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Т	EST REPORT			
Report No. ······:	CTC20211949E06			
FCC ID	2AY37-BS-CH002			
Applicant	Shenzhen Times Innovation Technol	ogy Co., Ltd.		
Address	5th Floor, Building B, Baseus Intelligence Park, No.2008, Xuegang Rd, Gangtou Community, Bantian Street, Longgang District, Shenzhen China			
Manufacturer:	Shenzhen Times Innovation Technolog	y Co., Ltd.		
Address	5th Floor, Building B, Baseus Intelligene Xuegang Rd, Gangtou Community, Bar District Shenzhen China	ce Park, No.2008, ntian Street, Longgang		
Product Name:	Baseus Energy Column Pro Car Wire Tarnish	eless MP3 Charger		
Trade Mark:	Baseus			
Model/Type reference······:	BS-CH002			
Listed Model(s) ······	CDNL000014			
Standard:	FCC CFR Title 47 Part 15 Subpart C Section 15.247			
Date of receipt of test sample:	Dec. 03, 2021			
Date of testing	Dec. 03, 2021 to Dec. 16, 2021			
Date of issue	Dec. 17, 2021			
Result:	PASS			
Compiled by:		T. Jinna		
(Printed name+signature)	Jim Jiang	Jim f		
Supervised by:				
(Printed name+signature)	Miller Ma	Muler Ma		
	. <u></u>	~		
Approved by:		1 cmas		
(Printed name+signature)	Totti Zhao			
Testing Laboratory Name:	CTC Laboratories, Inc.			
Address	1-2/F., Building 2, Jiaguan Building, Guanlan High-Tech Park.			
	Shenzhen, Guangdong, China			
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1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.247: Operation within the bands of 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.

RSS 247 Issue 2: Standard Specifications for Frequency Hopping Systems (FHSs) and Digital Transmission Systems (DTSs) Operating in the Bands 902-928MHz, 2400-2483.5MHz and 5725-5850MHz. ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

1.2. Report Version

Revised No.	Date of issue	Description
01 Dec. 17, 2021		Original

1.3. Test Description

FCC Part 15 Subpart C (15.247)/ RSS 247 Issue 2					
Test liem	Standard	Decult	Test Engi-		
iest item	FCC IC		Result	neer	
Antenna Requirement	15.203	/	Pass	Jim Jiang	
Conducted Emission	15.207	RSS-Gen 8.8	N/A	N/A	
Restricted Bands	15.205	RSS-Gen 8.10	Pass	Jim Jiang	
Hopping Channel Separation	15.247(a)(1)	RSS 247 5.1 (b)	Pass	Jim Jiang	
Dwell Time	15.247(a)(iii)	RSS 247 5.1 (d)	Pass	Jim Jiang	
Peak Output Power	15.247(b)(1)	RSS 247 5.4 (b)	Pass	Jim Jiang	
Number of Hopping Frequency	15.247(a)(iii)	RSS 247 5.1 (d)	Pass	Jim Jiang	
Band Edge Emissions	15.247(d)	RSS 247 5.5	Pass	Jim Jiang	
Radiated Spurious Emission	15.247(d)&15.209	RSS 247 5.5& RSS-Gen 8.9	Pass	Jim Jiang	
20dB Bandwidth	15.247(a)	RSS 247 5.1 (b)	Pass	Jim Jiang	

Note:

1. The measurement uncertainty is not included in the test result.

2. N/A: means this test item is not applicable for this device according to the technology characteristic of device.





Add: 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L5365

CTC Laboratories, Inc. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation. Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 4340.01

CTC Laboratories, Inc. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

Industry Canada (Registration No.: 9783A, CAB Identifier: CN0029)

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

FCC (Registration No.: 951311, Designation Number CN1208)

CTC Laboratories, Inc. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained inour files. Registration 951311, Aug 26, 2017.

1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties radio equipment characteristics; Part 2" and is documented in the CTC Laboratories, Inc. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for CTC Laboratories, Inc.



Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.42 dB	(1)
Transmitter power Radiated	2.14 dB	(1)
Conducted spurious emissions 9kHz~40GHz	1.60 dB	(1)
Radiated spurious emissions 9kHz~40GHz	2.20 dB	(1)
Conducted Emissions 9kHz~30MHz	3.20 dB	(1)
Radiated Emissions 30~1000MHz	4.70 dB	(1)
Radiated Emissions 1~18GHz	5.00 dB	(1)
Radiated Emissions 18~40GHz	5.54 dB	(1)
Occupied Bandwidth		(1)

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.6. Environmental Conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	21°C~27°C
Relative Humidity:	40%~60%
Atmospheric Pressure:	101kPa



2. GENERAL INFORMATION

2.1. Client Information

Applicant:	Shenzhen Times Innovation Technology Co., Ltd.
Address:	5th Floor, Building B, Baseus Intelligence Park, No.2008, Xuegang Rd, Gangtou Community, Bantian Street, Longgang District, Shenzhen China
Manufacturer:	Shenzhen Times Innovation Technology Co., Ltd.
Address:	5th Floor, Building B, Baseus Intelligence Park, No.2008, Xuegang Rd, Gangtou Community, Bantian Street, Longgang District, Shenzhen China
Factory:	Shenzhen youpinshi electronic technology co., LTD
Address:	No. 122, Ditang Road, Shasan Village, Shajing Street, Baoan District, Shenzhen, China

2.2. General Description of EUT

Product Name:	Baseus Energy Column Pro Car Wireless MP3 Charger Tarnish
Trade Mark:	Baseus
Model/Type reference:	BS-CH002
Listed Model(s):	CDNL000014
Model Difference:	All these models are identical in the same PCB, layout and electrical circuit. The difference is the model. Model BS-CH002 was selected as the EUT in this report.
Power supply:	Input: DC12-24V ✓ Output: DC5V 3A, DC9V 3A, DC12V 2.5A, DC20V 1.5A Type-C Output: DC5V 3A, DC9V 3A, DC12V 2.5A, DC15V 2A, DC20V 1.5A ✓/J Output: DC5V 0.5A ✓ +Type-C Output: DC5V 3A
Hardware version:	V1.1
Software version:	V1.04
Bluetooth 5.0/ EDR	
Modulation:	GFSK, π/4-DQPSK, 8-DPSK
Operation frequency:	2402MHz~2480MHz
Channel number:	79
Channel separation:	1MHz
Antenna type:	PCB Antenna
Antenna gain:	-0.58dBi



2.3. Accessory Equipment Information

Equipment Information						
Name	Model	S/N	Manufacturer			
Notebook	ThinkPad T460s	/	Lenovo			
Cable Information	Cable Information					
Name	Shielded Type	Ferrite Core	Length			
USB Cable	Unshielded	NO	100cm			
Test Software Information						
Name	Version	/	1			
BT FCC Tool	V2.24	/	1			



2.4. Operation State

Operation Frequency List: The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing. BT EDR, 79 channels are provided to the EUT. Channels 00/39/78 were selected for testing.

Operation Frequency List:

Channel	Frequency (MHz)	
00	2402	
01	2403	
÷	÷	
38	2440	
39	2441	
40	2442	
:	:	
77	2479	
78	2480	

Note: The display in grey were the channel selected for testing.

Test mode

For RF test items:

The engineering test program was provided and enabled to make EUT continuous transmit

For AC power line conducted emissions:

The EUT was set to connect with the Bluetooth instrument under large package sizes transmission.

For Radiated spurious emissions test item:

The engineering test program was provided and enabled to make EUT continuous transmit. The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data recorded in the report.



