



TYPICAL CHARACTERISTICS ON PMC-33D5-6D8-SFF

PMI MODEL: PMC-33D5-6D8-SFF IS A MONOPULSE COMPARATOR OPERATING OVER THE 3.0 TO 3.5 GHz FREQUENCY RANGE. THIS MODEL OFFERS A TYPICAL INSERTION LOSS OF 0.8 dB IF INPUT SIGNALS AT PORTS A, B, C AND D ARE EQUAL IN AMPLITUDE OR POWER & INPHASE WITH AN OUTPUT AT PORT AZ Σ . INSERTION LOSS OF 6.8 dB MAXIMUM IF INPUT SIGNAL AT PORT A, B, C or D AND ALL OTHER PORTS ARE TERMINATED TO 50 OHMS WITH AN OUTPUT AT PORTS EL Δ , AZ Σ , AQ or AZ Δ , WHILE MAINTAINING A MAXIMUM AMPLITUDE BALANCE OF \pm 0.4 dB AND A PHASE BALANCE OF \pm 5°.



November 15th, 2019

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**TYPICAL CHARACTERISTICS
ON
PMC-33D5-6D8-SFF**

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TYPICAL CHARACTERISTICS ON PMC-33D5-6D8-SFF

OUTLINE DRAWING

DESCRIPTION

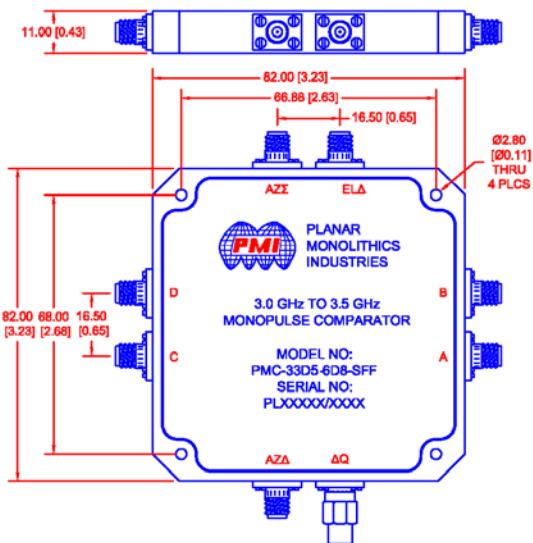
PMI MODEL: PMC-33D5-6D8-SFF IS A MONOPULSE COMPARATOR OPERATING OVER THE 3.0 TO 3.5 GHz FREQUENCY RANGE. THIS MODEL OFFERS A TYPICAL INSERTION LOSS OF 0.8 dB IF INPUT SIGNALS AT PORTS A, B, C AND D ARE EQUAL IN AMPLITUDE OR POWER & INPHASE WITH AN OUTPUT AT PORT AZZ. INSERTION LOSS OF 6.8 dB MAXIMUM IF INPUT SIGNAL AT PORT A, B, C or D AND ALL OTHER PORTS ARE TERMINATED TO 50 OHMS WITH AN OUTPUT AT PORTS ELA, AZZ, AQ or AZA, WHILE MAINTAINING A MAXIMUM AMPLITUDE BALANCE OF ± 0.4 dB AND A PHASE BALANCE OF $\pm 5^\circ$.

SPECIFICATIONS

- FREQUENCY RANGE: 3.0 GHz TO 3.5 GHz
- INSERTION LOSS: 0.8 dB TYPICAL (If input signals at ports A, B, C and D are equal Amplitude or Power & Inphase with an output at Port AZZ)
- INSERTION LOSS: 6.8 dB MAXIMUM (If input signals at port A, B, C or D and all other ports are terminated to 50 Ohms with an output at ports ELA, AZZ, AQ or AZA)
- AMPLITUDE BALANCE: ± 0.4 dB MAXIMUM
- PHASE BALANCE: $\pm 5^\circ$
- ISOLATION: 23 dB MINIMUM
- VSWR: 1.25:1 MAXIMUM
- POWER HANDLING: AVERAGE: 10 WATT MAXIMUM (PORT A, B, C & D)
PEAK: 0.1 kW MAXIMUM
- IMPEDANCE: 50 Ω
- CONNECTORS: SMA FEMALE
- SIZE: 82 mm x 82 mm x 11 mm
3.23" x 3.23" x 0.43"
EXCLUDING CONNECTORS
- FINISH: BLUE EPOXY POLIMIDE COATING IAW MIL-C-22750, TYPE I OVER EPOXY POLIMIDE PRIMER IAW MIL-P-23377, TYPE I, CLASS 1 OR 3.

REVISIONS			
ZONE	REV.	DESCRIPTION	DATE
	A1	ORIGINAL RELEASE	10/8/10

MECHANICAL OUTLINE



ENVIRONMENTAL RATINGS

- TEMPERATURE: -55 °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 OPERATING TEMPERATURE
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

PMI CONFIDENTIAL AND PROPRIETARY

ALL DIMENSIONS
ARE IN mm [INCH]
TOLERANCES:
XXX ± 0.508 [0.020]
XXXX ± 0.254 [0.010]

APPROVALS		DATE	TITLE		
DRAWN NJA		10/8/10	PRODUCT FEATURE		
REDRAWN			SIZE	FROM NO.	DWN NO.
ISSUED			A		REV. A1
			SCALE	N:S	SHEET
					1 OF 1

PLANAR MONOLITHICS INDUSTRIES, INC.
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ISO 9001 CERTIFIED





**TYPICAL CHARACTERISTICS
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TEST DATA SUMMARY

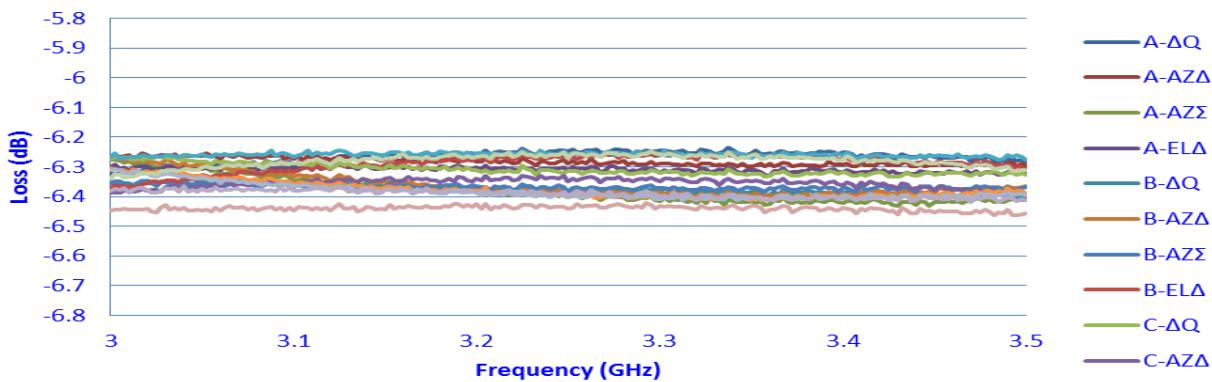
Test Item No.	Parameters	Specified Value	-55°C	+25°C	+85°C
1	Frequency Range:	3.0 GHz to 3.5 GHz	3.0 GHz to 3.5 GHz	3.0 GHz to 3.5 GHz	3.0 GHz to 3.5 GHz
2	Insertion Loss: (if input signals at ports A, B, C, and D are equal Amplitude or Power & Inphase with an output at port AZΣ)	0.8 dB Typical	0.3 dB	0.4 dB	0.5 dB
3	Insertion Loss: (if input signals at ports A, B, C, or D and all other ports are terminated to 50 Ohms with an output at ports ELΔ, AZΣ, AQ or AZΔ)	6.8 dB Maximum	6.5 dB	6.7 dB	6.7 dB
4	Amplitude Balance:	±0.4 dB Maximum	±0.1 dB	±0.2 dB	±0.3 dB
5	Phase Balance:	±5°	±0.9°	±1°	±2.2°
6	Isolation:	23 dB Minimum	24 dB	23 dB	23 dB
7	VSWR:	1.25:1 Maximum	1.1:1	1.2:1	1.2:1
8	Power Handling:	Average: 10 Watt Maximum (Port A, B, C, & D) Peak: 0.1 kW Maximum	10 Watts MAX (Port A, B, C, D)	10 Watts MAX (Port A, B, C, D)	10 Watts MAX (Port A, B, C, D)
9	Impedance:	50 Ω	50 Ω	50 Ω	50 Ω



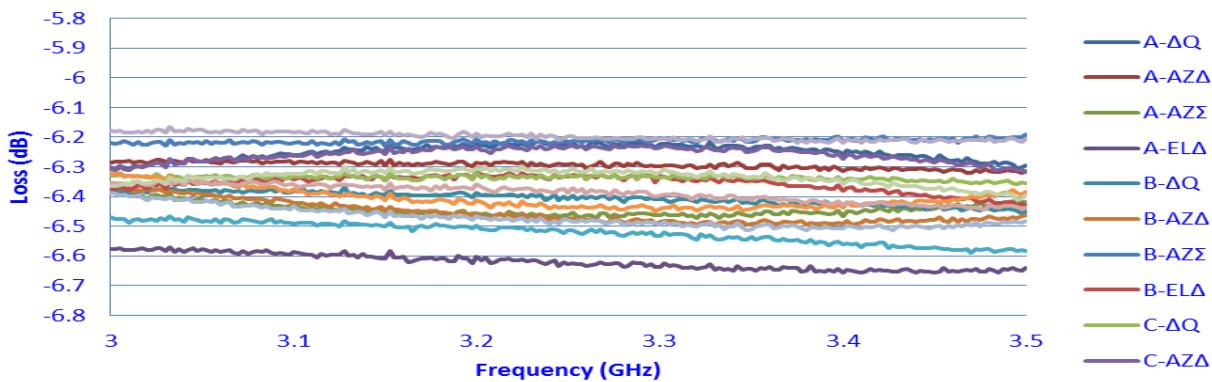
TYPICAL CHARACTERISTICS ON PMC-33D5-6D8-SFF

