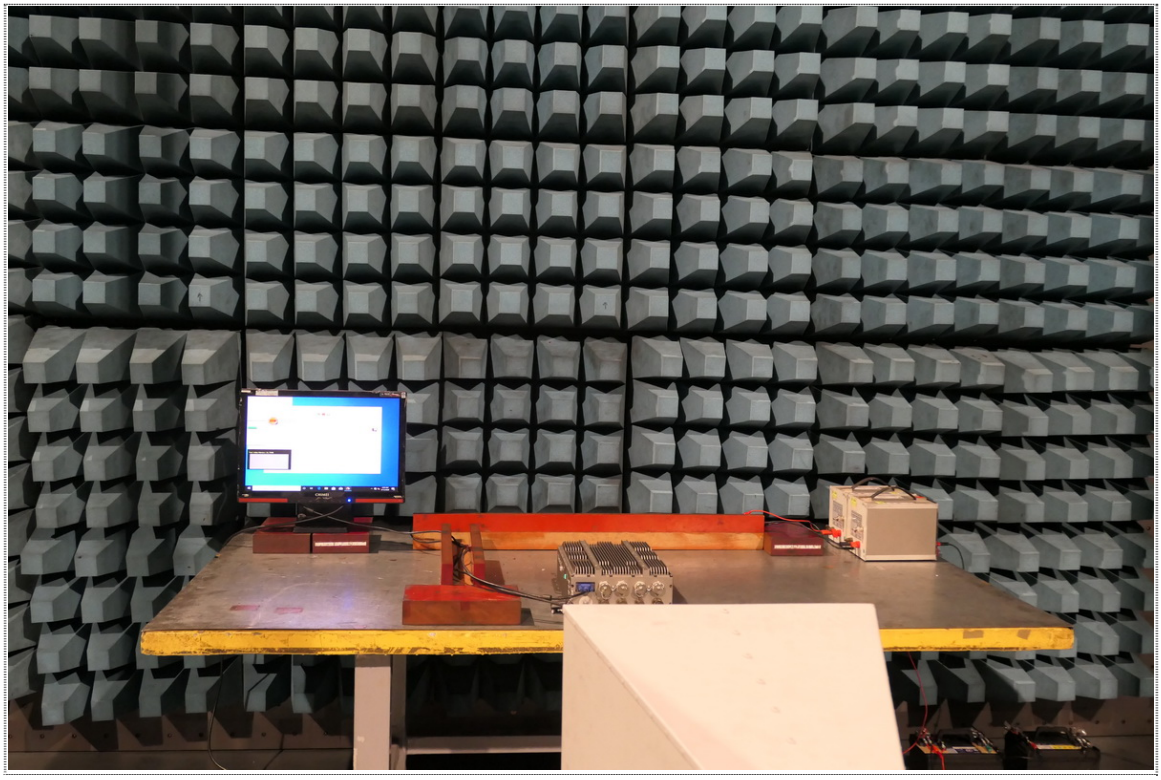
4.3 Radiated susceptibility, electric field Test (RS103)



View of Measurement (Frequency 80 MHz - 200 MHz)



View of Measurement (Frequency 200 MHz – 1 GHz)



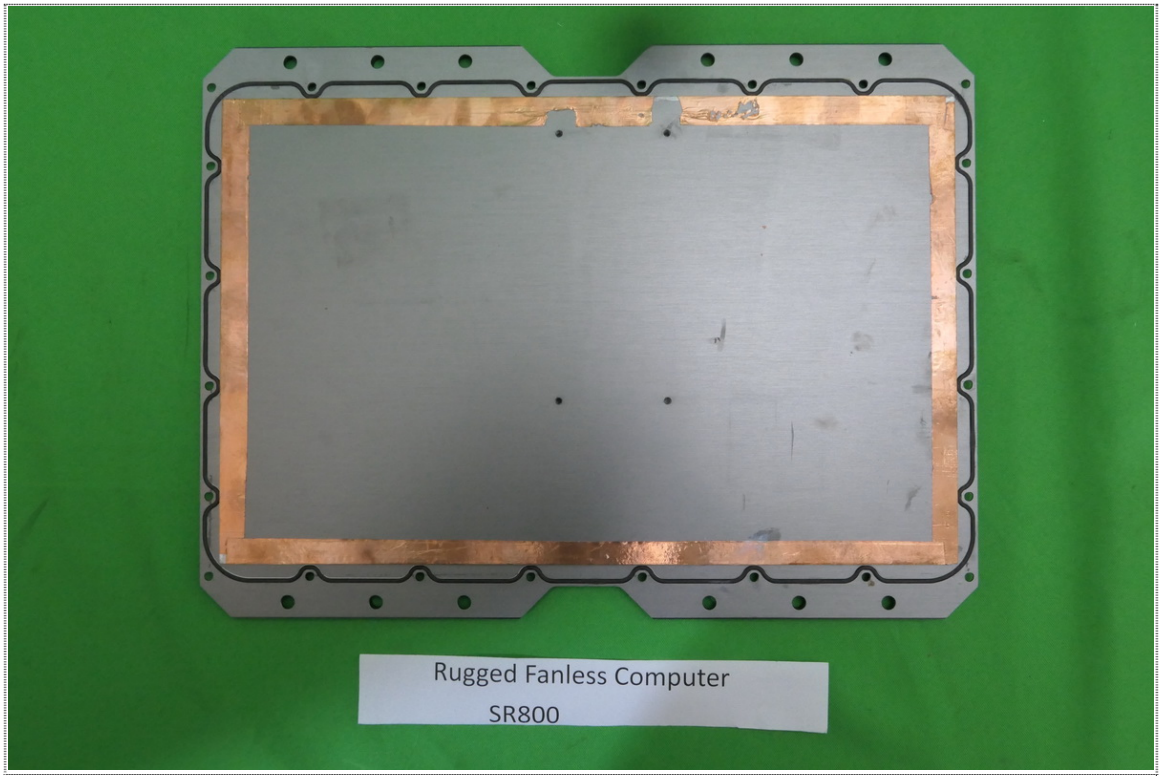
View of Measurement (Frequency 1 GHz – 3 GHz)

