

# TEST REPORT

Issued By: Dongguan New Testing Centre Co., Ltd

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7. As for test verdict, “—” means is “no need for judgment” “N/A” means is “not applicable”, “P” means “pass”, “F” means “fail”.

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## TEST REPORT DECLARE

<b>IC ID</b>	: 25977-27006
<b>FCC ID</b>	: 2AUJF-27006
<b>Applicant</b>	: Diecast Masters Company Limited
<b>Address</b>	: Room 1801-5, 18/F., King Palace Plaza, 52A Sha Tsui Road, Tsuen Wan, N.T., Hong Kong
<b>Equipment under Test</b>	: Radio-Control 1/16 Freightliner Cascadia
<b>Model No</b>	: 27006
<b>Trade Mark</b>	: Diecast-Masters
<b>Manufacturer</b>	: Guang Dong Yu Lee Technology Corporation Limited
<b>Address</b>	: Jinlong Industrial District, Sanzhong Village, Qingxi Town, Dongguan City, Guangdong Province, China

**Test Standard Used:**

FCC Rules and Regulations Part 15 Subpart C: 2019, ANSI C63.10:2013.

RSS-210: Issue 10 December 2019, RSS-Gen: March 6, 2019.

**We Declare:**

The equipment described above is tested by Dongguan New Testing Centre Co., Ltd and in the configuration tested the equipment complied with the standards specified above. The test results are contained in this test report and Dongguan New Testing Centre Co., Ltd is assumed of full responsibility for the accuracy and completeness of these tests.

**After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above standards.**

<b>Report No.:</b>	NTC-ER2007045		
<b>Date of Test:</b>	May.18, 2020 to Oct.20, 2020	<b>Date of Report:</b>	Oct.21, 2020

**Prepared By:**

*Jeffrey Zhang*  
**Jeffrey Zhang/Engineer**



*Dave*  
**Dave Gao/LAB Manager**

pNote: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan New Testing Centre Co., Ltd

## 1. Summary of test results

Description of Test Item	Standard	Results
-20dB Bandwidth and 99% occupied bandwidth	FCC Part 15 Subpart C:2019 ANSI C63.10:2013 RSS-210:2019; RSS-Gen:2019	PASS
Conducted emission test	FCC Part 15 Subpart C:2019 ANSI C63.10:2013 RSS-210:2019; RSS-Gen:2019	N/A
Radiated emission test	FCC Part 15 Subpart C:2019 ANSI C63.10:2013 RSS-210:2019; RSS-Gen:2019	PASS
Antenna requirement	FCC 15.203; RSS-GEN	PASS
Restricted band and band-edge	FCC 15.249,15.209; RSS-210,RSS-GEN	PASS

## 2. General test information

### 2.1. Description of EUT

EUT* Name	: Radio-Control 1/16 Freightliner Cascadia
Test model	: 27006
EUT function description	: Please reference user manual of this device
Power supply	: DC 3V (New battery is used; Battery AAA 1.5V * 2Pcs)
Trade mark	: Diecast-Masters
Operation frequency	: 2402-2478MHz
Modulation Type	: GFSK
Channel Space	: 1MHz
Channel Number	: 77
Antenna Type	: Wire antenna
Antenna Gain	: 0 dBi
Hardware Version	: V1.0
Software Version	: V1.0

Note: 1,EUT is the ab. of equipment under test.

Channel List:

Channels	Frequency (MHz)	Channels	Frequency (MHz)	Channels	Frequency (MHz)
0	2402	26	2428	52	2454
1	2403	27	2429	53	2455
2	2404	28	2430	54	2456
3	2405	29	2431	55	2457
4	2406	30	2432	56	2458
5	2407	31	2433	57	2459
6	2408	32	2434	58	2460
7	2409	33	2435	59	2461
8	2410	34	2436	60	2462
9	2411	35	2437	61	2463
10	2412	36	2438	62	2464
11	2413	37	2439	63	2465
12	2414	38	2440	64	2466
13	2415	39	2441	65	2467
14	2416	40	2442	66	2468
15	2417	41	2443	67	2469
16	2418	42	2444	68	2470
17	2419	43	2445	69	2471
18	2420	44	2446	70	2472
19	2421	45	2447	71	2473
20	2422	46	2448	72	2474
21	2423	47	2449	73	2475
22	2424	48	2450	74	2476
23	2425	49	2451	75	2477
24	2426	50	2452	76	2478
25	2427	51	2453	-	-

## 2.2. Description of test modes

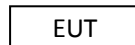
The transmitter module was tested while in a continuous transmitter/receiver mode. The EUT was tuned to a low, middle, and high channel for all tests. For all test case pre/scans were completed in all modes to determine worst case levels.

Entry test mode steps of transmitter:

1. At the same time, press and hold the demo + light button to start up, enter the test mode;
2. After entering the test mode, press the light button to select mode and frequency:  
 2402MHz (modulation) -- > 2440 MHz (modulation) -- > 2478 MHz (modulation) -- > 2402 MHz (Un-modulation) -- > 2440 MHz (Un-modulation)-- > 2478 MHz (Un-modulation).

Test Software Version	V1.0		
Tx power	Fixed		
Test Frequency	2402MHz	2440MHz	2478MHz

## 2.3. Block diagram EUT configuration for test



## 2.4. Test environment conditions

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

Temperature range:	21-24°C
Humidity range:	40-75%
Pressure range:	86-106kPa

## 2.5. Measurement uncertainty

Test Item	Uncertainty
Uncertainty for Conduction emission test	2.44dB
Uncertainty for Radiation Emission test (30MHz – 1GHz)	3.14 dB (Polarize: V)
	3.16 dB (Polarize: H)
Uncertainty for Radiation Emission test (1GHz – 26GHz)	4.27 dB (Polarize: V)
	4.51 dB (Polarize: H)
Uncertainty for Radiation Emission test (26GHz – 40GHz)	4.60 dB (Polarize: V)
	4.60 dB (Polarize: H)
Bandwidth	±1.2%
Stop Transmitting Time Test	±0.5%
Frequency error	5.8 x 10 <sup>-8</sup>

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

### 3. Radiated emission test

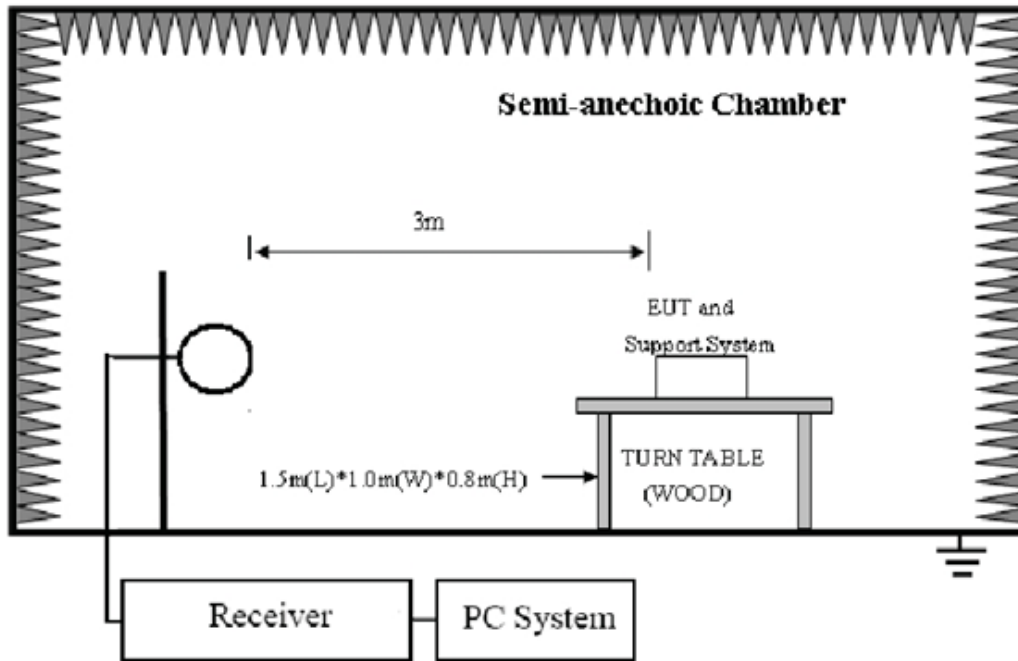
#### 3.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	EMI Test Receiver	R&S	ESR	7250-30406 7528	2020-05-25	1 Year
2	Trilog Broadband Antenna	Schwarzbeck	VULB9168	00969	2019-03-28	2 Year
3	Active Loop antenna	Schwarzbeck	FMZB-1519	1519-038	2019-05-23	2 Year
4	Horn antenna	Schwarzbeck	BBHA9120D	453	2019-05-16	2 Year
5	Pre-amplifier	R&S	SCU18	105326	2020-05-25	1 Year
6	RF Cable	GORE	OSQ01Q010 78.7	SN1545847 3	2019-05-23	2 Year
7	RF Cable	ESCO	ETS-LINGR EN	RFC-SMS-1 00-SMS-340 -IN	2019-05-23	2 Year
8	Measurement software	Farad	EZ-EMC(VE R:1.1.4.2)	N/A	N/A	N/A

