



**Typical Characteristics
ON
PAT-3D1G3D5G-CD-SFF-NF**

PMI MODEL PAT-3D1G3D5G-CD-SFF-NF IS A BI-DIRECTIONAL VARIABLE ATTENUATOR THAT OPERATES BETWEEN 3.1 AND 3.5 GHz. AT THE LOW LOSS STATE, THE INSERTION LOSS IS BETTER THAN 1.1 dB, AND IN THE ATTENUATION STATE THERE IS 30 dB OF LOSS.



August 21 , 2018

**Designed By: Engineering
Tested and Reported By: A.Lopez /S. Palacio**

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Product Feature Drawing

DESCRIPTION

PMI MODEL PAT-3D1G3D5G-CD-SFF-NF IS A BI-DIRECTIONAL VARIABLE ATTENUATOR THAT OPERATES BETWEEN 3.1 AND 3.5 GHz. AT THE LOW LOSS STATE THE INSERTION LOSS IS BETTER THAN 1.1 dB, AND IN THE ATTENUATION STATE THERE IS 30 dB OF LOSS.

SPECIFICATIONS

- FREQUENCY RANGE: 3.1 TO 3.5 GHz
- INPUT POWER: +10 dBm CW
- POWER HANDLING (WITHOUT DAMAGE): 0.5 W PEAK POWER
258us pulse width, 0.06 duty factor.
- LOW LOSS STATE:
 - INSERTION LOSS: 1.10 dB MAX (BI-DIRECTIONAL)
 - VARIATION IN LOSS: ± 0.2 dB OVER ANY 10 MHz
 - VSWR: 1.20 : 1 MAX
 - INSERTION LOSS MATCHING: ± 0.2 dB FROM GOLDEN UNIT
 - PHASE MATCHING: ± 3° FROM GOLDEN UNIT
- ATTENUATION STATE:
 - ATTENUATION: 30 dB ± 1.0 dB (BI-DIRECTIONAL)
 - VARIATION IN ATTENUATION: ± 0.2 dB OVER ANY 10 MHz
 - VSWR: 1.25 : 1 MAX
 - INSERTION LOSS MATCHING: ± 0.20 dB FROM GOLDEN UNIT
 - PHASE MATCHING: ± 3° FROM GOLDEN UNIT
- NOISE FIGURE:
 - LOW LOSS STATE: 1.10 dB MAX. (BI-DIRECTIONAL)
 - ATTENUATION STATE: 30 dB ± 1.0 dB MAX.
- SWITCHING SPEED: 0.5 us MAX
- LOGIC LEVELS:
 - PIN D > PIN E: LOW LOSS STATE
 - PIN E > PIN D: ATTENUATION STATE (INPUT INTO 26LS32 RECEIVER)
- DC POWER SUPPLY:
 - +V: +15V @ 250 mA MAX
 - V: -15V @ 100 mA MAX
- SIZE: 5.87" x 2.50" x 1.40"
- FINISH: PAINTED BLUE

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

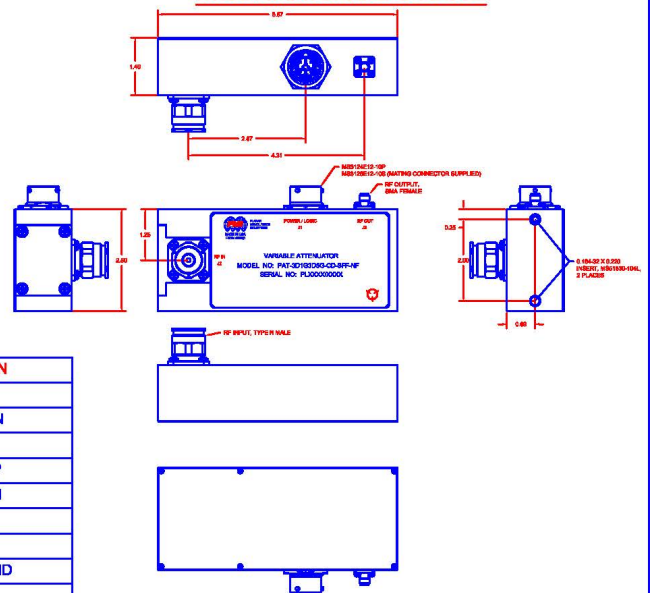
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

PMI CONFIDENTIAL AND PROPRIETARY

ALL DIMENSIONS ARE IN INCHES [mm]
TOLERANCES:
X.XXX ±0.020
X.XXX ±0.010

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A1	ORIGINAL RELEASE	4/28/2010	
	A2	ECN # 18-0236	11/30/2010	

MECHANICAL OUTLINE



PLANAR MONOLITHICS INDUSTRIES, INC.

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ISO 9001 CERTIFIED



APPROVALS		DATE	TITLE			REV.
DRAWN	<i>JPD</i>	6/22/10	PRODUCT FEATURE PAT-3D1G3D5G-CD-SFF-NF			A2
REDRAWN	<i>JPU</i>	4/28/10	SIZE	FROM NO.	DWG NO.	
ISSUED			A	05XQ0	27034320	
			SCALE	N:S	SHEET	1 OF 1

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Summary Data Sheet

TEST. ITEM NO	PARAMETERS	SPECIFIED VALUE	TEST RESULTS	QA QC
1	Frequency Range:	3.1 TO 3.5 GHz	3.1 TO 3.5 GHz	
2	Input Power:	+10 dBm CW	+22 dBm (See Graph)	
3	Power Handling (Without Damage):	0.5 W Peak Power 256us Pulse Width, 0.06 Duty Factor.	Pass By Design	
Low Loss State:				
4	Insertion Loss:	1.10 dB MAX (BI-DIRECTIONAL)	0.80dB (See Plot)	
5	Variation In Loss:	± 0.2 dB Over Any 10 MHz	±0.005dB (See Plot)	
6	VSWR:	1.20 : 1 MAX	1.19:1 (See Plot)	
7	Insertion Loss Matching:	± 0.2 dB From Golden Unit	± 0.04 dB	
8	Phase Matching:	± 3° From Golden Unit	0° / -1.78°	
Attenuation State:				
9	Attenuation:	30 dB ± 1.0 dB (BI-DIRECTIONAL)	29.78 – 30.62dB (See Plot)	
10	Variation In Attenuation:	± 0.2 dB Over Any 10 MHz	±0.003dB (See Plot)	
11	VSWR:	1.25 : 1 MAX	1.24:1 (See Plot)	
12	Insertion Loss Matching:	± 0.20 dB From Golden Unit	± 0.10 dB	
13	Phase Matching:	± 3° From Golden Unit	1.87 ° / -0.26°	
Noise Figure:				
14	Low Loss State:	1.10 dB MAX. (BI-DIRECTIONAL)	0.80dB	
15	Attenuation State:	30 dB ±1.0 dB MAX.	30.62 dB	
16	Switching Speed:	0.5 us MAX	0.42 us (See Plot)	
17	Logic Levels:	PIN D > PIN E: Low Loss State PIN E > PIN D: Attenuation State (INPUT INTO 26LS32 RECEIVER)	Pass	
18	Dc Power Supply:	+15V @ 250 mA MAX -15V @ 100 mA MAX	+15V @ 124 mA -15V @ 15 mA	

