



## ELECTRONICS TEST AND DEVELOPMENT CENTRE

(STQC Directorate, Ministry of Communications & Information Technology)  
 100 ft Road, Peenya Industrial Estate, Bangalore-560 058  
 (Tel: 2839 5992, 2839 4647. Fax: 080 - 2839 1804)  
 E-mail: centre@etdcbg.org



T-0044

Report No.: ETDC (Bg)/T-60331-2

### TEST REPORT

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#### 1. Scope

1.	Service request number	60331
2.	Requested by (Name & Address of the Organization)	M/s. CEM Solutions Pvt Ltd, Akarsh Eco Place ,Ground Floor, 176 EPIP, Industrial Area, Kundalahalli, Whitefield, Bangalore-560066.
3.	Description of the equipment:	
	a) Nomenclature	Nano PBX
	b) Manufactured by	CEM Solutions Pvt Ltd
	c) Model / type no.	CPX-002
	d) Serial no.	001 (Prototype)
4.	Date of submission of samples	30-09-2009
5.	Condition of item on receipt	Good
6.	Date of completion of tests	01-10-2009
7.	Applicable test specification	FCC Part 15:2007 , Class B
8.	Test category	Performance Test
9.	Environment condition	Temp: 26 °C, RH: 65%

#### 2. Major equipments used

Sl No	Nomenclature	Make	Model	Cal. Due
1	EMI Receiver	R&S	ESI26	FEB 2010
2	LISN	R&S	ESH3Z5	FEB 2010
3	Biconicalog Antenna	Electro-metrics	EM-6917B-1	AUG 2010

This report refers only to the item tested and shall not be reproduced except in full. Refer to Information contained on the cover.





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Test Performed : 1) Power line Conducted emission measurement  
2) Radiated emission measurement @ 3 mts. distance

Specification : FCC Part15:2007, Class B

Detector : Quasi Peak (Qp) / Average (Avg)

Detector B/W:

Frequency (MHz)	Detector B/W (kHz)
0.15 - 30	9
30 - 1000	120

Limits:

Power line Conducted Emission measurement for class B equipment		
Frequency (MHz)	Qp Limit (dB $\mu$ V)	Avg Limit (dB $\mu$ V)
0.15 - 0.5	66 - 56	56 - 46
0.5 - 5.0	56	46
5.0 - 30	60	50

Radiated emission measurement for class B equipment	
Frequency (MHz)	Qp Limit (dB $\mu$ V/m)
30 - 88	40
88 - 216	43.5
216 - 960	46
960 - 1000	54

**EUT Configuration:** Nano PBX (Internet Private Branch Exchange) was powered by 220V AC/12V DC power adaptor. It is used to make internal calls, outgoing calls, as well as IP calls. It has 6 FXS and 2 FXO ports. During the test, only one FXS and one FXO port was used for communication.

Summary of Test Results:

Power line Conducted Emission measurement:

Meets the Class B Limits of FCC 15.

Few significant emissions are reported in page no 03.

Refer annexure "A & B" for mains terminal disturbance voltage graphs (Peak measurement)

Radiated emission Measurement :

Meets the Class B Limits of FCC 15.

Few significant emissions are reported in page no. 04.

Refer Annexure "C" to Annexure "J" for radiated disturbance graphs (Peak measurement)

Remark: - Equipment under test shown in annexure "K"

EMC/FM-082-07





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Results: (1) Power line Conducted emission measurement.

Frequency (MHz)	Qp Reading (dB $\mu$ V)	Qp Limit (dB $\mu$ V)	Avg Reading (dB $\mu$ V)	Avg Limit (dB $\mu$ V)
<b>Phase - Ground</b>				
0.342	34.32	61	27.21	51
0.438	34.06	58	25.61	48
0.478	38.50	57	27.77	47
0.498	36.38	56	23.59	46
1.134	31.74	56	14.29	46
29.818	22.35	60	16.09	50
<b>Neutral - Ground</b>				
0.434	35.12	58	27.44	48
0.458	37.32	58	21.42	48
0.490	36.96	57	27.41	47
0.506	36.08	56	22.07	46
0.722	31.32	56	23.14	46
29.978	23.66	60	17.73	50





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### 2) Radiated emission measurement @ 3 mts.

Frequency (MHz)	Emission level measured (dB $\mu$ V/m)	Angle (deg)	Polarisation (H/V)	Limit (dB $\mu$ V/m)
79.08	33.35	0	V	40
80.24	33.39	90	V	40
85.16	37.62	270	H	40
85.2	35.45	0	H	40
124.8	36.61	270	H	43.5
136.04	34.25	270	V	43.5
162.48	33.96	270	V	43.5
168.64	32.78	180	V	43.5
262.88	36.54	0	V	46
283.48	36.52	180	H	46
290.68	35.66	90	H	46
308.76	36.85	0	H	46
340.92	37.68	270	H	46
622.04	36.20	90	V	46
781.4	36.85	180	H	46
848.64	38.26	270	V	46

Tested By  
(Hemant Sahu)  
(Scientist 'B')

Date:  
EMC/FM-086-07



Approved By

**Dr. N.C. JOSHI**

Scientist 'E'

