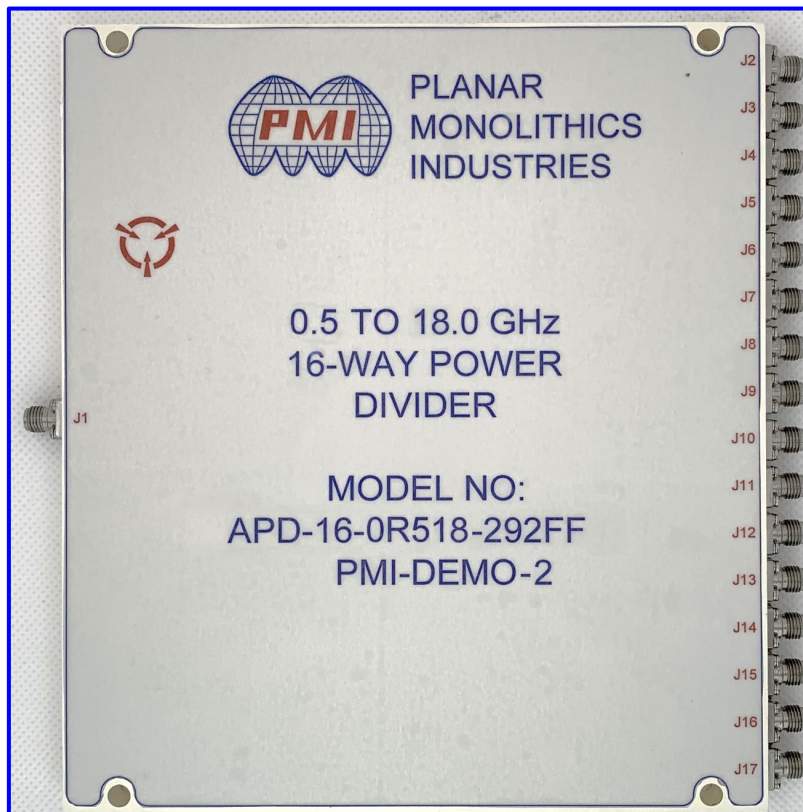




## Typical Characteristics ON APD-16-0R518-292FF

PMI MODEL: APD-16-0R518-292FF IS A SIXTEEN WAY POWER DIVIDER OPERATING OVER THE 0.5 TO 18.0 GHz FREQUENCY RANGE. THIS MODEL HAS A TYPICAL INSERTION LOSS OF 3.0 dB TYPICAL BETWEEN 2.0 TO 8.0 GHz AND 5.0 dB FROM 8.0 TO 18.0 GHz. THE COMPACT 6.2" x 7.1" x 0.43" HOUSING IS OUTFITTED WITH 2.92 mm FEMALE CONNECTORS.



**November 3, 2020**

**Designed By:**

**Dr. Ashok Gorwara and Sean Heraty**

**Tested and Reported By:**

**Sean Heraty**



# Typical Characteristics ON APD-16-0R518-292FF

## Technical Sheet

### DESCRIPTION

PMI MODEL: APD-16-0R518-292FF IS A SIXTEEN WAY POWER DIVIDER OPERATING OVER THE 0.5 TO 18.0 GHz FREQUENCY RANGE. THIS MODEL HAS A TYPICAL INSERTION LOSS OF 3.0 dB TYPICAL BETWEEN 2.0 TO 8.0 GHz AND 5.0 dB FROM 8.0 TO 18.0 GHz. THE COMPACT 6.2" x 7.1" x 0.43" HOUSING IS OUTFITTED WITH 2.92 mm FEMALE CONNECTORS.

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	-	Preliminary	10/29/20	

### SPECIFICATIONS

FREQUENCY RANGE: ----	0.5 TO 18.0 GHz	
INSERTION LOSS (OVER THEORETICAL POWER SPLIT OF 12 DB): -----	0.5 to 1 GHz 1 to 2 GHz 2 to 8 GHz 8 to 18 GHz	2.0 dB Typ. 3.0 dB Typ. 3.0 dB Typ. 5.0 dB Typ.
INSERTION LOSS FLATNESS (REF LINE OF BEST FIT): -----	0.5 to 1 GHz 1 to 2 GHz 2 to 8 GHz 8 to 18 GHz	± 1.0 dB Typ. ± 1.5 dB Typ. ± 1.2 dB Typ. ± 1.0 dB Typ.
ISOLATION: -----	0.5 to 1 GHz 1 to 2 GHz 2 to 8 GHz 8 to 18 GHz	10 dB Typ. 10 dB Typ. 20 dB Typ. 20 dB Typ.
VSWR (INPUT): -----	0.5 to 1 GHz 1 to 2 GHz 2 to 8 GHz 8 to 18 GHz	2.5:1 Typ. 3.1:1 Typ. 3.0:1 Typ. 2.1:1 Typ.
VSWR (OUTPUT): -----	0.5 to 1 GHz 1 to 2 GHz 2 to 8 GHz 8 to 18 GHz	1.5:1 Typ. 1.5:1 Typ. 1.8:1 Typ. 2.0:1 Typ.

AMPLITUDE BALANCE: --	0.5 to 1 GHz 1 to 2 GHz 2 to 8 GHz 8 to 18 GHz	± 0.5 dB Max. ± 0.5 dB Max. ± 0.5 dB Max. ± 1.3 dB Max.
PHASE BALANCE: -----	0.5 to 1 GHz 1 to 2 GHz 2 to 8 GHz 8 to 18 GHz	± 3° Typ. ± 3° Typ. ± 10° Typ. ± 20° Typ.
AVERAGE POWER: -----	25 Watts (+44dBm) (Into 1.2:1 Load VSWR)	
CONNECTORS: -----	2.92 mm FEMALE REMOVABLE	
SIZE: -----	[6.2" x 7.1 x 0.43"] EXCLUDING CONNECTORS	
FINISH: -----	PAINTED BLUE	

### PLANAR MONOLITHICS INDUSTRIES, INC.

7311-F GROVE ROAD  
FREDERICK, MARYLAND 21704 USA  
TEL: (301)-662-5019, FAX: (301)-662-1731  
WEB: www.pmi-rf.com, EMAIL: sales@pmi-rf.com  
ISO 9001 CERTIFIED



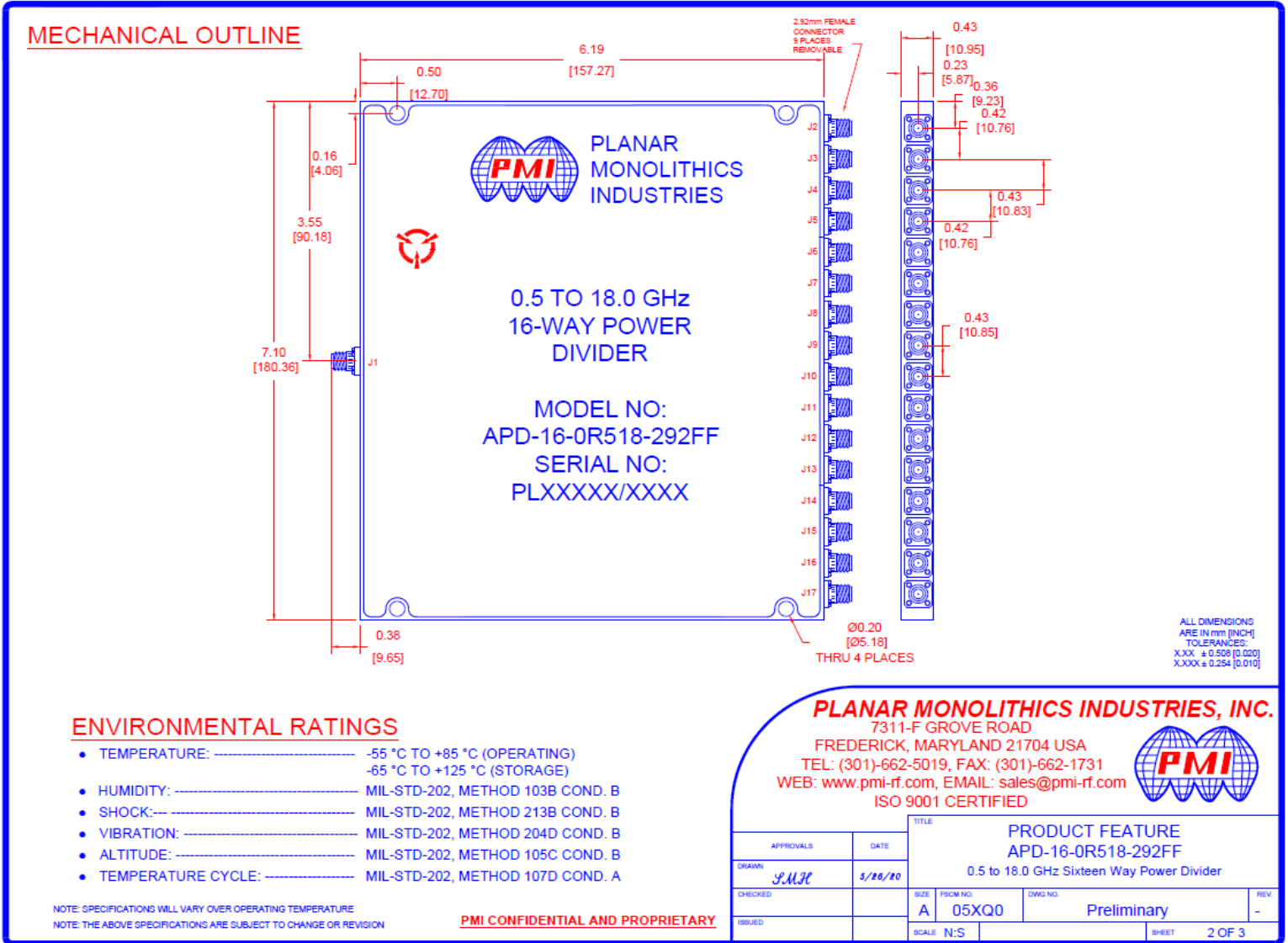
APPROVALS		DATE	TITLE		
DRAWN <i>SMB</i>		5/26/20	PRODUCT FEATURE APD-16-0R518-292FF 0.5 to 18.0 GHz Sixteen Way Power Divider		
CHECKED			SIZE	FORM NO.	DRWG NO.
			A	05XQ0	Preliminary
ISSUED			SCALE	N:S	SHEET 1 OF 3

PMI CONFIDENTIAL AND PROPRIETARY



# Typical Characteristics ON APD-16-0R518-292FF

## Mechanical Outline

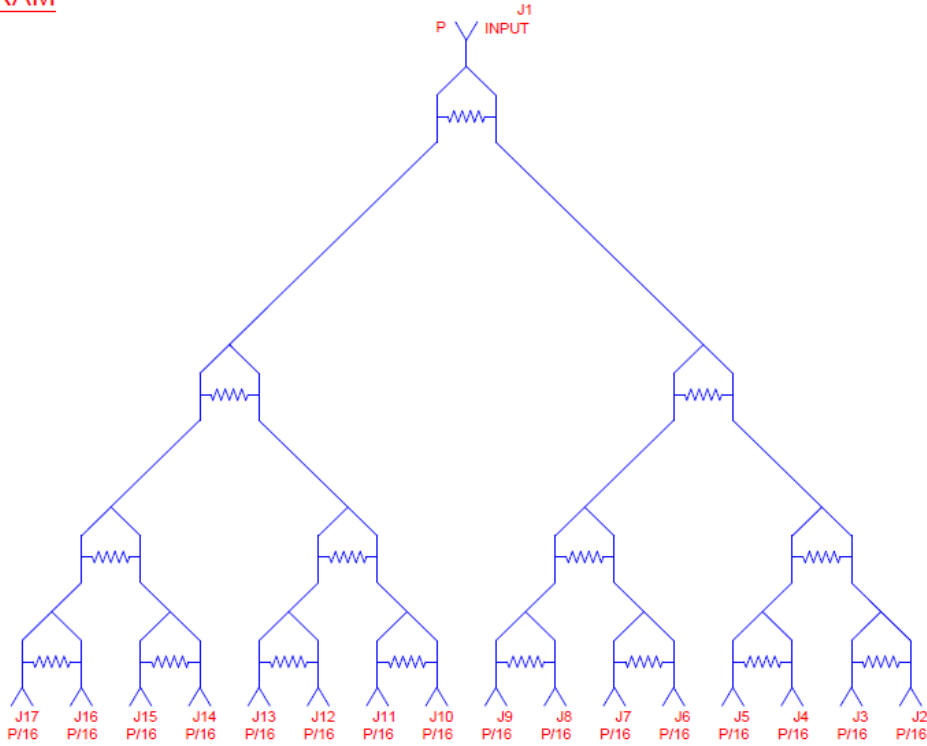




# Typical Characteristics ON APD-16-0R518-292FF

## Block Diagram

### BLOCK DIAGRAM



**PLANAR MONOLITHICS INDUSTRIES, INC.**  
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 ISO 9001 CERTIFIED



		TITLE <b>PRODUCT FEATURE</b> APD-16-0R518-292FF 0.5 to 18.0 GHz Sixteen Way Power Divider		
APPROVALS	DATE	SIZE	FSOM NO.	REV.
		A	05XQ0	-
DRAWN	DATE	DWG NO.		
<i>SMB</i>	5/26/20	Preliminary		
CHECKED		SCALE	SHEET	
		N:S	3 OF 3	

