



# RADIO TEST REPORT

**FCC ID** : ZPNB122037TIRVBSD  
**Equipment** : BSD 77GHz Trailer RV System  
**Brand Name** : Cub  
**Model Name** : B122-037、A009-010、A009-026、B122-037XXX-XX、  
B122-037XXX-XXX、A009-010XXX-XX、A009-010XXX-XXX、  
A009-026XXX-XX、A009-026XXX-XXX、A009-XXX-XX、  
A009-XXX-XXX (Please refer to section 1.1.5 of the test report for  
detailed information.)  
**Applicant** : CUB ELECPARTS INC  
No.6,Lane 546, Sec. 6, Changlu Road, Fuhsin Township,  
Changhua County, Taiwan 506  
**Manufacturer** : CUB ELECPARTS INC  
No.6,Lane 546, Sec. 6, Changlu Road, Fuhsin Township,  
Changhua County, Taiwan 506  
**Standard** : 47 CFR FCC Part 95M

The product was received on May 28, 2021, and testing was started from May 28, 2021 and completed on Jun. 22, 2021. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

**Sportun International Inc. Hsinchu Laboratory**  
No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



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### Appendix A. Test Photos

#### Photographs of EUT v01



## History of this test report



## Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	95.303	Occupied Bandwidth	PASS	-
3.2	95.3367	Radiated E.I.R.P Power	PASS	-
3.3	95.3379	Transmitter Radiated Unwanted Emissions	PASS	-
3.4	95.3379	Frequency Stability	PASS	-

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

**Comments and Explanations:**

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

Reviewed by: Sam Chen

Report Producer: Wendy Pan



## 1 General Description

### 1.1 Information

#### 1.1.1 RF General Information

RF General Information			
Frequency Range (GHz)	Operating Frequency Range (GHz)	Test Frequency (GHz)	Modulation
76-81	76.019~76.705	76.36	FMCW

#### 1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
1	Texas Instruments	VS-95A043	PCB	N/A	10
2	Texas Instruments	VS-95A043	PCB	N/A	10

Note: The above information was declared by manufacturer.

#### 1.1.3 EUT Operational Condition

EUT Power Type	Host System			
Supply Voltage	<input type="checkbox"/>	AC	State AC voltage	-
Supply Voltage	<input checked="" type="checkbox"/>	DC	State DC voltage	12

#### 1.1.4 Test Signal Duty Cycle

Test Signal Duty Cycle			
<input checked="" type="checkbox"/>	Continuous transmission – 21.94%		
<input type="checkbox"/>	Transmissions occur regularly in time - ...%		

**1.1.5 Table for Multiple Listing**

EUT No.	Model Name	Description
1	B122-037	
-	A009-010	
-	A009-026	
-	B122-037XXX-XX, B122-037XXX-XXX, A009-010XXX-XX, A009-010XXX-XXX, A009-026XXX-XX, A009-026XXX-XXX, A009-XXX-XX and A009-XXX-XXX (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.)	All the models are identical, the difference model name for difference as marketing strategy.

Note 1: From the above model B122-037 was selected as representative model for the test and its data was recorded in this report.

Note 2: The above information was declared by manufacturer.



## 1.2 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ◆ 47 CFR FCC Part 95M
- ◆ ANSI C63.10 - Testing Unlicensed Wireless Devices
- ◆ KDB653005 D01 76-81 GHz Radars v01r01

The following reference test guidance is not within the scope of accreditation of TAF.

- ◆ FCC KDB 414788 D01 v01r01

## 1.3 Testing Location Information

Testing Location Information				
Test Lab. : Sporton International Inc. Hsinchu Laboratory				
Hsinchu (TAF: 3787)	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.) TEL: 886-3-656-9065	FAX: 886-3-656-9085		
		Test site Designation No. TW3787 with FCC.		
		Conformity Assessment Body Identifier (CABID) TW3787 with ISED.		

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
Radiated (For frequency stability)	TH03-CB	Eddie Weng	22.2-23.6 / 62-68	May 28, 2021 ~ Jun. 22, 2021
Radiated (For below 1GHz)	03CH05-CB	Eason Chen	24.3-25.3 / 63-64	May 28, 2021 ~ Jun. 22, 2021
Radiated (For 1-18GHz and above 40GHz)	03CH05-CB	Eason Chen	24.3-25.2 / 63-65	May 28, 2021 ~ Jun. 22, 2021
Radiated (For 18-40GHz)	03CH06-CB	Eason Chen	24-25.2 / 62-65	May 28, 2021 ~ Jun. 22, 2021

## 1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Test Items	Uncertainty	Remark
Radiated Emission (9kHz ~ 30MHz)	4.2 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.5 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.8 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.7 dB	Confidence levels of 95%
Radiated Emission (40GHz ~ 60GHz)	4.2 dB	Confidence levels of 95%
Radiated Emission (60GHz ~ 90GHz)	4.2 dB	Confidence levels of 95%
Radiated Emission (90GHz ~ 200GHz)	5.1 dB	Confidence levels of 95%
Radiated Emission (200GHz ~ 280GHz)	5.5 dB	Confidence levels of 95%
Temperature	1.7°C	Confidence levels of 95%



## 2 Test Configuration of EUT

### 2.1 Test Channel Frequencies Configuration

Test Frequencies (GHz)	76.36
Software Setting	Default

### 2.2 Conformance Tests and Related Test Frequencies

Test Item	Test Frequencies (GHz)
Occupied Bandwidth	76.36
Radiated E.I.R.P Power	76.36
Transmitter Spurious Emissions (below 1 GHz)	76.36
Transmitter Spurious Emissions (1 GHz-40 GHz)	76.36
Transmitter Spurious Emissions (above 40 GHz)	76.36
Frequency Stability	76.36



## 2.3 The Worst Case Measurement Configuration

The Worst Case Mode for Following Conformance Tests	
Tests Item	Occupied Bandwidth Radiated E.I.R.P Power Frequency Stability
Test Condition	Radiated measurement
Operating Mode	CTX

The Worst Case Mode for Following Conformance Tests	
Tests Item	Transmitter Radiated Unwanted Emissions
Test Condition	Radiated measurement
Operating Mode < 1GHz	CTX
Operating Mode > 1GHz	CTX

Note: The EUT can only be used at X axis position.

