

TYPICAL CHARACTERISTICS
FOR
PSDM-25R5G27G-360

PMI MODEL NUMBER PSDM-25R5G27G-360 IS A 8 BIT DIGITALLY CONTROLLED PHASE SHIFTER, OPERATING OVER THE 25.5 TO 27 GHz FREQUENCY RANGE. THIS MODEL FEATURES AN LSB OF 1.4° AND 360° OF PHASE CONTROL.



REPORTED BY: DYLAN HOSCHAR

TESTED BY: DYLAN HOSCHAR

8/20/2026

TYPICAL CHARACTERISTICS FOR PSDM-25R5G27G-360

OUTLINE DRAWING

DESCRIPTION:

PMI MODEL NUMBER PSDM-25R5G27G-360 IS A 8 BIT DIGITALLY CONTROLLED PHASE SHIFTER, OPERATING OVER THE 25.5 TO 27 GHz FREQUENCY RANGE. THIS MODEL FEATURES AN LSB OF 1.4° AND 360° OF PHASE CONTROL, ALL IN A SLIM LINE PACKAGE MEASURING ONLY (L) 2.0" X (W) 2.1" X (H) 0.5".

SPECIFICATIONS:

• FREQUENCY RANGE:	25.5 TO 27 GHz
• INSERTION LOSS:	12 dB MAX*
• VSWR:	2.2:1 MAX*
• PHASE CONTROL RANGE:	360 DEGREES
• PHASE LSB STEP:	1.4 DEGREES
• PHASE FLATNESS:	±10 DEGREES MAX*
• AMPLITUDE VARIATION VS. POWER:	±3 dB MAX**
• AMPLITUDE VARIATION VS. TEMPERATURE:	±5 dB MAX (-40°C TO +85°C)*
• PHASE VARIATION VS. POWER:	±10 DEGREES TYP, ±20 DEGREES MAX*
• PHASE VARIATION VS. TEMPERATURE:	±20 DEGREES MAX (-40°C TO +85°C)*
• SWITCHING SPEED:	500ns MAX
• INPUT POWER:	+10 dBm MAX
• CONTROL:	8 BIT TTL (1 = ON, 0 = OFF)
• DC SUPPLY:	+12 TO +15 VDC @ 100 mA MAX
• SIZE:	(L) 2.0" x (W) 2.1" x (H) 0.5"
• PWR/CTL CONNECTORS:	15 PIN D-SUB-FEMALE (MATING CONNECTOR SUPPLIED)
• FINISH:	PAINTED BLUE

* @ 0 dBm INPUT POWER

** @ -10 dBm TO +5 dBm INPUT POWER

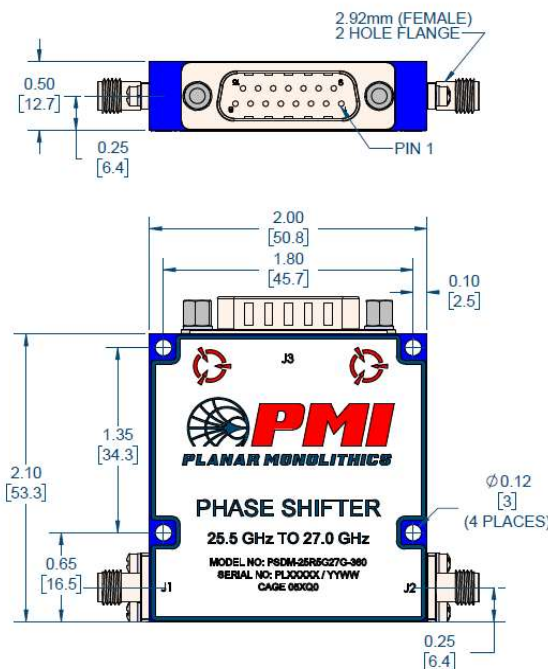
PIN NO:	J3 PIN FUNCTIONS
1	11.25°
2	5.625°
3	2.813°
4	1.406° (LSB)
5	GND
6	NOT USED
7	NOT USED
8	GND
9	NOT USED
10	NOT USED
11	+12V TO +15V
12	180° (MSB)
13	90°
14	45°
15	22.5°

ENVIRONMENTAL RATINGS:

• TEMPERATURE:	-40°C TO +85°C (OPERATING)
	-65°C TO +125°C (STORAGE)
• HUMIDITY:	MIL-STD-202, METHOD 103B COND. B
• SHOCK:	MIL-STD-202, METHOD 213B COND. B
• VIBRATION:	MIL-STD-202, METHOD 204D COND. B
• ALTITUDE:	MIL-STD-202, METHOD 105C COND. B
• TEMPERATURE CYCLE:	MIL-STD-202, METHOD 107D COND. A

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

ZONE	REV	DESCRIPTION	DATE	APPROVED
	A1	ORIGINAL RELEASE	4/10/08	



PMI CONFIDENTIAL AND PROPRIETARY

APPROVALS		DATE	TITLE	
DESIGNED BY	D. HOSCHAR	4/10/08	OUTLINE	
REVIEWED BY			PSDM-25R5G27G-360	
SIZE	B	PSDM NO.	27054620	REV. A1
SCALE	1:1	SHEET 1 OF 1		