NOTE: SPECIFICATIONS WILL VARY OVER OPERATING TEMPERATURE  
 NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

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# Typical Characteristics ON APD-16-0R518-292FF

## Technical Specifications

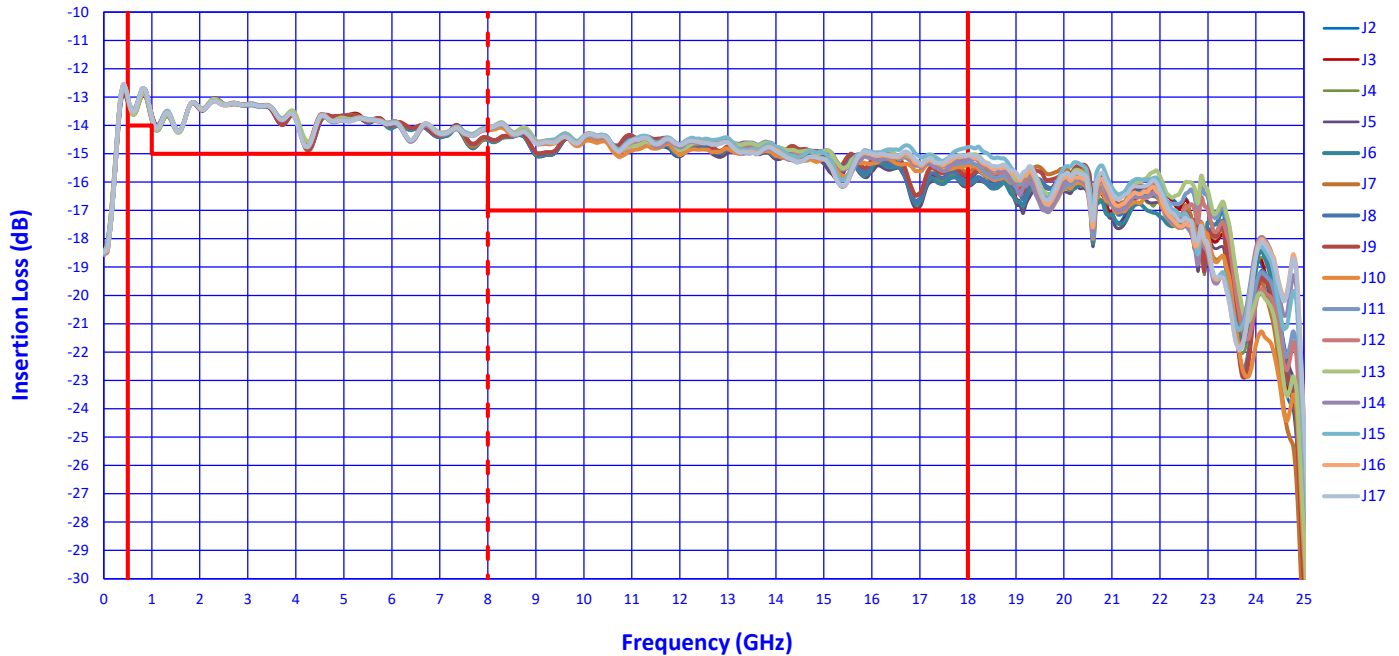
TEST ITEM NO.	PARAMETERS	SPECIFIED VALUE	TEST RESULTS			QA QC
			+25°C	-55°C	+85°C	
1	Frequency Range	0.5 GHz – 23 GHz	0.5 GHz – 23 GHz	0.5 GHz – 23 GHz	0.5 GHz – 23 GHz	
2	Insertion Loss (Over Theoretical Power Split of 12 dB)	0.5 to 1 GHz	2.0 dB Typ.	1.86 dB	1.83 dB	1.85 dB
		1 to 2 GHz	3.0 dB Typ.	2.82 dB	2.73 dB	3.02 dB
		2 to 8 GHz	3.0 dB Typ.	2.9 dB	2.79 dB	3.11 dB
		8 to 18 GHz	5.0 dB Typ.	4.92 dB	4.66 dB	5.2 dB
				See Graphs	See Graphs	See Graphs
3	Insertion Loss Flatness (Ref Line of Best Fit)	0.5 to 1 GHz	± 1.0 dB Typ.	0.7 dB	0.77 dB	0.64 dB
		1 to 2 GHz	± 1.5 dB Typ.	1.1 dB	1.13 dB	1.14 dB
		2 to 8 GHz	± 1.2 dB Typ.	1.17 dB	1.18 dB	1.25 dB
		8 to 18 GHz	± 1.0 dB Typ.	0.95 dB	1.04 dB	0.98 dB
				See Graphs	See Graphs	See Graphs
4	Isolation	0.5 to 1 GHz	10 dB Typ.	6.63 dB	6.6 dB	6.69 dB
		1 to 2 GHz	10 dB Typ.	11.07 dB	11.07 dB	11.08 dB
		2 to 8 GHz	20 dB Typ.	18.69 dB	18.79 dB	18.7 dB
		8 to 18 GHz	20 dB Typ.	18.44 dB	18.41 dB	18.46 dB
				See Graphs	See Graphs	See Graphs
5	VSWR Input	0.5 to 1 GHz	2.5:1 Typ.	2.42 :1	2.55 :1	2.37 :1
		1 to 2 GHz	3.1:1 Typ.	2.88 :1	2.96 :1	2.83 :1
		2 to 8 GHz	3.0:1 Typ.	2.8 :1	2.85 :1	2.76 :1
		8 to 18 GHz	2.1:1 Typ.	2.01 :1	2.1 :1	2.03 :1
				See Graphs	See Graphs	See Graphs
6	VSWR Output	0.5 to 1 GHz	1.5:1 Max.	1.29 :1	1.28 :1	1.3 :1
		1 to 2 GHz	1.5:1 Max.	1.23 :1	1.25 :1	1.21 :1
		2 to 8 GHz	1.8:1 Max.	1.53 :1	1.54 :1	1.51 :1
		8 to 18 GHz	2.0:1 Max.	1.72 :1	1.77 :1	1.74 :1
				See Graphs	See Graphs	See Graphs
7	Amplitude Balance	0.5 to 1 GHz	± 0.5 dB Max.	0.13 dB (±)	0.1 dB (±)	0.1 dB (±)
		1 to 2 GHz	± 0.5 dB Max.	0.11 dB (±)	0.09 dB (±)	0.1 dB (±)
		2 to 8 GHz	± 0.5 dB Max.	0.46 dB (±)	0.46 dB (±)	0.49 dB (±)
		8 to 18 GHz	± 1.3 dB Max.	1.23 dB (±)	1.27 dB (±)	1.26 dB (±)
				See Graphs	See Graphs	See Graphs
8	Phase Balance	0.5 to 1 GHz	± 3° Typ.	+1.04 °/-1.11 °	+0.71 °/-1.13 °	+0.73 °/-0.38 °
		1 to 2 GHz	± 3° Typ.	+1.09 °/-0.74 °	+1.07 °/-0.59 °	+1.55 °/-0.93 °
		2 to 8 GHz	± 10° Typ.	+6.31 °/-3.35 °	+6.28 °/-3.4 °	+6.83 °/-2.49 °
		8 to 18 GHz	± 20° Typ.	+11.1 °/-7.18 °	+11.26 °/-7.43 °	+12.49 °/-4.27 °
				See Graphs	See Graphs	See Graphs
9	Average Power	25 Watts (+44dBm) (Into 1.2:1 Load VSWR)	Pass 25 Watts See Graph	Pass 25 Watts See Graph	Pass 25 Watts See Graph	

Note: Amplitude and phase balance are relative to J2 Port.

