WERBEL MICROWAVE LLC
628 State Route 10, Unit 14
Whippany, New Jersey 07981
Sales@WerbelMicrowave.com - www.WerbelMicrowave.com

High Power Directional Coupler, 690-2700MHz, 40dB, N-Male or Female Input, 50Ω

HIGH DIRECTIVITY… 30dB TYPICAL PERFORMANCE!

WMADC-0.7-2.7-40DB-SERIES

The WMADC-0.7-2.7-40DB-SERIES is a high-power 40 dB directional coupler covering 690 to 2700 MHz, supporting key cellular, LTE, and wireless infrastructure bands. Built on an air dielectric coaxial structure, this design delivers low insertion loss, excellent power handling, and exceptional directivity for accurate forward and reverse power discrimination.

Unlike many broadband couplers that prioritize ultra-flat coupling, this model is engineered to maximize directivity across the band, ensuring cleaner separation between forward and reflected signals. In most real-world systems, coupling variation is easily calibrated out, while poor directivity cannot be corrected—making this approach better aligned with high-power measurement accuracy and system protection.

Typical applications include RF power monitoring, transmitter protection, VSWR measurement, distributed antenna systems (DAS), base station infrastructure, and general-purpose RF test setups requiring reliable sampling of high-power signals.

The series is configurable in single or dual configurations. The input connector is offered with a standard N-Female, or optionally an N-Male for direct amplifier connection—eliminating unnecessary adapters, reducing mismatch, and preserving system integrity at high power.

Electrical Specifications at +25°C, Sea Level

Parameter		Low Band	Mid Band	High Band	Unit
Frequency Range		0.69 – 1	1 – 2	2 – 2.7	GHz
Impedance			50		Ω
Coupling Nominal Value		41.0	40.0	39.0	dB
Coupling Accuracy (±) deviation from nominal		2.0	2.0	2.0	dB, typ.
Coupling Flatness (±)		1.5	1.0	1.5	dB, typ.
Directivity		25	25	25	dB, min.
Mainline Loss[1]	+25°C +85°C	0.10 0.15	0.15 0.20	0.18 0.23	dB, max.
Return Loss (Input, Output)		25	25	24	dB, min.
Return Loss (Coupled)		20	20	20	dB, min.
Forward or Reverse Power, at +25°C, Sea Level (CW)[2]		500	375	300	W, max.
Forward or Reverse Power, at +85°C, Sea Level (CW)[2]		400	300	240	W, max.
Termination Power (Coupled Port max power)			1		W, max.
DC Current (Input-Output)			5		A max.

Mechanical and Environmental Specifications

Connector Interface	N Male or Female, SMA 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	207 g (single) 211 g (dual)	Connectors Material	N: Brass, Tri-Alloy Plated
Operating Humidity	10-90% (non-condensing)		SMA: Brass, Gold Plated
Operating Environment	Indoor Use Only	Contacts Material	Beryllium Copper, Gold Plated
HTSUS Code	8548.00.0000	Insulators Material	Virgin PTFE
ECCN	EAR99	Finish	Green Paint

1. Mainline loss includes coupling loss.
2. All output ports must be terminated in a 50-ohm load with 1.2:1 max VSWR. Ratings assume adequate thermal conduction to mounting surface.
3. Electrical specifications are tested at +25 °C.
4. To the best of our knowledge at the time of publication.

Explanation of Part Numbers

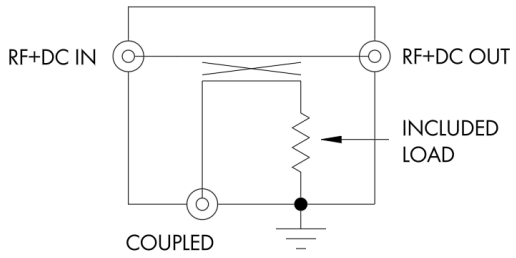
WMADC-	0.7-2.7-	40DB-	1-	NF
Product Series	Frequency (GHz)	Nominal dB Value	Configuration: 1 = Single Coupler 2 = Dual Coupler	Input Connector: NF = N Female NM = N Male

Currently available as standard models:

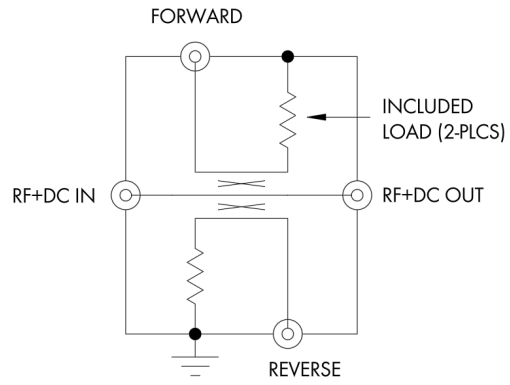
WMADC-0.7-2.7-40DB-1-NF	690-2700MHz, 40dB, Single Coupler,	N-Female Input,	N-Female Output, SMA-F Coupled
WMADC-0.7-2.7-40DB-1-NM	690-2700MHz, 40dB, Single Coupler,	N-Male Input,	N-Female Output, SMA-F Coupled
WMADC-0.7-2.7-40DB-2-NF	690-2700MHz, 40dB, Dual Coupler,	N-Female Input,	N-Female Output, SMA-F Coupled
WMADC-0.7-2.7-40DB-2-NM	690-2700MHz, 40dB, Dual Coupler,	N-Male Input,	N-Female Output, SMA-F Coupled

