EXHIBIT # 16

FCC Requirements CRF 47 Part 2.1033,c (13)

Modulation System Description

JXBLMDSXP4-DS3

Type of Emission, Necessary Bandwidth and Modulation Characteristics for DS3

The DMC XP4 T-Carrier radio is employed to process digital information of various types. Voice, data, television, and many other information types can be encoded and transmitted across this radio system. The emission designator (35MOF7W) was developed by the following process:

The necessary bandwidth was developed from the following equation: CFR 47 part 2.202, (b)

For DS3 Data rate (including overhead):

Bn = 2 DK + B

B = R/log(base2) of S

B = (49.3Mbits/sec.)/2 = 24.65M Symbols/sec.

Where:
Bn = Necessary bandwidth in MHz
R= Aggregate bit rate in bits/sec = 49.3 Mbits/sec.
S= number of transmitter levels = 4
D= deviation in MHz = 5.175 MHz
K= 1 for this modulation type

Therefore Bn = (2) (5.175E+6) (1) + 24.65E+6 = 35.0 MHz

The F7W portion of the designator is derived as follows
F = Frequency Modulation [CFR47 part 2.201 (c)]
7 = is the nature of the modulation signal [CFR47 part2.201 (d)]
W = is the type of information transmitted [CFR47 part2.201 (e)]

The resultant complete emission designator can be stated as 35MOF7W

CFR 47 Part2.1051 / 101.111 Spurious Emissions at Antenna terminal JXBLMDSXP4-DS3

The radio frequency generated within the equipment and appearing at the antenna terminal has been measured as shown in the data section of this report. The data limits required by the commission can be found in CFR 47 Part 101.111 a,(2),ii. / 2.1051

Attenuation below means output power = 11 +.4(P-50) + 1O*Log B

P = Percentage removed from the carrier frequency
B = Authorized bandwidth = 35 MHz

Frequency Removed (MHz)	Attenuation below carrier(db)
-87.5	-29
-87.5	-56
-43.36	-56
-17.5	-26.44
-17.5	0
0	0
17.5	0
17.5	-26.44
43.36	-56
87.5	-56
87.5	-29
110000.0	-29

Outside 250% of the occupied 99% width uses CFR, Part 101.111 a,(2) iii

In any 4 KHz band, the center frequency removed from the center frequency by more than 250% of the authorized:

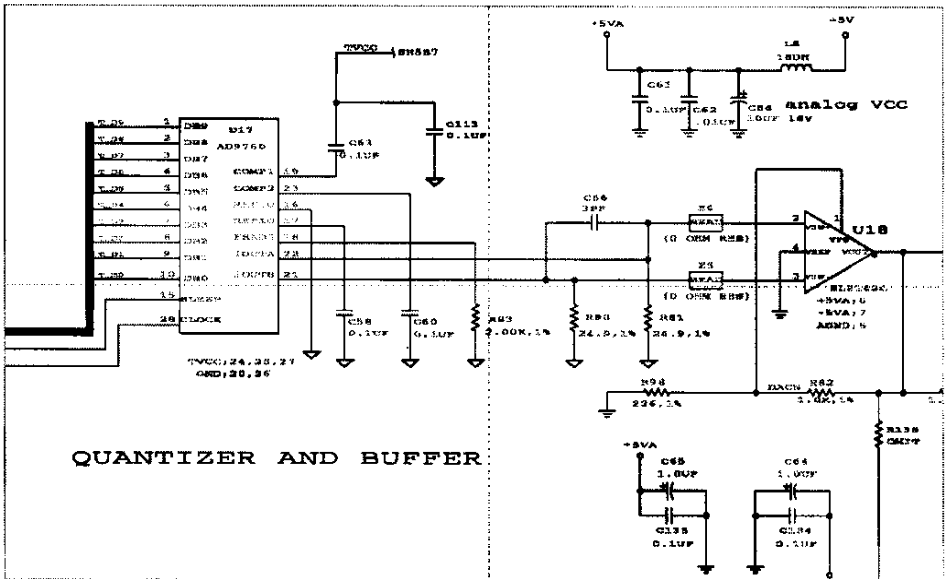
Attenuation below the means carrier power =/< 43 + 10* Log(Means Output Power)

