

## FCC Test Report

**Report No.:** RF160809D13

**FCC ID:** ARS-PWMAW632A

**Model No.:** HSTND-9261-L

**Received Date:** Aug. 9, 2016

**Test Date:** Aug. 12 ~ 23, 2016

**Issued Date:** Aug. 26, 2016

**Applicant:** TOP VICTORY ELECTRONICS (TAIWAN) CO., LTD.

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**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

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### Release Control Record

Issue No.	Description	Date Issued
RF160809D13	Original release.	Aug. 26, 2016

## 1 Certificate of Conformity

**Product:** LCD Monitor  
(With Dual Mode Wireless Charger)

**Brand:** HP

**Model No.:** HSTND-9261-L

**Sample Status:** Engineering sample

**Applicant:** TOP VICTORY ELECTRONICS (TAIWAN) CO., LTD.

**Test Date:** Aug. 12 ~ 23, 2016

**Standards:** 47 CFR FCC Part 15, Subpart C (Section 15.209)  
ANSI C63.10: 2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :** Celia Chen , **Date:** Aug. 26, 2016  
Celia Chen / Supervisor

**Approved by :** Rex Lai , **Date:** Aug. 26, 2016  
Rex Lai / Assistant Manager

## 2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (SECTION 15.209)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -17.75dB at 0.37656MHz.
15.209	Radiated Emission Test	PASS	Meet the requirement of limit. Minimum passing margin is -6.3dB at 181.369MHz.

### 2.1 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	Expanded Uncertainty (k=2) ( $\pm$ )
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.78 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	2.38 dB
	30MHz ~ 1000MHz	5.32 dB

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

Product	LCD Monitor (With Dual Mode Wireless Charger)
Brand	HP
Model No.	HSTND-9261-L
Status of EUT	Engineering sample
Power Supply Rating	19.5Vdc from Adapter <For Monitor> 5Vdc from Monitor <For Wireless Charger>
Modulation Type	Qi: Load Modulation AirFuel: Load Modulation
Operating Frequency	Qi: 110-205kHz AirFuel: 110-205kHz
Tested Frequency	Qi: 135kHz AirFuel: 148kHz
Antenna Type	Loop antenna
Antenna Connector	N/A
Accessory Device	Adapter
Data Cable Supplied	N/A
Maximum power output from the charging coil	Max 5W

Note:

1. The EUT is a LCD Monitor (With Dual Mode Wireless Charger) (Qi & AirFuel).

2. The EUT uses following adapter.

Brand	hp
Model	TPC-AA501
Input Power	100-240Vac, 2.9A, 50-60Hz
Output Power	19.5Vdc, 9.23A, 180W
Power Cord	Non-shielded AC 3-Pin cable (1.8m) Non-shielded DC cable (1.7m) with one ferrite core

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

### 3.2 Description of Test Modes

2 channels are provided to this EUT:

Channel	Frequency
A	Qi: 135kHz
B	AirFuel: 148kHz

### 3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO		DESCRIPTION
	RE<1G	PLC	
A	√	√	Qi: 135kHz
B	√	√	AirFuel: 148kHz

Where **RE<1G**: Radiated Emission below 1GHz **PLC**: Power Line Conducted Emission

#### **Radiated Emission Test (Below 1GHz):**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	Frequency (kHz)
A	135
B	148

#### **Power Line Conducted Emission Test:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	Frequency (kHz)
A	135
B	148

#### **Test Condition:**

APPLICABLE TO	EUT CONFIGURE MODE	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
PLC	A & B	26deg. C, 62% RH	120Vac, 60Hz	Ian Chang
RE<1G	A & B	31deg. C, 74% RH	120Vac, 60Hz	Ian Chang



### 3.3 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.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Qi Load	N/A	N/A	N/A	N/A	Supplied by client
B.	AirFuel Load	N/A	N/A	N/A	N/A	Supplied by client

