FCC PART 15.231

TEST REPORT

For

ZHEJIANG YANKON GROUP CO.,LTD

No.208 Tongjiang Middle Road, Shangyu Economic Development Zone, SHAOXING, ZHEJIANG, China

FCC ID: 2AL76-YGRF433

Report Type:	Product Name:
Original	Remote controller

Report Number:	2507P38220E-RF-01
Report Date:	2025-02-19
Reviewed By:	Ash Lin
Approved By:	Miles Chen
Prepared By:	Bay Area Compliance Laboratories Corp. (Xiamen) Unit 102, No. 902 Meifeng South Road, Binhai West Avenue, Science and Technology Innovation Park, Torch High tech Zone XiaMen Tel: +86-592-3200111 www.baclcorp.com.cn

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REPORT REVISION HISTORY

Number of Revisions	Report No.	Version	Issue Date	Description
0	2507P38220E-RF-01	R1V1	2025-02-19	Initial Release

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	ZHEJIANG YANKON GROUP CO.,LTD
Product Name:	Remote controller
Tested Model:	YGRF433
Power Supply:	DC 3V from battery
RF Function:	SRD
Operating Band/Frequency:	433.92MHz
Channel Number:	1
Modulation Type:	ASK
Antenna Type:	PCB Antenna
EUT Received Status:	Good
Note: *1. All measurement and test data in this report was gathered from production sample serial number: 2XFQ-1 (Assigned by the BACL (Xiamen). The EUT supplied by the applicant was received on 2025-02-13)*	

Objective

This test report is prepared for *ZHEJIANG YANKON GROUP CO.,LTD* All the test measurements were performed according to the measurement procedure described in ANSI C63.10-2013.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, section 15.203, 15.205, 15.209, 15.35(c) and 15.231 rules.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

Measurement Uncertainty

Item		U_{lab}
Radiated emission	9kHz-30MHz	2.59 dB
	30MHz~1GHz	4.79 dB
	1GHz~6GHz	4.6 dB
Occupied Bandwidth		0.053kHz
Transmitter Conducted Power		0.624 dB
Temperature		1℃
Humidity		5%

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Xiamen) to collect test data is located on the Unit 102, No. 902 Meifeng South Road, Binhai West Avenue, Science and Technology Innovation Park, Torch High tech Zone XiaMen.

Bay Area Compliance Laboratories Corp. (Xiamen) Lab is accredited to ISO/IEC 17025 by A2LA (Certificate Number: 7134.01) and the lab has been recognized as the FCC accredited lab under the KDB 974614 D01, FCC Registration No.: 485720, the FCC Designation No.: CN1384.

SYSTEM TEST CONFIGURATION

Test Mode and Voltage

The system was configured for testing in a typical mode (as normally used by a typical user).	
Test mode:	Transmitting
Test voltage:	DC 3V from battery
Remark:	During all emission tests, the EUT was configured to measure its highest possible emission level and the worst case's test data was presented in this test report.

Justification

The system was configured in testing mode which was provided by manufacturer.

Channel List:

Channel	Frequency (MHz)
1	433.92

EUT Exercise Software

Engineering Mode was provided by manufacturer.

Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
/	/	/	/

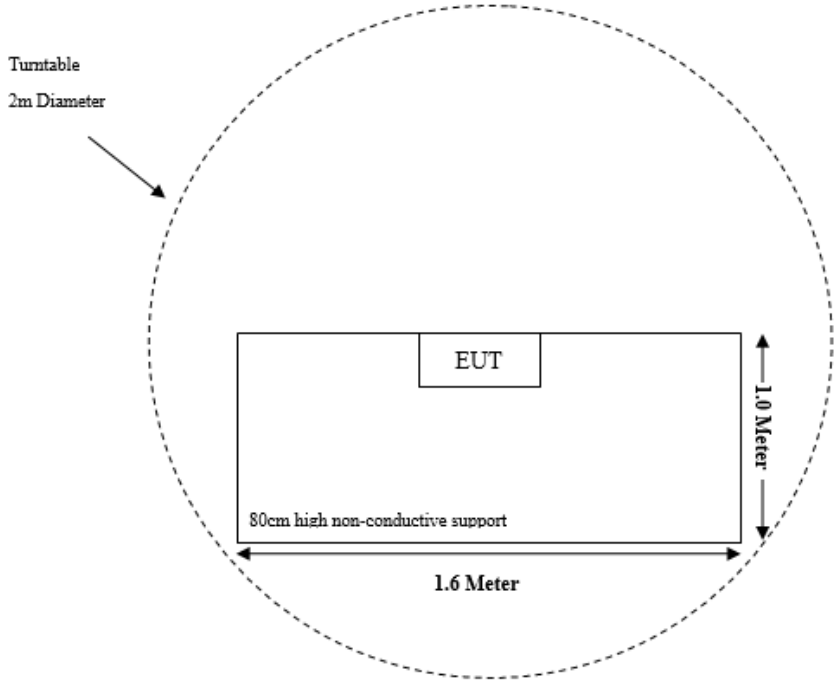
External I/O Cable

Cable Description	Length (m)	From Port	To Port
/	/	/	/

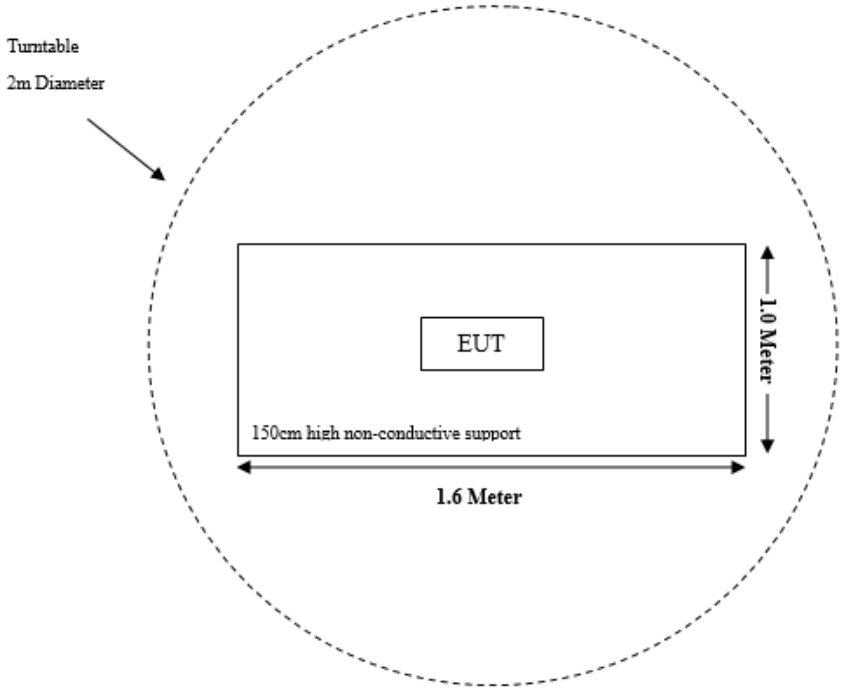
Block Diagram of Test Setup

For Radiated Emissions:

Below 1GHz



Above 1GHz



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliant
§15.207(a)	Conducted Emissions	Not Applicable (See Note)
§15.205, §15.209, §15.231(b)	Radiated Emissions	Compliant
§15.231 (a) (1)	Deactivation	Compliant
§15.231 (c)	20dB Emission Bandwidth	Compliant

Note: The EUT was powered by battery.
Note 1: The EUT have 12 keys, pre-scan all keys, the duty cycle of all keys is the same, the worst case "WARM" key was tested and recorded in the report.

