Typical Characteristics For DVAT-0518-60-8-SK-193

PMI MODEL DVAT-0518-60-8-SK-193 IS A 0.5 TO 18.0 GHz VARIABLE ATTENUATOR/MODULATOR WITH 8 BIT BINARY TTL CONTROL OR OPTIONAL ANALOG VOLTAGE CONTROL.

September 25, 2018
Designed by: PMI Engineering
Tested and Reported by: Kevin Mansfield

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DESCRIPTION

PMI MODEL DVAT-0518-60-8-SK-193 IS A 0.5 TO 18.0 GHz VARIABLE ATTENUATOR/MODULATOR WITH 8 BIT BINARY TTL CONTROL OR OPTIONAL ANALOG VOLTAGE CONTROL.

SPECIFICATIONS

- FREQUENCY RANGE: — 0.5 to 18.0 GHz
- INSERTION LOSS: — 5.25dB MAXIMUM
- ATTENUATION FLATNESS: — @ 10 dB = ± 0.9 dB; @ 20 dB = ± 1.5 dB; @ 40 dB = ± 3.0 dB; @ 60 dB = ± 5.0 dB
- ATTENUATION ACCURACY: — 0–30 dB = ± 1.0 dB; 30–50 dB = ± 1.3 dB; 50–60 dB = ± 1.5 dB
- MONOTONICITY: — GUARANTEED
- TEMPERATURE VARIATION: — ± 2.5dB –10 to 85 deg C Typ; ± 3.5dB –40 to 95 deg C Typ
- SWITCHING TIME: — 5 µs MAXIMUM
- SMALL SIGNAL BANDWIDTH: — 100 kHz Typ (6dB with ±3 dB sinewave)
- LARGE SIGNAL BANDWIDTH: — 50 kHz Typ (30dB with ±30 dB sinewave)
- RETURN LOSS: — –12 dB TYP –8.5 dB MAX
- POWER RATING: — +20 dBm
- DIGITAL CONTROL: — 8 BIT TTL; 0.25 dB MINIMUM ATTENUATION STEP
- ANALOG CONTROL option: — 0–6V ANALOG VOLTAGE, 10dB/VOLT
- POWER SUPPLY: — +12V TO +15V @ 150 mA MAXIMUM
- NEGATIVE SUPPLY IS OPTIONAL: — 0 TO –15V @ 2 mA MAXIMUM (may be omitted)
- CONNECTORS:
- RF INPUT/OUTPUT: — FIELD REPLACEABLE SMA (FEMALE)
- POWER AND CONTROLS: — 15 PIN MICRO-D FEMALE; MATING CONNECTOR (MALE) FURNISHED
- SIZE: — 2.00" x 1.81" x 0.50"
- FINISH: — PAINTED BLUE

ENVIRONMENTAL RATINGS

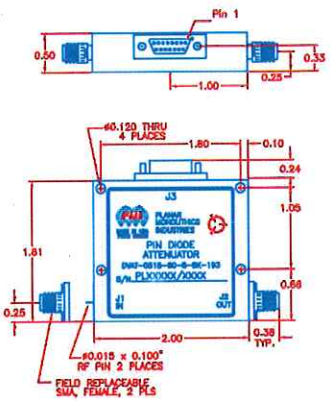
- TEMPERATURE: — –40°C TO + 85°C (OPERATING); –65°C TO +125°C (STORAGE)
- HUMIDITY: — MIL-STD-202F, METHOD 103B COND. B
- SHOCK: — MIL-STD-202F, METHOD 213B COND. B
- VIBRATION: — MIL-STD-202F, METHOD 204D COND. B
- ALTITUDE: — MIL-STD-202F, METHOD 105C COND. B
- TEMPERATURE CYCLE: — MIL-STD-202F, METHOD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

NOTE: SPECIFICATIONS TELL WHAT OVER OPERATING TEMPERATURE
NOTE: THE ABOVE SPECIFICATIONS ARE SUBJECT TO CHANGE OR REVISION

ALL DIMENSIONS ARE IN INCHES
TOLERANCES:
X.XX ±0.025
X.XXX ±0.010

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A1	ORIGINAL RELEASE	4/24/12	

MECHANICAL OUTLINE



PMI CONFIDENTIAL AND PROPRIETARY

PLANAR MONOLITHICS INDUSTRIES, INC.
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FREDERICK, MARYLAND 21704 USA
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ISO 9001 CERTIFIED

APPROVALS	DATE
DRAWN PSV	4/17/12
RELEASED SW	4/18/12
SHELVED	

TITLE: PRODUCT FEATURE
DVAT-0518-60-8-SK-193

SIZE	FSCM NO.	DWG NO.	REV.
A	05XQ0	27035041	A1

SCALE N:S SHEET 1 OF 2

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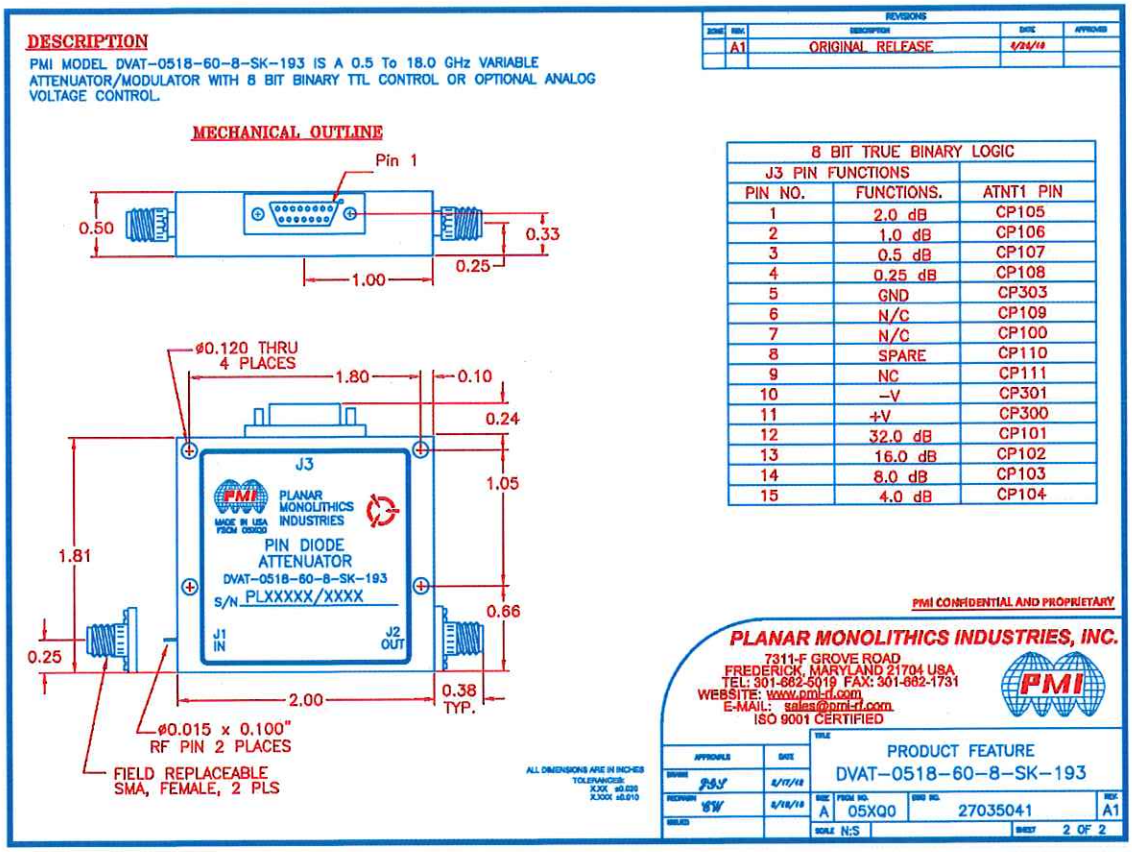
Typical Characteristics
For
DVAT-0518-60-8-SK-193



DESCRIPTION

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REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	A1	ORIGINAL RELEASE	4/24/18	

