

## FCC Test Report

**Report No.:** RF160830D15

**FCC ID:** 2AAZG9194A1

**Model No.:** CFC CHARGER

**Received Date:** Aug. 30, 2016

**Test Date:** Sep. 9 ~ 12, 2016

**Issued Date:** Sep. 19, 2016

**Applicant:** DYE PRECISION, INC.

**Address:** 10637 Scripps Summit Court San Diego, CA 92131

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

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan  
(R.O.C.)



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### Release Control Record

| Issue No.   | Description       | Date Issued   |
|-------------|-------------------|---------------|
| RF160830D15 | Original release. | Sep. 19, 2016 |

## 1 Certificate of Conformity

**Product:** Cable Free Charging

**Brand:** DYE

**Model No.:** CFC CHARGER

**Sample Status:** Mass Production

**Applicant:** DYE PRECISION, INC.

**Test Date:** Sep. 9 ~ 12, 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 / Supervisor

**Date:**

Sep. 19, 2016

**Approved by :**



Rex Lai / Assistant Manager

**Date:**

Sep. 19, 2016

## 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.<br>Minimum passing margin is -23.65dB at 1.44141MHz. |
| 15.209   | Radiated Emission Test      | PASS   | Meet the requirement of limit.<br>Minimum passing margin is -9.44dB at 138.398MHz.  |

### 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                                     | Cable Free Charging     |
| Brand                                       | DYE                     |
| Test Model                                  | CFC CHARGER             |
| Status of EUT                               | Mass Production         |
| Power Supply Rating                         | 5Vdc from USB interface |
| Modulation Type                             | AM Modulation           |
| Operating Frequency                         | 110-205kHz              |
| Tested Frequency                            | 123kHz                  |
| Antenna Type                                | Coil antenna            |
| Antenna Connector                           | N/A                     |
| Accessory Device                            | N/A                     |
| Data Cable Supplied                         | N/A                     |
| Maximum power output from the charging coil | 5 watts                 |

Note:

1. The EUT is a Cable Free Charging (Qi).
2. The EUT was pre-tested with the following modes:
  - ≥ Charging Mode (EUT + Notebook)
  - ≥ Charging Mode (EUT + Adapter)
 The worst emission level was found when the EUT tested under **Charging Mode (EUT + Adapter)**.
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

1 channel is provided to this EUT:

| Channel | Frequency (kHz) |
|---------|-----------------|
| 1       | 123             |

### 3.2.1 Test Mode Applicability and Tested Channel Detail

| EUT CONFIGURE MODE | APPLICABLE TO |     | DESCRIPTION                    |
|--------------------|---------------|-----|--------------------------------|
|                    | RE<1G         | PLC |                                |
| A                  | √             | √   | Charging Mode (EUT + Adapter)  |
| B                  | -             | √   | Charging Mode (EUT + Notebook) |

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 | AVAILABLE CHANNEL | TESTED CHANNEL |
|--------------------|-------------------|----------------|
| A                  | 1                 | 1              |

#### **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 | AVAILABLE CHANNEL | TESTED CHANNEL |
|--------------------|-------------------|----------------|
| A & B              | 1                 | 1              |

#### **Test Condition:**

| APPLICABLE TO | EUT CONFIGURE MODE | ENVIRONMENTAL CONDITIONS | INPUT POWER            | TESTED BY |
|---------------|--------------------|--------------------------|------------------------|-----------|
| PLC           | A                  | 26deg. C, 73% RH         | 120Vac, 60Hz (Adapter) | Dalen Dai |
|               | B                  | 26deg. C, 73% RH         | 120Vac, 60Hz (System)  | Dalen Dai |
| RE<1G         | A                  | 29deg. C, 73% RH         | 120Vac, 60Hz (Adapter) | Ian Chang |



### 3.3 Description of Support Units

| ID | Product           | Brand | Model No. | Serial No. | FCC ID           | Remarks            |
|----|-------------------|-------|-----------|------------|------------------|--------------------|
| A. | M2                | DYE   | M2        | N/A        | 2AAZG3045A1      | Supplied by client |
| B. | Adapter           | HTC   | TC U250   | N/A        | FCC DoC Approved | Provided by Lab    |
| C. | NOTEBOOK COMPUTER | DELL  | PP27L     | 8SNZ12S    | FCC DoC Approved | Provided by Lab    |