TYPICAL CHARACTERISTICS FOR PSDM-25R5G27G-360

TEST DATA

Data Taken at 0 dBm Input Power - Unless otherwise specified

Test Item No.	Parameters	Specified Value	Measured Value		
			+25°C	-40°C	+85°C
1	Frequency Range:	25.5 GHz to 27 GHz	25.5 GHz to 27 GHz		
2	Insertion Loss:	12 dB Max.	9.5 dB See Plot	9.2 dB See Plot	9.7 dB See Plot
3	VSWR:	2.2:1 Max.	2.08:1	2.13:1	2.08:1
4	Phase Control Range:	360°	364.49°	353.64°	372.68°
5	Phase LSB Step:	1.4°	1.6°	1.5°	1.5°
6	Phase Flatness:	±10° Max.	±5.48° See Plot	±6.09° See Plot	±5.13° See Plot
7	Switching Speed:	500ns Max.	Rise: 483.81 ns Fall: 454.52 ns		
8	DC Supply:	+12V to +15V @ 100 mA Max.	+12 to +15V @ 35 mA	+12 to +15V @ 32 mA	+12 to +15V @ 38 mA
9	Amplitude Variation VS. Power:	±3 dB Max. (-10 to +5 dBm)	±0.49 dB	±0.5 dB	±0.46 dB
	VS. Temperature:	±5 dB Max. (-40°C to +85°C)	±0.4 dB		
10	Phase Variation VS. Power:	±10° Typ., ±20° Max. (-10 to +5 dBm)	± 13.6°	± 14.3°	± 13.5°
	VS. Temperature:	±20° Max. (-40°C to +85°C)	±5.3°		

TYPICAL CHARACTERISTICS FOR PSDM-25R5G27G-360

ACCURACY AND FLATNESS @ 25°C

Programmed Phase Shift	Phase Shift	Accuracy	Flatness
DEG	DEG	DEG	±DEG
1.40625	1.59	-0.18	0.13
2.8125	3.10	-0.29	0.23
5.625	6.10	-0.47	0.43
11.25	12.20	-0.95	0.83
22.50	23.80	-1.30	1.18
45.00	46.15	-1.15	1.03
90.00	91.61	-1.61	2.18
180.00	181.63	-1.63	3.04

Programmed Phase Shift	Phase Shift	Accuracy	Flatness
DEG	DEG	DEG	±DEG
33.75	35.04	-1.29	1.19
67.50	67.64	-0.14	1.00
101.25	102.74	-1.49	2.63
135.00	136.61	-1.61	3.32
168.75	170.31	-1.56	3.14
202.50	204.30	-1.80	2.86
236.25	238.21	-1.96	2.98
270.00	273.37	-3.37	3.93
303.75	308.88	-5.13	5.15
337.50	343.16	-5.66	5.18
358.59	364.49	-5.90	5.480

ACCURACY AND FLATNESS @ -40°C

Programmed Phase Shift	Phase Shift	Accuracy	Flatness
DEG	DEG	DEG	±DEG
1.40625	1.54	-0.14	0.20
2.8125	3.06	-0.24	0.31
5.625	5.99	-0.36	0.49
11.25	11.74	-0.49	0.74
22.50	21.33	1.17	0.80
45.00	38.80	6.20	0.56
90.00	81.10	8.90	2.00
180.00	166.86	13.14	2.37

Programmed Phase Shift	Phase Shift	Accuracy	Flatness
DEG	DEG	DEG	±DEG
33.75	30.02	3.73	0.70
67.50	58.29	9.21	1.38
101.25	92.12	9.13	2.46
135.00	124.30	10.70	2.64
168.75	156.54	12.21	2.45
202.50	189.20	13.30	2.22
236.25	222.83	13.42	2.48
270.00	258.64	11.36	4.05
303.75	295.44	8.31	5.30
337.50	331.50	6.00	5.62
358.59	353.64	4.96	6.091

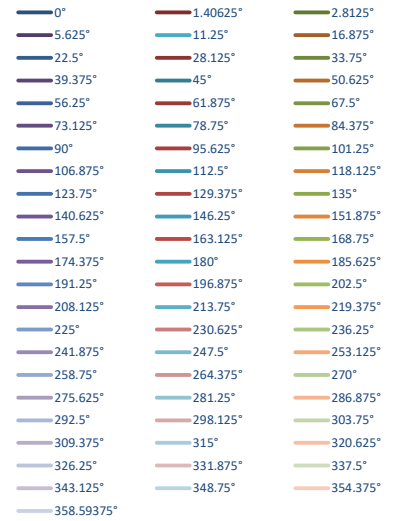
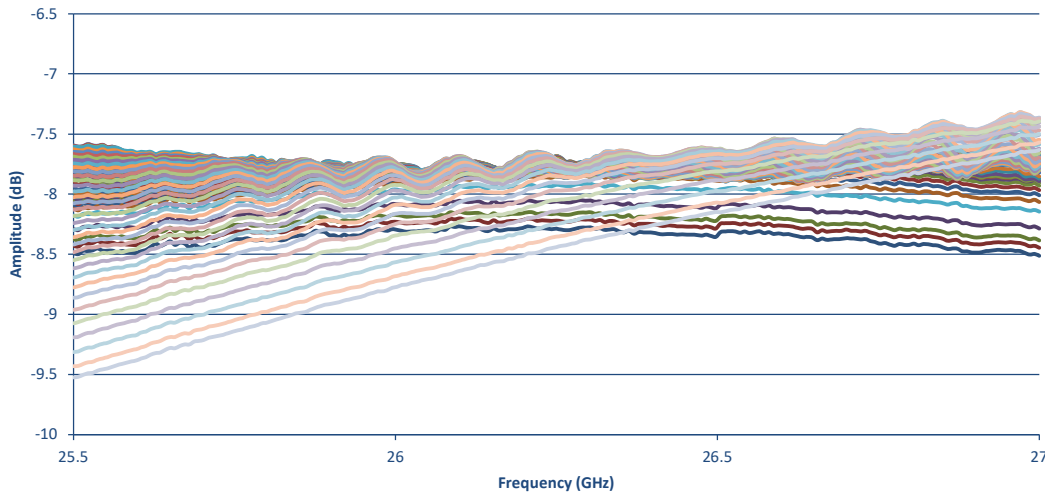
ACCURACY AND FLATNESS @ 85°C

