

Transmission Test

Date Completed: _____

Performed by: _____

Tested Specifications:

Test #	Engineering Specification	Description	Pass Requirement
T6	ES7	Data Rate	>40kbps
T7	ES8	Transmission Range	>100m
T9	ES10	Bit Error Rate	<0.12

Revision History:

Revision	Description	Date
1	Document Created	12/9/2010
2	Document Updated	1/6/2011

Equipment Needed:

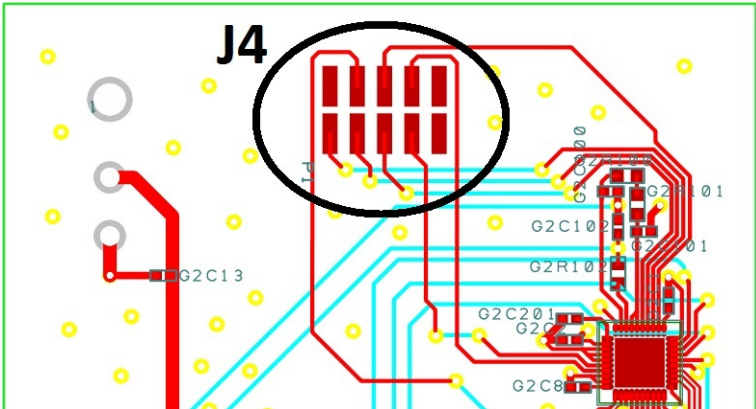




Name of Equipment	Accuracy
2 Communication Boards	-
2 PCs with SmartRF Studio Previously Installed	-
2 CC Debuggers	-
Distance Measurer	1m
Tape	-
Marker	-

Resources Needed:

Resource	Comment
SmartRF Studio 7	-
Custom Script	The script compares the received data (Hex format exported from SmartRF Studio 7) with the original transmitted data, and calculates the Bit Error Rate and Data Rate of the connection.
Gordan Field House Space	Measurement should be performed in Line of Sight.

Test Procedure:

Step Number	Check Off	Procedure
1		Put a distance marker (tape with the corresponding distance written on it) at 10m, 50m, 100m, and 250m with respect to a starting marker using a measuring device for accuracy.
2		Place a communication board at the starting marker upon a static free surface at least two feet off the ground. Orientate the antenna vertically.
3		Place a PC by the communication board and turn it on.
4		Connect the CC Debugger to a USB port of the PC using a USB cable.
5		Plug the programming connector from the CC Debugger to J4 on the communication board.

		
6		<p>Open SmartRF Studio 7 on the PC (at the starting marker).</p> 
7		<p>Double click on the connected device to open the device control panel.</p> 
8		<p>Click on the Expert Mode on the top of the screen.</p> 
9		<p>Click on Packet Tx on the top of the screen.</p> 
10		<p>Fill in the Fields according to Figure 1.</p>

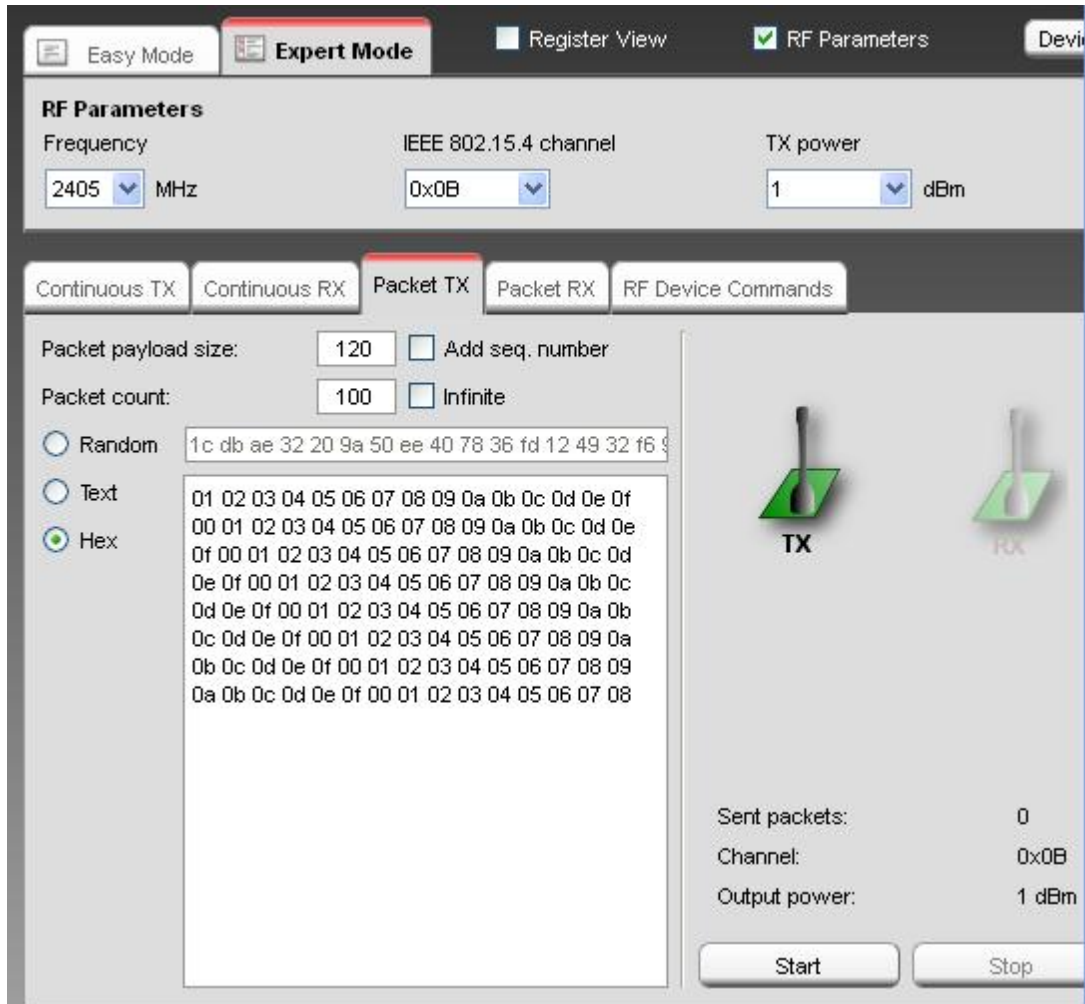
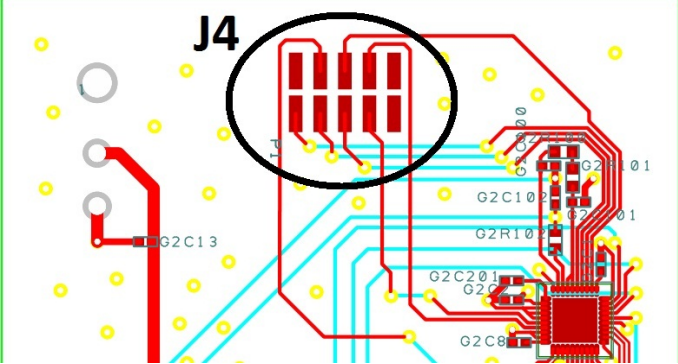

