



FCC 47 CFR PART 15 SUBPART B TEST REPORT

for

900MHz Wireless Headphone

Model: HP4190A

Brand: Arkon

Test Report Number:
C130409Z05-F

Issued for:

Uni-Art Precise Products Ltd

**11-12/F, Yue Xiu Industrial Building, 87 Hung To Road, Kowloon,
Hong Kong**

Issued by:

COMPLIANCE CERTIFICATION SERVICES (SHENZHEN) INC.

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Issued Date: April 24, 2013



TESTING CERT #2861.01

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Revision History

Rev.		Issue No		Revisions	Effect Page	Revised By
00		C130409Z05-F		Initial Issue	ALL	Amay Tang



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**1 TEST RESULT CERTIFICATION**

Product	900MHz Wireless Headphone
Model	HP4190A
Brand	Arkon
Applicant	Uni-Art Precise Products Ltd 11-12/F, Yue Xiu Industrial Building, 87 Hung To Road, Kowloon, Hong Kong
Manufacturer	Uni-Art Precise Products Ltd 11-12/F, Yue Xiu Industrial Building, 87 Hung To Road, Kowloon, Hong Kong
Tested	April 9~22, 2013
Test Voltage	AC120V/60Hz

EMISSION			
Standard	Item	Result	Remarks
FCC 47 CFR Part 15 Subpart B ANSI C63.4: 2009	Conducted (Power Port)	N/A	Not applicable, Since EUT supplied by the batteries.
	Radiated	PASS	Meet Class B limit

*Note: 1. The statements of test result on the above are decided by the request of test standard only; the measurement uncertainties are not factored into this compliance determination.
2. The information of measurement uncertainty is available upon the customer's request.*

Deviation from Applicable Standard
None

The above equipment has been tested by Compliance Certification Services Inc., and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Approved by:

Tom Gan
Supervisor of EMC Dept.
Compliance Certification Service Inc.

Reviewed by:

Ruby Zhang
Supervisor of Report Dept.
Compliance Certification Service Inc.



2 EUT DESCRIPTION

Product	900MHz Wireless Headphone
Model	HP4190A
Brand	Arkon
Applicant	Uni-Art Precise Products Ltd
Housing material	Plastic
EUT Type	<input type="checkbox"/> Engineering Sample, <input checked="" type="checkbox"/> Product Sample, <input type="checkbox"/> Mass Product Sample.
Identify Number	C130409Z05-F
EUT Power Rating	DC2.4V supplied by the batteries
Received Date	January 14, 2013
EUT Max. Operating Frequency	912MHz

I/O Port EUT

I/O PORT TYPES	Q'TY	TESTED WITH
1). N/A	N/A	N/A



3 TEST METHODOLOGY

3.1. DECISION OF FINAL TEST MODE

The EUT was tested together with the above additional components, and a configuration, which produced the worst emission levels, was selected and recorded in this report.

Pre-Test Mode		
Emission	Conducted Emission	N/A
	Radiated Emission	Mode 1: Charging

After the preliminary scan, the following test mode was found to produce the highest emission level.

Final Test Mode		
Emission	Conducted Emission	N/A
	Radiated Emission	Mode 1

Then, the above highest emission mode of the configuration of the EUT and cable was chosen for all final test items.

3.2. EUT SYSTEM OPERATION

- 1 Setup the EUT and simulators as shown on 4.2.
- 2 Turn on the power of all equipment.
- 3 Run the program to test.



4 SETUP OF EQUIPMENT UNDER TEST

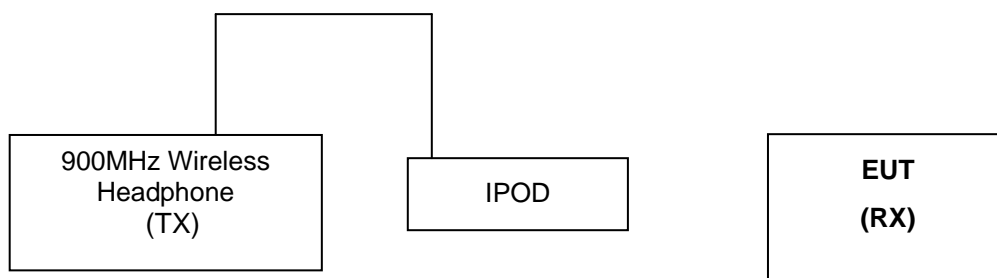
4.1. DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Equipment	Model No.	Serial No.	FCC ID	Brand	Data Cable	Power Cord
1	IPOD	A1285	YM908BY U3QY	DoC	IPOD	N/A	N/A
2	900MHz Wireless Headphone (TX)	HP4190A	N/A	MVAHP1391 C-001T	Arkon	N/A	N/A

