



Guangdong Dongdian Testing Service Co., Ltd.

广东东电检测技术有限公司

Dipole Antenna self-calibration Report

偶极子天线自校报告

|   |   |   |
|---|---|---|
| Monitor method/<br>监控方法                   | : | According to KDB 865664 D01<br>依据 KDB 865664 D01  |
| Monitor projects/<br>监控项目                 | : | Dipole Antenna self-calibration /偶极子天线自校  |
| Monitoring purposes/<br>监控目的              | : | Demonstrate that the SAR target, impedance and return loss of the dipole remain stable as required /证明偶极子的 SAR 目标，阻抗和回波损耗根据要求保持稳定 |
| Monitoring implementation Date/<br>监控实施日期 | : | 2023-10-20  |
| Report date/<br>报告日期                      | : | 2023-10-21  |
| Report number/<br>报告编号                    | : | DDT-ZLJK20231021-2  |
| Conclusion/ monitoring<br>监控结论            | : | Qualify/合格  |
| Executor/<br>实施人                          | : | 孔秋秋   |
| Audit/<br>审核                              | : | 胡鹏  |

Note: This report is only for the internal quality control of Dongdian Testing  
说明：本报告仅供东电检测内部质量控制用

REPORT

## 1、 Monitoring items 监控项目

Dipole Antenna self-calibration /偶极子天线自校

## 2、 Monitoring method 监控方法

Immediate re-calibration is required for the following conditions.

在下列情况下需要立即重新校准。

1) According to KDB 865664 D01, When the most recent return-loss result, measured at least annually, deviates by more than 20% from the previous measurement (i.e. value in dB  $\times$  0.2) or not meeting the required 20 dB minimum return-loss requirement.

根据 KDB 865664 D01，当最近的收益损失结果，至少每年测量一次，与以前的测量偏差超过 20%(即以 dB\*0.2 为单位的值)或满足要求的最小 20 dB 收益损失要求。

2) When the most recent measurement of the real or imaginary parts of the impedance, measured at least annually, deviates by more than 5  $\Omega$  from the previous measurement.

当阻抗的实部或虚部最近的测量值，至少每年测量一次，与以前的测量值偏差超过 5  $\Omega$ 。

3) When the measured SAR deviates from the calibrated SAR value by more than 10% due to changes in physical, mechanical, electrical or other relevant dipole conditions; i.e., the error is not introduced by incorrect measurement procedures or other issues relating to the SAR measurement system.

由于物理、机械、电气或其他相关偶极子条件的变化，测量 SAR 与校准 SAR 值偏差超过 10%;即误差不是由不正确的测量程序或与 SAR 测量系统有关的其他问题引起的。

## 3、 Monitoring purpose 监控目的

Demonstrate that SAR target, the impedance and return loss of the dipole remain stable as required

证明偶极子 SAR 目标，阻抗和回波损耗根据要求保持稳定

## 4、 Test the product 检测产品

The quality control uses the same sample as follows for comparison/本次质量监控采用如下样品进行校准：

|                               |                         |
|-------------------------------|-------------------------|
| Manufacturer/制造商              | Speag                   |
| name/名称:                      | 2450MHz Dipole antenna  |
| Model number/型号:              | D2450V2                 |
| Environment temperature/环境温度: | 20.8 $^{\circ}$ C       |
| Look pictures/外观图片            | As shown in figure /见图一 |

|                               |                         |
|-------------------------------|-------------------------|
| Manufacturer/制造商              | Speag                   |
| name/名称:                      | 5GHz Dipole antenna     |
| Model number/型号:              | D5GHZV2                 |
| Environment temperature/环境温度: | 20.8℃                   |
| Look pictures/外观图片            | As shown in figure /见图二 |



Figure 1 Test signal source/ 图1 测试样品



Figure 2 Test signal source/ 图二 测试样品

## 5、Standards and specifications adopted 采用的标准与规范

This antenna calibration is conducted according to KDB 865664 D01

本次天线校准依据 KDB 865664 D01 进行检测

## 6、Participate in the laboratory/Testers 参与实验室/测试人员

The following personnel participated in this laboratory:/本次实验室有以下人员参与:

Table 1: Participate in the measurement laboratory/Testers

表一：参加测量实验室/测试人员

| Laboratory Name<br>实验室名称                                     | Temp °C<br>温度 °C | 1 号测试人员              |
|--|------------------|----------------------|
| Guangdong Dongdian Testing Service Co., Ltd.<br>广东东电检测技术有限公司 | 20.8°C           | Johnson Huang<br>黄荣辉 |

## 7、Monitoring results 监控结果

The quality control test results are shown in Table 2 and Table 3, and the detailed test data is in the attachment/本次质量监控测试结果如表二和表三，详细测试数据见附件

Table 2

表二

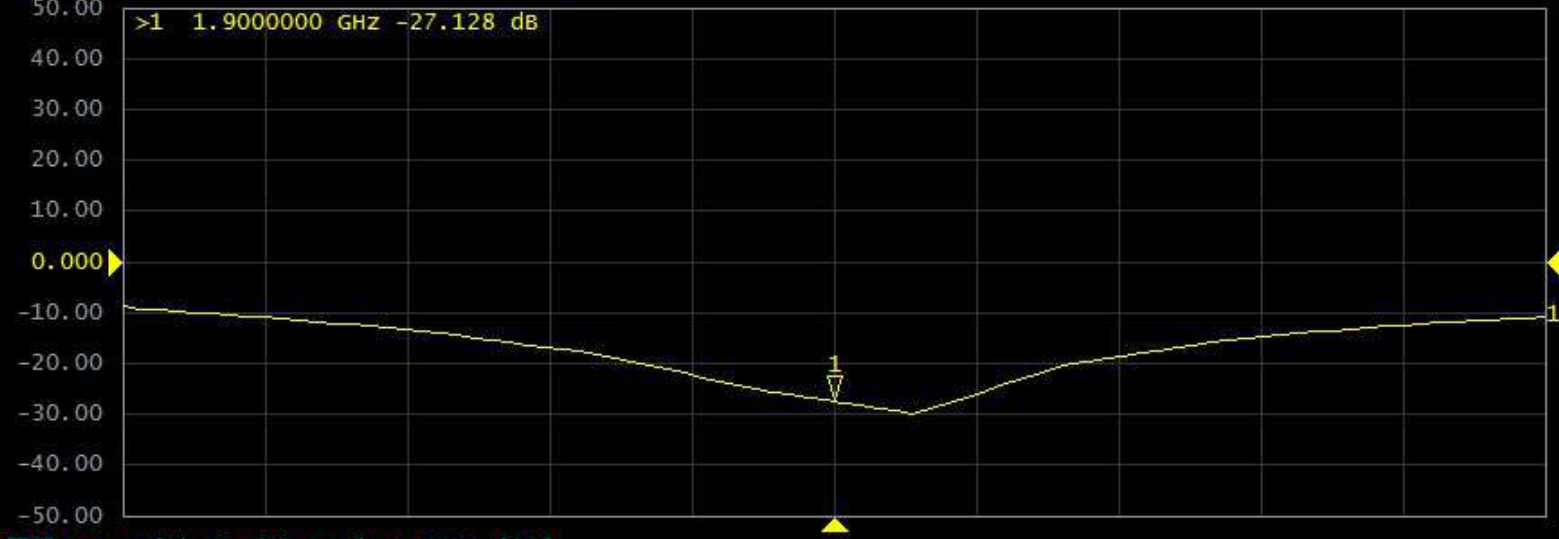
| Calibrated<br>Antenna 校准天线 | Target Return loss<br>目标回波损耗 | Test Return loss<br>测试回波损耗 | Deviation<br>偏差 | Result<br>结果 |
|----------------------------|------------------------------|----------------------------|-----------------|--------------|
| 2450                       | -28.825                      | -28.394                    | 1.50%           | OK           |
| 5200                       | -24.780                      | -20.041                    | 19.12%          | OK           |
| 5300                       | -24.151                      | -27.179                    | 12.54%          | OK           |
| 5500                       | -23.082                      | -25.183                    | 9.10%           | OK           |
| 5600                       | -22.239                      | -23.471                    | 5.54%           | OK           |

