

4.21 Adjacent Channel Emissions

4.21.1 Test Case

4.21.1.1 Purpose

This test verifies requirements related to the Adjacent Channel Emissions of the transmitter. This is a test of requirements allocated to the overall equipment.

4.21.1.2 Setup/Initial Conditions

A Spectrum Analyzer shall serve as the primary test equipment.

The Spectrum Analyzer shall be configured as follows for measurement of adjacent channel power:

Center Frequency	112 MHz	
Span	50 kHz	
Attenuation	10 dB	Adjust as required during procedure
Reference Level	0 dBm	Adjust as required during procedure
Resolution Bandwidth	Auto	
Video Bandwidth	Auto	
Trigger	External	Trigger on sync pulse leading edge
ACP Channel Bandwidth	16 kHz	
ACP Channel Spacing	25 kHz	
Video Averaging	On	(25 measurements averaged)

A VHF Data Link Transmitter shall serve as the host unit under test for verifying these Product Specification requirements.

The equipment shall be configured in the test setup shown in Figure 3.3.2.4-1. Unless otherwise directed, the transmitter “enable” function must be active (TTL low). The initial condition for the transmitter shall be the Operational Mode. To enter Operational Mode, apply power to the transmitter. Following completion of power-on tests (less than 1 second), the transmitter will enter Operational Mode. Unless otherwise directed, allow the UUT to warm up for 15 minutes before taking data.

4.21.1.3 Definition of Inputs

This test shall verify that the transmitter limits adjacent channel emissions as required. Adjacent channel emissions are primarily attributable to amplifier linearity and to filtering employed in the transmitter IF. Since the filtering is performed at the IF frequency, its performance is not channel frequency dependent. However, the performance of the final amplifier stage can be frequency dependent as well as dc input voltage dependent.

To ensure measurement of worse case performance, these overall transmitter tests are performed at both ends of the frequency band and at the center. The tests are also performed at min and max input dc voltages for the worst case frequency. The specific inputs for this test case are provided in Tables 4.21.1.3-1 to -3.

The 222 byte application data message which is required for the test is defined as follows (data shown as hex bytes) - (Canned scenario “*WApp5”):

