FCC TEST REPORT

For

Shenzhen Aerospace Innotech Corporation Limited

RFID Reader

Model No.: SAAT-F805, SAAT-I801, SAAT-I802, SAAT-D807

Test Report Number : ESTSZ120501205F-2

EST COMPLIANCE LABORATORY LIMITED
4/F, 7th Building, Xinyuan Industrial Park, Xinguang Road,
Xili, Nanshan District, Shenzhen 518055, China
Tel:+86-755-26648640 Fax:+86-755-26648637

TABLE OF CONTENTS

1 GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	**Shenzhen Aerospace Innotech Corporation Limited**
Address of applicant:	Room 803, Block B, SZAAT Building,10th Road Kejinan, Hi-Tech Park, Nanshan District, Shenzhen, Guangdong, China
Manufacturer:	**Shenzhen Aerospace Innotech Corporation Limited**
Address of manufacturer:	Room 803, Block B, SZAAT Building,10th Road Kejinan, Hi-Tech Park, Nanshan District, Shenzhen, Guangdong, China

General Description of E.U.T

EUT Description:	RFID Reader
Trade Name:	N/A
Model No.:	SAAT-F805, SAAT-I801, SAAT-I802, SAAT-D807
Test Model:	SAAT-F805
Power Supply:	DC 12V via Adapter
Test Power Supply:	AC 120V, 60Hz

Remark: *The models of EUT are identical except appearance of equipment. Unless otherwise specified, all tests were performed on model **SAAT-F805**, to represent the other similar models.*

1.2 Test Standards

The following Declaration of Conformity report of EUT is prepared in accordance with

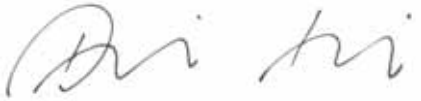
FCC Rules and Regulations Part 15 Subpart B .

The objective of the manufacturer is to demonstrate compliance with the described above standards.

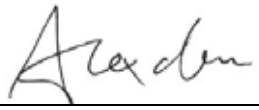
Date of Test : May 07~Jun. 06, 2012

Prepared by : 

(Engineer: David He)

Reviewer : 

(Project Manager: Ronnie Liu)

Approved & Authorized Signer : 

(Manager: Alex Chen)

1.3 Test Summary

For the EUT described above. The standards used were FCC Part 15 Subpart B for Emissions

Table 1 : Tests Carried Out Under FCC Part 15 Subpart B

Standard	Test Items	Status
FCC Part 15 Subpart B	Conduction Emission, 0.15MHz to 30MHz	√
FCC Part 15 Subpart B	Radiation Emission, 30MHz to 1000MHz	√

√ Indicates that the test is applicable
× Indicates that the test is not applicable

1.4 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

The maximum emission levels emanating from the device are compared to the FCC Part 15 Subpart B limits for radiation emissions and the measurement results contained in this test report show that EUT is to be technically compliant with FCC requirements.

Global United Technology Service Co., Ltd at 2nd Floor, Block No.2, Laodong Industrial Zone,Xixiang Road, Baoan District, Shenzhen, China

1.5 Test Facility

All measurement required was performed at laboratory of Global United Technology Service Co., Ltd at 2nd Floor, Block No.2, Laodong Industrial Zone,Xixiang Road, Baoan District, Shenzhen, China

The test facility is recognized, certified, or accredited by the following organizations:

FCC – Registration No.: 600491
Global United Technology Service Co., Ltd has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 600491.

