Mobile Radio

AVIATION BAND

USER'S MANUAL

Thank you for purchasing this mobile radio. It is unique for it’s compact body, powerful output and frequency range design. It's also designed with new and personalized operation menu to give you easy-to-use and exceptional operation experience. We believe its mini size and costeffective price will well meet your demand.

Before operation and to obtain the best performance, we recommend you to read this user manual carefully to become familiar with the features and uses.

WARNING:

This device can only be used as an aid to navigation for VFR. All information is presented for reference only. You assume total responsibility and risk for its use.

Please press the MENU Key.

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Attention!

Please observe the following precautions to prevent fire, personal injury, damage to the radio:

- Don't use this machine when driving, so dangerous.
- This radio is designed to use 13.8 V dc voltage, do not use the 24 V power supply to the the mobile radio.
- Please do not place the machine in the dust, moisture or water splashing.
- If there's any electromagnetic interference, please keep the mobile radio away from the sources such as TV set, engine generator etc.
- Do not expose the mobile radio to long periods of direct sunlight, for example on the dashboard of a vehicle or close to heating appliances.
- If the mobile radio generate any smoke or strange smell, please turn off the power supply immediately and make sure all is safe, then you can send the unit to the nearest after-sale center for inspection or repairment.
- Do not keep transmitting with high power output for too long time, which may lead to overheating and cause auto power off or failure.

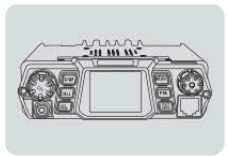
GETTING STARTED

■ PRODUCT INSPECTION

Welcome to use our mobile radio, before operation, it is recommended that you:

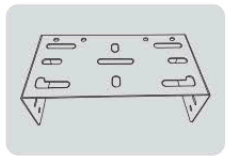
- Please check the package is in good condition without any damage.
- Please unpack the package box carefully and check that all items are included.
- If you find any items are missing or have been damaged during shipment, please contact your dealer immediately.

Standard accessories

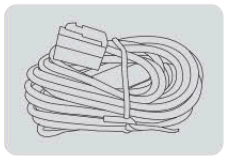


Mobile Radio

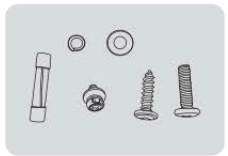
Microphone



Mounting Bracket



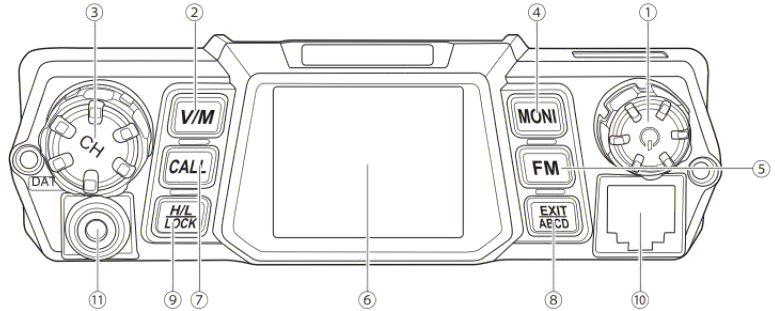
Power Cable



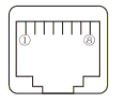
Screws and Fuse

■ PANEL DESCRIPTION

Front panel



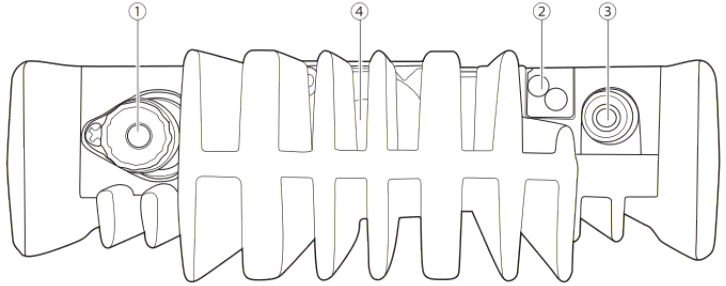
① Power On/Off, Volume Knob
② Mode Switch
③ Progress Knob, confirm key
④ Monitor
⑤ FM Radio
⑥ Display screen
⑦ Call key
⑧ A/B/C/D Band Switch, Emergency Alarm
⑨ High/Low power switch and lock.
⑩ Microphone Connector
⑪ DATA



RJ45 Connector

① Data Input
② RPT CTRL
③ MIC
④ MIC Ground
⑤ PTT
⑥ GND
⑦ +8V DC Out
⑧ Null

Rear panel



① Antenna connector
② DC 13.8V power supply
③ Remote speaker
④ Cooling fan

Hotkey function guide

Power/Volume: Press the key to turn on the radio. Hold on the key for seconds to turn off the radio. Switch the knob to adjust the volume.