2.5. Measurement Instruments List

Tonscend JS0806-2 Test system					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Spectrum Analyzer	Rohde & Schwarz	FSU26	100105	Dec. 25, 2021
2	Spectrum Analyzer	Rohde & Schwarz	FUV40-N	101331	Mar. 15, 2022
3	MXG Vector Signal Generator	Agilent	N5182A	MY47420864	Dec. 25, 2021
4	Signal Generator	Agilent	E8257D	MY46521908	Dec. 25, 2021
5	Power Sensor	Agilent	U2021XA	MY5365004	Dec. 25, 2021
6	Power Sensor	Agilent	U2021XA	MY5365006	Dec. 25, 2021
7	Simultaneous Sam- pling DAQ	Agilent	U2531A	TW54493510	Dec. 25, 2021
8	Climate Chamber	TABAI	PR-4G	A8708055	Dec. 25, 2021
9	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	116410	Dec. 25, 2021
10	Climate Chamber	ESPEC	MT3065	/	Dec. 25, 2021
11	300328 v2.2.2 test system	TONSCEND	v2.6	/	/

Radiated Emission and Transmitter spurious emissions					
ltem	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	EMI Test Receiver	Rohde & Schwarz	ESCI	100658	Dec. 25, 2021
2	High pass filter	micro-tranics	HPM50111	142	Dec. 25, 2021
3	Log-Bicon Antenna	Schwarzbeck	CBL6141A	4180	Dec. 25, 2021
4	Ultra-Broadband Antenna	ShwarzBeck	BBHA9170	25841	Dec. 25, 2021
5	Loop Antenna	LAPLAC	RF300	9138	Dec. 25, 2021
6	Spectrum Analyzer	Rohde & Schwarz	FSU26	100105	Dec. 25, 2021
7	Horn Antenna	Schwarzbeck	BBHA 9120D	647	Dec. 25, 2021
8	Pre-Amplifier	HP	8447D	1937A03050	Dec. 25, 2021
9	Pre-Amplifier	EMCI	EMC051835	980075	Dec. 25, 2021
10	Antenna Mast	UC	UC3000	N/A	N/A
11	Turn Table	UC	UC3000	N/A	N/A
12	Cable Below 1GHz	Schwarzbeck	AK9515E	33155	Dec. 25, 2021
13	Cable Above 1GHz	Hubersuhner	SUCOFLEX102	DA1580	Dec. 25, 2021
14	Splitter	Mini-Circuit	ZAPD-4	400059	Dec. 25, 2021
15	RF Connection Ca- ble	HUBER+SUHNER	RE-7-FL	N/A	Dec. 25, 2021
16	RF Connection Ca- ble	Chengdu E-Microwave			Dec. 25, 2021



17	High pass filter	Compliance Direc- tion systems	BSU-6	34202	Dec. 25, 2021
18	Attenuator	Chengdu E-Microwave	EMCAXX-10RNZ-3		Dec. 25, 2021
19	High and low tem- perature box	ESPEC	MT3065	12114019	Dec. 25, 2021

Conducted Emission										
Item	m Test Equipment Manufacturer Model No. Serial No. Calibrat									
1	LISN	R&S	ENV216	101112	Dec. 25, 2021					
2	LISN	R&S	ENV216	101113	Dec. 25, 2021					
3	EMI Test Receiver	R&S	ESCI	100658	Dec. 25, 2021					

Note:

1. The Cal. Interval was one year.

2. The cable loss has calculated in test result which connection between each test instruments.



3.1. Conducted Emission

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.207/ RSS - Gen 8.8

	Limit (dBuV)				
Frequency range (IVIPZ)	Quasi-peak	Average			
0.15-0.5	66 to 56*	56 to 46*			
0.5-5	56	46			
5-30	60	50			

* Decreases with the logarithm of the frequency.

Test Configuration



Test Procedure

- 1. The EUT was setup according to ANSI C63.10:2013 requirements.
- 2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
- 3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
- 4. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
- 5. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
- 6. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
- 7. During the above scans, the emissions were maximized by cable manipulation.



Test Mode Please refer to the clause 2.4.

Test Results

Not applicable.



3.2. Radiated Emission

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.209/ RSS - Gen 8.9

Frequency	Field Strength	Measurement Distance
(MHz)	(microvolts/meter)	(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
960~1000	500	3

	dB(uV/m)	(at 3 meters)
Frequency (Minz)	Peak	Average
Above 1000	74	54

Note:

(1) The tighter limit applies at the band edges.

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

Test Configuration





30-1000MHz Test Setup





Above 1GHz Test Setup

Test Procedure

- 1. The EUT was setup and tested according to ANSI C63.10:2013
- 2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
- 3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
- 4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
- 5. Set to the maximum power setting and enable the EUT transmit continuously.
- 6. Use the following spectrum analyzer settings
 - (1) Span shall wide enough to fully capture the emission being measured;
 - (2) Below 1 GHz:

RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;

If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

(3) From 1 GHz to 10th harmonic:

RBW=1MHz, VBW=3MHz Peak detector for Peak value.

RBW=1MHz, VBW=3MHz RMS detector for Average value.

Test Mode

Please refer to the clause 2.4.

Test Result

9 KHz~30 MHz

From 9 KHz to 30 MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



Ant. Pol.		по	Horizontal													
est Mode	:	ТΧ	TX GFSK Mode 2402MHz													
Remark:		Only worse case is reported														
90.0 dBuV/m																
40		1 X				4 	57 6			FCC F	Part15 RE-	Class	B 30-10 Mar	00M gin -6	dB	
www.White	Winterstration	w	W	Y	<i>W</i> M	M./ ^{www}		NWA	Mayan	d'una de la constante de	adadalar and	444.2				
10 30.000 44	ึ่ให้เห็ป\่น∕ัน 0 50 60	70 8	80	V.	` \\/		MHz)			пын ^{инил} 300	400	500	600	700	10	000.0
10 30.000 44	0 50 60 Frequenc (MHz)	70 s	60 Fi	act B/r	tor m)	Rea (dB	MHz)	L	evel uV/m	1440 ^{1/40/4}	400 Limit BuV/m	500) M	600 largir (dB)	700	10 etec	000.0
10 30.000 44 No. 1	0 50 60 Frequenc (MHz) 71.9578	70 8	60 Fi (d	act B/r	tor m)	Rea (dB	ding	(dB	evel uV/m 6.54	nanuwat 300) (dE	400 Limit 3uV/m 40.00	500) (600 largir (dB) -3.46	700 1 D	nt etec QF	
No. 1 2	0 50 60 Frequenc (MHz) 71.9578 77.4680	70 8 Y	60 Fi (d -1	act B/r 18.	tor m) 13 44	Rea (dB 54	ding auV) .67	Lu (dB 30	evel uV/m 6.54 6.71	300 (de	400 Limit 3uV/m 40.00	500) (600 largir (dB) -3.46 13.29	700 1 D	10 etec QF QF	
No. 2 30.000 40	Why w	70 4 Y	60 F (d -1 -1 -1	act B/r 18.	tor m) 13 44 85	Rea (dB 54 46 53	ding uV) .67 .15 .35	L((dB 3(2(34	evel uV/m 6.54 6.71 4.50	300 (dE	400 Limit 3uV/m 40.00 40.00 43.50	500 M) ((600 largir (dB) -3.46 13.29 -9.00	700 1 D	10 etec QF QF QF	
0 30.000 44 No. 1 2 3 4	Weight Market Ma	yy y	60 Fi (d -1 -1 -1	act B/r 18. 19.	tor m) 13 44 85 34	Rea (dB 54 46 53 46	ding uV) .67 .15 .35	L((dB 3(2(34 3(evel uV/m 6.54 6.71 4.50 0.30	300 300 (dE	400 Limit 3uV/m 40.00 40.00 43.50 43.50	500) ((600 largir (dB) -3.46 13.29 -9.00 13.20	700 1 D	etecc QF QF QF	tor
No. 1 2 3 4 5	With With Ministry 0 50 60 Frequenc (MHz) 71.9578 77.4680 95.9852 120.1886 162.0197	y y 5 6 7	Fi (d -1 -1 -1 -1	act B/r 18. 19.	tor m) 13 44 85 34 41	Rea (dB 54 46 53 46 45	ding auV) .67 .15 .35 .64 .81	L((dB 3(2(3/ 3/ 3(3)	evel uV/m 6.54 6.71 4.50 0.30 1.40	300 300 (dE	400 Limit 3uV/m 40.00 40.00 43.50 43.50 43.50	500 M) ((600 argir (dB) -3.46 13.29 -9.00 13.20 13.20	700 700	etecc QF QF QF QF	





