

4.18 Nominal Output Power

4.18.1 Test Case

4.18.1.1 Purpose

This test verifies requirements related to the Nominal Output Power of the transmitter. This is a test of requirements allocated to both software and the overall equipment.

4.18.1.2 Setup/Initial Conditions

An RF power meter shall serve as the primary test equipment.

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

4.18.1.3 Definition of Inputs

This test shall verify that the output power does not fall below the minimum of 41.5 dBm and does not exceed the maximum allowed value of +45 dBm. It shall also verify the operation and accuracy of the software controlled output power attenuator and the accuracy of the software reported output power level.

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 Table 4.18.1.3-1 to -3.

Table 4.18.1.3-1 Nominal Output Power Test Case Inputs At Nominal DC Input Voltages		
Step	Input	Description
A	DC input voltages at nominal: 5 Vdc	

**Table 4.18.1.3-1 Nominal Output Power Test Case Inputs
At Nominal DC Input Voltages**

Step	Input	Description
	+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.	Set for no attenuation of output.
D	Send a 222 Byte Application Data Message, continuously in all time slots	Causes transmitter to transmit continuously.
E	Send a Power Control Command with Attenuation Value of 1.	Set for attenuation of .5 dB.
F	Send a Power Control Command with Attenuation Value of 2.	Set for attenuation of 1 dB.
G	Send a Power Control Command with Attenuation Value of 4.	Set for attenuation of 2 dB.
H	Send a Power Control Command with Attenuation Value of 6.	Set for attenuation of 3 dB.
I	Send a Power Control Command with Attenuation Value of 30.	Set for attenuation of 15 dB.

**Table 4.18.1.3-2 Nominal Output Power Test Case Inputs
At Minimum DC Input Voltages and Worst Case Frequency for Lowest Output Power**

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 lowest output power frequency MHz and Time Slot FFh (all slots).	
C	Send a Power Control Command with Attenuation Value of 0.	Set for no attenuation of output.
D	Send a 222 Byte Application Data Message, continuously in all time slots	Causes transmitter to transmit continuously.
E	Send a Power Control Command with Attenuation Value of 1.	Set for attenuation of .5 dB.
F	Send a Power Control Command with Attenuation Value of 2.	Set for attenuation of 1 dB.
G	Send a Power Control Command with Attenuation Value of 4.	Set for attenuation of 2 dB.
H	Send a Power Control Command with Attenuation Value of 6.	Set for attenuation of 3 dB.

Table 4.18.1.3-2 Nominal Output Power Test Case Inputs
At Minimum DC Input Voltages and Worst Case Frequency for Lowest Output Power

Step	Input	Description
I	Send a Power Control Command with Attenuation Value of 30.	Set for attenuation of 15 dB.

Table 4.18.1.3-3 Nominal Output Power Test Case Inputs
At Maximum DC Input Voltages and Worst Case Frequency for Highest Output Power

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 highest output power frequency MHz and Time Slot FFh (all slots).	
C	Send a Power Control Command with Attenuation Value of 0.	Set for no attenuation of output.
D	Send a 222 Byte Application Data Message, continuously in all time slots	Causes transmitter to transmit continuously.
E	Send a Power Control Command with Attenuation Value of 1.	Set for attenuation of .5 dB.
F	Send a Power Control Command with Attenuation Value of 2.	Set for attenuation of 1 dB.
G	Send a Power Control Command with Attenuation Value of 4.	Set for attenuation of 2 dB.
H	Send a Power Control Command with Attenuation Value of 6.	Set for attenuation of 3 dB.
I	Send a Power Control Command with Attenuation Value of 30.	Set for attenuation of 15 dB.

4.18.1.4 Major Steps

Verify the Nominal Output Power requirements for both the software and the overall transmitter equipment by performing the following steps.

At nominal dc input voltage, verify output power level and reported power level at 112.000 MHz, with output attenuation value set to 0 dB..

- A. Apply the inputs of Table 4.18.1.3-1, Step A through D and verify the outputs of Table 4.18.1.5-1, Step A and B.

At nominal dc input voltage, verify output power level and reported power level at 112.000 MHz, with output attenuation value set to .5 dB.

- B. Apply the inputs of Table 4.18.1.3-1, Step E and verify the outputs of Table 4.18.1.5-1, Step C and D.

