



# HCT CO., LTD.

## CERTIFICATE OF COMPLIANCE FCC Certification

|                                                                  |                                                                                                                        |
|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Applicant Name:</b><br>LG Electronics MobileComm U.S.A., Inc. | <b>Date of Issue:</b><br>May 29, 2014                                                                                  |
| <b>Address:</b><br>1000 Sylvan Avenue, Englewood Cliffs NJ 07632 | <b>Test Site/Location:</b><br>HCT CO., LTD., 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea |
|                                                                  | <b>Report No.:</b> HCT-R-1405-F011-1                                                                                   |
|                                                                  | <b>HCT FRN:</b> 0005866421                                                                                             |

|                   |                                               |
|-------------------|-----------------------------------------------|
| <b>FCC ID:</b>    | <b>ZNFD855P</b>                               |
| <b>APPLICANT:</b> | <b>LG Electronics MobileComm U.S.A., Inc.</b> |

|                                                               |                                                                                                    |                                                            |
|---------------------------------------------------------------|----------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| <b>FCC Model(s):</b>                                          | LG-D855P                                                                                           |                                                            |
| <b>Additional FCC Model(s):</b>                               | LG-D855p, D855P, D855p, LGD855P, LGD855p, LG-D855AR, LG-D855ar, LGD855AR, LGD855ar, D855AR, D855ar |                                                            |
| <b>EUT Type:</b>                                              | Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC                   |                                                            |
| <b>FCC Classification:</b>                                    | Licensed Portable Transmitter Held to Ear (PCE)                                                    |                                                            |
| <b>FCC Rule Part(s):</b>                                      | §2 , §27                                                                                           |                                                            |
| <b>Tx Frequency:</b>                                          | 706.5 MHz – 713.5 MHz (LTE – Band 17),<br>1710.7 MHz – 1754.3 MHz (LTE – Band 4)                   |                                                            |
| <b>Max. RF Output Power<br/>Normal battery Charger:</b>       | Band 17 ( 5 MHz) :                                                                                 | 0.076 W (QPSK) (18.81 dBm)<br>0.077 W (16-QAM) (18.85 dBm) |
|                                                               | Band 17 (10 MHz) :                                                                                 | 0.083 W (QPSK) (19.20 dBm)<br>0.088 W (16-QAM) (19.45 dBm) |
|                                                               | Band 4 (1.4 MHz):                                                                                  | 0.236 W (QPSK) (23.72 dBm)<br>0.240 W (16-QAM) (23.81 dBm) |
|                                                               | Band 4 (3 MHz):                                                                                    | 0.236 W (QPSK) (23.73 dBm)<br>0.237 W (16-QAM) (23.74 dBm) |
|                                                               | Band 4 (5 MHz):                                                                                    | 0.240 W (QPSK) (23.80 dBm)<br>0.236 W (16-QAM) (23.73 dBm) |
|                                                               | Band 4 (10 MHz):                                                                                   | 0.251 W (QPSK) (23.99 dBm)<br>0.252 W (16-QAM) (24.02 dBm) |
|                                                               | Band 4 (15 MHz):                                                                                   | 0.253 W (QPSK) (24.03 dBm)<br>0.251 W (16-QAM) (24.00 dBm) |
|                                                               | Band 4 (20 MHz):                                                                                   | 0.233 W (QPSK) (23.68 dBm)<br>0.241 W (16-QAM) (23.82 dBm) |
| <b>Max. RF Output Power<br/>Wireless battery<br/>Charger:</b> | Band 17 ( 5 MHz) :                                                                                 | 0.060 W (QPSK) (17.77 dBm)<br>0.062 W (16-QAM) (17.93 dBm) |
|                                                               | Band 17 (10 MHz) :                                                                                 | 0.068 W (QPSK) (18.34 dBm)<br>0.075 W (16-QAM) (18.76 dBm) |
|                                                               | Band 4 (1.4 MHz):                                                                                  | 0.299 W (QPSK) (24.76 dBm)<br>0.318 W (16-QAM) (25.02 dBm) |
|                                                               | Band 4 (3 MHz):                                                                                    | 0.303 W (QPSK) (24.82 dBm)<br>0.307 W (16-QAM) (24.87 dBm) |
|                                                               | Band 4 (5 MHz):                                                                                    | 0.307 W (QPSK) (24.87 dBm)<br>0.312 W (16-QAM) (24.94 dBm) |
|                                                               | Band 4 (10 MHz):                                                                                   | 0.324 W (QPSK) (25.11 dBm)<br>0.333 W (16-QAM) (25.22 dBm) |
|                                                               | Band 4 (15 MHz):                                                                                   | 0.320 W (QPSK) (25.05 dBm)<br>0.310 W (16-QAM) (24.92 dBm) |
|                                                               | Band 4 (20 MHz):                                                                                   | 0.319 W (QPSK) (25.04 dBm)<br>0.343 W (16-QAM) (25.35 dBm) |
| <b>Emission Designator(s):</b>                                | Band 17 (5 MHz) :                                                                                  | 4M50G7D (QPSK) / 4M50W7D (16-QAM)                          |
|                                                               | Band 17 (10 MHz) :                                                                                 | 8M95G7D (QPSK) / 8M93W7D (16-QAM)                          |
|                                                               | Band 4 (1.3 MHz) :                                                                                 | 1M08G7D (QPSK) / 1M08W7D (16-QAM)                          |
|                                                               | Band 4 (4 MHz) :                                                                                   | 2M69G7D (QPSK) / 2M69W7D (16-QAM)                          |
|                                                               | Band 4 (5 MHz) :                                                                                   | 4M50G7D (QPSK) / 4M50W7D (16-QAM)                          |
|                                                               | Band 4 (10 MHz) :                                                                                  | 8M96G7D (QPSK) / 8M94W7D (16-QAM)                          |
|                                                               | Band 4 (15 MHz) :                                                                                  | 13M4G7D (QPSK) / 13M4W7D (16-QAM)                          |
|                                                               | Band 4 (20 MHz) :                                                                                  | 17M9G7D (QPSK) / 17M9W7D (16-QAM)                          |

| FCC CERTIFICATION REPORT                    |                                       |                                                                                                      | <a href="http://www.hct.co.kr">www.hct.co.kr</a> |
|---------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| <b>Test Report No.</b><br>HCT-R-1405-F011-1 | <b>Date of Issue:</b><br>May 29, 2014 | <b>EUT Type:</b><br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <b>FCC ID:</b><br>ZNFD855P                       |



The measurements shown in this report were made in accordance with the procedures specified in §2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

**HCT CO., LTD.** Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998, 21 U.S. C. 853(a)

**Report prepared by**  
**: Jong Seok Lee**  
**Test engineer of RF Team**

**Approved by**  
**: Chang Seok Choi**  
**Manager of RF Team**

This report only responds to the tested sample and may not be reproduced, except in full, without written approval of the HCT Co., Ltd.

| FCC CERTIFICATION REPORT             |                                |                                                                                               | <a href="http://www.hct.co.kr">www.hct.co.kr</a> |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | FCC ID:<br>ZNFD855P                              |

## Version

| TEST REPORT NO.   | DATE         | DESCRIPTION                                                                                                                                                                                                                                                                                                                                             |
|-------------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HCT-R-1405-F011   | May 20, 2014 | - First Approval Report                                                                                                                                                                                                                                                                                                                                 |
| HCT-R-1405-F011-1 | May 29, 2014 | <ul style="list-style-type: none"> <li>- Insert the Information for WCP on Section 4</li> <li>- Revise the Frequency Stability Limit on Section 3.8 and 5.0</li> <li>- Delete the Requirement for 776 – 788 MHz Band</li> <li>- Revise the Emission Designator for 20 MHz 16-QAM of LTE Band 4.</li> <li>- Add the Additional Band Edge Plot</li> </ul> |
|                   |              |                                                                                                                                                                                                                                                                                                                                                         |
|                   |              |                                                                                                                                                                                                                                                                                                                                                         |
|                   |              |                                                                                                                                                                                                                                                                                                                                                         |

# Table of Contents

|                                                                                  |    |
|----------------------------------------------------------------------------------|----|
| 1. GENERAL INFORMATION .....                                                     | 5  |
| 2. INTRODUCTION .....                                                            | 7  |
| 2.1. EUT DESCRIPTION.....                                                        | 7  |
| 2.2. MEASURING INSTRUMENT CALIBRATION .....                                      | 7  |
| 2.3. TEST FACILITY .....                                                         | 7  |
| 3. DESCRIPTION OF TESTS .....                                                    | 8  |
| 3.1 CONDUCTED OUTPUT POWER.....                                                  | 8  |
| 3.2 ERP/EIRP RADIATED POWER AND RADIATED SPURIOUS EMISSIONS.....                 | 9  |
| 3.3 PEAK-AVERAGE RATIO. ....                                                     | 10 |
| 3.4 OCCUPIED BANDWIDTH. ....                                                     | 12 |
| 3.5 BLOCK B FREQUENCY RANGE (704 – 710 and 734 – 740 MHz, 777 – 792 MHz) .....   | 13 |
| 3.6 AWS – MOBILE FREQUENCY BLOCKS (1710 – 1755 MHz).....                         | 13 |
| 3.7 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL.....                     | 14 |
| 3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE .....                 | 15 |
| 4. LIST OF TEST EQUIPMENT .....                                                  | 16 |
| 5. SUMMARY OF TEST RESULTS .....                                                 | 17 |
| 6. SAMPLE CALCULATION .....                                                      | 18 |
| 7. TEST DATA .....                                                               | 19 |
| 7.1 EFFECTIVE RADIATED POWER OUTPUT_stand alone .....                            | 19 |
| 7.2 EFFECTIVE RADIATED POWER OUTPUT_with wireless charging pad .....             | 21 |
| 7.3 EQUIVALENT ISOTROPIC RADIATED POWER OUTPUT_ stand alone .....                | 23 |
| 7.4 EQUIVALENT ISOTROPIC RADIATED POWER OUTPUT_ with wireless charging pad ..... | 27 |
| 7.5 RADIATED SPURIOUS EMISSIONS_stand alone.....                                 | 31 |
| 7.5.1 RADIATED SPURIOUS EMISSIONS (Band 17) .....                                | 31 |
| 7.5.2 RADIATED SPURIOUS EMISSIONS (Band 4) .....                                 | 33 |
| 7.6 RADIATED SPURIOUS EMISSIONS_ with wireless charging pad.....                 | 39 |
| 7.6.1 RADIATED SPURIOUS EMISSIONS (Band 17) .....                                | 39 |
| 7.6.2 RADIATED SPURIOUS EMISSIONS (Band 4) .....                                 | 41 |
| 7.7 PEAK-TO-AVERAGE RATIO .....                                                  | 47 |
| 7.8 OCCUPIED BANDWIDTH .....                                                     | 48 |
| 7.9 CONDUCTED SPURIOUS EMISSIONS .....                                           | 49 |
| 7.9.1 BAND EDGE.....                                                             | 50 |
| 7.10 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE .....                | 51 |
| 7.10.1 FREQUENCY STABILITY (LTE Band 17).....                                    | 51 |
| 7.10.2 FREQUENCY STABILITY (LTE Band 4).....                                     | 53 |
| 8. TEST PLOTS.....                                                               | 59 |



# MEASUREMENT REPORT

## 1. GENERAL INFORMATION

**Applicant Name:** LG Electronics MobileComm U.S.A., Inc.

**Address:** 1000 Sylvan Avenue, Englewood Cliffs NJ 07632

**FCC ID:** ZNFD855P

**Application Type:** Certification

**FCC Classification:** Licensed Portable Transmitter Held to Ear (PCE)

**FCC Rule Part(s):** §2 , §27

**EUT Type:** Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC

**FCC Model(s):** LG-D855P

**Additional FCC Model(s):** LG-D855p, D855P, D855p, LGD855P, LGD855p, LG-D855AR, LG-D855ar, LGD855AR, LGD855ar, D855AR, D855ar

**Tx Frequency:** 706.5 MHz – 713.5 MHz (LTE – Band 17),  
1710.7 MHz – 1754.3 MHz (LTE – Band 4)

**Max. RF Output Power Normal battery Charger:**

|                    |                                                            |
|--------------------|------------------------------------------------------------|
| Band 17 ( 5 MHz) : | 0.076 W (QPSK) (18.81 dBm)<br>0.077 W (16-QAM) (18.85 dBm) |
| Band 17 (10 MHz) : | 0.083 W (QPSK) (19.20 dBm)<br>0.088 W (16-QAM) (19.45 dBm) |
| Band 4 (1.4 MHz):  | 0.236 W (QPSK) (23.72 dBm)<br>0.240 W (16-QAM) (23.81 dBm) |
| Band 4 (3 MHz):    | 0.236 W (QPSK) (23.73 dBm)<br>0.237 W (16-QAM) (23.74 dBm) |
| Band 4 (5 MHz):    | 0.240 W (QPSK) (23.80 dBm)<br>0.236 W (16-QAM) (23.73 dBm) |
| Band 4 (10 MHz):   | 0.251 W (QPSK) (23.99 dBm)<br>0.252 W (16-QAM) (24.02 dBm) |
| Band 4 (15 MHz):   | 0.253 W (QPSK) (24.03 dBm)<br>0.251 W (16-QAM) (24.00 dBm) |
| Band 4 (20 MHz):   | 0.233 W (QPSK) (23.68 dBm)<br>0.241 W (16-QAM) (23.82 dBm) |

**Max. RF Output Power Wireless battery Charger:**

|                    |                                                            |
|--------------------|------------------------------------------------------------|
| Band 17 ( 5 MHz) : | 0.060 W (QPSK) (17.77 dBm)<br>0.062 W (16-QAM) (17.93 dBm) |
| Band 17 (10 MHz) : | 0.068 W (QPSK) (18.34 dBm)<br>0.075 W (16-QAM) (18.76 dBm) |
| Band 4 (1.4 MHz):  | 0.299 W (QPSK) (24.76 dBm)<br>0.318 W (16-QAM) (25.02 dBm) |
| Band 4 (3 MHz):    | 0.303 W (QPSK) (24.82 dBm)<br>0.307 W (16-QAM) (24.87 dBm) |
| Band 4 (5 MHz):    | 0.307 W (QPSK) (24.87 dBm)<br>0.312 W (16-QAM) (24.94 dBm) |
| Band 4 (10 MHz):   | 0.324 W (QPSK) (25.11 dBm)<br>0.333 W (16-QAM) (25.22 dBm) |
| Band 4 (15 MHz):   | 0.320 W (QPSK) (25.05 dBm)<br>0.310 W (16-QAM) (24.92 dBm) |
| Band 4 (20 MHz):   | 0.319 W (QPSK) (25.04 dBm)<br>0.343 W (16-QAM) (25.35 dBm) |

**Emission Designator(s):**

|                    |                                   |
|--------------------|-----------------------------------|
| Band 17 (5 MHz) :  | 4M50G7D (QPSK) / 4M50W7D (16-QAM) |
| Band 17 (10 MHz) : | 8M95G7D (QPSK) / 8M93W7D (16-QAM) |

### FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                  |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------|
| FCC CERTIFICATION REPORT             |                                |                                                                                               | <a href="http://www.hct.co.kr">www.hct.co.kr</a> |
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | FCC ID:<br>ZNFD855P                              |



Band 4 (1.3 MHz) : 1M08G7D (QPSK) / 1M08W7D (16-QAM)  
Band 4 (4 MHz) : 2M69G7D (QPSK) / 2M69W7D (16-QAM)  
Band 4 (5 MHz) : 4M50G7D (QPSK) / 4M50W7D (16-QAM)  
Band 4 (10 MHz) : 8M96G7D (QPSK) / 8M94W7D (16-QAM)  
Band 4 (15 MHz) : 13M4G7D (QPSK) / 13M4W7D (16-QAM)  
Band 4 (20 MHz) : 17M9G7D (QPSK) / 17M9W7D (16-QAM)

**Date(s) of Tests:** April 10, 2014 ~ May 19, 2014

**Antenna Specification**  
Manufacturer: AT&C Co. LTD.  
Antenna type: Internal Antenna  
Peak Gain: Band 4: -5.22 dBi  
Band 17: -12.61 dBi

| FCC CERTIFICATION REPORT             |                                |                                                                                               | <a href="http://www.hct.co.kr">www.hct.co.kr</a> |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | FCC ID:<br>ZNFD855P                              |

## **2. INTRODUCTION**

### **2.1. EUT DESCRIPTION**

The LG Electronics MobileComm U.S.A., Inc. LG-D855P Cellular/PCS

GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC consists of LTE 4 and 17.

Note : All test performed with the battery cover already incorporate the NFC antenna and Wireless charging capability.

### **2.2. MEASURING INSTRUMENT CALIBRATION**

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

### **2.3. TEST FACILITY**

The Fully-anechoic and conducted measurement facility used to collect the radiated data are located at the 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Korea.

### **3. DESCRIPTION OF TESTS**

#### **3.1 CONDUCTED OUTPUT POWER**

##### Test Procedure

Conducted Output Power is tested in accordance with KDB971168 D01 Power Meas License Digital Systems v02r01, June 7, 2013, Section 5.2.

##### **5.2.1 Procedure for use with a spectrum/signal analyzer when EUT can be configured to transmit continuously or when sweep triggering/signal gating can be properly implemented**

The EUT is considered to transmit continuously if it can be configured to transmit at a burst duty cycle of greater than or equal to 98% throughout the duration of the measurement. If this condition can be achieved, then the following procedure can be used to measure the average output power of the EUT.

This procedure can also be used when the EUT cannot be configured to transmit continuously, provided that the measurement instrument can be configured to trigger a sweep at the beginning of each full-power transmission burst, and the sweep time is less than or equal to the minimum transmission time during each burst (*i.e.*, no burst off-time is to be included in the measurement).

- a) Set span to at least 1.5 times the OBW.
- b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz.
- c) Set VBW  $\geq 3 \times$  RBW.
- d) Set number of points in sweep  $\geq 2 \times$  span / RBW.
- e) Sweep time = auto-couple.
- f) Detector = RMS (power averaging).
- g) If the EUT can be configured to transmit continuously (*i.e.*, burst duty cycle  $\geq 98\%$ ), then set the trigger to free run.
- h) If the EUT cannot be configured to transmit continuously (*i.e.*, burst duty cycle  $< 98\%$ ), then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Ensure that the sweep time is less than or equal to the transmission burst duration.
- i) Trace average at least 100 traces in power averaging (*i.e.*, RMS) mode.
- j) Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function, with the band limits set equal to the OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

### 3.2 ERP/EIRP RADIATED POWER AND RADIATED SPURIOUS EMISSIONS

Note: ERP(Effective Radiated Power), EIRP(Effective Isotropic Radiated Power)

#### Test Procedure

Radiated emission measurements are performed in the Fully-anechoic chamber. The equipment under test is placed on a non-conductive table 3-meters away from the receive antenna in accordance with ANSI/TIA-603-C-2004 Clause 2.2.17. The turntable is rotated through 360 degrees, and the receiving antenna scans in order to determine the level of the maximized emission. The level and position of the maximized emission is recorded with the spectrum analyzer using a positive peak detector.

A half wave dipole is then substituted in place of the EUT. For emissions above 1GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.

The power is calculated by the following formula;

$$P_{d(dBm)} = P_{g(dBm)} - \text{cable loss}_{(dB)} + \text{antenna gain}_{(dB)}$$

Where:  $P_d$  is the dipole equivalent power and  $P_g$  is the generator output power into the substitution antenna.

The maximum EIRP is calculated by adding the forward power to the calibrated source plus its appropriate gain value. These steps are repeated with the receiving antenna in both vertical and horizontal polarization. the difference between the gain of the horn and an isotropic antenna are taken into consideration

#### **Radiated spurious emissions**

: Frequency Range : 30 MHz ~ 10<sup>th</sup> Harmonics of highest channel fundamental frequency.

### 3.3 PEAK-AVERAGE RATIO.

#### Test Procedure

Peak to Average Power Ratio is tested in accordance with KDB971168 D01 Power Meas License Digital Systems v02r01, June 7, 2013, Section 5.7.

#### - Section 5.7.1 CCDF Procedure

- a) Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;
- b) Set the number of counts to a value that stabilizes the measured CCDF curve;
- c) Set the measurement interval as follows:
  - 1) for continuous transmissions, set to 1 ms,
  - 2) for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
- d) Record the maximum PAPR level associated with a probability of 0.1%.

#### - Section 5.7.2 Alternate Procedure

Use one of the procedures presented in 5.1 to measure the total peak power and record as  $P_{Pk}$ . Use one of the applicable procedures presented 5.2 to measure the total average power and record as  $P_{Avg}$ . Determine the P.A.R. from:  $P.A.R_{(dB)} = P_{Pk (dBm)} - P_{Avg (dBm)}$  ( $P_{Avg}$  = Average Power + Duty cycle Factor)

#### 5.1.1 Peak power measurements with a spectrum/signal analyzer or EMI receiver

The following procedure can be used to determine the total peak output power.

- a) Set the RBW  $\geq$  OBW.
- b) Set VBW  $\geq 3 \times$  RBW.
- c) Set span  $\geq 2 \times$  RBW
- d) Sweep time = auto couple.
- e) Detector = peak.
- f) Ensure that the number of measurement points  $\geq$  span/RBW.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the peak amplitude level.

## 5.2.2 Procedures for use with a spectrum/signal analyzer when EUT cannot be configured to transmit continuously and sweep triggering/signal gating cannot be properly implemented

If the EUT cannot be configured to transmit continuously (burst duty cycle < 98%), then one of the following procedures can be used. The selection of the applicable procedure will depend on the characteristics of the measured burst duty cycle.

Measure the burst duty cycle with a spectrum/signal analyzer or EMC receiver can be used in zero-span mode if the response time and spacing between bins on the sweep are sufficient to permit accurate measurement of the burst on/off time of the transmitted signal.

### 5.2.2.2 Constant burst duty cycle

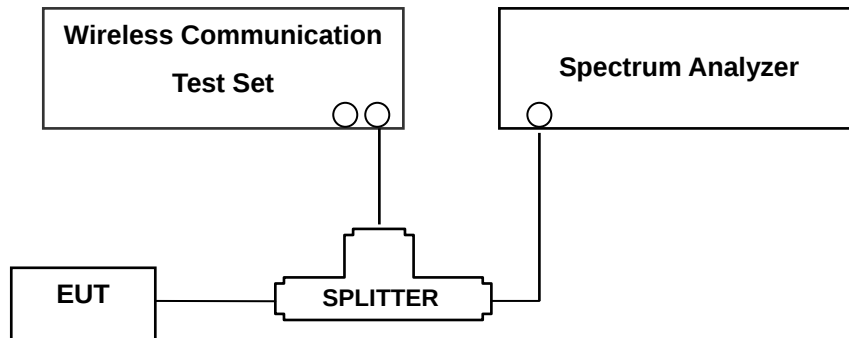
If the measured burst duty cycle is constant (i.e., duty cycle variations are less than  $\pm 2$  percent), then:

- a) Set span to at least 1.5 times the OBW.
- b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz.
- c) Set VBW  $\geq 3 \times$  RBW.
- d) Number of points in sweep  $\geq 2 \times$  span / RBW. (This gives bin-to-bin spacing  $\leq$  RBW/2, so that narrowband signals are not lost between frequency bins.)
- e) Sweep time = auto.
- f) Detector = RMS (power averaging).
- g) Set sweep trigger to "free run".
- h) Trace average at least 100 traces in power averaging (i.e., RMS) mode.
- i) Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.
- j) Add  $10 \log (1/x)$ , where  $x$  is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission).

For example, add  $10 \log (1/0.25) = 6$  dB if the duty cycle is a constant 25%.

### 3.4 OCCUPIED BANDWIDTH.

#### Test set-up



(Configuration of conducted Emission measurement)

#### Test Procedure

OBW is tested in accordance with KDB971168 D01 Power Meas License Digital Systems v02r01, June 7, 2013, Section 4.2..

The EUT was setup to maximum output power at its lowest channel. The occupied bandwidth was measured using a spectrum analyzer. The measurements are repeated for the highest and a middle channel. The EUT's occupied bandwidth is measured as the width of the signal between two points, one below the carrier center frequency and one above the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. Plots of the EUT's occupied bandwidth are shown herein.

### 3.5 BLOCK B FREQUENCY RANGE (704 – 710 and 734 – 740 MHz, 777 – 792 MHz)

§27.5(c)

698-746 MHz Band. The following frequencies are available for licensing pursuant to this part in the 698–746 MHz band: (1) Three paired channel blocks of 12 MHz each are available for assignment as follows :

Block A : 698 – 704 MHz and 728 – 734 MHz ;

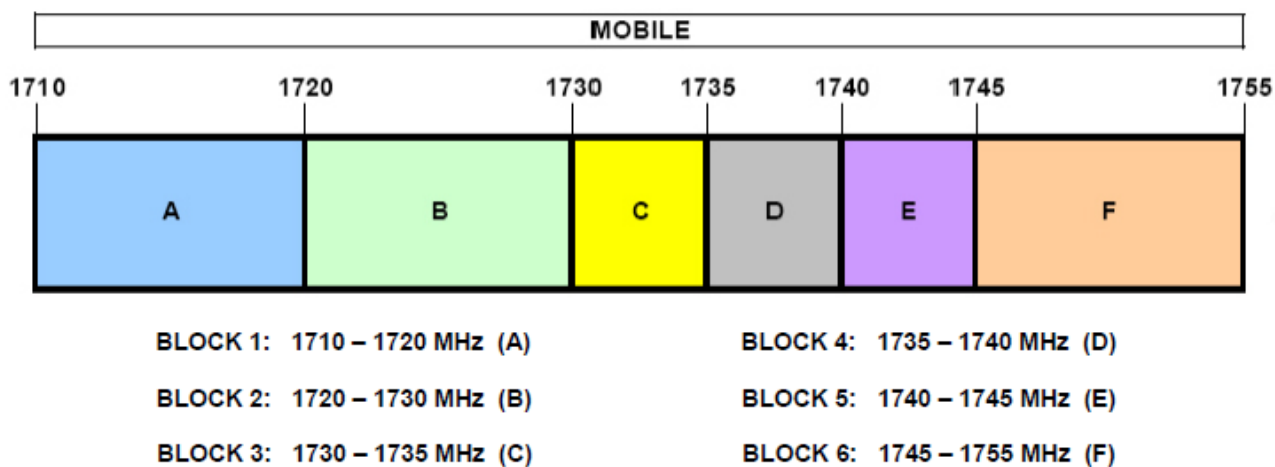
Block B : 704 – 710 MHz and 734 – 740 MHz ; and

Block C : 710 – 716 MHz and 740 – 746 MHz.

The EUT is only being authorized for operation in Blocks B and C.

### 3.6 AWS – MOBILE FREQUENCY BLOCKS (1710 – 1755 MHz)

§27.5(h)



### 3.7 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL.

#### Test Procedure

Spurious and harmonic emissions at antenna terminal is tested in accordance with KDB971168 D01 Power Meas License Digital Systems v02r01, June 7, 2013, Section 6.0.

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer.

The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log(P)$  dB. Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 30kHz bandwidth may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency

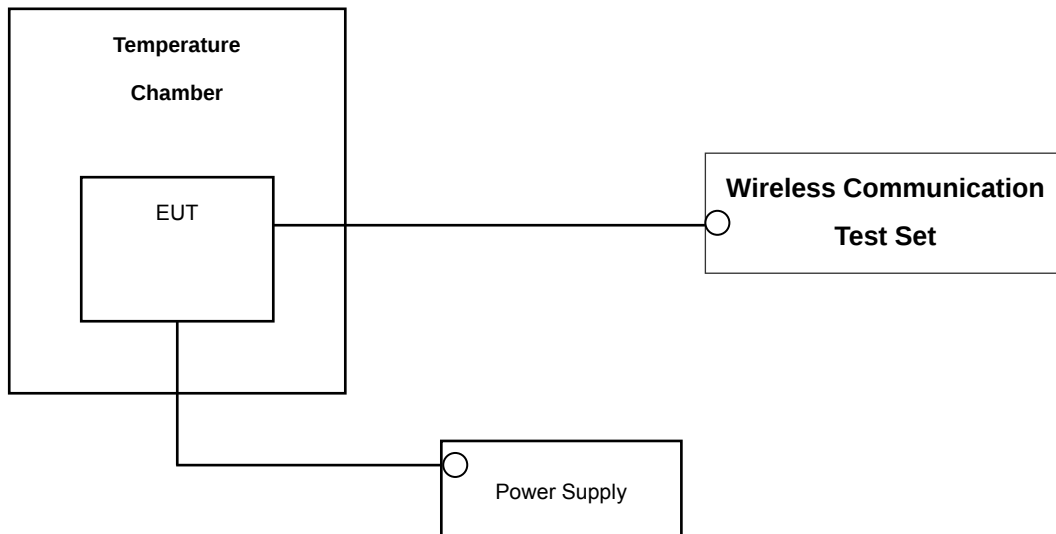
**NOTES:** The analyzer plot offsets were determined by below conditions.

- For LTE Band 17, total offset 26.5 dBm = 20 dBm attenuator + 6 dBm Divider + 0.5 dBm RF cables.
- For LTE Band 4, total offset 27.2 dBm = 20 dBm attenuator + 6 dBm Divider + 1.2 dBm RF cables.

| FCC CERTIFICATION REPORT             |                                |                                                                                               | <a href="http://www.hct.co.kr">www.hct.co.kr</a> |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | FCC ID:<br>ZNFD855P                              |

### 3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

#### Test Set-up



\* Nominal Operating Voltage

#### Test Procedure

Frequency stability is tested in accordance with ANSI/TIA-603-C-2004 section 2.2.2

The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from - 30 °C to + 50 °C using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from the end point to 115 % of the voltage normally at the input to the device or at the power supply terminals if cables are not normally supplied.

Specification — the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block(LTE Band4). The frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5$  ppm) of the center frequency(LTE Band17).

#### Time Period and Procedure:

The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).

1. The equipment is turned on in a “standby” condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
2. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

## 4. LIST OF TEST EQUIPMENT

| Manufacture        | Model/ Equipment                    | Serial Number          | Calibration Date | Calibration Interval | Calibration Due |
|--------------------|-------------------------------------|------------------------|------------------|----------------------|-----------------|
| LG Electronics USA | WCP-300/WCP<br>(FCC ID : BEJWCP300) | 303HYR026898           | -                | -                    | -               |
| Agilent            | N1921A/ Power Sensor                | MY45241059             | 07/11/2013       | Annual               | 07/11/2014      |
| Agilent            | N1911A/ Power Meter                 | MY45100523             | 01/24/2014       | Annual               | 01/24/2015      |
| MITEQ              | AMF-6D-001180-35-20P/AMP            | 1081666                | 09/12/2013       | Annual               | 09/12/2014      |
| Wainwright         | WHK1.2/15G-10EF/H.P.F               | 4                      | 06/24/2013       | Annual               | 06/24/2014      |
| Wainwright         | WHK3.3/18G-10EF/H.P.F               | 2                      | 06/24/2013       | Annual               | 06/24/2014      |
| Hewlett Packard    | 11667B / Power Splitter             | 10545                  | 02/22/2014       | Annual               | 02/22/2015      |
| Digital            | EP-3010/ Power Supply               | 3110117                | 10/29/2013       | Annual               | 10/29/2014      |
| Schwarzbeck        | UHAP/ Dipole Antenna                | 557                    | 03/05/2013       | Biennial             | 03/05/2015      |
| Schwarzbeck        | UHAP/ Dipole Antenna                | 558                    | 05/03/2013       | Biennial             | 05/03/2015      |
| Korea Engineering  | KR-1005L / Chamber                  | KRAB05063-3CH          | 10/30/2013       | Annual               | 10/30/2014      |
| Schwarzbeck        | BBHA 9120D/ Horn Antenna            | 1191                   | 12/03/2013       | Biennial             | 12/03/2015      |
| Schwarzbeck        | BBHA 9120D/ Horn Antenna            | 1151                   | 10/05/2013       | Biennial             | 10/05/2015      |
| Agilent            | E4440A/Spectrum Analyzer            | US45303008             | 04/09/2014       | Annual               | 04/09/2015      |
| WEINSCHL           | ATTENUATOR                          | BR0592                 | 10/28/2013       | Annual               | 10/28/2014      |
| REOHDE&SCHWARZ     | FSV40/Spectrum Analyzer             | 1307.9002K40-100931-NK | 06/10/2013       | Annual               | 06/10/2014      |
| Agilent            | 8960 (E5515C)/ Base Station         | GB45070669             | 08/31/2013       | Annual               | 08/31/2014      |

## 5. SUMMARY OF TEST RESULTS

| FCC Part Section(s)           | Test Description                                                 | Test Limit                                                                        | Test Condition | Test Result |
|-------------------------------|------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------|-------------|
| 2.1049, 27.53                 | Occupied Bandwidth                                               | N/A                                                                               | CONDUCTED      | PASS        |
| 2.1051, 27.53(g),<br>27.53(h) | Band Edge / Spurious and Harmonic Emissions at Antenna Terminal. | $< 43 + 10 \log_{10}(P[\text{Watts}])$ at Band Edge and for all-of-band emissions |                | PASS        |
| 27.50(d)(5)                   | Peak-Average Ratio                                               | $< 13 \text{ dB}$                                                                 |                | PASS        |
| 2.1046                        | Conducted Output Power                                           | N/A                                                                               |                | PASS        |
| 2.1055, 27.54                 | Frequency stability / variation of ambient temperature           | $< 2.5 \text{ ppm}$                                                               |                | PASS        |
| 27.50(c)(10)                  | Effective Radiated Power (Band 17)                               | $< 3 \text{ Watts max. ERP}$                                                      | RADIATED       | PASS        |
|                               |                                                                  |                                                                                   |                |             |
| 27.50(d)(4)                   | Equivalent Isotropic Radiated Power (Band 4)                     | $< 1 \text{ Watts max. EIRP}$                                                     |                | PASS        |
|                               |                                                                  |                                                                                   |                | PASS        |
| 2.1053, 27.53(g),<br>27.53(h) | Undesirable Out-of-Band Emissions                                | $< 43 + 10 \log_{10}(P[\text{Watts}])$ for all out-of-band emissions              |                | PASS        |

\*: See SAR Report

## 6. SAMPLE CALCULATION

### A. ERP Sample Calculation

| Mode | Ch./ Freq. |            | Measured<br>Level(dBm) | Substitute<br>LEVEL(dBm) | Ant. Gain<br>(dBd) | C.L  | Pol. | ERP   |       |
|------|------------|------------|------------------------|--------------------------|--------------------|------|------|-------|-------|
|      | channel    | Freq.(MHz) |                        |                          |                    |      |      | W     | dBm   |
| LTE  | 23755      | 706.5      | -28.75                 | 29.60                    | -10.21             | 0.76 | V    | 0.073 | 18.63 |

$$\text{ERP} = \text{SubstituteLEVEL(dBm)} + \text{Ant. Gain} - \text{CL(Cable Loss)}$$

- 1) The EUT mounted on a wooden tripod is 0.8 meter above test site ground level.
- 2) During the test , the turn table is rotated and the antenna height is found.
- 3) Record the field strength meter's level.
- 4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
- 5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
- 6) The signal generator output level with Ant. Gain and cable loss are the rating of effective radiated power (ERP).

### B. Emission Designator

#### QPSK Modulation

**Emission Designator = 4M48G7D**

LTE BW = 4.48 MHz

G = Phase Modulation

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

#### 16QAM Modulation

**Emission Designator = 4M48W7D**

LTE BW = 4.48 MHz

W = main carrier modulated in a combination of two

or more of the following modes;

amplitude, angle, pulse

7 = Quantized/Digital Info

D = Data transmission; telemetry; telecommand

## 7. TEST DATA

### 7.1 EFFECTIVE RADIATED POWER OUTPUT\_stand alone

| Freq<br>(MHz) | Bandwidth | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBd) | C.L  | Pol | ERP   |       |
|---------------|-----------|------------|-------------------------|---------------------------|-------------------|------|-----|-------|-------|
|               |           |            |                         |                           |                   |      |     | W     | dBm   |
| 706.5         | 5 MHz     | QPSK       | -28.75                  | 29.60                     | -10.21            | 0.76 | V   | 0.073 | 18.63 |
|               |           | 16-QAM     | -28.66                  | 29.69                     | -10.21            | 0.76 | V   | 0.074 | 18.72 |
| 710.0         |           | QPSK       | -28.59                  | 29.80                     | -10.22            | 0.77 | V   | 0.076 | 18.81 |
|               |           | 16-QAM     | -28.55                  | 29.84                     | -10.22            | 0.77 | V   | 0.077 | 18.85 |
| 713.5         |           | QPSK       | -29.61                  | 29.18                     | -10.24            | 0.78 | V   | 0.065 | 18.16 |
|               |           | 16-QAM     | -29.55                  | 29.24                     | -10.24            | 0.78 | V   | 0.066 | 18.22 |

Effective Radiated Power Data (Band 17 – 5 MHz)

Note: Worst case is 1 resource block

| Freq<br>(MHz) | Bandwidth | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBd) | C.L  | Pol | ERP   |       |
|---------------|-----------|------------|-------------------------|---------------------------|-------------------|------|-----|-------|-------|
|               |           |            |                         |                           |                   |      |     | W     | dBm   |
| 709.0         | 10 MHz    | QPSK       | -28.58                  | 29.78                     | -10.22            | 0.79 | V   | 0.075 | 18.77 |
|               |           | 16-QAM     | -28.19                  | 30.17                     | -10.22            | 0.79 | V   | 0.082 | 19.16 |
| 710.0         |           | QPSK       | -28.42                  | 29.97                     | -10.22            | 0.77 | V   | 0.079 | 18.98 |
|               |           | 16-QAM     | -28.12                  | 30.27                     | -10.22            | 0.77 | V   | 0.085 | 19.28 |
| 711.0         |           | QPSK       | -28.37                  | 30.20                     | -10.23            | 0.77 | V   | 0.083 | 19.20 |
|               |           | 16-QAM     | -28.12                  | 30.45                     | -10.23            | 0.77 | V   | 0.088 | 19.45 |

Effective Radiated Power Data (Band 17 – 10 MHz)

Note: Worst case is 1 resource block.



**NOTES:**

Effective Radiated Power Output Measurements by Substitution Method

according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer.

