Annexure 'A'
Test facilities at BEL (charges are indicative only)

Corporate Office

CENTRAL NODAL OFFICER for the use of Test Facility at all the BEL Units / Offices	Mr.Manoj Yadav, Sr.Dy. Gen. Manager, Management Services, Corporate Office Bharat Electronics Limited, Nagavara,Outer Ring Road , Bangaluru-560045 Phone:080-25039322,email: manojyadav@bel.co.in

PANCHKULA

NODAL OFFICER for the use of Test Facility at BEL Panchkula Unit	Mr.Dhirendra N Pandey Deputy General Manager - Quality Control Bharat Electronics Limited Plot No.405, Industrial Area, Phase III, Panchkula - 134113, Haryana Phone: +91-172-2591532 Fax: +91-172-2591463/2591520 e-mail: dnpandey@bel.co.in

Sl	Test Facility	Specifications	Hourly Rate in Rs
1	COLD HEAT CHAMBERS	Temperature Range : -40°C to +140°C Capacity:1000L Floor Loading Capacity : 150Kg Temperature accuracy : ± 2 ° C	2950
2	THERMAL CYCLING CHAMBER	Humidity range : 10% to 98% RH Working Space : 1300 L Floor Loading Capacity : 150 Kg Temperature accuracy : ± 2K Relative Humidity Accuracy : ±3% R.H Temperature Change rate : 10K/	3771
3	VIBRATION TEST FACILITY	Force rating in Sine & random : 9.8KN Displacement : 2.0 INCH (P-P) Slip table size : 600x600mm Head Expander size : 13.4 in Max. Static Load supported : 272 Kg Max. Bare table acceleration : 100 g	2397
4	BUMP TEST MACHINE	Displacement : 25mm ±4mm Slip table size : 600mm x 600mm Max. Static Load supported : 113.5 Kg Max. Bare table acceleration : 40g±4g	1794

MACHILIPATNAM

NODAL OFFICER for the use of Test Facility at BEL Machilipatnam Unit	Mr. P Durgaprasad, Manager-sub-Contract Bharat Electronics Limited Post Box No. 26, Ravindranath Tagore Road, Machilipatnam-521001, AP Phone: 08672-220644 Fax:08672-222640 email:durgaprasadp@bel.co.in

SL	Test facility	Specification	Hourly Rate in Rs
5	Vibration Test SystemSAI 30F - 5452-16/ST	Sine Force 5500 lbf (pk) Random force 5500 lbf (rms) Displacement 51mm (pk-pk) frequency up to 2000HZ (Rated Power 50KW)	2585
6	Climatic Chamber (weiss) (WK3 800/70/10	-70°C to 180°C Ramp 10°/min Humidity 10° C to 95°C (10 to 95% RH Power = 46KW Test space volume - 800 ltr	2585
7	Hot/Cold Chamber (WT-340/40/5	-40°C to 180° Ramp 5°C/M Volume 340 ltrs Power 8 KW	3575
8	Salt Spray Chamber (Model No.5F-450-CCT) (Make: CM enviro systems)	Test Space : 850Wx700Dx800H in mm Ambient to 55°C Power = 5KW	2585
9	Rain Test Chamber (Model: AQUA - 1000 - XXB) CM enviro systems	Test space volume - 1000 ltr Dimensions:1200Wx1200Dx2100Hmm Discharge Pressure 200 kPA ±15% Flow rate : 60 lt	1765
10	Bump/Testing Machine Make : Tarang Kinetics – Roorkee Model TBTM - 6060F	Speciman size 600x600 mm Max: Speciman wt 200g Stroke - 50 mm Working Space 100x100x100 cms	1765
11	Dust Chamber	Temperature Range: Ambient to 60°C	1765

KOTDWARA

NODAL OFFICER for the use of Test Facility at BEL Kotdwara Unit	Mr.Mohd. Shahid Sami Manager -Sub-Contract Bharat Electronics Limited Dist. Pauri Garhwal, Kotdwara - 246149, Uttarakhand.Phone:01382-231146/6351 Fax:01382-231156/32, e-mail:sahidsami@bel.co.in

