

Address

Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 1 of 61

# **FCC TEST REPORT**

Client Name : General Procurement, Inc

800 E Dyer Road , Santa Ana, California, United States

92705

Product Name : Hyundai Koral\_8W2

Date : Apr. 17, 2019

# **Shenzhen Anbotek Compliance Laboratory Limited**



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16

# **Contents**

1. General Information	pole.	Anb			Kuporg	Prince	5
1.1. Client Information	Hotek	pobote.	P.O.		, otok	Anbo	5
1.2. Description of Device (EUT)	Yun Kak		otek	Anbo	Pr	Y-	poter
1.3. Auxiliary Equipment Used Durir	ng Test	be.	Hotek	paboter	Anu		
1.2. Description of Device (EUT)      1.3. Auxiliary Equipment Used Durir      1.4. Description of Test Modes	hnbol	P.	n	, , , , , , , , , , , , , , , , , , ,	y Aut	0	
1.5. List of channels  1.6. Description Of Test Setup  1.7. Test Equipment List  1.8. Measurement Uncertainty	. Yo	botek	Anbu		otek	'upote.	Anto
1.6. Description Of Test Setup		-botek	- Anbot	Vu,		, thotek	
1.7. Test Equipment List	pote	Ann		otek	Anbo		iek (
1.8. Measurement Uncertainty	abotek	Anbo		wotek.	Vupore,	Ant	10
1.9. Description of Test Facility	"Oter	Vup,		r-Vek	holie	P.	10
2. Summary of Test Results	<i>P</i> 11.	ek.	oboten	Anbe	V	otek	
Summary of Test Results      Conducted Emission Test	Anbe		Abotek	Anbore	, Au		12
3.1 Test Standard and Limit							13
3.2. Test Setup	Yek.	apolo	Ans		motek.	Anbor	12
3.3 Test Procedure							13
3.4. Test Data	Aupor	b.,	tek	nboter	Anb		o <sup>tek</sup> 12
3.4. Test Data      4. Radiation Spurious Emission and Ban	d Edge	Anu		potek	Anbor		17
4.1. Test Standard and Limit4.2. Test Setup	Mode		100°		dag	Jie v	17
4.2. Test Setup	V	otek	Vupore,	Anv		abotek	Anbo
4.3. Test Procedure	An.	Yaz	hote	k Anb		, otek	18
4.4. Test Data	otek	Aupo		ote <sup>k</sup>	upote.	Anu	19
4.3. Test Procedure	,ootek	Anbote	An	494	abotek	Anbo.	27
5.1. Test Standard and Limit5.2. Test Setup	711.	,,,00	er P	up.	h. "notek		27
5.2. Test Setup	Anbe	V	otek	Anbore	Am	Yay	
5.3 Test Procedure							2.
5.4. Test Data	6 200	ote.	Anb	کوپر	tek A	ipore	27
5.4. Test Data 6. 20DB Occupy Bandwidth Test		Motek	Anbor	b11.	rotek	upoter.	32
6.1. Test Standard		tek	dag	Ye. V	Up.	, , , oot	31
6.1. Test Standard6.2. Test Setup	upote.	Ann		thotek	Anbor	brr	
6.3. Test Procedure	abotek	Anbo.	P	, otek	anbote	Ani	32
6.4. Test Data	otel	h24	oote.	Anv	٥ مي	cek.	3
7. Carrier Frequency Separation Test	An	403	botek	Anbo	ps	uote <sup>K</sup>	35
7.1. Test Standard and Limit	Anb		, otek	, anbo	ie. Vi		35
7.2. Test Setup	tek A	upore	An	Yay	botek	Aupor	35
7.3. Test Procedure	, tek	obotek	Anbo	W	ootek	Anbote	35
7.4. Test Data	Up.	, , , o <sup>t</sup>	8 <sub>K</sub>	pole	An-	٥١,	35
8. Number of Hopping Channel Test	Anbore	Mus	Yor	obotek	Anbo	N	39
6.2. Test Setup	hobote	An		- cotek	Anbol	P	39
Anbound Anbores					e <sup>K</sup> Coc	Io·AB DE	= 05 a

Page 2 of 61



Report No.: SZAWW190320006-01	FCC ID: 2AIO	HHT0802W16		Page 3 of (	
8.2. Test Setup	. nbook		woter Anbot		39
8.3. Test Procedure	v				39
8.4. Test Data	· · · · · · · · · · · · · · · · · · ·		Aubole Au	po by	39
9. Dwell Time Test		Ans	, potek	PUPOL P	41
9.1. Test Standard and Limit	<sup>97</sup> O <sub>10</sub>	K Anbor	Pr.,	Mpoter	41
9.2. Test Setup	Vupo. W.	rek opoge.	Anb	olek	41
9.3. Test Procedure	abote. And		tek Aupora		41
	otek t		You Yay		41
10. 100kHz Bandwidth of Frequency E	Band Edge Require	ement	40°	eotek Anb	45
10.1. Test Standard and Limit	Anv	botek	Aupor Air	V	45
10.2. Test Setup	ootek Anbo		abote	And	45
10.3. Test Procedure	notek anbote	Vun.	wotek.	Anbor	45
10.4. Test Data	Vun.	tek Wupos	Pr. rotek	nboter	45
11. Antenna Requirement	Anbo. A.	notek Anbo	ie. And	botel	50
11.1. Test Standard and Requiren	nent		botek Aupor	bo	50
11.2. Antenna Connected Constru		Aupo, W.	dek katen	lote, Yun	50
APPENDIX I TEST SETUP PHOTO	GRAPH	Anbore	Ann	"potek V	51
APPENDIX II EXTERNAL PHOTOG		abotek	Anbo	otek.	53
APPENDIX III INTERNAL PHOTOG					57



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 4 of 61

# TEST REPORT

Applicant : General Procurement, Inc

Manufacturer : Shen Zhen Cheng Fong Digital-Tech Limited

Product Name : Hyundai Koral 8W2

Model No. : Koral\_8W2

Trade Mark : Hyundai

Rating(s) : Input: DC 5V, 2A(Via adapter Input: AC 100~240V, 50/60Hz, 0.35A; with DC

3.7V, 3500mAh Battery inside)

Test Standard(s) : FCC Part15 Subpart C 2018, Section 15.247

Test Method(s) : ANSI C63.10: 2013

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 the FCC Part 15 Subpart C 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	Mar. 20, 2019
Date of Test	Mar. 20~Apr. 10, 2019
Date of Test  Anbotek	Anbotek Line Your Anbotek Anbotek
Anbotek Product Safety	O Tray larg
tek hoter Indote	Anbor An
Prepared by *Approved*	stek And stek andotes And
upote, Yun Otek Pupan Vupor, Vin	(Engineer / Oliay Yang)
	Snavy Meng
Reviewer	Anb Anb Anborek
cek Anbote Anbotek Anbotes Anbo	(Supervisor / Snowy Meng)
	tek abotek Appote And atek An
	Sally Zhong
Approved & Authorized Signer	Aupore Auporek Wilholek Vupo
All Alpotek Alpotek	(Manager / Sally Zhang)

Shenzhen Anbotek Compliance Laboratory Limited





Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 5 of 61

# 1. General Information

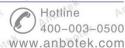
# 1.1. Client Information

Applicant	: General Procurement, Inc
Address	: 800 E Dyer Road , Santa Ana, California, United States 92705
Manufacturer	: Shen Zhen Cheng Fong Digital-Tech Limited
Address	Building A, ChengFong Industrial Area, Huaxing road, Dalang, Longhua, Shen Zhen, China
Factory	: Shen Zhen Cheng Fong Digital-Tech Limited
Address	Building A, ChengFong Industrial Area, Huaxing road, Dalang, Longhua, Shen Zhen, China

# 1.2. Description of Device (EUT)

Product Name	:	Hyundai Koral_8W2	Anbotek Anbotek Anbotek Anbotek
Model No.	:	Koral_8W2	Anbotek Anbotek Anbotek Anbotek
Trade Mark	:	Hyundai	ek abotek Anbotek Anbotek Anbote
Test Power Supply	:	AC 240V, 60Hz for adapted DC 3.7V Battery inside	er/ AC 120V, 60Hz for adapter/
Test Sample No.	:	1-2-1(Normal Sample), 1-2	2-2(Engineering Sample)
		Operation Frequency:	BT: 2402~2480MHz 2.4G Wifi: 802.11b/ g/ n(HT20) 2412-2462MHz 802.11n(HT40) 2422-2452MHz
	:	Transfer Rate:	BT 4.1 EDR: 1/2/3 Mbits/s BT 4.1 BLE: 1 Mbits/s
Product Description		Number of Channel:	BT 4.1 EDR: 79 Channels BT 4.1 BLE: 40 Channels 2.4G Wifi: 11 Channels for 802.11b/ g/ n(HT20) 7 Channels for 802.11n(HT40)
		Modulation Type:	BT 4.1 EDR: GFSK, π/4-DQPSK, 8-DPSK BT 4.1 BLE: GFSK 2.4G Wifi: 802.11b CCK; 802.11g/n OFDM
		Antenna Type:	PIFA Antenna
		Antenna Gain(Peak):	1.1 dBi

