SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch

No. 1 Workshop, M-10, Middle section, Science & Technology Park,
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TEST REPORT

Application No.:	SZEM1703002131CR (SGS SZ No.:T51710200141EM)
Applicant:	Spin Master Toys Far East Ltd.
Address of Applicant:	Room 1113, 11/F., Chinachen Golden Plaza, 77 Mody Road, Tsim Sha Tsui East, Kowloon, Hong Kong
Manufacturer:	Spin Master Toys Far East Ltd.
Equipment Under Test (EUT):	
EUT Name:	ARH RDC RoboTrax UPCX GBL 2pk SLD / ARH RDC Robo Trax EML 2pk SLD/ARH RDC Robo Trax FFP AMZX GBL 4pk SLD
Model No.:	44601RX
Ref No.:	44601
Phantom No.:	20086950, 20088065, 20093869
Finished Goods No.:	1049388, 1050041, 1053168
Brand Name:	ARH RDC RoboTrax
Sales Planning:	6037256, 6037660, 6040075
Request Age Grading:	8+
Country of Origin:	China
FCC :	PQN44601RX2G4
Standards:	47 CFR Part 15, Subpart C 15.249
Date of Receipt:	2017-03-20
Date of Test:	2017-03-23 to 2017-03-27
Date of Issue:	2017-04-12
Test Result :	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

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Jack Zhang
EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.
If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

Revision Record				
Version	***Chapter***	***Date***	***Modifier***	***Remark***
01		*2017-04-12*		*Original*

Authorized for issue by:				
Tested By		Gebin Sun **Gebin Sun /Project Engineer**		2017-03-27 **Date**
Checked By		Eric Fu **Eric Fu /Reviewer**		2017-04-12 **Date**

2 Test Summary

Radio Spectrum Technical Requirement				
Item	**Standard**	**Method**	**Requirement**	**Result**
Antenna Requirement	47 CFR Part 15, Subpart C 15.249	N/A	47 CFR Part 15, Subpart C 15.203	Pass

Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Field Strength of the Fundamental Signal(15.249(a))	47 CFR Part 15, Subpart C 15.249	ANSI C63.10 (2013) Section 6.5&6.6	47 CFR Part 15, Subpart C 15.249(a)	Pass
Radiated Emissions	47 CFR Part 15, Subpart C 15.249	ANSI C63.10 (2013) Section 6.4&6.5&6.6	47 CFR Part 15, Subpart C 15.209 & 15.249 (a),(d)	Pass
Restricted Band Around Fundamental Frequency	47 CFR Part 15, Subpart C 15.249	ANSI C63.10 (2013) Section 6.4&6.5&6.6	47 CFR Part 15, Subpart C 15.205 & 15.249(d) & 15.209	Pass
20dB Bandwidth	47 CFR Part 15, Subpart C 15.249	ANSI C63.10 (2013) Section 6.9	47 CFR Part 15, Subpart C 15.215	Pass

3 Contents

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4 General Information

4.1 Details of E.U.T.

Operating Frequency:	2.4GHz(2413MHz-2469MHz)
Modulation Type:	GFSK
Sample Type:	Portable production
Antenna Type:	Integral
Antenna Gain:	0dBi
Power supply:	3.7V DC(1 x 3.7V Rechargeable battery) Battery: Charge by DC 5V for tankbot

4.2 Description of Support Units

The EUT has been tested independently.

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction emission	3.45dB (9kHz to 150kHz)
		3.0dB (150kHz to 30MHz)
2	Radiated Power	3.64dB
3	Radiated emission	4.5dB (30MHz-1GHz)
		4.8dB (1GHz-6GHz)
4	Radiated Immunity	1.64dB
5	Conducted Immunity	0.96dB
6	ESD	6 %
7	EFT (Electrical Fast Transients)	5 %
8	Surge Immunity	5 %
9	Voltage Dips and Interruptions	4 %
10	20 system	1.5dB
11	Temperature test	1℃
12	Humidity test	3%
13	DC power test	0.5 %

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• **VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

• **FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

• **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Equipment List

20dB Bandwidth					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2016-10-09	2017-10-09
Spectrum Analyzer	Rohde & Schwarz	FSP	SEM004-06	2016-10-09	2017-10-09
Power Meter	Rohde & Schwarz	NRVS	SEM014-02	2016-10-09	2017-10-09

General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2016-10-12	2017-10-12
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2016-10-12	2017-10-12
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2016-10-12	2017-10-12
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2016-05-18	2017-05-18

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.249

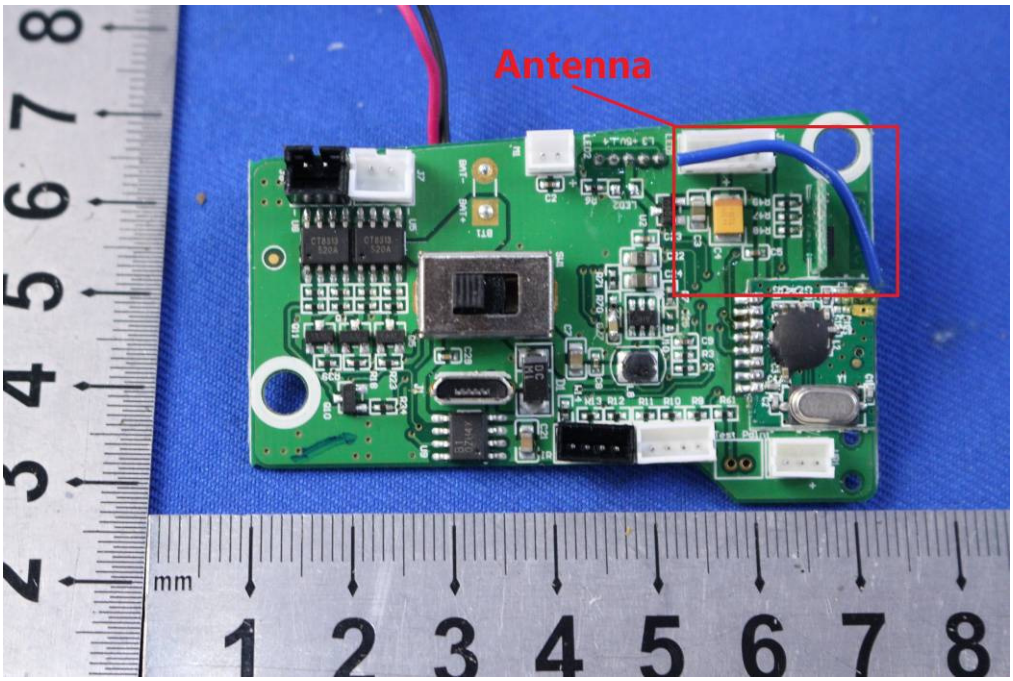
6.1.2 Conclusion

Standard Requirment:

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. The use of a permanently

attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:



The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 0dBi.