Functional Schematic

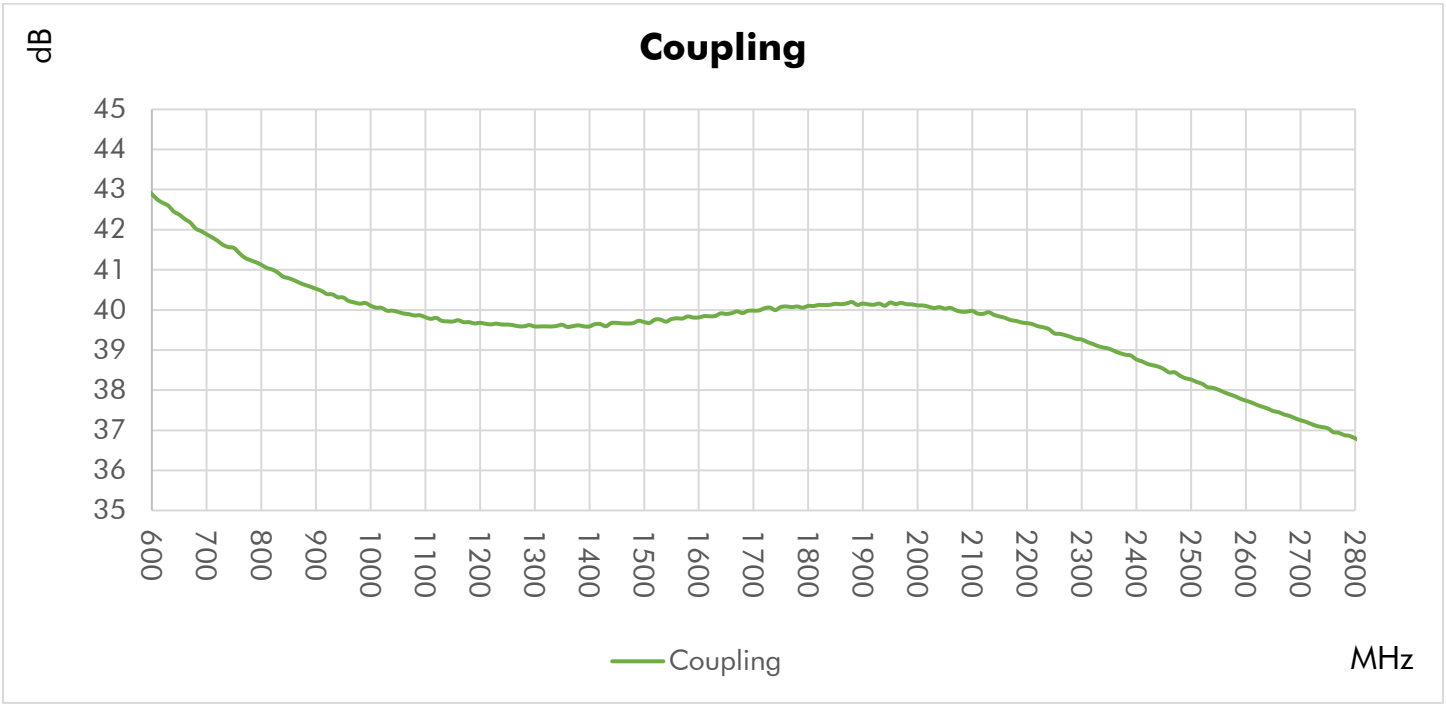
Single Coupler

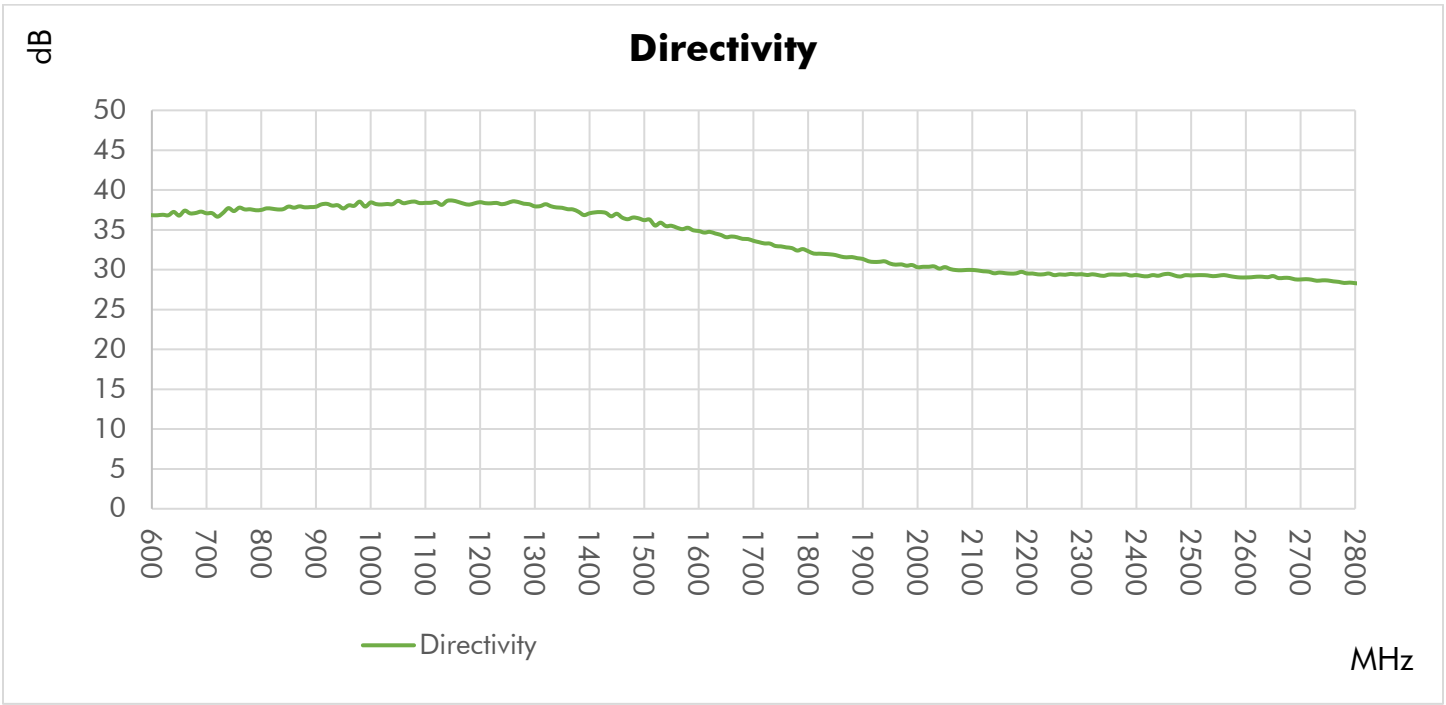


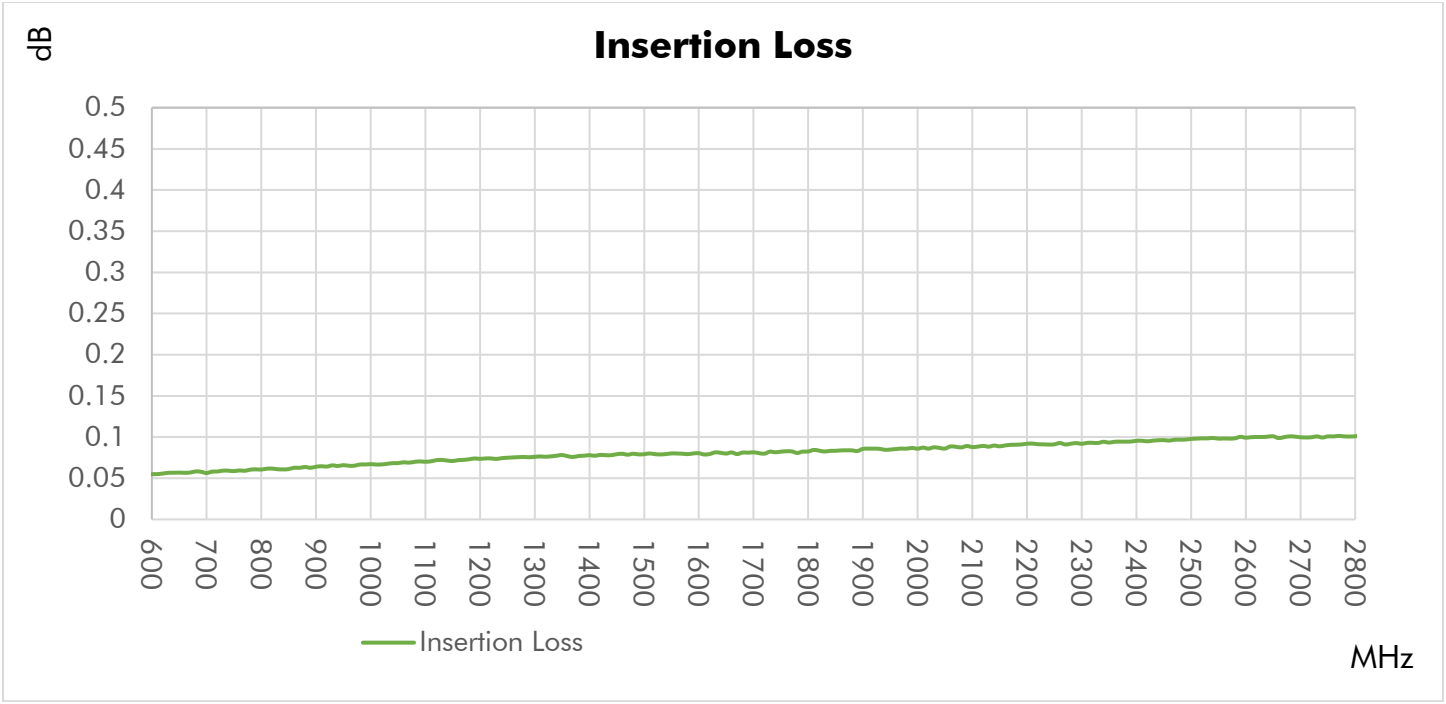