At nominal dc input voltage, verify output power level and reported power level at 112.000 MHz, with output attenuation value set to 1 dB.

C. Apply the inputs of Table 4.18.1.3-1, Step F and verify the outputs of Table 4.18.1.5-1, Step E and F.

At nominal dc input voltage, verify output power level and reported power level at 112.000 MHz, with output attenuation value set to 2 dB.

Apply the inputs of Table 4.18.1.3-1, Step G and verify the outputs of Table 4.18.1.5-1, Step G and H.

At nominal dc input voltage, verify output power level and reported power level at 112.000 MHz, with output attenuation value set to 3 dB.

Apply the inputs of Table 4.18.1.3-1, Step H and verify the outputs of Table 4.18.1.5-1, Step I and J.

At nominal dc input voltage, verify output power level and reported power level at 112.000 MHz, with output attenuation value set to 15 dB.

F. Apply the inputs of Table 4.18.1.3-1, Step I and verify the outputs of Table 4.18.1.5-1, Step K and L.

Repeat steps A through F, but with frequency set to 115.000 MHz, as shown below:

At nominal dc input voltage, verify output power level and reported power level at 115.000 MHz, with output attenuation value set to 0 dB..

G. Apply the inputs of Table 4.18.1.3-1, Step A through D and verify the outputs of Table 4.18.1.5-1, Step A and B.

At nominal dc input voltage, verify output power level and reported power level at 115.000 MHz, with output attenuation value set to .5 dB.

H. Apply the inputs of Table 4.18.1.3-1, Step E and verify the outputs of Table 4.18.1.5-1, Step C and D.

At nominal dc input voltage, verify output power level and reported power level at 115.000 MHz, with output attenuation value set to 1 dB.

I. Apply the inputs of Table 4.18.1.3-1, Step F and verify the outputs of Table 4.18.1.5-1, Step E and F.

At nominal dc input voltage, verify output power level and reported power level at 115.000 MHz, with output attenuation value set to 2 dB.

- J. Apply the inputs of Table 4.18.1.3-1, Step G and verify the outputs of Table 4.18.1.5-1, Step G and H.

At nominal dc input voltage, verify output power level and reported power level at 115.000 MHz, with output attenuation value set to 3 dB.

- K. Apply the inputs of Table 4.18.1.3-1, Step H and verify the outputs of Table 4.18.1.5-1, Step I and J.

At nominal dc input voltage, verify output power level and reported power level at 115.000 MHz, with output attenuation value set to 15 dB.

Apply the inputs of Table 4.18.1.3-1, Step I and verify the outputs of Table 4.18.1.5-1, Step K and L.

Repeat steps A through F, but with frequency set to 117.950 MHz, as shown below:

At nominal dc input voltage, verify output power level and reported power level at 117.950 MHz, with output attenuation value set to 0 dB..

- M. Apply the inputs of Table 4.18.1.3-1, Step A through D and verify the outputs of Table 4.18.1.5-1, Step A and B.

At nominal dc input voltage, verify output power level and reported power level at 117.950 MHz, with output attenuation value set to .5 dB.

Apply the inputs of Table 4.18.1.3-1, Step E and verify the outputs of Table 4.18.1.5-1, Step C and D.

At nominal dc input voltage, verify output power level and reported power level at 117.950 MHz, with output attenuation value set to 1 dB.

- O. Apply the inputs of Table 4.18.1.3-1, Step F and verify the outputs of Table 4.18.1.5-1, Step E and F.

At nominal dc input voltage, verify output power level and reported power level at 117.950 MHz, with output attenuation value set to 2 dB.

Apply the inputs of Table 4.18.1.3-1, Step G and verify the outputs of Table 4.18.1.5-1, Step G and H.

At nominal dc input voltage, verify output power level and reported power level at 117.950 MHz, with

output attenuation value set to 3 dB.

Apply the inputs of Table 4.18.1.3-1, Step H and verify the outputs of Table 4.18.1.5-1, Step I and J.

At nominal dc input voltage, verify output power level and reported power level at 117.950 MHz, with output attenuation value set to 15 dB.

Apply the inputs of Table 4.18.1.3-1, Step I and verify the outputs of Table 4.18.1.5-1, Step K and L.

For the three previous sets of tests, note at which frequency the lowest and highest output power measurements were obtained.

