



TEST REPORT NUMBER:(8520)129-0611

TEST REPORT

Applicant:	Jazwares, LLC	Fax:	--
		E-mail:	--
Address :	1067 Shotgun Road, Sunrise, Florida, United States, 33326		
Test Date :	13 May 2020 ~ 22 May 2020		

Manufacturer or Supplier :	Jazwares, LLC
Address :	1067 Shotgun Road, Sunrise, Florida, United States, 33326
Sample Description:	FNT – Deluxe Feature Vehicle (RC Baller)
Model number:	FNT0381
Additional Model :	--
Rated Voltage:	4.5V d.c. ("AA" Size *3)
FCC ID :	YNIJAZWARES381
The submitted sample of the above equipment has been tested according to following standard(s)	
FCC Rules and Regulations Part 15 Subpart C 15.249, ANSI C63.10:2013	
CONCLUSION: The submitted sample was found to COMPLY with the test requirement	

Assistant Manager

Name: Nick Lung
Date: June 02, 2020



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1. Summary of test results

The EUT have been tested according to the applicable standards as referenced below.		
Description of Test Item	Standard	Results
20 dB Bandwidth	FCC Part 15: 15.215 ANSI C63.10:2013	PASS
Radiated Emission	FCC Part 15: 15.209 FCC Part 15: 15.249 ANSI C63.10:2013	PASS
Band Edge Compliance	FCC Part 15: 15.249 ANSI C63.10:2013	PASS
Power Line Conducted Emission	FCC Part 15: 15.207 ANSI C63.10: 2013	N/A
Antenna requirement	FCC Part 15: 15.203	PASS

Note: N/A is an abbreviation for Not Applicable.



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2. General test information

2.1. Description of EUT

Power supply	: DC 4.5V from batteries (3*1.5V "AA" batteries)
Operation frequency	: 2410 MHz - 2473 MHz
Modulation	: GFSK
Antenna Type	: Wire antenna, maximum PK gain: 0 dBi

EUT channels and frequencies list:

Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2410 MHz	23	2432 MHz	45	2454 MHz
2	2411 MHz	24	2433 MHz	46	2455 MHz
3	2412 MHz	25	2434 MHz	47	2456 MHz
4	2413 MHz	26	2435 MHz	48	2457 MHz
5	2414 MHz	27	2436 MHz	49	2458 MHz
6	2415 MHz	28	2437 MHz	50	2459 MHz
7	2416 MHz	29	2438 MHz	51	2460 MHz
8	2417 MHz	30	2439 MHz	52	2461 MHz
9	2418 MHz	31	2440 MHz	53	2462 MHz
10	2419 MHz	32	2441 MHz	54	2463 MHz
11	2420 MHz	33	2442 MHz	55	2464 MHz
12	2421 MHz	34	2443 MHz	56	2465 MHz
13	2422 MHz	35	2444 MHz	57	2466 MHz
14	2423 MHz	36	2445 MHz	58	2467 MHz
15	2424 MHz	37	2446 MHz	59	2468 MHz
16	2425 MHz	38	2447 MHz	60	2469 MHz
17	2426 MHz	39	2448 MHz	61	2470 MHz
18	2427 MHz	40	2449 MHz	62	2471 MHz
19	2428 MHz	41	2450 MHz	63	2472 MHz
20	2429 MHz	42	2451 MHz	64	2473 MHz
21	2430 MHz	43	2452 MHz		
22	2431 MHz	44	2453 MHz		

2.2. Accessories of EUT

Description of Accessories	Manufacturer	Model number	Serial No.	Other
N/A	N/A	N/A	N/A	N/A

2.3. Assistant equipment used for test

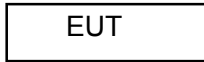
Assistant equipment	Manufacturer	Model number	Serial No.	Other
N/A	N/A	N/A	N/A	N/A



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2.4. Block diagram of EUT configuration for test

Tx Mode:



For Tx Mode, A special test firmware was installed in EUT and which can exercise the EUT work in continues RF test mode at specified test channel as below:

Note: New battery is used during all test

Tested mode, channel, information		
Mode	Channel	Frequency (MHz)
GFSK Tx mode	Low	2410
	Middle	2445
	High	2473

2.5. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	21-25 °C
Humidity range:	40-75%
Pressure range:	86-106 kPa

2.6. Deviations of test standard

No Deviation.

2.7. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd

Addr.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808

Tel.: +86-0769-38826678, <http://www.dgddt.com>, Email: ddt@dgddt.com

CNAS Accreditation No. L6451; A2LA Accreditation No. 3870.01

FCC Designation Number: CN1182; FCC Test Firm Registration Number: 540522

Industry Canada site registration number: 10288A-1

Result reviewed by Centre of Testing Service (Ningbo) Co, Ltd Guangzhou Branch - a Bureau Veritas Company

Address: Building A, No.65 Zhuji Highway, Jishancun, Tianhe District, Guangzhou, China



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2.8. Measurement uncertainty

Test Item	Uncertainty
Bandwidth	1.1%
Peak Output Power (Conducted) (Spectrum Analyzer)	0.86 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Peak Output Power (Conducted) (Power Sensor)	0.74 dB
Power Spectral Density	0.74 dB (10 MHz ≤ f < 3.6 GHz);
	1.38 dB (3.6 GHz ≤ f < 8 GHz)
Frequencies Stability	6.7 x 10 ⁻⁸ (Antenna couple method)
	5.5 x 10 ⁻⁸ (Conducted method)
Conducted Spurious Emissions	0.86 dB (10 MHz ≤ f < 3.6 GHz);
	1.40 dB (3.6 GHz ≤ f < 8 GHz)
	1.66 dB (8 GHz ≤ f < 22 GHz)
Uncertainty for Radio Frequency (RBW < 20 kHz)	3×10 ⁻⁸
Temperature	0.4 °C
Humidity	2%
Uncertainty for Radiation Emission Test (30 MHz -1 GHz)	4.70 dB (Antenna Polarize: V)
	4.84 dB (Antenna Polarize: H)
Uncertainty for Radiation Emission Test (1 GHz - 40 GHz)	4.10 dB (1 - 6 GHz)
	4.40 dB (6 GHz -18 GHz)
	3.54 dB (18 GHz - 26 GHz)
	4.30 dB (26 GHz - 40 GHz)
Uncertainty for Power Line Conduction Emission Test	3.32 dB (150 kHz - 30 MHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	