Means output power level = .0398Watts

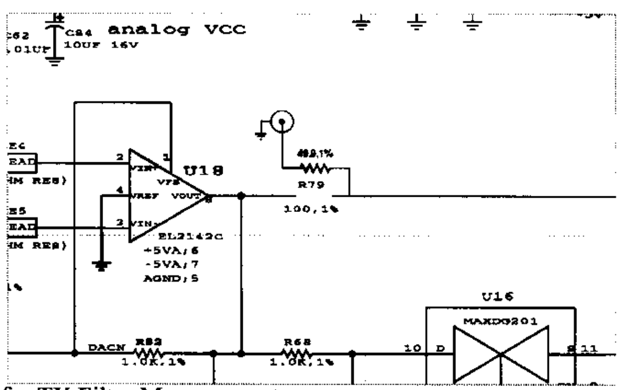
Attenuation =/< 43 -14 = 29 dBC

Transmitter Spurious and Modulation Control

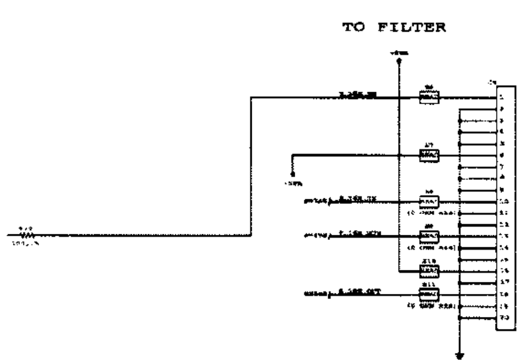
1. Introduction
   1.1. This document describes expected and measured transmit filter on DS-3 4FSK Signal Processor Printed Circuit Assembly (SigProc).



1.2. Fig. 1 4FSK Source
   1.2.1. The 4FSK waveform is sourced by a 10-Bit Video DAC AD9760-50. At present the DAC only outputs one of four levels, and all filtering is performed by the analog transmit filters.
   1.2.2. The differential output of the DAC is amplified by an analog differential amplifier EL2142C; this has the effect of carrying a terminated differential signal across a noisy digital groundplane to become a single-sided waveform on a quiet groundplane.
   1.2.3. The output of this amplifier is designed to not limit for the maximum DAC output excursion