Dual Coupler

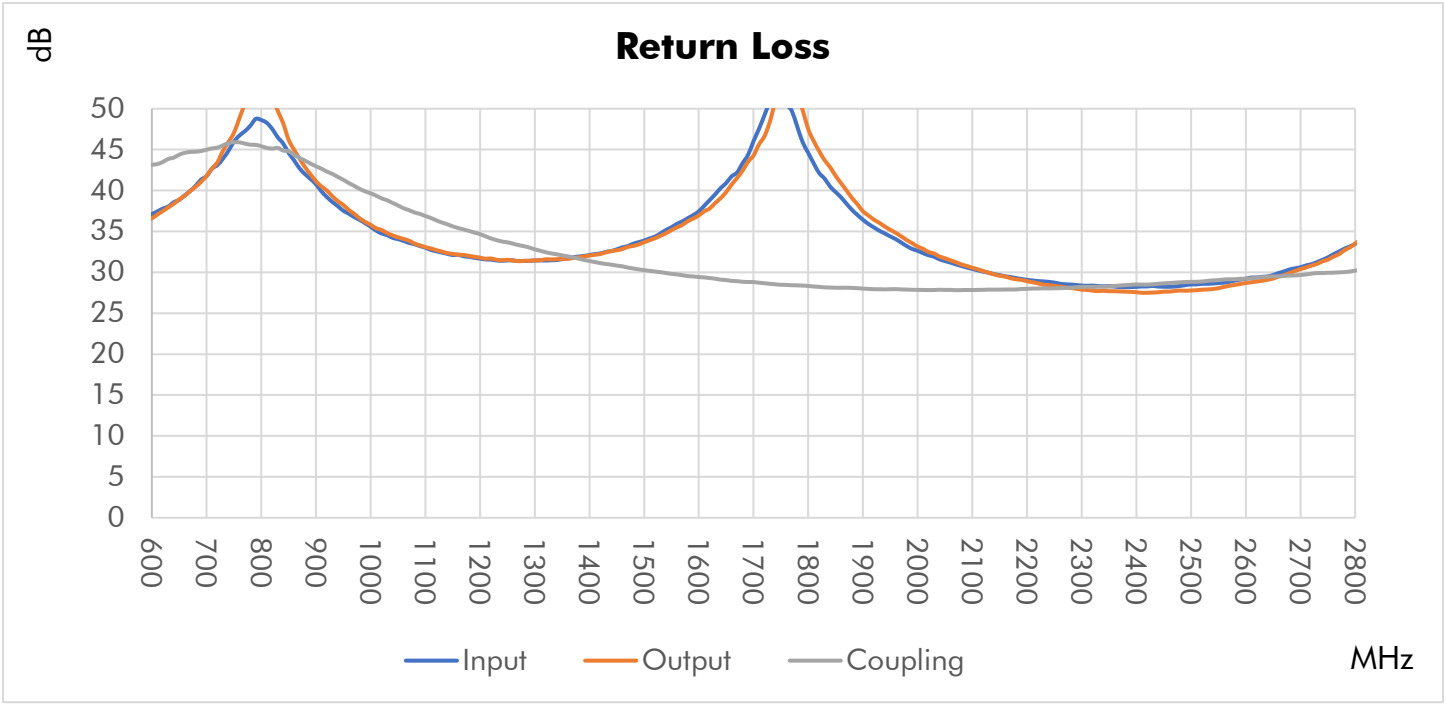


Typical Performance at +25 °C

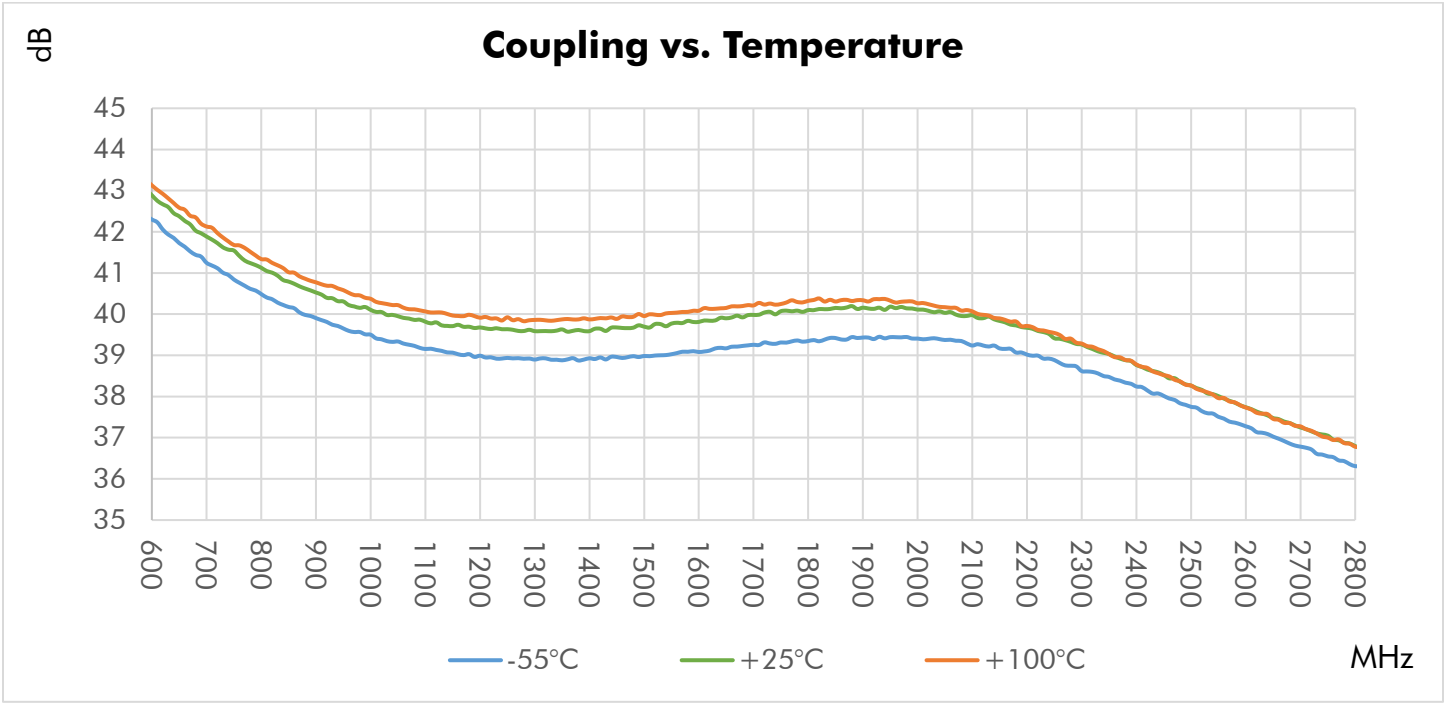