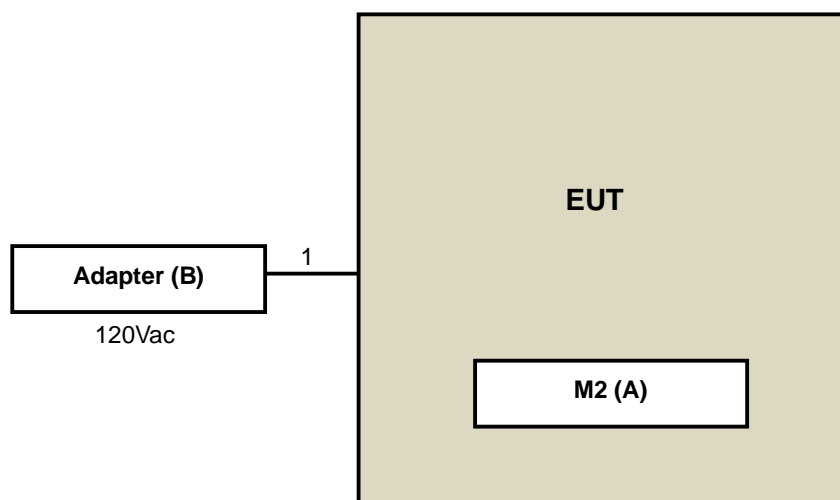
Note: All power cords of the above support units are non-shielded (1.8m).

| ID | Descriptions | Qty. | Length (m) | Shielding (Yes/No) | Cores (Qty.) | Remarks            |
|----|--------------|------|------------|--------------------|--------------|--------------------|
| 1. | USB cable    | 1    | 1.0        | Y                  | 0            | Supplied by client |

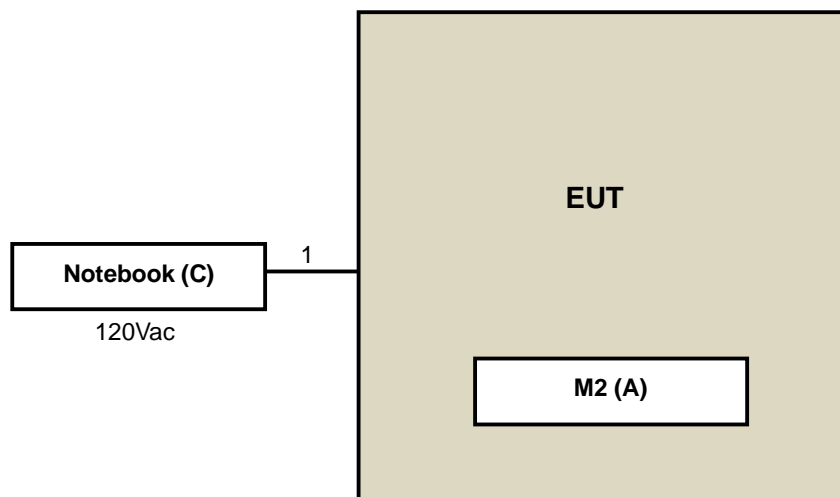
Note: The core(s) is(are) originally attached to the cable(s).

#### 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.

## 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<br>(MHz) | FIELD STRENGTH (dBuV/m) |             | MEASUREMENT DISTANCE<br>(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<br>(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<br>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<br>Antenna                   | BBHA-9170            | 212            | Jan. 08, 2016   | Jan. 07, 2017    |
| Schwarzbeck Horn<br>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<br>With 4dB PAD               | SF104                | CABLE-CH6      | Aug. 15, 2016   | Aug. 14, 2017    |
| SUHNER RF cable<br>With 3dB PAD               | SF102                | Cable-CH8-3.6m | Aug. 15, 2016   | Aug. 14, 2017    |
| KEYSIGHT MIMO<br>Powermeasurement Test<br>set | U2021XA              | U2021XA-001    | May 25, 2016    | May 24, 2017     |
| KEYSIGHT<br>Spectrum Analyzer                 | N9030A               | MY54490260     | Jul. 26, 2016   | Jul. 25, 2017    |
| Loop Antenna EMCI                             | LPA600               | 270            | Aug. 20, 2015   | Aug. 19, 2017    |
| ROHDE & SCHWARZ<br>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 chamber room. 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. Both X and Y axes of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case 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.

