


FCC TEST REPORT

Product : Pet GPS Tracker
BAANOOL, DI QIU TU XING

Trade mark : 

Model/Type reference : GPS-201, BN-201

Serial Number : N/A

Ratings : Lithium battery: DC 3.7V, Charge by DC 5.0V

Report Number : EED32N804308

Date of Issue : Dec. 10, 2021

Regulations : See below

Test Standards	Results
<input checked="" type="checkbox"/> 47 CFR FCC Part 15 Subpart B	PASS

Prepared for:

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Date: _____

Dec. 10, 2021

Check No.: 1439010621

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(Note: N/A means *not applicable*)

1. GENERAL INFORMATION

Applicant: Shenzhen Coban Electronics Co.,Ltd
5/F, Block 22, Wisdomland Business Park, Guankou 2nd Road, Nantou, Nanshan District, Shenzhen, Guangdong, China.518052

Manufacturer: Shenzhen Coban Electronics Co.,Ltd
602 &702, Bldg. C2, Xinqiao Industrial Park, Tongfuyu Industrial Area, Xinhe Avenue, Gonghe Community, Shajing Sub-District, Bao'an District, Shenzhen, Guangdong, China

Factory: Shenzhen Coban Electronics Co.,Ltd
602 &702, Bldg. C2, Xinqiao Industrial Park, Tongfuyu Industrial Area, Xinhe Avenue, Gonghe Community, Shajing Sub-District, Bao'an District, Shenzhen, Guangdong, China

Product: Pet GPS Tracker
BAANOOL, DI QIU TU XING

Trade Mark:



Model/Type reference: GPS-201, BN-201

Test Model No.: GPS-201

Serial Number: N/A

Report Number: EED32N804308

State of Sample(s): Normal

Sample Received Date: Oct. 12, 2021

Sample tested Date: Oct. 12, 2021 to Dec. 10, 2021

Test Mode: Mode a: Charging+GPS+GSM mode
Mode b: Charging+GPS+NB-IoT mode

Company Name and Address shown on Report, the sample(s) and sample Information was/ were provided by the applicant who should be responsible for the authenticity which CTI hasn't verified.

2. TEST SUMMARY

The Product has been tested according to the following specifications:

Standard	Test Item	Test Method	Test
FCC 15.107	Conducted Emission	ANSI C63.4:2014	Yes
FCC 15.109	Radiated Emission	ANSI C63.4:2014	Yes

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

Test item	Value (dB)
Conducted disturbance	3.1
Radiated disturbance (30MHz to 1GHz)	4.9

4. PRODUCT INFORMATION AND TEST SETUP

4.1. PRODUCT INFORMATION

Ratings: Lithium battery: DC 3.7V, Charge by DC 5.0V

Model/Type reference: GPS-201, BN-201

4.2. TEST SETUP CONFIGURATION

See test photographs attached in Appendix 1 for the actual connections between Product and support equipment.

4.3. SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	Data Cable	Power Cord
1	Adapter	HUAWEI	HW-090200CH0	---	---	CE&FCC

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

5. FACILITIES AND ACCREDITATIONS

5.1. TEST FACILITY

All test facilities used to collect the test data are located at Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4, CISPR 16-1-1 and other equivalent standards.

5.2. TEST EQUIPMENT LIST

Instrumentation: The following list contains equipments used at CTI for testing.

The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

Equipment used during the tests:

Shielding Room No. 3 - Conducted disturbance Test				
Equipment	Manufacturer	Model	Serial No.	Due Date
Receiver	R&S	ESCI	100435	04/14/2022
LISN	R&S	ENV216	100098	03/03/2022
Communication test set	R&S	CMW500	120765	08/03/2022

3M Semi-anechoic Chamber (2)- Radiated disturbance Test				
Equipment	Manufacturer	Model	Serial No.	Due Date
3M Chamber & Accessory Equipment	TDK	SAC-3	---	05/22/2022
Receiver	R&S	ESCI7	100009	04/14/2022
TRILOG Broadband Antenna	schwarzbeck	VULB 9163	9136-401	10/16/2022
Multi device Controller	maturio	NCD/070/107111 12	---	---
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1869	04/14/2024
Microwave Preamplifier	Agilent	8449B	3008A02425	06/22/2022
Communication test set	R&S	CMW500	120765	08/03/2022

5.3. LABORATORY ACCREDITATIONS AND LISTINGS

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

6. CONDUCTED EMISSION TEST

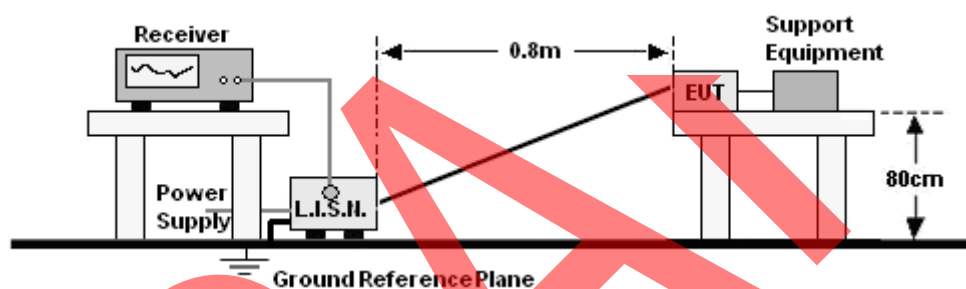
6.1. LIMITS

Limits for Class B digital devices

Frequency range (MHz)	Limits dB(μ V)	
	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: The lower limit shall apply at the transition frequency.

