



# EMI TEST REPORT

**Filing Type** : Certification  
**FCC ID** : ZPNB122037TIRVBSD  
**Equipment** : BSD 77GHz Trailer RV System  
**Brand Name** : Cub  
**Model Name** : A009-035 、 A009-036 、 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 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 Rules and Regulations Part 15 Subpart B Class B Digital Device

The product was received on Mar. 01, 2022, and testing was started from Mar. 10, 2022 and completed on Mar. 10, 2022. 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 C63.4-2014 and shown compliance with the applicable technical standards.

The test results in this variant 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: Sin Chang  
**Sporton International Inc. Hsinchu Laboratory**  
No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



## Table of Contents

History of this test report.....3

Summary of Test Result.....4

1. General Description of Equipment under Test.....5

2. Test Configuration of Equipment under Test.....7

3. General Information of Test.....9

4. Test of Radiated Emission.....10

5. List of Measuring Equipment Used .....14

6. Uncertainty of Test Site .....15

Appendix A. Test Results of Radiated Emission

Appendix B. Test Photos

Photographs of EUT V01





## Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
-	15.107	AC Power Port Conducted Emission	N/A	Note
4	15.109	Radiated Emission below 1GHz	PASS	Under limit 3.03 dB at 248.25 MHz
4	15.109	Radiated Emission above 1GHz	PASS	Under limit 6.73 dB at 28.79957 GHz

Note: It was supplied power by DC-Powered (vehicle battery) for EUT; it's not necessary to apply to AC Power-line Conducted Emissions test.

**Declaration of Conformity:**

1. The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers. It's means measurement values may risk exceeding the limit of regulation standards, if measurement uncertainty is include in test results.
2. The measurement uncertainty please refer to report "Measurement Uncertainty".

**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: Sin Chang**

**Report Producer: Jessie Wei**

## 1. General Description of Equipment under Test

Product Detail	
Equipment Name	BSD 77GHz Trailer RV System
Model Name	A009-035 、 A009-036 、 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 of the test report for detailed information.)
Brand Name	Cub
Power Supply	From DC power supply (12V)

### 1.1. Feature of Equipment under Test

1. The EUT's highest operating frequency is 77GHz.
2. Accessories

Set	Item	Equipment Name	Brand	Model
1	1	Radar Holder Cover1	Cub	21-006204-01
	2	Radar Holder Cover2	Cub	21-005961-01
	3	Cable1	Cub	25-360206-11
	4	Controller A	Cub	A009-010NA1-A0
	5	Controller B	Cub	C001-020NA1-A0
	6	Info Cable_1	Cub	25-360240-01
	7	Info Cable_2	Cub	25-360240-11
	8	Info Cable_3	Cub	25-360240-21
	9	Info Cable_coloured thread	Cub	25-300555-01
	10	Indicator_1	Cub	C200-012NA1-A0
2	1	Radar Holder Cover3	Cub	21-006281-01
	2	Cable2	Cub	25-360263-00
	3	Info Cable_4	Cub	25-360264-00
	4	Indicator_2_1	Cub	C200-002NA1-A2
	5	Indicator_2_2	Cub	C200-002NA1-A3
	6	Buzzer	Cub	44-100008-01
3	1	Radar Holder Cover4	Cub	21-006303-01
	2	Cable3	Cub	25-360275-00
	3	Controller A	Cub	A009-010NA1-A0
	4	Controller B	Cub	C001-020NA1-A0
	5	Info Cable_5	Cub	25-360250-01
	6	Info Cable_6	Cub	25-360249-01
	7	Indicator_2_1	Cub	C200-002NA1-A2
	8	Indicator_2_2	Cub	C200-002NA1-A3
	9	Buzzer	Cub	44-100008-01
	10	7-way	Cub	25-360259-01



3. Test Configuration

Set	Configuration	Description
1	1	Radar Holder Cover + Controller + Cable + Info Cable_coloured thread
	2	Radar Holder Cover + Controller + Cable + Info Cable + Indicator
2	3	Radar Holder Cover + Cable + Info Cable + Indicator + Buzzer
3	4	Radar Holder Cover + Controller + Cable + Info Cable + Indicator + Buzzer + 7-way

4. Table for Multiple Listing

Model Name	Description
A009-035	All the models are identical, the different model name equipped with different accessories.
A009-036	
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.)	

Note 1: From the above model A009-035, A009-036 and B122-037 were selected as representative model for the test.

Note 2: The above information was declared by manufacturer.

5. Table for Existing Change

This product is an extension of original one reported under Sporton project number: FC151729

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
1. Adding two new model names: A009-035 and A009-036.	All test items
2. Adding Set 2 for model names: A009-035 and Set 3 for model names: A009-036.	

