Typical Characteristics
On
PDT-8G12G-40-515-SFF

PDT-8G12G-40-515-SFF IS A 2-WAY HIGH POWER SWITCH THAT OPERATES OVER THE 8.0 TO 12.0 GHz FREQUENCY RANGE. THIS SWITCH HAS A MAXIMUM INSERTION LOSS OF 2 dB, A TYPICAL VSWR OF 1.8:1, AND A MINIMUM ISOLATION OF 40 dB. THIS UNIT HAS AN OPERATING POWER OF +40 dBm CW AVERAGE OR +57 dBm AT A 1 µs PULSE WIDTH AND A 1% DUTY CYCLE.

May 1, 2018

Designed By:
Matthew Berry / Sebastian Palacio / Narayanaswamy Shanmugam

Tested & Reported By:
Sebastian Palacio

7311-F Grove Road, Frederick, MD 21704 USA Phone: (301)662-5019 Fax: (301)662-1731
email: sales@pmi-rf.com

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DESCRIPTION

PMI MODEL: PDT-8G12G-40-515-SFF IS A 2-WAY HIGH POWER SWITCH THAT OPERATES OVER THE 8.0 TO 12.0 GHz FREQUENCY RANGE. THIS SWITCH HAS A MAXIMUM INSERTION LOSS OF 2 dB, A TYPICAL VSWR OF 1.8:1, AND A MINIMUM ISOLATION OF 40 dB. THIS UNIT HAS AN OPERATING POWER OF +40 dBm CW AVERAGE OR +57 dBm AT A 1 µs PULSE WIDTH AND A 1% DUTY CYCLE.

REVISIONS

ZONE	REV.	DESCRIPTION	DATE	APPROVED
	1	ORIGINAL RELEASE	10/14/16	
	B1	INSERTION LOSS UPDATE	5/2/18	
	B2	ECN # 25-0049	2/24/25	

SPECIFICATIONS

- FREQUENCY: ---------- 8.0 TO 12.0 GHz
- INSERTION LOSS: ---------- 2.0 dB MAXIMUM - 8.0 TO 10.0 GHz
  2.3 dB MAXIMUM - 10.0 TO 12.0 GHz
- ISOLATION: ---------- 40 dB MINIMUM
- OPERATING POWER: ---------- +40 dBm CW AVERAGE
  +57 dBm @ 1 µs PULSE WIDTH, 1% DUTY CYCLE
- VSWR: ---------- 1.8:1 TYPICAL
- SWITCHING SPEED: ---------- 200 ns MAXIMUM
- SUPPLY: ---------- +5 V @ 100 mA
  -15 V @ 60 mA
- 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. MOUNTING SURFACE FREE OF PAINT

LOGIC CONTROL TTL

TTL	J0-J1	J0-J2
HIGH	INSERTION LOSS	ISOLATION
LOW	ISOLATION	INSERTION LOSS

ENVIRONMENTAL RATINGS

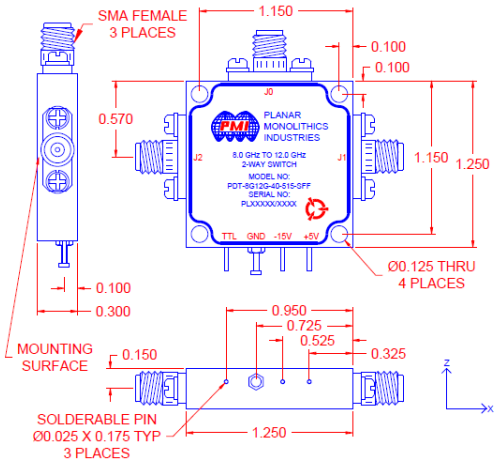
- TEMPERATURE: ---------- -54 °C TO +95 °C (OPERATING)
  -65 °C TO +125 °C (STORAGE)
- HUMIDITY: ---------- MIL-STD-202, METHOD 103B COND. B MAINTAIN RH 95±4% @ 63 °C (ALLOWED RF 85% WHEN TEMPERATURE-DOWN TRANSITION TIME.) THE RATE OF TEMPERATURE CHANGE: ABOVE 8 °C/HOURS
- SHOCK: ---------- MIL-STD-202, METHOD 213, COND J 20G (DURING OPERATION) &125g, 6 ms SAW TOOTH TYPE, 3-AXIS (NO OPERATION
- VIBRATION: ---------- MIL-STD-202, METHOD 214, COND A 12G 30 MIN X, Y, Z-AXIS (DURING OPERATION) & 20G 30 MIN X, Y, Z-AXIS (DURING OPERATION)
- ALTITUDE: ---------- MIL-STD-202, METHOD 105C, COND B 200Km (8.47e-7 hPa or 6.353e-7 torr/DURING OPERATION)
- 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