[CALL] : In standby mode, press to send caller ID at selected signaling mode, in transmit mode, press to send repeat activate signaling.

[MONI] : Press to turn on or turn off the squelch.

[V/M] : Press to select radio mode.

[EXIT A/B/C/D] : Press to exit function menu setting. In standby mode, press to select A, B, C, D frequency. hold on this key for seconds to active the alarm channel, continuous alarm sound, press this key again to cancel the alarm.

[FM] : Press to enter and exit FM radio function.

[H/L LOCK] : Press the key to switch High/Mid/Low power, and hold on the key for seconds to lock/unlock.

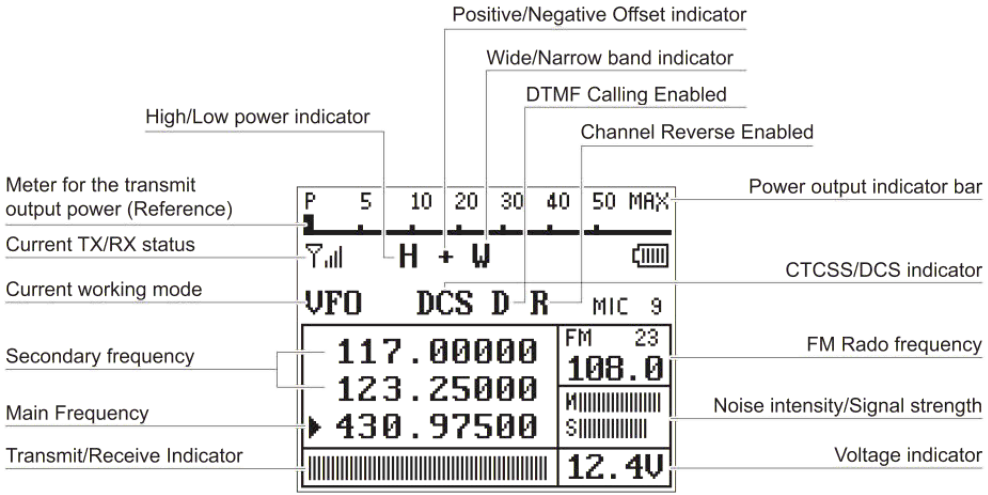
Coder/Function Key: Press to enter menu function setting mode. Hold on for seconds to exit function setting mode.

■ VFO/MR Key/Emergency Key

Selecting the 121.5 MHz emergency frequency in case of emergency, you can immediately select the 121.5 MHz emergency frequency.

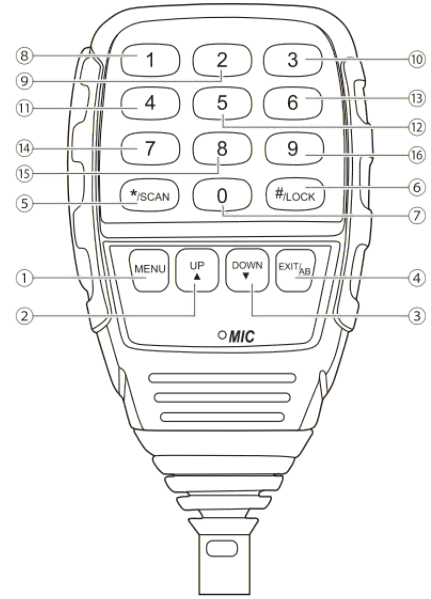
1. Press and hold **[VFO/MR]** key for 2 seconds to enter the emergency channel 121.5MHz (default channel).
2. Press **[VFO/MR]** key for 2 seconds to return to the previously selected frequency.