Note: Only the retest data has been recorded in this test report.

6. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

1.2. Modification of EUT

Please refer to the technical specifications of EUT.



## 2. Test Configuration of Equipment under Test

### 2.1. Test Mode

The following table is a list of the test modes shown in this test report.

Radiated Emissions Below 1GHz									
Test Mode	Set	Configuration	Radar Holder	Cable	Controller	Info Cable	Indicator_2_1+ Indicator_2_2	Buzzer	7-way
1	2	Config. 3	Cover 3	2	-	4	●	●	-
2	3	Config. 4	Cover 4	3	A	5, 6	●	●	●
3	3	Config. 4	Cover 4	3	B	5, 6	●	●	●

Mode 3 generated the worst test result, so it was recorded in this report.

Radiated Emissions Above 1GHz									
Test Mode	Set	Configuration	Radar Holder	Cable	Controller	Info Cable	Indicator_2_1+ Indicator_2_2	Buzzer	7-way
1	2	Config. 3	Cover 3	2	-	4	●	●	-
2	3	Config. 4	Cover 4	3	A	5, 6	●	●	●
3	3	Config. 4	Cover 4	3	B	5, 6	●	●	●

Mode 3 generated the worst test result, so it was recorded in this report.

### 2.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Support Unit	Brand	Model	FCC ID
A	DC Power Supply	MOTECH	LPS-305	N/A

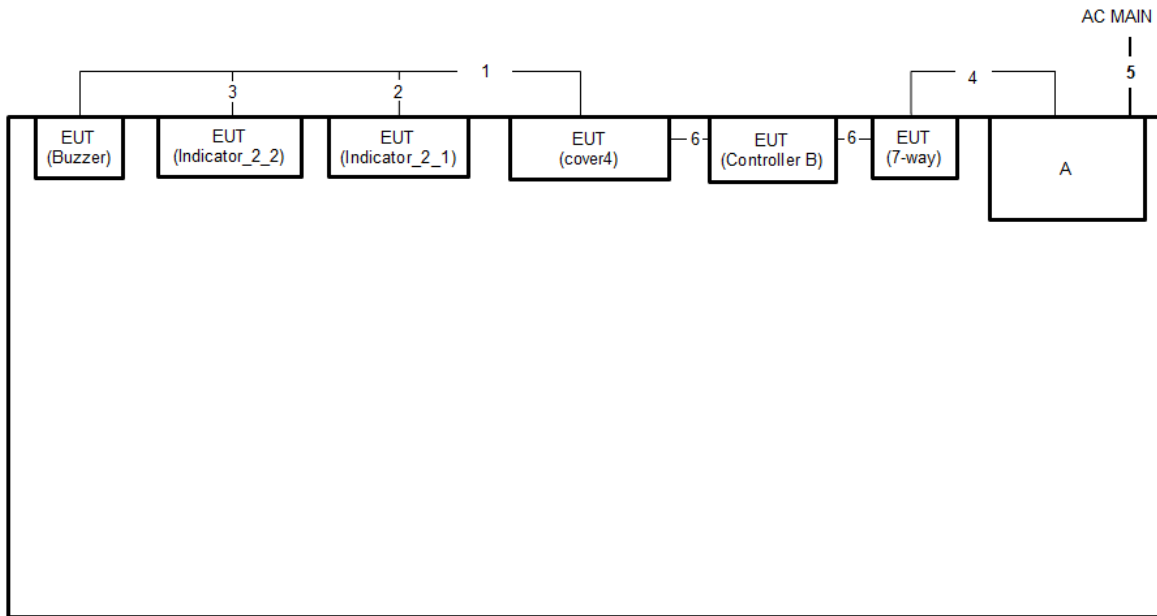
### 2.3. EUT Operation Condition

The EUT transmits RF signal continuously.

No test software was used during testing.



**2.4. Connection Diagram of Test System**



Item	Connection	Shielded	Length
1	Info Cable_5	No	8.5m
2	Cable3	No	0.2m
3	Info Cable_6	No	3.3m
4	Crocodile clip cable	No	1m
5	Power cable	No	1.5m
6	Controller B	No	0.3m





### 3. General Information of Test

#### 3.1. Test Facility

EMI	
Test Lab. : Sporton International Inc. Hsinchu Laboratory	
Hsinchu	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)
(TAF: 3787)	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.	