The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

1.6 Test Equipment List and Details

Test equipments list of Global United Technology Service Co., Ltd

Equipment	Manufacturer	Model#	Serial #	Data of Cal.	Due Data
3m Semi-Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS201	Mar. 30 2012	Mar. 30 2013
Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS202	N/A	N/A
EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Sept. 10 2011	Sept. 10 2012
EMI Test Software	AUDIX	E3	N/A	N/A	N/A
Coaxial Cable	GTS	N/A	GTS400	Apr. 01 2012	Apr. 01 2013
Coaxial Cable	GTS	N/A	GTS401	Apr. 01 2012	Apr. 01 2013
Coaxial Cable	GTS	N/A	GTS402	Apr. 01 2012	Apr. 01 2013
Coaxial Cable	GTS	N/A	GTS407	Apr. 01 2012	Apr. 01 2013
Coaxial Cable	GTS	N/A	GTS408	Apr. 01 2012	Apr. 01 2013
BiConiLog Antenna (26-3000MHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS204	Feb. 26 2012	Feb. 26 2013
Pre-amplifier(0.1-3000MHz)	HP	8347A	GTS210	Aug. 03 2011	Aug. 03 2012
Double-ridged horn (1-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS205	Feb. 26 2012	Feb. 26 2013
Pre-amplifier(1-18GHz)	Rohde & Schwarz	8349B	GTS224	Aug. 03 2011	Aug. 03 2012
Humidity/ Temperature Indicator	Shanghai	ZJ1-2B	GTS250	Oct. 28 2011	Oct. 28 2012
Barometer	ChangChun	DYM3	GTS251	Feb. 26 2012	Feb. 26 2013
Shielding Room	ZhongYu Electron	7.0(L)*3.0(W)*3.0(H)	GTS206	Apr. 10 2012	Apr. 10 2013
EMI Test Receiver	Rohde & Schwarz	ESCS30	GTS208	Sept. 14 2011	Sept. 14 2012
10dB Pulse Limiter	Rohde & Schwarz	N/A	GTS209	Sept. 14 2011	Sept. 14 2012
LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8127	GTS207	Apr. 14 2012	Apr. 14 2013
Coaxial Cable	GTS	N/A	GTS406	Apr. 01 2012	Apr. 01 2013

2 TEST CONFIGURATION

2.1 Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

2.2 EUT Exercise Software

The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software offered by manufacture, can let the EUT being normal operation.

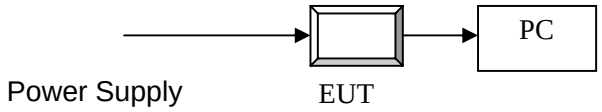
2.3 Special Accessories

As shown in section 2.5, interface cable used for compliance testing is shielded as normally supplied by **Shenzhen Aerospace Innotech Corporation Limited** and its respective support equipment manufacturers.

2.4 Equipment Modifications

The EUT tested was not modified by EST.

2.5 Basic Test Setup Block Diagram



3 DISTURBANCE VOLTAGE AT THE MAINS TERMINALS

3.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ±2.4 dB.

3.2 Limit of Disturbance Voltage at The Mains Terminals (FCC PART15 Subpart B 15.107 Class B)

Frequency Range (MHz)	Limits (dBuV)	
	Quasi-Peak	Average
0.150～0.500	66-56	56-46
0.500-5.000	56	46
5.000～30.00	60	50

Note: (1)The tighter limit shall apply at the edge between two frequency bands.

3.3 EUT Setup

The setup of EUT is according with ANSI C63.4-2003 measurement procedure. The specification used was the FCC Rules and Regulations Part 15 Subpart B limits.

The EUT was placed center and the back edge of the test table.

The AV cables were draped along the test table and bundled to 30-40cm in the middle.

The spacing between the peripherals was 10 cm.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

3.4 Instrument Setup

The test receiver was set with the following configurations:

Test Receiver Setting:

Frequency Range……150 KHz to 30 MHz
Detector……..Peak & Quasi-Peak & Average
Sweep Speed……Auto
IF Band Width……9 KHz

3.5 Test Procedure

During the conducted emission test, the EUT power cord was connected to the auxiliary outlet of the first Artificial Mains.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.

