

Smith chen

TEST REPORT

Applicant: Libertybelle Marketing Ltd

Address of Applicant: 30b Spice Quay Shad Thames, London, United Kingdom

Manufacturer/Factory: Top-reliable Technology Co., Ltd.

Address of EQOM Purchasing B.V C/O Elthome Gate 64 High Street,

Manufacturer/Factory: Pinner, HA5 5QA, United Kingdom

Product Name: Nexusremote1

Model No.: Nexusremote1

Trade Mark: N/A

FCC ID: 2AX3V-NEXUSREMOTE1

Applicable standards: FCC Part 15.231

Test procedure ANSI C63.10-2013

Date of Test: Dec.22, 2022-Dec.29, 2022

Date of report issued: Feb.17, 2023

Test Result : PASS*

Remark:

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

Prepared By

Shenzhen ETR Standard Technology Co., Ltd.

Address: No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Compiled by: Reviewed by: Approved by:

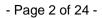
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Project Engineer Project Manager Authorized Signature

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





Report Revision History

Report No. Description Issue Date

ET-22120961E Original Feb.17, 2023



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1 Test Summary

Test Item	Section in CFR 47	Result	Test by
Antenna requirement	15.203 RSS-Gen Section 6.8	Pass	
Conducted emission	15.207 RSS-Gen Section 8.8	Pass	Qiao Li
Transmitter field strength	15.231(b) RSS210 Annex D	Pass	Yvan
Radiated emission and Restricted band	n and RSS-210 D&		Yvan
Occupied Bandwidth	15.215 RSS-Gen 6.7	Pass	Yvan
Release time	15.231(a)(2)		Yvan

Remarks:

- 1. Pass: The EUT complies with the essential requirements in the standard.
- 2. Test according to ANSI C63.10:2013

Measurement Uncertainty

Test Item	Uncertainty Criterion	Measurement Uncertainty	Notes
Occupied Channel Bandwidth	±5%	±0.55%	(1)
RF output power, conducted	±1.5dB	±0.99dB	(1)
Power Spectral Density, conducted	±3dB	±0.61dB	(1)
Unwanted Emissions, conducted	±3dB	±0.64dB	(1)
AC Power Line Conducted Emission	±6dB	± 3.02 dB	(1)
Radiated emissions Below 1GHz	±6dB	±4.30 dB	(1)
Radiated emissions Above 1GHz	±6dB	±4.35 dB	(1)
Note (1): The measurement uncertain	ty is for coverage factor of	of k=2 and a level of confidence	e of 95%.



2 General Information

2.1 General Description of EUT

Product Name:	Nexusremote1	
Model No.:	Nexusremote1	
Model of difference:	N/A	
Sample(s) Status:	Engineer sample	
Hardware Version:	N/A	
Software Version:	N/A	
Operation Frequency:	433.92MHz	
Channel numbers:	1	
Channel separation:	N/A	
Modulation type:	ASK	
Antenna Type:	PCB Antenna	
Antenna gain:	0dBi Max (Declare by applicant)	
Power supply:	DC 3.7V	
Connecting I/O port(s)	Please refer to User's Manual	

Note: For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual



2.2 Test mode

Test mode	Description
Mode 1	TX Mode: During test, Keep EUT is in continuous transmission mode, New battery is used during all test

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2.3 Description of Support Units

Equipment	Model	S/N	Manufacturer
Adapter	HW-050200CH0	/	HUAWEI

2.4 Deviation from Standards

None.

2.5 Abnormalities from Standard Conditions

None.

2.6 Test Facility

Test laboratory: Shenzhen ETR Standard Technology Co., Ltd.

CNAS Registration Number: L11864
A2LA Certificate Number: 6640.01
FCC Designation Number: CN1326
FCC Test Firm Registration: 183064

2.7 Test Location

All tests were performed at:

No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe,

Laboratory location: Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Telephone: +86 755 85259392 Fax: +86 755 27219460

2.8 Additional Instructions

None.

