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TEST REPORT

LogTag LT5GEO
Cellular Environmental Recorder

tested to

RTCA / DO-160G: 2010

Environmental Conditions and Test Procedures for Airborne Equipment

Section 21 – Emission of Radio Frequency Energy

for

LogTag Recorders Ltd

This Test Report is issued with the authority of:

Andrew Cutler - General Manager

Table of Contents

1. STATEMENT OF COMPLIANCE

The **LogTag LT5GEO Cellular Environment Recorder** complies with RTCA / DO-160G: 2010 section 21 as a Category M and Category H device.

2. RESULTS SUMMARY

The results from testing carried out on the 27th February 2024 are summarised in the following table:

Test	Result
Conducted emissions 150 kHz – 152 MHz	Not tested. Device powered using internal batteries with no external cables or ports in normal mode of operation.
Radiated emissions 100 – 6000 MHz	Complies. No emissions were detected from the device under test.

3. INTRODUCTION

This report describes the tests and measurements performed for the purpose of determining compliance with the specification.

The client selected the test samples.

This report relates only to the samples tested.

Measurement uncertainties with statistical confidence intervals of 95% are shown below test results. Both Class A and Class B uncertainties have been accounted for, as well as influence uncertainties where appropriate.

All compliance statements have been made with respect of the specification limit with no reference to the measurement uncertainty.

All testing was carried out as per the standard in the worst-case configuration with no deviations being applied.

Report Revision Table

Version	Change Made	Date
231005.3	Initial issue	27 Feb 2024

4. CLIENT INFORMATION

Company Name	LogTag International Ltd
Address	28A William Pickering Drive Rosedale
City	Auckland 0632
Country	New Zealand
Contact	Mr Aaron Blanchard

5. DESCRIPTION OF TEST SAMPLE

Brand Name	LogTag
Model Numbers	LT5GEO
Product	Cellular Environmental Recorder
Manufacturer	Log Tag North America
Country of Origin	China
Serial Number	A0D8000201

The device tested contains a BG-95 cellular modem that is identified on the label has having following the certifications:

FCC ID: XMR201910GB95MS

ISED ID: 10224A-201910BG95M3

When the device was tested the cellular modem was activated but it was not transmitting

6. TEST RESULTS

Radiated Emissions (100 – 6000 MHz)

Radiated emissions testing was carried out over the frequency range of 100 MHz to 6000 MHz at the Laboratory's MacKelvie Street premises in a 5.6 m x 9.6 m x 4.1 m screened room.

As these devices are powered using an internal battery only radiated emissions testing was carried out.

The device was programmed by the client to operate continuously collecting environmental data periodically with the cellular being activated but not transmitting.

Testing was carried out when the devices were placed the following orientations

- Laying Flat on top of the test table with the front face of the device facing upward.

This face is known as the **Laying Flat (X Plane)**.

- Standing upright with the front face of the device facing the test antenna.

This face is known as the **Front Face (Y Plane)**.

- Standing upright with the front face of the device facing the left hand wall of the test chamber.

This face is known as the **Left Hand Side (Z Axis)**.

Measurements were made at a distance of 1.0 metre from the device under test.

The device under test was placed on top of a copper earth plate that was 1 metre above the chamber floor.

Testing was carried out using vertical and horizontal polarisations.

The following antenna types were used:

- 100 – 300 MHz. Biconical antenna
- 300 – 1000 MHz. Log periodic antenna
- 1000 – 6000 MHz. Horn antenna

Radiated Emissions (100 – 6000 MHz) cont.

Measurements were made using scanning receiver that used a peak detector with the following set ups.

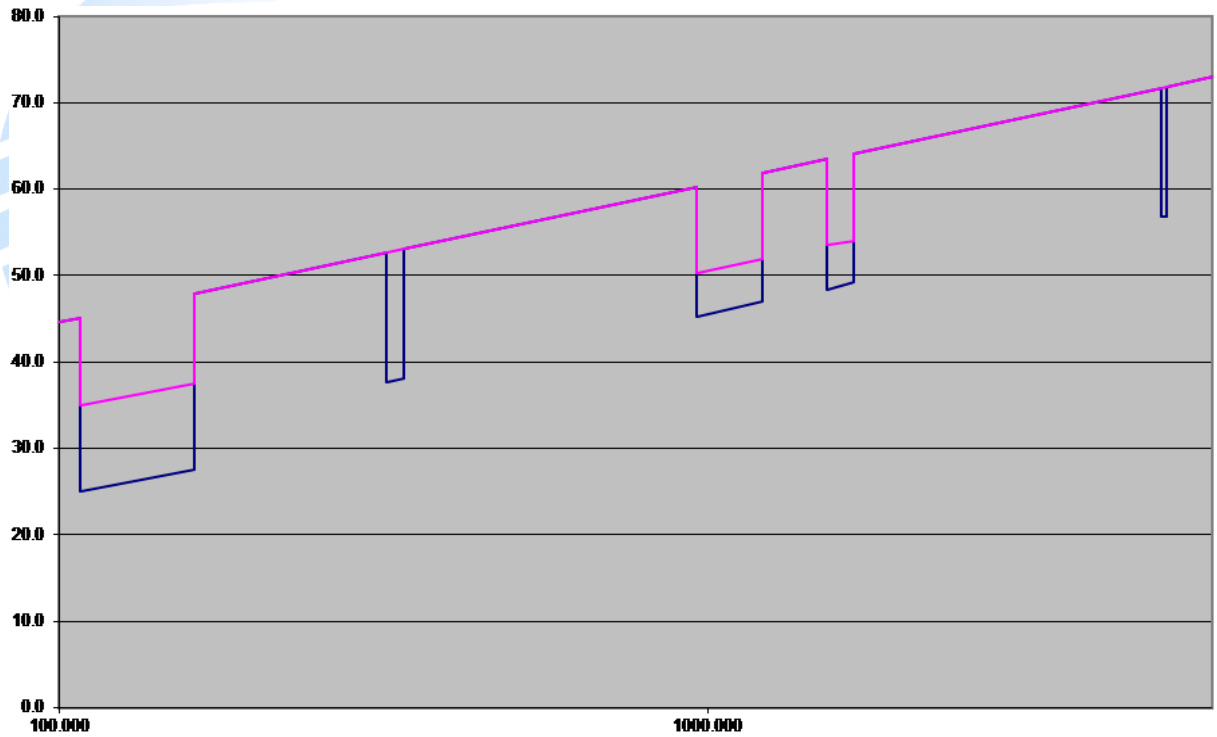
- 100 kHz bandwidth between 100 and 300 MHz using frequency steps of 40 kHz and a measurement time of 15 ms.

- 100 kHz bandwidth between 300 and 1000 MHz using frequency steps of 40 kHz and a measurement time of 15 ms.

- 1 MHz bandwidth between 1000 – 6000 MHz using frequency steps of 400 kHz and a measurement time of 15 ms.

Category M and Category H limits were applied.

Below is a graph showing a comparison between the Category H (blue) and Category M limits (purple).



A number of low level ambient emissions can be observed in the plots between 100 – 300 MHz.

No emissions were detected from the samples tested.

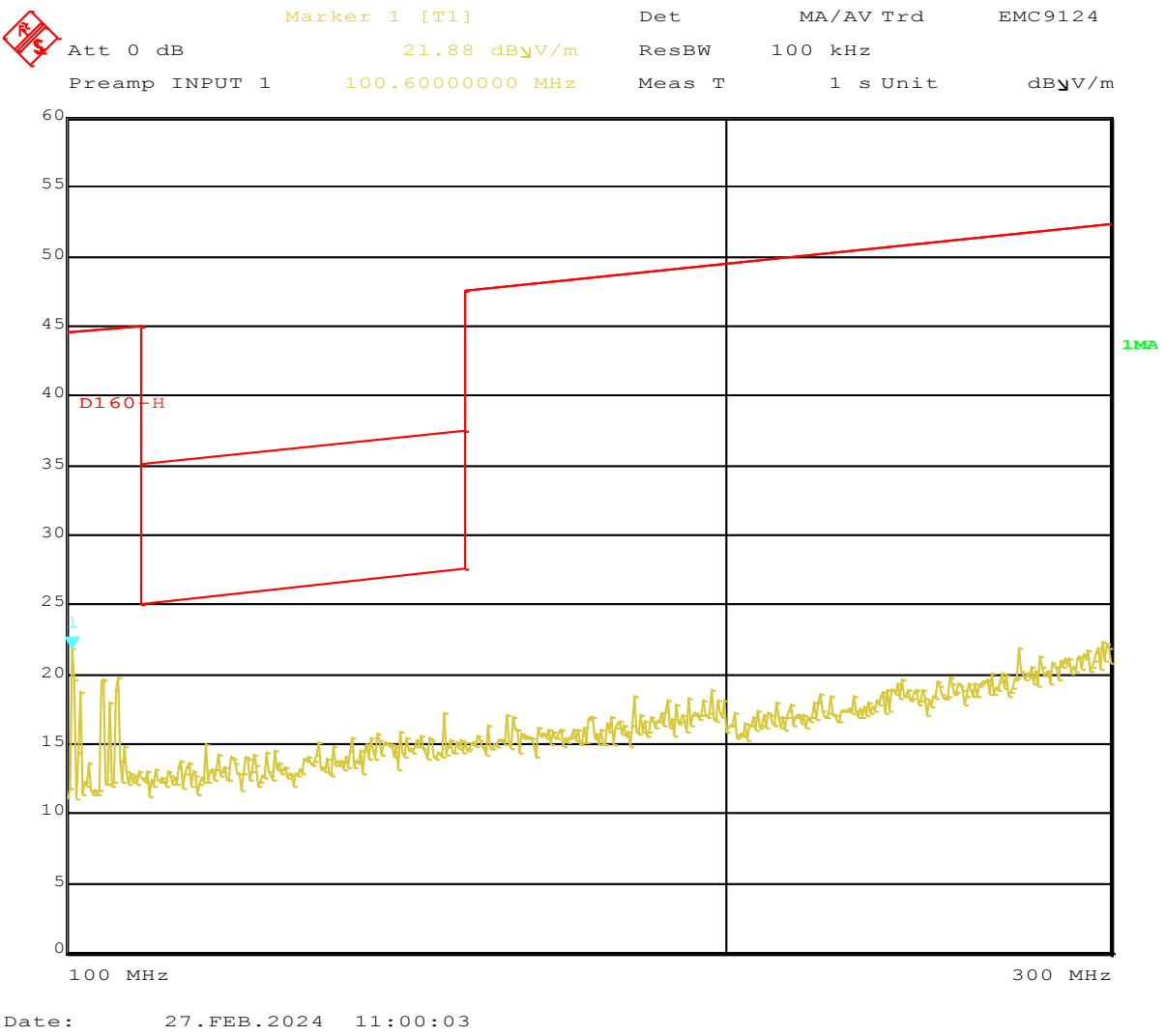
Result: Complies when the Category M and Category H limits are applied.