A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the dipole is measured. The ERP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is y plane in LTE mode. Also worst case of detecting Antenna is vertical polarization in LTE mode.

| FCC CERTIFICATION REPORT             |                                |                                                                                               | <a href="http://www.hct.co.kr">www.hct.co.kr</a> |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | FCC ID:<br>ZNFD855P                              |

## 7.2 EFFECTIVE RADIATED POWER OUTPUT\_with wireless charging pad

| Freq<br>(MHz) | Bandwidth | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBd) | C.L  | Pol | ERP   |       |
|---------------|-----------|------------|-------------------------|---------------------------|-------------------|------|-----|-------|-------|
|               |           |            |                         |                           |                   |      |     | W     | dBm   |
| 706.5         | 5 MHz     | QPSK       | -29.68                  | 28.67                     | -10.21            | 0.76 | H   | 0.059 | 17.70 |
|               |           | 16-QAM     | -30.26                  | 28.09                     | -10.21            | 0.76 | H   | 0.052 | 17.12 |
| 710.0         |           | QPSK       | -29.63                  | 28.76                     | -10.22            | 0.77 | H   | 0.060 | 17.77 |
|               |           | 16-QAM     | -29.47                  | 28.92                     | -10.22            | 0.77 | H   | 0.062 | 17.93 |
| 713.5         |           | QPSK       | -30.22                  | 28.57                     | -10.24            | 0.78 | H   | 0.057 | 17.55 |
|               |           | 16-QAM     | -30.20                  | 28.59                     | -10.24            | 0.78 | H   | 0.057 | 17.57 |

Effective Radiated Power Data (Band 17 – 5 MHz)

Note: Worst case is 1 resource block

| Freq<br>(MHz) | Bandwidth | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBd) | C.L  | Pol | ERP   |       |
|---------------|-----------|------------|-------------------------|---------------------------|-------------------|------|-----|-------|-------|
|               |           |            |                         |                           |                   |      |     | W     | dBm   |
| 709.0         | 10 MHz    | QPSK       | -29.50                  | 28.86                     | -10.22            | 0.79 | H   | 0.061 | 17.85 |
|               |           | 16-QAM     | -29.11                  | 29.25                     | -10.22            | 0.79 | H   | 0.067 | 18.24 |
| 710.0         |           | QPSK       | -29.55                  | 28.84                     | -10.22            | 0.77 | H   | 0.061 | 17.85 |
|               |           | 16-QAM     | -29.02                  | 29.37                     | -10.22            | 0.77 | H   | 0.069 | 18.38 |
| 711.0         |           | QPSK       | -29.23                  | 29.34                     | -10.23            | 0.77 | H   | 0.068 | 18.34 |
|               |           | 16-QAM     | -28.81                  | 29.76                     | -10.23            | 0.77 | H   | 0.075 | 18.76 |

Effective Radiated Power Data (Band 17 – 10 MHz)

Note: Worst case is 1 resource block.



**NOTES:**

Effective Radiated Power Output Measurements by Substitution Method

according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer.

A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the dipole is measured. The ERP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is x plane in LTE mode. Also worst case of detecting Antenna is horizontal polarization in LTE mode.

| FCC CERTIFICATION REPORT             |                                |                                                                                               | <a href="http://www.hct.co.kr">www.hct.co.kr</a> |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | FCC ID:<br>ZNFD855P                              |

### 7.3 EQUIVALENT ISOTROPIC RADIATED POWER OUTPUT\_ stand alone

| Freq<br>(MHz) | Bandwidth | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBi) | C.L  | Pol | EIRP  |       |
|---------------|-----------|------------|-------------------------|---------------------------|-------------------|------|-----|-------|-------|
|               |           |            |                         |                           |                   |      |     | W     | dBm   |
| 1710.7        | 1.4 MHz   | QPSK       | -17.89                  | 13.69                     | 9.87              | 1.16 | H   | 0.174 | 22.40 |
|               |           | 16-QAM     | -17.85                  | 13.73                     | 9.87              | 1.16 | H   | 0.175 | 22.44 |
| 1732.5        |           | QPSK       | -16.58                  | 14.98                     | 9.90              | 1.16 | H   | 0.236 | 23.72 |
|               |           | 16-QAM     | -16.49                  | 15.07                     | 9.90              | 1.16 | H   | 0.240 | 23.81 |
| 1754.3        |           | QPSK       | -16.75                  | 14.60                     | 10.01             | 1.17 | H   | 0.221 | 23.44 |
|               |           | 16-QAM     | -16.38                  | 14.97                     | 10.01             | 1.17 | H   | 0.240 | 23.81 |

**Effective Radiated Power Data (Band 4 – 1.4 MHz)**

Note: Worst case is 1 resource block.

| Freq<br>(MHz) | Bandwidth | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBi) | C.L  | Pol | EIRP  |       |
|---------------|-----------|------------|-------------------------|---------------------------|-------------------|------|-----|-------|-------|
|               |           |            |                         |                           |                   |      |     | W     | dBm   |
| 1711.5        | 3 MHz     | QPSK       | -17.67                  | 13.90                     | 9.87              | 1.16 | H   | 0.182 | 22.61 |
|               |           | 16-QAM     | -17.61                  | 13.96                     | 9.87              | 1.16 | H   | 0.185 | 22.67 |
| 17325         |           | QPSK       | -16.57                  | 14.99                     | 9.90              | 1.16 | H   | 0.236 | 23.73 |
|               |           | 16-QAM     | -16.56                  | 15.00                     | 9.90              | 1.16 | H   | 0.237 | 23.74 |
| 1753.5        |           | QPSK       | -16.76                  | 14.54                     | 10.01             | 1.17 | H   | 0.218 | 23.38 |
|               |           | 16-QAM     | -16.68                  | 14.62                     | 10.01             | 1.17 | H   | 0.222 | 23.46 |

**Effective Radiated Power Data (Band 4 – 3 MHz)**

Note: Worst case is 1 resource block.

| Freq<br>(MHz) | Bandwidth | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBi) | C.L  | Pol | EIRP  |       |
|---------------|-----------|------------|-------------------------|---------------------------|-------------------|------|-----|-------|-------|
|               |           |            |                         |                           |                   |      |     | W     | dBm   |
| 1712.5        | 5 MHz     | QPSK       | -17.48                  | 14.03                     | 9.87              | 1.16 | H   | 0.188 | 22.74 |
|               |           | 16-QAM     | -17.40                  | 14.11                     | 9.87              | 1.16 | H   | 0.191 | 22.82 |
| 1732.5        |           | QPSK       | -16.50                  | 15.06                     | 9.90              | 1.16 | H   | 0.240 | 23.80 |
|               |           | 16-QAM     | -16.57                  | 14.99                     | 9.90              | 1.16 | H   | 0.236 | 23.73 |
| 1752.5        |           | QPSK       | -16.65                  | 14.65                     | 10.01             | 1.17 | H   | 0.223 | 23.49 |
|               |           | 16-QAM     | -16.52                  | 14.78                     | 10.01             | 1.17 | H   | 0.230 | 23.62 |

#### Effective Radiated Power Data (Band 4 – 5 MHz)

Note: Worst case is 1 resource block.

| Freq<br>(MHz) | Bandwidth | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBi) | C.L  | Pol | EIRP  |       |
|---------------|-----------|------------|-------------------------|---------------------------|-------------------|------|-----|-------|-------|
|               |           |            |                         |                           |                   |      |     | W     | dBm   |
| 1715.0        | 10 MHz    | QPSK       | -16.81                  | 14.84                     | 9.87              | 1.16 | H   | 0.226 | 23.55 |
|               |           | 16-QAM     | -16.76                  | 14.89                     | 9.87              | 1.16 | H   | 0.229 | 23.60 |
| 1732.5        |           | QPSK       | -16.31                  | 15.25                     | 9.90              | 1.16 | H   | 0.251 | 23.99 |
|               |           | 16-QAM     | -16.28                  | 15.28                     | 9.90              | 1.16 | H   | 0.252 | 24.02 |
| 1750.0        |           | QPSK       | -16.53                  | 14.77                     | 10.01             | 1.17 | H   | 0.230 | 23.61 |
|               |           | 16-QAM     | -16.40                  | 14.90                     | 10.01             | 1.17 | H   | 0.237 | 23.74 |

#### Effective Radiated Power Data (Band 4 – 10 MHz)

Note: Worst case is 1 resource block.

| Freq<br>(MHz) | Bandwidth | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBi) | C.L  | Pol | EIRP  |       |
|---------------|-----------|------------|-------------------------|---------------------------|-------------------|------|-----|-------|-------|
|               |           |            |                         |                           |                   |      |     | W     | dBm   |
| 1717.5        | 15 MHz    | QPSK       | -16.84                  | 14.82                     | 9.88              | 1.16 | H   | 0.226 | 23.54 |
|               |           | 16-QAM     | -16.70                  | 14.96                     | 9.88              | 1.16 | H   | 0.233 | 23.68 |
| 1732.5        |           | QPSK       | -16.27                  | 15.29                     | 9.90              | 1.16 | H   | 0.253 | 24.03 |
|               |           | 16-QAM     | -16.30                  | 15.26                     | 9.90              | 1.16 | H   | 0.251 | 24.00 |
| 1747.5        |           | QPSK       | -16.77                  | 14.59                     | 9.99              | 1.16 | H   | 0.220 | 23.42 |
|               |           | 16-QAM     | -16.60                  | 14.76                     | 9.99              | 1.16 | H   | 0.229 | 23.59 |

#### Effective Radiated Power Data (Band 4 – 15 MHz)

Note: Worst case is 1 resource block.

| Freq<br>(MHz) | Bandwidth | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBi) | C.L  | Pol | EIRP  |       |
|---------------|-----------|------------|-------------------------|---------------------------|-------------------|------|-----|-------|-------|
|               |           |            |                         |                           |                   |      |     | W     | dBm   |
| 1720.0        | 20 MHz    | QPSK       | -16.79                  | 14.77                     | 9.88              | 1.16 | H   | 0.223 | 23.49 |
|               |           | 16-QAM     | -16.60                  | 14.96                     | 9.88              | 1.16 | H   | 0.233 | 23.68 |
| 1732.5        |           | QPSK       | -16.62                  | 14.94                     | 9.90              | 1.16 | H   | 0.233 | 23.68 |
|               |           | 16-QAM     | -16.48                  | 15.08                     | 9.90              | 1.16 | H   | 0.241 | 23.82 |
| 1745.0        |           | QPSK       | -16.69                  | 14.72                     | 9.96              | 1.16 | H   | 0.225 | 23.52 |
|               |           | 16-QAM     | -16.71                  | 14.70                     | 9.96              | 1.16 | H   | 0.224 | 23.50 |

#### Effective Radiated Power Data (Band 4 – 20 MHz)

Note: Worst case is 1 resource block.



**NOTES:**

Effective Radiated Power Output Measurements by Substitution Method

according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer.

A Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the Horn antenna is measured. The difference between the gain of the horn and an isotropic antenna is taken into consideration and the EIRP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is x plane in LTE mode. Also worst case of detecting Antenna is horizontal polarization in LTE mode.

| FCC CERTIFICATION REPORT             |                                |                                                                                               | <a href="http://www.hct.co.kr">www.hct.co.kr</a> |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | FCC ID:<br>ZNFD855P                              |

## 7.4 EQUIVALENT ISOTROPIC RADIATED POWER OUTPUT\_ with wireless charging pad

| Freq<br>(MHz) | Bandwidth | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBi) | C.L  | Pol | EIRP  |       |
|---------------|-----------|------------|-------------------------|---------------------------|-------------------|------|-----|-------|-------|
|               |           |            |                         |                           |                   |      |     | W     | dBm   |
| 1710.7        | 1.4 MHz   | QPSK       | -16.97                  | 14.61                     | 9.87              | 1.16 | H   | 0.215 | 23.32 |
|               |           | 16-QAM     | -16.81                  | 14.77                     | 9.87              | 1.16 | H   | 0.223 | 23.48 |
| 1732.5        |           | QPSK       | -15.54                  | 16.02                     | 9.90              | 1.16 | H   | 0.299 | 24.76 |
|               |           | 16-QAM     | -15.28                  | 16.28                     | 9.90              | 1.16 | H   | 0.318 | 25.02 |
| 1754.3        |           | QPSK       | -15.43                  | 15.92                     | 10.01             | 1.17 | H   | 0.299 | 24.76 |
|               |           | 16-QAM     | -15.21                  | 16.14                     | 10.01             | 1.17 | H   | 0.315 | 24.98 |

**Effective Radiated Power Data (Band 4 – 1.4 MHz)**

Note: Worst case is 1 resource block.

| Freq<br>(MHz) | Bandwidth | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBi) | C.L  | Pol | EIRP  |       |
|---------------|-----------|------------|-------------------------|---------------------------|-------------------|------|-----|-------|-------|
|               |           |            |                         |                           |                   |      |     | W     | dBm   |
| 1711.5        | 3 MHz     | QPSK       | -16.81                  | 14.76                     | 9.87              | 1.16 | H   | 0.222 | 23.47 |
|               |           | 16-QAM     | -16.60                  | 14.97                     | 9.87              | 1.16 | H   | 0.233 | 23.68 |
| 17325         |           | QPSK       | -15.48                  | 16.08                     | 9.90              | 1.16 | H   | 0.303 | 24.82 |
|               |           | 16-QAM     | -15.43                  | 16.13                     | 9.90              | 1.16 | H   | 0.307 | 24.87 |
| 1753.5        |           | QPSK       | -15.60                  | 15.70                     | 10.01             | 1.17 | H   | 0.284 | 24.54 |
|               |           | 16-QAM     | -15.29                  | 16.01                     | 10.01             | 1.17 | H   | 0.305 | 24.85 |

**Effective Radiated Power Data (Band 4 – 3 MHz)**

Note: Worst case is 1 resource block.

| Freq<br>(MHz) | Bandwidth | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBi) | C.L  | Pol | EIRP  |       |
|---------------|-----------|------------|-------------------------|---------------------------|-------------------|------|-----|-------|-------|
|               |           |            |                         |                           |                   |      |     | W     | dBm   |
| 1712.5        | 5 MHz     | QPSK       | -16.68                  | 14.83                     | 9.87              | 1.16 | H   | 0.226 | 23.54 |
|               |           | 16-QAM     | -16.56                  | 14.95                     | 9.87              | 1.16 | H   | 0.232 | 23.66 |
| 1732.5        |           | QPSK       | -15.43                  | 16.13                     | 9.90              | 1.16 | H   | 0.307 | 24.87 |
|               |           | 16-QAM     | -15.37                  | 16.19                     | 9.90              | 1.16 | H   | 0.311 | 24.93 |
| 1752.5        |           | QPSK       | -15.59                  | 15.71                     | 10.01             | 1.17 | H   | 0.285 | 24.55 |
|               |           | 16-QAM     | -15.20                  | 16.10                     | 10.01             | 1.17 | H   | 0.312 | 24.94 |

#### Effective Radiated Power Data (Band 4 – 5 MHz)

Note: Worst case is 1 resource block.

| Freq<br>(MHz) | Bandwidth | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBi) | C.L  | Pol | EIRP  |       |
|---------------|-----------|------------|-------------------------|---------------------------|-------------------|------|-----|-------|-------|
|               |           |            |                         |                           |                   |      |     | W     | dBm   |
| 1715.0        | 10 MHz    | QPSK       | -16.06                  | 15.59                     | 9.87              | 1.16 | H   | 0.269 | 24.30 |
|               |           | 16-QAM     | -15.87                  | 15.78                     | 9.87              | 1.16 | H   | 0.281 | 24.49 |
| 1732.5        |           | QPSK       | -15.19                  | 16.37                     | 9.90              | 1.16 | H   | 0.324 | 25.11 |
|               |           | 16-QAM     | -15.08                  | 16.48                     | 9.90              | 1.16 | H   | 0.333 | 25.22 |
| 1750.0        |           | QPSK       | -15.42                  | 15.88                     | 10.01             | 1.17 | H   | 0.296 | 24.72 |
|               |           | 16-QAM     | -15.15                  | 16.15                     | 10.01             | 1.17 | H   | 0.316 | 24.99 |

#### Effective Radiated Power Data (Band 4 – 10 MHz)

Note: Worst case is 1 resource block.

| Freq<br>(MHz) | Bandwidth | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBi) | C.L  | Pol | EIRP  |       |
|---------------|-----------|------------|-------------------------|---------------------------|-------------------|------|-----|-------|-------|
|               |           |            |                         |                           |                   |      |     | W     | dBm   |
| 1717.5        | 15 MHz    | QPSK       | -15.92                  | 15.74                     | 9.88              | 1.16 | H   | 0.279 | 24.46 |
|               |           | 16-QAM     | -16.07                  | 15.59                     | 9.88              | 1.16 | H   | 0.270 | 24.31 |
| 1732.5        |           | QPSK       | -15.25                  | 16.31                     | 9.90              | 1.16 | H   | 0.320 | 25.05 |
|               |           | 16-QAM     | -15.38                  | 16.18                     | 9.90              | 1.16 | H   | 0.310 | 24.92 |
| 1747.5        |           | QPSK       | -15.54                  | 15.82                     | 9.99              | 1.16 | H   | 0.292 | 24.65 |
|               |           | 16-QAM     | -15.30                  | 16.06                     | 9.99              | 1.16 | H   | 0.308 | 24.89 |

#### Effective Radiated Power Data (Band 4 – 15 MHz)

Note: Worst case is 1 resource block.

| Freq<br>(MHz) | Bandwidth | Modulation | Measured<br>Level (dBm) | Substitute<br>Level (dBm) | Ant.<br>Gain(dBi) | C.L  | Pol | EIRP  |       |
|---------------|-----------|------------|-------------------------|---------------------------|-------------------|------|-----|-------|-------|
|               |           |            |                         |                           |                   |      |     | W     | dBm   |
| 1720.0        | 20 MHz    | QPSK       | -15.82                  | 15.74                     | 9.88              | 1.16 | H   | 0.279 | 24.46 |
|               |           | 16-QAM     | -15.70                  | 15.86                     | 9.88              | 1.16 | H   | 0.287 | 24.58 |
| 1732.5        |           | QPSK       | -15.26                  | 16.30                     | 9.90              | 1.16 | H   | 0.319 | 25.04 |
|               |           | 16-QAM     | -14.95                  | 16.61                     | 9.90              | 1.16 | H   | 0.343 | 25.35 |
| 1745.0        |           | QPSK       | -15.48                  | 15.93                     | 9.96              | 1.16 | H   | 0.297 | 24.73 |
|               |           | 16-QAM     | -15.30                  | 16.11                     | 9.96              | 1.16 | H   | 0.310 | 24.91 |

#### Effective Radiated Power Data (Band 4 – 20 MHz)

Note: Worst case is 1 resource block.

**NOTES:**

Effective Radiated Power Output Measurements by Substitution Method

according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a non-conductive styrofoam resin table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer.

A Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the Horn antenna is measured. The difference between the gain of the horn and an isotropic antenna is taken into consideration and the EIRP is recorded.

Also, we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna. The worst case of the EUT is x plane in LTE mode. Also worst case of detecting Antenna is horizontal polarization in LTE mode.

| FCC CERTIFICATION REPORT             |                                |                                                                                               | <a href="http://www.hct.co.kr">www.hct.co.kr</a> |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | FCC ID:<br>ZNFD855P                              |

## 7.5 RADIATED SPURIOUS EMISSIONS\_stand alone

### 7.5.1 RADIATED SPURIOUS EMISSIONS (Band 17)

OPERATING FREQUENCY : 706.50 MHz  
 MEASURED OUTPUT POWER: 18.85 dBm = 0.077W  
 MODULATION SIGNAL: 5 MHz 16-QAM  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  31.85 dBc

| Ch                | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBd) | Substitute Level (dBm) | C.L  | Pol | ERP (dBm) | dBc   |
|-------------------|------------|----------------------|-----------------|------------------------|------|-----|-----------|-------|
| 23755<br>(706.50) | 1413.0     | -39.53               | 5.67            | -43.60                 | 1.05 | V   | -38.98    | 57.83 |
|                   | 2119.5     | -49.82               | 7.40            | -54.06                 | 1.2  | V   | -47.86    | 66.71 |
|                   | 2826.0     | -44.14               | 8.69            | -47.61                 | 1.46 | V   | -40.38    | 59.23 |
| 23790<br>(710.00) | 1420.0     | -37.87               | 5.71            | -42.64                 | 1.05 | V   | -37.98    | 56.83 |
|                   | 2130.0     | -48.21               | 7.34            | -52.33                 | 1.24 | V   | -46.23    | 65.08 |
|                   | 2840.0     | -42.82               | 8.75            | -46.64                 | 1.48 | V   | -39.37    | 58.22 |
| 23825<br>(713.50) | 1427.0     | -38.98               | 5.75            | -43.59                 | 1.04 | V   | -38.88    | 57.73 |
|                   | 2140.5     | -42.88               | 7.27            | -46.57                 | 1.22 | V   | -40.52    | 59.37 |
|                   | 2854.0     | -42.90               | 8.80            | -46.60                 | 1.46 | V   | -39.26    | 58.11 |

- NOTES:**
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
  2. We are performed all frequency to 10<sup>th</sup> harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
  3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
  4. Worst case is 1 resource block.

OPERATING FREQUENCY : 710.00 MHz  
 MEASURED OUTPUT POWER: 19.45 dBm = 0.088W  
 MODULATION SIGNAL: 10 MHz 16-QAM  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  32.45 dBc

| Ch                | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBd) | Substitute Level (dBm) | C.L  | Pol | ERP (dBm) | dBc   |
|-------------------|------------|----------------------|-----------------|------------------------|------|-----|-----------|-------|
| 23780<br>(709.00) | 1418.0     | -39.01               | 5.70            | -43.11                 | 1.05 | V   | -38.46    | 57.91 |
|                   | 2127.0     | -49.45               | 7.36            | -53.60                 | 1.23 | V   | -47.47    | 66.92 |
|                   | 2836.0     | -42.71               | 8.69            | -46.17                 | 1.47 | V   | -38.95    | 58.40 |
| 23790<br>(710.00) | 1420.0     | -38.47               | 5.71            | -43.24                 | 1.05 | V   | -38.58    | 58.03 |
|                   | 2130.0     | -49.64               | 7.34            | -53.76                 | 1.24 | V   | -47.66    | 67.11 |
|                   | 2840.0     | -42.41               | 8.75            | -46.23                 | 1.48 | V   | -38.96    | 58.41 |
| 23800<br>(711.00) | 1422.0     | -37.70               | 5.72            | -42.27                 | 1.05 | V   | -37.60    | 57.05 |
|                   | 2133.0     | -49.60               | 7.33            | -53.69                 | 1.24 | V   | -47.60    | 67.05 |
|                   | 2844.0     | -42.14               | 8.77            | -45.82                 | 1.47 | V   | -38.52    | 57.97 |

- NOTES:**
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
  2. We are performed all frequency to 10<sup>th</sup> harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
  3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
  4. Worst case is 1 resource block.

## 7.5.2 RADIATED SPURIOUS EMISSIONS (Band 4)

OPERATING FREQUENCY : 1732.50 MHz  
 MEASURED OUTPUT POWER: 23.81 dBm = 0.240W  
 MODULATION SIGNAL: 1.4 MHz 16-QAM  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  36.81 dBc

| Ch                | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBi) | Substitute Level (dBm) | C.L  | Pol | EIRP (dBm) | dBc   |
|-------------------|------------|----------------------|-----------------|------------------------|------|-----|------------|-------|
| 19957<br>(1710.7) | 3,421.40   | -45.05               | 12.36           | -51.89                 | 1.64 | H   | -41.17     | 64.98 |
|                   | 5,132.10   | -29.10               | 12.34           | -29.30                 | 2.01 | H   | -18.97     | 42.78 |
|                   | 6,842.80   | -33.53               | 12.17           | -27.92                 | 2.35 | H   | -18.10     | 41.91 |
| 20175<br>(1732.5) | 3,465.00   | -44.35               | 12.27           | -50.88                 | 1.63 | H   | -40.24     | 64.05 |
|                   | 5,197.50   | -33.89               | 12.63           | -34.44                 | 2.11 | H   | -23.92     | 47.73 |
|                   | 6,930.00   | -40.54               | 11.87           | -34.39                 | 2.41 | H   | -24.93     | 48.74 |
| 20393<br>(1754.3) | 3,508.60   | -44.79               | 12.15           | -50.55                 | 1.67 | H   | -40.07     | 63.88 |
|                   | 5,262.90   | -33.56               | 12.91           | -35.10                 | 2.03 | H   | -24.22     | 48.03 |
|                   | 7,017.20   | -38.62               | 11.59           | -31.75                 | 2.38 | H   | -22.54     | 46.35 |

- NOTES:**
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
  2. We are performed all frequency to 10<sup>th</sup> harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
  3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
  4. Worst case is 1 resource block.

OPERATING FREQUENCY : 1732.50 MHz  
 MEASURED OUTPUT POWER: 23.74 dBm = 0.237W  
 MODULATION SIGNAL: 3 MHz 16-QAM  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  36.74 dBc

| Ch                | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBi) | Substitute Level (dBm) | C.L  | Pol | EIRP (dBm) | dBc   |
|-------------------|------------|----------------------|-----------------|------------------------|------|-----|------------|-------|
| 19965<br>(1711.5) | 3,423.00   | -44.15               | 12.36           | -50.99                 | 1.64 | H   | -40.27     | 64.01 |
|                   | 5,134.50   | -31.33               | 12.35           | -31.55                 | 2.00 | H   | -21.20     | 44.94 |
|                   | 6,846.00   | -36.55               | 12.16           | -30.92                 | 2.36 | H   | -21.12     | 44.86 |
| 20175<br>(1732.5) | 3,465.00   | -44.55               | 12.27           | -51.08                 | 1.63 | H   | -40.44     | 64.18 |
|                   | 5,197.50   | -32.76               | 12.63           | -33.31                 | 2.11 | H   | -22.79     | 46.53 |
|                   | 6,930.00   | -39.95               | 11.87           | -33.80                 | 2.41 | H   | -24.34     | 48.08 |
| 20385<br>(1753.5) | 3,507.00   | -45.33               | 12.15           | -51.09                 | 1.67 | H   | -40.61     | 64.35 |
|                   | 5,260.50   | -32.31               | 12.90           | -33.85                 | 2.02 | H   | -22.97     | 46.71 |
|                   | 7,014.00   | -39.47               | 11.59           | -32.65                 | 2.33 | H   | -23.39     | 47.13 |

- NOTES:**
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
  2. We are performed all frequency to 10<sup>th</sup> harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
  3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
  4. Worst case is 1 resource block.

OPERATING FREQUENCY : 1732.50 MHz  
 MEASURED OUTPUT POWER: 23.80 dBm = 0.240W  
 MODULATION SIGNAL: 5 MHz QPSK  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  36.80 dBc

| Ch                | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBi) | Substitute Level (dBm) | C.L  | Pol | EIRP (dBm) | dBc   |
|-------------------|------------|----------------------|-----------------|------------------------|------|-----|------------|-------|
| 19975<br>(1712.5) | 3425.0     | -44.24               | 12.35           | -51.08                 | 1.63 | H   | -40.36     | 64.16 |
|                   | 5137.5     | -32.52               | 12.36           | -32.76                 | 1.99 | H   | -22.39     | 46.19 |
|                   | 6850.0     | -36.29               | 12.15           | -30.65                 | 2.36 | H   | -20.86     | 44.66 |
| 20175<br>(1732.5) | 3465.0     | -44.33               | 12.27           | -50.86                 | 1.63 | H   | -40.22     | 64.02 |
|                   | 5197.5     | -31.94               | 12.63           | -32.49                 | 2.11 | H   | -21.97     | 45.77 |
|                   | 6930.0     | -40.36               | 11.87           | -34.21                 | 2.41 | H   | -24.75     | 48.55 |
| 20375<br>(1752.5) | 3505.0     | -45.22               | 12.15           | -50.98                 | 1.67 | H   | -40.50     | 64.30 |
|                   | 5257.5     | -32.40               | 12.90           | -33.85                 | 2.02 | H   | -22.97     | 46.77 |
|                   | 7010.0     | -39.05               | 11.61           | -32.45                 | 2.36 | H   | -23.20     | 47.00 |

- NOTES:**
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
  2. We are performed all frequency to 10<sup>th</sup> harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
  3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
  4. Worst case is 1 resource block.

OPERATING FREQUENCY : 1732.50 MHz  
 MEASURED OUTPUT POWER: 24.02 dBm = 0.252W  
 MODULATION SIGNAL: 10 MHz 16-QAM  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  37.02 dBc

| Ch                | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBi) | Substitute Level (dBm) | C.L  | Pol | EIRP (dBm) | dBc   |
|-------------------|------------|----------------------|-----------------|------------------------|------|-----|------------|-------|
| 20000<br>(1715.0) | 3430.0     | -44.17               | 12.34           | -51.26                 | 1.63 | H   | -40.55     | 64.57 |
|                   | 5145.0     | -32.38               | 12.38           | -32.54                 | 1.97 | H   | -22.13     | 46.15 |
|                   | 6860.0     | -38.62               | 12.11           | -33.18                 | 2.38 | H   | -23.45     | 47.47 |
| 20175<br>(1732.5) | 3465.0     | -45.30               | 12.27           | -51.83                 | 1.63 | H   | -41.19     | 65.21 |
|                   | 5197.5     | -33.20               | 12.63           | -33.75                 | 2.11 | H   | -23.23     | 47.25 |
|                   | 6930.0     | -40.43               | 11.87           | -34.28                 | 2.41 | H   | -24.82     | 48.84 |
| 20350<br>(1750.0) | 3500.0     | -45.29               | 12.15           | -51.30                 | 1.66 | H   | -40.81     | 64.83 |
|                   | 5250.0     | -32.85               | 12.87           | -34.26                 | 2.03 | H   | -23.42     | 47.44 |
|                   | 7000.0     | -39.20               | 11.65           | -32.52                 | 2.39 | H   | -23.26     | 47.28 |

- NOTES:**
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
  2. We are performed all frequency to 10<sup>th</sup> harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
  3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
  4. Worst case is 1 resource block.

OPERATING FREQUENCY : 1732.50 MHz  
 MEASURED OUTPUT POWER: 24.03 dBm = 0.253W  
 MODULATION SIGNAL: 15 MHz QPSK  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  37.03 dBc

| Ch                | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBi) | Substitute Level (dBm) | C.L  | Pol | EIRP (dBm) | dBc   |
|-------------------|------------|----------------------|-----------------|------------------------|------|-----|------------|-------|
| 20025<br>(1717.5) | 3435.0     | -44.42               | 12.34           | -51.23                 | 1.63 | H   | -40.52     | 64.55 |
|                   | 5152.5     | -32.44               | 12.40           | -32.63                 | 1.96 | H   | -22.19     | 46.22 |
|                   | 6870.0     | -37.21               | 12.08           | -32.01                 | 2.36 | H   | -22.29     | 46.32 |
| 20175<br>(1732.5) | 3465.0     | -44.80               | 12.27           | -51.33                 | 1.63 | H   | -40.69     | 64.72 |
|                   | 5197.5     | -32.67               | 12.63           | -33.22                 | 2.11 | H   | -22.70     | 46.73 |
|                   | 6930.0     | -39.80               | 11.87           | -33.65                 | 2.41 | H   | -24.19     | 48.22 |
| 20325<br>(1747.5) | 3495.0     | -45.74               | 12.17           | -51.78                 | 1.65 | H   | -41.26     | 65.29 |
|                   | 5242.5     | -32.67               | 12.83           | -33.86                 | 1.99 | H   | -23.02     | 47.05 |
|                   | 6990.0     | -39.08               | 11.68           | -31.76                 | 2.38 | H   | -22.46     | 46.49 |

- NOTES:** 1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
2. We are performed all frequency to 10<sup>th</sup> harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. Worst case is 1 resource block.

OPERATING FREQUENCY : 1732.50 MHz  
 MEASURED OUTPUT POWER: 23.82 dBm = 0.241W  
 MODULATION SIGNAL: 20 MHz 16-QAM  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  36.82 dBc

| Ch                | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBi) | Substitute Level (dBm) | C.L  | Pol | EIRP (dBm) | dBc   |
|-------------------|------------|----------------------|-----------------|------------------------|------|-----|------------|-------|
| 20050<br>(1720.0) | 3440.0     | -44.00               | 12.33           | -50.79                 | 1.64 | H   | -40.10     | 63.92 |
|                   | 5160.0     | -32.08               | 12.44           | -32.42                 | 1.98 | H   | -21.96     | 45.78 |
|                   | 6880.0     | -41.21               | 12.04           | -36.12                 | 2.37 | H   | -26.45     | 50.27 |
| 20175<br>(1732.5) | 3465.0     | -44.11               | 12.27           | -50.64                 | 1.63 | H   | -40.00     | 63.82 |
|                   | 5197.5     | -31.92               | 12.63           | -32.47                 | 2.11 | H   | -21.95     | 45.77 |
|                   | 6930.0     | -39.86               | 11.87           | -33.71                 | 2.41 | H   | -24.25     | 48.07 |
| 20300<br>(1745.0) | 3490.0     | -45.63               | 12.18           | -51.82                 | 1.65 | H   | -41.29     | 65.11 |
|                   | 5235.0     | -33.46               | 12.81           | -34.63                 | 1.99 | H   | -23.81     | 47.63 |
|                   | 6980.0     | -38.70               | 11.71           | -31.83                 | 2.37 | H   | -22.49     | 46.31 |

- NOTES:**
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
  2. We are performed all frequency to 10<sup>th</sup> harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
  3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
  4. Worst case is 1 resource block.

## 7.6 RADIATED SPURIOUS EMISSIONS\_ with wireless charging pad

### 7.6.1 RADIATED SPURIOUS EMISSIONS (Band 17)

OPERATING FREQUENCY : 706.50 MHz  
 MEASURED OUTPUT POWER: 17.93 dBm = 0.062W  
 MODULATION SIGNAL: 5 MHz 16-QAM  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  30.93 dBc

| Ch                | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBd) | Substitute Level (dBm) | C.L  | Pol | ERP (dBm) | dBc   |
|-------------------|------------|----------------------|-----------------|------------------------|------|-----|-----------|-------|
| 23755<br>(706.50) | 1413.0     | -40.58               | 5.67            | -44.65                 | 1.05 | H   | -40.03    | 57.96 |
|                   | 2119.5     | -49.58               | 7.40            | -53.82                 | 1.2  | H   | -47.62    | 65.55 |
|                   | 2826.0     | -45.95               | 8.69            | -49.42                 | 1.46 | H   | -42.19    | 60.12 |
| 23790<br>(710.00) | 1420.0     | -38.13               | 5.71            | -42.90                 | 1.05 | H   | -38.24    | 56.17 |
|                   | 2130.0     | -46.88               | 7.34            | -51.00                 | 1.24 | H   | -44.90    | 62.83 |
|                   | 2840.0     | -46.10               | 8.75            | -49.92                 | 1.48 | H   | -42.65    | 60.58 |
| 23825<br>(713.50) | 1427.0     | -38.73               | 5.75            | -43.34                 | 1.04 | H   | -38.63    | 56.56 |
|                   | 2140.5     | -43.33               | 7.27            | -47.02                 | 1.22 | H   | -40.97    | 58.90 |
|                   | 2854.0     | -46.12               | 8.80            | -49.82                 | 1.46 | H   | -42.48    | 60.41 |

- NOTES:**
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
  2. We are performed all frequency to 10<sup>th</sup> harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
  3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
  4. Worst case is 1 resource block.

OPERATING FREQUENCY : 710.00 MHz  
 MEASURED OUTPUT POWER: 18.76 dBm = 0.075W  
 MODULATION SIGNAL: 10 MHz 16-QAM  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  31.76 dBc

| Ch                | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBd) | Substitute Level (dBm) | C.L  | Pol | ERP (dBm) | dBc   |
|-------------------|------------|----------------------|-----------------|------------------------|------|-----|-----------|-------|
| 23780<br>(709.00) | 1418.0     | -38.70               | 5.70            | -42.80                 | 1.05 | H   | -38.15    | 56.91 |
|                   | 2127.0     | -44.54               | 7.36            | -48.69                 | 1.23 | H   | -42.56    | 61.32 |
|                   | 2836.0     | -45.83               | 8.69            | -49.29                 | 1.47 | H   | -42.07    | 60.83 |
| 23790<br>(710.00) | 1420.0     | -38.58               | 5.71            | -43.35                 | 1.05 | H   | -38.69    | 57.45 |
|                   | 2130.0     | -42.83               | 7.34            | -46.95                 | 1.24 | H   | -40.85    | 59.61 |
|                   | 2840.0     | -46.52               | 8.75            | -50.34                 | 1.48 | H   | -43.07    | 61.83 |
| 23800<br>(711.00) | 1422.0     | -38.61               | 5.72            | -43.18                 | 1.05 | H   | -38.51    | 57.27 |
|                   | 2133.0     | -43.50               | 7.33            | -47.59                 | 1.24 | H   | -41.50    | 60.26 |
|                   | 2844.0     | -46.70               | 8.77            | -50.38                 | 1.47 | H   | -43.08    | 61.84 |

- NOTES:**
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
  2. We are performed all frequency to 10<sup>th</sup> harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
  3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
  4. Worst case is 1 resource block.

## 7.6.2 RADIATED SPURIOUS EMISSIONS (Band 4)

OPERATING FREQUENCY : 1732.50 MHz  
 MEASURED OUTPUT POWER: 25.02 dBm = 0.318W  
 MODULATION SIGNAL: 1.4 MHz 16-QAM  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  38.02 dBc

| Ch                | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBi) | Substitute Level (dBm) | C.L  | Pol | EIRP (dBm) | dBc   |
|-------------------|------------|----------------------|-----------------|------------------------|------|-----|------------|-------|
| 19957<br>(1710.7) | 3,421.40   | -46.09               | 12.36           | -52.93                 | 1.64 | H   | -42.21     | 67.23 |
|                   | 5,132.10   | -37.12               | 12.34           | -37.32                 | 2.01 | H   | -26.99     | 52.01 |
|                   | 6,842.80   | -35.51               | 12.17           | -29.90                 | 2.35 | H   | -20.08     | 45.10 |
| 20175<br>(1732.5) | 3,465.00   | -45.96               | 12.27           | -52.49                 | 1.63 | H   | -41.85     | 66.87 |
|                   | 5,197.50   | -38.86               | 12.63           | -39.41                 | 2.11 | H   | -28.89     | 53.91 |
|                   | 6,930.00   | -38.37               | 11.87           | -32.22                 | 2.41 | H   | -22.76     | 47.78 |
| 20393<br>(1754.3) | 3,508.60   | -45.85               | 12.15           | -51.61                 | 1.67 | H   | -41.13     | 66.15 |
|                   | 5,262.90   | -35.86               | 12.91           | -37.40                 | 2.03 | H   | -26.52     | 51.54 |
|                   | 7,017.20   | -39.71               | 11.59           | -32.84                 | 2.38 | H   | -23.63     | 48.65 |

- NOTES:**
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
  2. We are performed all frequency to 10<sup>th</sup> harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
  3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
  4. Worst case is 1 resource block.

