March 7, 2000

Correspondence Reference Number: 12237
Confirmation Number: EA96089
FCC ID: MIJTELCPE-USB-01

To: Errol Chang
From: Jim Dykema

Subject: Request for technical data

I am providing additional data to show compliance to Section 101.111(a)(2)(ii) as per your request. Subsequent to the origial filing a second modulation scheme has been implemented. I am also providing this new data for your review.

Modulation/ Symbol Rate (MS/ Sec.)	RF Tuned Frequency (GHz)	Occupied Bandwidth (MHz)
16 QAM/ 0.384	31.2256	0.561
QPSK/ 0.32	31.2255	0.495
QPSK/ 0.64	31.2259	0.986
QPSK/ 1.28	31.2264	1.80
QPSK/ 2.56	31.2273	3.46
16 QAM/ 0.384	31.2994	0.541
QPSK/ 0.32	31.2995	0.475
QPSK/ 0.64	31.2991	0.955
QPSK/ 1.28	31.2986	1.72
QPSK/ 2.56	31.2977	3.16

The CPE acccepts IF input over the range of 17 – 42 MHz. A software modification is required for the CPE to cover each of the 25 MHz sub-bands that make up the 31.225 – 31.300 GHz allocated band. The lower and upper edge guardbands are required to meet the emission mask requirements. The new emission designators are:

- 16 QAM 0.384 MS/s– 561KD1D
- QPSK 2.56 MS/s – 3M46G1D

The following is a list of the data provided:

1. 16 QAM data carrier at 31.2256 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge
2. QPSK/ 0.32 MS/s data carrier at 31.2255 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge
3. QPSK/ 0.64 MS/s data carrier at 31.2259 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge
4. QPSK/ 1.28 MS/s data carrier at 31.2264 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge
5. QPSK/ 2.56 MS/s data carrier at 31.2273 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge
6. 16 QAM data carrier at 31.2994 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge
7. QPSK/ 0.32 MS/s data carrier at 31.2995 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge

8. QPSK/ 0.64 MS/s data carrier at 31.2991 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge
9. QPSK/ 1.28 MS/s data carrier at 31.2986 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge
10. QPSK/ 2.56 MS/s data carrier at 31.2977 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge
1. 16 QAM data carrier at lower band edge compared to digital emission mask (101.111(a)(2)) – ± 250 % allocated bandwidth
12. 16 QAM data carrier at upper band edge compared to digital emission mask (101.111(a)(2)) – ± 250 % allocated bandwidth

With regards to the calculation of the emission mask, your letter states that " the emission limit at the LMDS band edge starts at - 29.75 dB and continues on a slope to - 56 dB at the frequency of 86.25 MHz removed from the band edge and stays there until 187.5 MHz removed from the LMDS band edge". While I agree with your figures of - 29.75 and –56 dBc, I was under the assumption that the 86.25 and 187.5 MHz frequencies were relative to the allocated band center frequency and independent of carrier frequency.

Limit (dBc)	Lower Absolute Freq. (GHz)	Upper Absolute Freq. (GHz)	Percent of Authorized Bandwidth	Offset Freq. From Band Edge (MHz)	Offset Freq. From band Center (MHz)
-29.75	31.00000	31.075000	50	0.0	37.5
-56	30.95073	31.112448	115.623	49.27	86.77
-56	30.85000	31.225000	250	150.0	187.5

Please, let me know if I have made an incorrect assumption.

Sincerely,
Jim Dykema

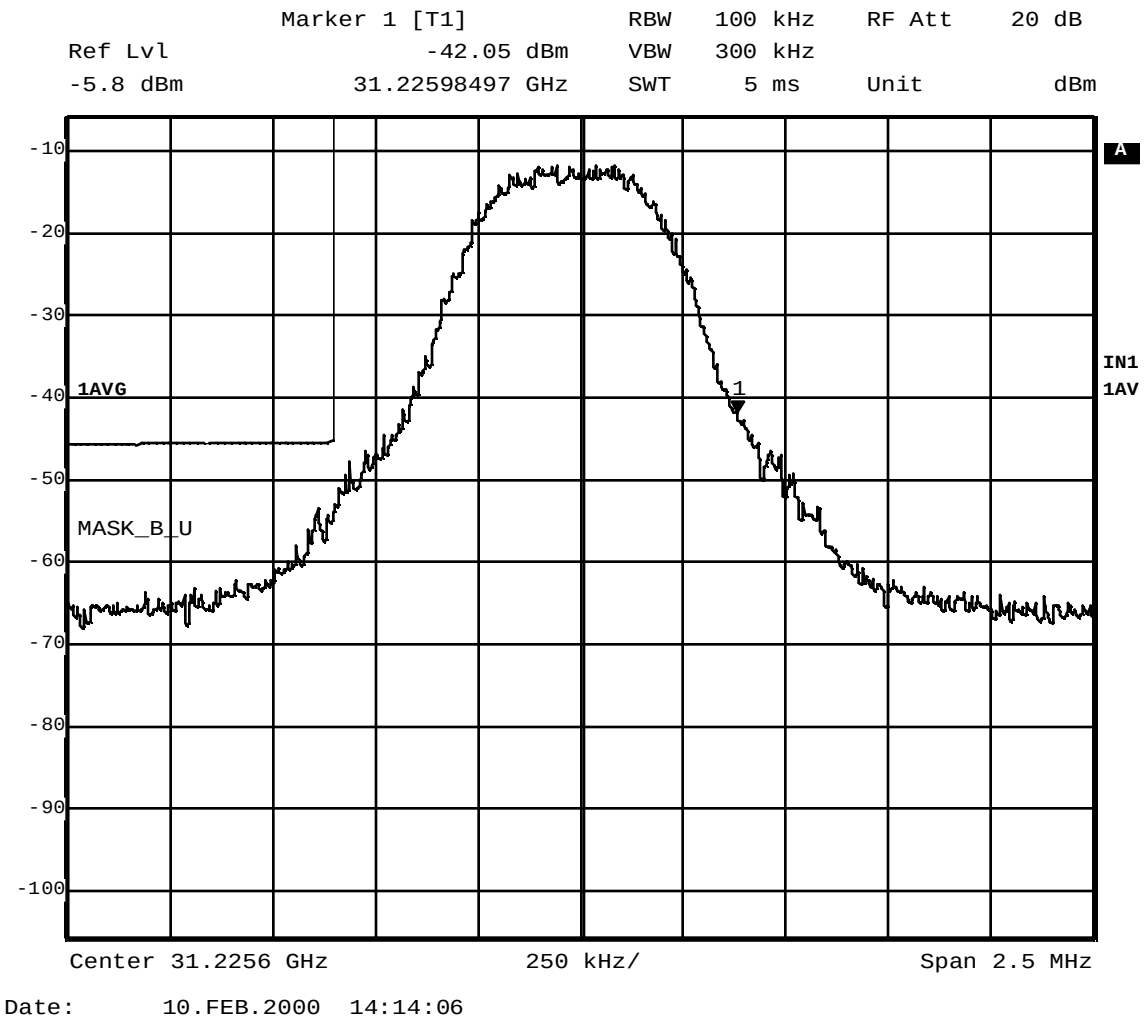

Figure 1 16 QAM data carrier at 31.2256 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge

The emission mask is set as follows:

1. Measure the peak of the unmodulated signal using 1 MHz/ 3MHz resolution bandwidth (RBW)/ video bandwidth (VBW).
2. Set reference level (RL) to the peak of the signal obtained in step 1).
3. If necessary to eliminate signal broadening, reduce the RBW maitaining the RBW/VBW ratio of 1/3. If a narrower RBW is used, adjust the emission mask by $10*\log_{10}$ (RBW in MHz).

The above figue shows that the peak of the unmodulated signal was measured at –5.8 dBm. The limit for the digital emission mask at 50% removed from the allocated band center is 29.75 dBc. The bandwidth correction for 100 kHz RBW is -10 dB. Therefore, the mask is at –45.55 dBm (-5.8dBm - 29.75dBc - 10dB).

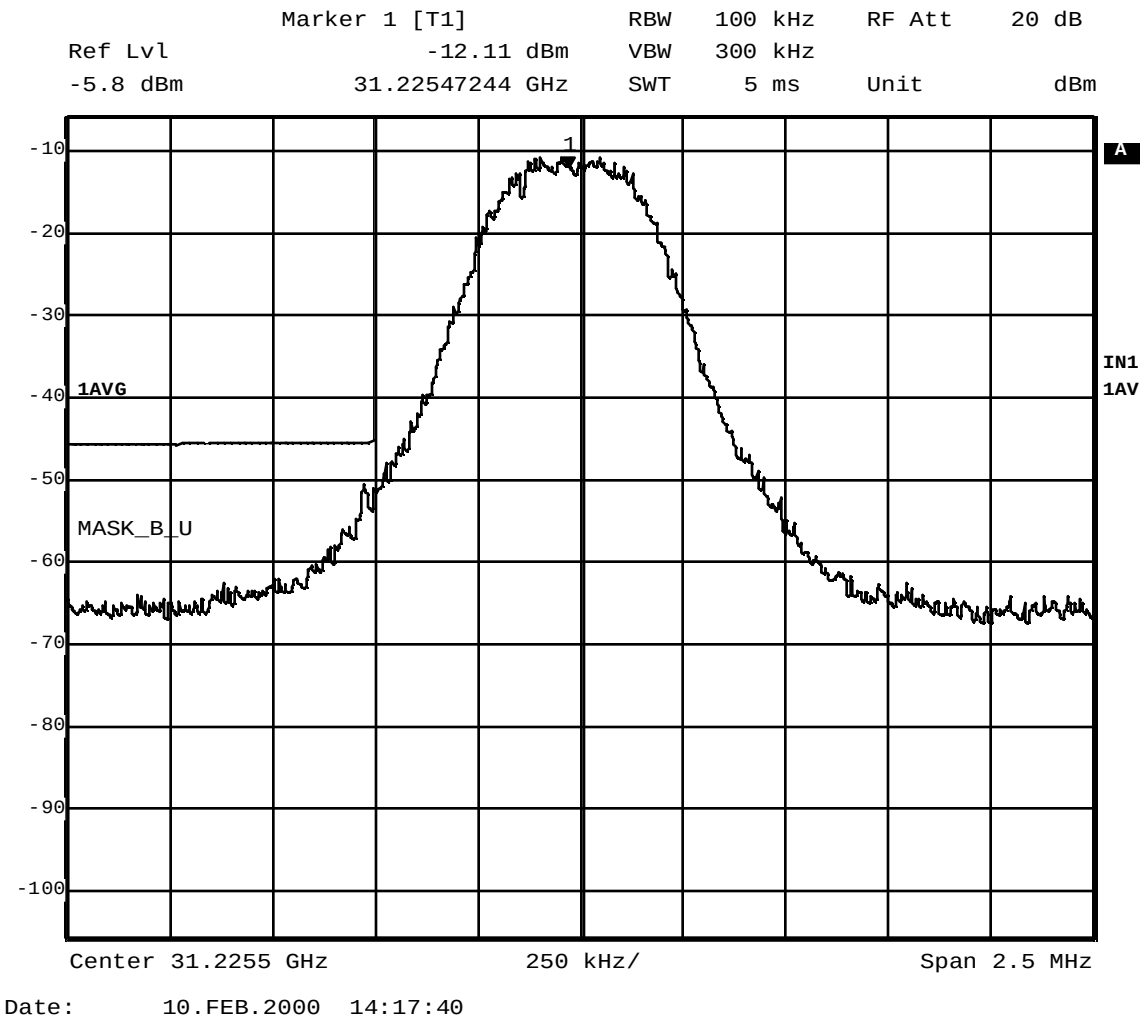

Figure 2 QPSK/ 0.32 MS/s data carrier at 31.2255 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge

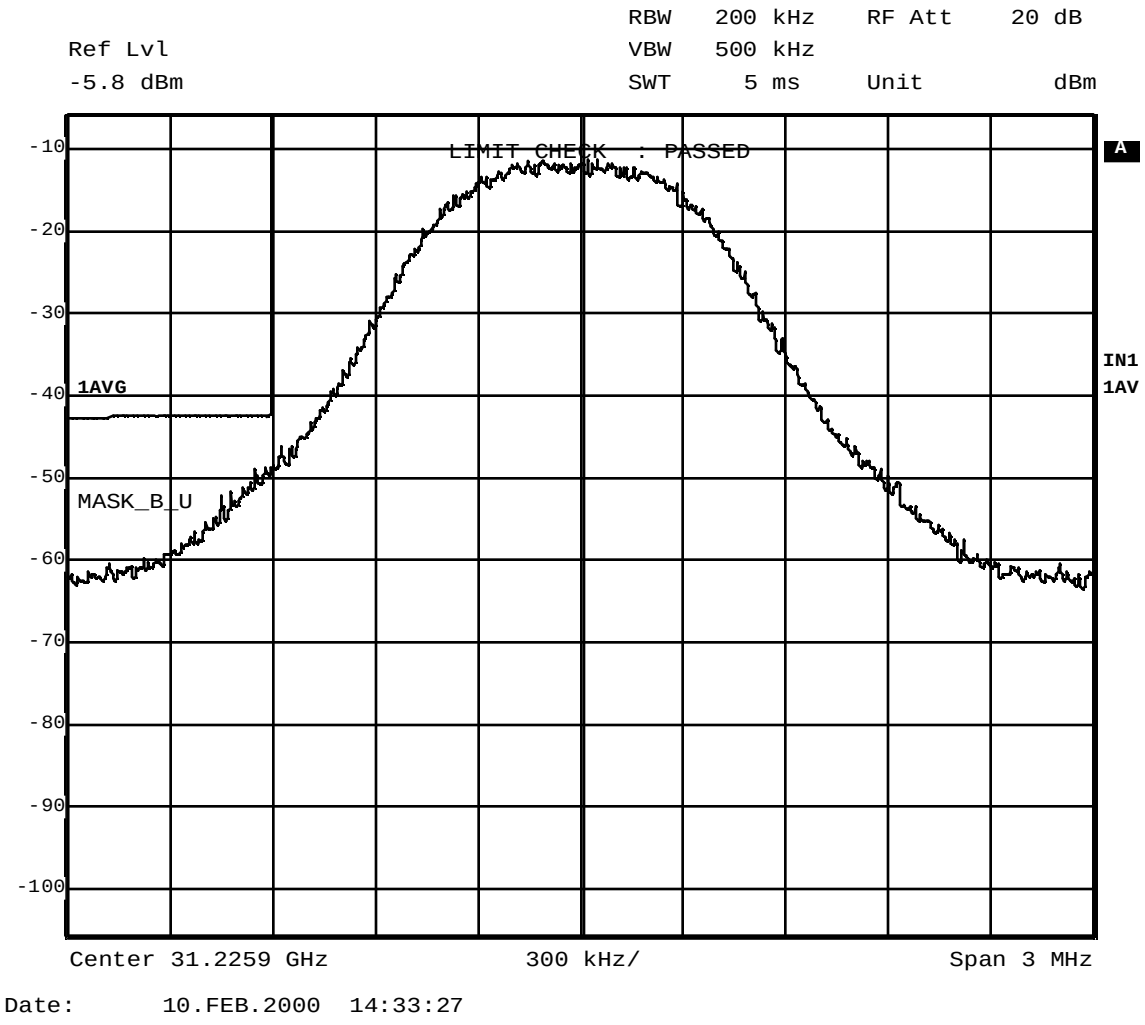

Figure 3 QPSK/ 0.64 MS/s data carrier at 31.2259 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge

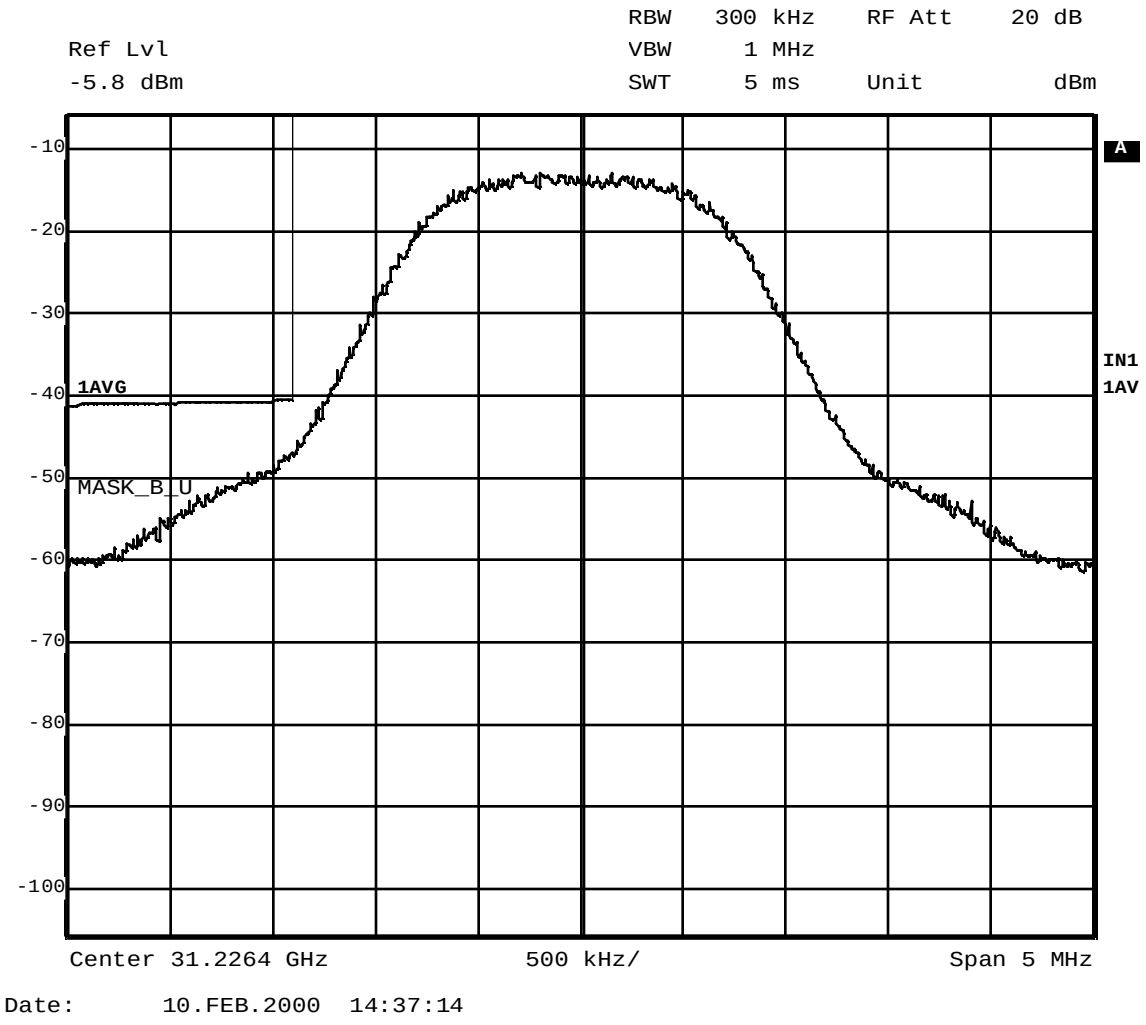

Figure 4 QPSK/ 1.28 MS/s data carrier at 31.2264 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge

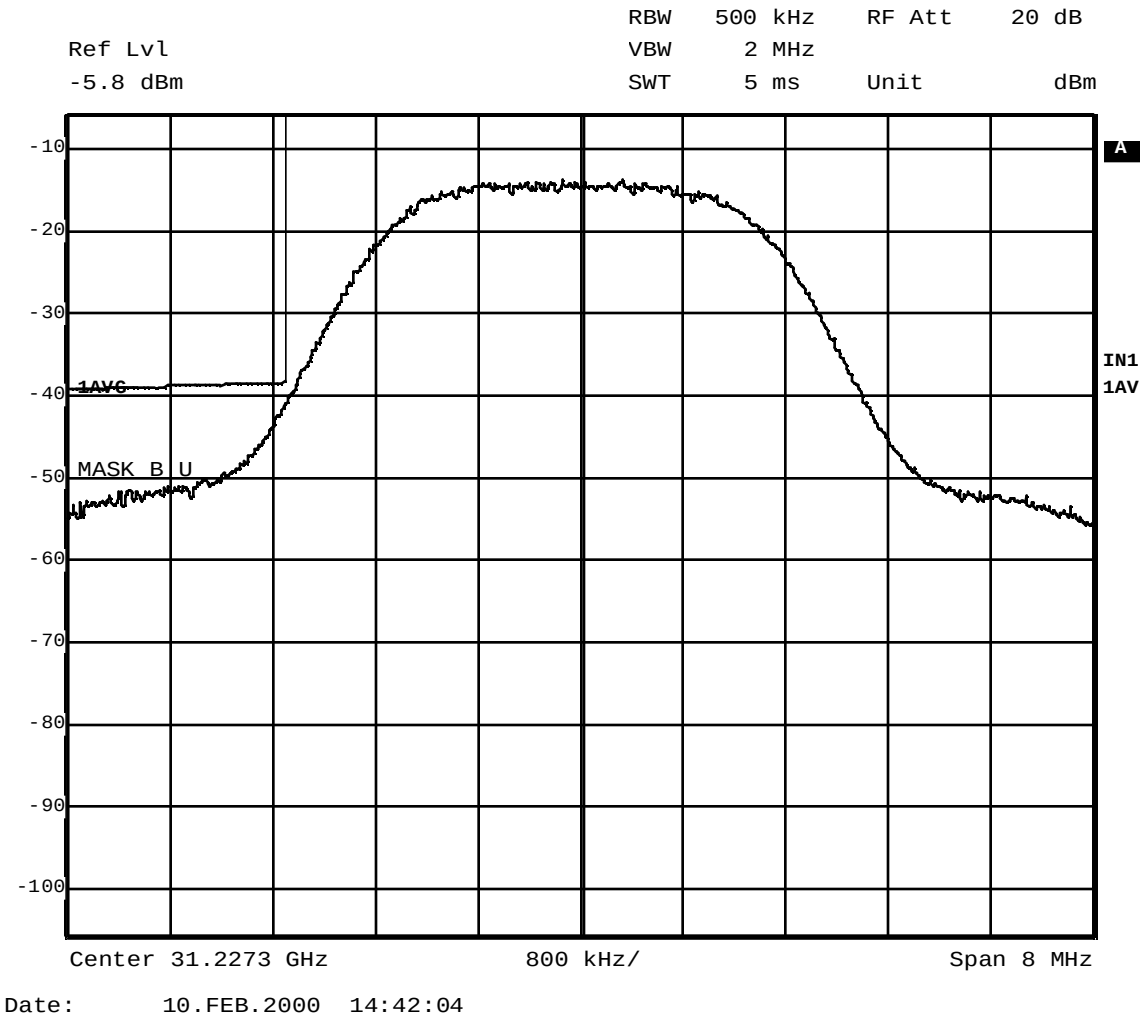

Figure 5 QPSK/ 2.56 MS/s data carrier at 31.2273 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge

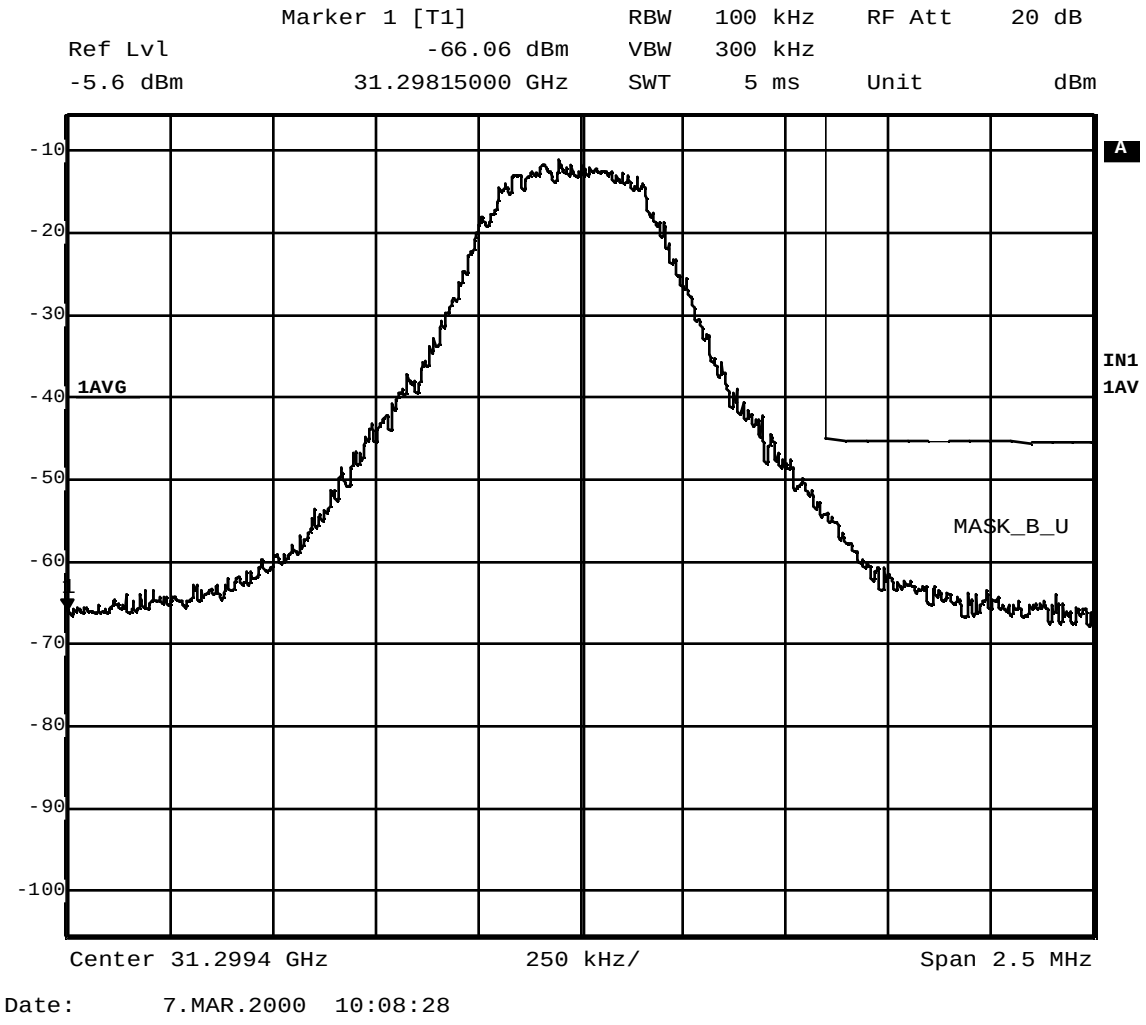

Figure 6 16 QAM data carrier at 31.2994 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge

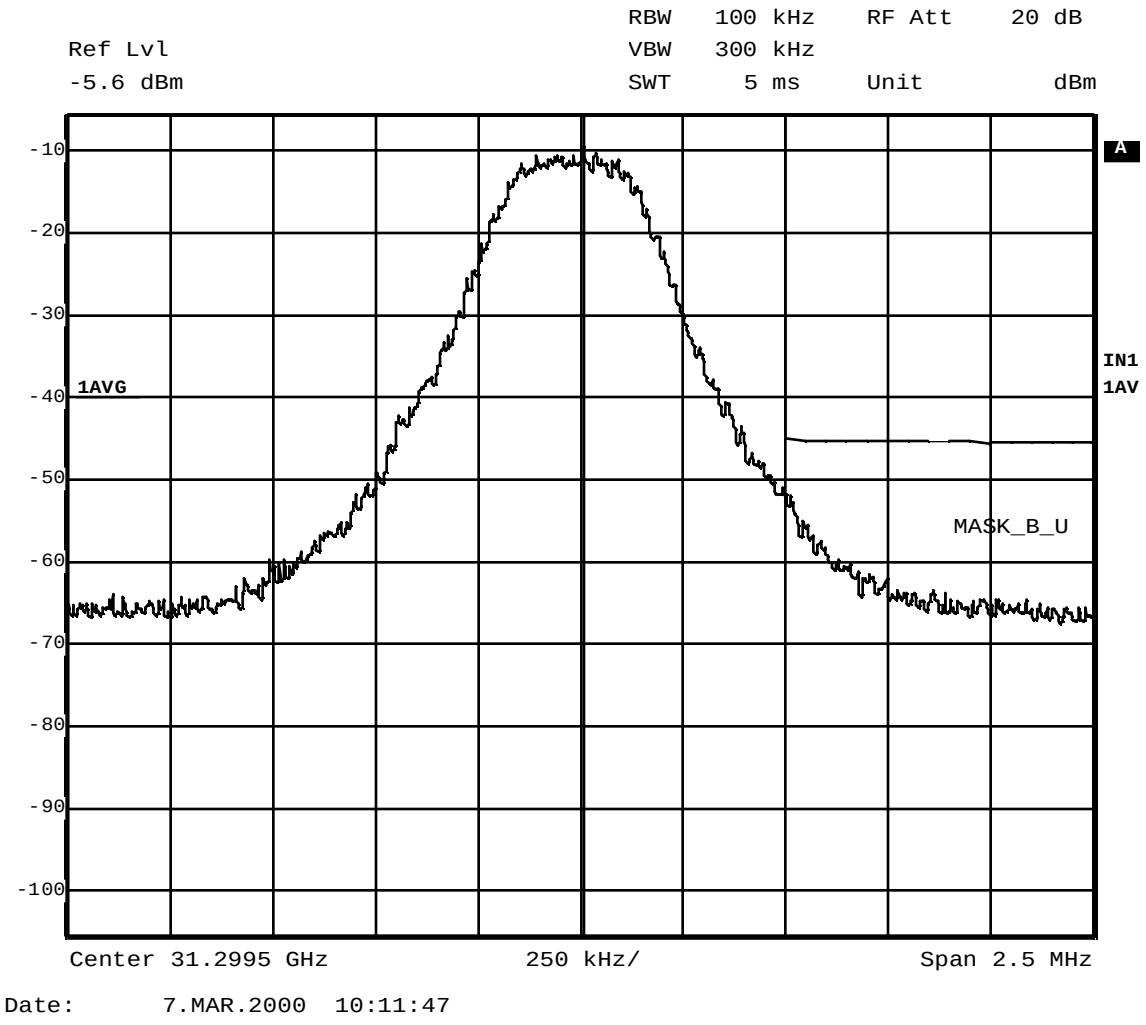

Figure 7 QPSK/ 0.32 MS/s data carrier at 31.2995 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge

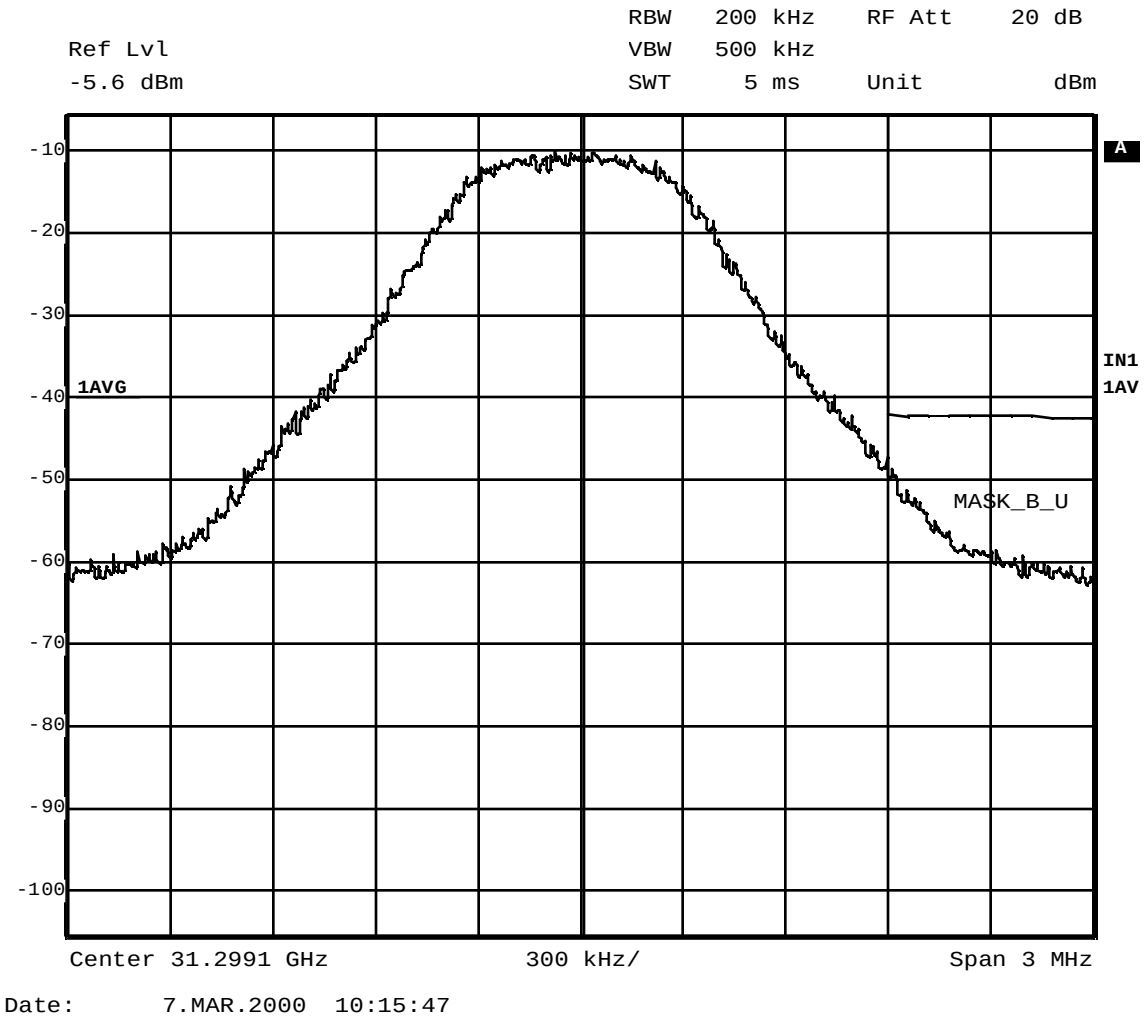

Figure 8 QPSK/ 0.64 MS/s data carrier at 31.2991 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge

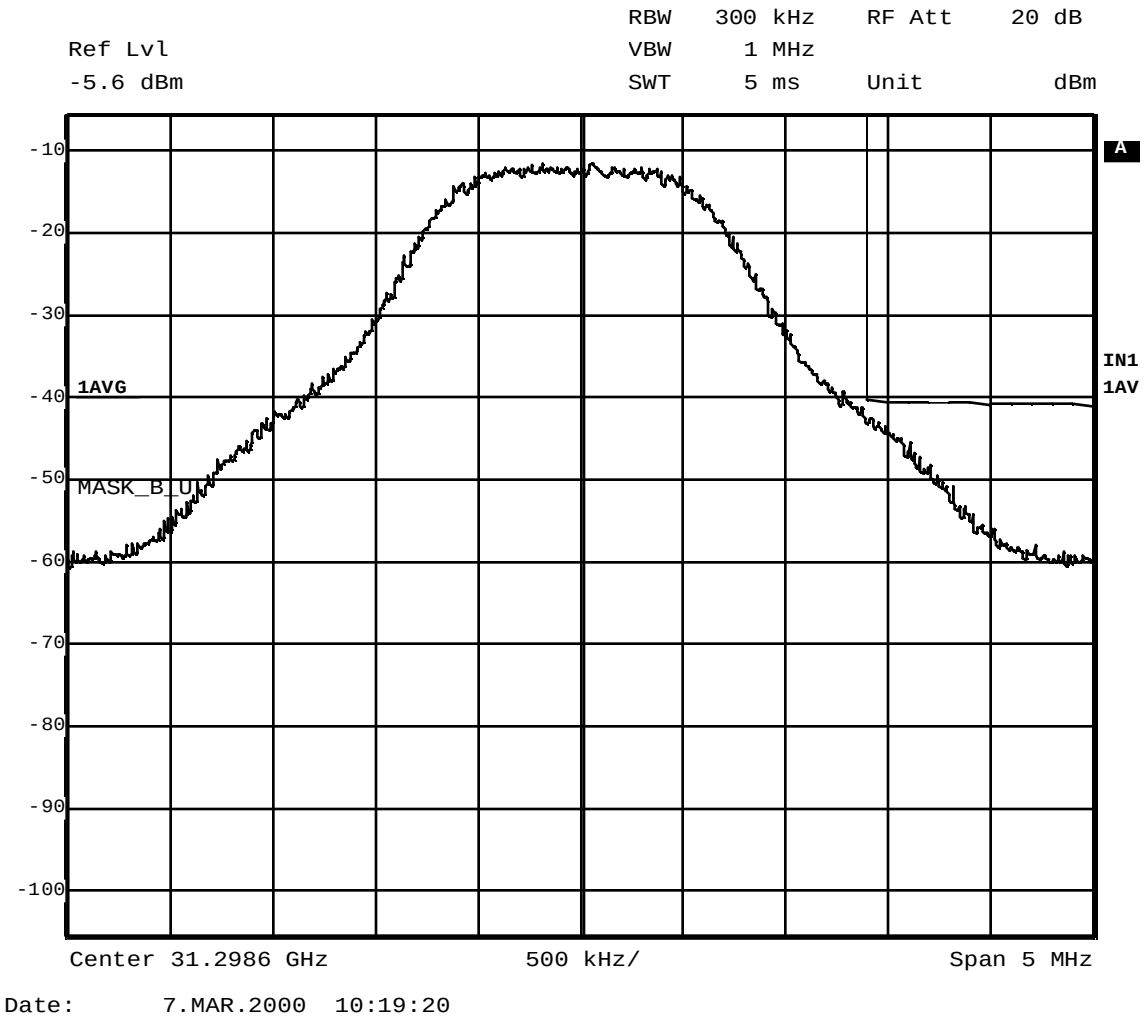

Figure 9 QPSK/ 1.28 MS/s data carrier at 31.2986 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge

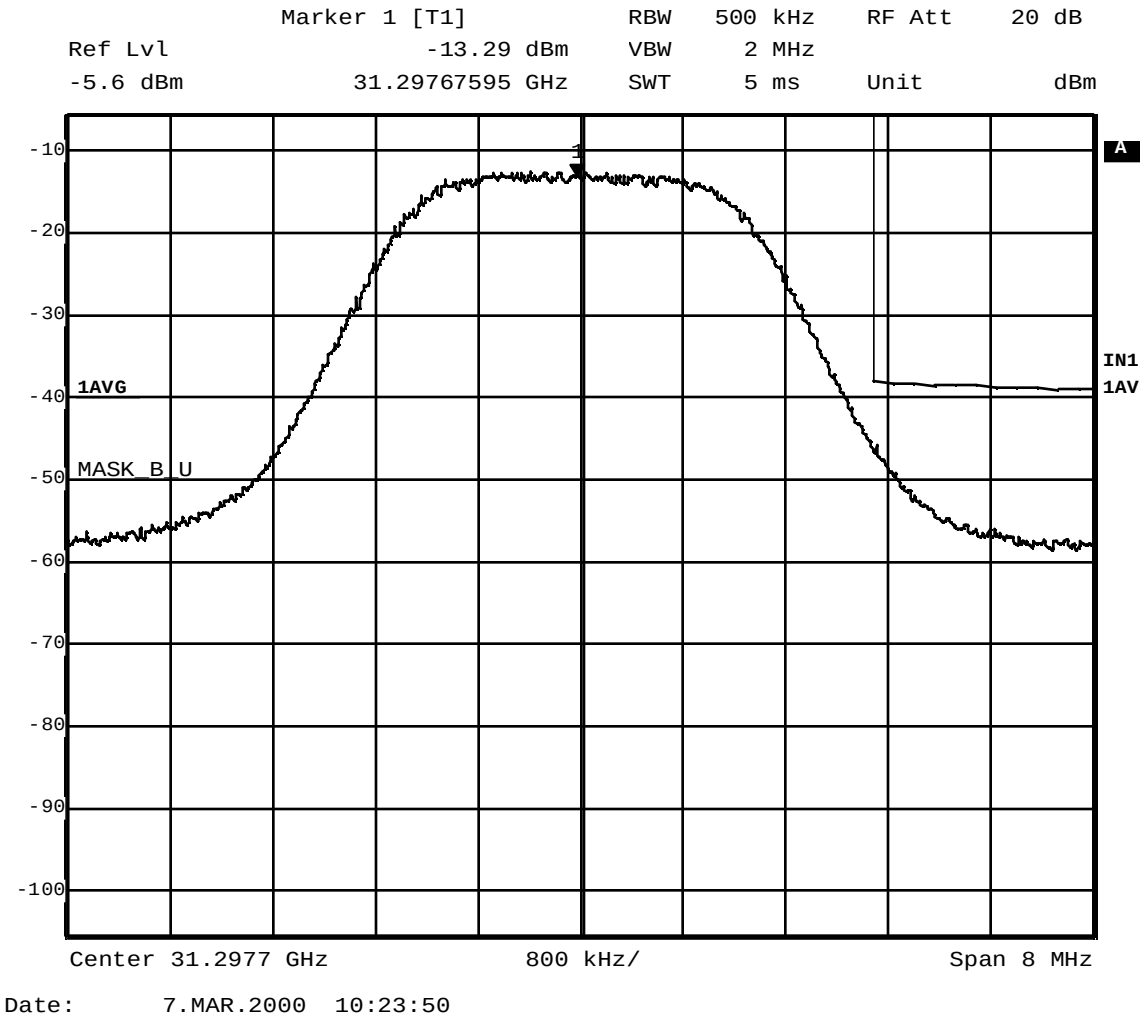

Figure 10 QPSK/ 2.56 MS/s data carrier at 31.2977 GHz compared to digital emission mask (101.111(a)(2)) – closeup of band edge

