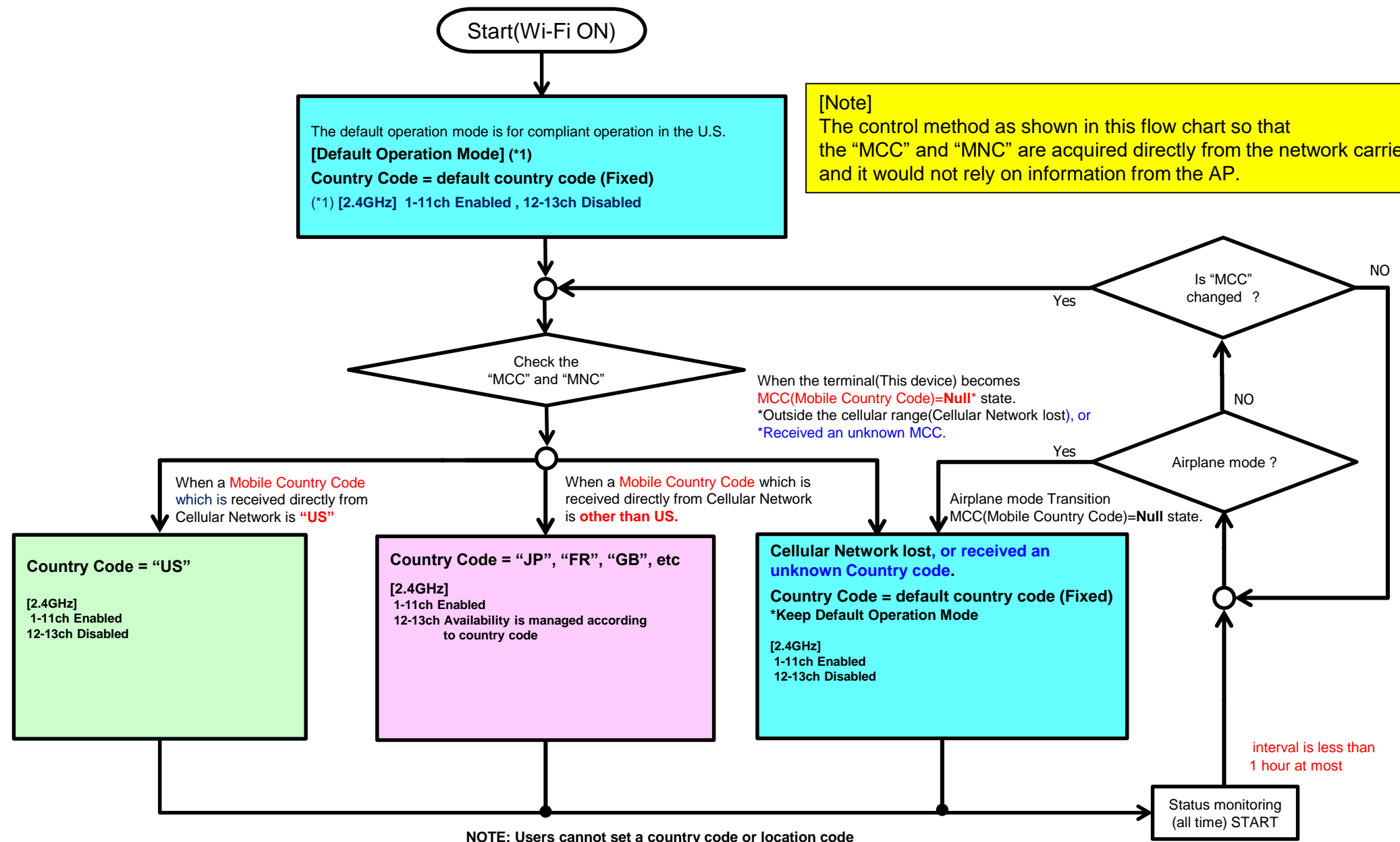# Verification report of control algorithm is accordance with KDB594280

FCC ID : APYHRO00296

Date : 2021 May-10th

◆Channel Control Algorithm Flowchart

Start(Wi-Fi ON)

The default operation mode is for compliant operation in the U.S.
[Default Operation Mode] (*1)
Country Code = default country code (Fixed)
(*1) **[2.4GHz] 1-11ch Enabled , 12-13ch Disabled**

Is "MCC" changed ?   NO

Yes

Check the "MCC" and "MNC"

When the terminal(This device) becomes
MCC(Mobile Country Code)=**Null*** state.
*Outside the cellular range(Cellular Network lost), or
*Received an unknown MCC.

