

GENERAL INFORMATION

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1. General

One of the features of Global Maritime Distress/Safety System (GMDSS) is high reliability established by automatic and introduction of digital techniques.

The JSB-196GM MF/HF Radio System is designed for medium-distance communication. It completely satisfies the requirements that SOLAS/GMDSS must meet.

The Radio System consists of the MF/HF Radiotelephone, digital selective call terminal with a built-in watchkeeping receiver (DSC). It uses digitized information suited to automatic processing for distress/safety as well as general purpose communications.

It features ease of handling and operation, and demands no special techniques. Further, the self-diagnosis and module design assures easy maintenance and inspection.

1.1 SCOPE AND PURPOSE

The following technical data on the JSB-196GM Radio Equipment are submitted to the Federal Communications Commission for type acceptance under Part 2,15 and Part 80 of the Commission's rules and regulations.

1.2 JSB-196GM Composition

The JSB-196GM consists of the following units and attachments:

No.	Component	Part name	Quantity	Remarks
1	Radiotelephone	JSB-196GM	1	
1-1 Included Accessories				
1-1-1	Hand Set	NQW-213	1	
1-1-2	Power Cable	7ZCJD0043A	1	L=1m
1-1-3	Mounting screws	MPTG30762	1	
1-1-4	Plug	5JWGC00004	1	
1-1-5	Connector	5JJA00034	2	
1-1-6	Terminals	5JDAH00084	2	
1-1-7	Spare fuse	5ZFEX00013	4	40A
1-1-8	Instruction Manual	7ZPJD0124	1	English
1-1-9	Packing List	7ZPJD0130	1	
1-1-10	Register List	7ZPJD0065	1	
1-1-11	Return Envelope	6ZXJD00122	1	
2	DSC Terminal	NCT-196	1	
2-1 Included Accessories				
2-1-1	DSC Power Cable	7ZCJD0062	1	L=3m
2-1-2	DSC AF Cable	7ZCJD0071	1	L=1.5m
2-1-3	DSC Control Cable	7ZCJD0072	1	L=1.5m
2-1-4	Spare fuse	5ZFEX00012	2	3A
2-1-5	Instruction Manual	7ZPJD0120	1	English
2-1-6	Packing List	7ZPJD0127	1	
2-1-7	Bridge Card	7ZPJD0122	1	English
3	Antenna Tuner	NFC-196	1	
3-1 Included Accessories				
3-1-1	ATU Control Cable	7ZCJD0044A	1	L=5m
3-1-2	ATU RF Cable	7ZCJD0045	1	L=5m
3-1-3	Screw	BRTG03217	2	
3-1-4	Terminal	5JTCD00393	2	1.25-3
3-1-5	Terminal	5JTCD00001	2	2-3
3-1-6	Terminal	BRTE00395	2	5.5-3
3-1-7	Washer	BSFW06000B	2	W6Bs
3-1-8	Packing List	7ZPJD0126	1	

OPTIONS

No.	Component	Part name	Quantity	Remarks
1	DC-DC Converter	NBG-300	1	
2	Hand Microphone	NVT-133	1	Straight cable (L=5m)
3	Hand Microphone	NVT-140	1	Carl cable (L=0.4m)

2. TYPE NUMBER

TYPE : MF/HF RADIO EQUIPMENT
MODEL : JSB-196GM
FCC ID : CKE JSB-196GM

3. SPECIFICATIONS

3.1 GENERAL

Frequency range:	Transmit: 1.6 to 27.5MHz (100Hz steps) Receive: 0.1 to 29.9999MHz (100Hz steps)
Frequency tolerance:	Within ± 10 Hz (after 1 minute warm-up)
Emission mode:	J3E, A1A, F1B, H2B, H3E (Reception only)
User definable channels:	200ch (20ch X 10 Groups)
Preset ITU channels:	1693ch (SSB:283, F1B:891, A1A:519)
Communication mode:	Simplex and semi-duplex
Power requirement:	13.6V DC $\pm 10\%$ (12.3V DC to 15.0V DC), negative-grounded Tx: 40A max Rx: 2A max (Operable between 10.2V DC and 16.2V DC)
Operating temperature:	-30 to +55°C (-15°C to +55°C during normal operation)
Dimensions and mass:	• JSB-196GM Mass : Appox. 7.4kg : 250mm(W) $\times$ 100mm(H) $\times$ 260mm(D) • NCT-196 Mass : Appox. 4.8kg : 250mm(W) $\times$ 100mm(H) $\times$ 260mm(D) • NFC-196 Mass : Appox. 3.3kg : 230mm(W) $\times$ 380mm(H) $\times$ 90mm(D)

3.2 RADIOTELEPHONE (JSB-196GM)

TRANSMITTER

Output power:	150 W _{pep}
Occupied bandwidth:	J3E 3 kHz or less F1B, A1A 0.5 kHz or less
Carrier suppression:	J3E 40dB or more
Unwanted emission:	J3E: 28dB or more at 1.5 to 4.5kHz 35dB or more at 4.5 to 7.5kHz 62dB or more at 7.5kHz or more F1B: 28dB or more at 0.25 to 0.5kHz 35dB or more at 0.5 to 1.25kHz 62dB or more at 1.25kHz or more
Spurious suppression:	60 dB or more
AF frequency response:	350 to 2700Hz (6dB bandwidth)
Microphone input:	600 ohms dynamic microphone (-40 dBm standard)
Line input:	0 dBm, 600 ohms (Balanced)

RECEIVER

Sensitivity:	J3E 6.3 μ V or less (1.6 to 4MHz) 3.5 μ V or less (4 to 27.5MHz) F1B 1.8 μ V or less (1.6 to 4MHz) 1.0 μ V or less (4 to 27.5MHz)
Receiving system:	Triple superheterodyne
Intermediate frequencies:	70.455MHz, 455kHz, 20.217kHz
Selectivity:	J3E 6 dB bandwidth 2.4 to 3kHz, 66 dB bandwidth within ± 2.1 kHz F1B 6 dB bandwidth 270 to 300Hz, 60 dB bandwidth within ± 550 Hz
Spurious response:	40 dB or more
Clarifier range:	± 200 Hz (1Hz steps)
AF output:	5.0W max. 1W rated

3.3 DSC TERMINAL (NCT-196)

DSC

Protocol:	ITU-R Recommendations 493 and 541
Emission:	F1B/J2B 100 baud
Modulator frequency:	1,700Hz $\pm$ 85Hz
Output level:	+10dBm maximum at 600 ohms, balanced
Demodulator frequency:	1,700Hz $\pm$ 85Hz
Input level:	-20dBm to +10dBm at 600 ohms, balanced
Processor code:	10 units error detection specified by ITU-R Recommendation 493.
File Memories:	Call transmitting file: 11files
(Battery backup RAM)	General call receiving file: 20files
	Distress call receiving file: 20files

DSC WATCH-KEEPING RECEIVER

Receiving frequencies:	Six frequencies: 2187.5, 4207.5, 6312, 8414.5, 12577, and 16804.5kHz
Scanning:	(a) Scanning within two seconds of any frequencies selected from the following: 2187.5, 4207.5, 6312, 8414.5, 12577, and 16804.5kHz (b) Scanning stops on detection of 100 baud dot pattern.
Receiving system:	Double super heterodyne with the up-conversion system using a phase-locked digital frequency synthesizer. 1st IF:40.455MHz 2nd IF:455kHz
Reception mode:	F1B/J2B
Sensitivity:	The symbol error rate is 1×10^{-2} or less. (RF input level = $1 \mu V$)
Selectivity:	6dB bandwidth: 270 to 300Hz 30dB bandwidth: within ± 330 Hz 60dB bandwidth: within ± 550 Hz
Frequency stability:	Within ± 10 Hz
Interference rejection and Blocking immunity:	The symbol error rate is 1×10^{-2} or less. Wanted signal: input level = $10 \mu V$, Unwanted signal: input level = 31.6mV, no modulation, variation range 9kHz to 2GHz (except wanted channel and its adjacent channel (± 750 Hz))
Adjacent channel selectivity:	The symbol error rate is 1×10^{-2} or less. Wanted signal: input level = $10 \mu V$ Unwanted signal: input level = 1mV, no modulation, offset frequency = ± 500 Hz

Conducted spurious emission:	The power emitted from the antenna terminal is 1nW or less.
Antenna impedance:	50 ohms, unbalanced

3.4 ANTENNA TUNER (NFC-196)

Frequency range:	1.6 to 30MHz
Power capability:	200 W _{pep}
SWR after tuning:	50ohms, SWR < 2
Tuning method:	Automatic tuning and preset tuning
Tuning time:	Automatic tuning: 1sec~15sec Preset tuning: 0.5sec~1sec
Operating temperature:	-30 to +60 °C