



THC19F03

Hybrid Coupler 3B, 90°

Rev A1.0

The THC19F03 is a low profile, high performance 3dB directional coupler. It is designed for DCS & PCS applications. This component is suitable for feed-forward amplifier and signal sampling circuits where low insertion loss, high directivity is required. It can be used in power applications up to 30 Watts.

Parts have been subjected to rigorous qualification testing and they are using materials with coefficients of thermal expansion (CTE) compatible with common substrates such as FR4, G-10, RF-35, R04350B and polyimide.

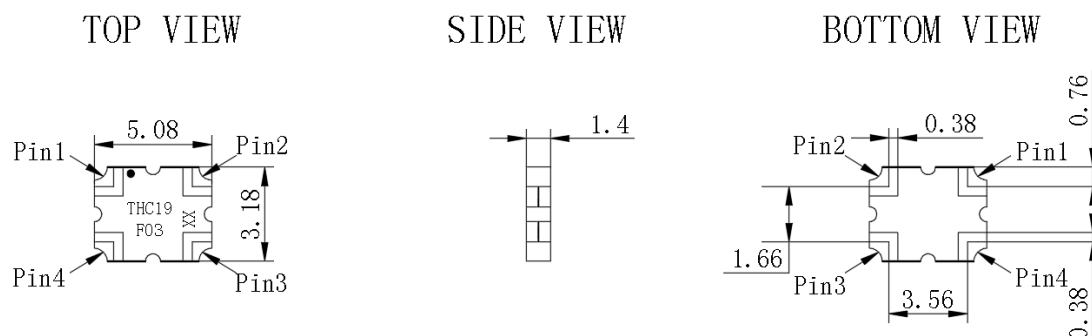
Features:

- . 1700-2300 MHz
- . Low Insertion Loss
- . High Directivity
- . Low VSWR
- . Good Repeatability
- . CTE compatible with FR4, G-10, RF-35, R04350B and polyimide
- . Immersion gold, prevent surface oxidation & scratch
- . RoHS Compliant
- . Tape & Reel Package available

Electrical Specifications

Frequency	Isolation	Insertion Loss	VSWR	Amplitude Balance
MHz	dB Min	dB Max	Max:1	dB Max
1700-2300	21.0	0.25	1.20	±0.50
Phase Balance	Power	Size	Thickness	Operating Temp.
Degrees	Avg.CW.Watts	mm	mm	°C
90±3.0	30	5.08*3.18	1.4	-55 to +105

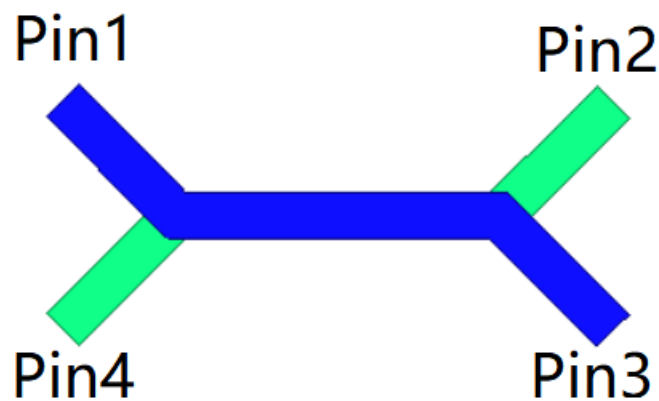
Mechanical Outline



- Notes:
1. All dimensions show in millimeters;
 2. ROHS Compliant in accordance with EU Directive;
 3. Dimension tolerance: ±0.1mm.

