A-Series

RoHS KIT

Surface Mount Thin Film Fixed Chip Attenuator

A-Series thin film fixed attenuators are compact, offer high impedance precision, and are ideally suited for RF and microwave applications. A-Series offer excellent frequency response and can also be configured for upside-down, planarized installation to maximize performance.

FEATURES

- 99.5% Al_2O_3 substrate material
- Ultra low noise attenuator element
- Excellent high frequency performance
- Low inductance and parasitic capacitance
- Stable characteristics over temperature and time
- Nickel barrier layer for excellent solderability and mechanical integrity
- Polyimide passivation of attenuator element
- 100% matte tin finish
- +/- 10% impedence accuracy on A-0402WA/IMS2647/IMS2652 sizes

SPECIFICATIONS

ITEM	SPECIFICATION
Value Range:	0dB to 10dB, 16dB[1]
Standard Impedance:	50Ω Nominal
DC Attenuation Stability[2]:	.001 dB/dB/°C
Operating Temperature:	-55°C to 150°C
Storage Temperature:	-65°C to 150°C
Thermal Conductivity:	26 W/m-°K
Attachment:	Solder and Epoxy
End of Life:	No E.O.L Planned
Moisture Level:	Level 1

1. A-1206 and A-1612 only

2. Based on TCR and resistor tolerance at DC.

ACCURACY

CASE SIZE	ATTENUATION INCREMENT			
	0 - 3	4 - 7	8 - 10	16
0402	± 0.3dB	± 0.5dB	± 0.7dB	N/A
0603	± 0.3dB	± 0.5dB	± 0.7dB	N/A
0805	± 0.3dB	± 0.3dB	± 0.3dB	N/A
1206	± 0.3dB	± 0.3dB	± 0.3dB	± 0.5dB
1612	± 0.3dB	± 0.3dB	± 0.3dB	± 0.5dB

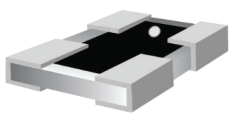
DIMENSIONS

Part Number	Length 'L'	Width 'W'	Height (max) 'H'	Terminal 't'	Rated Power (70° C)	Impedance
A-0402WA, IMS2647, IMS2652	0.039" ± .002"	0.020" ± .002"	0.015"	0.011" ± .002"	32mW	50Ω
A-0603 & IMS2533	0.063" ± .004"	0.032" ± .004"	0.020"	0.020" ± .006"	63mW	50Ω
A-0805 & IMS1141	0.079" ± .008"	0.049" ± .008"	0.020"	0.020" ± .008"	100mW	50Ω
A-1206	0.126" ± .008"	0.063" ± .008"	0.020"	0.039" ± .010"	125mW	50Ω
A-1612	0.165" ± .008"	0.118" ± .008"	0.038"	0.035" ± .020"	250mW	50Ω

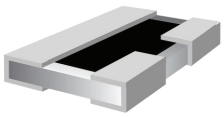
Data available in Modelithics Library

TERMINAL STYLE

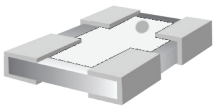
WA -Full Wraparound



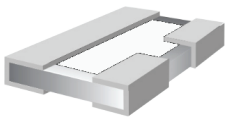
A-0402WA/IMS2647



A-0603, A-0805, A-1206, A-1612

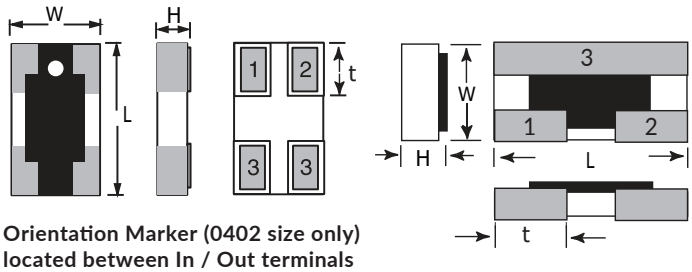


IMS2652



IMS2533, IMS1141

TERMINAL DIMENSIONS & FUNCTION



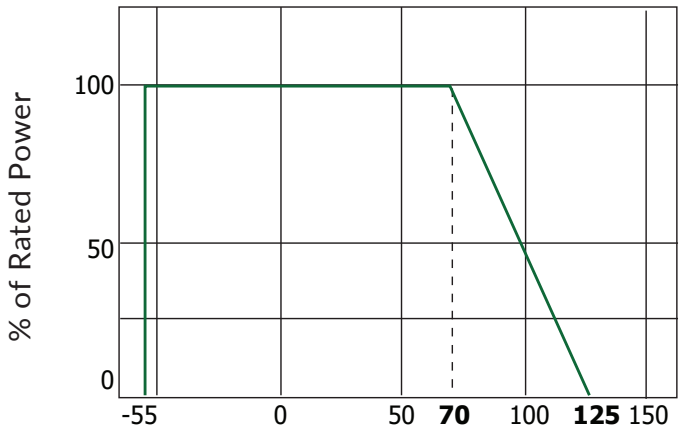
Orientation Marker (0402 size only) located between In / Out terminals

Terminal Functions (all sizes)
1 - Input / Output
2 - Output / Output
3 - Ground

INPUT POWER @ 70°C

	A-0402WA IMS2647 IMS2652	A-0603 IMS2533	A-0805 IMS1141	A-1206	A-1612
1dB	155mW	300mW	485mW	607mW	1.2W
2dB	87mW	171mW	271mW	339mW	678mW
3dB	64mW	126mW	200mW	251mW	501mW
4dB	53mW	105mW	166mW	208mW	415mW
5dB	47mW	92mW	146mW	183mW	365mW
6dB	43mW	85mW	134mW	168mW	336mW
7dB	40mW	79mW	125mW	156mW	313mW
8dB	38mW	75mW	119mW	148mW	297mW
9dB	37mW	72mW	114mW	143mW	286mW
10dB	36mW	70mW	111mW	139mW	278mW

Power De-Rating Curve



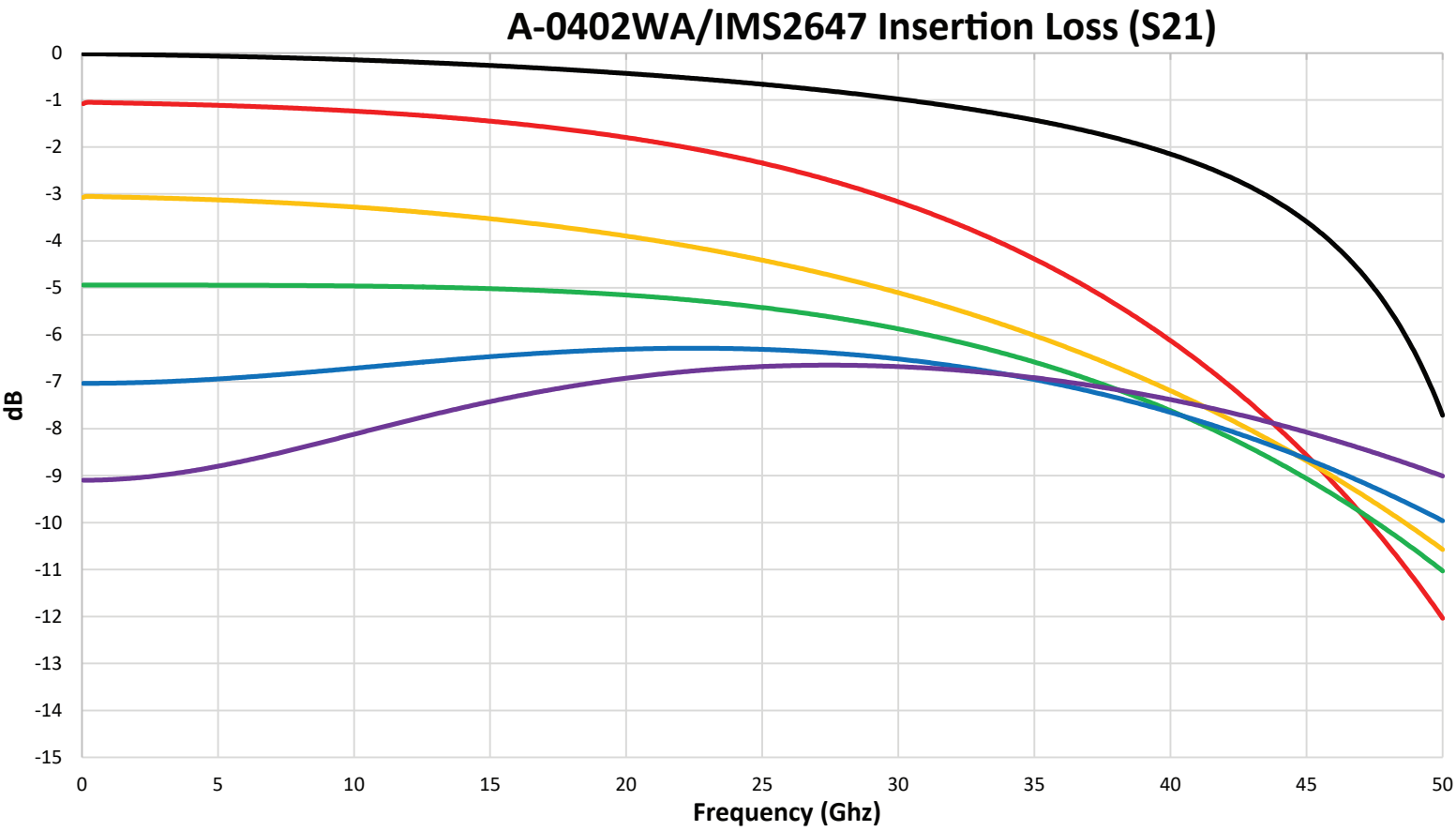
RF PERFORMANCE ESTIMATES - FREQUENCY AT -15dB RETURN LOSS