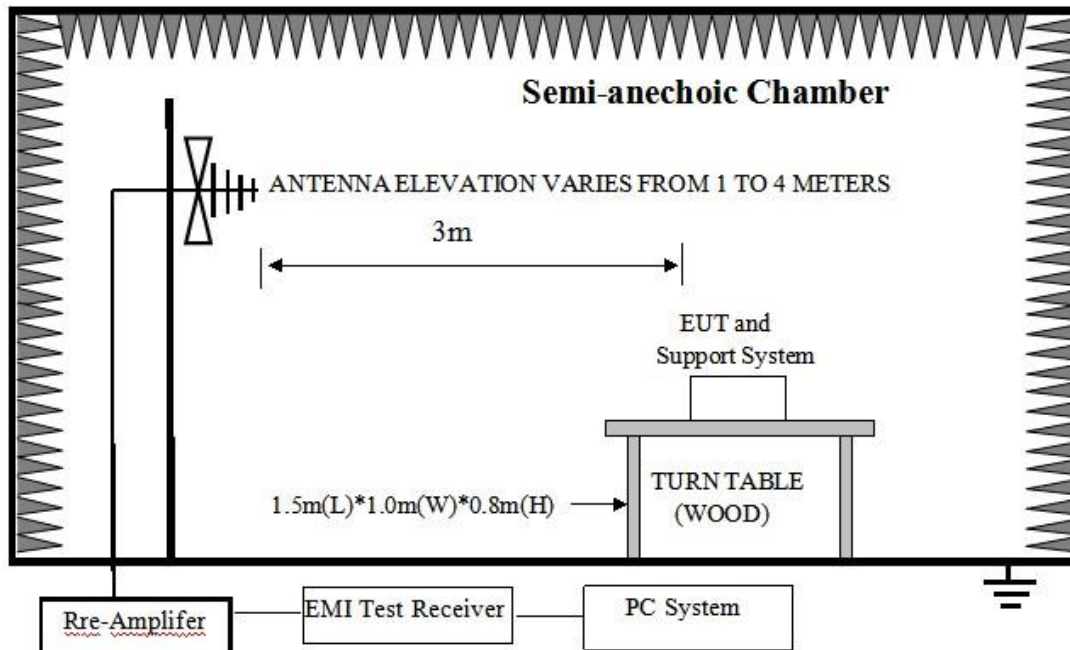


### 3.2. Block diagram of test setup

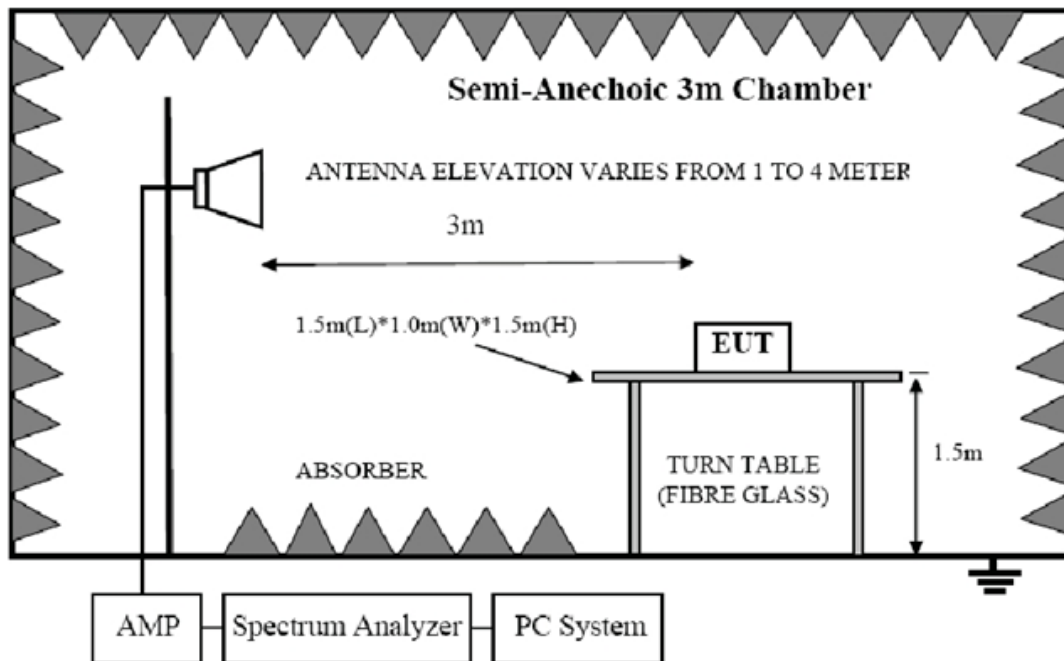
In 3m Anechoic Chamber Test Setup Diagram for 9KHz to 30MHz:



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



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



### 3.3. Limit

Rss-gen restricted frequency band:

**Table 6 – Restricted Frequency Bands\***

MHz	MHz	GHz
0.090-0.110	240-285	9.0-9.2
2.1735-2.1905	322-335.4	9.3-9.5
3.020-3.026	399.9-410	10.6-12.7
4.125-4.128	608-614	13.25-13.4
4.17725-4.17775	960-1427	14.47-14.5
4.20725-4.20775	1435-1626.5	15.35-16.2
5.677-5.683	1645.5-1646.5	17.7-21.4
6.215-6.218	1660-1710	22.01-23.12
6.26775-6.26825	1718.8-1722.2	23.6-24.0
6.31175-6.31225	2200-2300	31.2-31.8
8.291-8.294	2310-2390	36.43-36.5
8.362-8.366	2655-2900	Above 38.6
8.37625-8.38675	3260-3267	
8.41425-8.41475	3332-3339	
12.29-12.293	3345.8-3358	
12.51975-12.52025	3500-4400	
12.57675-12.57725	4500-5150	
13.36-13.41	5350-5460	
16.42-16.423	7250-7750	
16.69475-16.69525	8025-8500	
16.80425-16.80475		
25.5-25.67		
37.5-38.25		
73-74.6		
74.8-75.2		
108-138		
156.52475-156.52525		
156.7-156.9		

\* Certain frequency bands listed in Table 6 and in bands above 38.6 GHz are designated for licence-exempt applications. These frequency bands and the requirements that apply to the devices are set out in the 200- and 300-series of RSSs, such as RSS-210 and RSS-310, which contain the requirements that apply to licence-exempt radio apparatus.

