

FCC ID: 2BCRG-AC136 182519C400054101 Page 1 of 41 Report No.:

# **FCC Test Report**

Shenzhen Dongshiduohe Technology Co.,Ltd **Applicant** 

2-801, Longjingxiaoqu, Yangmeishequ, Address Bantianjiedao, Shenzhenshi, China

**Product Name** AC136

: Jun. 28, 2024 **Report Date** 

Shenzhen Anbotek Con Anbotek



ce Laboratory Limited









Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 2 of 41

# **Contents**

1. Gene	ral Information	- 190tek - Al	poi	Volek	0000	48.0	YUP.	abotek
1.1. 1.2	Client Information Description of Devi	ce (EUT)	Vupose,	Anbo	hajr	potek	Anbo,	w Yupote
1.3	Auxiliary Equipmen	t Used During	Test		010r	VUD.	· · · · · · · · · · · · · · · · · · ·	de Yar
1.4.	Operation channel	list		- <sub>K</sub>		Anlante	Anb.	- tek
1.5	Description of Test  Measurement Unce	Modesertaintv	ek An	ote	. p.a	90	Stopy	
1.7	Measurement Unce Test Summary Description of Test	A A A		,,botek	Anbu		notek	anbore
Anb 1.8	Description of Test	Facility	00,	by.	, odny		'Up	1
1.9	Disclaimer	et voi	Anboie'		iek on	00/e/	14/00.	1
O Anton	Disclaimer	St Mak	Vupotek	AUD		spotek	Anbo	
Z. Anten	ına requirement			3k	//o/	-04e	anb	·
oter 2.1.	. Conclusion	4	V 071,	otek	Aupoier	····billo	-ek	4 1
3. Cond	ucted Emission at A EUT Operation Test Setup	C power line	YU.		botek	<u></u>	), , , , , , , , , , , , , , , , , , ,	1
3.1.	. EUT Operation		,ot <sup>ek</sup>	V <sub>DO</sub>	bi.		,bo <sup>ter</sup>	
3.2	Test Setup	160, K	work	Aupoter	4.00	ek	nbotek	1
Angio	Test Setup  Test Data  pied Bandwidth  EUT Operation  Test Setup	Anboye	Kby	" pot	Sk. Wul		hotek.	Aupote)
4. Occu	pied Bandwidth	npoyek.	Napo,	/r /r	oiek.	Aupore		
4.1.	EUT Operation	-,00log-	Allpore		otek.	VUpotek	Pupp.	1
5 Maxir	num Conducted Out	nut Power	*6¥	botek	Aupo	r Birn	~otek	Anboren 1
Anbolaxii	num Conducted Out EUT Operation Test Setup	nbotek OWOI Anb	9/-	hotek	Anbore	b.	, ek	anbotek 1
5.1	Test Setup	notek l	'Up Ogs.	Prov	400	0,67	VUON.	2
5.3	Test Data	Vu. Vak	Mpotek	Aupo		wotek.	Aupore	2
6. Chan	rest Setupnet Test Datanel Separation  EUT Operation  Test Setup	Aupo	r Loiel	Anb	,ore p	ru.	odas	2
61	FUT Operation							ootek Pa
6.2	Test Setup	<sup>9</sup> 10404	VUr.		botek	Aupo,		2
6.3	. Test Data		40 F	α <sup>lo</sup> ~			~07	Δ2
7. Numb	per of Hopping Frequ	iencies		Nupo <sub>ter</sub>	Ans.		- Potek	2
Anbo. 1.	EUT Operation	Pupoye, V.			k Aup		w. Wolek	2
7.2	Test Setup	otek	Vupo.		74ekk	Upo <sub>je</sub> .	Anr	,2
7.3	. Test Data		Anbote	4	otek	Uupokek.	kup	2
8. Dwell	Time	VII.	AUD.	,er	up.	2001	y	2
8.1.	EUT Operation	er Anbo	- OK	,botek	Mopore	b <sub>II</sub> .		2
.8.2 איני אור א	Test Setup	oolog Vilpo	-γ- γ	- work	Auporen	ball	"rek	2
0.3.	EUT Operation Test Setup Test Data Time EUT Operation Test Setup Test Data Sions in non-restricte EUT Operation  EUT Operation Test Setup	al feetau a a a a M	/p <sup>0</sup> / <sup>0</sup> /	W. J.	- 7/00	tek.	YUPO,	wotek o
9. ⊨miss	sions in non-restricte	u irequency b	ands	Woo.		hotek	Aupore	2ين کې
9.1.	EUT Operation	Pupo,	r. hotek	Antoo	14	, clek	- Nobele	2
9.3	Test Data	Aupake		ek	700 <u>46</u> %	P.How.	 6	2







Report No.: 182519C400054101	FCC ID: 2BCRG-AC136	Page 3 of 41
10. Band edge emissions (Radiated)	hotek Anbore And	29
10.1. EUT Operation10.2. Test Setup	Anborek Anborek An	29
10.3. Test Data  11. Emissions in frequency bands (below 1GHz)	) wek whodek Anborek	31
11.1. EUT Operation 11.2. Test Setup 11.3. Test Data	0	32 33 34
12. Emissions in frequency bands (above 1GHz		,.e.t
12.1. EUT Operation 12.2. Test Setup 12.3. Test Data	y Andrew Andrew Andrew Andrew	36 37 38
APPENDIX I TEST SETUP PHOTOGRAPH APPENDIX II EXTERNAL PHOTOGRAPH	Anborek pobolek	41 41





FCC ID: 2BCRG-AC136 Report No.: 182519C400054101 Page 4 of 41

# TEST REPORT

Shenzhen Dongshiduohe Technology Co.,Ltd Applicant

Manufacturer Dongguan Joy2Hear Electronics Co., Ltd

**Product Name** 

Model No. AC136, AC136-1, AC136-2

N/A Trade Mark

Input: 5V-Rating(s)

Battery Capacity: DC 3.7V, 1200mAh

47 CFR Part 15.247

ANSI C63.10-2020 Test Standard(s)

KDB 558074 D01 15.247 Meas Guidance v05r02

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 Mecelpt.	Juli: 05, 2024
abotek Anbotek Anbotek	Anbot Anbotek Anbotes Anbotek
Date of Test:	Jun. 03, 2024 to Jun. 18, 2024
Anbotek Anbotek Anbotek Anbotek Anbotek	Ella Liang
Prepared By:	potek Aupor All Jek Auporer An
otek Anbotek Anbotek Anbotek	(Ella Liang)
	Bolward pan
Approved & Authorized Signer:	And tek Anbore And tek abor
	(Edward Pan)





Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 5 of 41

# **Revision History**

	Report Version	Description	Issued Date
Ī	Anbore ROO gootek Ant	Original Issue.	Jun. 28, 2024
,e)	Anbotek Anbotek	Anbotek Anbotek Anbotek	k anbotek Anbotek Ant
10	otek Anborek Anborer	And Anbotek Anbotek Anbot	tiek Anbotek Anboter





FCC ID: 2BCRG-AC136 Report No.: 182519C400054101 Page 6 of 41

### 1. General Information

### 1.1. Client Information

	<u> </u>	No harmonia de la
Applicant	:	Shenzhen Dongshiduohe Technology Co.,Ltd
Address	:	2-801, Longjingxiaoqu, Yangmeishequ, Bantianjiedao, Shenzhenshi, China
Manufacturer	:	Dongguan Joy2Hear Electronics Co., Ltd
Address	:	No.38 Chuangye Road, Jiaolian, Wanjiang Subdistrict, Dongguan City, Guangdong Province, China
Factory	:	Dongguan Joy2Hear Electronics Co., Ltd
Address	:	No.38 Chuangye Road, Jiaolian, Wanjiang Subdistrict, Dongguan City, Guangdong Province, China

