# TEST REPORT

of

## FCC Part 15 Subpart C AND CANADA RSS-Gen

☐ New Application; ☐ Class I PC; ☒ Class II PC

| | |
|---|---|
| **Product :** | **Sensor AID DUO TPMS TOOL** |
| **Brand:** | **Cub** |
| **Model:** | **FCC: Please see page 6** |
| | **IC:VS-60U029** |
| **Model Difference:** | **FCC: Please see page 6** |
| | **IC: N/A** |
| **FCC ID:** | **ZPNVS60U029** |
| **IC:** | **9959A-VS60U029** |
| **FCC Rule Part:** | **§15.209** |
| **ISED Rule Part:** | **RSS-Gen issue 5; RSS-210 issue 10** |
| **Applicant:** | **CUB ELECPARTS INC.** |
| **Address:** | **No.6, Lane 546, Sec.6, Changlu Road, Fuhsin Township, Changhua County, Taiwan 506** |

Test Performed by:

**International Standards Laboratory Corp. LT Lab.**
TEL: +886-3-263-8888 FAX: +886-3-263-8899
No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist., Tao Yuan City 325, Taiwan

Report No.: **ISL-18LR335FC-R2**
Issue Date :**2021/09/24**

Test results given in this report apply only to the specific sample(s) tested and are traceable to national or international standard through calibration of the equipment and evaluating measurement uncertainty herein.
The uncertainty of the measurement does not include in consideration of the test result unless the customer required the determination of uncertainty via the agreement, regulation or standard document specification.

# VERIFICATION OF COMPLIANCE

| | |
|---|---|
| **Applicant:** | CUB ELECPARTS INC. |
| **Product Description:** | Sensor AID DUO TPMS TOOL |
| **Brand Name:** | Cub |
| **FCC ID:** | ZPNVS60U029 |
| **IC:** | 9959A-VS60U029 |
| **Model No.:** | FCC: Please see page 6 |
| | IC:VS-60U029 |
| **Model Difference:** | FCC: Please see page 6 |
| | IC: N/A |
| **Date of test:** | 2021/08/12 ~ 2021/09/23 |
| **Date of EUT Received:** | 2021/08/12 |

## We hereby certify that:

All the tests in this report have been performed and recorded in accordance with the standards described above and performed by an independent electromagnetic compatibility consultant, International Standards Laboratory Corp.

The test results contained in this report accurately represent the measurements of the characteristics and the energy generated by sample equipment under test at the time of the test. The sample equipment tested as described in this report is in compliance with the limits of above standards.

| | | | |
|---|---|---|---|
| ***Test By:*** | Barry Lee | ***Date:*** | 2021/09/24 |
| | ***Barry Lee / Senior Engineer*** | | |
| ***Prepared By:*** | Gigi yeh | ***Date:*** | 2021/09/24 |
| | ***Gigi Yeh / Senior Engineer*** | | |
| ***Approved By:*** | Jerry Liu | ***Date:*** | 2021/09/24 |
| | ***Jerry Liu / Technical Manager*** | | |

# Version

| Version No. | Date | Description |
|---|---|---|
| 00 | 2021/09/24 | Initial creation of document |
| | | |

# Measurement Uncertainty (K=2)

| Description Of Test | Uncertainty |
|---|---|
| Conducted Emission (AC power line) | 2.586 dB |
| Field Strength of Spurious Radiation | <=30MHz: 2.96dB<br>30-1GHz: 4.22 dB<br>1-40 GHz: 4.08 dB |
| Conducted Power | 2.412 GHz: 1.30 dB<br>5.805 GHz: 1.55 dB |
| Power Density | 2.412 GHz:1.30 dB<br>5.805 GHz: 1.67 dB |
| Frequency | 0.0032% |