Sl	Test Facility	Specifications	**Hourly Rate in Rs**
12	Dust Chamber	Operating range RT to +40°C Dust Proof ness as per JSS 55555, Work area - 1 x1 x 1 M	1310
13	ESS Chamber	Operating range (-70°C to +180°C) Rate of change of Temp. rate 20°c/ min. RH 10 to 95% Working area-1. 3 x 1. 1 x 0. 9M (1300 ltr)	3520
14	ESS Chamber	Operating range (-70°C to +180°C) Rate of change of Temp. rate 25°c/ min. RH 10 to 95% Working area-1. 3 x 1. 1 x 0. 9M (1300 ltr)	3810
15	ESS Chamber	Operating range (-70°C to +180°C) Rate of change of Temp. rate 10°C/ min. RH 10 to 95% Working area-1 x 1 x 0. 9M (900 liter)	3240
16	Vibration Machine	Freq. 5Hz to 3000HZ, Disp. ±51 mm & Up to 90g Force Rating Sine 2200 kgf (peak) Random 2272 kgf (rms) Maximum load capacity- 150 Kg, Working area 36*36 Inch	5450
17	Bump Machine	Bump 0 to 99999 Peak Deceleration 40g ± 4g Bump Repetition 2 to 3 bump / sec Height of Drop 25mm ± 4mm Maximum Load 113.5 Kgs Working area -60x60 Cm	1870
18	Salt Corrosion Test	Salt Spray Test as per JSS 55555, working capacity-450 Liter	1250
19	Shock Test Machine	Half Sine Pulse of Peak 40Pulse Duration of 18 ms Working area - 16x16 inch	2520
20	Driving Rain Chamber	200kpa water pressure & 8 Showers	1350

HYDERABAD

NODAL OFFICER for the use of Test Facility at BEL Hyderabad Unit	Mr.M.Upender Sr. DGM-Vendor Development Bharat Electronics Limited Industrial Area, Nacharam, Hyderabad - 500 076 Telengana Phone:040-27194275 Fax: 040-27151228/71406 E -Mail:upenderm@bel.co.in

Sl	Test Facility	Specifications	Hourly Rate in Rs
21	High Temp /Low Temp/Damp Heat /Thermal Cycling	Temp Range: (-)70 TO (+)180 º C Humidity: 95% RH	2500
22	High Temp /Low Temp/Thermal Cycling	Temp Range: (-)70 TO (+)180 º C	2500
23	High Temp /Low Temp/Thermal Cycling/Altitude	Temp Range: (-)70 TO (+)180 º C Humidity : 95 % RH Alt Height : 90mts	3000
24	High Temp /Low Temp/Thermal Cycling/Damp Heat	Temp Range: (-)70 TO (+)180 º C Humidity : 95 % RH	2500
25	High Temp /Low Temp/ Thermal Cycling /Damp Heat	Temp Range: (-)60 TO (+)100 º C Humidity : 95 % RH	7500
26	High/Cold /Thermal Shock (Only Passive Test)	Temp Range: (-)80 TO (+)220 º C	2500
27	High/Cold /Thermal Shock (Only Passive Test)	Temp Range: (-)80 TO (+)220 º C	2500
28	Vibration:Random/Sine/Shock	Frequency Range : 05 TO 2500Hz Acceleration : 100 “g” (Free Table)	4500
29	Vibration:Random /Sine/ Shock/ Random On Random /Sine On Random (Soft)	Frequency Range : 05 TO 2500Hz Acceleration : 180 “g” (Free Table)	10000
30	Vibration:Random /Sine/ Shock/ Random On Random /Sine On Random(Soft)	Frequency Range : 05 TO 2500Hz Acceleration : 100 “g” (Free Table)	4500
31	Half Sine Bump	Repetation: 2-3 BUMPS/SEC	4000
32	Drop /Toppling	Platform Height: 0.4 Mt	4000
33	Rain Test	Rain Fall Rate :250mm/Hour TO 450 mm/Hour	4000
34	Rain Test	Rain Fall Rate :250mm/Hour TO 450 mm/Hour	4000

