# CERTIFICATION TEST REPORT

**Report Number. :** 11992683-E1V6

| | | |
|---|---|---|
| **Applicant** | : | Verifone, Inc.<br>1400 West Stanford Ranch Road<br>Rocklin, CA 95765, U.S.A. |
| **FCC ID** | : | B32V200T2GDE |
| **IC ID** | : | 787C-V2002GDE |
| **EUT Description** | : | POINT OF SALE TERMINAL |
| **MODEL** | : | V200t 2G/D/E |
| **Test Standard(s)** | : | FCC CFR47 PART 22 SUBPART H<br>FCC CFR47 PART 24 SUBPART E<br>INDUSTRY CANADA RSS-132 ISSUE 3<br>INDUSTRY CANADA RSS-133 ISSUE 6 |

**Date Of Issue:**

April 16, 2018

**Prepared by:**

UL Verification Services Inc.
47173 Benicia Street
Fremont, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888

NVLAP LAB CODE 200065-0

# Revision History

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| V1 | 12/14/17 | Initial Issue | -- |
| V2 | 01/30/18 | Revised Test Methodology section.<br>Revised Scope of Testing section.<br>Updated Test & Measurement Equipment, section 7. | Frank Ibrahim |
| V3 | 02/21/18 | Revised Scope of Testing section, and removed output power table. | Frank Ibrahim |
| V4 | 03/06/18 | Added ERP/EIRP section. | Frank Ibrahim |
| V5 | 03/15/18 | Updated Scope of Testing | Frank Ibrahim |
| V6 | 04/16/18 | Revised Test Methodology section<br>Added Worst-Case Configuration and Mode section | Frank Ibrahim |

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** Verifone, Inc.
1400 West Stanford Ranch Road Suite 200
Rocklin, CA 95765, U.S.A.

**EUT DESCRIPTION:** Point of Sale Terminal

**MODEL:** V200t 2G/D/E

**SERIAL NUMBER:** 401-431-499

**DATE TESTED:** November 29, 2017

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULTS** |
| FCC PART 22H, 24E | PASS |
| INDUSTRY CANADA RSS-132,133 | 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:

FRANK IBRAHIM
CONSUMER TECHNOLOGY DIVISION
OPERATION MANAGER
UL VERIFICATION SERVICES INC

Prepared By:

GLENN ESCANO
CONSUMER TECHNOLOGY DIVISION
TEST ENGINEER
UL VERIFICATION SERVICES INC

# 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI/C63.26, FCC CFR 47 Part 2, FCC KDB 971168 D01 v03, FCC Part 22 and Part 24, RSS-132, RSS-133, and RSS-GEN Issue 4.

# 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. Line conducted emissions are measured only at the 47173 address. 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.
Chambers A through C are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-3, respectively. Chambers D through H are covered under Industry Canada company address code 22541 with site numbers 22541 -1 through 22541-5, respectively.

# 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:

EIRP = PSA reading with EUT worst orientation (dBm) + Path loss (dB) – cable loss( between the SG and substitution antenna) + Substitution Antenna Factor (dBi)

ERP = PSA reading with EUT worst orientation (dBm) + Path loss (dB) – 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 |
|---|---|
| Occupied Channel Bandwidth | ±1.1 % |
| RF output power, conducted | ±0.35 dB |
| Power Spectral Density, conducted | ±0.39 dB |
| Unwanted Emissions, conducted | ±2.9 dB |
| All emissions, radiated | ±5.36 dB |
| Temperature | ±0.9 °C |
| Humidity | ±2.26% RH |
| Supply Voltages | ±0.45 % |
| Time | ±0.2 % |

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

# 5. EQUIPMENT UNDER TEST

## 5.1. DESCRIPTION OF EUT

The EUT is a Point of Sale Terminal which supports the following technologies 850/1900 GSM and NFC.

## 5.2. MAXIMUM OUTPUT ERP/EIRP

The transmitter has a maximum peak ERP / EIRP output power as follows:

| FCC Part 22/24 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range (MHz) | Modulation | AG | Conducted power (Peak) | | ERP/EIRP (Peak) | |
| | | | (dBi) | (dBm) | (mW) | (dBm) | (mW) |
| 850 | 824~849 | GPRS | 0.2 | 32.30 | 1698.24 | 30.35 | 1083.93 |
| 1900 | 1850~1910 | GPRS | 0.1 | 30.10 | 1023.29 | 30.20 | 1047.13 |

| RSS 132/133 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Band | Frequency Range (MHz) | Modulation | AG | Conducted power (Peak) | | EIRP (Peak) | |
| | | | (dBi) | (dBm) | (mW) | (dBm) | (mW) |
| 850 | 824~849 | GPRS | 0.2 | 32.30 | 1698.24 | 32.50 | 1778.28 |
| 1900 | 1850~1910 | GPRS | 0.1 | 30.10 | 1023.29 | 30.20 | 1047.13 |

## 5.3. SCOPE OF TESTING

This report covers only radiated emissions portion. For antenna port data (except output power) refer to report number 11859411-E1V3 (FCC ID: B32V240M2G, IC: 787C-V240M2G) for model V240m 2G as the WWAN module covered by this report is identical to the WWAN module inside model V240m 2G.