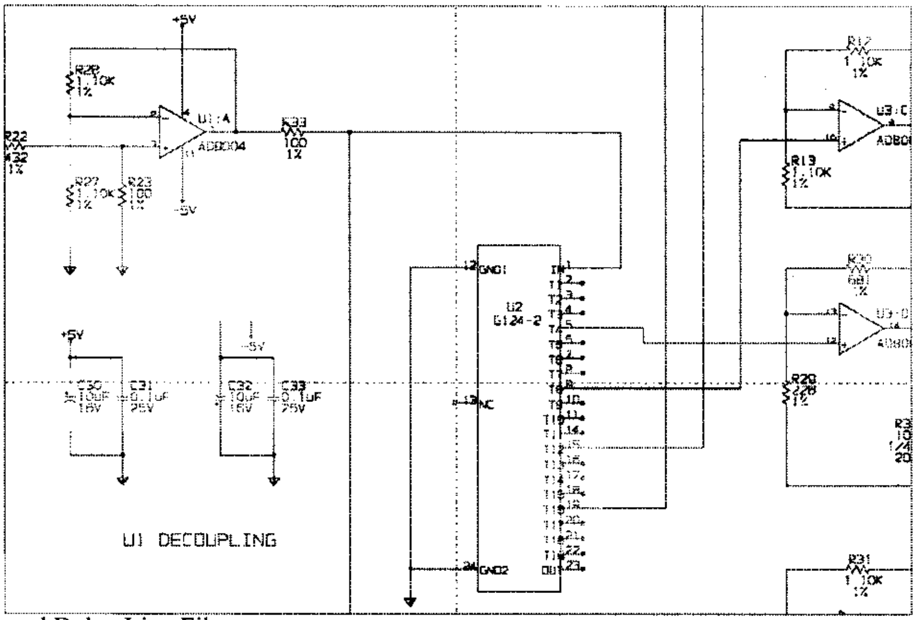


1.3. Fig. 2 Test Connection for TX Filter Measurement.

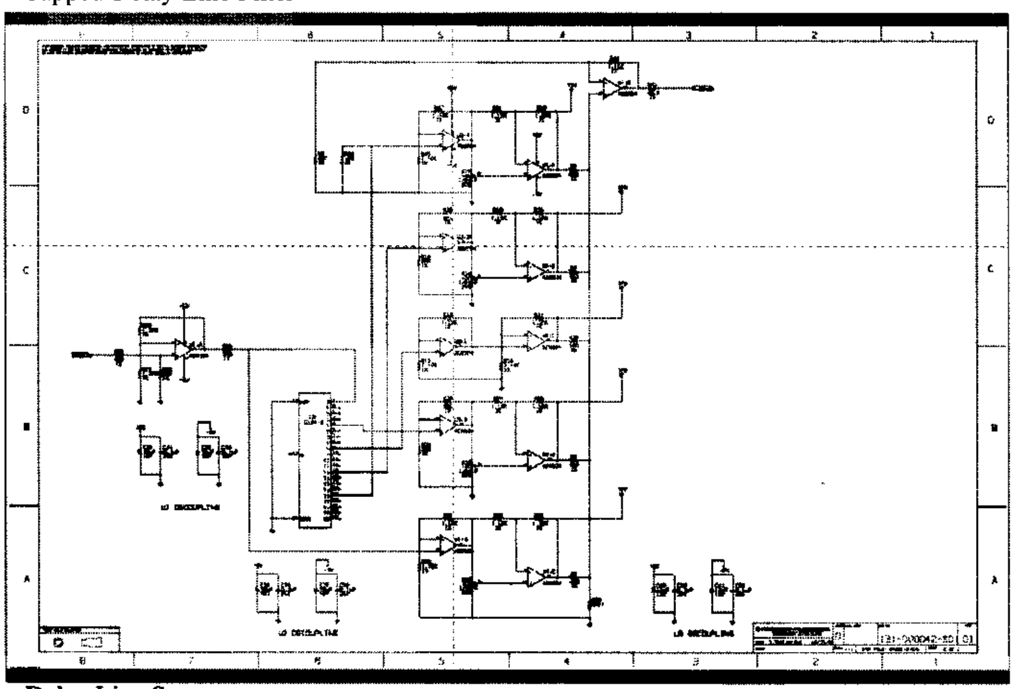


1.4. Fig. 3 SigProc Filter Daughter Card Interface

1.4.1. **The SigProc Filter Daughter Card TX section is a five-tap analog delay line equalizer with each tap amplitude adjustable within a specified range using a potentiometer.** Taps are spaced at intervals of **about one symbol time** (40.6ns).



1.5. Fig. 4 Tapped Delay Line Filter



1.6. **Fig. 5** Delay Line Summer

1.6.1. **Unfiltered four-level waveforms** spaced at about 1 symbol interval **are scaled, possibly inverted and added in the tapped delay line filter**

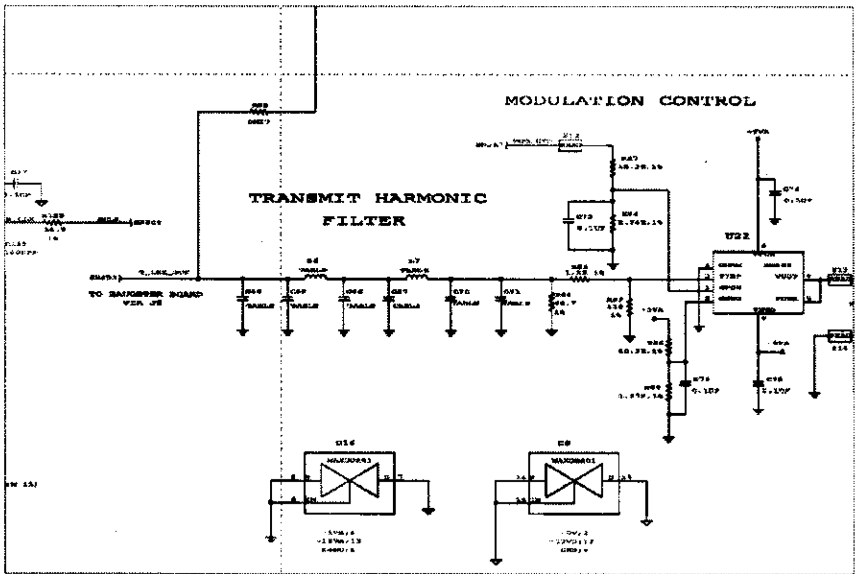
1.6.2. **The center tap is fixed: all other taps are adjustable**