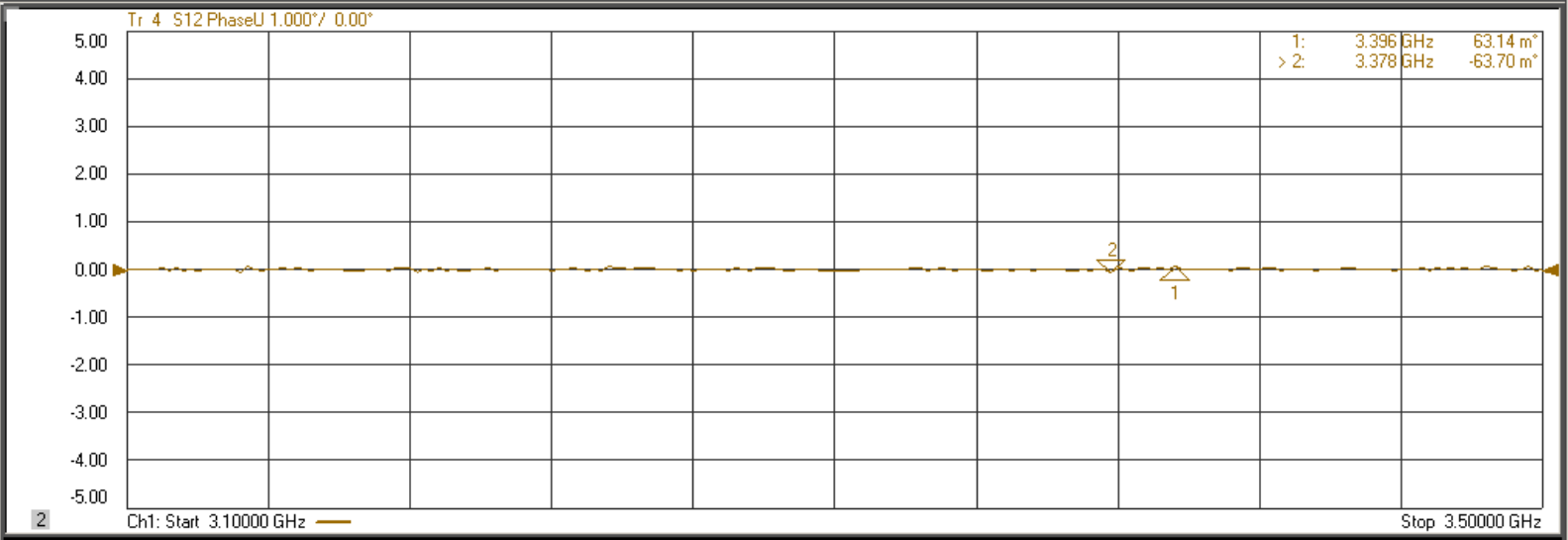
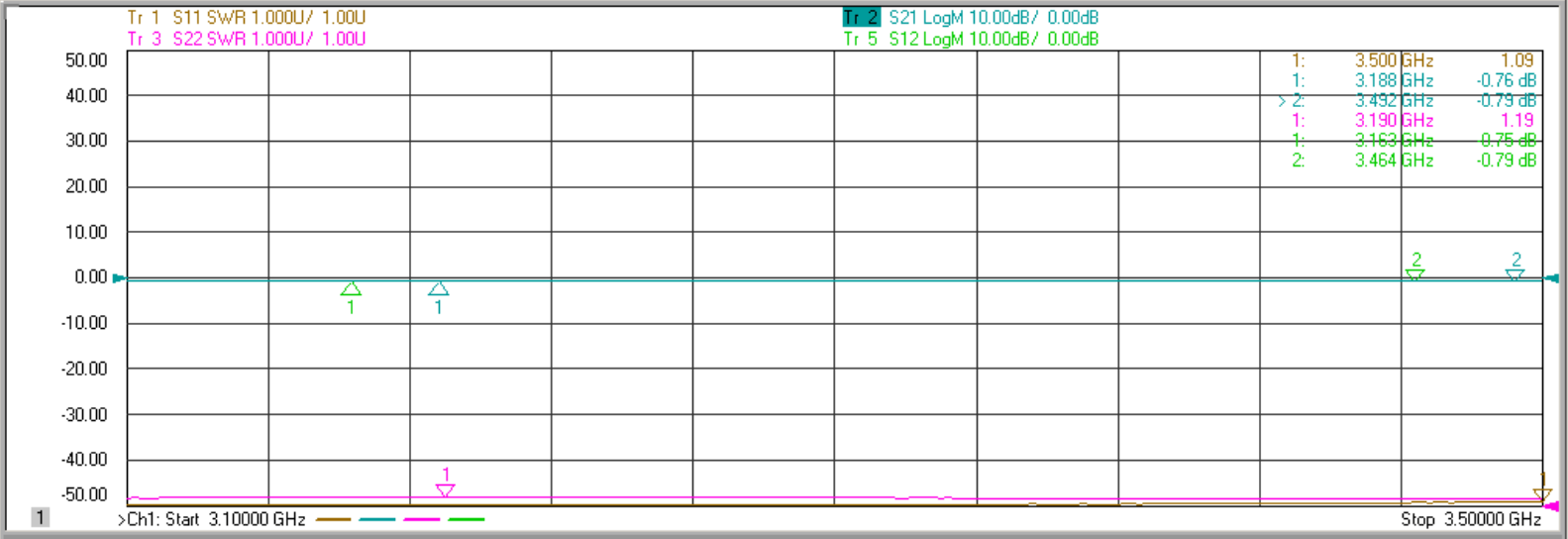
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**Typical Characteristics
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**Low Loss State (Bi-Directional), Return Loss and Phase (PL23224/1831)
Golden Unit**

