KENWOOD

ALL-MODE TRANSCEIVER

2-m 70-cm TS-711A, TS-811A/B

2-m 70-cm

TS-711A, TS-811A/B

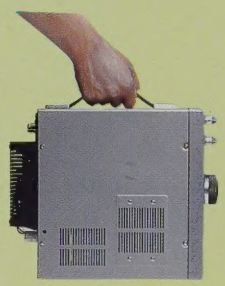
ALL-MODE TRANSCEIVERS

The TS-711A 2-m and the TS-811A/B 70-cm All-mode transceivers feature enhanced ease of operation through the use of new microprocessor technology that permits the incorporation of the widest range of innovative features in a very compact package. These features include KENWOOD's new, exclusive DCS (Digital Code Squelch), 10-Hz step dual digital VFO's, a new, multi-function fluorescent tube digital display, 40 multi-function memory channels, programmable band scan, memory scan, mode scan, auto mode function, "Quick-step" main tuning dial, IF shift, speech processor, all-mode squelch, noise blanker, and an easy-to-operate front panel design.

[FEATURES]

COMPACT, LIGHTWEIGHT DESIGN, FULL 20 MHz COVERAGE (TS-811A: 430—450 MHz).

With nearly every conceivable feature and a built-in AC power supply, the TS-711A and TS-811A/B measure only 270 (10.6) W×96 (3.78) H ×260 (10.2) D, mm (inch), and weigh only 7.1 kg., (15.65 lbs., approx.), facilitating use as either a mobile or base station.



DCS (DIGITAL CODE SQUELCH).

DCS is a revolutionary signalling concept developed by KENWOOD, for Amateur radio, that utilizes the most advanced digital data transmission technology.

10-Hz STEP DUAL DIGITAL VFO'S WITH TCXO.

Built-in 10-Hz step, dual digital VFO's provide commercial grade frequency stability through use of a TCXO (Temperature Compensated Crystal Oscillator) functioning in a two-loop PLL circuit.
Frequency step size selection is accomplished utilizing the front panel "MODE", "STEP", and "CH.Q" switches, as is illustrated in the following table:

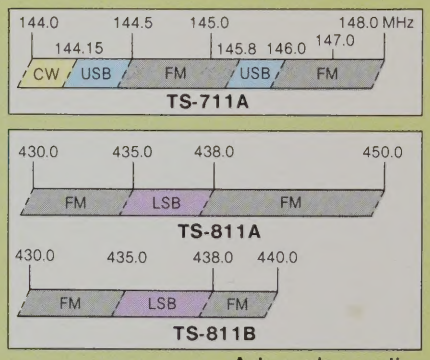
MODE	FM		SSB/CW	
CH.Q / STEP	OFF	ON	OFF	ON
		5 kHz*		
OFF	10 Hz	25 kHz**	10 Hz	5 kHz
ON	100 Hz	5 kHz	100 Hz	1 kHz

*TS-711A, **TS-811A/B

A front panel "A/B" switch allows the operator to specify the VFO to be used, and a "SPLIT" switch, also on the front panel, permits split frequency operations. An "A=B" switch makes it possible to quickly duplicate the tuning data (frequency, mode, RIT data, offset, ALERT) programmed into the active VFO, in the data banks of the inactive VFO.

ALL-MODE PLUS AUTO-MODE OPERATIONS.

Modes of operation include FM, USB, LSB, and CW transmit and/or receive. Mode selection is quickly accomplished through the use of front panel mode keys. An adjacent LED confirms the selection. When a mode key is depressed, the first letter of the mode is announced in International Morse code, through the built-in speaker. In addition to individual keys for each mode, an "AUTO" switch, when activated, cues the radio to automatically select the appropriate mode, depending on the frequency selected.



Auto-mode operation

CHANNEL "QUICK-STEP" TUNING.

Tuning characteristic varies from conventional VFO feel to stepping action when "CH.Q" switch is depressed. When operation is shifted from VFO to memory channel mode, the main tuning dial is automatically set to stepping action. Stepping action tuning is also applied to the VFO mode when the "M▶V" switch is depressed.

NEW MICROPROCESSOR CONTROLLED OPERATION.

- **40 Multi-Function Memory Channels.**

Forty built-in "memory" channels allow storage of frequency, mode, dial information, offset, and tone, combining increased convenience with simplicity of operation. Memory data is backed up by an internal lithium battery (Estimated 5 year life). Depressing the "VFO/M" switch on the front panel permits selection of the memory channel, using the main tuning control. The "CH.S" switch is provided to facilitate selection of the memory channel in which the operator wishes to store data. The "M▶V" switch is used to transfer memory data to the active VFO.

- **Programmable Band Scan.**

Scans automatically within the limits specified in memory channels 39 and 40. The scan direction may be changed by shifting the position of the main tuning dial during scan.