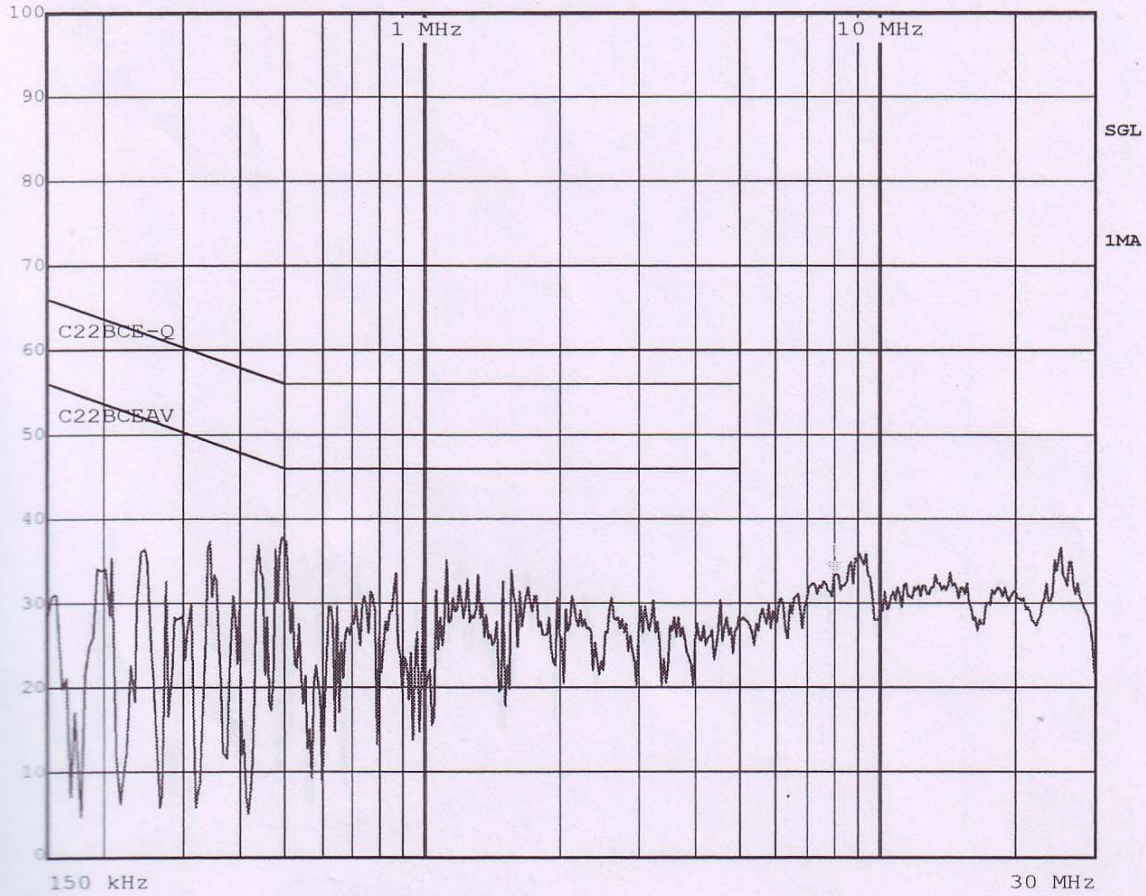
Electronics Test & Development Centre  
Ministry of Comm. & IT., STQC Directorate,  
Govt. of India, Bangalore - 560 058.

Issued By

CO-ORDINATOR  
TESTING SERVICES,  
E.T.D.C., BANGALORE



Marker 1 [T1]      Det      QP Trd      LISN  
Att 0 dB AUTO      33.32 dB $\mu$ V      ResBW      9 kHz  
Preamp INPUT 2      8.11800000 MHz      Meas T      1 ms Unit      dB $\mu$ V