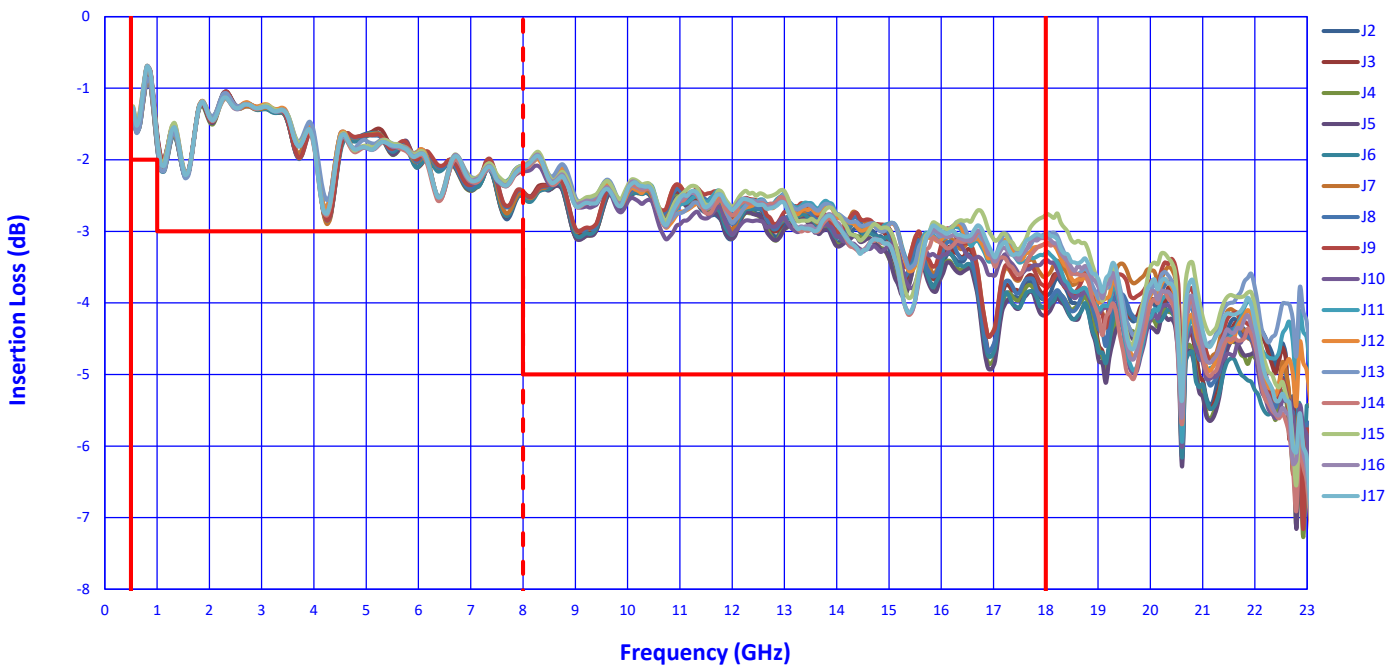


# Typical Characteristics ON APD-16-0R518-292FF

### Absolute Insertion Loss (+25°C)

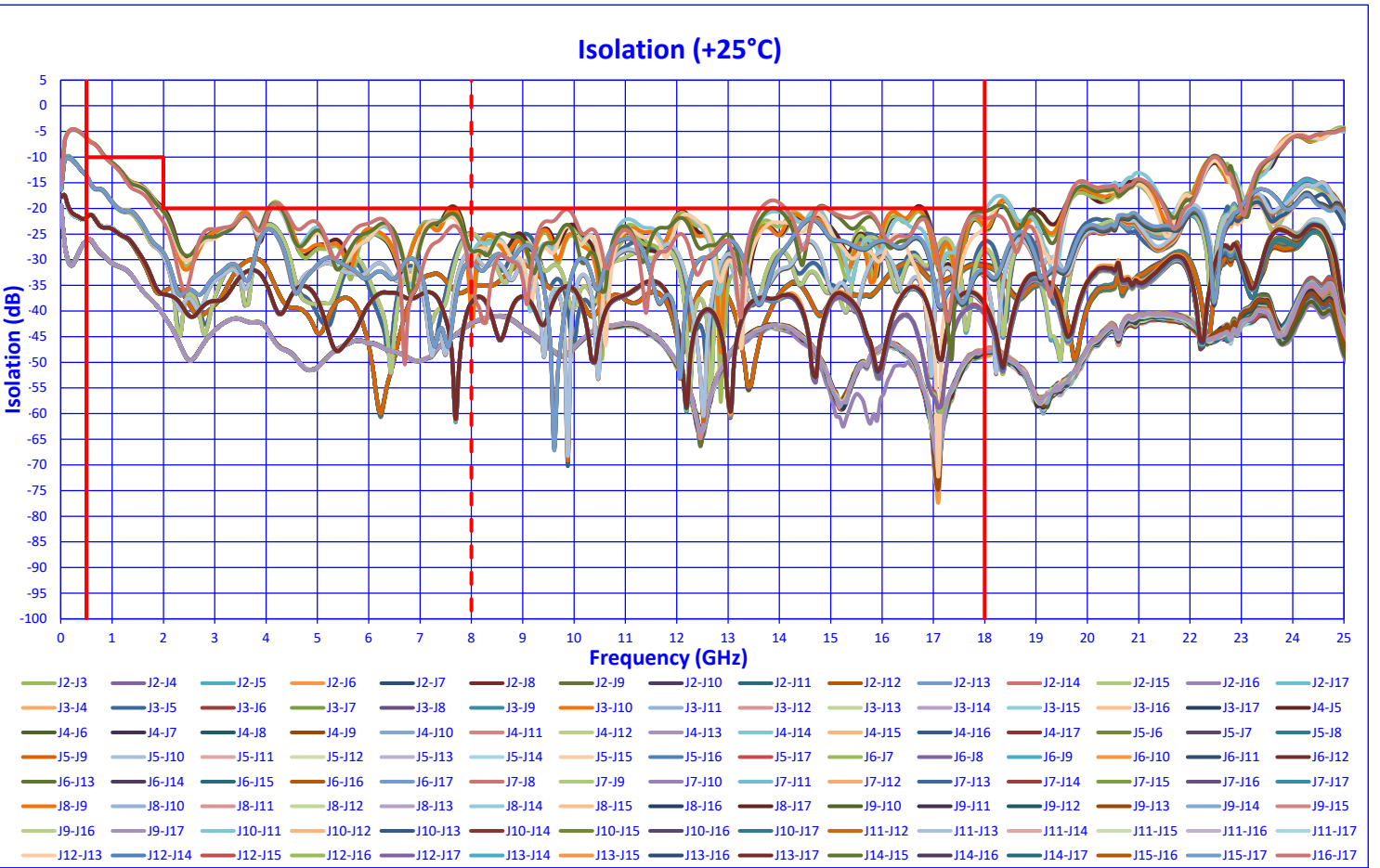
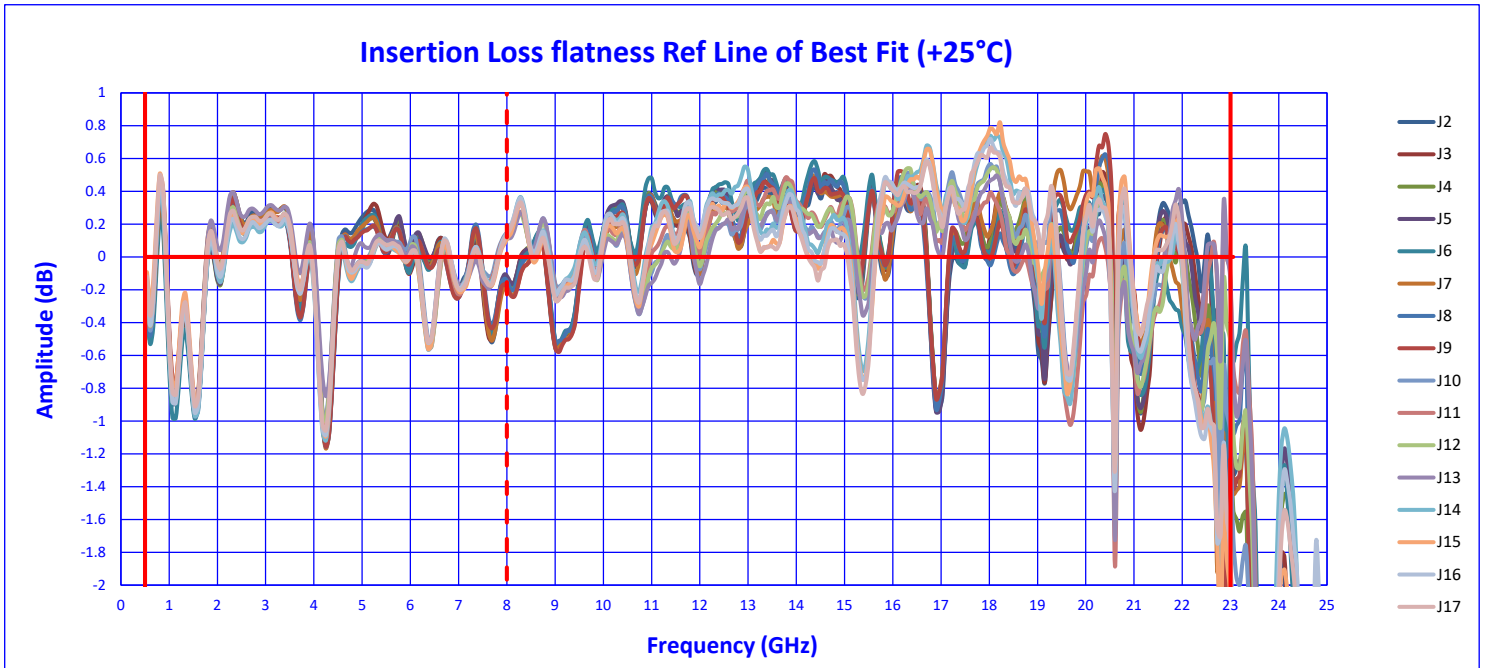


### Insertion Loss over Theoretical Power Split of 12 dB (+25°C)





# Typical Characteristics ON APD-16-0R518-292FF

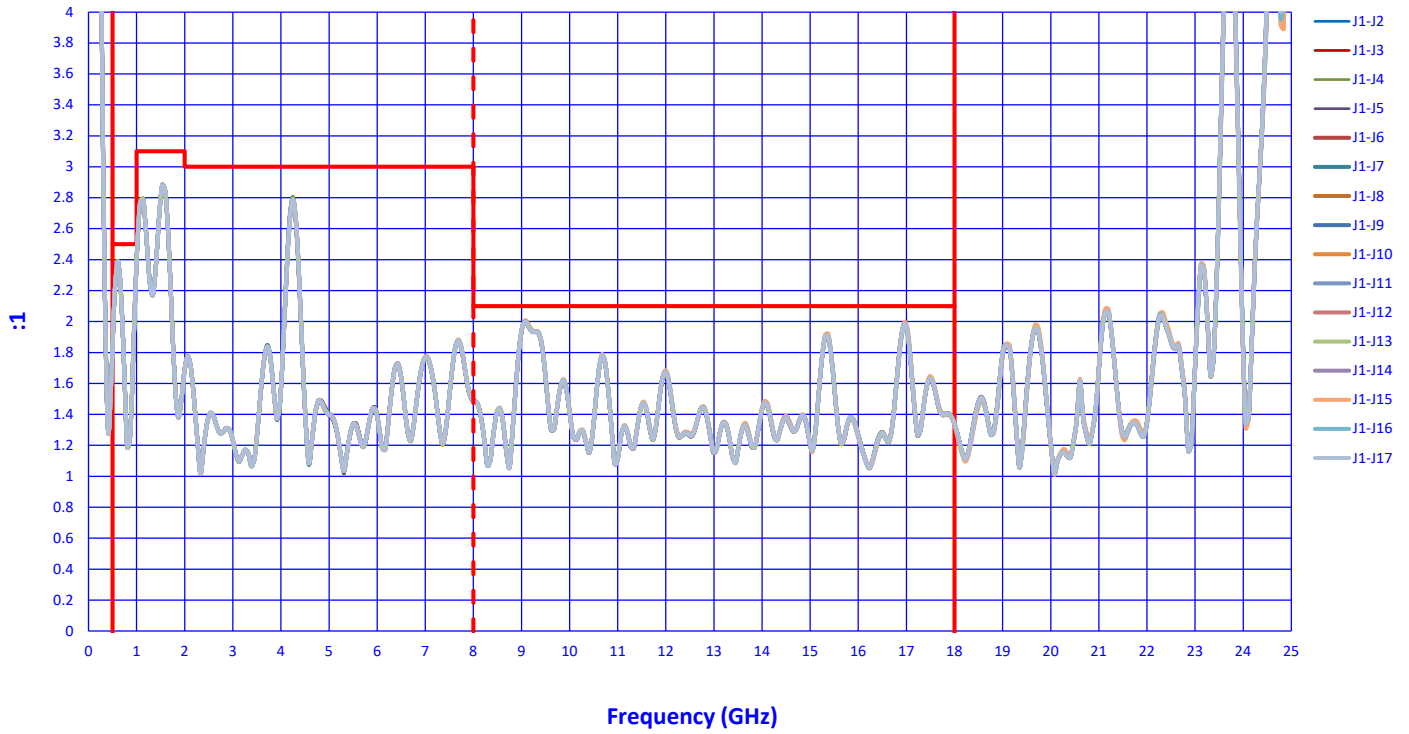


7311-F Grove Road Frederick, MD 21704 USA Phone: (301)662-5019 Fax: (301)662-1731  
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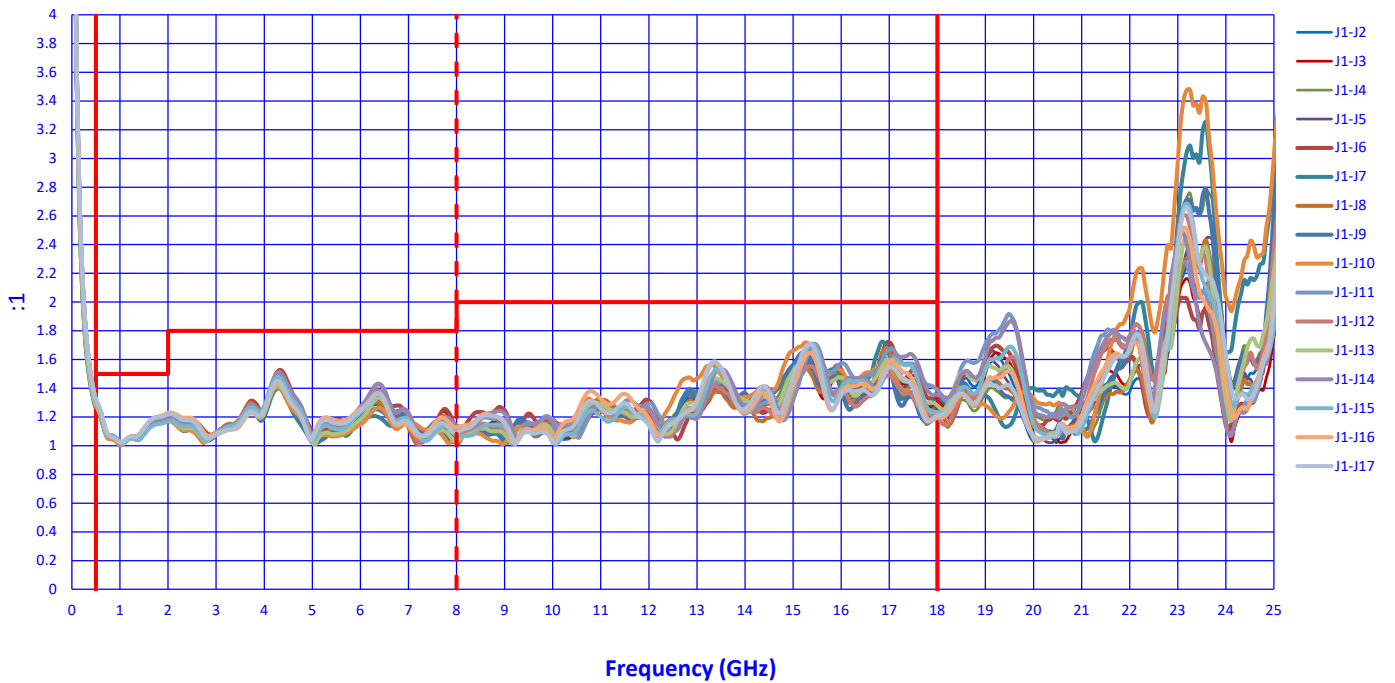