Hybrid Coupler Pin Configuration

The THC19F03 has an orientation marker to denote Pin 1. Once port one has been identified the other ports are known automatically. Please see the chart below for clarification:



Configuration	Pin 1	Pin 2	Pin 3	Pin 4
Splitter	Input	Isolated	$-3\text{dB} \angle \theta - 90^\circ$	$-3\text{dB} \angle \theta$
Splitter	Isolated	Input	$-3\text{dB} \angle \theta$	$-3\text{dB} \angle \theta - 90^\circ$
Splitter	$-3\text{dB} \angle \theta - 90^\circ$	$-3\text{dB} \angle \theta$	Input	Isolated
Splitter	$-3\text{dB} \angle \theta$	$-3\text{dB} \angle \theta - 90^\circ$	Isolated	Input
Combiner	$A \angle \theta - 90^\circ$	$A \angle \theta$	Isolated	Output
Combiner	$A \angle \theta$	$A \angle \theta - 90^\circ$	Output	Isolated
Combiner	Isolated	Output	$A \angle \theta - 90^\circ$	$A \angle \theta$
Combiner	Output	Isolated	$A \angle \theta$	$A \angle \theta - 90^\circ$

Note:

“A” is the amplitude of the applied signals. When two quadrature signals with equal amplitudes are applied to the coupler as described in the table, they will combine at the output port. If the amplitudes are not equal, some of the applied energy will be directed to the isolated port.



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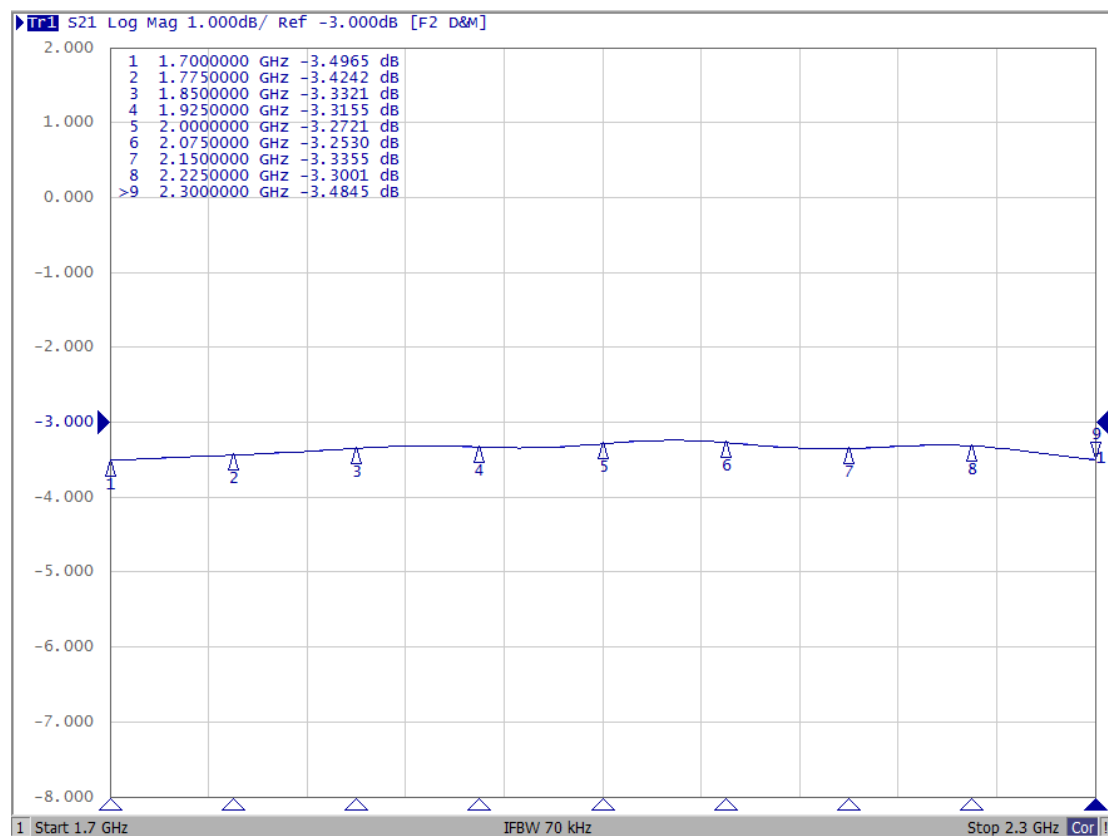
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Typical Performance Data

