***Fischer RF Compliance, LLC***
609 Heather Lane
Bryn Mawr, PA 19010

A-11

December 15, 2024

Derek W. Orth, Esq.
Inglesino Taylor
600 Parsippany Road, Suite 204
Parsippany, New Jersey 07054

Re: Radio Frequency Electromagnetic Energy (RF-EME) On-Site Measurements of Existing Flagpole Facility
Location Name: **V-Fee Mendham Apartments**
84-90 East Main Street, Mendham, NJ 07945 (Mendham Borough, Morris County)

To whom it may concern:

I have been contracted to provide on-site RF-EME field strength measurements at the above referenced property to certify that the existing telecommunications facility is compliant with federal standards and regulations regarding RF exposure. The existing stealth flagpole on the property contains antenna arrays of AT&T, Dish, T-Mobile and Verizon as well as a public safety antenna.

At the Mendham Borough Joint Land Use Board meeting on December 3, 2024, the Board requested that on-site RF field strength measurements be taken around the existing telecommunications facility. A theoretical study prepared by dBm Engineering had previously been provided, which stated that the exposure levels from the existing facility would be compliant with federal allowable levels in all publicly accessible areas at ground level and at all areas on and inside the proposed apartment building. The Board made the request that physical measurements be performed so that both empirical and theoretical data would be provided as part of the application.

I visited the property on December 12, 2024, to perform the on-site readings. Using a calibrated Narda NBM-550 broadband meter and Narda EA5091 probe (calibration certificates attached), (70) measurements were taken around the existing facility. A total of (10) readings were taken inside the Mendham Health & Racquet Club building in the lobby area as this was the most elevated location where measurements could be performed and the closest part of the building to the flagpole facility. An additional (60) readings were taken in the parking lot surrounding the Mendham Health & Racquet Club building and flagpole facility. The measurement table containing the results as well as a measurement map for reference is attached. **All recorded measurements were less than 1% of the FCC General Population maximum permissible exposure (MPE) limit with the highest measurement being 0.1635%. With 100% being the allowable limit, this means that the highest recorded measurement was over 600 times less than the federal allowable limit.**

For reference, the FCC defines two sets of maximum permissible exposure (MPE) limits—Occupational (Controlled) and General Population (Uncontrolled). Occupational limits apply in situations in which persons are exposed because of their employment and where those persons have undergone proper RF awareness training, have been made fully aware of the potential for exposure, and can exercise control over their exposure. General Population limits, conversely, apply to accessible areas where workers or

the general public may be exposed and have not undergone RF awareness training, may not be aware of the potential for exposure, and may not be able to exercise control over their exposure. For the frequency bands the cellular carriers operate in, the General Population MPE limits are five times more conservative than the Occupational MPE limits. That is, there is a much stricter standard of compliance in areas that are accessible by the general public. See 47 CFR § 1.1307 and 1.1310 as well as OET Bulletin 65 for the full federal code pertaining to regulations for evaluating and certifying compliance with respect to RF exposure.

**In summary, the measurements demonstrate that the existing telecommunications facility is fully compliant with FCC regulations regarding human exposure to RF-EME in all surrounding publicly accessible areas by a substantial margin.**

If you have any questions, please contact me at michaelfischer@comcast.net.

Sincerely,


Michael Fischer, P.E.
Registered Professional Engineer
New Jersey License No. 24GE04841400