Note: Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.2. CONFIGURATION OF SYSTEM UNDER TEST





5 FACILITIES AND ACCREDITATIONS

5.1. FACILITIES

All measurement facilities used to collect the measurement data are located at **No.10-1, Mingkeda Logistics Park, No.18, Huanguan South Rd., Guan Lan Town, Baoan District, Shenzhen, China**

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR 22. All receiving equipment conforms to CISPR 16-1-1, CISPR 16-1-2, CISPR 16-1-3, CISPR 16-1-4, CISPR 16-1-5.

5.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

USA	A2LA
China	CNAS

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

USA	FCC
Japan	VCCI (C-3478, R-3135, T-652, G-624)
Canada	INDUSTRY CANADA
Taiwan	BSMI
Norway	Nemko

Copies of granted accreditation certificates are available for downloading from our web site, <http://www.ccsrf.com>

5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Uncertainty
Conducted emissions	9kHz~30MHz	+/- 3.18dB
Radiated emissions	30MHz ~ 200MHz	+/- 3.79dB
	200MHz ~1000MHz	+/- 3.62dB
	Above 1000MHz	+/- 5.04dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Consistent with industry standard determining compliance with the limits shall be base on the results of the compliance measurement. Consequently the measure emissions being less than the maximum allowed emission result in this be a compliant test or passing test.

The acceptable measurement uncertainty value without requiring revision of the compliance statement is base on conducted and radiated emissions being less than U_{CISPR} which is 3.6dB and 5.2dB respectively. CCS values (called U_{Lab} in CISPR 16-4-2) is less than U_{CISPR} as shown in the table above. Therefore, MU need not be considered for compliance.



6 CONDUCTED EMISSION MEASUREMENT

6.1. LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

NOTE:

- (1) The lower limit shall apply at the transition frequencies.
- (2) The limit decreases in line with the logarithm of the frequency in the range 0.15 to 0.50 MHz.
- (3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

6.2. TEST INSTRUMENTS

Conducted Emission Test Site					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
ESCI EMI TEST RECEIVER.ESCI	ROHDE&SCHWARZ	ESCI	100783	03/09/2013	03/08/2014
LISN(EUT)	ROHDE&SCHWARZ	ENV216	101543-WX	09/20/2012	09/20/2013
LISN	EMCO	3825/2	8901-1459	03/09/2013	03/08/2014
Temp. / Humidity Meter	VICTOR	HTC-1	N/A	03/04/2013	03/03/2014
Test S/W	FARAD	EZ-EMC/ CCS-3A1-CE			

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. N.C.R = No Calibration Request.



6.3. TEST PROCEDURES (please refer to measurement standard or CCS SOP PA-031)

Procedure of Preliminary Test

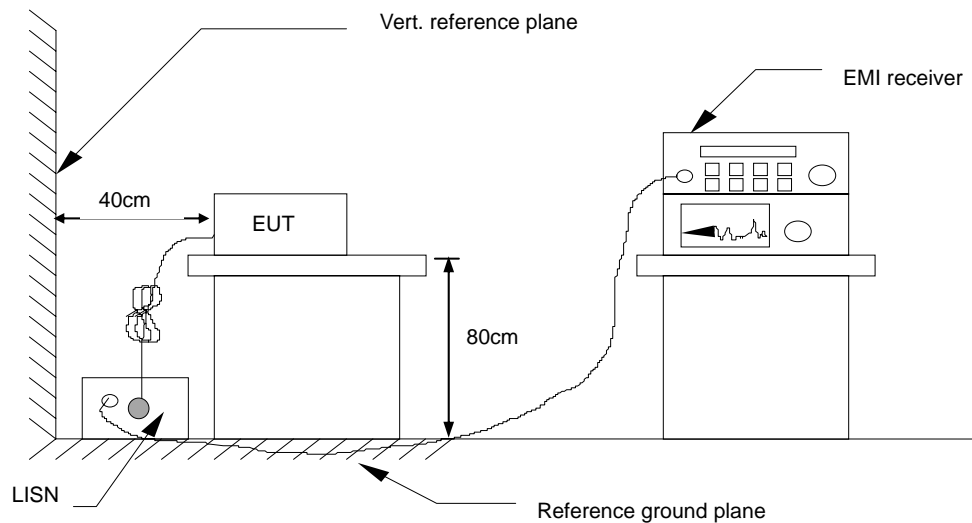
- The EUT and support equipment, if needed, were set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor standing equipment, it is placed on the ground plane, which has a 12 mm non-conductive covering to insulate the EUT from the ground plane.
- All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.
- The test equipment EUT received DC2.4V power from the batteries.
- The test program of the EUT was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.
- The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.
- During the above scans, the emissions were maximized by cable manipulation.
- The test mode(s) described in Item 3.1 were scanned during the preliminary test.
- After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.
- The worst configuration of EUT and cable of the above highest emission level were recorded for reference of the final test.