**NOTE:** The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

##### 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:**

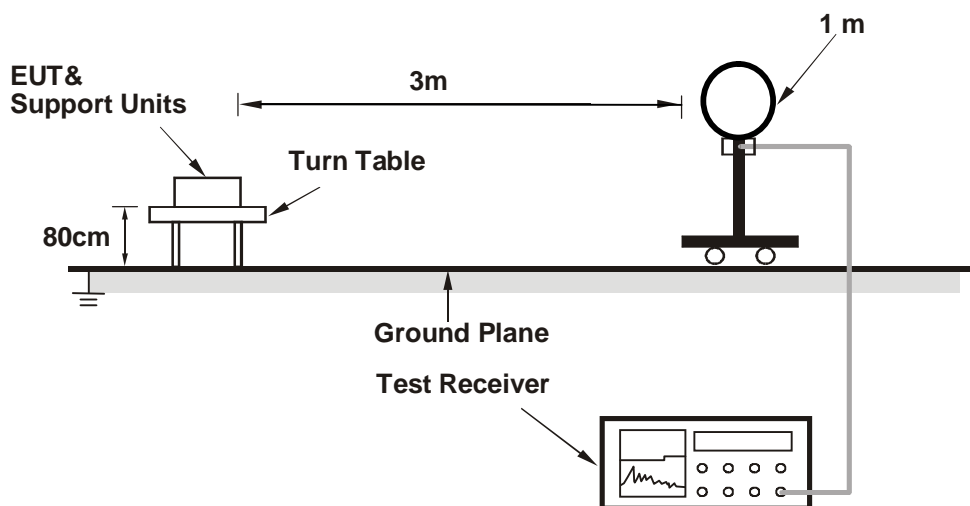
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.4 Deviation from Test Standard

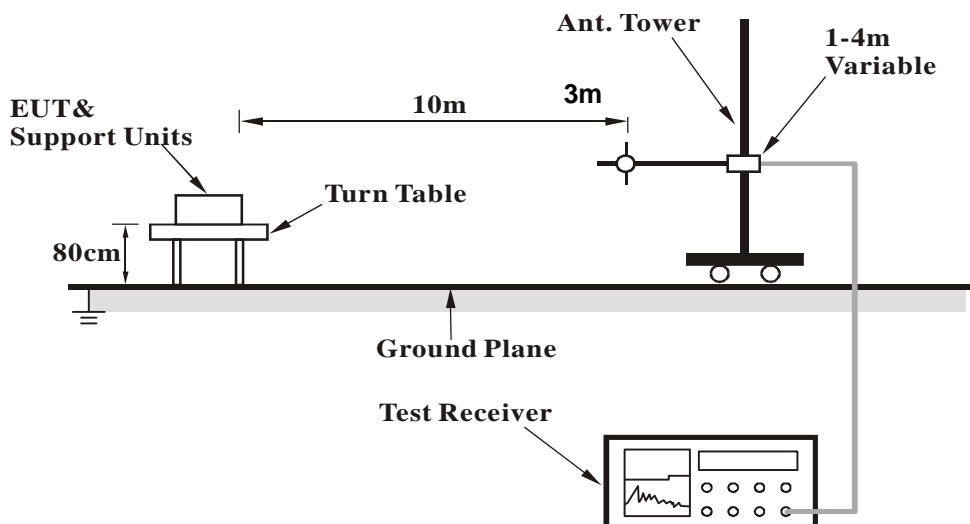
No deviation.

