Laboratory	**EMC Laboratory, Robert Bosch Engineering and Business Solutions Limited, CHIL-SEZ, Keeranatham Village, Coimbatore, Tamil Nadu**		
Accreditation Standard	**ISO/IEC 17025: 2005**		
Discipline	**Electronics Testing**	**Issue Date**	**24.05.2014**
Certificate Number	**T-2199**	**Valid Until**	**23.05.2016**
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S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
I.	**EMI/EMC & ESD TESTING**			
1	**Electronic Sub Assembly for Automobiles**	Radiated Emission Test (RE)	Antenna method,: CISPR25: 2002,Edition 2 CISPR25:2008-3, Edition 3, 95/54/EC Directive,1995, Annexure 7,8 2004/104/EC Directive 2004 Annexure 7,8 72/245/EEC Directive 2006 Annexure 7,8 2009/19/EC ECE-R10 Rev 3.0 2010 Annexure 7,8 ECE-R10 Rev 4.0 2012 Annexure 7,8 AIS-004 (Part-3):2009 Annexure 5 & 6	Frequency 10 kHz to 3500 MHz
			Strip line method: CISPR25:2008-3, Edition 3	Frequency 10 kHz to 400 MHz

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Conducted Emission Test- Power supply and Interconnect lines (CE)	CISPR25: 2002,Edition 2 CISPR25:2008-3, Edition 3 Voltage Method:	Frequency 100 kHz to 110 MHz
			Current probe Method:	Frequency 20 Hz to 110 MHz
		Conducted Emission Test -Transients on power supply line (CE)	ISO 7637-2,2004 Edition 2 ISO 7637-2:2011 Edition 3 72/245/EEC Directive 2006 Annexure 10 2009/19/EC ECE-R10 Rev 3.0 2010 Annexure 10 ECE-R10 Rev 4.0 2012 Annexure 10 AIS-004 (Part-3):2009 Annexure 8	(±) 12V to (±) 400 V
		Electrostatic Discharge Immunity Test (ESD)	ISO10605 :2008 Edition 2 Contact and Air Discharge SAE J1113-13:2004	Level: (±) 1 kV to 30 kV

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		RF Radiated Susceptibility Test – ALSE method	ISO 11452-2,2004 Edition 2 95/54/EC Directive 1995, Annexure 9 2004/104/EC Directive 2004 Annexure 9 72/245/EEC Directive 2006 Annexure 9 2009/19/EC ECE-R10 Rev 3.0 2010 Annexure 9 ECE-R10 Rev 4.0 2012 Annexure 9 AIS-004 (Part-3):2009 Annexure 7	Frequency: 80 MHz to 200 MHz , Level 1V/m to 50 V/m 200 MHz to 4 GHz, Level: 1V/m to 200 V/m
		RF Radiated Susceptibility Test – Bulk current Injection method	ISO11452-4,2005 Edition 3 95/54/EC Directive 1995, Annexure 9 2004/104/EC Directive 2004 Annexure 9 72/245/EEC Directive 2006 Annexure 9 2009/19/EC	Frequency 1 MHz to 400 MHz Level :10 mA to 300 mA

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			ECE-R10 Rev 3.0 2010 Annexure 9 ECE-R10 Rev 4.0 2012 Annexure 9 AIS-004 (Part-3):2009 Annexure 7	
		RF Radiated Susceptibility Test – Strip line method	ISO11452-5,2002 Edition 2 95/54/EC Directive 1995, Annexure 9 2004/104/EC Directive 2004 Annexure 9 72/245/EEC Directive 2006 Annexure 9 2009/19/EC ECE-R10 Rev 3.0 2010 Annexure 9 ECE-R10 Rev 4.0 2012 Annexure 9 AIS-004 (Part-3):2009 Annexure 7	Frequency: 10 kHz to 400 MHz Level : 1V/m to 360 V/m