MECHANICAL OUTLINE

8 BIT TRUE BINARY LOGIC		
J3 PIN FUNCTIONS		
PIN NO.	FUNCTIONS.	ATNT1 PIN
1	2.0 dB	CP105
2	1.0 dB	CP106
3	0.5 dB	CP107
4	0.25 dB	CP108
5	GND	CP303
6	N/C	CP109
7	N/C	CP100
8	SPARE	CP110
9	NC	CP111
10	-V	CP301
11	+V	CP300
12	32.0 dB	CP101
13	16.0 dB	CP102
14	8.0 dB	CP103
15	4.0 dB	CP104

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APPROVALS	DATE	TITLE: PRODUCT FEATURE DVAT-0518-60-8-SK-193	
DRAWN JSY	4/17/18	SIZE A	FSCM NO. 05XQ0
RECHKD KW	4/18/18	DWG NO. 27035041	REV. A1
ENGR		SCALE N:S	SHEET 2 OF 2

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Typical Characteristics For DVAT-0518-60-8-SK-193

TEST. ITEM NO	PARAMETERS	SPECIFIED VALUE	PASS/FAIL	QA QC
1	Frequency Range:	0.5 to 18.0 GHz	0.5 to 18.0 GHz	
2	Insertion Loss:	5.25 dB Max.	4.5 dB See Plot	
3	Attenuation Flatness:	±0.9 dB @ 10 dB ±1.5 dB @ 20 dB ±3.0 dB @ 40 dB ±5.0 dB @ 60 dB	±0.26 dB @ 10 dB ±0.57 dB @ 20 dB ±0.73 dB @ 40 dB ±1.26 dB @ 60 dB See Plot	
4	Attenuation Accuracy:	±1.0 dB @ 0 - 30 dB ±1.3 dB @ 30 - 50 dB ±1.5 dB @ 50 - 60 dB	0.07 dB @ 0 - 30 dB 0.09 dB @ 30 - 50 dB 0.31 dB @ 50 - 60 dB See Plot	
5	Monotonicity:	Guaranteed	Pass	
6	Temperature Variation:	±2.5 dB -10 to 85°C Typ. ±3.5 dB -40 to 95°C Typ.	±2.1 dB -10 to 85°C ±3 dB -40 to 95°C	
7	Switching Speed:	5 us Max.	<1 µs See Plots	
8	Small Signal Bandwidth:	100 KHz Typ. (6 dB w/±3 dB sinewave)	N/A	
9	Larg Signal Bandwidth:	50 KHz Typ. (30 dB w/±3 dB sinewave)	N/A	
10	Return Loss:	-12 dB Typ. -8.5 dB Max.	-13.4 dB See Plot	
11	Power Rating:	+20 dB	+20 dBm See Plots	
12	Power Supply:	+15 V @ 150 mA Max.	113 mA	

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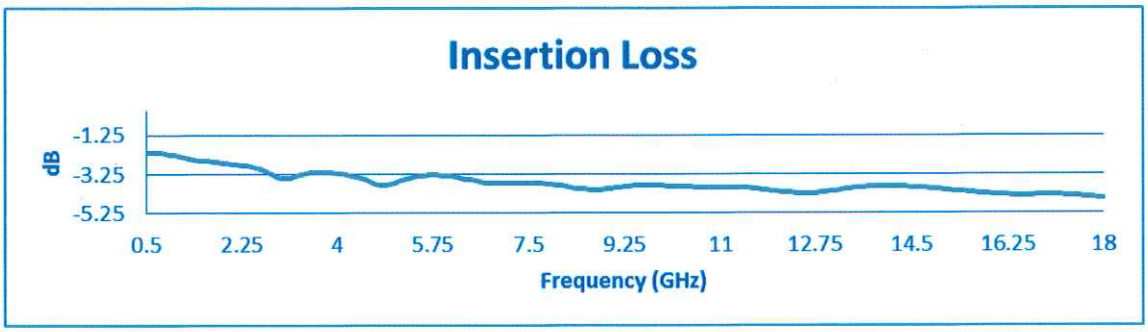

