



Calibration Laboratory Cert: 5518.01

ISO/IEC 17025:2017 and ANSI/NCSL Z540.1-1994  
**Accredited Calibration Certificate**

Customer: Sample Certificate

Certificate: Sample

Product: E Field Probe  
 Manufacturer: Lumiloop  
 Model: LSProbe1.2  
 Serial: 934

Notes: Calibrated with Correction Factors On  
 10MHz to 8.2GHz

Date of Report: 10/11/2024  
 Date of Calibration: 10/11/2024  
 Next Calibration:

**The next calibration date is defined by the equipment user/owner.**

The results of the tests performed are held on file at The EMC Shop. The calibration was carried out in accordance with the general requirements of ISO/IEC 17025-2017 and ANSI Z-540-1 using laboratory standards which are traceable to the SI International System of Quantities through the National Institute of Standards and Technology (NIST), and or other Accredited bodies except where none exist. Tests are carried out in environmental conditions controlled to the extent appropriate to the instrument's specification. This certificate shall not be reproduced except in full without the written approval of the laboratory. The uncertainty results meet the requirements of the ISO/IEC 17025-2017 standard and ILAC Doc.P14. Statements of conformity (e.g. Pass or Fail) are made in accordance with Simple Acceptance decision rules as defined in ILAC G8 with a TUR of 4:1 or greater. The customer is responsible for considering whether the inclusion of the uncertainties shown on the certificate would prevent their use of the equipment based on their risk evaluations. Results are accredited unless annotated with an asterisk. The results presented are only applicable to the Model/Serial number shown.

**Ambient Conditions of Laboratory**

Temperature (°C): **23.6**  
 Relative Humidity (%): **38**

Technician: **Caleb Crites**

Technician Signature: Caleb B Crites



Calibration Equipment				
Model	Description	Serial Number	Certificate Number	Due Date
FL7040	Field Probe	0352814	221213-130209-d54321	1/11/2025
FI7000	Field Probe Laser Interface	0349930	NA	NA
FM7004A	Field Probe Monitor	0346928	NA	NA
EP-602	Field Probe	711ZX00440	231213-133717-ea0d01	12/27/2024
3117	Horn Antenna	00212937	NA	NA
E4419B	Power Meter	GB40202731	1-17660891762-1	5/24/2025
E9304A	Power Sensor	MY41497710	1-16749159368-1	2/14/2025
N5173B	Signal Generator	MY53270199	WO-00544602	8/17/2025
DC1G-100	Directional Coupler	132228	A23042601DR	4/26/2025
DC18G-50	Directional Coupler	2220	A23042601DR	4/26/2025
50U1000	Amplifier, 10kHz to 1GHz	0357990	NA	NA
SS18G-10	Amplifier, 1GHz to 18GHz	2415066	NA	NA
10x14x10 RF Chamber	RF Chamber	1000246	NA	NA
GTEM800	Transverse Electromagnetic Waveguide	513461	NA	NA

<b>Calibration Method Used:</b>	<b>IEEE Std. 1309-2013; Substitution</b>
<b>Axis Alignment:</b>	<b>35.3° Angle, Z-Axis Aligned with E-Field</b>
<b>Parameters Calibrated:</b>	<b>Linearity</b>
	<b>Frequency Response</b>
	<b>Isotropy</b>

<b>Condition as found:</b>	<b>IN tolerance</b>
<b>Condition as left:</b>	<b>IN tolerance</b>

Measuring Uncertainties	
Linearity	<b>± 1.8 dB</b>
Frequency Response 1kHz to 1GHz	<b>± 2.9 dB</b>
Frequency Response 1GHz to 18GHz	<b>± 2.32 dB</b>



