



Zacta

# TEST REPORT

Report number : Z101C-14086

Issue date : October 17, 2014

The device, as described herewith, was tested pursuant to applicable test procedure and complies with the requirements of;

## FCC Part 22 Subpart H

The test results are traceable to the international or national standards.

|                            |                       |
|----------------------------|-----------------------|
| Applicant                  | : KYOCERA Corporation |
| Equipment under test (EUT) | : Mobile Phone        |
| Model number               | : KC-01               |
| FCC ID                     | : JOYKC-01            |

|              |                                                                                                                                                                    |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Date of test | : September 2, October 8, 9, 14, 2014                                                                                                                              |
| Test place   | : TÜV SÜD Zacta Ltd. Yonezawa Testing Center<br>4149-7 Hachimanpara 5-chome<br>Yonezawa-shi Yamagata 992-1128 Japan<br>Phone: +81-238-28-2880 Fax: +81-238-28-2888 |
| Test results | : Complied                                                                                                                                                         |

The results in this report are applicable only to the equipment tested.  
This report shall not be re-produced except in full without the written approval of TÜV SÜD Zacta Ltd.  
This test report must not be used by client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Tested by : Chiaki Kanno Taiki Watanabe  
Chiaki Kanno Taiki Watanabe

Authorized by : Eiji Akiba  
Deputy General Manager of EMC Technical Department

**NVLAP**<sup>®</sup>  
NVLAP LAB CODE 200306-0

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## 1. Summary of Test

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### 1.1 Purpose of test

It is the original test in order to verify conformance to FCC Part 22 Subpart H.

### 1.2 Standards

CFR47 FCC Part 22 Subpart H

#### 1.2.1 Test Methods

ANSI/TIA/EIA-603-C-2004

#### 1.2.2 Deviation from standards

None

### 1.3 List of applied test to the EUT

| Test items<br>Section | Test items                                             | Condition | Result |
|-----------------------|--------------------------------------------------------|-----------|--------|
| 2.1046                | Conducted Output Power                                 | Conducted | PASS   |
| 22.913(a)             | Effective Radiated Power                               | Radiated  | PASS   |
| 22.917(a)<br>2.1049   | Occupied Bandwidth                                     | Conducted | PASS   |
| 22.917(a)<br>2.1051   | Band Edge Spurious and Harmonic at<br>Antenna Terminal | Conducted | PASS   |
| 22.917(a)<br>2.1053   | Radiated emissions and<br>Harmonic Emissions           | Radiated  | PASS   |
| 22.355<br>2.1055      | Frequency Stability                                    | Conducted | PASS   |

#### 1.3.1 Test set up

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### 1.4 Modification to the EUT by laboratory

None

## 2. Equipment Under Test

---

### 2.1 General Description of equipment

EUT is the Mobile Phone.

### 2.2 EUT information

|                                               |   |                                                                                                                                                   |
|-----------------------------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Applicant                                     | : | KYOCERA Corporation<br>Yokohama Office 2-1-1 Kagahara, Tsuzuki-ku Yokohama-shi, Kanagawa,<br>Japan<br>Phone: +81-45-943-6253 Fax: +81-45-943-6314 |
| Equipment under test                          | : | Mobile Phone                                                                                                                                      |
| Trade name                                    | : | Kyocera                                                                                                                                           |
| Model number                                  | : | KC-01                                                                                                                                             |
| Serial number                                 | : | N/A                                                                                                                                               |
| EUT condition                                 | : | Pre-Production                                                                                                                                    |
| Power ratings                                 | : | Battery: DC 3.8V                                                                                                                                  |
| Size                                          | : | (W) 64 × (D) 11.1 × (H) 127.0 mm                                                                                                                  |
| Environment                                   | : | Indoor and Outdoor use                                                                                                                            |
| Terminal limitation                           | : | -20°C to 60°C                                                                                                                                     |
| RF Specification<br>Frequency of<br>Operation | : | Up Link<br>GSM850: 824.2-848.8MHz<br>WCDMA Band V: 826.4-846.6MHz                                                                                 |
|                                               |   | Down Link<br>GSM850: 869.20-893.8MHz<br>WCDMA Band V: 871.4-891.6MHz                                                                              |
| Modulation type                               | : | GSM850: GMSK<br>WCDMA Band V: QPSK, 16QAM                                                                                                         |
| Emission designator                           | : | GSM850: 246KGXW<br>WCDMA Band V: 4M15F9W                                                                                                          |
| Output power                                  | : | GSM850: 1.479W ERP (31.7dBm)<br>WCDMA Band V: 0.081W ERP (19.1dBm)                                                                                |
| Antenna type                                  | : | Internal antenna                                                                                                                                  |
| Antenna gain                                  | : | GSM850: -1.6dBi<br>WCDMA Band V: -1.6dBi                                                                                                          |

### 2.3 Variation of the family model(s)

Not applicable

### 2.4 Description of Test mode

The EUT had been tested under operating condition.  
There are three channels have been tested as following:

| Band         | Channel | Frequency |
|--------------|---------|-----------|
| GSM850       | 128     | 824.2MHz  |
|              | 190     | 836.6MHz  |
|              | 251     | 848.8MHz  |
| WCDMA Band V | 4132    | 826.4MHz  |
|              | 4183    | 836.6MHz  |
|              | 4233    | 846.6MHz  |

The field strength of spurious emissions was measured at each position of all three axis X, Y and Z to compare the level, and the maximum noise.

The worst emission was found in Z axis and the worst case recorded.

### 3. Configuration of equipment

---

#### 3.1 Equipment(s) used

| No. | Equipment    | Company | Model No. | Serial No. | FCC ID / DoC | Comment |
|-----|--------------|---------|-----------|------------|--------------|---------|
| 1   | Mobile Phone | KYOCERA | KC-01     | N/A        | JOYKC-01     | EUT     |

#### 3.2 System configuration

1. Mobile Phone  
(EUT)

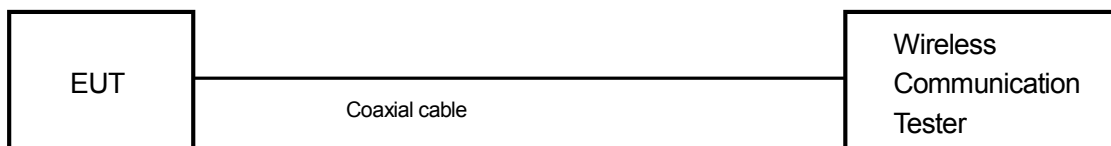
Note1: Numbers assigned to equipment on this diagram correspond to the list in "3.1 Equipment(s) used".

## 4. Conducted Output Power

### 4.1 Measurement procedure [FCC 2.1046]

The conducted output power was measured with a wireless communication tester connected to the antenna terminal. The wireless communication tester parameters were set to produce the maximum power from the EUT.

- Test configuration



### 4.2 Measurement result

Date : Sep. 2, 2014  
 Temperature : 23.0 [°C]  
 Humidity : 54.0 [%]  
 Test place : Shielded room No.4

Test engineer : Chiaki Kanno

| Band    | Channel | Frequency [MHz] | Maximum Burst-Averaged Output Power [dBm] |                     |                |                |                |                 |                |                |                |
|---------|---------|-----------------|-------------------------------------------|---------------------|----------------|----------------|----------------|-----------------|----------------|----------------|----------------|
|         |         |                 | Voice GSM CS 1slot                        | GPRS/EDGE(GMSK)Data |                |                |                | EDGE(8-PSK)Data |                |                |                |
|         |         |                 |                                           | GPRS 1 TX Slot      | GPRS 2 TX Slot | GPRS 3 TX Slot | GPRS 4 TX Slot | EDGE 1 TX Slot  | EDGE 2 TX Slot | EDGE 3 TX Slot | EDGE 4 TX Slot |
| GSM 850 | 128     | 824.2           | 33.37                                     | 33.37               | 32.24          | 30.11          | 28.79          | N/A             | N/A            | N/A            | N/A            |
|         | 190     | 836.6           | 33.32                                     | 33.21               | 32.09          | 30.02          | 28.97          | N/A             | N/A            | N/A            | N/A            |
|         | 251     | 848.8           | 33.27                                     | 33.18               | 32.16          | 30.21          | 28.96          | N/A             | N/A            | N/A            | N/A            |

| 3GPP<br>Release<br>Version | Mode            |     | Sub-Test | Cellular Band [dBm] |              |       | MPR | Bc    | Bd    | Bc/Bd |
|----------------------------|-----------------|-----|----------|---------------------|--------------|-------|-----|-------|-------|-------|
|                            | Channel         |     |          | 4132                | 4183         | 4233  |     |       |       |       |
|                            | Frequency [MHz] |     |          | 826.4               | 836.6        | 846.6 |     |       |       |       |
| 99                         | W-CDMA          | RMC | -        | 24.11               | <b>24.45</b> | 24.23 | -   | -     | -     | -     |
|                            |                 | AMR | -        | 23.93               | 24.37        | 24.17 |     |       |       |       |
| 5                          | HSDPA           |     | 1        | 23.01               | 23.36        | 23.09 | 0   | 2/15  | 15/15 | 2/15  |
| 5                          |                 |     | 2        | 21.62               | 21.96        | 21.86 | 0   | 12/15 | 15/15 | 12/15 |
| 5                          |                 |     | 3        | 20.67               | 21.01        | 20.81 | 0.5 | 15/15 | 8/15  | 15/8  |
| 5                          |                 |     | 4        | 20.56               | 20.89        | 20.71 | 0.5 | 15/15 | 4/15  | 15/4  |
| 6                          | HSUPA           |     | 1        | 22.20               | 22.68        | 22.38 | 0   | 11/15 | 15/15 | 11/15 |
| 6                          |                 |     | 2        | 21.21               | 21.61        | 21.49 | 2   | 6/15  | 15/15 | 6/15  |
| 6                          |                 |     | 3        | 21.70               | 21.79        | 21.65 | 1   | 15/15 | 9/15  | 15/9  |
| 6                          |                 |     | 4        | 21.73               | 22.07        | 22.37 | 2   | 2/15  | 15/15 | 2/15  |
| 6                          |                 |     | 5        | 22.99               | 23.09        | 22.83 | 0   | 15/15 | 15/15 | 15/15 |

## 5. Effective Radiated Power

### 5.1 Measurement procedure [FCC 22.913(a)]

#### <Step 1>

The EUT and support equipment are placed on a 1 meter x 1.5 meter surface, 0.8 meter height FRP table. Radiated emission measurements are performed at 3 meter distance with the broadband antenna (double ridged guide antenna). The antenna is positioned both the horizontal and vertical planes of polarization and height is varied 1 to 4 meters and stopped at height producing the maximum emission. The bandwidth of the spectrum analyzer is set to 1MHz. The turntable is rotated by 360 degrees and stopped at azimuth of producing the maximum emission.