Remarks:

4

5

6

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

39.29

40.45

43.72

24.93

25.00

32.52

43.50

43.50

46.00

QP

QP

QP

-18.57

-18.50

-13.48

-14.36

-15.45

-11.20

2.Margin value = Level -Limit value

160.3209

175.6565

416.9108



Ant.	Pol.		Ho	Horizontal									
Test	Mode	:	Tک	TX GFSK Mode 2402MHz									
Rem	nark:		No SC	No report for the emission which more than 20 dB below the pre- scribed limit.									
100.0	dBu¥/m												
_						FCC Pa	rt15 Class C 3M A	bove-16 Pea	k				
		1											
		×				FCC	Part15 Class C 3	Above-1G A	v				
50		2											
U.U 100)0.000 350	0.00 600	D.00	8500.00 110	00.00 13500.	0 16000.00	18500.00 2100	0.00	26000.00 MHz				
Г		Freque	ncv	Factor	Reading	Level	Limit	Margin					
	NO.	(MHz	z) ((dB/m)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	Detector				
	1	4804.4	159	-2.82 61.49 58.67 74.00 -15.33 peak									
Γ	2	4805.1	12	-2.82 50.07 47.25 54.00 -6.75 AVG									
Rom	arks:												

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



Ant	. Pol.		Vertical	ertical									
Tes	t Mode	:	TX GFSK Mo	GFSK Mode 2402MHz									
Rer	nark:		No report for scribed limit.	To report for the emission which more than 20 dB below the pre- scribed limit.									
100.0) dBuV/m												
					FCC Pa	rt15 Class C 3M A	.bove-1G Pea	<u>k</u>					
50		2 X			FCC	Part15 Class C 31	4 Above-1G A	v					
		*											
0.0 10	00.000 35	00.00 6000.00) 8500.00 110	00.00 13500.00) 16000.00	18500.00 2100	10.00	26000.00 MHz					
	No.	Frequenc (MHz)	y Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector					
ſ	1	4804.42	3 -2.82	49.07	46.25	54.00	-7.75	AVG					
[2	4805.28	0 -2.82	-2.82 59.97 57.15 74.00 -16.85 peak									
Rer 1.Fa	narks: actor (d	B/m) = Ante	nna Factor (dB	/m)+Cable F	actor (dB)-	Pre-amplifie	er Factor						



Ant	. Pol.		Horizontal	orizontal									
Tes	t Mode	:	TX GFSK Mo	X GFSK Mode 2441MHz									
Rer	nark:		No report for the emission which more than 20 dB below the pre- scribed limit.										
100.0) dBuV/m												
					FCC Pa	rt15 Class C 3M A	bove-1G Pea	k					
50		1			FCC	Part15 Class C 3)	4 Above-1G A	v					
50		*											
0.0													
10	100.000 35	00.00 6000.00	0 8500.00 110	00.00 13500.00	1 16000.00	18500.00 2100	10.00	26000.00 MHz					
	No.	Frequenc (MHz)	y Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector					
ſ	1	4881.56	2 -2.60	60.35	57.75	74.00	-16.25	peak					
[2	4882.20	1 -2.60	-2.60 49.59 46.99 54.00 -7.01 AVG									
Rer 1.Fa	marks: actor (d	B/m) = Ante	nna Factor (dB	/m)+Cable F	Factor (dB)-	Pre-amplifie	er Factor						



Ant	. Pol.			Verti	ertical								
Tes	t Mode	:		TX C	X GFSK Mode 2441MHz								
Rer	nark:			No r scrib	No report for the emission which more than 20 dB below the pre- scribed limit.								
100.0) dBu∀/m									1			
										FCC Pa	rt15 Class C 3	1 Above-16 Pea	k
50	1									FCC	Part15 Class (3M Above-1G A	NV
50		3	ž										
0.0	100 000 35	00.00	6000 0	0 850	0.00	110	10.00	13500.0	1600	<u> 00 00 -</u>	18500.00 2		26000 00 MHz
Г		Free	quen	~~	Fact	or	Rea	ding	le	vel	Limit	Margin	
	No.	()	MHz)	- (dB/n	1)	(dE	BuV)	(dBu	V/m)	(dBuV/m	i) (dB)	Detector
ļ	1	48	80.87	1	-2.6	0	60	.07	57	.47	/4.00	-16.53	peak
	2	48	81.15	4	-2.6	0	48	.60	46	.00	54.00	-8.00	AVG
Rer 1.Fa	marks: actor (d	B/m) :	= Ante	nna F	actor	(dB	/m)+(Cable	Factor	(dB)-	Pre-ampli	fier Factor	



Ant	. Pol.		Horizontal	orizontal								
Tes	t Mode	:	TX GFSK Mo	K GFSK Mode 2480MHz								
Rer	nark:		No report for scribed limit.	No report for the emission which more than 20 dB below the pre- scribed limit.								
100.0) dBuV/m											
					FCC Pa	rt15 Class C 3M A	bove-16 Pea	k				
		2 X			FCC	Part15 Class C 3	4 Above-1G A	v				
50		*										
0.0												
10	100.000 35	UU.UU 6000.00	J 8500.00 110	UU.UU 135UU.UI	J 16000.00	18500.00 2100	10.00	26000.00 MHz				
	No.	Frequenc (MHz)	y Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector				
ſ	1	4960.63	7 -2.38	49.13	46.75	54.00	-7.25	AVG				
[2	4961.11	5 -2.38	-2.38 59.79 57.41 74.00 -16.59 peak								
Rer 1.Fa	narks: actor (d	B/m) = Ante	nna Factor (dB	/m)+Cable I	Factor (dB)-	Pre-amplifie	er Factor					



Ant	. Pol.		Vertical	/ertical									
Tes	t Mode	:	TX GFSK Mo	X GFSK Mode 2480MHz									
Rer	nark:		No report for the emission which more than 20 dB below the pre- scribed limit.										
100.0) dBuV/m												
					FCC Pa	rt15 Class C 3M A	.bove-16 Pea	k					
50		2			FCC	Part15 Class C 3	4 Above-1G A	v					
50		*											
0.0	100.000 35	00.00 00.00) 8500.00 110	00.00 13500.00) 16000.00	18500.00 2100	10.00	26000.00 MHz					
Г			. Fasta	Deading	Lough	1:	Maraia	· · · · · · ·					
	No.	(MHz)	(dB/m)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	Detector					
	1	4961.02	0 -2.38	48.80	46.42	54.00	-7.58	AVG					
	2	4961.16	9 -2.38	-2.38 60.16 57.78 74.00 -16.22 peak									
Rer 1.Fa	marks: actor (d	B/m) = Ante	nna Factor (dE	/m)+Cable F	Factor (dB)-	Pre-amplifie	er Factor						



