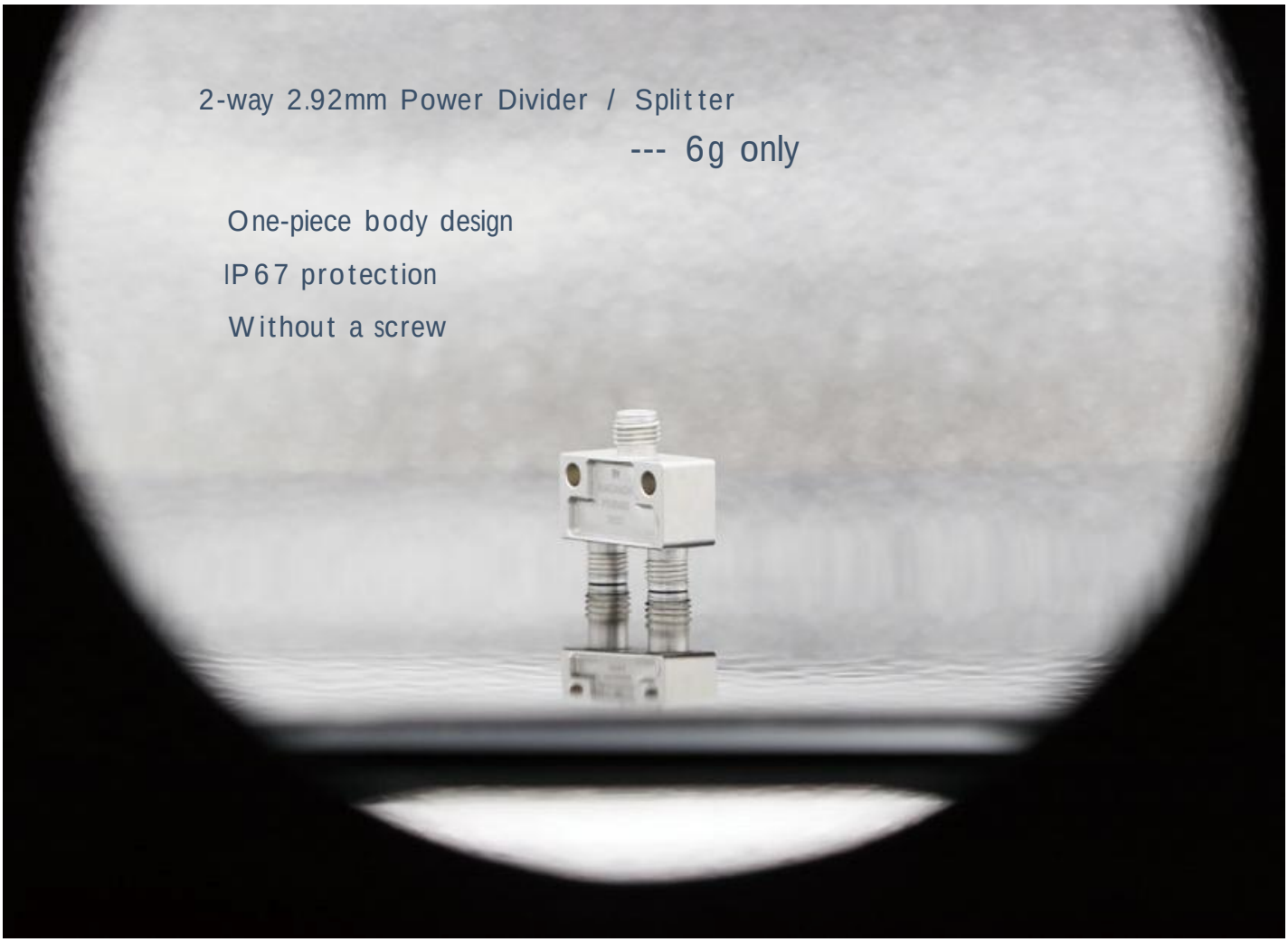
The World Smallest/Lightest Coaxial Power Divider / Splitter for 5G (27/28 GHz) Application --- 6g only

2020-09



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Overview

Various RF applications require power to be distributed among various paths. The simplest way this can be done is by using a "power splitter/divider". An RF/microwave power divider splits an input signal into two equal and identical (i.e., in-phase) signals. It can also be used as a "power combiner" where the common port is the output and the two equal power ports are used as the inputs. Important specifications when used as a power divider include the insertion loss, return losses, and amplitude and phase balance between the arms.

