

## FCC/ISED - TEST REPORT

Report Number	709502407380-0	Date of Is	ssue: January 15, 2025
Model	: R2190-16CH-W	Н, R2190-16CH-BK,	R2190-16CH-GR
Product Type	: Remote control		
Applicant	: Louver-Lite Limit	ed	
Address	: Ashton Road, Hy	de, Cheshire, SK14	4BG,United Kingdom
Production Facility	: ZHEJIANG JIEC LTD	ANG LINEAR MOTI	ON TECHNOLOGY CO.,
Address			Γ, XINCHANG COUNTY, 'S REPUBLIC OF CHINA
Test Result	: Positive	□ Negative	
Total pages including Appendices	: 27		

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch is a subcontractor to TÜV SÜD Product Service GmbH according to the principles outlined in ISO 17025.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch reports apply only to the specific samples tested under stated test conditions. Construction of the actual test samples has been documented. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. The manufacturer/importer is responsible to the Competent Authorities in Europe for any modifications made to the production units which result in non-compliance to the relevant regulations. TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval.



# 1 Table of Contents

1	Ta	able of Contents	2
2		Report Modification Record	
3	D	Details about the Test Laboratory	3
4	D	Description of the Equipment Under Test	4
5	S	Summary of Test Standards	5
6	S	Summary of Test Results	6
7	G	General Remarks	7
8	Te	est Setups	8
9	Te	est Methodology	10
Ģ	9.1	Conducted Emission.	10
Ş	9.2	Radiated Emission	15
ç	9.3	20dB Bandwidth Measurement	20
Ş	9.4	99% Bandwidth Measurement	21
ç	9.5	Deactivation Time	22
10		Systems test configuration	23
11		Test Equipment List	24
12		System Measurement Uncertainty	25
13		Photographs of Test Set-ups	26
14		Photographs of EUT	27



## 2 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

Issue	Description of Change	Date of Issue
709502407380-00A	First Issue	01/15/2025

## 3 Details about the Test Laboratory

## **Details about the Test Laboratory**

Test Site 1

Company name: TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

No.16 Lane, 1951 Du Hui Road,

Shanghai 201108,

P.R. China

820234

CN1183

Telephone: +86 21 6141 0123

Fax: +86 21 6140 8600

FCC Registration

No.:

FCC Designation

Number:

on

**ISED CAB** 

CN0101

identifier

IC Registration

31668

No.:



## 4 Description of the Equipment Under Test

Product: Remote control

Model no./HVIN/PMN: R2190-16CH-WH, R2190-16CH-BK, R2190-16CH-GR

FCC ID: 2BK6HR2190-16CH

IC: 33109-R219016CH

Brand Name: One Touch

Options and accessories: AC adaptor: KA12C-0502000US (The AC/DC adapter

provided by lab, not included the EUR)

Rating: DC 5V (charging by USB Type-C port)

3.7VDC (build-in rechargeable lithium battery)

**RF** Transmission

Frequency:

433.92MHz

Modulation: FSK

Antenna Type: PCB antenna

Antenna Gain:

Description of the EUT: The Equipment Under Test (EUT) is a Remote control with

SRD function. We tested it and listed the worst data in this

report.

Test sample no.: SHA-845449-2

The sample's mentioned in this report is/are submitted/ supplied/ manufactured by client. The laboratory therefore assumes no responsibility for accuracy of information on the brand name, model number, origin of manufacture, consignment, antenna gain or any information supplied.



# 5 Summary of Test Standards

	Test Standards					
FCC Part 15 Subpart C	RADIO FREQUENCY DEVICES					
10-1-2023 Edition	Subpart C - Intentional Radiators					
RSS-Gen Issue 5 General Requirements for Compliance of Radio Apparatus						
April 2018 +						
Amendment 1 March						
2019 + Amendment 2						
February 2021						
RSS-210 Issue 11	RSS-210 — License-exempt Radio Apparatus: Category I					
June 25, 2024	Equipment					

All the test methods were according to ANSI C63.10-2020.