File Trace/Chan Response Marker/Analysis Stimulus Utility Help



Cont. CH 1: S21 / M CΔ 2-Port

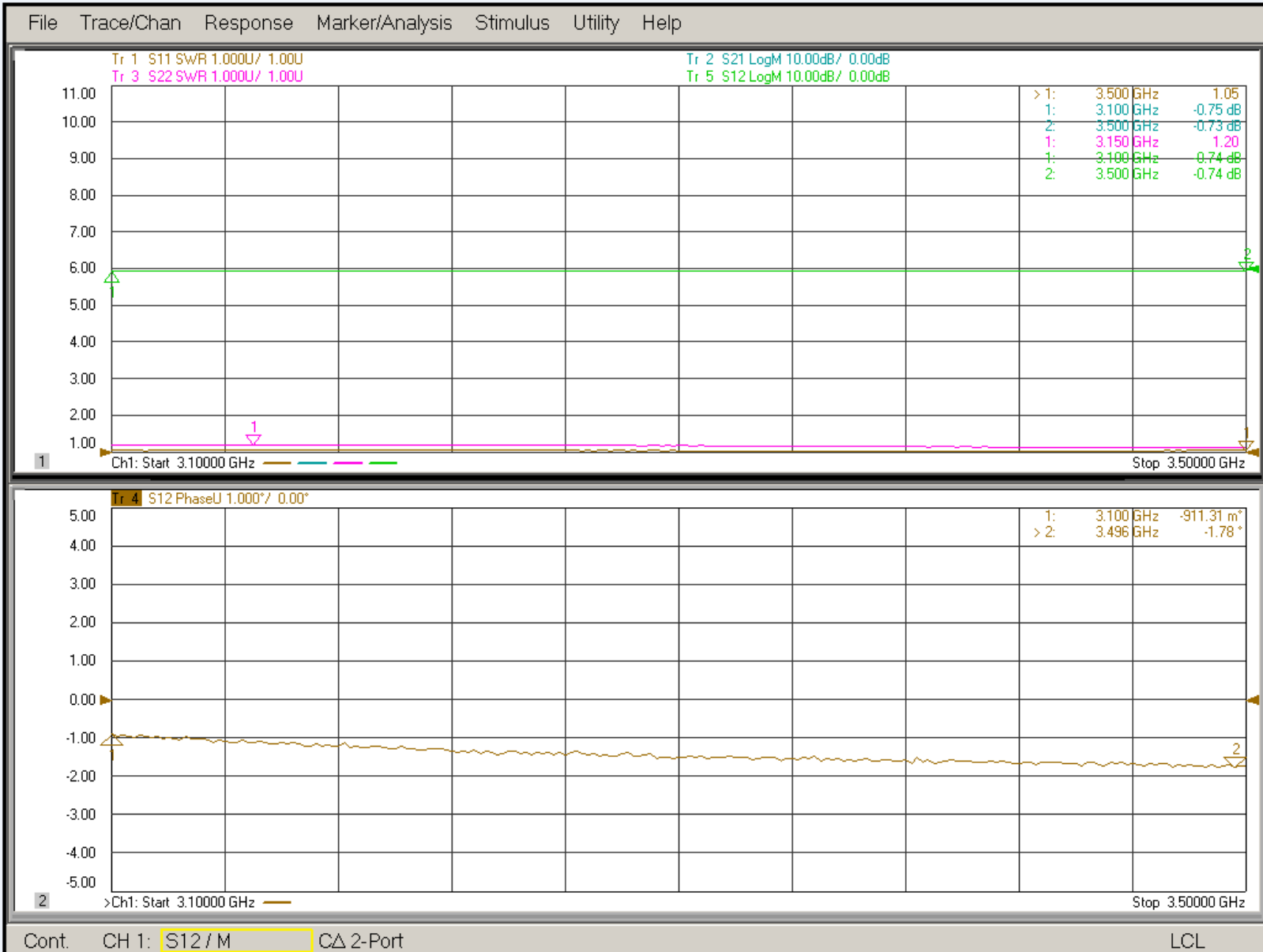
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**Typical Characteristics
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**Low Loss State (Bi-Directional), Return Loss and Phase (PL23225/1831)
Unit 2**