Measurement uncertainty with a confidence interval of 95% is:
- Radiated emission tests (100 - 6000 MHz) ± 4.1 dB

Test Results

Laying Flat (X Plane)

100 – 300 MHz vertical polarisation

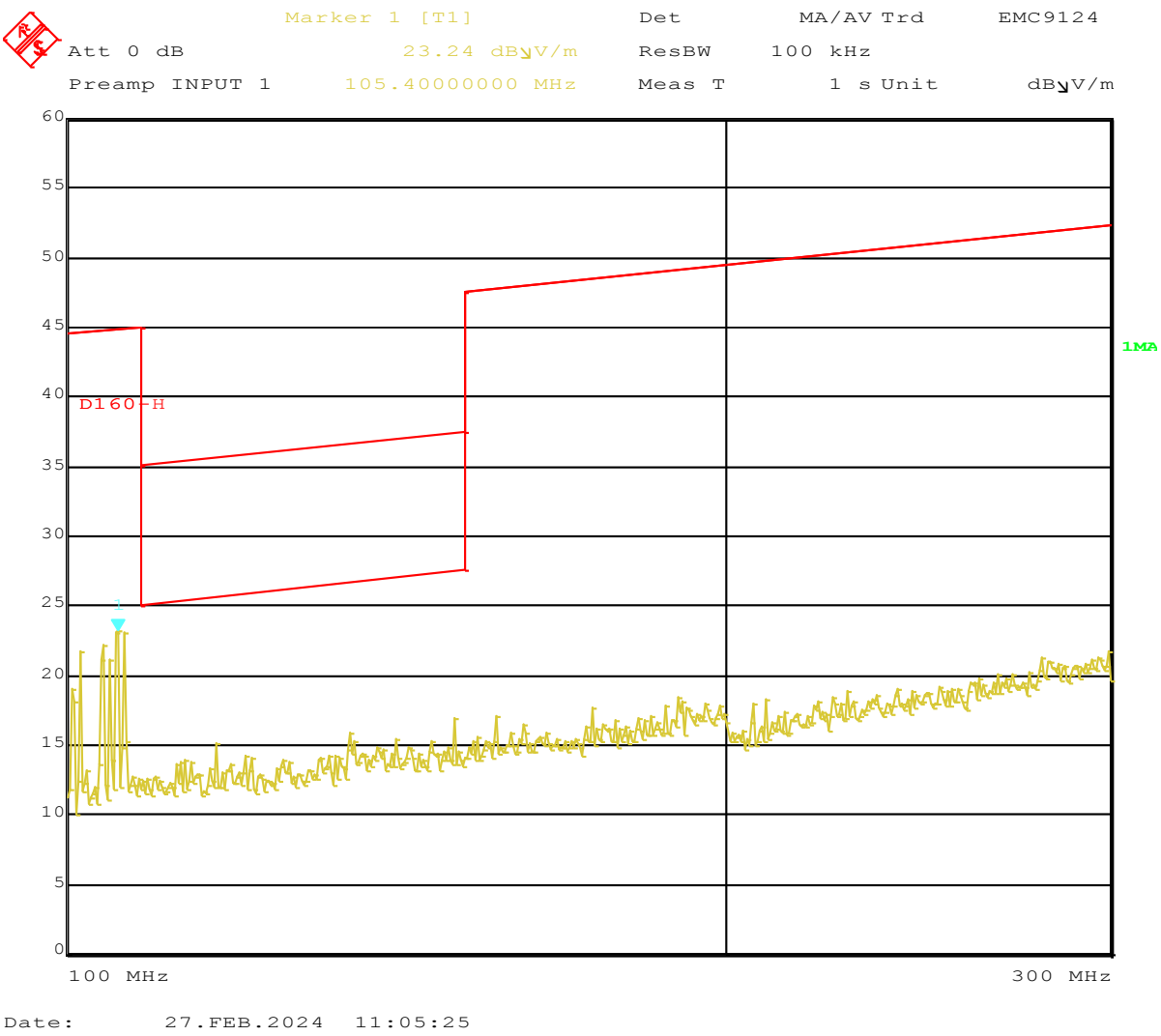


No emissions detected from the device

Emission at 100.6 MHz is an FM broadcast transmitter

Lying Flat (X Plane)

100 – 300 MHz horizontal polarisation

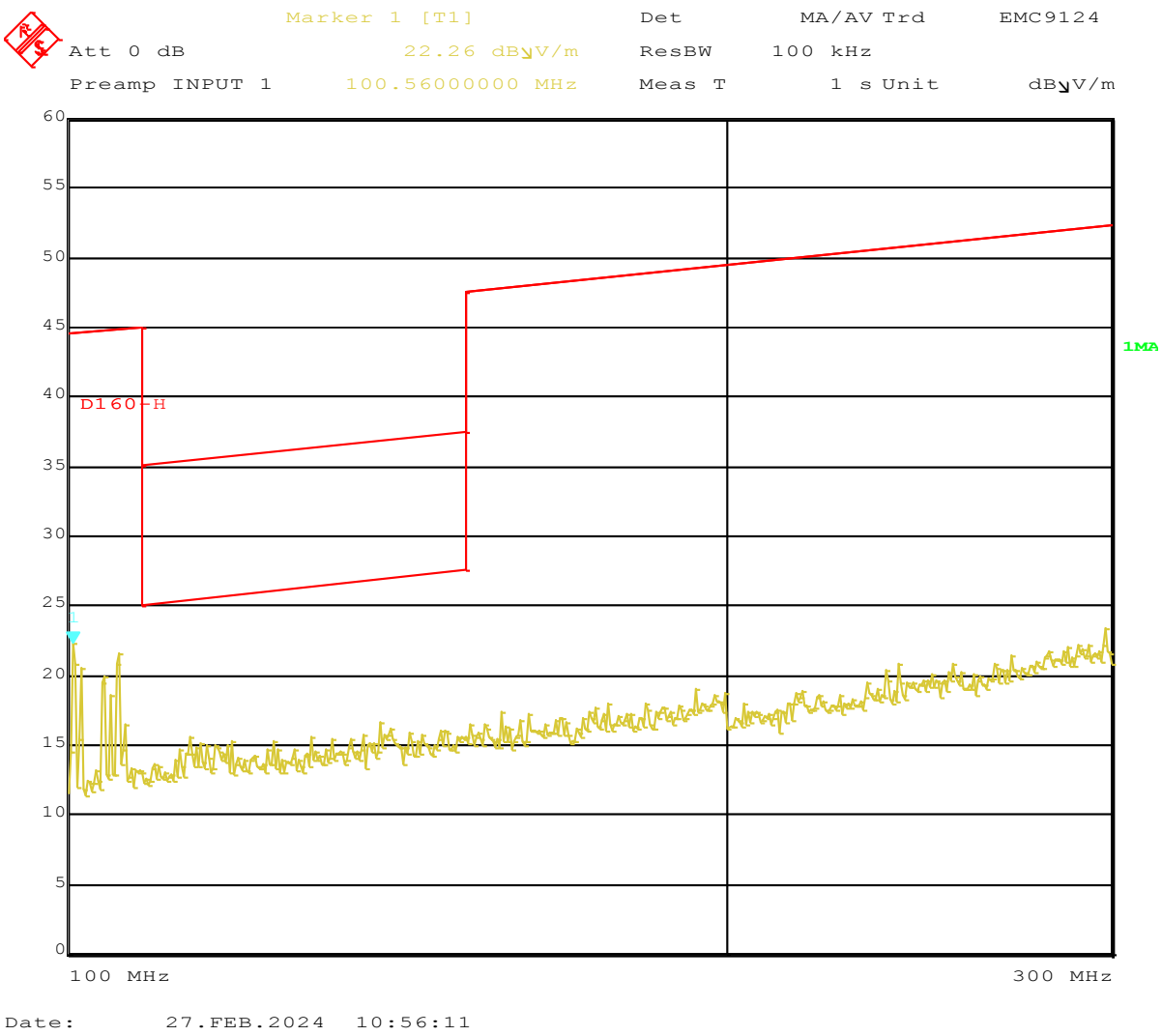


No emissions detected from the device

Emission at 105 MHz is an FM broadcast transmitter

Front Face (Y Plane)