Insertion Loss

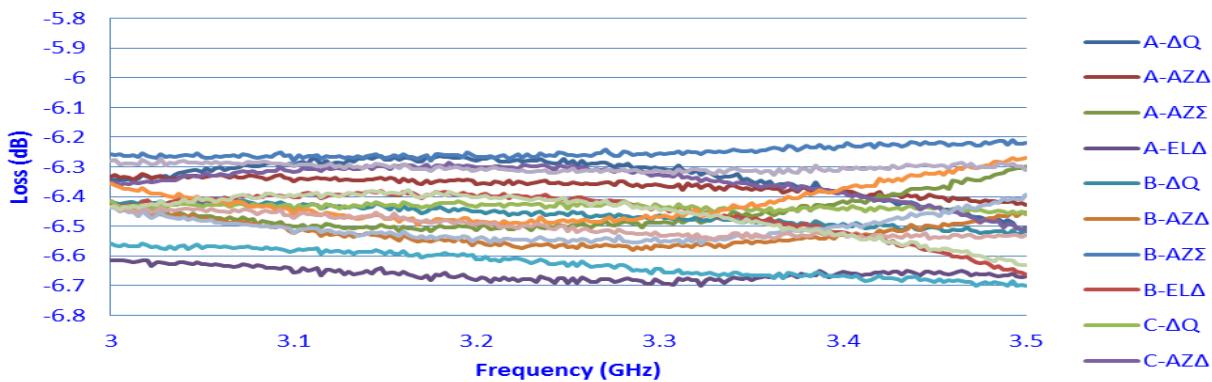
Insertion Loss @ -55°C



Insertion Loss @ +25°C



Insertion Loss @ +85°C

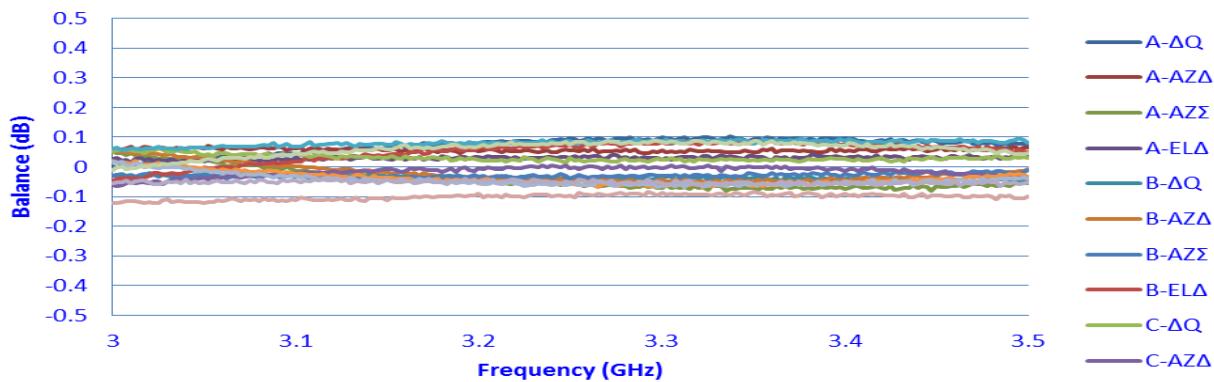




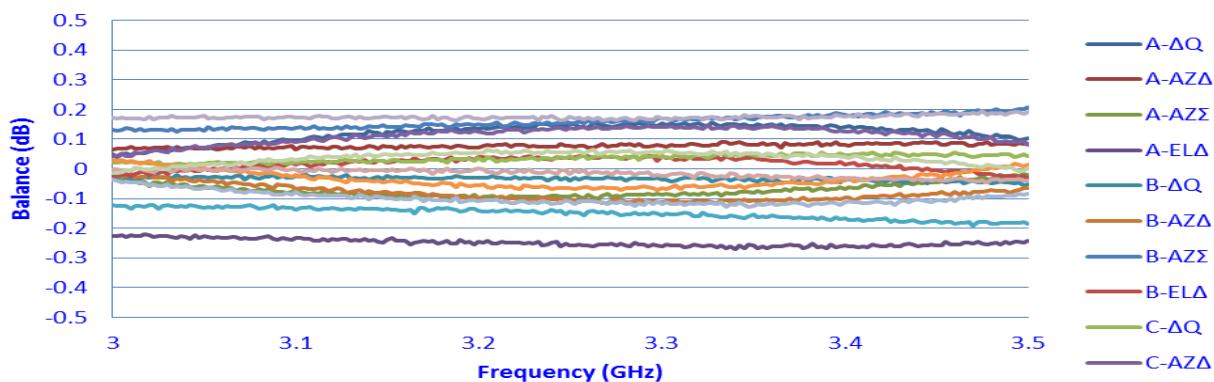
TYPICAL CHARACTERISTICS ON PMC-33D5-6D8-SFF

Amplitude Balance

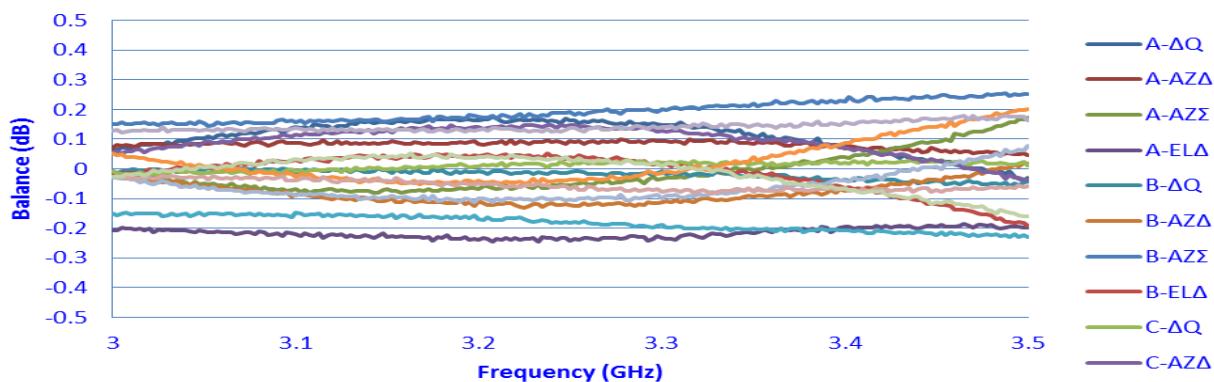
Amplitude Balance @ -55°C



Amplitude Balance @ +25°C



Amplitude Balance @ +85°C

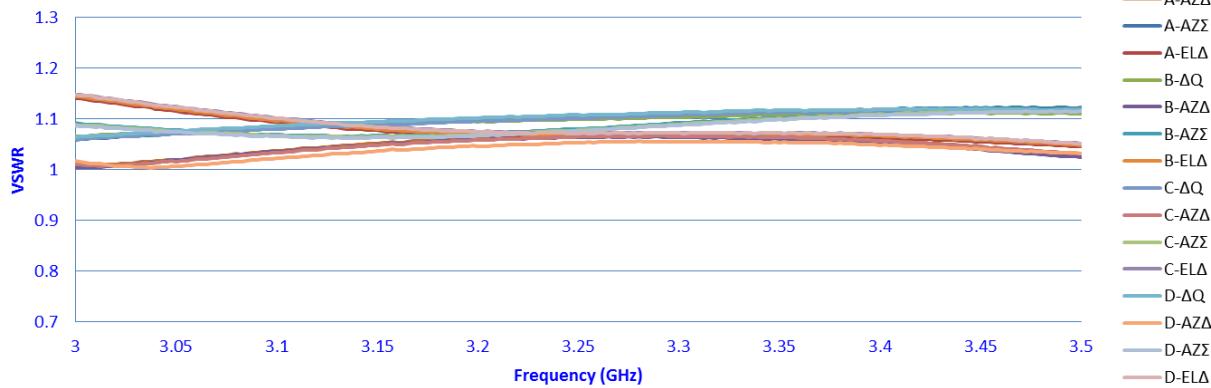




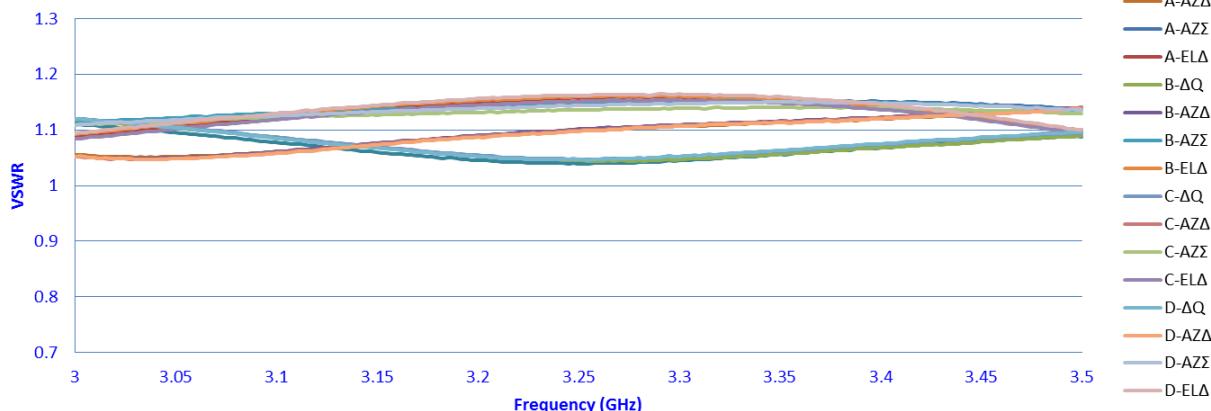
TYPICAL CHARACTERISTICS ON PMC-33D5-6D8-SFF

VSWR

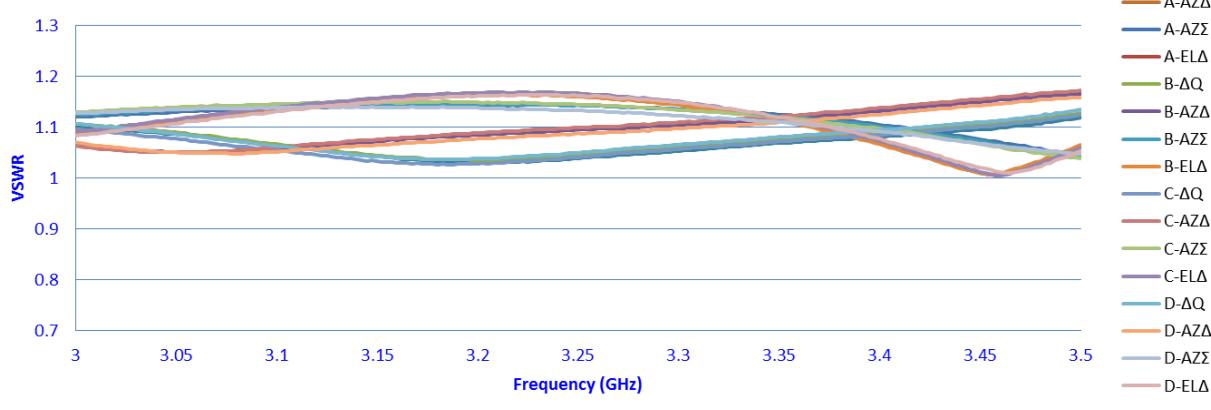
VSWR @-55°C



VSWR @+25°C



VSWR @+85°C





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Phase Data Relative to AZΣ (Normalized) @ -55°C, +25°C and +85°C

Phase Data Relative to AZΣ @ -55°C		A	B	C	D	ELΔ	AZΣ	ΔQ	AZΔ
	A	-	Isolation	Isolation	Isolation	+90°	0°	+91°	0°
	B	Isolation	-	Isolation	Isolation	+90°	0°	-90°	-180°
	C	Isolation	Isolation	-	Isolation	-90°	0°	+90°	+180°
	D	Isolation	Isolation	Isolation	-	-90°	0°	-90°	0°
	ELΔ	+90°	+90°	-90°	-90°	-	Isolation	Isolation	Isolation
	AZΣ	0°	0°	0°	0°	Isolation	-	Isolation	Isolation
	ΔQ	+91°	-90°	+90°	-90°	Isolation	Isolation	-	Isolation
	AZΔ	0°	-180°	+180°	0°	Isolation	Isolation	Isolation	-