Programmed Phase Shift	Phase Shift	Accuracy	Flatness
DEG	DEG	DEG	±DEG
1.40625	1.53	-0.12	0.14
2.8125	2.98	-0.17	0.20
5.625	5.83	-0.21	0.38
11.25	11.78	-0.53	0.70
22.50	23.71	-1.21	1.27
45.00	49.85	-4.85	1.25
90.00	99.61	-9.61	1.90
180.00	194.34	-14.34	2.93

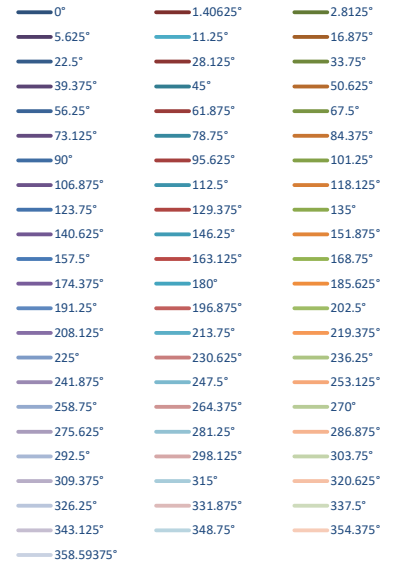
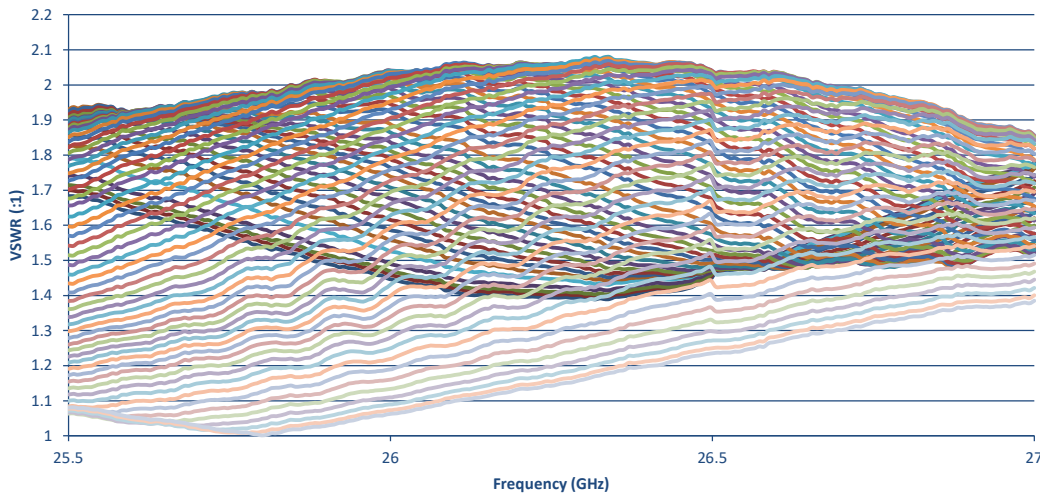
Programmed Phase Shift	Phase Shift	Accuracy	Flatness
DEG	DEG	DEG	±DEG
33.75	36.74	-2.99	1.39
67.50	74.12	-6.62	0.94
101.25	111.52	-10.27	2.35
135.00	147.46	-12.46	3.14
168.75	182.79	-14.04	3.01
202.50	217.61	-15.11	2.84
236.25	251.76	-15.51	3.04
270.00	286.26	-16.26	4.03
303.75	319.92	-16.17	5.05
337.50	352.03	-14.53	4.95
358.59	372.68	-14.08	5.133

DATA @ 25°C

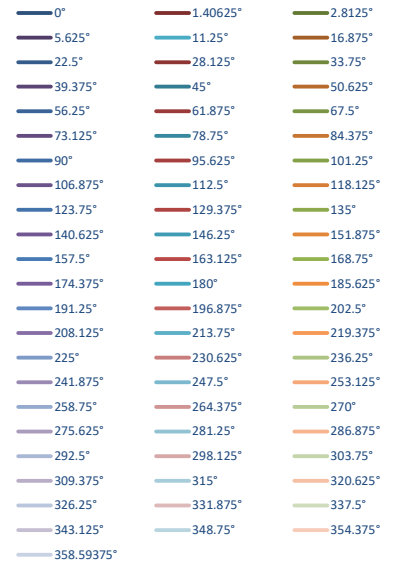
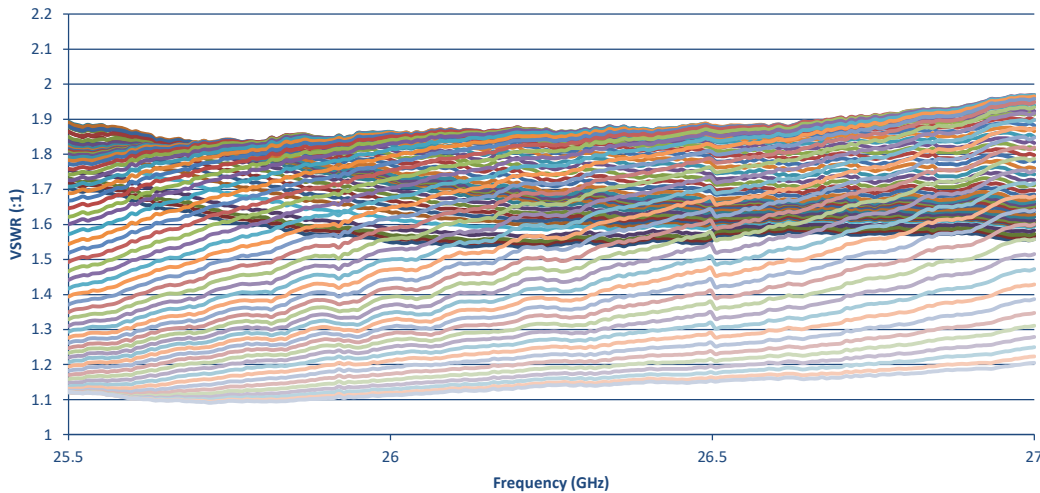
Insertion Loss at Phase Settings



