STU Standard Technology Union Co., Ltd.

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FCC ID TEST REPORT

Application No.:	STUGZEMO111013538RF2
Applicant:	South Surveying & Mapping Instrument Co., Ltd
Address	F1, No.52, Jian Zhong Rd, Tian He Software Park, Zhong Shan Avenue West, Guangzhou, China
Equipment Under Test (EUT):	
EUT Name:	GNSS RECEIVER
Trade Mark:	SOUTH
Model No.:	S82-T
Serial No.:	Not supplied by client
FCC ID:	Z9PS82-T
Standards:	FCC PART 15B
Date of Receipt:	Nov.16, 2011
Date of Test:	Nov.16, 2011
Test Result :	**PASS***

Tested By: David Li / Test Engineer.....

Reviewed By : Jimmy Yao / EMC Manager.....

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1. VERIFICATION OF COMPLIANCE

EUT Name:	GNSS RECEIVER
Trade Mark:	SOUTH
Model No.:	S82-T
Applicant:	South Surveying & Mapping Instrument Co., Ltd F1, No.52, Jian Zhong Rd, Tian He Software Park, Zhong Shan Avenue West, Guangzhou, China
Manufacturer:	South Surveying & Mapping Instrument Co., Ltd F1, No.52, Jian Zhong Rd, Tian He Software Park, Zhong Shan Avenue West, Guangzhou, China
Type of Test:	FCC Class B
File Number:	STUGZEMO111013538RF2
Date of test:	Nov.05, 2011 to Nov.16, 2011
Deviation:	None
Condition of Test Sample:	Normal

The above equipment was tested by STU Standard Technology Union Co., Ltd. For compliance with the requirements set forth in the FCC Rules and Regulations Part 15, the measurement procedure according to ANSI C63.4:2003 This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

2. TEST FACILITY

All measurement facilities used to collect the measurement data are located at
Guangdong Electronic & Electrical Products Inspection and Supervision Institute（CGEL）
45 Cunnan Street, Shayongnan, Sanyuanli District, Guangzhou, Guangdong, China

The test site is constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003.

FCC Registration No.: 597719

3. SUPPORT EQUIPMENT LIST

Device Type	Manufacturer	Model Name	Serial No.	Data Cable	Power Cable
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**Note: All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

4. SYSTEM DESCRIPTION

EUT test procedure:

1. Connect EUT and peripheral devices (if any).
2. Power on the EUT, then EUT begins to work.
3. Make sure the EUT works normally during the test.

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5. FCC LINE CONDUCTED EMISSION TEST

5.1. TEST EQUIPMENT OF LINE CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	N/A	06/29/2011	06/28/2012
LISN	R&S	ESH3-Z5	N/A	06/29/2011	06/28/2012
AMN	R&S	ESH2-Z5	862060/020	06/29/2011	06/28/2012

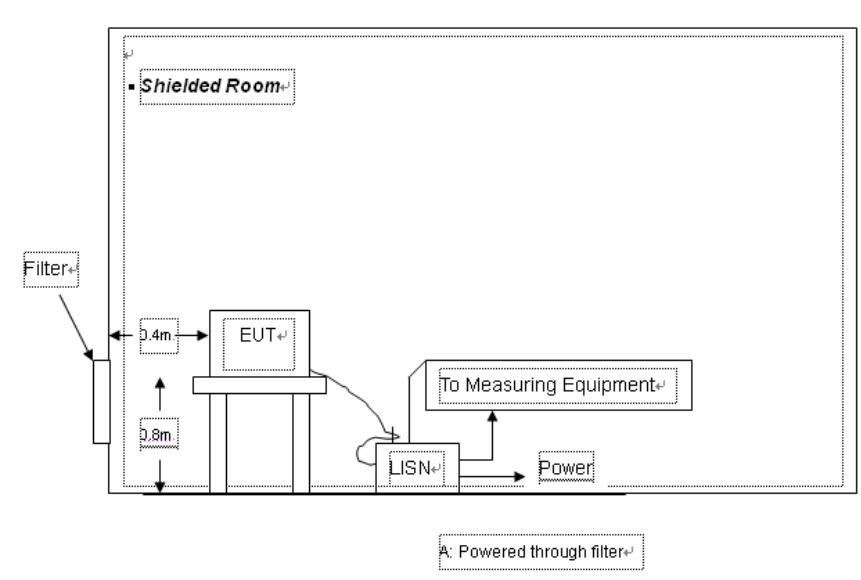
5.2 .LIMITS OF LINE CONDUCTED EMISSION TEST

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz~500kHz	66-56	56-46
500kHz~5MHz	56	46
5MHz~30MHz	60	50

