



 Report No.:
 18220WC30163201-M1
 FCC ID: 2AYYT-M8-MIC
 Page 1 of 39

# FCC Test Report

### Applicant

# : DONGGUAN LOYFUN INDUSTRIAL CO.,LTD

- Address
- Room 101,Building 2,No 54, Xikeng road,Puxin : village,Shipai town, Dongguan, Guangdong, China.
- Product Name : Wireless Microphone
- Report Date : Aug. 30, 2023



#### Shenzhen Anbotek Compliance Laboratory Limited

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Test Standard(s) : 47 CFR Part 15.247

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with above listed standard(s) requirements. This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt:

Aug. 03, 2023

Date of Test:

Anbotek

Aug. 03, 2023 to Aug. 18, 2023

Tu Tu Hong

Prepared By:

(TuTu Hong)

Idward pan

(Edward Pan)

Shenzhen Anbotek Compliance Laboratory Limited

Approved & Authorized Signer:

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### **Revision History**

Report Version			Description	Issued Date				
R00	nbotek Ant	otek	Original Issue.	Anbotek	Anbore	Aug. 29	9, 2023	Anbote
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otek Antotek	Anboten	Anbubote	k Anbotek	Anbore	otek P	Anbotek	Anboten	A Ho

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### 1. General Information

## 1.1. Client Information

Applicant	: DONGGUAN LOYFUN INDUSTRIAL CO.,LTD
Address	Room 101,Building 2,No 54, Xikeng road,Puxin village,Shipai town, Dongguan, Guangdong, China.
Manufacturer	: DONGGUAN LOYFUN INDUSTRIAL CO.,LTD
Address	Room 101,Building 2,No 54, Xikeng road,Puxin village,Shipai town, Dongguan, Guangdong, China.
Factory	: DONGGUAN LOYFUN INDUSTRIAL CO.,LTD
Address	Room 101,Building 2,No 54, Xikeng road,Puxin village,Shipai town, Dongguan, Guangdong, China.

### 1.2. Description of Device (EUT)

Product Name	:	Wireless Microphone
Test Model No.	:	M8-MIC hotek Anbolek Anbolek Anbolek Anbolek
Reference Model No.	:	M1-MIC, M26-MIC, M56PRO-MIC, M17-MIC, M19-MIC, M28-MIC, M65- MIC, A01-MIC, A8PRO-MIC (Note: All samples are the same except the model number & appearance color, so we prepare "M8-MIC" for test only.)
Trade Mark	:	N/A Anbotek Anbotek Anbotek Anbotek Anbotek
Test Power Supply	:	AC 120V/60Hz for Adapter/DC 3.7V Battery inside
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Adapter	:	N/A botek Anbotek Anbotek Anbotek Anbotek Anbotek
RF Specification		
Operation Frequency	:	2402MHz to 2480MHz
Number of Channel	:	79 ak Anbotek Anbotek Anbotek Anbotek
Modulation Type	:	GFSK, π/4 DQPSK
Antenna Type	:	PCB Antenna
		1.9 dBi (Provided by customer)

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### 1.3. Auxiliary Equipment Used During Test

Title	Manufacturer	Model No.	Serial No.
Xiaomi 33W adapter(RE)	Xiaomi Andorek	MDY-11-EX	SA62212LA04358J

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### 1.4. Description of Test Modes

	DV.								
Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
00 otek	2402	17	2419	34	2436	ex 51 pri	2453	68 K	2470
01 nbot	2403	18	2420	35	2437	52	2454	69	2471
× 02 💦	2404	19	2421	36	2438	53	2455	70	2472
o <sup>.</sup> 03	2405	20	2422	37 🕅	2439	54	2456	71 <sup>Anb</sup>	2473
04	2406	21	2423	38	2440	55	2457	72	2474
05	2407	22	2424	39	2441	56	2458	73	2475
06 nort	2408	23	2425	40°**	2442	57	2459	P 74	2476
07	2409	24	2426	41 mbot	2443	58	2460	75	2477
× 08	2410	25	2427	<sup>ek</sup> 42 m	2444	59	2461	76 <sup>4,000</sup>	2478
09	2411	26	2428	o <sup>16</sup> 43	2445	60 de	2462	77 A	2479
10	2412	27	2429	44 A	2446	61	2463	78	2480
11 hotel	2413	28	2430	45	2447	62	2464	Antone	Anna
12	2414	29	2431	46,001	2448	63	2465		
<sub>e</sub> ×13	2415	30	2432	e <sup>k</sup> 47 pm <sup>b</sup>	2449	64	2466		
.14	2416	31	2433	48	2450	65	2467	ALL ALL	
15.04	2417	32	2434	49	2451	66	2468 🔊	ootek	in the second
16	2418	33	2435	50	2452	67	2469		Anbu

### 1.5. Description of Test Modes

Pretest Modes	Descriptions
Andorek PTM1	Keep the EUT in continuously transmitting mode (non-hopping) with GFSK modulation.
TM2	Keep the EUT in continuously transmitting mode (non-hopping) with $\pi/4$ DQPSK modulation.
Anborret TM3 Anborret	Keep the EUT in continuously transmitting mode (hopping) with GFSK modulation,.
otek AnboTM4 Anbotek	Keep the EUT in continuously transmitting mode (hopping) with $\pi/4$ DQPSK modulation.

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### 1.7. Measurement Uncertainty

Parameter	Uncertainty
Conducted emissions (AMN 150kHz~30MHz)	3.8dB
Occupied Bandwidth	925Hz
Conducted Output Power	0.76dB
Conducted Spurious Emission	1.24dB
Radiated spurious emissions (above 1GHz)	1G-6GHz: 4.78dB; 6G-18GHz: 4.88dB 18G-40GHz: 5.68dB
Radiated emissions (Below 30MHz)	3.53dB
Radiated spurious emissions (30MHz~1GHz)	Horizontal: 3.92dB; Vertical: 4.52dB
This uncertainty represents an expanded uncertain confidence level using a coverage factor of k=2.	ty expressed at approximately the 95%

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### 1.8. Test Summary

Test Items	Test Modes	Status
Antenna requirement	An abotek Anboten	P
Conducted Emission at AC power line	Mode1,2	PAnbo
Occupied Bandwidth	Mode1,2	P An
Maximum Conducted Output Power	Mode1,2	nbot P
Channel Separation	Mode3,4	Anbot P
Number of Hopping Frequencies	Mode3,4	P
Dwell Time	Mode3,4	Panbo
Emissions in non-restricted frequency bands	Mode1,2,3,4	P An
Band edge emissions (Radiated)	Mode1,2	nbote P
Emissions in frequency bands (below 1GHz)	Mode1,2	Anbore
Emissions in frequency bands (above 1GHz)	Mode1,2	P
Note: P: Pass	Anbotek Anbotek	Anbore

N: N/A, not applicable

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### 1.9. Description of Test Facility

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

#### FCC-Registration No.:184111

Shenzhen Anbotek Compliance Laboratory Limited, 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 in our files. Registration No. 184111.