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

PMI CONFIDENTIAL AND PROPRIETARY

MECHANICAL OUTLINE



PLANAR MONOLITHICS INDUSTRIES, INC.
7311-F GROVE ROAD
FREDERICK, MARYLAND 21704 USA
TEL: (301)-662-5019, FAX: (301)-662-1731
WEB: www.pmi-rf.com, EMAIL: sales@pmi-rf.com
ISO 9001 CERTIFIED

APPROVALS	DATE
DRAWN: M.Berry	10/14/16
CHECKED	
ISSUED	

TITLE: PRODUCT FEATURE
PDT-8G12G-40-515-SFF
8.0 GHz to 12.0 GHz 2-Way Switch

SIZE	FSCM NO.	DWG NO.	REV.
A	05XQ0	27030580	B2

SCALE N:S SHEET 1 OF 2

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Typical Characteristics
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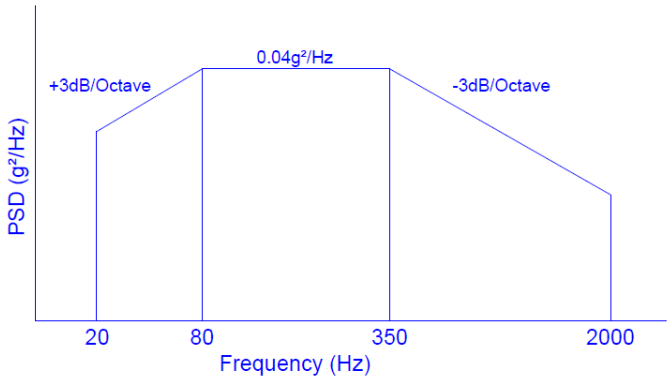
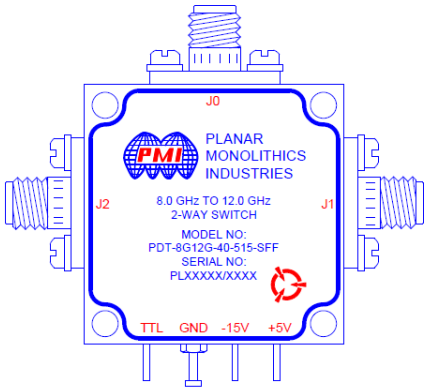
VIBRATION TESTING PROFILE:

1. VIBRATION DIRECTION IS Z-AXIS

2. VIBRATION FREQUENCY IS RANDOM VIBRATION 20-2000 Hz AND EXCLUDES RESONANCE FREQUENCY OF A TEST ZIG

3. VIBRATION MAGNITUDE IS 6grms, 0.04g²/Hz ±3 dB OCTAVE FOR 10 MINUTES





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TOLERANCES:
X.XX ±0.020
X.XXX ±0.010

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APPROVALS	DATE
DRAWN M.Berry	10/14/16
CHECKED	
ISSUED	

