

AW-CM389NF

Wireless LAN & Bluetooth Module IC

For Mobile Phones, DSCs, PMPs and Gaming Devices

MFG Tool Command User Guide

Version 0.1

Inspired by wireless

Confidential

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Document release	Date	Modification	Initials	Approved
Version 0.1	2013/09/22	Initial version	Alex Yu	Chihhao Liao

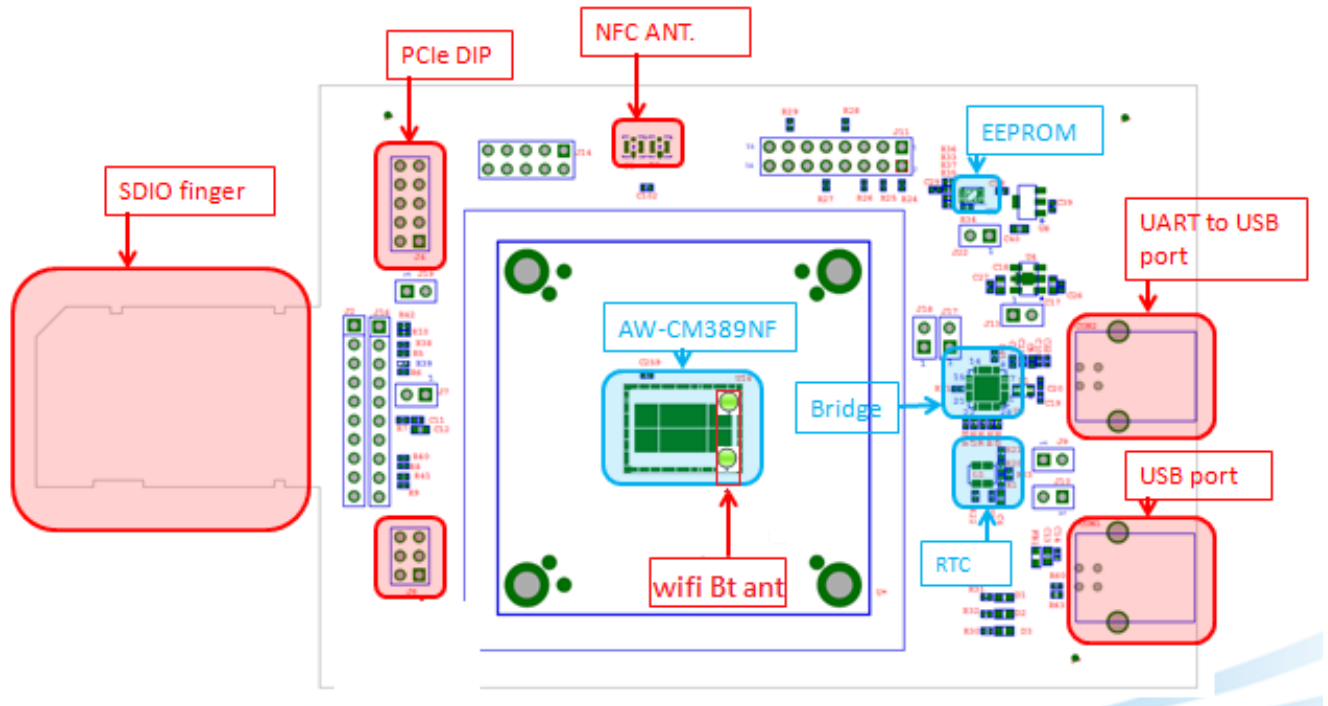
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1. AW-CM389NF WLAN & Bluetooth MFG Tool Command User Guide

