FCC 47 CFR PART 15 SUBPART C
INDUSTRY CANADA RSS-210 ISSUE 8

CERTIFICATION TEST REPORT

FOR

EMERGENCY ALERT WEARABLE

MODEL NUMBER: ANW1115

FCC ID: 2AGPI-ANW1115
IC ID: 20951-ANW1115

REPORT NUMBER: 15U21636-E3V2

ISSUE DATE: JANUARY 19, 2016

Prepared for
ANELTO
6270 MORNINGSTAR DR SUITE 100
THE COLONY
TX 75056 USA

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
--	01/14/16	Initial Issue	H. Mustapha
V2	01/19/16	Upadated EUT Description Updated antenna type in section 5.3	H. Mustapha

TABLE OF CONTENTS

1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Anelto
6270 Morningstar Dr.
The Colony, TX 75056 USA

EUT DESCRIPTION: Emergency Alert Wearable

MODEL: ANW1115

SERIAL NUMBER: Wearable WB38

DATE TESTED: Sept 14 – Nov 12, 2015

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
CFR 47 Part 15 Subpart C	Pass
INDUSTRY CANADA RSS-210 Issue 8 Annex 8	Pass
INDUSTRY CANADA RSS-GEN Issue 4	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 byUL 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:

Huda Mustapha

HUDA MUSTAPHA
PROJECT LEAD
UL Verification Services Inc.

Tested By:

Lionel Lara

LIONEL LARA
WiSE LAB ENGINEER
UL Verification Services Inc.

FRANK IBRAHIM
PROGRAM MANAGER
UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15, RSS-GEN Issue 4, and RSS-210 Issue 8.

3. FACILITIES AND ACCREDITATION

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

47173 Benicia Street	47266 Benicia Street
☒ Chamber A	☐ Chamber D
☒ Chamber B	☐ Chamber E
☒ Chamber C	☐ Chamber F
	☐ Chamber G
	☐ Chamber H

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers A through H are covered under Industry Canada company address code 2324B with site numbers 2324B -1 through 2324B-8, respectively.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at http://ts.nist.gov/standards/scopes/2000650.htm.

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, 0.15 to 30 MHz	± 3.52 dB
Radiated Disturbance, 30 to 1000 MHz	± 4.94 dB
Radiated Disturbance, 1 to 6 GHz	± 3.86 dB
Radiated Disturbance, 6 to 18 GHz	± 4.23 dB
Radiated Disturbance, 18 to 26 GHz	± 5.30 dB
Radiated Disturbance, 26 to 40 GHz	± 5.23 dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Emergency Alert Wearable device that is part of a Mobile Personal Emergency Response System.

5.2. MAXIMUM OUTPUT E-FIELD STRENGTH

The transmitter has a maximum output peak E-field as follows:

Frequency (MHz)	Mode	Output PK E-field Strength (dBuV/m)
906	2FSK	75.43

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The wearable utilizes a monopole antenna, with a maximum gain of -6 dBi.

5.4. SOFTWARE AND FIRMWARE

The test utility software used during testing was HW A, SW version 1.0.

5.5. WORST-CASE CONFIGURATION AND MODE

X,Y investigation was performed and X orientation was found to be worst-case, therefore, all final radiated emissions was performed using X orientation. See setup photos section for details.

The wearable device covered under this report uses the same radio as the cradle covered under report no. 15U21636-E2V1FCCIC. Therefore, testing the wearable for conducted test items was covered by testing the cradle.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List			
Description	**Manufacturer**	**Model**	**Serial Number**
DC Power Supply	Sorenson	XHR 60-18	1308A1935