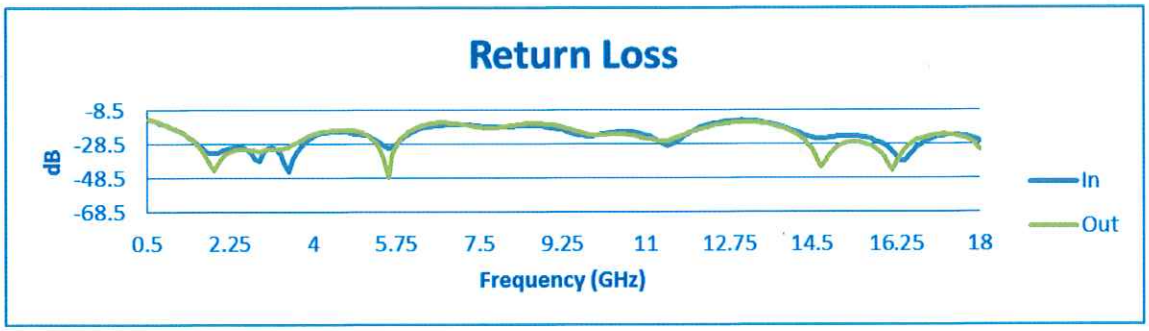

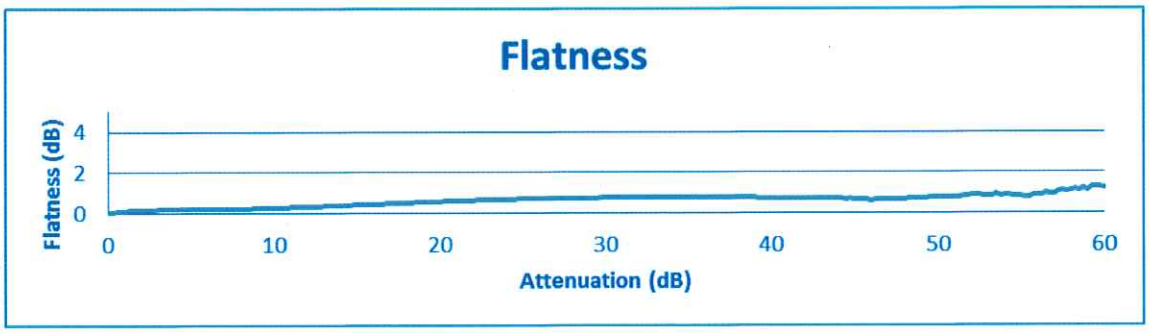

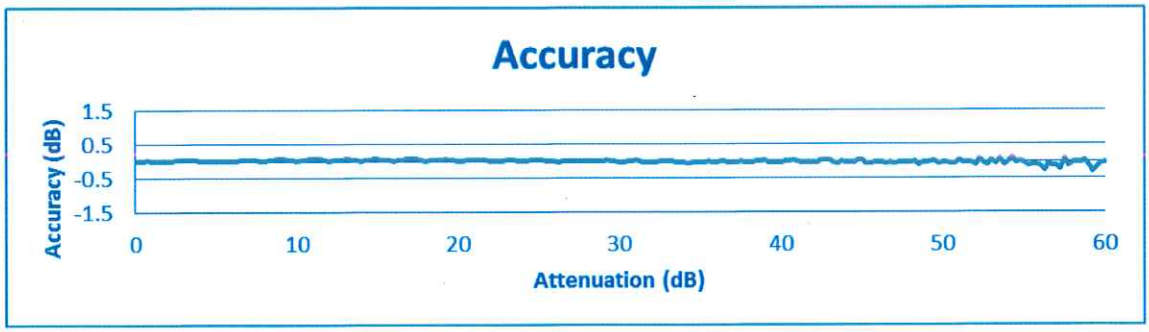

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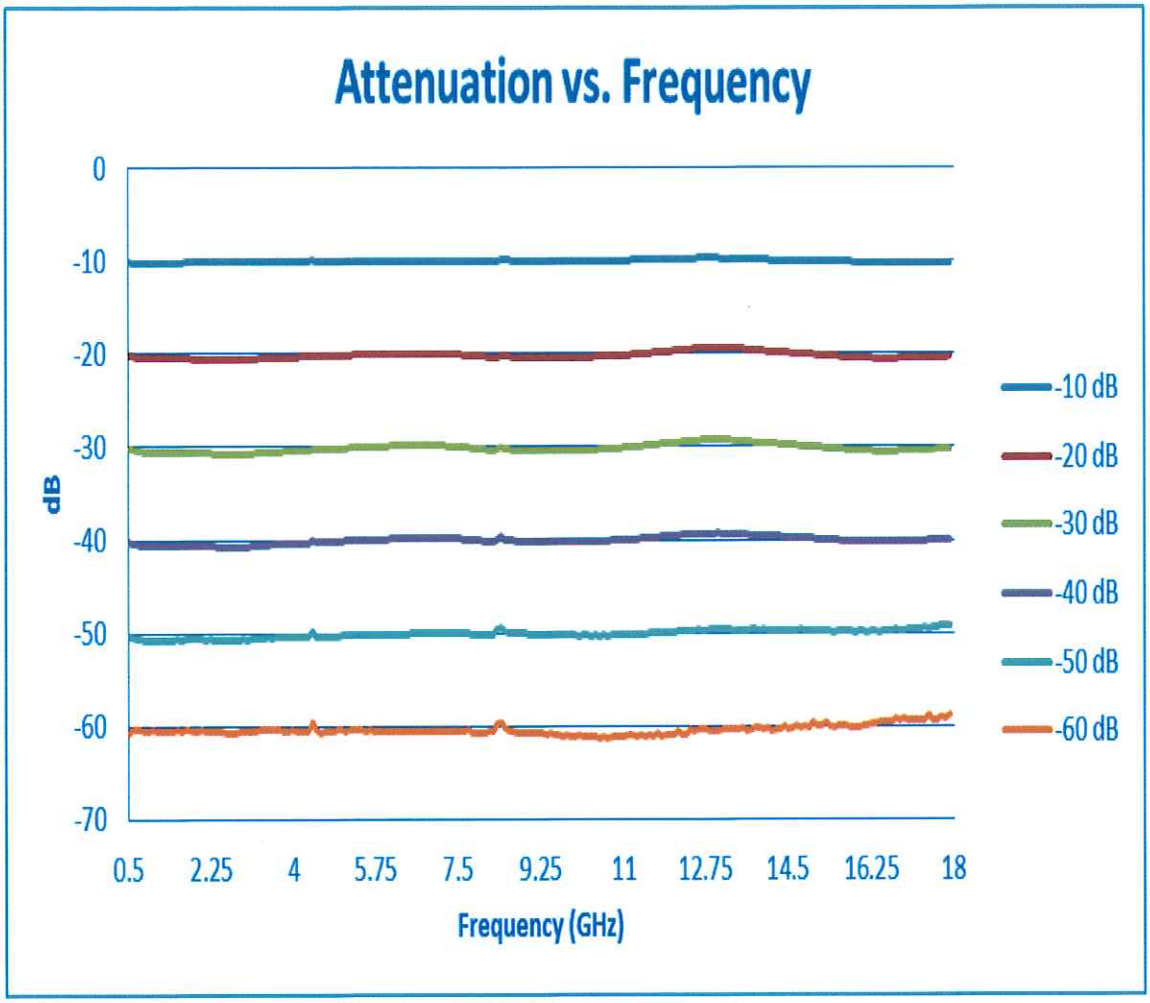

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Typical Characteristics For DVAT-0518-60-8-SK-193

Switching Speed

First the full scale pulse is shown in Figure 1. Channel 1 is the TTL signal from the Waveform Generator (Yellow). Channel 2 is the SDLVA output (Green).

The voltage difference from the SDLVA is 1.17 V / 32 dB = 36.6 mV / dB (same as SDLVA alone with 32 dB difference in input power level from the signal generator).

The TTL signal has been inverted to show rising and falling edges matching the rising and falling edges of the SDLVA output. The SDLVA output high corresponds to 0 dB attenuation and the SDLVA output low corresponds to 32 dB attenuation.

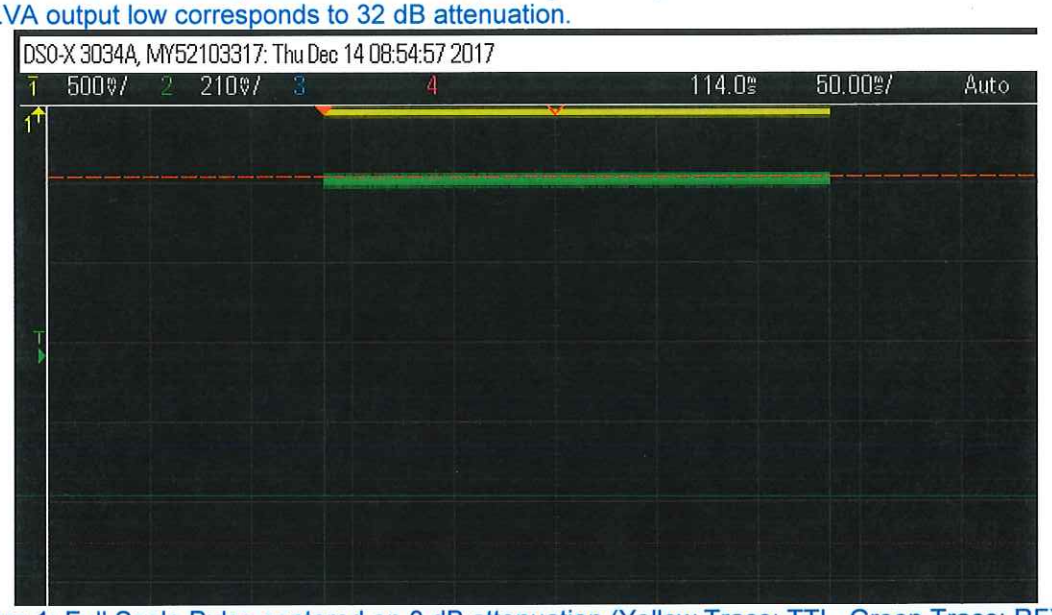

Figure 1: Full Scale Pulse centered on 0 dB attenuation (Yellow Trace: TTL, Green Trace: RF)

Next, the full scale pulse is shown in Figure 2 with the scope centered on 32 dB attenuation.

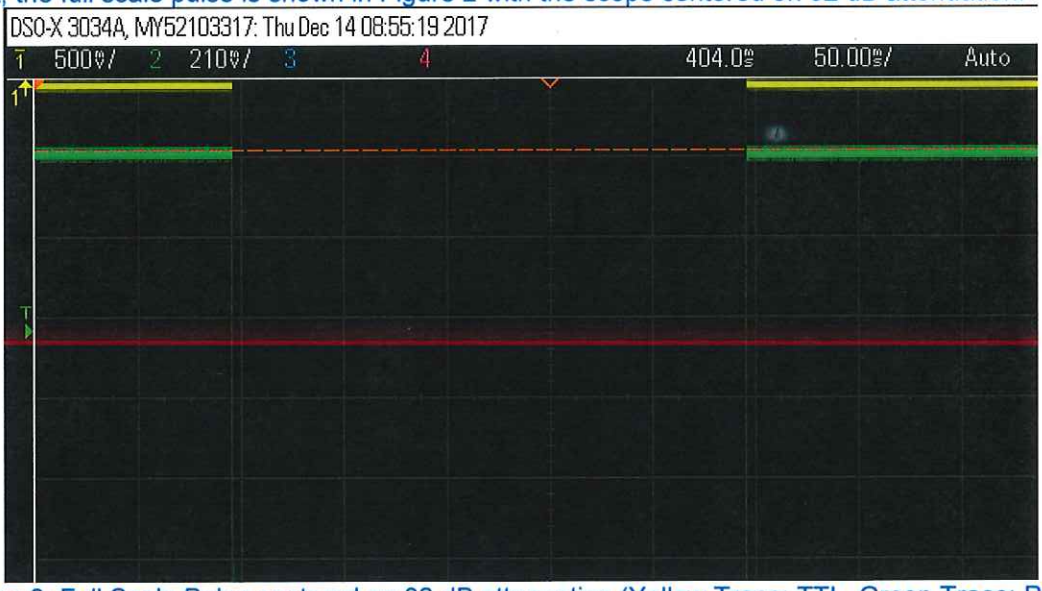

Figure 2: Full Scale Pulse centered on 32 dB attenuation (Yellow Trace: TTL, Green Trace: RF)

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Next, for clarity, multiple pulses are shown in Figure 3.