6.2. BLOCK DIAGRAM OF TEST SETUP



6.3. PROCEDURE OF CONDUCTED EMISSION TEST

- The Product was placed on a nonconductive table above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N.).
- The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
- For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

6.4. GRAPHS AND DATA

Product : Pet GPS Tracker

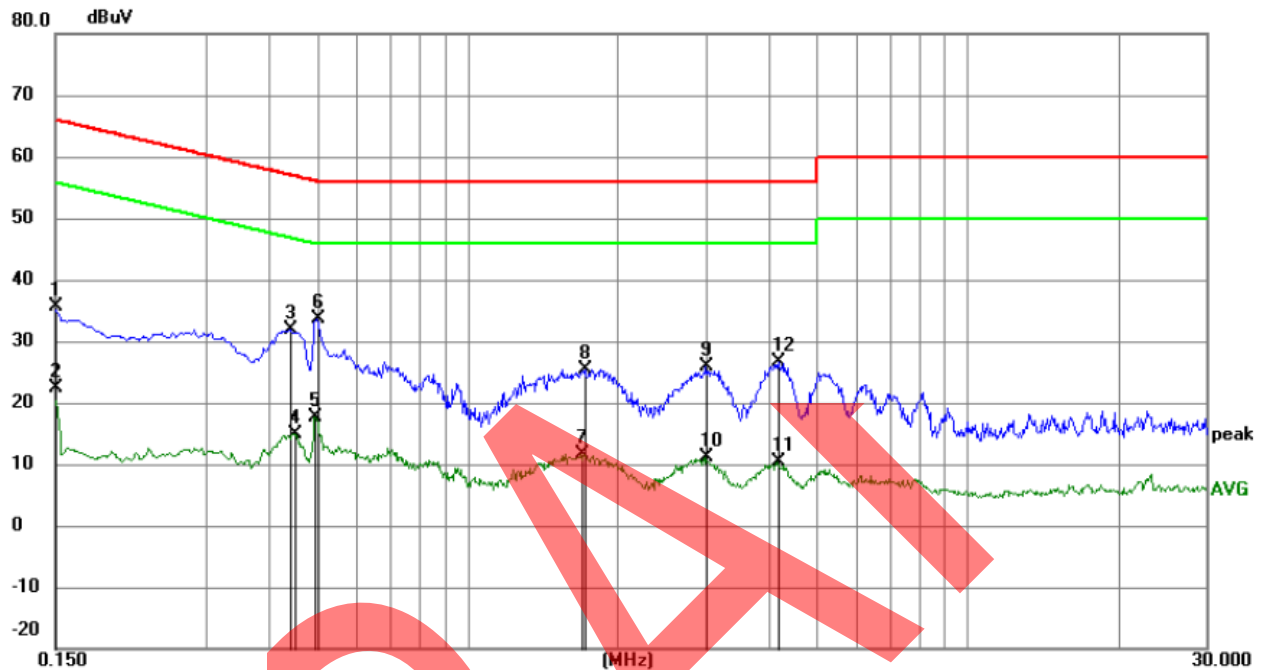
Model/Type reference : GPS-201

Power : DC 5V

Temperature/Humidity : 22°C/53%

Mode : Mode a

Phase : L



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1500	25.71	9.87	35.58	66.00	-30.42	peak	
2		0.1500	12.52	9.87	22.39	56.00	-33.61	AVG	
3		0.4425	21.93	9.96	31.89	57.01	-25.12	peak	
4		0.4515	5.00	9.96	14.96	46.85	-31.89	AVG	
5		0.4965	7.69	9.95	17.64	46.06	-28.42	AVG	
6	*	0.5010	23.65	9.95	33.60	56.00	-22.40	peak	
7		1.6980	1.76	9.80	11.56	46.00	-34.44	AVG	
8		1.7250	15.65	9.80	25.45	56.00	-30.55	peak	
9		3.0030	16.01	9.79	25.80	56.00	-30.20	peak	
10		3.0030	1.39	9.79	11.18	46.00	-34.82	AVG	
11		4.1640	0.59	9.78	10.37	46.00	-35.63	AVG	
12		4.1910	16.74	9.78	26.52	56.00	-29.48	peak	

