

TEST REPORT

Application No.: BTEK250620088A01-T01
Applicant: Spacio Innovations Inc.
Address of Applicant: 1388 Spruce Street Winnipeg MB R3E 2V7 Canada
Manufacturer: Jiangsu Byecold Technology Co., Ltd.
Address of Manufacturer: NO. 8 Xingye Road, Lingang Industrial Park, Zhaodun Town, Pizhou City, Xuzhou City, Jiangsu, P.R. China

Equipment Under Test (EUT):

EUT Name: Remote Thermostat

Test Model.: WY2

Adding Model(s): /

Trade Mark:



FCC ID: 2A7RI-WY2

Standard(s) : 47 CFR Part 15, Subpart C 15.231

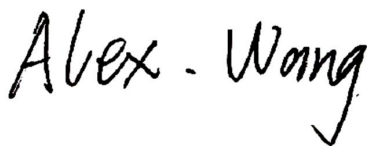
Date of Receipt Sample(s): 2025-07-02

Date of Test: 2025-07-02 to 2025-07-16

Date of Issue: 2025-07-17

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.



Alex Wang/ Approved & Authorized
EMC Laboratory Manager



Revision Record			
Version	Issue Date	Revisions	Remarks
V0	2025-07-17	Initial	Valid

Authorized for issue by:			
		<i>Karl Liu</i>	
		Karl Liu / File Editor	
		<i>June Li</i>	
		June Li/Reviewer	

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.



2 Test Summary

Radio Spectrum Technical Requirement			
Standard	Item	Requirement	Result
47 CFR Part 15, Subpart C 15.231	Antenna Requirement	47 CFR Part 15, Subpart C 15.203	Pass

Standard	Item	Requirement	Result
47 CFR Part 15, Subpart C 15.207	Conduction Emission	47 CFR Part 15, Subpart C 15.207	N/A
47 CFR Part 15, Subpart C 15.231	20dB Bandwidth	47 CFR Part 15, Subpart C 15.231(c)	Pass
	Transmission time	47 CFR Part 15, Subpart C 15.231a(1)	Pass
	Duty cycle corrected factor	--	Pass
	Field strength of the Fundamental signal	47 CFR Part 15, Subpart C 15.231 (b)	Pass
	Radiation Spurious Emission	47 CFR Part 15, Subpart C 15.231(b)/15.205/15.209	Pass

Note:

N/A: Not applicable.

Due to the EUT is powered by battery, The Conduction Emission is not applicable.

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.



3 Contents

	Page
1 Cover Page	1
2 Test Summary	3
3 Contents	4
4 General Information	5
4.1 Details of E.U.T.	5
4.2 EUT Test Mode and Test Condition	5
4.3 Description of Support Units	5
4.4 Measurement Uncertainty	5
4.5 Test Location	6
4.6 Deviation from Standards	6
4.7 Abnormalities from Standard Conditions	6
5 Equipment List	7
6 Radio Spectrum Technical Requirement	9
6.1 Antenna Requirement	9
6.1.1 Test Requirement:	9
6.1.2 Conclusion	9
7 Radio Spectrum Matter Test Results	10
7.1 20dB Bandwidth	10
7.1.1 Test Mode Description	10
7.1.2 Test Setup Diagram	10
7.1.3 Measurement Procedure and Data	10
7.2 Transmission time	11
7.2.1 Test Mode Description	11
7.2.2 Test Setup Diagram	11
7.2.3 Measurement Procedure and Data	11
7.3 Duty Cycle Corrected Factor	12
7.3.1 Test Setup Diagram	12
7.3.2 Measurement Procedure and Data	12
7.4 Field strength of the Fundamental signal	13
7.4.1 Test Setup Diagram	13
7.4.2 Measurement Procedure and Data	14
7.5 Radiated Spurious Emission	15
7.5.1 Test Setup Diagram	16
7.5.2 Measurement Procedure and Data	17
8 Test Setup Photo	18
9 EUT Constructional Details (EUT Photos)	18
10 Appendix	19



4 General Information

4.1 Details of E.U.T.

Power supply:	DC 3V(AAA Battery*2)
Frequency Range:	433.92MHz
Modulation Type:	ASK
Number of Channels:	1
Antenna Type:	single conductor
Antenna Gain:	0dBi
Sample No.:	BTEK250521080A01-1-1/1
Model(s) Difference Statement	☒ Single Model.
	☐ Multi-Models:

4.2 EUT Test Mode and Test Condition

Test Mode	Description	Remark
1	TX	Continue TX
Remark:1.only show the worst case in the test report.		