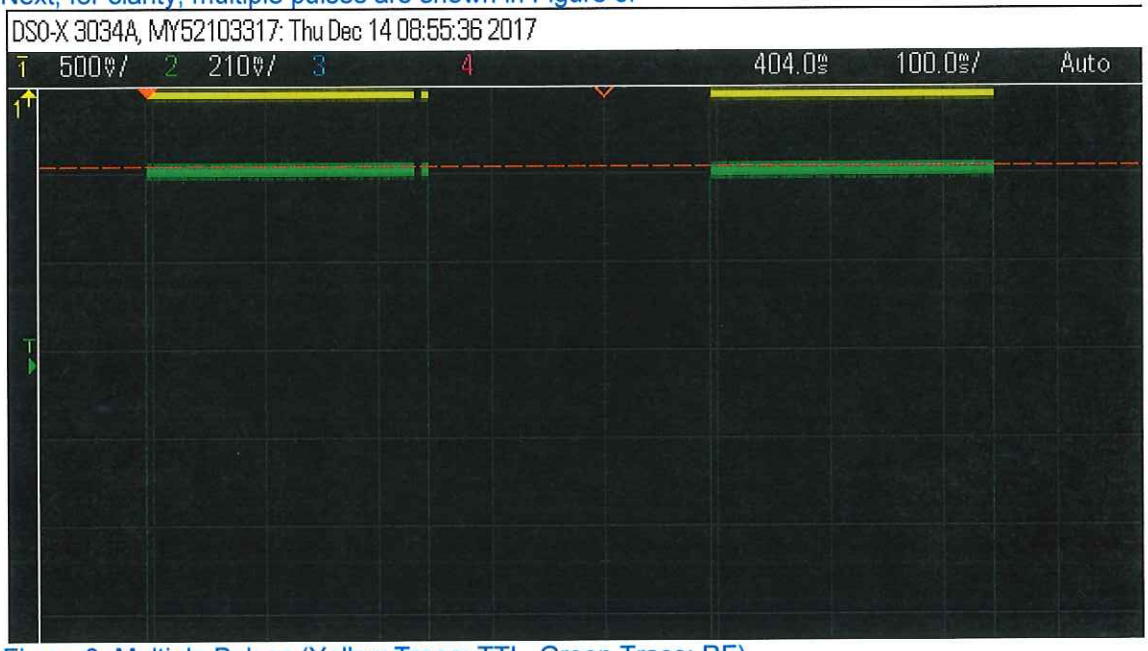

Figure 3: Multiple Pulses (Yellow Trace: TTL, Green Trace: RF)

Figure 4 shows the switching speed off (from 32 dB attenuation to 0 dB attenuation. The result is an off switching speed of 308.5 ns (50% TTL to 90% RF).

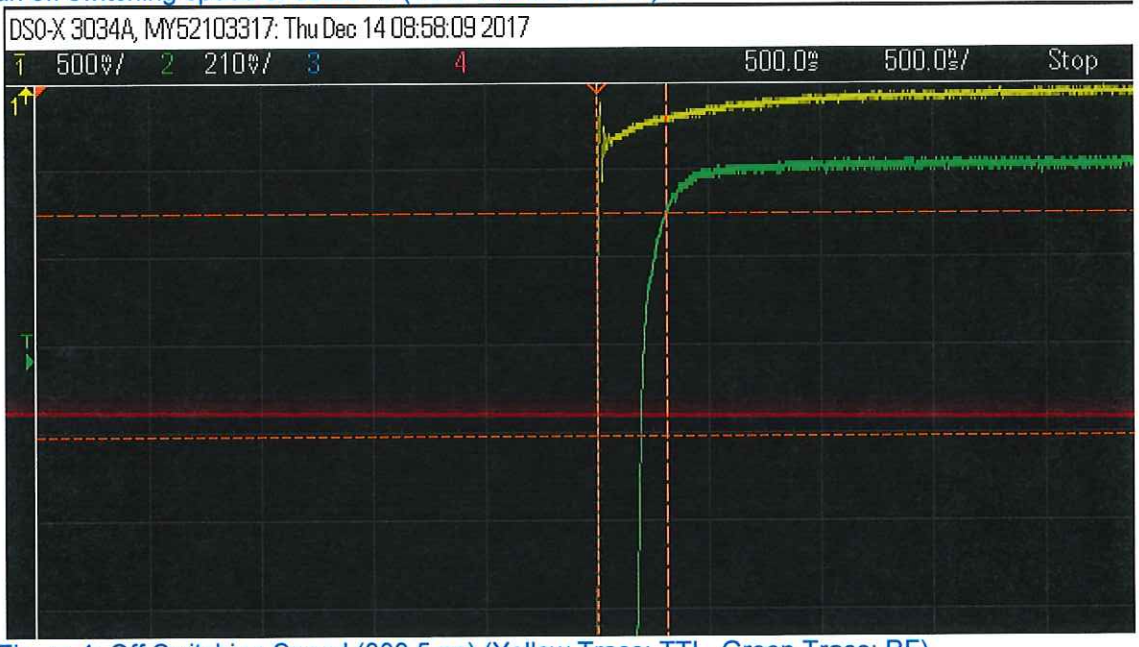

Figure 4: Off Switching Speed (308.5 ns) (Yellow Trace: TTL, Green Trace: RF)

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Figure 5 shows the On Switching Speed (from 0 dB attenuation to 32 dB attenuation). The result is an On Switching Speed of 452 ns (50% TTL to 10% RF)

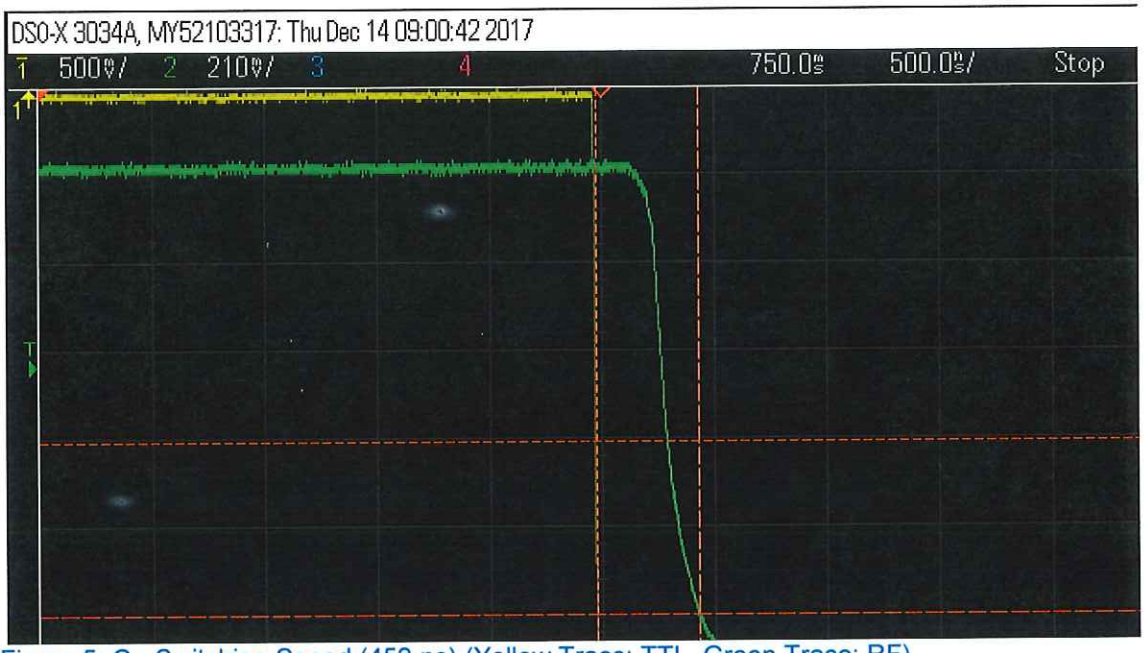

Figure 5: On Switching Speed (452 ns) (Yellow Trace: TTL, Green Trace: RF)