NO

Airplane mode ?

Yes

When a Mobile Country Code which is received directly from Cellular Network is **"US"**

When a Mobile Country Code which is received directly from Cellular Network is **other than US.**

Airplane mode Transition
MCC(Mobile Country Code)=**Null** state.

Country Code = "US"

[2.4GHz]
 1-11ch Enabled
12-13ch Disabled

Country Code = "JP", "FR", "GB", etc

[2.4GHz]
 1-11ch Enabled
 12-13ch Availability is managed according
           to country code

Cellular Network lost, or received an unknown Country code.

Country Code = default country code (Fixed)
*Keep Default Operation Mode

[2.4GHz]
 1-11ch Enabled
 12-13ch Disabled

interval is less than
1 hour at most

Status monitoring
(all time) START

NOTE: Users cannot set a country code or location code

◆Scan Waveform on 2.4GHz(Country Code=default country code, US)
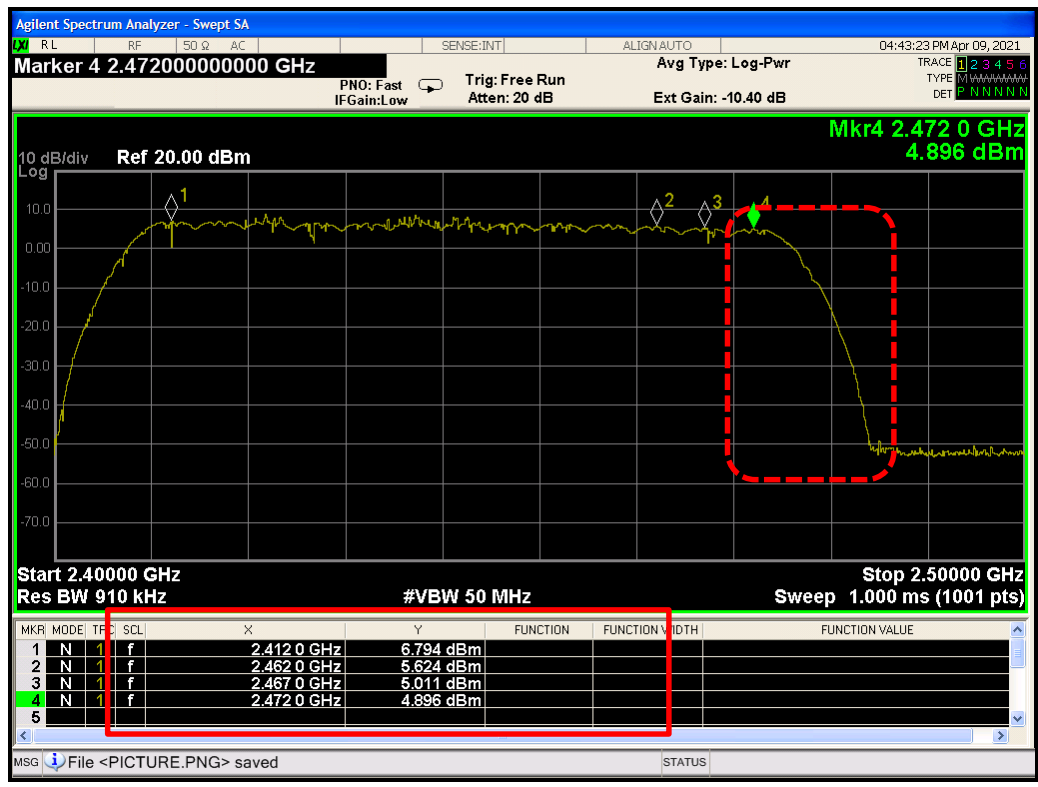
[CC=default country code]
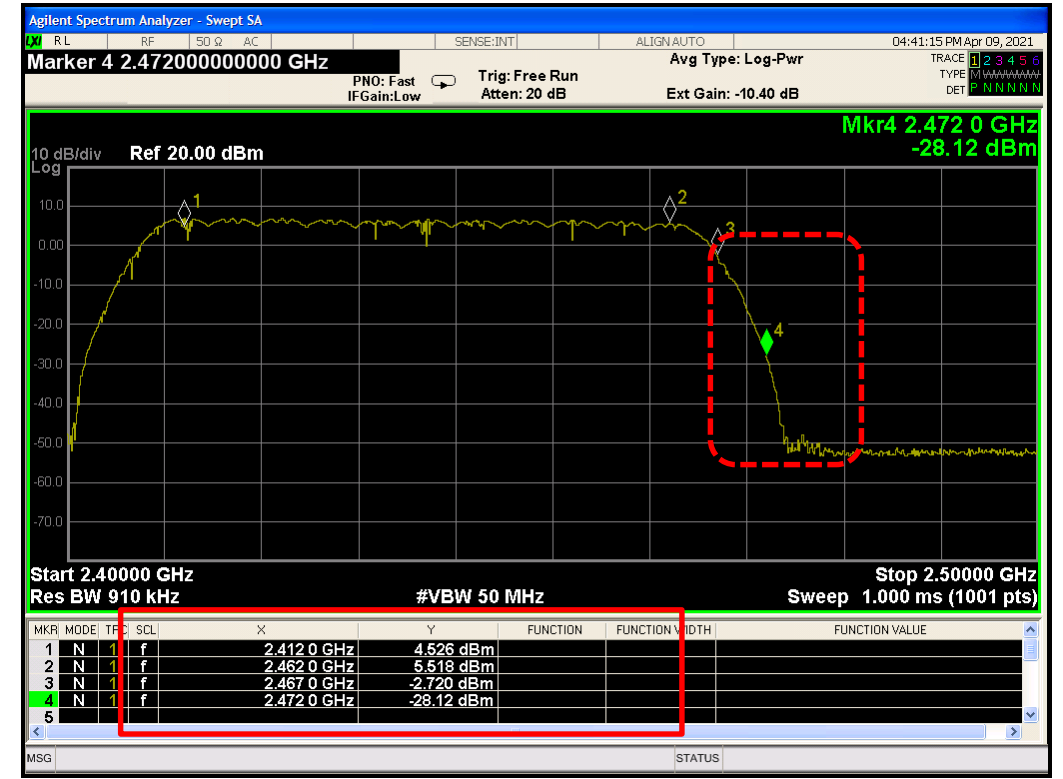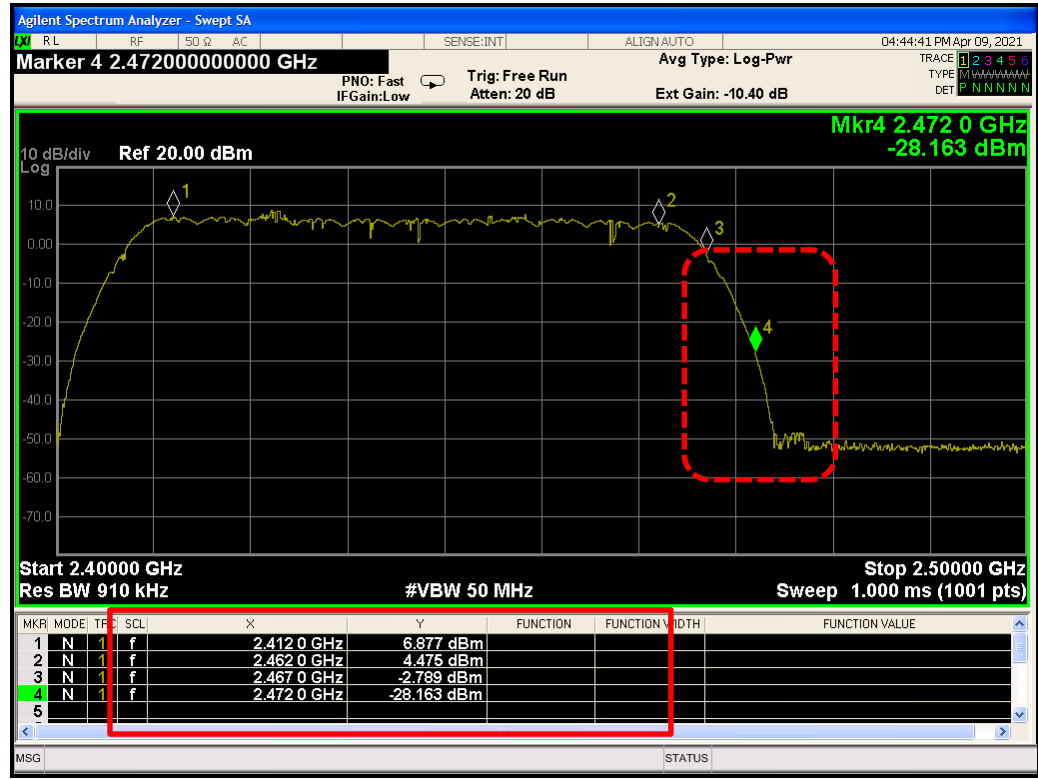
1-11ch   = Enabled
12-13ch = Disabled
⇒ Operation Check Result = OK