**Note: 1. The lower limit shall apply at the transition frequency.

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz

5.3. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



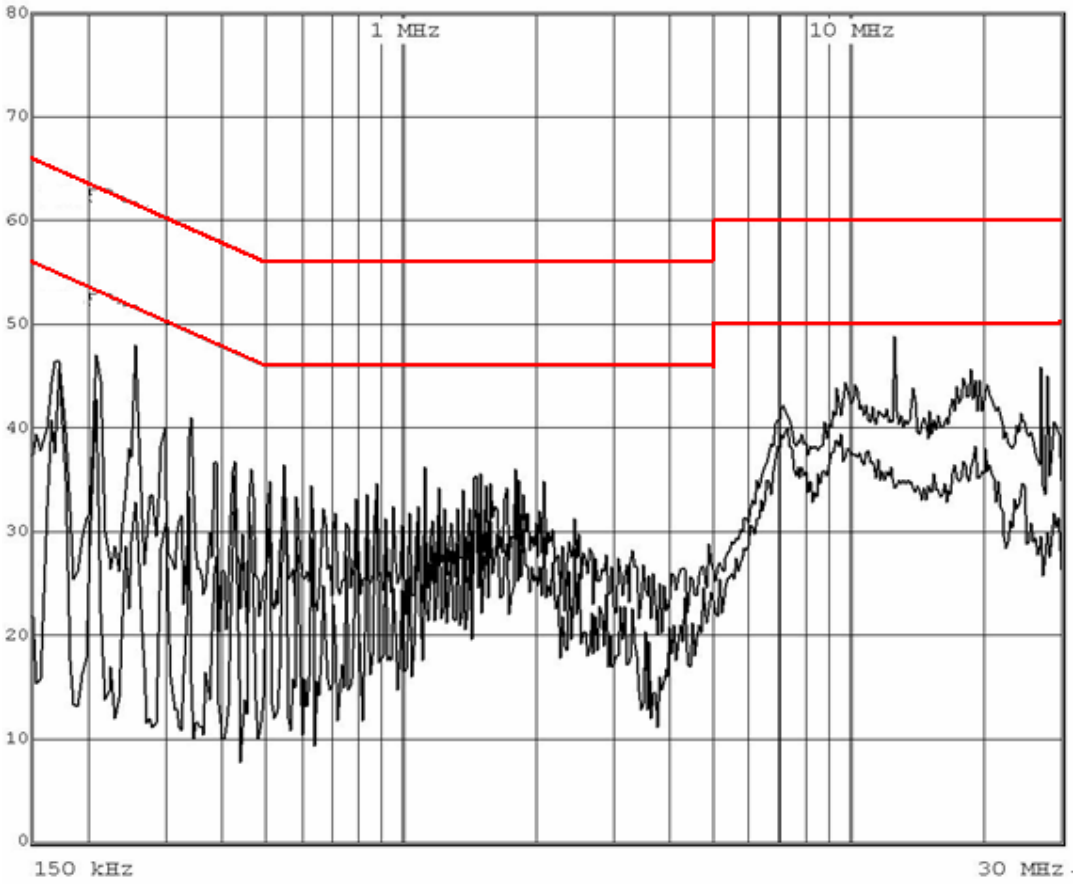
5.4. PROCEDURE OF LINE CONDUCTED EMISSION TEST

1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2) Support equipment, was placed as per ANSI C63.4.
3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
4) PC, one support equipment received AC power through a Line Impedance Stabilization Network (LISN) that was grounded to the protect earth.
5) Monitor, the other support equipment received AC power from a second LISN.
6) The EUT test program was started. Emissions were measured on each current carrying line of the PC using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7) Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8) During the above scans, the emissions were maximized by cable manipulation.
9) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions.
10) Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
11) The test data of the worst case condition(s) was reported on the Summary Data page.

5.5 TEST RESULT OF LINE CONDUCTED EMISSION TEST

charging mode:

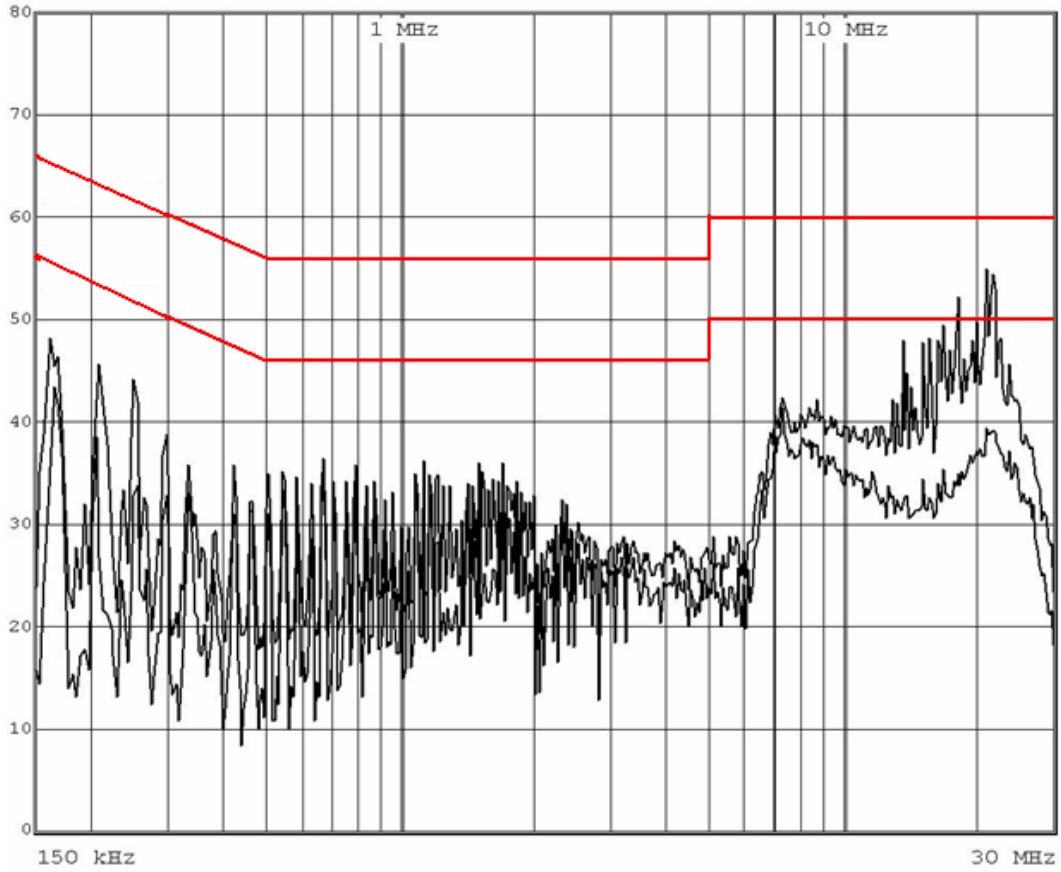
CONDUCTED EMISSION TEST-L



Quasi-peak and Average measurement:

Frequency MHz	Level QP dBmV	Limit QP dBmV	Margin dB	Detector QP/AV	Result
0.1740	27.34	54.76	27.42	AV	**Pass**
0.2540	45.53	61.61	16.08	QP	**Pass**
7.2900	22.39	50.00	27.61	AV	**Pass**
7.3300	23.20	50.00	26.80	AV	**Pass**
12.7140	37.54	60.00	22.46	QP	**Pass**
27.0100	33.20	60.00	26.80	QP	**Pass**

CONDUCTED EMISSION TEST-N

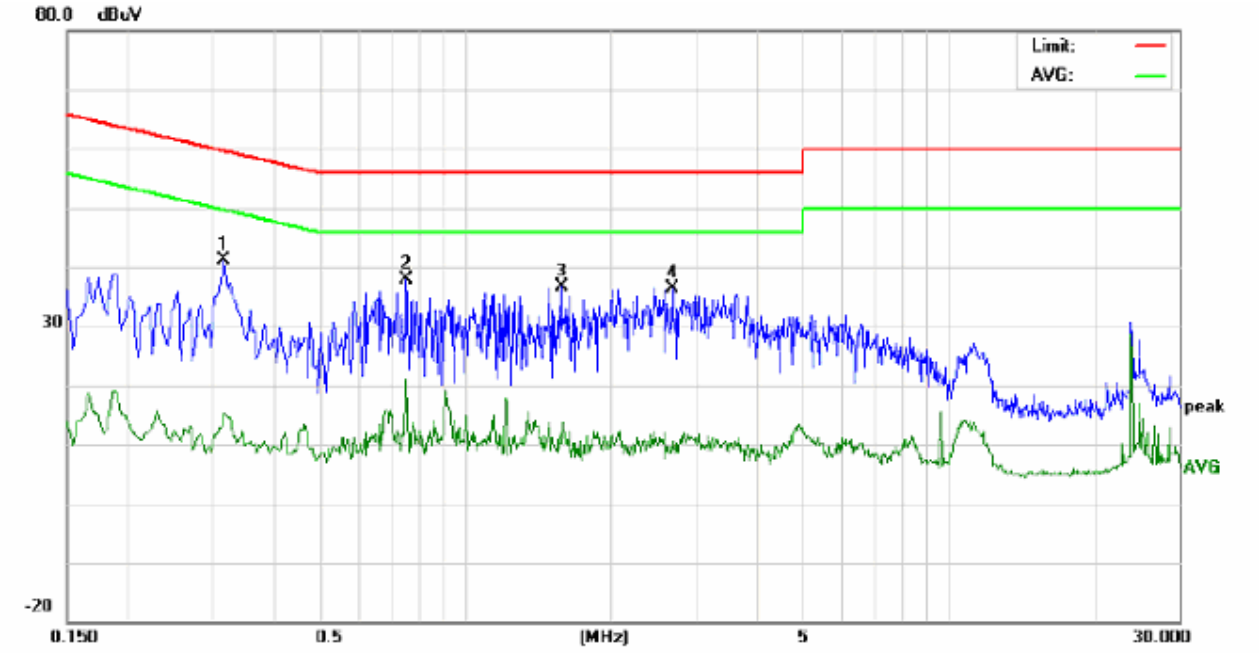


Quasi-peak and Average measurement:

Frequency MHz	Level QP dBmV	Limit QP dBmV	Margin dB	Detector QP/AV	Result
0.6700	24.32	46.00	21.68	AV	**Pass**
7.3140	29.59	50.00	20.41	AV	**Pass**
21.3220	41.93	60.00	18.07	QP	**Pass**
21.3220	25.27	50.00	24.73	AV	**Pass**
21.8820	37.82	60.00	22.18	QP	**Pass**
22.2220	40.78	60.00	19.22	QP	**Pass**

Reading mode:

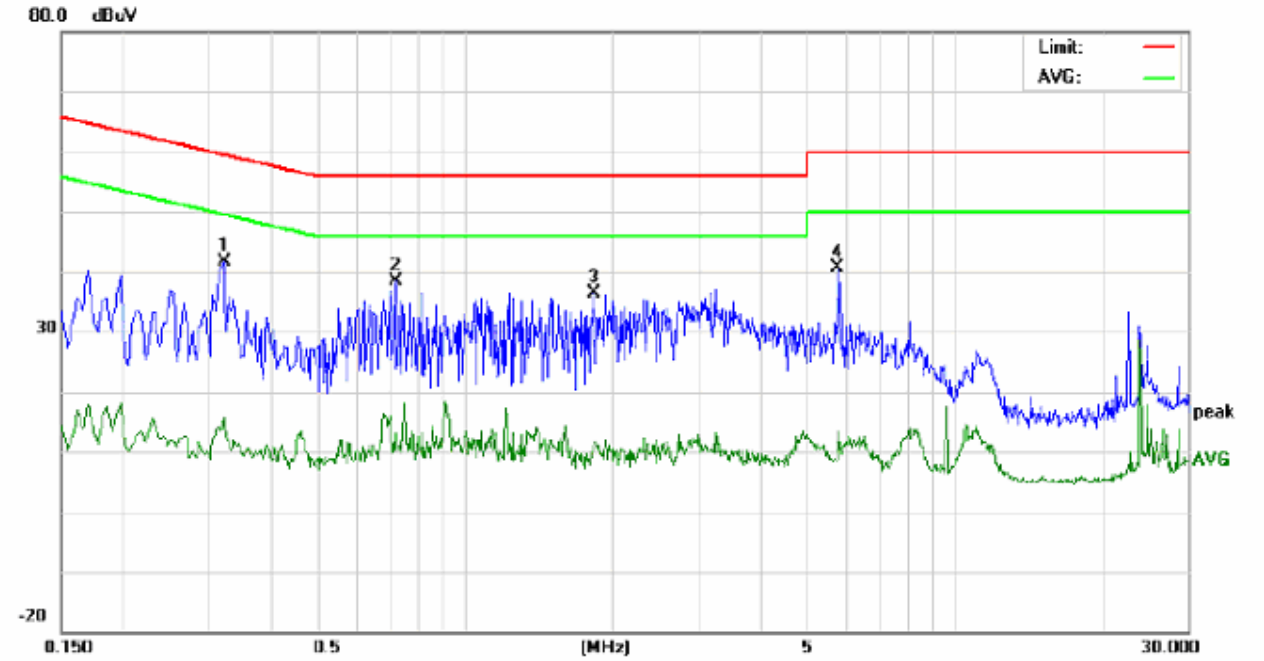
CONDUCTED EMISSION TEST-L



Site: Conduction | Phase: *L1* | Temperature: 26
Limit: FCC Class B Conduction(QP) | Power: AC 120V/60Hz | Humidity: 60 %

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.3180	30.76		4.82	10.30	41.06		15.12	59.76	49.76	-18.70	-34.64	P	
2	0.7580	27.44		10.93	10.31	37.75		21.24	56.00	46.00	-18.25	-24.76	P	
3	1.5780	26.25		1.21	10.36	36.61		11.57	56.00	46.00	-19.39	-34.43	P	
4	2.6900	25.86		0.09	10.48	36.34		10.57	56.00	46.00	-19.66	-35.43	P	

CONDUCTED EMISSION TEST-N



Site: Conduction | Phase: *N* | Temperature: 26
Limit: EN55022 Class B Conduction(QP) | Power: AC 120V/60Hz | Humidity: 60 %

No.	Freq. (MHz)	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG	dB	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.3220	31.42		5.47	10.30	41.72		15.77	59.65	49.65	-17.93	-33.88	P	
2	0.7220	28.06		2.69	10.33	38.39		13.02	56.00	46.00	-17.61	-32.98	P	
3	1.8300	26.06		0.39	10.27	36.33		10.66	56.00	46.00	-19.67	-35.34	P	
4	5.7819	30.43		3.00	10.27	40.70		13.27	60.00	50.00	-19.30	-36.73	P	