100 - 300 MHz vertical polarisation

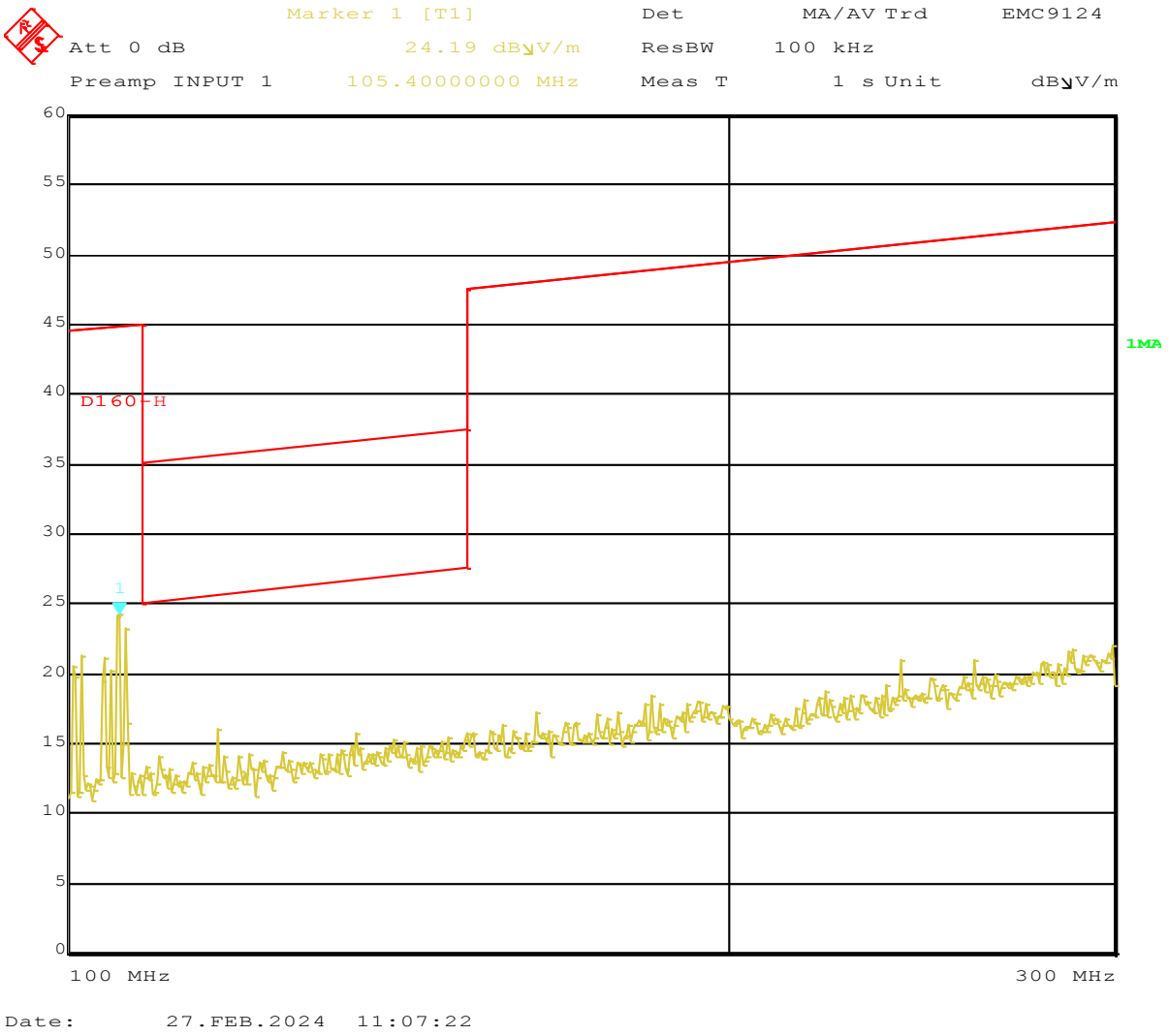


No emissions detected from the device

Emission at 100.56 MHz is an FM broadcast transmission

Front Face (Y Plane)

100 - 300 MHz horizontal polarisation

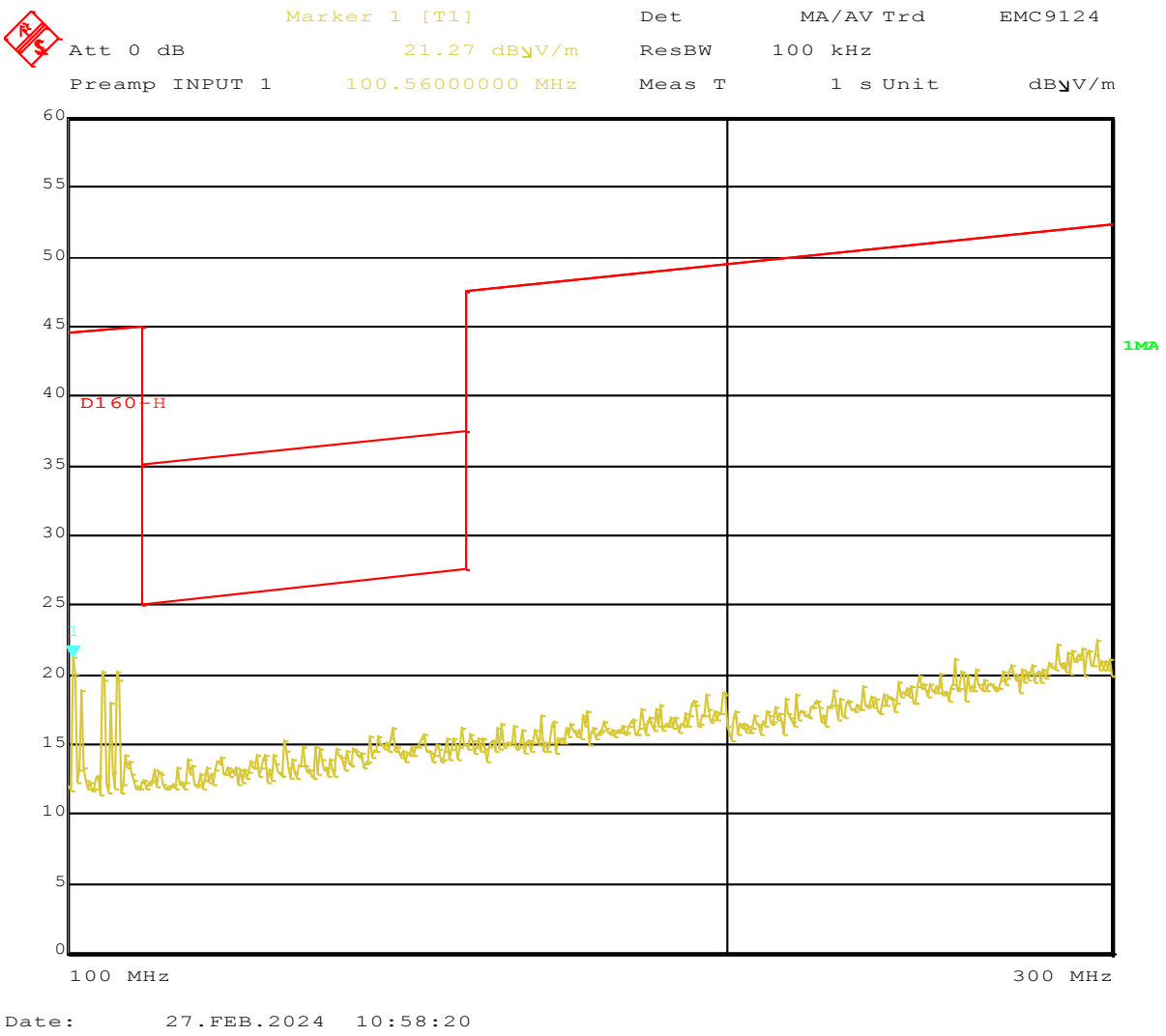


No emissions detected from the device

Emission at 105.4 MHz is an FM broadcast transmission

Left Hand Side (Z Plane)

100 - 300 MHz vertical polarisation

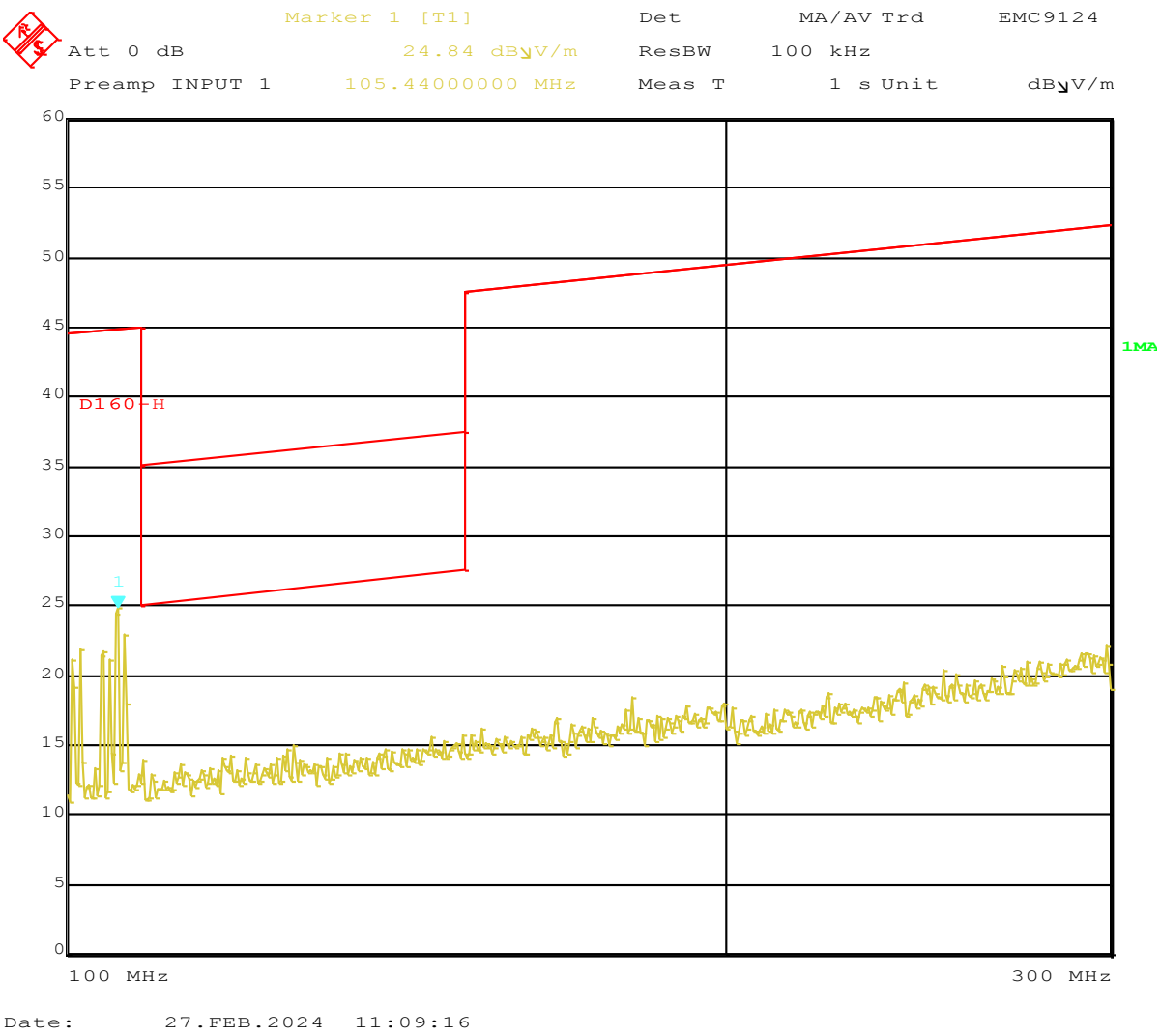


No emissions detected from the device

Emission at 100.6 MHz is an FM broadcast transmission

Left Hand Side (Z Plane)