Product : Pet GPS Tracker

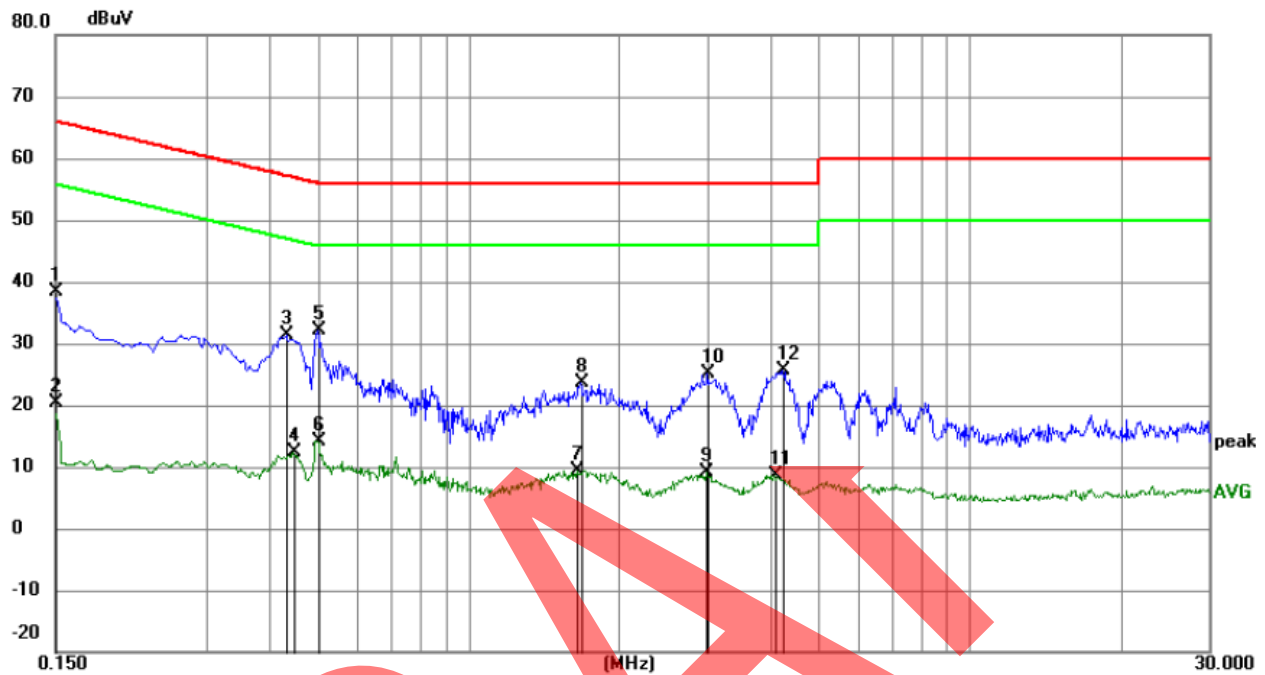
Model/Type reference : GPS-201

Power : DC 5V

Temperature/Humidity : 22°C/53%

Mode : Mode a

Phase : N



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.1500	28.58	9.87	38.45	66.00	-27.55	peak	
2		0.1500	10.42	9.87	20.29	56.00	-35.71	AVG	
3		0.4335	21.41	9.96	31.37	57.19	-25.82	peak	
4		0.4470	2.32	9.96	12.28	46.93	-34.65	AVG	
5	*	0.5010	22.21	9.95	32.16	56.00	-23.84	peak	
6		0.5010	4.19	9.95	14.14	46.00	-31.86	AVG	
7		1.6530	-0.45	9.80	9.35	46.00	-36.65	AVG	
8		1.6800	13.84	9.80	23.64	56.00	-32.36	peak	
9		2.9849	-0.71	9.79	9.08	46.00	-36.92	AVG	
10		3.0075	15.27	9.79	25.06	56.00	-30.94	peak	
11		4.0785	-1.03	9.78	8.75	46.00	-37.25	AVG	
12		4.2315	15.86	9.78	25.64	56.00	-30.36	peak	

