

Ultra-Compact & Lightweight 2-Way Coaxial Power Divider for 5G (27/28 GHz) Applications

2020-09

2-way 2.92mm Power Divider / Splitter

- *6g Only - One-Piece Aluminum Body Design*
- *Screwless & Rugged - IP67 Weatherproof Protection*



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---Ultra-Compact & Lightweight 2-Way Coaxial Power Divider

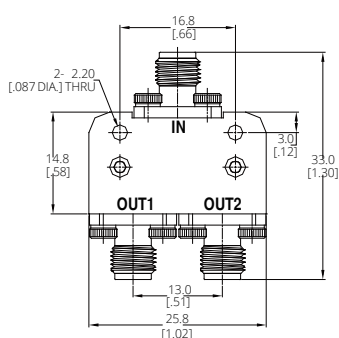
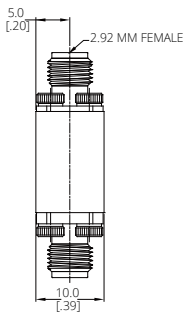
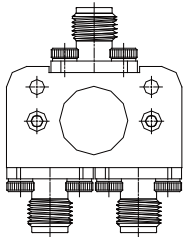
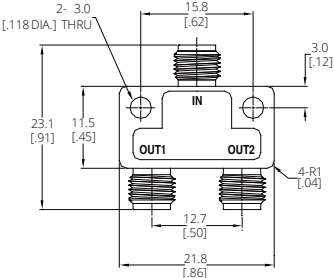
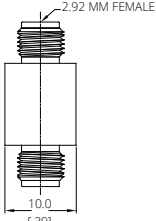
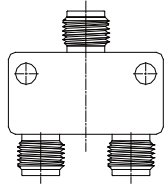
Anoison has developed an excellent 2-way power divider for a 5G system manufacturer. The design criteria needed to account for limited installation space, small size, light weight and IP67 protection.

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 Coaxial Power Divider for 5G (27/28 GHz) Applications

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

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

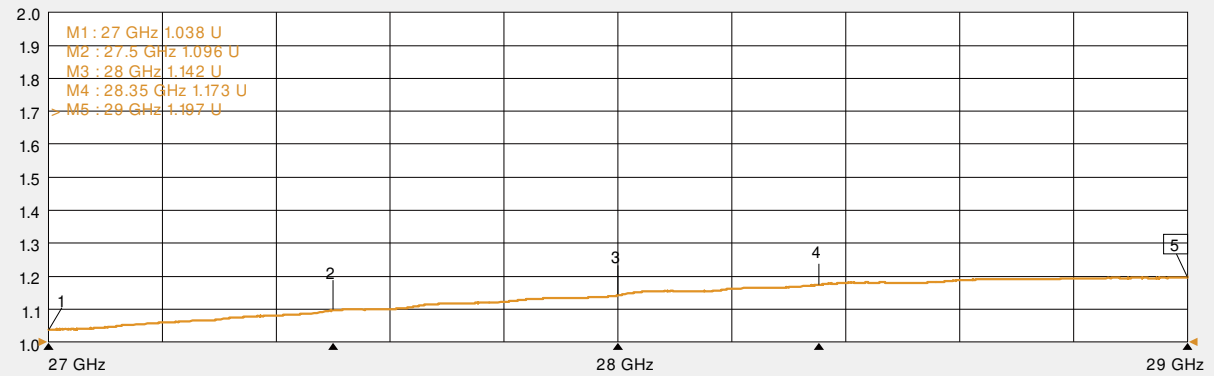
Environmental Data

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)