Shenzhen Anbotek Compliance Laboratory Limited





Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 6 of 61

**Remark:** 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2) This report is for BDR+EDR module.

# 1.3. Auxiliary Equipment Used During Test

Adapter	:	MODEL: JHD-AP013U-050200BB-B	Anboten	Anbo	anbotek.
		INPUT: 100-240V~ 50/60Hz, 0.35A			A. botek
N		Output: DC 5V, 2000mA			Vii

# 1.4. Description of Test Modes

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

### TEST MODE:

	70	- NO.				
bru,	Mode 1	Anbotek Anbote Ann	CH(	O Anbo	Anbotek Anbote.	Pic
	Mode 2	GFSK	CH3	9 Anb	tek Anbotek Anbotek	
No	Mode 3	Anbotek Anbot A	CH7	8 And	notek Anbotek Anbote	aV4
	Mode 4	k Anbotek Anbo otek	CH(	10° ote Ar	hotek Anbotek Anbot	i k
00-	Mode 5	π/4-DQPSK	CH	9 <sub>Anbott</sub>	TX+ Charging Mode/TX Only	00,
PUL	Mode 6	nbotek Anboten Anbo	CH7	8 Anbou	Anbotek Anbotek	P.O.
19	Mode 7	Anbotek Anbote And	CHO	O Anbox	ek anbotek Anboten	
V	Mode 8	8-DPSK	CH	9 Anb	otek Anbotek Anbote	N.
	Mode 9	k Anbotek Anbote	CH7	8 of en An	otek Anbotek Anbote	,

#### Note:

- (1) The measurements are performed at the highest, middle, lowest available channels.
- (2) The data rate was set in 1Mbps for radiated emission due to the highest RF output power.

Hotline 400–003–0500 www.anhotek.com



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 7 of 61

# 1.5. List of channels

be.		76,	- up	F _V		250 700		191	200
Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
00	2402	17	2419	34	2436	51	2453	68,,,,,,	2470
01	2403	18	2420	35	2437	52	2454	69	2471
02	2404	19	2421	36	2438	53	2455	70	2472
03	2405	20	2422	37	2439	54	2456	71	2473
04	2406	21	2423	38	2440	55	2457	72	2474
05	2407	22	2424	39	2441	56	2458	73	2475
05	2408	23	2425	40	2442	57	2459	xe* 74	2476
07	2409	24 📈	2426	41	2443	58	2460	75	2477
08	2410	25	2427	42	2444	59 And	2461	76	2478
09	2411	26	2428	43	2445	60	2462	77	2479
10	2412	27	2429	44	2446	61	2463	78	2480
11	2413	28	2430	45	2447	62	2464		ootek
12 ×	2414	29	2431	46	2448	63	2465		
13	2415	30 p	2432	47 tek	2449	64 🗥	2466		
14 <sup>nbox</sup>	2416	31	2433	48	2450	o <sup>tel</sup> 65	2467		100
15 An	2417	32	2434	49	2451	66	2468		N N
16	2418	33	2435	50	2452	67	2469		,01eX

# Note:

- 1. The engineering test program was provided and the EUT was programmed to be in continuously transmitting mode.
- 2. EUT built-in battery-powered, fully-charged battery use of the test battery.

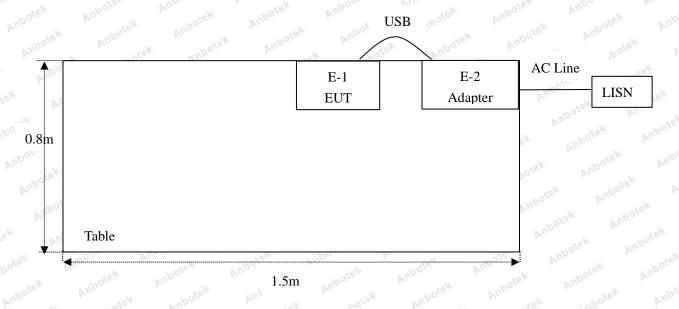
www.anbotek.com



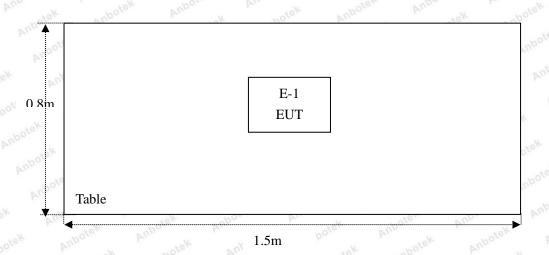
Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 8 of 61

# 1.6. Description Of Test Setup

CE



RE



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



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 9 of 61

# 1.7. Test Equipment List

D.	160	- 400	- W - 24	View View	104	200
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
nb1.	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	Nov. 05, 2018	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESPI3	101604	Nov. 05, 2018	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Nov. 05, 2018	1 Year
4.	Spectrum Analysis	Agilent	E4407B	US39390582	Nov. 05, 2018	1 Year
5.	MAX Spectrum Analysis	Agilent	N9020A	MY51170037	Nov. 05, 2018	1 Year
6.	Preamplifier	SKET Electronic	BK1G18G30 D	KD17503	Nov. 05, 2018	1 Year
<sub>tek</sub> 7.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Nov. 20, 2018	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Nov. 19, 2018	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB1519B	00053	Nov. 20, 2018	1 Year
10.	Horn Antenna	A-INFO	LB-180400-K F	J211060628	Nov. 20, 2018	1 Year
.e <sup>√</sup> 11.	Pre-amplifier	SONOMA	310N	186860	Nov. 05, 2018	1 Year
12.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
13.	RF Test Control System	YIHENG	YH3000	2017430	Nov. 05, 2018	1 Year
14.	Power Sensor	DAER	RPR3006W	15I00041SN045	Nov. 05, 2018	1 Year
×15.	Power Sensor	DAER	RPR3006W	15I00041SN046	Nov. 05, 2018	1 Year
16.	MXA Spectrum Analysis	Agilent	N9020A	MY51170037	Nov. 05, 2018	1 Year
17.	MXG RF Vector Signal Generator	Agilent	N5182A	MY48180656	Nov. 05, 2018	1 Year
18.	Signal Generator	Agilent	E4421B	MY41000743	Nov. 05, 2018	1 Year
19.	DC Power Supply	LW	TPR-6420D	374470	Oct. 31, 2018	1 Year
20.	Constant Temperature Humidity Chamber	ZHONGJIAN	ZJ-KHWS80 B	N/A	Nov. 01, 2018	1 Year





Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 10 of 61

# 1.8. Measurement Uncertainty

Radiation Uncertainty	:	Ur = 3.9 dB (Ho	orizontal)	otek an	botek A	hoter And
		Ur = 3.8 dB (Ve	ertical)			Anbore Ar
		Andotek	Anboten	Anbo	Anbotek	Auport
Conduction Uncertainty	:	Uc = 3.4 dB	Anbote	k And hotek	Anbotek	Aupor

## 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 registed 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, July 31, 2017.

## ISED-Registration No.: 8058A-1

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-1, June 13, 2016.

#### **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.518102



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 11 of 61

# 2. Summary of Test Results

Standard Section	Test Item	Result
15.203/15.247(c)	Antenna Requirement	PASS
15.207	Conducted Emission	PASS
15.205/15.209	Spurious Emission	PASS
15.247(b)(1)	Conducted Peak Output Power	PASS
15.247(a)(1)	20dB Occupied Bandwidth	PASS
15.247(a)(1)	Carrier Frequencies Separation	PASS
15.247(a)(1)	Hopping Channel Number	PASS
15.247(a)(1)	Dwell Time	PASS
15.247(d)	Band Edge	PASS



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 12 of 61

# 3. Conducted Emission Test

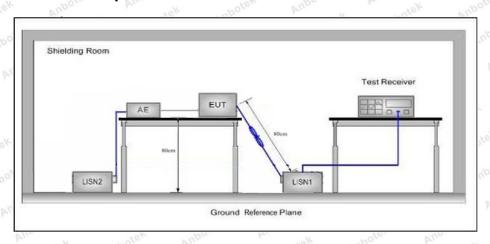
## 3.1. Test Standard and Limit

Test Standard	FCC Part15 Section 15.2	207 Anbotes Anbotes	
	Francisco	Maximum RF L	ine Voltage (dBuV)
Test Limit	Frequency	Quasi-peak Level	Average Level
	150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
	500kHz~5MHz	Mibotek 56 Anbou	46 otel
	5MHz~30MHz	Anbotek 60 Anbot	Model 50 Notes

Remark: (1) \*Decreasing linearly with logarithm of the frequency.

(2) The lower limit shall apply at the transition frequency.

# 3.2. Test Setup



#### 3.3. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.10-2013 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

#### 3.4. Test Data

During the test, pre-scan the GFSK,  $\pi/4$ QPSK, 8DPSK modulation, and found the GFSK modulation Low channel(TX+Charging Mode) which is the worst case, only the worst case is recorded in the report. Please to see the following pages.

