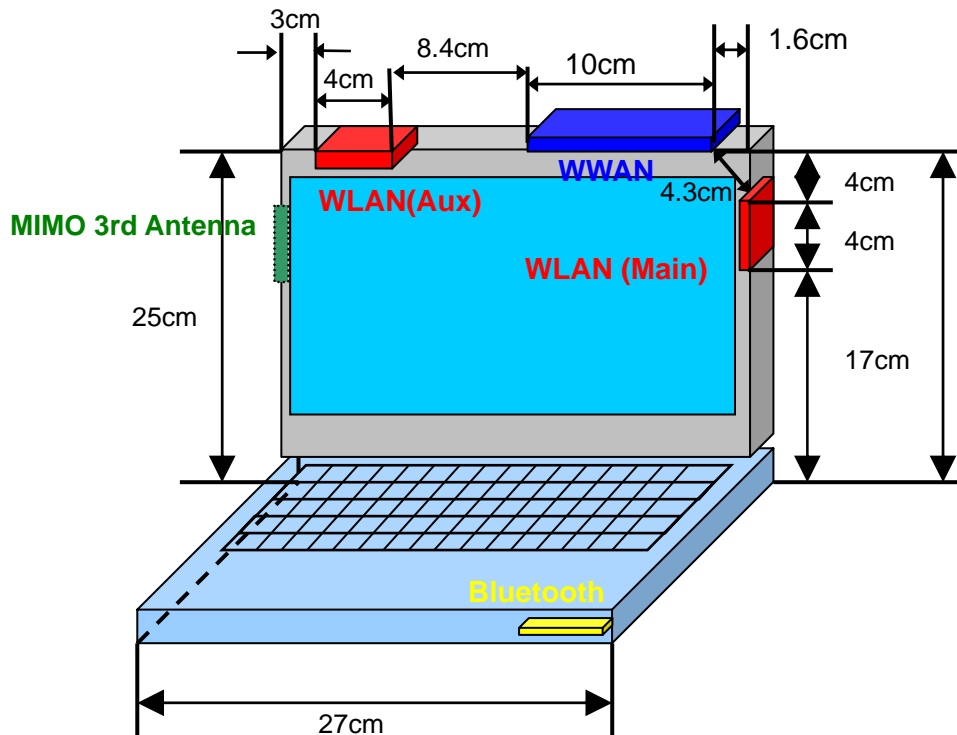# RF Exposure Evaluation
in co-locating with other transmitters

1. Configuration

The applying host device has the following configuration for the wireless communication features, and it incorporates the three kinds of transmitters. i.e. WWAN, WLAN and Bluetooth.