Tel:(86-755) 85259392 Email:etr800@etrtest.com Web: www.etrlab.cn No.103, No.10, Phase I, Zone 3, Xinxing Industrial Park, Xinhe, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China



3 Test Instruments list

Item	Equipment name	Manufacturer	Model	Serial No.	Calibration date	Due date
1	EMI Test Receiver	Rohde&schwarz	ESPI7	100605	2022.3.09	2023.3.08
2	EMI Test Receiver	Rohde&schwarz	ESCI3	102696	2022.3.09	2023.3.08
3	Broadband antenna	schwarabeck	VULB9168	1064	2022.3.11	2024.3.10
4	Horn antenna	schwarabeck	BBHA9120D	9120D-1145	2022.3.09	2023.3.08
5	amplifier	EMtrace	RP01A	50117	2022.3.09	2023.3.08
6	Artificial power network	schwarabeck	NSLK8127	8127483	2022.3.09	2023.3.08
	Artificial power network	ETS	3186/2NM	1132	2022.3.09	2023.3.08
7	10dB attenuator	HUBER+SUHNE R	10dB	/	2022.3.09	2023.3.08
8	amplifier	Space-Dtronics	EWLAN0118 G-P40	19113001	2022.3.09	2023.3.08
9	Spectrum analyzer	KEYSIGHT	N9020A	MY55370280	2022.3.09	2023.3.08
10	Power detector box	MWRFtest	MW100-PSB	MW201020JYT	2022.11.09	2023.11.08

Note: the calibration interval of the above test instruments is 12 or 24 months and the calibrations are traceable to international system unit (SI).

Software Name Manufacturer		Model	Version	
Conducted	Farad	EZ-EMC	Ver.EMC-CON 3A1.1	
Radiated	Farad	EZ-EMC	Ver.FA-03A2 RE	



4 Test results and Measurement Data

4.1 Antenna requirement

Standard requirement:

FCC part 15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

RSS-Gen 6.8:

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

EUT Antenna:

The antenna is PCB antenna, the best case gain of the antenna is 0dBi, reference to the appendix II for details



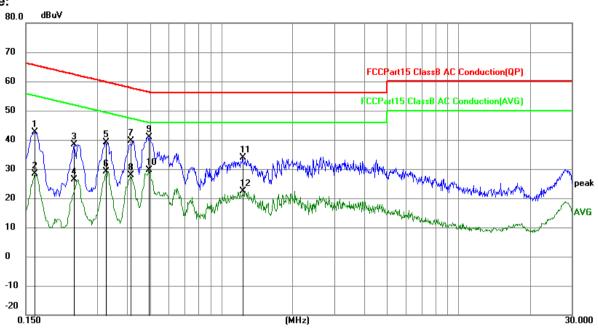
4.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207						
Test Method:	ANSI C63.10:2013						
Test Frequency Range:	150KHz to 30MHz						
Class / Severity:	Class B						
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto						
Limit:	Frequency range (MHz) Limit (dBuV)						
	Quasi-peak Average						
		0.15-0.5 66 to 56* 56 to 46*					
		0.5-5 56 46					
	5-30 * Decreases with the logarithm	60	50				
Test setup:		•					
Test procedure:	Reference Plane LISN 40cm 80cm Filter AC power Equipment Test table/Insulation plane Remark E.U.T Equipment Under Test LISN Line Impedence Stabilization Network Test table height=0.8m 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted						
Test Instruments:	interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement. Refer to section 3.0 for details						
Test mode:	Refer to section 2.2 for details						
Test environment:		ımid.: 55%	Press.: 1012mbar				
		Jilliu 55 /6	Press.: 1012mbar				
Test voltage:	AC 120V						
Test results:	Pass						



Measurement data





No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1635	32.17	10.48	42.65	65.28	-22.63	QP
2	0.1635	17.79	10.48	28.27	55.28	-27.01	AVG
3	0.2400	28.04	10.43	38.47	62.10	-23.63	QP
4	0.2400	15.84	10.43	26.27	52.10	-25.83	AVG
5	0.3255	28.74	10.39	39.13	59.57	-20.44	QP
6	0.3255	18.63	10.39	29.02	49.57	-20.55	AVG
7	0.4153	29.25	10.37	39.62	57.54	-17.92	QP
8	0.4153	17.54	10.37	27.91	47.54	-19.63	AVG
9	0.4964	30.47	10.36	40.83	56.06	-15.23	QP
10	0.4964	19.22	10.36	29.58	46.06	-16.48	AVG
11	1.2342	23.69	10.29	33.98	56.00	-22.02	QP
12	1.2342	12.00	10.29	22.29	46.00	-23.71	AVG