7 Radio Spectrum Matter Test Results

7.1 Field Strength of the Fundamental Signal(15.249(a))

Test Requirement 47 CFR Part 15, Subpart C 15.249(a)
Test Method: ANSI C63.10 (2013) Section 6.5&6.6
Measurement Distance: 3m
Limit:

Frequency	Limit (dBuV/m @3m)	Remark
2400MHz-2483.5MHz	94.0	Average Value
	114.0	Peak Value

7.1.1 E.U.T. Operation

Operating Environment:

Temperature:	25.0 °C	Humidity:	50 % RH	Atmospheric Pressure:	1015	mbar

Pretest these mode to find the worst case:	c:TX mode_Keep the EUT(tankbot) in transmitting mode.
The worst case for final test:	c:TX mode_Keep the EUT(tankbot) in transmitting mode.

7.1.2 Measurement Data

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

h. Test the EUT in the lowest channel,the middle channel,the Highest channel.

i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

j. Repeat above procedures until all frequencies measured was complete.

Mode:c;

Peak value:

Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
2412.693	29.15	5.35	37.96	89.65	86.19	114	-27.81	Horizontal
2413.03	29.15	5.35	37.96	88.31	84.85	114	-29.15	Vertical
2440.118	29.23	5.38	37.96	89.39	86.04	114	-27.96	Horizontal
2440.238	29.23	5.38	37.96	88.34	84.99	114	-29.01	Vertical
2468.652	29.31	5.4	37.95	88.36	85.12	114	-28.88	Horizontal
2469.278	29.31	5.4	37.95	87.4	84.16	114	-29.84	Vertical

7.2 Radiated Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.209 & 15.249 (a),(d)
Test Method: ANSI C63.10 (2013) Section 6.4&6.5&6.6
Measurement Distance: 3m
Limit:

Frequency(MHz)	Field strength (microvolts/meter)	Limit (dBuV/m)	Detector	Measurement Distance (meters)
0.009-0.490	2400/F(kHz)	-	-	300
0.490-1.705	24000/F(kHz)	-	-	30
1.705-30	30	-	-	30
30-88	100	40.0	QP	3
88-216	150	43.5	QP	3
216-960	200	46.0	QP	3
960-1000	500	54.0	QP	3
Above 1000	500	54.0	AV	3

7.2.1 E.U.T. Operation

Operating Environment:
Temperature: 25.0 °C Humidity: 50 % RH Atmospheric Pressure: 1015 mbar
Pretest these mode to find the worst case: c:TX mode_Keep the EUT(tankbot) in transmitting mode.
The worst case for final test: c:TX mode_Keep the EUT(tankbot) in transmitting mode.

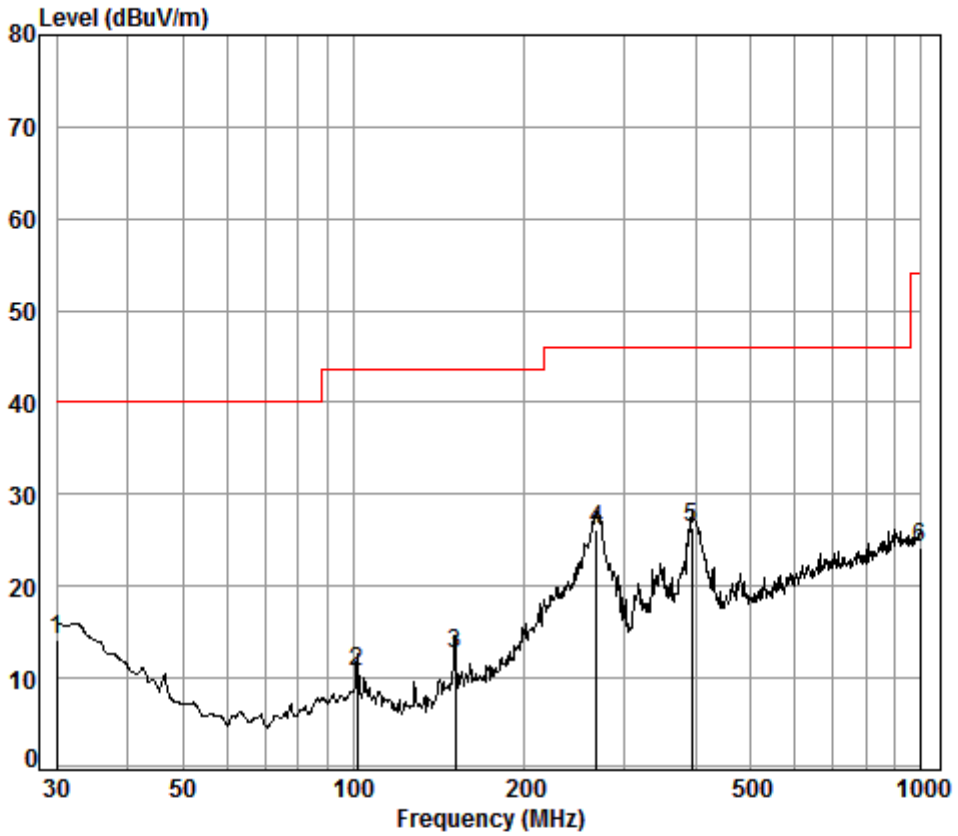
7.2.2 Measurement Data

For testing performed with the loop antenna, the center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane. Only the worst position of vertical was shown in the report.