6. FCC RADIATED EMISSION TEST

6.1. TEST EQUIPMENT OF RADIATED EMISSION

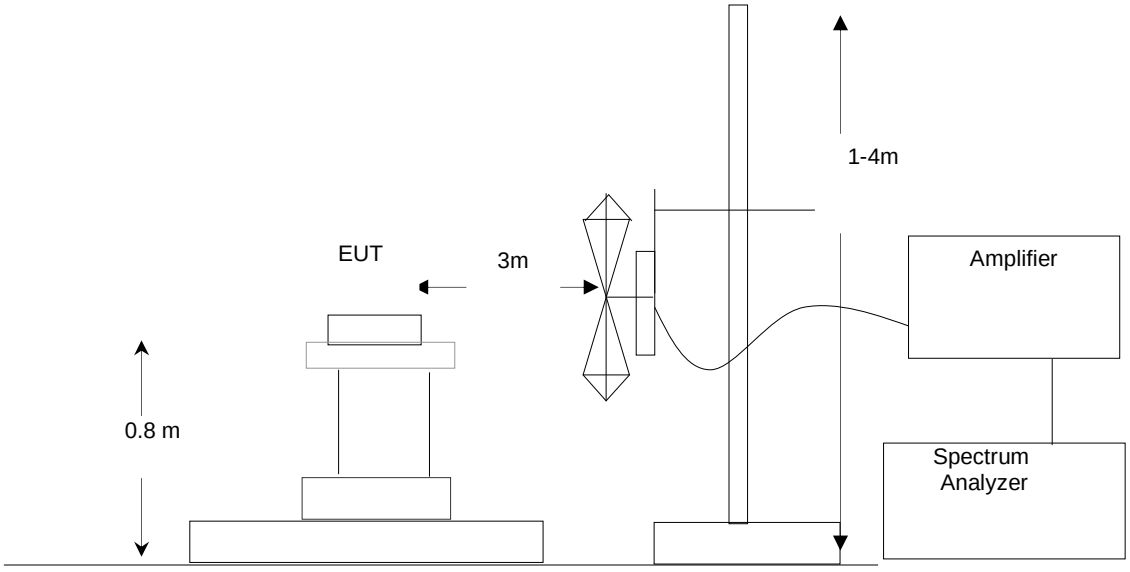
Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
PSA SERIES SPECTRUM ANALYZER	AGILENT	E4440A	N/A	06/29/2011	06/28/2012
ANTENNA	A.H.	SAS-521-4	N/A	06/29/2011	06/28/2012
HORN ANTENNA	EM	EM-AH-10180	N/A	06/29/2011	06/28/2012
AMPLIFIER	EM	EM30180	0607030	06/29/2011	06/28/2012
POSITIONING CONTROLLER	MF	MF-7802	N/A	06/29/2011	06/28/2012

6.2. LIMITS OF RADIATED EMISSION TEST

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBuV/m/ Q.P.)
30~88	3	40.0
88~216	3	43.5
216~960	3	46.0
Above 960	3	54.0