- **Memory Scan plus Programmable Memory Channel Lock-out.**

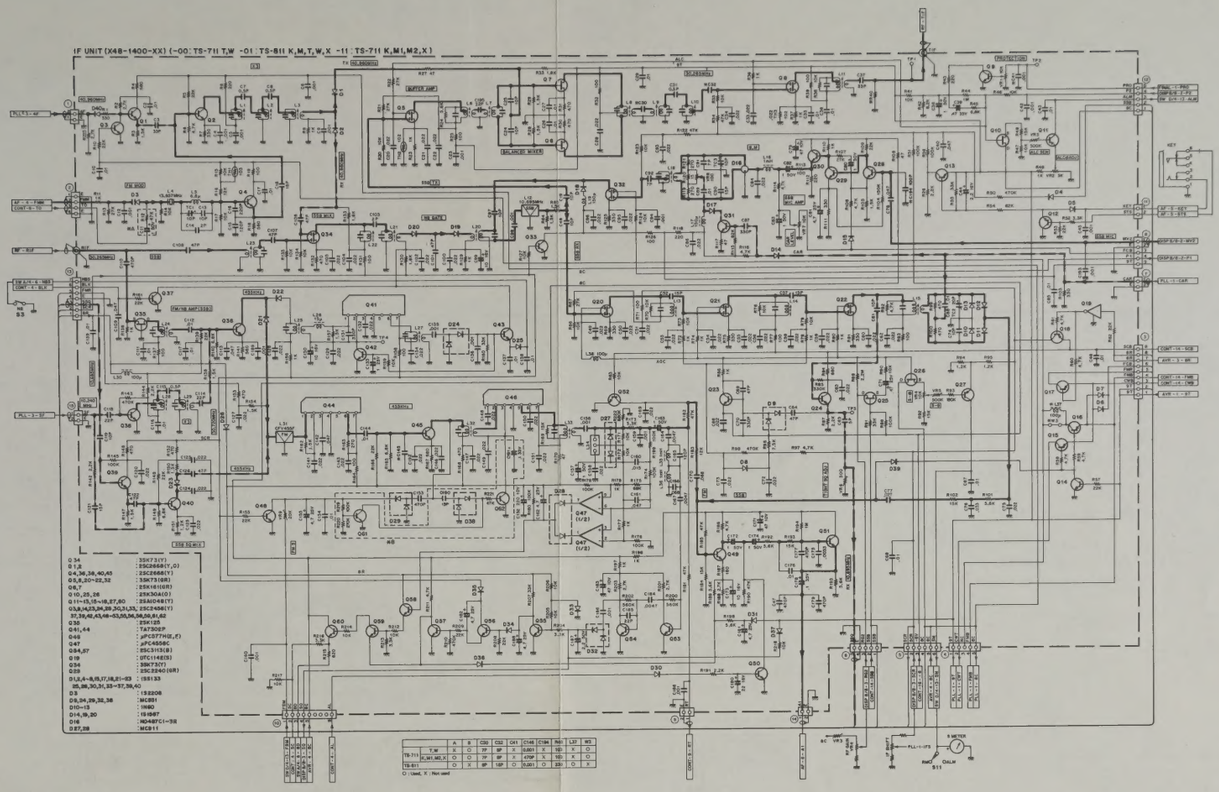
Depressing the "SCAN" switch during memory channel operation initiates memory scan. Memory scan scans only those channels in which data is stored. A programmable channel lock-out function permits the operator to skip selected channels without loss of data previously stored in those channels.

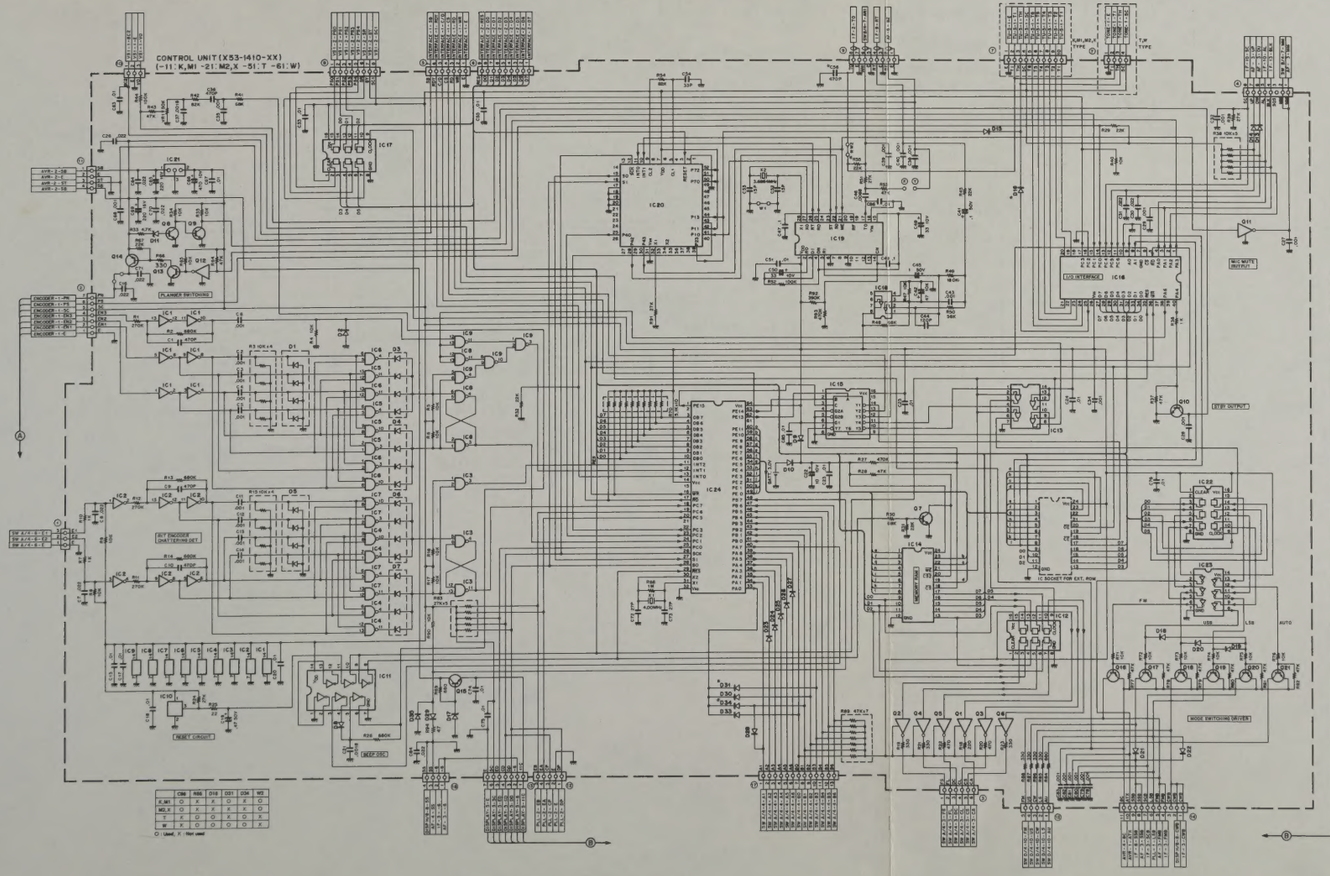
DCS = Digital Code Squelch.