#### ISED-Registration No.: 8058A

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

#### Test Location

Shenzhen Anbotek Compliance Laboratory Limited. 1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518128

#### Shenzhen Anbotek Compliance Laboratory Limited

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### 1.10. Test Equipment List

	······································	PUP				
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
بم 1	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	2022-10-23	2023-10-22
ptek 2	Three Phase V- type Artificial Power Network	CYBERTEK	EM5040DT	E215040D T001	2023-07-05	2024-07-04
3	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	2022-10-13	2023-10-12
4	Software Name EZ-EMC	Farad Technology	ANB-03A	N/A N/A	rek / Anbotek	Anboisek
0.0		pribo. h.	otek prof	ale. Aun	ek abo	PK P

Maximum Conducted Output Power Channel Separation Number of Hopping Frequencies Dwell Time Emissions in non-restricted frequency bands Occupied Bandwidth

			K 60.				
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date	
1	MXG RF Vector Signal Generator	Agilent	N5182A	MY481806 56	2022-10-13	2023-10-12	
2	Power Meter	Agilent	N1914A	MY500011 02	2022-10-26	2023-10-25	
3	DC Power Supply	IVYTECH	IV3605	1804D360 510	2022-10-22	2023-10-21	
Anbu 4	MXA Spectrum Analysis	KEYSIGHT	N9020A	MY505318 23	2023-02-23	2024-02-22	
5	Oscilloscope	Tektronix	MDO3012	C020298	2022-10-19	2023-10-18	

	edge emissions (Ra sions in frequency ba	· · · · · · · · · · · · · · · · · · ·	Anbotek	Anboren	Anborek	Anbotek Anb
Item	Equipment	Model No.	Serial No.	Last Cal.	Cal.Due Date	
Anbo.	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	2022-10-23	2023-10-22
2	EMI Preamplifier	SKET Electronic	LNPA- 0118G-45	SKET-PA- 002	2022-10-13	2023-10-12
3	Double Ridged Horn Antenna	SCHWARZBECK	BBHA 9120D	02555	2022-10-16	2025-10-15
o <sup>xe</sup> 4	EMI Test Software EZ-EMC	SHURPLE	MANA	N/A	Anboten P	hobotek A
anb5 <sup>rek</sup>	Horn Antenna	A-INFO	LB-180400- KF	J21106062 8	2022-10-23	2023-10-22
6 Spectrum Analyzer		Rohde & Schwarz	FSV40-N	101792	2023-05-26	2024-05-25
7 40	Amplifier	Talent Microwave	TLLA18G40 G-50-30	23022802	2023-05-25	2024-05-24

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2

3

4

Anbo

Pre-amplifier

**Bilog Broadband** 

Antenna EMI Test Software

EZ-EMC

#### Report No.: FCC ID: 2AYYT-M8-MIC Page 13 of 39 18220WC30163201-M1 Emissions in frequency bands (below 1GHz) Model No. Serial No. Cal.Due Date Equipment Manufacturer Last Cal. Item 1 **EMI Test Receiver** Rohde & Schwarz ESR26 101481 2022-10-23 2023-10-22

310N P

VULB9163

N/A

186860

345

N/A

2022-10-23

2022-10-23

7

2023-10-22

2025-10-22

boy Ax

SONOMA

Schwarzbeck

SHURPLE

# Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek

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### 2. Antenna requirement

hotek Anbort	An intentional radiator shall be designed to ensure that no antenna other
And k hotek	than that furnished by the responsible party shall be used with the device.
Test Requirement:	The use of a permanently attached antenna or of an antenna that uses a
An otek anbot	unique coupling to the intentional radiator shall be considered sufficient to
an Aupr K	comply with the provisions of this section.

### 2.1. Conclusion

The antenna is a PCB antenna which permanently attached, and the best case gain of the antenna is 1.9 dBi . It complies with the standard requirement.

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### 3. Conducted Emission at AC power line

Test Requirement:	Refer to 47 CFR 15.207(a), Except section, for an intentional radiator public utility (AC) power line, the reback onto the AC power line on ar band 150 kHz to 30 MHz, shall no measured using a 50 µH/50 ohms (LISN).	that is designed to be con adio frequency voltage that by frequency or frequencie t exceed the limits in the fo	nected to the at is conducted s, within the ollowing table, as
abotek Anbore	Frequency of emission (MHz)	Conducted limit (dBµV)	Allingtek
	Anbo k botek Anbor	Quasi-peak	Average
Anbor An	0.15-0.5	66 to 56*	56 to 46*
Test Limit:	0.5-5 tek moote Ante	56 botek An	46
	5-30	60	50 ren And
	*Decreases with the logarithm of t	he frequency.	pri cotek ant
Test Method:	ANSI C63.10-2020 section 6.2	Anbotek Anboten	And
Procedure:	Refer to ANSI C63.10-2020 sectio line conducted emissions from unl		

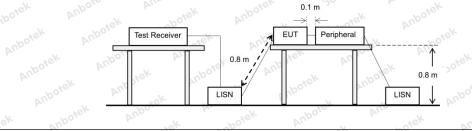
### 3.1. EUT Operation

#### **Operating Environment:**

Test	mode:
	200

1: TX-GFSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with GFSK modulation. 2: TX-π/4 DQPSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with  $\pi/4$  DQPSK modulation.