For antenna port data (except ERP/EIRP) refer to report 11859411-E1V3. Due to different antenna gain, ERP/EIRP is provided here for model V200t 2G/D/E.

## 5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a PIFA antenna with a maximum peak gain as follow:

| Frequency (MHz) | Peak Gain (dBi) |
|---|---|
| GSM850, 824~849MHz | 0.2 |
| GSM1900, 1850~1910MHz | 0.1 |

Refer to Gemalto M2M GmbH report: ES_GT_303989 and tested by CETECOM GmbH.

## 5.5. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was VOS2 30640XXX.

## 5.6. WORST-CASE CONFIGURATION AND MODE

The fundamental of the EUT was investigated in three orthogonal orientations X, Y, & Z, and it was determined that X-Axis with AC/DC Adapter was worst-case orientation; therefore, all final radiated testing was performed with the EUT in X-Axis with AC/DC Adapter orientation.

## 5.7. DESCRIPTION OF TEST SETUP

**SUPPORT EQUIPMENT**

| Support Equipment List | | | | |
|---|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **Serial Number** | **FCC ID** |
| AC Adapter | Verifone | PSA18A-082A | 5A00170801381 | N/A |

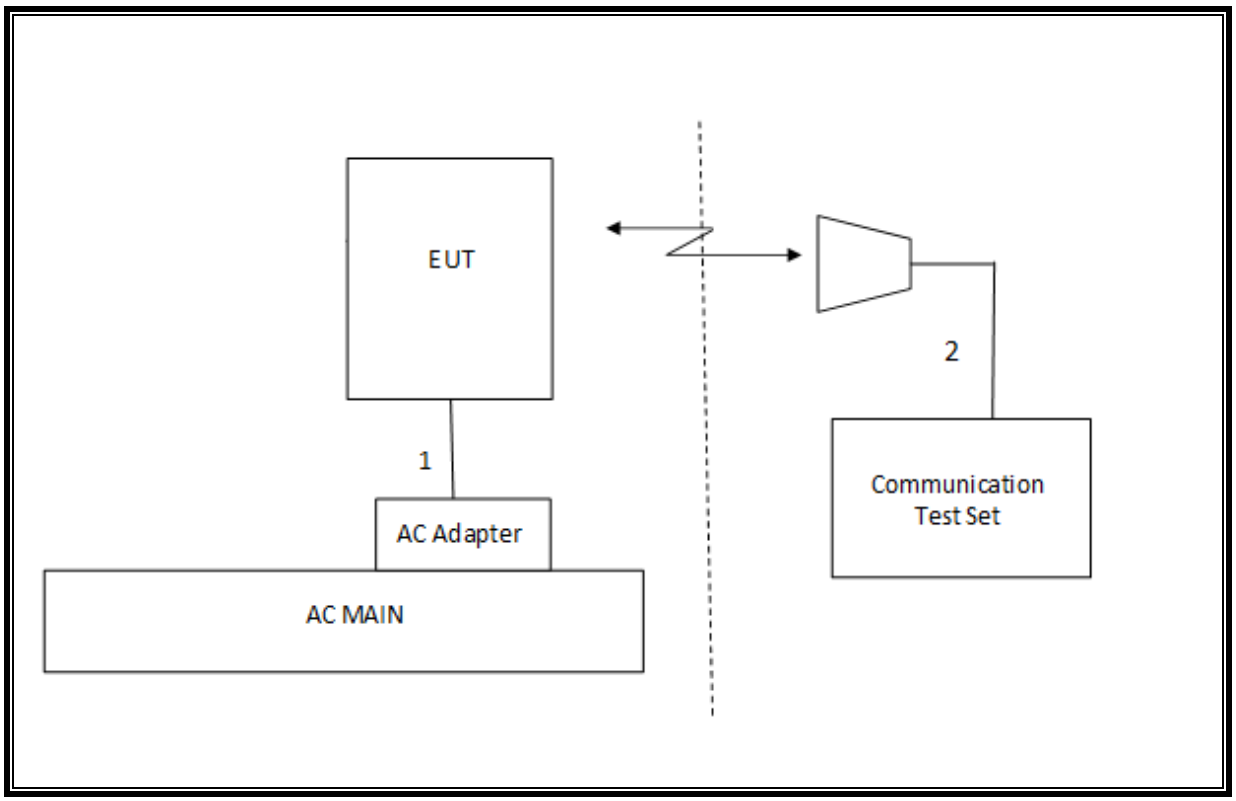
**I/O CABLES (RADIATED SETUP)**

| I/O Cable List | | | | | | |
|---|---|---|---|---|---|---|
| **Cable No** | **Port** | **# of Identical ports** | **Connector Type** | **Serial Type** | **Cable Length (m)** | **Remarks** |
| 1 | DC | 1 | Round | Un-shielded | 1.75m | No |
| 2 | 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 (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** | **T Number** | **Cal Date** | **Cal Due** |
| Amplifier, 1 to 18 GHz | Miteq | AFS43-00101800-25-S-42 | 931 | 06/21/17 | 06/21/18 |
| Amplifier, 1 to 8 GHz | Miteq | AMF-4D-01000800-30-29P | 1156 | 02/15/17 | 02/15/18 |
| Amplifier, 10KHz to 1GHz, 32dB | Keysight | 8447D | 15 | 08/14/17 | 08/14/18 |