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3. Equipment used during test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
RF Connected Test (Tonscend RF Measurement System)					
Spectrum analyzer	R&S	FSU26	200071	Sep. 29, 2019	1 Year
Wideband Radio Communication tester	R&S	CMW500	117491	Jun. 25, 2019	1 Year
Vector Signal Generator	Agilent	E8267D	US49060192	Sep. 29, 2019	1 Year
Vector Signal Generator	Agilent	N5182A	MY48180737	Jun. 25, 2019	1 Year
Power Sensor	Agilent	U2021XA	MY55150010	Jun. 28, 2019	1 Year
Power Sensor	Agilent	U2021XA	MY55150011	Jun. 28, 2019	1 Year
DC Power Source	MATRIS	MPS-3005L-3	D813058W	Jun. 25, 2019	1 Year
RF Cable	Micable	C10-01-01-1	100309	Sep. 29, 2019	1 Year
Temp&Humi Programmable	ZHIXIANG	ZXGDJS-150L	ZX170110-A	Oct. 21, 2019	1 Year
Test Software	JS Tonscend	JS1120-3	Ver.2.7	N/A	N/A
Radiation 1#chamber					
EMI Test Receiver	R&S	ESU8	100316	Sep. 29, 2019	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	Jun. 25, 2019	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB9163	9163-462	Nov. 15, 2019	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Sep. 29, 2019	1 Year
Double Ridged Horn Antenna	R&S	HF907	100276	Nov. 15, 2019	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	Sep. 29, 2019	1 Year
Pre-amplifier	A.H.	PAM-0118	360	Sep. 29, 2019	1 Year
Pre-amplifier	TERA-MW	TRLA-0040 G35	101303	Sep. 29, 2019	1 Year
RF Cable	HUBSER	CP-X2+ CP-X1	W11.03+ W12.02	Sep. 29, 2019	1 Year
RF Cable	N/A	5m+6m+1m	06270619	Sep. 29, 2019	1 Year
MI Cable	HUBSER	C10-01-01-1 M	1091629	Sep. 29, 2019	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A
Radiation 2#chamber					
EMI Test Receiver	R&S	ESCI	101364	Sep. 29, 2019	1 Year
Spectrum analyzer	Agilent	E4447A	MY50180031	Jun. 25, 2019	1 Year
Trilog Broadband Antenna	Schwarzbeck	VULB 9163	9163-994	Nov. 15, 2019	1 Year
Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	Sep. 29, 2019	1 Year



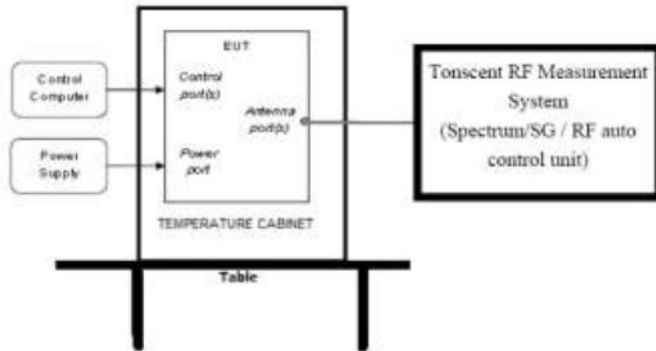
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Double Ridged Horn Antenna	Schwarzbeck	BBHA9120	02108	Jul. 21, 2019	1 Year
Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	Sep. 29, 2019	1 Year
Pre-amplifier	TERA-MW	TRLA-0040 G35	101303	Sep. 29, 2019	1 Year
RF Cable	N/A	14+1.5m	06270619	Sep. 29, 2019	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A
Power Line Conducted Emissions Test					
EMI Test Receiver	R&S	ESU8	100316	Sep. 29, 2019	1 Year
LISN 1	R&S	ENV216	101109	Sep. 29, 2019	1 Year
LISN 2	R&S	ESH2-Z5	100309	Sep. 29, 2019	1 Year
Pulse Limiter	R&S	ESH3-Z2	101242	Sep. 29, 2019	1 Year
CE Cable 1	HUBSER	N/A	W10.01	Sep. 29, 2019	1 Year
Test software	Audix	E3	V 6.11111b	N/A	N/A

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4. 20 dB Bandwidth

4.1. Block diagram of test setup



4.2. Limits

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, 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.

4.3. Test Procedure

- (1) Connect EUT's antenna output to spectrum analyzer by RF cable.
- (2) Set the spectrum analyzer as follows:

RBW:	30 kHz
VBW:	100 kHz
Detector Mode:	Peak
Sweep time:	auto
Trace mode	Max hold
- (3) Allow the trace to stabilize, measure the 20 dB bandwidth of signal.

4.4. Test Result

Mode	Freq (MHz)	20 dB bandwidth Result (MHz)	Conclusion
GFSK	2410	1.178	PASS
	2445	1.186	PASS
	2473	1.178	PASS



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4.5. Original test data

20 dB Bandwidth:

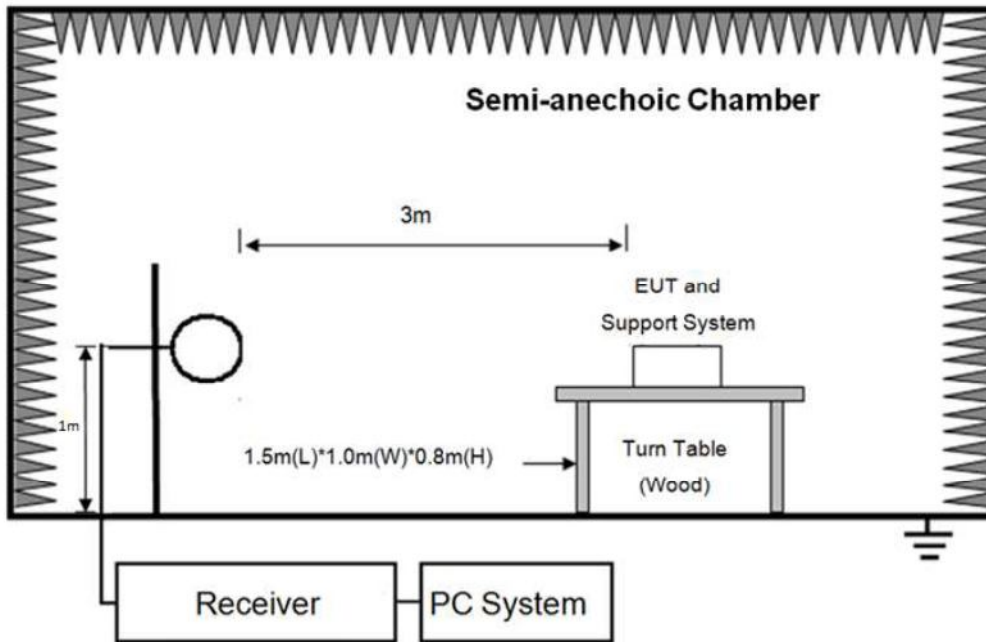
Graphs	
LCH 2410	<p style="text-align: center;">Date: 22.MAY.2020 11:29:52</p>
MCH 2445	<p style="text-align: center;">Date: 22.MAY.2020 11:32:48</p>
HCH 2473	<p style="text-align: center;">Date: 22.MAY.2020 11:34:17</p>

