

FCC/ISED - TEST REPORT

Report Number	: 709502408990-00A Date of Issue: January 21, 2025					
Model	: MT01-3101-067004					
Product Type	: TDBU Center Mount 12VDC Motor					
Applicant	: Rollease Acmeda Inc					
Address	: 750 East Main Street, 7th Floor, Stamford, CT 06902 USA					
Production Facility: Ningbo Dooya Mechanic & Electronic Technology Co., Ltd.						
Address	: No.168 Shengguang Road,Luotuo,Zhenhai 315202 Ningbo,Zhejiang province, PEOPLE'S REPUBLIC OF CHINA					
Test Result	: Positive D Negative					
Total pages including Appendices	: 28					

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

Та	able of Contents	2
R	eport Modification Record	3
D	etails about the Test Laboratory	3
D	escription of the Equipment Under Test	4
S	ummary of Test Standards	5
S	ummary of Test Results	6
G	eneral Remarks	7
S	ystems test configuration	8
Т	est Setups	9
	Test Methodology	11
0.1	Conducted Emission	11
0.2	The Field strength of Emissions	16
0.3	20dB Bandwidth Measurement	21
0.4	99% Bandwidth Measurement	23
0.5	Deactivation Time	24
	Test Equipment List	25
	System Measurement Uncertainty	26
	Photographs of Test Set-ups	27
	Photographs of EUT	28
,	R D S S G S T 0.1 0.2 0.3 0.4	 0.1 Conducted Emission



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
709502408990-00A	First Issue	01/21/2025

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
Telephone:	+86 21 6141 0123
Fax:	+86 21 6140 8600
FCC Registration	820234
FCC Designation Number:	CN1183
ISED CAB identifier	CN0101
IC Registration No.:	31668



4 Description of the Equipment Under Test

Product:	TDBU Center Mount 12VDC Motor
Model no./HVIN/PMN:	MT01-3101-067004
FCC ID:	2AGGZ003B9ACA5C
IC:	21769-003B9ACA5C
Brand Name:	Λυτομλτε
Options and accessories:	NA
Rating:	12V DC
RF Transmission Frequency:	433.92MHz
Modulation:	FSK
Antenna Type:	Line Antenna
Description of the EUT:	The Equipment Under Test (EUT) is a TDBU Center Mount 12VDC Motor with SRD function. We tested it and listed the worst data in this report.
Test sample no.:	SHA- 860462-1

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	FCC Part 15.231 Subpart C, RSS-210 Issue 11								
Test Condition	Test Condition								
§15.207	RSS-GEN A8.8 Conducted emission AC power port		11-15	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	16-20	3m cham ber	Pass				
§15.231(c)	RSS-210 A.1.4	20dB and 99% Bandwidth Measurement	21-23	Shield room	Pass				
§15.231(a)(1)	RSS-210 A.1.2(a)	Deactivation Time	24-25	Shield room	Pass				
§15.203	RSS-Gen 6.8	Antenna requirement	See note 1		Pass				

Note 1: N/A=Not Applicable.

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



Remarks

This submittal(s) (test report) is intended for FCC ID: 2AGGZ003B9ACA5C, IC: 21769-003B9ACA5C 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.

SUMMARY:

All tests according to the regulations cited on page 5 were

- Performed
- □ Not Performed

The Equipment Under Test

- - Fulfills the general approval requirements.
- □ **Does not** fulfill the general approval requirements.
- Sample Received Date: October 08, 2024
- Testing Start Date: October 09, 2024
- Testing End Date: October 10, 2024
- -TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

Reviewed by:

Prepared by:

Tested by:

Hui TONG Review Engineer

Yongging ZHENG

Yongqing ZHENG **Project Engineer**

Tianii XU **Test Engineer**

Tianli XU





8 Systems test configuration

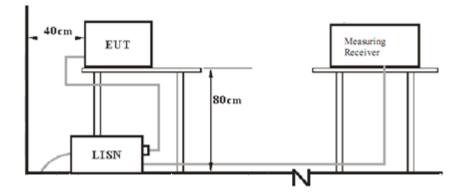
Auxiliary Equipment Used during Test:

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

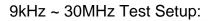


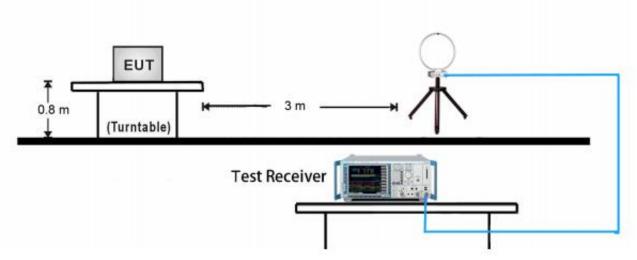
9 Test Setups

9.1 AC Power Line Conducted Emission test setups



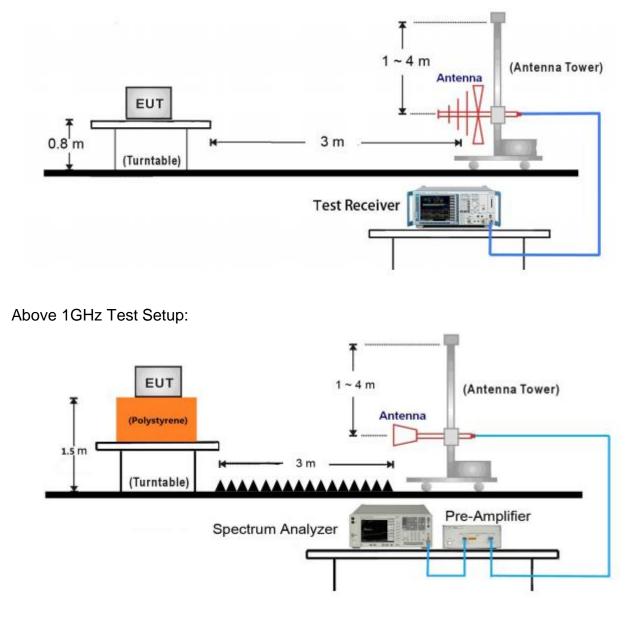
9.2 Radiated test setups



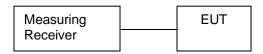




30MHz ~ 1GHz Test Setup:



9.3 Conducted RF test setups





10 Test Methodology

10.1 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.
- 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 MHz	QP Limit dBµV	AV Limit dΒμV
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

*Decreasing linearly with logarithm of the frequency.



Conducted Emission Test 0.15MHz – 30MHz

150k-30MHz Conducted Emission Test

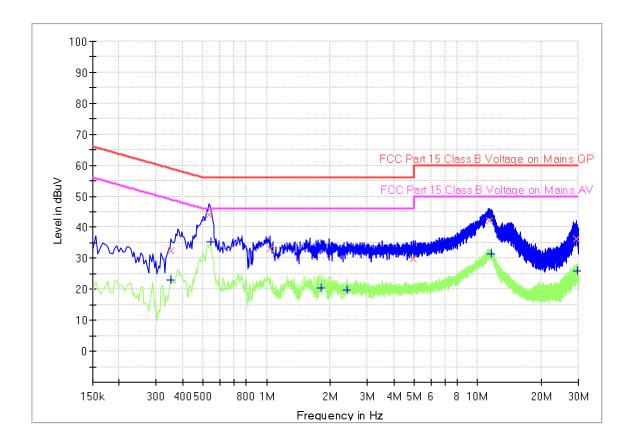
EUT Information

EUT Name: Model Client: Op Cond Operator: Standard Comment: Sample No.: TDBU Center Mount 12VDC Motor MT01-3101-067004 Rollease Acmeda Inc Power on, Continuous Transmitting Tianji XU FCC Part 15.231 L SHA-860462-3

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

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
Hardware Setup: Receiver: Level Unit:	Voltag [ESR 3 dBuV	e with 2-Line-L 3]	ISN		

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



EMC_SHA_F_R_02.01E

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch 3-13, No.151, Heng Tong Road, Shanghai, 200070, P.R. China Phone: +86 21 61410123, Fax:+86 21 61408600 Page 12 of 28 Rev. 23.00