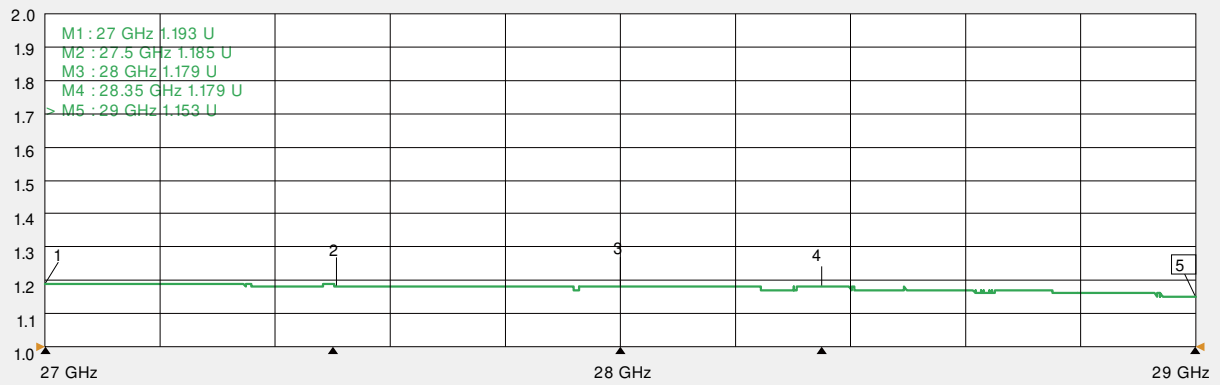
Typical Test Data

IN-OUT1

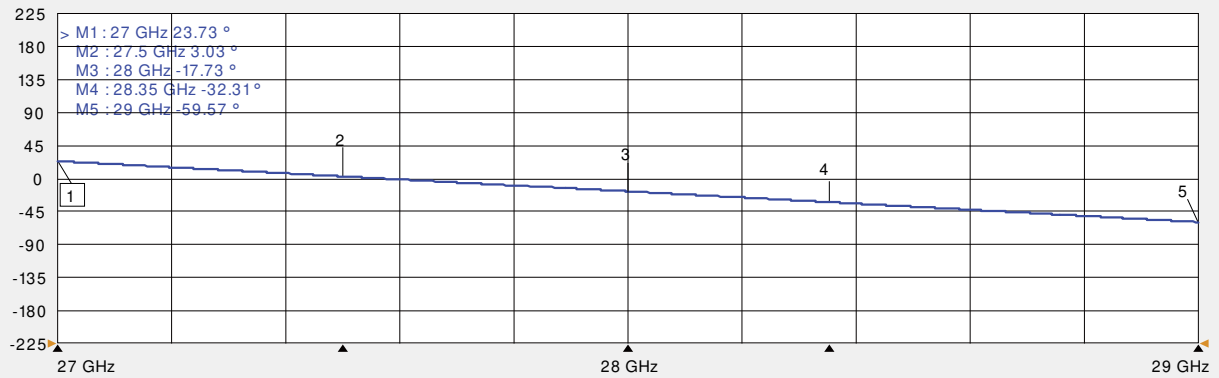
Tr1 S11 Refl SWR RefLvl: 1 U Res: 100 mU/Div



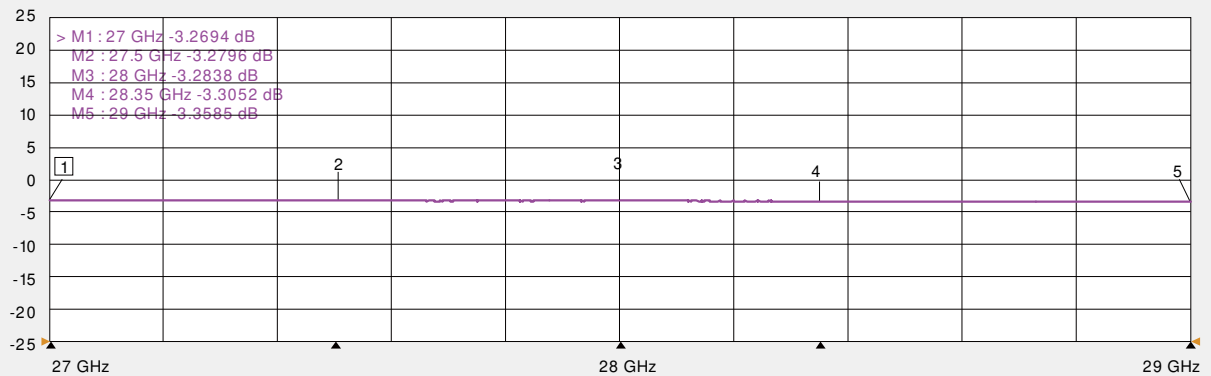
Tr2 S22 Refl SWR RefLvl: 1 U Res: 100 mU/Div



