Model :	Phase :	Originator :	Dept.	Date :
PACIFICO	MVT2	Shawn Lee	RF	July 15th, 2013

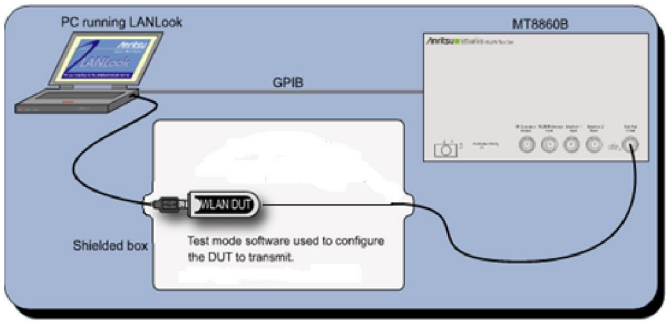
Tune-Up Procedure

1. Test Configurations for WIFI

The Measurement of WIFI Module conduction test is used MT8860C made in Anritsu.

The following picture shows test set-up.

<Picture 1>



Notes;

• This test shall be measured using shield room or shield box to prevent correlation interference or noise.

2. Criteria for WIFI

802.11b (2.4GHz)

IEEE Std 802.11-2007	Test Parameter	Limit
18.4.7.1	Transmit power levels	Follows national regulatory domain requirements
18.4.7.2	Transmit power level control	Required for radios >100 mW
18.4.7.3	Transmit spectrum mask	Defined limit mask
18.4.7.4	Transmit center frequency tolerance	± 25 ppm
18.4.7.5	Chip clock frequency tolerance	± 25 ppm
18.4.7.6	Transmit power-on and power-down ramp	< 2 µs
18.4.7.7	RF carrier suppression	–15dB, unscrambled 1010 payload
18.4.7.8	Transmit modulation accuracy	< 0.35 EVM peak, DQSK modulation
18.4.8.1	Receiver minimum input sensitivity	PER < 8%, –76 dBm input level, 11 Mbps
18.4.8.2	Receiver maximum input level	PER < 8%, –10 dBm input level, 11Mbps
18.4.8.3	Receiver adjacent channel rejection*	>35 dB, PER < 8%, 25 MHz separation, 11 Mbps

802.11g (2.4GHz)

IEEE Std 802.11-2007 Reference	Test Parameter	Limit
19.4.7.1	Transmit power levels	Follows regional and national regulatory domain requirements
19.4.7.2	Transmit center frequency tolerance	± 25 ppm maximum
19.4.7.3	Symbol clock frequency tolerance	± 25 ppm maximum
19.4.7 (17.3.9.6.1)	Transmitter center frequency leakage	No greater than –15 dB relative to overall transmitted power
19.4.7 (17.3.9.6.2)	Transmitter spectral flatness	± 2 dB maximum deviation, subcarrier 1 to 16; +2 to –4 dB, subcarrier 17 to 26
19.5.4	Transmit spectrum mask	Defined limit mask based on data rate
19.7.2.7 (17.3.9.6.3)	Transmitter constellation error	No greater than –25 dB (5.6 %RMS), 54 Mbps
19.5.1 (17.3.10.1)	Receiver minimum input sensitivity	< 10% PER, –65 dBm, 54 Mbps
19.5.2 (17.3.10.2)	Receiver adjacent channel rejection*	No less than –1 dB, < 10% PER, 54 Mbps
19.5.3	Receiver maximum input level	< 10% PER, –20 dBm

NOTE: IEEE Std 802.11-2007 supersedes IEEE Std 802.11b-1999 and IEEE Std 802.11g-2003
* Additional signal source required

802.11a (20 MHz channels) (5GHz)

IEEE Std 802.11-2007 Reference	Test Parameter	Limit
17.3.9.1	Transmit power levels	Follows regional and national regulatory domain requirements
17.3.9.2	Transmit spectrum mask	Defined limit mask
17.3.9.4	Transmit center frequency tolerance	± 20 ppm maximum
17.3.9.5	Symbol clock frequency tolerance	± 20 ppm maximum
17.3.9.6.1	Transmitter center frequency leakage	No greater than -15 dB relative to overall transmitted power
17.3.9.6.2	Transmitter spectral flatness	± 2 dB maximum deviation, subcarrier 1 to 16; +2 to –4 dB, subcarrier 17 to 26
17.3.9.6.3	Transmitter constellation error	No greater than -25 dB (5.6 %RMS), 54 Mbps
17.3.10.1	Receiver minimum input sensitivity	< 10% PER, –65 dBm, 54 Mbps
17.3.10.2	Receiver adjacent channel rejection*	No less than –1 dB, < 10% PER, 54 Mbps
17.3.10.3	Receiver non-adjacent channel rejection*	No less than 15 dB, <10% PER, 54 Mbps
17.3.10.4	Receiver maximum input level	< 10% PER, –30 dBm

