



CERTIFICATION TEST REPORT

Report Number. : 11859411-E1V3

Applicant : Verifone, Inc.
1400 West Stanford Ranch Road
Rocklin, CA 95765, USA

FCC ID : B32V240M2G

IC ID : 787C-V240M2G

EUT Description : MOBILE POINT OF SALE TERMINAL

Test Standard(s) : FCC 47 CFR PART 22H
FCC 47 CFR PART 24E
ICE-RSS-132 Issue 3
ICE-RSS-133 Issue 6

Date Of Issue:

January 23, 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

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	09/20/17	Initial Issue	F. Ibrahim
V2	12/13/17	Updated Sections 2, 6, 7, 8 and corrected Company Name	F. Ibrahim
V3	01/23/18	Updated Maximum Output ERP/EIRP and RF Output Power sections	F. Ibrahim

TABLE OF CONTENTS

1.	ATTESTATION OF TEST RESULTS	4
2.	TEST METHODOLOGY	5
3.	FACILITIES AND ACCREDITATION	5
4.	CALIBRATION AND UNCERTAINTY	5
4.1.	<i>MEASURING INSTRUMENT CALIBRATION</i>	<i>5</i>
4.2.	<i>SAMPLE CALCULATION</i>	<i>5</i>
4.3.	<i>MEASUREMENT UNCERTAINTY</i>	<i>6</i>
5.	EQUIPMENT UNDER TEST	6
5.1.	<i>DESCRIPTION OF EUT</i>	<i>6</i>
5.2.	<i>MAXIMUM OUTPUT ERP/EIRP</i>	<i>7</i>
5.3.	<i>DESCRIPTION OF AVAILABLE ANTENNAS</i>	<i>7</i>
5.4.	<i>DESCRIPTION OF TEST SETUP</i>	<i>8</i>
6.	TEST AND MEASUREMENT EQUIPMENT	11
7.	SUMMARY TABLE	12
8.	ANTENNA PORT TEST RESULTS	13
8.1.	<i>RF OUTPUT POWER</i>	<i>13</i>
8.2.	<i>PEAK TO AVERAGE RATIO</i>	<i>17</i>
8.3.	<i>OCCUPIED BANDWIDTH</i>	<i>19</i>
8.4.	<i>BAND EDGE EMISSIONS</i>	<i>21</i>
8.5.	<i>OUT OF BAND EMISSIONS</i>	<i>23</i>
8.6.	<i>FREQUENCY STABILITY</i>	<i>25</i>
9.	RADIATED TEST RESULTS	27
9.1.	<i>FIELD STRENGTH OF SPURIOUS RADIATION</i>	<i>27</i>
10.	SETUP PHOTOS	30

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Verifone, Inc.
1400 West Stanford Ranch Road Suite 200
Rocklin, CA 95765, USA

EUT DESCRIPTION: Mobile Point of Sale Terminal

MODEL: V240m 2G

SERIAL NUMBER: 313-856-052, 313-856-093

DATE TESTED: Septemer 8 to12, 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
PROGRAM MANAGER
UL VERIFICATION SERVICES INC

Prepared By:



KIYA KEDIDA
CONSUMER TECHNOLOGY DIVISION
ENGINEER
UL VERIFICATION SERVICES INC

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI/TIA-603-E-2016, FCC CFR 47 Part 2, FCC KDB 971168 D01 v02r02, FCC Part 22 and FCC Part 24, and in accordance with 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
<input type="checkbox"/> Chamber A(IC: 2324B-1)	<input type="checkbox"/> Chamber D(IC: 22541-1)
<input checked="" type="checkbox"/> Chamber B(IC: 2324B-2)	<input type="checkbox"/> Chamber E(IC: 22541-2)
<input type="checkbox"/> Chamber C(IC: 2324B-3)	<input type="checkbox"/> Chamber F(IC: 22541-3)
	<input type="checkbox"/> Chamber G(IC: 22541-4)
	<input type="checkbox"/> 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 GSM Mobile Point of Sale Terminal which contains an NFC module.

