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## EDGE Analysis of the HI5828, Dual 12-bit Digital to Analog Converter with the ISL5217 Quad Digital Up Converter

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Objective:

These plots were obtained using an Intersil ISL5217 Digital Up Converter (DUC) evaluation board with the on-board Intersil HI5828 DAC. The objective is to demonstrate the performance under conditions of single channel GSM/EDGE (Global System for Mobile Communications/Enhanced Data Rate for GSM Evolution) for use in a BTS (Base Transceiver System). The combination of the DUC and the DAC provides a digital baseband to analog IF conversion. Similar performance is obtained with the HI5860, HI5828, and HI5960 DACs. The clock rates used here of 50, 60, and 80MHz are for generalization. The ISL5217 supports non-integer interpolation, thus the use of a multiple of the 13MHz reference clock is not necessary for the clock rate, but is certainly permitted.

## Contents

**Each case contains a spectral plot in a narrow frequency window (~5MHz) and in a wide frequency window (~25MHz).**

**50MSPS input rate:**

- 7MHz Output Frequency
- 12MHz Output Frequency
- 13MHz Output Frequency
- 19.2MHz Output Frequency

**60MSPS input rate:**

- 12MHz Output Frequency

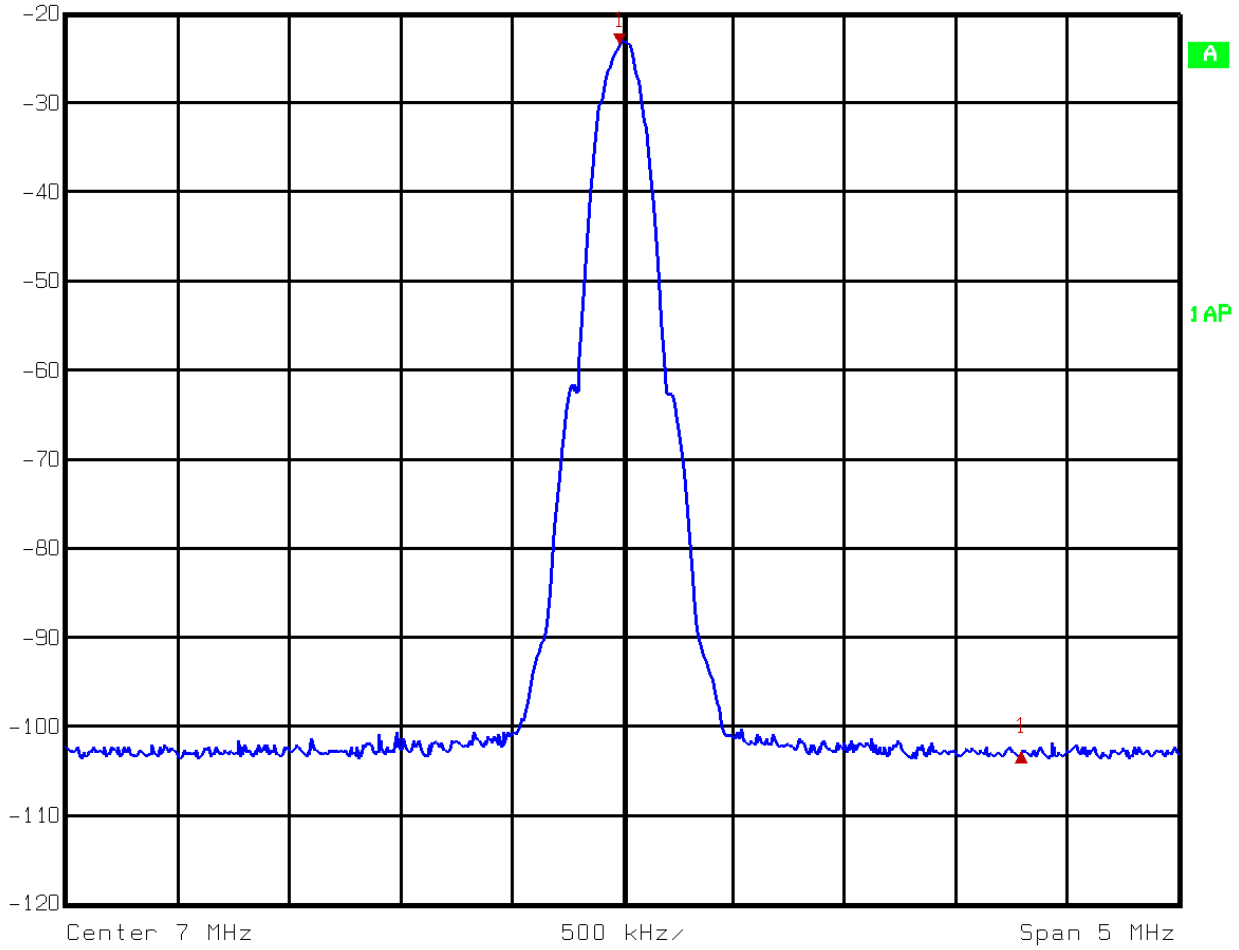
**80MSPS input rate:**

- 12MHz Output Frequency

Please note the title and comment found below each plot for more information on each case.




