# RADIO TEST REPORT
## FCC 47 CFR PART 15 SUBPART C

| | |
|---|---|
| **Test Standard** | **FCC Part 15.249** |
| **Product name** | **Z-Wave® Scene Button** |
| **Brand Name** | **GOOD WAY** |
| **Model** | **TR1B100Z1** |
| **Test Result** | **Pass** |
| **Statements of Conformity** | **Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.** |

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10: 2013 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.
The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc.( Wugu Laboratory)

*Approved by:*

Kevin Tsai
Deputy Manager

# Revision History

| Rev. | Issue Date | Revisions | Effect Page | Revised By |
|---|---|---|---|---|
| 00 | July 2, 2020 | Initial Issue | ALL | Allison Chen |

# TABLE OF CONTENTS

# 1. GENERAL INFORMATION

## 1.1 EUT INFORMATION

| | |
|---|---|
| **Applicant** | GOOD WAY TECHNOLOGY CO., LTD.<br>3F, No. 135, Ln. 235, Baociao Rd., Sindian Dist., New Taipei City 231, Taiwan |
| **Equipment** | Z-Wave® Scene Button |
| **Brand Name** | GOOD WAY |
| **Model No.** | TR1B100Z1 |
| **Model Discrepancy** | N/A |
| **Received Date** | May 28, 2020 |
| **Date of Test** | June 3, 2020 |
| **Power Operation** | Power from Battery. (AAA*2) |
| **RF Field Strength** | 908.4 MHz: 90.24 dBuV/m @peak |
| | 908.42 MHz: 93.90 dBuV/m @peak |
| | 916 MHz: 93.06 dBuV/m @peak |
| **Date Rate** | 9.6 kbps / 40 kbps / 100 kbps |

## 1.2 EUT CHANNEL INFORMATION

| | |
|---|---|
| Frequency Range | 908.4 MHz, 908.42 MHz, 916 MHz |
| Modulation Type | FSK / GFSK |
| Number of channel | 3 Channel |

**Remark:**
Refer as ANSI C63.10: 2013 clause 5.6.1 Table 4 for test channels

| Number of frequencies to be tested | | |
|---|---|---|
| **Frequency range in which device operates** | **Number of frequencies** | **Location in frequency range of operation** |
| ☒ 1 MHz or less | 1 | Middle |
| ☐ 1 MHz to 10 MHz | 2 | 1 near top and 1 near bottom |
| ☐ More than 10 MHz | 3 | 1 near top, 1 near middle, and 1 near bottom |

## 1.3 ANTENNA INFORMATION

| | |
|---|---|
| **Antenna Type** | ☐ PIFA ☐ PCB ☐ Dipole ☒ Chip |
| **Antenna Gain** | Gain: -0.7 dBi |
| **Antenna Connector** | N/A |

# 1.4 MEASUREMENT UNCERTAINTY

| PARAMETER | UNCERTAINTY |
|---|---|
| AC Powerline Conducted Emission | +/- 1.2575 |
| Emission bandwidth, 20dB bandwidth | +/- 0.0014 |
| RF output power, conducted | +/- 1.14 |
| Power density, conducted | +/- 1.40 |
| 3M Semi Anechoic Chamber / 30M~200M | +/- 4.12 |
| 3M Semi Anechoic Chamber / 200M~1000M | +/- 4.68 |
| 3M Semi Anechoic Chamber / 1G~8G | +/- 5.18 |
| 3M Semi Anechoic Chamber / 8G~18G | +/- 5.47 |
| 3M Semi Anechoic Chamber / 18G~26G | +/- 3.81 |
| 3M Semi Anechoic Chamber / 26G~40G | +/- 3.87 |

***Remark***:
*1.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2*
*2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.*

## 1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at *No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan. (R.O.C.)*

| Test site | Test Engineer | Remark |
|---|---|---|
| AC Conduction Room | - | Not applicable, because EUT doesn't connect to AC Main Source direct. |
| Radiation | Jerry Chang | - |
| RF Conducted | Jerry Chang | - |

***Remark:*** *The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.*

## 1.6 INSTRUMENT CALIBRATION

| RF Conducted Test Site | | | | | |
|---|---|---|---|---|---|
| **Name of Equipment** | **Manufacturer** | **Model** | **Serial Number** | **Calibration Date** | **Calibration Due** |
| Coaxial Cable | Woken | WC12 | CC003 | 06/28/2019 | 06/27/2020 |
| Signal Analyzer | R&S | FSV 40 | 101073 | 09/25/2019 | 09/24/2020 |
| Software | N/A | | | | |

| Wugu 966 Chamber A | | | | | |
|---|---|---|---|---|---|
| **Name of Equipment** | **Manufacturer** | **Model** | **Serial Number** | **Calibration Date** | **Calibration Due** |
| Bilog Antenna | Sunol Sciences | JB3 | A030105 | 07/26/2019 | 07/25/2020 |
| Coaxial Cable | HUBER SUHNER | SUCOFLEX 104PEA | 20995 | 02/25/2020 | 02/24/2021 |
| Coaxial Cable | EMCI | EMC105 | 190914+25111 | 09/20/2019 | 09/19/2020 |
| Digital Thermo-Hygro Meter | WISEWIND | 1206 | D07 | 01/15/2020 | 01/14/2021 |
| double Ridged Guide Horn Antenna | ETC | MCTD 1209 | DRH13M02003 | 10/04/2019 | 10/03/2020 |
| High Pass Filter | SOLVANG TECHNOLOGY INC. | STI15 | 9923 | 02/25/2020 | 02/24/2021 |
| Loop Ant | COM-POWER | AL-130 | 121051 | 03/27/2020 | 03/26/2021 |
| Pre-Amplifier | EMEC | EM330 | 060609 | 02/25/2020 | 02/24/2021 |
| Pre-Amplifier | HP | 8449B | 3008A00965 | 02/25/2020 | 02/24/2021 |
| Signal Analyzer | Agilent | N9010A | MY52220817 | 03/19/2020 | 03/18/2021 |
| Antenna Tower | CCS | CC-A-1F | N/A | N.C.R | N.C.R |
| Controller | CCS | CC-C-1F | N/A | N.C.R | N.C.R |
| Turn Table | CCS | CC-T-1F | N/A | N.C.R | N.C.R |
| Software | e3 6.11-20180413 | | | | |

***Remark:*** *Each piece of equipment is scheduled for calibration once a year.*

## 1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

| EUT Accessories Equipment | | | | | |
|---|---|---|---|---|---|
| **No.** | **Equipment** | **Brand** | **Model** | **Series No.** | **FCC ID** |
| | N/A | | | | |

| Support Equipment | | | | | |
|---|---|---|---|---|---|
| **No.** | **Equipment** | **Brand** | **Model** | **Series No.** | **BSMI ID** |
| | N/A | | | | |

## 1.8 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10:2013, FCC Part 2, FCC Part 15.249.

# 2. TEST SUMMERY

| FCC Standard Section | Report Section | Test Item | Result |
|---|---|---|---|
| 15.203 | 1.3 | Antenna Requirement | Pass |
| 15.207(a) | 4.1 | AC Conducted Emission | N/A |
| 15.215(c) | 4.2 | 20 dB Bandwidth | Pass |
| 15.249(a) | 4.3 | Field strength of the fundamental signal | Pass |
| 15.249(a) /15.209 | 4.3 | Radiation Spurious Emission | Pass |

# 3. DESCRIPTION OF TEST MODES

## 3.1 THE WORST MODE OF OPERATING CONDITION

| | |
|---|---|
| Operation mode | Z-wave |
| Test Channel Frequencies | 908.4 MHz, 908.42 MHz, 916 MHz |

## 3.2 THE WORST MODE OF MEASUREMENT

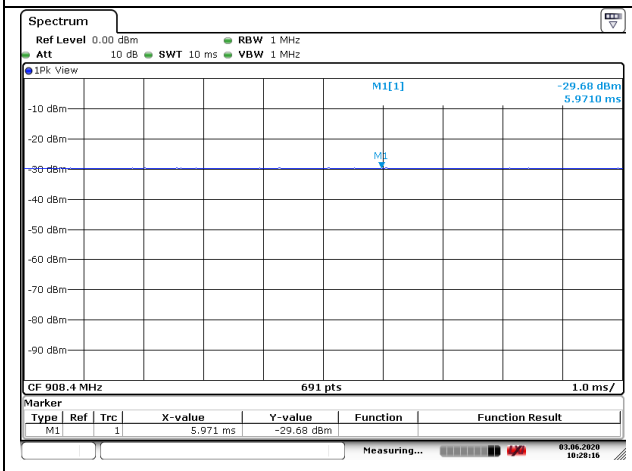
| Radiated Emission Measurement Above 1G | |
|---|---|
| **Test Condition** | **Radiated Emission Above 1G** |
| **Power supply Mode** | **Mode 1: EUT power by Battery** |
| **Worst Mode** | **☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4** |
| **Worst Position** | **☐ Placed in fixed position.**<br>**☒ Placed in fixed position at X-Plane (E2-Plane)**<br>**☐ Placed in fixed position at Y-Plane (E1-Plane)**<br>**☐ Placed in fixed position at Z-Plane (H-Plane)** |

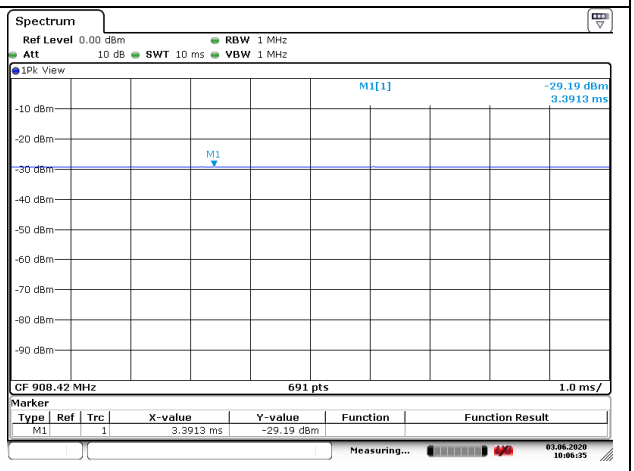
| Radiated Emission Measurement Below 1G | |
|---|---|
| **Test Condition** | **Radiated Emission Below 1G** |
| **Power supply Mode** | **Mode 1: EUT power by Battery** |
| **Worst Mode** | **☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4** |

*Remark:*
*1. The worst mode was record in this test report.*
*2. EUT pre-scanned in three axis ,X,Y, Z and two polarity, for radiated measurement. The worst case(X-Plane) were recorded in this report*