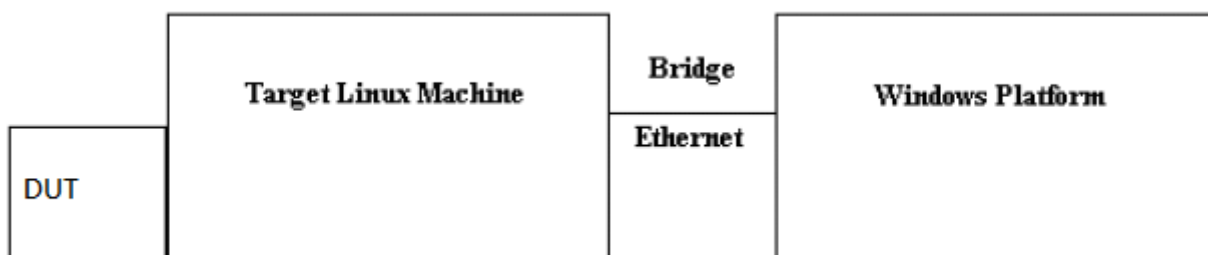
EVB Block Diagram



- When you test AW-CM389NF, please insert USB B type into connector 1 (USB port) in the first. It is necessary for two issues. One is for Bluetooth UART to USB interface control and the other one is apply the voltage for 32.768KHz OSC.

1.1 Environment set up and Bridge Mode Tool

- The "Manufacturing Bridge" refers to the application that allows a user to send commands between Target platform and Windows XP platform. The environment enables the user to test performance of the AW-CM389NF.



Manufacturing Bridge mode

(2) bin Folder Contents

Download the latest MFG release from the Marvell Extranet and unzip it. The bin folder should look similar to the figure shown below. The release contains three folders: bridge, FwImage, and internal.

► Data (D:) ► Old-D-Drive ► 21913 ► MFG-W8897-MF-WIFI-BT-FM-BRG-FC13-WIN-X86-2.0.0.14-14.1.11.p197 ► bin ►

Name	Date modified	Type	Size
bridge	2/19/2013 3:48 PM	File folder	
FwImage	2/11/2013 5:41 PM	File folder	
internal	2/11/2013 5:49 PM	File folder	
release	2/11/2013 5:49 PM	File folder	

(3) Bridge Folder

Within the bridge folder are two .tgz files.

bridge_linux_0.1.0.29-fc13-bin	12/10/2012 3:47 PM	WinRAR archive	38 KB
bridge_linux_0.1.0.29-src	12/10/2012 3:48 PM	WinRAR archive	16 KB

a. File bridge_linux_0.1.0.29-fc13-bin contains the following files.

Name	Size	Packed	Type	Modified	CRC32
..			File folder		
bridge_init.conf	866	?	CONF File	12/10/2012 3:4...	
mfgbridge	84,472	?	File	12/10/2012 3:4...	

b. File bridge_linux_0.1.0.22-src.tgz contains the source files for the bridge.

Name	Size	Packed	Type	Modified
..			File folder	
Android.mk	381	?	MK File	12/10/2012 3:4...
Android_bz.mk	381	?	MK File	12/10/2012 3:4...
Android_mbt.mk	275	?	MK File	12/10/2012 3:4...
bridge_init.conf	866	?	CONF File	12/10/2012 3:4...
Makefile	1,112	?	File	12/10/2012 3:4...
mfgbridge.c	31,788	?	C File	12/10/2012 3:4...
mfgbridge.h	5,193	?	H File	12/10/2012 3:4...
mfgdebug.c	2,112	?	C File	12/10/2012 3:4...
mfgdebug.h	2,008	?	H File	12/10/2012 3:4...
README.txt	229	?	Text Document	12/10/2012 3:4...

(4)FwImage Folder

Within the FwImage folder are 5 .bin files.

Name	Date modified	Type	Size
pcie8897_combo.bin	2/11/2013 5:43 PM	BIN File	211 KB
pcie8897_combo.h	2/11/2013 5:44 PM	H File	1,263 KB
sdio8897_combo.bin	2/11/2013 5:46 PM	BIN File	212 KB
sdio8897_combo.h	2/11/2013 5:46 PM	H File	1,271 KB
usb8897_combo.bin	2/11/2013 5:41 PM	BIN File	236 KB
usb8897_combo.h	2/11/2013 5:41 PM	H File	1,411 KB
w8897d.bin	2/11/2013 5:46 PM	BIN File	1 KB
w8897o.bin	2/11/2013 5:46 PM	BIN File	212 KB

a. The corresponding Firmware should be placed in the /lib/Firmware/mrvl folder

(5)Internal Folder

Within the internal folder is the labtool and labtool_src folder. For this document's purpose, only the details of the labtool folder will be discussed.

