



**FCC CFR47 PART 22H AND 24E
&
INDUSTRY CANADA RSS-132 AND RSS-133
CERTIFICATION
TEST REPORT
FOR**

850/900/1800/1900/2100 MHZ MULTI-BAND MODULE

MODEL NUMBER: MC8792V

FCC ID: N7NMC8792

IC: 2417C-MC8792

REPORT NUMBER: 08U12080-1

ISSUE DATE: SEPTEMBER 30, 2008

Prepared for

**SIERRA WIRELESS INC.
13811 WIRELESS WAY
RICHMOND, BC V6V 3A4, CANADA**

Prepared by

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NVLAP LAB CODE 200065-0

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
--	09/30/08	Initial Issue	T. Chan

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: SIERRA WIRELESS INC.
13811 WIRELESS WAY
RICHMOND, BC V6V 3A4, CANADA

EUT DESCRIPTION: 850/900/1800/1900/2100 MHz MULTI-BAND MODULE

MODEL: MC8792V

SERIAL NUMBER: 355060020000050

DATE TESTED: SEPTEMBER 20 AND 29, 2008

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 22H and 24E	
AND	PASS
IC RSS-132 ISSUE 2 and RSS-133 ISSUE 4	(Radiated Portion)

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

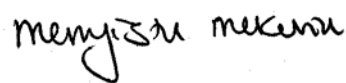
Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:



THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:



MENGISTU MEKURIA
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA/EIA 603C (2004), FCC CFR 47 Part 2, and FCC CFR 47 Part 22H, 24E, RSS-GEN, RSS132, & RSS133.

3. FACILITIES AND ACCREDITATION

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

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

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is an 850/900/1800/1900/2100 MHz multi-band module and manufactured by Sierra Wireless, Inc.

The module supports GSM, GPRS, EGPRS and UMTS. Device capabilities are documented in the theory of operation

Only the 850/1900 MHz frequency bands were investigated under this project, and the test result documented in this report only applies to EUT operating in the 850/1900 MHz frequency bands. This device contains 900 MHz /1800 MHz/2100 MHz functions but these frequency bands are not operational in the U.S. territories.

5.2. SOFTWARE AND FIRMWARE

The following settings were used to configure the Radio Communication Tester, Agilent 8960 series 10 E5515C, Wireless Communication Test Set is used to control the EUT and measure the output power.

The following setting was used to establish the signal.

System Config: GSM/GPRS Mobile Test
E1968A A.06.31

Call Parms: BCH → Cell Band: GSM850/PCS
TCH → Traffic Band: GSM850/PCS
Traffic Channel: 128/192/251 or 512/661/810
MS Tx Level: 0

PDTCH → Traffic Band: GSM850/PCS
Traffic Channel: 128/192/251 512/661/810
MS Tx Level: 0
Coding Scheme: CS-1
MultiSlot Config: 2up, 2 down

Control: Active Cell → GSM/GPRS/EGPRS

5.4. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	ELPAC	FW1805	54872	NA
Communications Test Set	Agilent	E5515C	10092	DoC
Test Fixture	Sierra Wireless	Mini Card Dev Board	1400338 Rev 1	NA

