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FCC TEST REPORT

Client Name : DONGGUAN TOGRAN ELECTRONICS TECHNOLOGY

CO.,LTD.

Address 262 shidan Rd.,3rd industrial Area, Juzhou, Shijie Town,

Dongguan city, China

Product Name : Vertical Mouse

Date : Jul. 16, 2019

Shenzhen Anbotek Compliance Laboratory Limited



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TEST REPORT

Applicant : DONGGUAN TOGRAN ELECTRONICS TECHNOLOGY CO.,LTD.

Manufacturer : DONGGUAN TOGRAN ELECTRONICS TECHNOLOGY CO.,LTD.

Product Name : Vertical Mouse

Model No. : TM209G

Trade Mark : Togran

Rating(s) : Input: DC 1.5V by "AA"*1 battery inside

Test Standard(s) : FCC Part15 Subpart C, Paragraph 15.249

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

Date of Test

Jun 17, 2019

Jun 17~Jul. 02, 2019

Prepared by

(Engineer / Oliay Yang)

Reviewer

(Supervisor / Snowy Meng)

Approved & Authorized Signer

(Manager / Sally Zhang)

All All





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1. General Information

1.1. Client Information

Applicant	DONGGUAN TOGRAN ELECTRONICS TECHNOLOGY CO.,LTD.	
Address	262 shidan Rd.,3rd industrial Area, Juzhou, Shijie Town, Dongguan city, China	iek rek
Manufacturer	DONGGUAN TOGRAN ELECTRONICS TECHNOLOGY CO.,LTD.	
Address	262 shidan Rd.,3rd industrial Area, Juzhou, Shijie Town, Dongguan city, China	P.U.
Factory	DONGGUAN TOGRAN ELECTRONICS TECHNOLOGY CO.,LTD.	
Address	262 shidan Rd.,3rd industrial Area, Juzhou, Shijie Town, Dongguan city,	potek

1.2. Description of Device (EUT)

Product Name	:	Vertical Mouse	tek Anbotek Anbotek Anbotek
Model No.	:	TM209G	hootek Anbotek Anbotek Anbotek
Trade Mark	:	Togran	Anbotek Anbotek Anbotek Anbote
Test Power Supply	:	DC 1.5V battery inside	Anbotek Anbotek Anbotek Ant
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(E	Engineering Sample)
		2408~2474MHz	2408~2474MHz
		34 Channels	34 Channels
Product Description	:	Modulation Type:	FSK nbotek Anbotek Anbotek Anb
		PCB Antenna	PCB Antenna
		0 dBi	-5.35 dBi

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





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1.3. Auxiliary Equipment Used During Test

e	N/A	otek	Anbotek	Anbore	VII.	Anbote Anbote	Anbo	otek vup

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.

Pretest Mode		Description	
Mode 1	olek Anbotek	CH01	Anbote, And
Mode 2	botek Anbotek	And CH17 Datek	Anbote Ans botek
Mode 3	nbotek Anbot	CH34	Anbore Am

For Radiated Emission						
Final Test Mode Description						
Mode 1	tek hotek Anbote CH01 tek Anbotek Anbotek					
Mode 2	CH17 hotek Anbore CH17					
Mode 3	Anbotek Anbotek Anbotek Anbotek Anbotek					

Note:

1. The engineering test program was provided and the EUT was programmed to be in continuously transmitting mode.



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1.5. List of Channels

Ob a made	Freq.	Channel	Freq.	Freq.	Freq.	Channal	Freq.
Channel	(MHz)	Channel	(MHz)	Channel	(MHz)	Channel	(MHz)
botek1 p	2408	10	2426	19	2444	28	2462
1002K	2410	11.×	2428	20	2446	29	2464
3 otek	2412	12 tek	2430	21	2448	30	2466
4 hotel	2414	13	2432	22	2450	4 31 nbote	2468
5 5	2416	14	2434	23 M	2452	32 _{cab}	2470
6	2418	o ^{ten} 15 And	2436	24 M	2454	33	2472
7	2420	16	2438	25	2456	34	2474
Aupole	2422	Anb17	2440	26	2458	Anco	nbotek
An9ore	2424	18	2442	27ex	2460	VUD.	abote

