

HT220

PRESERVATION SOCIETY

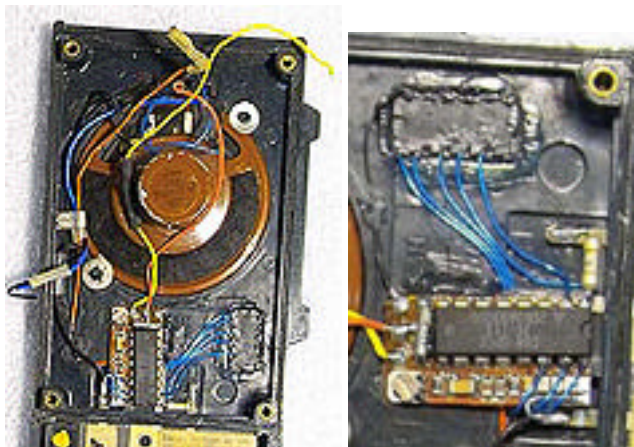
NEWSLETTER

HT-220 MULTI-PL FEATURE

This slimline may look like any other but it has a modification (DIP switch) to select PL codes. All HT-220s with PL used Vibrasenders (reeds) with only one tone and occupied considerable space, as PL models are longer than carrier squelch models.



DIP switch on front of Slimline



Inside has enough space between circuit board and cover to contain the additional circuitry

Ed Fong, WB6IQN, designed and built this particular slimline using components that was not available during the HT-220s reign. This feature gives a user the field capability to select various PL codes as needed. ☞

A NEW LIFE FOR HT220S?

from the editor

In November 2000, FCC authorized MURS (Multi-Use Radio System) at 151.82, 151.88, 151.94, 154.57 and 154.60 for up to 2 watts on an unlicensed basis under Part 95 of the FCC's rules. The FCC said it will "revisit" the issue of allocating additional MURS channels *at a later date should additional support develop*. 154.6 MHz is used by many fast foods for one of their drive-up channels. 154.6 MHz with a PL of 118.8Hz is used by Preservation Society officers and members for non-amateur radio communications.

☞ Please be advised that operating a 1.8 watt HT220 may not be valid on MURS. There are limitations such as bandwidth of 2.5KHz on 151.82, 151.88, and 151.94 so HT220 will have to be adjusted accordingly.

☞ It should also be noted you can modify "accepted equipment" (i.e.) for business bands such as the HT220 to operate on amateur radio bands, however, you cannot operate a amateur radio on business bands (amateur gear is not considered *accepted equipment*).

For more on MURS, visit the MURS Homepage at <http://www.provide.net/~prsg/murshome.htm> which includes operating rules, FAQ, and latest developments. This webpage does not have rotating banners, javascript or any other worthless "hubcaps" to screw-up your browser. ☞

HT-220 220 BET

from Hal

Many years ago I put an HT-220 on 220 MHz by using brass slugs in the coils and ordering crystals in the right multiplication region. I did it more as a lark. Another ham bet me it could not be done and I won the bet. ☞

MOTOROLA MEMORIES

by David Massey, webmaster of "Tribute to the Telephone"
<http://www.telephonetribute.com>

It was a great place to work back then. I don't recall any of my coworker's names – I was there less than a year. I do remember an arrest that took place out in the parking lot while I worked there. Seems some stockroom employees were selling hot radios to undercover cops!

Would you have anything for the HT220 page?

I have some other stories:

A tech went crazy trying to troubleshoot a "dog" radio for almost the whole shift, and out of frustration, he took his soldering iron and burned (melted) a hole thru the front cover and destroyed the circuit board inside. He was instantly fired and escorted out the door!

The supervisor of the second-shift final test area for the 450MHz HT-220 line (my supervisor) was married to a lady in the rework area that we technicians took our radios to for part replacements (we weren't allowed to touch an iron!). Well, this lady spent more time yakking to the other rework girl that I got mad after my radio sat there on her bench for two hours and she hadn't even touched it. So I complained to my boss – whom at the time I didn't know was married to the lady I was complaining about! I almost got fired for that!

On the technical side of things, I remember day-shift would get to pick the "cherry" radios as they came off of the production line. The cherries were the ones that worked and tuned up the first time they were powered up. We on the second shift would get all of the left-over radios – i.e., the "dogs" from day-shift! Our supervisor was too dumb to realize why day-shift always outdid the night shift.