1.6.3. **The center tap has a fixed gain of 1**

1.6.4. **The two taps immediately adjacent to the center tap have a maximum gain of ± .4129**

1.6.5. **The two end taps have a maximum gain of** ± .1000

1.6.6. **This equalizer is used to cancel a major part of the linear part of the intersymbol interference that the subsequent radio creates.**



1.7. Fig. 6 Transmit Harmonic Filter

1.7.1. The equalized output is filtered using a Chebyshev 5th-order filter with 66 ohm source and **load impedance**. The filter output is matched using a pi-pad into the 100-ohm input impedance of the voltage-controlled amplifier.

1.7.2. The filter ratio of CIN to C1 is 127/220 or .5772 (.1dB ripple Chebyshev filter is .5807 ratio)

1.7.3. Inductors are wound toroids (9 turns of 30AWG enameled wire wound in a single layer on MICROMETALS T25-2 ferrite core, .446uH 5% adjusted and set by manufacturer using Q-Dope adhesive, marked with yellow dot on red wire) with design Q exceeding 140 for frequencies between 4.0MHz and 15 MHz.

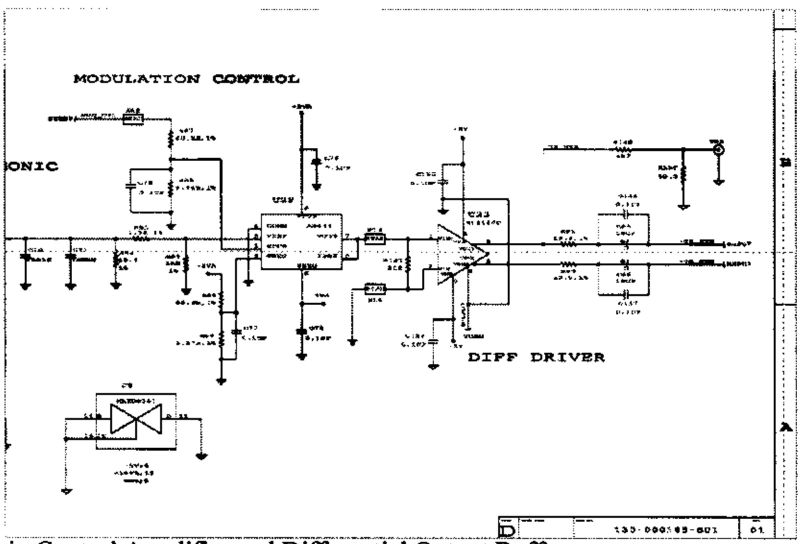
1.7.4. The prototype filter inductance is .28665 uH

1.7.5. The prototype filter capacitance is 98.1661pF

1.7.6. The prototype filter resistance is 54 ohms

1.7.7. The prototype filter frequency is 30MHz

1.7.8. The actual filter load is 47 ohms. The actual filter source is 50 ohms.



1.8. **Fig. 7** Transmit Gain Control Amplifier and Differential Output Buffer

1.8.1. The filter output is into an adjustable-gain amplifier with 100 ohms input impedance through a matching pad. This amplifier is used during system adjustment test to set the FM modulation index. The adjustment range is ± 6dB adjustable in .05dB increments.

1.8.2. The eye waveform is examined at TP2 during module test to verify the eye pattern closely matches a pictured eye pattern in terms of eye shape and closure and amplitude. The transmit RF spectrum is verified against a mask during Factory Acceptance Testing, as is the system BER performance versus RF level over temperature.

1.8.3. The Gain Control Amplifier output drives a differential amplifier (which bridges from the relatively-quiet PCA to the noisy backplane/receiver).