Product : Pet GPS Tracker

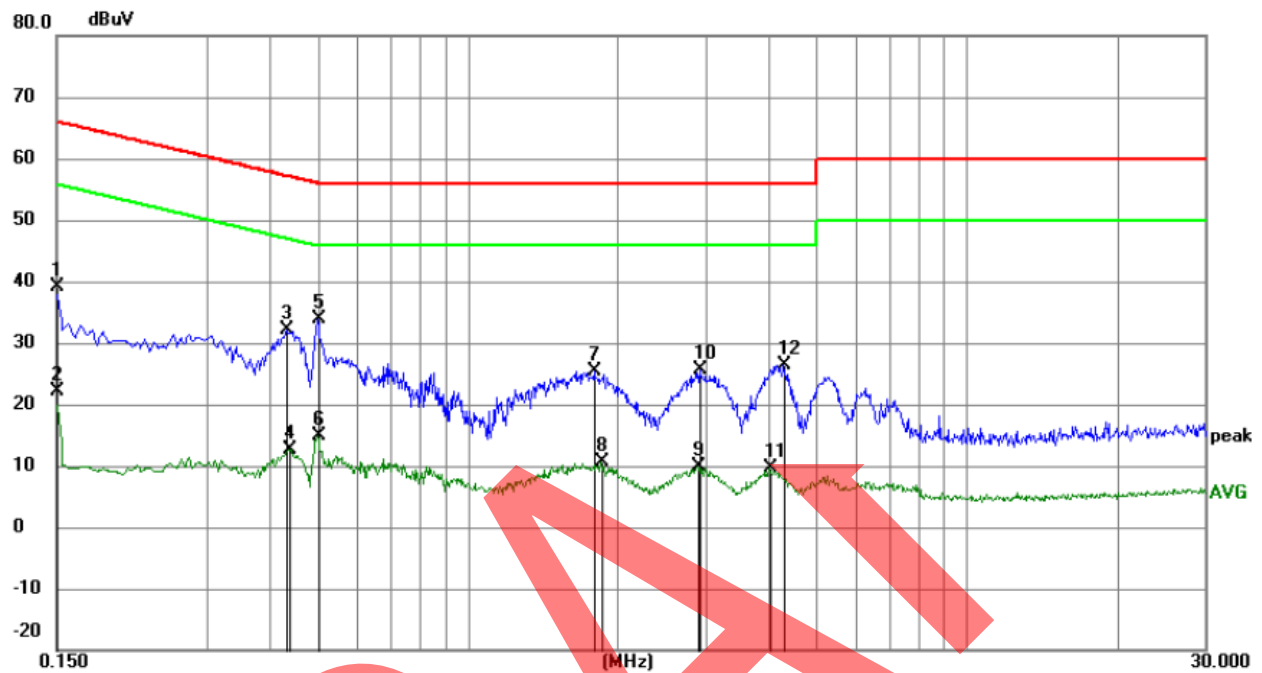
Model/Type reference : GPS-201

Power : DC 5V

Temperature/Humidity : 22°C/53%

Mode : Mode b

Phase : L



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1500	29.25	9.87	39.12	66.00	-26.88	peak	
2		0.1500	12.23	9.87	22.10	56.00	-33.90	AVG	
3		0.4335	22.21	9.96	32.17	57.19	-25.02	peak	
4		0.4380	2.67	9.96	12.63	47.10	-34.47	AVG	
5	*	0.5010	23.83	9.95	33.78	56.00	-22.22	peak	
6		0.5010	4.82	9.95	14.77	46.00	-31.23	AVG	
7		1.7925	15.49	9.80	25.29	56.00	-30.71	peak	
8		1.8510	0.86	9.80	10.66	46.00	-35.34	AVG	
9		2.8905	-0.02	9.79	9.77	46.00	-36.23	AVG	
10		2.9265	15.87	9.79	25.66	56.00	-30.34	peak	
11		4.0335	-0.09	9.78	9.69	46.00	-36.31	AVG	
12		4.2945	16.65	9.78	26.43	56.00	-29.57	peak	

Product : Pet GPS Tracker

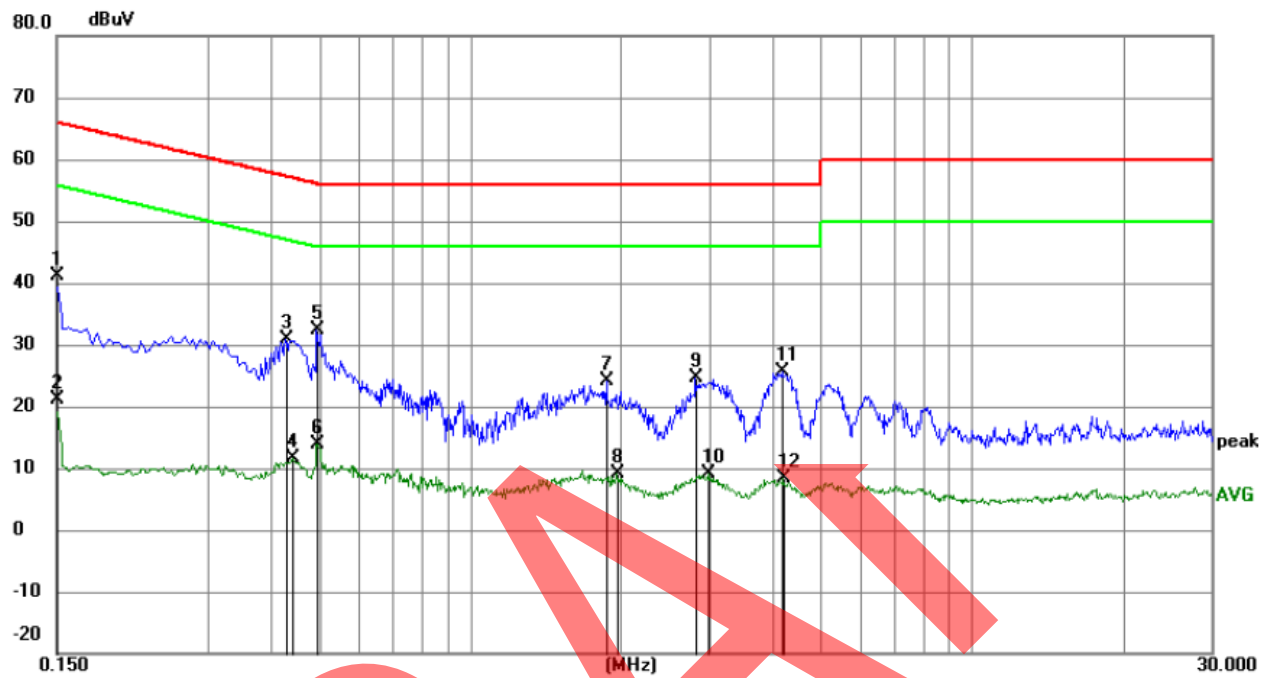
Model/Type reference : GPS-201

Power : DC 5V

Temperature/Humidity : 22°C/53%

Mode : Mode b

Phase : N



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1500	31.26	9.87	41.13	66.00	-24.87	peak	
2		0.1500	11.19	9.87	21.06	56.00	-34.94	AVG	
3		0.4290	20.89	9.96	30.85	57.27	-26.42	peak	
4		0.4425	1.63	9.96	11.59	47.01	-35.42	AVG	
5	*	0.4965	22.32	9.95	32.27	56.06	-23.79	peak	
6		0.4965	4.00	9.95	13.95	46.06	-32.11	AVG	
7		1.8735	14.46	9.79	24.25	56.00	-31.75	peak	
8		1.9680	-0.64	9.79	9.15	46.00	-36.85	AVG	
9		2.8095	14.89	9.79	24.68	56.00	-31.32	peak	
10		2.9849	-0.67	9.79	9.12	46.00	-36.88	AVG	
11		4.1910	15.81	9.78	25.59	56.00	-30.41	peak	
12		4.2045	-1.32	9.78	8.46	46.00	-37.54	AVG	

Note:

1. Margin=Measurement-Limit.
2. Measurement=Reading_Level+Correct Factor.
3. Correct Factor=Cable Factor+Lisn Factor.

7. RADIATED EMISSION TEST

7.1. LIMITS

For unintentional device , according to §15.109 (a) Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values.

And according to §15.109 (2) measurements below 1000 MHz provided the limits in paragraphs (a) and (b) of this section are extrapolated to the new measurement distance using an inverse linear distance extrapolation factor (20 dB/decade).

