

REPLACEMENT PART REFERENCE GUIDE, WP4NA+

AN-10-029

Original Part:	WP4N+	
Replacement Part:	WP4NA+	

Replacement Part has been judged by Mini-Circuits Engineering as a suitable replacement to Original Part.

MECHANICAL DIMENSIONS

Case Style: DQ1225

Both the WP4N+ and WP4NA+ uses the same case style DQ1225 case style.

CONCLUSION:

1) FORM-FIT-FUNCTIONAL ANALYSIS_a:

The Replacement Part WP4NA+ has the same form and fit as the original part WP4N+

The Replacement Part maximum power handling and operating temperature on the Absolute Maximum Table were changed. The Replacement Part's maximum input power as a splitter is now +34dBm instead of the Original Part's maximum input power as a splitter of 1.5W (+31.76dBm). Replacement Part's maximum internal dissipation power is now +25dBm instead of the Original Part's maximum internal dissipation power of 0.375W (+25.75dBm).

Additionally, the Replacement Part's maximum operating temperature is now +105°C instead of the Original Part's maximum operating temperature of 85°C

Replacement Part and Original Part feature the same expected performance. See section 2 for Min. Max and Typical performance and graphs.

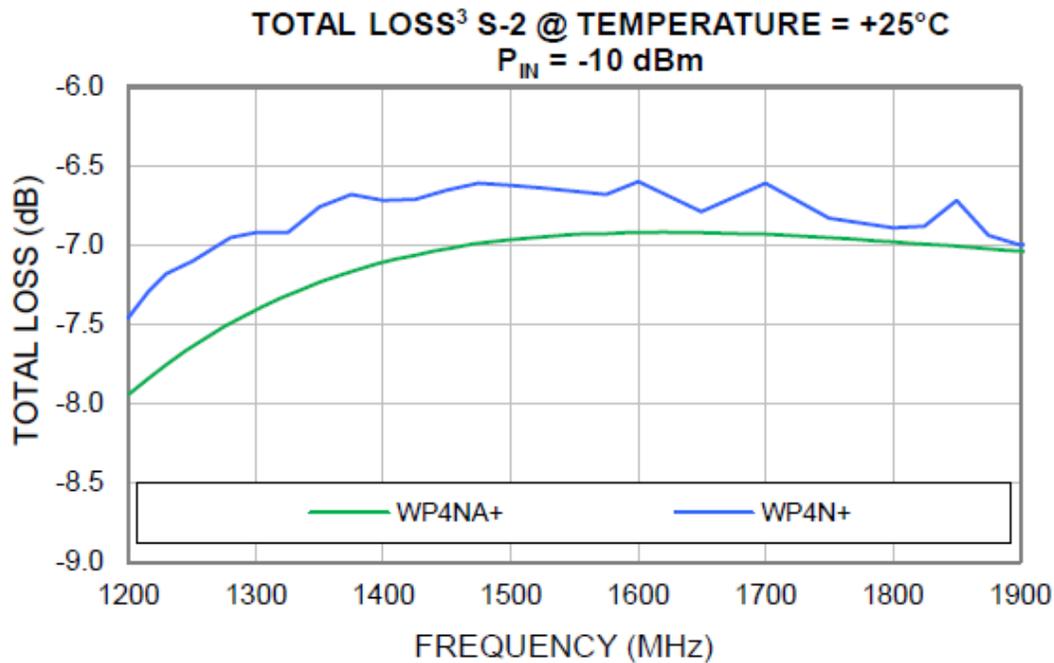
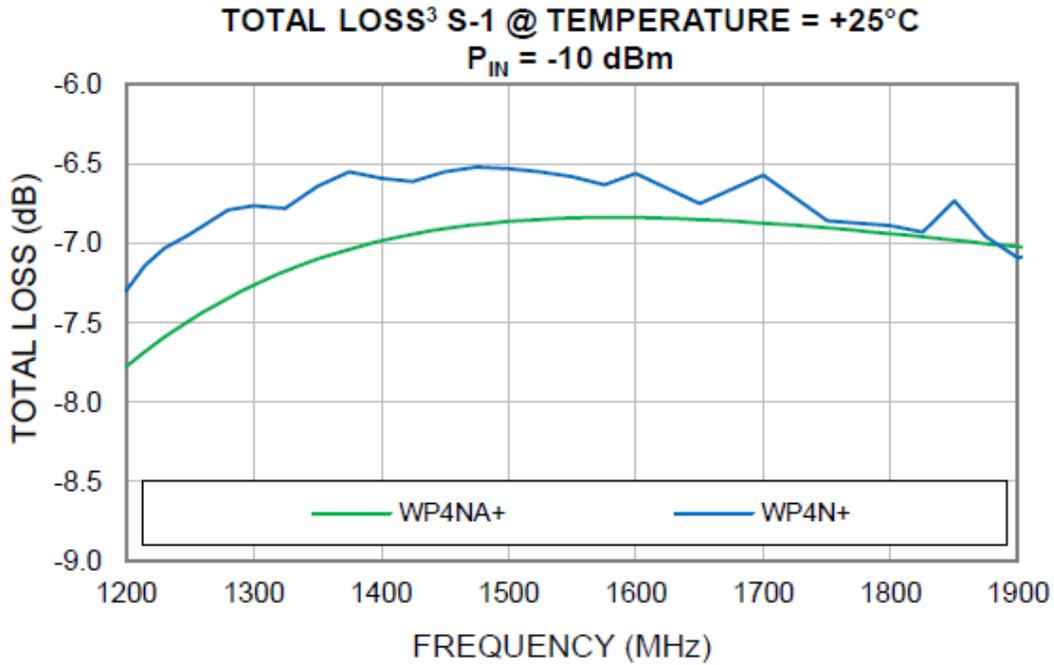
2) RF PERFORMANCE COMPARISON AT ROOM TEMPERATURE:

MODEL: WP4N+, WP4NA+

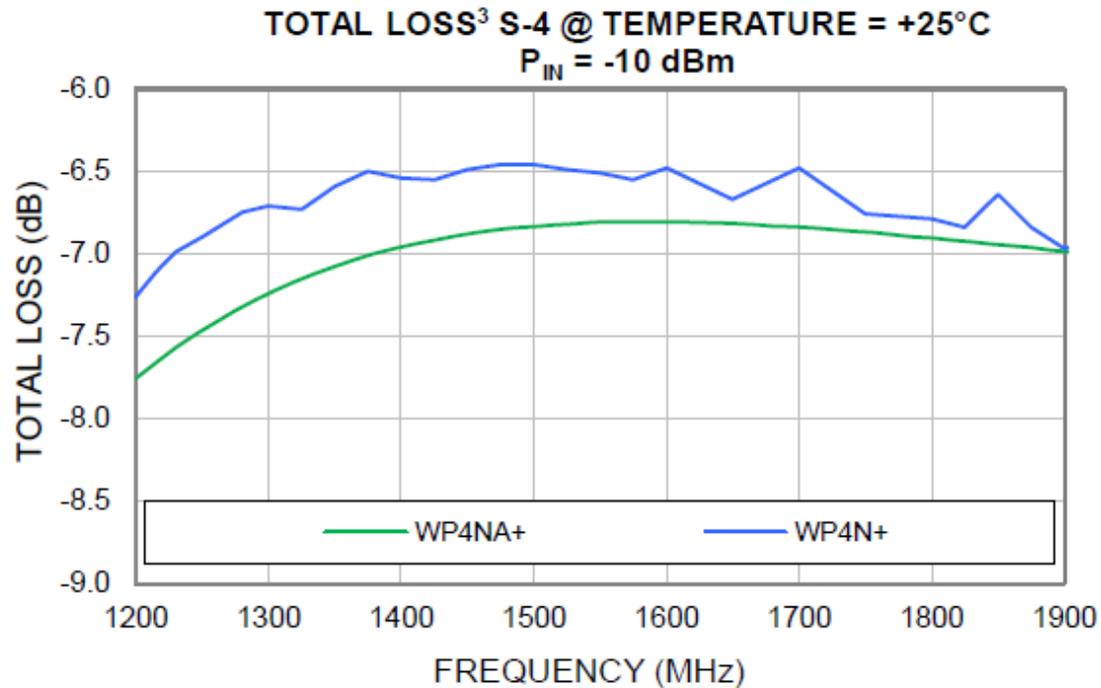
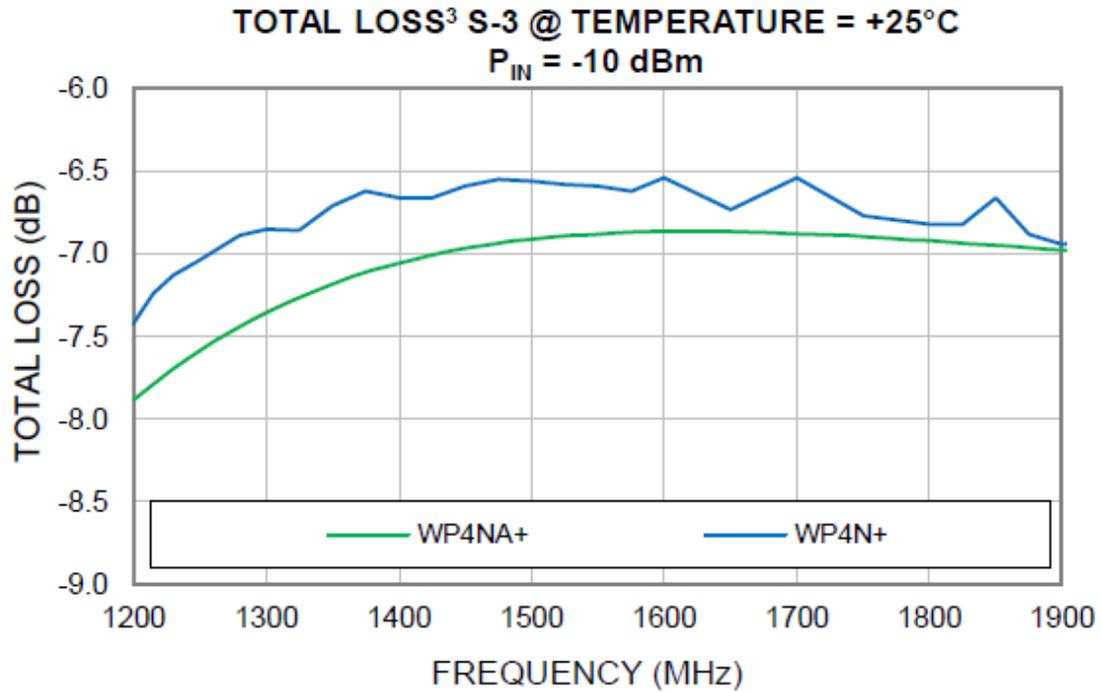
Parameter	Freq (MHz)		WP4N+			WP4NA+		
	From	To	Min.	Avg.	Max.	Min.	Avg.	Max.
INSERTION LOSS ¹ - Above 6dB (dB)	1215	1215		0.7	1.4		1.9	2.5
	1500	1500				1.0	1.7	
	1800	1800				1.0	1.8	
	1900	1900				1.1	2.0	
ISOLATION (dB)	1215	1215	14	23		16	21	
	1500	1500			24	29		
	1800	1800			21	25		
	1900	1900			20	24		
AMPLITUDE UNBALANCE (dB)	1215	1215			0.5		0.20	0.7
	1500	1500				0.16	0.6	
	1800	1800				0.13	0.7	
	1900	1900				0.14	0.7	
PHASE UNBALANCE (Deg)	1215	1215			5.0		1.5	7
	1500	1500				1.6	7	
	1800	1800				1.9	7	
	1900	1900				2.0	8	
RETURN LOSS - PORT 1,2,3,4 ² (dB)	1215	1215		15.6			11	
	1500	1500			21			
	1800	1800			12			
	1900	1900			10			
RETURN LOSS - SUM (dB)	1215	1215		14.0			16	
	1500	1500			18			
	1800	1800			15			
	1900	1900			14			

