



TEST DOCUMENTATION PACKAGE

FOR

10 BIT PHASE SHIFTER

PMI MODEL No.

PS-360-DC-1R

OPTION: 810

TESTED BY

**Stephen Kuhn
Rene Afable**

9 DECEMBER 2006

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10 BIT PHASE SHIFTER
PS-360-DC-1R
TEST DATA
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SUMMARY TEST DATA
ON
10 BIT PHASE SHIFTER

Customer : YC International, Korea
 Job No : P604024XN
 Model No : PS-360-DC-1R
 Option No : 810
 Serial No : PM607322

Tested By : SK, RA
 Temperature : +25°C
 Date : 12/11/06

TEST ITEM NO.	PARAMETERS	SPECIFIED VALUE	MEASURED VALUE	Q/A
1	FREQUENCY RANGE:	8 TO 10 GHz	8 TO 10 GHz	
2	INSERTION LOSS:	11.5 dB MAX	20 dB	
3	VSWR	1.75:1 MAX	1.75:1	
4	PHASE ACCURACY ± 10°	SEE PLOT	SEE PLOT	
5	SWITCHING SPEED:	1 uS	880 nS	
6	DC POWER SUPPLY:	-12 TO -15 @ 70 mA	40 mA	
7	DC POWER SUPPLY:	+12 TO +15 @ 100 mA	11 mA	

TESTED ON: AGILENT 8722ES

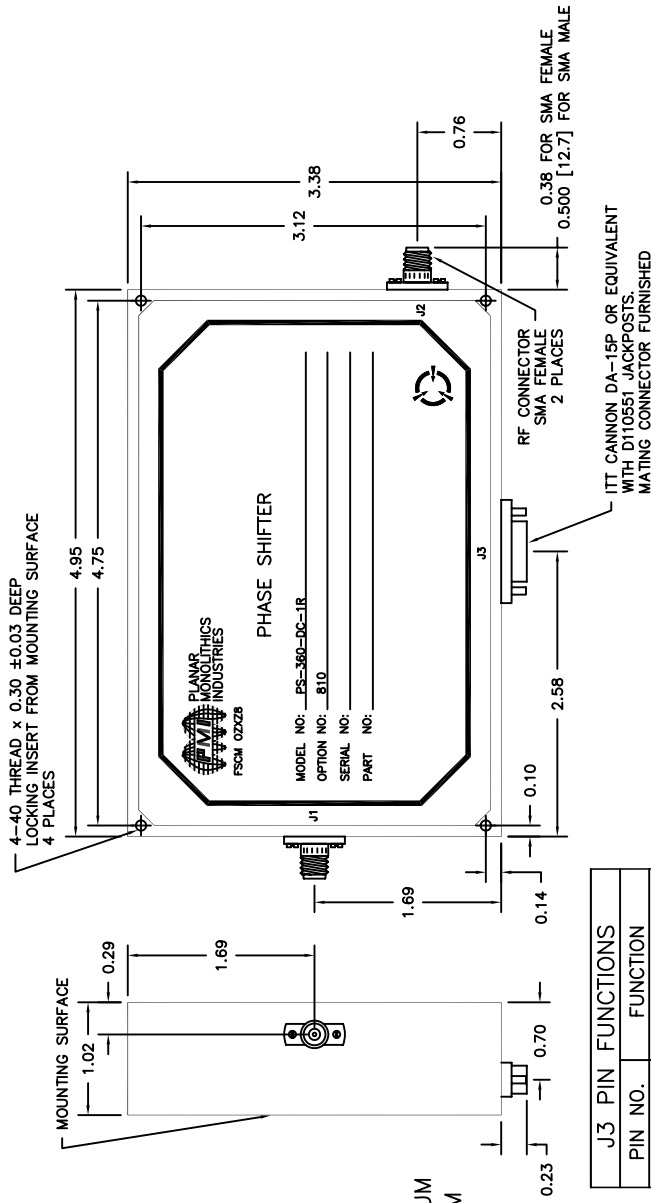
QA/QC Approval: _____ Date: _____

DESCRIPTION

PMI MODEL PS-360-DC-1R OPTION: 810 IS A DIGITALLY CONTROLLED 360° PHASE SHIFTER WITH A PHASE ACCURACY OF $\pm 10^\circ$, A SWITCHING SPEED OF 500 nSec AND OPERATES IN THE RANGE OF 8 TO 10 GHz.

SPECIFICATIONS

- FREQUENCY RANGE: 8 GHz TO 10 GHz (OTHER FREQUENCY RANGES AVAILABLE)
- INSERTION LOSS: 11.5 dB MAXIMUM
- VSWR: 1.75:1 MAXIMUM
- PHASE ACCURACY: $\pm 10^\circ$
- SWITCHING SPEED: 500 nSec
- POWER HANDLING: +20 dBm (+30 dBm SURVIVAL)
- CONTROL: 10 BIT TTL
- DC POWER:
 - +V: +5V @ 200 mA MAXIMUM
 - +V: +12V TO 15V @ 100 mA MAXIMUM
 - V: -12V TO 15V @ 70 mA MAXIMUM
- SIZE: 4.95"(L) x 3.38"(W) x 1.02"(H)
- WEIGHT: 13 OUNCES TYPICAL



J3 PIN FUNCTIONS	
PIN NO.	FUNCTION
1	-12V TO -15V
2	+12V TO +15V
3	N/C
4	1.4"
5	5.6"
6	45.0"
7	180.0" (MSB)
8	90.0"
9	GROUND
10	0.7"
11	22.5"
12	2.8"
13	11.3"
14	0.35" (LSB)
15	+5V

ENVIRONMENTAL RATINGS

- TEMPERATURE: -55°C TO +85°C (OPERATING)
-65°C TO +125°C (STORAGE)
- HUMIDITY: MIL-STD-202F, METHOD 103B COND. B
- SHOCK: MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: MIL-STD-202F, METHOD 107D COND. A

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

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	-	ORIGINAL RELEASE JOB# 00525P	9/21/02	

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ISO 9001:2000 CERTIFIED

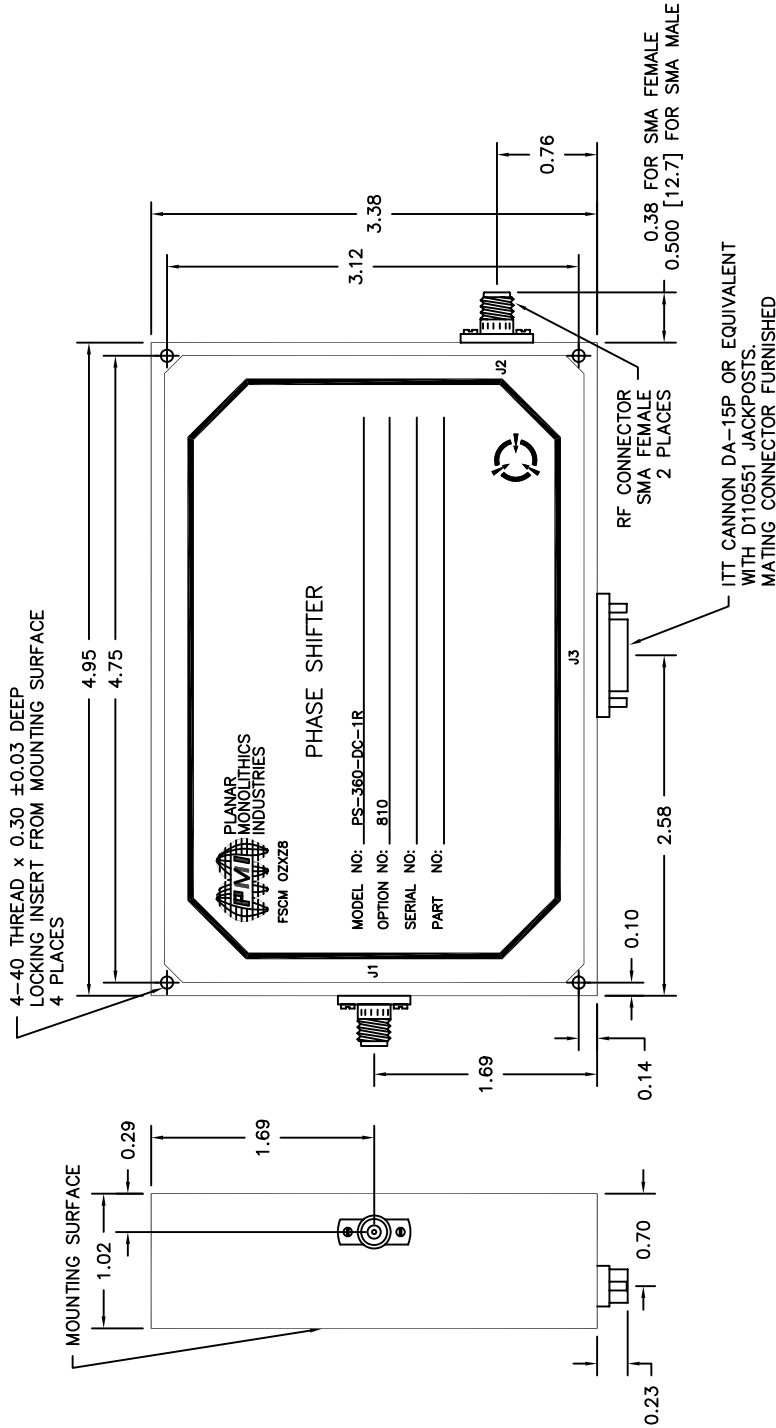


APPROVALS		DATE		TITLE	
DRAWN	WSP	9/21/02		PRODUCT FEATURE	
REDRAWN	JGJ	11/18/04		PS-360-DC-1R	
ISSUED				OPTION: 810	
				SIZE	FSM NO.
				A	OZXX8
				DWG NO.	100-6296
				REV.	-
				SCALE	N:S
				SHEET	1 OF 3

DESCRIPTION

PMI MODEL PS-360-DC-1R OPTION: 810 IS A DIGITALLY CONTROLLED 360° PHASE SHIFTER WITH A PHASE ACCURACY OF ±10°, A SWITCHING SPEED OF 500 nSec AND OPERATES IN THE RANGE OF 8 TO 10 GHZ.

REVISIONS		DATE	APPROVED
ZONE	REV.	DESCRIPTION	
	-	ORIGINAL RELEASE JOB# 00525P	9/21/02



MECHANICAL OUTLINE

J3 PIN NO.	J3 PIN FUNCTIONS
1	-12V TO -15V
2	+12V TO +15V
3	N/C
4	1.4"
5	5.6"
6	45.0"
7	180.0" (MSB)
8	90.0"
9	GROUND
10	0.7"
11	22.5"
12	2.8"
13	11.3"
14	0.35" (LSB)
15	+5V

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APPROVALS	DATE	TITLE
		MECHANICAL OUTLINE
		PS-360-DC-1R
		OPTION: 810
		8 TO 10 GHZ, DIGITALLY CONTROLLED PHASE SHIFTER
DRAWN	9/21/02	SIZE FSCOM NO.
REDRAWN	11/18/04	A OZXZB
ISSUED		DWG NO. 100-6296
		SCALE N:S
		SHEET 2 OF 3

ALL DIMENSIONS ARE IN INCHES
 TOLERANCES:
 X.XX ±0.020
 X.XXX ±0.010

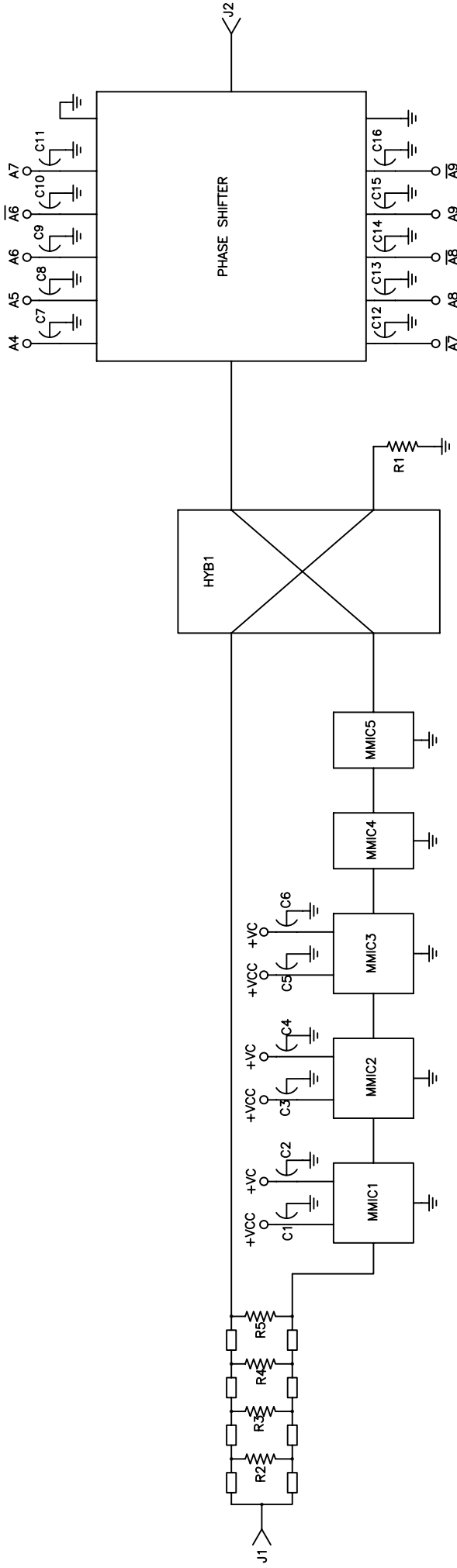
DESCRIPTION

PMI MODEL PS-360-DC-1R OPTION: 810 IS A DIGITALLY CONTROLLED 360° PHASE SHIFTER WITH A PHASE ACCURACY OF $\pm 10^\circ$, A SWITCHING SPEED OF 500 nSec AND OPERATES IN THE RANGE OF 8 TO 10 GHz.

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	-	ORIGINAL RELEASE JOB# 00525P SOUTHWEST RESEARCH, TX	9/21/02	

FUNCTIONAL BLOCK DIAGRAM



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APPROVALS		DATE	TITLE	
DRAWN	WSP	9/21/02	FUNCTIONAL BLOCK DIAGRAM	
REDRAWN	JDG	11/18/04	PS-360-DC-1R	
ISSUED			OPTION: 810	
			8 TO 10 GHz, DIGITALLY CONTROLLED PHASE SHIFTER	
			SIZE	FSOM NO.
			A	OZXZ8
			SCALE	N:S
			DWG NO.	100-6296
			REV.	-
			SHEET	3 OF 3