Shenzhen Anbotek Compliance Laboratory Limited





Report No.: SZAWW190320006-01

### **Conducted Emission Test Data**

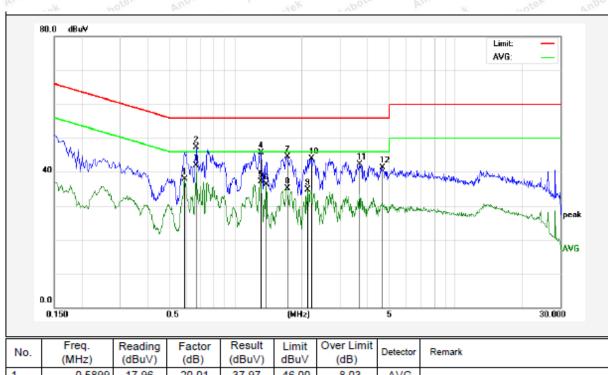
Test Site: 1# Shielded Room

Mode 1 **Operating Condition:** 

Test Specification: AC 240V, 60Hz for adapter

Comment: Live Line

Tem.: 22.9℃ Hum.: 65%



No.	(MHz)	(dBuV)	(dB)	(dBuV)	dBu∀	(dB)	Detector	Remark
1	0.5899	17.96	20.01	37.97	46.00	-8.03	AVG	
2	0.6660	27.33	20.03	47.36	56.00	-8.64	QP	
3	0.6660	21.93	20.03	41.96	46.00	-4.04	AVG	
4	1.3060	25.60	20.13	45.73	56.00	-10.27	QP	
5	1.3060	16.88	20.13	37.01	46.00	-8.99	AVG	
6	1.3820	16.09	20.13	36.22	46.00	-9.78	AVG	
7	1.7220	24.33	20.13	44.46	56.00	-11.54	QP	
8	1.7220	15.00	20.13	35.13	46.00	-10.87	AVG	
9	2.1380	14.66	20.14	34.80	46.00	-11.20	AVG	
10	2.2139	23.82	20.14	43.96	56.00	-12.04	QP	
11	3.6700	22.10	20.17	42.27	56.00	-13.73	QP	
12	4.6900	21.19	20.20	41.39	56.00	-14.61	QP	

Code: AB-RF-05-a

www.anbotek.com



Report No.: SZAWW190320006-01

### **Conducted Emission Test Data**

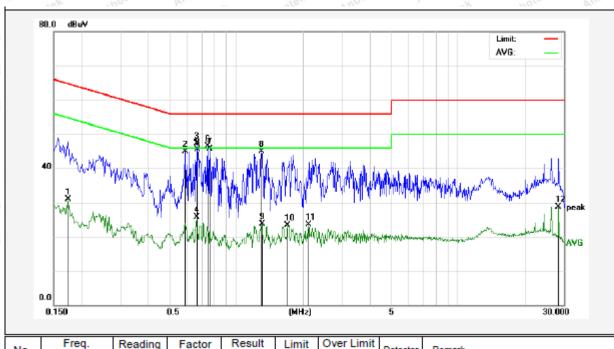
Test Site: 1# Shielded Room

Mode 1 **Operating Condition:** 

Test Specification: AC 240V, 60Hz for adapter

Comment: Neutral Line

Tem.: 22.9℃ Hum.: 65%



N	lo.	Freq. (MHz)	(dBuV)	Factor (dB)	(dBuV)	Limit dBu∀	(dB)	Detector	Remark
1		0.1740	11.03	19.90	30.93	54.76	-23.83	AVG	
2		0.5899	24.83	20.01	44.84	56.00	-11.16	QP	
3		0.6620	27.19	20.03	47.22	56.00	-8.78	QP	
4		0.6620	5.75	20.03	25.78	46.00	-20.22	AVG	
5		0.6700	25.52	20.03	45.55	56.00	-10.45	QP	
6		0.7460	26.41	20.05	46.46	56.00	-9.54	QP	
7		0.7620	25.74	20.06	45.80	56.00	-10.20	QP	
8		1.2980	24.71	20.13	44.84	56.00	-11.16	QP	
9		1.3060	3.60	20.13	23.73	46.00	-22.27	AVG	
10	0	1.7020	3.09	20.13	23.22	46.00	-22.78	AVG	
11	1	2.1180	3.38	20.14	23.52	46.00	-22.48	AVG	
12	2	28.3460	8.47	20.27	28.74	50.00	-21.26	AVG	



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 15 of 61

#### **Conducted Emission Test Data**

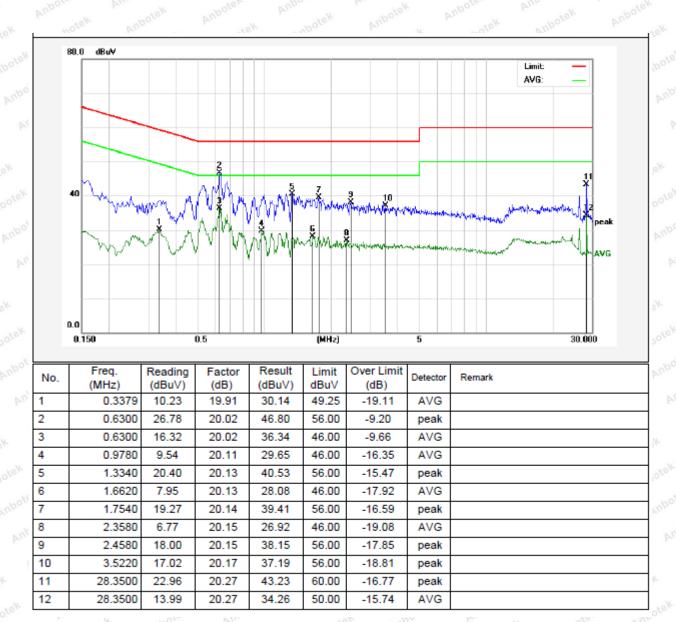
Test Site: 1# Shielded Room

**Operating Condition:** Mode 1

**Test Specification:** AC 120V, 60Hz for adapter

Comment: Live Line

Tem.: 22.9°C Hum.: 65%



Code: AB-RF-05-a

400-003-0500 www.anbotek.com



Report No.: SZAWW190320006-01

### **Conducted Emission Test Data**

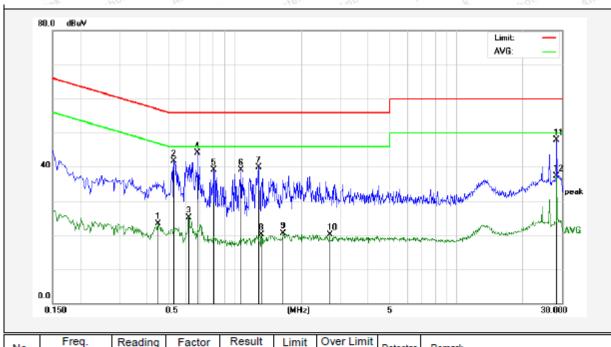
Test Site: 1# Shielded Room

Mode 1 **Operating Condition:** 

Test Specification: AC 120V, 60Hz for adapter

Comment: Neutral Line

Tem.: 22.9℃ Hum.: 65%



N	0.	(MHz)	(dBuV)	(dB)	(dBuV)	dBuV	(dB)	Detector	Remark
1		0.4500	3.38	19.96	23.34	46.87	-23.53	AVG	
2		0.5299	21.62	19.99	41.61	56.00	-14.39	peak	
3		0.6180	5.18	20.02	25.20	46.00	-20.80	AVG	
4		0.6820	24.05	20.03	44.08	56.00	-11.92	peak	
5		0.8059	19.00	20.07	39.07	56.00	-16.93	peak	
6		1.0660	18.91	20.12	39.03	56.00	-16.97	peak	
7		1.2780	19.73	20.13	39.86	56.00	-16.14	peak	
8		1.3220	-0.01	20.13	20.12	46.00	-25.88	AVG	
9		1.6580	0.41	20.13	20.54	46.00	-25.46	AVG	
10	)	2.6820	0.03	20.15	20.18	46.00	-25.82	AVG	
11		28.3580	27.59	20.27	47.86	60.00	-12.14	peak	
12	2	28.3580	17.12	20.27	37.39	50.00	-12.61	AVG	

Code: AB-RF-05-a

400-003-0500 www.anbotek.com



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 17 of 61

# 4. Radiation Spurious Emission and Band Edge

# 4.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15	5.209 and 15.205	Annotek	Anbotek	Aupo, by
	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz~0.490MHz	2400/F(kHz)	nbotek An	ote. Anv	300 NO
	0.490MHz-1.705MHz	24000/F(kHz)	An abotak	Aupore Ar	30
	1.705MHz-30MHz	30	Anbotek	Anbole.	30
Test Limit	30MHz~88MHz	100	40.0	Quasi-peak	3 notek
	88MHz~216MHz	150	43.5	Quasi-peak	3 botek
	216MHz~960MHz	200	46.0	Quasi-peak	3 abot
	960MHz~1000MHz	500	54.0	Quasi-peak	3
	Above 4000ML	500 book	54.0	Average	Anbox 3
	Above 1000MHz	Anbotek - Anbote	74.0	Peak	Anbo 3

# Remark:

- (1) The lower limit shall apply at the transition frequency.
- (2) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