J1 VSWR at Phase Settings

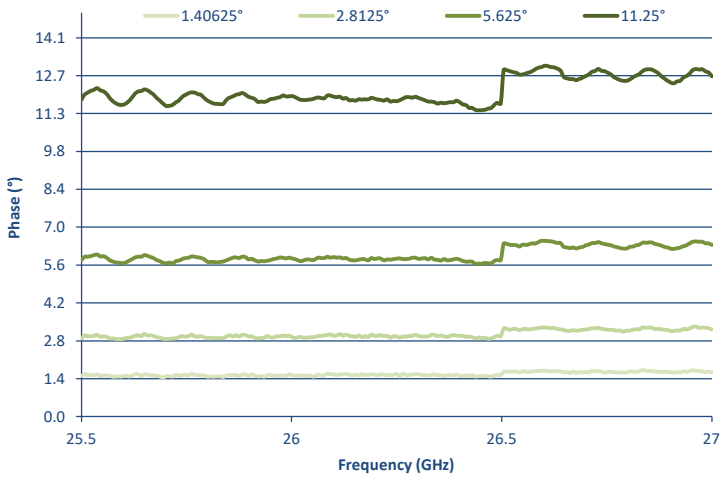


J2 VSWR at Phase Settings

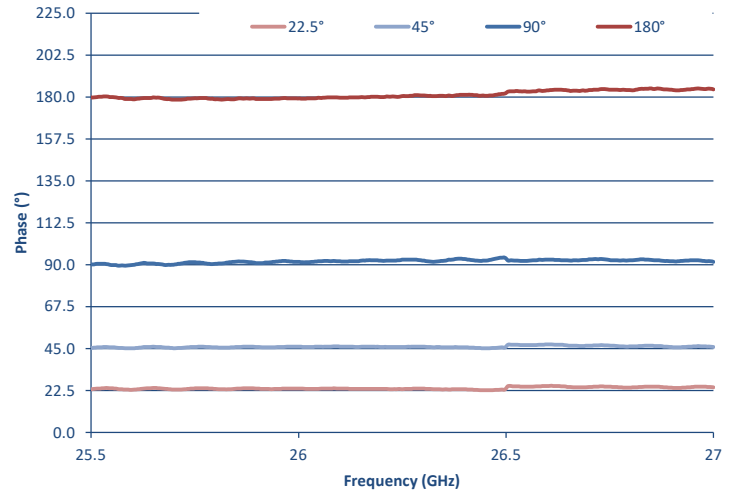


DATA @ 25°C

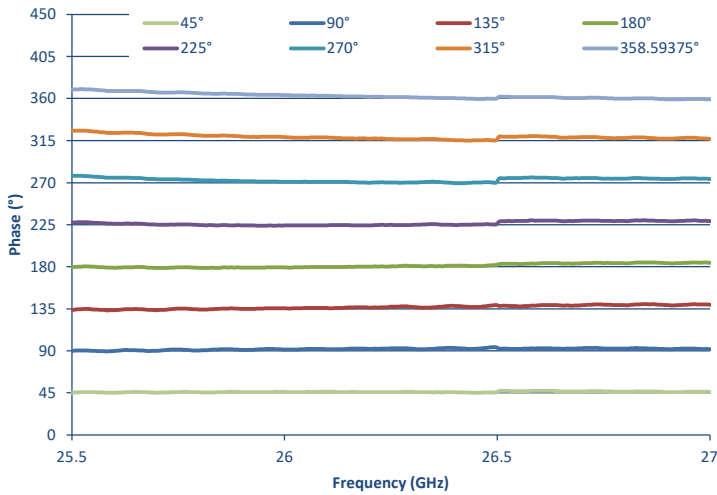
Small BIT Phase Settings



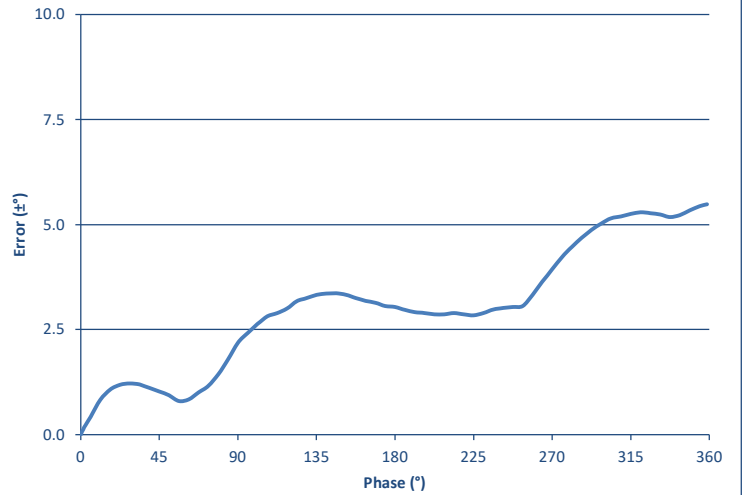
Large BIT Phase Settings