■ LCD Description



■ Hand Held MIC Keys and Description (optional)

① **"MENU"** : Function key
② **"UP"** : Higher frequency
③ **"DOWN"** : Lower frequency
④ **"EXIT"** : Exit the AB channel switch, alarm function
Alarm Activate (Long Press)
⑤ **"*/SCAN"** : Scanning function
⑥ **"#/LOCK"** : High / Low Power Toggle
Keyboard Lock (Long Press)
⑦ **"0"** : Number 0
Emergency Key (Long Press)
⑧ **"1"** : Number 1
⑨ **"2"** : Number 2
⑩ **"3"** : Number 3
⑪ **"4"** : Number 4
⑫ **"5"** : Number 5
⑬ **"6"** : Number 6
⑭ **"7"** : Number 7
⑮ **"8"** : Number 8
⑯ **"9"** : Number 9



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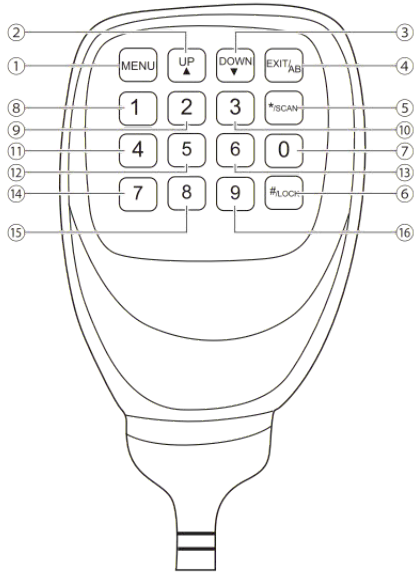
⑨ **“2”** : Number 2
⑩ **“3”** : Number 3
⑪ **“4”** : Number 4
⑫ **“5”** : Number 5
⑬ **“6”** : Number 6
⑭ **“7”** : Number 7
⑮ **“8”** : Number 8
⑯ **“9”** : Number 9



Microphone Keypad Operation

1. Press **[#]** key to switch High/Low transmit output power.
2. Hold on **[#]** key for seconds to Lock/Unlock the keypad.
3. Hold on **[EXIT/AB]** key for seconds to active Alarm mode.
4. Press **[EXIT/AB]** key select present working frequency.
5. Press **[*]** key to reverse the transmit frequency and receive frequency.
6. Hold on **[*]** key to start Scan function.

■ SAME TX RX FREQUENCY, DIFFERENT TX RX FREQUENCY CHANNEL MEMORY

Same TX RX frequency channel memory

1. Use keypad write require frequency, for example 146.6250, press microphone **[MENU]** key (or Progress/confirm key).
2. Menu select 28.
3. Press microphone **[MENU]** key (or Progress/confirm key) to select channel 001. Press **[MENU]** key (or Progress/confirm key) again to memory it to CH-001.

   If before setting already shows CH-001 (not 001) means channel 1 is memorized.

   Delete this memorized channel: select menu 29, press **[MENU]** key (or Progress/confirm key), select channel CH-001 press **[MENU]** key (or Progress/confirm key) again to delete, LCD shows 001 is empty channel.
4. Press **[MENU]** key (or Progress/confirm key) to memory it, LCD shows CH-001.
5. Press **[MENU]** key (or Progress/confirm key) back to main menu, select 25, A- channel setting the frequency, channel number, channel name, press **[MENU]** key (or Progress/confirm key) to confirm.
6. Same use menu 26, 27 to setting the B, C frequency.

Different TX RX frequency channel (CTCSS/DCS) memory (connect repeater)

1. Press **[MENU]** key (or Progress/confirm key), select menu 10.
2. Press **[MENU]** key (or Progress/confirm key), setting the receive DCS figure.
3. Press **[MENU]** key (or Progress/confirm key) to

confirm. select menu 11 to setting the receive CTCSS.

4. Press **[MENU]** key (or Progress/confirm key), setting the receive CTCSS figure.
5. Press **[MENU]** key (or Progress/confirm key) to confirm. Select menu 12 setting transmit DCS.
6. Press **[MENU]** key (or Progress/confirm key), to setting the transmit DCS figure.
7. Press **[MENU]** key (or Progress/confirm key) to confirm.
8. Select menu 13. Press **[MENU]** key (or Progress/ confirm key) to select transmit CTCSS figure.
9. Press **[MENU]** key (or Progress/confirm key) to confirm.
10. Press **[EXIT]** to exit. If no need DCS/CTCSS then no then these steps.

Use microphone keypad press require frequency, for example 438.6250.

1. Press microphone **[MENU]** key (or Progress/ confirm key) enter menu.
2. Menu select 28.
3. Press microphone **[MENU]** key (or Progress/ confirm key) to select channel 002. Press **[MENU]** key (or Progress/confirm key) again to memory it to CH-002. If before setting already shows CH-002 (not 002) means channel 2 is memorized.