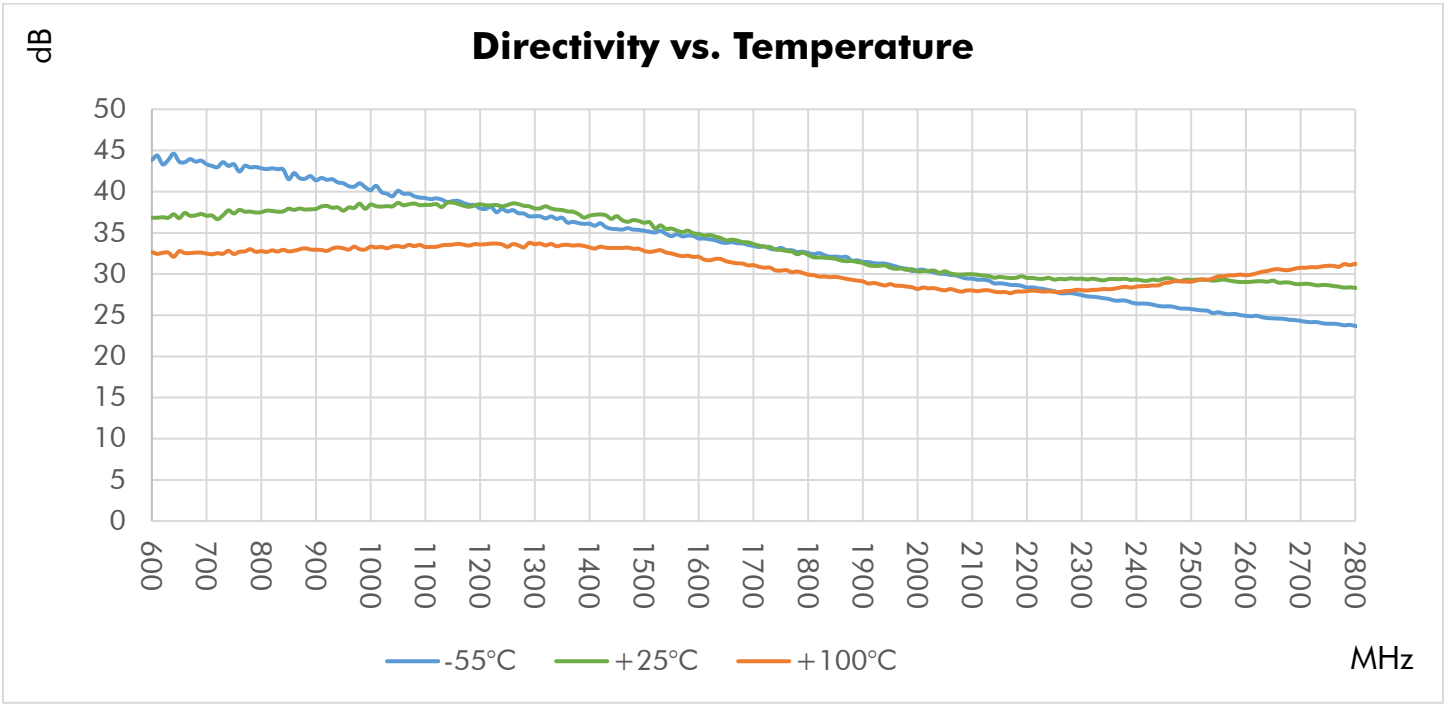


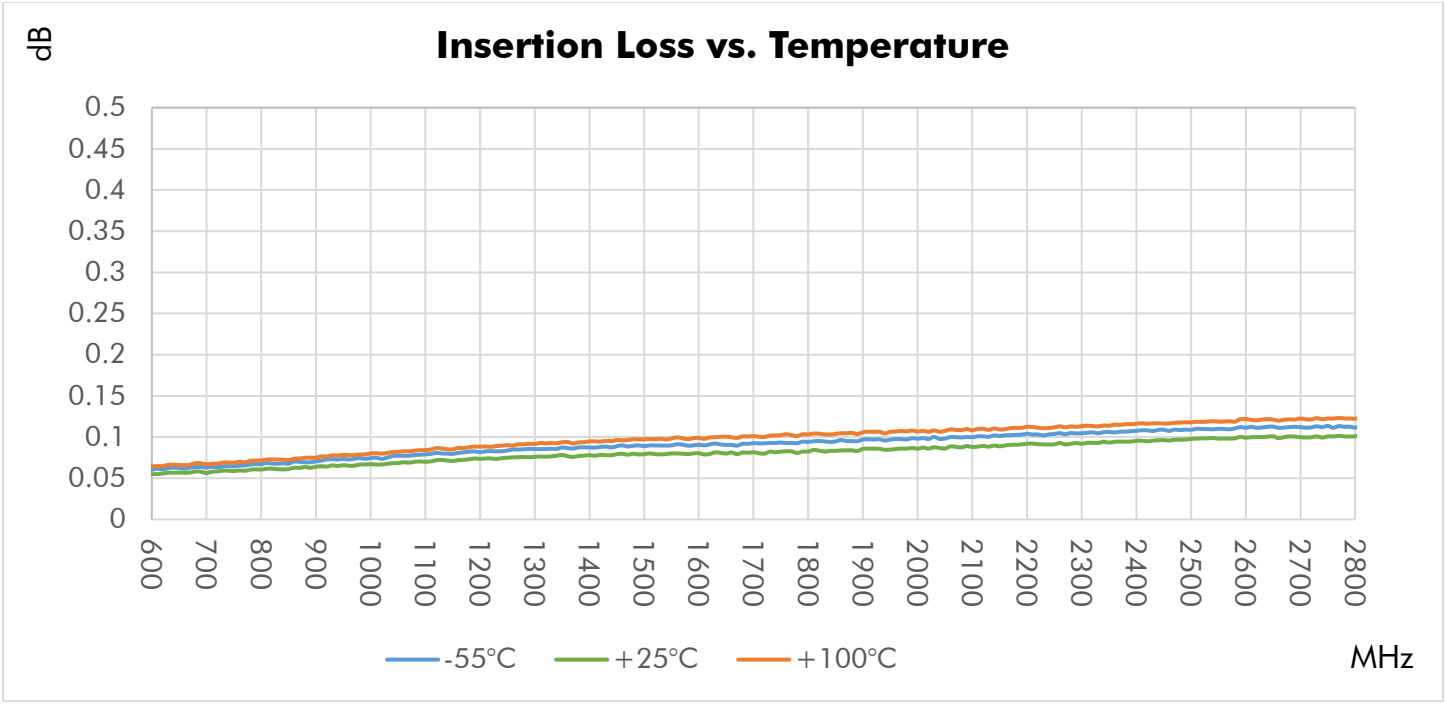

Insertion Loss
dB
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
Insertion Loss
MHz