[CC="US"]

1-11ch   = Enabled
12-13ch = Disabled
⇒ Operation Check Result = OK

◆Scan Waveform on 2.4GHz(Country Code=JP, FR)
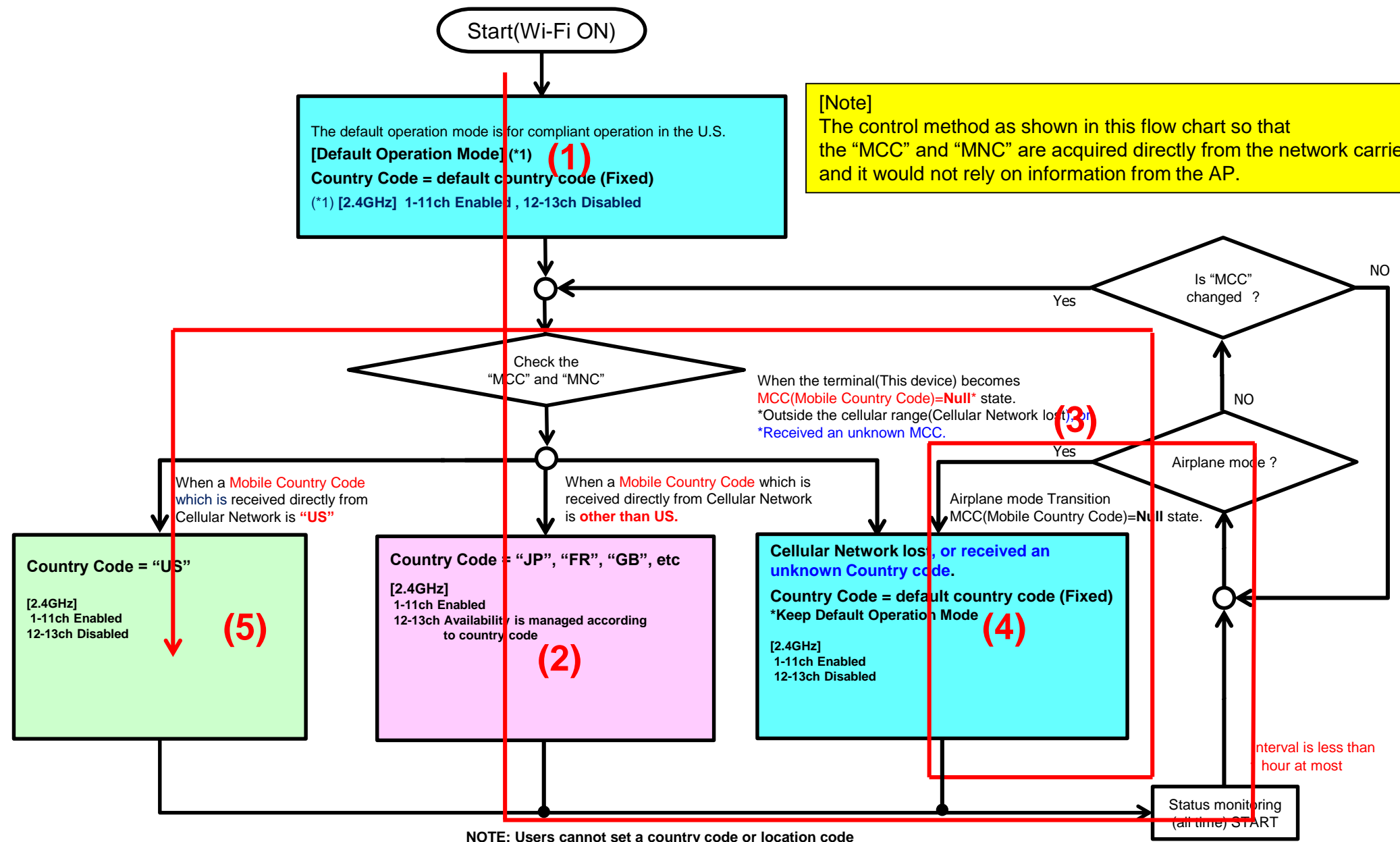
[CC="JP"]