Table 3

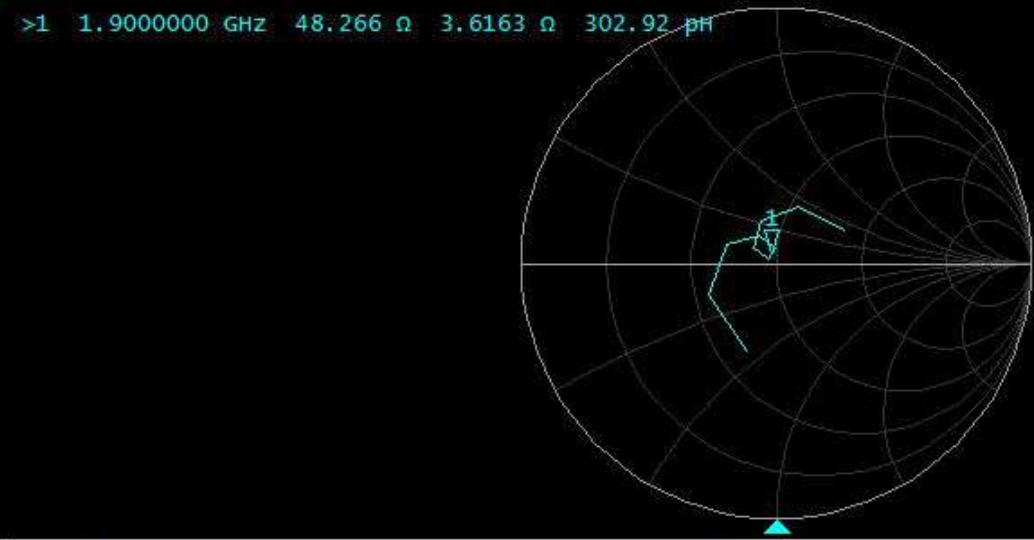
表三

| Calibrated<br>Antenna<br>校准天线 | Target<br>Impedance<br>(Real)<br>目标阻抗<br>(实部) | Target<br>Impedance<br>(Imaginary)<br>目标阻抗<br>(虚部) | Test<br>Impedance<br>(Real)<br>测试阻抗<br>(实部) | Test<br>Impedance<br>(Imaginary)<br>测试阻抗<br>(虚部) | Deviation<br>偏差<br>(实部) | Deviation<br>偏差<br>(虚部) | Result<br>结果 |
|-------------------------------|---|--|---|--|-------------------------|-------------------------|--------------|
| 2450                          | 53.391  | 1.586  | 50.607                                      | 2.878  | 2.784                   | 1.292                   | OK           |
| 5200                          | 49.477  | -8.009   | 52.310                                      | -8.448   | 2.833                   | 0.439                   | OK           |
| 5300                          | 54.645  | -5.723   | 49.946                                      | -3.293   | 4.699                   | 2.43                    | OK           |
| 5500                          | 56.887  | -4.538   | 52.061                                      | -5.591   | 4.826                   | 1.053                   | OK           |
| 5600                          | 56.214  | -5.378   | 52.520                                      | -4.505   | 3.694                   | 0.873                   | OK           |

Tr1 S11 Log Mag 10.00dB/ Ref 0.000dB [F1]