NOTE: IEEE Std 802.11-2007 supersedes IEEE Std 802.11a-1999
* Additional signal source required

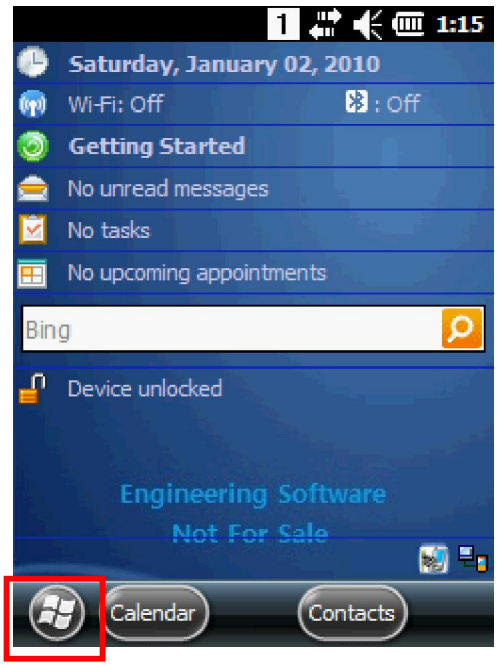
802.11n (5GHz/2.4GHz)

IEEE Std 802.11n-2009 Reference	Test Parameter	Limit
20.3.21.1	Transmit spectrum mask	Defined limit mask based on channel bandwidth
20.3.21.2	Transmitter spectral flatness	Defined limits based on channel bandwidth
20.3.21.3	Transmit power	Follows regional and national regulatory domain requirements
20.3.21.4	Transmit center frequency tolerance	± 20 ppm maximum (5 GHz band) ± 25 ppm maximum (2.4 GHz band)
20.3.21.6	Symbol clock frequency tolerance	± 20 ppm maximum (5 GHz band) ± 25 ppm maximum (2.4 GHz band)
20.3.21.7.2	Transmitter center frequency leakage	No greater than –15 dB relative to overall transmitted power (20 MHz channel bandwidth) No greater than –20 dB relative to overall transmitted power (40 MHz channel bandwidth)
20.3.21.7.3	Transmitter constellation error	No greater than –28 dB (3.98 %RMS), 64-QAM with 5/6 coding rate
20.3.22.1	Receiver minimum input sensitivity	<10% PER, –64 dBm, MCS 7, 20 MHz channel bandwidth
20.3.22.2*	Receiver adjacent channel rejection	–2 dB for <10% PER, MCS 7
20.3.22.3*	Receiver non-adjacent channel rejection	14 dB for <10% PER, MCS 7
20.3.22.4	Receiver maximum input level	<10% for -30 dBm input at the receiver, all MCS settings