# 1.2. Description of Device (EUT)

_k hor A	11.	THE THE PARTY OF T
Product Name	:	AC136 And Andrew Andrew Andrew Andrew
Model No.	:	AC136, AC136-1, AC136-2 (Note: All samples are the same except the model number and appearance color, so we prepare "AC136" for test only.)
Trade Mark	:	N/A Anbotek Anbotek Anbotek Anbotek Anbotek Anbotek
Test Power Supply	:	DC 5V from adapter input AC 120V/60Hz; DC 3.7V battery inside
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Adapter	:	N/A'k Anborek Anborek Anborek Anborek
RF Specification		
Operation Frequency	:	2402MHz to 2480MHz
Number of Channel	:	79 Anbotek Anbotek Anbotek Anbo
Modulation Type	:	GFSK, π/4 DQPSK, 8DPSK
Antenna Type	:	PCB Antenna Antorek Antorek Antorek
Antenna Gain(Peak)	:	-0.58dBi Anborek Anborek Anborek Anborek

#### Remark:

- (1) All of the RF specification are provided by customer.(2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.







Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 7 of 41

# 1.3. Auxiliary Equipment Used During Test

Title Manufacturer		Model No.	Serial No.	
Xiaomi 33W adapter	Xiaomi	MDY-11-EX	SA62212LA04358J	

### 1.4. Operation channel list

Operation Band:

Operation E	Band:		oter Anbe		stek anb	0, 0,	1- 40-
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
Aupo 0	2402	20	2422	40	2442	60 to	2462
AULOGER	2403	210 rek	2423	41	2443	61	2463
2, nbores	2404	22 <sub>nb</sub> ote	2424	42	2444	62	2464 NO
iek 3 Anbo	2405	nek 23 Anb	2425	43	ore 2445 profes	63	2465
botek 4 A	2406	24	2426	44	2446	64	2466
mbot 5	2407	25	2427	45	2447	65	2467
6 tek	2408	26	2428	46	2448	66	2468
7 <sub>nbotek</sub>	2409	27 botel	2429	47	2449	67	2469
ek 8 Anbo	2410	28	2430	48	2450	68 Mario	2470
otek 9	2411 Pribe	29	2431	49	2451	o <sup>tel</sup> 69	2471
.10	2412	30	2432	nb <sup>ot</sup> 50	2452	Anb 70	2472
11ek	2413	And 31	2433	51	2453	A.71*e*	2473
12 nek	2414	32	2434	52	2454	72018	2474
13	2415	33	2435	53×nbot	2455	K 73 Anbot	2475
14	2416	34	2436	otek 54 Anb	2456	otek 74 An	2476
15	2417	35	2437	nb <sup>010</sup> 55	2457	75	2477
16	2418	Anbo 36	2438	56	2458	76	2478
Anbert 17	2419	37	2439	57	2459	77 otek	2479
18	2420	38	2440	58,00te	2460	78 nbot	2480
19	2421	39 Anbo	2441	tek 59 Anbe	2461	otek - Mul	otek - Anbo







Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 8 of 41

### 1.5. Description of Test Modes

Pretest Modes	Descriptions
Anborek TM1nboren A	Keep the EUT in continuously transmitting mode (non-hopping) with GFSK modulation.
TM2 Anborek	Keep the EUT in continuously transmitting mode (non-hopping) with π/4 DQPSK modulation.
otek Anborek	Keep the EUT in continuously transmitting mode (non-hopping) with 8DPSK modulation.
Inbotes And TM4 And	Keep the EUT in continuously transmitting mode (hopping) with GFSK modulation,.
Anborek TM5 borek Ar	Keep the EUT in continuously transmitting mode (hopping) with $\pi/4$ DQPSK modulation.
Anborek TM6 Anborek	Keep the EUT in continuously transmitting mode (hopping) with 8DPSK modulation.

## 1.6. Measurement Uncertainty

Uncertainty
3.4dBek Anborek Anborek
925Hz Jek Anborek
0.76dB botek Anbotek Anbotek Anbotek
1.24dB nbotek Anbotek Anb
1G-6GHz: 4.78dB; 6G-18GHz: 4.88dB 18G-40GHz: 5.68dB
3.53dBrek Anborek
Horizontal: 3.92dB; Vertical: 4.52dB

The measurement uncertainty and decision risk evaluated according to AB/WI-RF-F-032. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



www.anbotek.com.cn





Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 9 of 41

### 1.7. Test Summary

Test Items	Test Modes	Status
Antenna requirement	Anbotek / Anbote	Ant Potek
Conducted Emission at AC power line	Mode1,2,3	P
Occupied Bandwidth	Mode1,2,3	P P
Maximum Conducted Output Power	Mode1,2,3	P
Channel Separation	Mode4,5,6	hoo Pk
Number of Hopping Frequencies	Mode4,5,6	Anb P rek
Dwell Time	Mode4,5,6	P
Emissions in non-restricted frequency bands	Mode1,2,3,4,5,6	P <sup>Anba</sup>
Band edge emissions (Radiated)	Mode1,2,3	P An
Emissions in frequency bands (below 1GHz)	Mode1,2,3	nbore P
Emissions in frequency bands (above 1GHz)	Mode1,2,3	Anbore P. ok
Note: P: Pass N: N/A, not applicable	Anbotek Anbotek	Anbore

hbotek Anbotek Anbot

**Shenzhen Anbotek Compliance Laboratory Limited** 







Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 10 of 41

#### 1.8. Description of Test Facility

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

#### FCC-Registration No.:434132

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. 434132.

#### 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.

#### 1.9. Disclaimer

- The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
- 2. The test report is invalid if there is any evidence and/or falsification.
- 3. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
- 4. This document may not be altered or revised in any way unless done so by Anbotek and all revisions are duly noted in the revisions section.
- 5. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- 6. The authenticity of the information provided by the customer is the responsibility of the customer and the laboratory is not responsible for its authenticity.

The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.





FCC ID: 2BCRG-AC136 Report No.: 182519C400054101 Page 11 of 41

### 1.10. Test Equipment List

Cond	ucted Emission at A	C power line	Aupo	k hotel	Anbore	Andrek
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
. 1	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	2024-01-18	2025-01-17
otek 2	Three Phase V- type Artificial Power Network	CYBERTEK	EM5040DT	E215040D T001	2024-01-17	2025-01-16
30t	Software Name EZ-EMC	Farad Technology	ANB-03A	N/A	Alooiek	Anborek
4	EMI Test Receiver	Rohde & Schwarz	ESPI3	100926	2023-10-12	2024-10-11

Occupied Bandwidth

Maximum Conducted Output Power

Channel Separation

Number of Hopping Frequencies

**Dwell Time** 

Emissions in non-restricted frequency bands

Ite	em	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
ek ojek	1	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ- KHWS80B	N/A M	2023-10-16	2024-10-15
Noot	2	DC Power Supply	IVYTECH	IV3605	1804D360 510	2023-10-20	2024-10-19
V. VU	3ે <sup>ર</sup> ે	Spectrum Analyzer	Rohde & Schwarz	FSV40-N	101792	2024-05-06	2025-05-05
4	4.n <sup>b</sup>	MXA Spectrum Analysis	KEYSIGHT	N9020A	MY505318 23	2024-02-22	2025-02-21
	5	Oscilloscope	Tektronix	MDO3012	C020298	2023-10-12	2024-10-11
6		MXG RF Vector Signal Generator	Agilent	N5182A	MY474206 47	2024-02-04	2025-02-03