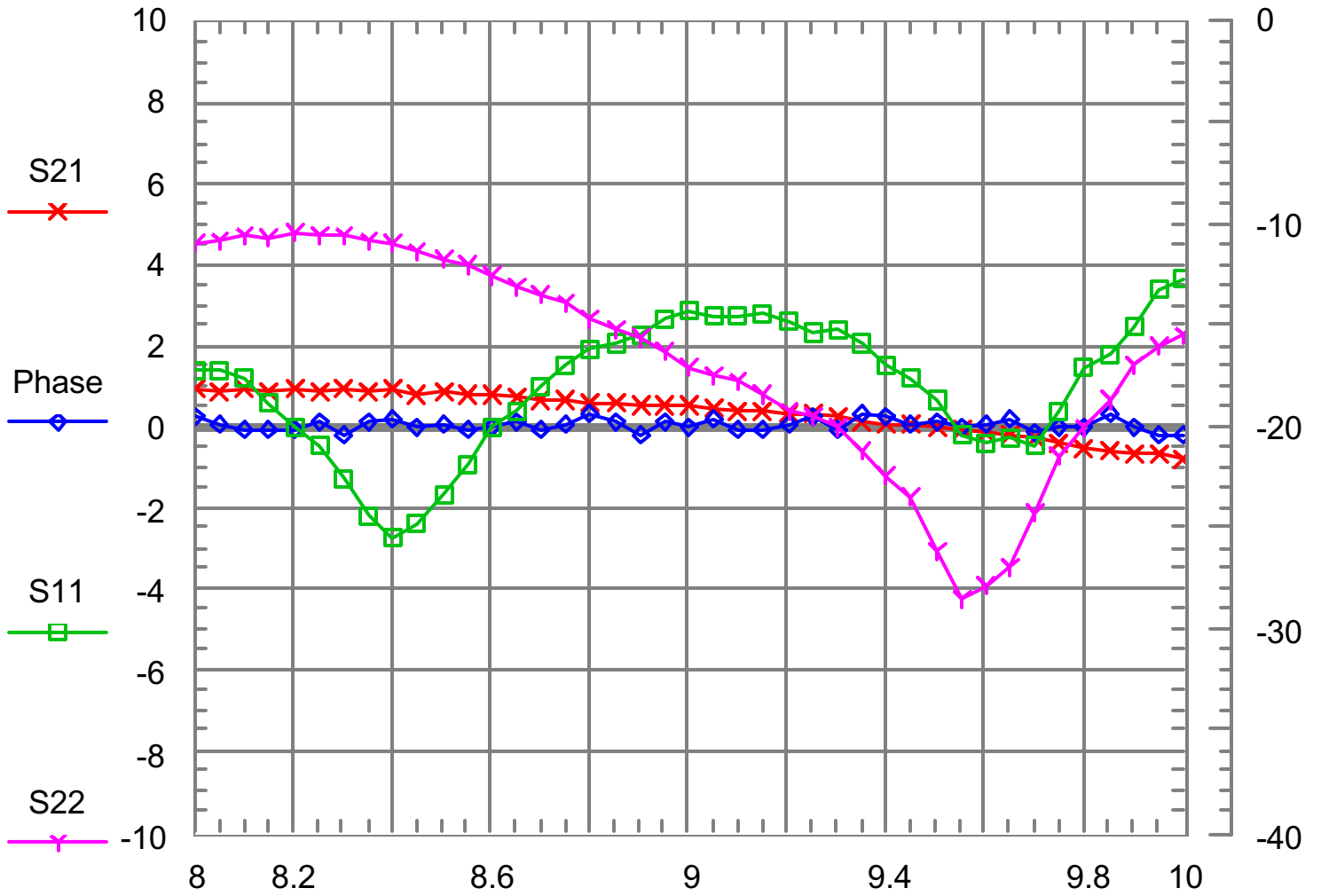
CONFIDENTIAL AND PROPRIETARY

S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



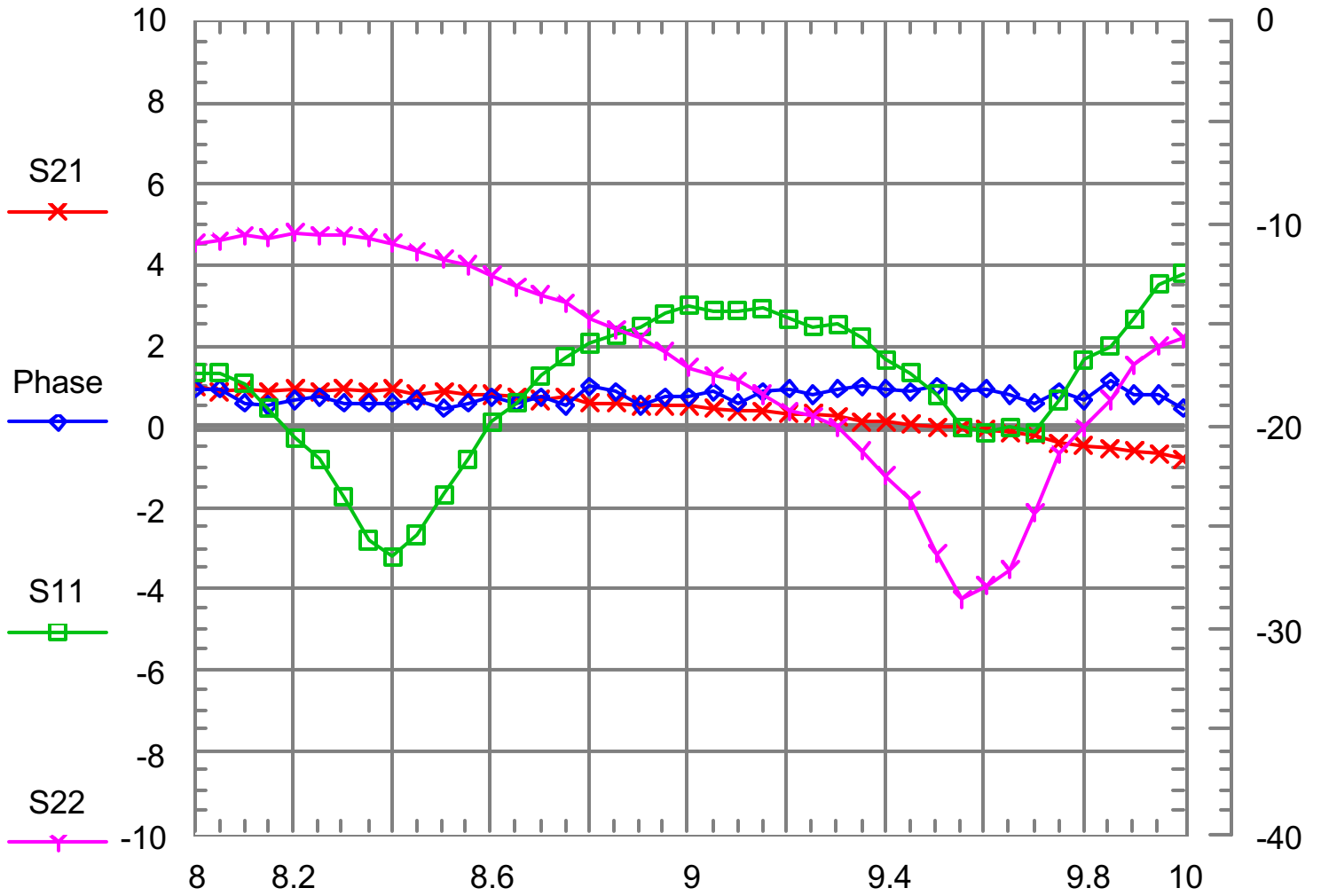
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



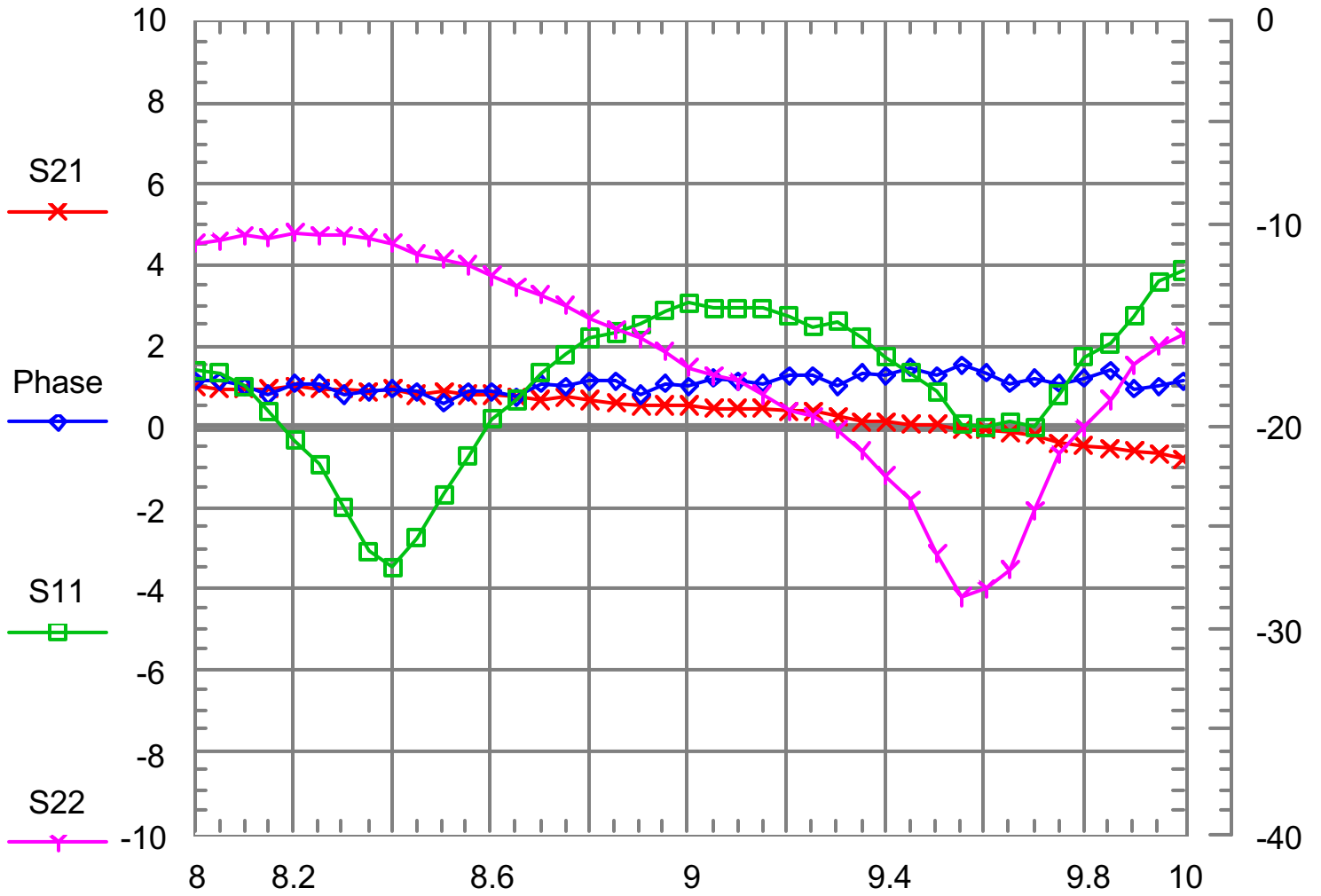
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



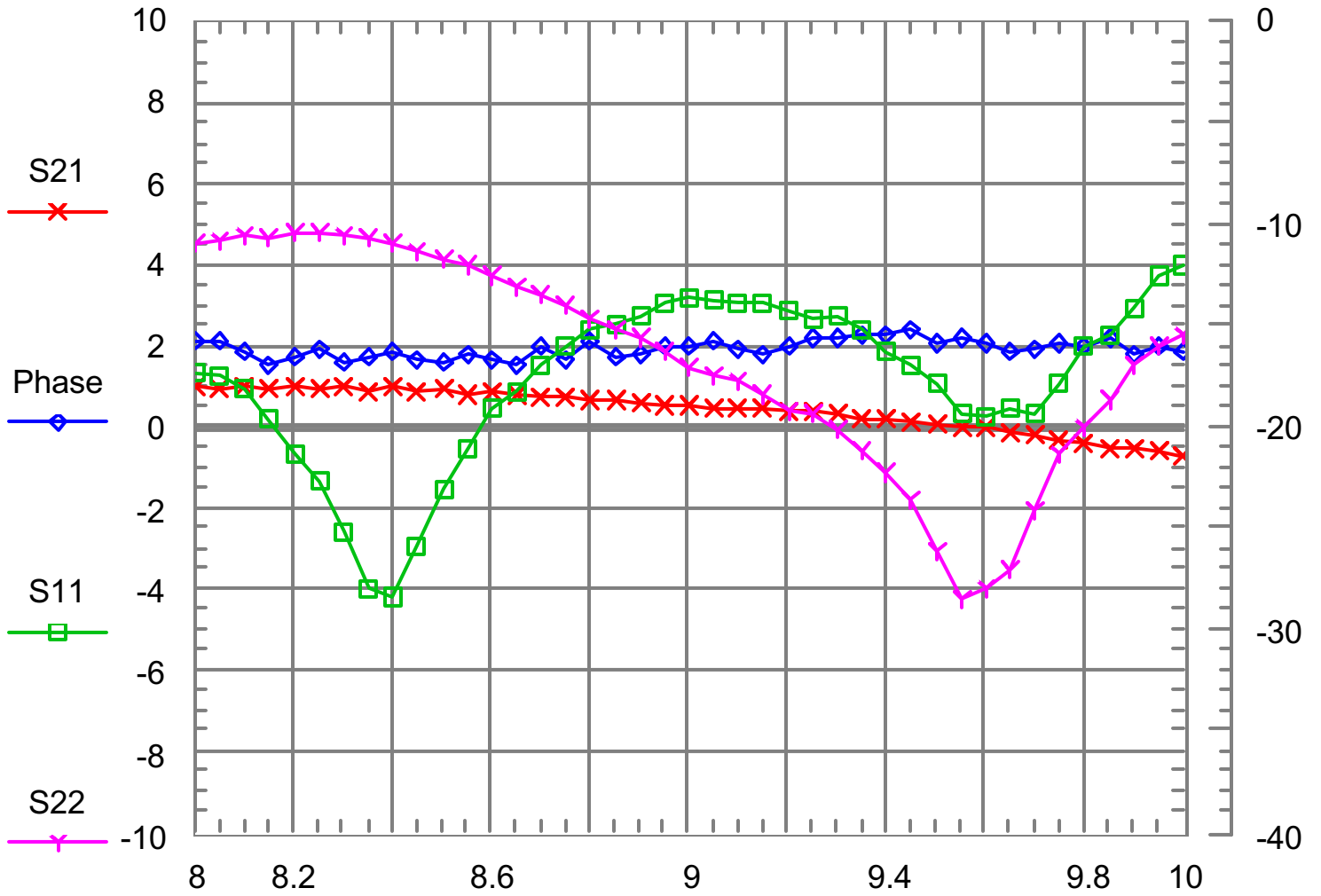
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



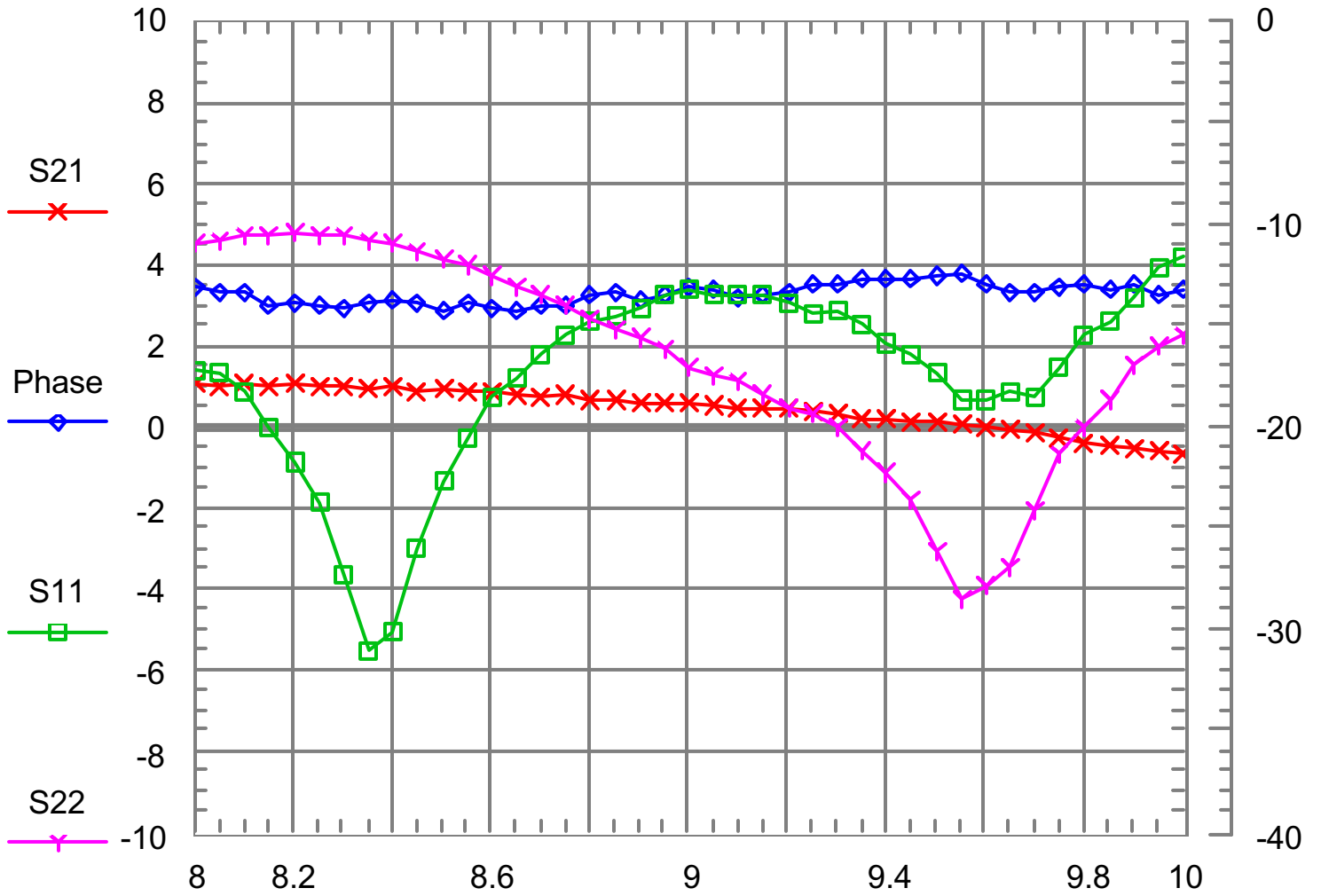
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