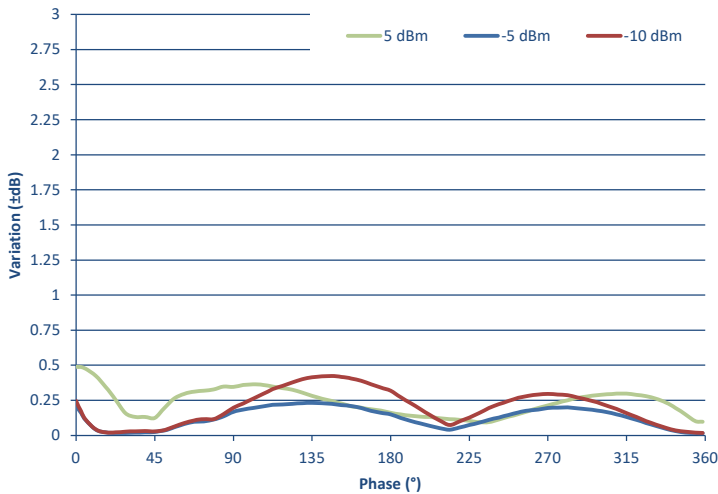
Phase Settings



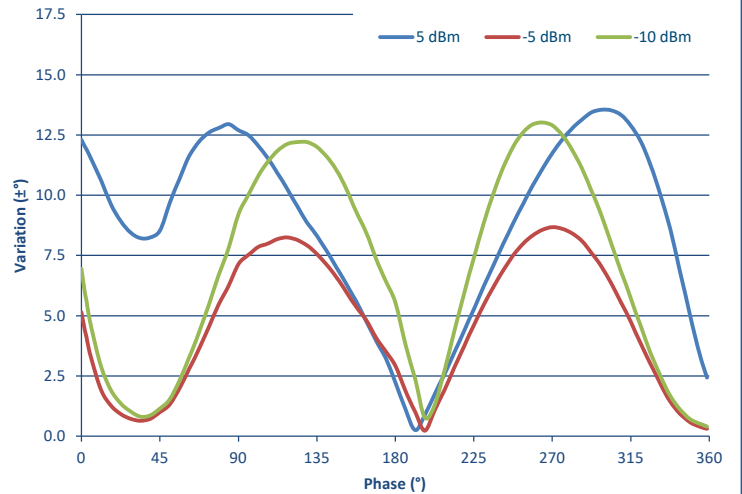
Phase Flatness



Amplitude Variation vs. Power*



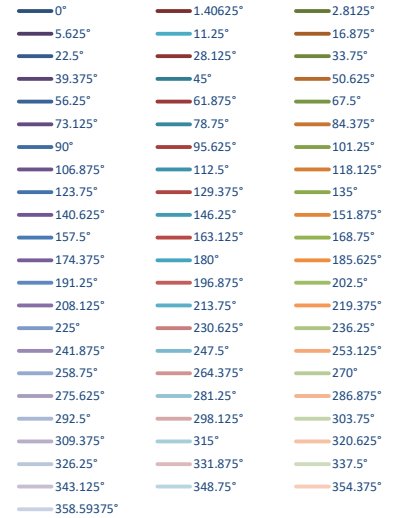
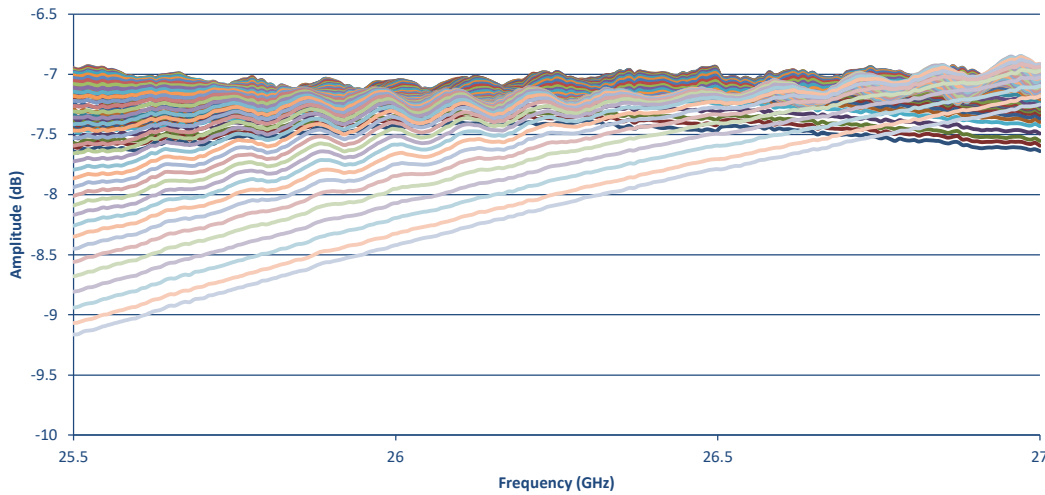
Phase Variation vs. Power*