Ant. Pol.		Horizontal	Horizontal											
Test Mode	:	TX π/4-DQPS	SK Mode 24	02MHz										
Remark:		No report for t scribed limit.	the emissior	n which mor	e than 20 d	B below	the pre-							
100.0 dBu∀/m														
				FCC Pa	rt15 Class C 3M A	bove-16 Pea	k							
	1			FCC	Part15 Class C 3N	4 Above-1G A	v							
50	×													
1000.000 35	00.00 6000.00	0 8500.00 1100	0.00 13500.00) 16000.00	18500.00 2100	0.00	26000.00 MHz							
	-	- Forter	Deading	Level	1 5 14	Maria								
No.	Frequence (MHz)	y Factor Reading Level Limit Margin (dB/m) (dBuV) (dBuV/m) (dBuV/m) (dB) Detector												
1	4804.70	0 -2.82	61.12	58.30	74.00	-15.70	peak							
2	4805.22	1 -2.82	49.96	47.14	54.00	-6.86	AVG							
Remarks:														

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



Ant	. Pol.			Verti	Vertical										
Tes	t Mode	:		TX 1	т/4-С	QP	SK M	ode 24	102MF	łz					
Rer	nark:			No re scrib	eport ed li	t for t mit.	the er	nissio	n whic	h mor	e than	20 dl	B below 1	the pre-	
100.0) dBuV/m	1													
										FCC Pa	rt15 Class	C 3M A	bove-1G Pea	k	
		2	<u></u>							FCC	Part15 Cla	ass C 3k	4 Above-1G A	v	
50			(
0.0															
10	100.000 35	00.00	6000.00	850	0.00	110	00.00	13500.0	D 160)0.00	18500.00	2100	0.00	26000.00 MHz	2
Г															
	No.	Fre (1	quenc MHz)	y Factor Reading Level Limit Margin (dB/m) (dBuV) (dBuV/m) (dBuV/m) (dB) Detector											
	1	48	04.78	0	-2.8	32	49	.80	46	.98	54.	00	-7.02	AVG	
	2	48	05.54	2	-2.8	32	61	.33	58	.51	74.	00	-15.49	peak	
Ror	narke:														
Rei	narks.														

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



Ant. Po	ol.		Horizo										
Test M	ode:		ΤΧ π/	4-DQP	SK Mode	24	41M⊦	lz					
Remar	k:		No rep scribe	port for d limit.	the emis	sior	n whic	h mor	e than	20 d	B below t	he pre-	
100.0 dB	3uV/m								Ì				
								FCC Pa	rt15 Class	с зм а	bove-16 Pea	k	
		1						FCC	Part15 Cla	ss C 31	4 Above-1G A	v	
50		2 X											
0.0	0 2500 00		9500	00 110	0 00 125	00.00	100	0.00	19500 00	21.00	0.00	2000.00 MU-	
No	o. Fr	equenc (MHz)	y Factor Reading Level Limit Margin (dB/m) (dBuV) (dBuV/m) (dBuV/m) (dB) Detector										
1	1 4	880.86	5 -	2.60	61.14	ł	58.	.54	74.(00	-15.46	peak	
2	2 4	881.12	7 -	2.60	50.32	2	47	.72	54.0	00	-6.28	AVG	
Remark	ks:												

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



Ant	t. Pol.			Verti	Vertical										
Tes	t Mode	:		ТХ т	т/4-DQP	SK Mode	24	41M⊦	łz						
Rer	mark:			No re scrib	eport for ed limit.	the emis	sior	n whic	h mor	e than 20 d	B below 1	the pre-			
100.0) dBuV/m														
									FCC Pa	rt15 Class C 3M A	.bove-1G Pea	k			
		ŝ	2						FCC	Part15 Class C 3k	4 Above-1G A	v			
50		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	{												
0.0	100 000 35	00.00	6000 00	850	0.00 110	00.00 135		1600	10 00 ·	18500.00 2100	0.00	26000 00 MHz			
	No.	Free (N	quenc //Hz)	cy Factor Reading Level Limit Margin (dB/m) (dBuV) (dBuV/m) (dBuV/m) (dB) Detector											
	1	48	81.842	2	-2.60	49.56	5	46	.96	54.00	-7.04	AVG			
	2	488	82.00	3	-2.60	61.32	2	58	.72	74.00	-15.28	peak			
Ror	marke.														
Rer	marks:														

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



Ant	t. Pol.		Horizontal	Horizontal											
Tes	st Mode	:	TX π/4-DQP	SK Mode 24	80MHz										
Rei	mark:		No report for scribed limit.	the emission	n which mor	e than 20 d	B below t	the pre-							
100.0	0 dBuV/m					i i									
					FCC Pa	rt15 Class C 3M A	.bove-16 Pea	k							
		2													
		×			FCC	Part15 Class C 3	A Above-1G A	v							
50		1													
0.0			0500.00.110	00.00 10500.00	10000.00										
1(000.000 35	00.00 6000.00	J 8500.00 110	00.00 13500.00	0 16000.00	18500.00 2100	10.00	26000.00 MHz							
				1	1										
	No.	Frequenc (MHz)	y Factor Reading Level Limit Margin (dB/m) (dBuV) (dBuV/m) (dBuV/m) (dB) Detector												
	1	4960.98	5 -2.38	50.17	47.79	54.00	-6.21	AVG							
	2	4961.08	7 -2.38	62.21	59.83	74.00	-14.17	peak							
				·	•			· · · · · ·							

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



Ant	t. Pol.		Vert	Vertical									
Tes	t Mode	:	ТХ	X π /4-DQPSK Mode 2480MHz o report for the emission which more than 20 dB below the pre-									
Rei	mark:		No i scrit	report for t bed limit.	he emissio	n which mor	e than 20 d	B below t	the pre-				
100.0) dBu∀/m												
						FCC Pa	rt15 Class C 3M A	bove-1G Pea	k				
		1 X				FCC	Part15 Class C 3k	4 Above-1G A	v				
50		×											
0.0	00 000 25	00.00 6000	0 05	00.00 110	0 00 12500 0	0 16000.00	19500.00 2100	0.00	2000 00 MU-				
		<u></u>		00.00 110	0.00 13300.0	0 10000.00	10000.00 2100	0.00	20000.00 Mil2				
	No.	Frequen (MHz)	су	y Factor Reading Level Limit Margin (dB/m) (dBuV) (dBuV/m) (dBuV/m) (dB) Detector									
	1	4960.99	96	-2.38	60.35	57.97	74.00	-16.03	peak				
[2	4961.13	32	-2.38	48.46	46.08	54.00	-7.92	AVG				
Rer	marks:												

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



Ant	. Pol.		Horizontal	Horizontal											
Tes	t Mode	:	TX 8-DPSH	K Mode 24	D2MH	z									
Rer	nark:		No report for scribed lim	or the emis it.	sion	which mor	e than 20 d	B below t	the pre-						
100.0) dBuV/m														
						FCC Pa	rt15 Class C 3M A	.bove-1G Pea	k						
		2													
		Î				FCC	Part15 Class C 3	Above-1G A	v						
50		*													
0.0															
0.0 10)00.000 35	0.00 6000.00) 8500.00	11000.00 13	500.00	16000.00 1	18500.00 2100	0.00	26000.00 MI	Hz					
	No.	Frequence (MHz)	y Facto (dB/m)	r Readi) (dBu\	ng /) ((Level dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector						
Γ	1	4804.47	4 -2.82 51.68 48.86 54.00 -5.14 AVG												
[2	4805.02	3 -2.82	63.5	Э	60.77	74.00	-13.23	peak						
Rer	narks:														
1.Fa	actor (d	B/m) = Ante	nna Factor (dB/m)+Cal	ole Fa	actor (dB)-I	Pre-amplifie	er Factor							