   Delete this memorized channel: select menu 29, press **[MENU]** key (or Progress/confirm key), select channel CH-002 press **[MENU]** key(or Progress/ confirm key) again to delete, LCD shows 002 is empty channel.
4. Press **[MENU]** key (or Progress/confirm key) to memory it, LCD shows CH-002.
5. Press **[EXIT/AB]** key to exit. Microphone press frequency for example 430.6250.
6. Press microphone **[MENU]** key (or Progress/ confirm key) select menu 28.
7. Press **[MENU]** key (or Progress/confirm key) select channel CH-002.
8. Press **[MENU]** key (or Progress/confirm key) memory this frequency to transmit channel.

   Back to main menu, select 25, A-channel setting the frequency, channel number, channel name, press **[MENU]** key (or Progress/confirm key) to confirm.
9. Same use menu 26, 27 to setting the B, C frequency.

Menu Function Setting Operation

■ Operation For Manual Channel Memory And Delete

Channel memory:

1. Directly input frequency by keypad under frequency mode. Example: 435.125 MHz input 4,3,5,1,2,5.
2. Setting CTDCS frequency (manual page 10, 11). Setting transmit CTDCS frequency (manual page 12,13). For example: receive CTDCS 67.0HZ, transmit CTDCS 67.0HZ. Press **[MENU]** Key + **[1]** Key + **[1]** Key + **[MENU]** + **[UP]** Key. Select 67.0HZ + **[MENU]** Key

   Transmit CTDCS 67.0HZ. Press **[MENU]** Key + **[1]** Key + **[3]** Key + **[MENU]** + **[UP]** Key. Select 67.0HZ +**[MENU]** Key. Press **[MENU]** Key again to save and exit. (If no need CTDCS all select OFF).
3. Select manual 28 to memory the channel, press **[MENU]** Key + **[2]** Key + **[8]** Key + **[MENU]** Key + **[UP]** (DOWN) select channel + **[MENU]** Key to memory the channel information.

Delete channel:

Select menu 29. Press **[MENU]** + **[2]** + **[9]** + **[MENU]**+ **[UP]** (DOWN) select the channel number + **[MENU]** Key to delete.

■ Keypad Lock-out

Hold the microphone **[#]** key for 2 seconds at standby to turn on/off the keypad lock-out function.

■ Transmit Transit Signal

Select transit signal frequency (out radio have 4 kind transit signal frequency). Press **[MENU]** + **[4]** + **[8]** + **[MENU]** + **[UP]**(DOWN) select transit signal frequency + **[MENU]** key to save setting. Hold **[PTT]** and press **[CALL]** Key to transmit setting transit signal.

■ FUNCTION MENU

0	TMR	OFF	Turn off Multi-Frequency Standby
		M+A	Start Multi-Frequency Standby, standby frequencies are Main frequency and Zone A frequencies
		M+B	Start Multi-Frequency Standby, standby frequencies are Main frequency and Zone B frequencies
		M+C	Start Multi-Frequency Standby, standby frequencies are Main frequency and Zone C frequencies
		M+A+B	Start Multi-Frequency Standby, standby frequencies are Main frequency and Zone A, B frequencies
		M+A+C	Start Multi-Frequency Standby, standby frequencies are Main frequency and Zone A, C frequencies
		M+B+C	Start Multi-Frequency Standby, standby frequencies are Main frequency and Zone B, C frequencies
		M+A+B+C	Start Multi-Frequency Standby, standby frequencies are Main frequency and Zone A, B, C frequencies
1	STEP	2.50K	In Frequency mode, step value for changing frequency when pressing UP/DOWN keys
		5.00K	
		6.25K	
		10.00K	
		12.50K	
		25.00K	
		8.33K	

2	SQL-FM	0,...,9	Squelch level
3	TXP	HIGH	High Power Transmission (UHF)
		LOW	Low Power Transmission (UHF)
4	SCR	OFF	Scrambler Off
		1	Enable Scrambler Group 1
		2	Enable Scrambler Group 2
		3	Enable Scrambler Group 3
		4	Enable Scrambler Group 4
		5	Enable Scrambler Group 5
		6	Enable Scrambler Group 6
		7	Enable Scrambler Group 7
		8	Enable Scrambler Group 8
5	TOT	15,30,…600	Numbers from 15 to 600, in steps of 15, indicate the maximum transmission duration when the PTT button is pressed.
6	VOX	OFF, 1, 2, 3, ... 10	OFF VOX Off. 1, 2, 3, ... 10 represent the sensitivity levels for voice control activation. The higher the number, the louder the sound required to activate it.
7	WN	WIDE	Wide Band operation (UHF)
		NARR	Narrow Band operation (UHF)
8	PONKEY	OFF	Remember last power-off state
		ON	Don't remember last power-off state, must long-press power key to turn on after power-up

9	BEEP	OFF	Turn off operation prompt tone
		ON	Turn on operation prompt tone
10	R-DCS	OFF	No Receive Tone
		D023N ,..., D754I	The standard CTCSS code sequence
11	R-CTCS	OFF	No Receive Tone
		67.0HZ ,..., 254.1HZ	The standard CTCSS code sequence, Standard or non-standard CTCSS code can also be directly entered via the keypad.
12	T-DCS	OFF	No Transmit Tone
		D023N ,..., D754I	The standard CTCSS code sequence
13	T-CTCS	OFF	No Transmit Tone
		67.0HZ ,..., 254.1HZ	The standard CTCSS code sequence, Standard or non-standard CTCSS code can also be directly entered via the keypad.
14	ANL-SW	OFF	Turn off ANL (Automatic Noise Limiter) function
		ON	Turn on ANL function
15	BCL	OFF	Allow transmission even if channel is busy
		ON	Busy Channel Lockout - prohibit transmission if channel is busy
16	SC-ADD	OFF	Do not add channel to scan list when storing channel
		ON	Add channel to scan list when storing channel
17	SC-REV	TO	Time Operated Scan
		CO	Carrier Operated Scan
		SE	Search Scan

18	OPTSIG	OFF	Turn off Optional Signaling
		DTMF	Current optional signaling is DTMF
		2TONE	Current optional signaling is 2-Tone
		5TONE	Current optional signaling is 5-Tone
19	SPMUTE	QT	Speaker unmutes when tone matches
		AND	Speaker unmutes when both tone AND optional signaling match
		OR	Speaker unmutes when either tone OR optional signaling matches
20	PTT-ID	OFF	No code sent when PTT is pressed
		BOT	Send code when PTT is pressed (content set by programming software)
		EOT	Send code when PTT is released (content set by programming software)
		BOTH	Send code both when PTT is pressed and released
21	S-VALT	1,2,3,…,200	
22	SIG-BP	OFF	No reminder when optional signaling is active
		ON	Remind when optional signaling is active
23	EMC-TP	ALARM	Unit emits alarm tone when alarming
		ANI	Send alarm code and unit ID code when alarming
		BOTH	Emit alarm tone AND send alarm code/unit ID when alarming
24	AUTOLK	OFF	Disable automatic keypad lock
		ON	Enable automatic keypad lock

25	CA-MDF	FREQ	In Channel mode for Zone A, channel displayed as frequency
		CH	In Channel mode for Zone A, channel displayed as channel number
		NAME	In Channel mode for Zone A, channel displayed as channel name (Specific name set in programming software)
26	CB-MDF	FREQ	In Channel mode for Zone B, channel displayed as frequency
		CH	In Channel mode for Zone B, channel displayed as channel number
		NAME	In Channel mode for Zone B, channel displayed as channel name (Specific name set in programming software)
27	CC-MDF	FREQ	In Channel mode for Zone C, channel displayed as frequency
		CH	In Channel mode for Zone C, channel displayed as channel number
		NAME	In Channel mode for Zone C, channel displayed as channel name (Specific name set in programming software)
28	MEM-CH	000,…,199	When storing a channel, it is used to indicate the channel number to be stored. If "CH-" is displayed before the number, it indicates that the channel already contains pre-existing channel parameters.
29	DEL-CH	000,…,199	To delete the channel parameters of a specified channel. If there is no "CH-" prefix, it indicates that the channel has no parameters and the operation is invalid.
30	SFT-D	OFF	In Frequency mode, no offset between Tx and Rx frequency
		+	In Frequency mode, Tx frequency = Rx frequency + offset
		-	In Frequency mode, Tx frequency = Rx frequency - offset
31	OFFSET	000.000	In Frequency mode, the frequency difference between Tx and Rx (Whether applied depends on offset direction setting)
32	TMR-MR	OFF,1, 2, 3, …50	Main Frequency Return Delay Time

33	TMR_TX	TRACK	Transmit on the received frequency (Track)
		FIXED	Always transmit on the Main frequency
34	STE	OFF	Turn off Squelch Tail Eliminate function
		ON	Turn on Squelch Tail Eliminate function
35	RP-STE	OFF,1, 2, 3, …50	Eliminate the tail tone generated during repeater transmission.
36	ST-FC	WHITE RED BLUE GREEN YELLOW INDIGO PURPLE GRAY	Status character display color setting (top)
37	MFS-FC		Main frequency small character display color setting
38	SFA-FC		Zone A channel display area character color setting
39	SFB-FC		Zone B channel display area character color setting
40	SFC-FC		Zone C channel display area character color setting
41	BATT-C		Battery voltage display character color
42	SIG-FC		Bottom status bar display color
43	MENUFC		Menu character display color during menu setup
44	TX-FC		Display color when current active channel is transmitting
45	RX-FC		Display color when current active channel receives carrier
46	ANI	000000	Unit Identification Code
47	A-CODE	000000	Alarm Code

48	REP-S	1000	Single tone frequency sent when CALL key is pressed during transmission, used to activate repeater
		1450	Single tone frequency sent when CALL key is pressed during transmission, used to activate repeater
		1750	Single tone frequency sent when CALL key is pressed during transmission, used to activate repeater
		2100	Single tone frequency sent when CALL key is pressed during transmission, used to activate repeater
49	REP-M	OFF	Disable Repeater Forwarding
		CARRI	Forward upon receiving carrier
		CTDCS	Forward upon receiving tone signaling
50	SQL-AM	0, …,16	Set the squelch level for the AM band.
51	RESET	VFO	Menu Reset (Initialization)
		ALL	Menu and Channel Reset (Initialization)

General Specifications

GENERAL	
Frequency range	TX: 118.000 ~ 136.99166 MHz (AM)
	RX: 108.000 ~ 136.99166 MHz (AM) / 65 ~ 108 (FM)
	UHF: 400 ~ 470 MHz
Channel spacing	25 kHz (FM) /8.33 kHz (AM)
Mode	6K00A3E (AM)
	16K0G3E (FM)
Frequency step	2.5kHz/5.0kHz/6.25kHz/10.0kHz/12.5kHz/25.0kHz/8.33kHz
Number of Memory channels	200 Channels
Frequency stability	±2.5ppm
Working voltage	13.8V DC±15%:
Squelch Setup	CARRIER / CTCSS / DCS / 5Tone / 2TONE / DTMF
Operating temperature range	–20˚C ~ +60˚C
Dimensions	140 (W) × 43 (H) × 172 (D) mm,
Weight (approximately)	1.03kg

FM Section	RECEIVER (ETSI EN 300 086 Standardized. Test)	
	Wide band	Narrow band
Sensitivity	≤0.25μV	≤0.35μV
Channel choice	≥70dB	≥60dB
Intermodulation	≥65dB	≥60dB
Spurious Rejection	≥70dB	≥70dB
Audio response	+1~-3dB (0.3-3KHz)	+1~-3dB (0.3~2.55KHz)
Signal to noise ratio	≥45dB	≥40dB
Audio Distortion	≤5%	
Audio output power	≥2W±10%	

FM Section	TRANSMIT(ETSI EN 300 086 Standardized. Test)	
	Wide band	Narrow band
Output power	UHF H: 40W / L: 20W (FM)	
Modulation Mode	16KΦF3E	11KΦF3E
Channel Power	≥70dB	≥60B
Signal to noise ratio	≥40dB	≥36dB
Parasitic harmonic	≥60dB	≥60dB
Audio response	+1--3dB (0.3-3KHz)	+1--3dB (0.3-2.55KHz)
Audio distortion	≤5%	

AM Section	TRANSMITTER
Output power	100W (PEP), 30W (CW)
Modulation limiting	70 ~ 100%
Audio harmonic distortion	Less than 10% (at 60% modulation)
Ham and Noise ratio	More than 35 dB
Spurious emissions	More than 46 dB
Frequency stability	±0.4 kHz

AM Section	RECEIVER
Receive system	Double conversion superheterodyne
Intermediate frequencies	1st 46.35 MHz, 2nd 450 kHz
Sensitivity	COM: Less than 0 dBμ (at 6 dB S/N)
	NAV: Less than 3 dBμ (at 6 dB S/N)
Squelch sensitivity (Threshold)	COM/NAV: Less than 0 dBμ
Spurious response rejection ratio	COM/NAV: More than 60 dB

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