***Fischer RF Compliance, LLC***
609 Heather Lane
Bryn Mawr, PA 19010

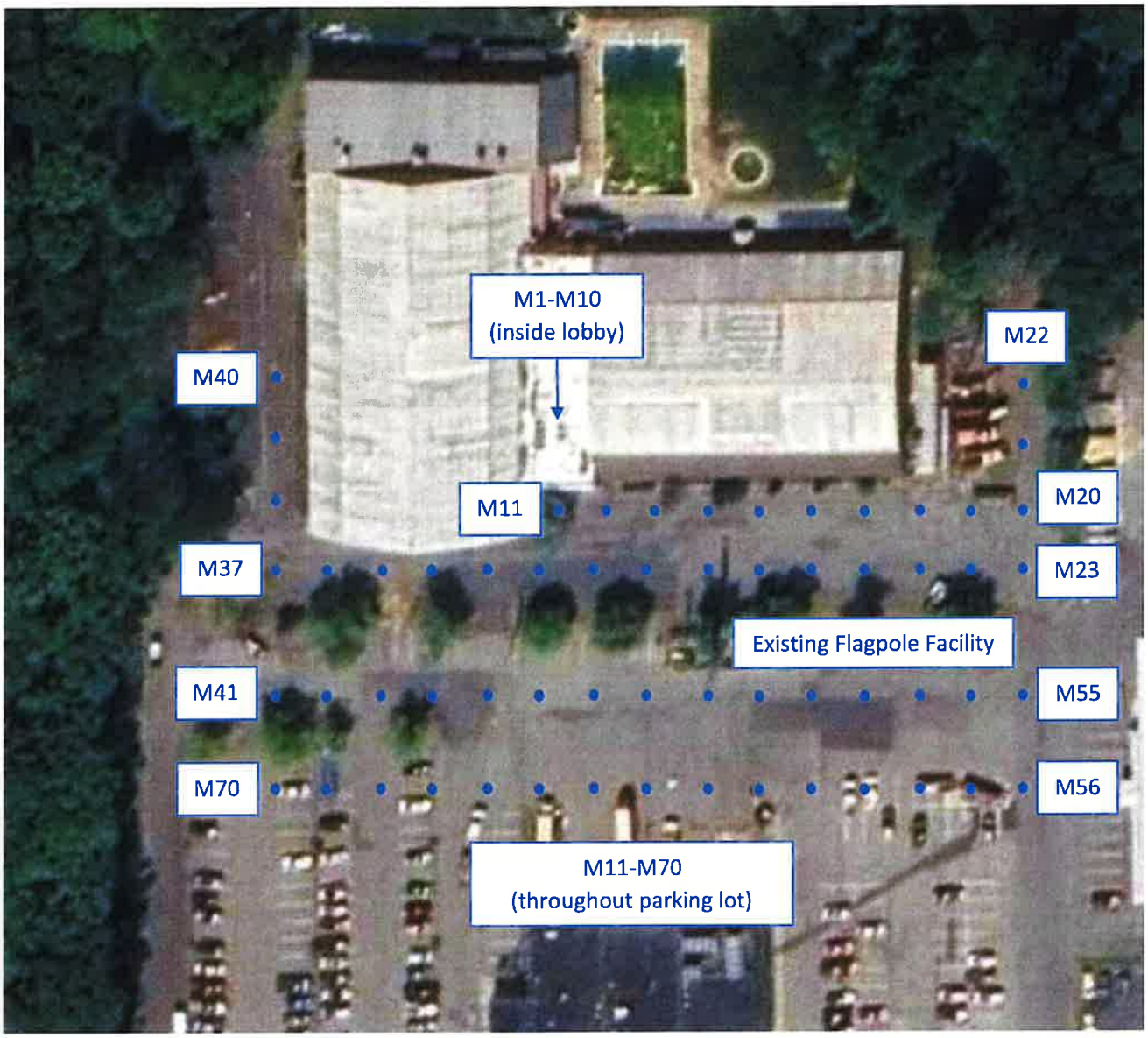
## MEASUREMENT TABLE

| Measurement | % FCC General Population MPE | Measurement | % FCC General Population MPE |
|---|---|---|---|
| 1 | 0.1209% | 36 | 0.0343% |
| 2 | 0.1383% | 37 | 0.0436% |
| 3 | 0.1262% | 38 | 0.0365% |
| 4 | 0.1356% | 39 | 0.0488% |
| 5 | 0.0900% | 40 | 0.0104% |
| 6 | 0.1115% | 41 | 0.0427% |
| 7 | 0.1275% | 42 | 0.0482% |
| 8 | 0.1409% | 43 | 0.0386% |
| 9 | 0.1635% | 44 | 0.0291% |
| 10 | 0.1412% | 45 | 0.0750% |
| 11 | 0.0721% | 46 | 0.0779% |
| 12 | 0.1130% | 47 | 0.1137% |
| 13 | 0.0820% | 48 | 0.1064% |
| 14 | 0.0238% | 49 | 0.0476% |
| 15 | 0.0097% | 50 | 0.0550% |
| 16 | 0.0341% | 51 | 0.0386% |
| 17 | 0.0232% | 52 | 0.0119% |
| 18 | 0.0078% | 53 | 0.0433% |
| 19 | 0.0123% | 54 | 0.0387% |
| 20 | 0.0602% | 55 | 0.0087% |
| 21 | 0.0262% | 56 | 0.0037% |
| 22 | 0.0469% | 57 | 0.0025% |
| 23 | 0.0144% | 58 | 0.0030% |
| 24 | 0.0486% | 59 | 0.0193% |
| 25 | 0.0227% | 60 | 0.0775% |
| 26 | 0.0387% | 61 | 0.0615% |
| 27 | 0.0168% | 62 | 0.0342% |
| 28 | 0.0070% | 63 | 0.0916% |
| 29 | 0.0140% | 64 | 0.0099% |
| 30 | 0.0312% | 65 | 0.0064% |
| 31 | 0.0768% | 66 | 0.0178% |
| 32 | 0.0451% | 67 | 0.0048% |
| 33 | 0.0472% | 68 | 0.0052% |
| 34 | 0.0178% | 69 | 0.0198% |
| 35 | 0.0087% | 70 | 0.0504% |

***Fischer RF Compliance, LLC***
609 Heather Lane
Bryn Mawr, PA 19010

---

## MEASUREMENT MAP



***Fischer RF Compliance, LLC***
609 Heather Lane
Bryn Mawr, PA 19010

