

# practical Wireless

APRIL 1993 £1.75

## Propagation Special

### Meteor Scatter

Ian Poole G3YWX Looks At This Fascinating Mode

### Feature

Spread Spectrum - Communications Of The Future?

### Antenna Workshop

Build A Rotatable Mast

### Valve & Vintage

For The Valved Equipment Enthusiast

## Reviewed This Month

**Yaesu's FT-530  
Go Anywhere  
Hand-held  
Dual-Bander  
With The  
Smart Mic**

**Plus  
QSOs In French  
Packet Panorama  
And Much More**



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# SME

South Midlands Communications Ltd, S.M. House, School Close, Chandlers Ford Ind. Est., Eastleigh, Hants SO5 3BY

## FT530 DUALBAND HANDHELD



- VHF/UHF Handheld
- Dual reception on same or different bands
- Rx Frequency coverage: 144-146, 430-440 MHz Expandable to 110-180, 300-500, 800-950 MHz
- AM Capability
- Built-in CTCSS & DTMF Encode/Decode
- Full Duplex Crossband operation
- Built in VOX for "Hands Free" operation
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FT211RH	2m mobile	£299.00	PX
FT290R2	2m multimode	£239.00	PX
FT790R2	70cms multimode	£425.00	PX
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FT203R	2m handheld	£110.00	AX

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PRO2005	Scanner	£100.00	AX
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AX = ARE, LONDON BX = SMC, BIRMINGHAM CX = SMC, CHESTERFIELD LX = SMC, LEEDS PX = SMC, SOUTHAMPTON (HQ) RX = REG WARD, AXMINSTER

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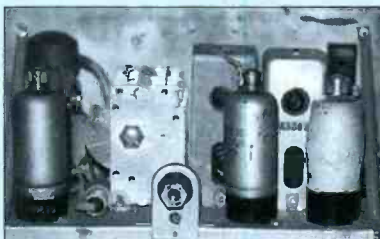
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*We asked Richard Newton G0RSN to try the Yaesu FT-530 dual-band hand-held transceiver, and as keen as ever, here's what he thinks!*

# Review

## The Yaesu FT-530 Dual-Band Hand-Held

The Yaesu FT-530 is supplied with a dual-band helical antenna (which measures 100mm in length), a 7.2V 700m/Ah NiCad battery pack, a belt clip and battery charger. Circuit diagrams, instruction book and quick reference card are also included.

### Pleasing Radio

The FT-530 is a pleasing radio to look at. The case is black in colour and is polycarbonate high impact plastics at the front and die cast alloy heat sink at the rear.

The top panel of the radio has a BNC antenna connection, 13.8V external power supply/charging socket and external speaker/microphone sockets. The top panel also supports a pair of two-in-one squelch/volume controls, one for v.h.f., the other for u.h.f., and a 20 detent rotary switch used to tune the v.f.o. and memories. This also has functions when setting up CTCSS and DTMF tones.

The antenna is situated directly behind the volume squelch control for v.h.f., thus inhibiting the use of those controls. A small point, but one which will be frustrating to a user. I feel that since the FT-530 is not one of the smaller hand-helds on the market at the moment, this design difficulty could have been avoided.

### Side Panel

I'll move now on to the side panel. This is the home to the power switch, which is almost flush with the case and bright orange. This design is a godsend to a scatty operator like me, who, when in deep conversation with some long distance contact, invariably hits the off switch instead of the push-to-talk (p.t.t.) switch.

The tone burst, push-to-talk and lamp switches are grouped together under a rubber membrane, although together they cannot easily be mistaken. The lamp illuminates the display well and will stay on for five seconds.

If pushed after the function key, the light will stay on continuously. The tone burst will transmit a tone without the use of the p.t.t. button.

The usual squelch defeat or monitor facility is not present on the FT-530, a departure from tradition maybe, but personally I cannot remember ever using this facility.

### Good Size

The front panel has the l.c.d. display. This is a good size and the important information is easy to see. However, if a lot of the functions are being used it does become cluttered. A block of l.c.d. squares, serve as signal strength meter on receive and r.f. power indicator on transmit.

Below the display are the function and

numerical keys and dual colour, (red and green) l.e.d.s to indicate transmit and busy v.h.f. and u.h.f. I would have preferred to see these l.e.d. indicators on the top panel, however I accept that this is a personal preference.

The speaker and microphone are located behind a grill below the key pad. In addition to lighting the display, the lamp also illuminates some of the keys. This has obvious advantages.

I have however one criticism. The 'band', 'call subBand' and 'reverse' keys are not under-lit nor are the secondary functions of any keys. It's a shame that such a good idea was not fully exploited.

### The Manual

The FT-530 is not a radio you can pick up, turn on, and use. In fairness, the manual itself tells you this.

I am not very technically minded, (anyone who knows me will now be nodding to themselves knowingly!) I am however, reasonably competent in the use of radio equipment and understanding the jargon and instructions found in user manuals.