2. Measured Transmitter Filter

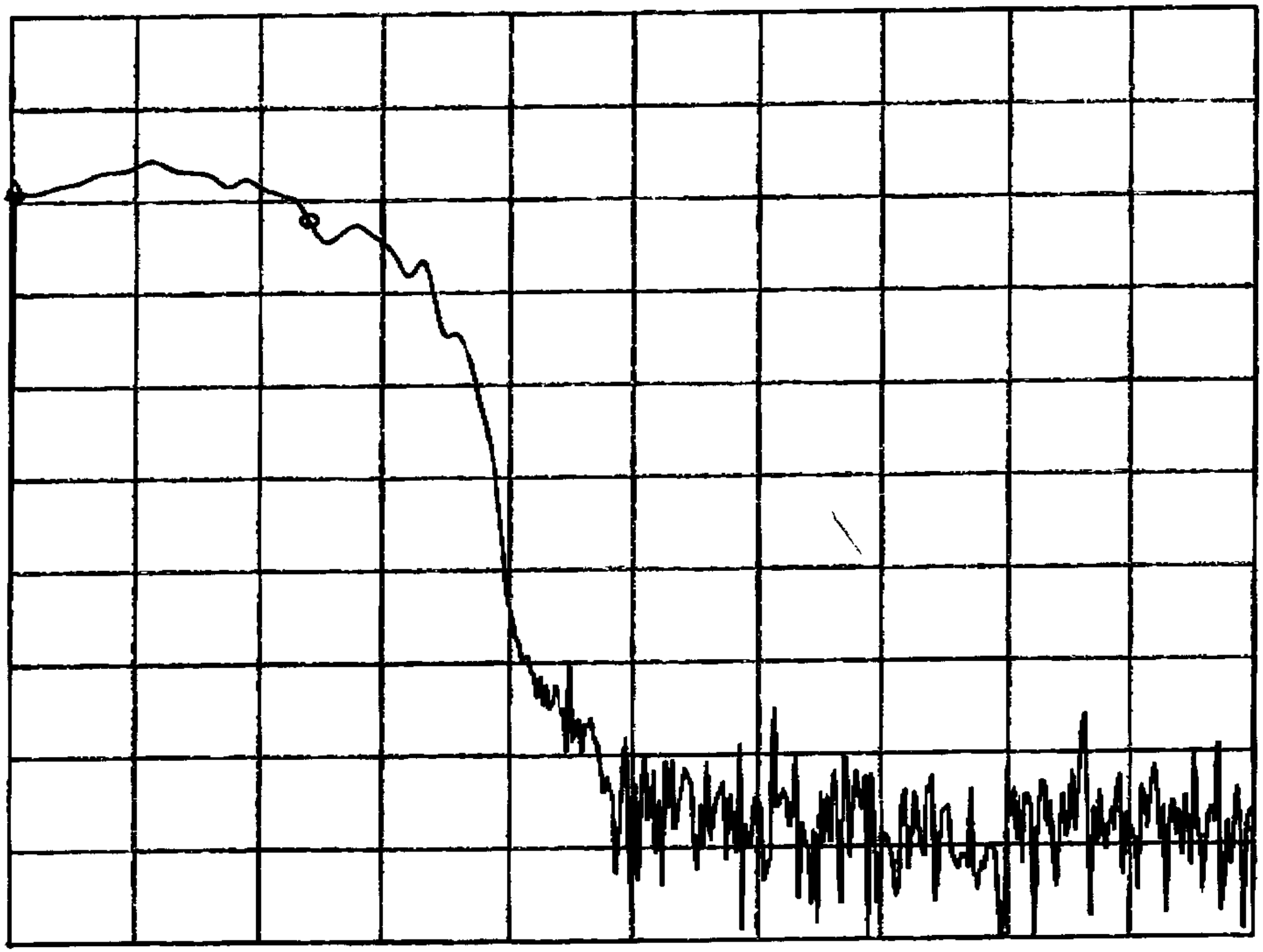
2.1. An HP3577B Network Analyzer (5Hz – 200MHz) is connected to the UUT, which has been mounted in a standard DMC Link Simulator Test Fixture.

2.2. R79 100 1% is removed. The resistor is replaced by the B (output) port of the Network Analyzer and a 50 ohm 1% resistor (return loss is not measured).

2.3. The PWB TX-EYE output is measured at the Link Simulator TX EYE output, which is connected directly to the A (input) Port of the Network Analyzer. This output is one-half of the normal differential SigProc output

