



FCC CFR47 PART 22 SUBPART H
FCC CFR47 PART 24 SUBPART E

CERTIFICATION TEST REPORT

FOR

GSM/WCDMA Phone + Bluetooth, DTS/UNII a/b/g/n & ANT +

MODEL NUMBER: SM-G7108V

FCC ID: A3LSMG7108V

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Prepared for

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SAMSUNG ELECTRONICS CO., LTD.
416, MAETAN 3-DONG, YEONGTONG-GU
SUWON-CITY, GYEONGGI-DO 443-742, SOUTH KOREA

EUT DESCRIPTION: GSM/WCDMA Phone + Bluetooth, DTS/UNII a/b/g/n & ANT +

MODEL: SM-G7108V

SERIAL NUMBER: FL-027-F (Radiated)

DATE TESTED: January 27 – February 3, 2014

| APPLICABLE STANDARDS | |
|----------------------|--------------|
| STANDARD | TEST RESULTS |
| FCC PART 22H, 24E | PASS |

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government. Approved & Released For

UL Verification Services Inc. By:

Tested By:



PHILIP KIM
WiSE PROGRAM MANAGER
UL Verification Services Inc.

STEVEN TRAN
WiSE LAB TECHNICIAN
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 22, FCC CFR Part 24.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\text{EIRP} = \text{PSA reading with EUT worst orientation (dBm)} + \text{Path loss (dB)} - \text{cable loss (between the SG and substitution antenna)} + \text{Substitution Antenna Factor (dBi)}$$

$$\text{ERP} = \text{PSA reading with EUT worst orientation (dBm)} + \text{Path loss (dB)} - \text{cable loss (between the SG and substitution antenna)}$$

(Path loss = Signal generator output – PSA reading with substitution antenna)

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER | UNCERTAINTY |
|---------------------------------------|-------------|
| Conducted Disturbance, 0.15 to 30 MHz | 3.52 dB |
| Radiated Disturbance, 30 to 18000 MHz | 4.94 dB |

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/WCDMA Phone + Bluetooth, DTS/UNII a/b/g/n & ANT+

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted and radiated ERP / EIRP output powers as follows:

| FCC Part 22/24 | | | | | | |
|----------------|----------------------|--------------------|------------|-----------|------------|-----------|
| Band | Frequency Range(MHz) | Modulation Peak | Conducted | | Radiated | |
| | | | Peak (dBm) | Peak (mW) | Peak (dBm) | Peak (mW) |
| GSM850 | 824~849 | GMSK | 33.0 | 1995 | | |
| | 824~849 | GPRS | 33.0 | 1995 | 26.941 | 494.42 |
| | 824~849 | EGPRS | 27.0 | 501.2 | 23.551 | 226.52 |
| GSM1900 | 1850~1910 | GMSK | 30.2 | 1047 | | |
| | 1850~1910 | GPRS | 30.2 | 1047 | 28.2 | 660.69 |
| | 1850~1910 | EGPRS | 25.7 | 371.5 | 26.57 | 453.94 |
| Band 5 | 824~849 | REL99 | 23.5 | 223.9 | 19.58 | 90.78 |
| | 824~849 | HSDPA | 22.5 | 177.8 | 18.95 | 78.52 |
| | 824~849 | HSUPA | 22.5 | 177.8 | | |
| Band 2 | 1850~1910 | REL99 | 22.8 | 190.5 | 23.75 | 237.14 |
| | 1850~1910 | HSDPA | 21.5 | 141.3 | 24.47 | 279.9 |
| | 1850~1910 | HSUPA | 21.5 | 141.3 | | |

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna for the [List the bands supported] with a maximum peak gain as follow:

| Frequency (MHz) | Peak Gain (dBi) |
|----------------------|-----------------|
| Band 5, 824~849MHz | -2.87 |
| Band 2, 1850~1910MHz | 1.98 |

5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

| Support Equipment List | | | | |
|------------------------|--------------|-----------|---------------|--------|
| Description | Manufacturer | Model | Serial Number | FCC ID |
| AC Adapter | Samsung | SM-G7108V | N/A | N/A |
| Earphone | Samsung | N/A | N/A | N/A |

I/O CABLES (CONDUCTED SETUP)

| I/O Cable List | | | | | | |
|----------------|--------------|----------------------|------------------------|------------|------------------|---------|
| Cable No | Port | # of identical ports | Connector Type | Cable Type | Cable Length (m) | Remarks |
| 1 | RF Out | 1 | Spectrum Analyzer | Shielded | None | NA |
| 2 | Antenna Port | 1 | EUT | Shielded | 0.1m | NA |
| 3 | RF In/Out | 1 | Communication Test Set | Shielded | 1m | NA |

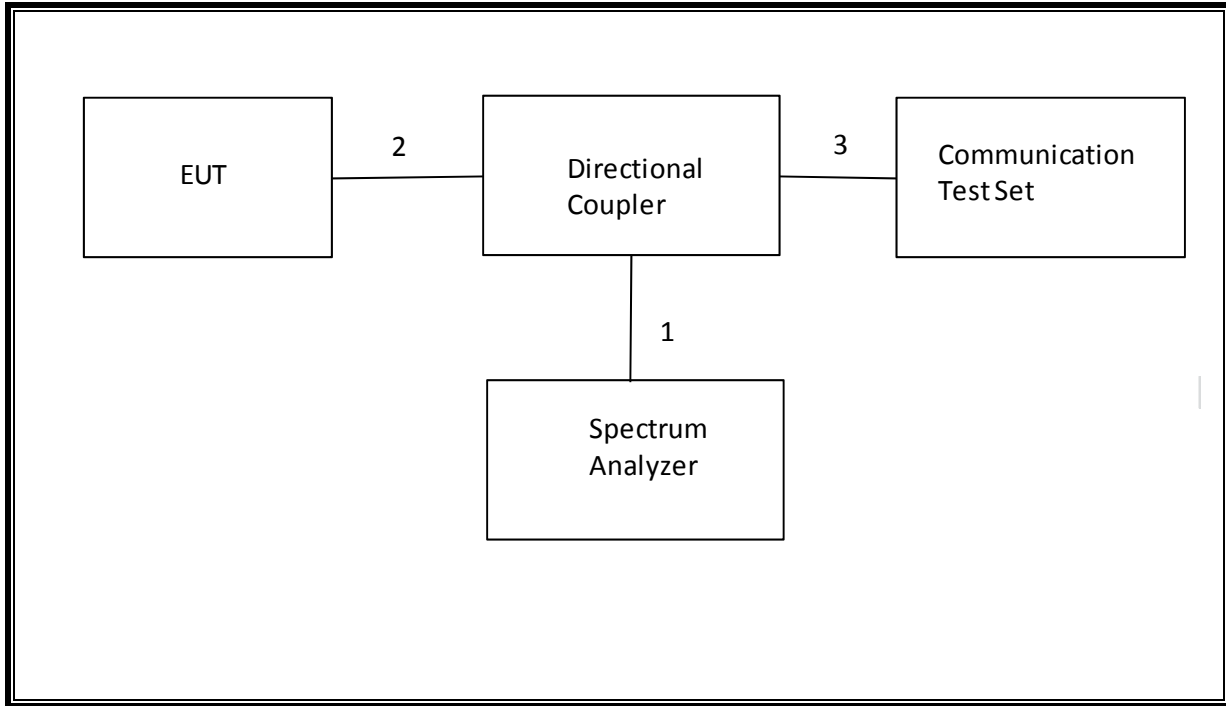
I/O CABLES (RADIATED SETUP)

| I/O CABLE LIST | | | | | | |
|----------------|-----------|----------------------|------------------------|-------------|--------------|---------|
| Cable No. | Port | # of Identical Ports | Connector Type | Cable Type | Cable Length | Remarks |
| 1 | USB | 1 | AC Adapter | Un-shielded | 1.2m | No |
| 2 | Jack | 1 | Headset | Shielded | 1m | No |
| 3 | RF In/out | 1 | Communication Test Set | Un-shielded | 2m | Yes |

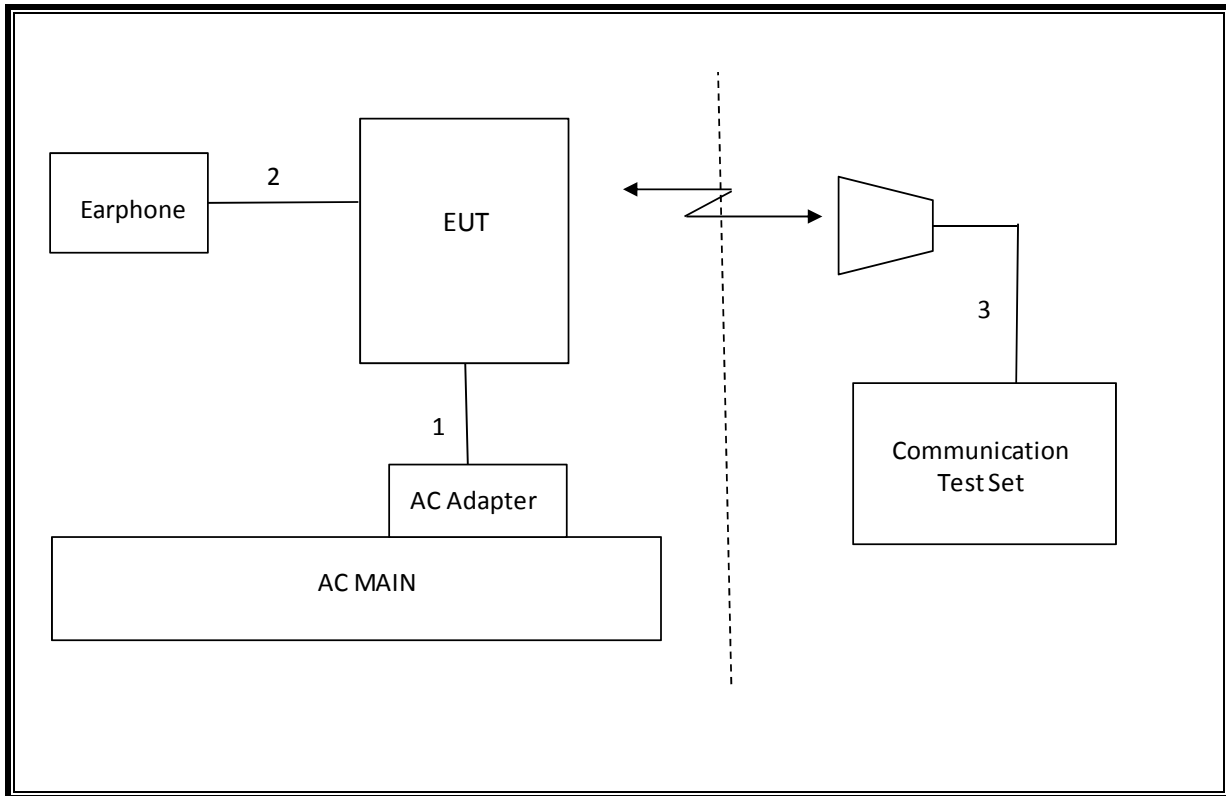
TEST SETUP

The EUT is continuously communicated to the call box during the tests.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| TEST EQUIPMENT LIST | | | | |
|------------------------------------|----------------|--------------|--------|----------|
| Description | Manufacturer | Model | Asset | Cal Due |
| Spectrum Analyzer, 44 GHz | Agilent / HP | E4446A | C01179 | 02/26/14 |
| Antenna, Bilog, 2 GHz | Sunol Sciences | JB1 | C01011 | 08/14/14 |
| Antenna, Horn, 18 GHz | EMCO | 3115 | C00783 | 10/25/14 |
| Antenna, Horn, 18 GHz | EMCO | 3115 | C00784 | 09/25/14 |
| Highpass Filter, 2.7 GHz | Micro-Tronics | HPM13194 | N02687 | CNR |
| Highpass Filter, 1.5 GHz | Micro-Tronics | HPM13193 | N02688 | CNR |
| Temperature / Humidity Chamber | Thermotron | SE 600-10-10 | C00930 | 01/09/15 |
| Communications Test Set | R&S | CMW500 | T159 | 07/02/14 |
| DC power supply, 8 V @ 3 A or 15 V | Agilent / HP | E3610A | None | CNR |
| Vector signal generator, 6 GHz | Agilent / HP | E4438C | None | 07/06/14 |
| Antenna, Tuned Dipole 400~1000 | ETS | 3121C DB4 | C00993 | 02/14/14 |
| Directional Coupler | RF-Lambda | RFDC5M06G15 | None | CNR |

7. Summary Table

| FCC Part Section | RSS Section(s) | Test Description | Test Limit | Test Condition | Test Result | Worst Case |
|------------------------|----------------------------------|--|------------|----------------|-------------|------------|
| 2.1049 | RSS Gen | Occupied Band width (99%) | N/A | Conducted | Pass | 4190.9KHz |
| 22.917(a) 24.238(a) | RSS-132(4.5.1) RSS-133(6.5.1) | Band Edge / Conducted Spurious Emission | -13dBm | | Pass | -21.458dBm |
| 2.1046 | N/A | Conducted output power | N/A | | Pass | 33dBm |
| 22.355 24.235 | RSS-132(4.3) RSS-133(6.3) | Frequency Stability | 2.5PPM | | Pass | 0.00PPM |
| 22.913(a)(2) | RSS-132(4.4) | Effective Radiated Power | 38 dBm | | Pass | 26.941dBm |
| 24.232(c) | RSS-133(6.4) | Equivalent Isotropic Radiated Power | 33dBm | Radiated | Pass | 28.2dBm |
| 22.917(a) 24.238(a) | RSS-132(4.5.1) RSS-133(6.5.1) | Radiated Spurious Emission | -13dBm | | Pass | -41.8dBm |

8. RF POWER OUTPUT VERIFICATION

8.1. GSM/GPRS/EDGE

Function: Menu select > GSM Mobile Station > GSM 850/900/1800/1900
Press Connection control to choose the different menus
Press RESET > choose all to reset all settings
Connection Press Signal Off to turn off the signal and change settings
Network Support > GSM+GPRS or GSM+EGPRS
Main Service > Packet Data
Service selection > Test Mode A – Auto Slot Config. off
MS Signal Press Slot Config bottom on the right twice to select and change the number of time slots and power setting
 > Slot configuration > Uplink/Gamma
 > 33 dBm for GPRS 850/900
 > 30 dBm for GPRS1800/1900
BS Signal Enter the same channel number for TCH channel (test channel) and BCCH channel
Frequency Offset > + 0 Hz
Mode > BCCH and TCH
BCCH Level > -85 dBm (May need to adjust if link is not stable)
BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel]
Channel Type > Off
P0> 4 dB
Slot Config > Unchanged (if already set under MS Signal)
TCH > choose desired test channel
Hopping > Off
Main Timeslot > 3 (Default)
Network Coding Scheme > CS4 (GPRS) and MCS9 (EGPRS)
Bit Stream > 2E9-1PSR Bit Pattern
AF/RF Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input
Connection Press Signal On to turn on the signal and change settings

