

## Quadrature Hybrid 90 Degree SMA Female 6 to 12.4 GHz

### Hybrids Technical Data Sheet

#### Product Description

AmpliTech model APTQH-90-06001240-SMA is a 90-degree hybrid coupler that operates from 6 to 12.4 GHz with an impressive power handling capacity of up to 50 watts (CW). This coupler comes in an enclosure measuring 1.00 x 0.50 x 0.38 inches.

Specifications	Min	Typ	Max	Min
Frequency	6		12.4	GHz
Impedance		50		Ohm
Phase Difference		90		Degrees
Total Loss <sup>1</sup> (J1-J3 and J1-J4)		3.6 ±0.4	±0.8	dB
Isolation	14	17		dB
Return Loss (all ports)	13	16		dB
Amplitude Balance (±)		0.3	0.6	dB
Phase Balance (±)		2.5	5.0	Degrees
Input Power (CW) <sup>2</sup>			50	Watts

#### Mechanical

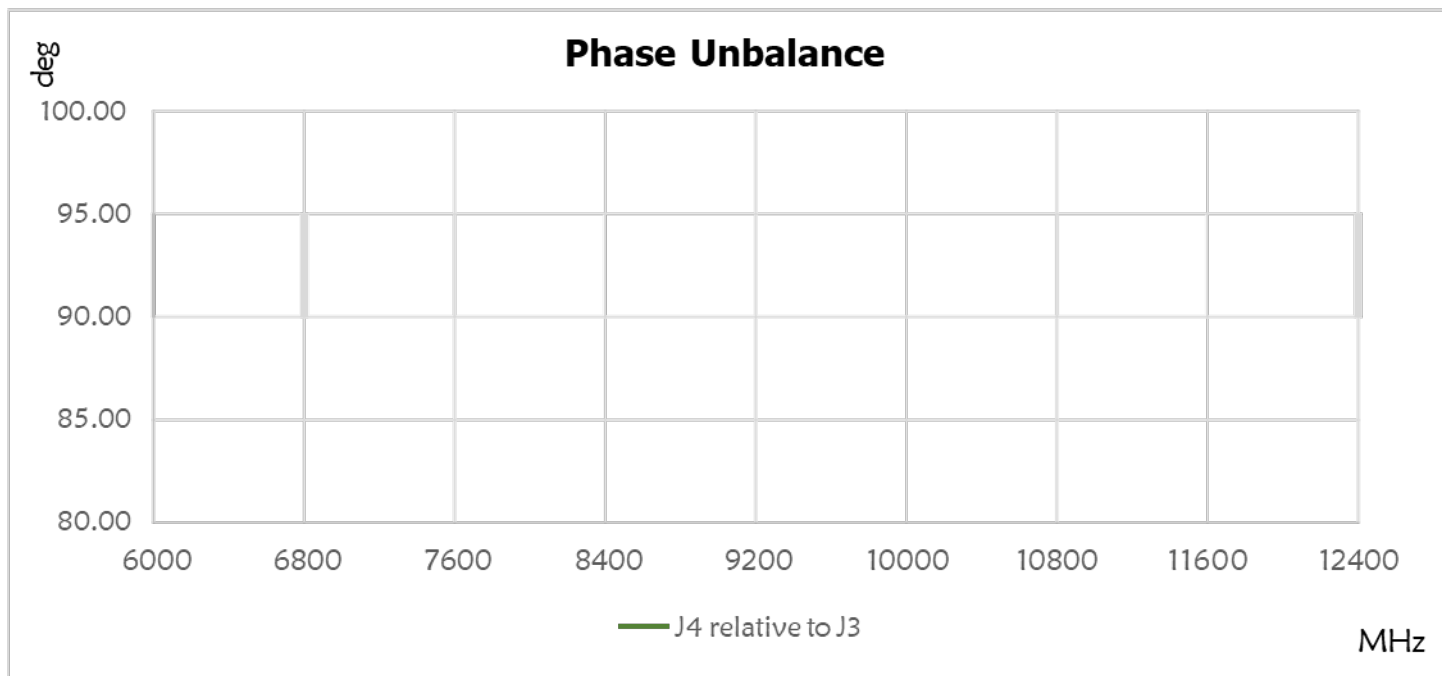
Connector Interface	SMA-Female
Operating Temperature <sup>2</sup>	-55 to +85 °C
Storage Temperature	-55 to +100 °C
Weight Estimate	0.6 oz (17.9 g)
Humidity	10-90% non-condensing
Environment	Indoors Use Only