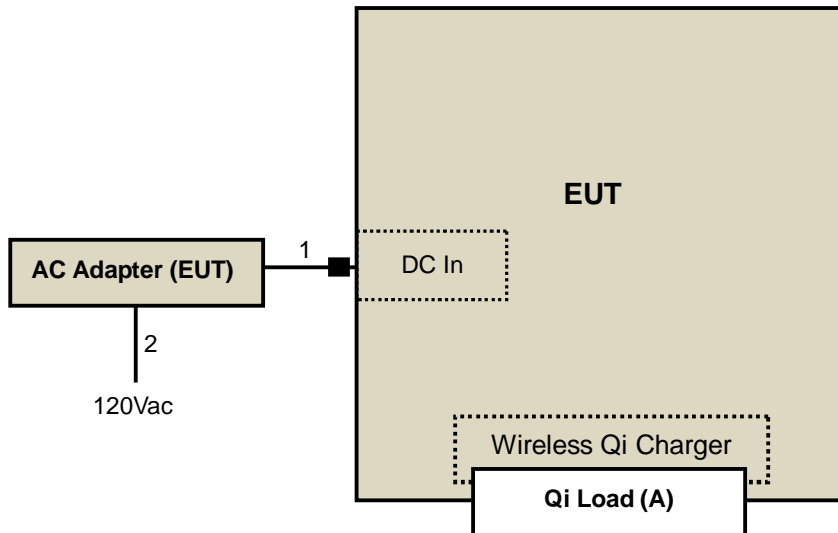
Note: All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC cable	1	1.7	N	1	Supplied by client
2.	AC Power Cord	1	1.8	N	0	Supplied by client

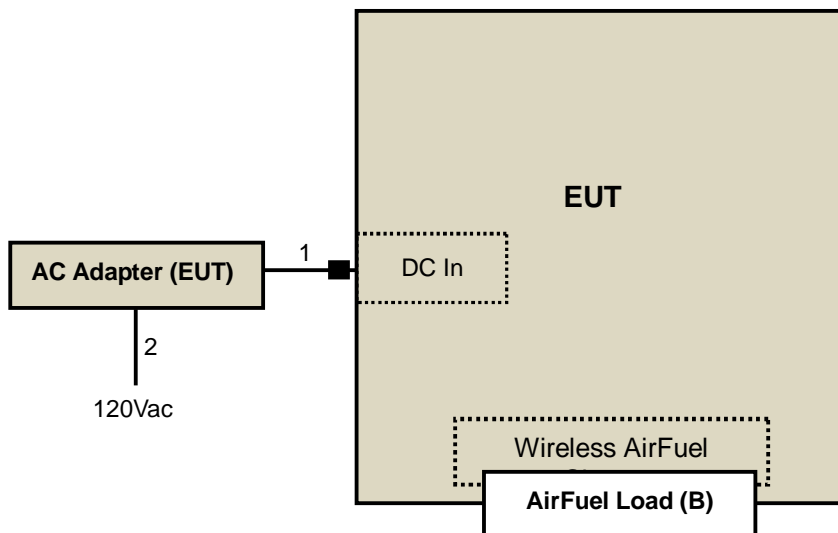
Note: The core(s) is(are) originally attached to the cable(s).

### 3.3.1 Configuration of System under Test

#### TEST CONFIGURATION – Mode A



#### TEST CONFIGURATION – Mode B



### 3.4 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

#### **FCC Part 15, Subpart C (15.209)**

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

**NOTE:** The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

## 4 Test Types and Results

### 4.1 Radiated Emission and Bandedge Measurement

#### 4.1.1 Limits of Radiated Emission and Bandedge Measurement

##### FOR FREQUENCY BELOW 30MHz

FREQUENCY (MHz)	FIELD STRENGTH (dBuV/m)		MEASUREMENT DISTANCE (meters)
	uV/m	dBuV/m	
0.009 – 0.490	2400 / F (kHz)	48.52-13.80	300
0.490 – 1.705	24000 / F (kHz)	33.80-22.97	30
1.705 – 30.0	30	29.54	30