8.1.1. GSM OUTPUT POWER RESULT

| Band | Mode | Ch. | f(MHz) | 1 time slot | 2 time slot | 3 time slot | 4 time slot |
|---------|-------|-----|--------|-------------|-------------|-------------|-------------|
| | | | | Peak (dBm) | Peak (dBm) | Peak (dBm) | Peak (dBm) |
| GSM850 | GMSK | 128 | 824.2 | 32.7 | | | |
| | | 190 | 836.6 | 32.7 | | | |
| | | 251 | 848.8 | 33.0 | | | |
| | GPRS | 128 | 824.2 | 32.8 | 31.1 | 29.2 | 27.1 |
| | | 190 | 836.6 | 32.7 | 31.1 | 29.2 | 27.1 |
| | | 251 | 848.8 | 33.0 | 31.2 | 29.4 | 27.2 |
| | EGPRS | 128 | 824.2 | 27.0 | 27.0 | 26.0 | 23.9 |
| | | 190 | 836.6 | 26.9 | 26.9 | 25.8 | 23.8 |
| | | 251 | 848.8 | 27.0 | 27.0 | 26.0 | 24.0 |
| GSM1900 | GMSK | 512 | 1850.2 | 30.0 | | | |
| | | 661 | 1880 | 30.0 | | | |
| | | 810 | 1909.8 | 30.2 | | | |
| | GPRS | 512 | 1850.2 | 30.0 | 29.6 | 27.4 | 25.3 |
| | | 661 | 1880 | 30.1 | 29.8 | 27.5 | 25.5 |
| | | 810 | 1909.8 | 30.2 | 30.0 | 27.8 | 25.6 |
| | EGPRS | 512 | 1850.2 | 25.7 | 25.6 | 24.9 | 22.9 |
| | | 661 | 1880 | 25.6 | 25.4 | 24.8 | 22.7 |
| | | 810 | 1909.8 | 25.7 | 25.5 | 24.9 | 22.7 |

8.2. UMTS REL 99

TEST PROCEDURE

The following summary of these settings are illustrated below:

| | Mode | Rel99 |
|---------------------------|-------------------------|----------------|
| | Subtest | - |
| WCDMA General Settings | Loopback Mode | Test Mode 1 |
| | Rel99 RMC | 12.2kbps RMC |
| | HSDPA FRC | Not Applicable |
| | HSUPA Test | Not Applicable |
| | Power Control Algorithm | Algorithm2 |
| | β_c | Not Applicable |
| | β_d | Not Applicable |
| | β_{ec} | Not Applicable |
| | β_c/β_d | 8/15 |
| | β_{hs} | Not Applicable |
| | β_{ed} | Not Applicable |

8.2.1. UMTS REL 99 OUTPUT POWER RESULT

| Band | Mode | Ch. | f(MHz) | Conducted Power (dBm) |
|--------|-------|------|--------|--------------------------|
| | | | | Avg (dBm) |
| Band 5 | REL99 | 4145 | 826.6 | 23.5 |
| | | 4183 | 836.6 | 23.5 |
| | | 4220 | 846.4 | 23.5 |
| Band 2 | REL99 | 9275 | 1852.6 | 22.8 |
| | | 9400 | 1880 | 22.8 |
| | | 9525 | 1907.4 | 22.8 |

8.3. UMTS HSDPA

The following 4 Sub-tests were completed according to Release 5 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

| | Mode | Rel5 HSDPA | | | |
|-------------------------------|--------------------------------------|--------------|-------|-------|-------|
| | Subtest | 1 | 2 | 3 | 4 |
| WCDMA General Settings | Loopback Mode | Test Mode 1 | | | |
| | Rel99 RMC | 12.2kbps RMC | | | |
| | HSDPA FRC | H-Set1 | | | |
| | Power Control Algorithm | Algorithm 2 | | | |
| | β_c | 2/15 | 12/15 | 15/15 | 15/15 |
| | β_d | 15/15 | 15/15 | 8/15 | 4/15 |
| | Bd (SF) | 64 | | | |
| | β_c/β_d | 2/15 | 12/15 | 15/8 | 15/4 |
| | β_{hs} | 4/15 | 24/15 | 30/15 | 30/15 |
| MPR (dB) | 0 | 0 | 0.5 | 0.5 | |
| HSDPA Specific Settings | D_{ACK} | 8 | | | |
| | D_{NAK} | 8 | | | |
| | DCQI | 8 | | | |
| | Ack-Nack repetition factor | 3 | | | |
| | CQI Feedback (Table 5.2B.4) | 4ms | | | |
| | CQI Repetition Factor (Table 5.2B.4) | 2 | | | |
| | $A_{hs} = \beta_{hs}/\beta_c$ | 30/15 | | | |

8.3.1. UMTS HSDPA OUTPUT POWER RESULT

| Band | Mode | Subset | Ch. | f(MHz) | Conducted Power (dBm) |
|--------|-------|--------|------|--------|--------------------------|
| | | | | | Avg (dBm) |
| Band 5 | HSDPA | 1 | 4145 | 826.6 | 22.5 |
| | | | 4183 | 836.6 | 22.5 |
| | | | 4220 | 846.4 | 22.5 |
| | | 2 | 4145 | 826.6 | 22.4 |
| | | | 4183 | 836.6 | 22.5 |
| | | | 4220 | 846.4 | 22.5 |
| | | 3 | 4145 | 826.6 | 22.0 |
| | | | 4183 | 836.6 | 22.0 |
| | | | 4220 | 846.4 | 22.0 |
| | | 4 | 4145 | 826.6 | 21.9 |
| | | | 4183 | 836.6 | 22.0 |
| | | | 4220 | 846.4 | 21.9 |
| Band 2 | HSDPA | 1 | 9275 | 1852.6 | 21.5 |
| | | | 9400 | 1880 | 21.5 |
| | | | 9525 | 1907.4 | 21.4 |
| | | 2 | 9275 | 1852.6 | 21.2 |
| | | | 9400 | 1880 | 21.1 |
| | | | 9525 | 1907.4 | 21.0 |
| | | 3 | 9275 | 1852.6 | 19.8 |
| | | | 9400 | 1880 | 19.7 |
| | | | 9525 | 1907.4 | 19.6 |
| | | 4 | 9275 | 1852.6 | 19.6 |
| | | | 9400 | 1880 | 20.8 |
| | | | 9525 | 1907.4 | 20.6 |

8.3.2. UMTS HSUPA

TEST PROCEDURE

The following summary of these settings are illustrated below: (ETSI TS 134.121-1 Table C.11.1)

| | Mode | Rel6 HSUPA | Rel6 HSUPA | Rel6 HSUPA | Rel6 HSUPA | Rel6 HSUPA |
|-------------------------------|--------------------------------------|--|------------|---|------------|--|
| | Subtest | 1 | 2 | 3 | 4 | 5 |
| WCDMA General Settings | Loopback Mode | Test Mode 1 | | | | |
| | P-CPICH (dB) | -10 | | | | |
| | P-CCPCH (dB) | -12 | | | | |
| | SCH (dB) | -12 | | | | |
| | PICH(dB) | -15 | | | | |
| | DPCH (dB) | -9 | | | | |
| | HS-SCCH_1 (dB) | -8 | | | | |
| | HS-PDSCH (dB) | -3 | | | | |
| | Rel99 RMC | 12.2kbps RMC | | | | |
| | HSDPA FRC | H-Set1 | | | | |
| | HSUPA Test | HSUPA Loopback | | | | |
| | Power Control Algorithm | Algorithm2 | | | | |
| | Bc | 11/15 | 6/15 | 15/15 | 2/15 | 15/15 |
| | Bd | 15/15 | 15/15 | 9/15 | 15/15 | 15/15 |
| | Bec | 209/225 | 12/15 | 30/15 | 2/15 | 5/15 |
| | β_c/β_d | 11/15 | 6/15 | 15/9 | 2/15 | 15/15 |
| | Bhs | 22/15 | 12/15 | 30/15 | 4/15 | 30/15 |
| β_{ed} (note1) | 1309/225 | 94/75 | 47/15 | 56/75 | 134/15 | |
| MPR | 0 | 2 | 1 | 2 | 0 | |
| HSDPA Specific Settings | DACK | 8 | | | | |
| | DNAK | 8 | | | | |
| | DCQI | 8 | | | | |
| | Ack-Nack repetition factor | 3 | | | | |
| | CQI Feedback (Table 5.2B.4) | 4ms | | | | |
| | CQI Repetition Factor (Table 5.2B.4) | 2 | | | | |
| | Ahs = β_{hs}/β_c | 30/15 | | | | |
| HSUPA Specific Settings | D E-DPCCH | 6 | 8 | 8 | 5 | 7 |
| | DHARQ | 0 | 0 | 0 | 0 | 0 |
| | AG Index | 20 | 12 | 15 | 17 | 21 |
| | Reference E-TFCIs | 5 | 5 | 2 | 5 | 5 |
| | ETFCI (from 34.121 Table C.11.1.3) | 75 | 67 | 92 | 71 | 81 |
| | Associated Max UL Data Rate kbps | 242.1 | 174.9 | 482.8 | 205.8 | 308.9 |
| | Reference E_TFCIs | E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27 | | E-TFCI 11 E-TFCI PO 4 E-TFCI 92 E-TFCI PO 18 | | E-TFCI 11 E-TFCI PO 4 E-TFCI 67 E-TFCI PO 18 E-TFCI 71 E-TFCI PO 23 E-TFCI 75 E-TFCI PO 26 E-TFCI 81 E-TFCI PO 27 |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Note1: β_{ed} cannot be set directly, it is set by Absolute Grant Value.

8.3.3. UMTS HSUPA OUTPUT POWER RESULT

| Band | Mode | Subset | Ch. | f(MHz) | Conducted Power (dBm) |
|--------|-------|--------|------|--------|--------------------------|
| | | | | | Avg (dBm) |
| Band 5 | HSUPA | 1 | 4145 | 826.6 | 22.4 |
| | | | 4183 | 836.6 | 22.5 |
| | | | 4220 | 846.4 | 22.5 |
| | | 2 | 4145 | 826.6 | 21.5 |
| | | | 4183 | 836.6 | 21.5 |
| | | | 4220 | 846.4 | 21.4 |
| | | 3 | 4145 | 826.6 | 21.1 |
| | | | 4183 | 836.6 | 20.8 |
| | | | 4220 | 846.4 | 20.6 |
| | | 4 | 4145 | 826.6 | 22.0 |
| | | | 4183 | 836.6 | 22.0 |
| | | | 4220 | 846.4 | 21.9 |
| | | 5 | 4145 | 826.6 | 22.4 |
| | | | 4183 | 836.6 | 22.5 |
| | | | 4220 | 846.4 | 22.5 |
| Band 2 | HSUPA | 1 | 9275 | 1852.6 | 21.4 |
| | | | 9400 | 1880 | 21.5 |
| | | | 9525 | 1907.4 | 21.2 |
| | | 2 | 9275 | 1852.6 | 20.1 |
| | | | 9400 | 1880 | 20.6 |
| | | | 9525 | 1907.4 | 20.6 |
| | | 3 | 9275 | 1852.6 | 20.5 |
| | | | 9400 | 1880 | 19.8 |
| | | | 9525 | 1907.4 | 19.7 |
| | | 4 | 9275 | 1852.6 | 21.0 |
| | | | 9400 | 1880 | 21.1 |
| | | | 9525 | 1907.4 | 20.9 |
| | | 5 | 9275 | 1852.6 | 21.5 |
| | | | 9400 | 1880 | 21.4 |
| | | | 9525 | 1907.4 | 21.3 |

9. PEAK TO AVERAGE RATIO

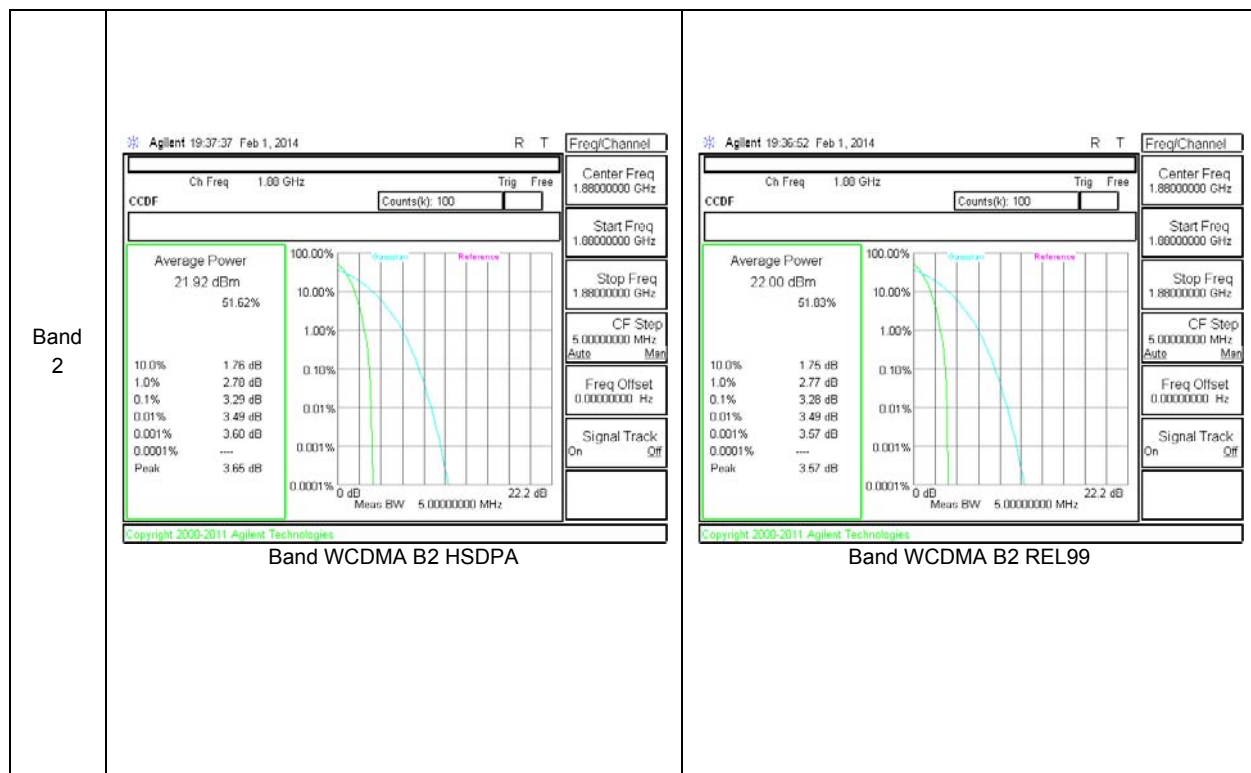
Test Procedure

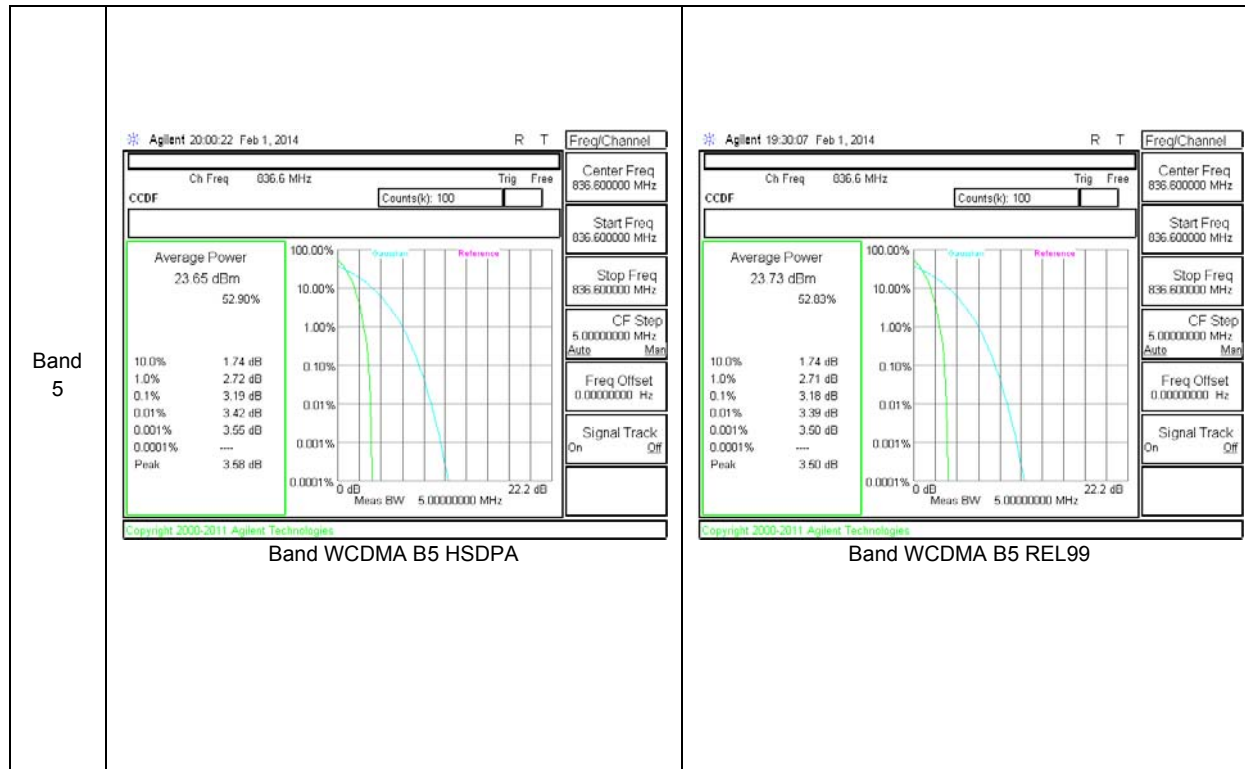
Per KDB 971168 D01 Power Meas License Digital Systems v02r01

Test Spec

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13 dB.

