

Nordic 的 SDK 提供兩種測試 RF 方式：

### Radio test

**Radio test** 是對於多國認證，例如 FCC、ETSI 等認證測試及使用頻譜儀測試比較適合。

Rayson 針對 Radio test 提供一個 RF 的測試 FW，透過 UART Command 即可設定 Radio，例如 TX Power、Frequency，TX Modulation Carrier，RX Carrier....等。

Rayson FW Name : [RadioTet-NL15X\\_n290\\_RC\\_25030700.hex](#)

### DTM (Direct Test Mode)

**DTM** 是 Nordic 按照藍牙 SIG 規範所要求資料格式的 RF 測試 FW。

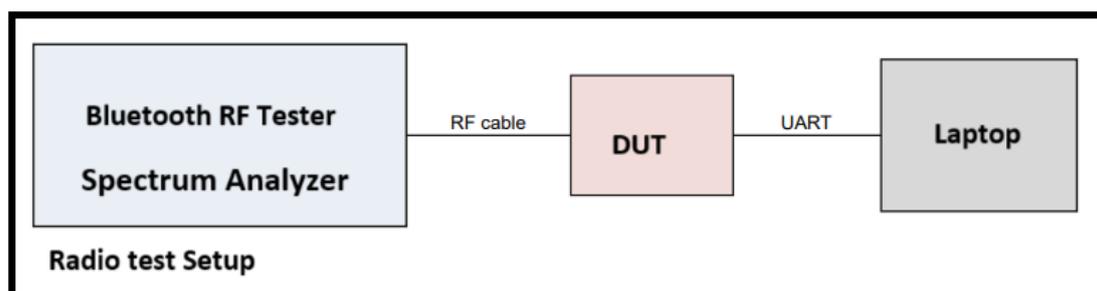
Rayson 已設定好 Baud Rate 和 UART TX/RX pin，燒錄後即可做 RF 測試。

對於藍牙 BQB 認證測試或使用 MT8852B、N4010A 測試較為適合。

Rayson FW Name : [DTM-NL15X\\_n290\\_RC\\_25030500.hex](#)

