National Accreditation Board for Testing and Calibration Laboratories

CERTIFICATE OF ACCREDITATION

BNNSPEAG TEST & CALIBRATION LABORATORY INDIA PRIVATE LIMITED

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2017

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

11/11, SECTOR-3, RAJENDRA NAGAR, SAHIBABAD, GHAZIABAD, UTTAR PRADESH, INDIA

in the field of

CALIBRATION

Certificate Number: CC-2765

Issue Date: 25/06/2024 **Valid Until:** 24/06/2026

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.
(To see the scope of accreditation of thislaboratory, you may also visit NABL website www.nabl-india.org)

Name of Legal Entity: BNNSPEAG TEST AND CALIBRATION LABORATORY INDIA PRIVATE LIMITED

Signed for and on behalf of NABL

N. Venkateswaran
Chief Executive Officer

National Accreditation Board for Testing and Calibration Laboratories

SCOPE OF ACCREDITATION

Laboratory Name : BNNSPEAG TEST & CALIBRATION LABORATORY INDIA PRIVATE LIMITED, 11/11, SECTOR-3, RAJENDRA NAGAR, SAHIBABAD, GHAZIABAD, UTTAR PRADESH, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-2765 **Page No** 1 of 9

Validity 25/06/2024 to 24/06/2026 **Last Amended on** -

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
Permanent Facility					
1	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Antenna Factor (AF)	Using Vector Network Analyzer, Open Area Test Site (OATS) Reference Standard as per ANSI C 63.5: 2017, CISPR 16-1-6: 2014 + Amd 1: 2017 + Amd 2: 2022	1 GHz to 18 GHz	2 dB
2	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Antenna Factor (AF)	Using Vector Network Analyzer, Open Area Test Site (OATS) Reference Standard as per SAE ARP 958 Rev. D	1 GHz to 18 GHz	2 dB
3	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Antenna Factor (AF)	Using Vector Network Analyzer, Open Area Test Site (OATS) Reference Standard as per SAE ARP 958 Rev. E	1 GHz to 18 GHz	2 dB
4	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Antenna Factor (AF)	Using Vector Network Analyzer, Open Area Test Site (OATS) Reference Standard as per ANSI C 63.5: 2017, CISPR 16-1-6: 2014 + Amd 1: 2017 + Amd 2: 202	30 MHz to 1 GHz	1.58 dB

SCOPE OF ACCREDITATION

Laboratory Name : BNNSPEAG TEST & CALIBRATION LABORATORY INDIA PRIVATE LIMITED, 11/11, SECTOR-3, RAJENDRA NAGAR, SAHIBABAD, GHAZIABAD, UTTAR PRADESH, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-2765 **Page No** 2 of 9

Validity 25/06/2024 to 24/06/2026 **Last Amended on** -

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
5	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Antenna Factor (AF)	Using Vector Network Analyzer, Open Area Test Site (OATS) Reference Standard as per SAE ARP 958 Rev. D	30 MHz to 1 GHz	2 dB
6	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Antenna Factor (AF)	Using Vector Network Analyzer, Open Area Test Site (OATS) Reference Standard as per SAE ARP 958 Rev. E	30 MHz to 1 GHz	2 dB
7	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Antenna Factor (AF)	Using Vector Network Analyzer as per CISPR 16-1-6: 2014 + Amd 1: 2017 + Amd 2: 2022, ANSI C63.5: 2017	9 kHz to 30 MHz	1.83 dB
8	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Antenna Pair Reference site attenuation (Aapr)	Using Vector Network Analyzer, Open Area Test Site (OATS) Reference Standard as per CISPR 16-1-4: 2019 Clause 6.6.4, 6.10.2	30 MHz to 18 GHz	1.31 dB

SCOPE OF ACCREDITATION

Laboratory Name :	BNNSPEAG TEST & CALIBRATION LABORATORY INDIA PRIVATE LIMITED, 11/11, SECTOR-3, RAJENDRA NAGAR, SAHIBABAD, GHAZIABAD, UTTAR PRADESH, INDIA
Accreditation Standard	ISO/IEC 17025:2017
Certificate Number	CC-2765
Page No	3 of 9
Validity	25/06/2024 to 24/06/2026
Last Amended on	-