9.1. CONDUCTED PEAK TO AVERAGE RESULT





10. LIMITS AND CONDUCTED RESULTS

10.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

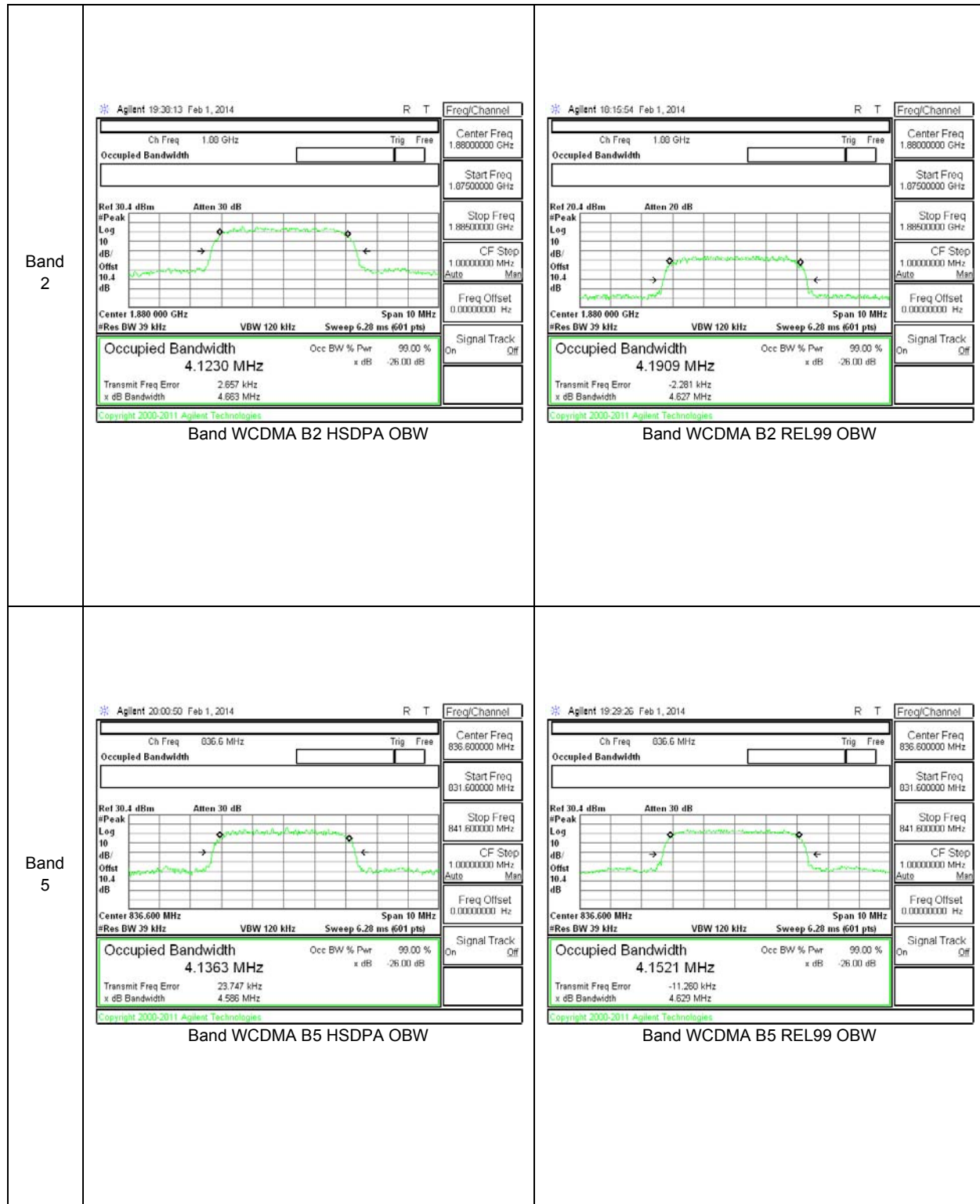
The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the low, middle and high channel in each band. The -26dB bandwidth was also measured and recorded.

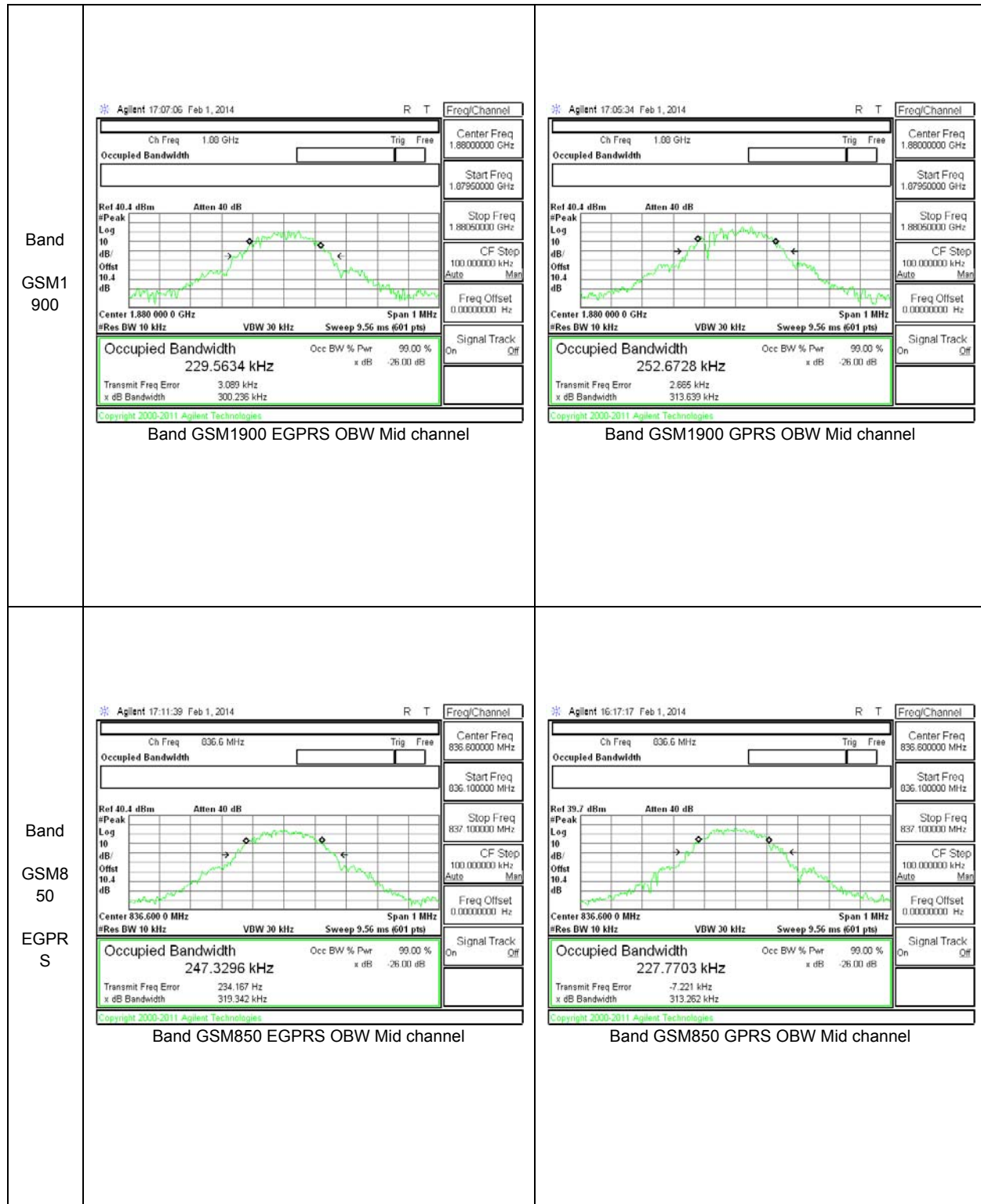
(KDB 971168 D01 Power Meas License Digital Systems v02r01 - 06/07/2013)

10.1.1. OCCUPIED BANDWIDTH RESULTS

| Band | Mode | Channel | f (MHz) | 99% BW (KHz) | -26dB BW (KHz) |
|---------|-------|---------|---------|--------------|----------------|
| GSM850 | GPRS | 128 | 824.2 | 238.9 | 301.7 |
| | | 190 | 836.6 | 227.8 | 313.3 |
| | | 251 | 848.8 | 246.9 | 305.5 |
| | EGPRS | 128 | 824.2 | 246.8 | 303.4 |
| | | 190 | 836.6 | 247.3 | 319.3 |
| | | 251 | 848.8 | 260.5 | 320.1 |
| GSM1900 | GPRS | 512 | 1850.2 | 237.8 | 311.0 |
| | | 661 | 1880 | 252.7 | 313.6 |
| | | 810 | 1909.8 | 243.0 | 324.2 |
| | EGPRS | 512 | 1850.2 | 247.8 | 318.6 |
| | | 661 | 1880 | 229.6 | 300.2 |
| | | 810 | 1909.8 | 245.9 | 287.6 |
| Band 5 | REL99 | 4145 | 826.6 | 4144.1 | 4617 |
| | | 4183 | 836.6 | 4152.1 | 4629 |
| | | 4220 | 846.4 | 4077.7 | 4609 |
| | HSDPA | 4145 | 826.6 | 4125.8 | 4595 |
| | | 4183 | 836.6 | 4136.3 | 4586 |
| | | 4220 | 846.4 | 4102.5 | 4579 |
| Band 2 | REL99 | 9275 | 1852.6 | 4147.1 | 4604 |
| | | 9400 | 1880 | 4190.9 | 4627 |
| | | 9525 | 1907.4 | 4148.9 | 4610 |
| | HSDPA | 9275 | 1852.6 | 4105.7 | 4607 |
| | | 9400 | 1880 | 4123.0 | 4663 |
| | | 9525 | 1907.4 | 4137.6 | 4618 |

10.1.2. OCCUPIED BANDWIDTH PLOTS





10.2. BAND EDGE EMISSIONS

RULE PART(S)

FCC: §22.359, §24.238

LIMITS

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r01

The transmitter output was connected to an Agilent 8960 or a CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

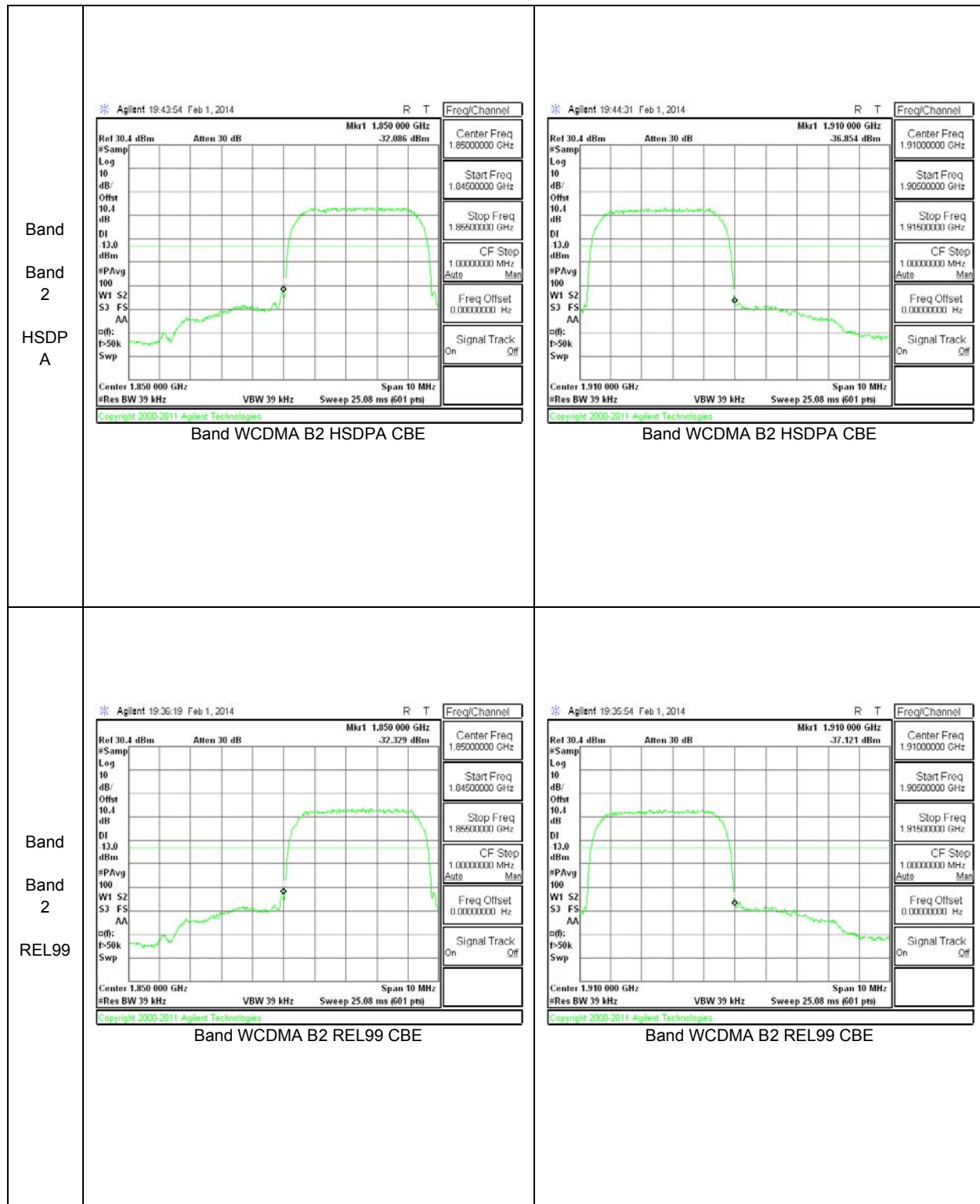
- Set the spectrum analyzer span to include the block edge frequency (824, 849, 1850, 1910 and 1915MHz)
- Set a marker to point the corresponding band edge frequency in each test case.
- Set display line at -13 dBm.
- Set resolution bandwidth to at least 1% of emission bandwidth.
- (m)(6) Compliance with these rules is based on the user of measurement instrumentation employing a resolution bandwidth of 1MHz or greater. However, in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least 1 percent of the emission bandwidth may be employed.