At low dc input voltages, verify output power level and reported power level, with output attenuation value set to 0 dB and frequency set to lowest output value obtained in the previous step:

T. Apply the inputs of Table 4.18.1.3-2, Step A through D and verify the outputs of Table 4.18.1.5-1, Step A and B.

At low dc input voltages, verify output power level and reported power level, with output attenuation value set to .5 dB and frequency set to lowest output value obtained in Step S:

U. Apply the inputs of Table 4.18.1.3-2, Step E and verify the outputs of Table 4.18.1.5-1, Step C and D.

At low dc input voltages, verify output power level and reported power level, with output attenuation value set to 1 dB and frequency set to lowest output value obtained in Step S:

V. Apply the inputs of Table 4.18.1.3-2, Step F and verify the outputs of Table 4.18.1.5-1, Step E and F.

At low dc input voltages, verify output power level and reported power level, with output attenuation value set to 2 dB and frequency set to lowest output value obtained in Step S:

W. Apply the inputs of Table 4.18.1.3-2, Step G and verify the outputs of Table 4.18.1.5-1, Step G and H.

At low dc input voltages, verify output power level and reported power level, with output attenuation value set to 3 dB and frequency set to lowest output value obtained in Step S:

- X. Apply the inputs of Table 4.18.1.3-2, Step H and verify the outputs of Table 4.18.1.5-1, Step I and J.

At low dc input voltages, verify output power level and reported power level, with output attenuation value set to 15 dB and frequency set to lowest output value obtained in Step S:

- Y. Apply the inputs of Table 4.18.1.3-2, Step I and verify the outputs of Table 4.18.1.5-1, Step K and L.

At high dc input voltages, verify output power level and reported power level, with output attenuation value set to 0 dB and frequency set to highest output value obtained in Step S:

- Z. Apply the inputs of Table 4.18.1.3-3, Step A through D and verify the outputs of Table 4.18.1.5-1, Step A and B.

At high dc input voltages, verify output power level and reported power level, with output attenuation value set to .5 dB and frequency set to highest output value obtained in Step S:

- AA. Apply the inputs of Table 4.18.1.3-3, Step E and verify the outputs of Table 4.18.1.5-1, Step C and D.

At high dc input voltages, verify output power level and reported power level, with output attenuation value set to 1 dB and frequency set to highest output value obtained in Step S:

- AB. Apply the inputs of Table 4.18.1.3-3, Step F and verify the outputs of Table 4.18.1.5-1, Step E and F.

At high dc input voltages, verify output power level and reported power level, with output attenuation value set to 2 dB and frequency set to highest output value obtained in Step S:

- AC. Apply the inputs of Table 4.18.1.3-3, Step G and verify the outputs of Table 4.18.1.5-1, Step G and H.

At high dc input voltages, verify output power level and reported power level, with output attenuation value set to 3 dB and frequency set to highest output value obtained in Step S:

- AD. Apply the inputs of Table 4.18.1.3-3, Step H and verify the outputs of Table 4.18.1.5-1, Step I and J.

At high dc input voltages, verify output power level and reported power level, with output attenuation value set to 15 dB and frequency set to highest output value obtained in Step S:

AE. Apply the inputs of Table 4.18.1.3-3, Step I and verify the outputs of Table 4.18.1.5-1, Step K and L.

4.18.1.5 Expected Outputs

Table 4.18.1.5-1 Nominal Output Power Test Case Outputs		
Step	Expected Results	Comment
A	Measured Output Peak Power greater than or equal to 40.0 dBm and less than or equal to 45 dBm.	Baseline value with no attenuation. Measured with RF power meter.
B	Software reported value within 5 dB of value measured in A. above.	Viewed on screen of PC running Lab SW.
C	Measured Output Peak Power within .6 dB of a value .5 dB less than that measured in A. above.	Measured with RF power meter.
D	Software reported value within 5 dB of value measured in C. above.	Viewed on screen of PC running Lab SW.
E	Measured Output Peak Power within .6 dB of a value 1 dB less than that measured in A. above.	Measured with RF power meter.
F	Software reported value within 5 dB of value measured in E. above.	Viewed on screen of PC running Lab SW.
G	Measured Output Peak Power within .6 dB of a value 2 dB less than that measured in A. above.	Measured with RF power meter.
H	Software reported value within 5 dB of value measured in G. above.	Viewed on screen of PC running Lab SW.
I	Measured Output Peak Power within .6 dB of a value 3 dB less than that measured in A. above.	Measured with RF power meter.
J	Software reported value within 5 dB of value measured in I. above.	Viewed on screen of PC running Lab SW.
K	Measured Output Peak Power within 1.0 dB of a value 15 dB less than that measured in A. above.	Measured with RF power meter.
L	Software reported value within 5 dB of value measured in K. above.	Viewed on screen of PC running Lab SW.