Hotline



Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 12 of 41

ote.	And	stek rupo.	N. Ok	pote.	AUS	iek
	edge emissions (Ra sions in frequency ba		Auporg	Anbotek	Aupotek	Anbotek
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1 00	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	2024-01-23	2025-01-22
2	EMI Preamplifier	SKET Electronic	LNPA- 0118G-45	SKET-PA- 002	2024-01-17	2025-01-16
3	Double Ridged Horn Antenna	SCHWARZBECK	BBHA 9120D	02555	2022-10-16	2025-10-15
nbote 4	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	Andotek	Aupolok
5	Horn Antenna	A-INFO	LB-180400- KF	J21106062 8	2023-10-12	2024-10-11
6	Spectrum Analyzer	Rohde & Schwarz	FSV40-N	101792	2024-05-06	2025-05-05
*e*7	Amplifier	Talent Microwave	TLLA18G40 G-50-30	23022802	2024-05-07	2025-05-06

Emiss	sions in frequency ba	ands (below 1GHz)				
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	2024-01-23	2025-01-22
. 2	Pre-amplifier	SONOMA	310N	186860	2024-01-17	2025-01-16
34	Bilog Broadband Antenna	Schwarzbeck	VULB9163	345	2022-10-23	2025-10-22
4ntel	Loop Antenna (9K- 30M)	Schwarzbeck	FMZB1519 B	00053	2023-10-12	2024-10-11
5,00	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A, Noot	y Aupon	k Anbotek



Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 13 of 41

# 2. Antenna requirement

Test Requirement:

Refer to 47 CFR Part 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to 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 - 0.58dBi . It complies with the standard requirement.





Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 14 of 41

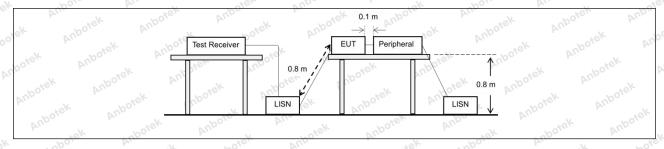
# 3. Conducted Emission at AC power line

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	that is designed to be con adio frequency voltage tha ny frequency or frequencie t exceed the limits in the f	nected to the at is conducted as, within the ollowing table, as
o h spoiek	(LISN).	Can duated limit (dD:\/)	Anbore
Aupore All.	Frequency of emission (MHz)	Conducted limit (dBµV)	Averego
sotek Anbo.	W. The Work William	Quasi-peak	Average
Test Limit:	0.15-0.5	66 to 56*	56 to 46*
rest Littit.	0.5-5 dek nabote Ame	56 hotel An	46
Ans above	5-30 And San	60	50 And
Anbore Air	*Decreases with the logarithm of t	he frequency.	
Test Method:	ANSI C63.10-2020 section 6.2	Anbores.	Aug Otek
Procedure:	Refer to ANSI C63.10-2020 section line conducted emissions from unline conducted emissions from the conducted emission		

# 3.1. EUT Operation

Operating Envi	ronment:	Aupore	Pur Potek	Anbotek	Vupo,	anboick .	Aupore
Test mode:	hopping) wit 2: TX-π/4-D	h GFSK mod QPSK (Non-	dulation. Hopping): K	eep the EUT	ntinuously trans in continuously	PLUP.	ek .
Anborek Anb	(non-hoppin 3: TX-8DPS hopping) wit	K (Non-Hop	oing): Keep t		ontinuously tran	nsmitting mo	de (non-

# 3.2. Test Setup



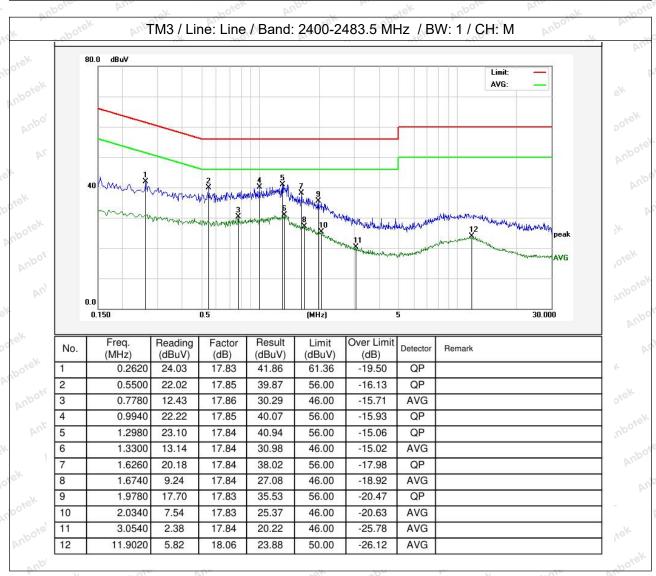




Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 15 of 41

#### 3.3. Test Data

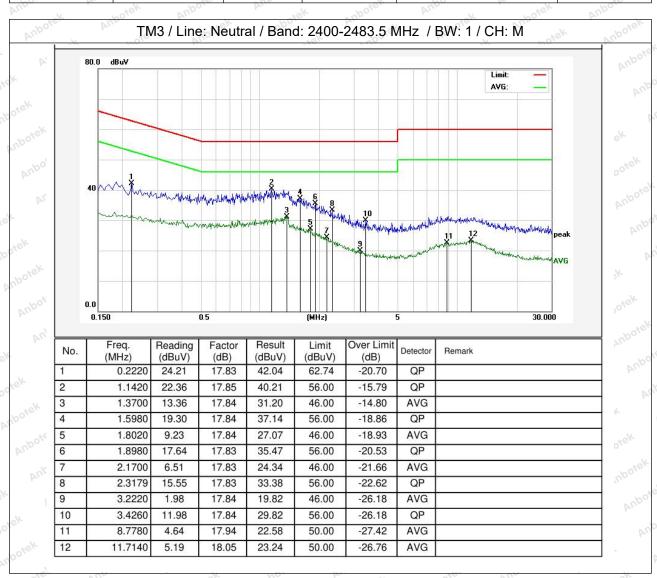
Temperature:	22.3 °C	Humidity	: 49.8 %	Atmospheric Pressure:	101 kPa
Temperature:	22.3 °C	Humidity	:   49.8 %	Atmospheric Pressure:	101 KPa





Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 16 of 41

Temperature: 22.3 °C Humidity: 49.8 % Atmospheric Pressure: 101 kPa



Note:Only record the worst data in the report.







Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 17 of 41

# 4. Occupied Bandwidth

Test Requirement:	47 CFR 15.247(a)(1)
Test Limit:  Anbotek  Anbotek  Anbotek  Anbotek  Anbotek	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. KDB 558074 D01 15.247 Meas Guidance v05r02
ek 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:
Anbotek Anbotek	<ul><li>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.</li></ul>
Aupotek Vupote	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 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.
Procedure:	d) Step a) through step c) might require iteration to adjust within the specified range.
	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.
oter Anbotek	f) Use the 99% power bandwidth function of the instrument (if available) and 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
stek Anbotek Anbo	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 the plot(s).

# 4.1. EUT Operation

Operating Environment:







Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 18 of 41

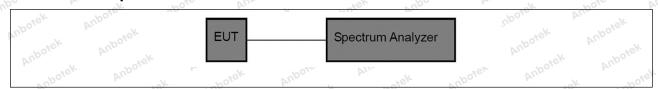
1: TX-GFSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with GFSK modulation.