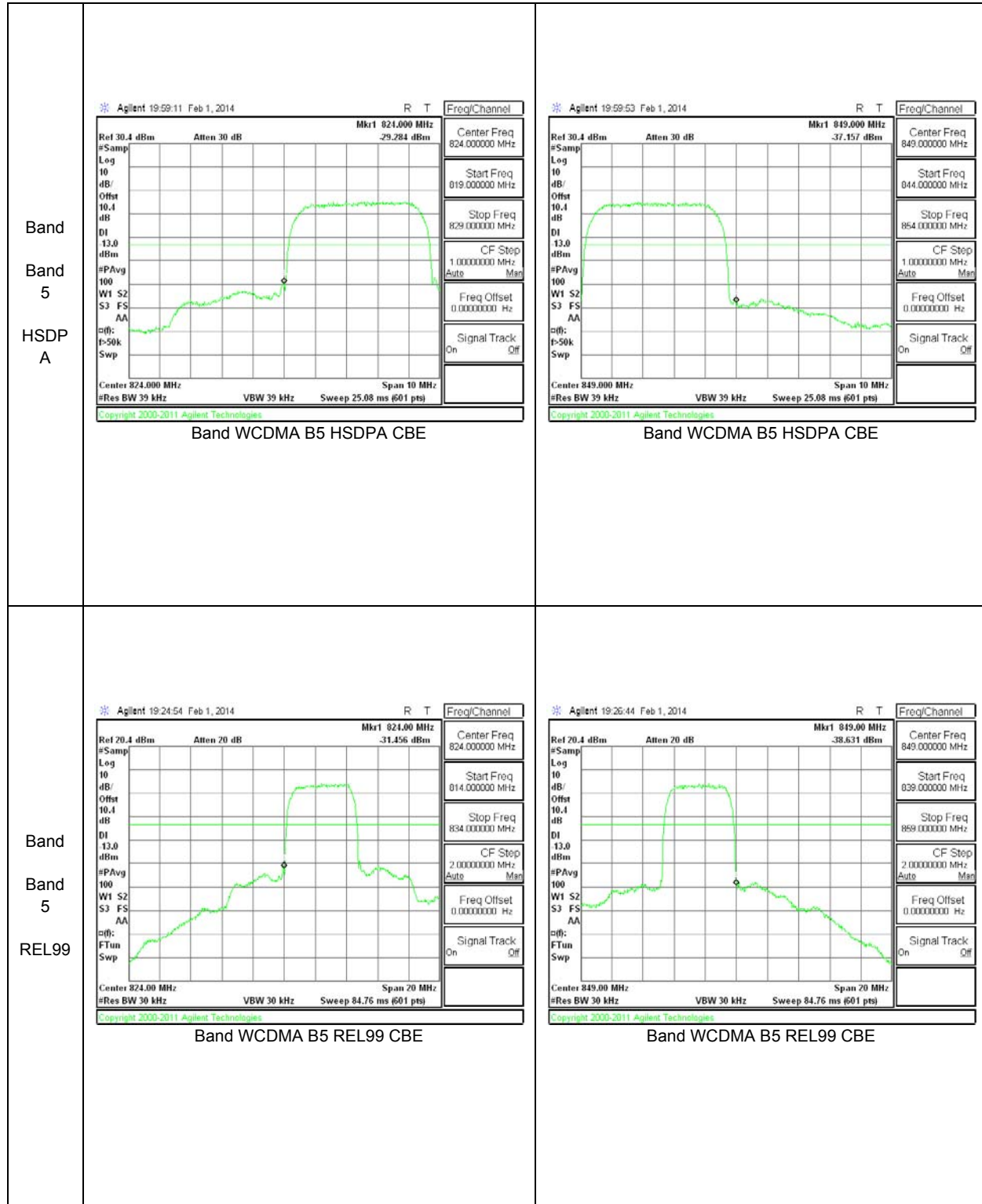
MODES TESTED

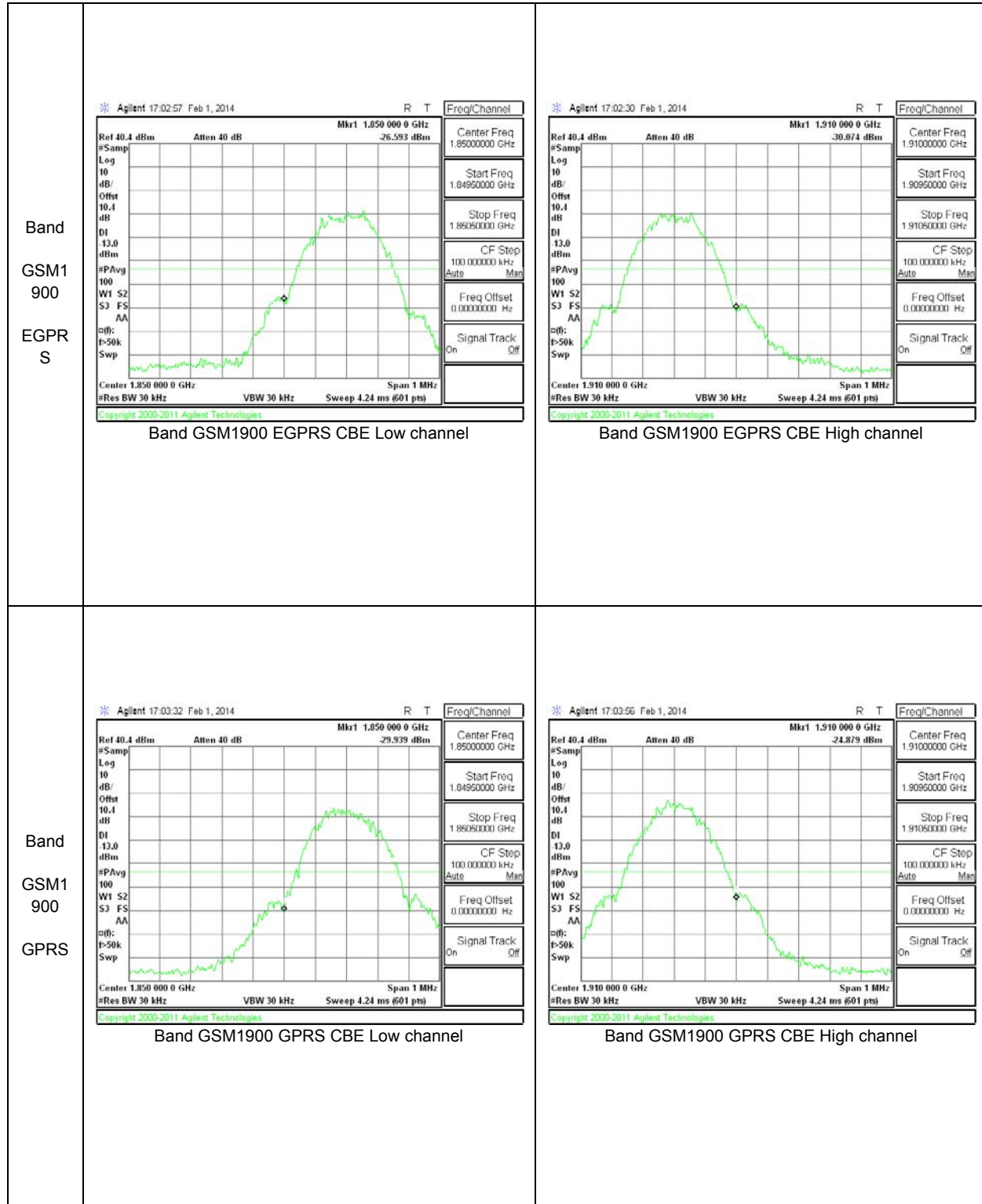
GSM 1900/850 & WCDMA B2/B5

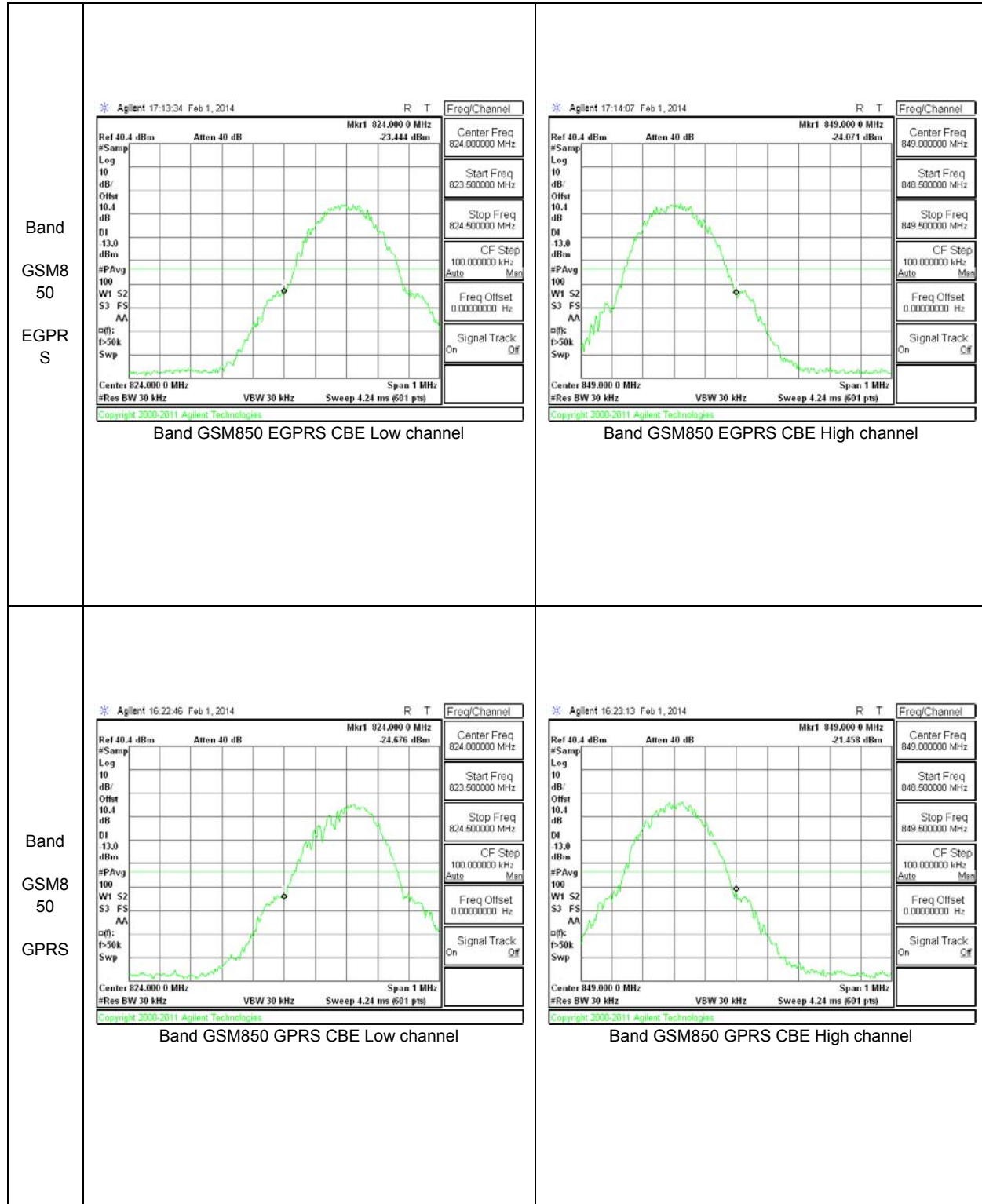
RESULTS

10.2.1. BAND EDGE PLOTS









10.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238

LIMITS

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r01

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

For each out of band emissions measurement:

- Set display line at -13 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

MODES TESTED

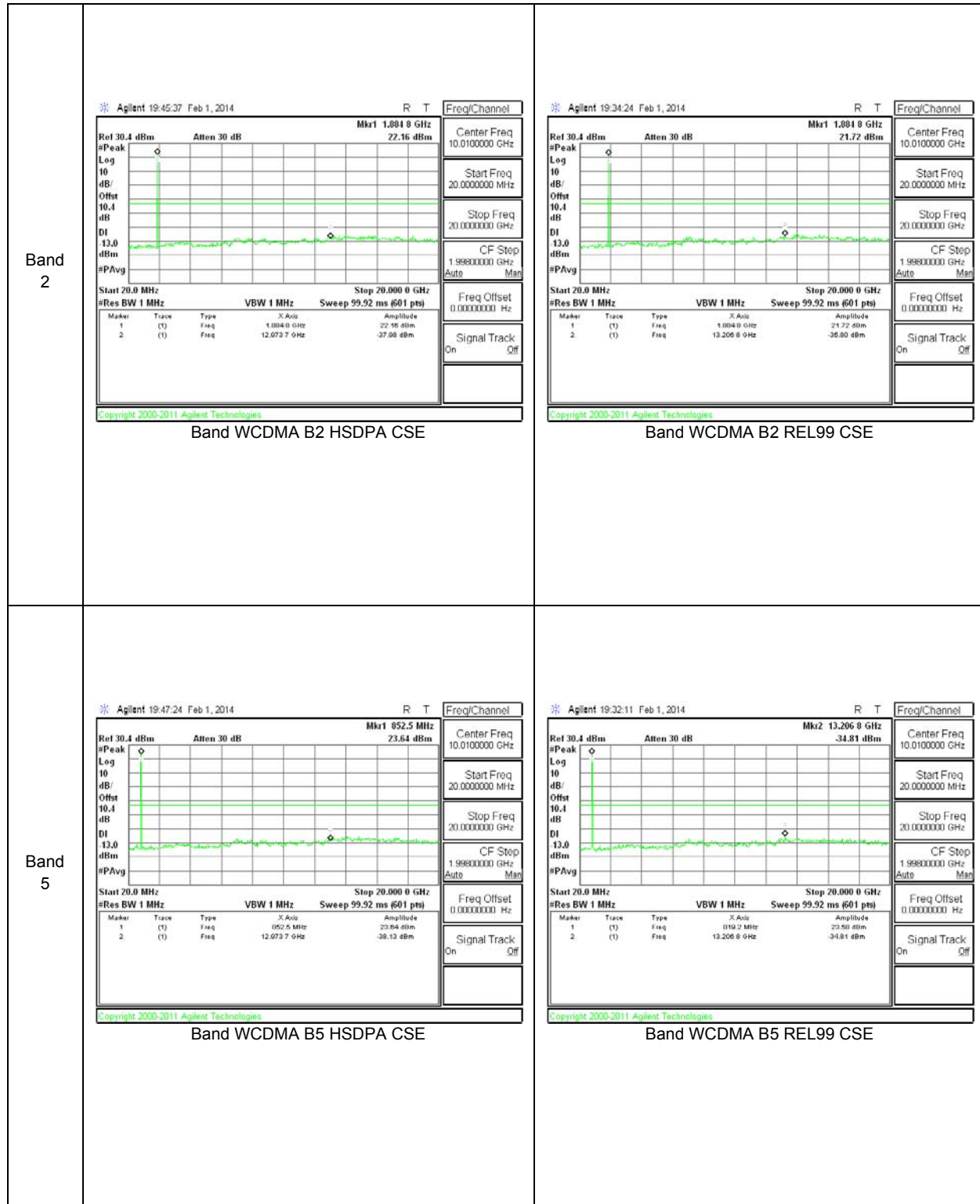
GSM1900/850 & WCDMA B2/B5

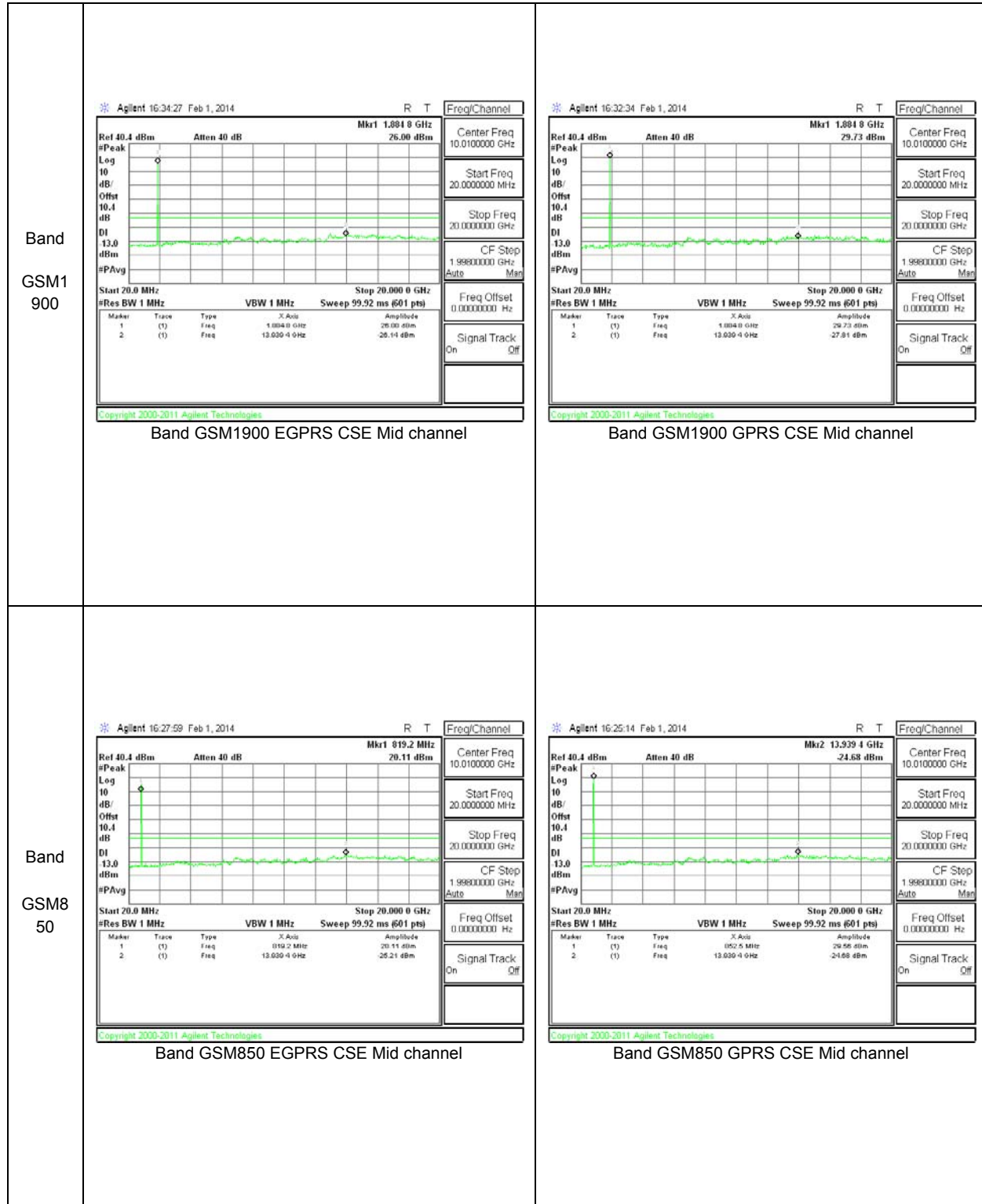
RESULTS

10.3.1. OUT OF BAND EMISSIONS RESULT

| Band | Mode | f (MHz) | Spur (dBm) | Spec (dBm) | Delta (dB) |
|---------|-------|---------|------------|------------|------------|
| GSM850 | GPRS | 824.2 | -25.48 | -13 | -12.48 |
| | | 836.6 | -24.68 | -13 | -11.68 |
| | | 848.8 | -24.29 | -13 | -11.29 |
| | EGPRS | 824.2 | -25.50 | -13 | -12.5 |
| | | 836.6 | -25.21 | -13 | -12.21 |
| | | 848.8 | -25.87 | -13 | -12.87 |
| GSM1900 | GPRS | 1850.2 | -26.01 | -13 | -13.01 |
| | | 1880 | -27.81 | -13 | -14.81 |
| | | 1909.8 | -26.86 | -13 | -13.86 |
| | EGPRS | 1850.2 | -25.35 | -13 | -12.35 |
| | | 1880 | -26.14 | -13 | -13.14 |
| | | 1909.8 | -26.31 | -13 | -13.31 |
| Band 5 | REL99 | 826.6 | -37.28 | -13 | -24.28 |
| | | 836.6 | -34.81 | -13 | -21.81 |
| | | 846.4 | -36.14 | -13 | -23.14 |
| | HSDPA | 826.6 | -37.58 | -13 | -24.58 |
| | | 836.6 | -38.13 | -13 | -25.13 |
| | | 846.4 | -37.66 | -13 | -24.66 |
| Band 2 | REL99 | 1852.4 | -36.23 | -13 | -23.23 |
| | | 1880 | -35.80 | -13 | -22.8 |
| | | 1907.6 | -37.95 | -13 | -24.95 |
| | HSDPA | 1852.4 | -37.52 | -13 | -24.52 |
| | | 1880 | -37.98 | -13 | -24.98 |
| | | 1907.6 | -36.16 | -13 | -23.16 |

10.3.2. OUT OF BAND EMISSIONS PLOTS





10.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235

LIMITS

§22.355 - The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 ppm for mobile stations.

§24.235 - The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r01

Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to 20°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50°C is reached. Reference power supply voltage for these tests is 3.7Vdc.

Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case). The test voltage ranges from 3.50 to 4.26 VDC.

MODES TESTED

GSM1900/850 & WCDMA B2/B5

RESULTS

See the following pages.

10.4.1. FREQUENCY STABILITY RESULTS

GPRS 1900, Channel 661 Freq: 1880MHz– MID CHANNEL

| Reference Frequency: PCS Mid Channel 1880MHz @ 20°C | | | | |
|---|------------------------------|---|-------------|-------------|
| Limit: to stay +/- 2.5 ppm = 4700.000 Hz | | | | |
| Power Supply (Vdc) | Environment Temperature (°C) | Frequency Deviation Measured with Time Elapse | | |
| | | (MHz) | Delta (ppm) | Limit (ppm) |
| 3.70 | 50 | 1879.999992 | 0.004 | 2.5 |
| 3.70 | 40 | 1879.999992 | 0.004 | 2.5 |
| 3.70 | 30 | 1879.999993 | 0.004 | 2.5 |
| 3.70 | 20 | 1880.000000 | 0 | 2.5 |
| 3.70 | 10 | 1879.999995 | 0.003 | 2.5 |
| 3.70 | 0 | 1879.999999 | 0.006 | 2.5 |
| 3.70 | -10 | 1879.999994 | 0.003 | 2.5 |
| 3.70 | -20 | 1879.999994 | 0.003 | 2.5 |
| 3.70 | -30 | 1879.999993 | 0.004 | 2.5 |

| Reference Frequency: PCS Mid Channel 1880 MHz @ 20°C | | | | |
|--|------------------------------|---|-------------|-------------|
| Limit: to stay +/- 2.5 ppm = 4700.000 Hz | | | | |
| Power Supply (Vdc) | Environment Temperature (°C) | Frequency Deviation Measured with Time Elapse | | |
| | | (MHz) | Delta (ppm) | Limit (ppm) |
| 3.70 | 20 | 1880.000000 | 0 | 2.5 |
| 4.20 | 20 | 1879.999993 | 0.004 | 2.5 |
| 3.30 | 20 | 1879.999996 | 0.002 | 2.5 |

GPRS 850 CELL BAND, – MID CHANNEL190, Frequency 836.6MHz

| Reference Frequency: Cell Mid Channel 836.6 MHz @ 20°C | | | | |
|--|------------------------------|---|-------------|-------------|
| Limit: +/- 2.5 ppm = 2091.500 Hz | | | | |
| Power Supply (Vdc) | Environment Temperature (°C) | Frequency Deviation Measured with Time Elapse | | |
| | | (MHz) | Delta (ppm) | Limit (ppm) |
| 3.70 | 50 | 836.600015 | -0.007 | 2.5 |
| 3.70 | 40 | 836.600018 | -0.011 | 2.5 |
| 3.70 | 30 | 836.600015 | -0.007 | 2.5 |
| 3.70 | 20 | 836.600009 | 0 | 2.5 |
| 3.70 | 10 | 836.600019 | -0.012 | 2.5 |
| 3.70 | 0 | 836.600016 | -0.008 | 2.5 |
| 3.70 | -10 | 836.600012 | -0.004 | 2.5 |
| 3.70 | -20 | 836.600013 | -0.005 | 2.5 |
| 3.70 | -30 | 836.600009 | 0.000 | 2.5 |

| Reference Frequency: Cell Mid Channel 836.6 MHz @ 20°C | | | | |
|--|------------------------------|---|----------------|-------------|
| Limit: +/- 2.5 ppm = 2091.500 Hz | | | | |
| Power Supply (Vdc) | Environment Temperature (°C) | Frequency Deviation Measured with Time Elapse | | |
| | | (MHz) | Delta (ppm) | Limit (ppm) |
| 3.70 | 20 | 836.600009 | 0.00000 | 2.5 |
| 4.20 | 20 | 836.600014 | -0.00598 | 2.5 |
| 3.30 | 20 | 836.600015 | -0.00717 | 2.5 |

11. RADIATED TEST RESULTS

11.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232

LIMITS

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13dB.

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.17

MODES TESTED

GSM1900/850 & WCDMA B2/B5

TEST RESULTS

11.1.1. ERP/EIRP Results

| Band | Mode | Channel | f(MHz) | ERP / EIRP | |
|--------|-------|---------|--------|------------|--------|
| | | | | dBm | mW |
| Band 2 | REL99 | 9275 | 1852.6 | 23.69 | 233.88 |
| | | 9400 | 1880 | 23.75 | 237.14 |
| | | 9525 | 1907.4 | 22.27 | 168.66 |
| | HSDPA | 9275 | 1852.6 | 24.47 | 279.9 |
| | | 9400 | 1880 | 21.69 | 147.57 |
| | | 9525 | 1907.4 | 21.4 | 138.04 |

| Band | Mode | Channel | f(MHz) | ERP / EIRP | |
|--------|-------|---------|--------|------------|-------|
| | | | | dBm | mW |
| Band 5 | REL99 | 4145 | 826.6 | 19.58 | 90.78 |
| | | 4183 | 836.6 | 17.97 | 62.68 |
| | | 4220 | 846.4 | 16.29 | 42.56 |
| | HSDPA | 4145 | 826.6 | 18.95 | 78.52 |
| | | 4183 | 836.6 | 16.86 | 48.54 |
| | | 4220 | 846.4 | 15.43 | 34.91 |

| Band | Mode | Channel | f(MHz) | ERP / EIRP | |
|---------|-------|---------|--------|------------|--------|
| | | | | dBm | mW |
| GSM1900 | GPRS | 512 | 1850.2 | 27.67 | 584.79 |
| | | 661 | 1880 | 28.2 | 660.69 |
| | | 810 | 1909.8 | 26.64 | 461.32 |
| | EGPRS | 512 | 1850.2 | 26.06 | 403.65 |
| | | 661 | 1880 | 26.57 | 453.94 |
| | | 810 | 1909.8 | 24.69 | 294.44 |

| Band | Mode | Channel | f(MHz) | ERP / EIRP | |
|--------|-------|---------|--------|------------|--------|
| | | | | dBm | mW |
| GSM850 | GPRS | 128 | 824.2 | 25.661 | 368.21 |
| | | 190 | 836.6 | 25.891 | 388.24 |
| | | 251 | 848.8 | 26.941 | 494.42 |
| | EGPRS | 128 | 824.2 | 23.351 | 216.32 |
| | | 190 | 836.6 | 23.451 | 221.36 |
| | | 251 | 848.8 | 23.551 | 226.52 |