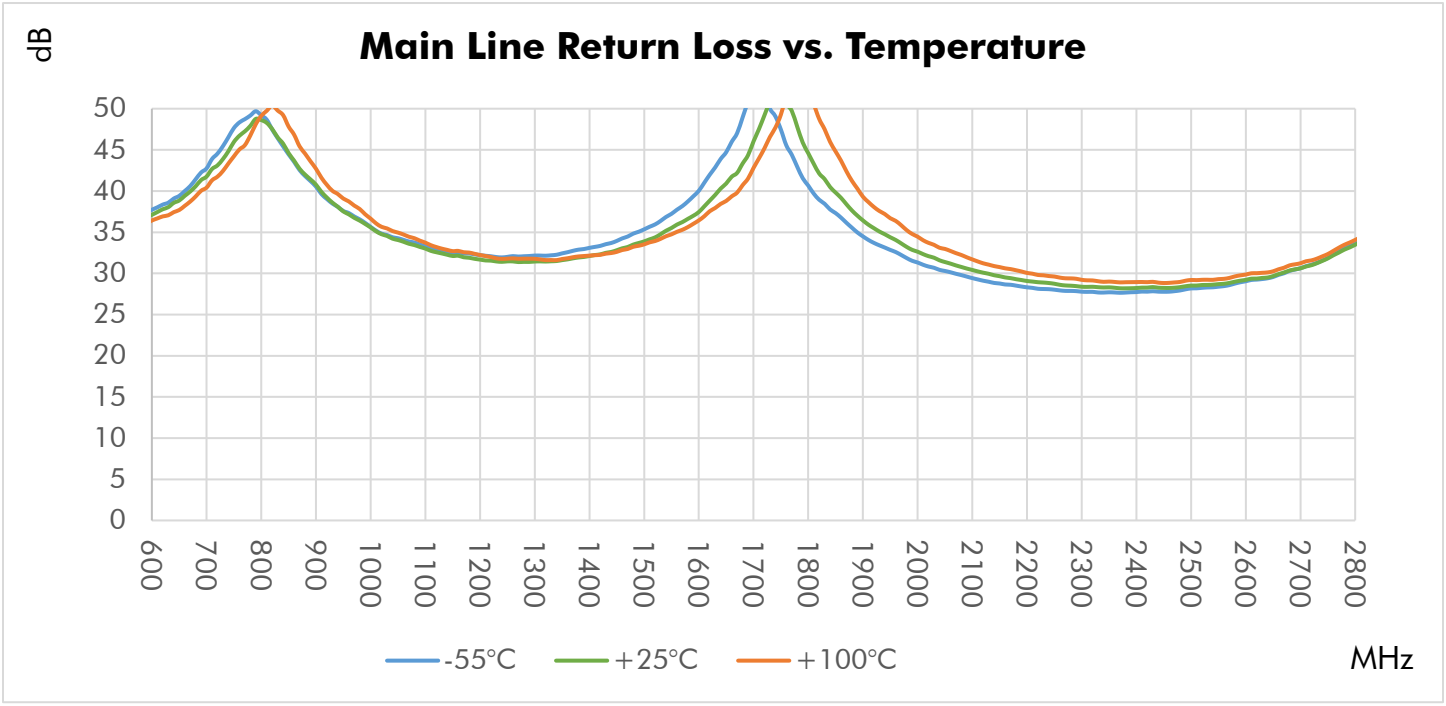

Return Loss
dB
50
45
40
35
30
25
20
15
10
5
0
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
Input
Output
Coupling
MHz