## 4.2. Test Setup

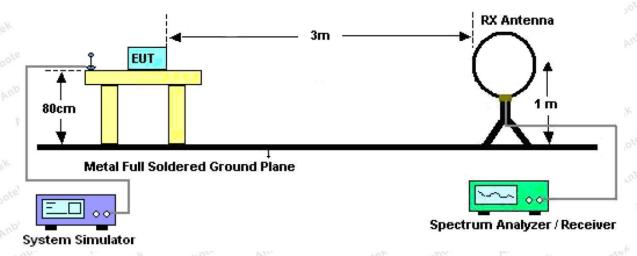


Figure 1. Below 30MHz



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 18 of 61

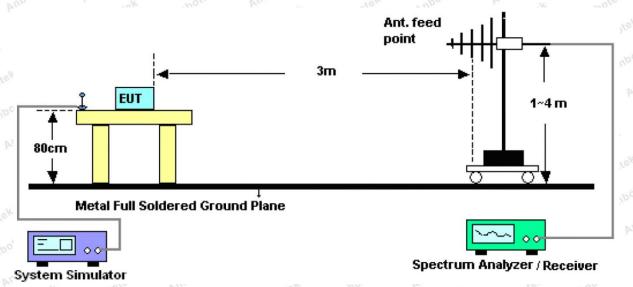


Figure 2. 30MHz to 1GHz

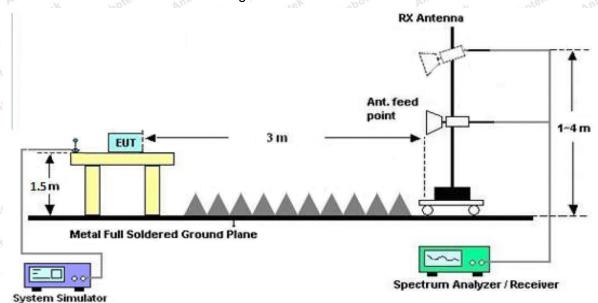


Figure 3. Above 1 GHz

### 4.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.

For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.

The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9\*6\*6 Chamber. The device is evaluated in xyz orientation.

For the radiated emission test above 1GHz:

#### Shenzhen Anbotek Compliance Laboratory Limited





Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 19 of 61

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

For 9kHz to 150kHz, Set the spectrum analyzer as:

RBW = 200Hz, VBW =1kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple

For 150kHz to 30MHz, Set the spectrum analyzer as:

RBW = 9KHz, VBW =30kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 30MHz to 1000MHz, Set the spectrum analyzer as:

RBW = 100kHz, VBW =300kHz, Detector = Quasi-Peak, Trace mode = Max hold, Sweep- auto couple

For above 1GHz, Set the spectrum analyzer as:

RBW =1MHz, VBW =1MHz, Detector= Peak, Trace mode= Max hold, Sweep- auto couple.

RBW =1MHz, VBW =10Hz, Detector= Average, Trace mode= Max hold, Sweep- auto couple.

#### 4.4. Test Data

#### **PASS**

During the test, pre-scan the GFSK,  $\pi/4$ QPSK, 8DPSK modulation, and found the GFSK modulation Middle channel(TX Only) which is the worst case, only the worst case is recorded in the report

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

www.anbotek.com



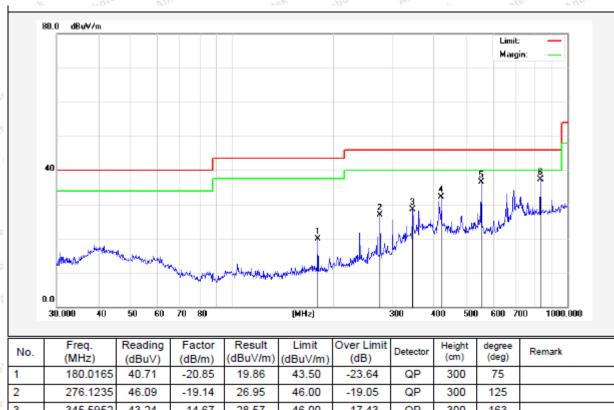
Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 20 of 61

Test Results (30~1000MHz)

SZAWW190320006-01 Temp.(°C)/Hum.(%RH): 22.5°C/50%RH Job No.:

FCC PART 15C Power Source: Standard: DC 3.7V Battery inside

Mode 2 Test Mode: Polarization: Horizontal



	No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
	1	180.0165	40.71	-20.85	19.86	43.50	-23.64	QP	300	75	
	2	276.1235	46.09	-19.14	26.95	46.00	-19.05	QP	300	125	
	3	345.5952	43.24	-14.67	28.57	46.00	-17.43	QP	300	163	
	4	420.5803	44.42	-12.38	32.04	46.00	-13.96	QP	300	254	
Γ	5	552.8832	47.52	-11.10	36.42	46.00	-9.58	QP	300	302	
	6	830.4002	43.34	-6.00	37.34	46.00	-8.66	QP	300	336	



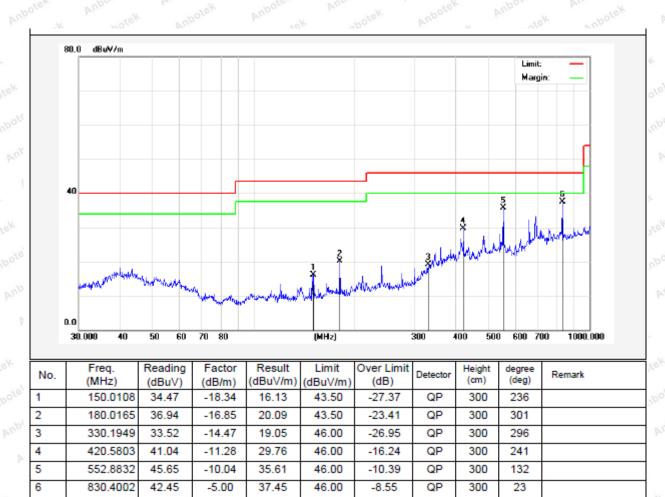
Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 21 of 61

Test Results (30~1000MHz)

SZAWW190320006-01 Job No.: Temp.(°C)/Hum.(%RH): 22.5°C/50%RH

FCC PART 15C Standard: Power Source: DC 3.7V Battery inside

Test Mode: Mode 2 Vertical Polarization:





Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16

Test Results (1GHz-25GHz)

Test Mode:	CH00			Test	channel: Lov	vest		
			ſ	Peak Value				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
4804.00	39.45	34.04	6.58	34.09	45.98	74.00	-28.02	No VK
7206.00	33.25	37.11	7.73	34.50	43.59	74.00	-30.41	V
9608.00	32.74	39.31	9.23	34.79	46.49	74.00	-27.51	V
12010.00	* Ano	tek	nbotek	Aupore	Ans	74.00	Anbor	V
14412.00	botel * A	upo-	Botek	Anborek	k Anti-	74.00	Aupor	V
4804.00	44.18	34.04	6.58	34.09	50.71	74.00	-23.29	H
7206.00	35.20	37.11	7.73	34.50	45.54	74.00	-28.46	H day
9608.00	32.36	39.31	9.23	34.79	46.11	74.00	-27.89	PUBO,
12010.00	ek * anbo	TON PL	box by	botek	Anbotes	74.00	-upotek	y S
14412.00	cotek *	botek	Aupore	An abotek	Anboten	74.00	nbote	Н
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		A۱	verage Valu	е			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
4804.00	27.86	34.04	6.58	34.09	34.39	54.00	-19.61	V
7206.00	21.70	37.11	7.73	34.50	32.04	54.00	-21.96	V
9608.00	20.64	39.31	9.23	34.79	34.39	54.00	-19.61	V
12010.00	Anbotek	Aupor	botek	Anbote	Anbe	54.00	ek Aupo	V
14412.00	Anb*tek	Aupore	ok hot	anb'	Yes Yup	54.00	ootek A	V
4804.00	32.33	34.04	6.58	34.09	38.86	54.00	-15.14	Vulder.
7206.00	24.01	37.11	7.73	34.50	34.35	54.00	-19.65	H
9608.00	20.55	39.31	9.23	34.79	34.30	54.00	-19.70	Н
12010.00	otel*	Anbotek	Aupore	An notek	Anbotek	54.00	6/K - 4/00	CEK H
14412.00	Yupo *ek	abotek	Aupore.	K M	lek Anbo	54.00	rek br	botek

Code: AB-RF-05-a

400-003-0500 www.anbotek.com



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 23 of 61

Test Results (1GHz-25GHz)