GAZIABAD

NODAL OFFICER for the use of Test Facility at BEL Gaziabad Unit	Mr.Sanjay Srivastava AGM - Central Materials Manager Bharat Electronics Limited Address: Site IV, Sahibabad Industrial Area, Bharat Nagar Post, Ghaziabad – 201010, Uttar Pradesh Phone:+91-120-2776573

Sl	Test Facility	Specifications	Hourly Rate in Rs
35	High Temp /Low Temp/Damp Heat (WK 3-600/70)	Temp Range: -75 to +180 º C Humidity :10% to 98 % RH	3575/
36	High Temp /Low Temp/Damp Heat (WK 3/340/70)	Temp Range: -72 to +180 º C Humidity :10% to 95 % RH	3575/
37	Altitude (1000SDd/70DU)	(H×W×D) in MM : 750× 580× 540 Temp Range: -70 to +100 º C Humidity :15% to 95 % RH Ground To 1 Lakh ft.(up to 10 mbar) (H×W×D) in MM : 900×1000×1150	4500/-
38	Altitude (WK 300/70/D)	Temp Range: -70 to +100 º C Humidity :15% to 95 % RH Ground To 1 Lakh ft.(upto 10 mbar) (H×W×D) in MM : 900×1000×1150	4500/-
39	Rapid Thermal Cycling (WK 270/70/25)	to 10 mbar) Temp Range: -70 to +180 º C Humidity :10% to 95 % RH Temperature Change Rate: 25°C/m (H×W×D) in MM : 750× 580× 620	4800/
40	Rapid Thermal Cycling (WK 1300/70/30)	Temp Range: -70 to +180 º C Humidity :10% to 95 % RH Temperature Change Rate: 25°C/mi (H×W×D) in MM: 920x 1100x 1325	5400/-
41	Rapid Thermal Cycling (WK 1300/70/25)	Temp Range: -70 to +180 º C Humidity :10% to 98 % RH Temperature Change Rate: 25°C/min (H×W×D) in MM : 920× 1100× 1325	5400/-
42	Rapid Thermal Cycling	Temp Range: -70 to +180 º C	5400/-

	(WKS/3/800/70/10)	Humidity :10% to 98 % RH	
43	Walk-in chamber SD 19/60)	Temperature Change Rate: 12°C/min Humidity :10% to 98 % RH Temp Range: -70 to +95 º C	12500/-
44	Walk-in chamber (WZH/10/A2)	H×W×D) in MM : 3000× 2600× 2400 Temp Range: -70 to +150 º C Humidity :10% to 98 % RH (H×W×D) in MM : 2000× 2060× 1160	10500/-
45	Thermal Shock (TS 130)	Temp Range: -75 to +220ºC Sliding bucket type	3400/-
46	Thermal Shock (TS 300)	Temp Range: -80 to +220 º C Sliding bucket type	4500/-
47	Salt Spray Chamber (SC 1000)	Temperature Range: Ambient to +50°C Humidity Range: From ambient up to saturation Working space volume: 950 liter	3600/-
48	Salt Spray Chamber (SC 1000)	Force Rating: Sine 60kN (Peak), Random 60 kN (RMS) Max. Shock Force: 106 kN Shaker Stroke: 76 mm pk-pk Freq Range: 5-2000 Hz. Slip table Size: 900x 900 mm Type of Test Modes: Random Vibration, Sine Vibration, Shock Test	10600/-
49	Vibration: Random /Sine/Shock SAB15-S202/ST)	Force rating: Sine 9.8kN (Peak), Random 9.8kN (RMS)	7500/-
50	Bump Test Machine (P-1010)	Max. Shock Force: 20 kN Pay load capacity: 500 Kg Bed Size : 1000 x 1000 mm Pulse Duration : 6 to 18 ms Pulse repeating freq: 1 to 3 Bumps /sec Acceleration Range : 5 to 40g Acceleration Range : 5 to 40g Pulse Waveform : Half Sine Test Axis : Vertical	5500/- Per Test