TITLE: PRODUCT FEATURE
PDT-8G12G-40-515-SFF
8.0 GHz to 12.0 GHz 2-Way Switch

SIZE	FSCM NO.	DWG NO.	REV.
A	05XQ0	27030580	B2

SCALE N:S SHEET 2 OF 2

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Typical Characteristics On PDT-8G12G-40-515-SFF

Typical Data @ 25°C

TEST. ITEM NO	PARAMETERS	SPECIFIED VALUE			TEST RESULTS	QA QC
1	Frequency Range	8.0 to 12.0 GHz			**8.0 to 12.0 GHz See Plots**	
2	Insertion Loss	2.0 dB Max – 8.0 to 10.0 GHz 2.3 dB Max – 10.0 to 12.0 GHz			**1.89 dB 2.11 dB See Plots**	
3	Isolation	40 dB Min			**44.5 dB See Plots**	
4	Operating Power	+40 dBm CW Average +57 dBm @ 1 µs Pulse Width & 1% Duty Cycle			**+40 dBm CW Average +57 dBm @ 1 µs Pulse Width & 1% Duty Cycle See Graph**	
5	VSWR	1.8:1 Typ			**1.52:1 See Plots**	
6	Switching Speed	200 ns Max			**196 ns See Plot**	
7	Video Transients	Not Specified			**2mV P-P**	
8	Control Logic	TTL	J0-J1	J0-J2	**Pass**	
		1	Insertion Loss	Isolation		
		0	Isolation	Insertion Loss		
9	Supply	+5 V @ 100 mA -15 V @ 60 mA			**+5 V @ 50 mA -15 V @ 0 mA**	

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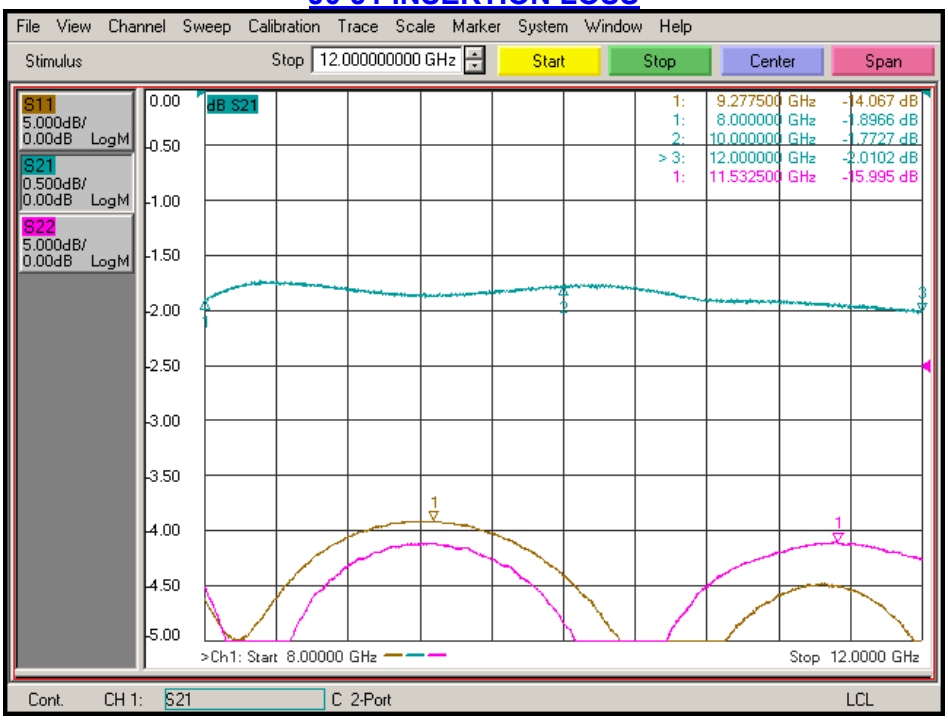
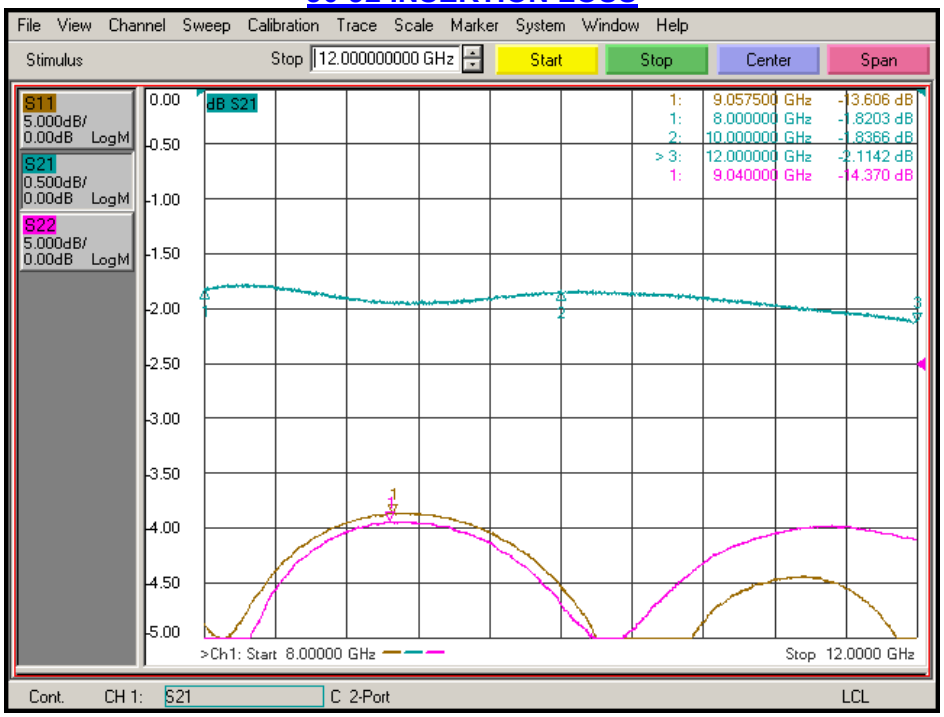
J0-J1 INSERTION LOSS