##### FOR FREQUENCY BETWEEN 30-1000MHz

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 3m)	
	uV/m	dBuV/m	uV/m	dBuV/m
30-88	90	39.1	100	40.0
88-216	150	43.5	150	43.5
216-960	210	46.4	200	46.0
Above 960	300	49.5	500	54.0

## 4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Feb. 26, 2016	Feb. 25, 2017
HP Preamplifier	8449B	3008A01201	Feb. 26, 2016	Feb. 25, 2017
MITEQ Preamplifier	AMF-6F-260400-33-8P	892164	Mar. 01, 2016	Feb. 28, 2017
Agilent TEST RECEIVER	N9038A	MY51210129	Feb. 02, 2016	Feb. 01, 2017
Schwarzbeck Antenna	VULB 9168	139	Jan. 04, 2016	Jan. 03, 2017
Schwarzbeck Antenna	VHBA 9123	480	May 29, 2015	May 28, 2017
Schwarzbeck Horn Antenna	BBHA-9170	212	Jan. 08, 2016	Jan. 07, 2017
Schwarzbeck Horn Antenna	BBHA 9120-D1	D130	Jan. 21, 2016	Jan. 20, 2017
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	Radiated_V7.6.15.9.4	NA	NA	NA
SUHNER RF cable With 4dB PAD	SF104	CABLE-CH6	Aug. 15, 2016	Aug. 14, 2017
			Aug. 15, 2015	Aug. 14, 2016
SUHNER RF cable With 3dB PAD	SF102	Cable-CH8-3.6m	Aug. 15, 2016	Aug. 14, 2017
			Aug. 15, 2015	Aug. 14, 2016
KEYSIGHT MIMO Powermeasurement Test set	U2021XA	U2021XA-001	May 25, 2016	May 24, 2017
KEYSIGHT Spectrum Analyzer	N9030A	MY54490260	Jul. 26, 2016	Jul. 25, 2017
EMCI Loop Antenna	LPA600	270	Aug. 20, 2015	Aug. 19, 2017
ROHDE & SCHWARZ Spectrum Analyzer	FSV40	101042	Sep. 23, 2015	Sep. 22, 2016

- NOTE:**
1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
  2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
  3. The test was performed in Chamber No. 6.
  4. The Industry Canada Reference No. IC 7450E-6.
  5. The FCC Site Registration No. is 447212.

#### 4.1.3 Test Procedures

##### **For Frequency range 9kHz~30MHz**

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter Semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. Then the Loop antenna was rotated 360 degrees to determine the position of the highest radiation.
- b. The antenna is a broadband loop antenna, which is fixed of a 1m height above the ground, and set away from 3m to the EUT to find the disturbance reading on each frequency.
- c. The test-receiver system was set to average detect function and specified bandwidth.

##### **For Frequency range 30 ~ 1000MHz**

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

##### **Note:**

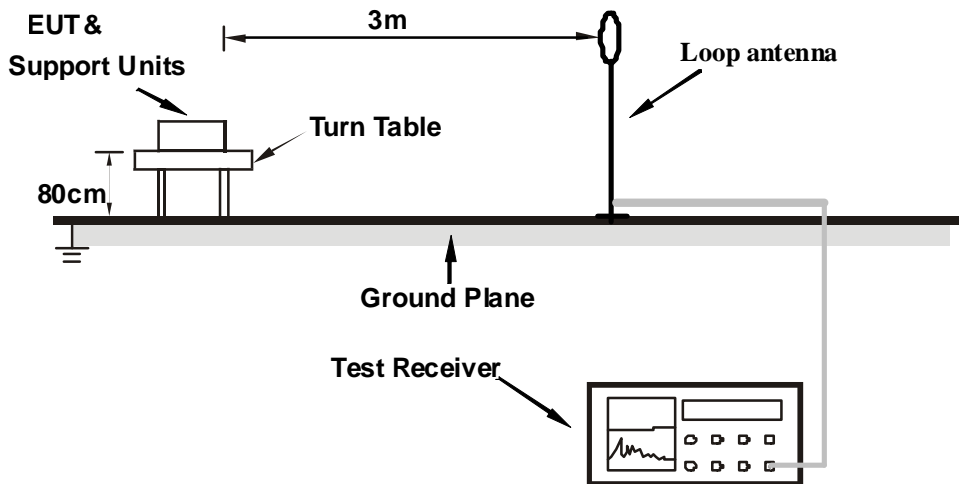
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.4 Deviation from Test Standard

