# CERTIFICATION CLASS II PERMISSIVE CHANGE TEST REPORT

**Report Number. :** 12441959-E1V1

| | | |
|---|---|---|
| **Applicant** | : | HONEYWELL INTERNATIONAL INC.<br>9680 OLD BAILES ROAD<br>FORT MILL, SOUTH CARILINA 29715<br>U.S.A |
| **Model** | : | CT50LFN |
| **FCC ID** | : | HD5-CT50LFN |
| **EUT Description** | : | Dolphin CT50 |
| **Test Standard(s)** | : | FCC CFR47 PART 22H, 24E<br>IC RSS-132 ISSUE 3, RSS-133 ISSUE 6 |

**Date Of Issue:**
OCTOBER 03, 2018

**Prepared by:**
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NVLAP LAB CODE 200065-0

Revision History

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| V1 | 10/03/2018 | Initial Issue | Chin Pang |
| | | | |

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# 1. ATTESTATION OF TEST RESULTS

| | |
|---|---|
| Applicant Name and Address | HONEYWELL INTERNATIONAL IN.<br>9680 OLD BAOLES ROAD<br>FORT MILL, SOUTH CAROLINA 29715, U.S.A |
| Model | CT50LFN |
| FCC ID | HD5-CT50LFN |
| EUT Description | Dolphin CT50 |
| Serial Number | 1629940712 (Conducted); 16299407C7(Radiated); |
| Date Tested | SEPTEMBER 19-21, 2018 |
| Applicable Standards | FCC CFR 47 Part 22H, 24E<br>IC RSS-132 ISSUE 3, RSS-133 ISSUE 6 |
| Test Results | COMPLIES |

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 (NIST Handbook 150, Annex A). This report is written to support regulatory compliance of the applicable standards stated above.

| Approved & Released By: | Prepared By: |
|---|---|
|  |  |
| Chin Pang<br>Senior Test Engineer<br>UL Verification Services Inc. | Gabriel Mendez<br>Laboratory Engineer<br>UL Verification Services Inc. |

# 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, Part 22, Part 24, FCC KDB 971168 D01 v03r01/ D02 v02r01, and FCC KDB 412172 D01 Determining ERP and EIRP v01r01. ANSI C63.26:2015, IC RSS-132 and RSS-133.

# 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, Fremont, California, USA. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

| 47173 Benicia Street | 47266 Benicia Street |
|---|---|
| ☐ Chamber A (IC:2324B-1) | ☐ Chamber D (IC:22541-1) |
| ☐ Chamber B (IC:2324B-2) | ☒ Chamber E (IC:22541-2) |
| ☐ Chamber C (IC:2324B-3) | ☐ Chamber F (IC:22541-3) |
| | ☐ Chamber G (IC:22541-4) |
| | ☐ Chamber H (IC:22541-5) |

The above test sites and facilities are covered under FCC Test Firm Registration # 208313.
UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at NVLAP Lab Search.

# 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:
Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

## 4.3. MEASUREMENT UNCERTAINTY

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

| PARAMETER | UNCERTAINTY |
|---|---|
| Conducted Disturbance, 9KHz to 0.15 MHz | 3.84 dB |
| Conducted Disturbance, 0.15 to 30 MHz | 3.65 dB |
| Radiated Disturbance, 9KHz to 30 MHz | 3.15 dB |
| Radiated Disturbance, 30 to 1000 MHz | 5.36 dB |
| Radiated Disturbance,1000 to 18000 MHz | 4.32 dB |
| Radiated Disturbance,18000 to 26000 MHz | 4.45 dB |
| Radiated Disturbance,26000 to 40000 MHz | 5.24 dB |
| Occupied Channel Bandwidth | ±0.39 % |
| Temperature | ±0.9 °C |
| Supply voltages | ±0.45 % |
| Time | ±0.02 % |

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

# 5. EQUIPMENT UNDER TEST

## 5.1. DESCRIPTION OF EUT

The EUT is a Dolphin CT50 mobile computer. (Terminal)

## 5.2. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The change filed under this application is the addition of CDMA200, BC0 and BC1.

## 5.3. MAXIMUM OUTPUT POWER

**ERP/EIRP LIMIT**

FCC: §2.1046, §22.913, §24.232, §27.50 and §90.635
IC: RSS132§5.4; RSS133§6.4 and RSS139§6.5.

**EIRP/ERP TEST PROCEDURE**

ANSI C63.26:2015/ KDB 971168 D01 Section 5.6

ERP/EIRP = PMeas + GT − LC
where: ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as PMeas, typically dBW or dBm);
PMeas = measured transmitter output power or PSD, in dBm or dBW;
GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);
LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

For devices utilizing multiple antennas, KDB 662911 provides guidance for determining the effective array transmit antenna gain term to be used in the above equation.

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

**CDMA MODES**

**Part 22 BC0**

| Frequency range (MHz) | Modulation | Conducted (Average) (dBm) | Antenna Gain (dBi) | Limit (W) | ERP | | 99% BW (kHz) | Emission Designator |
|---|---|---|---|---|---|---|---|---|
| | | | | | (dBm) | (W) | | |
| 824-849 | 1xRTT | 23.47 | 0.70 | 7.0 | 22.02 | 0.159 | 1274 | 1M27F9W |
| | 1xEV-DO Rev A | 23.41 | | | 21.96 | 0.157 | 1271 | 1M27F9W |

**Part 24 / RSS 133 BC1**

| Frequency range (MHz) | Modulation | Conducted (Average) (dBm) | Antenna Gain (dBi) | Limit (W) | EIRP | | 99% BW (kHz) | Emission Designator |
|---|---|---|---|---|---|---|---|---|
| | | | | | (dBm) | (W) | | |
| 1850-1910 | 1xRTT | 23.56 | 1.70 | 2.0 | 25.26 | 0.336 | 1281 | 1M28F9W |
| | 1xEV-DO Rev A | 23.40 | | | 25.10 | 0.324 | 1274 | 1M27F9W |

## 5.4. MAXIMUM ANTENNA GAIN

| Frequency (MHz) | Antenna Gain (dBi) |
|---|---|
| 824 - 849 | 0.7 |
| 1850 - 1910 | 1.7 |

## 5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case is EUT on the highest power. Based on Average Power measurement investigations, the following modes should be considered as worst-case scenario for all other measurements.

Worst-case modes:
- CDMA 2000 1xRTT
- CDMA 2000 EVDO REV. 0

The EUT was investigated in three orthogonal orientations X/Y/Z. It was determined that Z (Portrait) orientation was the worst-case orientation for BC0 and Y (Landscape) orientation for BC1.

Radiated spurious emissions were investigated below 30MHz, 30MHz-1GHz and above 1GHz. There were no emissions found on below 30MHz and 30MHz-1GHz below 20dB of the limit.

## 5.6. DESCRIPTION OF TEST SETUP

**SUPPORT EQUIPMENT**

N/A

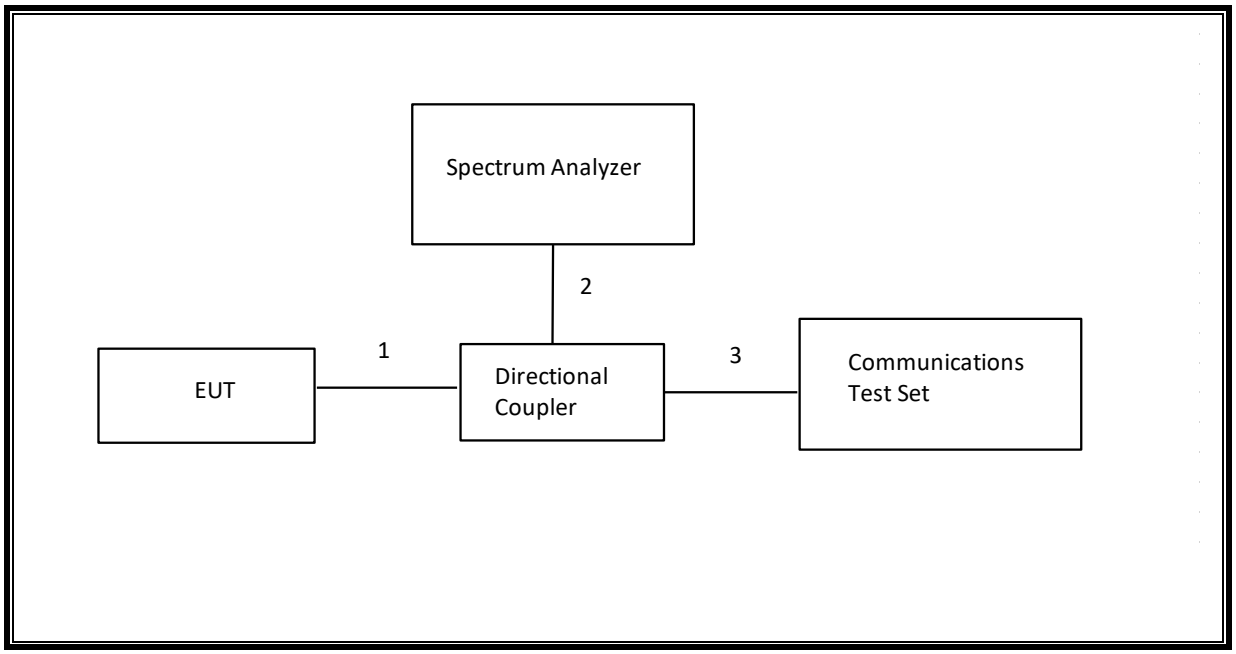
**I/O CABLES (RF Conducted Test)**

| I/O Cable List | | | | | | |
|---|---|---|---|---|---|---|
| Cable No | Port | # of identical ports | Connector Type | Cable Type | Cable Length (m) | Remarks |
| 1 | SMA | 1 | directional coupler | Un-shielded | 0.1m | N/A |
| 2 | SMA | 1 | Spectrum Analyzer | Un-shielded | None | N/A |
| 3 | RF In/Out | 1 | Call Box | Un-shielded | 1m | N/A |