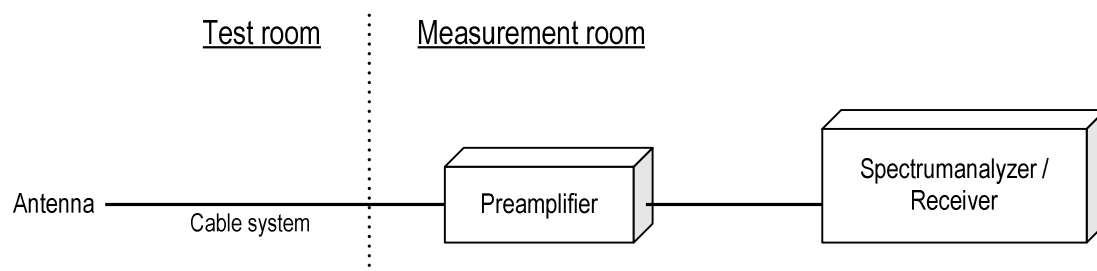
#### <Step 2>

The substitution antenna is replaced by the transmitter antenna (EUT). The frequency of the signal generator is adjusted to the measurement frequency. Level of the signal generator is adjusted to the level that is obtained from step 1, and record the emission level of signal generator.

#### Spectrum analyzer setting

- Detector: Peak (RBW: 3MHz, VBW: 8MHz): GSM
- Detector: Peak (RBW: 5MHz, VBW: 8MHz): WCDMA

#### - Test configuration



### 5.2 Calculation method

Result (ERP) = S.G Reading – Cable loss + Antenna Gain  
Margin = Limit – Result (ERP)

### 5.3 Limit

7 W (38.45dBm)

## 5.4 Test data

Date : Oct. 14, 2014      Test personnel :  
 Temperature : 24.9 [°C]  
 Humidity : 58.4 [%]      Tested by :  
 Test place : 3m Semi-anechoic chamber      Taiki Watanabe

### [GSM850]

| H/V | Frequency [MHz] | S.A Reading [dBm] | S.G Reading [dBm] | Cable loss [dB] | Ant.Gain [dBd] | Result [dBm] | Limit [dBm] | Margin [dB] |
|-----|-----------------|-------------------|-------------------|-----------------|----------------|--------------|-------------|-------------|
| H   | 824.2           | 24.0              | 43.0              | 0.7             | -10.7          | 31.7         | 38.4        | 6.7         |
| H   | 836.6           | 22.9              | 41.5              | 0.7             | -10.7          | 30.1         | 38.4        | 8.3         |
| H   | 848.8           | 22.4              | 41.7              | 0.7             | -10.7          | 30.3         | 38.4        | 8.1         |

### [WCDMA Band V]

| H/V | Frequency [MHz] | S.A Reading [dBm] | S.G Reading [dBm] | Cable loss [dB] | Ant.Gain [dBd] | Result [dBm] | Limit [dBm] | Margin [dB] |
|-----|-----------------|-------------------|-------------------|-----------------|----------------|--------------|-------------|-------------|
| H   | 826.4           | 14.7              | 28.5              | 0.7             | -10.7          | 17.1         | 38.4        | 21.3        |
| H   | 836.6           | 15.2              | 30.2              | 0.7             | -10.7          | 18.8         | 38.4        | 19.6        |
| H   | 846.6           | 15.2              | 30.5              | 0.7             | -10.7          | 19.1         | 38.4        | 19.3        |

## 6. Occupied Bandwidth

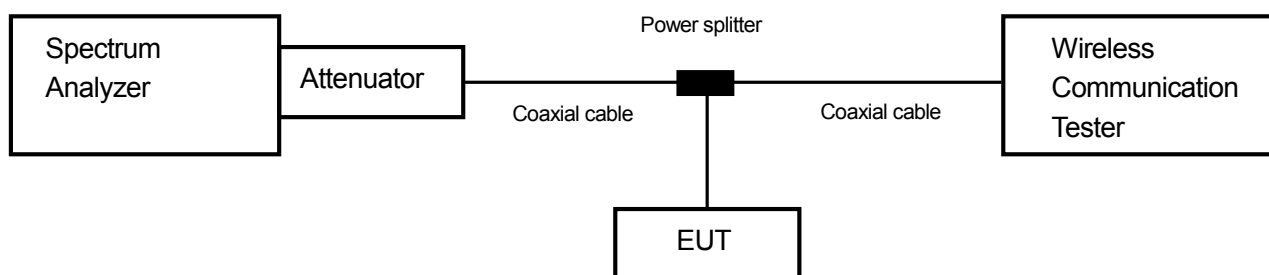
### 6.1 Measurement procedure [FCC 22.917(a), 2.1049]

The Occupied bandwidth was measured with a spectrum analyzer connected to the antenna terminal.

The spectrum analyzer is set to;

- RBW=3kHz, VBW=9.1kHz, Span=1MHz, Sweep=auto, Detector=Peak, Trace mode=Max hold
- RBW=51kHz, VBW=150kHz, Span=10MHz, Sweep=auto, Detector=Peak, Trace mode=Max hold

- Test configuration



### 6.2 Limit

None

### 6.3 Measurement result

Date : Oct. 9, 2014

Temperature : 26.6 [°C]

Humidity : 45.6 [%]

Test place : Shielded room No.4

Test engineer :

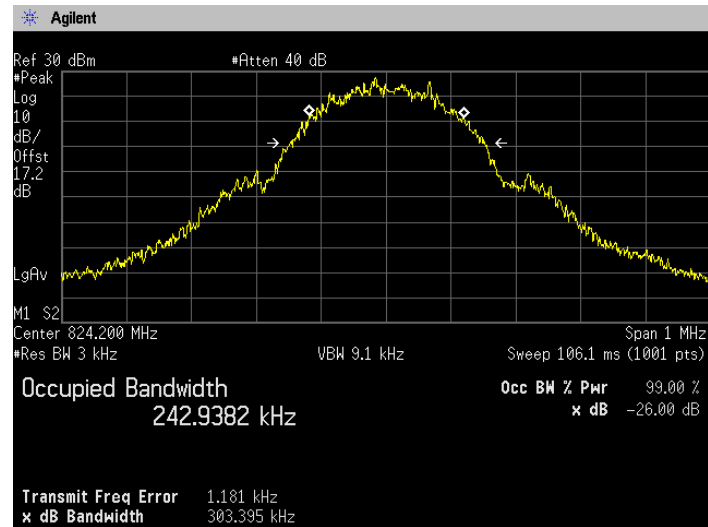
Taiki Watanabe

| Band   | Channel | Frequency (MHz) | Test Result (kHz) |
|--------|---------|-----------------|-------------------|
| GSM850 | 128     | 824.2           | 242.9832          |
|        | 190     | 836.6           | 242.9671          |
|        | 251     | 848.8           | 245.5713          |

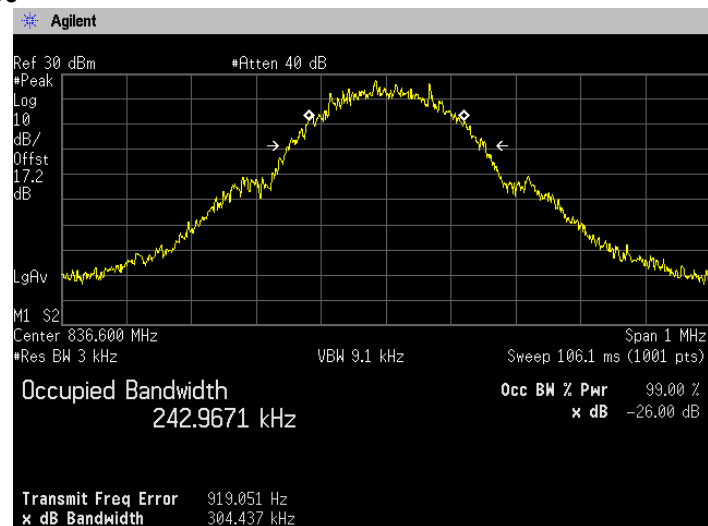
| Band      | Channel | Frequency (MHz) | Test Result (MHz) |
|-----------|---------|-----------------|-------------------|
| W-CDMA850 | 4132    | 826.4           | 4.1544            |
|           | 4183    | 836.6           | 4.1440            |
|           | 4233    | 846.6           | 4.1465            |

## 6.4 Trace data [GSM850]

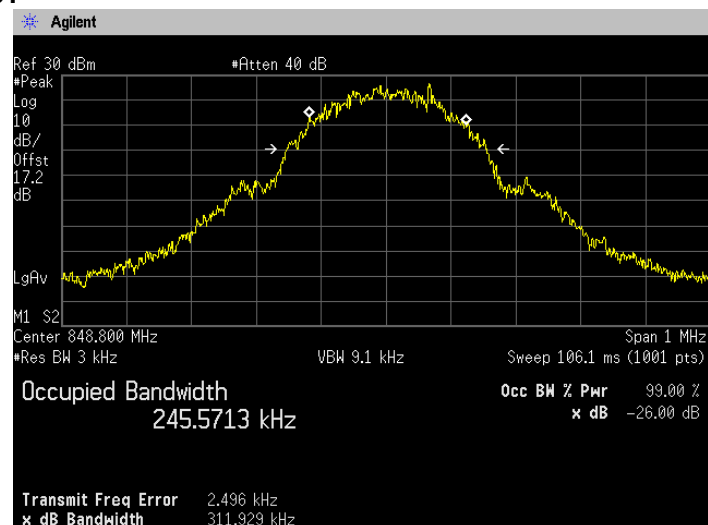
Channel: 128



Channel: 190



Channel: 251





## 7. Band Edge Spurious and Harmonic at Antenna Terminals

### 7.1 Measurement procedure [FCC 22.917(a), 2.1051]

The band edge spurious and harmonic was measured with a spectrum analyzer connected to the antenna terminal.