The instruction book that came with the FT-530 changed all that! When I eventually got to grips with it, I found the information was there.

However I found that the book was set out in a most off-putting way. Text was bunched together, paragraphs were long, terms were confusing and diagrams were scarce.

I found the book difficult to digest and frustrating. Not wishing to be unfair, I sought some more opinion. I took the FT-530 and handbook to my radio club, where colleagues of all levels of experience had a go. The verdict was unanimous, it was, to say the least, hard-going.

It's a good job there's a quick reference guide supplied with the FT-530. This is a small aid-memoir, that can be carried in even the smallest shirt pocket. All the main functions of the set are laid out pictorially and as such are very easy to use, off-setting the main manual complications.

I hope this criticism will be seen as constructive. To this end, perhaps I could suggest in the main manual the inclusion of an A-Z index, an 'Easy Get On The Air' chapter, detailing the basics of v.f.o. and memory operation and more examples throughout.

### Versatile Radio

The FT-530 is an advanced and versatile radio when you get to know it. I was pleased to see it came with DTMF and CTCSS.

How many times are we expected to spend vast amounts of money purchasing this board and that chip? Not so with the FT-530.

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## Useful Features

The functions of this radio are far too numerous to mention all of them, however I will mention some of the more useful features I feel the FT-530 has to offer. It has programmable frequency steps and variable repeater shift. The frequency steps can be programmed for 5, 10, 12.5, 15, 20, 25, or 50kHz. It is also possible to tune in 1MHz steps, which is very useful for 430MHz.

## Dual VFO

Each band has a dual v.f.o., and this is an unusual feature for a hand-held that will prove to be a very useful asset. Particularly when trying to find a free channel when working simplex, and especially when operating mobile.

## Memories

There are 41 memories on each band, 38 of these will store frequency, offsets, tones and other functions. Two are used to set the limits of v.f.o. programmed scan and one is a call frequency. The call frequency can be retrieved at the touch of a button.

## Modes Of Scan

There are several modes of scan offered by the FT-530. Priority scan, where memory No. 1 is monitored every five seconds. Programmed v.f.o. scan, where you can set the upper and lower limits. Memory scan, any memory can be temporarily omitted.

A total v.f.o. scan can also be achieved. When scanning, the FT-530 can be programmed to either stop at a carrier and remain until it has gone, or to stop for five seconds and then continue.

## Recent Innovation

A relatively recent innovation, has been the introduction of certain hand-helds being able to receive and transmit paging by use of DTMF tones. The FT-530 had this facility, so you can page friends on an individual or group basis or be paged yourself.

If you live near a group of licensed friends, this facility will doubtless give you hours of fun and you never know, it might even be useful! There is no need for others to have FT-530s to join in, but they do need a hand-held that can transmit DTMF tones including the star (\*) symbol or have a page facility.

When working duplex with a speaker/mic attached, the received audio can be split between the internal and external speakers, thus preventing feed-back.

## Variable Power Output

The FT-530 has a variable transmit power output. This differs with input voltage.

At approximately 7.2V in the power levels can be 0.5W, 1.5W or 2W. At approximately 12V the levels can be 0.5W, 1.5W, 3W or 5W. This is one of the many power saving features on the FT-530.

Practical Wireless, April 1993

Others include automatic power off, automatic battery save and being able to disable the l.e.d.s and key bleeps. The parameters of these are all variable.

## Repeater Shift Function

One feature I feel is useful, especially when mobile operating, is the automatic repeater shift function. As soon as you tune to a repeater frequency on v.h.f. the set automatically engages a 600kHz shift. No more fumbling round for the offset switch!

The FT-530 will only allow you to transmit on the main band, however the sub band can be set to receive a different frequency on the same band as the main band. Confused? So was I!

To explain, I could be transmitting on the v.h.f. band using 145.625MHz but set the u.h.f. side to monitor 145.500. This is a very useful feature and could be done for two u.h.f. frequencies just as easily.

The sub band can be left blank, to effect single band operation. It can display the built-in clock or display, in a numerical read-out, how much voltage is left in the battery. This feature impressed me greatly, it's a simple addition, but so very useful.

## Great Effect

The clock too is used to great effect. The FT-530 boasts a timer-on and timer-off facility, along with an alarm.

How many readers remember the song 'Deck of Cards', where a soldier convinces his sergeant he is using a deck of cards as a prayer book, Bible and almanac when caught with them in church? Well, you can now tell your better half that your FT-530 is not being taken on holiday as a radio. It is a time piece, travel alarm and egg timer. I know, I was that radio amateur!

## Accessed With Ease

I accessed the local repeaters with ease and found the receive sensitivity to be adequate. I received favourable reports on the transmitted audio.

I was disappointed with the quality of the audio on receive. Although acceptable, it was not up to the quality one would expect from a radio such as the FT-530. I feel most, if not all of the blame, must be laid on the very small speaker used. But there's no room for a bigger speaker in this rig.