### 3.2. Test Setup



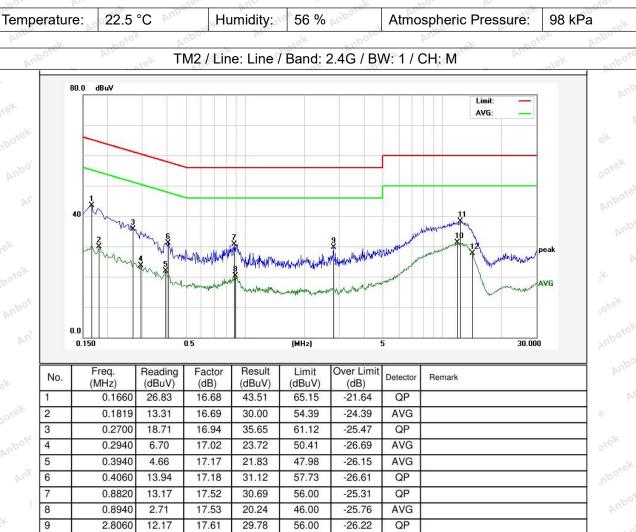
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### 3.3. Test Data



-18.72

-21.61

-22.26

AVG

QP

AVG

#### Shenzhen Anbotek Compliance Laboratory Limited

11.9379

12.3780

14.2860

10

11

12

13.64

20.73

9.99

17.64

17.66

17.75

31.28

38.39

27.74

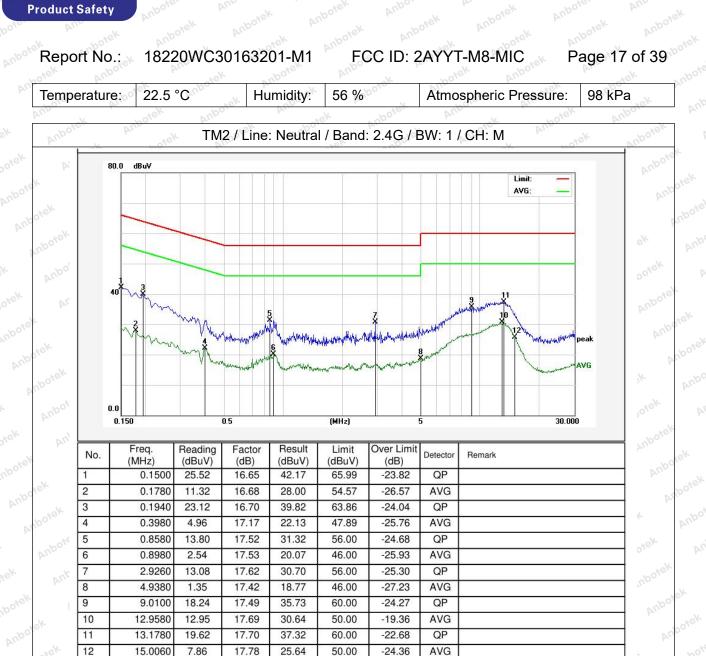
50.00

60.00

50.00

Address:1/F.,Building D,Sogood Science and Technology Park, Sanwei Community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China. Tel:(86)0755–26066440 Fax:(86)0755–26014772 Email:service@anbotek.com





AVG

Note: Only record the worst data in the report...

12

Anbotek

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### 4. Occupied Bandwidth

r h	NOIT AIT START NOT TO A NOT
Test Requirement:	47 CFR 15.215(c)
Test Limit:	Refer to 47 CFR 15.215(c), intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.
Test Method:	ANSI C63.10-2020, section 7.8.6, For occupied bandwidth measurements, use the procedure in 6.9.3. Frequency hopping shall be disabled for this test.
Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek	The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The following procedure shall be used for measuring 99% power bandwidth: a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW. b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be at least three times the RBW, unless otherwise specified by the applicable requirement. c) Set the reference level of the instrument as required, keeping the signal
Anbotek Anbotek A Anbotek Anbotek Anbotek Anbotek	from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.6.2. d) Step a) through step c) might require iteration to adjust within the
Procedure:	<ul> <li>specified range.</li> <li>e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max-hold mode (until the trace stabilizes) shall be used.</li> <li>f) Use the 99% power bandwidth function of the instrument (if available) and</li> </ul>
Anbotek Anbote	report the measured bandwidth. g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies. h) The occupied bandwidth shall be reported by providing spectral plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to
n abotek Anboter	the plot(s).

### 4.1. EUT Operation

Operating Environment:

#### Shenzhen Anbotek Compliance Laboratory Limited

Address: 1/F., Building D, Sogood Science and Technology Park, Sanwei Community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China. Tel:(86)0755-26066440 Fax:(86)0755-26014772 Email:service@anbotek.com





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Test mode:	<ol> <li>TX-GFSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with GFSK modulation.</li> <li>TX-π/4 DQPSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with π/4 DQPSK modulation.</li> </ol>							
Anbore Ante	k aboten		hotek					
4.2. Test Setup	tek hotek	Anbore	Andhotek	Anbotek	Anbo			

Anbotel

### 4.2. Test Setup

otek Anbotek	Anbotek	EUT		Spectrum Analyzer	2	botek	Anbotek A
Anbotek	Anbo. otek	Anbotek	Anbu	m- botek Ar	bore	Anbo.	Anbotek

Anbot

### 4.3. Test Data

Temperature:	24.3 °C	Humidity:	52 %	Atmospheric Pressure: 102 kPa

Please Refer to Appendix for Details.

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### 5. Maximum Conducted Output Power

Test Requirement:	47 CFR 15.247(b)(1)
Test Limit:	Refer to 47 CFR 15.247(b)(1), For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.
Test Method:	ANSI C63.10-2020, section 7.8.5
Anbotek Anbotek Anbotek Anbotek	This is an RF-conducted test to evaluate maximum peak output power. Use a direct connection between the antenna port of the unlicensed wireless device and the spectrum analyzer, through suitable attenuation. Frequency hopping shall be disabled for this test. Use the following spectrum analyzer settings:
Ante Antoriek Ant	<ul> <li>a) Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.</li> <li>b) RBW &gt; 20 dB bandwidth of the emission being measured.</li> </ul>
Anbotek Anbotek	<ul> <li>c) VBW ≥ RBW.</li> <li>d) Sweep: No faster than coupled (auto) time.</li> <li>e) Detector function: Peak.</li> </ul>
Procedure:	f) Trace: Max-hold. g) Allow trace to stabilize.
Anbo Anb	h) Use the marker-to-peak function to set the marker to the peak of the emission.
hotek Anbotek A	i) The indicated level is the peak output power, after any corrections for external attenuators and cables.
anbotek Anbotek	j) A spectral plot of the test results and setup description shall be included in the test report.
Anbotek Anbotel	NOTE—A peak responding power meter may be used, where the power meter and sensor system video bandwidth is greater than the occupied bandwidth of the unlicensed wireless device, rather than a spectrum
All otek Anbo	analyzer.