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01 00 00 00 02 00 00 00 03 00 00 00 04 00 00 00 05 00 00 00 06 00 00 00 07 00 00 00
08 00 00 00 09 00 00 00 0A 00 00 00 0B 00 00 00 0C 00 00 00 0D 00 00 00 0E 00 00 00
0F 00 00 00 10 00 00 00 11 00 00 00 12 00 00 00 13 00 00 00 14 00 00 00 15 00 00 00
16 00 00 00 17 00 00 00 18 00 00 00 19 00 00 00 1A 00 00 00 1B 00 00 00 1C 00 00 00
1D 00 00 00 1E 00 00 00 1F 00 00 00 20 00 00 00 21 00 00 00 22 00 00 00 23 00 00 00
24 00 00 00 25 00 00 00 26 00 00 00 27 00 00 00 28 00 00 00 29 00 00 00 2A 00 00 00
2B 00 00 00 2C 00 00 00 2D 00 00 00 2E 00 00 00 2F 00 00 00 30 00 00 00 31 00 00 00
32 00 00 00 33 00 00 00 34 00 00 00 35 00 00 00 36 00 00 00 37 00 00 00 38 39
```

Table 4.21.1.3-1 Adjacent Channel Test Case Inputs At Nominal DC Input Voltages		
Step	Input	Description
A	DC input voltages at nominal: 5 Vdc +15 Vdc -12 Vdc +28 Vdc	
B	Send a Tune Command with Frequency set to desired value indicated in Major Step and Time Slot FFh (all slots).	
C	Send a Power Control Command with Attenuation Value of 0.	
D	Send a 222 Byte Application Data Message, continuously in all time slots	See message definition above.

Table 4.21.1.3-2 Adjacent Channel Test Case Inputs At Minimum DC Input Voltages and Worst Case Frequency		
Step	Input	Description
A	DC input voltages at minimum: 5 Vdc +14.25Vdc -11.4 Vdc +26.6 Vdc	
B	Send a Tune Command with Frequency set to desired value indicated in	

Table 4.21.1.3-2 Adjacent Channel Test Case Inputs At Minimum DC Input Voltages and Worst Case Frequency		
Step	Input	Description
	Major Step and Time Slot FFh (all slots).	
C	Send a Power Control Command with Attenuation Value of 0.	
D	Send a 222 Byte Application Data Message, continuously in all time slots	See message definition above.

Table 4.21.1.3-3 Adjacent Channel Test Case Inputs At Maximum DC Input Voltages and Worst Case Frequency		
Step	Input	Description
A	DC input voltages at maximum: 5.5 Vdc +15.75Vdc -12.6 Vdc +29.4 Vdc	
B	Send a Tune Command with Frequency set to desired value indicated in Major Step and Time Slot FFh (all slots).	
C	Send a Power Control Command with Attenuation Value of 0.	
D	Send a 222 Byte Application Data Message, continuously in all time slots	See message definition above.

4.21.1.4 Major Steps

Verify the Adjacent Channel requirements for the transmitter equipment by performing the following steps.

At nominal dc input voltage, verify adjacent channel emissions at a channel frequency of 112.000 MHz.

1. Apply the inputs of Table 4.21.1.3-1 so that the transmitter is continuously transmitting on the 112 MHz channel frequency.
2. Use the spectrum analyzer to measure the power in the adjacent channels and at the measurement bandwidths as indicated in Table 4.21.1.5-1. Compare results to the outputs in Table 4.21.1.5-1.

At nominal dc input voltage, verify adjacent channel emissions at a channel frequency of 115.000 MHz.

- C. Apply the inputs of Table 4.21.1.3-1 so that the transmitter is continuously transmitting on the 115 MHz channel frequency.

4. Use the spectrum analyzer to measure the power in the adjacent channels and at the measurement bandwidths as indicated in Table 4.21.1.5-1. Compare results to the outputs in Table 4.21.1.5-1.

At nominal dc input voltage, verify adjacent channel emissions at a channel frequency of 117.950 MHz.

5. Apply the inputs of Table 4.21.1.3-1 so that the transmitter is continuously transmitting on the 117.950 MHz channel frequency.
6. Use the spectrum analyzer to measure the power in the adjacent channels and at the measurement bandwidths as indicated in Table 4.21.1.5-1. Compare results to the outputs in Table 4.21.1.5-1.
7. For the three previous sets of tests, note at which frequency the worst case adjacent channel power measurements were obtained.

At minimum dc input voltage, verify adjacent channel emissions at the worst case channel frequency identified in Step G. above.

8. Apply the inputs of Table 4.21.1.3-2 so that the transmitter is continuously transmitting on the worst case channel frequency.
9. Use the spectrum analyzer to measure the power in the adjacent channels and at the measurement bandwidths as indicated in Table 4.21.1.5-1. Compare results to the outputs in Table 4.21.1.5-1.

At maximum dc input voltage, verify adjacent channel emissions at the worst case channel frequency identified in Step G. above.

10. Apply the inputs of Table 4.21.1.3-3 so that the transmitter is continuously transmitting on the worst case channel frequency.
11. Use the spectrum analyzer to measure the power in the adjacent channels and at the measurement bandwidths as indicated in Table 4.21.1.5-1. Compare results to the outputs in Table 4.21.1.5-1.

(1) Expected Outputs

Table 4.21.1.5-1 Adjacent Channel Test Case Outputs

Adjacent Channel	Bandwidth	Expected Results	Comment
1 st	16 KHz	-18 dBm	
1 st	25 KHz	+ 2 dBm	
2 nd	25 KHz	-23 dBm	
4 th	25 KHz	-28 dBm	
8 th	25 KHz	-33 dBm	
16 th	25 KHz	-38 dBm	
32 nd	25 KHz	-43 dBm	
64 th	25 KHz	-48 dBm	

4.21.1.5 Post Processing/Analysis

4.21.1.6 Pass/Fail Criteria

The criteria for successfully passing these test cases are based on obtaining the responses shown above. Since the procedure steps are independent of each other, failure of any one step does not necessitate re-testing of any other step.

4.21.2 Test Procedure

4.21.2.1 Adjacent Channel Emissions

Test Procedure Steps

Pass/Fail ()	Results	Pass ()	Fail ()