5 Photographs of EUT

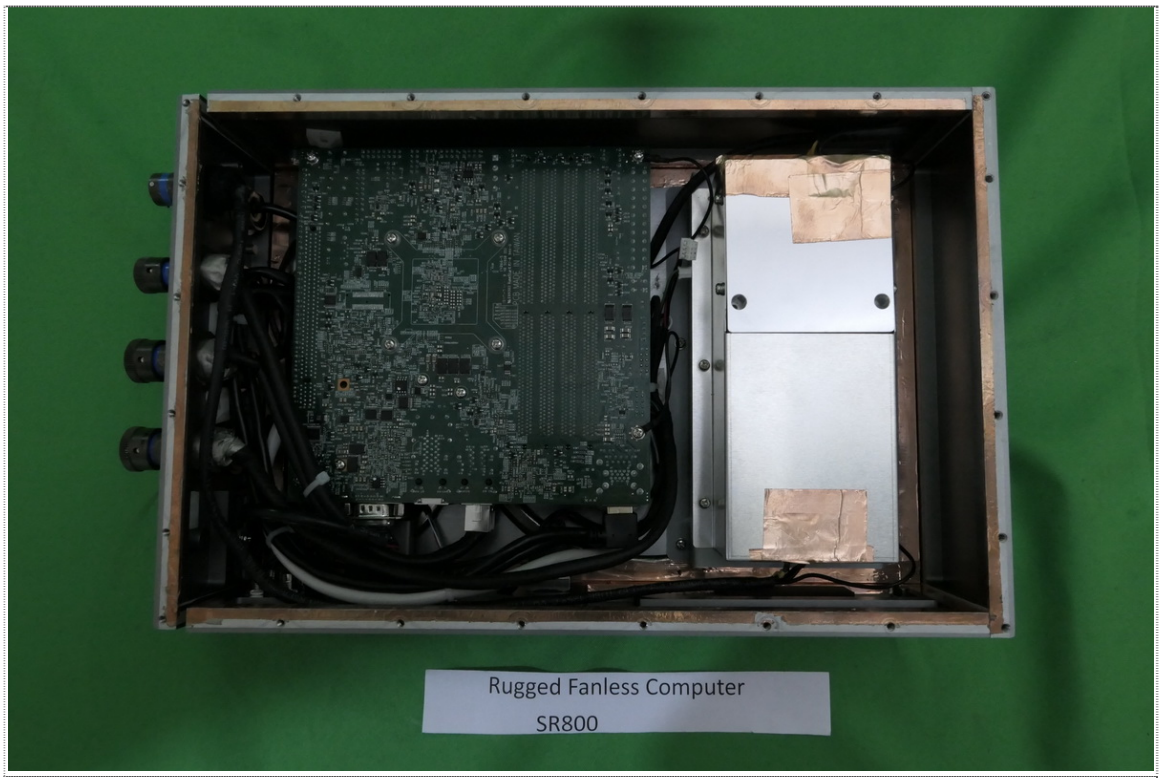
5.1 Model No.: SR-800

View of EUT-1

View of EUT-2

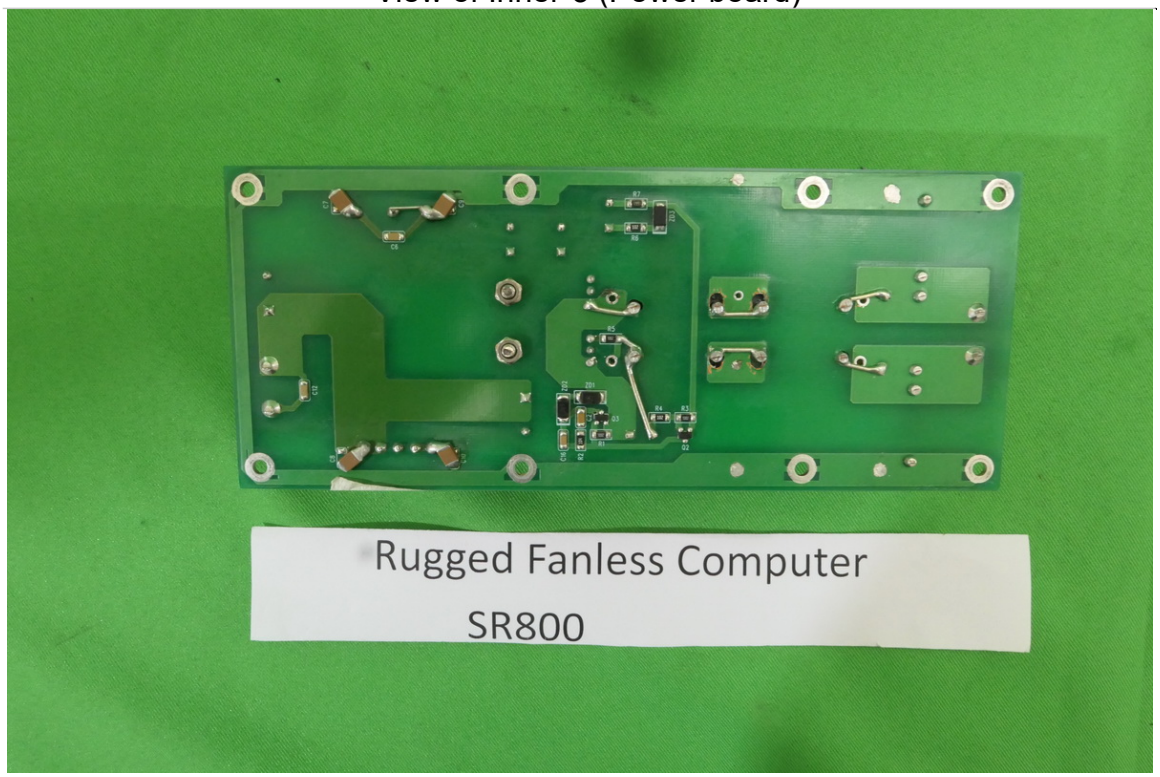