Data (D:) > Old-D-Drive > 21913 > MFG-W8897-MF-WIFI-BT-FM-BRG-FC13-WIN-X86-2.0.0.14-14.1.11.p197 > bin > internal			
Include in library ▾ Share with ▾ Burn New folder			
Name	Date modified	Type	Size
labtool	2/11/2013 5:49 PM	File folder	

The contents of the labtool folder is shown below.

Name	Date modified	Type	Size
AddCalDLL.dll	2/11/2013 5:46 PM	Application extens...	1,004 KB
DutApi878XDII.h	2/11/2013 5:46 PM	H File	41 KB
DutApiMimoBtFmBrdigeEth	2/11/2013 5:48 PM	Application	192 KB
DutApiMimoBtFmBrdigeUart	2/11/2013 5:48 PM	Application	144 KB
DutApiMimoBtFmDII_BRIDGE_ETH.dll	2/11/2013 5:47 PM	Application extens...	304 KB
DutApiMimoBtFmDII_BRIDGE_ETH.lib	2/11/2013 5:47 PM	LIB File	129 KB
DutApiMimoBtFmDII_BRIDGE_UART.dll	2/11/2013 5:48 PM	Application extens...	316 KB
DutApiMimoBtFmDII_BRIDGE_UART.lib	2/11/2013 5:48 PM	LIB File	129 KB
DutBtApi.hc	2/11/2013 5:46 PM	HC File	7 KB
DutBtApi878XDII.h	2/11/2013 5:46 PM	H File	20 KB
DutFmApi878XDII.h	2/11/2013 5:46 PM	H File	13 KB
DutWlanApi.hc	2/11/2013 5:46 PM	HC File	15 KB
DutWlanApi878XDII.h	2/11/2013 5:46 PM	H File	25 KB
Flash_SPI_header.bin	2/11/2013 5:46 PM	BIN File	4 KB
Flash_SPI_header.sbin	2/11/2013 5:46 PM	SBIN File	4 KB
GenHeader.bin	2/11/2013 5:46 PM	BIN File	1 KB
SetUp	2/11/2013 5:46 PM	Configuration sett...	3 KB
UsbHeader.bin	2/11/2013 5:46 PM	BIN File	1 KB

The Labtool executable is labeled (DutApiMimoBtFmBridgeEth.exe)

1.2 Using the Contents of the MFG Release Package

(1) For the Bridge Utility that runs on the target platform, go to the folder shown below.

► Data (D:) ► Old-D-Drive ► 21913 ► MFG-W8897-MF-WIFI-BT-FM-BRG-FC13-WIN-X86-2.0.0.14-14.1.11.p197 ► bin ►

Name	Date modified	Type	Size
bridge	2/19/2013 3:48 PM	File folder	
FwImage	2/11/2013 5:41 PM	File folder	
internal	2/11/2013 5:49 PM	File folder	
release	2/11/2013 5:49 PM	File folder	

Obtain the `bridge_linux_x.x.x.x_src.tgz` file. The source files include a makefile for standard Linux distribution and Android. The same bridge tool can be compiled and run on an Android platform.

If using an x86 Fedora Core X OS, you have the executable already in the sub directory

`../bin_mfgbridge`

Files: `mfgbridge` & `bridge_init.conf`

After successful compilation, an “mfgbridge” executable will be produced and will run on the target platform. In the same folder, make sure to include the `bridge_init.conf` file from the bridge source code.

On the given Host Linux system, the following files have to be transferred & reside on the system.

(Transfer the files over via flash memory or tftp over the host.)

Place the firmware in `/lib/firmware/mrvl/`

`sd8897_combo.bin` (for SD interface)

PLEASE NOTE THE DRIVER IS NOT PART OF THE MANUFACTURING PACKAGE

The user must compile the driver per your specific Linux OS and Kernel. This is due to that the driver is dependent on the actual OS and kernel version. This next section will describe the steps needed to be done before you can install the driver and run it.

Please download the production driver package from the extranet at the below location:

My Products/ Wireless/ 88W8897/ Software

Unzip these three zipped files:

a. `XXX-8897-FC13-SYSKT-X.X.X.X _X-app-src.tgz`

b. XXX-8897-FC13-SYSKT-X.X.X.X_X-GPL-src.tgz

c. XXX-8897-FC13-SYSKT-X.X.X.X_X-mlan-src.tgz

From the unzipped files, go to the subdirectory wlan_src

*Make sure to have kernel headers and kernel libs before executing the "make" commands below.

make clean

make build

Go up one folder to copy both *.ko files to your directory in where you have the other files in where you want to run the insmod command.

