Theory of Operation (How It Works)
Upper Band Inhibit (as demanded by FCC Rules)

1. Counting the frequency of the RF drive signal from the transceiver, this INHIBIT circuit will prohibit amplifying the higher HF bands to comply with FCC rule for the amateur external power amplifier. The circuit consists of following three blocks ;
   a. Drive signal take in and 1/16 divider ..... PC1675, Prescaler
   b. Band Decoder, MPU PC1664
   c. Main Control, MPU PC1665

2. RF drive signal from the transceiver is voltage divided in the RF power detector board. After wave form shaping to the adequate level, the signal is lead to the input of the prescaler (frequency divider).
   (Ref. : " RF Signal " at left side of schematic diagram.)

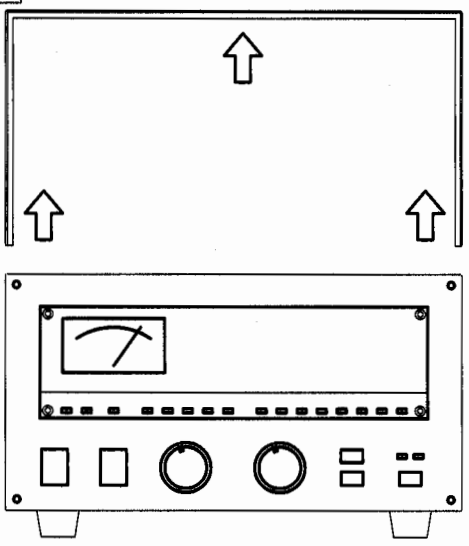
3. " RF Signal " being divided by 16, is delivered to the input of the counter of the band decoder MPU.
   (Ref. : " 1/16 FREQ " at upper center in the schematic diagram.)

4. MPU (PIC18F452-I/P) of Band Decoder has a counter function at I/O port RA4. From the number of the pulses put in per 100mS , the frequency of the RF drive signal will be calculated. If the calculated result is within the prohibited frequency range of amplifier, Band Decoder MPU will tell Main Control MPU about the " Inhibit ". Two MPU's are connected through two wire serial communication mode (Inter-Integrated Circuit : I2C) and RB0/INT channel can exchange numerical data each other. (Ref. : Center of schematic, " I2C LINK ")

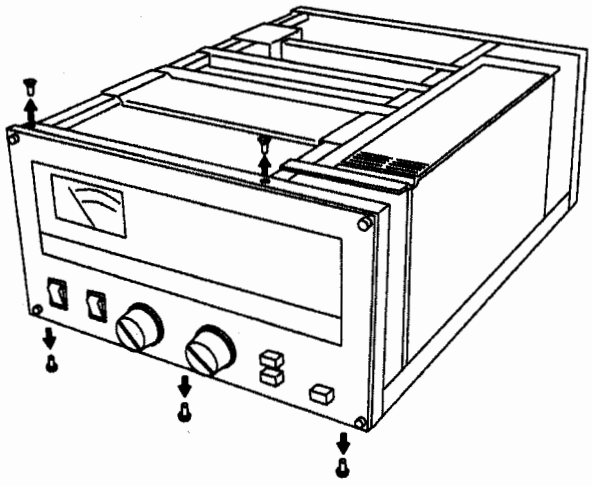
5. MPU on Main Control, PC1665, manages the input/output power of the amplifier, monitors the DC power supply status, and manages the transmit/receive status as well. Upon receiving " Transmit (Amplification) Inhibit Signal " through I2C communication mode, the amplification of the power amplifier (PC1662) is stopped.

How to disable "UPPER BAND INHIBIT (FCC Rule)".

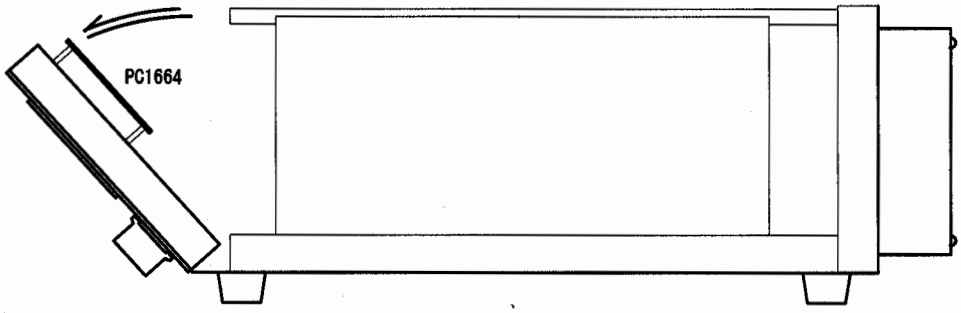
STEP1 Unscrew the 14 bolts on the cover. Lift the top cover.