According to FCC 15.31 section(1), at frequencies at or above 30 MHz measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse linear-distance for field strength measurements; inverse-linear-distance-squared for power density measurements).

According to FCC 15.31 section(2), frequencies below 30 MHz, performing measurements at a closer distance than specified, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade).

According to 15.35 Measurement detector functions and bandwidths section (b). Unless otherwise specified, e.g., see §§15.250, 15.252, 15.253(d), 15.255, 15.256, and 15.509 through 15.519 of this part, the limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit applicable to the equipment under test.

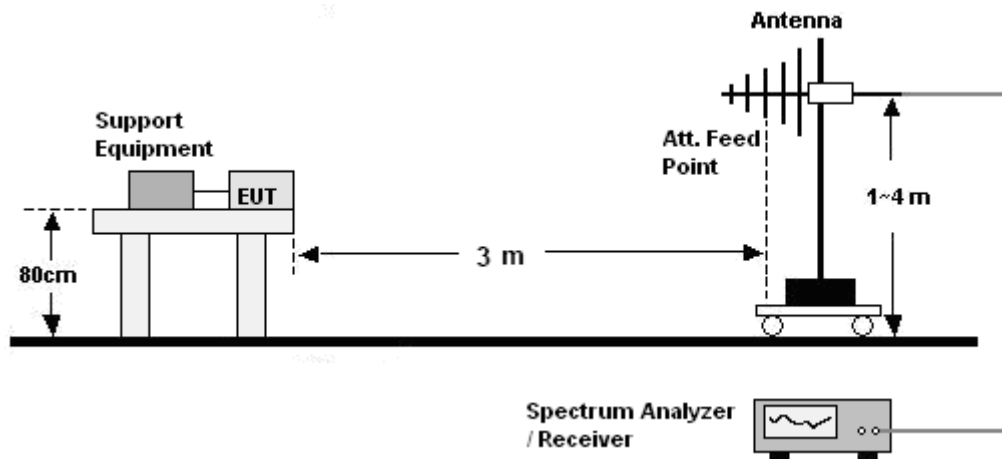
Limits for Class B digital devices

Frequency (MHz)	limits at 3m dB(μV/m)
30-88	40.0
88-216	43.5
216-960	46.0
Above 960	54.0

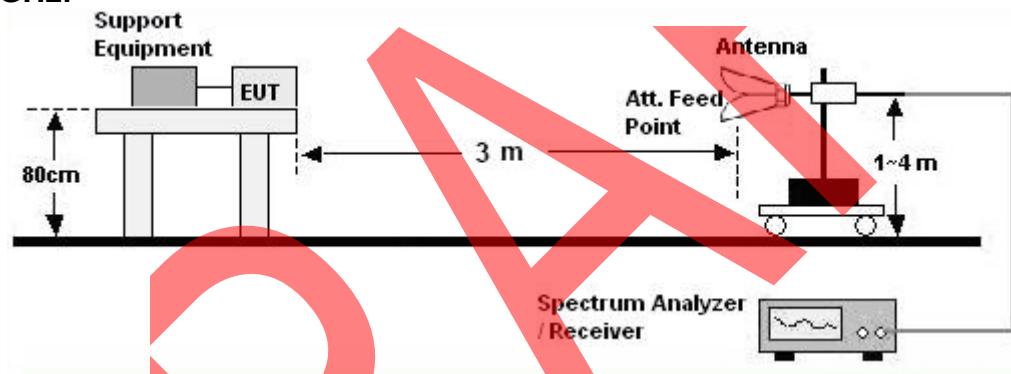
- NOTE:**
1. The lower limit shall apply at the transition frequency.
 2. The limits shown above are based on measuring equipment employing a CISPR quasi-peak detector function for frequencies below or equal to 1000MHz.
 3. The limits shown above are based on measuring equipment employing an average detector function for frequencies above 1000MHz.

7.2. BLOCK DIAGRAM OF TEST SETUP

30MHz ~ 1GHz:



Above 1GHz:



7.3. PROCEDURE OF RADIATED EMISSION TEST

30MHz ~ 1GHz:

- a. The Product was placed on the non-conductive turntable 0.8 m above the ground at a chamber.
- b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.

Above 1GHz:

- a. The Product was placed on the non-conductive turntable 0.8m above the ground at a chamber.
- b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 1MHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- c. For each frequency whose maximum record was higher or close to limit, measure its AV value: rotate the turntable from 0 to 360 degrees to find the degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to AV value and specified bandwidth with Maximum Hold Mode, and record the maximum value.

7.4. GRAPHS AND DATA

Product : Pet GPS Tracker
Model/Type reference : GPS-201
Power : DC 5V **Temperature** : 22°C
Mode : Mode a **Humidity** : 53%
Polarization : Horizontal



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	Comment
			dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	
1		59.6493	5.88	14.07	19.95	40.00	-20.05	peak	100	235
2		98.4866	5.09	14.34	19.43	43.50	-24.07	peak	200	1
3		202.8103	8.59	13.42	22.01	43.50	-21.49	peak	200	356
4		374.6225	9.54	19.37	28.91	46.00	-17.09	peak	100	146
5		607.7867	8.12	25.27	33.39	46.00	-12.61	peak	100	179
6	*	744.8660	9.14	26.52	35.66	46.00	-10.34	peak	200	116