TEST EQUIPMENT LIST

Test Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emissions Below 1 GHz					
EMI Test Receiver	Rohde & Schwarz	ESR	103103	2024/3/29	2025/3/28
Loop Antenna	Rohde & Schwarz	HFH2-Z2	830749/001	2023/7/27	2026/7/26
Antenna	Sunol Sciences	JB6	A122022-5	2023/7/27	2026/7/26
Amplifier	Sonoma	310B	120903	2024/3/29	2025/3/28
Coaxial Cable	XINHANGWEIBO	XH400T-N-4M	CC002	2024/3/29	2025/3/28
Coaxial Cable	XINHANGWEIBO	XH460B-N-2M	CC006	2024/3/29	2025/3/28
Coaxial Cable	XINHANGWEIBO	XH460B-N-12M	CC007	2024/3/29	2025/3/28
Coaxial Cable	XINHANGWEIBO	HFH2-CC	335.3609	2024/3/29	2025/3/28
Test Software	Audix	E3	18621a	N/A	N/A
Radiated Emissions Above 1 GHz					
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102051	2024/3/29	2025/3/28
Filter Switch Unit	Decentest	DT7220FSU	DS79904	2024/2/23	2025/2/22
Multiplex Switch Test Control Set	Decentest	DT7220SCU	DS79901	2024/2/23	2025/2/22
Horn Aantenna	EMCO	3115	9002-3355	2024/11/19	2027/11/18
Preamplifier	A.H.Systems	PAM-0118P	489	2024/3/29	2025/3/28
Coaxial Cable	XINHANGWEIBO	XH800A-N-6M	CC003	2024/3/29	2025/3/28
Coaxial Cable	XINHANGWEIBO	XH800A-N-1M	CC005	2024/3/29	2025/3/28
Test Software	Audix	E3	18621a	N/A	N/A

Statement of Traceability: Bay Area Compliance Laboratories Corp. (Xiamen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC§15.203 - ANTENNA REQUIREMENT

Applicable Standard

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 shall be considered sufficient to comply with the provisions of this section.

Antenna Connected Construction

The EUT has a PCB antenna which was permanently attached; fulfill the requirement of this section. Please refer to EUT photos.

Result: Compliant.

FCC §15.205, §15.209, §15.231 (b) - RADIATED EMISSIONS

Applicable Standard

FCC §15.205, §15.209, §15.231 (b)

According to FCC §15.231(b), the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emission (microvolts/meter)
40.66-40.70	2250	225
70-130	1250	125
130-174	1250 to 3750 *	125 to 375 *
174-260	3750	375
260-470	3750 to 12500 *	375 to 1250 *
Above 470	12500	1250

*Linear interpolations.

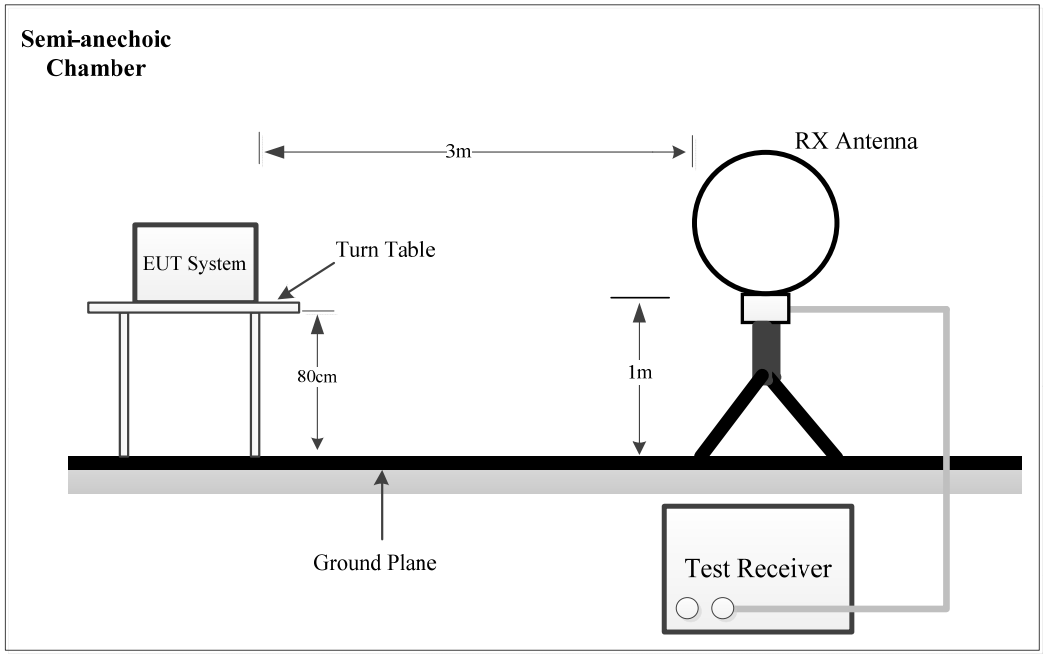
(1) The above field strength limits are specified at a distance of 3 meters. The tighter limits apply at the band edges.

(2) Intentional radiators operating under the provisions of this section shall demonstrate compliance with the limits on the field strength of emissions, as shown in the above table, based on the average value of the measured emissions. As an alternative, compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR quasi-peak detector. The specific method of measurement employed shall be specified in the application for equipment authorization. If average emission measurements are employed, the provisions in §15.35 for averaging pulsed emissions and for limiting peak emissions apply. Further, compliance with the provisions of §15.205 shall be demonstrated using the measurement instrumentation specified in that section.