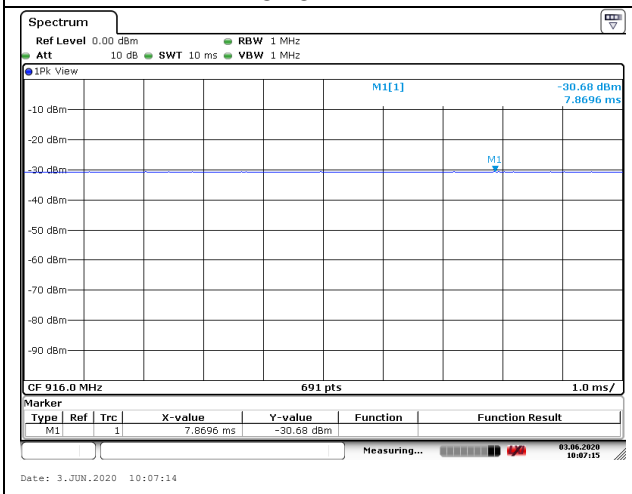
## 3.3 EUT DUTY CYCLE

| Duty Cycle | | | | |
|---|---|---|---|---|
| Configuration | Duty Cycle (%) | Duty Factor (dB) =10*log (1/Duty Cycle) | 1/T (kHz) | VBW setting (kHz) |
| 908.4 MHz | 100.00 | 0.00 | N/A | 10Hz |
| 908.42 MHz | 100.00 | 0.00 | N/A | 10Hz |
| 916 MHz | 100.00 | 0.00 | N/A | 10Hz |




916 MHz



# 4. TEST RESULT

## 4.1 AC POWER LINE CONDUCTED EMISSION

### 4.1.1 Test Limit

According to §15.207(a),

| Frequency Range (MHz) | Limits(dBμV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15 to 0.50 | 66 to 56* | 56 to 46* |
| 0.50 to 5 | 56 | 46 |
| 5 to 30 | 60 | 50 |

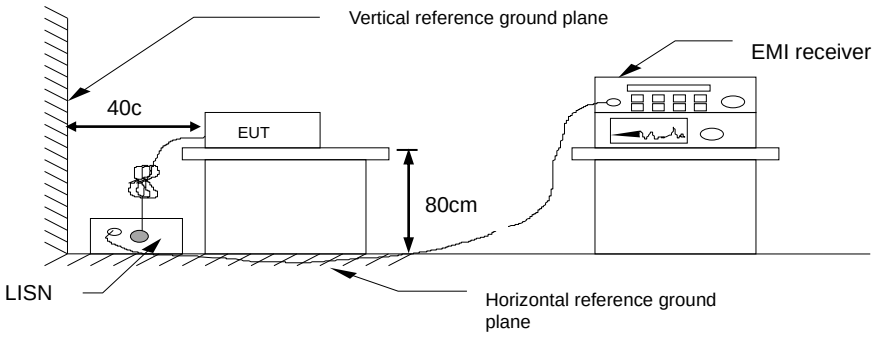
* Decreases with the logarithm of the frequency.

### 4.1.2 Test Procedure

Test method Refer as ANSI C63.10: 2013 clause 6.2,

1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

### 4.1.3 Test Setup




### 4.1.4 Test Result

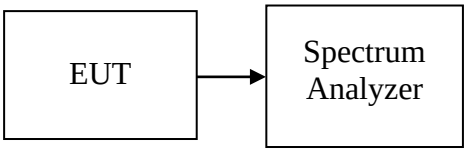
***Not applicable, because EUT doesn't connect to AC Main Source direct.***

## 4.2 20dB BANDWIDTH

### LIMIT

None; for reporting purposes only.

**Test Configuration**




### TEST PROCEDURE

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW=3kHz, VBW = 10kHz, Span = 500kHz, Sweep = auto.
4. Set the spectrum analyzer as OBW(99%) function.
5. Mark the peak frequency and 20dB (upper and lower) frequency.
6. Repeat until all the rest channels are investigated.

### TEST RESULTS

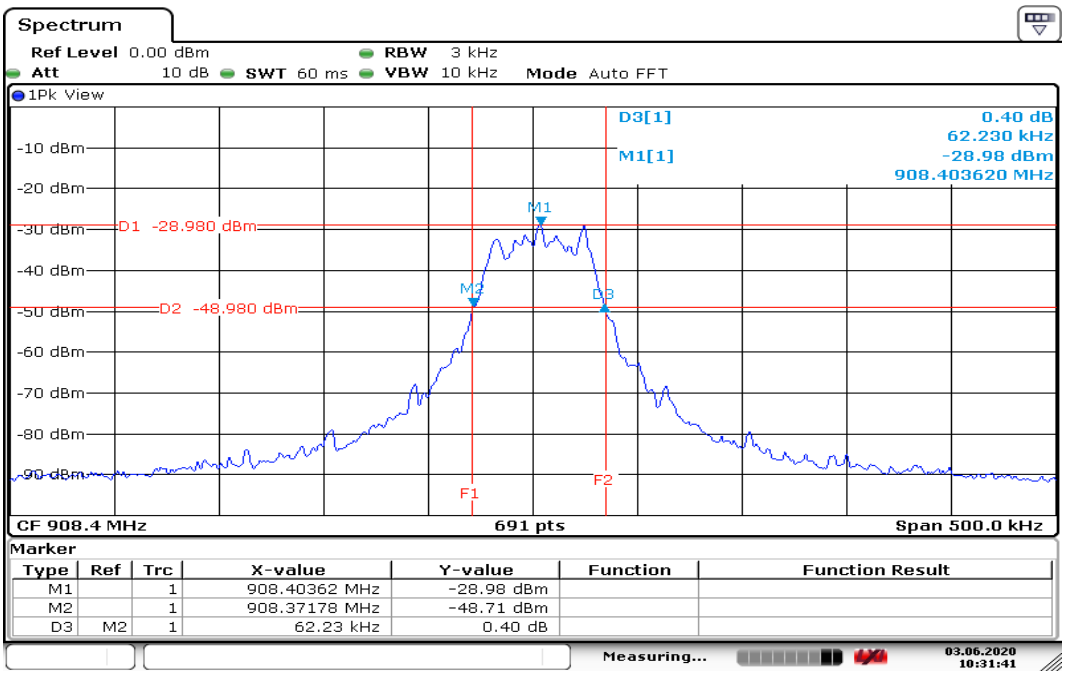
*No non-compliance noted*

**Test Data**

| Frequency (MHz) | 20dB Bandwidth (kHz) | 99% OBW (kHz) |
|---|---|---|
| 908.4 MHz | 62.23 | 55.7163 |
| 908.42 MHz | 65.85 | 59.3342 |
| 916 MHz | 76.7 | 71.6353 |

## Test Plot
## 20dB Bandwidth

### 908.4 MHz

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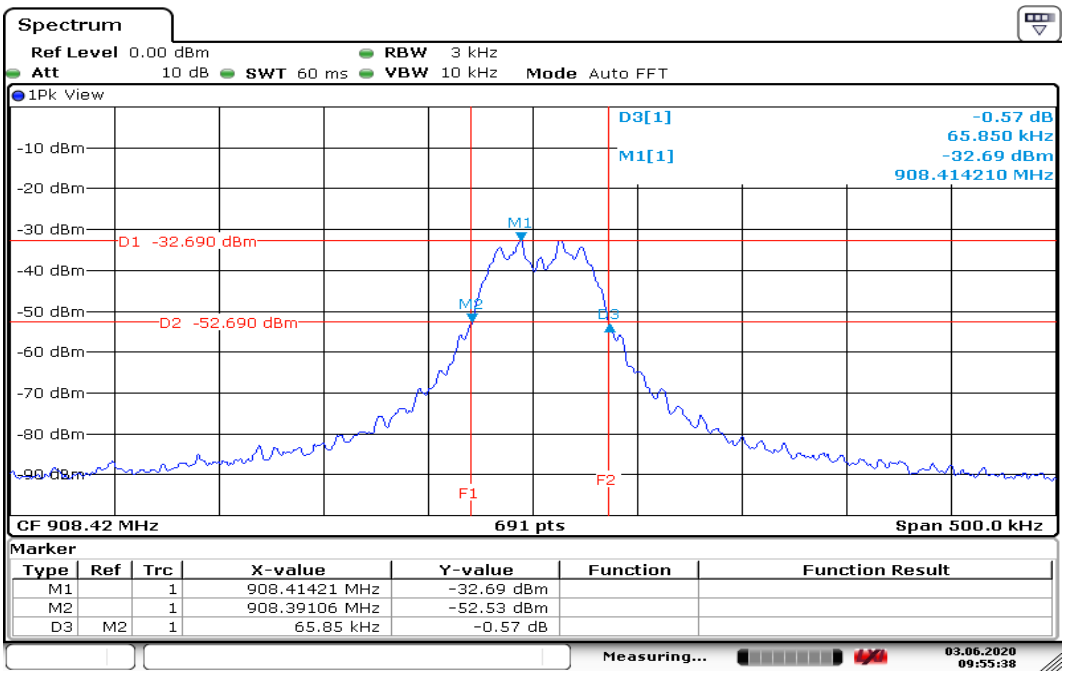
### 908.42 MHz

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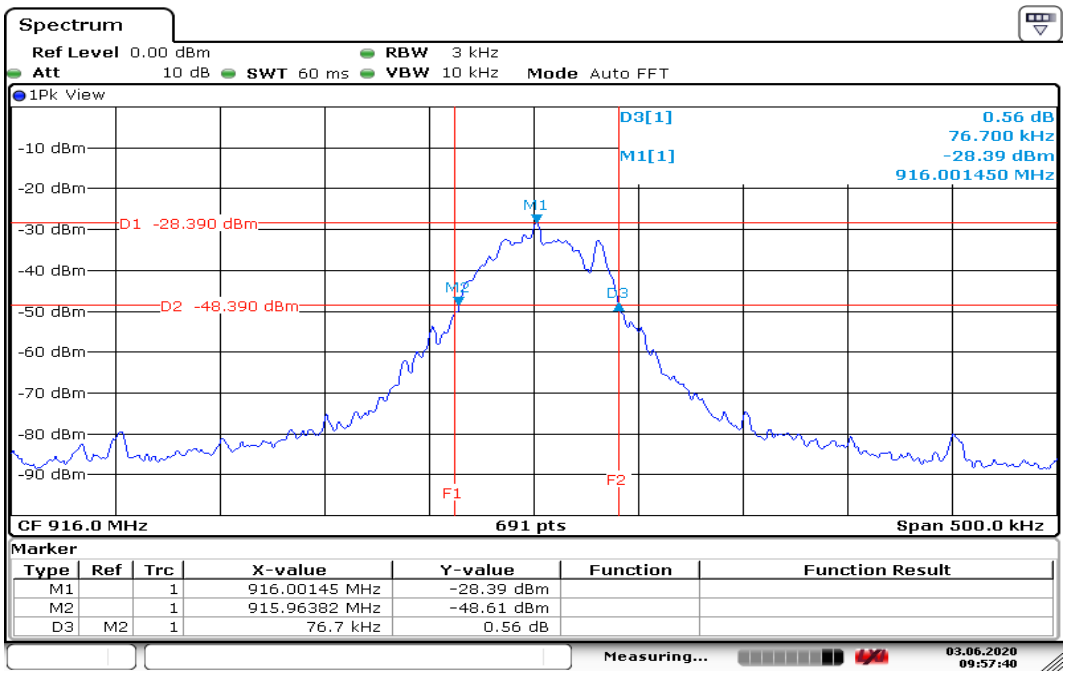
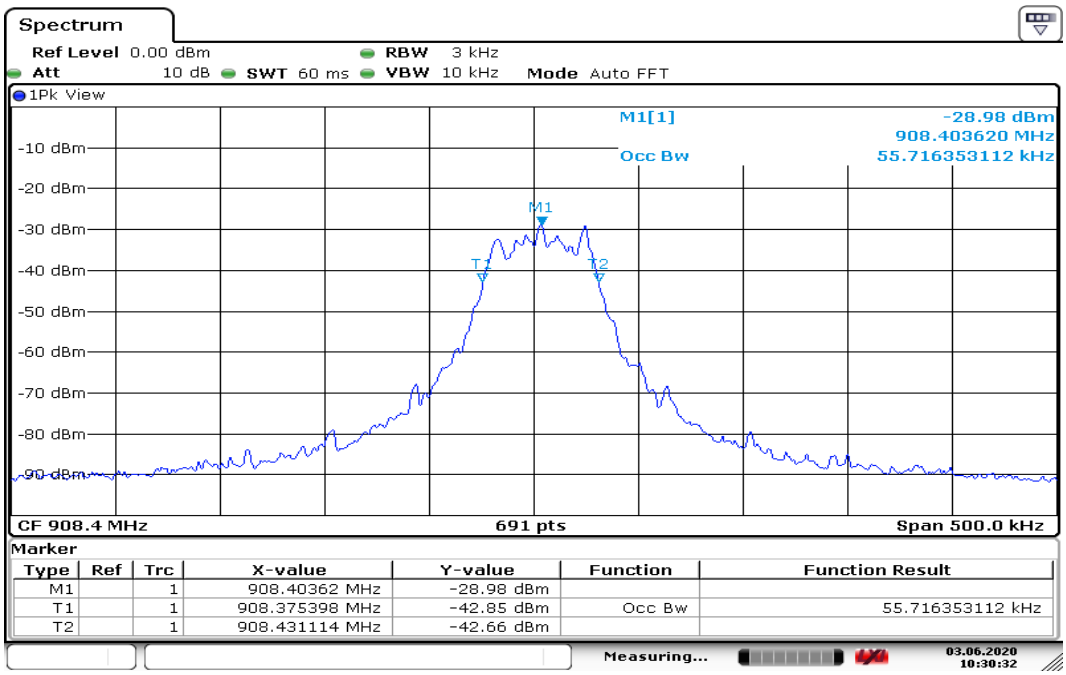
## 916 MHz