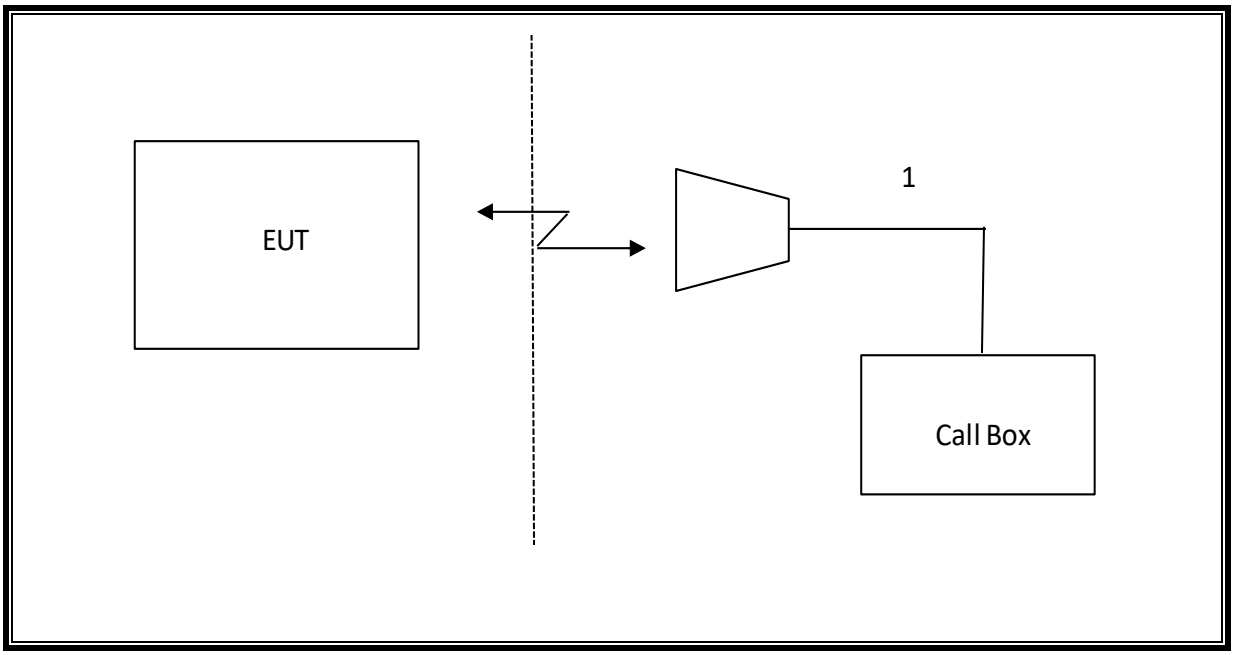
**I/O CABLES (RF Radiated Test)**

| I/O Cable List | | | | | | |
|---|---|---|---|---|---|---|
| Cable No | Port | # of identical ports | Connector Type | Cable Type | Cable Length (m) | Remarks |
| 1 | RF In/Out | 1 | Antenna | Un-shielded | 5m | NA |

**CONDUCTED SETUP**




**RADIATED 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** |
| Antenna, Horn 1-18GHz | ETS Lindgren | 3117 | T712 | 02/08/2019 |
| Antenna, Broadband Hybrid, 30MHz to 2000MHz | Sunol Sciences | JB3 | T899 | 07/24/2019 |
| Amplifier, 1 to 18GHz | Miteq | AFS42-00101800-25-S-42 | T1131 | 12/30/2018 |
| Amplifier, 10KHz to 1GHz, 32dB | Sonoma | 310N | T285 | 07/06/2019 |
| Spectrum Analyzer, PXA 3Hz to 44GHz | Keysight | N9030A | T907 | 02/07/2019 |
| Filter, HPF 1.2GHz | MICROTRONICS | WHKX1.2/15G-6ST | T1182 | 05/19/2019 |
| Filter, HPF 3.0GHz | MICROTRONICS | HPM17543 | T487 | 12/04/2018 |
| Power Meter, P-series single channel | Keysight | N1912A | T1272 | 05/01/2019 |
| Power Sensor | Keysight | N1921A | T1225 | 04/10/2019 |
| Chamber, Environmental | Cincinnati Sub Zero | ZPHS-8-3.5-SCT/WC | T1154 | 02/28/2019 |
| Spectrum Analyzer, PSA, 3Hz to 44GHz | Agilent Technologies | E4446A | T99 | 06/27/2019 |
| Directional Coupler | KRYTAR | 152610 | T1536 | 04/27/2019 |
| Wideband Communication Test Set, Call Box | Rohde & Schwarz | CMW500 | T959 | 02/17/2019 |
| Antenna, Active Loop 9KHz to 30MHz | ETS-Lindgren | 6502 | T35 | 12/15/2018 |
| | | | | |
| CLT Software | UL | UL RF | Ver 1.7, November 2015 | |
| Power Measurement Software | UL | UL RF | Ver 2.2, June 2017 | |

# 7. RF OUTPUT POWER VERIFICATION

EUT includes different power levels for head use configuration and body use configuration and the below tables contain the highest of all configurations average conducted output powers as follows:

**RESULT**

## 7.1. CDMA

Maximum output power is verified on the Low, Middle and High channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E for 1xRTT, section 3.1.2.3.4 of 3GPP2 C.S0033-0/TIA-866 for Rel. 0 and section 4.3.4 of 3GPP2 C.S0033-A for Rev. A

**1xRTT**

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

| Application | Rev, License |
|---|---|
| CDMA2000 Mobile Test | B.15.18, L |

- Protocol Rev > 6 (IS-2000-0)
- System ID: 139; NID: 65535, Reg. Ch. #.: 384 for Cell(Version), 600 for PCS(Sprint) 525
- Radio Config (RC) > RC1 or RC3
- Service Option (SO) Setup > SO55 or SO32
- Traffic Data Rate > Full
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

**1xEV-DO - Release 0 (REL 0)**

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

EVDO Release 0 - RTAP

- Call Setup > Shift & Preset
- Call Control:
  - Access Network Info > Cell Parameters > Sector ID > 00800580:0:0:1 > Subnet Mask > 0
  - PCS (Sprint): Channel 525, Sector ID=00840AC0:0:0:1
- Call Parms:
  - Cell Power > -105.5 dBm/1.23 MHz
  - Channel > (Enter channel number)
  - Application Config > Enhanced Test Application Protocol > RTAP
  - RTAP Rate > 153.6 kbps
  - Rvs Power Ctrl > Active bits
  - Protocol Rel > 0 (1xEV-DO)
- Press “Start Data Connection” when “Session Open” appear in “Active Cell”
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

EVDO Release 0 - FTAP

- Call Setup > Shift & Preset
- Call Control:
  - Access Network Info > Cell Parameters > Sector ID > 00800580:0:0:1 > Subnet Mask > 0
  - PCS (Sprint): Channel 525, Sector ID=00840AC0:0:0:1
- Call Parms:
  - Cell Power > -105.5 dBm/1.23 MHz
  - Cell Band > (Select US Cellular or US PCS)
  - Channel > (Enter channel number)
  - Application Config > Enhanced Test Application Protocol > FTAP (default)
  - FTAP Rate > 307.2 kbps (2 Slot, QPSK)
  - Rvs Power Ctrl > Active bits
  - Protocol Rel > 0 (1xEV-DO)
- Press “Start Data Connection” when “Session Open” appear in “Active Cell”

**Rvs Power Ctrl > All Up bits (Maximum TxPout)1xEV-DO - Revision A (REV A)**

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

| Application | Rev, License |
|---|---|
| 1xEV-DO Terminal Test | A.09.13 |

EVDO Rev. A – RETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > RETAP
- R-Data Pkt Size > 4096
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2
  - PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
  - Access Network Info > Cell Parameters, Sector ID > 00800580:0:0:1, Subnet Mask > 0
  - PCS (Sprint): Channel 525, Sector ID=00840AC0:0:0:1
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots
  - ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

EVDO Rev. A - FETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > FETAP
- F-Traffic Format > 4 (1024, 2,128) Canonical (307.2k, QPSK)
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2
  - PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Access Network Info > Cell Parameters, Sector ID > 00800580:0:0:1, Subnet Mask >0
- PCS (Sprint): Channel 525, Sector ID=00840AC0:0:0:1
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots
  - ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