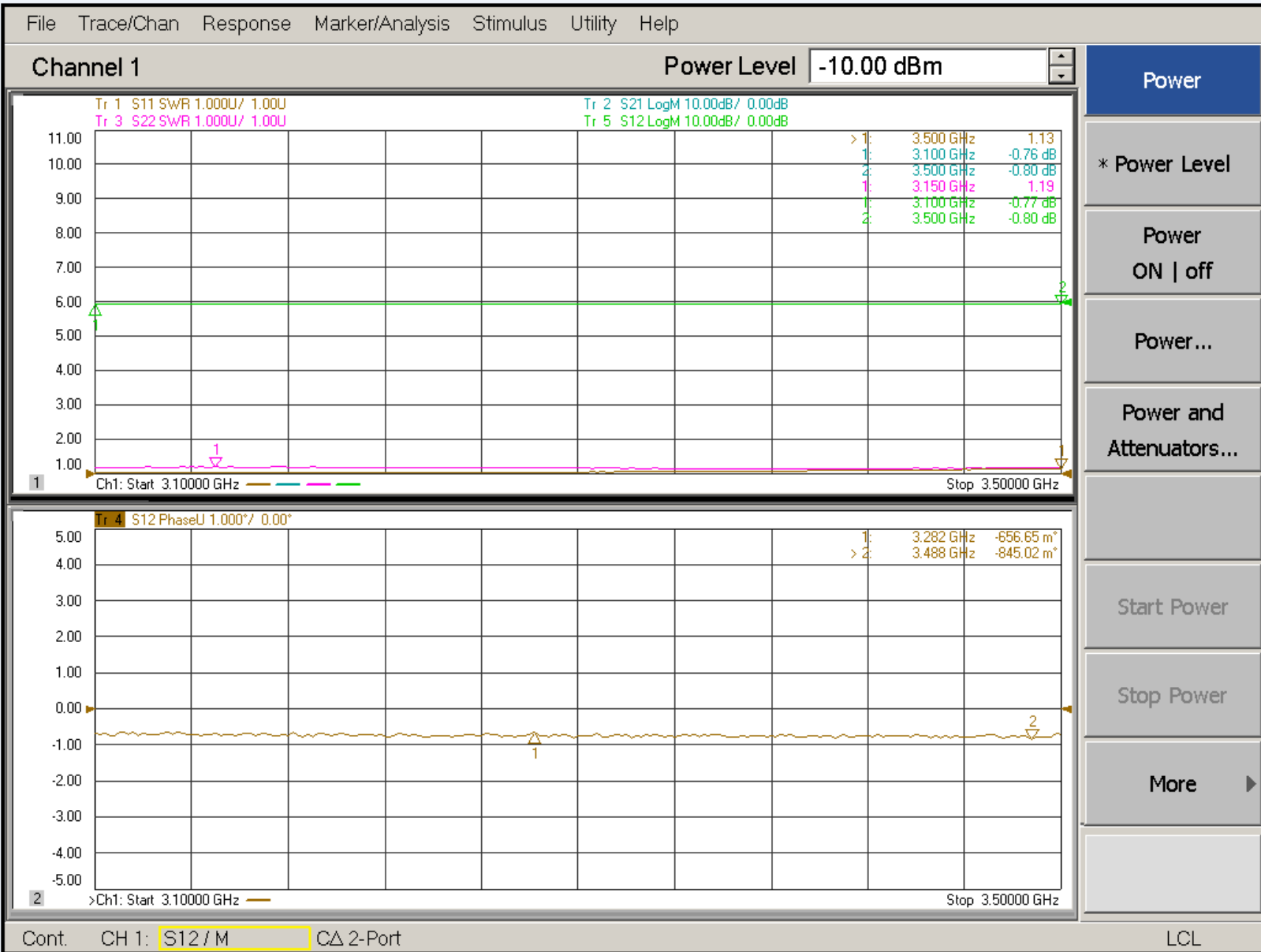


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Typical Characteristics ON PAT-3D1G3D5G-CD-SFF-NF

Low Loss State (Bi-Directional), Return Loss and Phase (PL23226/1831) Unit 3

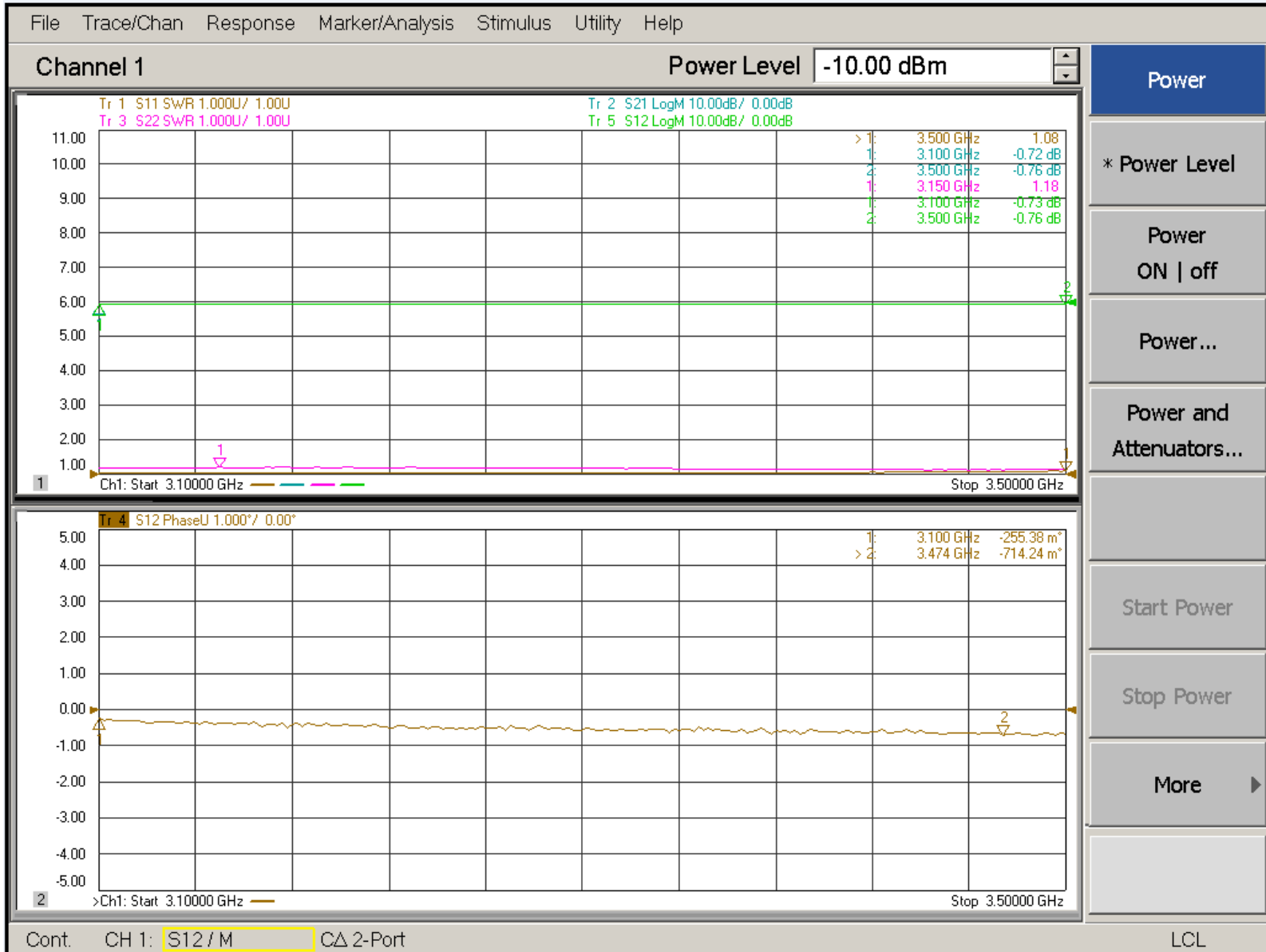


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Typical Characteristics
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Low Loss State (Bi-Directional), Return Loss and Phase (PL23227/1831)
Unit 4