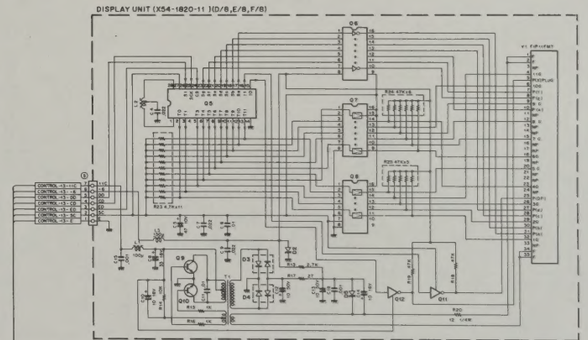
DCS "Digital Code Squelch", a revolutionary signalling concept for Amateur radio that utilizes the most advanced technology, has just been announced by KENWOOD.
Not to be confused with CTCSS (Continuous Tone Coded Squelch System), DCS uses digital code information to open squelch on a receiver that has been programmed to accept the specific code being transmitted. The system recognizes 100,000 different 5 digit code signals, making it possible for each station to have its own "private call" code, as well as to have a "group call" or "common call" code. DCS is also effective in suppressing unwanted signals. A 6 digit (maximum) Amateur station call sign is programmed in ASCII code, and transmitted in conjunction with the DCS code. This digital data is transmitted automatically, whenever the transmit key is pressed and released, when the DCS switch is on. An optional "Call Sign Display" is available that stores the calling station call sign in its memory, for future reference, and also displays it on an LCD readout. The "Call Sign Display" is capable of storing the call sign data of up to 20 stations, allowing the operator to quickly check for calls, if he has been absent from his radio, and to review his contacts for logging purposes.
The DCS code uses mark and space frequencies within the normal speech bandwidth, which can easily be handled by a repeater.