OPERATING FREQUENCY : 1732.50 MHz  
 MEASURED OUTPUT POWER: 24.87 dBm = 0.307W  
 MODULATION SIGNAL: 3 MHz 16-QAM  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  37.87 dBc

| Ch                | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBi) | Substitute Level (dBm) | C.L  | Pol | EIRP (dBm) | dBc   |
|-------------------|------------|----------------------|-----------------|------------------------|------|-----|------------|-------|
| 19965<br>(1711.5) | 3,423.00   | -45.48               | 12.36           | -52.32                 | 1.64 | H   | -41.60     | 66.47 |
|                   | 5,134.50   | -35.96               | 12.35           | -36.18                 | 2.00 | H   | -25.83     | 50.70 |
|                   | 6,846.00   | -36.14               | 12.16           | -30.51                 | 2.36 | H   | -20.71     | 45.58 |
| 20175<br>(1732.5) | 3,465.00   | -45.87               | 12.27           | -52.40                 | 1.63 | H   | -41.76     | 66.63 |
|                   | 5,197.50   | -37.39               | 12.63           | -37.94                 | 2.11 | H   | -27.42     | 52.29 |
|                   | 6,930.00   | -38.20               | 11.87           | -32.05                 | 2.41 | H   | -22.59     | 47.46 |
| 20385<br>(1753.5) | 3,507.00   | -45.91               | 12.15           | -51.67                 | 1.67 | H   | -41.19     | 66.06 |
|                   | 5,260.50   | -36.13               | 12.90           | -37.67                 | 2.02 | H   | -26.79     | 51.66 |
|                   | 7,014.00   | -40.00               | 11.59           | -33.18                 | 2.33 | H   | -23.92     | 48.79 |

- NOTES:**
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
  2. We are performed all frequency to 10<sup>th</sup> harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
  3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
  4. Worst case is 1 resource block.

OPERATING FREQUENCY : 1732.50 MHz  
 MEASURED OUTPUT POWER: 24.94 dBm = 0.312W  
 MODULATION SIGNAL: 5 MHz 16-QAM  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  37.94 dBc

| Ch                | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBi) | Substitute Level (dBm) | C.L  | Pol | EIRP (dBm) | dBc   |
|-------------------|------------|----------------------|-----------------|------------------------|------|-----|------------|-------|
| 19975<br>(1712.5) | 3425.0     | -46.51               | 12.35           | -53.35                 | 1.63 | H   | -42.63     | 67.57 |
|                   | 5137.5     | -36.51               | 12.36           | -36.75                 | 1.99 | H   | -26.38     | 51.32 |
|                   | 6850.0     | -38.08               | 12.15           | -32.44                 | 2.36 | H   | -22.65     | 47.59 |
| 20175<br>(1732.5) | 3465.0     | -45.80               | 12.27           | -52.33                 | 1.63 | H   | -41.69     | 66.63 |
|                   | 5197.5     | -30.33               | 12.63           | -30.88                 | 2.11 | H   | -20.36     | 45.30 |
|                   | 6930.0     | -36.94               | 11.87           | -30.79                 | 2.41 | H   | -21.33     | 46.27 |
| 20375<br>(1752.5) | 3505.0     | -45.26               | 12.15           | -51.02                 | 1.67 | H   | -40.54     | 65.48 |
|                   | 5257.5     | -37.30               | 12.90           | -38.75                 | 2.02 | H   | -27.87     | 52.81 |
|                   | 7010.0     | -41.62               | 11.61           | -35.02                 | 2.36 | H   | -25.77     | 50.71 |

- NOTES:**
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
  2. We are performed all frequency to 10<sup>th</sup> harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
  3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
  4. Worst case is 1 resource block.

OPERATING FREQUENCY : 1732.50 MHz  
 MEASURED OUTPUT POWER: 25.22 dBm = 0.333W  
 MODULATION SIGNAL: 10 MHz 16-QAM  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10} (W) =$  38.22 dBc

| Ch                | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBi) | Substitute Level (dBm) | C.L  | Pol | EIRP (dBm) | dBc   |
|-------------------|------------|----------------------|-----------------|------------------------|------|-----|------------|-------|
| 20000<br>(1715.0) | 3430.0     | -46.70               | 12.34           | -53.79                 | 1.63 | H   | -43.08     | 68.30 |
|                   | 5145.0     | -36.27               | 12.38           | -36.43                 | 1.97 | H   | -26.02     | 51.24 |
|                   | 6860.0     | -36.47               | 12.11           | -31.03                 | 2.38 | H   | -21.30     | 46.52 |
| 20175<br>(1732.5) | 3465.0     | -45.60               | 12.27           | -52.13                 | 1.63 | H   | -41.49     | 66.71 |
|                   | 5197.5     | -36.37               | 12.63           | -36.92                 | 2.11 | H   | -26.40     | 51.62 |
|                   | 6930.0     | -38.18               | 11.87           | -32.03                 | 2.41 | H   | -22.57     | 47.79 |
| 20350<br>(1750.0) | 3500.0     | -45.90               | 12.15           | -51.91                 | 1.66 | H   | -41.42     | 66.64 |
|                   | 5250.0     | -37.02               | 12.87           | -38.43                 | 2.03 | H   | -27.59     | 52.81 |
|                   | 7000.0     | -39.49               | 11.65           | -32.81                 | 2.39 | H   | -23.55     | 48.77 |

- NOTES:**
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
  2. We are performed all frequency to 10<sup>th</sup> harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
  3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
  4. Worst case is 1 resource block.

OPERATING FREQUENCY : 1732.50 MHz  
 MEASURED OUTPUT POWER: 25.05 dBm = 0.320W  
 MODULATION SIGNAL: 15 MHz QPSK  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  38.05 dBc

| Ch                | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBi) | Substitute Level (dBm) | C.L  | Pol | EIRP (dBm) | dBc   |
|-------------------|------------|----------------------|-----------------|------------------------|------|-----|------------|-------|
| 20025<br>(1717.5) | 3435.0     | -47.13               | 12.34           | -53.94                 | 1.63 | H   | -43.23     | 68.28 |
|                   | 5152.5     | -36.33               | 12.40           | -36.52                 | 1.96 | H   | -26.08     | 51.13 |
|                   | 6870.0     | -35.87               | 12.08           | -30.67                 | 2.36 | H   | -20.95     | 46.00 |
| 20175<br>(1732.5) | 3465.0     | -44.92               | 12.27           | -51.45                 | 1.63 | H   | -40.81     | 65.86 |
|                   | 5197.5     | -37.38               | 12.63           | -37.93                 | 2.11 | H   | -27.41     | 52.46 |
|                   | 6930.0     | -38.36               | 11.87           | -32.21                 | 2.41 | H   | -22.75     | 47.80 |
| 20325<br>(1747.5) | 3495.0     | -45.93               | 12.17           | -51.97                 | 1.65 | H   | -41.45     | 66.50 |
|                   | 5242.5     | -37.16               | 12.83           | -38.35                 | 1.99 | H   | -27.51     | 52.56 |
|                   | 6990.0     | -41.48               | 11.68           | -34.16                 | 2.38 | H   | -24.86     | 49.91 |

- NOTES:**
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
  2. We are performed all frequency to 10<sup>th</sup> harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
  3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
  4. Worst case is 1 resource block.

OPERATING FREQUENCY : 1732.50 MHz  
 MEASURED OUTPUT POWER: 25.35 dBm = 0.343W  
 MODULATION SIGNAL: 20 MHz 16-QAM  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  38.35 dBc

| Ch                | Freq (MHz) | Measured Level (dBm) | Ant. Gain (dBi) | Substitute Level (dBm) | C.L  | Pol | EIRP (dBm) | dBc   |
|-------------------|------------|----------------------|-----------------|------------------------|------|-----|------------|-------|
| 20050<br>(1720.0) | 3440.0     | -43.64               | 12.33           | -50.43                 | 1.64 | H   | -39.74     | 65.09 |
|                   | 5160.0     | -34.76               | 12.44           | -35.10                 | 1.98 | H   | -24.64     | 49.99 |
|                   | 6880.0     | -38.98               | 12.04           | -33.89                 | 2.37 | H   | -24.22     | 49.57 |
| 20175<br>(1732.5) | 3465.0     | -42.86               | 12.27           | -49.39                 | 1.63 | H   | -38.75     | 64.10 |
|                   | 5197.5     | -35.17               | 12.63           | -35.72                 | 2.11 | H   | -25.20     | 50.55 |
|                   | 6930.0     | -39.94               | 11.87           | -33.79                 | 2.41 | H   | -24.33     | 49.68 |
| 20300<br>(1745.0) | 3490.0     | -43.66               | 12.18           | -49.85                 | 1.65 | H   | -39.32     | 64.67 |
|                   | 5235.0     | -35.63               | 12.81           | -36.80                 | 1.99 | H   | -25.98     | 51.33 |
|                   | 6980.0     | -40.22               | 11.71           | -33.35                 | 2.37 | H   | -24.01     | 49.36 |

- NOTES:**
1. Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:
  2. We are performed all frequency to 10<sup>th</sup> harmonics from 30 MHz. Measurements above show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
  3. we have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
  4. Worst case is 1 resource block.

## 7.7 PEAK-TO-AVERAGE RATIO

| Band    | Band Width | Frequency (MHz) | Modulation | Resource Block Size | Resource Block Offset | Data (dB ) |
|---------|------------|-----------------|------------|---------------------|-----------------------|------------|
| Band 17 | 5 MHz      | 710.0           | QPSK       | 25                  | 0                     | 5.05       |
|         |            |                 | 16-QAM     | 25                  | 0                     | 5.77       |
|         | 10 MHz     | 710.0           | QPSK       | 50                  | 0                     | 5.82       |
|         |            |                 | 16-QAM     | 50                  | 0                     | 5.08       |

| Band   | Band Width | Frequency (MHz) | Modulation | Resource Block Size | Resource Block Offset | Data (dB ) |
|--------|------------|-----------------|------------|---------------------|-----------------------|------------|
| Band 4 | 1.4 MHz    | 1732.5          | QPSK       | 6                   | 0                     | 5.90       |
|        |            |                 | 16-QAM     | 6                   | 0                     | 6.73       |
|        | 3 MHz      | 1732.5          | QPSK       | 15                  | 0                     | 5.84       |
|        |            |                 | 16-QAM     | 15                  | 0                     | 6.65       |
|        | 5 MHz      | 1732.5          | QPSK       | 25                  | 0                     | 5.76       |
|        |            |                 | 16-QAM     | 25                  | 0                     | 6.44       |
|        | 10 MHz     | 1732.5          | QPSK       | 50                  | 0                     | 5.75       |
|        |            |                 | 16-QAM     | 50                  | 0                     | 6.43       |
|        | 15 MHz     | 1732.5          | QPSK       | 75                  | 0                     | 5.60       |
|        |            |                 | 16-QAM     | 75                  | 0                     | 6.36       |
|        | 20 MHz     | 1732.5          | QPSK       | 100                 | 0                     | 5.57       |
|        |            |                 | 16-QAM     | 100                 | 0                     | 6.39       |

- Plots of the EUT's Peak- to- Average Ratio are shown Page 68 ~ 75

## 7.8 OCCUPIED BANDWIDTH

| Band    | Band Width (MHz) | Frequency (MHz) | Modulation | Resource Block Size | Resource Block Offset | Data ( MHz ) |
|---------|------------------|-----------------|------------|---------------------|-----------------------|--------------|
| Band 17 | 5                | 710.0           | QPSK       | 25                  | 0                     | 4.4967       |
|         |                  |                 | 16-QAM     | 25                  | 0                     | 4.4986       |
|         | 10               | 710.0           | QPSK       | 50                  | 0                     | 8.9535       |
|         |                  |                 | 16-QAM     | 50                  | 0                     | 8.9300       |

| Band   | Band Width (MHz) | Frequency (MHz) | Modulation | Resource Block Size | Resource Block Offset | Data ( MHz ) |
|--------|------------------|-----------------|------------|---------------------|-----------------------|--------------|
| Band 4 | 1.4              | 1732.5          | QPSK       | 6                   | 0                     | 1.0848       |
|        |                  |                 | 16-QAM     | 6                   | 0                     | 1.0828       |
|        | 3                | 1732.5          | QPSK       | 15                  | 0                     | 2.6901       |
|        |                  |                 | 16-QAM     | 15                  | 0                     | 2.6915       |
|        | 5                | 1732.5          | QPSK       | 25                  | 0                     | 4.4997       |
|        |                  |                 | 16-QAM     | 25                  | 0                     | 4.4974       |
|        | 10               | 1732.5          | QPSK       | 50                  | 0                     | 8.9624       |
|        |                  |                 | 16-QAM     | 50                  | 0                     | 8.9398       |
|        | 15               | 1732.5          | QPSK       | 75                  | 0                     | 13.411       |
|        |                  |                 | 16-QAM     | 75                  | 0                     | 13.448       |
|        | 20               | 1732.5          | QPSK       | 100                 | 0                     | 17.867       |
|        |                  |                 | 16-QAM     | 100                 | 0                     | 17.852       |

- Plots of the EUT's Occupied Bandwidth are shown Page 60 ~ 67.

## 7.9 CONDUCTED SPURIOUS EMISSIONS

| Band    | Band Width (MHz) | Frequency (MHz) | Modulation | Resource Block Size | Resource Block Offset | Frequency of Maximum Harmonic (GHz) | Maximum Data [dBm] |
|---------|------------------|-----------------|------------|---------------------|-----------------------|-------------------------------------|--------------------|
| Band 17 | 5                | 706.5           | QPSK       | 1                   | 0                     | 6.974750                            | -26.46             |
|         |                  | 710.0           |            | 1                   | 0                     | 6.941750                            | -26.86             |
|         |                  | 713.5           |            | 1                   | 0                     | 6.999750                            | -26.01             |
|         | 10               | 709.0           |            | 1                   | 0                     | 6.980250                            | -27.06             |
|         |                  | 710.0           |            | 1                   | 0                     | 6.969750                            | -26.85             |
|         |                  | 711.0           |            | 1                   | 0                     | 6.976750                            | -26.20             |
|         |                  |                 |            |                     |                       |                                     |                    |

| Band   | Band Width (MHz) | Frequency (MHz) | Modulation | Resource Block Size | Resource Block Offset | Frequency of Maximum Harmonic (GHz) | Maximum Data [dBm] |
|--------|------------------|-----------------|------------|---------------------|-----------------------|-------------------------------------|--------------------|
| Band 4 | 1.4              | 1710.7          | QPSK       | 1                   | 0                     | 6.989740                            | -25.79             |
|        |                  | 1732.5          |            | 1                   | 0                     | 6.997440                            | -26.62             |
|        |                  | 1754.3          |            | 1                   | 0                     | 6.961190                            | -26.70             |
|        | 3                | 1711.5          |            | 1                   | 0                     | 6.994720                            | -26.37             |
|        |                  | 1732.5          |            | 1                   | 0                     | 6.981130                            | -26.14             |
|        |                  | 1753.5          |            | 1                   | 0                     | 6.980680                            | -26.39             |
|        | 5                | 1712.5          |            | 1                   | 0                     | 6.999260                            | -26.17             |
|        |                  | 1732.5          |            | 1                   | 0                     | 6.986570                            | -26.38             |
|        |                  | 1752.5          |            | 1                   | 0                     | 6.960740                            | -25.96             |
|        | 10               | 1715.0          |            | 1                   | 0                     | 6.603180                            | -26.46             |
|        |                  | 1732.5          |            | 1                   | 0                     | 6.971160                            | -26.33             |
|        |                  | 1750.0          |            | 1                   | 0                     | 6.916780                            | -25.62             |
|        | 15               | 1717.5          |            | 1                   | 0                     | 6.980680                            | -26.34             |
|        |                  | 1732.5          |            | 1                   | 0                     | 6.987470                            | -25.49             |
|        |                  | 1747.5          |            | 1                   | 0                     | 4.791350                            | -26.66             |
|        | 20               | 1720.0          |            | 1                   | 0                     | 6.917680                            | -26.02             |
|        |                  | 1732.5          |            | 1                   | 0                     | 6.982940                            | -25.32             |
|        |                  | 1745.0          |            | 1                   | 0                     | 6.986110                            | -25.97             |

- Plots of the EUT's Conducted Spurious Emissions are shown Page 92~ 115.

### 7.9.1 BAND EDGE

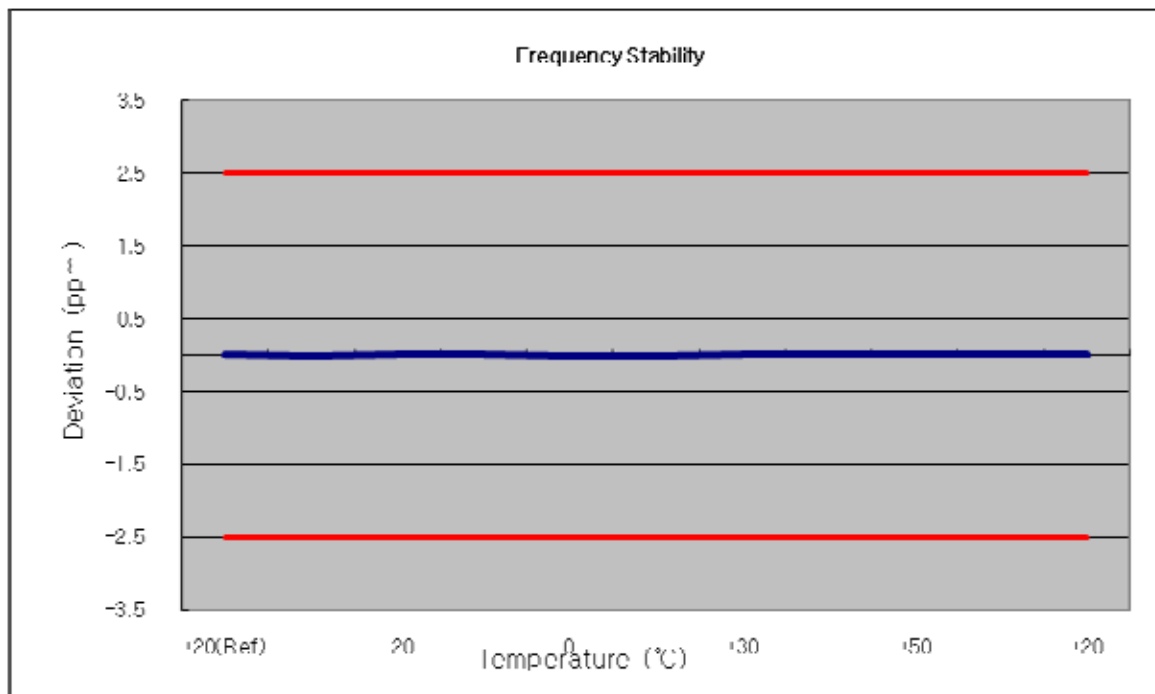
- Plots of the EUT's Band Edge are shown Page 76 ~ 91

## 7.10 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

### 7.10.1 FREQUENCY STABILITY (LTE Band 17)

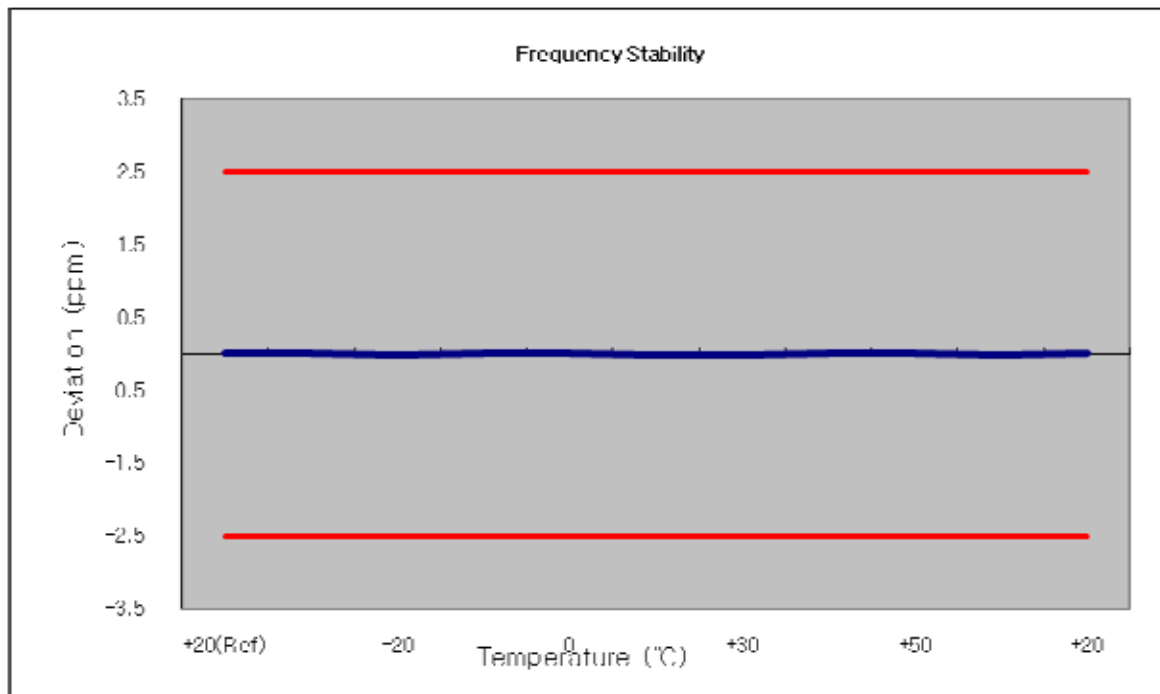
OPERATING FREQUENCY: 710,000,000 Hz  
 CHANNEL: 23790 (5 MHz)  
 REFERENCE VOLTAGE: 3.8 VDC  
 DEVIATION LIMIT:  $\pm 0.00025\%$  or 2.5 ppm

| Voltage (%)    | Power (VDC) | Temp. ( ) | Frequency (Hz) | Frequency Error (Hz) | Deviation (%) | ppm    |
|----------------|-------------|-----------|----------------|----------------------|---------------|--------|
| 100%           | 3.80        | +20(Ref)  | 709 999 999    | 0                    | 0.000 000     | 0.000  |
| 100%           |             | -30       | 709 999 993    | -5.60                | -0.000 001    | -0.008 |
| 100%           |             | -20       | 710 000 001    | 2.30                 | 0.000 000     | 0.003  |
| 100%           |             | -10       | 709 999 996    | -2.50                | 0.000 000     | -0.004 |
| 100%           |             | 0         | 709 999 994    | -4.50                | -0.000 001    | -0.006 |
| 100%           |             | +10       | 709 999 994    | -4.10                | -0.000 001    | -0.006 |
| 100%           |             | +30       | 709 999 995    | -3.30                | 0.000 000     | -0.005 |
| 100%           |             | +40       | 709 999 995    | -3.50                | 0.000 000     | -0.005 |
| 100%           |             | +50       | 709 999 995    | -3.60                | -0.000 001    | -0.005 |
| 115%           | 4.37        | +20       | 710 000 001    | 2.40                 | 0.000 000     | 0.003  |
| Batt. Endpoint | 3.23        | +20       | 709 999 995    | -3.50                | 0.000 000     | -0.005 |



OPERATING FREQUENCY: 710,000,000 Hz  
 CHANNEL: 23790 (10 MHz)  
 REFERENCE VOLTAGE: 3.8 VDC  
 DEVIATION LIM IT: ± 0.000 25 % or 2.5 ppm

| Voltage<br>(%) | Power<br>(VDC) | Temp.<br>( ) | Frequency<br>(Hz) | Frequency<br>Error (Hz) | Deviation<br>(%) | ppm    |
|----------------|----------------|--------------|-------------------|-------------------------|------------------|--------|
| 100%           | 3.80           | +20(Ref)     | 710 000 004       | 0                       | 0.000 000        | 0.000  |
| 100%           |                | -30          | 710 000 001       | -2.70                   | 0.000 000        | -0.004 |
| 100%           |                | -20          | 710 000 000       | -4.20                   | -0.000 001       | -0.006 |
| 100%           |                | -10          | 710 000 002       | -2.20                   | 0.000 000        | -0.003 |
| 100%           |                | 0            | 710 000 001       | -3.60                   | -0.000 001       | -0.005 |
| 100%           |                | +10          | 710 000 000       | -4.10                   | -0.000 001       | -0.006 |
| 100%           |                | +30          | 710 000 000       | -3.90                   | -0.000 001       | -0.005 |
| 100%           |                | +40          | 710 000 006       | 2.00                    | 0.000 000        | 0.003  |
| 100%           |                | +50          | 710 000 000       | -3.70                   | -0.000 001       | -0.005 |
| 115%           | 4.37           | +20          | 710 000 000       | -3.80                   | -0.000 001       | -0.005 |
| Batt. Endpoint | 3.23           | +20          | 710 000 007       | 2.90                    | 0.000 000        | 0.004  |



## 7.10.2 FREQUENCY STABILITY (LTE Band 4)

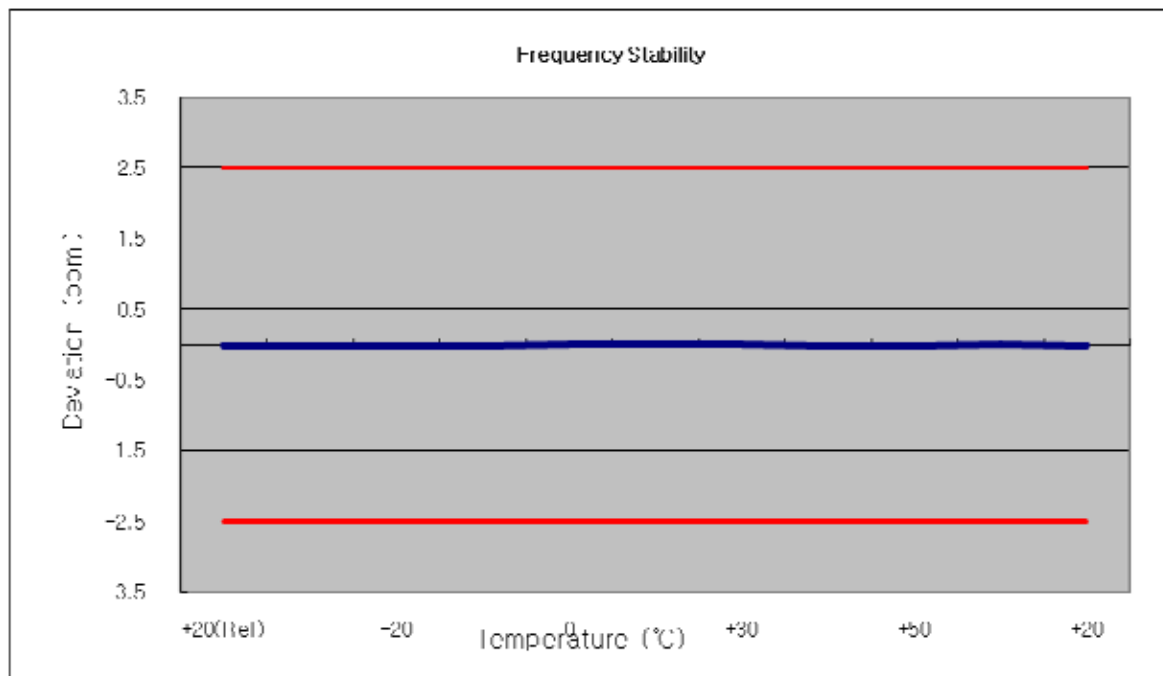
OPERATING FREQUENCY: 1732,500,000 Hz

CHANNEL: 20175 (1.4 MHz)

REFERENCE VOLTAGE: 3.8 VDC

DEVIATION LIMIT: -

| Voltage (%)    | Power (VDC) | Temp. ( ) | Frequency (Hz) | Frequency Error (Hz) | Deviation (%) | ppm    |
|----------------|-------------|-----------|----------------|----------------------|---------------|--------|
| 100%           | 3.80        | +20(Ref)  | 1732 499 993   | 0                    | 0.000 000     | 0.000  |
| 100%           |             | -30       | 1732 499 987   | -6.70                | 0.000 000     | -0.004 |
| 100%           |             | -20       | 1732 499 984   | -9.10                | -0.000 001    | -0.005 |
| 100%           |             | -10       | 1732 499 982   | -11.60               | -0.000 001    | -0.007 |
| 100%           |             | 0         | 1732 500 001   | 8.10                 | 0.000 000     | 0.005  |
| 100%           |             | +10       | 1732 499 999   | 5.70                 | 0.000 000     | 0.003  |
| 100%           |             | +30       | 1732 500 000   | 7.10                 | 0.000 000     | 0.004  |
| 100%           |             | +40       | 1732 499 984   | -9.10                | -0.000 001    | -0.005 |
| 100%           |             | +50       | 1732 499 981   | -12.70               | -0.000 001    | -0.007 |
| 115%           | 4.37        | +20       | 1732 499 998   | 4.70                 | 0.000 000     | 0.003  |
| Batt. Endpoint | 3.23        | +20       | 1732 499 986   | -7.00                | 0.000 000     | -0.004 |



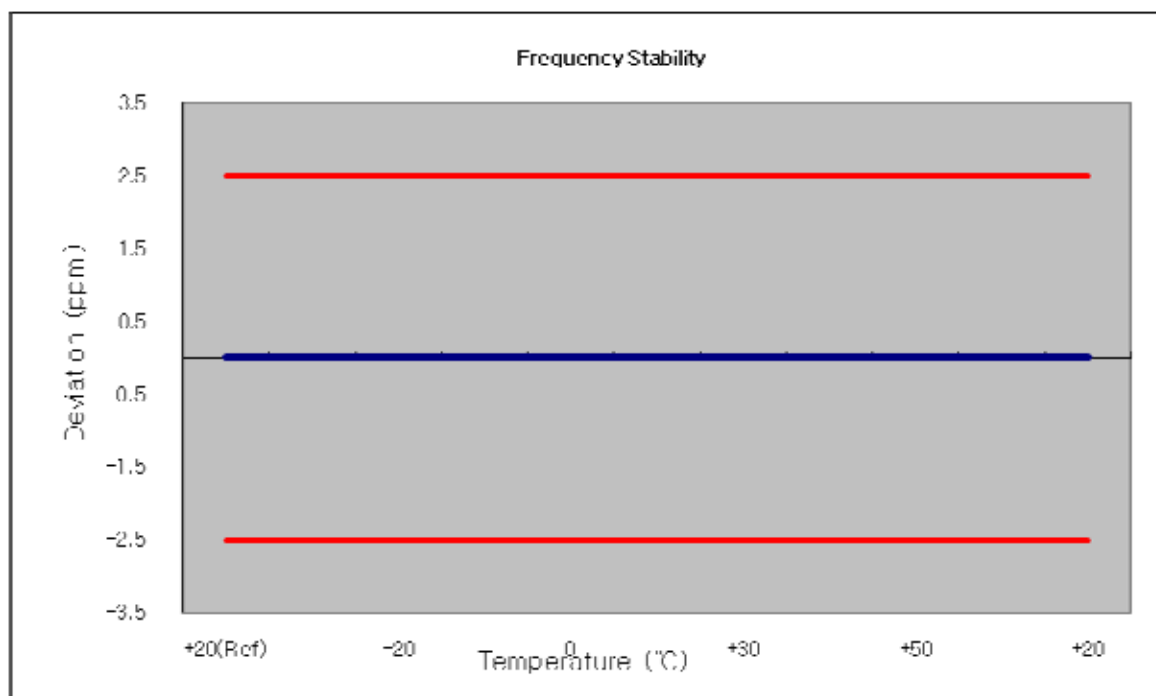
OPERATING FREQUENCY: 1732,500,000 Hz

CHANNEL: 20175 (3 MHz)

REFERENCE VOLTAGE: 3.8 VDC

DEVIATION LIM IT: -

| Voltage<br>(%) | Power<br>(VDC) | Temp.<br>( ) | Frequency<br>(Hz) | Frequency<br>Error (Hz) | Deviation<br>(%) | ppm    |
|----------------|----------------|--------------|-------------------|-------------------------|------------------|--------|
| 100%           | 3.80           | +20(Ref)     | 1732 499 994      | 0                       | 0.000 000        | 0.000  |
| 100%           |                | -30          | 1732 499 987      | -7.90                   | 0.000 000        | -0.005 |
| 100%           |                | -20          | 1732 499 988      | -6.00                   | 0.000 000        | -0.003 |
| 100%           |                | -10          | 1732 500 004      | 9.20                    | 0.000 001        | 0.005  |
| 100%           |                | 0            | 1732 500 002      | 7.30                    | 0.000 000        | 0.004  |
| 100%           |                | +10          | 1732 499 989      | -5.90                   | 0.000 000        | -0.003 |
| 100%           |                | +30          | 1732 500 003      | 8.80                    | 0.000 001        | 0.005  |
| 100%           |                | +40          | 1732 499 990      | -4.90                   | 0.000 000        | -0.003 |
| 100%           |                | +50          | 1732 499 989      | -5.70                   | 0.000 000        | -0.003 |
| 115%           | 4.37           | +20          | 1732 500 002      | 7.60                    | 0.000 000        | 0.004  |
| Batt. Endpoint | 3.23           | +20          | 1732 499 987      | -7.40                   | 0.000 000        | -0.004 |



**FCC CERTIFICATION REPORT**

Test Report No.  
HCT-R-1405-F011-1

Date of Issue:  
May 29, 2014

EUT Type:  
Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC

[www.hct.co.kr](http://www.hct.co.kr)

FCC ID:  
ZNFD855P

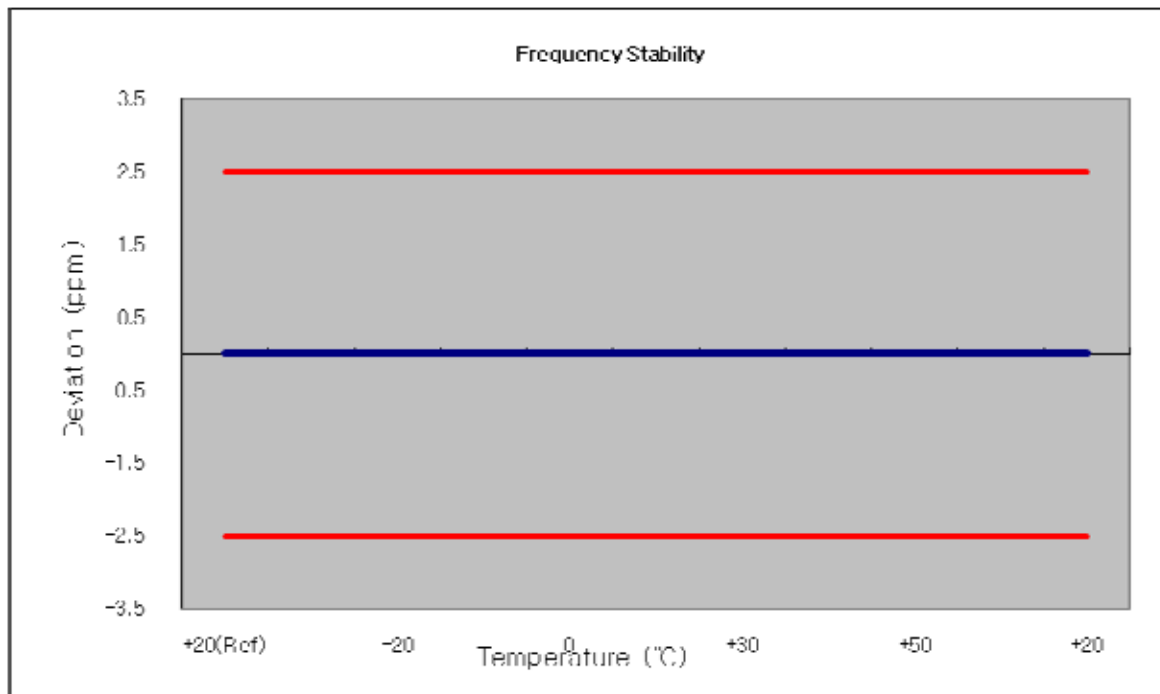
OPERATING FREQUENCY: 1732,500,000 Hz

CHANNEL: 20175 (5 MHz)

REFERENCE VOLTAGE: 3.8 VDC

DEVIATION LIM IT: -

| Voltage<br>(%) | Power<br>(VDC) | Temp.<br>( ) | Frequency<br>(Hz) | Frequency<br>Error (Hz) | Deviation<br>(%) | ppm    |
|----------------|----------------|--------------|-------------------|-------------------------|------------------|--------|
| 100%           | 3.80           | +20(Ref)     | 1732 499 993      | 0                       | 0.000 000        | 0.000  |
| 100%           |                | -30          | 1732 499 988      | -4.30                   | 0.000 000        | -0.002 |
| 100%           |                | -20          | 1732 499 998      | 5.40                    | 0.000 000        | 0.003  |
| 100%           |                | -10          | 1732 500 003      | 10.30                   | 0.000 001        | 0.006  |
| 100%           |                | 0            | 1732 499 999      | 6.70                    | 0.000 000        | 0.004  |
| 100%           |                | +10          | 1732 499 986      | -6.50                   | 0.000 000        | -0.004 |
| 100%           |                | +30          | 1732 500 000      | 7.20                    | 0.000 000        | 0.004  |
| 100%           |                | +40          | 1732 499 997      | 4.70                    | 0.000 000        | 0.003  |
| 100%           |                | +50          | 1732 499 998      | 5.00                    | 0.000 000        | 0.003  |
| 115%           | 4.37           | +20          | 1732 499 985      | -7.80                   | 0.000 000        | -0.005 |
| Batt. Endpoint | 3.23           | +20          | 1732 500 000      | 6.80                    | 0.000 000        | 0.004  |



