

### **CERTIFICATE OF ACCREDITATION**

### **RFCOMM CALIBRATION LABORATORY, RFCOMM SOLUTIONS & SERVICES 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

G 06, 6TH FLOORNO. 02, JAIN HEIGHTS SOLUS 1ST CROSS, J C ROAD, BENGALURU, KARNATAKA, INDIA

in the field of

# CALIBRATION

**Certificate Number:** 

CC-2801

**Issue Date:** 

13/08/2024

Valid Until:

12/08/2026

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: RFCOMM SOLUTIONS & SERVICES PRIVATE LIMITED

#### Signed for and on behalf of NABL



N. Venkateswaran Chief Executive Officer





Laboratory Name :	RFCOMM CALIBRATION LABORATOR LIMITED, G 06, 6TH FLOOR NO. 02, J BENGALURU, KARNATAKA, INDIA	•	
Accreditation Standard	ISO/IEC 17025:2017		
Certificate Number	CC-2801	Page No	1 of 8
Validity	13/08/2024 to 12/08/2026	Last Amended on	30/08/2024

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)(±)
		1 30	Permanent Facility		
1	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage (1 kHz to 100 kHz)	Using 6½ Digit multimeter by Direct Method	20 mV to 5 V	0.06 % to 0.018 %
2	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage (1 kHz to 100 kHz)	Using 6½ Digit multimeter and Arbitrary waveform generator by comparison method	20 mV to 5 V	0.28 % to 0.13 %
3	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Current	Using 6½ Digit Multimeter by direct method	100 mA to 10 A	0.088 % to 0.64 %
4	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Current	Using 6½ Digit Multimeter and DC power supply by comparison method	100 mA to 10 A	0.58 % to 0.66 %
5	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Voltage	Using DC Power supply & Power Supply and 6½ Digit multimeter by Comparison Method	1 V to 650 V	0.17 % to 0.5 %





### **SCOPE OF ACCREDITATION**

Laboratory Name :	RFCOMM CALIBRATION LABORATOR LIMITED, G 06, 6TH FLOOR NO. 02, J BENGALURU, KARNATAKA, INDIA	•	
Accreditation Standard	ISO/IEC 17025:2017		
Certificate Number	CC-2801	Page No	2 of 8
Validity	13/08/2024 to 12/08/2026	Last Amended on	30/08/2024

.....

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)(±)
6	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digit multimeter by Direct Method	1 V to 650 V	0.57 % to 0.5 %
7	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Measure)	Amplitude Modulation (Rate: 1 kHz to 10 kHz)	Using Modulation Meter by Direct Method	Depth: 10 % to 90 %, CW: 10 MHz to 1.3 GHz	2.44 % to 2.36 %
8	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Measure)	Frequency	Using Universal frequency counter & High Frequency Counters Locked with Frequency Standard by Direct Method	1 Hz to 40 GHz	26.6 µHz to 57.8 Hz
9	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Measure)	Frequency Modulation (Rate 1 kHz to 20 kHz)	Using Modulation Meter by Direct Method	Deviation: 1 kHz to 200 kHz, CW: 10 MHz to 1.3 GHz	2.30 % to 2.27 %
10	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Measure)	RF Power (10 MHz to 40 GHz)	Using USB power sensor, Power meter with sensor & Signal analyzer by direct method	+13 dBm to -60 dBm	5.5 % to 7.01 %





Laboratory Name :	RFCOMM CALIBRATION LABORATOR LIMITED, G 06, 6TH FLOOR NO. 02, J BENGALURU, KARNATAKA, INDIA	,	
Accreditation Standard	ISO/IEC 17025:2017		
Certificate Number	CC-2801	Page No	3 of 8
Validity	13/08/2024 to 12/08/2026	Last Amended on	30/08/2024

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)(±)
11	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Source)	Amplitude Modulation (Rate: 1 kHz to 10 kHz)	Using Analog signal generator by Direct Method	Depth: 10 % to 90 %, CW: 10 MHz to 1.3 GHz	3.3 %
12	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Source)	Frequency	Using Arbitrary waveform generator and analog signal generator and Digital signal generator with Reference Locked to Frequency Standard by Direct Method	1 Hz to 40 GHz	0.59 Hz to 6.05 Hz
13	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Source)	Frequency Modulation (Rate: 1 kHz to 20 kHz)	Using analog signal generator & Digital Signal Generator By Direct Method	Deviation: 10 kHz to 200 kHz, CW: 10MHz to 1.3GHz	2.28 %
14	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Source)	Frequency Modulation at (Rate:1 kHz to 20 kHz)	Using analog signal generator & Digital Signal Generator By Direct Method	Deviation 10 kHz to 200 kHz,CW: 10MHz to 1.3GHz	2.08 %





Laboratory Name :	RFCOMM CALIBRATION LABORATOR LIMITED, G 06, 6TH FLOOR NO. 02, J BENGALURU, KARNATAKA, INDIA	•	
Accreditation Standard	ISO/IEC 17025:2017		
Certificate Number	CC-2801	Page No	4 of 8
Validity	13/08/2024 to 12/08/2026	Last Amended on	30/08/2024

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)(±)
15	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Source)	RF Power (10 MHz to 40 GHz)	Using signal generator by transfer method	+13 dBm to -60 dBm	6.38 % to 10.04 %
16	ELECTRO- TECHNICAL- TIME & FREQUENCY (Source)	Sine Wave Flatness	Using Digital signal generator & Analog signal generator by Direct Method	50 MHz to 10 GHz	6.16 % to 8 %
17	ELECTRO- TECHNICAL- TIME & FREQUENCY (Source)	Time Period	Using Signal generator & Arb generator by direct method	10 ms to 200 ps	0.0031 % to 0.06 %

This is annexure to 'Certificate of Accreditation' and does not require any signature.