**RESULT**

## 7.1.1. CDMA BC0

| ID: | 30606 | Date: | 9/19/18 |
|---|---|---|---|

| Band | Mode | Radio Configuration (RC) | Service Option (SO) | Ch No. | Freq. (MHz) | Average Power (dBm) |
|---|---|---|---|---|---|---|
| BC0 (850MHz) | 1xRTT | RC1 | 2 (Loopback) | 1013 | 824.70 | 23.39 |
| | | | | 384 | 836.52 | 23.38 |
| | | | | 777 | 848.31 | **23.47** |
| | | | 55 (Loopback) | 1013 | 824.70 | 23.38 |
| | | | | 384 | 836.52 | 23.36 |
| | | | | 777 | 848.31 | 23.39 |
| | | RC2 | 9 (Loopback) | 1013 | 824.70 | 23.40 |
| | | | | 384 | 836.52 | 23.36 |
| | | | | 777 | 848.31 | 23.39 |
| | | | 55 (Loopback) | 1013 | 824.70 | 23.41 |
| | | | | 384 | 836.52 | 23.39 |
| | | | | 777 | 848.31 | 23.36 |
| | | RC3 | 2 (Loopback) | 1013 | 824.70 | 23.43 |
| | | | | 384 | 836.52 | 23.40 |
| | | | | 777 | 848.31 | 23.36 |
| | | | 55 (Loopback) | 1013 | 824.70 | 23.41 |
| | | | | 384 | 836.52 | 23.39 |
| | | | | 777 | 848.31 | 23.33 |
| | | | 32 (+ F-SCH) | 1013 | 824.70 | 23.41 |
| | | | | 384 | 836.52 | 23.31 |
| | | | | 777 | 848.31 | 23.31 |
| | | | 32 (+ SCH) | 1013 | 824.70 | 23.40 |
| | | | | 384 | 836.52 | 23.33 |
| | | | | 777 | 848.31 | 23.32 |
| | | RC4 | 2 (Loopback) | 1013 | 824.70 | 23.39 |
| | | | | 384 | 836.52 | 23.32 |
| | | | | 777 | 848.31 | 23.31 |
| | | | 55 (Loopback) | 1013 | 824.70 | 23.35 |
| | | | | 384 | 836.52 | 23.36 |
| | | | | 777 | 848.31 | 23.34 |
| | | | 32 (+ F-SCH) | 1013 | 824.70 | 23.41 |
| | | | | 384 | 836.52 | 23.39 |
| | | | | 777 | 848.31 | 23.41 |
| | | | 32 (+ SCH) | 1013 | 824.70 | 23.39 |
| | | | | 384 | 836.52 | 23.41 |
| | | | | 777 | 848.31 | 23.42 |
| | | RC5 | 9 (Loopback) | 1013 | 824.70 | 23.42 |
| | | | | 384 | 836.52 | 23.33 |
| | | | | 777 | 848.31 | 23.33 |
| | | | 55 (Loopback) | 1013 | 824.70 | 23.38 |
| | | | | 384 | 836.52 | 23.33 |
| | | | | 777 | 848.31 | 23.35 |
| | 1xAdvanced | RC11 | 2 (Loopback) | 1013 | 824.70 | 23.37 |
| | | | | 384 | 836.52 | 23.31 |
| | | | | 777 | 848.31 | 23.35 |
| | | | 75 (Loopback) | 1013 | 824.70 | 23.39 |
| | | | | 384 | 836.52 | 23.31 |
| | | | | 777 | 848.31 | 23.33 |
| | | | 32 (+ F-SCH) | 1013 | 824.70 | 23.37 |
| | | | | 384 | 836.52 | 23.35 |
| | | | | 777 | 848.31 | 23.36 |
| | | | 32 (+ SCH) | 1013 | 824.70 | 23.39 |
| | | | | 384 | 836.52 | 23.37 |
| | | | | 777 | 848.31 | 23.33 |
| | 1xEVDO Rel. 0 | FTAP Rate: 307.2 kbps(2 slot, QPSK) | RTAP Rate: 153.6 kbps | 1013 | 824.70 | **23.41** |
| | | | | 384 | 836.52 | 23.38 |
| | | | | 777 | 848.31 | 23.38 |
| | 1xEVDO Rev. A | FETAP: 307.2k, QPSK/ ACK | RETAP: 4096 | 1013 | 824.70 | 23.40 |
| | | | | 384 | 836.52 | 23.33 |
| | | | | 777 | 848.31 | 23.33 |

## 7.1.2. CDMA BC1

| ID: | 30606 | Date: | 9/19/18 |
|---|---|---|---|

| Band | Mode | Radio Configuration (RC) | Service Option (SO) | Ch No. | Freq. (MHz) | Average Power (dBm) |
|---|---|---|---|---|---|---|
| BC1 (1900MHz) | 1xRTT | RC1 | 2 (Loopback) | 25 | 1851.25 | 23.44 |
| | | | | 600 | 1880.00 | 23.45 |
| | | | | 1175 | 1908.75 | 23.55 |
| | | | 55 (Loopback) | 25 | 1851.25 | 23.47 |
| | | | | 600 | 1880.00 | 23.51 |
| | | | | 1175 | 1908.75 | **23.56** |
| | | RC2 | 9 (Loopback) | 25 | 1851.25 | 23.45 |
| | | | | 600 | 1880.00 | 23.55 |
| | | | | 1175 | 1908.75 | 23.54 |
| | | | 55 (Loopback) | 25 | 1851.25 | 23.44 |
| | | | | 600 | 1880.00 | 23.53 |
| | | | | 1175 | 1908.75 | 23.48 |
| | | RC3 | 2 (Loopback) | 25 | 1851.25 | 23.41 |
| | | | | 600 | 1880.00 | 23.45 |
| | | | | 1175 | 1908.75 | 23.39 |
| | | | 55 (Loopback) | 25 | 1851.25 | 23.44 |
| | | | | 600 | 1880.00 | 23.45 |
| | | | | 1175 | 1908.75 | 23.33 |
| | | | 32 (+ F-SCH) | 25 | 1851.25 | 23.42 |
| | | | | 600 | 1880.00 | 23.46 |
| | | | | 1175 | 1908.75 | 23.51 |
| | | | 32 (+ SCH) | 25 | 1851.25 | 23.44 |
| | | | | 600 | 1880.00 | 23.41 |
| | | | | 1175 | 1908.75 | 23.36 |
| | | RC4 | 2 (Loopback) | 25 | 1851.25 | 23.37 |
| | | | | 600 | 1880.00 | 23.43 |
| | | | | 1175 | 1908.75 | 23.42 |
| | | | 55 (Loopback) | 25 | 1851.25 | 23.39 |
| | | | | 600 | 1880.00 | 23.37 |
| | | | | 1175 | 1908.75 | 23.36 |
| | | | 32 (+ F-SCH) | 25 | 1851.25 | 23.36 |
| | | | | 600 | 1880.00 | 23.40 |
| | | | | 1175 | 1908.75 | 23.41 |
| | | | 32 (+ SCH) | 25 | 1851.25 | 23.41 |
| | | | | 600 | 1880.00 | 23.51 |
| | | | | 1175 | 1908.75 | 23.49 |
| | | RC5 | 9 (Loopback) | 25 | 1851.25 | 23.37 |
| | | | | 600 | 1880.00 | 23.43 |
| | | | | 1175 | 1908.75 | 23.36 |
| | | | 55 (Loopback) | 25 | 1851.25 | 23.47 |
| | | | | 600 | 1880.00 | 23.42 |
| | | | | 1175 | 1908.75 | 23.33 |
| | 1xAdvanced | RC11 | 2 (Loopback) | 25 | 1851.25 | 23.31 |
| | | | | 600 | 1880.00 | 23.36 |
| | | | | 1175 | 1908.75 | 23.38 |
| | | | 75 (Loopback) | 25 | 1851.25 | 23.43 |
| | | | | 600 | 1880.00 | 23.43 |
| | | | | 1175 | 1908.75 | 23.39 |
| | | | 32 (+ F-SCH) | 25 | 1851.25 | 23.41 |
| | | | | 600 | 1880.00 | 23.42 |
| | | | | 1175 | 1908.75 | 23.40 |
| | | | 32 (+ SCH) | 25 | 1851.25 | 23.39 |
| | | | | 600 | 1880.00 | 23.37 |
| | | | | 1175 | 1908.75 | 23.37 |
| | 1xEVDO Rel. 0 | FTAP Rate: 307.2 kbps(2 slot, QPSK) | RTAP Rate: 153.6 kbps | 25 | 1851.25 | **23.40** |
| | | | | 600 | 1880 | 23.39 |
| | | | | 1175 | 1908.75 | 23.37 |
| | 1xEVDO Rev. A | FETAP: 307.2k, QPSK/ ACK | RETAP: 4096 | 25 | 1851.25 | 23.33 |
| | | | | 600 | 1880 | 23.38 |
| | | | | 1175 | 1908.75 | 23.33 |

# 8. CONDUCTED TEST RESULTS

## 8.1. OCCUPIED BANDWIDTH

**RULE PART(S)**

FCC: §2.1049
IC: RSS132; RSS133§2.3

**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 middle channel in each band. The 99% and -26dB bandwidths was also measured and recorded.

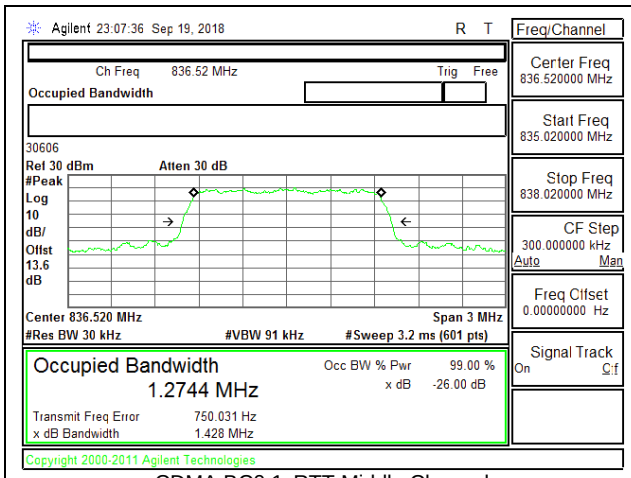
**RESULTS**

There is no limit required and power is the same for low, middle and high channel; therefore, only middle channel was tested.

