

Appendix F Test Frequencies

Bench Test Frequencies

The following paragraphs describe the frequencies\channels used during the adjacent channel interference susceptibility and interoperability bench tests.

Adjacent Channel Interference Tests

The 25 kHz radios were tested for susceptibility to adjacent channel interference on simplex and duplex channels. The 25 kHz radios were tested with both 25 and 12.5 kHz channelized radios acting as the interferers. The 25 kHz interferers were tuned ± 25 and ± 50 kHz (two channels) from the desired signal carrier frequency and the 12.5 kHz interferers were tuned ± 12.5 , ± 25 , ± 37.5 , and ± 50 kHz from the carrier frequency. Using this method a “baseline” measurement of the current operating 25 kHz environment could be simulated and those results compared to the proposed 25 and 12.5 kHz environment.

The frequencies that were used by the desired signal and interferer radio during the simplex interference susceptibility testing are shown below in Table F-1. The desired signal was transmitted on channel 22A. On-tune interferers were not tested. The interstitial channel designations for the interferers in Tables F-1 and F-2 are identified by adding a prefix of “2” to the previous 25 kHz channel. For example, the interstitial channel 12.5 kHz above channel 21 is labeled 221. This channel plan designation has been submitted to ITU-R study group 8B but has not yet been internationally adopted.

Table F-1
25 kHz Simplex Test Channels

Simplex Channel Designation	Interferer Frequency (MHz)	offset value kHz
21A	157.0500	-50.0
221*	157.0625	-37.5
81A	157.0750	-25.0
281*	157.0875	-12.5
22 A	157.1000	0
222*	157.1125	+12.5
82A	157.1250	+25.0
282*	157.1375	+37.5
23A	157.1500	+50.0
* proposed designator		

The frequencies that were used by the desired signal and interferer radio during the duplex interference susceptibility testing are shown below in Table A-2. Channel 87 was the desired signal channel.

Table F-2
25 kHz Duplex Test Frequencies

Duplex Channel Designation	Transmit Mobile Stations (MHz)	Transmit Base Stations (MHz)	Offset value (kHz)
86	157.3250	161.9250	-50.0
286*	157.3375	161.9375	-37.5
27	157.3500	161.9500	-25.0
227*	157.3625	161.9625	-12.5
87	157.3750	161.9750	0
287*	157.3875	161.9875	+12.5
28	157.4000	162.0000	+25.0
228*	157.4125	162.0125	+37.5
88	157.4250	162.0250	+50.0
* proposed designator			

When testing the 25 kHz mobile receiver on the duplex channel, the test set functioned as the desired base station transmitter and the interferer radio located outside the shield room acted as the adjacently tuned base station 25 or 12.5 kHz transmitter. Conversely, when testing the 25 kHz base station receiver on the duplex channel the test set functioned as the desired mobile transmitter and the interferer radios acted as the adjacently tuned mobile transmitter.

The radios were configured as either a base station or mobile unit. Therefore, the tests were completed by merely selecting the proper channel for each test set-up. Internal programming in the radios selected the proper frequency for that particular desired and interferer channel for each test. Most marine VHF radios are sold either as a base station radio or as a mobile radio. Although, some manufacturers sell radios that can be configured by the user as either one.

Note: In Tables F-1 and F-2 the 25 kHz interferers transmitted only on the assigned marine channels. The 12.5 kHz interferers transmitted on the assigned marine channels and the interstitial channels between them.

The 12.5 kHz radios were tested for susceptibility to adjacent channel interference on simplex and duplex channels. The 12.5 kHz radios were only tested with 25 kHz channelized radios acting as the interferers. The 25 kHz interferer radios were off-tuned ± 12.5 and ± 37.5 kHz from the carrier frequency of the desired 12.5 kHz signal. Table F-3 lists the frequencies of the simplex desired and interferer channels tested. The interstitial channel 222A was the desired signal channel. Obviously, due to the channel plan an on-tune 25 kHz interferer could not be tested.

Table F-3
12.5 kHz Simplex Test Frequencies

Simplex Channel Designation	Interferer Frequency (MHz)	offset value (kHz)
81A	157.0750	-37.5
22A	157.1000	-12.5
222A*	157.1125	0
82A	157.1250	+12.5
23A	157.1500	+37.5
* proposed designator		

Table F-4 lists the frequencies of the duplex desired and interferer channels. The interstitial channel 285 was the desired signal channel.

Table F-4
12.5 kHz Duplex Test Frequencies

Duplex Channel Designation	Transmit Mobile Stations (MHz)	Transmit Base Stations (MHz)	Offset value (kHz)
25	157.2500	161.8500	-37.5
85	157.2750	161.8750	-12.5
285*	157.2875	161.8875	0
26	157.3000	161.9000	+12.5
86	157.3250	161.9250	+37.5
* proposed designator			

When testing the 12.5 kHz mobile and base receiver on the duplex and simplex channel the test set functioned as the adjacently tuned 25 kHz interferer radio. This was accomplished by adjusting the carrier frequency of the RF output of the test set to the values shown in Table F-4.

Interoperability Tests

Simplex channel 22A was used as the desired signal channel for testing the interoperability of a 12.5 kHz transmitter with the 25 kHz receivers. Channel 22A was also used to test the interoperability of a 25 kHz transmitter with a 12.5 kHz receiver on a simplex channel. Channel 85 was used to test the interoperability of a 25 kHz transmitter and 12.5 kHz receiver on a duplex channel. The frequencies of these channels are shown above in Tables F-1 and F-2.