## 2.4 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

## 2.5 Accessories

N/A

## 2.6 Support Equipment

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
A	Power Supply	Advanced	LPS-305	N/A
B	Left Side Blind Spot Indicator set	Cub	21-006204-01 25-360206-11 A009-010NA1-A0 25-360240-01 C200-012NA1-A0	N/A
C	Right Side Blind Spot Indicator set	Cub	21-006204-01 25-360206-11 A009-010NA1-A0 25-360240-01 C200-012NA1-A0	N/A



## 2.7 Far Field Boundary Calculations

The far-field boundary is given as:

$$\text{far field} = (2 * L^2) / \lambda$$

where:

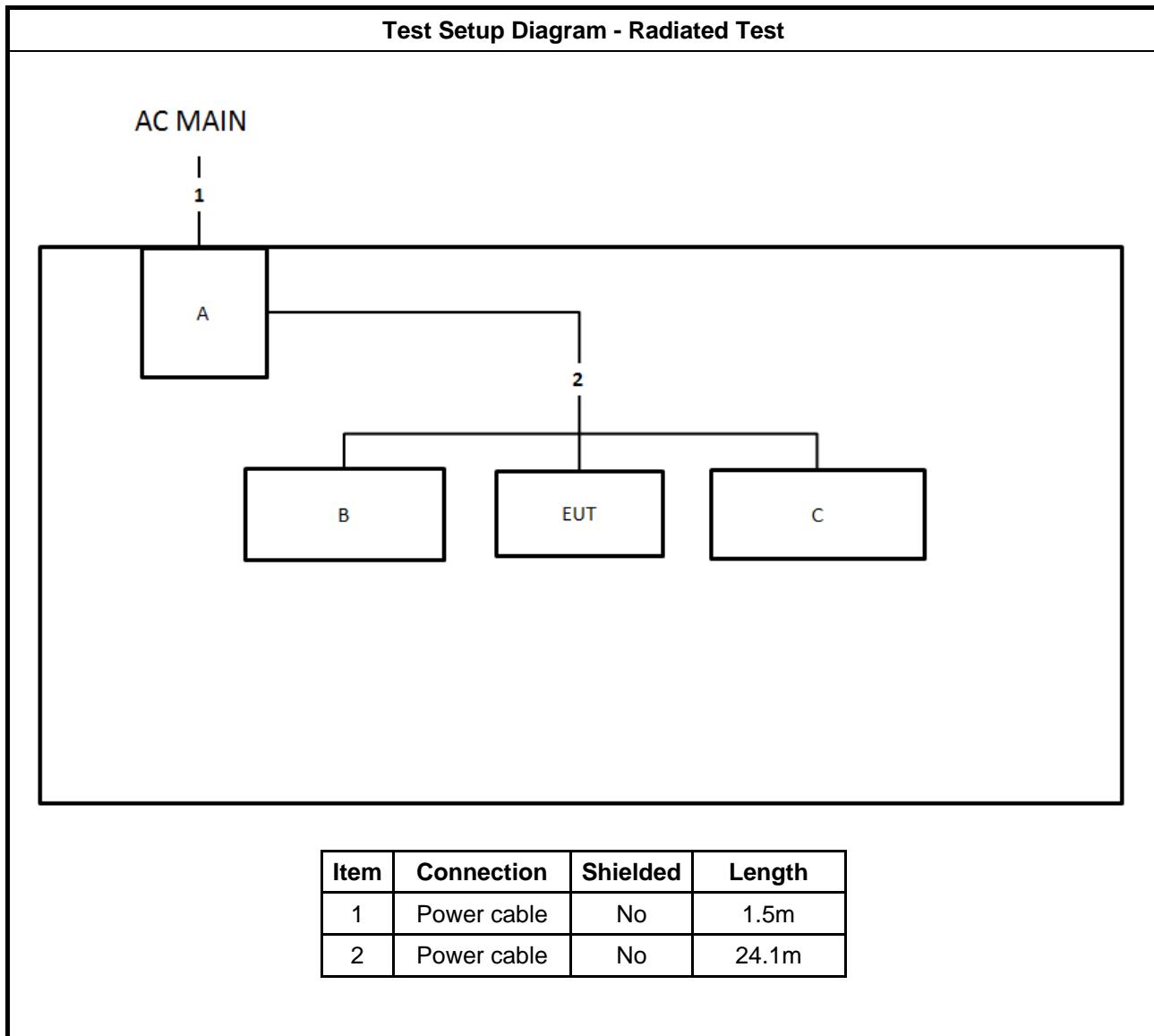
L = Largest Antenna Dimension, including the reflector, in meters

$\lambda$ = wavelength in meters

Far Field (m)				
Frequency (GHz)	L (m)	Lambda (m)	d(Far Field) (m)	d(Far Field) (cm)
76.36	0.03	0.0039288	0.458	45.82



## 2.8 Test Setup Diagram



## 3 Transmitter Test Result

### 3.1 Occupied Bandwidth

#### 3.1.1 Occupied Bandwidth (OBW) Limit

Occupied Bandwidth (EBW) Limit
Information only

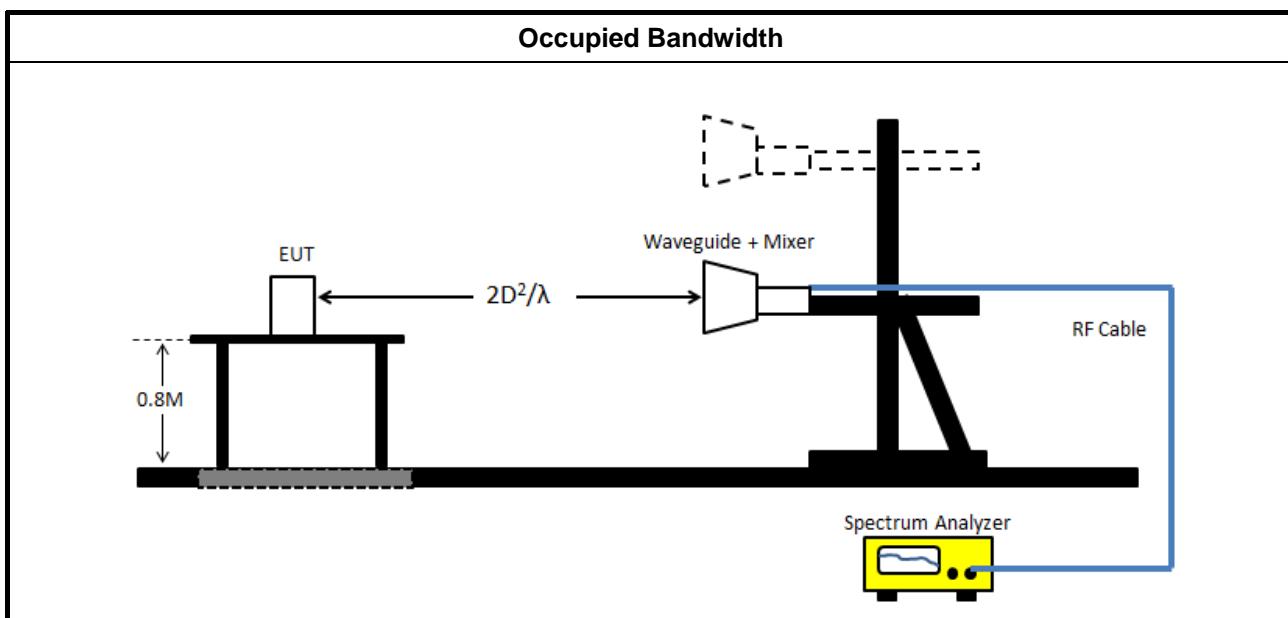
#### 3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