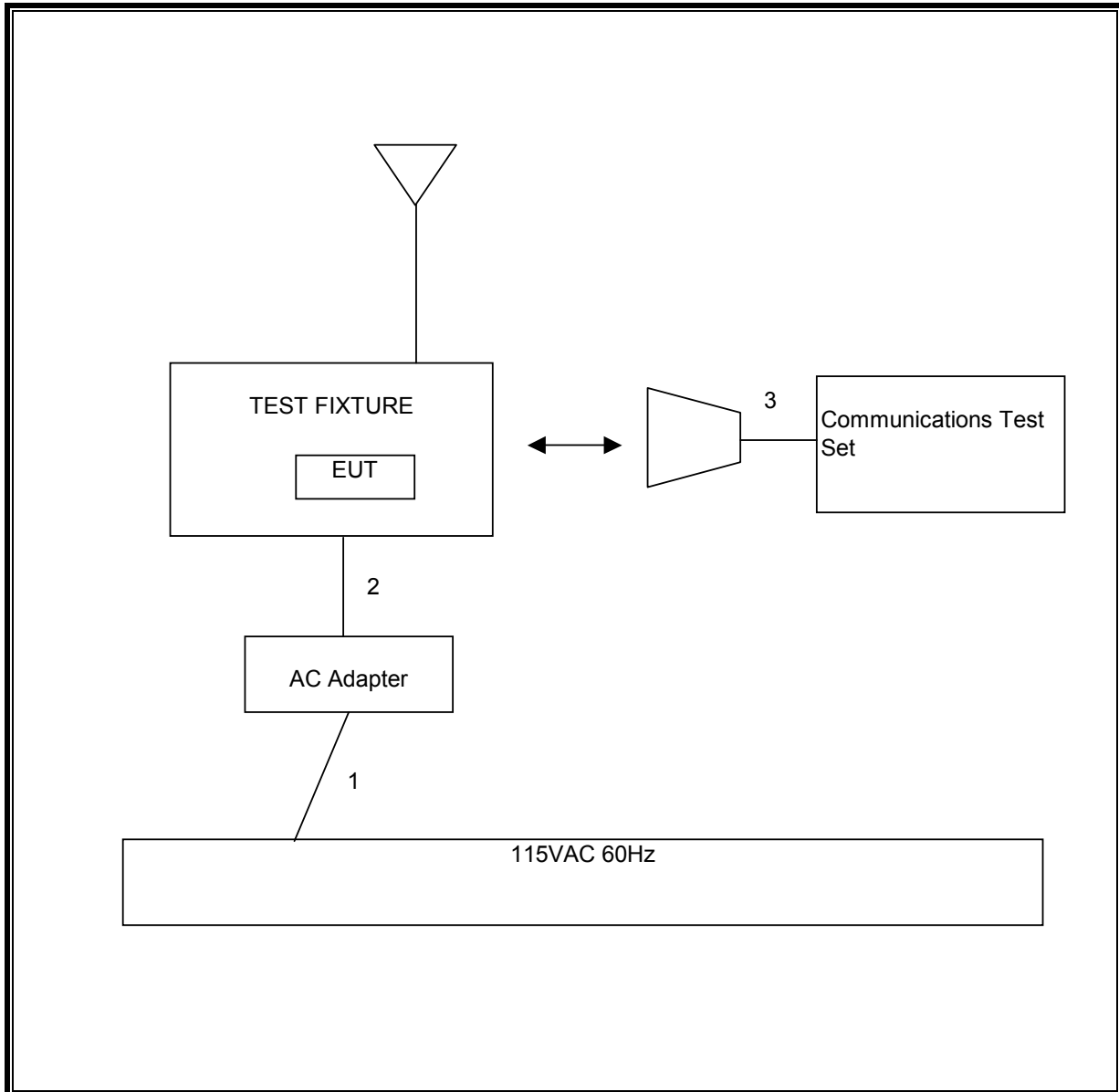
I/O CABLES

Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Un-shielded	2m	NA
2	DC	1	DC	Un-shielded	2m	NA
3	RF In/Out	1	SMA	Shielded	2m	NA

TEST SETUP

The EUT module is installed in a test fixture during the tests. The Wireless Communication test set exercised the EUT.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

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

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	10/8/2009
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	10/8/2009
Antenna, Horn, 18 GHz	EMCO	3115	C00872	4/22/2009
Antenna, Horn, 18 GHz	ETS	3117	C01022	4/22/2009
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	9/27/2008
Communication Test Set	Agilent	E5515C	6B46160222	6/16/2009
Communication Test Set	R & S	CMU 200	C00944	12/26/08
2.7GHz HPF	MicroTronic	HPM13195	N02689	CNR
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02689	CNR

7. LIMITS AND RESULTS

7.1. FIELD STRENGTH OF SPURIOUS RADIATION

LIMIT

§§22.917 (e) and §24.238 (a), RSS-132 § 4.5.1, & RSS-133 § 6.5.1 (a) (i) & (b): Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.12, FCC 22.917 (h), FCC 24.238 (b), RSS-132, & RSS-133