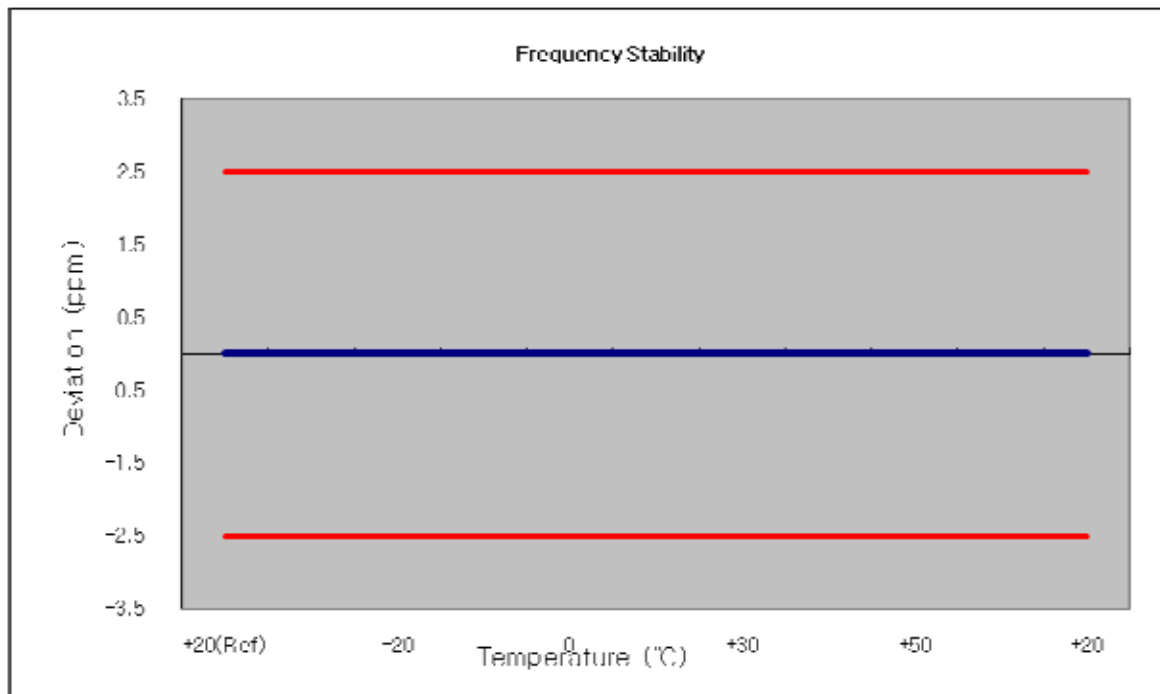
OPERATING FREQUENCY: 1732,500,000 Hz

CHANNEL: 20175 (10 MHz)

REFERENCE VOLTAGE: 3.8 VDC

DEVIATION LIM IT: -

| Voltage<br>(%) | Power<br>(VDC) | Temp.<br>( ) | Frequency<br>(Hz) | Frequency<br>Error (Hz) | Deviation<br>(%) | ppm    |
|----------------|----------------|--------------|-------------------|-------------------------|------------------|--------|
| 100%           | 3.80           | +20(Ref)     | 1732 500 005      | 0                       | 0.000 000        | 0.000  |
| 100%           |                | -30          | 1732 500 012      | 6.30                    | 0.000 000        | 0.004  |
| 100%           |                | -20          | 1732 500 001      | -4.40                   | 0.000 000        | -0.003 |
| 100%           |                | -10          | 1732 500 000      | -5.00                   | 0.000 000        | -0.003 |
| 100%           |                | 0            | 1732 500 012      | 7.00                    | 0.000 000        | 0.004  |
| 100%           |                | +10          | 1732 500 000      | -5.30                   | 0.000 000        | -0.003 |
| 100%           |                | +30          | 1732 500 012      | 6.30                    | 0.000 000        | 0.004  |
| 100%           |                | +40          | 1732 500 000      | -5.70                   | 0.000 000        | -0.003 |
| 100%           |                | +50          | 1732 500 000      | -5.10                   | 0.000 000        | -0.003 |
| 115%           | 4.37           | +20          | 1732 500 014      | 9.10                    | 0.000 001        | 0.005  |
| Batt. Endpoint | 3.23           | +20          | 1732 500 000      | -5.20                   | 0.000 000        | -0.003 |



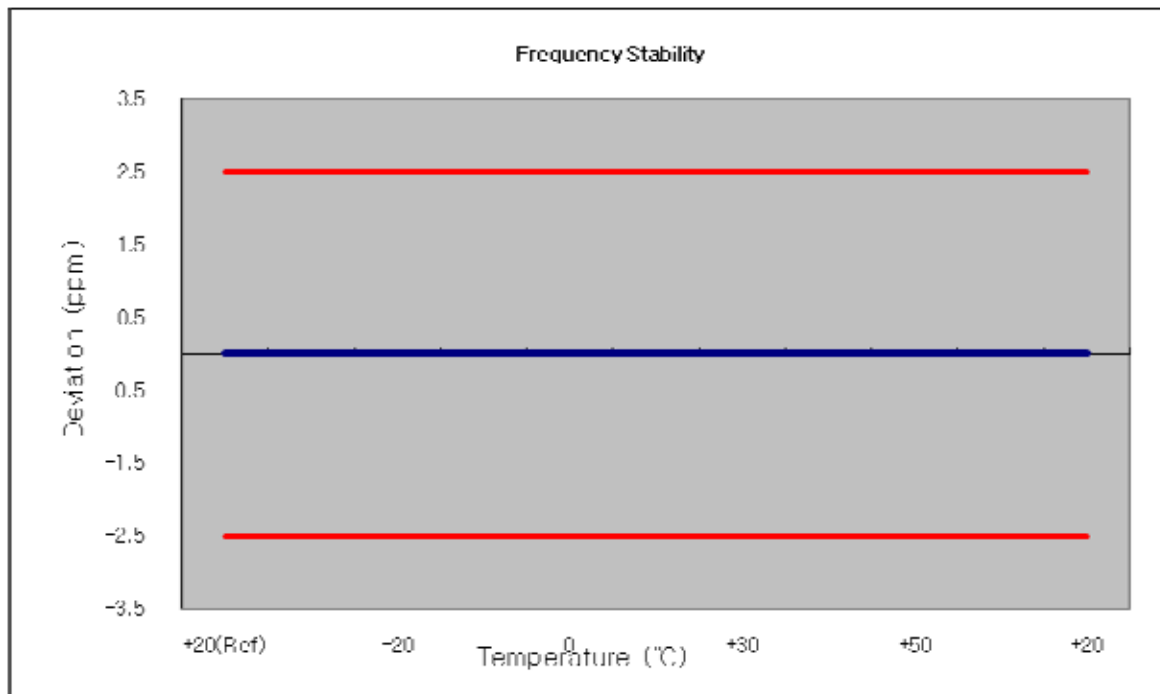
OPERATING FREQUENCY: 1732,500,000 Hz

CHANNEL: 20175 (15 MHz)

REFERENCE VOLTAGE: 3.8 VDC

DEVIATION LIM IT: -

| Voltage<br>(%) | Power<br>(VDC) | Temp.<br>( ) | Frequency<br>(Hz) | Frequency<br>Error (Hz) | Deviation<br>(%) | ppm    |
|----------------|----------------|--------------|-------------------|-------------------------|------------------|--------|
| 100%           | 3.80           | +20(Ref)     | 1732 500 008      | 0                       | 0.000 000        | 0.000  |
| 100%           |                | -30          | 1732 500 014      | 5.70                    | 0.000 000        | 0.003  |
| 100%           |                | -20          | 1732 500 011      | 2.50                    | 0.000 000        | 0.001  |
| 100%           |                | -10          | 1732 500 017      | 8.80                    | 0.000 001        | 0.005  |
| 100%           |                | 0            | 1732 500 013      | 4.50                    | 0.000 000        | 0.003  |
| 100%           |                | +10          | 1732 500 012      | 3.70                    | 0.000 000        | 0.002  |
| 100%           |                | +30          | 1732 500 003      | -5.00                   | 0.000 000        | -0.003 |
| 100%           |                | +40          | 1732 500 014      | 5.40                    | 0.000 000        | 0.003  |
| 100%           |                | +50          | 1732 500 016      | 7.30                    | 0.000 000        | 0.004  |
| 115%           | 4.37           | +20          | 1732 500 003      | -5.50                   | 0.000 000        | -0.003 |
| Batt. Endpoint | 3.23           | +20          | 1732 500 011      | 2.70                    | 0.000 000        | 0.002  |



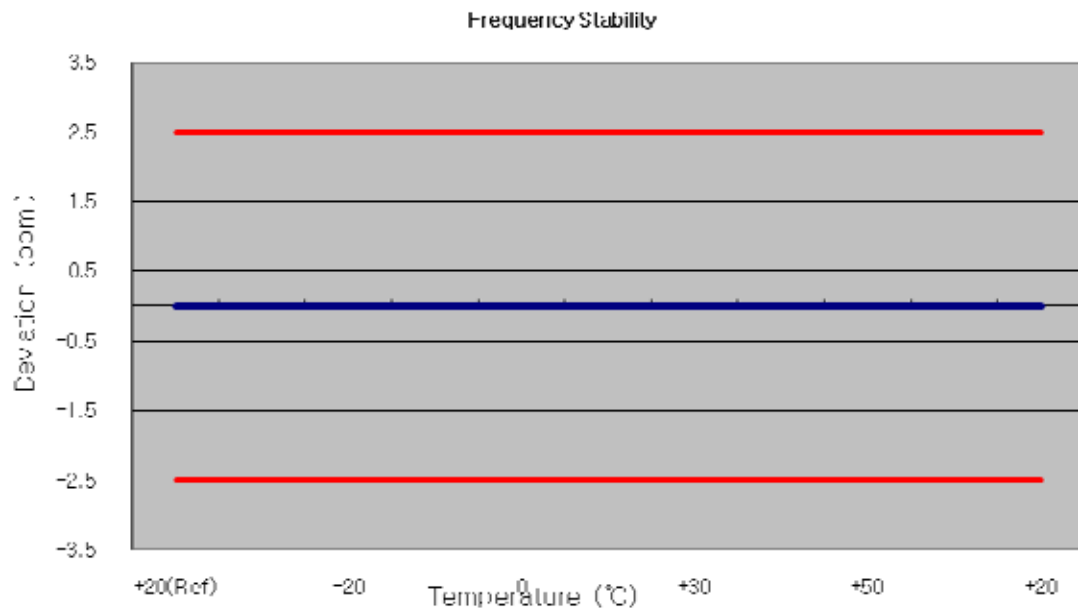
OPERATING FREQUENCY: 1732,500,000 Hz

CHANNEL: 20175 (20 MHz)

REFERENCE VOLTAGE: 3.8 VDC

DEVIATION LIM IT: -

| Voltage<br>(%) | Power<br>(VDC) | Temp.<br>( ) | Frequency<br>(Hz) | Frequency<br>Error (Hz) | Deviation<br>(%) | ppm    |
|----------------|----------------|--------------|-------------------|-------------------------|------------------|--------|
| 100%           | 3.80           | +20(Ref)     | 1732 500 003      | 0                       | 0.000 000        | 0.000  |
| 100%           |                | -30          | 1732 500 007      | 4.20                    | 0.000 000        | 0.002  |
| 100%           |                | -20          | 1732 499 998      | -4.50                   | 0.000 000        | -0.003 |
| 100%           |                | -10          | 1732 499 998      | -4.70                   | 0.000 000        | -0.003 |
| 100%           |                | 0            | 1732 500 008      | 4.90                    | 0.000 000        | 0.003  |
| 100%           |                | +10          | 1732 499 998      | -5.00                   | 0.000 000        | -0.003 |
| 100%           |                | +30          | 1732 500 009      | 6.40                    | 0.000 000        | 0.004  |
| 100%           |                | +40          | 1732 499 998      | -4.90                   | 0.000 000        | -0.003 |
| 100%           |                | +50          | 1732 500 011      | 7.60                    | 0.000 000        | 0.004  |
| 115%           | 4.37           | +20          | 1732 500 008      | 4.80                    | 0.000 000        | 0.003  |
| Batt. Endpoint | 3.23           | +20          | 1732 499 998      | -4.60                   | 0.000 000        | -0.003 |



**FCC CERTIFICATION REPORT**

Test Report No.  
HCT-R-1405-F011-1

Date of Issue:  
May 29, 2014

EUT Type:  
Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC

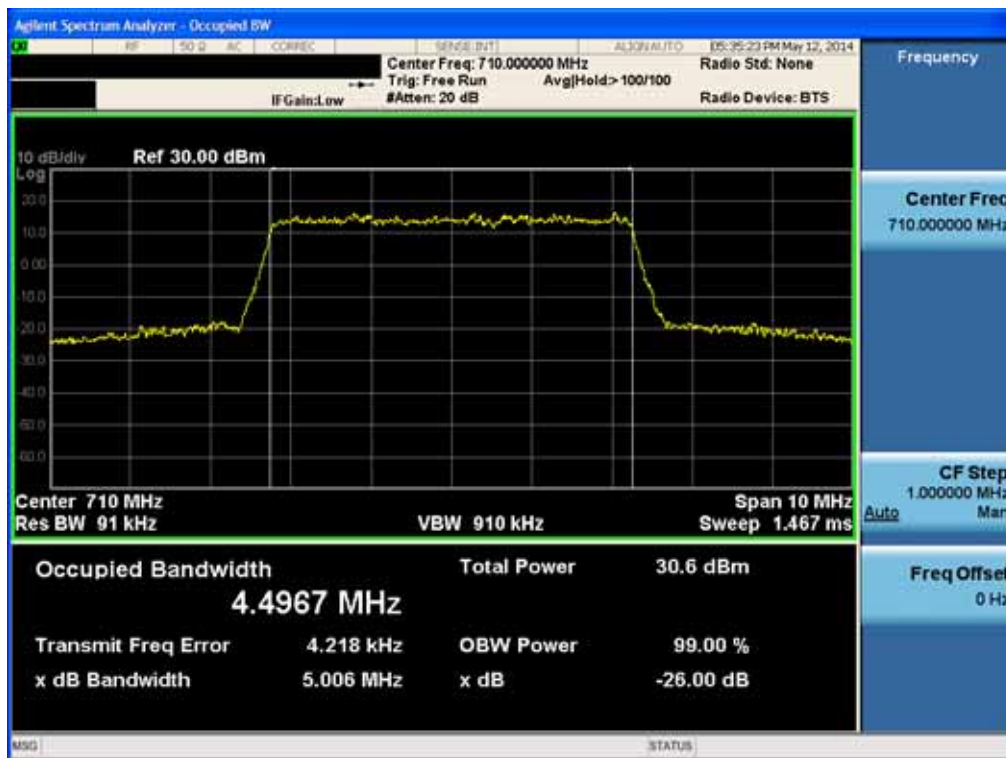
[www.hct.co.kr](http://www.hct.co.kr)

FCC ID:  
ZNFD855P

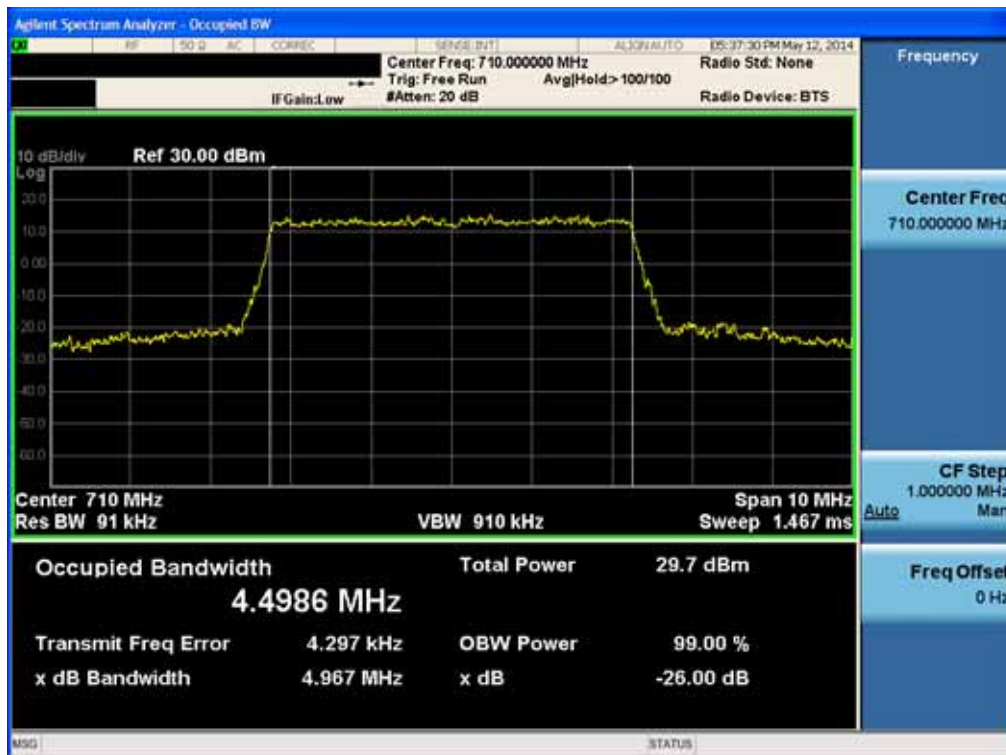


## 8. TEST PLOTS

# BAND 17. Occupied Bandwidth Plot (23790ch\_5MHz\_QPSK\_RB 25)



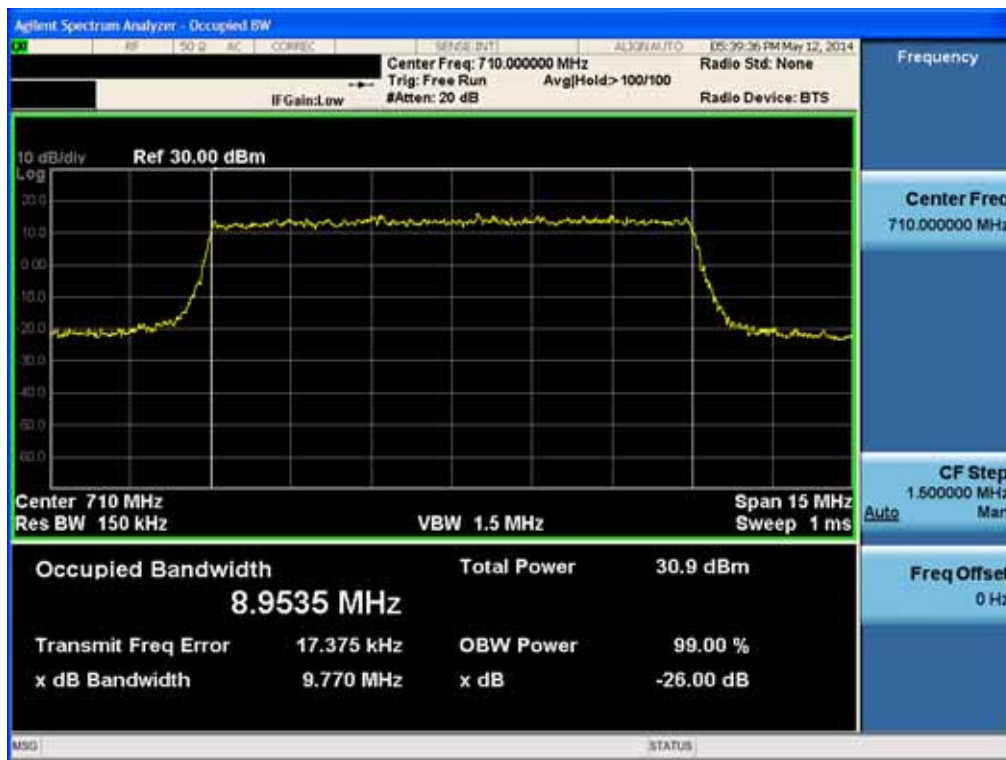
# BAND 17. Occupied Bandwidth Plot (23790ch\_5MHz\_16-QAM\_RB 25)



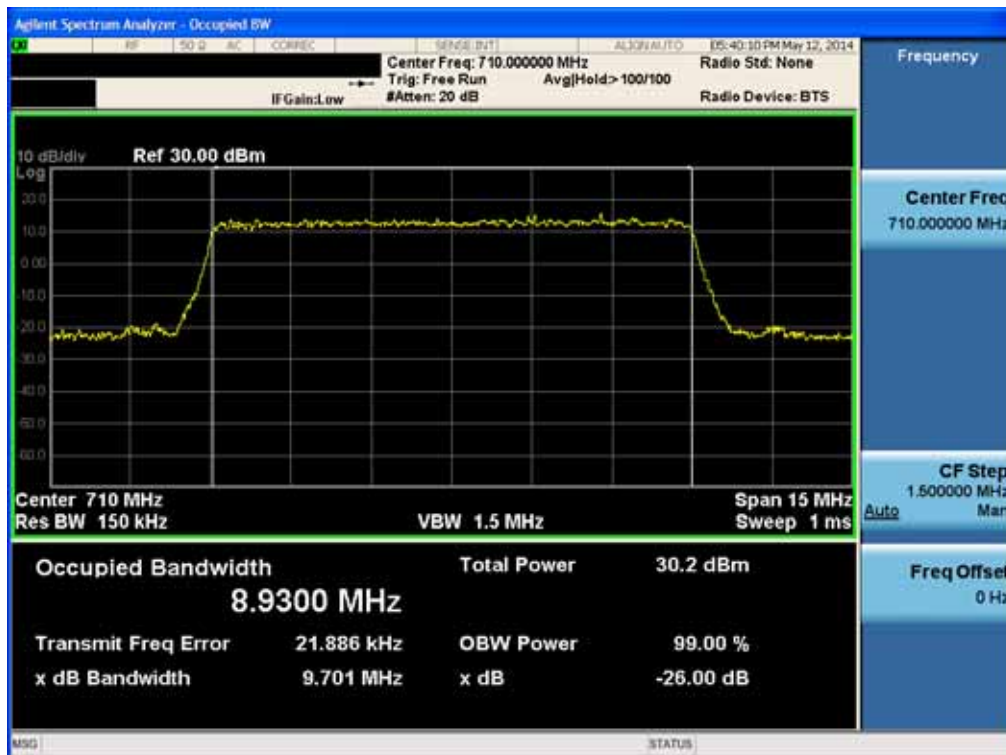
## FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

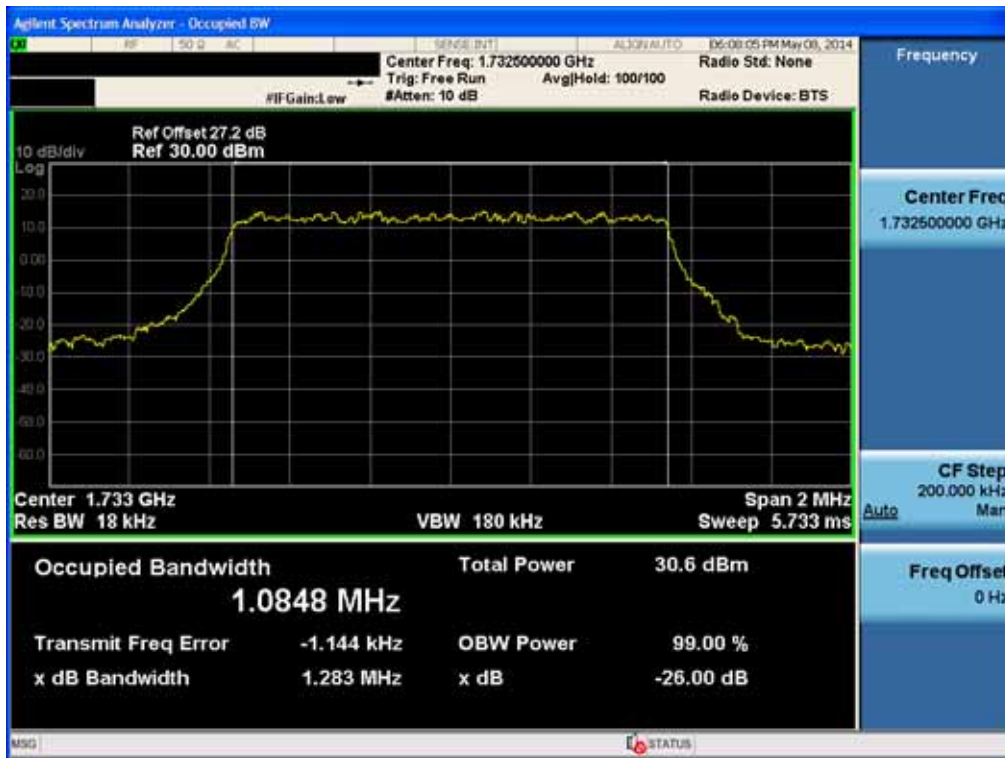
BAND 17. Occupied Bandwidth Plot (23790ch\_10MHz\_QPSK\_RB 50)



BAND 17. Occupied Bandwidth Plot (23790ch\_10MHz\_16-QAM\_RB 50)



BAND 4. Occupied Bandwidth Plot (1.4M BW Ch.20175 QPSK RB 6)



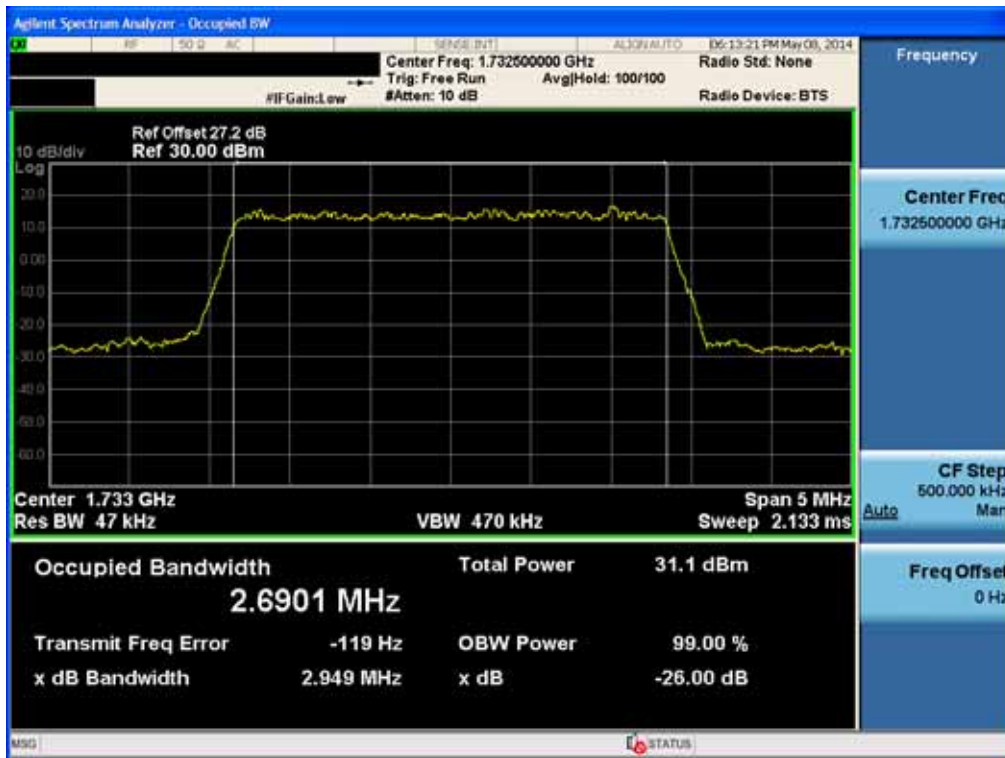
BAND 4. Occupied Bandwidth Plot (1.4M BW Ch.20175 16QAM RB 6)



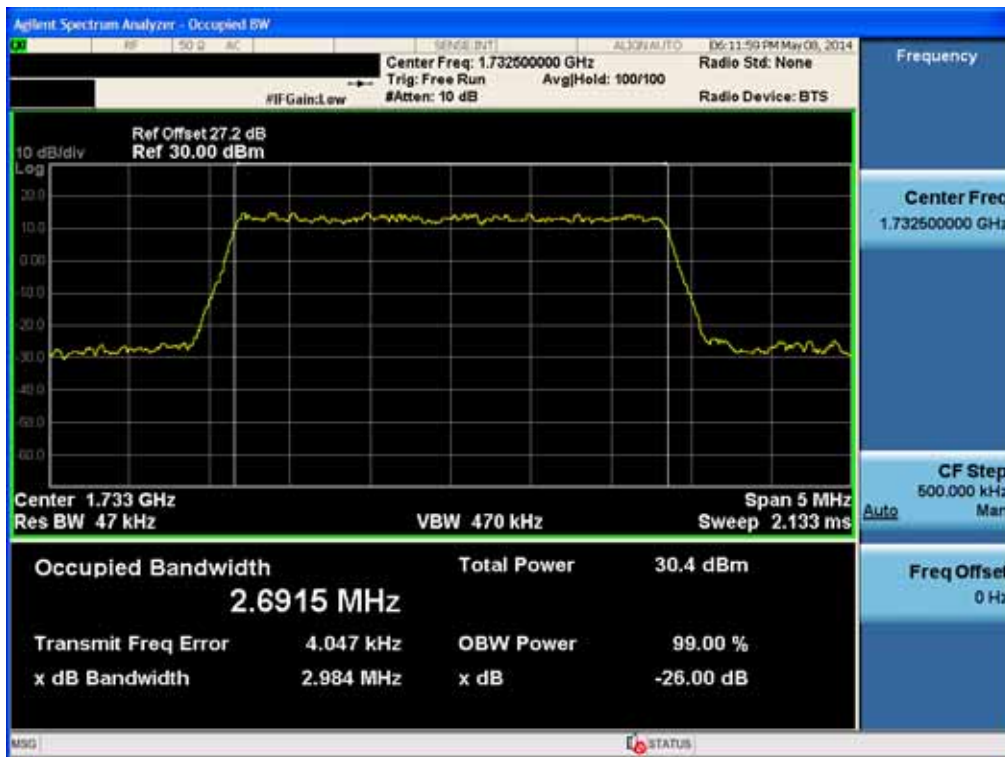
FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

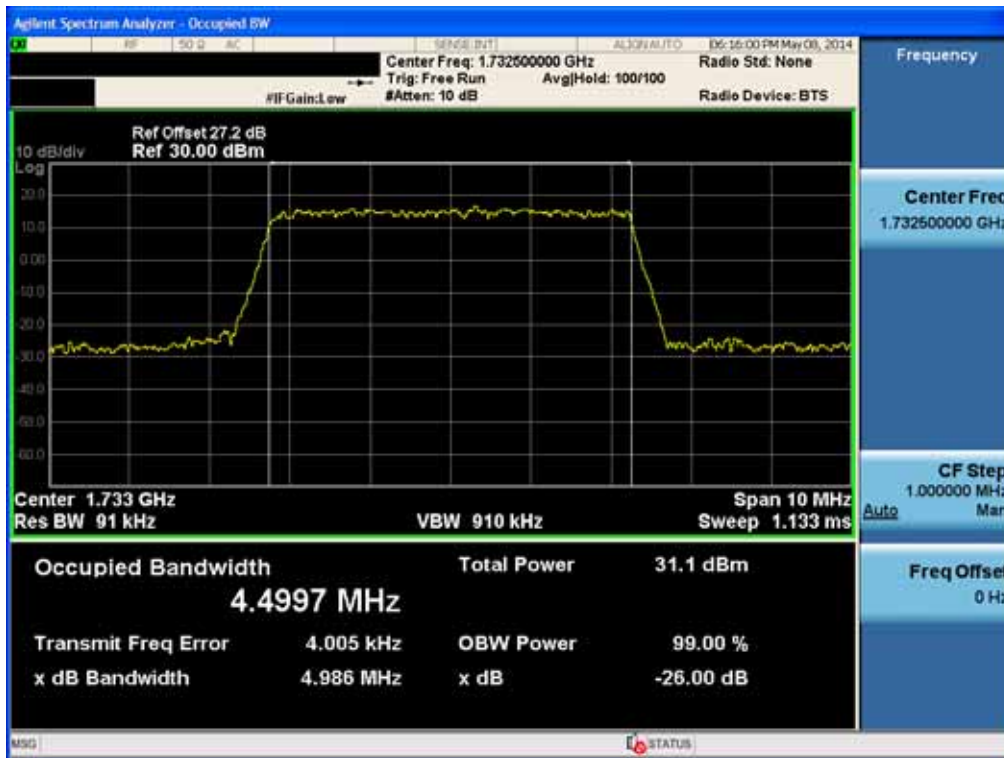
BAND 4. Occupied Bandwidth Plot (3M BW Ch.20175 QPSK RB 15)



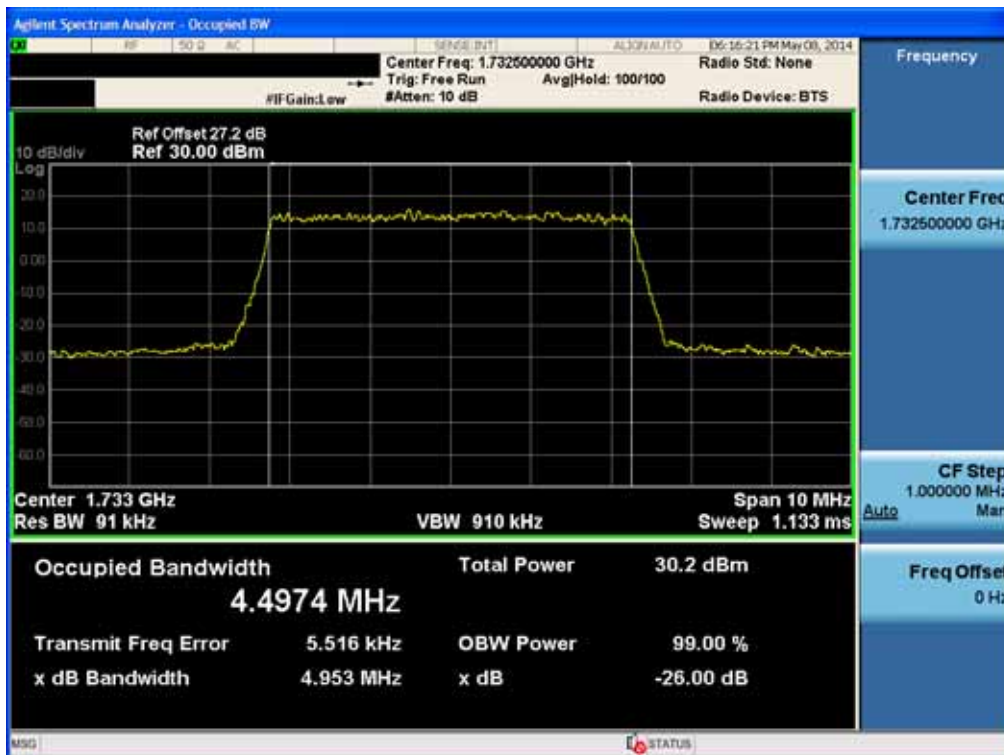
BAND 4. Occupied Bandwidth Plot (3M BW Ch.20175 16QAM RB 15)



#### BAND 4. Occupied Bandwidth Plot (5M BW Ch.20175 QPSK RB 25)



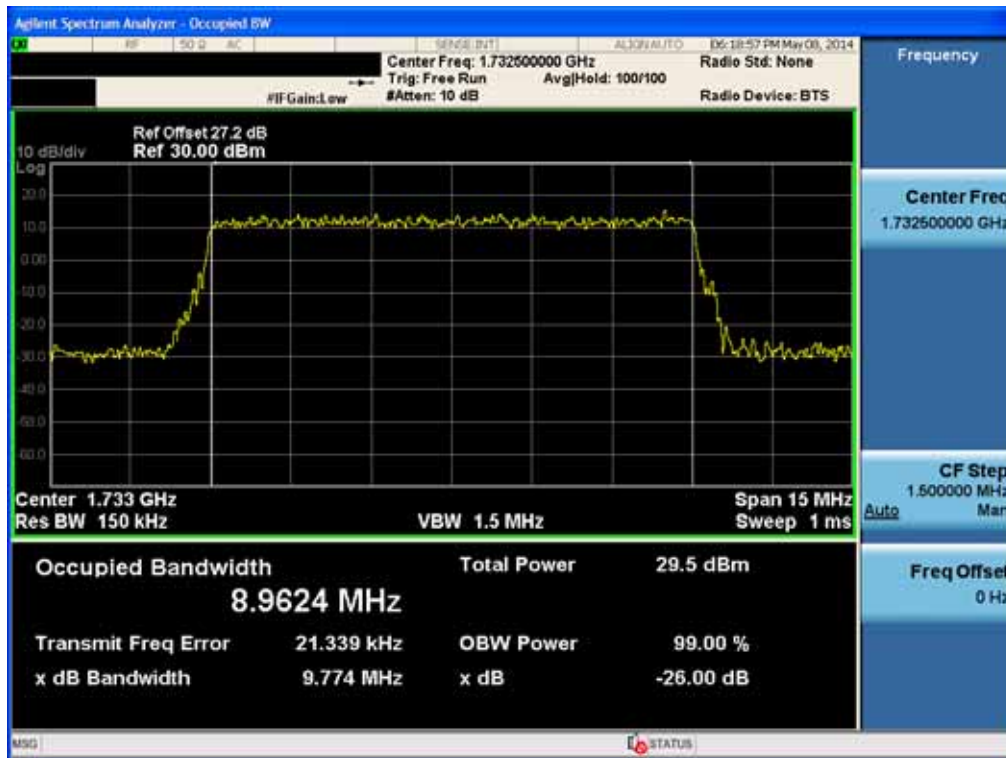
#### BAND 4. Occupied Bandwidth Plot (5M BW Ch.20175 16QAM RB 25)



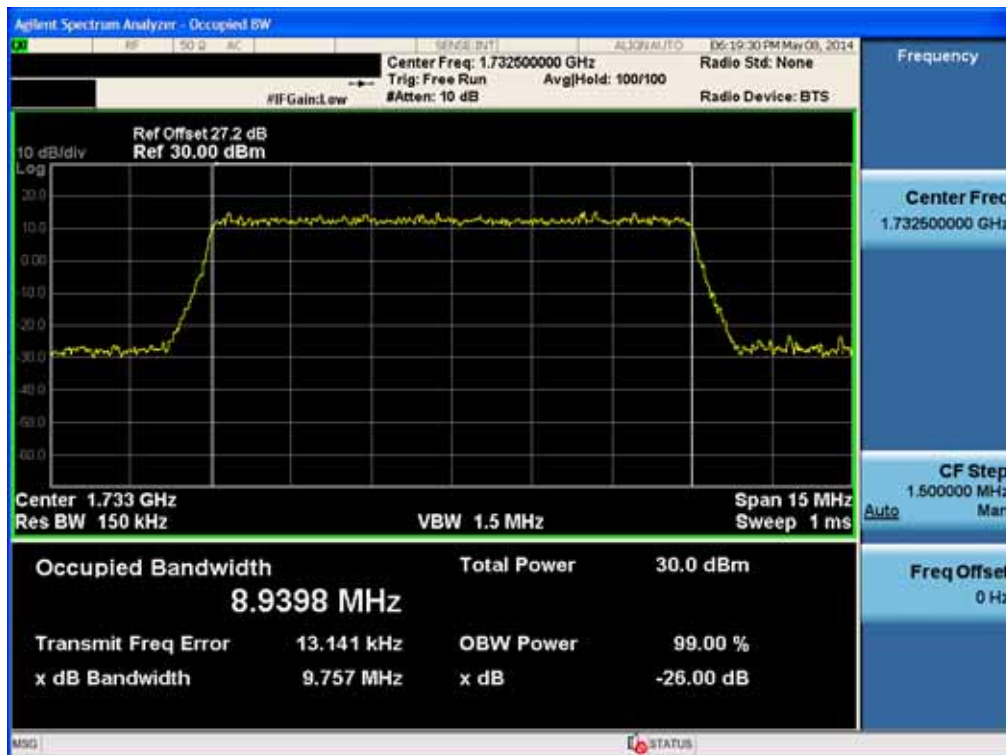
#### FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