Title:      conducted emission, class B (L-G)  
Date:      30.SEP.2009 15:15:16

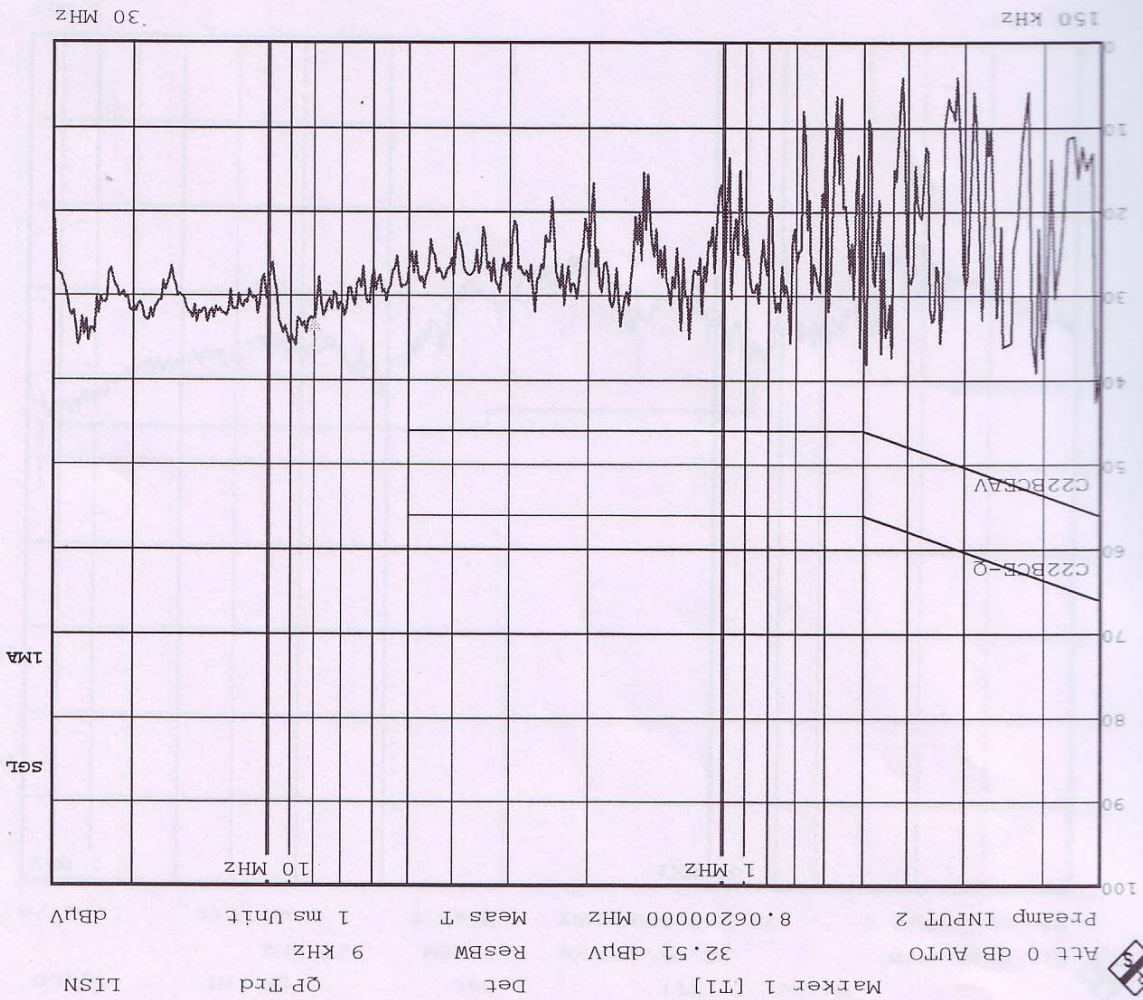
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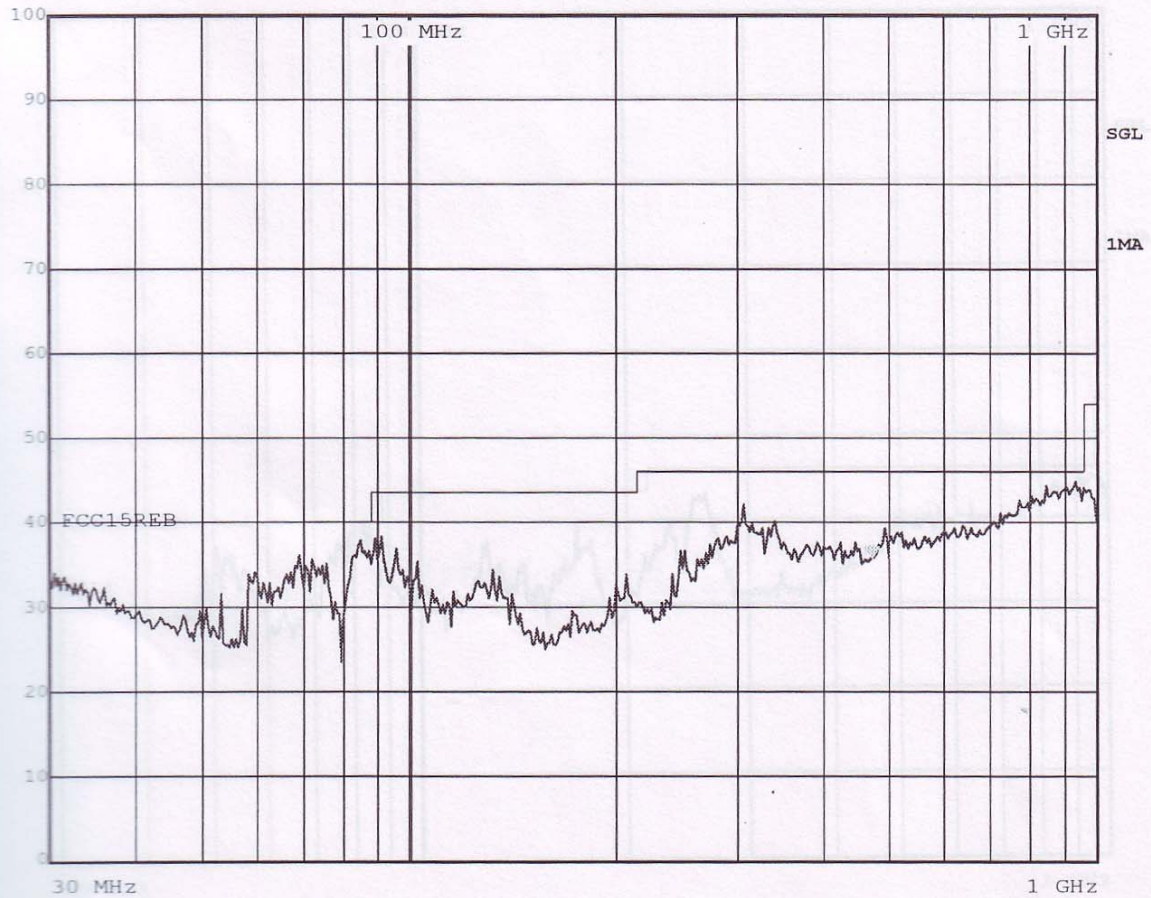
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Annexure "B"

Marker 1 [T1]      Det      QP Trd      BILOG  
Att 0 dB AUTO      35.65 dB $\mu$ V/m      ResBW      120 kHz  
Preamp INPUT 2      472.28000000 MHz      Meas T      1 ms Unit      dB $\mu$ V/m