## Microphone Display

With the FT-530, I was given the MH29 speaker/microphone. This has its own l.c.d. display and lamp. The MH29 controls most of the main functions of the FT-530 by remote control. I found it to be a good companion to the FT-530 and extremely useful when mobile on my feet. The audio from this very smart unit is good, both on transmit and receive.

## Battery Pack

The battery pack that comes with the FT-530 has a 2.5mm jack socket in the side. The jack input



**There's an interesting option to go with the FT-530, in the shape of the MH29A2B microphone with l.c.d. frequency display.**

*I found the microphone display unit to be a good companion to the FT-530 and extremely useful when mobile on my feet. The audio from the very smart MH29 speaker/microphone is good both on transmit and receive.*

## Manufacturer's Specifications

### General

Frequency range:	144-145.995MHz and 430-439.995MHz (can be extended)		
Channel steps:	5, 10, 12, 5, 15, 20, 25 & 50kHz		
Emission type:	F3 (f.m.)		
Supply voltage range:	5.5 to 16-V d.c.		
Power source:	7.2 or 12-V NiCad pack, or external d.c. power supply		
Current consumption:	190mA unscelched, 150µA (auto power-off)		
	<b>144MHz</b>	<b>430MHz</b>	<b>Dual RX</b>
Squelched	60mA	50mA	95mA
Batt. Saver (1:43)	16mA	16mA	16.8mA
Transmit (13.8V, 5W)	1.5 A	1.6 A	—

### VHF Section

Transmit (European)	144-146MHz (other frequencies may be programmed)
Receive	130-174MHz
Repeater shift:	+/- 600kHz (default)

### UHF Section

Transmit	430-440MHz
Receive	400-500MHz
Repeater Shift	1.6, 5 or 7.6 (default 1.6MHz)

### Receiver

Circuit type:	Double-conversion superhet
IFs:	v.h.f. - 15.25MHz & 455kHz u.h.f. - 44.775MHz & 455kHz
Sensitivity:	v.h.f. < 0.158µV (12dB SINAD) u.h.f. < 0.18µV (12dB SINAD)
Selectivity (-6/-60dB)	> 12 / < 30kHz
AF output :	0.3W (@ 13.8V, for 5% THD)

### Transmitter

Power output (@ 13.8V):	approximately 5W (see below)
Modulation:	variable reactance F3
Maximum deviation:	+/- 5kHz
Spurious emissions:	> 60dB below carrier
Microphone type:	2kΩ condenser
Burst tone:	1750Hz (except vers. A)

## Transmitter Power Selection

Display Shows	7.2V Nominal Watts	7.2V Nominal mA	12V Nominal Watts	12V Nominal mA
L1	0.5	600	0.5	600
L2	1.5	750	1.5	850
L3	2	750	3	1100
Hi	2	1000	5	1500

Operating Temp. Range:	-10°C - +60°C
Frequency stability:	+/- 5p.p.m.
Antenna (BNC):	50Ω (rubber-covered helical antenna supplied)
Case size:	55x134x33mm w/o battery or antenna
Weight (approx):	530g with FNB-27 & antenna

## CTCSS Tone Frequencies (Hz)

67.0	94.8	131.8	186.8
69.3	97.4	136.5	192.8
71.9	100.0	141.3	203.5
74.4	103.5	146.2	210.7
77.0	107.2	151.4	218.1
79.7	110.9	156.7	225.7
82.5	114.8	162.2	233.6
85.4	118.8	167.9	241.0
88.5	123.0	173.8	250.3
91.5	127.3	179.9	—

## Accessories & Options List

Rechargeable Ni-Cad Battery Packs	Charger
FNB-25 7.2V, 600mAh	NC-28C
FNB-26 7.2V, 1000mAh	NC-34C
FNB-27 12V, 600mAh	NC-18C
FNB-28 7.2V, 700mAh	NC-28C

## Other Accessories

NC-42	1-hour Desktop Quick Charger for all above FNB packs
MH-29A2B	Remote Control Speaker/Mic
YH-2	VOX Headset
YHA-29	Rubber flexible antenna

is the charging socket for the supplied charger.

The socket is protected by a hard plastics plug, which is hinged and secured to the side of the battery pack. Unfortunately, this hinge was beginning to whiten along the crease after only two charges. I am of the opinion that it would not last long, and when it breaks it will cheapen the look of the radio considerably.

## In Conclusion

In conclusion, I think that the FT-530 is a complicated, but nevertheless reasonable little radio. If you are into gadgets and gismos then you will feel very much at home with the Yaesu FT-530.

Once I got over the initial hurdles, I found the FT-530 to be a solid little radio with some useful functions. It is a good all-round package, coming complete with facilities that are expensive additions for other similar radios on the market.

PW



My thanks go to South Midlands Communications (SMC) Ltd., of S. M. House, School Close, Chandlers Ford Industrial Estate, Eastleigh, Hampshire SO5 3BY, tel: (0703) 255111, for the loan of the review model.

The FT-530 is available in the price range £420 to £449, and the MH29A2B is available at around £69.

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