### 5.1. EUT Operation

Operating Environment:								
Anbot At.		GFSK (Non-Ho non-hopping)				tinuously tra	ansmitting	e.
Test mode:	2: ТХ-п	τ/4 DQPSK (N	on-Hopping)	: Keep the	e EUT i			
Anbo otek Anbote	v transmi	itting mode (no	on-hopping) \	with π/4 E	QPSK	modulation	botek	

### 5.2. Test Setup

Þ., .	Anbotek		EUT	с. 	Spectrum	Analyzer	) )	Anbotek
ž	Anbore		otek	Anboter	Anv-	. A	botek	Anboten

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Anbo



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### 5.4. Test Data

Temperature:	24.3 °C	Anbo	umidity:	52 %	Anboro	Atmospheric F	Pressure:	102 k	Pa
And	Lotek	Anbor	by.	*ek	abote.	Ann		<sup>SK</sup>	anbo.
Please Refer to	o Appendix	for Details.							

Please Refer to Appendix for Details.

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## 6. Channel Separation

Test Requirement:	47 CFR 15.247(a)(1)
Test Limit: http://www.andorek	Refer to 47 CFR 15.247(a)(1), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.
Test Method:	ANSI C63.10-2020, section 7.8.2
Procedure: Amborek Amborek Amborek Amborek Amborek Amborek Amborek Amborek Amborek Amborek Amborek	The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings: a) Span: Wide enough to capture the peaks of two adjacent channels. b) RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel. c) Video (or average) bandwidth (VBW) ≥ RBW. d) Sweep: No faster than coupled (auto) time. e) Detector function: Peak. f) Trace: Max-hold. g) Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. Compliance of an EUT with the appropriate regulatory limit shall be determined. A spectral plot of the data shall be included in the test report.

### 6.1. EUT Operation

Operating Environment:	K Anboter	Anu	nbotek	Anbor	k botek	Anbot
sek Anboite Ant	(hopping) with	lopping): Keep GFSK modulati	on,. And	et de	otek Anbo.	
Test mode:		SK (Hopping):			uously transm	nitting
botek Anbore P	mode (hopping	g) with π/4 DQP	SK modulat	ion.		otek
And						nbu

### 6.2. Test Setup

o <sup>te</sup>		nboi	UT	Spectrum A	nalyzer			Anb
1	6.3. Test Data	ek Anbotek	An- Anbotek	Anbotek K abotek	Anbur Anborok	Anbotek	Anbotek	-
[	Temperature:	24.3 °C	Humidity:	52 % M <sup>000</sup>	Atmospheric	Pressure:	102 kPa	<u>zek</u>

Please Refer to Appendix for Details.

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### 7. Number of Hopping Frequencies

Test Requirement:	47 CFR 15.247(a)(1)(iii)
Test Limit:	Refer to 47 CFR 15.247(a)(1)(iii), Fequency hopping systems in the 2400- 2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.
Test Method:	ANSI C63.10-2020, section 7.8.3
Procedure:	<ul> <li>The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:</li> <li>a) Span: The frequency band of operation. Depending on the number of channels the device supports, it could be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.</li> <li>b) RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.</li> <li>c) VBW ≥ RBW.</li> <li>d) Sweep: No faster than coupled (auto) time.</li> <li>e) Detector function: Peak.</li> <li>f) Trace: Max-hold.</li> <li>g) Allow the trace to stabilize.</li> </ul>
hotek Anbotek Anbotek Anbotek	It might prove necessary to break the span up into subranges to show clearly all of the hopping frequencies. Compliance of an EUT with the appropriate regulatory limit shall be determined for the number of hopping channels. A spectral plot of the data shall be included in the test report.

### 7.1. EUT Operation

Operating Environment:	botek						
potek Anbotek Anb	3: TX-GFSK (He (hopping) with 0			continuou	sly trans	mitting r	node
Test mode:	4: TX-π/4 DQPS	SK (Hopping):	Keep the E	EUT in cont	inuously	/ transmi	itting
Anbo k hotek	mode (hopping)	with π/4 DQI	SK modula	ation.	m' not		Inport
aboten Anb	Lotek I			hoter			

### 7.2. Test Setup

otek	Anbotek	Anbo	EUT	14. tu	Spectrum Ana	alyzer	otek Ano	nbotek Anbr
nborel		r	botek	Anbor	All.	Anboten		Anbore
7.3.	Test Data	otek	Anbotek	Anboten	k anbotek	Anbotek	Anbore	Anbotek

Temperature:	24.3 °C	Humidity:	52 %	Atmospheric Pressure:	102 kPa

Please Refer to Appendix for Details.

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# 8. Dwell Time

Test Requirement:	47 CFR 15.247(a)(1)(iii)
Test Limit:	Refer to 47 CFR 15.247(a)(1)(iii), Fequency hopping systems in the 2400- 2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.
Test Method:	ANSI C63.10-2020, section 7.8.4
Procedure: Anborek	The dwell time per hop on a channel is the time from the start of the first transmission to the end of the last transmission for that hop. If the device has a single transmission per hop then the dwell time is the duration of that transmission. If the device has a multiple transmissions per hop then the dwell time is measured from the start of the first transmission to the end of the last transmission. The time of occupancy is the total time that the device dwells on a channel over an observation period specified in the regulatory requirement. To determine the time of occupancy the spectrum analyzer will be configured to measure both the dwell time per hop and the number of times the device transmits on a specific channel in a given period. The EUT shall have its hopping function enabled. Compliance with the requirements shall be made with the minimum and with the maximum number of channels enabled. If the dwell time per channel does not vary with the number of channels than compliance with the requirements may be based on the minimum number of channels than compliance with the requirements may be based on the minimum number of channels. If the device supports different dwell times per channel (example Bluetooth devices can dwell on a channel for 1, 3 or 5 time slots) then measurements can be limited to the longest
k hotek Anbr	dwell time with the minimum number of channels.
	Use the following spectrum analyzer settings to determine the dwell time per hop:
	<ul> <li>a) Span: Zero span, centered on a hopping channel.</li> <li>b) RBW shall be ≤ channel spacing and where possible RBW should be set &gt;&gt; 1 / T, where T is the expected transmission time per hop.</li> <li>c) Sweep time: Set so that the start of the first transmission and end of the last transmission for the hop are clearly captured. Setting the sweep time to be slightly longer than the hopping period per channel (hopping period = 1/hopping rate) should achieve this.</li> <li>d) Use a video trigger, where possible with a trigger delay, so that the start of the transmission is clearly observed. The trigger level might need adjustment to reduce the chance of triggering when the system hops on an adjacent channel.</li> </ul>
Anbotek Anbotek Anbotek Anbot	<ul> <li>e) Detector function: Peak.</li> <li>f) Trace: Clear-write, single sweep.</li> <li>g) Place markers at the start of the first transmission on the channel and at the end of the last transmission. The dwell time per hop is the time between</li> </ul>