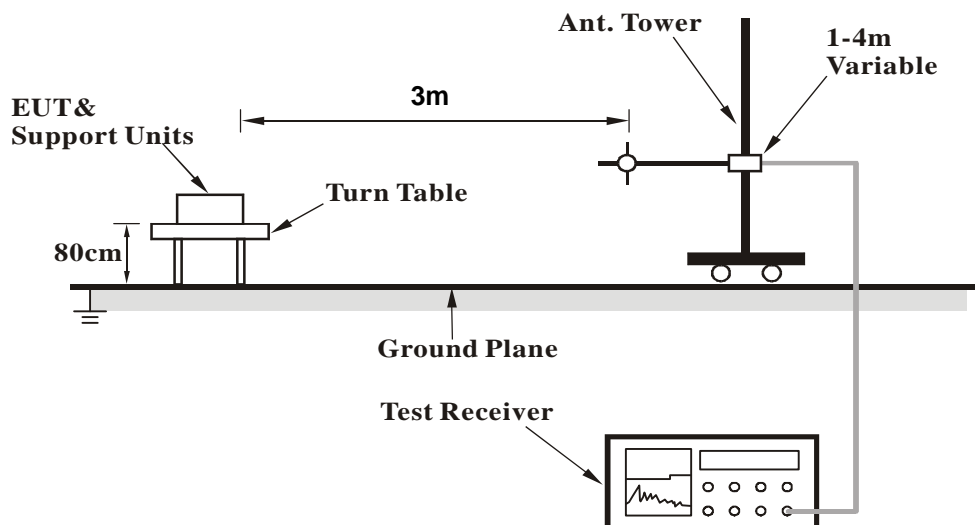
No deviation.

#### 4.1.5 Test Set Up

##### <Frequency Range below 30MHz>



##### <Frequency range 30 ~ 1000MHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.1.6 EUT Operating Conditions

- Connected the Adapter to EUT.
- Turned on the power of all equipment.
- The load which supplied by the client is meant to simulate the charging condition.
- EUT charged to Load continuously.

4.1.7 Test Results

**BELOW 30MHz DATA**

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	9kHz ~ 30MHz		
<b>TEST MOED</b>	A		

**ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA OPEN AT 3m**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*0.135	73.9 QP	105.0	-31.1	1.00	160	59.3	14.6
2	0.270	51.0 QP	99.0	-48.0	1.00	136	42.4	8.5
3	0.405	50.3 QP	95.5	-45.2	1.00	37	44.9	5.4
4	0.540	37.2 QP	73.0	-35.8	1.00	8	33.5	3.7
5	0.675	41.7 QP	71.0	-29.3	1.00	201	39.4	2.2
6	0.945	37.9 QP	68.1	-30.2	1.00	57	37.3	0.6
7	1.209	34.9 QP	66.0	-31.1	1.00	146	35.0	-0.1

**ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA CLOSE AT 3m**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*0.135	71.9 QP	105.0	-33.1	1.00	360	57.3	14.6
2	0.405	46.9 QP	95.5	-48.6	1.00	316	41.6	5.4
3	0.675	38.3 QP	71.0	-32.7	1.00	215	36.0	2.2
4	0.945	35.2 QP	68.1	-32.9	1.00	360	34.6	0.6
5	1.215	33.2 QP	65.9	-32.7	1.00	329	33.3	-0.1
6	1.485	34.4 QP	64.2	-29.8	1.00	360	35.1	-0.8