Ant	. Pol.		Vertica									
Tes	t Mode	:	TX 8-I	DPSK N	lode 240	2M	Hz					
Rer	nark:		No rep	oort for t	he emiss	sior	n whic	h mor	e than 20 d	B below t	the pre-	
100.0) dBu∀/m		scribe	a innit.								
50								FCC Par	t15 Class C 3M A Par(15 Class C 3)	.bove-1G Pea 4 Above-1G A	k V	
0.0	00.000 35	00.00 6000.00	6000.00 8500.00 11000.00 13500.00 16000.00 18500.00 21000.00 26000.00 MHz									
Г		-										
	No.	Frequence (MHz)	cy Factor Reading Level Limit Margin (dB/m) (dBuV) (dBuV/m) (dBuV/m) (dB) Detector									
	1	4804.44	5 -	-2.82 61.05 58.23 74.00 -15.77 peak								
	2	4805.20	0 -	2.82	49.49		46.	.67	54.00	-7.33	AVG	ļ
Por	marke:											
1.Fa	actor (d	B/m) = Ante	nna Fa	ctor (dB/	/m)+Cab	le F	actor	(dB)-I	Pre-amplifie	er Factor		



Ant	. Pol.			Horiz	Horizontal									
Tes	t Mode	:		TX 8-	-DPSK N	lode 244	1M	lHz						
Rer	nark:			No re scribe	eport for ed limit.	the emis	sior	n whic	h mor	e than 20 d	B below	the pre-		
100.0) dBuV/m						1							
									FCC Pa	rt15 Class C 3M A	vbove-16 Pea	k		
		1 X							FCC	Part15 Class C 3	4 Above-1G A	v		
50		×												
0.0	00.000.00			050	00 110	00.00 105	00.04	1000		10500.00 0100	20.00	20000 00 1111		
	<u>uu.uuu sa</u>	00.00	6000.00	0.000	<u></u>	00.00 135	<u></u>	, 1600	0.00	10300.00 210	0.00			
	No.	Frec (N	quenc (Hz)	y	Factor dB/m)	Readir (dBuV	ng ')	Lev (dBu	vel V/m)	Limit (dBuV/m)	Margin (dB)	Detector		
Γ	1	488	32.214	-2.60 62.59 59.99 74.00 -14.01 peak										
	2	488	32.580)	-2.59	50.63	}	48.	.04	54.00	-5.96	AVG		
Rer 1.Fa	narks: actor (d	B/m) =	= Antei	nna Fa	actor (dB	/m)+Cab	le F	actor	(dB)-l	Pre-amplifie	er Factor			



Ant	. Pol.		Vertical	/ertical										
Tes	t Mode	:	TX 8-DPSK N	/lode 2441N	lHz									
Rer	nark:		No report for scribed limit.	the emission	n which mor	e than 20 d	B below	the pre-						
100.0) dBuV/m													
					FCC Pa	rt15 Class C 3M A	vbove-16 Pea	k						
50		*			FCC	Part15 Class C 3	Above-1G A	w						
50		X												
0.0 10	100.000 35	00.00 6000.00) 8500.00 110	00.00 13500.00) 16000.00	18500.00 2100	0.00	26000.00 MHz						
ſ	No.	Frequenc (MHz)	y Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector						
Γ	1	4881.18	4 -2.60	61.42	58.82	74.00	-15.18	peak						
	2	4881.86	5 -2.60	49.71	47.11	54.00	-6.89	AVG						
-														
Rer 1.Fa	narks: actor (d	B/m) = Ante	nna Factor (dB	/m)+Cable I	actor (dB)-	Pre-amplifie	er Factor							



Ant	. Pol.			Horiz	Horizontal											
Tes	t Mode	•		TX 8	-DPSK N	lode 248	30N	lHz								
Rer	nark:			No re scrib	eport for ed limit.	the emis	sio	n whic	h mor	e than 20	dB below	the pre-				
100.0) dBu∀/m		ĺ													
									FCC Pa	rt15 Class C 3M	Above-1G Pea	k				
		,							FCC	Part15 Class C	3M Above-1G A	NV				
50		Ś														
0.0	00 000 25	0.00	C000 0	0 050	0.00 110	00.00 125	00.0	100	0.00	10500.00 01	000.00	2000.00.00				
			0000.0		0.00 110	00.00 100	00.0	5 1000		10000.00 21		2000.00 11				
	No.	Frec (N	queno ИНz)	cy (Factor dB/m)	Readir (dBuV	ng ′)	Lev (dBu	vel V/m)	Limit (dBuV/m	Margin) (dB)	Detector				
Γ	1	496	60.35	2	2 -2.38 62.96 60.58 74.00 -13.42 peak											
	2	496	61.16	6	-2.38	50.77	'	48.	39	54.00	-5.61	AVG				
Rer 1.Fa	narks: actor (d	B/m) =	= Ante	enna Fa	actor (dB	/m)+Cab	le l	- actor	(dB)-	Pre-amplif	ier Factor					



Ant	. Pol.		Vertical										
Tes	t Mode	:	TX 8-DPSI	K Mode 2	480M	Hz							
Rer	nark:		No report f	or the em	issior	n which	mor	e than 20 d	B below t	the pre-			
100.0) dBuV/m		Scribed IIII										
							FCC Pa	rt15 Class C 3M A	bove-1G Pea	k			
50		2								·			
0.0	00.000.25		9500.00	11000 00 1	2500.00	1000	00 1	19500.00 2100	0.00	2000.00 MH-			
Г		5			1		-1	1					
	No.	(MHz)	ncy Factor Reading Level Limit Margin z) (dB/m) (dBuV) (dBuV/m) (dBuV/m) (dB) Detector										
	1	4960.86	5 -2.38 61.39 59.01 74.00 -14.99 peak										
	2	4961.32	0 -2.38	49.	86	47.4	18	54.00	-6.52	AVG			
David													
Rer 1.F	narks: actor (d	B/m) = Ante	nna Factor (dB/m)+C	able F	actor ((dB)-l	Pre-amplifie	r Factor				



3.3. Band Edge Emissions (Radiated)

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d):

Restricted Frequency Band	(dBuV/m	n)(at 3m)
(MHz)	Peak	Average
2310 ~2390	74	54
2483.5 ~2500	74	54

Conducted band edge limit: The highest point of the operating frequency waveform down 20dB

Test Configuration



Test Procedure

- 1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
- 2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
- 3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
- 4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
- The receiver set as follow: RBW=1MHz, VBW=3MHz Peak detector for Peak value. RBW=1MHz, VBW see note 1 with Peak Detector for Average Value.

Note 1: For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 3.9 Duty Cycle.

Test Mode

Please refer to the clause 2.4.