#### 3.1.3 Test Procedures

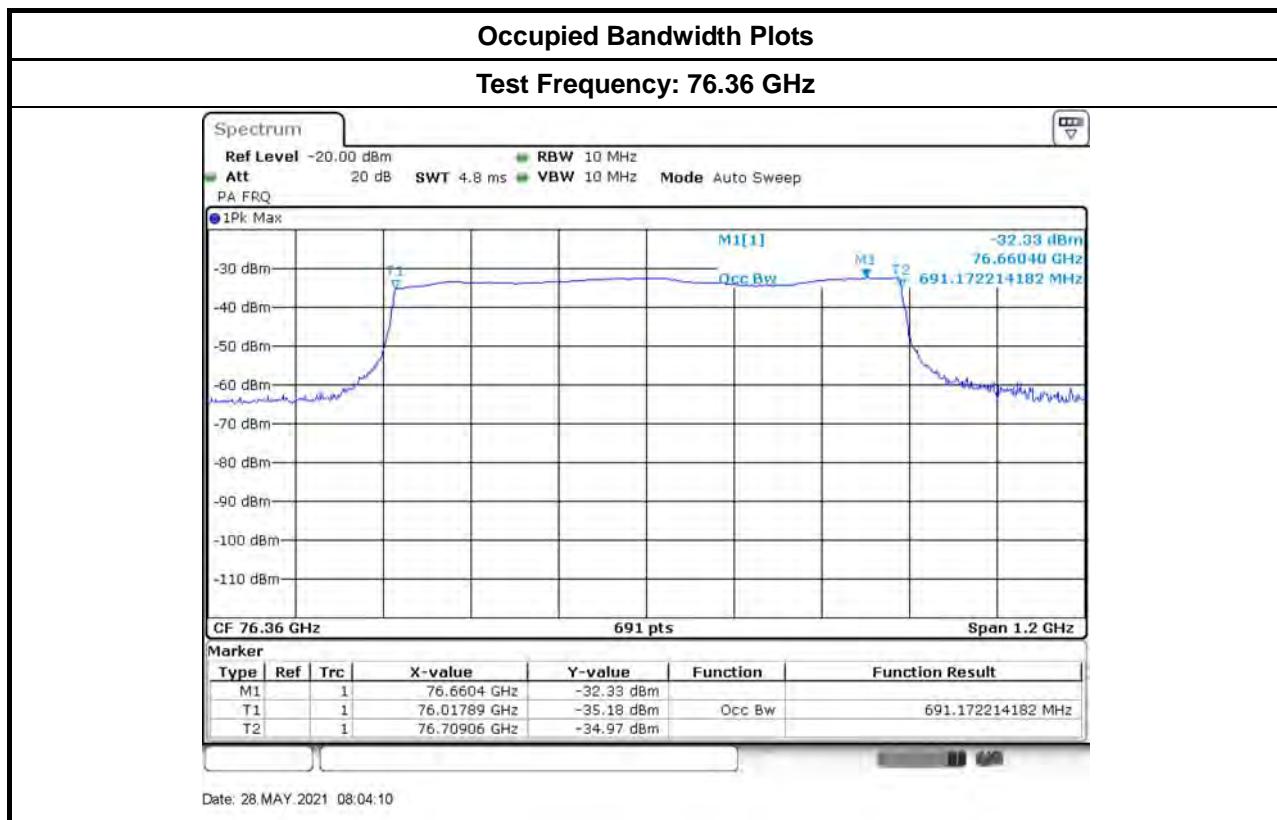
Test Method	
<input checked="" type="checkbox"/>	For the Occupied bandwidth shall be measured using one of the options below:
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 7.8.7 for EBW measurement.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 6.9.2 for occupied bandwidth testing.
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 9 for radiated measurement.
	<input checked="" type="checkbox"/> Radiated test was conducted at far-field distance. the distance from the radiating element of the EUT to the edge of the far field may be calculated from $[r \geq 2D^2/\lambda]$ r is the distance from the radiating element of the EUT to the edge of the far field, in m D is the largest dimension of both the radiating element and the test antenna (horn), in m $\lambda$ is the wavelength of the emission under investigation [300/f (MHz)], in m

#### 3.1.4 Test Setup



**3.1.5 Test Result of Occupied Bandwidth**

<b>Test Results</b>		
<b>Test Freq. (GHz)</b>	<b>99% Occupied Bandwidth (MHz)</b>	<b>Limit (MHz)</b>
76.36	691.17	N/A





## 3.2 Radiated E.I.R.P Power

### 3.2.1 Radiated E.I.R.P Power Limit

Radiated E.I.R.P Power	
<input checked="" type="checkbox"/> 76-81 GHz Band:	
	<input checked="" type="checkbox"/> Peak: EIRP 55 dBm [279uW/cm <sup>2</sup> at 3m] Average: EIRP 50 dBm [88uW/cm <sup>2</sup> at 3m]

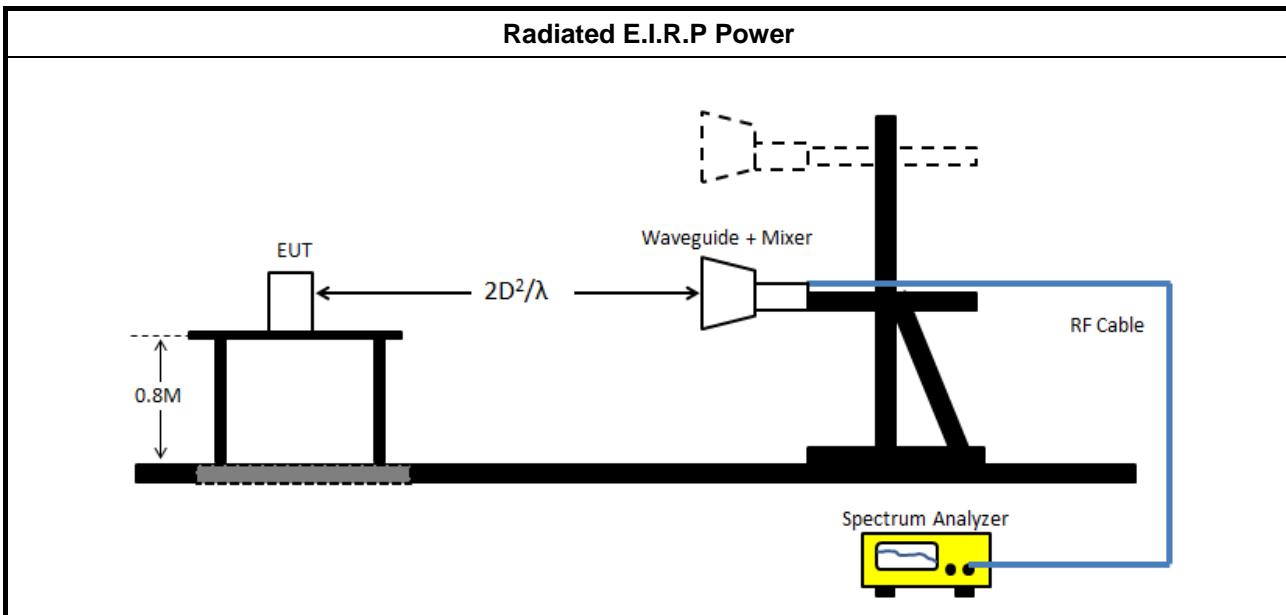
### 3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.2.3 Test Procedures