CD-10 Call Sign Display

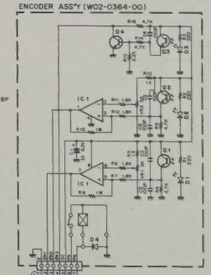
TS-711A/E SCHEMATIC DIAGRAM



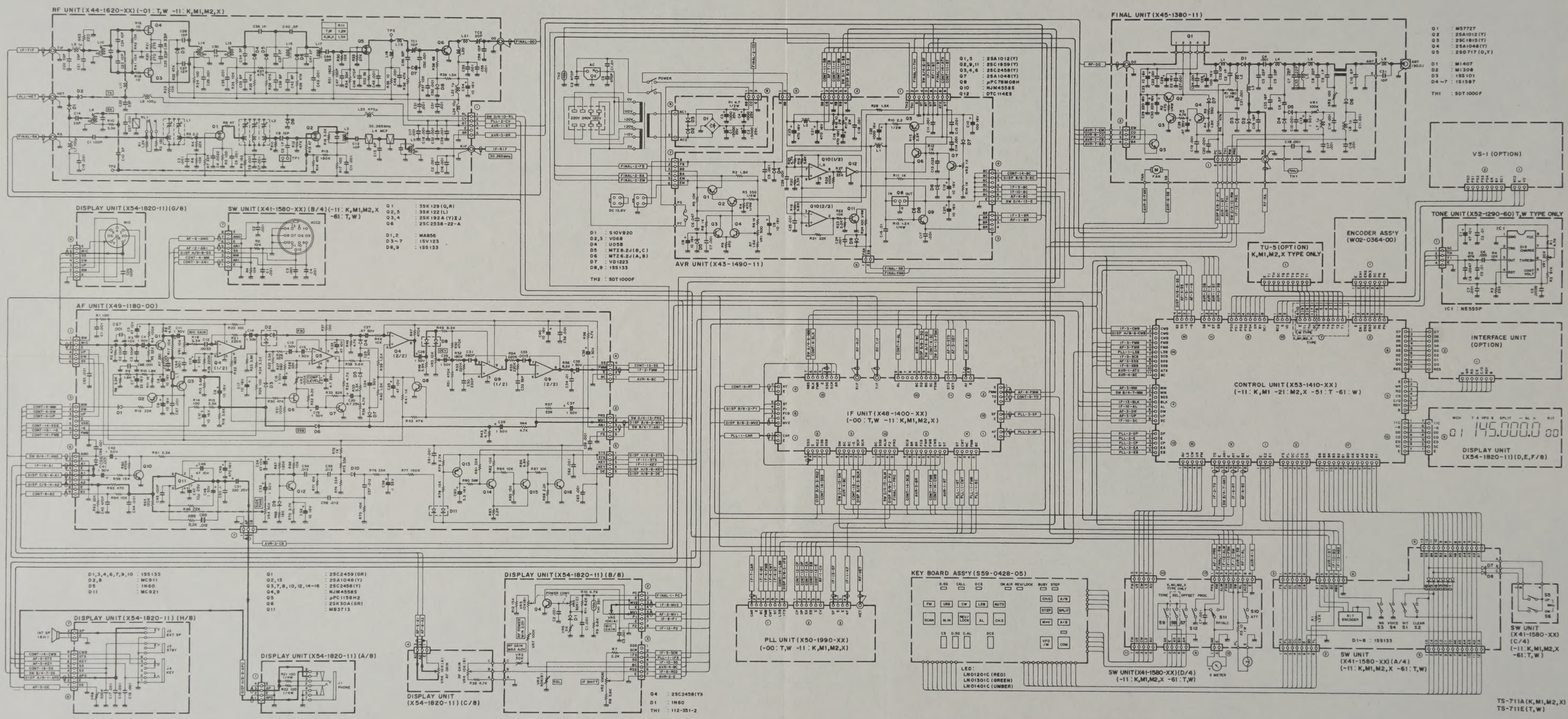


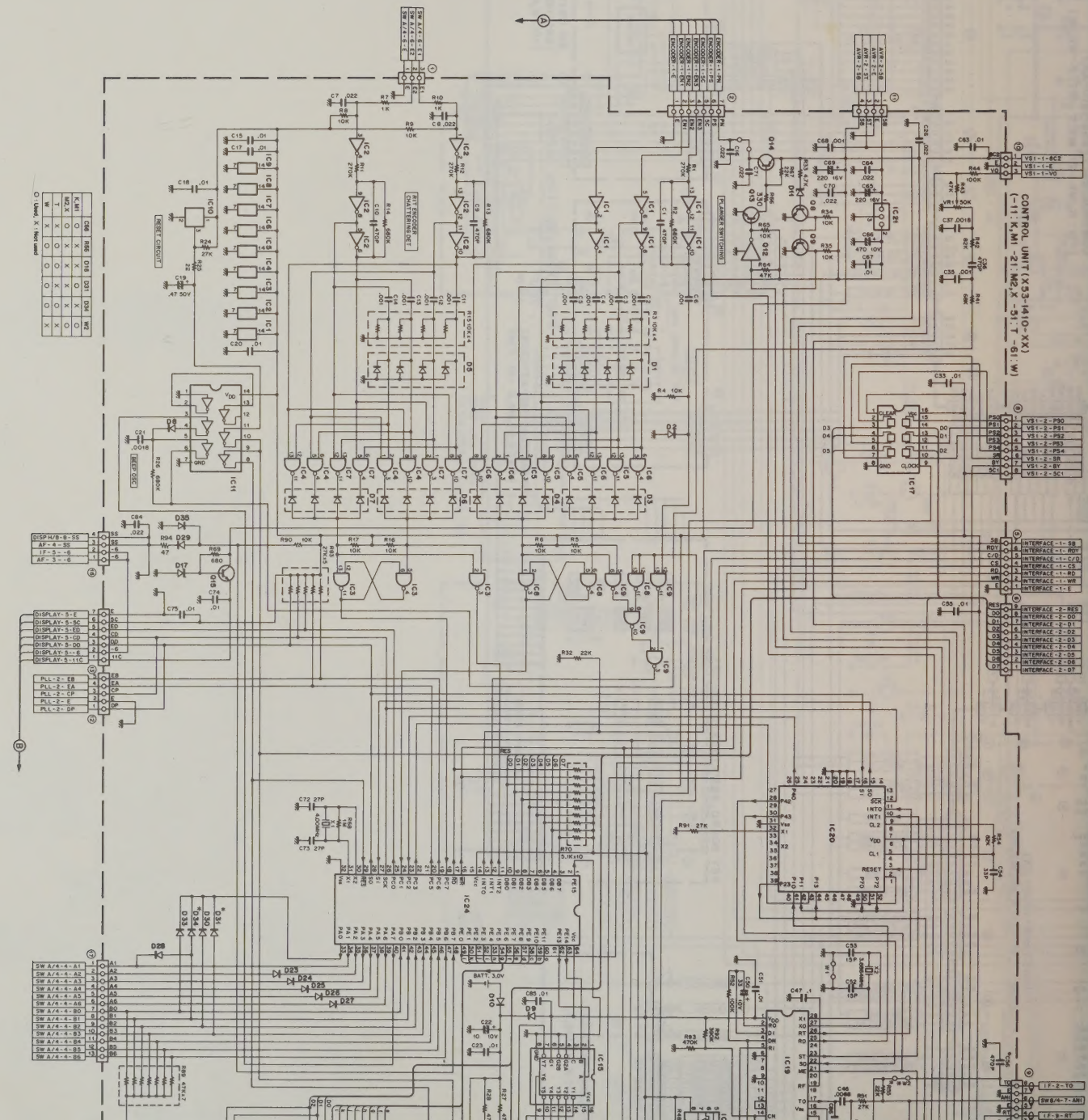


ENCODER ASS'Y (W02-0364-00)