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	-2.0	32.30	1698.24	28.15	653.13
1900	1850~1910	GPRS	1.0	30.10	1023.29	31.10	1288.25

RSS 132/133							
Band	Frequency Range (MHz)	Modulation	AG	Conducted power (Peak)		EIRP (Peak)	
			(dBi)	(dBm)	(mW)	(dBm)	(mW)
850	824~849	GPRS	-2.0	32.30	1698.24	30.30	1071.52
1900	1850~1910	GPRS	1.0	30.10	1023.29	31.10	1288.25

5.3. 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	-2.0
GSM1900, 1850~1910MHz	1.0

5.4. DESCRIPTION OF TEST SETUP
SUPPORT EQUIPMENT

Support Equipment List				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Verifone	SC1402	1708200053701	NA

I/O CABLES (CONDUCTED SETUP)

I/O Cable List						
Cable No	Port	# of Identical ports	Connector Type	Serial 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

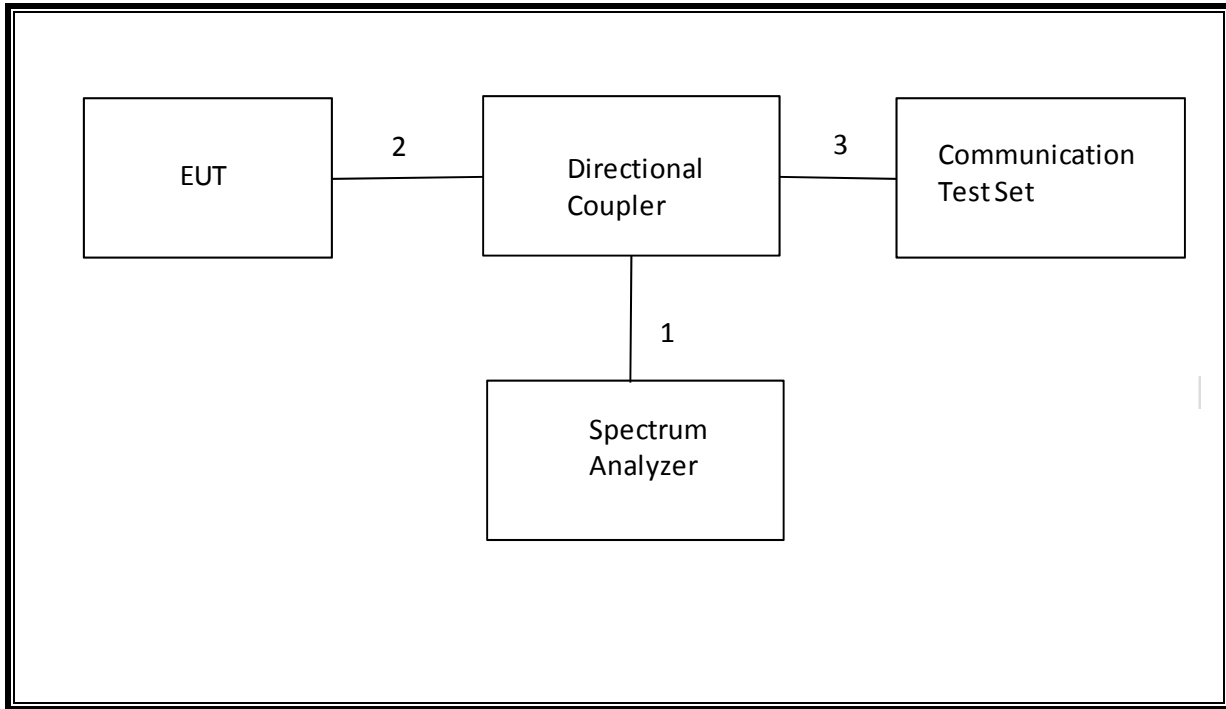
I/O CABLES (RADIATED SETUP)

I/O Cable List						
Cable No	Port	# of Identical ports	Connector Type	Serial Type	Cable Length (m)	Remarks
1	DC	1	Round	Un-shielded	1.75m	
2	RF In/out	1	Communication Test Set	Un-shielded	2m	