# Table of Contents

# 1. General Information

## 1.1 Product Description

General:

| | | |
|---|---|---|
| Product Name | Sensor AID DUO TPMS TOOL | |
| Brand Name | Cub | |
| FCC: Model Name | VS-60U029; VS-60U029XX; VS-60U029XX-XX; VS-60U029XX-XX-X; VS-60U024; VS-60U024XX; VS-60U024XX-XX; VS-60U024XX-XX-X; VS-60U029XXXXXXX; VS-60U024XXXXXXX; CT4; Sensor AID TOOL Gen4; Sensor AID DUO TPMS TOOL; SENSOR AID TOOL GEN4; SENSOR AID DUO TPMS TOOL | |
| IC: Model Name | VS-60U029 | |
| FCC Model Difference | 1. For the marketing purpose<br>2. Where X may be any alpha character “a”-“z”, ”A”-“Z”, or numeric character “0”-“9”,or -, ( , ) , or blank or combination of alpha and numeric characters | |
| IC Model Difference | N/A | |
| Power Supply | 5 Vdc from AC/DC adapter or 3.7V from battery | |
| | Adapter: | Model: SK22G3-0500250U |
| | Battery: | Model : MLP625094 |

IC RSS-Gen:

| | |
|---|---|
| PMN (Product Marketing Name) | VS-60U029 |
| HVIN (Hardware Version Identification Number) | VS-60U029 |
| Product SW version | 1.0 |
| Product HW version | 1.0 |
| Radio SW version | RS1.0 |
| Radio HW version | 1.0 |

Rule: 15.209 (TX) / RSS-Gen

| | |
|---|---|
| Frequency Range: | 125kHz |
| Modulation type: | AM |
| Antenna Designation: | Loop Antenna |

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

This submittal(s) (test report) is intended for FCC ID: **ZPNVS60U029** filing to comply with Section 15.209 of the FCC Part 15, Subpart C Rules and **IC: 9959A-VS60U029** filing to comply with Industry Canada RSS-Gen issue 5; RSS-210 issue 10.

## 1.3 Test Methodology

All testing were performed according to the procedures in ANSI C63.10: 2013.

## 1.4 Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of **International Standards Laboratory Corp.**<LT Lab.> No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist., Tao Yuan City 325, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.10: 2013. FCC Registration Number is: 487532; Designation Number is: TW0997, Canada Registration Number: 4067B-4.

## 1.5 Special Accessories

Not available for this EUT intended for grant.

## 1.6 Equipment Modifications

Not available for this EUT intended for grant.

# 2. System Test Configuration

## 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

## 2.2 EUT Exercise

The EUT (Transmitter) was tested with a test program to fix the Tx frequency that was for the purpose of the measurements. For more information please see test data and APPENDIX 1 for set-up photographs.

## 2.3 Test Procedure

### 2.3.1 Conducted Emissions (Not apply in the report)

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 7, 13 of ANSI C63.4-2014 and RSS-Gen issue 5. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and Average detector mode.

### 2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8/1.5 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” Is still within the 3dB illumination BW of the measurement antenna. According to the requirements in Section 8 and 13 and Sub-clause 8.3.1.2 of ANSI C63.10: 2013.

## 2.4 Limitation

### (1) Emission Bandwidth

**FCC 15.215(c) requirement:**

Intentional radiators operating under the alternative provisions to the general emission limits must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

**RSS-Gen 6.7 requirement:**

The occupied bandwidth or the "99% emission bandwidth" is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

### (2) Conducted Emission

**According to FCC 15.207(a) / RSS-Gen 8.8 requirement:**

Conducted Emission Limits is as following.

| Frequency range | Limits dB (uV) | |
|---|---|---|
| MHz | 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 |
| Note<br>1.The lower limit shall apply at the transition frequencies<br>2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz. | | |

**(3) Radiated Emission**

**FCC 15.209 requirement:**

(a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

(b) In the emission table above, the tighter limit applies at the band edges.

(c) The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. For intentional radiators which operate under the provisions of other Sections within this Part and which are required to reduce their unwanted emissions to the limits specified in this table, the limits in this table are based on the frequency of the unwanted emission and not the fundamental frequency. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.

The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

| Frequency (MHz) | Field strength μV/m | Distance (m) | Field strength at 3m dBμV/m |
|---|---|---|---|
| 0.009-0.490 | 2400/F(kHz) | 300 | |
| 0.490-1.705 | 24000/F(kHz) | 30 | |
| 1.705-30 | 30 | 30 | 69.54 |
| 30-88 | 100 | 3 | 40 |
| 88-216 | 150 | 3 | 43.5 |
| 216-960 | 200 | 3 | 46 |
| Above 960 | 500 | 3 | 54 |

**RSS-Gen requirement:**

Except where otherwise indicated in the applicable RSS, radiated emissions shall comply with the field strength limits shown in following tables. Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter's fundamental emission.