100 - 300 MHz horizontal polarisation

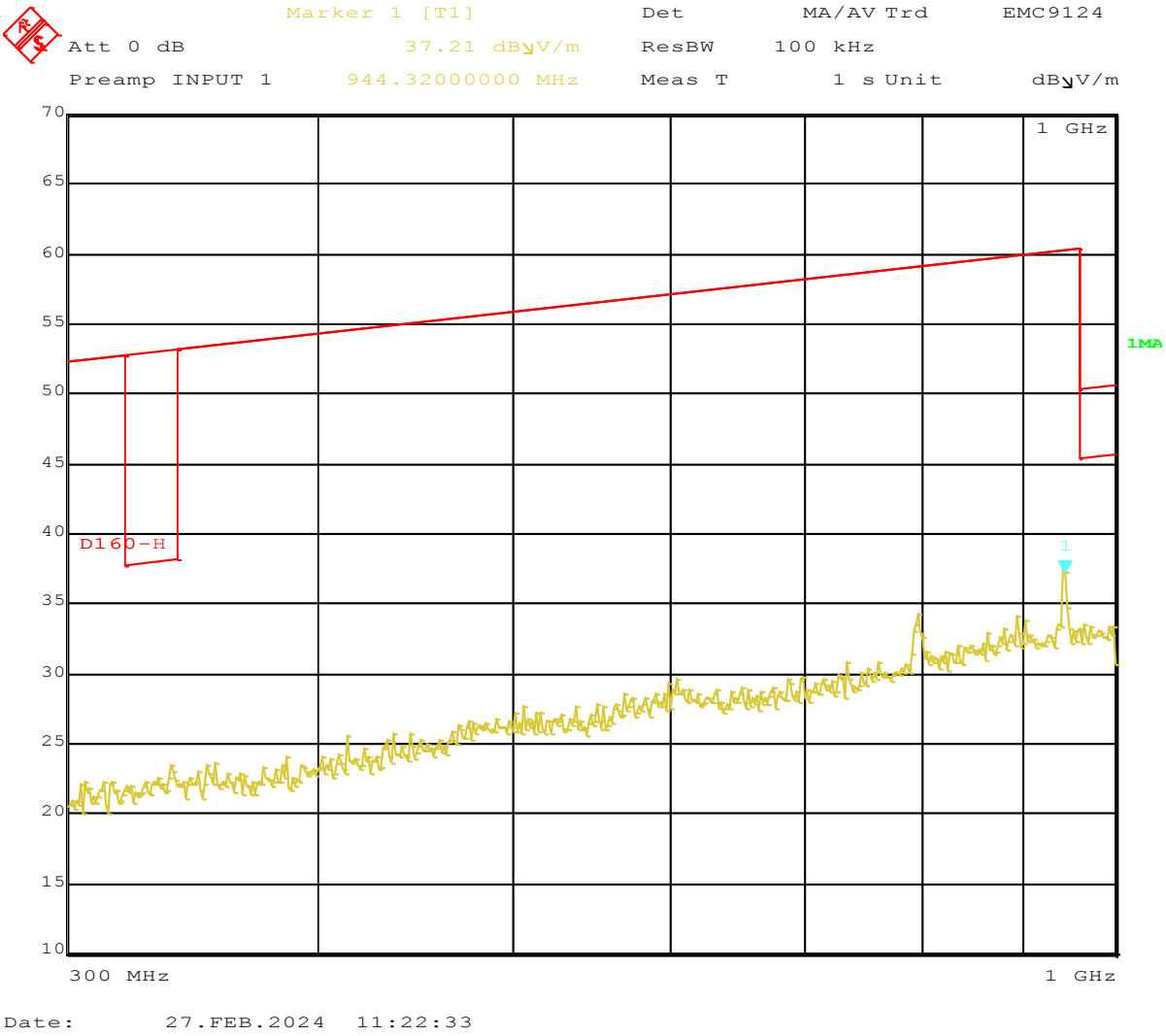


No emissions detected from the device

Emission at 105.44 MHz is an FM broadcast transmission

Laying Flat (X Plane)

300 - 1000 MHz vertical polarisation

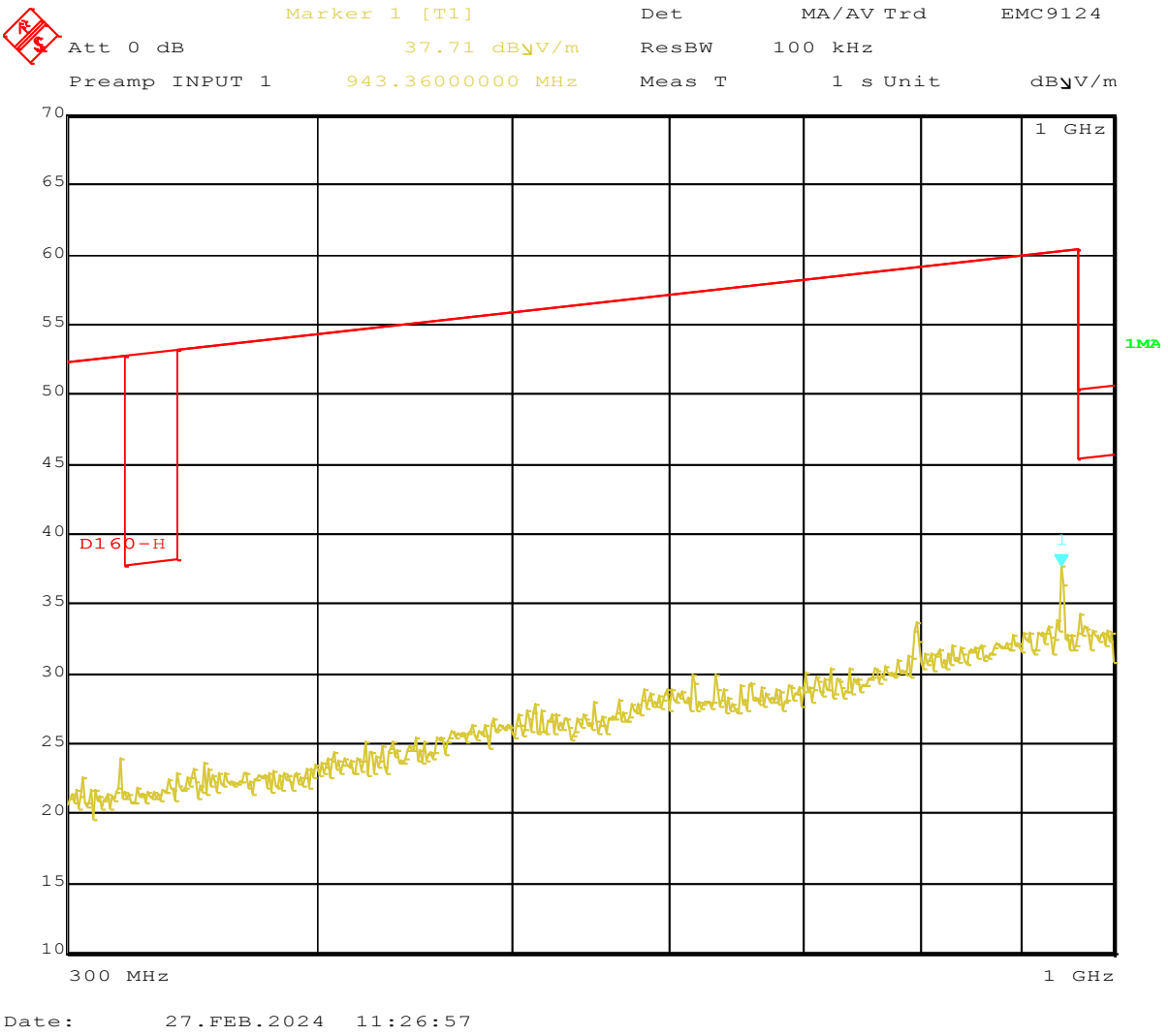


No emissions detected from the device

Emission at 944 MHz is a cellular ambient emission

Laying Flat (X Plane)

300 - 1000 MHz horizontal polarisation

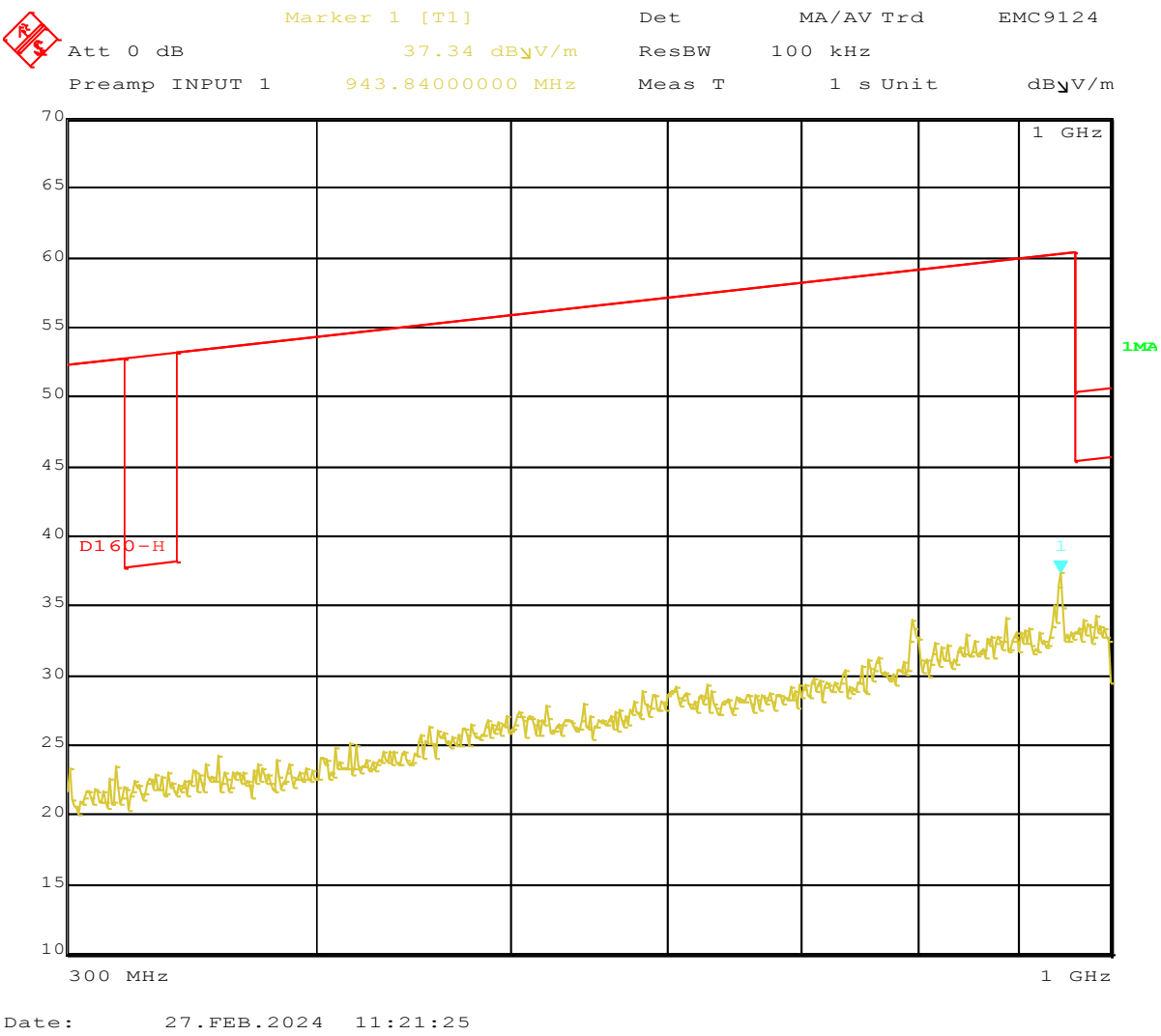


No emissions detected from the devices

Emission at 944 MHz is a cellular ambient emission

Front Face (Y Plane)