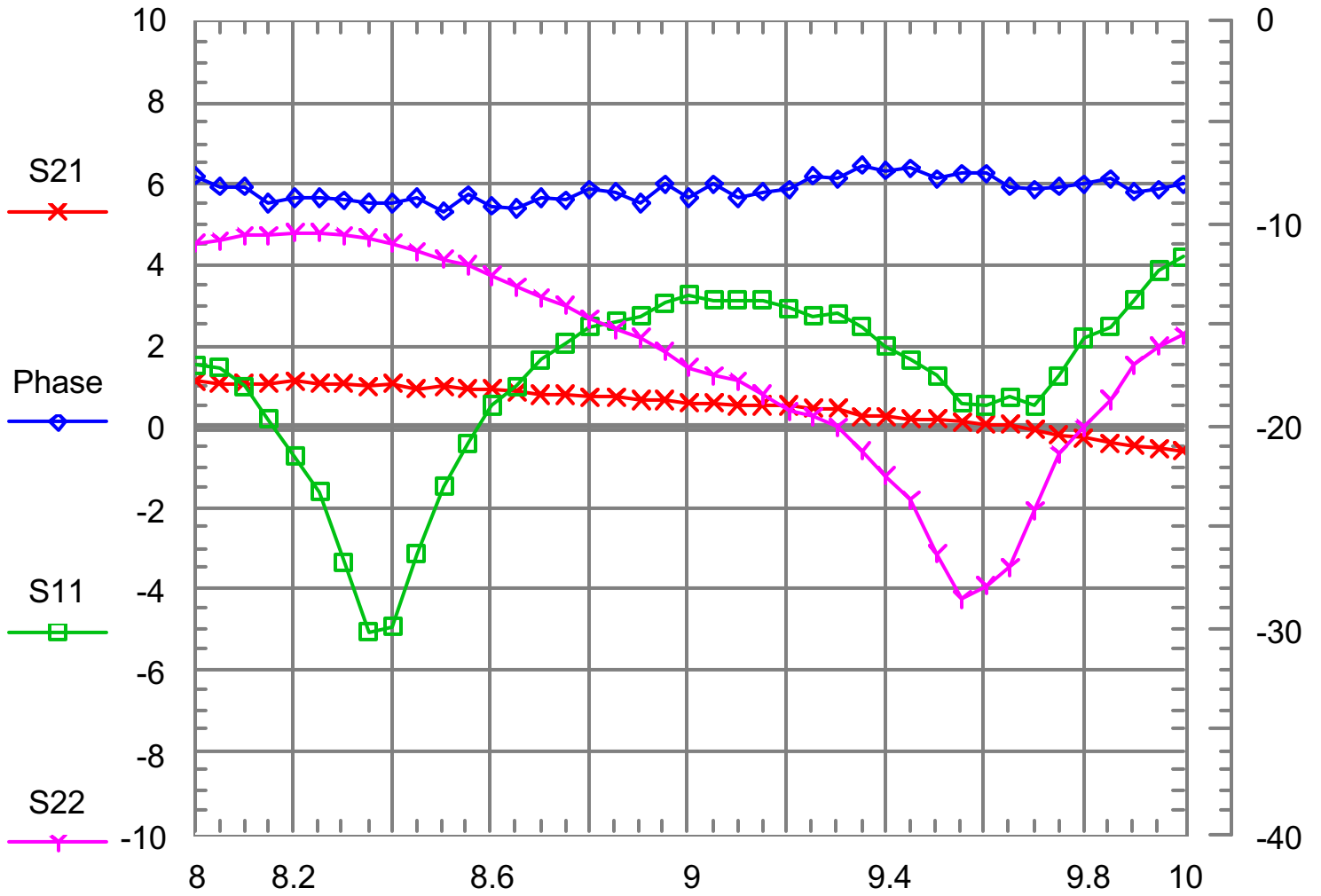
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



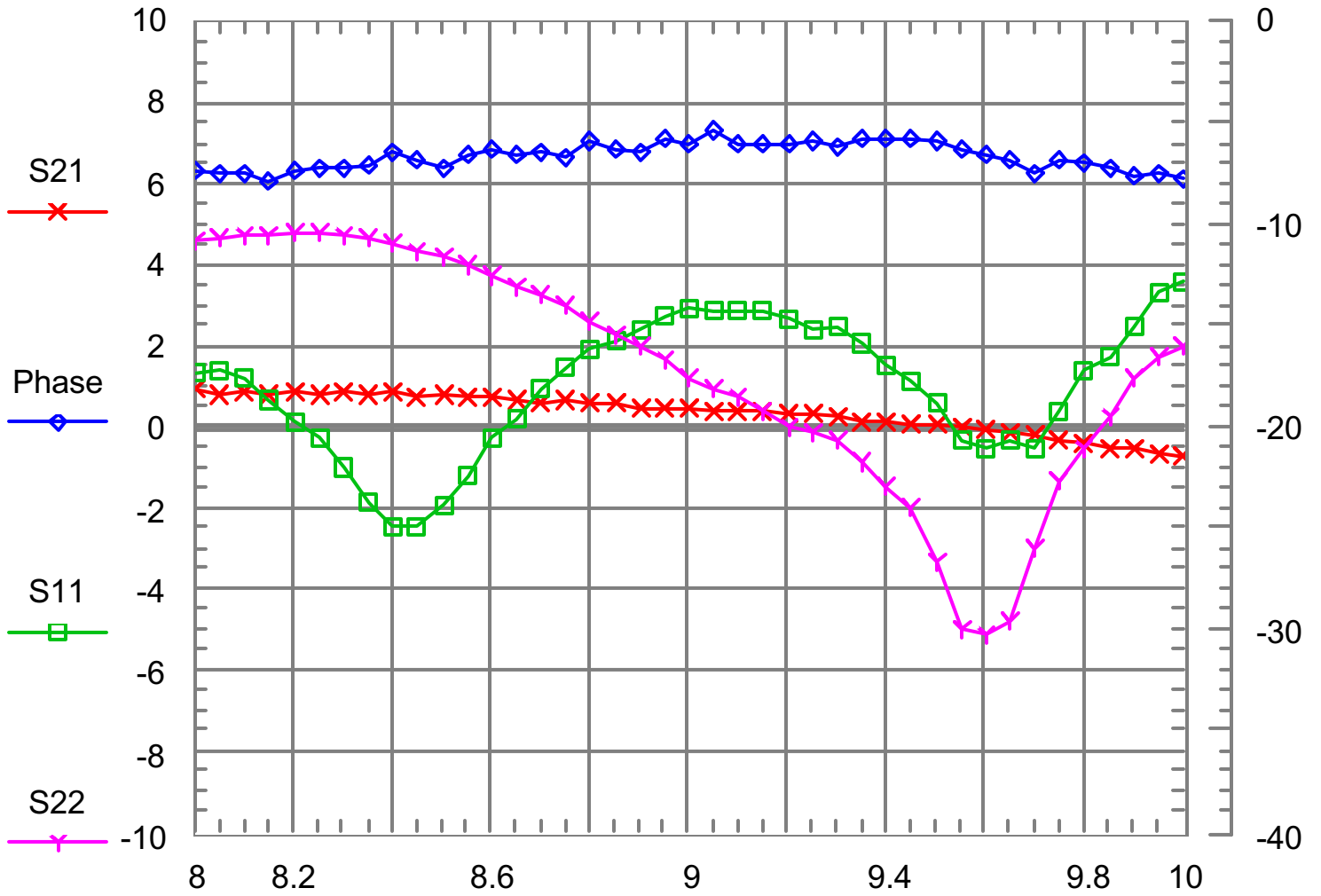
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



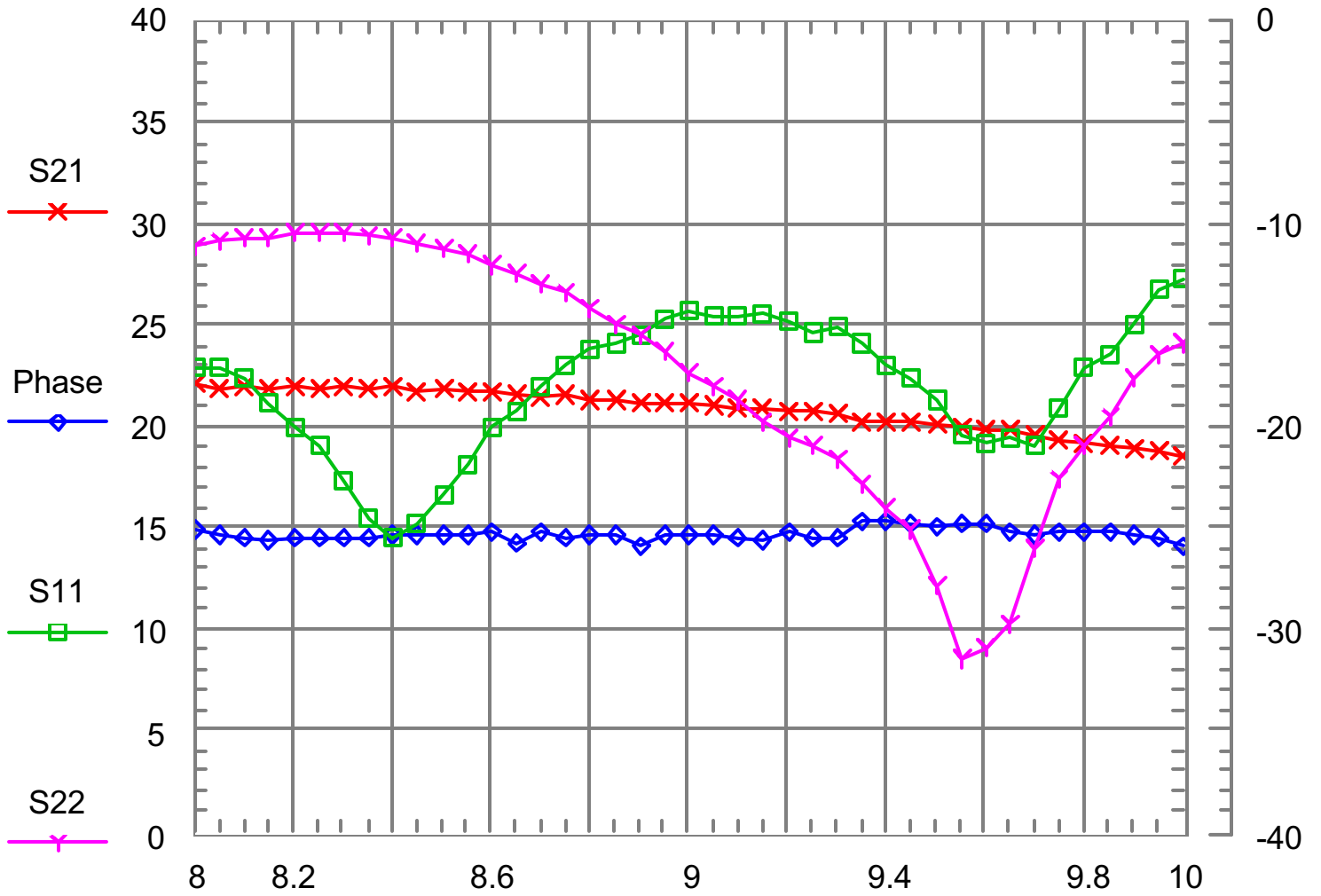
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



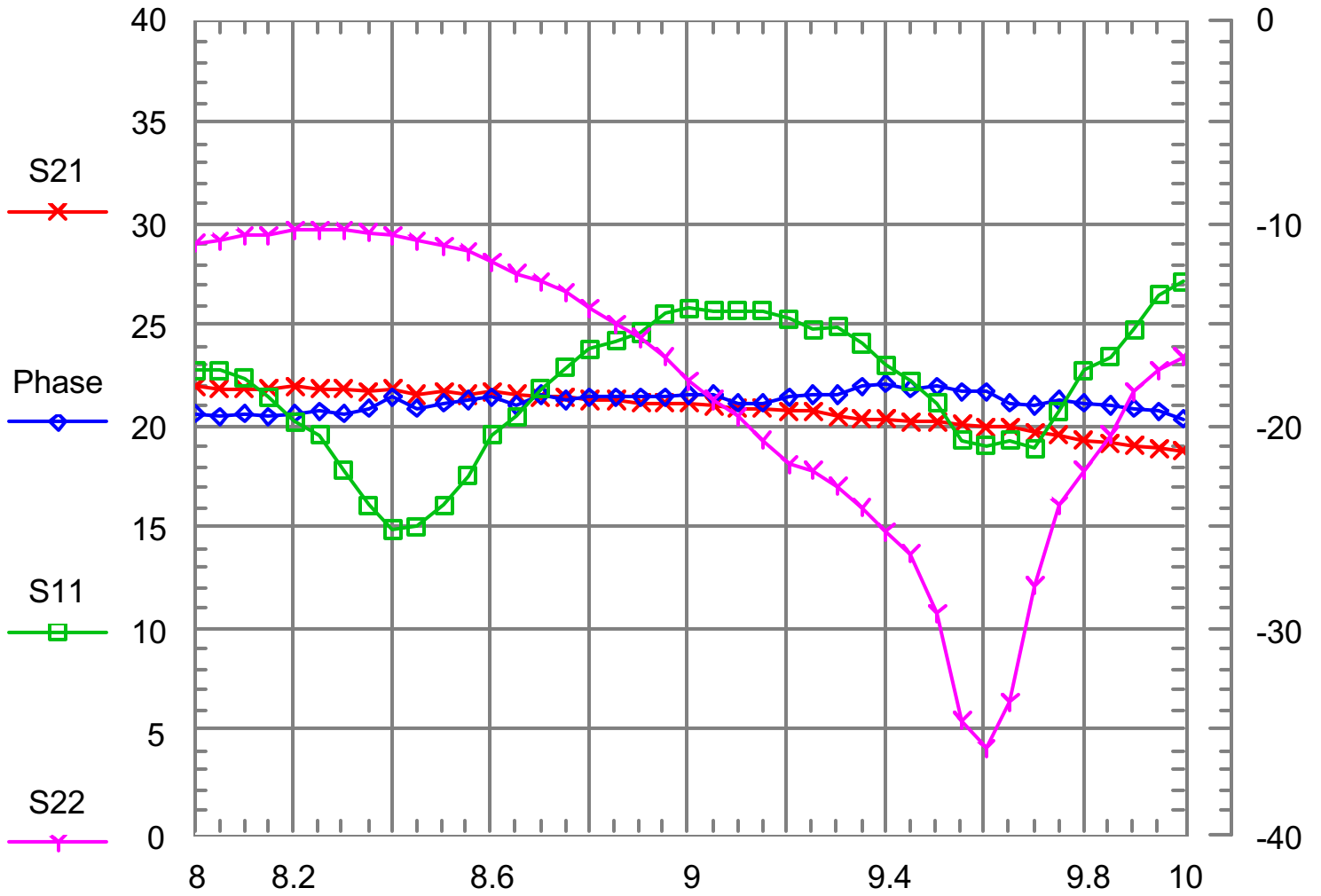
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



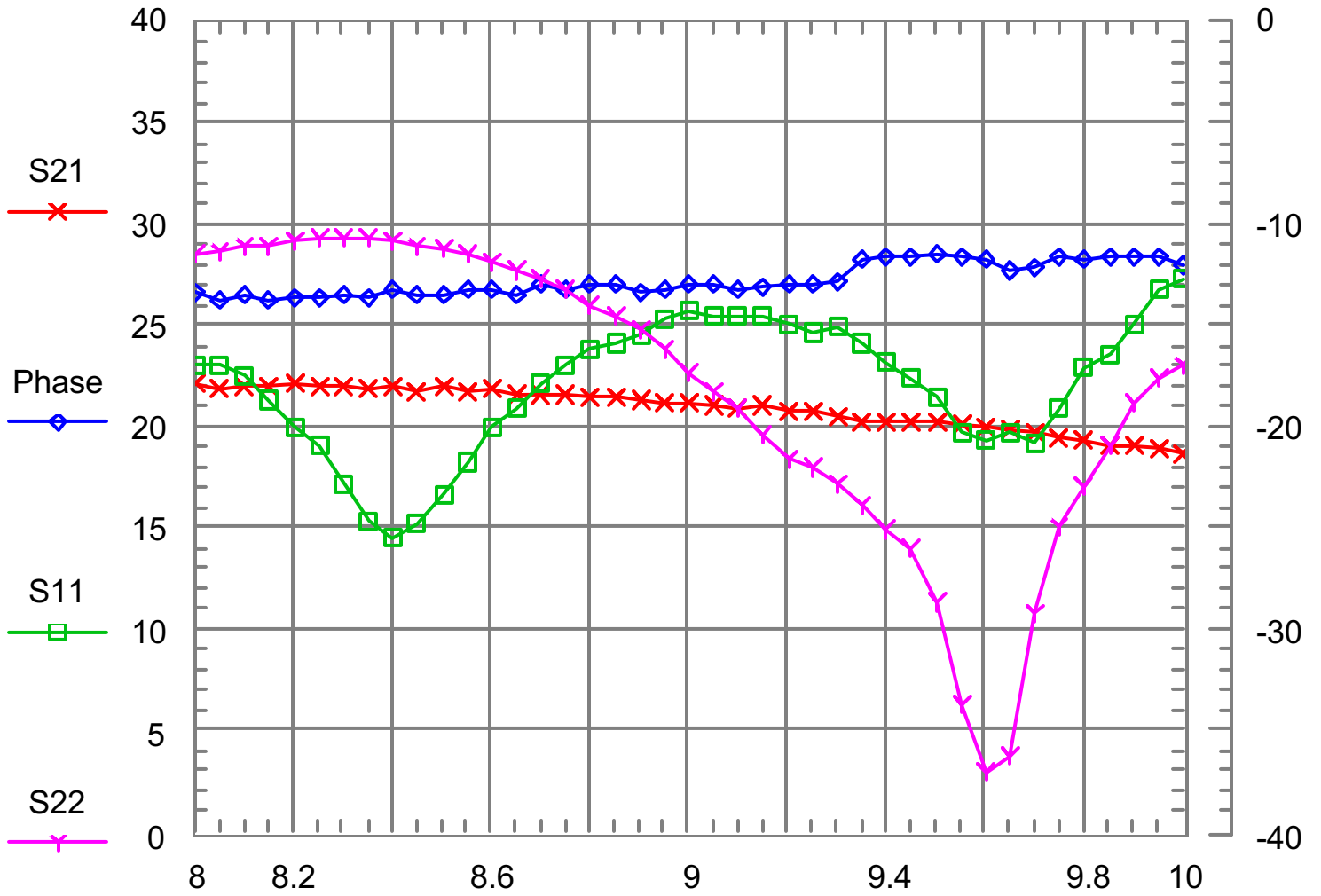
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