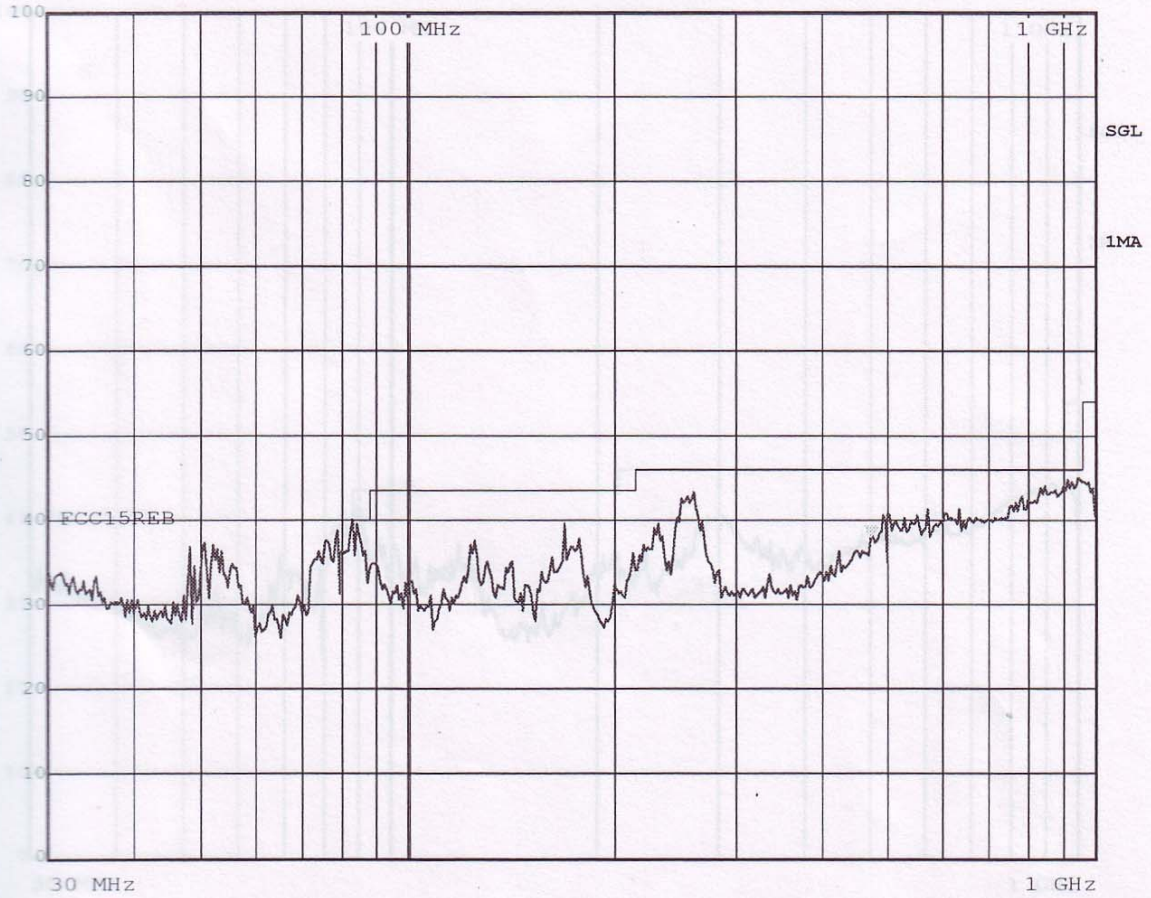
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Marker 1 [T1]      Det      QP Trd      BILOG  
 Att 0 dB AUTO      37.89 dB $\mu$ V/m      ResBW      120 kHz  
 Preamp INPUT 2      474.68000000 MHz      Meas T      1 ms Unit      dB $\mu$ V/m