## 1. Radio test

步驟一. 測試架設



步驟二. Uart setting

P0.00: UART\_TX

P0.01: UART\_RX

P2.09: LED status

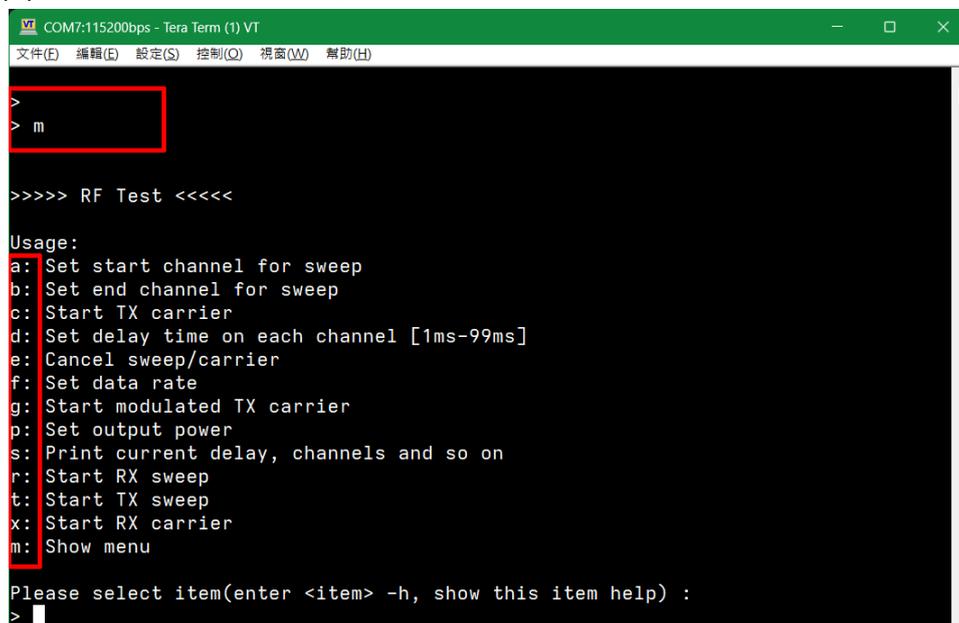
H/W flow ctrl: none

Parity: none

Buadrate: 115,200 bps

### 步驟三. Menu item

- (a) 輸入 `\r` (0x0d)會出現"`>`"符號表示可以下命令了
- (b) 輸入 `m` (0x6d 0x0d)可顯示選單
- (c) 可輸入 `a, b, c, d, e, f, g, p, s, r, t, x`,來設定或執行命令
- (d) 設定會有`<sub cmd>`參數要帶入



```
COM7:115200bps - Tera Term (1) VT
文件(F) 編輯(E) 設定(S) 控制(C) 視窗(W) 幫助(H)
>
> m

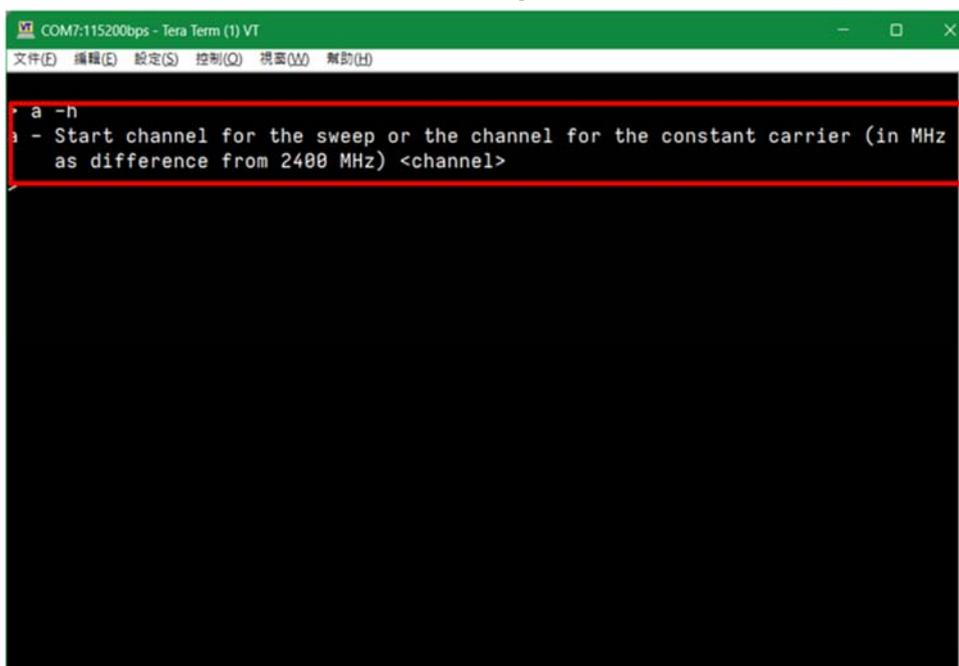
>>>> RF Test <<<<<

Usage:
a: Set start channel for sweep
b: Set end channel for sweep
c: Start TX carrier
d: Set delay time on each channel [1ms-99ms]
e: Cancel sweep/carrier
f: Set data rate
g: Start modulated TX carrier
p: Set output power
s: Print current delay, channels and so on
r: Start RX sweep
t: Start TX sweep
x: Start RX carrier
m: Show menu

Please select item(enter <item> -h, show this item help) :
>
```

### 步驟四. Item help

- (a) 輸入 `Item` 後面加上 `-h`(中間用空格隔開)可顯示該項目的說明  
範例: `a -h`(0x61 0x20 0x2d 0x68 0x0d)  
顯示 **Set start channel for sweep** 的說明