[CC="FR"]
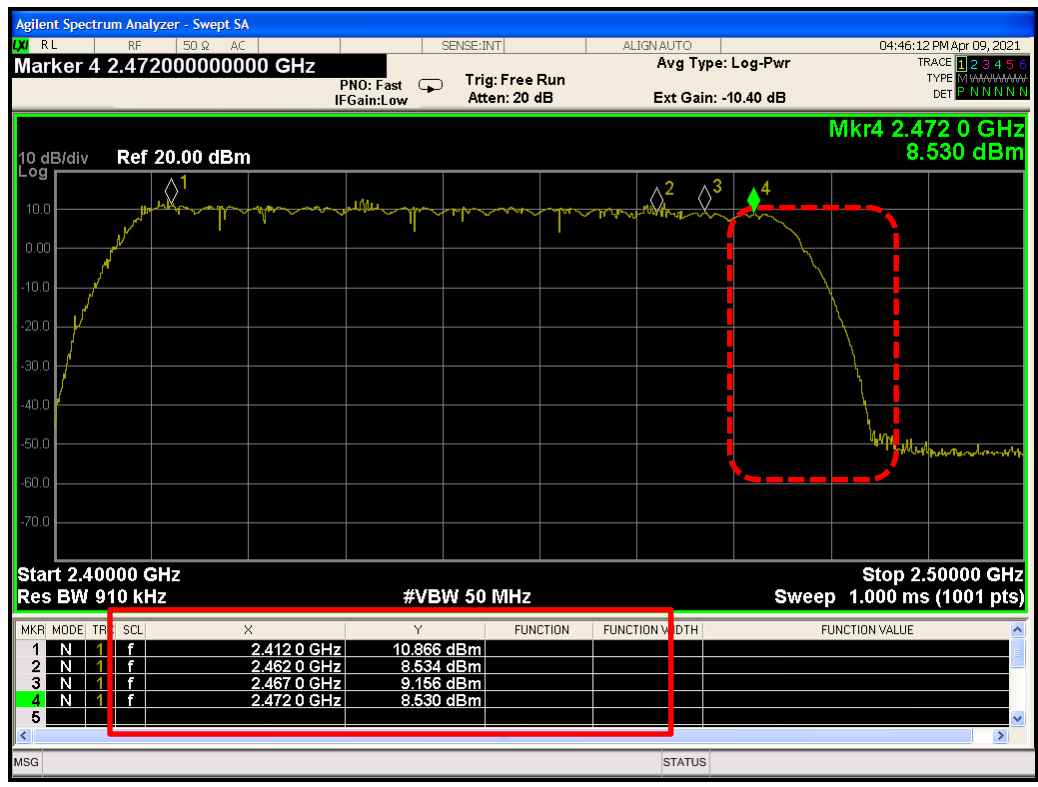
1-13ch = Enabled
⇒ Operation Check Result = OK

1-13ch = Enabled
⇒ Operation Check Result = OK

◆Channel Control Algorithm Flowchart

Start(Wi-Fi ON)

The default operation mode is for compliant operation in the U.S.
[Default Operation Mode] (*1) **(1)**
Country Code = default country code (Fixed)
(*1) **[2.4GHz] 1-11ch Enabled , 12-13ch Disabled**

[Note]
The control method as shown in this flow chart so that
the "MCC" and "MNC" are acquired directly from the network carrier
and it would not rely on information from the AP.

Check the
"MCC" and "MNC"

When the terminal(This device) becomes
MCC(Mobile Country Code)=**Null*** state.
*Outside the cellular range(Cellular Network lost), or
*Received an unknown MCC.

