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Report No.: SZEM180500359601
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TEST REPORT

Application No.: SZEM1805003596CR
Applicant: Hub6 Inc.
Address of Applicant: 11 Gwendolen Cres, North York, Canada, M2N2L9
Manufacturer: Hub6 Inc.
Address of Manufacturer: 11 Gwendolen Cres, North York, Canada, M2N2L9
Equipment Under Test (EUT):
EUT Name: SAFE BY HUB6
Model No.: H1
Standard(s) : 47 CFR Part 15, Subpart B
Date of Receipt: 2018-05-03
Date of Test: 2018-05-12 to 2018-05-28
Date of Issue: 2018-06-15

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.



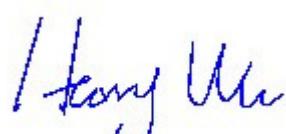
Keny Xu

EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2018-06-15		Original

Authorized for issue by:			
		 _____ Harry Wu /Project Engineer	
		 _____ Eric Fu /Reviewer	

2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Radiated Emissions (30MHz-1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass
Radiated Emissions (above 1GHz)	47 CFR Part 15, Subpart B	ANSI C63.4:2014	Class B	Pass

InternalSource	UpperFrequency
Below 1.705MHz	30MHz
1.705MHz to 108MHz	1GHz
108MHz to 500MHz	2GHz
500MHz to 1GHz	5GHz
Above 1GHz	5th harmonic of the highest frequency or 40GHz, whichever is lower

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4 General Information

4.1 Details of E.U.T.

Power supply:	Input: DC 12V
Cable:	Power Cable: 100cm, Unshielded; Network Cable: 100cm, Unshielded

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
DC power	ZHAOXIN	RXN-305D	REF. No.SEA2700
Laptop	Lenovo	T430u	REF. No.SEA1800
Mouse	Lenovo	M-U0025-O	REF. No.:SEA2400
Network Cable	SGS	N/A	REF. No.SEA1100
Router	NETGEAR	DGN2200	REF. No.SEA2200

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radiated Emission	± 4.5dB (30MHz-1GHz)
		± 4.8dB (1GHz-6GHz)
2	Temperature test	± 1 °C
3	Humidity test	± 3%

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China.
518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Equipment List

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2017-08-05	2020-08-04
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2017-07-13	2018-07-12
EMI Test Receiver	Agilent Technologies	N9038A	SEM004-05	2017-09-27	2018-09-26
BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2017-06-27	2020-06-26
Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2018-04-02	2019-04-01
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	SEM010-02	2018-04-02	2019-04-01

Radiated Emissions (above 1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2018-03-13	2021-03-12
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2017-07-13	2018-07-12
EXA Spectrum Analyzer	Agilent Technologies Inc	N9010A	SEM004-09	2018-04-13	2019-04-12
Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2018-04-13	2021-04-12
Low Noise Amplifier (100MHz-18GHz)	Black Diamond Series	BDLNA-0118-352810	SEM005-05	2017-09-27	2018-09-26
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	SEM010-02	2018-04-02	2019-04-01

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2017-09-29	2018-09-28
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2017-09-29	2018-09-28
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2017-09-29	2018-09-28
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2018-04-08	2019-04-07

6 Emission Test Results

6.1 Radiated Emissions (30MHz-1GHz)

Test Requirement: 47 CFR Part 15, Subpart B

Test Method: ANSI C63.4:2014

Frequency Range: 30MHz to 1GHz

Measurement Distance: 3m

Limit:

30MHz -88MHz 40.0(dB μ V/m) quasi-peak

88MHz-216MHz 43.5(dB μ V/m) quasi-peak

216MHz-960MHz 46.0(dB μ V/m) quasi-peak

960MHz-1000MHz 54.0(dB μ V/m) quasi-peak

Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to1000MHz

6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24.6 °C Humidity: 55 % RH Atmospheric Pressure: 1015 mbar