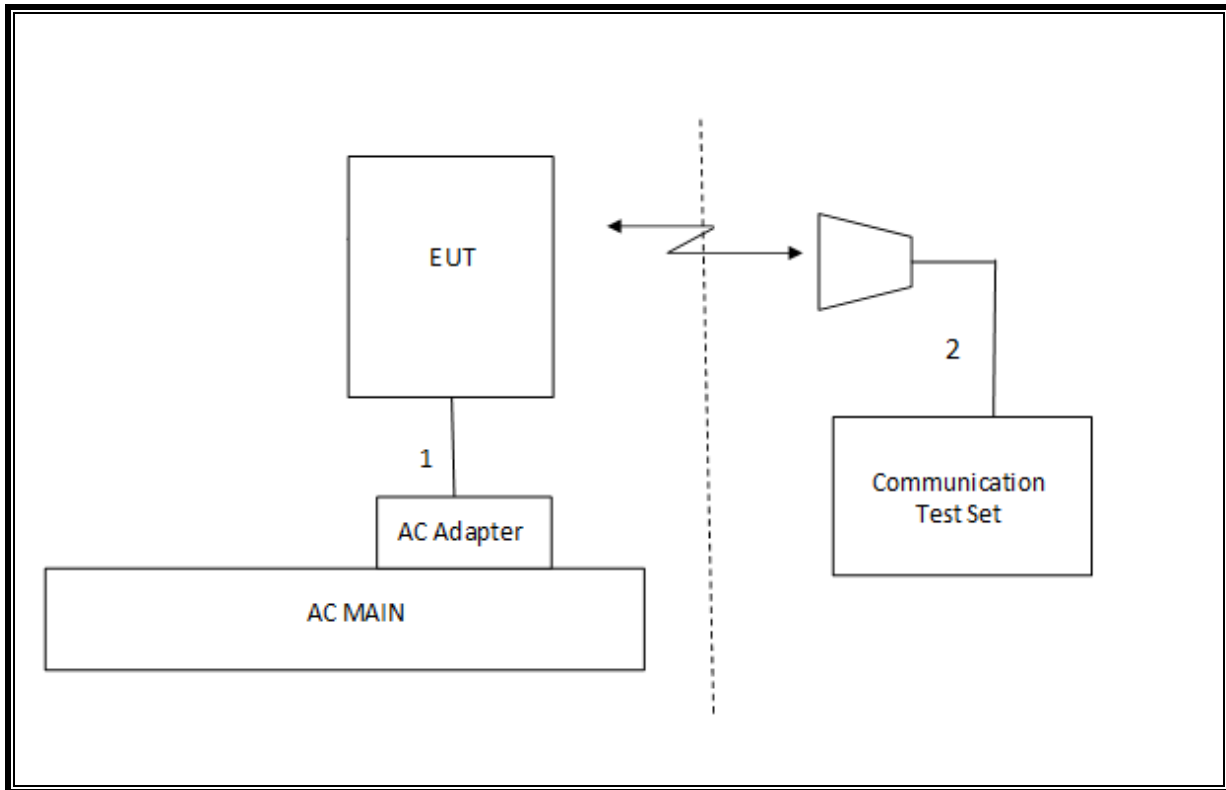
TEST SETUP

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	T Number	Cal Date	Cal Due
Amplifier, 1 to 18 GHz	Miteq	AFS43-00101800-25-S-42	493	02/15/17	02/15/18
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	10	02/15/17	02/15/18
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences	JB3	408	11/10/16	11/10/17
Horn Antenna	ETS-Lindgren	3117	T712	1/30/2017	01/30/18
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	907	01/23/17	01/23/18
Highpass Filter, 2.7 GHz	Micro-Circuits	H2G518G6	T772	7/5/16	07/05/18
Highpass Filter, 1 GHz	Micro-Tronics	HPM18129	T889	2/21/17	02/21/18
Highpass Filter, 4GHz	Micro-Tronics	HPM13351	T1241	7/19/17	07/19/18
Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	T956	06/22/17	06/22/18
PXA, Signal Analyzer	Agilent Technologies	N9030A	T1931	06/06/17	06/06/18
DC power supply, 8 V @ 3 A or 15 V @ 2 A	Agilent / HP	E3610A	None	CNR	None
Antenna, Tuned Dipole 400~1000 MHz	ETS	3121C DB4	T273	6/08/17	06/08/18
Directional Coupler	Mini-Circuits	ZUDC10-183+	T1136	6/18/17	06/18/18

Test Equipment List			
Description	Manufacturer	Model	UL Test software
Radiated Software	UL	UL EMC	Ver 1.2.4, Mar 13, 2017
Conducted Software	UL	UL EMC	Ver 9.5, May 26, 2015
CLT Software	UL	UL RF	Ver 1.7, Feb 2, 2015
Antenna Port Software	UL	UL RF	Ver 7.0.1, Feb 27, 2017