Anoison 1-piece body design---The world smallest/lightest 2-Way Coaxial Power Divider / Splitter

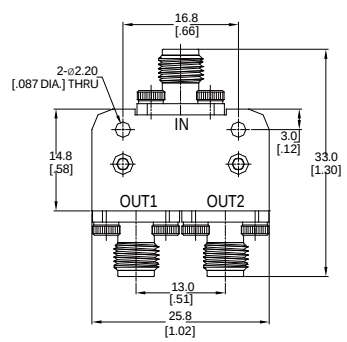
Anoison has developed an excellent 2-way power divider for a 5G system manufacturer. The design criteria needed to account for limited installation space, small size, light weight and IP67 protection.

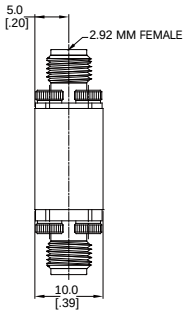
Below is a typical design. The normal design for existing power splitters uses three 4-hole flange connectors fixed on the housing by screws. The connector flanges require more space, hence there is no opportunity to reduce size. Further, the thread holes on the housing make it difficult to achieve IP67 protection.

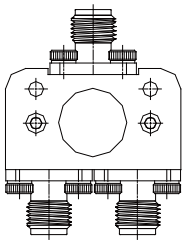
Anoison's creative design integrates the three connectors and the housing into a single unit (one-piece body). As a result, a smaller and lighter design is achieved. Eliminating the screws, i.e., no holes in the housing, results in easier assembly, connection and complete IP67 protection, see below:

To accomplish excellent durability, the design uses 7 series Aircraft Grade Aluminum Alloy which possess a hardness similar to Brass Alloys. It also results in a final weight is only 6 grams.

See below specifications and test curves:

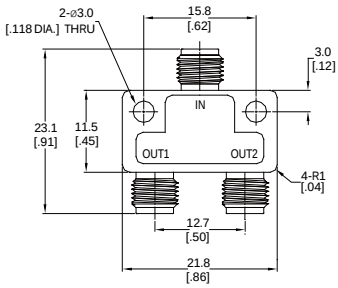


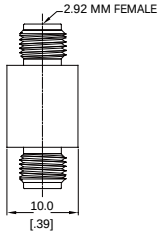


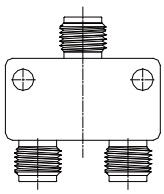


Traditional Design

- **Bigger size**
- **Heavier weight**
- **DIfficult to process IP67**
- **Complex assembly**







1-piece body design

- **High Hardness Aluminum Alloy**
- **6g weight only**
- **No screw taps**
- **IP67 protection**

Example of 2-way power divider / Splitter for 5G application

Electrical Data

Number of Output Ports	**2**
Frequency Range	**27-29 GHz**
Impedance	**50 Ω**
VSWR	**<1.30**
Insertion Loss	**<0.6 dB**
Isolation	**>23 dB**
Amplitude Balance	**<0.3 dB**
Phase Balance	**3°**
Input Power	**20 W Max.**
Reverse Power	**0.5 W Max.**

Material and Finish

Conncetor(2.92mm Female)	**7003 Aluminum Alloy**
Housing	**7003 Aluminum Alloy, Transparent Epoxy**