Here is the sample list of files (as a minimum) at 1 location:

bridge_init.conf

mfgbridge

mlan.ko

sd8797.ko

Now you can run the following commands to install the driver and firmware and start the Manufacturing bridge application with the following commands.

On the target platform, use the following commands to put the 88W8797 in MFG mode:

> insmod mlan.ko

> insmod sd8897.ko "mfg_mode=1 drv_mode=1 fw_name=mrvl/sd8897_combo.bin"
(if using the SD interface)

> insmod pcie8797.ko "mfg_mode=1 drv_mode=1 fw_name=mrvl/usb8897_combo.bin"
(if using the PCIE interface)

mfg_mode=1 specifies that the FW to be used for Manufacturing purposes.

Bring up the ethernet interface and specify an IP address to the Target platform. This address must match the IP for the DUT in which the Host XP is expecting.

Ex. ifconfig eth0 192.168.1.10 up

The next line will start the MFG Bridge application.

> ./mfgbridge

At this point, the target is ready to receive Labtool commands. On the Windows XP laptop where the Labtool release was downloaded, go to the folder shown below:

X86-1.0.1.14-14.0.11.p5\bin\internal\labtool

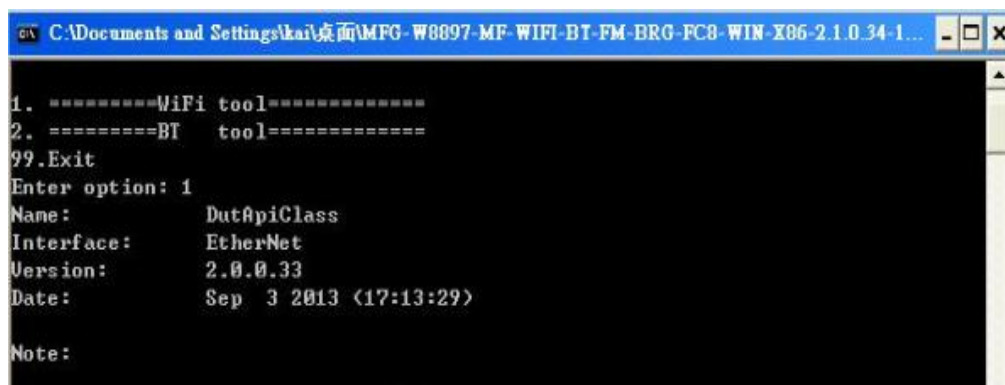
Name	Size	Type	Date Modified
DutApi878xDll.h	37 KB	C/C++ Header	3/28/2011 2:09 PM
DutApiMimoBtFmBridgeEth.exe	212 KB	Application	3/28/2011 2:10 PM
DutApiMimoBtFmBridgeUart.exe	176 KB	Application	3/28/2011 2:10 PM
DutApiMimoBtFmDll_BRIDGE_...	288 KB	Application Extension	3/28/2011 2:10 PM
DutApiMimoBtFmDll_BRIDGE_...	118 KB	Object File Library	3/28/2011 2:10 PM
DutApiMimoBtFmDll_BRIDGE_...	296 KB	Application Extension	3/28/2011 2:10 PM
DutApiMimoBtFmDll_BRIDGE_...	119 KB	Object File Library	3/28/2011 2:10 PM
DutBtApi878xDll.h	20 KB	C/C++ Header	3/28/2011 2:09 PM
DutBtApi.hc	7 KB	HC File	3/28/2011 2:09 PM
DutFmApi878xDll.h	13 KB	C/C++ Header	3/28/2011 2:09 PM
DutWlanApi878xDll.h	27 KB	C/C++ Header	3/28/2011 2:09 PM
DutWlanApi.hc	14 KB	HC File	3/28/2011 2:09 PM
FEM_8797.ini	2 KB	Configuration Settings	3/28/2011 2:09 PM
GenHeader.bin	1 KB	BIN File	3/28/2011 2:09 PM
SetUp.ini	32 KB	Configuration Settings	3/28/2011 2:09 PM
UsbHeader.bin	1 KB	BIN File	3/28/2011 2:09 PM

Edit the “SetUp.ini” file as shown in the lines highlighted in **RED** below. The setup DutIpAddress will be the IP address of your target.