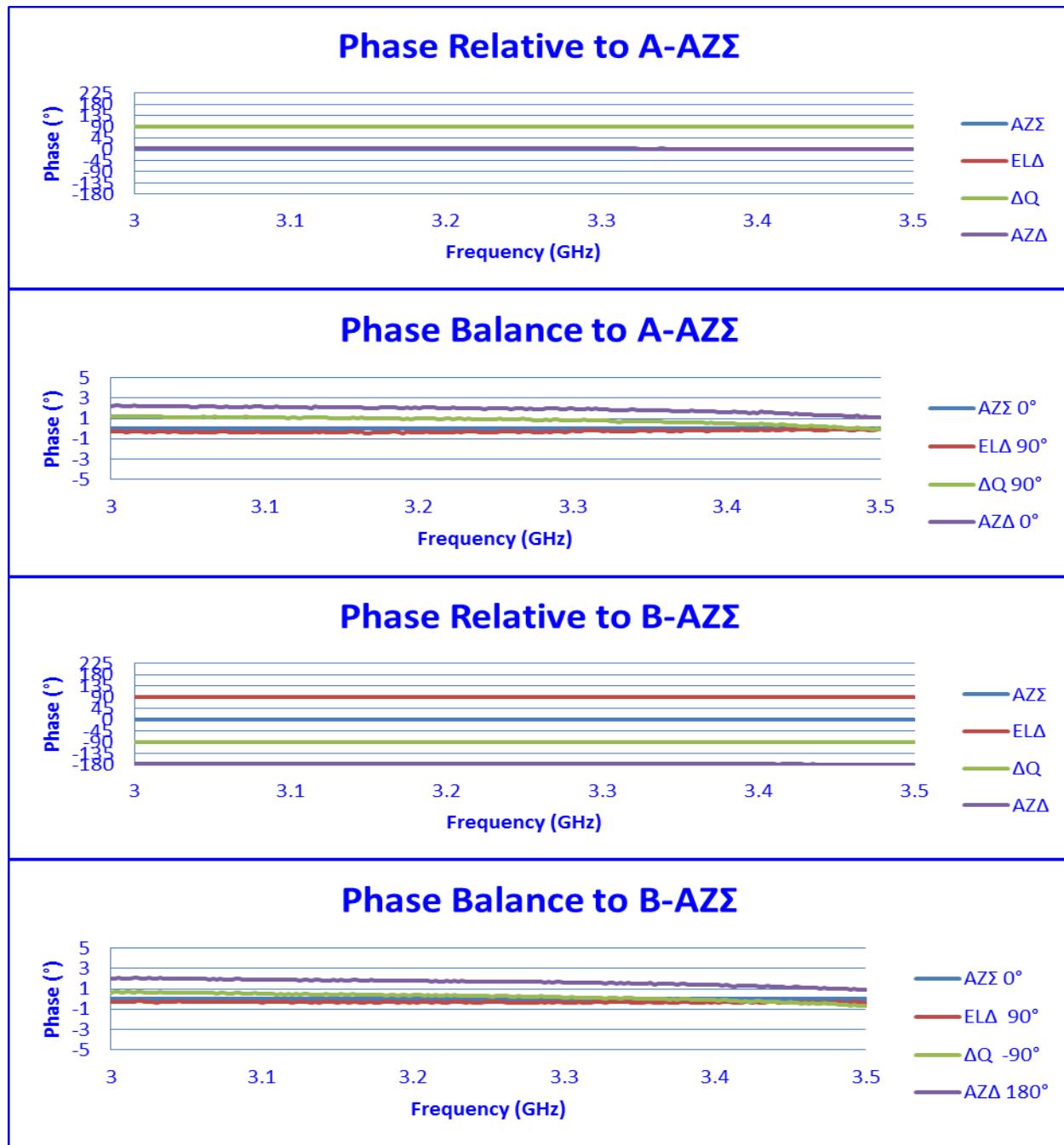
Phase Data Relative to AZΣ @ +25°C		A	B	C	D	ELΔ	AZΣ	ΔQ	AZΔ
	A	-	Isolation	Isolation	Isolation	+90°	0°	+91°	+2°
	B	Isolation	-	Isolation	Isolation	+90°	0°	-90°	-179°
	C	Isolation	Isolation	-	Isolation	-90°	0°	+91°	+182°
	D	Isolation	Isolation	Isolation	-	-91°	0°	-89°	-2°
	ELΔ	+90°	+90°	-90°	-91°	-	Isolation	Isolation	Isolation
	AZΣ	0°	0°	0°	0°	Isolation	-	Isolation	Isolation
	ΔQ	+91°	-90°	+91°	-89°	Isolation	Isolation	-	Isolation
	AZΔ	+2°	-179°	+182°	-2°	Isolation	Isolation	Isolation	-

Phase Data Relative to AZΣ @ +85°C		A	B	C	D	ELΔ	AZΣ	ΔQ	AZΔ
	A	-	Isolation	Isolation	Isolation	+90°	0°	+89°	+1°
	B	Isolation	-	Isolation	Isolation	+90°	0°	-90°	-179°
	C	Isolation	Isolation	-	Isolation	-91°	0°	+92°	+183°
	D	Isolation	Isolation	Isolation	-	-90°	0°	-88°	+3°
	ELΔ	+90°	+90°	-91°	-90°	-	Isolation	Isolation	Isolation
	AZΣ	0°	0°	0°	0°	Isolation	-	Isolation	Isolation
	ΔQ	+89°	-90°	+92°	-88°	Isolation	Isolation	-	Isolation
	AZΔ	+1°	-179°	+183°	+3°	Isolation	Isolation	Isolation	-



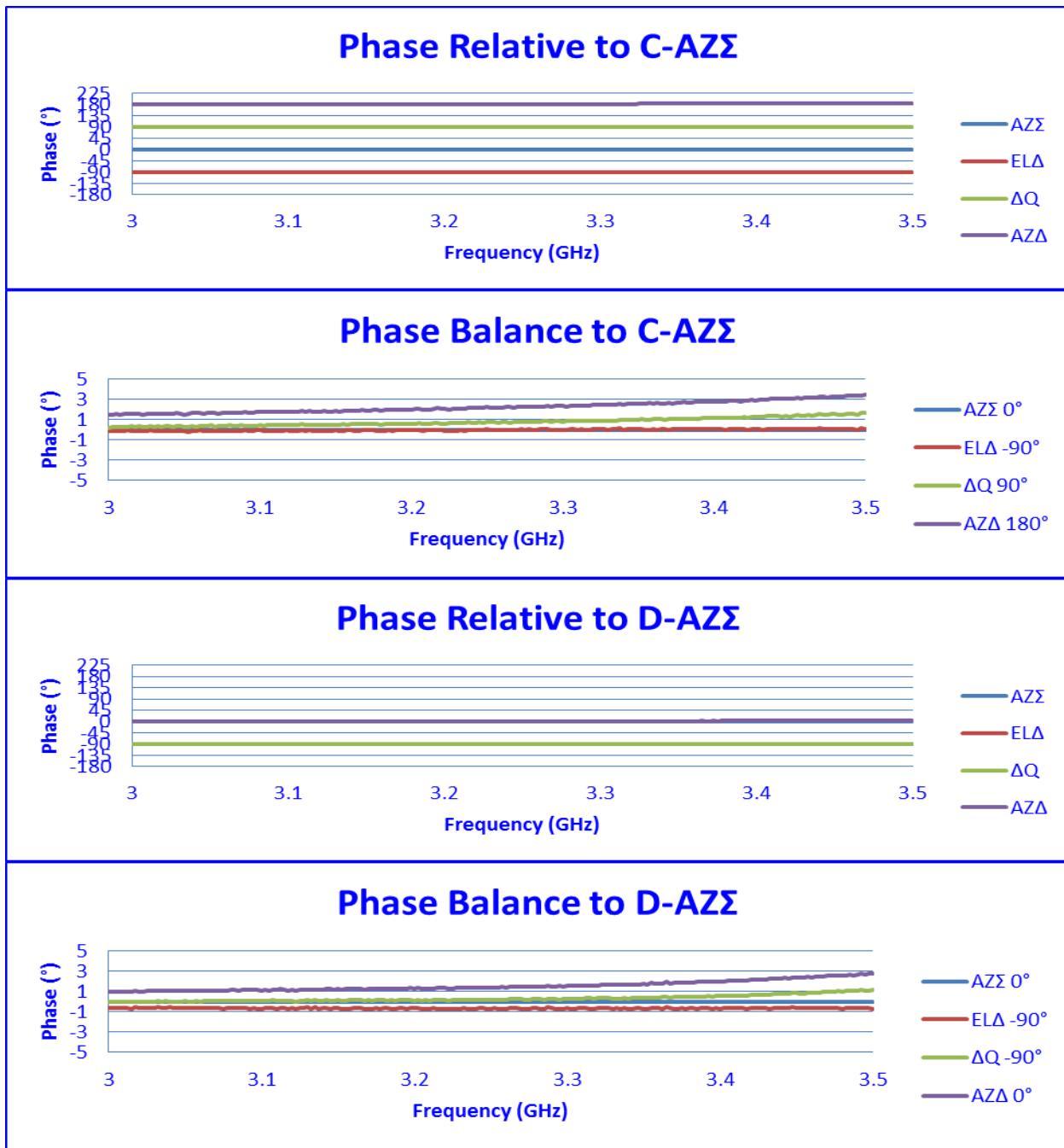
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Phase Data Relative to AZ Σ (Normalized) @ -55°C, +25°C and +85°C





TYPICAL CHARACTERISTICS ON PMC-33D5-6D8-SFF





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Phase Data Relative to ELΔ (Normalized) -55°C, +25°C and +85°C

Phase Data Relative to ELΔ @-55°C		A	B	C	D	ELΔ	AZΣ	ΔQ	AZΔ
	A	-	Isolation	Isolation	Isolation	0°	-90°	+1°	-90°
	B	Isolation	-	Isolation	Isolation	0°	-90°	-180°	+90°
	C	Isolation	Isolation	-	Isolation	0°	+90°	+180°	-90°
	D	Isolation	Isolation	Isolation	-	0°	+90°	+0°	+90°
	ELΔ	0°	0°	0°	0°	-	Isolation	Isolation	Isolation
	AZΣ	-90°	-90°	+90°	+90°	Isolation	-	Isolation	Isolation
	ΔQ	+1°	-180°	+180°	+0°	Isolation	Isolation	-	Isolation
	AZΔ	-90°	+90°	-90°	+90°	Isolation	Isolation	Isolation	-