11.1.2. ERP/EIRP Data

| Band Band 2 HSDP A | High Frequency Fundamental Measurement Compliance Certification Services Chamber C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------------|--|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|----------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|--------|--|--|--|--|--|--|--|--|-------|------|---|------|------|-------|------|-------|--|-------|------|---|------|------|-------|------|------|--|--------|--|--|--|--|--|--|--|--|-------|------|---|------|------|-------|------|-------|--|-------|------|---|------|------|-------|------|-------|--|---------|--|--|--|--|--|--|--|--|-------|------|---|------|------|-------|------|-------|--|-------|------|---|------|------|-------|------|-------|
| | Company: Samsung | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Project #: 14U16956 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Date: 01/29/14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Engineer: K.Kedida | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Configuration: EUT ONLY, X Position | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Mode: HSDPA 1900MHz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Equipment: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Receiving: T119, and Chamber C SMA Cables Substitution: Horn T711 Substitution, 4ft SMA Cable (244639001) Warehouse | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>f GHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1.853</td> <td>17.8</td> <td>V</td> <td>0.85</td> <td>4.60</td> <td>21.59</td> <td>33.0</td> <td>-11.4</td> <td></td> </tr> <tr> <td>1.853</td> <td>20.7</td> <td>H</td> <td>0.85</td> <td>4.60</td> <td>24.47</td> <td>33.0</td> <td>-8.5</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1.880</td> <td>15.2</td> <td>V</td> <td>0.85</td> <td>4.60</td> <td>18.91</td> <td>33.0</td> <td>-14.1</td> <td></td> </tr> <tr> <td>1.880</td> <td>17.9</td> <td>H</td> <td>0.85</td> <td>4.60</td> <td>21.69</td> <td>33.0</td> <td>-11.3</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1.907</td> <td>13.5</td> <td>V</td> <td>0.85</td> <td>4.60</td> <td>17.23</td> <td>33.0</td> <td>-15.8</td> <td></td> </tr> <tr> <td>1.907</td> <td>17.7</td> <td>H</td> <td>0.85</td> <td>4.60</td> <td>21.40</td> <td>33.0</td> <td>-11.6</td> <td></td> </tr> </tbody> </table> | | | | | | | | f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 1.853 | 17.8 | V | 0.85 | 4.60 | 21.59 | 33.0 | -11.4 | | 1.853 | 20.7 | H | 0.85 | 4.60 | 24.47 | 33.0 | -8.5 | | Mid Ch | | | | | | | | | 1.880 | 15.2 | V | 0.85 | 4.60 | 18.91 | 33.0 | -14.1 | | 1.880 | 17.9 | H | 0.85 | 4.60 | 21.69 | 33.0 | -11.3 | | High Ch | | | | | | | | | 1.907 | 13.5 | V | 0.85 | 4.60 | 17.23 | 33.0 | -15.8 | | 1.907 | 17.7 | H | 0.85 | 4.60 | 21.40 | 33.0 | -11.6 |
| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.853 | 17.8 | V | 0.85 | 4.60 | 21.59 | 33.0 | -11.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.853 | 20.7 | H | 0.85 | 4.60 | 24.47 | 33.0 | -8.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.880 | 15.2 | V | 0.85 | 4.60 | 18.91 | 33.0 | -14.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.880 | 17.9 | H | 0.85 | 4.60 | 21.69 | 33.0 | -11.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.907 | 13.5 | V | 0.85 | 4.60 | 17.23 | 33.0 | -15.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.907 | 17.7 | H | 0.85 | 4.60 | 21.40 | 33.0 | -11.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rev. 3.17.11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Band Band 2 REL99 | High Frequency Fundamental Measurement Compliance Certification Services Chamber C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------------------------|---|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|----------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|--------|--|--|--|--|--|--|--|--|-------|------|---|------|------|-------|------|-------|--|-------|------|---|------|------|-------|------|------|--|--------|--|--|--|--|--|--|--|--|-------|------|---|------|------|-------|------|-------|--|-------|------|---|------|------|-------|------|------|--|---------|--|--|--|--|--|--|--|--|-------|------|---|------|------|-------|------|-------|--|-------|------|---|------|------|-------|------|-------|--|
| | Company: Samsung | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Project #: 14U16956 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Date: 01/29/14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Engineer: K.Kedida | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Configuration: EUT ONLY, X Position | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Mode: REL99 1900MHz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Equipment: Receiving: T119, and Chamber C SMA Cables Substitution: Horn T711 Substitution, 4ft SMA Cable (244639001) Warehouse | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th>f GHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1.853</td> <td>17.3</td> <td>V</td> <td>0.85</td> <td>4.60</td> <td>21.07</td> <td>33.0</td> <td>-11.9</td> <td></td> </tr> <tr> <td>1.853</td> <td>19.9</td> <td>H</td> <td>0.85</td> <td>4.60</td> <td>23.69</td> <td>33.0</td> <td>-9.3</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1.880</td> <td>16.4</td> <td>V</td> <td>0.85</td> <td>4.60</td> <td>20.15</td> <td>33.0</td> <td>-12.9</td> <td></td> </tr> <tr> <td>1.880</td> <td>20.0</td> <td>H</td> <td>0.85</td> <td>4.60</td> <td>23.75</td> <td>33.0</td> <td>-9.3</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1.907</td> <td>14.5</td> <td>V</td> <td>0.85</td> <td>4.60</td> <td>18.20</td> <td>33.0</td> <td>-14.8</td> <td></td> </tr> <tr> <td>1.907</td> <td>18.5</td> <td>H</td> <td>0.85</td> <td>4.60</td> <td>22.27</td> <td>33.0</td> <td>-10.7</td> <td></td> </tr> </tbody> </table> | | | | | | | | f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 1.853 | 17.3 | V | 0.85 | 4.60 | 21.07 | 33.0 | -11.9 | | 1.853 | 19.9 | H | 0.85 | 4.60 | 23.69 | 33.0 | -9.3 | | Mid Ch | | | | | | | | | 1.880 | 16.4 | V | 0.85 | 4.60 | 20.15 | 33.0 | -12.9 | | 1.880 | 20.0 | H | 0.85 | 4.60 | 23.75 | 33.0 | -9.3 | | High Ch | | | | | | | | | 1.907 | 14.5 | V | 0.85 | 4.60 | 18.20 | 33.0 | -14.8 | | 1.907 | 18.5 | H | 0.85 | 4.60 | 22.27 | 33.0 | -10.7 | |
| | f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.853 | 17.3 | V | 0.85 | 4.60 | 21.07 | 33.0 | -11.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.853 | 19.9 | H | 0.85 | 4.60 | 23.69 | 33.0 | -9.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.880 | 16.4 | V | 0.85 | 4.60 | 20.15 | 33.0 | -12.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.880 | 20.0 | H | 0.85 | 4.60 | 23.75 | 33.0 | -9.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.907 | 14.5 | V | 0.85 | 4.60 | 18.20 | 33.0 | -14.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.907 | 18.5 | H | 0.85 | 4.60 | 22.27 | 33.0 | -10.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rev. 3.17.11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Band Band 5 HSDPA A | High Frequency Substitution Measurement Compliance Certification Services Chamber C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|--------------------|----------------------|-----------------------|--------------|----------------|----------------|----------|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|----------------|-------|---------------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|------|------|-------|--|--------|-------|---|-----|-----|-------|------|-------|--|---------------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|-------|---|-----|-----|-------|------|-------|--|----------------|--|--|--|--|--|--|--|--|--------|------|---|-----|-----|------|------|-------|--|--------|-------|---|-----|-----|-------|------|-------|--|
| | Company: | | Samsung | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Project #: | | 14U16956 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Date: | | 01/29/14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Engineer: | | K.Kedida | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Configuration: | | EUT ONLY, X Position | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Mode: | | WCDMA_HSDPA_850 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Equipment: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Receiving: Sunol T185, and 3m Chamber N-type Cable (Setup this one for testing EUT) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Margin (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>826.40</td> <td>10.77</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>9.87</td> <td>38.5</td> <td>-28.6</td> <td></td> </tr> <tr> <td>826.40</td> <td>19.85</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>18.95</td> <td>38.5</td> <td>-19.5</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>836.60</td> <td>11.06</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>10.16</td> <td>38.5</td> <td>-28.3</td> <td></td> </tr> <tr> <td>836.60</td> <td>17.76</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>16.86</td> <td>38.5</td> <td>-21.6</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>846.60</td> <td>9.33</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>8.43</td> <td>38.5</td> <td>-30.0</td> <td></td> </tr> <tr> <td>846.60</td> <td>16.33</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>15.43</td> <td>38.5</td> <td>-23.0</td> <td></td> </tr> </tbody> </table> | | | | | | | | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes | Low Ch | | | | | | | | | 826.40 | 10.77 | V | 0.9 | 0.0 | 9.87 | 38.5 | -28.6 | | 826.40 | 19.85 | H | 0.9 | 0.0 | 18.95 | 38.5 | -19.5 | | Mid Ch | | | | | | | | | 836.60 | 11.06 | V | 0.9 | 0.0 | 10.16 | 38.5 | -28.3 | | 836.60 | 17.76 | H | 0.9 | 0.0 | 16.86 | 38.5 | -21.6 | | High Ch | | | | | | | | | 846.60 | 9.33 | V | 0.9 | 0.0 | 8.43 | 38.5 | -30.0 | | 846.60 | 16.33 | H | 0.9 | 0.0 | 15.43 | 38.5 | -23.0 | |
| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 826.40 | 10.77 | V | 0.9 | 0.0 | 9.87 | 38.5 | -28.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 826.40 | 19.85 | H | 0.9 | 0.0 | 18.95 | 38.5 | -19.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 836.60 | 11.06 | V | 0.9 | 0.0 | 10.16 | 38.5 | -28.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 836.60 | 17.76 | H | 0.9 | 0.0 | 16.86 | 38.5 | -21.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 846.60 | 9.33 | V | 0.9 | 0.0 | 8.43 | 38.5 | -30.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 846.60 | 16.33 | H | 0.9 | 0.0 | 15.43 | 38.5 | -23.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rev. 3.17.11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Band Band 5 REL99 | High Frequency Substitution Measurement Compliance Certification Services Chamber C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--------------------|----------------------|-----------------------|--------------|----------------|----------------|----------|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|----------------|-------|---------------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|-------|---|-----|-----|-------|------|-------|--|---------------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|-------|---|-----|-----|-------|------|-------|--|----------------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|-------|---|-----|-----|-------|------|-------|--|
| | Company: | | Samsung | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Project #: | | 14U16956 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Date: | | 01/29/14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Engineer: | | K.Kedida | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Configuration: | | EUT ONLY, X Position | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Mode: | | WCDMA_Rel 99_850 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Equipment: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Receiving: Sunol T185, and 3m Chamber N-type Cable (Setup this one for testing EUT) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Margin (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>826.40</td> <td>11.85</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>10.95</td> <td>38.5</td> <td>-27.5</td> <td></td> </tr> <tr> <td>826.40</td> <td>20.48</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>19.58</td> <td>38.5</td> <td>-18.9</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>836.60</td> <td>11.26</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>10.36</td> <td>38.5</td> <td>-28.1</td> <td></td> </tr> <tr> <td>836.60</td> <td>18.87</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>17.97</td> <td>38.5</td> <td>-20.5</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>846.60</td> <td>10.91</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>10.01</td> <td>38.5</td> <td>-28.4</td> <td></td> </tr> <tr> <td>846.60</td> <td>17.19</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>16.29</td> <td>38.5</td> <td>-22.2</td> <td></td> </tr> </tbody> </table> | | | | | | | | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes | Low Ch | | | | | | | | | 826.40 | 11.85 | V | 0.9 | 0.0 | 10.95 | 38.5 | -27.5 | | 826.40 | 20.48 | H | 0.9 | 0.0 | 19.58 | 38.5 | -18.9 | | Mid Ch | | | | | | | | | 836.60 | 11.26 | V | 0.9 | 0.0 | 10.36 | 38.5 | -28.1 | | 836.60 | 18.87 | H | 0.9 | 0.0 | 17.97 | 38.5 | -20.5 | | High Ch | | | | | | | | | 846.60 | 10.91 | V | 0.9 | 0.0 | 10.01 | 38.5 | -28.4 | | 846.60 | 17.19 | H | 0.9 | 0.0 | 16.29 | 38.5 | -22.2 | |
| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 826.40 | 11.85 | V | 0.9 | 0.0 | 10.95 | 38.5 | -27.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 826.40 | 20.48 | H | 0.9 | 0.0 | 19.58 | 38.5 | -18.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 836.60 | 11.26 | V | 0.9 | 0.0 | 10.36 | 38.5 | -28.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 836.60 | 18.87 | H | 0.9 | 0.0 | 17.97 | 38.5 | -20.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 846.60 | 10.91 | V | 0.9 | 0.0 | 10.01 | 38.5 | -28.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 846.60 | 17.19 | H | 0.9 | 0.0 | 16.29 | 38.5 | -22.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rev. 3.17.11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | | | | | | | | |
|------------------------------|---|-----------------------------|----------------------------|----------------------------|-------------------------------|-----------------------|------------------------|-----------------------|--------------|
| Band GSM1 900 EGPRS | High Frequency Fundamental Measurement Compliance Certification Services Chamber C | | | | | | | | |
| | Company: | | Samsung | | | | | | |
| | Project #: | | 14U16956 | | | | | | |
| | Date: | | 01/29/14 | | | | | | |
| | Test Engineer: | | K.Kedida | | | | | | |
| | Configuration: | | EUT ONLY, X Position | | | | | | |
| | Mode: | | EGPRS 1900MHz | | | | | | |
| | Test Equipment: | | | | | | | | |
| | Receiving: T119, and Chamber C SMA Cables | | | | | | | | |
| | Substitution: Horn T711 Substitution, 4ft SMA Cable (244639001) Warehouse | | | | | | | | |
| | f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| | Low Ch | | | | | | | | |
| | 1.850 | 16.5 | V | 0.85 | 4.60 | 20.20 | 33.0 | -12.8 | |
| | 1.850 | 22.3 | H | 0.85 | 4.60 | 26.06 | 33.0 | -6.9 | |
| | Mid Ch | | | | | | | | |
| | 1.880 | 16.6 | V | 0.85 | 4.60 | 20.32 | 33.0 | -12.7 | |
| | 1.880 | 22.8 | H | 0.85 | 4.60 | 26.57 | 33.0 | -6.4 | |
| | High Ch | | | | | | | | |
| | 1.910 | 15.5 | V | 0.85 | 4.60 | 19.26 | 33.0 | -13.7 | |
| | 1.910 | 20.9 | H | 0.85 | 4.60 | 24.69 | 33.0 | -8.3 | |
| | Rev. 3.17.11 | | | | | | | | |

| Band GSM1 900 GPRS | High Frequency Fundamental Measurement Compliance Certification Services Chamber C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|--------------------|----------------------|-----------------------|---------------|----------------|---------------|----------|---------------------|--------------------|--------------------|-----------------------|---------------|----------------|---------------|-------|--------|--|--|--|--|--|--|--|--|-------|------|---|------|------|-------|------|-------|--|-------|------|---|------|------|-------|------|------|--|--------|--|--|--|--|--|--|--|--|-------|------|---|------|------|-------|------|-------|--|-------|------|---|------|------|-------|------|------|--|---------|--|--|--|--|--|--|--|--|-------|------|---|------|------|-------|------|-------|--|-------|------|---|------|------|-------|------|------|--|
| | Company: | | Samsung | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Project #: | | 14U16956 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Date: | | 01/29/14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Engineer: | | K.Kedida | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Configuration: | | EUT ONLY, X Position | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Mode: | | GPRS 1900MHz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Equipment: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Receiving: T119, and Chamber C SMA Cables | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Substitution: Horn T711 Substitution, 4ft SMA Cable (244639001) Warehouse | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>f GHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBi)</th> <th>EIRP (dBm)</th> <th>Limit (dBm)</th> <th>Delta (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>1.850</td> <td>18.2</td> <td>V</td> <td>0.85</td> <td>4.60</td> <td>21.98</td> <td>33.0</td> <td>-11.0</td> <td></td> </tr> <tr> <td>1.850</td> <td>23.9</td> <td>H</td> <td>0.85</td> <td>4.60</td> <td>27.67</td> <td>33.0</td> <td>-5.3</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>1.880</td> <td>18.0</td> <td>V</td> <td>0.85</td> <td>4.60</td> <td>21.72</td> <td>33.0</td> <td>-11.3</td> <td></td> </tr> <tr> <td>1.880</td> <td>24.5</td> <td>H</td> <td>0.85</td> <td>4.60</td> <td>28.20</td> <td>33.0</td> <td>-4.8</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>1.910</td> <td>17.8</td> <td>V</td> <td>0.85</td> <td>4.60</td> <td>21.56</td> <td>33.0</td> <td>-11.4</td> <td></td> </tr> <tr> <td>1.910</td> <td>22.9</td> <td>H</td> <td>0.85</td> <td>4.60</td> <td>26.64</td> <td>33.0</td> <td>-6.4</td> <td></td> </tr> </tbody> </table> | | | | | | | | f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | Low Ch | | | | | | | | | 1.850 | 18.2 | V | 0.85 | 4.60 | 21.98 | 33.0 | -11.0 | | 1.850 | 23.9 | H | 0.85 | 4.60 | 27.67 | 33.0 | -5.3 | | Mid Ch | | | | | | | | | 1.880 | 18.0 | V | 0.85 | 4.60 | 21.72 | 33.0 | -11.3 | | 1.880 | 24.5 | H | 0.85 | 4.60 | 28.20 | 33.0 | -4.8 | | High Ch | | | | | | | | | 1.910 | 17.8 | V | 0.85 | 4.60 | 21.56 | 33.0 | -11.4 | | 1.910 | 22.9 | H | 0.85 | 4.60 | 26.64 | 33.0 | -6.4 | |
| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.850 | 18.2 | V | 0.85 | 4.60 | 21.98 | 33.0 | -11.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.850 | 23.9 | H | 0.85 | 4.60 | 27.67 | 33.0 | -5.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.880 | 18.0 | V | 0.85 | 4.60 | 21.72 | 33.0 | -11.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.880 | 24.5 | H | 0.85 | 4.60 | 28.20 | 33.0 | -4.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.910 | 17.8 | V | 0.85 | 4.60 | 21.56 | 33.0 | -11.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.910 | 22.9 | H | 0.85 | 4.60 | 26.64 | 33.0 | -6.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rev. 3.17.11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Band GSM8 50 EGPR S | High Frequency Substitution Measurement Compliance Certification Services Chamber C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|--------------------|----------------------|-----------------------|--------------|----------------|----------------|----------|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|----------------|-------|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|-------|---|-----|-----|-------|------|-------|--|---------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|-------|---|-----|-----|-------|------|-------|--|
| | Company: | | Samsung | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Project #: | | 14U16956 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Date: | | 01/29/14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Engineer: | | K.Kedida | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Configuration: | | EUT ONLY, X Position | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Mode: | | EGRPS 850MHz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Equipment: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Receiving: Sunol T185, and 3m Chamber N-type Cable (Setup this one for testing EUT) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Margin (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>824.20</td> <td>14.87</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>13.97</td> <td>38.5</td> <td>-24.5</td> <td></td> </tr> <tr> <td>824.20</td> <td>24.25</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>23.35</td> <td>38.5</td> <td>-15.1</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>836.60</td> <td>15.88</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>14.98</td> <td>38.5</td> <td>-23.5</td> <td></td> </tr> <tr> <td>836.60</td> <td>24.35</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>23.45</td> <td>38.5</td> <td>-15.0</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>848.80</td> <td>17.87</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>16.97</td> <td>38.5</td> <td>-21.5</td> <td></td> </tr> <tr> <td>848.80</td> <td>24.45</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>23.55</td> <td>38.5</td> <td>-14.9</td> <td></td> </tr> </tbody> </table> | | | | | | | | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes | Low Ch | | | | | | | | | 824.20 | 14.87 | V | 0.9 | 0.0 | 13.97 | 38.5 | -24.5 | | 824.20 | 24.25 | H | 0.9 | 0.0 | 23.35 | 38.5 | -15.1 | | Mid Ch | | | | | | | | | 836.60 | 15.88 | V | 0.9 | 0.0 | 14.98 | 38.5 | -23.5 | | 836.60 | 24.35 | H | 0.9 | 0.0 | 23.45 | 38.5 | -15.0 | | High Ch | | | | | | | | | 848.80 | 17.87 | V | 0.9 | 0.0 | 16.97 | 38.5 | -21.5 | | 848.80 | 24.45 | H | 0.9 | 0.0 | 23.55 | 38.5 | -14.9 | |
| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 824.20 | 14.87 | V | 0.9 | 0.0 | 13.97 | 38.5 | -24.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 824.20 | 24.25 | H | 0.9 | 0.0 | 23.35 | 38.5 | -15.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 836.60 | 15.88 | V | 0.9 | 0.0 | 14.98 | 38.5 | -23.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 836.60 | 24.35 | H | 0.9 | 0.0 | 23.45 | 38.5 | -15.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 848.80 | 17.87 | V | 0.9 | 0.0 | 16.97 | 38.5 | -21.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 848.80 | 24.45 | H | 0.9 | 0.0 | 23.55 | 38.5 | -14.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rev. 3.17.11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Band GSM8 50 GPRS | High Frequency Substitution Measurement Compliance Certification Services Chamber C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|--------------------|----------------------|-----------------------|--------------|----------------|----------------|----------|---------------------|--------------------|--------------------|-----------------------|--------------|----------------|----------------|-------|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|-------|---|-----|-----|-------|------|-------|--|---------|--|--|--|--|--|--|--|--|--------|-------|---|-----|-----|-------|------|-------|--|--------|-------|---|-----|-----|-------|------|-------|--|
| | Company: | | Samsung | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Project #: | | 14U16956 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Date: | | 01/29/14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Engineer: | | K.Kedida | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Configuration: | | EUT ONLY, X Position | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Mode: | | GRPS 850MHz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Test Equipment: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Receiving: Sunol T185, and 3m Chamber N-type Cable (Setup this one for testing EUT) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Substitution: Dipole S/N: 00022117, 4ft SMA Cable (SN # 245200 001) Warehouse. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th>f MHz</th> <th>SG reading (dBm)</th> <th>Ant. Pol. (H/V)</th> <th>Cable Loss (dB)</th> <th>Antenna Gain (dBd)</th> <th>ERP (dBm)</th> <th>Limit (dBm)</th> <th>Margin (dB)</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td colspan="9">Low Ch</td> </tr> <tr> <td>824.20</td> <td>17.71</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>16.81</td> <td>38.5</td> <td>-21.6</td> <td></td> </tr> <tr> <td>824.20</td> <td>26.56</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>25.66</td> <td>38.5</td> <td>-12.8</td> <td></td> </tr> <tr> <td colspan="9">Mid Ch</td> </tr> <tr> <td>836.60</td> <td>19.27</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>18.37</td> <td>38.5</td> <td>-20.1</td> <td></td> </tr> <tr> <td>836.60</td> <td>26.79</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>25.89</td> <td>38.5</td> <td>-12.6</td> <td></td> </tr> <tr> <td colspan="9">High Ch</td> </tr> <tr> <td>848.80</td> <td>20.78</td> <td>V</td> <td>0.9</td> <td>0.0</td> <td>19.88</td> <td>38.5</td> <td>-18.6</td> <td></td> </tr> <tr> <td>848.80</td> <td>27.84</td> <td>H</td> <td>0.9</td> <td>0.0</td> <td>26.94</td> <td>38.5</td> <td>-11.5</td> <td></td> </tr> </tbody> </table> | | | | | | | | f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes | Low Ch | | | | | | | | | 824.20 | 17.71 | V | 0.9 | 0.0 | 16.81 | 38.5 | -21.6 | | 824.20 | 26.56 | H | 0.9 | 0.0 | 25.66 | 38.5 | -12.8 | | Mid Ch | | | | | | | | | 836.60 | 19.27 | V | 0.9 | 0.0 | 18.37 | 38.5 | -20.1 | | 836.60 | 26.79 | H | 0.9 | 0.0 | 25.89 | 38.5 | -12.6 | | High Ch | | | | | | | | | 848.80 | 20.78 | V | 0.9 | 0.0 | 19.88 | 38.5 | -18.6 | | 848.80 | 27.84 | H | 0.9 | 0.0 | 26.94 | 38.5 | -11.5 | |
| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Cable Loss (dB) | Antenna Gain (dBd) | ERP (dBm) | Limit (dBm) | Margin (dB) | Notes | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 824.20 | 17.71 | V | 0.9 | 0.0 | 16.81 | 38.5 | -21.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 824.20 | 26.56 | H | 0.9 | 0.0 | 25.66 | 38.5 | -12.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mid Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 836.60 | 19.27 | V | 0.9 | 0.0 | 18.37 | 38.5 | -20.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 836.60 | 26.79 | H | 0.9 | 0.0 | 25.89 | 38.5 | -12.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| High Ch | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 848.80 | 20.78 | V | 0.9 | 0.0 | 19.88 | 38.5 | -18.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 848.80 | 27.84 | H | 0.9 | 0.0 | 26.94 | 38.5 | -11.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Rev. 3.17.11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