**Note: The lower limit shall apply at the transition frequency.

6.3 BLOCK DIAGRAM OF RADIATED EMISSION TEST



6.4 PROCEDURE OF RADIATED EMISSION TEST

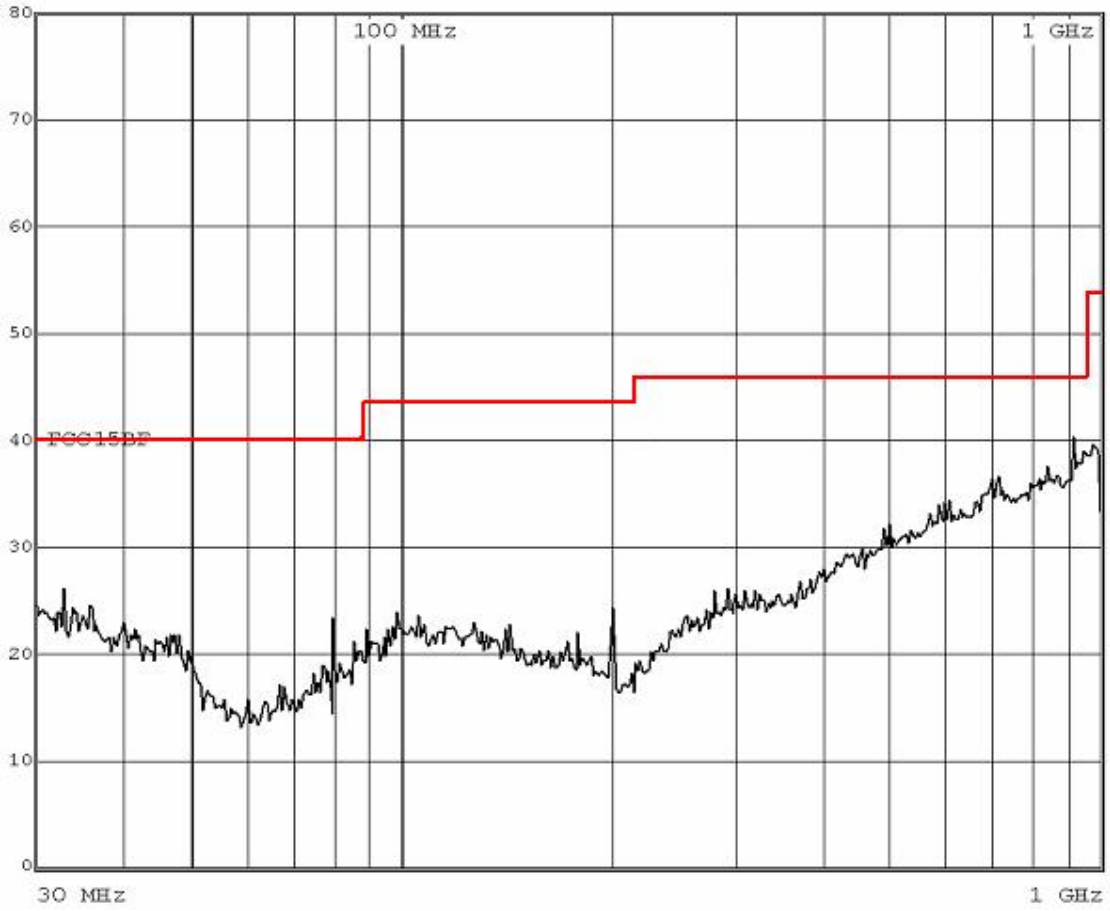
1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2) Support equipment, was placed as per ANSI C63.4.
3) All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
4) The EUT is linked to the support equipments. All support equipments received AC 120V/60Hz power from socket under the turntable.
5) The antenna was placed at 3 meter away from the EUT as stated in FCC Part 15. The antenna connected to the Analyzer via a cable and at times a pre-amplifier would be used.
6) The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
7) The test mode(s) were scanned during the test:
8) Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and Q.P./Peak reading is presented.

The test data of the worst case condition(s) was reported on the Summary Data page.

6.5 TEST RESULT OF RADIATED EMISSION TEST

Charging Mode:

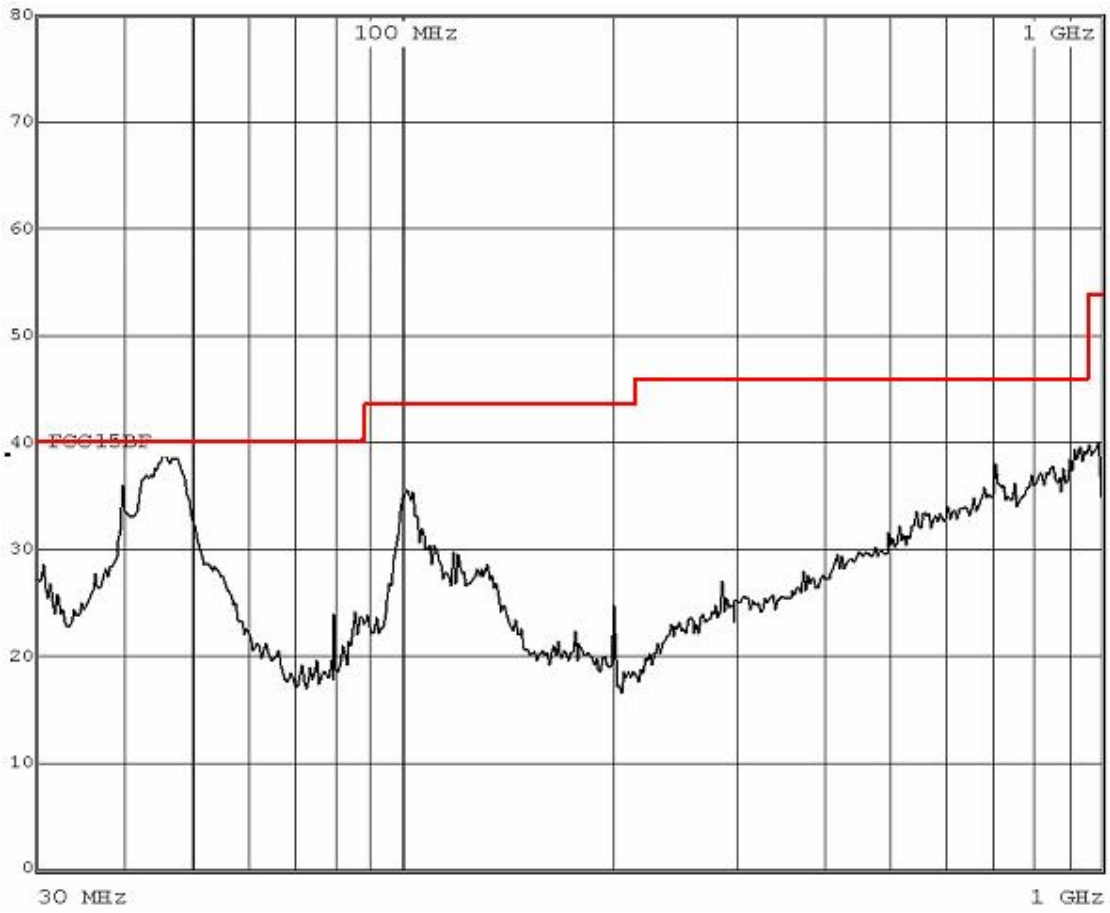
RADIATED EMISSION HORIZONTAL AT 3M



Quasi-peak measurement

Frequency MHz	Level QP dB(mV/m)	Limit QP dB(mV/m)	Margin dB	Polarity	Result
915.4800	33.44	46.00	12.56	H	**Pass**
976.9200	34.30	54.00	19.70	H	**Pass**
978.1600	34.39	54.00	19.61	H	**Pass**
980.6800	34.40	54.00	19.60	H	**Pass**
984.9200	34.40	54.00	19.60	H	**Pass**
989.4400	34.33	54.00	19.67	H	**Pass**

RADIATED EMISSION VERTICAL AT 3M

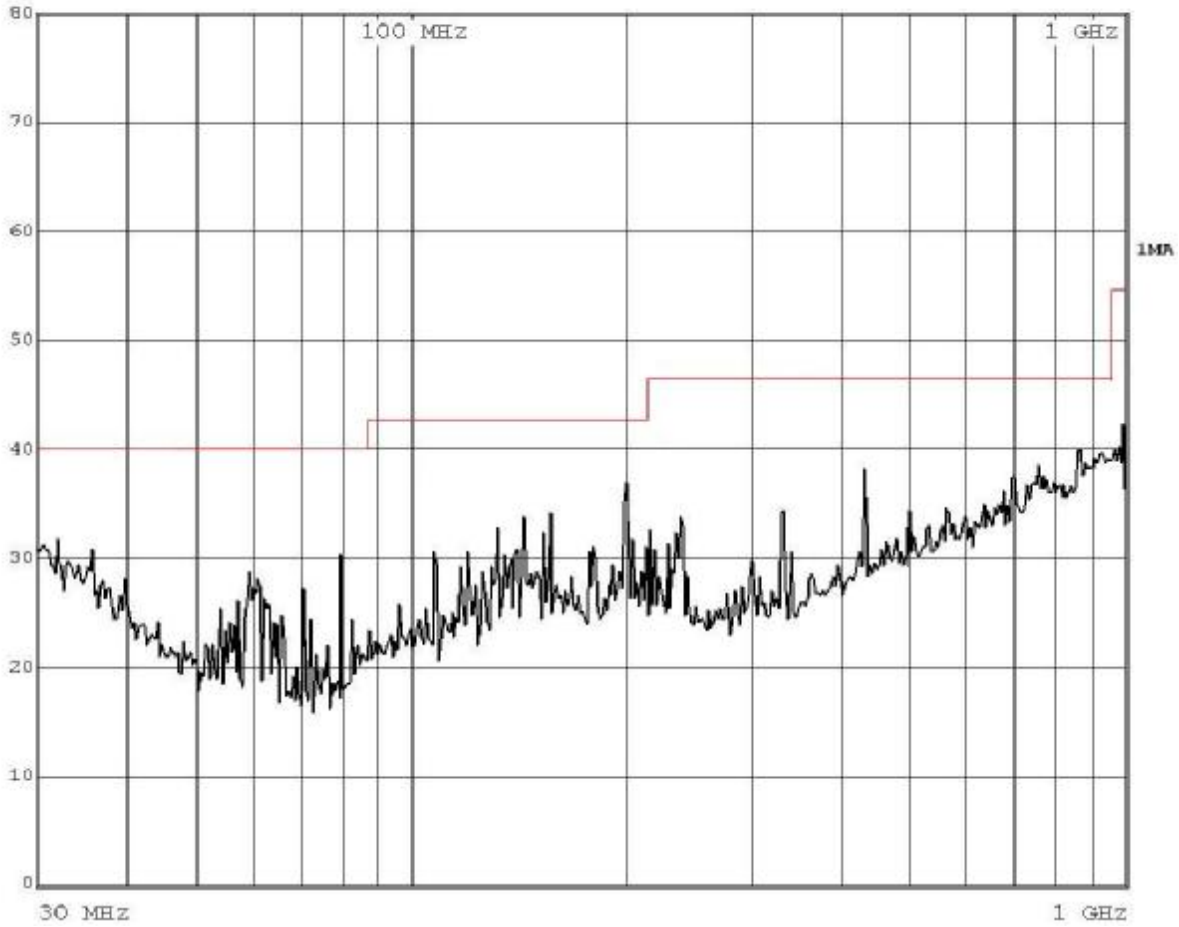


Quasi-peak measurement

Frequency MHz	Level QP dB(mV/m)	Limit QP dB(mV/m)	Margin dB	Polarity	Result
45.6800	35.96	40.00	4.04	V	**Pass**
101.5200	31.78	43.50	11.72	V	**Pass**
931.7200	33.74	46.00	12.26	V	**Pass**
938.3200	33.64	46.00	12.36	V	**Pass**
965.1600	34.11	54.00	19.89	V	**Pass**
990.2800	34.23	54.00	19.77	V	**Pass**