All data was recorded in the peak detection mode. Quasi-peak and Average readings were only performed when an emission was found to be marginal (within -10 dBμV of specification limits). Quasi-peak readings are distinguished with a "**QP**". Average readings are distinguished with a "**AV**".

3.6 Summary of Test Results

According to the data in section 3.6, the EUT complied with the FCC Part 15 Subpart B Conducted margin, with the worst margin reading of:

3.7 Disturbance Voltage Test Data

Temperature (℃)	26
Humidity (%RH)	58
Barometric Pressure (mbar)	1001.1
EUT	RFID Reader
M/N	SAAT-F805
Operating Mode	Standby

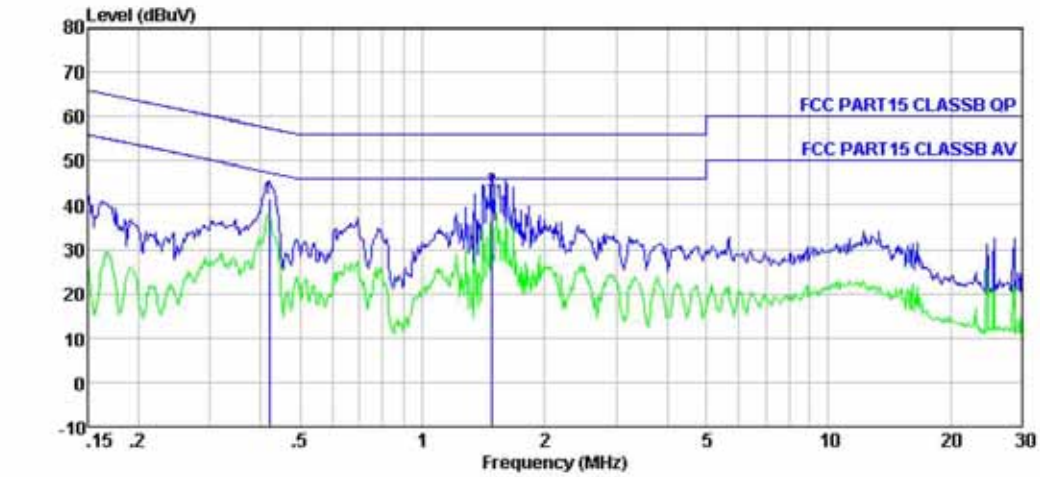
Test data see following pages.

Remark: (1) When PK reading is less than relevant limit 20dB, the QP reading and AV reading will not be recorded.
(2) Where QP reading is less than relevant AV limit, the AV reading will not be measured

3.8 Test Result

Pass.

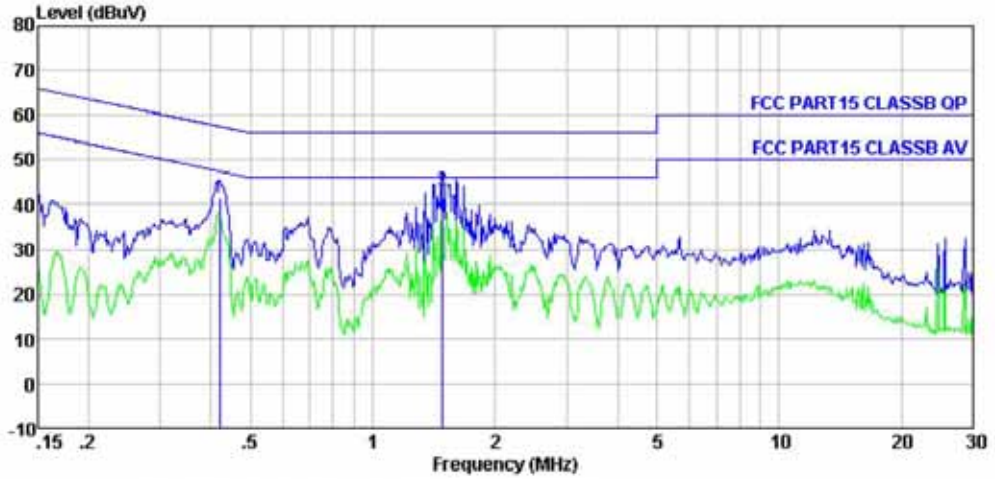
Conducted Emission Test Data



Condition : FCC PART15 CLASSB QP LISN(2011) LINE
EUT : RFID Reader
Model : SAAT-F805
Test Mode : Standby
Power Rating : AC 120V/60Hz
Test Engineer: David