The spectrum analyzer is set to;

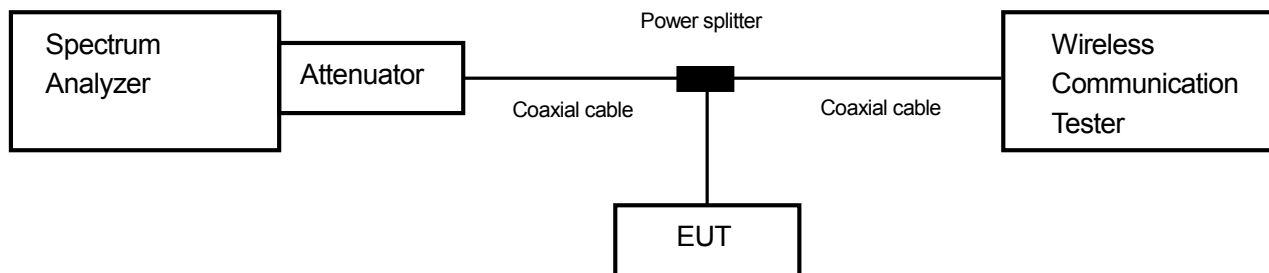
<Band Edge>

- RBW=3kHz, 51kHz, VBW=9.1kHz, 150kHz, Span=1MHz, 10MHz, Sweep=auto, Detector=Average, Trace mode=Max hold

<Spurious Emissions>

- RBW=1MHz, VBW=3MHz, Span=Arbitrary setting, Sweep=auto, Detector=Peak, Trace mode=Max hold

- Test configuration



### 7.2 Limit

-13dBm or less

### 7.3 Measurement result

Date : Oct. 9, 2014

Temperature : 26.6 [°C]

Humidity : 45.6 [%]

Test place : Shielded room No.4

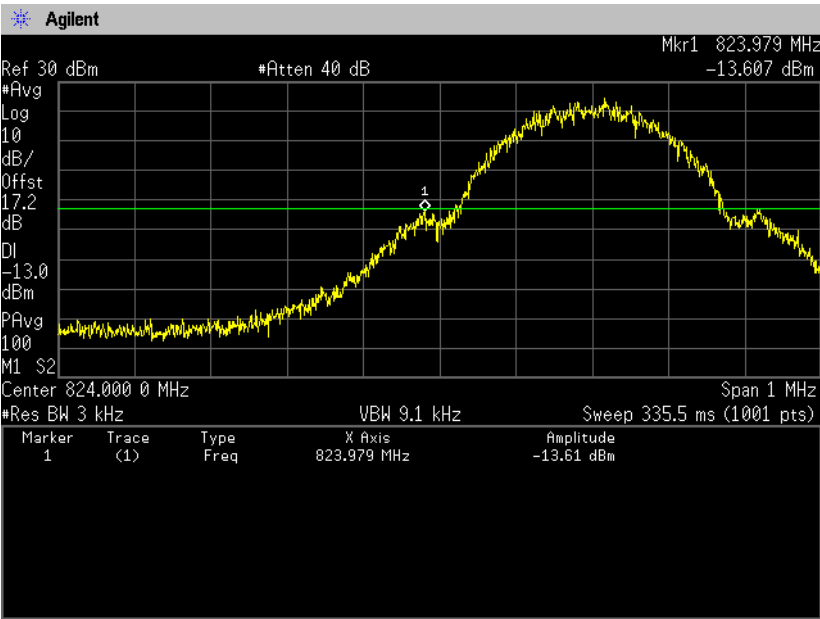
Test engineer :

Taiki Watanabe

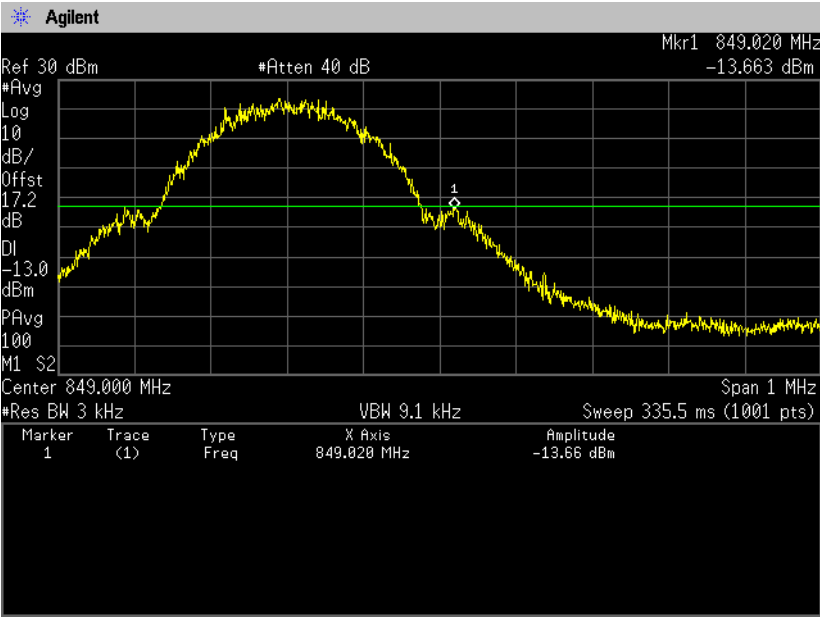
| Band         | Channel | Frequency [MHz] | Limit [dB] | Results            | Results |
|--------------|---------|-----------------|------------|--------------------|---------|
| GSM850       | 128     | 824.2           | -13        | See the trace data | PASS    |
|              | 190     | 836.6           | -13        | See the trace data | PASS    |
|              | 251     | 848.8           | -13        | See the trace data | PASS    |
| WCDMA Band V | 4132    | 826.4           | -13        | See the trace data | PASS    |
|              | 4183    | 836.6           | -13        | See the trace data | PASS    |
|              | 4233    | 846.6           | -13        | See the trace data | PASS    |