Procedure of Final Test

- EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.
- The test data of the worst-case condition(s) was recorded.



6.4. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

6.5. DATA SAMPLE

Frequency (MHz)	QuasiPeak Reading (dBuV)	Average Reading (dBuV)	Correction Factor (dB)	QuasiPeak Result (dBuV)	Average Result (dBuV)	QuasiPeak Limit (dBuV)	Average Limit (dBuV)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XXXX	32.69	25.65	11.52	44.21	37.17	65.78	55.79	-21.57	-18.62	Pass

Factor = Insertion loss of LISN + Cable Loss
Result = Quasi-peak Reading/ Average Reading + Factor
Limit = Limit stated in standard
Margin = Result (dBuV) – Limit (dBuV)

6.6. TEST RESULTS

Not applicable, Since EUT supplied by the batteries.



7 RADIATED EMISSION MEASUREMENT

7.1. LIMITS OF RADIATED EMISSION MEASUREMENT

Below 1GHz

FREQUENCY (MHz)	dBuV/m (At 10m)	dBuV/m (At 3m)
	Class A	Class B
30 ~ 88	39.00	40.00
88 ~ 216	43.50	43.50
216 ~ 960	46.00	46.00
960 ~ 1000	49.50	54.00

NOTE:

- (1) The lower limit shall apply at the transition frequencies.
- (2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

Above 1GHz

Frequency (MHZ)	Class A (dBuV/m)		Class B (dBuV/m)	
	Average	Peak	Average	Peak
Above 1000	60	80	54	74

Notes:

- (1) The lower limit shall apply at the transition frequencies.
- (2) Emission level (dBuV/m) = 20 log Emission level (uV/m).
- (3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

According to FCC Part 15.33 (b), for an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or in which the device operated or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705-108	1000
108-500	2000
500-1000	5000
Above 1000	5 th harmonic of the highest frequency or 40GHz, whichever is lower

**7.2. TEST INSTRUMENTS**

Radiated Emission Test Site 966 (2)					
Name of Equipment	Manufacturer	Model Number	Serial Number	Last Calibration	Due Calibration
PSA Series Spectrum Analyzer	Agilent	E4446A	US44300399	03/09/2013	03/08/2014
Turn Table	N/A	N/A	N/A	N.C.R	N.C.R
Controller	Sunol Sciences	SC104V	022310-1	N.C.R	N.C.R
Controller	CT	N/A	N/A	N.C.R	N.C.R
High Noise Amplifier	Agilent	8449B	3008A01838	03/18/2013	03/18/2014
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170-497	06/21/2012	06/21/2013
Horn Antenna	SCHWARZBECK	BBHA9120	D286	03/02/2013	03/01/2014
Temp. / Humidity Meter	Anymetre	JR913	N/A	03/04/2013	03/03/2014
Antenna Tower	SUNOL	TLT2	N/A	N.C.R	N.C.R
Test S/W	FARAD	LZ-RF / CCS-SZ-3A2			

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. N.C.R = No Calibration Request.



7.3. TEST PROCEDURES (please refer to measurement standard or CCS SOP PA-031)

Procedure of Preliminary Test

- The equipment was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane. When the EUT is a floor standing equipment, it is placed on the ground plane which has a non-conductive covering to insulate the EUT from the ground plane.
- Support equipment, if needed, was placed as per ANSI C63.4.
- All I/O cables were positioned to simulate typical usage as per ANSI C63.4.
- The test equipment EUT received DC2.4V from the batteries. All support equipment power received from another socket under the turntable.
- The antenna was placed at 3 meter away from the EUT as stated in ANSI C63.4. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.
- The Analyzer / Receiver quickly scanned from 30MHz to 40GHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters (For Below 1GHz) or 1 meter (For Above 1GHz) above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- The test mode(s) described in Item 3.1 were scanned during the preliminary test:
- After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.
- The worst configuration of EUT and cable of the above highest emission level were recorded for reference of the final test.