One night I had a radio that was having parasitic oscillations in the transmitter stages. I put a 30 pF cap across one of the stages and it got rid of the problem. Well, I got in trouble for "re-engineering" the radio! It had to match the schematics when we shipped the units. Ironically, the engineering department finally decided my fix was legit and revised the schematic months later!

We would sometimes wait weeks to get special semiconductors (transistors and IC's) from the Motorola Semiconductor division in Arizona which hurt our ability to fix the radios in a timely manner. So we techs gradually collected our own stock of these hard-to-get components and kept the radios moving even when the regular stockroom had none of the parts we needed.

I also remember there were no time clocks for the hourly employees – a very rare thing back then and even today. The management at the time thought time clocks were de-humanizing and counter-productive. Those were the days... ☺

THE PORTABLE CLINIC

<http://www.theportableclinic.com>

Robert Hicks, KA4LMW, designed several HT220 synthesizer radios using Dale's board in the 1970s and sold them thru his company called The Portable Clinic at that time. Here is one of his hamfest displays in the 1970s.



Bob has references on HT220s and MT500s at his site www.theportableclinic.com including a 6-channel slimline and a 12-channel omni HT220.

Robert also has a description of using a HT220 as a low-cost part of a APRS PACKET Satellite System that provides you with a GPS location system. This GPS system works just like The Lojack Car System that people spend a lot of money for, except this service is FREE to you and works all the time. ☺

MISSING PLATE: THE "X" SCANDAL

The HT220 is notorious for being mis-identified when, unbeknownst to the owner, the backcovers have been swapped at some point in the radio's history. The backcover plate, originally mounted in a recessed area of the cover with formidable double-sided, cushioned adhesive tape, contains the model number, an FCC number (type acceptance) and also the unit's serial number. Reasons for such a swap range from replacing a damaged back (this happened a lot when people took Motorola pager belt clips and mounted them right to the plastic, which later takes a hit and breaks off), to the re-assembly of several broken units into one working unit, to efforts to comply with strange laws.

In Maryland some years ago there was a law which reportedly allowed police to question those who possessed equipment (primarily consumer electronics, construction gear, and weapons) with a missing or defaced serial number plate. Usually such a situation was discovered during other investigative work. But at one hamfest in the 1970s, police actually seized several HT220s with missing plates which were being offered for legitimate, documented sale by a commercial vendor in the fleamarket. Authorities specifically justified the seizure by noting the equipment was "of a police nature." The Maryland law failed to consider that serial number plates were routinely removed not because the radios were stolen, but to satisfy business accounting, government inventory lists, and other reasons not related to intended ownership.

The "crackdown" at the hamfest (which allegedly came as the result of a disgruntled customer of this vendor who was aware of his likely vulnerability from the law) triggered an effort in the ham community to scrounge serial number plates from whatever source was handy. Slapping a plate on there then allowed the unfettered conversion and use of HT220s handed over as trade-ins from business users, obtained at auction from government sources, and from as-is, unwarranted factory rejects cobbled together into working radios.

Motorola formerly had a program which allowed interested hams to acquire radios which had failed assembly line testing. The Illinois company Spectronics was primarily a commercial two-way dealer but also had been named as one of the outlets

for non-warranted HT220s intended to be used for parts or by experimenters. The Spectronics "X" Scandal, as it became known, began at a time Motorola factory technicians prepared rejected radios by scoring an "X" on the motherboard into a certain solder pad so the radio could be subsequently handed over to Spectronics. Well, you can guess what happened. Hams would get the radio working, re-crystal back to commercial frequencies, sell at a great markup, and make some money. Eventually, Motorola caught on to the scheme after a few commercial accounts returned radios for service and the dreaded "X" was discovered. The boards that failed QC after that were instead sent to the crusher. ☞

IMPORTANT NOTE ON DC POWER FOR HT-220S

A good, fully charged battery right off the charger is about 17V. Using a bench supply dictates caution, so +15v max is a safe approach. NEVER, NEVER reverse the polarity of the power supply! Two common areas to look if the cover fuse is blown is the audio output transistors, and a 10uf polarized cap, Cxxx (P/N ?) across the +15 buss. If any of these components are shorted, they must be replaced. NOTE: If the audio transistors are blown, it is a good indication that someone applied power with REVERSED polarity. ☞