#### 3.2. Test Environment

Test Items	Test Site No.	Test Engineer	Test Environment			Test Date	Remark
			Temp (°C)	Humidity (%)	Pressure (kPa)		
Radiated Emission below 1GHz	03CH04-CB	Simmon Cheng	23.7-24.6	55-58	-	Mar. 10, 2022	-
Radiated Emission above 1GHz	03CH04-CB	Simmon Cheng	23.7-24.6	55-58	-	Mar. 10, 2022	-

#### 3.3. Test Voltage

Power Type	Test Voltage
DC Power Supply	12V

#### 3.4. Standard for Methods of Measurement

ANSI C63.4-2014

#### 3.5. Frequency Range Investigated

Test Items	Frequency Range
Radiated emission test	30 MHz to 40,000 MHz

#### 3.6. Test Distance

Test Items	Test Distance
Radiated emission test below 1 GHz (30 MHz to 1,000 MHz)	3 m
Radiated emission test above 1 GHz (1,000 MHz to 18,000 MHz)	3 m
Radiated emission test above 1 GHz (18,000 MHz to 40,000 MHz)	1 m



## 4. Test of Radiated Emission

### 4.1. Limit

Radiated Emission below 1 GHz test at 3 m:

Frequency (MHz)	QP (dBuV/m)
30~88	40
88~216	43.5
216~960	46
Above 960	54

Radiated Emission 1~18 GHz test at 3 m:

Frequency (MHz)	PK (dBuV/m)	AV (dBuV/m)
1,000 to 18,000	74	54

Radiated Emission 18~40 GHz test at 1 m:

Frequency (MHz)	PK (dBuV/m)	AV (dBuV/m)
18,000 to 40,000	83.54	63.54



## **4.2. Test Procedures**

- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 3m (below 1GHz) / 3m (1GHz-18GHz) / 1m (18GHz-40GHz) meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
- h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

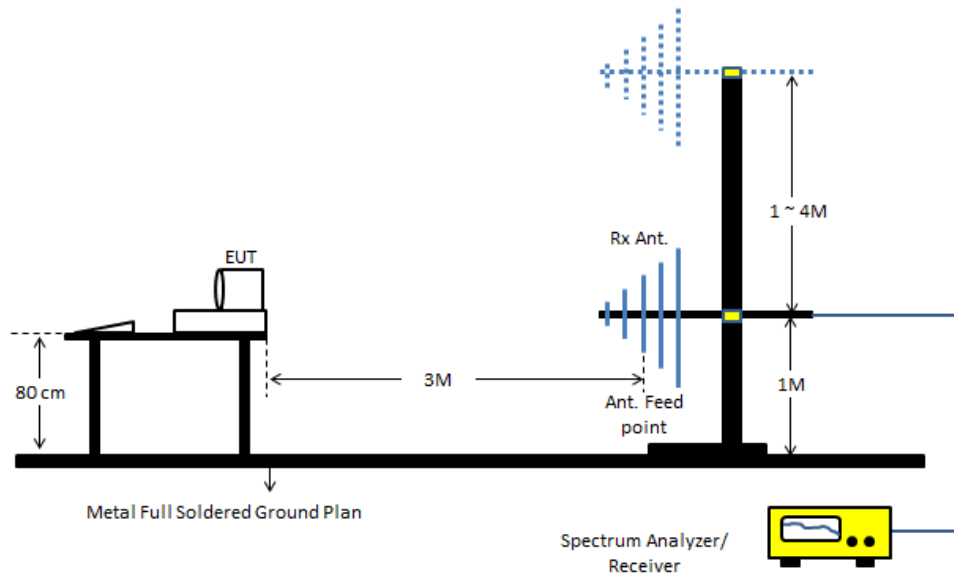
## **4.3. Measurement Results Calculation**

The measured Level is calculated using:

- a. Corrected Reading:  $\text{Antenna factor (AF)} + \text{Cable loss (CL)} + \text{Read level (Raw)} - \text{Preamp factor (PA)} = \text{Level}$
- b.  $\text{Margin} = -\text{Limit} + \text{Level}$