Typical Performance Over Temperature

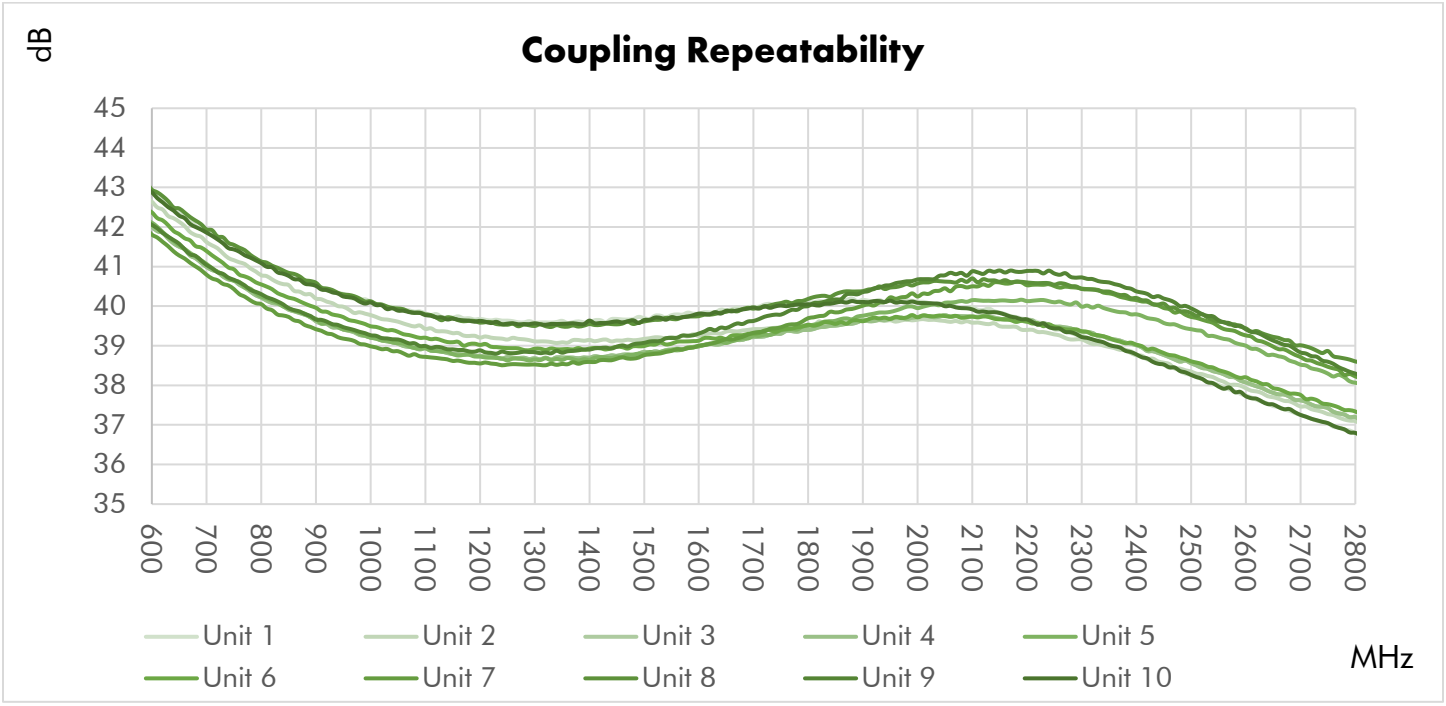


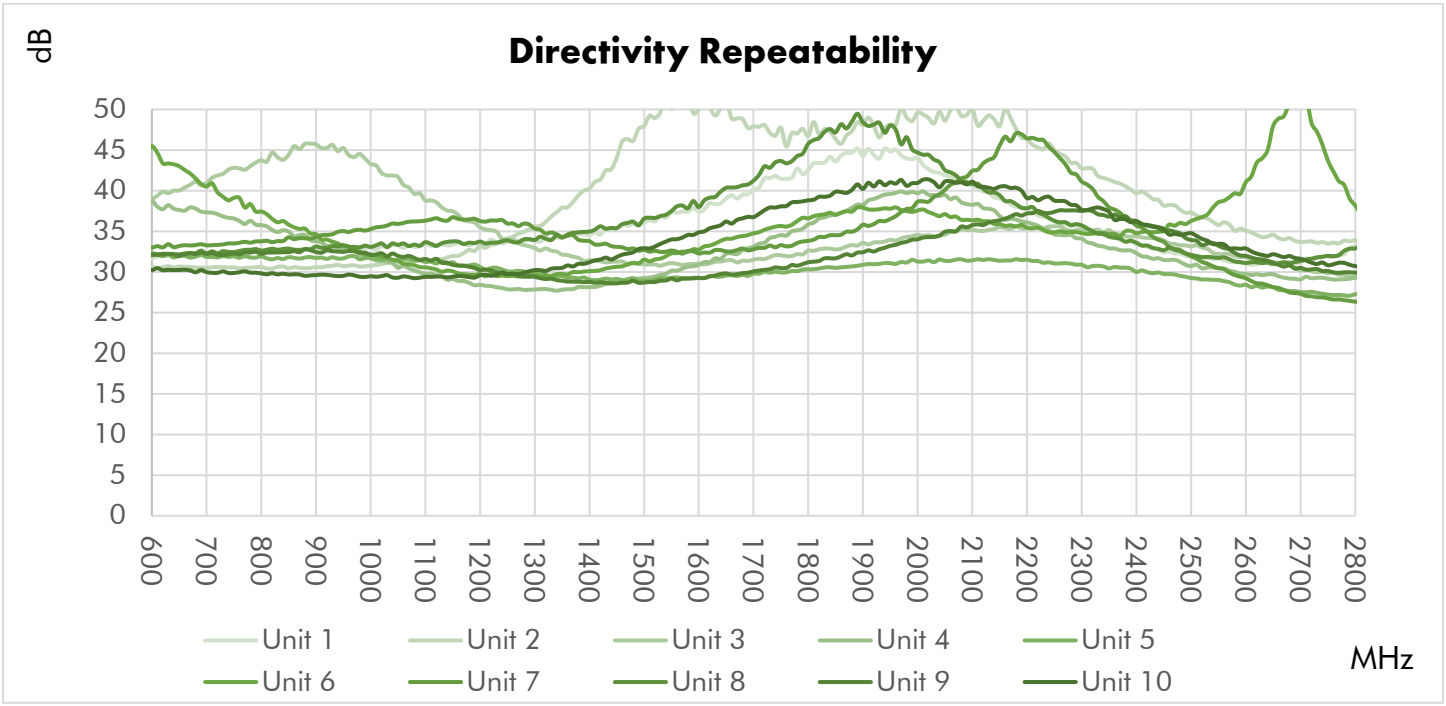


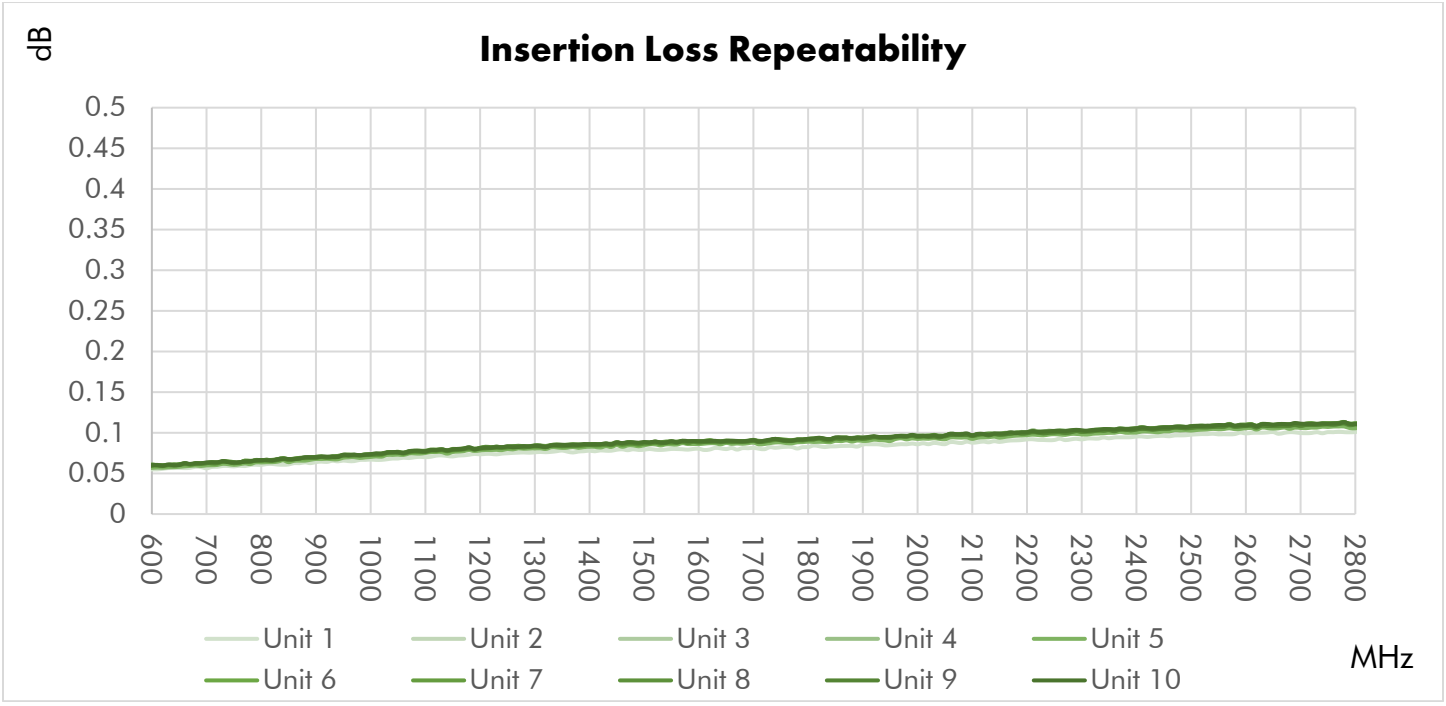

Insertion Loss vs. Temperature
dB
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
-55°C
+25°C
+100°C
MHz

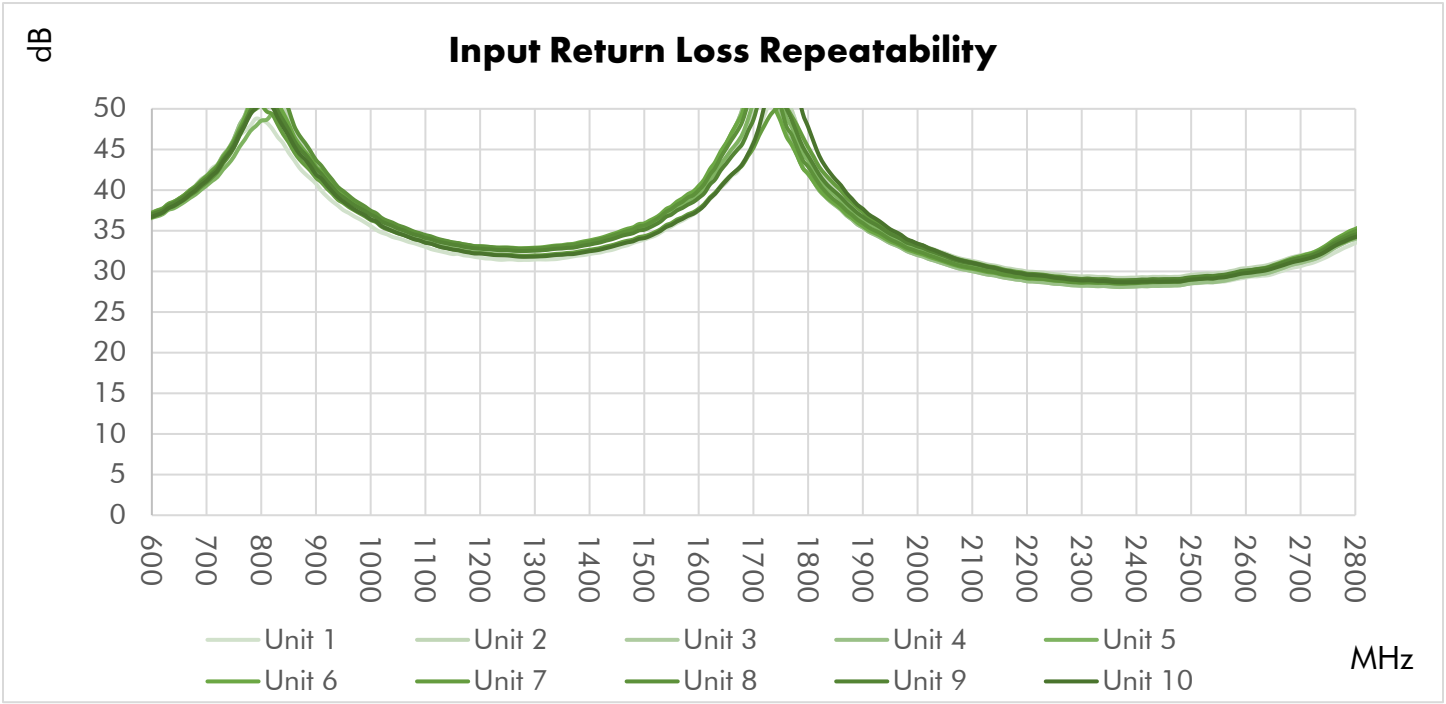

Main Line Return Loss vs. Temperature
dB
50
45
40
35
30
25
20
15
10
5
0
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
-55°C
+25°C
+100°C
MHz