7.4 Trace data  
[GSM850]  
(Band Edge)

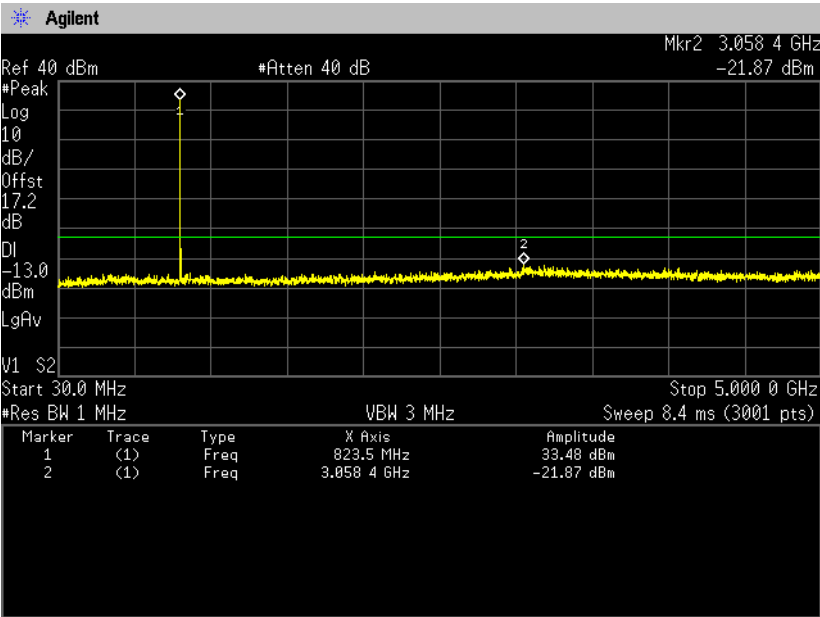
Channel: 128



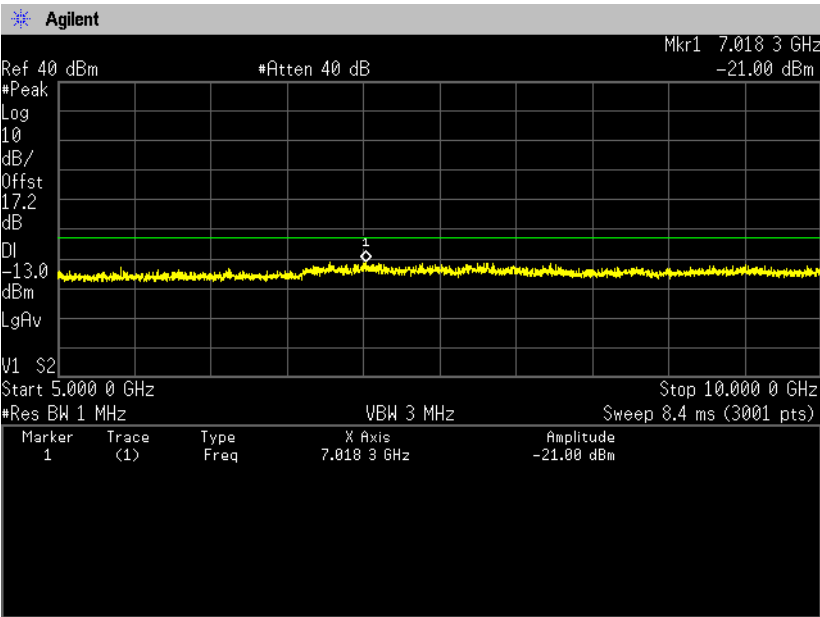
Channel: 251



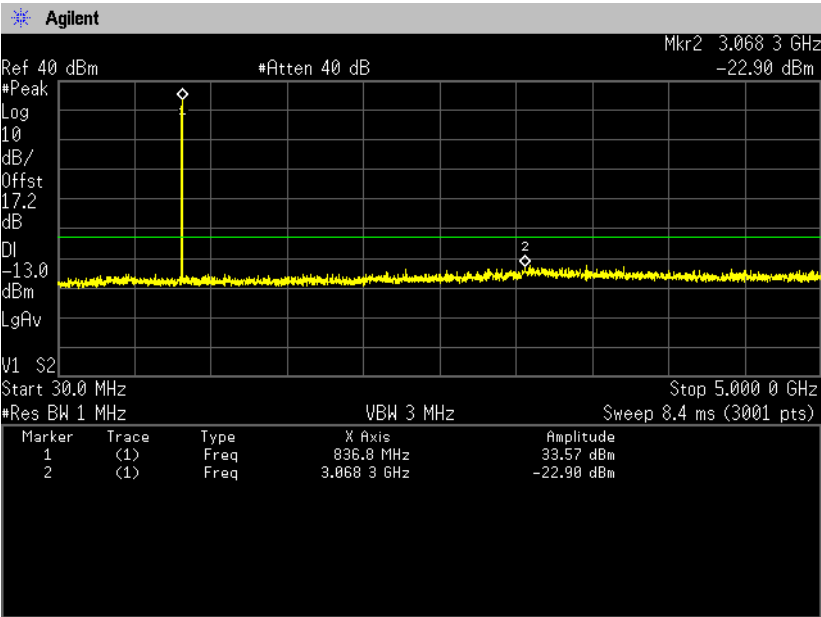
(Spurious Emissions)  
Channel: 128  
30MHz-5GHz