<u>**Figure-1**</u>: **Host device configulation**

The WWAN Tx/Rx antenna and a WLAN antenna are co-located with 43mm of separation distance. However both transmitter modules do not establish the network link connections simultaneously, but switch the operation each other within 11 seconds of hand over time when one is in active. (See page 2 in this exhibit.)
So the SAR testing for the applying WWAN transmitter does not require any evaluation for co-location with WLAN devices.
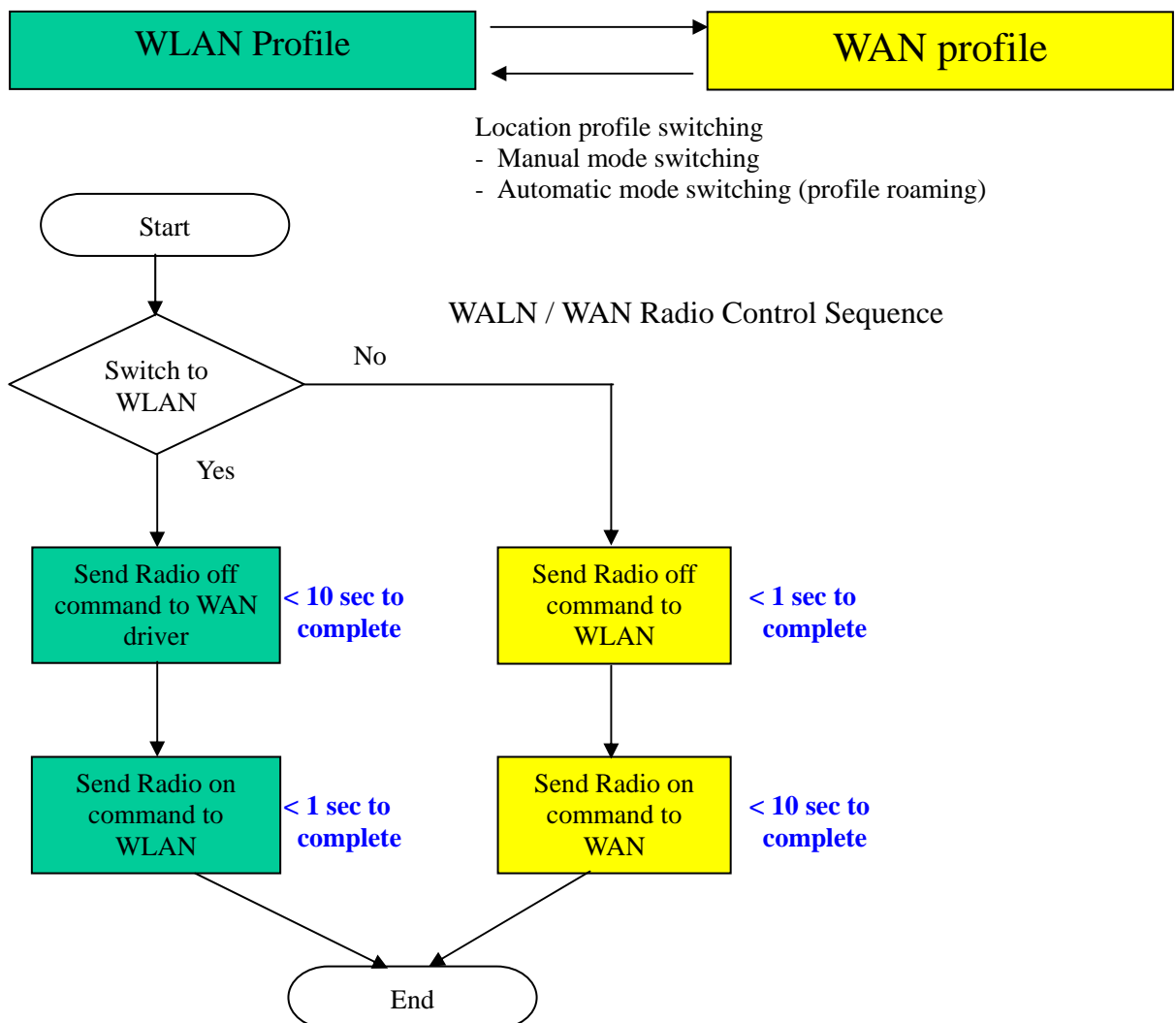
In the other hand, the separation distance between WWAN Tx/Rx antenna and Bluetooth antenna is 84mm (See Figure-3 in page 5), and both transmitters operate simultaneously. Therefore those transmitters are regarded as co-located devices, and then the SAR testing is required to be performed with the co-locating WWAN and Bluetooth devices in active.

The separate SAR report includes the measurement results performed with the applying transmitter (**FCC ID: N7N-MC5725-L**, **IC: 2417C-MC5275**) and the co-located Bluetooth transmitter (FCC ID: MCLJ07H081, IC: 2878D-J07H081) in active and transmitting simultaneously.