1. Typical insertion loss displayed are the worsted case among Port1, Port 2, Port 3, and Port 4
2. Typical return loss displayed are the worsted case among Port1, Port 2, Port 3, and Port 4

3) TYPICAL PERFORMANCE GRAPHS AT ROOM TEMPERATURE:

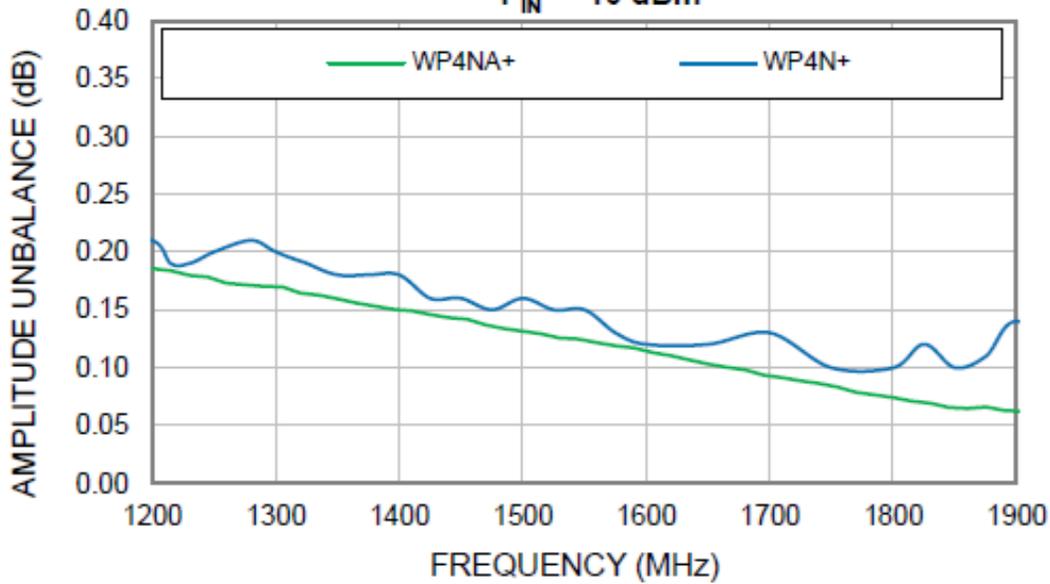


3. Total Loss = Single Path (S-1 or S-2 or S-3 or S-4) Insertion Loss + 6 dB Splitter Loss



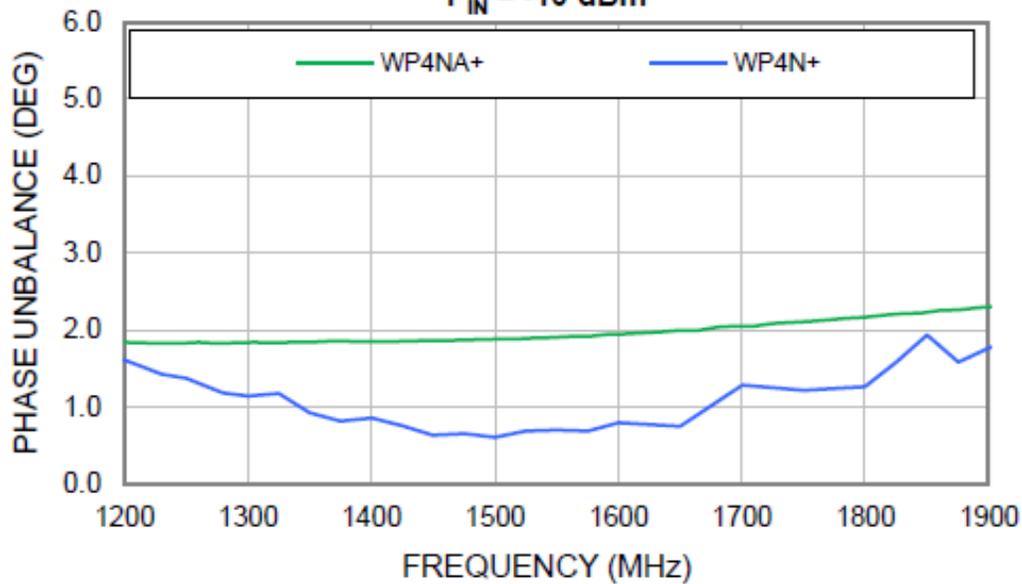
3. Total Loss = Single Path (S-1 or S-2 or S-3 or S-4) Insertion Loss + 6 dB Splitter Loss