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.419	40.86	0.57	0.10	41.53	57.46	-15.93	QP
2	1.480	42.24	0.43	0.10	42.77	56.00	-13.23	QP

Conducted Emission Test Data



Condition : FCC PART15 CLASSB QP LISN(2011) NEUTRAL
EUT : RFID Reader
Model : SAAT-F805
Test Mode : Standby
Power Rating : AC 120V/60Hz
Test Engineer: David

	Freq	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.420	40.43	0.57	0.10	41.10	57.46	-16.36	QP
2	1.477	42.10	0.43	0.10	42.63	56.00	-13.37	QP

4 RADIATED DISTURBANCES

4.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ±4.0 dB.

4.2 Limit of Radiated Disturbances (Subpart B 15.109 Class B)

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dBμV/m)
30 ~ 88	3	40
88 ~216	3	43.5
216 ~ 960	3	46
960~1000	3	49.5

Note: (1) The tighter limit shall apply at the edge between two frequency bands.
(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

4.3 EUT Setup

The radiated emission tests were performed in the in the 3-meter anechoic chamber, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC Part 15 Subpart B limits.

The EUT was placed on the center of the test table.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

4.4 Test Receiver Setup

According to FCC Part 15 rule, the frequency was investigated from 30 to 1000 MHz. During the radiated emission test, the test receiver was set with the following configurations:

Test Receiver Setting:

Detector……..Peak & Quasi-Peak
IF Band Width……..120KHz
Frequency Range……30MHz to 1000MHz
Turntable Rotated……0 to 360 degrees

Antenna Position:

Height……1m to 4m
Polarity……...Horizontal and Vertical

4.5 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings performed only when an emission was found to be marginal (within -10 dBμV of specification limits), and are distinguished with a "**QP**" in the data table.

4.6 Radiated Emissions Test Result

Temperature (℃)	26
Humidity (%RH)	56
Barometric Pressure (mbar)	1001.1
EUT	RFID Reader
M/N	SAAT-F805
Operating Mode	Standby-RS232, Standby-USB, Standby-Ethernet

Test data see following pages.

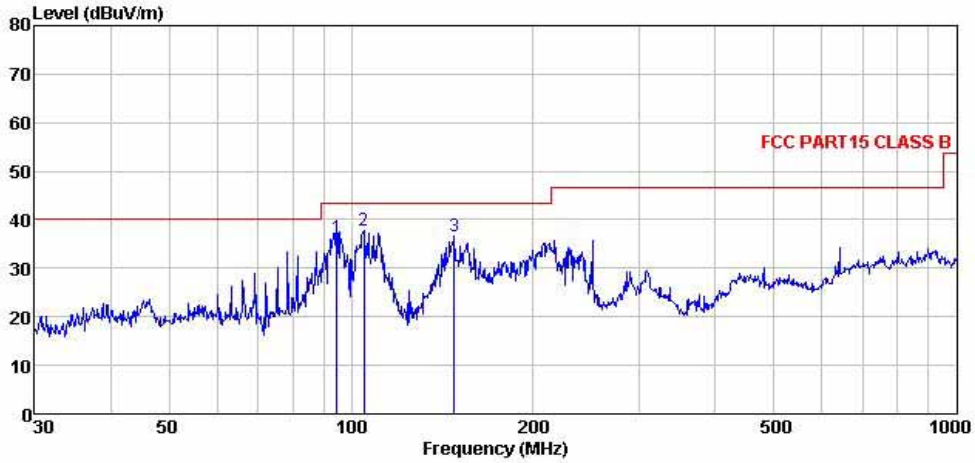
Remark: (1) When PK reading is less than relevant limit 20dB, the QP reading and AV reading will not be recorded.
(2) Where QP reading is less than relevant AV limit, the AV reading will not be measured

4.7 Test Result

Pass.