## SITE PHOTOS



**MENDHAM HEALTH & RACQUET CLUB LOBBY (Measurements 1-10)**



**EXISTING FLAGPOLE FACILITY AND SURROUNDING PARKING LOT (Measurements 11-70)**


Advanced Test Equipment Corp.
Rentals · Sales · Calibration · Service

# CALIBRATION CERTIFICATE

ATEC Asset ID
39987

Work Order
2024009531

Certificate Number: 2024009531-Rev2

| | |
|---|---|
| Asset ID | 39987 |
| Manufacturer | Narda |
| Model Number | NARD-NBM-550 |
| Serial Number | H-1174 |
| Description | Broadband Field Strength Meter (requires probes) |

| | |
|---|---|
| Initial Condition | In Tolerance |
| Final Condition | In Tolerance |
| Calibration Date | 6/19/2024 |
| Due Date | 6/19/2026 |
| Temperature C° | 24.76 |
| Humidity | 36.4 |
| Procedure | 2401-8700-00A and ATE 990313 Rev. Revision |

**Customer Name:** Millennium Engineering, P.C.
**Customer Address:** 42 Old Barn Drive West Chester , PA 19382
**Comments:**

This Calibration is traceable to the International System of Units (SI), through National Metrology Institutes (NIST, PTB, NRC, NPL, etc.), ratiometric techniques, or natural physical constants. This certificate applies only to the item identified and shall not be reproduced other than in full, without the specific written approval of Advanced Test Equipment Corporation (ATEC). The calibration has been completed in accordance with ATEC's Active Use Calibration System. ATEC conforms to the requirements of the Quality Management System registered to ISO 9001:2015 (QAS International; US2790).

