

FCC PART 15 CLASS B  
MEASUREMENT AND TEST REPORT

For

**Kenyazi Investment Limited**

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Kwai Fong, N.T Hongkong

**FCC ID: PKH-WLNS67811RX**

<b>Report Type:</b> Class II Permissive Change	<b>Product Type:</b> Wireless Lights & Sounds of Christmas (Receiver)
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<b>Report Number:</b> RSZ120411006-00A1	
<b>Report Date:</b> 2012-04-19	
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**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. This report **must not** be used by the customer to claim product certification, approval, or endorsement by NVLAP\*, or any agency of the Federal Government.

\* This report contains data that are not covered by the NVLAP accreditation and are marked with an asterisk "★" (Rev.2)

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## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

The *Kenya Investment Limited*'s product, model number: *WLNS67811 RX (FCC ID: PKH-WLNS67811RX)* (or the "EUT") in this report was a *Wireless Lights & Sounds of Christmas*, which was measured approximately: 18 cm (L) x 7.3 cm (W) x 7.8 cm (H), rated input voltage: 120V/60Hz. The highest frequency generated of EUT is 435 MHz.

*\* All measurement and test data in this report was gathered from production sample serial number: 1204022 (Assigned by BACL, Shenzhen). The EUT was received on 2012-04-11.*

### Objective

This report is prepared on behalf of *Kenya Investment Limited* in accordance with Part 2- Subpart J, Part 15- Subparts A and B of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine the compliance of EUT with FCC Part 15 Class B.

This is the C2PC application of the device. The difference between the original device and the current one is as follows:

Part	Original	New
RF Receiver IC	PT4316	PT4317
L3	33 nH	30 nH
L5	1 pF	0.8 pF
CS15	0.01 $\mu$ F	270 kohm Resistor
CS21	100 pF	0.1 $\mu$ F
L4, CS19, CS20, Rs24	L4, CS19, CS20, Rs24	Delete

For the changes made to the device, all item testing were performed.

### Related Submittal(s)/Grant(s)

Original submission with FCC ID: PKH-WLNS67811RX which is granted on 2008-08-28

### Test Facility

The Test site used by Bay Area Compliance Laboratories Corp.(Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).



The current scope of accreditations can be found at <http://ts.nist.gov/Standards/scopes/2007070.htm>

## SYSTEM TEST CONFIGURATION

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### Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

### EUT Exercise Software

No exercise software was used.

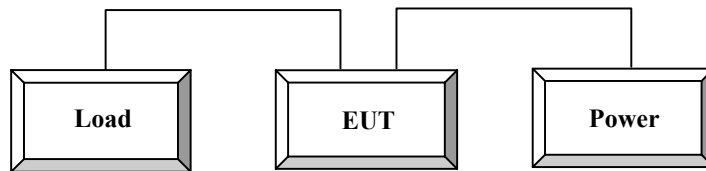
### Equipment Modifications

No modification was made to the EUT tested.