HostIpAddress will be the IP address of the Windows XP Laptop.

```
[DutIp]
DutIpAddress = 192.168.1.10
HostIpAddress = 192.168.1.100
Protocol = TCP
```

Click on “**DutApiMimoBtFmBridgeEth.exe**” and you will see



```
C:\Documents and Settings\kai\桌面\MFG-W8897-MF-WIFI-BT-FM-BRG-FC8-WIN-X86-2.1.0.34-1...
1. =====WiFi tool=====
2. =====BT  tool=====
99.Exit
Enter option: 1
Name:      DutApiClass
Interface:  Ethernet
Version:    2.0.0.33
Date:      Sep 3 2013 (17:13:29)
Note:
```

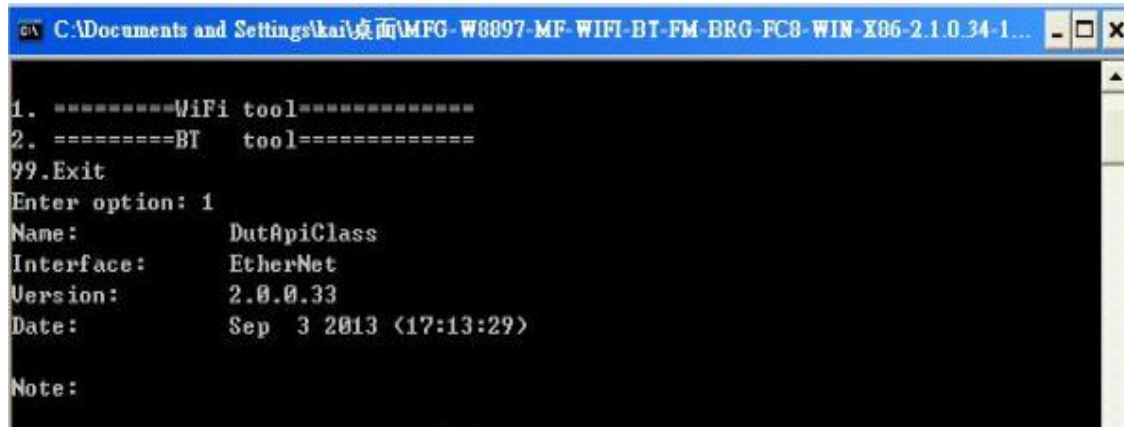

1.3 Initial Command

As the information showed on your screen, please enter these commands below to start your test.

(Figure 9)

Command: 1 Wi-Fi testing

Command: 2 BT testing



```

C:\Documents and Settings\kai桌面\MFG-W8897-MF-WIFI-BT-FM-BRG-FC8-WIN-X86-2.1.0.34-1...
1. =====WiFi tool=====
2. =====BT tool=====
99.Exit
Enter option: 1
Name:      DutApiClass
Interface: Ethernet
Version:   2.0.0.33
Date:      Sep 3 2013 (17:13:29)
Note:
  
```

Figure 9

1.3 Generate 802.11a/b/g/n Packet commands

a. Tx on CH 6 at 10 dBm with a CCK-11Mbps data rate in 20 MHz BW mode on path A

```

25                // Stop Tx
10 1 1            // Set Path A Only
30 0              // Set to 2.4 GHz Band
112 0             // Set to 20 MHz BW
12 6              // Set to CH 6
22 0 6 10 0       // Set to CH 6 at 10 dBm Output Power with CCK/BPSK Data Rate on Path A

25 1 4            // Tx at 11 Mbps
  
```

b. Tx on CH 6 at 10 dBm with a CCK-11Mbps data rate in 20 MHz BW mode on path B

```

25                // Stop Tx
10 2 2            // Set Path B Only
30 0              // Set to 2.4 GHz Band
112 0             // Set to 20 MHz BW
12 6              // Set to CH 6
  