FCC 15.205 Restricted frequency band:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
<sup>1</sup> 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	( <sup>2</sup> )

FCC 15.209 and rss-gen table 4 Limit

Frequency (MHz)	Distance (Meters)	Field Strengths Limits dB(μV)/m
30--88	3	40.0
88--216	3	43.5
216--960	3	46.0
960--1000	3	54.0
Above 1GHz	3	Peak: 74.0
	3	Average:54.0

Note: (1) The smaller limit shall apply at the cross point between two frequency bands.

(2)Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

(3)The emission limits shown in the above table are based on measurements employing a CISPR QP detector except for the frequency bands 9-90KHz, 110-490KHz and above 1000MHz.Radiated emissions limits in these three bands are based on measurements employing an average detector.

(4) At frequencies below 30MHz, measurement may be performed at a distance closer then that specified, and the limit at closer measurement distance can be extrapolated by below formula:

$$\text{Limit}_{3m}(\text{dBuV}/\text{m}) = \text{Limit}_{30m}(\text{dBuV}/\text{m}) + 40\text{Log}(30\text{m}/3\text{m})$$

(5)All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

### 3.4. Test Procedure

#### Procedure of Preliminary Test

Configuration EUT to simulate typical usage as described in clause 2.3 and test equipment as described in clause 4.2 of this report.

Mains cables, telephone lines or other connections to auxiliary equipment located outside the test are shall drape to the floor, be fitted with ferrite clamps or ferrite tubes placed on the floor at the point where the cable reaches the floor and then routed to the place where they leave the turntable. No extension cords shall be used to mains receptacle.

EUT height should be 0.8m for below 1GHz and 1.5m for above 1GHz at ground with absorbers.

The antenna was placed at 3 meter away from the EUT as stated in ANSI C63.10. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.

The Analyzer / Receiver quickly scanned from 30MHz to 25GHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

The X, Y, Z three axial are tested and the report only the worst case.

The emissions from 9KHz to 1GHz, QP or average values were measured with EMI receiver with below RBW:

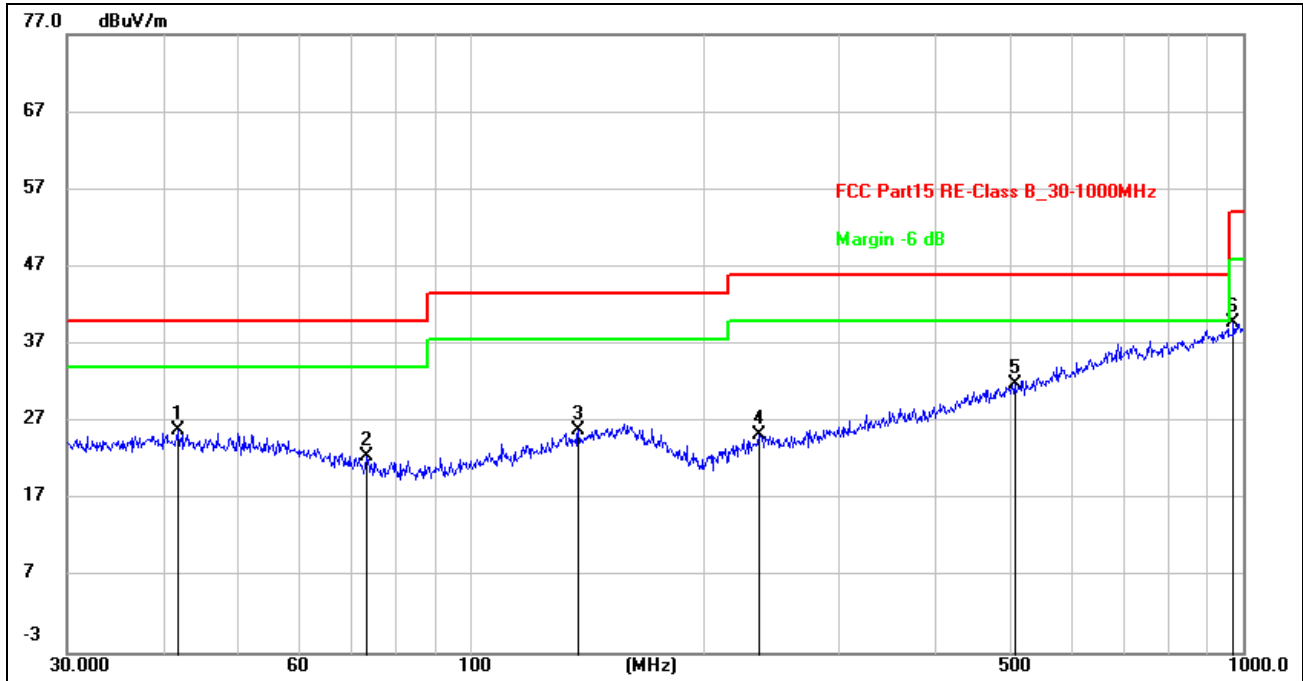
Frequency band	RBW
9KHz-150KHz	200Hz
150KHz-30MHz	9KHz
30MHz-1GHz	120KHz

For emissions above 1GHz, both Peak and Average level were measured with Spectrum Analyzer, and the RBW is set at 1MHz, VBW is set at 3MHz for Peak measure; RMS detector RBW 1MHz VBW 3MHz for Average measure.

### 3.5. Test result

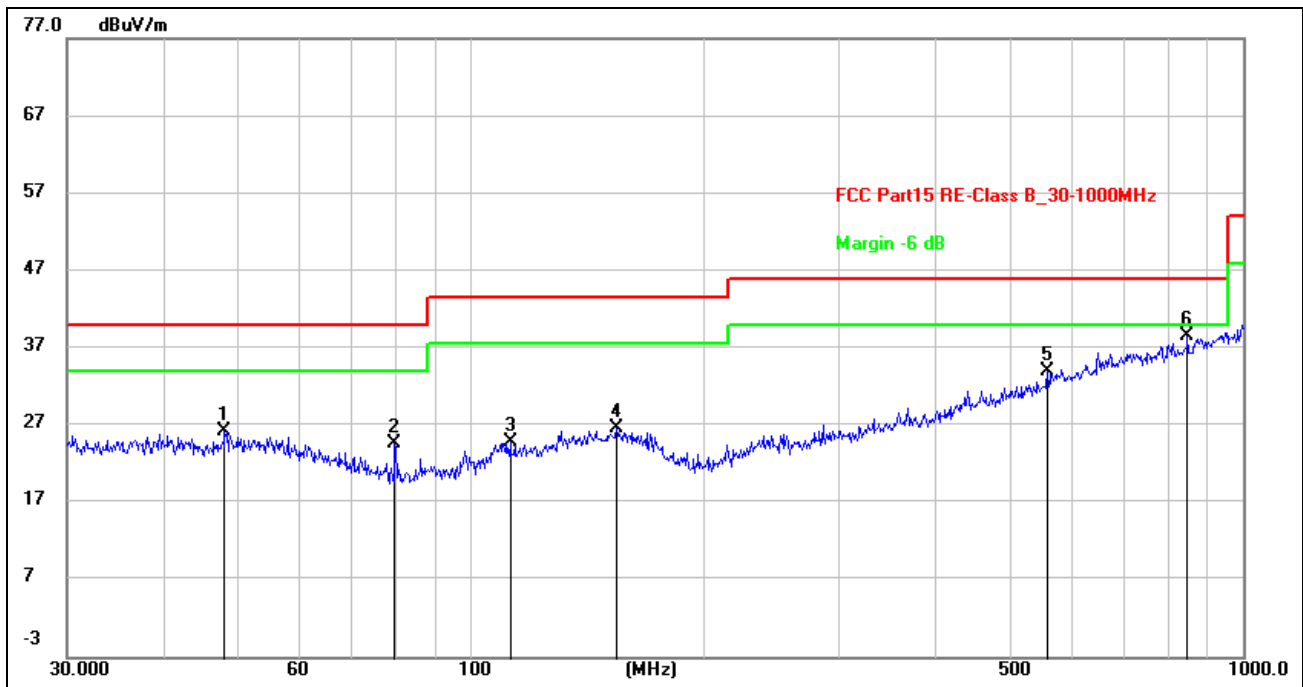
#### **PASS. (See below detailed test result)**

9K-30MHz: Emission detected are more than 20dB below the limit line.