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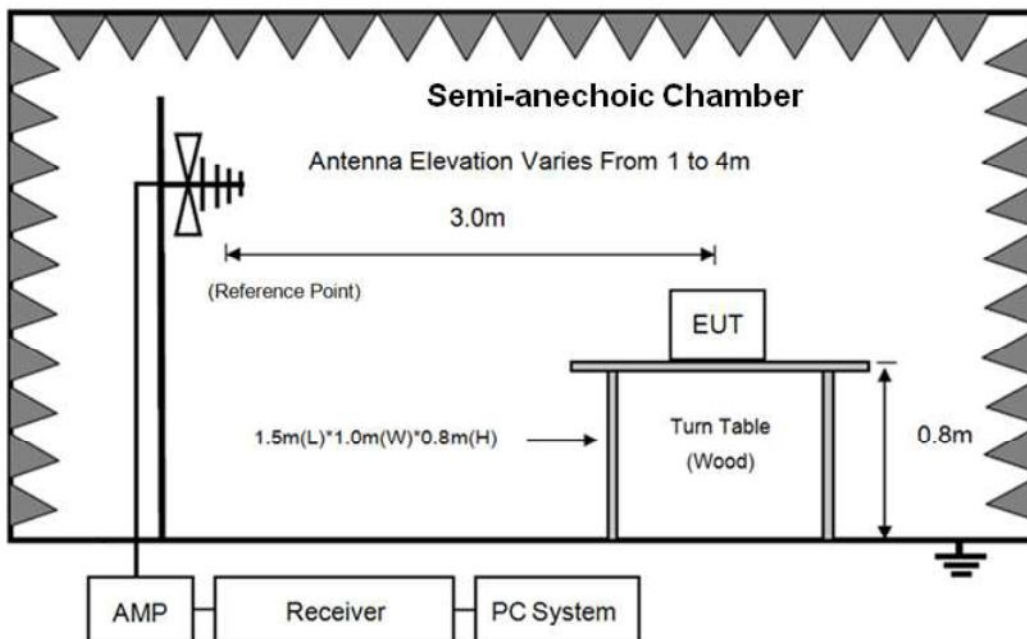
5. Radiated emission

5.1. Block diagram of test setup

In 3m Anechoic Chamber Test Setup Diagram for 9 kHz - 30 MHz

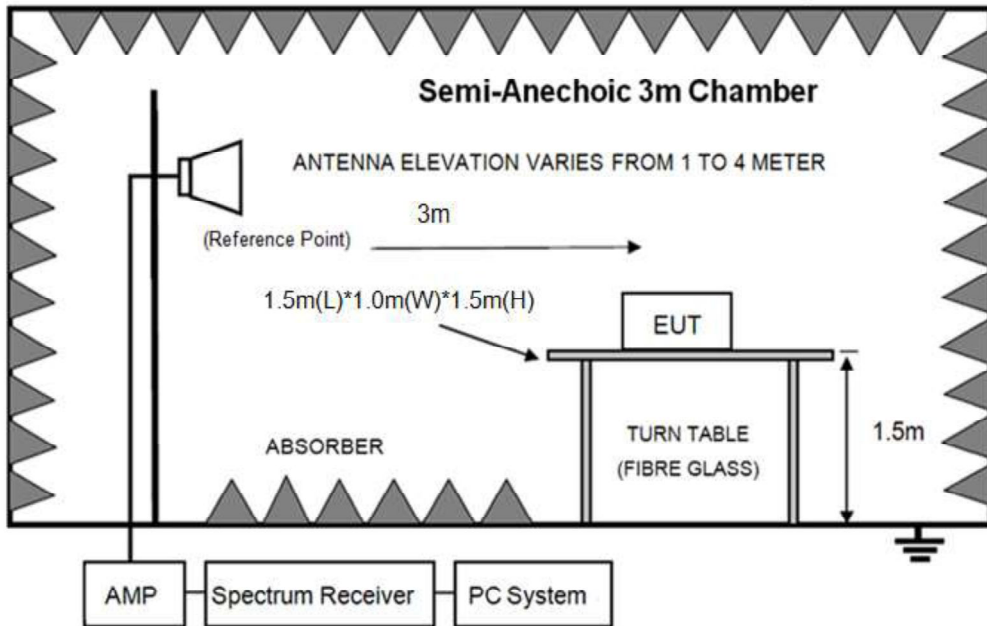


In 3m Anechoic Chamber Test Setup Diagram for 30 MHz - 1 GHz



In 3m Anechoic Chamber Test Setup Diagram for frequency above 1 GHz

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Note: For harmonic emissions test an appropriate high pass filter was inserted in the input port of AMP.

5.2. Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V}/\text{m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000 MHz	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	
Field Strength of Fundamental emission for 2.4 GHz - 2.4835 GHz	3	94.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average) 114.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak)	
Field Strength of Harmonics	3	74.0 $\text{dB}(\mu\text{V})/\text{m}$ (Peak) 54.0 $\text{dB}(\mu\text{V})/\text{m}$ (Average)	

Remark:

- (1) Emission level $\text{dB}\mu\text{V} = 20 \log$ Emission level $\mu\text{V}/\text{m}$
- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.
- (4) 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



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an average detector.

5.3. Test Procedure

- (1) EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber.
- (2) Setup EUT and assistant system according clause 2.3 and 4.2
- (3) Test antenna was located 3m from the EUT on an adjustable mast. Below pre-scan procedure was first performed in order to find prominent radiated emissions.
 - (a) Change work frequency or channel of device if practicable.
 - (b) Change modulation type of device if practicable.
 - (c) Change power supply range from 85% to 115% of the rated supply voltage
 - (d) Rotated EUT though three orthogonal axes to determine the attitude of EUT arrangement produces highest emissions
- (4) Spectrum frequency from 9 kHz to 25 GHz (tenth harmonic of fundamental frequency) was investigated, and no any obvious emission were detected from 9 kHz to 30 MHz and 18 GHz to 25 GHz, so below final test was performed with frequency range from 30 MHz to 18 GHz.
- (5) For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1 m and 4 m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.10:2013 on Radiated Emission test.
- (6) For emissions from 30 MHz to 1 GHz, Quasi-Peak values were measured with EMI Receiver and the bandwidth of Receiver is 120 kHz.
- (7) For emissions above 1 GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1 MHz, VBW is set at 3 MHz for Peak measure; Average value=Peak value + PDCF.
- (8) For fundamental frequency test, set spectrum analyzer's RBW=3 MHz, VBW=10 MHz, peak detector for PK, read the Level in spectrum analyzer and record, Average value=Peak value + PDCF.
- (9) X axis, Y axis, Z axis are tested, and worse setup X axis is reported.



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5.4. Test result

PASS. (See below detailed test result)

All the emissions except fundamental emission from 9 kHz to 25 GHz were comply with 15.209 limit.

Note1: According exploratory test, the emission levels are 20 dB below the limit detected from 9 kHz to 30 MHz and 18 GHz to 25 GHz, so the final test was performed with frequency range from 30 MHz to 18 GHz and recorded in below.

Note2: For emissions below 1 GHz, according exploratory explorer test, when change Tx mode and channel, have no distinct influence on emissions level, so for emissions below 1 GHz, the final test was only performed with EUT working in GFSK, Tx 2410 MHz mode.

Note3: For emissions above 1 GHz. If peak results comply with AV limit, AV Result is deemed to comply with AV limit.