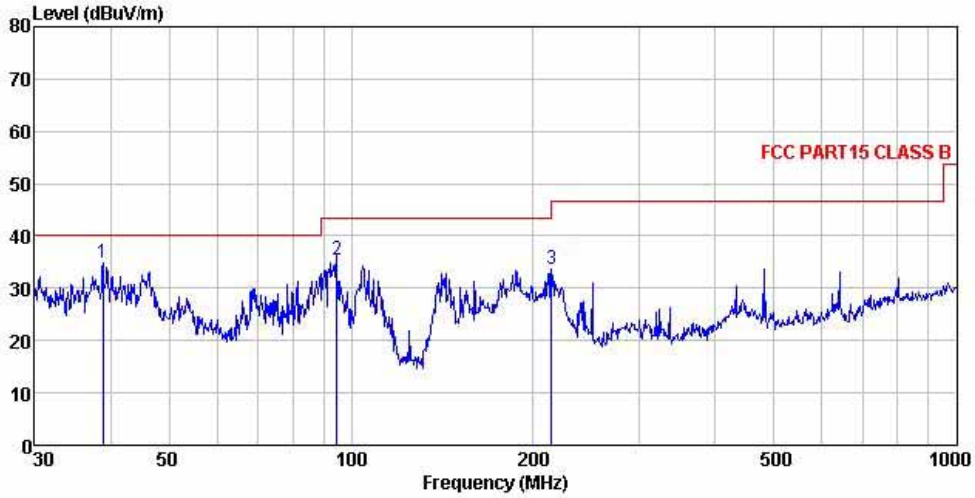
Radiated Emission Test Data

Mode: Stanby-RS232



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163-NEW HORIZONTAL
EUT : RFID Reader
Model : SAAT-P805
Test Mode : Standby-RS232
Power Rating : AC 120V/60Hz
Test Engineer: David

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	94.43	57.25	9.92	1.11	31.73	36.55	43.50	-6.95	QP
2	104.90	57.67	10.70	1.20	31.72	37.85	43.50	-5.65	QP
3	147.92	56.39	10.61	1.50	31.96	36.54	43.50	-6.96	QP

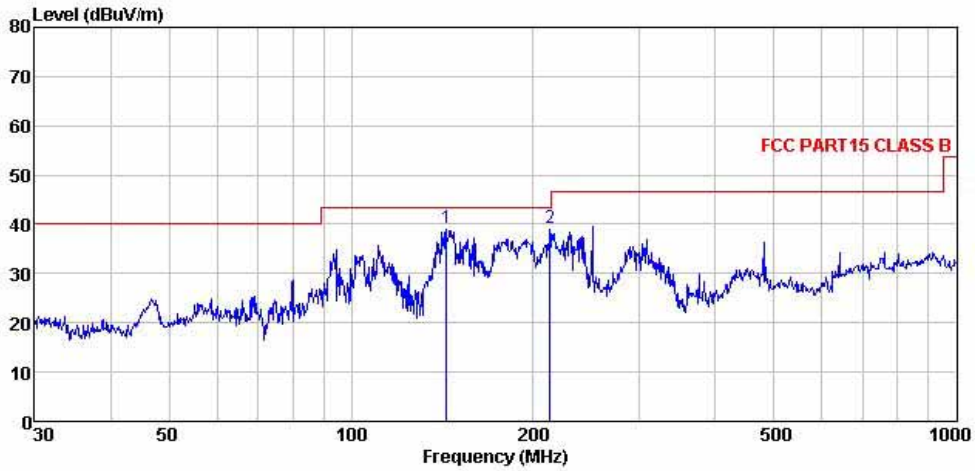


Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163-NEW VERTICAL
EUT : RFID Reader
Model : SAAT-F805
Test Mode : Standby-RS232
Power Rating : AC 120V/60Hz
Test Engineer: David