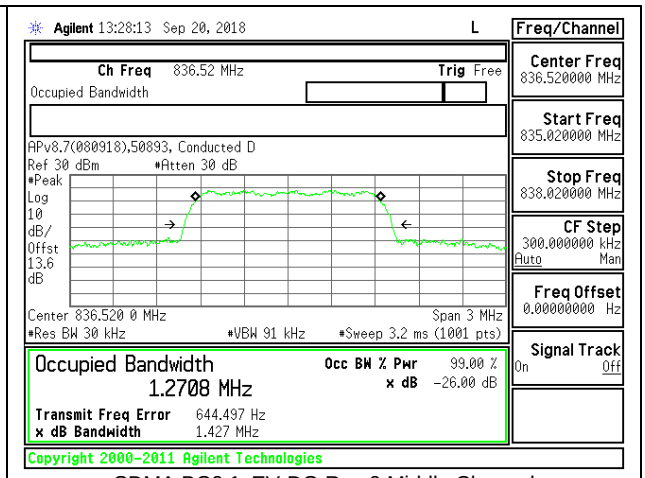
**CDMA**

| Band | Modulation | Channel | f(MHz) | 99% BW (MHz) | -26dB BW (MHz) |
|---|---|---|---|---|---|
| BC0 | 1xRTT | 384 | 836.5 | 1.2744 | 1.428 |
| | 1xEV-DO Rev 0 | | | 1.2708 | 1.427 |
| BC1 | 1xRTT | 600 | 1880.0 | 1.2810 | 1.435 |
| | 1xEV-DO Rev 0 | | | 1.2743 | 1.432 |

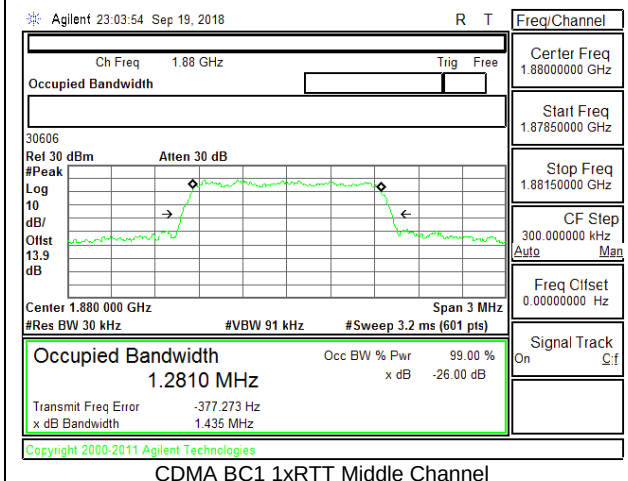
**CDMA**



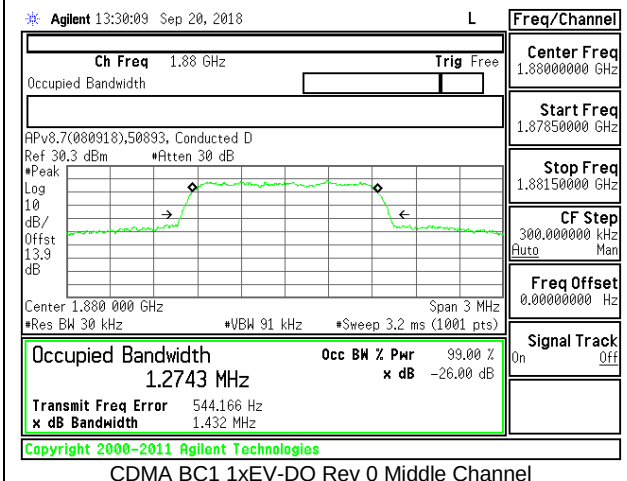

CDMA BC0 1xRTT Middle Channel




CDMA BC0 1xEV-DO Rev 0 Middle Channel




CDMA BC1 1xRTT Middle Channel




CDMA BC1 1xEV-DO Rev 0 Middle Channel

## 8.2. BAND EDGE AND EMISSION MASK

### RULE PART(S)

FCC: §2.1051, §22.917, §24.238
IC: RSS132§5.5; RSS133§6.5

### LIMITS

FCC: §22.917, §24.238
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.

RSS132§5.5
Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

(i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P ( dBW) by at least 43 + 10 log10p (watts).

(ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least43 + 10 log10 p (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

RSS133§6.5
Equipment shall comply with the limits in (i) and (ii) below.

(i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p(watts).

(ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p (watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

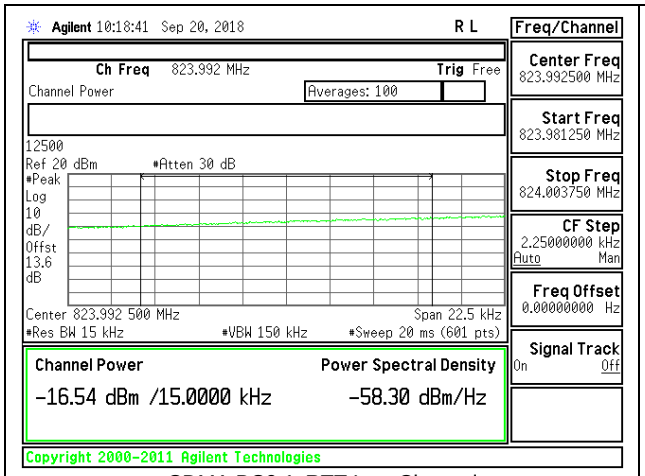
### TEST PROCEDURE

The transmitter output was connected to a R&S 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:

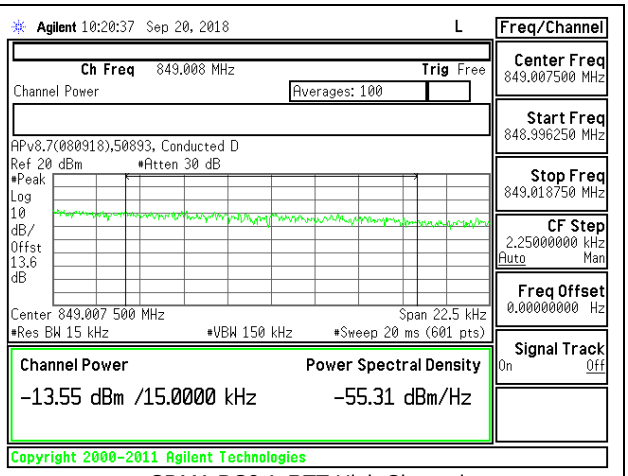
- Set the spectrum analyzer span to include the block edge frequency.
- Set a marker to point the corresponding band edge frequency in each test case.
- Set display line at -13 dBm
- Set resolution bandwidth to at least 1% of emission bandwidth.