**AMPLITUDE UNBALANCE @ TEMPERATURE = +25°C,
P_{IN} = -10 dBm**

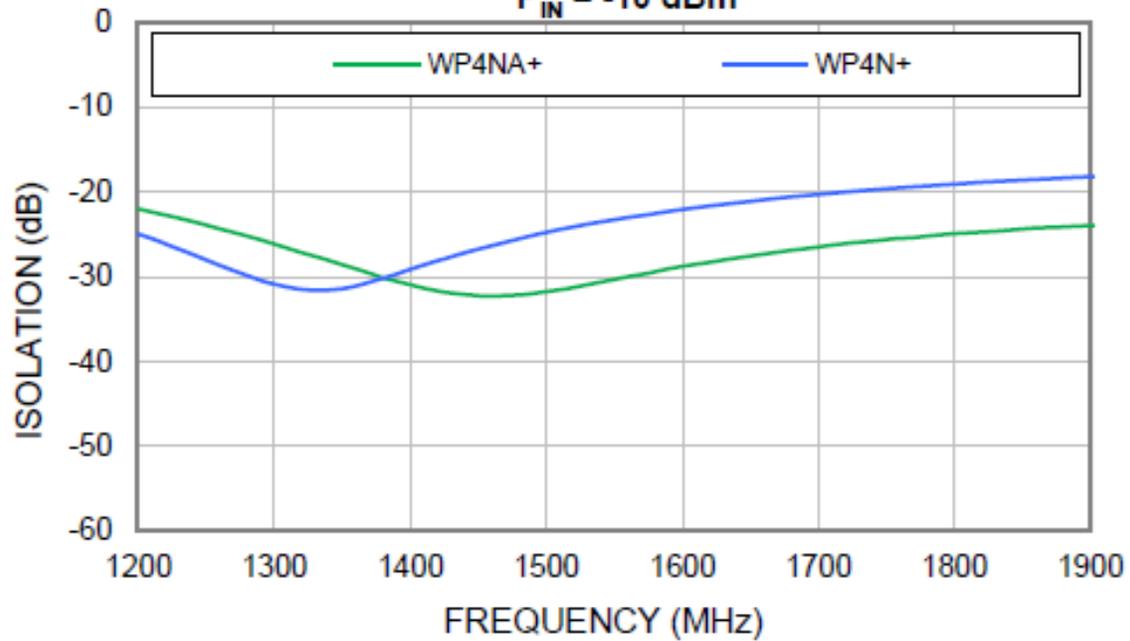


WP4NA+
WP4N+

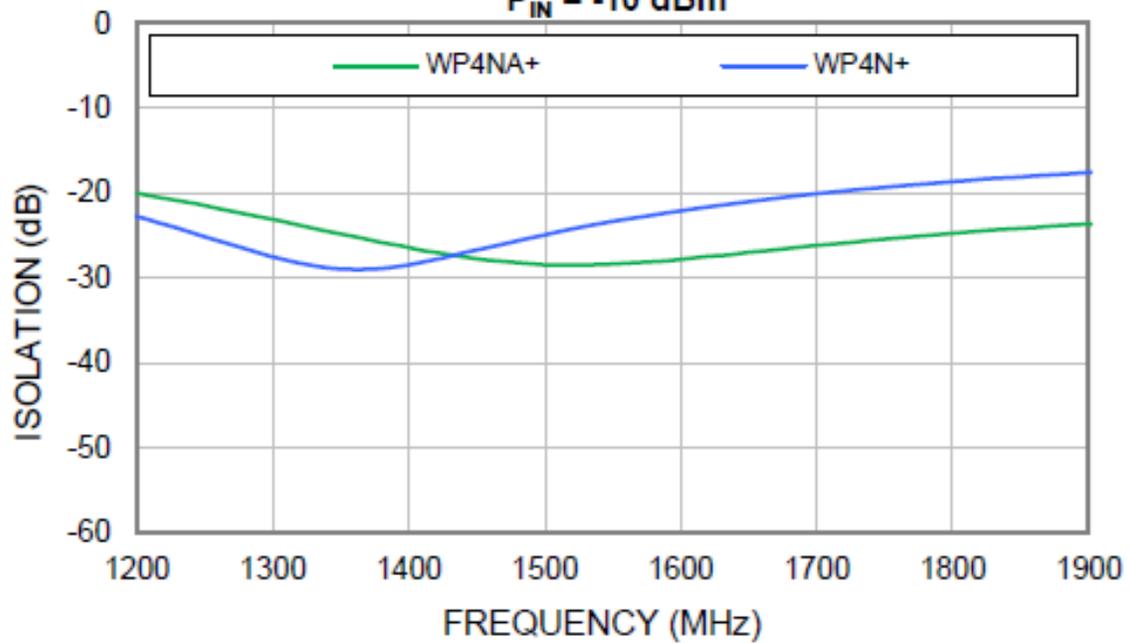