Test Method	
<input checked="" type="checkbox"/> For the Occupied bandwidth shall be measured using one of the options below:	
<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 9 for radiated measurement.	
	<input checked="" type="checkbox"/> Radiated test was conducted at far-field distance. the distance from the radiating element of the EUT to the edge of the far field may be calculated from $[r \geq 2D^2/\lambda]$ $r$ is the distance from the radiating element of the EUT to the edge of the far field, in m $D$ is the largest dimension of both the radiating element and the test antenna (horn), in m $\lambda$ is the wavelength of the emission under investigation [300/f (MHz)], in m
	<input checked="" type="checkbox"/> The measured power level is converted to EIRP using the Friis equation: $E_{\text{Meas}} = 126.8 - 20\log(\lambda) + P - G$ where $E$ is the field strength of the emission at the measurement distance, in dB $\mu$ V/m $P$ is the power measured at the output of the test antenna, in dBm $\lambda$ is the wavelength of the emission under investigation [300/fMHz], in m $G$ is the gain of the test antenna, in dBi  $\text{EIRP} = E_{\text{Meas}} + 20 \log(d_{\text{Meas}}) - 104.7$ where $E_{\text{IRP}}$ is the equivalent isotropically radiated power, in dBm. $E_{\text{Meas}}$ is the field strength of the emission at the measurement distance, in dB $\mu$ V/m. $d_{\text{Meas}}$ is the measurement distance, in m.

### 3.2.4 Test Setup



### 3.2.5 Measurement Results Calculation

The measured Level is calculated using:

$$\text{EIRP} = \text{Read Level} - \text{Rx Gain} + 20 * \text{LOG}(4 * 3.14159 * \text{Distance} / (300 / (\text{Test Freq.} * 1000)))$$

$$\text{Power Density} = ((10^{(\text{EIRP}/10)/1000}) / (4 * 3.14159 * (\text{Specification Distance} * 100)^2)) * 1000000000000000$$

### 3.2.6 Test Result of Radiated E.I.R.P Power

Freq. (GHz)	Rx Gain (dBi)	P-Peak (dBm)	P-Average (dBm)	E-Meas- Peak (dBuV/m)	E-Meas- Average (dBuV/m)	Distance (m)	EIRP- Peak (dBm)	EIRP- Average (dBm)
76.36	23.9	-10.9	-24.51	140.11	126.50	0.50	29.29	15.68
EIRP Limit							55	50



### 3.3 Transmitter Radiated Unwanted Emissions

#### 3.3.1 Transmitter Radiated Unwanted Emissions Limit

Transmitter Radiated Unwanted Emissions Limit (Below 40 GHz)			
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960 - 40000	500	54	3

Frequency Range (GHz)	EIRP (dBm)	Power Density (pW/cm <sup>2</sup> @ 3m)
40 - 200	-1.7	600
200 - 231	0.5	1000