Repeatability in Production






Insertion Loss Repeatability
dB
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
Unit 1
Unit 2
Unit 3
Unit 4
Unit 5
Unit 6
Unit 7
Unit 8
Unit 9
Unit 10
MHz


Input Return Loss Repeatability
dB
50
45
40
35
30
25
20
15
10
5
0
600
700
800
900
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
Unit 1
Unit 2
Unit 3
Unit 4
Unit 5
Unit 6
Unit 7
Unit 8
Unit 9
Unit 10
MHz

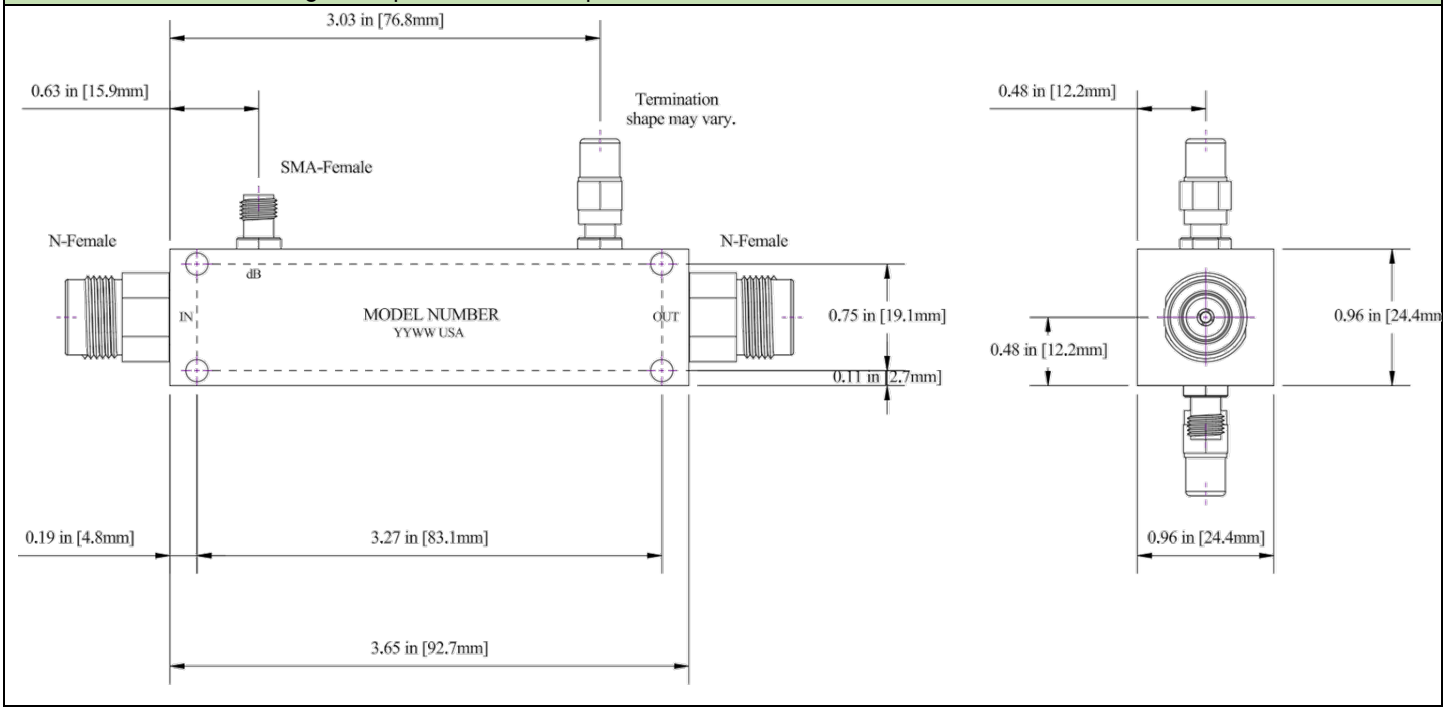
WERBEL MICROWAVE LLC
628 State Route 10, Unit 14
Whippany, New Jersey 07981
Sales@WerbelMicrowave.com - www.WerbelMicrowave.com

Typical Performance Data

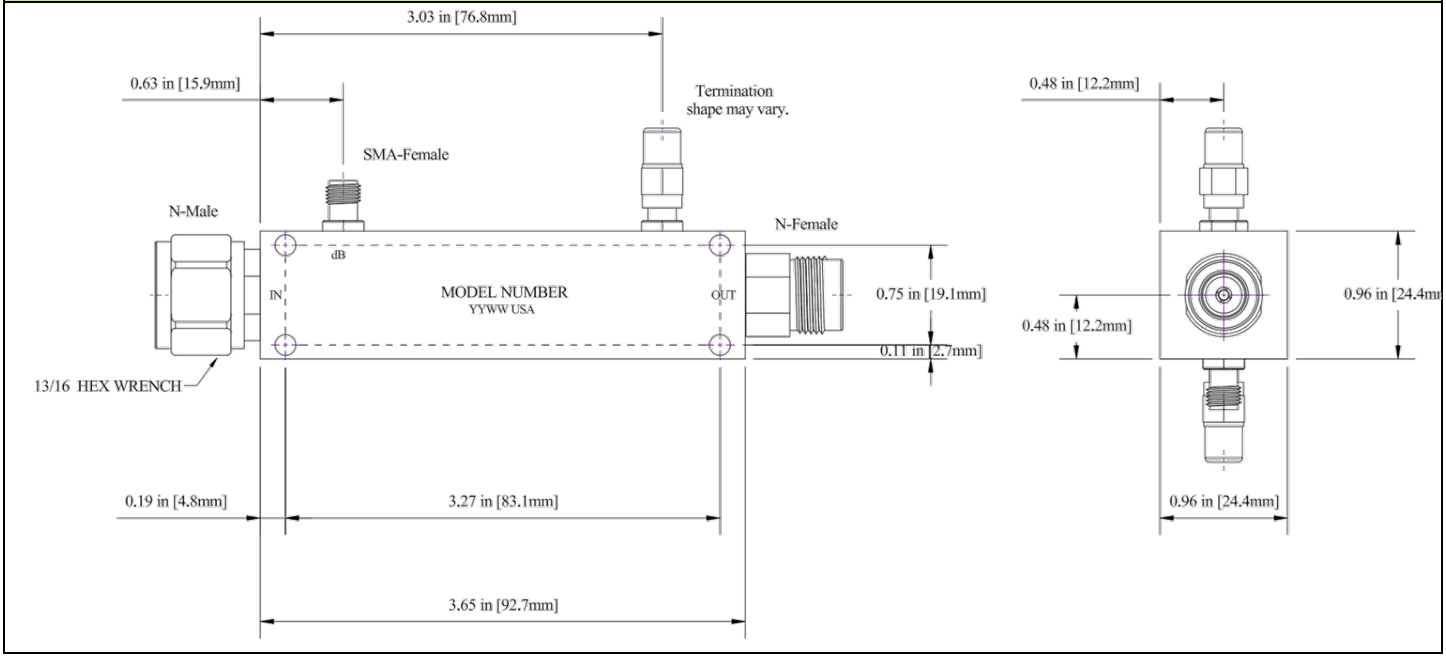
Frequency (MHz)	Return Loss (dB)			Mainline Loss (dB)	Coupling (dB)	Directivity (dB)
	In	Out	Cpl.	In-Out	In-Cpl.	
100	41.43	41.27	44.24	0.03	57.24	34.39
200	36.82	38.75	42.15	0.01	51.35	35.44
300	34.18	34.52	41.75	0.04	47.98	35.27
400	34.42	34.03	42.53	0.05	45.68	36.07
500	35.02	34.69	43.92	0.06	43.97	35.65
600	36.91	36.81	46.02	0.06	42.66	35.28
700	41.04	41.32	48.81	0.06	41.65	35.25
800	49.53	52.33	52.07	0.07	40.89	35.25
900	43.35	43.64	53.95	0.07	40.26	35.70
1000	37.75	37.67	54.72	0.07	39.79	35.75
1100	34.90	34.97	56.21	0.08	39.50	35.61
1200	33.67	33.74	60.62	0.08	39.31	36.14
1300	33.59	33.65	56.01	0.08	39.26	36.04
1400	34.62	34.58	49.06	0.09	39.29	35.72
1500	36.95	36.90	44.02	0.09	39.36	35.55
1600	42.01	42.12	40.32	0.09	39.52	34.78
1700	54.53	60.94	37.54	0.09	39.73	34.24
1800	40.97	41.67	35.24	0.09	39.97	33.25
1900	35.34	35.92	33.45	0.09	40.11	32.80
2000	32.29	32.72	31.93	0.10	40.27	31.64
2100	30.50	30.75	30.63	0.10	40.30	31.21
2200	29.45	29.52	29.53	0.10	40.18	30.84
2300	29.06	28.87	28.62	0.10	39.95	31.08
2400	29.13	28.76	27.87	0.10	39.66	31.12
2500	29.71	29.16	27.23	0.11	39.23	31.75
2600	30.80	30.34	26.65	0.11	38.79	32.46
2700	32.72	32.41	26.20	0.11	38.36	33.49
2800	36.35	36.23	25.86	0.11	37.90	34.58
2900	46.33	46.77	25.63	0.11	37.49	35.56
3000	42.04	41.68	25.56	0.12	37.15	36.27