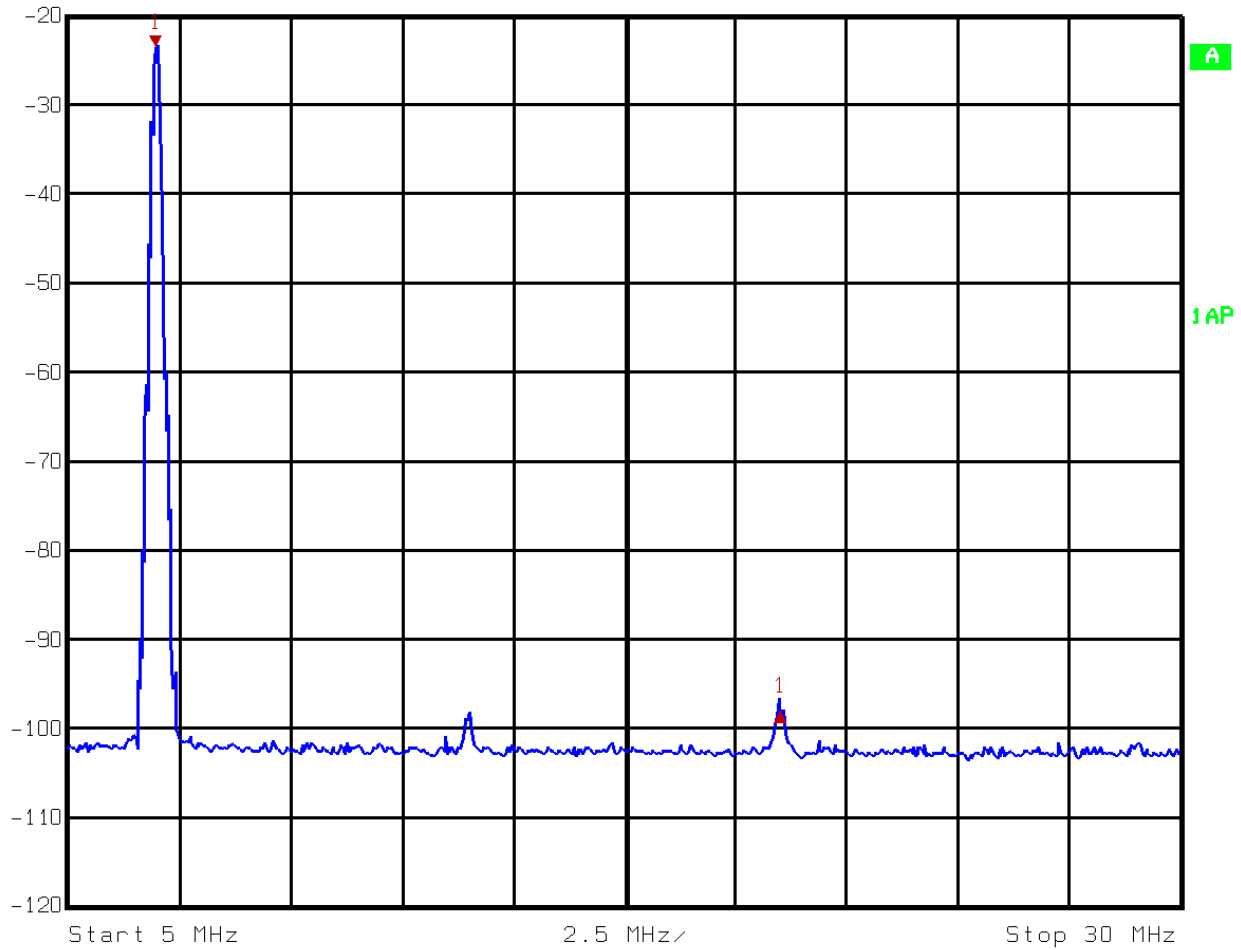
Delta 1 [T1] RBW 30 kHz RF Att 10 dB  
Ref Lvl -79.25 dB VBW 300 Hz  
-20 dBm 1.80000000 MHz SWT 1.4 s Unit dBm



Title: HI5828, 50Mc1k  
Comment A: ISL5217 driven, 7MHz EDGE Modulated  
Date: 2.OCT.2000 11:27:55

### HI5828, 50MSPS Clock, 7MHz EDGE Carrier, 5MHz Span

 Delta 1 [T1] RBW 30 kHz RF Att 10 dB  
Ref Lvl -74.61 dB VBW 300 Hz  
-20 dBm 14.03607214 MHz SWT 7 s Unit dBm

