

FT-2500M Two Metre FM Transceiver

Reviewed by RSGB Headquarters Staff

THE LATEST 12-volt two-metre FM rig from Yaesu runs up to 50 watts, boasts 'military spec construction' and is packed with facilities. It comes with a microphone and dash-board clip, a mobile bracket, a 2.5m power cable, a handbook and of course a Yaesu sticker.

The FT-2500M has an integrated die-cast chassis and heat sink, designed to protect against shock, vibration and overheating.

The loudspeaker is mounted on the underside so, unless the radio is to be mounted near vertically, an external speaker will be needed.

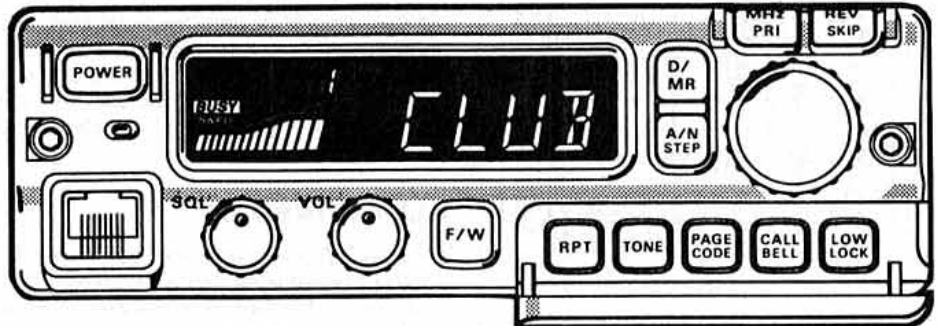
FRONT AND BACK

THE DECEPTIVELY uncluttered front panel includes a good sized tuning knob and chunky audio and squelch controls. Each of these knobs is knurled and covered in a non-slip plastic that makes adjustment easy, even in the dark (important when mobile). These three controls are also backlit with the same orange light that illuminates the display. On the left are the push-on, push-off power switch and the microphone socket. No separate TNC socket is provided.

The microphone, which uses Yaesu's oblong latching plug, is small and has a fiddly transmit button with a rather strong spring. It contains a tone button which sends a 1750Hz tone whenever (and for however long) it is pressed. UP/DOWN buttons step the frequency or memory channels, or start the scanning; these have a 'cheap' feel to them and the sharp-edged stowage hook tends to get in the way of them.

Five other push-buttons are visible. 'A/N' switches the display between frequency and a programmable alphanumeric name, 'D/MR' toggles between memory and dial, 'MHz/PRI' allows rapid switching of the frequency between 144.*** and 145.***MHz, 'REV/SKIP' toggles between 'repeat' and 'reverse' splits, and 'F/W' activates a second (less commonly used) function on each of the other buttons. The first four buttons are handily grouped round the frequency knob and are easy to find without looking - clearly some effort has gone into ergonomics.

Five other buttons lurk under a robust flap below the tuning knob (see the illustration above): Four control repeater shift, CTCSS, DTMF paging (if fitted) and the CALL channel memory. The fifth switches Tx



Five control buttons are 'hidden' under a flap on the front panel.

power level between 50, 25 and 5W or (in conjunction with the 'F/W' button) locks the other controls.

A 77mm x 18mm LCD panel gives comprehensive information (see the illustration below) but this does not obscure its main purpose of displaying frequency clearly. The orange backlighting adjusts automatically to the ambient light level, though like so many of the facilities on the FT-2500M this can also be adjusted manually from the front panel. The result is pleasant and easy to read.

The rear panel carries the fused 'pigtail' power lead, 3.5mm speaker jack and SO239 antenna socket.

DOCUMENTATION

AT FIRST GLANCE the handbook looks overwhelming at over 160 A5-sized pages, but only the first 54 are in English, the rest being the same information but in French and Spanish.

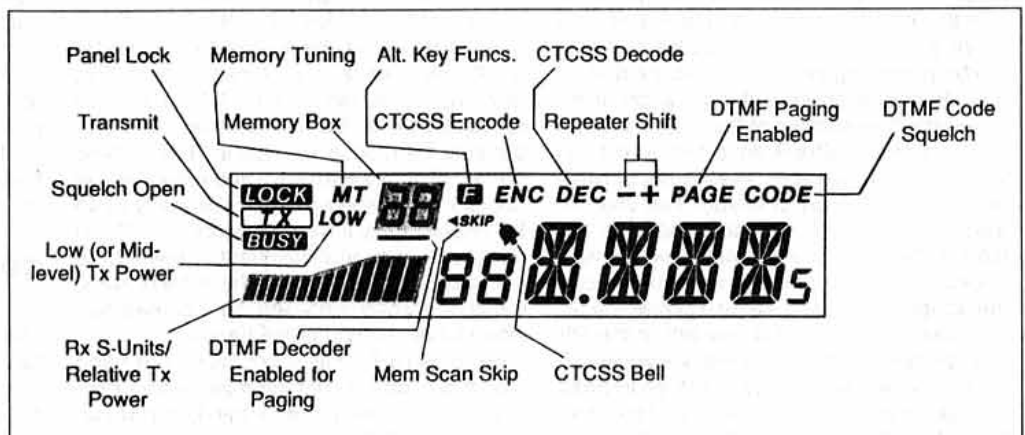
The controls are described clearly and the installation instructions include safety notes, important for a radio of this power. The bulk of the manual explains how to use the advanced

facilities: memories, DTMF, etc. This is done in a helpful manner and boxes are provided from time to time giving tips about possible 'idiot traps' (such as accidentally locking out the controls). Diagrams of the controls and display are given as an aid to understanding. A two-page section 'In Case of Problems' isn't the usual cause-and-effect guide (which so often list every fault possible except the one you're experiencing). Instead it aims to help the user understand the display and the function buttons.