J0-J2 INSERTION LOSS



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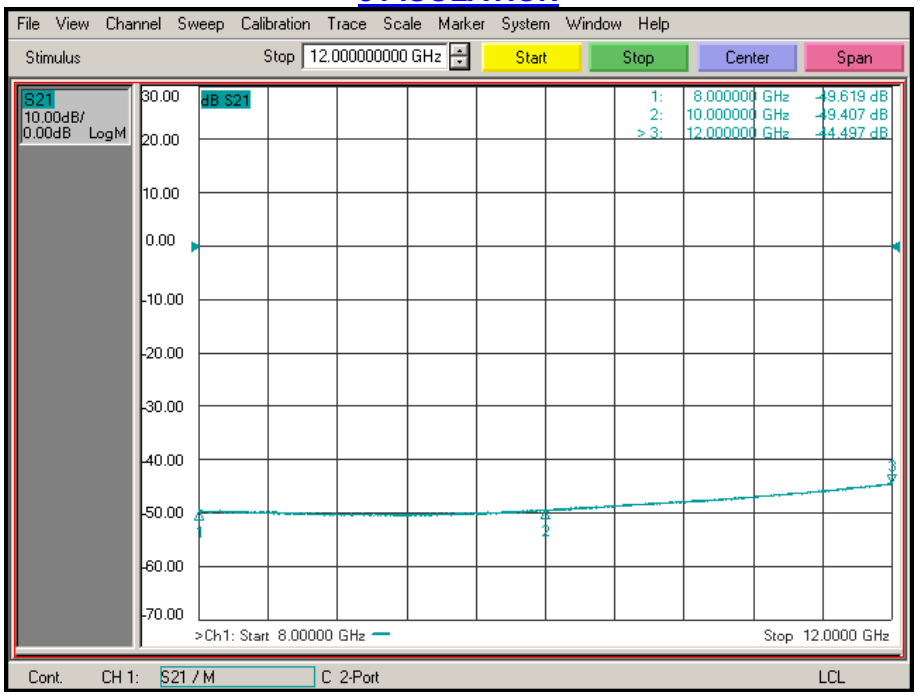
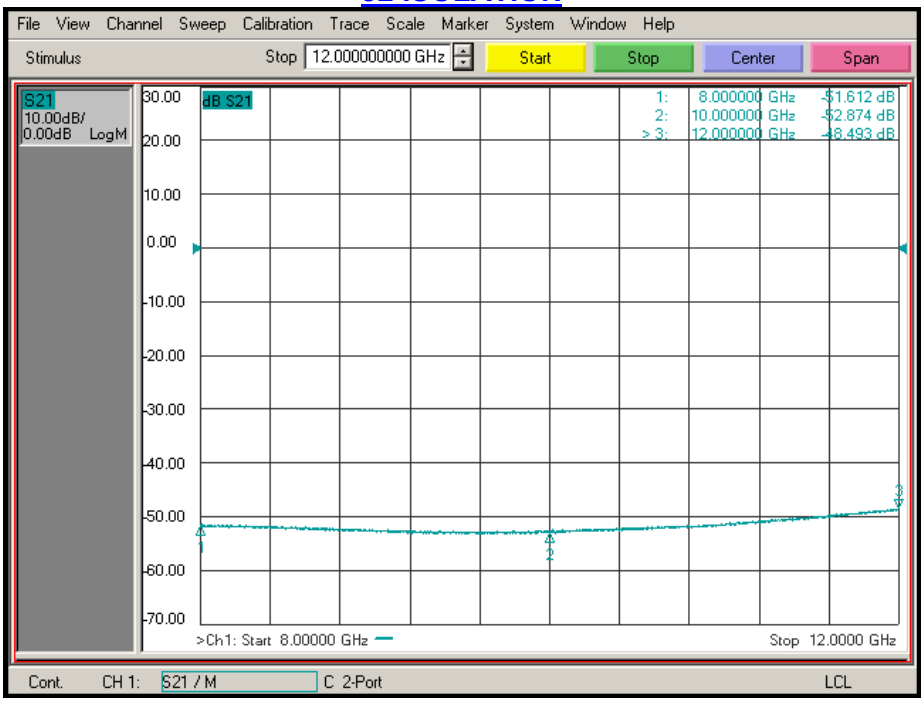
J1 ISOLATION