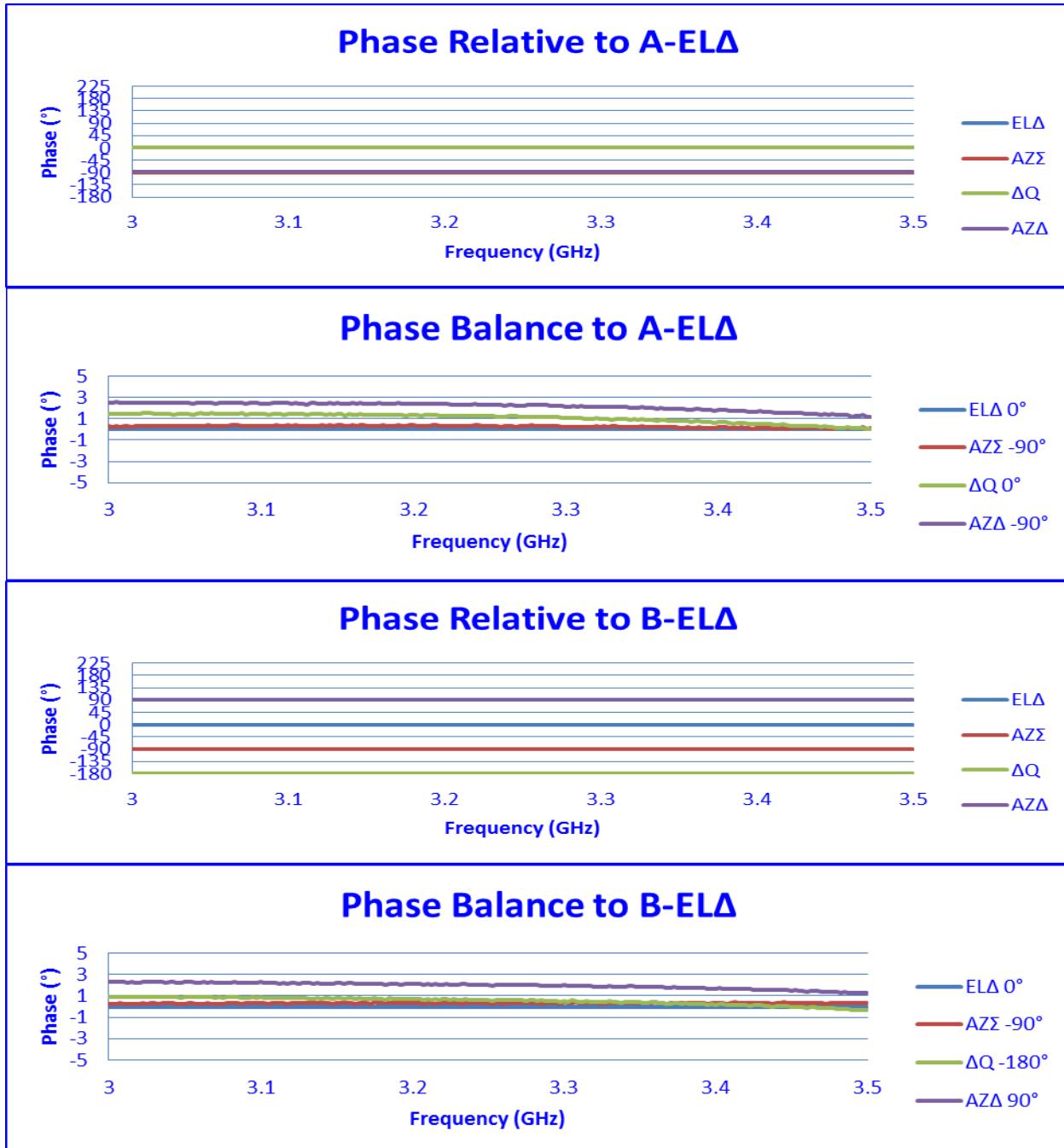
Phase Data Relative to ELΔ @+25°C		A	B	C	D	ELΔ	AZΣ	ΔQ	AZΔ
	A	-	Isolation	Isolation	Isolation	0°	-90°	+1°	-88°
	B	Isolation	-	Isolation	Isolation	0°	-90°	-180°	+92°
	C	Isolation	Isolation	-	Isolation	0°	+90°	+181°	-87°
	D	Isolation	Isolation	Isolation	-	0°	+91°	+1°	+93°
	ELΔ	0°	0°	0°	0°	-	Isolation	Isolation	Isolation
	AZΣ	-90°	-90°	+90°	+91°	Isolation	-	Isolation	Isolation
	ΔQ	+1°	-180°	+181°	+1°	Isolation	Isolation	-	Isolation
	AZΔ	-88°	+92°	-87°	+93°	Isolation	Isolation	Isolation	-

Phase Data Relative to ELΔ @+85°C		A	B	C	D	ELΔ	AZΣ	ΔQ	AZΔ
	A	-	Isolation	Isolation	Isolation	0°	-90°	0°	-89°
	B	Isolation	-	Isolation	Isolation	0°	-90°	-180°	+91°
	C	Isolation	Isolation	-	Isolation	0°	+91°	+183°	-86°
	D	Isolation	Isolation	Isolation	-	0°	+90°	+2°	+94°
	ELΔ	0°	0°	0°	0°	-	Isolation	Isolation	Isolation
	AZΣ	-90°	-90°	+91°	+90°	Isolation	-	Isolation	Isolation
	ΔQ	0°	-180°	+183°	2°	Isolation	Isolation	-	Isolation
	AZΔ	-89°	+91°	-86°	+94°	Isolation	Isolation	Isolation	-



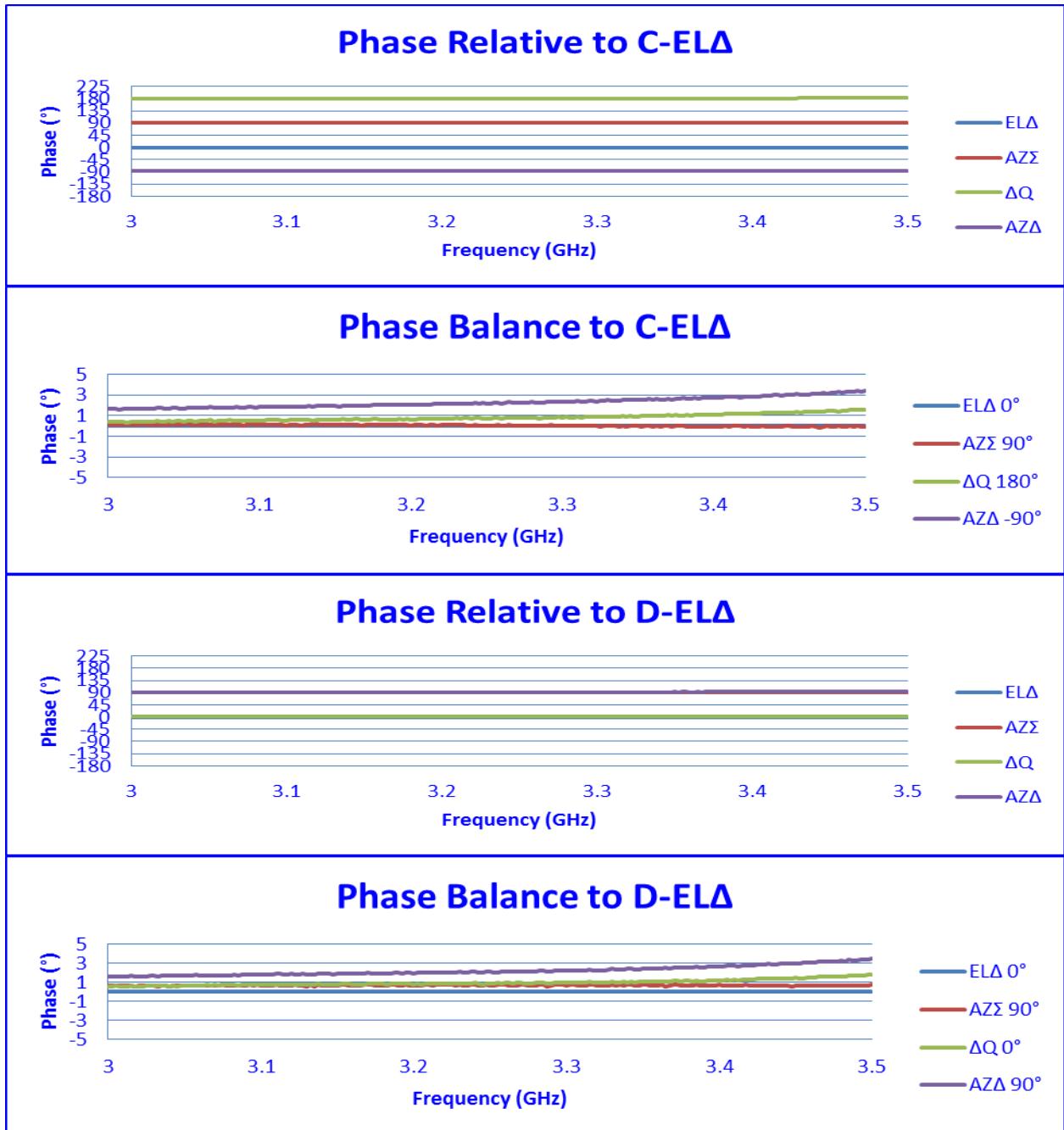
TYPICAL CHARACTERISTICS ON PMC-33D5-6D8-SFF