Test mode:

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

3: TX-8DPSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with 8DPSK modulation.

### 4.2. Test Setup



### 4.3. Test Data

0	Temperature:	25.5 °C	Humidity:	47 %	Atmospheric Pressure:	101 kPa	

Please Refer to Appendix for Details.





Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 19 of 41

# 5. Maximum Conducted Output Power

Test Requirement:	47 CFR 15.247(b)(1)
Test Limit: Anborek	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 KDB 558074 D01 15.247 Meas Guidance v05r02
Anbotek Anbotek Anbotek Anbote	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:
potek Anbotek	<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	c) VBW ≥ RBW. d) Sweep: No faster than coupled (auto) time. e) Detector function: Peak.
Procedure:	f) Trace: Max-hold. g) Allow trace to stabilize.
otek Anbotek A	<ul><li>h) Use the marker-to-peak function to set the marker to the peak of the emission.</li><li>i) The indicated level is the peak output power, after any corrections for</li></ul>
Anbotek Anbotek	external attenuators and cables.  j) A spectral plot of the test results and setup description shall be included in the test report.
Anbotek Anbo	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

# 5.1. EUT Operation

Operating Envi	onment: Anborek Anborek Anborek Anborek
k Anborek	1: TX-GFSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with GFSK modulation.
Test mode:	2: TX- $\pi$ /4-DQPSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with $\pi$ /4 DQPSK modulation.
Vupotek Vupo	3: TX-8DPSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with 8DPSK modulation.

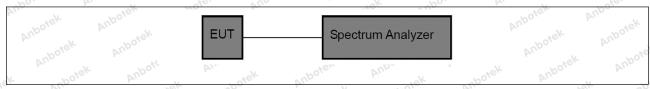






Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 20 of 41

### 5.2. Test Setup



#### 5.3. Test Data

10	Tomporaturo	25.5 °C	Humidita	47 %	Atmospheric Pressure:	101 kPa
	Temperature:	25.5 6	Humidity:	47 70	Aunosphenc Flessure.	101 kPa

Please Refer to Appendix for Details.





Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 21 of 41

# 6. Channel Separation

anbo r	About All Market Month of the Market Month
Test Requirement:	47 CFR 15.247(a)(1)
Anborek Anborek  Test Limit:  Anborek  Anborek  Anborek  Anborek	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 KDB 558074 D01 15.247 Meas Guidance v05r02
Anbotek Anb	The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:
Anbotek Anbotek	<ul> <li>a) Span: Wide enough to capture the peaks of two adjacent channels.</li> <li>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.</li> <li>c) Video (or average) bandwidth (VBW) ≥ RBW.</li> </ul>
Procedure:	d) Sweep: No faster than coupled (auto) time. e) Detector function: Peak.
potek Aupotek b	f) Trace: Max-hold. g) Allow the trace to stabilize.
Anbotek Anbotek Anbotek Anbotek	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 En	vironment:
voosek vu	4: TX-GFSK (Hopping): Keep the EUT in continuously transmitting mode (hopping) with GFSK modulation,.
Test mode:	5: TX- $\pi$ /4-DQPSK (Hopping): Keep the EUT in continuously transmitting mode (hopping) with $\pi$ /4 DQPSK modulation.
Aupolek	6: TX-8DPSK (Hopping): Keep the EUT in continuously transmitting mode (hopping) with 8DPSK modulation.

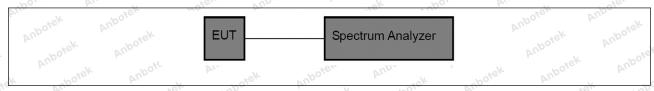






Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 22 of 41

#### 6.2. Test Setup



#### 6.3. Test Data

Temperature:	25.5 °C	Humidity:	47 %	Atmospheric Pressure:	101 kPa
. 2/0.12 2 : 2:12:12.12.1	=0.0		11 1/2	, m	10.111

Please Refer to Appendix for Details.





Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 23 of 41

# 7. Number of Hopping Frequencies

Test Requirement:	47 CFR 15.247(a)(1)(iii)
Test Limit:  Anbotek  Anbotek  Anbotek  Anbotek  Anbotek	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 KDB 558074 D01 15.247 Meas Guidance v05r02
Anbotek Anbot	The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:
	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.
	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.
Procedure:	c) VBW ≥ RBW. d) Sweep: No faster than coupled (auto) time.
	e) Detector function: Peak. f) Trace: Max-hold.
	g) Allow the trace to stabilize.
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 Envi	ronment:
Anboten Anb	4: TX-GFSK (Hopping): Keep the EUT in continuously transmitting mode (hopping) with GFSK modulation,.
Test mode:	5: TX- $\pi$ /4-DQPSK (Hopping): Keep the EUT in continuously transmitting mode (hopping) with $\pi$ /4 DQPSK modulation.
ek Aupotek	6: TX-8DPSK (Hopping): Keep the EUT in continuously transmitting mode (hopping) with 8DPSK modulation.

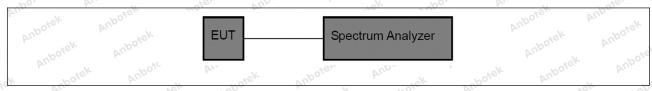






Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 24 of 41

### 7.2. Test Setup



### 7.3. Test Data

10	Tomporaturo	25.5 °C	Humidita	47 %	Atmospheric Pressure:	101 kPa
	Temperature:	25.5 6	Humidity:	47 70	Aunosphenc Flessure.	101 kPa

Please Refer to Appendix for Details.





Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 25 of 41

## 8. Dwell Time

Test Requirement:  47 CFR 15.247(a)(1)(iii)  Refer to 47 CFR 15.247(a)(1)(iii), Fequency hopping system 2483.5 MHz band shall use at least 15 channels. The averag occupancy on any channel shall not be greater than 0.4 secc period of 0.4 seconds multiplied by the number of hopping of employed. Frequency hopping systems may avoid or suppre transmissions on a particular hopping frequency provided that 15 channels are used.  ANSI C63.10-2020, section 7.8.4  KDB 558074 D01 15.247 Meas Guidance v05r02  The dwell time per hop on a channel is the time from the stat transmission to the end of the last transmission for that hop, a single transmission per hop then the dwell time is the dura transmission. If the device has a multiple transmissions per I dwell time is measured from the start of the first transmission the last transmission.  The time of occupancy is the total time that the device dwells over an observation period specified in the regulatory require determine the time of occupancy the spectrum analyzer will measure both the dwell time per hop and the number of time transmits on a specific channel in a given period.  The EUT shall have its hopping function enabled. Complianc requirements shall be made with the minimum and with the r number of channels than compliance with the requirement based on the minimum number of channels. If the devices and we for 1, 3 or 5 time slots) then measurements can be limited to dwell time sper channel (example Bluetooth devices can dwe for 1, 3 or 5 time slots) then measurements can be limited to dwell time with the minimum number of channels.  Use the following spectrum analyzer settings to determine the hop:  a) Span: Zero span, centered on a hopping channel. b) RBW shall be ≤ channel spacing and where possible RBV set > 1 / T, where T is the expected transmission time per h c) Sweep time: Set so that the start of the first transmission as last transmission for the hop are clearly captured. Setting the be slightly longer than the hopping period per channel (hopp 1/hopping ra	ek aboyen	Yu.,	. Foick	Aupo.	iek społek	anbor Arranio
Test Limit:  Test Limit:  Test Limit:  Test Limit:  Deriod of 0.4 seconds multiplied by the number of hopping of employed. Frequency hopping systems may avoid or suppre transmissions on a particular hopping frequency provided that 15 channels are used.  ANSI C63.10-2020, section 7.8.4  KDB 558074 D01 15.247 Meas Guidance v05r02  The dwell time per hop on a channel is the time from the stat transmission to the end of the last transmission for that hop, a single transmission per hop then the dwell time is the dural transmission. If the device has a multiple transmissions the last transmission the last transmission the last transmission the last transmission.  The time of occupancy is the total time that the device dwells over an observation period specified in the regulatory require determine the time of occupancy the spectrum analyzer will measure both the dwell time per hop and the number of time transmits on a specific channel in a given period.  The EUT shall have its hopping function enabled. Compliance requirements shall be made with the minimum and with the rumber of channels than compliance with the requirement based on the minimum number of channels. If the devices and dwell times per channel (example Bluetooth devices can dwell times per channel (example Bluetooth devices can dwell times per channel (example Bluetooth devices can be limited to dwell time with the minimum number of channels.  Use the following spectrum analyzer settings to determine the hop:  a) Span: Zero span, centered on a hopping channel. b) RBW shall be ≤ channel spacing and where possible RBV set >> 1 / T, where T is the expected transmission time per h c) Sweep time: Set so that the start of the first transmission a last transmission for the hop are clearly captured. Setting the be slightly longer than the hopping period per channel (hopp	- Vi	tek Auport	And	15.247(a)(1)(iii)	: 47 CFR 1	Test Requirement:
It knows to the end of the last transmission for that hop, a single transmission per hop then the dwell time is the dural transmission. If the device has a multiple transmission per hop then the dwell time is the dural transmission. If the device has a multiple transmission per howell time is measured from the start of the first transmission the last transmission.  The time of occupancy is the total time that the device dwells over an observation period specified in the regulatory require determine the time of occupancy the spectrum analyzer will measure both the dwell time per hop and the number of time transmits on a specific channel in a given period.  The EUT shall have its hopping function enabled. Complianc requirements shall be made with the minimum and with the number of channels enabled. If the dwell time per channel do the number of channels than compliance with the requirements based on the minimum number of channels. If the device suffer 1, 3 or 5 time slots) then measurements can be limited to dwell time with the minimum number of channels.  Use the following spectrum analyzer settings to determine the hop:  a) Span: Zero span, centered on a hopping channel.  b) RBW shall be ≤ channel spacing and where possible RBV set >> 1 / T, where T is the expected transmission time per hops and the stransmission for the hop are clearly captured. Setting the be slightly longer than the hopping period per channel (hopp	ge time of onds within a hannels ess	s. The average tir than 0.4 seconds of hopping chanr oid or suppress	at least 15 ch shall not be gr plied by the nu ing systems m	IHz band shall cy on any chan f 0.4 seconds m d. Frequency h sions on a parti	2483.5 M occupand period of employed transmiss	Test Limit:  Anborek  Anborek  Anborek  Anborek  Anborek  Anborek
transmission to the end of the last transmission for that hop. a single transmission per hop then the dwell time is the dura transmission. If the device has a multiple transmissions per h dwell time is measured from the start of the first transmission the last transmission.  The time of occupancy is the total time that the device dwells over an observation period specified in the regulatory require determine the time of occupancy the spectrum analyzer will I measure both the dwell time per hop and the number of time transmits on a specific channel in a given period.  The EUT shall have its hopping function enabled. Compliance requirements shall be made with the minimum and with the number of channels enabled. If the dwell time per channel do the number of channels than compliance with the requirement based on the minimum number of channels. If the device supplement to dwell times per channel (example Bluetooth devices can dwell times per channel (example Bluetooth devices can dwell time with the minimum number of channels.  Use the following spectrum analyzer settings to determine the hop:  a) Span: Zero span, centered on a hopping channel. b) RBW shall be ≤ channel spacing and where possible RBV set >> 1 / T, where T is the expected transmission time per hop sightly longer than the hopping period per channel (hopp)	ootek Anbotel	ok Anborek		Pro i	VC	Test Method:
over an observation period specified in the regulatory require determine the time of occupancy the spectrum analyzer will I measure both the dwell time per hop and the number of time transmits on a specific channel in a given period.  The EUT shall have its hopping function enabled. Compliant requirements shall be made with the minimum and with the r number of channels enabled. If the dwell time per channel do the number of channels than compliance with the requirement based on the minimum number of channels. If the device supplied well times per channel (example Bluetooth devices can dwell times per channel (example Bluetooth devices can dwell time with the minimum number of channels.  Use the following spectrum analyzer settings to determine the hop:  a) Span: Zero span, centered on a hopping channel.  b) RBW shall be ≤ channel spacing and where possible RBV set >> 1 / T, where T is the expected transmission time per horizontal contents. Setting the be slightly longer than the hopping period per channel (hopp	If the device ha ation of that hop then the	for that hop. If the is the duration nissions per hop	he last transm op then the dw nas a multiple	sion to the end transmission pe sion. If the devi e is measured	transmiss a single t transmiss dwell time	
requirements shall be made with the minimum and with the r number of channels enabled. If the dwell time per channel do the number of channels than compliance with the requirement based on the minimum number of channels. If the device supplements with the devices can dwell times per channel (example Bluetooth devices can dwell time with the minimum number of channels.  Use the following spectrum analyzer settings to determine the hop:  a) Span: Zero span, centered on a hopping channel. b) RBW shall be ≤ channel spacing and where possible RBV set >> 1 / T, where T is the expected transmission time per hop the supplements of the first transmission alast transmission for the hop are clearly captured. Setting the be slightly longer than the hopping period per channel (hopp	ement. To be configured to	llatory requirement analyzer will be c umber of times the	specified in the pancy the spec e per hop and	observation per le the time of oc both the dwell	over an o determine measure	
a) Span: Zero span, centered on a hopping channel. b) RBW shall be ≤ channel spacing and where possible RBV set >> 1 / T, where T is the expected transmission time per h c) Sweep time: Set so that the start of the first transmission a last transmission for the hop are clearly captured. Setting the be slightly longer than the hopping period per channel (hopp	maximum loes not vary witents may be lipports different liell on a channe	and with the maxi er channel does ne requirements r he device suppor vices can dwell or be limited to the	with the minimum. If the dwell not compliance the of channer ample Bluetocomessuremen	nents shall be more of channels enable of channels on the minimum les per channel or 5 time slots) the minimum of the minimum or 5 time slots) the minimum or 5 time slots) the minimum of the m	requirement number of the number of the number of dwell time for 1, 3 or	orbotek Anbotek Anbotek Anbotek Procedure: ek Anbotek
c) Sweep time: Set so that the start of the first transmission a last transmission for the hop are clearly captured. Setting the be slightly longer than the hopping period per channel (hopp	N should be	nnel. possible RBW sh	ed on a hoppir spacing and w	Zero span, cer shall be ≤ chan	a) Span: b) RBW s	
	and end of the e sweep time to	ransmission and ed. Setting the sw	the start of the p are clearly ca copping period	o time: Set so the smission for the ly longer than th	c) Sweep last trans be slightly	
d) Use a video trigger, where possible with a trigger delay, so the transmission is clearly observed. The trigger level might to reduce the chance of triggering when the system hops on channel.  e) Detector function: Peak.	need adjustmer	r level might need	re possible wit observed. The	video trigger, w mission is clear the chance of	d) Use a the transito reduce channel.	









Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 26 of 41

f) Trace: Clear-write, single sweep.

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 these two markers.

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 sufficient to capture at least 2 hops. When the device uses a dynamic hopping sequence, or the sequence varies, the period of measurement may need to capture multiple hops to better determine the average time of occupancy. Count the number of hops on the channel across the sweep time.

The average number of hops on the same channel within the regulatory 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 number of hops in that ten seconds is  $3 / 0.5 \times 10$ , or 60 hops.

The average time of occupancy is calculated by multiplying the dwell time per hop by the number of hops in the observation period.

### 8.1. EUT Operation

### Operating Environment:

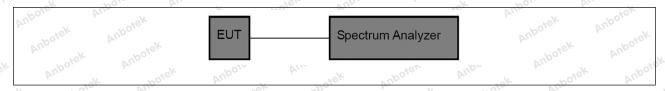
4: TX-GFSK (Hopping): Keep the EUT in continuously transmitting mode (hopping) with GFSK modulation..

Test mode:

5: TX- $\pi$ /4-DQPSK (Hopping): Keep the EUT in continuously transmitting mode (hopping) with  $\pi$ /4 DQPSK modulation.

6: TX-8DPSK (Hopping): Keep the EUT in continuously transmitting mode (hopping) with 8DPSK modulation.

#### 8.2. Test Setup



#### 8.3. Test Data

Temperature: 25.5 °C	Humidity: 47 %	Atmospheric Pressure:	101 kPa
----------------------	----------------	-----------------------	---------

Please Refer to Appendix for Details.







Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 27 of 41

# 9. Emissions in non-restricted frequency bands

Test Requirement:	47 CFR 15.247(d), 15.209, 15.205
Anbotek	Refer to 47 CFR 15.247(d), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter 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 KDB 558074 D01 15.247 Meas Guidance v05r02
	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: botek Anbotek	The limit is based on the highest in-band level across all channels measured 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 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.
ote Anbotek	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







Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 28 of 41

standards measurement procedures described in Clause 6 with the exception that the resolution bandwidth shall be 100 kHz, video bandwidth 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.

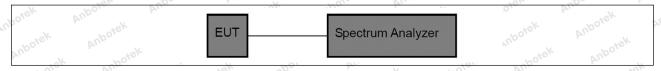
### 9.1. EUT Operation

# Operating Environment:

- 1: TX-GFSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with GFSK modulation.
- 2: TX- $\pi$ /4-DQPSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with  $\pi$ /4 DQPSK modulation.
- 3: TX-8DPSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with 8DPSK modulation.
- 4: TX-GFSK (Hopping): Keep the EUT in continuously transmitting mode (hopping) with GFSK modulation..
- 5: TX- $\pi$ /4-DQPSK (Hopping): Keep the EUT in continuously transmitting mode (hopping) with  $\pi$ /4 DQPSK modulation.
- 6: TX-8DPSK (Hopping): Keep the EUT in continuously transmitting mode (hopping) with 8DPSK modulation.

#### 9.2. Test Setup

Test mode:



#### 9.3. Test Data

Temperature: 25.5 °C Humidity:	47 %	Atmospheric Pressure: 101 kPa
--------------------------------	------	-------------------------------

Please Refer to Appendix for Details.

### Shenzhen Anbotek Compliance Laboratory Limited







Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 29 of 41

# 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	oly with the
tek Anbotek Anbo	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
botek Anbo	0.490-1.705	24000/F(kHz)	30
iek abotek	1.705-30.0	30	30 And
	30-88	100 **	3 ek
	88-216	150 **	3
	216-960	200 **	3 boten And
	10 <sup>th</sup> . 00 <sup>th</sup>	7	007
Test Limit:		│ 500 ragraph (g), fundamental emiss ing under this section shall not b	
Test Limit; otek Antotek Anbotek	** Except as provided in partitional radiators operated frequency bands 54-72 MHHowever, operation within sections of this part, e.g., § In the emission table above The emission limits shown employing a CISPR quasi-90 kHz, 110–490 kHz and a these three bands are base	aragraph (g), fundamental emiss ing under this section shall not b dz, 76-88 MHz, 174-216 MHz or these frequency bands is permit	ions from be located in the 470-806 MHz. ted under other band edges. measurements quency bands 9— ssion limits in
Test Limit; otek  Anbotek  Anbotek	** Except as provided in partitional radiators operated frequency bands 54-72 MHHowever, operation within sections of this part, e.g., § In the emission table above The emission limits shown employing a CISPR quasi-90 kHz, 110–490 kHz and at these three bands are based detector.	aragraph (g), fundamental emissing under this section shall not be lz, 76-88 MHz, 174-216 MHz or these frequency bands is permited 15.231 and 15.241.  The tighter limit applies at the being the above table are based on peak detector except for the frequency of the missing the section of the missing the missing the above 1000 MHz. Radiated emissing the missing them missing the missing the missing them missing the missing the missing the missing them missing t	ions from be located in the 470-806 MHz. ted under other band edges. measurements quency bands 9— ssion limits in
Test Method:	** Except as provided in partitional radiators operated frequency bands 54-72 MHHowever, operation within sections of this part, e.g., § In the emission table above The emission limits shown employing a CISPR quasi-90 kHz, 110–490 kHz and a these three bands are base	aragraph (g), fundamental emissing under this section shall not be lz, 76-88 MHz, 174-216 MHz or these frequency bands is permit § 15.231 and 15.241.  The entire the tighter limit applies at the being the above table are based on peak detector except for the free above 1000 MHz. Radiated emisted on measurements employing 6.10	ions from be located in the 470-806 MHz. ted under other band edges. measurements quency bands 9— ssion limits in

# 10.1. EUT Operation

Operating Env	rironment: orek Anborek Anborek Anborek Ar
upotek Aupo	1: TX-GFSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with GFSK modulation.
Test mode:	2: TX-π/4-DQPSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with π/4 DQPSK modulation.
Vi. Vipotek	3: TX-8DPSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with 8DPSK modulation.

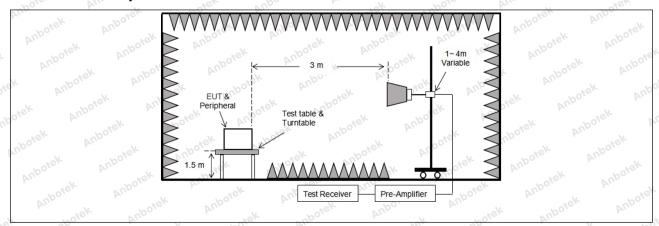






Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 30 of 41

### 10.2. Test Setup



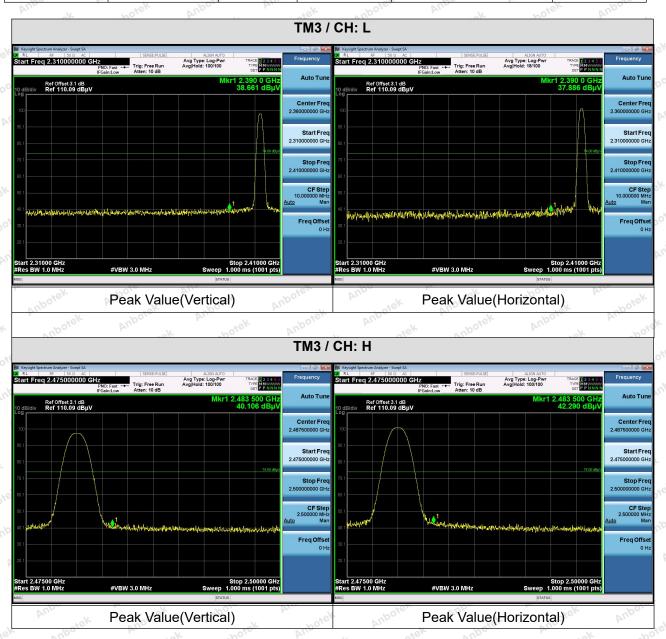




Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 31 of 41

#### 10.3. Test Data

Temperature: 25.5 °C Humidity: 47 % Atmospheric Pressure: 101 kPa



#### Remark

- 1. During the test, pre-scan all modes, the report only record the worse case mode.
- 2. When the PK measure result value is less than the AVG limit value, the AV measure result values test not applicable.







Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 32 of 41

# 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 § 15.2	ply with the
tek Unpotek Wupo,	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
botek Anbo.	0.490-1.705	24000/F(kHz)	30 stell
	1.705-30.0	30	30
	30-88	100 **	3.ek nbore
	88-216	150 **	3
	216-960	200 **	3 botel And
	AL COOLET AND	F00 ok 1001	10
Test Limit:		│ 500 aragraph (g), fundamental emiss ing under this section shall not b	
Test Limit; otek Antorek Antorek Anborek Anbor	** Except as provided in partitional radiators operated frequency bands 54-72 MHHowever, operation within sections of this part, e.g., § In the emission table above the emission limits shown employing a CISPR quasi-90 kHz, 110–490 kHz and a these three bands are base	aragraph (g), fundamental emiss ing under this section shall not b dz, 76-88 MHz, 174-216 MHz or these frequency bands is permit	ions from be located in the 470-806 MHz. ted under other band edges. measurements quency bands 9— ssion limits in
Test Limit potek  Anbotek	** Except as provided in partitional radiators operated frequency bands 54-72 MHHowever, operation within sections of this part, e.g., § In the emission table above The emission limits shown employing a CISPR quasi-90 kHz, 110–490 kHz and significant contents.	aragraph (g), fundamental emissing under this section shall not be lz, 76-88 MHz, 174-216 MHz or these frequency bands is permit § 15.231 and 15.241.  The in the above table are based on peak detector except for the frequency bands is permit applies at the line the above 1000 MHz. Radiated emissing under the section in the section in the frequency above 1000 MHz. Radiated emissing under the section is section.	ions from be located in the 470-806 MHz. ted under other band edges. measurements quency bands 9— ssion limits in
Test Method:	** Except as provided in partitional radiators operated frequency bands 54-72 MHHowever, operation within sections of this part, e.g., § In the emission table above the emission limits shown employing a CISPR quasi-90 kHz, 110–490 kHz and a these three bands are base	aragraph (g), fundamental emissing under this section shall not be lz, 76-88 MHz, 174-216 MHz or these frequency bands is permit § 15.231 and 15.241.  The entire tighter limit applies at the limit he above table are based on peak detector except for the free above 1000 MHz. Radiated emisted on measurements employing 6.6.4	ions from be located in the 470-806 MHz. ted under other band edges. measurements quency bands 9— ssion limits in

# 11.1. EUT Operation

Operating Env	ronment: orek Anborek Anborek Anborek Ar
ubotek Vupor	1: TX-GFSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with GFSK modulation.
Test mode:	2: TX- $\pi$ /4-DQPSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with $\pi$ /4 DQPSK modulation.
Anbotek	3: TX-8DPSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with 8DPSK modulation.

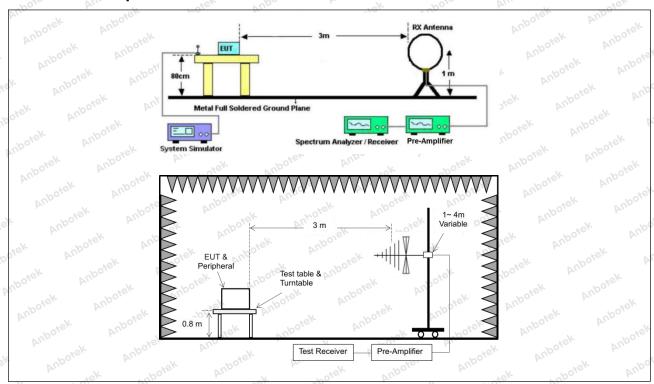






Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 33 of 41

### 11.2. Test Setup





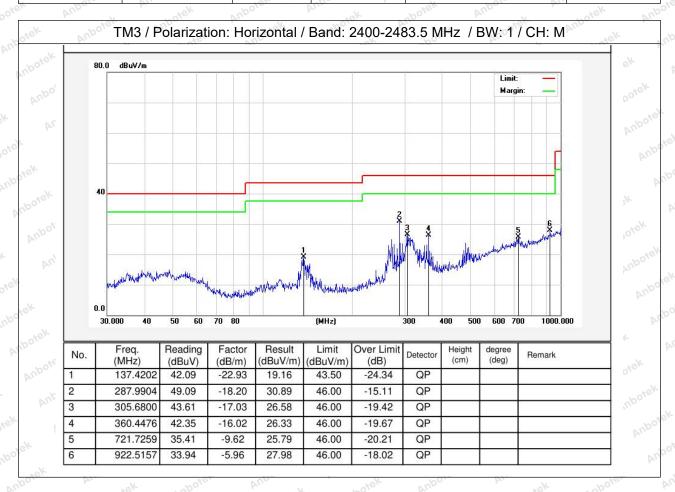


Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 34 of 41

#### 11.3. Test Data

The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.

Temperature:	20.3 °C	Humidity:	46 %	Atmospheric Pressure:	101 kPa

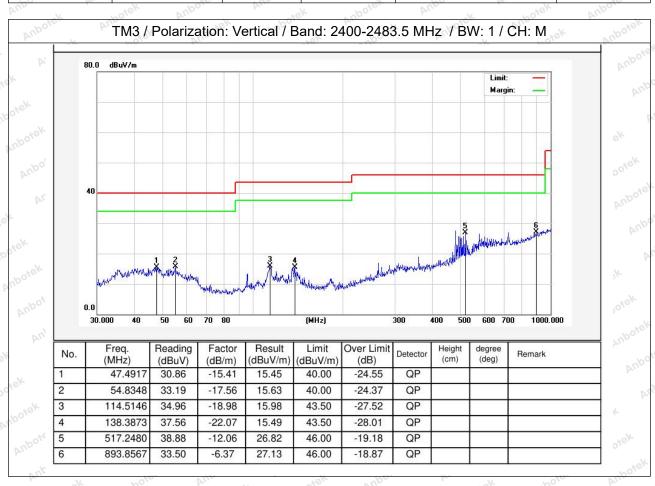






Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 35 of 41

Temperature: 20.3 °C Humidity: 46 % Atmospheric Pressure: 101 kPa



Note:Only record the worst data in the report.









Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 36 of 41

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

20 L	POL VILLE	ter upo	ak hore
Test Requirement:		ons which fall in the restricted ba omply with the radiated emission	
Anbore Anbor	in § 15.209(a)(see § 15.205		up,
k Anbotek Anbot	Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
	0.009-0.490	2400/F(kHz)	300
abotek Anbo	0.490-1.705	24000/F(kHz)	30 John March
	1.705-30.0	30	30
	30-88	100 **	3,ek abore
	88-216	150 **	3
	216-960	200 **	3 boten And
	Above 960	500 Mark Anbor	3 304 01
	frequency bands 54-72 MH However, operation within to sections of this part, e.g., § In the emission table above The emission limits shown employing a CISPR quasi-part of the emission bands are based these three bands are based.	ng under this section shall not be z, 76-88 MHz, 174-216 MHz or hese frequency bands is permitt § 15.231 and 15.241.  The tighter limit applies at the bein the above table are based on beak detector except for the frequency above 1000 MHz. Radiated emisted on measurements employing	470-806 MHz. ed under other eand edges. measurements uency bands 9— esion limits in
boten And	detector.	Tek npoter And	k hotek
Test Method:	ANSI C63.10-2020 section KDB 558074 D01 15.247 M		otek Anbotek
Procedure:	ANSI C63.10-2020 section	6.6.4 Anbores An	otek Anbote
		6.11	

# 12.1. EUT Operation

Operating Env	rironment: orek Anborek Anborek Anborek Ar
upotek Aupo	1: TX-GFSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with GFSK modulation.
Test mode:	2: TX-π/4-DQPSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with π/4 DQPSK modulation.
Vi. Vipotek	3: TX-8DPSK (Non-Hopping): Keep the EUT in continuously transmitting mode (non-hopping) with 8DPSK modulation.

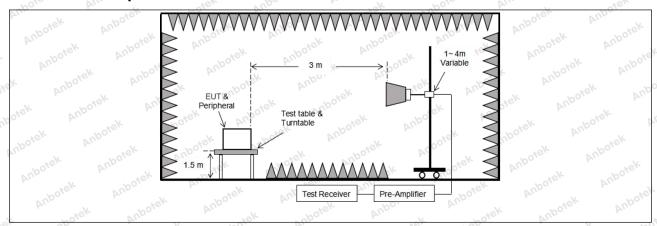






Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 37 of 41

### 12.2. Test Setup







Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 38 of 41

### 12.3. Test Data

Temperature: 24.4 °C	Humidity: 48.2 %	Atmospheric Pressure:	101 kPa
----------------------	------------------	-----------------------	---------

	Po, b,		TM2 / CU. I	·	- NO.	hy,	
TM3 / CH: L							
Peak value:							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization	
4804.00	29.33	15.27	44.60	74.00	-29.40	Vertical	
7206.00	30.13	18.09	48.22	74.00	-25.78	Vertical	
9608.00	31.69	23.76	55.45	74.00	-18.55	Vertical	
12010.00	Aupote * At	iek .	abotek Anb	74.00	otek Anbote	Vertical	
14412.00	"Upo*sk	Anbo	hotek P	74.00	otek ont	Vertical	
4804.00	29.52	15.27	44.79	74.00	-29.21	Horizontal	
7206.00	31.10	18.09	49.19	74.00	-24.81	Horizontal	
9608.00	29.16	23.76	52.92	74.00	-21.08	Horizontal	
12010.00	otek * Aupo	-k 20	iek Aupote	74.00	· nbotek	Horizontal	
14412.00	notek* An	boye Vur	iek inbo	74.00	ok hote	Horizontal	
Average value:							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization	
4804.00	18.71	15.27	33.98	54.00	-20.02	Vertical	
7206.00	19.16	18.09	37.25	54.00	-16.75	Vertical	
9608.00	20.71	23.76	44.47	54.00	-9.53 o <sup>10</sup>	Vertical	
12010.00	in Oreth	Aupoter Au	iek .	54.00	A Pro-	Vertical	
14412.00	And *	abotek	Aupor	54.00	ipole Aug	Vertical	
4804.00	17.87	15.27	33.14	54.00	-20.86	Horizontal	
7206.00	20.16	18.09	38.25	54.00	-15.75	Horizontal	
9608.00	18.47	23.76	42.23	54.00	-11.77	Horizontal	
12010.00	* 494	otek Anbor	N Pu	54.00	Vug.	Horizontal	
14412.00	4 ×	rotek ant	ofer And	54.00	ek Aupor	Horizontal	



Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 39 of 41

			ГМ3 / СН: М			
Peak value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4882.00	29.35	15.42	44.77	74.00	-29.23 m	Vertical
7323.00	29.98	18.02	48.00	74.00	-26.00	Vertical
9764.00	30.70	23.80	54.50	74.00	-19.50	Vertical
12205.00	ek * spotek	Anborr	h worek	74.00	Ans	Vertical
14646.00	*	tek Wipose	Pun de	74.00	Aupo	Vertical
4882.00	29.22	15.42	44.64	74.00	-29.36	Horizontal
7323.00	31.09	18.02	49.11	74.00	-24.89	Horizontal
9764.00	28.86	23.80	52.66	74.00	-21.34	Horizontal
12205.00	*otek	Aupole.	Aug	74.00	YUpor by	Horizontal
14646.00	Ant siek	nbotek	Aupo	74.00	Aupole	Horizontal
Average value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
4882.00	18.44	15.42	33.86	54.00	-20.14	Vertical
7323.00	19.26	18.02	37.28	54.00	-16.72	Vertical
9764.00	20.57	23.80	44.37	54.00	-9.63	Vertical
12205.00	k *upor	N. Siek	anbotek	54.00	borek	Vertical
14646.00	otek * Anbot	Anb	sk spojek	54.00	bu. Poick	Vertical
4882.00	17.78	15.42	33.20	54.00	-20.80	Horizontal
7323.00	19.72	18.02 A	37.74	54.00	-16.26	Horizontal
9764.00	18.98	23.80	42.78	54.00	-11.22	Horizontal
12205.00	Anb*otek	Anbo	abotek	54.00	"otek "	Horizontal
14646.00	* "otek	VUPO.	A. tek	54.00	AUD	Horizontal





Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 40 of 41

en Aug	riek	anbore	Dir.	hoter	AUD	atek.
		٦	ГМ3 / СН: Н			
Peak value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4960.00	29.62	15.58	45.20	74.00	-28.80	Vertical
7440.00	29.99	17.93	47.92	74.00	-26.08	Vertical
9920.00	31.25	23.83	55.08	74.00	-18.92	Vertical
12400.00	* ~ ~otek	anbore.	And	74.00	Aupo,	Vertical
14880.00	* Vup	iek upołek	Aupo.	74.00	Aupore	Vertical
4960.00	29.29	15.58	44.87	74.00	-29.13	Horizontal
7440.00	31.12	17.93	49.05	74.00	-24.95	Horizontal
9920.00	29.54	23.83	53.37	74.00	-20.63	Horizontal
12400.00	Anb * * ek	abotek	Aupo,	74.00	Aupote, Au	Horizontal
14880.00	V.Apo.	Notek Notek	Anbores	74.00	abotek	Horizontal
Average value:						
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	polarization
4960.00	19.56	15.58	35.14	54.00	-18.86	Vertical
7440.00	20.27	17.93	38.20	54.00	15.80 A	Vertical
9920.00	21.12	23.83	44.95	54.00	-9.05	Vertical
12400.00	* * sboick	Aupor	hotek	54.00	Aug	Vertical
14880.00	* * *	sk Aupole.	Aug	54.00	Aupo	Vertical
4960.00	19.22	15.58 NO	34.80	54.00	-19.20	Horizontal
7440.00	21.09	17.93	39.02 M	54.00	-14.98	Horizontal
9920.00	18.88	23.83	42.71	54.00 And	-11.29	Horizontal
12400.00	* totek	Anbores	Aur Stek	54.00	Ipo. by	Horizontal
14880.00	An*	* Upotek	Aupo	54.00	Anbore	Horizontal

#### Remark:

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







Report No.: 182519C400054101 FCC ID: 2BCRG-AC136 Page 41 of 41

### 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 -----