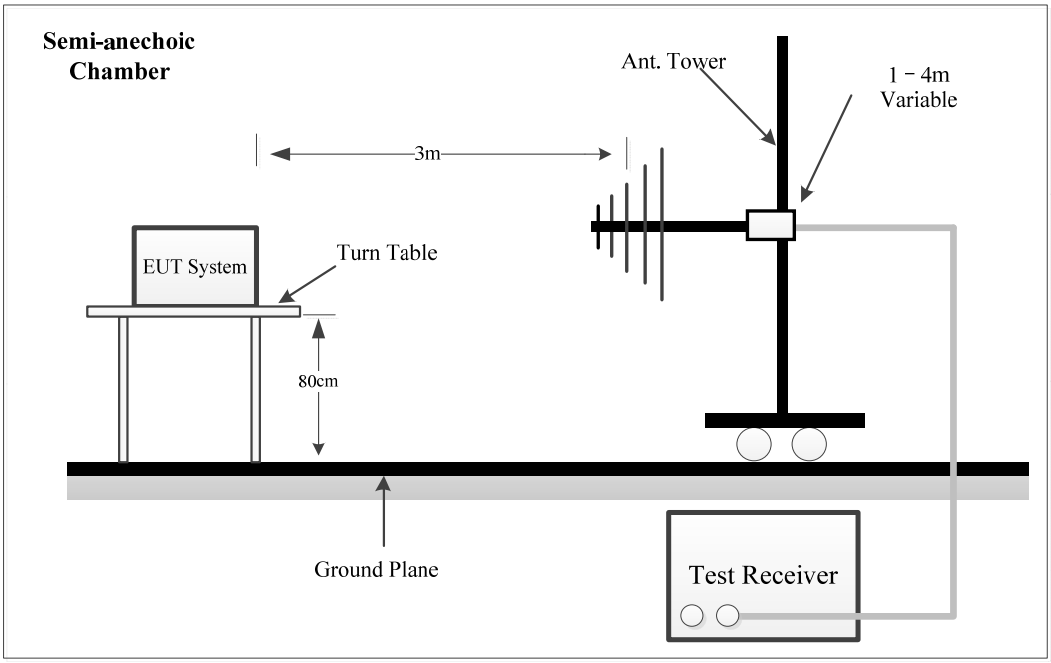
(3) The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in §15.209, whichever limit permits a higher field strength.

Test System Setup

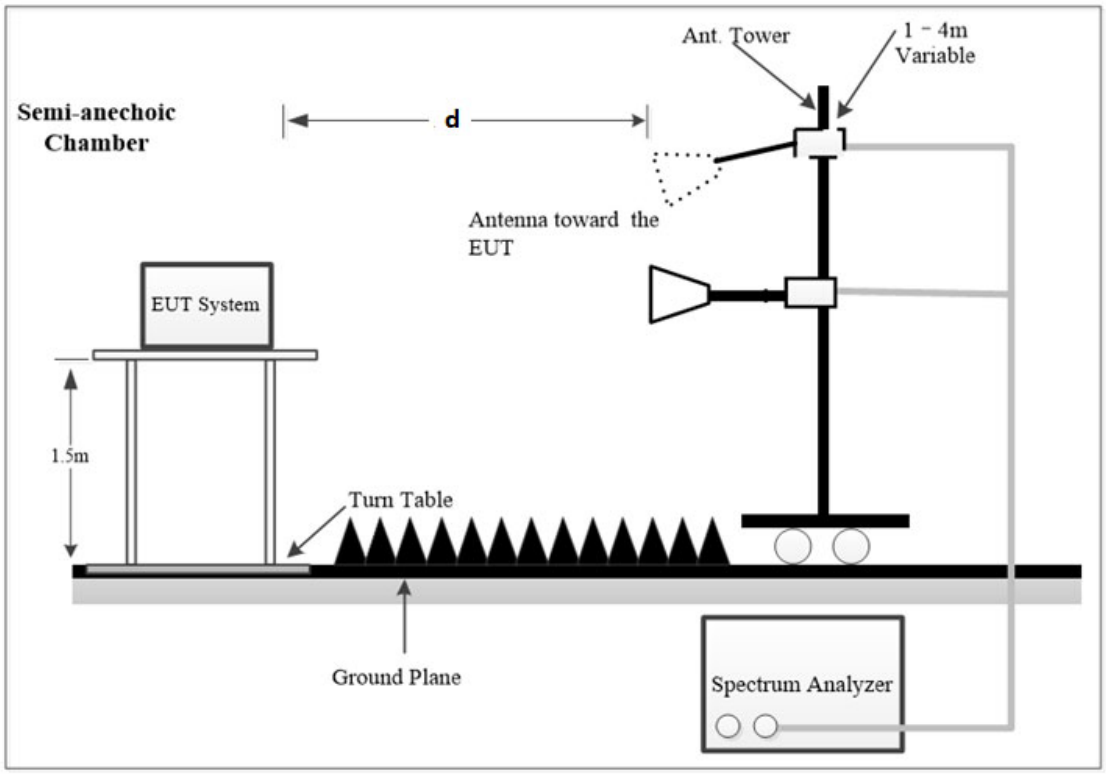
9 kHz-30MHz:



30MHz-1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC § 15.205, 15.209 and 15.231.

NOTE: d is testing distance;
For Radiated Emission test (1GHz-5GHz) and Bandedge Emission test, which was performed at 3 m distance.

EMI Test Receiver Setup

The system was investigated from 9 kHz to 5 GHz.

During the radiated emission test, the EMI test Receiver was set with the following configurations:

Frequency Range	RBW	VBW	IF B/W	Measurement
9 kHz – 150 kHz	200Hz	1 kHz	/	PK
	/	/	200Hz	QP/AV
150 kHz – 30 MHz	10 kHz	30 kHz	/	PK
	/	/	9kHz	QP/AV
30 MHz – 1000 MHz	100 kHz	300 kHz	/	PK
	/	/	120kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

For each measurement antenna alignment, the EUT shall be rotated through 0° to 360° on a turntable. The report shall list the six emissions with the smallest margin relative to the limit, for each of the three antenna orientations (parallel, perpendicular, and ground parallel) unless the margin is greater than 20 dB, then the following statement shall be made: "all emissions were greater than 20 dB below the limit."

If the measured peak level of the emissions that the measuring receiver reading level plus corrected factor is at least 10 dB below the QP emission limit, there's no need to record the measured QP level of the emissions in the report.

Level &Margin Calculation

The Level is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Factor (dB/m) =Antenna Factor (dB/m) + Cable Loss (dB) - Amplifier Gain (dB)
Level (dBμV/m) = Reading (dBμV) + Factor (dB/m)

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin (dB) = Limit (dBμV/m) –Level (dBμV/m)

Test Results Summary

According to the data in the following table, the EUT complied with the FCC §15.205, §15.209, §15.231 (b).