#### 3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

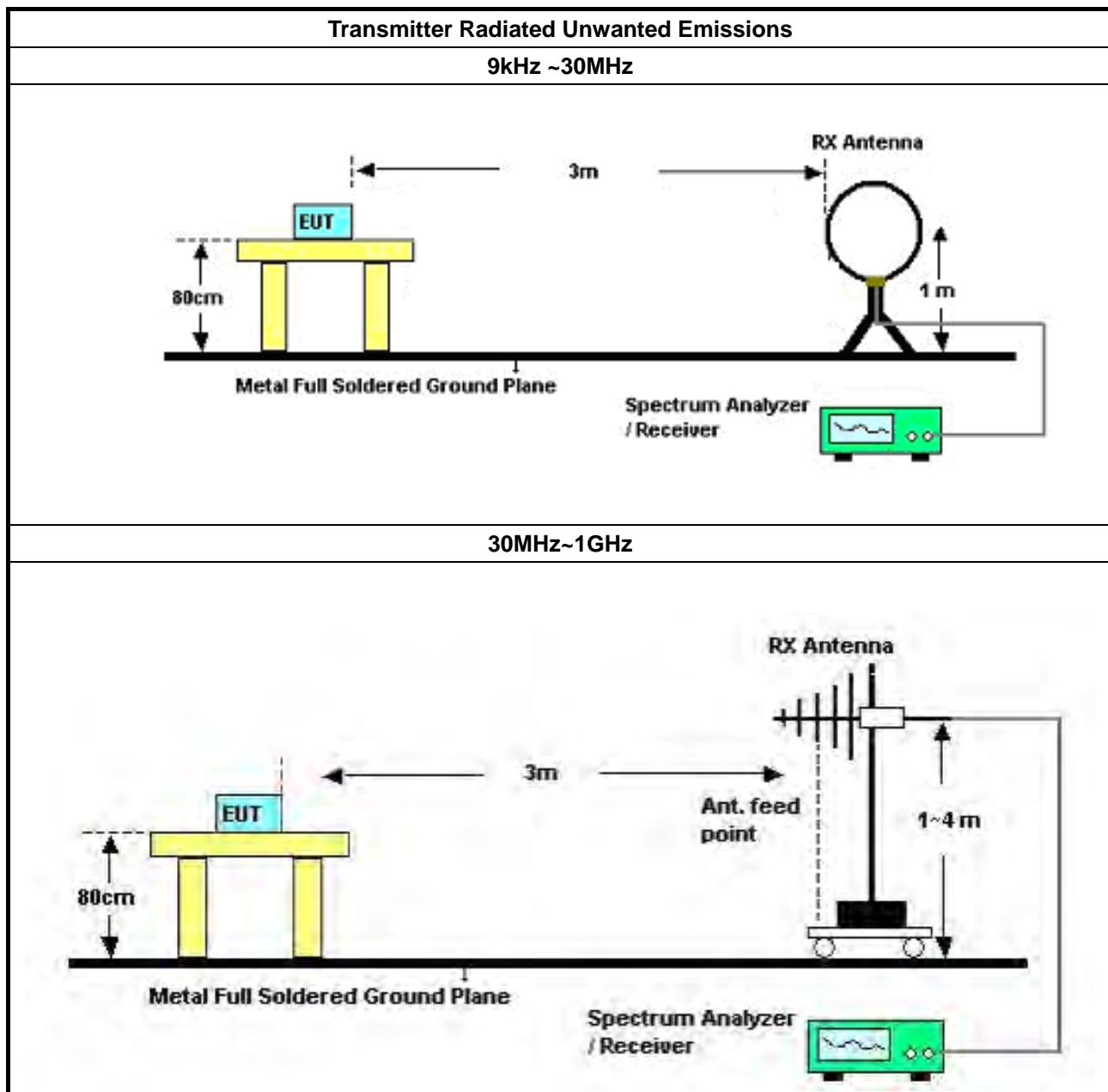
#### 3.3.3 Test Procedures

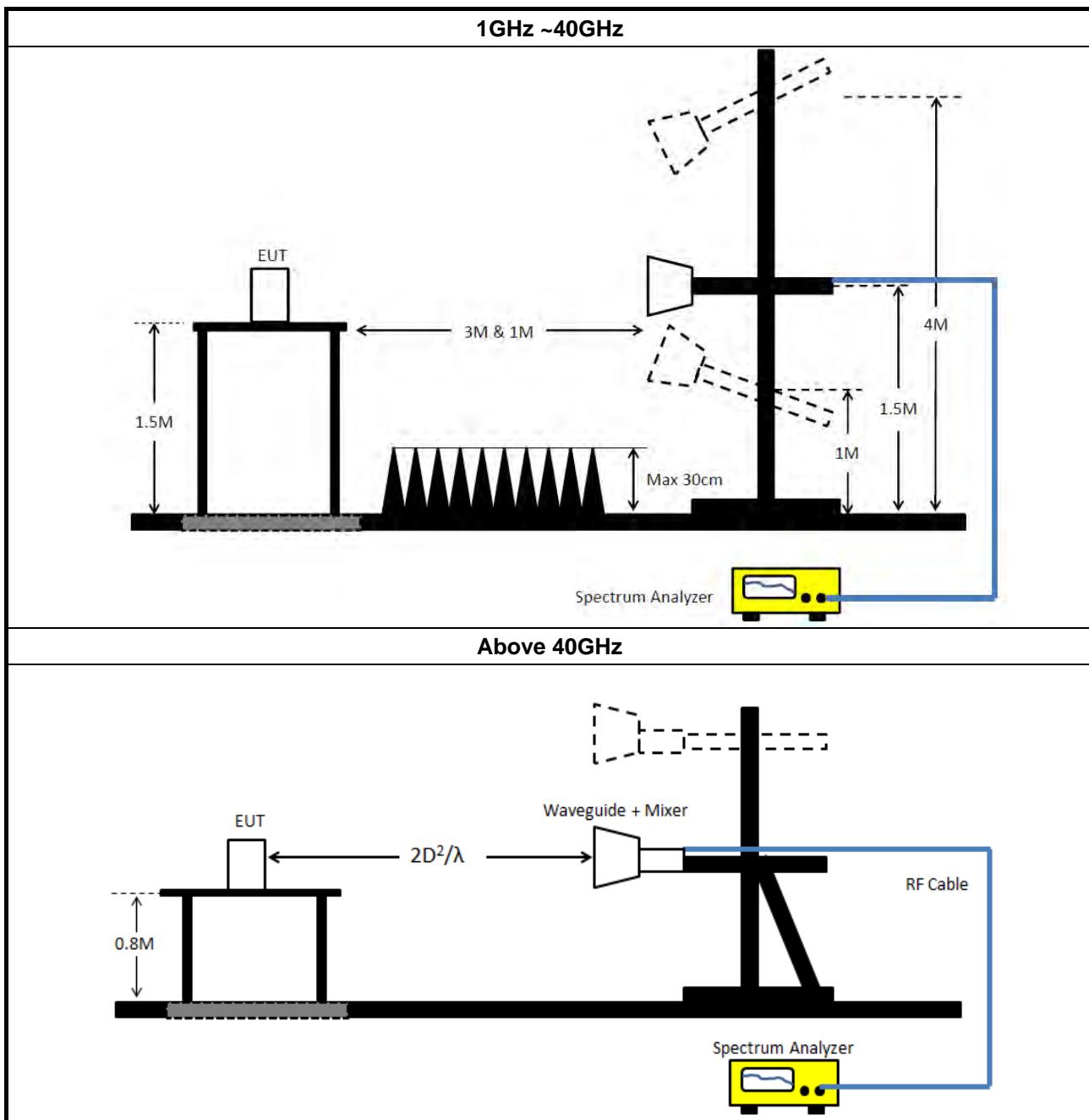
Test Method – General Information	
<input checked="" type="checkbox"/> For the transmitter unwanted emissions shall be measured using following options below:	
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 6.3 for unwanted emissions into non-restricted bands.
<input checked="" type="checkbox"/>	For unwanted emissions below 40GHz bands.
<input checked="" type="checkbox"/>	Radiated emissions below 40 GHz shall not exceed the general limits in LP0002 Section 2.8
<input checked="" type="checkbox"/>	Refer as ANSI C63.10, clause 4.1.4.2.3 (Video Averaging) average measurements using spectrum reduced video bandwidth ( $VBW \geq 10\text{Hz}$ ) - [duty cycle $\geq 98$ or external power trigger].
<input type="checkbox"/>	Refer as ANSI C63.10, clause 4.1.4.2.4 average value of pulsed emissions.
<input type="checkbox"/>	Refer as ANSI C63.10, clause 4.1.4.2.2 measurement procedure peak limit.



Test Method	
<input checked="" type="checkbox"/> For radiated measurement below 40GHz.	<input checked="" type="checkbox"/> Refer as ANSI C63.10, clause 6.3 through 6.6 for radiated emissions from below 40 GHz.
<input checked="" type="checkbox"/> For radiated measurement above 40GHz. Refer as ANSI C63.10, clause 9.12 for radiated measurement.	
<input checked="" type="checkbox"/>	Radiated test was conducted at far-field distance. the distance from the radiating element of the EUT to the edge of the far field may be calculated from $[r \geq 2D^2/\lambda]$ r is the distance from the radiating element of the EUT to the edge of the far field, in m D is the largest dimension of both the radiating element and the test antenna (horn), in m $\lambda$ is the wavelength of the emission under investigation [300/f (MHz)], in m
<input checked="" type="checkbox"/>	<p>The measured power level is converted to EIRP using the Friis equation: <math>E_{Meas} = 126.8 - 20\log(\lambda) + P - G</math></p> <p>where</p> <p><math>E</math> is the field strength of the emission at the measurement distance, in <math>\text{dB}\mu\text{V}/\text{m}</math> <math>P</math> is the power measured at the output of the test antenna, in <math>\text{dBm}</math> <math>\lambda</math> is the wavelength of the emission under investigation [300/fMHz], in m <math>G</math> is the gain of the test antenna, in <math>\text{dBi}</math></p> <hr/> <p><math>EIRP = E_{Meas} + 20 \log(d_{Meas}) - 104.7</math></p> <p>where</p> <p><math>EIRP</math> : is the equivalent isotropically radiated power, in <math>\text{dBm}</math>. <math>E_{Meas}</math> : is the field strength of the emission at the measurement distance, in <math>\text{dB}\mu\text{V}/\text{m}</math>. <math>d_{Meas}</math> : is the measurement distance, in m.</p> <hr/> <p>Equations to calculate power density Calculate the power density at the distance specified by the limit from the EIRP in watts using Equation:</p> $PD = \frac{EIRP_{Linear}}{4\pi d^2}$ <p>where</p> <p><math>PD</math> is the power density at the distance specified by the limit, in <math>\text{W}/\text{m}^2</math> <math>EIRP_{Linear}</math> is the equivalent isotropically radiated power, in watts <math>d</math> is the distance at which the power density limit is specified, in m.</p>

### 3.3.4 Test Setup





### 3.3.5 Measurement Results Calculation

The measured Level is calculated using:

For below 40GHz

Corrected Reading: Antenna factor (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(if applicable) = Level.