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- Record the version of Lab Software used to control the UUT host computer. Without applying supply voltage to the transmitter, adjust the power supply output voltages to the nominal values shown in Table 4.21.1.3-1 Step A. With the UUT (unit under test) configured in the test setup shown in Figure 3.3.2.4-1, connect the spectrum analyzer to the output port of the 30 dB RF attenuator. Measure and record RF power calibration factors between the UUT output port and the spectrum analyzer input port at 112 MHz, 115 MHz and 117.95 MHz. Set the spectrum analyzer measurement parameters to the values shown in paragraph 4.21.1.2. Apply power to the transmitter. Send a Tune Command message to the transmitter setting the frequency to 112 MHz and the Time Slot to all slots. Send a Power Control Command message to the transmitter setting the power attenuation value to 0 dB for maximum output power. Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

√	112 Mhz 115 Mhz 117.95 Mhz 30.1 db SW ver 1.0	N / A	N / A
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Record Correction Factors and Lab SW Version (Reference)

- Change the spectrum analyzer center frequency to 112.025 MHz. Using the spectrum analyzer “channel power in 16 kHz bandwidth” function, measure and record the transmitter output power in the center 16 kHz band, taking into account the 112 MHz measurement correction factor.

√	-25	√	
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Test Procedure Steps

P er f. ()	Results	P as s ()	F ai l ()
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(≤ -18 dBm)

- Change the spectrum analyzer center frequency to 111.975 MHz. Using the spectrum analyzer “channel power in 16 kHz bandwidth” function, measure and record the transmitter output power in the center 16 kHz band, taking into account the 112 MHz measurement correction factor.

√	-27.3	√	
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(≤ -18 dBm)

- Change the spectrum analyzer channel bandwidth measurement parameter to 25 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 112 MHz measurement correction factor.

√	-8.4	√	
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($\leq +2$ dBm)

- Change the spectrum analyzer center frequency to 112.025 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 112 MHz measurement correction factor.

√	-3.6	√	
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($\leq +2$ dBm)

- Change the spectrum analyzer center frequency to 112.050 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 112 MHz measurement correction factor.

√	-34.7	√	
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(≤ -23 dBm)

- Change the spectrum analyzer center frequency to 112.100 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 112 MHz measurement correction factor.

√	-36.1	√	
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Test Procedure Steps

P er f. ()	Results	P as s ()	F ai l ()
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(≤ -28 dBm)

8. Change the spectrum analyzer center frequency to 112.200 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 112 MHz measurement correction factor.

√	-36.7	√	
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(≤ -33 dBm)

9. Change the spectrum analyzer center frequency to 112.400 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 112 MHz measurement correction factor.

√	-43.7	√	
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(≤ -38 dBm)

10. Change the spectrum analyzer center frequency to 112.800 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 112 MHz measurement correction factor.

√	-48.8	√	
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(≤ -43 dBm)

11. Change the spectrum analyzer center frequency to 113.600 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 112 MHz measurement correction factor.

√	-48.9	√	
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(≤ -48 dBm)

12. Change the spectrum analyzer center frequency to 111.950 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 112 MHz measurement correction factor.

√	-33.9	√	
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(≤ -23 dBm)

Test Procedure Steps

P er f. ()	Results	P as s ()	F ai l ()
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13. Change the spectrum analyzer center frequency to 111.900 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 112 MHz measurement correction factor.

√	-35.8	√	
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(≤ -28 dBm)

14. Change the spectrum analyzer center frequency to 111.800 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 112 MHz measurement correction factor.

√	-37.5	√	
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(≤ -33 dBm)

15. Change the spectrum analyzer center frequency to 111.600 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 112 MHz measurement correction factor.

√	-44.3	√	
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(≤ -38 dBm)

16. Change the spectrum analyzer center frequency to 111.200 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 112 MHz measurement correction factor.

√	-48.4	√	
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(≤ -43 dBm)

17. Change the spectrum analyzer center frequency to 110.400 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 112 MHz measurement correction factor.

√	-48.8	√	
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(≤ -48 dBm)

18. Command the transmitter to stop transmitting. Send a Tune Command message to the transmitter setting the frequency to 115 MHz and the Time Slot to all slots. Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter. Change the spectrum analyzer channel

Test Procedure Steps

P er f. ()	Results	P as s ()	F ai l ()
√	N/A	N / A	N / A

19. Change the spectrum analyzer center frequency to 115.025 MHz. Using the spectrum analyzer “channel power in 16 kHz bandwidth” function, measure and record the transmitter output power in the center 16 kHz band, taking into account the 115 MHz measurement correction factor.

√	-24.6	√	
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(≤ -18 dBm)