**PHASE UNBALANCE @ TEMPERATURE = +25°C,
P_{IN} = -10 dBm**



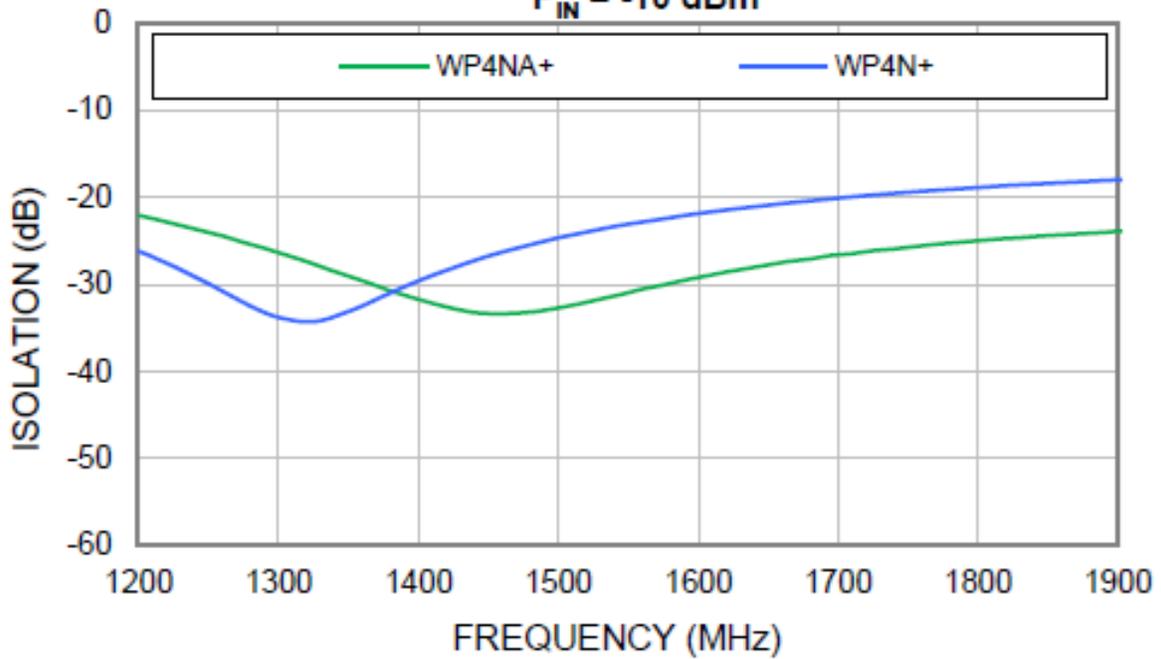
**ISOLATION 1-2 @ TEMPERATURE = +25°C,
P_{IN} = -10 dBm**