For above 40GHz

$EIRP = \text{Read Level} - \text{Rx Gain} + 20 * \text{LOG}(4 * 3.14159 * \text{Distance} / (300 / (\text{Test Freq.} * 1000)))$ .

$\text{Power Density} = ((10^{(EIRP/10)/1000}) / (4 * 3.14159 * (\text{Specification Distance} * 100)^2)) * 1000000000000000$ .



### **3.3.6 Test Result of Transmitter Radiated Unwanted Emissions (Below 30MHz)**

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

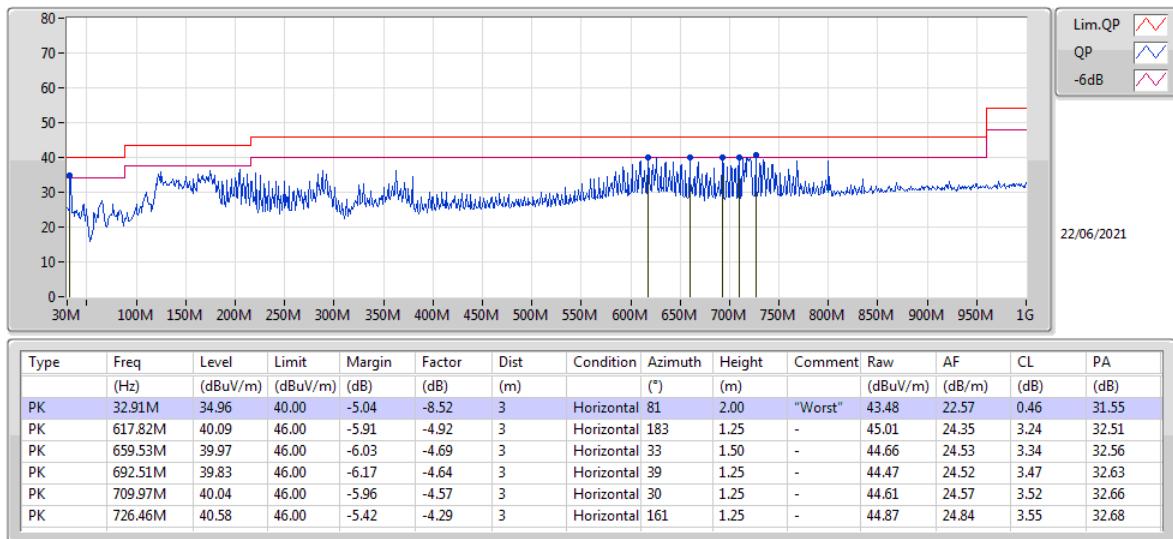
The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10 harmonic or 40 GHz, whichever is appropriate.



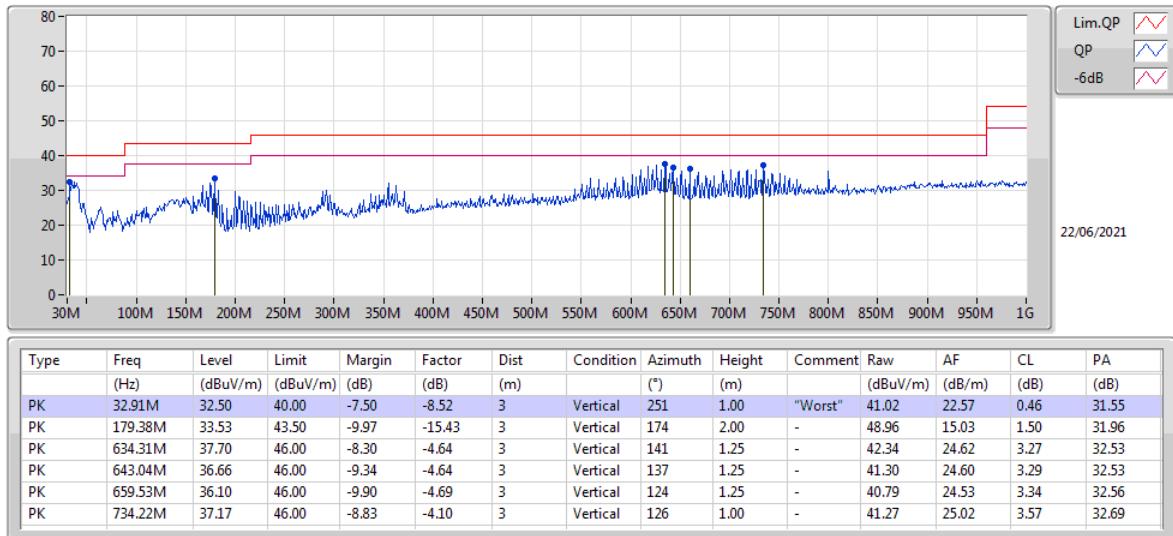
## 3.3.7 Test Result of Transmitter Radiated Unwanted Emissions (30MHz ~ 1GHz)

Test Range	30 MHz – 1000 MHz	Test Freq. (GHz)	76.36
Test Distance	3 m		

## Horizontal



## Vertical



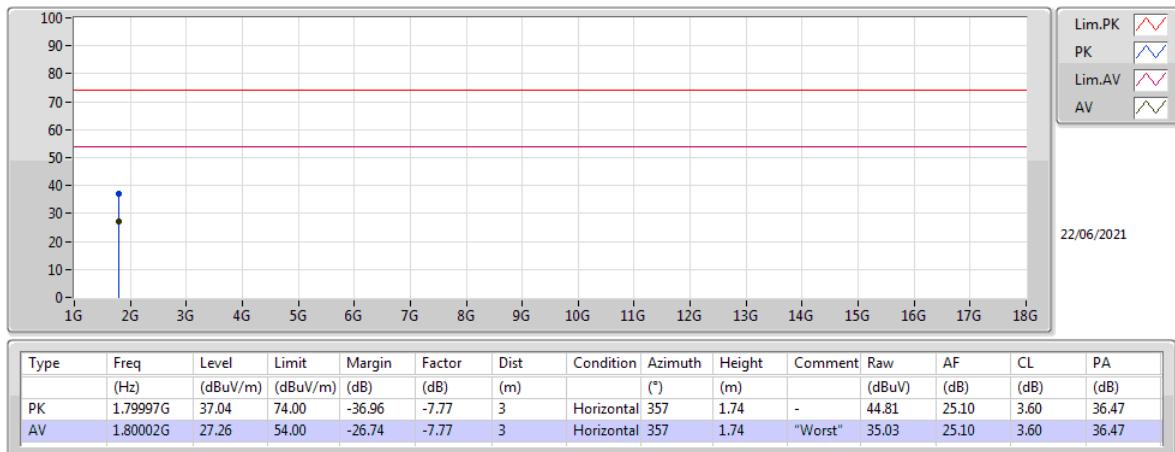
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.  
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)