Date: 3.JUN.2020 09:57:40

## Test Plot
## 99% OBW

### 908.4 MHz

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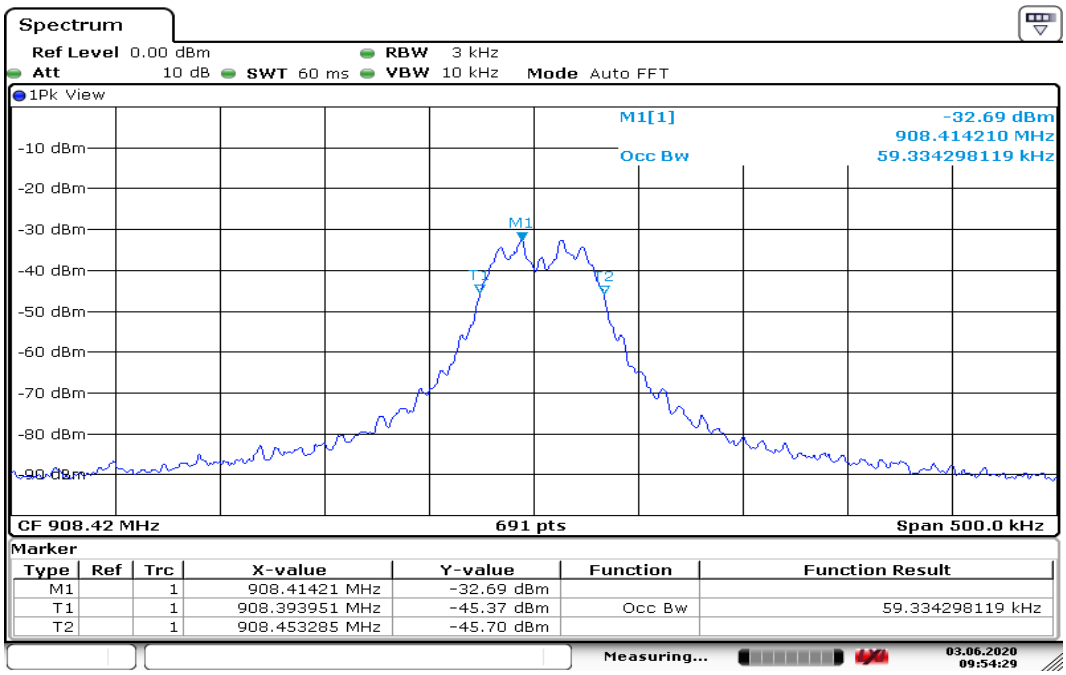
### 908.42 MHz

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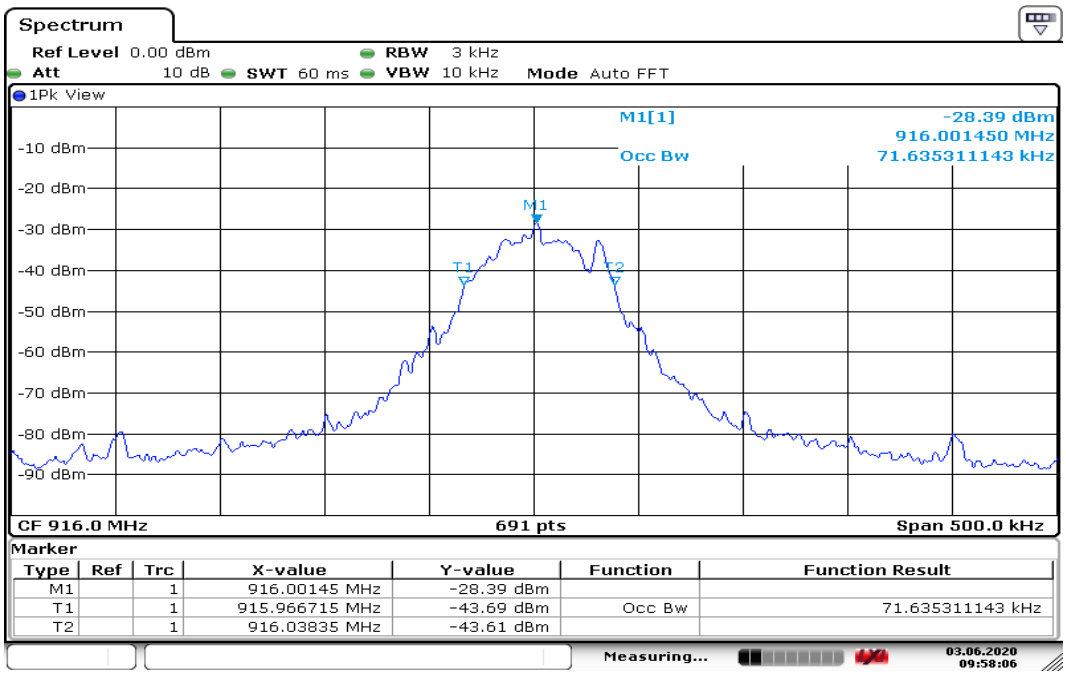
## 916 MHz




Date: 3.JUN.2020 09:58:06

# 4.3 RADIATION FUNDAMENTAL AND SPURIOUS EMISSION

## 4.3.1 Test Limit

According to §15.249(a), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the follow:

| Fundamental frequency | Field strength of fundamental (millivolts/meter) | Field strength of harmonics (microvolts/meter) |
|---|---|---|
| 902-928 MHz | 50 | 500 |
| 2400-2483.5 MHz | 50 | 500 |
| 5725-5875 MHz | 50 | 500 |
| 24.0-24.25 GHz | 250 | 2500 |

According to §15.249(d), Emission Radiated outside of specified frequency bands, except for harmonics, shall be attenuated by at 50dB below the level of the fundamental or to the general radiated emission limits in section §15.209.

According to §15.249(e), for frequencies above 1000 MHz, the above field strength limits are based on average limits. The peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

**Below 30 MHz**

| Frequency | Field Strength (microvolts/m) | Magnetic H-Field (microamperes/m) | Measurement Distance (metres) |
|---|---|---|---|
| 9-490 kHz | 2,400/F (F in kHz) | 2,400/F (F in kHz) | 300 |
| 490-1,705 kHz | 24,000/F (F in kHz) | 24,000/F (F in kHz) | 30 |
| 1.705-30 MHz | 30 | N/A | 30 |

**Above 30 MHz**

| Frequency (MHz) | Field Strength microvolts/m at 3 metres (watts, e.i.r.p.) | |
|---|---|---|
| | Transmitters | Receivers |
| 30-88 | 100 (3 nW) | 100 (3 nW) |
| 88-216 | 150 (6.8 nW) | 150 (6.8 nW) |
| 216-960 | 200 (12 nW) | 200 (12 nW) |
| Above 960 | 500 (75 nW) | 500 (75 nW) |

Remark:
Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open are test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

### 4.3.2 Test Procedure

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10: 2013, and the EUT set in a continuous mode.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.

3. Span shall wide enough to full capture the emission measured. The SA from 9kHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.

Note: No emission found between lowest internal used/generated frequency to 30MHz(9KHz~30MHz)

4. The SA setting following：

(1) Below 1G：RBW = 100kHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2) Above 1G：

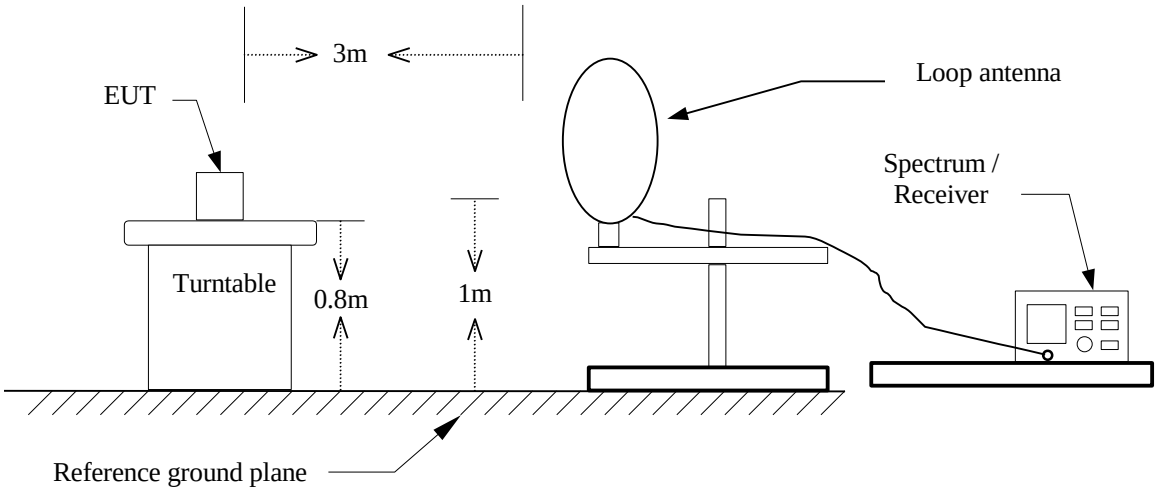
(2.1) For Peak measurement：RBW = 1MHz, VBW ≥ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2.2) For Average measurement：RBW = 1MHz, VBW