4.18.1.6 Post Processing/Analysis

None required.

4.18.1.7 Pass/Fail Criteria

The Criteria for successfully passing these test cases are the output results indicated in Table 4.18.1.5-1.

In the event of test equipment malfunction during the performance of the test procedures, it is only necessary to repeat the previous test steps that include the transmitter commands specific to making the particular measurement required during the test step when the equipment malfunction occurred. For most of the measurements made during this procedure, this means that it should only be necessary to go back to the nearest previous step where the UUT is commanded to stop transmitting.

4.18.2 Test Procedure

4.18.2.1 Nominal Output Power

Test Procedure Steps

Record the version of Lab Software used to control the UUT host computer. With the UUT (unit under test) configured in the test setup shown in Figure 3.3.2.4-1, use an RF cable to connect the RF power meter to the output port of the 30 dB RF attenuator. Measure and record the correction factors at 112 MHz, 115 MHz, and 117.950 MHz. (The correction factor is the total loss between the UUT RF output port and the RF power meter input port.) Without applying supply voltage to the transmitter, adjust the power supply output voltages to the nominal values shown in Table 4.18.1.3-1 Step A. Turn on the power supplies. Activate the Enable switch. Send a Tune Command message to the transmitter setting the frequency to 112.000 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.

Measure and record the UUT peak output power indicated by the power meter with the correction factor, verifying that it is greater than or equal to +40.0 dBm and less than or equal to +45 dBm.

P er f. ()	Results	P as s ()	F ail ()
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112 Mhz 115 Mhz 117.95 Mhz	N / A	N / A
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(Calibration
Factors and
Lab SW
Version)

√	41.1	√	
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(+40.0 dBm ≤
Po ≤ +45 dBm)

Test Procedure Steps

P er f. ()	Results	P as s ()	F ail ()
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Read and record the output power reported by UUT software indicated on the host PC.

√	41.0	√	
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(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in the previous two steps, verifying that the difference between the values is less than or equal to 5 dB.

√	.1	√	
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(Difference $\leq$ 5 dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 1 (set for attenuation of 0.5 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

√	N/A	N / A	N / A
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Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	40.8	N / A	N / A
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(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 2 and in the previous step, verifying that the difference between the values is between 0.0 dB and 1.1 dB.

√	.3	√	
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(0.0 dB $\leq$ Difference $\leq$ 1.1 dB)

Read and record the output power reported by UUT software indicated on the host PC.

Test Procedure Steps

P er f. ()	Results	P as ()	F ail ()
√	41.0	N / A	N / A

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 6 and 8, verifying that the difference between the values is less than or equal to 5 dB.

√	.2	√	
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(Difference ≤ 5
dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 2 (set for attenuation of 1 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

√	N/A	N / A	N / A
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Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	40.4	N / A	N / A
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(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 2 and in the previous step, verifying that the difference between the values is between 0.4 dB and 1.6 dB.

√	.7	√	
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(0.4 dB ≤
Difference ≤ 1.6
dB)

Read and record the output power reported by UUT software indicated on the host PC.

Test Procedure Steps

P er f. (_)	Results	P as s (_)	F ail (_)
√	40.0	N / A	N / A

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 11 and 13, verifying that the difference between the values is less than or equal to 5 dB.

√	.4	√	
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(Difference ≤ 5
dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 4 (set for attenuation of 2 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

√	N/A	N / A	N / A
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Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	39.4	N / A	N / A
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(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 2 and in the previous step, verifying that the difference between the values is between 1.4 dB and 2.6 dB.

√	1.7	√	
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(1.4 dB ≤
Difference ≤ 2.6
dB)

Test Procedure Steps

P er f. ()	Results	P as s ()	F ail ()
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Read and record the output power reported by UUT software indicated on the host PC.