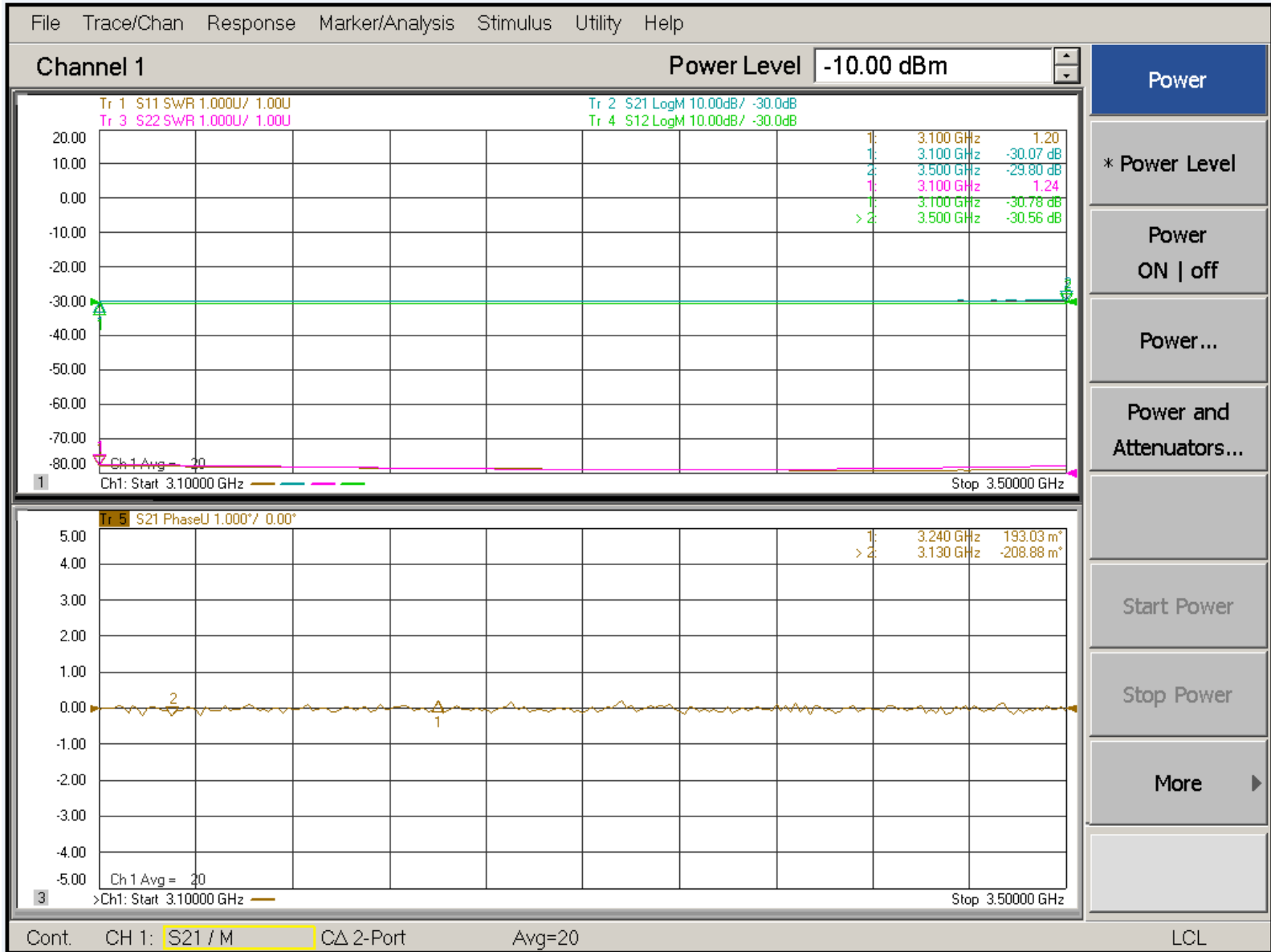


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Typical Characteristics
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Attenuation State (Bi-Directional), Return Loss and Phase (PL23224/1831)
Golden Unit

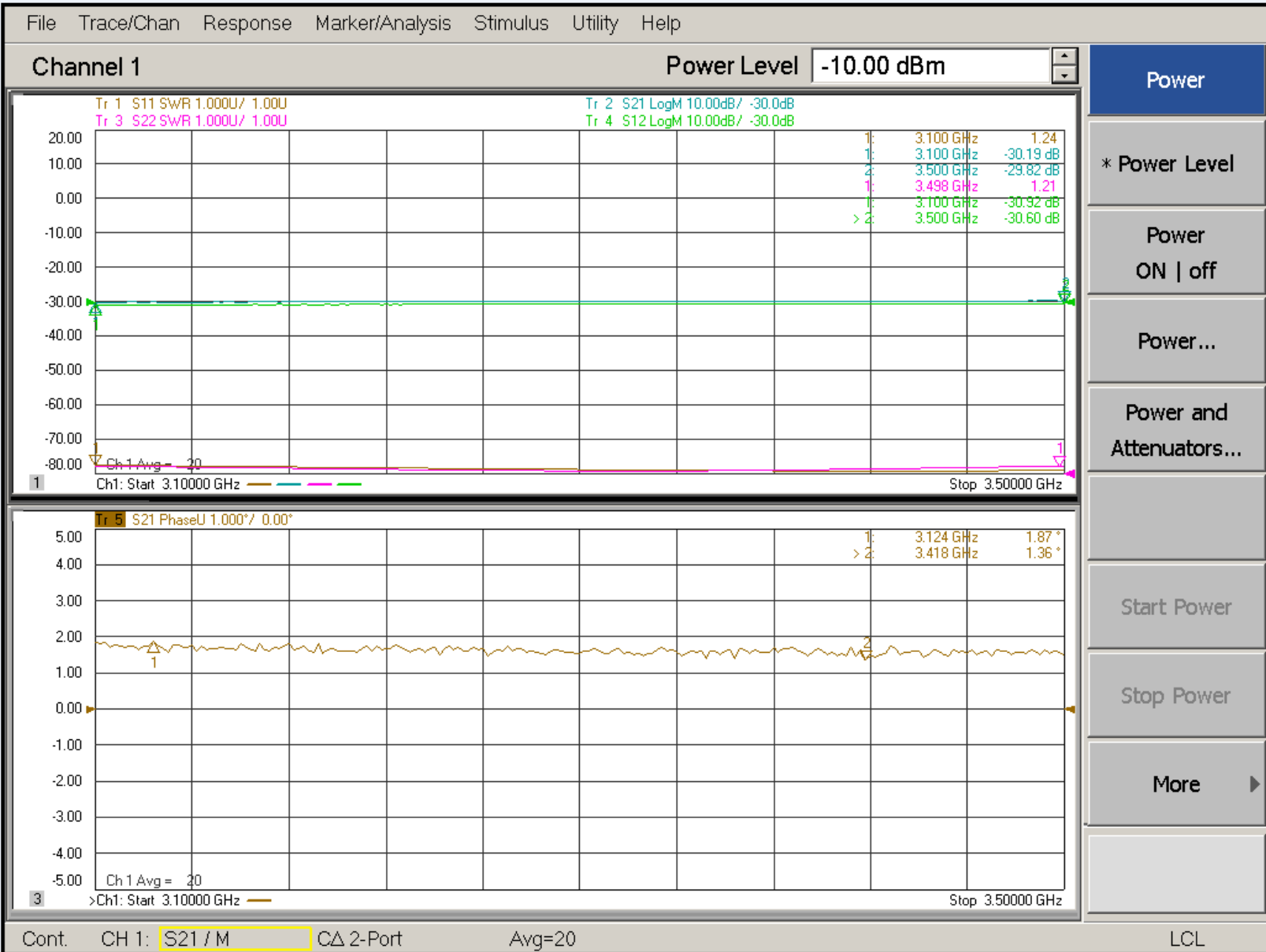


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Typical Characteristics ON PAT-3D1G3D5G-CD-SFF-NF