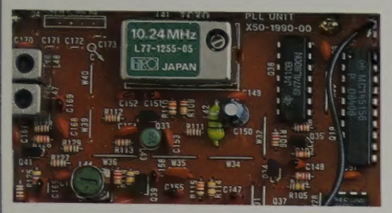
SCHEMATIC DIAGRAM

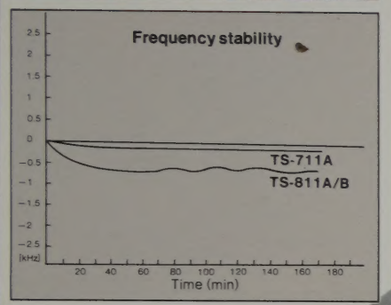



CONTROL UNIT (X43-1410-XX)
(-11: K, M1 -21: M2, X -51: T -61: W)

BUILT-IN TCXO

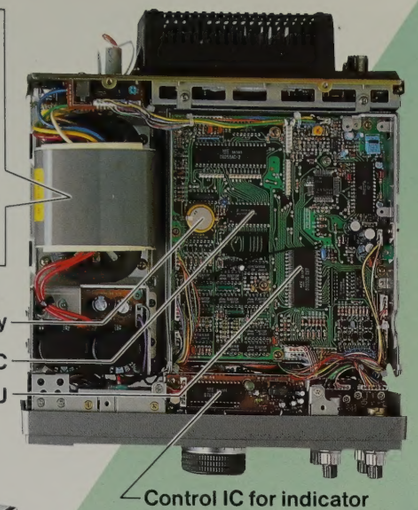
A single TCXO (Temperature Compensated Crystal Oscillator) operating at 10.24 MHz, is provided in the TS-711A, TS-811A/B to provide state-of-the-art stability. The built-in TCXO is accurate to within ±3 ppm between −10°C and +50°C. This is equivalent to a frequency stability of ±300 Hz (TS-711A), ±1200 Hz from 430.0~440.0 MHz, (TS-811A/B), during the first hour. This is comparable with current synthesized HF transceivers.
Dual digital 10 Hz step VFO'S are provide for convenient tuning.





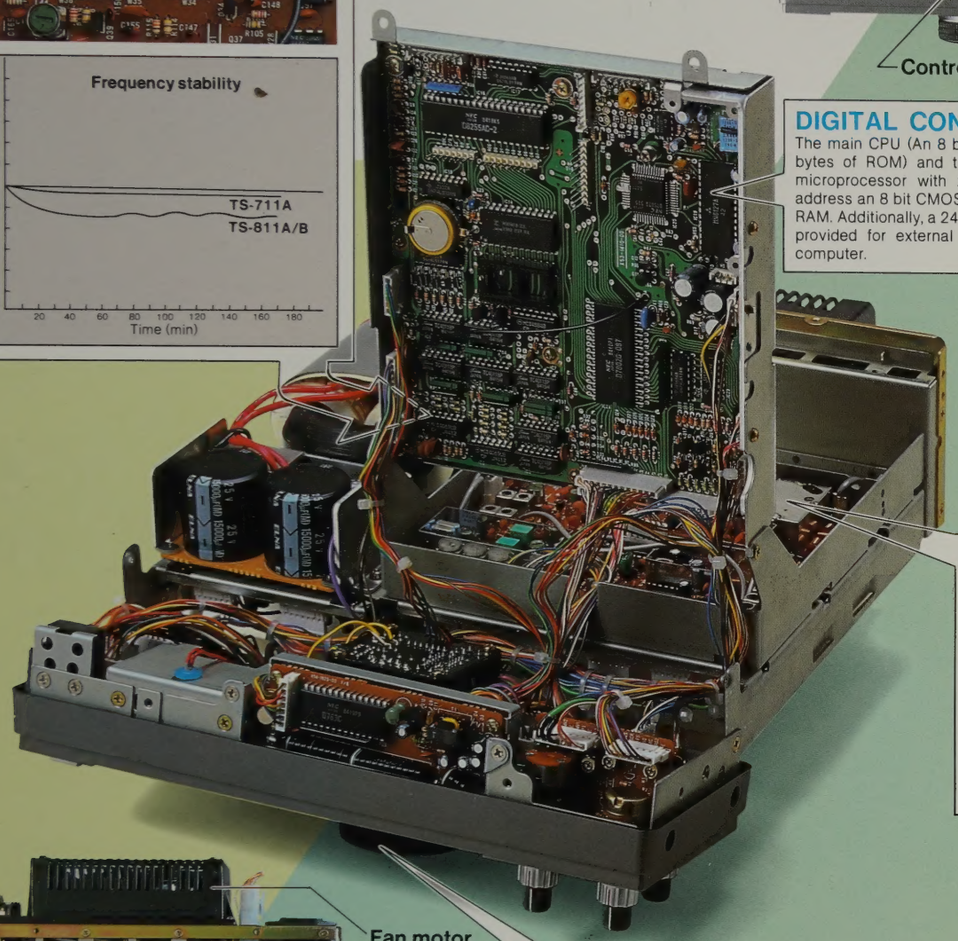
"R" CORE TRANSFORMER

A compact "R" core type transformer is provided to keep the size of the TS-711A, TS-811A/B to a minimum.
This low flux leakage transformer contributes to the high C/N (Carrier/Noise) ratio that is provided by the PLL unit.
Temperature stability is also improved since the R core type transformer lacks the large quantities of copper wire, and large core of conventional transformers. Hysterisis currents are therefore kept to a minimum, which results in lower core heating.