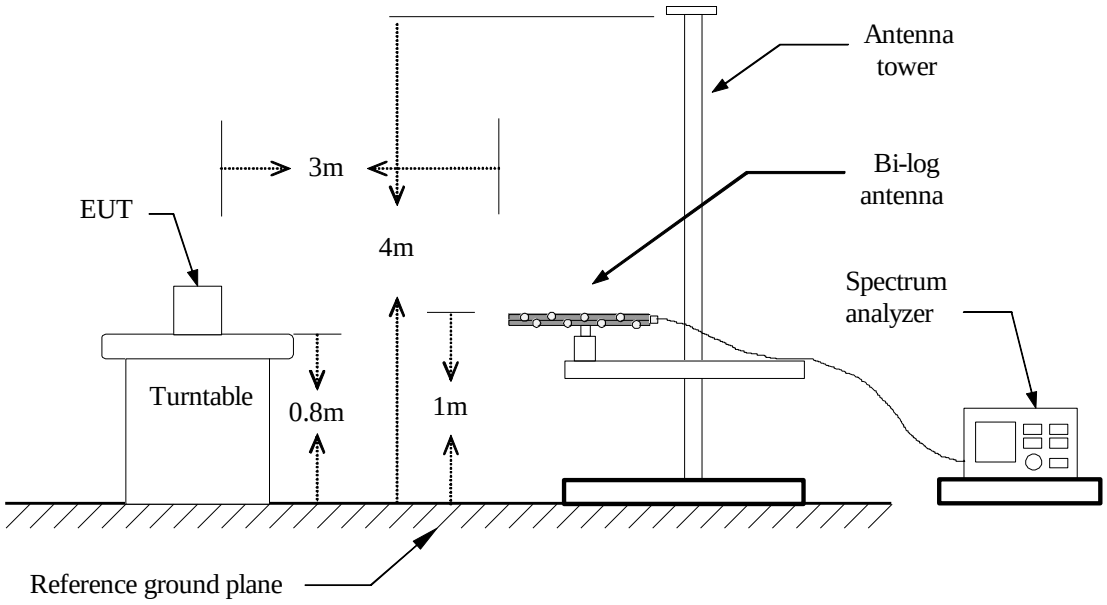
- If Duty Cycle ≥ 98%, VBW=10Hz.
- If Duty Cycle < 98%, VBW≥1/T.

## 4.3.3 Test Setup

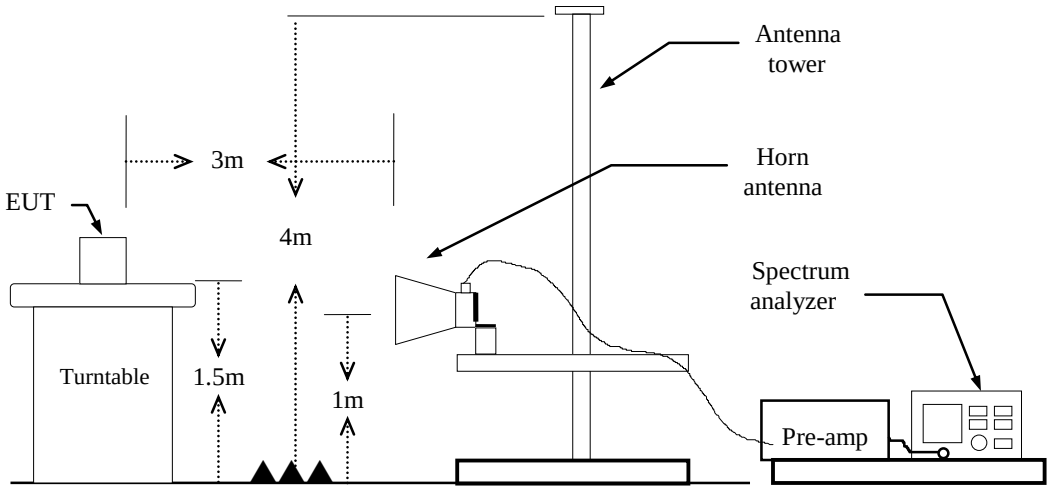
### 9kHz ~ 30MHz




### 30MHz ~ 1GHz



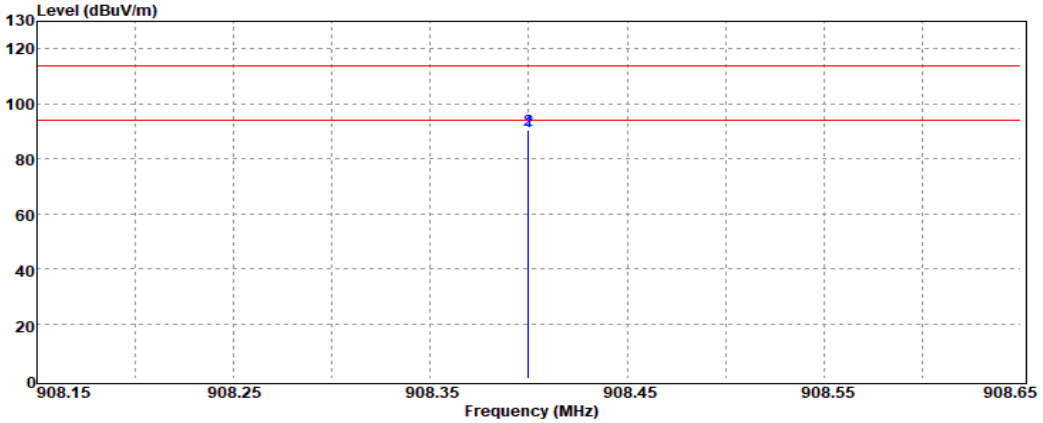
**Above 1 GHz**



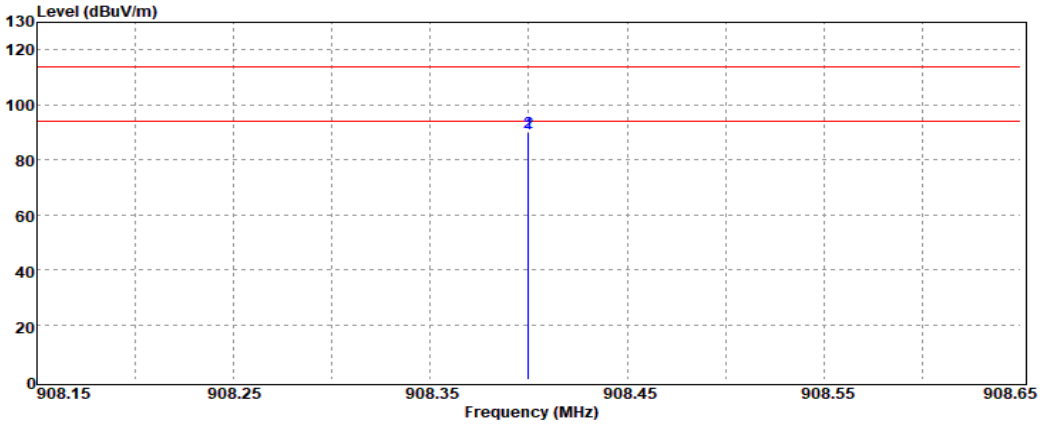
## Radiation Fundamental

| Test Mode: | 908.4 MHz | Temp/Hum | 24.6(℃)/ 51%RH |
|---|---|---|---|
| Test Item | Main | Test Date | June 3, 2020 |
| Polarize | Vertical / Horizontal | Test Engineer | Jerry Chang |

### Vertical



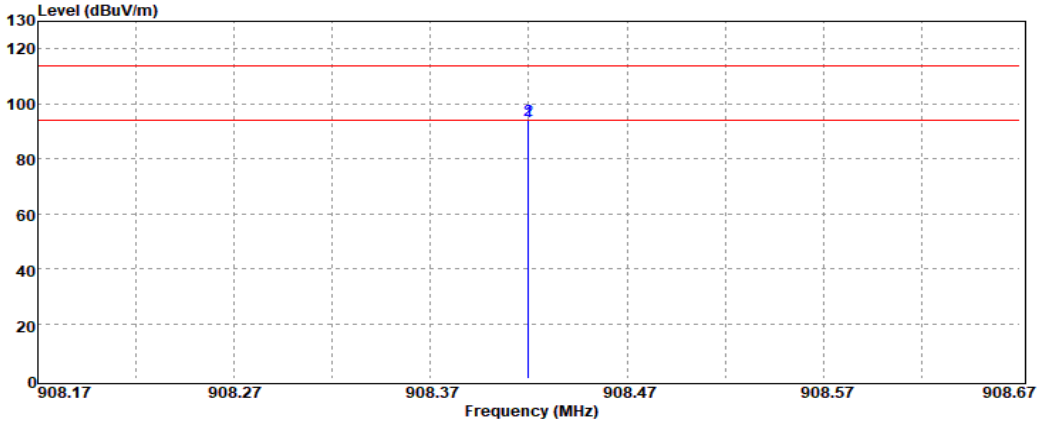

### Horizontal



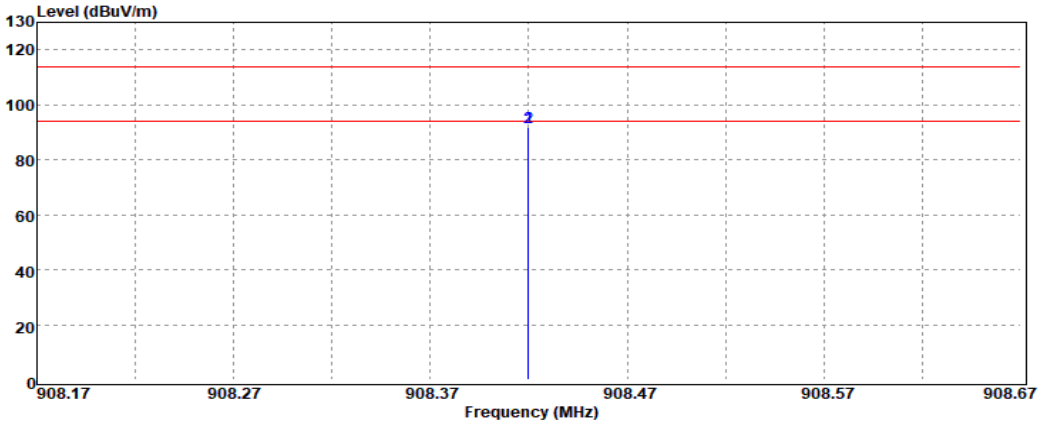

| Freq. MHz | Detector Mode PK/QP/AV | Spectrum Reading Level dBµV | Factor dB | Actual FS dBµV/m | Limit @3m dBµV/m | Margin dB | Remark |
|---|---|---|---|---|---|---|---|
| 908.40 | Average | 86.48 | 3.55 | 90.03 | 94.00 | -3.97 | V |
| 908.40 | Peak | 86.69 | 3.55 | 90.24 | 114.00 | -23.76 | V |
| 908.40 | Average | 86.03 | 3.55 | 89.58 | 94.00 | -4.42 | H |
| 908.40 | Peak | 86.21 | 3.55 | 89.76 | 114.00 | -24.24 | H |

| Test Mode: | 908.42 MHz | Temp/Hum | 24.6(℃)/ 51%RH |
|---|---|---|---|
| Test Item | Main | Test Date | June 3, 2020 |
| Polarize | Vertical / Horizontal | Test Engineer | Jerry Chang |