Laboratory Name :	RFCOMM CALIBRATION LABORATOR LIMITED, G 06, 6TH FLOOR NO. 02, J BENGALURU, KARNATAKA, INDIA	•	
Accreditation Standard	ISO/IEC 17025:2017		
Certificate Number	CC-2801	Page No	5 of 8
Validity	13/08/2024 to 12/08/2026	Last Amended on	30/08/2024

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)(±)
	-	1.0	Site Facility		
1	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage (1 kHz to 100 kHz)	Using 6½ Digit multimeter by Direct Method	20 mV to 5 V	0.06 % to 0.018 %
2	ELECTRO- TECHNICAL- Alternating Current (< 1 GHz) (Measure)	AC Voltage (1 kHz to 100 kHz)	Using 6½ Digit multimeter and Arbitrary waveform generator by comparison method	20 mV to 5 V	0.28 % to 0.13 %
3	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Current	Using 6½ Digit Multimeter by direct method	100 mA to 10 A	0.088 % to 0.64 %
4	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Current	Using 6½ Digit Multimeter and DC power supply by comparison method	100 mA to 10 A	0.58 % to 0.66 %
5	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Voltage	Using DC Power supply & Power Supply and 6½ Digit multimeter by Comparison Method	1 V to 650 V	0.17 % to 0.5 %





Laboratory Name :	RFCOMM CALIBRATION LABORATOR LIMITED, G 06, 6TH FLOOR NO. 02, J BENGALURU, KARNATAKA, INDIA	•	
Accreditation Standard	ISO/IEC 17025:2017		
Certificate Number	CC-2801	Page No	6 of 8
Validity	13/08/2024 to 12/08/2026	Last Amended on	30/08/2024

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)(±)
6	ELECTRO- TECHNICAL- DIRECT CURRENT (Measure)	DC Voltage	Using 6½ Digit multimeter by Direct Method	1 V to 650 V	0.57 % to 0.5 %
7	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Measure)	Amplitude Modulation (Rate: 1 kHz to 10 kHz)	Using Modulation Meter by Direct Method	Depth: 10 % to 90 %, CW: 10 MHz to 1.3 GHz	2.44 % to 2.36 %
8	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Measure)	Frequency	Using Universal frequency counter & High Frequency Counters Locked with Frequency Standard by Direct Method	1 Hz to 40 GHz	26.6 µHz to 57.8 Hz
9	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Measure)	Frequency Modulation (Rate 1 kHz to 20 kHz)	Using Modulation Meter by Direct Method	Deviation: 1 kHz to 200 kHz, CW: 10 MHz to 1.3 GHz	2.30 % to 2.27 %
10	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Measure)	RF Power (10 MHz to 40 GHz)	Using USB power sensor, Power meter with sensor & Signal analyzer by direct method	+13 dBm to -60 dBm	5.5 % to 7.01 %





Laboratory Name :	RFCOMM CALIBRATION LABORATORY, RFCOMM SOLUTIONS & SERVICES PRIVATE LIMITED, G 06, 6TH FLOOR NO. 02, JAIN HEIGHTS SOLUS 1ST CROSS, J C ROAD, BENGALURU, KARNATAKA, INDIA		
Accreditation Standard	ISO/IEC 17025:2017		
Certificate Number	CC-2801	Page No	7 of 8
Validity	13/08/2024 to 12/08/2026	Last Amended on	30/08/2024

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)(±)
11	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Source)	Amplitude Modulation (Rate: 1 kHz to 10 kHz)	Using Analog signal generator by Direct Method	Depth: 10 % to 90 %, CW: 10 MHz to 1.3 GHz	3.3 %
12	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Source)	Frequency	Using Arbitrary waveform generator and analog signal generator and Digital signal generator with Reference Locked to Frequency Standard by Direct Method	1 Hz to 40 GHz	0.59 Hz to 6.05 Hz
13	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Source)	Frequency Modulation (Rate: 1 kHz to 20 kHz)	Using analog signal generator & Digital Signal Generator By Direct Method	Deviation: 10 kHz to 200 kHz, CW: 10MHz to 1.3GHz	2.28 %
14	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Source)	Frequency Modulation at (Rate:1 kHz to 20 kHz)	Using analog signal generator & Digital Signal Generator By Direct Method	Deviation 10 kHz to 200 kHz,CW: 10MHz to 1.3GHz	2.08 %





### **SCOPE OF ACCREDITATION**

Laboratory Name :	RFCOMM CALIBRATION LABORATORY, RFCOMM SOLUTIONS & SERVICES PRIVATE LIMITED, G 06, 6TH FLOOR NO. 02, JAIN HEIGHTS SOLUS 1ST CROSS, J C ROAD, BENGALURU, KARNATAKA, INDIA		
Accreditation Standard	ISO/IEC 17025:2017		
Certificate Number	CC-2801	Page No	8 of 8
Validity	13/08/2024 to 12/08/2026	Last Amended on	30/08/2024

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)(±)
15	ELECTRO- TECHNICAL- RF/MICROWAV E (1 GHZ AND ABOVE) (Source)	RF Power (10 MHz to 40 GHz)	Using signal generator by transfer method	+13 dBm to -60 dBm	6.38 % to 10.04 %
16	ELECTRO- TECHNICAL- TIME & FREQUENCY (Source)	Sine Wave Flatness	Using Digital signal generator & Analog signal generator by Direct Method	50 MHz to 10 GHz	6.16 % to 8 %
17	ELECTRO- TECHNICAL- TIME & FREQUENCY (Source)	Time Period	Using Signal generator & Arb generator by direct method	10 ms to 200 ps	0.0031 % to 0.06 %

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