7. SUMMARY TABLE

FCC Part Section	RSS Section(s)	Test Description	Test Limit	Test Condition	Test Result
2.1049	N/A	Occupied Bandwidth (99%)	N/A	Conducted	Pass
22.917(a) 24.238(a)	RSS-132(5.5) RSS-133(6.5)	Band Edge / Conducted Spurious Emission	-13dBm		Pass
2.1046	N/A	Conducted output power	N/A		Pass
22.355 24.235	RSS-132(5.3) RSS-133(6.3)	Frequency Stability	2.5PPM		Pass
22.913(a)(2)	RSS-132 (5.4)	Effective Radiated Power	38dBm	Radiated	Pass
24.232(c) 27.50(h)(2)	RSS-133(6.4)	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

8. ANTENNA PORT TEST RESULTS

8.1. RF OUTPUT POWER

TEST PROCEDURE

ANSI C63.26:2015/ ANSI/TIA / EIA 603-E-2016 Clause 2.2.17
KDB 971168 Section 5.6

$ERP/EIRP = P_{Meas} + GT - LC$

where: ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as P_{Meas} , typically dBW or dBm);

P_{Meas} = 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.

MODES TESTED

- GSM 850
- GSM 1900

GSM

Using CMW500 Communication Test Set

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
> 27 dBm for EGPRS 850/900
> 30 dBm for GPRS1800/1900
> 26 dBm for EGPRS1800/1900

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 > CS 4 (GPRS) and MCS5-9 (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

Tested By	Kenneth Mak
Date	9/8/2017

GSM 850 (FCC)

Antenna gain (dBi)		-2.00					
Mode	Ch.	f (MHz)	Modulation	Conducted Peak Power (dBm)	Peak ERP (dBm)	ERP Limit (dBm)	Margin (dB)
GPRS	128	824.2	1 Time slot	32.30	28.15	38.5	-10.35
	190	836.6		32.20	28.05	38.5	-10.45
	251	848.8		32.20	28.05	38.5	-10.45
	128	824.2	2 Time slot	32.30	28.15	38.5	-10.35
	190	836.6		32.20	28.05	38.5	-10.45
	251	848.8		32.20	28.05	38.5	-10.45

GSM 850 (ISED)

Antenna gain (dBi)		-2.00					
Mode	Ch.	f (MHz)	Modulation	Conducted Peak Power (dBm)	Peak EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)
GPRS	128	824.2	1 Time slot	32.30	30.30	38.5	-8.20
	190	836.6		32.20	30.20	38.5	-8.30
	251	848.8		32.20	30.20	38.5	-8.30
	128	824.2	2 Time slot	32.30	30.30	38.5	-8.20
	190	836.6		32.20	30.20	38.5	-8.30
	251	848.8		32.20	30.20	38.5	-8.30

GSM 1900

Antenna gain (dBi)		1.00					
Mode	Ch.	f (MHz)	Modulation	Conducted Peak Power (dBm)	Peak EIRP (dBm)	EIRP Limit (dBm)	Margin (dB)
GPRS	512	1850.2	1 Time slot	30.00	31.00	33.0	-2.00
	661	1880.0		30.10	31.10	33.0	-1.90
	810	1909.8		30.10	31.10	33.0	-1.90
	512	1850.2	2 Time slot	30.00	31.00	33.0	-2.00
	661	1880.0		30.10	31.10	33.0	-1.90
	810	1909.8		30.10	31.10	33.0	-1.90