300 - 1000 MHz vertical polarisation

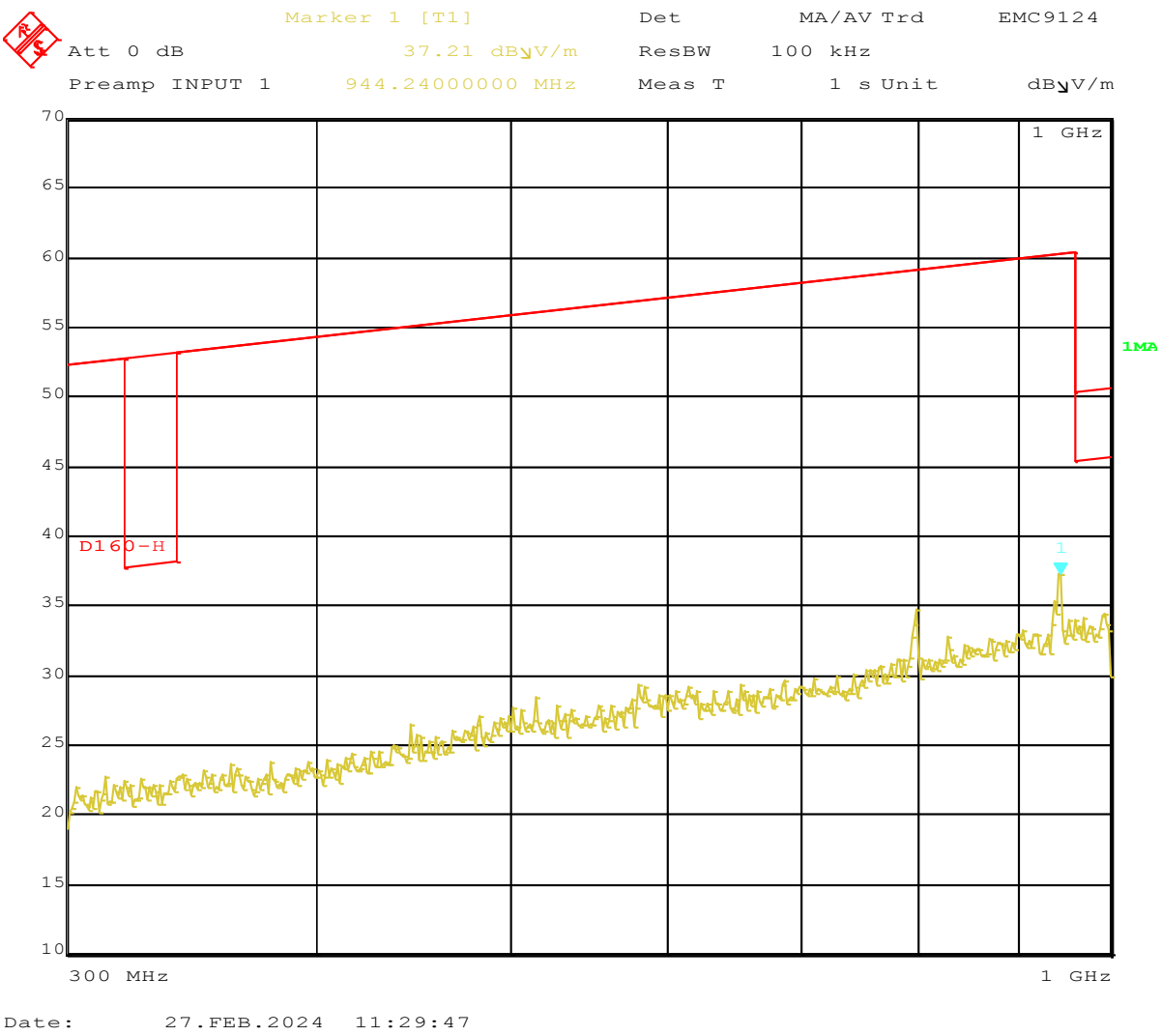


No emissions detected from the devices

Emission at 944 MHz is a cellular ambient emission

Front Face (Y Plane)

300 - 1000 MHz horizontal polarisation

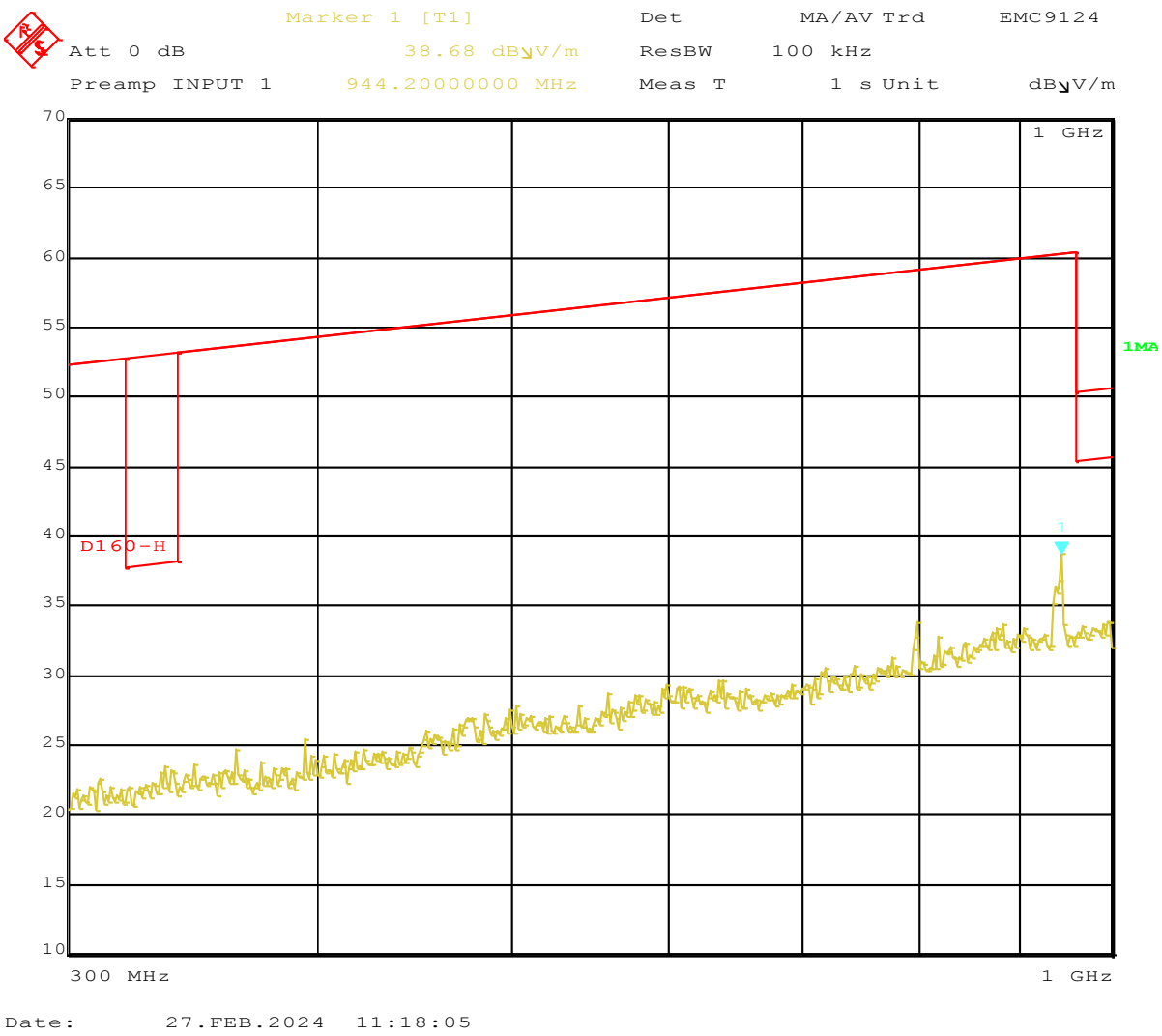


No emissions detected from the devices

Emission at 944 MHz is a cellular ambient emission

Left Hand Side (Z Plane)