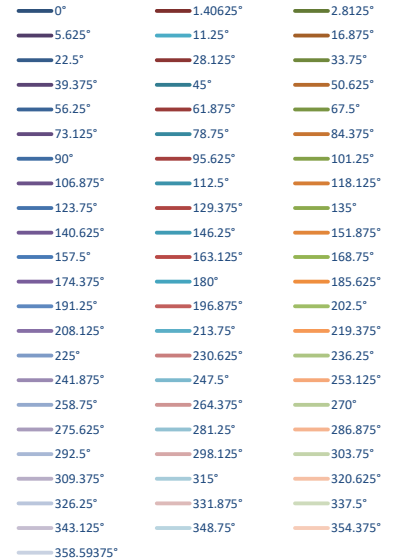
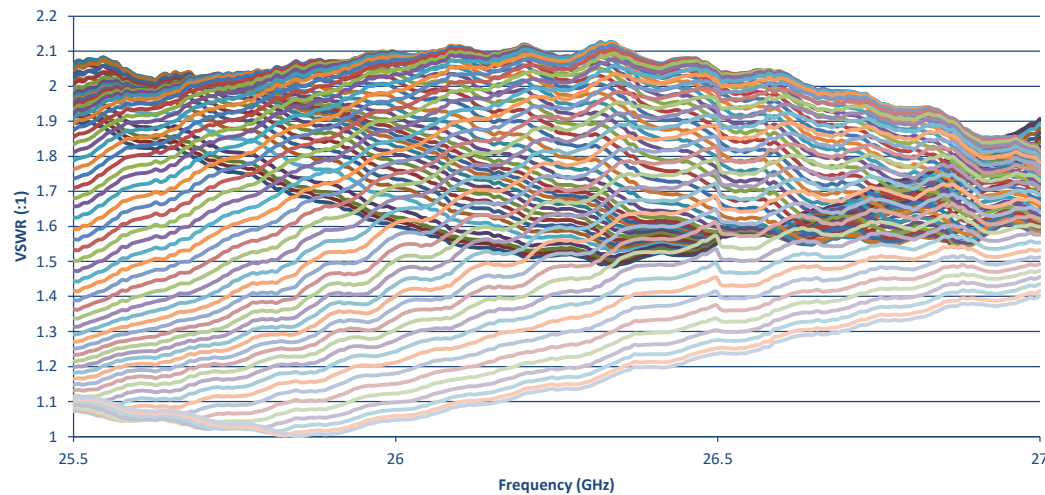
* Referenced to signal at 0 dBm

DATA @ -40°C

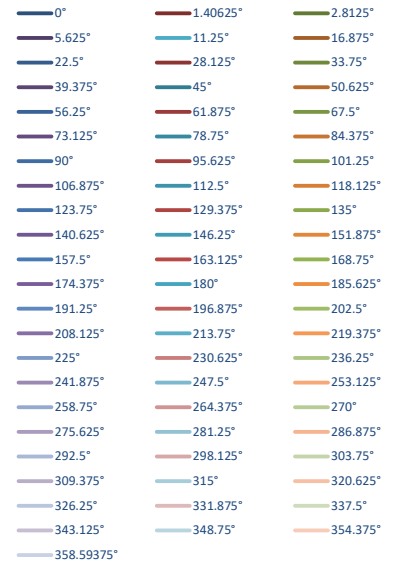
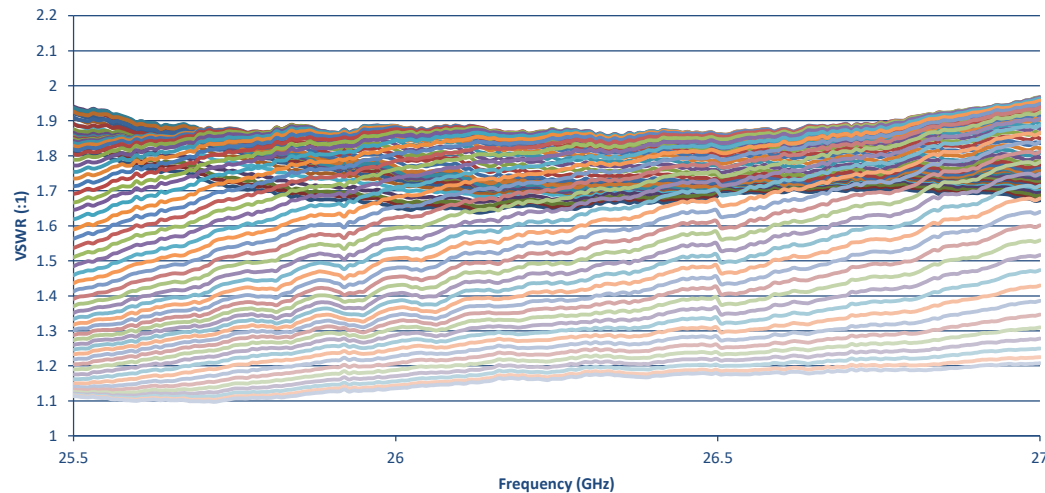
Insertion Loss at Phase Settings