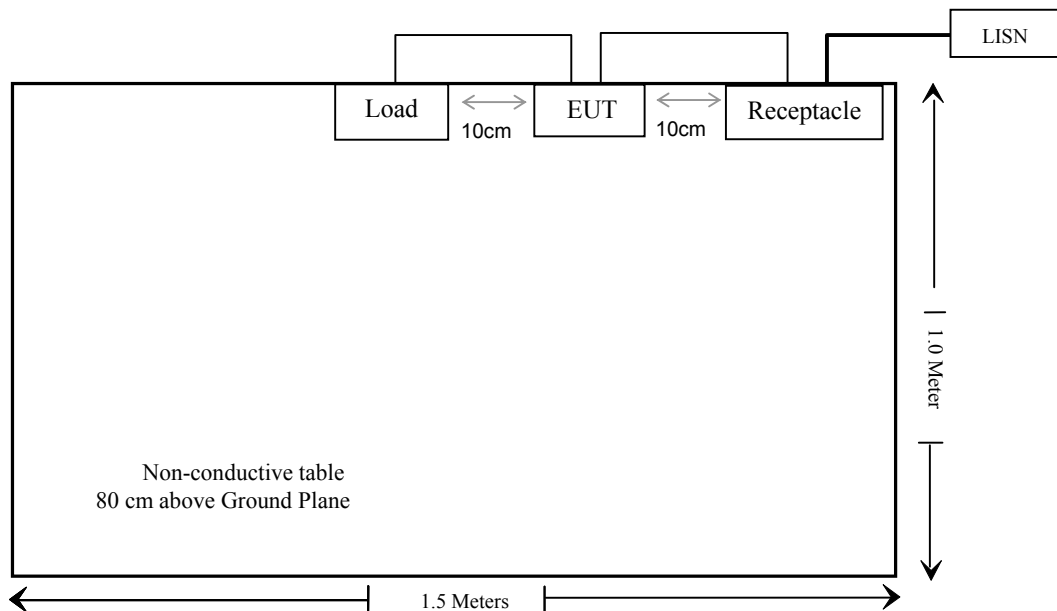
### External I/O Cable

Cable Description	Length (m)	From/Port	To
Unshielded Undetachable AC Cable	0.3	EUT	Receptacle
Unshielded Undetachable DC Cable	0.3	EUT	Load

## Configuration of Test Setup



## Block Diagram of Test Setup



**SUMMARY OF TEST RESULTS**

FCC Rules	Description of Test	Results
§15.107	AC Line Conducted Emissions	Compliance
§15.209	Radiated Emissions	Compliance

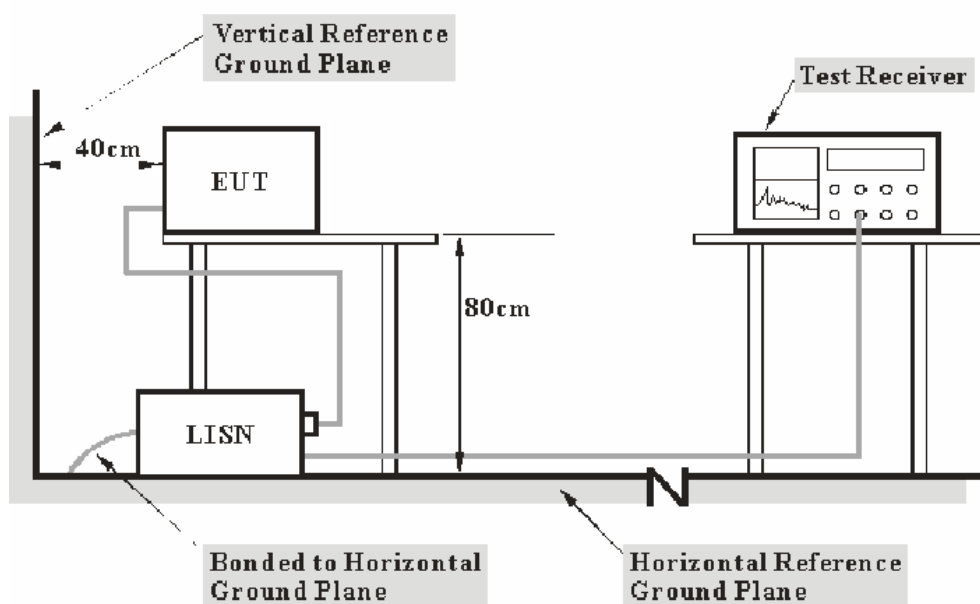
## FCC §15.107 – AC LINE CONDUCTED EMISSIONS

### Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on CISPR 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is 2.4 dB.(k=2, 95% level of confidence)

### EUT Setup



- Note:**
1. Support units were connected to second LISN.
  2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2009 measurement procedure. The specification used was with the FCC Part 15.107 Class B limits.

The spacing between the peripherals was 10 cm.

The EUT was connected to a 120 VAC/60 Hz power source.



## EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

<b><i>Frequency Range</i></b>	<b><i>IF B/W</i></b>
150 kHz – 30 MHz	9 kHz

## Test Equipment List and Details

<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>	<b>Calibration Due Date</b>
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2011-11-24	2012-11-23
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2011-11-17	2012-11-16
Rohde & Schwarz	Pulse limiter	ESH3Z2	DE25985	2011-07-08	2012-07-07

\* **Statement of Traceability:** Bay Area Compliance Laboratory Corp. attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

## Test Procedure

During the conducted emission test, the EUT was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

## Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.107, with the worst margin reading of:

**10.42 dB at 0.150 MHz in the Neutral conducted**

## Test Data

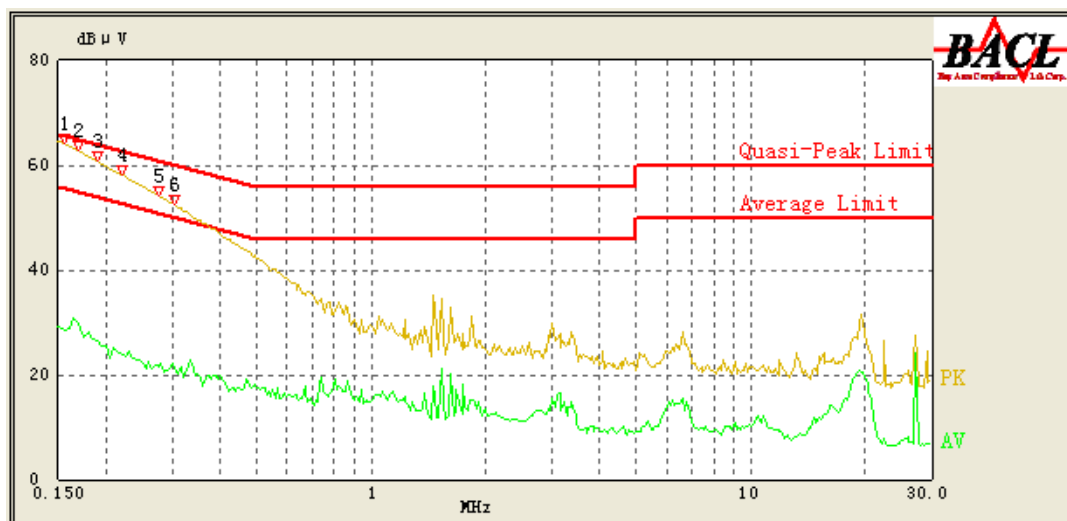
### Environmental Conditions

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	48 %
<b>ATM Pressure:</b>	100.0 kPa

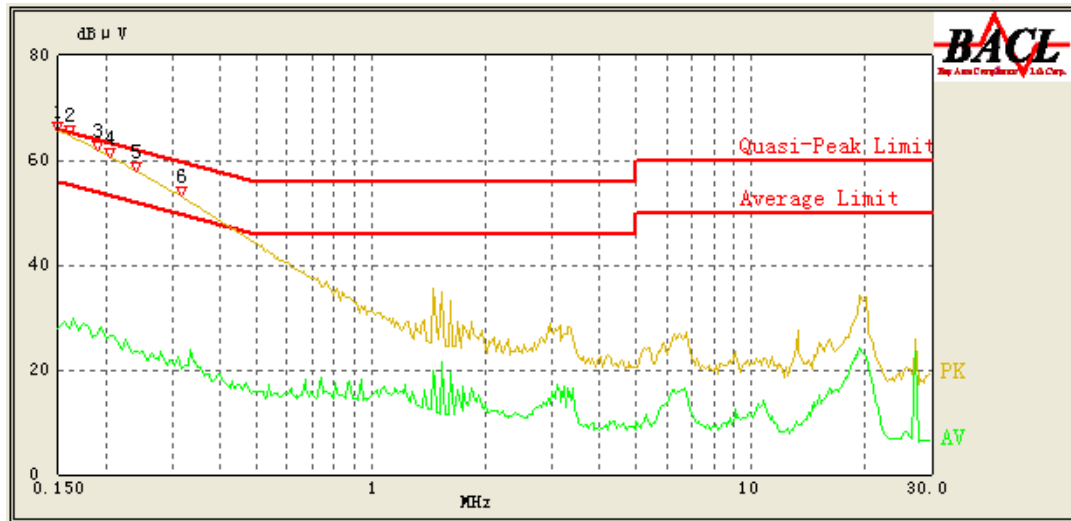
*The testing was performed by Junior Cai on 2012-04-12.*