300 - 1000 MHz vertical polarisation

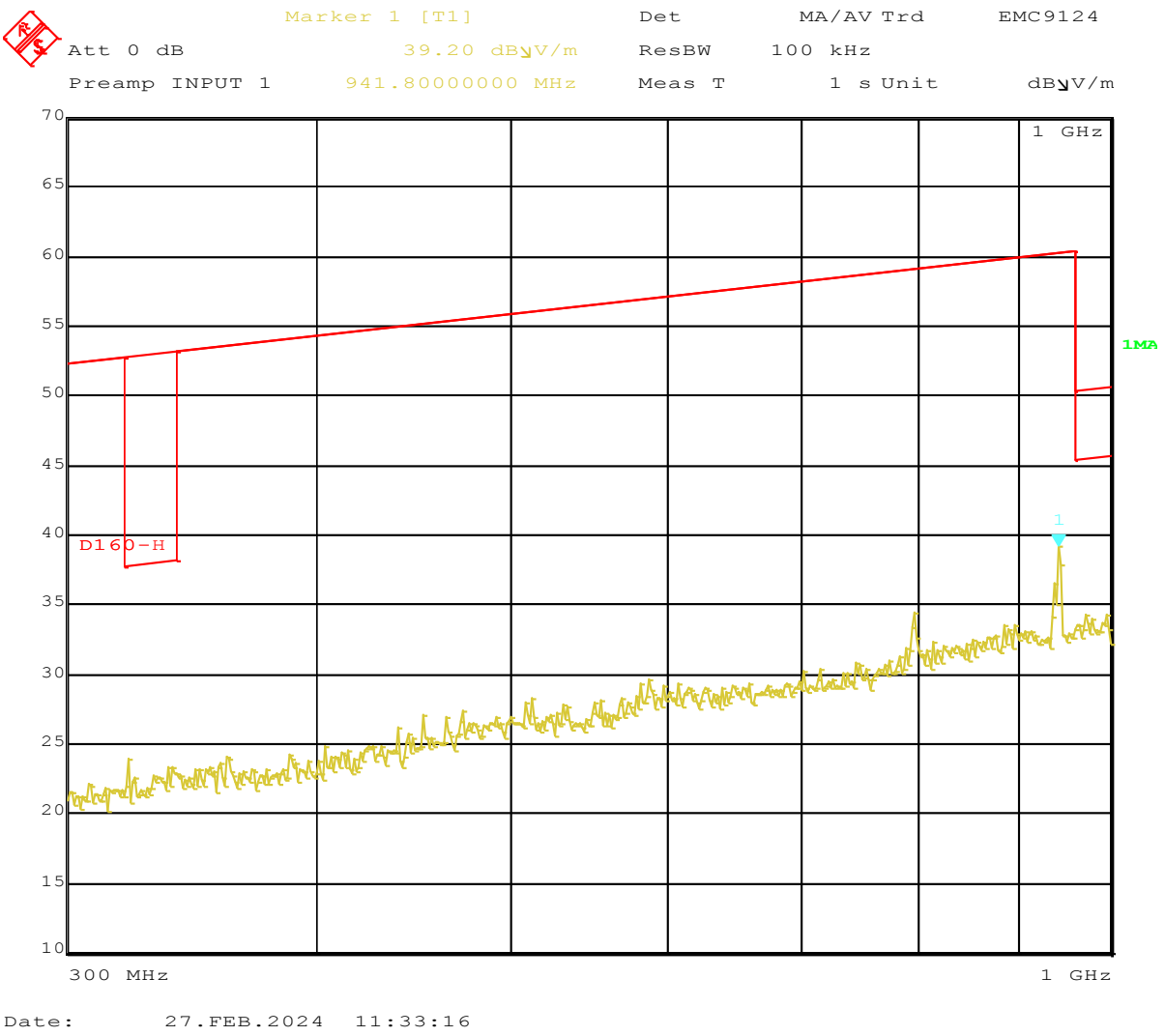


No emissions detected from the devices

Emission at 944 MHz is a cellular ambient emission

Long Edge (Z Plane)

300 - 1000 MHz horizontal polarisation

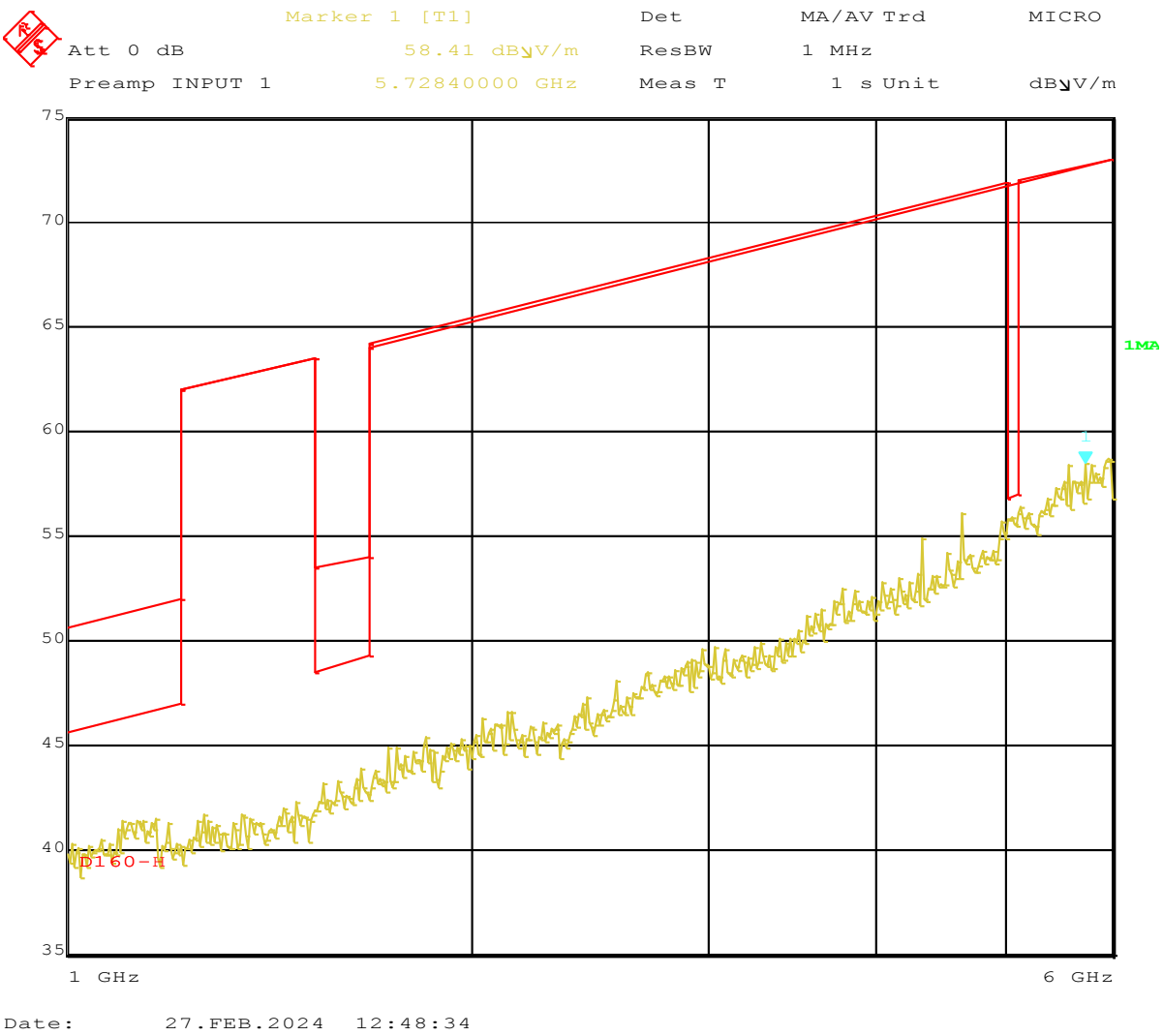


No emissions detected from the devices

Emission at 944 MHz is a cellular ambient emission

Laying Flat (X Plane)

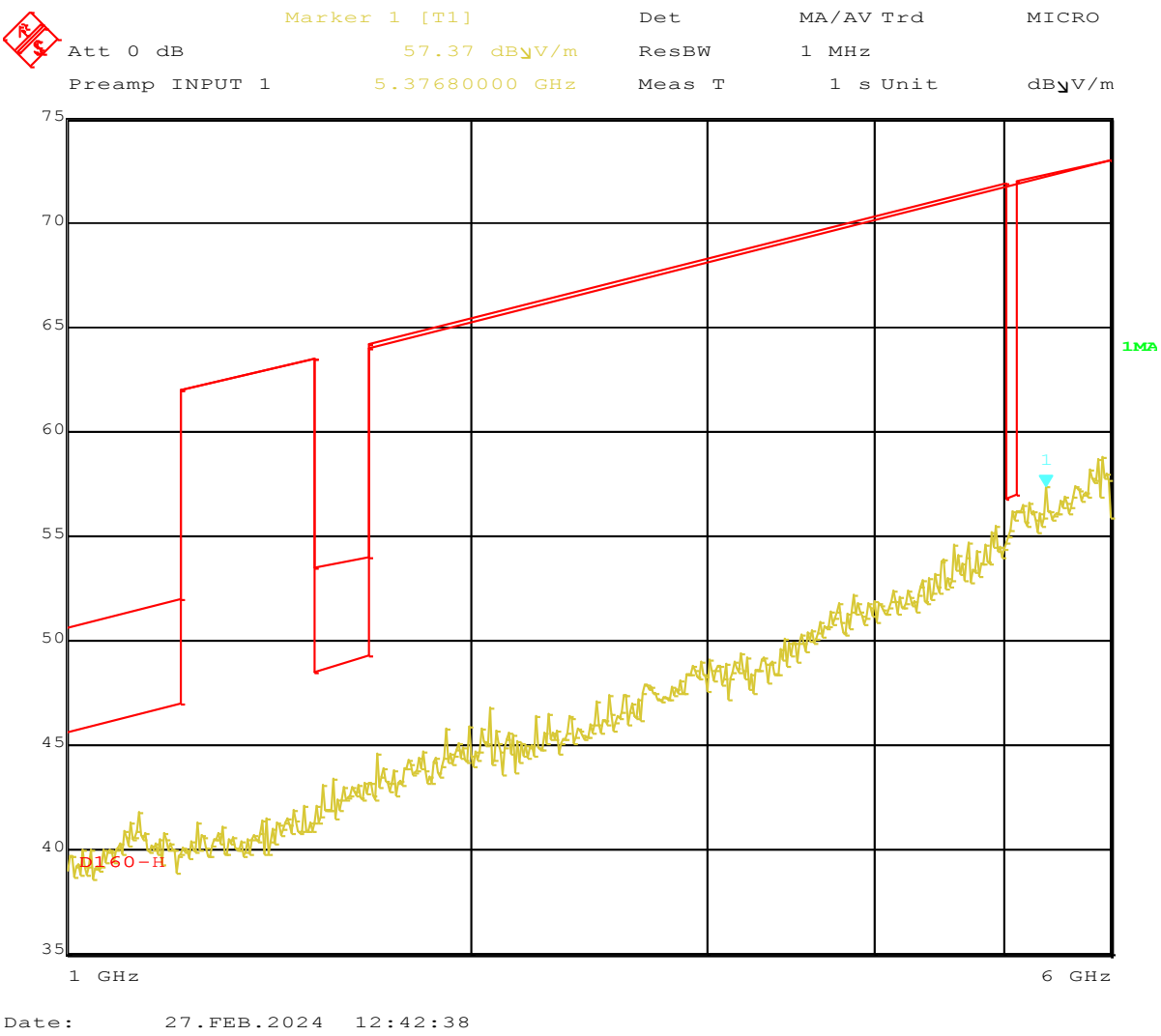
1000 - 6000 MHz vertical polarisation



No emissions detected from the device

Laying Flat (X Plane)

