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This month Rob Mannion G3XFD takes a look at a transceiver from Yaesu which could arguably be called 'Yaesu's 'forgotten classic' - the pioneering FT-707.

# Yaesu's Forgotten Transceiver? It's Classic - The Yaesu FT-707

**Rob Mannion G3XFD tries the Yaesu FT-707 and suggests you start looking now for a model on the second-hand market**

**R**esponse from our readers to our newly extended 'It's A Classic' series - which has been running on an occasional basis certainly surprised the *PW* team! The report on the TS-830 certainly provoked a lot of correspondence, and the new GW owner of the rig I'd had to try, even got me to sign the manual at the Leicester Show!

One unforeseen results of the article were the several (good natured) complaints I got from readers who said that prices of TS-830s had risen since the article was published. All I can say in my defence is that none of the money

may well be overlooked nowadays.

Although I owned - and still own a selection of other pioneering Yaesu Amateur Radio equipment - I've never until now had the opportunity to use the FT-707. However, now that

I've had the opportunity I wish I'd been able to have one in my shack.

The suggestion of trying the '707 came from **Bob G6DUN** at the Shortwave Shop in

Christchurch when I returned the Kenwood TS-830, which had featured in the October issue. On the look-out for more classic equipment we got talking about older Yaesu Amateur equipment - it so happened that he had a '707 which had come his way. So, rather tempted I took it away with me.

The FT-707 was available in the early 1980s and was first reviewed (anonymously as was often the case in those days) by a 'Staff Member' in the May 1981 issue of *PW*.

Interestingly although the review provided much technical information, the opinion I was looking for from the unknown reviewer was summed up in one paragraph simply as "It's really going to break my heart to send the review model back". Obviously the transceiver had left a lasting impression!

As we now approach 2001 it's all too easy to forget the impact the



● Fig. 1: The neat front panel of the FT-707 transceiver. The main tuning display from the transceiver is provided by bright 'off white' i.e.d.s with a bar-graph type of indicator for power output indication. The digital frequency read-out is supplemented by a mechanical analogue dial counter. The neat and uncluttered control panel is exceptionally easy to use.

Rob Mannion G3XFD has been the Editor of *PW* for nearly 11 years. He's a keen 'portable' operator on both the c.w. and v.h.f. bands



● The Yaesu FT-707 - a transceiver ahead of its time?

comes my way! So, with your responses ringing in our ears I've started looking around for rigs we've perhaps missed first time round and which

introduction of Japanese Amateur Radio equipment had on our hobby back in the early 1960s. In fact the earliest Japanese equipment I ever saw was in 1959 (or thereabouts) in the G. W. Smith & Co. (Radio) Ltd. shop in Lisle Street, not far from the famous Tottenham Court Road.

In those days there were several interesting shops selling surplus radio equipment of interest to Radio Amateurs and those like me who were budding Amateurs. However, farther down Lisle Street there were establishments best avoided unless you wished to be apprehended by the continually patrolling Vice Squad officers of the Metropolitan Police!

## Sommerkamp & Yaesu

What made the Smith's shop in Lisle Street stand out from many of the others was the fact that along with selling a nice range of surplus equipment, they also sold Eagle equipment, Lafayette receivers (American looking but again - I'm fairly certain - also made in Japan) and one or two early Sommerkamp radio receivers from Germany.



● Fig. 2: Inside view of the transceiver, showing the upper side of the main p.c.b. with relatively few integrated circuits and many discrete components.

However, although the Sommerkamp receivers were marked 'Made in Germany' it became obvious to anyone looking closely at the receivers that they were made in Japan and assembled in Germany. The Japanese maker's name? Yaesu Musen of course.

I still have some unusual Bakelite International Octal and several Mazda Octal baseboard mounting valve bases bought from the shop. They've lasted me many years and have proved extremely useful. But oh, how I now wish I then had the money to buy one of the early Sommerkamp receivers - as nowadays they are becoming very collectable indeed.

In fact, it's my opinion that the early Sommerkamp and Yaesu equipment will very soon become

as collectable as the Eddystone equipment is now. So, whatever you do ... don't dump that older radio - it could be the start of your own collection.

Five or six years ago when I was attending the Dayton HamVention in Ohio in the USA with a party of *PW* readers I came across one chap who has a truly massive collection of Japanese Amateur Radio equipment on display outside in the huge 'Flea market'. None was for sale!

Additionally, None of it was later than 1980 and some went back to the early 1960s with one or two rarer items (particularly Morse keys) going back to the middle 1950s. Some of the collection included equipment made by Yaesu originally for the Japanese home market (this is how the famous FT-75 originally

started so I've learned).

Hopefully as this series goes from strength-to-strength owners of rarer 'classics' will let us share the experience of owning the equipment (see 'Keylines' for further details on how you can help) and will be in contact with me on

the subject. In the meantime I'll describe my own interesting experiences with the FT-707.