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 Radiated Emission test (below 1 GHz)

TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 2# **E:\2020 RE2# Report Data\BV REPORT\85201290611\fcc below 1g.EM6**

Test Date : 2020-05-17 **Tested By** : Jacky

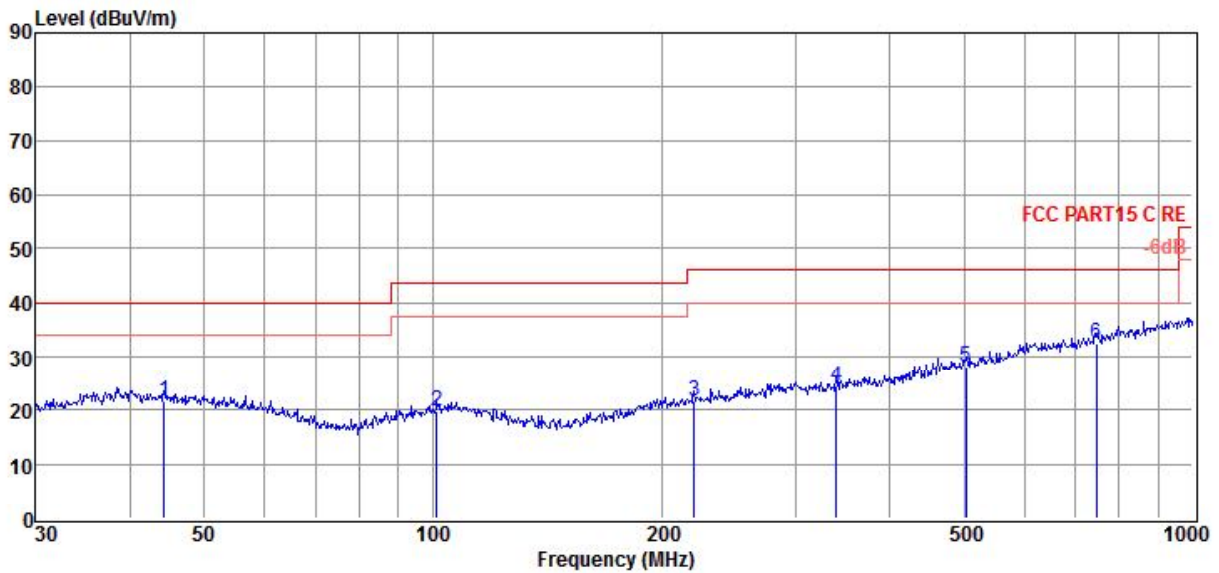
EUT : FNT – Deluxe Feature Vehicle (RC Baller) **Model Number** : FNT0381

Power Supply : DC 4.5V **Test Mode** : Tx mode

Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa **Antenna/Distance** : 2019 VULB 9163 2#/3m/VERTICAL

Memo :

Data: 1



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Result Level (dBμV/m)	Limit Line (dBUV/m)	Over Limit (dB)	Detector	Polarization
1	44.28	3.85	13.95	3.74	21.54	40.00	-18.46	QP	VERTICAL
2	101.29	3.79	11.69	4.21	19.69	43.50	-23.81	QP	VERTICAL
3	220.62	4.56	12.03	4.97	21.56	46.00	-24.44	QP	VERTICAL
4	339.59	4.22	14.65	5.57	24.44	46.00	-21.56	QP	VERTICAL
5	502.94	3.99	17.75	6.29	28.03	46.00	-17.97	QP	VERTICAL
6	747.48	4.47	20.54	7.36	32.37	46.00	-13.63	QP	VERTICAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
 2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
 3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.

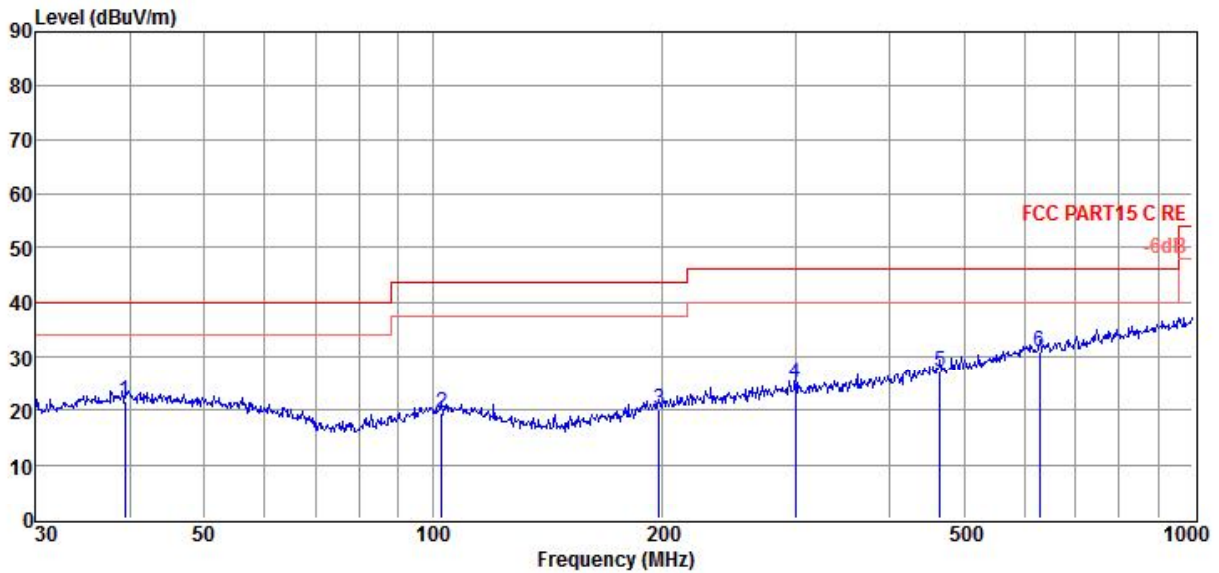


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TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 2# E:\2020 RE2# Report Data\BV REPORT\85201290611\fcc below 1g.EM6
Test Date : 2020-05-17 **Tested By** : Jacky
EUT : FNT – Deluxe Feature Vehicle (RC Baller) **Model Number** : FNT0381
Power Supply : DC 4.5V **Test Mode** : Tx mode
Condition : Temp:24.5°C,Humi:55%,Press:100.1kPa **Antenna/Distance** : 2019 VULB 9163 2#/3m/HORIZONTAL

Memo :

Data: 2



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	Cable Loss (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	39.30	3.68	14.36	3.70	21.74	40.00	-18.26	QP	HORIZONTAL
2	102.72	3.66	11.67	4.22	19.55	43.50	-23.95	QP	HORIZONTAL
3	198.59	3.90	11.34	4.83	20.07	43.50	-23.43	QP	HORIZONTAL
4	300.37	5.74	14.01	5.37	25.12	46.00	-20.88	QP	HORIZONTAL
5	465.60	4.20	17.00	6.13	27.33	46.00	-18.67	QP	HORIZONTAL
6	629.48	4.69	19.49	6.89	31.07	46.00	-14.93	QP	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss.
 2. If Peak Result complies with QP limit, QP Result is deemed to comply with QP limit.
 3. Test setup: RBW: 120 kHz, VBW: 300 kHz, Sweep time: auto.