2.4. The gain and group delay of the connection are scanned and plotted.

REF LEVEL /DIV OFFSET 23 750 000.000Hz
-10.000dBm 10.000dB MAG (A) -3.158dB



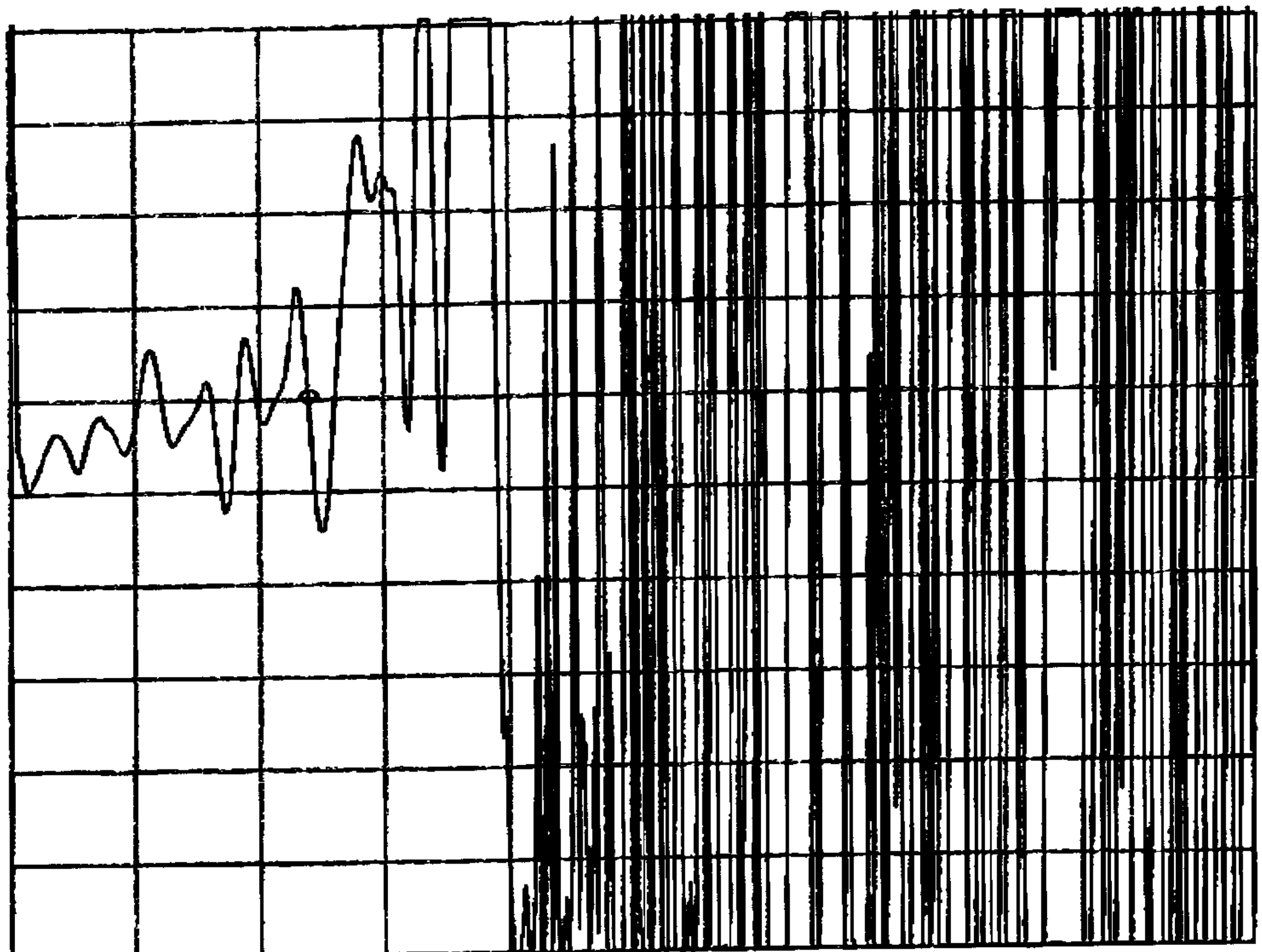
START 0.000Hz STOP 100 000 000.000Hz
AMPTD -10.0dBm

MAY 26, 1999
PETER J CASTAGNA
PLOTS : R Binning
Single-Sided DS-3
Transmit FILTER
and EQUALIZER
AMPLITUDE VERSUS FREQ.