Radiated emission below 1GHz

Mode: C

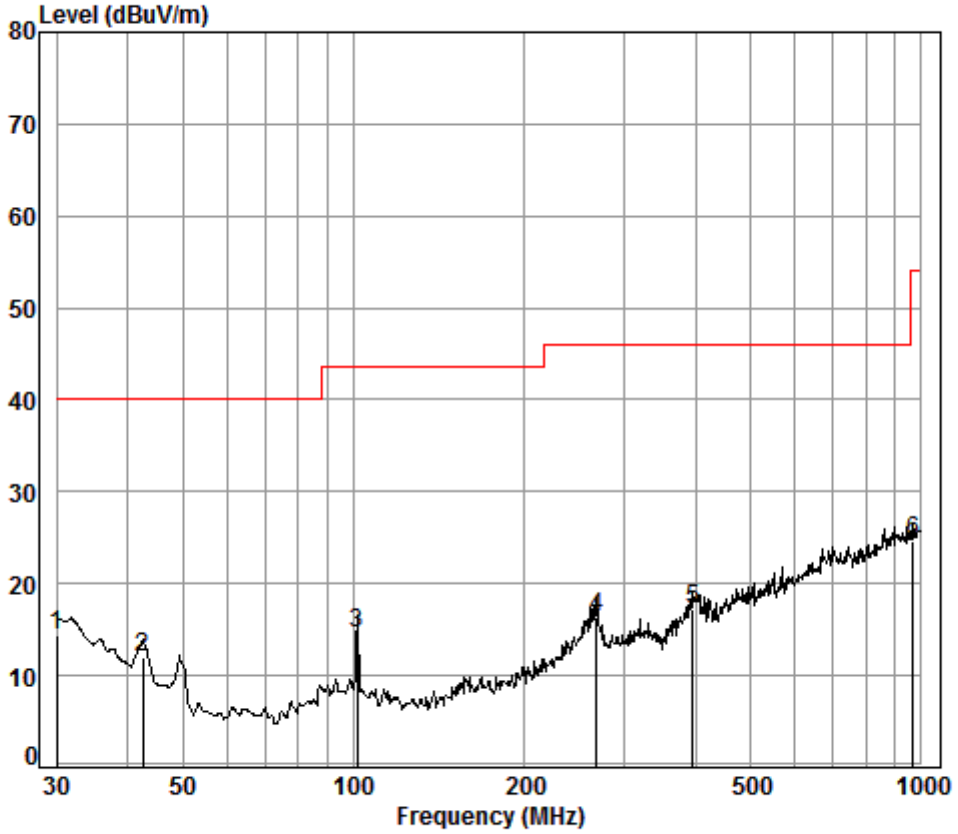
Horizontal



Condition: 3m HORIZONTAL
Job No. : 02131CR
Test mode: TX mode
: Tankbot

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	30.00	0.60	18.70	27.36	22.20	14.14	40.00	-25.86
2	101.64	1.21	9.02	27.19	27.59	10.63	43.50	-32.87
3	151.07	1.32	9.06	26.90	29.17	12.65	43.50	-30.85
4	268.49	1.76	12.67	26.49	38.29	26.23	46.00	-19.77
5 pp	393.47	2.18	16.22	27.09	35.11	26.42	46.00	-19.58
6	996.50	3.70	24.16	26.33	22.72	24.25	54.00	-29.75

Vertical



Condition: 3m VERTICAL
Job No. : 02131CR
Test mode: TX mode
: Tankbot

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	30.00	0.60	18.70	27.36	22.48	14.42	40.00	-25.58
2	42.60	0.66	11.96	27.31	26.60	11.91	40.00	-28.09
3	101.64	1.21	9.02	27.19	31.46	14.50	43.50	-29.00
4	268.49	1.76	12.67	26.49	28.50	16.44	46.00	-29.56
5	396.24	2.19	16.25	27.11	25.94	17.27	46.00	-28.73
6	968.93	3.67	23.30	26.44	24.00	24.53	54.00	-29.47

Transmitter emission above 1GHz

Mode:c;Modulation Type:GFSK; Channel:Low

Peak value:

Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3842.163	33.18	6.58	37.98	44.23	46.50	74	-27.50	Vertical
4826.000	34.20	7.76	38.41	52.45	56.40	74	-17.60	Vertical
6274.796	34.92	8.92	38.03	45.27	51.39	74	-22.61	Vertical
7239.000	36.40	9.68	37.08	44.07	53.32	74	-20.68	Vertical
9652.000	37.53	11.10	35.07	39.22	53.23	74	-20.77	Vertical
12512.420	38.90	13.15	36.83	37.71	53.54	74	-20.46	Vertical
3909.457	33.36	6.63	37.99	44.50	46.97	74	-27.03	Horizontal
4826.000	34.20	7.76	38.41	49.45	53.40	74	-20.60	Horizontal
6193.614	34.86	8.87	38.11	44.11	50.03	74	-23.97	Horizontal
7239.000	36.40	9.68	37.08	43.34	52.59	74	-21.41	Horizontal
9652.000	37.53	11.10	35.07	39.17	53.18	74	-20.82	Horizontal
12208.390	38.73	12.71	36.10	37.50	53.54	74	-20.46	Horizontal

Average value:

Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4826.000	34.20	7.76	38.41	36.25	40.20	54	-13.80	Vertical

Mode:c;Modulation Type:GFSK; Channel:Middle

Peak value:

Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3943.545	33.45	6.66	37.99	44.41	46.99	74	-27.01	Vertical
4880.000	34.29	7.83	38.44	48.31	52.40	74	-21.60	Vertical
6140.076	34.82	8.84	38.16	44.76	50.55	74	-23.45	Vertical
7320.000	36.37	9.73	37.01	43.25	52.58	74	-21.42	Vertical
9760.000	37.55	11.21	35.02	39.63	53.83	74	-20.17	Vertical
12386.320	38.83	12.97	36.53	37.16	53.07	74	-20.93	Vertical
3972.178	33.53	6.68	38.00	44.47	47.13	74	-26.87	Horizontal
4880.000	34.29	7.83	38.44	52.34	56.43	74	-17.57	Horizontal
6104.642	34.79	8.82	38.20	44.43	50.13	74	-23.87	Horizontal
7320.000	36.37	9.73	37.01	43.86	53.19	74	-20.81	Horizontal
9760.000	37.55	11.21	35.02	39.69	53.89	74	-20.11	Horizontal
12243.770	38.75	12.76	36.19	37.74	53.75	74	-20.25	Horizontal