#### 4.1.5 Test Set Up

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



##### For 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 M2 (paintball gun with 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 MODE</b>         | Mode A          |

| ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA OPEN 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   | *0.123      | 52.19 QP                | 105.81         | -53.62      | 2.00               | 0                    | 36.93            | 15.26                    |
| 2   | 0.246       | 41.06 QP                | 99.79          | -58.73      | 2.00               | 61                   | 31.75            | 9.31                     |
| 3   | 0.369       | 48.84 QP                | 96.26          | -47.42      | 2.00               | 192                  | 42.74            | 6.10                     |
| 4   | 8.586       | 22.54 QP                | 69.54          | -47.00      | 2.00               | 357                  | 26.14            | -3.60                    |
| 5   | 19.503      | 19.95 QP                | 69.54          | -49.59      | 2.00               | 360                  | 25.10            | -5.15                    |
| 6   | 25.921      | 21.77 QP                | 69.54          | -47.77      | 2.00               | 360                  | 28.52            | -6.75                    |
| ANTENNA POLARITY & TEST DISTANCE: LOOP ANTENNA CLOSE 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   | *0.123      | 49.58 QP                | 105.81         | -56.23      | 2.00               | 341                  | 34.32            | 15.26                    |
| 2   | 0.369       | 48.65 QP                | 96.26          | -47.61      | 2.00               | 360                  | 42.55            | 6.10                     |
| 3   | 1.449       | 28.91 QP                | 64.39          | -35.48      | 2.00               | 80                   | 29.60            | -0.69                    |
| 4   | 16.144      | 26.21 QP                | 69.54          | -43.33      | 2.00               | 164                  | 30.38            | -4.17                    |
| 5   | 21.303      | 31.92 QP                | 69.54          | -37.62      | 2.00               | 212                  | 37.97            | -6.05                    |
| 6   | 25.981      | 37.52 QP                | 69.54          | -32.02      | 2.00               | 345                  | 44.18            | -6.66                    |

#### 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
8. Limit @3m=Limit@30m+40log(30 / 3)=Limit@30m+40

**Below 1GHz Data:**

|                        |              |                          |                 |
|------------------------|--------------|--------------------------|-----------------|
| <b>CHANNEL</b>         | TX Channel 1 | <b>DETECTOR FUNCTION</b> | Quasi-Peak (QP) |
| <b>FREQUENCY RANGE</b> | 30MHz ~ 1GHz | <b>TEST MODE</b>         | Mode 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   | 53.765      | 18.80 QP                | 40.00          | -21.20      | 2.36 H             | 127                  | 28.19            | -9.39                    |
| 2   | 103.284     | 18.81 QP                | 43.50          | -24.69      | 1.67 H             | 143                  | 32.39            | -13.58                   |
| 3   | 138.398     | 34.06 QP                | 43.50          | -9.44       | 3.15 H             | 253                  | 44.08            | -10.02                   |
| 4   | 156.973     | 27.60 QP                | 43.50          | -15.90      | 2.20 H             | 88                   | 36.78            | -9.18                    |
| 5   | 219.344     | 22.55 QP                | 46.00          | -23.45      | 1.42 H             | 102                  | 34.14            | -11.59                   |
| 6   | 291.318     | 23.70 QP                | 46.00          | -22.30      | 1.58 H             | 253                  | 31.53            | -7.83                    |
| 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   | 57.499      | 27.16 QP                | 40.00          | -12.84      | 1.37 V             | 32                   | 36.92            | -9.76                    |
| 2   | 97.706      | 23.17 QP                | 43.50          | -20.33      | 2.68 V             | 275                  | 37.68            | -14.51                   |
| 3   | 138.058     | 27.70 QP                | 43.50          | -15.80      | 2.01 V             | 239                  | 37.72            | -10.02                   |
| 4   | 190.875     | 23.00 QP                | 43.50          | -20.50      | 1.57 V             | 226                  | 34.72            | -11.72                   |
| 5   | 293.598     | 22.35 QP                | 46.00          | -23.65      | 1.00 V             | 185                  | 30.17            | -7.82                    |
| 6   | 601.039     | 28.06 QP                | 46.00          | -17.94      | 1.30 V             | 65                   | 29.51            | -1.45                    |