PS360-DC-1R SET HEX 0040 Dec8y06

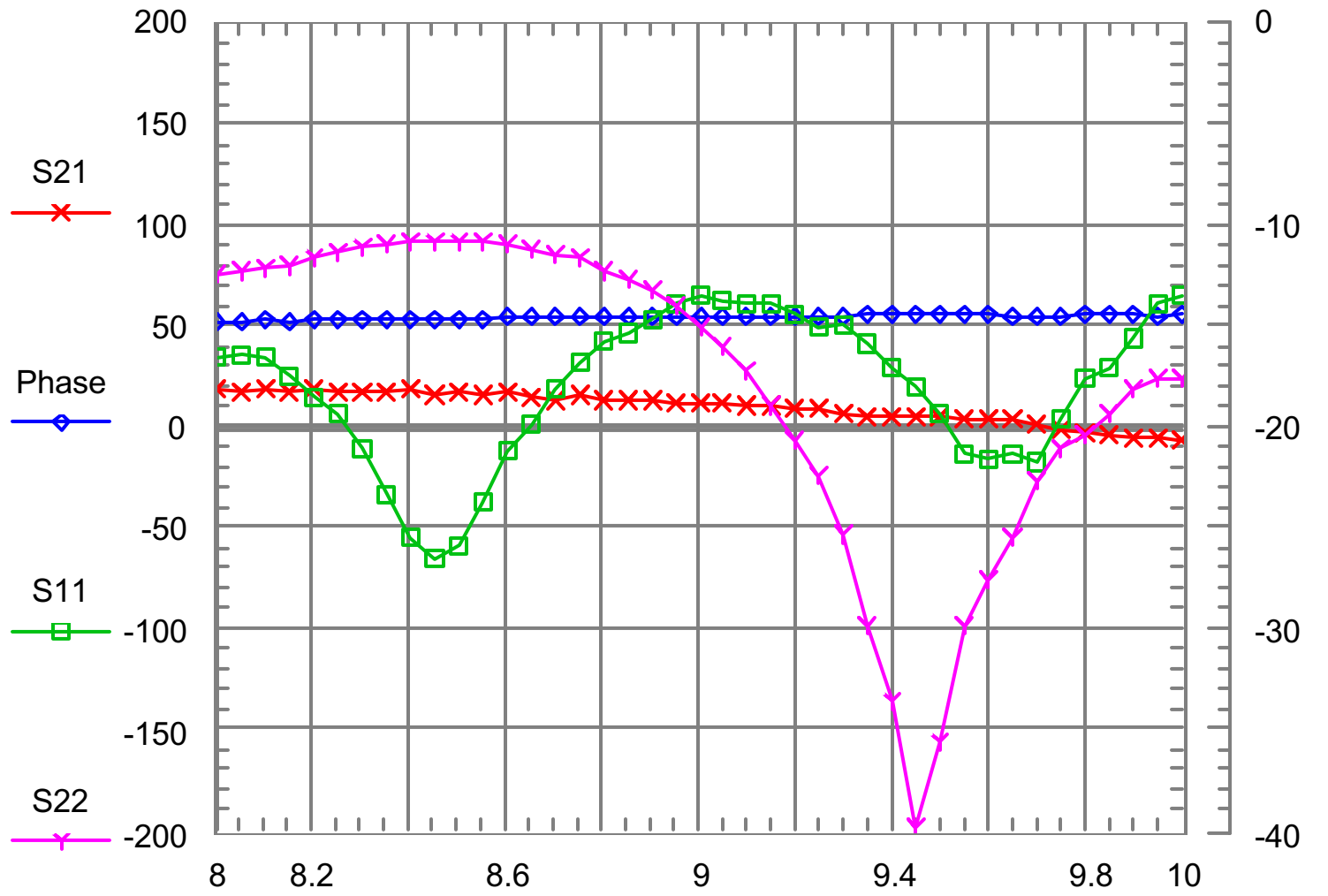


S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



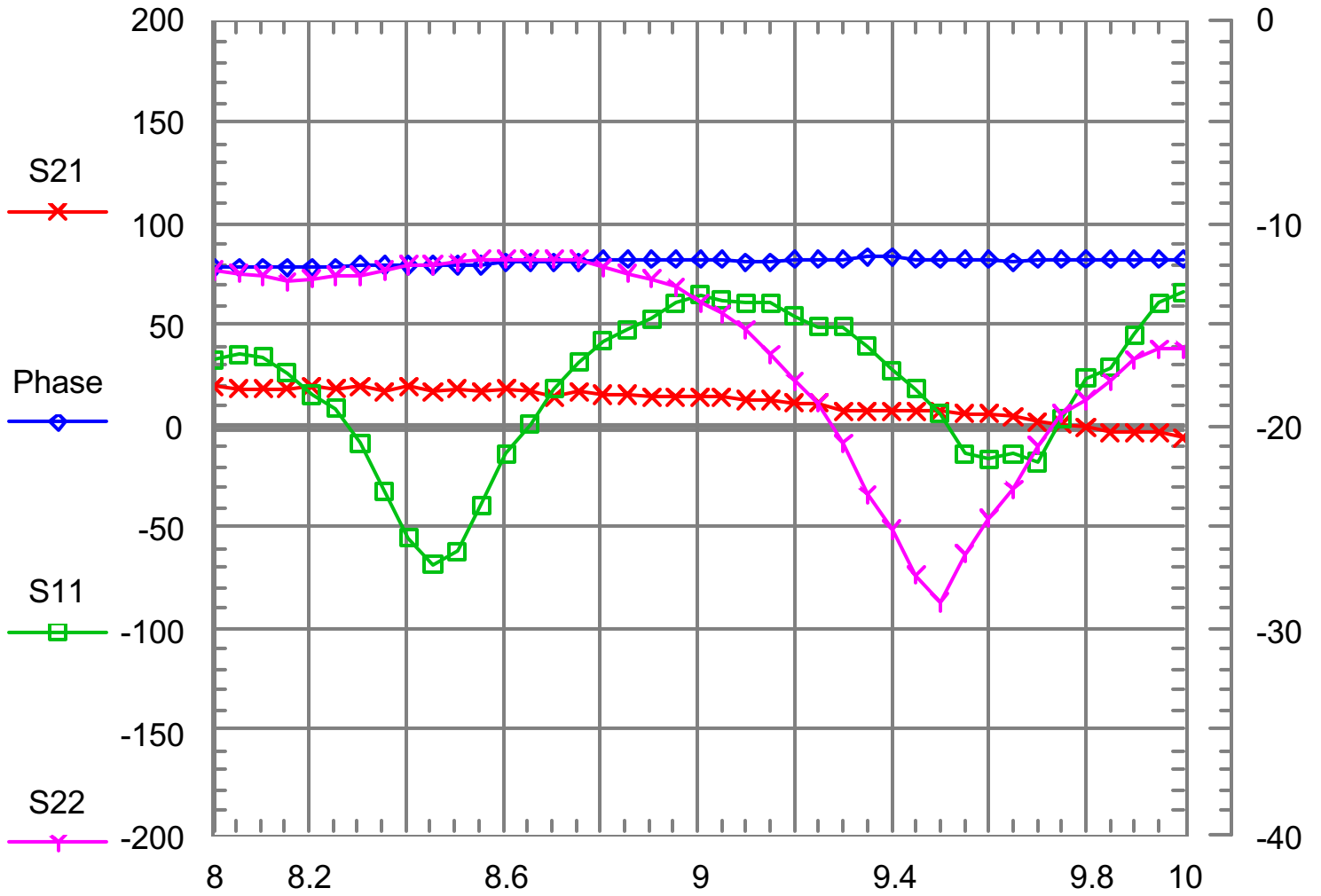
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



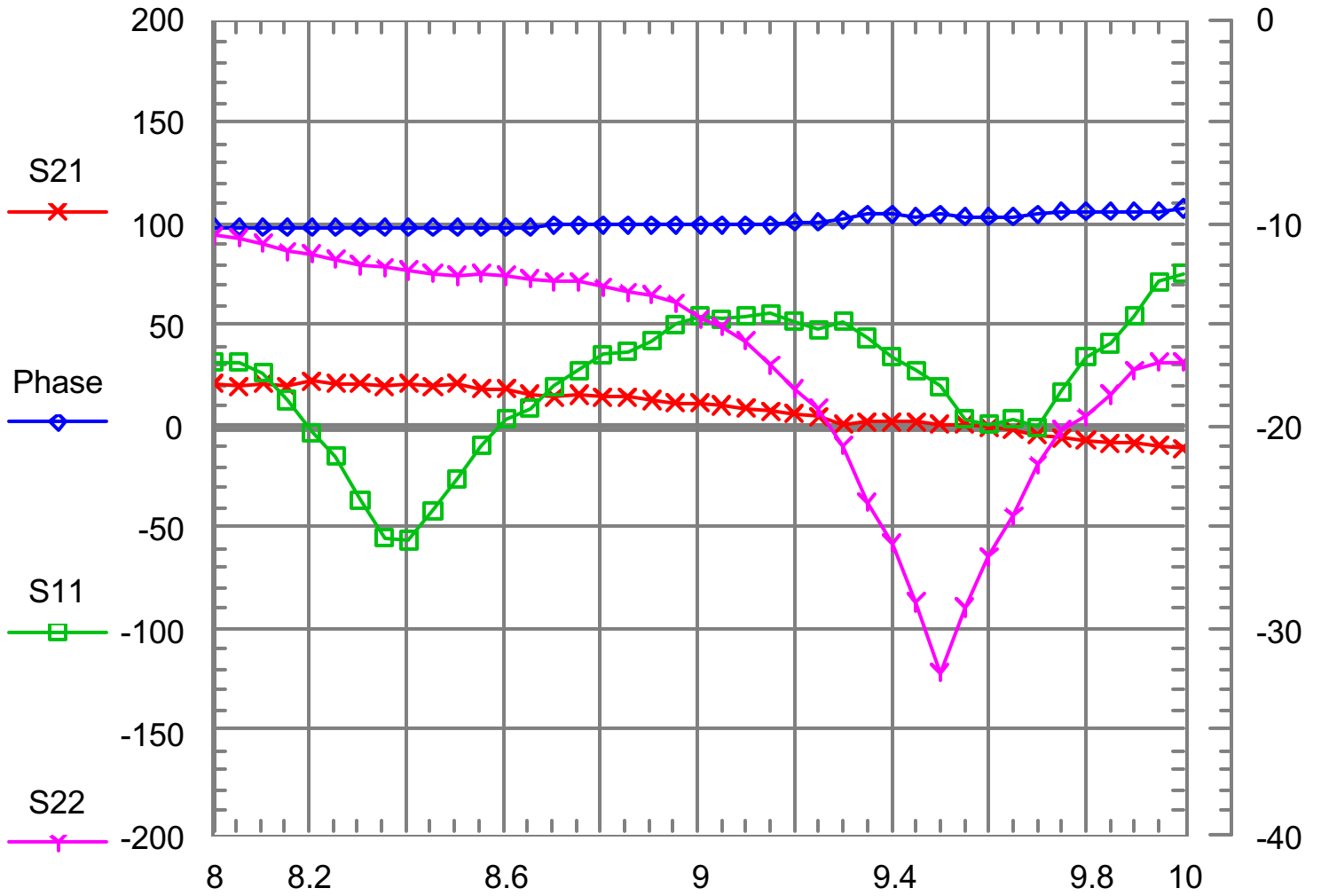
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



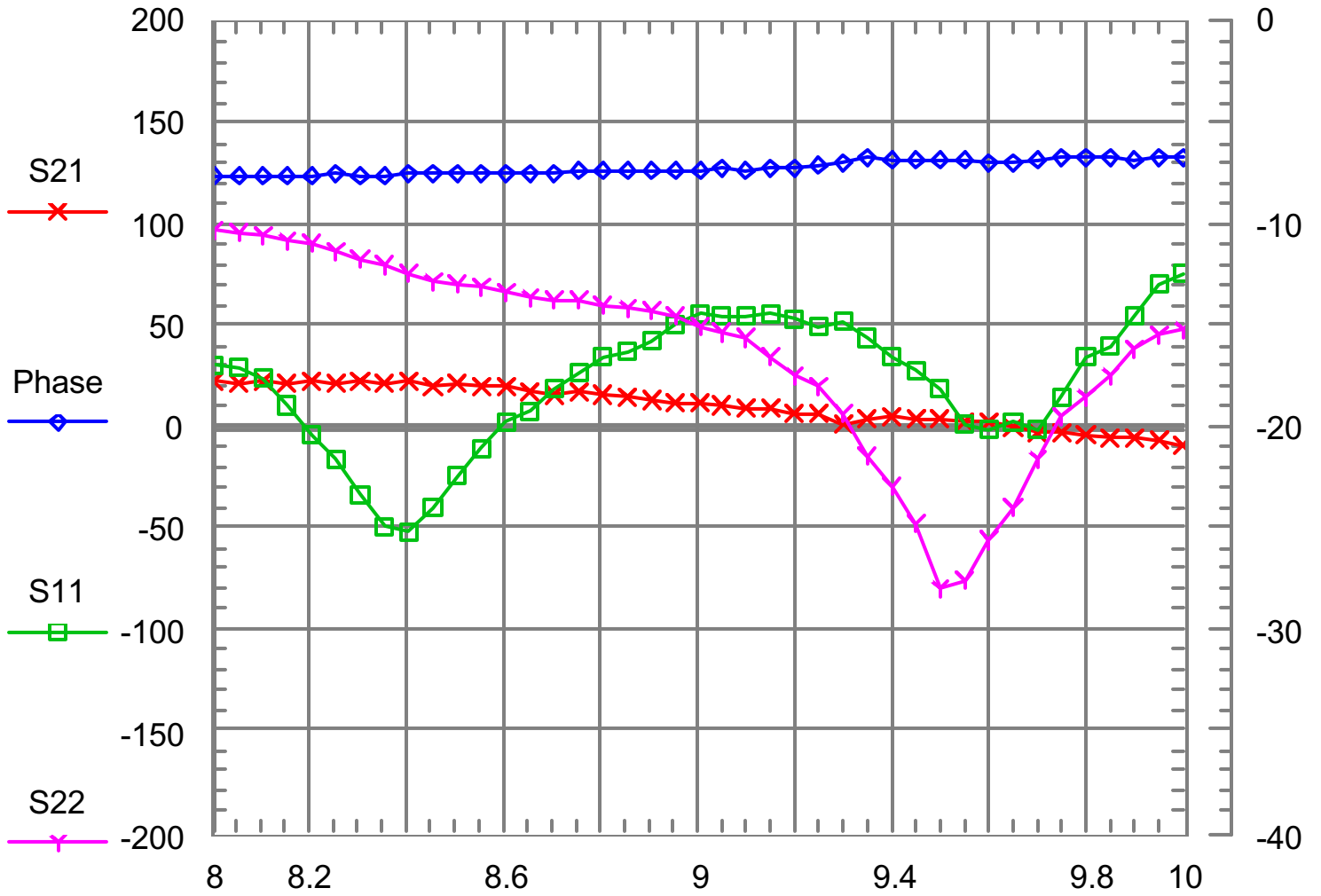
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