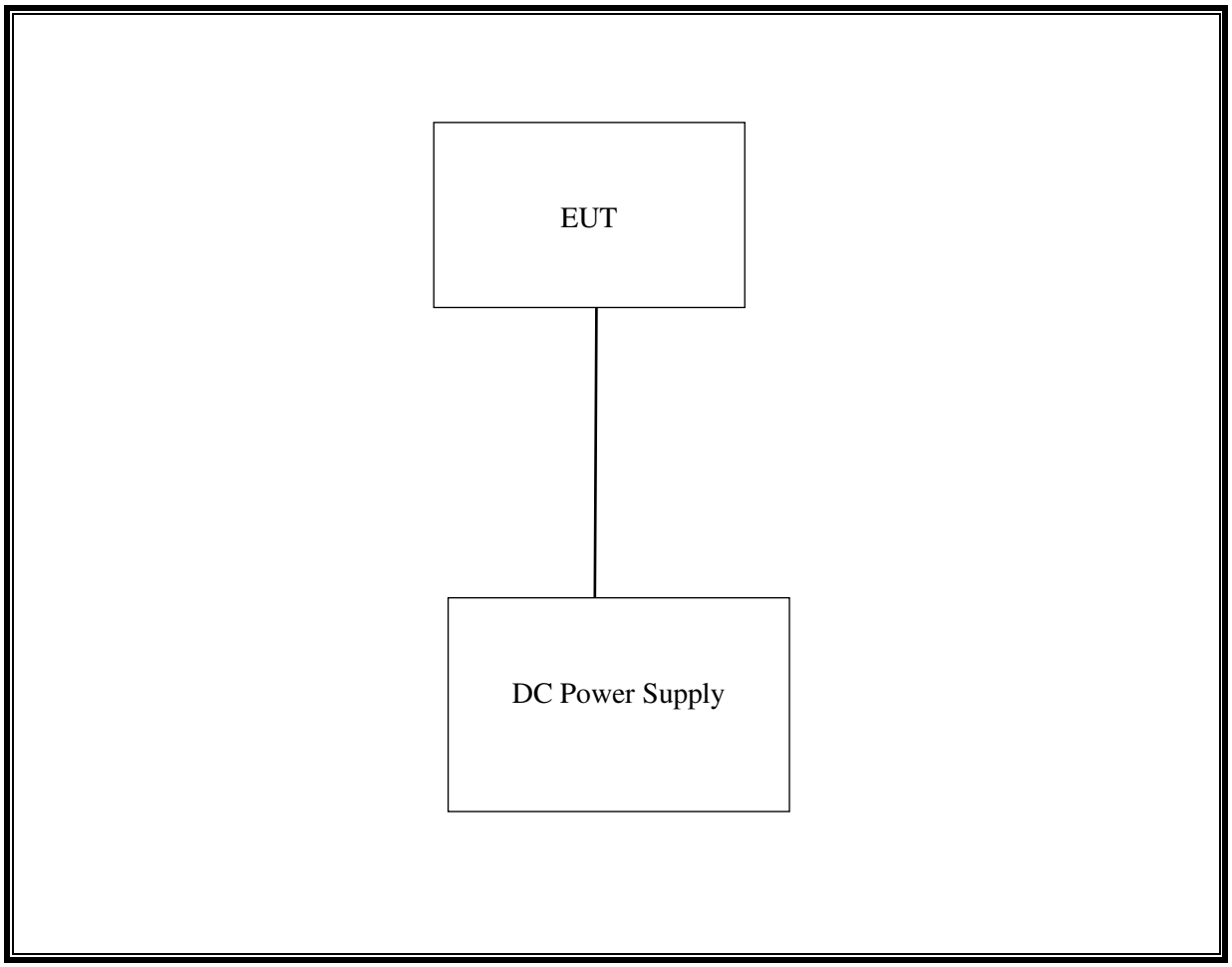
I/O CABLES

N/A

TEST SETUP

The wearable was connected to the DC power supply and was set to transmit.

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	T No.	Cal Date	Cal Due
Radiated Software	UL	UL EMC	Ver 9.5, July 24, 2015		
Conducted Software	UL	UL EMC	Ver 9.5, June 26, 2015		
Horn Antenna 1-18GHz	ETS	3117	136	01/15/15	01/15/16
Antenna, Biconolog, 30MHz-1 GHz	Sunol Sciences	JB3	477	6/10/2015	6/10/2016
Preamp 10kHz-1000MHz	HP	8447D	10	01/16/15	01/16/16
Preamp 1-8GHz	Miteq	AMF-4D-01000800-30-29P	782	11/18/14	11/18/15
Preamp 1-26.5GHz	Agilent	8449B	404	04/13/15	04/13/16
Amplifier, 26-40GHz	Miteq	NSP4000-SP2	88	04/07/15	04/07/16
Spectrum Analyzer 3kHz - 44GHz	Agilent	N9030A	907	05/15/15	05/15/16
Coaxial Switchbox	Keysight	11713A	457	-	-
Power Meter	Agilent	N1911A	T1268	06/07/15	06/07/16
LISN for Conducted Emission	FCC	50/250-25-2	24	01/16/15	01/16/16
Power Sensor	Agilent	N1921A	1223	06/07/15	02/06/16

7. MEASUREMENT METHODS

On time and duty cycle: ANSI C63.10-2013, Section 11.6.
Radiated emissions: ANSI C63.10-2013, Sections 6.5 and 6.6.
Occupied bandwidth (99% dB): ANSI C63.10-2013, Sections 6.9.3.