# Typical Characteristics ON APD-16-0R518-292FF

### VSWR IN (+25°C)

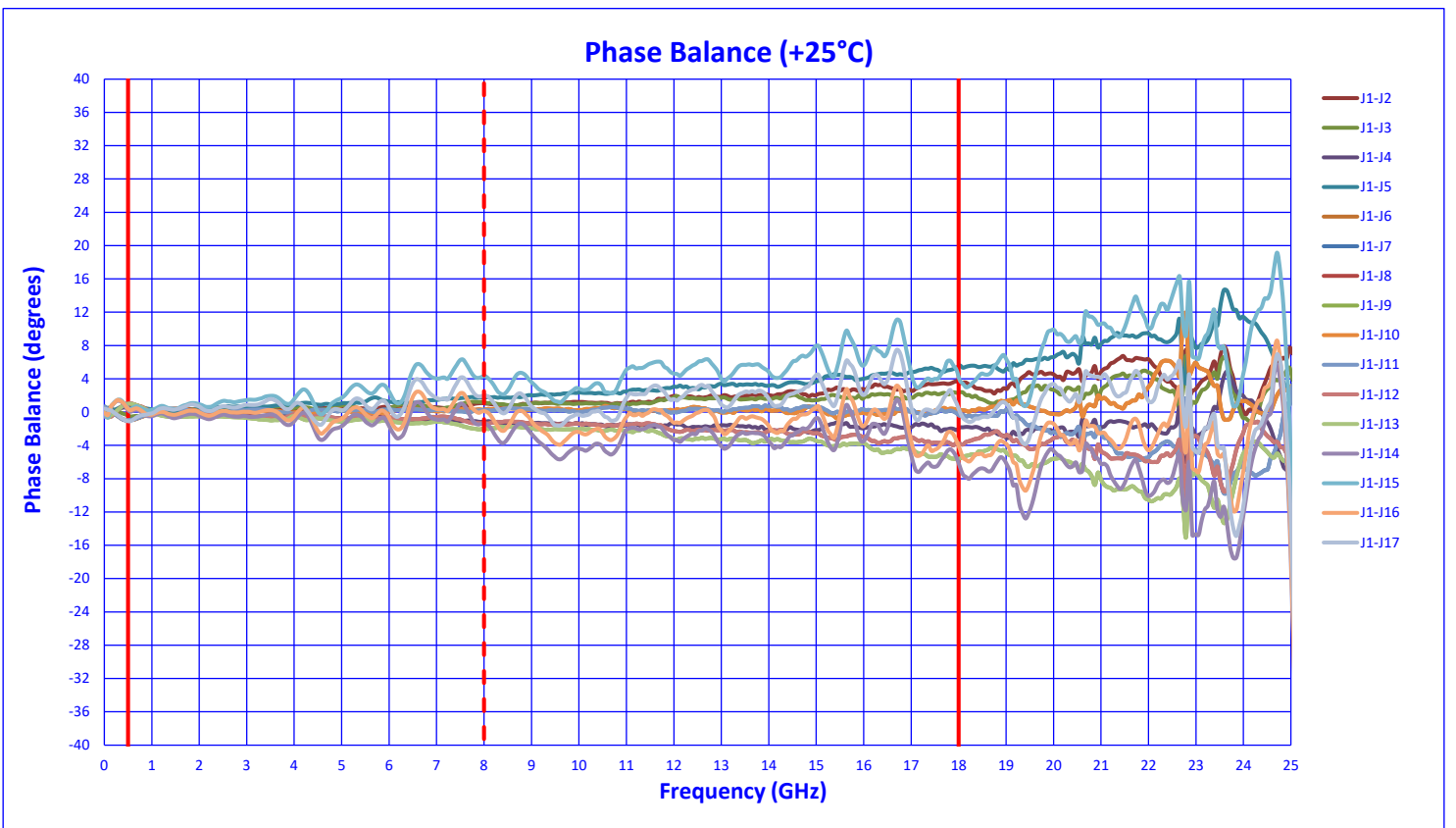
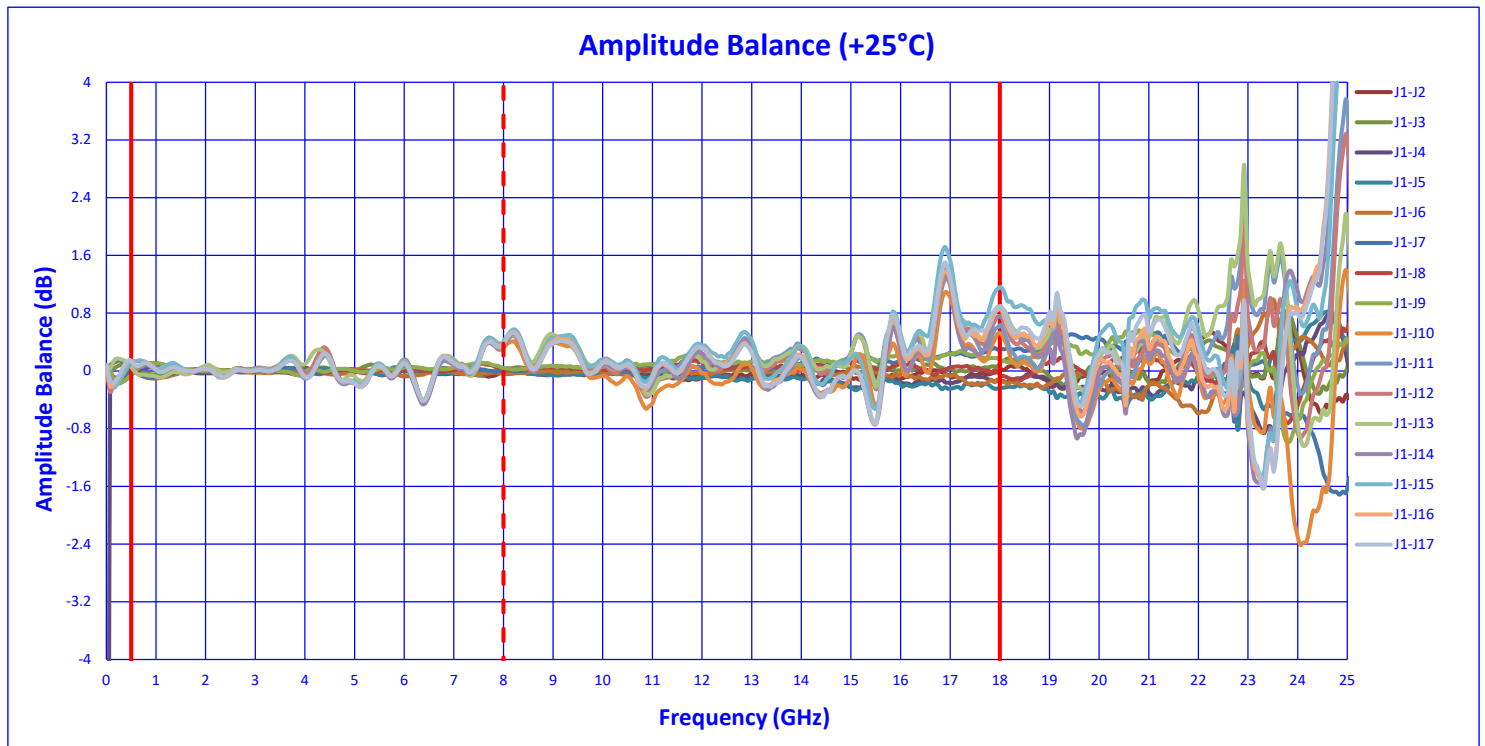


### VSWR OUT (+25°C)





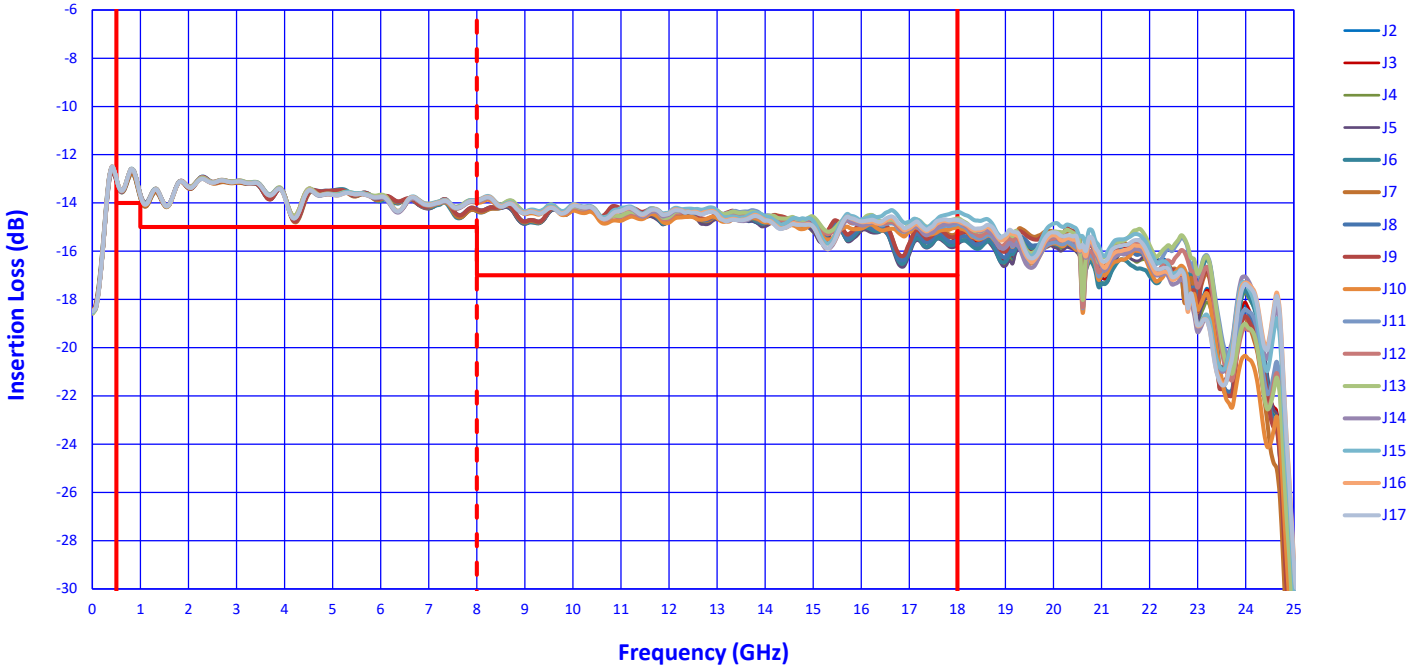
# Typical Characteristics ON APD-16-0R518-292FF