## Solid State

Basically speaking, the Yaesu FT-707 is a 3.5 to 28MHz fully solid state 100W s.s.b. and c.w. transceiver, capable of running a maximum of 100W. Using amplitude modulation it's capable of a

maximum of 50W and the design is based round remarkably stable variable frequency and crystal-controlled oscillators.

Although the transceiver covers all the WARC allocations, strangely enough **it does not cover the 1.8MHz band**. The omission of 'Top Band' although surprising (especially if you enjoy 1.8MHz operations) nowadays, perhaps is more than compensated for by the inclusion of the WARC bands as they've become much busier.

I'm left wondering whether or not - 20 or so years ago would the lack of 'Top Band' have deterred me from buying the transceiver? Bearing in mind how little used the WARC bands were then I may have opted

for another rig - and I would have been the loser!

The receiver circuitry on the FT-707 is rather unusual and extremely interesting. In fact, it's a double conversion superhet which ends up producing the original 8.9875MHz i.f.!

The first 8.9875MHz i.f. is passed through a 20kHz crystal filter and then, after further processing is fed through the main s.s.b. filter (an extra c.w., filter was available as an option). The filtered i.f. signal is then mixed with a 19.7475 MHz local oscillator signal. The resultant 10.76MHz signal is fed through another crystal filter and mixed with another 19.745MHz local oscillator to produce the original i.f.

The rather protracted conversion

## Manufacturer's Specifications

### GENERAL

<b>Frequency Coverage:</b>	80m	3.5-4.0MHz
	40m	7.0-7.5MHz
	30m	10.0-10.5MHz
	20m	14.0-14.5MHz
	17m	18.0-18.5MHz
	15m	21.0-21.5MHz
	12m	24.5-25.0MHz
	10m	28.0-29.9MHz

**Modes Of Operation:** l.s.b., u.s.b., c.w. and a.m.

**Power Requirements:** 13.5V d.c., negative ground

**Current Consumption:** d.c. 1.5A receive

d.c. 20A transmit

**Case Size:** 93 (h) x 240 (w) x 295 (d) mm inc. heat sink

**Weight:** approx 6.5kg

### TRANSMITTER

**Power Input:** s.s.b./c.w. 240W d.c.  
a.m. 80W d.c.

**Carrier Suppression:** Better than 40dB

**Unwanted Sideband Suppression:** Better than 50dB at 14MHz, 1kHz mod.

### RECEIVER

**Spurious Emissions:** At least 50dB down

**Frequency Response:** 350-2700Hz (-6dB)

**Third Order Distortion Products:** At least 31dB down

### RECEIVER

**Frequency Stability:** Less than 300Hz drift over 30 minutes after 10 minute warm up, less than 100Hz drift after 30 minutes warm up

### RECEIVER

**Sensitivity:** s.s.b./c.w. 0.25µV for 10dB S/N  
a.m. 1.0µV for 10dB S/N

**Selectivity:** s.s.b. 2.4kHz (-6dB); 4.0kHz (-60dB)  
c.w. \* 0.6kHz (-6dB); 1.2kHz (-60dB)  
c.w. \*\* 350Hz (-6dB); 1.2kHz (-60dB)  
a.m. 3.6kHz (-6dB); 6.8kHz (-60dB)

**Image Rejection:** 60dB (80-12m)  
50dB (10m)

**Audio Output Impedance:** 4-16Ω

**Audio Output:** 3W @ 4Ω @ 10% THD

**Variable Bandwidth Control:** Continuous from 300Hz to 2.4kHz (s.s.b./c.w. modes only)

**Modulation Type:** (s.s.b.) Balanced modulator

(a.m.) Amplitude modulation of a low power stage

**Antenna Output Impedance:** 50Ω

**Microphone Impedance:** 500-600Ω (low impedance)

\* with optional 600Hz c.w. filter

\*\* with optional 350Hz c.w. filter



● Fig. 3: Underside view of the main p.c.b. with the massive heat sinking for the p.a. stage on the far right with the shielding (with perforated screening) of the two transistor power amplifier on the near right.



Fig. 4: Rear view of the FT-707 with fan protection and ducting screen removed. Note heavy duty cast aluminium heat-sinking ducts and the airways provided when the screening is in place.

and re-conversion process enabled the designer to provide the receiver with a continuously tuneable variable bandwidth over the i.f. pass-band with no change in the beat note of the incoming signal.

The process - although involved - is effective and is achieved by the clever use of a variable crystal oscillator (so beloved by the **Rev. George Dobbs G3RJV** for his QRP projects!) with just enough 'swing' to cover the pass-band of the filter. It's all worthwhile and the results are impressive bearing in mind the age of the transceiver.

In fact, everything on this transceiver is impressive. Especially when you remember that it predates the minuscule surface mount components by more than a decade. What a tribute to the designers!

### On The Air

On the air the FT-707 proved to be a delight and I only had a few minor difficulties. I won't concentrate on them because I think they're mainly due to the limited dexterity I have with my left hand.