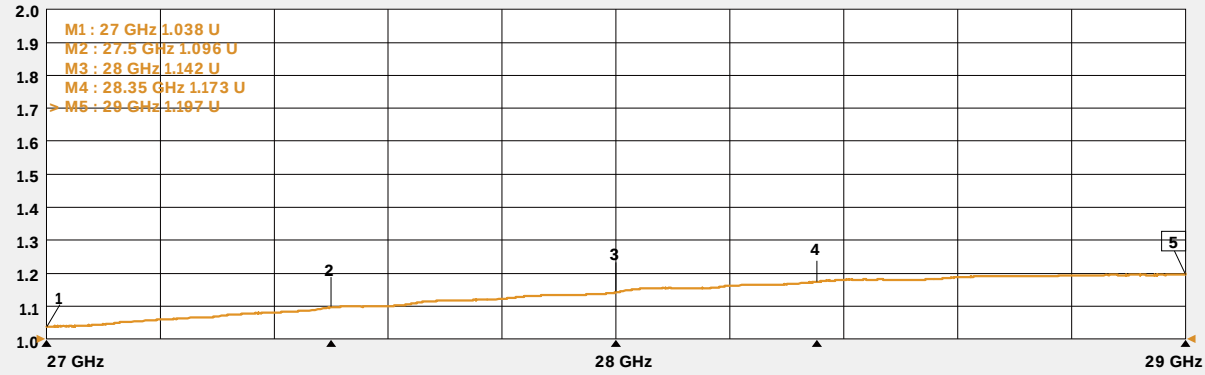
Environmental Data

Operating Temperature	**-55°C to +100°C**
Storage Temperature	**-55°C to +125°C**
Protection Grade	**IP67(Connectors Mated Condition, The Cable End 2.92mm Male Connector be Requested with A Rubber Seal Gasket)**
RoHS Compliant	**2011/65/EU(RoHS) and 2015/863/(RoHS)**
REACH Compliant	**1907/2006/EC(REACH)**

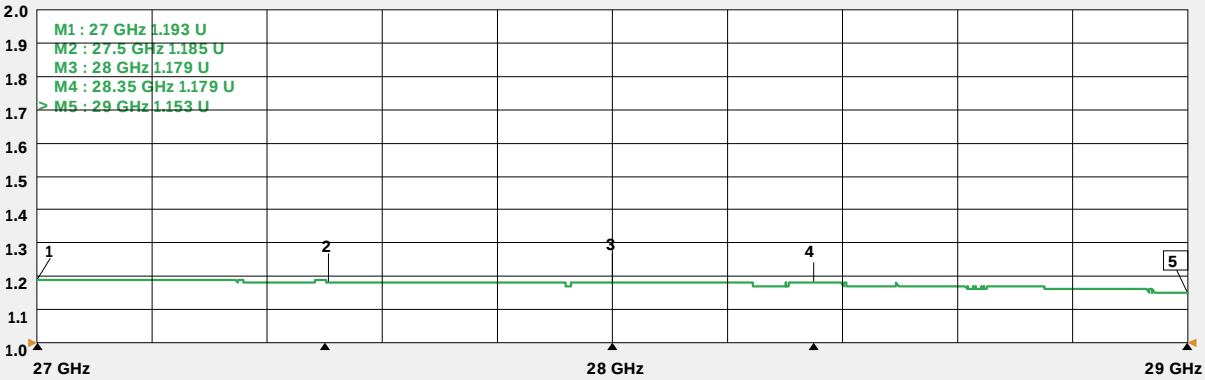
Typical Test Data

IN-OUT1

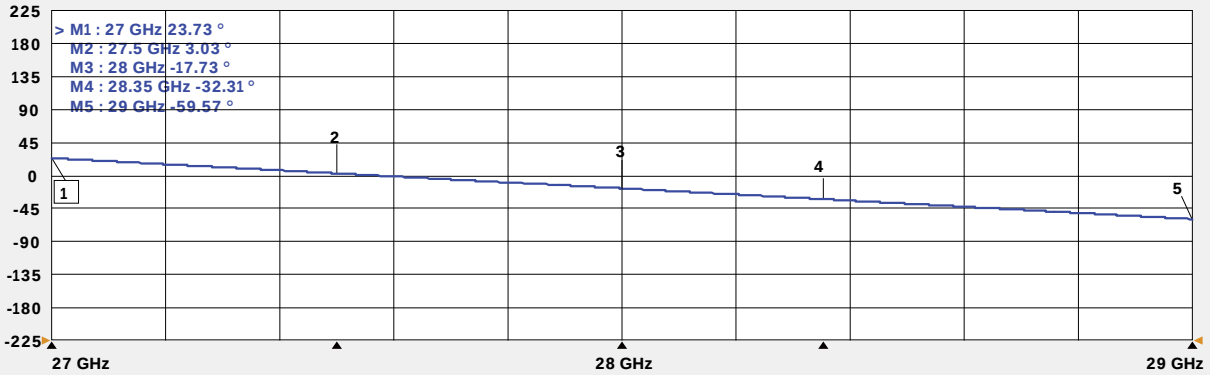
Tr1 S11 Refl SWR RefLvl: 1 U Res: 100 mU/Div