20. Change the spectrum analyzer center frequency to 114.975 MHz. Using the spectrum analyzer “channel power in 16 kHz bandwidth” function, measure and record the transmitter output power in the center 16 kHz band, taking into account the 115 MHz measurement correction factor.

√	-28.9	√	
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(≤ -18 dBm)

21. Change the spectrum analyzer channel bandwidth measurement parameter to 25 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 115 MHz measurement correction factor.

√	-9.4	√	
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(≤ +2 dBm)

22. Change the spectrum analyzer center frequency to 115.025 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 115 MHz measurement correction factor.

√	-6.0	√	
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(≤ +2 dBm)

23. Change the spectrum analyzer center frequency to 115.050 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 115 MHz measurement correction factor.

√	-32.5	√	
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Test Procedure Steps

P er f. ()	Results	P as s ()	F ai l ()
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(≤ -23 dBm)

24. Change the spectrum analyzer center frequency to 115.100 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 115 MHz measurement correction factor.

√	-34.3	√	
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(≤ -28 dBm)

25. Change the spectrum analyzer center frequency to 115.200 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 115 MHz measurement correction factor.

√	-35.8	√	
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(≤ -33 dBm)

26. Change the spectrum analyzer center frequency to 115.400 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 115 MHz measurement correction factor.

√	-40.2	√	
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(≤ -38 dBm)

27. Change the spectrum analyzer center frequency to 115.800 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 115 MHz measurement correction factor.

√	-48.2	√	
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(≤ -43 dBm)

28. Change the spectrum analyzer center frequency to 116.600 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 115 MHz measurement correction factor.

√	-48.8	√	
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(≤ -48 dBm)

Test Procedure Steps

P er f. ()	Results	P as s ()	F ai l ()
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29. Change the spectrum analyzer center frequency to 114.950 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 115 MHz measurement correction factor.

√	-33.1	√	
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(≤ -23 dBm)

30. Change the spectrum analyzer center frequency to 114.900 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 115 MHz measurement correction factor.

√	-34.6	√	
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(≤ -28 dBm)

31. Change the spectrum analyzer center frequency to 114.800 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 115 MHz measurement correction factor.

√	-35.1	√	
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(≤ -33 dBm)

32. Change the spectrum analyzer center frequency to 114.600 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 115 MHz measurement correction factor.

√	-40.0	√	
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(≤ -38 dBm)

33. Change the spectrum analyzer center frequency to 114.200 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 115 MHz measurement correction factor.

√	-48.3	√	
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(≤ -43 dBm)

Test Procedure Steps

P er f. ()	Results	P as s ()	F ai l ()
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34. Change the spectrum analyzer center frequency to 113.400 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 115 MHz measurement correction factor.

√	-48.9	√	
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(≤ -48 dBm)

35. Command the transmitter to stop transmitting. Send a Tune Command message to the transmitter setting the frequency to 117.950 MHz and the Time Slot to all slots. Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter. Change the spectrum analyzer channel bandwidth measurement parameter to 16 kHz.

√	N/A	N / A	N / A
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36. Change the spectrum analyzer center frequency to 117.975 MHz. Using the spectrum analyzer “channel power in 16 kHz bandwidth” function, measure and record the transmitter output power in the center 16 kHz band, taking into account the 117.95 MHz measurement correction factor.

√	-23.3	√	
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(≤ -18 dBm)

37. Change the spectrum analyzer center frequency to 117.925 MHz. Using the spectrum analyzer “channel power in 16 kHz bandwidth” function, measure and record the transmitter output power in the center 16 kHz band, taking into account the 117.95 MHz measurement correction factor.

√	-26.9	√	
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(≤ -18 dBm)

38. Change the spectrum analyzer channel bandwidth measurement parameter to 25 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 117.95 MHz measurement correction factor.

√	-9.2	√	
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(≤ +2 dBm)

Test Procedure Steps

P er f. ()	Results	P as s ()	F ai l ()
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39. Change the spectrum analyzer center frequency to 117.975 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 117.95 MHz measurement correction factor.

√	-6.0	√	
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(≤ +2 dBm)

40. Change the spectrum analyzer center frequency to 118.000 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 117.95 MHz measurement correction factor.

√	-33.8	√	