Final_Result

Frequency	QuasiPeak	CAverage	Limit	Margin	Meas.	Bandwidth	Line	Corr.
(MHz)	(dBuV)	(dBuV)	(dBuV)	(dB)	Time	(kHz)		(dB)
					(ms)			
0.352500		22.95	48.90	25.95	1000.0	9.000	L1	19.5
0.352500	32.34		58.90	26.56	1000.0	9.000	L1	19.5
0.532500	44.04		56.00	11.96	1000.0	9.000	L1	19.5
0.541500		35.14	46.00	10.86	1000.0	9.000	L1	19.5
1.036500	33.00		56.00	23.00	1000.0	9.000	L1	19.5
1.806000		20.55	46.00	25.45	1000.0	9.000	L1	19.5
2.413500		19.65	46.00	26.35	1000.0	9.000	L1	19.5
4.951500	29.68		56.00	26.32	1000.0	9.000	L1	19.6
11.323500	42.16		60.00	17.84	1000.0	9.000	L1	19.8
11.544000		31.45	50.00	18.55	1000.0	9.000	L1	19.8
29.233500	36.20		60.00	23.80	1000.0	9.000	L1	21.0
29.544000		25.76	50.00	24.24	1000.0	9.000	L1	21.0



150k-30MHz Conducted Emission Test

EUT Information

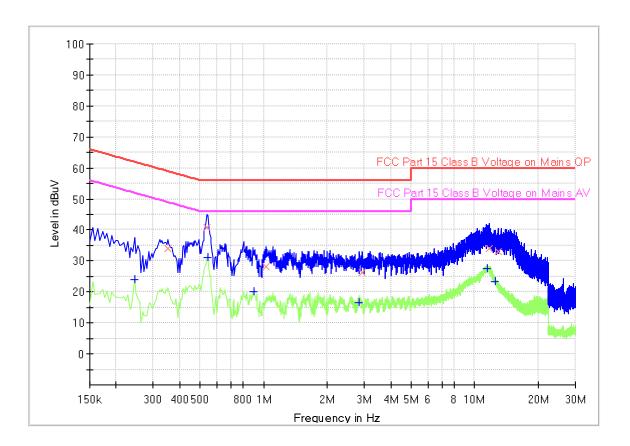
EUT Name:
Model
Client:
Op Cond
Operator:
Standard
Comment:
Sample No.:

TDBU Center Mount 12VDC Motor MT01-3101-067004 Rollease Acmeda Inc Power on, Continuous Transmitting Tianji XU FCC Part 15.231 N SHA-860462-3

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



EMC_SHA_F_R_02.01E

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch 3-13, No.151, Heng Tong Road, Shanghai, 200070, P.R. China Phone: +86 21 61410123, Fax:+86 21 61408600 Page 14 of 28 Rev. 23.00



Final Result

Frequency	QuasiPeak	CAverage	Limit	Margin	Meas.	Bandwidth	Line	Corr.
(MHz)	(dBuV)	(dBuV)	(dBuV)	(dB)	Time (ms)	(kHz)		(dB)
0.244500		23.89	51.94	28.05	1000.0	9.000	Ν	19.4
0.352500	34.04		58.90	24.86	1000.0	9.000	Ν	19.4
0.537000	40.82		56.00	15.18	1000.0	9.000	Ν	19.5
0.541500		31.21	46.00	14.79	1000.0	9.000	Ν	19.5
0.897000		20.10	46.00	25.90	1000.0	9.000	Ν	19.5
1.027500	28.16		56.00	27.84	1000.0	9.000	Ν	19.5
2.827500		16.37	46.00	29.63	1000.0	9.000	Ν	19.5
2.940000	26.15		56.00	29.85	1000.0	9.000	Ν	19.5
11.499000		27.53	50.00	22.47	1000.0	9.000	Ν	19.8
11.737500	34.10		60.00	25.90	1000.0	9.000	Ν	19.8
12.552000		23.19	50.00	26.81	1000.0	9.000	Ν	19.8
12.957000	33.05		60.00	26.95	1000.0	9.000	Ν	19.8

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)



10.2 The Field strength of Emissions

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									

(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 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.

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

Limits for 15.209 Radiated emission limits



- 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) (µA/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								
*The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements										
emploving a linear a	emploving 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.