# 6 Summary of Test Results

	Technical Requirements						
FCC Part 15.231 Su	bpart C, RSS-210 Issu	e 11					
Test Condition			Pages	Test Site	Test Result		
§15.207	RSS-GEN A8.8	Conducted emission AC power port	10-14	Shield room	Pass		
§15.205, §15.209, 15.35 (c)§15.231(b)	RSS-210 A.1.3 RSS-GEN 8.9	The Field strength of Emissions	15-19	3m cham ber	Pass		
§15.231(c)	RSS-210 A.1.4	20dB and 99% Bandwidth Measurement	20-21	Shield room	Pass		
§15.231(a)(1)	RSS-210 A.1.2(a)	Deactivation Time	22	Shield room	Pass		
§15.203	RSS-Gen 6.8	Antenna requirement	See r	note 1	Pass		

Note 1: N/A=Not Applicable.

Note 2: The EUT uses a permanently ceramic antenna. In accordance to §15.203 and RSS-Gen 5, It is considered sufficiently to comply with the provisions of this section.



## 7 General Remarks

#### Remarks

This submittal(s) (test report) is intended for FCC ID:2BK6HR2190-16CH, IC: 33109-R219016CH complies with Section 15.205, 15.207, 15.209, 15.231 of the FCC Part 15, Subpart C Rules and RSS-Gen Issue 5 A1:2019+ A2:2021 and RSS-210 issue 11 June 25, 2024.

According to client's declaration, all the models are identical, the electrical schematic diagram and PCB Layout of models are same except for the different color.

so model R2190-16CH-WH was chosen to perform all the tests, other models R2190-16CH-BK and R2190-16CH-GR are deemed to fulfill all the requirement without further testing.

Pre-tests are performed the charging and DC powered by battery mode and DC powered by battery mode, the worst test results of the charging and DC powered by battery mode are recorded.

#### **SUMMARY:**

All tests according to the regulation	ns cited on page 5 were
■ - Performed	
□ - <b>Not</b> Performed	
The Equipment Under Test	
■ - Fulfills the general approval re	equirements.
☐ - Does not fulfill the general app	proval requirements.
Sample Received Date:	October 08, 2024
Testing Start Date:	October 09, 2024

October 10, 2024

Reviewed by: Prepared by: Tested by:

-TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

Hui TONG Yongqing ZHENG Tianji XU
Review Engineer Project Engineer Test Engineer

EMC\_SHA\_F\_R\_02.01E

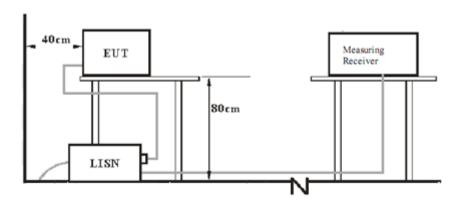
Testing End Date:

Tianli XU



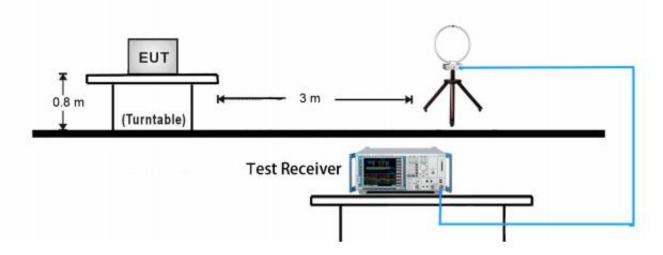
## 8 Test Setups

## 8.1 AC Power Line Conducted Emission test setups



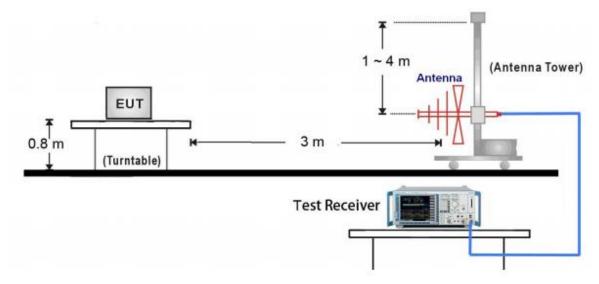
## 8.2 Radiated test setups

## 9kHz ~ 30MHz Test Setup:

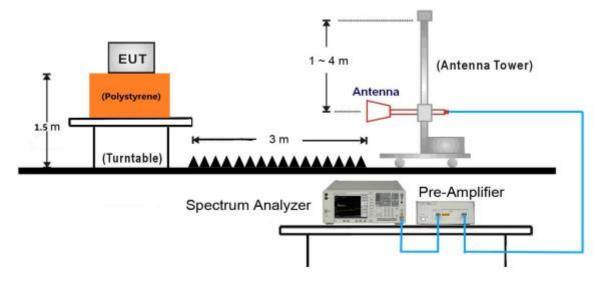




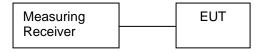
## 30MHz ~ 1GHz Test Setup:



# Above 1GHz Test Setup:



## 8.3 Conducted RF test setups





## 9 Test Methodology

### 9.1 Conducted Emission

#### **Test Method**

- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- 2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- 3. All the support units are connecting to the other LISN.
- 4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- 6. Both sides of AC line were checked for maximum conducted interference.
- 7. The frequency range from 150 kHz to 30 MHz was searched.
- 8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

#### Limit

According to §15.207 and RSS-GEN Issue 5 8.8, conducted emissions limit as below:

	Frequency	QP Limit	AV Limit	
_	MHz	dΒμV	dΒμV	
	0.150-0.500	66-56*	56-46*	_
	0.500-5	56	46	
	5-30	60	50	

<sup>\*</sup>Decreasing linearly with logarithm of the frequency.



### Conducted Emission Test 0.15MHz - 30MHz

# 150k-30MHz Conducted Emission Test

## **EUT Information**

EUT Name: Remote control Model R2190-16CH-WH

Client: Zhejiang Jiecang Linear Motion Technology Co.,Ltd.

Op Cond Power on, Continuous Transmitting

Operator: Tianji XU Standard FCC Part 15.231

Comment: L

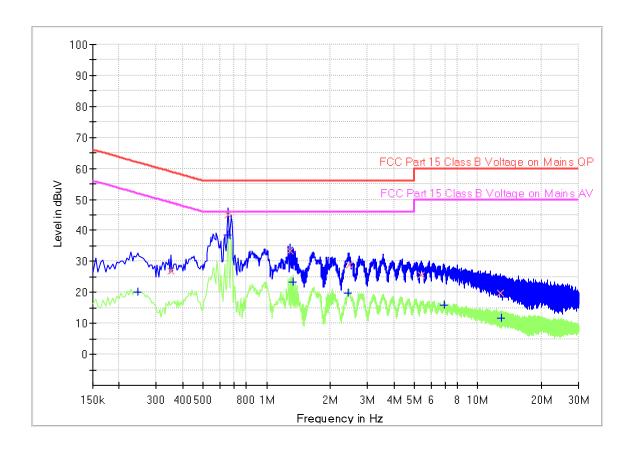
Sample No.: SHA-845449-2

# Scan Setup: Voltage with 2-Line-LISN pre [EMI conducted]

Hardware Setup: Voltage with 2-Line-LISN

Receiver: [ESR 3] Level Unit: dBuV

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
9 kHz - 150 kHz	100 Hz	PK+	200 Hz	0.02 s	0 dB
150 kHz - 30 MHz	4.5 kHz	PK+; AVG	9 kHz	0.01 s	0 dB





## **Final Result**

i iiiai_i\es	mai_i\esuit							
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.244500		20.11	51.94	31.83	1000.0	9.000	L1	19.4
0.352500	26.94		58.90	31.96	1000.0	9.000	L1	19.5
0.658500		38.48	46.00	7.52	1000.0	9.000	L1	19.5
0.658500	44.87		56.00	11.13	1000.0	9.000	L1	19.5
1.284000	33.45		56.00	22.55	1000.0	9.000	L1	19.5
1.338000		23.28	46.00	22.72	1000.0	9.000	L1	19.5
2.422500		19.82	46.00	26.18	1000.0	9.000	L1	19.5
2.449500	28.70		56.00	27.30	1000.0	9.000	L1	19.5
5.406000	25.65		60.00	34.35	1000.0	9.000	L1	19.6
6.963000	-	15.83	50.00	34.17	1000.0	9.000	L1	19.7
12.736500	19.64		60.00	40.36	1000.0	9.000	L1	19.9
12.912000		11.81	50.00	38.19	1000.0	9.000	L1	19.9



# 150k-30MHz Conducted Emission Test

## **EUT Information**

EUT Name: Remote control Model R2190-16CH-WH

Client: Zhejiang Jiecang Linear Motion Technology Co.,Ltd.