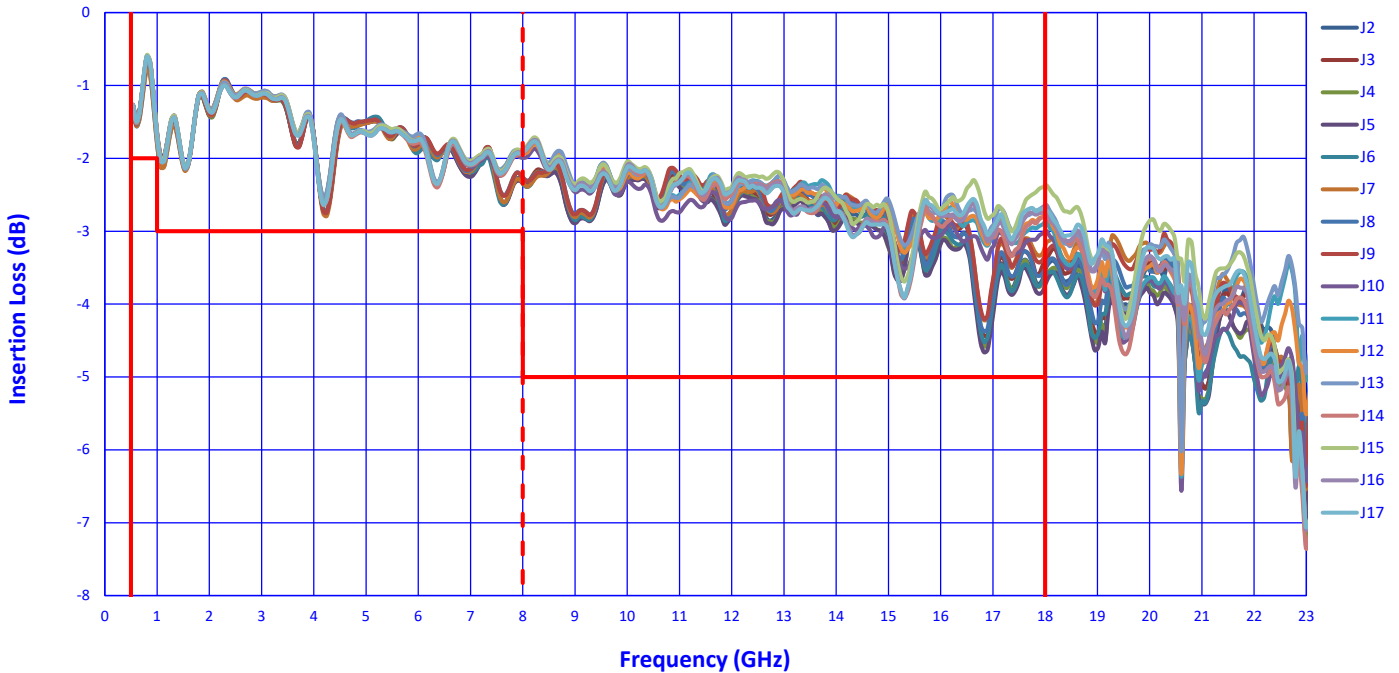


# Typical Characteristics ON APD-16-0R518-292FF

### Absolute Insertion Loss (-55°C)

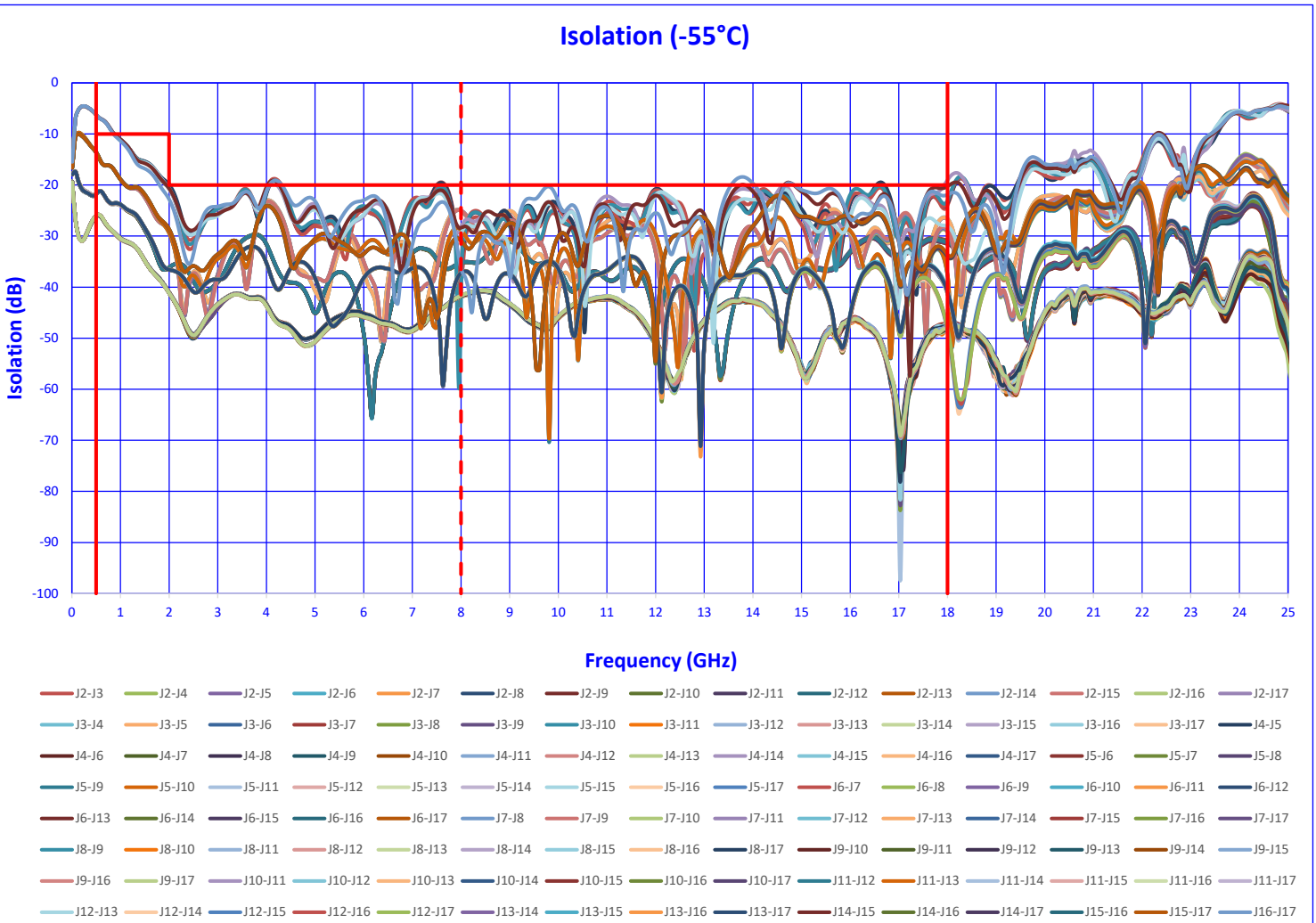
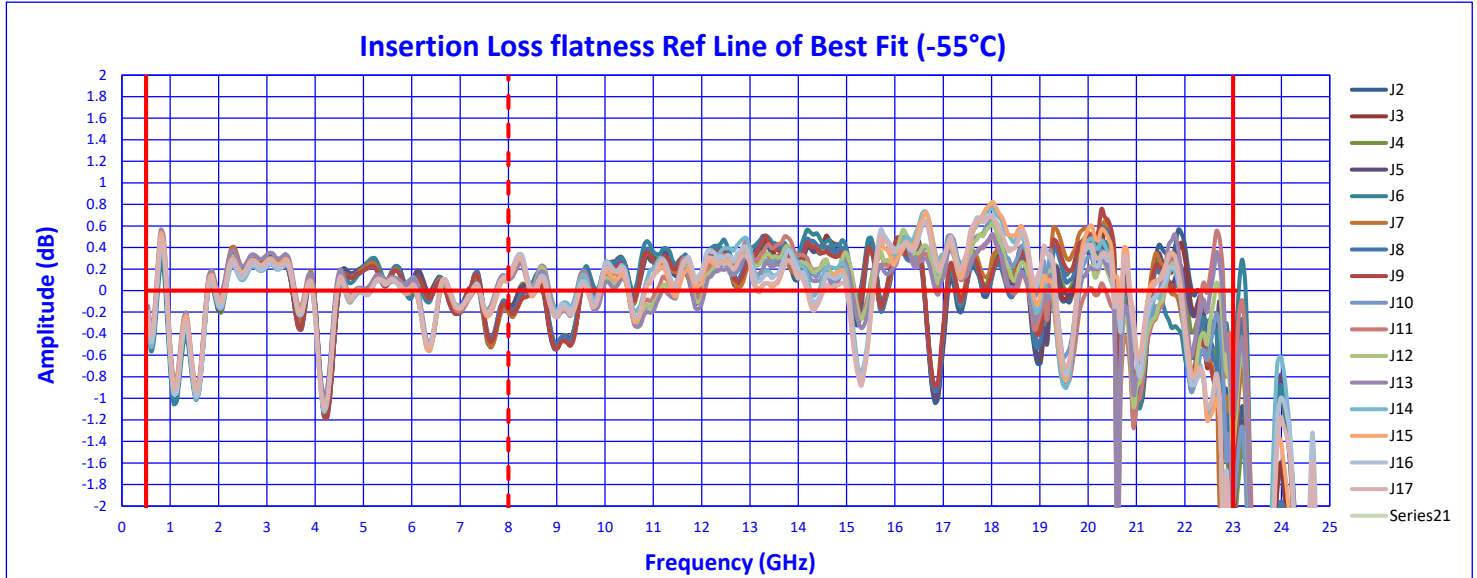


### Insertion Loss over Theoretical Power Split of 12 dB (-55°C)





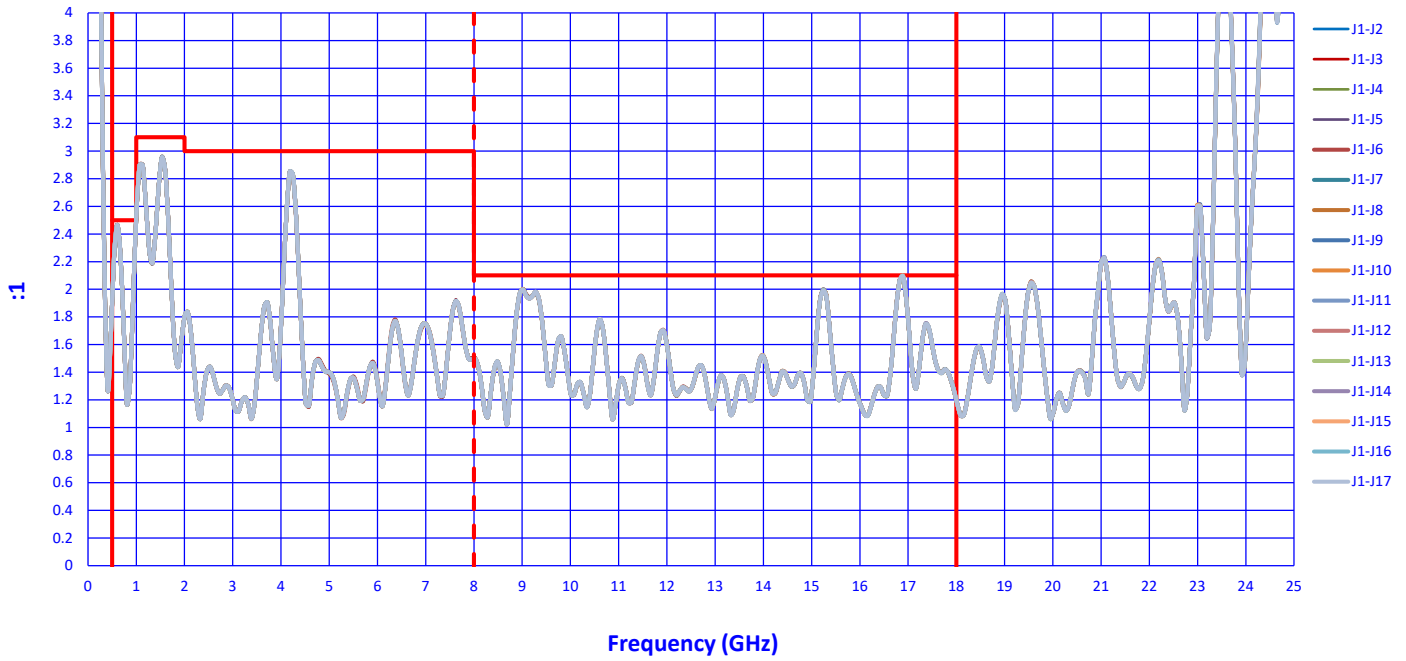
# Typical Characteristics ON APD-16-0R518-292FF