Attenuation State (Bi-Directional), Return Loss and Phase (PL23225/1831) Unit 2

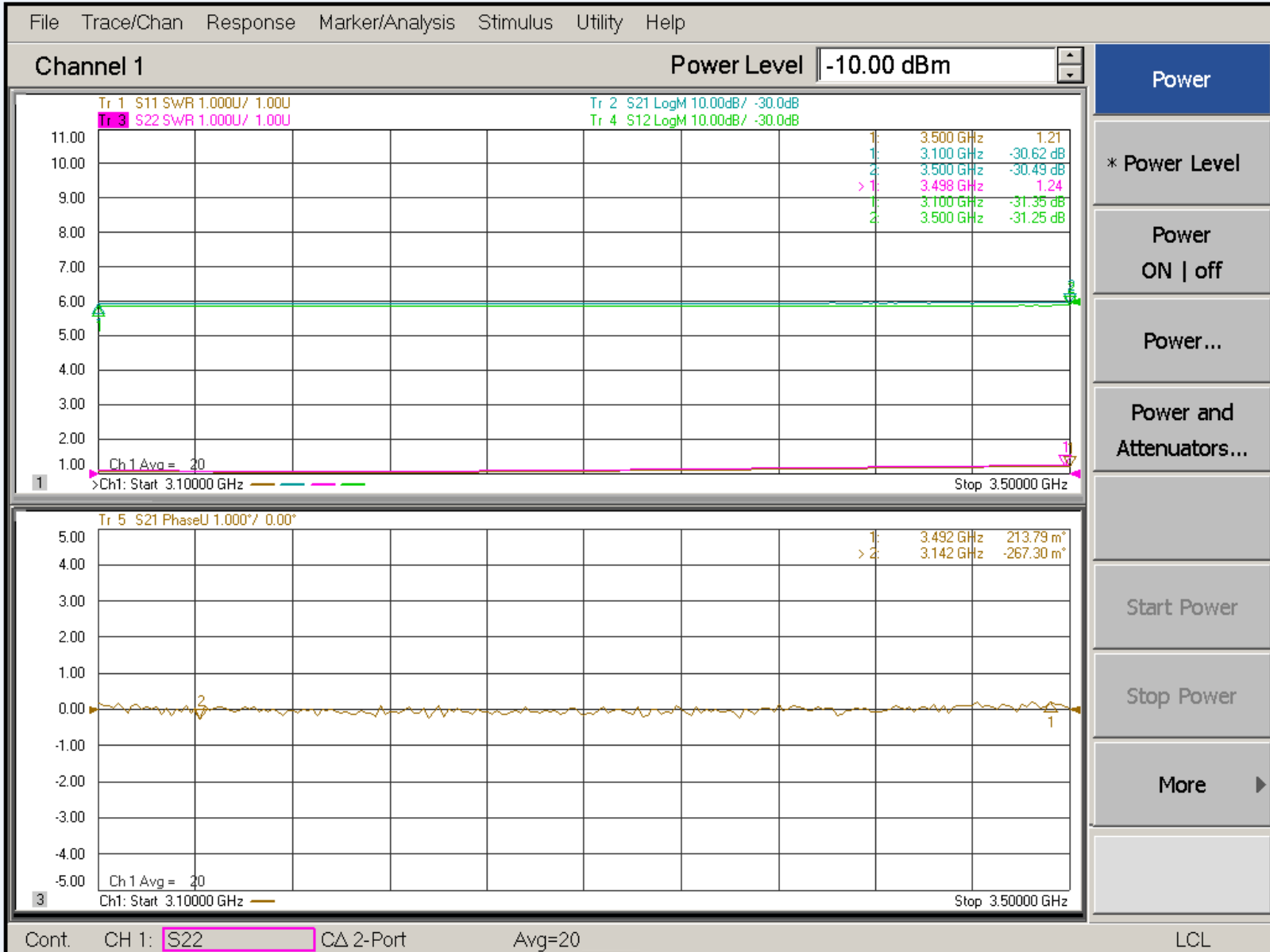


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Typical Characteristics ON PAT-3D1G3D5G-CD-SFF-NF

Attenuation State (Bi-Directional), Return Loss and Phase (PL23226/1831) (Unit 3)