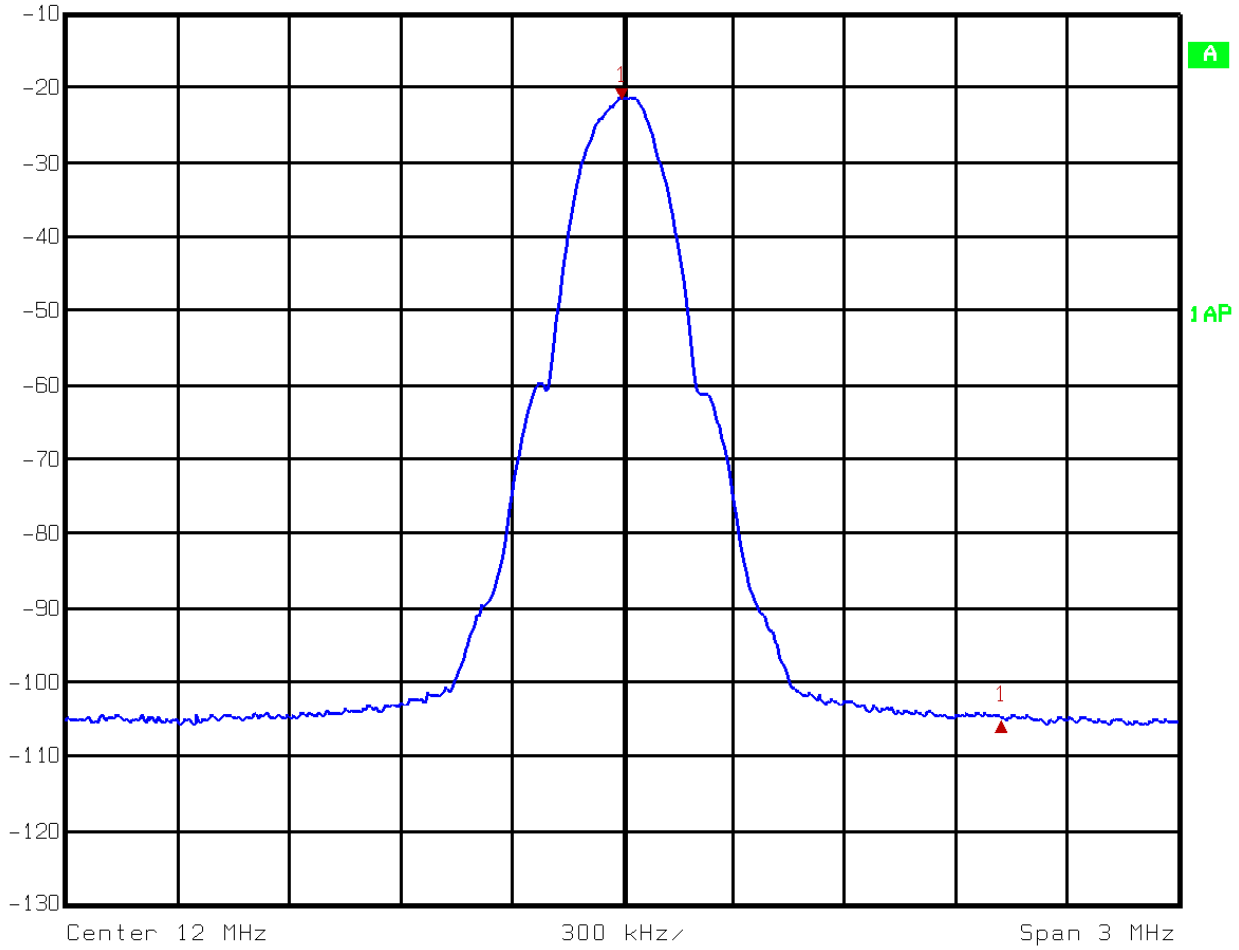


Title: HI5828, 50Mc1k  
Comment A: ISL5217 driven, 7MHz EDGE Modulated  
Date: 2.OCT.2000 11:22:29

### HI5828, 50MSPS Clock, 7MHz EDGE Carrier, 25MHz Span



Delta 1 [T1] RBW 30 kHz RF Att 0 dB  
Ref Lvl -83.61 dB VBW 100 Hz  
-10 dBm 1.02404810 MHz SWT 2.5 s Unit dBm



Date: 29.AUG.2000 13:56:20

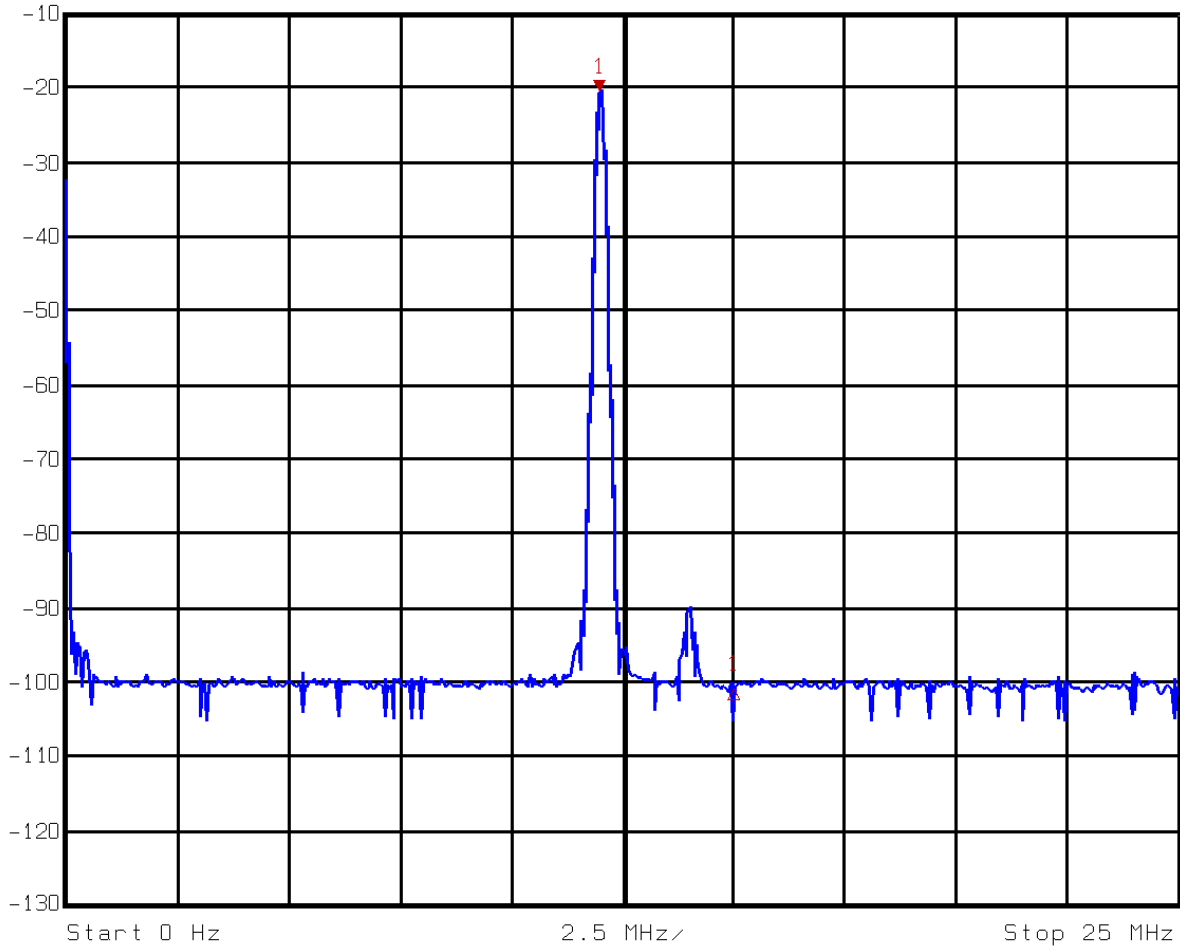
**HI5828, 50MSPS Clock, 12MHz EDGE Carrier, 3MHz Span**