√	39	N / A	N / A
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(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 16 and 18, verifying that the difference between the values is less than or equal to 5 dB.

√	.4	√	
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(Difference ≤ 5
dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 6 (set for attenuation of 3 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

√	N/A	N / A	N / A
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Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	38.7	N / A	N / A
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(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 2 and in the previous step, verifying that the difference between the values is between 2.4 dB and 3.6 dB.

√	2.4	√	
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(2.4 dB ≤
Difference ≤ 3.6
dB)

Read and record the output power reported by UUT software indicated on the host PC.

Test Procedure Steps

P er f. ()	Results	P as s ()	F ail ()
√	38	N / A	N / A

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 21 and 23, verifying that the difference between the values is less than or equal to 5 dB.

√	.7	√	
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(Difference ≤ 5
dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 30 (set for attenuation of 15 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

√	N/A	N / A	N / A
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Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	26.7	N / A	N / A
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(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 2 and in the previous step, verifying that the difference between the values is between 14 dB and 16 dB.

√	14.4	√	
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(14 dB ≤
Difference ≤ 16
dB)

Read and record the output power reported by UUT software indicated on the host PC.

Test Procedure Steps

P er f. ()	Results	P as s ()	F ail ()
√	28	N / A	N / A

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 26 and 28, verifying that the difference between the values is less than or equal to 5 dB.

√	1.3	√	
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(Difference $\leq$ 5
dB)

Command the UUT to stop transmitting. Send a Tune Command message to the transmitter setting the frequency to 115.000 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.

√	N/A	N / A	N / A
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Measure and record the UUT peak output power indicated by the power meter with the correction factor, verifying that it is greater than or equal to +40.0 dBm and less than or equal to +45 dBm.

√	41.7	√	
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(+40.0 dBm $\leq$
Po $\leq$ +45 dBm)

Read and record the output power reported by UUT software indicated on the host PC.

√	42	N / A	N / A
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(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in the previous two steps, verifying that the difference between the values is less than or equal to 5 dB.

Test Procedure Steps

P er f. ()	Results	P as s ()	F ail ()
√	.3	√	

(Difference $\leq$ 5
dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 1 (set for attenuation of 0.5 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

√	N/A	N / A	N / A
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Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	41.3	N / A	N / A
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(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 31 and in the previous step, verifying that the difference between the values is between 0.0 dB and 1.1 dB.

√	.4	√	
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(0.0 dB $\leq$
Difference $\leq$ 1.1
dB)

Read and record the output power reported by UUT software indicated on the host PC.

√	41.0	N / A	N / A
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(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 35 and 37, verifying that the difference between the values is less than or equal to 5 dB.

√	.3	√	
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Test Procedure Steps

P er f. ()	Results	P as s ()	F ail ()
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(Difference $\leq$ 5 dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 2 (set for attenuation of 1 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

√	N/A	N / A	N / A
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Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	40.9	N / A	N / A
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(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 31 and in the previous step, verifying that the difference between the values is between 0.4 dB and 1.6 dB.

√	.8	√	
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(0.4 dB $\leq$
Difference $\leq$ 1.6
dB)

Read and record the output power reported by UUT software indicated on the host PC.

√	41.0	N / A	N / A
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(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 40 and 42, verifying that the difference between the values is less than or equal to 5 dB.

√	.1	√	
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Test Procedure Steps

P er f. (_)	Results	P as s (_)	F ail (_)
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(Difference $\leq$ 5 dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 4 (set for attenuation of 2 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

√	N/A	N / A	N / A
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Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	39.9	N / A	N / A
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(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 31 and in the previous step, verifying that the difference between the values is between 1.4 dB and 2.6 dB.

√	1.8	√	
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(1.4 dB $\leq$
Difference $\leq$ 2.6
dB)

Read and record the output power reported by UUT software indicated on the host PC.

√	40.0	N / A	N / A
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(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 45 and 47, verifying that the difference between the values is less than or equal to 5 dB.

√	.1	√	
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Test Procedure Steps

P er f. (_)	Results	P as s (_)	F ail (_)
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(Difference $\leq$ 5
dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 6 (set for attenuation of 3 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

√	N/A	N / A	N / A
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Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	39.1	N / A	N / A
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(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 31 and in the previous step, verifying that the difference between the values is between 2.4 dB and 3.6 dB.