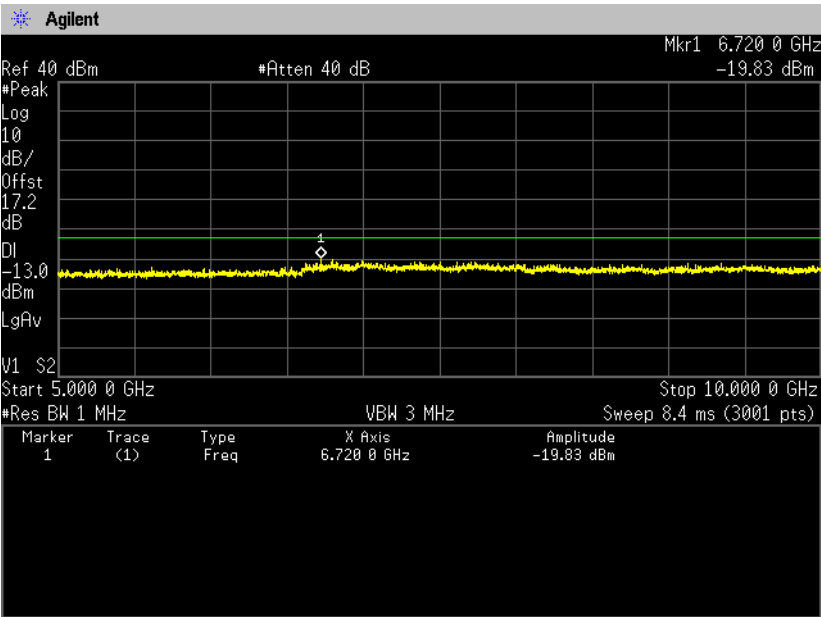
5GHz-10GHz



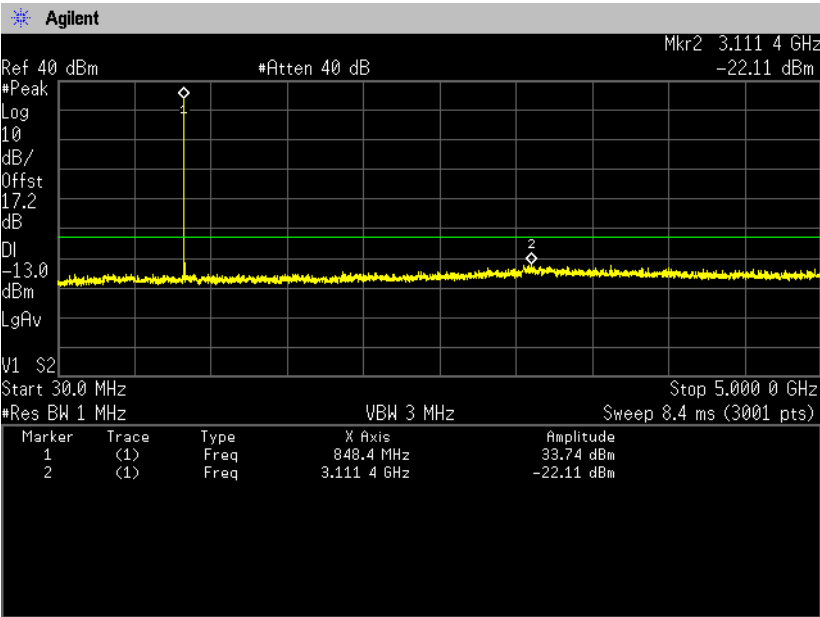
Channel: 190  
30MHz-5GHz



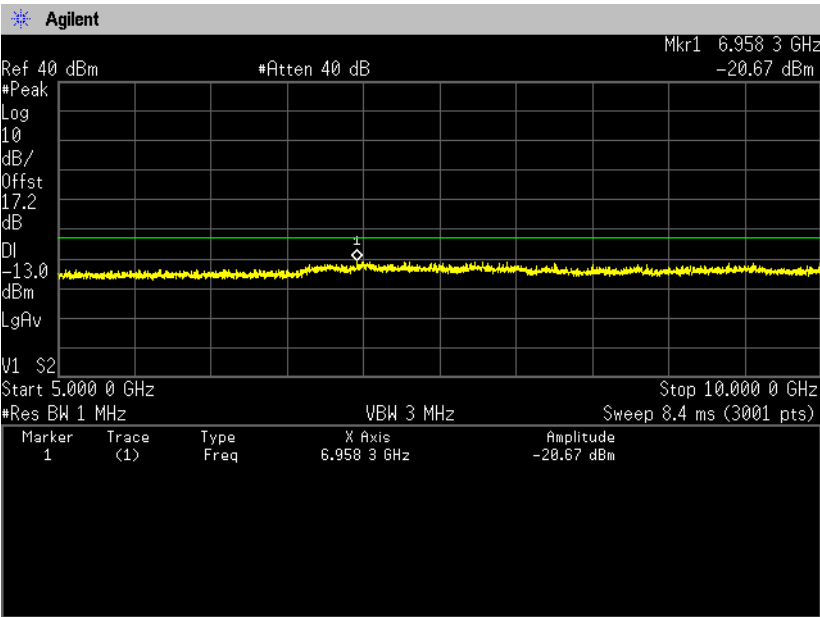
5GHz-10GHz



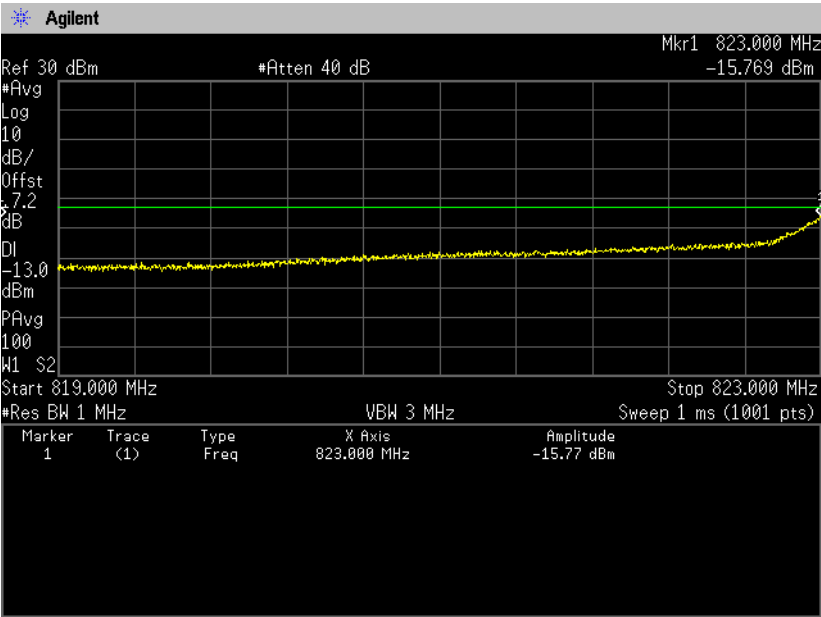
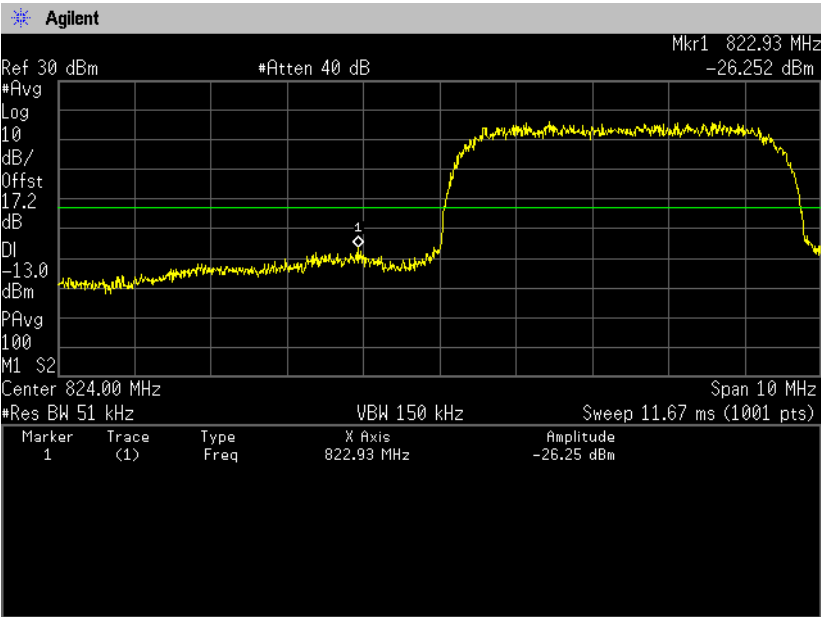
Channel: 251  
30MHz-5GHz



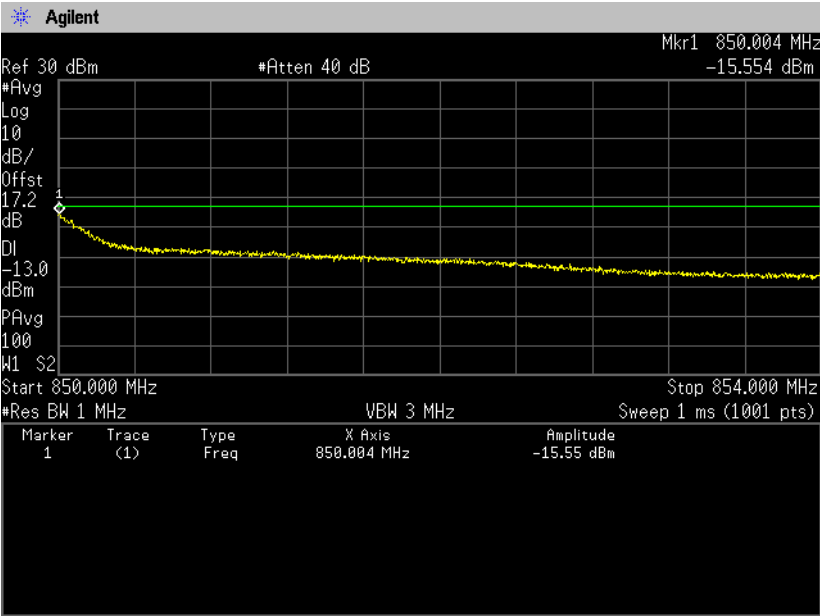
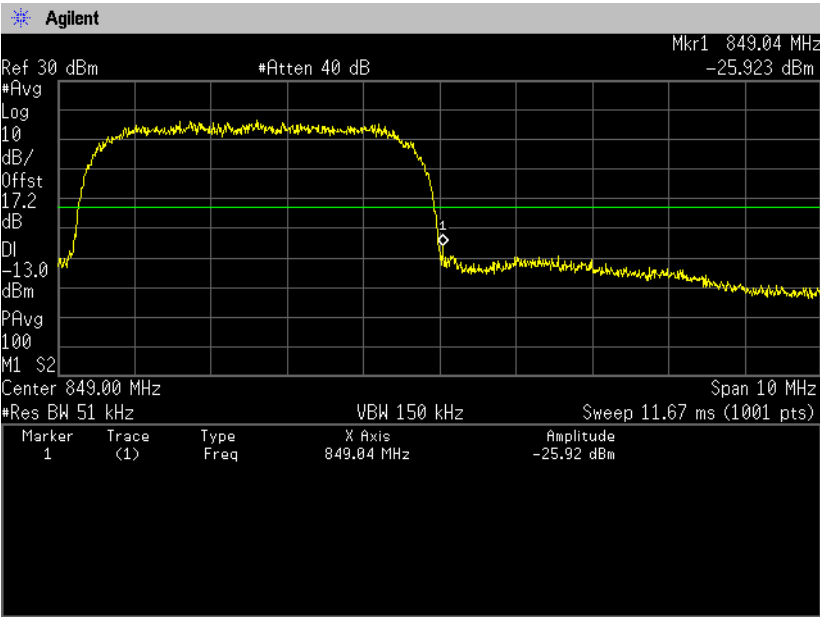
5GHz-10GHz



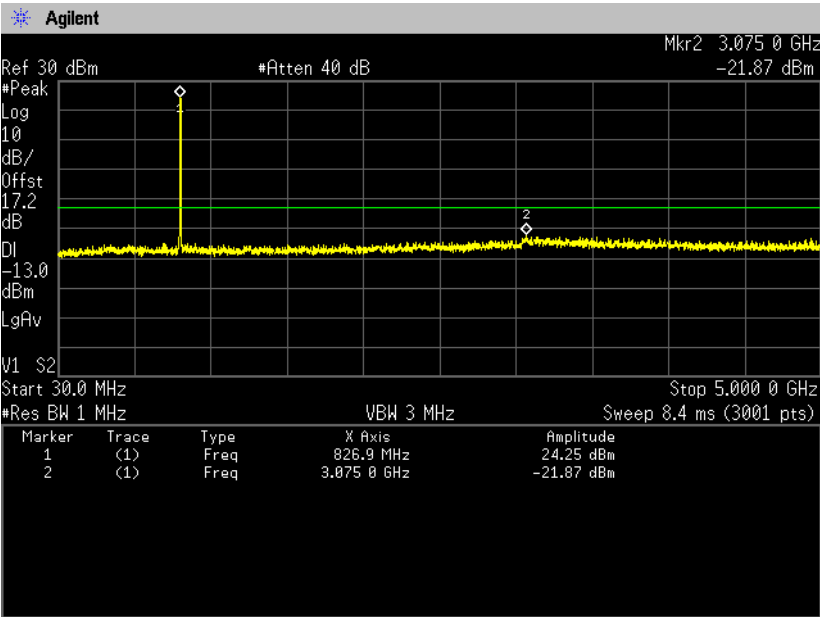
[WCDMA Band V]  
(Band Edge)  
Channel: 4132



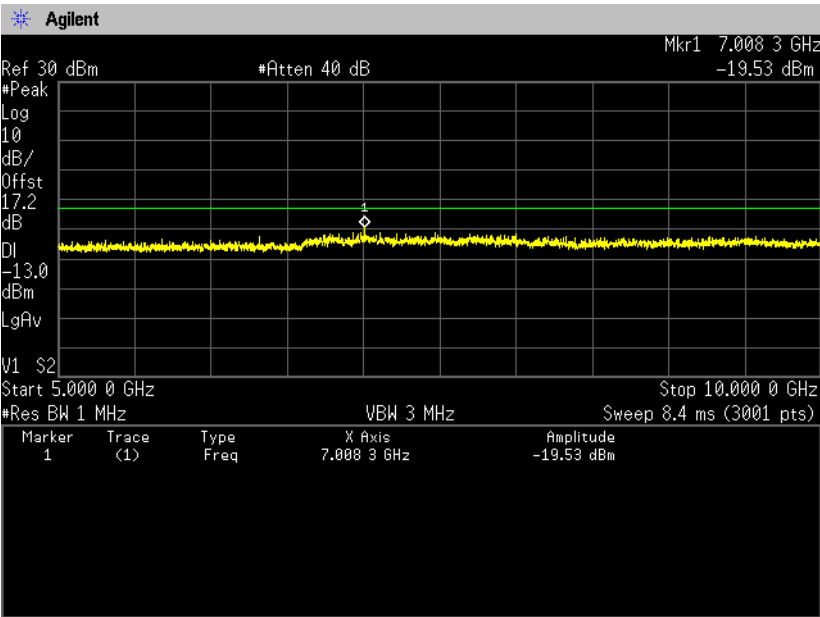
Channel: 4233



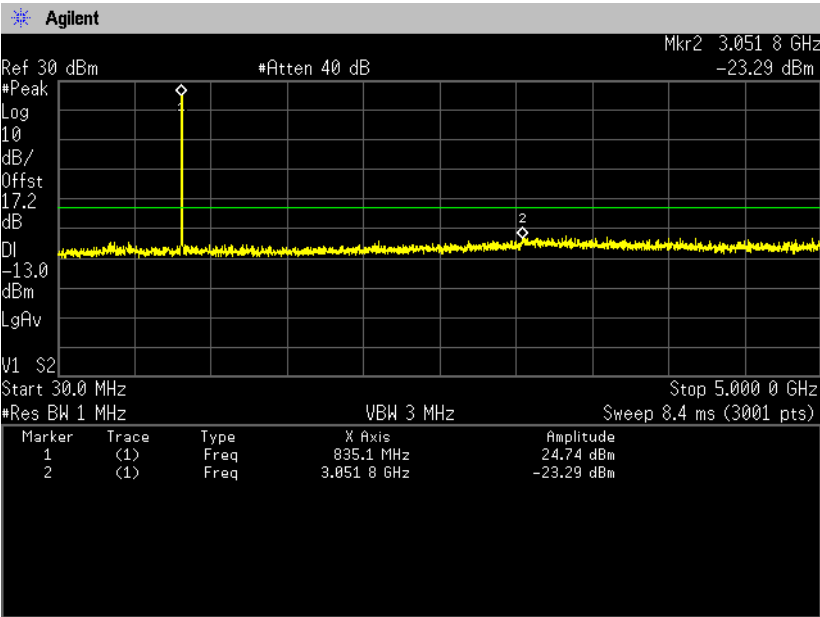
(Spurious Emissions)  
Channel: 4132  
30MHz-5GHz