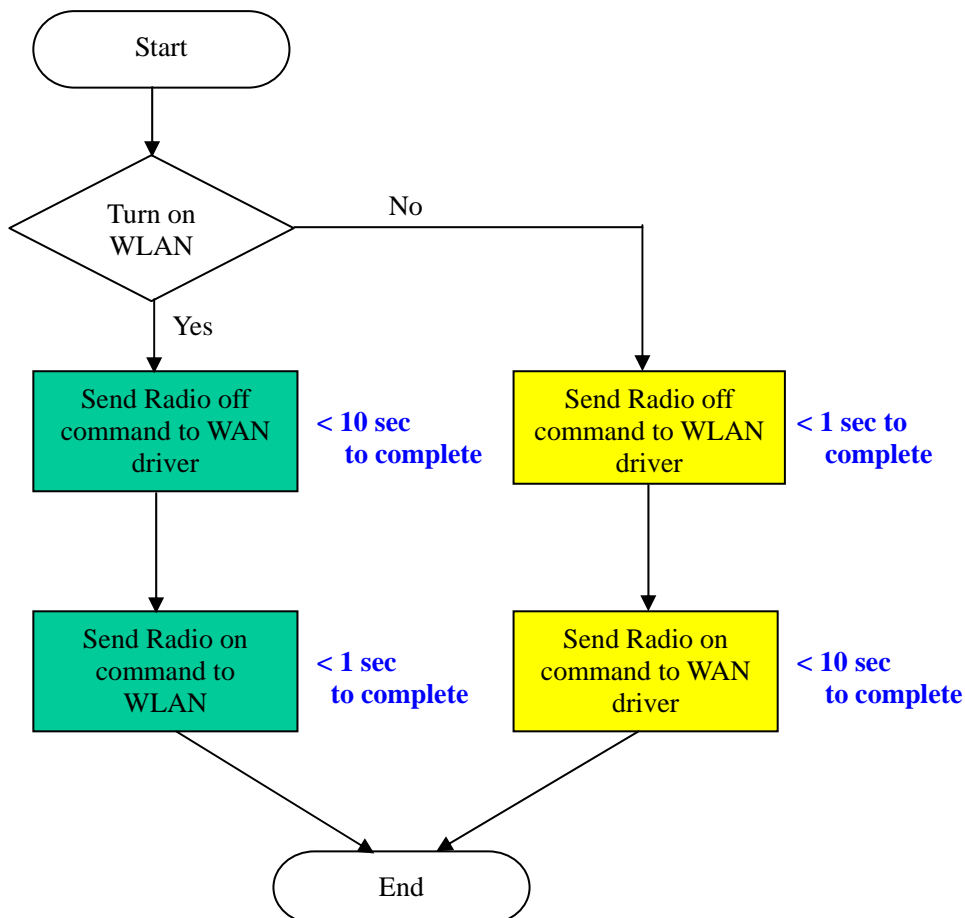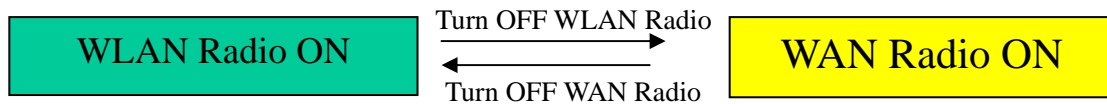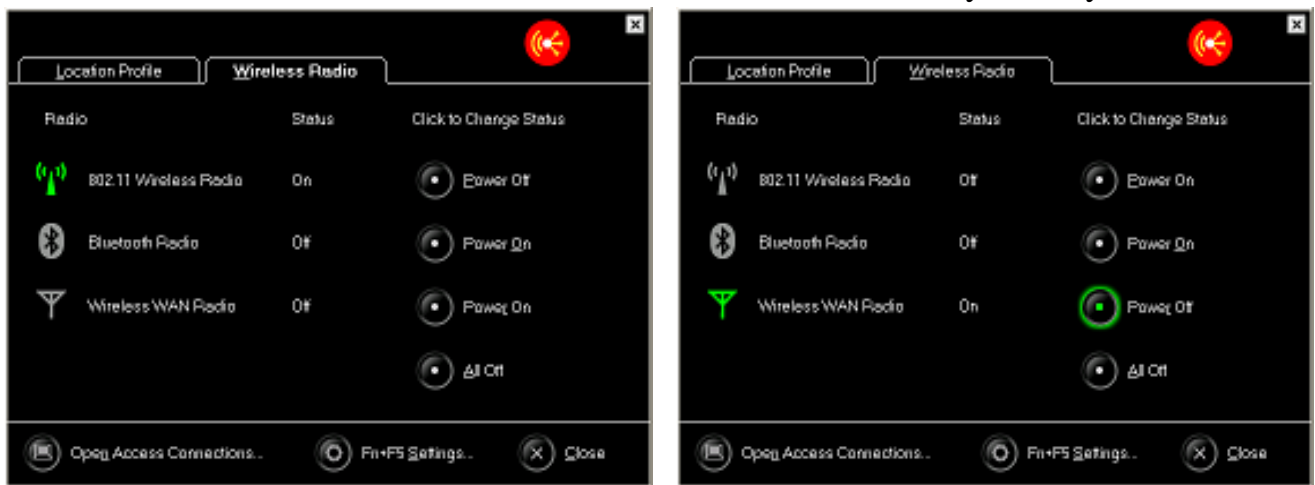## 2. Wireless LAN /WAN switching scheme within 11 seconds of handover time