8. ANTENNA PORT TEST RESULTS

8.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

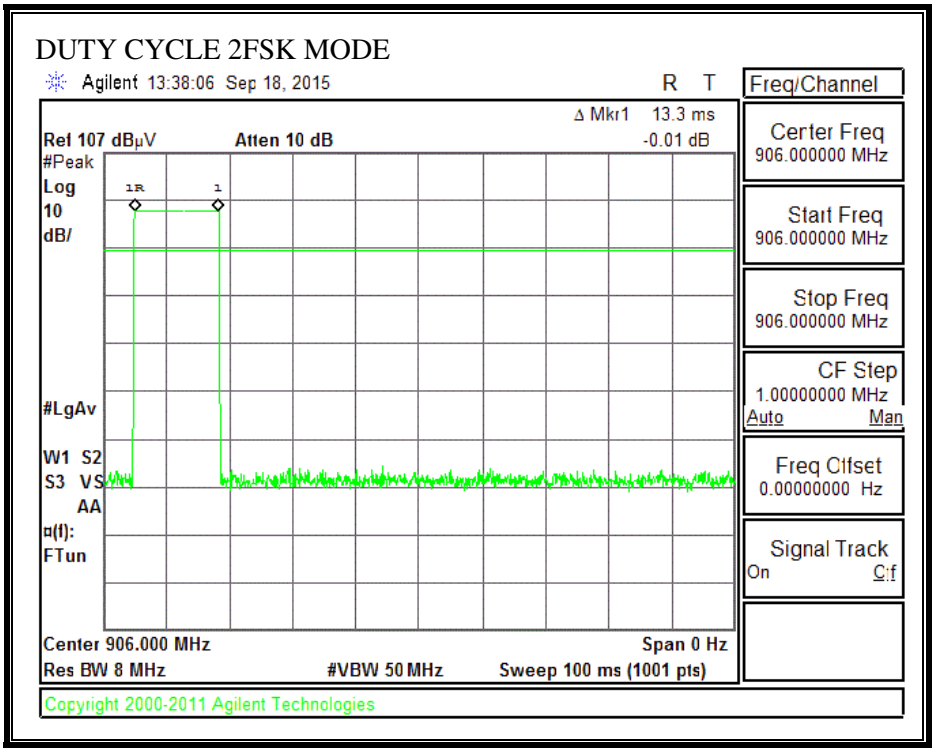
PROCEDURE

KDB 789033 Zero-Span Spectrum Analyzer Method.

ON TIME AND DUTY CYCLE RESULTS

Mode	ON Time B (msec)	Period (msec)	Duty Cycle x (linear)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)
2FSK	13.300	100.000	0.133	13.30%	17.52

DUTY CYCLE PLOT



8.2. 99% BANDWIDTH

Please refer to report “15U21636-E2V1FCCIC” for the 99% BW data.

9. RADIATED TEST RESULTS

LIMIT

IC RSS-210, A2.9
FCC 15.249

Operation within the bands 902–928 MHz, 2400–2483.5 MHz, 5725–5875 MHZ, and 24.0–24.25 GHz.
(a) Except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in § 15.209, whichever is the lesser attenuation.

