
FCC Element 9 - GMDSS Radio Maintenance

1. What are the correct VHF Channels and Frequencies for Calling/Distress, DSC and bridge-to-bridge operations?

- **Ch-16, 156.800 MHz, Ch-70, 156.525 MHz and Ch-13, 156.650 MHz.**
- Ch-06, 156.300 MHz, Ch-16, 156.800 MHz and Ch-13, 156.650 MHz.
- Ch-08, 156.400 MHz, Ch-70, 156.525 MHz and Ch-16, 156.800 MHz.
- Ch-06, 156.300 MHz, Ch-12, 156.600 MHz and Ch-13, 156.650 MHz.

Note:
VHF distress/calling utilizes Channel 16 (156.800 MHz), DSC distress/calling uses Channel 70 (156.525 MHz), and bridge-to-bridge communications use Channel 13 (156.650 MHz).

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2. What is the frequency separation between Transmit and Receive frequencies on a duplex channel?

- 2.8 MHz
- **4.6 MHz**
- 6.4 MHz
- 10.7 MHz

Note:
The standard frequency separation between transmit and receive frequencies on marine VHF duplex channels is 4.6 MHz.

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3. What is the assigned channel spacing for VHF channels?

- 10 kHz
- 15 kHz
- **25 kHz**
- 50 kHz

Note:
VHF channels utilize a 25 kHz spacing to ensure international interoperability.

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4. What is the allowed frequency tolerance for the DSC carrier frequencies?

- 10 Hz
- 20 Hz
- 5 ppm
- **10 ppm**

Note:
DSC carrier frequencies have a tolerance of 10 ppm, a relative error specified in international standards. This allows for varying frequency deviations across different bands while maintaining a consistent level of accuracy, unlike fixed tolerances in Hertz or a stricter 5 ppm.

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5. Using a frequency counter with an accuracy of 2 ppm — which of the following are within legal tolerance for the frequencies of 156.800 MHz and 156.525 MHz?

- **156,798.758 kHz and 156.526.243 kHz.**
- 156,798.735 kHz and 156,526.258 kHz.
- 156,801.567 kHz and 156,526.476 kHz.
- 156,798.635 kHz and 156,523.352 kHz

Note:
Choice A is correct because the measured frequencies allow for the counter's ±2 ppm error and remain within the legal ±10 ppm tolerance.

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6. Using a frequency counter with an accuracy of 5 ppm — which of the following are within legal tolerance for the frequencies of 156.875 MHz and 157.200?

- 156,873.562 kHz and 157,198.264 kHz.
- **156,875.774 kHz and 157.199.321 kHz.**
- 156,876.562 kHz and 157,201.355 kHz.
- 156,873.336 kHz and 157,201.570 kHz.

Note:
The frequencies 156,875.774 kHz and 157,199.321 kHz are within the legal 5 ppm tolerance of their respective nominal frequencies.

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7. What is the purpose of the USA-INT switch?

- To provide for simplex operations with European Public Correspondence stations.
- To provide for duplex operations with U.S. Public Correspondence stations.
- To change from duplex to simplex operation on designated channels in European waters.
- **To change from duplex to simplex operation on designated channels in U.S. waters.**

Note:
The USA-INT switch converts designated channels from duplex to simplex operation when operating in U.S. waters, enabling the use of U.S.-specific simplex frequencies.

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8. What may happen if the USA-INT control is left on INT when in U.S. waters?

- **Your signals will be heard but other station replies will not be heard on certain channels.**
- You will be able to communicate with public correspondence stations on Channel 5.
- Other stations will not be able to hear your transmissions and you will not hear any signals.
- You will not be able to operate on channel 13.

Note:
Using the international channel plan (INT) in U.S. waters can result in transmissions being received by other stations, but the receiving radio may not be tuned to the correct frequency to hear replies on certain channels due to differing frequency pairings.

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9. What is the purpose of the Dual Watch function?

- Allows simultaneous reception on two different channels.
- **To rapidly switch the radio 's receiver between two channels.**
- Allows reception and transmission at the same time.
- It allows you to monitor both sides of a public correspondence station's communication.

Note:
Dual Watch rapidly alternates the receiver between two channels to monitor both, as a standard marine VHF radio has only one receiver and cannot simultaneously receive on two channels.

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10. What is the proper adjustment of the squelch control for maximum sensitivity?

- Maximum clockwise rotation.
- Maximum counterclockwise rotation.
- **Just below the point where the noise breaks through.**
- The squelch has no effect on the sensitivity.

Note:
The correct squelch setting maximizes sensitivity by minimizing the threshold at which the receiver blocks noise, allowing the reception of the weakest signals while avoiding constant background interference; adjusting the control just below the point where noise reappears achieves this balance.
