

## **Technical Tip**

### **QAM6 Spurious Outputs**

The Technicolor QAM6 modulator will create spurious signals that usually fall in a frequency range usually well above normally used bandwidth. However if the signals fall into a used frequency some picture impairments could occur, especially with analog video sources.

For example modulating channel 2 or 54 MHz create a “spur” at 1110 MHz which is well above usable spectrum for CATV.

As the channel frequency increases the spurs fall into a lower frequency range. For example modulating channel 55 411 MHz creates a “spur” at 756 MHz or channel 117.

It is important remember these are QAM frequencies not mapped channel assignments.

Realistically the first channel that may cause a spur in usable frequency would be channel 91 at 626 MHz that would create a spur that would affect channel 77 at 540 MHz

We have found that these “spurs” will affect analog signals more than digital. When a spur falls within a NTSC analog channels a herringbone pattern may be seen in the picture.

You have probably never experienced this before as it would be extremely rare to run QAMs out of a COM2000 system at that high of a frequency.

However with the addition of the NTSC-8 to the Technicolor product line you may be using some higher frequencies to make room for the analog channels in your lineup.

Recommendations:

Always use the lowest available spectrum for NTSC channels.



For this example we are using:

- 48 NTSC channels from 6 NTSC-8 modulators using channels 2-49.
- 48 channels duplicated on QAMs using 3 channels per qam.
- An additional 48 channels of HD from a second COM2000 (not duplicated in NTSC).

NTSC Analog Channels	48 HD CH 16 QAMS	Addition of a second full QAM chassis with 48 HD channels One QAM 8 16 QAMS Total
CH 2-49 54-378Mhz	CH 55 – 70 408-504Mhz	CH 71 – 86 504-600 Mhz

In this example the modulation of channels 81 – 86 would create spurs as detailed below:

Once again in lab testing this only affected analog channels as the spurs are not strong enough to affect digital QAM signals modulation error rate (MER)

Modulated Channel	Spur Frequency	Spur CH
75	636	93
76	630	92
77	624	91
78	618	90
79	612	89
80	606	88
81	600	87
82	594	86
83	588	85
84	582	84
85	576	83
86	570	82
87	564	81
88	558	80
89	552	79
90	546	78
91	540	77
92	534	76
93	528	75
94	522	74