**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<br>TEST RECEIVER                                 | ESCS 30     | 100276       | Apr. 12, 2016 | Apr. 11, 2017 |
| ROHDE & SCHWARZ<br>Artificial Mains Network<br>(for EUT)         | ENV216      | 101197       | May 04, 2016  | May 03, 2017  |
| LISN With Adapter<br>(for EUT)                                   | AD10        | C10Ada-002   | May 04, 2016  | May 03, 2017  |
| ROHDE & SCHWARZ<br>Artificial Mains Network<br>(for peripherals) | ESH3-Z5     | 100218       | Nov. 25, 2015 | Nov. 24, 2016 |
| SCHWARZBECK<br>Artificial Mains Network (For<br>EUT)             | NNLK8129    | 8129229      | May 04, 2016  | May 03, 2017  |
| Software   | Cond_V7.3.7 | NA           | NA            | NA            |
| RF cable (JYEBAO)<br>With 10dB PAD                               | 5D-FB       | Cable-C10.01 | Feb. 15, 2016 | Feb. 14, 2017 |
| SUHNTER Terminator<br>(For ROHDE & SCHWARZ<br>LISN)              | 65BNC-5001  | E1-011484    | May 12, 2016  | May 11, 2017  |
| ROHDE & SCHWARZ<br>Artificial Mains Network (For<br>TV EUT)      | ESH3-Z5     | 100220       | Nov. 13, 2015 | Nov. 12, 2016 |
| LISN With Adapter<br>(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

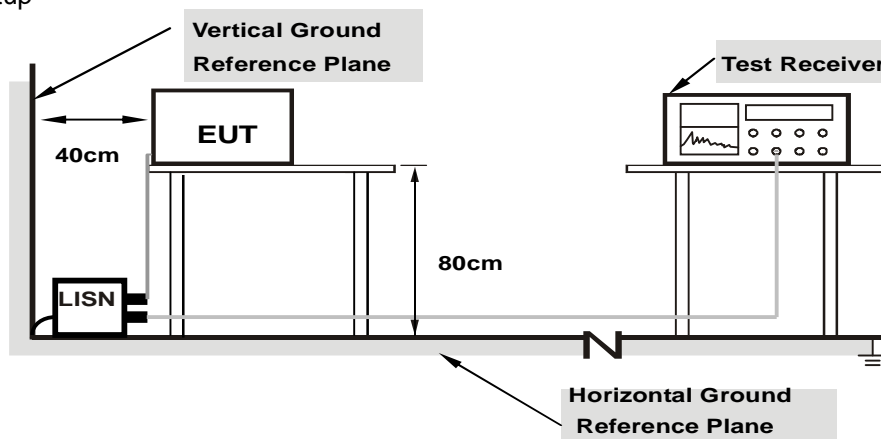
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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:** 1.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.