J2 ISOLATION



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Typical Characteristics
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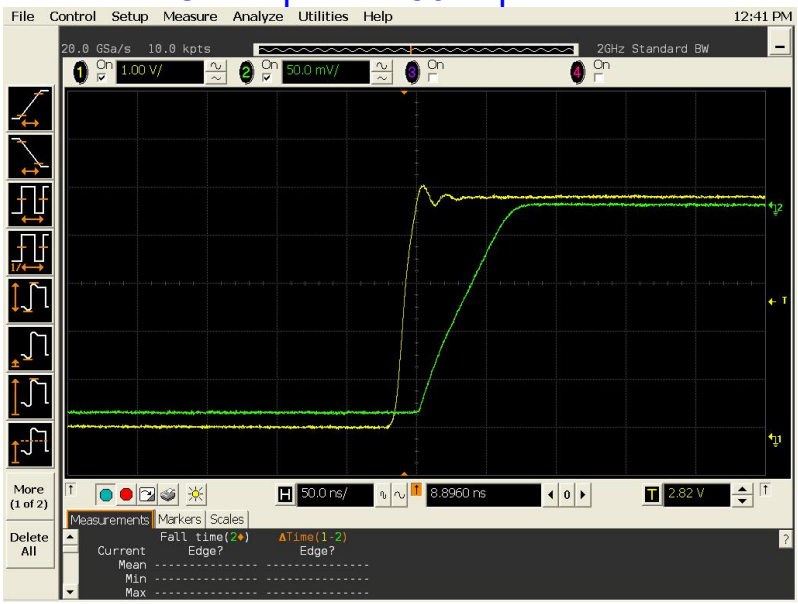
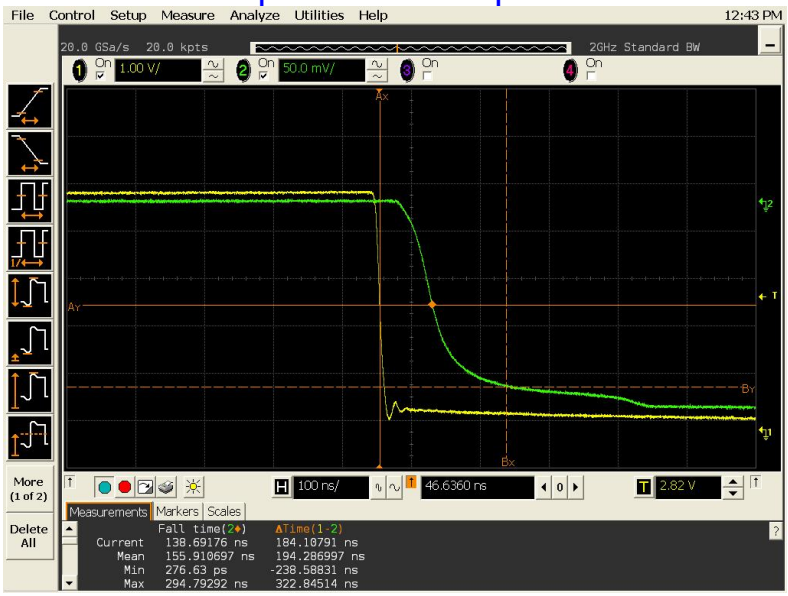
Switching Speed

OFF Speed – 50ns per Div.



ON Speed – 100ns per Div.



Yellow Trace: TTL Signal
Green Trace: RF Signal

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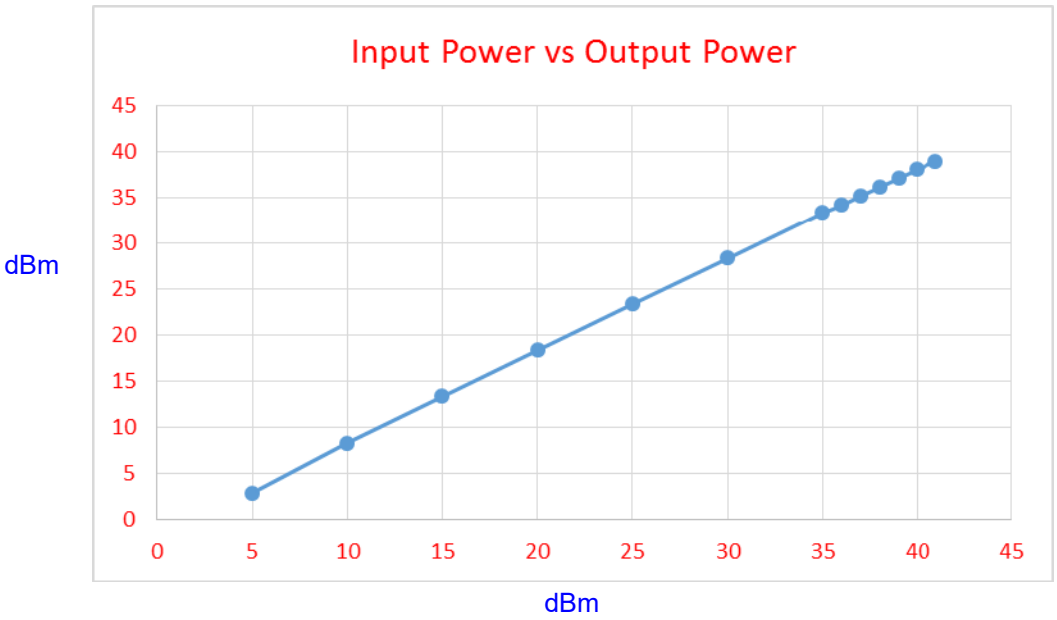
High Power Test