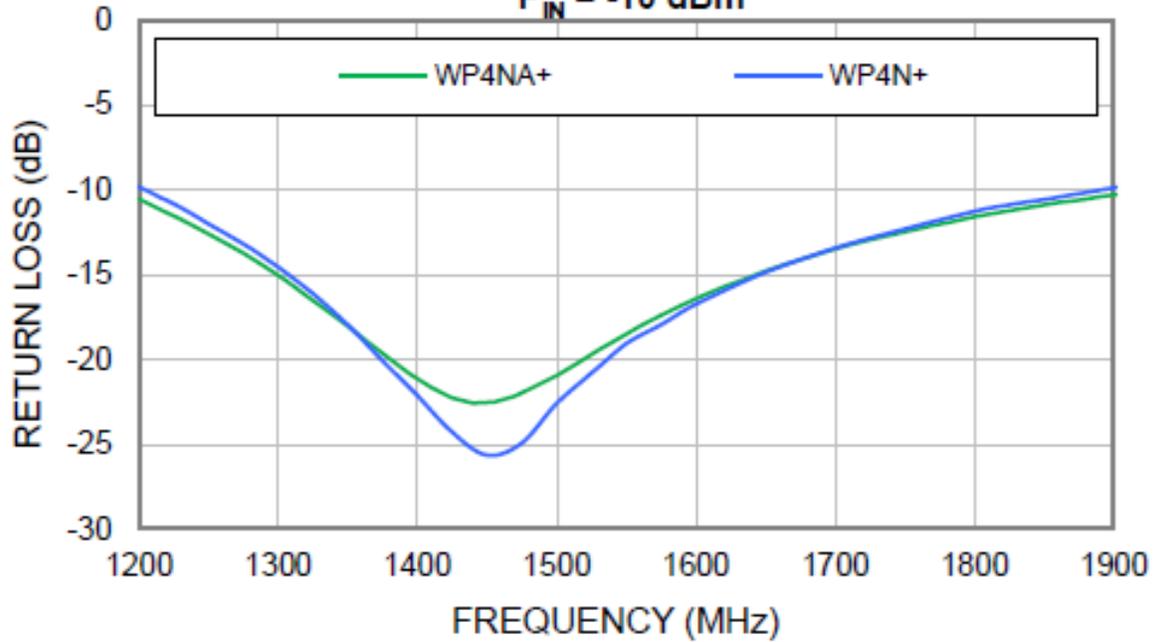
**ISOLATION 2-3 @ TEMPERATURE = +25°C,
P_{IN} = -10 dBm**