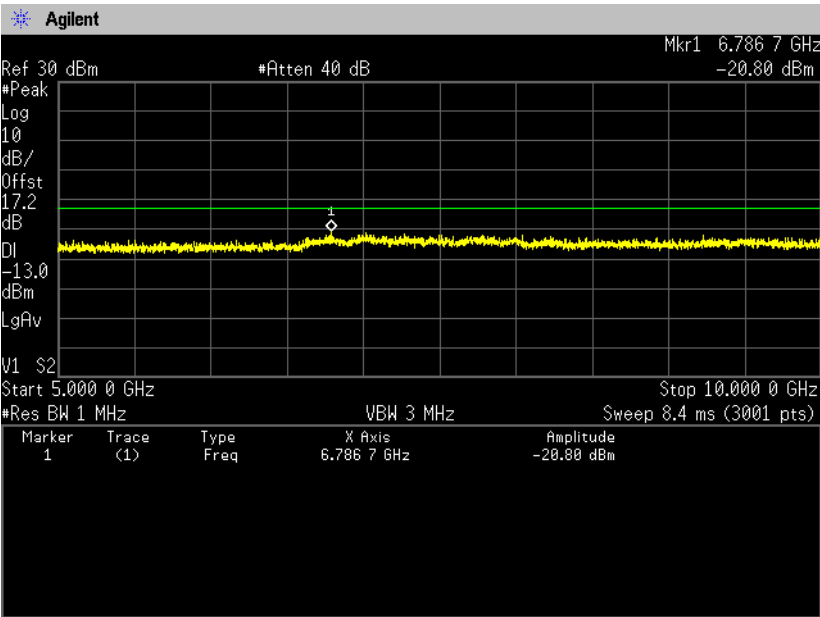
5GHz-10GHz



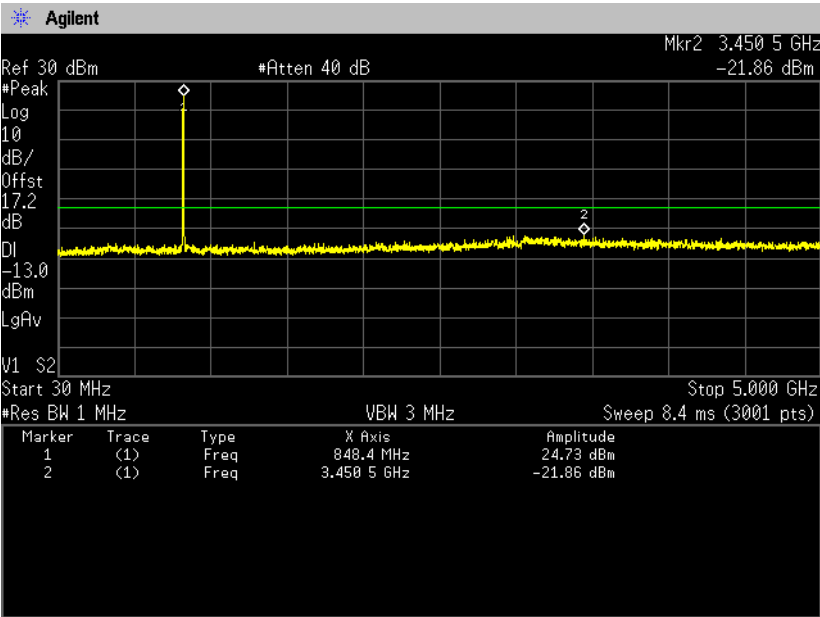
**Channel: 4183**  
**30MHz-5GHz**



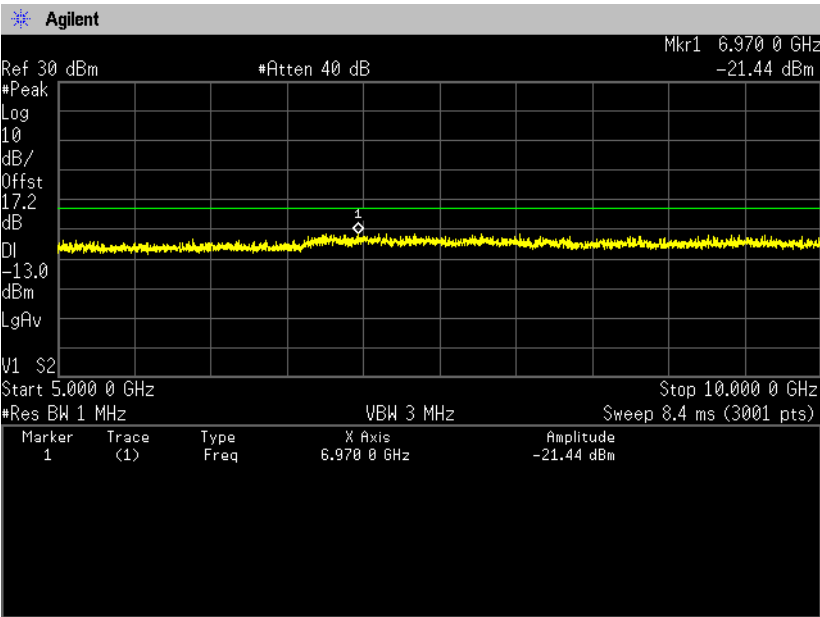
**5GHz-10GHz**



**Channel: 4233**  
**30MHz-5GHz**



**5GHz-10GHz**



## 8. Radiated Emissions and Harmonic Emissions

### 8.1 Measurement procedure [FCC 22.917(a), 2.1053]

#### <Step 1>

The EUT and support equipment are placed on a 1 meter x 1.5 meter surface, 0.8 meter height FRP table. Radiated emission measurements are performed at 3 meter distance with the broadband antenna (Biconical antenna, Log periodic antenna and double ridged guide antenna). The antenna is positioned both the horizontal and vertical planes of polarization and height is varied 1 to 4 meters and stopped at height producing the maximum emission.

The bandwidth of the spectrum analyzer is set to 1MHz. The turntable is rotated by 360 degrees and stopped at azimuth of producing the maximum emission. The frequency is investigated up to 20GHz.

#### <Step 2>

The substitution antenna is replaced by the transmitter antenna (EUT).

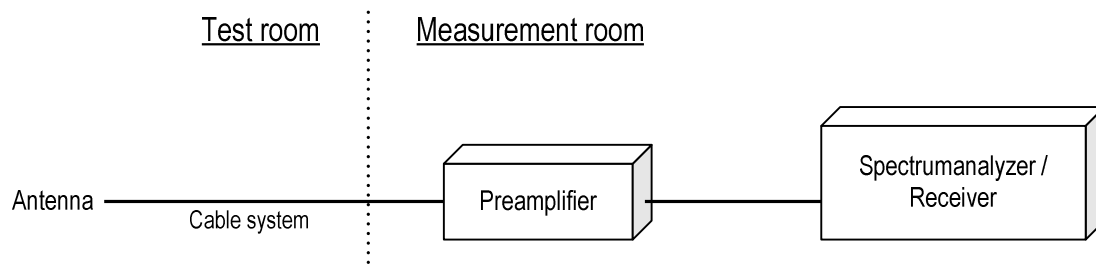
The frequency of the signal generator is adjusted to the measurement frequency.

Level of the signal generator is adjusted to the level that is obtained from step 1, and record the emission level of signal generator.