| Antenna, Broadband Hybrid, 30MHz to 2000MHz | Sunol Sciences | JB3 | 899 | 06/15/17 | 6/15/18 |
| Horn Antenna | ETS-Lindgren | 3117 | T712 | 01/30/17 | 01/30/18 |
| Spectrum Analyzer, PXA 3Hz to 44GHz | Keysight | N9030A | 905 | 01/11/17 | 01/11/18 |
| Highpass Filter, 2.7 GHz | Micro-Circuits | H2G518G6 | T772 | 07/05/16 | 07/05/18 |
| Highpass Filter, 1 GHz | Micro-Tronics | HPM18129 | T889 | 02/21/17 | 02/21/18 |
| Highpass Filter, 4GHz | Micro-Tronics | HPM13351 | T1241 | 07/19/17 | 07/19/18 |
| Wideband Radio Communication Tester | Rohde & Schwarz | CMW500 | T956 | 06/22/17 | 06/22/18 |

| Test Equipment List | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model** | **T Number** |
| Radiated Software | UL | UL EMC | Ver 9.5, Dec 01, 2015 |

# 7. TEST RESULTS

## 7.1. SUMMARY TABLE

| FCC Part Section | RSS Section(s) | Test Description | Test Limit | Test Condition | Test Result |
|---|---|---|---|---|---|
| 22.913(a)(2) | RSS-132 (5.5) | Effective Radiated Power | 38dBm | Radiated | Pass |
| 24.232(c ) | RSS-133(6.5) | Equivalent Isotropic Radiated Power | 33dBm | | Pass |
| 22.917(a)<br>24.238(a) | RSS-132(5.5)<br>RSS-133(6.5) | Radiated Spurious Emission | -13dBm | | Pass |

## 7.2. RADIATED TEST RESULTS

**RULE PART(S)**

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

**FCC LIMIT**

§22.917 (e) and §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.
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).
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**

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.

## GSM

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** VERIFONE
**Project #:** 11992683
**Date:** 11/29/2017
**Test Engineer:** 43575 OS
**Configuration:** EUT + AC Adapter
**Location:** Chamber C
**Mode:** GPRS 850 MHz Harmonics