Test Mode:	CH39			Test	channel: Mid	dle		
			F	Peak Value				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
4882.00	38.27	34.38	6.69	34.09	45.25	74.00	-28.75	~ V <sub>K</sub>
7323.00	32.47	37.22	7.78	34.53	42.94	74.00	-31.06	V
9764.00	32.04	39.46	9.35	34.80	46.05	74.00	-27.95	V
12205.00	rek * Wup.	rek P	nbotek	Anbote	And	74.00	Anbore	V
14646.00	ibotek * A	Upo.	Abotek	Anbores	K Anbe	74.00	Aupor	V
4882.00	42.76	34.38	6.69	34.09	49.74	74.00	-24.26	H
7323.00	34.31	37.22	7.78	34.53	44.78	74.00	-29.22	H day
9764.00	31.56	39.46	9.35	34.80	45.57	74.00	-28.43	Anpor
12205.00	ek * anbo	Tek VI	DOL K	botek	Anbotek	74.00	anbotek	Hat
14646.00	otek *	botek	Aupor	Andotek	Anboten	74.00	anbote	Н
	,,,,		A۱	verage Valu	е			
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
4882.00	26.92	34.38	6.69	34.09	33.90	54.00	-20.10	V
7323.00	21.06	37.22	7.78	34.53	31.53	54.00	-22.47	V
9764.00	20.08	39.46	9.35	34.80	34.09	54.00	-19.91	V
12205.00	Anbotek	Aupor	potek.	Anbote	Anbo	54.00	ok Anbi	V
14646.00	Anborek	Aupore	ok hot	anbo	Yes, Vup.	54.00	ootek A	<sup>ipoto</sup>
4882.00	31.26	34.38	6.69	34.09	38.24	54.00	-15.76	Vupoje
7323.00	23.30	37.22	7.78	34.53	33.77	54.00	-20.23	Hip
9764.00	19.89	39.46	9.35	34.80	33.90	54.00	-20.10	Нр
12205.00	otel*	Anbotek	Aupore	Pur Potek	Anbotek	54.00	ok who	iek H
14646.00	Yupo *tek	abotek	Anboro	r bu	lek Anbo	54.00	rok by	Hotod

Code: AB-RF-05-a

www.anbotek.com



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 24 of 61

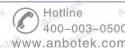
## Test Results (1GHz-25GHz)

Test Mode:	CH78			Test	channel: Hig	hest		
			ı	Peak Value				
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
4960.00	37.55	34.72	6.79	34.09	44.97	74.00	-29.03	NOOVK
7440.00	31.99	37.34	7.82	34.57	42.58	74.00	-31.42	Vote
9920.00	31.62	39.62	9.46	34.81	45.89	74.00	-28.11	V
12400.00	rek * Wup.	*ek	nbotek	Anboten	Ans	74.00	Anbore	ν V
14880.00	hotek * A	Upor Lek	A botek	Anboren	Anbe	74.00	Aupon	V
4960.00	41.89	34.72	6.79	34.09	49.31	74.00	-24.69	H
7440.00	33.77	37.34	7.82	34.57	44.36	74.00	-29.64	rupote H
9920.00	31.06	39.62	9.46	34.81	45.33	74.00	-28.67	Anbore
12400.00	ek * Anbo	rek bu	bor by	hotek	Anbotek	74.00	nbotek	Hup
14880.00	otek *	botek	Aupor	Andotek	Anbotes	74.00	nbote	НР
1.00		ı	A۱	erage Valu	е	1-11"	1535	
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.
4960.00	26.42	34.72	6.79	34.09	33.84	54.00	-20.16	V
7440.00	20.72	37.34	7.82	34.57	31.31	54.00	-22.69	V
9920.00	19.77	39.62	9.46	34.81	34.04	54.00	-19.96	V
12400.00	Anbotek	Aupor	An botek	Anbote	Anbo	54.00	ek Aupr	V
14880.00	Vupalek	Auporo	K Not	ak Anb	rey Vup.	54.00	ootek A	V V
4960.00	30.68	34.72	6.79	34.09	38.10	54.00	-15.90	AUA HEL
7440.00	22.92	37.34	7.82	34.57	33.51	54.00	-20.49	Hipo
9920.00	19.53	39.62	9.46	34.81	33.80	54.00	-20.20	Ны
12400.00	otel*	anbotek	Pupots.	Anv	Anbotek	54.00	N 200	iek H
14880.00	Aupo *	botek	Anboten	K VUD	lek Aupo	54.00	P.V.	hotels

# Remark:

- 1. During the test, pre-scan the GFSK,  $\pi/4$ QPSK, 8DPSK modulation, and found the GFSK modulation is worse case, the report only record this mode.
- 2. Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 3. "\*" means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.

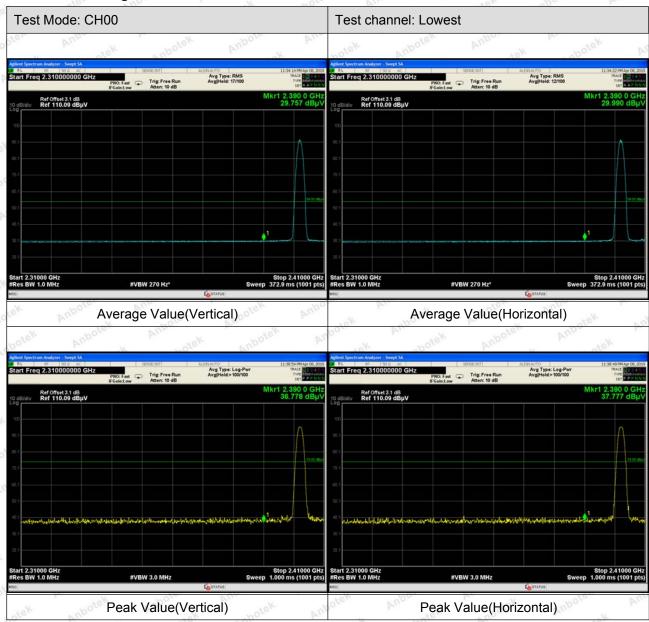
# Shenzhen Anbotek Compliance Laboratory Limited





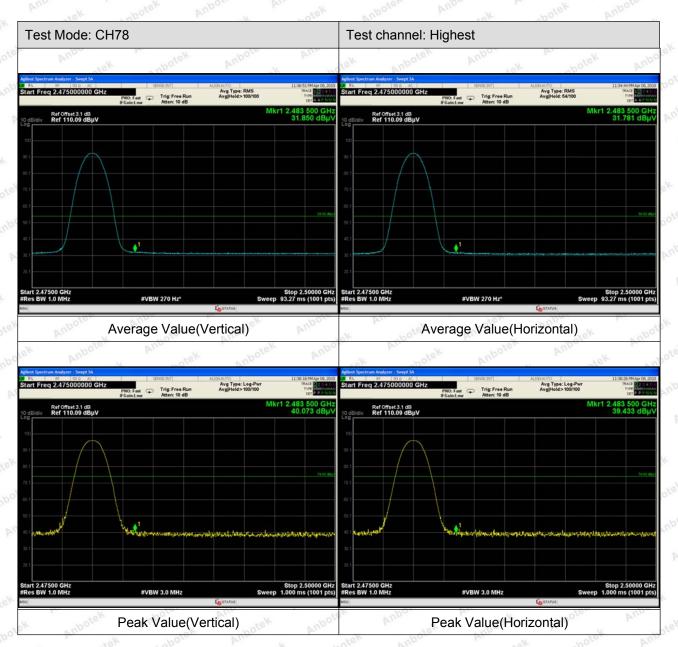
Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 25 of 61

## Radiated Band Edge:





Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 26 of 61



#### Remark:

- 1. During the test, pre-scan the GFSK,  $\pi$ /4QPSK, 8DPSK modulation, and found the GFSK modulation is worse case, the report only record this mode.
- 2. Level = Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor



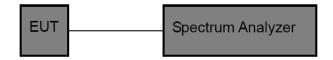
Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 27 of 61

# 5. Maximum Peak Output Power Test

## 5.1. Test Standard and Limit

Test Standard	FCC Part15	C Section 15.	247 (b)(3)	Anbo	Anbotek .	Anbote	P.W.
Test Limit	125mW	Am	Anbotek	Anbo	Anbotek .	Anbole	V.

# 5.2. Test Setup



#### 5.3. Test Procedure

- 1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above,
- 2. Spectrum Setting:

RBW > the 20 dB bandwidth of the emission being measured

Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

# 5.4. Test Data

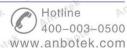
Test Item : Max. peak output power Test Mode : CH Low ~ CH High

Test Voltage : DC 3.7V Battery inside Temperature :  $23.7^{\circ}$ C Test Result : PASS Humidity : 53%RH

Channel Frequency	Peak Power output	Limit	Results	Modulation
(MHz)	(dBm)	(dBm)	Results	Wodulation
2402	0.229	30	PASS	BDR
2441	-1.208	30	PASS MOON	BDR
2480	-0.331	30	PASS	BDR
2402	-0.495	20.96	PASS	EDR Ann
2441	-1.802	20.96	PASS	EDR
2480	-0.945	20.96	PASS	EDR

Remark: The EDR was tested on ( $\pi$ /4QPSK, 8DPSK) modes, only the worst data of (8DPSK) is attached in the following pages.