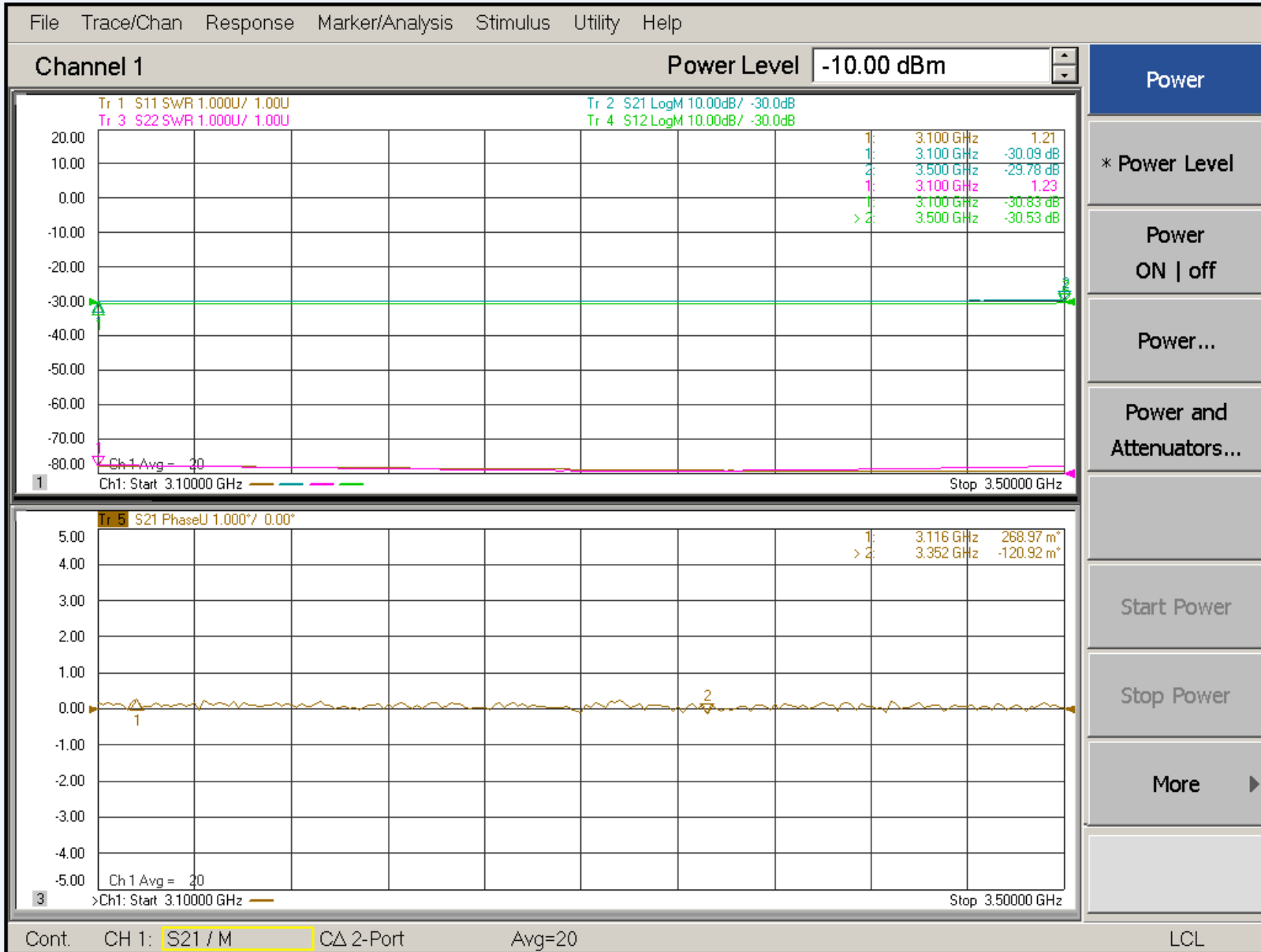


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Typical Characteristics ON PAT-3D1G3D5G-CD-SFF-NF

Attenuation State (Bi-Directional), Return Loss and Phase (PL23227/1831) (Unit 4)



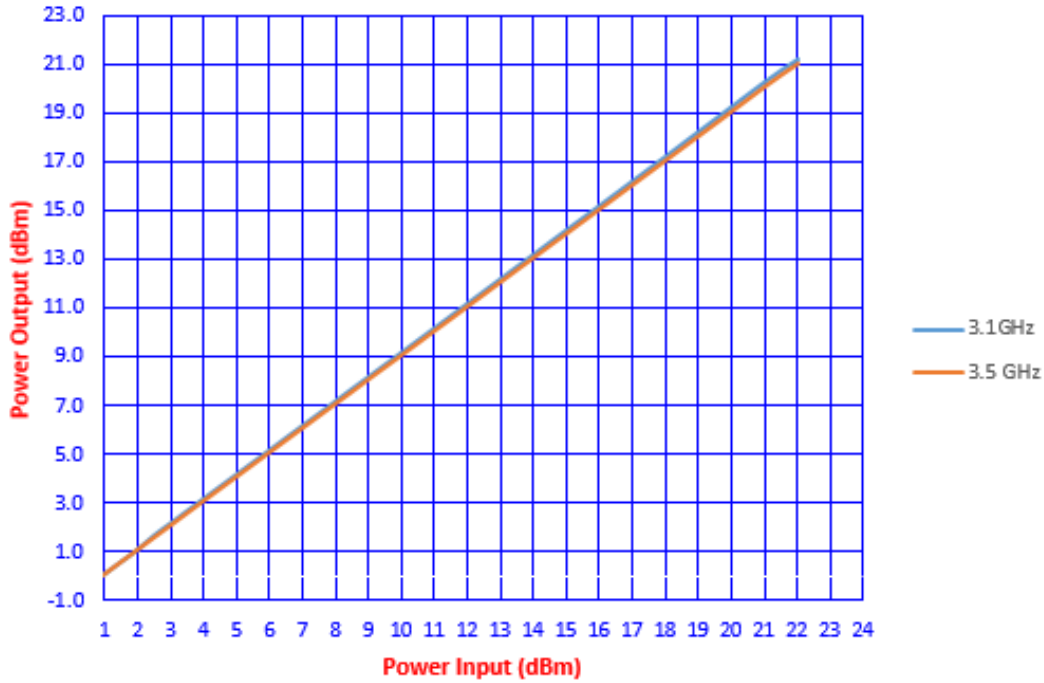
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Power Test (CW)

Power Test(dBm)



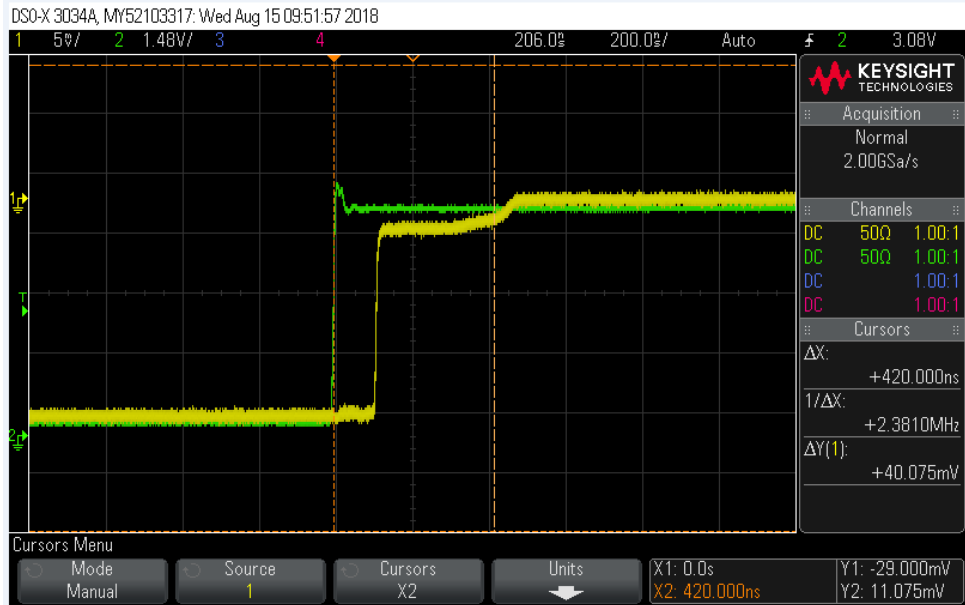
3.1 GHz			3.5 GHz		3.1 GHz			3.5 GHz	
POWER INPUT	POWER OUTPUT	LOSS	POWER OUTPUT	LOSS	POWER INPUT	POWER OUTPUT	LOSS	POWER OUTPUT	LOSS
0.00	-0.903	0.903	-0.895	0.895	11.50	10.667	0.833	10.584	0.916
0.50	-0.405	0.905	-0.397	0.897	12.00	11.170	0.830	11.085	0.915
1.00	0.094	0.906	0.102	0.898	12.50	11.672	0.828	11.585	0.915
1.50	0.595	0.905	0.600	0.900	13.00	12.175	0.825	12.089	0.911
2.00	1.096	0.904	1.102	0.898	13.50	12.679	0.821	12.588	0.912
2.50	1.671	0.829	1.603	0.897	14.00	13.180	0.820	13.087	0.913
3.00	2.172	0.828	2.104	0.896	14.50	13.684	0.816	13.586	0.914
3.50	2.673	0.827	2.606	0.894	15.00	14.181	0.819	14.081	0.919
4.00	3.177	0.823	3.108	0.892	15.50	14.680	0.820	14.578	0.922
4.50	3.676	0.824	3.606	0.894	16.00	15.179	0.821	15.076	0.924
5.00	4.173	0.827	4.103	0.897	16.50	15.684	0.816	15.574	0.926
5.50	4.672	0.828	4.601	0.899	17.00	16.187	0.813	16.075	0.925
6.00	5.171	0.829	5.100	0.900	17.50	16.689	0.811	16.572	0.928
6.50	5.669	0.831	5.599	0.901	18.00	17.192	0.808	17.072	0.928
7.00	6.169	0.831	6.097	0.903	18.50	17.699	0.801	17.574	0.926
7.50	6.669	0.831	6.596	0.904	19.00	18.206	0.794	18.074	0.926
8.00	7.169	0.831	7.095	0.905	19.50	18.716	0.784	18.580	0.920
8.50	7.677	0.824	7.594	0.907	20.00	19.227	0.773	19.083	0.917
9.00	8.172	0.828	8.098	0.902	20.50	19.738	0.762	19.593	0.907
9.50	8.667	0.833	8.596	0.904	21.00	20.238	0.762	20.093	0.907
10.00	9.166	0.834	9.084	0.916	21.50	20.716	0.784	20.578	0.922
10.50	9.669	0.831	9.585	0.916	22.00	21.162	0.838	21.035	0.965