(1) Radiation Test

Ant	t. Pol.		Horiz	orizontal FSK Mode 2402MHz										
Tes	t Mode	:	GFS	K Mode 2	2402MHz									
100.0) dBuV/m	I				1		Î						
						FCC	Part15 RE-Class	8 Above 1G F	K					
50						FCC	Part15 RE-Class	B Above 1G A	v					
50								×						
				1										
0.0 22	257.250 22	72.25 2287.25	2302	2.25 2317	7.25 2332.25	5 2347.25	2362.25 2377	.25	2407.25 MHz					
	No.	Frequenc (MHz)	y (Factor dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector					
	1	2390.000)	30.84	17.10	47.94	74.00	-26.06	peak					
	2	2390.000)	30.84	4.86	35.70	54.00	-18.30	AVG					
Rer 1.F 2.M	marks: actor (d largin va	B/m) = Antei alue = Level	nna Fa -Limit	actor (dB/ value	/m)+Cable	Factor (dB)-	Pre-amplifie	er Factor						



nt.	nt. Pol. st Mode:			ertical									
est	t Mode	:	G	FSK Mode	e 2402MI	Ηz							
D.O	dBu¥/m								1				_
┝								FCC	Part15 RE	-Class	8 Above 1G	РК	
ł													
								FCC	D	Cl			
								FLL	Partis RE	-Liass	Above IG		
											×		
						_							
ľ	he magnesistered and a second s	niguestion to be followed as the	and the second	ngaldan ta'naka Managangan saan	nan ja j aran di dana kan da babilar	A garantee	affert an tarrent de la second	~******	and self an		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~~
22!	57.250 223	72.25 228	7.25	2302.25 2	317.25 2	332.25	234	7.25	2362.25	2377	.25	2407.	25
Г		Froque	DOV	Factor	Bood	ing			Lim		Margin	T	
	No.	(MHz	<u>z)</u>	(dB/m)	(dBu	iNg IV)	(dBu	V/m)	(dBu\	//m)	(dB)	Deteo	tor
	1	2390.0	000	30.84	16.6	64	47	.48	74.	00	-26.52	pea	ak
	2	2390.0	000	30.84	5.7	6	36	.60	54.	00	-17.40	AV	G

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



An	t. Pol.		Horizo	ontal								
Tes	st Mode):	GFSK	K Mode 2	2480 MH	Z						
100.	0 dBuV/m	1										
								FCC	Part15 RF.Class	R Above 1G P	ĸ	
								100			K	
								FCC	Part15 RE-Class	B Above 1G A	v	
50	1,											
	mar Lan	manus and a second a	markadende	www.	and the second sec	erun	lanulman klamati	~~*****	and an and the second	- Anna Martine	denter en starrande 19	
0.0	474.000 24	89.00 2504.00) 2519	.00 2534	1.00 2549	3 .00	2564	.00 2	2579.00 2594	l.00	2624.00 MHz	2
		Frequenc	VF	actor	Readin	a	Le ⁱ	vel	Limit	Margin		
	No.	(MHz)		dB/m)	(dBuV)	(dBu	V/m)	(dBuV/m)	(dB)	Detector	
	1	2483 50		31.24	16 10	<u>,</u>	47	34	74 00	-26.66	peak	
	ว	2402.50		21.24	5.24		26	50	F4.00	17.42	AVG	
	2	2403.00		51.24	0.54		30	.00	04.00	-17.42	AVG	
Re	marks:											

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



Ant	. Pol.		N	/ertical								
Tes	t Mod	le:	C	GFSK M	lode	2480 MH	Z					
100.0) dBuV.	/m				1				i	Ì	
									FCC	Part15 RE-Clas	B Above 1G I	РК –
									FCC	Part15 RE-Clas	B Above 1G /	v
50	1 X											
0.0												
24	74.750	2489.75 2	2504.75	2519.75	253	4.75 254	9.75	2564	1.75 2	2579.75 25	94.75	2624.75 MHz
Г		Frequ	iency	Fac	tor	Readir	na	le	vel	Limit	Margin	
	No.	(M	Hz)	(dB)	/m)	(dBuV	')	(dBu	V/m)	(dBuV/m) (dB)	Detector
1 2483.500 31.24 16.13 47.37 74.00 -26.63 peak										peak		
	2	2483	3.500	31.	24	5.21		36	.45	54.00	-17.55	AVG
L												
Rer	narks:	dD/m)	Antona	o Focto		(m) · Cab		Tootor		Dro omolif	or Footor	
	actor ((uB/m) = 1	Antenn		n (aB	/m)+Cab	ie i	-actor	(ap)-I	re-amplif	er Factor	



Ant	t. Pol.	bl. Horizontal σde: π/4-DOPSK Mode 2402MHz									
Tes	t Mode	:	π/4-[DQPSK N	Node 240	2MF	Ηz				
100.0) dBuV/m			1							
								FCC	Part15 RE-Class	B Above 1G P	κo
								FCC	Part15 RE-Class	B Above 1G A	v
50										1 *	
	and the families and the	anglanen distantation (mission)	n mandar da	,andrewskerroedskoord	en an		•••••••		en de la company de la comp	warman water	money word
0.0											
22	257.250 22	72.25 2287.25	5 230	2.25 231	7.25 2332	.25	2347.	25 2	2362.25 2377	7.25	2407.25 MHz
ſ		Frequence		Factor	Deadin	~	Lov		Limit	Morgin	
	No.	(MHz)	.y	dB/m)	(dBuV	9	dBu\	//m)	(dBuV/m)	(dB)	Detector
	1	2390.00		30.84	16.93	<u> </u>	47	77	74 00	-26.23	neak
	2 2390.000			20.94	10.00		25	70	54.00	10.20	AVG
l	2	2330.00	0	30.04	4.00		55.	10	54.00	-10.50	AVO
Rer	narks:										
1.F	actor (d	B/m) = Ante	nna Fa	actor (dB	/m)+Cabl	e Fa	actor	(dB)-l	Pre-amplifie	r Factor	



Ant. Pol. Vertical Test Mode: π/4-DOPSK Mode 2402MHz														
Tes	t Mode	:	π/4	4-DQPS	SK N	Node 240)2N	1Hz						
100.0) dBuV/m			1										1
														1
									FCC	Part15 RI	E-Class	B Above 1G F	ĸ	{
													A	
									FCC	Part15 RI	E-Class	B Above 1G A	v I	1
50												×		1
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														1
														-
0.0														
22	55.750 223	70.75 2285	.75 2	2300.75	231	5.75 2330).75	2345	i.75 2	2360.75	2375	i.75	2405.75	MHz
ſ	No	Frequer	ncy	Fact	or	Readin	ıg	Le	vel	Lin	nit	Margin	Detector]
	INO.	(MHz)	(dB/n	n)	(dBuV)	(dBu	V/m)	(dBu)	√/m)	(dB)	Detector	
	1	2390.0	00	30.8	4	17.40)	48.	.24	74.	00	-25.76	peak	
ľ	2	2390.0	00	30.8	4	5.17		36.	.01	54.	00	-17.99	AVG	1
Ľ			I									1		_
Rer	narks:	$B(m) = \Lambda m$	tonno	Factor		/m)+Cab		Factor		Drogon	onlific	r Factor		



An	t. Po	ol.			H	orizor	ntal										
Tes	st Mo	ode	:		π/	4-DC	PSK	Mode	248	0N	1Hz						
100.	0 dB	u¥/m															
	6											FCC	Part1	5 RE-Class	B Above 1G	PK	
												FCC	Part1	5 RE-Class	B Above 1G	AV	
50		1 X															
		2															
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0.0																	
2	474.00	0 24	39.00	2504.	00	2519.00) 25	34.00	2549.	.00	2564	l.00 :	2579.	00 2594	4.00	2624.00 N	Hz
			-			_	-	De	- dia	_					Manain	1	т
	No).	Freq (M	uen IHz)	су	Fa (dF	CLOF Vm)	(d	adin RuV)	9	(dBu	vei V/m)	(dF	LIMIC RuV/m)	(dB)	Detector	
	1		249	3.50	00	21	24	1	7 1 2	-	(UDU //8	37	(01	74.00	25.63	neak	ł
	2 2403.500			2	.24		EE	_	-10.	70		4.00	-20.00		ł		
	2		248	3.5	JU	3	.24	4	.55		35.	.79	;	54.00	-18.21	AVG	Ţ
Po	mork	· · ·															