Outline Drawings

Single Coupler, N-Female Input, Model Shown: **WMADC-0.7-2.7-40DB-1-NF**



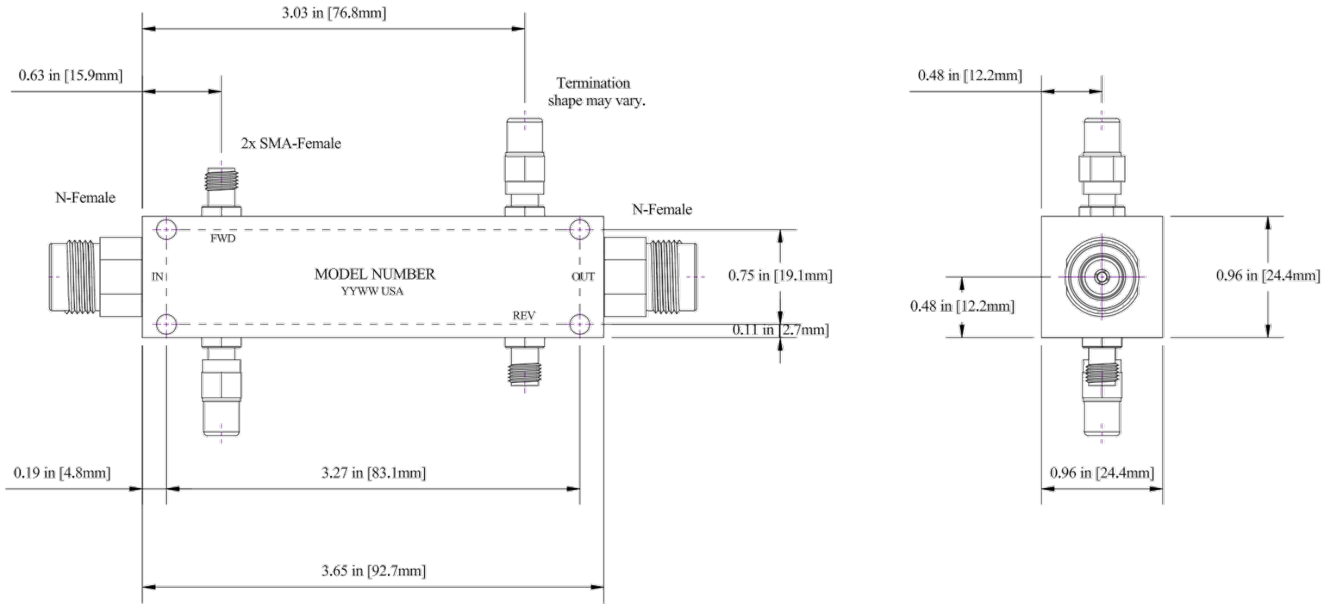
Single Coupler, N-Male Input, Model Shown: **WMADC-0.7-2.7-40DB-1-NM**



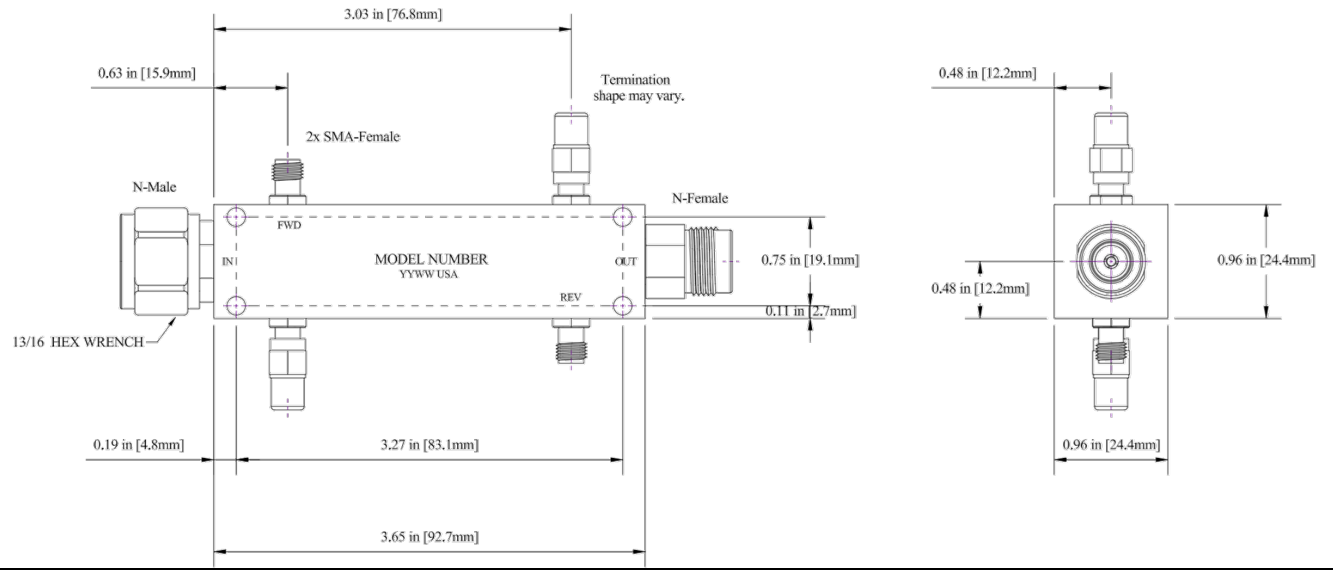
Dimensions are in inches, [mm] shown for convenience. Tolerances on 2-pl decimals: ±.03. 3-pl decimals: ± .015.

WERBEL MICROWAVE LLC
628 State Route 10, Unit 14
Whippany, New Jersey 07981
Sales@WerbelMicrowave.com - www.WerbelMicrowave.com

Dual Coupler, N-Female Input, Model Shown: **WMADC-0.7-2.7-40DB-2-NF**



Dual Coupler, N-Male Input, Model Shown: **WMADC-0.7-2.7-40DB-2-NM**



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