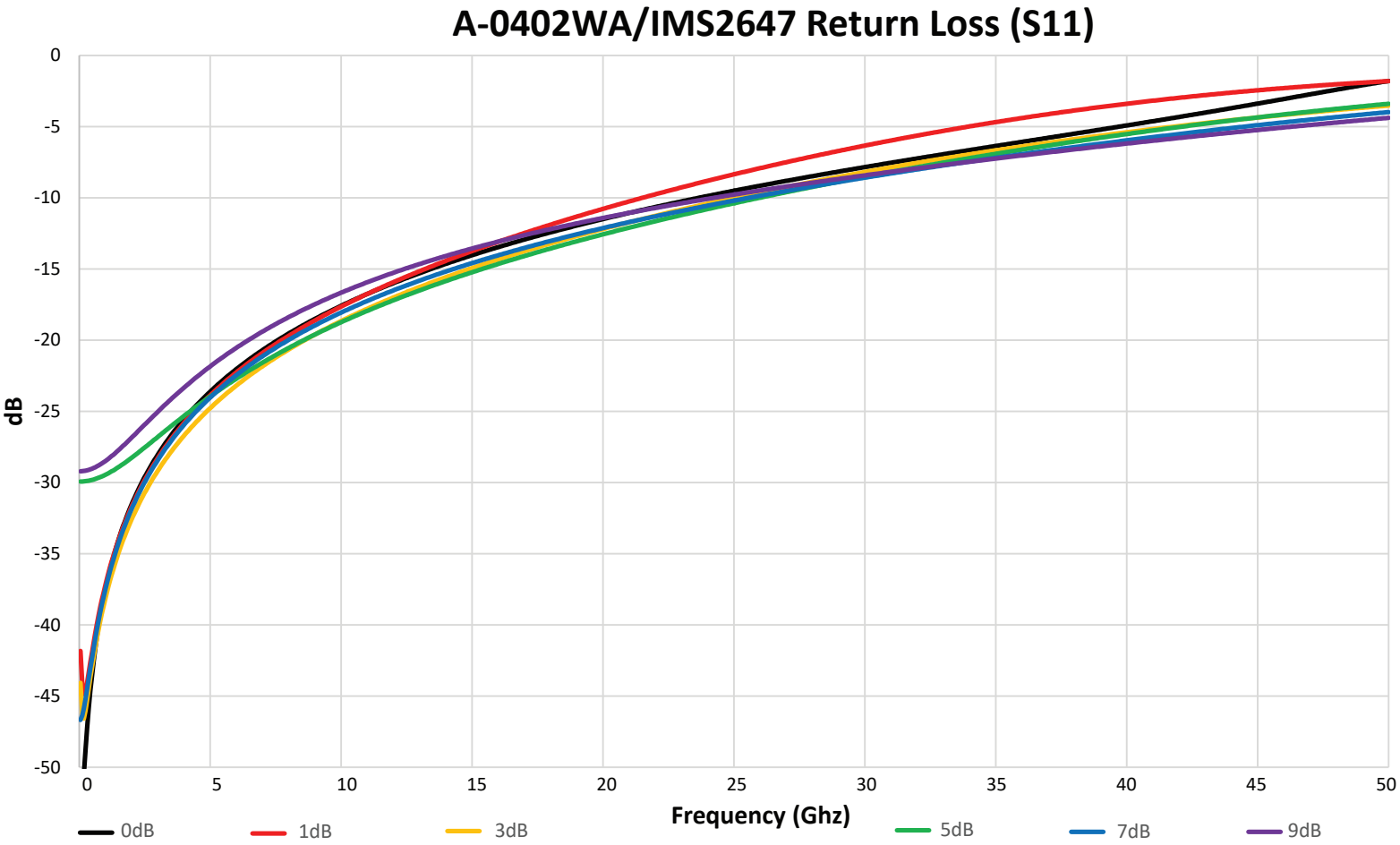
	A-0402WA IMS2647[1]	IMS2652[1]	A-0603[2]	IMS2533[2]	A-0805[3]	IMS1141[3]	A-1206
0dB	13.5 Ghz	48.0 Ghz	11.7 Ghz	34.6 Ghz	4.9 Ghz	20-24+ Ghz	5-10+ Ghz
1dB	13.0 Ghz	46.7 Ghz	14.2 Ghz	36.0 Ghz	5.6 Ghz	20-24+ Ghz	5-10+ Ghz
2dB	14.0 Ghz	47.6 Ghz	14.8Ghz	36.9 Ghz	6.0 Ghz	20-24+ Ghz	5-10+ Ghz
3dB	14.9 Ghz	47.3 Ghz	15.0 Ghz	36.9 Ghz	6.4 Ghz	20-24+ Ghz	5-10+ Ghz
4dB	15.7 Ghz	46.8 Ghz	14.8 Ghz	28.3 Ghz	6.1 Ghz	20-24+ Ghz	5-10+ Ghz
5dB	15.4 Ghz	49.0 Ghz	13.1 Ghz	26.6 Ghz	6.5 Ghz	20-24+ Ghz	5-10+ Ghz
6dB	15.4 Ghz	45.6 Ghz	13.1 Ghz	27.9 Ghz	6.7 Ghz	20-24+ Ghz	5-10+ Ghz
7dB	14.3 Ghz	40.3 Ghz	13.8 Ghz	28.2 Ghz	6.2 Ghz	20-24+ Ghz	5-10+ Ghz
8dB	13.6 Ghz	38.7 Ghz	12.6 Ghz	28.7 Ghz	6.6 Ghz	20-24+ Ghz	5-10+ Ghz
9dB	12.4 Ghz	36.7 Ghz	12.7 Ghz	28.8 Ghz	6.9 Ghz	20-24+ Ghz	5-10+ Ghz
10dB	12.3 Ghz	32.2 Ghz	13.0 Ghz	26.7 Ghz	7.0 Ghz	20-24+ Ghz	5-10+ Ghz

1 - A-0402WA/ IMS2647 / IMS2652 - 6.6mil Rogers 4350B
2 - A-0603 / IMS2533 - 6.6mil Rogers 4350B
3 - A-0805 / IMS1141 - 20 mil Rogers 4350B