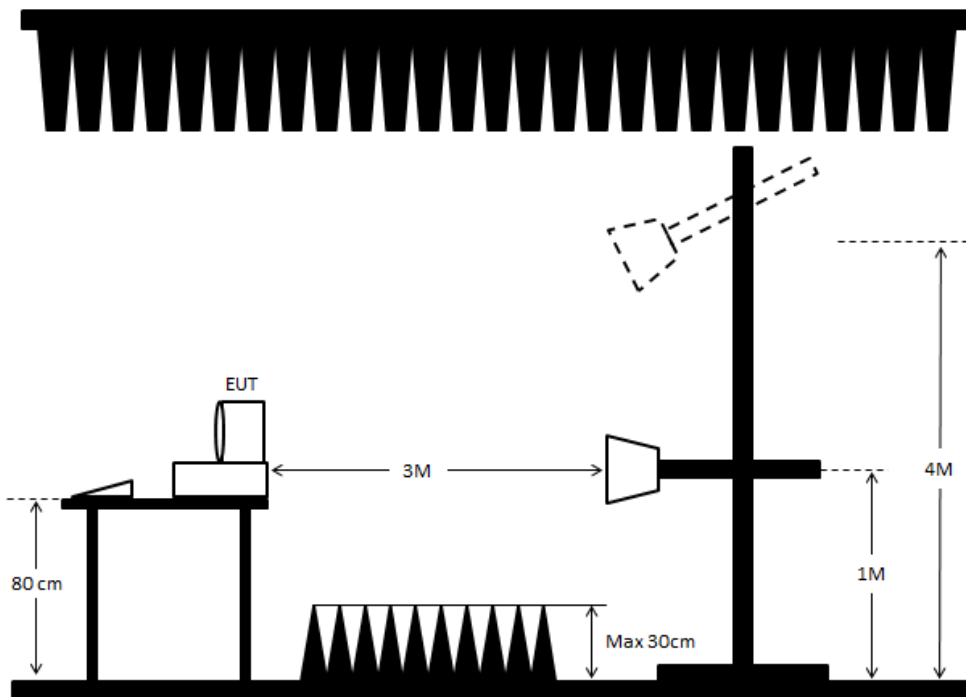
#### 4.4. Typical Test Setup Layout of Radiated Emission

<Below 1 GHz>:

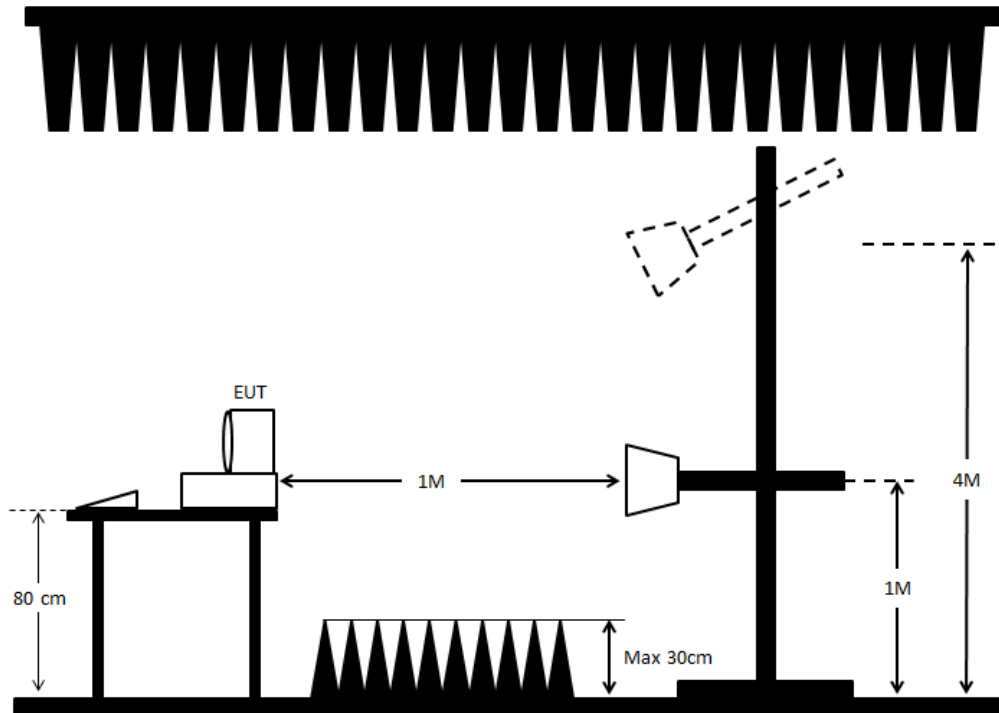


<Above 1 GHz>:

1,000~18,000 MHz



18,000~40,000 MHz



#### 4.5. Test Result of Radiated Emission

Refer as Appendix A



### 5. List of Measuring Equipment Used

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH04-CB	30 MHz ~ 1 GHz	Aug. 08, 2021	Aug. 07, 2022	Radiation (03CH04-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH04-CB	1GHz ~18GHz 3m	Feb. 24, 2022	Feb. 23, 2023	Radiation (03CH04-CB)
BILOG ANTENNA with 6 dB attenuator	Schaffner & EMC	CBL6112B & N-6-06	22021&AT-N0607	30MHz ~ 1GHz	Oct. 09, 2021	Oct. 08, 2022	Radiation (03CH04-CB)
Horn Antenna	ETS • Lindgren	3115	00143147	750MHz~18GHz	Oct. 25, 2021	Oct. 24, 2022	Radiation (03CH04-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 05, 2021	Aug. 04, 2022	Radiation (03CH04-CB)
Pre-Amplifier	Agilent	310N	187291	0.1MHz ~ 1GHz	Dec. 16, 2021	Dec. 15, 2022	Radiation (03CH04-CB)
Pre-Amplifier	Agilent	83017A	MY53270063	0.5GHz ~ 26.5GHz	Jul. 12, 2021	Jul. 11, 2022	Radiation (03CH04-CB)
Pre-Amplifier	MITEQ	TTA1840-35-HG	1864479	18GHz ~ 40GHz	Jul. 13, 2021	Jul. 12, 2022	Radiation (03CH04-CB)
Signal Analyzer	R&S	FSV40	101904	9kHz ~ 40GHz	Apr. 15, 2021	Apr. 14, 2022	Radiation (03CH04-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	Jun. 21, 2021	Jun. 20, 2022	Radiation (03CH04-CB)
RF Cable-low	Woken	RG402	Low Cable-03+67	30MHz ~ 1GHz	Oct. 04, 2021	Oct. 03, 2022	Radiation (03CH04-CB)
RF Cable-high	Woken	RG402	High Cable-21	1GHz - 18GHz	Oct. 04, 2021	Oct. 03, 2022	Radiation (03CH04-CB)
RF Cable-high	Woken	RG402	High Cable-21+67	1GHz - 18GHz	Oct. 04, 2021	Oct. 03, 2022	Radiation (03CH04-CB)
High Cable	Woken	WCA0929M	40G#5+7	1GHz ~ 40 GHz	Dec. 14, 2021	Dec. 13, 2022	Radiation (03CH04-CB)
High Cable	Woken	WCA0929M	40G#5	1GHz ~ 40 GHz	Dec. 08, 2021	Dec. 07, 2022	Radiation (03CH04-CB)
High Cable	Woken	WCA0929M	40G#7	1GHz ~ 40 GHz	Dec. 14, 2021	Dec. 13, 2022	Radiation (03CH04-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH04-CB)

※ Calibration Interval of instruments listed above is one year.

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



## 6. Uncertainty of Test Site

Test Items	Uncertainty	Remark
Conducted Emissions	3.4 dB	Confidence levels of 95%
Radiated Emissions below 1GHz	5.5 dB	Confidence levels of 95%
Radiated Emissions 1GHz ~ 18GHz	4.7 dB	Confidence levels of 95%
Radiated Emissions 18GHz ~ 40GHz	4.2 dB	Confidence levels of 95%