**Standards Used**

| Model | Manufacturer | Serial | Asset ID | Due Date |
|---|---|---|---|---|
| AGIL-34401A | Agilent Technologies | US36109164 | 23503 | 12/13/2024 |

| 2401-8700-00A and ATE 990313 | | | | | |
|---|---|---|---|---|---|
| **Manual Template** | **Pass** | | **Found / Left** | | |
| TEST DESCRIPTION | TRUE VALUE | Lower Limit | TEST RESULT | Upper Limit | Status |
| Calibration Results | | | | | |
| Input Voltage: 2.400 V | | | | | |
| Channel X | 2.376 V | 2.352 V | 2.371 V | 2.400 V | Pass |
| Channel Y | 2.376 V | 2.352 V | 2.371 V | 2.400 V | Pass |
| Channel Z | 2.376 V | 2.352 V | 2.371 V | 2.400 V | Pass |
| Because of an internal voltage divider, the nominal indication is 2.376 V. | | | | | |

**-- End of measurement results--**

Calibrated by: Hisham Salman

Approved by: Integration Admin

**Narda Safety Test Solutions GmbH**
Sandwiesenstrasse 7 - 72793 Pfullingen - Germany
Phone: +49 7121 9732 0 - Fax: +49 7121 9732 790

narda
Safety Test Solutions

# Calibration Certificate

Narda Safety Test Solutions GmbH hereby certifies that the referenced equipment has been calibrated by qualified personnel to Narda's approved procedures. The calibration was carried out within a certified quality management system conforming to ISO 9001.

| | |
|---|---|
| OBJECT | Probe EA 5091, FCC Shaped |
| MANUFACTURER | Narda Safety Test Solutions |
| PART NUMBER (P/N) | 2402/07B |
| SERIAL NUMBER (S/N) | 01067 |
| CUSTOMER | Millennium Engineering, P.C.<br>42 Old Barn Drive<br>West Chester, PA 19382<br>United States |
| CALIBRATION DATE<br>(YYYY-MM-DD) | 2024-06-03 |
| AMBIENT CONDITIONS | Temperature: (23 ± 3) °C<br>Relative humidity: (20 to 60) % |
| CALIBRATION PROCEDURE | 2402-8707-00B |

ISSUE DATE: 2024-06-03
(YYYY-MM-DD)

CALIBRATED BY
N. Gillhart

AUTHORIZED SIGNATORY

**Narda Safety Test Solutions GmbH**
Sandwiesenstrasse 7 - 72793 Pfullingen - Germany
Phone: +49 7121 9732 0 - Fax: +49 7121 9732 790

# METHOD OF MEASUREMENT

### FREQUENCY RESPONSE / ISOTROPY

The calibration of the object was performed in the frequency domain using an unmodulated (CW) signal. The measurement involves the generation of a linearly polarized electromagnetic field, approximating to a plane wave, into which the object was placed.

The probe was aligned for maximum interception of the field, i.e. the handle of the probe was oriented in the otho-angle position (54.7 to the vertical E-field vector) above 200 MHz. Below 200 MHz the handle was oriented perpendicular to both, the direction of propagation of the field and the direction of the E-field vector.

For each frequency the object was rotated about the axis of the handle while recording the readings continuously. After a full revolution of 360° was made the results are calculated from the recorded values.

The meter indicates the results in the unit "%Std", i.e. the power related ratio of the calibration field level and the reference level (MPE = maximum permissible exposure limit) of the standard.

$$\%Std_{disp} = \sqrt{\%Std_{\min} \cdot \%Std_{\max}}$$

$$A = 10\log_{10}\left(\frac{\%Std_{\max}}{\sqrt{\%Std_{\max} \cdot \%Std_{\min}}}\right)\text{dB}$$

The correction factor CF may be applied to compensate the systematic error due to frequency response.

$$CF = \%Std_{cal} / \%Std_{disp}$$

# FIELD GENERATION

### SETUP A (up to 18 GHz)

Calibration using a transfer standard. The probe is positioned with the boresight of a linearly polarized standard gain horn antennae. The field strength is set to a known value based on the power meter reading Pcal in reference to a calibrated sensor (Eref, Pref ).

$$E_{cal} = E_{ref}\sqrt{P_{cal}/P_{ref}}$$

### SETUP A (above 18 GHz)

Calibration using calculated field strength. The probe is positioned with the boresight of a linearly polarized horn antenna. The field strength is derived from the horn's gain g, the transmitted power of the antenna and the distance d. The power measurement includes the power meter's corrected indication Pcal and a fixed attenuation D.