#### BAND 4. Occupied Bandwidth Plot (10M BW Ch.20175 QPSK RB 50)



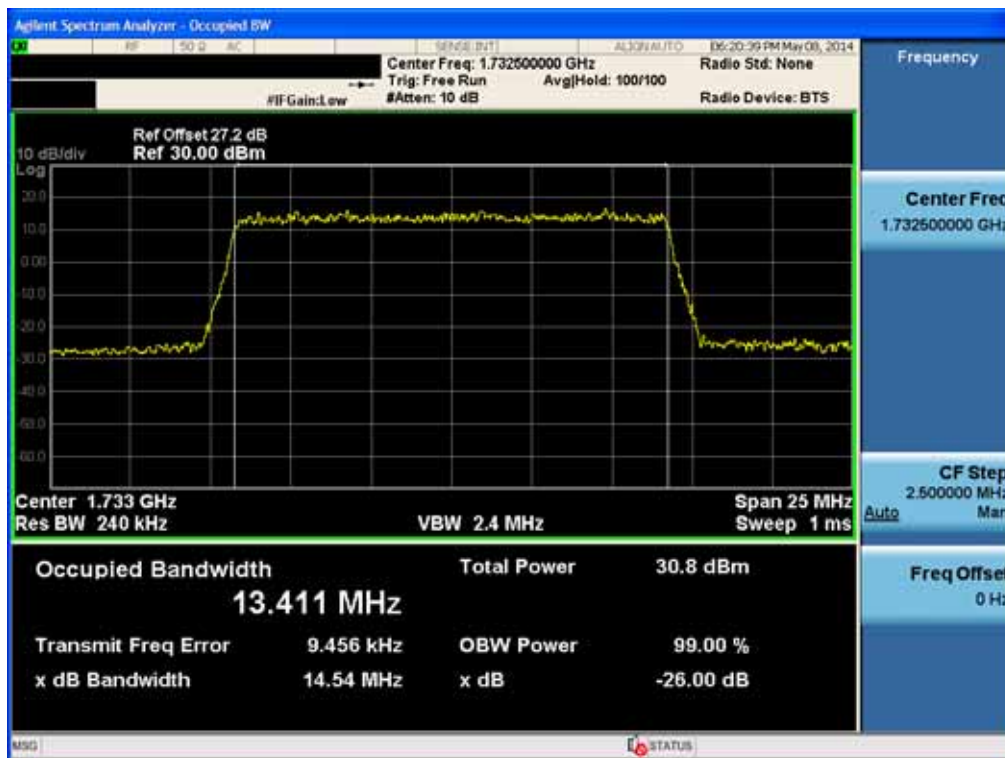
#### BAND 4. Occupied Bandwidth Plot (10M BW Ch.20175 16QAM RB 50)



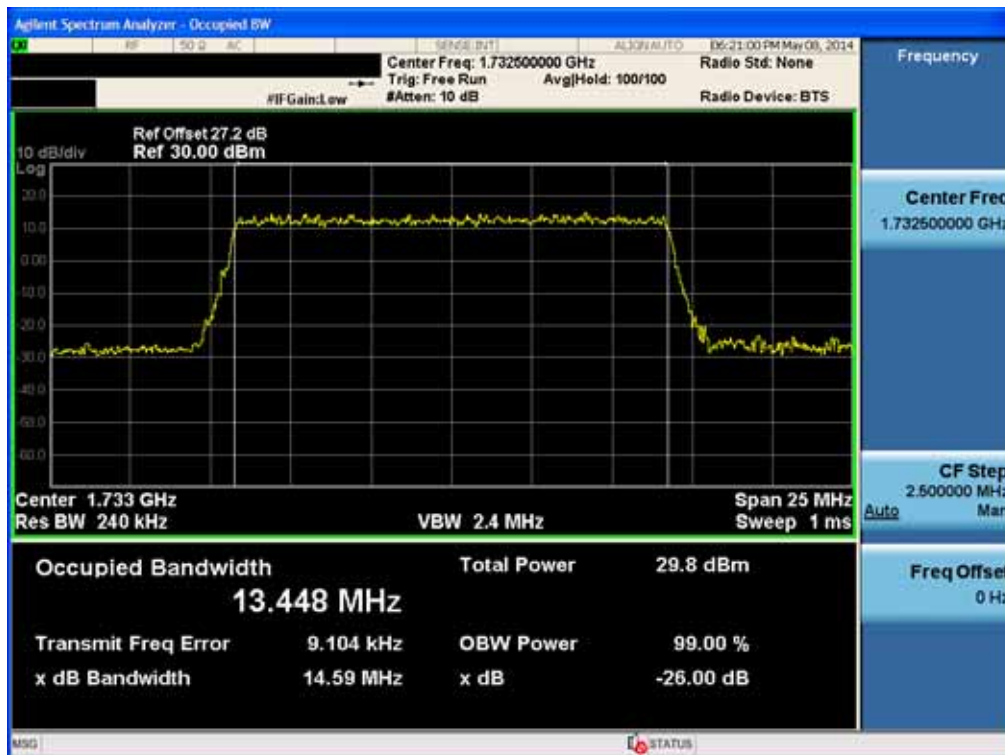
#### FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

#### BAND 4. Occupied Bandwidth Plot (15M BW Ch.20175 QPSK RB 75)



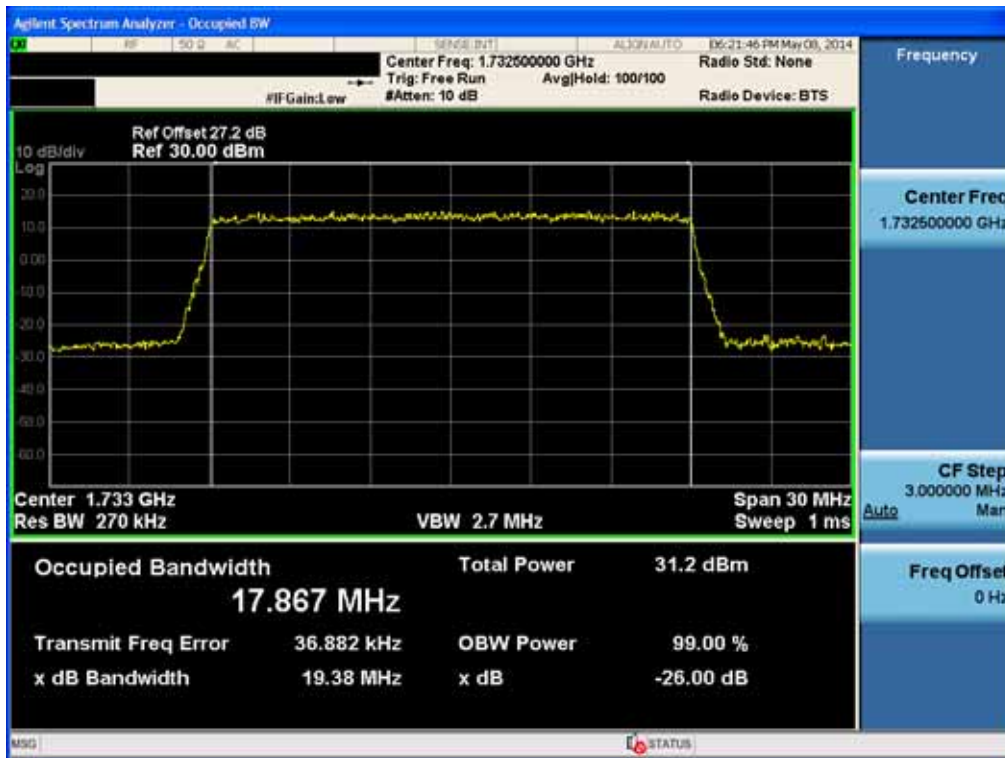
#### BAND 4. Occupied Bandwidth Plot (15M BW Ch.20175 16QAM RB 75)



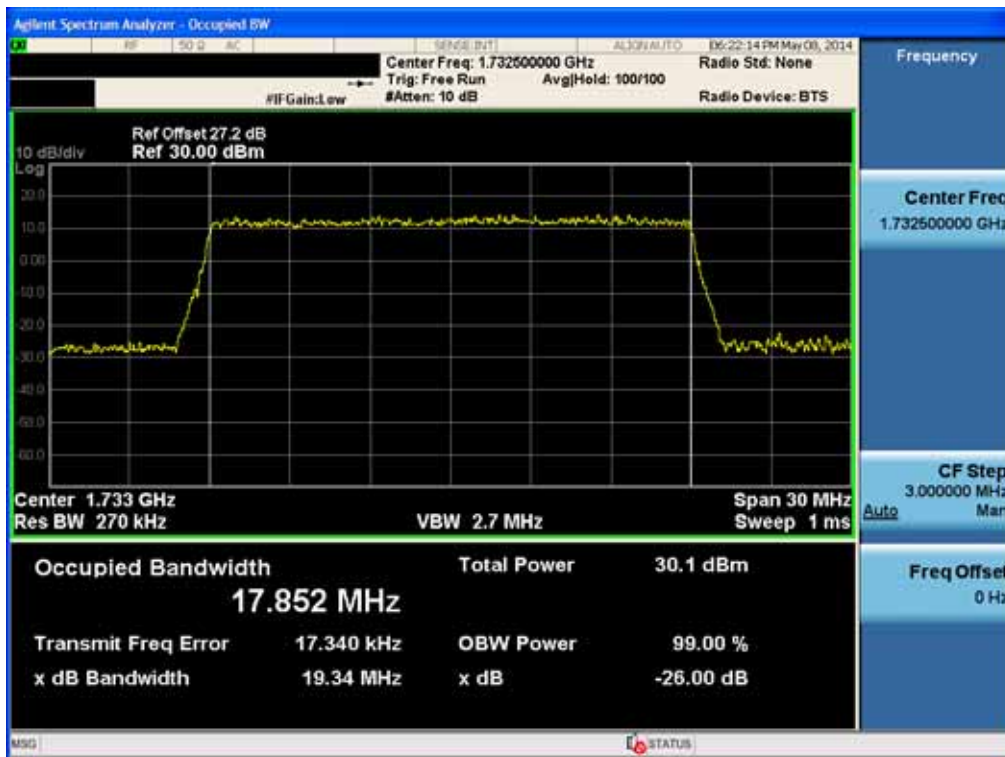
#### FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Occupied Bandwidth Plot (20M BW Ch.20175 QPSK RB 100)



BAND 4. Occupied Bandwidth Plot (20M BW Ch.20175 16QAM RB 100)



# BAND 17. PAR Plot (23790ch\_5MHz\_QPSK\_RB 25)



# BAND 17. PAR Plot (23790ch\_5MHz\_16-QAM\_RB 25)



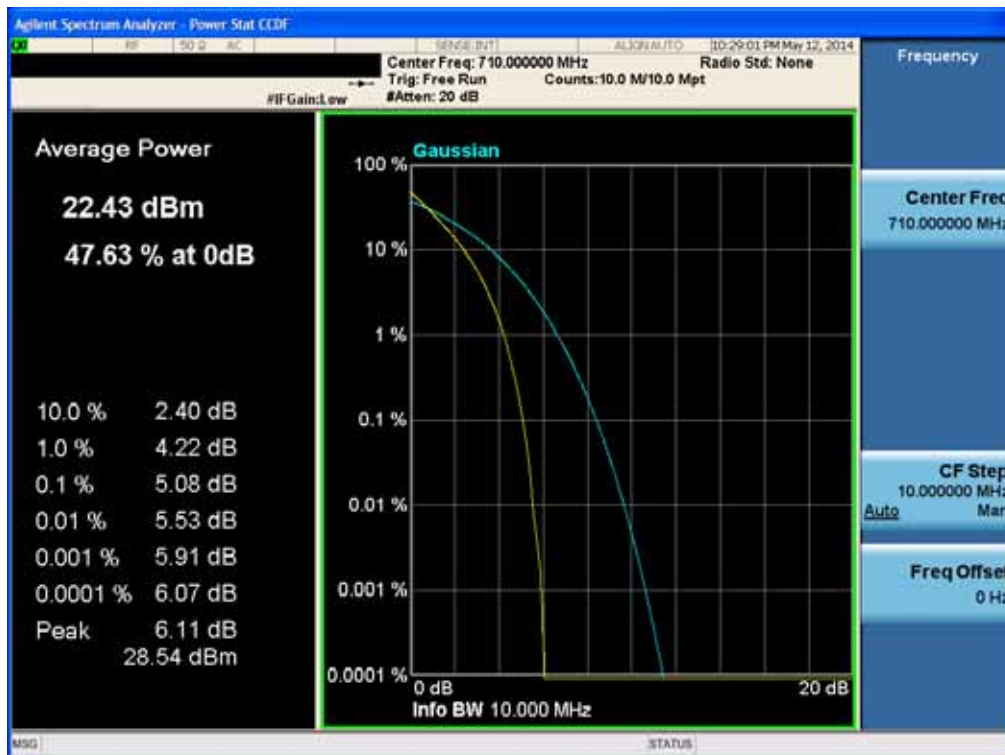
## FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

# BAND 17. PAR Plot (23790ch\_10MHz\_QPSK\_RB 50)



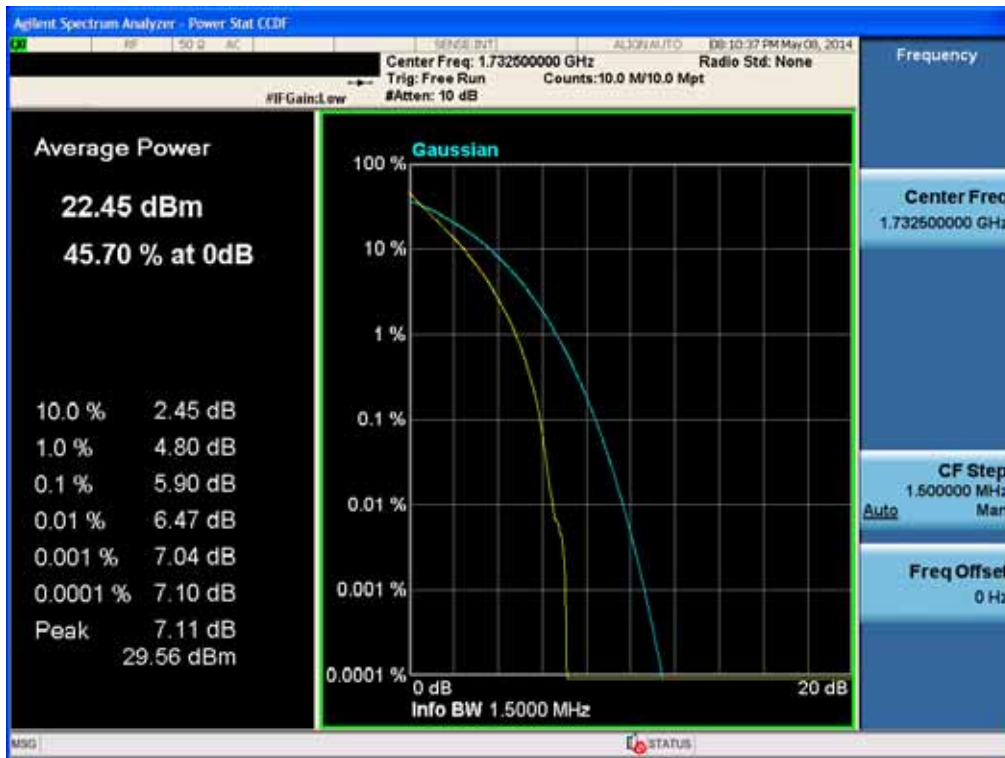
# BAND 17. PAR Plot (23790ch\_10MHz\_16-QAM\_RB 50)



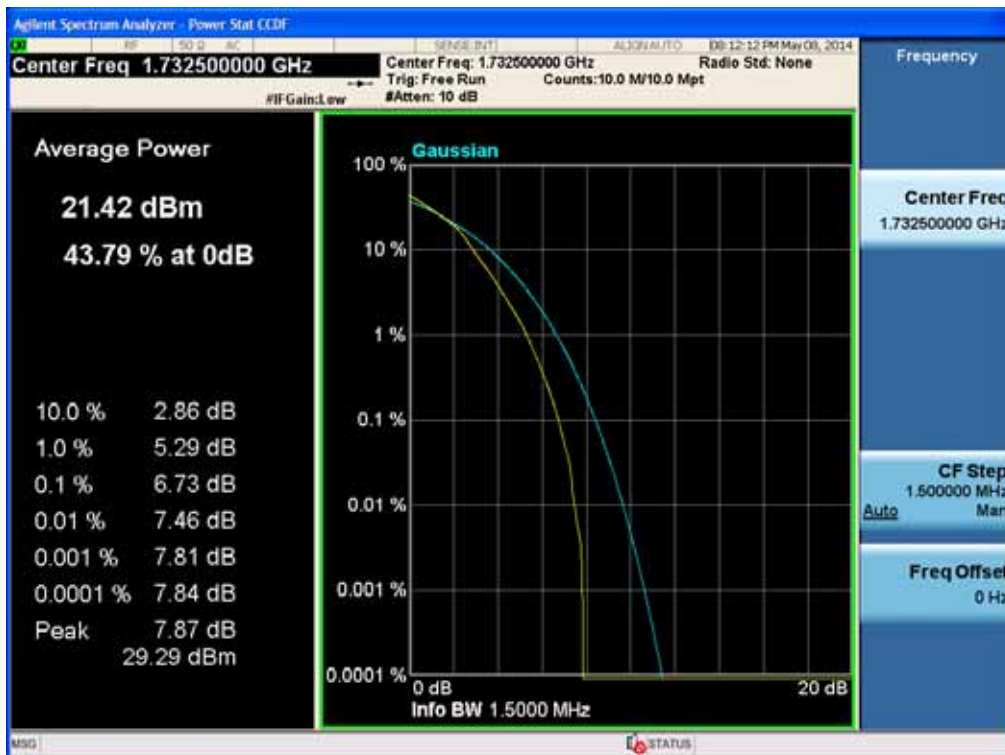
## FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

# BAND 4. PAR Plot (1.4M BW Ch.20175 QPSK RB 6)



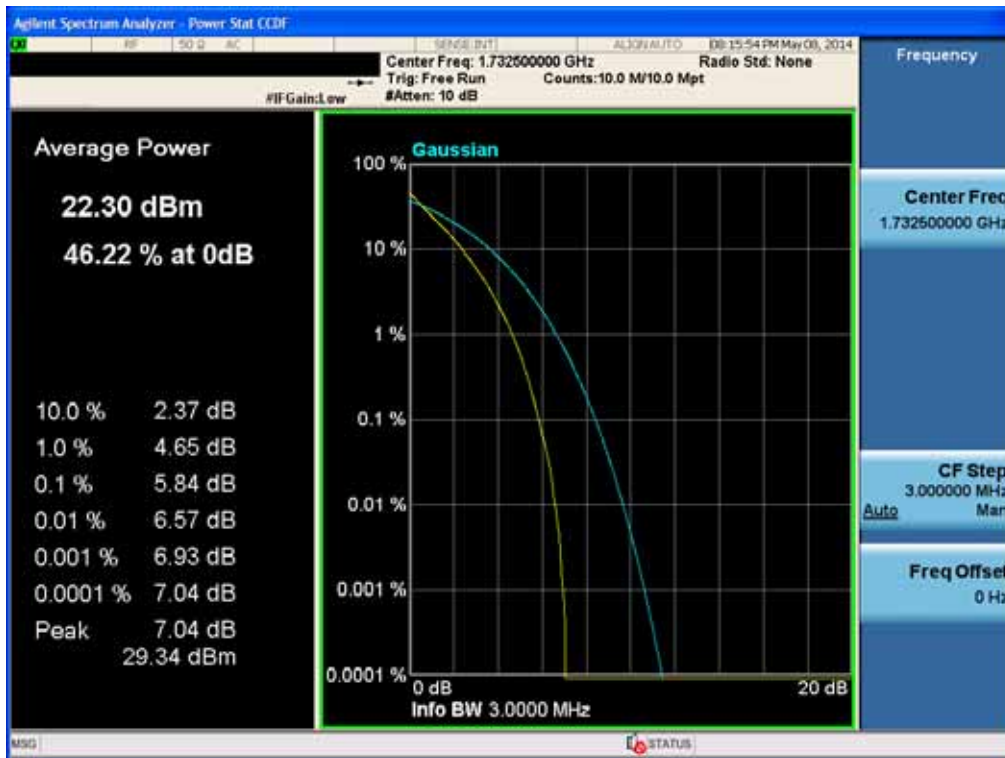
# BAND 4. PAR Plot (1.4M BW Ch.20175 16QAM RB 6)



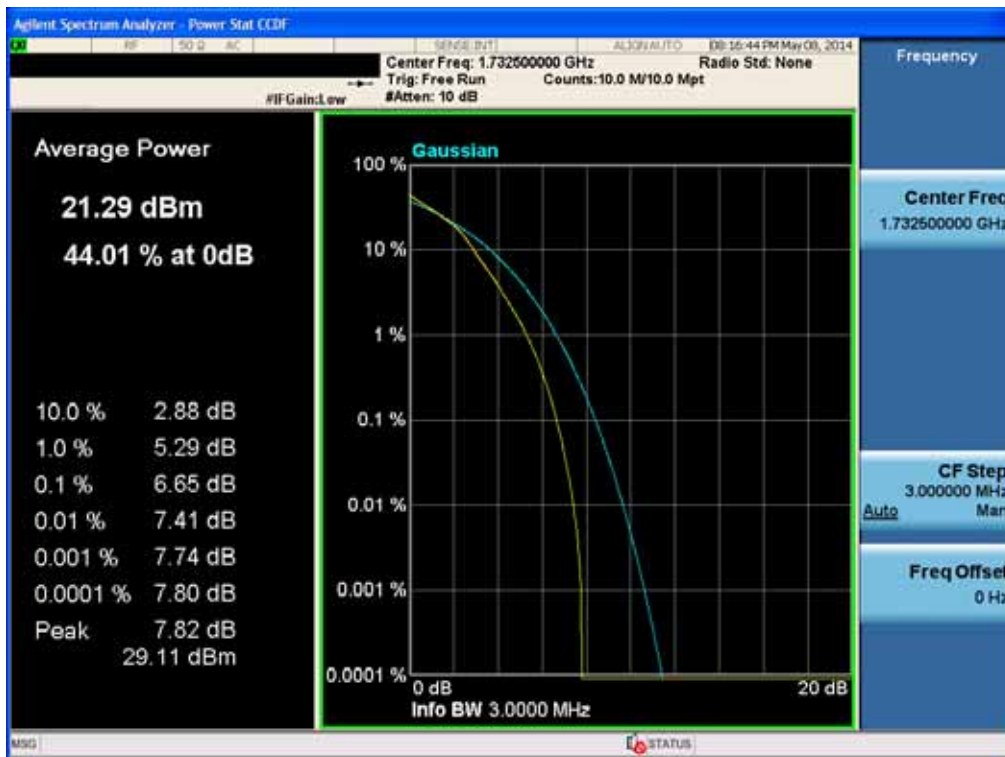
## FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

#### BAND 4. PAR Plot (3M BW Ch.20175 QPSK RB 15)



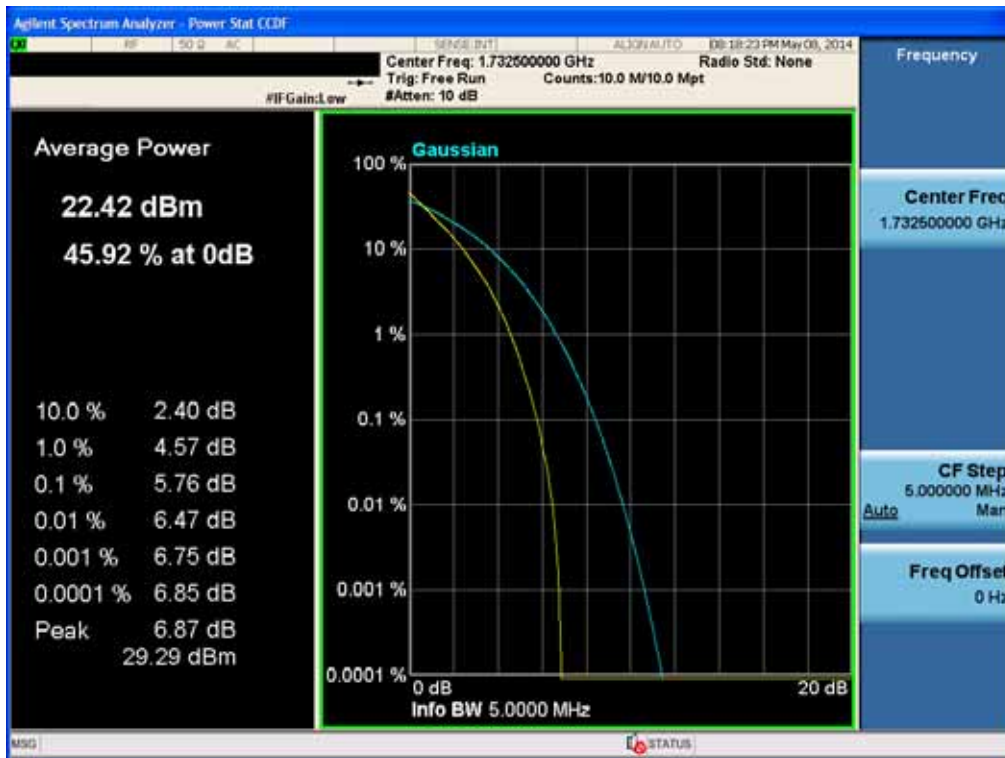
#### BAND 4. PAR Plot (3M BW Ch.20175 16QAM RB 15)



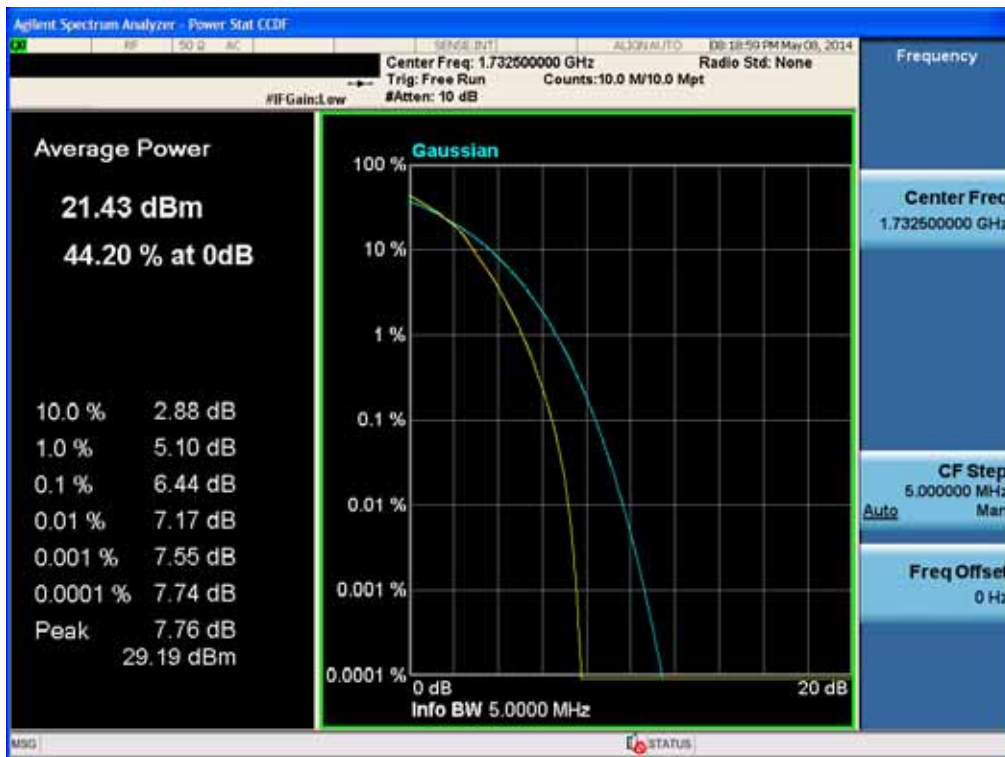
#### FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

#### BAND 4. PAR Plot (5M BW Ch.20175 QPSK RB 25)



#### BAND 4. PAR Plot (5M BW Ch.20175 16QAM RB 25)



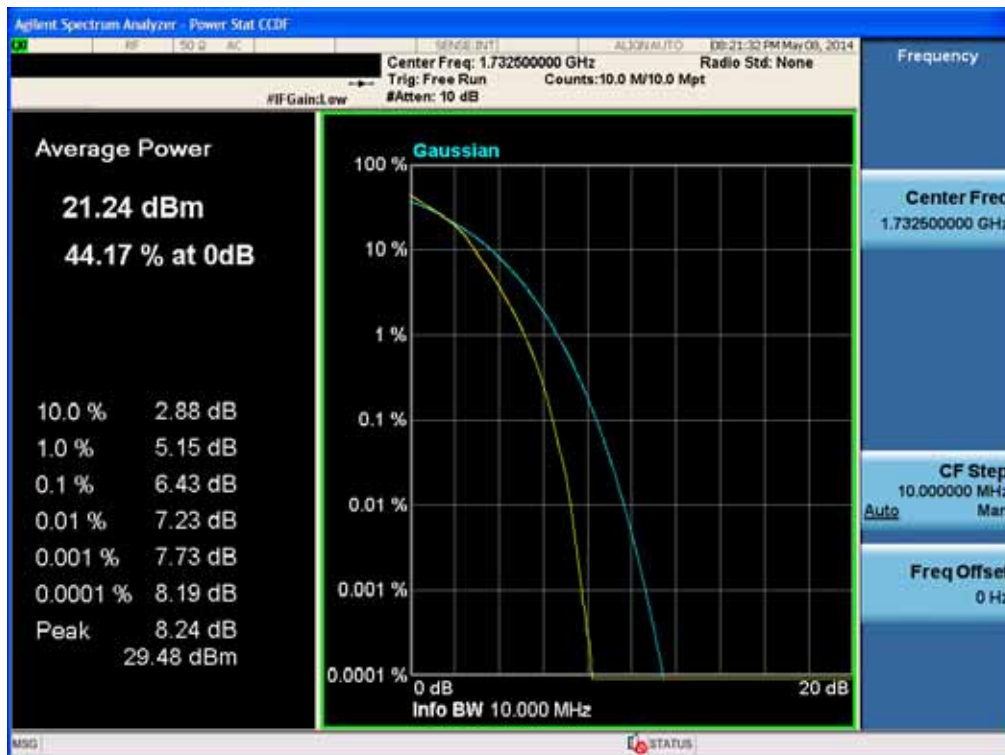
#### FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

# BAND 4. PAR Plot (10M BW Ch.20175 QPSK RB 50)



# BAND 4. PAR Plot (10M BW Ch.20175 16QAM RB 50)



## FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

# BAND 4. PAR Plot (15M BW Ch.20175 QPSK RB 75)



# BAND 4. PAR Plot (15M BW Ch.20175 16QAM RB 75)



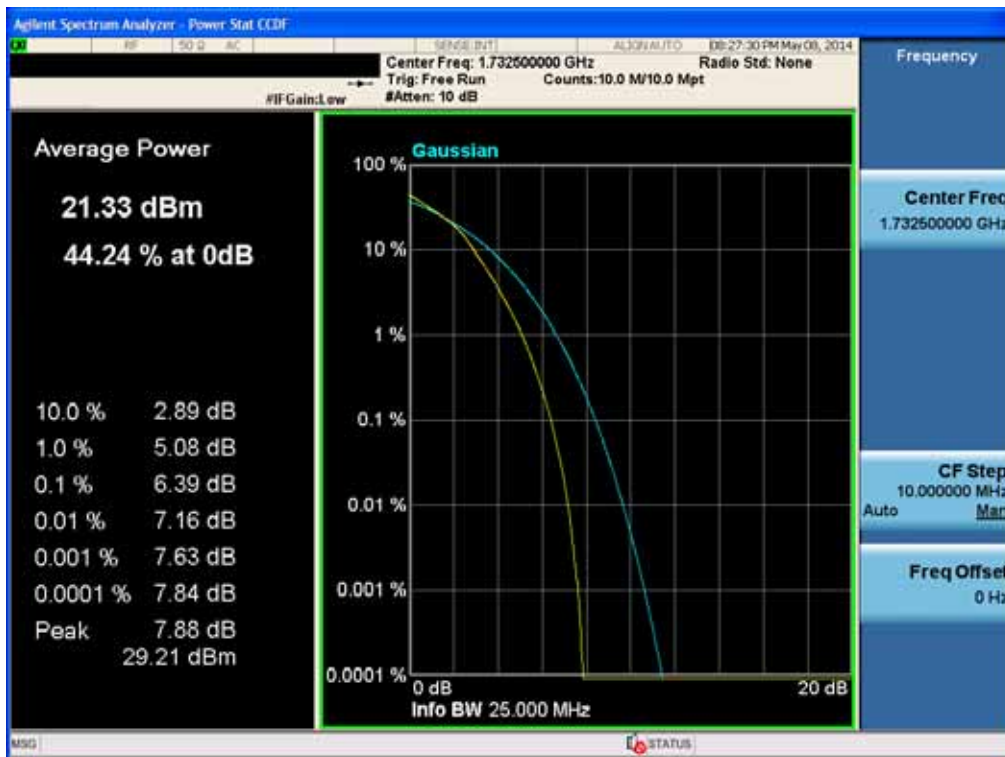
## FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. PAR Plot (20M BW Ch.20175 QPSK RB 100)



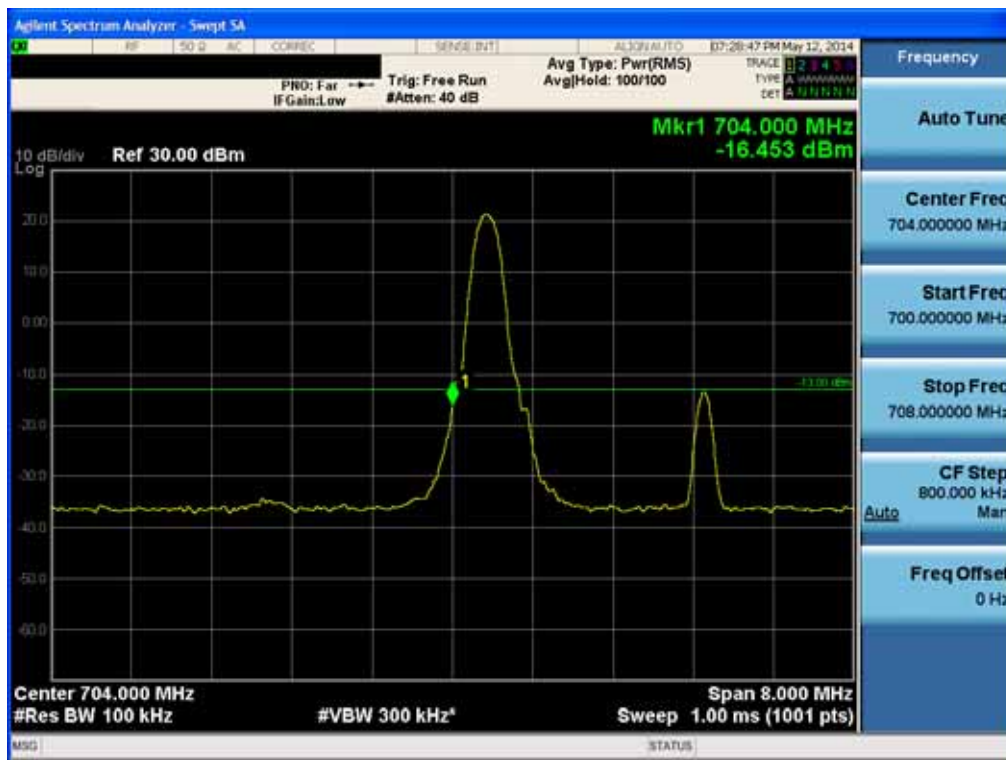
BAND 4. PAR Plot (20M BW Ch.20175 16QAM RB 100)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

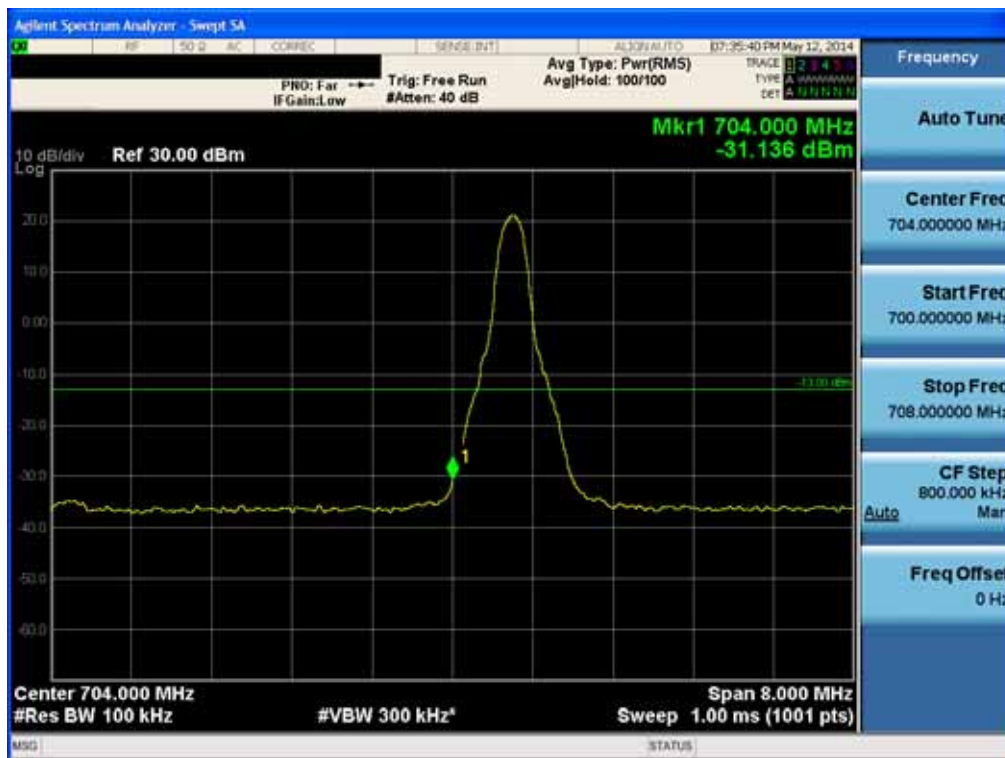
BAND 17. Low Band Edge Plot (5M BW Ch.23755 QPSK RB 1, Offset 0) -1