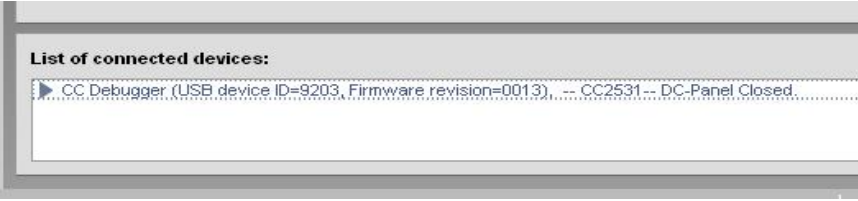

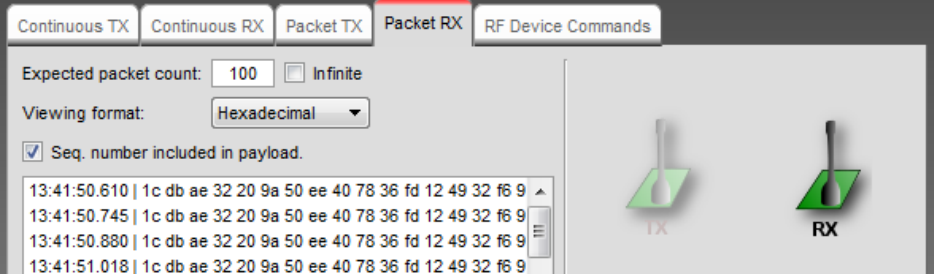






Figure 1 - Configuration Settings for Transmission

11		Place a communication board at the 10m marker upon a static free surface at least two feet off the ground. Orientate the antenna vertically.
12		Place a PC by the communication board and turn it on.
13		Connect the CC Debugger to a USB port of the PC using a USB cable.
14		Plug the programming connector from the CC Debugger to J4 on the communication board.

		
15		<p>Open SmartRF Studio 7 on the PC (at the 10m marker).</p> 
16		<p>Double click on the connected device to open the device control panel.</p> 
17		<p>Click on the Expert Mode on the top of the screen.</p> 
18		<p>Click on Packet Rx on the top of the screen.</p> 
19		<p>Fill in an appropriate name for the test in the field at the bottom of the screen. Record or copy this name.</p>

		
20		<p>Click on the start button at the bottom right of the screen on the PC at the 10m marker to start receiving data.</p> 
21		<p>Click the start button at the bottom right of the screen on the PC at the starting marker to start the transmission of data.</p> 
22		<p>Wait until the receive computer has received 100 packets successfully.</p> 
23		<p>Open up the custom script and input the path corresponding to the name of the text file for the executed test (as inputted in Step 19).</p>
24		<p>Record the calculated BER and Data Rate from the script in the Measured Results table.</p>
25		<p>In the Measured Results Table, if both the BER and Data Rate pass for the 10m marker then record a value of Yes for a successful transmission. If either the BER or Data Rate are not acceptable, record a No for a successful transmission.</p>
26		<p>Repeat steps 11 through 24 at the other three markers.</p>

Measured Results Table:

Variable Name	Recorded Value	Passable Range	Pass/Fail
BER (%) at 10m		<0.12	
Data Rate (kbps) at 10m		>40	
Successful Transmission at 10m		Yes	
BER (%) at 50m		<0.12	
Data Rate (kbps) at 50m		>40	
Successful Transmission at 50m		Yes	
BER (%) at 100m		<0.12	
Data Rate (kbps) at 100m		>40	
Successful Transmission at 100m		Yes	
BER (%) at 250m		<0.12	
Data Rate (kbps) at 250m		>40	
Successful Transmission at 250m		Yes	

Comments and Calculations:

Sign off on section completion: _____

Date of Sign Off: _____