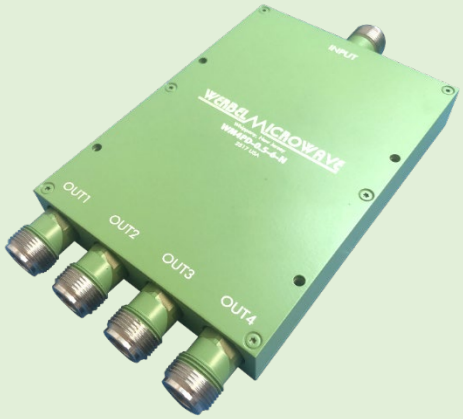
WERBEL MICROWAVE LLC
Whippany, N.J. 07981
www.WerbelMicrowave.com

Power Divider, 4-way, 0.5-6GHz, N Female Connectors

WM4PD-0.5-6-N

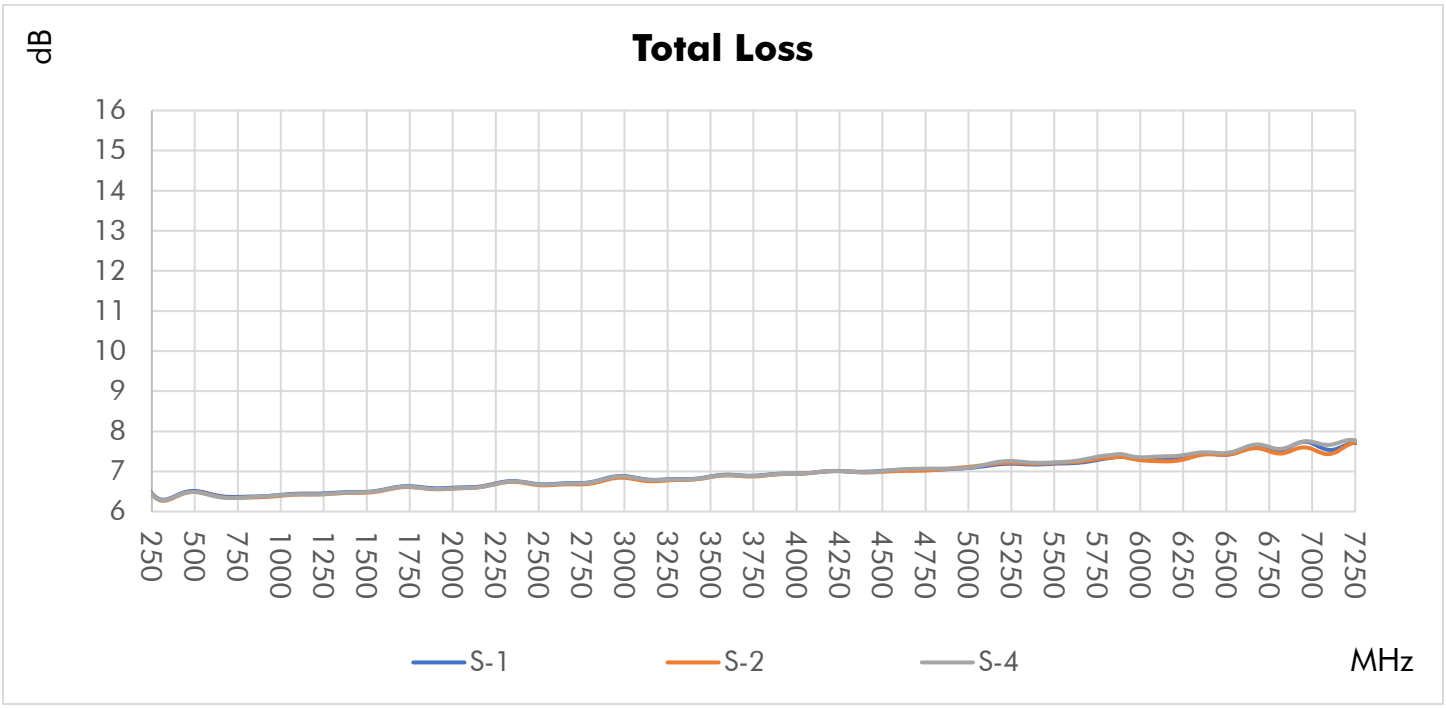


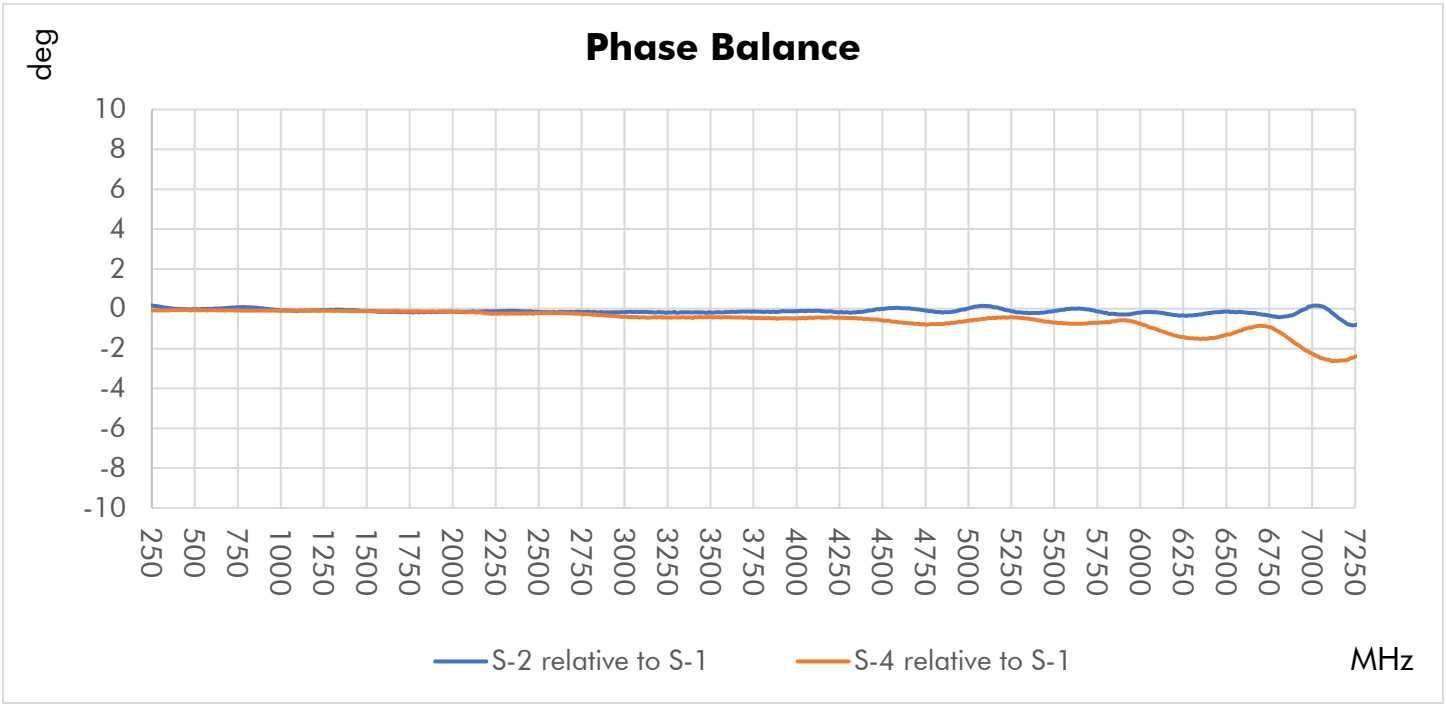
Parameter	Low Band	Mid Band	High Band	Unit
Frequency Range	500-700	700-3000	3000-6000	MHz
Impedance		50		Ω
Return Loss (Port S)	12	13	13	dB, min.
Return Loss (Port 1-4)	18	18	18	dB, min.
Insertion Loss above 6.02dB	1.0	1.5	2.0	dB, max.
Isolation		18		dB, min.
Amplitude Unbalance (±)[1]	0.3	0.4	0.6	dB, max.
Phase Unbalance (±)[1]	1	5	10	Degree, max.
Input Power (CW)[2]		30		W, max.
Combining Power (CW)[2]		0.5		W/port, max.
Internal Dissipation		1.2		W, max.
DC Current		150		mA/port, max.