Code: AB-RF-05-a

400-003-0500 www.anbotek.com

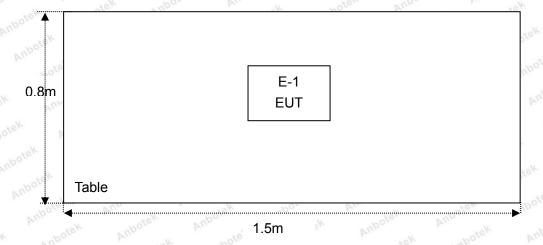


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1.6. Description of Test Setup

RE



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1.7. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.
inbatek	L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	100055	Nov. 26, 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
,te\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
⊌ [¥] 11.	Pre-amplifier	SONOMA	310N	186860	Nov. 05, 2018	1 Year
12.	EMI Test Software EZ-EMC	SHURPLE	N/A	Anbo N/A Anb	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

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1.8. 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, September 30, 2018.

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, March 07, 2019.

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



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2. Summary of Test Results

Test Item		Result	
Antenna Requirement	*upofer	PASS	tek
Conducted Emission	Anbore	N/A	hotek
Radiated Emission	K Anbe	PASS	Anbotek
20dB Bandwidth	otek b	PASS	Anbo
Band Edge	wotek	PASS	by.
	Antenna Requirement Conducted Emission Radiated Emission 20dB Bandwidth	Antenna Requirement Conducted Emission Radiated Emission 20dB Bandwidth	Antenna Requirement PASS Conducted Emission N/A Radiated Emission PASS 20dB Bandwidth PASS

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3. Conducted Emission Test

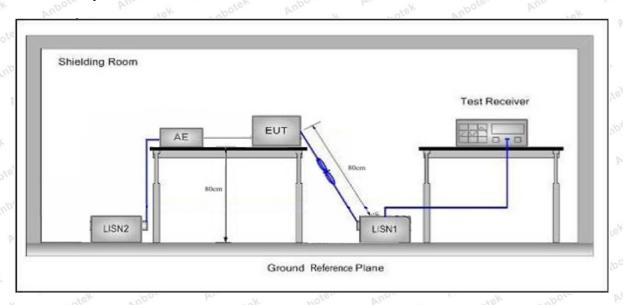
3.1. Test Standard and Limit

Test Standard	FCC Part15 Section 15.2	07 Anbote And Botek	Anbotek Anbos tek				
Test Limit	Fragueney	Maximum RF Line Voltage (dBuV)					
	Frequency	Quasi-peak Level	Average Level				
	150kHz~500kHz	66 ~ 56 *	56 ~ 46 *				
	500kHz~5MHz	Anbotek 56 Anbou	46				
	5MHz~30MHz	Anbotek 60 Anbotek	50 _M				

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.

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3.4. Test Data

The EUT is powered by DC 1.5V battery inside, so there is no need to conduct this test.

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4. Radiated Emission and Band Edge

4.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15	5.209 and 15.205	All	Anbotek	Anboursek
	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz~0.490MHz	2400/F(kHz)	Anbotek An	DOLO YUL	300
	0.490MHz-1.705MHz	24000/F(kHz)	Nupotek	Aupole - A	30
	1.705MHz-30MHz	30 notes	Anbotek	Aupore rok	30
Test Limit	30MHz~88MHz	100	40.0	Quasi-peak	3 otek
	88MHz~216MHz	150	43.5	Quasi-peak	ak 3 potek
	216MHz~960MHz	200	46.0	Quasi-peak	tek 3 nbot
	960MHz~1000MHz	500	54.0	Quasi-peak	atek3
	A b a v a 4000 M L b	500	54.0	Average	3.
	Above 1000MHz	Anbotek - Anbote	74.0	Peak	Anb 3 tek

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

Test Standard	FCC Part15 (Section 15.249	k abotek	Anboten	Anbotek	Anbotek
Test Limit	Frequency (MHz)	Field Strength of fundamental ((millivolts /meter)	Field Strength of Harmonics (microvolts/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	2400~2483.5	50	Anboten Anbe	114.0	Peak	inbote 3
	2400~2483.5	50	Anbotek Ar	94.0	Average	Anbotta A
	2400~2483.5	hoote Annibote	500	74.0	Peak	3
	2400~2483.5	Anborratek anb	500	54.0	Average	3

Remark:

(1) 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

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Figure 1. Below 30MHz

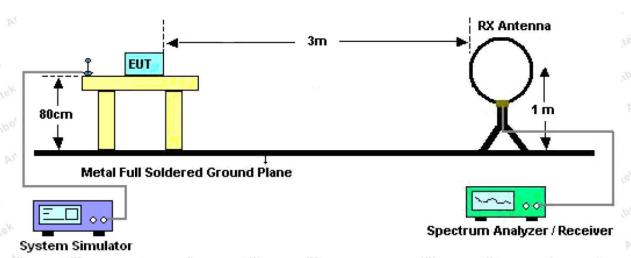


Figure 2. 30MHz to 1GHz

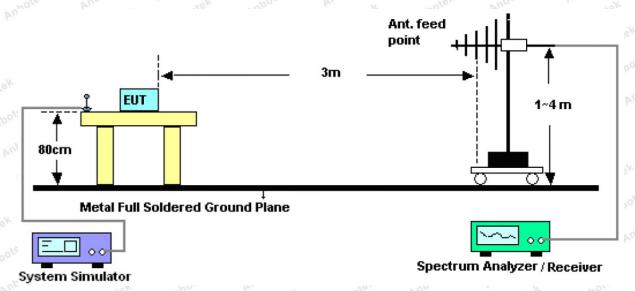
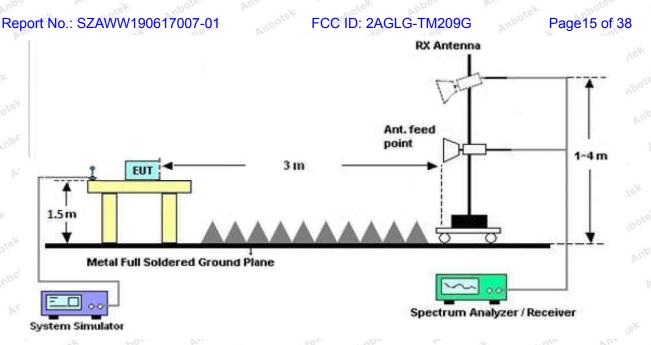


Figure 3. Above 1 GHz





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:

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.

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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 all kind of the place mode (X-axis, Y-axis, Z-axis), and found the X-axis is the worst case.

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

During the test, pre-scan all the modes, and found the Middle channel which is the worst case, only the worst case is recorded in the report



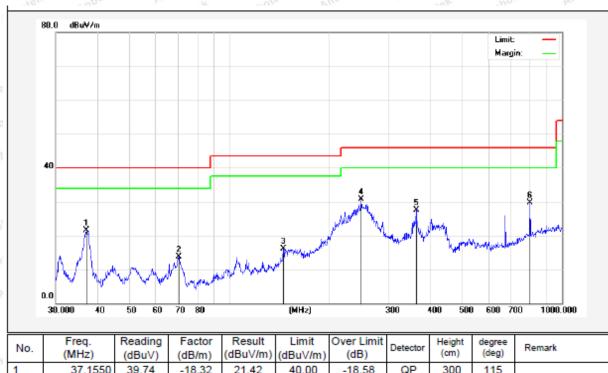
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Test Results (30~1000MHz)

Job No.: SZAWW190617007-01 Temp.(°C)/Hum.(%RH): 24.9°C/51%RH

FCC PART 15C Standard: Power Source: DC 1.5V battery inside

Horizontal Test Mode: Mode 2 Polarization:



ú	No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
8	1	37.1550	39.74	-18.32	21.42	40.00	-18.58	QP	300	115	
8	2	70.3365	36.31	-22.52	13.79	40.00	-26.21	QP	300	360	
	3	145.3506	39.58	-23.41	16.17	43.50	-27.33	QP	300	253	
2	4	248.5519	50.12	-19.34	30.78	46.00	-15.22	QP	300	55	
	5	364.2595	42.30	-14.70	27.60	46.00	-18.40	QP	300	48	
	6	801.7863	37.47	-7.67	29.80	46.00	-16.20	QP	300	257	