Test Conditions	
Temperature:	24.1 °C
Relative Humidity:	55 %
ATM Pressure:	1010 mbar

4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
--	--	--	--

4.4 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Peak Output Power	± 0.76dB
20dB Bandwidth	± 3%
Conducted Spurious Emissions	± 0.8dB
Radiated Emissions which fall in the restricted bands	±5.1dB (1GHz-6GHz); ±5.2dB(above 6GHz)
Radiated Spurious Emissions (Below 1GHz)	±5.1dB
Radiated Spurious Emissions (Above 1GHz)	±5.1dB (1GHz-6GHz); ±5.2dB(above 6GHz)



4.5 Test Location

All tests were performed at:

Shenzhen BANTEK Testing Co., Ltd.,

A5&A6, Building B1&B2, No.45 Gangtuo Road, Bogang Community, Shajing Street, Bao'an District, Shenzhen, Guangdong, China 518104

Tel:0755-2334 4200

Fax: 0755-2334 4200

FCC Registration Number: 264293

Designation Number: CN1356

No tests were sub-contracted.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



5 Equipment List

Conducted Test					
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Shielding Room	YIHENG ENELECTRONIC	9*5*3.3	YH-BT-220304-04	2025-02-15	2028-02-14
EMI Test Receiver	Rohde&Schwarz	ESCI	101021	2025-06-18	2026-06-17
Measurement Software	Fara	EZ EMC Ver. FA-03A2	N/A	N/A	N/A
LISN	Rohde&Schwarz	ENV216	101472	2025-06-18	2026-06-17
LISN	Schwarzbeck	NSLK 8128	05127	2025-06-18	2026-06-17

RF Conducted					
Equipment	Manufacturer	Model No	Serial No	Cal Date	Cal Due Date
Shielding Room	YIHENG ENELECTRONIC	5.5*3.1*3	YH-BT-220304-03	2025-02-15	2028-02-14
EXA Signal Analyzer	KEYSIGHT	N9020A	MY54230486	2025-06-19	2026-06-18
DC Power Supply	E3632A	E3642A	KR75304416	2025-06-19	2026-06-18
Attenuator	RswTech	SMA-JK-6dB	N/A	2025-06-19	2026-06-18
Attenuator	RswTech	SMA-JK-3dB	N/A	2025-06-19	2026-06-18
RF Control Unit	Techy	TR1029-1	N/A	2025-06-19	2026-06-18
RF Sensor Unit	Techy	TR1029-2	N/A	2025-06-19	2026-06-18
WIDEBAND RADIO COMMUNICATION TESTER	R&S	CMW 500	141258	2025-06-19	2026-06-18
MXG Vector Signal Generator	Agilent	N5182A	US46240522	2025-06-19	2026-06-18
Programmable Temperature&Humidity Chamber	GRT	GR-HWX1000	GR22051001	2025-06-19	2026-06-18
Measurement Software	TACHOY	RF TestSoft	N/A	N/A	N/A

RSE					
Equipment	Manufacturer	Model No	Serial No	Cal Date	Cal Due Date
3m Semi-Anechoic Chamber	YIHENG ENELECTRONIC	966	YH-BT-220304-01	2025-02-15	2028-02-14
EMI Test Receiver	Rohde&Schwarz	ESCI	100694	2025-06-18	2026-06-17
TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	01324	2025-06-18	2026-06-17
Pre-Amplifier	Schwarzbeck	BBV 9745	#180	2025-06-18	2026-06-17
Measurement Software	Fara	EZ EMC Ver. FA-03A2	N/A	2025-06-18	2026-06-17
EXA Signal Analyzer	Keysight	N9020A	MY54440290	2025-06-18	2026-06-17
Horn Antenna	Schwarzbeck	BBHA 9120D	02695	2025-06-18	2026-06-17
Pre-Amplifier	Tonscend	TAP0118045	AP20K806109	2025-06-18	2026-06-17



Horn Antenna	SCHWARZBECK	BBHA9170	1157	2025-06-18	2026-06-17
Low Noise Pre-amplifier	SKET	LNPA-1840G-50	SK2022032902	2025-06-18	2026-06-17
Signal analyzer	ROHDE&SCHWARZ	FSQ40	100010	2025-06-18	2026-06-17
Loop Antenna	ETS	6502	00201177	2025-06-18	2026-06-17
Cable	BTEK	LMR400UF-NMNM-7.00M	/	2025-06-18	2026-06-17
Cable	BTEK	LMR400UF-NMNM-2.50M	/	2025-06-18	2026-06-17
Cable	BTEK	LMR400UF-NMNM-3.00M	/	2025-06-18	2026-06-17
Cable	BTEK	SFT205PUR-MNSWSM-7.00M	/	2025-06-18	2026-06-17
Cable	BTEK	SFT205PUR-MNSWSM-2.50M	/	2025-06-18	2026-06-17
Cable	BTEK	SFT205PUR-MNSWSM-2.50M	/	2025-06-18	2026-06-17
Cable	BTEK	SFT205PUR-MNSWSM-0.30M	/	2025-06-18	2026-06-17



6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203

6.1.2 Conclusion

This product has a single conductor, fulfill the requirement of this section.