Frequency	MHz	1700	1775	1850	1925	2000	2075	2150	2225	2300
Coupling	dB	-3.50	-3.42	-3.33	-3.32	-3.27	-3.25	-3.34	-3.30	-3.48
Transmission	dB	-2.53	-2.62	-2.68	-2.75	-2.80	-2.80	-2.89	-2.81	-2.90
Insertion Loss	dB	-0.02	-0.02	-0.02	-0.03	-0.04	-0.03	-0.11	-0.06	-0.19
Isolation	dB	-28.33	-29.82	-31.28	-32.38	-32.15	-30.73	-28.68	-26.61	-24.81
Phase	degree	88.71	88.77	88.67	88.96	88.73	88.95	88.94	88.92	89.12
VSWR	Input	/	1.06	1.04	1.03	1.03	1.05	1.06	1.09	1.14
	coupler	/	1.05	1.04	1.04	1.06	1.08	1.10	1.13	1.19
	Transmission	/	1.05	1.03	1.02	1.03	1.04	1.06	1.09	1.14
	Isolated	/	1.04	1.03	1.04	1.05	1.07	1.10	1.13	1.19

Typical Performance

Coupling(dB):

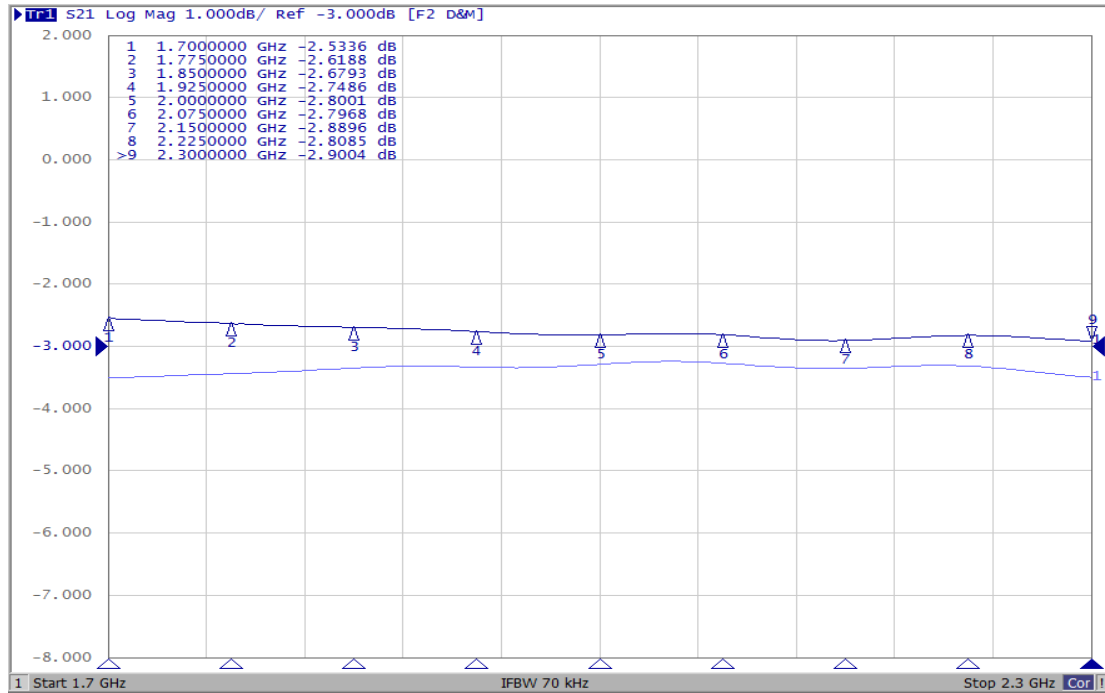




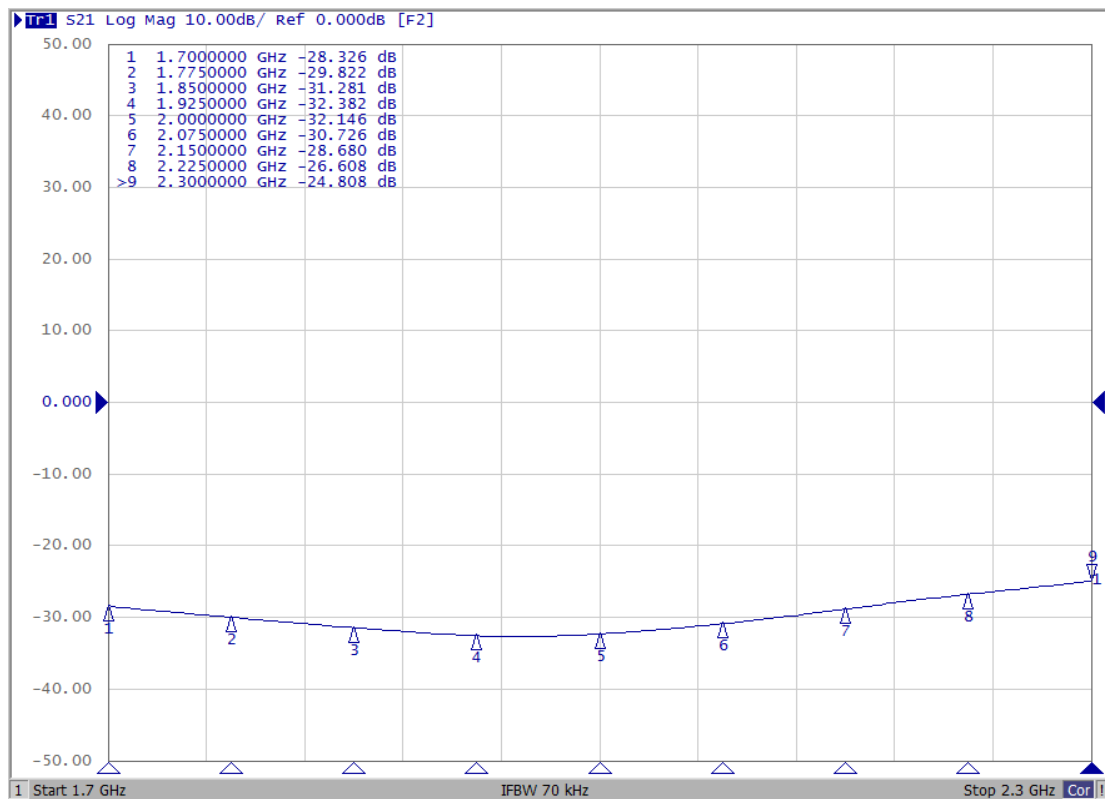
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Transmission(dB):



Isolation(dB):