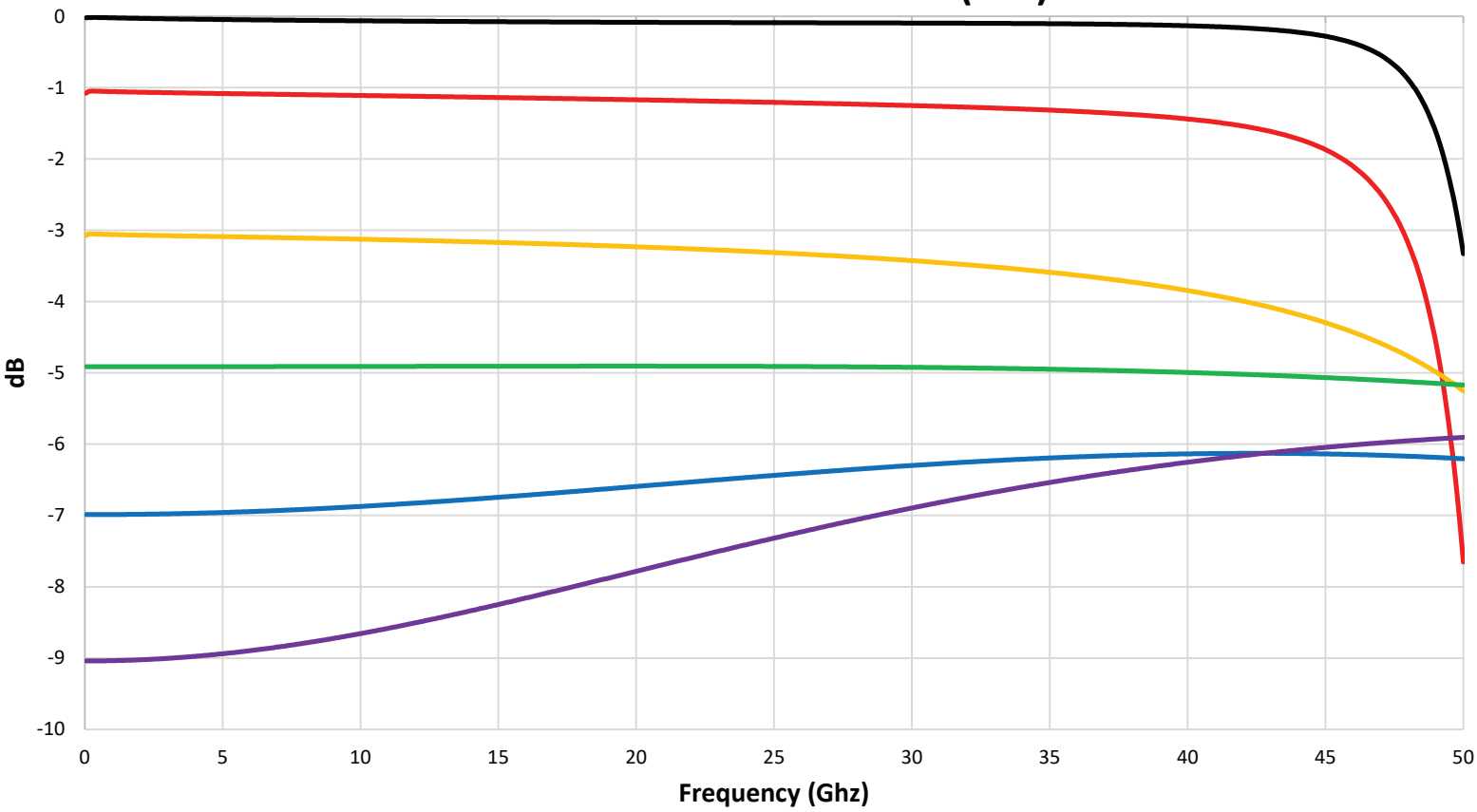
*A-1612-C Performance Unavailable

INSERTION AND RETURN LOSS PLOTS

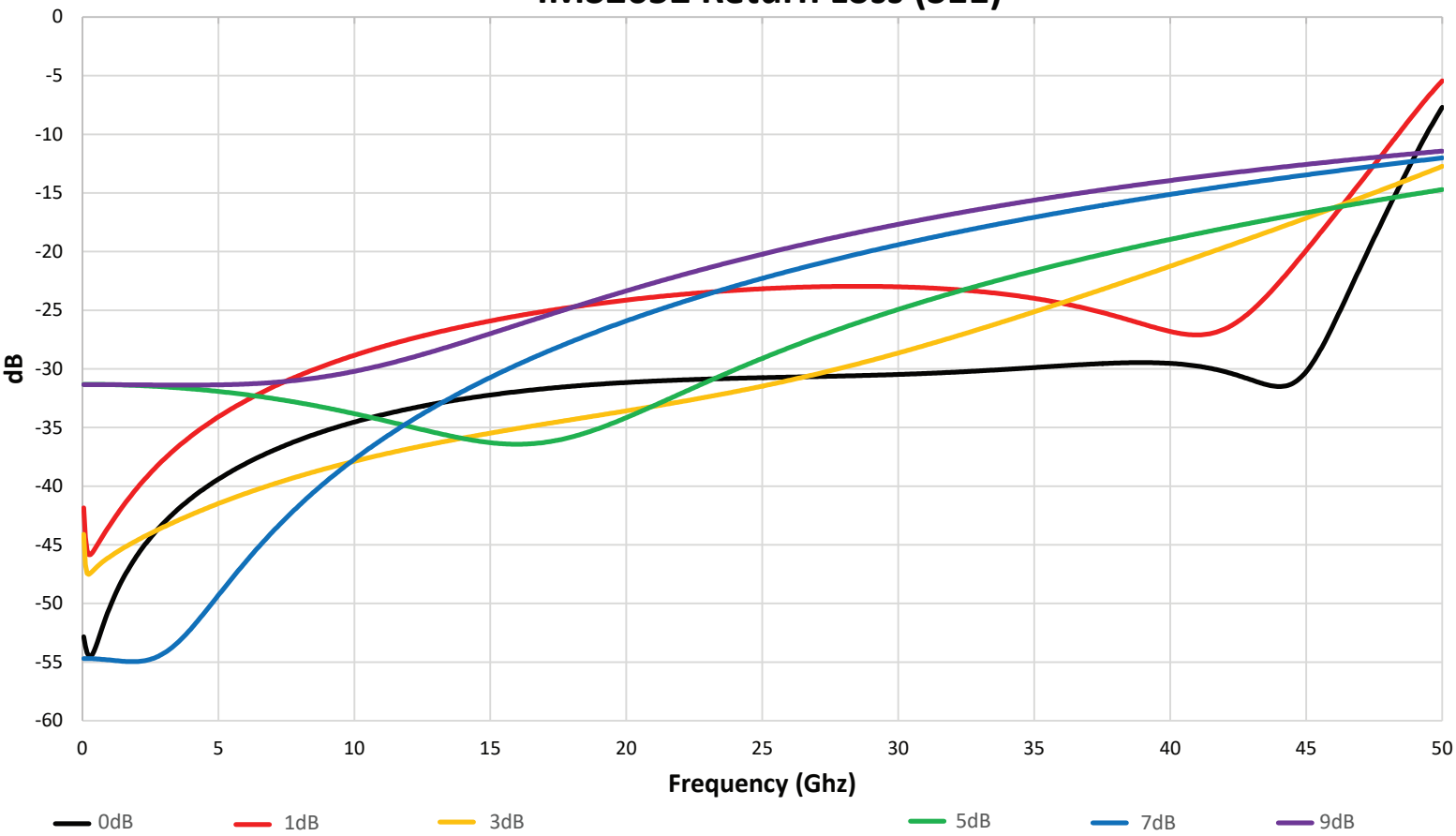