Op Cond Power on, Continuous Transmitting

Operator: Tianji XU

Standard FCC Part 15.231

Comment: N

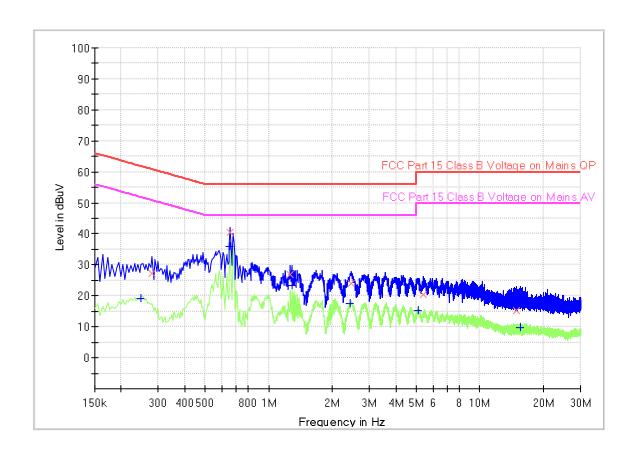
Sample No.: SHA-845449-2

# Scan Setup: Voltage with 2-Line-LISN pre [EMI conducted]

Hardware Setup: Voltage with 2-Line-LISN

Receiver: [ESR 3] Level Unit: dBuV

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
9 kHz - 150 kHz	100 Hz	PK+	200 Hz	0.02 s	0 dB
150 kHz - 30 MHz	4.5 kHz	PK+; AVG	9 kHz	0.01 s	0 dB





## Final\_Result

Frequency	QuasiPeak	CAverage	Limit	Margin	Meas.	Bandwidth	Line	Corr.
(MHz)	(dBuV)	(dBuV)	(dBuV)	(dB)	Time	(kHz)		(dB)
					(ms)			
0.249000		19.22	51.79	32.57	1000.0	9.000	N	19.4
0.280500	27.08		60.80	33.72	1000.0	9.000	N	19.5
0.658500	I	36.03	46.00	9.97	1000.0	9.000	N	19.4
0.658500	40.45		56.00	15.55	1000.0	9.000	N	19.4
1.261500	26.97		56.00	29.03	1000.0	9.000	N	19.5
1.288500		23.43	46.00	22.57	1000.0	9.000	N	19.5
2.422500	-	17.39	46.00	28.61	1000.0	9.000	N	19.5
2.463000	23.82		56.00	32.18	1000.0	9.000	N	19.5
5.136000	-	15.35	50.00	34.65	1000.0	9.000	N	19.6
5.397000	20.41		60.00	39.59	1000.0	9.000	N	19.6
14.919000	15.27		60.00	44.73	1000.0	9.000	N	19.9
15.508500	-	9.69	50.00	40.31	1000.0	9.000	N	19.9

#### Remark:

Level=Reading Level + Correction Factor Correction Factor=Cable Loss + LISN Factor (The Reading Level is recorded by software which is not shown in the sheet)



## 9.2 Radiated Emission

#### **Test Method**

- 1: The EUT was place on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- 2: The EUT was set 3 meters away from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 3: The height of antenna 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.
- 4: 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.

5: Use the following spectrum analyzer settings According to C63.10:

9kHz -150kHz

RBW = 200Hz, VBW = 1kHz for peak measurement, Sweep = auto,

Detector function = peak, Trace = max hold.

150kHz - 30MHz

RBW = 10 kHz, VBW = 30 kHz for peak measurement, Sweep = auto,

Detector function = peak, Trace = max hold.

30MHz - 1GHz

RBW = 100 kHz, VBW = 300 kHz for peak measurement, Sweep = auto,

Detector function = peak, Trace = max hold.