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Neutral: 80.0 dBuV 70 60 50 40 30 20 10

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1590	33.33	10.48	43.81	65.52	-21.71	QP
2	0.1590	19.85	10.48	30.33	55.52	-25.19	AVG
3	0.2400	29.08	10.43	39.51	62.10	-22.59	QP
4	0.2400	14.35	10.43	24.78	52.10	-27.32	AVG
5	0.3300	27.43	10.39	37.82	59.45	-21.63	QP
6	0.3300	17.80	10.39	28.19	49.45	-21.26	AVG
7	0.4153	27.04	10.37	37.41	57.54	-20.13	QP
8	0.4153	15.07	10.37	25.44	47.54	-22.10	AVG
9	0.4828	30.55	10.36	40.91	56.29	-15.38	QP
10	0.4828	16.84	10.36	27.20	46.29	-19.09	AVG
11	1.8551	24.49	10.30	34.79	56.00	-21.21	QP
12	1.8551	11.42	10.30	21.72	46.00	-24.28	AVG

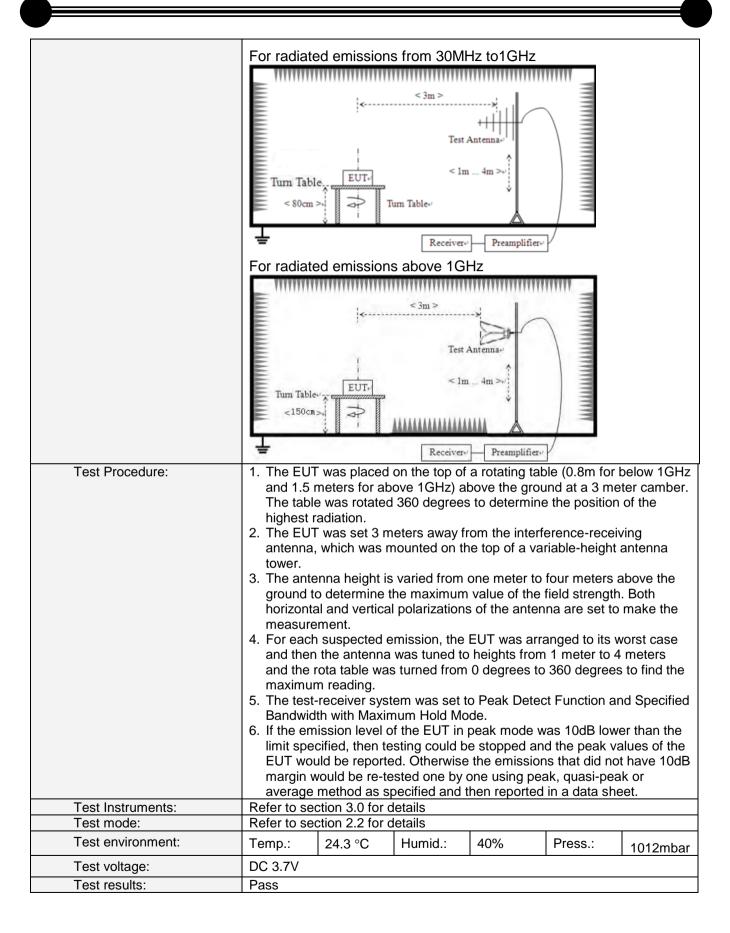
(MHz)