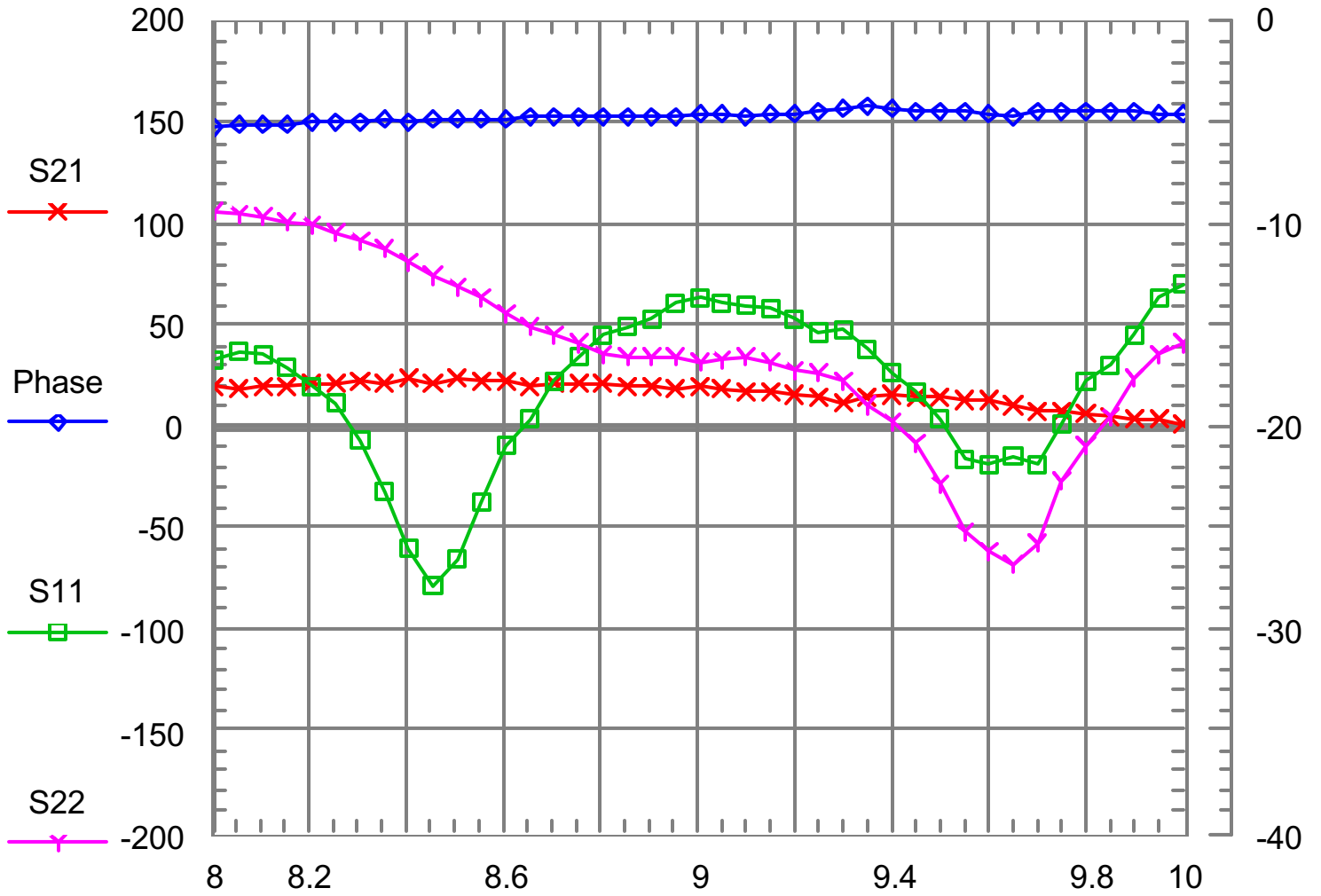
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



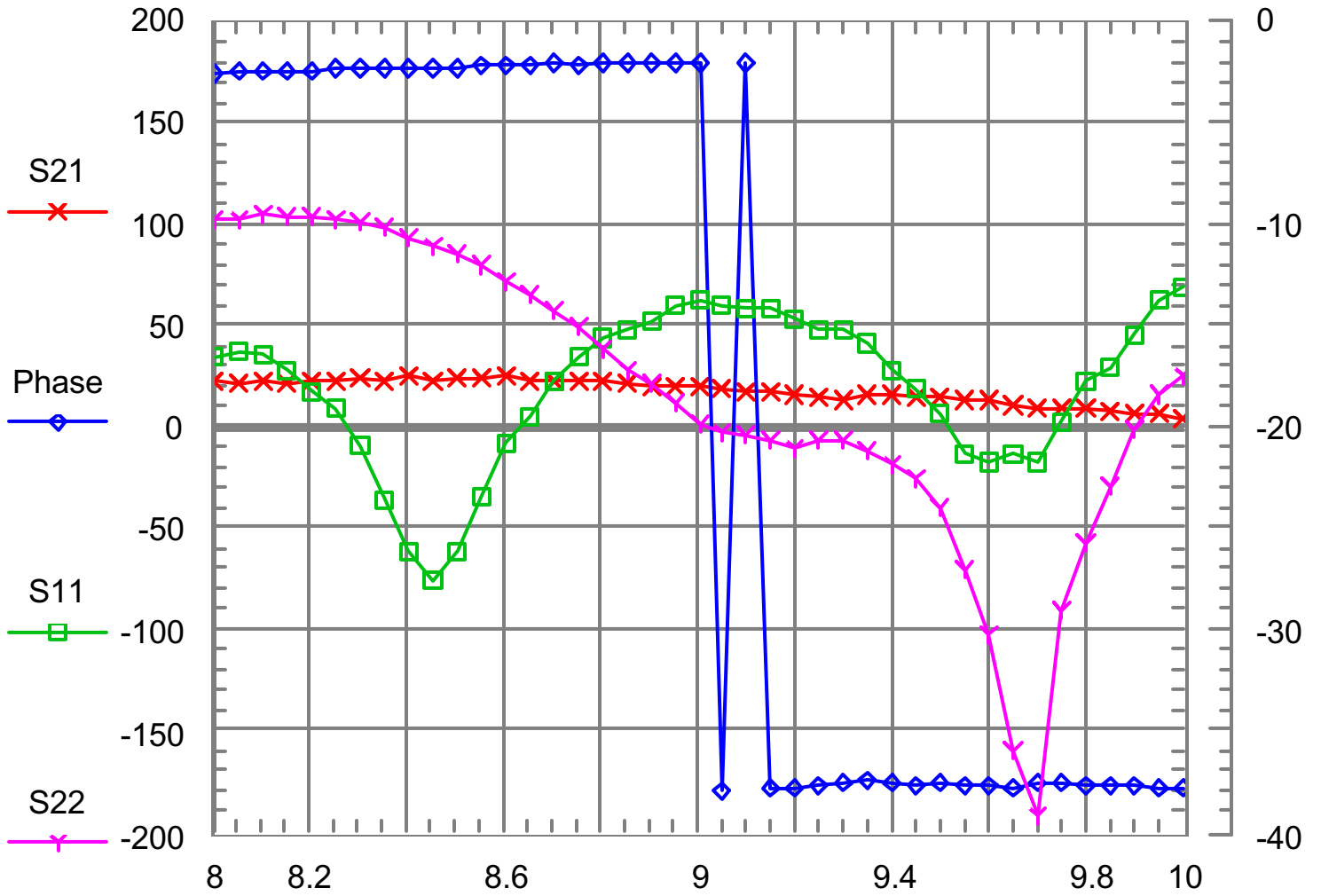
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



