



## FCC PART 15, SUBPART B, CLASS B

### TEST REPORT

For

### YEALINK (XIAMEN ) NETWORK TECHNOLOGY CO., LTD.

309, 3th Floor, No.16, Yun Ding North Road, Huli District, Xiamen City, Fujian China

Model: SIP-T46S, SIP-T46G  
FCC ID: T2C-T46S

|  |                           |
|--|---------------------------|
| Report Type<br>Original Report   | Product Type:<br>IP Phone |
| Test Engineer : <u>Kevin Kao</u>   |                           |
| Report Number : <u>RTWS160627001-00</u>  |                           |
| Report Date : <u>2016-07-11</u>  |                           |
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**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Taiwan)

## Revision History

| Revision | Issue Date | Description     |
|----------|------------|-----------------|
| 1.0      | 2016.07.11 | Original Report |
|          |            |                 |
|          |            |                 |
|          |            |                 |
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## 1. GENERAL INFORMATION

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

**Applicant:** YEALINK (XIAMEN ) NETWORK TECHNOLOGY CO., LTD.  
309, 3th Floor, No.16, Yun Ding North Road, Huli District, Xiamen  
City, Fujian China

**Manufacturer:** YEALINK (XIAMEN ) NETWORK TECHNOLOGY CO., LTD.  
309, 3th Floor, No.16, Yun Ding North Road, Huli District, Xiamen  
City, Fujian China

**Product:** IP Phone

**Model:** SIP-T46S, SIP-T46G

**Trade Name:** Yealink

**Operating Frequency:** 500MHz

**Voltage Range:** I/P: 100-240Vac, 50/60Hz, 350mA  
O/P: 5V, 2A

**Date of Test:** June 27, 2016 ~July 11, 2016

\*All measurement and test data in this report was gathered from production sample serial number: 16062701  
(Assigned by BACL, Taiwan). The EUT supplied by the applicant was received on 2016-06-27.

Designation Number: TW1101

Adapter 1 Information:

Model: YLPS052000B-US  
I/P: 100-240Vac, 50/60Hz, 350mA  
O/P: 5V, 2A

Adapter 2 Information:

Model: OH-1015A0502000U2-UL  
I/P: 100-240Vac, 50/60Hz, 350mA  
O/P: 5V, 2A

**Model Difference:** The major electrical and mechanical constructions of series models are identical to the basic model, except different model name.

### 1.2 Objective

This test report is prepared on behalf of *YEALINK (XIAMEN ) NETWORK TECHNOLOGY CO., LTD.* in accordance with Part 2, Subpart J, Part 15, Subparts A and B of the Federal Communication Commission's rules.

The tests were performed in order to determine the compliance of the EUT with FCC Part 15 B.

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

No related submittal(s).

## 2. SYSTEM TEST CONFIGURATION

### 2.1 Description of Test Configuration

The system was configured for testing in testing mode which was provided by manufacturer.

### 2.2 Test Mode

| Pretest Mode | Description                                    |
|--------------|--|
| MODE 1       | Normal operation(Adapter:YLPS052000B-US)       |
| MODE 2       | Normal operation(Adapter:OH-1015A0502000U2-UL) |
| MODE 3       | Normal operation(PoE)                          |

| Final Test Mode | Description                                    |
|-----------------|--|
| MODE 1          | Normal operation(Adapter:YLPS052000B-US)       |
| MODE 2          | Normal operation(Adapter:OH-1015A0502000U2-UL) |

### 2.3 EUT Exercise Software

“myHwin” exercise software was used.

### 2.4 Special Accessories

No special accessory.

### 2.5 Equipment Modifications

No modification was made to the EUT.

### 2.6 Description of operation:

1. Turn on EUT and test equipment
2. NB use myHwin.exe that sends "H" to the Panel
3. Use "Brunin" Drive do for Read/Write work
4. Use "ping.exe for EUT to transmit and receive
5. Repeat steps 2-4

## 2.7 Support Equipment List and Details

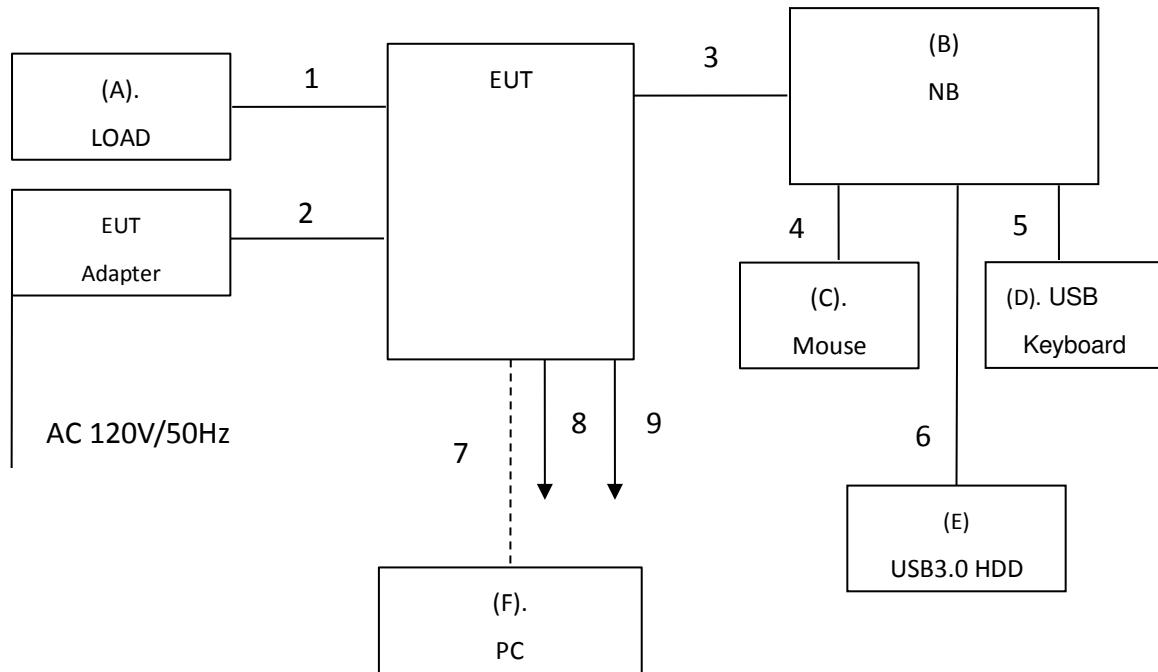
| No. | Description     | Manufacturer | Model Number         | BSMI   | FCC ID | S/N                 |
|-----|-----------------|--------------|----------------------|--------|--------|---------------------|
| A   | LOAD            | N/A          | N/A                  | N/A    | N/A    | N/A                 |
| B   | NB              | ASUS         | X550J                | R31018 | DOC    | F9N0CV2281<br>0937G |
| C   | Mouse           | DELL         | MS111-P              | R41108 | DOC    | N/A                 |
| D   | USB<br>Keyboard | DELL         | SK-8120              | R3A002 | DOC    | N/A                 |
| E   | USB3.0 HDD      | WD           | My Passport<br>Ultra | D33015 | DOC    | WX21A557K<br>R62    |
| F   | PC              | DELL         | OptiPlex 790<br>SFF  | R33002 | DOC    | H9WPSR1             |