<b>Site:</b>		<b>Antenna::</b> Horizontal	<b>Temperature(C):</b> 24(C)
<b>Limit:</b>	FCC Part15 RE-Class B_30-1000MHz		<b>Humidity(%):</b> 60%
<b>EUT:</b>	Radio-Control 1/16 Freightliner Cascadia	<b>Test Time:</b>	2020/5/12 14:50:37
<b>M/N.:</b>	27006	<b>Power Rating:</b>	DC 3V
<b>Mode:</b>	Tx mode	<b>Test Engineer:</b>	
<b>Note:</b>			

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	41.8595	11.19	14.68	25.87	40.00	-14.13	peak	200	286	
2	73.3593	11.21	11.27	22.48	40.00	-17.52	peak	200	175	
3	137.9028	11.36	14.60	25.96	43.50	-17.54	peak	200	214	
4	236.6447	12.40	12.93	25.33	46.00	-20.67	peak	100	278	
5 *	506.4790	12.96	18.96	31.92	46.00	-14.08	peak	200	20	
6	972.3373	14.20	25.58	39.78	54.00	-14.22	peak	200	143	



Site:	Antenna::Vertical	Temperature(C):24(C)
Limit: FCC Part15 RE-Class B_30-1000MHz		Humidity(%):60%
EUT: Radio-Control 1/16 Freightliner Cascadia	Test Time:	2020/5/12 14:56:09
M/N.: 27006	Power Rating:	DC 3V
Mode: Tx mode	Test Engineer:	
Note:		

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	47.9940	11.95	14.37	26.32	40.00	-13.68	peak	200	128	
2	79.8002	14.40	10.31	24.71	40.00	-15.29	peak	100	306	
3	112.5243	12.31	12.56	24.87	43.50	-18.63	peak	200	202	
4	154.2785	11.22	15.45	26.67	43.50	-16.83	peak	100	280	
5	558.7301	13.96	20.00	33.96	46.00	-12.04	peak	200	242	
6 *	848.0563	14.40	24.11	38.51	46.00	-7.49	peak	100	330	

<b>Site:</b>	<b>966 LAB</b>	<b>Antenna::H / V</b>	<b>Temperature(C):24(C)</b>
<b>Limit:</b>	<b>FCC Part 15.249</b>		<b>Humidity(%):60%</b>
<b>EUT:</b>	<b>Radio-Control 1/16 Freightliner Cascadia</b>	<b>Test Time:</b>	<b>2020/07/18</b>
<b>M/N.:</b>	<b>27006</b>	<b>Power Rating:</b>	<b>DC 3V</b>
<b>Mode:</b>	<b>Tx mode (2402MHz)</b>	<b>Test Engineer:</b>	
<b>Note:</b>			

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Pre-amp (dB)	Cable lost (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detect	Antenna polarization
2402.00	96.84	26.37	40.19	8.51	91.53	114.00	-22.47	Peak	H
2402.00	85.90	26.37	40.19	8.51	80.59	94.00	-13.41	AVG	H
2390.00	56.76	26.33	40.23	8.46	51.32	74.00	-22.68	Peak	H
2390.00	48.30	26.33	40.23	8.46	42.86	54.00	-11.14	AVG	H
2400.00	57.09	26.38	40.20	8.49	51.76	74.00	-22.24	Peak	H
2400.00	41.19	26.38	40.20	8.49	35.86	54.00	-18.14	AVG	H
4804.00	60.22	31.00	40.19	9.53	60.56	74.00	-13.44	Peak	H
4804.00	45.91	31.00	40.19	9.53	46.25	54.00	-7.75	AVG	H
2402.00	95.47	26.37	40.19	8.51	90.16	114.00	-23.84	Peak	V
2402.00	86.16	26.37	40.21	8.51	80.83	94.00	-13.17	AVG	V
2390.00	45.83	26.33	40.23	8.46	40.39	74.00	-33.61	Peak	V
2390.00	40.22	26.33	40.23	8.46	34.78	54.00	-19.22	AVG	V
2400.00	49.50	26.38	40.20	8.49	44.17	74.00	-29.83	Peak	V
2400.00	48.40	26.38	40.20	8.49	43.07	54.00	-10.93	AVG	V
4804.00	51.63	31.00	40.19	9.53	51.97	74.00	-22.03	Peak	V
4804.00	43.50	31.00	40.19	9.53	43.84	54.00	-10.16	AVG	V

Note: 1. Result Level = Reading Level + Antenna Factor + Cable loss – Pre-amp Factor.

2. Antenna polarization: “H” means Horizontal, “V” means Vertical.



<b>Site:</b>	<b>966 LAB</b>	<b>Antenna::H / V</b>	<b>Temperature(C):24(C)</b>
<b>Limit:</b>	<b>FCC Part 15.249</b>		<b>Humidity(%):60%</b>
<b>EUT:</b>	<b>Radio-Control 1/16 Freightliner Cascadia</b>	<b>Test Time:</b>	<b>2020/07/18</b>
<b>M/N.:</b>	<b>27006</b>	<b>Power Rating:</b>	<b>DC 3V</b>
<b>Mode:</b>	<b>Tx mode (2440MHz)</b>	<b>Test Engineer:</b>	
<b>Note:</b>			

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Pre-amp (dB)	Cable lost (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detect	Antenna polarization
2440.00	98.77	26.43	40.21	8.53	93.52	114.00	-20.48	Peak	H
2440.00	87.98	26.43	40.21	8.53	82.73	94.00	-11.27	AVG	H
4880.00	56.12	31.04	40.19	9.59	56.56	74.00	-17.44	Peak	H
4880.00	43.20	31.04	40.19	9.59	43.64	54.00	-10.36	AVG	H
2440.00	88.63	26.43	40.21	8.53	83.38	114.00	-30.62	Peak	V
2440.00	79.82	26.43	40.21	8.53	74.57	94.00	-19.43	AVG	V
4880.00	60.11	31.04	40.19	9.59	60.55	74.00	-13.45	Peak	V
4880.00	47.33	31.04	40.19	9.59	47.77	54.00	-6.23	AVG	V

Note: 1. Result Level = Reading Level + Antenna Factor + Cable loss – Pre-amp Factor.