**General field strength limits at frequencies above 30 MHz**

| Frequency (MHz) | Field strength (μV/m at 3 m) |
|---|---|
| 30 – 88 | 100 |
| 88 – 216 | 150 |
| 216 – 960 | 200 |
| Above 960 | 500 |

**General field strength limits at frequencies below 30 MHz**

| Frequency | Magnetic field strength (H-Field) (μA/m) | Measurement distance (m) |
|---|---|---|
| 9 - 490 kHz [1] | 6.37/F (F in kHz) | 300 |
| 490 - 1705 kHz | 63.7/F (F in kHz) | 30 |
| 1.705 - 30 MHz | 0.08 | 30 |

Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

**Limit Table:**

| Number of Harmonic | Frequency (kHz) | Distance m | Limit at 300m (dBuV/m) | Limit at 30m (dBuV/m) | Distance Factor dB | Limit at 3m (dBuV/m) |
|---|---|---|---|---|---|---|
| 1 | 125 | 300 | 25.67 | -- | 80 | 105.67 |
| 2 | 250 | 300 | 19.65 | -- | 80 | 99.65 |
| 3 | 375 | 300 | 16.12 | -- | 80 | 96.12 |
| 4 | 500 | 30 | -- | 33.62 | 40 | 73.62 |
| 5 | 625 | 30 | -- | 31.69 | 40 | 71.69 |
| 6 | 750 | 30 | -- | 30.10 | 40 | 70.10 |
| 7 | 875 | 30 | -- | 28.76 | 40 | 68.76 |
| 8 | 1000 | 30 | -- | 27.60 | 40 | 67.60 |
| 9 | 1125 | 30 | -- | 26.58 | 40 | 66.58 |
| 10 | 1250 | 30 | -- | 25.67 | 40 | 65.67 |

Limit Calculation and transfer to 3m test distance:
If the frequency between 9 – 490kHz,
Limit = 20log(2400/f(kHz) + 40log(300/3)

If the frequency between 490 kHz – 1.705MHz
Limit = 20log(24000/f(kHz) + 40log(30/3)

## 2.5 Configuration of Tested System

**Fig. 2-1 Configuration of Tested System**

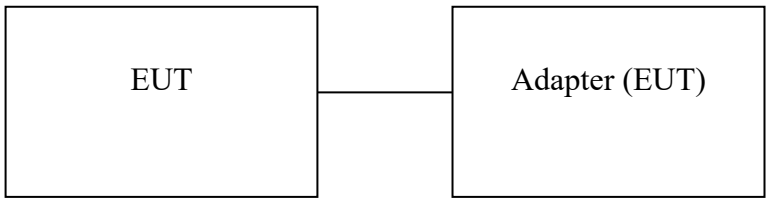



**Table 2-1 Equipment Used in Tested System**

| Item | Equipment | Mfr/Brand | Model/ Type No. | Series No. | Data Cable | Power Cord |
|---|---|---|---|---|---|---|
| 1 | N/A | | | | | |

## 3. Summary of Test Results

| FCC Rules | Description Of Test | Result |
|---|---|---|
| §15.207 | Conducted Emission | N/A |
| §15.209 | Radiated Emission | Compliant |

## 4. Description of test modes

The EUT has been tested under continuous operating condition with a Test Kit. The Frequency 125kHz was chosen for testing.

The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1,E2 mode) three axis modes. Worse case E1 mode.

Note: Test item list below has been re-verify:

1. Emission Bandwidth Test
2. Radiated Emission Test

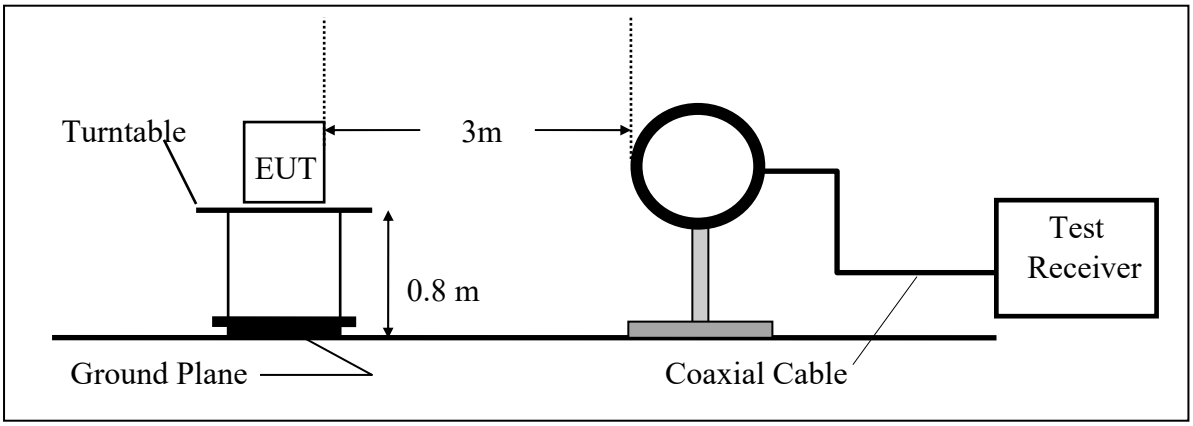
# 5. Emission Bandwidth Test

## 5.1 Measurement Procedure:

The spectrum analyzer span was set to 2 to 5 times the estimated bandwidth of the emission. The RBW was set from 1% to 5% of the estimated emission bandwidth. The trace was set to max hold with a peak detector active. The marker-delta function of the analyzer, set at 20 dB below the highest peak, was utilized to determine the 20 dB bandwidth of the emission.

The 99% occupied bandwidth was measured with the spectrum analyzer span set to fully display the emission, including the emissions skirts. The RBW was set from 1% and 5% of the estimated 99%bandwidth. The occupied 99% bandwidth was measured by using the occupied bandwidth function of the spectrum analyzer set to 99% with a peak detector.