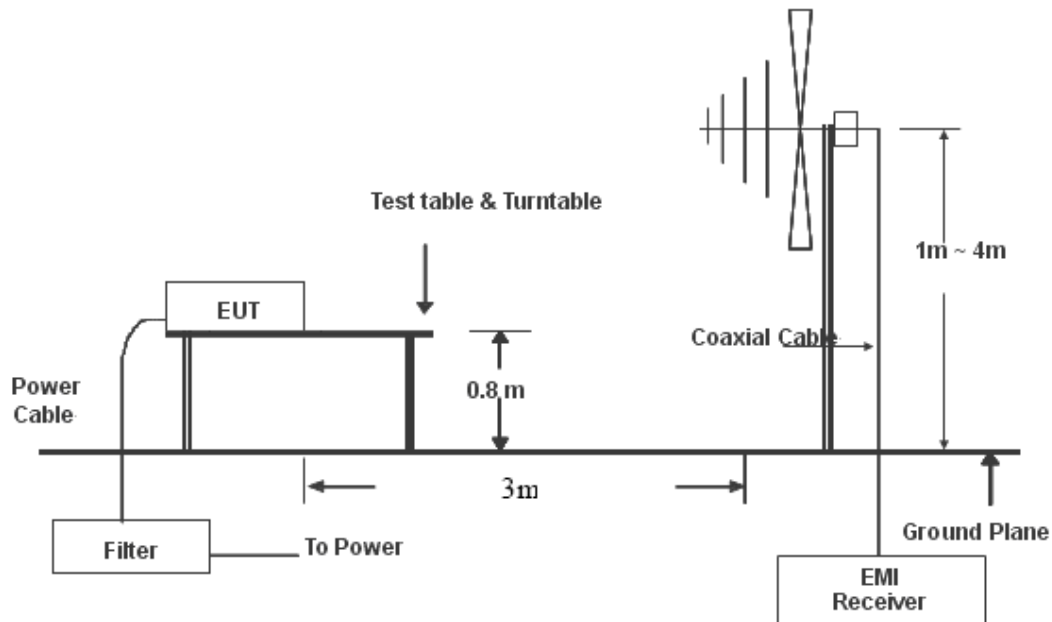
Procedure of Final Test

- EUT and support equipment were set up on the turntable as per the configuration with highest emission level in the preliminary test.
- The Analyzer / Receiver scanned from 30MHz to 40GHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 or 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- Recording at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. (For Below 1GHz) or Peak/Average (For Above 1GHz) reading is presented.
- The test data of the worst-case condition(s) was recorded.

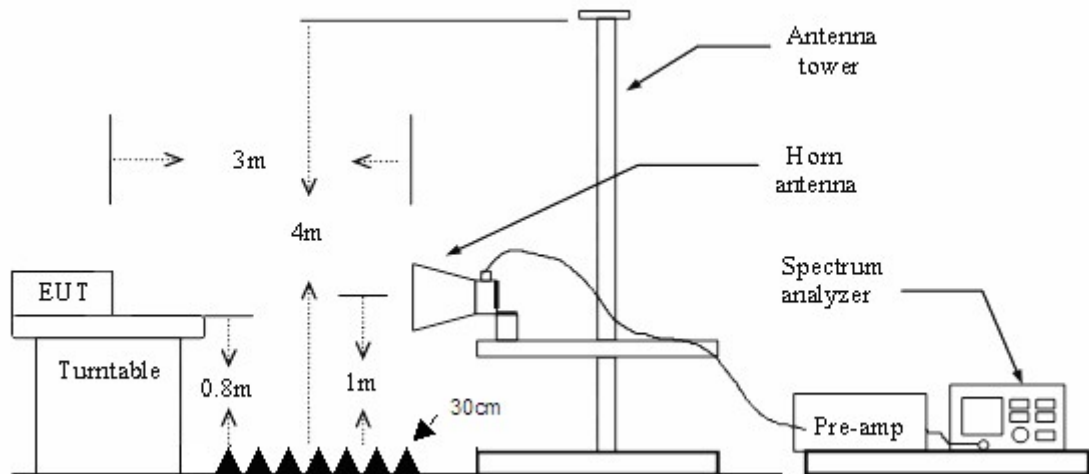


7.4. TEST SETUP

Below 1GHz



Above 1GHz



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

**7.5. DATA SAMPLE****Below 1GHz**

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
XXX.XXXX	47.40	-21.61	25.79	40.00	-14.21	QP

Frequency (MHz) = Emission frequency in MHz
Reading (dBuV) = Uncorrected Analyzer / Receiver reading
Correct Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain
Result (dBuV/m) = Reading (dBuV) + Corr. Factor (dB/m)
Limit (dBuV/m) = Limit stated in standard
Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)
Q.P. = Quasi-peak Reading