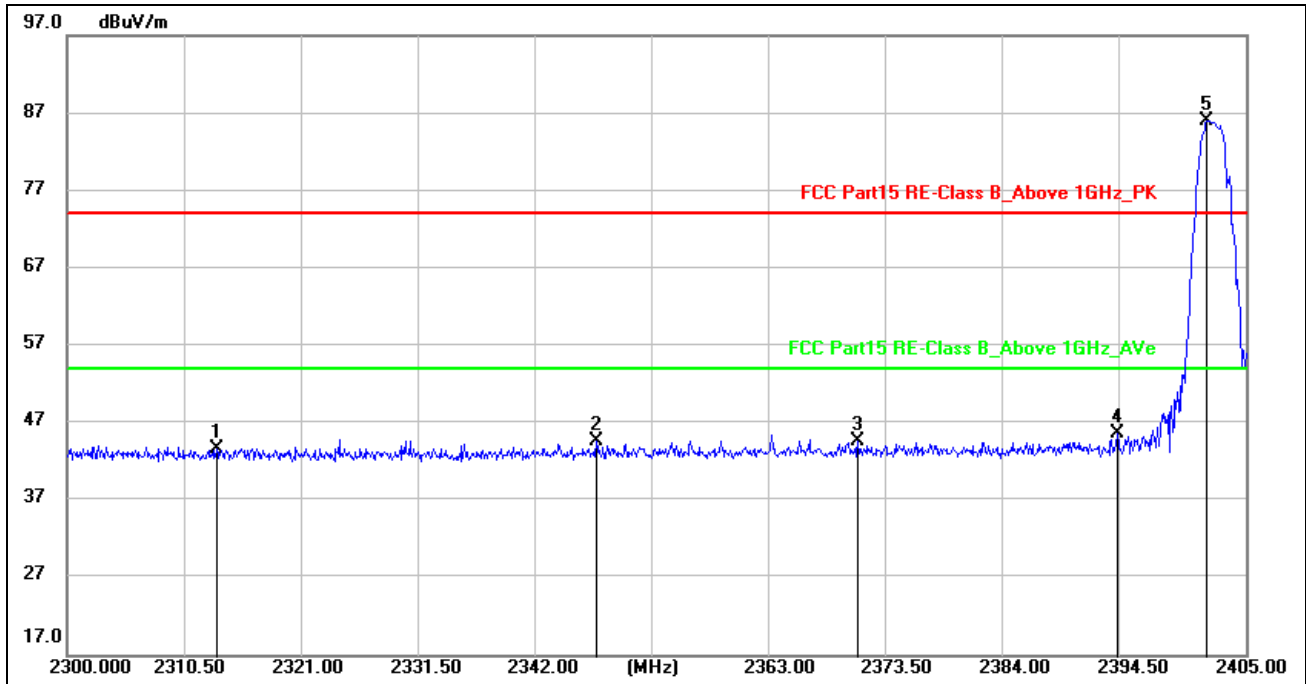
2. Antenna polarization: “H” means Horizontal, “V” means Vertical.

<b>Site:</b>	<b>966 LAB</b>	<b>Antenna::H / V</b>	<b>Temperature(C):24(C)</b>
<b>Limit:</b>	<b>FCC Part 15.249</b>		<b>Humidity(%):60%</b>
<b>EUT:</b>	<b>Radio-Control 1/16 Freightliner Cascadia</b>	<b>Test Time:</b>	<b>2020/07/18</b>
<b>M/N.:</b>	<b>27006</b>	<b>Power Rating:</b>	<b>DC 3V</b>
<b>Mode:</b>	<b>Tx mode (2478MHz)</b>	<b>Test Engineer:</b>	
<b>Note:</b>			

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Pre-amp (dB)	Cable lost (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detect	Antenna polarization
2478.00	100.48	26.50	40.21	8.54	95.31	114.00	-18.69	Peak	H
2478.00	89.28	26.50	40.21	8.54	84.11	94.00	-9.89	AVG	H
2483.50	54.23	26.56	40.29	8.65	49.15	74.00	-24.85	Peak	H
2483.50	44.68	26.56	40.29	8.65	39.60	54.00	-14.40	AVG	H
4956.00	54.92	31.02	40.19	9.62	55.37	74.00	-18.63	Peak	H
4956.00	45.92	31.02	40.19	9.62	46.37	54.00	-7.63	AVG	H
2478.00	98.54	26.50	40.21	8.54	93.37	114.00	-20.63	Peak	V
2478.00	84.35	26.50	40.21	8.54	79.18	94.00	-14.82	AVG	V
2483.50	54.68	26.56	40.29	8.65	49.60	74.00	-24.40	Peak	V
2483.50	35.58	26.56	40.29	8.65	30.50	54.00	-23.50	AVG	V
4956.00	51.59	31.02	40.19	9.62	52.04	74.00	-21.96	Peak	V
4956.00	44.40	31.02	40.19	9.62	44.85	54.00	-9.15	AVG	V

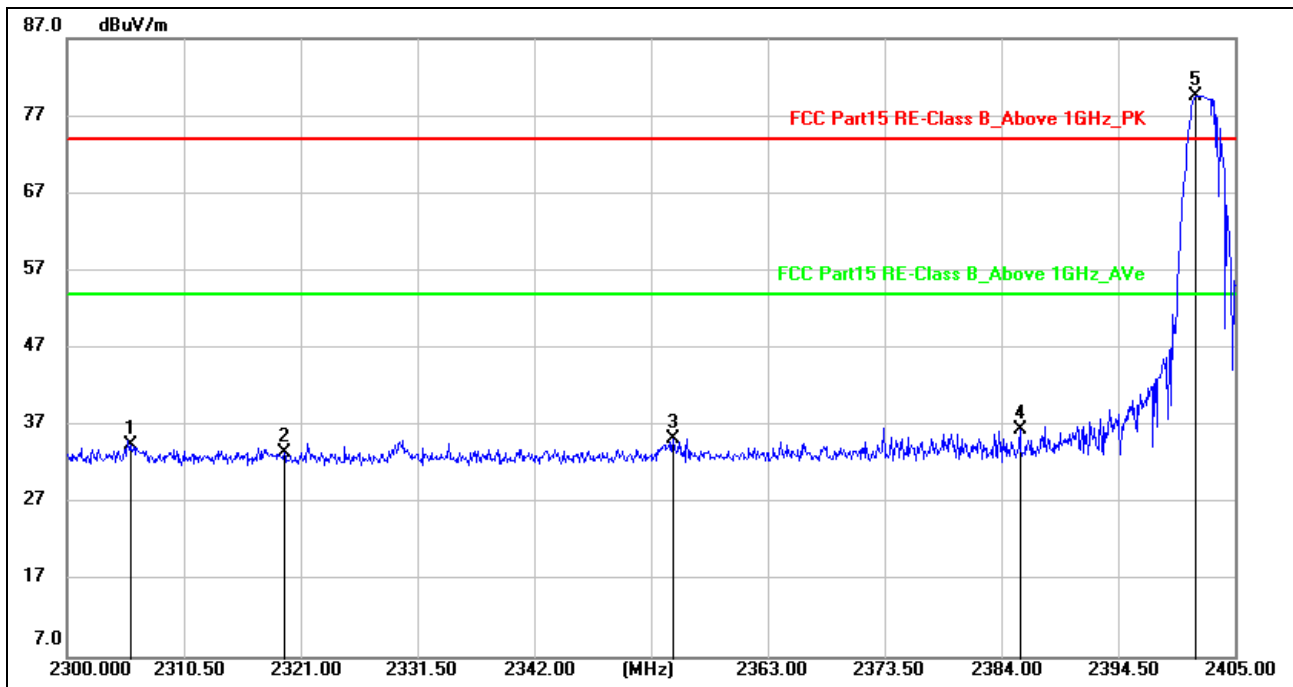
Note: 1. Result Level = Reading Level + Antenna Factor + Cable loss – Pre-amp Factor.  
 2. Antenna polarization: “H” means Horizontal, “V” means Vertical.