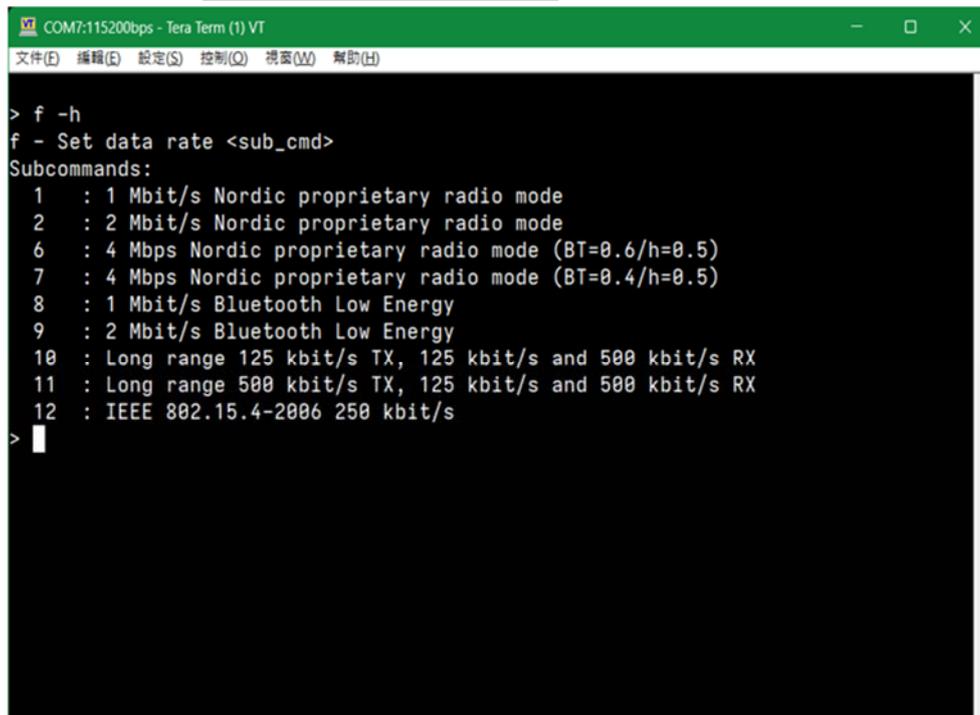
```
COM7:115200bps - Tera Term (1) VT
文件(F) 編輯(E) 設定(S) 控制(C) 視窗(W) 幫助(H)
> a -h
a - Start channel for the sweep or the channel for the constant carrier (in MHz
as difference from 2400 MHz) <channel>
```

- (b) Help 有提示`<sub cmd>`表示該項次輸入時需要帶入參數,

範例: f -h(0x66 0x20 0x2d 0x68 0x0d)