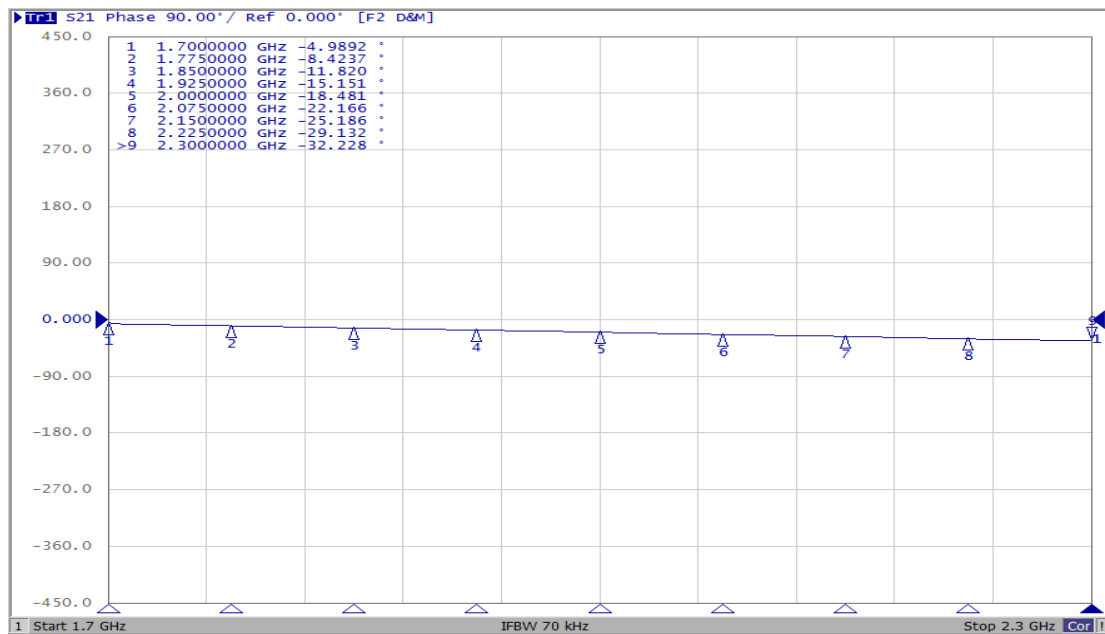


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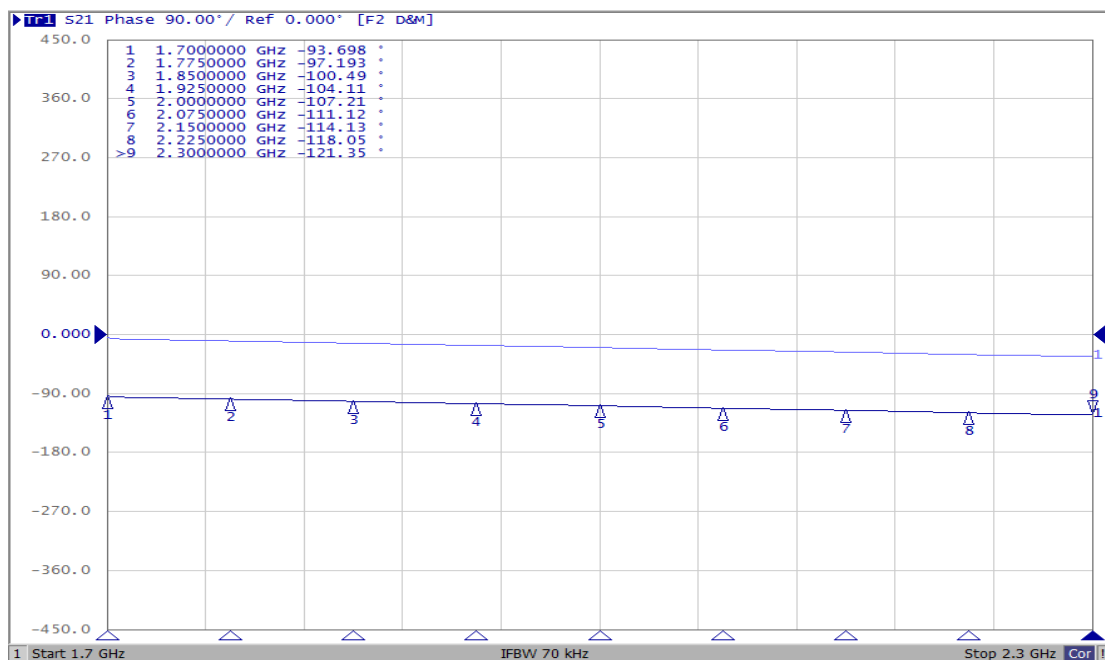
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Phase(degree):

Coupling Phase(degree):