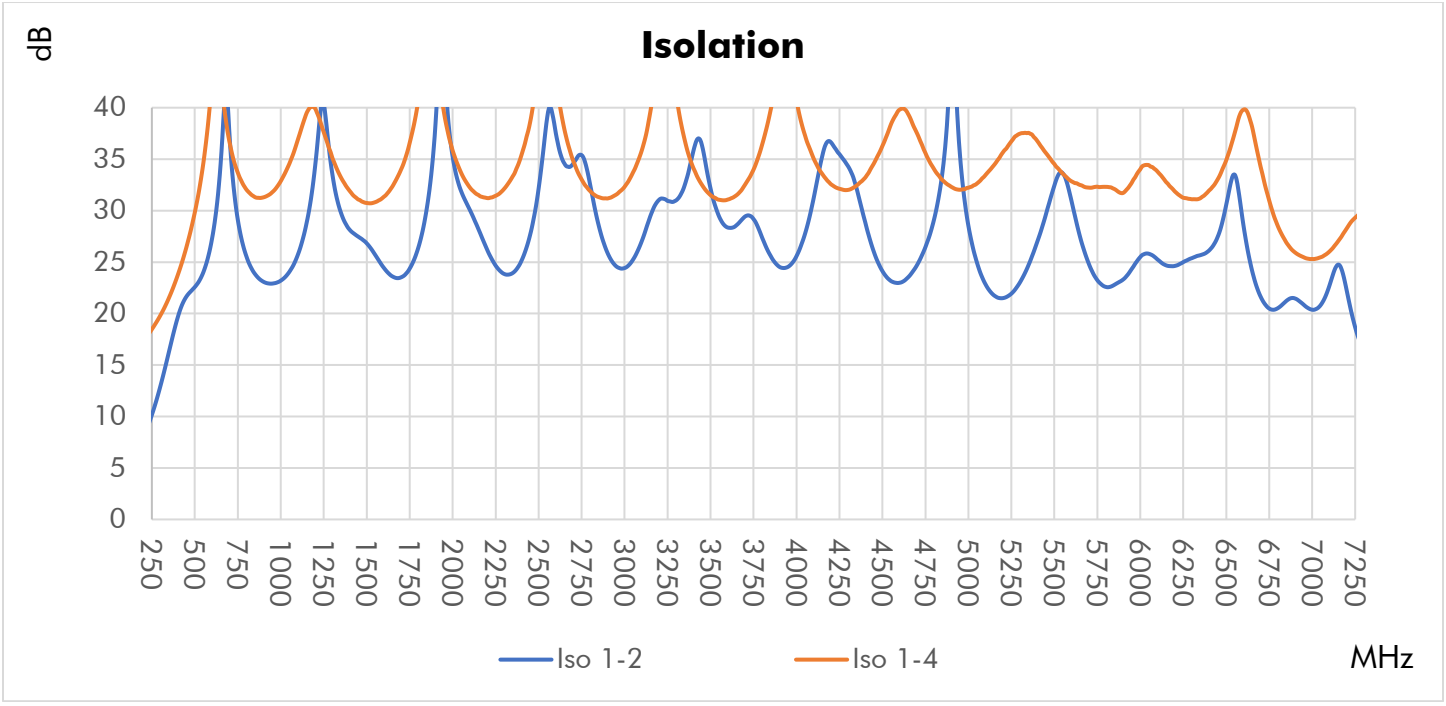
Connector Interface	N Female	RoHS Status[4]	RoHS3 Compliant
Operating Temperature[3]	-55 to +85 °C	REACH Status[4]	REACH Unaffected
Storage Temperature	-55 to +100 °C	Enclosure Material	Aluminum
Nominal Weight	400 g (14.1 oz)	Connectors Material	Stainless Steel
Operating Humidity	10-90% (non-condensing)	Contacts Material	Beryllium Copper, Gold Plated
Operating Environment	Indoor Use Only	Insulators Material	Virgin PTFE
HTSUS Code	8548.00.0000	Finish	Green Paint
ECCN	EAR99	Country of Origin	United States of America

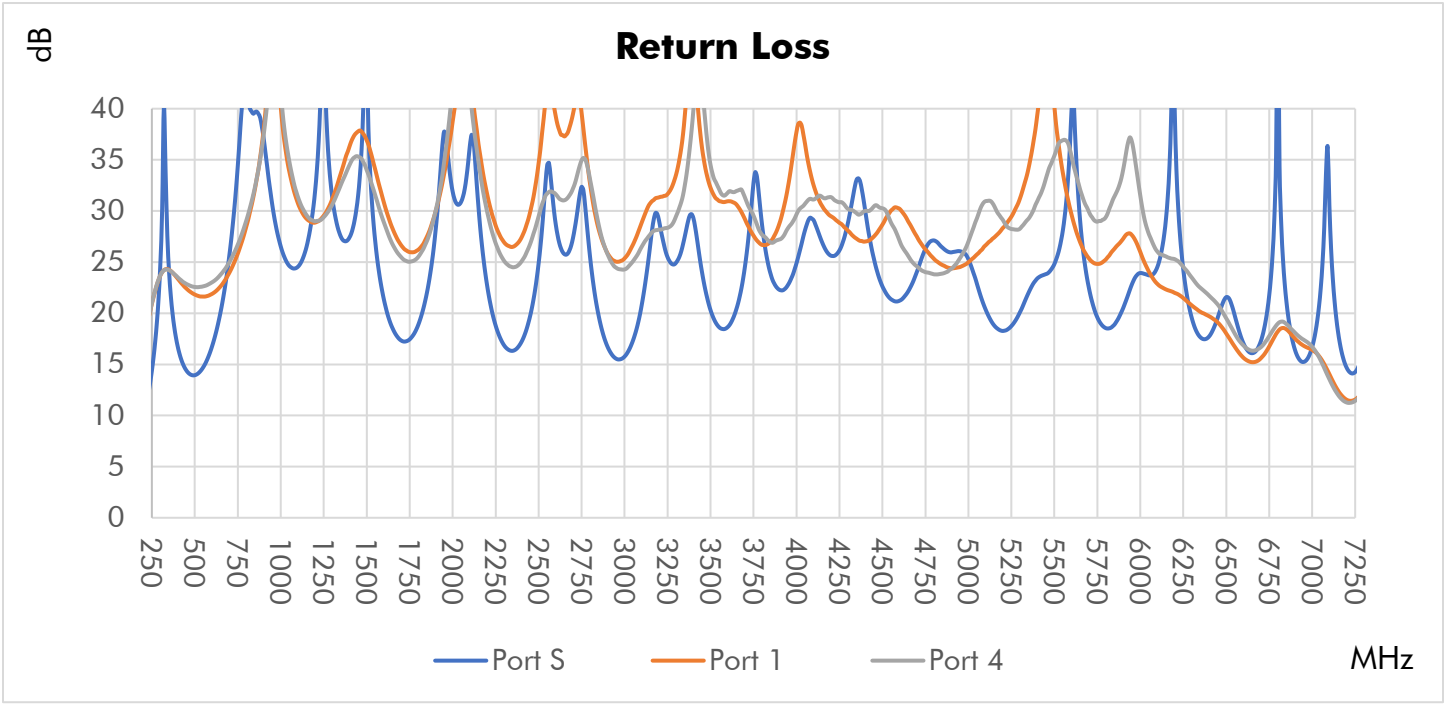
1. With reference to average.
2. All output ports should be terminated in a 50-ohm load with 1.2:1 max VSWR.
3. Electrical specifications are tested at +25 °C.
4. To the best of our knowledge at the time of publication.