#### Materials

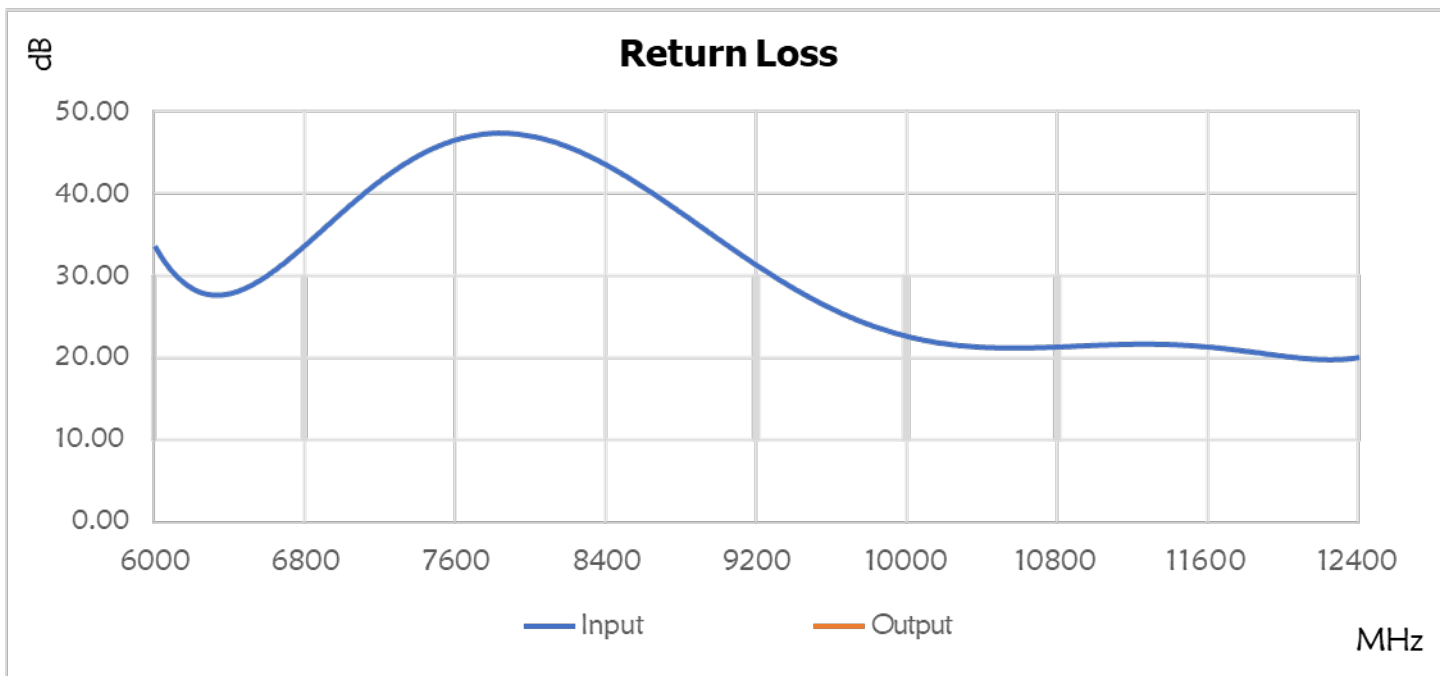
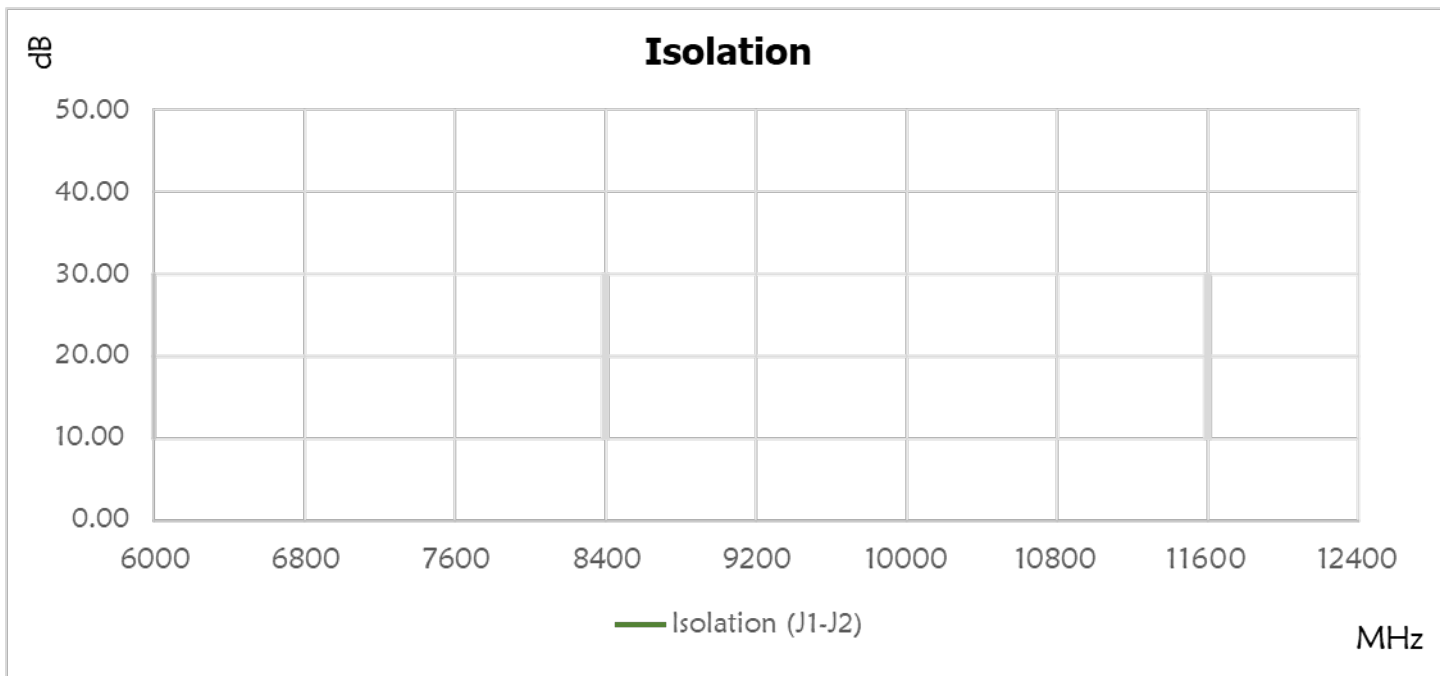
RoHS /REACH Compliant <sup>3</sup>	Yes
Enclosure	Aluminum
Connectors	Stainless Steel
Contacts	Be Cu, Gold Plated
Insulators	PTFE
Finish	Gray Paint