Above 1GHz

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
XXXX.XXXX	62.09	-11.42	50.67	74.00	-23.33	Peak
XXXX.XXXX	49.78	-11.42	38.36	54.00	-15.64	AVG

Frequency (MHz) = Emission frequency in MHz
Reading (dBuV) = Uncorrected Analyzer / Receiver reading
Correction Factor (dB/m) = Antenna factor + Cable loss – Amplifier gain
Result (dBuV/m) = Reading (dBuV) + Correction Factor (dB/m)
Limit (dBuV/m) = Limit stated in standard
Margin (dB) = Result (dBuV/m) – Limit (dBuV/m)
Peak = Peak Reading
AVG = Average Reading

Calculation Formula

Margin (dB) = Result (dBuV/m) – Limits (dBuV/m)
Result (dBuV/m) = Reading (dBuV) + Correction Factor (dB/m)

**7.6. TEST RESULTS****Below 1GHz**

Model No.	HP4190A	Test Mode	Mode 1
Environmental Conditions	24°C, 52% RH	RBW,VBW	120 kHz
Antenna Pole	Vertical	Antenna Distance	3m
Detector Function	Quasi-peak	Tested by	Leevin Li

(The chart below shows the highest readings taken from the final data.)

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
51.0167	53.92	-17.26	36.66	40.00	-3.34	QP
109.2167	54.84	-20.95	33.89	43.50	-9.61	QP
377.5833	42.69	-16.85	25.84	46.00	-20.16	QP
553.8000	37.83	-13.85	23.98	46.00	-22.02	QP
712.2333	33.23	-11.10	22.13	46.00	-23.87	QP
856.1167	32.70	-9.46	23.24	46.00	-22.76	QP

REMARKS: 1. QP= Quasi-peak Reading
2. The other emission levels were very low against the limit.



Model No.	HP4190A	Test Mode	Mode 1
Environmental Conditions	24°C, 52% RH	RBW,VBW	120 kHz
Antenna Pole	Horizontal	Antenna Distance	3m
Detector Function	Quasi-peak	Tested by	Leevin Li

(The chart below shows the highest readings taken from the final data.)

Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
109.2167	49.73	-20.95	28.78	43.50	-14.72	QP
183.5833	43.53	-18.58	24.95	43.50	-18.55	QP
257.9500	40.74	-17.90	22.84	46.00	-23.16	QP
432.5500	36.12	-14.80	21.32	46.00	-24.68	QP
665.3500	36.48	-11.53	24.95	46.00	-21.05	QP
731.6332	35.54	-10.68	24.86	46.00	-21.14	QP

REMARKS: 1. QP= Quasi-peak Reading
2. The other emission levels were very low against the limit.

**Above 1GHz**

Model No.	HP4190A	Test Mode	Mode 1
Environmental Conditions	24°C, 52% RH	RBW,VBW	1MHz
Antenna Pole	Vertical	Antenna Distance	3m
Detector Function:	Peak/AVG	Tested by	Leevin Li

(The chart below shows the highest readings taken from the final data.)

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1825.0000	53.99	-9.67	44.32	74.00	-29.68	peak
2740.0000	50.99	-5.28	45.71	74.00	-28.29	peak
4375.0000	45.44	-0.91	44.53	74.00	-29.47	peak
5335.0000	46.40	1.53	47.93	74.00	-26.07	peak
5800.0000	46.62	2.78	49.40	74.00	-24.60	peak
7270.0000	45.17	7.44	52.61	74.00	-21.39	peak

REMARKS: 1. Peak= Peak Reading; AVG= Average Reading.

2. The other emission levels were very low against the limit.



Model No.	HP4190A	Test Mode	Mode 1
Environmental Conditions	24°C, 52% RH	RBW,VBW	1MHz
Antenna Pole	Horizontal	Antenna Distance	3m
Detector Function:	Peak/AVG	Tested by	Leevin Li

(The chart below shows the highest readings taken from the final data.)

Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1315.0000	49.03	-8.21	40.82	74.00	-33.18	Peak
2740.0000	53.38	-5.28	48.10	74.00	-25.90	Peak
4180.0000	45.45	-1.67	43.78	74.00	-30.22	Peak
5005.0000	45.55	1.33	46.88	74.00	-27.12	Peak
6130.0000	44.25	3.48	47.73	74.00	-26.27	Peak
6370.0000	44.11	4.18	48.29	74.00	-25.71	Peak

REMARKS: 1. Peak= Peak Reading; AVG= Average Reading.
2. The other emission levels were very low against the limit.