## 2.8 External Cable List and Details

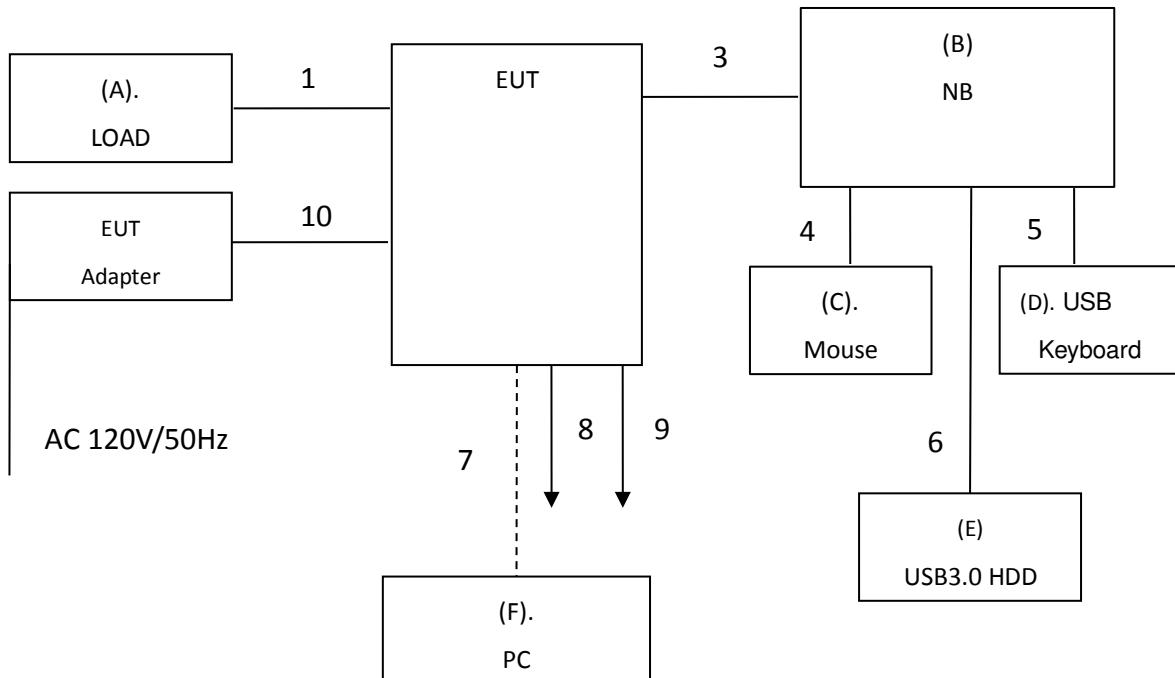
| No. | Description | Shielded Type | Ferrite Core | Length |
|-----|-------------|---------------|--------------|--------|
| 1   | USB Cable   | Non-Shielded  | N/A          | 1 M    |
| 2   | Power Cable | Non-Shielded  | N/A          | 1.8M   |
| 3   | RJ-45 Cable | Non-Shielded  | N/A          | 1.5M   |
| 4   | USB Cable   | Non-Shielded  | N/A          | 1.8M   |
| 5   | USB Cable   | Non-Shielded  | N/A          | 1.8M   |
| 6   | USB Cable   | Shielded      | N/A          | 0.5M   |
| 7   | RJ-45 Cable | Non-Shielded  | N/A          | 10M    |
| 8   | RJ-9 Cable  | Non-Shielded  | N/A          | 1.5M   |
| 9   | RJ-11 Cable | Non-Shielded  | N/A          | 2.2M   |
| 10  | Power Cable | Non-Shielded  | N/A          | 3M     |

## 2.9 Block Diagram of Test Setup

Mode 1



Mode 2



### 3. SUMMARY OF TEST RESULTS

| FCC Rules | Description of Test        | Results    |
|-----------|----------------------------|------------|
| §15.107   | AC Line Conducted Emission | Compliance |
| §15.109   | Radiated Emission          | Compliance |

## 4. FCC §15.107 – AC LINE CONDUCTED EMISSIONS

### 4.1 Applicable Standard

According to FCC §15.107

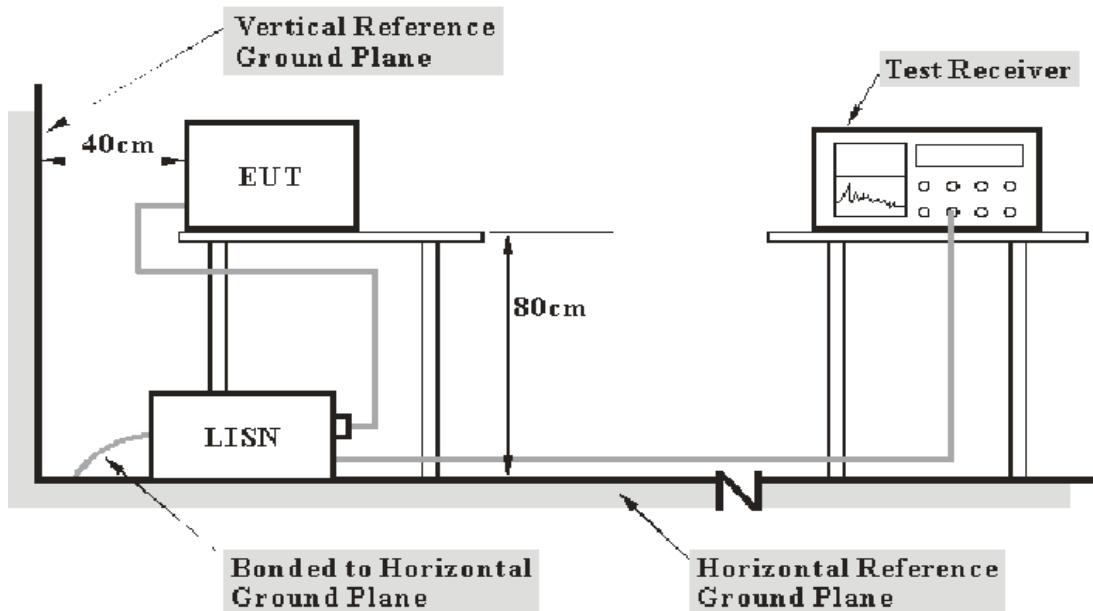
### 4.2 Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements maybe receiver reading, attenuation of the connection between LISN/ISN and receiver, LISN/ISN voltage division factor, LISN/ISN VDF frequency interpolation and receiver related input quantities, etc.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of conducted disturbance test at Bay Area Compliance Laboratories Corp. (Taiwan) is shown as below. And the uncertainty will not be taken into consideration for the test data recorded in the report.

| Port     | Expanded Measurement uncertainty       |
|----------|--|
| AC Mains | 2.71 dB (k=2, 95% level of confidence) |
| CAT 3    | 3.81 dB (k=2, 95% level of confidence) |
| CAT 5    | 4.24 dB (k=2, 95% level of confidence) |
| CAT 6    | 4.71 dB (k=2, 95% level of confidence) |

### 4.3 EUT Setup



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

The measurement procedure of EUT setup is according with per ANSI C63.4-2014. The related limit was specified in FCC Part 15.107 Class B.

The spacing between the peripherals is 10 cm.

#### 4.4 EMI Test Receiver Setup

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

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

| Frequency Range  | IF B/W |
|------------------|--------|
| 150 kHz – 30 MHz | 9 kHz  |

#### 4.5 Test Procedure

During the conducted emission test, the power cord was connected to the first LISN and the other relevant equipments were connected to the second LISN.

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

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

#### 4.6 Test Equipment List and Details

| Description       | Manufacturer    | Model   | Serial Number | Calibration Date | Calibration Due Date |
|-------------------|-----------------|---------|---------------|------------------|----------------------|
| LISN              | Rohde & Schwarz | ENV216  | 101248        | 2015/8/3         | 2016/8/2             |
| LISN              | EMCO            | 699837  | 75848         | 2015/7/8         | 2016/7/7             |
| EMI Test Receiver | Rohde & Schwarz | ESCI    | 100540        | 2015/7/25        | 2016/7/24            |
| Pulse Limiter     | Rohde & Schwarz | ESH3Z2  | TXZEM025      | 2015/8/28        | 2016/8/27            |
| RF Cable          | EMEC            | EM-CB5D | 001           | 2015/7/29        | 2016/7/28            |
| Software          | AUDIX           | E3      | V9.150826k    | N.C.R            | N.C.R                |

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Taiwan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

#### 4.7 Factor & Over Limit Calculation

The factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

$$\text{Factor} = \text{LISN VDF} + \text{Cable Loss} + \text{Transient Limiter Attenuation}$$

The “Over Limit” column of the following data tables indicates the degree of compliance with the applicable limit. For example, an over limit of -7 dB means the emission is 7 dB below the limit. The equation for Over Limit calculation is as follows:

$$\text{Over Limit} = \text{Level} - \text{Limit Line}$$

#### 4.8 Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.107. Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in complies with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cisp}$$

In BACL,  $U_{(Lm)}$  is less than  $U_{cisp}$ , if  $L_m$  is less than  $L_{lim}$ , it implies that the EUT complies with the limit.

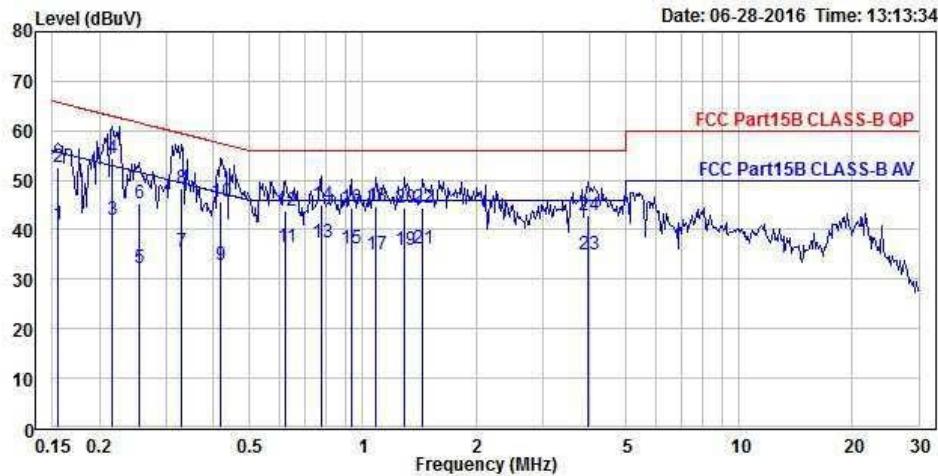
#### 4.9 Test Data

##### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 28.7 °C   |
| Relative Humidity: | 48 %      |
| ATM Pressure:      | 101.0 kPa |