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.
6. Loop antenna was used for all radiated emission below 30MHz.
7. Limit @3m=Limit@300m+40log(300 / 3)=Limit@300m+80



<b>CHANNEL</b>	TX Channel 2	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	9kHz ~ 30MHz		
<b>TEST MOED</b>	B		

**ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA OPEN AT 3m**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*0.148	67.7 QP	104.2	-36.5	1.00	194	54.0	13.8
2	0.296	46.6 QP	98.1	-51.5	1.00	238	38.9	7.6
3	0.444	46.1 QP	94.6	-48.5	1.00	360	41.3	4.8
4	0.740	37.2 QP	70.2	-33.0	1.00	181	35.6	1.6
5	6.556	26.9 QP	69.5	-42.6	1.00	10	30.3	-3.4
6	10.579	26.3 QP	69.5	-43.2	1.00	0	30.1	-3.8

**ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA CLOSE AT 3m**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*0.148	62.8 QP	104.2	-41.4	1.00	208	49.1	13.8
2	0.444	42.6 QP	94.6	-52.0	1.00	177	37.8	4.8
3	0.740	35.4 QP	70.2	-34.8	1.00	38	33.8	1.6
4	1.036	32.6 QP	67.2	-34.6	1.00	110	32.2	0.3
5	1.477	30.1 QP	64.2	-34.1	1.00	296	30.8	-0.8
6	2.512	28.3 QP	69.5	-41.2	1.00	334	30.8	-2.5

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " \* ": Fundamental frequency.
6. Loop antenna was used for all radiated emission below 30MHz.
7. Limit @3m=Limit@300m+40log(300 / 3)=Limit@300m+80

### BELOW 1GHz DATA

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30 ~ 1000MHz		
<b>TEST MODE</b>	A		

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	36.935	25.2 QP	40.0	-14.8	1.94 H	143	35.9	-10.7
2	187.916	33.4 QP	43.5	-10.1	1.18 H	357	44.8	-11.5
3	252.809	35.7 QP	46.0	-10.3	2.69 H	286	45.4	-9.6
4	307.420	35.1 QP	46.0	-10.9	1.84 H	152	42.7	-7.6
5	365.232	34.2 QP	46.0	-11.8	2.20 H	284	40.6	-6.4
6	511.605	32.7 QP	46.0	-13.3	1.00 H	29	35.7	-3.0

#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	38.099	29.9 QP	40.0	-10.1	1.24 V	239	40.4	-10.5
2	145.964	32.0 QP	43.5	-11.5	1.62 V	0	41.5	-9.6
<b>3</b>	<b>181.369</b>	<b>37.2 QP</b>	<b>43.5</b>	<b>-6.3</b>	<b>1.52 V</b>	<b>40</b>	<b>47.8</b>	<b>-10.7</b>
4	252.761	38.9 QP	46.0	-7.1	2.13 V	142	48.6	-9.6
5	304.947	36.7 QP	46.0	-9.3	2.28 V	170	44.3	-7.6
6	365.183	37.6 QP	46.0	-8.4	1.98 V	10	44.0	-6.4

#### REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

<b>CHANNEL</b>	TX Channel 2	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	30 ~ 1000MHz		
<b>TEST MODE</b>	B		

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	148.970	28.6 QP	43.5	-14.9	1.42 H	259	38.0	-9.4
2	195.190	28.5 QP	43.5	-15.0	2.61 H	208	40.3	-11.8
3	252.230	30.8 QP	46.0	-15.2	2.01 H	132	40.5	-9.6
4	303.930	31.3 QP	46.0	-14.7	1.45 H	78	38.9	-7.6
5	375.170	26.9 QP	46.0	-19.1	2.23 H	154	33.0	-6.1
6	522.270	28.9 QP	46.0	-17.1	1.84 H	148	31.8	-2.9