顯示 **Set data rate** 的說明

可輸入參數: 1, 2, 6, 7, 8, 9, 10, 11, 12

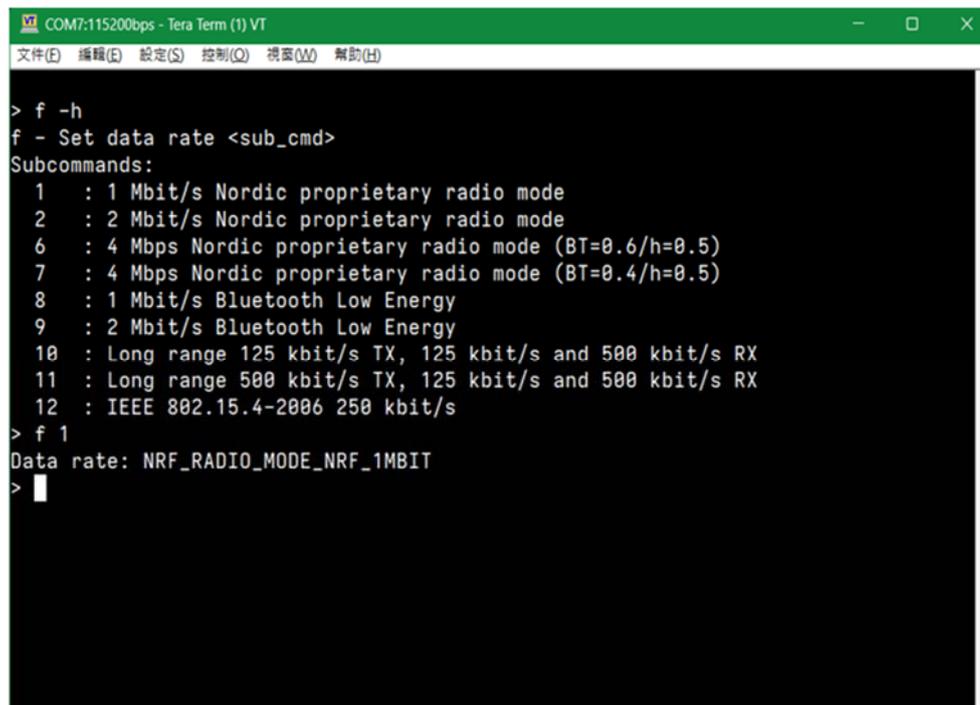


```
COM7:115200bps - Tera Term (1) VT
文件(F) 編輯(E) 設定(S) 控制(O) 視窗(W) 幫助(H)

> f -h
f - Set data rate <sub_cmd>
Subcommands:
 1 : 1 Mbit/s Nordic proprietary radio mode
 2 : 2 Mbit/s Nordic proprietary radio mode
 6 : 4 Mbps Nordic proprietary radio mode (BT=0.6/h=0.5)
 7 : 4 Mbps Nordic proprietary radio mode (BT=0.4/h=0.5)
 8 : 1 Mbit/s Bluetooth Low Energy
 9 : 2 Mbit/s Bluetooth Low Energy
10 : Long range 125 kbit/s TX, 125 kbit/s and 500 kbit/s RX
11 : Long range 500 kbit/s TX, 125 kbit/s and 500 kbit/s RX
12 : IEEE 802.15.4-2006 250 kbit/s
> |
```

(c) 範例: f 1(0x66 0x20 0x31 0d)

**Set Data rate** 為 **1 Mbit/s Nordic proprietary radio mode**,設定成功會顯示提示



```
COM7:115200bps - Tera Term (1) VT
文件(F) 編輯(E) 設定(S) 控制(O) 視窗(W) 幫助(H)

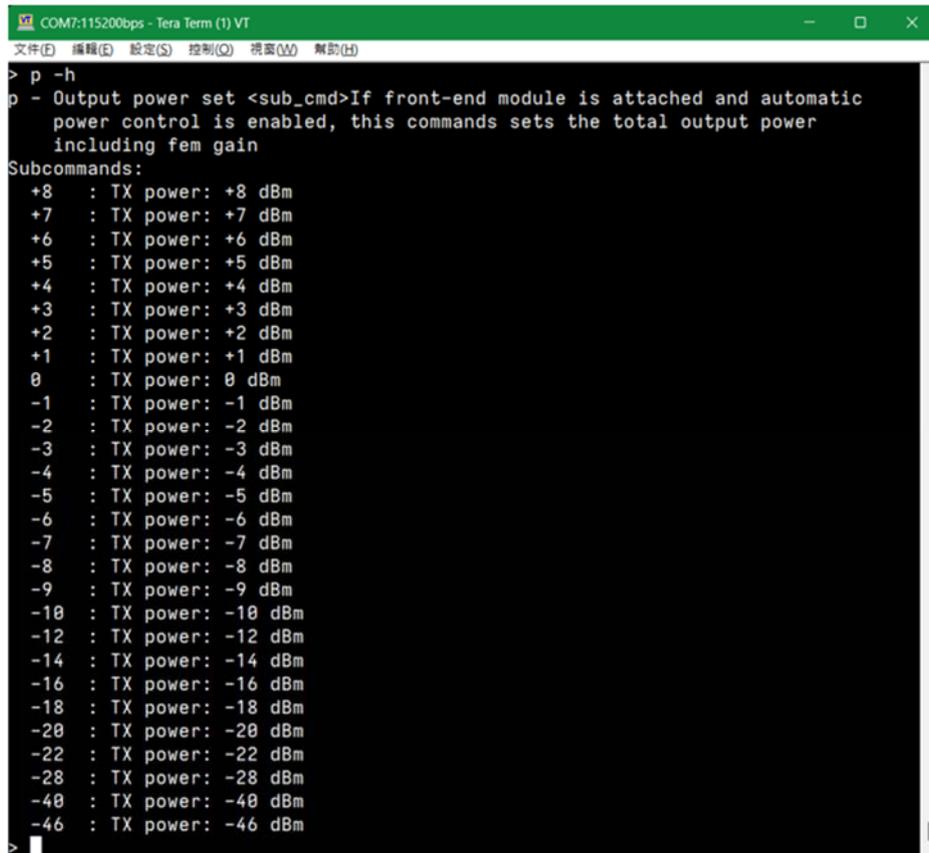
> f -h
f - Set data rate <sub_cmd>
Subcommands:
 1 : 1 Mbit/s Nordic proprietary radio mode
 2 : 2 Mbit/s Nordic proprietary radio mode
 6 : 4 Mbps Nordic proprietary radio mode (BT=0.6/h=0.5)
 7 : 4 Mbps Nordic proprietary radio mode (BT=0.4/h=0.5)
 8 : 1 Mbit/s Bluetooth Low Energy
 9 : 2 Mbit/s Bluetooth Low Energy
10 : Long range 125 kbit/s TX, 125 kbit/s and 500 kbit/s RX
11 : Long range 500 kbit/s TX, 125 kbit/s and 500 kbit/s RX
12 : IEEE 802.15.4-2006 250 kbit/s
> f 1
Data rate: NRF_RADIO_MODE_NRF_1MBIT
> |
```