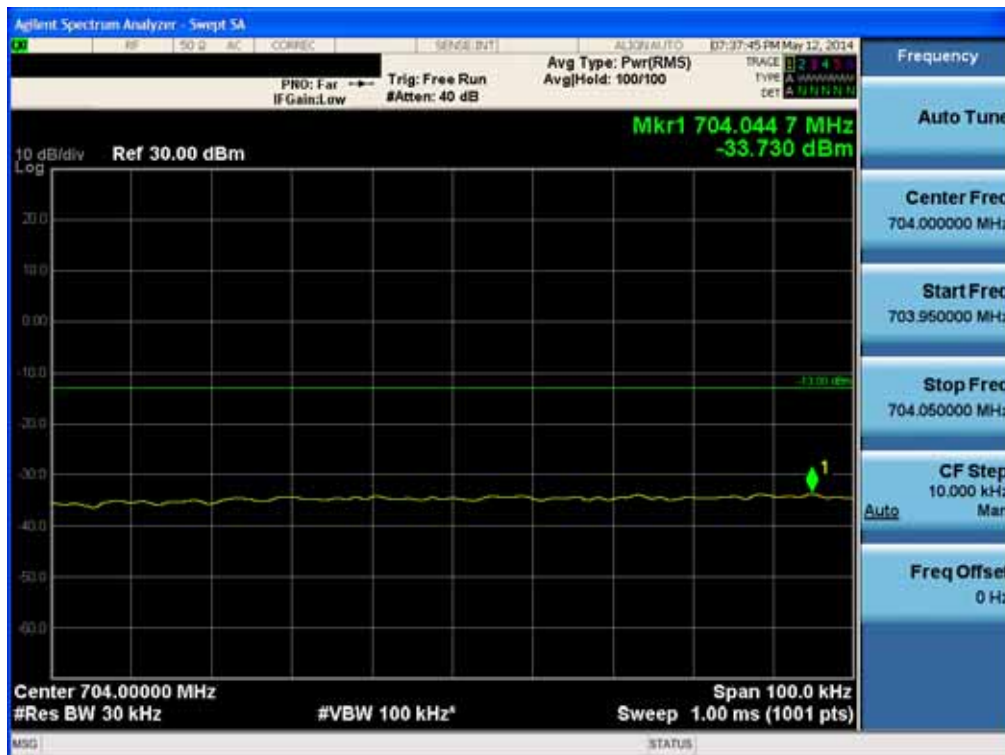
BAND 17. Low Band Edge Plot (5M BW Ch.23755 QPSK RB 25) -2



# BAND 17. Low Band Edge Plot (10M BW Ch.23780 QPSK RB 1, Offset 0) -1



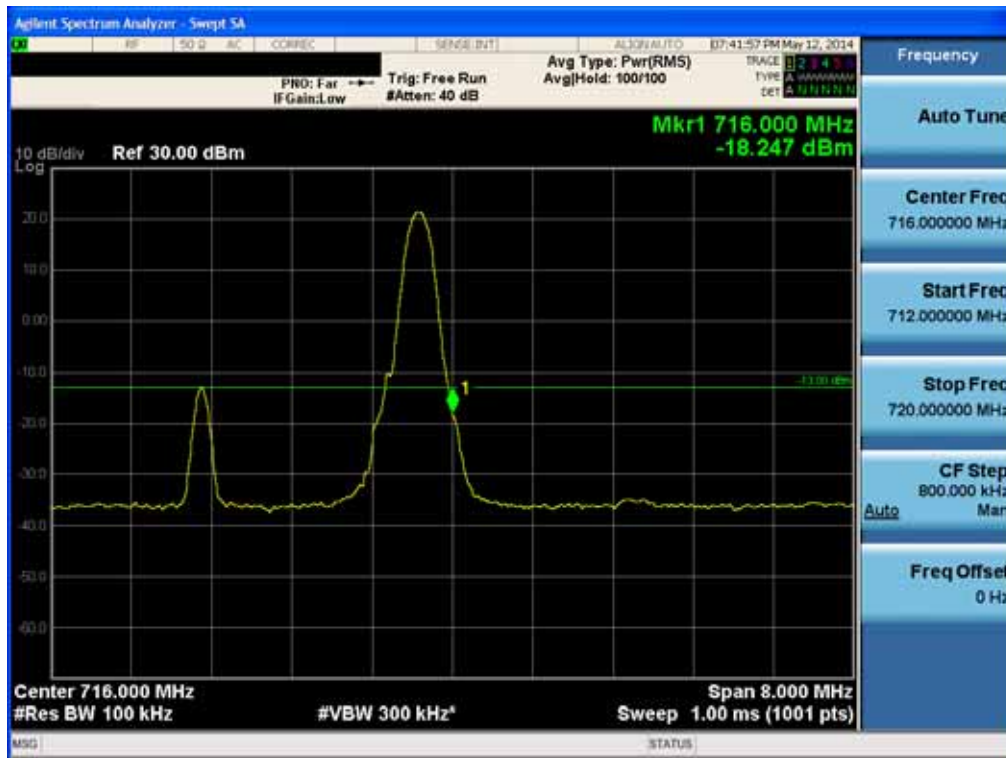
# BAND 17. Low Band Edge Plot (10M BW Ch.23780 QPSK RB 50) -2



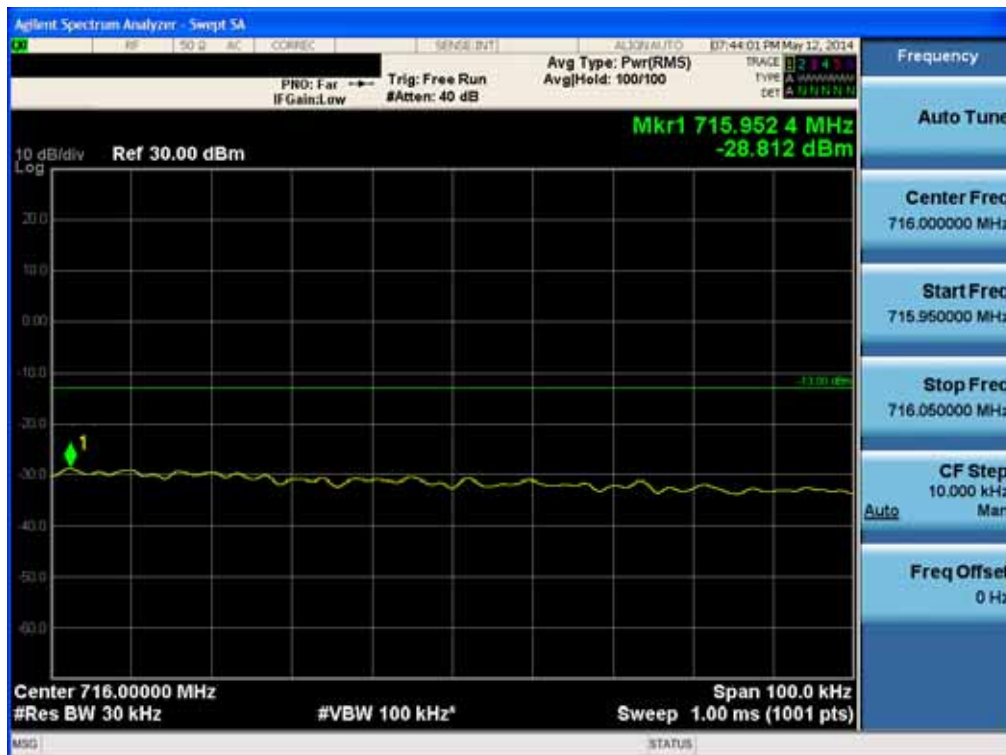
## FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

# BAND 17. High Band Edge Plot (5M BW Ch.23825 QPSK RB 1, Offset 24) -1



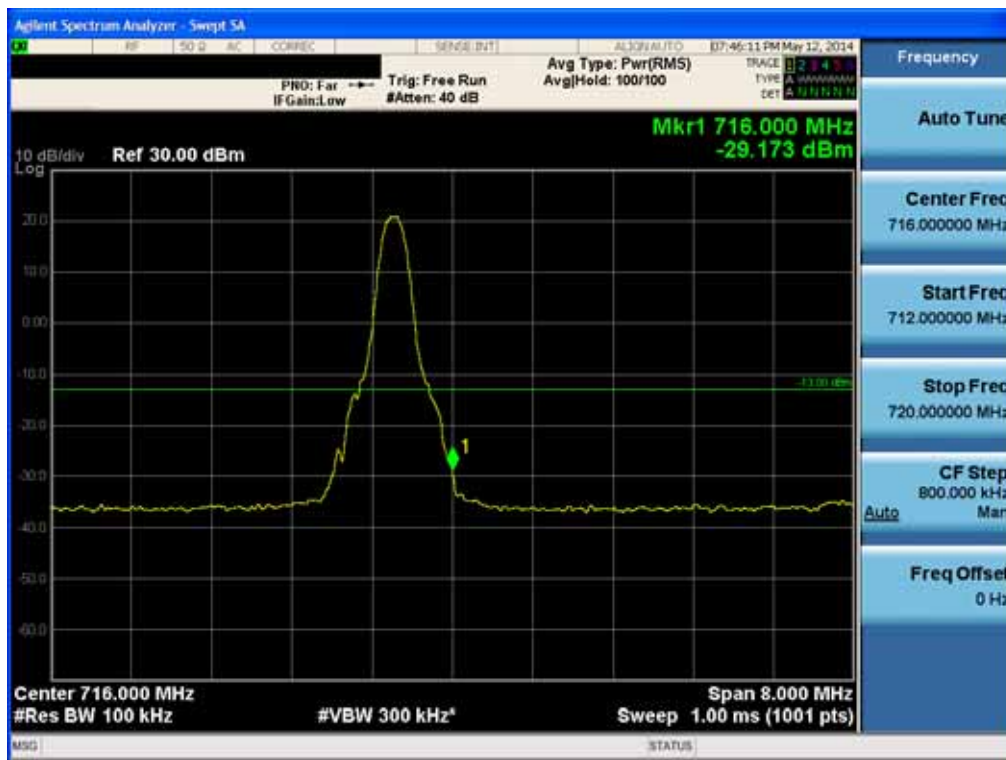
# BAND 17. High Band Edge Plot (5M BW Ch.23825 QPSK RB 25) -2



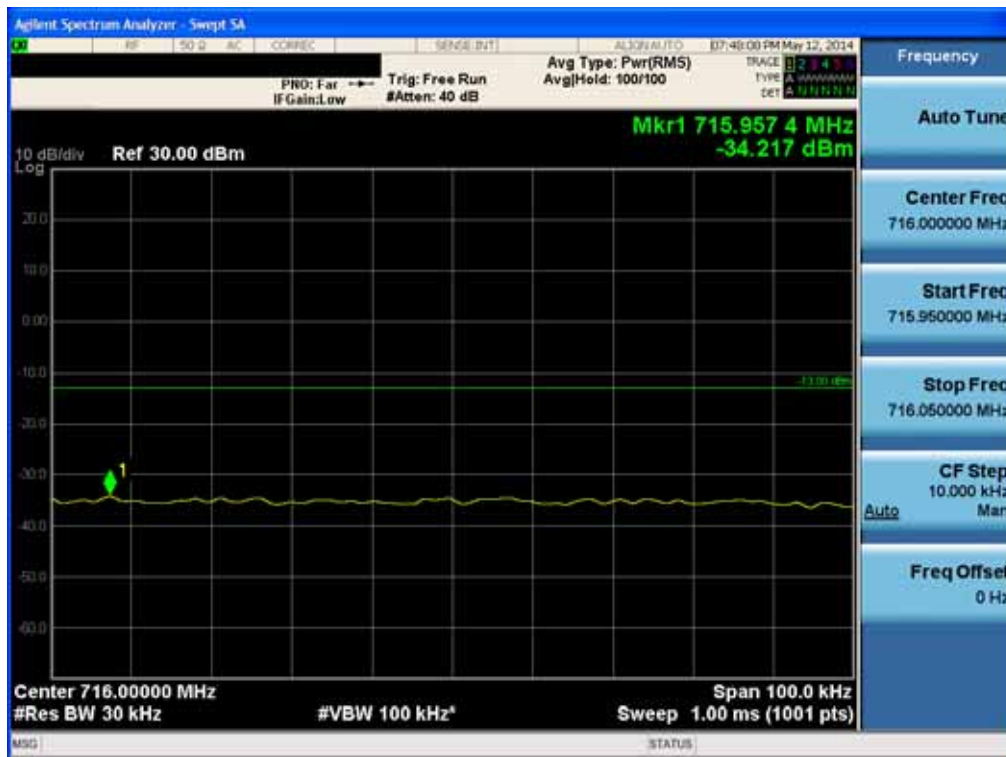
## FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

# BAND 17. High Band Edge Plot (10M BW Ch.23800 QPSK RB 1, Offset 49) -1



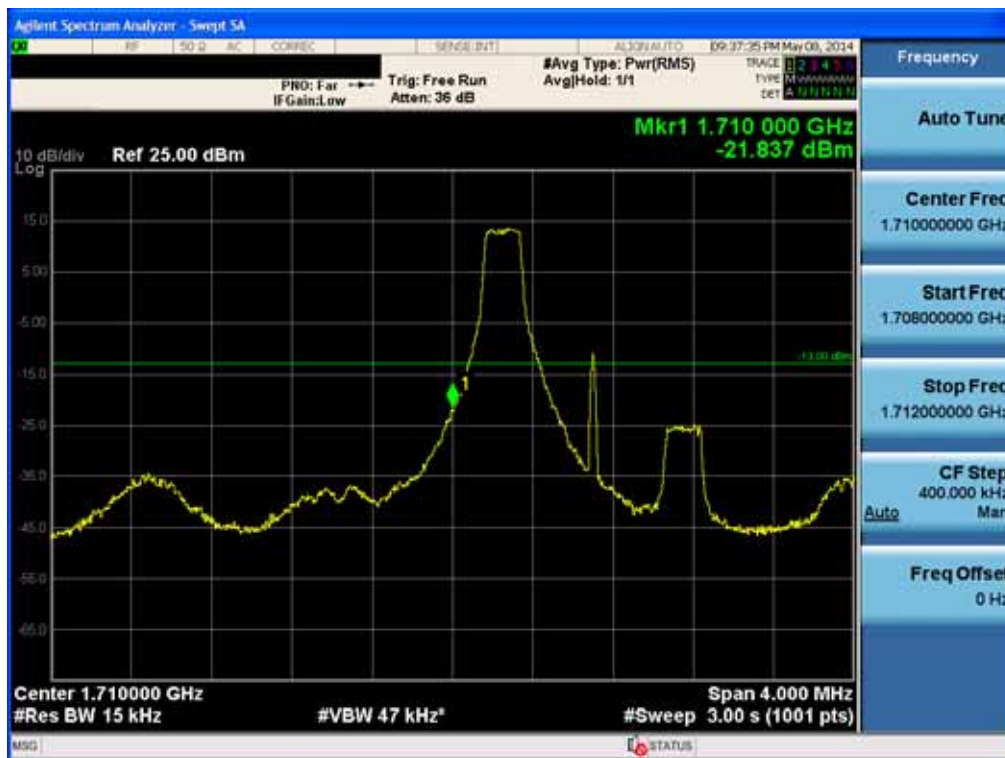
# BAND 17. High Band Edge Plot (10M BW Ch.23800 QPSK RB 50) -2



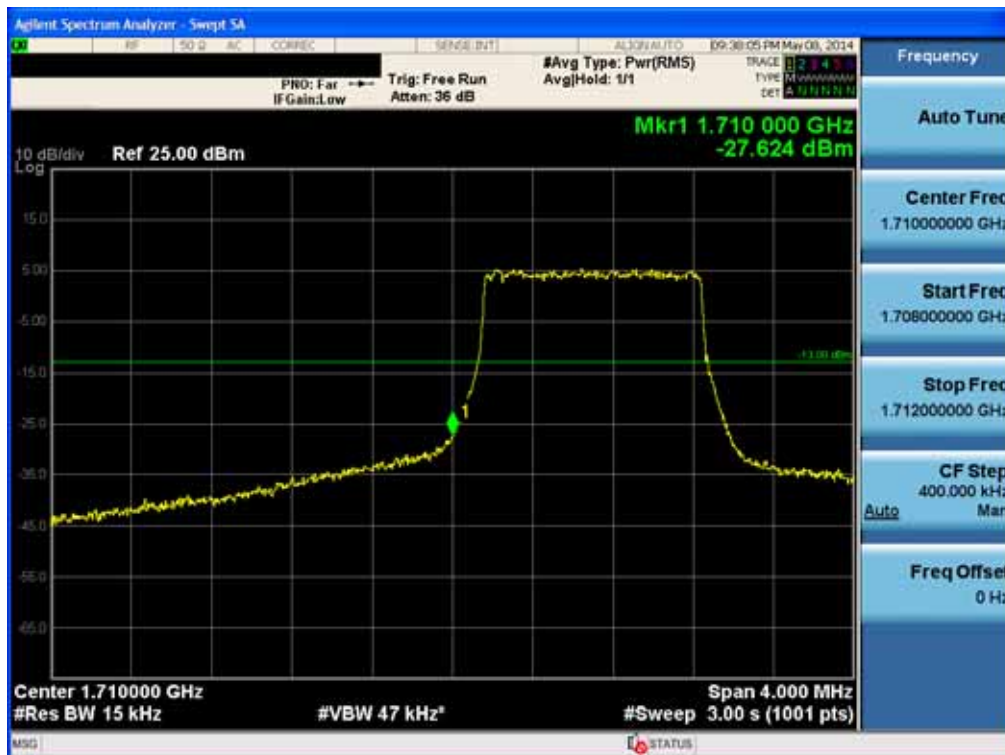
## FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Lower Band Edge Plot (1.4M BW Ch.19957 QPSK RB 1, Offset 0) -1



BAND 4. Lower Band Edge Plot (1.4M BW Ch.19957 QPSK RB 6) -2



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

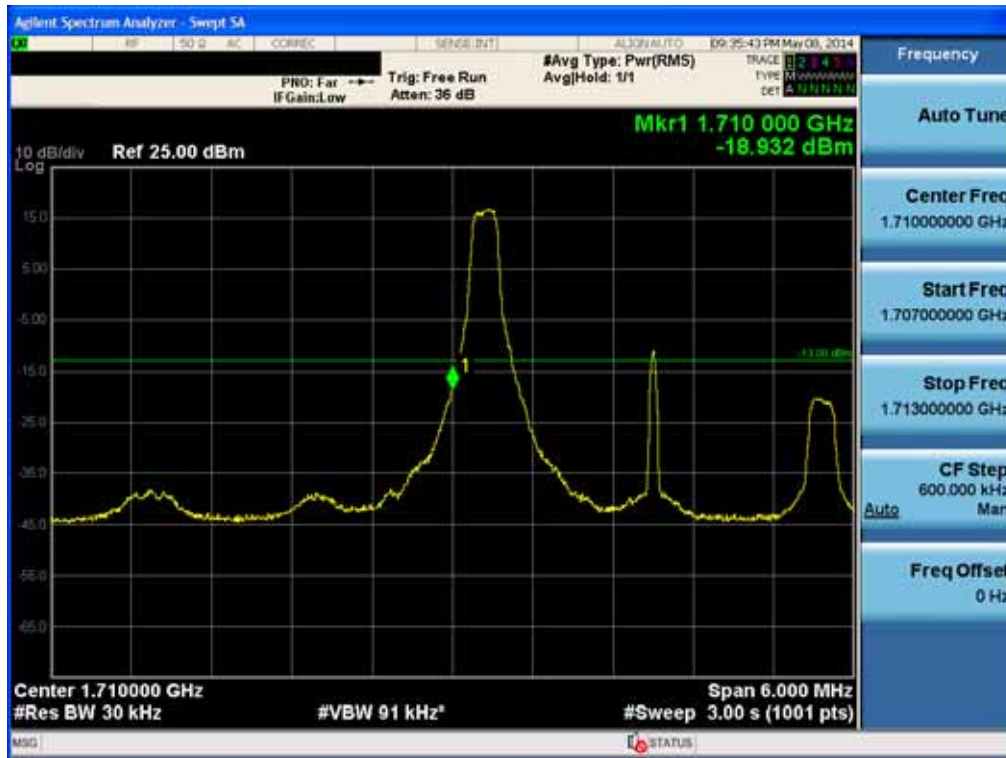
# BAND 4. Lower Extended Band Edge Plot (1.4M BW Ch.19957 QPSK RB 6) -3



## FCC CERTIFICATION REPORT

|                                             |                                       |                                                                                                      |                                                                                |
|---------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| <b>Test Report No.</b><br>HCT-R-1405-F011-1 | <b>Date of Issue:</b><br>May 29, 2014 | <b>EUT Type:</b><br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br><b>FCC ID:</b><br>ZNFD855P |
|---------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|

BAND 4. Lower Band Edge Plot (3M BW Ch.19965 QPSK RB 1, Offset 0) -1



BAND 4. Lower Band Edge Plot (3M BW Ch.19965 QPSK RB 15) -2



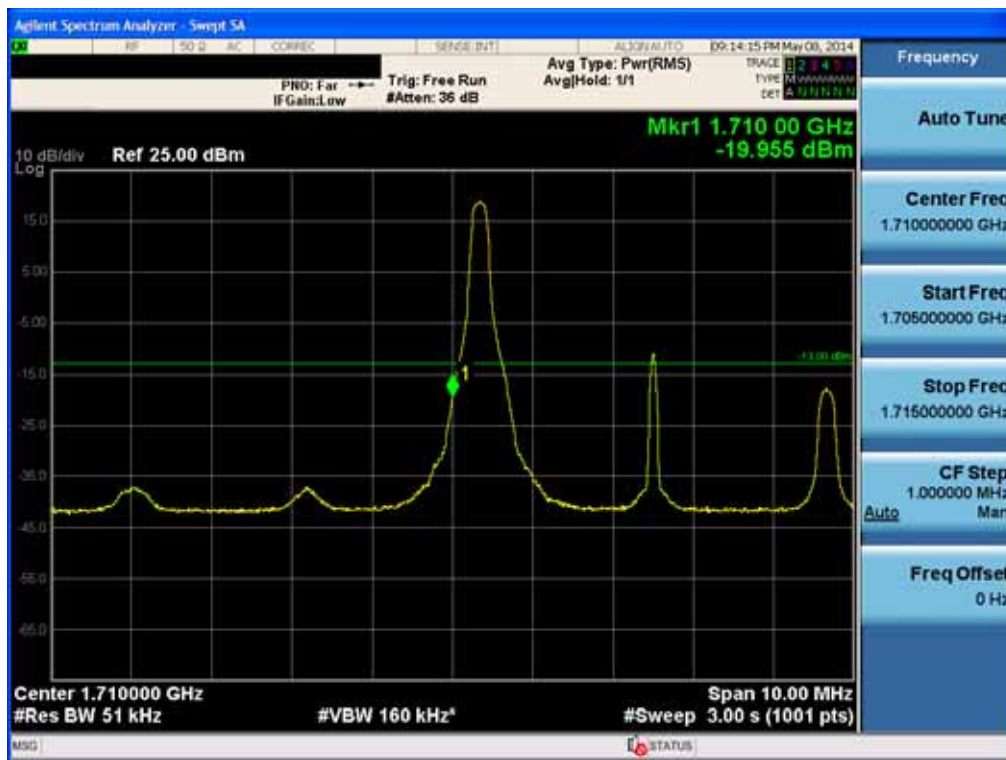
FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Lower Extended Band Edge Plot (3M BW Ch.19965 QPSK RB 15) -3



BAND 4. Lower Band Edge Plot (5M BW Ch.19975 QPSK RB 1, Offset 0) -1



BAND 4. Lower Band Edge Plot (5M BW Ch.19975 QPSK RB 25) -2



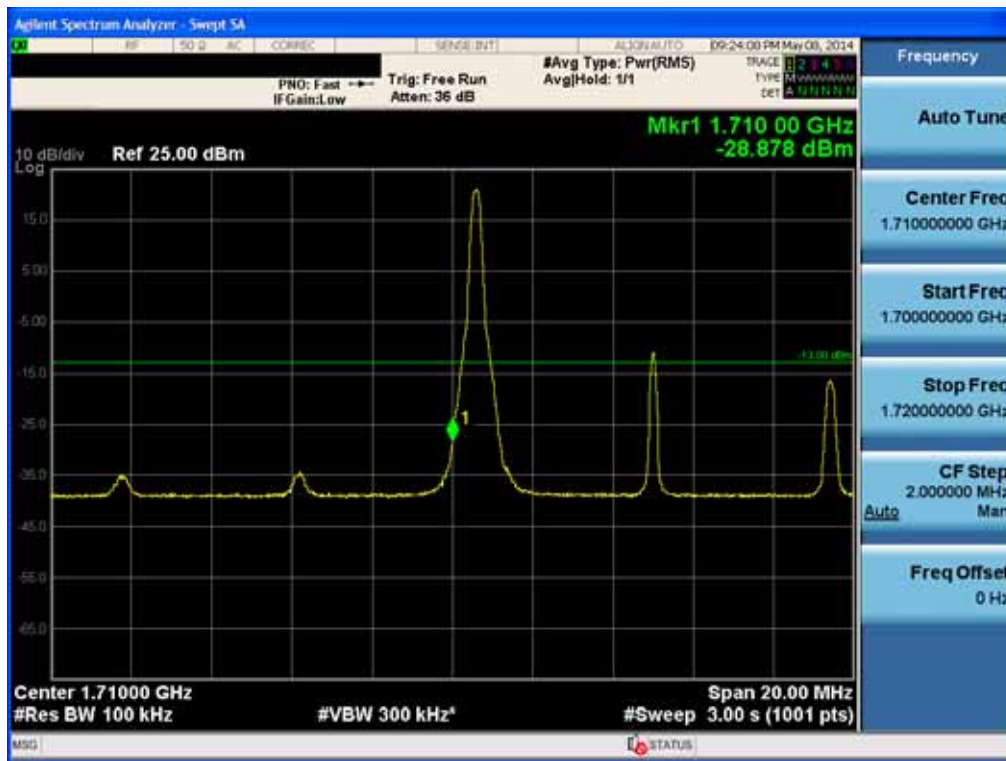
FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Lower Extended Band Edge Plot (5M BW Ch.19975 QPSK RB 25) -3



BAND 4. Lower Band Edge Plot (10M BW Ch.20000 QPSK RB 1, Offset 0) -1



BAND 4. Lower Band Edge Plot (10M BW Ch.20000 QPSK RB 50) -2



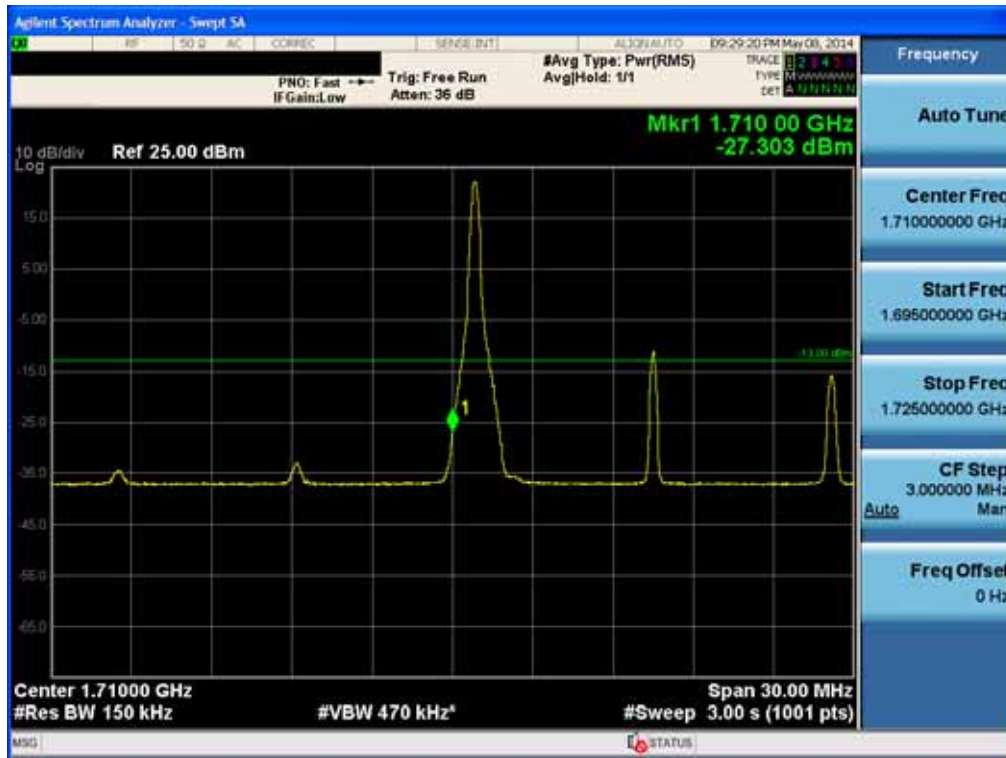
FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Lower Extended Band Edge Plot (10M BW Ch.20000 QPSK RB 50) -3



BAND 4. Lower Band Edge Plot (15M BW Ch.20025 QPSK RB 1, Offset 0) -1



BAND 4. Lower Band Edge Plot (15M BW Ch.20025 QPSK RB 75) -2



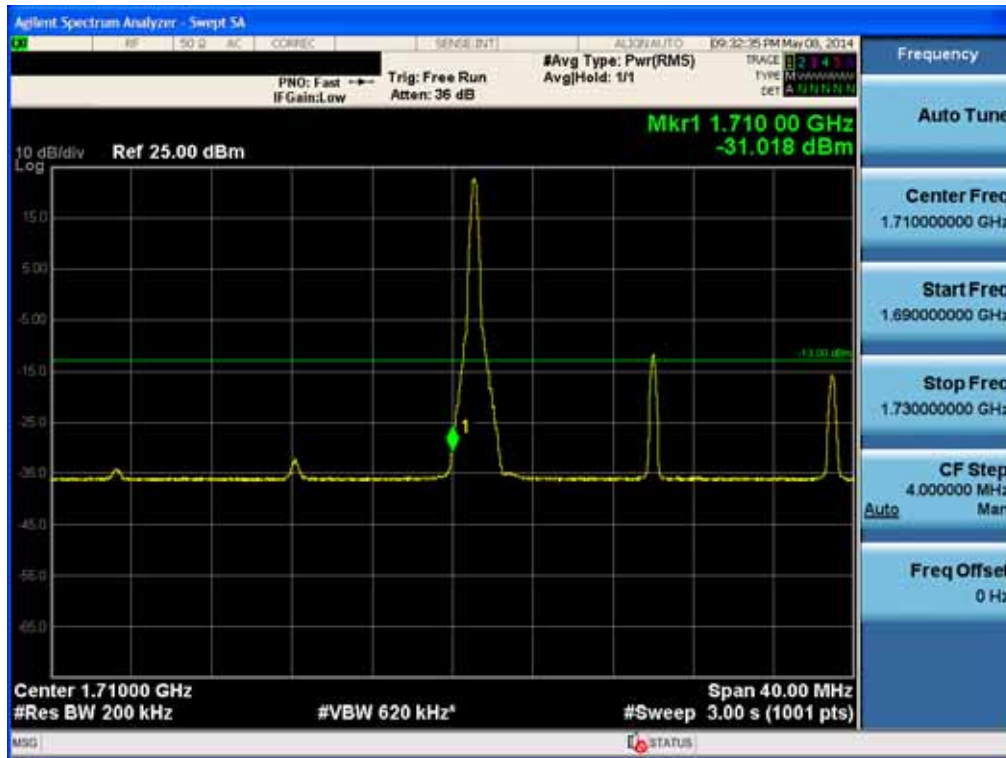
FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Lower Extended Band Edge Plot (15M BW Ch.20025 QPSK RB 75) -3



BAND 4. Lower Band Edge Plot (20M BW Ch.20050 QPSK RB 1, Offset 0) -1



BAND 4. Lower Band Edge Plot (20M BW Ch.20050 QPSK RB 100) -2



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

#### BAND 4. Lower Extended Band Edge Plot (20M BW Ch.20050 QPSK RB 100) -3



#### FCC CERTIFICATION REPORT

|                                             |                                       |                                                                                                      |                                                                                    |
|---------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>Test Report No.</b><br>HCT-R-1405-F011-1 | <b>Date of Issue:</b><br>May 29, 2014 | <b>EUT Type:</b><br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br><br><b>FCC ID:</b><br>ZNFD855P |
|---------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|

BAND 4. Upper Band Edge Plot (1.4M BW Ch.20393 QPSK RB 1, Offset 5) -1



BAND 4. Upper Band Edge Plot (1.4M BW Ch.20393 QPSK RB 6) -2



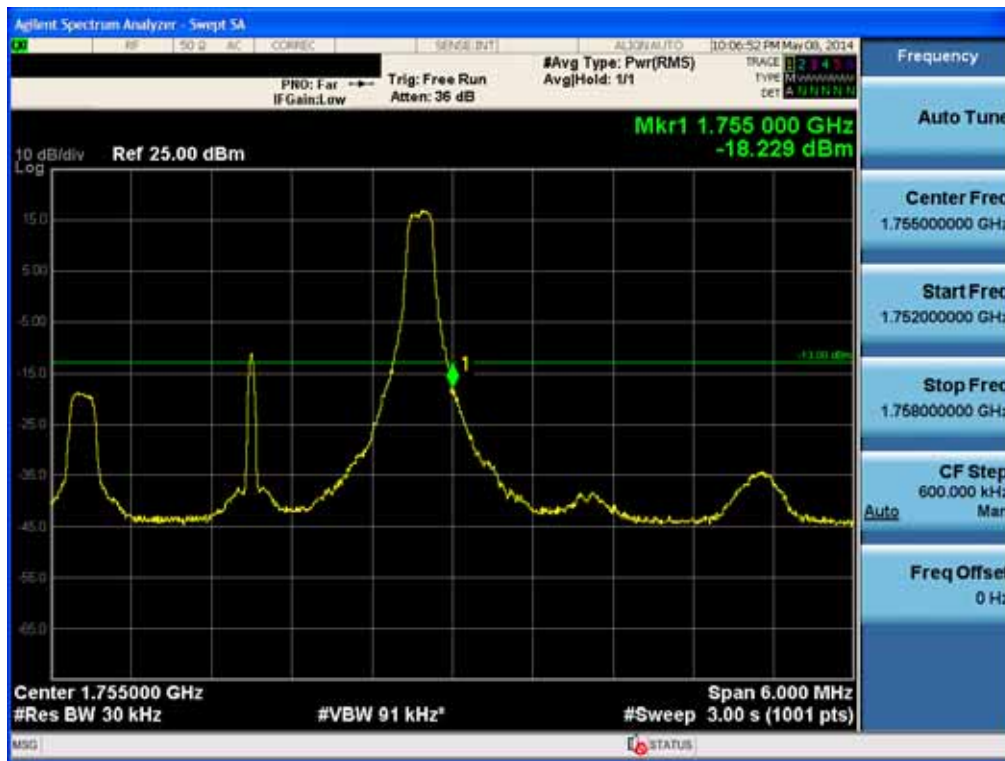
FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Upper Extended Band Edge Plot (1.4M BW Ch.20393 QPSK RB 6) -3



BAND 4. Upper Band Edge Plot (3M BW Ch.20385 QPSK RB 1, Offset 14) -1



BAND 4. Upper Band Edge Plot (3M BW Ch.20385 QPSK RB 15) -2



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

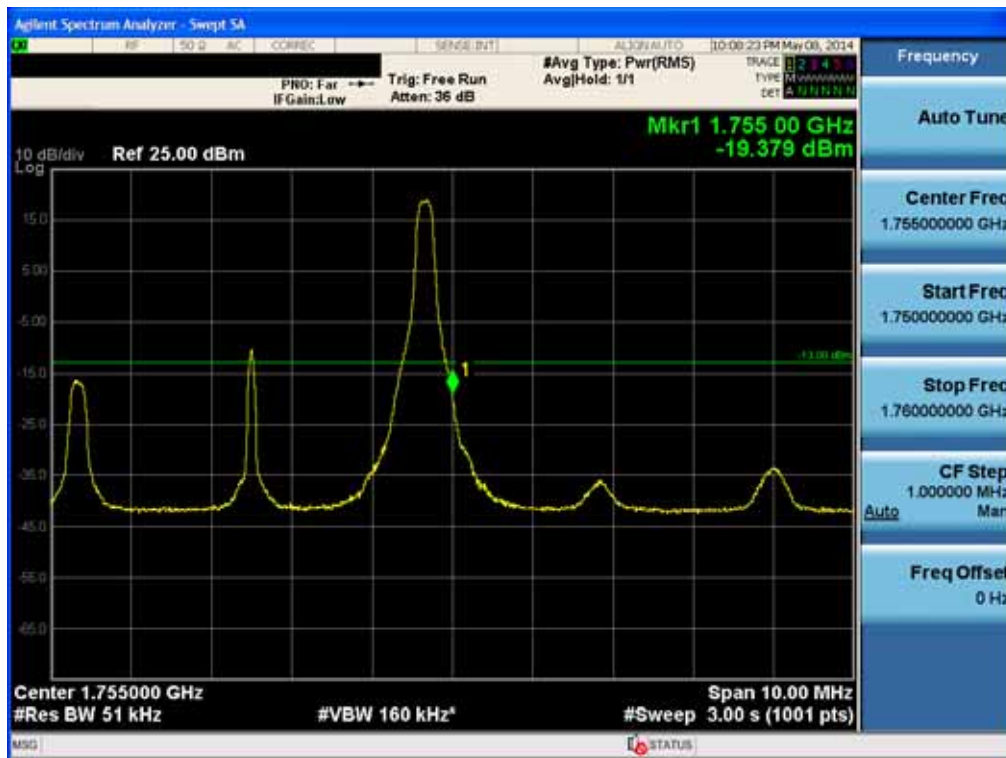
# BAND 4. Upper Extended Band Edge Plot (3M BW Ch.20385 QPSK RB 15) -3



## FCC CERTIFICATION REPORT

|                                             |                                       |                                                                                                      |                                                                                |
|---------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| <b>Test Report No.</b><br>HCT-R-1405-F011-1 | <b>Date of Issue:</b><br>May 29, 2014 | <b>EUT Type:</b><br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br><b>FCC ID:</b><br>ZNFD855P |
|---------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|