### Linearity / Dynamic Range Levels

IEEE Std. 1309-2003 sec 7.1

Frequency (MHz)	Applied E-Field (V/m)	Measured E-Field (V/m)	Difference (V/m)	Difference Percent (%)	Difference (dB)
27	11.681	11.2	-0.48	4.12%	-0.365
27	14.281	13.9	-0.38	2.67%	-0.235
27	18.422	17.8	-0.62	3.38%	-0.298
27	22.656	21.9	-0.76	3.34%	-0.295
27	28.184	27.2	-0.98	3.49%	-0.309
27	35.167	34.3	-0.87	2.47%	-0.217
27	45.060	43.0	-2.06	4.57%	-0.406
27	56.386	54.2	-2.19	3.88%	-0.343
27	70.886	68.7	-2.19	3.08%	-0.272
27	87.848	85.1	-2.75	3.13%	-0.276
27	107.56	106.5	-1.06	0.99%	-0.086
27	131.21	132.9	1.69	1.29%	0.111
27	155.75	162.9	7.15	4.59%	0.390
27	176.87	191.6	14.73	8.33%	0.695



### Frequency Response

IEEE Std. 1309-2003 sec 7.2

Frequency (GHz)	Applied E-Field (V/m)	Measured E-Field (V/m)	Difference (V/m)	Difference Percent (%)	Difference (dB)
0.01	31.102	26.5	-4.60	14.80%	-1.391
0.05	33.405	30.4	-3.01	9.00%	-0.819
0.08	32.556	30.0	-2.56	7.85%	-0.710
0.1	31.850	29.8	-2.05	6.44%	-0.578
0.3	31.419	29.4	-2.02	6.43%	-0.577
0.5	31.183	29.8	-1.38	4.44%	-0.394
0.8	31.064	29.8	-1.26	4.07%	-0.361
1	30.994	29.3	-1.69	5.47%	-0.488
5	35.006	33.1	-1.91	5.44%	-0.486
8	38.217	35.2	-3.02	7.89%	-0.714
10	37.920	33.4	-4.52	11.92%	-1.102
50	27.466	25.5	-1.97	7.16%	-0.645
80	29.638	30.0	0.36	1.22%	0.105
100	25.562	24.8	-0.76	2.98%	-0.263
500	25.951	26.6	0.65	2.50%	0.215
800	41.658	39.1	-2.56	6.14%	-0.550
1,000	7.860	4.5	-3.36	42.75%	-4.844
1,500	23.270	17.9	-5.37	23.08%	-2.279
2,000	10.98	8.2	-2.78	25.32%	-2.536
2,500	13.05	11.2	-1.85	14.18%	-1.328
3,000	23.54	19.3	-4.24	18.01%	-1.725
3,500	17.39	17.1	-0.29	1.67%	-0.146
4,000	25.88	25.6	-0.28	1.08%	-0.094
4,500	27.46	30.0	2.54	9.25%	0.768
5,000	20.18	26.8	6.62	32.80%	2.464
5,500	17.05	24.0	6.95	40.76%	2.970
6,000	26.11	28.8	2.69	10.30%	0.852
6,500	24.97	24.7	-0.27	1.08%	-0.094
7,000	23.46	23.5	0.04	0.17%	0.015
7,500	25.71	25.4	-0.31	1.21%	-0.105
8,000	21.70	27.7	6.00	27.65%	2.120
8,200	28.80	26.9	-1.90	6.60%	-0.593



### Isotropy

IEEE Std. 1309-2003 sec 7.3

The anisotropy is obtained from the geometric mean of the field strength maximum response and the field strength minimum response in a 20V/m field at 400MHz using the following formula:

$$A = 20 \log_{10} \left( \frac{S_{\max}}{\sqrt{S_{\max} S_{\min}}} \right) \text{ dB}$$

Where  $S$  is the amplitude in field strength units

<b>Maximum Response (V/m):</b>	20.8
<b>Minimum Response (V/m):</b>	20.1

<b>Anisotropy (dB):</b>	<b>± 0.149</b>
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**End of Calibration Report: Field Probe Cert Rev. 1**