$$E_{cal} = \sqrt{\frac{P_{cal} \cdot D \cdot g \cdot 120\pi\,\Omega}{4\pi \cdot d^2}}$$

Reference: IEEE Std. 1309

### SETUP B (200 MHz to 1800 MHz)

Calibration using a transfer standard. The probe is mounted in front of a double balanced ridge horn antenna. The field strength is set to a known value based on the power meter reading Pcal in reference to

**Narda Safety Test Solutions GmbH**
Sandwiesenstrasse 7 - 72793 Pfullingen - Germany
Phone: +49 7121 9732 0 - Fax: +49 7121 9732 790

a calibrated sensor (Eref, Pref ).

$$E_{cal} = E_{ref}\sqrt{P_{cal}/P_{ref}}$$

**SETUP C (up to 300 MHz)**

Calibration using calculated field strength. A Crawford TEM cell is used to generate the known field strength E. The field strength is derived from TEM cell's septum height b, impedance Z0 and from the output power of the cell. The output power measurement includes the power meter's corrected indication Pcal and a fixed attenuation D.

$$E_{cal} = \frac{\sqrt{P_{cal} \cdot D \cdot Z_0}}{b}$$

**Narda Safety Test Solutions GmbH**
Sandwiesenstrasse 7 - 72793 Pfullingen - Germany
Phone: +49 7121 9732 0 - Fax: +49 7121 9732 790

## UNCERTAINTY

The measurement uncertainty stated in this document is the expanded uncertainty with a coverage factor of 1.96 (corresponding, in the case of normal distribution, to a confidence probability of 95%).

This statement of uncertainty applies to the measured values only and does not make any implementation or include any estimation as to the long-term stability of the calibrated device.

## METROLOGICAL TRACEABILITY

The calibration results are traceable to SI-units according to ISO/IEC 17025. Physical units, which are not included in the list of accredited measured quantities such as field strength or power density, are traced to the basic units via approved measurement and computational methods.

The equipment used for this calibration is traceable to the standards listed below.

| Reference- / Working- Standard | Manufacturer | Model | Serial-Number | Certificate-Number | CalDate | CalDue Date | Trace |
|---|---|---|---|---|---|---|---|
| **SETUP A (up to 18 GHz)** | | | | | | | |
| E-Field Reference Probe | Narda | EF1891 | A-0093 | 2022070118-1 | 2022-11 | # | UKAS 0478 |
| **SETUP B** | | | | | | | |
| E-Field Reference Probe | Narda | EF1891 | A-0093 | 2022070118-1 | 2022-11 | # | UKAS 0478 |
| **SETUP A (above 18 GHz)** | | | | | | | |
| Power Sensor | Agilent | R8486A | 3318A03707 | WO-0597994 | 2024-02 | 2026-02 | Agilent (UK) |
| Power Meter | Agilent | E4419B | MY40330449 | WO-00598011 | 2024-03 | 2026-03 | Agilent (DE) |
| Power Sensor | Agilent | Q8486A | 3318A01930 | WO-00597966 | 2024-02 | 2026-02 | Agilent (UK) |
| Power Meter | Agilent | E4419B | MY40330486 | WO-00598003 | 2024-02 | 2026-02 | Agilent (DE) |
| Power Sensor | Agilent | V8486A | US39010333 | WO-00597966 | 2024-02 | 2026-02 | Agilent (DE) |
| Power Meter | Agilent | E4419B | MY50000111 | WO-00597960 | 2024-02 | 2026-02 | Agilent (DE) |
| **SETUP C** | | | | | | | |
| Calliper | Mauser | 0-150mm | D/07 22206 | 20238822-D-K-15181-01-00-2020-02 | 2020-02 | # | DAkkS |
| MMID-0357-Attenuator | Weinschel | 49-20-33/44-10 | KH-B66/BS5534 | 300707621/D-K-15012-01-00/2023-08 | 2023-08 | 2026-08 | DAkkS |
| 1635_Power Sensor | Rohde&Schwarz | NRV-Z51 | 101777 | 300680617-D-K-15195-01-00-2023-01 | 2023-01 | 2025-01 | DAkkS |
| 1751_RF-Millivoltmeter | Rohde&Schwarz | URV55 | 100627 | 300667734-D-K-15195-01-00-2022-10 | 2022-10 | 2024-10 | DAkkS |