*The testing was performed by Kevin Kao on 2016-06-28.*

**Mode 1:**  
**AC 120V/60 Hz, Line**



Condition: limit\FCC Part15B CLASS-B QP.csv Line

EUT : IP Phone

Model : SIP-T46S

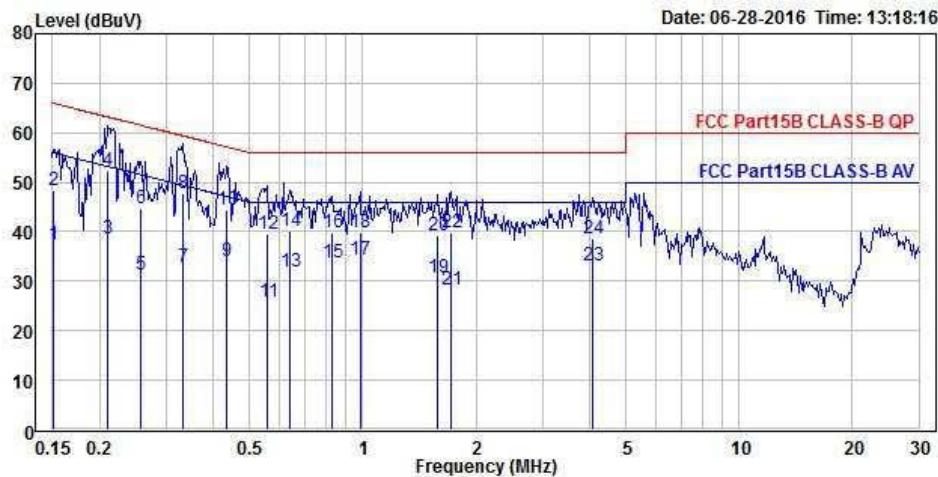
Note : 120V/60Hz, Adapter:YLPS52000B-US

| Freq | Level | Limit |        | Over Limit Factor | Read Level | Remark        |
|------|-------|-------|--------|-------------------|------------|---------------|
|      |       | Line  | Factor |                   |            |               |
| 1    | 0.155 | 41.02 | 55.74  | -14.72            | 19.57      | 21.45 Average |
| 2    | 0.155 | 52.77 | 65.74  | -12.97            | 19.57      | 33.20 QP      |
| 3    | 0.216 | 41.97 | 52.96  | -10.99            | 19.56      | 22.41 Average |
| 4    | 0.216 | 54.50 | 62.96  | -8.46             | 19.56      | 34.94 QP      |
| 5    | 0.254 | 32.36 | 51.63  | -19.27            | 19.56      | 12.80 Average |
| 6    | 0.254 | 45.47 | 61.63  | -16.16            | 19.56      | 25.91 QP      |
| 7    | 0.330 | 35.65 | 49.45  | -13.80            | 19.55      | 16.10 Average |
| 8    | 0.330 | 48.51 | 59.45  | -10.94            | 19.55      | 28.96 QP      |
| 9    | 0.419 | 32.78 | 47.46  | -14.68            | 19.55      | 13.23 Average |
| 10   | 0.419 | 45.63 | 57.46  | -11.83            | 19.55      | 26.08 QP      |
| 11   | 0.624 | 36.52 | 46.00  | -9.48             | 19.56      | 16.96 Average |
| 12   | 0.624 | 43.93 | 56.00  | -12.07            | 19.56      | 24.37 QP      |
| 13   | 0.774 | 37.50 | 46.00  | -8.50             | 19.57      | 17.93 Average |
| 14   | 0.774 | 44.97 | 56.00  | -11.03            | 19.57      | 25.40 QP      |
| 15   | 0.930 | 36.35 | 46.00  | -9.65             | 19.58      | 16.77 Average |
| 16   | 0.930 | 44.50 | 56.00  | -11.50            | 19.58      | 24.92 QP      |
| 17   | 1.082 | 35.00 | 46.00  | -11.00            | 19.58      | 15.42 Average |



| Freq | Level | Limit |       | Over Limit Factor | Read Level |       | Remark  |
|------|-------|-------|-------|-------------------|------------|-------|---------|
|      |       | Line  | dB    |                   | dB         | dBuV  |         |
|      | MHz   | dBuV  | dBuV  |                   |            |       |         |
| 18   | 1.082 | 44.76 | 56.00 | -11.24            | 19.58      | 25.18 | QP      |
| 19   | 1.289 | 35.85 | 46.00 | -10.15            | 19.59      | 16.26 | Average |
| 20   | 1.289 | 44.53 | 56.00 | -11.47            | 19.59      | 24.94 | QP      |
| 21   | 1.441 | 36.06 | 46.00 | -9.94             | 19.62      | 16.44 | Average |
| 22   | 1.441 | 44.42 | 56.00 | -11.58            | 19.62      | 24.80 | QP      |
| 23   | 3.965 | 34.93 | 46.00 | -11.07            | 19.68      | 15.25 | Average |
| 24   | 3.965 | 42.75 | 56.00 | -13.25            | 19.68      | 23.07 | QP      |

AC 120V/60 Hz, Neutral



Condition: limit\FCC Part15B CLASS-B QP.csv Neutral

EUT : IP Phone

Model : SIP-T46S

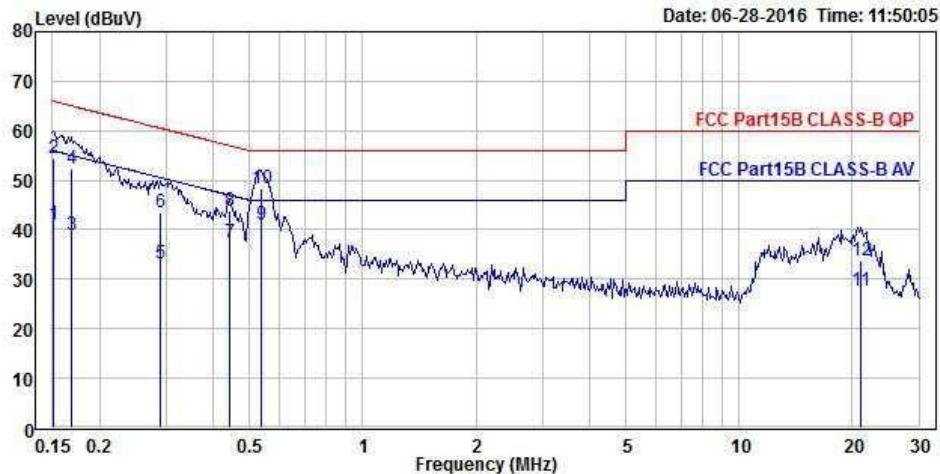
Note : 120V/60Hz, Adapter:YLPS52000B-US

|    | Freq  | Limit |       | Over Line Factor | Read dB | Read Level dBuV | Remark  |
|----|-------|-------|-------|------------------|---------|-----------------|---------|
|    |       | Level | Line  |                  |         |                 |         |
|    | MHz   | dBuV  | dBuV  | dB               | dB      | dBuV            |         |
| 1  | 0.151 | 37.52 | 55.93 | -18.41           | 19.58   | 17.94           | Average |
| 2  | 0.151 | 48.40 | 65.93 | -17.53           | 19.58   | 28.82           | QP      |
| 3  | 0.210 | 38.72 | 53.22 | -14.50           | 19.57   | 19.15           | Average |
| 4  | 0.210 | 52.47 | 63.22 | -10.75           | 19.57   | 32.90           | QP      |
| 5  | 0.258 | 31.48 | 51.50 | -20.02           | 19.57   | 11.91           | Average |
| 6  | 0.258 | 44.83 | 61.50 | -16.67           | 19.57   | 25.26           | QP      |
| 7  | 0.333 | 32.99 | 49.38 | -16.39           | 19.56   | 13.43           | Average |
| 8  | 0.333 | 47.79 | 59.38 | -11.59           | 19.56   | 28.23           | QP      |
| 9  | 0.436 | 34.06 | 47.13 | -13.07           | 19.56   | 14.50           | Average |
| 10 | 0.436 | 44.55 | 57.13 | -12.58           | 19.56   | 24.99           | QP      |
| 11 | 0.559 | 25.73 | 46.00 | -20.27           | 19.56   | 6.17            | Average |
| 12 | 0.559 | 39.47 | 56.00 | -16.53           | 19.56   | 19.91           | QP      |
| 13 | 0.640 | 31.91 | 46.00 | -14.09           | 19.57   | 12.34           | Average |
| 14 | 0.640 | 40.01 | 56.00 | -15.99           | 19.57   | 20.44           | QP      |
| 15 | 0.832 | 33.63 | 46.00 | -12.37           | 19.57   | 14.06           | Average |
| 16 | 0.832 | 39.83 | 56.00 | -16.17           | 19.57   | 20.26           | QP      |
| 17 | 0.983 | 34.39 | 46.00 | -11.61           | 19.58   | 14.81           | Average |



| Freq | Level | Limit |       | Over Limit Factor | Read Level |       | Remark  |
|------|-------|-------|-------|-------------------|------------|-------|---------|
|      |       | Line  | dB    |                   | dB         | dBuV  |         |
|      | MHz   | dBuV  | dBuV  |                   |            |       |         |
| 18   | 0.983 | 39.82 | 56.00 | -16.18            | 19.58      | 20.24 | QP      |
| 19   | 1.586 | 30.70 | 46.00 | -15.30            | 19.62      | 11.08 | Average |
| 20   | 1.586 | 39.15 | 56.00 | -16.85            | 19.62      | 19.53 | QP      |
| 21   | 1.718 | 28.37 | 46.00 | -17.63            | 19.62      | 8.75  | Average |
| 22   | 1.718 | 39.77 | 56.00 | -16.23            | 19.62      | 20.15 | QP      |
| 23   | 4.093 | 33.18 | 46.00 | -12.82            | 19.68      | 13.50 | Average |
| 24   | 4.093 | 38.69 | 56.00 | -17.31            | 19.68      | 19.01 | QP      |