**Vertical**



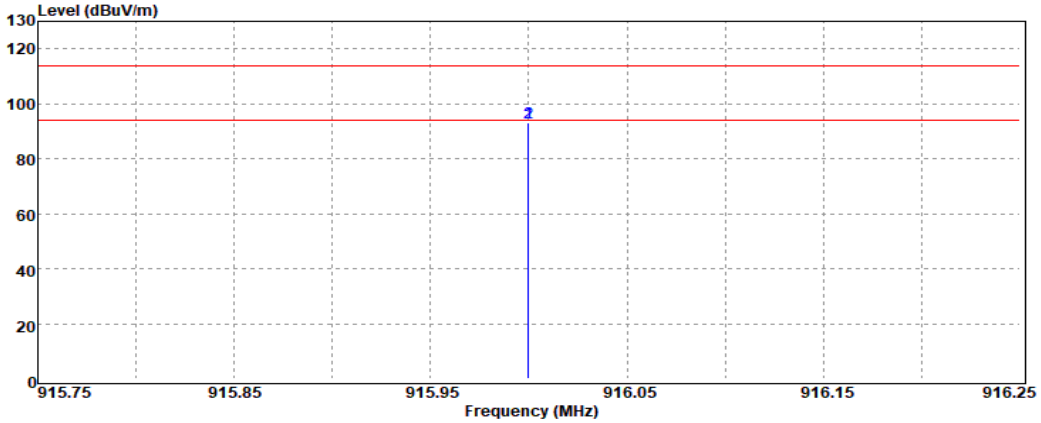

**Horizontal**



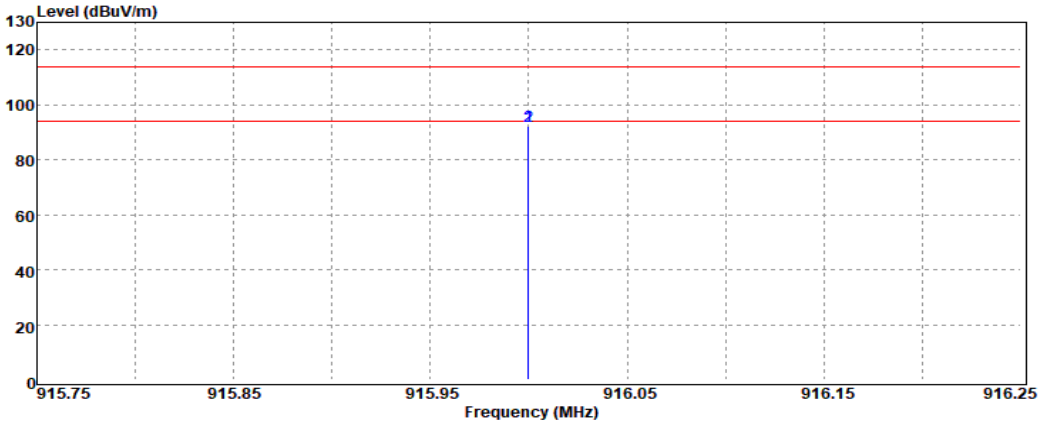

| Freq. MHz | Detector Mode PK/QP/AV | Spectrum Reading Level dBµV | Factor dB | Actual FS dBµV/m | Limit @3m dBµV/m | Margin dB | Remark |
|---|---|---|---|---|---|---|---|
| 908.42 | Average | 90.14 | 3.55 | 93.69 | 94.00 | -0.31 | V |
| 908.42 | Peak | 90.35 | 3.55 | 93.90 | 114.00 | -20.10 | V |
| 908.42 | Average | 88.22 | 3.55 | 91.77 | 94.00 | -2.23 | H |
| 908.42 | Peak | 88.35 | 3.55 | 91.90 | 114.00 | -22.10 | H |

| Test Mode: | 916 MHz | Temp/Hum | 24.6(℃)/ 51%RH |
|---|---|---|---|
| Test Item | Main | Test Date | June 3, 2020 |
| Polarize | Vertical / Horizontal | Test Engineer | Jerry Chang |

**Vertical**



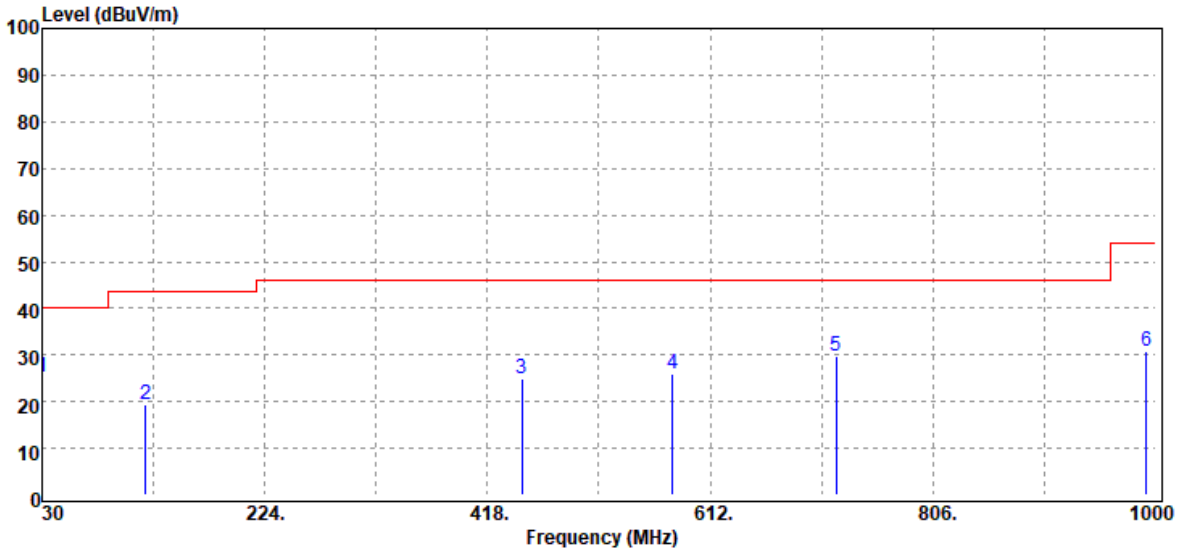

**Horizontal**




| Freq. MHz | Detector Mode PK/QP/AV | Spectrum Reading Level dBµV | Factor dB | Actual FS dBµV/m | Limit @3m dBµV/m | Margin dB | Remark |
|---|---|---|---|---|---|---|---|
| 916.00 | Average | 89.45 | 3.57 | 93.02 | 94.00 | -0.98 | V |
| 916.00 | Peak | 89.49 | 3.57 | 93.06 | 114.00 | -20.94 | V |
| 916.00 | Average | 88.57 | 3.57 | 92.14 | 94.00 | -1.86 | H |
| 916.00 | Peak | 88.75 | 3.57 | 92.32 | 114.00 | -21.68 | H |

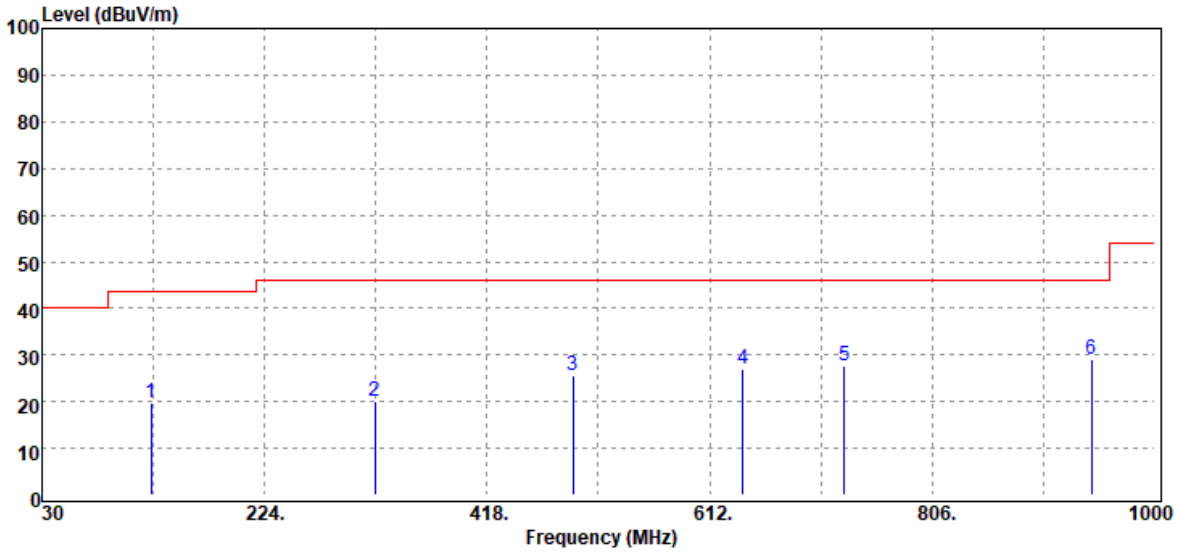
## Below 1G Test Data

| Test Mode: | 908.4 MHz | Temp/Hum | 24.6(℃)/ 51%RH |
|---|---|---|---|
| Test Item | 30MHz-1GHz | Test Date | June 3, 2020 |
| Polarize | Vertical | Test Engineer | Jerry Chang |
| Detector | Peak | | |