Product : Pet GPS Tracker

Model/Type reference : GPS-201

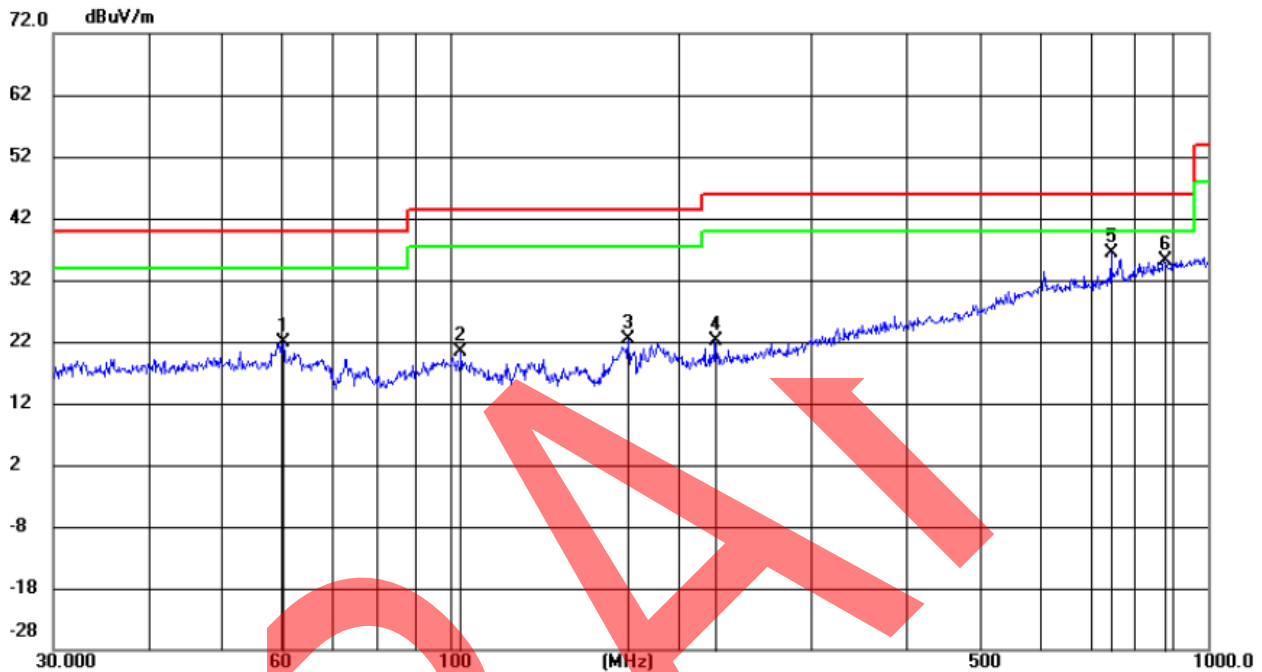
Power : DC 5V

Temperature : 22°C

Mode : Mode a

Humidity : 53%

Polarization : Vertical



No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Antenna Height cm	Table Degree	Comment
1	60.2801	8.03	13.94	21.97	40.00	-18.03	peak	100	116	
2	103.4421	6.32	14.02	20.34	43.50	-23.16	peak	200	99	
3	171.9946	11.43	10.95	22.38	43.50	-21.12	peak	100	1	
4	223.7334	7.63	14.48	22.11	46.00	-23.89	peak	100	356	
5 *	744.8661	9.89	26.52	36.41	46.00	-9.59	peak	100	252	
6	875.2470	6.55	28.57	35.12	46.00	-10.88	peak	100	204	