Typical Performance at +25 °C

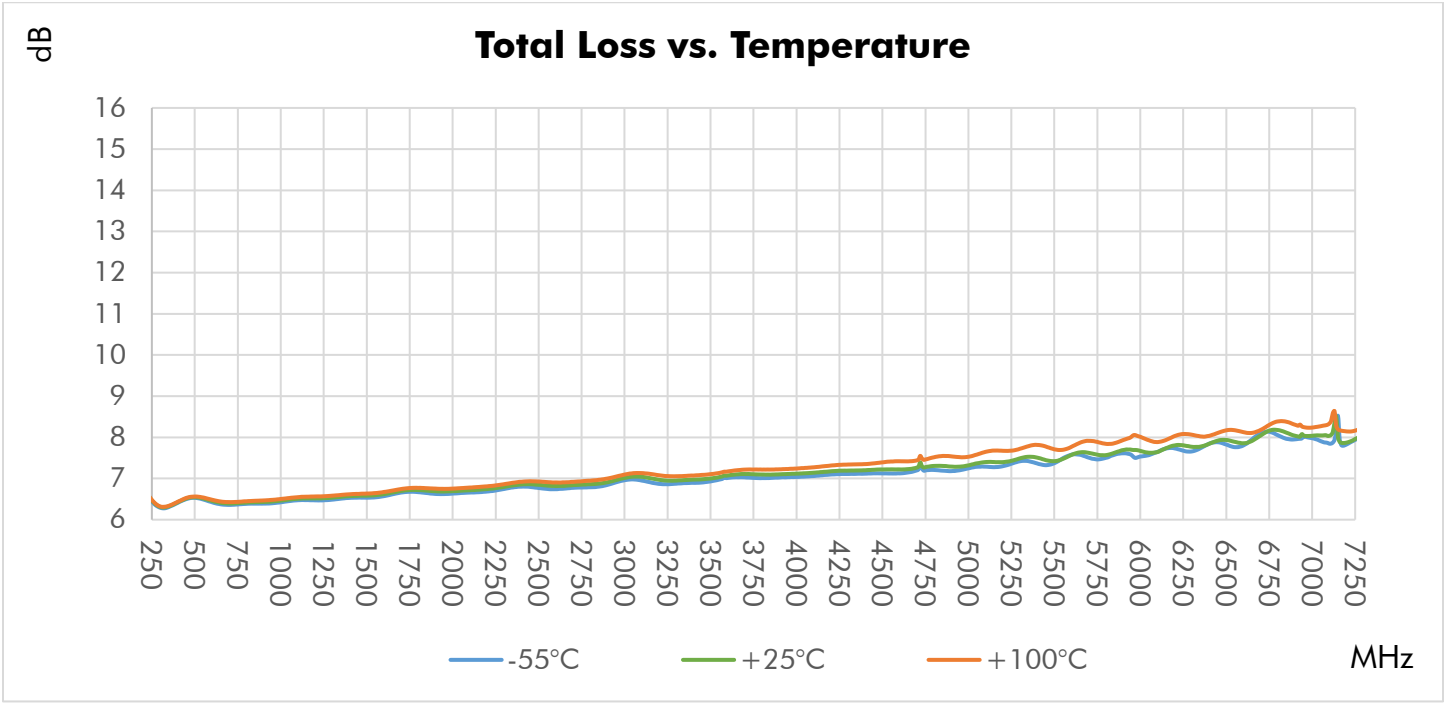


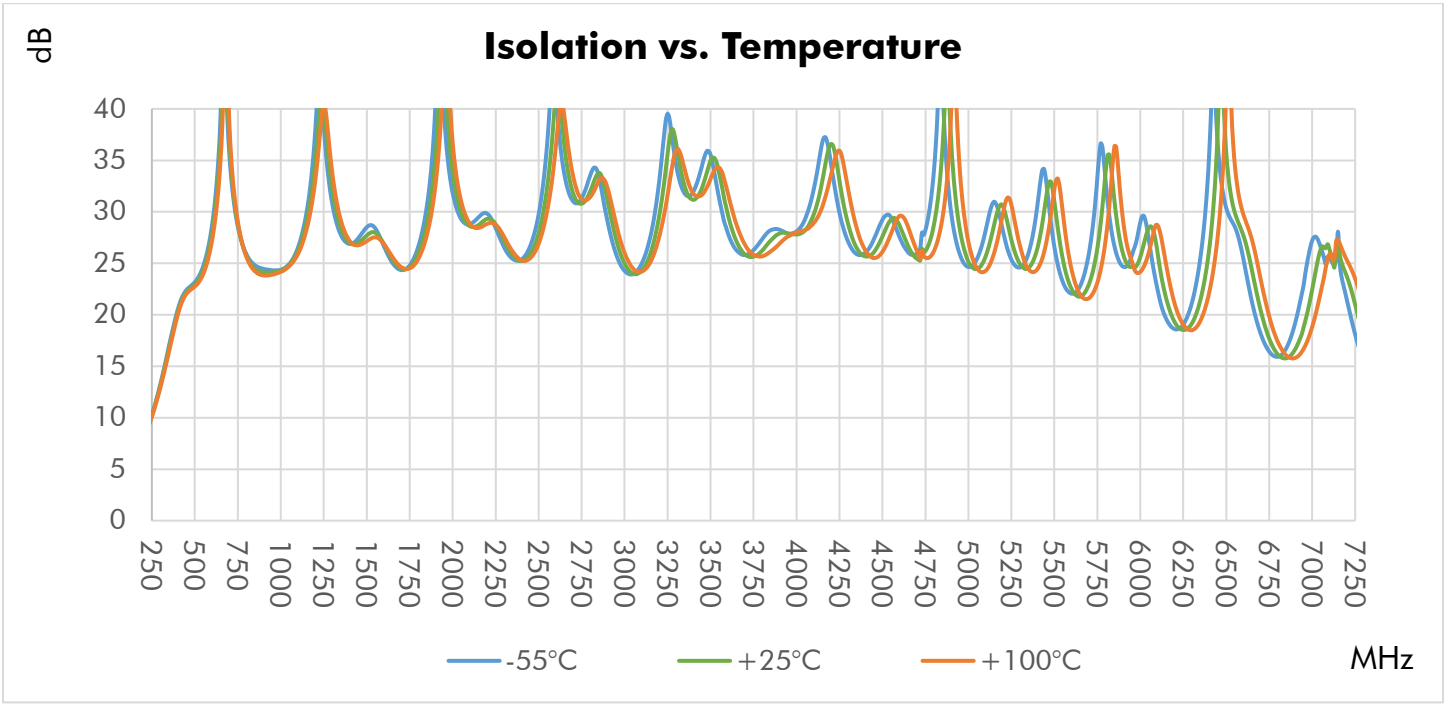


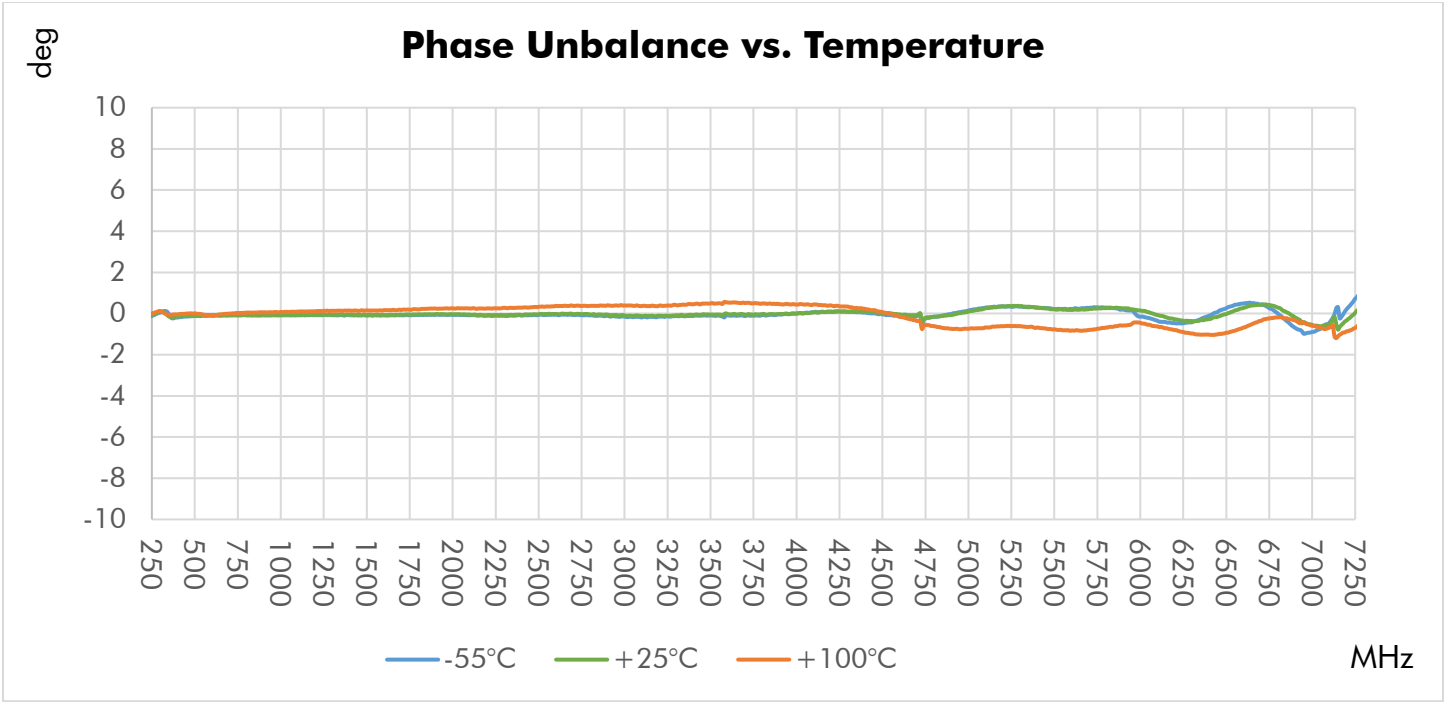

Isolation
dB
40
35
30
25
20
15
10
5
0
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
3500
3750
4000
4250
4500
4750
5000
5250
5500