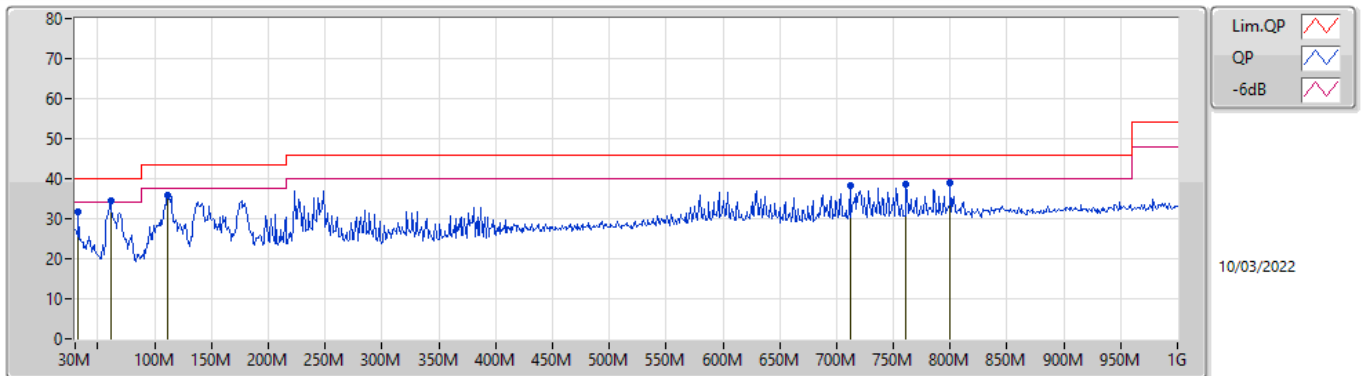




**Summary**

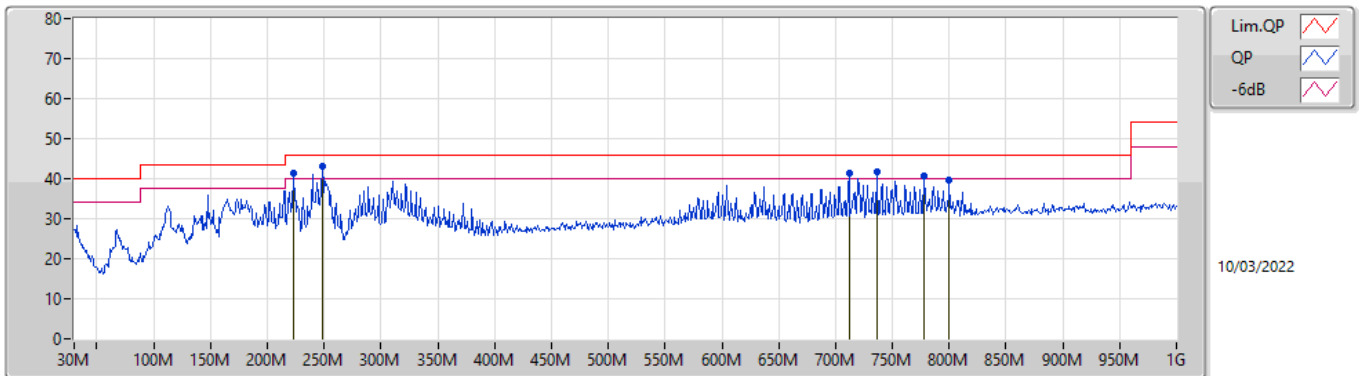
Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 3	Pass	PK	248.25M	42.97	46.00	-3.03	Horizontal

Mode 3



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV/m)	AF (dB/m)	CL (dB)	PA (dB)
PK	32.91M	31.56	40.00	-8.44	-8.58	3	Vertical	7	1.00	-	40.14	22.02	1.56	32.16
PK	61.04M	34.63	40.00	-5.37	-18.01	3	Vertical	173	2.00	"Worst"	52.64	12.46	1.70	32.17
PK	111.48M	35.85	43.50	-7.65	-12.22	3	Vertical	327	1.00	-	48.07	17.99	1.90	32.11
PK	711.91M	38.12	46.00	-7.88	-4.38	3	Vertical	341	1.00	-	42.50	25.50	3.42	33.30
PK	761.38M	38.45	46.00	-7.55	-4.08	3	Vertical	285	1.00	-	42.53	25.84	3.52	33.44
PK	800.18M	38.87	46.00	-7.13	-3.57	3	Vertical	278	1.00	-	42.44	26.39	3.60	33.56

Mode 3



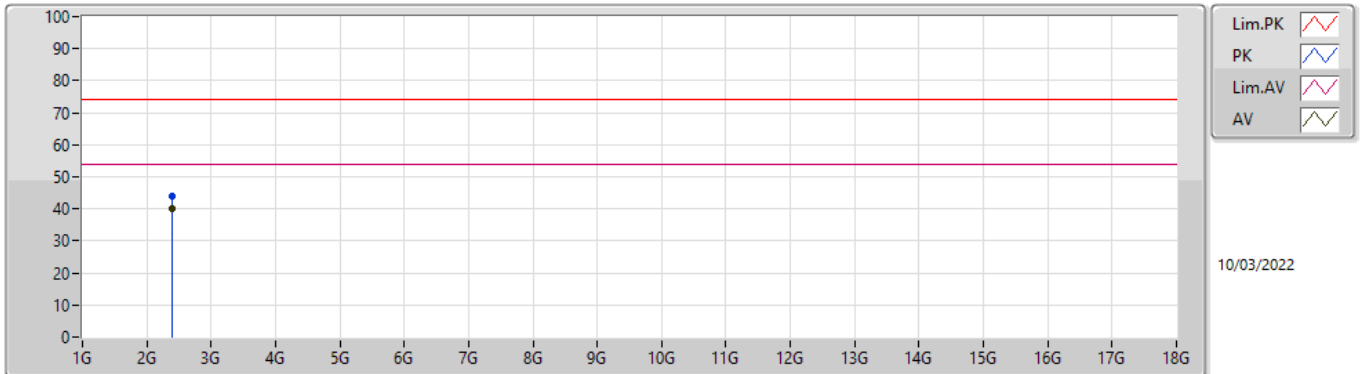
Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV/m)	AF (dB/m)	CL (dB)	PA (dB)
PK	223.03M	41.48	46.00	-4.52	-14.53	3	Horizontal	245	1.50	-	56.01	15.41	2.19	32.13
PK	248.25M	42.97	46.00	-3.03	-11.89	3	Horizontal	213	1.25	"Worst"	54.86	17.99	2.29	32.17
PK	711.91M	41.42	46.00	-4.58	-4.38	3	Horizontal	279	1.50	-	45.80	25.50	3.42	33.30
PK	736.16M	41.65	46.00	-4.35	-3.97	3	Horizontal	298	1.50	-	45.62	25.93	3.47	33.37
PK	777.87M	40.67	46.00	-5.33	-4.16	3	Horizontal	280	1.25	-	44.83	25.77	3.56	33.49
PK	800.18M	39.67	46.00	-6.33	-3.57	3	Horizontal	130	2.00	-	43.24	26.39	3.60	33.56