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(≤ -23 dBm)

41. Change the spectrum analyzer center frequency to 118.050 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 117.95 MHz measurement correction factor.

√	-35.6	√	
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(≤ -28 dBm)

42. Change the spectrum analyzer center frequency to 118.150 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 117.95 MHz measurement correction factor.

√	-36.9	√	
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(≤ -33 dBm)

43. Change the spectrum analyzer center frequency to 118.350 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 117.95 MHz measurement correction factor.

√	-43.9	√	
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(≤ -38 dBm)

Test Procedure Steps

P er f. ()	Results	P as s ()	F ai l ()
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44. Change the spectrum analyzer center frequency to 118.750 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 117.95 MHz measurement correction factor.

√	-48.6	√	
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(≤ -43 dBm)

45. Change the spectrum analyzer center frequency to 119.550 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 117.95 MHz measurement correction factor.

√	-49.1	√	
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(≤ -48 dBm)

46. Change the spectrum analyzer center frequency to 117.900 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 117.95 MHz measurement correction factor.

√	-34.5	√	
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(≤ -23 dBm)

47. Change the spectrum analyzer center frequency to 117.850 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 117.95 MHz measurement correction factor.

√	-35.2	√	
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(≤ -28 dBm)

48. Change the spectrum analyzer center frequency to 117.750 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 117.95 MHz measurement correction factor.

√	-37.1	√	
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(≤ -33 dBm)

49. Change the spectrum analyzer center frequency to 117.550 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 117.95 MHz measurement correction factor.

Test Procedure Steps

P e r f. (_)	Results	P a s (_)	F a i l (_)
√	-43.5	√	

(≤ -38 dBm)

50. Change the spectrum analyzer center frequency to 117.150 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 117.95 MHz measurement correction factor.

√	-48.7	√	
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(≤ -43 dBm)

51. Change the spectrum analyzer center frequency to 116.350 MHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the 117.95 MHz measurement correction factor.

√	-49.1	√	
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(≤ -48 dBm)

52. For the three previous sets of tests, note and record at which transmitter output center frequency the worst-case adjacent channel power measurements were obtained. The procedure will refer to this frequency as Fw in future references.

√	117.95	N / A	N / A
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(Reference)

53. Command the transmitter to stop transmitting. Adjust the power supply output voltages to the “minimum” values shown in Table 4.21.1.3-2 Step A. Send a Tune Command message to the transmitter setting the frequency to Fw and the Time Slot to all slots. Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter. Change the spectrum analyzer channel bandwidth measurement parameter to 16 kHz.

√	N/A	N / A	N / A
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54. Change the spectrum analyzer center frequency to Fw + 25 kHz. Using the spectrum analyzer “channel power in 16 kHz bandwidth” function, measure and record the transmitter output power in the center 16 kHz band, taking into account the Fw measurement correction factor.

Test Procedure Steps

P er f. (_)	Results	P as s (_)	F ai l (_)
√	-22.1	√	

(≤ -18 dBm)

55. Change the spectrum analyzer center frequency to Fw - 25 kHz. Using the spectrum analyzer “channel power in 16 kHz bandwidth” function, measure and record the transmitter output power in the center 16 kHz band, taking into account the Fw measurement correction factor.

√	-24.9	√	
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(≤ -18 dBm)

56. Change the spectrum analyzer channel bandwidth measurement parameter to 25 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-7.9	√	
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(≤ +2 dBm)

57. Change the spectrum analyzer center frequency to Fw + 25 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-4.7	√	
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(≤ +2 dBm)

58. Change the spectrum analyzer center frequency to Fw + 50 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-34.1	√	
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(≤ -23 dBm)

59. Change the spectrum analyzer center frequency to Fw + 100 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-34.8	√	
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Test Procedure Steps

P er f. ()	Results	P as s ()	F ai l ()
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(≤ -28 dBm)

60. Change the spectrum analyzer center frequency to Fw + 200 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-36.0	√	
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(≤ -33 dBm)

61. Change the spectrum analyzer center frequency to Fw + 400 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-43.9	√	
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(≤ -38 dBm)

62. Change the spectrum analyzer center frequency to Fw + 800 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-48.6	√	
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(≤ -43 dBm)

63. Change the spectrum analyzer center frequency to Fw + 1600 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-49.1	√	