5750
6000
6250
6500
6750
7000
7250
Iso 1-2
Iso 1-4
MHz

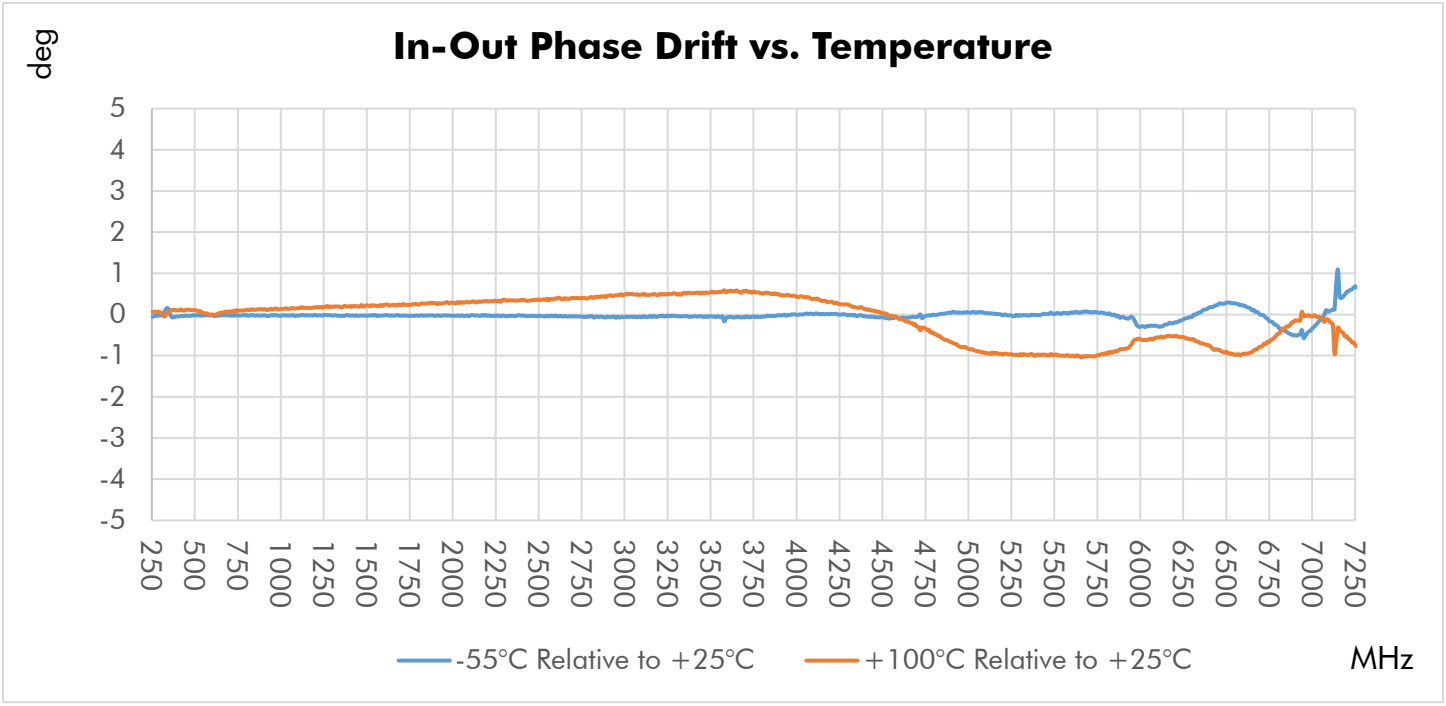

Return Loss
dB
40
35
30
25
20
15
10
5
0
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
3500
3750
4000
4250
4500
4750
5000
5250
5500
5750
6000
6250
6500
6750
7000
7250
Port S
Port 1
Port 4
MHz