Test Data

Environmental Conditions & Test Information

Frequency Range:	Below 1 GHz	Above 1 GHz
Temperature:	22.5℃	21.0℃
Relative Humidity:	49 %	48 %
ATM Pressure:	100.5 kPa	100.1 kPa
Test Date:	2025-02-13	2025-02-18
Test Engineer:	Wlif Wu	Wlif Wu

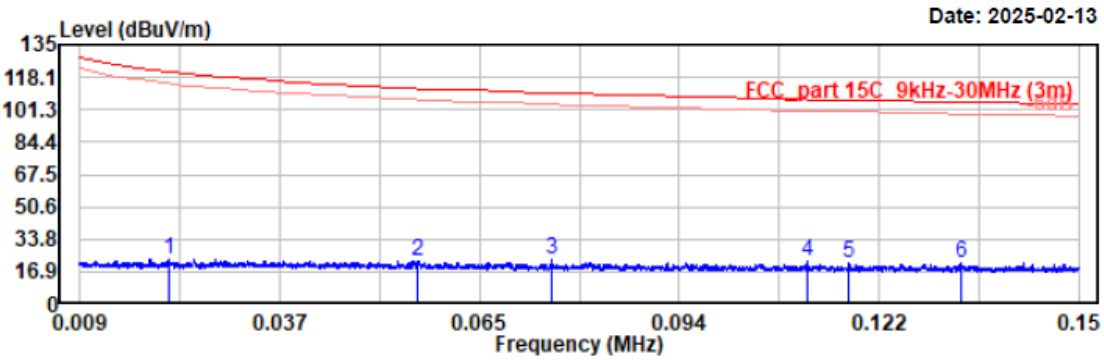
Note: Pre-scan in the X, Y and Z axes of orientation, the worst case Z-axis of orientation was recorded.

1) 9 kHz~30MHz

Pre-scan in parallel, ground-parallel and perpendicular of orientation of loop antenna, ground-parallel is worst case

Project No.: 2507P38220E-RF
Test Mode: 433.92MHz Transmitting
EUT Model: YGRF433
Test distance: 3m

Temp/Humi/ATM: 22.5℃/49%/100.5kPa
Tested by: Wlif Wu
Power Source: DC 3V



Condition: PK RBW:200Hz VBW:1kHz SWT:auto
QP RBW:200Hz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Remark
0.022	3.72	19.83	23.55	121.01	97.46	Peak
0.057	2.78	19.91	22.69	112.54	89.85	Peak
0.076	3.47	19.75	23.22	110.04	86.82	Peak
0.112	2.29	19.73	22.02	106.65	84.63	Peak
0.118	1.99	19.73	21.72	106.20	84.48	Peak
0.133	1.23	19.73	20.96	105.11	84.15	Peak

Project No.: 2507P38220E-RF
Test Mode: 433.92MHz Transmitting
EUT Model: YGRF433
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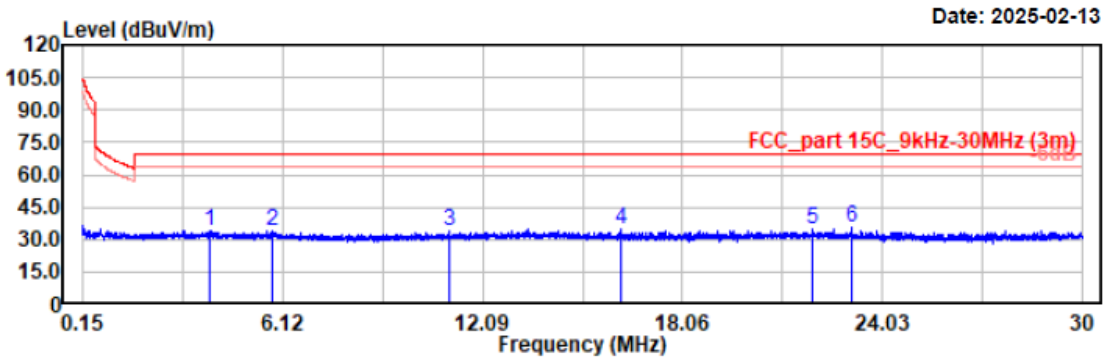


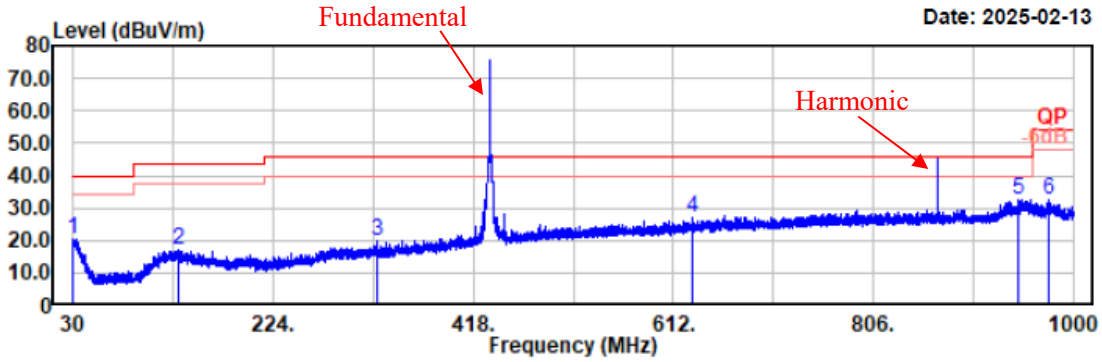
Condition: PK RBW:10kHz VBW:30kHz SWT:auto
QP RBW:9kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Remark
3.950	14.28	19.77	34.05	69.54	35.49	Peak
5.795	14.36	19.78	34.14	69.54	35.40	Peak
11.105	14.14	19.71	33.85	69.54	35.69	Peak
16.227	15.08	19.84	34.92	69.54	34.62	Peak
21.964	14.71	20.14	34.85	69.54	34.69	Peak
23.132	15.01	20.17	35.18	69.54	34.36	Peak

2） 30MHz~ 1GHz

Project No.: 2507P38220E RF
Test Mode: 433.92MHz Transmitting
EUT Model: YGRF433
Test distance: 3m

Temp/Humi/ATM: 22.5℃/49%/100.5kPa
Tested by: Wlif Wu
Power Source: DC 3V

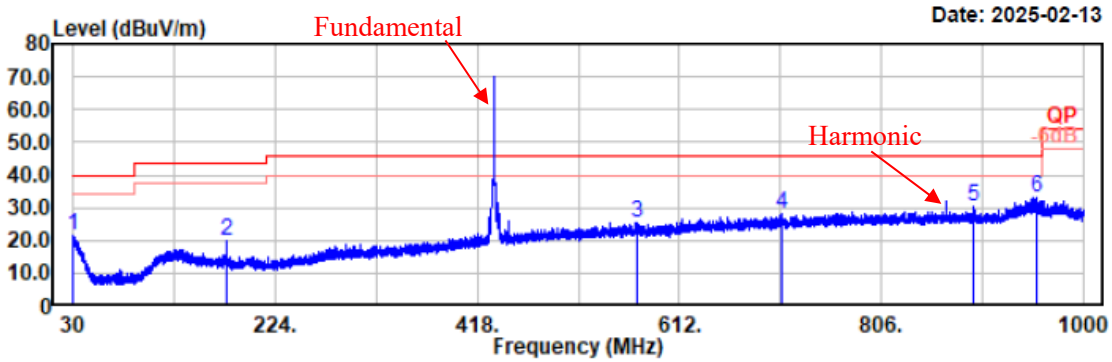


Condition: PK RBW:100kHz VBW:300kHz SWT:auto
QP RBW:120kHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
30.29	26.26	-5.68	20.58	40.00	19.42	Horizontal	Peak
132.24	27.17	-10.12	17.05	43.50	26.45	Horizontal	Peak
325.56	28.44	-8.64	19.80	46.00	26.20	Horizontal	Peak
631.11	28.39	-1.35	27.04	46.00	18.96	Horizontal	Peak
946.84	29.50	3.13	32.63	46.00	13.37	Horizontal	Peak
975.56	29.16	3.64	32.80	54.00	21.20	Horizontal	Peak