Ref Lvl  
-10 dBm

Marker 1 [T1]  
-20.29 dBm  
12.02404810 MHz

RBW 30 kHz RF Att 10 dB  
VBW 500 Hz  
SWT 4.2 s Unit dBm

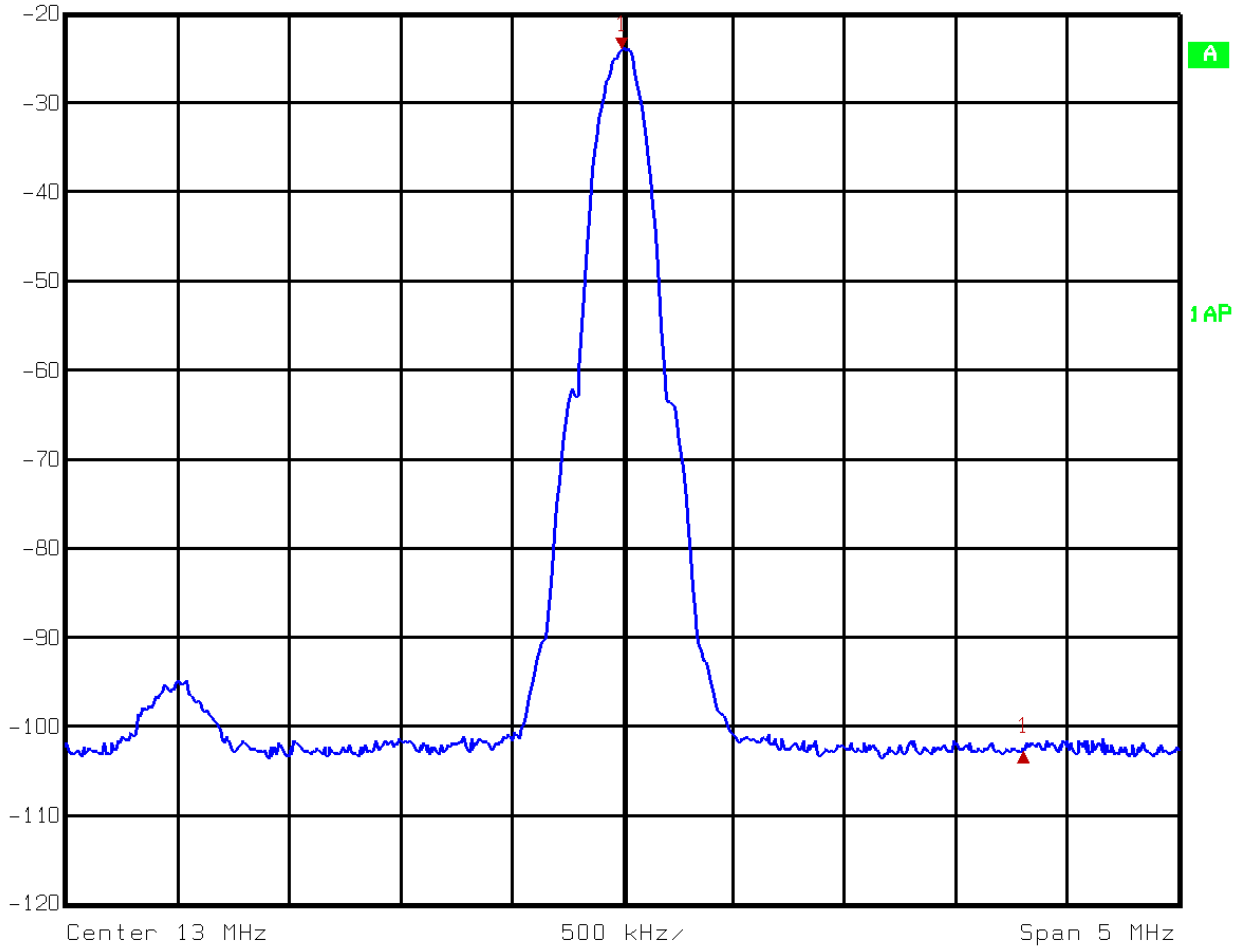


Date: 29.AUG.2000 13:46:11

### HI5828, 50MSPS Clock, 12MHz EDGE Carrier, 25MHz Span



Delta 1 [T1] RBW 30 kHz RF Att 10 dB  
Ref Lvl -78.72 dB VBW 300 Hz  
-20 dBm 1.80000000 MHz SWT 1.4 s Unit dBm