## 5.2 Test Setup

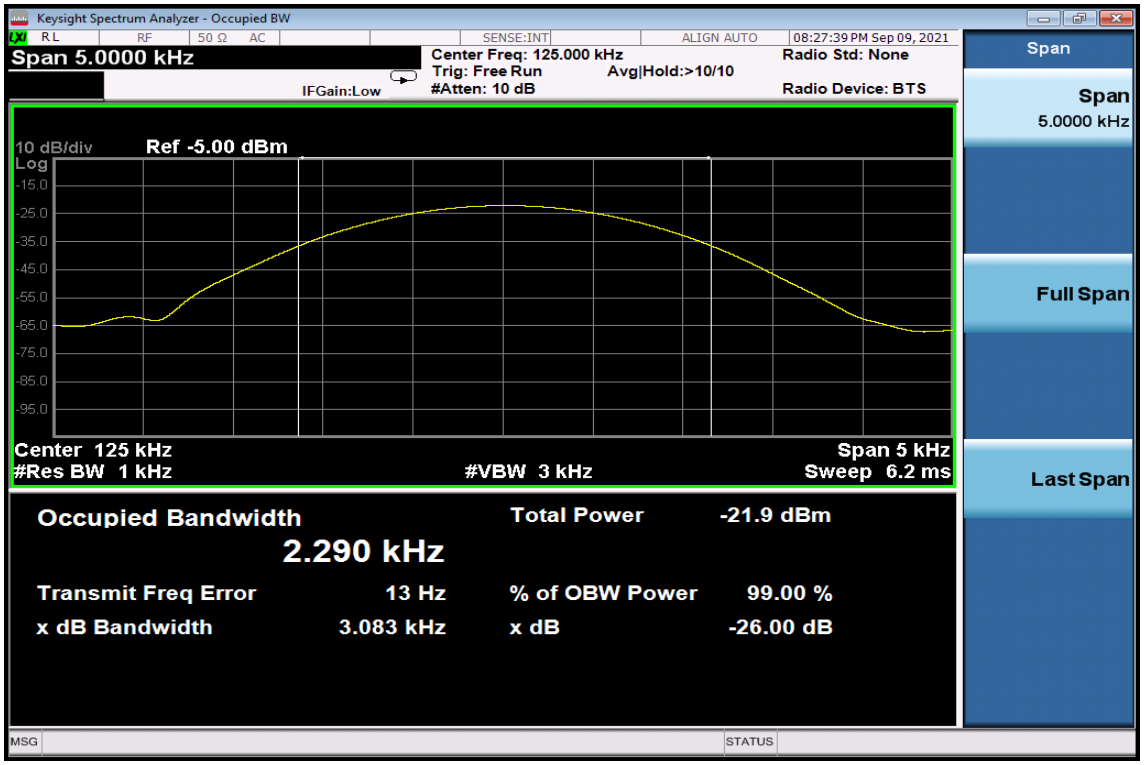



## 5.3 Measurement Equipment Used:

| Chamber 19(966) | | | | | |
|---|---|---|---|---|---|
| **Equipment Type** | **Manufacturer** | **Model Number** | **Serial Number** | **Last Cal.** | **Cal Due.** |
| Spectrum analyzer | R&S | FSP40 | 100116 | 8/18/2021 | 8/18/2022 |
| EMI Receiver | R&S | ESR3 | 102461 | 5/05/2021 | 5/05/2022 |
| Loop Antenna(9K-30M) | EM | EM-6879 | 271 | 05/21/2020 | 05/21/2022 |
| Preamplifier (9kHz-1GHz) | HP | 8447F | 3113A04621 | 06/22/2021 | 06/22/2022 |
| Preamplifier (1GHz - 26GHz) | EM | EM01M26G | 060681 | 05/07/2021 | 05/07/2022 |

## 5.4 Measurement Result:

| Frequency (kHz) | 26dB Bandwidth (kHz) | 99% Occupied Bandwidth (kHz) |
|---|---|---|
| 125 | 3.083 | 2.290 |



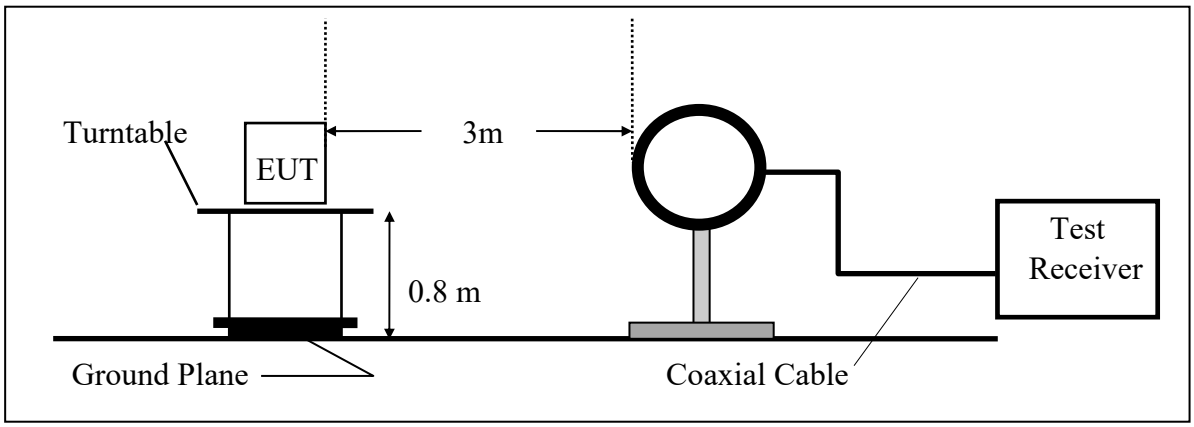
# 6. Radiated Emission Test

## 6.1 Measurement Procedure

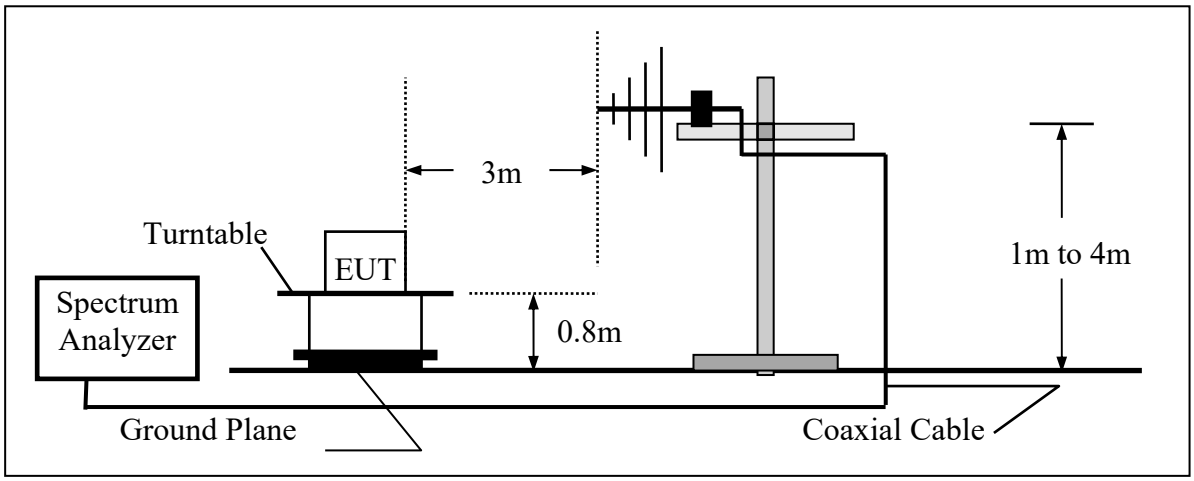
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