Test Mode: On

### AC 120V/60 Hz, Line



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/ QP/Ave.)
0.155	54.60	9.60	65.86	11.26	QP
0.170	53.54	9.60	65.43	11.89	QP
0.190	51.41	9.60	64.86	13.45	QP
0.220	48.77	9.60	64.00	15.23	QP
0.275	44.69	9.60	62.43	17.74	QP
0.305	42.93	9.60	61.57	18.64	QP
0.170	29.72	9.60	55.43	25.71	Ave.
0.155	28.57	9.60	55.86	27.29	Ave.
0.190	26.54	9.60	54.86	28.32	Ave.
0.305	21.61	9.60	51.57	29.96	Ave.
0.220	23.99	9.60	54.00	30.01	Ave.
0.275	21.56	9.60	52.43	30.87	Ave.

**AC 120V/60 Hz, Neutral**

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/ QP/Ave.)
0.150	55.58	9.60	66.00	10.42	QP
0.160	55.03	9.60	65.71	10.68	QP
0.190	51.97	9.60	64.86	12.89	QP
0.205	50.56	9.60	64.43	13.87	QP
0.240	47.83	9.60	63.43	15.60	QP
0.315	42.85	9.60	61.29	18.44	QP
0.205	26.61	9.60	54.43	27.82	Ave.
0.160	27.68	9.60	55.71	28.03	Ave.
0.150	27.92	9.60	56.00	28.08	Ave.
0.190	26.70	9.60	54.86	28.16	Ave.
0.240	23.35	9.60	53.43	30.08	Ave.
0.315	20.19	9.60	51.29	31.10	Ave.

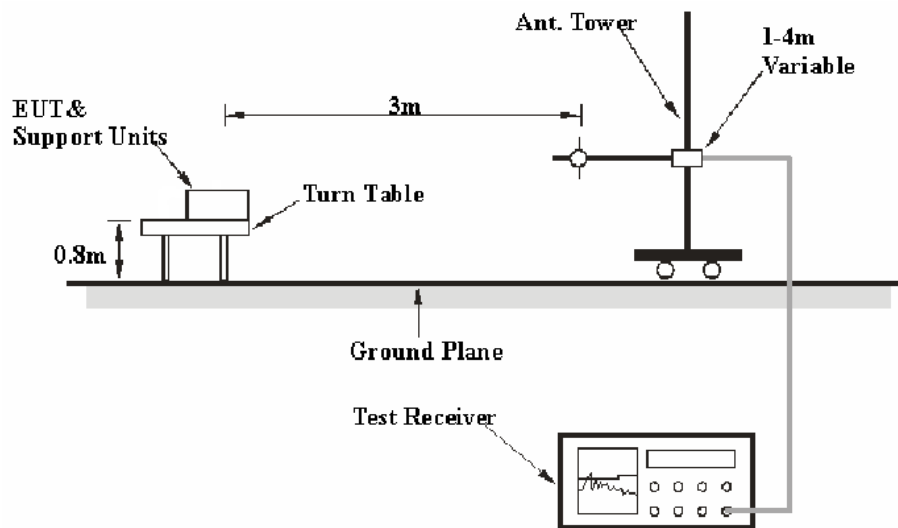
## FCC §15.109 - RADIATED EMISSIONS

### Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on CISPR 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is 4.0 dB. ( $k=2$ , 95% level of confidence)

### EUT Setup



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC Part 15.109 Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The EUT was connected to a 120 VAC/60 Hz power source.

## EMI Test Receiver Setup

The system was investigated from 30 MHz to 2000 MHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

<i><b>Frequency Range</b></i>	<i><b>RBW</b></i>	<i><b>Video B/W</b></i>	<i><b>Detector</b></i>
30 MHz – 1000 MHz	100 kHz	300 kHz	QP
1000 MHz – 2 GHz	1 MHz	3 MHz	PK
1000 MHz – 2 GHz	1 MHz	10 Hz	PK

## Test Procedure

During the radiated emissions test, the EUT was connected to AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1 GHz, peak and Average detection modes for frequencies above 1 GHz.