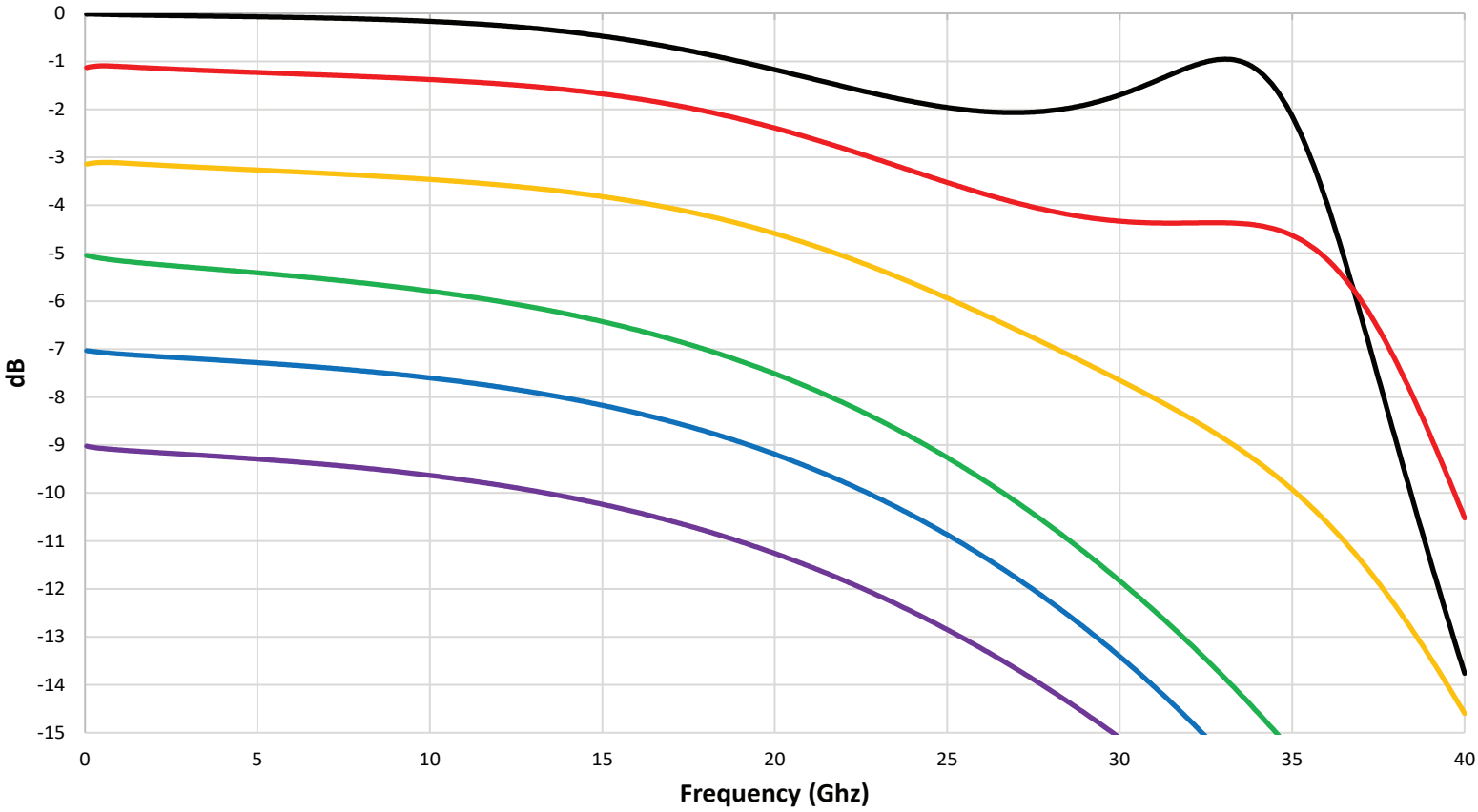
IMS2652 Insertion Loss (S21)



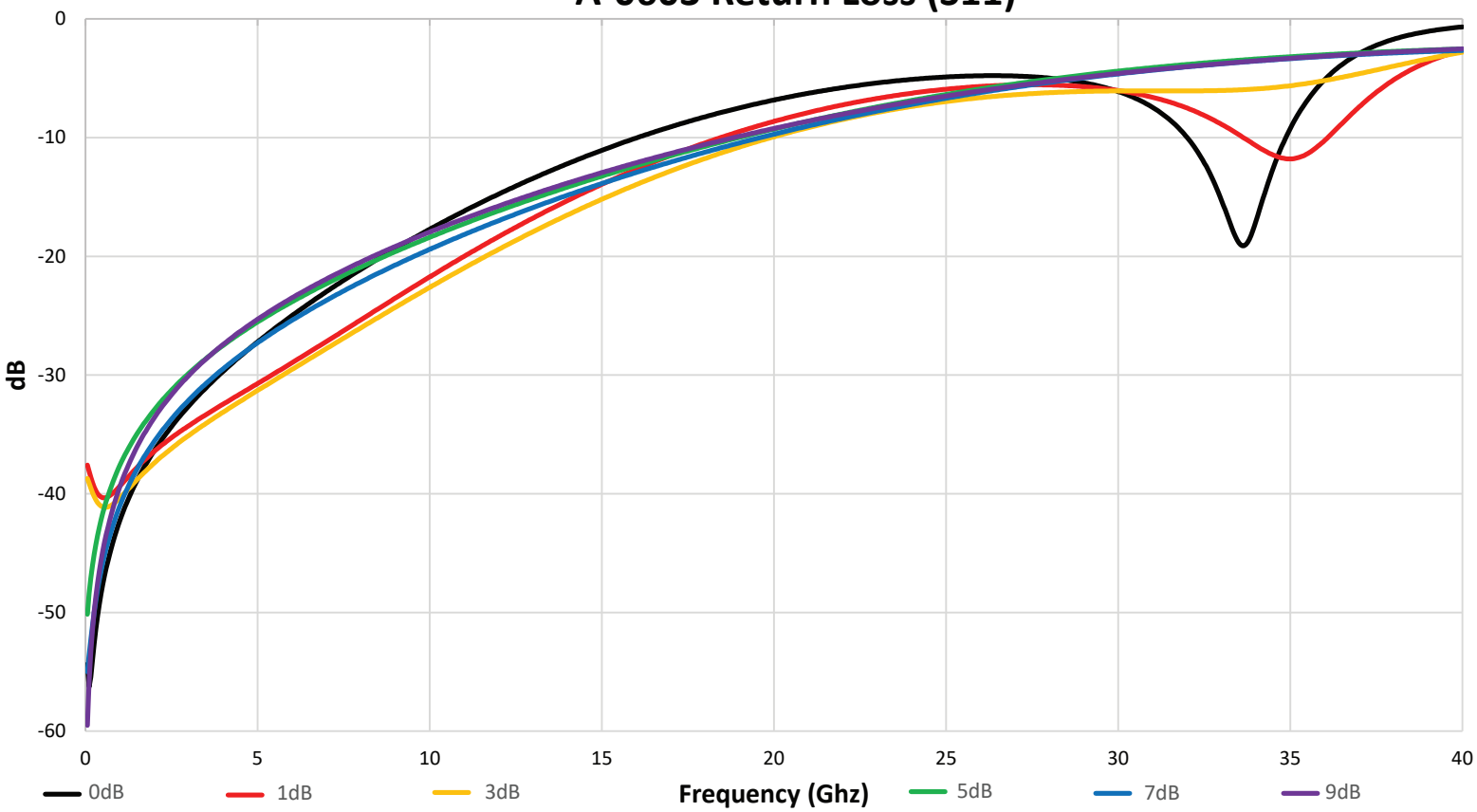
IMS2652 Return Loss (S11)