Project No.: 2507P38220E RF
Test Mode: 433.92MHz Transmitting
EUT Model: YGRF433
Test distance: 3m

Temp/Humi/ATM: 22.5℃/49%/100.5kPa
Tested by: Wlif Wu
Power Source: DC 3V



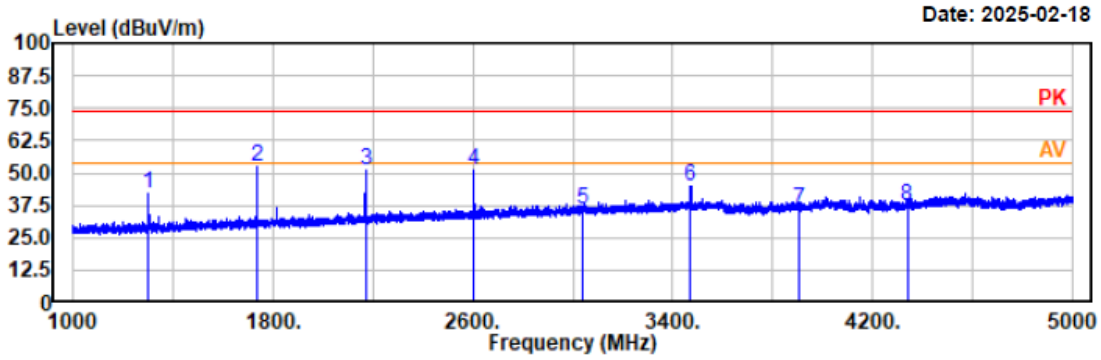
Condition: PK RBW:100kHz VBW:300kHz SWT:auto
QP RBW:120kHz SWT:auto

Freq	Reading	Factor	Result	Limit	Margin	Polarity	Remark
MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
30.49	26.98	-5.73	21.25	40.00	18.75	Vertical	Peak
177.93	31.88	-12.18	19.70	43.50	23.80	Vertical	Peak
571.07	27.79	-2.46	25.33	46.00	20.67	Vertical	Peak
710.07	28.12	-0.09	28.03	46.00	17.97	Vertical	Peak
895.24	27.66	2.42	30.08	46.00	15.92	Vertical	Peak
955.38	29.81	3.27	33.08	46.00	12.92	Vertical	Peak

3) 1GHz~ 5GHz

Project No.: 2507P38220E RF
Test Mode: 433.92MHz Transmitting
EUT Model: YGRF433
Test distance: 3m

Temp/Humi/ATM: 21.0℃/48%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 3V

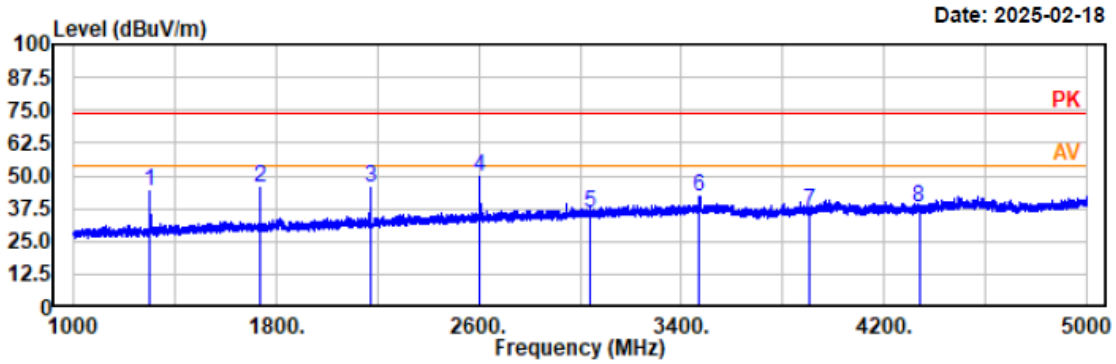


Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
1302.40	56.86	-15.01	41.85	74.00	32.15	horizontal	Peak
1736.40	66.20	-13.53	52.67	74.00	21.33	horizontal	Peak
2170.40	62.87	-12.07	50.80	74.00	23.20	horizontal	Peak
2604.40	61.51	-10.39	51.12	74.00	22.88	horizontal	Peak
3037.44	44.78	-8.88	35.90	74.00	38.10	horizontal	Peak
3472.40	52.73	-7.66	45.07	74.00	28.93	horizontal	Peak
3905.28	42.81	-6.80	36.01	74.00	37.99	horizontal	Peak
4339.20	42.75	-5.80	36.95	74.00	37.05	horizontal	Peak

Project No.: 2507P38220E RF
Test Mode: 433.92MHz Transmitting
EUT Model: YGRF433
Test distance: 3m

Temp/Humi/ATM: 21.0℃/48%/100.1kPa
Tested by: Wlif Wu
Power Source: DC 3V



Condition: PK RBW:1MHz VBW:3MHz SWT:auto

Freq MHz	Reading dBuV	Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Polarity	Remark
1302.40	59.47	-15.01	44.46	74.00	29.54	vertical	Peak
1736.40	59.28	-13.53	45.75	74.00	28.25	vertical	Peak
2170.40	57.56	-12.07	45.49	74.00	28.51	vertical	Peak
2604.40	59.79	-10.39	49.40	74.00	24.60	vertical	Peak
3037.60	44.47	-8.88	35.59	74.00	38.41	vertical	Peak
3472.40	50.05	-7.66	42.39	74.00	31.61	vertical	Peak
3905.28	43.67	-6.80	36.87	74.00	37.13	vertical	Peak
4339.20	43.49	-5.80	37.69	74.00	36.31	vertical	Peak

Test Data (the worst and recorded):