Test plots for band-edge



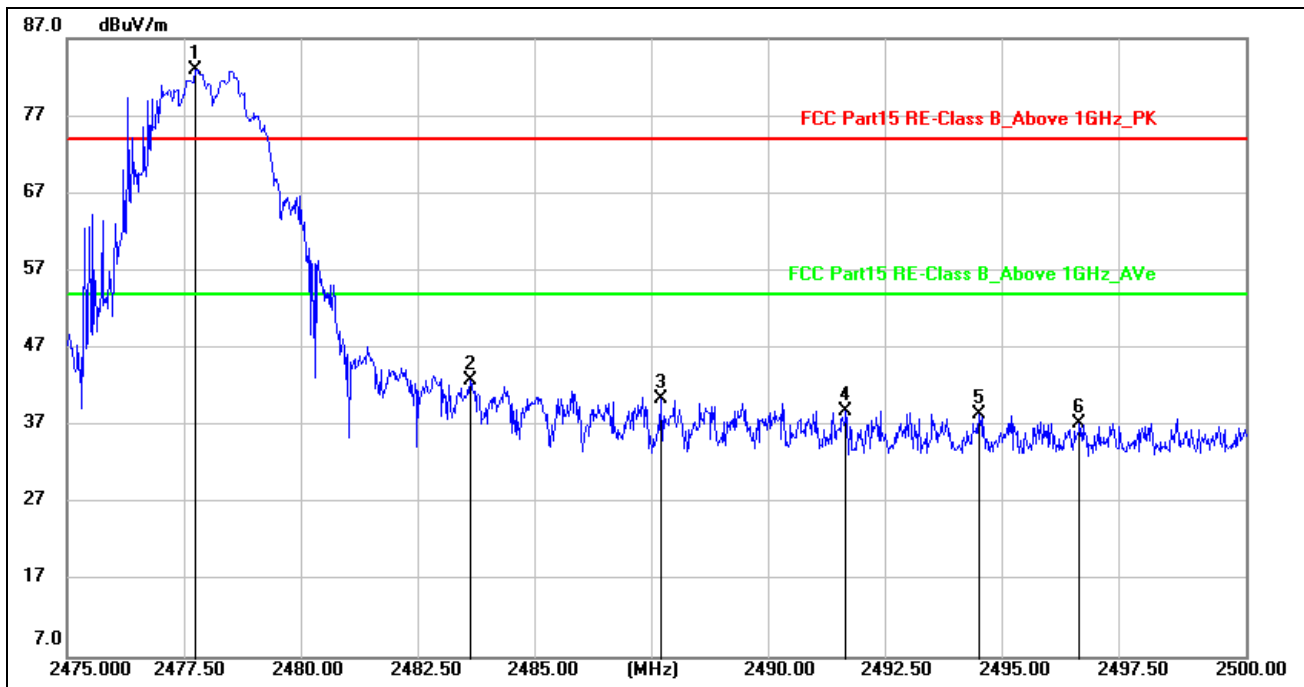
Site:		Antenna::Horizontal	Temperature(C):24(C)
Limit:	FCC Part 15.249		Humidity(%):60%
EUT:	Radio-Control 1/16 Freightliner Cascadia	Test Time:	2020/10/12
M/N.:	27006	Power Rating:	DC 3V
Mode:	Tx mode (2402MHz)	Test Engineer:	
Note:			

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	2313.335	54.56	-10.85	43.71	74.00	-30.29	peak			
2	2347.145	55.48	-10.82	44.66	74.00	-29.34	peak			
3	2370.455	55.41	-10.79	44.62	74.00	-29.38	peak			
4	2393.555	56.42	-10.77	45.65	74.00	-28.35	peak			
5	2401.935	96.82	-10.77	86.05	114.00	-27.95	peak			



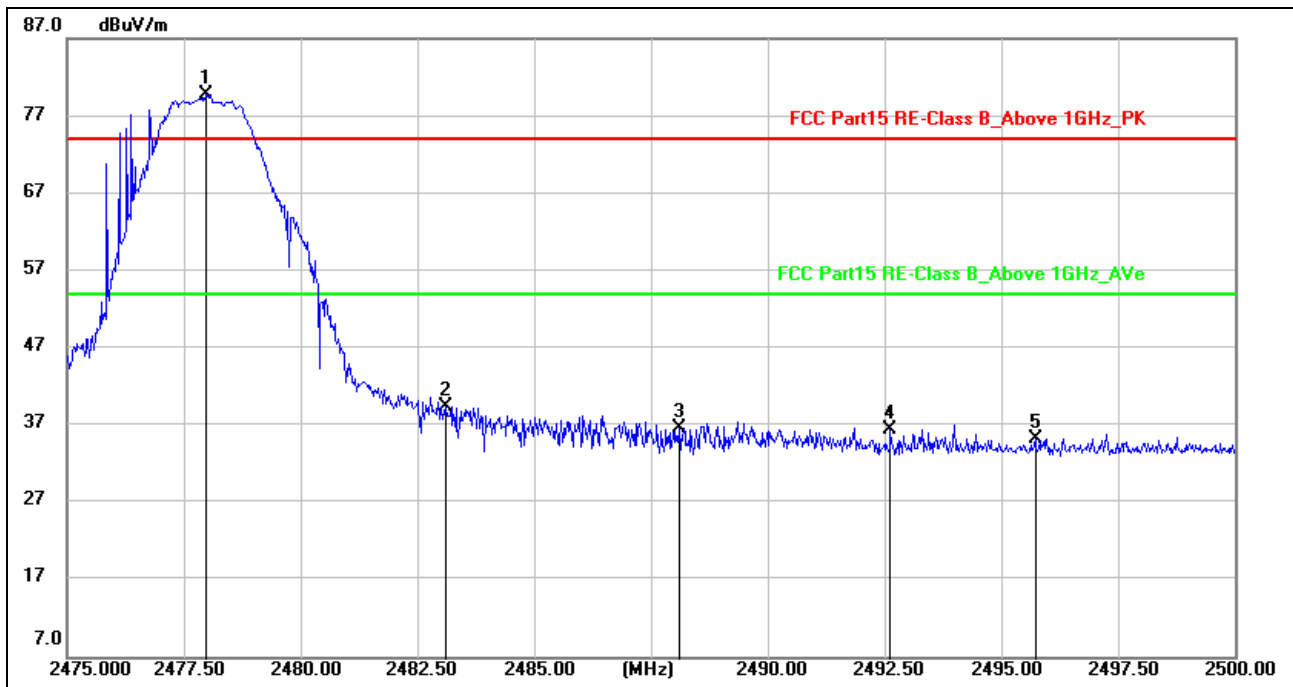
Site:		Antenna:: Vertical	Temperature(C):24(C)
Limit:	FCC Part 15.249		Humidity(%):60%
EUT:	Radio-Control 1/16 Freightliner Cascadia	Test Time:	2020/10/12
M/N.:	27006	Power Rating:	DC 3V
Mode:	Tx mode (2402MHz)	Test Engineer:	
Note:			

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	2305.670	45.37	-10.85	34.52	74.00	-39.48	peak			
2	2319.530	44.27	-10.84	33.43	74.00	-40.57	peak			
3	2354.495	46.09	-10.80	35.29	74.00	-38.71	peak			
4	2385.680	47.18	-10.78	36.40	74.00	-37.60	peak			
5	2401.935	90.38	-10.77	79.61	114.00	-34.39	peak			



Site:		Antenna::Horizontal	Temperature(C):24(C)
Limit:	FCC Part 15.249		Humidity(%):60%
EUT:	Radio-Control 1/16 Freightliner Cascadia	Test Time:	2020/10/12
M/N.:	27006	Power Rating:	DC 3V
Mode:	Tx mode (2478MHz)	Test Engineer:	
Note:			

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	2477.925	93.59	-10.70	82.89	114.00	-31.11	peak			
2	2483.550	53.47	-10.70	42.77	74.00	-31.23	peak			
3	2487.600	51.20	-10.69	40.51	74.00	-33.49	peak			
4	2491.525	49.61	-10.69	38.92	74.00	-35.08	peak			
5	2494.350	49.21	-10.69	38.52	74.00	-35.48	peak			
6	2496.475	48.02	-10.68	37.34	74.00	-36.66	peak			