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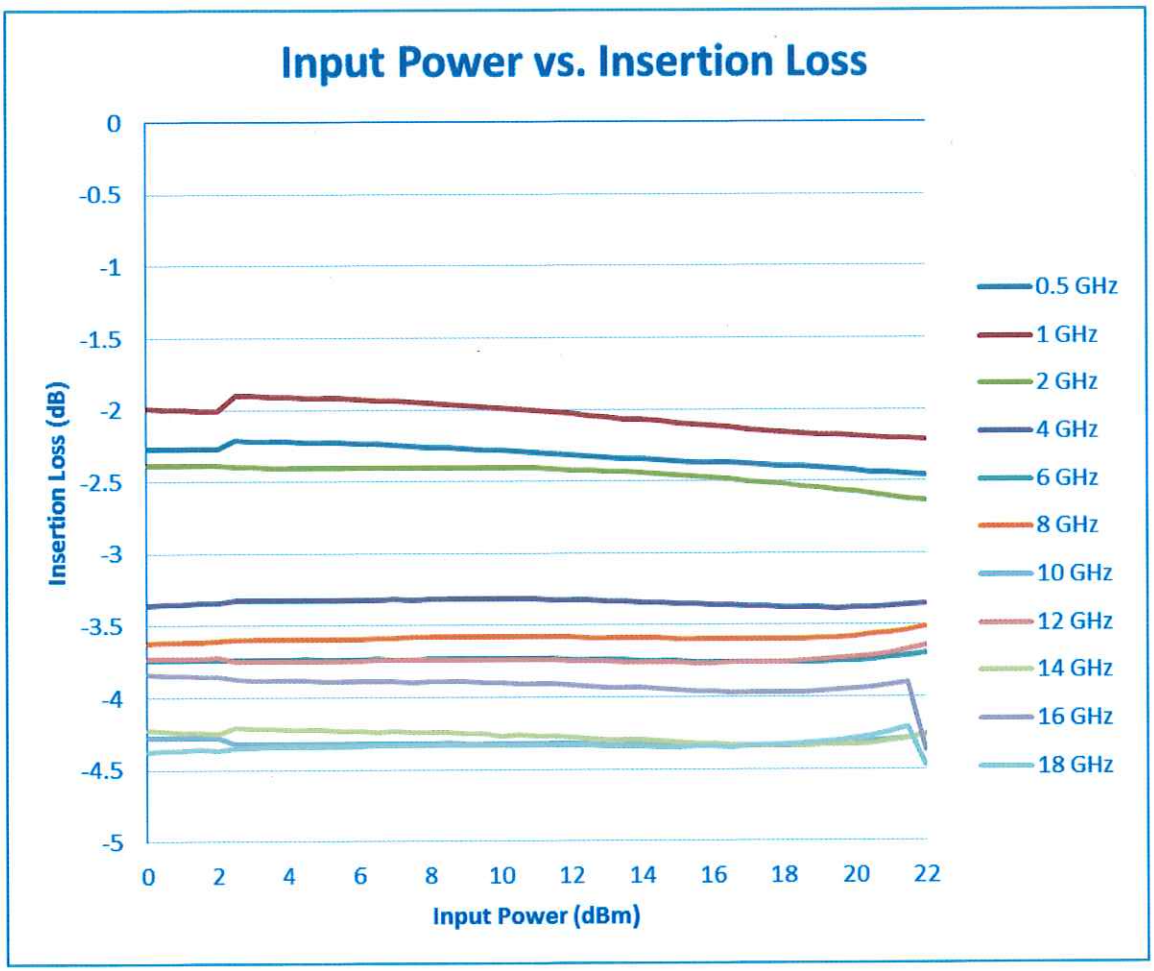
Power Handling



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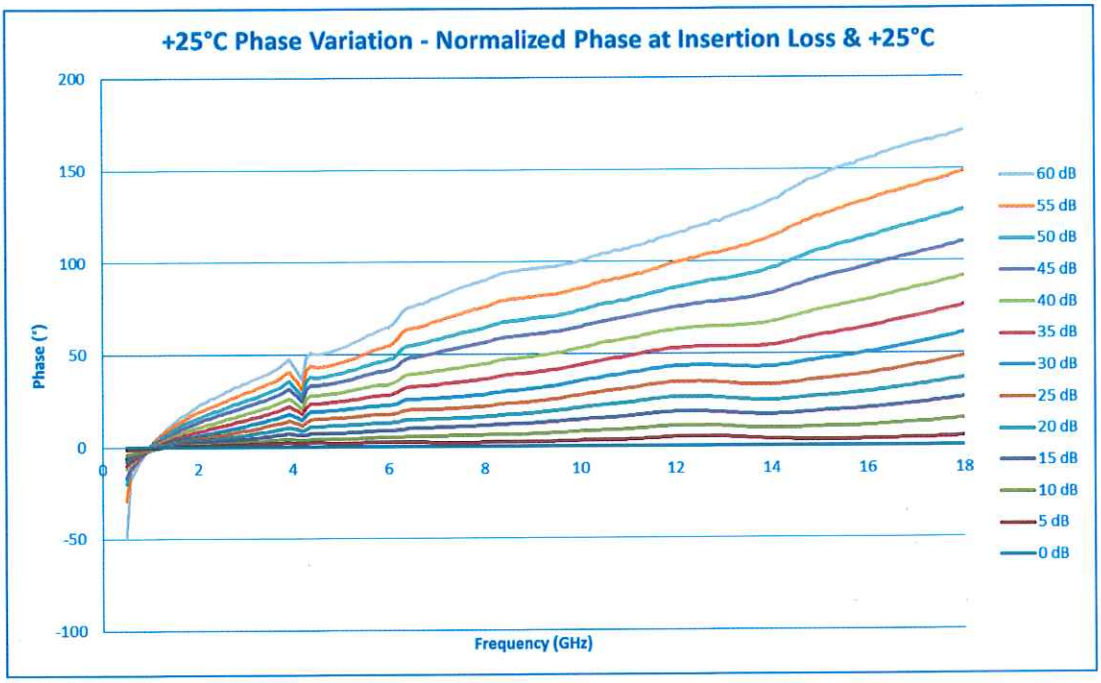
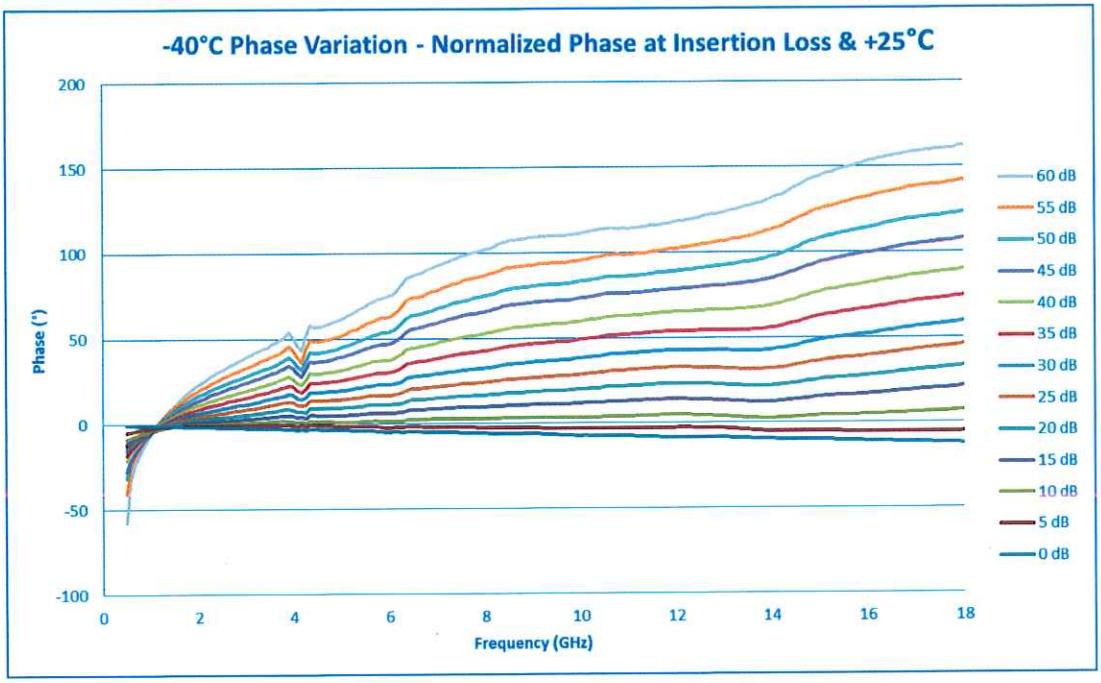
Phase Data