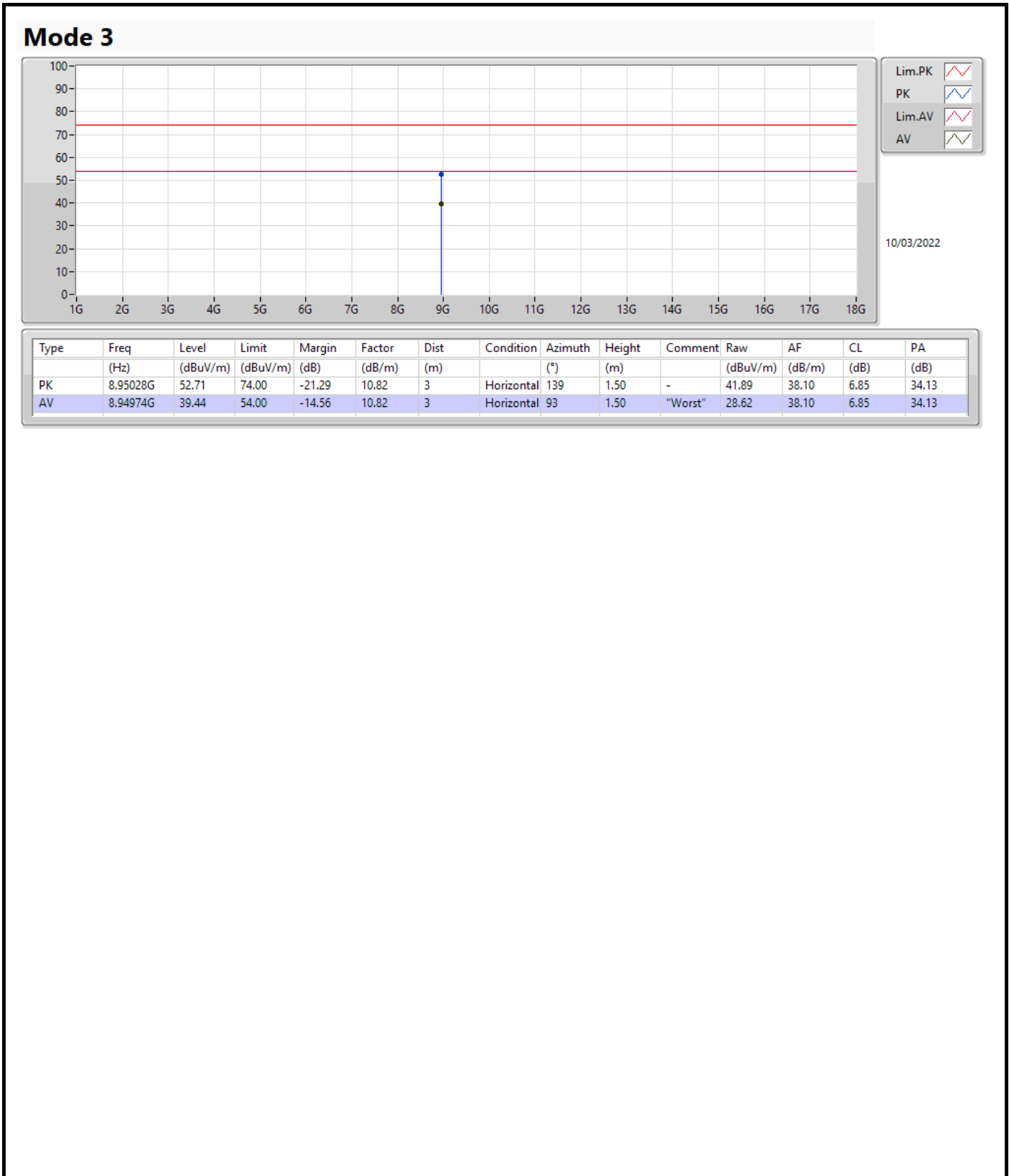
**Summary**

Mode	Result	Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Condition
Mode 3	Pass	AV	28.79957G	56.81	63.54	-6.73	Horizontal