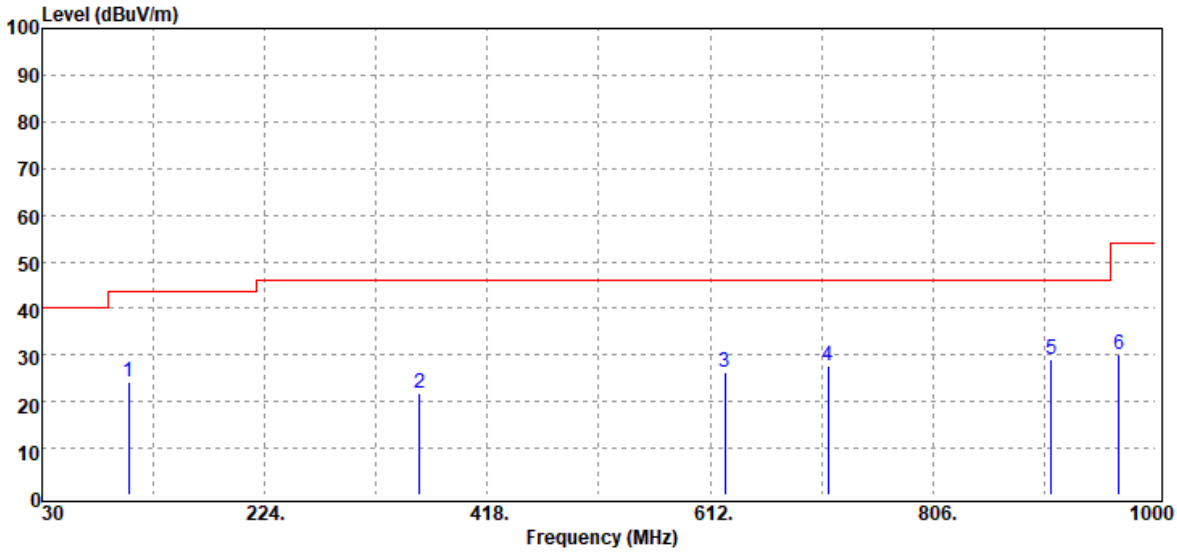

| No. | Freq. MHz | Detector Mode PK/QP/AV | Spectrum Reading Level dBµV | Factor dB | Actual FS dBµV/m | Limit @3m dBµV/m | Margin dB |
|---|---|---|---|---|---|---|---|
| 1 | 30.00 | Peak | 27.81 | -2.44 | 25.37 | 40.00 | -14.63 |
| 2 | 120.21 | Peak | 28.64 | -9.17 | 19.47 | 43.50 | -24.03 |
| 3 | 448.07 | Peak | 29.10 | -4.33 | 24.77 | 46.00 | -21.23 |
| 4 | 579.02 | Peak | 28.09 | -1.98 | 26.11 | 46.00 | -19.89 |
| 5 | 721.61 | Peak | 29.25 | 0.54 | 29.79 | 46.00 | -16.21 |
| 6 | 992.24 | Peak | 25.98 | 4.85 | 30.83 | 54.00 | -23.17 |

| Test Mode: | 908.4 MHz | Temp/Hum | 24.6(℃)/ 51%RH |
|---|---|---|---|
| Test Item | 30MHz-1GHz | Test Date | June 3, 2020 |
| Polarize | Horizontal | Test Engineer | Jerry Chang |
| Detector | Peak | | |



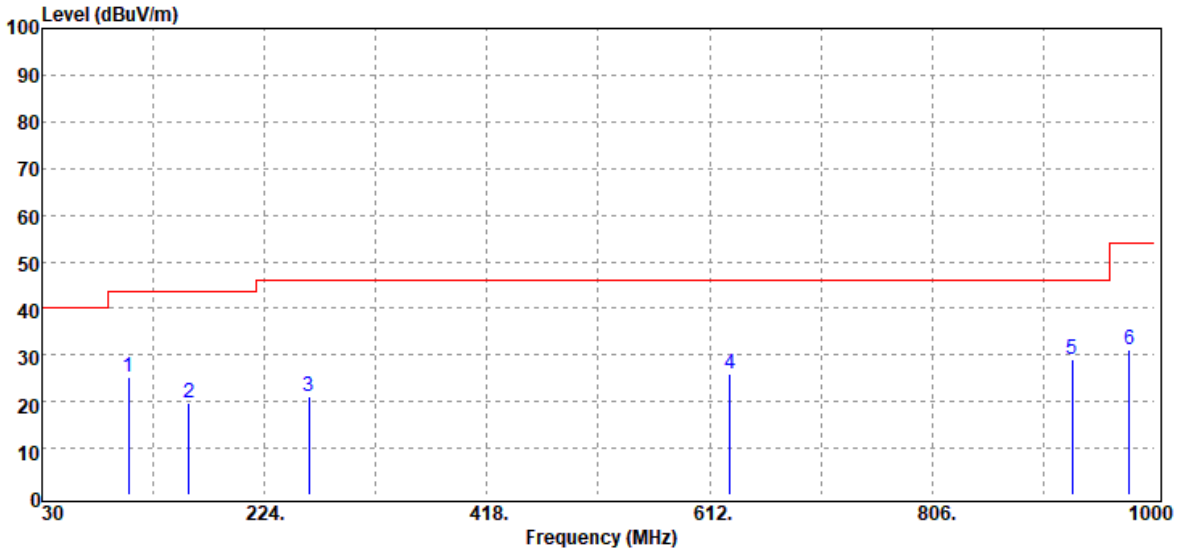

| No. | Freq. MHz | Detector Mode PK/QP/AV | Spectrum Reading Level dBµV | Factor dB | Actual FS dBµV/m | Limit @3m dBµV/m | Margin dB |
|---|---|---|---|---|---|---|---|
| 1 | 125.06 | Peak | 28.65 | -9.06 | 19.59 | 43.50 | -23.91 |
| 2 | 320.03 | Peak | 27.94 | -7.88 | 20.06 | 46.00 | -25.94 |
| 3 | 492.69 | Peak | 28.65 | -3.21 | 25.44 | 46.00 | -20.56 |
| 4 | 641.10 | Peak | 27.52 | -0.55 | 26.97 | 46.00 | -19.03 |
| 5 | 729.37 | Peak | 27.00 | 0.53 | 27.53 | 46.00 | -18.47 |
| 6 | 944.71 | Peak | 24.90 | 4.05 | 28.95 | 46.00 | -17.05 |

| Test Mode: | 908.42 MHz | Temp/Hum | 24.6(℃)/ 51%RH |
|---|---|---|---|
| Test Item | 30MHz-1GHz | Test Date | June 3, 2020 |
| Polarize | Vertical | Test Engineer | Jerry Chang |
| Detector | Peak | | |



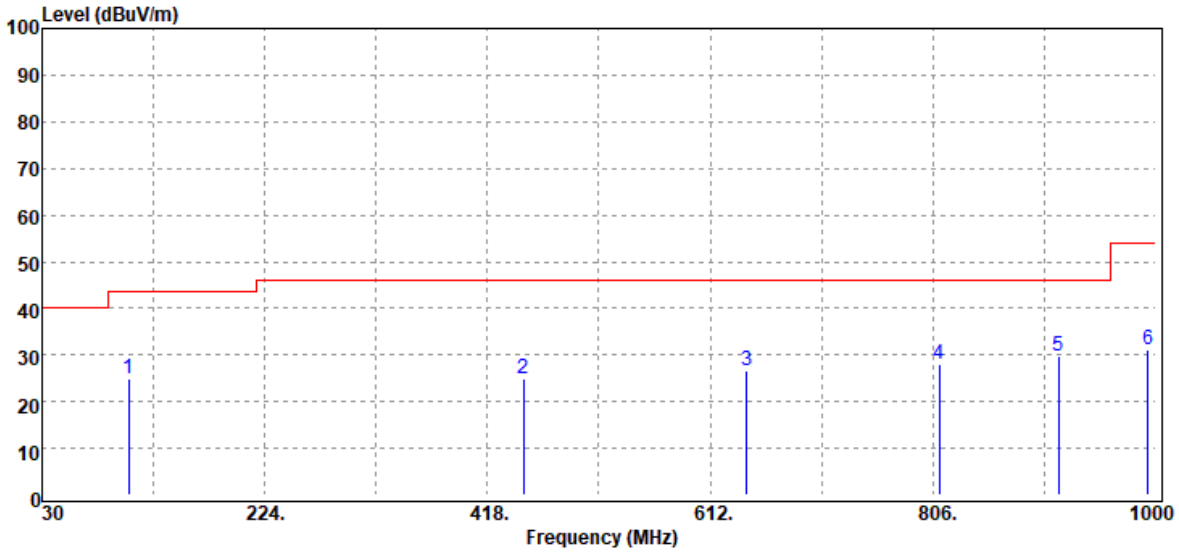

| No. | Freq. MHz | Detector Mode PK/QP/AV | Spectrum Reading Level dBµV | Factor dB | Actual FS dBµV/m | Limit @3m dBµV/m | Margin dB |
|---|---|---|---|---|---|---|---|
| 1 | 105.66 | Peak | 35.52 | -11.23 | 24.29 | 43.50 | -19.21 |
| 2 | 358.83 | Peak | 28.75 | -6.83 | 21.92 | 46.00 | -24.08 |
| 3 | 624.61 | Peak | 27.10 | -0.92 | 26.18 | 46.00 | -19.82 |
| 4 | 714.82 | Peak | 27.37 | 0.37 | 27.74 | 46.00 | -18.26 |
| 5 | 908.82 | Peak | 25.49 | 3.54 | 29.03 | 46.00 | -16.97 |
| 6 | 967.99 | Peak | 25.97 | 4.21 | 30.18 | 54.00 | -23.82 |

| Test Mode: | 908.42 MHz | Temp/Hum | 24.6(℃)/ 51%RH |
|---|---|---|---|
| Test Item | 30MHz-1GHz | Test Date | June 3, 2020 |
| Polarize | Horizontal | Test Engineer | Jerry Chang |
| Detector | Peak | | |



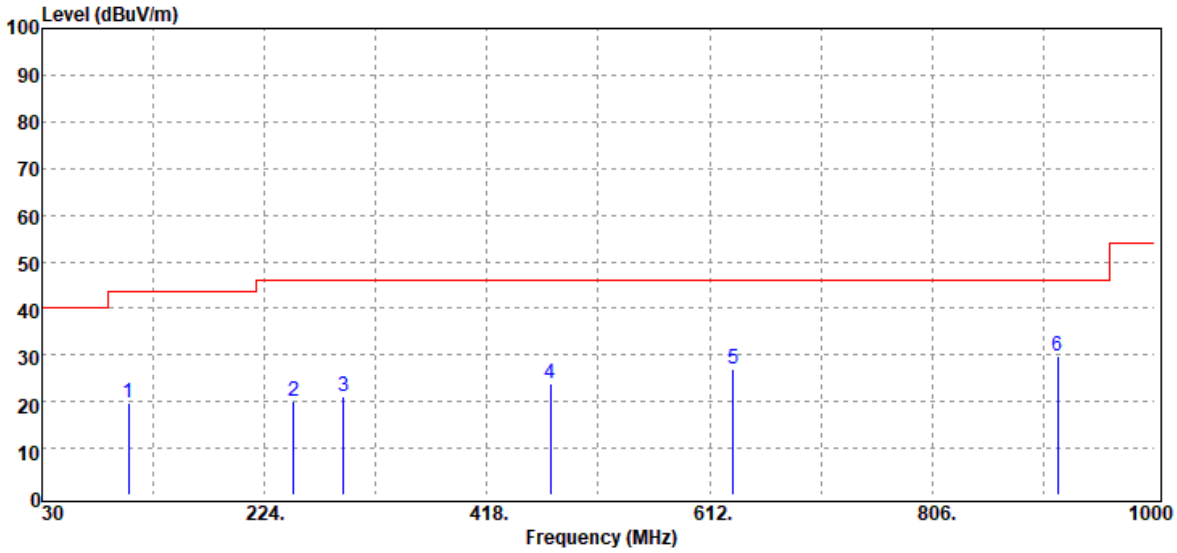

| No. | Freq. MHz | Detector Mode PK/QP/AV | Spectrum Reading Level dBµV | Factor dB | Actual FS dBµV/m | Limit @3m dBµV/m | Margin dB |
|---|---|---|---|---|---|---|---|
| 1 | 105.66 | Peak | 36.32 | -11.23 | 25.09 | 43.50 | -18.41 |
| 2 | 158.04 | Peak | 30.16 | -10.31 | 19.85 | 43.50 | -23.65 |
| 3 | 262.80 | Peak | 30.61 | -9.55 | 21.06 | 46.00 | -24.94 |
| 4 | 629.46 | Peak | 26.69 | -0.78 | 25.91 | 46.00 | -20.09 |
| 5 | 928.22 | Peak | 25.28 | 3.66 | 28.94 | 46.00 | -17.06 |
| 6 | 977.69 | Peak | 26.69 | 4.51 | 31.20 | 54.00 | -22.80 |