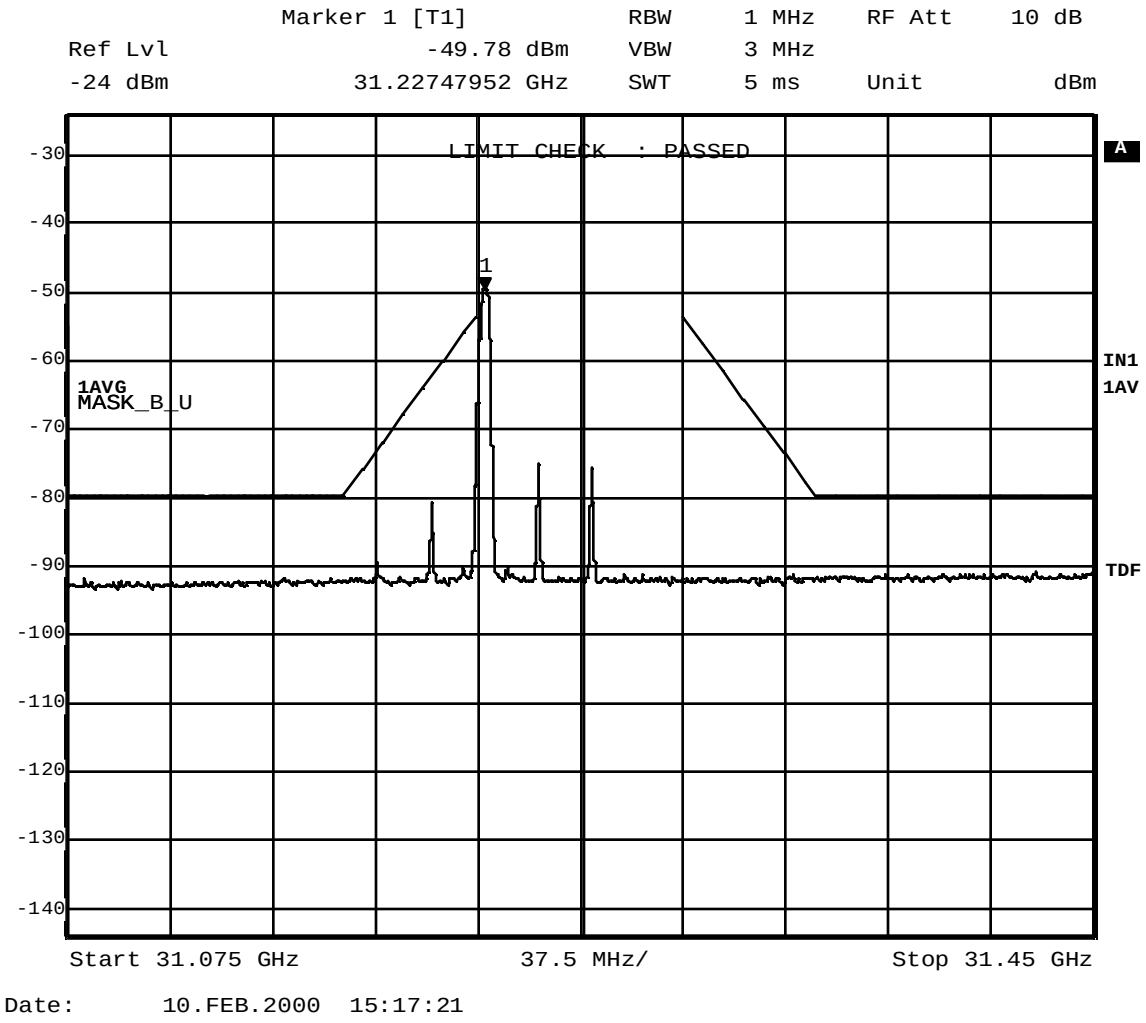

Figure 11 16 QAM data carrier at lower band edge compared to digital emission mask (101.111(a)(2)) – ± 250 % allocated bandwidth

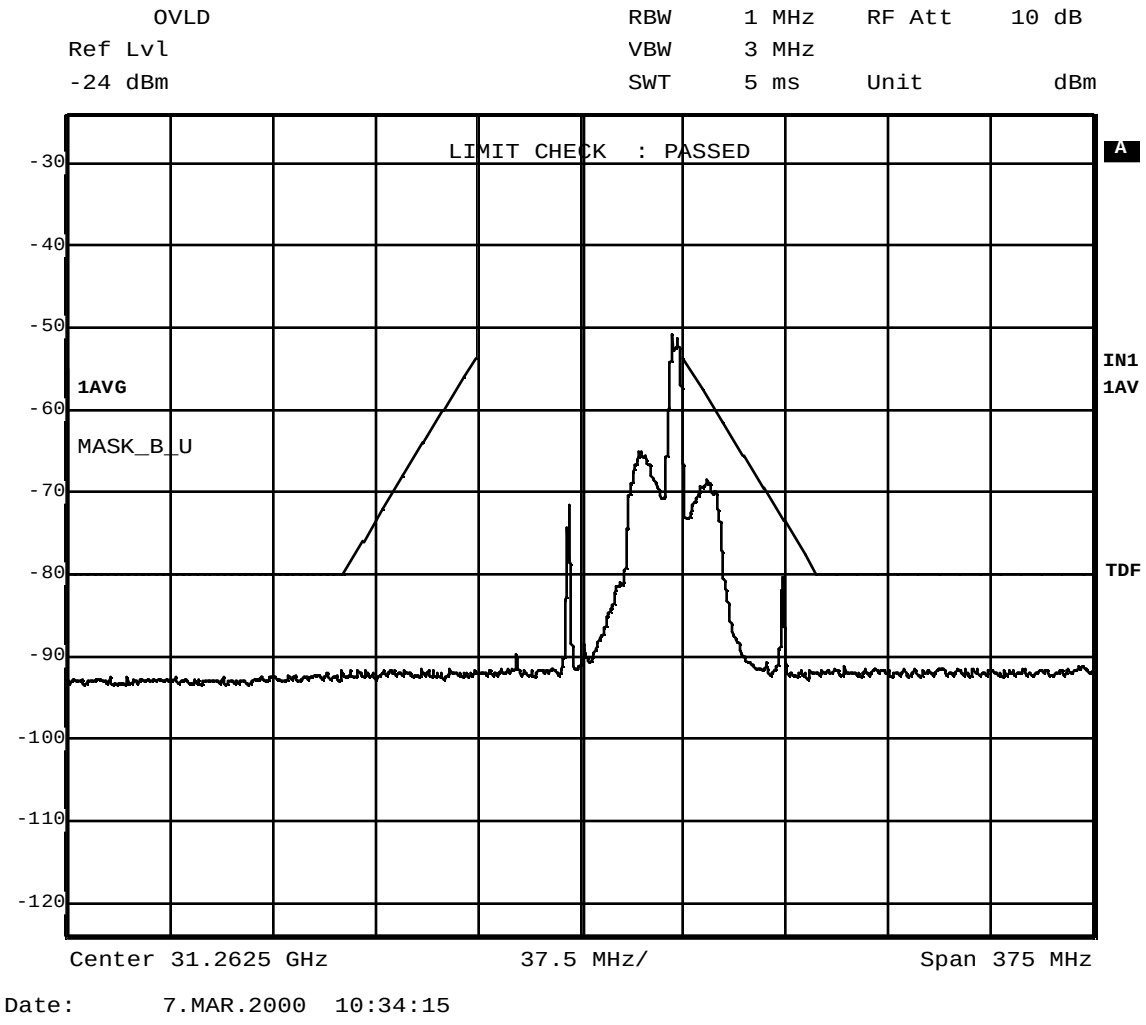

Figure 12 16 QAM data carrier at upper band edge compared to digital emission mask (101.111(a)(2)) – ± 250 % allocated bandwidth