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

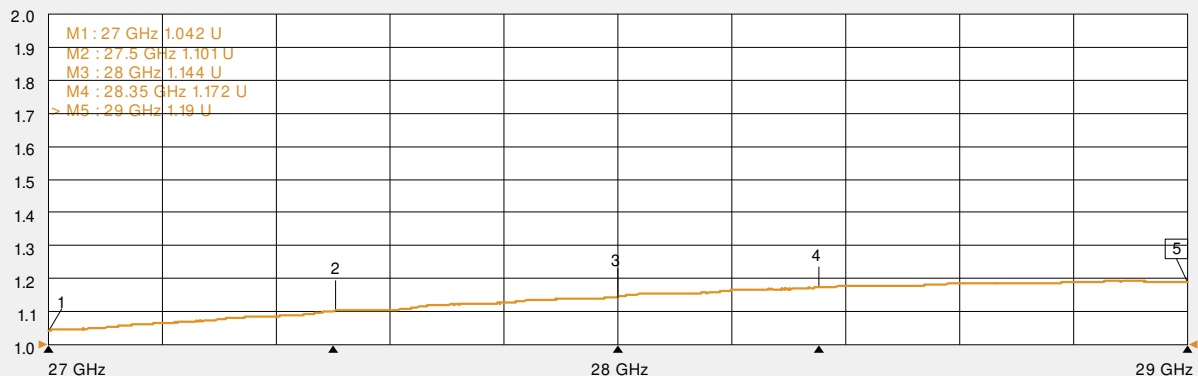


Tr4 S12 Trans LogM RefLvl: 0 dB Res: 5 dB/Div

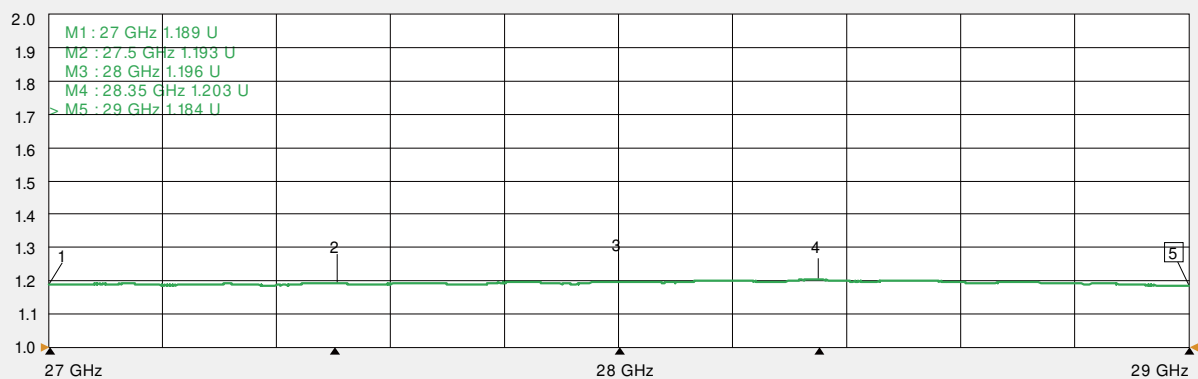


IN-OUT2

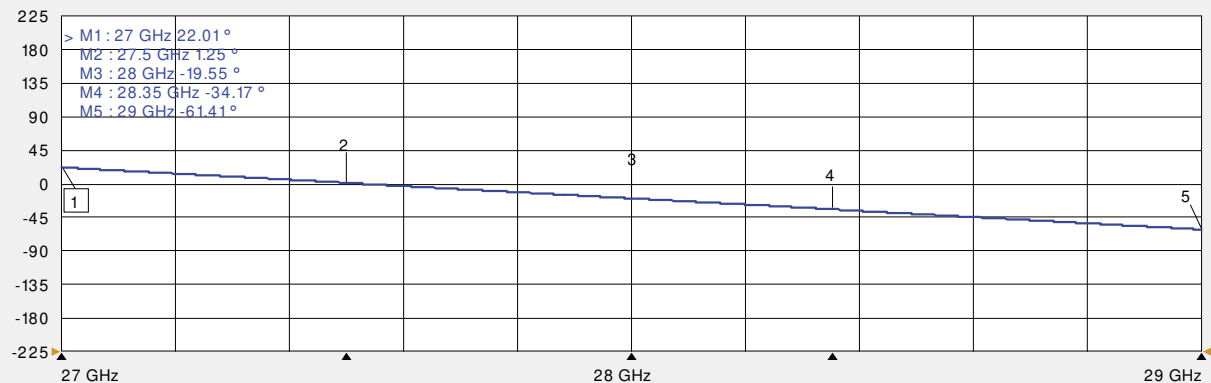
Tr1 S11 Refl SWR RefLvl: 1 U Res: 100 mU/Div