# reference standard; not used for routine calibration

**Narda Safety Test Solutions GmbH**
Sandwiesenstrasse 7 - 72793 Pfullingen - Germany
Phone: +49 7121 9732 0 - Fax: +49 7121 9732 790

# RESULTS

## FREQUENCY RESPONSE / ANISOTROPY

These results describe the uncorrected frequency response of the object

| *Frequency* MHz | *E.cal* V/m | *X.cal* %Std | *X.disp* %Std | *CF* | *U* dB | *A* dB |
|---|---|---|---|---|---|---|
| 0.30 | 308.29 | 25.21 | 12.45 | 2.03 | 1.35 | 1.60 |
| 3.00 | 304.67 | 24.62 | 31.32 | 0.79 | 1.35 | 0.82 |
| 10.00 | 92.14 | 25.02 | 33.60 | 0.74 | 1.20 | 0.35 |
| 30.00 | 30.77 | 25.11 | 20.84 | 1.21 | 1.20 | 0.34 |
| 100.00 | 30.70 | 25.01 | 26.04 | 0.96 | 1.20 | 0.32 |
| 300.00 | 30.94 | 25.39 | 14.43 | 1.76 | 1.50 | 0.21 |
| 750.00 | 48.09 | 24.53 | 29.45 | 0.83 | 1.50 | 0.15 |
| 1000.00 | 56.14 | 25.08 | 28.30 | 0.89 | 1.60 | 0.22 |
| 1800.00 | 68.61 | 24.97 | 29.77 | 0.84 | 1.30 | 0.37 |
| 2450.00 | 68.75 | 25.07 | 28.50 | 0.88 | 1.30 | 0.35 |
| 4000.00 | 67.87 | 24.43 | 28.54 | 0.86 | 1.30 | 0.87 |
| 8200.00 | 68.57 | 24.94 | 28.03 | 0.89 | 1.30 | 0.65 |
| 10000.00 | 68.21 | 24.68 | 25.94 | 0.95 | 1.30 | 0.80 |
| 18000.00 | 68.16 | 24.65 | 21.55 | 1.14 | 1.30 | 1.07 |
| 26500.00 | 68.58 | 24.95 | 22.32 | 1.12 | 1.30 | 0.82 |
| 40000.00 | 68.81 | 25.12 | 18.42 | 1.36 | 1.30 | 0.70 |
| 45500.00 | 67.98 | 24.52 | 10.59 | 2.32 | 1.30 | 0.92 |

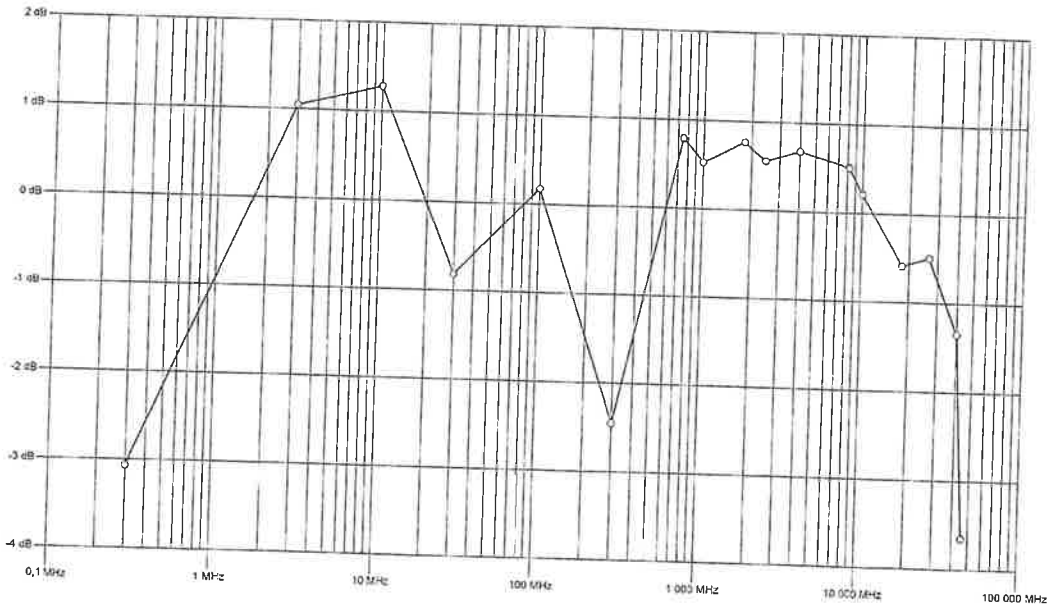
The correction factor CF is stored in the memory chip.
If the probe is connected to a NBM-550 Field Meter the correction may be enabled (Apply Correction Frequency = ON)