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Radiated Emission test (above 1 GHz)

Freq. (MHz)	Read level (dBμV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Result Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector type	Polarization
GFSK Tx mode 2410 MHz									
2410.00	97.71	27.52	43.22	4.05	86.06	114.00	-27.94	Peak	HORIZONTAL
4820.00	59.78	32.25	43.48	6.17	54.72	74.00	-19.28	Peak	HORIZONTAL
4820.00	AV=PK-36.72=54.72-36.72=18.00					54.00	-36.00	Average	HORIZONTAL
7230.00	57.37	37.14	42.91	7.82	59.42	74.00	-14.58	Peak	HORIZONTAL
7230.00	AV=PK-36.72=59.42-36.72=22.70					54.00	-31.30	Average	HORIZONTAL
8565.00	48.78	37.83	42.68	8.64	52.57	74.00	-21.43	Peak	HORIZONTAL
9466.00	47.80	39.07	42.50	8.96	53.33	74.00	-20.67	Peak	HORIZONTAL
11064.00	46.42	40.31	42.34	9.38	53.77	74.00	-20.23	Peak	HORIZONTAL
13189.00	44.11	39.86	41.07	10.74	53.64	74.00	-20.36	Peak	HORIZONTAL
2410.00	94.70	27.52	43.22	4.05	83.05	114.00	-30.95	Peak	VERTICAL
4740.00	56.43	32.14	43.51	6.12	51.18	74.00	-22.82	Peak	VERTICAL
7230.00	58.37	37.14	42.91	7.82	60.42	74.00	-13.58	Peak	VERTICAL
7230.00	AV=PK-36.72=60.42-36.72=23.70					54.00	-30.30	Average	VERTICAL
9534.00	47.69	39.13	42.49	9.02	53.35	74.00	-20.65	Peak	VERTICAL
10435.00	46.68	40.11	42.38	9.35	53.76	74.00	-20.24	Peak	VERTICAL
11744.00	46.31	39.41	42.31	10.23	53.64	74.00	-20.36	Peak	VERTICAL
12900.00	44.91	39.40	41.36	10.68	53.63	74.00	-20.37	Peak	VERTICAL
GFSK Tx mode 2445 MHz									
2445.00	96.83	27.59	43.23	4.09	85.28	114.00	-28.72	Peak	HORIZONTAL
4876.00	60.40	32.33	43.46	6.20	55.47	74.00	-18.53	Peak	HORIZONTAL
4876.00	AV=PK-36.72=55.47-36.72=18.75					54.00	-35.25	Average	HORIZONTAL
7335.00	55.62	37.20	42.89	7.94	57.87	74.00	-16.13	Peak	HORIZONTAL
7335.00	AV=PK-36.72=57.87-36.72=21.15					54.00	-32.85	Average	HORIZONTAL
10129.00	46.83	39.68	42.39	9.37	53.49	74.00	-20.51	Peak	HORIZONTAL
11200.00	45.86	40.12	42.34	9.55	53.19	74.00	-20.81	Peak	HORIZONTAL
12509.00	44.56	38.62	41.76	10.62	52.04	74.00	-21.96	Peak	HORIZONTAL
15841.00	42.70	38.59	40.11	11.54	52.72	74.00	-21.28	Peak	HORIZONTAL
2445.00	91.78	27.59	43.23	4.09	80.23	114.00	-33.77	Peak	VERTICAL
4961.00	58.05	32.45	43.43	6.25	53.32	74.00	-20.68	Peak	VERTICAL
7335.00	56.86	37.20	42.89	7.94	59.11	74.00	-14.89	Peak	VERTICAL
7335.00	AV=PK-36.72=59.11-36.72=22.39					54.00	-31.61	Average	VERTICAL
9449.00	46.82	39.06	42.50	8.95	52.33	74.00	-21.67	Peak	VERTICAL
10996.00	46.28	40.40	42.35	9.30	53.63	74.00	-20.37	Peak	VERTICAL
13461.00	43.43	40.25	40.81	10.80	53.67	74.00	-20.33	Peak	VERTICAL
16249.00	42.25	39.50	40.09	11.77	53.43	74.00	-20.57	Peak	VERTICAL
GFSK Tx mode 2473 MHz									
2473.00	95.97	27.65	43.25	4.11	84.48	114.00	-29.52	Peak	HORIZONTAL
4946.00	61.04	32.42	43.43	6.24	56.27	74.00	-17.73	Peak	HORIZONTAL



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4946.00	AV=PK-36.72=56.27-36.72=19.55					54.00	-34.45	Average	HORIZONTAL
7426.00	56.46	37.26	42.88	8.04	58.88	74.00	-15.12	Peak	HORIZONTAL
7426.00	AV=PK-36.72=58.88-36.72=22.16					54.00	-31.84	Average	HORIZONTAL
9534.00	47.49	39.13	42.49	9.02	53.15	74.00	-20.85	Peak	HORIZONTAL
11081.00	45.49	40.29	42.34	9.40	52.84	74.00	-21.16	Peak	HORIZONTAL
13665.00	42.93	40.50	40.61	10.85	53.67	74.00	-20.33	Peak	HORIZONTAL
15110.00	42.65	39.78	40.19	11.64	53.88	74.00	-20.12	Peak	HORIZONTAL
2473.00	90.78	27.65	43.25	4.11	79.29	114.00	-34.71	Peak	VERTICAL
4944.00	60.37	32.42	43.43	6.24	55.60	74.00	-18.40	Peak	VERTICAL
4944.00	AV=PK-36.72=55.60-36.72=18.88					54.00	-35.12	Average	VERTICAL
7426.00	56.63	37.26	42.88	8.04	59.05	74.00	-14.95	Peak	VERTICAL
7426.00	AV=PK-36.72=59.05-36.72=22.33					54.00	-31.67	Average	VERTICAL
9534.00	48.04	39.13	42.49	9.02	53.70	74.00	-20.30	Peak	VERTICAL
10690.00	45.94	40.28	42.36	9.32	53.18	74.00	-20.82	Peak	VERTICAL
11795.00	46.19	39.35	42.31	10.29	53.52	74.00	-20.48	Peak	VERTICAL
14056.00	41.91	40.89	40.29	10.97	53.48	74.00	-20.52	Peak	VERTICAL