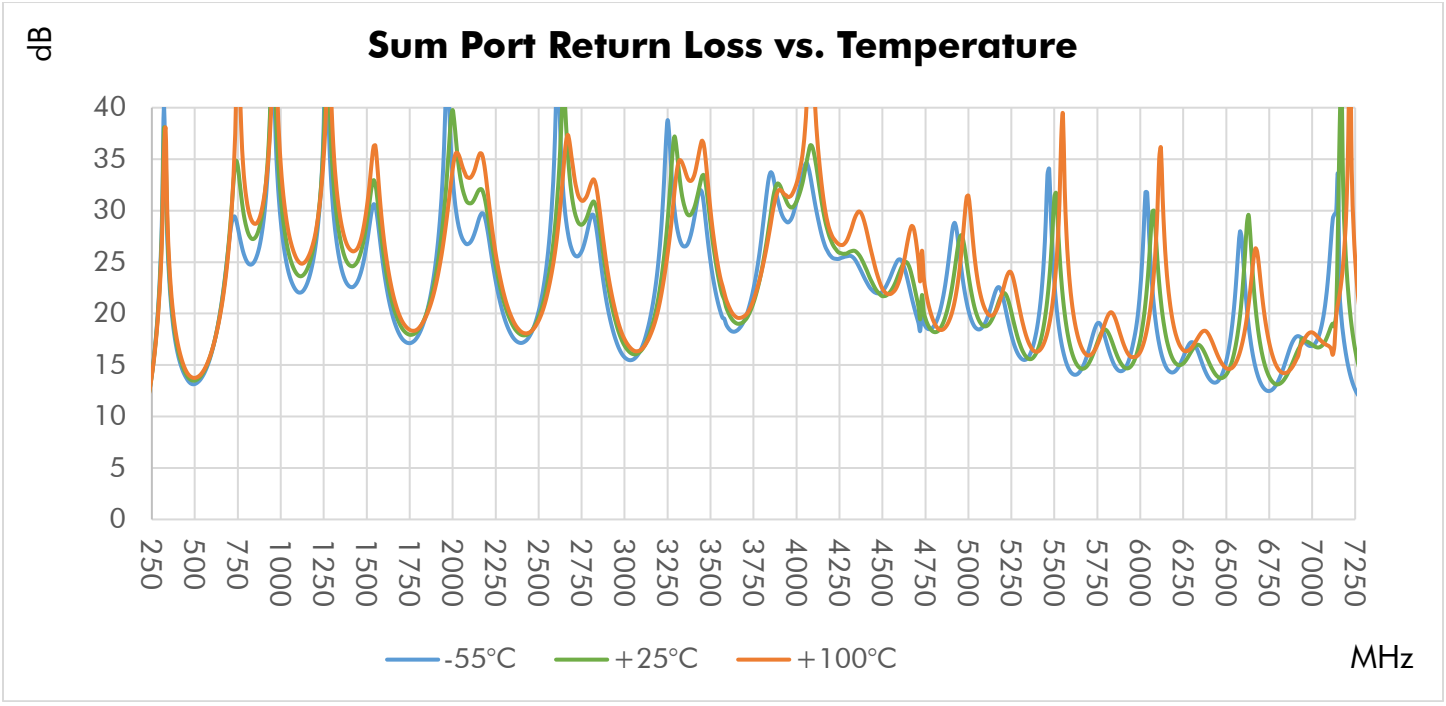
Typical Performance Over Temperature

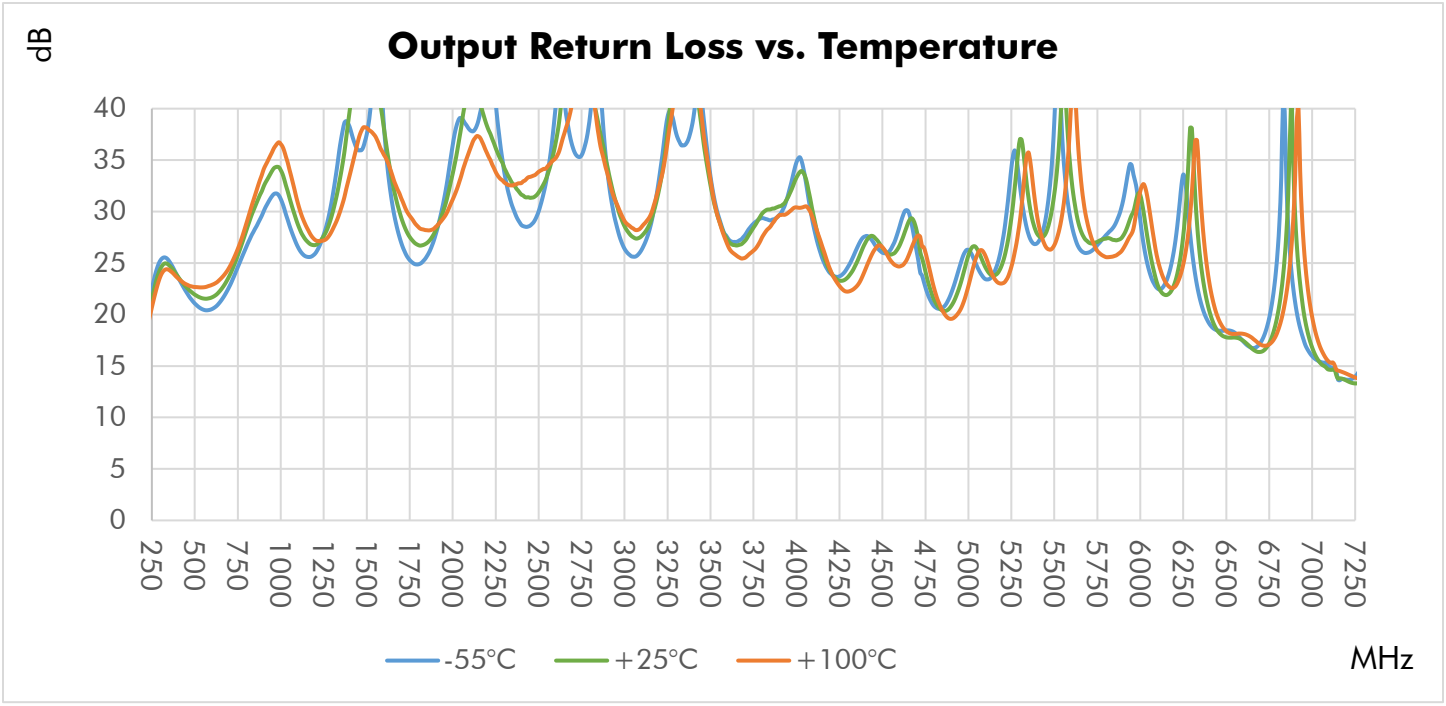




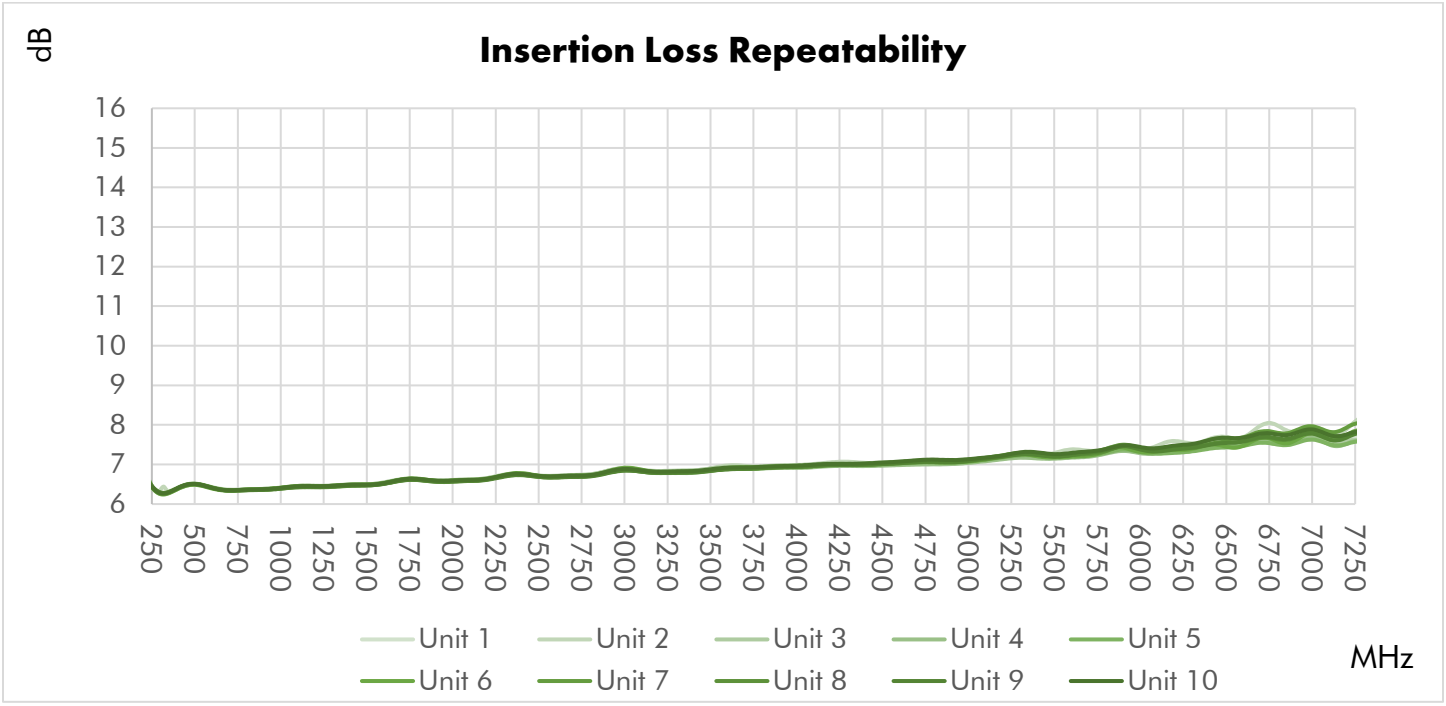

Phase Unbalance vs. Temperature
deg
10
8
6
4
2
0
-2
-4
-6
-8
-10
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
3500
3750
4000
4250
4500
4750
5000
5250
5500
5750
6000
6250
6500
6750
7000
7250
-55°C
+25°C
+100°C
MHz