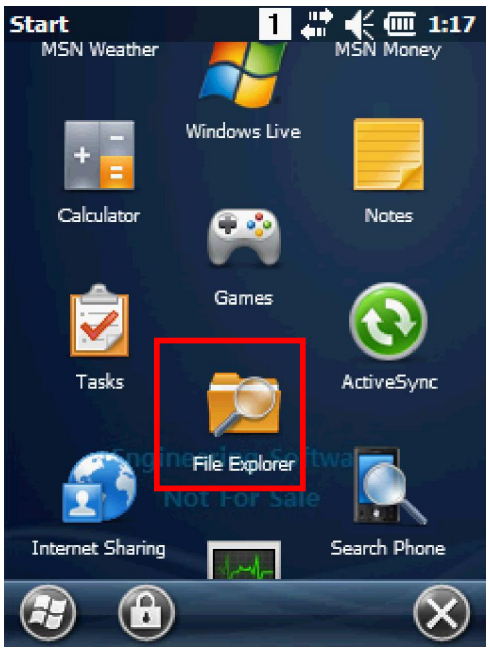
* Additional signal source required

3. Test setting for WIFI

1. Click “Windows start”

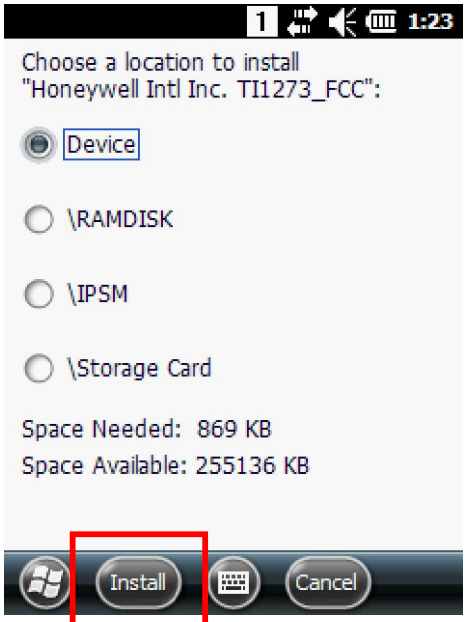


2. Enter “File Explorer

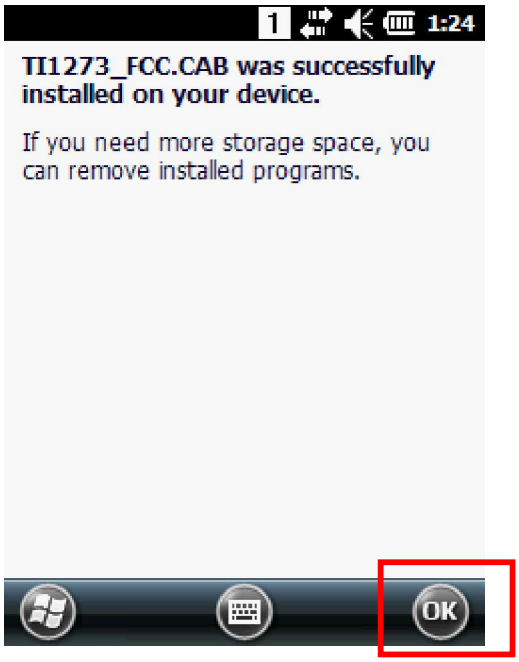


3. Select “My device” and install “TI1273_FCC_1.0.1.1”

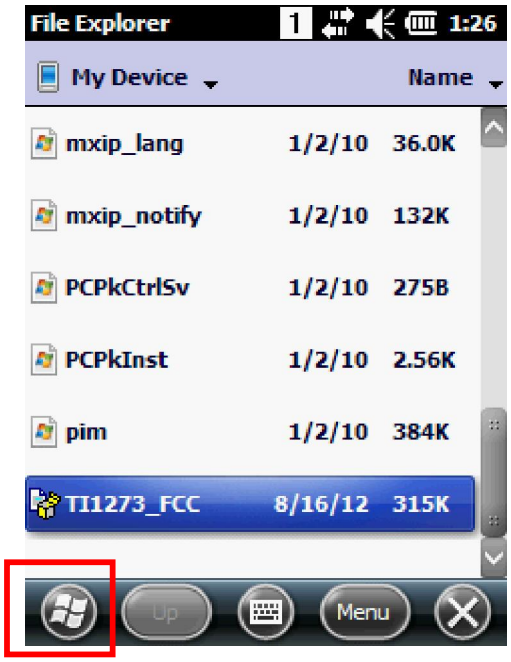
4. Click “OK”



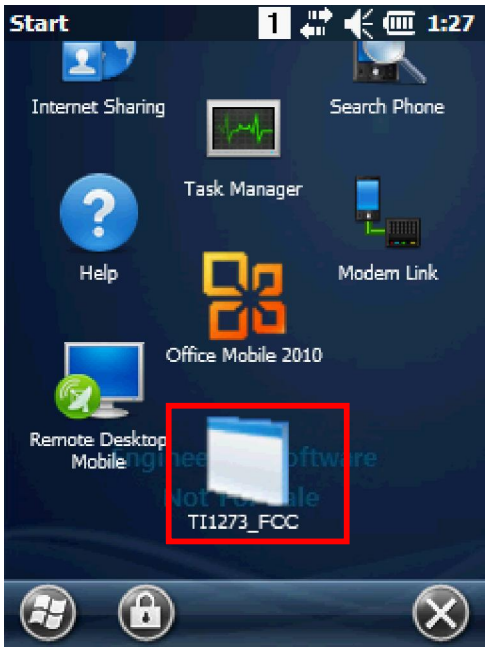
5. Click “ Windows start”