Result: Pass

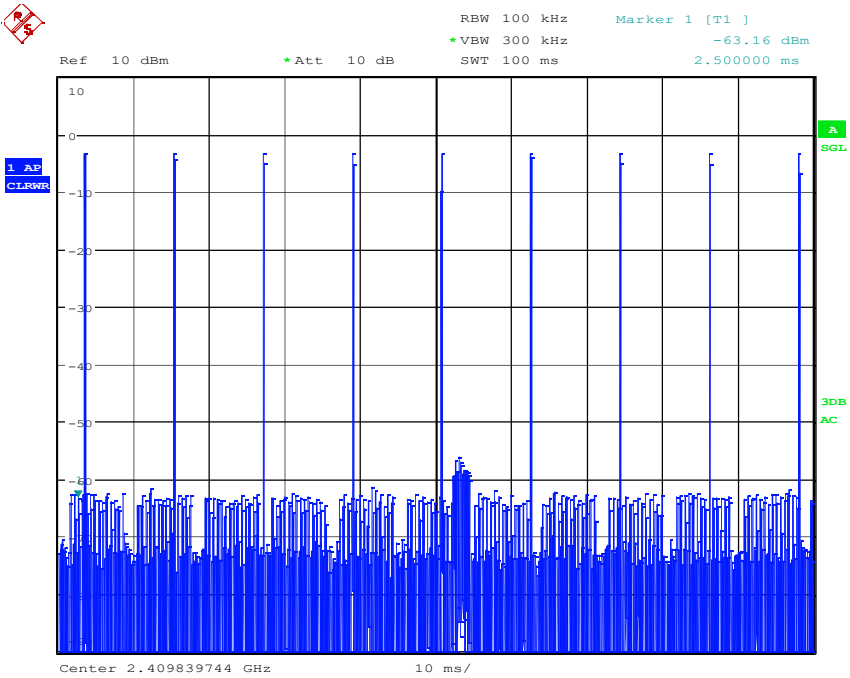
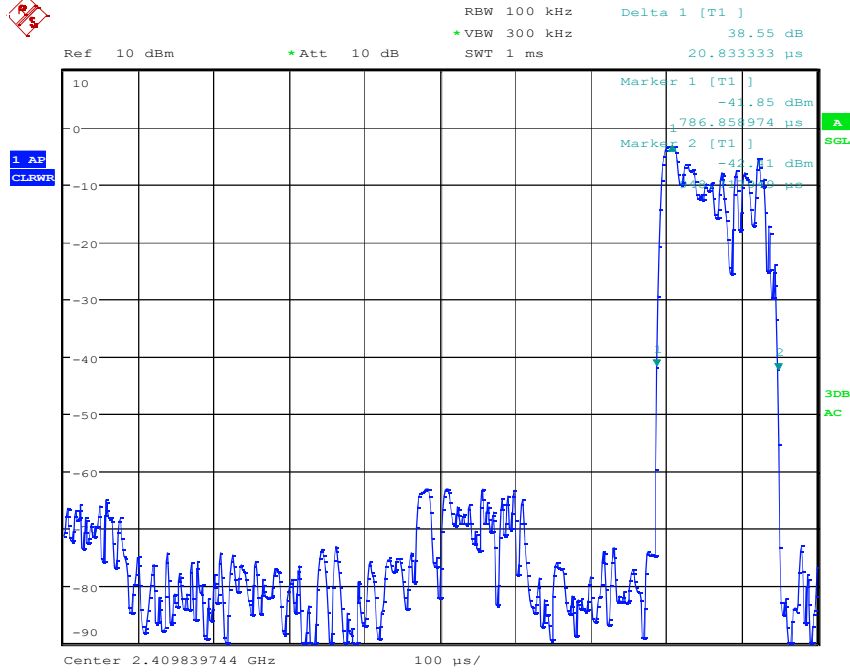
Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.

2. For emissions above 1GHz. If peak results comply with AV limit, AV Result is deemed to comply with AV limit.

Average value:	
Calculate Formula:	Average value=Peak value + PDCF
	PDCF= 20 log(Duty cycle)
	Duty cycle= $T_{on\ time} / T_{period}$
Test data:	$T_{on\ time} = 0.162 * 9 = 1.458\ ms$
	$T_{period} = 100\ ms$
	PDCF=-36.72



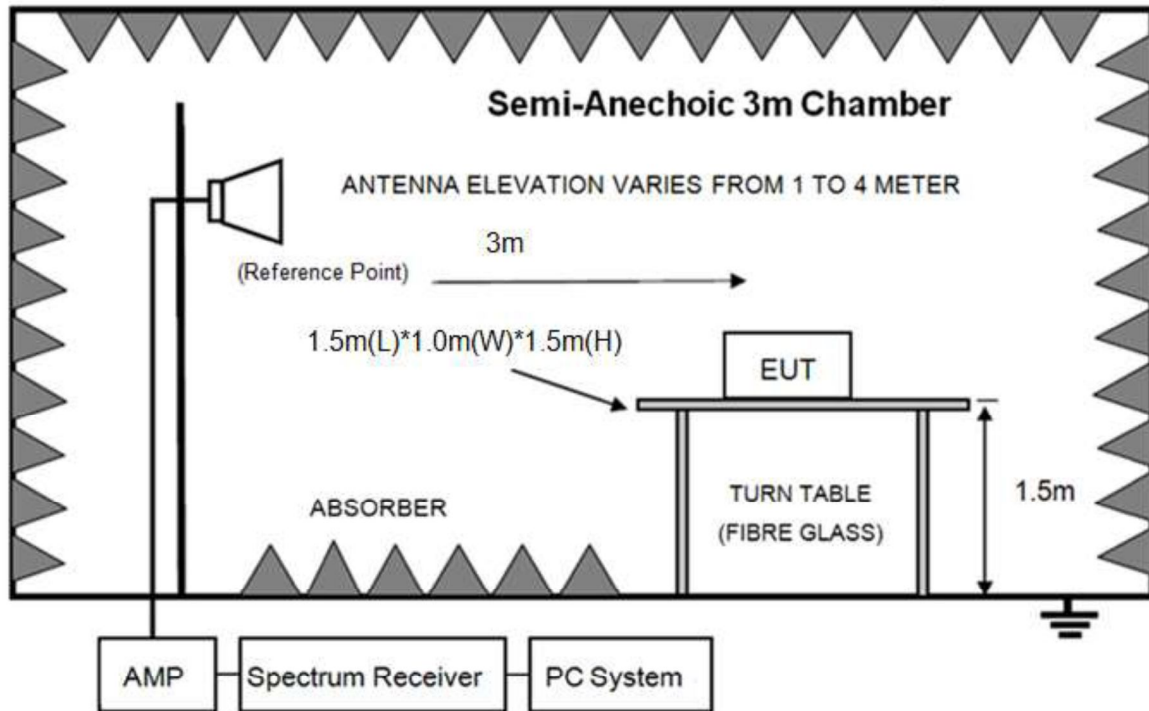
TEST REPORT NUMBER:(8520)129-0611



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6. Band Edge Compliance

6.1. Block diagram of test setup



6.2. Limit

All the lower and upper band-edges emissions appearing within 2310 MHz to 2390 MHz and 2483.5 MHz to 2500 MHz restricted frequency bands shall not exceed the limits shown in 15.209, Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

6.3. Test Procedure

Same with clause 8.3 except change investigated frequency range from 2310 MHz to 2430 MHz and 2470 MHz to 2500 MHz.

Remark: All restriction band have been tested, and only the worst case is shown in report.

6.4. Test result

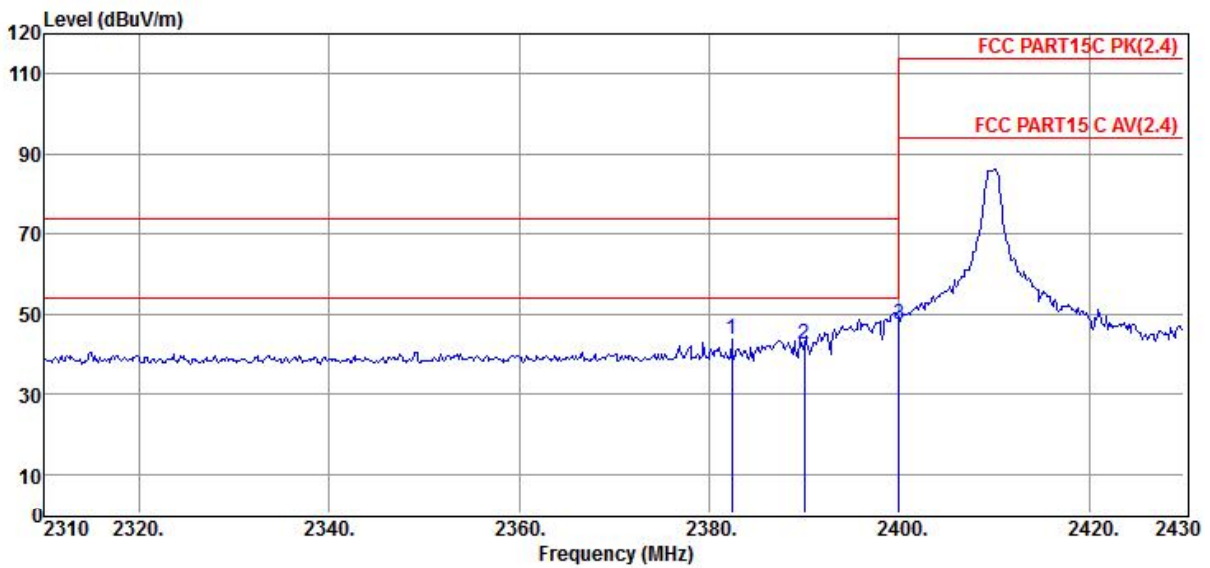
PASS. (See below detailed test result)