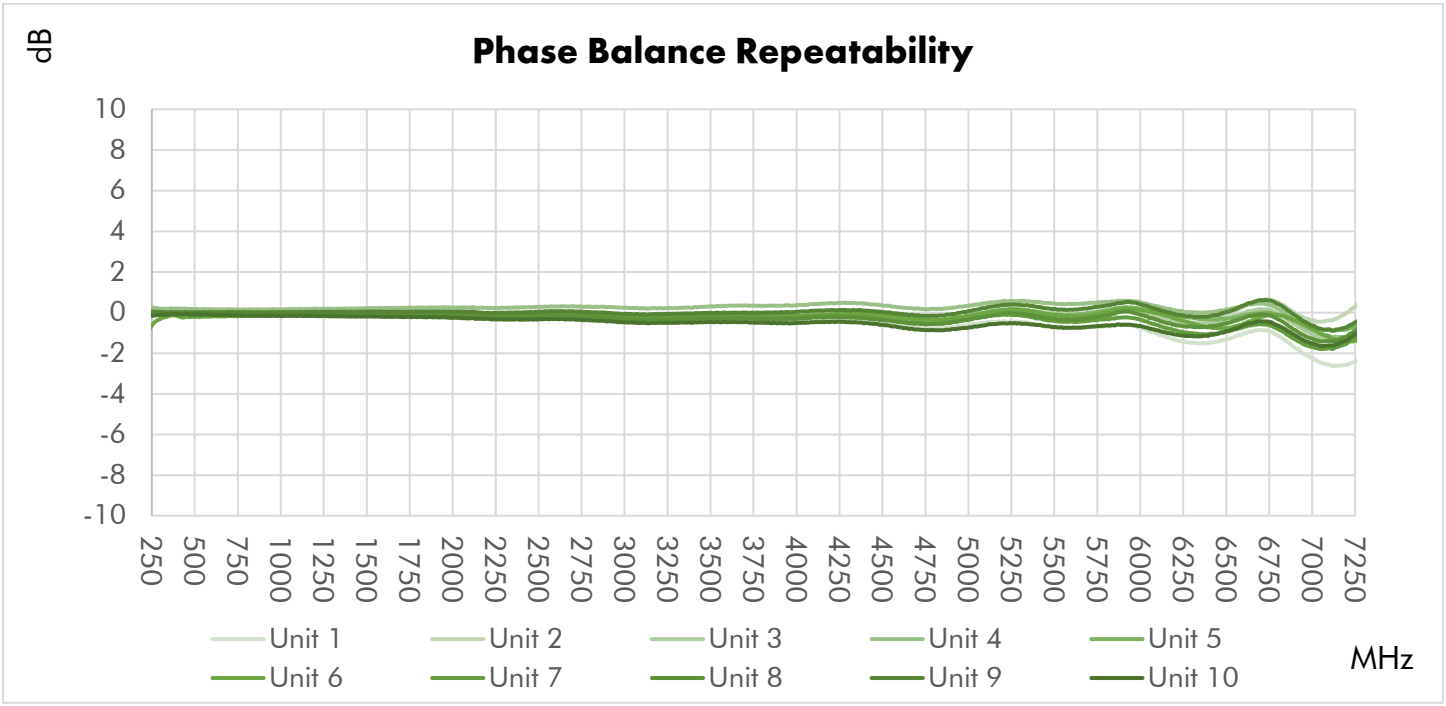

In-Out Phase Drift vs. Temperature
deg
5
4
3
2
1
0
-1
-2
-3
-4
-5
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
3500
3750
4000
4250
4500
4750
5000
5250
5500
5750
6000
6250
6500
6750
7000
7250
-55°C Relative to +25°C
+100°C Relative to +25°C
MHz

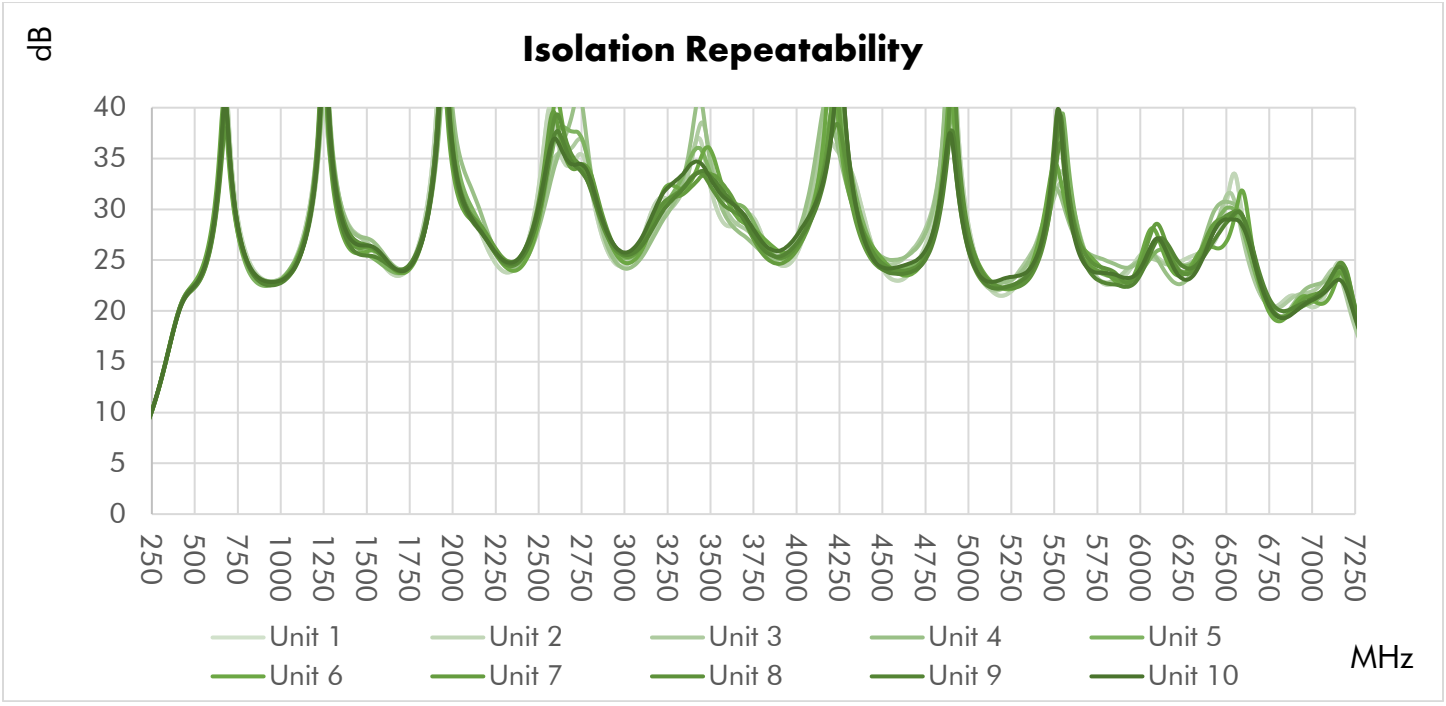

Sum Port Return Loss vs. Temperature
dB
40
35
30
25
20
15
10
5
0
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
3500
3750
4000
4250
4500
4750
5000
5250
5500
5750
6000
6250
6500
6750
7000
7250
-55°C
+25°C
+100°C
MHz