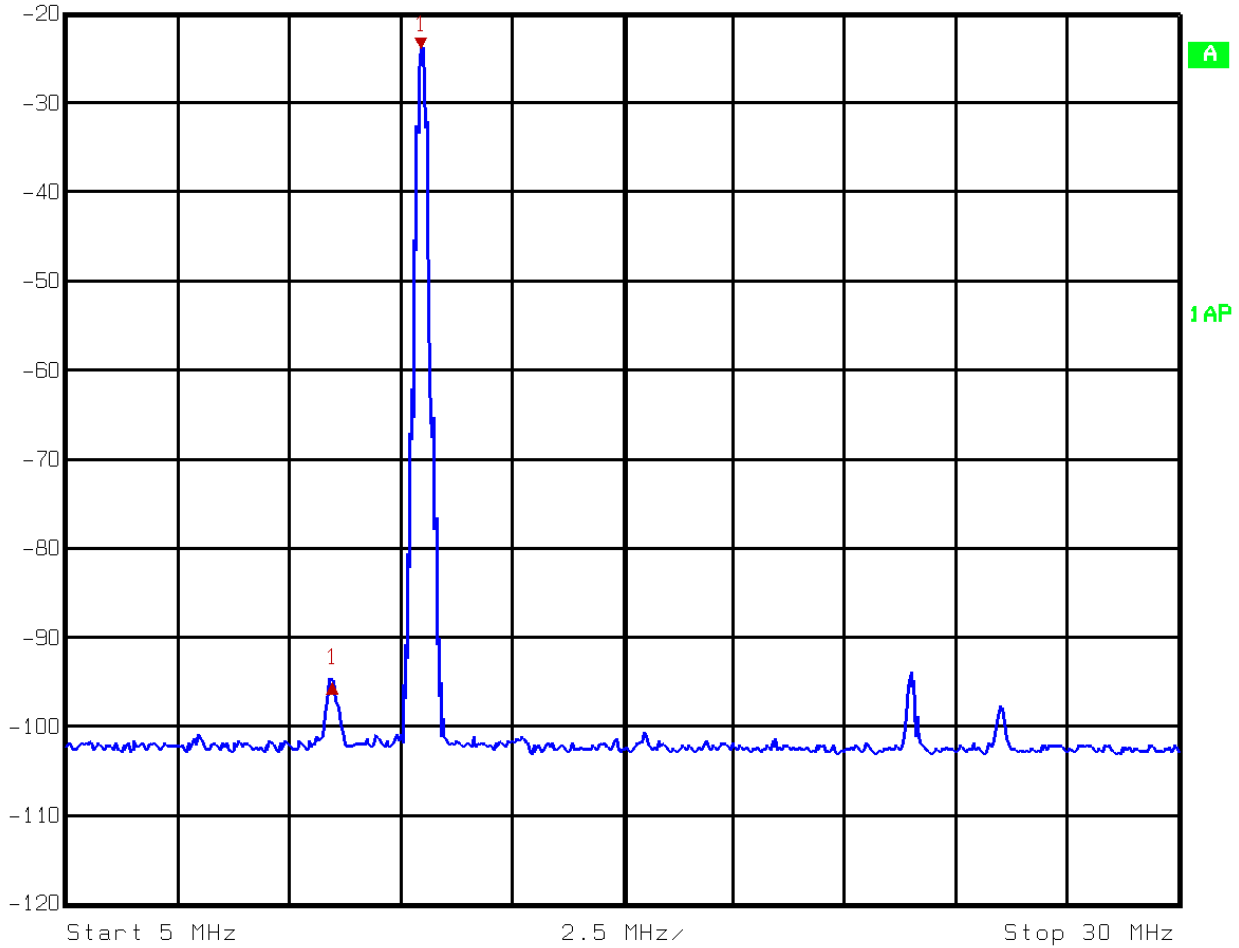


Title: HI5828, 50Mc1k  
Comment A: ISL5217 driven, 13MHz EDGE Modulated  
Date: 2.OCT.2000 11:26:49

### HI5828, 50MSPS Clock, 13MHz EDGE Carrier, 5MHz Span



Delta 1 [T1] RBW 30 kHz RF Att 10 dB  
Ref Lvl -20 dBm -71.00 dB VBW 300 Hz  
-2.00400802 MHz SWT 7 s Unit dBm

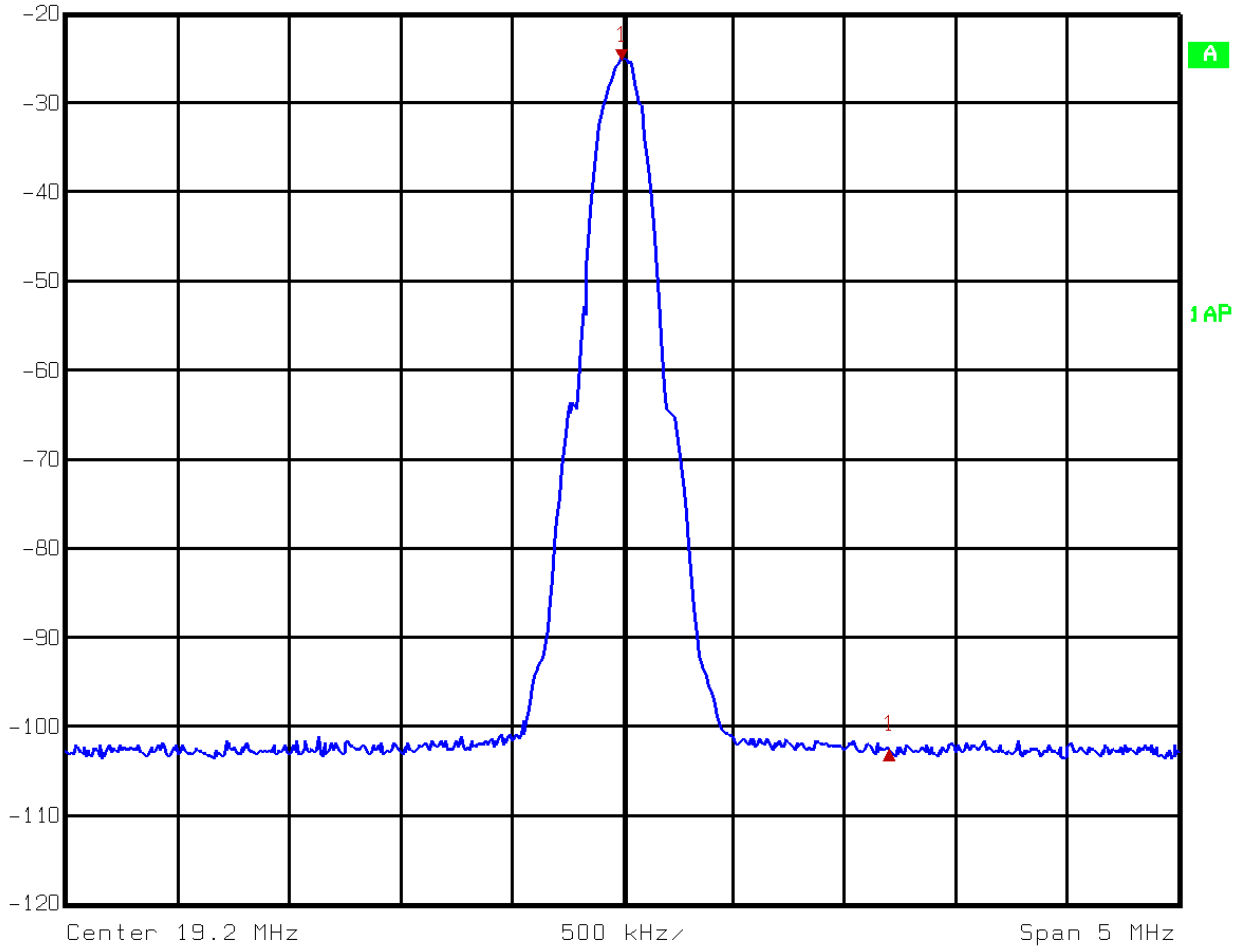


Title: HI5828, 50Mclk  
Comment A: ISL5217 driven, 13MHz EDGE Modulated  
Date: 2.OCT.2000 11:24:10