Viw of Inner-1

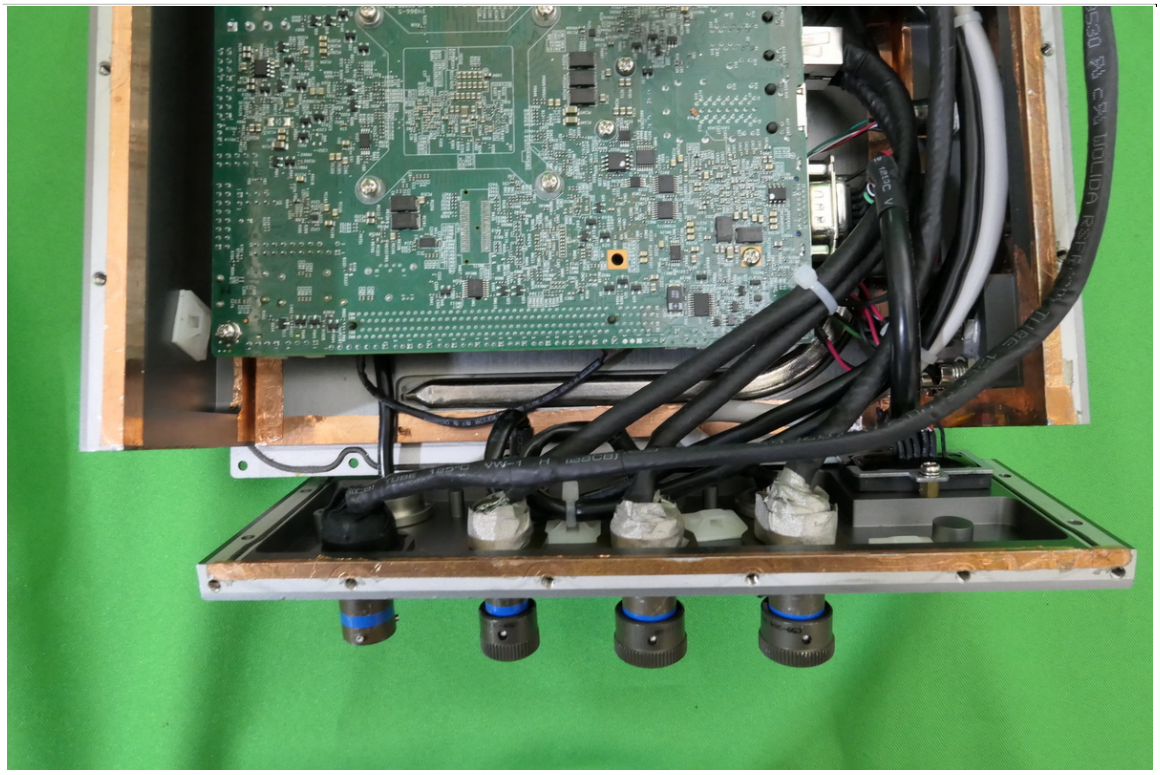


Viw of Inner-2

View of Inner-3 (Power board)



View of Inner-4 (Power board)



View of Inner-5