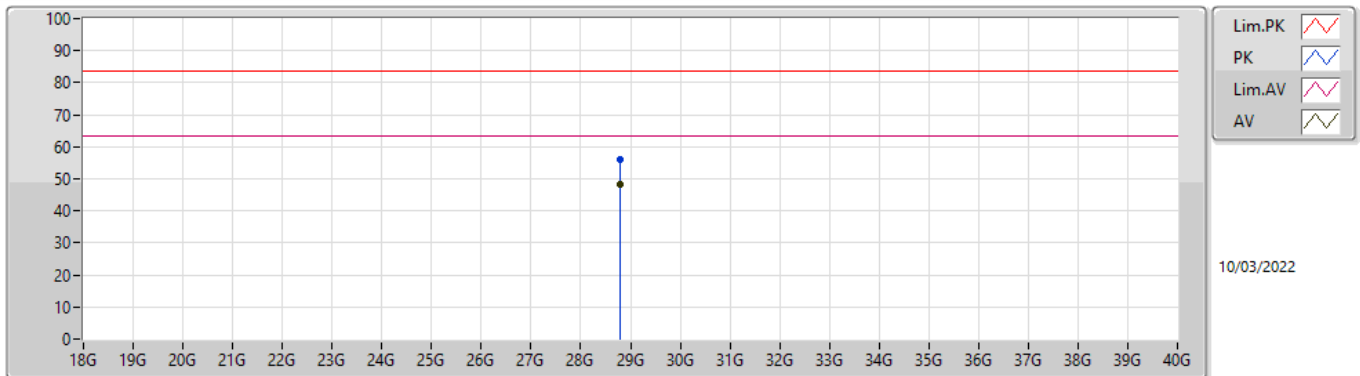
Mode 3



Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV/m)	AF (dB/m)	CL (dB)	PA (dB)
PK	2.39993G	43.94	74.00	-30.06	-3.53	3	Vertical	180	1.22	-	47.47	27.50	3.40	34.43
AV	2.39997G	39.95	54.00	-14.05	-3.53	3	Vertical	180	1.22	"Worst"	43.48	27.50	3.40	34.43



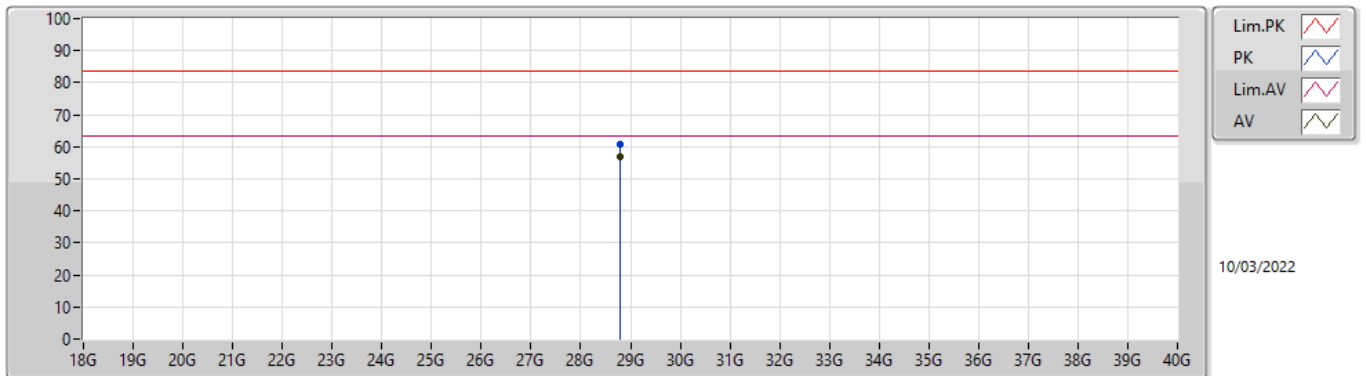
Mode 3







Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV/m)	AF (dB/m)	CL (dB)	PA (dB)
PK	28.79952G	56.00	83.54	-27.54	12.78	1	Vertical	31	1.19	-	43.22	39.82	18.80	45.84
AV	28.79961G	48.25	63.54	-15.29	12.78	1	Vertical	31	1.19	"Worst"	35.47	39.82	18.80	45.84



Mode 3



Lim.PK   
 PK   
 Lim.AV   
 AV 

10/03/2022

Type	Freq (Hz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Factor (dB/m)	Dist (m)	Condition	Azimuth (°)	Height (m)	Comment	Raw (dBuV/m)	AF (dB/m)	CL (dB)	PA (dB)
PK	28.79963G	60.80	83.54	-22.74	12.78	1	Horizontal	342	1.11	-	48.02	39.82	18.80	45.84
AV	28.79957G	56.81	63.54	-6.73	12.78	1	Horizontal	342	1.11	"Worst"	44.03	39.82	18.80	45.84