8.2. PEAK TO AVERAGE RATIO

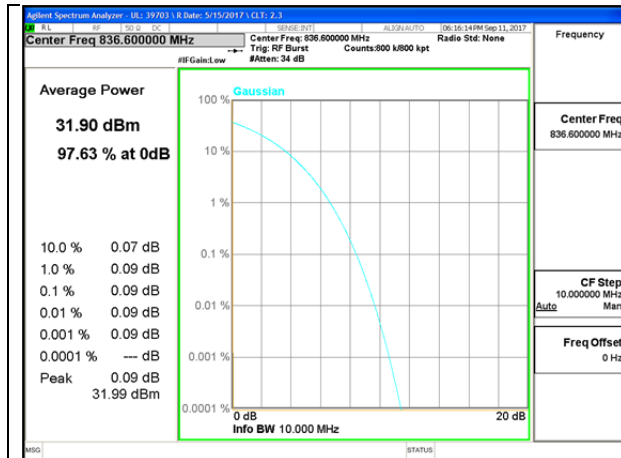
TEST PROCEDURE

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

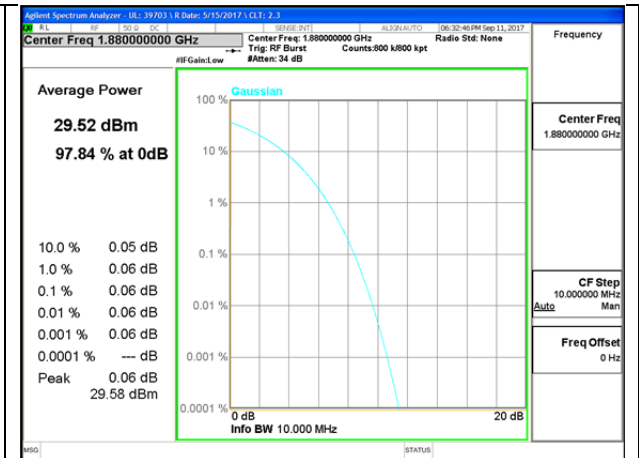
TEST SPEC

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.

GSM



GSM850 GPRS Middle Channel



GSM1900 GPRS Middle Channel

8.3. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049
IC: RSS132; RSS133

LIMITS

For reporting purposes only

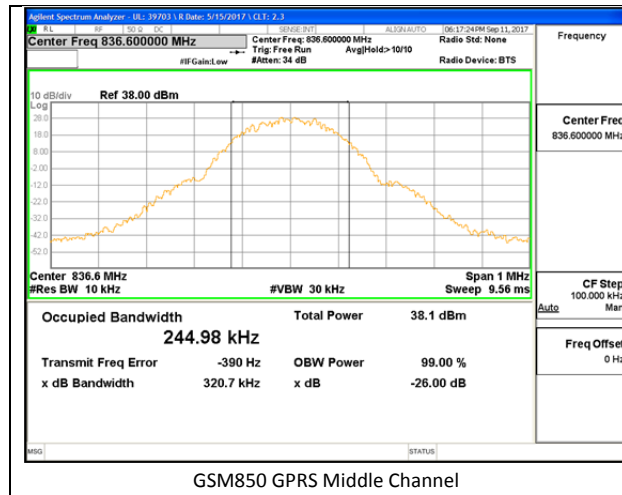
TEST PROCEDURE

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.

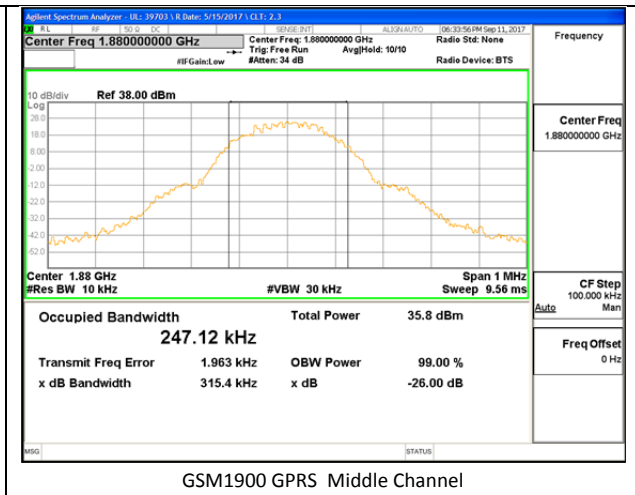
(KDB 971168 D01 Power Meas License Digital Systems v02r02)

GSM

Band	Mode	Channel	f (MHz)	99% BW (kHz)	-26dB (kHz)
GSM 850	GPRS	128	824.2	247.0	317.3
		190	836.6	245.0	320.7
		251	848.8	247.8	320.9
GSM 1900	GPRS	512	1850.2	243.9	317.3
		661	1880.0	247.1	315.4
		810	1909.8	244.0	304.3



GSM850 GPRS Middle Channel



GSM1900 GPRS Middle Channel

8.4. **BAND EDGE EMISSIONS**

RULE PART(S)

FCC: §22.359, §22.917, §24.238
IC: RSS132§5.5; RSS133§6.5

FCC LIMITS

FCC: §22.359, §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.