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	145.960	36.4 QP	43.5	-7.1	1.41 V	44	45.9	-9.6
2	184.960	31.2 QP	43.5	-12.3	1.85 V	1	42.3	-11.1
3	252.280	34.2 QP	46.0	-11.8	1.09 V	203	43.9	-9.6
4	305.040	32.3 QP	46.0	-13.7	2.31 V	143	39.9	-7.6
5	365.130	30.3 QP	46.0	-15.7	2.18 V	192	36.7	-6.4
6	517.960	34.1 QP	46.0	-11.9	1.47 V	138	37.0	-3.0

**REMARKS:**

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

## 4.2 Conducted Emission Measurement

### 4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	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 of 0.15 to 0.50MHz.

### 4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
ROHDE & SCHWARZ TEST RECEIVER	ESCS 30	100276	Apr. 12, 2016	Apr. 11, 2017
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ENV216	101197	May 04, 2016	May 03, 2017
LISN With Adapter (for EUT)	AD10	C10Ada-002	May 04, 2016	May 03, 2017
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100218	Nov. 25, 2015	Nov. 24, 2016
SCHWARZBECK Artificial Mains Network (For EUT)	NNLK8129	8129229	May 04, 2016	May 03, 2017
Software	Cond_V7.3.7	NA	NA	NA
RF cable (JYEBAO) With 10dB PAD	5D-FB	Cable-C10.01	Feb. 15, 2016	Feb. 14, 2017
SUHNER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-011484	May 12, 2016	May 11, 2017
ROHDE & SCHWARZ Artificial Mains Network (For TV EUT)	ESH3-Z5	100220	Nov. 13, 2015	Nov. 12, 2016
LISN With Adapter (for TV EUT)	100220	N/A	Nov. 13, 2015	Nov. 12, 2016

Notes: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in Shielded Room No. 10.

3. The VCCI Site Registration No. C-1852.

#### 4.2.3 Test Procedures

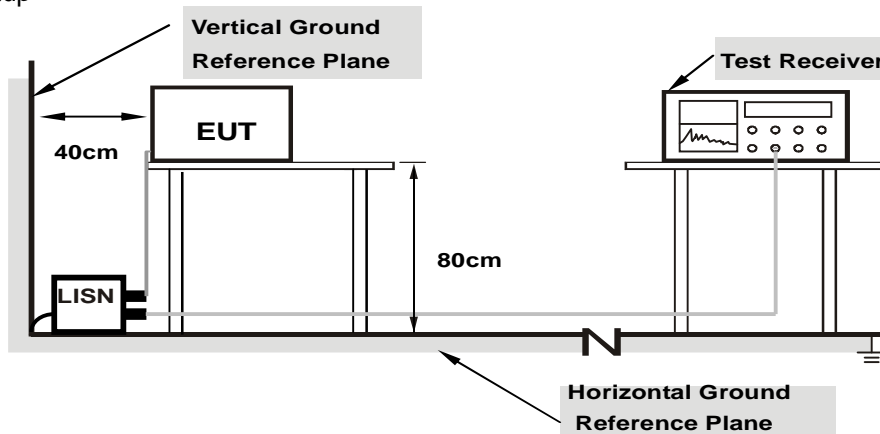
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

**NOTE:** The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

#### 4.2.4 Deviation from Test Standard

No deviation.

#### 4.2.5 Test Setup



**Note:** Support units were connected to second LISN.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

#### 4.2.6 EUT Operating Conditions

Same as item 4.1.6.

