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Good, I'm satisfied

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May 20

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Type

Problem

Product

Bluetooth Classic::WT41

Country

AMER::_United States

Request #28215

WT41 Eval Kit signal strenght



Paul Pasquali
May 18, 19:50

I have 2 eval kits sitting next to each other on a work bench. Using the RSSI command the reported strength is -66.
The iWrap manual states: "Receiver Signal Strength Indication. Possible values are from +20 to -128.
20 = Good link
-128 = Poor link"
Why do I have such a low signal with the ideal physical setting?

Comments



Jeff Rowberg
Bluegiga
Technologies

Hello Paul,

The Bluetooth output power will adapt to use the lowest value possible while maintaining link stability. The RSSI value will therefore "settle" after a short period of time to something lower than what is technically possible given the circumstances.

Further, with the WT41 specifically, due to the increased output power and RX sensitivity, placing two modules **right** next to each other is actually sub-optimal, because the transmitter of each can saturate the receiver of the other. A better test would be at least half a meter apart (assuming they are not already that separated).

Jeff Rowberg
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May 18, 2015, 19:53



Paul Pasquali

moved the modules apart 30 feet - can't connect, the inquiry 5 command "sees" the module about 50% of the time.

the call command does not connect

here's the commands and returns from the pc terminal application (connecting via rs232)

```
[Mon May 18 12:05:04.325 2015] inquiry 5
[Mon May 18 12:05:12.084 2015] INQUIRY 0
[Mon May 18 12:05:26.785 2015] inquiry 5
[Mon May 18 12:05:33.838 2015] INQUIRY_PARTIAL 00:07:80:68:8a:1a 001f00
[Mon May 18 12:05:34.379 2015] INQUIRY 1
[Mon May 18 12:05:34.379 2015] INQUIRY 00:07:80:68:8a:1a 001f00
[Mon May 18 12:05:44.579 2015] inquiry 5
[Mon May 18 12:05:52.391 2015] INQUIRY 0
[Mon May 18 12:05:57.644 2015] inquiry 5
[Mon May 18 12:06:01.383 2015] INQUIRY_PARTIAL 00:07:80:68:8a:1a 001f00
[Mon May 18 12:06:05.518 2015] INQUIRY 1
[Mon May 18 12:06:05.518 2015] INQUIRY 00:07:80:68:8a:1a 001f00
[Mon May 18 12:06:06.703 2015] inquiry 5
[Mon May 18 12:06:09.167 2015] INQUIRY_PARTIAL 00:07:80:68:8a:1a 001f00
[Mon May 18 12:06:14.651 2015] INQUIRY 1
[Mon May 18 12:06:14.651 2015] INQUIRY 00:07:80:68:8a:1a 001f00
[Mon May 18 12:06:24.275 2015] CALL 00:07:80:68:8a:1a 1101 RFCOMM
[Mon May 18 12:06:25.680 2015] CALL 0
[Mon May 18 12:06:30.809 2015] NO CARRIER 0 ERROR b01 SDC_CONNECTION_FAILED
```

May 18, 2015, 21:11



at 10 feet it will connect

```
inquiry 5
INQUIRY_PARTIAL 00:07:80:68:8a:1a 001f00
INQUIRY 1
INQUIRY 00:07:80:68:8a:1a 001f00
```

Paul Pasquali

CALL 00:07:80:68:8a:1a 1101 RFCOMM
CALL 0
CONNECT 0 RFCOMM 1

READY.
rssi 0
RSSI 00:07:80:68:8a:1a -65

May 18, 2015, 21:14



Jeff Rowberg
Bluegiga
Technologies

Hello Paul,

How old are these evaluation kits? Does there appear to be any possibility of physical damage? What are the iWRAP builds and configurations (output of `SET` and `INFO CONFIG`) for each module?