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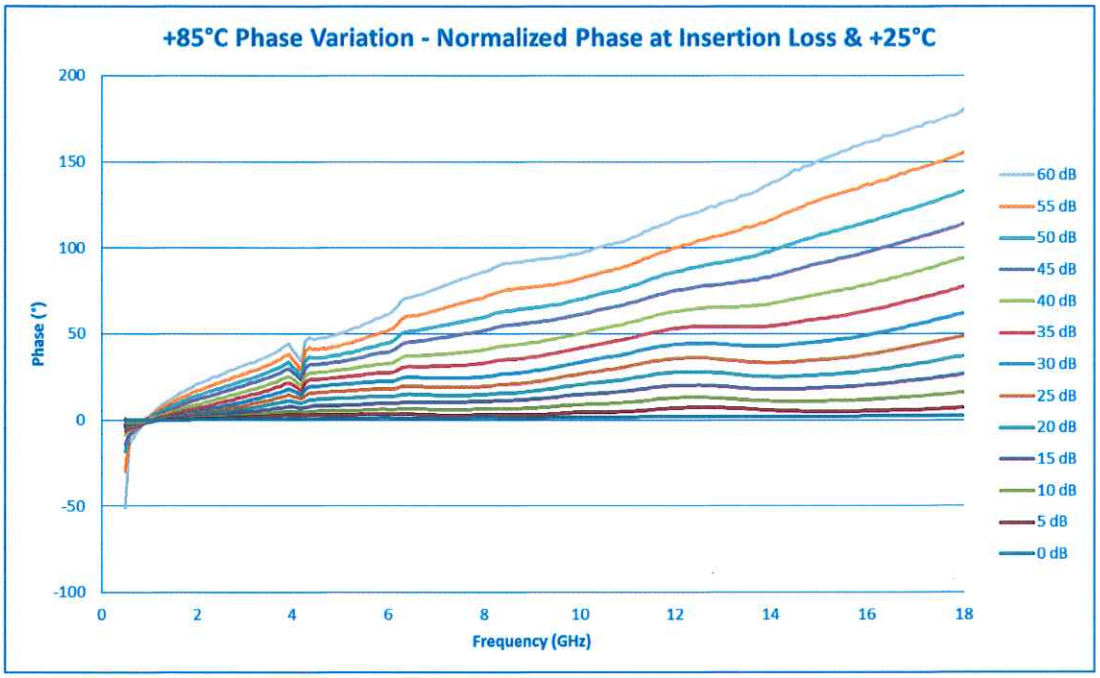

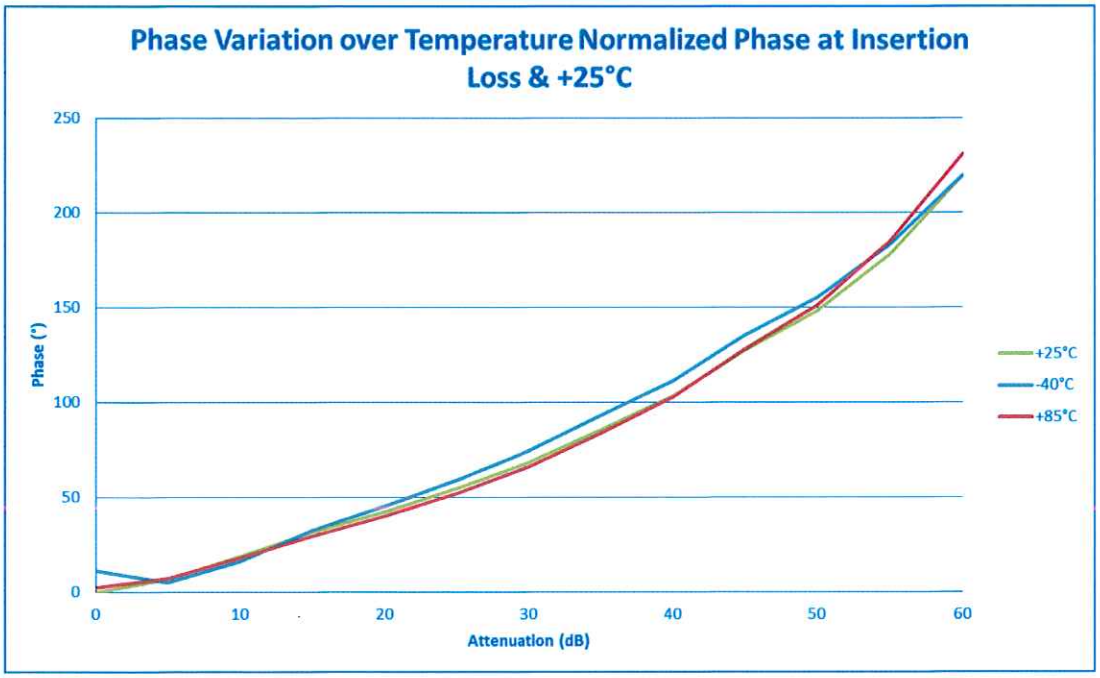

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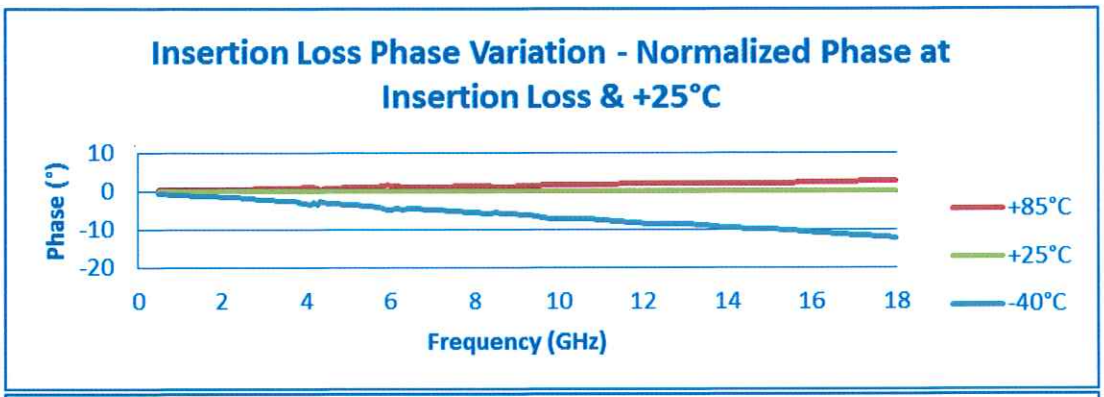