Gain factor (informative)
k0A: 0.865
k0B: 1.142

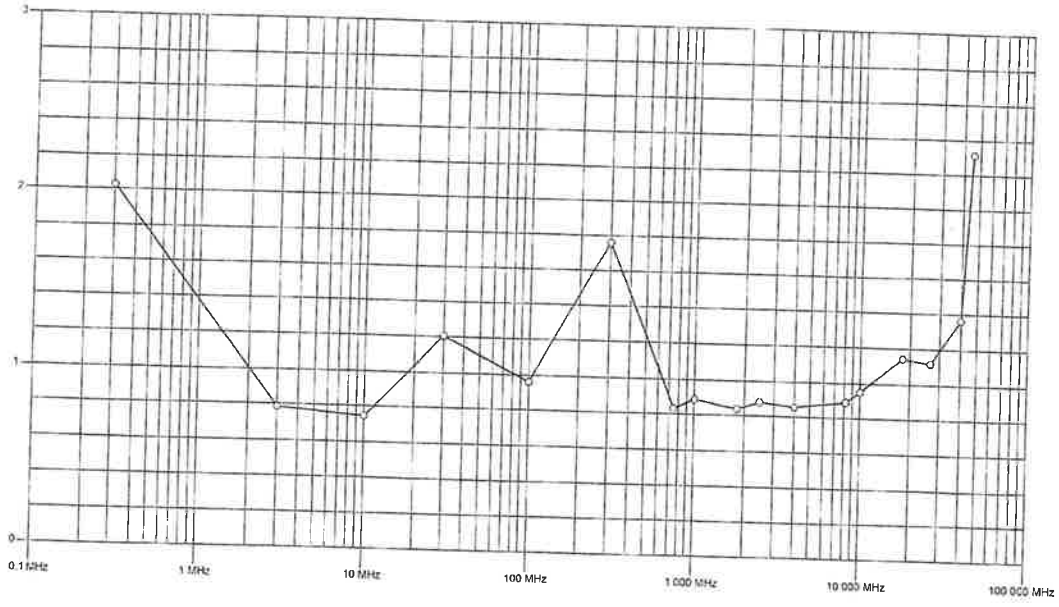
**Narda Safety Test Solutions GmbH**
Sandwiesenstrasse 7 - 72793 Pfullingen - Germany
Phone: +49 7121 9732 0 - Fax: +49 7121 9732 790

These results describe the uncorrected frequency response of the object
(with NBM-550: Apply Frequency Correction OFF)

Frequency Response




Correction Factor



Narda_STS
Sandwiesenstr. 7
72793 Pfullingen

narda
Safety Test Solutions

**Order No.** **RMA115911**
Order Date 28.05.24
Contract No.

Date 05.06.2024



# Service Report RMA115911

**2402/07B** **Probe EA 5091, FCC 1997 Controlled Shaped** **01067**

Visual inspection wear & tear
Test of basic function passed
Factory calibration 240207B-01067-20240603-41346
EEPROM correction factors updated