TEST REPORT NUMBER:(8520)129-0611
TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber2# E:\2020 RE2# Report Data\BV REPORT\85201290611\FCC ABOVE1G.EM6
Test Date : 2020-05-17 **Tested By** : Jacky
EUT : FNT – Deluxe Feature Vehicle (RC Baller) **Model Number** : FNT0381
Power Supply : DC 4.5V **Test Mode** : Tx mode
Condition : Temp:24.5'C,Humi:55%,Press:100.1kPa **Antenna/Distance** : 2019 BBHA9120D/3m/HORIZONTAL
Memo : 2410 MHz

Data: 1



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2382.36	55.53	27.46	43.20	4.03	43.82	74.00	-30.18	Peak	HORIZONTAL
2	2390.04	54.28	27.48	43.21	4.03	42.58	74.00	-31.42	Peak	HORIZONTAL
3	2400.00	59.24	27.50	43.21	4.04	47.57	74.00	-26.43	Peak	HORIZONTAL

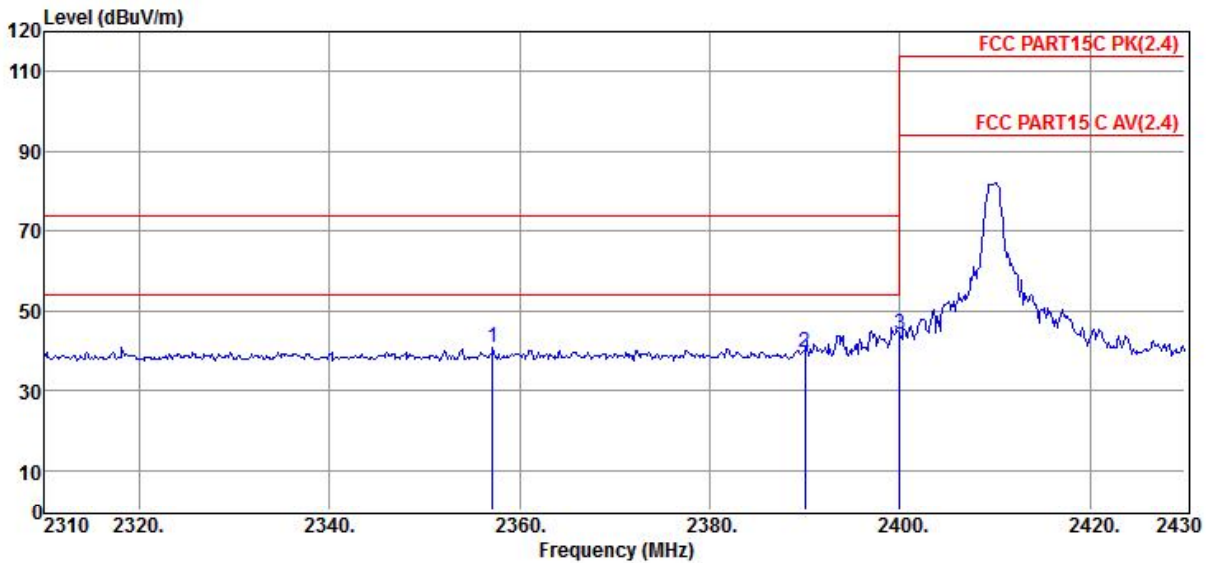
Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.



TEST REPORT NUMBER:(8520)129-0611
TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 2# E:\2020 RE2# Report Data\BV REPORT\85201290611\FCC ABOVE1G.EM6
Test Date : 2020-05-17 **Tested By** : Jacky
EUT : FNT – Deluxe Feature Vehicle (RC Baller) **Model Number** : FNT0381
Power Supply : DC 4.5V **Test Mode** : Tx mode
Condition : Temp:24.5'C,Humi:55%,Press:100.1kPa **Antenna/Distance** : 2019 BBHA9120D/3m/VERTICAL
Memo : 2410 MHz

Data: 2



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2357.16	52.55	27.41	43.19	4.00	40.77	74.00	-33.23	Peak	VERTICAL
2	2390.04	51.37	27.48	43.21	4.03	39.67	74.00	-34.33	Peak	VERTICAL
3	2400.00	55.95	27.50	43.21	4.04	44.28	74.00	-29.72	Peak	VERTICAL

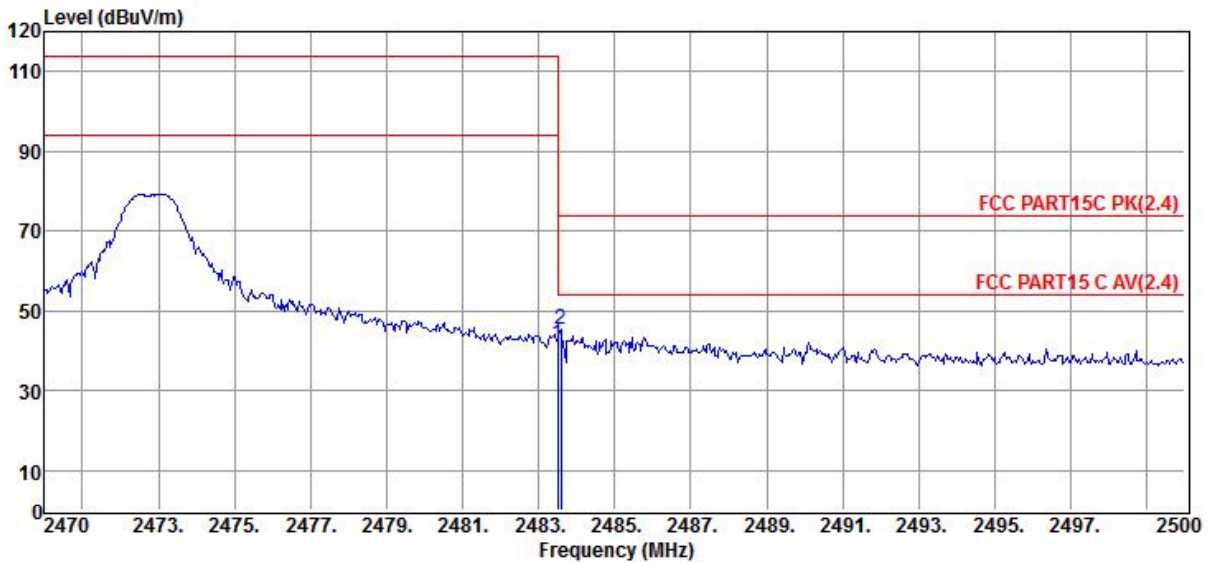
Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.