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

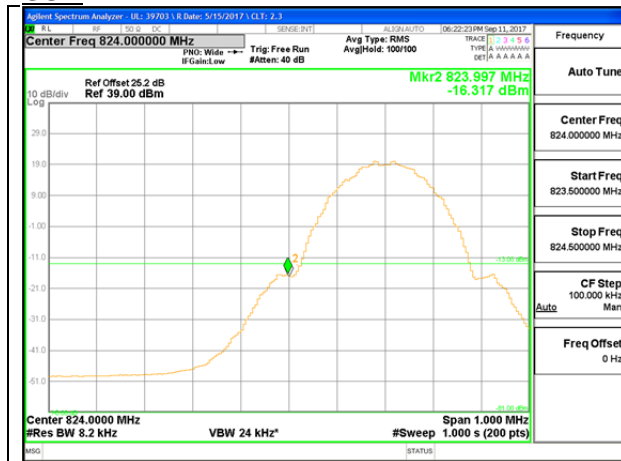
Per KDB 971168 D01 Power Meas License Digital Systems v02r02

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.

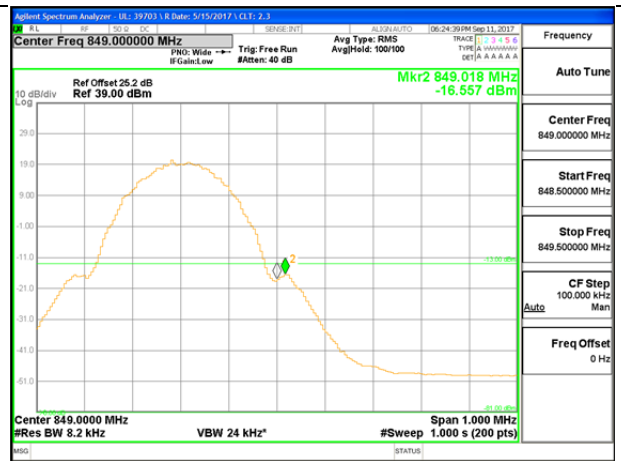
For each band edge measurement:

- Set the spectrum analyzer span to include the block edge frequency.
- 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.

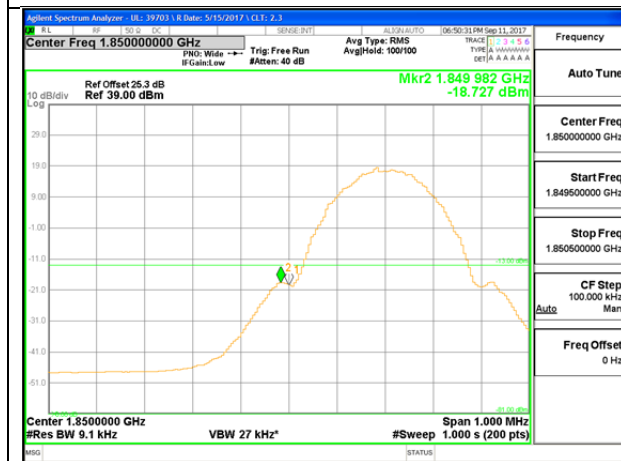
GSM



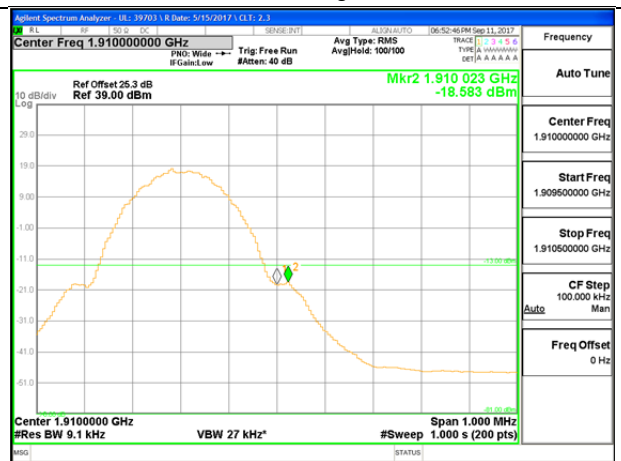
GSM850 GPRS Low Channel



GSM850 GPRS High Channel



GSM1900 GPRS Low Channel



GSM1900 GPRS High Channel

8.5. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §22.359, §22.917, §24.238
IC: RSS132§5.5; RSS133§6.5

FCC LIMITS

FCC: §22.359, §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.