Shenzhen Anbotek Compliance Laboratory Limited





Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 28 of 61



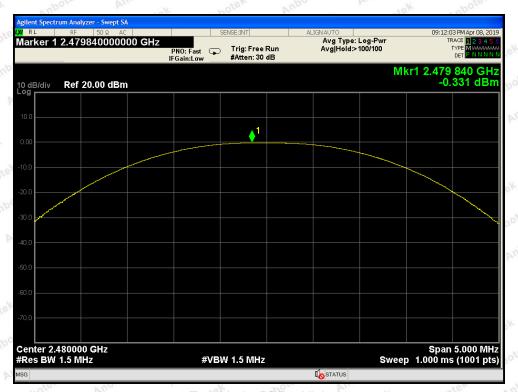
Test Mode: BDR---Low



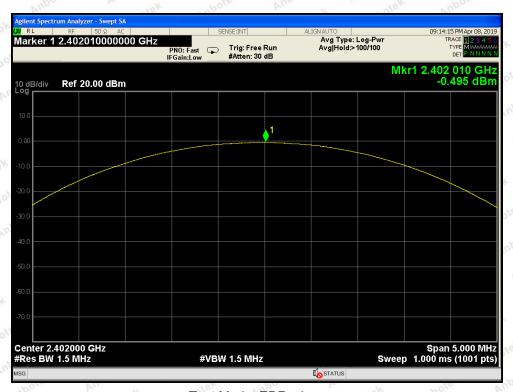
Test Mode: BDR---Middle



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 29 of 61



Test Mode: BDR---High



Test Mode: EDR---Low

Code: AB-RF-05-a

400-003-0500 www.anbotek.com



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 30 of 61



Test Mode: EDR---Middle



Test Mode: EDR---High

Hotline 400-003-0500 www.anbotek.com



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 31 of 61

# 6. 20DB Occupy Bandwidth Test

# 6.1. Test Standard

Test Standard	FCC Part15 C Section 15.247 (a)(1)	And	hotek	Anbore A
	Yer Was	10020	Ville	

# 6.2. Test Setup



### 6.3. Test Procedure

Using the following spectrum analyzer settings:

- 1. Span= approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel.
- 2. Set the RBW = 30 kHz.
- 3. Set the VBW = 100 kHz.
- 4. Sweep time = auto couple.
- 5. Detector function = peak.
- 6. Trace mode = max hold.
- 7. Allow trace to fully stabilize.

### 6.4. Test Data

Test Item : 20dB BW Test Mode : CH Low ~ CH High

Test Voltage : DC 3.7V Battery inside Temperature :  $23.7^{\circ}$ C Test Result : PASS Humidity : 53%RH

Channel	Frequency(MHz)	20dB Down BW(kHz)	Modulation Mode
Low Market	2402	934.0	BDR HEY
Middle	2441	925.0	Anbote BDR BDR Motek
High	2480	925.9	BDR
Low	2402	1257	EDR
Middle	2441	1262	PEDR
abotek High nbotek	2480	1267	nbotek EDR

Remark: The EDR was tested on  $(\pi/4QPSK, 8DPSK)$  modes, only the worst data of (8DPSK) is attached in the following pages.

Shenzhen Anbotek Compliance Laboratory Limited





Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 32 of 61



Test Mode: BDR---Low



Test Mode: BDR---Middle

Code: AB-RF-05-a

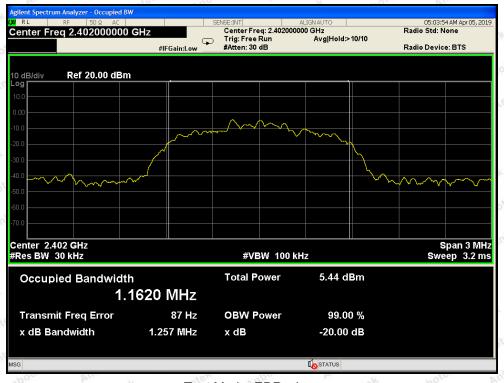
400-003-0500 www.anbotek.com



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 33 of 61



Test Mode: BDR---High



Test Mode: EDR---Low

Code: AB-RF-05-a

400-003-0500 www.anbotek.com



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 34 of 61



Test Mode: EDR---Middle



Test Mode: EDR---High



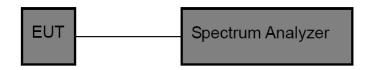
Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 35 of 61

# 7. Carrier Frequency Separation Test

## 7.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (a)(1)	Anbotek	Anbote Ar
Test Limit	>25KHz or >two-thirds of the 20 dB bandwidth	Anbotek	Aupor

# 7.2. Test Setup



## 7.3. Test Procedure

The EUT must have its hopping function enabled. Using the following spectrum analyzer settings:

- 1. Span= Wide enough to capture the peaks of two adjacent channels
- 2. Set the RBW = 30 kHz.
- 3. Set the VBW = 100 kHz.
- 4. Sweep time = auto couple.
- 5. Detector function = peak.
- 6. Trace mode = max hold.
- 7. Allow trace to fully stabilize.

### 7.4. Test Data

Test Item	:	Frequency Separation	Test Mode	:	CH Low ~ CH High
Toet Voltage		DC 3.7V Battery incide	Temperature		23.7℃

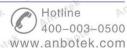
Test Voltage : DC 3.7V Battery inside Temperature : 23.7°C

Test Result : PASS Humidity : 53%RH

Channel	Frequency	Separation Read	Limit	Modulation
	(MHz)	Value (kHz)	(kHz)	Mode
botek Low	2402	1000	934.0	BDR
Middle	2441	1000	925.0	BDR
High	2480	1000	925.9	BDR
Low	2402	1000	838.0	EDR Model
Middle	2441	1000	841.3	EDR
High	2480	1000	844.7	EDR

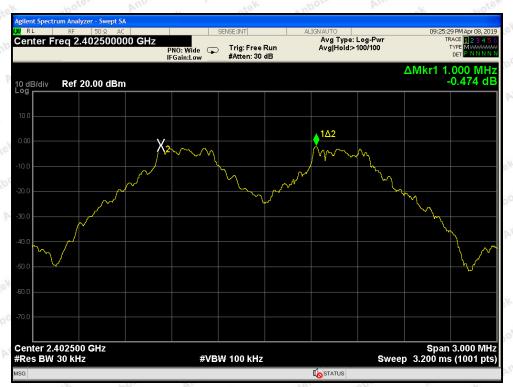
Remark: 1. The EDR was tested on  $(\pi/4QPSK, 8DPSK)$  modes, only the worst data of (8DPSK) is attached in the following pages.

2. The limit of mode (EDR) is 2/3 of 20dB BW.

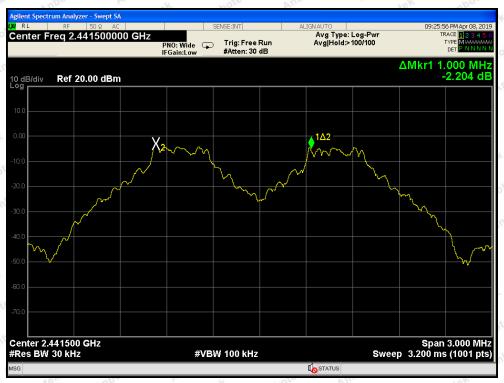




Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 36 of 61



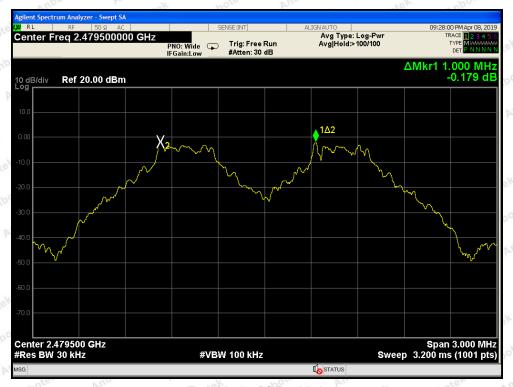
Test Mode: BDR---Low



Test Mode: BDR---Middle



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 37 of 61



Test Mode: BDR---High



Test Mode: EDR---Low

400-003-0500 www.anbotek.com



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 38 of 61



Test Mode: EDR---Middle



Test Mode: EDR---High



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 39 of 61

# 8. Number of Hopping Channel Test

### 8.1. Test Standard and Limit

Test Standard	FCC Part15 C S	Section 15.2	247 (a)(1)	Anb	Anbotek	Anbote A
Test Limit	>15 channels	hotek	Anbote.	And	Anbotek	Anbor

### 8.2. Test Setup



#### 8.3. Test Procedure

The EUT must have its hopping function enabled. Using the following spectrum analyzer setting:

- 1. Span= the frequency band of operation
- 2. Set the RBW = 100kHz.
- 3. Set the VBW = 300kHz.
- 4. Sweep time = auto couple.
- 5. Detector function = peak.
- 6. Trace mode = max hold.
- 7. Allow trace to fully stabilize.

#### 8.4. Test Data

Test Item : Number of Hopping Frequency Test Mode : CH Low ~ CH High

Test Voltage : DC 3.7V Battery inside : Temperature :  $23.7^{\circ}$ C Test Result : PASS : Humidity :  $53^{\circ}$ RH

Hopping Channel Frequency	Quantity of Hopping Channel	Quantity of Hopping Channel		
Range	Quantity of Flopping Officialities	Quantity of Fropping Charmer		
2402-2480MHz	And tek 79 potek And	>15		
Remark: The EDR was tested on (1	T//OPSK 2DPSK) modes only the work	et data of (8DPSK) is attached in		

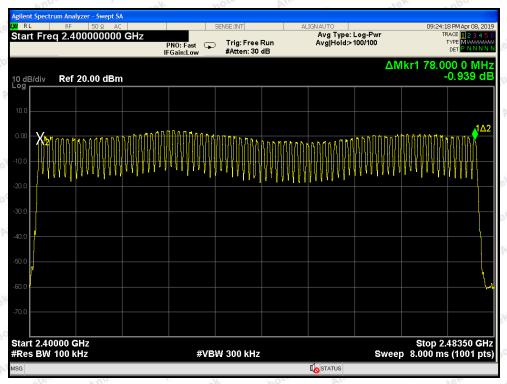
Remark: The EDR was tested on ( $\pi$ /4QPSK, 8DPSK) modes, only the worst data of (8DPSK) is attached in the following pages.