### HI5828, 50MSPS Clock, 13MHz EDGE Carrier, 25MHz Span



Delta 1 [T1] RBW 30 kHz RF Att 10 dB  
Ref Lvl -77.26 dB VBW 300 Hz  
-20 dBm 1.20000000 MHz SWT 1.4 s Unit dBm



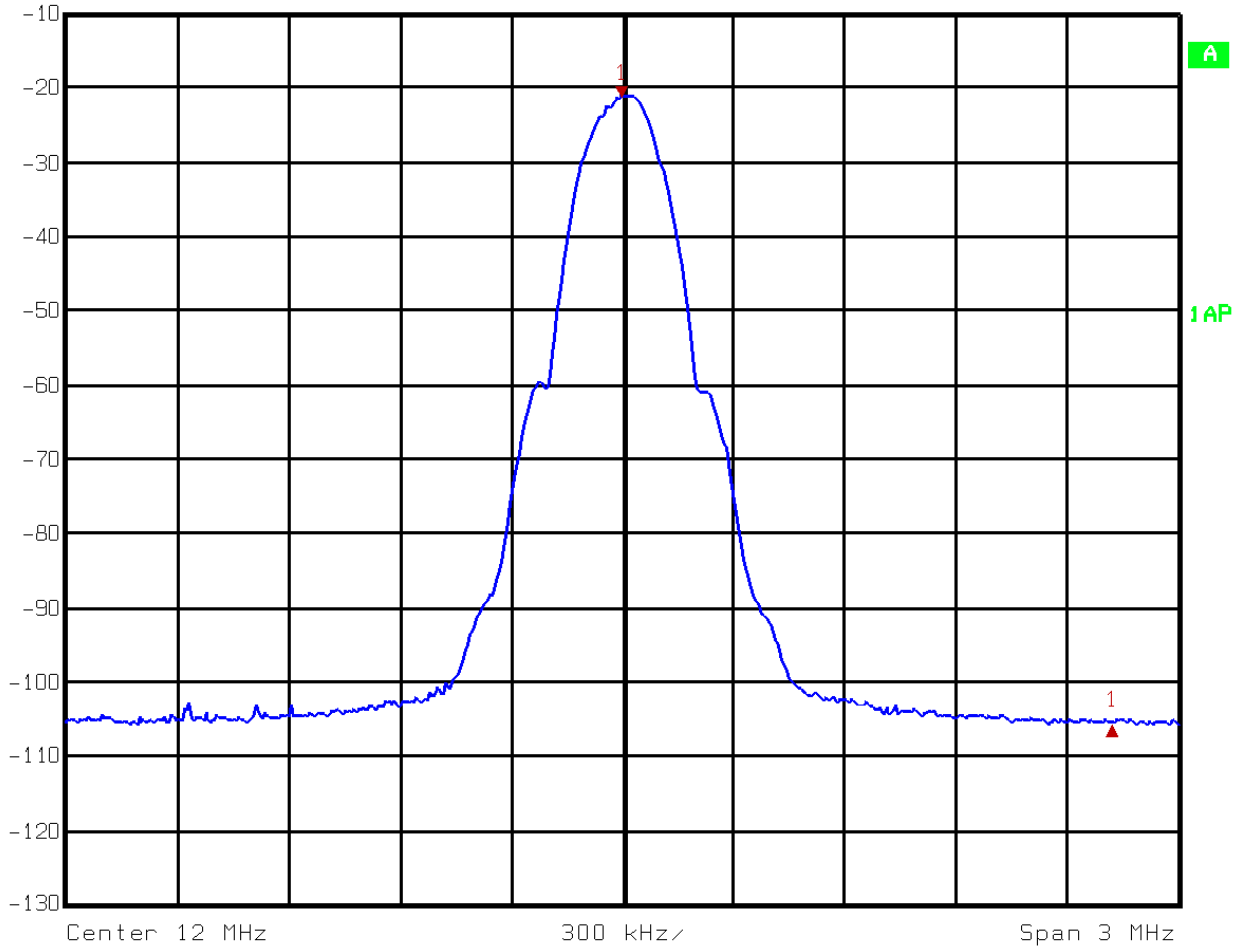
Title: HI5828, 50Mc1k  
Comment A: ISL5217 driven, 19.2MHz EDGE Modulated  
Date: 2.OCT.2000 11:25:42

### HI5828, 50MSPS Clock, 19.2MHz EDGE Carrier, 5MHz Span





Delta 1 [T1] RBW 30 kHz RF Att 0 dB  
Ref Lvl -84.25 dB VBW 100 Hz  
-10 dBm 1.32264529 MHz SWT 2.5 s Unit dBm