√	2.6	√	
---	-----	---	--

(2.4 dB $\leq$
Difference $\leq$ 3.6
dB)

Read and record the output power reported by UUT software indicated on the host PC.

√	39	N / A	N / A
---	----	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 50 and 52, verifying that the difference between the values is less than or equal to 5 dB.

√	.1	√	
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Test Procedure Steps

P er f. ()	Results	P as s ()	F ail ()
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(Difference $\leq$ 5 dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 30 (set for attenuation of 15 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

√	N/A	N / A	N / A
---	-----	-------------	-------------

Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	27.3	N / A	N / A
---	------	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 31 and in the previous step, verifying that the difference between the values is between 14 dB and 16 dB.

√	14.4	√	
---	------	---	--

(14 dB $\leq$
Difference $\leq$ 16
dB)

Read and record the output power reported by UUT software indicated on the host PC.

√	28	N / A	N / A
---	----	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 55 and 57, verifying that the difference between the values is less than or equal to 5 dB.

√	.7	√	
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Test Procedure Steps

P er f. ()	Results	P as s ()	F ail ()
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(Difference ≤ 5 dB)

Command the UUT 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. 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.

√	N/A	N / A	N / A
---	-----	-------------	-------------

Measure and record the UUT peak output power indicated by the power meter with the correction factor, verifying that it is greater than or equal to +40.0 dBm and less than or equal to +45 dBm.

√	41.0	√	
---	------	---	--

(+40.0 dBm $\leq$
Po $\leq$ +45 dBm)

Read and record the output power reported by UUT software indicated on the host PC.

√	41.0	N / A	N / A
---	------	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in the previous two steps, verifying that the difference between the values is less than or equal to 5 dB.

√	0	√	
---	---	---	--

(Difference ≤ 5 dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 1 (set for attenuation of 0.5 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

Test Procedure Steps

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

Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	40.7	N / A	N / A
---	------	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 60 and in the previous step, verifying that the difference between the values is between 0.0 dB and 1.1 dB.

√	.3	√	
---	----	---	--

(0.0 dB ≤
Difference ≤ 1.1
dB)

Read and record the output power reported by UUT software indicated on the host PC.

√	41	N / A	N / A
---	----	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 64 and 66, verifying that the difference between the values is less than or equal to 5 dB.

√	.3	√	
---	----	---	--

(Difference ≤ 5
dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 2 (set for attenuation of 1 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

Test Procedure Steps

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

Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	40.3	N / A	N / A
---	------	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 60 and in the previous step, verifying that the difference between the values is between 0.4 dB and 1.6 dB.

√	.7	√	
---	----	---	--

(0.4 dB ≤
Difference ≤ 1.6
dB)

Read and record the output power reported by UUT software indicated on the host PC.

√	40	N / A	N / A
---	----	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 69 and 71, verifying that the difference between the values is less than or equal to 5 dB.

√	.3	√	
---	----	---	--

(Difference ≤ 5
dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 4 (set for attenuation of 2 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

Test Procedure Steps

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

Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	39.3	N / A	N / A
---	------	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 60 and in the previous step, verifying that the difference between the values is between 1.4 dB and 2.6 dB.

√	1.7	√	
---	-----	---	--

(1.4 dB ≤
Difference ≤ 2.6
dB)

Read and record the output power reported by UUT software indicated on the host PC.

√	39	N / A	N / A
---	----	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 74 and 76, verifying that the difference between the values is less than or equal to 5 dB.

√	.3	√	
---	----	---	--

(Difference ≤ 5
dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 6 (set for attenuation of 3 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

Test Procedure Steps

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

Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	38.5	N / A	N / A
---	------	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 60 and in the previous step, verifying that the difference between the values is between 2.4 dB and 3.6 dB.

√	2.5	√	
---	-----	---	--

(2.4 dB ≤
Difference ≤ 3.6
dB)

Read and record the output power reported by UUT software indicated on the host PC.

√	38	N / A	N / A
---	----	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 79 and 81, verifying that the difference between the values is less than or equal to 5 dB.

√	.5	√	
---	----	---	--

(Difference ≤ 5
dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 30 (set for attenuation of 15 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

Test Procedure Steps

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

Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	26.7	N / A	N / A
---	------	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 60 and in the previous step, verifying that the difference between the values is between 14 dB and 16 dB.

