



CERTIFICATION TEST REPORT

Report Number. : 11992683-E1V6

Applicant : Verifone, Inc.
1400 West Stanford Ranch Road
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
FCC CFR47 PART 24 SUBPART E
INDUSTRY CANADA RSS-132 ISSUE 3
INDUSTRY CANADA RSS-133 ISSUE 6

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Prepared by:

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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. Revised Scope of Testing section. 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 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
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TEST ENGINEER
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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:

EURP = 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

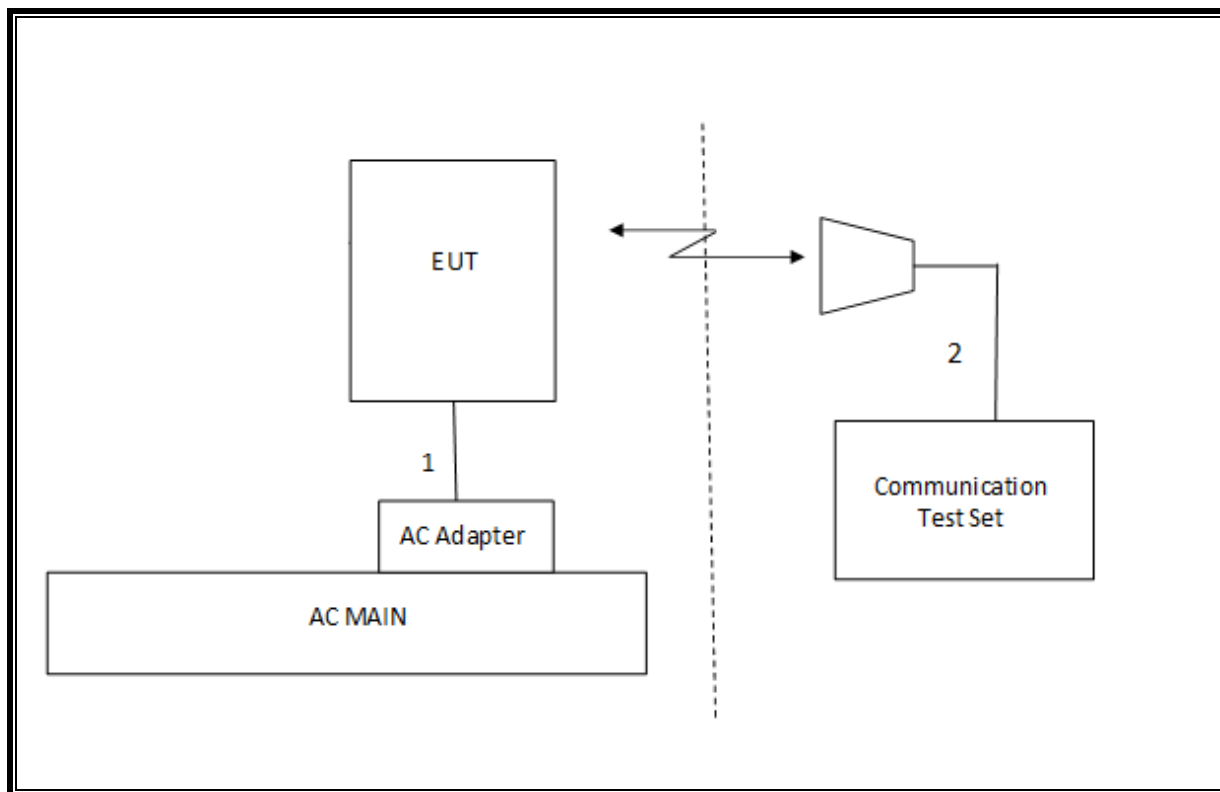
I/O CABLES (RADIATED SETUP)

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) 24.238(a)	RSS-132(5.5) 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 $43 + 10 \log_{10}P$ (watts).

After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10}P$ (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 $43 + 10 \log_{10}P$ (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 $43 + 10 \log_{10}P$ (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