Average value:

Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
4880.000	34.29	7.83	38.44	36.72	40.81	54	-13.19	Horizontal

Mode:c;Modulation Type:GFSK; Channel:High
Peak value:

Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3853.298	33.21	6.59	37.99	44.80	47.09	74	-26.91	Vertical
4938.000	34.39	7.91	38.47	48.39	52.65	74	-21.35	Vertical
6140.076	34.82	8.84	38.16	44.28	50.07	74	-23.93	Vertical
7407.000	36.34	9.79	36.93	42.99	52.41	74	-21.59	Vertical
9876.000	37.58	11.32	34.96	39.28	53.68	74	-20.32	Vertical
12621.510	38.88	13.19	37.09	37.84	53.39	74	-20.61	Vertical
3825.521	33.13	6.57	37.98	44.59	46.80	74	-27.20	Horizontal
4938.000	34.39	7.91	38.47	45.07	49.33	74	-24.67	Horizontal
6347.851	34.98	8.97	37.95	44.58	50.89	74	-23.11	Horizontal
7407.000	36.34	9.79	36.93	43.98	53.40	74	-20.60	Horizontal
9876.000	37.58	11.32	34.96	38.92	53.32	74	-20.68	Horizontal
12137.940	38.68	12.61	35.93	37.64	53.72	74	-20.28	Horizontal

Remark:

1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

   Final Test Level =Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor

2) Scan from 9kHz to 25GHz,The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported .

3) As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the above measurement data were shown in the report.

7.3 Restricted Band Around Fundamental Frequency

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.249(d) & 15.209

Test Method: ANSI C63.10 (2013) Section 6.4&6.5&6.6

Measurement Distance: 3m

Limit:

Frequency	Limit (dBuV/m @3m)	Remark
30MHz-88MHz	40.0	Quasi-peak Value
88MHz-216MHz	43.5	Quasi-peak Value
216MHz-960MHz	46.0	Quasi-peak Value
960MHz-1GHz	54.0	Quasi-peak Value
Above 1GHz	54.0	Average Value
Above 1GHz	74.0	Peak Value
Emission 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 Section 15.209,whichever is the lesser attenuation.		

7.3.1 E.U.T. Operation

Operating Environment:

Temperature:	24.0 °C	Humidity:	58 % RH	Atmospheric Pressure:	1015	mbar

Pretest these mode to find the worst case:	c:TX mode_Keep the EUT(tankbot) in transmitting mode.
The worst case for final test:	c:TX mode_Keep the EUT(tankbot) in transmitting mode.

7.3.2 Measurement Data

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

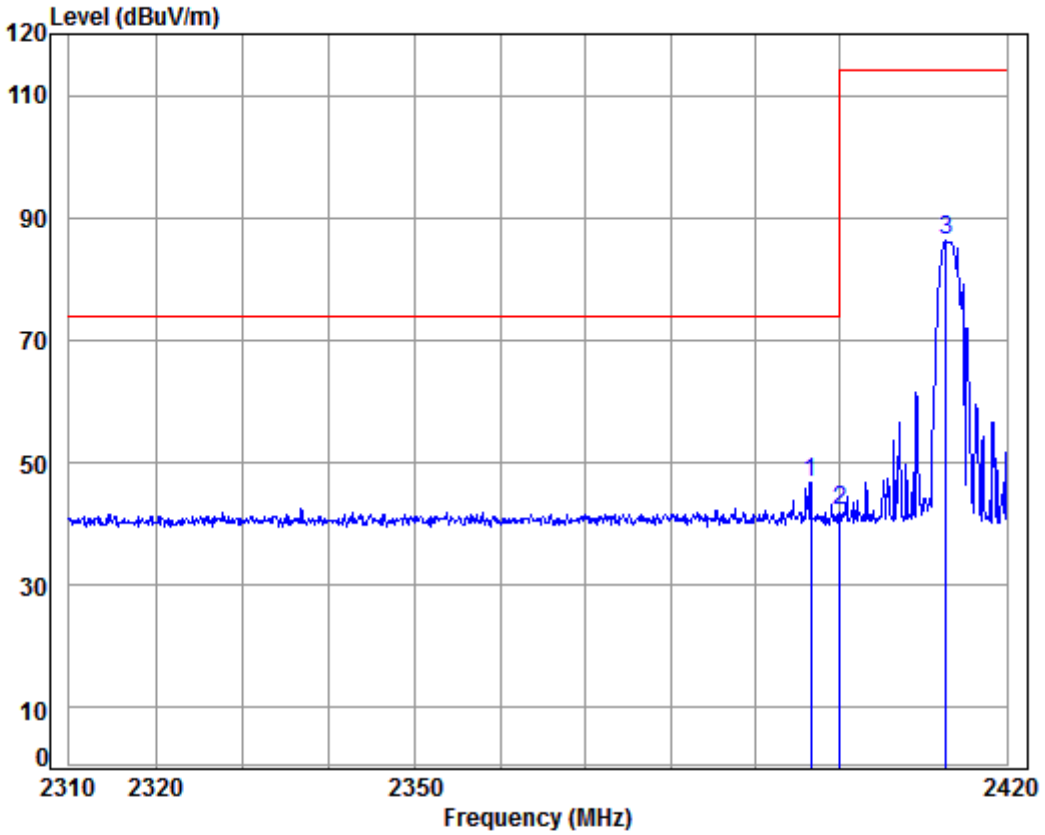
g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

h. Test the EUT in the lowest channel,the middle channel,the Highest channel.

i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

j. Repeat above procedures until all frequencies measured was complete.