7 Radio Spectrum Matter Test Results

7.1 20dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.231(c)

Limit:

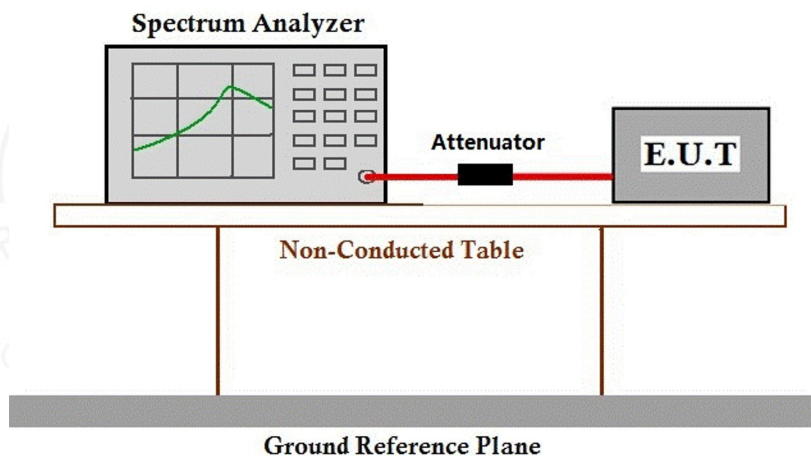
Frequency range(MHz)	Limit
70-900	No wider than 0.25% of the center frequency
Above 900	No wider than 0.5% of the center frequency

Remark: For this device, the limit is $434\text{MHz} \times 0.25\% = 1.085\text{MHz}$

7.1.1 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	keep the relative position between the artificial antenna and the EUT. Set to the maximum power setting and enable the EUT transmit continuously. All modes have been tested and only the data of worst case is recorded in the report.

7.1.2 Test Setup Diagram



7.1.3 Measurement Procedure and Data

Please Refer to Appendix



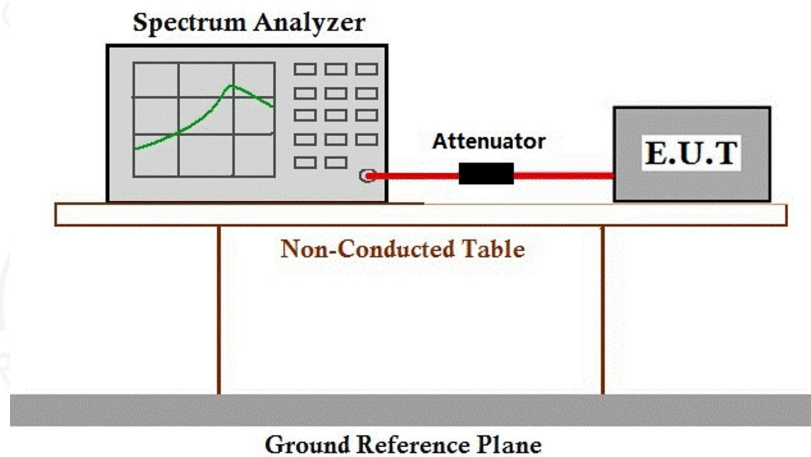
7.2 Transmission time

Test Requirement	47 CFR Part 15, Subpart C 15.231a(1)
Limit:	A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

7.2.1 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	01	The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement. Set to the maximum power setting and enable the EUT transmit continuously. Use the following spectrum analyzer settings: Frequency=Center carrier frequency RBW=100kHz, VBW=300kHz, Span= zero, Sweep time= 10second, Detector function = peak, Trace = single