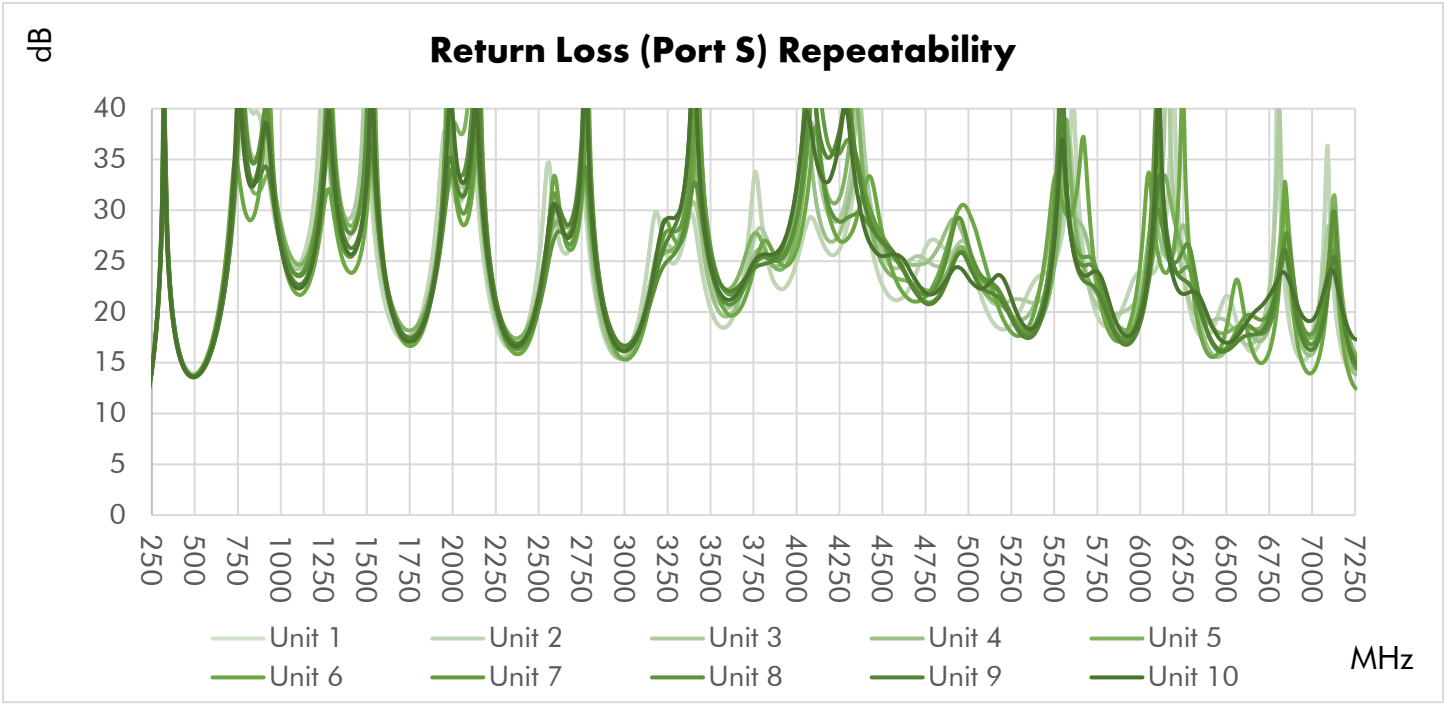

Output Return Loss vs. Temperature
dB
40
35
30
25
20
15
10
5
0
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
3500
3750
4000
4250
4500
4750
5000
5250
5500
5750
6000
6250
6500
6750
7000
7250
-55°C
+25°C
+100°C
MHz

Repeatability in Production



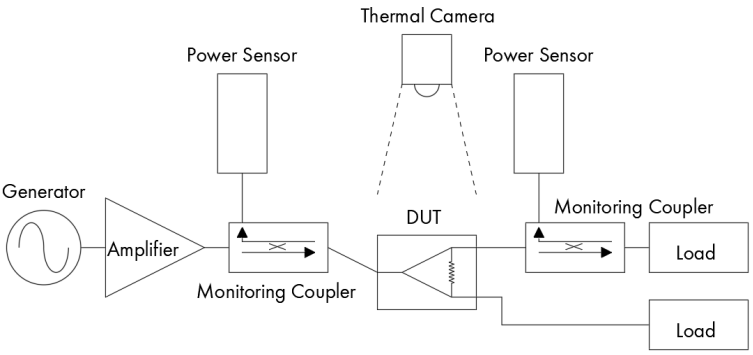
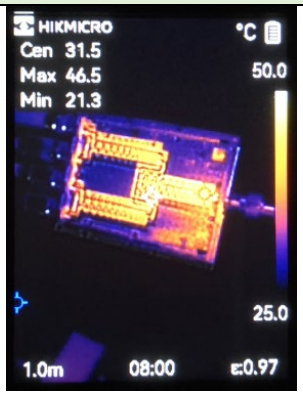



Isolation Repeatability
dB
40
35
30
25
20
15
10
5
0
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
3500
3750
4000
4250
4500
4750
5000
5250
5500
5750
6000
6250
6500
6750
7000
7250
Unit 1
Unit 2
Unit 3
Unit 4
Unit 5
Unit 6
Unit 7
Unit 8
Unit 9
Unit 10
MHz

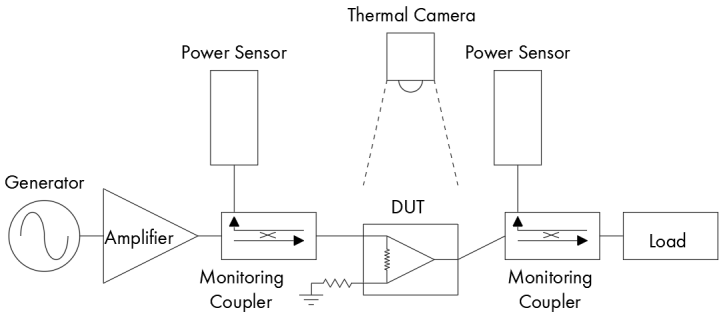
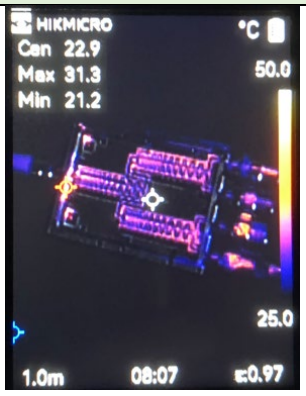
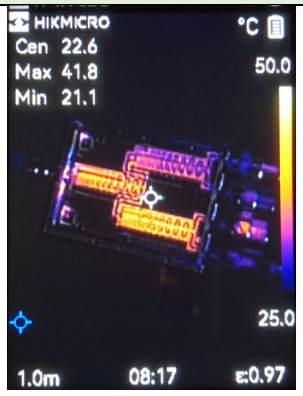

Return Loss (Port S) Repeatability
dB
40
35
30
25
20
15
10
5
0
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
3500
3750
4000
4250
4500
4750
5000
5250
5500
5750
6000
6250
6500
6750
7000
7250
Unit 1
Unit 2
Unit 3
Unit 4
Unit 5
Unit 6
Unit 7
Unit 8
Unit 9
Unit 10
MHz

Reliability Testing

RF power test was performed to determine the input power required to produce a nominal temperature rise of 20°C at the hottest point. The test was performed at room temperature without forced air. A heatsink was not used unless it came standard with the product.

Forward Direction RF Power Test Setup Diagram	Initial Temperature	Final Temperature
	 (RF power applied from the right)	 (RF power applied from the right)

- 70 watts CW at 500MHz was applied to the DUT input for a duration of 10 minutes.
- The DUT temperature increased from 22.7°C (initial, center marker) to 46.5°C (final, max marker), resulting in a 23.8°C rise.