4.3 Radiated Emission Measurement

4.5 Radiated Emission i	vicasui ement					
Test Requirement:	FCC Part15 C S				and 15.205	5(a).
Tarak Marilanda	RSS-210 D & R					
Test Method:	ANSI C63.10: 2			n		
Test site:	Measurement D			DDW	\/D\\/	Damadi
Receiver setup:	Frequency		tector	RBW	VBW	Remark
	9kHz- 150kHz			200Hz	300Hz	Quasi-peak Value
	150kHz-	Oue	si-peak	9kHz	10kHz	Quasi-peak Value
	30MHz	Qua	isi-peak	9KHZ	TUKITZ	Quasi-peak value
	30MHz-	Oua	si-peak	120KHz	300KHz	Quasi-peak Value
	1GHz	Quu	or pour	1201112	0001112	Quasi peak value
		F	Peak	1MHz	3MHz	Peak Value
	Above 1GHz	Above 1GHz Pe		1MHz	10Hz	Average Value
Limit:				strength of		strength of spurious
(Field strength of the	Fundament	tal		ndamental		emissions
fundamental signal)	frequency (M			ovolts/meter)	(m	nicrovolts/meter)
,	40.66-40.7		,	2.250	,	225
	70-130			1.250		125
	130-174		112	50 to 3750		1125 to 375
	174-260			3.750		375
	260-470		137	50 to 12500		1375 to 1250
	Above 470)		12500		1250
Limit:	Freque	ency		Limit (uV/m)		Remark
(Spurious Emissions)		0.009MHz-0.490MHz		2400/F(kHz) @300m		Quasi-peak Value
		0.490MHz-1.705MHz		24000/F(kHz) @30m		Quasi-peak Value
		1.705MHz-30.0MHz		30 @30m		Quasi-peak Value
		30MHz-88MHz		100 @3m		Quasi-peak Value
		88MHz-216MHz		150 @3m		Quasi-peak Value
		216MHz-960MHz		200 @3m 500 @3m		Quasi-peak Value
	960IVIHZ-	960MHz-1GHz		500 @3m		Quasi-peak Value
	Above 1	GHz		500 @3m		Average Value Peak Value
Limit:	Emissions radio	tod or	ıtcida of			bands, except for
(band edge)						w the level of the
(bund edge)						in Section 15.209,
	whichever is the					
Test setup:						
	For radiated e	11112210	ווטוו פווכ	I SKITZ IO SI	JIVII 1Z	***
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	=			Receive	10	







Measurement Data

4.3.1 Field Strength of Fundamental

Peak value:

	Frequency (MHz)	Read Level (dBuV/m)	Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
	433.92	84.84	-15.37	69.47	100.83	-31.36	Vertical
Ī	433.92	84.70	-15.27	69.43	100.83	-31.40	Horizontal

Average value:

Frequency (MHz)	Peak Level (dBuV/m)	DC Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
433.92	69.47	-5.21	64.26	80.83	-16.57	Vertical
433.92	69.43	-5.21	64.22	80.83	-16.61	Horizontal

Remark: Average=Peak+ Duty Cycle factor (see 4.5 clause)



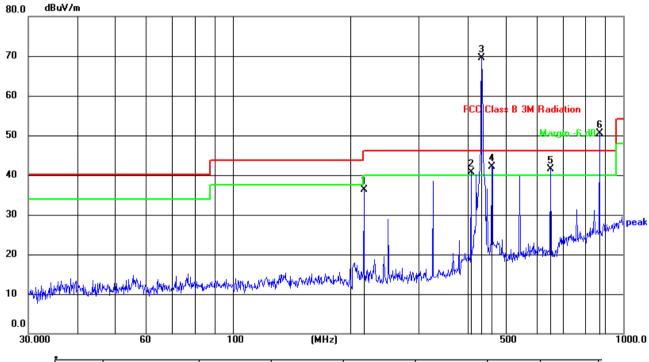
4.3.2 Spurious emissions and Bandedge

■ Below 30MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

■ Below 1GHz

Horizontal:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	l	Margin (dB)	Detector
1	216.7828	54.74	-18.48	36.26	46.00	-9.74	QP
2	407.5144	56.88	-16.17	40.71	46.00	-5.29	QP
3	434.0649	84.70	-15.27	69.43	46.00	23.43	peak
4	460.7271	56.75	-14.55	42.20	46.00	-3.80	QP
5	651.9416	51.10	-9.54	41.56	46.00	-4.44	QP
6	869.1300	57.44	-6.84	50.60	46.00	4.60	peak