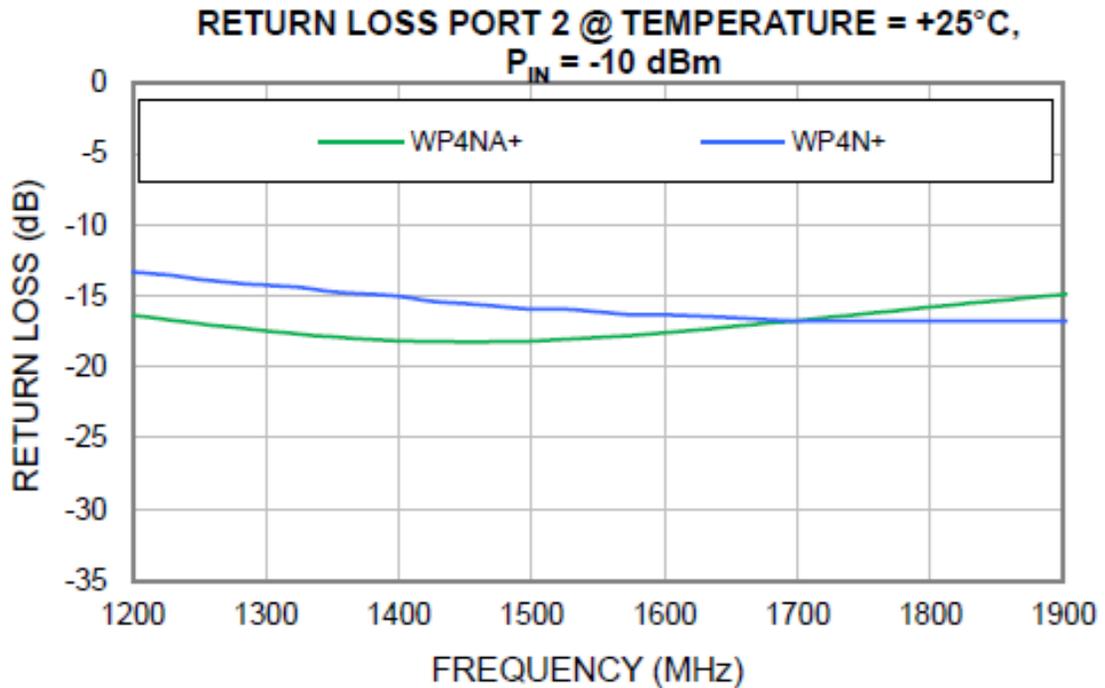
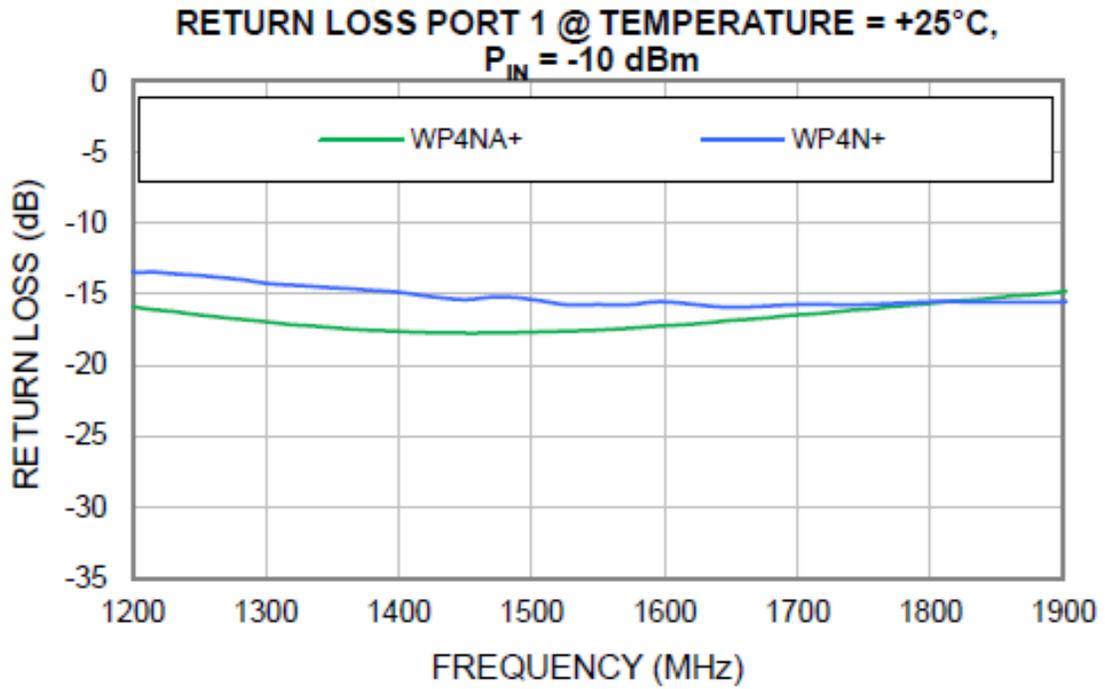