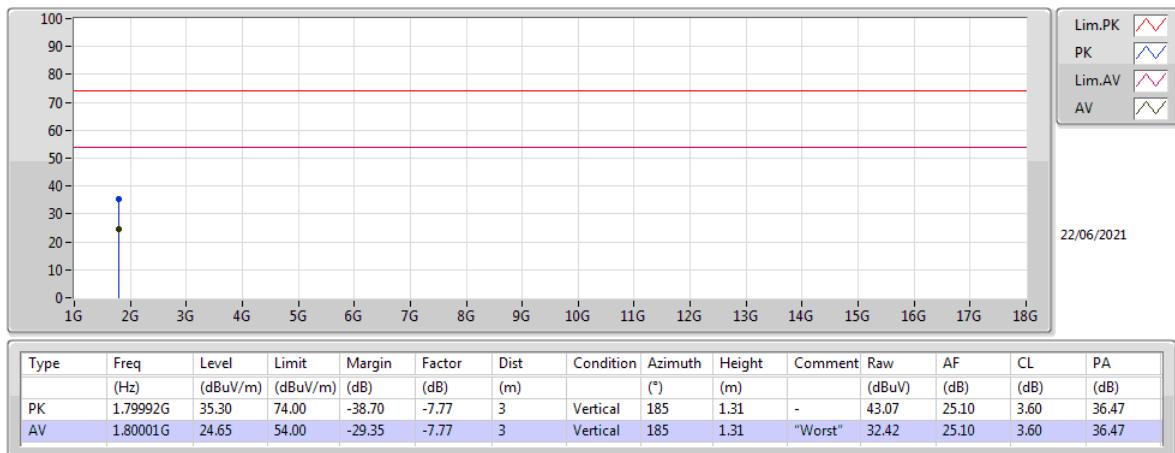
### 3.3.8 Test Result of Transmitter Radiated Unwanted Emissions (1GHz – 40GHz)

Test Range	1GHz – 18GHz	Test Freq. (GHz)	76.36
Test Distance	3 m		

#### Horizontal



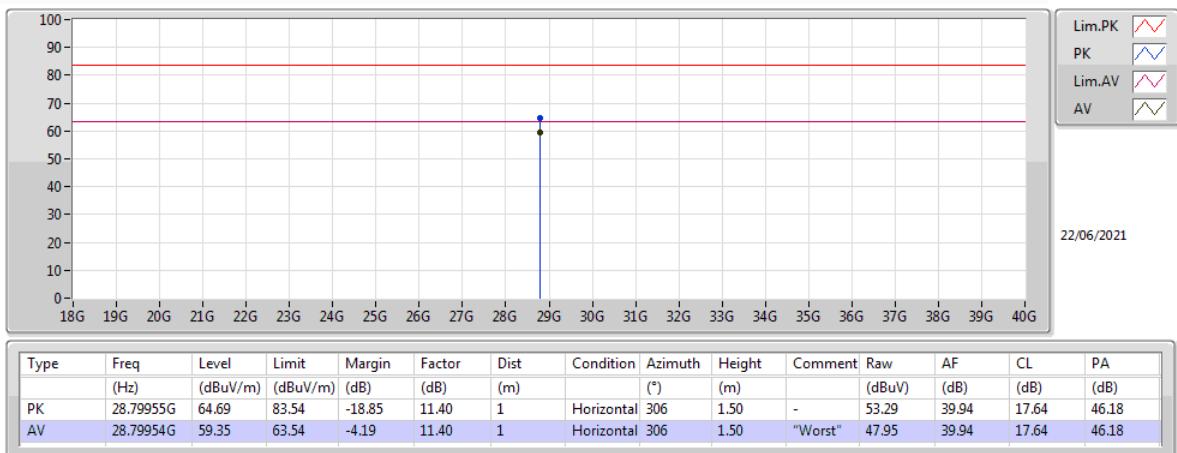
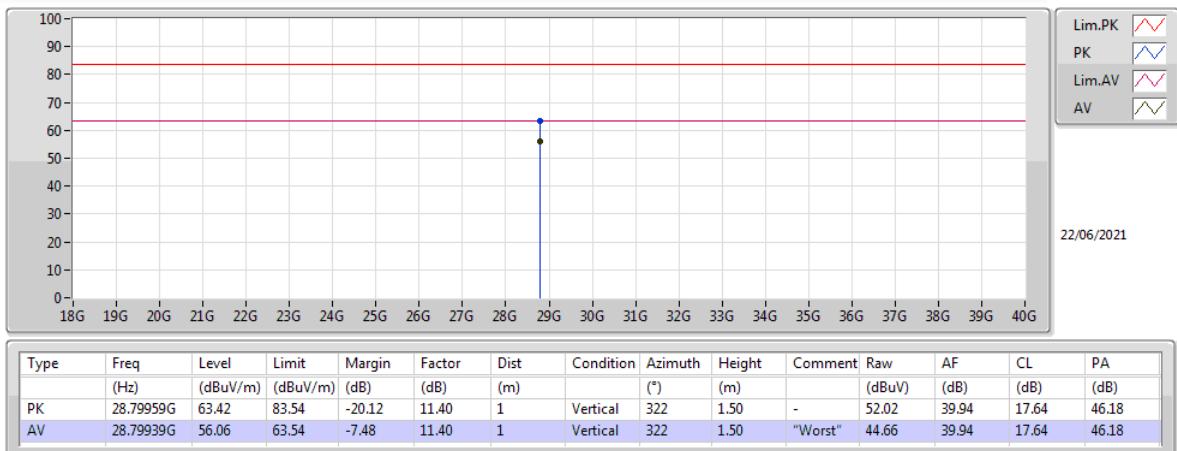
#### Vertical



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.  
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)



<b>Test Range</b>	18GHz – 40GHz	<b>Test Freq. (GHz)</b>	76.36
<b>Test Distance</b>	1 m		

**Horizontal****Mode 1****Vertical****Mode 1**

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.  
 Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)

**3.3.9 Test Result of Transmitter Radiated Unwanted Emissions (40GHz – 200GHz)**

Test Freq. (GHz)	Rx Gain (dBi)	Distance (m)	Read Worse Frequency (GHz)	Read Level (dBm)	EIRP (dBm)	Specification Distance (m)	Power Density (pW/cm^2)	Test Result
76.36	23.9	0.50	41.40	-81.83	-46.97	3	0.0178	PASS
Limit							600	-

**3.3.10 Test Result of Transmitter Radiated Unwanted Emissions (200GHz – 231GHz)**

Test Freq. (GHz)	Rx Gain (dBi)	Distance (m)	Read Worse Frequency (GHz)	Read Level (dBm)	EIRP (dBm)	Specification Distance (m)	Power Density (pW/cm^2)	Test Result
76.36	23.9	0.50	219.14	-65.3	-15.96	3	22.3928	PASS
Limit							1000	-



## 3.4 Frequency Stability

### 3.4.1 Frequency Stability Limit

#### Frequency Stability Limit

Fundamental emissions must be contained within the frequency bands specified in this 76-81GHz band during all conditions of operation. Equipment is presumed to operate over the temperature range -20 to +50 degrees Celsius with an input voltage variation of 85% to 115% of rated input voltage.