## 6.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 30MHz




(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



## 6.3 Measurement Equipment Used:

| Location | Equipment Name | Brand | Model | S/N | Last Cal. Date | Next Cal. Date |
|---|---|---|---|---|---|---|
| Chamber 19 | Signal analyzer | R&S | FSV40 | 101919 | 8/18/2021 | 8/18/2022 |
| Chamber 19 | EMI Receiver | R&S | ESR3 | 102461 | 5/05/2021 | 5/05/2022 |
| Chamber 19 | Loop Antenna | EM | EM-6879 | 271 | 05/21/2020 | 05/21/2022 |
| Chamber 19 | Bilog Antenna (30MHz-1GHz) | Schwarzbeck | VULB9168 w 6dB Att. | 9168-736 | 2/22/2021 | 2/22/2022 |
| Chamber 19 | Horn antenna (1GHz-18GHz) | ETS LINDGREN | 3117 | 00218718 | 09/25/2021 | 09/25/2022 |
| Chamber 19 | Horn antenna (18GHz-26GHz) | Com-power | AH-826 | 081001 | 11/23/2020 | 11/23/2021 |
| Chamber 19 | Horn antenna (26GHz-40GHz) | Com-power | AH-640 | 100A | 03/11/2021 | 03/11/2022 |
| Chamber 19 | Preamplifier (9kHz-1GHz) | HP | 8447F | 3113A04621 | 06/22/2021 | 06/22/2022 |
| Chamber 19 | Preamplifier (1GHz - 26GHz) | EM | EM01M26G | 060681 | 05/07/2021 | 05/07/2022 |
| Chamber 19 | Preamplifier (26GHz-40GHz) | MITEQ | JS4-26004000-27-5A | 818471 | 05/07/2021 | 05/07/2022 |
| Chamber 19 | RF Cable (9kHz-18GHz) | Huber Suhner & Woken | Sucoflex 104A & 18GHz SMA(M)-SMA(M)-10M | MY817/4A & 20200525 | 12/25/2020 | 12/25/2021 |
| Chamber 19 | RF Cable (18GHz-40GHz) | HUBER SUHNER | Sucoflex 102 | 27963/2&37421/2 | 11/19/2020 | 11/19/2021 |
| Chamber 19 | Signal Generator | Anritsu | MG3692A | 20311 | 01/03/2021 | 01/03/2022 |
| Chamber 19 | Test Software | Audix | E3 Ver:6.12023 | N/A | N/A | N/A |

## 6.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

**FS = RA + AF + CL - AG**

Average Value = Peak Value + 20 Log (Ton/Tp) ……. Pulse Modulation

| | | |
|---|---|---|
| Where | FS = Field Strength | CL = Cable Attenuation Factor (Cable Loss) |
| | RA = Reading Amplitude | AG = Amplifier Gain |
| | AF = Antenna Factor | |

## 6.5 Measurement Result

**Fundamental Measurement Result**

Operation Mode : TX CH
Fundamental Frequency : 125kHz
Temp : 25 ℃
Test Date : 2021/09/09
Test By : Barry
Hum. : 60%

| Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H |
|---|---|---|---|---|---|---|---|
| 0.12 | 70.52 | 30.49 | 101.01 | 125.00 | -23.99 | Peak | VERTICAL |
| | | | | | | | |
| 0.12 | 66.24 | 30.49 | 96.73 | 125.00 | -28.27 | Peak | HORIZONTAL |

Remark:

1 Measurement distance is 3 m.

2 The IF bandwidth of SPA was 10kHz, VBW=30kHz.

**Radiated Spurious Emission Measurement Result (9 kHz~30 MHz)**

Operation Mode: Transmitting Mode
Test Date: 2021/09/09
Fundamental Frequency: 125kHz
Test By: Barry
Temperature : 25 ℃
Humidity : 65 %

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H |
|---|---|---|---|---|---|---|---|---|
| 1 | 0.19 | 48.03 | 26.82 | 74.85 | 117.78 | -42.93 | Peak | VERTICAL |
| 2 | 0.37 | 38.15 | 21.11 | 59.26 | 107.12 | -47.86 | Peak | VERTICAL |
| 3 | 0.61 | 32.16 | 17.52 | 49.68 | 72.00 | -22.32 | Peak | VERTICAL |
| 4 | 1.78 | 34.86 | 12.45 | 47.31 | 69.54 | -22.23 | Peak | VERTICAL |
| 5 | 3.61 | 23.27 | 10.38 | 33.65 | 69.54 | -35.89 | Peak | VERTICAL |
| 6 | 8.89 | 17.50 | 11.26 | 28.76 | 69.54 | -40.78 | Peak | VERTICAL |
| | | | | | | | | |
| 1 | 0.22 | 46.73 | 25.54 | 72.27 | 116.00 | -43.73 | Peak | HORIZONTAL |
| 2 | 0.61 | 33.01 | 17.52 | 50.53 | 72.00 | -21.47 | Peak | HORIZONTAL |
| 3 | 1.78 | 37.69 | 12.45 | 50.14 | 69.54 | -19.40 | Peak | HORIZONTAL |
| 4 | 3.58 | 25.77 | 10.39 | 36.16 | 69.54 | -33.38 | Peak | HORIZONTAL |
| 5 | 9.97 | 18.49 | 11.45 | 29.94 | 69.54 | -39.60 | Peak | HORIZONTAL |
| 6 | 20.31 | 17.86 | 10.56 | 28.42 | 69.54 | -41.12 | Peak | HORIZONTAL |

Remark:

1 Measurement distance is 3 m.

2 The IF bandwidth of SPA was 10kHz, VBW=30kHz.

**Radiated Spurious Emission Measurement Result (30 MHz – 1 GHz)**

Operation Mode: Transmitting Mode
Test Date: 2021/09/09
Fundamental Frequency: 125kHz
Test By: Barry
Temperature : 25 ℃
Humidity : 65 %

| No | Freq MHz | Reading dBuV | Factor dB | Level dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol V/H |
|---|---|---|---|---|---|---|---|---|
| 1 | 431.58 | 37.94 | -1.78 | 36.16 | 46.00 | -9.84 | Peak | VERTICAL |
| 2 | 455.83 | 38.81 | -1.38 | 37.43 | 46.00 | -8.57 | Peak | VERTICAL |
| 3 | 529.55 | 36.80 | -0.38 | 36.42 | 46.00 | -9.58 | Peak | VERTICAL |
| 4 | 706.09 | 35.96 | 2.97 | 38.93 | 46.00 | -7.07 | Peak | VERTICAL |
| 5 | 740.04 | 36.29 | 3.71 | 40.00 | 46.00 | -6.00 | Peak | VERTICAL |
| 6 | 773.99 | 36.45 | 4.44 | 40.89 | 46.00 | -5.11 | Peak | VERTICAL |
| | | | | | | | | |
| 1 | 117.30 | 40.24 | -8.09 | 32.15 | 43.50 | -11.35 | Peak | HORIZONTAL |
| 2 | 522.76 | 37.08 | -0.48 | 36.60 | 46.00 | -9.40 | Peak | HORIZONTAL |
| 3 | 551.86 | 35.78 | -0.05 | 35.73 | 46.00 | -10.27 | Peak | HORIZONTAL |
| 4 | 583.87 | 37.12 | 0.75 | 37.87 | 46.00 | -8.13 | Peak | HORIZONTAL |
| 5 | 606.18 | 35.43 | 1.44 | 36.87 | 46.00 | -9.13 | Peak | HORIZONTAL |
| 6 | 627.52 | 34.71 | 1.74 | 36.45 | 46.00 | -9.55 | Peak | HORIZONTAL |

Remark:

1 Measuring frequencies from the lowest internal frequency to the 1GHz.
2 Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak / QP detector mode.
3 The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz, VBW=300kHz.