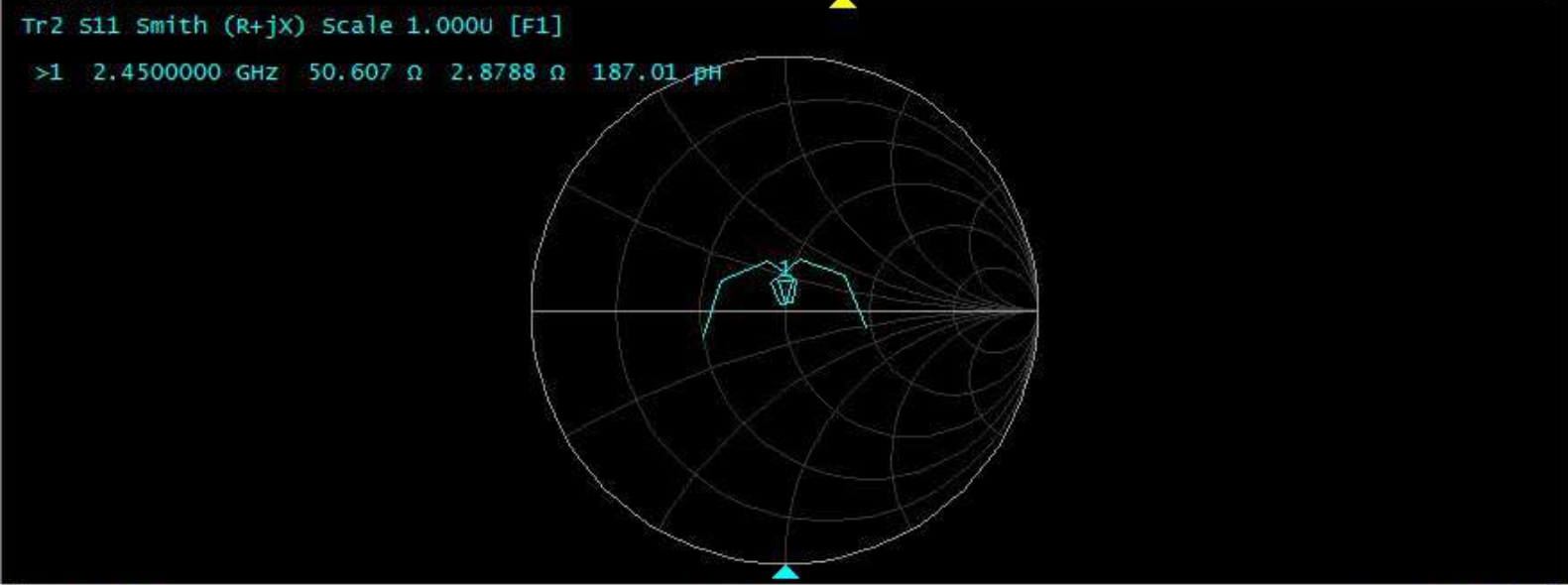
Tr2 S11 Smith (R+jX) scale 1.000U [F1]