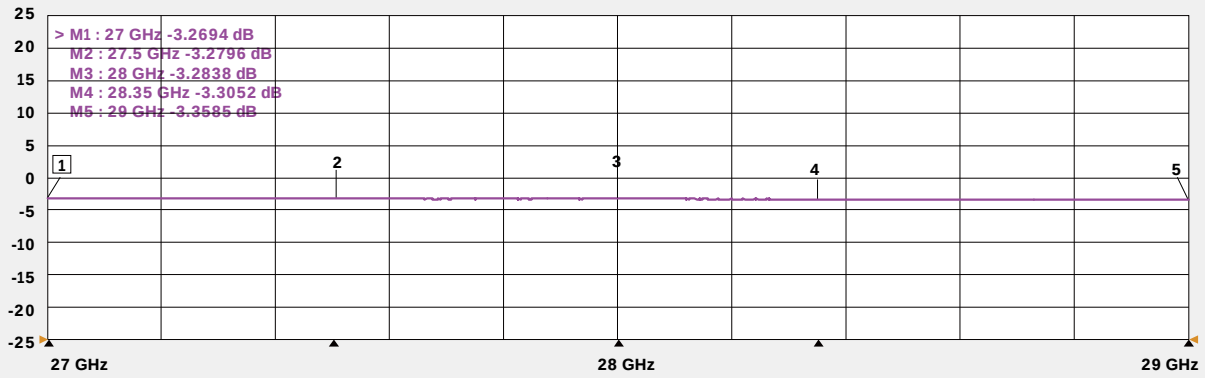
Tr2 S22 Refl SWR RefLvl: 1 U Res: 100 mU/Div