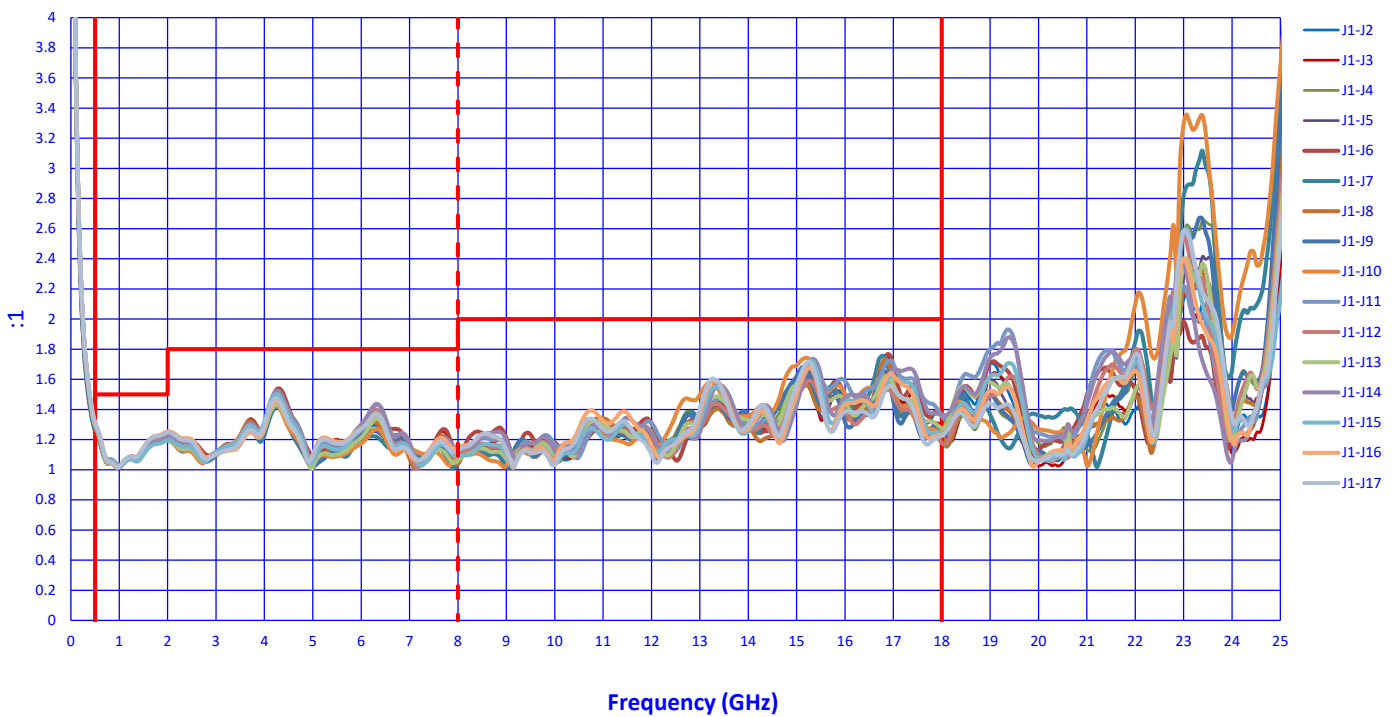


# Typical Characteristics ON APD-16-0R518-292FF

### VSWR IN (-55°C)

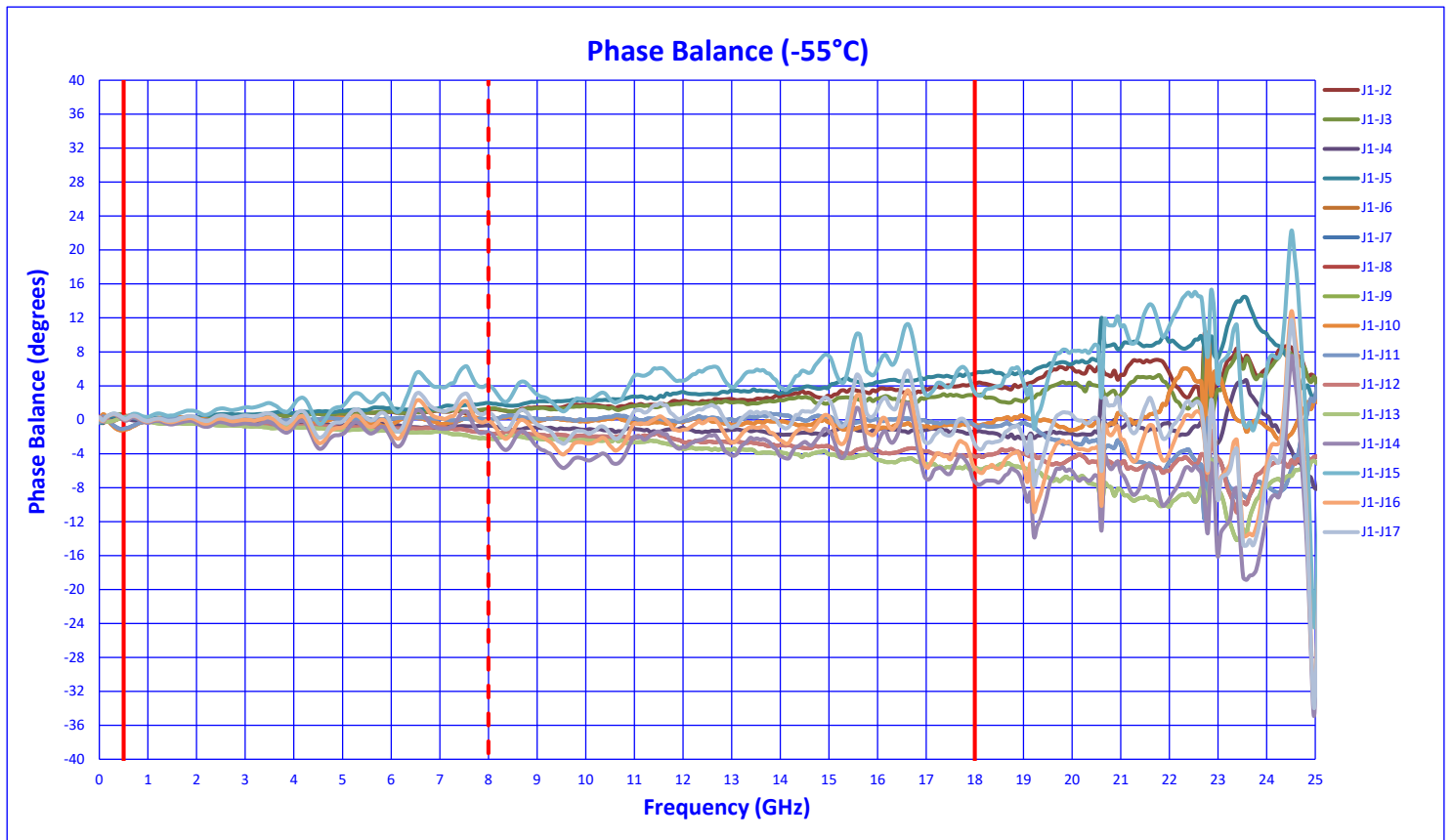
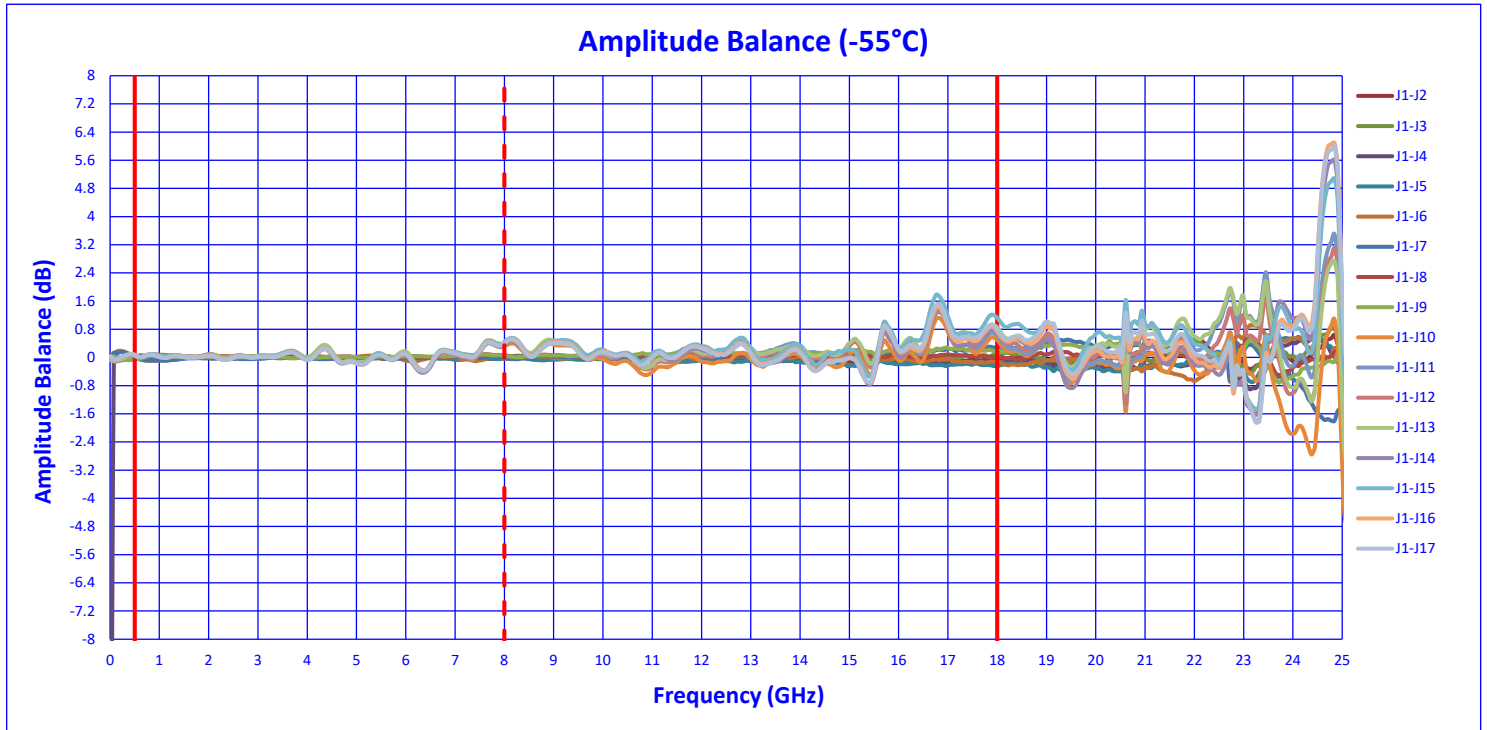


### VSWR OUT (-55°C)





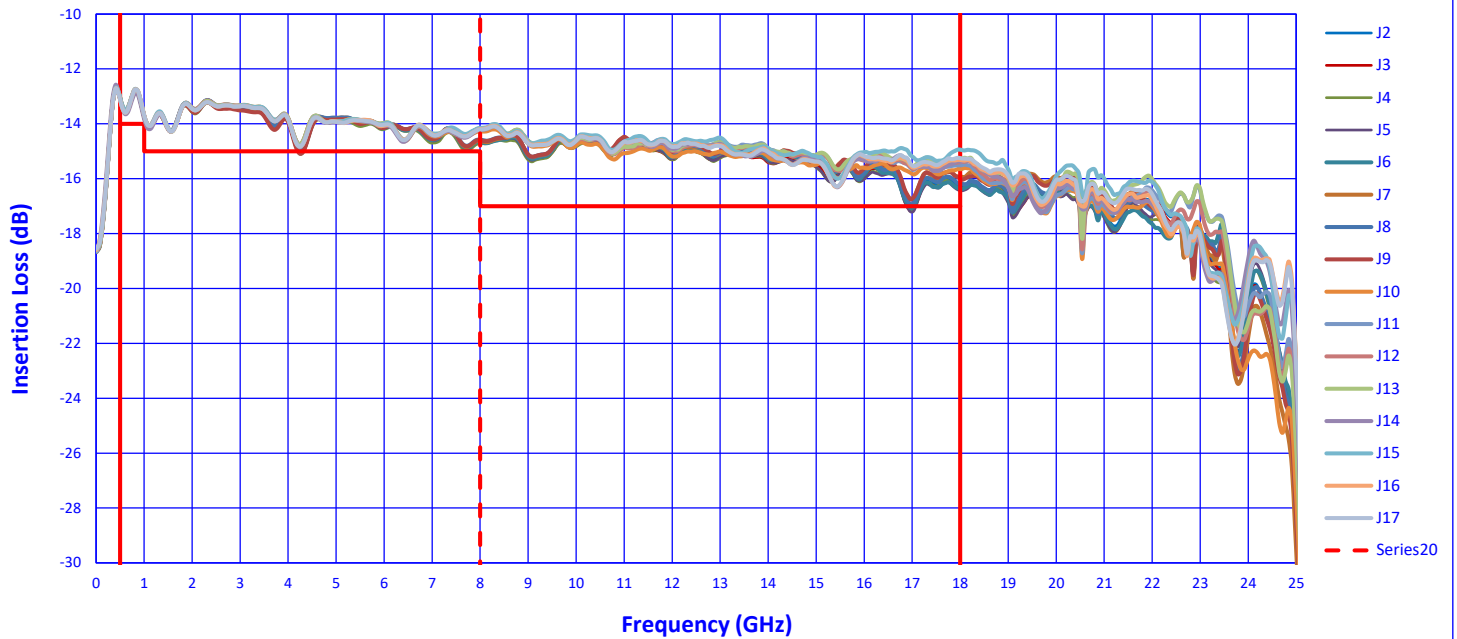
# Typical Characteristics ON APD-16-0R518-292FF



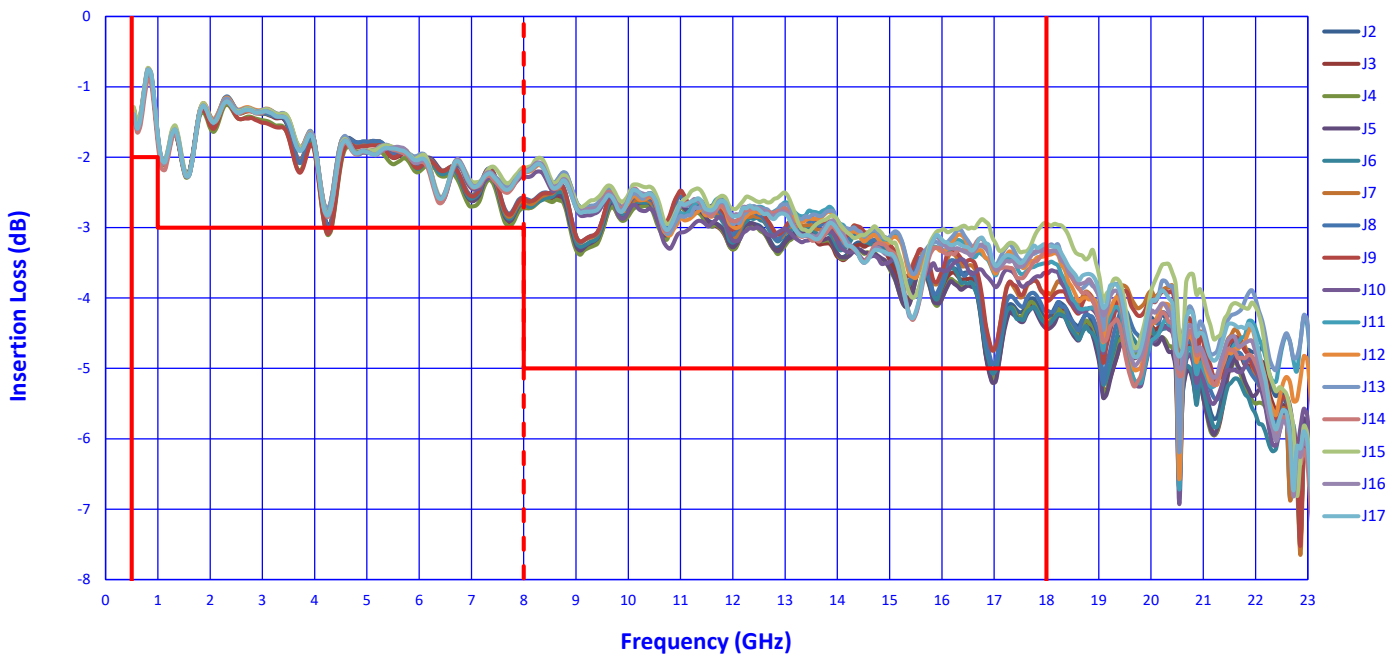


# Typical Characteristics ON APD-16-0R518-292FF

### Absolute Insertion Loss (+85°C)



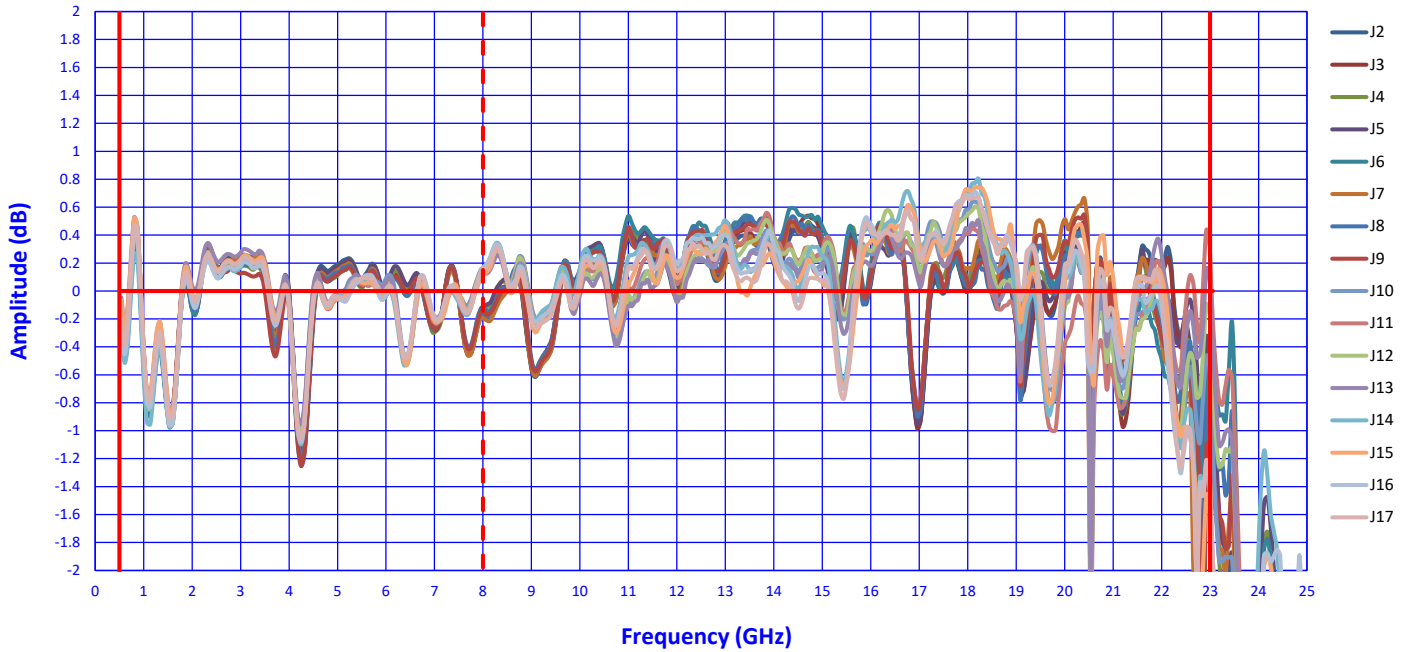
### Insertion Loss over Theoretical Power Split of 12 dB (+85°C)