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FCC ID: 2AYYT-M8-MIC

ore Ant	der and the sole Ant der
Anbotek Anbotek	these two markers.
anbotek Anbote	To determine the number of hops on a channel in the regulatory observation
	period repeat the measurement using a longer sweep time. When the device uses a single hopping sequence the period of measurement should be
k hotek Anbot	sufficient to capture at least 2 hops. When the device uses a dynamic
And	hopping sequence, or the sequence varies, the period of measurement may
tek nooter Ant	need to capture multiple hops to better determine the average time of
o. A.	occupancy. Count the number of hops on the channel across the sweep
Inbotek Anborrek	time. ek Anbotek Anbotek Anbotek Anbotek
	The average number of hops on the same channel within the regulatory
All thek aboten	observation period is calculated from the number of hops on the channel
	divided by the spectrum analyzer sweep time multiplied by the regulatory
	observation period. For example, if three hops are counted with an analyzer
	sweep time of 500 ms and the regulatory observation period is 10 s, then the
prek Anbor Ar	number of hops in that ten seconds is $3 / 0.5 \times 10$ , or 60 hops.
	inbo h stek inbore Ant isk storet Anbo h
nbore Ans .ek	The average time of occupancy is calculated by multiplying the dwell time
hotek Anbore	per hop by the number of hops in the observation period.

### 8.1. EUT Operation

Operating Environment:	ak hotek	Anbote	And	k nbote	K Anbo.	pr po	
orek Anbotek Anbot	3: TX-GFSK (H (hopping) with	GFSK modu	lation,.		- No	hotek A	
Test mode:	4: TX-π/4 DQF	PSK (Hopping	g): Keep the	EUT in cont	inuously trar	nsmitting	
Notek hotek	mode (hopping) with $\pi/4$ DQPSK modulation.						
Anoter Anot	hotek A	nbo, p	-rek	anbote.	And	hotek	
8.2. Test Setup	Annotek	Anbotek	Anbo	abotek	Anbore	And	

### 8.2. Test Setup

EUT	-	Spectrum Analyz	er
v	worke.	An	-xeX

### 8.3. Test Data

Temperature:	24.3 °C	Humidity:	52 %	bote	Atmospheric Pressure:	102 kPa

Please Refer to Appendix for Details.

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Product Safety

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### 9. Emissions in non-restricted frequency bands

Test Requirement:	47 CFR 15.247(d)
Test Limit: Anborek Anborek Anborek Anborek Anborek Anborek Anborek	Refer to 47 CFR 15.247(d), In any 100 kHz bandwidth outside the frequence band in which the spread spectrum or digitally modulated intentional radiato 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, provided the transmitte demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in § 15.209(a) is not required.
Test Method:	ANSI C63.10-2020 section 7.8.7
	7.8.7.1 General considerations To demonstrate compliance with the relative out-of-band emissions requirements conducted spurious emissions shall be measured for the transmit frequencies, per 5.5 and 5.6, and at the maximum transmit powers Frequency hopping shall be disabled for this test with the exception of measurements at the allocated band-edges which shall be repeated with hopping enabled.
	Connect the primary antenna port through an attenuator to the spectrum analyzer input; in the results, account for all losses between the unlicensed wireless device output and the spectrum analyzer. The frequency range of testing shall span 30 MHz to 10 times the operating frequency and this may be done in a single sweep or, to aid resolution, across a number of sweeps. The resolution bandwidth shall be 100 kHz, video bandwidth 300 kHz, and a coupled sweep time with a peak detector.
Procedure:	The limit is based on the highest in-band level across all channels measure using the same instrument settings (resolution bandwidth of 100 kHz, video bandwidth of 300 kHz, and a coupled sweep time with a peak detector). To
Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek	help clearly demonstrate compliance a display line may be set at the required offset (typically 20 dB) below the highest in-band level. Where the highest in-band level is not clearly identified in the out-of-band measurements a separate spectral plot showing the in-band level shall be provided.
	When conducted measurements cannot be made (for example a device with integrated, non-removable antenna) radiated measurements shall be used. The reference level for determining the limit shall be established by maximizing the field strength from the highest power channel and measuring using the resolution and video bandwidth settings and peak detector as described above. The field strength limit for spurious emissions outside of restricted-bands shall then be set at the required offset (typically 20 dB) below the highest in-band level. Radiated measurements will follow the standards measurement procedures described in Clause 6 with the exception that the resolution bandwidth shall be 100 kHz, video bandwidth

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300 kHz, and a coupled sweep time with a peak detector. Note that use of wider measurement bandwidths are acceptable for measuring the spurious emissions provided that the peak detector is used and that the measured value of spurious emissions are compared to the highest in-band level measured with the 100 kHz / 300 kHz bandwidth settings to determine compliance.

#### 7.8.7.2 Band-edges

Compliance with a relative limit at the band-edges (e.g., -20 dBc) shall be made on the lowest and on the highest channels with frequency hopping disabled and repeated with frequency hopping enabled. For the latter test the hopping sequence shall include the lowest and highest channels.

For measurements with the hopping disabled the analyzer screen shall clearly show compliance with the requirement within 10 MHz of the allocated band-edge.

For measurements with the hopping enabled the analyzer screen shall clearly show compliance with the requirement within 10 MHz of both of the allocated band-edges. This could require separate spectral plots for each band-edge.