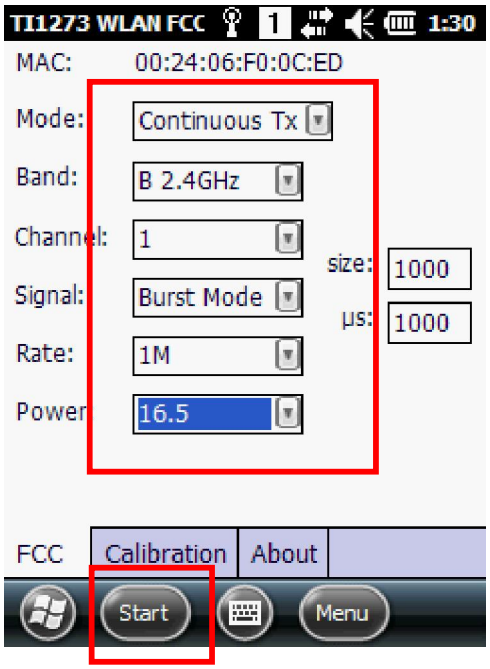


6. Execute “TI1273_FCC”



7. Set check box and click “Start”

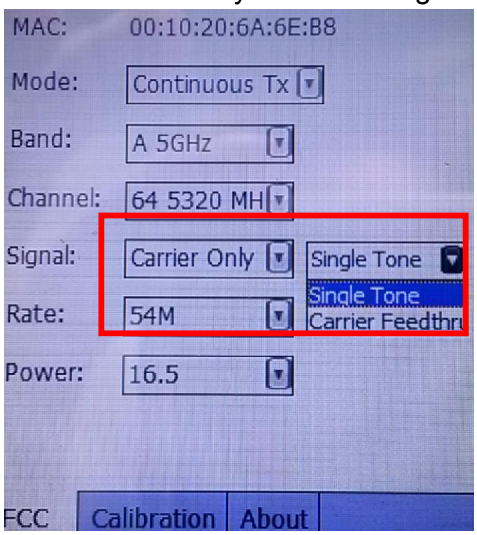




< Setting value >

1) Mode : Continuous Tx
2) Band : Select test band (B 2.4GHz, G 2.4GHz…..)
3) Channel : Select test channel
4) Signal :

4-1) Select Carrier only-> Select Single Tone



4-2) Select Burst mode (to modulation)

5) Power : Select 15/14 (802.11b@1Mbps/@11Mbps),
15/13(802.11g@6bps/@54Mbps),
12/11(802.11a@6Mbps/@54Mbps),
15/11(802.11n_2G@6.5Mbps/@65Mbps)
12/11(802.11n_5G@6.5Mbps/@65Mbps)

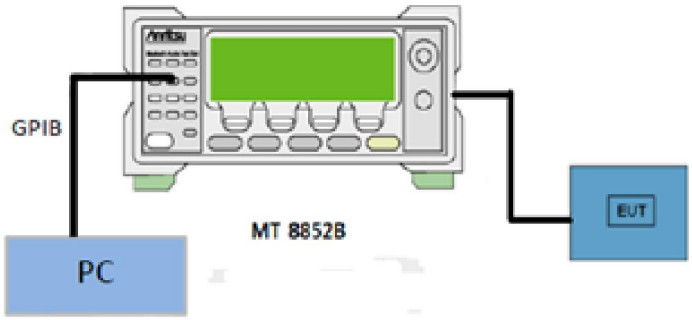
- The end user can't change power setting because this tool is provided to test engineer.

4. Test Configurations for Bluetooth

The Measurement of blue tooth conduction test is used MT8852B made in Anritsu.