BANGALORE

NODAL OFFICER for the use of Test Facility at BEL Bangalore Unit	Mr. ***Mohan Kumar KS***, Manager Management Services - BG CX Bharat Electronics Limited New Management Block, Jalahalli Post Bangalore - 560013 Phone: 080-22195248, Email :ksmohankumar@bel.co.in

Sl	Test Facility	Specifications	Hourly Rate in Rs
51	X-Ray Inspection XIDAT XD6500 For Printed Circuit Assemblies	Minimum feature recognition : < 2 microns Tube Voltage : 30 - 160 kV Maximum Board size : 20” x 17.5” (508 x 444 mm) Maximum Inspection Area : 18” x 16” (458 x 407 mm) Maximum Sample Weight : 5 Kg Oblique Angle View : 0 - 45º for any view,360 degrees around any position over entire inspection area System Magnification (geometric) : Upto 2725 x (700 X)	2058
52	Driving Rain Shower	JSS 55555	23200
53 .. 66	ENVIRONMENTAL TEST FACILITIES		Annexure A1
67 .. 157	Calibration Test Facilities		Annexure A2
158..189	EMI/EMC TEST Facilities		Annexure A3

Annexure 'A'- 1

ENVIRONMENTAL TEST FACILITIES

Sl	CATEGORY OF TESTS	Charges per hour (Value in Rs)
53	High Temperatur Test	3400
54	Low Temperature Test	3400
55	Humidity Test	3400
56	Corrosion (Salt Spray) Test	3400
57	Dust Test	3400
58	Thermal Cycling / Thermal Shock Test	3400
59	Altitude Test	3400
60	Bump Test	3400
61	Drop Test	3400
62	Vibration test (Sinusoidal / Random / SOR / ROR) and Shock test in UD 2, 3, 4, 5, 6, 7 and Shinken 1 & 2 vibration systems	5350
63	Tests in Walkin Chamber (Unified Chamber)	11200
64	Tests in Walkin chamber (Two independent chambers for each chamber) and Altitude Walk-in-chamber	8300
65	Vibration test (Sinusoidal / Random / SOR / ROR) and Shock test in 8900 Kgf vibration system	9500
66	Tests in HALT/HASS Chamber	17000

Annexure 'A'- 2

Calibration Charges of Instruments at Cal Lab EMID/QA

Sl	Instruments - Category	Calibration Charges (in Rs)
67	Amplifier (AF) (Up To 1 MHz)	9550
68	Amplifier (RF, Up To 1 GHz)	14250
	>1GHz to 18 GHz	20700
	>18 GHz to 40 GHz	26000
69	Attenuator (Fixed) 3 Freq	4800
	For every additional Freq. point	2000
70	Attenuator (Step) 3 Freq.	14250
	For Every Additional Freq. point	2000
71	Audio Analyzer	19050
72	Bias Current Source	19050
73	Breakdown Tester	9600
74	Bridge (Impedance)	19050
75	Bridge R/L/C < 1 khz	9600
	Bridge R/L/C >1 khz	19050
76	Calibrator (CRO)	57000
77	Calibrator (Meter General)	57000
78	Calibrator (Meter Precision)	60000
79	Communication Test Set	57000
80	Continuous Wave Simulator	28500
81	Curve Tracer	19050
82	Curve Tracer (High Precision)	57000
83	Decade RLC / Decade	4800
84	Digital Multimeter (< 4.5 Digit)	9550
	Digital Multimeter (4.5 To 5.5 Digits)	19050
	Digial Multimeter (6.5.Digits)	28500
	Digital Multimeter (8.5 Digits)	57000
85	Directional Coupler 3 Freq.	9550
86	Distortion Analyzer	9550
87	Electrical Instruments	9550
88	Electronic Load/ Module	14250
89	Emi Meter	28500
90	Emi Receiver (< 3GHz)	28500
	>3 GHz To 6 GHz	32500
	>6 GHz To 20 GHz	50000
	>20 GHz To 26.5 GHz	57500
	>26.5 GHz To 40 GHz	73600