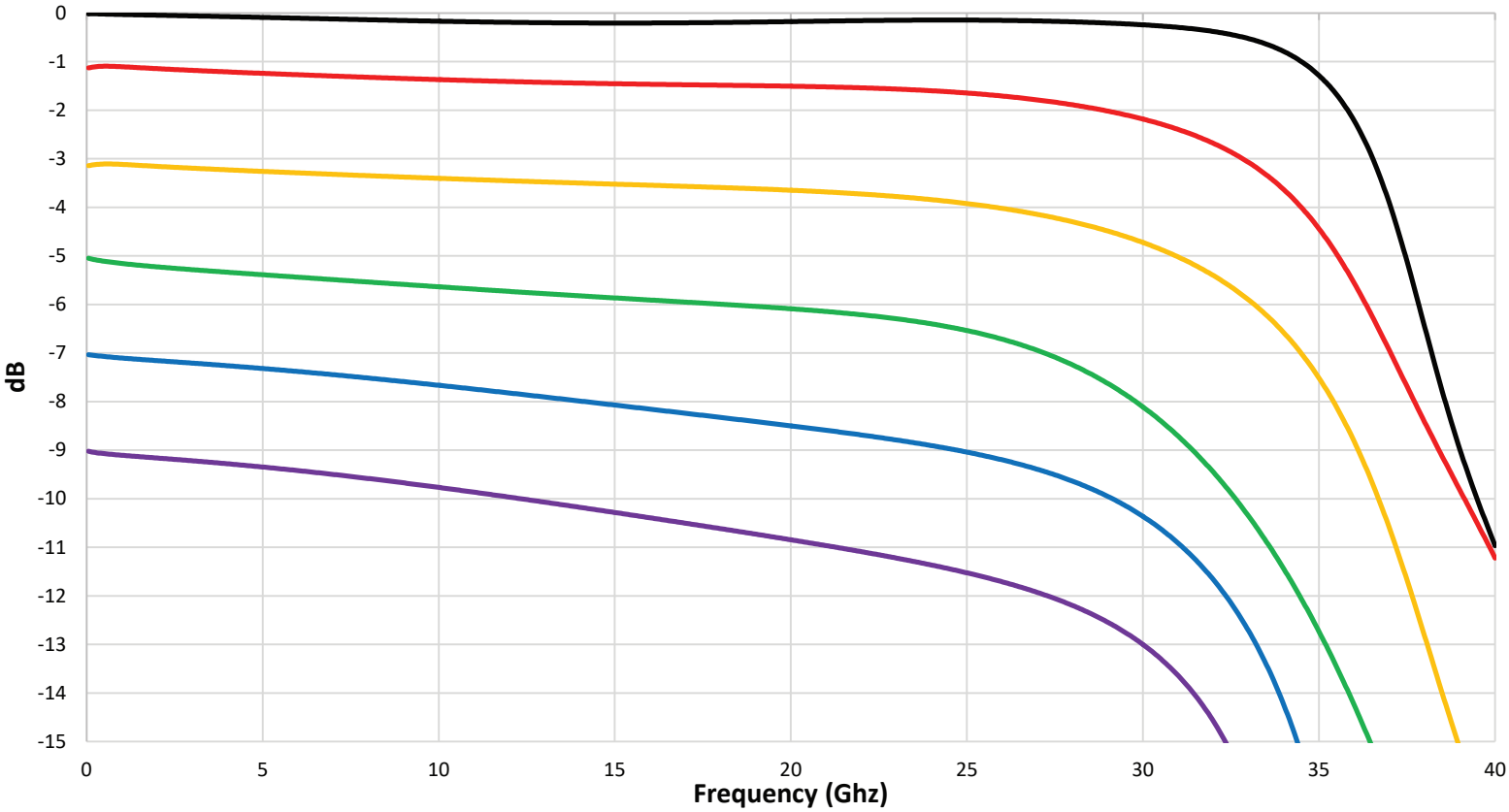
A-0603 Insertion Loss(S21)



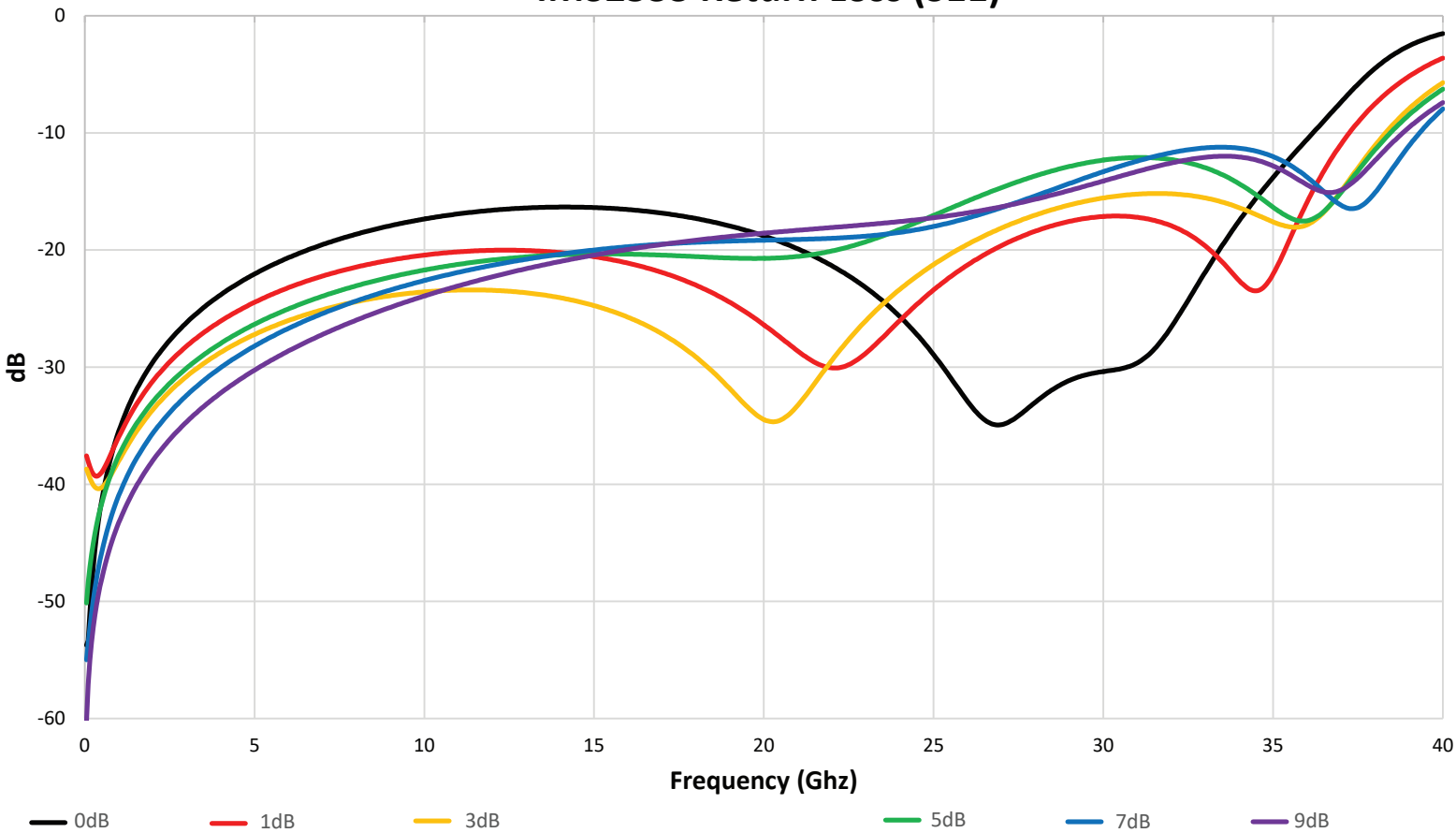
A-0603 Return Loss (S11)