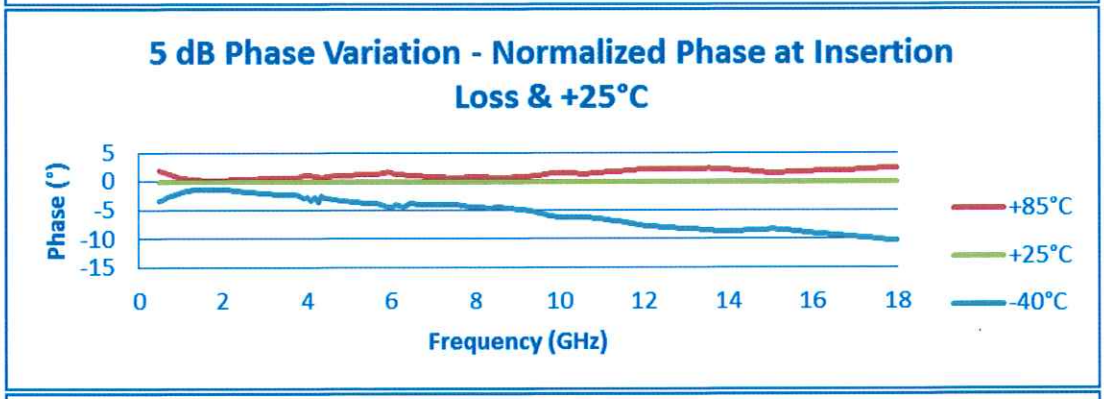

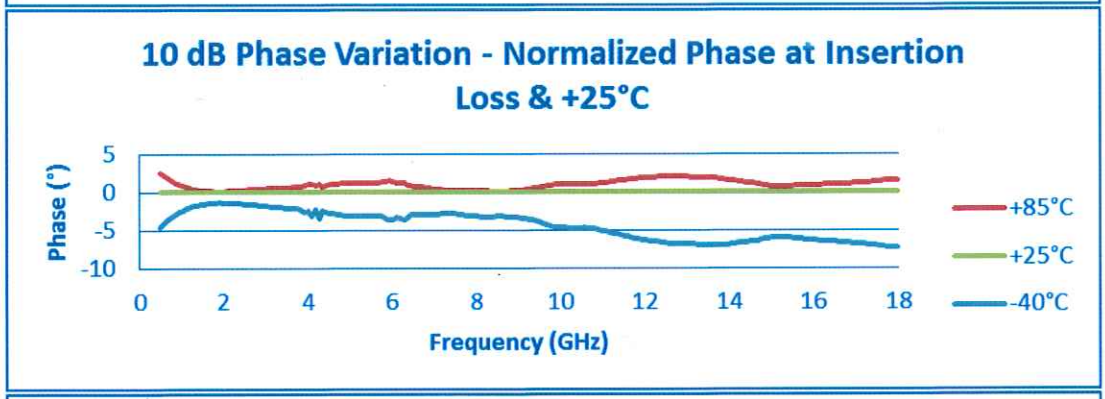

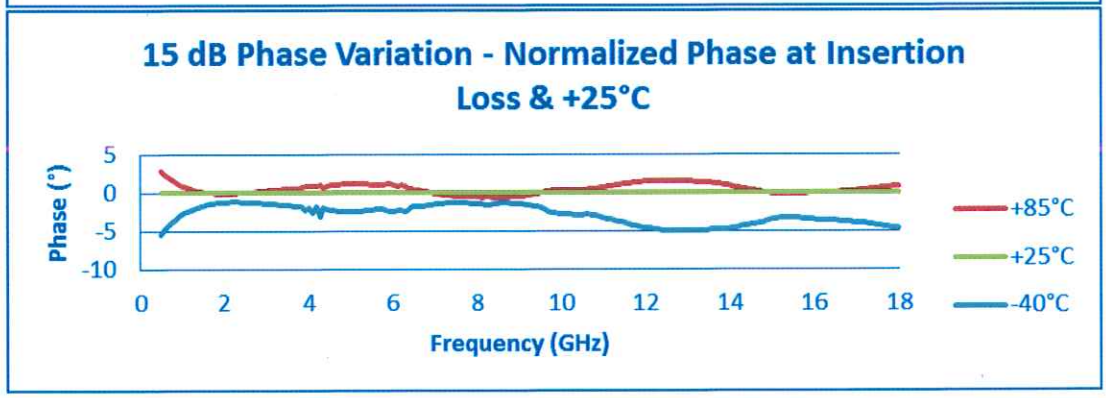

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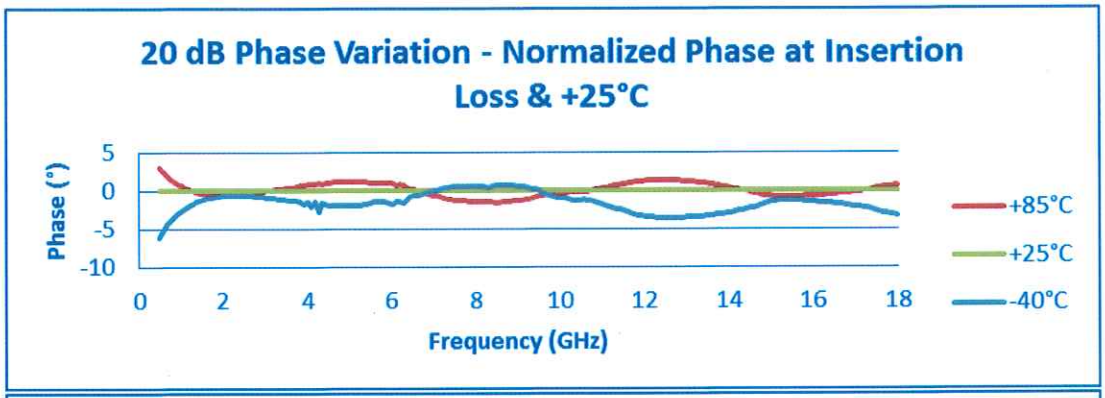