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(≤ -48 dBm)

64. Change the spectrum analyzer center frequency to Fw - 50 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-34.6	√	
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(≤ -23 dBm)

Test Procedure Steps

P er f. ()	Results	P as s ()	F ai l ()
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65. Change the spectrum analyzer center frequency to Fw - 100 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-35.9	√	
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(≤ -28 dBm)

66. Change the spectrum analyzer center frequency to Fw - 200 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-37.3	√	
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(≤ -33 dBm)

67. Change the spectrum analyzer center frequency to Fw - 400 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-43.7	√	
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(≤ -38 dBm)

68. Change the spectrum analyzer center frequency to Fw - 800 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-48.2	√	
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(≤ -43 dBm)

69. Change the spectrum analyzer center frequency to Fw - 1600 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-48.7	√	
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(≤ -48 dBm)

70. Command the transmitter to stop transmitting. Adjust the power supply output voltages to the “maximum” values shown in Table 4.21.1.3-3 Step A. Send a Tune Command message to the transmitter setting the frequency to Fw and the Time Slot to all slots. Command the transmitter to transmit maximum messages in all time slots by sending 222 byte

Test Procedure Steps

P er f. (_)	Results	P as s (_)	F ai l (_)
√	N/A	N / A	N / A

71. Change the spectrum analyzer center frequency to Fw + 25 kHz. Using the spectrum analyzer “channel power in 16 kHz bandwidth” function, measure and record the transmitter output power in the center 16 kHz band, taking into account the Fw measurement correction factor.

√	-24.9	√	
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(≤ -18 dBm)

72. Change the spectrum analyzer center frequency to Fw - 25 kHz. Using the spectrum analyzer “channel power in 16 kHz bandwidth” function, measure and record the transmitter output power in the center 16 kHz band, taking into account the Fw measurement correction factor.

√	-29.4	√	
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(≤ -18 dBm)

73. Change the spectrum analyzer channel bandwidth measurement parameter to 25 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-10.1	√	
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(≤ +2 dBm)

74. Change the spectrum analyzer center frequency to Fw + 25 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-6.9	√	
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(≤ +2 dBm)

75. Change the spectrum analyzer center frequency to Fw + 50 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-34.1	√	
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Test Procedure Steps

P er f. ()	Results	P as s ()	F ai l ()
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(\leq -23 dBm)

76. Change the spectrum analyzer center frequency to Fw + 100 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-36.4	√	
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(\leq -28 dBm)

77. Change the spectrum analyzer center frequency to Fw + 200 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-37.1	√	
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(\leq -33 dBm)

78. Change the spectrum analyzer center frequency to Fw + 400 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-44.2	√	
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(\leq -38 dBm)

79. Change the spectrum analyzer center frequency to Fw + 800 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-49.0	√	
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(\leq -43 dBm)

80. Change the spectrum analyzer center frequency to Fw + 1600 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-49.1	√	
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(\leq -48 dBm)

Test Procedure Steps

P er f. ()	Results	P as s ()	F ai l ()
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81. Change the spectrum analyzer center frequency to Fw - 50 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-34.1	√	
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(≤ -23 dBm)

82. Change the spectrum analyzer center frequency to Fw - 100 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-36.1	√	
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(≤ -28 dBm)

83. Change the spectrum analyzer center frequency to Fw - 200 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-35.9	√	
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(≤ -33 dBm)

84. Change the spectrum analyzer center frequency to Fw - 400 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-44.6	√	
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(≤ -38 dBm)

85. Change the spectrum analyzer center frequency to Fw - 800 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-48.3	√	
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(≤ -43 dBm)

Test Procedure Steps

P er f. ()	Results	P as s ()	F ai l ()
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86. Change the spectrum analyzer center frequency to Fw - 1600 kHz. Using the spectrum analyzer “channel power in 25 kHz bandwidth” function, measure and record the transmitter output power in the center 25 kHz band, taking into account the Fw measurement correction factor.

√	-49.0	√	
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(≤ -48 dBm)

(2) Analysis

None Required.

2. Results Summary
Passed

Performed by ___Dave Dautel_____

Date __12-11-98_____