

# Type1GC/1PS ApplicationNote RF Test

Document Number: N1- 5003  
Version: 1.0  
Release Date: 2018/4/16

Murata Manufacturing Co., Ltd.

## Revision History

Revision Number	Release Date	Comments
Revision 1.0	2018/4/16	Initial

## Contents

1.	About this Document.....	4
1.1.	Purpose and Scope .....	4
1.2.	References documentation .....	4
2.	How to use RF Test Application.....	4
2.1.	Creating a Build Target .....	4
2.2.	Using the Application.....	4
3.	Test Script Example.....	5
3.1.	2.4GHz Transmit Testing.....	5
3.1.1.	802.11b / CCK11 / Channel 1 / 17 dbm.....	5
3.1.2.	802.11g / 54Mbps / Channel 1 / 13 dbm .....	5
3.1.3.	802.11n / MCS7 / HT20 / Channel 1 / 12 dbm.....	6
3.2.	2.4GHz Receive Testing .....	6
3.3.	Carrier Wave .....	7
3.4.	5GHz Transmit Testing.....	7
3.4.1.	802.11a / Channel 36 / 13dBm .....	7
3.4.2.	802.11n HT20 / Channel 36 / 12dBm.....	8
3.4.3.	802.11n HT40 / Channel 36 / 12dBm.....	8
3.5.	5GHz Receive Testing .....	10

## 1. About this Document

### 1.1. Purpose and Scope

This document provides instructions to do a RF Test of Murata Type1GC EVB.

Note: Type1GC and 1PS are pin-to-pin compatible module.

For example, in the case of Type1PS, please use Type1PS platform files and module name 1PS instead of 1GC.

### 1.2. References documentation

N1-5003\_Type1GC\_1PC-Quick\_Start\_Guide.pdf

## 2. How to use RF Test Application

This section describes how to use RF Test application with Murata Type1GC.

RF Test application is located at <WICED-Studio>/43xxx\_Wi-Fi/apps/test/mfg\_test. This application is used to test the radio performance of the DUT and to assist with regulatory certification.

### 2.1. Creating a Build Target

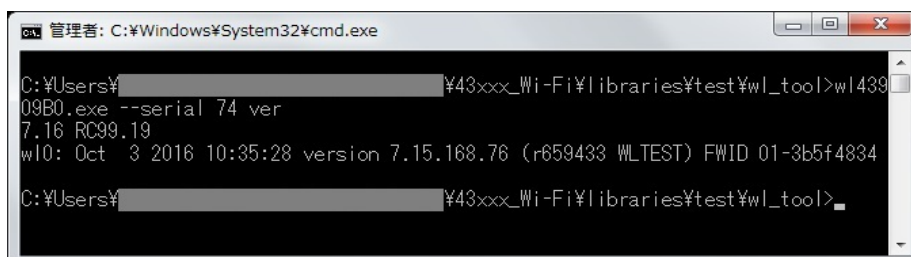
Build the RF test application with following line to Target name field.

test.mfg\_test-MurataType1GC download run

### 2.2. Using the Application

The test procedure is following steps.

- A) Connect Type1GC EVB to your PC. And then, open "Windows Device Manager" to check the port number which Type1GC EVB is detected as "WICED USB Serial Port" (e.g. COM74).
- B) Open cmd.exe and move to the following directory.  
<WICED-Studio>\43xxx\_Wi-Fi\libraries\test\wl\_tool
- C) Execute wl command as follows format.  
wl --serial [port#] [command]



### 3. Test Script Example

This section shows the test script of wl commands.

#### 3.1. 2.4GHz Transmit Testing

##### 3.1.1. 802.11b / CCK11 / Channel 1 / 17 dbm

```
wl43909B0.exe --serial 99 down
wl43909B0.exe --serial 99 mpc 0
wl43909B0.exe --serial 99 phy_watchdog 0
wl43909B0.exe --serial 99 country ALL
wl43909B0.exe --serial 99 band b
wl43909B0.exe --serial 99 up
wl43909B0.exe --serial 99 scansuppress 1
wl43909B0.exe --serial 99 2g_rate -r 11 -b 20
wl43909B0.exe --serial 99 channel 1
wl43909B0.exe --serial 99 phy_forcecal 1
wl43909B0.exe --serial 99 txpwr1 -o -q 68
wl43909B0.exe --serial 99 pkteng_start 00:11:22:33:44:55 tx 20 1024 0
    >> for use script, add [pause] at this line
wl43909B0.exe --serial 99 pkteng_stop tx
```

##### 3.1.2. 802.11g / 54Mbps / Channel 1 / 13 dbm

```
wl43909B0.exe --serial 99 down
wl43909B0.exe --serial 99 mpc 0
wl43909B0.exe --serial 99 phy_watchdog 0
wl43909B0.exe --serial 99 country ALL
wl43909B0.exe --serial 99 band b
wl43909B0.exe --serial 99 up
wl43909B0.exe --serial 99 scansuppress 1
wl43909B0.exe --serial 99 2g_rate -r 54 -b 20
wl43909B0.exe --serial 99 channel 1
wl43909B0.exe --serial 99 phy_forcecal 1
wl43909B0.exe --serial 99 txpwr1 -o -q 52
wl43909B0.exe --serial 99 pkteng_start 00:11:22:33:44:55 tx 20 1024 0
    >> for use script, add [pause] at this line
wl43909B0.exe --serial 99 pkteng_stop tx
```