The following picture shows test set-up

< Picture 2>



Notes;

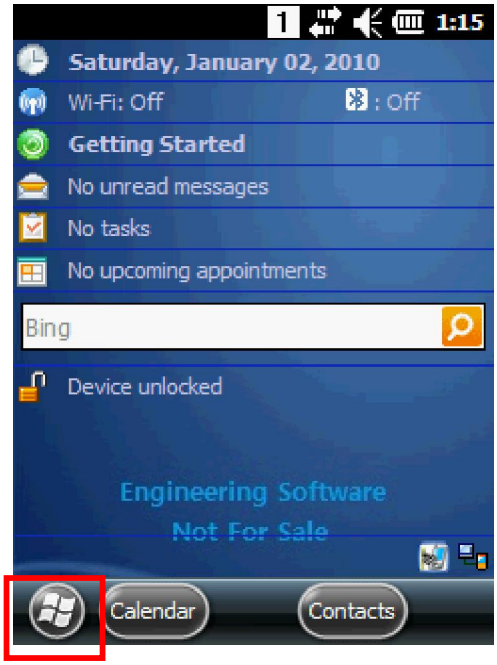
• This test shall be measured using shield room or shield box to prevent correlation interference or noise.

5. Criteria for Bluetooth

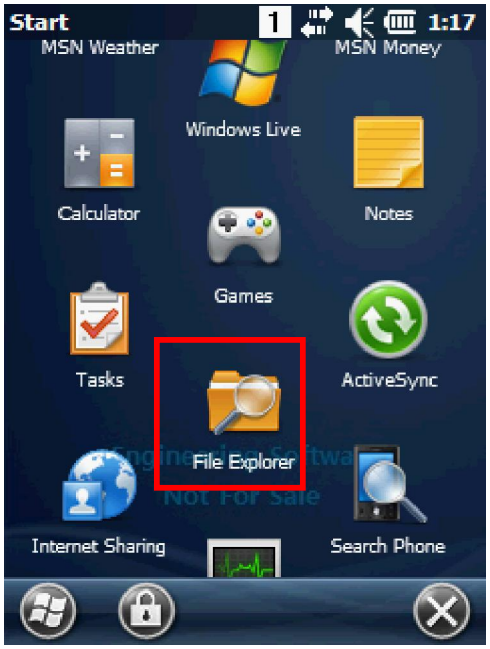
Characteristic		Min.	Typ.	Max.	Unit
Output Power	Peak			11	dBm
Class II	Avg	0	2	4	dBm
Power Control		2		8	dBm
Modulation Chaeacteristics		140		175	kHz
Initial Carrier Frequency Tolerance		-75		75	kHz
Carrier Frequency Drift	DH1	-25		25	kHz
	DH3	-40		40	kHz
	DH5	-40		40	kHz
Sensitivity - single slot packets	DH1			-70	dBm
Sensitivity - multi slot packets	DH5			-70	dBm
Maximum Input Level				-20	dBm

6. Test setting for Bluetooth

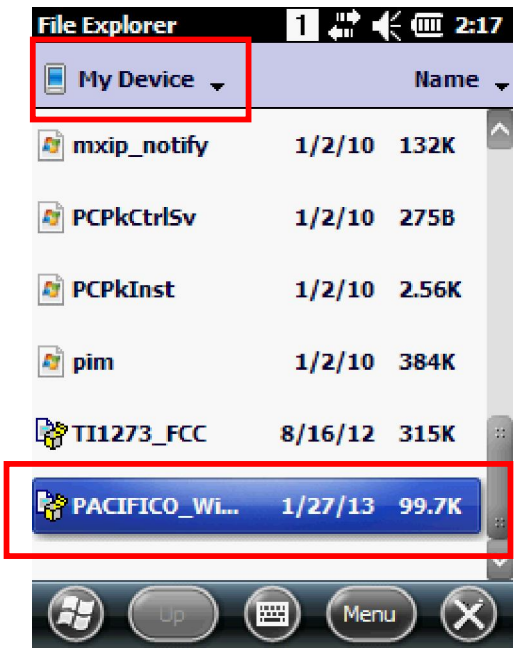
1. Click “Windows start”