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
9	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Antenna Return Loss (VSWR)	Using Vector Network Analyzer, Open Area Test Site (OATS) Reference Standard as per CISPR 16-1-6: 2014 + Amd 1: 2017 + Amd 2: 2022: Section A.8.7	30 MHz to 18 GHz	2.1 dB
10	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Antenna Symmetry (Balance)	Using Vector Network Analyzer, Open Area Test Site (OATS) Reference Standard as per ANSI 63.5-2017: Section 4.4.3	30 MHz to 300 MHz	2 dB
11	ELECTRO-TECHNICAL-EMI/ EMC (Measure)	Antenna Symmetry (Balance)	Using Vector Network Analyzer, Open Area Test Site (OATS) Reference Standard as per CISPR 16-1-6: 2014 + Amd 1: 2017 + Amd 2: 2022: Section 6.3.2	30 MHz to 6 GHz	-2 dB to +2 dB
12	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	Attenuation (10 MHz to 18 GHz)	Using Power Sensors with Signal Generators by Substitution Method	0.5 dB to 50 dB	0.37 dB to 0.87 dB

SCOPE OF ACCREDITATION

Laboratory Name : BNNSPEAG TEST & CALIBRATION LABORATORY INDIA PRIVATE LIMITED, 11/11, SECTOR-3, RAJENDRA NAGAR, SAHIBABAD, GHAZIABAD, UTTAR PRADESH, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-2765 **Page No** 4 of 9

Validity 25/06/2024 to 24/06/2026 **Last Amended on** -

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
13	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	Attenuation (9 kHz to 10 MHz)	Using Power Sensors with Signal Generators by direct Method	0.5 dB to 33 dB	0.33 dB to 0.39 dB
14	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	Frequency / Generators	Using Rubidium Source & Frequency Counter by Direct Method	9 kHz to 14 GHz	1.3 Hz to 19.4 Hz
15	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	Frequency/ Generators	Using Rubidium Source & Frequency Counter at Single Frequency by Direct Method	10 MHz to 10 MHz	-0.081 Hz to 0.081 Hz
16	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	Power / Generators (10 MHz to 18 GHz)	Using Power Sensors by Direct Method	-40 dBm to +10 dBm	0.41 dB to 0.64 dB
17	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	Power / Generators (9 kHz to 10 MHz)	Using Power Sensors by Direct Method	-20 dBm to +13 dBm	0.36 dB to 0.41 dB

SCOPE OF ACCREDITATION

Laboratory Name : BNNSPEAG TEST & CALIBRATION LABORATORY INDIA PRIVATE LIMITED, 11/11, SECTOR-3, RAJENDRA NAGAR, SAHIBABAD, GHAZIABAD, UTTAR PRADESH, INDIA

Accreditation Standard ISO/IEC 17025:2017

Certificate Number CC-2765 **Page No** 5 of 9

Validity 25/06/2024 to 24/06/2026 **Last Amended on** -

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
18	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	Electric Field / Electromagnetic Field Sensor & Probe (9 kHz to 18 GHz)	Using Signal Generator and RF Power Sensors based on IEEE-1309-2013 - Type B, TEC/SD/DD/CAL-EMF/01/FEB-19, IEC 61000-4- 3(2020) Annexure K	2 V/m to 100 V/m	14.96 %
19	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	Electric Field/ Electromagnetic Field Sensor & Probe (80 MHz to 1 GHz)	Using Signal Generator and RF Power Sensors based onIEEE-1309: 2013 - Type B, TEC/SD/DD/CAL-EMF/01/FEB-19, By IEC 61000-4-3(2020) Annexure K	2 V/m to 500 V/m	14.96 %
20	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	Frequency / Receivers	Using Signal Generator, Reference Frequency Standard by direct Method	9 kHz to 18 GHz	1.3 Hz to 78 Hz
21	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	Power / Receivers (9 kHz to 10 MHz)	Using Power Sensors with Signal Generators & Power Sensors by Comparison/ Substitution Method	-20 dBm to +10 dBm	0.43 dB to 0.47 dB