**3.1.3. 802.11n / MCS7 / HT20 / Channel 1 / 12 dbm**

```
wl43909B0.exe --serial 99 down
wl43909B0.exe --serial 99 mpc 0
wl43909B0.exe --serial 99 phy_watchdog 0
wl43909B0.exe --serial 99 country ALL
wl43909B0.exe --serial 99 band b
wl43909B0.exe --serial 99 up
wl43909B0.exe --serial 99 scansuppress 1
wl43909B0.exe --serial 99 2g_rate -h 7 -b 20
wl43909B0.exe --serial 99 chanspec 1/20
wl43909B0.exe --serial 99 phy_forcecal 1
wl43909B0.exe --serial 99 txpwr1 -o -q 48
wl43909B0.exe --serial 99 pkteng_start 00:11:22:33:44:55 tx 20 1024 0

>> for use script, add [pause] at this line

wl43909B0.exe --serial 99 pkteng_stop tx
```

**3.2. 2.4GHz Receive Testing**

```
wl43909B0.exe --serial 99 down
wl43909B0.exe --serial 99 mpc 0
wl43909B0.exe --serial 99 phy_watchdog 0
wl43909B0.exe --serial 99 country ALL
wl43909B0.exe --serial 99 band b
wl43909B0.exe --serial 99 up
wl43909B0.exe --serial 99 scansuppress 1
wl43909B0.exe --serial 99 channel 1
wl43909B0.exe --serial 99 phy_forcecal 1
wl43909B0.exe --serial 99 reset_cnts
wl43909B0.exe --serial 99 pkteng_start 00:11:22:33:44:55 rx

>> for use script, add [pause] at this line

wl43909B0.exe --serial 99 counters

>> 1. read rxdfrmocast/rxdfrmucastmbss for multi-cast/unicast packets take this as counter#1

>> 2. Generate a waveform that contains [X] number of packets

wl43909B0.exe --serial 99 counters

>> 1. read the same counter count again, take this as counter#2

>> 2. PER% = {[X-(counter#2 – counter#1)] / X} * 100%

wl43909B0.exe --serial 99 pkteng_stop rx
```

### **3.3. Carrier Wave**

```
wl43909B0.exe --serial 99 down
wl43909B0.exe --serial 99 mpc 0
wl43909B0.exe --serial 99 phy_watchdog 0
wl43909B0.exe --serial 99 country ALL
wl43909B0.exe --serial 99 band b
wl43909B0.exe --serial 99 up
wl43909B0.exe --serial 99 scansuppress 1
wl43909B0.exe --serial 99 txpwr1 -o -q 68
wl43909B0.exe --serial 99 out
wl43909B0.exe --serial 99 fqacurcy 1
    >> for use script, add [pause] at this line
wl43909B0.exe --serial 99 fqacurcy 0
```

### **3.4. 5GHz Transmit Testing**

#### **3.4.1. 802.11a / Channel 36 / 13dBm**

```
wl43909B0.exe --serial 99 down
wl43909B0.exe --serial 99 mpc 0
wl43909B0.exe --serial 99 phy_watchdog 0
wl43909B0.exe --serial 99 country ALL
wl43909B0.exe --serial 99 band a
wl43909B0.exe --serial 99 up
wl43909B0.exe --serial 99 scansuppress 1
wl43909B0.exe --serial 99 5g_rate -r 54 -b 20
wl43909B0.exe --serial 99 chanspec 36/20
wl43909B0.exe --serial 99 phy_forcecal 1
wl43909B0.exe --serial 99 txpwr1 -o -q 52
wl43909B0.exe --serial 99 pkteng_start 00:11:22:33:44:55 tx 20 1024 0
    >> for use script, add [pause] at this line
wl43909B0.exe.exe --serial 99 pkteng_stop tx
```

### **3.4.2. 802.11an HT20 / Channel 36 / 12dBm**

```
wl43909B0.exe --serial 99 down
wl43909B0.exe --serial 99 mpc 0
wl43909B0.exe --serial 99 phy_watchdog 0
wl43909B0.exe --serial 99 country ALL
wl43909B0.exe --serial 99 band a
wl43909B0.exe --serial 99 up
wl43909B0.exe --serial 99 scansuppress 1
wl43909B0.exe --serial 99 5g_rate -h 7 -b 20
wl43909B0.exe --serial 99 chanspec 36/20
wl43909B0.exe --serial 99 phy_forcecal 1
wl43909B0.exe --serial 99 txpwr1 -o -q 48
wl43909B0.exe --serial 99 pkteng_start 00:11:22:33:44:55 tx 20 1024 0

    >> for use script, add [pause] at this line

wl43909B0.exe.exe --serial 99 pkteng_stop tx
```