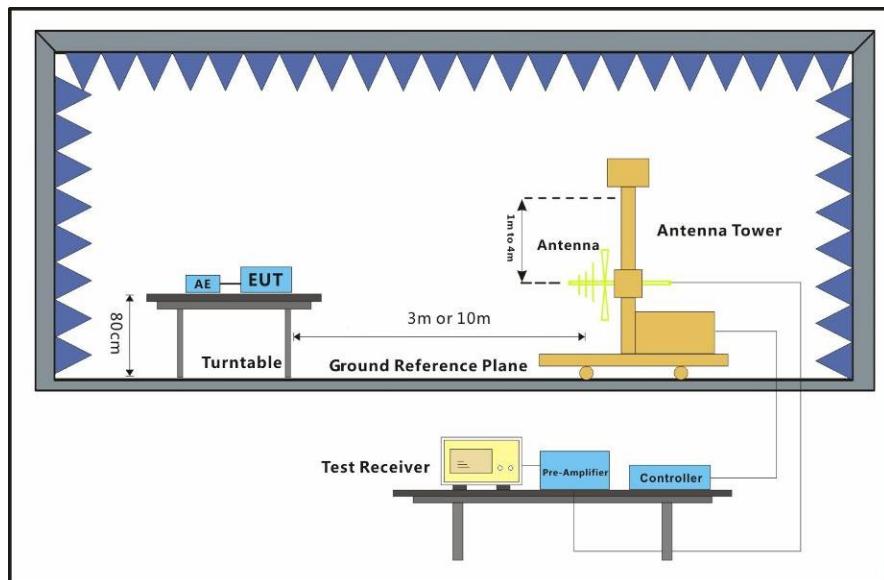
Pretest these modes to find the worst case: a:ping mode_Keep the EUT ping with PC.

b:UMTS-FDD Band V Traffic mode

c:UMTS-FDD Band II Traffic mode

The worst case for final test: a:ping mode_Keep the EUT ping with PC.