Title: Radiated emission FCC part15 class B(V,0)  
 Date: 30.SEP.2009 12:00:56

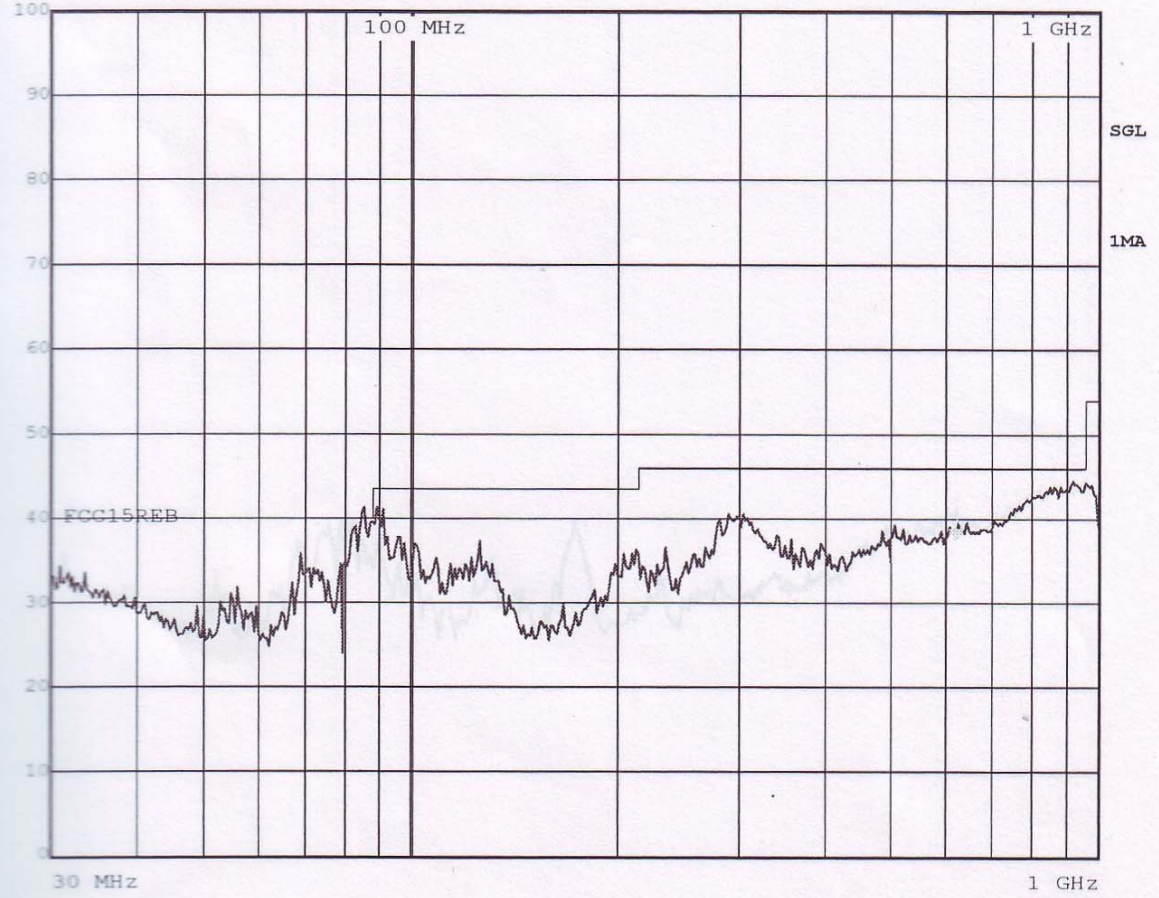
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Marker 1 [T1]      Det      QP Trd      BILOG  
 Att 0 dB AUTO      37.35 dB $\mu$ V/m      ResBW      120 kHz  
 Preamp INPUT 2      623.3200000 MHz      Meas T      1 ms Unit      dB $\mu$ V/m



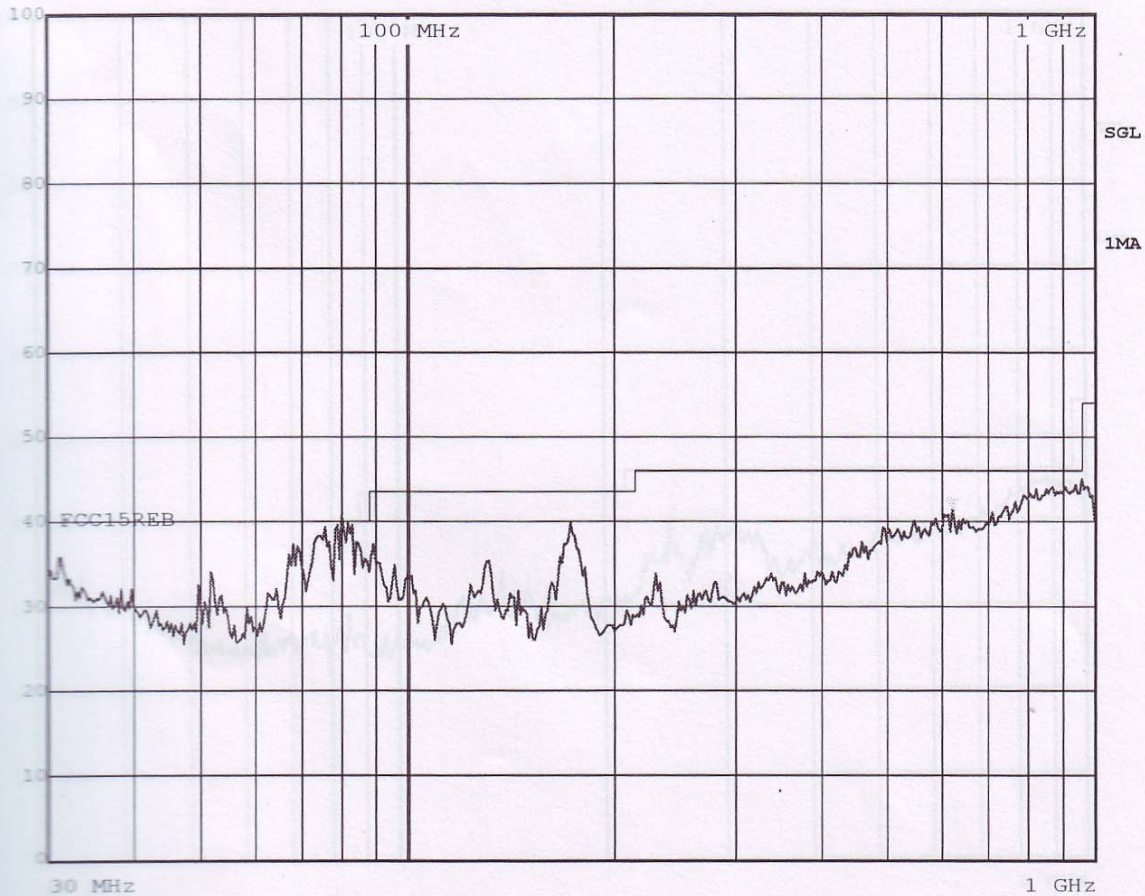
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Marker 1 [T1]      Det      QP Trd      BILOG  
Att 0 dB AUTO      41.30 dB $\mu$ V/m      ResBW      120 kHz  
Preamp INPUT 2      622.0400000 MHz      Meas T      1 ms Unit      dB $\mu$ V/m



