

TELEMOTIVE

INDUSTRIAL CONTROLS

DATE: 11/01/1999

TO: George Tannahill

FROM: Gerald Berger

SUBJECT: Type Acceptance Of Telemotive Transmitter ID GXZ304E7652

While we have always designed our equipment to comply with the FCC rules and regulations it is sometimes difficult to interpret these rules. It was my interpretation that we did not have to comply with the 70db notch in mask "D" because these transmitters are mobile stations with a maximum power output of less than 2 watts as indicated in paragraph 90.211. In fact these transmitters only have a maximum power output of 400mw. I called Gene Thompson at the part 90 rules division for his interpretation. He in turn discussed this with Ira Keltz, the person who wrote the new rules for this UHF band, and both of them concluded that the rules were not to punish low power users therefore, the mask did not apply to mobile transmitters with a maximum power output of 2 watts or less. However, it appears that paragraph 90.211 was deleted last August and while we filed before that time and should still be exempt I just don't have time to wait for the rules to be corrected.

Therefore I have adjusted the cutoff frequency of the audio low pass filter that the digital data passes through by setting the value of one capacitor (C10), which was a factory selected component, to .047uf. This capacitor will no longer be a factory selected part and will be fixed at that value. Since none of the RF circuits were changed and in fact the PCB was not changed in any way, I see no reason to re-run all the previous tests since they were not affected. The new graph showing the modulation bandwidth as a result of this adjustment is being submitted with this letter. The data rate used for this graph was reduced from 9600 to 4800 bits per second, 4800 bps is the highest data rate that we need for our application. The 9600 bps spectrum efficiency requirement (Sec.90.203), does not apply here since the output power of the transmitter is below 500mw. As can be seen our transmitter is now in compliance to mask "D".

In regard to the power turn on transient test, our transmitter meets this requirement by its design since the oscillator runs continuously and is not keyed "ON" and "OFF" in its operation. As can be seen in our schematic we use a Motorola MC2833 which is a low power FM transmitter chip. Also submitted with this letter is a data sheet showing the circuits inside this chip. The oscillator circuits use pins 14,15, and 16 of this chip. As you can see in our circuit diagram, we do not key these lines. Our transmitter keys only the transistor amplifiers in this chip and therefore do not effect the stability of the oscillator, therefore there will be no transients produced as a result of keying. This is a TMS FSK transmitter which sends data in short packets. When asked to transmit, the CPU, which controls this transmitter, will gate the signal to the power output stages "ON" and then the data will be sent after which the signal, to the amplifier, is gated "OFF". This process is done automatically and quickly so that multiple transmitters can share the same frequency without interfering with each other. The transmitter cannot be allowed to generate frequency transients during normal operation, because it would be interpreted by the receiver as a data pulse causing the system to shut down. Performing the transient test would produce obvious results since the oscillator is not keyed in this transmitter. Keying of the amplifier stages is part of the modulation scheme of this transmitter and the results of the keying together with the FSK data are shown in our bandwidth testing. I hope this information is adequate so you can proceed with our application for type approval.

Thank You,



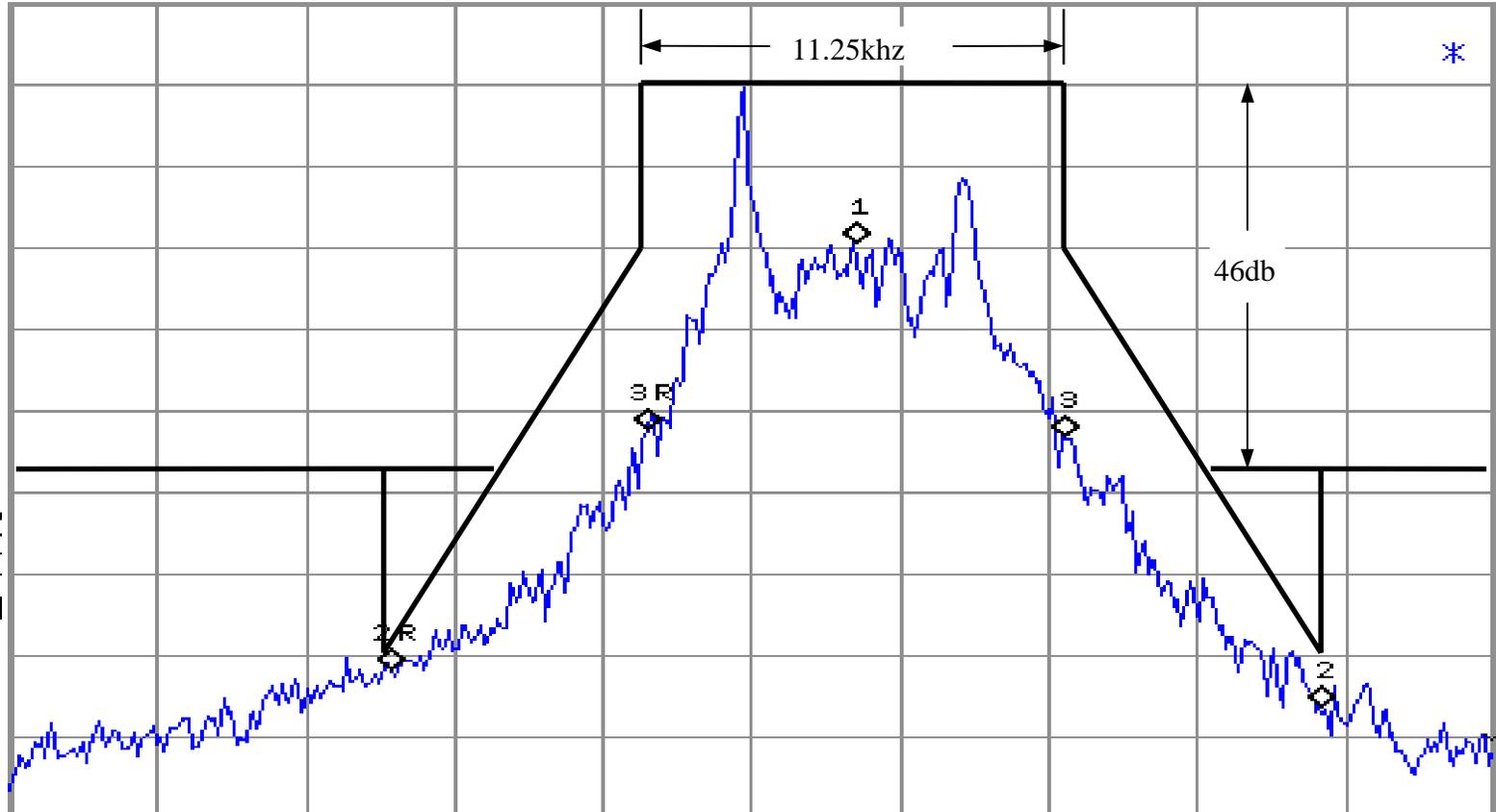
Gerald Berger
Principal Engineer

Ref 16 dBm

Atten 30 dB +20db Ext.

▲ Mkr3 11.20 kHz
-0.97 dB

Peak
Log
10
dB/



Center 467.9 MHz

#Res BW 100 Hz

VBW 100 Hz

Span 40 kHz

Sweep 4.2 s

V1 S2
S3 FC
AA