BAND 4. Upper Band Edge Plot (5M BW Ch.20375 QPSK RB 1, Offset 24) -1



BAND 4. Upper Band Edge Plot (5M BW Ch.20375 QPSK RB 25) -2



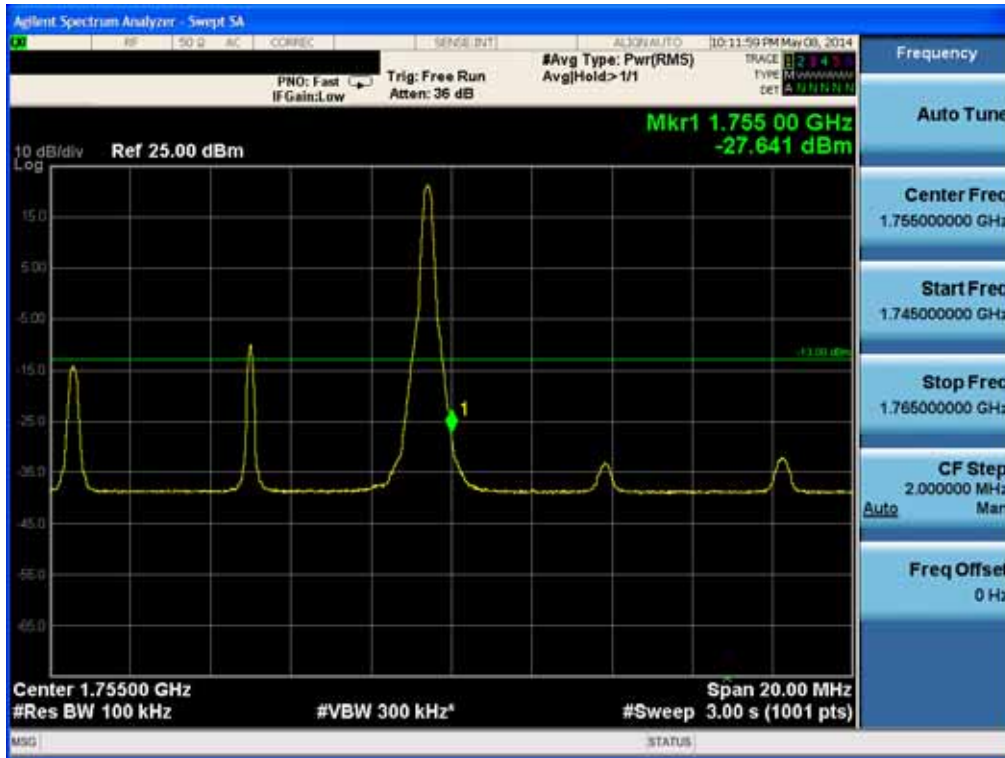
FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Upper Extended Band Edge Plot (5M BW Ch.20375 QPSK RB 25) -3



BAND 4. Upper Band Edge Plot (10M BW Ch.20350 QPSK RB 1, Offset 49) -1



BAND 4. Upper Band Edge Plot (10M BW Ch.20350 QPSK RB 50) -2



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

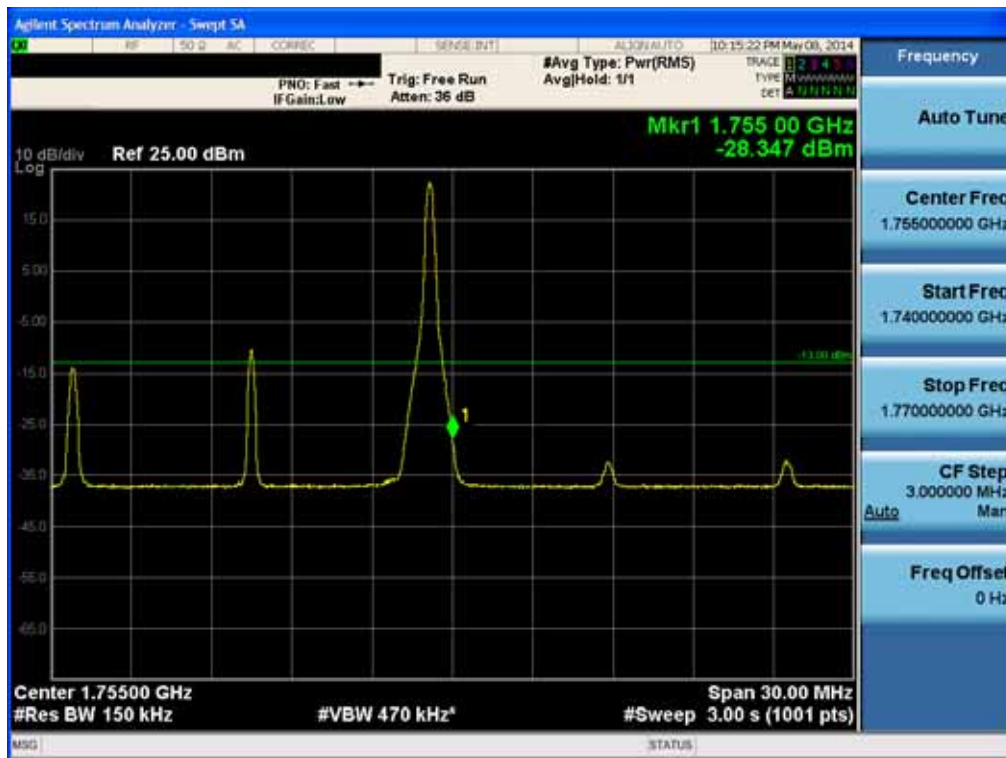
BAND 4. Upper Extended Band Edge Plot (10M BW Ch.20350 QPSK RB 50) -3



FCC CERTIFICATION REPORT

|                                             |                                       |                                                                                                      |                                                                                    |
|---------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>Test Report No.</b><br>HCT-R-1405-F011-1 | <b>Date of Issue:</b><br>May 29, 2014 | <b>EUT Type:</b><br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br><br><b>FCC ID:</b><br>ZNFD855P |
|---------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|

BAND 4. Upper Band Edge Plot (15M BW Ch.20325 QPSK RB 1, Offset 74) -1



BAND 4. Upper Band Edge Plot (15M BW Ch.20325 QPSK RB 75) -2



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

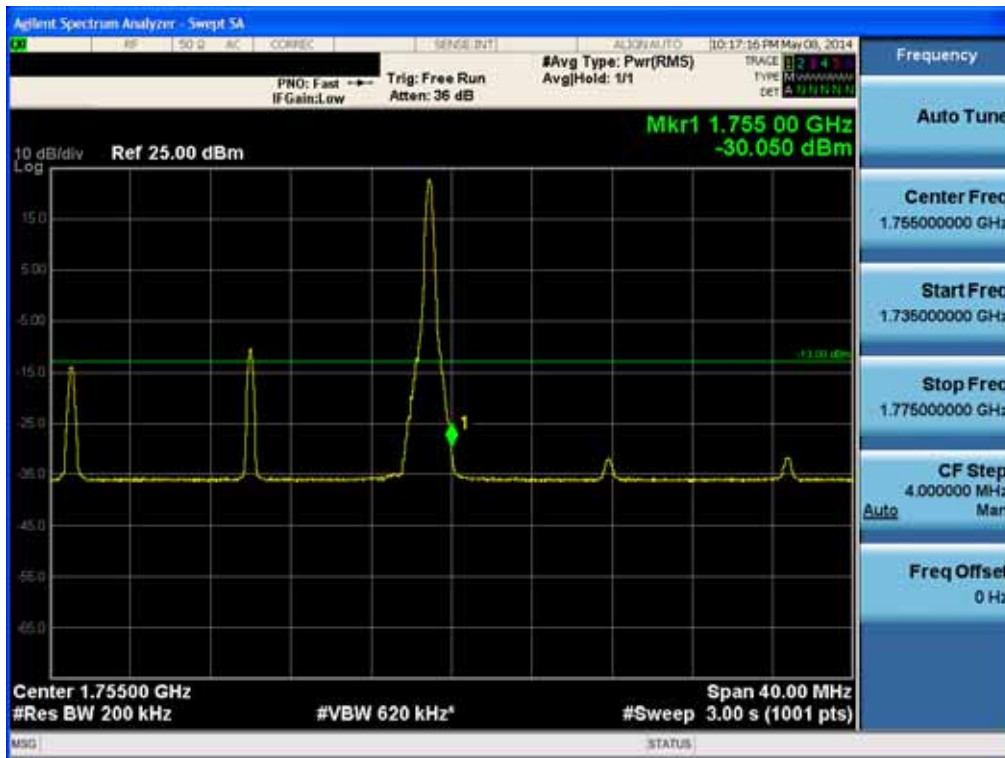
# BAND 4. Upper Extended Band Edge Plot (15M BW Ch.20325 QPSK RB 75) -3



## FCC CERTIFICATION REPORT

|                                             |                                       |                                                                                                      |                                                                                    |
|---------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>Test Report No.</b><br>HCT-R-1405-F011-1 | <b>Date of Issue:</b><br>May 29, 2014 | <b>EUT Type:</b><br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br><br><b>FCC ID:</b><br>ZNFD855P |
|---------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|

BAND 4. Upper Band Edge Plot (20M BW Ch.20300 QPSK RB 1, Offset 99) -1



BAND 4. Upper Band Edge Plot (20M BW Ch.20300 QPSK RB 100) -2



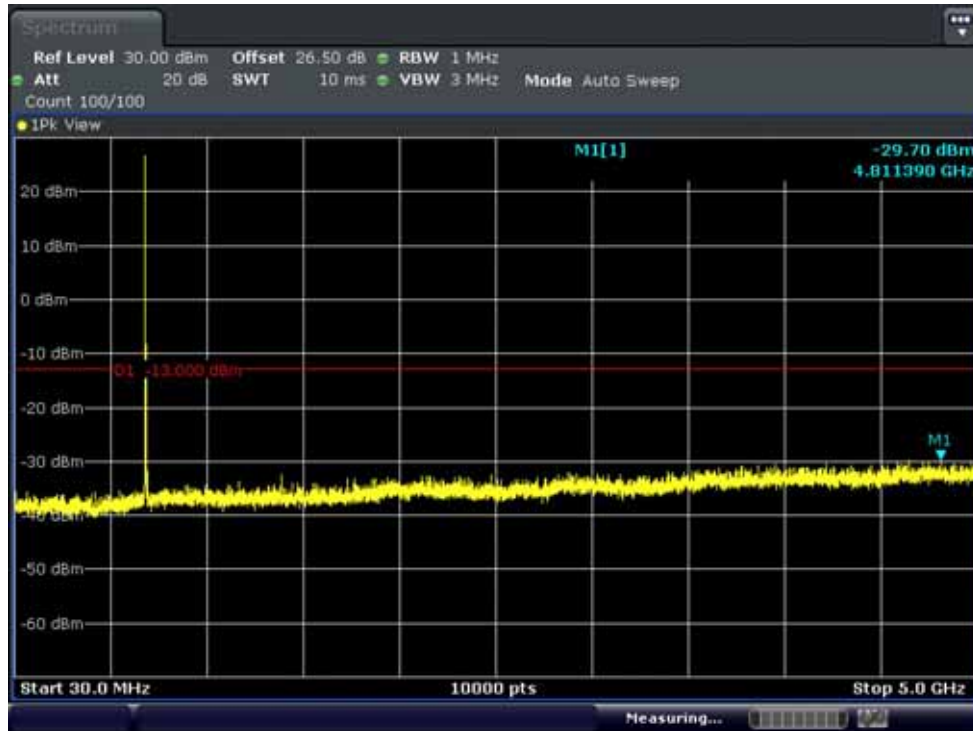
#### BAND 4. Upper Extended Band Edge Plot (20M BW Ch.20300 QPSK RB 100) -3



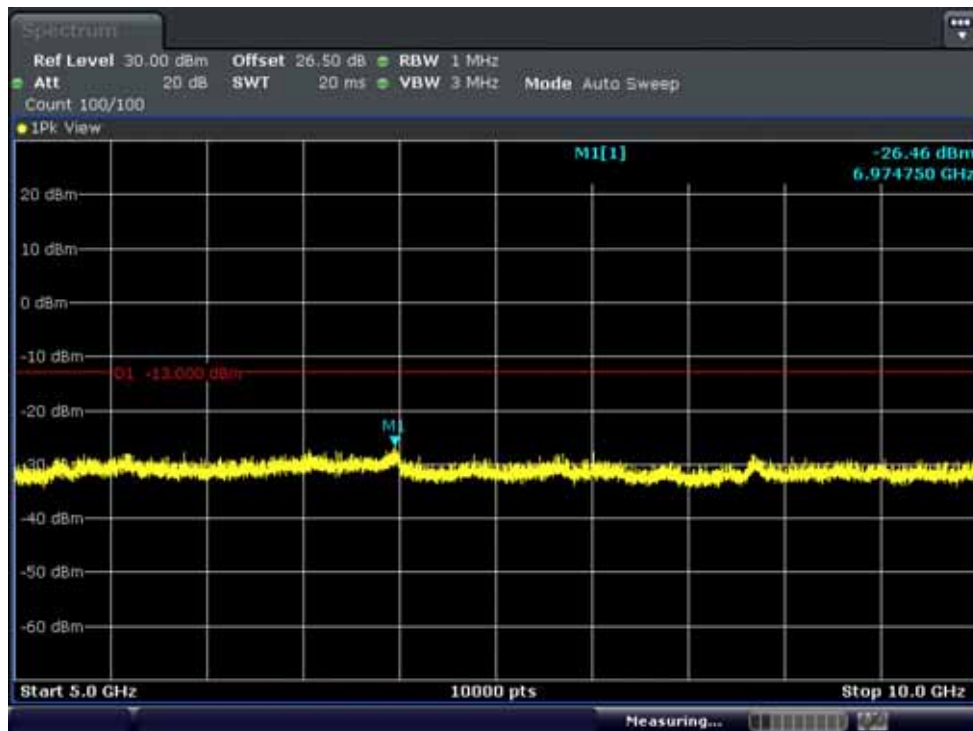
#### FCC CERTIFICATION REPORT

|                                             |                                       |                                                                                                      |                                                                                    |
|---------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>Test Report No.</b><br>HCT-R-1405-F011-1 | <b>Date of Issue:</b><br>May 29, 2014 | <b>EUT Type:</b><br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br><br><b>FCC ID:</b><br>ZNFD855P |
|---------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|

BAND 17. Conducted Spurious Plot\_1 (23755ch\_5MHz\_QPSK\_RB 1\_0)



BAND 17. Conducted Spurious Plot\_2 (23755ch\_5MHz\_QPSK\_RB 1\_0)



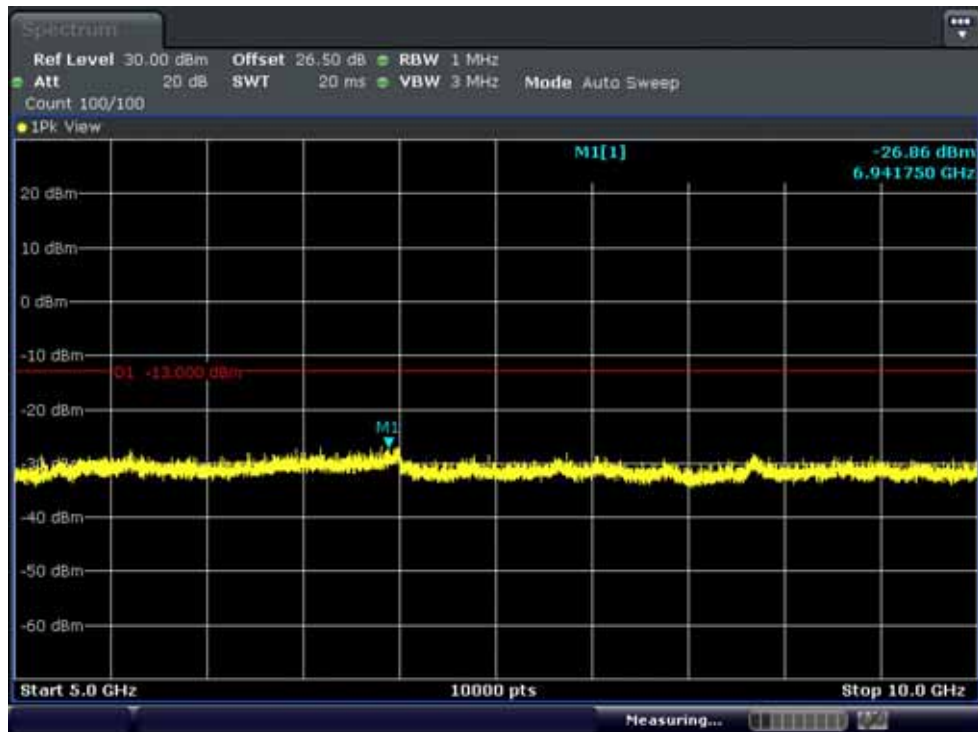
FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 17. Conducted Spurious Plot\_1 (23790ch\_5MHz\_QPSK\_RB 1\_0)



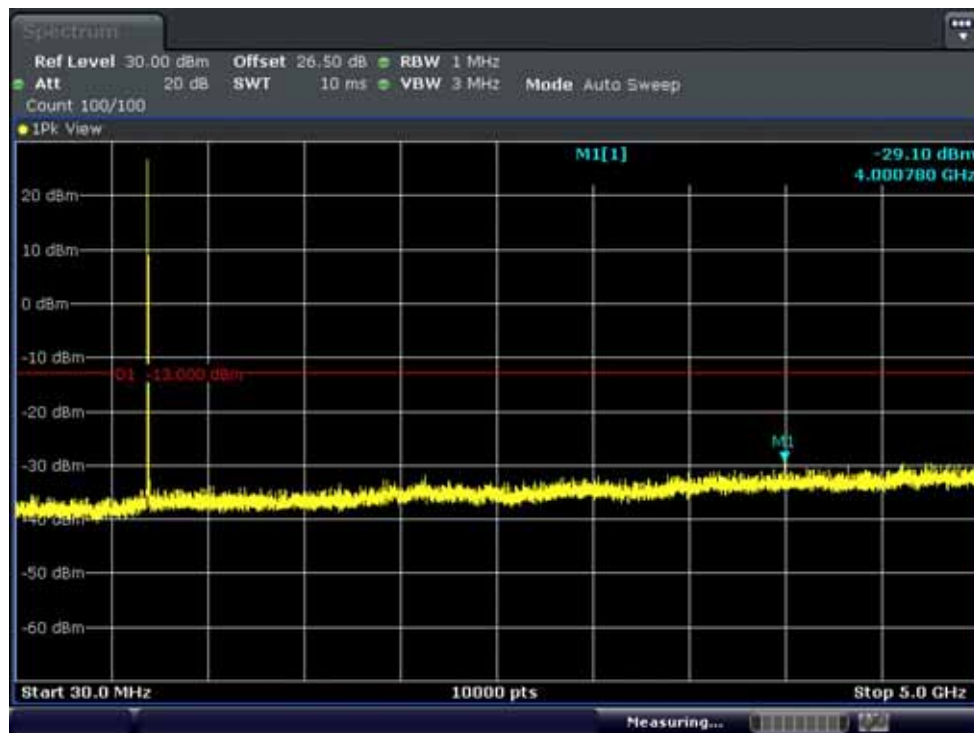
BAND 17. Conducted Spurious Plot\_2 (23790ch\_5MHz\_QPSK\_RB 1\_0)



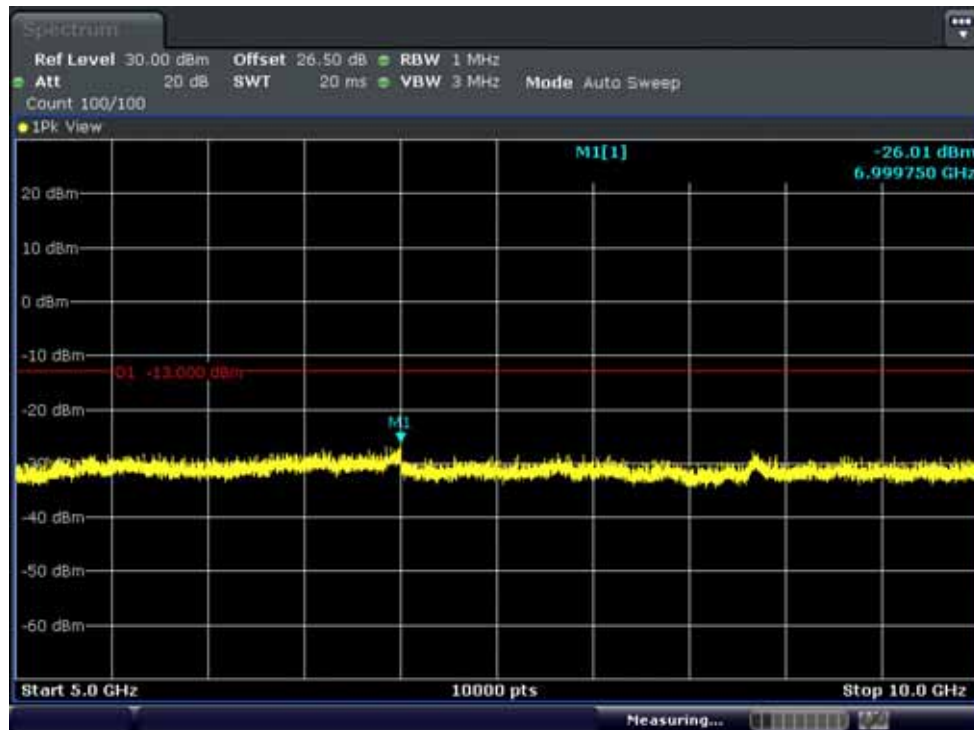
FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 17. Conducted Spurious Plot\_1 (23825ch\_5MHz\_QPSK\_RB 1\_0)



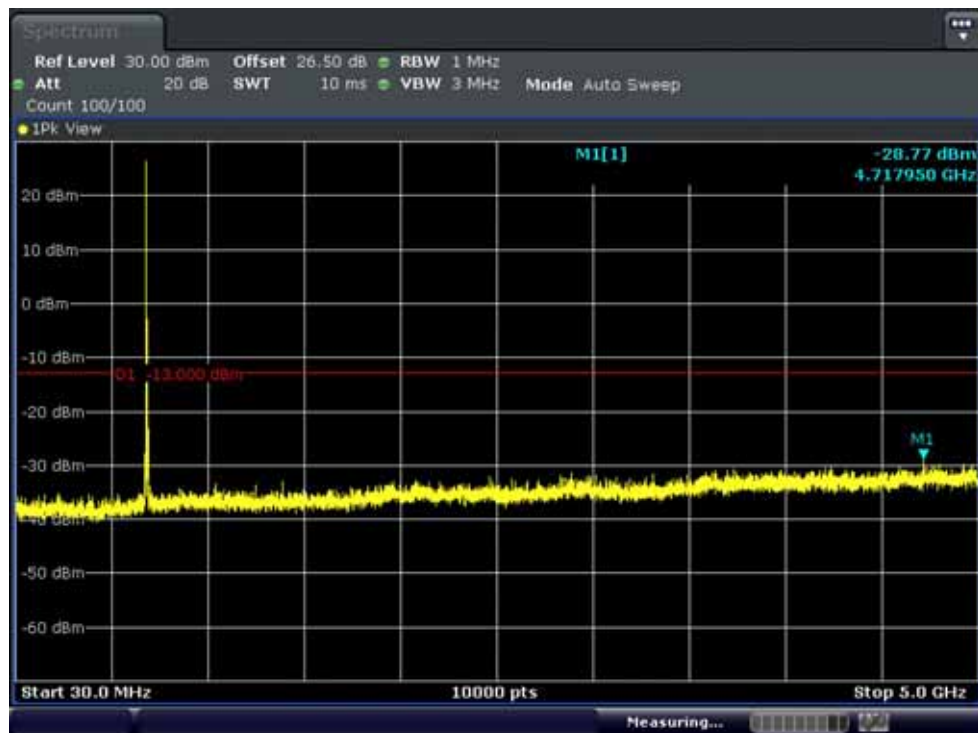
BAND 17. Conducted Spurious Plot\_2 (23825ch\_5MHz\_QPSK\_RB 1\_0)



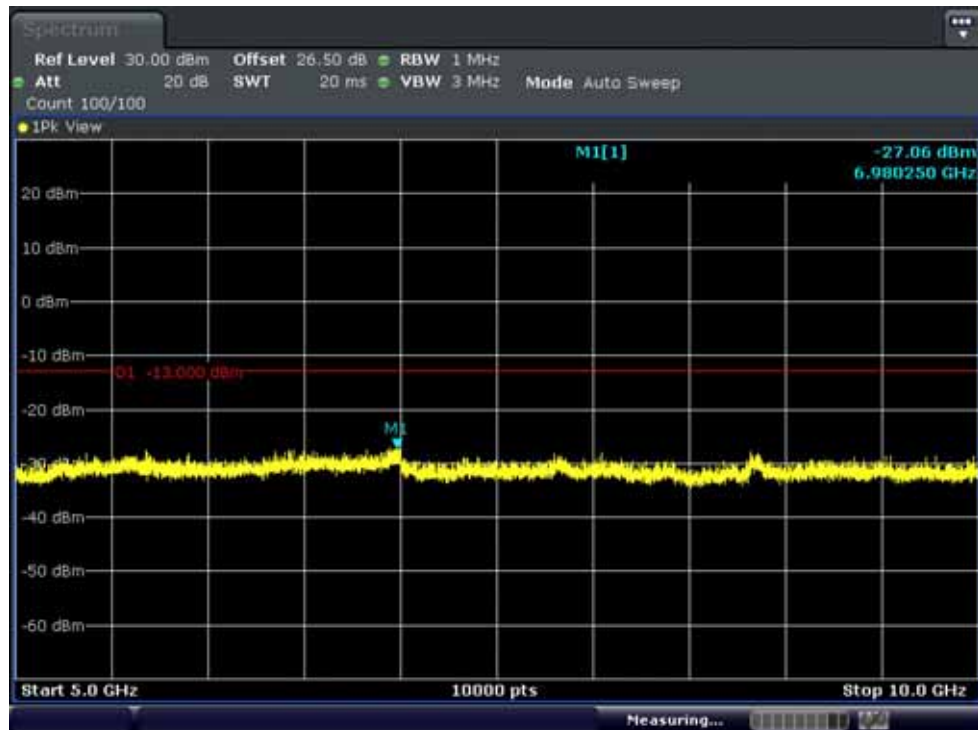
FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 17. Conducted Spurious Plot\_1 (23780ch\_10MHz\_QPSK\_RB 1\_0)



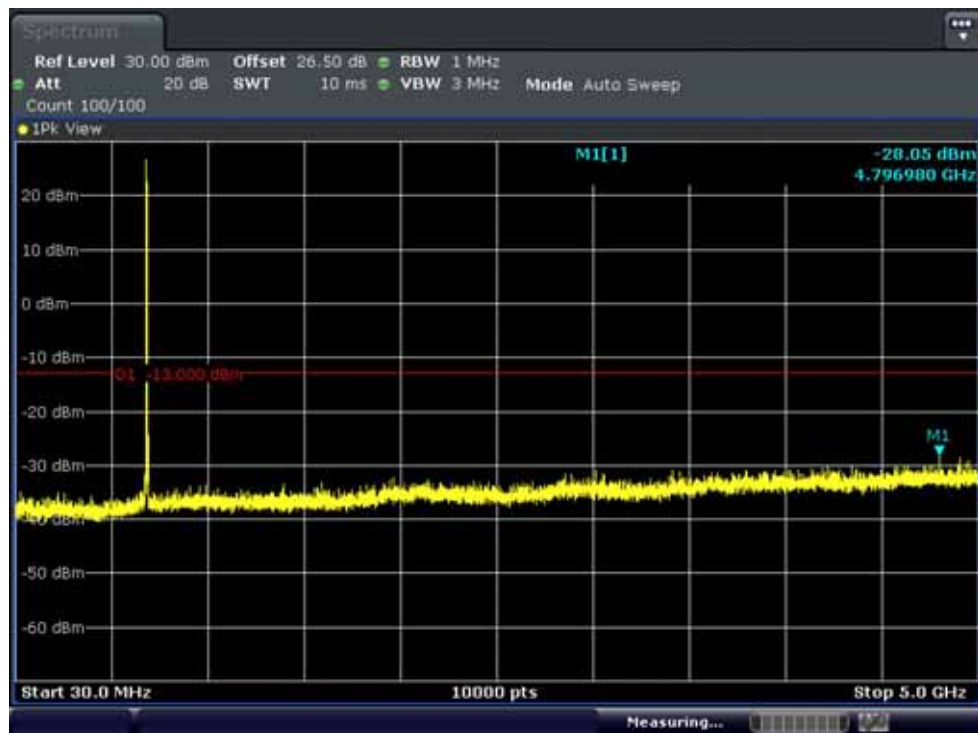
BAND 17. Conducted Spurious Plot\_2 (23780ch\_10MHz\_QPSK\_RB 1\_0)



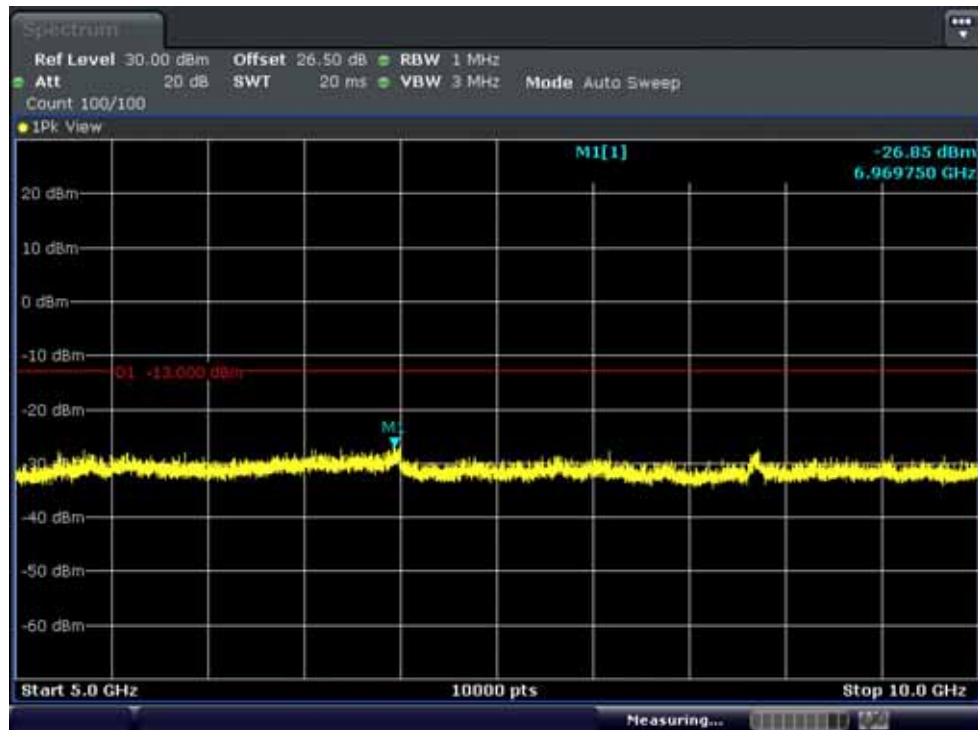
FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 17. Conducted Spurious Plot\_1 (23790ch\_10MHz\_QPSK\_RB 1\_0)



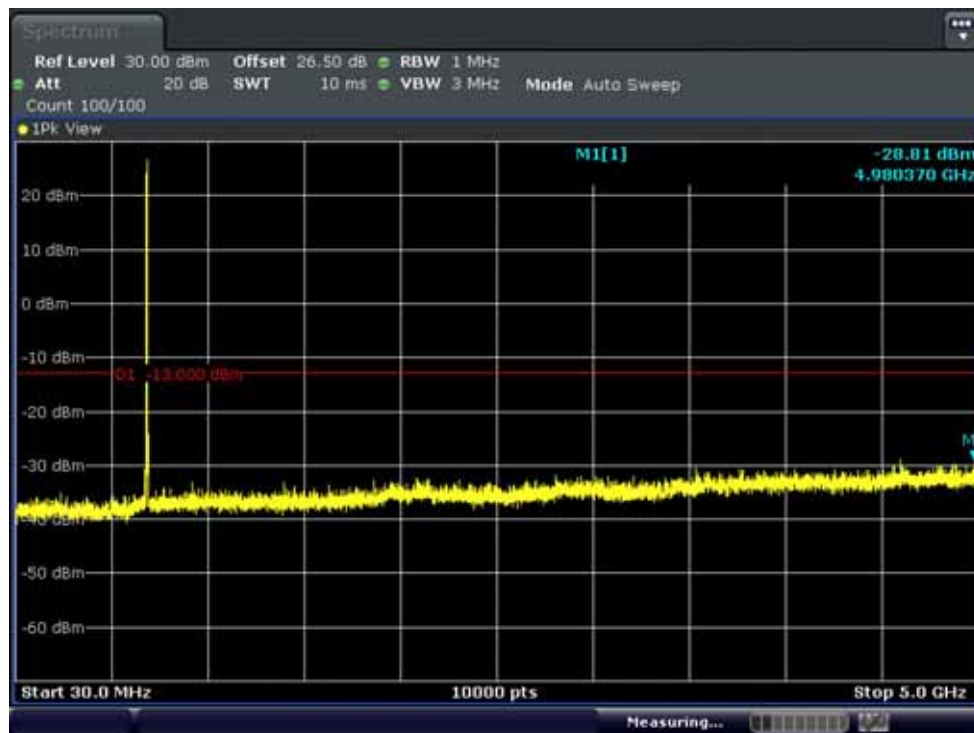
BAND 17. Conducted Spurious Plot\_2 (23790ch\_10MHz\_QPSK\_RB 1\_0)



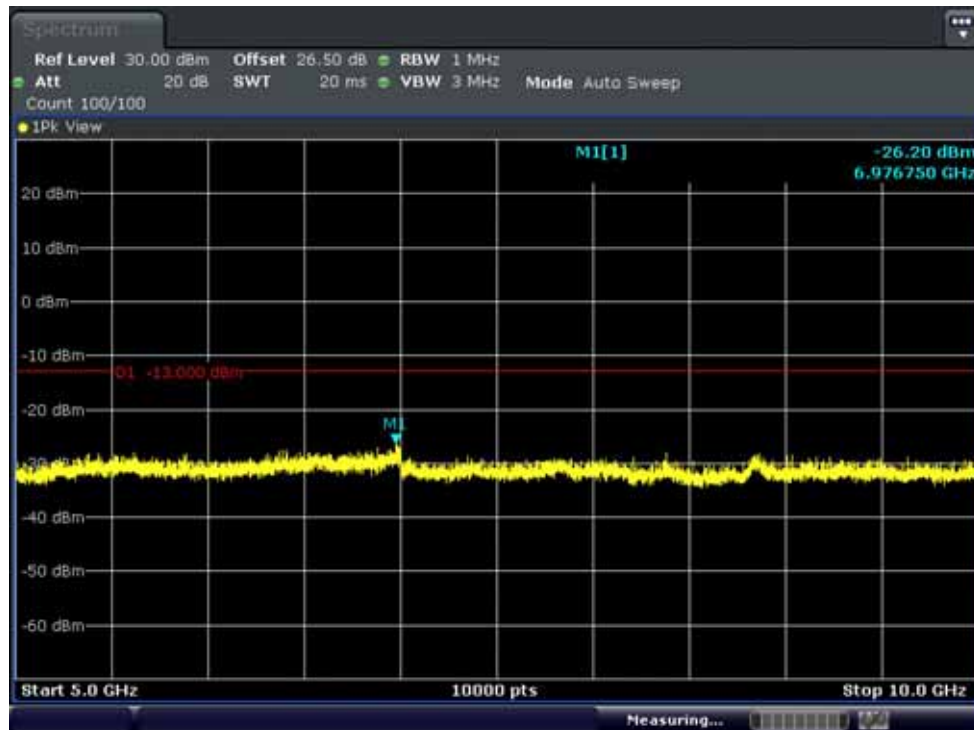
FCC CERTIFICATION REPORT

|                                             |                                       |                                                                                                      |                                                                                    |
|---------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <b>Test Report No.</b><br>HCT-R-1405-F011-1 | <b>Date of Issue:</b><br>May 29, 2014 | <b>EUT Type:</b><br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br><br><b>FCC ID:</b><br>ZNFD855P |
|---------------------------------------------|---------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|

BAND 17. Conducted Spurious Plot\_1 (23800ch\_10MHz\_QPSK\_RB 1\_0)



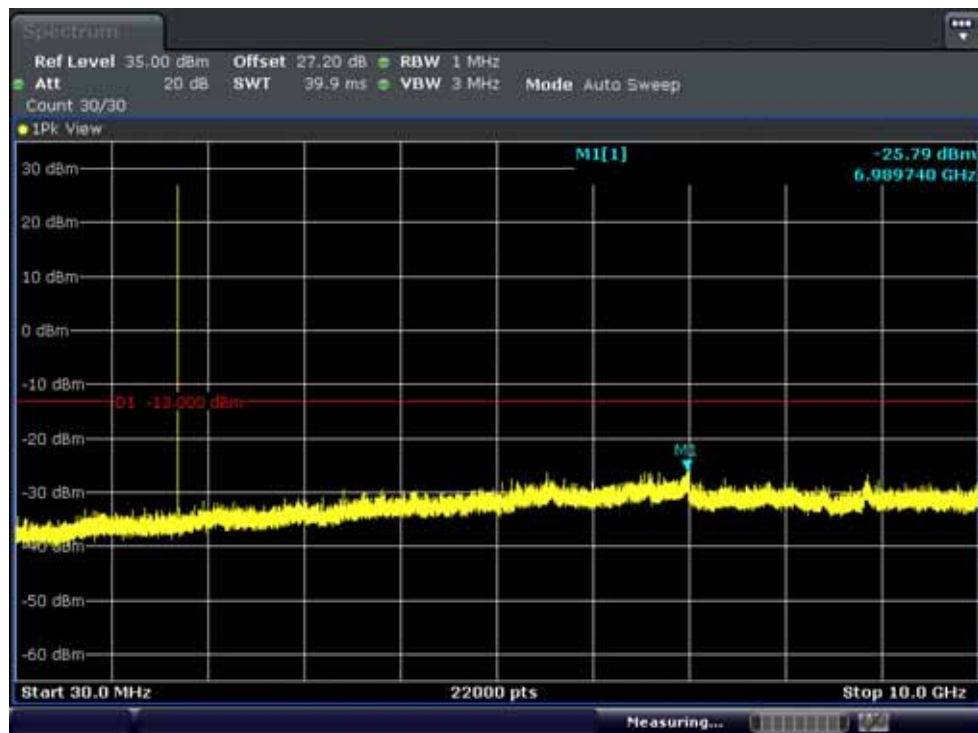
BAND 17. Conducted Spurious Plot\_2 (23800ch\_10MHz\_QPSK\_RB 1\_0)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (19956ch\_1.4MHz\_QPSK\_RB 1\_0)