Phase Data Relative to EL Δ (Normalized) -55°C, +25°C and +85°C





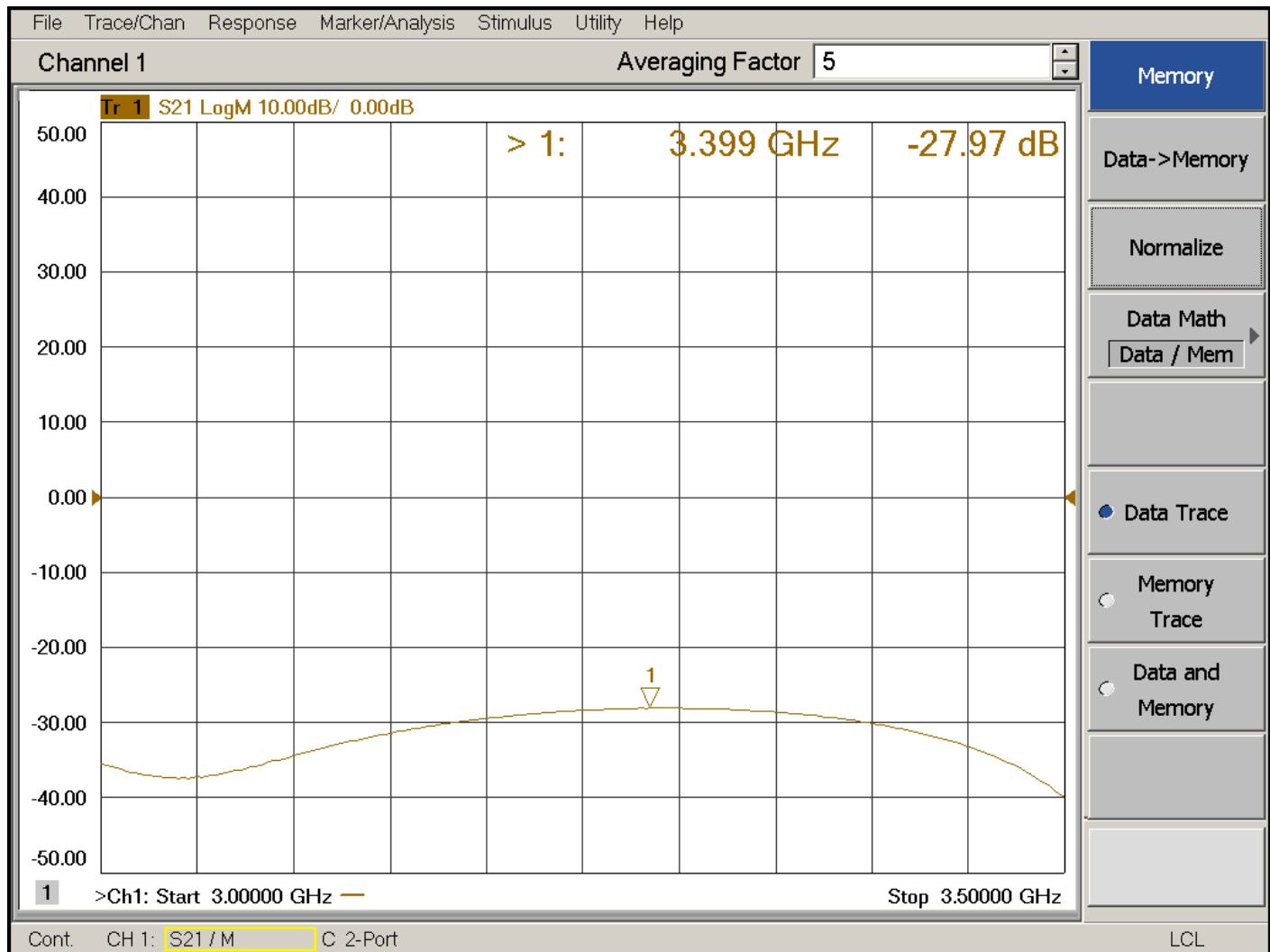
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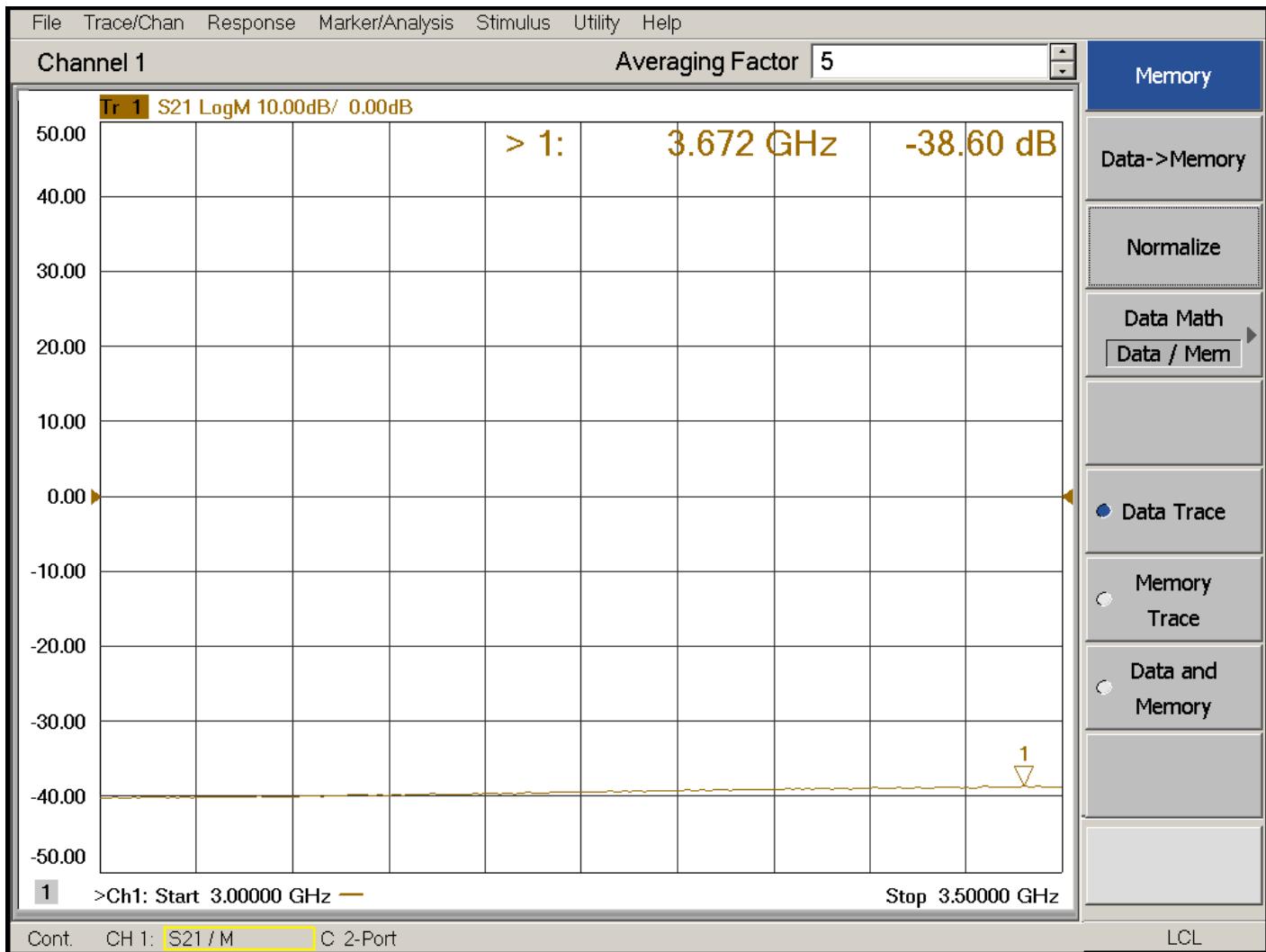
Port A to Port B Isolation





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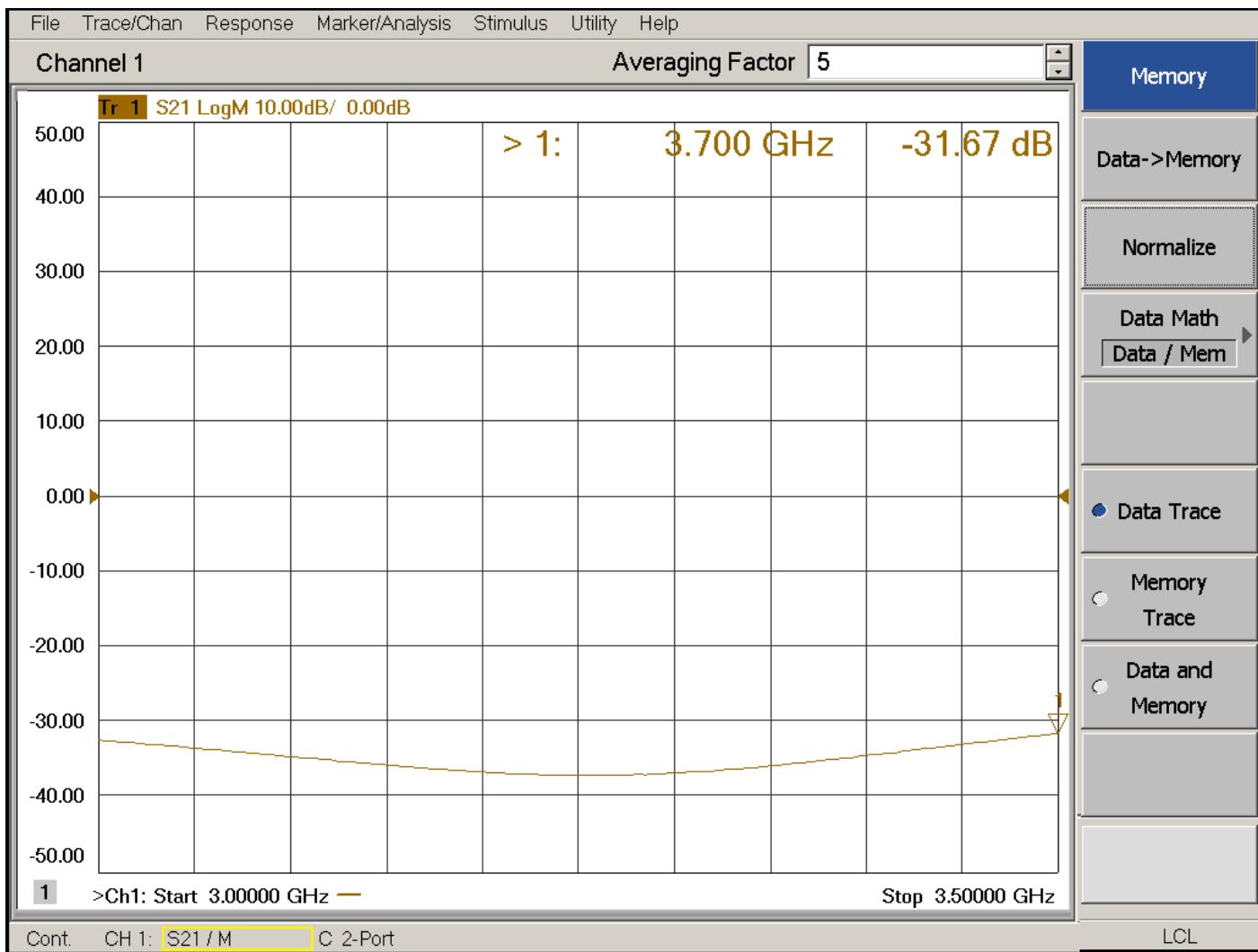
Port A to Port C Isolation





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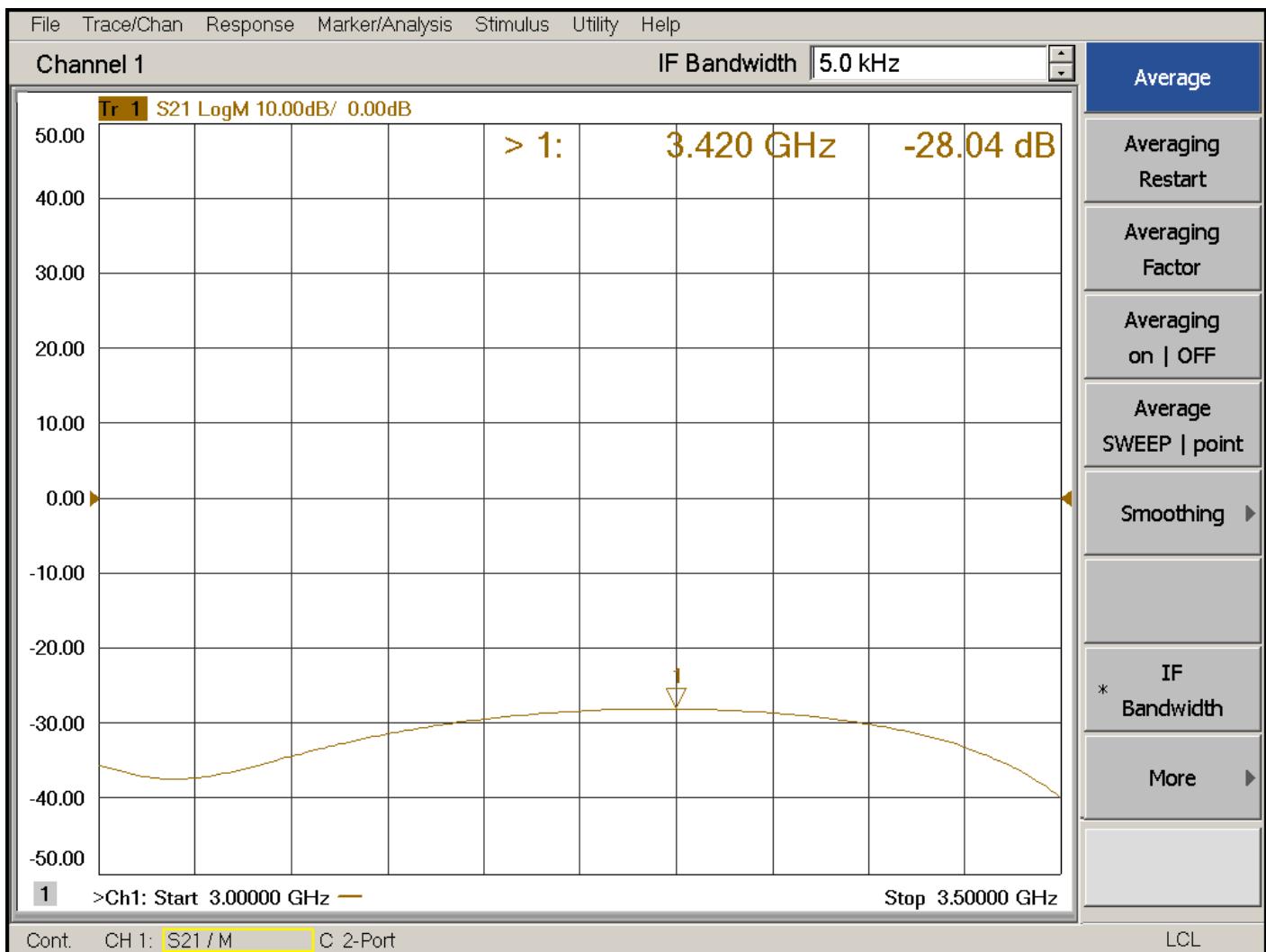
Port A to Port D Isolation