(d) 範例: p -h

顯示 **output power** 說明,

可輸入參數:

+8, +7, +6, +5, +4, +3, +2, +1, 0, -1, -2, -3, -4, -5, -6, -7, -8,  
-9, -10, -12, -14, -16, -18, -20, -22, -28, -40, -46

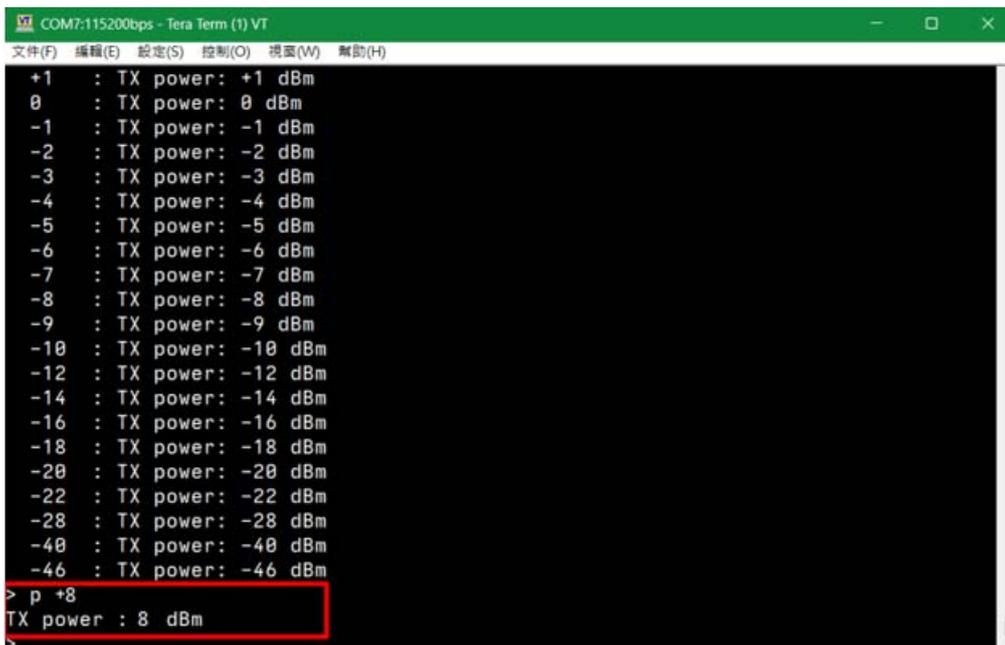


```
COM7:115200bps - Tera Term (1) VT
文件(F) 編輯(E) 設定(S) 控制(O) 視窗(W) 幫助(H)
> p -h
p - Output power set <sub_cmd>If front-end module is attached and automatic
   power control is enabled, this commands sets the total output power
   including fem gain
Subcommands:
+8 : TX power: +8 dBm
+7 : TX power: +7 dBm
+6 : TX power: +6 dBm
+5 : TX power: +5 dBm
+4 : TX power: +4 dBm
+3 : TX power: +3 dBm
+2 : TX power: +2 dBm
+1 : TX power: +1 dBm
0  : TX power: 0 dBm
-1 : TX power: -1 dBm
-2 : TX power: -2 dBm
-3 : TX power: -3 dBm
-4 : TX power: -4 dBm
-5 : TX power: -5 dBm
-6 : TX power: -6 dBm
-7 : TX power: -7 dBm
-8 : TX power: -8 dBm
-9 : TX power: -9 dBm
-10: TX power: -10 dBm
-12: TX power: -12 dBm
-14: TX power: -14 dBm
-16: TX power: -16 dBm
-18: TX power: -18 dBm
-20: TX power: -20 dBm
-22: TX power: -22 dBm
-28: TX power: -28 dBm
-40: TX power: -40 dBm
-46: TX power: -46 dBm
```