## Test Equipment List and Details

<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>	<b>Calibration Due Date</b>
HP	Amplifier	HP8447D	2944A09795	2011-11-24	2012-11-23
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2012-11-27
HP	Amplifier	ZVA-213+	T-E27H	2011-11-24	2012-11-23
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-01	2012-12-01
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp (Shenzhen). attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

## Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

**Test Results Summary**

According to the data in the following table, the EUT complied with the FCC Part 15.209, with the worst margin reading of:

**2.05 dB at 1737.5 MHz in the Horizontal polarization**

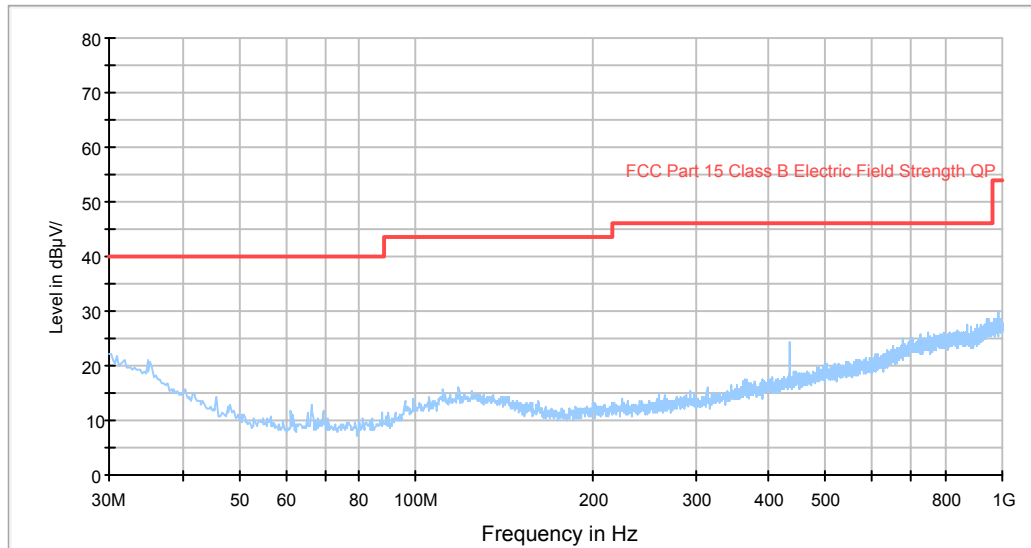
**Test Data****Environmental Conditions**

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	48 %
<b>ATM Pressure:</b>	100.0 kPa

*The testing was performed by Junior Cai on 2012-04-12.*

**Below 1 GHz:***Test Mode: On*

Auto Test(FCC part 15 Class B)



Note: The data which below 20dB to limit was not recorded.

**Above 1 GHz:**

Freq. (MHz)	Reading (dBμV)	Detector QP/PK/Ave	Direction Degree	Height (m)	Polar H/V	Ant. Loss (dB)	Cable Loss (dB)	Amp. Gain (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.209	
										Limit (dBμV/m)	Margin (dB)
1737.5	50.83	Ave.	63	1.5	H	25.10	2.52	26.50	51.95	54	2.05*
1302.6	47.54	Ave.	77	1.1	V	23.70	2.09	26.50	46.83	54	7.17
1302.6	40.90	Ave.	25	1.3	H	23.70	2.09	26.50	40.19	54	13.81
1737.5	37.56	Ave.	129	1.3	V	25.10	2.52	26.50	38.68	54	15.32
1737.5	55.06	PK	63	1.5	H	25.10	2.52	26.50	56.18	74	17.82
1302.6	54.88	PK	25	1.3	H	23.70	2.09	26.50	54.17	74	19.83
1302.6	51.88	PK	77	1.1	V	23.70	2.09	26.50	51.17	74	22.83
1737.5	44.48	PK	129	1.3	V	25.10	2.52	26.50	45.60	74	28.40

\*Within measurement uncertainty!

**\*\*\*\* END OF REPORT \*\*\*\***