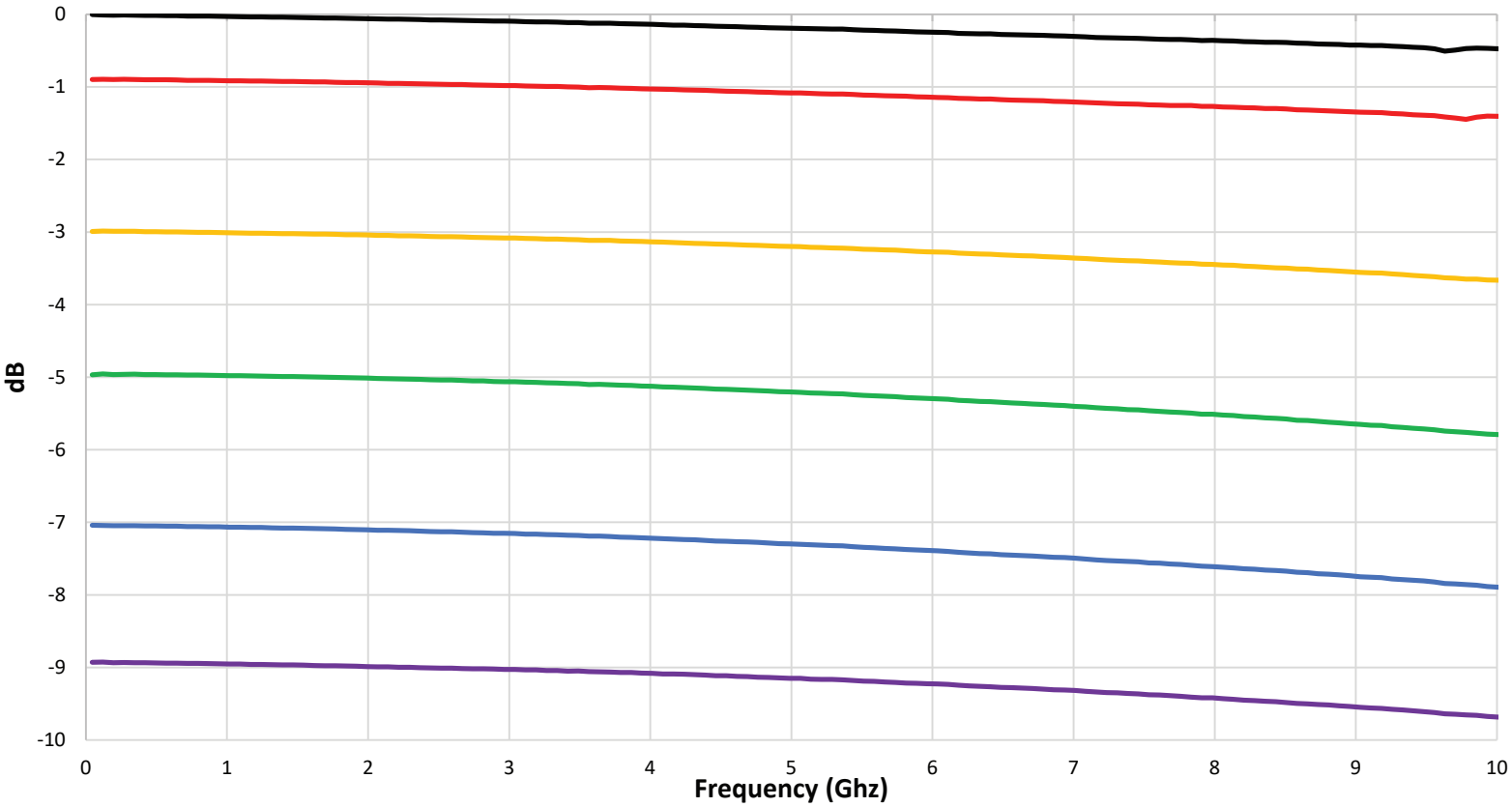
IMS2533 Insertion Loss (S21)



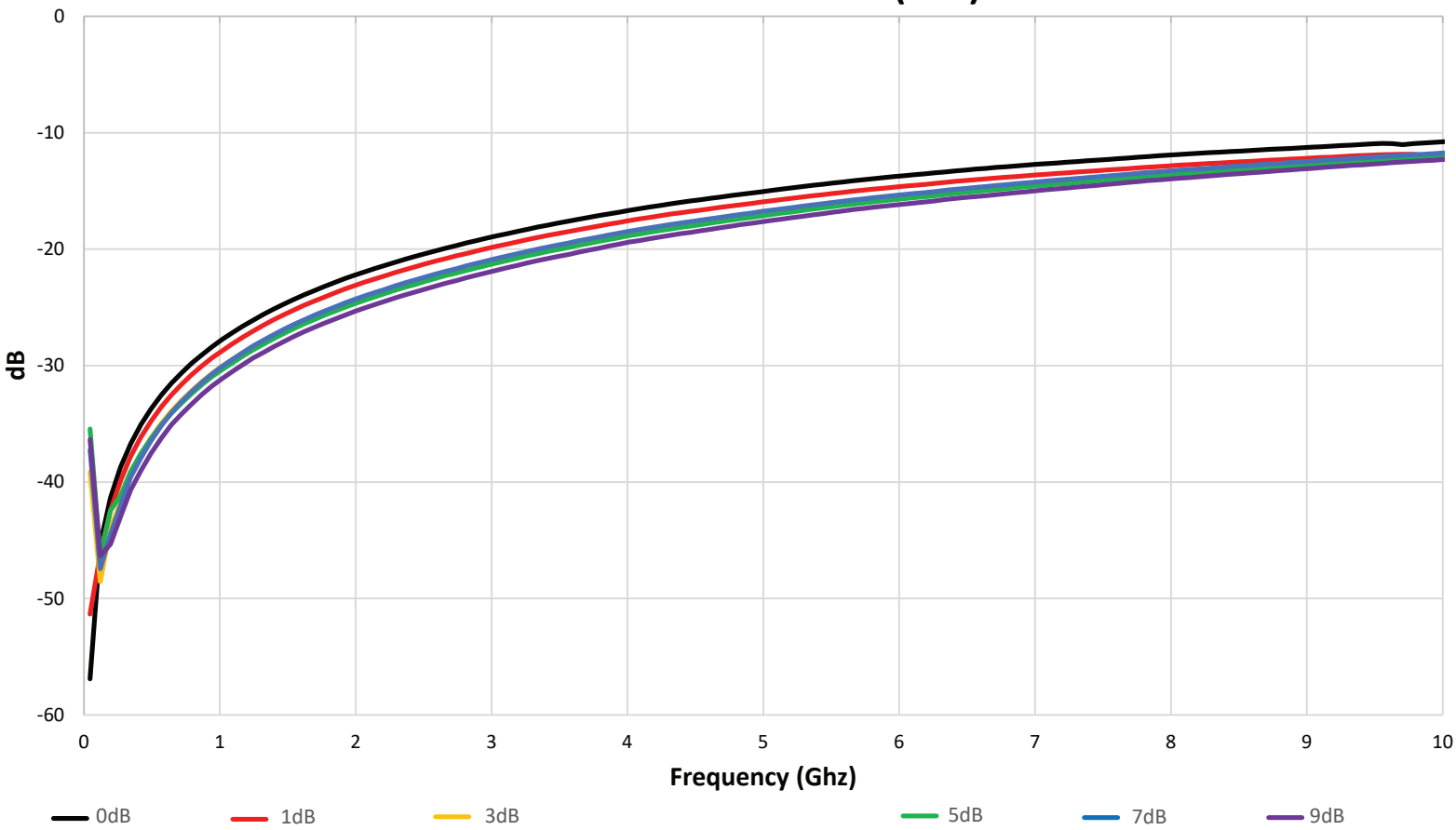
IMS2533 Return Loss (S11)