433.92MHz
Peak Strength

Frequency	Receiver	Rx Antenna		Cable loss	Amplifier Gain	Corrected Amplitude	Limit	Margin
	Reading	Polar	Factor					
MHz	dBµV	H/V	dB/m	dB	dB	dBµV/m	dBµV/m	dB
433.92*	80.74	H	22.88	3.74	31.92	75.44	100.83	25.39
433.92*	75.14	V	22.88	3.74	31.92	69.84	100.83	30.99
867.84	43.27	H	28.44	5.45	31.74	45.42	80.83	35.41
867.84	29.65	V	28.44	5.45	31.74	31.80	80.83	49.03
1301.76	56.86	H	26.00	1.52	42.53	41.85	74.00	32.15
1301.76	59.47	V	26.00	1.52	42.53	44.46	74.00	29.54
1735.68	66.20	H	27.27	1.78	42.58	52.67	80.83	28.16
1735.68	59.28	V	27.27	1.78	42.58	45.75	80.83	35.08
2169.60	62.87	H	28.68	2.03	42.78	50.80	80.83	30.03
2169.60	57.56	V	28.68	2.03	42.78	45.49	80.83	35.34
2603.52	61.51	H	30.21	2.23	42.83	51.12	80.83	29.71
2603.52	59.79	V	30.21	2.23	42.83	49.40	80.83	31.43
3037.44	44.78	H	31.77	2.32	42.97	35.90	80.83	44.93
3037.44	44.47	V	31.77	2.32	42.97	35.59	80.83	45.24
3471.36	52.73	H	32.84	2.67	43.17	45.07	80.83	35.76
3471.36	50.05	V	32.84	2.67	43.17	42.39	80.83	38.44
3905.28	42.81	H	33.71	2.83	43.34	36.01	74.00	37.99
3905.28	43.67	V	33.71	2.83	43.34	36.87	74.00	37.13
4339.20	42.75	H	34.28	3.57	43.65	36.95	74.00	37.05
4339.20	43.49	V	34.28	3.57	43.65	37.69	74.00	36.31

Note:
*: Fundamental

Field Strength (Average)

Frequency (MHz)	Peak Measurement@3m (dBµV/m)	Polar (H/V)	Duty Cycle Correction Factor(dB)	Average Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)
433.92*	75.44	H	-1.60	73.84	80.83	6.99
433.92 *	69.84	V	-1.60	68.24	80.83	12.59
867.84	45.42	H	-1.60	43.82	60.83	17.01
867.84	31.80	V	-1.60	30.20	60.83	30.63
1301.76	41.85	H	-1.60	40.25	54.00	13.75
1301.76	44.46	V	-1.60	42.86	54.00	11.14
1735.68	52.67	H	-1.60	51.07	60.83	9.76
1735.68	45.75	V	-1.60	44.15	60.83	16.68
2169.60	50.80	H	-1.60	49.20	60.83	11.63
2169.60	45.49	V	-1.60	43.89	60.83	16.94
2603.52	51.12	H	-1.60	49.52	60.83	11.31
2603.52	49.40	V	-1.60	47.80	60.83	13.03
3037.44	35.90	H	-1.60	34.30	60.83	26.53
3037.44	35.59	V	-1.60	33.99	60.83	26.84
3471.36	45.07	H	-1.60	43.47	60.83	17.36
3471.36	42.39	V	-1.60	40.79	60.83	20.04
3905.28	36.01	H	-1.60	34.41	54.00	19.59
3905.28	36.69	V	-1.60	35.09	54.00	18.91
4339.20	36.95	H	-1.60	35.35	54.00	18.65
4339.20	37.69	V	-1.60	36.09	54.00	17.91

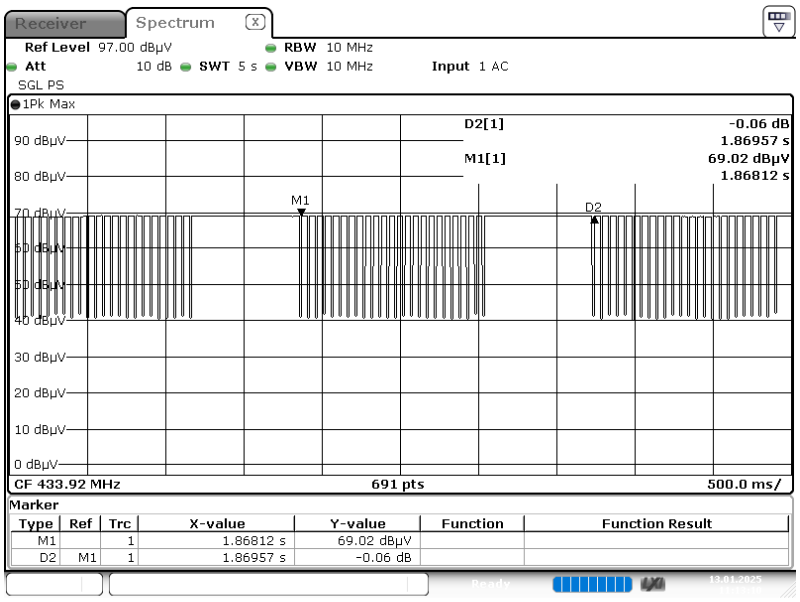
Note:
Average Amp. = Peak Measurement@3m(dBµV/m)+ Duty Cycle Correction Factor
Margin = Limit- Average Amp.

After verification, the duty cycle of all buttons is the same, so only one case will be tested
Duty Cycle Correction Factor Calculation as below:
Ton=23*37.68+688.41 =1555.05ms
Ton+off=1869.57ms
Duty Cycle = 1555.05/1869.57*100%=83.18%
Duty Cycle Correction Factor = 20*log(Duty Cycle)= -1.60 dB

Duty Cycle:

Test Mode:	Transmitting	**Test Engineer:**	Wlif Wu
Test Date:	2025-02-13	**Test Voltage:**	DC 3V from battery
Environment:	Temp.:22.5℃ Humi.: 49% Atm:100.5kPa		