7.2.2 Test Setup Diagram



7.2.3 Measurement Procedure and Data

Please Refer to Appendix

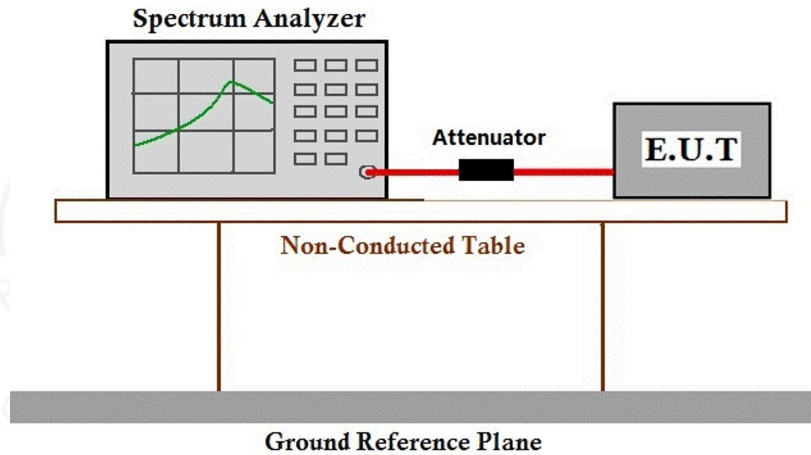


7.3 Duty Cycle Corrected Factor

Test Requirement 47 CFR Part 15, Subpart C 15.231

Limit: N/A

7.3.1 Test Setup Diagram



7.3.2 Measurement Procedure and Data

Please Refer to Appendix



7.4 Field strength of the Fundamental signal

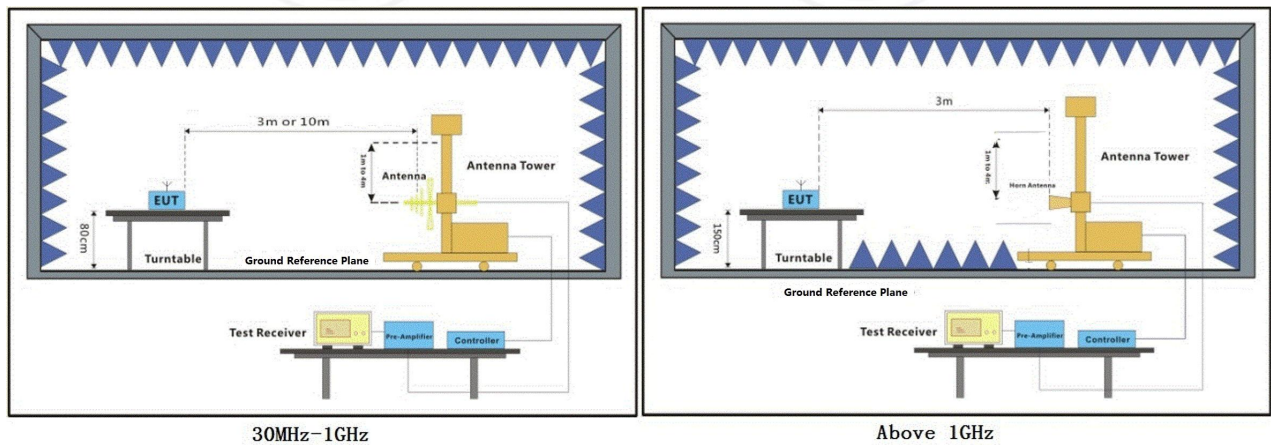
Test Requirement 47 CFR Part 15, Subpart C 15.231(b)

Limit:

Frequency(MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66–40.70	2,250	225
70–130	1,250	125
130–174	*1,250 to 3,750	*125 to 375
174–260	3,750	375
260–470	*3,750 to 12,500	*375 to 1,250
Above 470	12,500	1,250

*Linear interpolations

7.4.1 Test Setup Diagram



7.4.2 Measurement Procedure and 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 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.

Remark 1: Level= Reading Level + Factor

Remark 2: 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. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

Please Refer to Appendix



7.5 Radiated Spurious Emission

Test Requirement 47 CFR Part 15, Subpart C 15.231(b)/15.209

Limit:

15.209

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

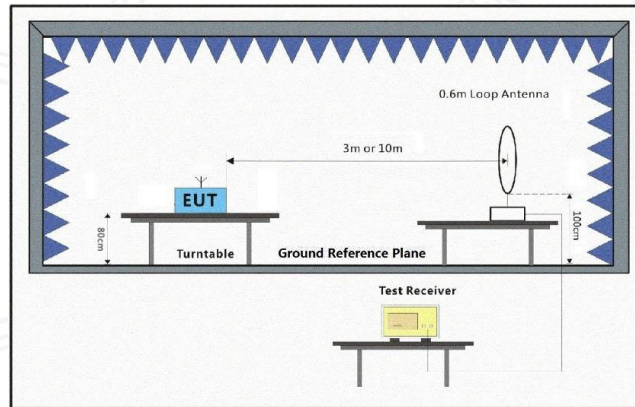
15.231(b)