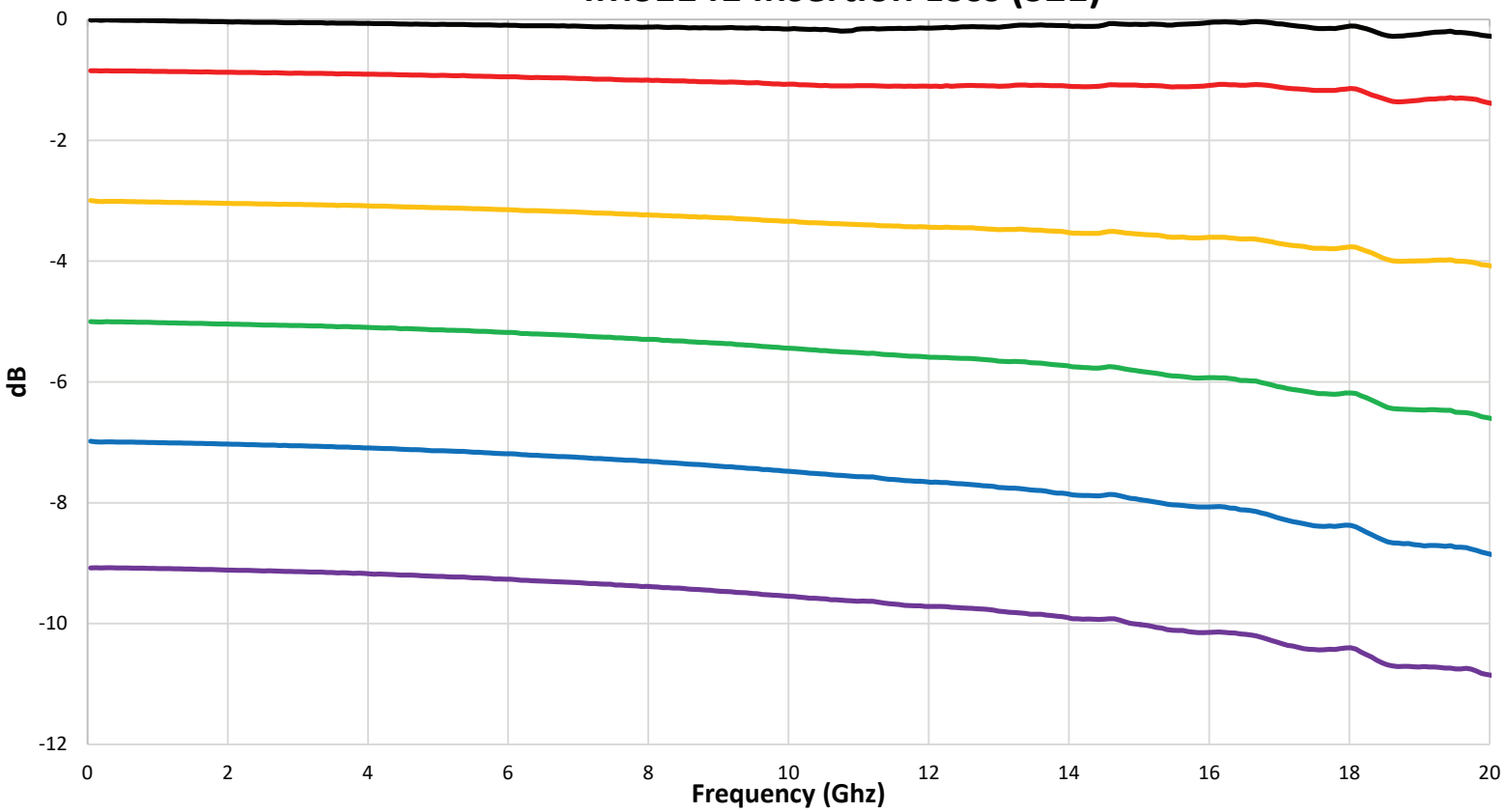
A-0805 Insertion Loss (S21)



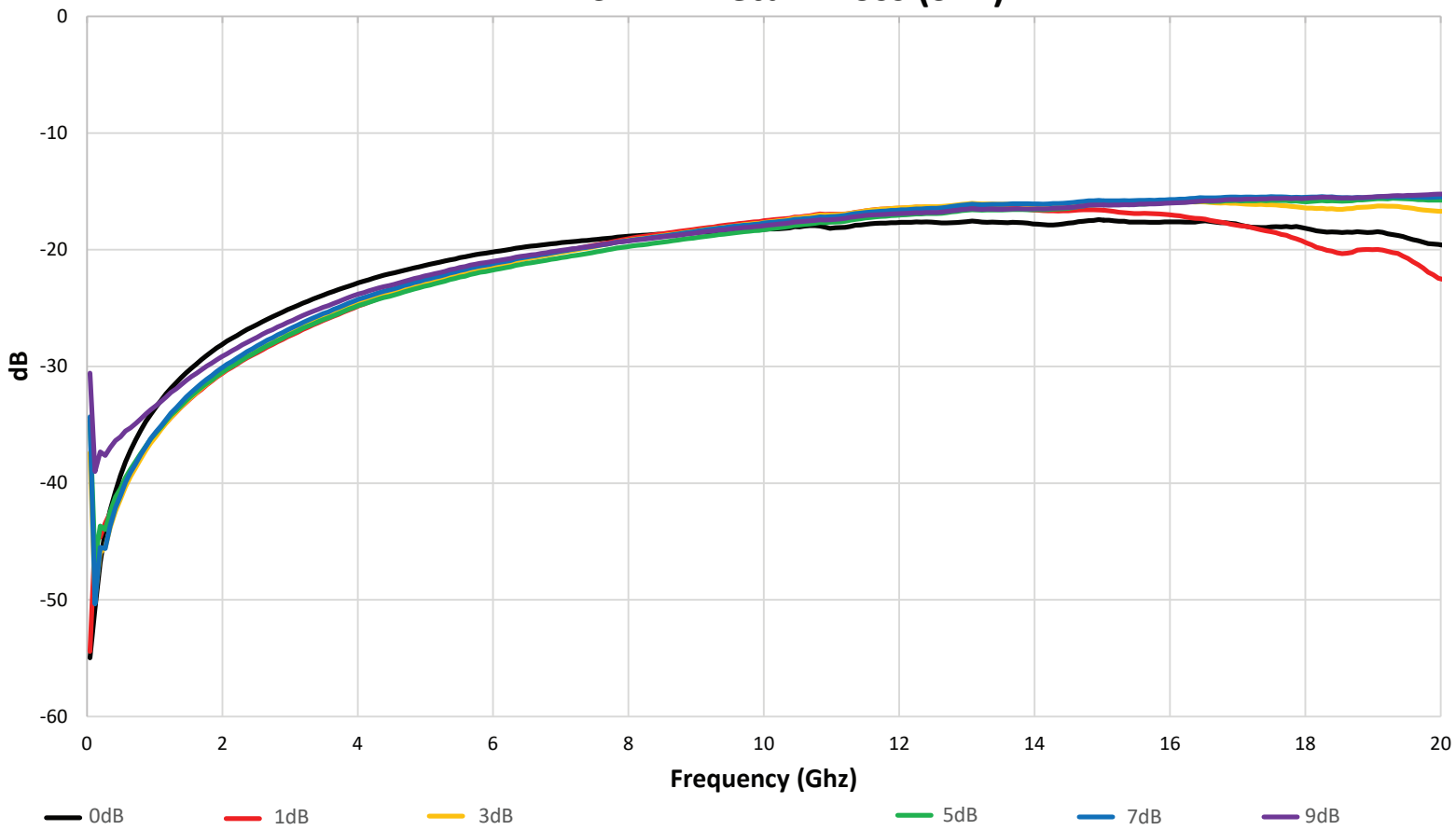
A-0805 Return Loss (S11)



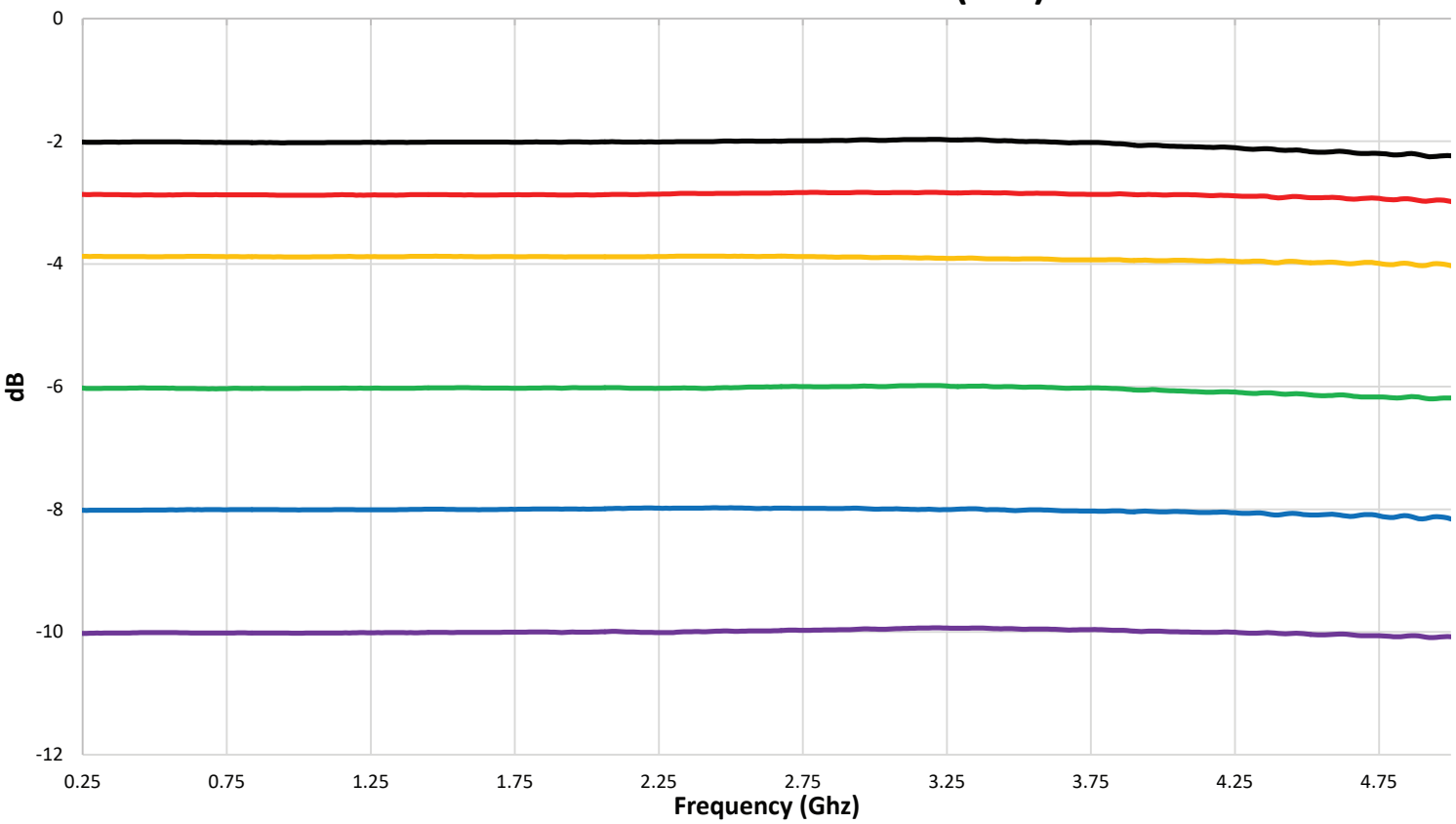
IMS1141 Insertion Loss (S21)