Location profile switching scenario

- Exclusive control for WLAN and WAN when WLAN and WAN location profile is applied by user (manual mode switching)

- Exclusive control when automatic location switching is performed by Access Connections (automatic profile roaming)

WLAN Profile → WAN profile

Location profile switching
- Manual mode switching
- Automatic mode switching (profile roaming)

WALN / WAN Radio Control Sequence

Start

Switch to WLAN — No / Yes

Send Radio off command to WAN driver — **< 10 sec to complete**

Send Radio off command to WLAN — **< 1 sec to complete**

Send Radio on command to WLAN — **< 1 sec to complete**

Send Radio on command to WAN — **< 10 sec to complete**

End

Radio control by software menu (Fn+F5 hot key)

Exclusive control when WLAN or WAN Radio ON is selected by hot key

| WLAN Radio ON | Turn OFF WLAN Radio →
 ← Turn OFF WAN Radio | WAN Radio ON |

Start

Turn on WLAN

Yes — No

| Send Radio off command to WAN driver | < 10 sec to complete | | Send Radio off command to WLAN driver | < 1 sec to complete |

| Send Radio on command to WLAN | < 1 sec to complete | | Send Radio on command to WAN driver | < 10 sec to complete |

End

Wireless WAN/LAN status indication

The sifting status from WAN(LAN) to LAN(WAN) is also indicated with the following LED.   The switching time is actually shorter than 11 seconds of logical control limit time.

3. Justification for SAR testing

The subjected host device is a tablet type PC, and the transmission antennas are very close to the human body. Therefore the applying modular transmitter and the antenna system is classified as a Potable device pursuant to FCC CFR 47 Section 2.1093 or "SAR Evaluation" category pursuant to IC RSS-102e clause 2.5.2.

The WWAN and WLAN modules do not establish the network link connections simultaneously, but switch to the other within 11 seconds of handover time when one is in active.   So each independent SAR testing for WLAN or WWAN module is available for RF exposure evaluation.

The separate SAR test report was measured for the applying modular transmitter (**FCC ID: N7N-MC5725-L, IC: 2417C-MC5275**). Then the applying device has found to comply with the SAR limits.

The SAR testing was performed with the co-located Bluetooth (FCC ID: MCLJ07H081, IC: 2878D-J07H081) in active and transmitting simultaneously.