Date: 29.AUG.2000 14:12:08

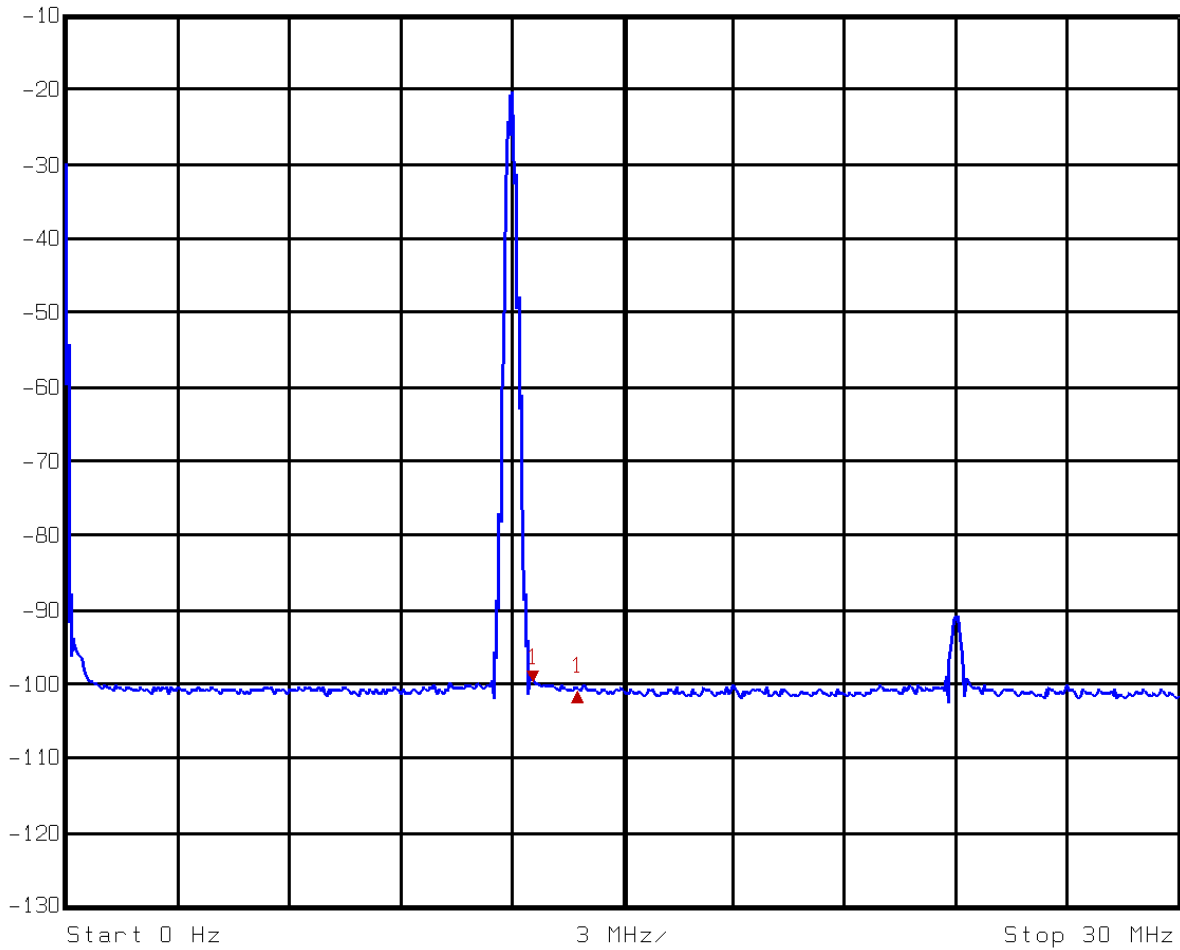
### HI5828, 60MSPS Clock, 12MHz EDGE Carrier, 3MHz Span