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	38.89	53.60	12.77	0.64	32.16	34.85	40.00	-5.15	QP
2	94.43	55.75	11.48	1.11	31.73	36.61	43.50	-6.89	QP
3	214.51	56.39	7.80	1.84	32.27	33.76	43.50	-9.74	QP

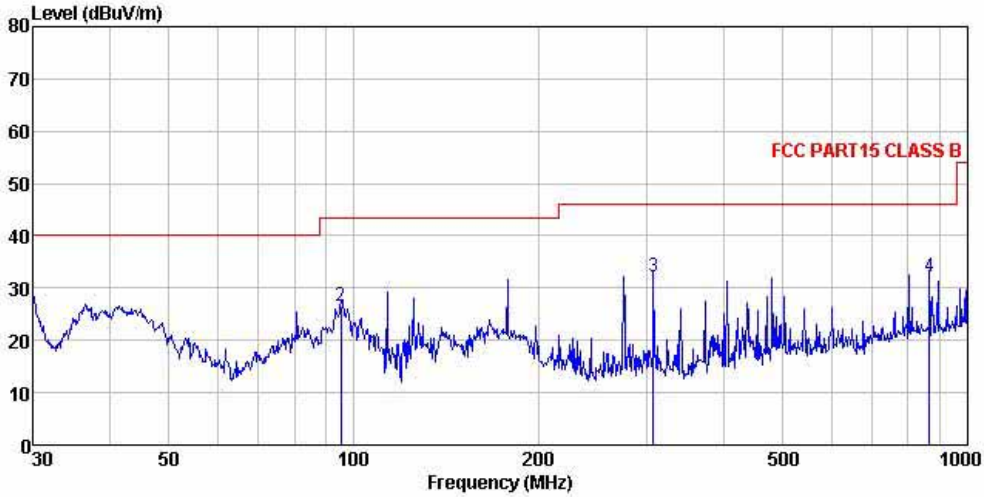
Radiated Emission Test Data

Mode: Standby-USB



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163-NEW HORIZONTAL
EUT : RFID Reader
Model : SAAT-F805
Test Mode : Standby-USB
Power Rating : AC 120V/60Hz
Test Engineer: David

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 *	143.33	58.11	9.55	1.48	31.95	37.19	43.50	-6.31	QP
2	213.02	57.23	9.91	1.83	32.27	36.70	43.50	-6.80	QP