Transmission Phase(degree):





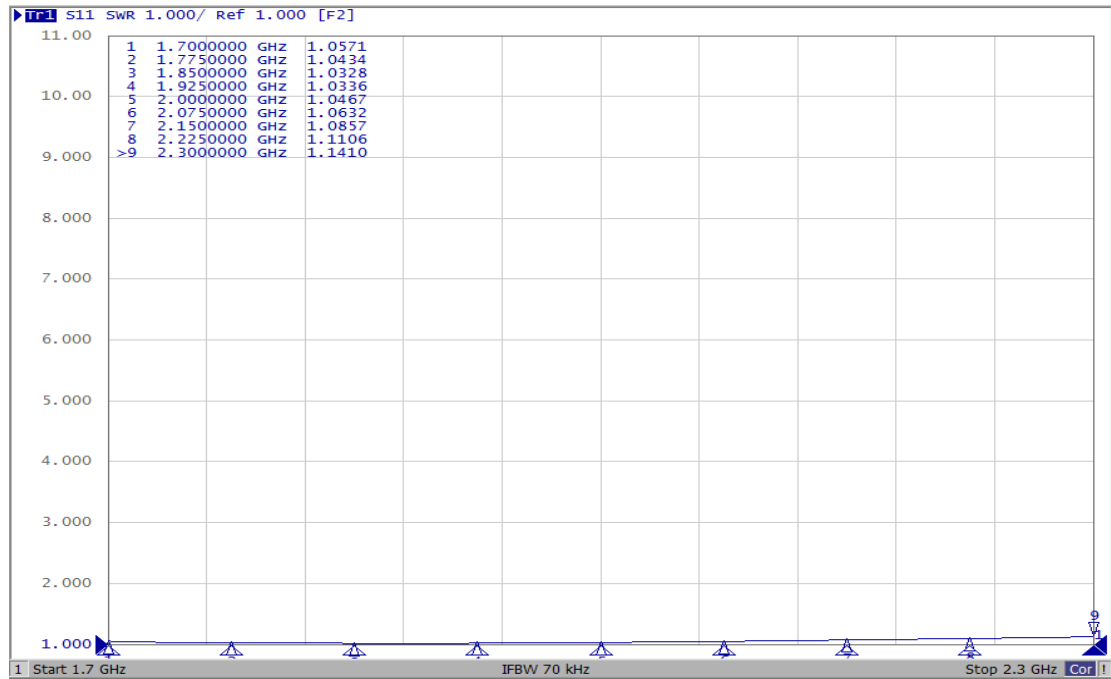
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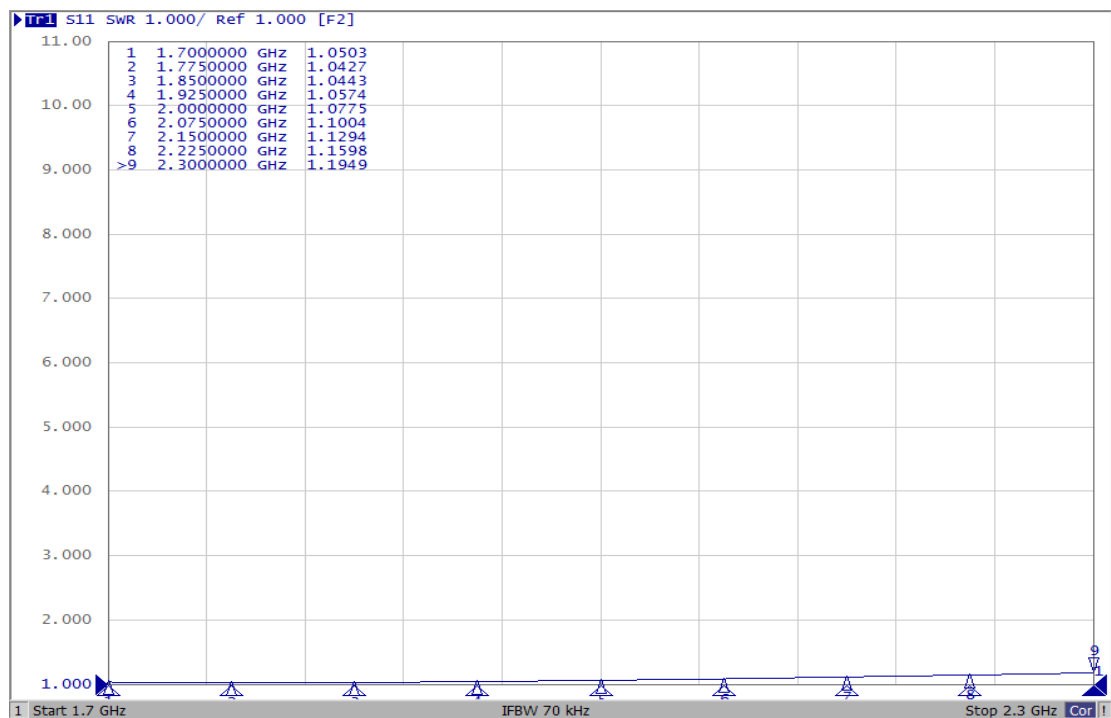
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VSWR :