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009–0.490	2400/F(kHz)	300
0.490–1.705	24000/F(kHz)	30
1.705–30.0	30	30
30–88	100 **	3
88–216	150 **	3
216–960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54–72 MHz, 76–88 MHz, 174–216 MHz or 470–806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

RESULTS

9.1. FUNDAMENTAL FREQUENCY RADIATED EMISSION

Project #:	15U21636
Report #:	15U21636
Date& Time:	11//12/2015
Test Engr:	Lieu Nguyen
	Chamber B

Company:	Aneltos, Inc.
EUT Description:	Wearable WB38
Test Configuration :	EUT with DC power supply
Type of Test:	FCC 15.249
Mode of Operation:	Transmitting

Freq.	Pk Rdg	AF	Closs + Preamp		Level	Limit	Margin	Pol	Az	Height	Mark
(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	FCC_B	(dB)	(H/V)	(Deg)	(Meter)	(P/Q/A)
906.00	66.34	26.50	-23.86	0.00	68.98	94.00	-25.02	3mV	195.00	1.67	P
906.00	72.79	26.50	-23.86	0.00	75.43	94.00	-18.57	3mH	168.00	1.05	P

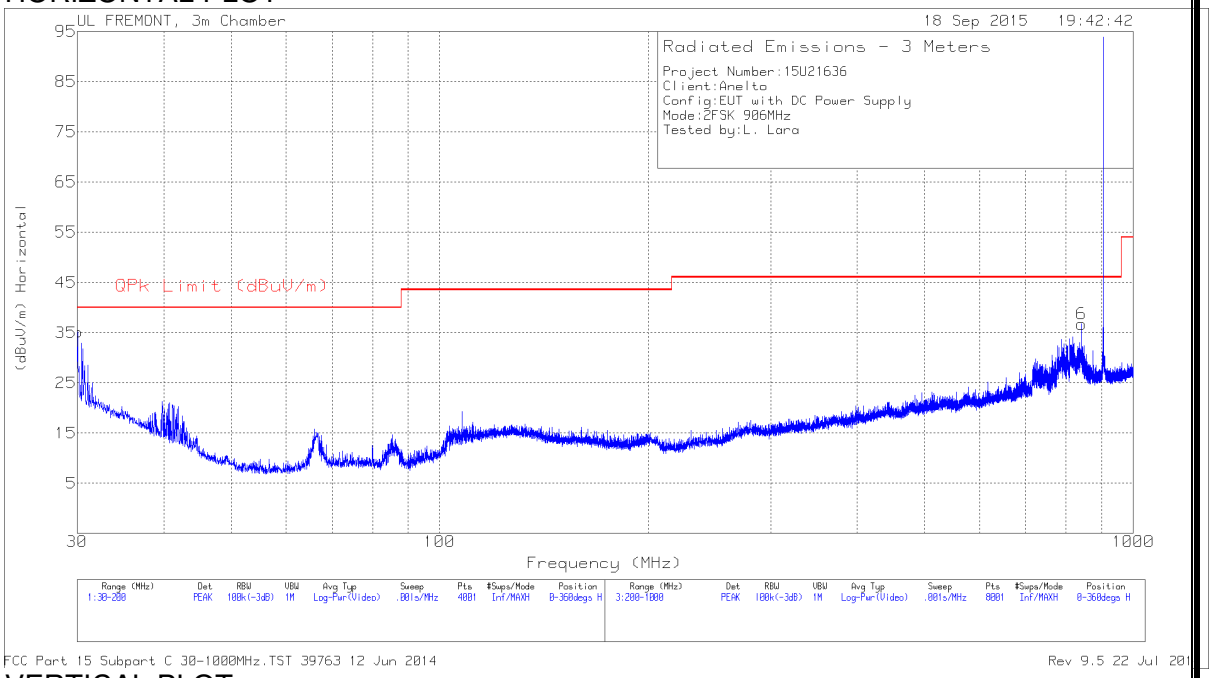
9.2. HARMONICS AND SPURIOUS EMISSIONS ABOVE 1GHz

													Anelto
													9/18/2015
M% = ((t1+t2+t3+...)/T)*100% =			13.30%				Av Reading = Pk Reading + 20*log(M%)						L. Lara
	ON TIME(ms)	T (ms)					20*log(M%) =	-17.523					Wearable
	13.3	100											
Frequency	**PK Reading**	**AV Reading**	**AF**	**Gain/Loss**	**PK Level**	**AV Level**	**PK Limit**	**AV Limit**	**PK Margin**	**AV Margin**	**Pol**	**Azimuth**	**Height**
1812	48.27	30.75	30.3	-22.7	55.87	38.35	74	54	-18.13	-15.65	V	125	399
1812	49.89	32.37	30.3	-22.7	57.49	39.97	74	54	-16.51	-14.03	H	74	204
2718	48.98	31.46	32.3	-22.1	59.18	41.66	74	54	-14.82	-12.34	V	112	386
2718	49.74	32.22	32.3	-22.1	59.94	42.42	74	54	-14.06	-11.58	H	178	344
3624	56.11	38.59	32.9	-30.8	58.21	40.69	74	54	-15.79	-13.31	V	118	251
3624	59.53	42.01	32.9	-30.8	61.63	44.11	74	54	-12.37	-9.89	H	351	254