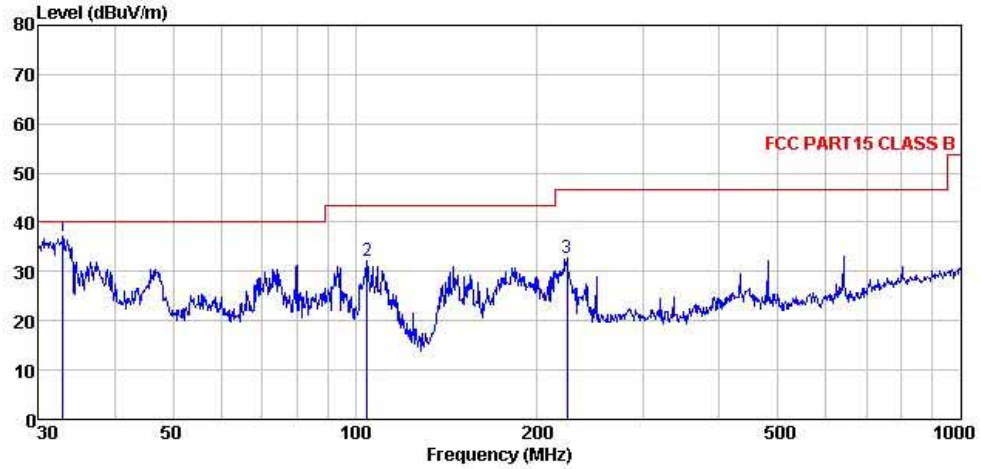


Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163-NEW VERTICAL
EUT : RFID Reader
Model : SAAT-F805
Test Mode : Standby-USB
Power Rating : AC 120V/60Hz
Test Engineer: David

	Freq	ReadAntenna Level	Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	30.00	40.66	13.03	0.60	26.48	27.81	40.00	-12.19	QP
2	95.43	40.52	11.29	1.11	26.34	26.58	43.50	-16.92	QP
3	307.83	44.14	11.68	2.09	25.73	32.18	46.00	-13.82	QP
4	866.09	36.55	19.11	3.27	26.63	32.30	46.00	-13.70	QP

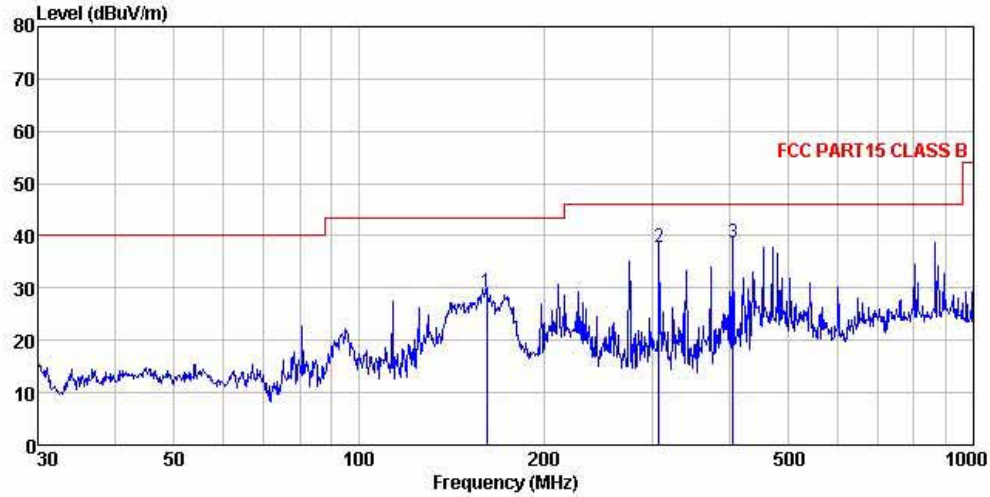
Radiated Emission Test Data

Mode: Standby-Ethernet



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163-NEW VERTICAL
EUT : RFID Reader
Model : SAAT-F805
Test Mode : Standby-Ethernet
Power Rating : AC 120V/60Hz
Test Engineer: David

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	32.86	55.99	12.82	0.61	32.23	37.19	40.00	-3.81	QP
2	104.54	50.89	11.72	1.19	31.72	32.08	43.50	-11.22	QP
3	223.73	54.04	9.09	1.87	32.28	32.72	46.00	-13.28	QP



Site : 3m chamber
Condition : FCC PART15 CLASS B 3m VULB9163-NEW HORIZONTAL
EUT : RFID Reader
Model : SAAT-F805
Test Mode : Standby-Ethernet
Power Rating : AC 120V/60Hz
Test Engineer: David

	Freq	ReadAntenna Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	161.47	42.92	10.75	1.58	26.08	29.17	43.50	-14.33	QP
2	307.83	49.35	12.17	2.09	25.73	37.88	46.00	-8.12	QP
3	406.09	48.40	14.44	2.27	26.56	38.55	46.00	-7.45	QP