Start 1.7 GHz

IFBW 100 Hz

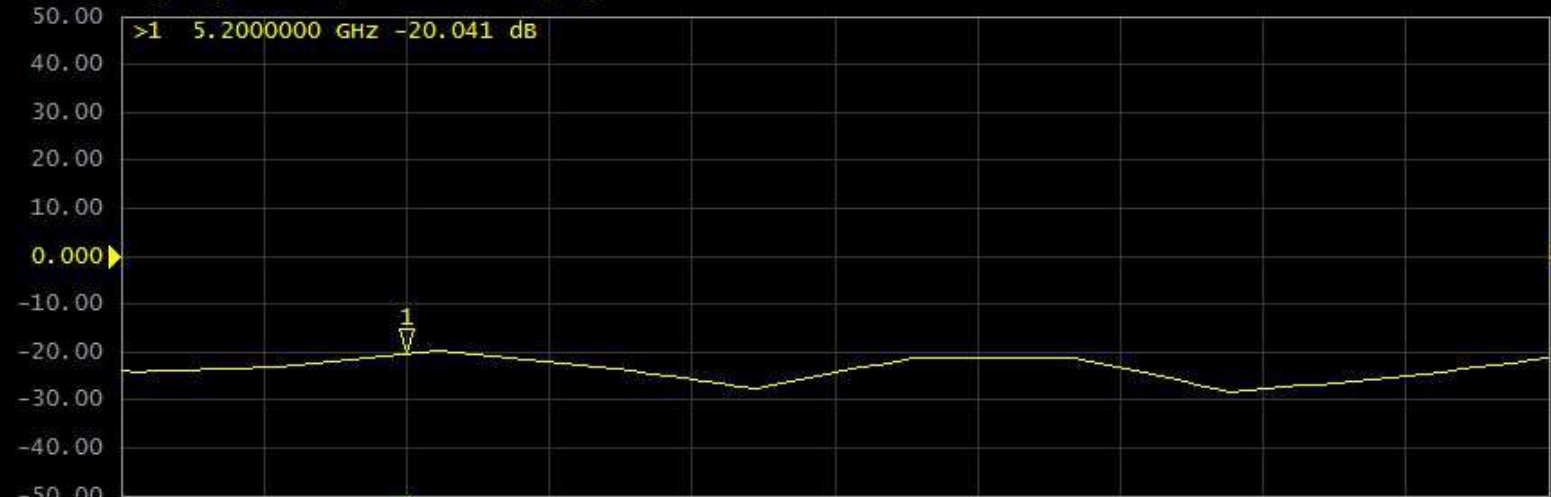
Stop 2.1 GHz Cor



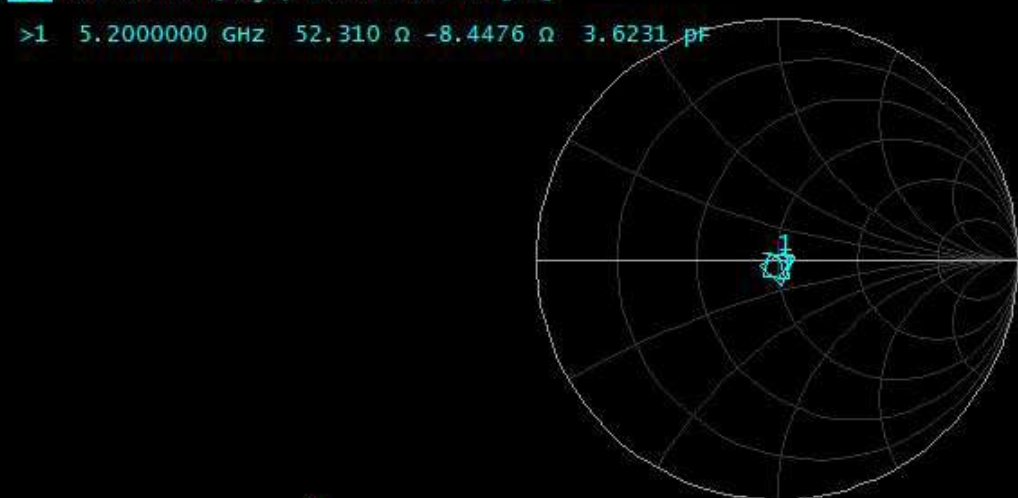
Start 2.25 GHz IFBW 100 Hz Stop 2.65 GHz