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May 18, 2015, 21:17



Paul Pasquali

just bought them - started working with them 2 days ago

device A (master)

```
set
SET BT BDADDR 00:07:80:68:8a:0c
SET BT NAME WT41-A
SET BT CLASS 001f00
SET BT IDENT BT:47 f000 5.0.1 Bluegiga iWRAP
SET BT LAP 9e8b33
SET BT PAGEMODE 4 2000 1
SET BT PAIR 00:07:80:68:8a:1a 3cc578e872a52f8d99f5e668a52cc212
SET BT POWER 19 19 19
SET BT ROLE 0 f 7d00
SET BT SNIFF 0 20 1 8
SET BT SSP 3 0
SET BT MTU 667
SET CONTROL BAUD 115200,8n1
SET CONTROL CD 00 0
SET CONTROL ECHO 7
SET CONTROL ESCAPE 43 00 1
SET CONTROL GAIN 0 5
SET CONTROL MSC DTE 00 00 00 00 00 00
SET CONTROL PIO 00 00
SET CONTROL READY 00
SET PROFILE SPP Bluetooth Serial Port
SET
info config
SYNTAX ERROR
info config
WRAP THOR AI (5.0.1 build 620)
Copyright (c) 2003-2012 Bluegiga Technologies Inc.
Compiled on Oct 1 2012 10:56:21, running on WT41-A module, psr v255
BGIO FTP HFP HFP_AG HID HID_CONSUMER_PAGE HSP MAP MDP OTA PBAP PIO=0x00fc SSP
SUBRATE TEST VOLUME
- BOCK4 version 620 (Oct 1 2012 10:56:03) (max acl/sco 7/1)
- Bluetooth version 3.0, Power class 1
- Loader 8615, firmware 8825 (56-bit encryption), native execution mode
- up 0 days, 00:00, 0 connections (pool 1)
- User configuration:
&0295 = 0000 0005 000b 0000 0003 0000 0000 0000 0000 0000 0000
&0299 = 0000 0000
&02aa = 0004 2000 0001 0033 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
&02ac = 0000 0000 002b 0000 0000 0000 0000 0000 0000 0000 0002 0000 0000 0000 0010 0000
0000 0000 0000 029b 0000 0000 0000 0000
&02ad = 5457 3134 412d
&02b0 = 0c82 fa3f e2cf 4881 e48a 7709 4bff 1eb9
&02b3 = 0004 0003 0003 0003 0003 0003 0003 0003 0003 0003 0003 0003 0003 0003 0003 0003
0005 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0005
READY.
```

Device B (slave)

```
set
SET BT BDADDR 00:07:80:68:8a:1a
SET BT NAME DEVICEB
SET BT CLASS 001f00
SET BT IDENT BT:47 f000 5.0.1 Bluegiga iWRAP
SET BT LAP 9e8b33
SET BT PAGEMODE 4 2000 1
SET BT PAIR 00:07:80:68:8a:0c 3cc578e872a52f8d99f5e668a52cc212
SET BT PAIR 38:2d:d1:ffb5:bd 51066614b6fd91b77ab1f7ce10ff295b
SET BT POWER 19 19 19
SET BT ROLE 0 f 7d00
SET BT SNIFF 0 20 1 8
```

```

SET BT SSP 3 0
SET BT MTU 667
SET CONTROL BAUD 115200,8n1
SET CONTROL CD 00 0
SET CONTROL ECHO 7
SET CONTROL ESCAPE 43 00 1
SET CONTROL GAIN 0 5
SET CONTROL MSC DTE 00 00 00 00 00 00
SET CONTROL PIO 00 00
SET CONTROL READY 00
SET PROFILE SPP Bluetooth Serial Port
SET
info config
WRAP THOR AI (5.0.1 build 620)
Copyright (c) 2003-2012 Bluegiga Technologies Inc.
Compiled on Oct 1 2012 10:56:21, running on WT41-A module, psr v255
BGIO FTP HFP HFP_AG HID HID_CONSUMER_PAGE HSP MAP MDP OTA PBAP PIO=0x00fc SSP
SUBRATE TEST VOLUME
- BOCK4 version 620 (Oct 1 2012 10:56:03) (max acl/sco 7/1)
- Bluetooth version 3.0, Power class 1
- Loader 8615, firmware 8825 (56-bit encryption), native execution mode
- up 0 days, 00:00, 0 connections (pool 1)
- User configuration:
&0295 = 0000 0005 000b 0000 0003 0000 0000 0000 0000 0000 0000
&0299 = 0000 0000
&02aa = 0004 2000 0001 0033 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000
&02ac = 0000 0000 002b 0000 0000 0000 0000 0000 0000 0000 0002 0000 0000 0000 0010 0000
0000 0000 0000 029b 0000 0000 0000 0000
&02ad = 4544 4956 4543 0042
&02b0 = 267d 604c 1f5f b7a1 7e84 83fd 6190 fa79
&02b3 = 0004 0004 0004 0004 0003 0003 0003 0003 0003 0003 0003 0003 0003 0003 0003 0003
000c 0002 0004 0007 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 000c
READY.

```

May 18, 2015, 21:34



Jeff Rowberg
Bluegiga
Technologies

Hi Paul,

Thanks for the info. I would first recommend updating the iWRAP firmware to the latest available iWRAP 5.5 build, which you can get (along with the updater tool) in the iWRAP Firmware Release archive from the WT41 product page:

- <https://www.bluegiga.com/en-US/products/wt41-world-s-longest-range/#documentation>

I do not expect this to affect the range, but build 620 is rather old at this point and updating would be wise.