RESULTS

CELL, GPRS Spurious & Harmonic (ERP)

High Frequency Substitution Measurement
 Compliance Certification Services, Fremont 5m B-Chamber

Company: SIERRA WIRELESS
 Project #: 08U12080
 Date: 9/29/2008
 Test Engineer: MENGISTU MEKURIA
 Configuration: EUT AND TEST FIXTURE
 Mode: CELL 850 MHz, GPRS

Test Equipment:

EMCO Horn 1-18GHz
T73; S/N: 6717 @3m

Horn > 18GHz

Limit
FCC 22

High Pass Filter

Hi Frequency Cables
 (2 ft) (2~3 ft) (4~6 ft) (12 ft)

Pre-amplifier 1-26GHz
T145 Agilent 3008A

Pre-amplifier 26-40GHz

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
LOW CH. (824.2 MHz)										
1.648	59.6	H	-45.7	3.8	8.0	5.8	-43.7	-13.0	-30.7	
2.473	60.6	H	-41.7	4.9	9.5	7.4	-39.1	-13.0	-26.1	
3.297	45.6	H	-53.3	5.6	9.8	7.6	-51.3	-13.0	-38.3	
1.648	60.6	V	-45.4	3.8	8.0	5.8	-43.4	-13.0	-30.4	
2.473	61.5	V	-41.0	4.9	9.5	7.4	-38.5	-13.0	-25.5	
3.297	52.5	V	-46.5	5.6	9.8	7.6	-44.5	-13.0	-31.5	
MID CH. (837.0 MHz)										
1.674	59.8	H	-45.4	3.9	8.0	5.9	-43.4	-13.0	-30.4	
2.511	51.2	H	-50.9	4.9	9.6	7.4	-48.4	-13.0	-35.4	
3.348	44.6	H	-54.1	5.6	9.8	7.6	-52.1	-13.0	-39.1	
1.674	55.1	V	-50.8	3.9	8.0	5.9	-48.8	-13.0	-35.8	
2.511	54.9	V	-47.4	4.9	9.6	7.4	-44.9	-13.0	-31.9	
3.348	48.2	V	-50.5	5.6	9.8	7.6	-48.6	-13.0	-35.6	
HI CH. (848.8 MHz)										
1.697	63.6	H	-41.4	3.9	8.1	5.9	-39.4	-13.0	-26.4	
2.545	51.3	H	-50.7	4.9	9.6	7.4	-48.2	-13.0	-35.2	
3.394	46.2	H	-52.3	5.7	9.7	7.6	-50.4	-13.0	-37.4	
1.697	60.4	V	-45.4	3.9	8.1	5.9	-43.3	-13.0	-30.3	
2.545	53.9	V	-48.2	4.9	9.6	7.4	-45.8	-13.0	-32.8	
3.394	48.2	V	-50.3	5.7	9.7	7.6	-48.4	-13.0	-35.4	

Rev. 4.12.7

PCS, GPRS Spurious & Harmonic (EIRP)

High Frequency Substitution Measurement
 Compliance Certification Services, Fremont 5m B-Chamber

Company: SIERRA WIRELESS
 Project #: 08U12080
 Date: 9/29/2008
 Test Engineer: MENGISTU MEKURIA
 Configuration: EUT AND TEST FIXTURE
 Mode: PCS 1900 MHz, GPRS

Test Equipment:

EMCO Horn 1-18GHz
T73; S/N: 6717 @3m

Horn > 18GHz

Limit
FCC 24

High Pass Filter

Hi Frequency Cables
 (2 ft)
 (2~3 ft)
 (4~6 ft)
 (12 ft)