	Radiated Emission										
Value	Emissions Frequency MHz	E-Field Polarity	PK Emission dBµV/m	Corr.	Average Factor dB	AV Emission dBµV/m	Limit dBµV/m	Margin	Emission Type		
Below 1	Below 1GHz										
PK	433.920	Н	81.60	25.50	/	/	100.83	19.23	Fundamental		
AV	433.920	Н	81.60	/	-22.79	58.81	80.83	22.02	Fundamental		
PK	433.920	V	74.50	25.50	/	/	100.83	26.33	Fundamental		
AV	433.920	V	74.50	/	-22.79	51.71	80.83	29.12	Fundamental		
PK	867.840	Н	39.40	/	/	/	80.83	41.43	Spurious		
AV	867.840	Н	39.40	/	-22.79	16.61	60.83	44.22	Spurious		
PK	867.840	V	38.90	/	/	/	80.83	41.93	Spurious		
AV	867.840	V	38.90	/	-22.79	16.11	60.83	44.72	Spurious		
Above 1	GHz				•				•		
PK	2674.750	Н	37.59	-9.50	/	/	74	36.41	Spurious		
AV	2674.750	Н	37.59	/	-22.79	14.80	54	39.20	Spurious		
PK	3393.650	Н	39.78	-6.60	/	/	74	34.22	Spurious		
AV	3393.650	Н	39.78	/	-22.79	16.99	54	37.01	Spurious		
PK	4373.650	Н	41.58	-3.50	/	/	74	32.42	Spurious		
AV	4373.650	Н	41.58	/	-22.79	18.79	54	35.21	Spurious		
PK	2650.600	V	35.27	-9.60	/	/	74	38.73	Spurious		
AV	2650.600	V	35.27	/	-22.79	12.48	54	41.52	Spurious		
PK	3440.200	V	40.62	6.40	/	/	74	35.12	Spurious		
AV	3440.200	V	40.62	/	-22.79	45.71	54	15.12	Spurious		
PK	4413.550	V	42.59	-3.50	/	/	74	31.41	Spurious		
AV	4413.550	V	42.59	/	-22.79	19.80	54	34.20	Spurious		

Remark:

1: AV Emission Level= PK Emission Level+20log(dutycycle)

2: 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.

4: Level= Reading Level + Correction Factor

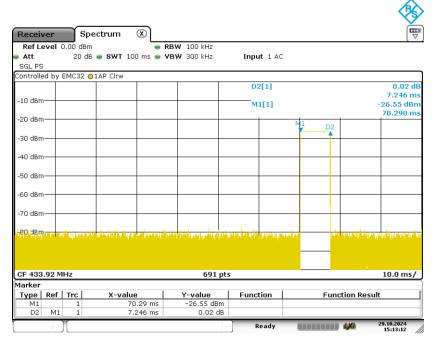
Correction Factor = Antenna Factor + Cable Loss- Amplifier Gain

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

Duty Cycle =7.246(ms)/100(ms) =7.246%

Duty Cycle Factor =20log (Duty Cycle) =-22.79

Report Number: 709502408990-00A



Date: 29.OCT.2024 15:13:11

Receiv			ectrum	×							(7
	vel (0.00 dBn			100 kHz						
Att		20 dE	8 👄 SWT 2	s 👄 VBW	300 kHz	Input	1 A(2			
SGL PS											
Controlle	d by I	ЕМСЗ2 🤇	1AP Clrw								
							D2[:	L]			2.63 d
-10 dBm·							-				123.19 n
10 00111							M1[1]			-37.52 dB
-20 dBm-											528.99 n
-30 dBm-	_			D2			+-)3			
			M1	4				Δ			
-40 dBm·			+				+			+	
-50 dBm·	-		+			-	+				
-60 dBm·											_
-70 dBm·											
-70 ubiii											
lon and	ورايان	سيأت المتناه	عسما فيرسفا والعارية	والمعاد العالية	A DESCRIPTION OF THE OWNER OWNER	and the second second	m.h.	de la contra	والمتعالية ومعاليته	de de la composition	بعقبه والكاف السطا أحاس
CF 433.	92 M	IHz			691 pt	s					200.0 ms/
1arker											
Туре	Ref	Trc	X-valu	e	Y-value	Fu	nctio	n	Fun	ction Res	ult
M1		1	52	8.99 ms	-37.52 dBm						
D2	M1	1		3.19 ms	2.63 dB						
D3	M1	1	72	0.29 ms	2.54 dB						
							Rea	du		1.92	29.10.2024 15:11:24