91	Frequency Analyzer	28500
92	Frequency Counter (< = 2GHz	14250
	>2 GHz To 18 GHz	19050
	>18 GHz To 40 GHz	28500
93	Frequency Meter	4800
94	Function Generator	19050
95	GPS Simulator Tester	28450
96	High Voltage Probe	4800
97	High Resistance Meter	9550
98	Level Generator / Meter	19050
99	Mega ohm Meter	9550
100	Microwave Components Per Freq.	4800
101	Microwave Link Analyzer	28450
102	Milli / Micro Ohm Meter	14250
103	Modulation Analyzer	19050
104	Modulation Meter	9600
105	Modulalor	9600
106	Multi Source Generator	28500
107	Nano Volt / Micro Ohm Meter (HP/3420a)	28500
108	Network Analyzer (Scalar) < 3 GHz	31650
	>3 GHz To 6 GHz	3700
	>6 GHz To 20 GHz	43500
	>20 GHz To 26.5 GHz	48000
	>26.5 GHz To 40 GHz	57000
109	Network Analyzer (Vector) < 3GHz	38000
	>3 GHz To 6 GHz	40000
	>6 GHz To 20 GHz	47000
	>20 GHz To 26.5 GHz	50000
	>26.5 GHz To 40 GHz	57000
110	Noise Meter / Generator	19050
111	Oscillator (AF)	9550
112	Oscillator (RF)	14250
113	Oscilloscope (Up to 100 MHz)	14250
	>100 MHz To 500 MHz	16850
	>500 MHz To 3 GHz	18000
	>3 GHz To 6 GHz	19050
	>6 GHz To 18 GHz	23750
	>18 GHz To 26.5 GHz	27500
	>26.5 GHz	28500
114	PCM Channel Measurement Set	19050

115	Power Meter (AF)	9550
116	Power Meter (RF) Without sensor	4800
117	Power Meter + Power sensor (<18GHz)Or standalone Power Sensor	19050
118	Power Sensor > 18GHz / Power Standard	28500
119	Power Meter (RF)	9550
120	Power Supply	9550
121	Probes	4800
122	Psophometer	9550
123	Pulse / Function Generator	28500
124	Pulse Generator	19050
125	Q Meter	14250
126	Quasi Peak Adapter	19050
127	Quartz Oscillator	14250
128	RF Power Analyst	9550
129	Receiver	19050
130	Recorder	9550
131	Signal Generator (< 3GHz)	19050
	>3 GHz To 6 GHz	20500
	>6 GHz To 20 GHz	26500
	>20 GHz To 26.5 GHz	29000
	>26.5 GHz To 40GHz	35000
132	Soldering Tester	4800
133	Spectrum/Signal Analyzer (< 3GHz)	29700
	(>3 GHz To 6 GHz)	31750
	(>6 GHz To 20 GHz)	41350
	(> 20 GHz To 26.5 GHz)	45750
	(>26.5 GHz To 40 GHz)	55000
134	Static Sensor	4800
135	Sweep Oscillator (Up to 3 GHz)	19050
	>3 GHz To 6 Ghz	20500
	>6 GHz To 20 GHz	7750
	>20 GHz To 26.5 GHz	31050
	>26.5 GHz To 40 GHz	37950
136	Telecom Instruments	19050
137	Timer	4800
138	Tracking Generator	19050
139	Video Instruments	28450
140	Voltmeter < 10MHz	9550
141	Voltmetr > 10MHz	14250
142	LISN	9500