Code:AB-RF-05-a

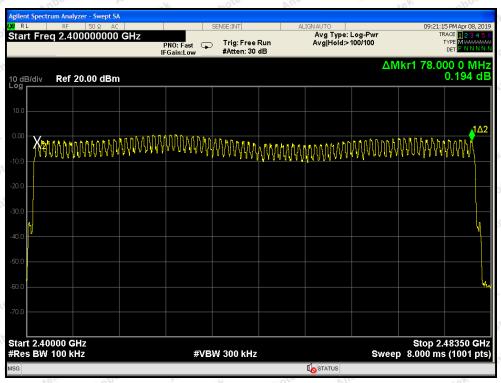
Hotline 400-003-0500 www.anbotek.com



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 40 of 61



**BDR Mode** 



**EDR Mode** 



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 41 of 61

### 9. Dwell Time Test

### 9.1. Test Standard and Limit

Test Standard	FCC Part15	C Section 15.	247 (a)(1)	Anb	Anbotek	Anbore	D.
Test Limit	0.4 sec	abotek	Anbote	And	Anbotek	Anboro	

### 9.2. Test Setup



#### 9.3. Test Procedure

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

- 1. Span= zero span, centered on a hopping channel
- 2. Set the RBW = 1 MHz.
- 3. Set the VBW = 1 MHz.
- 4. Sweep time = as necessary to capture the entire dwell time per hopping channel
- 5. Detector function = peak.
- 6. Trace mode = max hold.
- 7. Allow trace to fully stabilize.

#### 9.4. Test Data

Test Item : Time of Occupancy Test Mode : CH Low ~ CH High

Test Voltage : DC 3.7V Battery inside : Temperature :  $23.7^{\circ}$ C Test Result : PASS : Humidity : 53%RH

Package Type	Pulse width (ms)	Time slot length(ms)	Dwell time (ms)	Limit (s)	Modulation
DH1	0.368	time slot length *1600/2 /79 * 31.6	117.76	0.4	BDR
DH3	1.620	time slot length *1600/4 /79 * 31.6	259.20	0.4	BDR
DH5	2.872	time slot length *1600/6 /79 * 31.6	306.35	0.4	BDR
3DH1	0.378	time slot length *1600/2 /79 * 31.6	120.96	0.4	ote* EDR Ant
3DH3	1.625	time slot length *1600/4 /79 * 31.6	260.00	0.4	EDR
3DH5	2.872	time slot length *1600/6 /79 * 31.6	306.35	0.4	EDR

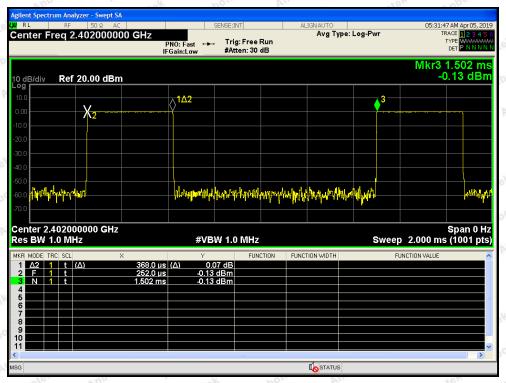
Remark: The EDR was tested on  $(\pi/4QPSK, 8DPSK)$  modes, only the worst data of (8DPSK) is attached in the following pages.

Shenzhen Anbotek Compliance Laboratory Limited

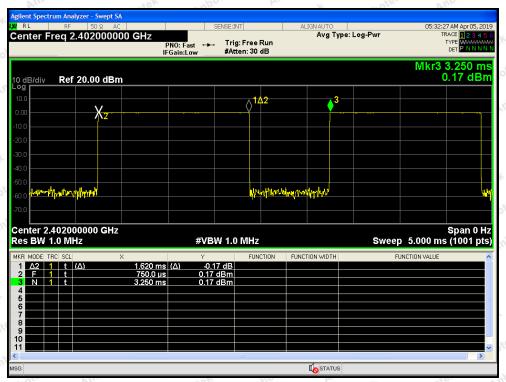




Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 42 of 61



Test Mode: BDR---DH1

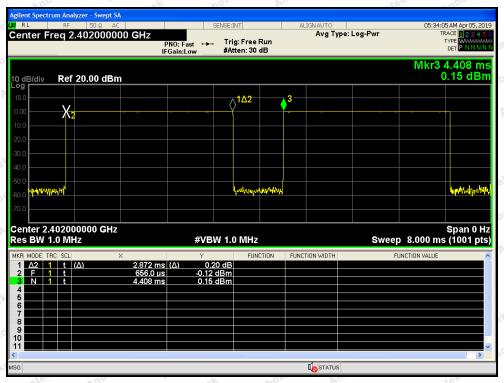


Test Mode: BDR---DH3

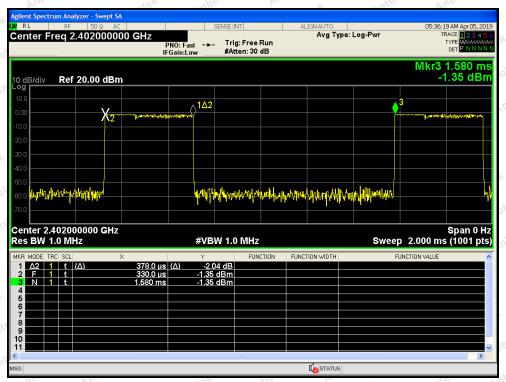
Hotline 400-003-0500 www.anbotek.com



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 43 of 61



Test Mode: BDR---DH5



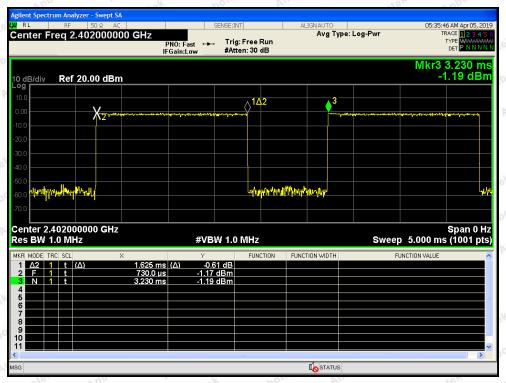
Test Mode: EDR---3DH1

Code: AB-RF-05-a

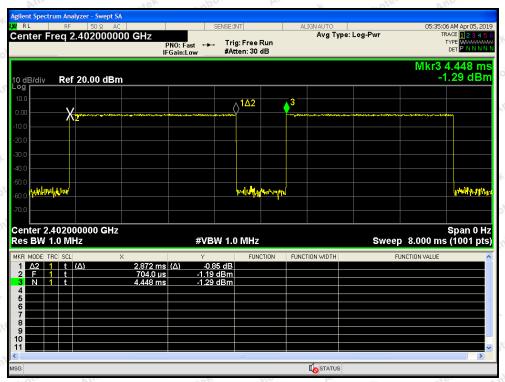
400-003-0500 www.anbotek.com



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 44 of 61



Test Mode: EDR---3DH3



Test Mode: EDR---3DH5

Code: AB-RF-05-a

400-003-0500 www.anbotek.com



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 45 of 61

### 10. 100kHz Bandwidth of Frequency Band Edge Requirement

### 10.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.247 (d)
Test Limit	in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

### 10.2. Test Setup



### 10.3. Test Procedure

The EUT must have its hopping/Non-hopping function enabled. Using the following spectrum analyzer setting:

- 1. Set the RBW = 100kHz.
- 2. Set the VBW = 300kHz.
- 3. Sweep time = auto couple.
- 4. Detector function = peak.
- 5. Trace mode = max hold.
- Allow trace to fully stabilize.

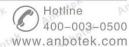
### 10.4. Test Data

Test Item : Band edge Test Mode : CH Low ~ CH High

Test Voltage : DC 3.7V Battery inside : Temperature :  $23.7^{\circ}$ C Test Result : PASS : Humidity : 53%RH

Remark: The EDR was tested on ( $\pi$ /4QPSK, 8DPSK) modes, only the worst data of ( $\pi$ /4DQPSK) is attached in the following pages.