Product : Pet GPS Tracker

Model/Type reference : GPS-201

Power : DC 5V

Temperature : 22°C

Mode : Mode b

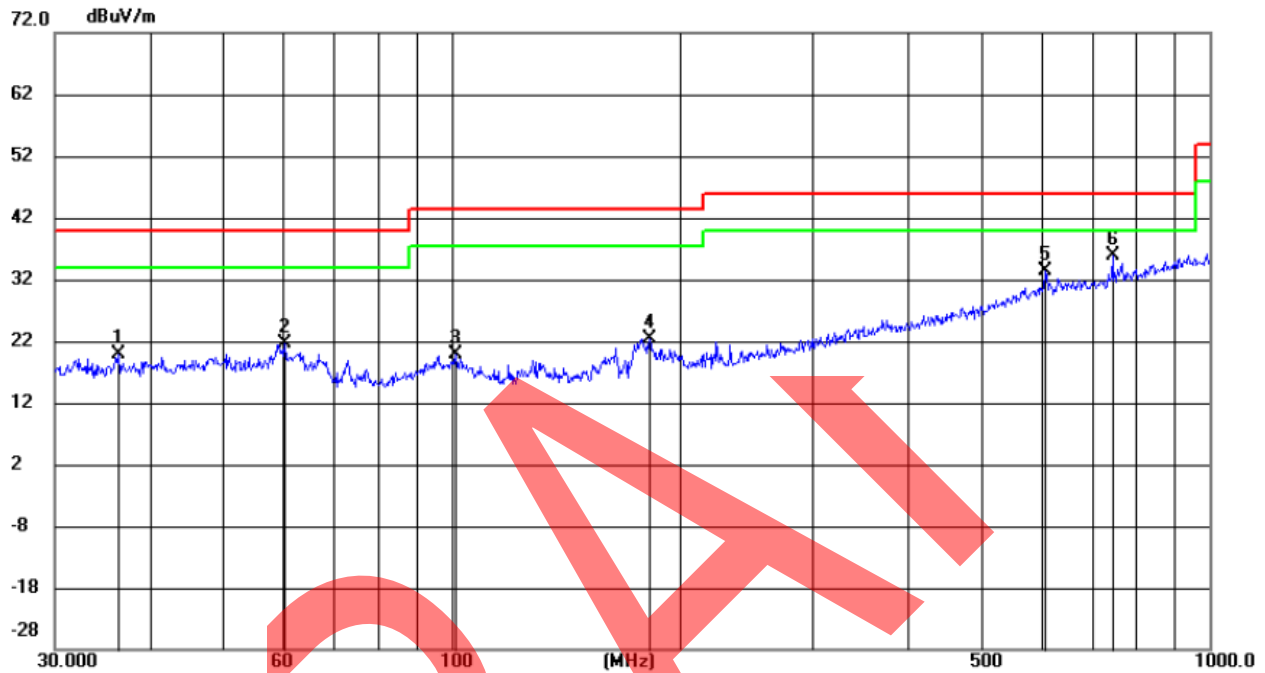
Humidity : 53%

Polarization : Horizontal



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Margin	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		58.8185	5.86	14.07	19.93	40.00	-20.07	peak	200	356
2		96.4361	5.32	14.06	19.38	43.50	-24.12	peak	200	150
3		208.5801	8.06	13.72	21.78	43.50	-21.72	peak	200	356
4		375.9385	8.57	19.41	27.98	46.00	-18.02	peak	100	91
5		607.7867	8.24	25.27	33.51	46.00	-12.49	peak	200	126
6	*	744.8660	9.45	26.52	35.97	46.00	-10.03	peak	200	356

Product : Pet GPS Tracker
Model/Type reference : GPS-201
Power : DC 5V **Temperature** : 22°C
Mode : Mode b **Humidity** : 53%
Polarization : Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree
1		36.3814	6.36	13.49	19.85	40.00	-20.15	peak	200	146
2		60.2801	7.65	13.94	21.59	40.00	-18.41	peak	100	206
3		101.2885	5.52	14.36	19.88	43.50	-23.62	peak	100	33
4		182.5592	11.00	11.41	22.41	43.50	-21.09	peak	100	3
5		607.7867	8.20	25.27	33.47	46.00	-12.53	peak	100	134
6	*	744.8661	9.34	26.52	35.86	46.00	-10.14	peak	200	249

Note:

1. Margin=Measurement-Limit.

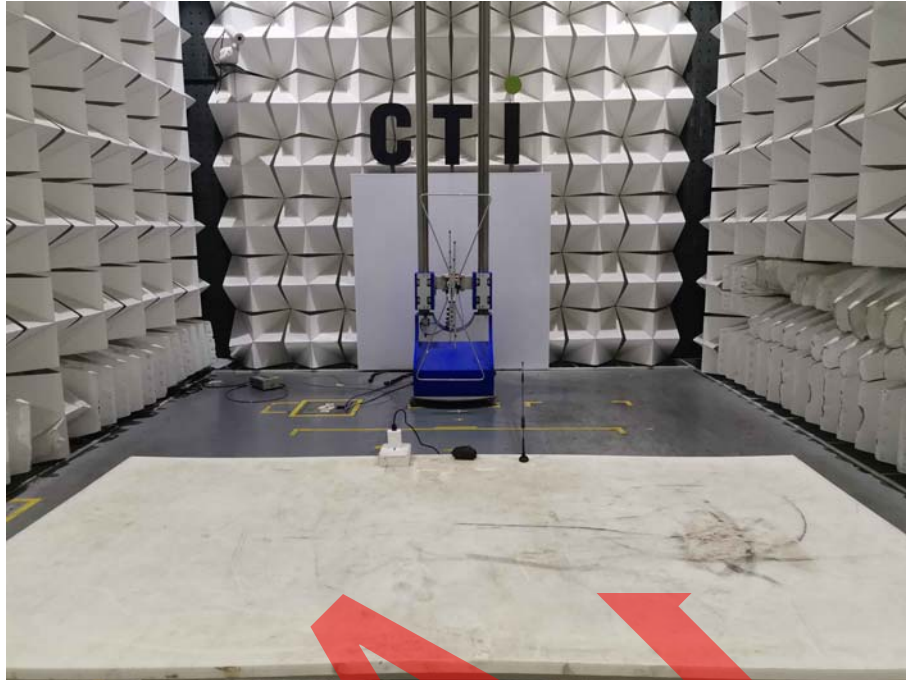
2. Measurement=Reading_Level+Correct Factor.

3. Correct Factor=Ant Factor+Cable loss.

4. The disturbance above 1GHz was very low, more than 20dB below the limit, so only the below 1GHz had been displayed.

APPENDIX 1 PHOTOGRAPHS OF TEST SETUP

Test Model No.: GPS-201



Radiated emission Test Setup-1(30MHz ~ 1GHz)



Radiated emission Test Setup-2(Above 1GHz)