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

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

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 a maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

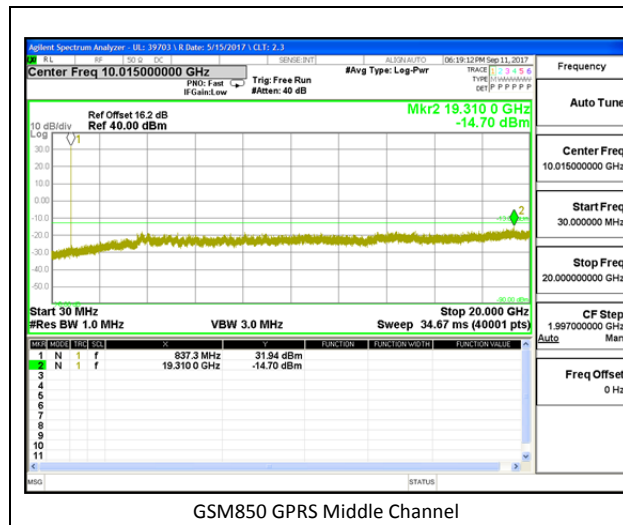
For each out of band emissions measurement:

- 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.

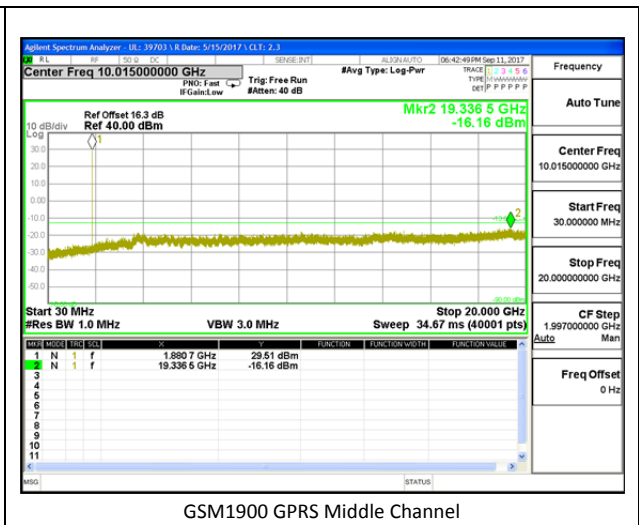
RESULTS

GSM

Band	Mode	f (MHz)	Spur (dBm)	Spec (dBm)	Delta (dB)
GSM 850	GPRS	824.2	-15.121	-13	-2.121
		836.6	-14.702	-13	-1.702
		848.8	-15.562	-13	-2.562
GSM 1900	GPRS	1850.2	-15.924	-13	-2.924
		1880	-16.161	-13	-3.161
		1909.8	-15.792	-13	-2.792



GSM850 GPRS Middle Channel



GSM1900 GPRS Middle Channel

8.6. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235

IC: RSS132§5.3; RSS133§6.3

FCC 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.

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

Per KDB 971168 D01 Power Meas License Digital Systems v02r02

Results

Tested By	Kiya Kedida
Date	9/12/17

GSM 850

Reference Frequency: GSM 850 Mid Channel 836.6 MHz @ 20°C				
Limit: to stay +/- 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.30	50	836.599979	0.001	2.5
3.30	40	836.599980	0.001	2.5
3.30	30	836.599980	0.000	2.5
3.30	20	836.599980	0	2.5
3.30	10	836.599982	-0.002	2.5
3.30	0	836.599978	0.003	2.5
3.30	-10	836.599980	0.000	2.5
3.30	-20	836.599981	-0.001	2.5

Reference Frequency: GSM 850 Mid Channel 836.6 MHz @ 20°C				
Limit: to stay +/- 2.5 ppm = 2091.500 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.30	20	836.599980	0	2.5
4.80	20	836.599979	0.002	2.5
3.20	20	836.599980	0.000	2.5

GSM 1900

Reference Frequency: GSM 1900 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)
3.30	50	1880.000031	0.003	2.5
3.30	40	1880.000032	0.002	2.5
3.30	30	1880.000035	0.001	2.5
3.30	20	1880.000036	0	2.5
3.30	10	1880.000040	-0.002	2.5
3.30	0	1880.000030	0.004	2.5
3.30	-10	1880.000035	0.001	2.5
3.30	-20	1880.000039	-0.002	2.5

Reference Frequency: GSM 1900 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)
3.30	20	1880.000036	0	2.5
4.80	20	1880.000043	-0.003	2.5
3.20	20	1880.000039	-0.001	2.5