Connecting packet radio TNC via the microphone socket is explained with much helpful detail, as is modifying the radio for 9600 Baud working. This latter should be carried out only by someone experienced with surface mount devices.

A two-page quick reference chart is included but it is a pity that this wasn't printed on facing pages so it could be left open beside the rig, especially as the following page is blank.

Finally, block and circuit diagrams are provided on a separate A3 sheet.



The comprehensive LCD display (shown actual size).



BELLS AND WHISTLES

ALTHOUGH THE RUGGED construction and high power are important, the FT-2500M really comes into its own with a large number of well thought out built-in features. These are customised from the front panel using both the visible and hidden buttons, with and without the function button. Different tone bleeps for each function give a helpful confirmation that you have pressed the right button. The transmit power switch even responds with low, medium or high tones, corresponding with the power level selected. The tone level adjusts with the volume control - useful when travelling in a noisy car - or the bleep can be disabled.

Several channel spacings are available from the synthesizer (see Manufacturer's Specifications box) and these are easily selected. However, the receive selectivity and the transmit deviation would need to be modified for optimum operation at, say, 12.5kHz channel spacing. Nevertheless, this flexibility is useful for transverting to 6m or when holidaying abroad.

There are 31 memories, each of which can store independent transmit and receive frequencies, repeater shift and direction, and CTCSS settings. Each memory can be assigned a four-digit name (eg S21, 3CF or CLUB) which can be displayed instead of the frequency if required. Any memories (except Ch 1) can be masked so that the radio ignores them until un-masked again; the handbook suggests this would be useful if you "regularly move from one operating area to another". A priority channel can be set to interrupt your monitoring of an-

other frequency when the squelch opens on that channel.

Holding down the UP/DOWN buttons on the microphone initiates the scanning. This can operate over the memories, the whole band or between limits set by the user to the nearest 100kHz. Scanning stops when the squelch opens and will resume either after five seconds or shortly after the squelch closes, programmable by the user. Memories can be programmed to be skipped by the scanner, though they may still be selected manually.

To prevent the transmitter being left on accidentally a Time-out Timer can be imple-

mented to turn off the Tx after between 5 and 60 minutes of continuous sending. Automatic Power-off can be set to switch off the radio after a period of no button or PTT activity; times of between 1 and 24 hours are available.

The repeater shift on the FT-2500M is initially set to 600kHz but any split can be set, either globally or by using the memory channels. Repeater shift is available manually on any channel but a most useful facility is Automatic Repeater Shift which enables a -600kHz shift whenever a receive frequency is selected in the sub-band 145.600 to 145.850MHz. It's a pity that the top three channels are included in this - they have long ceased to be allocated to repeaters in IARU Region 1, but this is a minor niggle.

A CTCSS tone encoder is built in (see page 67 for information on the use of CTCSS in the UK) and there is an optional decoder available. Selecting a tone is easy but fiddly if mobile,

as it involves one of the 'hidden' front panel buttons. If you use several co-channel repeaters habitually with different tones, these can be set in the memories; the tone group could be stored as part of the analogue display (eg R4_E, R6_A, R6_C etc).

ON THE AIR

THE FT-2500M was easy to use, once set up and performed well. The high power proved useful and there was adequate audio output for mobile use. The backlit display was found to be easy to read, as was the bargraph 'S' meter. Good reports were received on the transmit audio.

CONCLUSION

A GREAT DEAL of thought has gone into the design of the FT-2500M. It has a very ergonomic front panel and a wealth of facilities, the majority of which may be tailored to the user's preference. It is one of the highest power 2m mobiles available and is certainly built solidly.

Two small things let the radio down: the microphone feels cheap, and the loudspeaker is in the wrong place for most uses. These can be fixed easily but at an additional cost.

Optional extras include a CTCSS decoder, a DTMF pager, a DTMF keypad microphone, an external loudspeaker and a mains power supply.

The FT-2500M transceiver costs around £350 and is available from Yaesu dealers, many of whom advertise in *RadCom*. Our grateful thanks to Yaesu (UK) for the loan of the review model.

MANUFACTURER'S SPECIFICATIONS

General

Frequency range (as supplied):	144.025 - 146.000MHz
Channel steps (selectable):	5, 10, 12.5, 15, 25 or 50kHz
Frequency stability:	< ± 10ppm (-20 to +60°C)
Mode of emission:	F3 (G3E)
Antenna impedance:	50Ω unbalanced
Supply voltage:	13.8V DC ± 10% negative ground
Current consumption (typical):	Rx: 600mA, Tx hi/mid/low: 12/9/5A
Operating temperature range:	-20 to +60°C
Case size (WHD) without knobs:	160 x 50 x 180mm

Transmitter

Output power (hi/mid/low)	50 / 25 / 5W
Modulation type:	Variable reactance
Maximum deviation:	± 5kHz
Spurious radiation:	< 60dB
Microphone impedance:	2kΩ

Receiver

Circuit type:	Double Conversion Superhet
IFs:	21.4MHz and 455kHz
Sensitivity (for 12dB SINAD):	Better than 0.2µV
Selectivity (-6 / -60dB):	12 / 30kHz
IF rejection:	Better than 70dB
Image rejection:	Better than 70dB
Maximum AF output:	3.5W into 4Ω at 10% THD