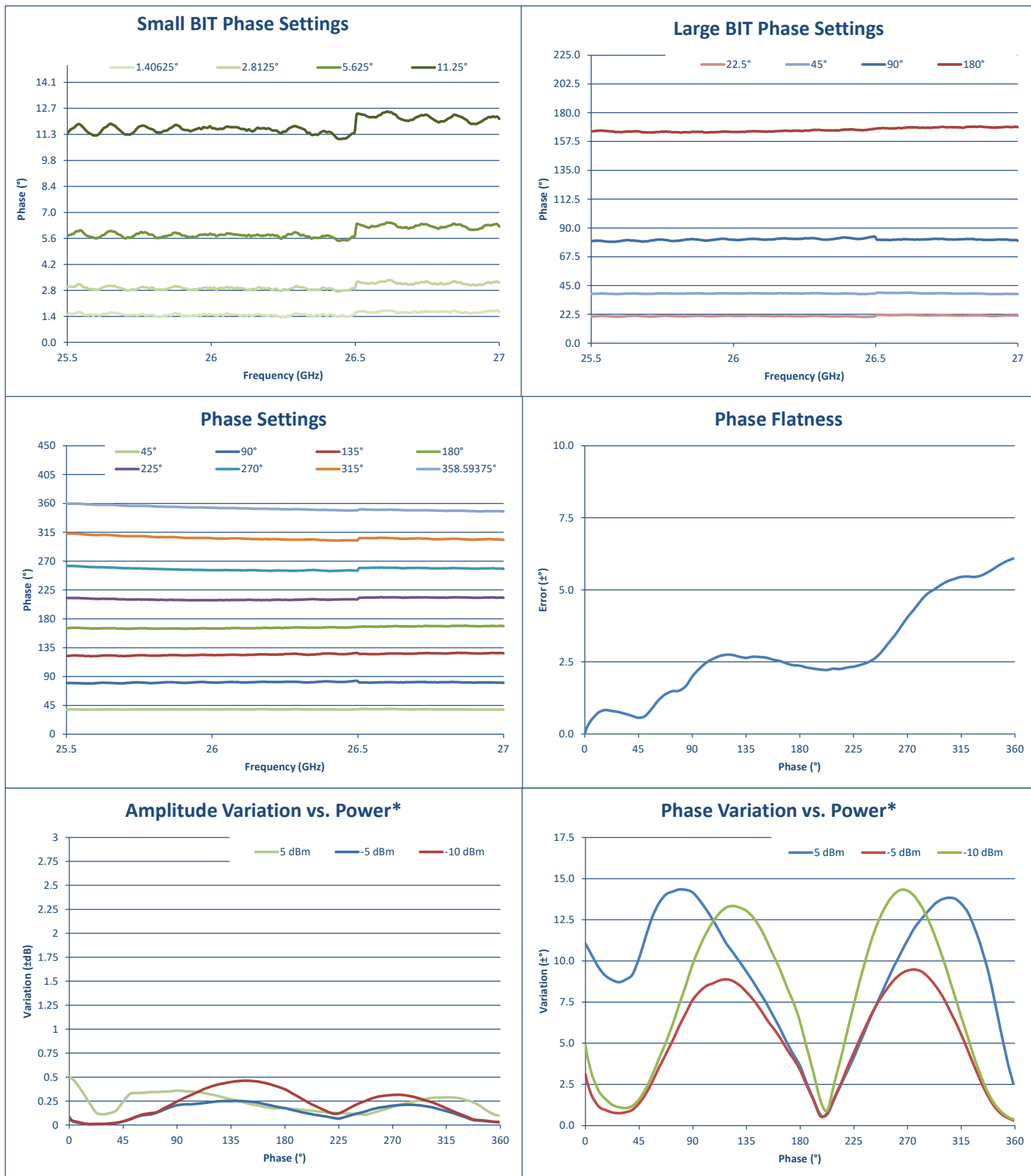
J1 VSWR at Phase Settings



J2 VSWR at Phase Settings



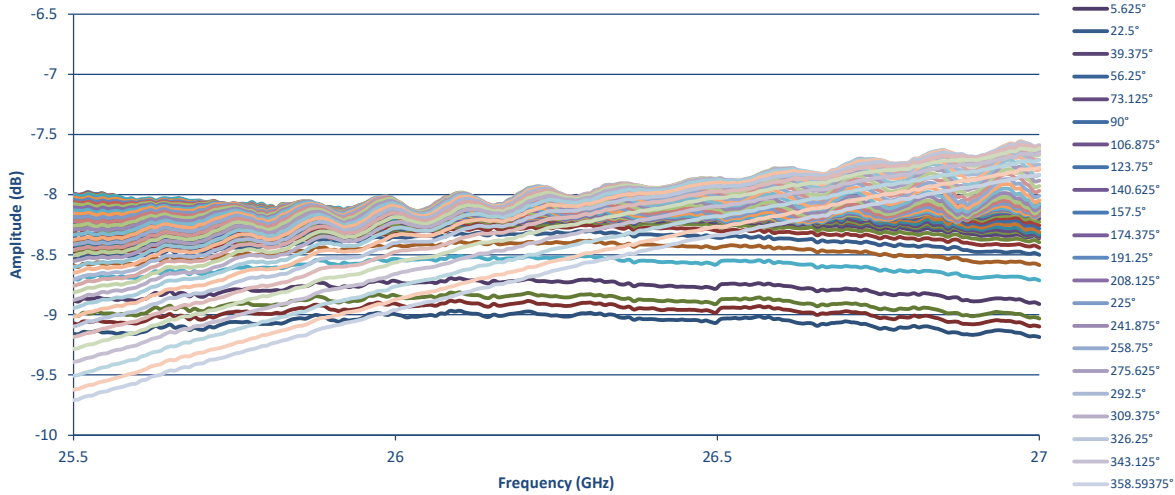
DATA @ -40°C



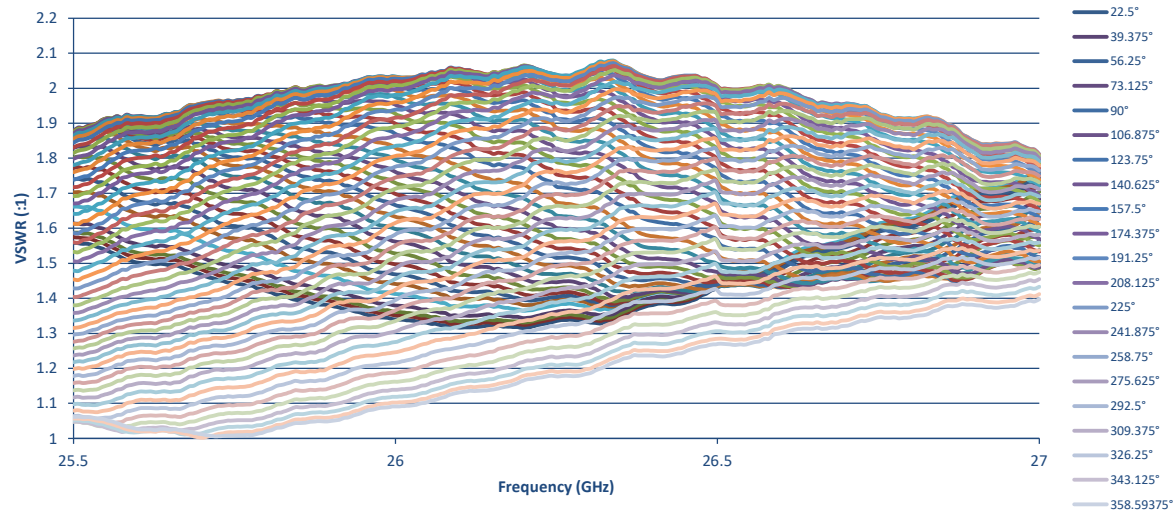
* Referenced to signal at 0 dBm

DATA @ 85°C

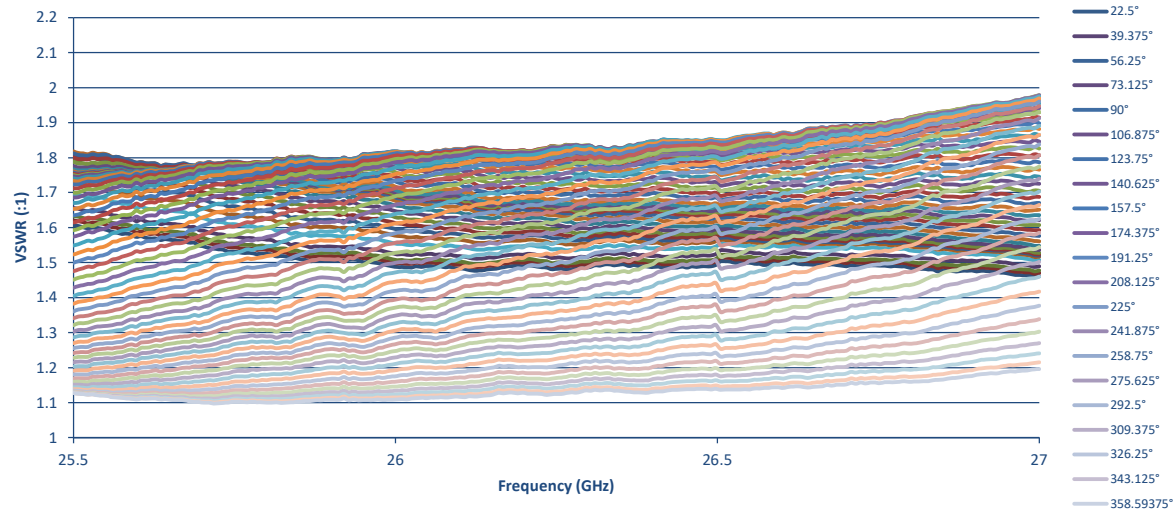