The SAR test was performed with the following configuration, and the same terms of each configuration are referred in the SAR test report.
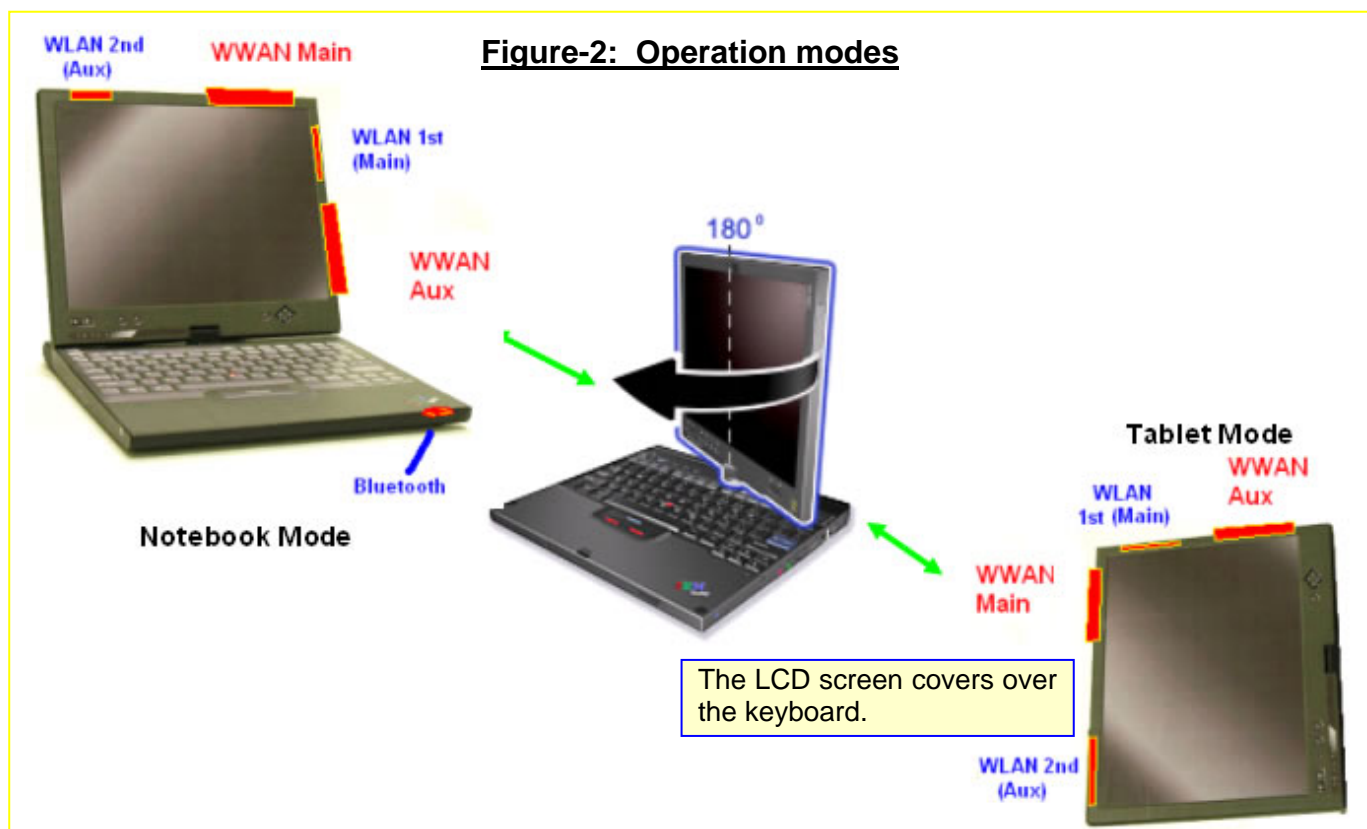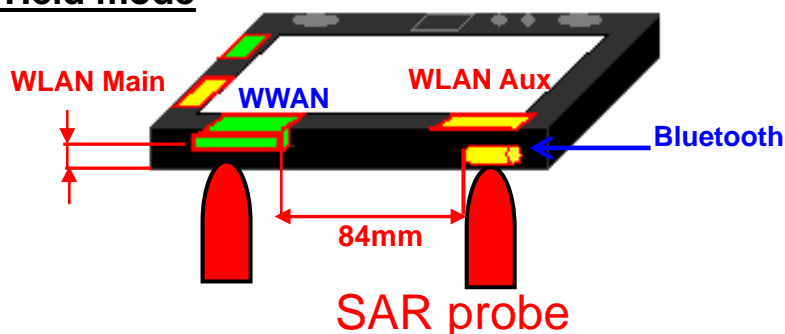

Figure-2: Operation modes

The LCD screen covers over the keyboard.

Figure-3: **Lap Held mode**

Figure-4: **Tablet_PL (Primary Landscape)**

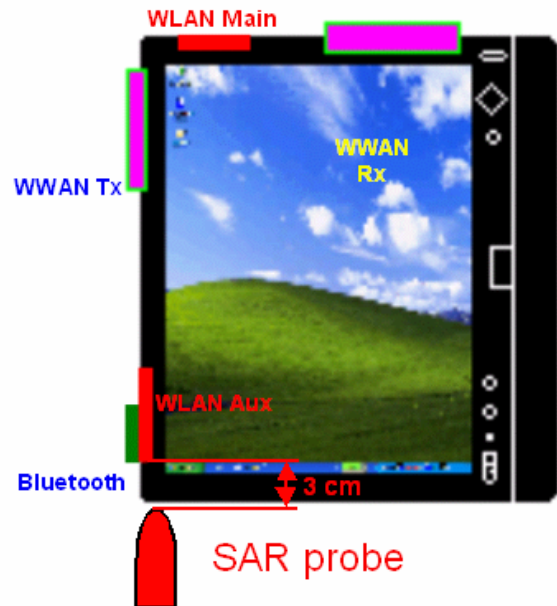### Figure-5: **Tablet_PP (Primary Portrait)**