Reading Mode:

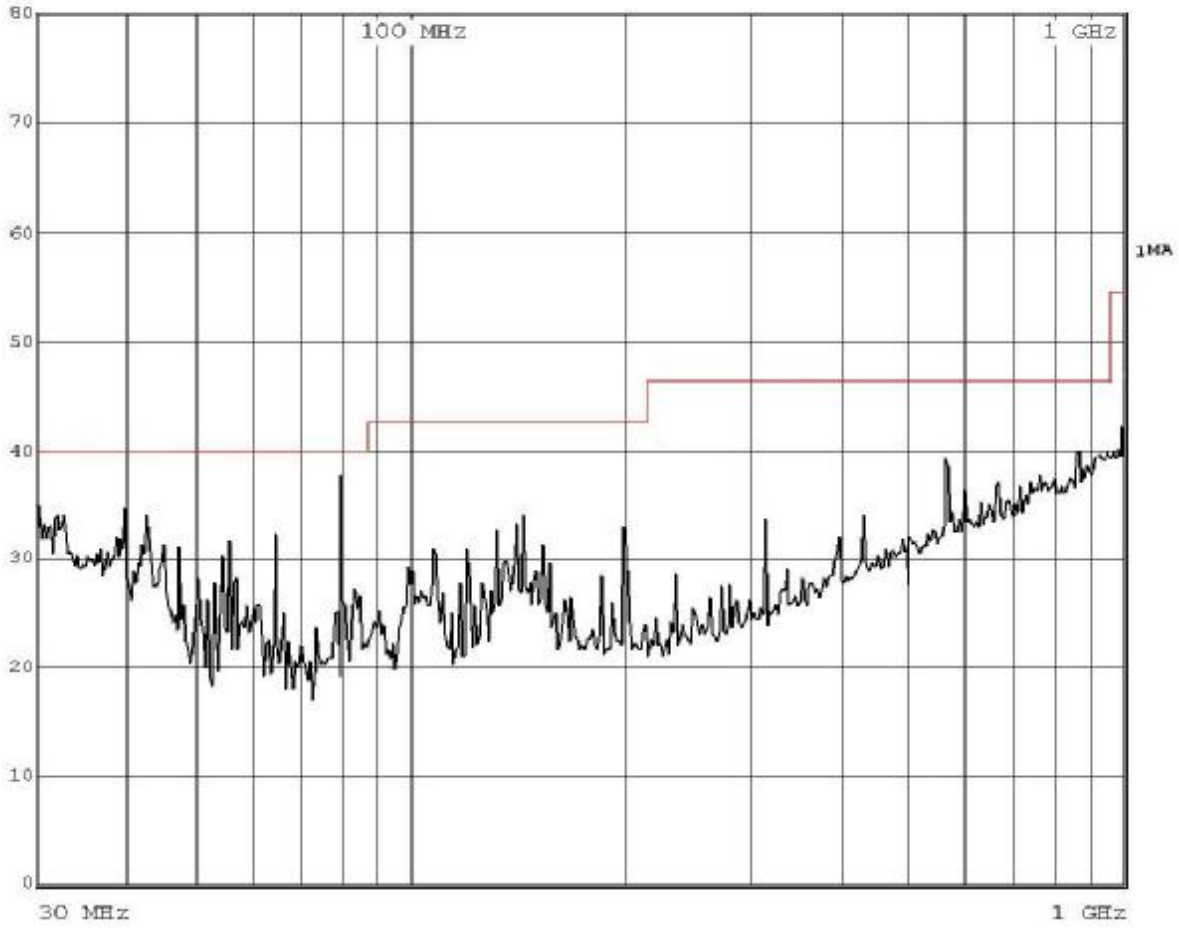
RADIATED EMISSION HORIZONTAL AT 3M



Quasi-peak measurement

Frequency (MHz)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
156.72	34.26	43.00	-8.71	QP
200.24	23.29	43.00	-19.70	QP
995.6	37.61	54.00	-16.38	QP

RADIATED EMISSION VERTICAL AT 3M



Quasi-peak measurement

Frequency (MHz)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Remark
30.12	32.92	40.00	-6.07	QP
40.00	26.25	40.00	-13.74	QP
60.04	21.47	40.00	-18.53	QP
60.12	21.36	40.00	-18.63	QP
995.16	39.69	54.00	-14.11	QP

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