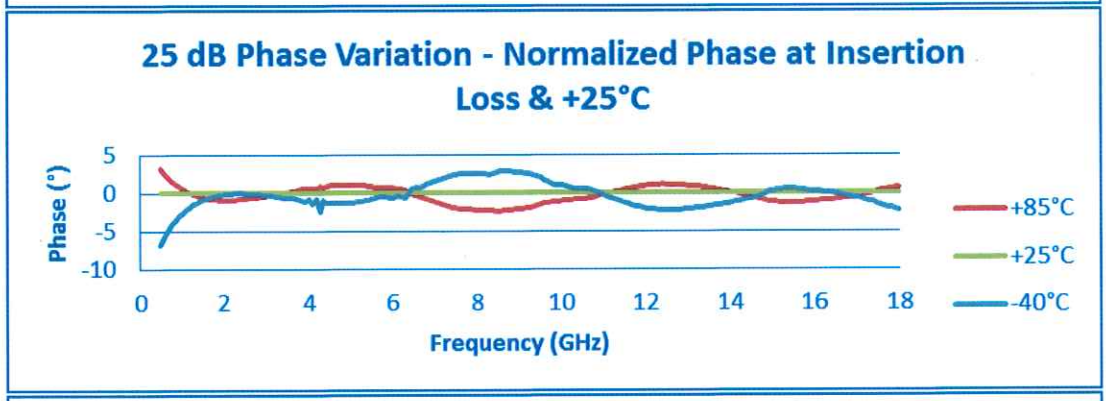

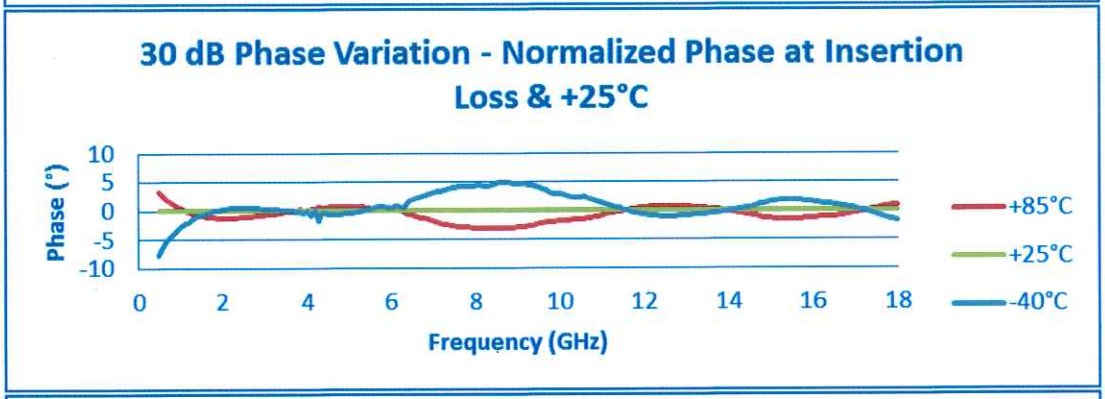

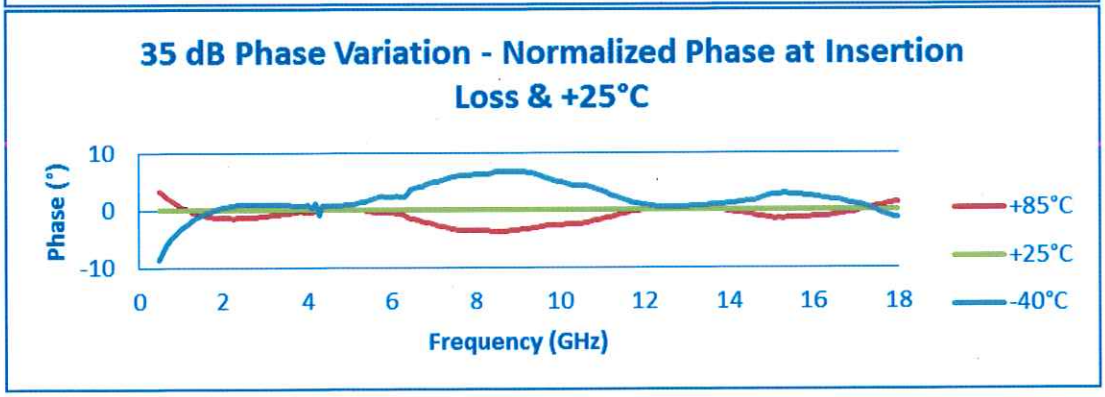

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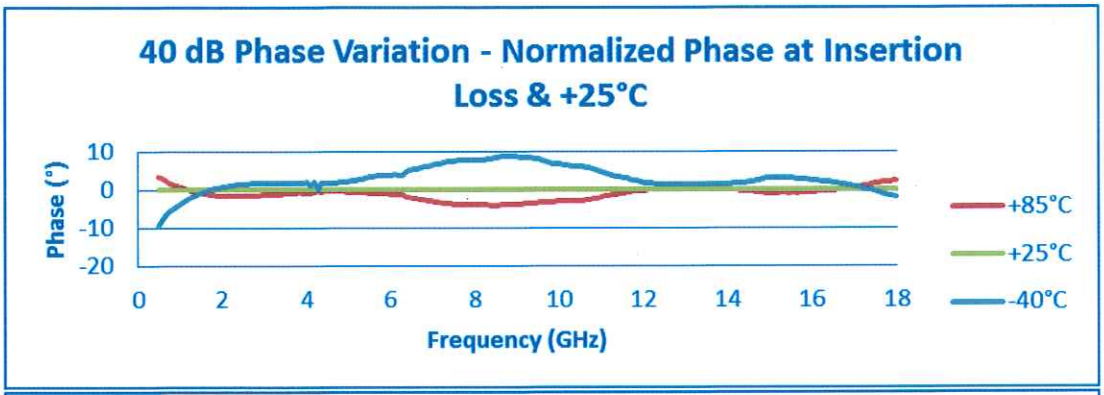

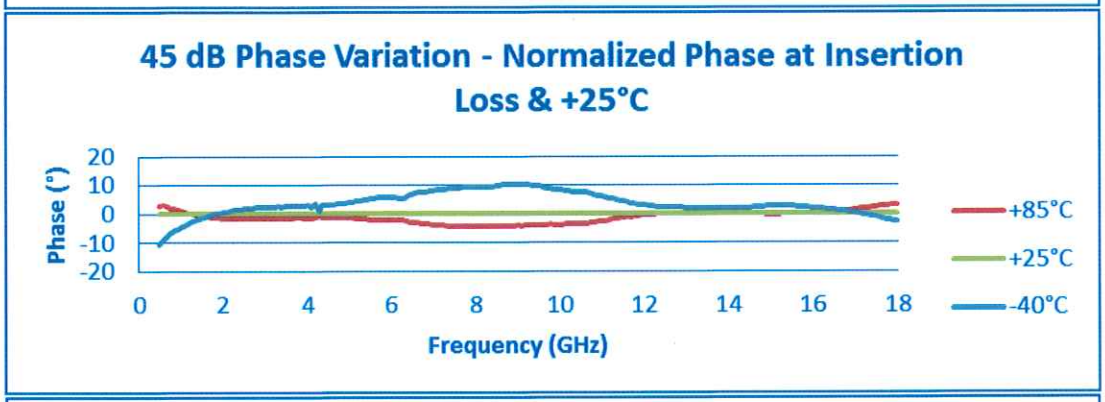

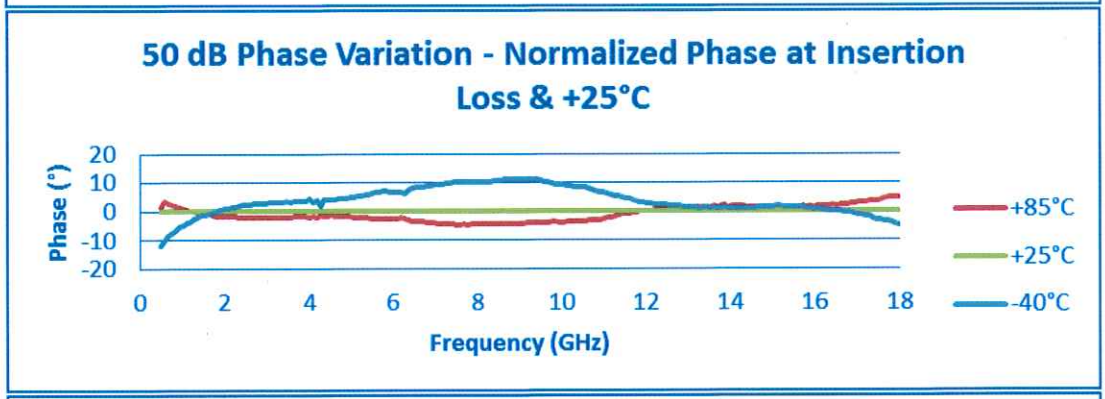

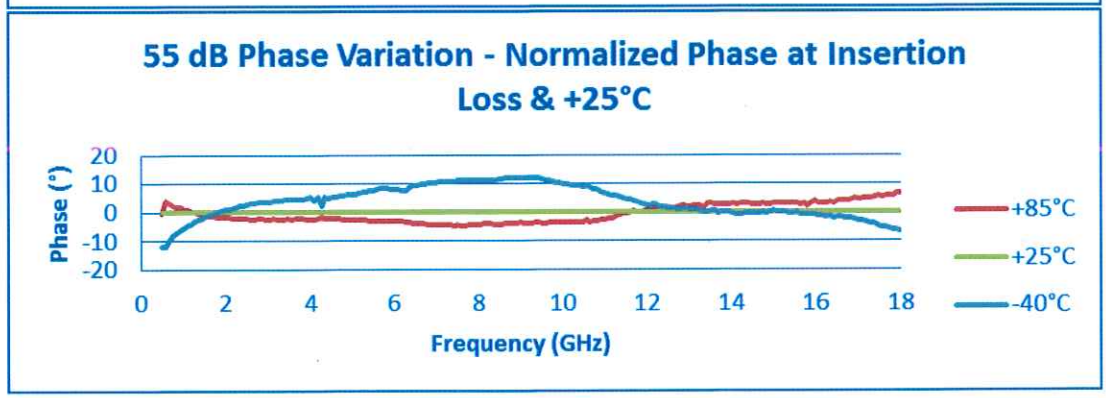

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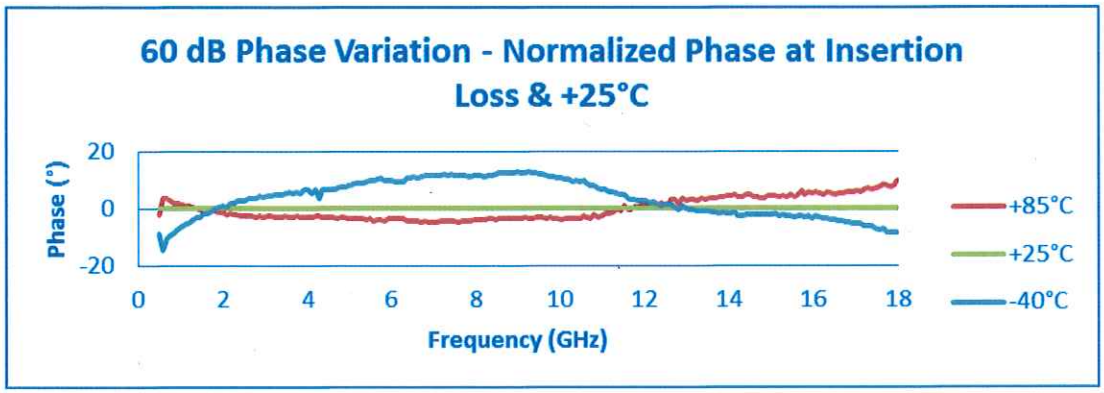

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