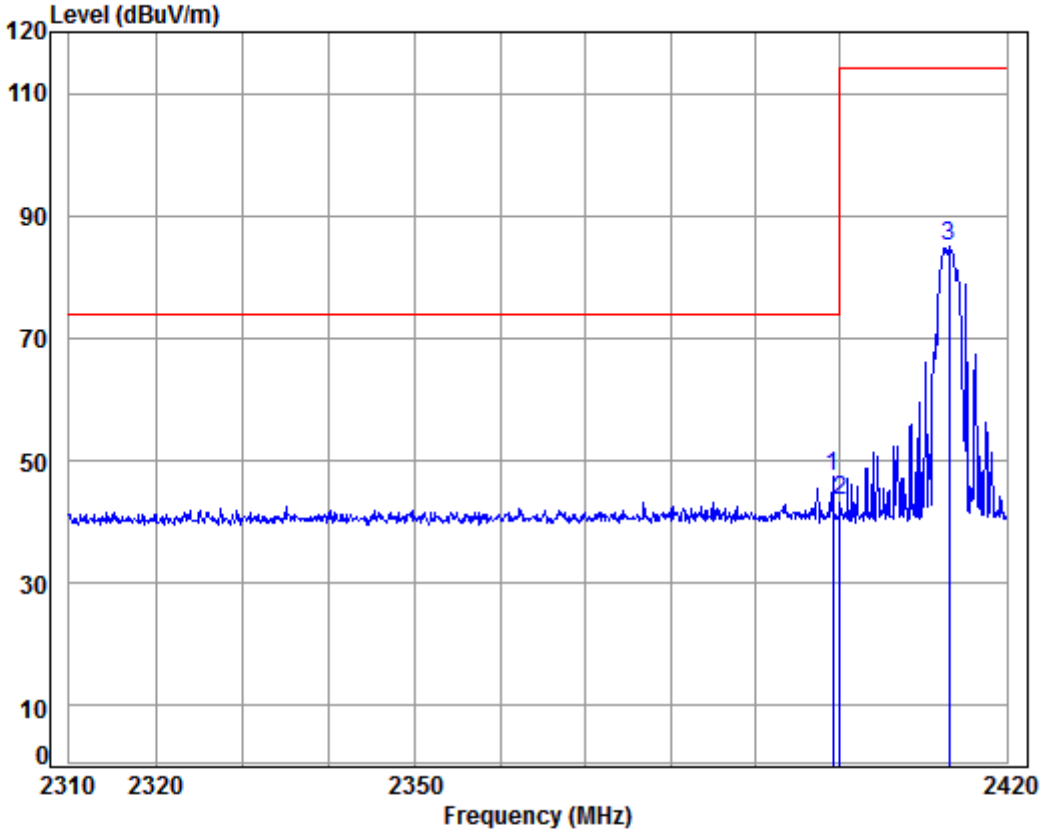
Mode:c; Polarization:Horizontal; Modulation Type:GFSK; Channel:Low



Condition: 3m Horizontal
Job No: : 02131CR
Mode: : 2413 Band edge
: Tankbot

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2396.585	5.34	29.10	37.96	50.35	46.83	74.00	-27.17	Peak
2	2400.000	5.34	29.11	37.96	45.77	42.26	74.00	-31.74	Peak
3	2412.693	5.35	29.15	37.96	89.65	86.19	114.00	-27.81	Peak

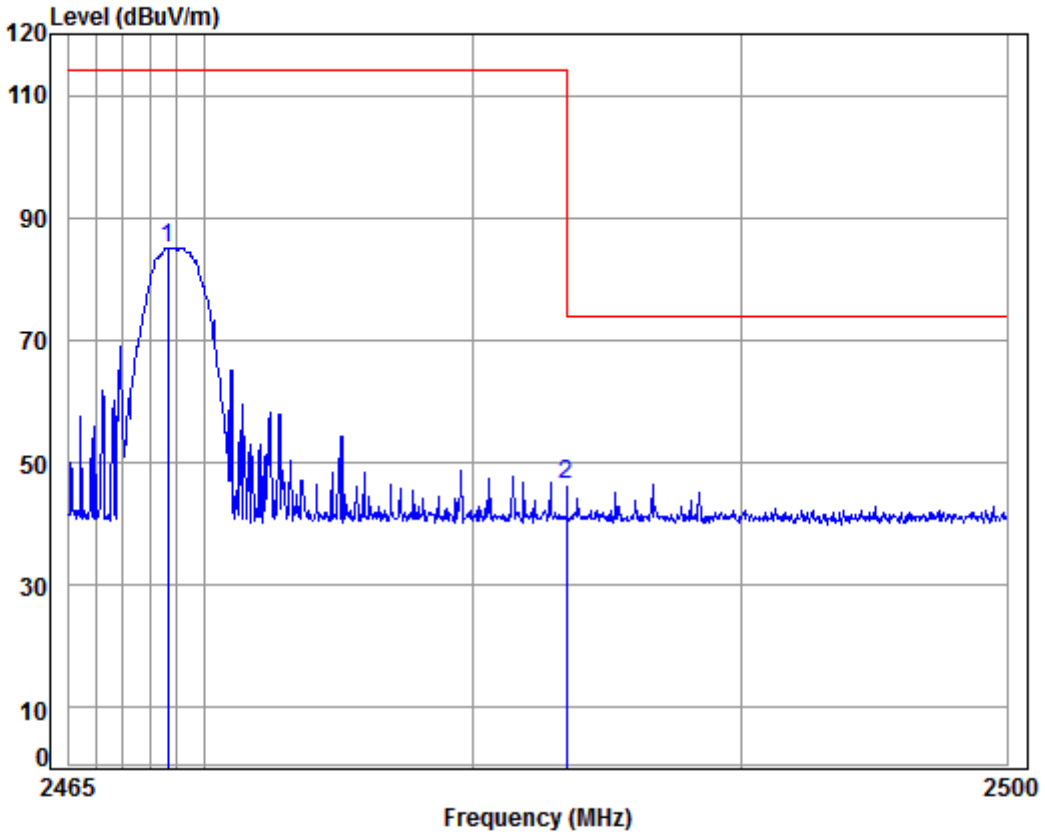
Mode:c; Polarization:Vertical; Modulation Type:GFSK; Channel:Low



Condition: 3m Vertical
Job No: : 02131CR
Mode: : 2413 Band edge
: Tankbot

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2399.151	5.34	29.10	37.96	50.97	47.45	74.00	-26.55	Peak
2	2400.000	5.34	29.11	37.96	46.94	43.43	74.00	-30.57	Peak
3	2413.030	5.35	29.15	37.96	88.31	84.85	114.00	-29.15	Peak