Pre-amplifier 1-26GHz
T145 Agilent 3008A

Pre-amplifier 26-40GHz

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
LOW CH. (1850.2 MHz)										
3.700	50.3	H	-46.7	5.9	9.7	7.6	-42.9	-13.0	-29.9	
5.551	45.0	H	-46.5	7.4	11.3	9.1	-42.6	-13.0	-29.6	
3.700	51.5	V	-45.6	5.9	9.7	7.6	-41.8	-13.0	-28.8	
5.551	45.2	V	-47.3	7.4	11.3	9.1	-43.4	-13.0	-30.4	
MID CH. (1880.0 MHz)										
3.760	50.0	H	-46.7	6.0	9.7	7.6	-43.0	-13.0	-30.0	
5.640	45.4	H	-46.2	7.4	11.5	9.3	-42.2	-13.0	-29.2	
3.760	52.5	V	-44.2	6.0	9.7	7.6	-40.5	-13.0	-27.5	
5.640	47.6	V	-45.0	7.4	11.5	9.3	-41.0	-13.0	-28.0	
HI CH. (1909.8 MHz)										
3.820	48.2	H	-48.2	6.0	9.7	7.5	-44.6	-13.0	-31.6	
5.729	44.9	H	-47.0	7.5	11.7	9.5	-42.8	-13.0	-29.8	
3.820	48.2	V	-48.3	6.0	9.7	7.5	-44.6	-13.0	-31.6	
5.729	44.0	V	-48.9	7.5	11.7	9.5	-44.7	-13.0	-31.7	

Rev. 4.12.7

CELL, EGPRS Spurious & Harmonic (ERP)

High Frequency Substitution Measurement
 Compliance Certification Services, Fremont 5m B-Chamber

Company: SIERRA WIRELESS
 Project #: 08U12080
 Date: 9/29/2008
 Test Engineer: MENGISTU MEKURIA
 Configuration: EUT AND TEST FIXTURE
 Mode: CELL 850 MHz, EGPRS

Test Equipment:

EMCO Horn 1-18GHz
T73; S/N: 6717 @3m

Horn > 18GHz

Limit
FCC 22

High Pass Filter

Hi Frequency Cables
 (2 ft) (2~3 ft) (4~6 ft) (12 ft)

Pre-amplifier 1-26GHz
T145 Agilent 3008A

Pre-amplifier 26-40GHz

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
LOW CH. (824.2 MHz)										
1.648	60.6	H	-44.7	3.8	8.0	5.8	-42.7	-13.0	-29.7	
2.473	53.6	H	-48.7	4.9	9.5	7.4	-46.2	-13.0	-33.2	
3.297	47.6	H	-51.3	5.6	9.8	7.6	-49.3	-13.0	-36.3	
1.648	57.8	V	-48.2	3.8	8.0	5.8	-46.2	-13.0	-33.2	
2.473	56.4	V	-46.1	4.9	9.5	7.4	-43.6	-13.0	-30.6	
3.297	48.9	V	-50.2	5.6	9.8	7.6	-48.1	-13.0	-35.1	
MID CH. (837.0 MHz)										
1.674	63.1	H	-42.1	3.9	8.0	5.9	-40.1	-13.0	-27.1	
2.511	56.8	H	-45.3	4.9	9.6	7.4	-42.8	-13.0	-29.8	
3.348	47.8	H	-50.9	5.6	9.8	7.6	-48.9	-13.0	-35.9	
1.674	60.7	V	-45.2	3.9	8.0	5.9	-43.2	-13.0	-30.2	
2.511	58.5	V	-43.8	4.9	9.6	7.4	-41.3	-13.0	-28.3	
3.348	48.0	V	-50.7	5.6	9.8	7.6	-48.8	-13.0	-35.8	
HI CH. (848.8 MHz)										
1.697	67.7	H	-37.4	3.9	8.1	5.9	-35.4	-13.0	-22.4	
2.545	51.5	H	-50.4	4.9	9.6	7.4	-47.9	-13.0	-34.9	
3.394	47.1	H	-51.4	5.7	9.7	7.6	-49.4	-13.0	-36.4	
1.697	61.0	V	-44.8	3.9	8.1	5.9	-42.7	-13.0	-29.7	
2.545	52.6	V	-49.6	4.9	9.6	7.4	-47.1	-13.0	-34.1	
3.394	47.6	V	-50.9	5.7	9.7	7.6	-49.0	-13.0	-36.0	