Spectrum analyzer setting

- Detector: Peak (RBW: 1MHz, VBW: 3MHz)

- Test configuration



### 8.2 Calculation method

Result = S.G Reading – Cable loss + Antenna Gain

Margin = Limit – Result (ERP)

### 8.3 Limit

-13dBm or less

#### 8.4 Test data

Date : Oct. 2, 2014      Test personnel :  
 Temperature : 24.3 [°C]  
 Humidity : 47.4 [%]      Tested by :  
 Test place : 3m Semi-anechoic chamber      Taiki Watanabe

Date : Oct. 14, 2014      Test personnel :  
 Temperature : 24.2 [°C]  
 Humidity : 56.3 [%]      Tested by :  
 Test place : 3m Semi-anechoic chamber      Taiki Watanabe

#### [GSM850] (Channel: 128)

| H/V | Frequency [MHz] | S.A Reading [dBm] | S.G Reading [dBm] | Cable loss [dB] | Ant.Gain [dBd] | Result [dBm] | Limit [dBm] | Margin [dB] |
|-----|-----------------|-------------------|-------------------|-----------------|----------------|--------------|-------------|-------------|
| H   | 1648.3          | -53.5             | -54.1             | 1.0             | 6.8            | -48.3        | -13.0       | 35.3        |
| V   | 1648.4          | -55.4             | -55.3             | 1.0             | 6.8            | -49.5        | -13.0       | 36.5        |
| H   | 2472.6          | -54.4             | -50.0             | 1.3             | 7.5            | -43.8        | -13.0       | 30.8        |
| V   | 2472.6          | -50.2             | -45.2             | 1.3             | 7.5            | -39.0        | -13.0       | 26.0        |

#### (Channel: 190)

| H/V | Frequency [MHz] | S.A Reading [dBm] | S.G Reading [dBm] | Cable loss [dB] | Ant.Gain [dBd] | Result [dBm] | Limit [dBm] | Margin [dB] |
|-----|-----------------|-------------------|-------------------|-----------------|----------------|--------------|-------------|-------------|
| H   | 1673.2          | -53.8             | -53.6             | 1.0             | 6.6            | -48.0        | -13.0       | 35.0        |
| V   | 1673.2          | -56.0             | -55.6             | 1.0             | 6.6            | -50.0        | -13.0       | 37.0        |
| H   | 2509.8          | -50.1             | -45.9             | 1.3             | 7.5            | -39.7        | -13.0       | 26.7        |
| V   | 2509.8          | -52.8             | -43.2             | 1.3             | 7.5            | -37.0        | -13.0       | 24.0        |

#### (Channel: 251)

| H/V | Frequency [MHz] | S.A Reading [dBm] | S.G Reading [dBm] | Cable loss [dB] | Ant.Gain [dBd] | Result [dBm] | Limit [dBm] | Margin [dB] |
|-----|-----------------|-------------------|-------------------|-----------------|----------------|--------------|-------------|-------------|
| H   | 1697.6          | -54.4             | -54.0             | 1.0             | 6.4            | -48.6        | -13.0       | 35.6        |
| V   | 1697.6          | -54.6             | -53.6             | 1.0             | 6.4            | -48.2        | -13.0       | 35.2        |
| H   | 2546.4          | -53.2             | -49.0             | 1.3             | 7.6            | -42.7        | -13.0       | 29.7        |
| V   | 2546.4          | -55.7             | -51.2             | 1.3             | 7.6            | -44.9        | -13.0       | 31.9        |

**[WCDMA Band V]**  
**(Channel: 4132)**

| H/V | Frequency<br>[MHz] | S.A Reading<br>[dBm] | S.G Reading<br>[dBm] | Cable loss<br>[dB] | Ant.Gain<br>[dBd] | Result<br>[dBm] | Limit<br>[dBm] | Margin<br>[dB] |
|-----|--------------------|----------------------|----------------------|--------------------|-------------------|-----------------|----------------|----------------|
| H   | 1654.4             | -57.9                | -58.3                | 1.0                | 6.8               | -52.5           | -13.0          | 39.5           |
| V   | 1651.1             | -58.5                | -58.7                | 1.0                | 6.8               | -52.9           | -13.0          | 39.9           |

**(Channel: 4183)**

| H/V | Frequency<br>[MHz] | S.A Reading<br>[dBm] | S.G Reading<br>[dBm] | Cable loss<br>[dB] | Ant.Gain<br>[dBd] | Result<br>[dBm] | Limit<br>[dBm] | Margin<br>[dB] |
|-----|--------------------|----------------------|----------------------|--------------------|-------------------|-----------------|----------------|----------------|
| H   | 1674.6             | -58.8                | -58.5                | 1.0                | 6.6               | -52.9           | -13.0          | 39.9           |
| V   | 1674.6             | -56.7                | -56.5                | 1.0                | 6.6               | -50.9           | -13.0          | 37.9           |

**(Channel: 4233)**

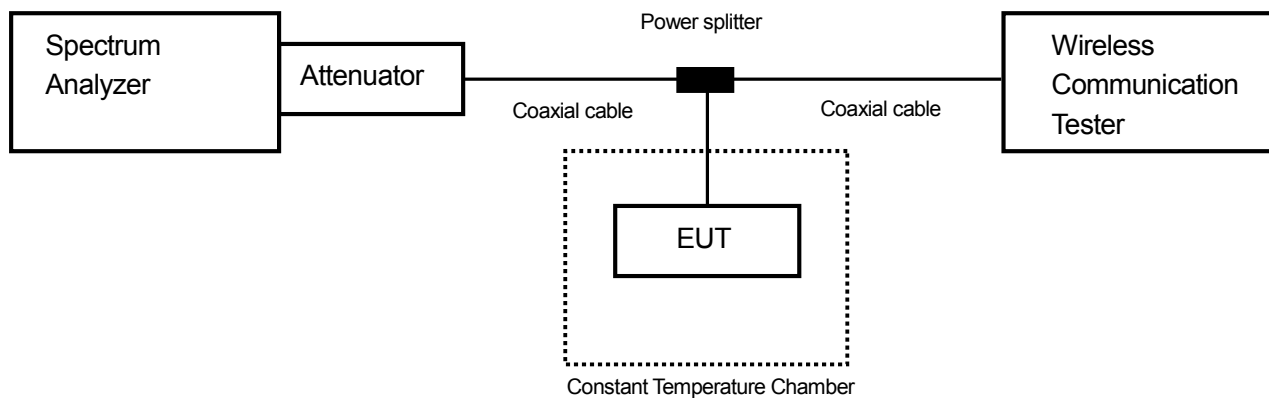
| H/V | Frequency<br>[MHz] | S.A Reading<br>[dBm] | S.G Reading<br>[dBm] | Cable loss<br>[dB] | Ant.Gain<br>[dBd] | Result<br>[dBm] | Limit<br>[dBm] | Margin<br>[dB] |
|-----|--------------------|----------------------|----------------------|--------------------|-------------------|-----------------|----------------|----------------|
| H   | 1691.8             | -56.1                | -55.7                | 1.0                | 6.5               | -50.3           | -13.0          | 37.3           |
| V   | 1694.7             | -57.8                | -57.8                | 1.0                | 6.4               | -52.4           | -13.0          | 39.4           |

## 9. Frequency Stability

### 9.1 Measurement procedure [FCC 22.355, 2.1055]

The EUT was placed inside of a constant temperature chamber as the temperature in the chamber was varied between -30°C and +50°C. The temperature was incremented by 10°C intervals and the unit was allowed to stabilize at each measurement. The frequency drift was measured with the normal Temperature and voltage tolerance and it is presented as the ppm unit.

- Test configuration



### 9.2 Limit

$\pm 2.5\text{ppm}$

### 9.3 Measurement result

Date : Oct. 8, 2014  
 Temperature : 25.9 [°C]  
 Humidity : 33.8 [%]  
 Test place : Shielded room No.4

Test engineer :  
 Taiki Watanabe

#### [GSM850] (Channel: 190)

| Limit: $\pm 0.00025\% = \pm 2.5\text{ppm}$ |                     |                                |                              |                |        |
|--------------------------------------------|---------------------|--------------------------------|------------------------------|----------------|--------|
| Power Supply<br>[V]                        | Temperature<br>[°C] | Measurements Frequency<br>[Hz] | Frequency Tolerance<br>[ppm] | Limit<br>[ppm] | Result |
| 3.80                                       | 25(Ref.)            | 836,600,026                    | 0.00000                      | $\pm 2.5$      | PASS   |
|                                            | 50                  | 836,600,010                    | -0.01945                     | $\pm 2.5$      | PASS   |
|                                            | 40                  | 836,600,015                    | -0.01259                     | $\pm 2.5$      | PASS   |
|                                            | 30                  | 836,600,016                    | -0.01158                     | $\pm 2.5$      | PASS   |
|                                            | 20                  | 836,600,018                    | -0.00996                     | $\pm 2.5$      | PASS   |
|                                            | 10                  | 836,600,029                    | 0.00378                      | $\pm 2.5$      | PASS   |
|                                            | 0                   | 836,600,015                    | -0.01351                     | $\pm 2.5$      | PASS   |
|                                            | -10                 | 836,600,013                    | -0.01513                     | $\pm 2.5$      | PASS   |
|                                            | -20                 | 836,600,016                    | -0.01243                     | $\pm 2.5$      | PASS   |
|                                            | -30                 | 836,600,013                    | -0.01560                     | $\pm 2.5$      | PASS   |
| 3.230                                      | 25                  | 836,600,018                    | -0.00949                     | $\pm 2.5$      | PASS   |
| 4.370                                      | 25                  | 836,600,015                    | -0.01255                     | $\pm 2.5$      | PASS   |

#### [WCDMA Band V] (Channel: 4183)

| Limit: $\pm 0.00025\% = \pm 2.5\text{ppm}$ |                     |                                |                              |                |        |
|--------------------------------------------|---------------------|--------------------------------|------------------------------|----------------|--------|
| Power Supply<br>[V]                        | Temperature<br>[°C] | Measurements Frequency<br>[Hz] | Frequency Tolerance<br>[ppm] | Limit<br>[ppm] | Result |
| 3.80                                       | 25(Ref.)            | 836,599,997                    | 0.00000                      | $\pm 2.5$      | PASS   |
|                                            | 50                  | 836,600,001                    | 0.00482                      | $\pm 2.5$      | PASS   |
|                                            | 40                  | 836,599,997                    | -0.00059                     | $\pm 2.5$      | PASS   |
|                                            | 30                  | 836,599,997                    | -0.00018                     | $\pm 2.5$      | PASS   |
|                                            | 20                  | 836,600,002                    | 0.00510                      | $\pm 2.5$      | PASS   |
|                                            | 10                  | 836,599,997                    | -0.00014                     | $\pm 2.5$      | PASS   |
|                                            | 0                   | 836,599,998                    | 0.00090                      | $\pm 2.5$      | PASS   |
|                                            | -10                 | 836,600,003                    | 0.00684                      | $\pm 2.5$      | PASS   |
|                                            | -20                 | 836,599,998                    | 0.00010                      | $\pm 2.5$      | PASS   |
|                                            | -30                 | 836,599,995                    | -0.00247                     | $\pm 2.5$      | PASS   |
| 3.230                                      | 25                  | 836,599,997                    | -0.00042                     | $\pm 2.5$      | PASS   |
| 4.370                                      | 25                  | 836,600,002                    | 0.00519                      | $\pm 2.5$      | PASS   |

Calculation;

$$\text{Frequency Tolerance (ppm)} = \frac{\text{Measurements Frequency (Hz)} - \text{Reference Frequency (Hz)}}{\text{Reference Frequency (Hz)}} \times 1000000$$

## 10. Uncertainty of measurement

Expanded uncertainties stated are calculated with a coverage Factor  $k=2$ .