For Above 1GHz

RBW = 1MHz, VBW≥3RBW for peak measurement, Sweep = auto, Detector function = peak, Trace = max hold.



#### Limit

1. FCC Limit: In addition to the provisions of § 15.205, 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 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 interpolation with frequency	*Linear interpolation with frequency						

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

Limits for 15.209 Radiated emission limits

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



#### 2. ISED Limit:

- (a) The field strength of emissions from momentarily operated intentional radiators shall not exceed the limits in table A1, based on the average value of the measured emissions. The requirements of the "Pulsed Operation" section of RSS-Gen apply for averaging pulsed emissions and limiting peak emissions. Alternatively, compliance with the limits in table A1 may be based on the use of a CISPR quasi-peak detector.
- (b) Unwanted emissions shall be 10 times below the fundamental emissions field strength limits in table A1 or comply with the limits specified in RSS-Gen, whichever is less stringent.

Table A1: Permissible field strength limits for momentarily operated devices

Fundamental frequency (MHz)	Field Strength of Fundamental (Microvolts /meter @ 3m)	Field Strength of spurious emissions ((Microvolts /meter @ 3m)
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 interpolation with frequency		

General field strength limits at frequencies below 30 MHz

Frequency	Magnetic field strength (H-Field) (μΑ/m))	Measurement distance (meters)
9 – 490 kHz*	6.37/F (F in kHz)	300
490 – 1705 kHz	63.7/F (F in kHz)	30
1.705-30.0 MHz	0.08	30

<sup>\*</sup>The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

Note 1: Limit  $3m(dB\mu V/m)=Limit 300m(dB\mu V/m)+40Log(300m/3m)$  (Below 30MHz) Note 2: Limit  $3m(dB\mu V/m)=Limit 30m(dB\mu V/m)+40Log(30m/3m)$  (Below 30MHz)

Note 3:  $dB\mu V/m = 20log(\mu V/m)$ ,  $dB\mu A/m = 20log(\mu A/m)$ 



## **Field strength of Emissions**

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

				Radiate	ed Emission				
Value	Emissions Frequency <b>MHz</b>	E-Field Polarity	PK Emission dBµV/m	Corr.	Average Factor <b>dB</b>	AV Emission dBµV/m	Limit dBµV/m	Margin	Emission Type
Below 1	GHz								
PK	433.92	Η	64.40	25.50	/	/	100.83	36.43	Fundamental
AV	433.92	Н	64.40	/	0	64.40	80.83	16.43	Fundamental
PK	433.92	V	69.10	25.50	/	/	100.83	31.73	Fundamental
AV	433.92	V	69.10	/	0	69.10	80.83	11.73	Fundamental
PK	867.84	Н	37.80	/	/	/	80.83	43.03	Spurious
AV	867.84	Н	37.80	/	0	37.80	60.83	23.03	Spurious
PK	867.84	V	38.60	/	/	/	42.23	55.53	Spurious
AV	867.84	V	38.60	/	0	38.60	22.23	35.53	Spurious
Above 1	GHz								-
PK	2603.656	Н	38.77	-9.70	/	/	80.83	42.06	Spurious
AV	2603.656	Н	38.77	/	0	38.77	60.83	22.06	Spurious
PK	3471.546	Н	42.59	-6.40	/	/	80.83	38.24	Spurious
ΑV	3471.546	Н	42.59	/	0	42.59	60.83	18.24	Spurious
PK	*4339.000	Н	43.32	-3.50	/	/	74	30.68	Spurious
ΑV	*4339.000	Н	43.32	/	0	43.32	54	10.68	Spurious
PK	2603.437	V	38.17	-9.70	/	/	80.83	42.66	Spurious
ΑV	2603.437	V	38.17	/	0	38.17	60.83	22.66	Spurious
PK	3471.437	V	42.15	6.40	/	/	80.83	38.68	Spurious
AV	3471.437	V	42.15	/	0	42.15	60.83	18.68	Spurious
PK	*4339.546	V	42.27	-3.50	/	/	74	31.73	Spurious
AV	*4339.546	V	42.27	/	0	42.27	54	11.73	Spurious