√	14.3	√	
---	------	---	--

(14 dB ≤
Difference ≤ 16
dB)

Read and record the output power reported by UUT software indicated on the host PC.

√	28.0	N / A	N / A
---	------	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 84 and 86, verifying that the difference between the values is less than or equal to 5 dB.

√	1.3	√	
---	-----	---	--

(Difference ≤ 5
dB)

Examine the power levels recorded in steps 2, 31, and 60, and record the frequency at which the lowest power level was recorded.

Test Procedure Steps

P er f. ()	Results	P as s ()	F ail ()
√	117.95	N / A	N / A

(Reference)

Command the UUT to stop transmitting. Adjust the supply output voltages to the “minimum” values shown in Table 4.18.1.3-2 Step A. Send a Tune Command message to the transmitter setting the frequency to that recorded in step 88 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.

√	N/A	N / A	N / A
---	-----	-------------	-------------

Measure and record the UUT peak output power indicated by the power meter with the correction factor, verifying that it is greater than or equal to +40.0 dBm and less than or equal to +45 dBm.

√	40.9	√	
---	------	---	--

(+40.0 dBm ≤
Po ≤ +45 dBm)

Read and record the output power reported by UUT software indicated on the host PC.

√	41	N / A	N / A
---	----	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in the previous two steps, verifying that the difference between the values is less than or equal to 5 dB.

√	.1	√	
---	----	---	--

(Difference ≤ 5
dB)

Test Procedure Steps

P er f. ()	Results	P as s ()	F ail ()
-------------------------	---------	------------------------	--------------------

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 1 (set for attenuation of 0.5 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

√	N/A	N / A	N / A
---	-----	-------------	-------------

Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	40.6	N / A	N / A
---	------	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 90 and in the previous step, verifying that the difference between the values is between 0.0 dB and 1.1 dB.

√	.3	√	
---	----	---	--

(0.0 dB ≤
Difference ≤ 1.1
dB)

Read and record the output power reported by UUT software indicated on the host PC.

√	41.0	N / A	N / A
---	------	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 94 and 96, verifying that the difference between the values is less than or equal to 5 dB.

√	.4	√	
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(Difference ≤ 5
dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 2 (set for attenuation of 1 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

Test Procedure Steps

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

Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	40.2	N / A	N / A
---	------	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 90 and in the previous step, verifying that the difference between the values is between 0.4 dB and 1.6 dB.

√	.7	√	
---	----	---	--

(0.4 dB ≤
Difference ≤ 1.6
dB)

Read and record the output power reported by UUT software indicated on the host PC.

√	40	N / A	N / A
---	----	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 99 and 101, verifying that the difference between the values is less than or equal to 5 dB.

√	.2	√	
---	----	---	--

(Difference ≤ 5
dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 4 (set for attenuation of 2 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

Test Procedure Steps

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

Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	39.2	N / A	N / A
---	------	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 90 and in the previous step, verifying that the difference between the values is between 1.4 dB and 2.6 dB.

√	1.7	√	
---	-----	---	--

(1.4 dB ≤
Difference ≤ 2.6
dB)

Read and record the output power reported by UUT software indicated on the host PC.

√	39	N / A	N / A
---	----	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 104 and 106, verifying that the difference between the values is less than or equal to 5 dB.

√	.2	√	
---	----	---	--

(Difference ≤ 5
dB)

Command the UUT to stop transmitting. Send a Power Control command with attenuation value of 6 (set for attenuation of 3 dB). Command the transmitter to transmit maximum messages in all time slots by sending 222 byte Application Data messages continuously to the transmitter.

Test Procedure Steps

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

Measure and record the UUT peak output power indicated by the power meter with the correction factor.

√	38.5	N / A	N / A
---	------	-------------	-------------

(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in step 90 and in the previous step, verifying that the difference between the values is between 2.4 dB and 3.6 dB.

√	2.4	√	
---	-----	---	--

(2.4 dB ≤
Difference ≤ 3.6
dB)

Read and record the output power reported by UUT software indicated on the host PC.

√	38	N / A	N / A
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(Reference)

Calculate the absolute value of the difference (in dB) between the values recorded in steps 109 and 111, verifying that the difference between