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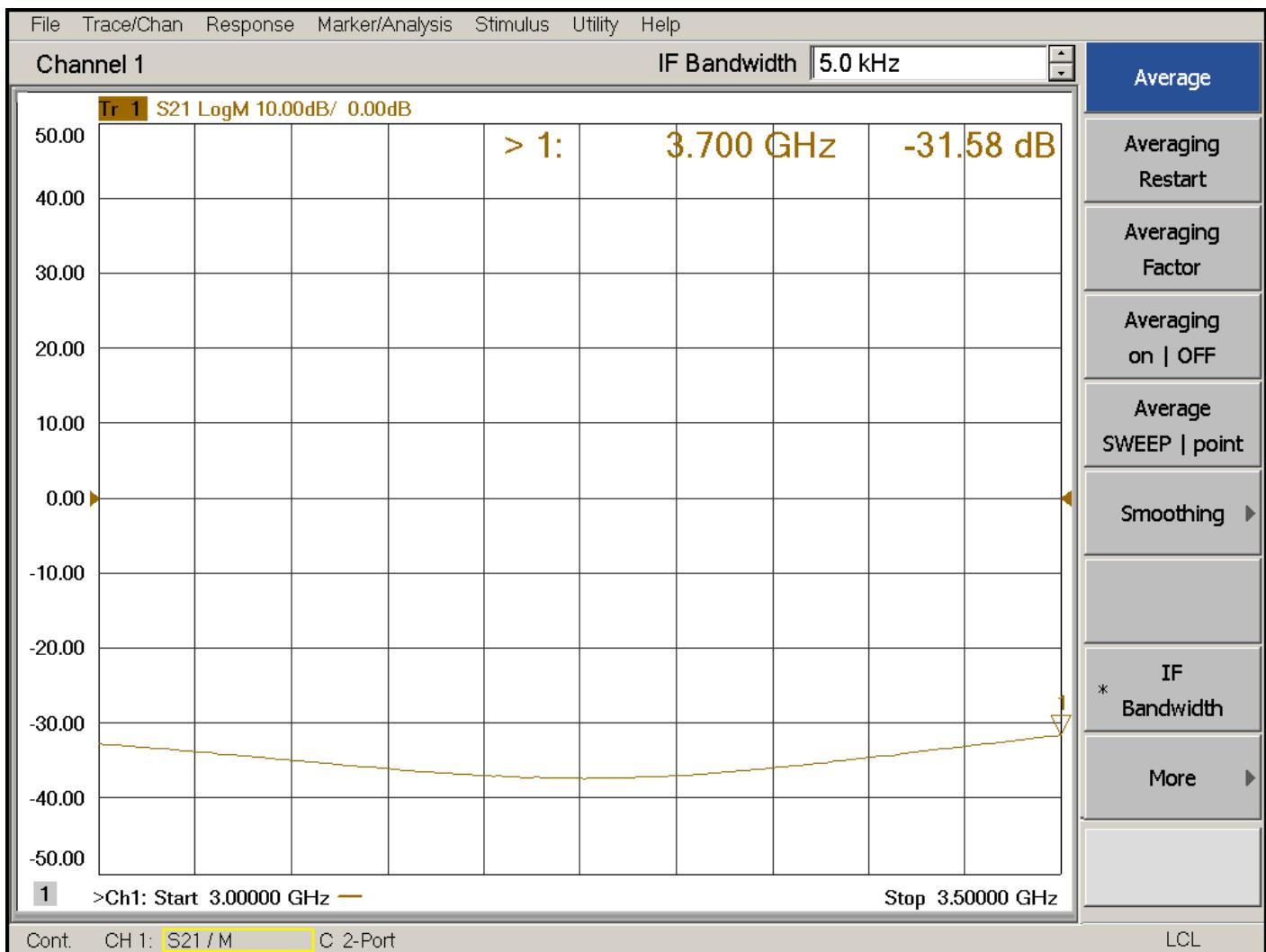
Port B to Port A Isolation





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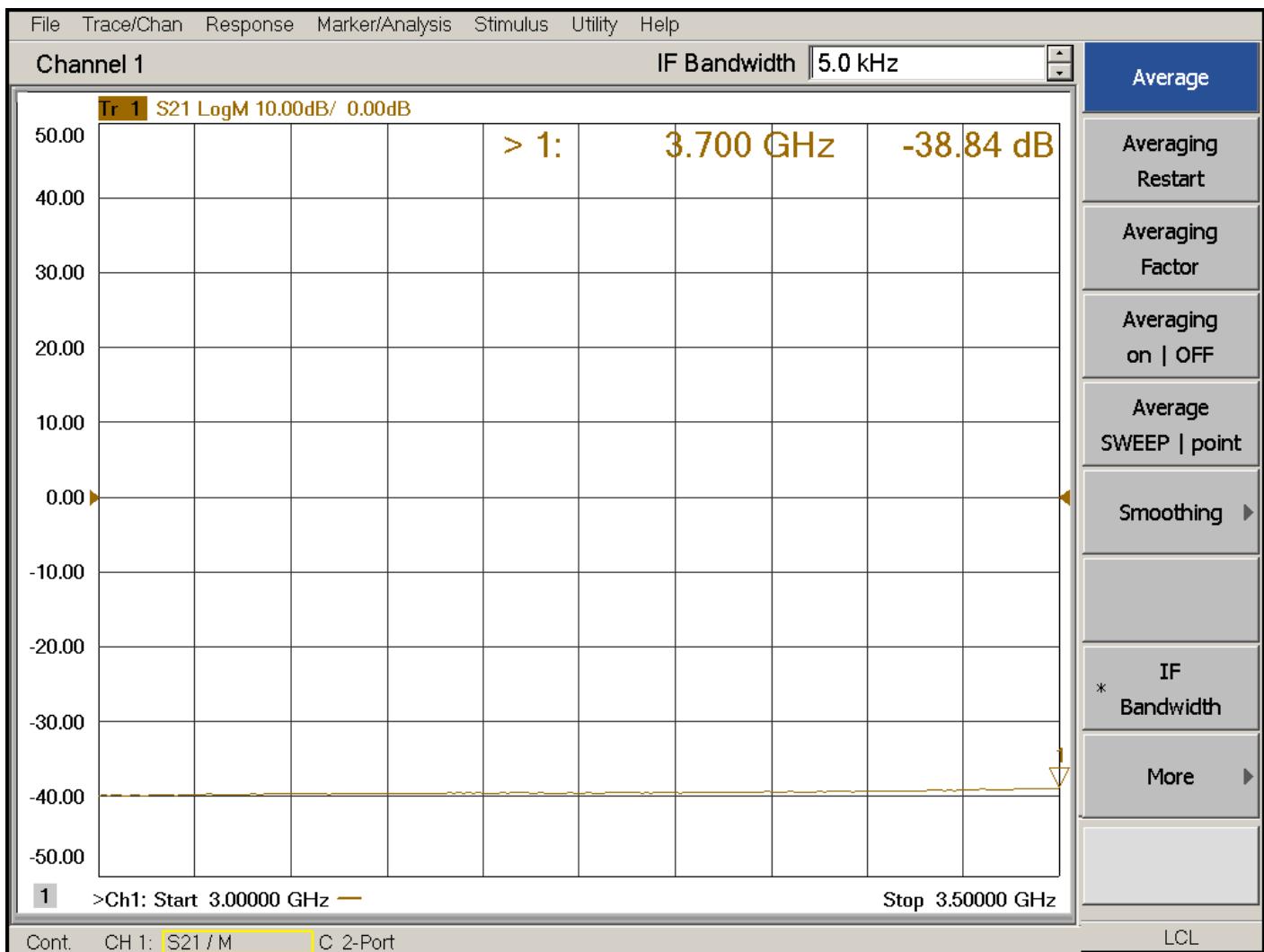
Port B to Port C Isolation





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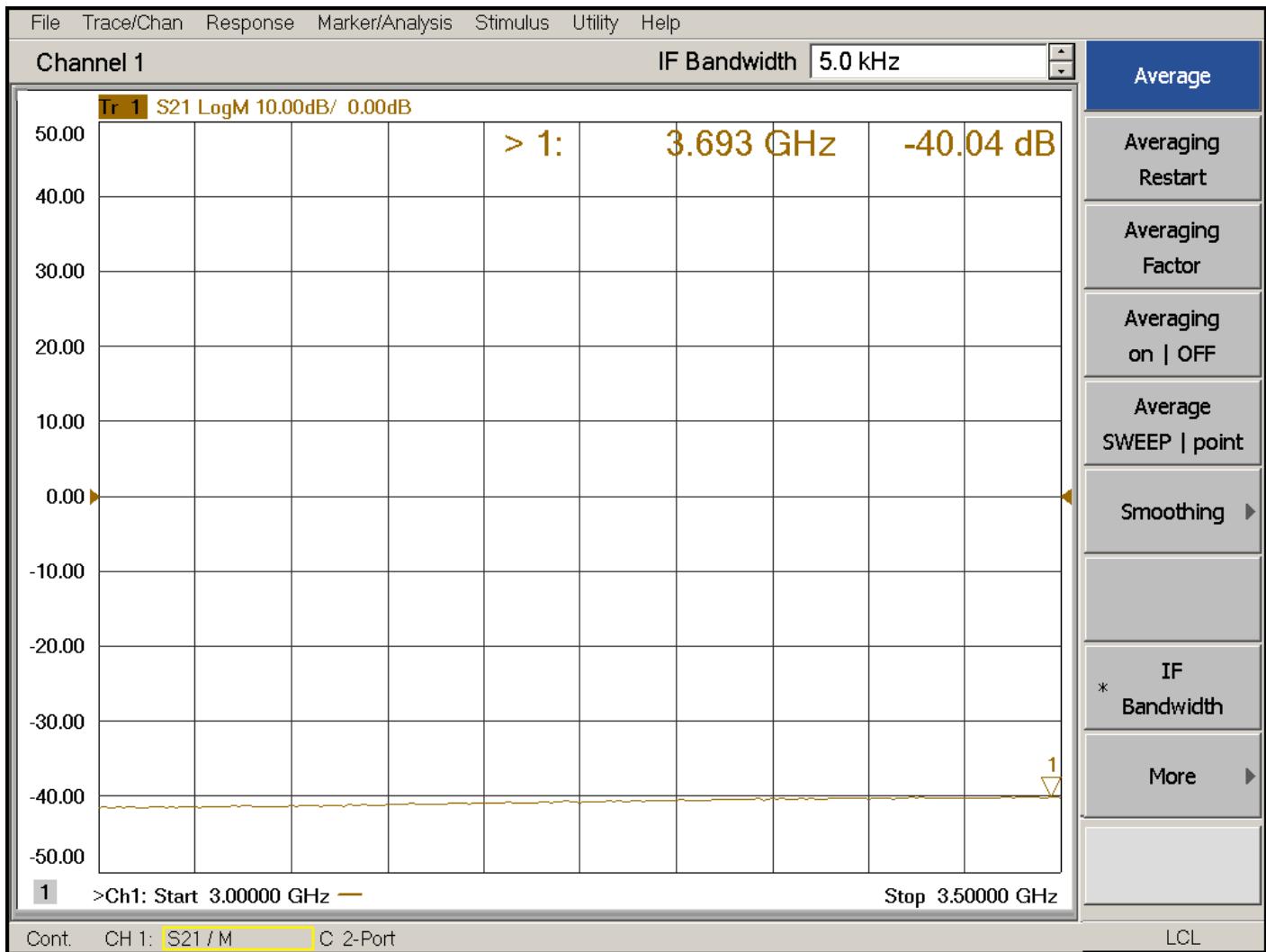
Port B to Port D Isolation





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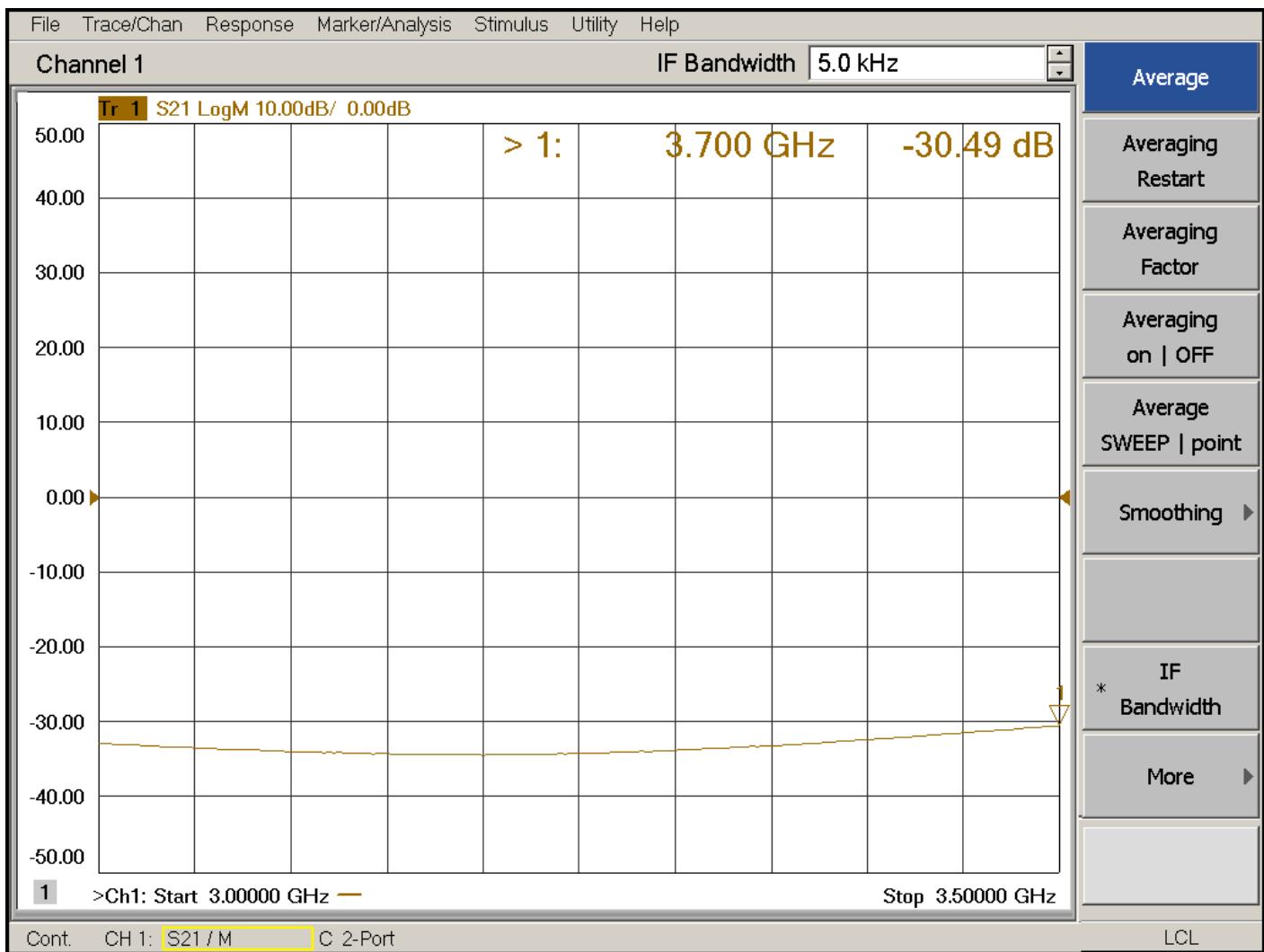
Port C to Port A Isolation