1. Total Loss includes insertion loss and frequency sensitivity.
2. All output ports should be terminated in a 50-ohm load with 1.2:1 max VSWR.
3. To the best of our knowledge at the time of publication.
4. Electrical specifications at +25 °C only.
5. Non-RoHS solder is available upon request.

**Typical Performance at +25 °C**



**Typical Performance at +25 °C**



### Typical Performance Data at +25 °C

Frequency (MHz)	Insertion Loss (dB) J1-J3	Coupling (dB) J1-J4	Amplitude Unbalance (dB)	Phase Unbalance (deg)	Isolation (dB) J1-J2	Return Loss (dB) J1
6000	3.0	3.4	0.4	88.9	33.7	22.6
6500	3.1	3.2	0.1	88.8	38.4	22.8
7000	3.3	3.1	0.2	88.8	43.4	23.1
7500	3.4	3.0	0.4	88.7	35.9	22.9
8000	3.5	3.0	0.5	88.9	31.3	22.7
8500	3.5	2.9	0.6	89.2	28.8	22.9
9000	3.5	2.8	0.7	88.9	26.5	22.6
9500	3.5	2.9	0.6	88.9	24.9	22.4
10000	3.5	3.1	0.4	89.2	23.3	21.4
10500	3.5	3.1	0.4	89.9	23.0	20.7
11000	3.4	3.1	0.2	89.7	21.1	19.1
11500	3.3	3.3	0.0	89.5	19.5	17.7
12000	3.2	3.5	0.3	89.5	18.5	16.8
12400	3.1	3.6	0.5	89.0	18.0	16.4

## Outline Dimensions