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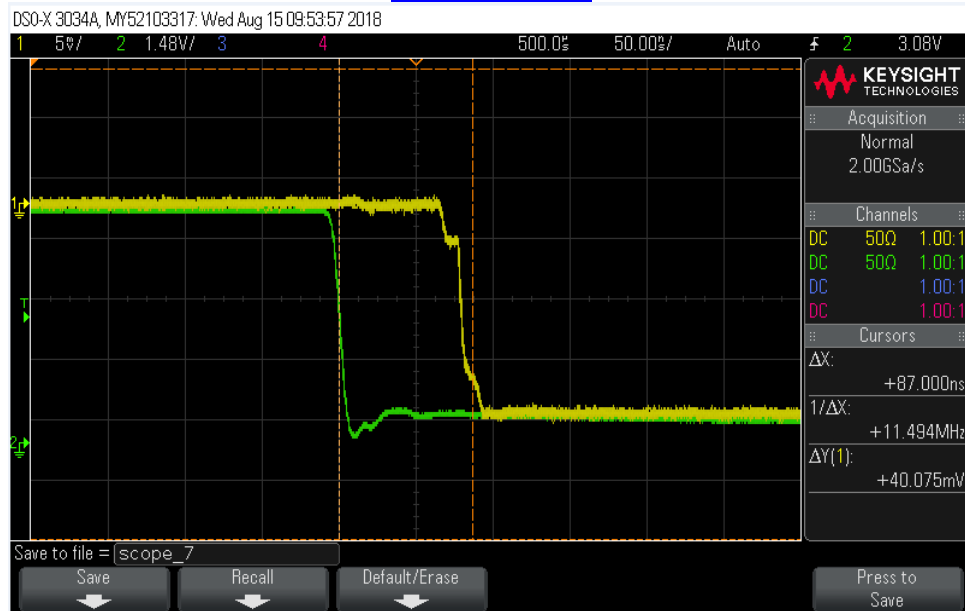
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**Switching Speed ON
200ns Per Div.**



**Yellow Trace: RF Signal
Green Trace: TTL Signal**

**Switching Speed OFF
50ns Per Div.**



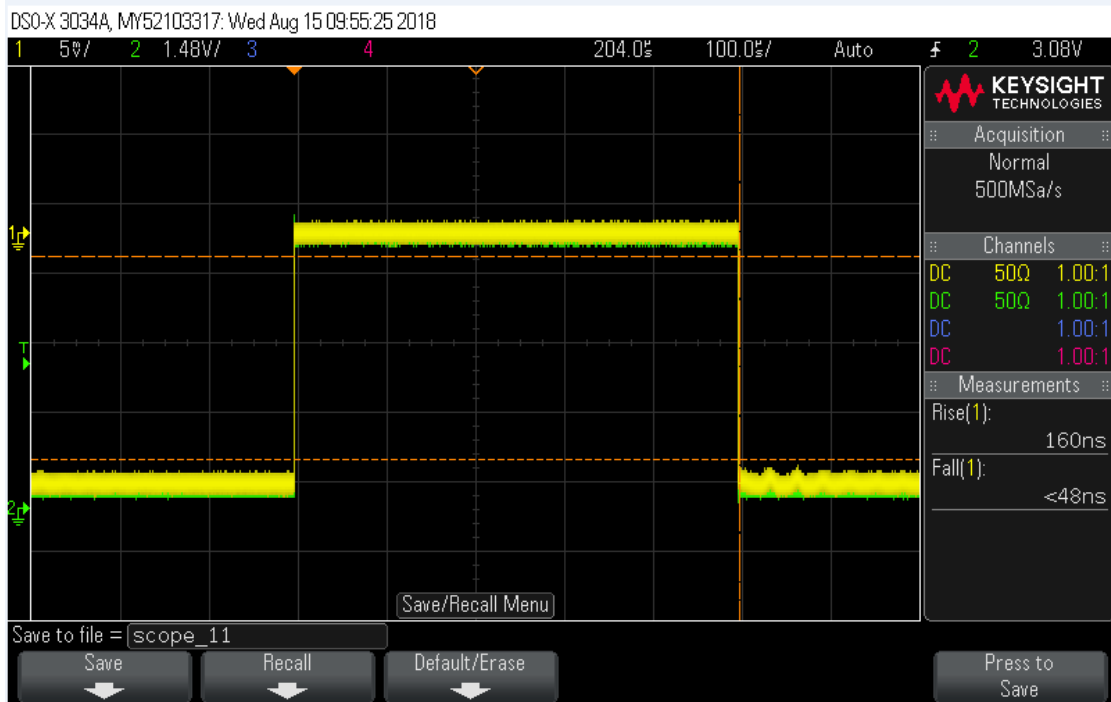
**Yellow Trace: RF Signal
Green Trace: TTL Signal**

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Full Pulse



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