### 9.1. EUT Operation

Operating Environment:	And And botek Anbor An otek upoter And
oten And	1: TX-GFSK (Non-Hopping): Keep the EUT in continuously transmitting
atek anbote. An	mode (non-hopping) with GFSK modulation.
Nbo. A. otek	2: TX-π/4 DQPSK (Non-Hopping): Keep the EUT in continuously
botek Anbu	transmitting mode (non-hopping) with $\pi/4$ DQPSK modulation.
Test mode:	3: TX-GFSK (Hopping): Keep the EUT in continuously transmitting mode
Anbort Ant	(hopping) with GFSK modulation,
hotek Anboi	4: TX- $\pi/4$ DQPSK (Hopping): Keep the EUT in continuously transmitting
And be bote	mode (hopping) with $\pi/4$ DQPSK modulation.
ek nbore. And	ak hotek Anbo h stek mbote. And

### 9.2. Test Setup

Anbotek	FUT	Spectrum	Analyzer	- P	
Anboten		opcourant	Anaryzer		
aboten				abote	

### 9.3. Test Data

2	Temperature:	24.3 °C	Humidity:	52 %	Atmospheric Pressure:	102 kPa

Please Refer to Appendix for Details.

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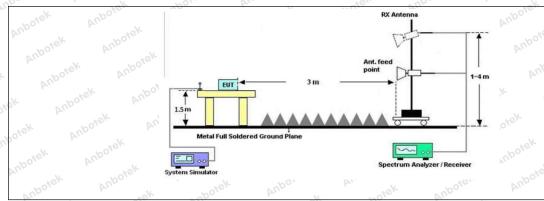
### 10. Band edge emissions (Radiated)

Test Requirement:	restricted bands, as defined	, In addition, radiated emissions d in § 15.205(a), must also comp ecified in § 15.209(a)(see § 15.2	ly with the woo					
k Anbotek Anbon	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)					
Anbotek Anbotek	0.009-0.490 0.490-1.705	2400/F(kHz) 24000/F(kHz)	300 30					
Anbotek Anbotek	1.705-30.0 30-88 88-216	30 100 ** 150 **	30 3 3					
Test Limit:	216-960 Above 960	200 ** 500	3 bote And 3 botek And					
nbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek	<ul> <li>** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g.,</li> <li>§§ 15.231 and 15.241.</li> </ul>							
Test Method:	ANSI C63.10-2020 section	6.10 Anbor ok An botek	Anboten And					
Procedure:	ANSI C63.10-2020 section	6.10.5.2	Anbotek Anbo					

### 10.1. EUT Operation

Operating Environment:	Anboin	Annovek	Anboten	Aups	atek	Anborek	Aupo.	. A
Anbotek Anbotek	mode (no	on-hopping)	opping): Kee with GFSK	modulation	1. poter	Ant	-V-	botek
Test mode:	Test mode: 2: TX-π/4 DQPSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with π/4 DQPSK modulation.							
tek Anboten Anbo	- Kelt	nbotek	Anbor	A''.	Pup	oter An	No tok	

### 10.2. Test Setup



#### Shenzhen Anbotek Compliance Laboratory Limited

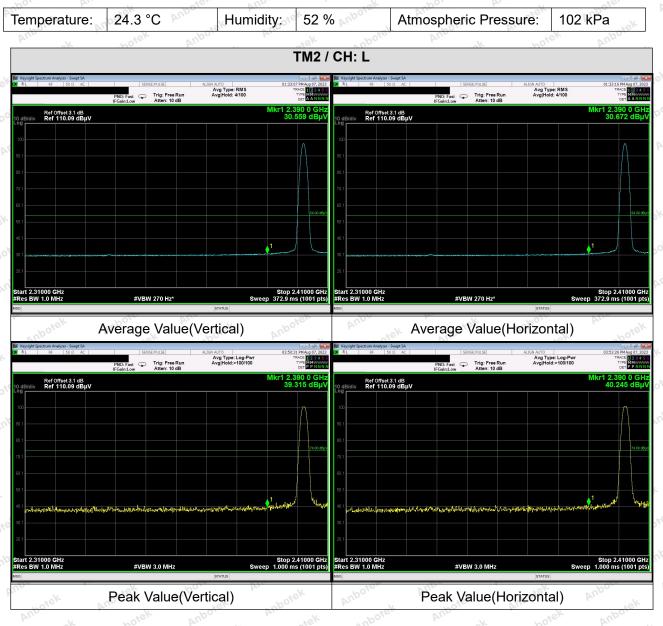
Address:1/F.,Building D,Sogood Science and Technology Park, Sanwei Community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China. Tel:(86)0755–26066440 Fax:(86)0755–26014772 Email:service@anbotek.com





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### 10.3. Test Data

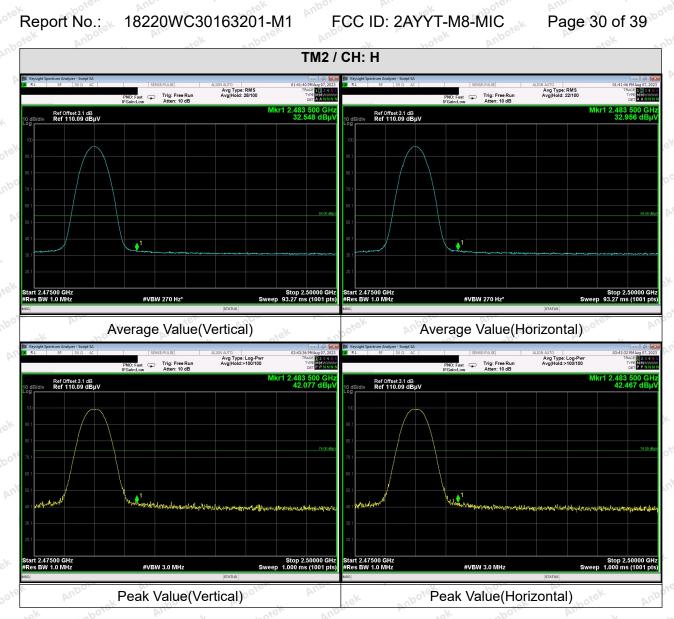


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#### Remark: Only the worst case is recorded in the report.