TYPICAL CHARACTERISTICS ON PMC-33D5-6D8-SFF

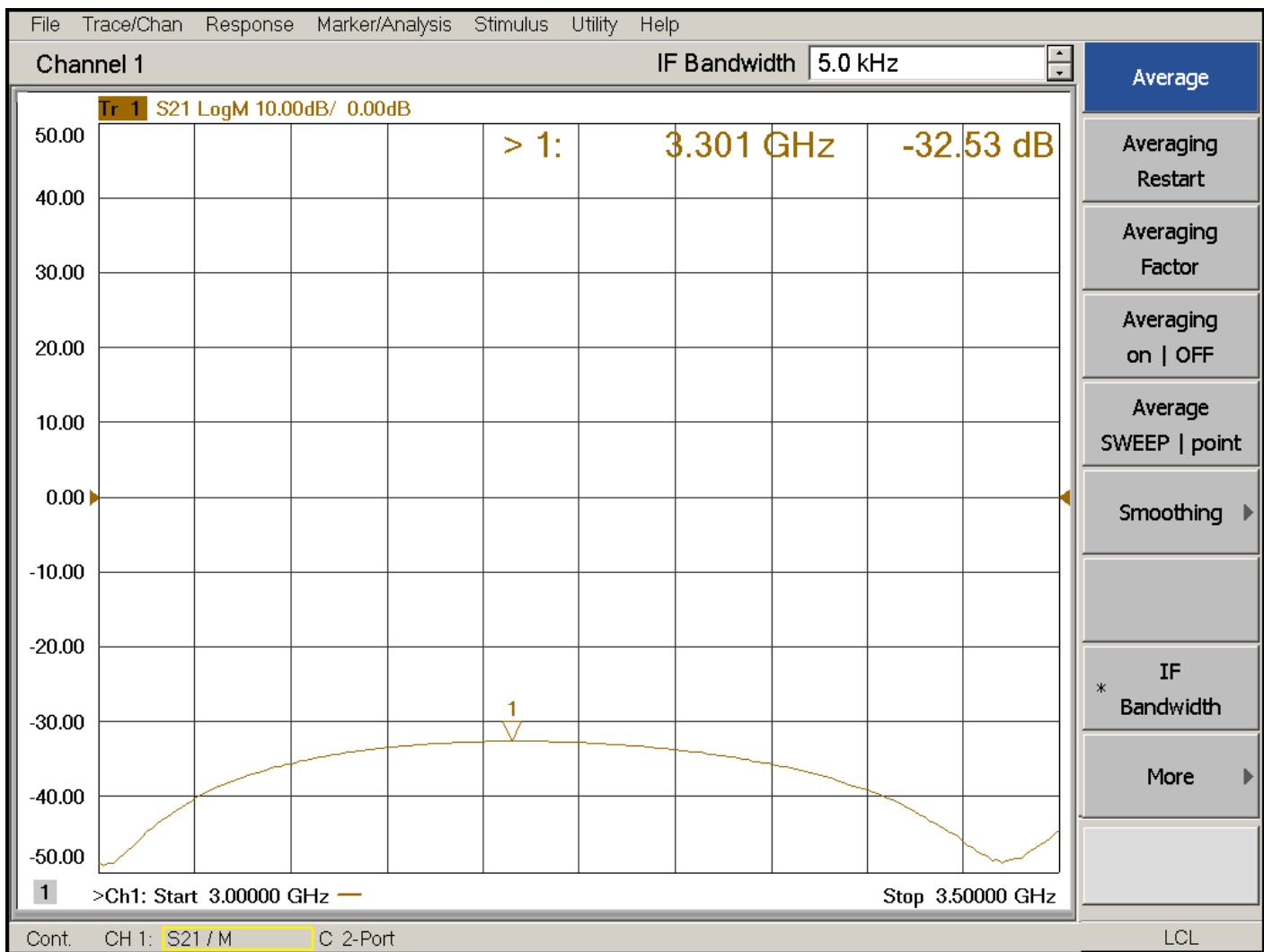
Port C to Port B Isolation





TYPICAL CHARACTERISTICS ON PMC-33D5-6D8-SFF

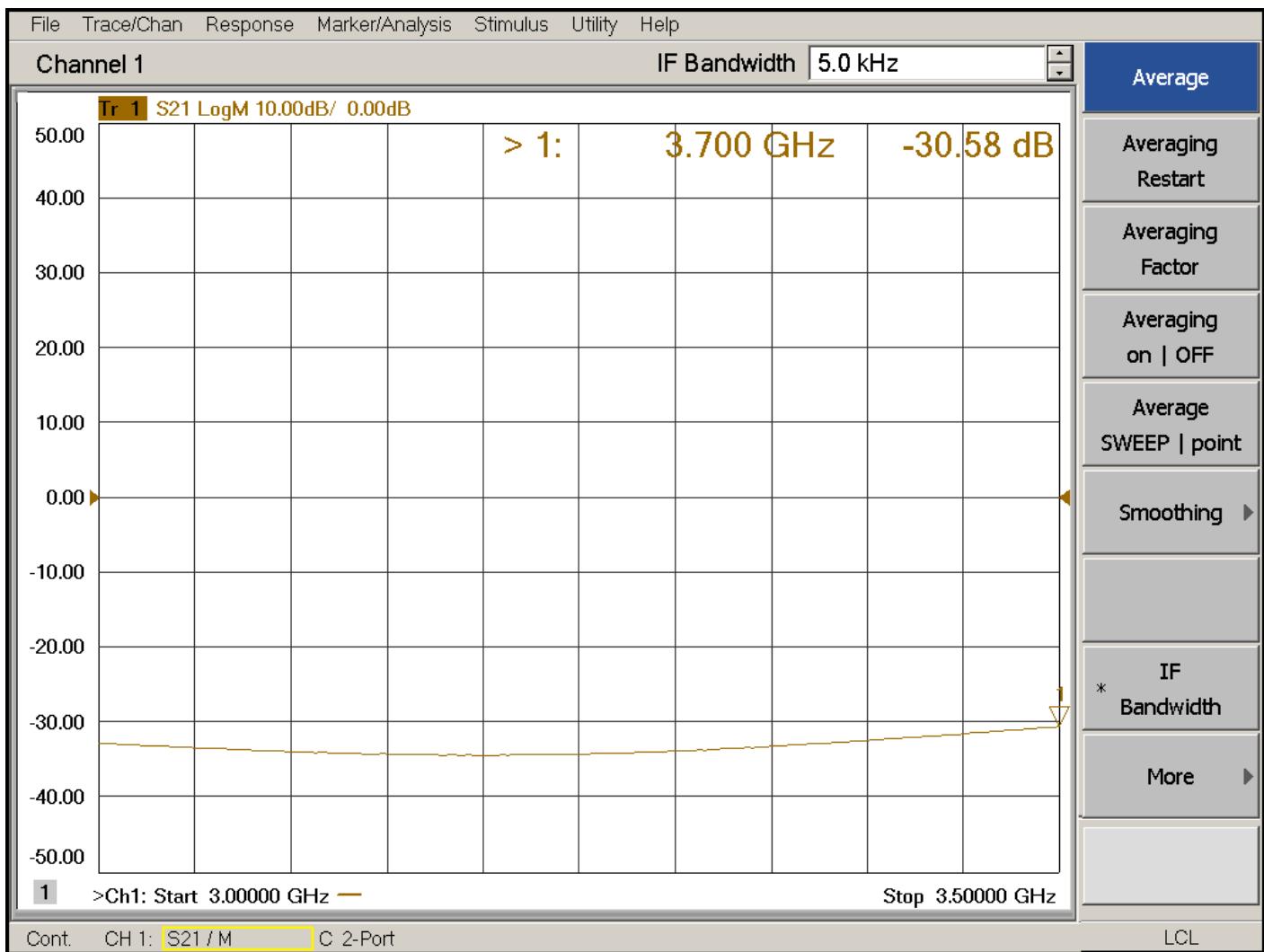
Port C to Port D Isolation





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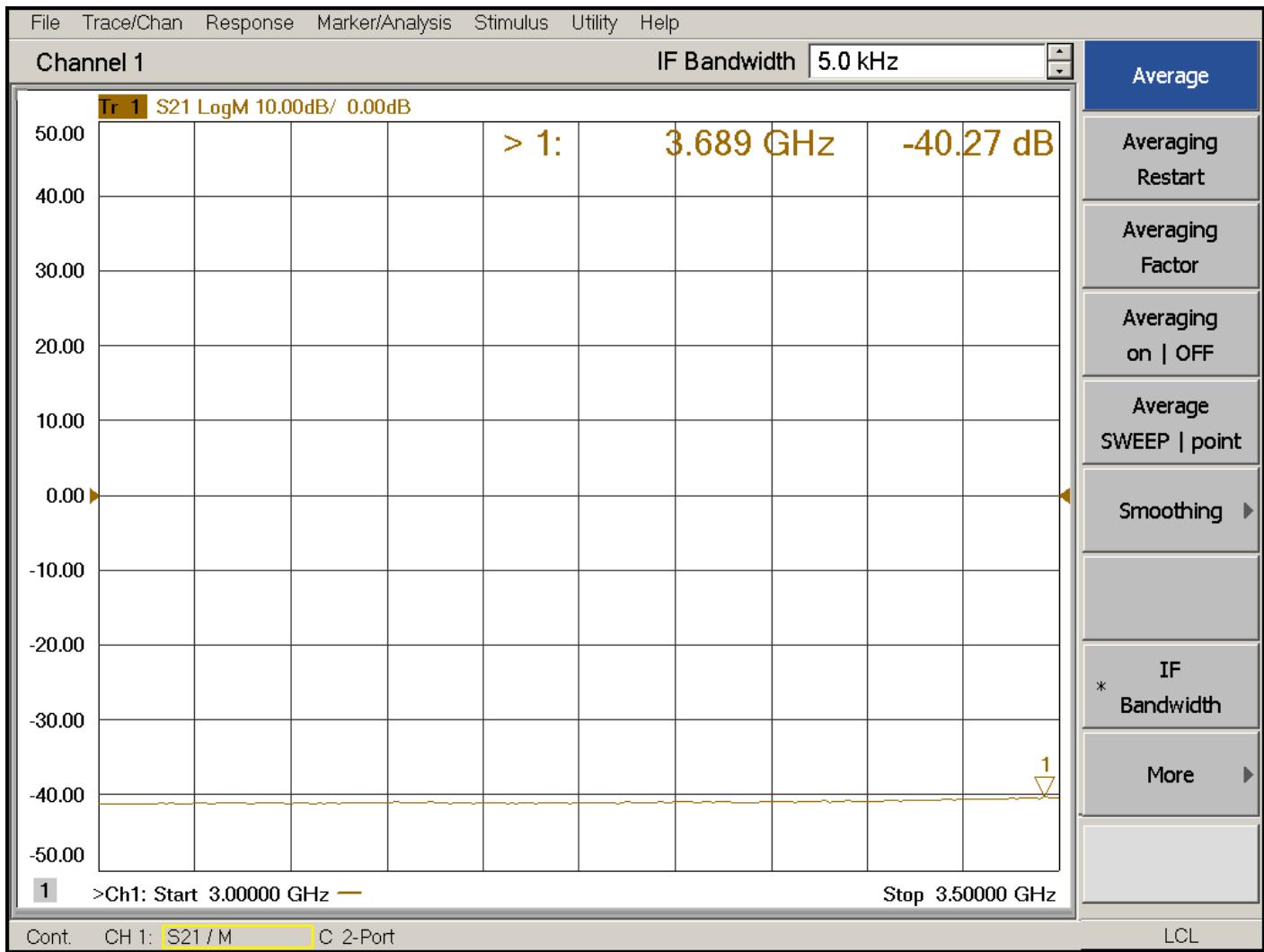
Port D to Port A Isolation





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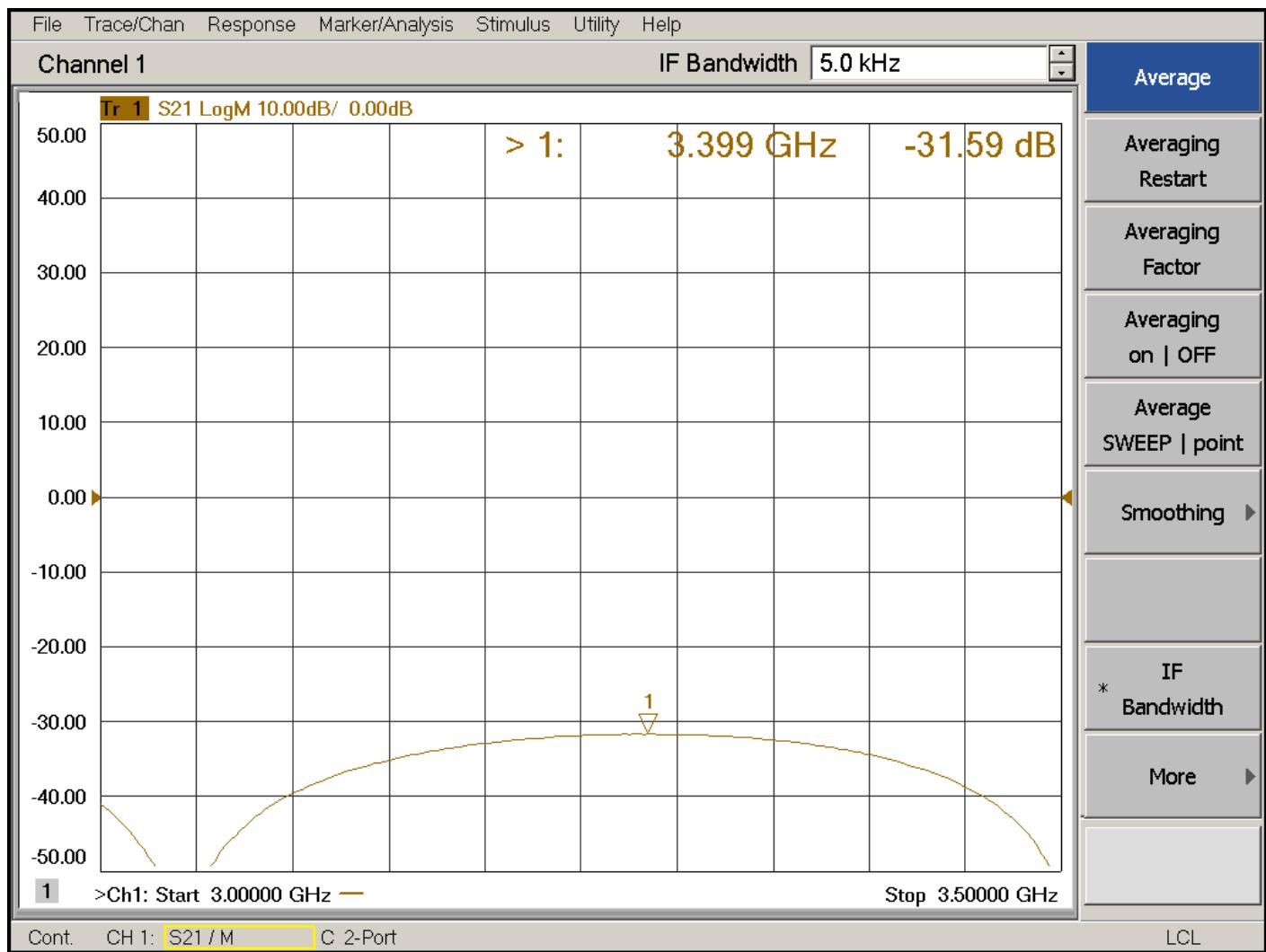
Port D to Port B Isolation





TYPICAL CHARACTERISTICS ON PMC-33D5-6D8-SFF

Port D to Port C Isolation





TYPICAL CHARACTERISTICS ON PMC-33D5-6D8-SFF

Test Setup to Validate Summation of Port (A+B) + (C+D)

Test No. 1 at 3.25GHz

RF Power @ Port A = 0dBm (1 mW)

RF Power @ Port B = 0dBm (1 mW)

RF Power @ Port C = 0dBm (1 mW)

RF Power @ Port D = 0dBm (1 mW)

All other Ports Terminated to 50 Ohms

RF Power @ Port AZ Σ = 5.6 dBm (3.6 mW) = (6 dBm (4 mW) – Insertion Loss of 0.4 dB)

RF Power @ Port ΔQ = -20.5 dBm

Test No. 2 at 3.25GHz

RF Power @ Port A = 40.38 dBm (10.00 W)

RF Power @ Port B = 40.38 dBm (10.00 W)

RF Power @ Port C = 40.38 dBm (10.00 W)

RF Power @ Port D = 40.38 dBm (10.00 W)

All other Ports Terminated to 50 Ohms

RF Power @ Port AZ Σ = 46 dBm (40 W) = (46.4 dBm (40.00 W) – Insertion Loss of 0.4 dB)

RF Power @ Port ΔQ = 25.5 dBm