Site:		Antenna:: Vertical	Temperature(C):24(C)
Limit:	FCC Part 15.249		Humidity(%):60%
EUT:	Radio-Control 1/16 Freightliner Cascadia	Test Time:	2020/10/12
M/N.:	27006	Power Rating:	DC 3V
Mode:	Tx mode (2478MHz)	Test Engineer:	
Note:			

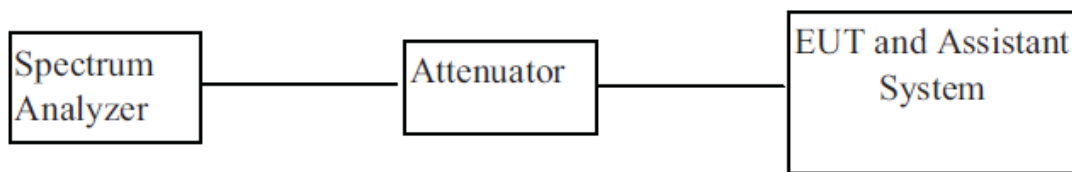
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)	Remark
1	2477.975	90.48	-10.70	79.78	114.00	-34.22	peak			
2	2483.100	50.15	-10.70	39.45	74.00	-34.55	peak			
3	2488.100	47.35	-10.69	36.66	74.00	-37.34	peak			
4	2492.625	47.15	-10.69	36.46	74.00	-37.54	peak			
5	2495.725	45.97	-10.68	35.29	74.00	-38.71	peak			

## 4. -20dB & 99% Bandwidth

### 4.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Signal Analyzer	Agilent	N9020A	MY54510476	2020-05-25	1 Year

### 4.2. BLOCK DIAGRAM OF TEST SETUP



### 4.3. Limit

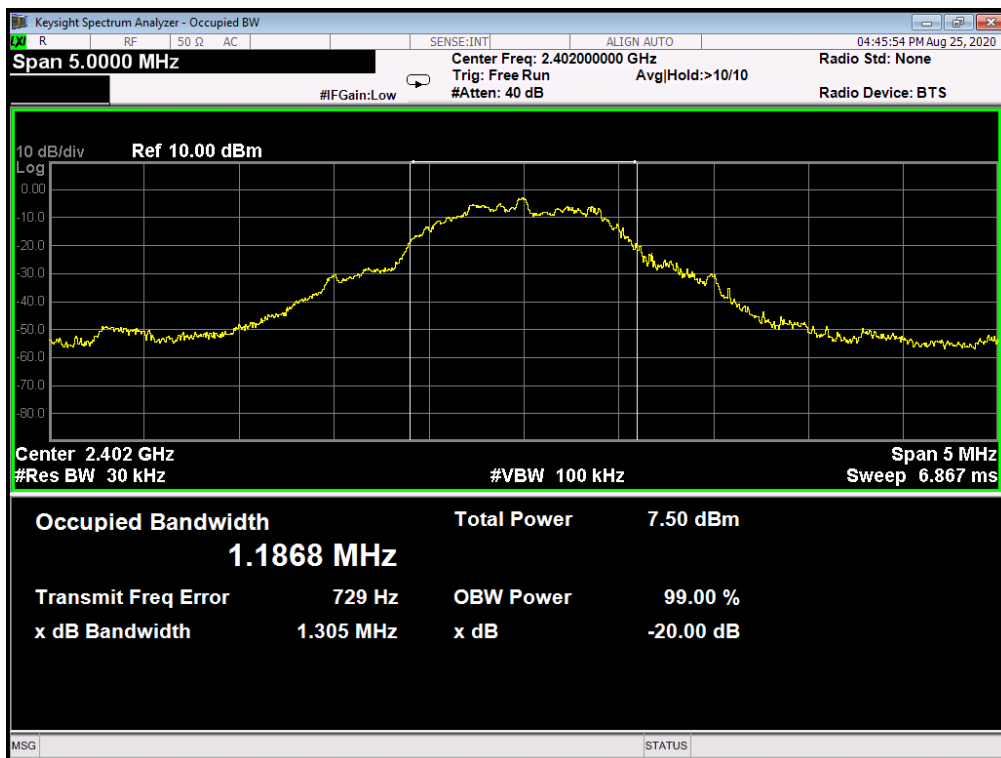
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

### 4.4. Test Procedure

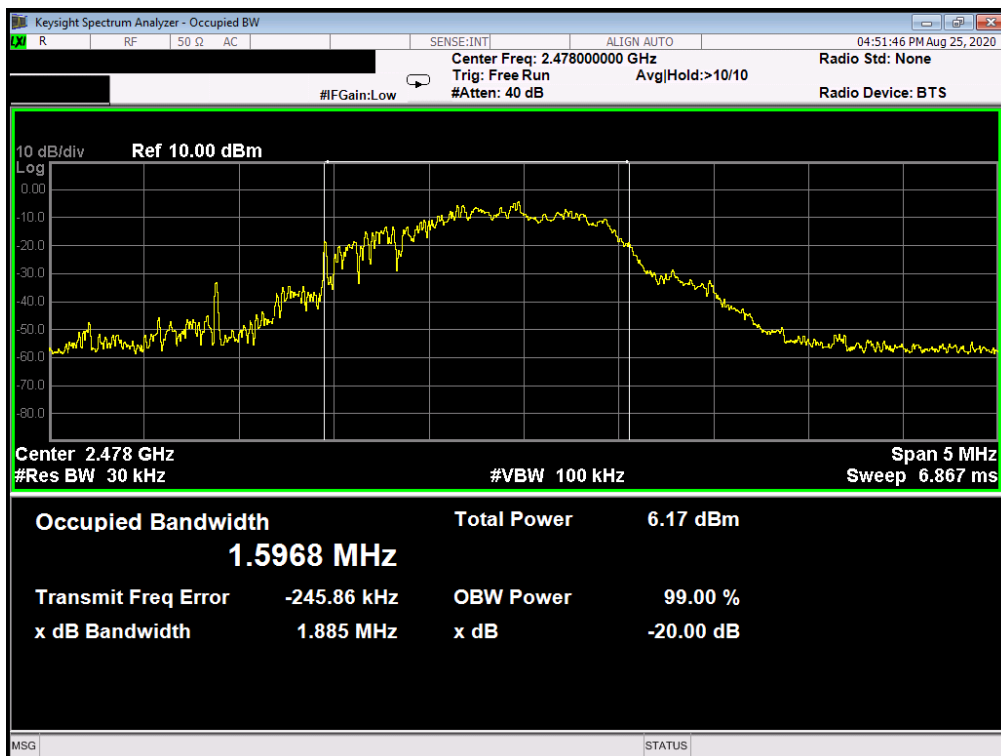
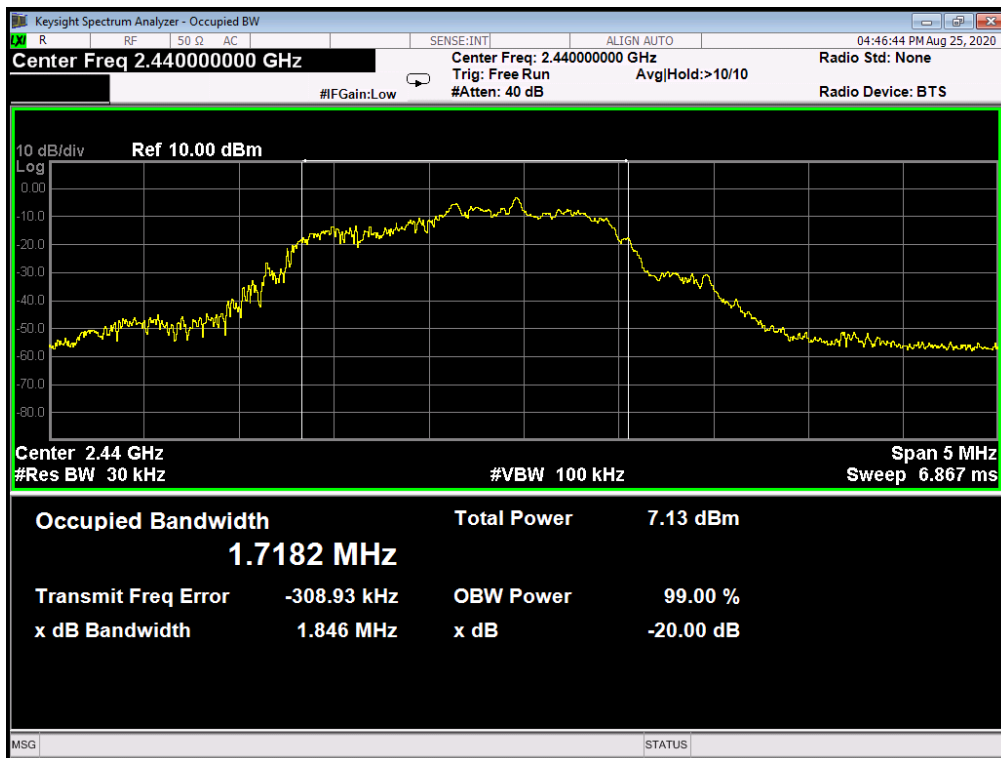
- (1) Connect EUT's antenna output to spectrum analyzer by RF cable.
- (2) The bandwidth of the fundamental frequency was measured by spectrum analyzer with 51 kHz RBW and 510 kHz VBW. The 20dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20dB.