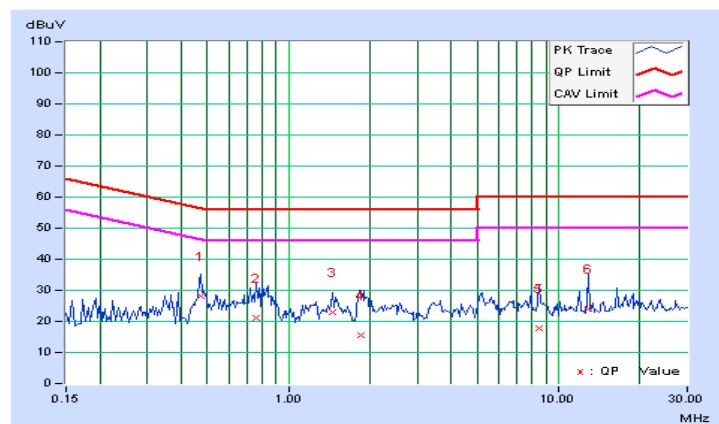
#### 4.2.7 Test Results

|                        |                |   |                                      |
|------------------------|----------------|---|--------------------------------------|
| <b>Frequency Range</b> | 150kHz ~ 30MHz | <b>Detector Function &amp; Resolution Bandwidth</b> | Quasi-Peak (QP) / Average (AV), 9kHz |
| <b>Test Mode</b>       | Mode 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                         | 0.47422         | 9.74                   | 18.33                | 7.98 | 28.07                 | 17.72 | 56.44        | 46.44 | -28.37      | -28.72 |
| 2                         | 0.75938         | 9.78                   | 11.24                | 4.89 | 21.02                 | 14.67 | 56.00        | 46.00 | -34.98      | -31.33 |
| 3                         | 1.46094         | 9.87                   | 12.99                | 4.26 | 22.86                 | 14.13 | 56.00        | 46.00 | -33.14      | -31.87 |
| 4                         | 1.85156         | 9.91                   | 5.68                 | 2.69 | 15.59                 | 12.60 | 56.00        | 46.00 | -40.41      | -33.40 |
| 5                         | 8.48047         | 10.12                  | 7.71                 | 5.30 | 17.83                 | 15.42 | 60.00        | 50.00 | -42.17      | -34.58 |
| 6                         | 12.90234        | 10.19                  | 13.97                | 1.99 | 24.16                 | 12.18 | 60.00        | 50.00 | -35.84      | -37.82 |

#### 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

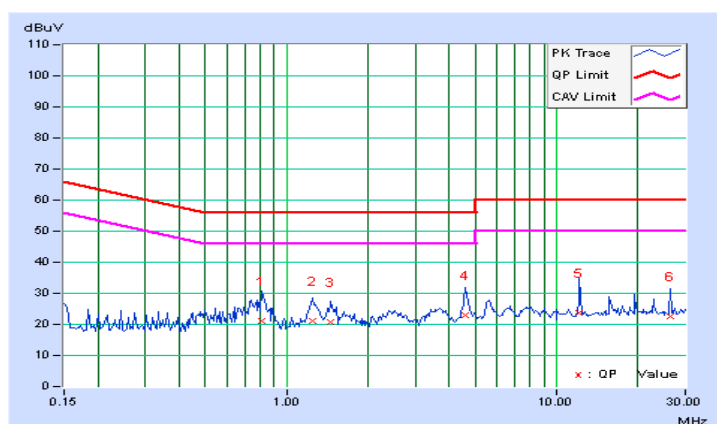


|                 |                |  |                                      |
|-----------------|----------------|--|--------------------------------------|
| Frequency Range | 150kHz ~ 30MHz | Detector Function & Resolution Bandwidth | Quasi-Peak (QP) / Average (AV), 9kHz |
| Test Mode       | Mode 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                            | 0.81016         | 9.78                   | 11.41                | 3.53 | 21.19                 | 13.31 | 56.00        | 46.00 | -34.81      | -32.69 |
| 2                            | 1.25000         | 9.83                   | 11.28                | 2.79 | 21.11                 | 12.62 | 56.00        | 46.00 | -34.89      | -33.38 |
| 3                            | 1.46484         | 9.85                   | 11.02                | 1.77 | 20.87                 | 11.62 | 56.00        | 46.00 | -35.13      | -34.38 |
| 4                            | 4.59766         | 10.12                  | 12.79                | 3.68 | 22.91                 | 13.80 | 56.00        | 46.00 | -33.09      | -32.20 |
| 5                            | 12.19141        | 10.21                  | 13.32                | 1.63 | 23.53                 | 11.84 | 60.00        | 50.00 | -36.47      | -38.16 |
| 6                            | 26.50781        | 10.29                  | 12.47                | 1.26 | 22.76                 | 11.55 | 60.00        | 50.00 | -37.24      | -38.45 |