### RESULTS

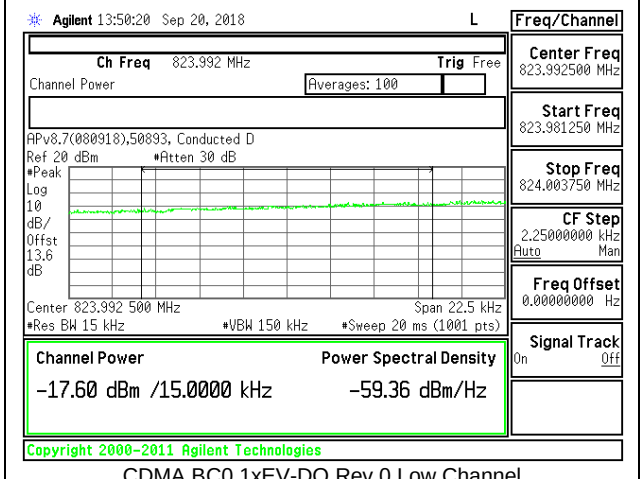
## 8.2.1. CDMA BC0



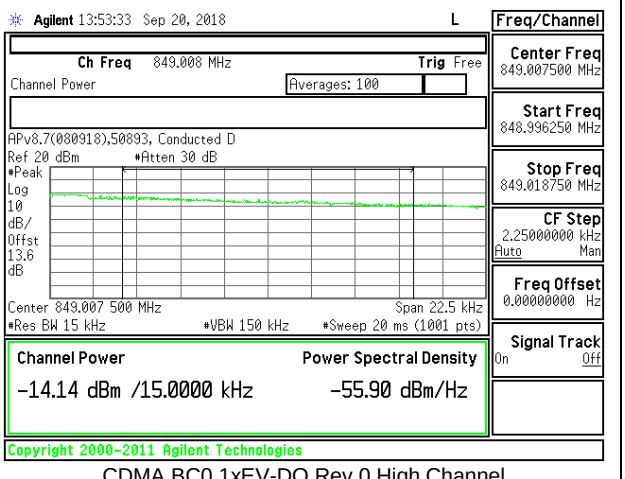
CDMA BC0 1xRTT Low Channel



CDMA BC0 1xRTT High Channel

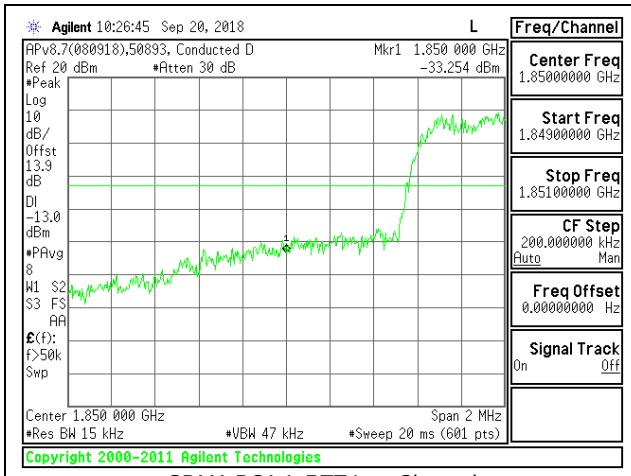


CDMA BC0 1xEV-DO Rev 0 Low Channel

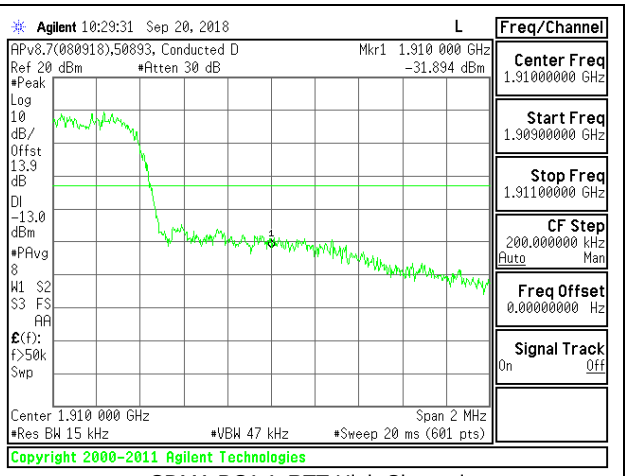


CDMA BC0 1xEV-DO Rev 0 High Channel

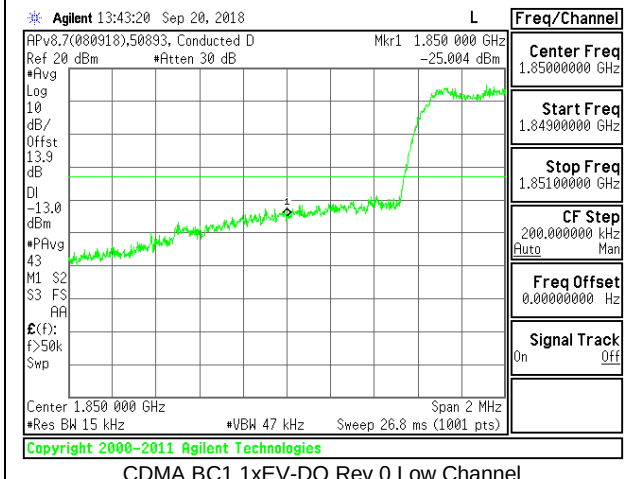
## 8.2.2. CDMA BC1



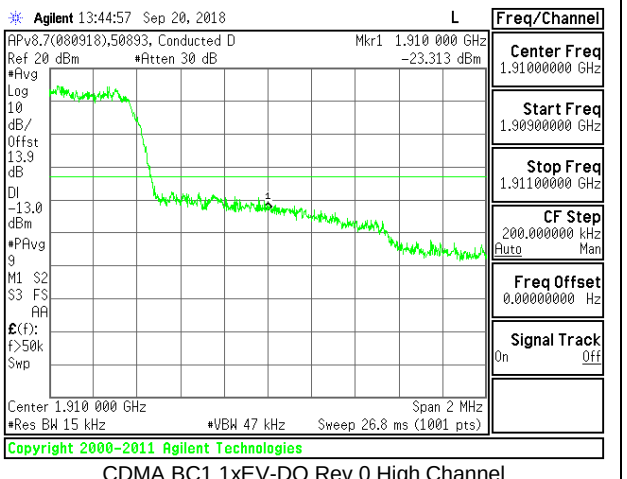

CDMA BC1 1xRTT Low Channel




CDMA BC1 1xRTT High Channel




CDMA BC1 1xEV-DO Rev 0 Low Channel




CDMA BC1 1xEV-DO Rev 0 High Channel

## 8.3. OUT OF BAND EMISSIONS

### RULE PART(S)

FCC: §2.1051, §22.917, §24.238
IC: RSS132§5.5; RSS133§6.5

### LIMITS

FCC: §22.917, §24.238,
The minimum permissible attenuation level of any spurious emissions is 43 + 10 log (P) dB where transmitting power (P) in Watts.

RSS132§5.5, RSS133§6.5
The minimum permissible attenuation level of any spurious emissions is 43 + 10 log (P) dB where transmitting power (P) in Watts.

### TEST PROCEDURE

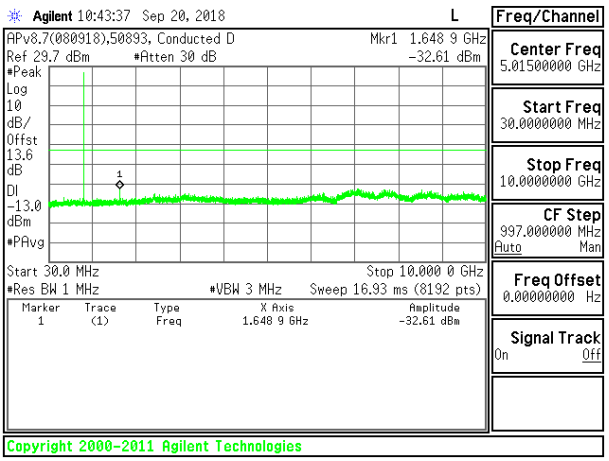
The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case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

For each out of band emissions measurement:

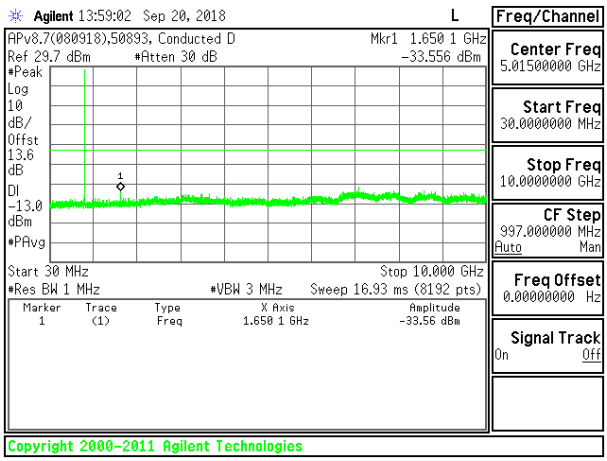
- Set display line at -13 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz. (NOTE: Worst case set RBW/VBW to 1MHz/3MHz)