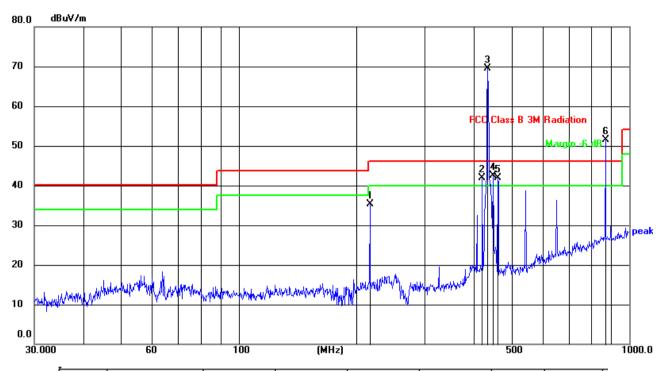
Average value:

Frequency	Peak Level	DC Factor	Level	Limit	Over Limit	polarization
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
869.1300	50.60	-5.21	45.39	60.83	-15.44	Horizontal

Remark: Average=Peak+ Duty Cycle factor



Vertical:



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	216.7828	53.59	-18.29	35.30	46.00	-10.70	QP
2	420.5803	57.74	-15.86	41.88	46.00	-4.12	QP
3	434.0649	84.84	-15.37	69.47	46.00	23.47	peak
4	447.9821	57.37	-14.81	42.56	46.00	-3.44	QP
5	460.7271	56.55	-14.55	42.00	46.00	-4.00	QP
6	869.1300	57.87	-6.39	51.48	46.00	5.48	peak

Average value:

Frequency	Peak Level	DC Factor	Level	Limit	Over Limit	polarization
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
869.1300	51.48	-5.21	46.27	60.83	-14.56	vertical

Average=Peak+ Duty Cycle factor



■ Above 1GHz

Peak value:

No.	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Polar
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(H/V)
1	1301.332	67.42	-15.66	51.76	74.00	-22.24	Horizontal
2	1736.483	67.40	-15.90	51.50	74.00	-22.50	Horizontal
3	2168.510	60.60	-15.38	45.22	74.00	-28.78	Horizontal
4	2603.351	65.83	-13.64	52.19	74.00	-21.81	Horizontal
1	1301.174	66.83	-15.66	51.17	74.00	-22.83	Vertical
2	1736.273	59.63	-15.90	43.73	74.00	-30.27	Vertical
3	2168.247	59.11	-15.38	43.73	74.00	-30.27	Vertical
4	2608.020	68.87	-13.63	55.24	74.00	-18.76	Vertical

Average value:

3.49.14.40.							
No	Frequency	Peak	DC Factor	Result	Limits	Margin	Polar
No.	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(H/V)
1	1301.332	51.76	-5.21	46.55	54.00	-7.45	Horizontal
2	1736.483	51.50	-5.21	46.29	54.00	-7.71	Horizontal
3	2168.510	45.22	-5.21	40.01	54.00	-13.99	Horizontal
4	2603.351	52.19	-5.21	46.98	54.00	-7.02	Horizontal
1	1301.174	51.17	-5.21	45.96	54.00	-8.04	Vertical
2	1736.273	43.73	-5.21	38.52	54.00	-15.48	Vertical
3	2168.247	43.73	-5.21	38.52	54.00	-15.48	Vertical
4	2608.020	55.24	-5.21	50.03	54.00	-3.97	Vertical

Remark:

- 1. Final Level =Receiver Read level +Correction Factor(Antenna Factor + Cable Loss Preamplifier Factor)
- 2. The emission levels of other frequencies are more than 20 dB below the limit and not show in test report.
- 3. "*", means this data is the too weak instrument of signal is unable to test.
- 4. Average=Peak+ Duty Cycle factor

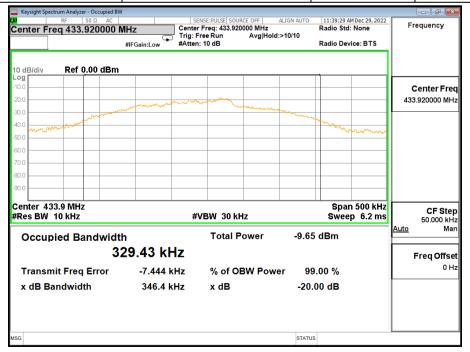


4.4 20dB Occupy Bandwidth

Test Requirement:	FCC Part15 C Section 15.231		
Test Method:	ANSI C63.10:2013		
Limit:	20dB bandwidth of the emissions shall not exceed 0.25% of the center frequency		
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table		
	Ground Reference Plane		
Test Procedure:	With the EUT's antenna attached, the EUT's 20dB Bandwidth power was received by the test antenna which was connected to the spectrum analyzer with the START and STOP frequencies set to the EUT's operation band.		
Test Instruments:	Refer to section 3.0 for details		
Test mode:	Refer to section 2.2 for details		
Test results:	Pass		