#### Remark:

Correction Factor = Antenna Factor + Cable Loss- Amplifier Gain

(The Reading Level is recorded by software which is not shown in the sheet)

Duty Cycle =100(ms)/100(ms) =100% Duty Cycle Factor =20log (Duty Cycle) =0

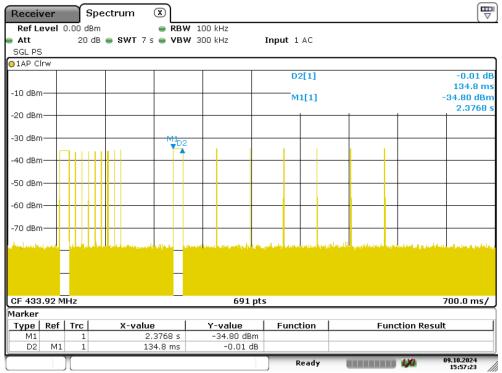
<sup>1:</sup> AV Emission Level= PK Emission Level+20log(dutycycle)

<sup>2:</sup> Data of measurement within this frequency range shown "/" in the table above means the reading of emissions are attenuated more than 20db below the permissible limits or the field strength is too small to be measured.

3: "\*" means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.

<sup>4:</sup> Level= Reading Level + Correction Factor





Date: 9.OCT.2024 15:57:23



## 9.3 20dB Bandwidth Measurement

### **Test Method**

- The EUT was placed on 0.8m height table, the RF output of EUT was connected to the test receiver by RF cable. 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 test receiver settings:
   RBW = 1% to 5% of the OBW, VBW≥3RBW, Sweep = auto, Detector function = peak,
   Trace = max hold
- Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth. Record the results.

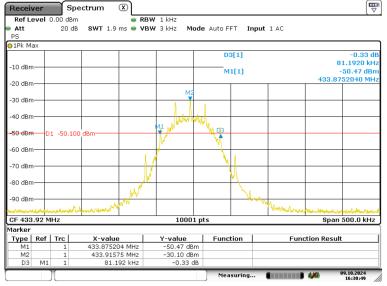
#### Limit

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70MHz and below 900MHz. For devices operating above 900MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20dB down from the modulated carrier.

The limit for the EUT = 0.25% \* 433.92 MHz = 1084.8 kHz

#### **Test Result**

Channel	20dB Bandwidth (KHz)	Limit (KHz)	Result
1	81.192KHz	≤1084.8	Pass



Date: 9.OCT.2024 16:30:49



## 9.4 99% Bandwidth Measurement

### **Test Method**

- The EUT was placed on 0.8m height table, the RF output of EUT was connected to the test receiver by RF cable. 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 test receiver settings:
   RBW = 1% to 5% of the OBW, VBW≥3RBW, Sweep = auto, Detector function = peak,
   Trace = max hold
- 3. Allow the trace to stabilize. Use the 99 % power bandwidth function of the instrument. Record the results.

#### Limit

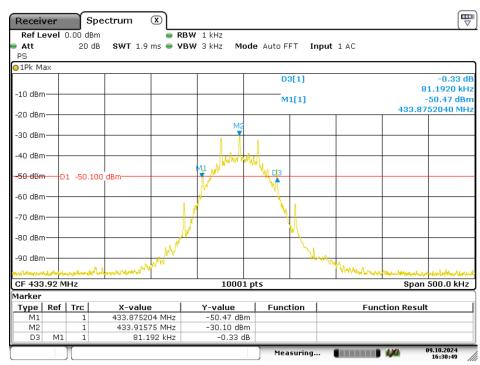
The occupied bandwidth of momentarily operated devices shall be less than or equal to 0.25% of the centre frequency for devices operating between 70 MHz and 900 MHz. For devices operating above 900 MHz, the occupied bandwidth shall be less than or equal to 0.5% of the centre frequency.