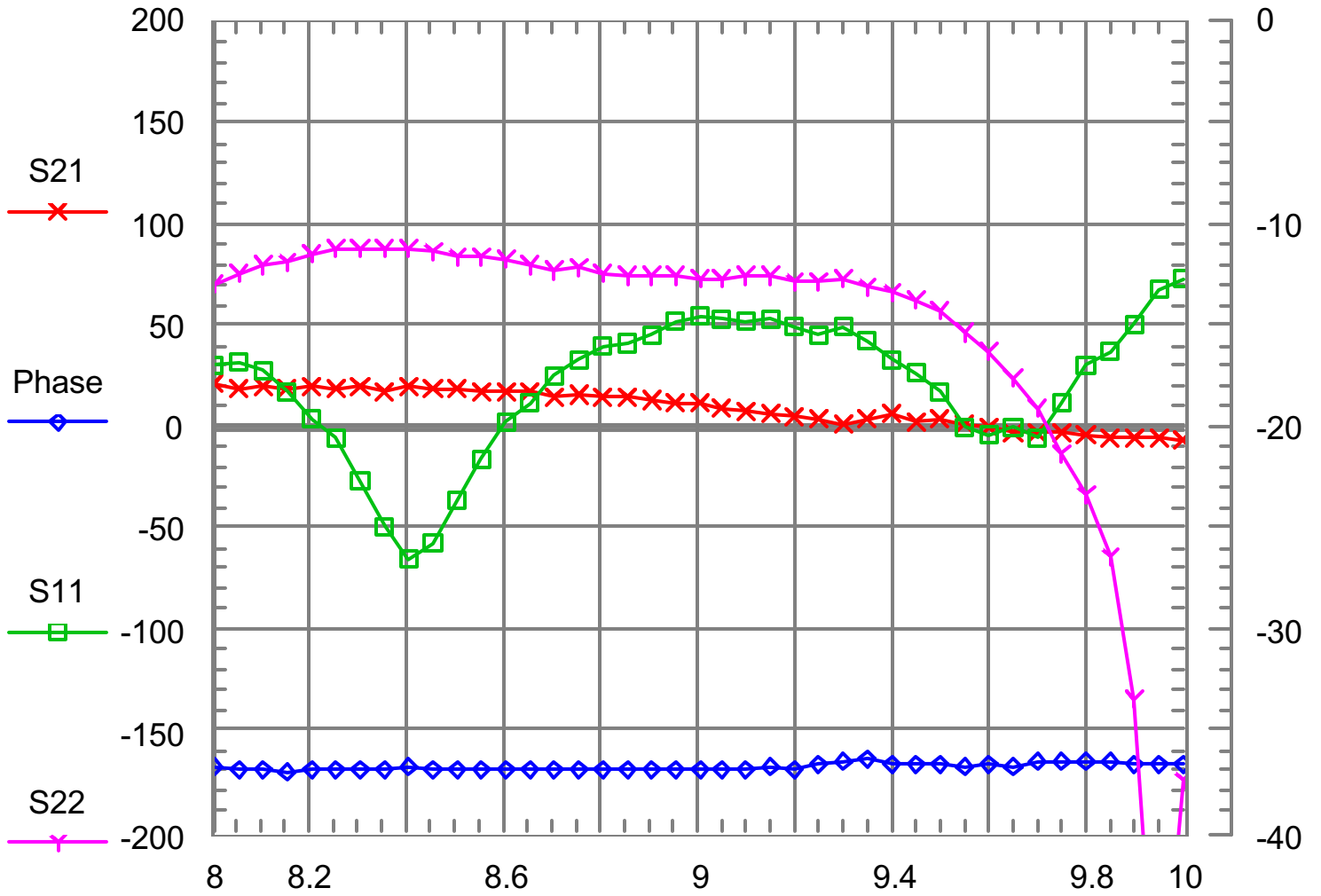
PS360-DC-1R SET HEX 01C0 Dec8y06

S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



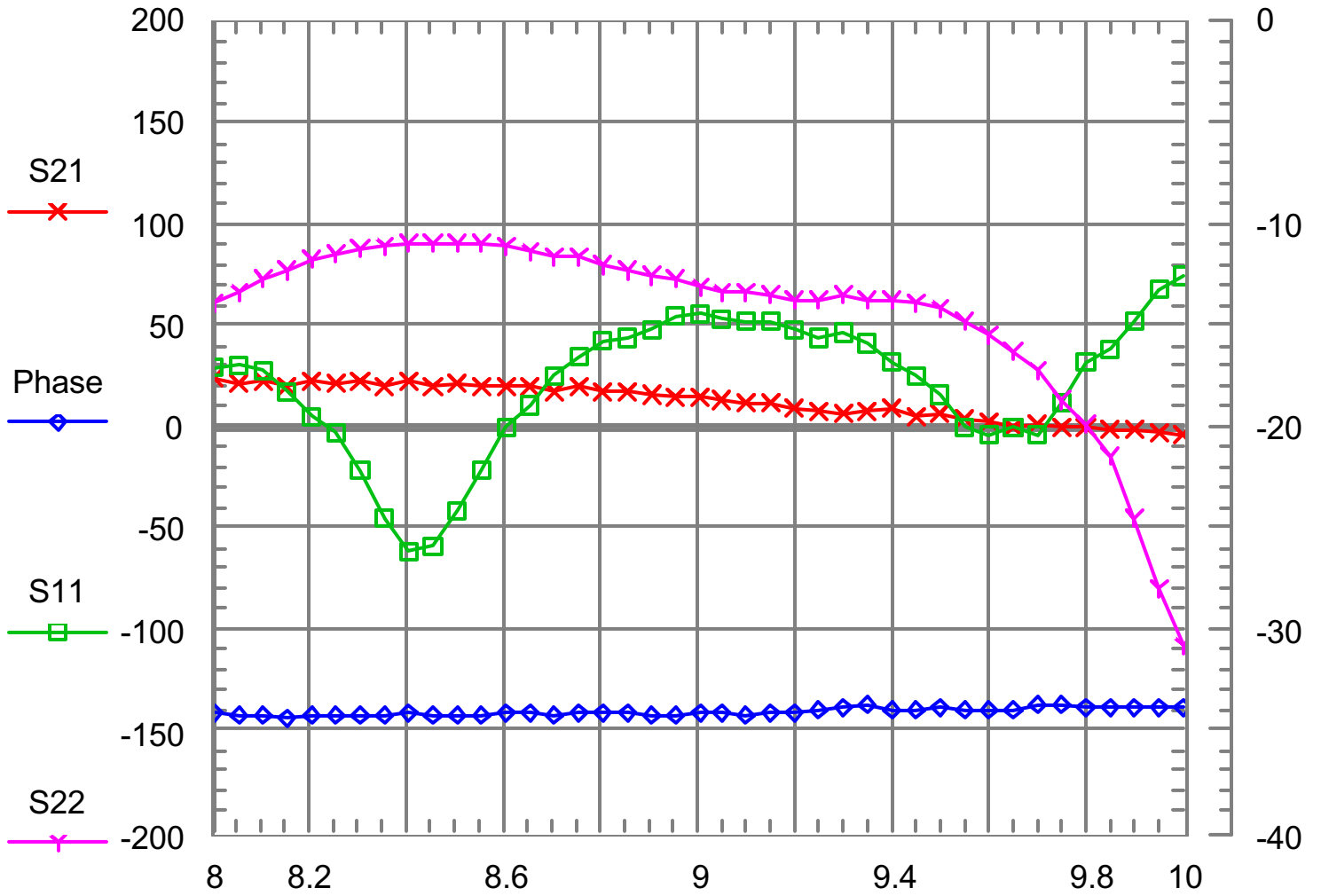
PS360-DC-1R SET HEX 0200 Dec8y06

S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



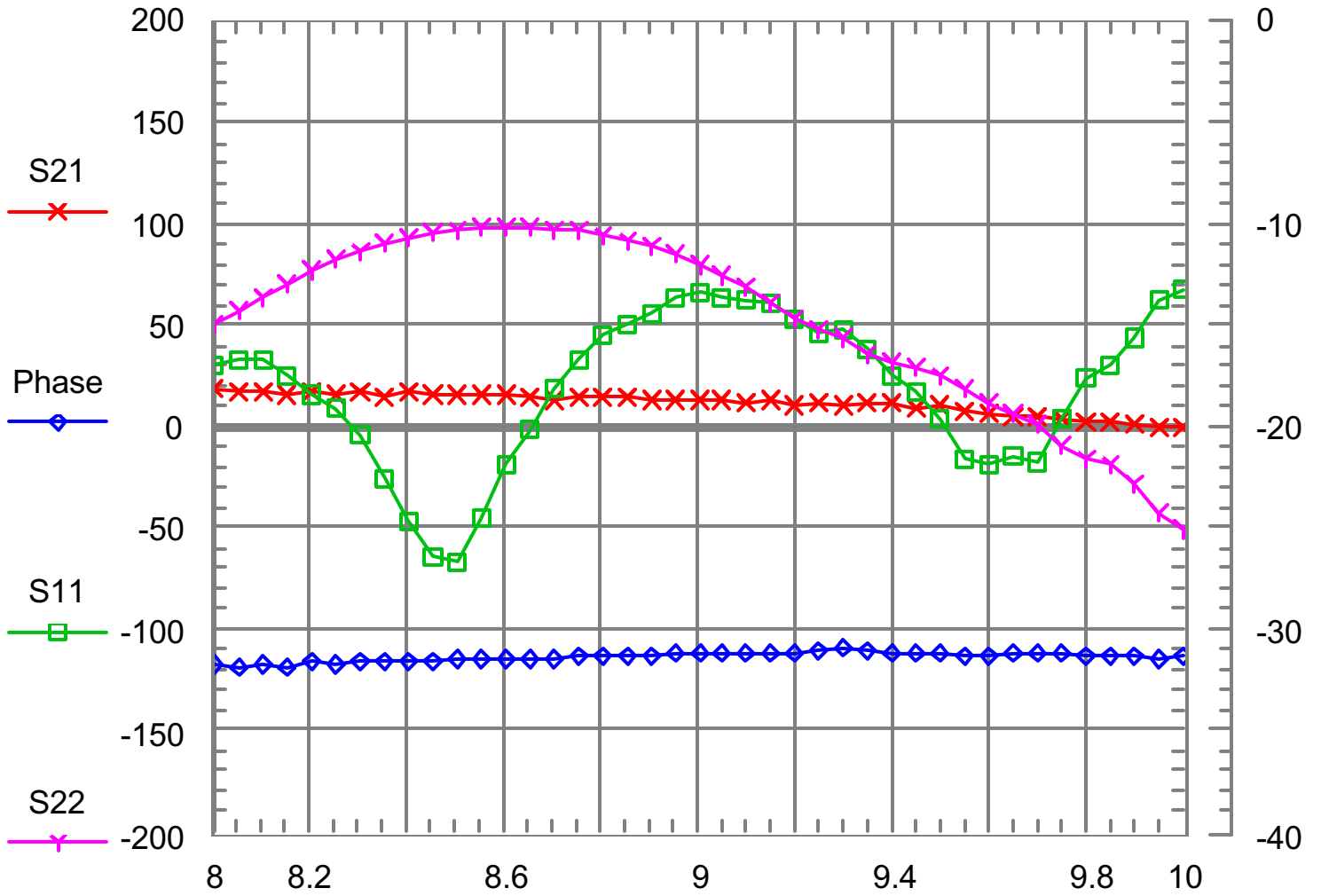
PS360-DC-1R SET HEX 0240 Dec8y06

S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



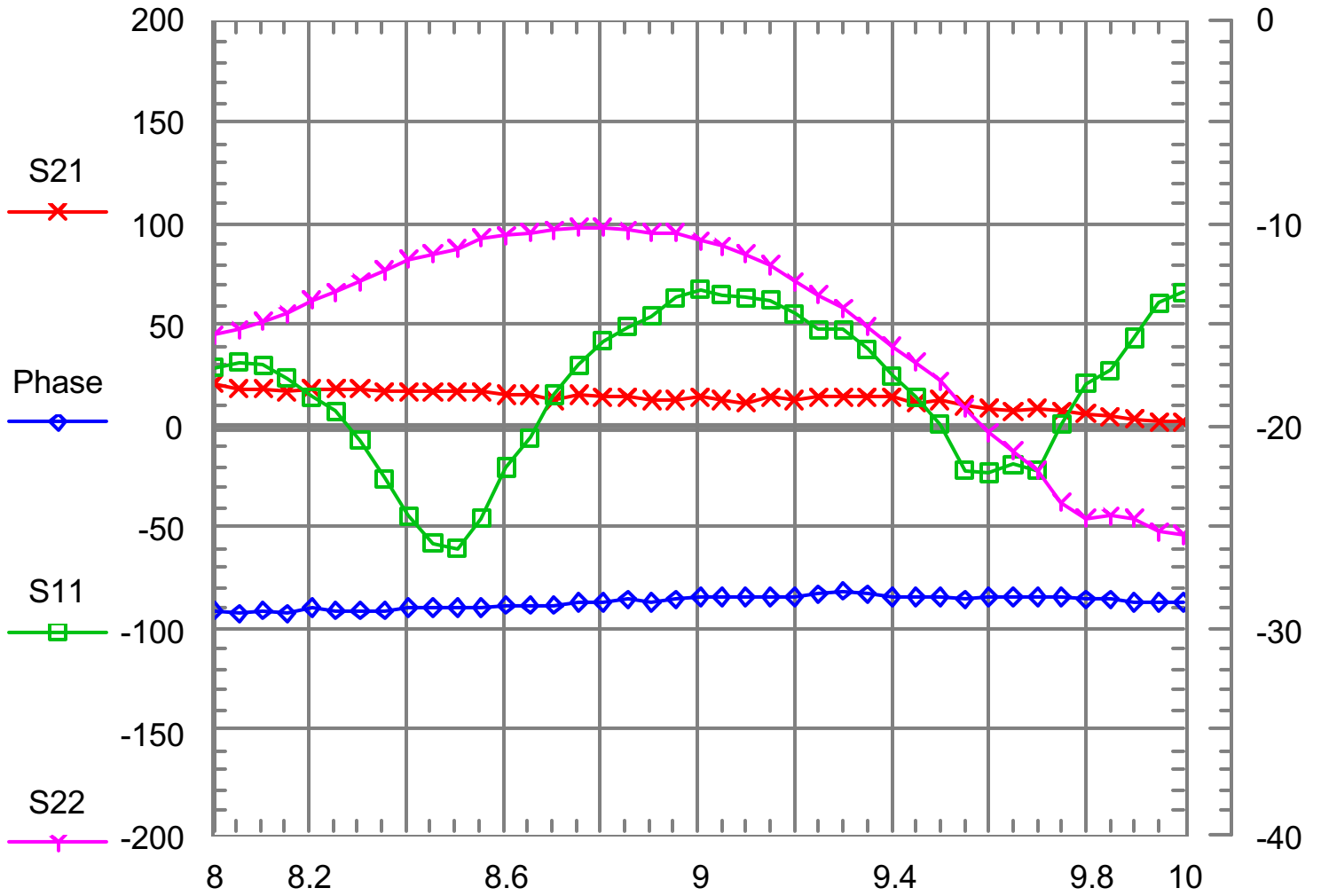
PS360-DC-1R SET HEX 0280 Dec8y06

S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



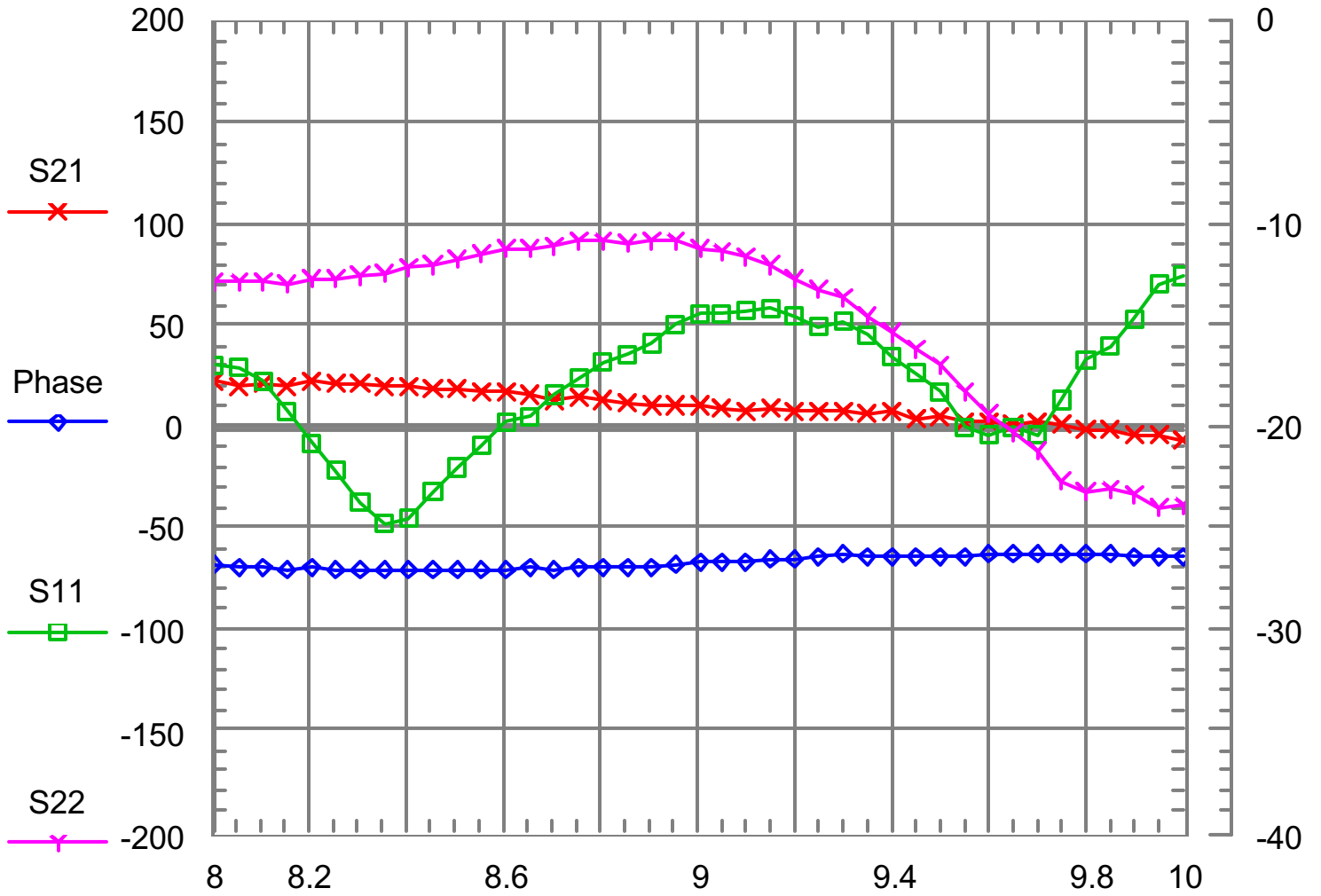
PS360-DC-1R SET HEX 02C0 Dec8y06

S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



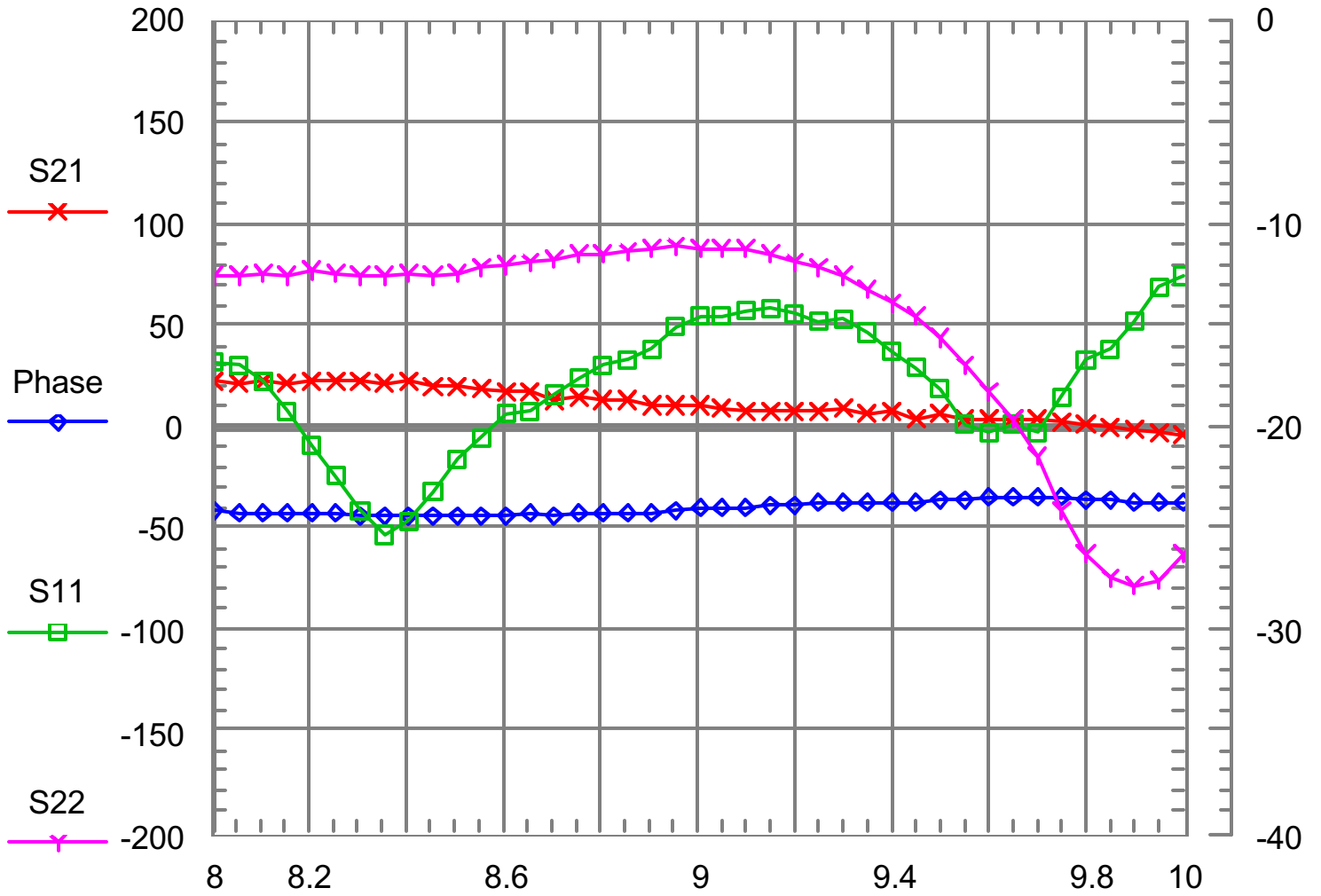
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



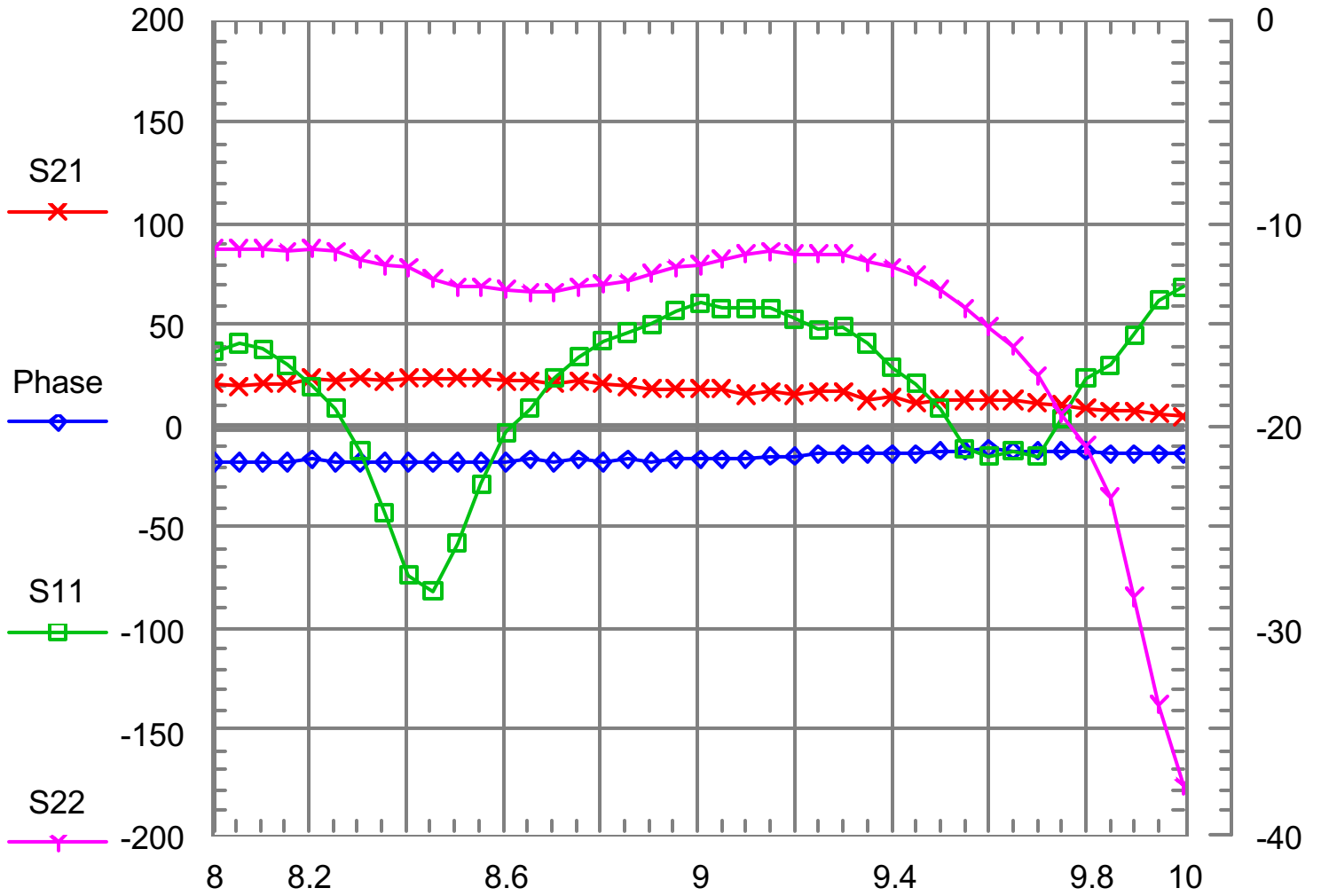
PS360-DC-1R SET HEX 0340 Dec8y06

S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



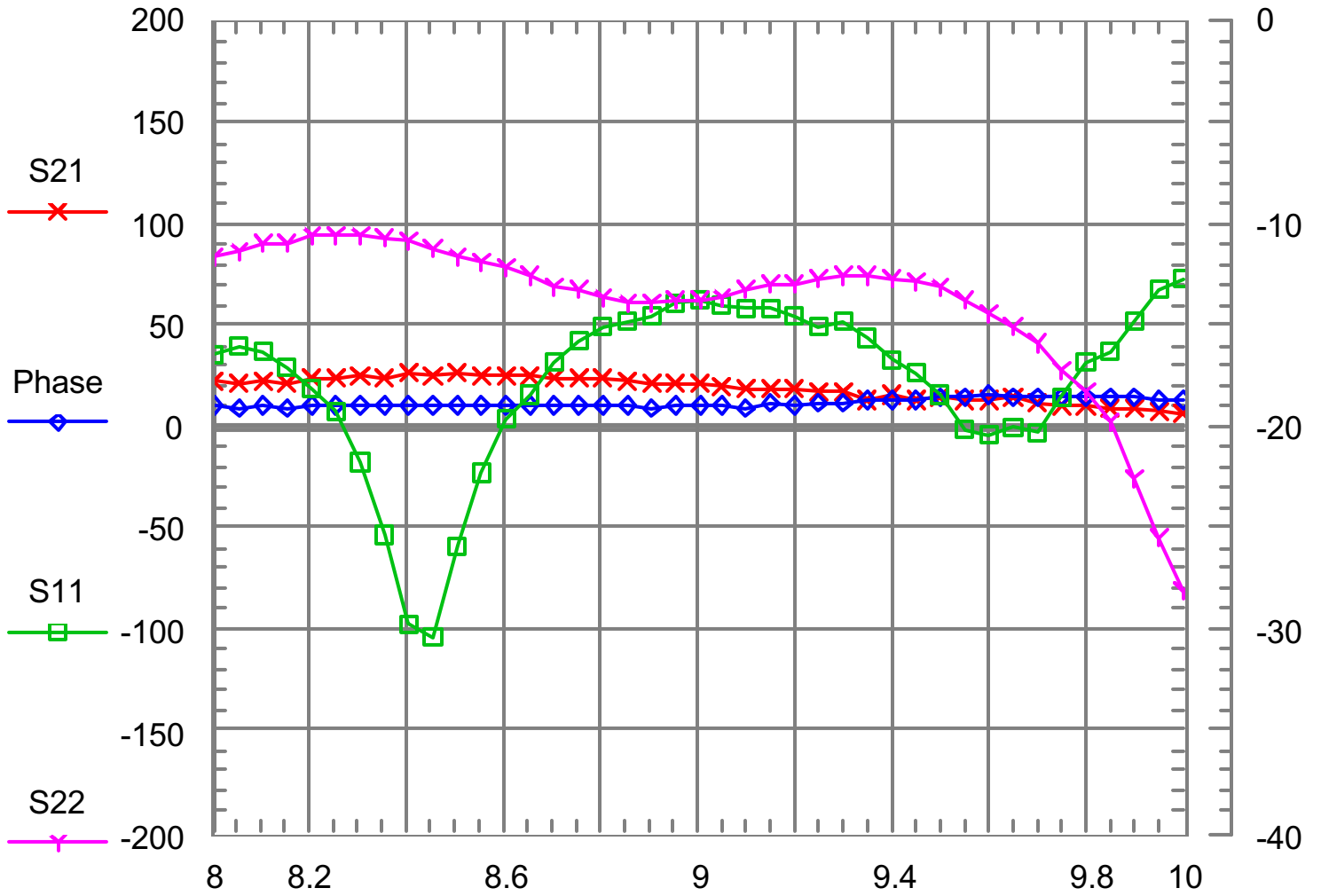
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