| Test Mode: | 916 MHz | Temp/Hum | 24.6(℃)/ 51%RH |
|---|---|---|---|
| Test Item | 30MHz-1GHz | Test Date | June 3, 2020 |
| Polarize | Vertical | Test Engineer | Jerry Chang |
| Detector | Peak | | |




| No. | Freq. MHz | Detector Mode PK/QP/AV | Spectrum Reading Level dBµV | Factor dB | Actual FS dBµV/m | Limit @3m dBµV/m | Margin dB |
|---|---|---|---|---|---|---|---|
| 1 | 105.66 | Peak | 36.19 | -11.23 | 24.96 | 43.50 | -18.54 |
| 2 | 449.04 | Peak | 29.22 | -4.29 | 24.93 | 46.00 | -21.07 |
| 3 | 644.01 | Peak | 27.15 | -0.58 | 26.57 | 46.00 | -19.43 |
| 4 | 811.82 | Peak | 25.98 | 2.09 | 28.07 | 46.00 | -17.93 |
| 5 | 915.61 | Peak | 26.16 | 3.57 | 29.73 | 46.00 | -16.27 |
| 6 | 993.21 | Peak | 26.37 | 4.84 | 31.21 | 54.00 | -22.79 |

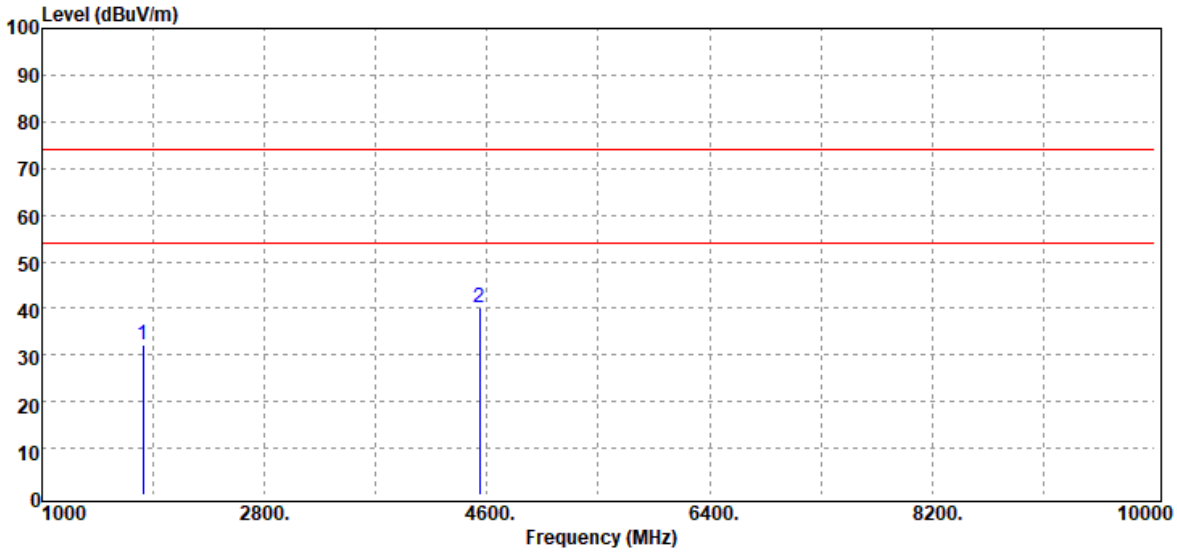
| Test Mode: | 916 MHz | Temp/Hum | 24.6(℃)/ 51%RH |
|---|---|---|---|
| Test Item | 30MHz-1GHz | Test Date | June 3, 2020 |
| Polarize | Horizontal | Test Engineer | Jerry Chang |
| Detector | Peak | | |




| No. | Freq. MHz | Detector Mode PK/QP/AV | Spectrum Reading Level dBµV | Factor dB | Actual FS dBµV/m | Limit @3m dBµV/m | Margin dB |
|---|---|---|---|---|---|---|---|
| 1 | 105.66 | Peak | 31.12 | -11.23 | 19.89 | 43.50 | -23.61 |
| 2 | 249.22 | Peak | 30.60 | -10.60 | 20.00 | 46.00 | -26.00 |
| 3 | 292.87 | Peak | 29.57 | -8.59 | 20.98 | 46.00 | -25.02 |
| 4 | 473.29 | Peak | 27.43 | -3.45 | 23.98 | 46.00 | -22.02 |
| 5 | 632.37 | Peak | 27.70 | -0.64 | 27.06 | 46.00 | -18.94 |
| 6 | 915.61 | Peak | 26.07 | 3.57 | 29.64 | 46.00 | -16.36 |

## Above 1G Test Data

| Test Mode: | 908.4 MHz | Temp/Hum | 24.6(℃)/ 51%RH |
|---|---|---|---|
| Test Item | Harmonic | Test Date | June 3, 2020 |
| Polarize | Vertical | Test Engineer | Jerry Chang |
| Detector | Peak | | |




| No. | Freq. MHz | Detector Mode PK/QP/AV | Spectrum Reading Level dBµV | Factor dB | Actual FS dBµV/m | Limit @3m dBµV/m | Margin dB |
|---|---|---|---|---|---|---|---|
| 1 | 1816.80 | Peak | 43.14 | -11.04 | 32.10 | 74.00 | -41.90 |
| 2 | 4542.00 | Peak | 44.93 | -4.77 | 40.16 | 74.00 | -33.84 |
| | N/A | | | | | | |
| | | | | | | | |
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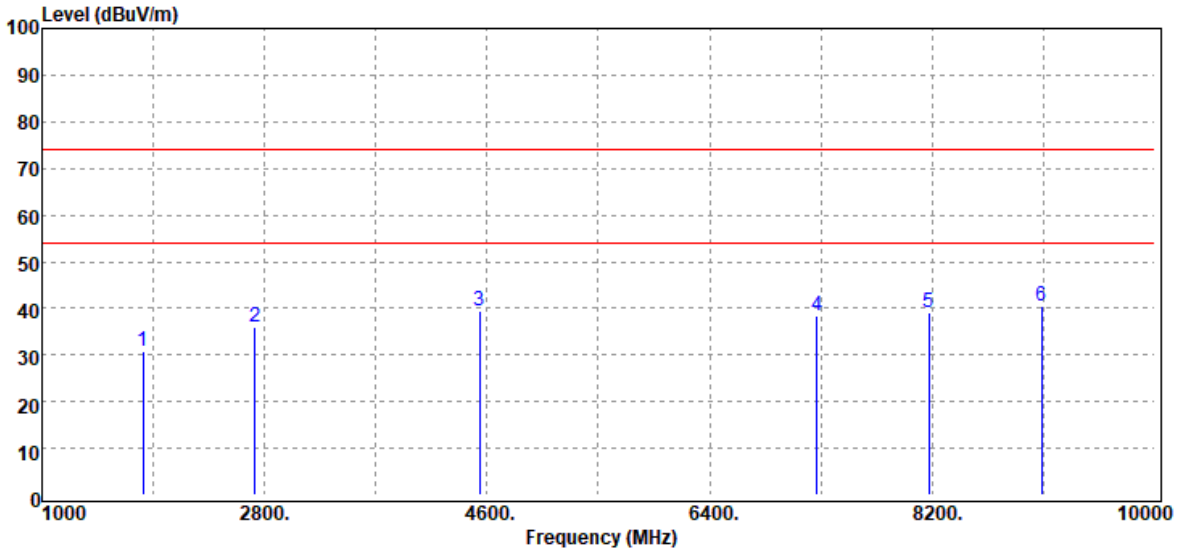
| | | | | | | | |

***Remark:***

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

| Test Mode: | 908.4 MHz | Temp/Hum | 24.6(℃)/ 51%RH |
|---|---|---|---|
| Test Item | Harmonic | Test Date | June 3, 2020 |
| Polarize | Horizontal | Test Engineer | Jerry Chang |
| Detector | Peak | | |

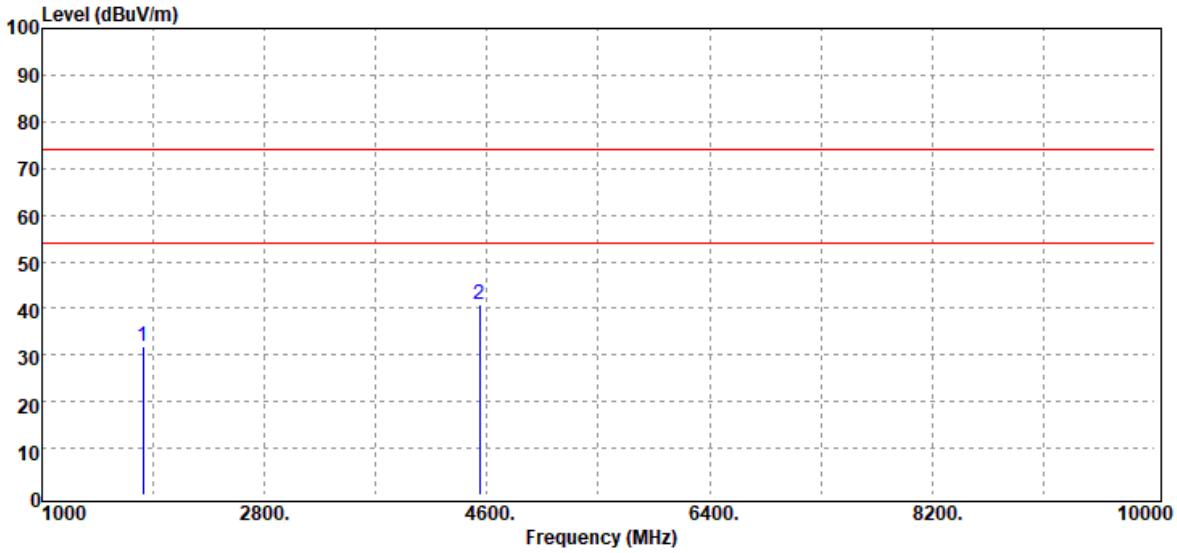



| No. | Freq. MHz | Detector Mode PK/QP/AV | Spectrum Reading Level dBµV | Factor dB | Actual FS dBµV/m | Limit @3m dBµV/m | Margin dB |
|---|---|---|---|---|---|---|---|
| 1 | 1816.80 | Peak | 41.72 | -11.04 | 30.68 | 74.00 | -43.32 |
| 2 | 2725.20 | Peak | 44.33 | -8.34 | 35.99 | 74.00 | -38.01 |
| 3 | 4542.00 | Peak | 44.36 | -4.77 | 39.59 | 74.00 | -34.41 |
| 4 | 7267.20 | Peak | 38.83 | -0.47 | 38.36 | 74.00 | -35.64 |
| 5 | 8175.60 | Peak | 39.45 | -0.43 | 39.02 | 74.00 | -34.98 |
| 6 | 9084.00 | Peak | 40.24 | 0.29 | 40.53 | 74.00 | -33.47 |