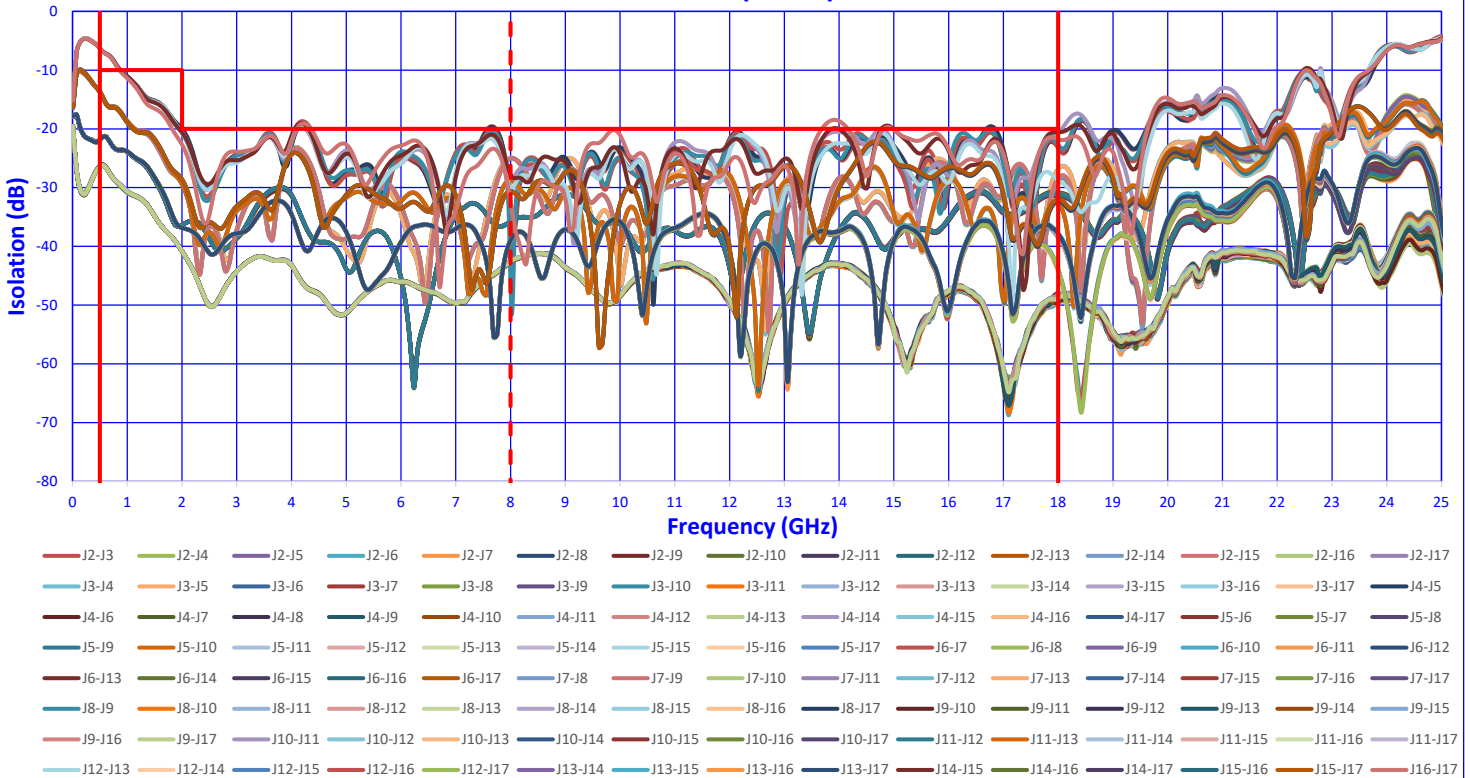


# Typical Characteristics ON APD-16-0R518-292FF

### Insertion Loss flatness Ref Line of Best Fit (+85°C)



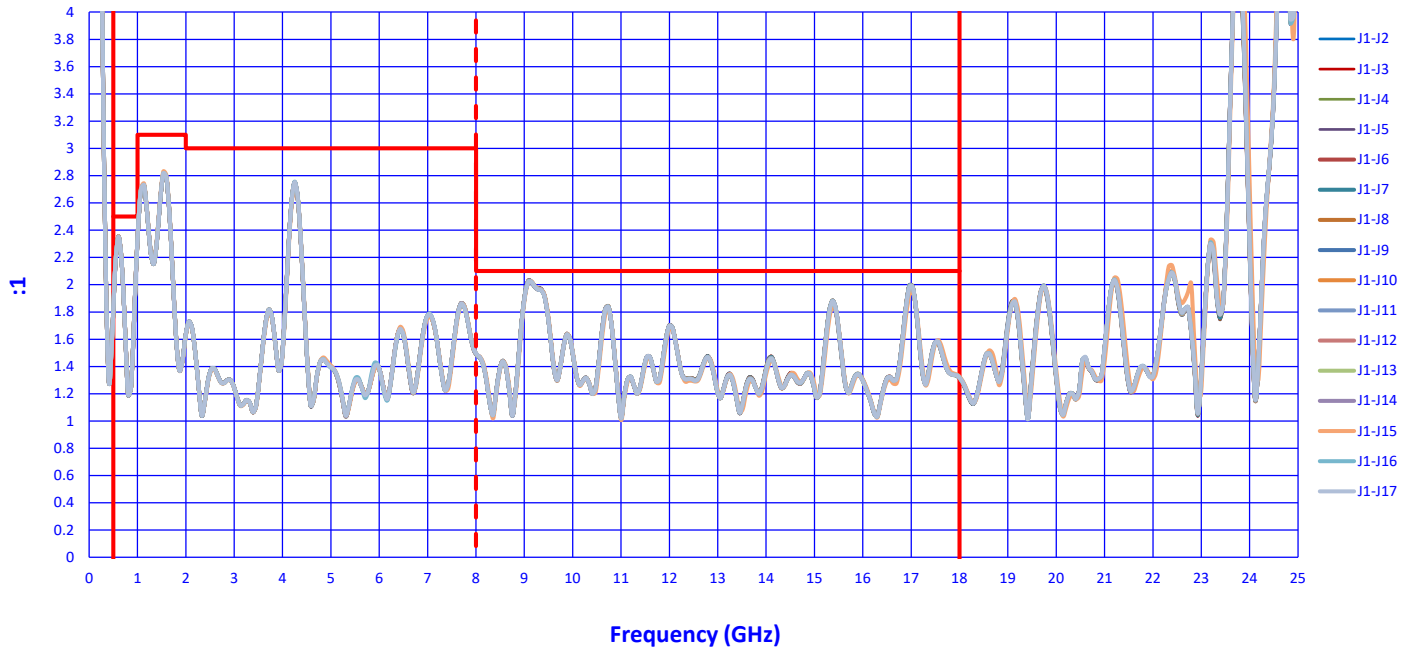
### Isolation (+85°C)