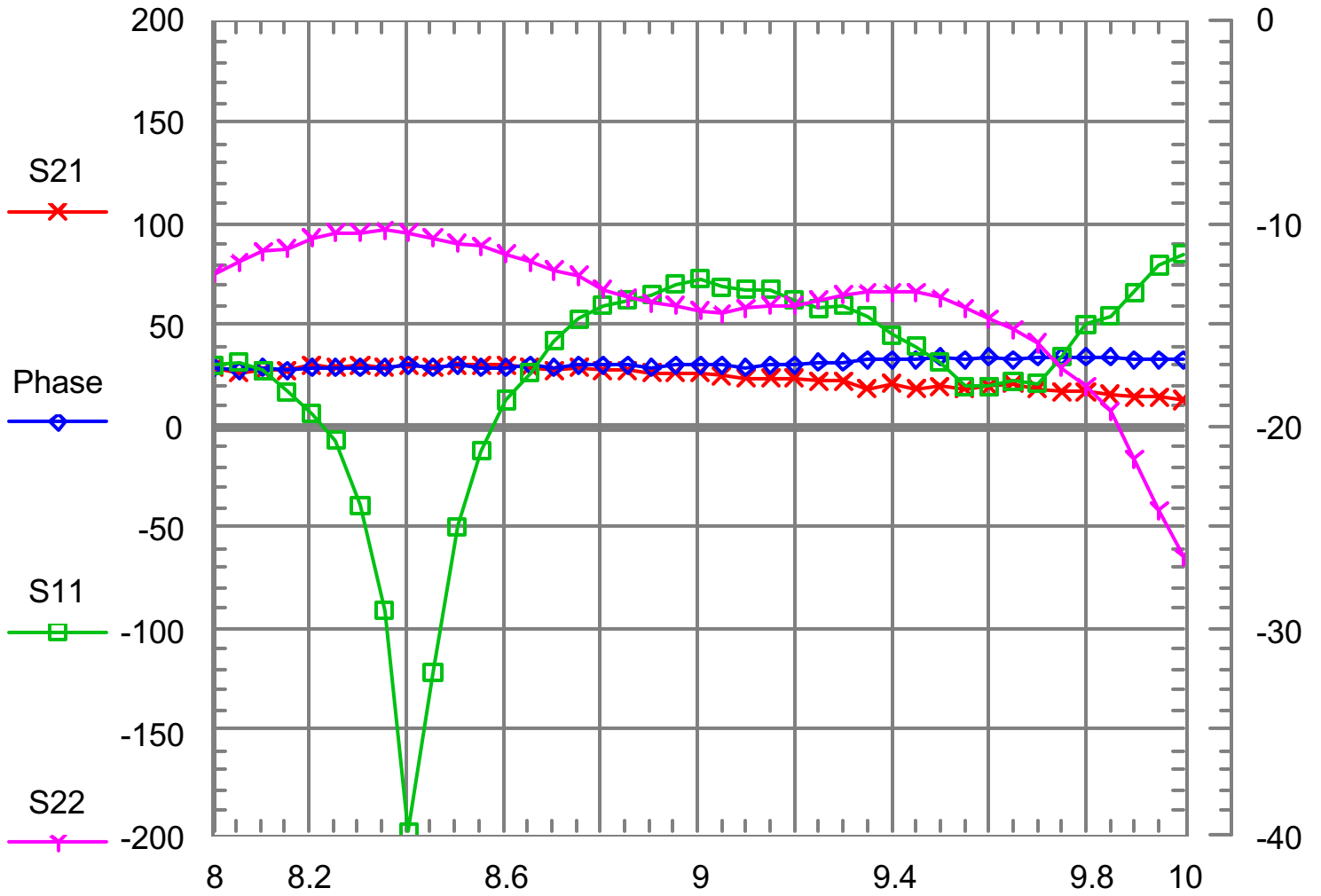
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



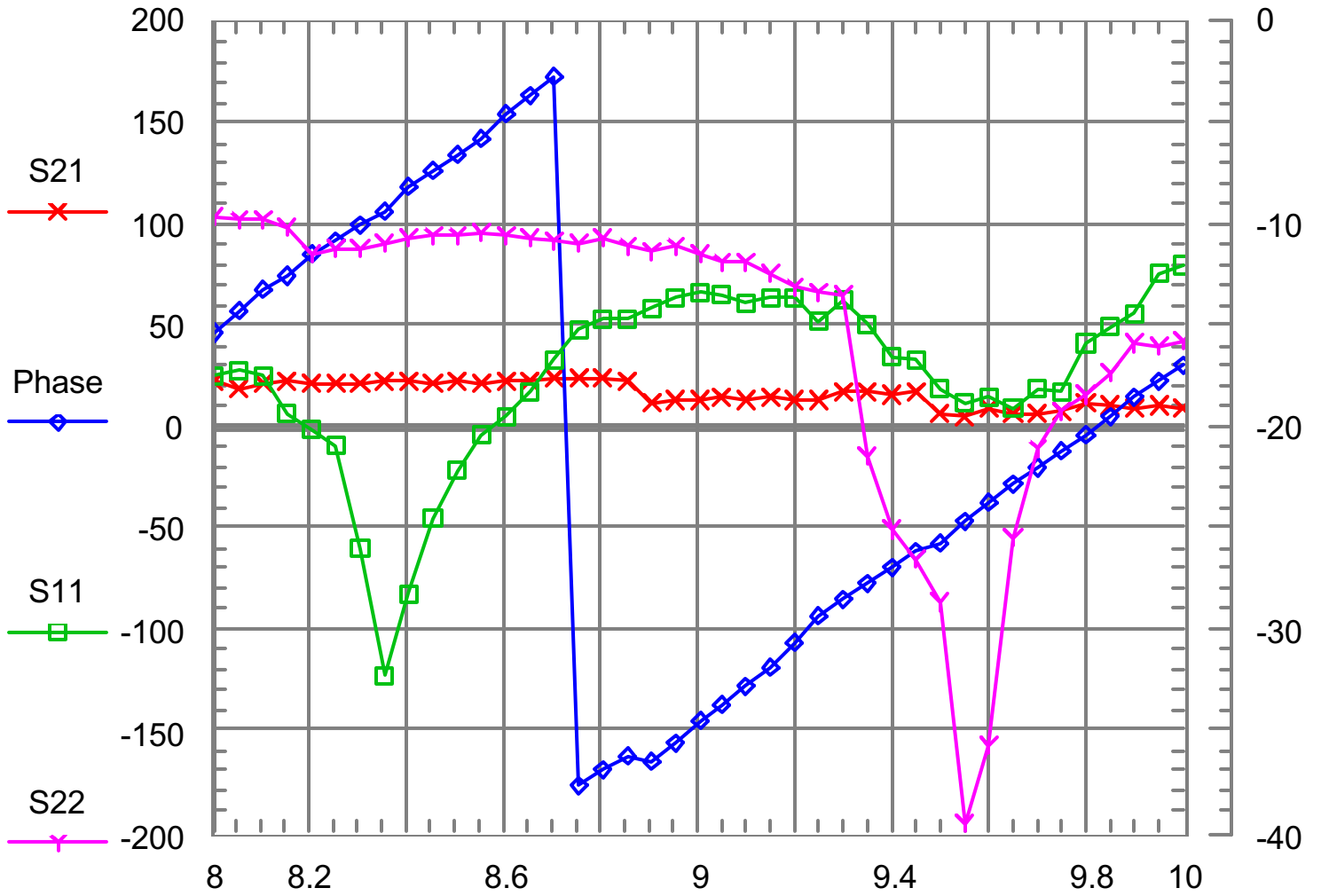
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S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