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 824.2MHz | | | | | | | | | |
| 1648.40 | -11.5 | V | 3.0 | 37.0 | 1.0 | -47.5 | -13.0 | -34.5 | |
| 2472.60 | -11.8 | V | 3.0 | 36.4 | 1.0 | -47.2 | -13.0 | -34.2 | |
| 3296.80 | -24.1 | V | 3.0 | 36.2 | 1.0 | -59.2 | -13.0 | -46.2 | |
| 1648.40 | -5.8 | H | 3.0 | 37.0 | 1.0 | -41.9 | -13.0 | -28.9 | |
| 2472.60 | -15.7 | H | 3.0 | 36.4 | 1.0 | -51.1 | -13.0 | -38.1 | |
| 3296.80 | -23.8 | H | 3.0 | 36.2 | 1.0 | -59.0 | -13.0 | -46.0 | |
| Mid Ch, 836.6MHz | | | | | | | | | |
| 1673.20 | -9.6 | V | 3.0 | 37.0 | 1.0 | -45.6 | -13.0 | -32.6 | |
| 2509.80 | -23.2 | V | 3.0 | 36.4 | 1.0 | -58.7 | -13.0 | -45.7 | |
| 3346.40 | -20.3 | V | 3.0 | 36.1 | 1.0 | -55.4 | -13.0 | -42.4 | |
| 1673.20 | -5.4 | H | 3.0 | 37.0 | 1.0 | -41.4 | -13.0 | -28.4 | |
| 2509.80 | -13.2 | H | 3.0 | 36.4 | 1.0 | -48.6 | -13.0 | -35.6 | |
| 3346.40 | -24.2 | H | 3.0 | 36.1 | 1.0 | -59.3 | -13.0 | -46.3 | |
| High Ch, 848.8MHz | | | | | | | | | |
| 1697.60 | -6.0 | V | 3.0 | 37.0 | 1.0 | -42.0 | -13.0 | -29.0 | |
| 2546.40 | -23.5 | V | 3.0 | 36.4 | 1.0 | -58.9 | -13.0 | -45.9 | |
| 3395.20 | -22.4 | V | 3.0 | 36.1 | 1.0 | -57.5 | -13.0 | -44.5 | |
| 1697.60 | -1.7 | H | 3.0 | 37.0 | 1.0 | -37.7 | -13.0 | -24.7 | |
| 2546.40 | -7.4 | H | 3.0 | 36.4 | 1.0 | -42.8 | -13.0 | -29.8 | |
| 3395.20 | -23.0 | H | 3.0 | 36.1 | 1.0 | -58.1 | -13.0 | -45.1 | |

**GSM850 GPRS**

**UL Verification Services, Inc.**
**Above 1GHz High Frequency Substitution Measurement**

**Company:** VERIFONE
**Project #:** 11992683
**Date:** 11/29/2017
**Test Engineer:** 43575 OS
**Configuration:** EUT + AC Adapter
**Location:** Chamber C
**Mode:** GPRS 1900 MHz Harmonics

| f MHz | SG reading (dBm) | Ant. Pol. (H/V) | Distance (m) | Preamp (dB) | Filter (dB) | EIRP (dBm) | Limit (dBm) | Delta (dB) | Notes |
|---|---|---|---|---|---|---|---|---|---|
| Low Ch, 1850.2MHz | | | | | | | | | |
| 3700.40 | -8.8 | V | 3.0 | 35.9 | 1.0 | -43.7 | -13.0 | -30.7 | |
| 5550.60 | -19.6 | V | 3.0 | 35.5 | 1.0 | -54.1 | -13.0 | -41.1 | |
| 7400.80 | -17.8 | V | 3.0 | 35.7 | 1.0 | -52.5 | -13.0 | -39.5 | |
| 3700.40 | -10.5 | H | 3.0 | 35.9 | 1.0 | -45.4 | -13.0 | -32.4 | |
| 5550.60 | -19.2 | H | 3.0 | 35.5 | 1.0 | -53.7 | -13.0 | -40.7 | |
| 7400.80 | -16.9 | H | 3.0 | 35.7 | 1.0 | -51.7 | -13.0 | -38.7 | |
| Mid Ch, 1880MHz | | | | | | | | | |
| 3760.00 | -14.5 | V | 3.0 | 35.8 | 1.0 | -49.3 | -13.0 | -36.3 | |
| 5640.00 | -19.1 | V | 3.0 | 35.5 | 1.0 | -53.6 | -13.0 | -40.6 | |
| 7520.00 | -18.3 | V | 3.0 | 35.7 | 1.0 | -53.1 | -13.0 | -40.1 | |
| 3760.00 | -18.2 | H | 3.0 | 35.8 | 1.0 | -53.0 | -13.0 | -40.0 | |
| 5640.00 | -18.7 | H | 3.0 | 35.5 | 1.0 | -53.2 | -13.0 | -40.2 | |
| 7520.00 | -16.9 | H | 3.0 | 35.7 | 1.0 | -51.6 | -13.0 | -38.6 | |
| High Ch, 1909.8MHz | | | | | | | | | |
| 3819.60 | -13.7 | V | 3.0 | 35.8 | 1.0 | -48.5 | -13.0 | -35.5 | |
| 5729.40 | -18.6 | V | 3.0 | 35.5 | 1.0 | -53.1 | -13.0 | -40.1 | |
| 7639.20 | -15.5 | V | 3.0 | 35.8 | 1.0 | -50.3 | -13.0 | -37.3 | |
| 3819.60 | -10.7 | H | 3.0 | 35.8 | 1.0 | -45.5 | -13.0 | -32.5 | |
| 5729.40 | -18.7 | H | 3.0 | 35.5 | 1.0 | -53.2 | -13.0 | -40.2 | |
| 7639.20 | -15.7 | H | 3.0 | 35.8 | 1.0 | -50.5 | -13.0 | -37.5 | |

**GSM 1900 GPRS**