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Hotline www.anbotek.com



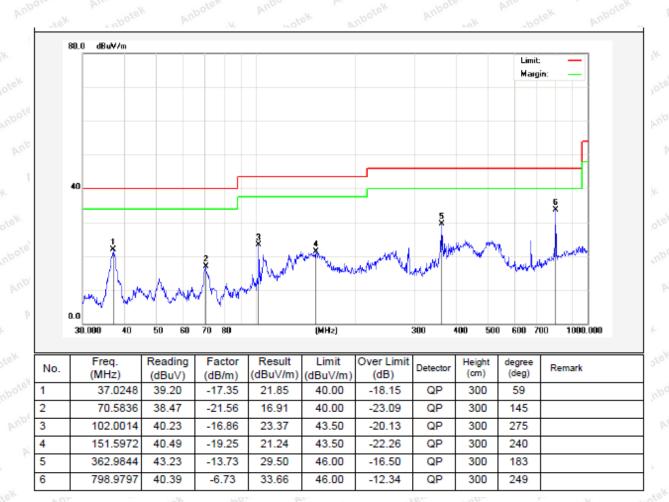
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Test Results (30~1000MHz)

SZAWW190510011 -02 Temp.($^{\circ}$)/Hum.($^{\circ}$ RH): Job No.: 24.9°C/51%RH

Standard: FCC PART 15C Power Source: DC 1.5V battery inside

Mode 2 Polarization: Test Mode: Vertical





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Test Results (1GHz-25GHz)

~0~	la.	W	250		No	100	Dir		_1(
Test Mode:	CH01 (Low	channel)							
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.	Detecto r
2408.0000	96.42	31.12	2.18	35.33	94.39	114.00	-19.61	٧	Peak
2408.0000	83.07	31.12	2.18	35.33	81.04	94.00	-12.96	ok ∧	AVG
4816.0000	47.91	34.01	2.58	34.65	49.85	74.00	-24.15	V	Peak
4816.0000	40.13	34.01	2.58	34.65	42.07	54.00	-11.93	V.ek	AVG
7224.0000	48.75	36.16	2.97	35.07	52.81	74.00	-21.19	Vubo	Peak
7224.0000	37.57	36.16	2.97	35.07	41.63	54.00	-12.37	Λ_{Jpo}	AVG
9632.0000	Anbotel	Aupo	L nbote	K AN	oore, k	in hotek	Anbotek	PL	bor
12040.0000	Ar* otel	Anbo	tek uk	otek	Aupote, K	Vunn Crek	anbott	. He	Aupor
14448.0000	*Anbote	PUP	rek by	abotek	Aupolen	Mup	lek voj	otek	Anbore
16856.0000	tek * Anb	Diek P	upor rek	abotek	Anbote	Aug	otek	nbotek	Anb
2408.0000	96.74	31.12	2.18	35.33	94.71	114.00	-19.29	Hoo	Peak
2408.0000	85.65	31.12	2.18	35.33	83.62	94.00	-10.38	Н	AVG
4816.0000	47.31	34.01	2.58	34.65	49.25	74.00	-24.75	√ H	Peak
4816.0000	40.50	34.01	2.58	34.65	42.44	54.00	-11.56	Hose	AVG
7224.0000	45.84	36.16	2.97	35.07	49.90	74.00	-24.10	Hek	Peak
7224.0000	36.14	36.16	2.97	35.07	40.20	54.00	-13.80	H ,	AVG
9632.0000	poter *	hbo otek	anbotek	Anbott	Par	hotek	Anbotek	Anbo.	1ek
12040.0000	Anbotek	Anbo	, upotel	Ant	ore. by	notek	Anbotek	Ani	16/r
14448.0000	An'x otok	Aupos	lek "up,	tek l	Tupore.	Run Potek	Anbote		Aupor
16856.0000	Note !	Vupo	olek bi.	hotek	Auporen	PUD.	ok Anb	oke ^k	Auporo

Note:

- 1. Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
 - 2. "*" means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.