Insertion Loss at Phase Settings



J1 VSWR at Phase Settings



J2 VSWR at Phase Settings

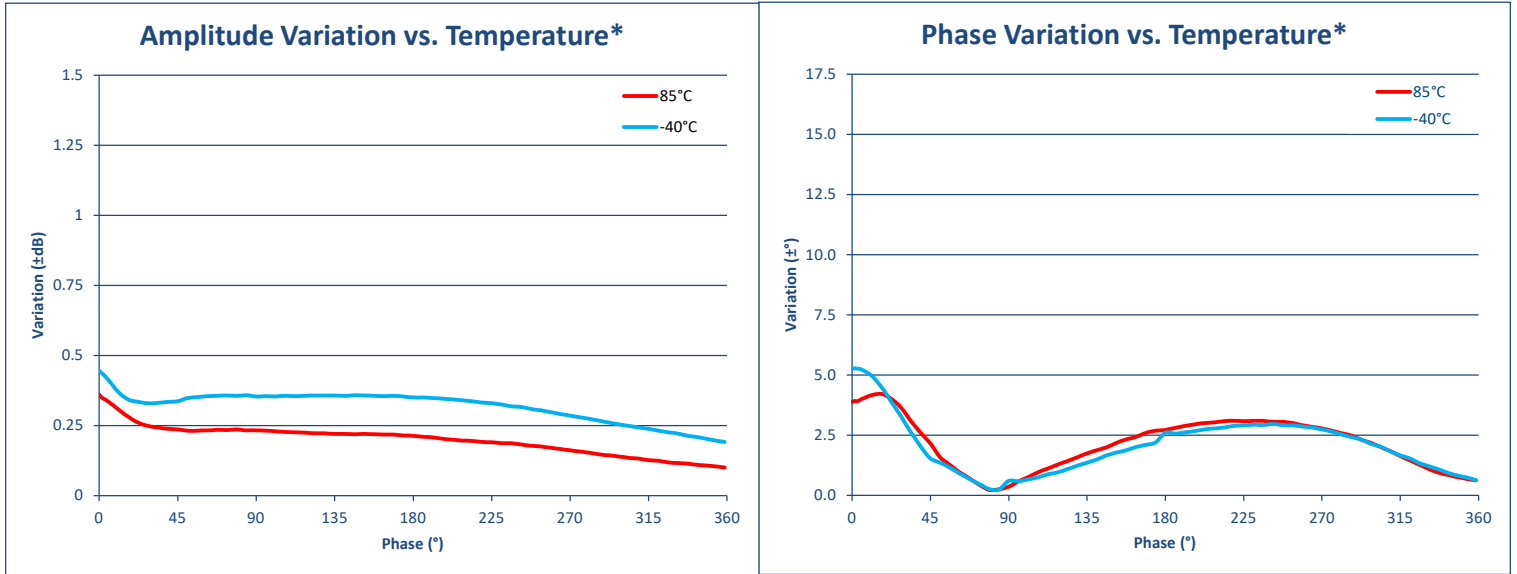


DATA @ 85°C



* Referenced to signal at 0 dBm

TYPICAL CHARACTERISTICS FOR PSDM-25R5G27G-360



*Referenced to 25°C signal @ 0 dBm

Switching Speed:
Rise: 483.81 ns
Fall: 454.52 ns