Test performed @ 8GHz



INPUT POWER	OUTPUT POWER
5	2.88
10	8.28
15	13.36
20	18.4
25	23.39
30	28.38
35	33.35
36	34.21
37	35.17
38	36.13
39	37.1
40	38.04
41	38.94

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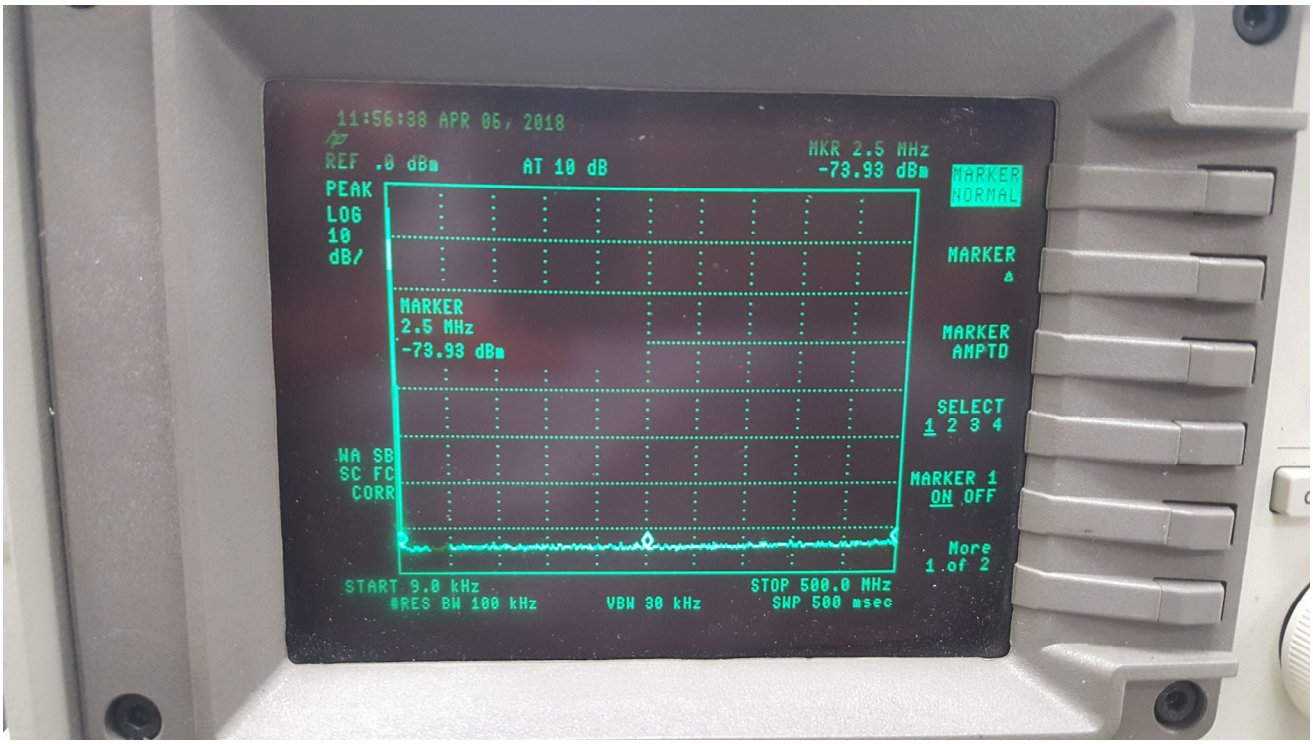
Switching Noise

Applying a square pulse to CTL pin (TTL) from 1kHz to 10MHz, 50% DC, switching noise plotted on a spectrum analyzer at ports J1 and J2 was as documented below.

Results indicate rejection better than -70dB



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