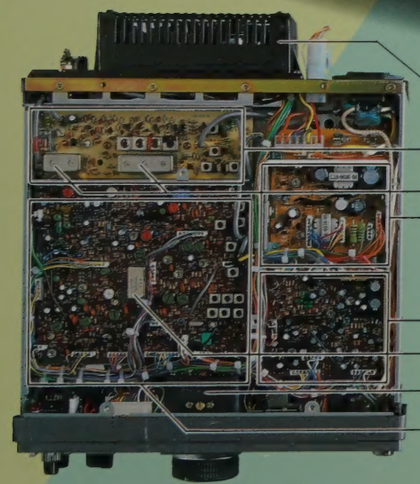
DIGITAL CONTROL UNIT

The main CPU (An 8 bit microprocessor with 6 K bytes of ROM) and the auxiliary CPU (A 4 bit microprocessor with 2 K bytes of ROM) may address an 8 bit CMOS memory, with 2 K bytes of RAM. Additionally, a 24 pin external ROM socket is provided for external interface with a personal computer.



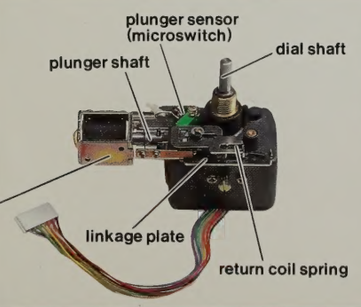
PLL UNIT

The PLL consists of a double conversion (two loop) superheterodyne system, in which all Local Oscillator frequencies are obtained from the TCXO. By utilizing the TCXO to generate all Local Oscillator frequencies the PLL unit stability is also improved.

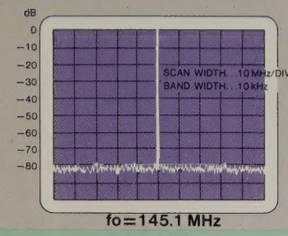


DUAL FUNCTION MAIN TUNING DIAL

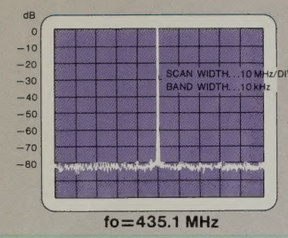
When operating SSB it is generally desirable to have a smooth tuning action to the dial, and when operating in FM it is preferable to have detent or click type tuning.
The TS-711A, TS-811A/B provides this in one dial. A push button switch (CH.Q) is provided to select the desired "feel". The radio will select detent type tuning automatically when in Memory, Tone select or DCS modes.



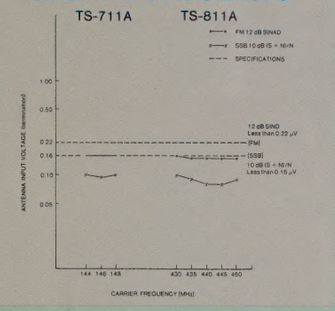
ADJACENT SPURIOUS RADIATION (TS-711A)



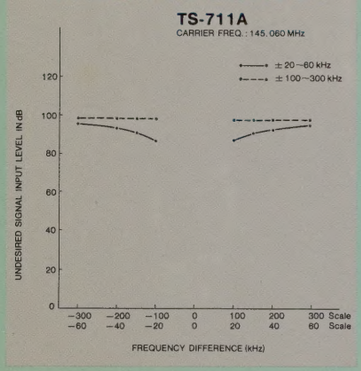
ADJACENT SPURIOUS RADIATION (TS-811A)



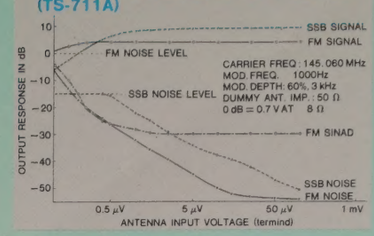
SENSITIVITY CHARACTERISTIC



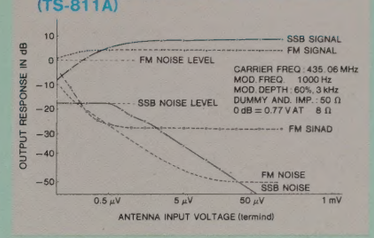
SELECTIVITY CHARACTERISTIC



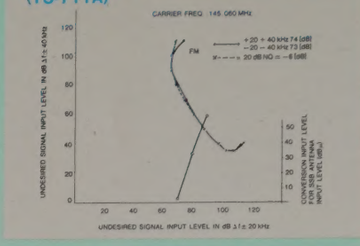
SIGNAL TO NOISE RATIO, OUTPUT LEVEL VS ANTENNA INPUT VOLTAGE (TS-711A)