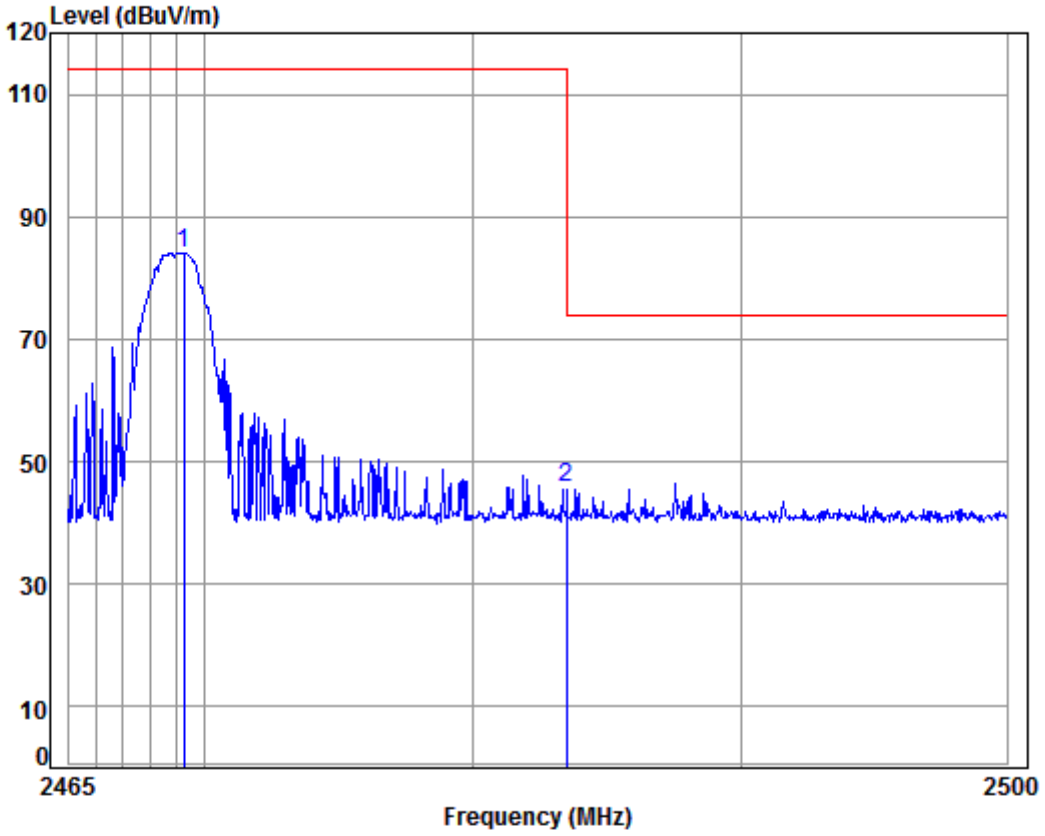
Mode:c; Polarization:Horizontal; Modulation Type:GFSK; Channel:High



Condition: 3m Horizontal
Job No: : 02131CR
Mode: : 2469 Band edge
: Tankbot

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2468.652	5.40	29.31	37.95	88.36	85.12	114.00	-28.88	Peak
2 pp	2483.500	5.41	29.35	37.95	49.57	46.38	74.00	-27.62	Peak

Mode:c; Polarization:Vertical; Modulation Type:GFSK; Channel:High



Condition: 3m Vertical
Job No: : 02131CR
Mode: : 2469 Band edge
: Tankbot

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2469.278	5.40	29.31	37.95	87.40	84.16	114.00	-29.84	Peak
2 pp	2483.500	5.41	29.35	37.95	49.12	45.93	74.00	-28.07	Peak

7.4 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.215
Test Method: ANSI C63.10 (2013) Section 6.9
Limit: Within the band 2400MHz-2483.5MHz

7.4.1 E.U.T. Operation

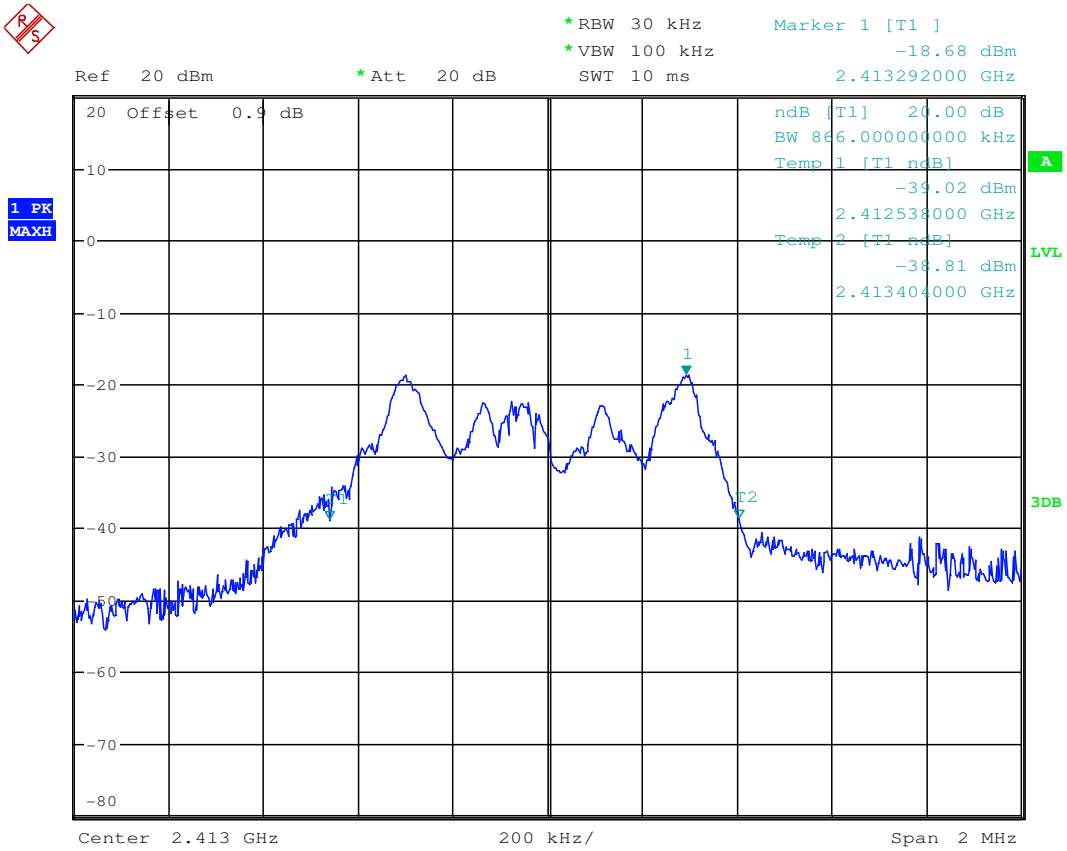
Operating Environment:
Temperature: 23.0 °C Humidity: 56 % RH Atmospheric Pressure: 1015 mbar
Pretest these mode to find the worst case: c:TX mode_Keep the EUT(tankbot) in transmitting mode.
The worst case for final test: c:TX mode_Keep the EUT(tankbot) in transmitting mode.