**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

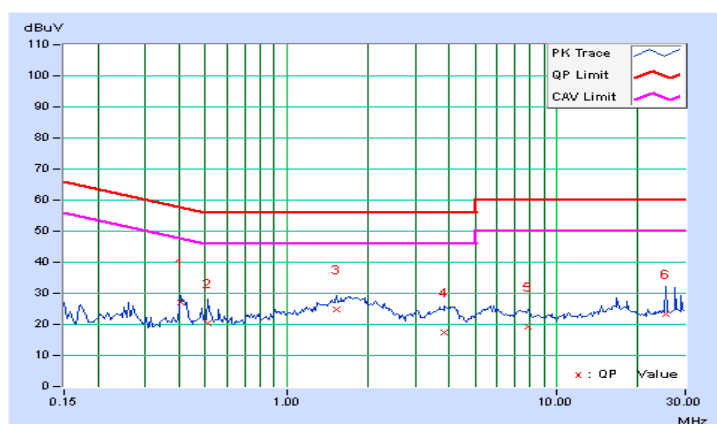


|                 |                |  |                                      |
|-----------------|----------------|--|--------------------------------------|
| Frequency Range | 150kHz ~ 30MHz | Detector Function & Resolution Bandwidth | Quasi-Peak (QP) / Average (AV), 9kHz |
| Test Mode       | Mode 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                         | 0.40391         | 9.69                   | 17.29                | 14.11 | 26.98                 | 23.80 | 57.77        | 47.77 | -30.79      | -23.97 |
| 2                         | 0.51328         | 9.70                   | 10.59                | 1.13  | 20.29                 | 10.83 | 56.00        | 46.00 | -35.71      | -35.17 |
| 3                         | 1.53516         | 9.76                   | 15.06                | 11.38 | 24.82                 | 21.14 | 56.00        | 46.00 | -31.18      | -24.86 |
| 4                         | 3.86328         | 9.86                   | 7.40                 | 2.00  | 17.26                 | 11.86 | 56.00        | 46.00 | -38.74      | -34.14 |
| 5                         | 7.82422         | 9.90                   | 9.44                 | 1.08  | 19.34                 | 10.98 | 60.00        | 50.00 | -40.66      | -39.02 |
| 6                         | 25.27734        | 9.98                   | 13.45                | 7.24  | 23.43                 | 17.22 | 60.00        | 50.00 | -36.57      | -32.78 |

**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

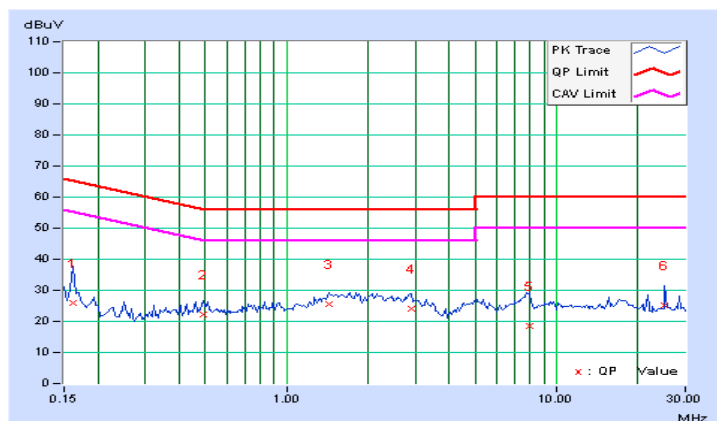


|                 |                |  |                                      |
|-----------------|----------------|--|--------------------------------------|
| Frequency Range | 150kHz ~ 30MHz | Detector Function & Resolution Bandwidth | Quasi-Peak (QP) / Average (AV), 9kHz |
| Test Mode       | Mode 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                            | 0.16172         | 9.70                   | 16.22                | 8.44  | 25.92                 | 18.14 | 65.38        | 55.38 | -39.46      | -37.24 |
| 2                            | 0.48984         | 9.70                   | 12.36                | 5.70  | 22.06                 | 15.40 | 56.17        | 46.17 | -34.11      | -30.77 |
| 3                            | 1.44141         | 9.75                   | 15.93                | 12.60 | 25.68                 | 22.35 | 56.00        | 46.00 | -30.32      | -23.65 |
| 4                            | 2.90234         | 9.81                   | 14.11                | 8.23  | 23.92                 | 18.04 | 56.00        | 46.00 | -32.08      | -27.96 |
| 5                            | 7.98438         | 9.89                   | 8.61                 | 3.22  | 18.50                 | 13.11 | 60.00        | 50.00 | -41.50      | -36.89 |
| 6                            | 25.09766        | 9.94                   | 15.30                | 10.08 | 25.24                 | 20.02 | 60.00        | 50.00 | -34.76      | -29.98 |

**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.

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

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