**Mode 2:**  
**AC 120V/60 Hz, Line**



Condition: limit\FCC Part15B CLASS-B QP.csv Line

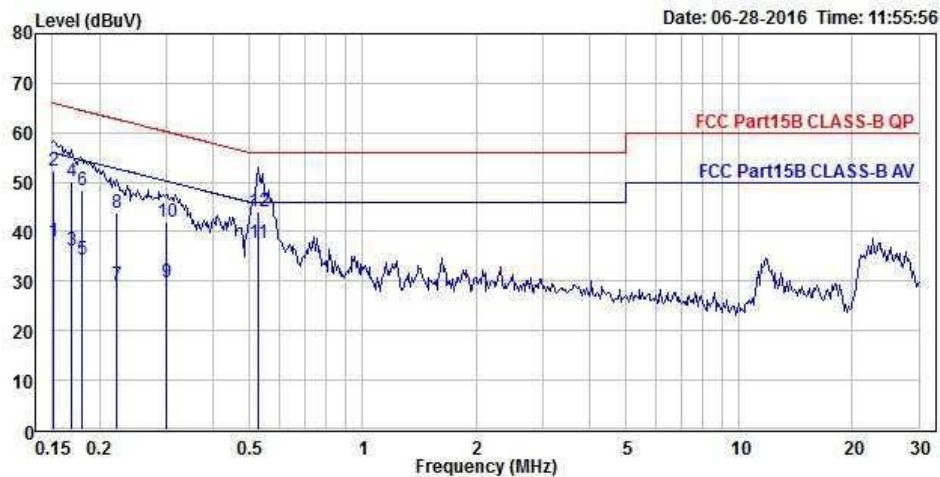
EUT : IP Phone

Model : SIP-T46S

Note : 120V/60Hz, Adapter:OH-1015A502000U-UL

| Freq | Level  | Limit |       | Over Limit Factor | Read Level | Remark        |
|------|--------|-------|-------|-------------------|------------|---------------|
|      |        | Line  | dB    |                   |            |               |
| MHz  | dBuV   | dBuV  | dB    | dB                | dBuV       |               |
| 1    | 0.151  | 40.96 | 55.93 | -14.97            | 19.57      | 21.39 Average |
| 2    | 0.151  | 54.53 | 65.93 | -11.40            | 19.57      | 34.96 QP      |
| 3    | 0.169  | 38.79 | 55.01 | -16.22            | 19.57      | 19.22 Average |
| 4    | 0.169  | 52.24 | 65.01 | -12.77            | 19.57      | 32.67 QP      |
| 5    | 0.291  | 33.22 | 50.51 | -17.29            | 19.55      | 13.67 Average |
| 6    | 0.291  | 43.50 | 60.51 | -17.01            | 19.55      | 23.95 QP      |
| 7    | 0.443  | 37.49 | 47.00 | -9.51             | 19.55      | 17.94 Average |
| 8    | 0.443  | 43.88 | 57.00 | -13.12            | 19.55      | 24.33 QP      |
| 9    | 0.537  | 40.97 | 46.00 | -5.03             | 19.55      | 21.42 Average |
| 10   | 0.537  | 48.36 | 56.00 | -7.64             | 19.55      | 28.81 QP      |
| 11   | 20.961 | 27.79 | 50.00 | -22.21            | 19.87      | 7.92 Average  |
| 12   | 20.961 | 33.84 | 60.00 | -26.16            | 19.87      | 13.97 QP      |

AC 120V/60 Hz, Neutral



Condition: limit\FCC Part15B CLASS-B QP.csv Neutral

EUT : IP Phone

Model : SIP-T46S

Note : 120V/60Hz, Adapter:OH-1015A502000U-UL

| Freq | Limit |       | Over Line Factor | Read   |       | Remark        |
|------|-------|-------|------------------|--------|-------|---------------|
|      | Level | dBuV  |                  | dB     | dBuV  |               |
|      | MHz   | dBuV  |                  | dB     | dBuV  |               |
| 1    | 0.151 | 37.88 | 55.93            | -18.05 | 19.58 | 18.30 Average |
| 2    | 0.151 | 52.36 | 65.93            | -13.57 | 19.58 | 32.78 QP      |
| 3    | 0.168 | 36.26 | 55.07            | -18.81 | 19.58 | 16.68 Average |
| 4    | 0.168 | 50.09 | 65.07            | -14.98 | 19.58 | 30.51 QP      |
| 5    | 0.180 | 34.27 | 54.48            | -20.21 | 19.57 | 14.70 Average |
| 6    | 0.180 | 48.37 | 64.48            | -16.11 | 19.57 | 28.80 QP      |
| 7    | 0.222 | 29.29 | 52.76            | -23.47 | 19.57 | 9.72 Average  |
| 8    | 0.222 | 43.84 | 62.76            | -18.92 | 19.57 | 24.27 QP      |
| 9    | 0.300 | 29.74 | 50.24            | -20.50 | 19.56 | 10.18 Average |
| 10   | 0.300 | 41.84 | 60.24            | -18.40 | 19.56 | 22.28 QP      |
| 11   | 0.528 | 37.66 | 46.00            | -8.34  | 19.56 | 18.10 Average |
| 12   | 0.528 | 44.17 | 56.00            | -11.83 | 19.56 | 24.61 QP      |

## 5. FCC §15.109 – RADIATED EMISSION

### 5.1 Applicable Standard

FCC §15.109

### 5.2 Measurement Uncertainty

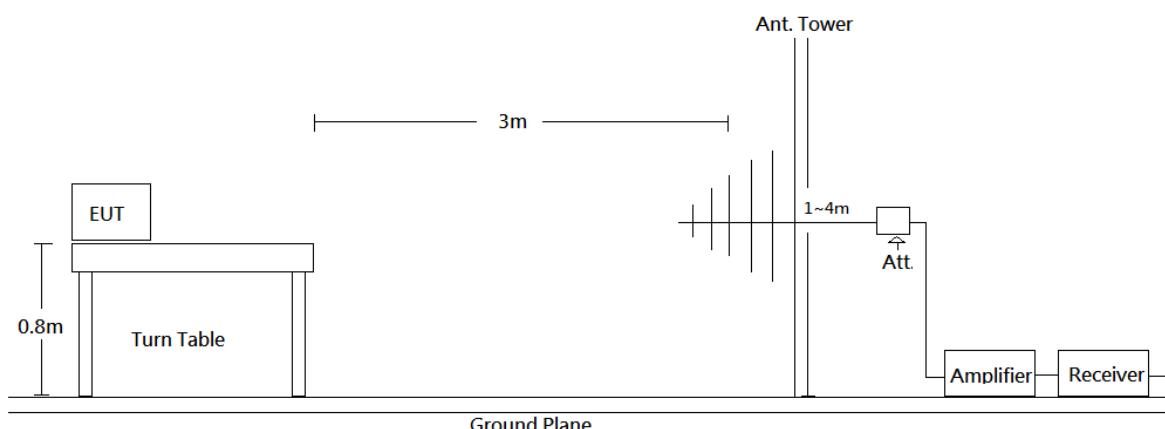
All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency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

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Taiwan) is shown in below table. And the uncertainty will not be taken into consideration for the test data recorded in the report