Concerning the low range, can you provide some more details on the environment that you are testing in? Is it clear line of sight and relatively free from other RF interference, or are there many walls and/or other Bluetooth and Wifi devices? You should be seeing better range in virtually any case, but I want to help establish a baseline. I will also run a test locally within my own environment to compare a simple 30-foot range and corresponding RSSI value.

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May 18, 2015, 23:54



Paul Pasquali

environment is benign. typical office, no walls, 2 tables with clutter between - tried again and got a connection on 2nd try. Carrier drop 30 seconds later

Raised unit 5 feet up for clear line of site. Connects with signal strength of -79.

Lower unit back on to table, signal strength dropped to -85

Only RF in room is WIFI. My iphone connects to a bluetooth speaker every time and I walk up and down stairs, around the building without loosing a signal.

Where's the long distance is the key spec for the WT41 - as is not usable for our application.

May 19, 2015, 03:58



Paul Pasquali

how do I install the software on the evaluation board - attached via RS232 (running windows 8) - software release notes say SPI

environment is benign. typical office, no walls, 2 tables with clutter between. WIFI and florescent lights.

tried again and got a connection on 2nd try. Carrier drop 30 seconds later

Raised unit 5 feet up for clear line of site. Connects with signal strength of -79.

Lower unit back on to table, signal strength dropped to -85

Only RF in room is WIFI.

My iphone connects to a bluetooth speaker every time. It's good for the same 30 feet plus a through a wood floors to the next level.

Where's the long distance is the key spec for the WT41 - as is not usable for our application.

May 19, 2015, 04:21



Jeff Rowberg
Bluegiga
Technologies

Hi Paul,

how do I install the software on the evaluation board - attached via RS232 (running windows 8) - software release notes say SPI

There are two methods for updating firmware, one of which is UART/DFU and the other of which is SPI. Typically UART is used because it is easier. There is a Firmware Update Guide PDF in the firmware release archive, as well as a "SerialDFU" software application which you can use for performing the update over the serial interface.

I was able to run my own test today as promised, also a typical office environment but without any special considerations. I used two WT41 evaluation boards about 30 feet apart, but there are numerous walls in between the two devices. I was able to pair and connect with RFCOMM/SPP easily on the first try at this distance, and RSSI commands show that it is hovering around -60 at this distance (sometimes as high as -55). This is what I would expect to see. There is clearly something abnormal about your hardware or setup.

Would it be possible for you to provide photos of the two kits, especially showing the module mounted on each board? There is not much hardware involved, and very little that could cause the kind of problem that you are seeing, but I would like to be able to do a quick visual check.

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May 19, 2015, 23:31



Paul Pasquali

I've attached the pics

[IMG_0730.JPG \(quick view\)](#)
 [IMG_0738.JPG \(quick view\)](#)
 [IMG_0739.JPG \(quick view\)](#)

May 20, 2015, 00:57



Paul Pasquali

updated iwrap - to 5.5.0 build 952

30 ft. clear line of site strength is -78 to -80
12 ft. clear line of site strength is -68 to -70

SET BT POWER RESET command resulted in no changes

May 20, 2015, 02:19



Jeff Rowberg
Bluegiga
Technologies

Hi Paul,

Thanks for the information. The explanation is now completely clear--one of your modules is missing its antenna. The large white block on the end of the module is the antenna itself, and only one of the modules has it. Assuming this is the condition that you received the evaluation board in, you should contact the distributor you obtained it from immediately for a replacement. The RF performance of that particular board will be extremely sub-par until this is fixed.

In the meantime, if you have another SPP-capable device (PC, Android phone, etc.), you should be able to test connectivity to the fully intact board with very good results.

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May 20, 2015, 16:40



Paul Pasquali

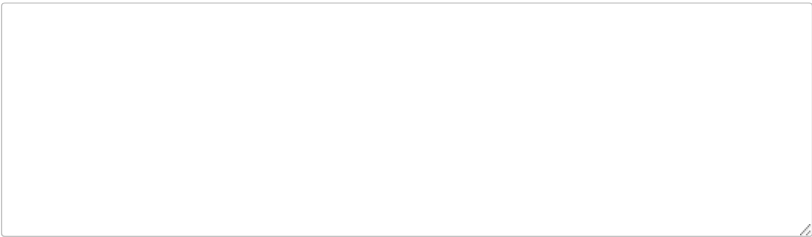
thanks - I've contacted the distributor and waiting for a call back

May 20, 2015, 19:27

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Paul Pasquali



Support