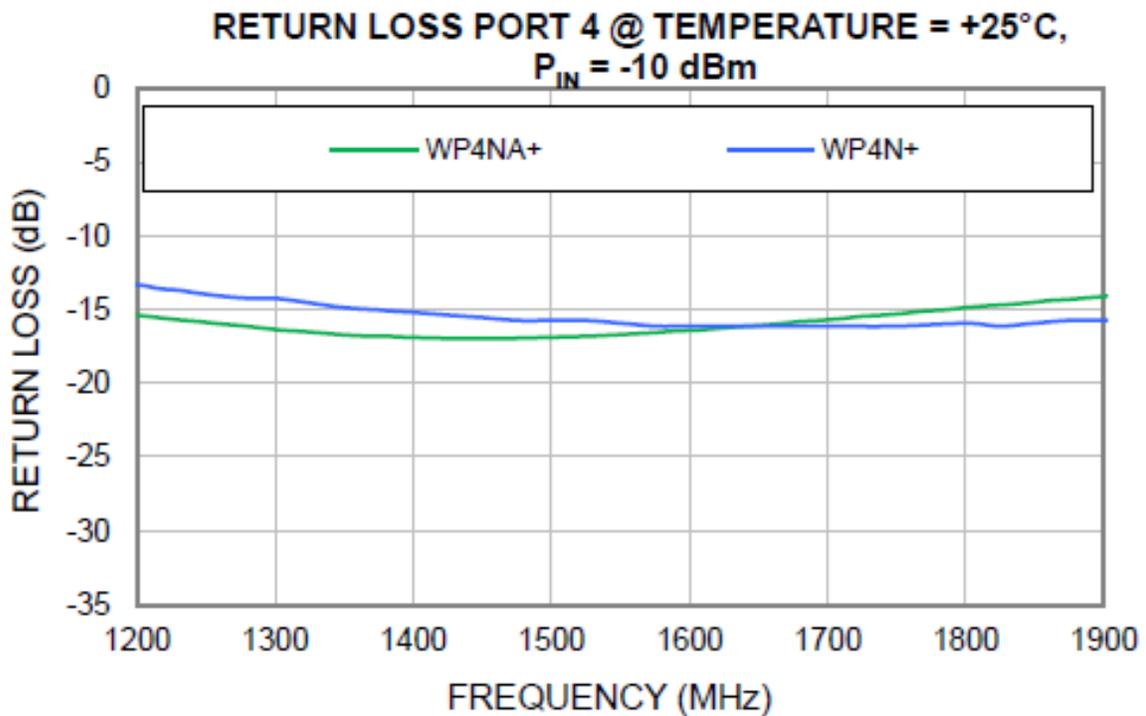
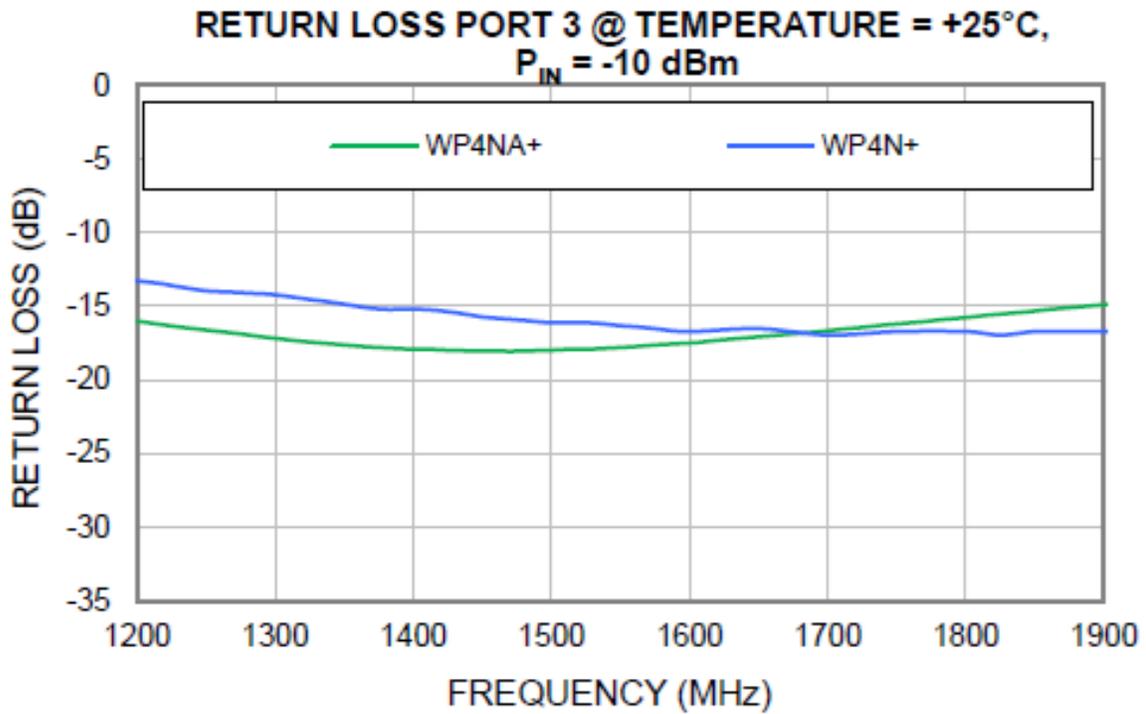
**ISOLATION 3-4 @ TEMPERATURE = +25°C,
P_{IN} = -10 dBm**



**RETURN LOSS PORT S @ TEMPERATURE = +25°C,
P_{IN} = -10 dBm**









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