### RESULTS

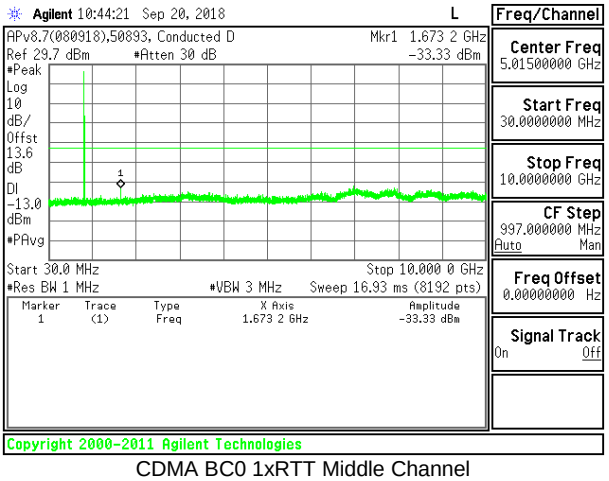
## 8.3.1. CDMA BC0



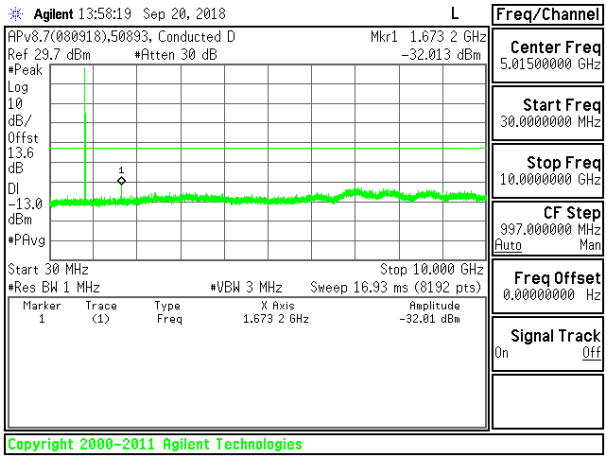
CDMA BC0 1xRTT Low Channel



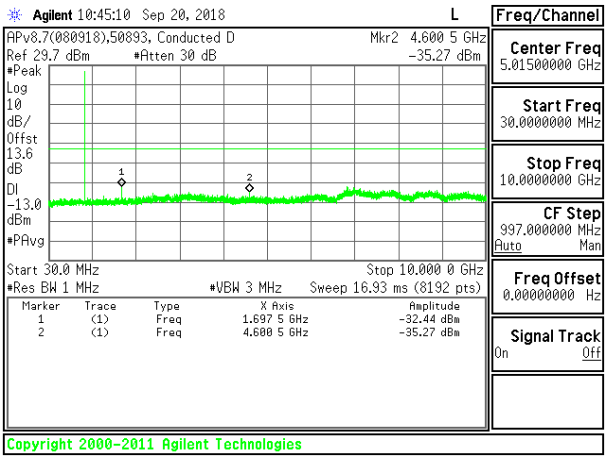
CDMA BC0 1xEV-DO Rev A Low Channel



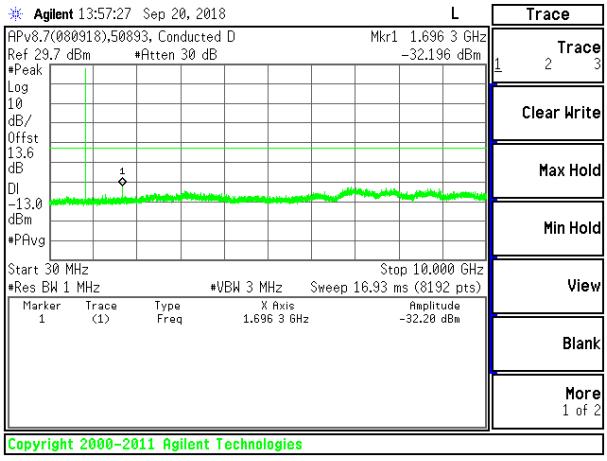
CDMA BC0 1xRTT Middle Channel



CDMA BC0 1xEV-DO Rev 0 Middle Channel

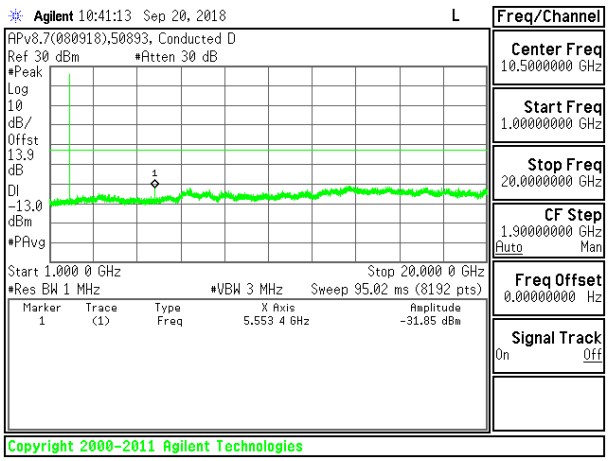


CDMA BC0 1xRTT High Channel

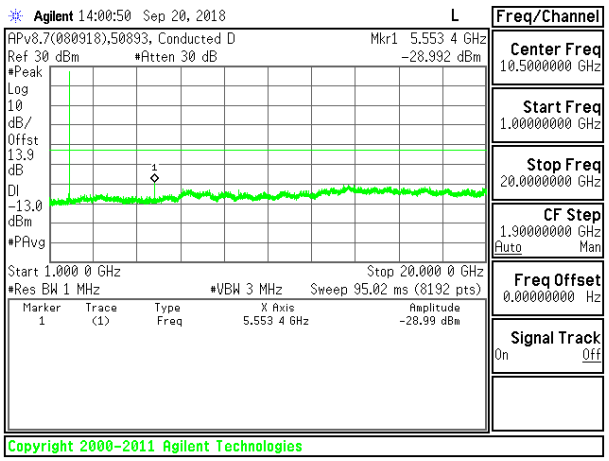


CDMA BC0 1xEV-DO Rev 0 High Channel

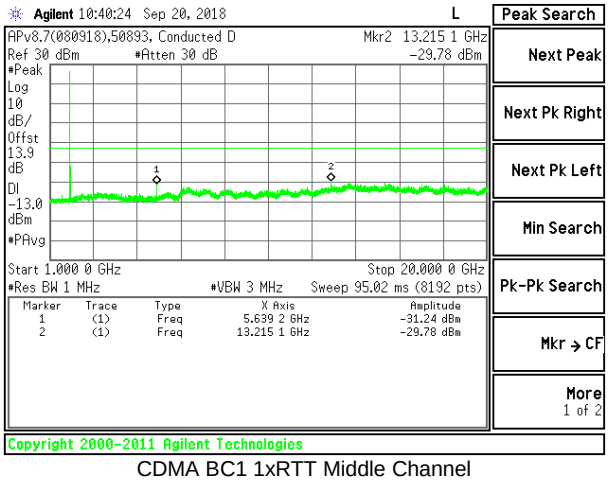
## 8.3.2. CDMA BC1



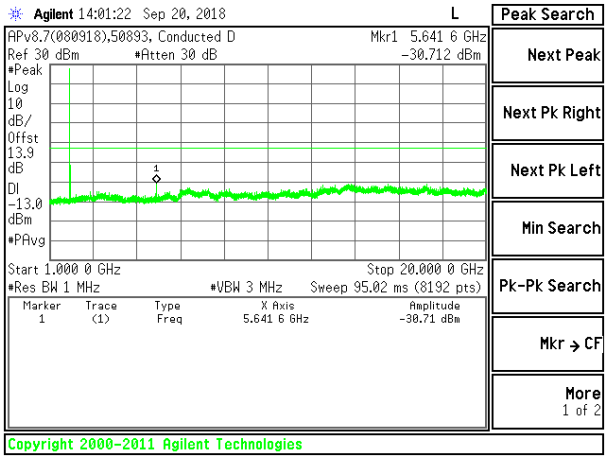

CDMA BC1 1xRTT Low Channel



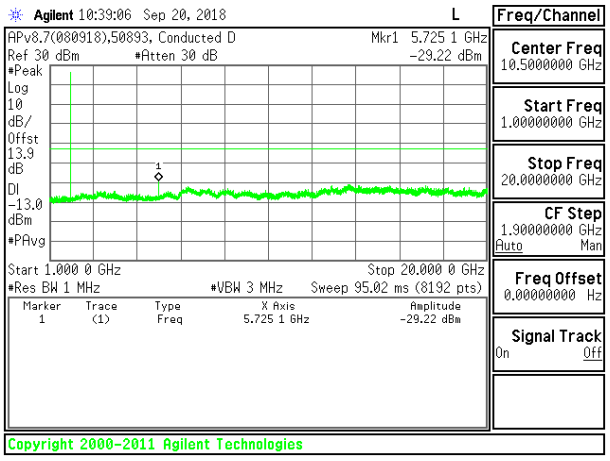

CDMA BC1 1xEV-DO Rev 0 Low Channel



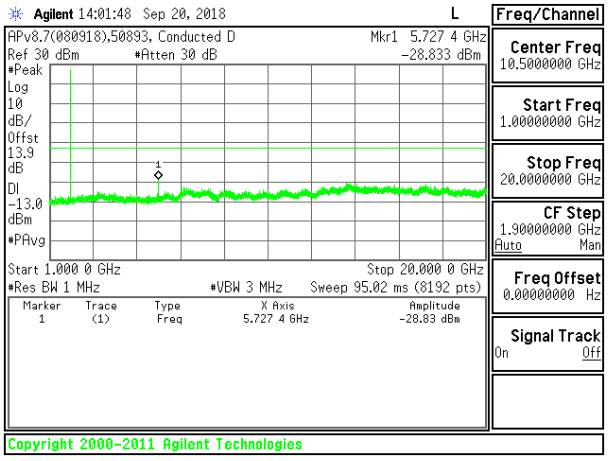

CDMA BC1 1xRTT Middle Channel




CDMA BC1 1xEV-DO Rev 0 Middle Channel




CDMA BC1 1xRTT High Channel




CDMA BC1 1xEV-DO Rev 0 High Channel

## 8.4. FREQUENCY STABILITY

**RULE PART(S)**

FCC: §2.1055, §22.355, §24.235
RSS132§5.3; RSS133§6.3.

**LIMITS**

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

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

RSS132§5.3
The carrier frequency shall not depart from the reference frequency in excess of ±2.5 SRSP for mobile stations and±1.5 ppm for base stations.
In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the occupied bandwidth stays within each of the sub-bands (see Section 5.1) when tested to the temperature and supply voltage variations specified in RSS-Gen.

RSS133§6.3
The carrier frequency shall not depart from the reference frequency, in excess of ±2.5 ppm for mobile stations and ±1.0 ppm for base stations.
In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the emission bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

**TEST PROCEDURE**

Use CMW 500 with Frequency Error measurement capability.

- Temp. = −30°C to +50°C
- Voltage = (85% - 115%)

  Low Voltage, 3.23VDC, Normal, 3.8VDC and High Voltage, 4.37VDC.
  End Voltage, 2.72VDC.

**Frequency Stability vs Temperature:**
The EUT is place inside a temperature chamber. The temperature is set to 20ºC 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 +50ºC is reached.

**Frequency Stability vs Voltage:**
The peak frequency error is recorded (worst-case).

**MODES TESTED**

- CDMA BC0
- CDMA BC1

**RESULTS**

See the following pages.

| ID: | 38602 | Date: | 9/20/18 |
|---|---|---|---|

**CDMA 1xRTT BC0**

| Limit | | 824 | 849 | Delta (Hz) | Frequency Stability (ppm) |
|---|---|---|---|---|---|
| Condition | | F low @ -13dBm | F high @ -13dBm | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (20C) | | 824.0161 | 848.9991 | | |
| Extreme (50C) | | 824.0161 | 848.9991 | -22.0 | -0.026 |
| Extreme (40C) | | 824.0161 | 848.9991 | -19.4 | -0.023 |
| Extreme (30C) | | 824.0161 | 848.9991 | -17.7 | -0.021 |
| Extreme (10C) | Normal | 824.0161 | 848.9991 | 12.5 | 0.015 |
| Extreme (0C) | | 824.0161 | 848.9991 | 22.7 | 0.027 |
| Extreme (-10C) | | 824.0161 | 848.9991 | 24.6 | 0.029 |
| Extreme (-20C) | | 824.0161 | 848.9991 | -16.5 | -0.020 |
| Extreme (-30C) | | 824.0161 | 848.9991 | 17.7 | 0.021 |
| | | | | | |
| | 15% | 824.0161 | 848.9991 | -14.2 | -0.017 |
| 20C | -15% | 824.0161 | 848.9991 | 9.7 | 0.012 |
| | End Point | 824.0161 | 848.9991 | 16.5 | 0.020 |

| ID: | 38602 | Date: | 9/20/18 |
|---|---|---|---|

**CDMA 1xRTT BC1**

| Limit | | 1850 | 1910 | Delta (Hz) | Frequency Stability (ppm) |
|---|---|---|---|---|---|
| Condition | | F low @ -13dBm | F high @ -13dBm | | |
| Temperature | Voltage | (MHz) | (MHz) | | |
| Normal (20C) | | 1850.5365 | 1909.4685 | | |
| Extreme (50C) | | 1850.5365 | 1909.4685 | 24.9 | 0.013 |
| Extreme (40C) | | 1850.5365 | 1909.4685 | 24.6 | 0.013 |
| Extreme (30C) | | 1850.5365 | 1909.4685 | 22.1 | 0.012 |
| Extreme (10C) | Normal | 1850.5365 | 1909.4685 | 16.6 | 0.009 |
| Extreme (0C) | | 1850.5365 | 1909.4685 | 22.6 | 0.012 |
| Extreme (-10C) | | 1850.5365 | 1909.4685 | 20.1 | 0.011 |
| Extreme (-20C) | | 1850.5365 | 1909.4685 | 15.3 | 0.008 |
| Extreme (-30C) | | 1850.5365 | 1909.4685 | 17.7 | 0.009 |
| | | | | | |
| | 15% | 1850.5365 | 1909.4685 | 30.1 | 0.016 |
| 20C | -15% | 1850.5365 | 1909.4685 | 25.2 | 0.013 |
| | End Point | 1850.5365 | 1909.4685 | 22.3 | 0.012 |