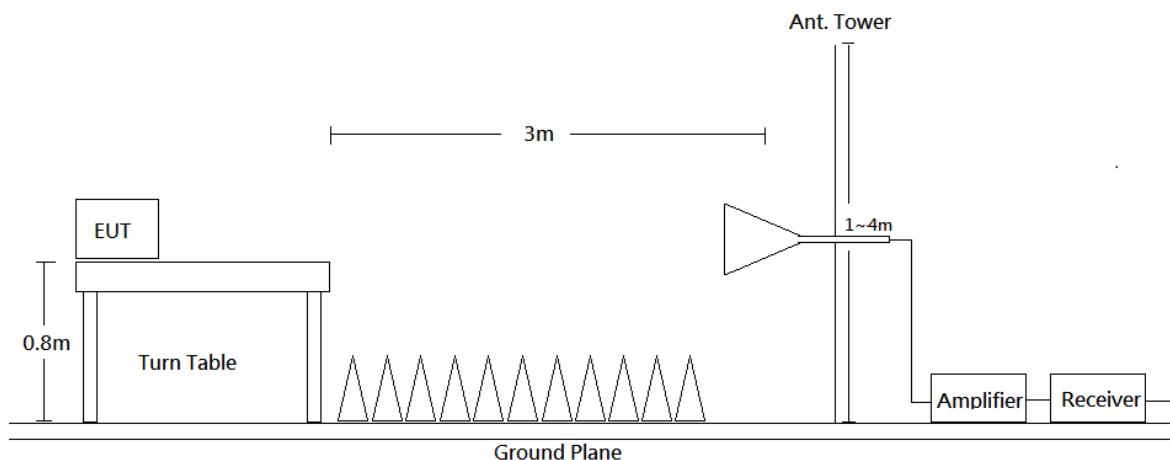
| Frequency    | Measurement uncertainty                |
|--------------|--|
| 9 kHz~30MHz  | 4.11 dB (k=2, 95% level of confidence) |
| 30MHz~200MHz | 4.21 dB (k=2, 95% level of confidence) |
| 200MHz~1GHz  | 4.41 dB (k=2, 95% level of confidence) |
| 1 GHz~6 GHz  | 4.51 dB (k=2, 95% level of confidence) |
| Above 6 GHz  | 4.88 dB (k=2, 95% level of confidence) |

### 5.3 EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits. The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

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

#### 5.4 EMI Test Receiver Setup

The system was investigated from 30 MHz to 40 GHz.

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

| Frequency Range  | RBW     | RBW Video B/W | IF B/W  | Detector |
|------------------|---------|---------------|---------|----------|
| 30MHz – 1000 MHz | 100 kHz | 300 kHz       | 120 kHz | QP       |
| Above 1 GHz      | 1MHz    | 3MHz          | /       | PK       |
|                  | 1MHz    | 10 Hz         | /       | Ave.     |

#### 5.5 Test Procedure

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

All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

## 5.6 Test Equipment List and Details

| Description       | Manufacturer    | Model                   | Serial Number          | Calibration Date | Calibration Interval |
|-------------------|-----------------|-------------------------|------------------------|------------------|----------------------|
| Broadband Antenna | Sunol Sciences  | JB6                     | A050115                | 2015/12/8        | 2016/12/7            |
| EMEC Attenuator   | EMEC            | UNAT-6+                 | 15542                  | 2015/12/8        | 2016/12/7            |
| Amplifier         | Sonoma          | 310N                    | 130601                 | 2016/7/3         | 2017/7/2             |
| Horn Antenna      | EMCO            | 3115                    | 9311-4158              | 2016/5/10        | 2017/5/9             |
| Preamplifier      | EMEC            | EM01G18G                | 060657                 | 2015/12/21       | 2016/12/20           |
| Loop Antenna      | ETS-Lindgren    | 6502                    | 00035796               | 2015/7/23        | 2016/7/22            |
| EMI Test Receiver | Rohde & Schwarz | ESR7                    | 101419                 | 2015/11/4        | 2016/11/3            |
| Mircoflex Cable   | UTIFLEX         | UFB311A-Q-1440-300300   | 220490-006             | 2015/11/4        | 2016/11/3            |
| Mircoflex Cable   | UTIFLEX         | UFB197C-1-2362-70U-70U  | 225757-001             | 2016/7/3         | 2017/7/2             |
| Mircoflex Cable   | UTIFLEX         | UFA210A-1-3149-300300   | MFR64639<br>226389-001 | 2015/12/2        | 2016/12/1            |
| Mircoflex Cable   | ROSNAL          | K1K50-UP0264-K1K50-80CM | 160309-2               | 2016/3/24        | 2017/3/23            |
| Turn Table        | Champro         | TT-2000                 | 060772-T               | N.C.R            | N.C.R                |
| Antenna Tower     | Champro         | AM-BS-4500-B            | 060772-A               | N.C.R            | N.C.R                |
| Controller        | Champro         | EM1000                  | 060772                 | N.C.R            | N.C.R                |
| software          | Rohde & Schwarz | EMC32                   | V9.10.00               | N.C.R            | N.C.R                |

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Taiwan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

## 5.7 Correct Factor & Margin Calculation

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

$$\text{Correct Factor} = \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain} + \text{Attenuator}$$

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

$$\text{Margin} = \text{Limit} - \text{Result}$$

## 5.8 Test Results Summary

According to the data in the following table, the EUT complied with the FCC §15.109 Class B. Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if  $L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$

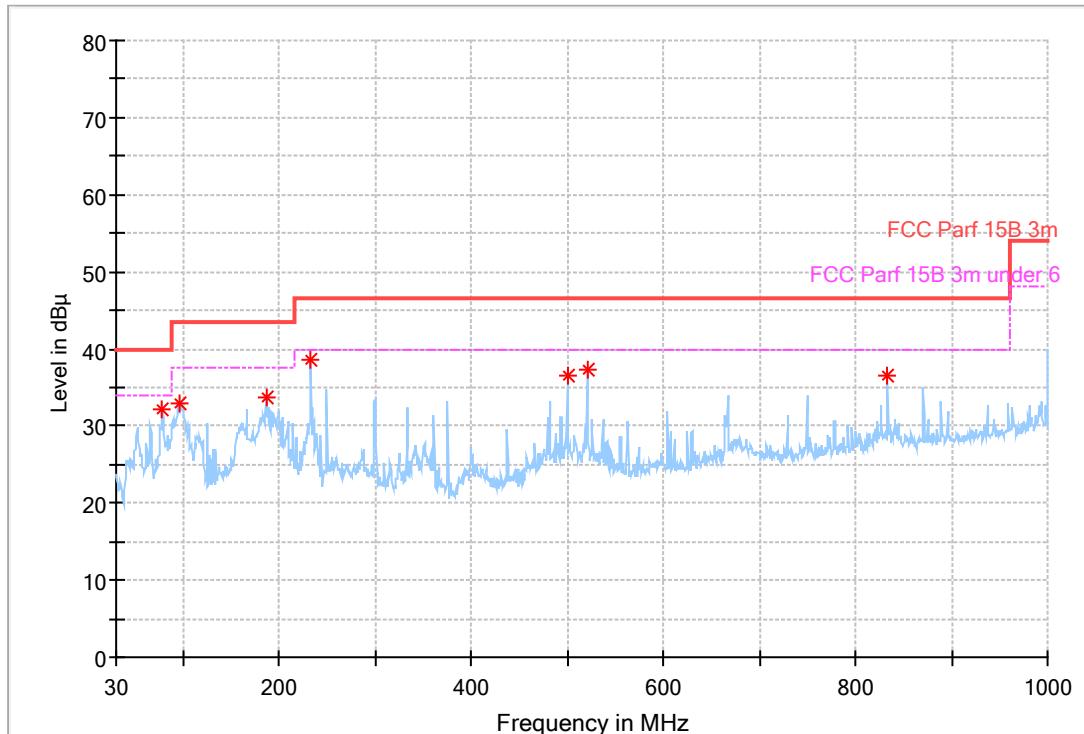
In BACL,  $U_{(Lm)}$  is less than  $U_{cispr}$ , if  $L_m$  is less than  $L_{lim}$ , it implies that the EUT complies with the limit.

## 5.9 Test Data

### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 22.6°C    |
| Relative Humidity: | 58 %      |
| ATM Pressure:      | 101.0 kPa |

The testing was performed by Mike Cai on 2016-07-06.