7.4.2 Measurement Data

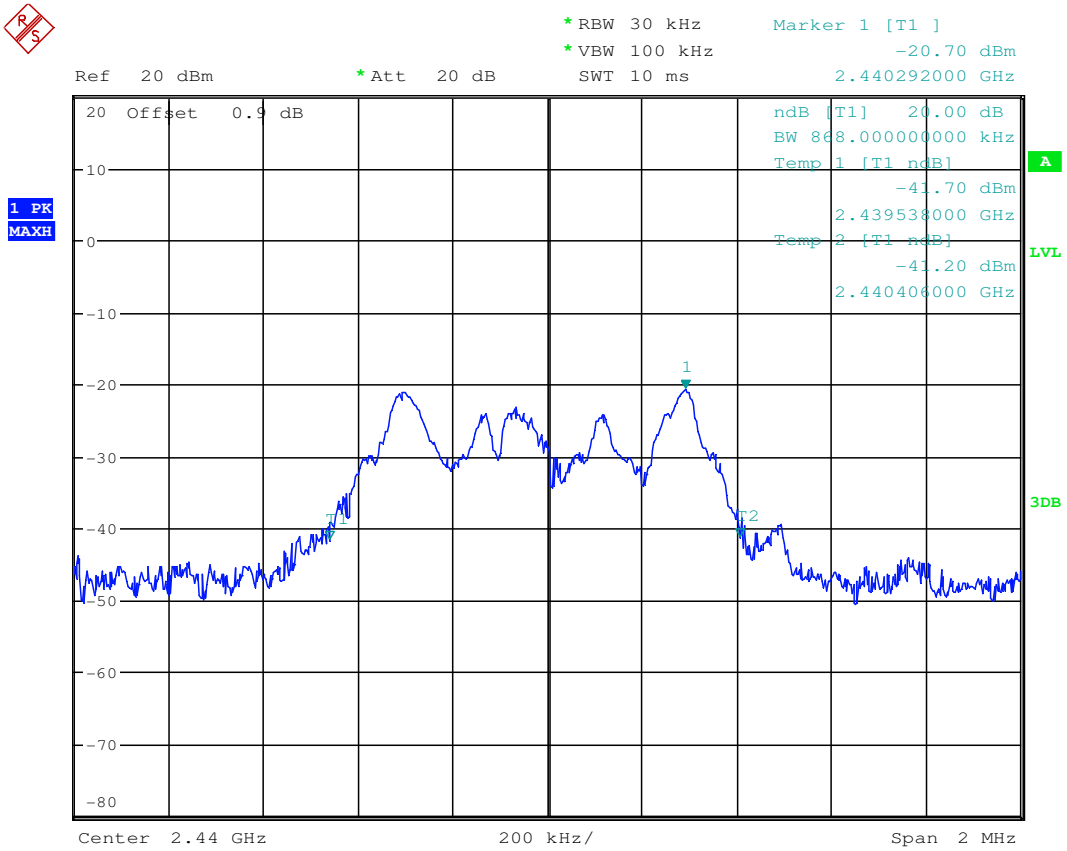
Measurement Data

Test channel	20dB bandwidth (MHz)	Results
Lowest	866	Pass
Middle	868	Pass
Highest	866	Pass