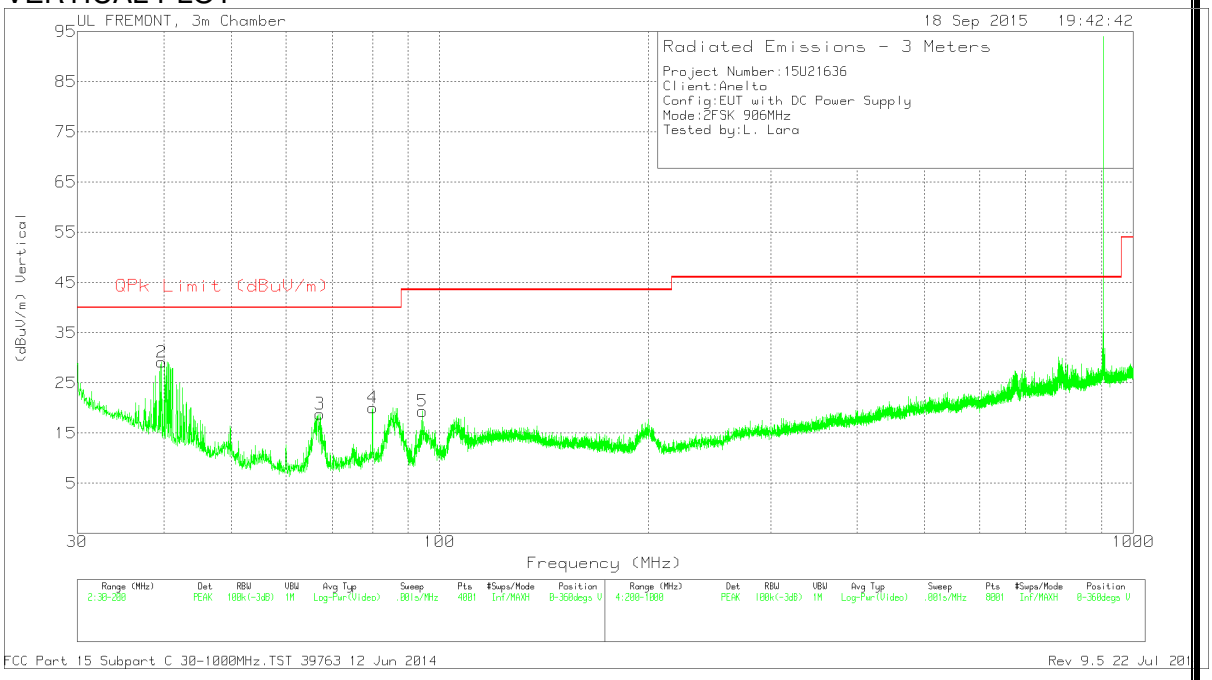
9.3. WORST-CASE BELOW 1 GHz

SPURIOUS EMISSIONS 30 TO 1000 MHz

HORIZONTAL PLOT



VERTICAL PLOT



Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	AF T185 (dB/m)	Amp/Cbl (dB)	Corrected Reading (dBuV/m)	QPk Limit (dBuV/m)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	30.0799	23.39	QP	21.7	-27.3	17.79	40	-22.21	338	376	H
2	39.7325	41.74	PK	14.5	-27.1	29.14	40	-10.86	0-360	100	V
3	67.145	37.33	PK	8.2	-26.7	18.83	40	-21.17	0-360	100	V
4	80.0225	38.67	PK	8	-26.6	20.07	40	-19.93	0-360	100	V
5	94.4725	37.26	PK	8.5	-26.4	19.36	43.52	-24.16	0-360	100	V
6	842	38.92	PK	20.9	-23.1	36.72	46.02	-9.3	0-360	100	H
7	*906	109.49	PK	22.1	-22.7	108.89	-	-	0-360	100	H
8	*906	96.42	PK	22.1	-22.7	95.82	-	-	0-360	200	V

* - fundamental frequency