## 8.5. PEAK-TO-AVERAGE POWER RATIO

**LIMIT**

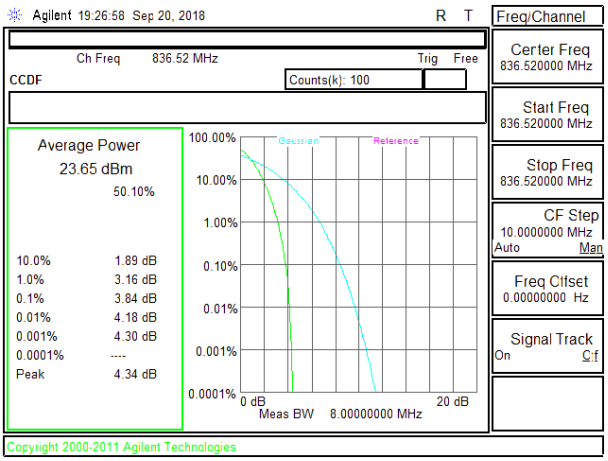
In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

**RESULT**

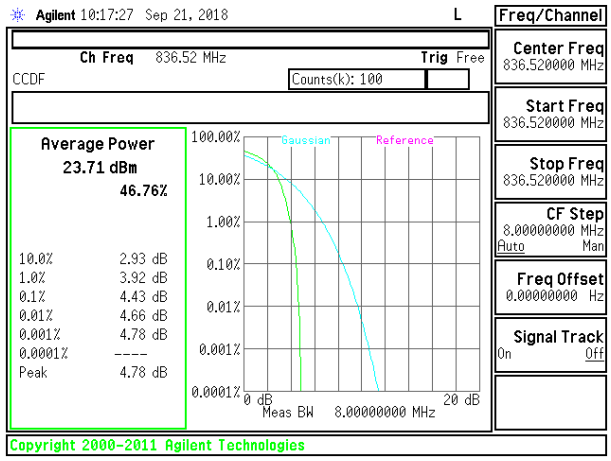
PORT A antenna was used to measure as the worst case. The results from all CCDF plots are passed with 13dB peak-to-average power ratio criteria.

| | | | |
|---|---|---|---|
| **ID:** | 12491 | **Date:** | 9/21/18 |

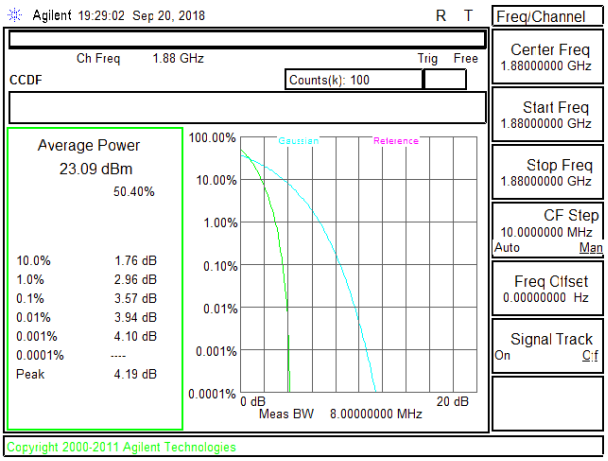
**CDMA**



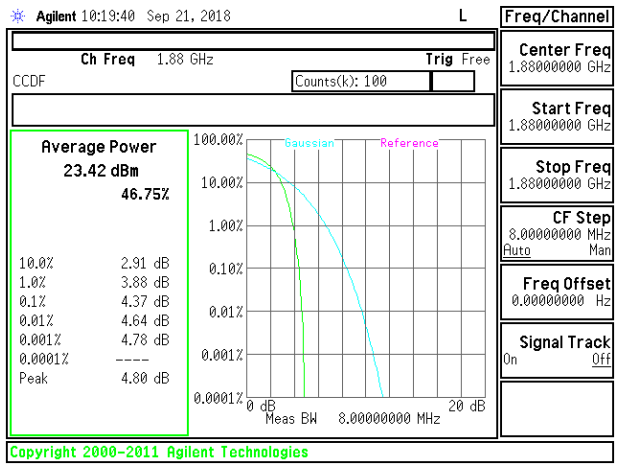
CDMA BC0 1xRTT Middle Channel



CDMA BC0 1xEV-DO Rev 0 Middle Channel



CDMA BC1 1xRTT Middle Channel



CDMA BC1 1xEV-DO Rev 0 Middle Channel

# 9. RADIATED TEST RESULTS

## RULE PART(S)

FCC: §2.1053, §22.917, §24.238.
IC: RSS132§5.5; RSS133§6.5

## LIMIT

FCC: §22.917(a), §24.238(a)
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.

RSS132§5.5
Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

(i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P ( dBW) by at least 43 + 10 log10p (watts).

(ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least43 + 10 log10 p (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

RSS133§6.5
Equipment shall comply with the limits in (i) and (ii) below.

(i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p(watts).

(ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 log10p (watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

## TEST PROCEDURE

KDB 971168 D01 Section 7

## RESULTS

# 9.1. FIELD STRENGTH OF SPURIOUS RADIATION

**CDMA**

**High Frequency Substitution Measurement**
**UL Fremont Radiated Chamber**

Company:
Project #:
Date: 09/19/18
Test Engineer: 31300
Configuration: EUT Only
Mode: CDMA 1xRTT 850MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber: 3m Chamber E | Pre-amplifer: 3m Chamber E | Filter: Filter | Limit: EIRP

| Frequency (GHz) | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP | Limit | Delta | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (824.7MHz) | | | | | | | | | | |
| 1.65 | -59.8 | H | 3.0 | -17.4 | 37.8 | 1.0 | -54.2 | -13.0 | -41.2 | |
| 2.47 | -57.4 | H | 3.0 | -12.4 | 38.5 | 1.0 | -49.9 | -13.0 | -36.9 | |
| 3.30 | -55.6 | H | 3.0 | -6.6 | 38.5 | 1.0 | -44.1 | -13.0 | -31.1 | |
| 1.65 | -59.5 | V | 3.0 | -17.3 | 37.8 | 1.0 | -54.2 | -13.0 | -41.2 | |
| 2.47 | -58.0 | V | 3.0 | -12.8 | 38.5 | 1.0 | -50.3 | -13.0 | -37.3 | |
| 3.30 | -57.3 | V | 3.0 | -8.6 | 38.5 | 1.0 | -46.0 | -13.0 | -33.0 | |
| Mid Channel (836.52MHz) | | | | | | | | | | |
| 1.67 | -60.1 | H | 3.0 | -17.6 | 37.8 | 1.0 | -54.5 | -13.0 | -41.5 | |
| 2.51 | -58.2 | H | 3.0 | -13.0 | 38.6 | 1.0 | -50.5 | -13.0 | -37.5 | |
| 3.35 | -57.8 | H | 3.0 | -8.7 | 38.5 | 1.0 | -46.2 | -13.0 | -33.2 | |
| 1.67 | -60.1 | V | 3.0 | -17.8 | 37.8 | 1.0 | -54.7 | -13.0 | -41.7 | |
| 2.51 | -58.9 | V | 3.0 | -13.5 | 38.6 | 1.0 | -51.1 | -13.0 | -38.1 | |
| 3.35 | -57.1 | V | 3.0 | -8.3 | 38.5 | 1.0 | -45.8 | -13.0 | -32.8 | |
| High Channel (848.31MHz) | | | | | | | | | | |
| 1.70 | -59.8 | H | 3.0 | -17.3 | 37.9 | 1.0 | -54.1 | -13.0 | -41.1 | |
| 2.54 | -59.3 | H | 3.0 | -13.9 | 38.6 | 1.0 | -51.5 | -13.0 | -38.5 | |
| 3.39 | -56.6 | H | 3.0 | -7.5 | 38.5 | 1.0 | -45.0 | -13.0 | -32.0 | |
| 1.70 | -60.4 | V | 3.0 | -18.0 | 37.9 | 1.0 | -54.9 | -13.0 | -41.9 | |
| 2.54 | -58.9 | V | 3.0 | -13.4 | 38.6 | 1.0 | -50.9 | -13.0 | -37.9 | |
| 3.39 | -57.3 | V | 3.0 | -8.3 | 38.5 | 1.0 | -45.8 | -13.0 | -32.8 | |