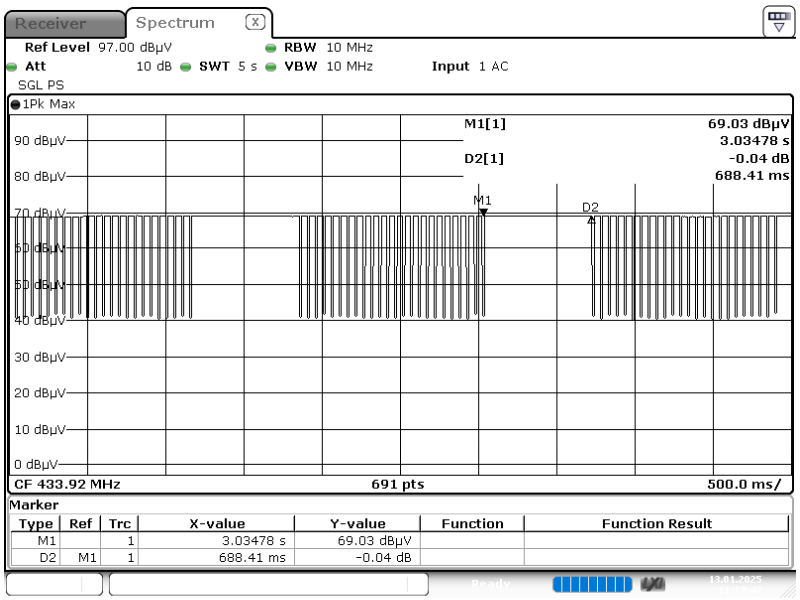
Transmission duration



ProjectNo.:2507P38220E-RF Tester:Wlif Wu

Date: 13.FEB.2025 11:13:10

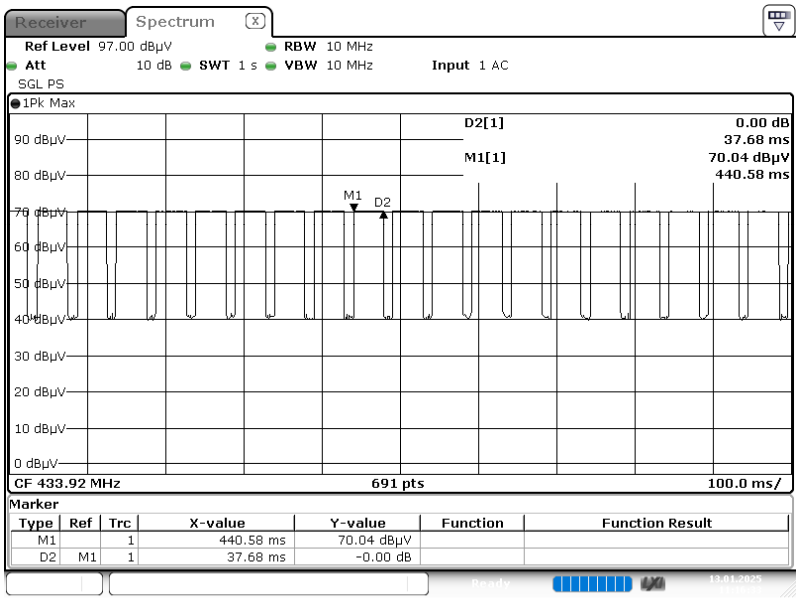
Pulse 1



ProjectNo.:2507P38220E-RF Tester:Wlif Wu

Date: 13.FEB.2025 11:13:42

Pulse 2



ProjectNo.:2507P38220E-RF Tester:Wlif Wu

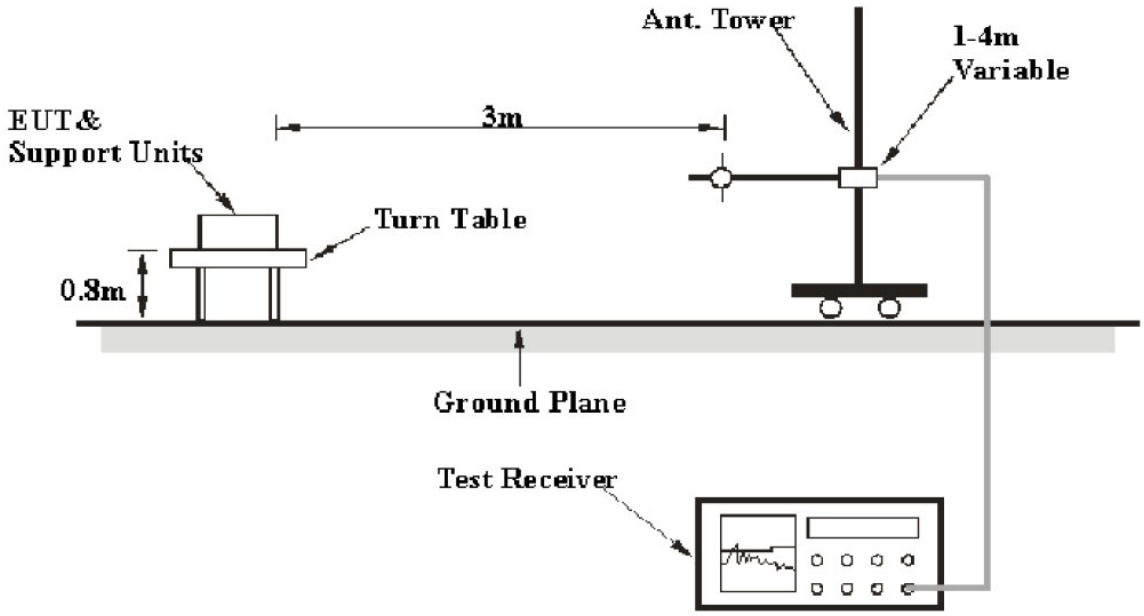
Date: 13.FEB.2025 11:16:32

FCC §15.231(a) (1) - DEACTIVATION TESTING

Applicable Standard

Per FCC §15.231(a) (1), A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

EUT Setup



Test Procedure

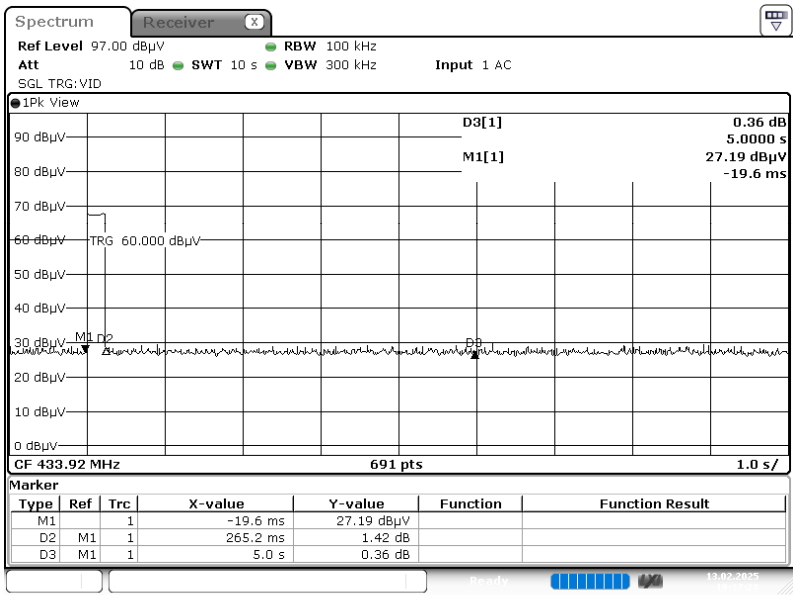
1. With the EUT's antenna attached, the waveform was received by the test antenna which was connected to the spectrum analyzer.
2. Set center frequency of spectrum analyzer=operating frequency.
3. Set the spectrum analyzer as RBW=100k VBW=300k Span=0Hz.
4. Repeat above procedures until all frequency measured was complete.