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### 11. Emissions in frequency bands (below 1GHz)

Test Requirement:	restricted bands, as defined	, In addition, radiated emissions d in § 15.205(a), must also comp ecified in § 15.209(a)(see § 15.20	ly with the 🔊				
k Anbotek Anbot	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)				
nbotek Anbotek	0.009-0.490 0.490-1.705	2400/F(kHz) 24000/F(kHz)	300 100 100 100 100 100 100 100 100 100				
Anbotek Anbore	1.705-30.0 30-88 88-216	30 100 ** 150 **	30 3 3				
Test Limit:	216-960 Above 960	200 ** 500	3 3				
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.							
Test Method:	ANSI C63.10-2020 section	6.6.4 hotek	Anbote. And				
Procedure:	ANSI C63.10-2020 section	6.6.4 And	Anbotek Anbo				

### 11.1. EUT Operation

Operating Environment	Anbor	Annotek	Anboter	Anbe	Hote	nbotek	Anbor	
Test mode:	mode (r 2: TX-π	non-hopping /4 DQPSK (	lopping): Ke ) with GFSK Non-Hoppin non-hopping	modulatio g): Keep th	n. ie EUT i	n continuou	isly Anto	otek
ek Anboten Anbo	- Notek	Anbotek	Anbort	Am	PUL	oten Al	horokek	 

#### Shenzhen Anbotek Compliance Laboratory Limited

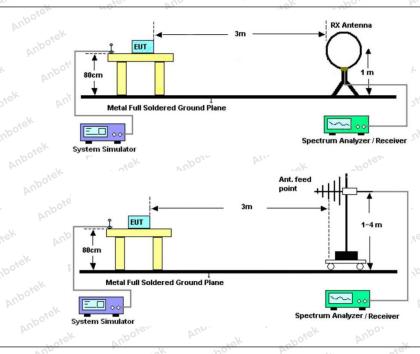
Address:1/F.,Building D,Sogood Science and Technology Park, Sanwei Community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China. Tel:(86)0755–26066440 Fax:(86)0755–26014772 Email:service@anbotek.com





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### 11.2. Test Setup



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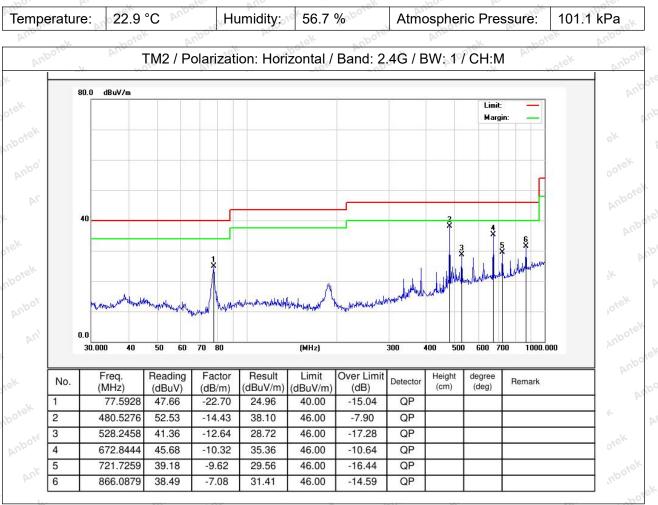




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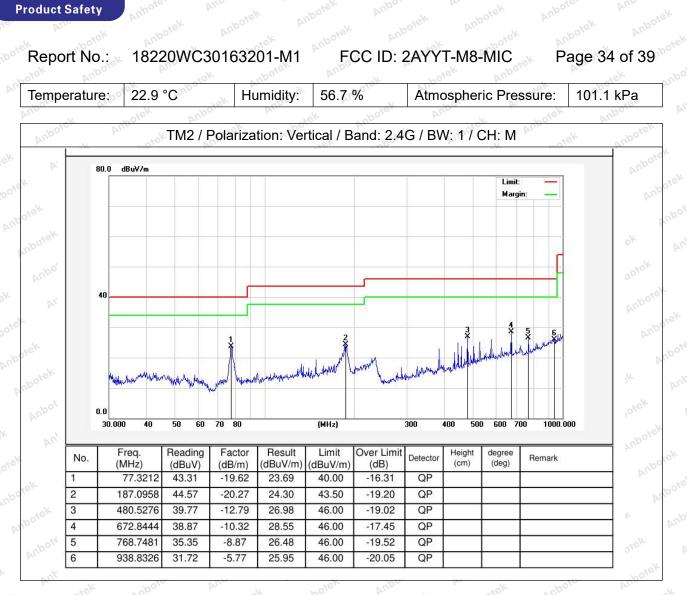
### 11.3. Test Data



#### **Shenzhen Anbotek Compliance Laboratory Limited**

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Note: Only record the worst data in the report..

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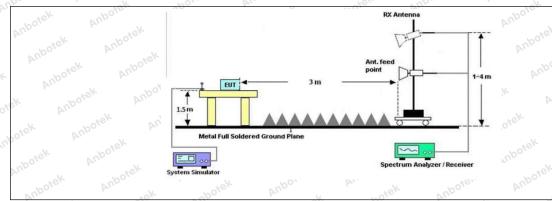
### 13. Emissions in frequency bands (above 1GHz)

Test Requirement:		ons which fall in the restricted background by the radiated emission $\overline{b}(c)$ .	
k Anbotek Anbon	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
v hotek	0.009-0.490	2400/F(kHz)	300 mbore
nboten Anbe	0.490-1.705	24000/F(kHz)	30
atek unboter	1.705-30.0	30° All alek mbo	30
Anboy k hotek	30-88	100 **	3rek Anbore
Tast Poten Anbo	88-216	150 **	3
Test Limit:	216-960	200 **	3 boten And
Anbo	Above 960	500 hotek Anbu	3 stek onb
nbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek	intentional radiators operati frequency bands 54-72 MH	ragraph (g), fundamental emissi ng under this section shall not b z, 76-88 MHz, 174-216 MHz or hese frequency bands is permitt	e located in the 470-806 MHz.
Test Method:	ANSI C63.10-2020 section	6.6.4	Anbotek Anbore
Procedure:	ANSI C63.10-2020 section	6.6.4 Anter Annu Lotek	Anbotek Anbo

### 13.1. EUT Operation

Operating Environment:	Anbor		k Anbote	Ano	atek.	nbotek	Anbo
Test mode:	mode (r	non-hopping	Hopping): Ke g) with GFSI (Non-Hoppir	K modulatic	on. pote		
Anbotek Anbotek	transmit	tting mode	(non-hopping	g) with π/4	DQPSK	modulation	botek Anbo