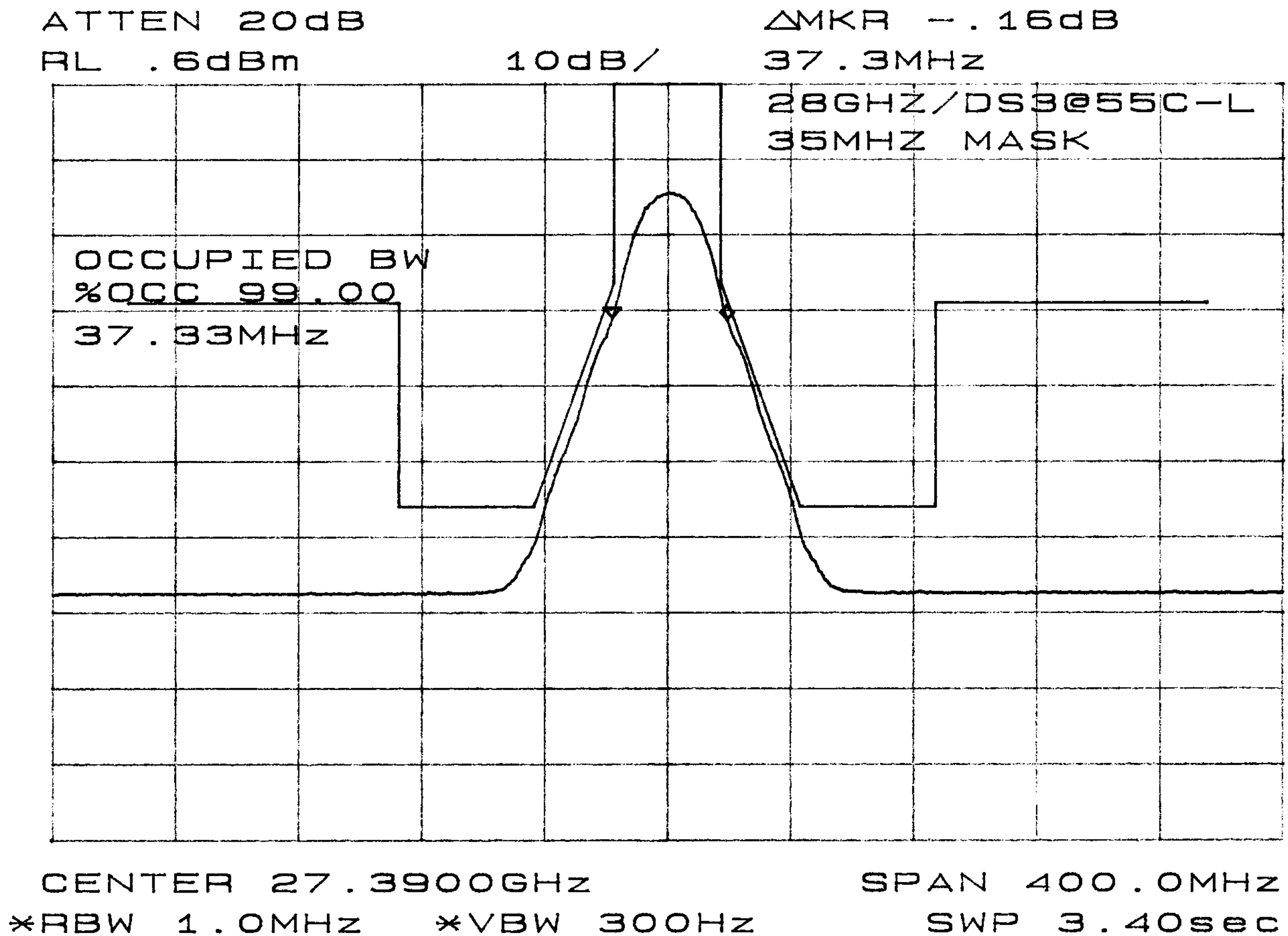
REF LEVEL /DIV OFFSET 23 750 000.000Hz
120.00nSEC 20.000nSEC DELAY (A) 140.98nSEC