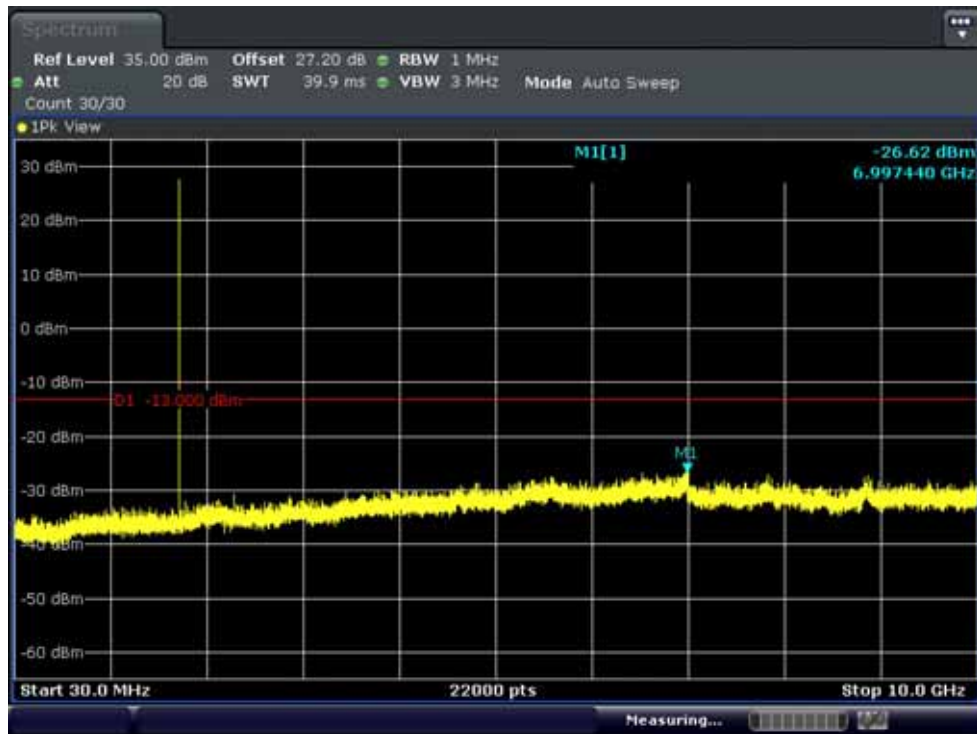
BAND 4. Conducted Spurious Plot\_2 (19956ch\_1.4MHz\_QPSK\_RB 1\_0)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (20175ch\_1.4MHz\_QPSK\_RB 1\_24)



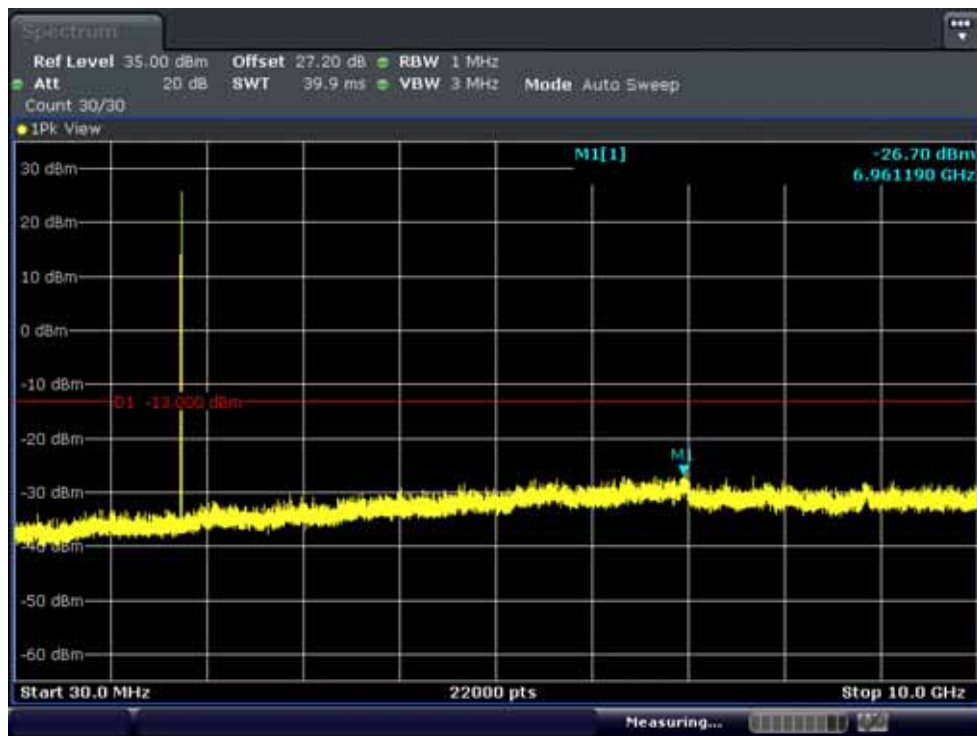
BAND 4. Conducted Spurious Plot\_2 (20175ch\_1.4MHz\_QPSK\_RB 1\_24)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (20394ch\_1.4MHz\_QPSK\_RB 1\_24)



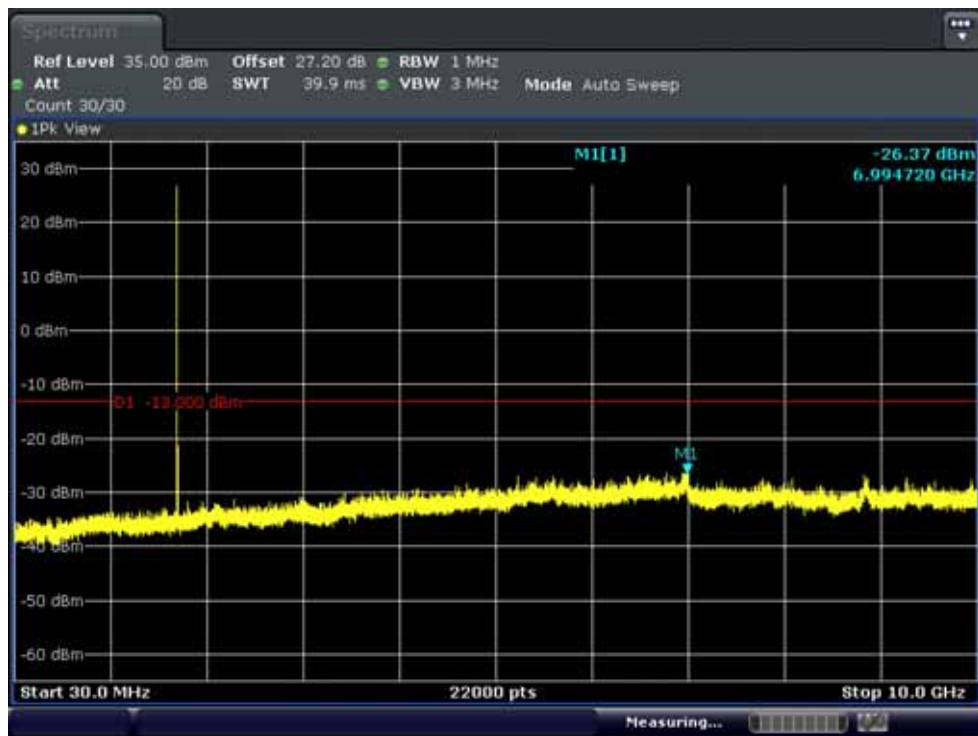
BAND 4 . Conducted Spurious Plot\_2 (20394ch\_1.4MHz\_QPSK\_RB 1\_24)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                         |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (19965ch\_3MHz\_QPSK\_RB 1\_0)



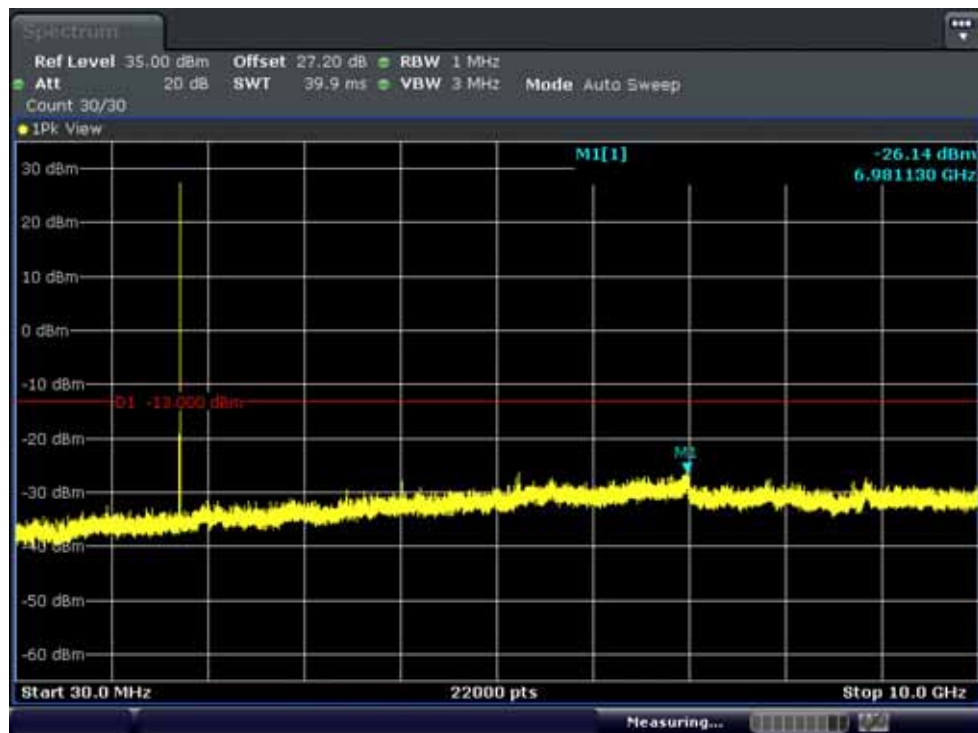
BAND 4. Conducted Spurious Plot\_2 (19965ch\_3MHz\_QPSK\_RB 1\_0)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                         |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (20175ch\_3MHz\_QPSK\_RB 1\_0)



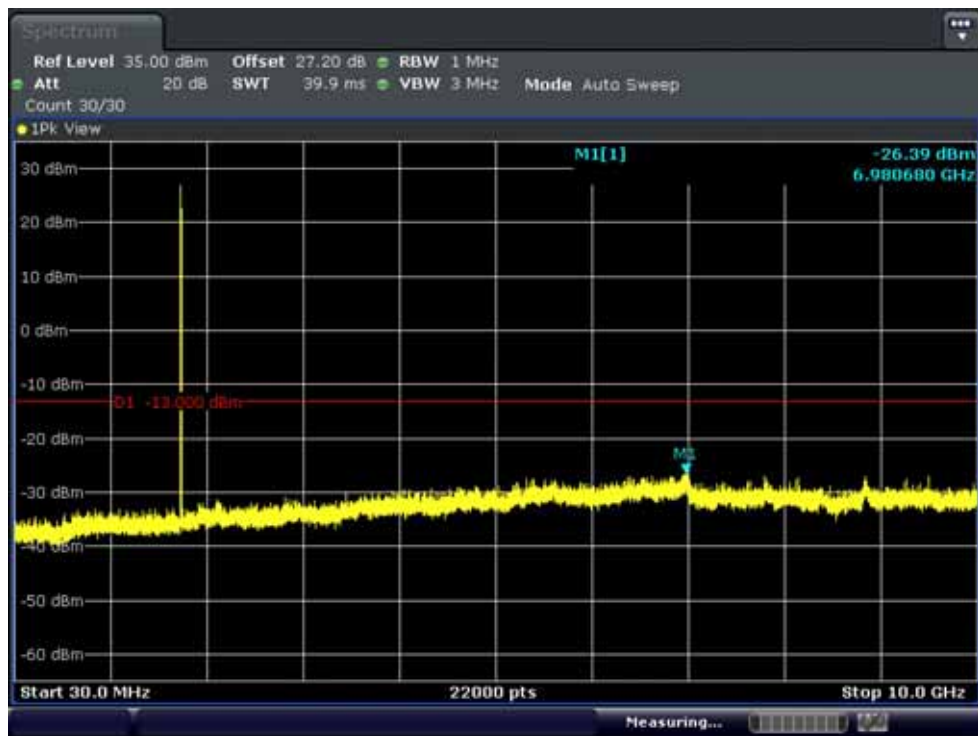
BAND 4. Conducted Spurious Plot\_2 (20175ch\_3MHz\_QPSK\_RB 1\_0)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (20385ch\_3MHz\_QPSK\_RB 1\_0)



BAND 4. Conducted Spurious Plot\_2 (20385ch\_3MHz\_QPSK\_RB 1\_0)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (19975ch\_5MHz\_QPSK\_RB 1\_0)



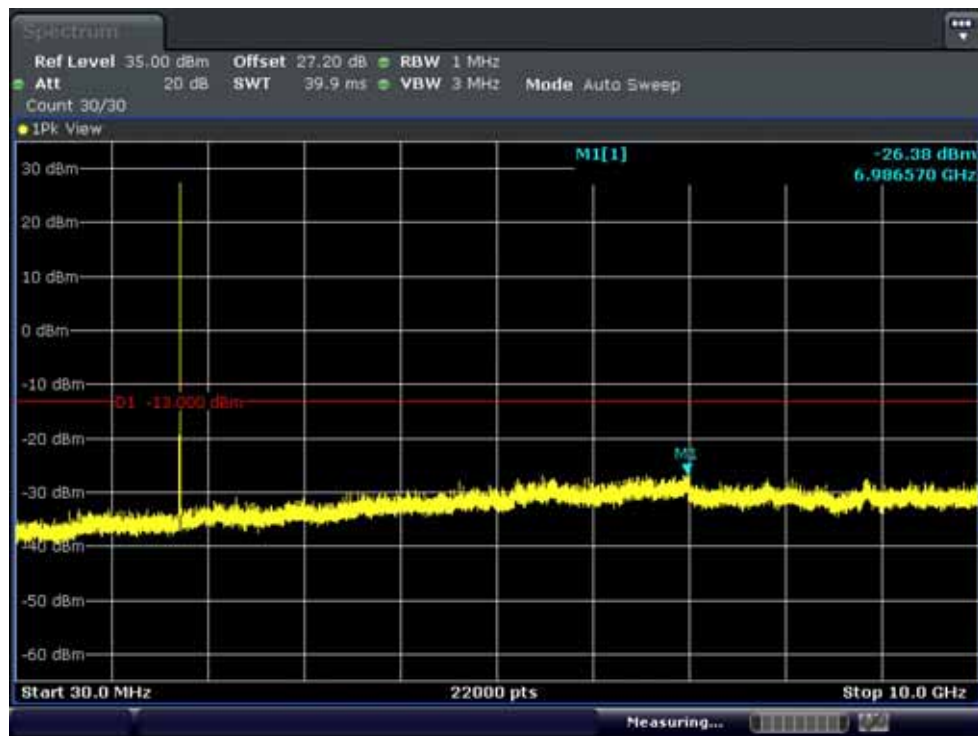
BAND 4. Conducted Spurious Plot\_2 (19975ch\_5MHz\_QPSK\_RB 1\_0)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (20175ch\_5MHz\_QPSK\_RB 1\_24)



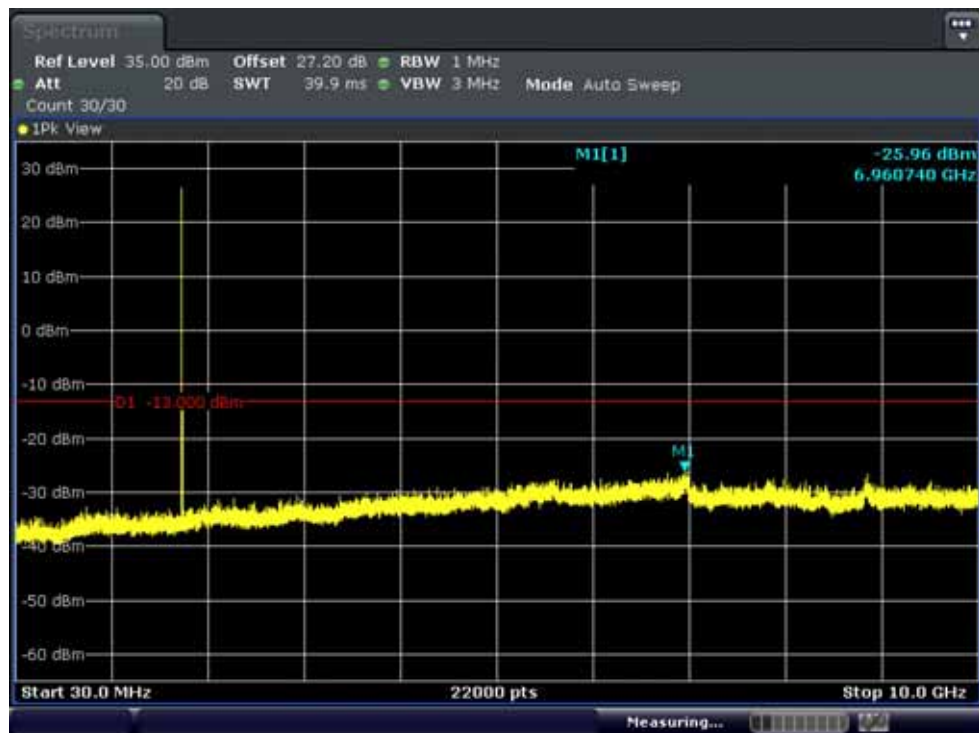
BAND 4. Conducted Spurious Plot\_2 (20175ch\_5MHz\_QPSK\_RB 1\_24)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (20375ch\_5MHz\_QPSK\_RB 1\_24)



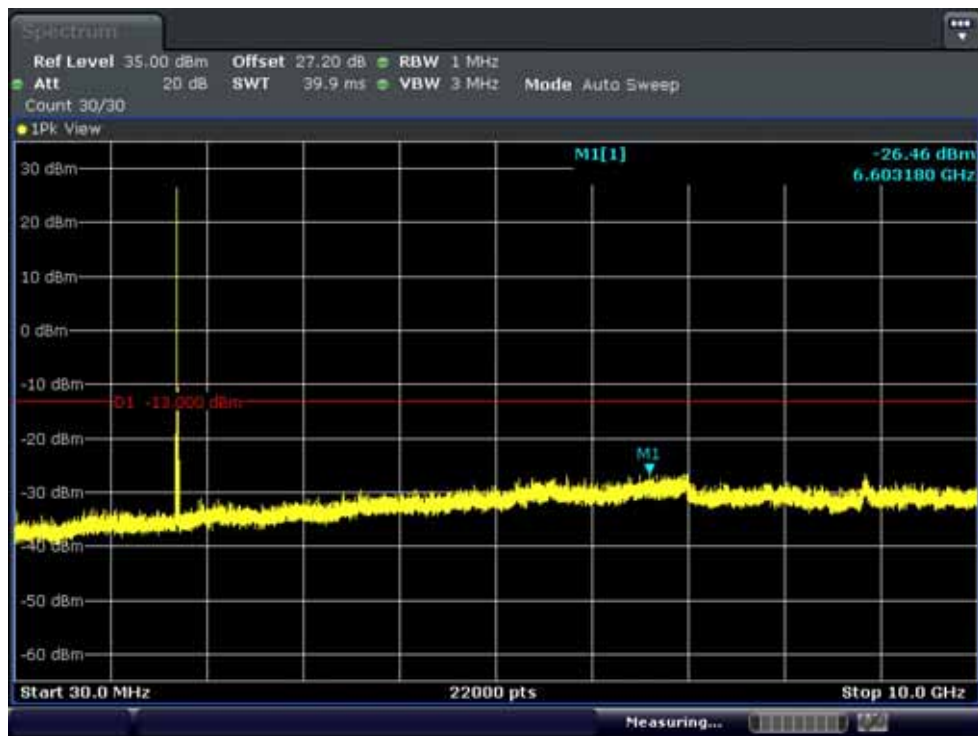
BAND 4 . Conducted Spurious Plot\_2 (20375ch\_5MHz\_QPSK\_RB 1\_24)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (20000ch\_10MHz\_QPSK\_RB 1\_0)



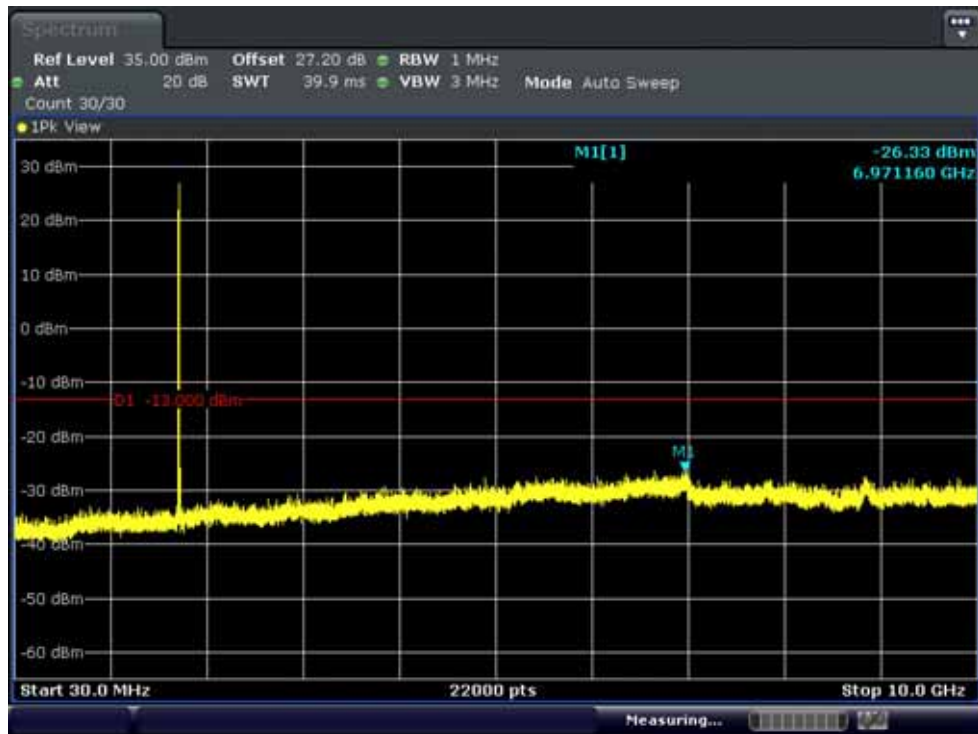
BAND 4. Conducted Spurious Plot\_2 (20000ch\_10MHz\_QPSK\_RB 1\_0)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (20175ch\_10MHz\_QPSK\_RB 1\_0)



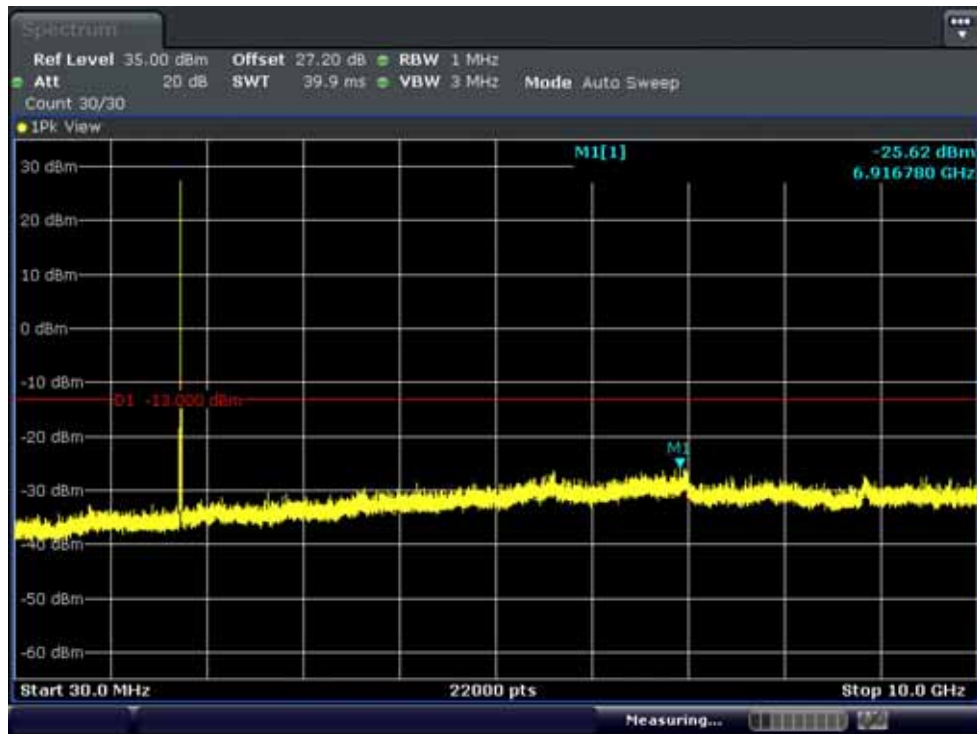
BAND 4. Conducted Spurious Plot\_2 (20175ch\_10MHz\_QPSK\_RB 1\_0)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (20350ch\_10MHz\_QPSK\_RB 1\_0)



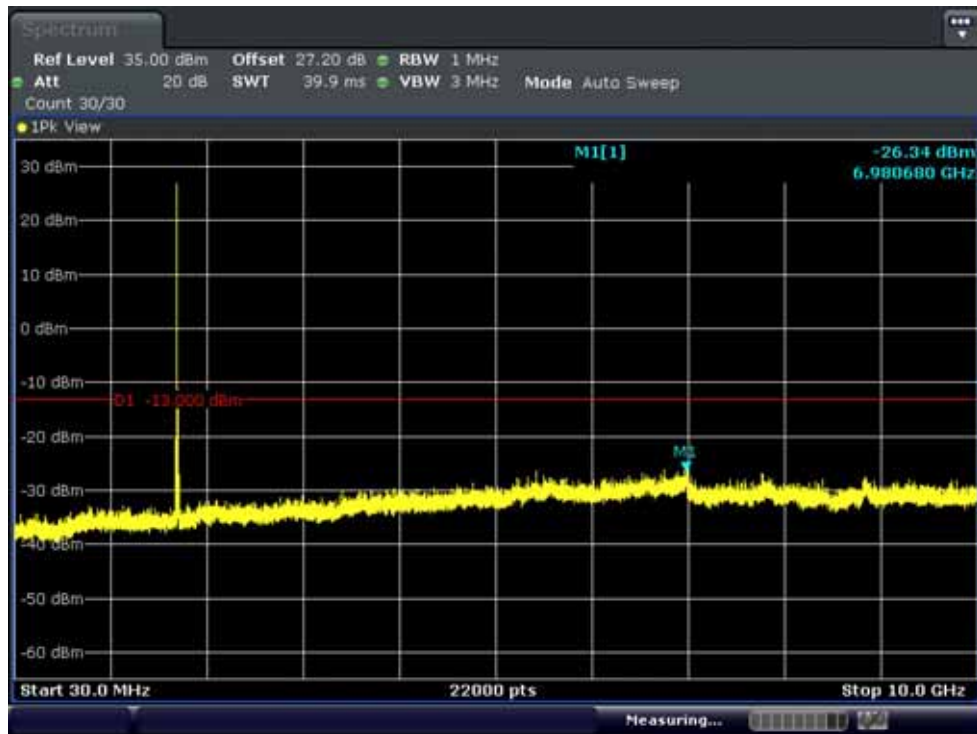
BAND 4. Conducted Spurious Plot\_2 (20350ch\_10MHz\_QPSK\_RB 1\_0)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (20025ch\_15MHz\_QPSK\_RB 1\_0)



BAND 4. Conducted Spurious Plot\_2 (20025ch\_15MHz\_QPSK\_RB 1\_0)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (20175ch\_15MHz\_QPSK\_RB 1\_24)



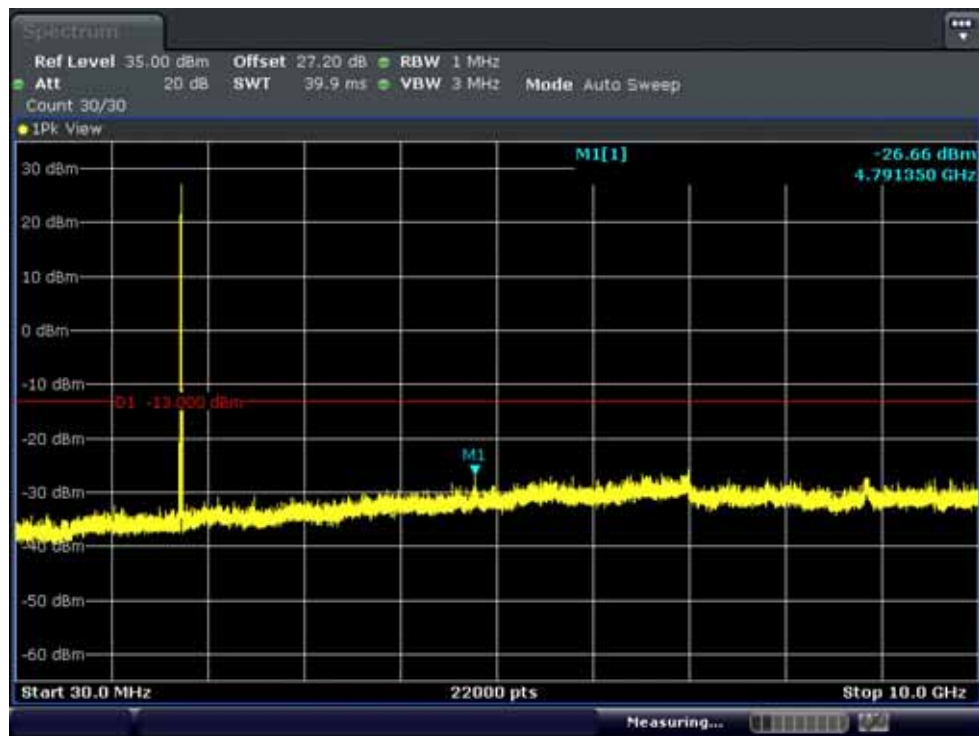
BAND 4. Conducted Spurious Plot\_2 (20175ch\_15MHz\_QPSK\_RB 1\_24)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (20325ch\_15MHz\_QPSK\_RB 1\_24)



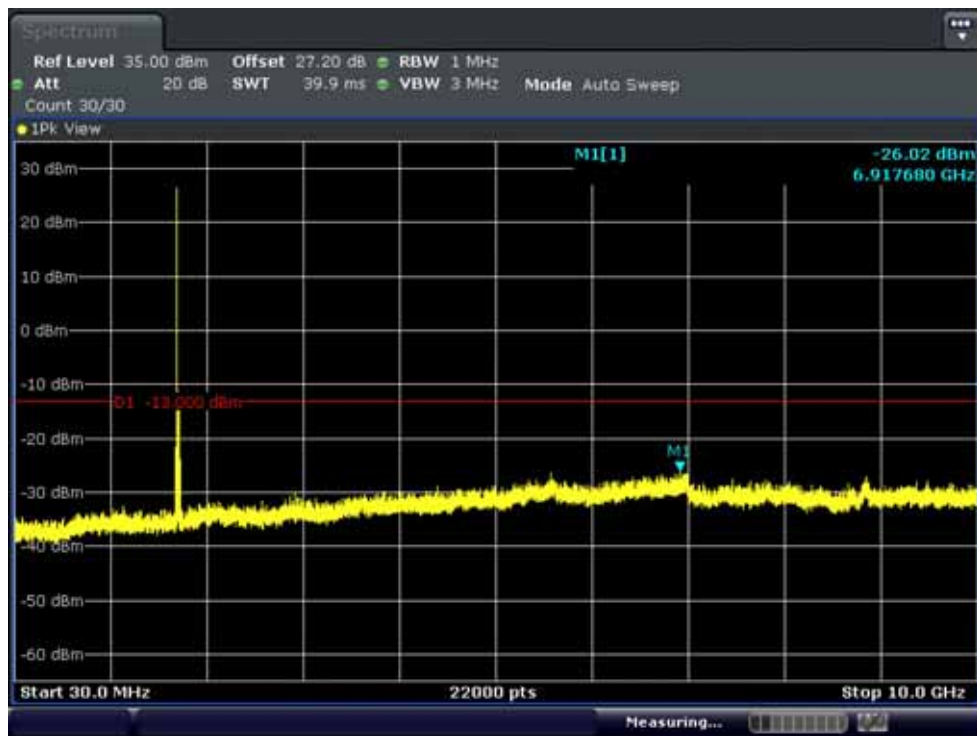
BAND 4 . Conducted Spurious Plot\_2 (20325ch\_15MHz\_QPSK\_RB 1\_24)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                         |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (20500ch\_20MHz\_QPSK\_RB 1\_0)



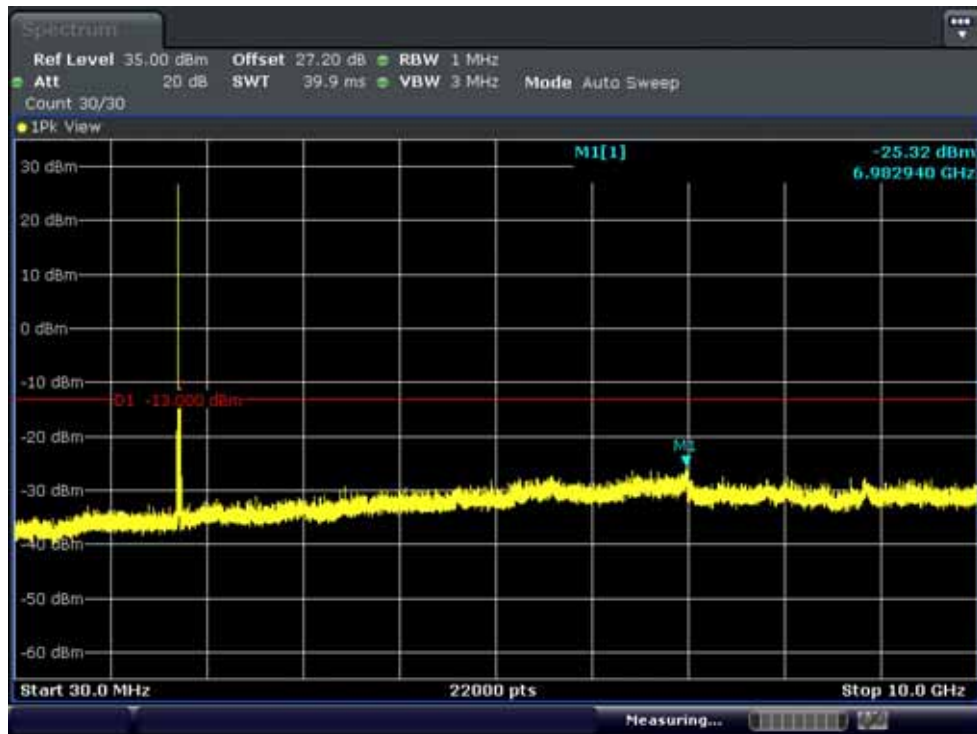
BAND 4. Conducted Spurious Plot\_2 (20500ch\_20MHz\_QPSK\_RB 1\_0)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                         |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (20175ch\_20MHz\_QPSK\_RB 1\_0)



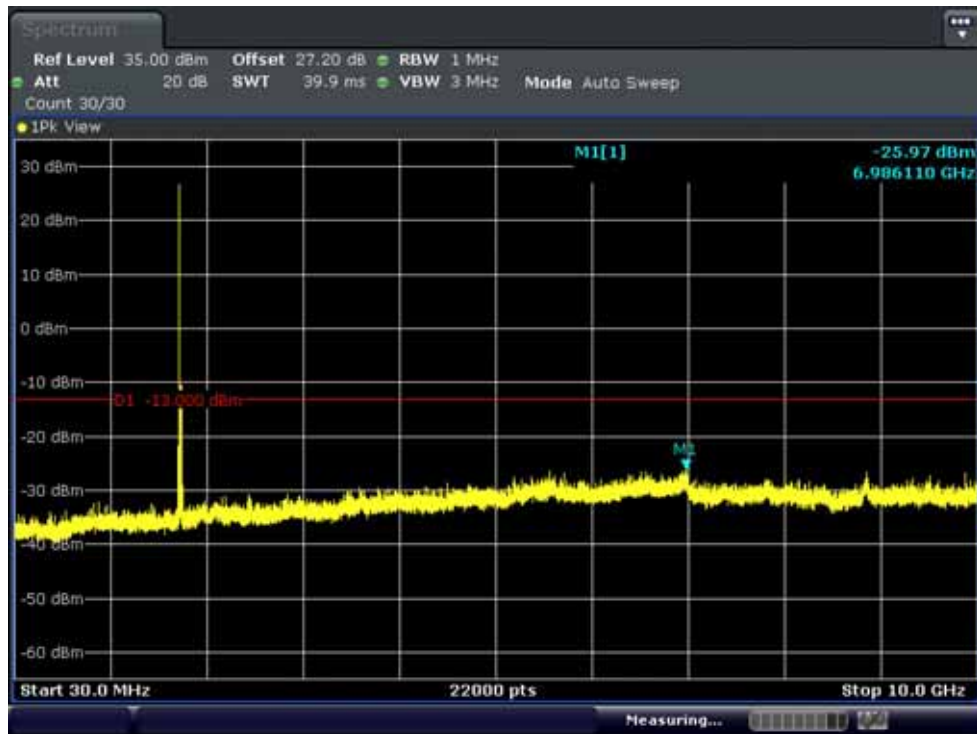
BAND 4. Conducted Spurious Plot\_2 (20175ch\_20MHz\_QPSK\_RB 1\_0)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|

BAND 4. Conducted Spurious Plot\_1 (20300ch\_20MHz\_QPSK\_RB 1\_0)



BAND 4. Conducted Spurious Plot\_2 (20300ch\_20MHz\_QPSK\_RB 1\_0)



FCC CERTIFICATION REPORT

|                                      |                                |                                                                                               |                                                                         |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| Test Report No.<br>HCT-R-1405-F011-1 | Date of Issue:<br>May 29, 2014 | EUT Type:<br>Cellular/PCS GSM/GPRS/EDGE/WCDMA/HSDPA/HSUPA/LTE Phone with Bluetooth, WLAN, NFC | <a href="http://www.hct.co.kr">www.hct.co.kr</a><br>FCC ID:<br>ZNFD855P |
|--------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|