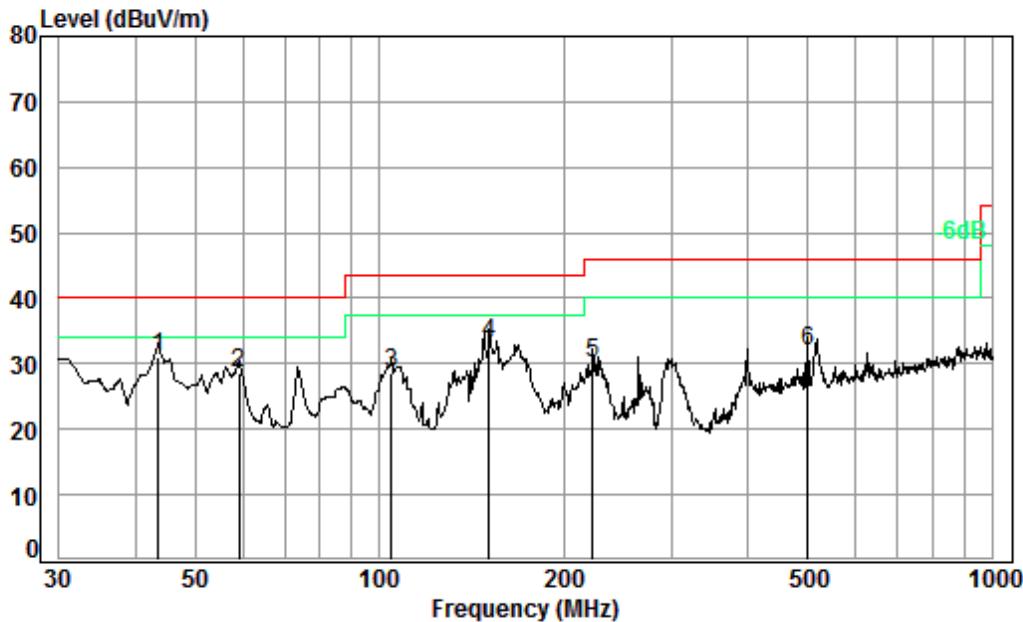
6.1.2 Test Setup Diagram



6.1.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

Mode:a; Polarization:Horizontal



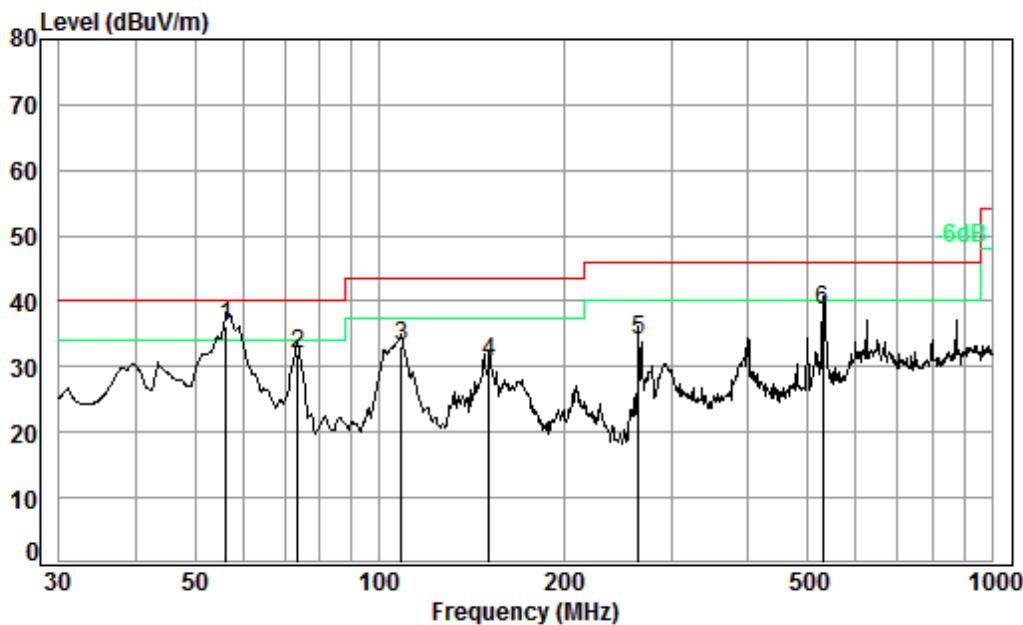
Condition: 3m HORIZONTAL

Job No. : 03596CR

Test mode: a

Freq	Cable	Ant	Preamp	Read	Limit	Over		
	Loss	Factor	Factor	Level				
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	43.51	0.68	16.26	27.62	41.69	31.01	40.00	-8.99
2	59.03	0.80	13.29	27.56	42.02	28.55	40.00	-11.45
3	104.54	1.21	13.78	27.51	41.15	28.63	43.50	-14.87
4	151.07	1.32	14.73	27.52	44.77	33.30	43.50	-10.20
5	222.95	1.53	17.44	27.53	38.73	30.17	46.00	-15.83
6	501.18	2.60	24.63	27.88	32.70	32.05	46.00	-13.95

Mode:a; Polarization:Vertical



Condition: 3m VERTICAL

Job No. : 03596CR

Test mode: a

Freq	Cable	Ant	Preamp	Read	Limit	Over		
	Loss	Factor	Factor	Level				
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	56.20	0.80	13.56	27.58	49.46	36.24	40.00	-3.76
2	73.62	0.91	12.50	27.52	46.06	31.95	40.00	-8.05
3	108.65	1.22	13.59	27.51	45.75	33.05	43.50	-10.45
4	151.07	1.32	14.73	27.52	42.09	30.62	43.50	-12.88
5	264.75	1.74	19.03	27.54	40.97	34.20	46.00	-11.80
6	530.10	2.63	25.24	27.82	38.61	38.66	46.00	-7.34