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CDMA BC0 1xRTT

**High Frequency Substitution Measurement**
**UL Fremont Radiated Chamber**

Company:
Project #:
Date: 09/19/18
Test Engineer: 31300
Configuration: EUT Only
Mode: CDMA EVDO Rev 0 850MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber: 3m Chamber E | Pre-amplifer: 3m Chamber E | Filter: Filter | Limit: EIRP

| Frequency (GHz) | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP | Limit | Delta | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (824.7MHz) | | | | | | | | | | |
| 1.65 | -61.1 | H | 3.0 | -18.6 | 37.8 | 1.0 | -55.5 | -13.0 | -42.5 | |
| 2.47 | -58.1 | H | 3.0 | -13.1 | 38.5 | 1.0 | -50.6 | -13.0 | -37.6 | |
| 3.30 | -58.0 | H | 3.0 | -9.0 | 38.5 | 1.0 | -46.5 | -13.0 | -33.5 | |
| 1.65 | -60.6 | V | 3.0 | -18.5 | 37.8 | 1.0 | -55.3 | -13.0 | -42.3 | |
| 2.47 | -57.5 | V | 3.0 | -12.3 | 38.5 | 1.0 | -49.8 | -13.0 | -36.8 | |
| 3.30 | -57.1 | V | 3.0 | -8.4 | 38.5 | 1.0 | -45.9 | -13.0 | -32.9 | |
| Mid Channel (836.52MHz) | | | | | | | | | | |
| 1.67 | -59.9 | H | 3.0 | -17.4 | 37.8 | 1.0 | -54.3 | -13.0 | -41.3 | |
| 2.51 | -59.2 | H | 3.0 | -14.0 | 38.6 | 1.0 | -51.6 | -13.0 | -38.6 | |
| 3.35 | -57.7 | H | 3.0 | -8.6 | 38.5 | 1.0 | -46.1 | -13.0 | -33.1 | |
| 1.67 | -60.1 | V | 3.0 | -17.9 | 37.8 | 1.0 | -54.7 | -13.0 | -41.7 | |
| 2.51 | -60.0 | V | 3.0 | -14.6 | 38.6 | 1.0 | -52.2 | -13.0 | -39.2 | |
| 3.35 | -59.8 | V | 3.0 | -11.0 | 38.5 | 1.0 | -48.5 | -13.0 | -35.5 | |
| High Channel (848.31MHz) | | | | | | | | | | |
| 1.70 | -60.2 | H | 3.0 | -17.6 | 37.9 | 1.0 | -54.5 | -13.0 | -41.5 | |
| 2.54 | -59.4 | H | 3.0 | -14.0 | 38.6 | 1.0 | -51.6 | -13.0 | -38.6 | |
| 3.39 | -56.8 | H | 3.0 | -7.8 | 38.5 | 1.0 | -45.1 | -13.0 | -32.1 | |
| 1.70 | -60.4 | V | 3.0 | -18.0 | 37.9 | 1.0 | -54.9 | -13.0 | -41.9 | |
| 2.54 | -58.6 | V | 3.0 | -13.1 | 38.6 | 1.0 | -50.6 | -13.0 | -37.6 | |
| 3.39 | -58.3 | V | 3.0 | -9.3 | 38.5 | 1.0 | -46.8 | -13.0 | -33.8 | |

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CDMA BC0 1xEV-DO Rev 0

**High Frequency Substitution Measurement**
**UL Fremont Radiated Chamber**

Company:
Project #:
Date: 09/19/18
Test Engineer: 31300
Configuration: EUT only
Mode: CDMA 1xRTT 1900MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber: 3m Chamber E | Pre-amplifer: 3m Chamber E | Filter: Filter | Limit: EIRP

| Frequency (GHz) | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP | Limit | Delta | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (1851.25MHz) | | | | | | | | | | |
| 3.70 | -56.2 | H | 3.0 | -6.2 | 38.6 | 1.0 | -43.8 | -13.0 | -30.8 | |
| 5.55 | -59.2 | H | 3.0 | -5.2 | 38.6 | 1.0 | -42.8 | -13.0 | -29.8 | |
| 7.41 | -60.4 | H | 3.0 | -2.8 | 37.8 | 1.0 | -39.6 | -13.0 | -26.6 | |
| 3.70 | -56.6 | V | 3.0 | -6.7 | 38.6 | 1.0 | -44.4 | -13.0 | -31.4 | |
| 5.55 | -59.7 | V | 3.0 | -5.9 | 38.6 | 1.0 | -43.5 | -13.0 | -30.5 | |
| 7.41 | -60.8 | V | 3.0 | -3.3 | 37.8 | 1.0 | -40.1 | -13.0 | -27.1 | |
| Mid Channel (1880MHz) | | | | | | | | | | |
| 3.76 | -55.5 | H | 3.0 | -5.4 | 38.6 | 1.0 | -43.0 | -13.0 | -30.0 | |
| 5.64 | -56.9 | H | 3.0 | -2.6 | 38.5 | 1.0 | -40.2 | -13.0 | -27.2 | |
| 7.52 | -61.2 | H | 3.0 | -3.4 | 37.7 | 1.0 | -40.1 | -13.0 | -27.1 | |
| 3.76 | -54.8 | V | 3.0 | -4.7 | 38.6 | 1.0 | -42.3 | -13.0 | -29.3 | |
| 5.64 | -56.7 | V | 3.0 | -2.7 | 38.5 | 1.0 | -40.3 | -13.0 | -27.3 | |
| 7.52 | -60.0 | V | 3.0 | -2.4 | 37.7 | 1.0 | -39.2 | -13.0 | -26.2 | |
| High Channel (1908.75MHz) | | | | | | | | | | |
| 3.82 | -54.1 | H | 3.0 | -3.9 | 38.7 | 1.0 | -41.5 | -13.0 | -28.5 | |
| 5.73 | -56.6 | H | 3.0 | -4.2 | 38.5 | 1.0 | -41.7 | -13.0 | -28.7 | |
| 7.64 | -60.2 | H | 3.0 | -2.2 | 37.7 | 1.0 | -38.9 | -13.0 | -25.9 | |
| 3.82 | -55.1 | V | 3.0 | -4.9 | 38.7 | 1.0 | -42.5 | -13.0 | -29.5 | |
| 5.73 | -58.4 | V | 3.0 | -4.3 | 38.5 | 1.0 | -41.8 | -13.0 | -28.8 | |
| 7.64 | -61.1 | V | 3.0 | -3.4 | 37.7 | 1.0 | -40.0 | -13.0 | -27.0 | |

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CDMA BC1 1xRTT

**High Frequency Substitution Measurement**
**UL Fremont Radiated Chamber**

Company:
Project #:
Date: 09/19/18
Test Engineer: 31300
Configuration: EUT only
Mode: CDMA EVDO Rev 0 1900MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber: 3m Chamber E | Pre-amplifer: 3m Chamber E | Filter: Filter | Limit: EIRP

| Frequency (GHz) | SA reading (dBm) | Ant. Pol. (H/V) | Distance | EIRP @ TX Ant End (dBm) | Preamp | Attenuator | EIRP | Limit | Delta | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| Low Channel (1851.25MHz) | | | | | | | | | | |
| 3.70 | -56.1 | H | 3.0 | -6.2 | 38.6 | 1.0 | -43.8 | -13.0 | -30.8 | |
| 5.55 | -58.9 | H | 3.0 | -4.9 | 38.6 | 1.0 | -42.4 | -13.0 | -29.4 | |
| 7.41 | -60.0 | H | 3.0 | -2.4 | 37.8 | 1.0 | -39.2 | -13.0 | -26.2 | |
| 3.70 | -55.4 | V | 3.0 | -5.5 | 38.6 | 1.0 | -43.1 | -13.0 | -30.1 | |
| 5.55 | -58.0 | V | 3.0 | -4.3 | 38.6 | 1.0 | -41.8 | -13.0 | -28.8 | |
| 7.41 | -60.4 | V | 3.0 | -2.9 | 37.8 | 1.0 | -39.7 | -13.0 | -26.7 | |
| Mid Channel (1880MHz) | | | | | | | | | | |
| 3.76 | -55.4 | H | 3.0 | -5.2 | 38.6 | 1.0 | -42.9 | -13.0 | -29.9 | |
| 5.64 | -56.3 | H | 3.0 | -2.1 | 38.5 | 1.0 | -39.6 | -13.0 | -26.6 | |
| 7.52 | -60.7 | H | 3.0 | -2.9 | 37.7 | 1.0 | -39.7 | -13.0 | -26.7 | |
| 3.76 | -55.3 | V | 3.0 | -5.3 | 38.6 | 1.0 | -42.9 | -13.0 | -29.9 | |
| 5.64 | -56.7 | V | 3.0 | -2.8 | 38.5 | 1.0 | -40.3 | -13.0 | -27.3 | |
| 7.52 | -61.1 | V | 3.0 | -3.5 | 37.7 | 1.0 | -40.2 | -13.0 | -27.2 | |
| High Channel (1908.75MHz) | | | | | | | | | | |
| 3.70 | -55.0 | H | 3.0 | -5.0 | 38.6 | 1.0 | -42.7 | -13.0 | -29.7 | |
| 5.73 | -58.4 | H | 3.0 | -3.9 | 38.5 | 1.0 | -41.4 | -13.0 | -28.4 | |
| 7.64 | -60.4 | H | 3.0 | -2.5 | 37.7 | 1.0 | -39.1 | -13.0 | -26.1 | |
| 3.82 | -53.9 | V | 3.0 | -3.7 | 38.7 | 1.0 | -41.3 | -13.0 | -28.3 | |
| 5.73 | -56.6 | V | 3.0 | -2.5 | 38.5 | 1.0 | -40.0 | -13.0 | -27.0 | |
| 7.64 | -60.8 | V | 3.0 | -3.0 | 37.7 | 1.0 | -39.7 | -13.0 | -26.7 | |

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