### 13.2. Test Setup



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### 13.3. Test Data

Temperature:	23.3 °C	AUPO	Humidity:	57.9 %	~	Atmospheric Pressure:	102 kPa
DUP	- ek	200.	Per.	V .	- OKO.	DUP	ek abo

		-	TM2 / CH: L			
Peak value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4804.00	27.46	15.27	42.73	74.00	-31.27	Vertical
7206.00	28.57	18.09	46.66	74.00	-27.34	Vertical
9608.00	29.49	23.76	53.25	74.00	-20.75	Vertical
12010.00	Anbote * Al	in the second	abotek Anb	74.00	otek Anbott	Vertical
14412.00	Anbo*ek	Anbo	-botek P	74.00	dek ont	Vertical
4804.00	27.81	15.27	43.08	74.00	-30.92	Horizontal
7206.00	28.85	18.09	46.94	74.00	-27.06	Horizontal
9608.00	28.36	23.76	52.12	74.00	-21.88	Horizontal
12010.00	potek * Anbo	int no	rek Anbote	74.00	Anborek	Horizontal
14412.00	botek* An	port Ant	stek unbo	74.00	welt bote	Horizontal

### Average value:

Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
4804.00	16.84	15.27	32.11	54.00	-21.89	Vertical
7206.00	17.60	18.09	35.69	54.00	-18.31	Vertical
9608.00	18.51	23.76	42.27 mbo	54.00	-11.73	Vertical
12010.00	n' notet	Anboten An	Jeck .	54.00 M <sup>00</sup>	. K M	Vertical
14412.00	Ann *	nbotek	Anbor A.	54.00	bote. Ann	Vertical
4804.00	16.16	15.27	31.43	54.00	-22.57	Horizontal
7206.00	17.91	18.09	36.00	54.00	-18.00	Horizontal
9608.00	17.67	23.76	41.43	54.00	-12.57	Horizontal
12010.00	dek *	otek Anbo.	ak not	54.00	Annatek	Horizontal
14412.00	100 <b>*</b>	botek Ant	oto Ano	54.00	ek Aupo.	Horizontal
		11-	10	07 r	V	la VIII

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		1	ГМ2 / СН: М			
Peak value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4882.00	27.48	15.42	42.90	74.00	-31.10 <sup>-100</sup>	Vertical
7323.00	28.42	18.02	46.44	74.00	-27.56	Vertical
9764.00	28.50	23.80	52.30	74.00	-21.70	Vertical
12205.00	ek * obotek	Anbore	prin wotek	74.00	Ano	Vertical
14646.00	* ~ ~ ~	rek Anbore	Aup	74.00	Anbore	Vertical
4882.00	27.51	15.42	42.93	74.00	-31.07	Horizontal
7323.00	28.84	18.02	46.86	74.00	-27.14	Horizontal
9764.00	28.06	23.80	51.86	74.00	-22.14	Horizontal
12205.00	* otek	Anboten	And	74.00	upor pr	Horizontal
14646.00	Art stok	nbotek	Anbor	74.00	Anboten	Horizontal
Average value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
4882.00	16.57	15.42	31.99	54.00	-22.01	Vertical
7323.00	17.70	18.02	35.72	54.00	-18.28 AM	Vertical
9764.00	18.37	23.80	42.17	54.00	-11.83	Vertical
12205.00	k Anbore	Ann	Anboten	54.00	abotek	Vertical
14646.00	otek * Anbot	Aupr	ek abotek	54.00	Arnotek	Vertical
4882.00	16.07	o <sup>161</sup> 15.42	31.49	54.00	-22.51	Horizontal
7323.00	17.47	18.02	35.49	54.00	-18.51	Horizontal
9764.00	18.18	23.80	41.98	54.00	500 <sup>-12.02</sup>	Horizontal
12205.00	Antorek	Anbo	abotek	54.00	wotek D	Horizontal
14646.00	* botek	Anbor	Mr. Stok	54.00	Anu	Horizontal

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#### Report No.: 18220WC30163201-M1 FCC ID: 2AYYT-M8-MIC TM2 / CH: H Peak value: Frequency Result Limit Line Over Limit Reading Factor polarization (MHz) (dBuV) (dBuV/m) (dBuV/m) (dB/m)(dB) 4960.00 43.33 27.75 15.58 74.00 -30.67 Vertical 7440.00 28.43 17.93 46.36 74.00 -27.64 Vertical -21.12 9920.00 29.05 23.83 52.88 74.00 Vertical \* 12400.00 74.00 Vertical \* P 74.00 Vertical 14880.00 4960.00 74.00 Horizontal 27.58 15.58 43.16 -30.84 7440.00 17.93 46.80 74.00 Horizontal 28.87 -27.20 9920.00 28.74 23.83 52.57 74.00 -21.43 Horizontal

### 14880.00 Average value:

12400.00

-						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
4960.00	17.69	15.58	33.27	54.00	-20.73	Vertical
7440.00	18.71	17.93	36.64	54.00	201 <sup>6-</sup> 17.36 M <sup>10</sup>	Vertical
9920.00	18.92	23.83	42.75	54.00	-11.25	Vertical Mo
12400.00	K * nbotek	Anbo	pri notek	54.00	Ann	Vertical
14880.00	* * * *	sk Anboro	Ann	54.00	Anbo	Vertical
4960.00	17.51	15.58	33.09	54.00	-20.91	Horizontal
7440.00	18.84	17.93	o <sup>tek</sup> 36.77 ph <sup>00</sup>	54.00	-17.23	Horizontal
9920.00	18.08	23.83	41.91	54.00 <sup>Mill</sup>	-12.09	Horizontal
12400.00	*otek	Anbore	Annatek	54.00	100 M	Horizontal
14880.00	All * otek	Anboten	Anberrok	54.00	Anbor	Horizontal

74.00

74.00

#### Remark:

- Result =Reading + Factor 1.
- 2. "\*" means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.
- Only the worst case is recorded in the report. 3.

\*

P.C\*O

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Horizontal

Horizontal



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### **APPENDIX I -- TEST SETUP PHOTOGRAPH**

Please refer to separated files Appendix I -- Test Setup Photograph\_RF

### APPENDIX II -- EXTERNAL PHOTOGRAPH

Please refer to separated files Appendix II -- External Photograph

### **APPENDIX III -- INTERNAL PHOTOGRAPH**

Please refer to separated files Appendix III -- Internal Photograph

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

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