11.2. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238

LIMIT

§22.917 (e) and §24.238 (a): Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB

TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). 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, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). 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, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

MODES TESTED

GSM 1900/850 & WCDMA B2/B5

RESULTS

11.2.1. SPURIOUS RADIATION DATA

| Compliance Certification Services Above 1GHz High Frequency Substitution Measurement | | | | | | | | | |
|---|------------------|------------------------|--------------|-------------|-------------|------------|-------------|------------|-------|
| Company: | | Samsung | | | | | | | |
| Project #: | | 14U16956 | | | | | | | |
| Date: | | 01/31/14 | | | | | | | |
| Test Engineer: | | K.Kedida | | | | | | | |
| Configuration: | | X Position, AC Charger | | | | | | | |
| Mode: | | WCDMA_HSDPA 1900 | | | | | | | |
| Chamber | | Pre-amplifer | | Filter | | Limit | | | |
| 3m Chamber C | | T343 8449B | | Filter 1 | | Part 24 | | | |
| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| Band2 | | | | | | | | | |
| HSDP | | | | | | | | | |
| A | | | | | | | | | |
| Low Ch, 1852.4MHz | | | | | | | | | |
| 3.705 | -16.4 | V | 3.0 | 35.4 | 1.0 | -50.7 | -13.0 | -37.7 | |
| 5.557 | -14.8 | V | 3.0 | 34.7 | 1.0 | -48.5 | -13.0 | -35.5 | |
| 7.409 | -10.3 | V | 3.0 | 34.9 | 1.0 | -44.2 | -13.0 | -31.2 | |
| 3.705 | -14.1 | H | 3.0 | 35.4 | 1.0 | -48.5 | -13.0 | -35.5 | |
| 5.557 | -14.9 | H | 3.0 | 34.7 | 1.0 | -48.7 | -13.0 | -35.7 | |
| 7.409 | -9.7 | H | 3.0 | 34.9 | 1.0 | -43.6 | -13.0 | -30.6 | |
| Mid Ch, 1880.0MHz | | | | | | | | | |
| 3.760 | -16.8 | V | 3.0 | 35.3 | 1.0 | -51.1 | -13.0 | -38.1 | |
| 5.640 | -14.5 | V | 3.0 | 34.7 | 1.0 | -48.3 | -13.0 | -35.3 | |
| 7.520 | -10.2 | V | 3.0 | 34.9 | 1.0 | -44.1 | -13.0 | -31.1 | |
| 3.760 | -13.4 | H | 3.0 | 35.3 | 1.0 | -47.7 | -13.0 | -34.7 | |
| 5.640 | -13.9 | H | 3.0 | 34.7 | 1.0 | -47.6 | -13.0 | -34.6 | |
| 7.520 | -8.8 | H | 3.0 | 34.9 | 1.0 | -42.7 | -13.0 | -29.7 | |
| High Ch, 1907.6 MHz | | | | | | | | | |
| 3.820 | -15.3 | V | 3.0 | 35.3 | 1.0 | -49.6 | -13.0 | -36.6 | |
| 5.723 | -13.1 | V | 3.0 | 34.7 | 1.0 | -46.9 | -13.0 | -33.9 | |
| 7.630 | -10.2 | V | 3.0 | 34.9 | 1.0 | -44.2 | -13.0 | -31.2 | |
| 3.820 | -14.5 | H | 3.0 | 35.3 | 1.0 | -48.8 | -13.0 | -35.8 | |
| 5.723 | -12.8 | H | 3.0 | 34.7 | 1.0 | -46.5 | -13.0 | -33.5 | |
| 7.630 | -9.3 | H | 3.0 | 34.9 | 1.0 | -43.2 | -13.0 | -30.2 | |
| Rev. 03.03.09 | | | | | | | | | |
| Note: No other emissions were detected above the system noise floor. | | | | | | | | | |

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 14U16956
Date: 01/31/14
Test Engineer: K.Kedida
Configuration: X Position, AC Charger
Mode: WCDMA_REL_99 1900

Chamber

3m Chamber C

Pre-amplifier

T343 8449B

Filter

Filter 1

Limit

Part 24

| | f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes | | |
|--------------------|-------------------|---------------------|--------------------|-----------------|----------------|----------------|---------------|----------------|---------------|-------|--|--|
| Band2 REL99 | Low Ch, 1852.4MHz | | | | | | | | | | | |
| | | 3.705 | -17.4 | V | 3.0 | 35.4 | 1.0 | -51.8 | -13.0 | -38.8 | | |
| | | 5.557 | -14.8 | V | 3.0 | 34.7 | 1.0 | -48.6 | -13.0 | -35.6 | | |
| | | 7.409 | -10.6 | V | 3.0 | 34.9 | 1.0 | -44.5 | -13.0 | -31.5 | | |
| | | 3.705 | -15.1 | H | 3.0 | 35.4 | 1.0 | -49.5 | -13.0 | -36.5 | | |
| | | 5.557 | -14.4 | H | 3.0 | 34.7 | 1.0 | -48.1 | -13.0 | -35.1 | | |
| | | 7.409 | -9.7 | H | 3.0 | 34.9 | 1.0 | -43.7 | -13.0 | -30.7 | | |
| | | Mid Ch, 1880.0MHz | | | | | | | | | | |
| | | 3.760 | -16.9 | V | 3.0 | 35.3 | 1.0 | -51.2 | -13.0 | -38.2 | | |
| | | 5.640 | -14.1 | V | 3.0 | 34.7 | 1.0 | -47.8 | -13.0 | -34.8 | | |
| | | 7.520 | -10.4 | V | 3.0 | 34.9 | 1.0 | -44.3 | -13.0 | -31.3 | | |
| | | 3.760 | -14.9 | H | 3.0 | 35.3 | 1.0 | -49.2 | -13.0 | -36.2 | | |
| | | 5.640 | -13.7 | H | 3.0 | 34.7 | 1.0 | -47.5 | -13.0 | -34.5 | | |
| | | 7.520 | -10.2 | H | 3.0 | 34.9 | 1.0 | -44.1 | -13.0 | -31.1 | | |
| | | High Ch, 1907.6 MHz | | | | | | | | | | |
| | | 3.820 | -17.1 | V | 3.0 | 35.3 | 1.0 | -51.4 | -13.0 | -38.4 | | |
| | | 5.723 | -13.2 | V | 3.0 | 34.7 | 1.0 | -46.9 | -13.0 | -33.9 | | |
| | | 7.630 | -10.8 | V | 3.0 | 34.9 | 1.0 | -44.8 | -13.0 | -31.8 | | |
| | 3.820 | -14.3 | H | 3.0 | 35.3 | 1.0 | -48.6 | -13.0 | -35.6 | | | |
| | 5.723 | -13.5 | H | 3.0 | 34.7 | 1.0 | -47.2 | -13.0 | -34.2 | | | |
| | 7.630 | -9.4 | H | 3.0 | 34.9 | 1.0 | -43.4 | -13.0 | -30.4 | | | |

Rev. 03.03.09
 Note: No other emissions were detected above the system noise floor.

| Compliance Certification Services | | | | | | | | | |
|--|------------------|------------------------|--------------|-------------|-------------|------------|-------------|------------|-------|
| Above 1GHz High Frequency Substitution Measurement | | | | | | | | | |
| Company: | | Samsung | | | | | | | |
| Project #: | | 14U16956 | | | | | | | |
| Date: | | 01/31/14 | | | | | | | |
| Test Engineer: | | K.Kedida | | | | | | | |
| Configuration: | | X Position, AC Charger | | | | | | | |
| Mode: | | WCDMA_HSDPA_850 | | | | | | | |
| Chamber | | Pre-amplifer | | | Filter | | Limit | | |
| 3m Chamber C | | T34 8449B | | | Filter 1 | | Part 24 | | |
| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| Low Ch, 826.40MHz | | | | | | | | | |
| 1.652 | -24.1 | V | 3.0 | 37.4 | 1.0 | -60.4 | -13.0 | -47.4 | |
| 2.479 | -20.1 | V | 3.0 | 36.4 | 1.0 | -55.5 | -13.0 | -42.5 | |
| 3.306 | -18.5 | V | 3.0 | 35.8 | 1.0 | -53.3 | -13.0 | -40.3 | |
| Mid Ch, 836.6MHz | | | | | | | | | |
| 1.652 | -24.3 | H | 3.0 | 37.4 | 1.0 | -60.7 | -13.0 | -47.7 | |
| 2.479 | -22.6 | H | 3.0 | 36.4 | 1.0 | -58.0 | -13.0 | -45.0 | |
| 3.306 | -18.9 | H | 3.0 | 35.8 | 1.0 | -53.7 | -13.0 | -40.7 | |
| High Ch, 846.6MHz | | | | | | | | | |
| 1.673 | -22.1 | V | 3.0 | 37.3 | 1.0 | -58.4 | -13.0 | -45.4 | |
| 2.510 | -20.8 | V | 3.0 | 36.4 | 1.0 | -56.1 | -13.0 | -43.1 | |
| 3.346 | -18.8 | V | 3.0 | 35.8 | 1.0 | -53.6 | -13.0 | -40.6 | |
| 1.673 | -22.7 | H | 3.0 | 37.3 | 1.0 | -59.1 | -13.0 | -46.1 | |
| 2.510 | -22.7 | H | 3.0 | 36.4 | 1.0 | -58.0 | -13.0 | -45.0 | |
| 3.346 | -18.5 | H | 3.0 | 35.8 | 1.0 | -53.3 | -13.0 | -40.3 | |
| High Ch, 846.6MHz | | | | | | | | | |
| 1.693 | -22.5 | V | 3.0 | 37.3 | 1.0 | -58.8 | -13.0 | -45.8 | |
| 2.539 | -18.8 | V | 3.0 | 36.3 | 1.0 | -54.1 | -13.0 | -41.1 | |
| 3.386 | -18.2 | V | 3.0 | 35.7 | 1.0 | -52.9 | -13.0 | -39.9 | |
| 1.693 | -23.6 | H | 3.0 | 37.3 | 1.0 | -59.9 | -13.0 | -46.9 | |
| 2.539 | -21.7 | H | 3.0 | 36.3 | 1.0 | -57.0 | -13.0 | -44.0 | |
| 3.386 | -18.7 | H | 3.0 | 35.7 | 1.0 | -53.4 | -13.0 | -40.4 | |
| Rev. 03.03.09 | | | | | | | | | |
| Note: No other emissions were detected above the system noise floor. | | | | | | | | | |

Band5
HSDP
A

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
 Project #: 14U16956
 Date: 01/31/14
 Test Engineer: K.Kedida
 Configuration: X Position, AC Charger
 Mode: WCDMA_REL 99_850

Chamber

3m Chamber C

Pre-amplifier

T34 8449B

Filter

Filter 1

Limit

Part 24

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|--------------------------|------------------|-----------------|--------------|-------------|-------------|------------|-------------|------------|-------|
| Low Ch, 826.40MHz | | | | | | | | | |
| 1.652 | -23.4 | V | 3.0 | 37.4 | 1.0 | -59.8 | -13.0 | -46.8 | |
| 2.479 | -20.6 | V | 3.0 | 36.4 | 1.0 | -55.9 | -13.0 | -42.9 | |
| 3.306 | -18.2 | V | 3.0 | 35.8 | 1.0 | -53.0 | -13.0 | -40.0 | |
| Mid Ch, 836.6MHz | | | | | | | | | |
| 1.652 | -24.1 | H | 3.0 | 37.4 | 1.0 | -60.4 | -13.0 | -47.4 | |
| 2.479 | -22.4 | H | 3.0 | 36.4 | 1.0 | -57.8 | -13.0 | -44.8 | |
| 3.306 | -19.5 | H | 3.0 | 35.8 | 1.0 | -54.3 | -13.0 | -41.3 | |
| High Ch, 846.6MHz | | | | | | | | | |
| 1.673 | -22.8 | V | 3.0 | 37.3 | 1.0 | -59.1 | -13.0 | -46.1 | |
| 2.510 | -20.2 | V | 3.0 | 36.4 | 1.0 | -55.5 | -13.0 | -42.5 | |
| 3.346 | -18.9 | V | 3.0 | 35.8 | 1.0 | -53.7 | -13.0 | -40.7 | |
| 1.673 | -24.0 | H | 3.0 | 37.3 | 1.0 | -60.3 | -13.0 | -47.3 | |
| 2.510 | -22.6 | H | 3.0 | 36.4 | 1.0 | -57.9 | -13.0 | -44.9 | |
| 3.346 | -18.3 | H | 3.0 | 35.8 | 1.0 | -53.1 | -13.0 | -40.1 | |
| High Ch, 846.6MHz | | | | | | | | | |
| 1.693 | -23.7 | V | 3.0 | 37.3 | 1.0 | -60.0 | -13.0 | -47.0 | |
| 2.539 | -20.4 | V | 3.0 | 36.3 | 1.0 | -55.8 | -13.0 | -42.8 | |
| 3.386 | -18.6 | V | 3.0 | 35.7 | 1.0 | -53.4 | -13.0 | -40.4 | |
| 1.693 | -23.3 | H | 3.0 | 37.3 | 1.0 | -59.6 | -13.0 | -46.6 | |
| 2.539 | -22.1 | H | 3.0 | 36.3 | 1.0 | -57.4 | -13.0 | -44.4 | |
| 3.386 | -18.0 | H | 3.0 | 35.7 | 1.0 | -52.7 | -13.0 | -39.7 | |

Rev. 03.03.09
 Note: No other emissions were detected above the system noise floor.