### **3.4.3. 802.11an HT40 / Channel 36 / 12dBm**

```
wl43909B0.exe --serial 99 down
wl43909B0.exe --serial 99 mpc 0
wl43909B0.exe --serial 99 phy_watchdog 0
wl43909B0.exe --serial 99 country ALL
wl43909B0.exe --serial 99 band a
wl43909B0.exe --serial 99 up
wl43909B0.exe --serial 99 scansuppress 1
wl43909B0.exe --serial 99 5g_rate -h 7 -b 40
wl43909B0.exe --serial 99 chanspec 36/40
wl43909B0.exe --serial 99 mimo_txbw 4
wl43909B0.exe --serial 99 phy_forcecal 1
wl43909B0.exe --serial 99 txpwr1 -o -q 48
wl43909B0.exe --serial 99 pkteng_start 00:11:22:33:44:55 tx 20 1024 0

    >> for use script, add [pause] at this line

wl43909B0.exe.exe --serial 99 pkteng_stop tx
```



**3.4.4. 802.11ac VHT20 / Channel 36 / 12dBm**

This section is available only for Type1PS.

```
wl43909B0.exe --serial 99 down
wl43909B0.exe --serial 99 mpc 0
wl43909B0.exe --serial 99 phy_watchdog 0
wl43909B0.exe --serial 99 country ALL
wl43909B0.exe --serial 99 band a
wl43909B0.exe --serial 99 up
wl43909B0.exe --serial 99 scansuppress 1
wl43909B0.exe --serial 99 5g_rate -v 8 -b 20
wl43909B0.exe --serial 99 chanspec 36/20
wl43909B0.exe --serial 99 phy_forcecal 1
wl43909B0.exe --serial 99 txpwr1 -o -q 48
wl43909B0.exe --serial 99 pkteng_start 00:11:22:33:44:55 tx 20 1024 0
    >> for use script, add [pause] at this line
wl43909B0.exe --serial 99 pkteng_stop tx
```

**3.4.5. 802.11ac VHT40 / Channel 36 / 10dBm**

This section is available only for Type1PS.

```
wl43909B0.exe --serial 99 down
wl43909B0.exe --serial 99 mpc 0
wl43909B0.exe --serial 99 phy_watchdog 0
wl43909B0.exe --serial 99 country ALL
wl43909B0.exe --serial 99 band a
wl43909B0.exe --serial 99 up
wl43909B0.exe --serial 99 scansuppress 1
wl43909B0.exe --serial 99 chanspec 36/40
wl43909B0.exe --serial 99 phy_forcecal 1
wl43909B0.exe --serial 99 5g_rate -v 9 -b 40
wl43909B0.exe --serial 99 txpwr1 -o -q 40
wl43909B0.exe --serial 99 pkteng_start 00:11:22:33:44:55 tx 20 1024 0
    >> for use script, add [pause] at this line
wl43909B0.exe --serial 99 pkteng_stop tx
```

### **3.4.6. 802.11ac VHT80 / Channel 36 / 10dBm**

This section is available only for Type1PS.

```
wl43909B0.exe --serial 99 down
wl43909B0.exe --serial 99 mpc 0
wl43909B0.exe --serial 99 phy_watchdog 0
wl43909B0.exe --serial 99 country ALL
wl43909B0.exe --serial 99 band a
wl43909B0.exe --serial 99 up
wl43909B0.exe --serial 99 scansuppress 1
wl43909B0.exe --serial 99 chanspec 36/80
wl43909B0.exe --serial 99 phy_forcecal 1
wl43909B0.exe --serial 99 5g_rate -v 9 -b 80
wl43909B0.exe --serial 99 txpwr1 -o -q 40
wl43909B0.exe --serial 99 pkteng_start 00:11:22:33:44:55 tx 20 4096 0
    >> for use script, add [pause] at this line
wl43909B0.exe --serial 99 pkteng_stop tx
```

### **3.5. 5GHz Receive Testing**

```
wl43909B0.exe --serial 99 down
wl43909B0.exe --serial 99 mpc 0
wl43909B0.exe --serial 99 phy_watchdog 0
wl43909B0.exe --serial 99 country ALL
wl43909B0.exe --serial 99 band auto
wl43909B0.exe --serial 99 up
wl43909B0.exe --serial 99 scansuppress 1
wl43909B0.exe --serial 99 chanspec 36/20
wl43909B0.exe --serial 99 phy_forcecal 1
wl43909B0.exe --serial 99 reset_cnts
wl43909B0.exe --serial 99 pkteng_start 00:11:22:33:44:55 rx
    >> for use script, add [pause] at this line
wl43909B0.exe --serial 99 counters
    >> 1. read rxdfmcast/rxdfmcastmbss for multi-cast/unicast packets take this as counter#1
    >> 2. Generate a waveform that contains [X] number of packets
wl43909B0.exe --serial 99 counters
    >> 1. read the same counter count again, take this as counter#2
    >> 2. PER% = {[X-(counter#2 – counter#1)] / X} * 100%
wl43909B0.exe --serial 99 pkteng_stop rx
```

(END)