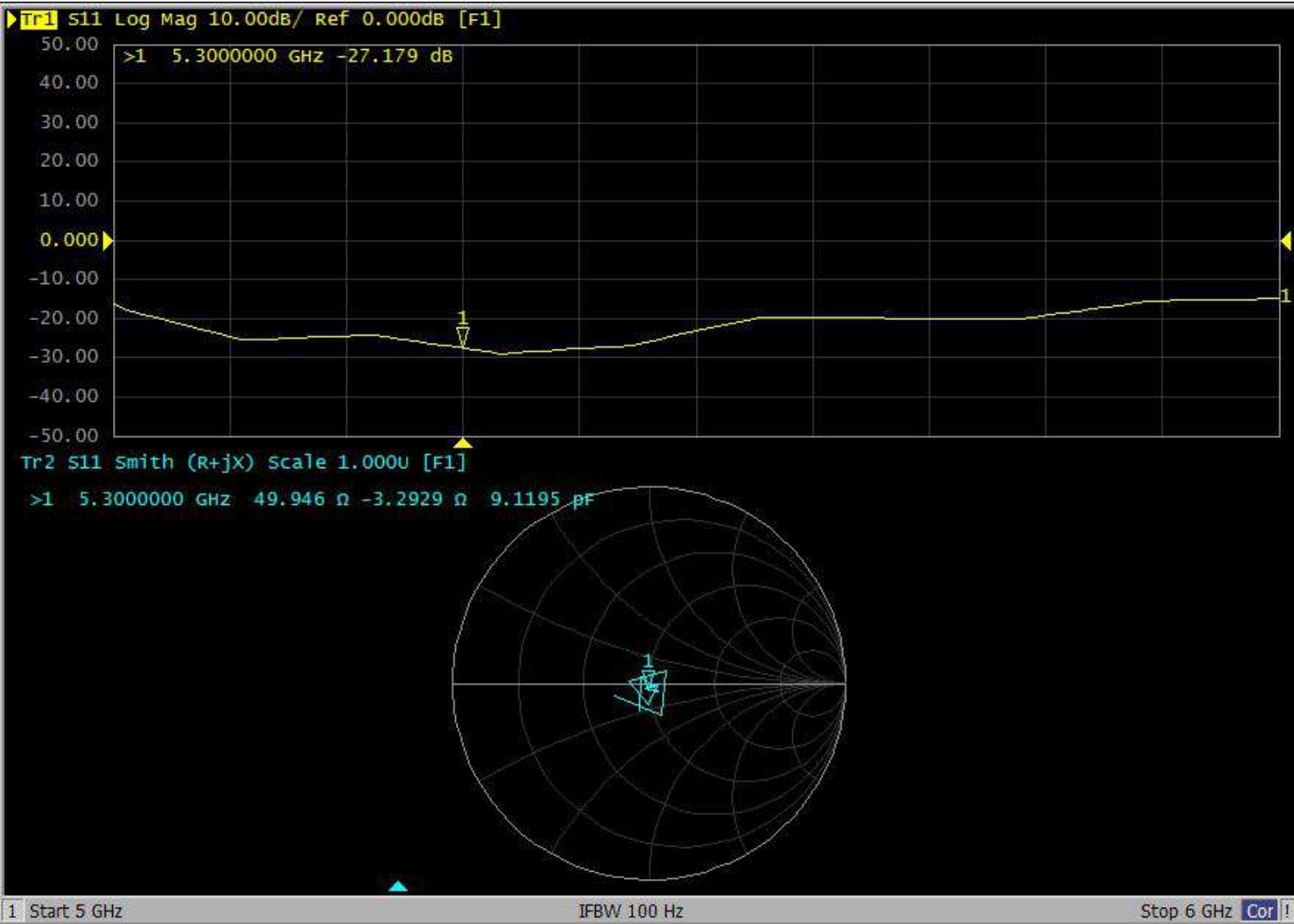


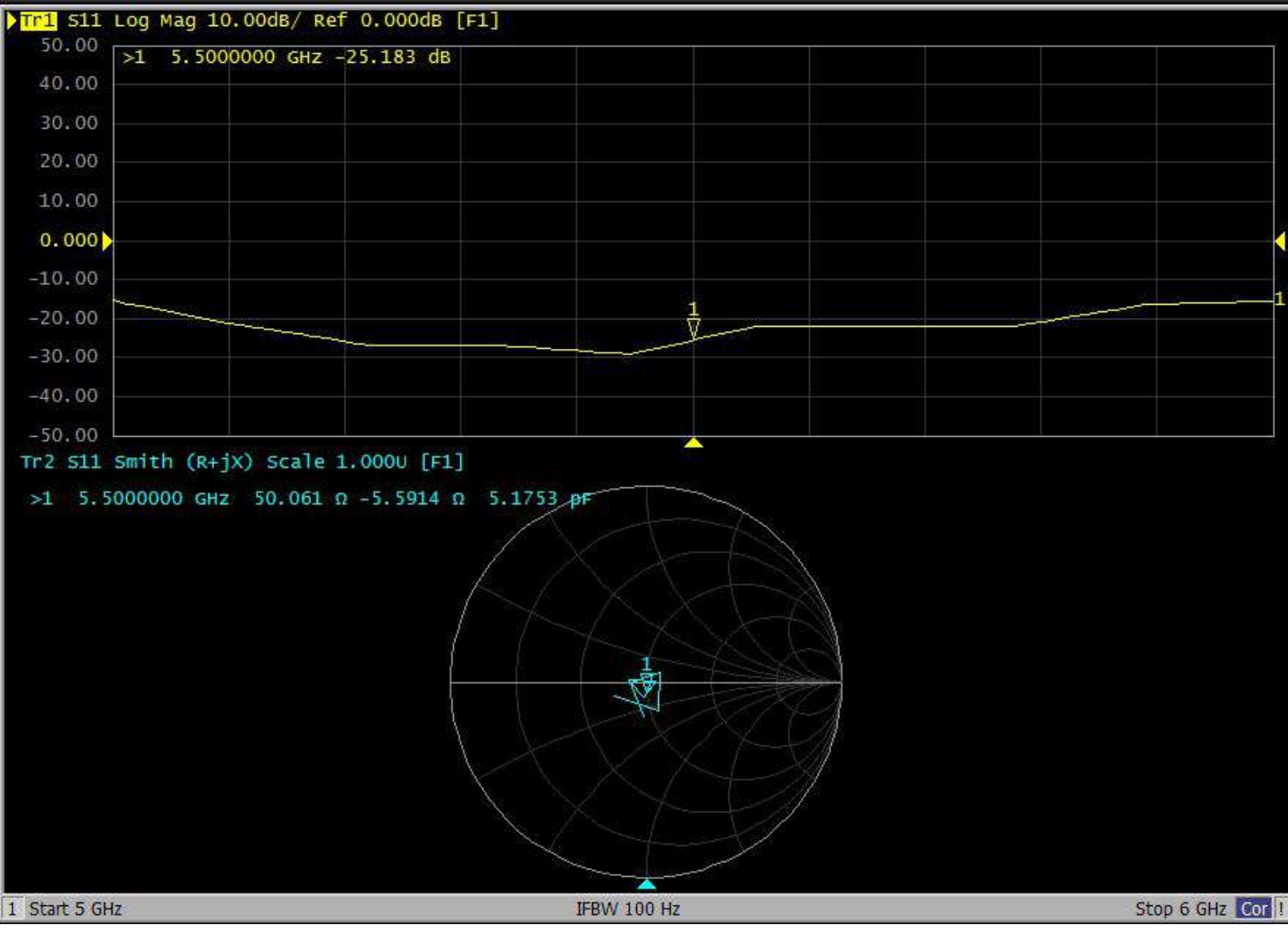
Tr1 S11 Log Mag 10.00dB/ Ref 0.000dB [F1]