(e) 範例: p +8(0x70 0x20 0x2b 0x34 0x0d)

### Set output power +8dbm

設定成功會顯示提示

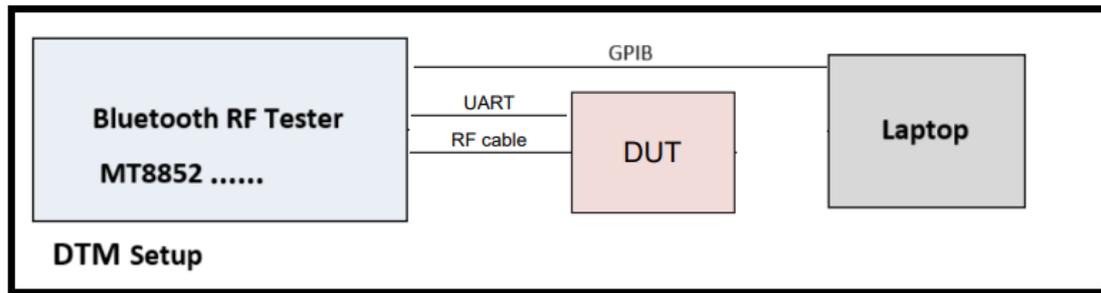


```
COM7:115200bps - Tera Term (1) VT
文件(F) 編輯(E) 設定(S) 控制(O) 視窗(W) 幫助(H)
+1 : TX power: +1 dBm
0  : TX power: 0 dBm
-1 : TX power: -1 dBm
-2 : TX power: -2 dBm
-3 : TX power: -3 dBm
-4 : TX power: -4 dBm
-5 : TX power: -5 dBm
-6 : TX power: -6 dBm
-7 : TX power: -7 dBm
-8 : TX power: -8 dBm
-9 : TX power: -9 dBm
-10: TX power: -10 dBm
-12: TX power: -12 dBm
-14: TX power: -14 dBm
-16: TX power: -16 dBm
-18: TX power: -18 dBm
-20: TX power: -20 dBm
-22: TX power: -22 dBm
-28: TX power: -28 dBm
-40: TX power: -40 dBm
-46: TX power: -46 dBm
> p +8
TX power : 8 dBm
```



## DTM (Direct Test Mode)

步驟一. 測試架設



步驟二. Uart setting

P0.00: UART\_TX  
P0.01: UART\_RX  
P2.09: LED status  
H/W flow ctrl: none  
Parity: none  
Buadrate: 19,200 bps

步驟三. 執行 MT8852 PC tool 測試工具即可進入 Direct Test Mode 進行測試.