*Mode 1: Below 1GHz**Horizontal*

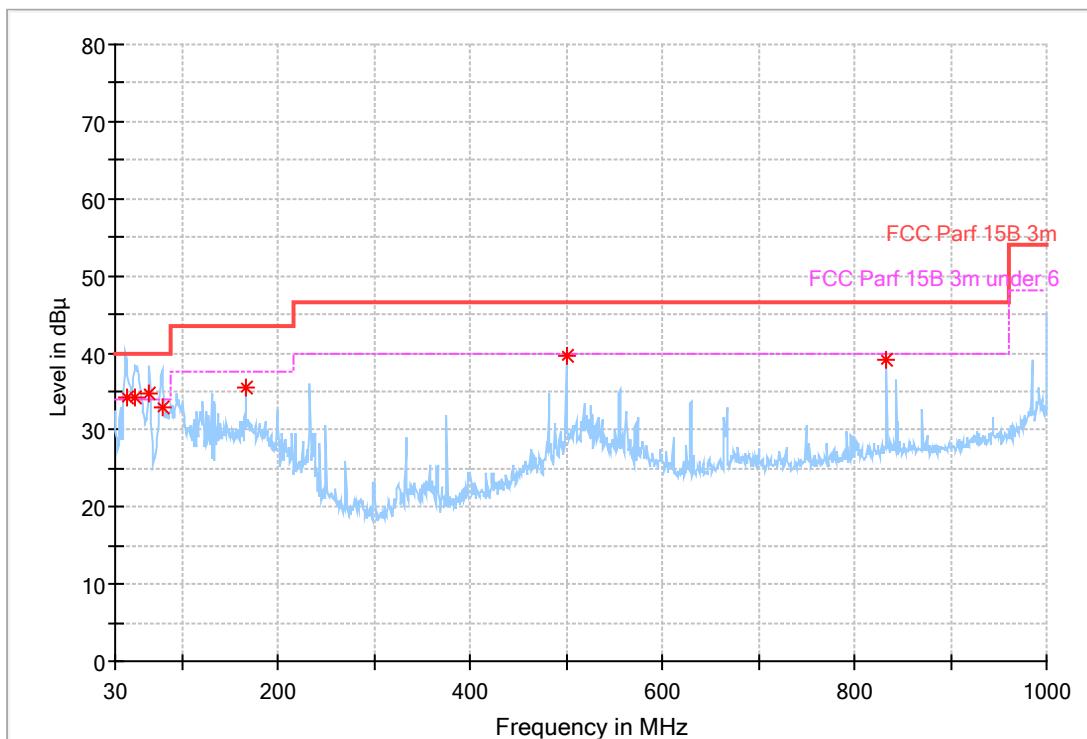
| Frequency (MHz) | Reading (dB $\mu$ V) | Detector | Correct Factor (dB/m) | Result (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) |
|-----------------|----------------------|----------|-----------------------|-----------------------|----------------------|-------------|
| 77.81           | 49.01                | QP       | -16.8                 | 32.21                 | 40                   | 7.79        |
| 95.82           | 48.53                | QP       | -15.7                 | 32.83                 | 43.5                 | 10.67       |
| 185.89          | 46.69                | QP       | -13                   | 33.69                 | 43.5                 | 9.81        |
| 233.01          | 51.11                | QP       | -12.6                 | 38.51                 | 46.5                 | 7.99        |
| 499.76          | 42.35                | QP       | -5.9                  | 36.45                 | 46.5                 | 10.05       |
| 520.54          | 43.11                | QP       | -5.7                  | 37.41                 | 46.5                 | 9.09        |
| 833.71          | 36.85                | QP       | -0.4                  | 36.45                 | 46.5                 | 10.05       |

Note: Result = Reading + Correct Factor

Margin = Limit -Result

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain + Attenuator

*Vertical*

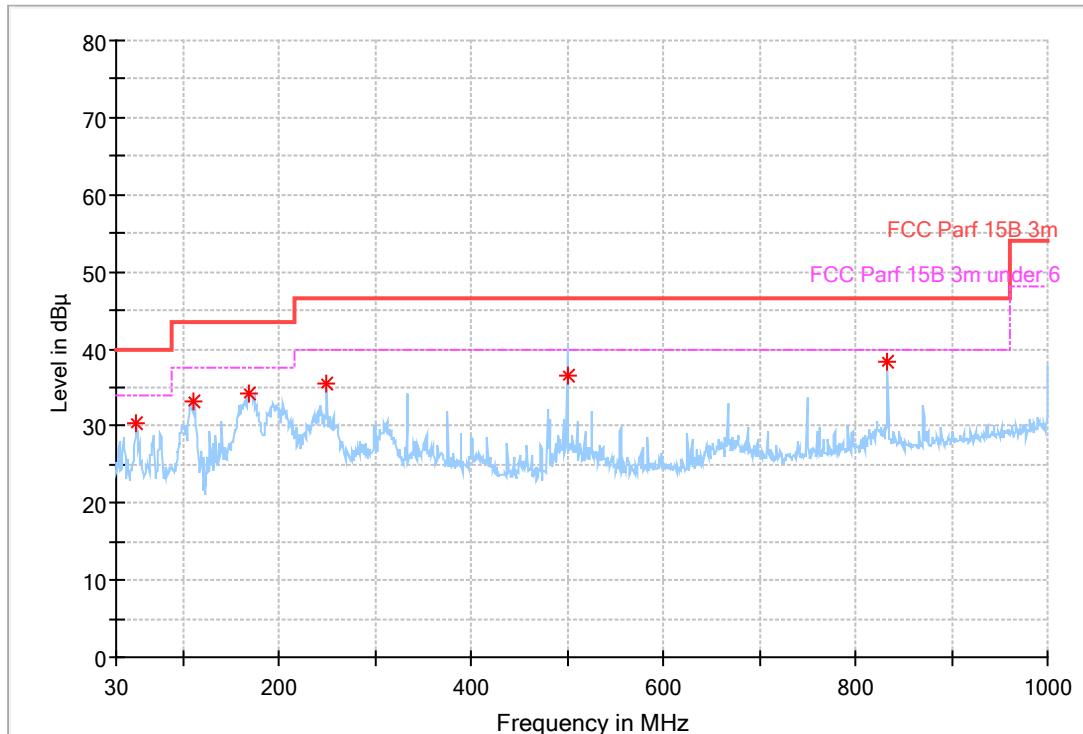


| Frequency (MHz) | Reading (dBuV) | Detector | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|----------------|----------|-----------------------|-----------------|----------------|-------------|
| 41.49           | 45.7           | QP       | -11.6                 | 34.1            | 40             | 5.9         |
| 52.39           | 50.8           | QP       | -16.5                 | 34.3            | 40             | 5.7         |
| 66.03           | 52             | QP       | -17.2                 | 34.8            | 40             | 5.2         |
| 78.57           | 49.7           | QP       | -16.8                 | 32.9            | 40             | 7.1         |
| 166.49          | 47.53          | QP       | -12.1                 | 35.43           | 43.5           | 8.07        |
| 499.76          | 45.47          | QP       | -5.9                  | 39.57           | 46.5           | 6.93        |
| 833.71          | 39.42          | QP       | -0.4                  | 39.02           | 46.5           | 7.48        |

Note: Result = Reading + Correct Factor

Margin = Limit -Result

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain + Attenuator

*Mode 2: Below 1GHz**Horizontal*

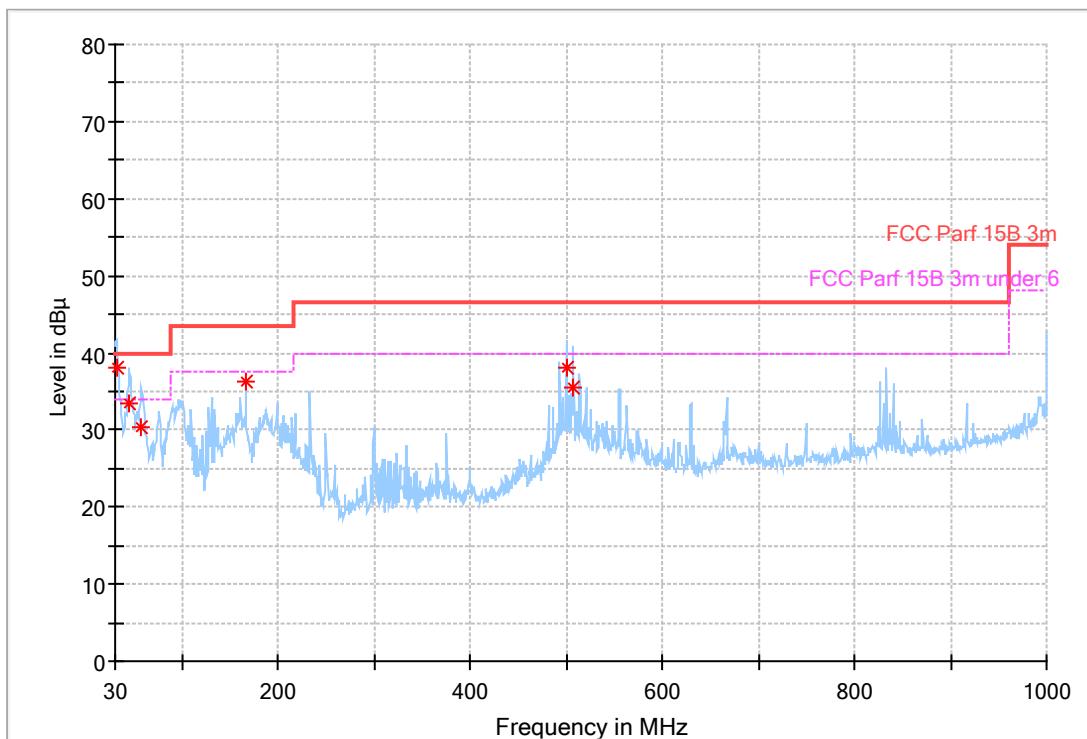
| Frequency (MHz) | Reading (dB $\mu$ V) | Detector | Correct Factor (dB/m) | Result (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) |
|-----------------|----------------------|----------|-----------------------|-----------------------|----------------------|-------------|
| 50.79           | 46.65                | QP       | -16.4                 | 30.25                 | 40                   | 9.75        |
| 111.06          | 45.2                 | QP       | -12.1                 | 33.1                  | 43.5                 | 10.4        |
| 169.26          | 46.73                | QP       | -12.4                 | 34.33                 | 43.5                 | 9.17        |
| 249.64          | 47.81                | QP       | -12.3                 | 35.51                 | 46.5                 | 10.99       |
| 500.01          | 42.5                 | QP       | -5.9                  | 36.6                  | 46.5                 | 9.9         |
| 833.71          | 38.73                | QP       | -0.4                  | 38.33                 | 46.5                 | 8.17        |