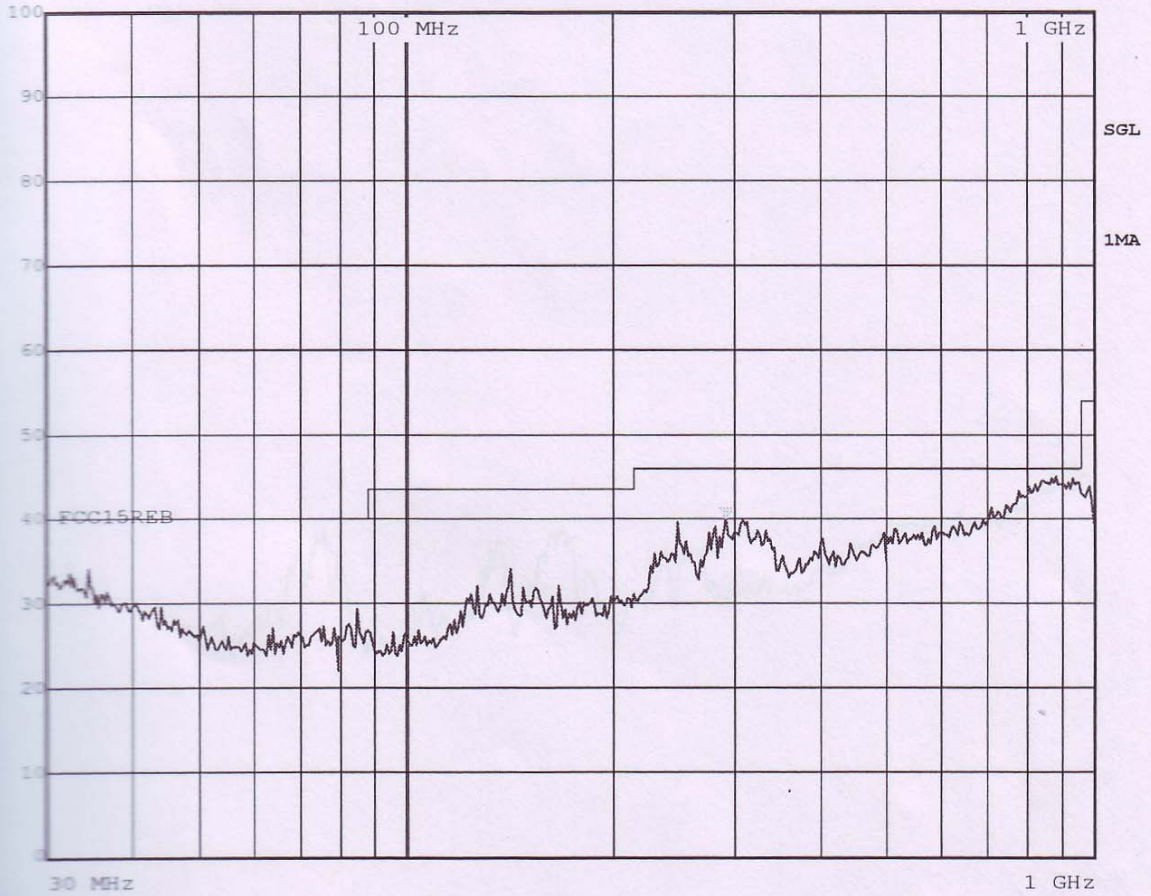
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Marker 1 [T1]      Det      QP Trd      BILOG  
Att 0 dB AUTO      39.97 dB $\mu$ V/m      ResBW      120 kHz  
Preamp INPUT 2      292.7600000 MHz      Meas T      1 ms Unit      dB $\mu$ V/m