**Shenzhen Anbotek Compliance Laboratory Limited** 

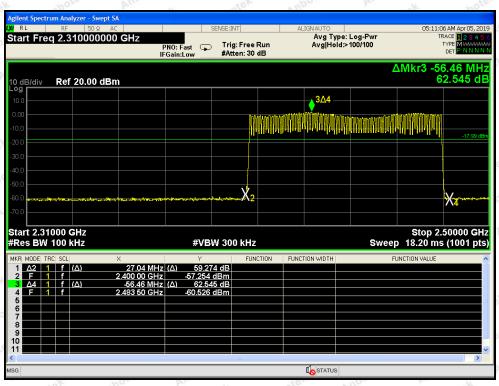




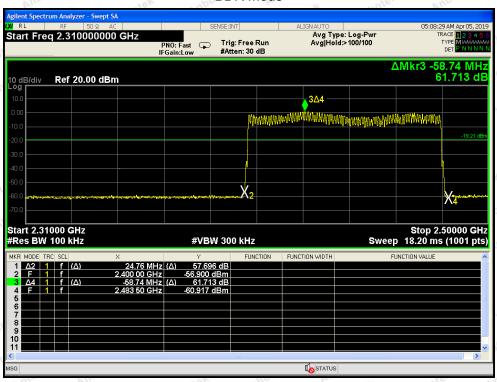
Report No.: SZAWW190320006-01 F

# FCC ID: 2AIOHHT0802W16 For Hopping Mode

Page 46 of 61



### BDR mode

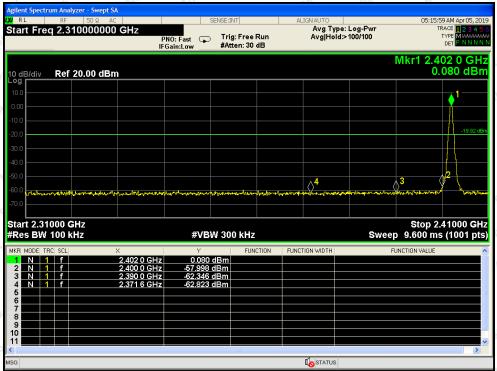


EDR mode
For Non-Hopping Mode

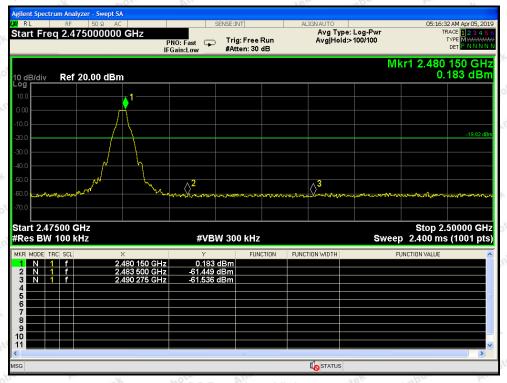
#### Shenzhen Anbotek Compliance Laboratory Limited



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 47 of 61



BDR mode -- Lowest

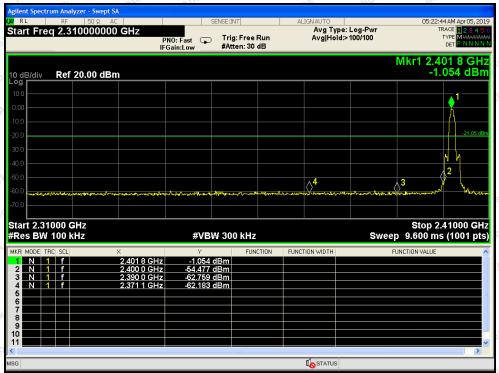


BDR mode -- Highest

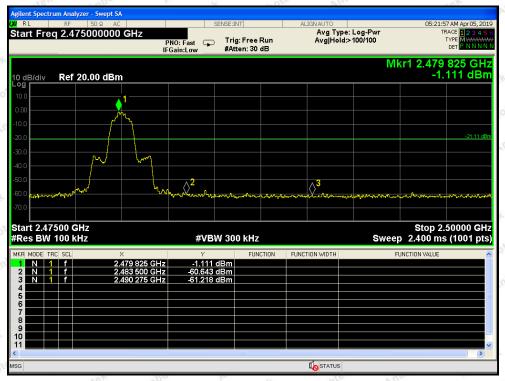
For Non-Hopping Mode



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 48 of 61



EDR mode -- Lowest



EDR mode -- Highest

Hotline 400-003-0500 www.anbotek.com

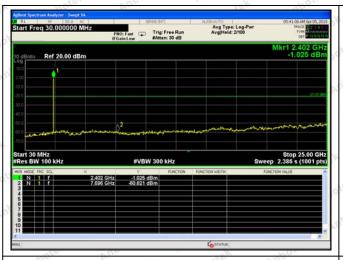


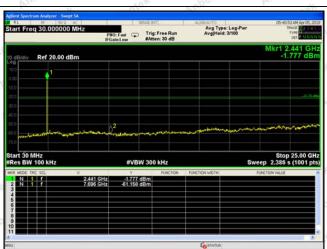
Report No.: SZAWW190320006-01

FCC ID: 2AIOHHT0802W16

Page 49 of 61

Conducted Emission Method

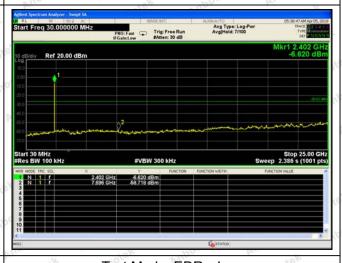




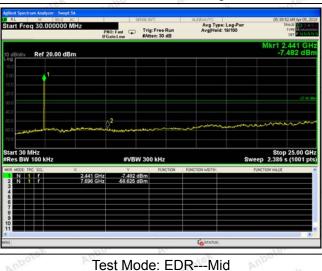
Test Mode: BDR---Low

Avg Type: Log-Pwr Avg[Hold: 2/100 Start Freq 30.000000 MHz PNO: Fast Trig: Free Run Ref 20.00 dBr

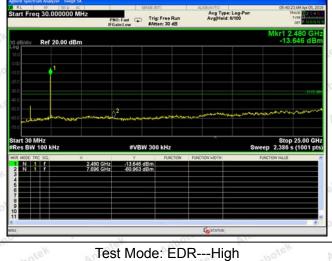
Test Mode: BDR---Mid



Test Mode: BDR---High



Test Mode: EDR---Low



Shenzhen Anbotek Compliance Laboratory Limited



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 50 of 61

# 11. Antenna Requirement

### 11.1. Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203 /247(c)
Requirement	1) 15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 2) 15.247(c) (1)(i) requirement: Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna

### 11.2. Antenna Connected Construction

The antenna is PIFA Antenna which permanently attached, and the best case gain of the antenna is 1.1 dBi. It complies with the standard requirement.





Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 51 of 61

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

Photo of Conducted Emission Measurement

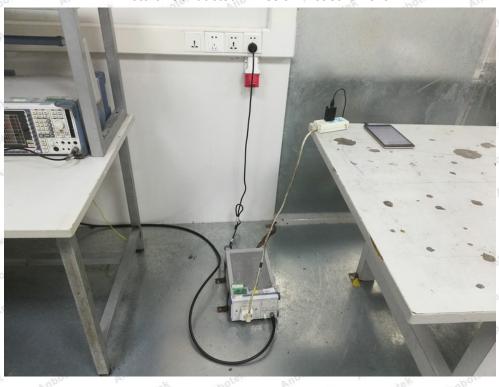


Photo of Radiation Emission Test



### Shenzhen Anbotek Compliance Laboratory Limited



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 52 of 61





Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 53 of 61

### APPENDIX II -- EXTERNAL PHOTOGRAPH





### Shenzhen Anbotek Compliance Laboratory Limited



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 54 of 61





### Shenzhen Anbotek Compliance Laboratory Limited



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 55 of 61

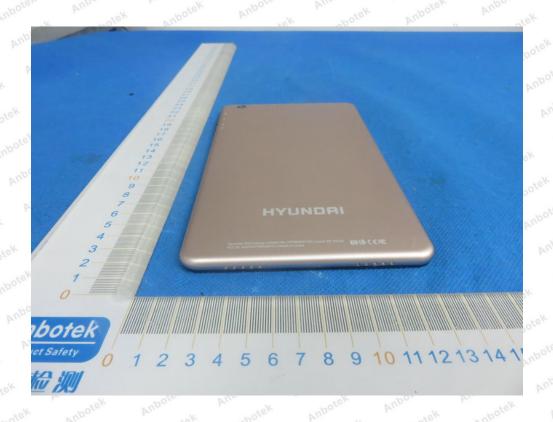




### Shenzhen Anbotek Compliance Laboratory Limited



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 56 of 61





# Shenzhen Anbotek Compliance Laboratory Limited



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 57 of 61

# **APPENDIX III -- INTERNAL PHOTOGRAPH**





### Shenzhen Anbotek Compliance Laboratory Limited



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 58 of 61





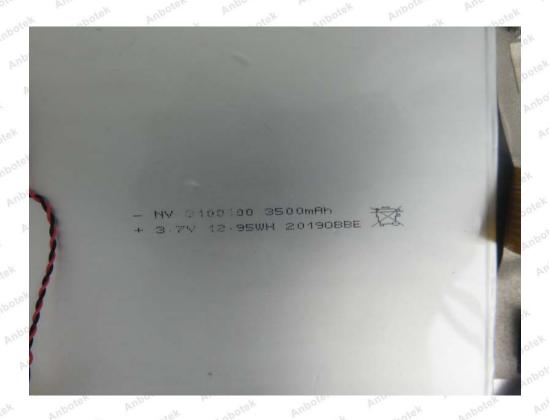
### Shenzhen Anbotek Compliance Laboratory Limited

Code: AB-RF-05-a

www.anbotek.com



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 59 of 61





# Shenzhen Anbotek Compliance Laboratory Limited



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 60 of 61





### Shenzhen Anbotek Compliance Laboratory Limited



Report No.: SZAWW190320006-01 FCC ID: 2AIOHHT0802W16 Page 61 of 61





--- End of Report -----

### Shenzhen Anbotek Compliance Laboratory Limited