9. RADIATED TEST RESULTS

9.1. FIELD STRENGTH OF SPURIOUS RADIATION

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 #:		11859411								
Date:		9/9/2017								
Test Engineer:		39703 KK								
Configuration:		EUT + AC Adapter								
Location:		Chamber B								
Mode:		GPRS 850 MHz Harmonics								
F MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch. 824.2MHz										
1648.40	-10.5	V	3.0	37.0	1.0	-46.5	-13.0	-33.5		
2472.60	-13.7	V	3.0	36.4	1.0	-49.1	-13.0	-36.1		
3296.80	-18.7	V	3.0	36.2	1.0	-53.9	-13.0	-40.9		
1648.40	-11.2	H	3.0	37.0	1.0	-47.3	-13.0	-34.3		
2472.60	-14.2	H	3.0	36.4	1.0	-49.6	-13.0	-36.6		
3296.80	-18.9	H	3.0	36.2	1.0	-54.1	-13.0	-41.1		
Mid Ch. 836.6MHz										
1673.20	-10.7	V	3.0	37.0	1.0	-46.7	-13.0	-33.7		
2509.80	-14.9	V	3.0	36.4	1.0	-50.3	-13.0	-37.3		
3346.40	-18.5	V	3.0	36.1	1.0	-53.6	-13.0	-40.6		
1673.20	-11.3	H	3.0	37.0	1.0	-47.3	-13.0	-34.3		
2509.80	-15.4	H	3.0	36.4	1.0	-50.8	-13.0	-37.8		
3346.40	-19.7	H	3.0	36.1	1.0	-54.8	-13.0	-41.8		
High Ch. 848.0MHz										
1697.60	-12.0	V	3.0	37.0	1.0	-47.9	-13.0	-34.9		
2546.40	-14.4	V	3.0	36.4	1.0	-49.8	-13.0	-36.8		
3386.20	-18.9	V	3.0	36.1	1.0	-54.0	-13.0	-41.0		
1697.60	-11.7	H	3.0	37.0	1.0	-47.6	-13.0	-34.6		
2546.40	-10.9	H	3.0	36.4	1.0	-46.3	-13.0	-33.3		
3386.20	-17.6	H	3.0	36.1	1.0	-52.7	-13.0	-39.7		

GSM850 GPRS

UL Verification Services, Inc. Above 1GHz High Frequency Substitution Measurement										
Company:		VERIFONE								
Project #:		11859411								
Date:		9/9/2017								
Test Engineer:		39703 KK								
Configuration:		EUT + AC Adapter								
Location:		Chamber B								
Mode:		GPRS 1900 MHz Harmonics								
F MHz	SG reading (dBm)	Ant. Pol. (HV)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes	
Low Ch. 1850.2MHz										
3700.40	-17.5	V	3.0	35.9	1.0	-52.4	-13.0	-39.4		
5550.60	-11.1	V	3.0	35.5	1.0	-45.6	-13.0	-32.6		
7400.80	-13.9	V	3.0	35.7	1.0	-48.6	-13.0	-35.6		
3700.40	-17.5	H	3.0	35.9	1.0	-52.4	-13.0	-39.4		
5550.60	-6.4	H	3.0	35.5	1.0	-40.9	-13.0	-27.9		
7400.80	-12.6	H	3.0	35.7	1.0	-47.4	-13.0	-34.4		
Mid Ch. 1880MHz										
3760.00	-16.2	V	3.0	35.8	1.0	-51.0	-13.0	-38.0		
5640.00	-10.1	V	3.0	35.5	1.0	-44.6	-13.0	-31.6		
7520.00	-13.1	V	3.0	35.7	1.0	-47.9	-13.0	-34.9		
3760.00	-17.3	H	3.0	35.8	1.0	-52.1	-13.0	-39.1		
5640.00	-6.1	H	3.0	35.5	1.0	-40.6	-13.0	-27.6		
7520.00	-12.9	H	3.0	35.7	1.0	-47.7	-13.0	-34.7		
High Ch. 1909.8MHz										
3819.60	-17.7	V	3.0	35.8	1.0	-52.4	-13.0	-39.4		
5729.40	-10.4	V	3.0	35.5	1.0	-44.9	-13.0	-31.9		
7639.20	-13.0	V	3.0	35.8	1.0	-47.8	-13.0	-34.8		
3819.60	-17.7	H	3.0	35.8	1.0	-52.5	-13.0	-39.5		
5729.40	-6.1	H	3.0	35.5	1.0	-40.6	-13.0	-27.6		
7639.20	-12.1	H	3.0	35.8	1.0	-46.8	-13.0	-33.8		

GSM1900 GPRS