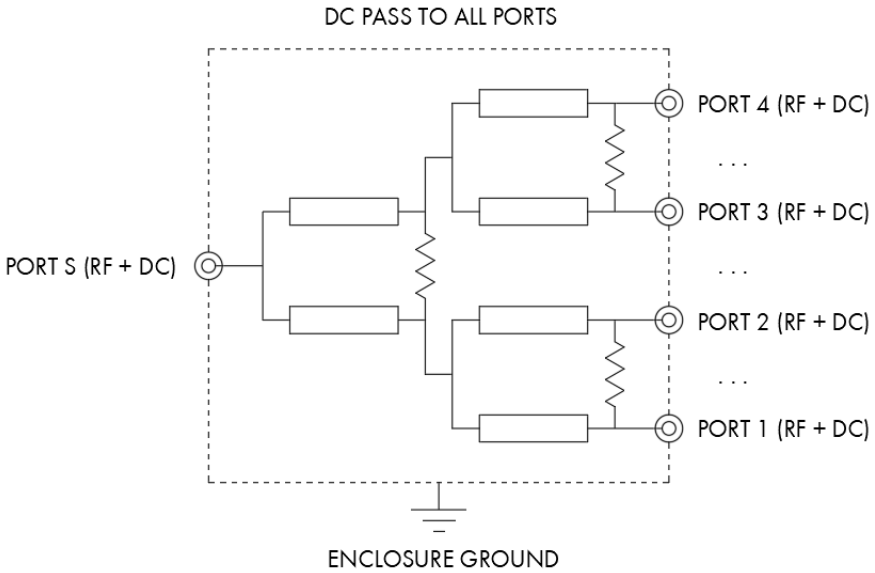
Reverse Direction RF Power Test Setup Diagram	Initial Temperature	Final Temperature
	 (RF power applied from the right)	 (RF power applied from the right)

- 3 watts CW at 500MHz was applied to the DUT output for a duration of 10 minutes.
- The DUT temperature increased from 22.9°C (initial, center marker) to 41.8°C (final, max marker), resulting in an 18.9°C rise.

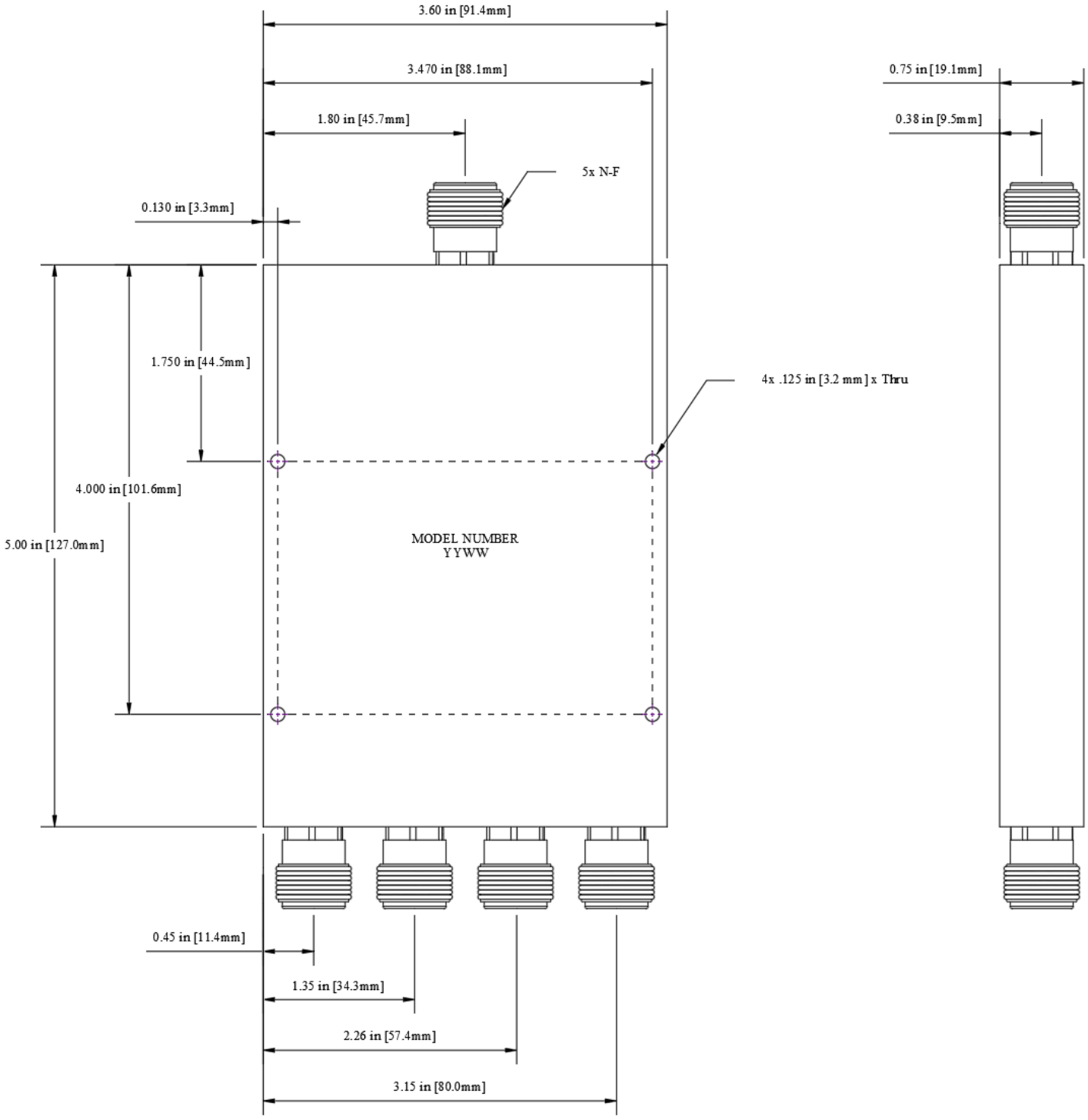
Typical Performance Data

Frequency (MHz)	Return Loss (dB)			Total Loss (dB)		Isolation (dB)	
	Port S	Port 1	Port 4	S-1	S-4	1-2	1-4
250	14.06	21.51	21.60	6.47	6.50	10.18	18.30
500	13.49	21.93	22.47	6.55	6.55	22.91	29.42
600	16.43	21.67	22.41	6.46	6.46	27.85	43.95
700	27.41	23.72	24.35	6.39	6.40	37.38	36.67
800	28.39	28.18	28.88	6.42	6.43	25.74	31.19
900	30.64	32.43	35.17	6.43	6.45	24.13	30.07
1000	31.31	34.02	40.00	6.46	6.47	24.31	31.26
1500	28.84	42.95	42.29	6.58	6.58	27.70	30.80
2000	39.77	33.68	32.39	6.69	6.67	33.87	42.67
2500	19.65	31.86	30.79	6.85	6.81	27.95	34.54
3000	16.88	28.57	31.91	7.01	6.97	24.98	30.91
3500	28.71	32.54	29.43	7.00	6.94	34.98	35.92
4000	30.88	33.31	41.89	7.12	7.05	27.80	38.08
4500	21.69	26.47	28.51	7.22	7.14	27.61	30.77
5000	23.78	25.74	29.09	7.32	7.22	25.16	34.00
5500	31.29	31.74	33.31	7.42	7.32	31.01	37.49
6000	17.50	31.61	36.96	7.67	7.52	25.62	26.55
6500	14.06	17.79	20.38	7.94	7.74	35.73	27.48
7000	16.97	16.78	20.10	8.04	7.84	22.45	25.74
7500	17.05	19.97	24.47	7.94	7.80	14.39	33.68
8000	21.44	13.30	13.01	8.35	8.29	12.03	25.47

Simplified Electrical Schematic



Outline Dimensions



Outline drawing: OL-4166-N
Dimensions are in inches, [mm] shown for convenience.
Tolerances on 2-pl decimals: ±.03. 3-pl decimals: ± .015.

The information contained in this document is accurate to the best of our knowledge and representative of the product described herein at the date of publication. It may be necessary to make modifications to the product and/or documentation of the product. Werbel Microwave LLC reserves the right to make such changes as required without notice. Unless otherwise stated, all specifications and dimensions are nominal. Werbel Microwave LLC does not make any representation or warranty regarding the suitability of the product described herein for any particular purpose or application, and Werbel Microwave LLC does not assume any liability arising out of the use of any part of documentation. This document gives only a description of the product(s) and shall not form part of any contract. Please contact a Werbel Microwave LLC Applications Engineer for the most current specification drawing.

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