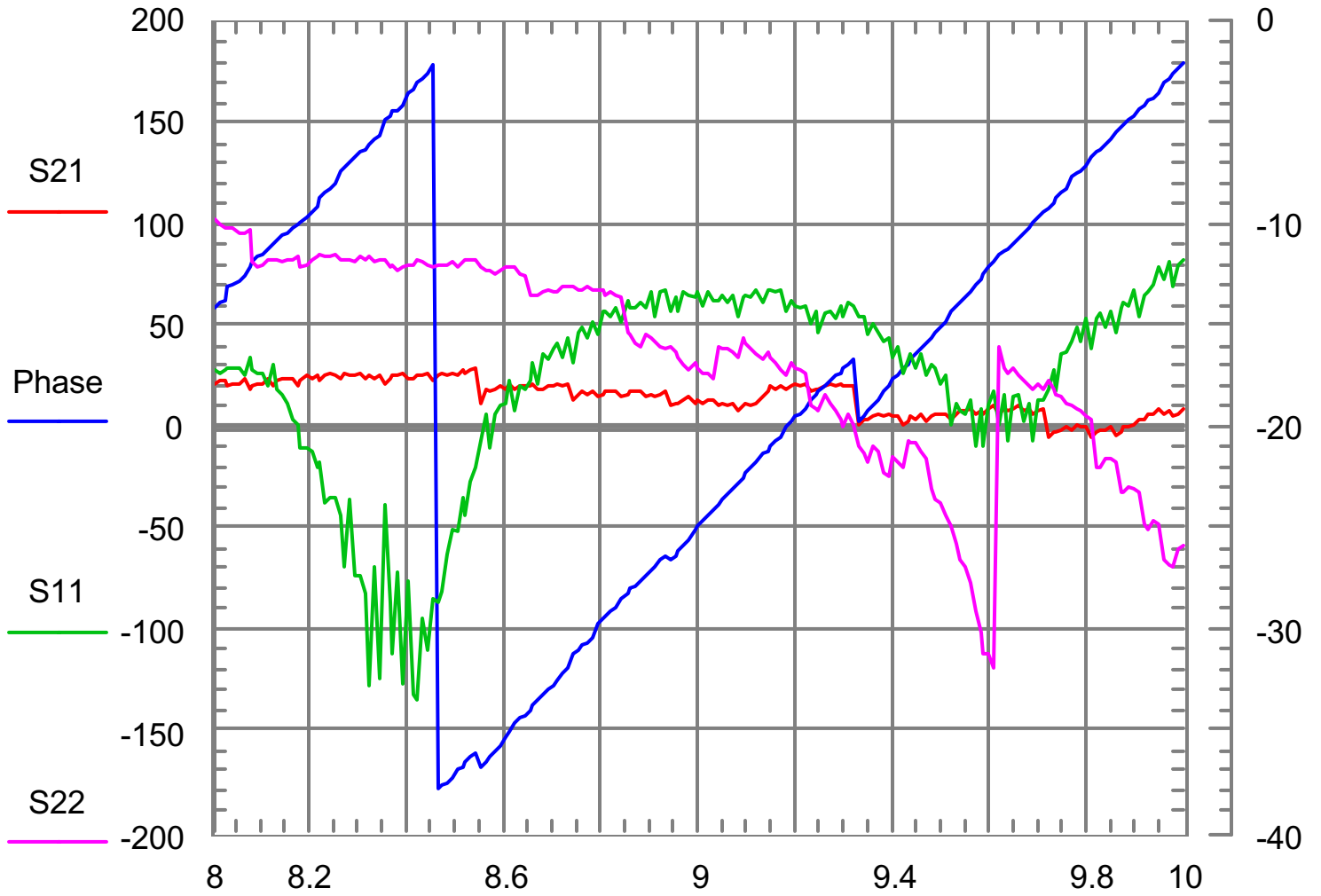
PS360-DC-1R SET SWEEP1 Dec9y06

S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



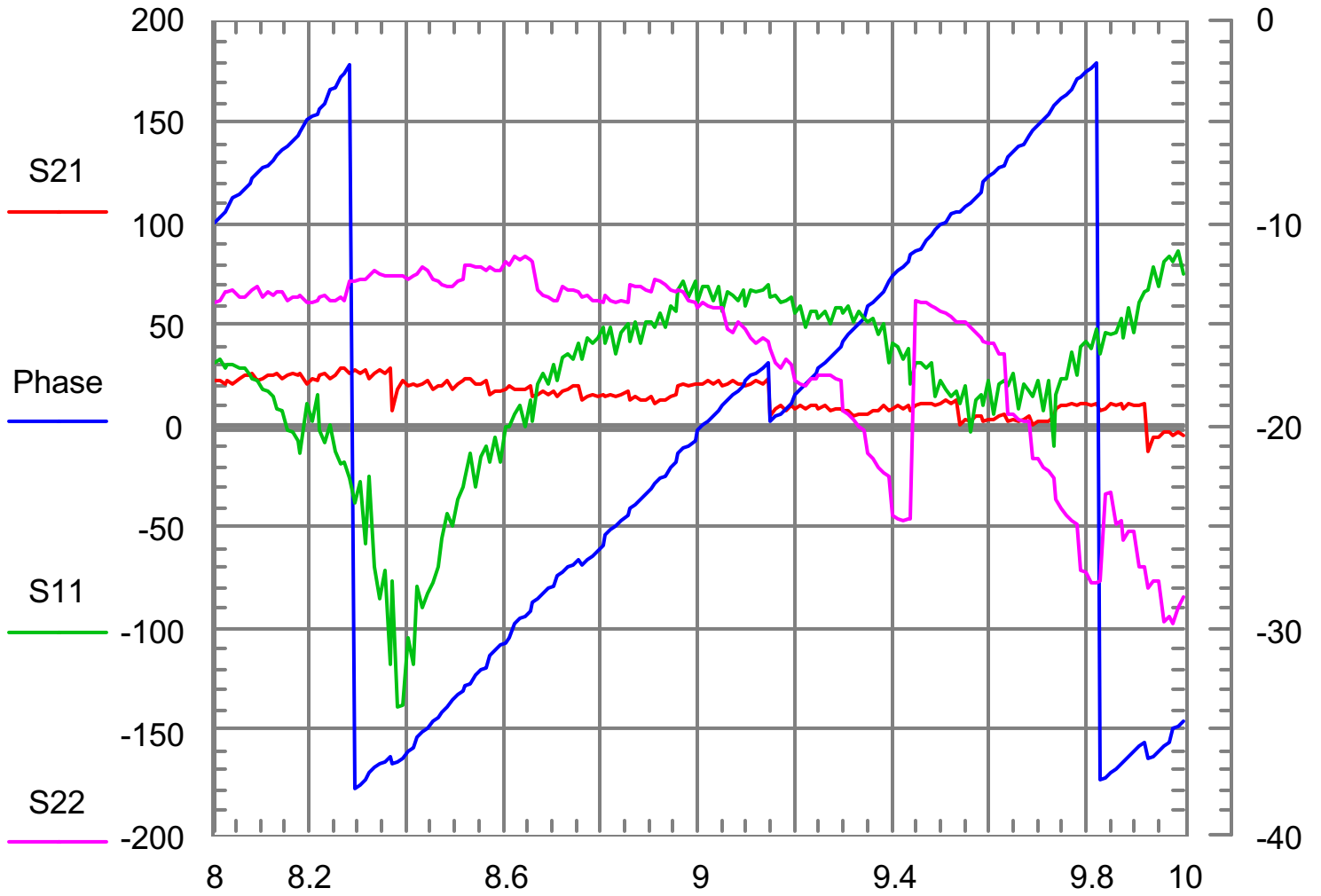
PS360-DC-1R SET SWEEP2 Dec9y06

S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



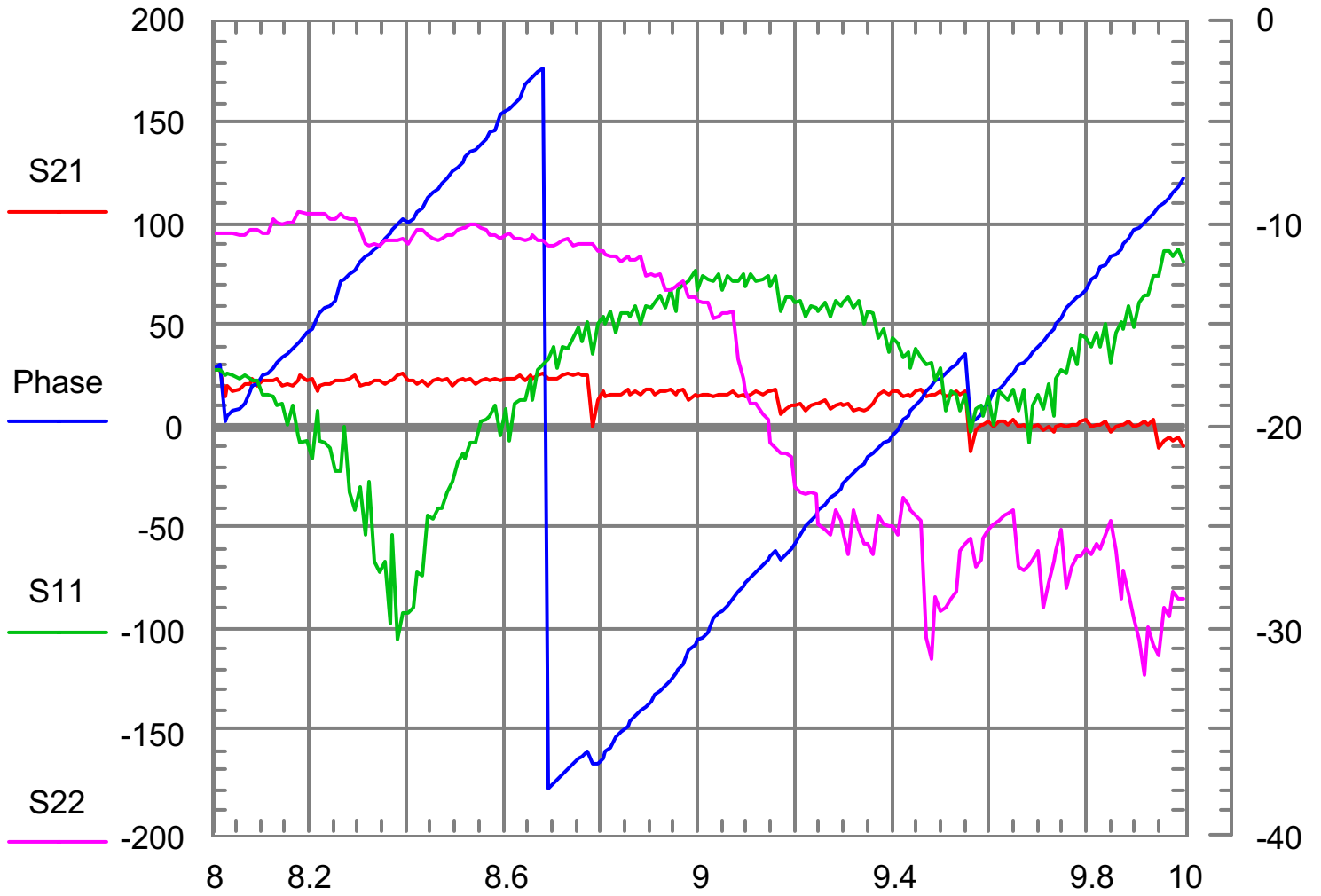
PS360-DC-1R SET SWEEP3 Dec9y06

S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



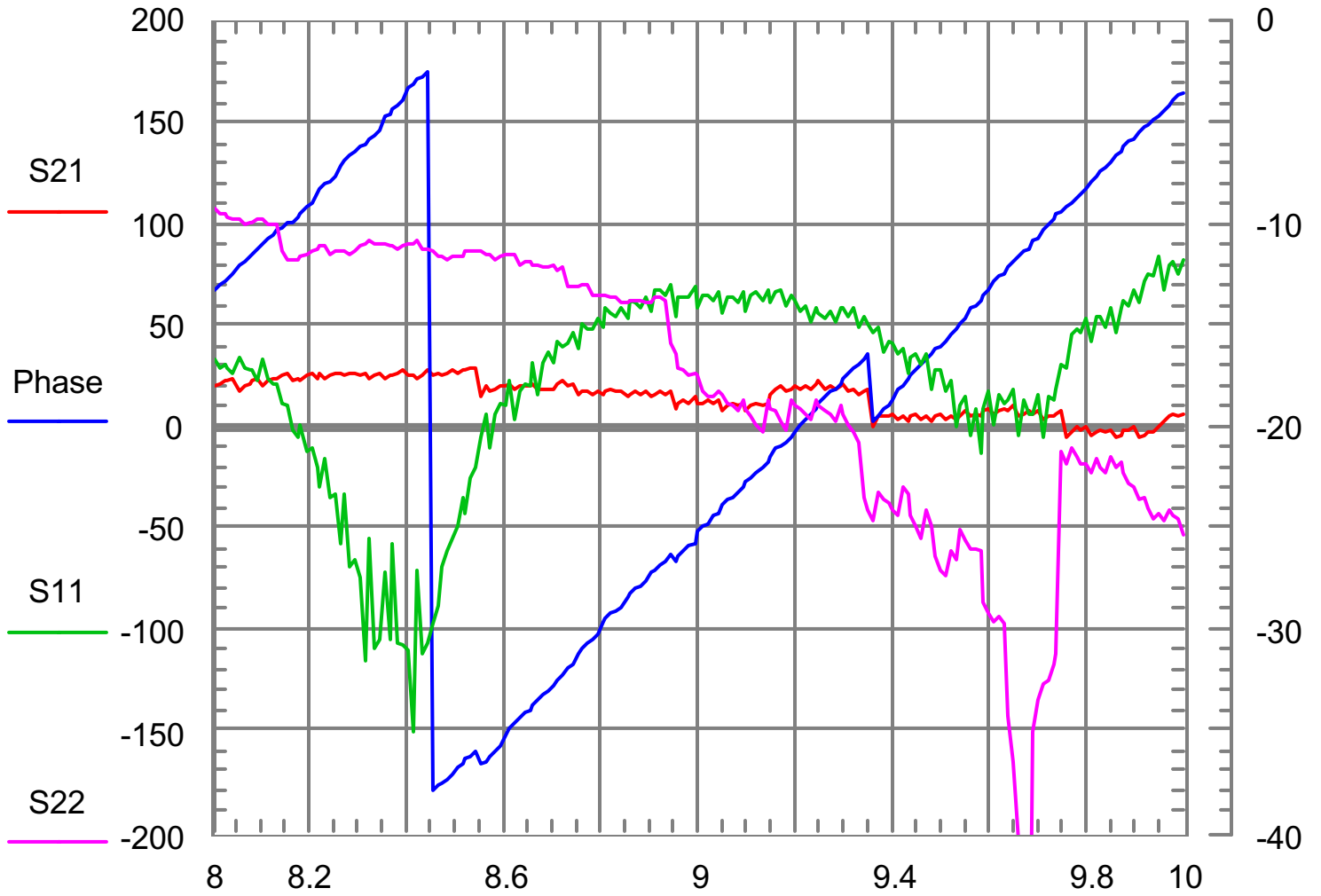
PS360-DC-1R SET SWEEP4 Dec9y06

S21 Phase degrees

8 to 10 GHz

S21 S11 S22

MAG dB



PS360-DC-1R SET SWEEP5 Dec9y06

PS360-DC-1R 8-10 GHz PHASE SHIFTER 11 Dec 2006

Channel 4 (Green Trace) : Phase Shifted RF mixed with source carrier.

Channel 2 (Cyan Trace) : TTL Digital Input signal

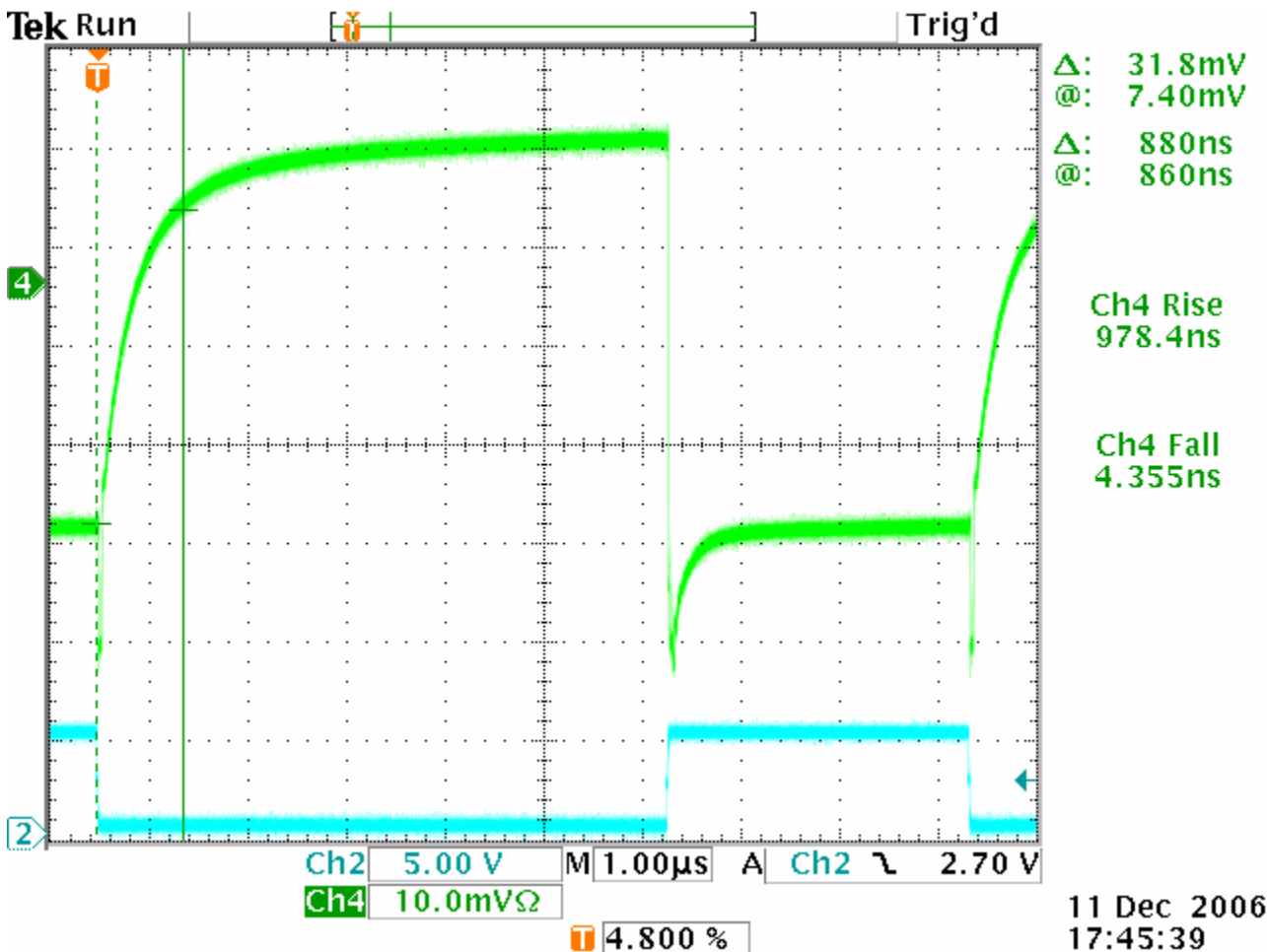
Tested at 9 GHz

Switching Hex codes OFF to 000

Note Hex code 3FF is 10 bit full scale value

Temperature 25 deg C

1 microsec / div



PS360-DC-1R 8-10 GHz PHASE SHIFTER 11 Dec 2006

Channel 4 (Green Trace) : Phase Shifted RF mixed with source carrier.

Channel 2 (Cyan Trace) : TTL Digital Input signal

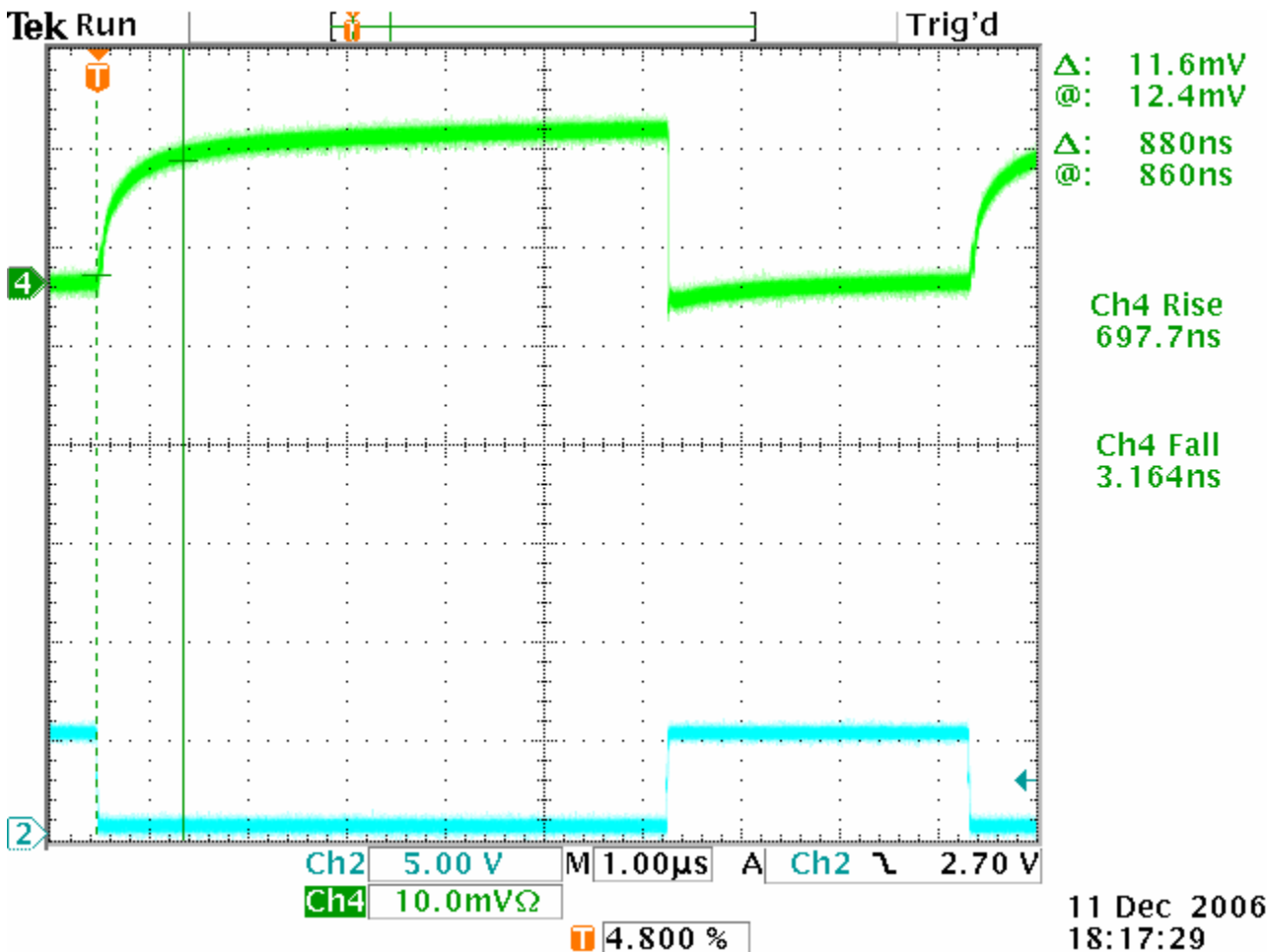
Tested at 9 GHz

Switching Hex codes 0A0 to 000

Note Hex code 3FF is 10 bit full scale value

Temperature 25 deg C

1 microsec / div





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INDUSTRIES



FSCM 0ZXZ8

PHASE SHIFTER

MODEL NO: PS-360-DC-1R

OPTION NO: 810

SERIAL NO: PM607322

J2

J3

J1



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PHASE SHIFTER

MODEL NO: PS-360-DC-1R
OPTION NO: 810
SERIAL NO: PM607322



J2

J3

J1