6.2 Radiated Emissions (above 1GHz)

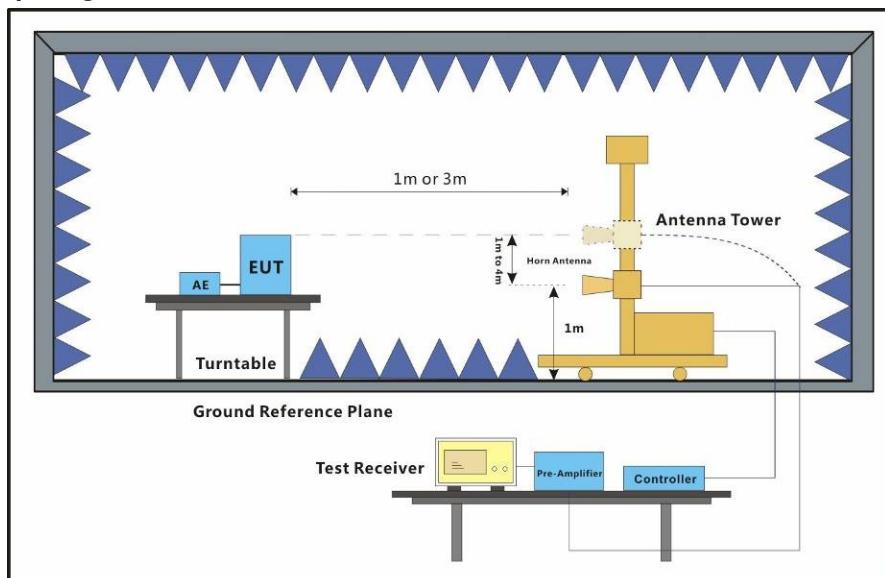
Test Requirement: 47 CFR Part 15, Subpart B
Test Method: ANSI C63.4:2014
Frequency Range: Above 1GHz
Measurement Distance: 3m
Limit:
Above 1GHz 74(dB μ V/m) peak, 54(dB μ V/m) average
Detector: Peak for pre-scan (1000kHz resolution bandwidth) 1000M to 18000MHz

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 21.7 °C Humidity: 54.9 % RH Atmospheric Pressure: 1015 mbar
Pretest these modes to find the worst case:
a:ping mode_Keep the EUT ping with PC.
b:UMTS-FDD Band V Traffic mode
c:UMTS-FDD Band II Traffic mode
The worst case for final test:
a:ping mode_Keep the EUT ping with PC.