Note: Result = Reading + Correct Factor

Margin = Limit –Result

Correct Factor = Antenna Factor + Cable Loss – Amplifier Gain + Attenuator

*Vertical*



| Frequency (MHz) | Reading (dBuV) | Detector | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|----------------|----------|-----------------------|-----------------|----------------|-------------|
| 31.39           | 42.6           | QP       | -4.6                  | 38              | 40             | 2           |
| 44.55           | 47.2           | QP       | -13.8                 | 33.4            | 40             | 6.6         |
| 57.71           | 47.6           | QP       | -17.3                 | 30.3            | 40             | 9.7         |
| 166.49          | 48.47          | QP       | -12.1                 | 36.37           | 43.5           | 7.13        |
| 499.76          | 43.9           | QP       | -5.9                  | 38              | 46.5           | 8.5         |
| 506.94          | 41.5           | QP       | -5.9                  | 35.6            | 46.5           | 10.9        |

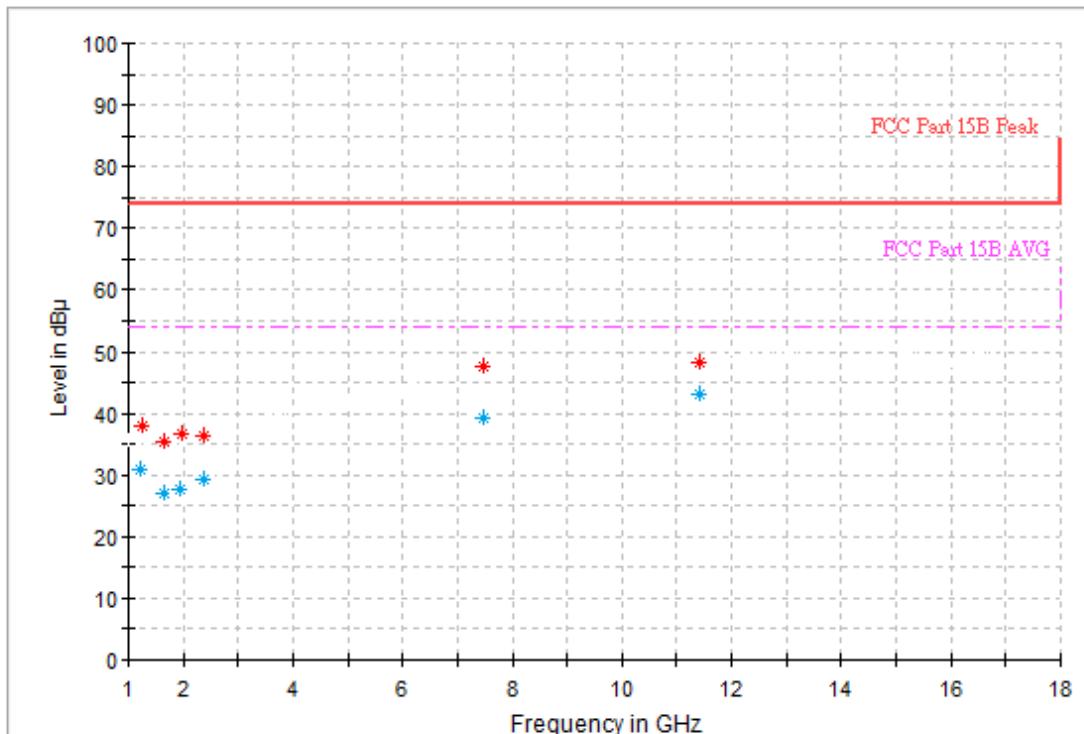
Note: Result = Reading + Correct Factor

Margin = Limit -Result

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain + Attenuator

Mode 1: Above 1GHz

Horizontal



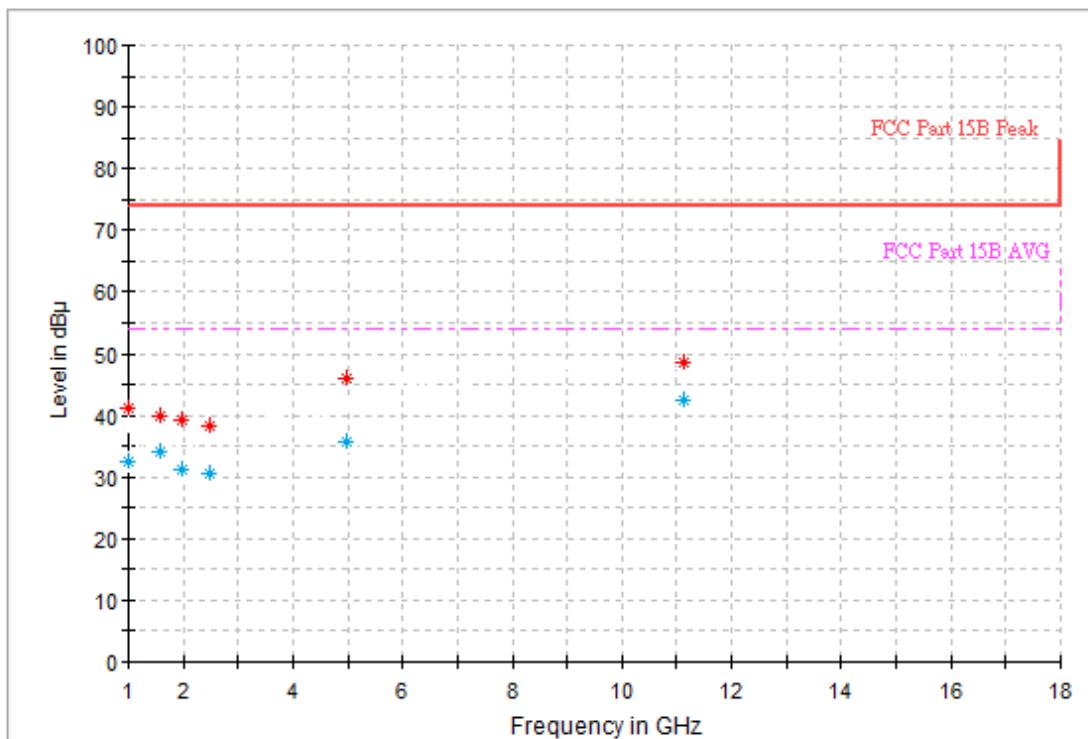
| Frequency (MHz) | Reading (dB $\mu$ V) | Detector | Correct Factor (dB/m) | Result (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) |
|-----------------|----------------------|----------|-----------------------|-----------------------|----------------------|-------------|
| 1238.48         | 47.67                | PEAK     | -9.8                  | 37.87                 | 74                   | 36.13       |
| 1238.48         | 40.25                | AVG      | -9.8                  | 30.45                 | 54                   | 23.55       |
| 1647.29         | 43.53                | PEAK     | -8                    | 35.53                 | 74                   | 38.47       |
| 1647.29         | 35.32                | AVG      | -8                    | 27.32                 | 54                   | 26.68       |
| 1987.98         | 42.97                | PEAK     | -6.3                  | 36.67                 | 74                   | 37.33       |
| 1987.98         | 34.22                | AVG      | -6.3                  | 27.92                 | 54                   | 26.08       |
| 2362.73         | 41.75                | PEAK     | -5.3                  | 36.45                 | 74                   | 37.55       |
| 2362.73         | 34.86                | AVG      | -5.3                  | 29.56                 | 54                   | 24.44       |
| 7472.95         | 40.21                | PEAK     | 7.4                   | 47.61                 | 74                   | 26.39       |
| 7472.95         | 32.52                | AVG      | 7.4                   | 39.92                 | 54                   | 14.08       |
| 11424.85        | 35.56                | PEAK     | 12.8                  | 48.36                 | 74                   | 25.64       |
| 11424.85        | 30.25                | AVG      | 12.8                  | 43.05                 | 54                   | 10.95       |