Date: 29.OCT.2024 15:11:24



10.3 20dB Bandwidth Measurement

Test Method

- 1. 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 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	81.250KHz	≤1084.8	Pass





				_						
Receiver			ctrum 🗷	·						
Ref Leve					W 1 kHz					
Att PS	2	0 dB	SWT 12.5 r	ms 👄 VB	W 3 kHz	Mode Auto	FFT In	put 1 AC		
Controlled I	by EMC:	32 🔘	1Pk Max							
	Í					D	3[1]			-0.50 dB
-10 dBm—										1.2500 kHz
						м	1[1]			50.32 dBm 39960 MHz
-20 dBm—										39900 MHZ
-30 dBm—					1	12				
-30 ubiii—					1	1				
-40 dBm—						Aud				<u> </u>
					M1	, nt				
50 dBm-	D1 -5	0.250	dBm							
-60 dBm—					<u> </u>					
00 0.0				1	1		Νı			
-70 dBm—	+				/					
				۷	7		[™]			
-80 dBm—				all			×.			
-90 dBm—				- f "			14			
manan	aline		mount	-y.			۲ ۱	V MWWwwwwwwww	. And the second	- a bourness
CF 433.92					1000	1 pts	1		Span	500.0 kHz
Marker										
	ef Trc		X-value		Y-value	Func	tion	Fun	ction Result	
M1		1	433.883996		-50.32 dB					
M2 D3 1		1	433.924342		-30.25 dB -0.50 d					
			01.23	the last	0.001					9.10.2024
						Mea	suring		1,0	15:29:37

Date: 29.OCT.2024 15:29:37



10.4 99% Bandwidth Measurement

Test Method

- 1. 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.

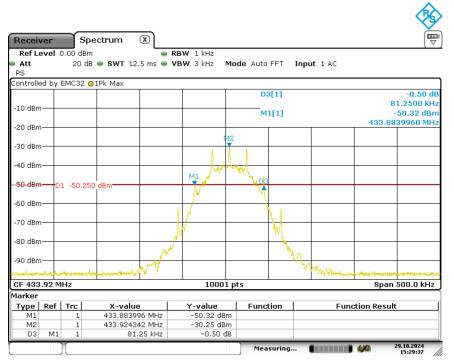
Limit

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	79.092	≤1084.8	Pass



99% bandwidth

Date: 29.OCT.2024 15:29:37



10.5 Deactivation Time

Test Method

- 1. 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.

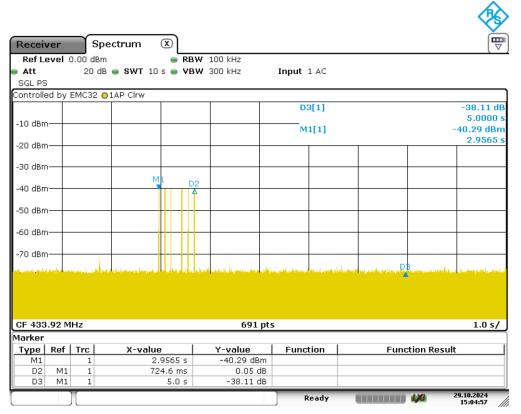
Limit

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

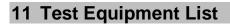
(\checkmark) (1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

Test Result

Channel	Frequency	Deactivation Time	Limit	Result
1	433.92MHz	724.6ms	≤5s	Pass



Date: 29.OCT.2024 15:04:57



List of Test Instruments

Test Site1

RF Conductive T	est					
Descriptio	n	Manufacturer	Model no.	Serial no.	Calibration Date	Calibration Due
Signal and spe 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
\boxtimes	EMI test receiver	ESR3	R&S	S1503109-YQ-EMC	2024-8-01	2025-7-31
\boxtimes	Trilog super broadband test antenna	SCHWARZBE CK	VULB9168	S1808296-YQ-EMC	2024-8-30	2025-8-29
\square	Double-ridged waveguide horn antenna	HF907	R&S	S1503009-YQ-EMC	2024-4-14	2025-4-13
\square	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
\square	Loop antenna	HFH2-Z2	R&S	S1503013-YQ-EMC	2023-6-15	2024-6-14

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	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 Photographs of EUT

Refer to the < External Photos > & < Internal Photos >.

-----End of Test Report------