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



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

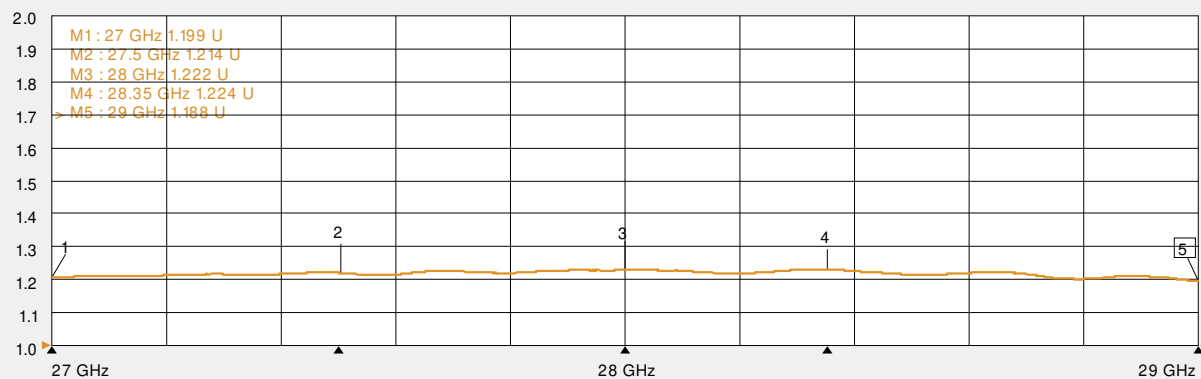


Tr4 S12 Trans LogM RefLvl: 0 dB Res: 5 dB/Div

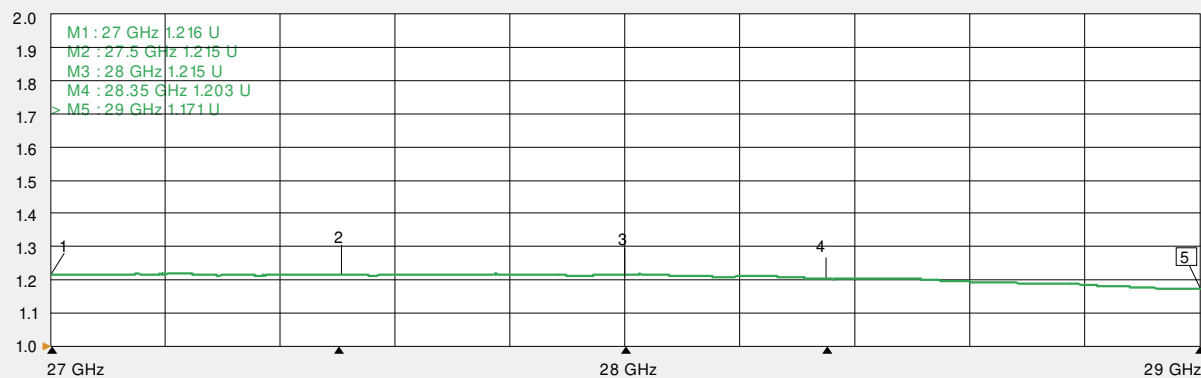


OUT1-OUT2

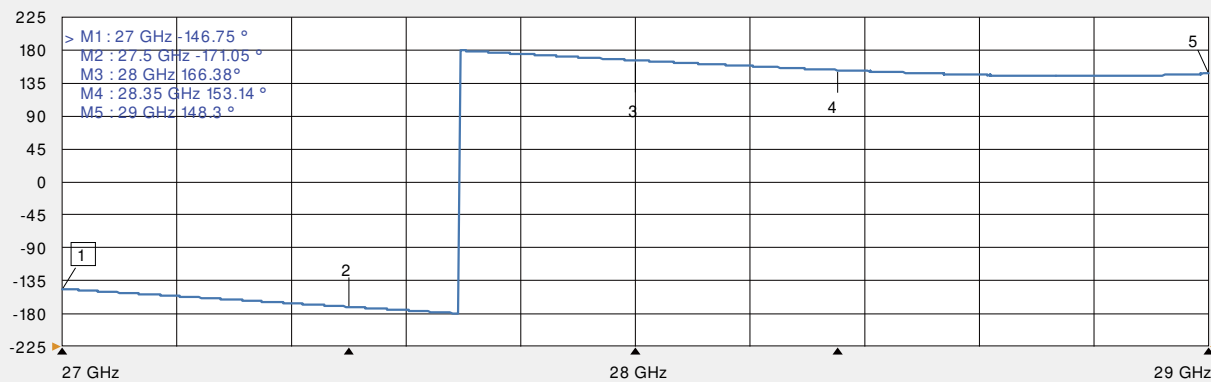
Tr1 S11 Refl SWR RefLvl: 1 U Res: 100 mU/Div



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