Note: Result = Reading + Correct Factor

Margin = Limit -Result

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain + Attenuator

*Vertical*

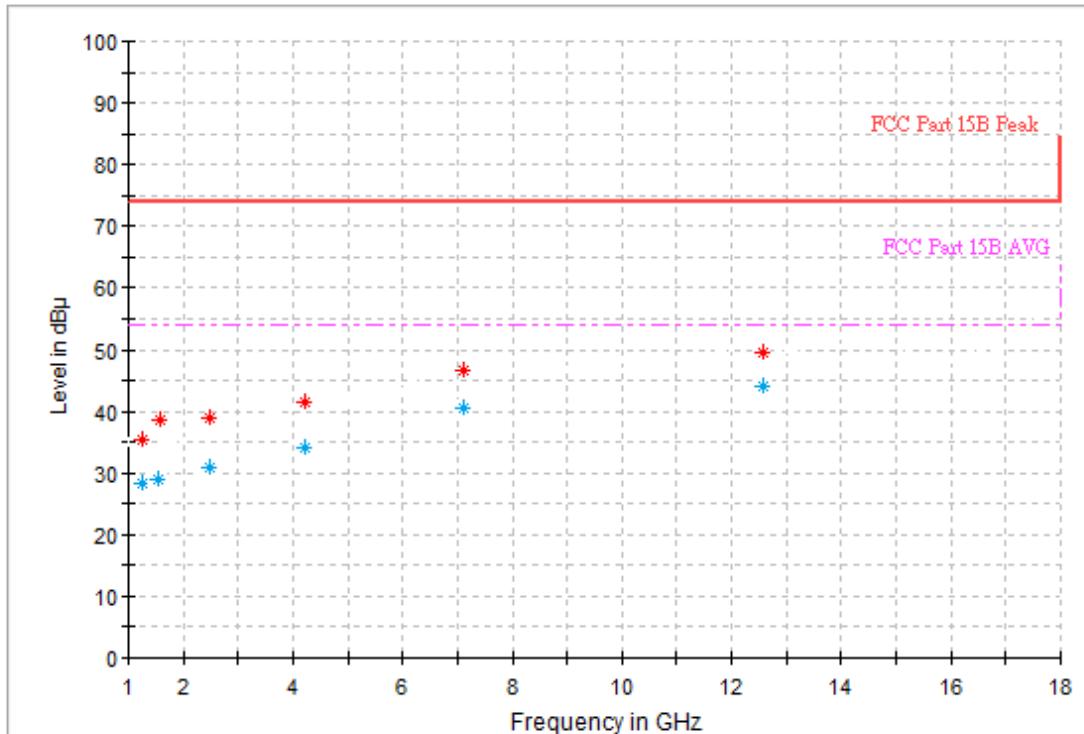


| Frequency (MHz) | Reading (dBuV) | Detector | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|----------------|----------|-----------------------|-----------------|----------------|-------------|
| 1000            | 51.99          | PEAK     | -10.7                 | 41.29           | 74             | 32.71       |
| 1000            | 44.23          | AVG      | -10.7                 | 33.53           | 54             | 20.47       |
| 1579.16         | 48.02          | PEAK     | -8.3                  | 39.72           | 74             | 34.28       |
| 1579.16         | 42.32          | AVG      | -8.3                  | 34.02           | 54             | 19.98       |
| 1987.98         | 45.56          | PEAK     | -6.3                  | 39.26           | 74             | 34.74       |
| 1987.98         | 38.22          | AVG      | -6.3                  | 31.92           | 54             | 22.08       |
| 2464.93         | 43.51          | PEAK     | -5.1                  | 38.41           | 74             | 35.59       |
| 2464.93         | 35.47          | AVG      | -5.1                  | 30.37           | 54             | 23.63       |
| 4985.97         | 44.72          | PEAK     | 1.3                   | 46.02           | 74             | 27.98       |
| 4985.97         | 35.21          | AVG      | 1.3                   | 36.51           | 54             | 17.49       |
| 11118.24        | 35.95          | PEAK     | 12.6                  | 48.55           | 74             | 25.45       |
| 11118.24        | 31.22          | AVG      | 12.6                  | 43.82           | 54             | 10.18       |

Note: Result = Reading + Correct Factor

Margin = Limit -Result

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain + Attenuator

*Mode 2: Above 1GHz**Horizontal*

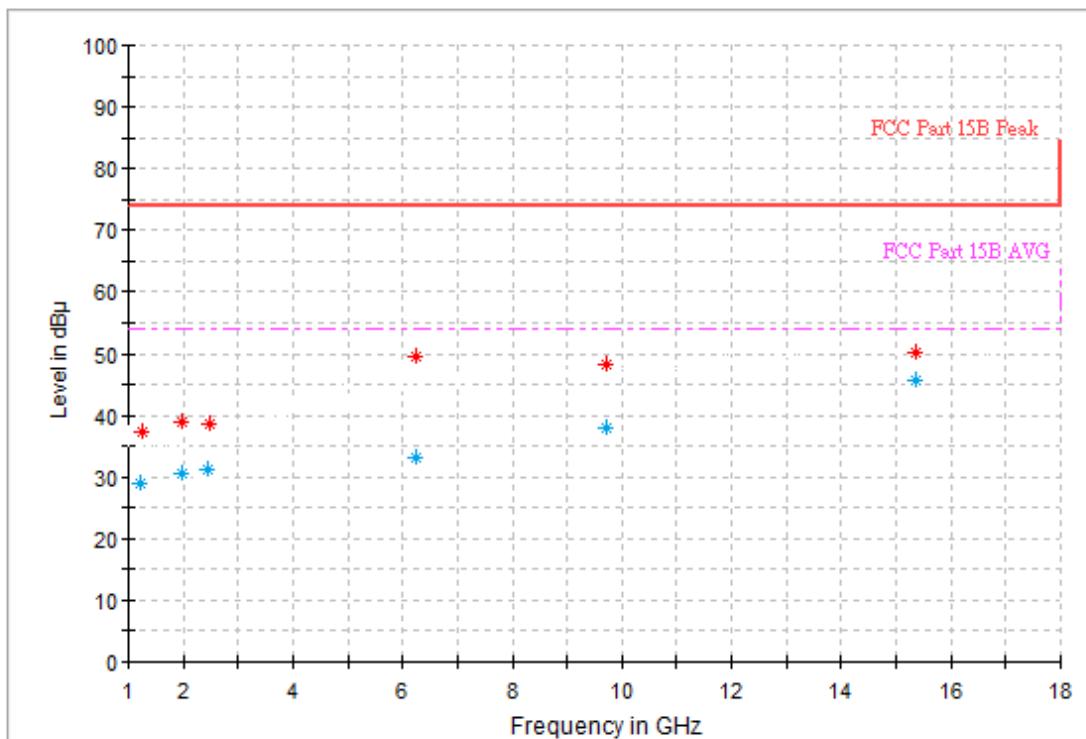
| Frequency (MHz) | Reading (dB $\mu$ V) | Detector | Correct Factor (dB/m) | Result (dB $\mu$ V/m) | Limit (dB $\mu$ V/m) | Margin (dB) |
|-----------------|----------------------|----------|-----------------------|-----------------------|----------------------|-------------|
| 1238.48         | 45.33                | PEAK     | -9.8                  | 35.53                 | 74                   | 38.47       |
| 1238.48         | 38.22                | AVG      | -9.8                  | 28.42                 | 54                   | 25.58       |
| 1579.16         | 46.73                | PEAK     | -8.3                  | 38.43                 | 74                   | 35.57       |
| 1579.16         | 37.12                | AVG      | -8.3                  | 28.82                 | 54                   | 25.18       |
| 2464.93         | 44.15                | PEAK     | -5.1                  | 39.05                 | 74                   | 34.95       |
| 2464.93         | 36.58                | AVG      | -5.1                  | 31.48                 | 54                   | 22.52       |
| 4236.47         | 41.8                 | PEAK     | -0.4                  | 41.4                  | 74                   | 32.6        |
| 4236.47         | 35.12                | AVG      | -0.4                  | 34.72                 | 54                   | 19.28       |
| 7098.2          | 40.7                 | PEAK     | 6                     | 46.7                  | 74                   | 27.3        |
| 7098.2          | 34.85                | AVG      | 6                     | 40.85                 | 54                   | 13.15       |
| 12583.17        | 37.31                | PEAK     | 12.3                  | 49.61                 | 74                   | 24.39       |
| 12583.17        | 32.15                | AVG      | 12.3                  | 44.45                 | 54                   | 9.55        |

Note: Result = Reading + Correct Factor

Margin = Limit -Result

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain + Attenuator

*Vertical*



| Frequency (MHz) | Reading (dBuV) | Detector | Correct Factor (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|----------------|----------|-----------------------|-----------------|----------------|-------------|
| 1238.48         | 45.33          | PEAK     | -9.8                  | 35.53           | 74             | 38.47       |
| 1238.48         | 39.25          | AVG      | -9.8                  | 29.45           | 54             | 24.55       |
| 1579.16         | 46.73          | PEAK     | -8.3                  | 38.43           | 74             | 35.57       |
| 1579.16         | 38.45          | AVG      | -8.3                  | 30.15           | 54             | 23.85       |
| 2464.93         | 44.15          | PEAK     | -5.1                  | 39.05           | 74             | 34.95       |
| 2464.93         | 36.54          | AVG      | -5.1                  | 31.44           | 54             | 22.56       |
| 4236.47         | 41.8           | PEAK     | -0.4                  | 41.4            | 74             | 32.6        |
| 4236.47         | 34.11          | AVG      | -0.4                  | 33.71           | 54             | 20.29       |
| 7098.2          | 40.7           | PEAK     | 6                     | 46.7            | 74             | 27.3        |
| 7098.2          | 32.86          | AVG      | 6                     | 38.86           | 54             | 15.14       |
| 12583.17        | 37.31          | PEAK     | 12.3                  | 49.61           | 74             | 24.39       |
| 12583.17        | 32.88          | AVG      | 12.3                  | 45.18           | 54             | 8.82        |

Note: Result = Reading + Correct Factor

Margin = Limit -Result

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain + Attenuator

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