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Electrical disturbance conduction and coupling	Pulse 1 ISO 7637 -2,2004 Edition 2 ISO 7637-2: 2011 Edition 3 SAE J1113-11 :2006 2004/104/EC Directive 2004 Annexure 10 72/245/EEC Directive 2006 Annexure 10 2009/19/EC ECE-R10 Rev 3.0 2010 Annexure10 ECE-R10 Rev 4.0 2012 Annexure 10 AIS-004 (Part-3):2009 Annexure 8	(-)20V to (-) 600V, Supply voltage 32V,60A
		Electrical disturbance conduction and coupling	Pulse 2 (a & b) ISO 7637 -2: 2004 Edition 2 ISO 7637 -2: 2011 Edition 3 SAE J1113-11 :2006 2004/104/EC Directive 2004 Annexure 10 72/245/EEC Directive 2006	(+)20 V to (+)150 V, pulse 2a (+) 1 V to (+) 60 V, pulse 2 b Supply voltage 32 V,60 A

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			Annexure 10 2009/19/EC ECE-R10 Rev 3.0 2010 Annexure10 ECE-R10 Rev 4.0 2012 Annexure 10 AIS-004 (Part-3):2009 Annexure 8	
		Electrical disturbance conduction and coupling	Pulse 3(a & b) ISO 7637 -2,2004 Edition 2 ISO 7637-2:2011 Edition 3 SAE J1113-11 :2006 2004/104/EC Directive 2004 Annexure 10 72/245/EEC Directive 2006 Annexure 10 2009/19/EC ECE-R10 Rev 3.0 2010 Annexure10 ECE-R10 Rev 4.0 2012 Annexure 10 AIS-004 (Part-3):2009 Annexure 8	(±) 25 to (±)300V , Supply voltage 32V, 60A

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Electrical disturbance conduction and coupling	Pulse 4 ISO 7637 -2,2004 Edition 2 2004/104/EC Directive 2004 Annexure 10 72/245/EEC Directive 2006 Annexure 10 2009/19/EC ECE-R10 Rev 3.0 2010 Annexure10 ECE-R10 Rev 4.0 2012 Annexure 10 AIS-004 (Part-3):2009 Annexure 8	Us: - 6 V to -16 V Ua: -2.5 V to -12V
		Electrical disturbance conduction and coupling	Pulse 5(a & b) ISO 7637 -2,2004 Edition 2 Load Dump ISO 16750-2: 2010 Edition 3 ISO 16750-2: 2012 Edition 4 Fast pulse as per CCC method. Slow pulse as per ICC method ISO 7637 -3,2007 Edition 2 SAE J1113-12 :2006	(+)20 V to (+)200 V, Supply voltage 32 V, 60 A (±)12V to (±)300V (±)3V to (±)170V Supply voltage 32V,60A

S.No.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			ISO 16750-2, 2006 Edition 2 ISO 16750-2:2010 Edition 3 ISO 16750-2:2012 Edition 4 Super imposed alternating voltage	10 Hz to 50 kHz, 1V P-P to 10V P-P Supply voltage 32 V,60 A
			ISO 16750-2, 2006 Edition 2 ISO 16750-2:2010 Edition 3 ISO 16750-2:2012 Edition 4 1) Discontinuities in supply voltage (momentary drop in supply voltage, Reset behavior at voltage drop) 2) DC supply voltage 3) Overvoltage 4) Slow increase and decrease of supply voltage 5) Reversed voltage 6) Ground reference and supply offset 7) Short-circuit protection 8) Open Circuit Test 9) Starting Profile	Supply voltage 32 V, 60 A

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		RF Radiated Susceptibility Test- portable Transmitters	ISO 11452-9-2012 Edition 1	Frequency 360 MHz to 2.7 GHz Level: 18 W
		RF Radiated Susceptibility Test- Immunity to Magnetic Fields	ISO 11452-8:2007 Edition 1 Radiating loop Method	Frequency 15 Hz to 150 kHz Level: 300 A/m

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