(3)

Is "MCC"
changed ?
Yes   NO

NO

Airplane mode ?
Yes

When a Mobile Country Code
which is received directly from
Cellular Network is **"US"**

When a Mobile Country Code which is
received directly from Cellular Network
is **other than US.**

Airplane mode Transition
MCC(Mobile Country Code)=**Null** state.

Country Code = "US"

[2.4GHz]
 1-11ch Enabled
12-13ch Disabled   **(5)**

Country Code = "JP", "FR", "GB", etc

[2.4GHz]
 1-11ch Enabled
 12-13ch Availability is managed according
      to country code

(2)

**Cellular Network lost, or received an
unknown Country code.**

Country Code = default country code (Fixed)
*Keep Default Operation Mode

[2.4GHz]
 1-11ch Enabled
 12-13ch Disabled   **(4)**

Interval is less than
hour at most

Status monitoring
(all time) START

NOTE: Users cannot set a country code or location code

◆Verification Pattern (Operation check result)

Check Result = OK

result.txt - メモ帳

ファイル(F)　編集(E)　書式(O)　表示(V)　ヘルプ(H)

```
05-10 13:19:17.028 10121 10121 D wpa_supplicant: wpa_driver_nl80211_driver_cmd COUNTRY 03 len = 0, 4096
05-10 13:19:17.040 10121 10121 D wpa_supplicant: nl80211: Regulatory information - country=03 (DFS-FCC)
```

(1) 1; Terminal start-up and Wi-Fi startup,　Start default Country Code (ex."03" : Ch-12,13 are disabled)
　　　　Effective frequency range = 2402-2472MHz(1-11ch=enable,12-13ch=disable)

```
05-10 13:19:26.224  2828  2828 D LocaleTracker-0: updateLocale: countryIso = jp, countryIsoDebugInfo = OperatorNumeric
(44020): MccTable.countryCodeForMcc("440")
05-10 13:19:26.228 10121 10121 D wpa_supplicant: wpa_driver_nl80211_driver_cmd COUNTRY JP len = 0, 4096
05-10 13:19:26.234 10121 10121 D wpa_supplicant: nl80211: Regulatory information - country=JP
```

(2) 2; Get MCC from Cellular network (Japan Operator-B),
　　　Change Country Code(default country code -> "JP") (Ch-12,13 are enabled)
　　　Effective frequency range = 2402-2482MHz(1-13ch=enable)

```
05-10 13:19:29.235  2872  2872 I QCC:EventsManager: Airplane mode is turned ON
05-10 13:19:30.524  2828  2828 D LocaleTracker-0: updateLocale: Change the current country to "", countryIsoDebugInfo =
OperatorNumeric(44020): MccTable.countryCodeForMcc("440"), mCellInfoList = null
```

(3) 3; Airplane mode transition (MCC : "JP"->"NULL")

```
05-10 13:19:33.382 11191 11191 D wpa_supplicant: wpa_driver_nl80211_driver_cmd COUNTRY 03 len = 0, 4096
05-10 13:19:33.571 11191 11191 D wpa_supplicant: nl80211: Regulatory information - country=03 (DFS-FCC)
```

(4) 4; Lost MCC from Cellular network (with Outside of the Cellular network),
　　　Change Country Code ("JP" -> default country code)　(Ch-12,13 are disabled)
　　　Effective frequency range = 2402-2472MHz(1-11ch=enable,12-13ch=disable)

```
05-10 13:19:37.957  2828  2828 D LocaleTracker-0: updateLocale: countryIso = us, countryIsoDebugInfo = OperatorNumeric
(31010): MccTable.countryCodeForMcc("310")
05-10 13:19:37.963 11191 11191 D wpa_supplicant: wpa_driver_nl80211_driver_cmd COUNTRY US len = 0, 4096
05-10 13:19:37.987 11191 11191 D wpa_supplicant: nl80211: Regulatory information - country=US (DFS-FCC)
```

(5) 5; Airplane mode Release and Get MCC from Cellular network (US Operator-A*)　*Base station simulator
　　　Change Country Code (default country code -> "US")(Ch-12,13 are disabled)
　　　Effective frequency range = 2402-2472MHz(1-11ch=enable,12-13ch=disable)