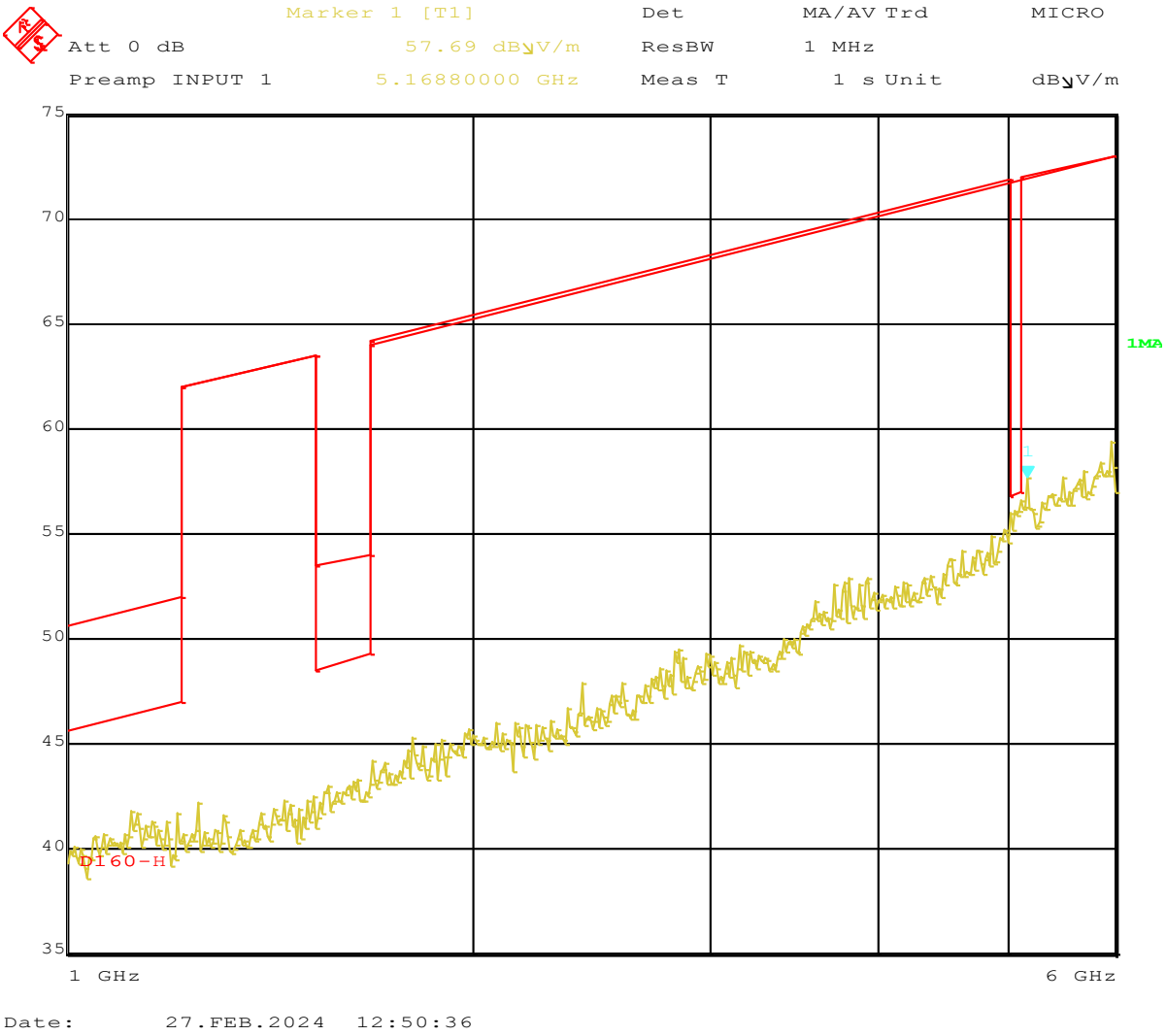
1000 - 6000 MHz horizontal polarisation



No emissions detected from the device

Front Face (Y Plane)

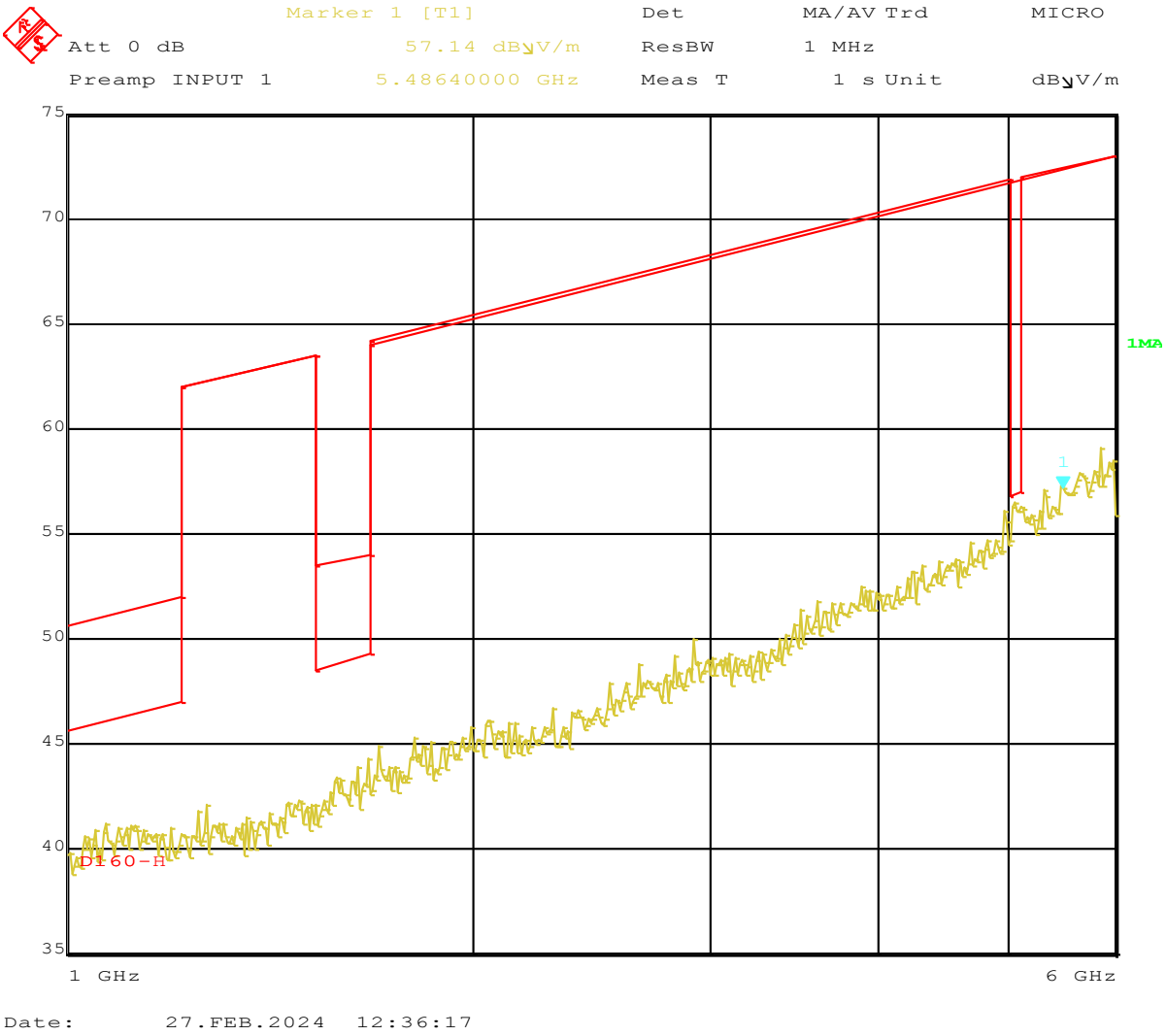
1000 - 6000 MHz vertical polarisation



No emissions detected from the device

Front Face (Y Plane)

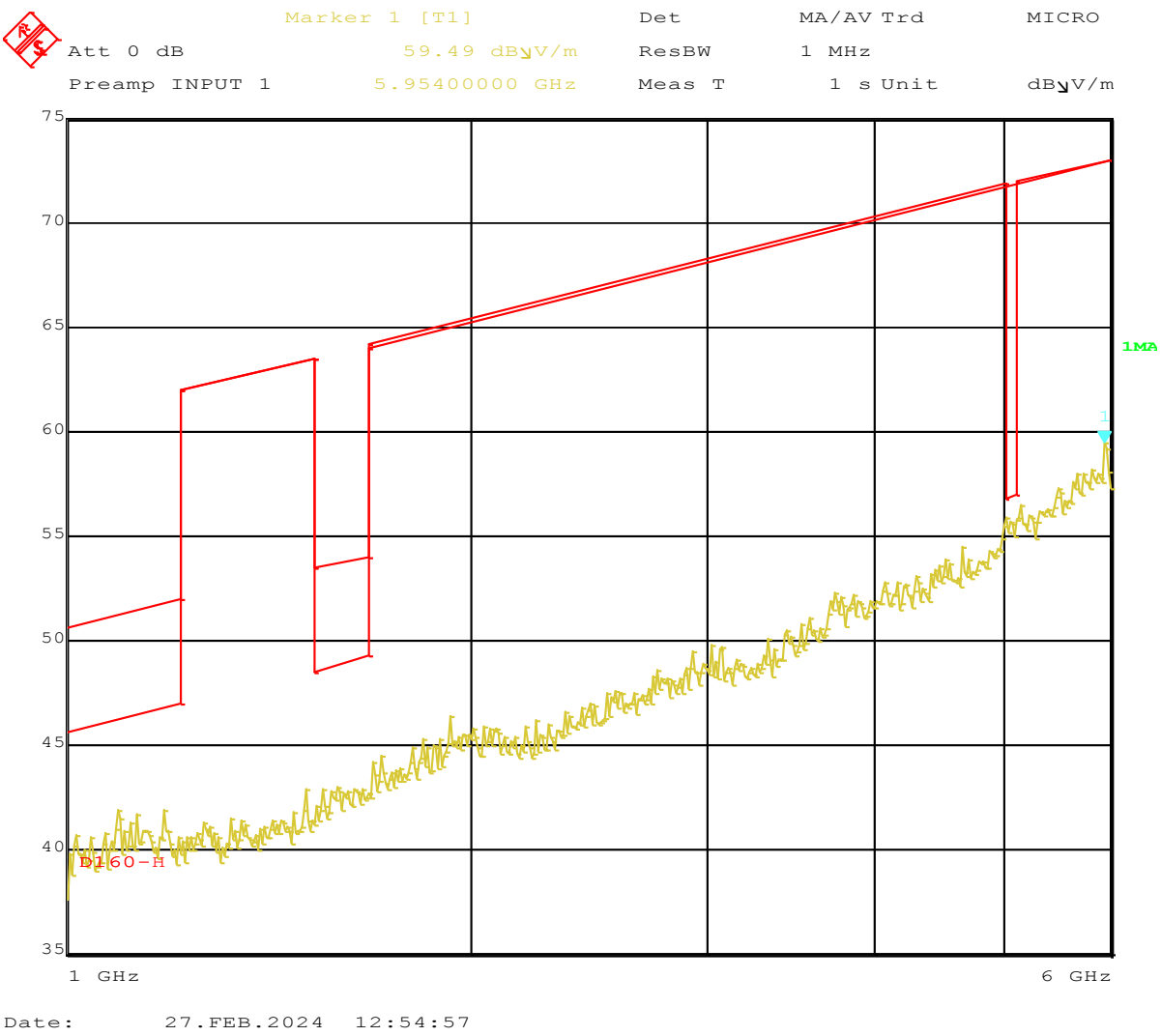
1000 - 6000 MHz horizontal polarisation



No emissions detected from the device

Left Hand Side (Z Plane)