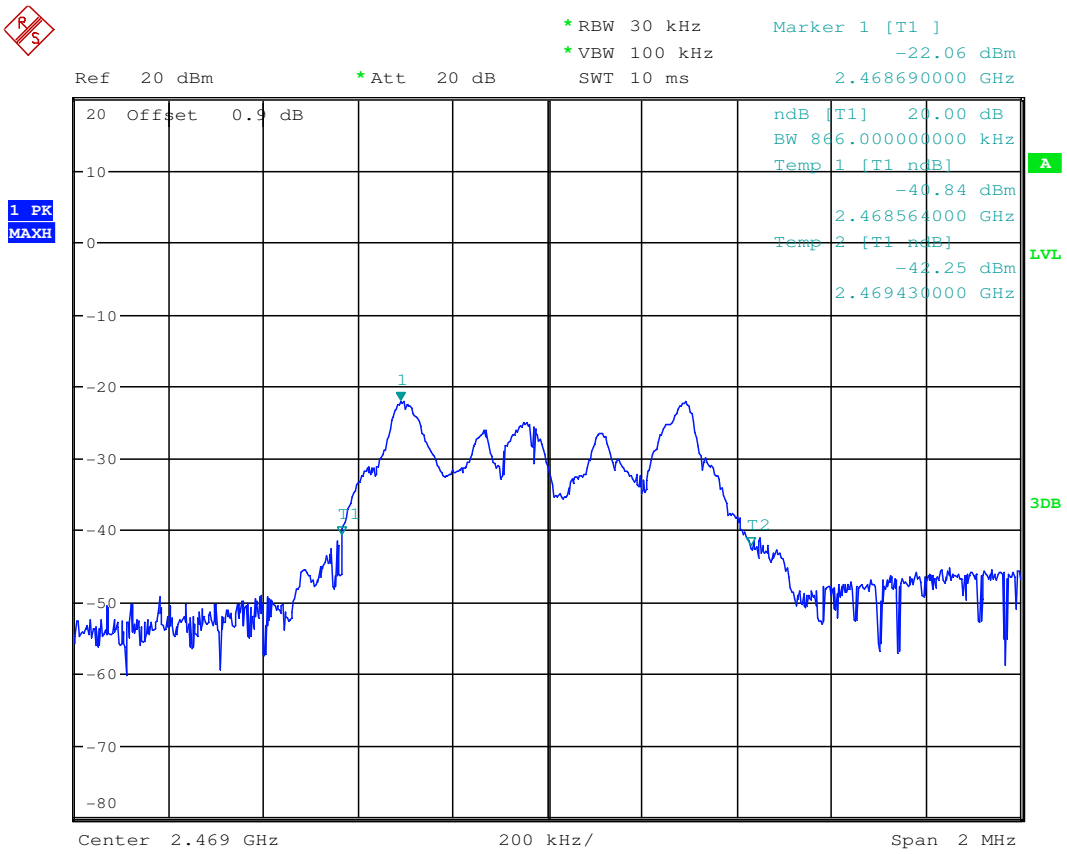
Mode:b; Channel:Low



Mode:b; Channel:middle

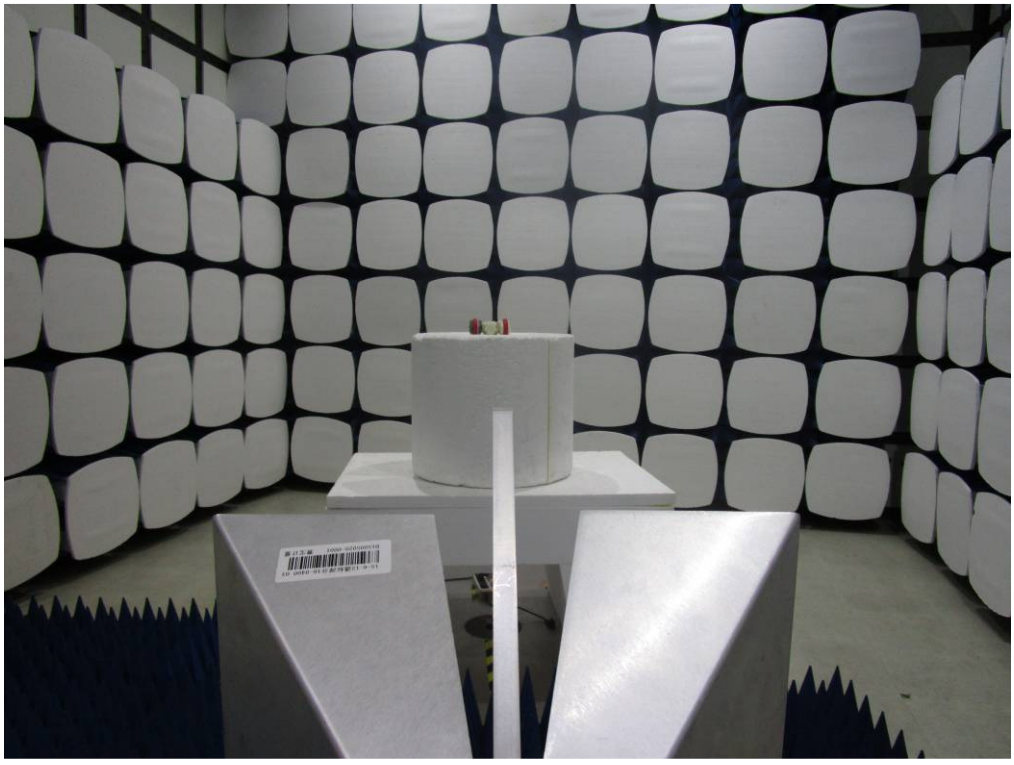


Mode:b; Channel:High

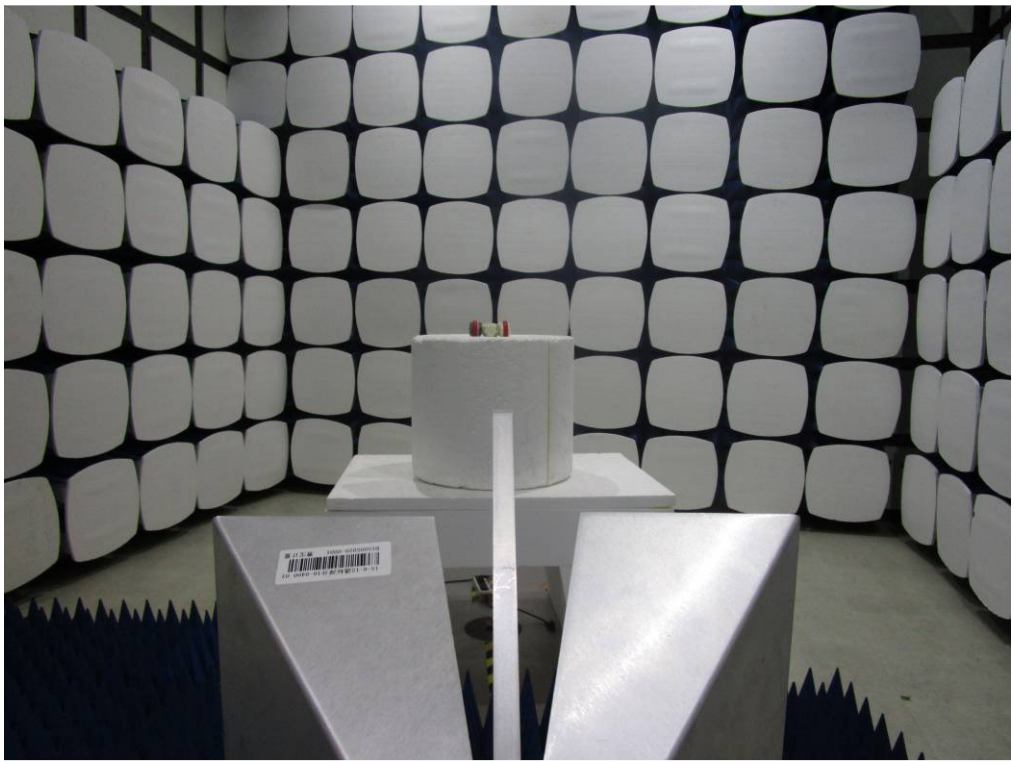


8 Photographs

8.1 Radiated Emissions Test Setup



8.2 Restricted Band Around Fundamental Frequency Test Setup



8.3 EUT Constructional Details

Refer to Appendix B- Photographs of EUT Constructional Details for SZEM1703002131CR.