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



Ant	. Pol.		Verti	cal							
Tes	t Mode	:	π/4-Ι	DQPSK N	lode 248	OM	Hz				
100.0) dBu∀/m										
							F	CC Pa	rt15 RE-Class	B Above 1G F	ж
	٨										
	Щ						F	CC Pa	rt15 RE-Class	B Above 1G A	W
50	X										
	2	La statistication and	the same of the second	-		No.	and the second second second	un	-	and the second secon	have been been a stored as
0.0	74 750 . 24	0.75	- 251	0.75	4.75	75	2EC4 7E	253	20.75 250	1.75	
24	14.730 24	03.73 2304.73	5 251	3.70 2034	4.73 2343	1.75	2064.70	237	3.70 2034	.73	2024.73 MHZ
ſ		Frequenc	v	Factor	Readin	a	Level		Limit	Margin	
	No.	(MHz)	<i>"</i>	(dB/m)	(dBuV)	(dBuV/m	1) (0	dBuV/m)	(dB)	Detector
	1	2483.50	0	31.24	15.75		46.99	/ (74.00	-27.01	peak
	2	2483.50	0	31.24	5.57		36.81		54.00	-17.19	AVG
										•	
Rer	narks:										
1.F	actor (d	B/m) = Ante	nna F	actor (dB	/m)+Cabl	le F	actor (dB	5)-Pr	e-amplifie	er Factor	



An	t. Pol.		Horiz	ontal					
Tes	st Mode	:	8-DP	SK Mode	e 2402MHz				
100.0	0 dBu∀/m								
						FCC	Part15 RE-Class	B Above 1G P	κn
						FCC	Part15 RE-Class	8 Above 1G A	v
50								1 X	
	and a second as a second second	Marabahan ana ang kanang ka	menshamm	and and a start of the start and and	vonden der mensendersker	dayayan analan karan da arangad	salaan ka maadaa ka ahaa ka aha	donan a stan a fit	energial WH
0.0									
22	257.250 22	72.25 2287.2	5 2302	2.25 231	7.25 2332.29	i 2347.25	2362.25 2377	.25	2407.25 MHz
ſ		F			D		1		
	No.	Frequent (MU-7)	cy	-actor	Reading	Level		Margin (dB)	Detector
	4		0	20.04	(ubuv)	(UDU V/III)			neek
	1	2390.00	0	30.84	10.00	47.50	74.00	-20.00	реак
	2	2390.00	0	30.84	4.97	35.81	54.00	-18.19	AVG

Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



Ant	. Pol.		Verti	cal							
Tes	t Mode	:	8-DF	SK Mode	e 2402MI	Hz					
100.0) dBu¥/m			ì	1						
								FCC	Part15 RE-Class	B Above 1G F	'K
								FCC	Part15 RE-Class	B Above 1G A	v
50										1 ¥	
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0.0											
22	55.750 22	70.75 2285.	75 230	0.75 231	5.75 2330).75	2345	5.75 2	2360.75 237	5.75	2405.75 MHz
ſ	Nie	Frequen	су	Factor	Readin	g	Le	vel	Limit	Margin	Detector
	NO.	(MHz)	((dB/m)	(dBuV)	(dBu	V/m)	(dBuV/m)	(dB)	Detector
ſ	1 2390.000 30.		30.84	16.71		47	.55	74.00	-26.45	peak	
ľ	2	2390.0	00	30.84	5.00		35.	.84	54.00	-18.16	AVG
L											
Rer	narks:	B/m) – Ant	onna F	actor (dR	/m)+Cab	ᄃ	Factor	(dB)-I	Pro-amplifie	r Factor	



Ant	. Pol.		Horiz	zontal							
Tes	t Mode	:	8-DP	SK Mode	e 2480M	Hz					
100.0) dBu∀/m	1		1		1					
	Δ							FCC	Part15 RE-Class	B Above 1G F	чК
								FCC	Part15 RE-Class	B Above 1G A	NV
50	1 X										
	W hoter	unpersonal production of the second	(ha) Angustanan	a-bainetherebailterebailte	analay ng ng ng ng Nasari		negasan dipertan	والمراجعين والأومريونية	and a stand and the second	*****	h. Marine and a second second
0.0											
24	76.250 24	91.25 2506.25	252	1.25 2530	6.25 2551	1.25	2566	6.25 2	2581.25 259	6.25	2626.25 MHz
	No.	Frequenc	y	Factor	Readin	g	Le	vel	Limit	Margin	Detector
		(MHZ)	(dB/m)	(dBuV)	(dBu	V/m)	(dBuV/m)	(dB)	
	1	2483.50)	31.24	16.15)	47	.39	/4.00	-26.61	peak
	2	2483.50	D	31.24	4.90		36	.14	54.00	-17.86	AVG
Rer	marks:										

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



Ant	. Pol.		Verti	cal									
Tes	t Mode	:	8-DP	SK Mode	e 2480MI	Hz							
100.0) dBuV/m	I		1	1								
								FEE	D-415		D About 10 D		
								FLL	Faitibi	JE-CI922	D ADOVE TO F	×	
								ECC	Part15	2E-Class	P Aboyo 16 A	M	
50	1							100	Taitist	IL Class			
	×												
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0.0 2/		89.00 2504.00	251	9.00 253/	4 00 2549	9 00	2564	00	2579.00	259/		2624 00 MH-	-
	114.000 24	00.00 2004.00	201	5.00 200	1.00 2.54	5.00	2001		2010.00	200		2024.00 14112	-
	No.	Frequenc (MHz)	y (Factor dB/m)	Readin (dBuV	ig ()	Le (dBu	vel V/m)	Li (dBu	mit ıV/m)	Margin (dB)	Detector	
	1	2483.500)	31.24	15.73	}	46.	97	74	00.4	-27.03	peak	
	2	2483.500)	31.24	5.58		36.	82	54	.00	-17.18	AVG	
												L	
Rer	narks:						_						

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor 2.Margin value = Level -Limit value



3.4. Band edge and Spurious Emissions (Conducted)

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d):In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

Test Configuration



Test Procedure

- 1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT transmit continuously
- Use the following spectrum analyzer settings: RBW = 100 kHz, VBW ≥ RBW, scan up through 10th harmonic.
 - Sweep = auto, Detector function = peak, Trace = max hold
- Measure and record the results in the test report.

Test Mode

Please refer to the clause 2.4.