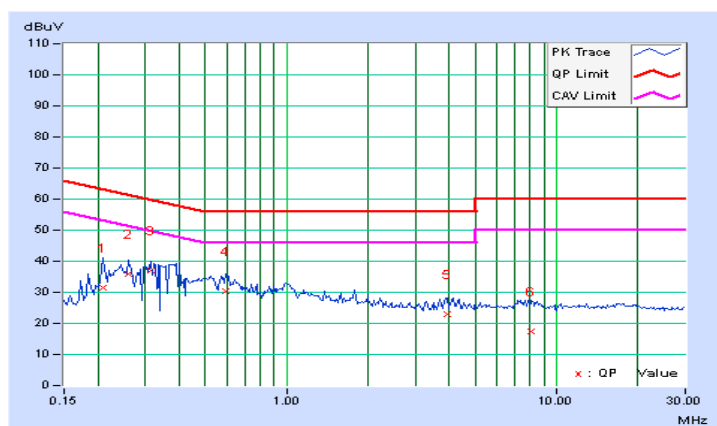
#### 4.2.7 Test Results

<b>Frequency Range</b>	150kHz ~ 30MHz	<b>Detector Function &amp; Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9kHz
<b>Test Mode</b>	A		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.20859	9.70	21.87	7.75	31.57	17.45	63.26	53.26	-31.69	-35.81
2	0.25938	9.70	26.05	13.25	35.75	22.95	61.45	51.45	-25.70	-28.50
3	0.31406	9.69	27.29	17.69	36.98	27.38	59.86	49.86	-22.88	-22.48
4	0.59531	9.71	20.77	4.59	30.48	14.30	56.00	46.00	-25.52	-31.70
5	3.91797	9.87	13.03	6.25	22.90	16.12	56.00	46.00	-33.10	-29.88
6	8.07422	9.90	7.63	0.63	17.53	10.53	60.00	50.00	-42.47	-39.47

#### Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

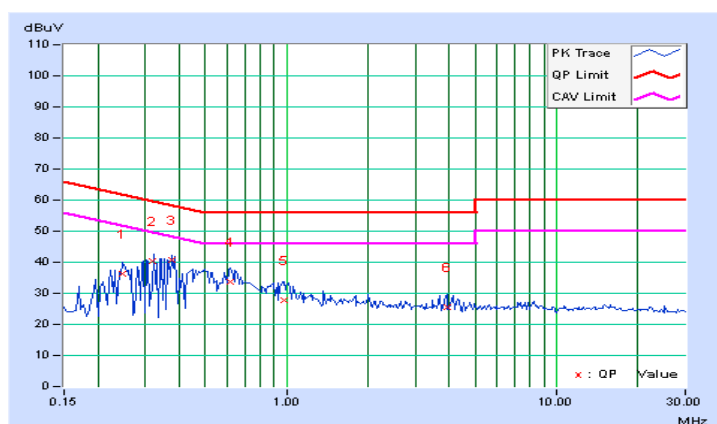


<b>Frequency Range</b>	150kHz ~ 30MHz	<b>Detector Function &amp; Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9kHz
<b>Test Mode</b>	A		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.24766	9.69	26.48	12.05	36.17	21.74	61.84	51.84	-25.67	-30.10
2	0.31805	9.69	30.71	20.55	40.40	30.24	59.76	49.76	-19.36	-19.52
<b>3</b>	<b>0.37656</b>	<b>9.69</b>	<b>30.91</b>	<b>14.35</b>	<b>40.60</b>	<b>24.04</b>	<b>58.35</b>	<b>48.35</b>	<b>-17.75</b>	<b>-24.31</b>
4	0.62266	9.70	23.91	7.89	33.61	17.59	56.00	46.00	-22.39	-28.41
5	0.97813	9.73	18.21	1.63	27.94	11.36	56.00	46.00	-28.06	-34.64
6	3.91797	9.86	15.61	9.37	25.47	19.23	56.00	46.00	-30.53	-26.77