Frequency(MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66-40.70	2,250	225
70-130	1,250	125
130-174	*1,250 to 3,750	*125 to 375
174-260	3,750	375
260-470	*3,750 to 12,500	*375 to 1,250
Above 470	12,500	1,250

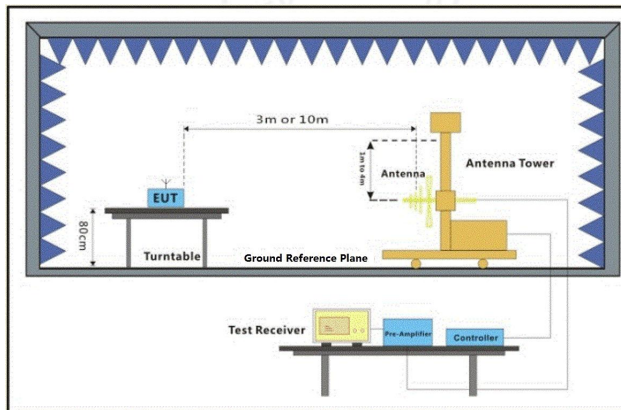
*Linear interpolations



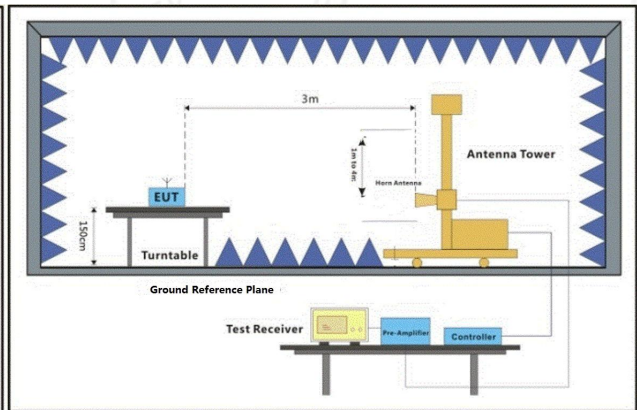
7.5.1 Test Setup Diagram



9KHz~30MHz



30MHz~1GHz



Above 1GHz



7.5.2 Measurement Procedure and Data

1. 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 Horizontal was shown in the report.

Measured Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor

2. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber in below 1GHz, 1.5m above the ground in above 1GHz. The table was rotated 360 degrees to determine the position of the highest radiation.

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

4. 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.

5. 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 and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

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

7. 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.

Remark:

1) Through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.

2) 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 = Reading Level + Factor

3) Scan from 9kHz to 1 GHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

Please Refer to Appendix

Note:

1) Pre-scan all modes and recorded the worst case results in this report (High Channel).

2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

3) Level = Reading + Factor, Margin = Level - Limit, Factor = Antenna Factor Cable Loss - Preamp Factor



8 Test Setup Photo

Please Refer to Appendix – Test Setup Photos.