### 4.5. Test result

Frequency (MHz)	99% OBW (MHz)	-20 dB Bandwidth (MHz)	Verdict
2402	1.1868	1.305	Pass
2440	1.7182	1.846	Pass
2478	1.5968	1.885	Pass







## **5. Antenna Requirements**

### **5.1. Limit**

For intentional device, according to FCC 47 CFR Section 15.203 and RSS-GEN, 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. And according to FCC 47 CFR Section 15.249 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

### **5.2. Result**

The EUT has an internal wire antenna permanently soldering on the printed circuit board, which complied with 15.203 and RSS-GEN, the maximum gain was 0 dBi.

## 6. Test setup photograph

### 6.1. Photos of radiated emission test

30MHz – 1GHz

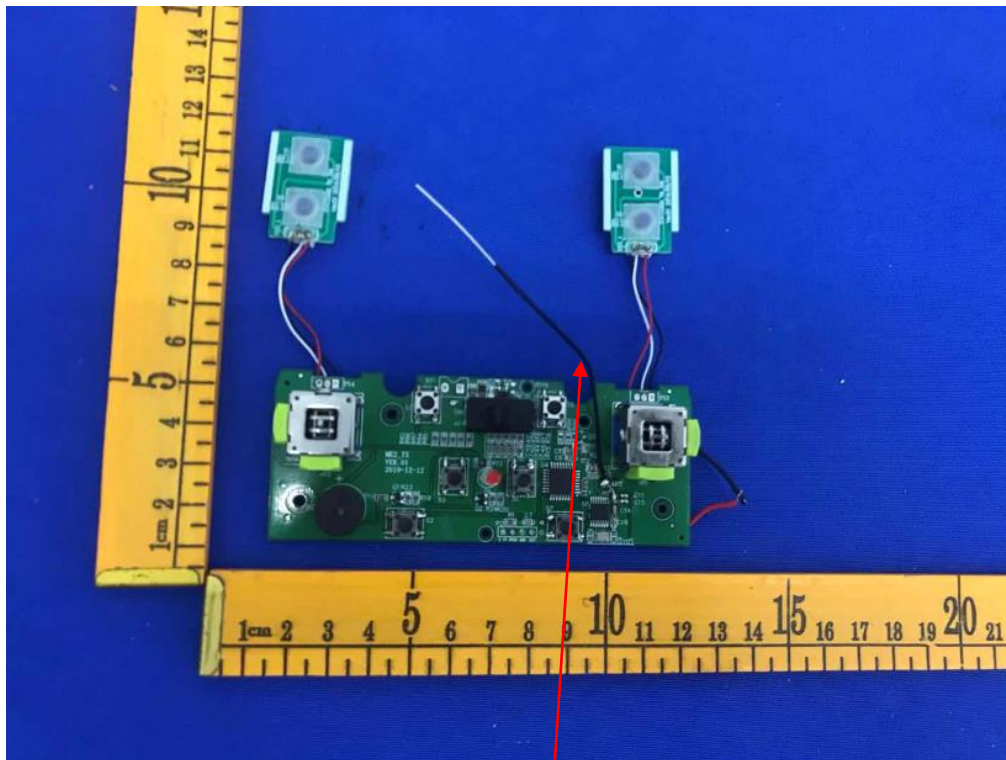


Above 1GHz

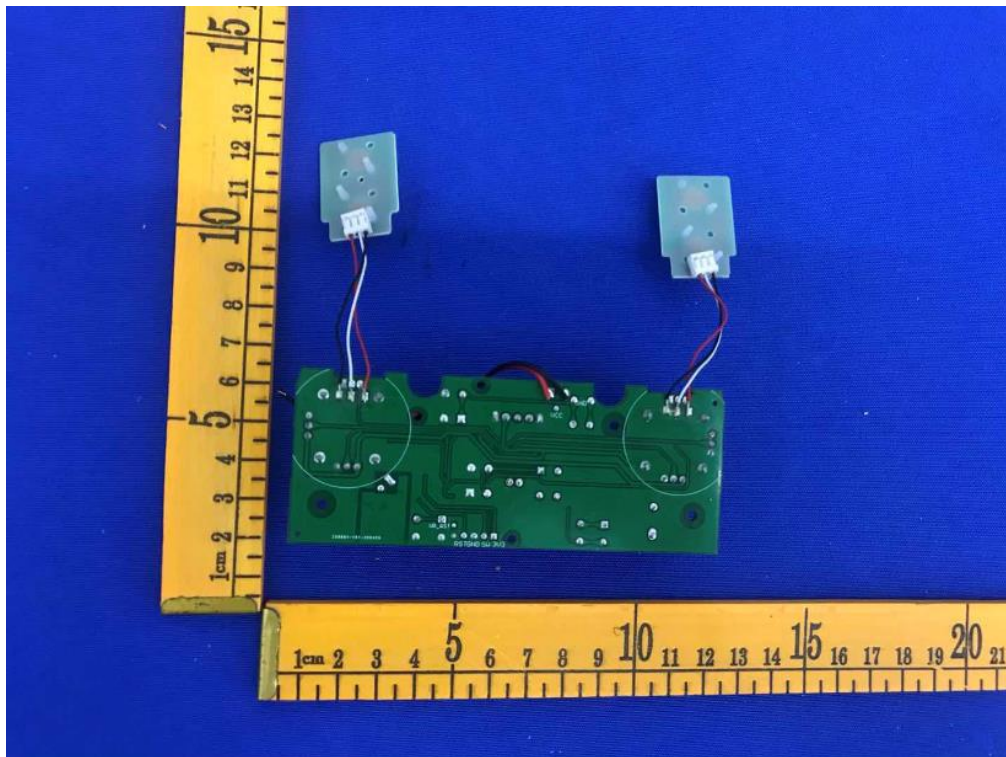


## 7. Photos of the EUT





Antenna



**--END OF REPORT--**