The limit for the EUT = 0.25% \* 433.92 MHz = 1084.8 kHz

#### **Test Result**

Channel	99% bandwidth (kHz)	Limit (kHz)	Result
1	79.594	≤1084.8	Pass

99% bandwidth



Date: 9.OCT.2024 16:30:49



## 9.5 Deactivation Time

### **Test Method**

- The EUT was placed on 0.8m height table, the RF output of EUT was connected to the test receiver by RF cable. The path loss was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT in transmitting mode.
- 3. Set center frequency of spectrum analyzer=operating frequency.
- 4. Set the spectrum analyzer as RBW ≥ OBW, VBW ≥ RBW, Span=0Hz, detector=peak.
- 5. Repeat above procedures until all frequency measured was complete.

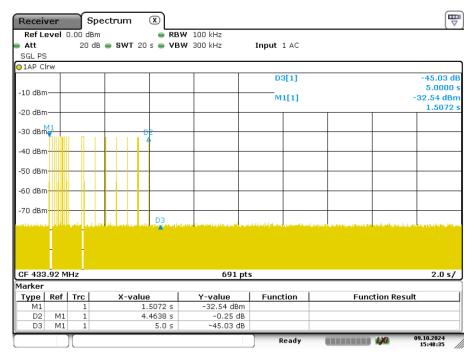
#### Limit

According to FCC Part 15.231 (a) and RSS-210 A.1.2(a), the transmitter shall be complied the following requirements:

 $(\sqrt{\ })$  (1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

### **Test Result**

Channel	Frequency	Deactivation Time	Limit	Result
1	433.925MHz	4463.8ms	≤5s	Pass



Date: 9.OCT.2024 15:48:34



# 10 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)



# 11 Test Equipment List

## **List of Test Instruments**

Test Site1

### **RF Conductive Test**

Description	Manufacturer	Model no.	Serial no.	Calibration	Calibration
				Date	Due
Signal and spectrum analyzer	R&S	FSV40	S1503003-YQ-EMC	2024-8-01	2025-7-31

#### Conducted Emission

Description	Model no.	Manufacturer	Equipment ID.	Calibration Date	Calibration Due
EMI test receiver	ESR3	R&S	S1503001-YQ-EMC	2024-8-01	2025-7-31
2-Line V-network	ENV216	R&S	S1503103-YQ-EMC	2024-8-01	2025-7-31

### Radiated Emission Test

USED	Equipment Name	Model	Manufacturer	Equipment ID.	Calibration Date	Calibration Due
	EMI test receiver	ESR3	R&S	S1503109-YQ-EMC	2024-8-01	2025-7-31
	Trilog super broadband test antenna	SCHWARZBE CK	VULB9168	S1808296-YQ-EMC	2024-8-30	2025-8-29
	Double-ridged waveguide horn antenna	HF907	R&S	S1503009-YQ-EMC	2024-4-14	2025-4-13
	Pre-amplifier	HPAP- 9K0130	Shenzhen HzEMC	S2110423b-YQ-EMC	2024-8-01	2025-7-31
$\boxtimes$	Signal and spectrum analyzer	FSV40	R&S	S1503003-YQ-EMC	2024-8-01	2025-7-31
$\boxtimes$	Loop antenna	HFH2-Z2	R&S	S1503013-YQ-EMC	2024-6-26	2025-6-25

	Measurement Software Information						
Test Item	Software	Manufacturer	Version				
RE	EMC 32	Rohde & Schwarz	V10.50.40				
CE	EMC 32	Rohde & Schwarz	V9.15.03				



## 12 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

## **System Measurement Uncertainty**

Items	Extended Uncertainty
Conducted Disturbance at Mains Terminals	150kHz to 30MHz, LISN, 3.16dB
Radiated Disturbance	9kHz to 30MHz, 3.52dBss
	30MHz to 1GHz, 5.03dB (Horizontal)
	5.12dB (Vertical)
	1GHz to 18GHz, 5.49dB
	18GHz to 40GHz, 5.63dB
Carrier power conducted measurement	50MHz~18GHz, 1.238dB
Spurious Emission Conducted Measurement	9kHz ~40GHz, 1.224dB

Measurement Uncertainty Decision Rule:

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2023, clause 4.3.3.



# 13 Photographs of Test Set-ups

Refer to the < Test Setup photos >.



14	Pho	otog	grap	hs	of	<b>EUT</b>
----	-----	------	------	----	----	------------

Refer to the < External Photos > & < Internal Photos >.
End of Test Report