### 3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

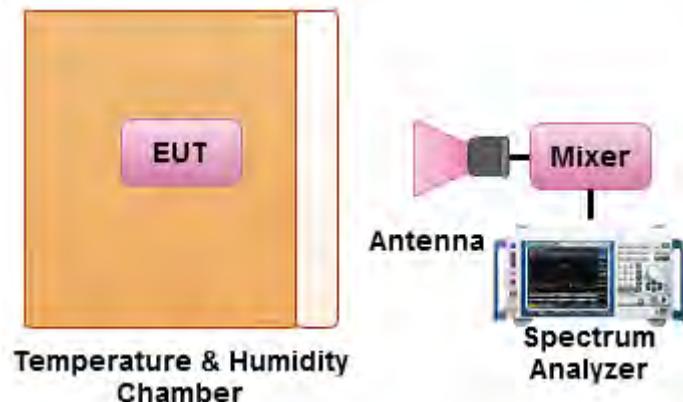
### 3.4.3 Test Procedures

#### Test Method

- For the frequency stability shall be measured using one of the options below:
  - Refer as ANSI C63.10, clause 9.14 for frequency stability measurement.
  - Refer as ANSI C63.10, clause 9 for radiated measurement.
- Radiated test was conducted at far-field distance. the distance from the radiating element of the EUT to the edge of the far field may be calculated from  $[r \geq 2D^2/\lambda]$   
 $r$  is the distance from the radiating element of the EUT to the edge of the far field, in m  
 $D$  is the largest dimension of both the radiating element and the test antenna (horn), in m  
 $\lambda$  is the wavelength of the emission under investigation [300/f (MHz)], in m
- The mixer may be placed outside the chamber in front of the temperature chamber door, and the chamber door opened for each reading.

### 3.4.4 Test Setup

#### Frequency Stability





### 3.4.5 Test Result of Frequency Stability

Test Freq. (GHz): 76.36

Test Temperature: (°C)	Measured Frequency (MHz)	Delta Frequency (kHz)	Limit (±kHz)
-20	76367.96	4485	Within band
-10	76367.96	4485	Within band
0	76367.96	4485	Within band
10	76367.24	3760	Within band
20	76363.48	Reference	Within band
30	76408.62	45145	Within band
40	76364.35	870	Within band
50	76363.62	145	Within band
60	76363.62	145	Within band
Test Voltage: (Vdc)	Measured Frequency (MHz)	Delta Frequency (kHz)	Limit (±kHz)
10.2	76362.17	-1305	within band
12	76363.48	Reference	within band
13.8	76366.51	3035	within band



## 4 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Loop Antenna	Teseq	HLA 6120	24155	9kHz - 30 MHz	Apr. 14, 2021	Apr. 13, 2022	Radiation (03CH05-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH05-CB	30 MHz ~ 1 GHz	Aug. 10, 2020	Aug. 09, 2021	Radiation (03CH05-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH05-CB	1GHz ~18GHz 3m	Nov. 08, 2020	Nov. 07, 2021	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESEQ & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 26, 2021	Mar. 25, 2022	Radiation (03CH05-CB)
Horn Antenna	SCHWARZBECK	BBHA9120D	BBHA 9120 D-1291	1GHz~18GHz	Sep. 05, 2020	Sep. 04, 2021	Radiation (03CH05-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2020	Jul. 20, 2021	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	Apr. 27, 2021	Apr. 26, 2022	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC12630SE	980287	1GHz – 26.5GHz	Jul. 03, 2020	Jul. 02, 2021	Radiation (03CH05-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 08, 2020	Jul. 07, 2021	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Nov. 10, 2020	Nov. 09, 2021	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESR7	102171	9kHz ~ 26GHz	Jul. 01, 2020	Jun. 30, 2021	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	Low Cable-04+23	30MHz~1GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-28	1GHz~18GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-04+28	1GHz~18GHz	Oct. 05, 2020	Oct. 04, 2021	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH05-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH05-CB)
Mixer	OML	M19HWA	U91113-1	40 ~ 60 GHz	Nov. 02, 2020	Nov. 01, 2021	Radiation (03CH05-CB)
Mixer	OML	M12HWA	E91113-1	60 ~ 90 GHz	Nov. 14, 2020	Nov. 13, 2021	Radiation (03CH05-CB)
Mixer	OML	M08HWA	F91113-1	90 ~ 140 GHz	Nov. 02, 2020	Nov. 01, 2021	Radiation (03CH05-CB)
Mixer	OML	M05HW/A	G91113-1	140 ~ 220 GHz	Nov. 02, 2020	Nov. 01, 2021	Radiation (03CH05-CB)



Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
Mixer	OML	M03HWD	120320-1	220 ~ 325 GHz	Nov. 02, 2020	Nov. 01, 2021	Radiation (03CH05-CB)
Standard Horn Antenna	Custom Microwave	M19RH	U91113-A	40 ~ 60 GHz	N.C.R	N.C.R	Radiation (03CH05-CB)
Standard Horn Antenna	Custom Microwave	M12RH	E91113-A	60 ~ 90 GHz	N.C.R	N.C.R	Radiation (03CH05-CB)
Standard Horn Antenna	Custom Microwave	M08RH	F91113-A	90 ~ 140 GHz	N.C.R	N.C.R	Radiation (03CH05-CB)
Standard Horn Antenna	Custom Microwave	M05RH	G91113-A	140 ~ 220 GHz	N.C.R	N.C.R	Radiation (03CH05-CB)
Standard Horn Antenna	Custom Microwave	M03RH	120320-A	220 ~ 325 GHz	N.C.R	N.C.R	Radiation (03CH05-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Jul. 21, 2020	Jul. 20, 2021	Radiation (03CH06-CB)
Pre-Amplifier	MITEQ	TTA1840-35-H G	1864479	18GHz ~ 40GHz	Jul. 08, 2020	Jul. 07, 2021	Radiation (03CH06-CB)
Spectrum analyzer	R&S	FSP40	100080	9kHz~40GHz	Dec. 15, 2020	Dec. 14, 2021	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-40G#1	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-40G#2	18GHz ~ 40 GHz	Jul. 16, 2020	Jul. 15, 2021	Radiation (03CH06-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH06-CB)
Spectrum analyzer	R&S	FSV40	101028	9kHz~40GHz	Dec. 31, 2020	Dec. 30, 2021	Radiation (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-11	1 GHz ~18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-12	1 GHz ~18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-13	1 GHz ~18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-14	1 GHz ~18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH03-CB)
RF Cable-high	Woken	RG402	High Cable-15	1 GHz ~18 GHz	Oct. 05, 2020	Oct. 04, 2021	Conducted (TH03-CB)
Temp. and Humidity Chamber	Gaint Force	GTH-408-40-C P-AR	MAA1410-011	-40~100 degree	Sep. 09, 2020	Sep. 08, 2021	Radiation (TH03-CB)

Note: Calibration Interval of instruments listed above is one year.

N.C.R. means Non-Calibration required.