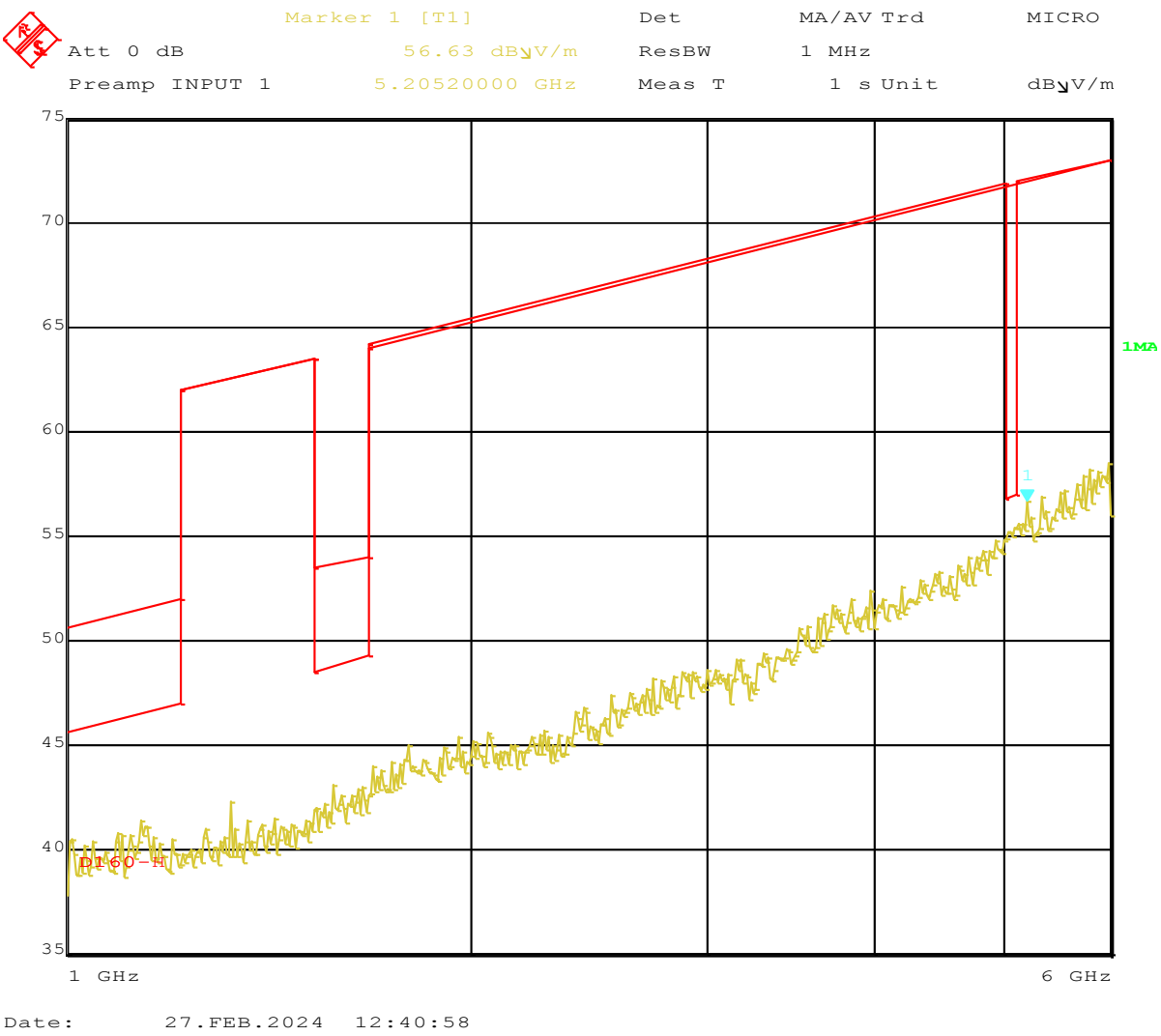
1000 - 6000 MHz vertical polarisation



No emissions detected from the device

Left Hand Side (Z Plane)

1000 - 6000 MHz horizontal polarisation



No emissions detected from the device

7. TEST EQUIPMENT

Instrument	Manufacturer	Model	Serial No	Asset Ref
Biconical Antenna	Schwarzbeck	BBA9106	9124-420	3801
VHF Balun	Schwarzbeck	VHBB9124	9124-420	3802
Horn Antenna	EMCO	3115	9511-4629	E1526
Log Periodic Antenna	Schwarzbeck	VUSLP9111B	9111-112	EMC4025
Receiver	R & S	ESIB 40	100171	R-27-1

All test equipment was within calibration at the time of testing.

8. ACCREDITATIONS

EMC Technologies (NZ) Ltd is **NOT** accredited by International Accreditation New Zealand (IANZ) Accreditation to NZS/ISO/IEC 17025 to test to this standard.

It is accredited by International Accreditation New Zealand (IANZ) Accreditation to NZS/ISO/IEC 17025 to test to standards that are very similar to this standard.

All measurement equipment has been calibrated in accordance with the terms of the EMC Technologies (NZ) Ltd International Accreditation New Zealand (IANZ) Accreditation to NZS/ISO/IEC 17025.

International Accreditation New Zealand has International Laboratory Accreditation Council (ILAC) Mutual Recognition Arrangements for testing and calibration with various accreditation bodies in a number of economies.

This includes NATA (Australia), UKAS (UK), SANAS (South Africa), NVLAP (USA), A2LA (USA), SWEDAC (Sweden).

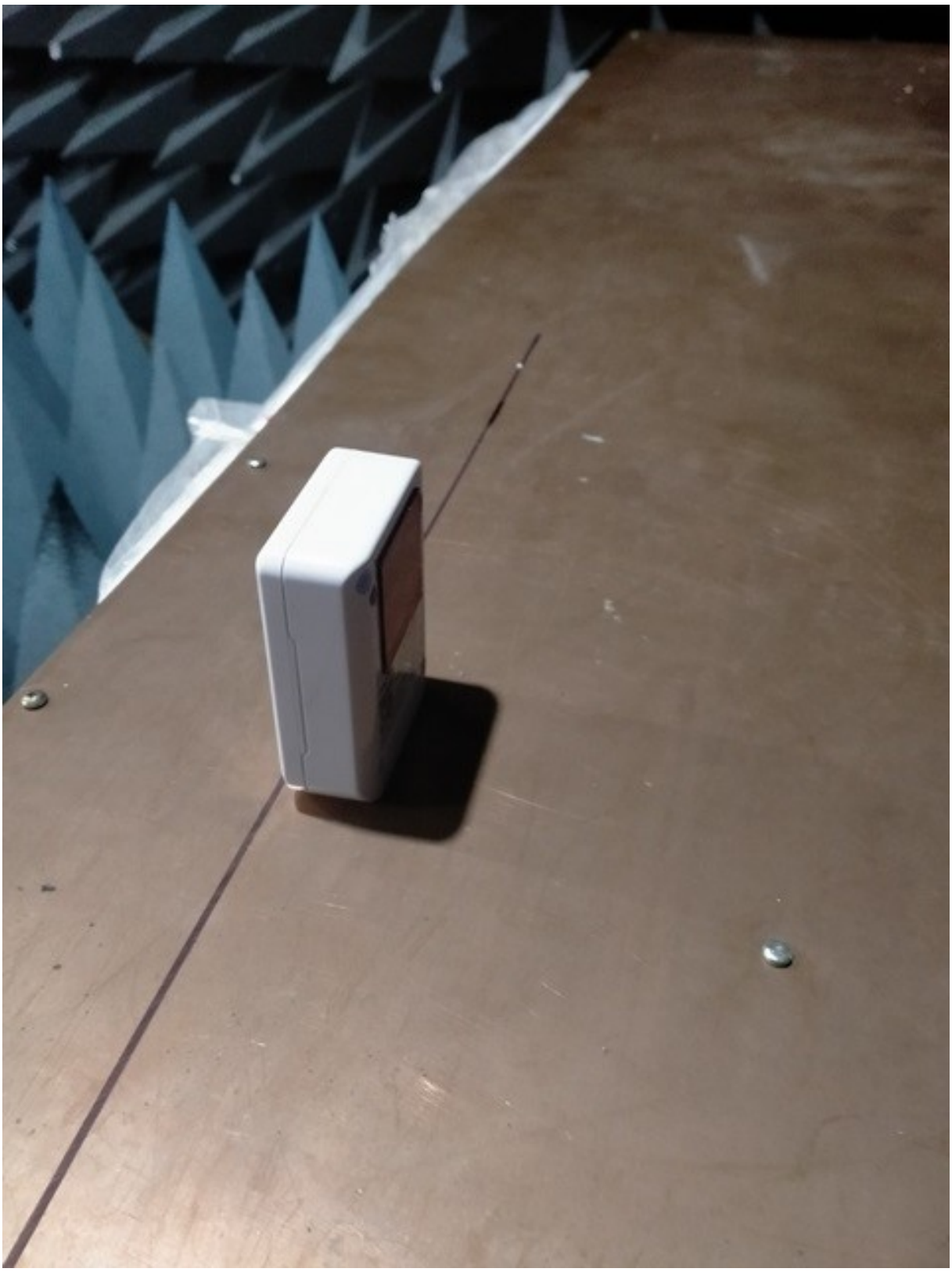
Further details can be supplied on request.

9. PHOTOGRAPHS

Device Under Test

Test Set Up – Lying Flat

Test Setup – Front Face



Test Setup – Left Hand Side