Band5
REL99

Compliance Certification Services
Above 1GHz High Frequency Substitution Measurement

Company: Samsung
Project #: 14U16956
Date: 01/31/14
Test Engineer: K.Kedida
Configuration: X Position, AC Charger
Mode: EGPRS 1900

Chamber

3m Chamber C

Pre-amplifier

T343 8449B

Filter

Filter 1

Limit

Part 24

| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|----------------------------|------------------|-----------------|--------------|-------------|-------------|------------|-------------|------------|-------|
| Low Ch, 1850.2MHz | | | | | | | | | |
| 3.700 | -17.7 | V | 3.0 | 35.4 | 1.0 | -52.1 | -13.0 | -39.1 | |
| 5.550 | -11.9 | V | 3.0 | 34.7 | 1.0 | -45.6 | -13.0 | -32.6 | |
| 7.400 | -11.0 | V | 3.0 | 34.9 | 1.0 | -44.9 | -13.0 | -31.9 | |
| 3.700 | -17.4 | H | 3.0 | 35.4 | 1.0 | -51.8 | -13.0 | -38.8 | |
| 5.550 | -13.8 | H | 3.0 | 34.7 | 1.0 | -47.5 | -13.0 | -34.5 | |
| 7.400 | -9.1 | H | 3.0 | 34.9 | 1.0 | -43.0 | -13.0 | -30.0 | |
| Mid Ch, 1880.0MHz | | | | | | | | | |
| 3.760 | -18.0 | V | 3.0 | 35.3 | 1.0 | -52.3 | -13.0 | -39.3 | |
| 5.640 | -13.0 | V | 3.0 | 34.7 | 1.0 | -46.7 | -13.0 | -33.7 | |
| 7.520 | -11.0 | V | 3.0 | 34.9 | 1.0 | -44.9 | -13.0 | -31.9 | |
| 3.760 | -16.7 | H | 3.0 | 35.3 | 1.0 | -51.0 | -13.0 | -38.0 | |
| 5.640 | -10.2 | H | 3.0 | 34.7 | 1.0 | -43.9 | -13.0 | -30.9 | |
| 7.520 | -9.5 | H | 3.0 | 34.9 | 1.0 | -43.4 | -13.0 | -30.4 | |
| High Ch, 1909.8 MHz | | | | | | | | | |
| 3.820 | -17.4 | V | 3.0 | 35.3 | 1.0 | -51.7 | -13.0 | -38.7 | |
| 5.729 | -10.8 | V | 3.0 | 34.7 | 1.0 | -44.6 | -13.0 | -31.6 | |
| 7.640 | -10.6 | V | 3.0 | 35.0 | 1.0 | -44.5 | -13.0 | -31.5 | |
| 3.820 | -17.5 | H | 3.0 | 35.3 | 1.0 | -51.8 | -13.0 | -38.8 | |
| 5.729 | -9.0 | H | 3.0 | 34.7 | 1.0 | -42.8 | -13.0 | -29.8 | |
| 7.640 | -9.3 | H | 3.0 | 35.0 | 1.0 | -43.2 | -13.0 | -30.2 | |

Rev. 03.03.09
 Note: No other emissions were detected above the system noise floor.

GSM1
900
EGPRS

| Compliance Certification Services Above 1GHz High Frequency Substitution Measurement | | | | | | | | | |
|---|---------------------|------------------------|-----------------|----------------|----------------|---------------|----------------|---------------|-------|
| Company: | | Samsung | | | | | | | |
| Project #: | | 14U16956 | | | | | | | |
| Date: | | 01/31/14 | | | | | | | |
| Test Engineer: | | K.Kedida | | | | | | | |
| Configuration: | | X Position, AC Charger | | | | | | | |
| Mode: | | GPRS 1900 | | | | | | | |
| Chamber | | Pre-amplifier | | | Filter | | Limit | | |
| 3m Chamber C | | T343 8449B | | | Filter 1 | | Part 24 | | |
| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| Low Ch, 1850.2MHz | | | | | | | | | |
| 3.700 | -17.4 | V | 3.0 | 35.4 | 1.0 | -51.8 | -13.0 | -38.8 | |
| 5.550 | -10.9 | V | 3.0 | 34.7 | 1.0 | -44.6 | -13.0 | -31.6 | |
| 7.400 | -11.2 | V | 3.0 | 34.9 | 1.0 | -45.1 | -13.0 | -32.1 | |
| 3.700 | -17.8 | H | 3.0 | 35.4 | 1.0 | -52.2 | -13.0 | -39.2 | |
| 5.550 | -9.8 | H | 3.0 | 34.7 | 1.0 | -43.6 | -13.0 | -30.6 | |
| 7.400 | -9.3 | H | 3.0 | 34.9 | 1.0 | -43.2 | -13.0 | -30.2 | |
| Mid Ch, 1880.0MHz | | | | | | | | | |
| 3.760 | -16.6 | V | 3.0 | 35.3 | 1.0 | -50.9 | -13.0 | -37.9 | |
| 5.640 | -9.6 | V | 3.0 | 34.7 | 1.0 | -43.3 | -13.0 | -30.3 | |
| 7.520 | -10.7 | V | 3.0 | 34.9 | 1.0 | -44.6 | -13.0 | -31.6 | |
| 3.760 | -15.4 | H | 3.0 | 35.3 | 1.0 | -49.7 | -13.0 | -36.7 | |
| 5.640 | -9.2 | H | 3.0 | 34.7 | 1.0 | -42.9 | -13.0 | -29.9 | |
| 7.520 | -8.3 | H | 3.0 | 34.9 | 1.0 | -42.2 | -13.0 | -29.2 | |
| High Ch, 1909.8 MHz | | | | | | | | | |
| 3.820 | -16.7 | V | 3.0 | 35.3 | 1.0 | -51.0 | -13.0 | -38.0 | |
| 5.729 | -9.4 | V | 3.0 | 34.7 | 1.0 | -43.1 | -13.0 | -30.1 | |
| 7.640 | -10.0 | V | 3.0 | 35.0 | 1.0 | -44.0 | -13.0 | -31.0 | |
| 3.820 | -15.8 | H | 3.0 | 35.3 | 1.0 | -50.1 | -13.0 | -37.1 | |
| 5.729 | -8.1 | H | 3.0 | 34.7 | 1.0 | -41.8 | -13.0 | -28.8 | |
| 7.640 | -8.9 | H | 3.0 | 35.0 | 1.0 | -42.9 | -13.0 | -29.9 | |
| Rev. 03.03.09 | | | | | | | | | |
| Note: No other emissions were detected above the system noise floor. | | | | | | | | | |

GSM1
900

GPRS

| Compliance Certification Services | | | | | | | | | |
|--|------------------|------------------------|--------------|-------------|-------------|------------|-------------|------------|-------|
| Above 1GHz High Frequency Substitution Measurement | | | | | | | | | |
| Company: | | Samsung | | | | | | | |
| Project #: | | 14U16956 | | | | | | | |
| Date: | | 01/31/14 | | | | | | | |
| Test Engineer: | | K.Kedida | | | | | | | |
| Configuration: | | X Position, AC Charger | | | | | | | |
| Mode: | | EGPRS 850 | | | | | | | |
| Chamber | | Pre-amplifier | | | Filter | | Limit | | |
| 3m Chamber | | T34 8449B | | | Filter 1 | | Part 24 | | |
| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| GSM8 | | | | | | | | | |
| 50 | | | | | | | | | |
| EGPRS | | | | | | | | | |
| S | | | | | | | | | |
| Low Ch, 824.2MHz | | | | | | | | | |
| 1.648 | -22.9 | V | 3.0 | 37.4 | 1.0 | -59.3 | -13.0 | -46.3 | |
| 2.473 | -20.5 | V | 3.0 | 36.4 | 1.0 | -55.9 | -13.0 | -42.9 | |
| 3.297 | -19.0 | V | 3.0 | 35.8 | 1.0 | -53.8 | -13.0 | -40.8 | |
| 1.648 | -23.9 | H | 3.0 | 37.4 | 1.0 | -60.3 | -13.0 | -47.3 | |
| 2.473 | -22.6 | H | 3.0 | 36.4 | 1.0 | -58.0 | -13.0 | -45.0 | |
| 3.297 | -19.0 | H | 3.0 | 35.8 | 1.0 | -53.8 | -13.0 | -40.8 | |
| Mid Ch, 836.6MHz | | | | | | | | | |
| 1.673 | -23.4 | V | 3.0 | 37.3 | 1.0 | -59.8 | -13.0 | -46.8 | |
| 2.510 | -20.0 | V | 3.0 | 36.4 | 1.0 | -55.3 | -13.0 | -42.3 | |
| 3.346 | -19.0 | V | 3.0 | 35.8 | 1.0 | -53.8 | -13.0 | -40.8 | |
| 1.673 | -23.1 | H | 3.0 | 37.3 | 1.0 | -59.4 | -13.0 | -46.4 | |
| 2.510 | -22.3 | H | 3.0 | 36.4 | 1.0 | -57.6 | -13.0 | -44.6 | |
| 3.346 | -19.3 | H | 3.0 | 35.8 | 1.0 | -54.1 | -13.0 | -41.1 | |
| High Ch, 848.8MHz | | | | | | | | | |
| 1.698 | -22.9 | V | 3.0 | 37.3 | 1.0 | -59.2 | -13.0 | -46.2 | |
| 2.547 | -19.7 | V | 3.0 | 36.3 | 1.0 | -55.1 | -13.0 | -42.1 | |
| 3.395 | -17.8 | V | 3.0 | 35.7 | 1.0 | -52.5 | -13.0 | -39.5 | |
| 1.698 | -22.2 | H | 3.0 | 37.3 | 1.0 | -58.5 | -13.0 | -45.5 | |
| 2.547 | -22.4 | H | 3.0 | 36.3 | 1.0 | -57.8 | -13.0 | -44.8 | |
| 3.395 | -18.4 | H | 3.0 | 35.7 | 1.0 | -53.1 | -13.0 | -40.1 | |
| Rev. 03.03.09 | | | | | | | | | |
| Note: No other emissions were detected above the system noise floor. | | | | | | | | | |

| Compliance Certification Services | | | | | | | | | |
|--|------------------|------------------------|--------------|-------------|---------------|------------|--------------|------------|-------|
| Above 1GHz High Frequency Substitution Measurement | | | | | | | | | |
| Company: | | Samsung | | | | | | | |
| Project #: | | 14U16956 | | | | | | | |
| Date: | | 01/31/14 | | | | | | | |
| Test Engineer: | | K.Kedida | | | | | | | |
| Configuration: | | X Position, AC Charger | | | | | | | |
| Mode: | | GPRS 850 | | | | | | | |
| Chamber | | Pre-amplifer | | | Filter | | Limit | | |
| 3m Chamber | | T34 8449B | | | Filter 1 | | Part 24 | | |
| f GHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
| GSM8 | | | | | | | | | |
| 50 | | | | | | | | | |
| GPRS | | | | | | | | | |
| Low Ch, 824.2MHz | | | | | | | | | |
| 1.648 | -20.2 | V | 3.0 | 37.4 | 1.0 | -56.6 | -13.0 | -43.6 | |
| 2.473 | -19.7 | V | 3.0 | 36.4 | 1.0 | -55.1 | -13.0 | -42.1 | |
| 3.297 | -18.9 | V | 3.0 | 35.8 | 1.0 | -53.7 | -13.0 | -40.7 | |
| 1.648 | -19.1 | H | 3.0 | 37.4 | 1.0 | -55.5 | -13.0 | -42.5 | |
| 2.473 | -19.9 | H | 3.0 | 36.4 | 1.0 | -55.2 | -13.0 | -42.2 | |
| 3.297 | -19.0 | H | 3.0 | 35.8 | 1.0 | -53.8 | -13.0 | -40.8 | |
| Mid Ch, 836.6MHz | | | | | | | | | |
| 1.673 | -21.3 | V | 3.0 | 37.3 | 1.0 | -57.6 | -13.0 | -44.6 | |
| 2.510 | -17.8 | V | 3.0 | 36.4 | 1.0 | -53.1 | -13.0 | -40.1 | |
| 3.346 | -18.1 | V | 3.0 | 35.8 | 1.0 | -52.9 | -13.0 | -39.9 | |
| 1.673 | -21.4 | H | 3.0 | 37.3 | 1.0 | -57.7 | -13.0 | -44.7 | |
| 2.510 | -20.7 | H | 3.0 | 36.4 | 1.0 | -56.0 | -13.0 | -43.0 | |
| 3.346 | -18.9 | H | 3.0 | 35.8 | 1.0 | -53.7 | -13.0 | -40.7 | |
| High Ch, 848.8MHz | | | | | | | | | |
| 1.698 | -21.6 | V | 3.0 | 37.3 | 1.0 | -57.9 | -13.0 | -44.9 | |
| 2.547 | -19.2 | V | 3.0 | 36.3 | 1.0 | -54.5 | -13.0 | -41.5 | |
| 3.395 | -18.3 | V | 3.0 | 35.7 | 1.0 | -53.0 | -13.0 | -40.0 | |
| 1.698 | -22.4 | H | 3.0 | 37.3 | 1.0 | -58.7 | -13.0 | -45.7 | |
| 2.547 | -21.2 | H | 3.0 | 36.3 | 1.0 | -56.5 | -13.0 | -43.5 | |
| 3.395 | -18.9 | H | 3.0 | 35.7 | 1.0 | -53.6 | -13.0 | -40.6 | |
| Rev. 03.03.09 | | | | | | | | | |
| Note: No other emissions were detected above the system noise floor. | | | | | | | | | |