Measurement Data

Center Frequency	20dB bandwidth(kHz)	Limit(kHz)	Result
433.92MHz	346.4	1084.8	Pass





4.5 DUTY CYCLE

Test Requirement:	FCC Part15 C Section 15.231		
Test Method:	ANSI C63.10:2013		
Limit:	N/A		
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane		
Test Procedure:	 The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below. The Duty Cycle Was Determined By The Following Equation: To Calculate The Actual Field Intensity, The Duty Cycle Correction Factor In Decibel Is Needed For Later Use And Can Be Obtained From Following Conversion Duty Cycle(%)=Total On Interval In A Complete Pulse Train/ Length Of A Complete Pulse Train * % Duty Cycle Correction Factor(Db)=20 * Log10(Duty Cycle(%) 		
Test Instruments:	Refer to section 3.0 for details		
Test mode:	Refer to section 2.2 for details		
Test results:	Pass		

Test data:

Ton = (1.38*14+0.48*11)ms= 24.60(ms)

Tp = 44.80(ms)

Duty cycle= Ton/ Tp*100%=24.60/44.80*100%=54.91%

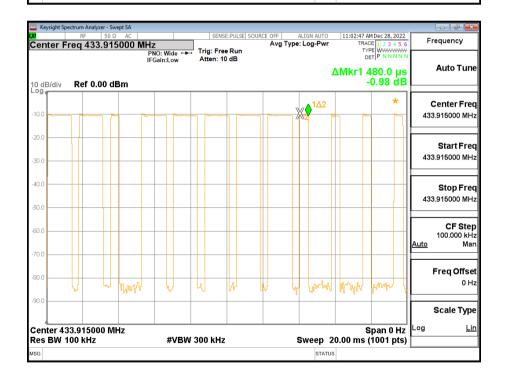
DC Correction Factor= 20log (Ton/Tp) =20log (24.60/44.80) = -5.21dB







STATUS



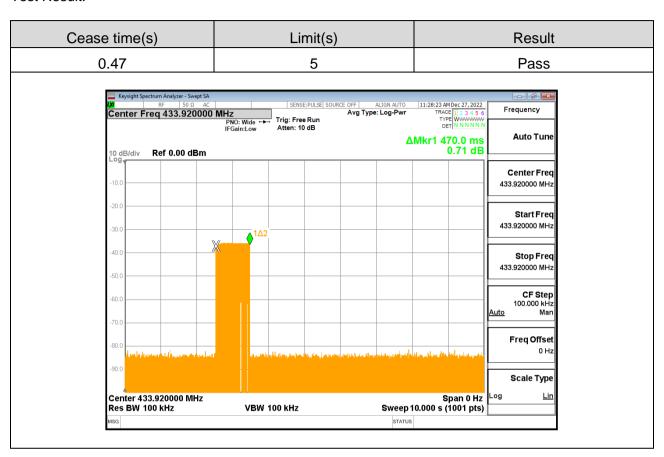


4.6 Release time

Test Requirement:	FCC Part15 C Section 15.231	
Test Method:	ANSI C63.10:2013	
Limit:		
Test setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane	
Test Procedure:	The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below. Spectrum Setting: RBW= 1MHz, VBW=3MHz, Sweep time = 10s. Note: (1)Refer to the plot (As Below), We find a manumotive operated transmitter shall employ a switch that will automatically deactivate the transmitteri immediately, within not more than 5 seconds of being released. (2)The EUT is comply with FCC PART 15 clause 15.231(a)(1). Manumotive working mode are pre-tested. and only the worst result is reported	
Test Instruments:	Refer to section 3.0 for details	
Test mode:	Refer to section 2.2 for details	
Test results:	Pass	



Test Result:







5 Test Setup Photo

Reference to the appendix I for details.

6 EUT Constructional Details

Reference to the appendix II for details.

-----End-----