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

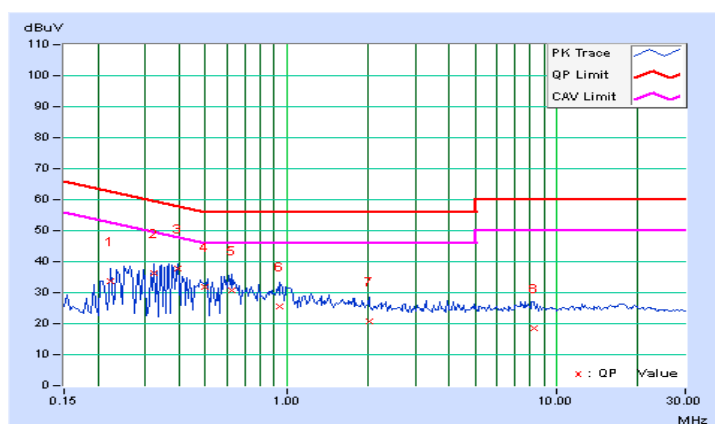


<b>Frequency Range</b>	150kHz ~ 30MHz	<b>Detector Function &amp; Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9kHz
<b>Test Mode</b>	B		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.22422	9.70	23.95	6.85	33.65	16.55	62.66	52.66	-29.01	-36.11
2	0.32188	9.69	26.61	15.73	36.30	25.42	59.66	49.66	-23.35	-24.23
3	0.39609	9.69	28.21	10.17	37.90	19.86	57.93	47.93	-20.03	-28.07
4	0.50000	9.70	22.11	8.81	31.81	18.51	56.00	46.00	-24.19	-27.49
5	0.63047	9.71	20.89	7.57	30.60	17.28	56.00	46.00	-25.40	-28.72
6	0.94688	9.74	15.79	6.15	25.53	15.89	56.00	46.00	-30.47	-30.11
7	2.01953	9.78	10.95	1.87	20.73	11.65	56.00	46.00	-35.27	-34.35
8	8.25781	9.90	8.63	1.69	18.53	11.59	60.00	50.00	-41.47	-38.41

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



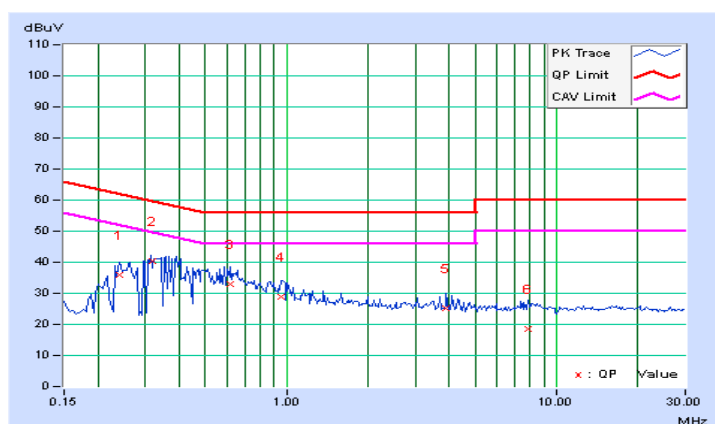


<b>Frequency Range</b>	150kHz ~ 30MHz	<b>Detector Function &amp; Bandwidth</b>	Quasi-Peak (QP) / Average (AV), 9kHz
<b>Test Mode</b>	B		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.23984	9.69	26.23	9.07	35.92	18.76	62.10	52.10	-26.18	-33.34
2	0.31661	9.69	30.71	20.17	40.40	29.86	59.80	49.80	-19.40	-19.94
3	0.62266	9.70	23.37	8.61	33.07	18.31	56.00	46.00	-22.93	-27.69
4	0.95320	9.73	19.15	12.63	28.88	22.36	56.00	46.00	-27.12	-23.64
5	3.91016	9.86	15.49	9.09	25.35	18.95	56.00	46.00	-30.65	-27.05
6	7.85547	9.89	8.75	0.21	18.64	10.10	60.00	50.00	-41.36	-39.90

**Remarks:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



## 5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

## Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

The address and road map of all our labs can be found in our web site also.

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