Rev. 4.12.7

PCS, EGPRS Spurious & Harmonic (EIRP)

High Frequency Substitution Measurement
 Compliance Certification Services, Fremont 5m B-Chamber

Company: SIERRA WIRELESS
 Project #: 08U12080
 Date: 9/29/2008
 Test Engineer: MENGISTU MEKURIA
 Configuration: EUT AND TEST FIXTURE
 Mode: PCS 1900 MHz, EGPRS

Test Equipment:

EMCO Horn 1-18GHz
T73; S/N: 6717 @3m

Horn > 18GHz

Limit
FCC 24

High Pass Filter

Hi Frequency Cables

(2 ft)
 (2~3 ft)
 (4~6 ft)
 (12 ft)

Pre-amplifier 1-26GHz
T145 Agilent 3008A

Pre-amplifier 26-40GHz

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
LOW CH. (1850.2 MHz)										
3.700	49.9	H	-47.1	5.9	9.7	7.6	-43.3	-13.0	-30.3	
5.551	42.1	H	-49.4	7.4	11.3	9.1	-45.5	-13.0	-32.5	
3.700	49.6	V	-47.5	5.9	9.7	7.6	-43.7	-13.0	-30.7	
5.551	45.9	V	-46.6	7.4	11.3	9.1	-42.7	-13.0	-29.7	
MID CH. (1880.0 MHz)										
3.760	49.0	H	-47.7	6.0	9.7	7.6	-44.0	-13.0	-31.0	
5.640	41.3	H	-50.4	7.4	11.5	9.3	-46.4	-13.0	-33.4	
3.760	49.1	V	-47.7	6.0	9.7	7.6	-44.0	-13.0	-31.0	
5.640	43.8	V	-48.8	7.4	11.5	9.3	-44.8	-13.0	-31.8	
HI CH. (1909.8 MHz)										
3.820	49.0	H	-47.3	6.0	9.7	7.5	-43.7	-13.0	-30.7	
5.729	42.0	H	-49.9	7.5	11.7	9.5	-45.8	-13.0	-32.8	
3.820	49.2	V	-47.3	6.0	9.7	7.5	-43.7	-13.0	-30.7	
5.729	43.5	V	-49.4	7.5	11.7	9.5	-45.2	-13.0	-32.2	

Rev. 4.12.7

PCS BAND WCDMA Spurious & Harmonic (EIRP)

High Frequency Substitution Measurement
 Compliance Certification Services, Fremont 5m B-Chamber

Company: SIERRA WIRELESS
 Project #: 08U12080
 Date: 9/29/2008
 Test Engineer: MENGISTU MEKURIA
 Configuration: EUT AND TEST FIXTURE
 Mode: PCS TX, WCDMA

Test Equipment:

EMCO Horn 1-18 GHz

T60; S/N: 2238 @3m

Horn > 18GHz

Limit

FCC 24

High Pass Filter

Hi Frequency Cables

(2 ft) (2~3 ft) (4~6 ft) (12 ft)

Pre-amplifier 1-26GHz

T145 Agilent 3008A1

Pre-amplifier 26-40GHz

f GHz	SA reading (dBuV/m)	Ant. Pol. (H/V)	SG reading (dBm)	CL (dB)	Gain (dBi)	Gain (dBd)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
LOW CH (1852.4 MHz)										
3.748	52.0	H	-44.7	6.0	9.7	7.5	-41.0	-13.0	-28.0	
3.748	54.0	V	-42.8	6.0	9.7	7.5	-39.1	-13.0	-26.1	
MID CH (1880.00 MHz)										
3.760	56.5	H	-40.1	6.0	9.7	7.5	-36.4	-13.0	-23.4	
3.760	58.4	V	-38.3	6.0	9.7	7.5	-34.6	-13.0	-21.6	
HI CH (1907.6 MHz)										
3.815	61.0	H	-35.4	6.0	9.7	7.6	-31.7	-13.0	-18.7	
3.815	65.3	V	-31.2	6.0	9.7	7.6	-27.5	-13.0	-14.5	

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