***Remark:***

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

| Test Mode: | 908.42 MHz | Temp/Hum | 24.6(℃)/ 51%RH |
|---|---|---|---|
| Test Item | Harmonic | Test Date | June 3, 2020 |
| Polarize | Vertical | Test Engineer | Jerry Chang |
| Detector | Peak | | |

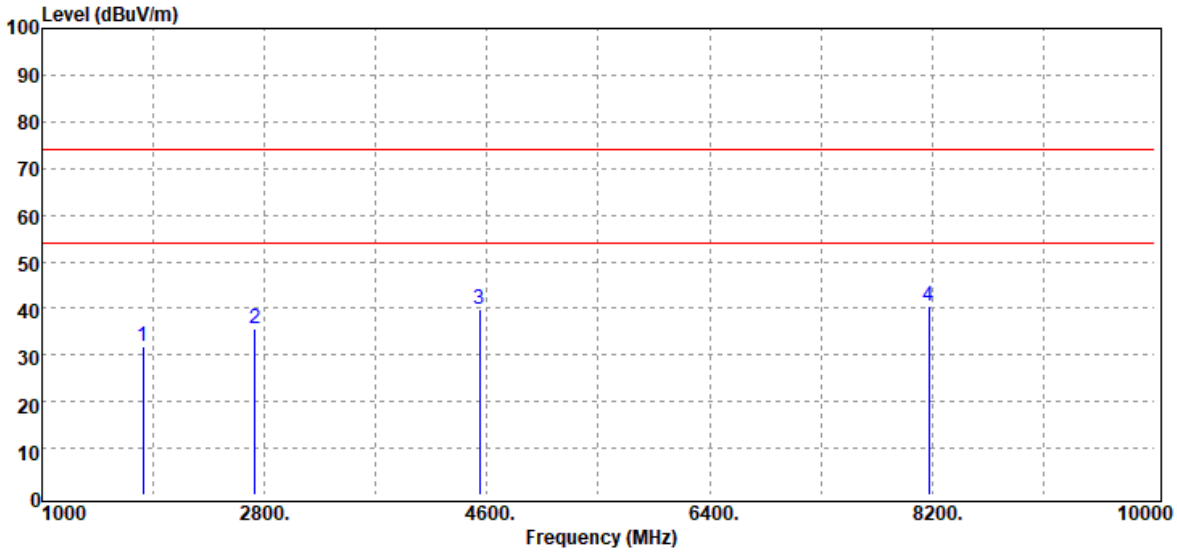



| No. | Freq. MHz | Detector Mode PK/QP/AV | Spectrum Reading Level dBµV | Factor dB | Actual FS dBµV/m | Limit @3m dBµV/m | Margin dB |
|---|---|---|---|---|---|---|---|
| 1 | 1816.84 | Peak | 43.02 | -11.04 | 31.98 | 74.00 | -42.02 |
| 2 | 4542.10 | Peak | 45.54 | -4.77 | 40.77 | 74.00 | -33.23 |
| | N/A | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

***Remark:***

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

| Test Mode: | 908.42 MHz | Temp/Hum | 24.6(℃)/ 51%RH |
|---|---|---|---|
| Test Item | Harmonic | Test Date | June 3, 2020 |
| Polarize | Horizontal | Test Engineer | Jerry Chang |
| Detector | Peak | | |

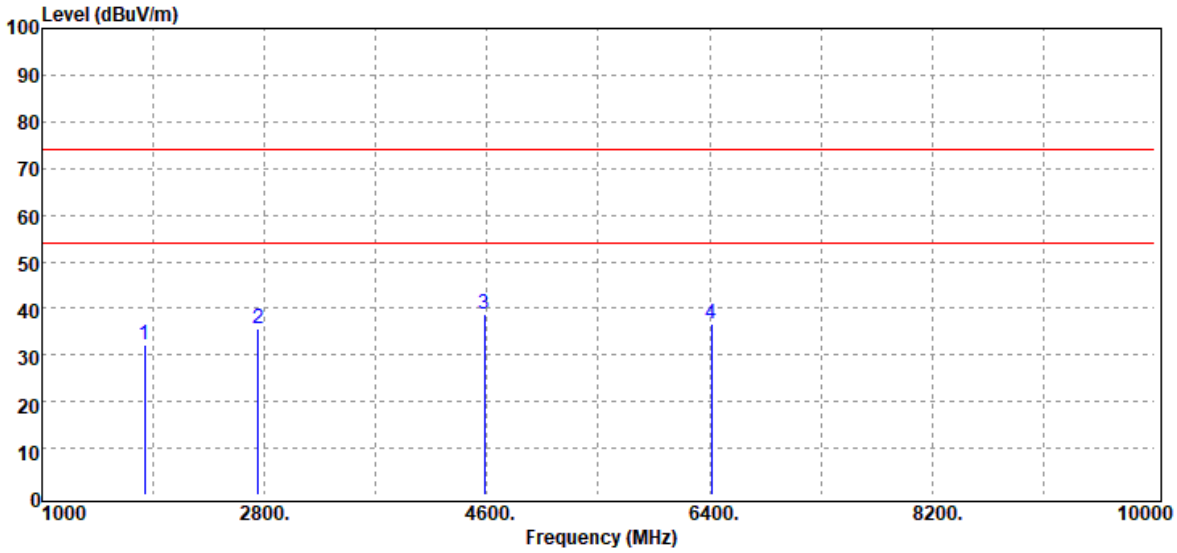



| No. | Freq. MHz | Detector Mode PK/QP/AV | Spectrum Reading Level dBµV | Factor dB | Actual FS dBµV/m | Limit @3m dBµV/m | Margin dB |
|---|---|---|---|---|---|---|---|
| 1 | 1816.84 | Peak | 42.98 | -11.04 | 31.94 | 74.00 | -42.06 |
| 2 | 2725.26 | Peak | 43.99 | -8.34 | 35.65 | 74.00 | -38.35 |
| 3 | 4542.10 | Peak | 44.40 | -4.77 | 39.63 | 74.00 | -34.37 |
| 4 | 8175.78 | Peak | 40.88 | -0.44 | 40.44 | 74.00 | -33.56 |
| | N/A | | | | | | |
| | | | | | | | |

***Remark:***

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

| Test Mode: | 916 MHz | Temp/Hum | 24.6(℃)/ 51%RH |
|---|---|---|---|
| Test Item | Harmonic | Test Date | June 3, 2020 |
| Polarize | Vertical | Test Engineer | Jerry Chang |
| Detector | Peak | | |

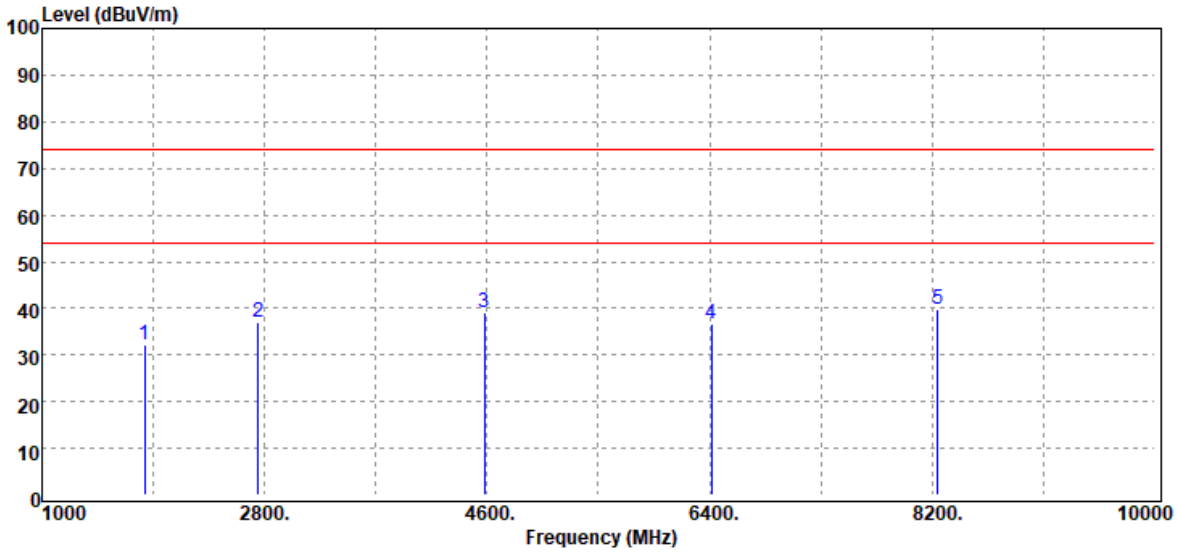



| No. | Freq. MHz | Detector Mode PK/QP/AV | Spectrum Reading Level dBµV | Factor dB | Actual FS dBµV/m | Limit @3m dBµV/m | Margin dB |
|---|---|---|---|---|---|---|---|
| 1 | 1832.00 | Peak | 42.97 | -10.96 | 32.01 | 74.00 | -41.99 |
| 2 | 2748.00 | Peak | 43.94 | -8.43 | 35.51 | 74.00 | -38.49 |
| 3 | 4580.00 | Peak | 43.85 | -4.94 | 38.91 | 74.00 | -35.09 |
| 4 | 6412.00 | Peak | 38.47 | -1.69 | 36.78 | 74.00 | -37.22 |
| | N/A | | | | | | |
| | | | | | | | |

***Remark:***

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

| Test Mode: | 916 MHz | Temp/Hum | 24.6(℃)/ 51%RH |
|---|---|---|---|
| Test Item | Harmonic | Test Date | June 3, 2020 |
| Polarize | Horizontal | Test Engineer | Jerry Chang |
| Detector | Peak | | |




| No. | Freq. MHz | Detector Mode PK/QP/AV | Spectrum Reading Level dBµV | Factor dB | Actual FS dBµV/m | Limit @3m dBµV/m | Margin dB |
|---|---|---|---|---|---|---|---|
| 1 | 1832.00 | Peak | 43.06 | -10.96 | 32.10 | 74.00 | -41.90 |
| 2 | 2748.00 | Peak | 45.29 | -8.43 | 36.86 | 74.00 | -37.14 |
| 3 | 4580.00 | Peak | 43.91 | -4.94 | 38.97 | 74.00 | -35.03 |
| 4 | 6412.00 | Peak | 38.44 | -1.69 | 36.75 | 74.00 | -37.25 |
| 5 | 8244.00 | Peak | 40.25 | -0.58 | 39.67 | 74.00 | -34.33 |
| | N/A | | | | | | |

***Remark:***

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. For above 1GHz, the EUT peak value was under average limit, therefore the Average value compliance with the average limit

**--End of Report--**