Conducted emission Test Setup

DRAFT

APPENDIX 2 PHOTOGRAPHS OF PRODUCT

Test Model No.: GPS-201



View of Product-1



View of Product-2



View of Product-3



View of Product-4



View of Product-5



View of Product-6



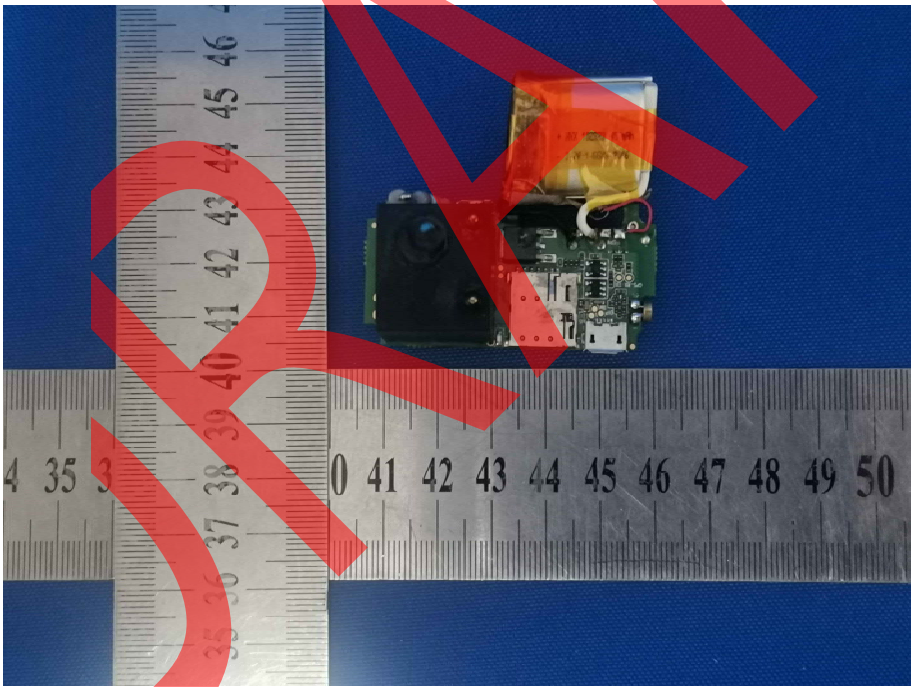
View of Product-7



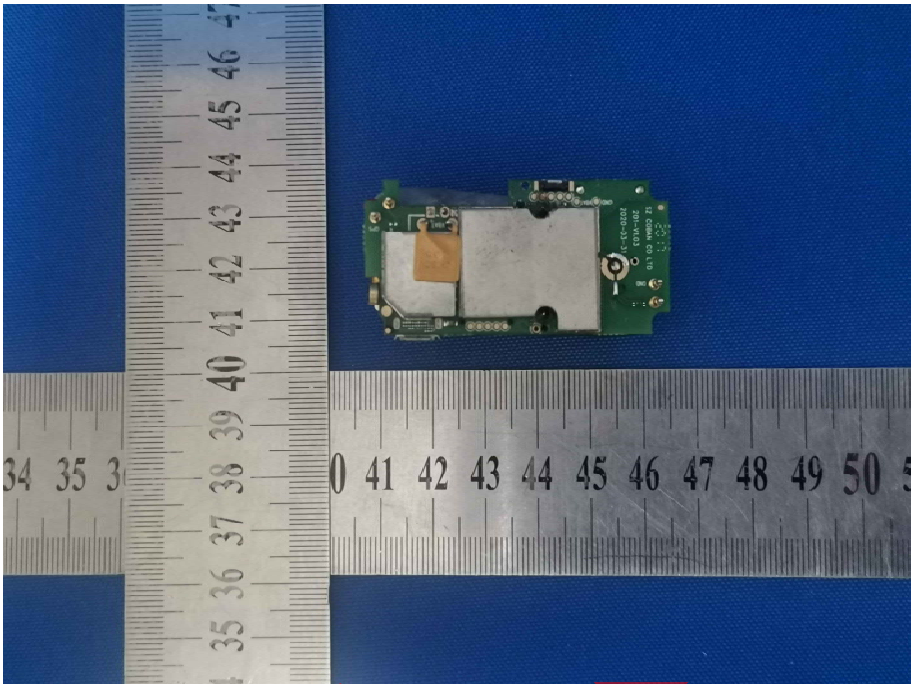
View of Product-8



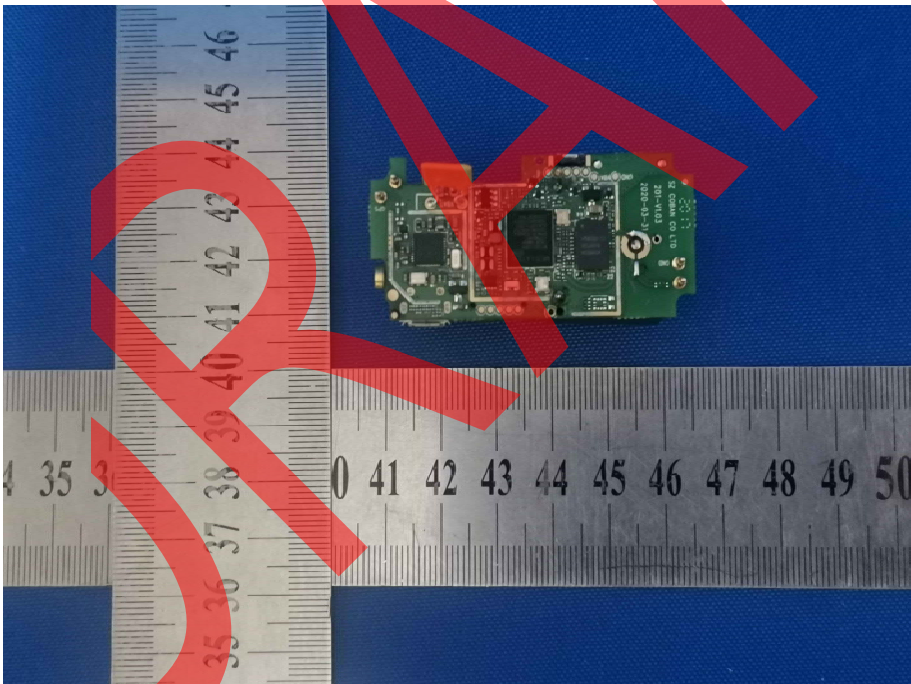
View of Product-9



View of Product-10



View of Product-11



View of Product-12



View of Product-13



View of Product-14

The test report is effective only with both signature and specialized stamp. The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.

*** End of Report ***