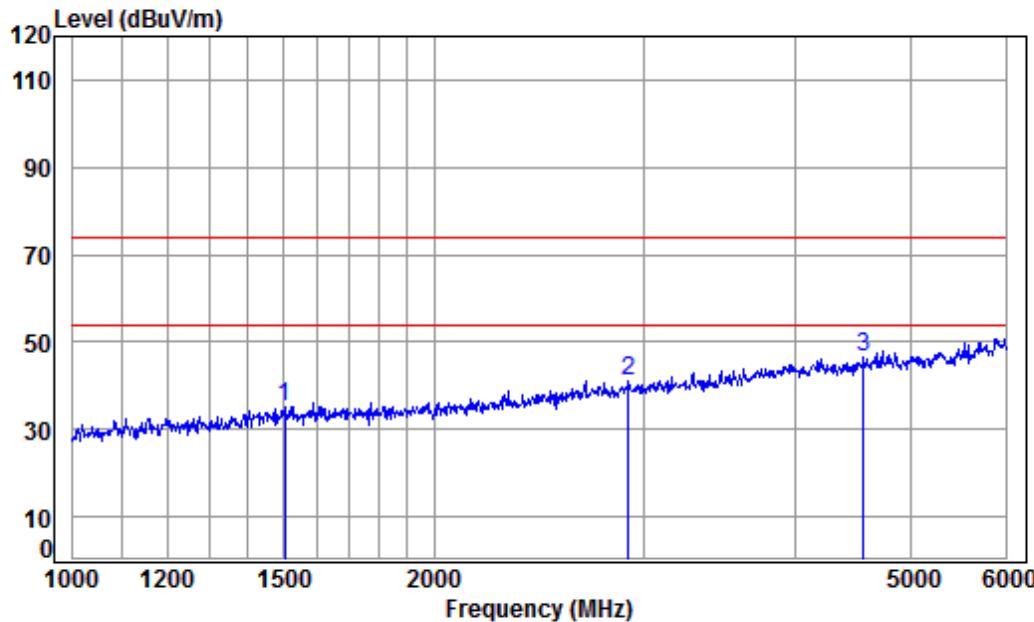
6.2.2 Test Setup Diagram



6.2.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

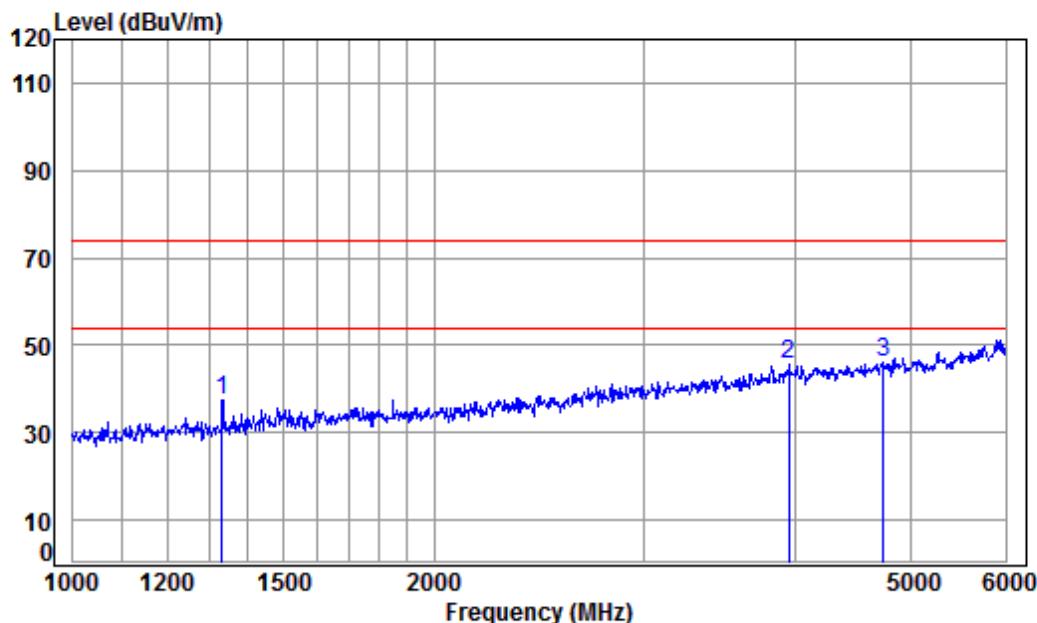
Mode:a; Polarization:Horizontal



Condition: 3m HORIZONTAL
Job No : 03596CR/03597CR
Mode : a

		Cable Freq	Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
		MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1		1501.898	5.48	25.81	41.41	45.12	35.00	74.00	-39.00	Peak
2		2909.230	5.92	30.98	42.07	46.21	41.04	74.00	-32.96	Peak
3	pp	4569.538	7.64	33.73	42.43	47.76	46.70	74.00	-27.30	Peak

Mode:a; Polarization:Vertical



Condition: 3m VERTICAL
Job No : 03596CR/03597CR
Mode : a

Freq	Cable	Ant	Preamp	Read	Limit	Over	Remark
	Loss	Factor	Factor	Level			
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 1332.000	4.91	25.10	41.29	48.58	37.30	74.00	-36.70 Peak
2 3959.316	6.94	33.49	42.32	47.56	45.67	74.00	-28.33 Peak
3 pp 4744.751	7.83	34.05	42.46	46.69	46.11	74.00	-27.89 Peak

- End of the Report -