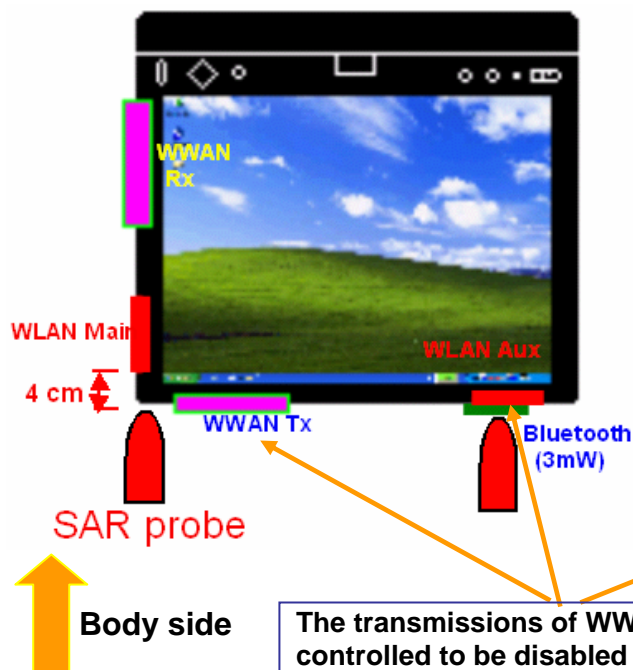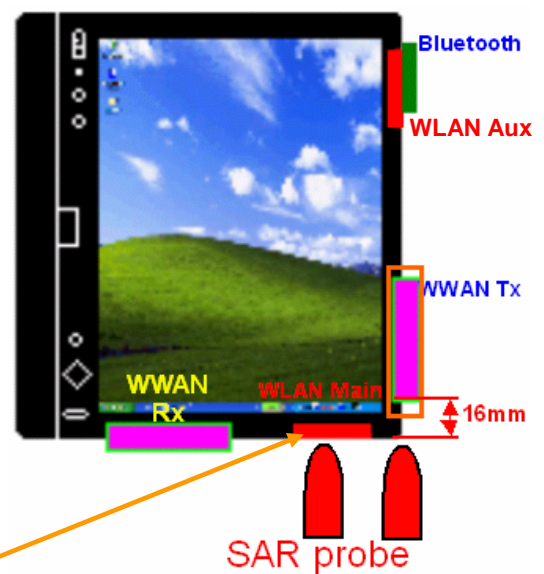### Figure-6: **Tablet_SL (Secondary Landscape)**

Figure-7: **Tablet_SP (Secondary Portrait)**

The transmissions of WWAN or WLAN at those angles are controlled to be disabled or reduced the power. (See next page.)

[Transmission control in "Tablet" operation mode]

- The system recognizes mechanically that it is transformed from **"Notebook mode"** to **"Tablet mode".**

Notebook mode

Tablet mode

- The screen angle of **Tablet mode** is determined by operators with the screen rotation switch shown below, then the system recognizes which screen mode in **PL, PP, SL** or **SP** is selected.

- When the **SL** screen mode was selected, the system performs transmission control according to the kind of each wireless card. When the applying card (FCC ID: N7N-MC5725-L, IC: 2417C-MC5275) was active, the system does not function with **SL** mode for any WWAN module and returns to **PL** model automatically so that operator won't use the **SL** mode.

- When the **SP** screen mode was selected, the system also performs transmission control according to the kind of each wireless card. But, the system does not require any transmission control for the applying WWAN card in **SP** mode since the body contacted WWAN antenna is receiving only.

screen rotation switch