9 EUT Constructional Details (EUT Photos)

Please Refer to Appendix - External and Internal Appendix EUT Photos



10 Appendix

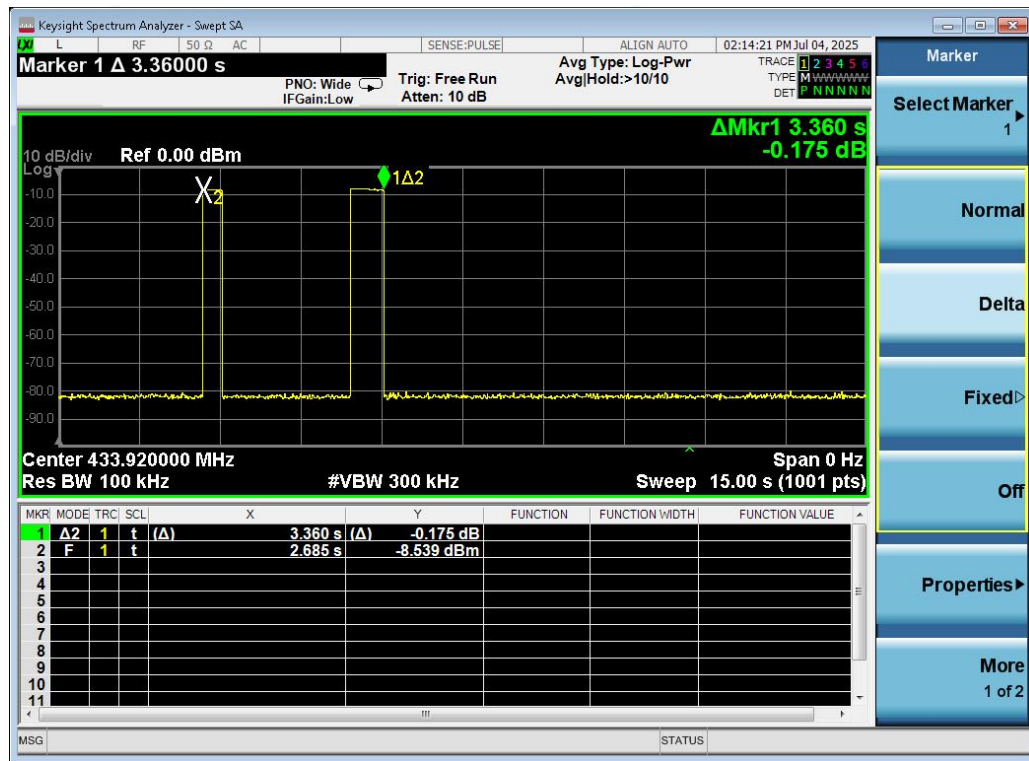
10.1 20dB Bandwidth

Test Channel	Bandwidth	Limit	Verdict
433.92MHz	44.993kHz	1.085MHz	PASS



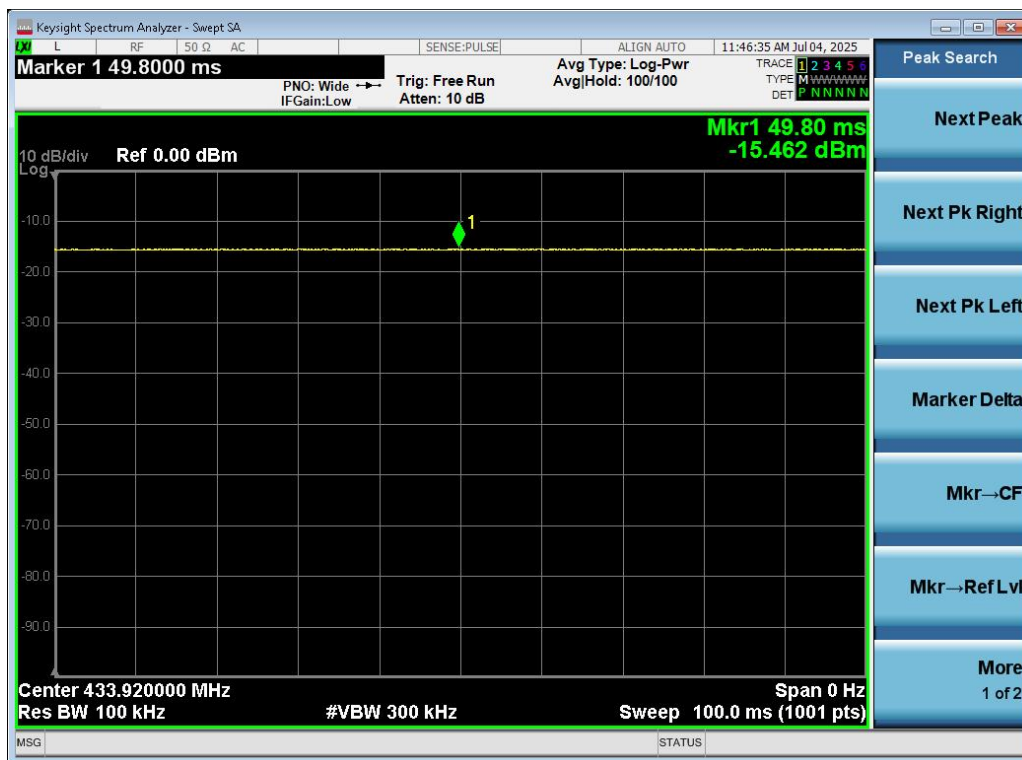
10.2 Transmission time

Transmission time(second)	Limit(second)	Result
3.36	5	Pass



10.3 Duty cycle corrected factor

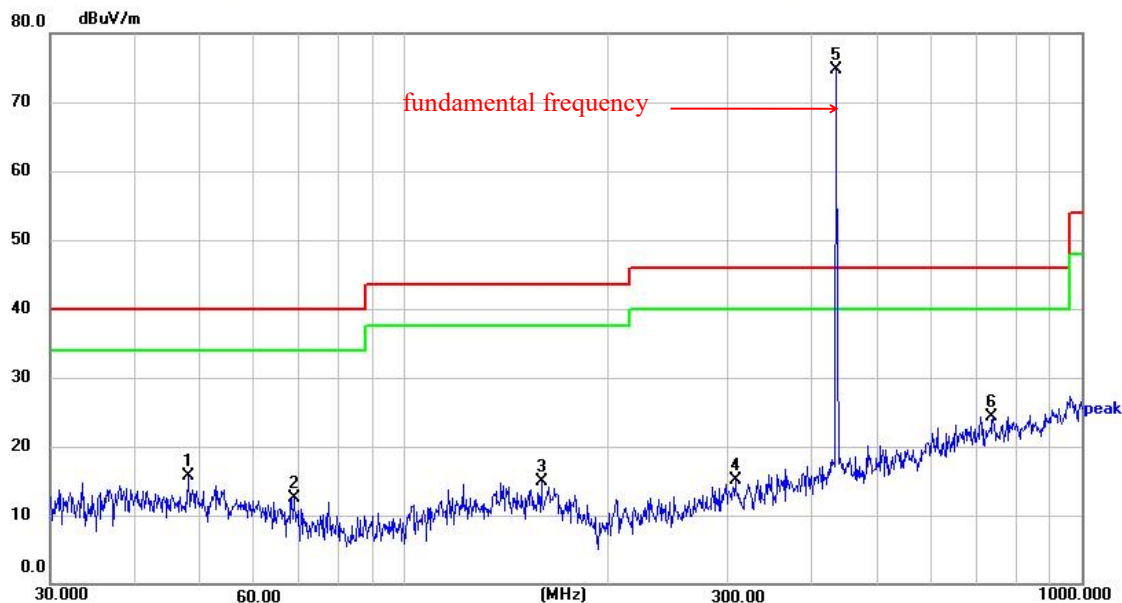
T _{ON} (ms)	100
T _{ON} number	1
Period (ms)	100
Duty Cycle	100/100=1
Duty Cycle Corrected Factor	$20 \cdot \log(1) = 0$