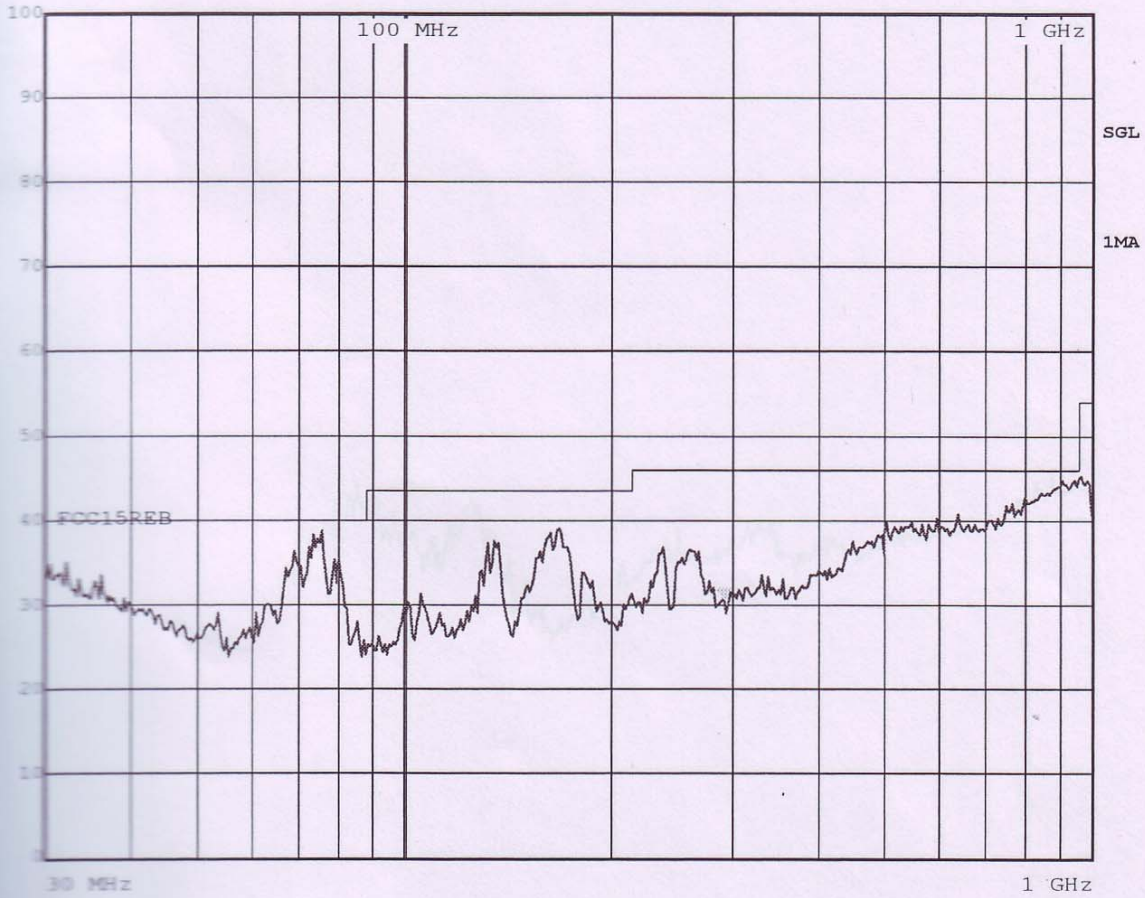


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Date: 30.SEP.2009 12:42:56





Marker 1 [T1]	Det	QP Trd	BILOG
Att 0 dB AUTO	30.54 dB $\mu$ V/m	ResBW 120 kHz	
Preamp INPUT 2	293.6800000 MHz	Meas T	1 ms Unit dB $\mu$ V/m



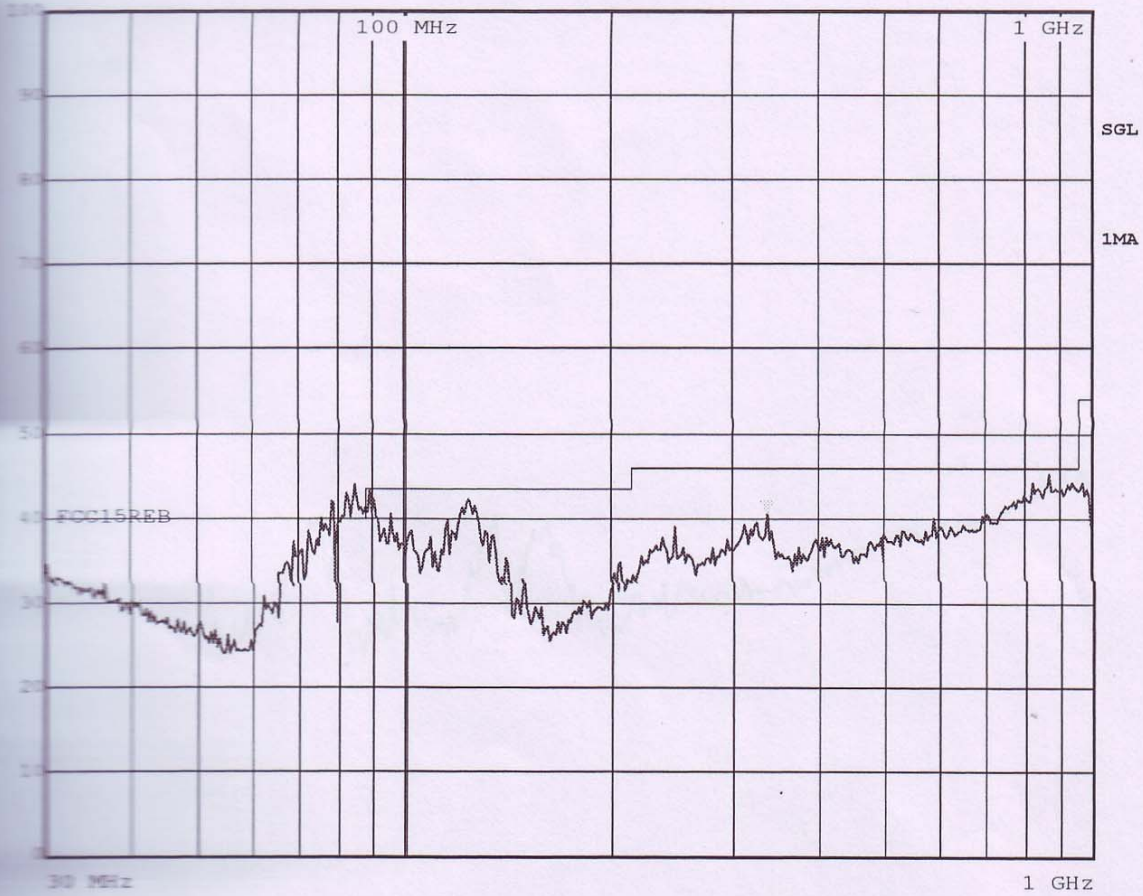
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Marker 1 [T1]      Det      QP Trd      BILOG  
Att 0 dB AUTO      40.67 dB $\mu$ V/m      ResBW      120 kHz  
Preamp INPUT 2      340.9200000 MHz      Meas T      1 ms Unit      dB $\mu$ V/m