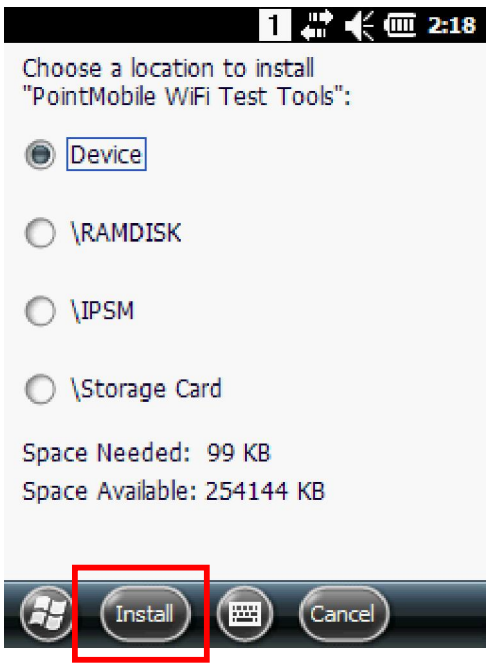


2. Enter “File Explorer



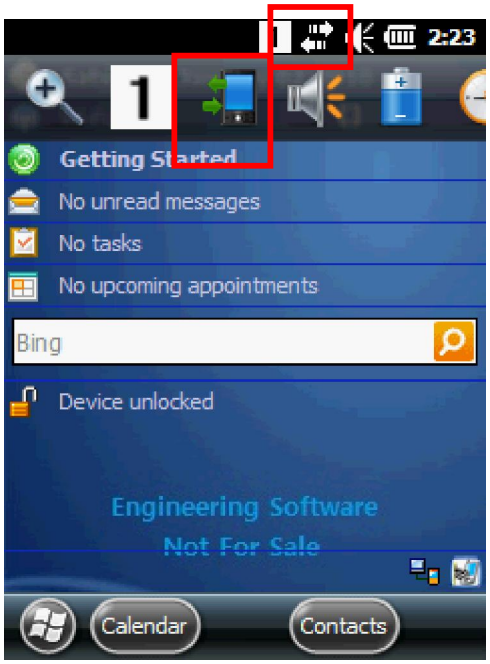
3. Select “My device” and install “PACIFICO_BT_TestMode_Script.cab”



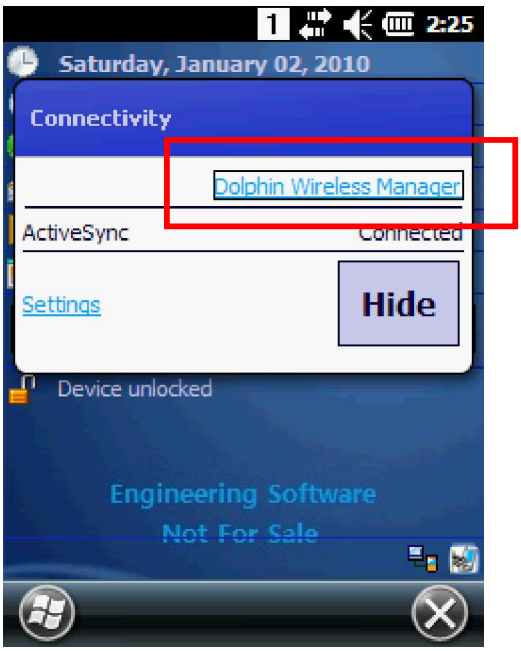


4. The device will be performed S/W reset after installing CAB file.

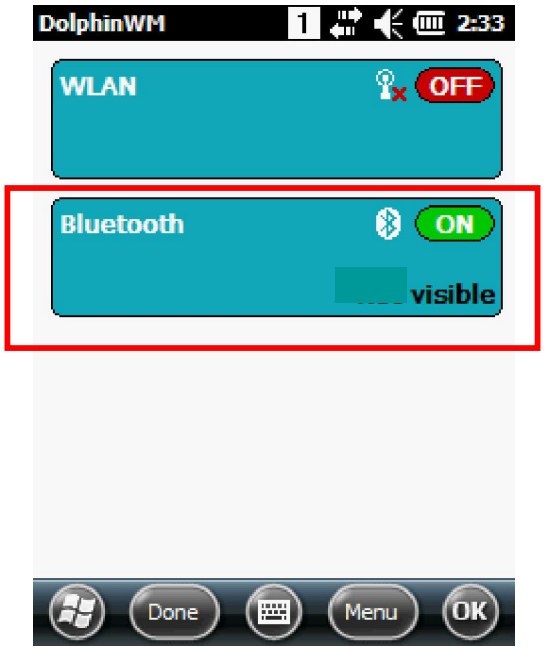
5. Click arrow and then Enter phone icon



6. Enter “Dolphin Wireless Manager”



7. Select “BT ON” and confirme “WLAN Off”



8. Confirm “Visible” and Perform BT test using measurement