Generally speaking the transceiver is, as I've mentioned, a delight to use. The large tuning knob, although not a free spinning weighted control, has an exceptionally 'nice' feel about it. However, being somewhat old fashioned the main pleasure for me was having the beautifully illuminated (in a soft luminescent green) main analogue dial which rotates behind

the deeply engraved very solid feeling aluminium tuning knob.

Being on the right hand side of the transceiver you might think that I (being left-handed of course) might have found the main tuning control difficult to use. Not so! Sat on my auxiliary desk to the left of my main transceiver (the Alinco DX-70) I found it very comfortable to tune and operate.

Despite the fact that the built-

in loudspeaker is underneath the transceiver the folding stand mounted on the underside lifts it up high enough to provide perfectly acceptable audio. Transmitted audio is also good and several friends said my voice was very recognisable.

On c.w. the variable delay VOX switching used for keying follows the pattern used for most transceivers of the same era. I quickly got used to it again once I'd adjusted the 'hang' time to my satisfaction.

Performance on 7MHz - always an excellent test I feel proved to be superb. Bearing in mind that the transceiver does not have a high first i.f. and it's a far from new design - it proved excellent indeed. In fact I regard this transceiver as being a really good rig for the keen c.w. operator. The variable bandwidth feature really proved itself on the air and enabled me to complete several very difficult QSOs which were hampered by very noisy conditions.

I regard my Alinco DX-70 as being an excellent performer on 7MHz, as it comes fitted with narrow filters as standard. And recently I have managed to find myself (thanks to **Arthur Tait GM4LBE** who lives up in Lerwick on 'Mainland' of the Shetland Islands) an add-on W9GR DSP III unit which increases the versatility of the receiver.

Together the DX-70 and the DSP unit provide a formidable pair with which I can compare results on other equipment. However, despite the fact that they do work

together well (the DSP unit's performance as a switchable bandwidth c.w. filter is superb) **I found that the FT-707 was also able to hold its own remarkably well in the same conditions, and this I proved by switching over the antenna during QSOs.**

The only time I was unable to continue a QSO was when I was working **Ger EI6DP** in Limerick, Ireland on s.s.b. The noise was so bad and conditions were so poor that the DSP III's noise reduction facilities had the edge over the sensitivity and I had to switch over to the DX-70/DSP III combination to complete the QSO.

Sensitivity, and selectivity make the FT-707 a good competitor even nowadays on the bands. On 3.5MHz I found it coped very well, and again c.w. was a delight. Trying the rig up on 28MHz to see if sensitivity 'dropped' off - I was pleased to see it hadn't. Everything I could hear on the DX-70 I could also copy on the '707.

### In Rob's Collection?

So, now I've had the opportunity of trying the seemingly rather rare FT-707 you're probably wondering - did it impress me enough to add one to my collection? In reply you'd get a resounding yes!

My only regret is that I never came across the FT-707 before now. And although the design is well over 20 years old - it more than holds its own on the modern day Amateur bands.

The only problems (and these are probably only due to my disabilities) were in operating the Mode control switch (my finger size didn't leave much room between the microphone plug and the switch). Additionally the really tiny VOX gain control (in the 7 o'clock position underneath the main tuning knob) and the VOX delay knob (in the 5 o'clock position under the main knob) were awkwardly placed.

However, as the two controls won't be operated that much in practice, I don't see them causing much trouble. And that's the sum total of problems I found on this pioneering transceiver.

Keen on c.w. and the proud owner of an M5 series callsign? If so - take my advice and look out for a Yaesu FT-707 on the second-hand market - you won't be disappointed. *PW*

### Yaesu Musen

The Yaesu Musen company have been involved with radio communications since the late 1950s. Their first equipment started arriving in the UK in the form of the now sought-after Sommerkamp receivers, made in Japan and assembled in Germany. Their UK base is now in Winchester, Hampshire.

### Product

The Yaesu FT-707 3.5 to 28MHz transceiver, including WARC bands. (First marketed in the 1980s)

### Pros & Cons

**Pros:** Good value for money transceiver.

*Ahead of its time - and still an excellent performer*

**Cons:** Obtaining spares for older transceivers can be difficult. However, this transceiver has a reputation for reliability.

**My thanks go to the Shortwave Shop of 18 Fairmile Road, Christchurch, Dorset BH23 2LJ.**

**Tel/FAX: (01202) 490099**

for the loan of the Yaesu FT-707

### Summary

*"Although the design is well over 20 years old - it more than holds its own on the modern day Amateur bands"... "Keen on c.w. and the proud owner of an M5 series callsign? If so - take my advice and look out for a Yaesu FT-707 on the second-hand market - you won't be disappointed".*

*My thanks go to The Shortwave Shop, 18 Fairmile Road, Christchurch, Dorset BH23 2LJ. Tel/FAX: (01202) 490099 for the loan of the review FT-707.*

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