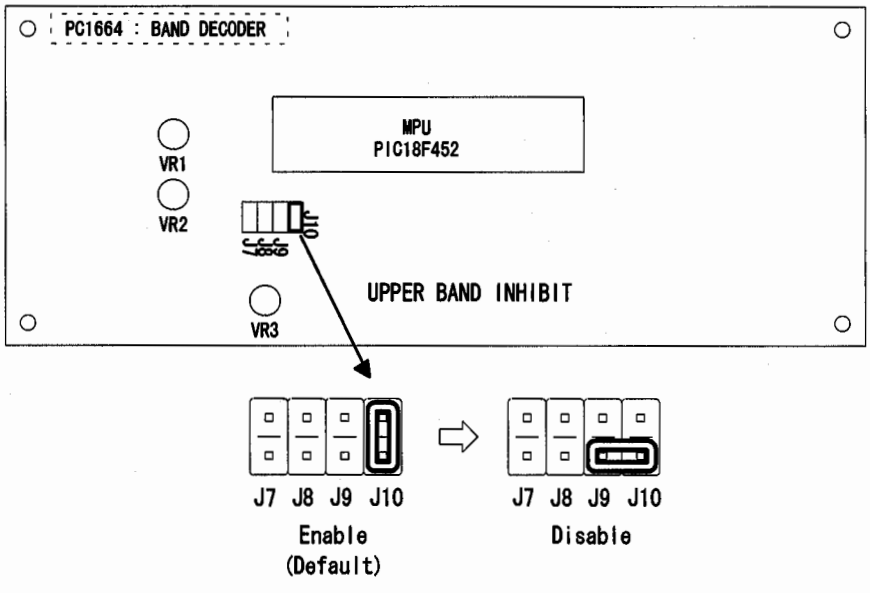
STEP2 Unscrew the five bolts holding the front panel assembly to the chassis.

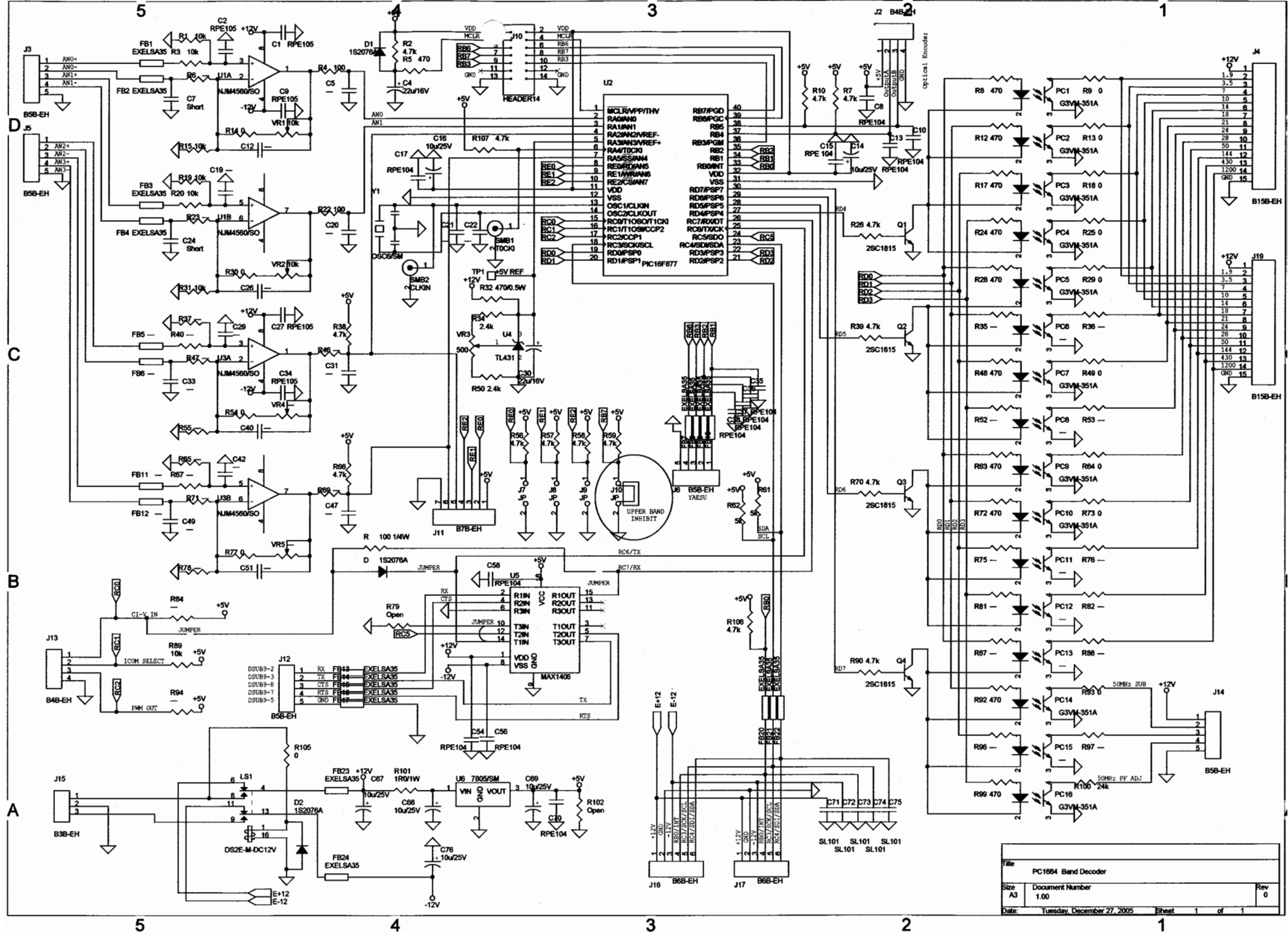


STEP3 Tilt the front panel assembly.



STEP4 To disable "UPPER BAND INHIBIT", set the jumper as below.




PC1664 Band Decoder
Size A3
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Sheet 1 of 1
PIC16F877
TL431
NJM4560/SO
MAX1406
7805/SM
2SC1815
G3VM-351A
UPPER BAND INHIBIT
YAESU
Optical Encoder
50MHz SUB
50MHz PF ADJ
ICOM SELECT
PWM OUT
CI-V IN
DS2E-M-DC12V