Ref Lvl  
-10 dBm

Delta 1 [T1]  
-1.12 dB  
1.20240481 MHz

RBW 30 kHz RF Att 10 dB  
VBW 300 Hz  
SWT 8.4 s Unit dBm

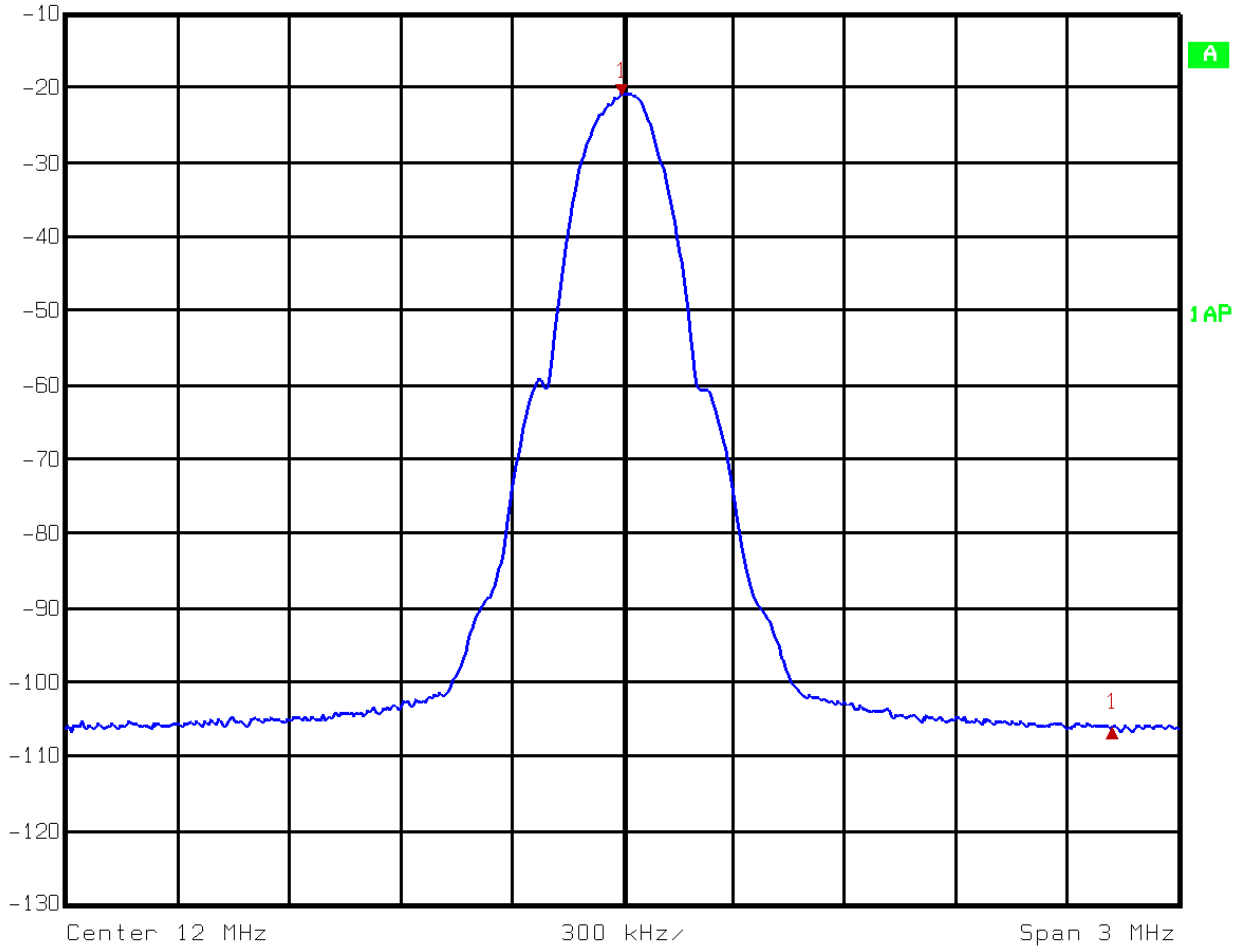


Date: 29.AUG.2000 14:11:34

### HI5828, 60MSPS Clock, 12MHz EDGE Carrier, 30MHz Span



Delta 1 [T1] RBW 30 kHz RF Att 0 dB  
Ref Lvl -84.92 dB VBW 100 Hz  
-10 dBm 1.32264529 MHz SWT 2.5 s Unit dBm

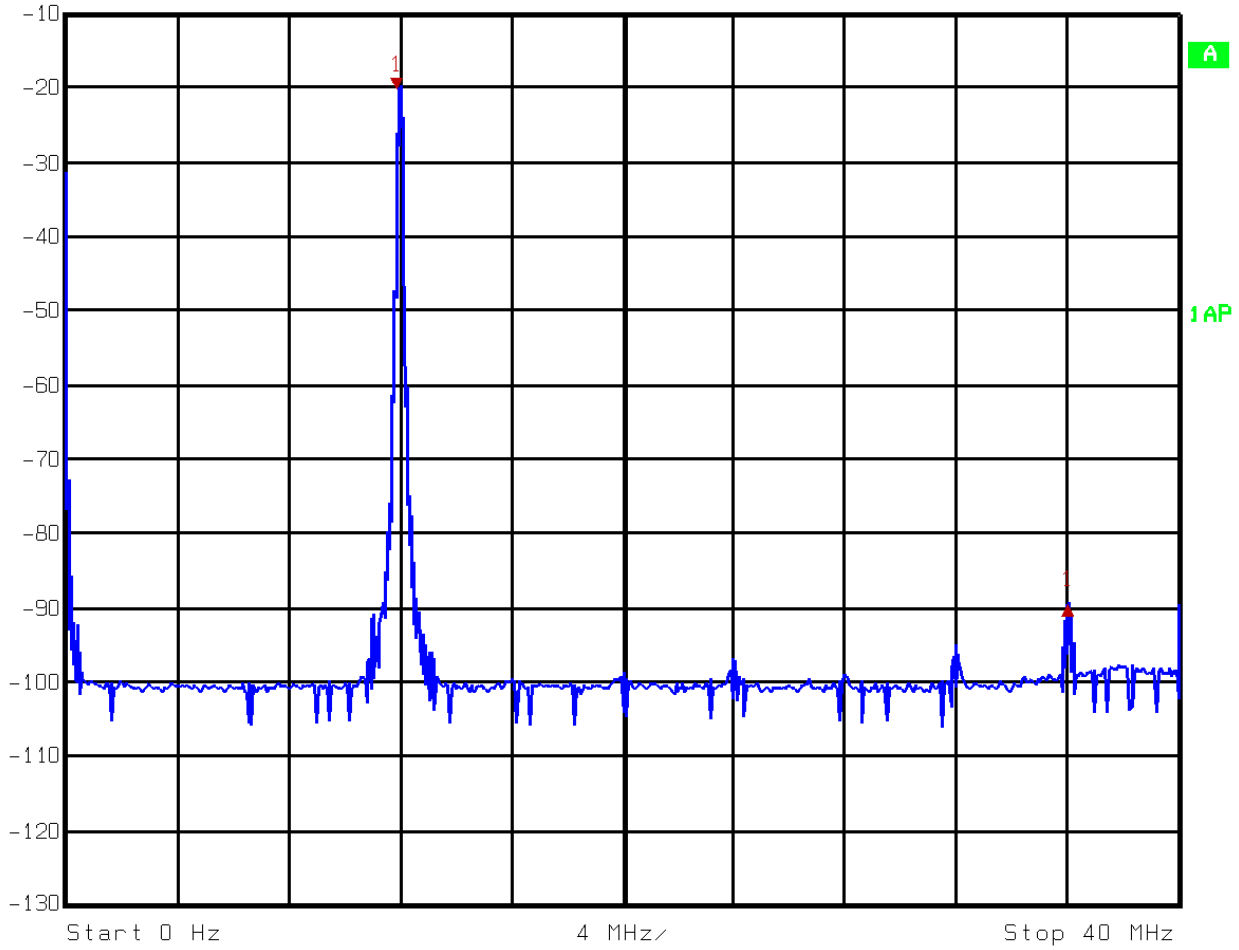


Date: 29.AUG.2000 14:13:06

**HI5828, 80MSPS Clock, 12MHz EDGE Carrier, 3MHz Span**



Delta 1 [T1] RBW 30 kHz RF Att 10 dB  
Ref Lvl -68.93 dB VBW 500 Hz  
-10 dBm 24.12825651 MHz SWT 6.8 s Unit dBm



Date: 29.AUG.2000 14:17:33

### HI5828, 80MSPS Clock, 12MHz EDGE Carrier, 40MHz Span