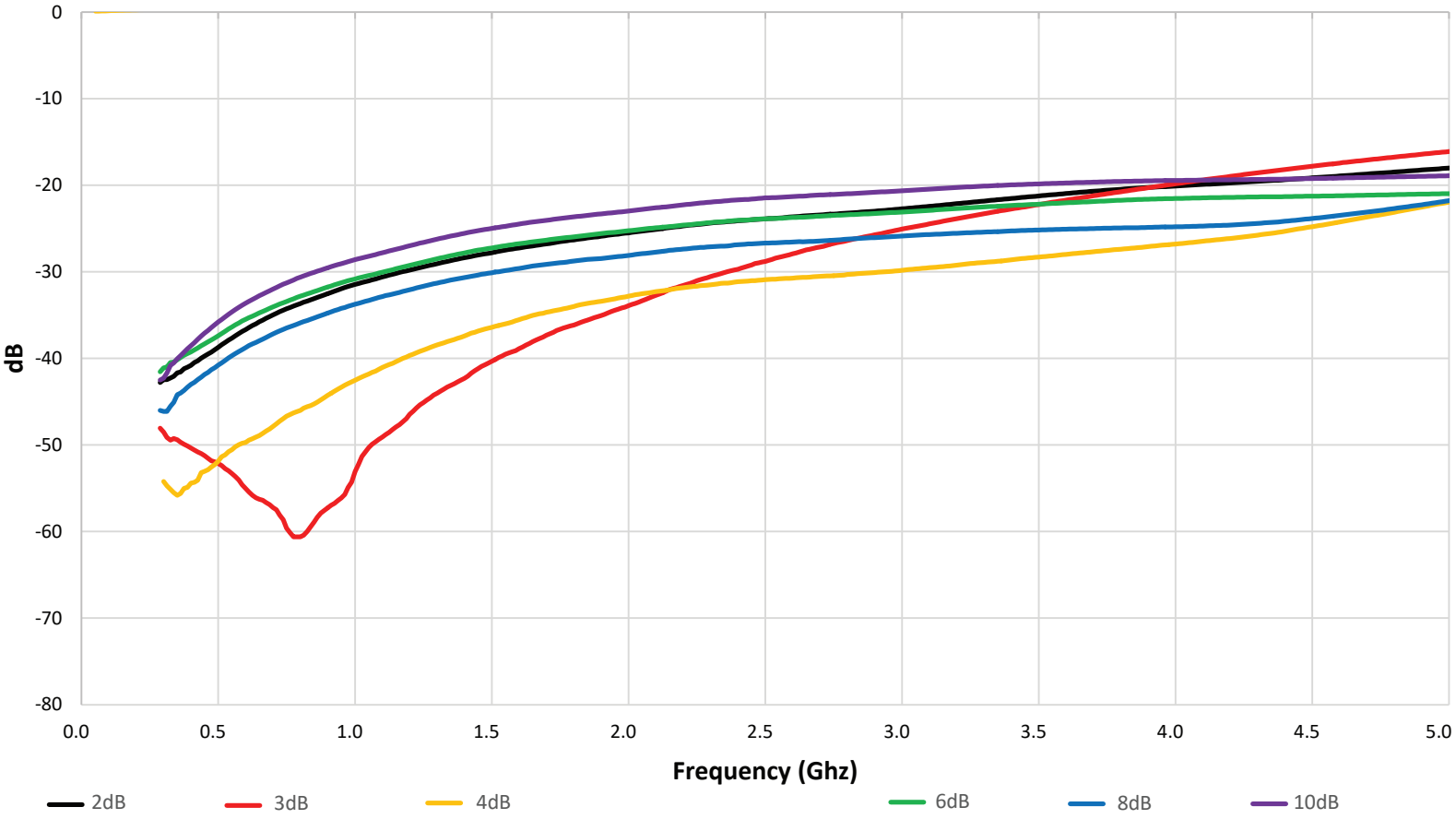
IMS1141 Return Loss (S11)



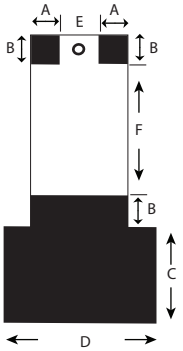
A-1206 Insertion Loss (S21)



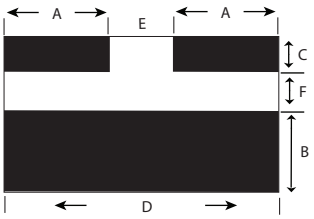
A-1206 Return Loss (S11)



TERMINAL DIMENSIONS OF INSTALLED SURFACE



A-0402WA/IMS2647
IMS2652



A-0603 A-0805
A-1206 A-1612
IMS2533 IMS1141

All dimensions are in inches (nominal)

Part	A	B	C	D	E	F
A-0402WA/ IMS2647	.009	.014	.024	.048	.008	.016
A-0603	.023	.046	.013	.070	.023	.012
A-0805	.030	.051	.024	.090	.030	.013
A-1206	.049	.051	.026	.136	.038	.026
A-1612	.030	.027	.047	.175	.115	.027
IMS2652	.009	.014	.024	.048	.008	.016
IMS2533	.023	.046	.013	.070	.023	.012
IMS1141	.030	.051	.024	.090	.030	.013

RESISTOR SIDE MOUNT ORIENTATION

A-0402WA IMS2647	IMS2652	A-0603	IMS2533	A-0805	IMS1141	A-1206	A-1612
UP	DOWN	UP	DOWN	UP	DOWN	UP	UP

ORDERING INFORMATION

Face Up Example: 3dB, 100mW, SMT 0805 attenuator

A - 0805 - C - 03DB

Prefix for Face Up Attenuator

Part
- ☑ 0402WA/IMS2647
- ☑ 0603
- ☑ 0805
- ☑ 1206
- ☑ 1612

C = 50Ω Impedance

Attenuation level
00 - 10dB, 16dB[1]

1. *A-1206 and A-1612 only*

Face Down Example: 3dB, 100mW, SMT 0805 attenuator

IMS1141 - 03DB

- ☑ IMS1141 = *Face Down 0805*
- ☑ IMS2533 = *Face Down 0603*
- ☑ IMS2652-C = *Face Down 0402WA*

Attenuation level
00 - 10dB

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RoHS Compliant = ☑

RoHS KIT