Test Data

Test Mode:	Transmitting	Test Engineer:	Wlif Wu
Test Date:	2025-02-13	Test Voltage:	DC 3V from battery
Environment:	Temp.:22.5℃ Humi.: 49% Atm:100.5kPa		

Channel Frequency (MHz)	Deactivate Time (s)	Limit (s)	Result
433.92	0.27	<5	Pass

T_{stop} <5s



ProjectNo.:2507P38220E-RF Tester:Wlif Wu

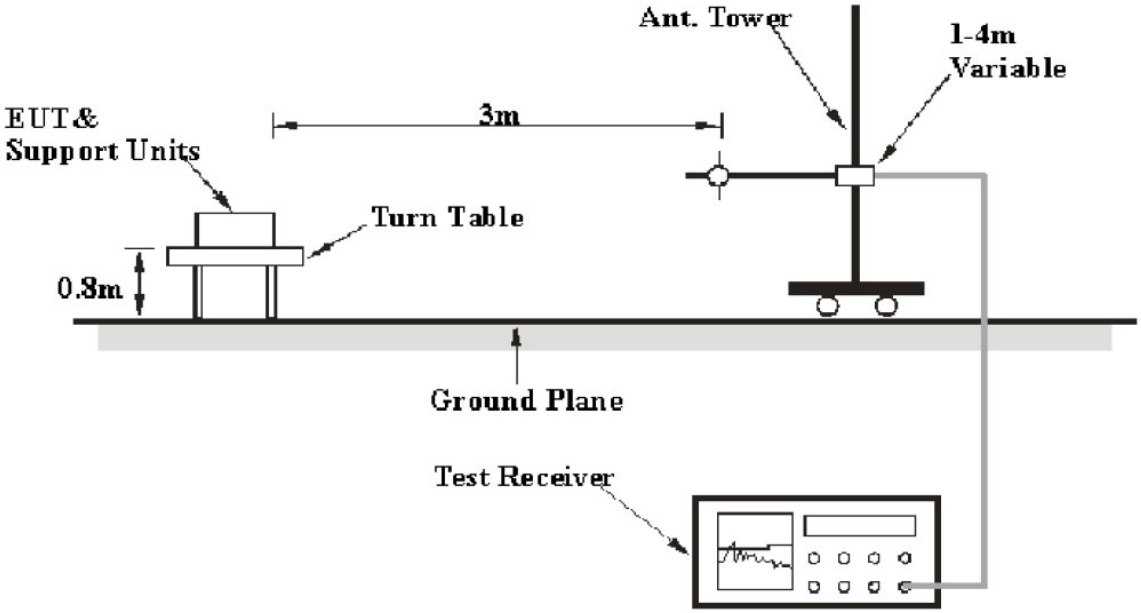
Date: 13.FEB.2025 19:37:29

FCC §15.231(c) - 20dB EMISSION BANDWIDTH TESTING

Applicable Standard

Per 15.231(c), The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier.

EUT Setup



Test Procedure

According to ANSI C63.10-2013 Section 6.9.2

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five times the OBW.

b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW, unless otherwise specified by the applicable requirement.

c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2

d) Steps a) through c) might require iteration to adjust within the specified tolerances.

e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target "−xx dB down" requirement; that is, if the requirement calls for measuring the −20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value.

f) Set detection mode to peak and trace mode to max hold.

g) Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).

h) Determine the "– xx dB down amplitude" using [(reference value) – xx]. Alternatively, this calculation may be made by using the marker-delta function of the instrument.

i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize.

Otherwise, the trace from step g) shall be used for step j).

j) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the "– xx dB down amplitude" determined in step h). If a marker is below this "– xx dB down amplitude" value, then it shall be as close as possible to this value. The occupied bandwidth is the frequency difference between the two markers.

Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the "– xx dB down amplitude" determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth.

k) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

Test Data

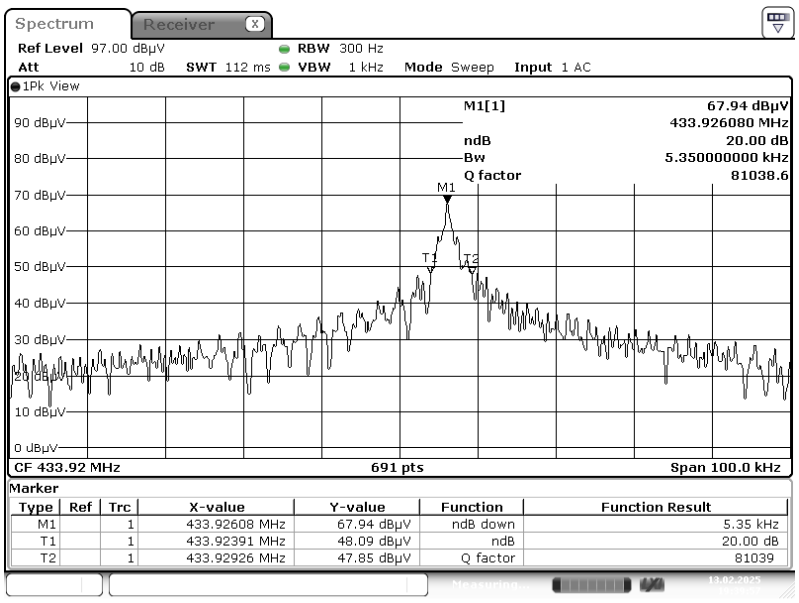
Test Mode:	Transmitting	Test Engineer:	Wlif Wu
Test Date:	2025-02-13	Test Voltage:	DC 3V from battery
Environment:	Temp.:22.5℃ Humi.: 49% Atm:100.5kPa		

ASK modulation:

Channel Frequency (MHz)	20dB Bandwidth (kHz)	Limit (kHz)	Result
433.92	5.35	1084.8	Pass

Note: Limit = 0.25% * Center Frequency = 0.25% * 433.92 MHz =1084.8 kHz

20 dB Emission Bandwidth



ProjectNo.:2507P38220E-RF Tester:Wlif Wu

Date: 13.FEB.2025 19:39:58

EUT PHOTOGRAPHS

Please refer to the attachment 2507P38220E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and 2507P38220E-RF-INP EUT INTERNAL PHOTOGRAPHS.

TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2507P38220E-RF-TSP TEST SETUP PHOTOGRAPHS.

Declarations

1. Bay Area Compliance Laboratories Corp. (Xiamen) is not responsible for authenticity of any information provided by the applicant. Information from the applicant that may affect test results are marked with an asterisk "★".

2. Unless otherwise stated, the results shown in this test report refer only to the sample(s) tested.

3. Unless required by the rule provided by the applicant or product regulations, then decision rule in this report did not consider the uncertainty.

4. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor k=2 with the 95.45% confidence interval.

5. This report cannot be reproduced except in full, without prior written approval of Bay Area Compliance Laboratories Corp. (Xiamen).

6. This report is valid only with a valid digital signature. The digital signature may be available only under the adobe software above version 7.0.

******* END OF REPORT *******