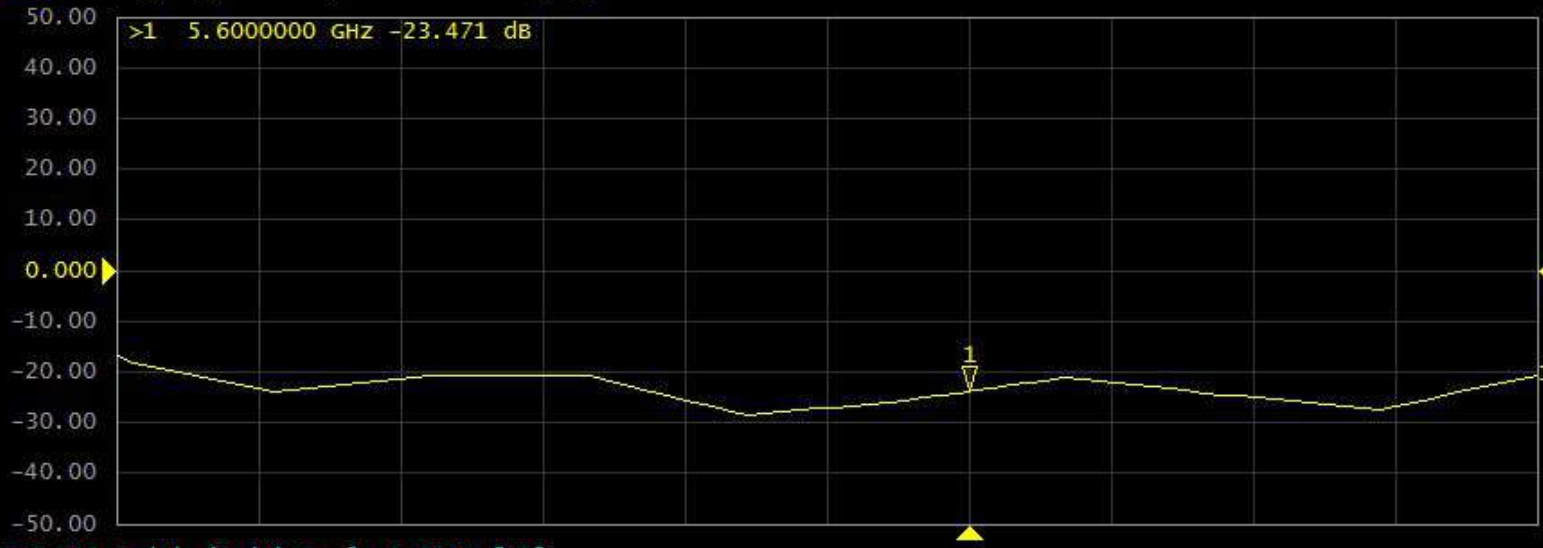
Tr2 S11 Smith (R+jX) scale 1.000U [F1]







Tr1 S11 Log Mag 10.00dB/ Ref 0.000dB [F1]



Tr2 S11 Smith (R+jX) Scale 1.000U [F1]

>1 5.600000 GHz 52.520  $\Omega$  -4.5053  $\Omega$  6.3082 pF