10.4 Field strength of the Fundamental signal&Radiation Spurious Emission

Test Antenna Horizontal (30MHz to 1GHz)

Level = Reading + Factor



Peak value:

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	47.9940	27.15	-11.40	15.75	40.00	-24.25	peak	100	360	P	
2	68.6310	25.84	-13.34	12.50	40.00	-27.50	peak	100	360	P	
3	159.2251	26.23	-11.30	14.93	43.50	-28.57	peak	100	360	P	
4	307.8313	26.33	-11.22	15.11	46.00	-30.89	peak	100	360	P	
5 *	434.0651	83.59	-8.93	74.66	46.00	28.66	peak	100	360	P	
6	867.8400	27.85	-3.52	24.33	46.00	-21.67	peak	100	360	P	

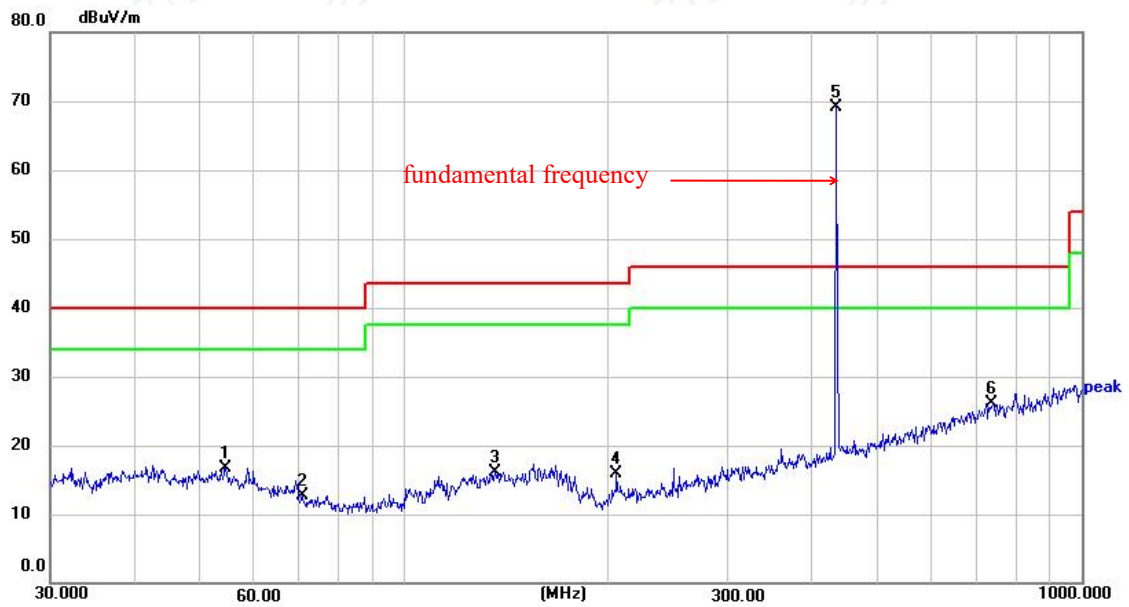
Average value:

No.	Freq. [MHz]	PKLevel [dBuV/m]	DCCF [dB]	Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Polarity	Detector
1	434.0651	74.66	0.00	74.66	80.83	-6.17	Horizontal	AV
2	867.84	24.33	0.00	24.33	60.83	-36.50	Horizontal	AV



Test Antenna Vertical (30MHz to 1GHz)

Level = Reading + Factor



Peak value:

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	54.4516	28.59	-11.80	16.79	40.00	-23.21	peak	100	0	P	
2	70.5836	27.49	-14.77	12.72	40.00	-27.28	peak	100	0	P	
3	135.9822	27.47	-11.33	16.14	43.50	-27.36	peak	100	0	P	
4	205.6751	29.48	-13.51	15.97	43.50	-27.53	peak	100	0	P	
5 *	434.0651	78.11	-8.93	69.18	46.00	23.18	peak	100	0	P	
6	867.8400	29.56	-3.52	26.04	46.00	-19.96	peak	100	0	P	

Average value:

No.	Freq. [MHz]	PKLevel [dBuV/m]	DCCF [dB]	Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Polarity	Detector
1	434.0651	69.18	0.00	69.18	80.83	-11.65	Vertical	AV
2	867.84	26.04	0.00	26.04	60.83	-34.79	Vertical	AV



Test Antenna Horizontal Above 1GHz

Peak value:

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Detector	P/F
1	1300	53.72	-12.55	41.17	80.83	-39.66	peak	P
2	1736	54.17	-10.55	43.62	80.83	-37.21	peak	P
3	2168	50.98	-8.78	42.20	80.83	-38.63	peak	P
4	2604	50.67	-8.28	42.39	80.83	-38.44	peak	P
5	3036	51.91	-4.93	46.98	80.83	-33.85	peak	P
6	3472	47.55	-6.57	40.98	80.83	-39.85	peak	P
7	3904	54.94	-7.23	47.71	74.00	-26.29	peak	P
8	4339.2	45.50	-6.04	39.46	74.00	-34.54	peak	P

Average value:

No.	Freq. [MHz]	PKLevel [dBuV/m]	DCCF [dB]	Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detector	P/F
1	1300	41.17	0.00	41.17	60.83	-19.66	AV	P
2	1736	43.62	0.00	43.62	60.83	-17.21	AV	P
3	2168	42.20	0.00	42.20	60.83	-18.63	AV	P
4	2604	42.39	0.00	42.39	60.83	-18.44	AV	P
5	3036	46.98	0.00	46.98	60.83	-13.85	AV	P
6	3472	40.98	0.00	40.98	60.83	-19.85	AV	P
7	3904	47.71	0.00	47.71	54.00	-6.29	AV	P
8	4339.2	39.46	0.00	39.46	54.00	-14.54	AV	P

Test Antenna Vertical Above 1GHz

Peak value:

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Detector	P/F
1	1300	47.58	-12.55	35.03	80.83	-45.80	peak	P
2	1736	53.20	-10.55	42.65	80.83	-38.18	peak	P
3	2168	56.05	-8.78	47.27	80.83	-33.56	peak	P
4	2604	55.78	-8.28	47.50	80.83	-33.33	peak	P
5	3036	56.64	-4.93	51.71	80.83	-29.12	peak	P
6	3472	49.56	-6.57	42.99	80.83	-37.84	peak	P
7	3904	57.98	-7.23	50.75	74.00	-23.25	peak	P
8	4339.2	46.54	-6.04	40.50	74.00	-33.50	peak	P

Average value:

No.	Freq. [MHz]	PKLevel [dBuV/m]	DCCF [dB]	Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detector	P/F
1	1300	35.03	0.00	35.03	60.83	-25.80	AV	P
2	1736	42.65	0.00	42.65	60.83	-18.18	AV	P
3	2168	47.27	0.00	47.27	60.83	-13.56	AV	P
4	2604	47.50	0.00	47.50	60.83	-13.33	AV	P
5	3036	51.71	0.00	51.71	60.83	-9.12	AV	P
6	3472	42.99	0.00	42.99	60.83	-17.84	AV	P
7	3904	50.75	0.00	50.75	54.00	-3.25	AV	P
8	4339.2	40.50	0.00	40.50	54.00	-13.50	AV	P

- End of the Report -