Please note that these results are not taken into account when determining compliance or non-compliance with test result.

| Test item                           | Measurement uncertainty |
|-------------------------------------|-------------------------|
| Conducted emission at mains port    | $\pm 3.0\text{dB}$      |
| Radiated emission (9kHz – 30MHz)    | $\pm 4.4\text{dB}$      |
| Radiated emission (30MHz – 1000MHz) | $\pm 4.5\text{dB}$      |
| Radiated emission (1000MHz – 26GHz) | $\pm 3.9\text{dB}$      |

## 11. Laboratory description

### 1. Location:

TÜV SÜD Zacta Ltd. Yonezawa Testing Center  
 4149-7 Hachimanpara 5-chome Yonezawa-shi Yamagata 992-1128 Japan  
 Phone: +81-238-28-2880 Fax: +81-238-28-2888

### 2. Facility filing information:

1) NVLAP accreditation: NVLAP Lab. code: 200306-0

2) VLAC accreditation: Lab. code: VLAC-013

| Site name                      | Radiated emission | Conducted emission for mains port | Conducted emission for telecom port | Radiated emission (CMAD) | Expiry Date  |
|--------------------------------|-------------------|-----------------------------------|-------------------------------------|--------------------------|--------------|
| 3m Semi-anechoic chamber       | VLAC-013          | VLAC-013                          | VLAC-013                            | -                        | Jul. 3, 2015 |
| 10m Semi-anechoic chamber No.1 |                   |                                   |                                     | VLAC-013                 |              |
| 10m Semi-anechoic chamber No.2 |                   |                                   |                                     | VLAC-013                 |              |
| Shielded room No.1             | -                 | VLAC-013                          | -                                   | -                        |              |

3) FCC filing:

| Site name                      | Registration Number | Expiry Date   |
|--------------------------------|---------------------|---------------|
| Site 3                         | 91065               | Oct.31, 2014  |
| 3m Semi-anechoic chamber       | 540072              | Feb. 20, 2017 |
| 10m Semi-anechoic chamber No.1 |                     |               |
| 10m Semi-anechoic chamber No.2 |                     |               |
| Shielded room No.1             |                     |               |

4) Industry Canada Oats site filing:

| Site name                      | Sites on file: Oats 3m/10m | Expiry Date   |
|--------------------------------|----------------------------|---------------|
| Site 3                         | 4224A-3                    | Jan. 23, 2015 |
| 3m Semi-anechoic chamber       | 4224A-4                    |               |
| 10m Semi-anechoic chamber No.1 | 4224A-5                    |               |
| 10m Semi-anechoic chamber No.2 | 4224A-6                    | Jan. 15, 2017 |

5) VCCI site filing:

| Site name                      | Radiated emission | Conducted emission for mains port | Conducted emission for telecom port | Expiry Date                                         |
|--------------------------------|-------------------|-----------------------------------|-------------------------------------|-----------------------------------------------------|
| Site 3                         | R-138             | C-134                             | T-1222                              | Nov. 16, 2014<br>Nov. 28, 2014*<br>(*:Telecom port) |
| 3m Semi-anechoic chamber       | A-0166            | A-0166                            | A-0166                              | Jul. 3, 2015                                        |
| 10m Semi-anechoic chamber No.1 |                   |                                   |                                     |                                                     |
| 10m Semi-anechoic chamber No.2 |                   |                                   |                                     |                                                     |
| Shielded room No.1             | -                 | A-0166                            |                                     |                                                     |

6) TÜV SÜD PS authorization:

Authorized as an EMC test laboratory

7) TÜV Rheinland authorization:

Authorized as an EMC test laboratory

## Appendix A. Test equipment

### Antenna port conducted test

| Equipment                                  | Company              | Model No.        | Serial No. | Cal. due      | Cal. date     |
|--------------------------------------------|----------------------|------------------|------------|---------------|---------------|
| Spectrum analyzer                          | Agilent Technologies | E4440A           | US44302655 | May 31, 2015  | May 30, 2014  |
| Microwave cable                            | RS                   | YH_13S5          | N/A (S403) | May 31, 2015  | May 10, 2014  |
| Attenuator                                 | Weinschel            | 56-10            | J4180      | Nov. 30, 2014 | Nov. 12, 2013 |
| Microwave cable                            | SUHNER               | SUCOFLEX104/1.5m | 199121/4   | Oct. 31, 2014 | Oct. 7, 2013  |
| Microwave cable                            | SUHNER               | SUCOFLEX104/1.5m | 322086/4   | Jul. 31, 2015 | Jul. 30, 2014 |
| Power splitter                             | ANRITSU              | K240B            | 020205     | Mar. 31, 2015 | Mar. 17, 2014 |
| Wideband radio frequency tester            | ROHDE&SCHWARZ        | CMW500           | 116338     | Mar. 31, 2015 | Mar. 7, 2014  |
| Operation type temperature controlled bath | Espec                | PL1KP            | 14007261   | Dec. 31, 2014 | Dec. 27, 2013 |

### Radiated emission

| Equipment                       | Company              | Model No.        | Serial No.       | Cal. Due      | Cal. Date     |
|---------------------------------|----------------------|------------------|------------------|---------------|---------------|
| EMI Receiver                    | ROHDE&SCHWARZ        | ECSI             | 100451           | Nov. 30, 2014 | Nov. 16, 2013 |
| Preamplifier                    | ANRITSU              | MH648A           | M96057           | Jun. 30, 2015 | Jun. 12, 2014 |
| Biconical antenna               | Schwarzbeck          | VHA9103/BBA9106  | 2125             | May 31, 2015  | May 7, 2014   |
| Log periodic antenna            | Schwarzbeck          | UHALP9108A       | 0560             | May 31, 2015  | May 7, 2014   |
| Attenuator                      | TME                  | CFA-01NPJ-6      | N/A (S275)       | Jun. 30, 2015 | Jun. 9, 2014  |
| Attenuator                      | TME                  | CFA-01NPJ-3      | N/A (S272)       | Jun. 30, 2015 | Jun. 9, 2014  |
| Spectrum analyzer               | Agilent Technologies | E4440A           | US44302655       | May 31, 2015  | May 30, 2014  |
| Preamplifier                    | Agilent Technologies | 8449B            | 3008A1008        | Dec. 31, 2014 | Dec. 9, 2013  |
| Dipole antenna                  | Schwarzbeck          | VHAP             | 1020             | Sep. 30, 2015 | Sep. 5, 2014  |
| Dipole antenna                  | Schwarzbeck          | UHAP             | 994              | Sep. 30, 2015 | Sep. 5, 2014  |
| Double ridged guide antenna     | EMCO                 | 3115             | 5205             | Dec. 31, 2014 | Dec. 10, 2013 |
| Attenuator                      | Agilent Technologies | 8491B            | MY39268633       | Jan. 31, 2015 | Jan. 15, 2014 |
| Double ridged guide antenna     | EMCO                 | 3115             | 4328             | Jan. 31, 2015 | Jan. 21, 2014 |
| Signal generator                | ROHDE&SCHWARZ        | SMB100A          | 177525           | Feb. 28, 2015 | Feb. 18, 2014 |
| Microwave cable                 | SUHNER               | SUCOFLEX102/2m   | 31648/2          | Feb. 28, 2015 | Feb. 13, 2014 |
| High pass filter                | Micro-Tronics        | HPM50115         | 004              | Jul. 31, 2015 | Jul. 12, 2014 |
| High pass filter                | Wainwright           | WHKX2.8/18G-6SS  | 1                | Jul. 31, 2015 | Jul. 17, 2014 |
| Wideband radio frequency tester | ROHDE&SCHWARZ        | CMW500           | 116338           | Mar. 31, 2015 | Mar. 7, 2014  |
| Microwave cable                 | SUHNER               | SUCOFLEX104/9m   | 346316/4         | Oct. 31, 2014 | Oct. 7, 2013  |
|                                 |                      | SUCOFLEX104/1m   | 322084/4         | Oct. 31, 2014 | Oct. 7, 2013  |
|                                 |                      | SUCOFLEX104/1.5m | 317226/4         | Oct. 31, 2014 | Oct. 7, 2013  |
|                                 |                      | SUCOFLEX104/7m   | 41625/6          | Oct. 31, 2014 | Oct. 7, 2013  |
| PC                              | DELL                 | DIMENSION E521   | 75465BX          | N/A           | N/A           |
| Software                        | TOYO Corporation     | EP5/RE-AJ        | 0611193/V5.3.61  | N/A           | N/A           |
| 3m Semi-anechoic chamber        | TOKIN                | N/A              | N/A (9002-NSA)   | May 31, 2015  | May 6, 2014   |
| 3m Semi-anechoic chamber        | TOKIN                | N/A              | N/A (9002-SVSWR) | May 31, 2015  | May 6, 2014   |

\*: The calibrations of the above equipment are traceable to NIST or equivalent standards of the reference organizations.