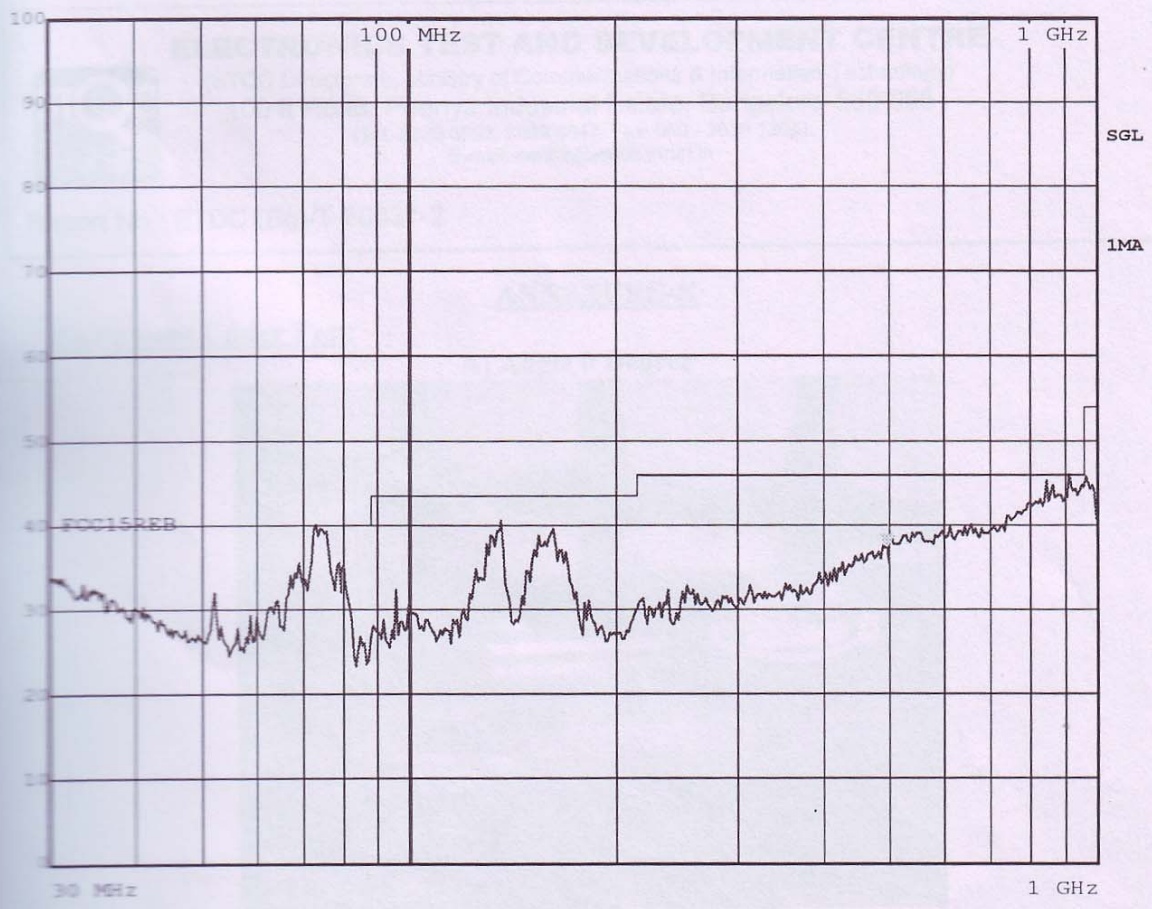
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Marker 1 [T1]      Det      QP Trd      BILOG  
Att 0 dB AUTO      37.32 dB $\mu$ V/m      ResBW      120 kHz  
Preamp INPUT 2      497.4400000 MHz      Meas T      1 ms Unit      dB $\mu$ V/m



Title: Radiated emission FCC part15 class B(V,270)  
Date: 30.SEP.2009 13:00:03

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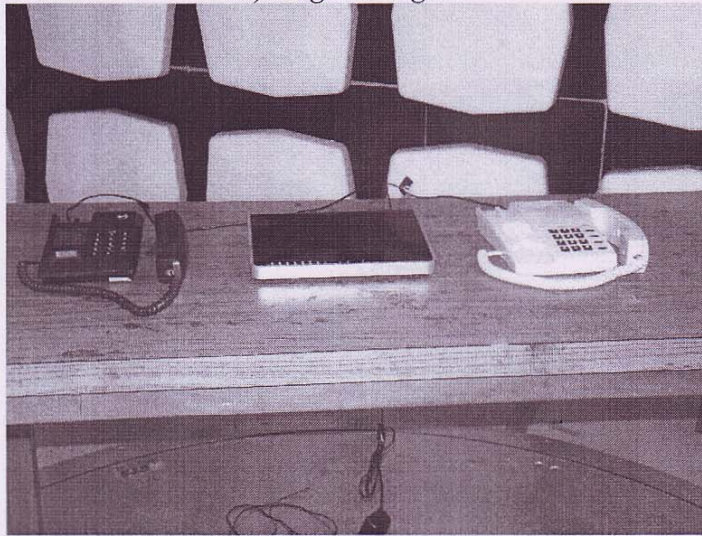
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### ANNEXURE-K

#### Equipment Under Test:

##### A) Angle 0 Degree



##### B) Angle 180 Degree



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