Test Results

(1) Band edge Conducted Test

Test Mode	Antenna	ChName	Frequency (MHz)	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
		Low	2402	-0.05	-54.82	<=-20.05	PASS
	Ant1	High	2480	-1.34	-56.93	<=-21.34	PASS
DHS	Anti	Low	Hop_2402	-0.85	-58.97	<=-20.85	PASS
		High	Hop_2480	-1.28	-58.36	<=-21.28	PASS
		Low	2402	-1.25	-55.22	<=-21.25	PASS
2045	Apt1	High	2480	-2.44	-58.26	<=-22.44	PASS
2005	Anti	Low	Hop_2402	-2.35	-57.96	<=-22.35	PASS
		High	Hop_2480	-4.31	-59.00	<=-24.31	PASS
		Low	2402	-0.16	-54.88	<=-20.16	PASS
2045	Apt1	High	2480	-1.37	-57.63	<=-21.37	PASS
3005	Anti	Low	Hop_2402	-3.95	-58.67	<=-23.95	PASS
		High	Hop_2480	-4.15	-58.91	<=-24.15	PASS

















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CTC Laboratories, Inc. 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China Tel.: (86)755-27521059 中国国家认证认可监督管理委员会

creditation Administration of the People's Republic of China : yz.cnca.cn



(2) Conducted Spurious Emissions Test

Test Mode	Antenna	Frequency (MHz)	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
			Reference	-0.22	-0.22		PASS
		2402	30~1000	-0.22	-59.33	<=-20.22	PASS
			1000~26500	-0.22	-38.72	<=-20.22	PASS
			Reference	-1.29	-1.29		PASS
DH5	Ant1	2441	30~1000	-1.29	-59.39	<=-21.29	PASS
			1000~26500	-1.29	-40.81	<=-21.29	PASS
			Reference	-1.37	-1.37		PASS
		2480	30~1000	-1.37	-59.86	<=-21.37	PASS
			1000~26500	-1.37	-42.24	<=-21.37	PASS
			Reference	-1.58	-1.58		PASS
		2402	30~1000	-1.58	-60.13	<=-21.58	PASS
			1000~26500	-1.58	-41.09	<=-21.58	PASS
			Reference	-4.31	-4.31		PASS
2DH5	Ant1	2441	30~1000	-4.31	-60.32	<=-24.31	PASS
			1000~26500	-4.31	-41.59	<=-24.31	PASS
			Reference	-2.18	-2.18		PASS
		2480	30~1000	-2.18	-59.43	<=-22.18	PASS
			1000~26500	-2.18	-44.02	<=-22.18	PASS
			Reference	-1.33	-1.33		PASS
		2402	30~1000	-1.33	-59.34	<=-21.33	PASS
			1000~26500	-1.33	-41.00	<=-21.33	PASS
			Reference	-2.01	-2.01		PASS
3DH5	Ant1	2441	30~1000	-2.01	-59.58	<=-22.01	PASS
			1000~26500	-2.01	-41.89	<=-22.01	PASS
			Reference	-1.56	-1.56		PASS
		2480	30~1000	-1.56	-60.27	<=-21.56	PASS
			1000~26500	-1.56	-44.12	<=-21.56	PASS





DH5_Ant1_2441_0~Reference













Addred Spectrum Andyzer, Swept SA 21 RL 55 1030 AC SHOE NO Center Freq 2.402200000 GHz PRO: Wild arr Trig: Free Run Ref Offset 05 dB 10 dB/div Ref 20.50 dB 10 dB/di dB/div Ref 20.50 dB 10 dB/	114400M0x13,2021 Frequency Image Present Frequency Image Present Auto Tune 1.584 dBm Center Freq 2.402000000 GHz Start Freq 2.401250000 GHz Storp Freq 2.402750000 GHz Cef Step 150.000 Hz 150.000 Hz	
Center Freq 2.40200000 GHz PNO: Wide	1140000cet 13.021 Frequency Trequency Auto Tune -1.584 cBm Center Freq 2.401 832 0 GHz 2.40200000 GHz 2.40200000 GHz Start Freq 2.401250000 GHz Stop Freq 2.40250000 GHz Stop Freq 2.40250000 GHz Stop Freq 2.40250000 GHz Stop Freq 2.40250000 GHz Stop Freq	
Plot Wide	Center Freq 2.401 832 0 GHz -1.584 dBm Center Freq 2.40125000 GHz Start Freq 2.40125000 GHz Stop Freq 2.40275000 GHz Stop Freq 150.000 Hz	
Ref Offset 0.5 dB 10 dB/div 10 dB/div 10 s 10 s 1	2.401 832 0 GHz -1.584 dBm Center Freq 2.40200000 GHz Start Freq 2.401250000 GHz Stop Freq 2.40275000 GHz CF Step 150.000 Hz	
Ref Offset 0.5 dB Mikri Log 1 10.5 1 0.50 1	Start Freq 2.4017832 U GHz Center Freq 2.40200000 GHz Start Freq 2.401250000 GHz Stop Freq 2.402750000 GHz CF Step 150.000 MHz	
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	Start Freq 2.401250000 GHz Stop Freq 2.402750000 GHz CF Step 150.000 Hz	
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	2.401250000 GHz Stop Freq 2.402750000 GHz CF Step 150.000 kHz	
	Stop Freq 2.402750000 GHz CF Step 150.000 kHz	
	Stop Freq 2.402750000 GHz CF Step 150.000 Hz	
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49.5	150.000 kHz	
49.5		
49.5	Auto Man	
481.5		
	Freg Offset	
	0 Hz	
-63.5		
Center 2.4020000 GHz	Span 1.500 MHz	
#Res BW 100 kHz #VBW 300 kHz Sweep	1.000 ms (1001 pts)	
MSG	πus	
2DH5 Ant1 2402 30.1	000	
ZDED_AII(1_2402_30~1	000	
Agilent Spectrum Analyzer - Swept SA	0 11:41:05 AM Dec 13:2021	
Center Freq 515.000000 MHz #Avg Type: RMS	TRACE 123456 Frequency	
PNO: Fast →→→ Trig: Free Run Avg Hold: 10/10		
IP-baint.cow when we we	Mkr1 209 94 MHz Auto Tune	
	-60 128 dBm	
	Center Freq	
10.0	515.000000 MHz	
0.00		
	Start Freq	
-10.0	30.000000 MHz	
20.0	Stop Freq	
	1.00000000 GHz	
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200 Automatical and a statement of the stat		
Start 30.0 MHz	Stop 1.0000 GHz	
#Res BW 100 kHz #VBW 300 kHz Sweep	94.00 ms (30001 pts)	
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Adient Spectrum Analyzer - Swept SA Adient Spectrum Analyzer - Swept SA Adient Spectrum Analyzer - Swept SA Center Freq 13.750000000 CHz Program Advector Sd Ref Offset 5- dB Ref Offset 5- dB Add B Add B M	xr29.507 95 GHz 41 091 GHz xr2 9.507 95 GHz 41 091	
Atlent Spectrum Analyze - Swept SA 2DH5_Ant1_2402_1000~2 Atlent Spectrum Analyze - Swept SA Street Spectrum Analyze - Swept SA Di RL Spectrum Analyze - Swept SA Center Freq 13.750000000 GHz Havg Type: RMS PR0: Fast → Trig: Free Run #Avg Hold: 10/10 #Avg Hold: 10/10 Ref Offset0.5 dB M 10 dB/div Ref 20.00 dBm	26500 > 114199AMDet 13.2021 TRACE 11.23 4 Prequency Prequency Prequency Auto Tune -41.091 dBm	
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Addent Spectrum Analyzer - Swept SA W RL BF 500 AC SPECENT Center Freq 13.750000000 GHz PIO: Feat	26500 The second secon	
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Addent Spectrum Analyzer - Swept SA Add R & Bre 500 AC Spectrum / Analyzer - Swept SA W R & Bre 500 AC Spectrum / Automation PIO: Fost	26500 Trace IP 23 as the frequency the freq	
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CTC Laboratories, Inc. 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China Tel.: (86)755-27521059 下ax: (86)755-27521011 Http://www.sz-ctc.org.cn For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China : <u>yz.cnca.cn</u>



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Center 2.4800000 GHz	Span 1.500 MHz	
#Res BW 100 kHz #VBW 300 kHz	Sweep 1.000 ms (1001 pts)	
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2DH5_Ant1_24	480_30~1000	
Agilent Spectrum Analyzer - Swept SA	ALIGNAUTO 11:45:28 AM Dec 13 2021	
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