143	Frequency Standard	26000
144	Injection / RF Probe	5000
145	Transient Pulse Generator	18000
146	Precision Resistor	4800
147	Multiple impedance Coupling Clamp	9500
148	Open / Short/ Match (Through Free (3 Freq.)	4800 Each
149	Digital Radio set	43200
150	Power Sweep Generator	19050
151	Ultra Compact Simulator	20250
152	ESD Generator	6900
153	EM Injection Clamp	5000
154	Angle Position Indicator With 15 Degree Interval	19050
155	Optical Transceiver	19050
156	Meger	14250
157	Infrared Thermometer	4800

Annexure 'A'- 3

EMI/EMC TEST Facilities at EMID/QA

Sl	Instruments - Category	Charges (in Rs)
158	CE01/101 - single phase	11300
159	CE01/101 - Three phase	22500
160	CE03 - Single phase	21800
161	CE03 - Three phase	43600
162	CE102 - Single phase	10900
163	CE102 - Three phase	21700
164	CE06/106 (10kHz-40 GHz) per frequency	43400
165	CE07	5300
166	CS01/101 - Single phase	8700
	CS01/101 - Single phase	8700
	CS01/101 - Three phase	17300
	CS02 - Single phase	14500
167	CS02 - Three phase	29000
168	CS03/CS103/CS04/CS104/CS05/CS105 (30 Hz to 20 GHz) per frequency	42300
169	CS06/106 - Single phase	8700
	CS06/106 - Three phase	17400
	CS09/109	13100
170	CS114 per cable	6900
	CS115 per cable	8500
	CS116 per cable	5300
171	RE01/101	22000
172	RE02/RE102 (upto 1 GHz)	22800
	RE02/RE102 (1 GHz-18 GHz)	22600
	RE02/RE102 (10 kHz-18 GHz)	45400
173	RS01/101 (30Hz - 100 kHz)	16400
174	RS02	20500
175	RS103/RS03 - upto 1 GHz	73800
	RS103/RS03 - 1 GHz-18 GHz	87900
	RS103/RS03 - 18 GHz-40 GHz	122400

	RS103/RS03 - 2 MHz-18 GHz	161700
	RS103/RS03 - 2 MHz-40 GHz	284000
176	RS06 (DC magnetic field)	15600
179	CE - CISPR 11/22	21700
180	RS - IEC 61000-4-3 (80 MHz - 6 GHz)	136400
	RS-IEC 61000-4-3 less than 1 GHz/Hour	27300
181	EFT - IEC 61000-4-4	14300
	Surge - IEC 61000-4-5	14300
	IEC 61000-4-9 (Pulsed magnetic field)	14300
	IEC 61000-4-11 (Voltage Dips, Short Interruptions and Voltage variations on AC supplies)	14300
	IEC 61000-4-12 (Ring Wave - power lines)	14300
	IEC 61000-4-29 (Voltage Dips, Short Interruptions and Voltage variations on DC supplies	14300
	IEC 61000-4-2-ESD	24000
182	Shielding Effectiveness test, Per freq/test Point	16800
183	MIL 704 - LDC 102 - Normal Steady State	11,200
	MIL 704 - LDC 301 -Abnormal Steady State	11200
	MIL 704 - LDC 401 - Emergency Starting	11200
	MIL 704 - LDC 103 - Voltage Distortion Spectrum	22300
	MIL 704 - LDC 104 - Total Ripple	22300
	MIL 704 - LDC105 - Normal Voltage Transients	18600
	MIL 704 - LDC302 - Abnormal Voltage Transients	18600
	MIL 704 - LDC 201 - Power interrupt	5600
	MIL 704 - LDC 601 - Power failure	5600
	MIL 704 - LDC 602 - Phase reversal	5600
184	Compliance Test Report	10000
185	EUT SET UP TIME inside SAC (for every 30 min)	6000
186	Waiting Time inside SAC (for every 30min)	6000
187	Diagnostic testing per hour	12000
189	Others	10000