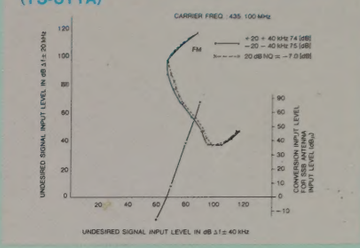
SIGNAL TO NOISE RATIO, OUTPUT LEVEL VS ANTENNA INPUT VOLTAGE (TS-811A)



INTERMODULATION CHARACTERISTIC (TS-711A)



INTERMODULATION CHARACTERISTIC (TS-811A)



- **Memory Channel Mode Scan.**

Depressing the "SCAN" switch when the "AUTO" mode has been selected initiates all-mode scan. Depressing the "SCAN" switch when the FM, USB, CW, or LSB mode has been selected initiates scan in that mode only. When operating in memory, band, or mode scan, scanning stops on busy channels and automatically resumes approximately 6 seconds later. (Time operated resume). When operating in the FM mode, scanning proceeds in 5-kHz steps, with a center-stop function.

- **Alert**

When the "AL" switch has been depressed, memory channel 1, ("Alert" channel), is monitored for activity approximately every 6 seconds, If a signal is present, a double "beep" sounds through the speaker to alert the operator.

REVERSE & LOCK SWITCH.

During VFO offset operations, or when operating on memory channel pairs 36, 37, or 38, depressing the "REV & LOCK" switch transposes the receive and transmit frequencies, to permit monitoring of repeater inputs, or to allow operation on reversed repeater pairs. When no offset has been chosen, the switch functions as a dial lock. In the "lock" mode, the "RIT" control continues to function in a normal manner.

NEW MULTI-FUNCTION FLUORESCENT TUBE DISPLAY.

A new multi-function fluorescent tube display provides improved readability and allows increased operating speed. Transmit/receive frequencies, digital code data, call sign data, and sub-audible tone frequencies are displayed in large, white, fluorescent characters, in the center area. Memory channel numbers, digital code channel numbers, and sub-audible tone channel numbers are displayed to the left, in smaller, white fluorescent characters. RIT frequencies (0.0~±9.9 kHz), and transmit digital code numbers are displayed to the right, in smaller, white fluorescent characters. Mode and function call-outs (M.CH, VFO A/B, T, SPLIT, +/−, AL, RIT) appear in red in the upper portion of the display.

OPERATIONAL TYPE RIT CIRCUIT.

The front panel "RIT" (Receiver Incremental Tuning) control shifts the receive frequency in 10-Hz steps within a range of ±9.9 kHz, for tuning in stations that are slightly off frequency, without affecting the transmit frequency. The "RIT" control may be used in any mode of operation, including "COM.CH" and "REV & LOCK" modes.

RF OUTPUT POWER CONTROL.

Using a front panel control, the RF output power may be continuously varied from 2 watts to maximum power in any mode.

IF SHIFT.

A front panel "IF SHIFT" control allows the operator to move the IF passband in either direction around the received signal, to place interfering signals outside the passband.

SPEECH PROCESSOR BUILT-IN.

A speech processor circuit combines an audio compression amplifier with a change in ALC time constant, resulting in an increase in average "talk-power" when operating SSB, and in suppressed sideband splatter with higher average modulation when operating in the FM mode.

VOICE SYNTHESIZER UNIT (OPTIONAL).

An optional VS-1 Voice Synthesizer Unit is available, which announces the frequency, digital code or tone frequency when the "VOICE" switch is depressed. Installation inside the cabinet is simple and easy.

ALL-MODE SQUELCH CIRCUIT.

The squelch circuit is effective in suppressing background noise in all operating modes, during key-up intervals.

HIGH PERFORMANCE NOISE BLANKER.

The high performance noise blanker is effective in suppressing pulse-type noise when operating SSB or CW.

AC POWER SUPPLY BUILT-IN, OPTIONAL DC POWER CABLE.

The TS-711A and TS-811A are self-contained, compact transceivers complete with built-in AC power supply. Operation on 12-16 VDC may be accomplished, using an optional PG-2J DC Power Cable.

ADDITIONAL FEATURES

- Common Channel.
- RF Attenuator (TS-711A only).
- ACC Switch (TS-811A only).
- CW Semi Break-in Circuit, with side-tone.

TS-711A, TS-811A/B OPTIONAL ACCESSORIES

CD-10 Call Sign Display

The CD-10 stores the call sign of the calling station in its memory and displays it on an LCD display. Call signs of up to 20 of the most recently calling stations are stored, allowing the operator to quickly check for and return any call.

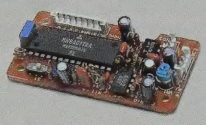
[Features]

- Automatical Display of the Call Sign
- Easy-to-connect
- 20-ch Memory Storage of Call Sign
- Easy-to-Read Dot-matrix LCD Display
- 2 switchable Output Terminal
- DATA PORT Supplied for External Computer

[Option] AC-10 **AC Adaptor**

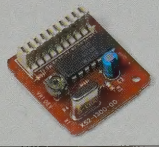
SP-430 External Speaker

The SP-430 is an attractive, compact external speaker that is styled for use with TS-711A and 811A/B. This low-distortion speaker matches the TS-711A and 811A/B in design, color, and appearance, providing clear sound for high intelligibility in any mode.