May 26, 1999
Peter J. Castagna
Plot: R Binning

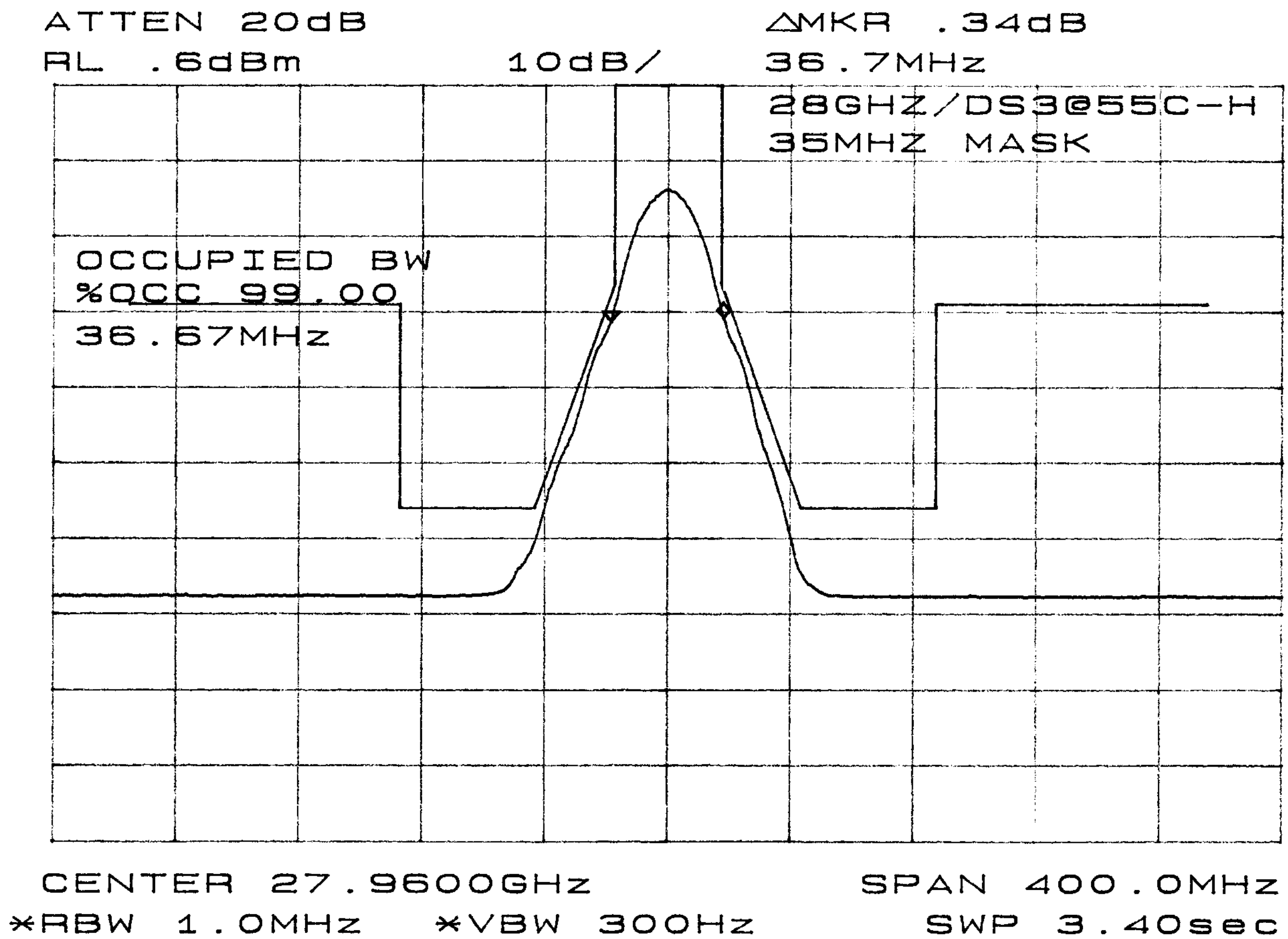
Single-Sided DS-3
Transmit Filter and
Equalizer
Group Delay Versus
Frequency



START 0.000Hz STOP 100 000 000.000Hz
AMPTD -10.0dBm DELAY APER 500.0kHz



ATTEN 20dB
RL .6dBm
10dB/
ΔMKR -.16dB
37.3MHz
28GHZ/DS3@55C-L
35MHZ MASK
OCCUPIED BW
%OCC 99.00
37.33MHz
CENTER 27.3900GHz
SPAN 400.0MHz
*RBW 1.0MHz
*VBW 300Hz
SWP 3.40sec


ATTEN 20dB
RL .6dBm
10dB/
ΔMKR .34dB
36.7MHz
28GHZ/DS3@55C-H
35MHZ MASK
OCCUPIED BW
%OCC 99.00
36.67MHz
CENTER 27.9600GHz
*RBW 1.0MHz
*VBW 300Hz
SPAN 400.0MHz
SWP 3.40sec