Tr3 S11 Refl Phase RefLvl: 0 ° Res: 45 °/Div

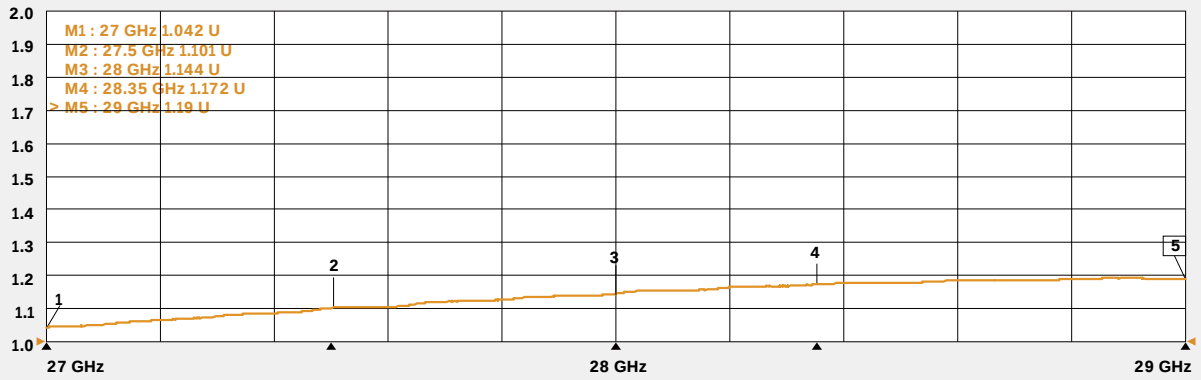


Tr4 S12 Trans LogM RefLvl: 0 dB Res: 5 dB/Div

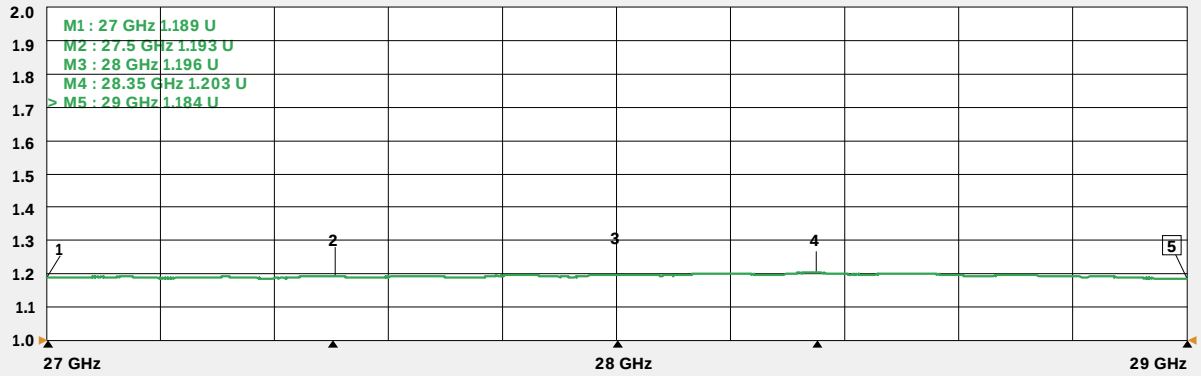


IN-OUT2

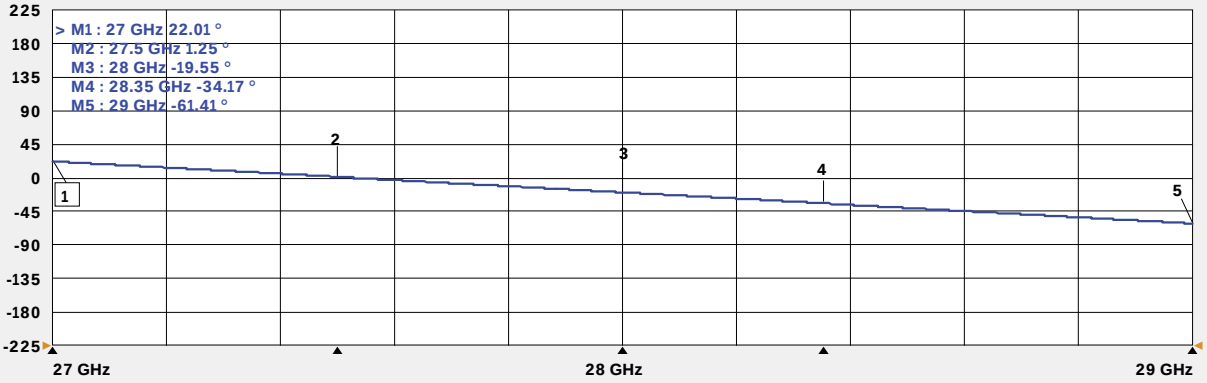
Tr1 S11 Refl SWR RefLvl: 1 U Res: 100 mU/Div