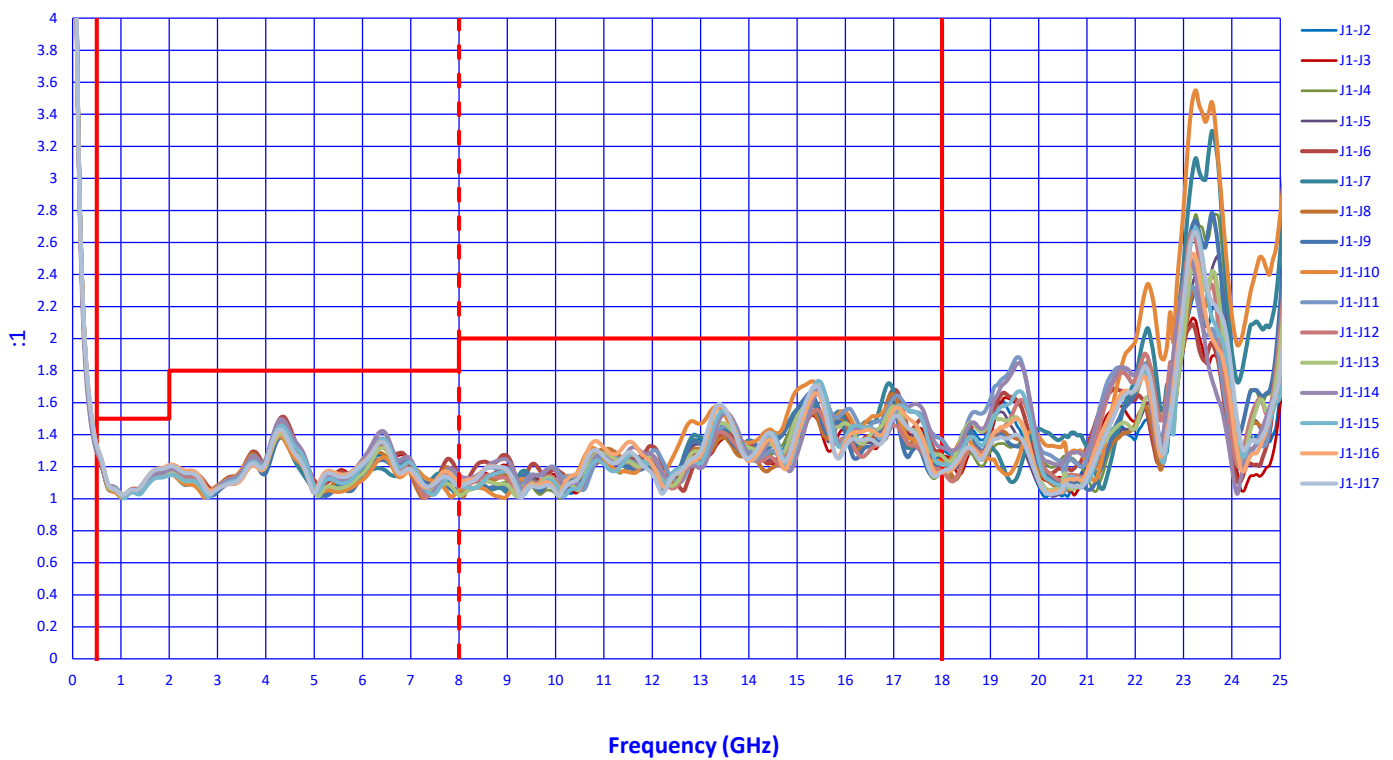


# Typical Characteristics ON APD-16-0R518-292FF

### VSWR IN (+85°C)

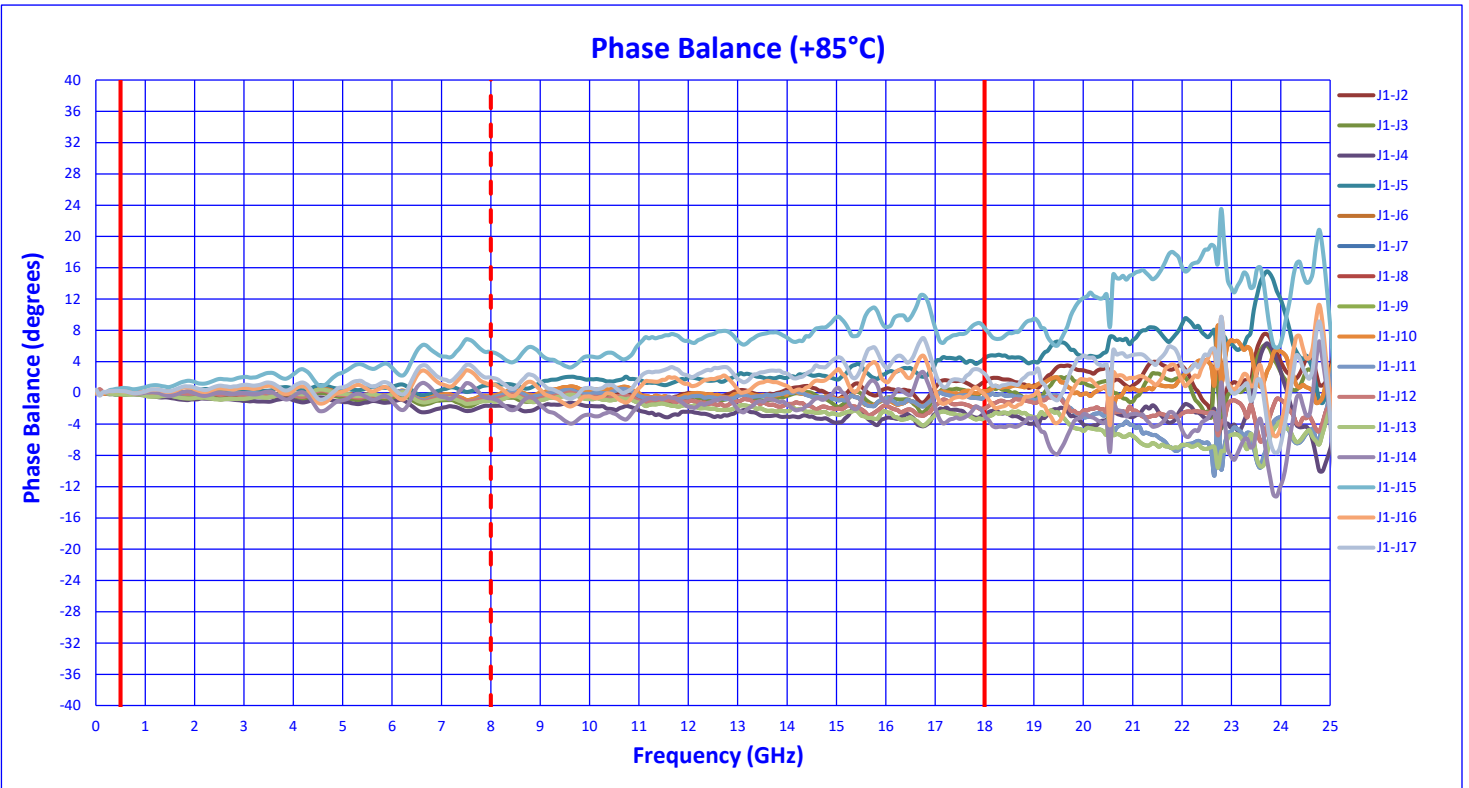
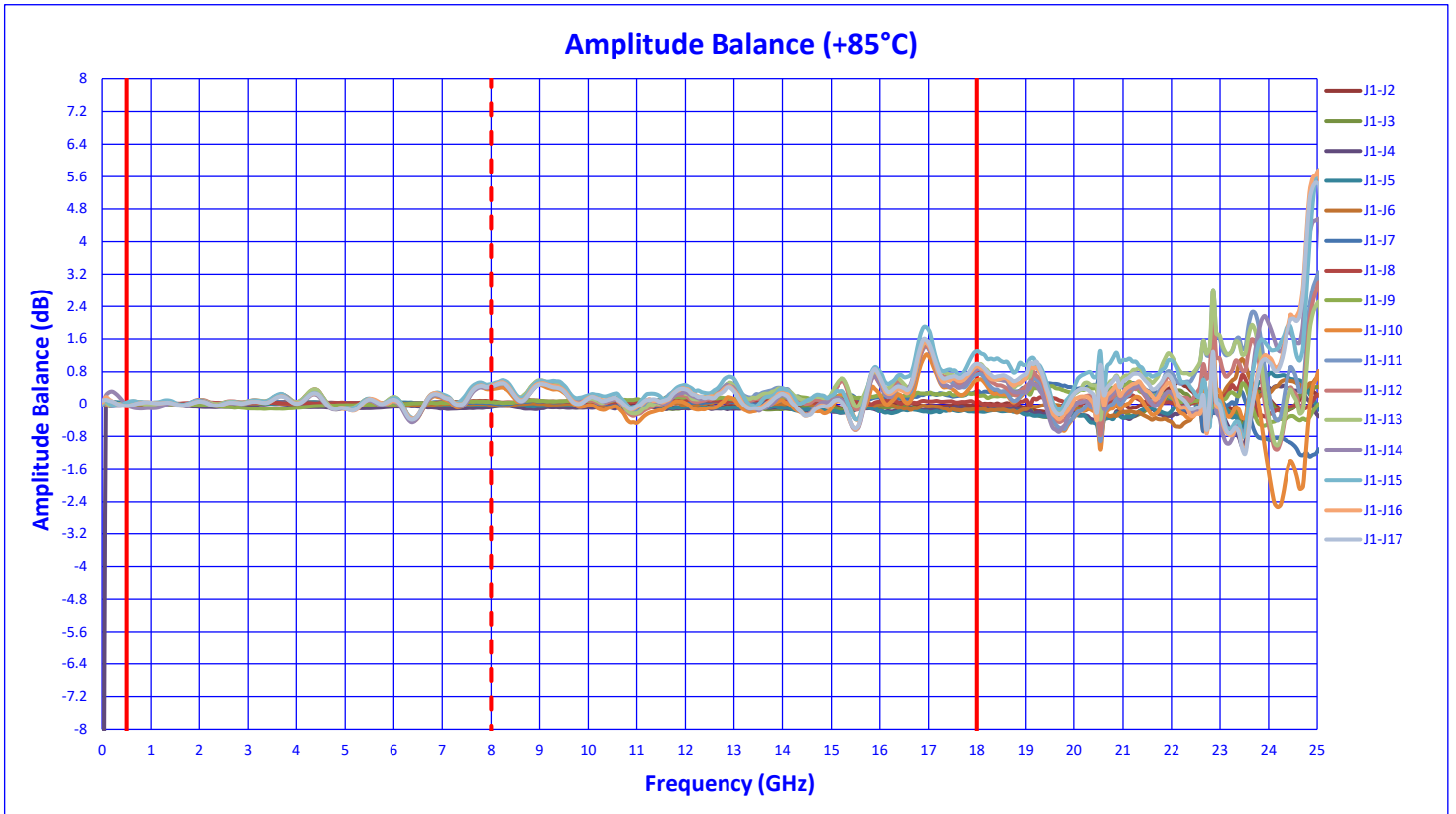


### VSWR OUT (+85°C)



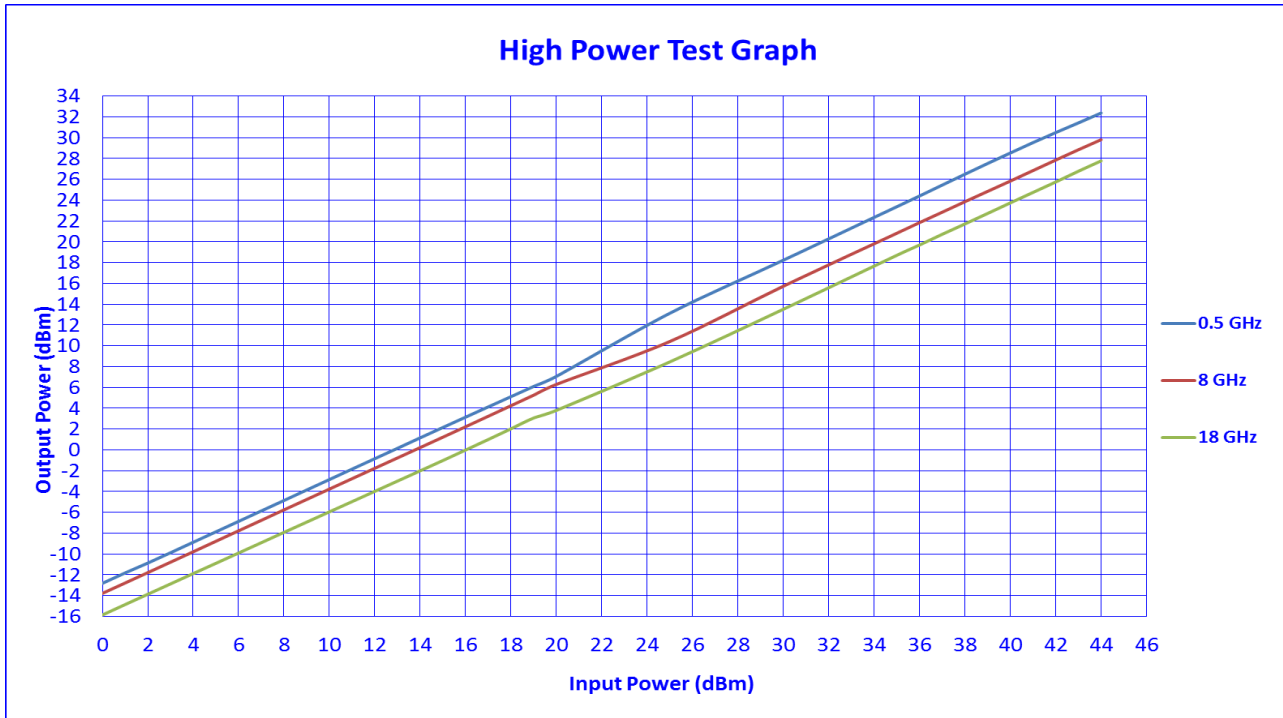


# Typical Characteristics ON APD-16-0R518-292FF





# Typical Characteristics ON APD-16-0R518-292FF



High Power Test									Power Input (Watts)
0.5 GHz			8 GHz			18 GHz			
Power Input (dBm)	Power Output (dBm)	Loss	Power Input (dBm)	Power Output (dBm)	Loss	Power Input (dBm)	Power Output (dBm)	Loss	
0.0	-12.815	12.815	0.0	-13.780	13.780	0.0	-15.857	15.857	
1.0	-11.815	12.815	1.0	-12.782	13.782	1.0	-14.855	15.855	
2.0	-10.871	12.871	2.0	-11.784	13.784	2.0	-13.862	15.862	
3.0	-9.875	12.875	3.0	-10.785	13.785	3.0	-12.871	15.871	
4.0	-8.869	12.869	4.0	-9.783	13.783	4.0	-11.881	15.881	
5.0	-7.866	12.866	5.0	-8.774	13.774	5.0	-10.892	15.892	
6.0	-6.863	12.863	6.0	-7.767	13.767	6.0	-9.902	15.902	
7.0	-5.858	12.858	7.0	-6.764	13.764	7.0	-8.909	15.909	
8.0	-4.855	12.855	8.0	-5.759	13.759	8.0	-7.922	15.922	
9.0	-3.848	12.848	9.0	-4.759	13.759	9.0	-6.935	15.935	
10.0	-2.845	12.845	10.0	-3.758	13.758	10.0	-5.946	15.946	
11.0	-1.839	12.839	11.0	-2.759	13.759	11.0	-4.966	15.966	
12.0	-0.841	12.841	12.0	-1.763	13.763	12.0	-3.980	15.980	
13.0	0.158	12.842	13.0	-0.769	13.769	13.0	-2.995	15.995	
14.0	1.165	12.835	14.0	0.228	13.772	14.0	-2.007	16.007	
15.0	2.159	12.841	15.0	1.228	13.772	15.0	-1.015	16.015	
16.0	3.150	12.850	16.0	2.229	13.771	16.0	-0.013	16.013	
17.0	4.136	12.864	17.0	3.237	13.763	17.0	1.001	15.999	
18.0	5.117	12.883	18.0	4.247	13.753	18.0	2.027	15.973	
19.0	6.101	12.899	19.0	5.265	13.735	19.0	3.071	15.929	
20.0	7.067	12.933	20.0	6.295	13.705	20.0	3.805	16.195	
25.0	13.130	11.870	25.0	10.420	14.580	25.0	8.460	16.540	
30.0	18.230	11.770	30.0	15.730	14.270	30.0	13.520	16.480	1 Watt
35.0	23.370	11.630	35.0	20.820	14.180	35.0	18.700	16.300	3 Watts
36.0	24.400	11.600	36.0	21.840	14.160	36.0	19.690	16.310	4 Watts
37.0	25.450	11.550	37.0	22.840	14.160	37.0	20.720	16.280	5 watts
38.0	26.490	11.510	38.0	23.850	14.150	38.0	21.710	16.290	6 watts
39.0	27.520	11.480	39.0	24.840	14.160	39.0	22.720	16.280	8 watts
40.0	28.530	11.470	40.0	25.830	14.170	40.0	23.740	16.260	10 Watts
41.0	29.530	11.470	41.0	26.840	14.160	41.0	24.740	16.260	12.5 Watts
42.0	30.490	11.510	42.0	27.850	14.150	42.0	25.740	16.260	16 Watts
43.0	31.420	11.580	43.0	28.840	14.160	43.0	26.780	16.220	20 Watts
<b>44.000</b>	<b>32.370</b>	<b>11.630</b>	<b>44.000</b>	<b>29.810</b>	<b>14.190</b>	<b>44.000</b>	<b>27.770</b>	<b>16.230</b>	<b>25 watts</b>