SCOPE OF ACCREDITATION

Laboratory Name :	BNNSPEAG TEST & CALIBRATION LABORATORY INDIA PRIVATE LIMITED, 11/11, SECTOR-3, RAJENDRA NAGAR, SAHIBABAD, GHAZIABAD, UTTAR PRADESH, INDIA
Accreditation Standard	ISO/IEC 17025:2017
Certificate Number	CC-2765
Validity	25/06/2024 to 24/06/2026

Last Amended on -

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22	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	RF Power/ Receivers (10 MHz - 18 GHz)	Using Power Sensors with Signal Generators & Power Sensors by Comparison/ Substitution Method	-40 dBm to +10 dBm	0.55 dB to 0.7 dB

SCOPE OF ACCREDITATION

Laboratory Name :	BNNSPEAG TEST & CALIBRATION LABORATORY INDIA PRIVATE LIMITED, 11/11, SECTOR-3, RAJENDRA NAGAR, SAHIBABAD, GHAZIABAD, UTTAR PRADESH, INDIA		
Accreditation Standard	ISO/IEC 17025:2017		
Certificate Number	CC-2765	**Page No**	7 of 9
Validity	25/06/2024 to 24/06/2026	**Last Amended on**	-

S.No	Discipline / Group	Measurand or Reference Material/Type of instrument or material to be calibrated or measured / Quantity Measured /Instrument	Calibration or Measurement Method or procedure	Measurement range and additional parameters where applicable(Range and Frequency)	* Calibration and Measurement Capability(CMC)(±)
Site Facility					
1	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	Attenuation (10 MHz to 18 GHz)	Using Power Sensors with Signal Generators by Substitution Method	0.5 dB to 50 dB	0.37 dB to 0.87 dB
2	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	Attenuation (9 kHz to 10 MHz)	Using Power Sensors with Signal Generators by direct Method	0.5 dB to 33 dB	0.33 dB to 0.39 dB
3	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	Frequency / Generators	Using Rubidium Source & Frequency Counter by Direct Method	9 kHz to 14 GHz	1.3 Hz to 19.4 Hz
4	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	Frequency/ Generators	Using Rubidium Source & Frequency Counter at Single Frequency by Direct Method	10 MHz to 10 MHz	-0.081 Hz to 0.081 Hz

SCOPE OF ACCREDITATION

Laboratory Name :	BNNSPEAG TEST & CALIBRATION LABORATORY INDIA PRIVATE LIMITED, 11/11, SECTOR-3, RAJENDRA NAGAR, SAHIBABAD, GHAZIABAD, UTTAR PRADESH, INDIA
Accreditation Standard	ISO/IEC 17025:2017
Certificate Number	CC-2765
Validity	25/06/2024 to 24/06/2026

Last Amended on -

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5	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	Power / Generators (10 MHz to 18 GHz)	Using Power Sensors by Direct Method	-40 dBm to +10 dBm	0.41 dB to 0.64 dB
6	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Measure)	Power / Generators (9 kHz to 10 MHz)	Using Power Sensors by Direct Method	-20 dBm to +13 dBm	0.36 dB to 0.41 dB
7	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	Frequency / Receivers	Using Signal Generator, Reference Frequency Standard by direct Method	9 kHz to 18 GHz	1.3 Hz to 78 Hz
8	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	Power / Receivers (9 kHz to 10 MHz)	Using Power Sensors with Signal Generators & Power Sensors by Comparison/ Substitution Method	-20 dBm to +10 dBm	0.43 dB to 0.47 dB
9	ELECTRO-TECHNICAL-RF/MICROWAVE (1 GHZ AND ABOVE) (Source)	RF Power/ Receivers (10 MHz - 18 GHz)	Using Power Sensors with Signal Generators & Power Sensors by Comparison/ Substitution Method	-40 dBm to +10 dBm	0.55 dB to 0.7 dB

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Laboratory Name :	BNNSPEAG TEST & CALIBRATION LABORATORY INDIA PRIVATE LIMITED, 11/11, SECTOR-3, RAJENDRA NAGAR, SAHIBABAD, GHAZIABAD, UTTAR PRADESH, INDIA		
Accreditation Standard	ISO/IEC 17025:2017		
Certificate Number	CC-2765	**Page No**	9 of 9
Validity	25/06/2024 to 24/06/2026	**Last Amended on**	-

*** CMCs represent expanded uncertainties expressed at approximately the 95% level of confidence, using a coverage factor of k = 2.**