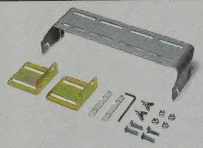
VS-1 Voice Synthesizer Unit

The VS-1 announces frequency, digital code or tone frequency when the "VOICE" switch is depressed. Installation inside the cabinet is simple and easy.



TU-5 CTCSS Tone Unit

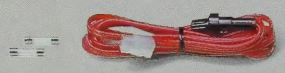
The TU-5 provides any one of 37 tones, selected by the main dial when installed inside the TS-711A and TS-811A/B.



MB-430 Mobile Mount

The mobile mount, MB-430 allows easy installation and removal of the TS-711A and TS-811A/B.
The transceiver tilt angle can be adjusted in 5 steps.

PG-2J DC Power Cable



SW-200A/B SWR/Power Meter

A:1.8~150 MHz B: 140~450 MHz

MC-60A (8 pin)

Deluxe Desk-top Microphone (50 kΩ/500 Ω)

Unidirectional moving coil microphone

MC-80 (8 pin)

Desk-top Microphone (700 Ω)

Omnidirectional electret condenser microphone

MC-85 (8 pin)

Deluxe Desk-top Microphone (700 Ω)

Unidirectional electret condenser microphone

The MC-60A, MC-80 and MC-85 have built-in pre-amplifier (MC-60A, MC-80) and audio level compensation (MC-85 only) to obtain superior quality audio sound.

MC-48 (8 pin)

16-key Auto-patch UP/DOWN Microphone

MC-42S (8 pin)

UP/DOWN Microphone

(K・M) 860905B ⑤ Printed in Japan

TS-711A, TS-811A/B SPECIFICATIONS

[General]

Frequency Range: TS-711A=144—148 MHz
TS-811A=430—450 MHz
TS-811B=430—440 MHz

Mode: SSB (A3J), FM (F3/F2=with DCS function)
CW (A1)

Antenna Impedance: 50 Ω

Temperature Range: −10°C~+50°C

Power Requirements: 120/220/240/VAC, 50/60Hz
13.8 VDC (12~16 V).(Negative grounding)

Power Consumption: TS-711A MAX. 170 WAC, 6.5 A (13.8 VDC) in transmit mode
50 WAC, 1.2 A (13.8 VDC) in receive mode (no signal)
TS-811**A**/B MAX **220**/240 WAC, **8.0**/8.5 A (13.8 VDC) in transmit mode
50 WAC, 1.3 A (13.8 VDC) in receive mode (no signal)

Frequency Tolerance: (−10°C~+50°C)
TS-711A: SSB, CW=Less than ±3 PPM
TS-811B: FM=Less than ±5 PPM
TS-811A: SSB, CW
430~440 MHz Less than ±3 PPM
440~450 MHz Less than ±5 PPM
FM=Less than ±5 PPM

Frequency Stability: (at normal temperature) Within ±300 Hz (TS-711A), ±1,200 Hz (TS-811A: 430~440 MHz, TS-811B) during the first hour after 1 minute of warm-up.
Within ±50 Hz during any 30 minutes period thereafter.

Dimensions: 270(10.6)W×96(3.78)H×260(10.2)D mm(inch) (Projections not included)

Weight: 7.1 kg (15.65 lbs.) approx.

[Transmitter]

RF Output Power: 25 W

Modulation: SSB=Balanced Modulation
FM=Reactance Modulation.

Spurious Radiation: Less than −60 dB

Maximum Frequency Deviation: ±5 kHz

Carrier Suppression: Better than 40 dB

Unwanted Sideband Suppression: Better than 40 dB

Modulation Distortion: (FM modulation 60%) Less than 3% (300 Hz~3 kHz)

Microphone Impedance: 500~600 Ω

[Receiver]

Circuitry: Double Conversion Superheterodyne

Intermediate Frequency: 1st IF 30.265 MHz
2nd IF 10.695 MHz (SSB/CW), 455 kHz (FM)

Sensitivity: FM=12 dB SINAD Less than 0.2 μV, (TS-811B), 0.22 μV (TS-711A/TS-811A)
S+N/N Better than 50 dB (input 1 mV),
SSB, CW =10 dB S+N/N Less than 0.16 μV (TS-711A), 0.14 μV (TS-811A), 0.13 μV (TS-811B),

Selectivity: SSB, CW=More than 2.2 kHz (−6 dB), Less than 4.8 kHz (−60 dB)
FM=More than 12 kHz (−6 dB), Less than 24 kHz (−60 dB)

Spurious Response: Better than 70 dB (TS-711A)
Better than 60 dB (TS-811A/B)

Squelch Sensitivity: Less than 0.16 μV

Scan Stop Level: Less than 0.2 μV

Audio Output Power: More than 2.0 W (5% distortion)

Audio Output Impedance: 8 Ω

[DCS control]

Code: NRZ equal-length Code

Modulation: MSK Modulation

Frequency Deviation: ±3.5 kHz standard (±2.5 kHz~±5 kHz)

Mark Frequency: 1200 Hz (Deviation: ±200 PPM)

Space Frequency: 1800 Hz (Deviation: ±200 PPM)

Code Transmission Speed: 1200 bits/second (Deviation: ±200 PPM)

Specifications are subject to change without notice due to developments in technology.

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