Tr2 S22 Refl SWR RefLvl: 1 U Res: 100 mU/Div



Tr3 S11 Refl Phase RefLvl: 0 ° Res: 45 °/Div



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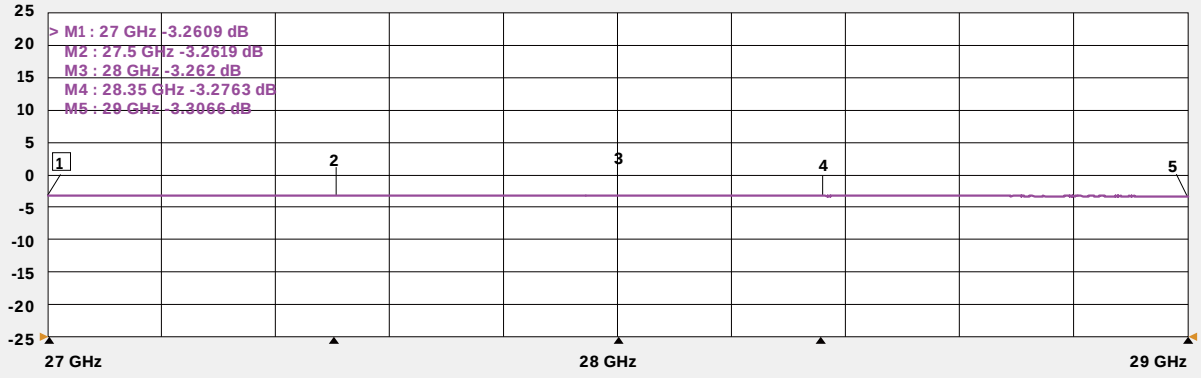
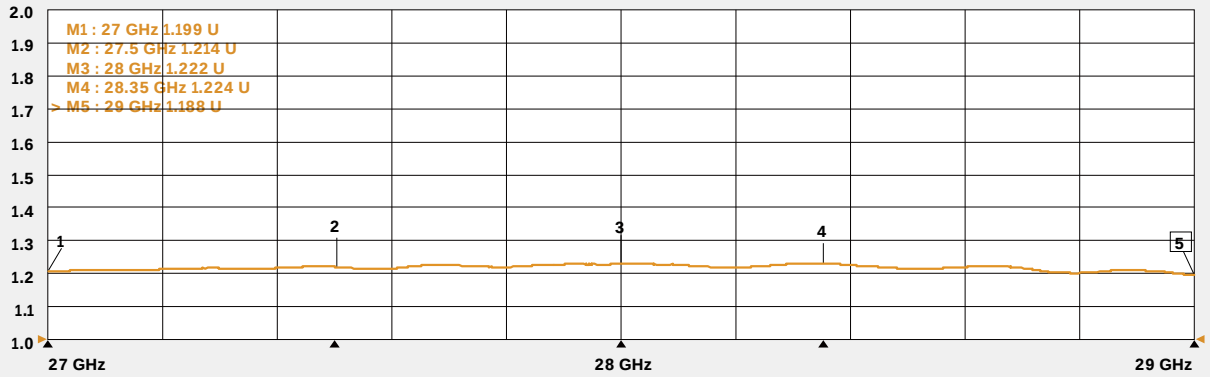
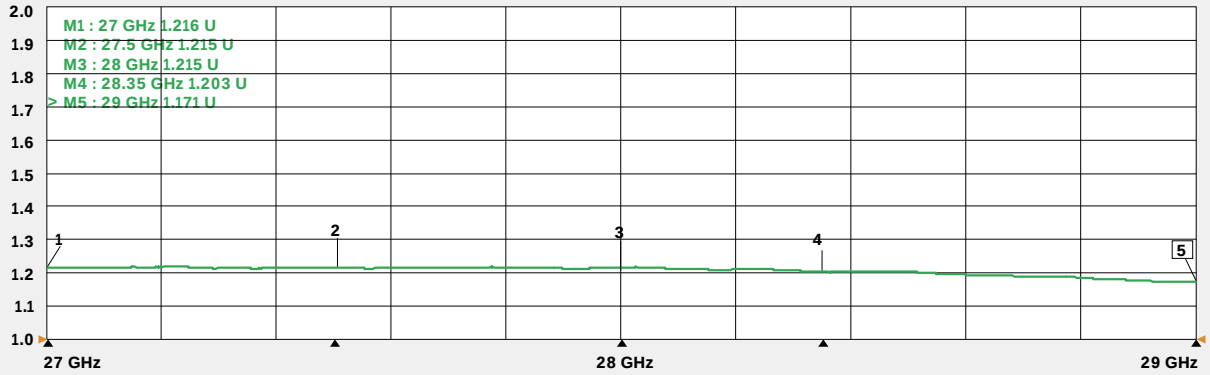


OUT1-OUT2

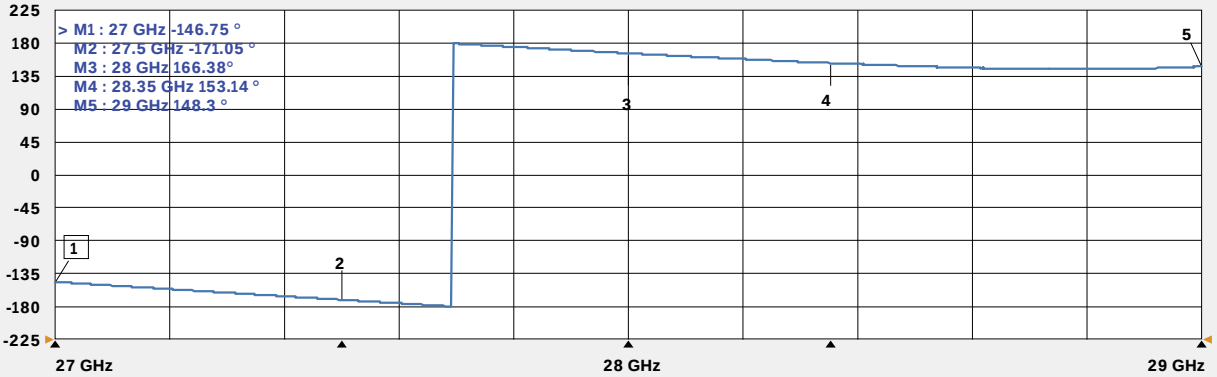
Tr1 S11 Refl SWR RefLvl: 1 U Res: 100 mU/Div



Tr2 S22 Refl SWR RefLvl: 1 U Res: 100 mU/Div



Tr3 S11 Refl Phase RefLvl: 0 ° Res: 45 °/Div



Tr4 S12 Trans LogM RefLvl: 0 dB Res: 5 dB/Div