TEST REPORT NUMBER:(8520)129-0611
TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 2# E:\2020 RE2# Report Data\BV REPORT\85201290611\FCC ABOVE1G.EM6
Test Date : 2020-05-17 **Tested By** : Jacky
EUT : FNT – Deluxe Feature Vehicle (RC Baller) **Model Number** : FNT0381
Power Supply : DC 4.5V **Test Mode** : Tx mode
Condition : Temp:24.5'C,Humi:55%,Press:100.1kPa **Antenna/Distance** : 2019 BBHA9120D/3m/VERTICAL
Memo : 2473 MHz

Data: 3



Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	53.10	27.67	43.25	4.12	41.64	74.00	-32.36	Peak	VERTICAL
2	2483.59	56.62	27.67	43.25	4.12	45.16	74.00	-28.84	Peak	VERTICAL

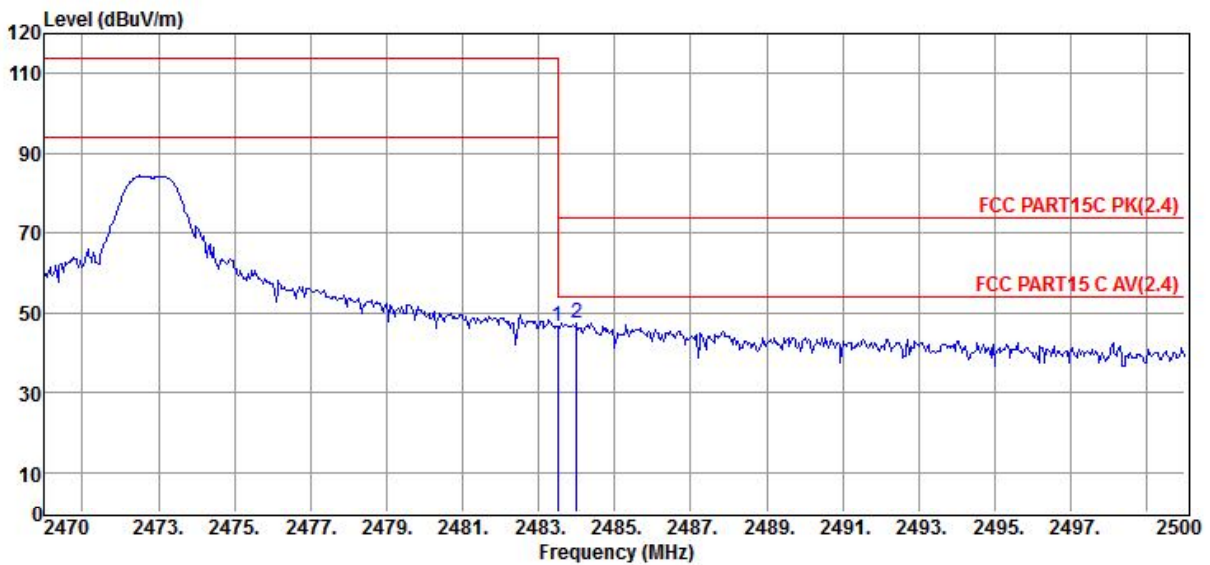
Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.



TEST REPORT NUMBER:(8520)129-0611
TR-4-E-009 Radiated Emission Test Result

Test Site : DDT 3m Chamber 2# E:\2020 RE2# Report Data\BV REPORT\85201290611\FCC ABOVE1G.EM6
Test Date : 2020-05-17 **Tested By** : Jacky
EUT : FNT – Deluxe Feature Vehicle (RC Baller) **Model Number** : FNT0381
Power Supply : DC 4.5V **Test Mode** : Tx mode
Condition : Temp:24.5'C,Humi:55%,Press:100.1kPa **Antenna/Distance** : 2019 BBHA9120D/3m/HORIZONTAL
Memo : 2473 MHz

Data: 4



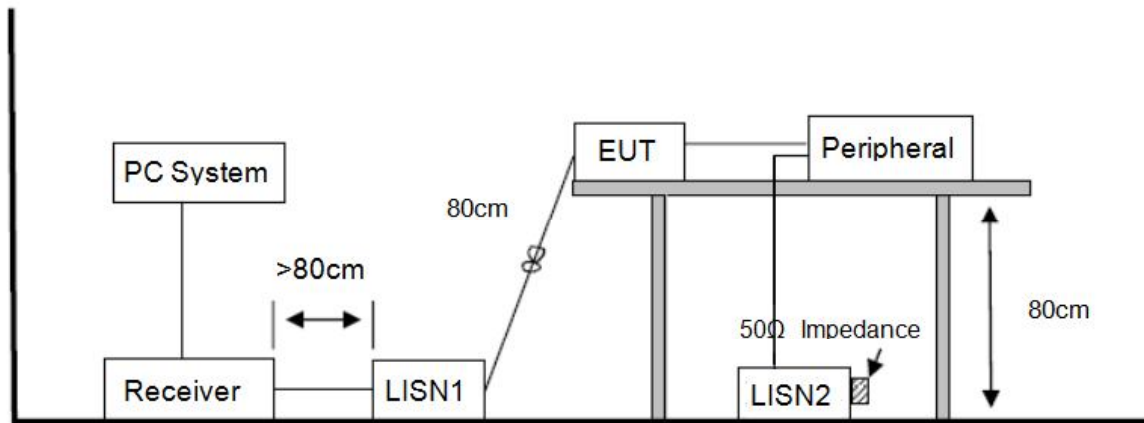
Item (Mark)	Freq. (MHz)	Read Level (dBμV)	Antenna Factor (dB/m)	PRM Factor (dB)	Cable Loss (dB)	Result Level (dBμV/m)	Limit Line (dBμV/m)	Over Limit (dB)	Detector	Polarization
1	2483.50	58.17	27.67	43.25	4.12	46.71	74.00	-27.29	Peak	HORIZONTAL
2	2484.01	58.91	27.67	43.25	4.12	47.45	74.00	-26.55	Peak	HORIZONTAL

Note: 1. Result Level = Read Level + Antenna Factor + Cable loss - PRM Factor.
 2. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
 3. Test setup: RBW: 1 MHz, VBW: 3 MHz, Sweep time: auto.

TEST REPORT NUMBER:(8520)129-0611

7. Power Line Conducted Emission

7.1. Block diagram of test setup



7.2. Power Line Conducted Emission Limits

Frequency	Quasi-Peak Level dB(μ V)	Average Level dB(μ V)
150 kHz ~ 500 kHz	66 ~ 56*	56 ~ 46*
500 kHz ~ 5 MHz	56	46
5 MHz ~ 30 MHz	60	50

Note 1: * Decreasing linearly with logarithm of frequency.

Note 2: The lower limit shall apply at the transition frequencies.

7.3. Test Procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 10.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30 MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.4 were scanned during the preliminary test.



TEST REPORT NUMBER:(8520)129-0611

After the preliminary scan, we found the test mode producing the highest emission level. The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 9 kHz.

7.4. Test Result

Not Applicable, since the EUT is only battery-operated device.

8. Antenna Requirements

8.1. Limit

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

8.2. Result

The antenna used for this product is wire antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 0 dBi.