```

```
22 1 6 10 0      // Set to CH 6 at 10 dBm Output Power with CCK/BPSK Data Rate on Path B
25 1 4           // Tx at 11 Mbps
```

c. Tx on CH 36 at 8 dBm with a MCS7 Data rate in 20 MHz BW Mode on Path A

```
25              // Stop Tx
10 1 1          // Set Path A
30 1            // Set to 5 GHz Band
112 0           // Set to 20 MHz BW
12 36           // Set to CH 36
22 0 36 8 1     // Set to CH 36 at 8 dBm Output Power with OFDM Data Rate on Path A
25 1 22         // Tx at MCS 7
```

d. Tx on CH 36 at 12 dBm with a MCS7 Data rate in 40 MHz BW Mode on Path A

```
25              // Stop Tx
10 1 1          // Set Path A
30 1            // Set to 5 GHz Band
112 1           // Set to 40 MHz BW
12 36           // Set to CH 36.
22 0 36 12 1    // Set to CH 36 at 12 dBm Output Power with OFDM Data Rate on path A
25 1 22         // Tx at MCS 7
```

d. Tx on CH 36(5210MHz) at 11 dBm with a MCS9 Data rate in 80 MHz BW Mode on Path A

```
25              // Stop Tx

10 1 1          // Set Path A
30 1            // Set to 5 GHz Band
112 4           // Set to 40 MHz BW
12 36           // Set to CH 36.
22 0 36 11 1    // Set to CH 36 at 11 dBm Output Power with OFDM Data Rate on path A
25 1 110        // Tx at MCS 9
```

Data rate set up

B mode & G mode:

1Mbps	5.5Mbps	11Mbps	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps
1	3	4	6	7	8	9	10
36Mbps	48Mbps	54Mbps					
11	12	13					

N mode:

MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	
15	16	17	18	19	20	21	22	

VHT Data Rates:

101 for VHT_SS1_MCS0
 102 for VHT_SS1_MCS1
 103 for VHT_SS1_MCS2
 104 for VHT_SS1_MCS3
 105 for VHT_SS1_MCS4
 106 for VHT_SS1_MCS5
 107 for VHT_SS1_MCS6
 108 for VHT_SS1_MCS7
 109 for VHT_SS1_MCS8
 110 for VHT_SS1_MCS9
 111 for VHT_SS2_MCS0
 112 for VHT_SS2_MCS1
 113 for VHT_SS2_MCS2
 114 for VHT_SS2_MCS3
 115 for VHT_SS2_MCS4
 116 for VHT_SS2_MCS5
 117 for VHT_SS2_MCS6
 118 for VHT_SS2_MCS7
 119 for VHT_SS2_MCS8
 120 for VHT_SS2_MCS9

After you type above command, you can measure the 802.11b/g/n packet by your RF test instrument (exp: Agilent 4010, IQview...).

1.4 Generate 802.11b/g/n continuous symbol Commands

a. Cont. Tx on CH 36 at 8 dBm with a MCS7 Data rate in 20 MHz BW Mode on Path A

```
17          // Stop Cont. Tx
25          // Stop Tx
10 1 1      // Set Path A
30 1        // Set to 5 GHz Band
112 0       // Set to 20 MHz BW
12 36       // Set to CH 36
22 0 36 8 1 // Set to CH 36 at 8 dBm Output Power with OFDM Data Rate on Path A
25 1 22     // Tx at MCS 7
25          // Stop Tx
17 1 22     // Cont. Tx at MCS7
17          // Stop Cont. Tx
```

1.5 Test RX sensitivity Commands

a. Rx on CH 157 in 20 MHz BW Mode on both Path A

```
25          // Stop Tx
10 1 1      // Set to Path A
30 1        // Set to 5 GHz Band
112 0       // Set to 20 MHz BW
12 100      // Set to CH 100
31          // Clear all the received packets
32          // Get Rx Packet Count and then clear the Rx packet counter
```

1.6 Others Commands

- (1) **Command 45**→ Check the MAC
- (2) **Command 99**→ Quit the test mode/ Quit the MFG tool

1.7 BT test mode Commands

This is how we test our BT: let BT enter test mode, then connect to tester for testing.

- (1) Command 45→Check BT MAC.
- (2) Command 78 1→BT enter test mode.

After you type above command, you can measure BT signal both TX/RX and the other BT test items by your BT instrument.