Input Port:



Coupling Port:



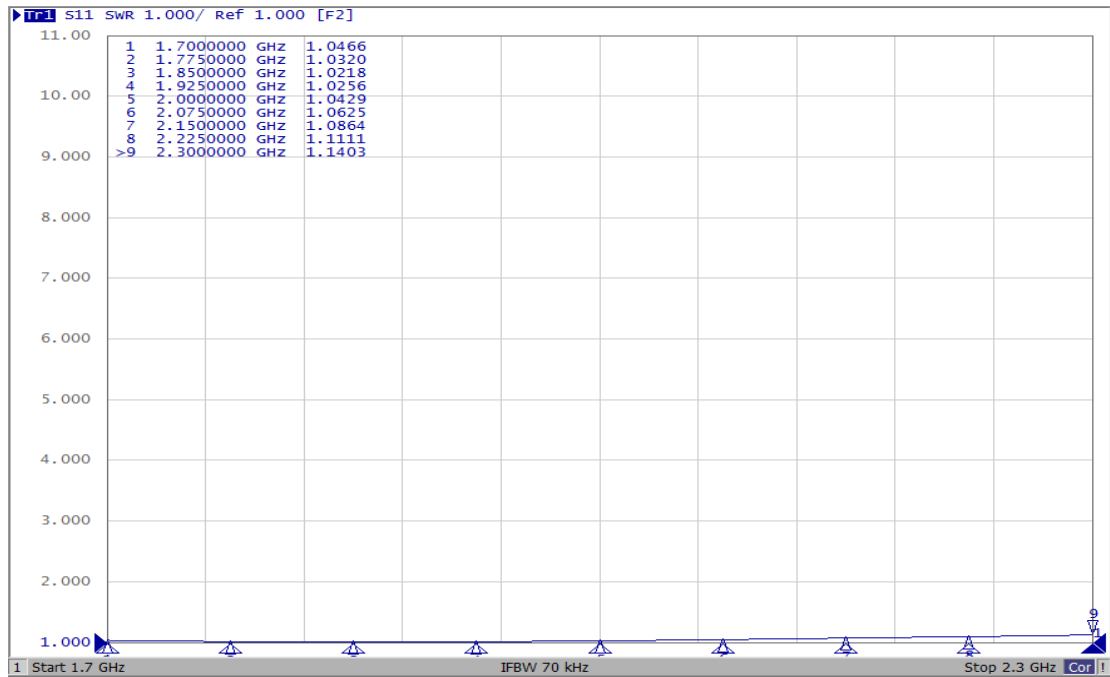


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Transmission Port:



Isolation Port:

