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Keys to Success to Installing the M802

For the typical cruiser the keys to success when installing an Icom M802 are simple. Utilize all the information found in "Icom IC M802 Starting from Scratch" plus:

1. Install the AT140 Tuner as close to the Antenna as possible for a vertical run to the antenna.
    a. Unless you are a technical person, do not use a 3rd party products as it can make operation later more difficult and limit help from other cruisers.
    b. Selected only one type of RF ground and let it be the only connection to the AT140 antenna tuner's ground lug.

2. Install the Transceiver
    a. As close to the battery as possible.
    b. Install the transceiver as far from the AT140 tuner as possible.
    c. Make sure the transceiver has air flow possible.
    d. If using the supplied power cable, install a MDL 30 fuse within 7 inches of the battery connection. Keep the 30 amp fast blow fuse that is in-line with the supplied cable at the transceiver.
    e. If the distance is greater than 10 feet to the battery: Use number 6 wire and connect to short piece of the supplied cable (within a foot). Install a 40 amp fuse within 7 inches of the battery.
    f. Only connect the tuner control cable green wire to the ground lug at the transceiver.
    g. DONOT CONNECT THE TRANSCEIVER TO THE BREAKER PANEL.

3. Don't forget the snap on ferrite cores listed in the book.

Note: The following slides are included from my Icom IC M802 Starting from Scratch all day presentation. They are key points that will supplement the "Icom IC M802 Starting from Scratch" book while you are installing and testing your installation.

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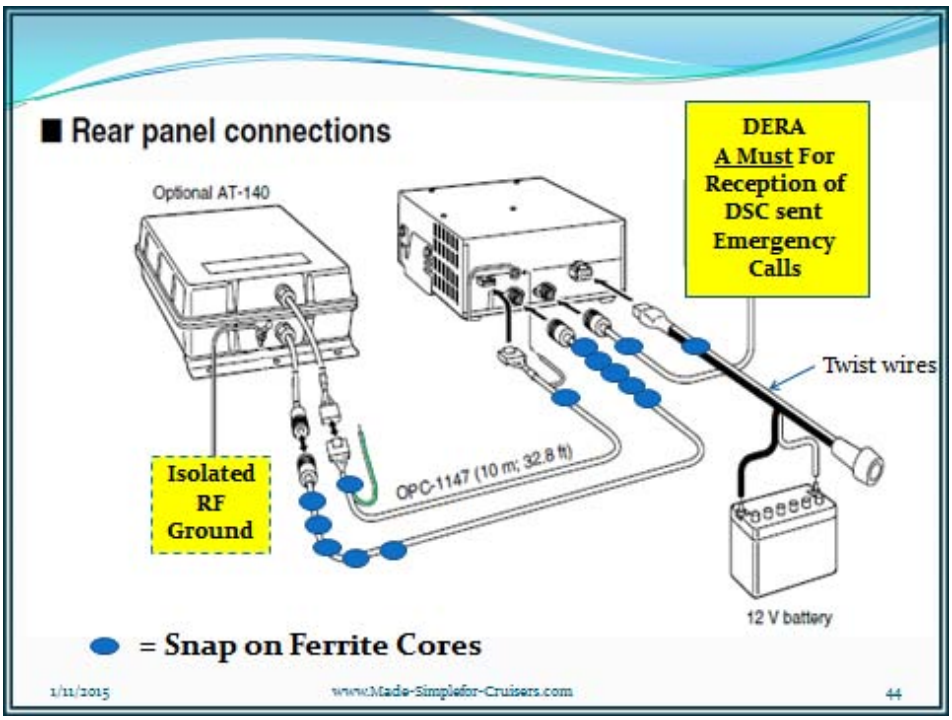
Use lots of Snap on cores to make sure the system works well.



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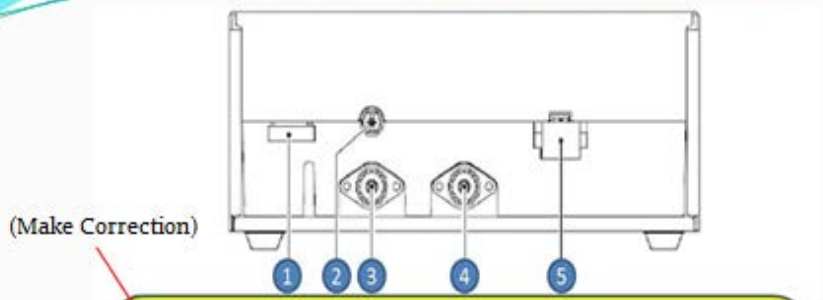

1. **TUNNER CONTROL SOCKET**
   Connect the control cable for the AT-140 antenna tuner here (OPC-1147 cable)

2. **GROUND TERMINAL**
   Important! ~~Connect the chips ground here.~~
   Control Cable Only

3. **ANTENNA CONNECTOR 1**
   Primary Antenna Connection.
   Connect the coaxial cable going to the AT-140 tuner via an RF Isolator here with a PL259 connector.

4. **ANTENNA CONNECTOR 2**
   DSC Emergency Reception Antenna Connection.
   Connect the DERA here via a PL-259 connector

5. **DC POWER SOCKET**
   Connect the battery 13.6 VDC power for the IC M802 here. (OPC 1107A cable)

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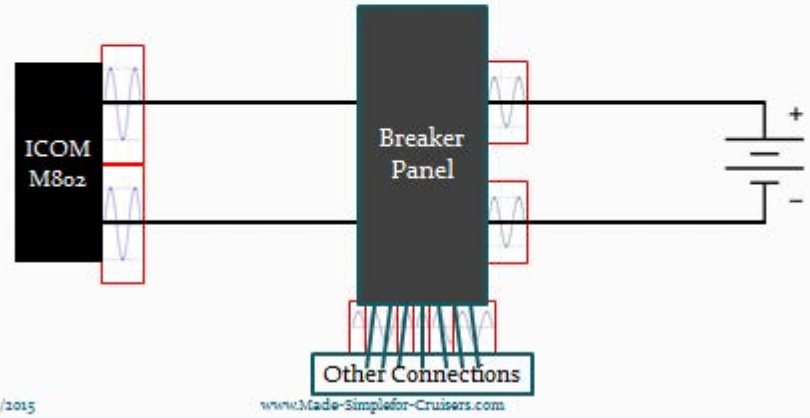
Powering the Radio

- Power the radio from the Battery and NOT the Breaker Panel!



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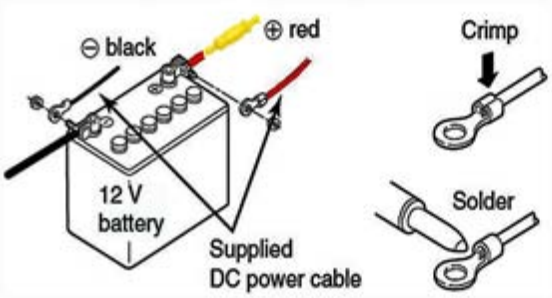
Powering the Radio

- Not to much solder, just cover the connection.
  - No solder into the insulation
- Fuse within 18 cm / 7 inches per ABYC



GTO to Stay Antennas

3. Fold the remaining end in half to obtain a 1" 3 wire connection.

4. Apply a light coat of solder
   - Tin the connection
   - Do not let solder run under insolation

Materials & Information Required

- Download the "Installation Checklist" and "Testing the Power and SWR"
  http://www.made-simplefor-cruisers.com/icm802

- Download "VSWR from Power Readings" at
  http://www.made-simplefor-cruisers.com/communications

Weather Fax and Voice Recorder

Types of Software: *JVCOMM32*, Weather Fax 2000
Or Sound Recorder to capture Weather Reports

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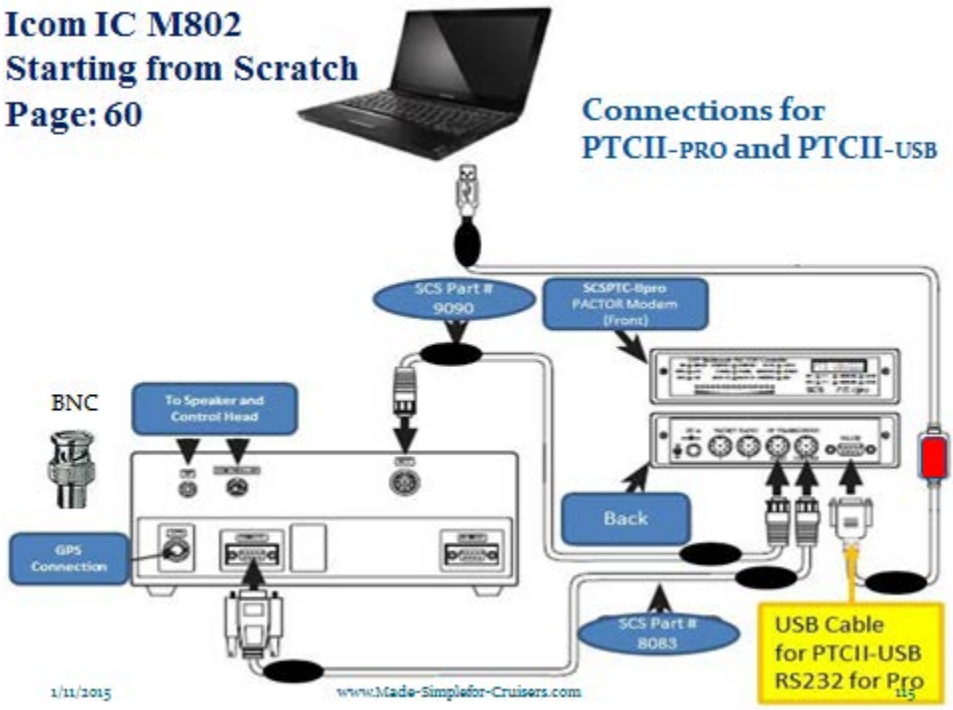

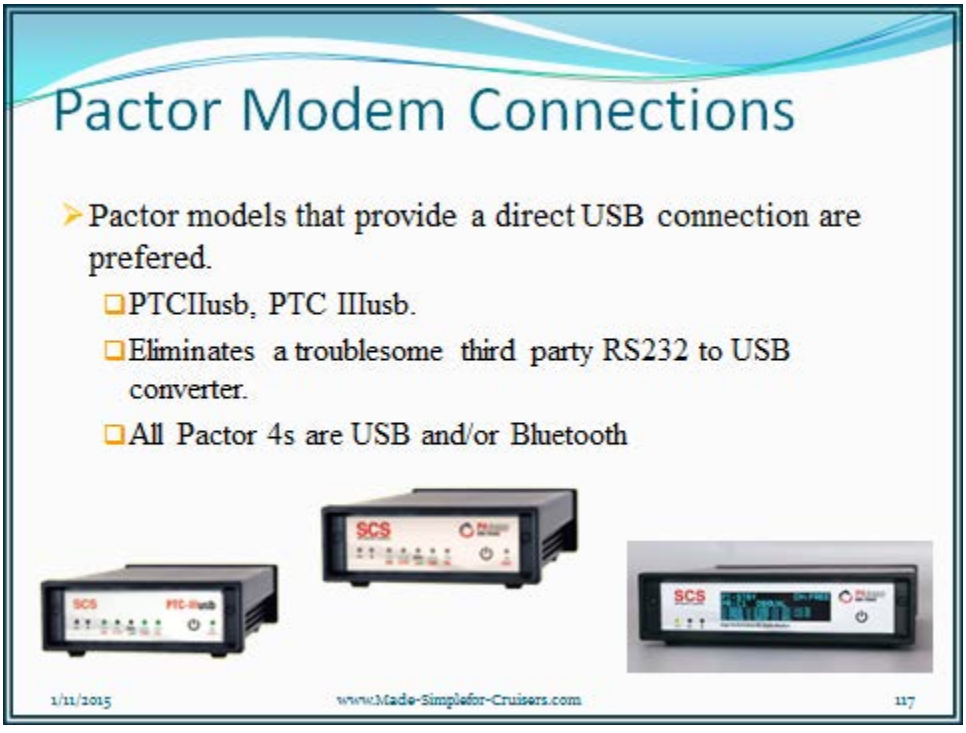

Important Note!

- When replicating **Email**, shift to **Low or Medium power!**
  - High power is not needed for email, it's digital.
  - Reduces the radiation in the boat
  - Reduces the chance of your computer locking up
- Transmitter Output: 150, 60, or 20 watts

Low Power 20W	Medium Power 60W	High Power 150W
F Then 7 Lo PRS	F Then 8 Mid TUV	F Then 9 Hi WXY

Programming Made Easy

Software /cable: Channel changes via your computer.

- You can Download what is in there now, modify or even start over, then upload the new program.
- Software works at least up to Windows 7
- One place to buy: http://www.theantennafarm.com
- CS-M802-USB is recommended ~$50

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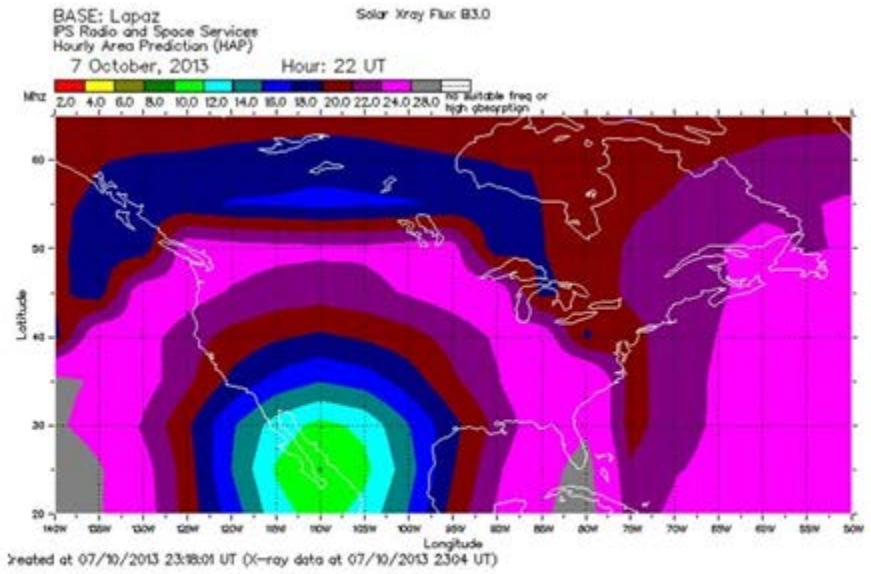
More things to do, while Ashore

- Look at some HF propagation information
- Good hourly calculated Propagation Tool
  - http://www.ips.gov.au/HF_Systems/6/6/1
    - Uses calculations and radio stations



Propagation Tool * Daylight

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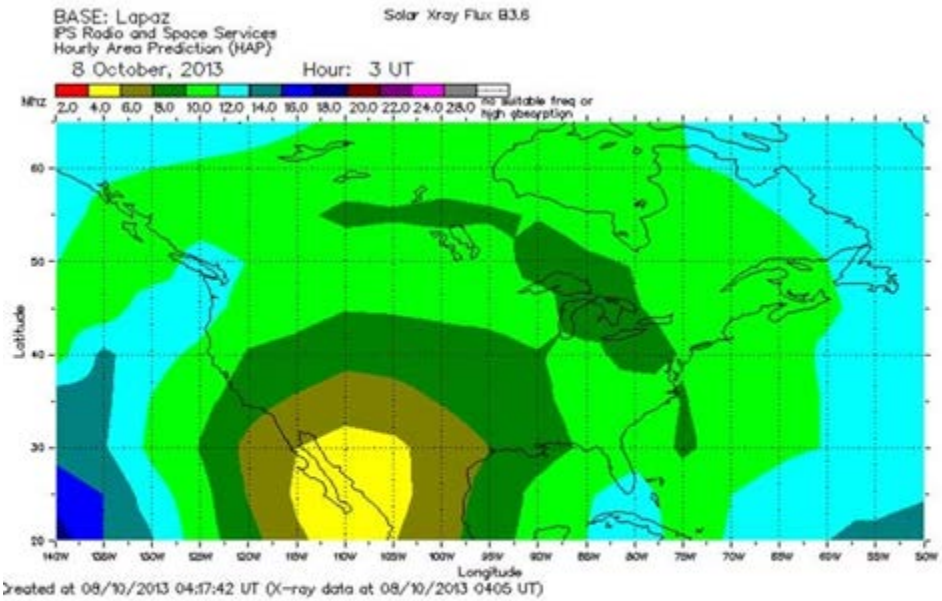

Propagation Tool * Night time

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User Channels — CS-M802 Rev.1.2

CH	RX	TX	Mode	Comment
1	1,160.0	1,160.0	USB	SafetyC
2	4,125.0	4,125.0	USB	CG/SFTY4
3	6,215.0	6,215.0	USB	CG/SFTY6
4	8,191.0	8,191.0	USB	CG/SFTY8
5	11,190.0	11,190.0	USB	CG/SFTY10
6	16,420.0	16,420.0	USB	CG/SFTY12
7	4,426.0	4,426.0	USB	CG/WX14
8	6,501.0	6,501.0	USB	CG/WX16
9	8,764.0	8,340.0	USB	CG/WX18
10	12,089.0	12,343.0	USB	CG/WX12
11	17,134.0	16,431.0	USB	CG/WX16
12	8,284.4	8,284.4	USB	MxPrtCpt
13	8,257.0	8,257.0	USB	MxHarb6
14	8,140.0	8,140.0	USB	MxHarb8
15	12,362.0	12,362.0	USB	MxHarb12
16	4,368.0	4,368.0	USB	MxMrina42
17	4,419.0	4,419.0	USB	MxMrina44
18	8,758.0	8,758.0	USB	MxMrina88
19	8,782.0	8,782.0	USB	MxMrina82
20	11,182.0	11,182.0	USB	AntmaC
21	1,065.0	1,065.0	USB	1A
22	1,079.0	1,079.0	USB	1B
23	1,093.0	1,093.0	USB	1C
24	1,096.5	1,096.5	USB	1D
25	1,214.0	1,214.0	USB	1E
26				
27	4,146.0	4,146.0	USB	4A
28	4,149.0	4,149.0	USB	4B
29				
30	6,124.0	6,124.0	USB	6A
31	6,127.0	6,127.0	USB	6B
32	6,130.0	6,130.0	USB	6C
33				
34	8,194.0	8,194.0	USB	8A
35	8,197.0	8,197.0	USB	8B
36	8,201.0	8,201.0	USB	8C
37	8,213.0	8,213.0	USB	8D
38				
39	11,163.0	11,163.0	USB	11A
40	11,168.0	11,168.0	USB	11B
41	11,259.0	11,259.0	USB	11C
42	11,262.0	11,262.0	USB	11D
43	11,265.0	11,265.0	USB	11E
44				
45	16,516.0	16,516.0	USB	16A
46	16,531.0	16,531.0	USB	16B
47	16,534.0	16,534.0	USB	16C
48	16,537.0	16,537.0	USB	16D
49	16,540.0	16,540.0	USB	16E
50	16,543.0	16,543.0	USB	16F
51	16,546.0	16,546.0	USB	16G
52				
53	16,628.0	16,628.0	USB	16A
54	16,628.0	16,628.0	USB	16B
55	16,631.0	16,631.0	USB	16C
56	16,634.0	16,634.0	USB	16D
57	16,637.0	16,637.0	USB	16E
58	16,640.0	16,640.0	USB	16F
59	16,643.0	16,643.0	USB	16G
60				
61	21,159.0	21,159.0	USB	21A
62	21,162.0	21,162.0	USB	21B
63	21,165.0	21,165.0	USB	21C
64	21,168.0	21,168.0	USB	21D
65	21,171.0	21,171.0	USB	21E
66	21,174.0	21,174.0	USB	21F
67	21,177.0	21,177.0	USB	21G
68				
69	25,100.0	25,100.0	USB	25A
70	25,103.0	25,103.0	USB	25B
71	25,106.0	25,106.0	USB	25C
72	25,109.0	25,109.0	USB	25D
73	25,112.0	25,112.0	USB	25E
74	25,115.0	25,115.0	USB	25F
75	25,118.0	25,118.0	USB	25G
76				
77				
78				
79				
80				

User Channels — CS-M802 Rev.1.2

CH	RX	TX	Mode	Comment
81				
82				
83				
84				
85				
86				
87				
88				
89				
90				
91				
92				
93				
94				
95	2,500.0	2,500.0	AM	WWV 2.5
96	5,000.0	5,000.0	AM	WWV 5
97	10,000.0	10,000.0	AM	WWV 10
98	15,000.0	15,000.0	AM	WWV 15
99	20,000.0	20,000.0	AM	WWV 20
100				
101	6,212.0	6,212.0	USB	Picante
102	8,143.0	8,143.0	USB	PanPacF
103	6,227.0	6,227.0	USB	Amigo P
104	6,224.0	6,224.0	USB	Amigo S
105				
106				
107	2,958.0	2,958.0	LSB	Sonrisa
108	7,192.0	7,192.0	LSB	ChubascP
109	7,194.0	7,194.0	LSB	ChubascS
110				
111	7,232.5	7,232.5	LSB	Baja
112	14,340.0	14,340.0	USB	Manana
113	21,402.0	21,402.0	USB	PacMarm
114				
115	6,516.0	6,516.0	USB	SouthBnd
116	8,122.0	8,122.0	USB	SthBndA
117	4,149.0	4,149.0	USB	South B49
118				
119	2,958.0	2,958.0	LSB	HappyHr
120	14,300.0	14,300.0	USB	Maritime
121				
122	4,269.0	4,077.0	USB	WLO 405
123	4,296.0	4,104.0	USB	WLO 414
124	4,411.0	4,119.0	USB	WLO 419
125	6,519.0	6,216.0	USB	WLO 607
126	8,788.0	8,264.0	USB	WLO 804
127	8,903.0	8,279.0	USB	WLO 809
128	8,906.0	8,282.0	USB	WLO 810
129	13,110.0	11,269.0	USB	WLO 1011
130	13,149.0	11,307.0	USB	WLO 1025
131	13,153.0	11,305.0	USB	WLO 1026
132	17,260.0	16,287.0	USB	WLO 1607
133	17,263.0	16,490.0	USB	WLO 1641
134	17,280.0	16,488.0	USB	WLO 1647
135	22,954.0	22,108.0	USB	WLO 2227
136	4,405.0	4,113.0	USB	KLB 417
137	8,731.0	8,207.0	USB	KLB 825
138	13,101.0	11,254.0	USB	KLB 1209
139	17,311.0	16,429.0	USB	KLB 1624
140				
141	28,300.0	28,300.0	USB	10MILE
142	24,920.0	24,920.0	USB	12MILE
143	21,200.0	21,200.0	USB	15MILE
144	18,110.0	18,110.0	USB	17MILE
145	14,150.0	14,150.0	USB	20MILE
146	7,125.0	7,125.0	USB	40MILE
147	3,600.0	3,600.0	USB	80MILE
148	1,800.0	1,800.0	USB	160MILE
149				
150				
151				
152				
153				
154				
155				
156				
157				
158				
159				
160				

Completed		Equipment List for installed with Backstay System
OK		The AT140 is as close to the antenna as possible.
OK/NA		GTO-15 cable is used from tuner to antenna.
OK/NA		The GTO-15 cable is fed through the hull using a water tight feed through/deck fitting/Clam Clamp.
OK/NA		The GTO-15 cable to the backstay is isolated using standoffs.
OK/NA		The GTO-15 is connected using a good quality connection to the backstay and protected from the environment with vulcanizing tape.
OK/NA		The GTO-15 cable to the backstay is the shortest route possible with no additional wire coiled up between the tuner and the antenna.
OK/NA		The IC M802 power cable (OPC1107A) is connected directly to the battery via a 30 amp MDL (slow blow) fuse within 7 inches. .
OK/NA		If the OPC1107A is not long enough to reach the battery, (#6) wire has been ran from the battery to the transceiver with a 40 amp fuse at the battery and the ICOM 30 amp fuse at the transceiver.
OK/NA		Battery Connections are crimped and soldered
OK/NA		The coaxial connectors (PL259) used on the cable between the transceiver and the tuner are factory made and tested.
OK		Or: Verify the PL259 connectors have been soldered at the center and the outer case if cable made locally
OK/NA		If coaxal cable has been constructed, verify the ohm meter readings on the cable have been recorded if coaxial cable was constructed locally and are within specified values logged in step eight.
OK/NA		The coaxial cable connection at the tuner have been wrapped with shrink tubing or vulcanizing tape.
OK/NA		Ferrite cores have been installed and the cable is looped through twice at both ends of the antenna tuner control cable.
OK/NA		An RF Isolator or preferably (5) ferrite cores have been installed at the RF output of the transceiver.
OK		(5) Snap on Ferrite Cores are installed at the tuner end of the RG8U/RG213 coax with tie wraps installed over them
OK/NA		The control head and Speaker cables have been tie wrapped to the side of the transceiver case.

OK/NA		The control head and Speaker cables have snap on ferrite cores at the transceiver end.
OK/NA		The DERA (DSC antenna) is installed and RG58 cable is ran to the back of the transceiver unit. It is connected to the number 2 antenna connection. (closest to the center of the transceiver)
OK/NA		The two PL259 connectors for the DERA uses RG58 adapters for the smaller cable and are soldered both at the center and the shield.
OK/NA		Verify the ohm meter readings on the cable have been recorded and are within specified values (Step 8 - Installing the Icom IC-M802)
OK		Verify every cable has some sort of ferrite cores installed on both ends: to/from the transceiver, modem and computer.
		Power Testing Results as recorded in Step 15 of Installation
OK		The Power out of the radio at maximum power is at least 150 watts
OK		The SWR of the radio is less than 1.5 for all bands

In		Equipment List
		Icom IC M802 marine SSB transceiver and tuner
OK		Transceiver Unit
OK		Control Head Unit
OK		Microphone (HM-135 or equivalent)
OK		External Speaker (SP-24 or equivalent)
OK		Mounting Bracket kit for Transceiver (bracket and mounting bolts)
OK		Mounting Bracket kit for Control Head (MB-81)
OK		Mounting Bracket kit for Speaker (MB-82)
OK		DC Power Cable (OPC 1107A)
OK		Microphone hanger kit
OK		Cable Tie Set
OK		Spare 30A and 5A FGB Fuses
OK		Associated connector set (8-pin Din)
OK		AT140 Control Cable OPC-1147
OK		AT-140 Antenna Tuner
OK		Remote Control Cable (OPC-1106)
OK		Tuner Connector kit
OK		(2) Snap on Ferrite cores for installation on tuner and transceivr end of the OPC1101 cable with the center hole of 0.41”
OK		Cable for GPS data with factory installed BNC connector(s) length as required to get from transceiver to NMEA signal.
OK		(1) 0.25" Ferrite Core for GPS input BNC cable
OK/NA		Factory built and tested coaxial cable long enough for tuner to transceiver
OK/NA		Alternately - RG213 or RG8U Coaxial Cable for Tuner and Transceiver
OK/NA		Alternately (2) PL259 Solder type connectors
OK/NA		Copper RF grounding foil, heavy-duty .010 thick. Max 4-inch Wide for connections
OK/NA		100 sqft of Copper Screen
OK/NA		Dynaplate to be installed during haul out of boat
OK/NA		Other Counterpoise grounding System
OK/NA		KISS-SSB™ Grounding System
OK/NA		RF Isolator If Used - MFJ-805 (Radio Works)or MFJ-915 from (MFJ Enterprise)
OK/NA		6-8" Factory built and tested coaxial cable to connect the RF Isolator to the transceiver
OK/NA		Alternatly 6 to 8 inch piece of RG8U or RG213 for RF Isolator transciever connection cable
OK/NA		Alternatly (2) PL259 Solder type connectors for RF Isolator transciever connection cable
OK/NA		OR Double-male coaxial connector
OK/NA		OR if no RF Isolator 5 Ferrite cores for RG8U/RG213 with the center hole of 0.41”
OK		(2) Snap on Ferrite cores for installation on the tuner end of the RG8U/RG213 Coax with the center hole of 0.41”
OK		(2) 1/2 Inch snap on Ferrite Cores for installation on both ends of control cable
OK		**DERA**
OK/NA		Gam Electronics DSC Antenna and mount with 30 ft. Cable & PL-259 Connector

OK/NA		Metz DSC Antenna and mount with 30 ft. Cable & PL-259 Connector
OK		One ferrite core for up to 17/64" size to be installed on the Metz antenna at the transceiver.
OK/NA		**HF 23 foot fiberglass antenna and mount**
OK/NA		GTO-15 antenna lead-in wire long enough to go from AT-140 Tuner to antenna
		OR Back Stay Antenna
OK/NA		Modified Stay with 2 insulators installed
OK/NA		3/4 " PVC to construct 3" standoffs for GTO-15 wire on backstay
OK/NA		The GTO-15 to Backstay connector.
OK/NA		GTO-15 antenna lead-in wire long enough to go from AT-140 Tuner to antenna
OK/NA		**OR GAM/McKim Split Lead Single Sideband Antenna (GTO cable not required)**
OK		Deck fitting/Clam Clamp for through hole for GTO-15 cable
OK/NA		Optional DSP Speaker/Device
OK		Misc. Vulcanizing Tape, electric grease and terminal grease lubricant, Solder, soldering Iron, SWR / Power meter, Volt Ohm meter, cable ties, tools

In		**Add Audio Weather Fax**
OK		Mono audio cable with 3.5mm connectors
OK		Weather Fax software that supports Audio input.

In		**Add Email and Weather FAX**
OK		Pactor Modem (Pactor 4, PTC IIusb or PTC IIpro)
OK/NA		USB cable for PTC IIusb
OK/NA		RS232 cable with serial to USB adapter for PTC IIpro
OK/NA		Control of Frequency by Modem - SCS 8083 six (6) foot Frequency control cable
OK/NA		Control of Frequency by Modem - SCS 8084 12 foot Frequency control cable
OK/NA		Control of Frequency by Computer - RS232 cable with serial to USB adapter
OK/NA		SCS 9090 six (6) foot Interconnecting cable
OK/NA		SCS 9091 six (12) foot Interconnecting cable
OK		(12) ferrite snap on cores for the selected three cables above (cores for up to 17/64" size) Also called Ferrite Data line filters
OK		Computer capable of running Windows software
OK/NA		Download Airmail for free from Sailmail.com for Sailmail or Windlink email service
OK/NA		Other HF-SSB email service software
OK/NA		Weather FAX software (May be included with Airmail)

Troubleshooting marine SSB radio

R Medero March 2015 – Partially complete, still working on this doc

Low Transmit Power

1. Verify antenna connections are good – Check connections between tuner and antenna as any connections exposed to elements will eventually fail.

Check coax connections between radio and tuner. Verify that they are snug and clean. Perform continuity test by disconnecting both ends and verify no continuity between shield and center conductors on one end (end A) then connect shield and center of other end (end B) together. Verify not more than 10 ohms is measured on end A.

Whip antennas can fail and can be verified with SWR meter. Connected SWR meter between radio and tuner, perform tune operation and verify SWR is low. Staring at top, remove one section of antenna at a time including connection at base, and verify that SWR (without retuning) changes as each is removed.

2. Verify power to radio is good – Verify power at radio is good while transmitting. Set radio to high power (if feature present) Measure voltage at as close to radio as practical while transmitting and whistling into mic. Verify you have at least 12v. If large voltage change is observed it could be the meter is sensitive to radio frequency interference, connections are resistive, wire is too small or too long, or battery is weak. To help determine meter reading is true, connect 12v light bulb where meter is connected and observe change in brilliance. Use different meter if you suspect reading is false.

3. Verify tuner is operating – Listen to tuner when tuner is turned on. On most rigs such as ICOM this is when the transceiver is turned on. You should hear relays in the tuner make a click sound. This verifies the tuner is powered up. If no sound is heard verify tuner control cable connections. On ICOM radios verify there is near 12 volts between the red and black wires. NOTE: Take care to not connect the red wire to any other wire as this can blow a fuse in or damage the transceiver or tuner. Another method to verify tuner is powered, set radio a frequency where a weak signal is heard (can use static if weak station not found). Disconnect tuner control cable while listing and verify signal level decreases. Reconnect control cable and very signal level increases.

If radio has a tune button verify that radio momentarily indicates it is transmitting when button is pressed. If it does not, verify tuner control cable connections. On ICOM radio: Momentarily connect green(key) wire to black(GND) wire and verify radio indicates transmitting while connection is made. If it does not then problem is in cable or radio. Momentarily connect white(start) wire to black(GND) wire and verify radio indicates transmitting while connection is made. If it does not then problem is in cable or tuner. When tune button is pressed you should hear relays in the tuner click.

On ICOM M802 the display will indicate when tuning is successful by indicating TUNE in upper area of the display. If not successful it will indicate THRU. If radio is indicating it is transmitting when tune

button is pressed, but not indication that tune operation succeeded, check coax connections between radio and tuner and antenna and ground connections on tuner.

Tune succeeds on some frequencies and not others. Very ground is good (see counterpoise info in other doc's), antenna connections are good, and antenna length including wire from tuner to antenna is not near ½ wave length (about 502/frequencyInMegaHertz). If you suspect it is the near ½ wave problem then add few feet of wire to antenna. Then verify other frequencies tune ok.

4. Antenna connections and tuner operation seem OK, but signal output is still low, verify radio is drawing expect amperage while transmitting loud audio (or CW if you know how to do that). A 100 watt radio should draw more than 15amps (20a for 150w radio). Verify radio is set to highest power and whistle in the mic while transmitting and note the amperage draw. If amperage is too low, the cause could be poor antenna match, voltage at radio too low while transmitting, not enough audio drive (bad mic or mic gain set too low) or bad component in radio. If amperage is as expected, it is unlikely issue is with radio or tuner, check antenna connection, GTO wire and tuner ground.

Difficulty Receiving

1. Verify receive (RF) gain is set to maximum, squelch if off, audio frequency based filtering is off (DSP filtering found on some ham rigs).

2. Electrical RF noise (interference) is the most usual cause of issues with receiving. RF noise is commonly generated by electronic stuff you have on board, onboard neighboring vessel or on land. Refrigerators, solar panel charge controllers, AC charges and inverters are among the worst offenders, but can be most anything from LED or CF lights, to watermaker controls. Most radios have signal strength indicators that are useful for measuring RF noise level. On the IC-M802 for example there is a bar graph in the lower left of the display. Under good noise conditions there should be only 1 or 2 bars illuminated when no one is transmitting. While sometimes naturally occurring noise can be higher, if 3 or more bars are illuminated that is an indication of local electrical noise.

RF interference can sound like static or it can sound like some man made signal. Also the interfering noise can come as conditions change in the device that is generation the noise. The controller for DC refrigeration is one example of a device that sometimes interferes on frequencies we commonly use. The noise from this device can sound like data or Morse code signals and will drift in and out of frequency you are monitoring.

To locate a noise source on your vessel wait for the frequency to be clear (no one transmitting) , observe the signal level indicator while listening to the noise. Remove power from (NOT JUST TURN OFF) all electrical devices while observing change in noise. Then power each on one by one again observing change in noise. If there is no way to disconnect solar panels from controller you can try placing heave cloth over the panel to shade the sun.

3. A good transmitting antenna is also good for receive. You can verify your antenna using your transmitter, see steps above in **Low Transmit Power**

4. While usually not necessary tuning your antenna will improve reception. You might find that once tuned and a band such as 4mHz then switching to the 8mHz band for example, receive signals are very

low. In most rigs you have 2 options, setting you tuner to the THROUGH mode (bypass), or you can tune on the new band. On the M802 through mode is F key then TUNE key.

Optimizing SSB Receive
rick medero 2015

Settings on your rig:
1. Turn squelch off. I have not found a squelch that works well with HF SSB. It can get to be tiresome listening to static but that is the nature of SSB.

2. Set RF gain to max (see your rig's operators manual).

3. Clarify to zero (see your rig's operators manual).

4. If using Ham rig, turn OFF AF based filtering (DSP noise reduction), experiment with options for controlling AGC response time.

Interference:
Local interference frequently comes for electronics on your boat, boats nearby and land based electrical equipment. Observe the bars on your display during receive, when no station is transiting. Also listen to the static. Ideally less that 2 bars should show and the static should sound like static (no pattern to the noise). If this is not the condition turn off electrical devises on you boat to see if any are the source of the interference. Note that many devises can still interfere when they are off but still have power supplied, so it is best to turn breakers or switches off that are supplying the power. Refrigerators, solar panel charge controllers, AC charges and inverters are among the worst offenders, but can be most anything from LED or CF lights, to watermaker controls. I help one boat where it was the watermaker even when it was off, we had to remove the 12v supply to get the interference to stop. In this case it did sound like normal static but about 5 bars showed the interference.

Equipment or installation issues:
I have seen a few cases now where tuners have relays that become resistive and cause receive to be low while transmit seems ok. What happens is the higher voltage when transmitting arcs the contacts resulting in lower resistance. This usually shows up just after tuning were the receiver is quiet until you transmit, then RX is fine, but can intermittently go resistive again. Sometimes tapping on the turner will cause it to go quiet or get better, this is one way to determine if issue is in the tuner.

Resistive antenna connection. Similar to tuner relay problem above, but connection between antenna and tuner or tuner and radio.

See hints on antenna and counterpoise.

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Discussion

Testing your installation by checking the output of Icom IC M802 HF SSB radio is a simple process. You first need a wattmeter that will cover the full range of the IC M802 and the 150+ watts output signal.

While it would be nice to have one of the fine Bird watt meters, you can obtain all the information you need to verify your system is working with a low cost watt meter. You can use a low cost meter like those manufactured by MFJ.
http://www.mfjenterprises.com/Categories.php?sec=244

Their watt meters range from about $ 40 to $100. Make sure the meter will read both forward and reflected power. You will also need a short piece of coaxial cable to connect the meter in line with the IC M802.

Download the SWR calculator spread sheet (SWR Sheet) from my web site on te communications page to record your data.

http://www.made-simplefor-cruisers.com/-%20Communications/SWR-POWER%20Calculations.xlsx

Connecting the Watt Meter

1. Disconnect the Coaxial cable on the back of the IC M802 radio.
2. Connect the Coaxial cable to the output of the watt meter. (Output/Antenna connection)
3. Connect your short piece of coaxial cable between the output of the IC M802 and the watt meter input. (Input/Transmitter connection)
4. Setup of the meter
    a. If the meter has multiple ranges, make sure the range being used is greater than 150 watts.
    b. Identify the method on the meter to select forward and reflected power. Some meters contain two meters that display both forward and reflected power.
5. The initial reading will be forward power.

Set up the IC M802 for testing

1) The tests will be made on one frequency within each band, e.g. 2, 4, 6, 8, 12, 16, 18, 22, and 25 MHz.
    a) For ease of testing I usually use the typical ship to ship channels: 2A, 4A, 6A, 8A, 12A, 16A, 18A, 22A, and 25A.

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Testing the IC M802

1) Select the frequency to test.
2) Listen for anyone using the channel.
3) Press the [THRU/TUNE] button while observing the watt meter.
4) Observe the LCD display on the IC M802.
   a) You will probably need a helping hand here as most transceivers are not installed close enough for one person to push the button and read the meter.
5) The watt meter should briefly display approximately 20 watts of power.
6) The LCD display should briefly display one bar at the bottom of the display between the "L" and the "H".
7) Press the [SET/MODE] switch four (4) times to display the "FSK" mode.
   a) The FSK mode will cause a 100% modulation of an single frequency very close to the dial frequency.
8) Press and hold the microphone push to talk (PTT) button while reading the watt meter.
9) Note the LCD display should also have eight (8) bars, e.g. Bars covering the distance between the "L" and the "H" at the bottom of the display.
10) Record the forward Power reading in the SWR sheet for the frequency being tested.
    a) If the meter also reads reflected power simultaneously, read and record the reflected power on the SWR sheet.
    b) If Not Go to Step 10 below.
    c) Go Back to Step 1 for the next frequency.
11) Change the watt meter to measure reflected power.
12) Press the PTT again and measure/read the reflected power.
13) Record the reflected power on the SWR sheet.
14) Go to Step 1 for the next frequency until all frequencies have been tested.

Repeat test annually if possible to assure degradation of the system from corrosion from the elements has not reduced the capability of your IC M802.

If you have questions, feel free to send me a note at p-t_on_sunyside@live.com

Quick no meter Quick test.

Individually Select 2A, 4A, 6A, 8A, 12A, 16A, 18A, 22A, 25A and complete the steps below:

1. Select Channel and make sure not in use.
2. Press [Set/Mode] button on to display “FSK”
3. Press [THRU/TUNE] button and make sure display indicates “TUNE”. (Signal Strength bar should indicate one bar while tuning)
4. Press PTT on Microphone
5. Signal Strength should be 8 signal strength bars if antenna system is tuning properly.

Note: While in a marina frequently the 2A and 4A may have less bars as a result of the signal bouncing back off other boats. Re check out of the marina if that occurs. If you are missing bars, re-test with a SWR meter in line using the same process as above.