ANTENNA CROSS REFERENCE CHART FOR HT220S

courtesy of the old www.mt500.com before the motorcycle site

Part Number	Model	Frequency	Color
85-05195H01	NAB6001	30-35	Yellow
85-05195H02	NAB6002	36-40	Green
85-05195H03	NAB6003	40-45	Black
85-05195H04	NAB6004	46-50	Blue
85-82283J05	NAD6221	136-142	Yellow
85-82283J06	NAD6222	142-150.8	Green
85-82283J01	NAD6219	150.8-162	Black
85-82283J02	NAD6220	162-174	Blue
85-05146B03	NAE6100	406-420	Red
85-05146B04	NAE6142	440-470	Green
85-05146B05	NAE6163	470-512	Black

This is Motorola's antenna color coding typically used on rubberduck antennas, look for the paint dot found on thread of antenna. If none seen, it is typically the most common bandsplit, for example, a VHF rubberduck with no paint is 150 to 162. ☞

PUBLIC SAFETY MODEL OF THE HT220



Designed specifically for public safety personnel, this model has a remote speaker/mic/antenna to allow operation without removing the radio from belt and provide best possible radiation pattern. This model was probably the first of this common configuration now used by many police depts.

Tom Donohoe at w2njs @ arrl.net has **public safety HT220s for sale**. 6-ch omni 453/458 split, 114.8 PL but dirty from years of police work. \$25 for a set of one working (basic check of 1 watt output and noise on receive) and one non-working for spare parts. Includes spkr/mic, antenna, but no battery. For more details and description, see www.batnet.com/mfwright/HT220sale.html. ☞

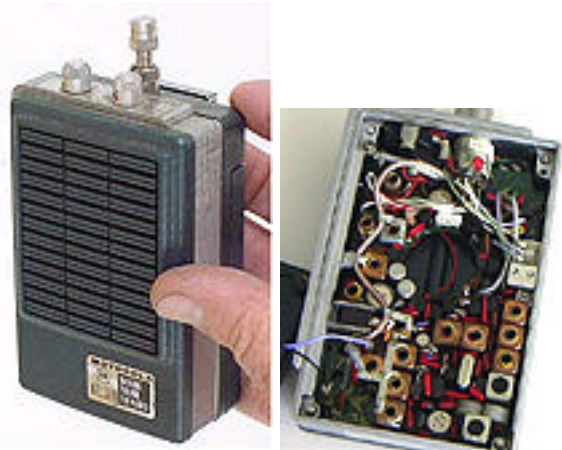
FALL FROM DOWN UNDER

By Brian Morgan, VK7RR

I am the local ham repeater technician and have had one or more HT220's for my own use since 1975. Late that year I was on top of a TV tower about 300 feet high on top of a 4000 foot mountain. At the time I was suspended by a rope ladder and safety harness, I dropped my almost new HT220 to the ground beneath. It fell about 300 feet to the ground and then bounced quite some distance out from the tower. When we got back to terra firma some hours later, I decided to hunt around to try to find it. We are talking about pretty solid rock here. I grabbed another handheld and pushed the PTT, whilst walking around and listening carefully. There lying on the rock was my rig, still working fine. The only problem was an intermittent caused by a broken resistor. That HT220 is still in use today. ☞

FRS PREDECESSOR: HT-100

You hardly see HT-100's anymore – they're just too exotic, what with the funny button-cell battery pack, the low, low power (100 mW), etc., but they do surface from time to time. The HT100s are about the same size as today's FRS radios. Note the component board is identical to the HT220 less the power amplifier.



Some people think the HT-100 is a nice radio for local plant operations, others considered it cute but impractical. However, bids on eBay are very high. ☞

HT220 NOSTALGIA COMMENT

by Dave Firis, AL7OP

I came across some boxes of 220s inside a pile of secret service micors at a surplus vendor. All crystals were crimped by pliers. However, most of them still worked OK as the actual crystal must be near the bottom of the cans and very few of the were actually broken. There were about 90 units and all of them worked on at least one of their 4 channels, about 25% worked on all four. We sold many of these until we realized that the USSS was STILL using these channels. When this happened we sold our services to the USSS to REMOVE the xtals, to INSURE that the remainder of the units (about 40 at that time) would not be bothering the gov't. We received \$375 from the USSS to disable radios that they had probably paid the local NYC MSS for the same thing. I also kept a couple around just for a piece of history. ☞

HT220 NEWSLETTER is published by the
HT-220 Preservation Society
Website: <http://www.batnet.com/mfwright/HT220.html>

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