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Test Mode:	CH17 (Midd	le channel)						
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.	Detecto r
2440.0000	93.59	31.12	2.20	34.51	92.40	114.00	-21.60	V	Peak
2440.0000	85.43	31.22	2.20	34.51	84.34	94.00	-9.66	V	AVG
4880.0000	49.62	34.98	2.49	34.14	52.95	74.00	-21.05	V	Peak
4880.0000	41.06	34.98	2.49	34.14	44.39	54.00	-9.61	oo'V	AVG
7320.0000	46.93	36.01	3.01	34.56	51.39	74.00	-22.61	Antone	Peak
7320.0000	36.53	36.01	3.01	34.56	40.99	54.00	-13.01	N_{p_0}	AVG
9760.0000	* upo*ek	Anbots	K Kun	K AN	potek p	Whor	A. shotek	P.	boten
12200.0000	*botek	Anbote	Y And	otek	Anbotek	Aupor	h. aboti	48	Anboren
14640.0000	* nbote	k Anb	Ore. Yu.	botek.	Anbotek	Anbor	ok po	otek	Anbote
17080.0000	1	otek p	Upore,	Kup "Ofek	Anbote	Aupo	rek bu	botek	Anb
2440.0000	96.51	31.12	2.20	34.51	95.32	114.00	-18.68	H	Peak
2440.0000	83.72	31.12	2.20	34.51	82.53	94.00	-11.47	Н	AVG
4880.0000	50.45	34.98	2.49	34.14	53.78	74.00	-20.22	ж Н	Peak
4880.0000	40.79	34.98	2.49	34.14	44.12	54.00	-9.88	Н	AVG
7320.0000	45.33	36.01	3.01	34.56	49.79	74.00	-24.21	H	Peak
7320.0000	38.22	36.01	3.01	34.56	42.68	54.00	-11.32	^{rup} or	AVG
9760.0000	botek * A	Upor Pak	An	Anbore	Pup.	iek A.	abotek	Anbot	-K
12200.0000	Anbotek	Aupore	hotel	Ant	oler V	ipo potek	anbotek .	An	7018.
14640.0000	Anisotek	Aupore	bur hur	stek .	hotek	Vupo.	abote abote	K	Auporen
17080.0000	*hbotek	Anbe	V Man	wotek.	Anbotek	Vupo	PK -10	otek	Anboter

Note:

- 1. Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2. "*" means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.



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70.		70.	WO.	P'		- 07		
CH34 (High	channel)							
Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Pol.	Detecto r
95.66	31.65	2.23	36.07	93.47	114.00	-20.53	V	Peak
83.40	31.65	2.23	36.07	81.21	94.00	-12.79	V	AVG
48.94	35.06	2.60	34.93	51.67	74.00	-22.33	V	Peak
39.11	35.06	2.60	34.93	41.84	54.00	-12.16	V	AVG
45.53	36.19	3.12	35.11	49.73	74.00	-24.27	Antone	Peak
36.61	36.19	3.12	35.11	40.81	54.00	-13.19	Nipo	AVG
nbokek	Anbote	K Was	K AN	potek p	upor	Allotek	P.Y	boten
*botek	Anbote	Y Amb	otek	Anbotek	Aupor	All both	,K	Anboren
* abote	Anb	Pres, Yur	"otek	Anbotek	Anbore	lek ek	otek	Anbote
rek * nb	otek p	upoter	Kupa rotek	Anbote	Anbe	rok bu	botek	Anb
93.70	31.65	2.23	36.07	91.51	114.00	-22.49	H	Peak
83.38	31.65	2.23	36.07	81.19	94.00	-12.81	Н	AVG
47.53	35.06	2.60	34.93	50.26	74.00	-23.74	κ H	Peak
41.55	35.06	2.60	34.93	44.28	54.00	-9.72	Н	AVG
48.53	36.19	3.12	35.11	52.73	74.00	-21.27	H	Peak
37.42	36.19	3.12	35.11	41.62	54.00	-12.38	hpore.	AVG
botek * A	Upore OK	Ann	Anbore	Aup	rek An	nbotek	Anbot	P
vupotek	Anbore	hotel	Ant	otek N	ipo.	a nbotek	An	Jores.
Anl*otek	Anbore.	VA MUN	stek	hotek	Vupo.	Ai.	4	Aupoter
*nbotek	Anbe	K And	notek	Anbotek	Vupore	P	stek.	Anbotel
	Read Level (dBuV) 95.66 83.40 48.94 39.11 45.53 36.61 * * * 93.70 83.38 47.53 41.55 48.53 37.42 * *	Read Level (dBuV) Factor (dB/m) 95.66 31.65 83.40 31.65 48.94 35.06 39.11 35.06 45.53 36.19 * * * 93.70 31.65 83.38 31.65 47.53 35.06 41.55 35.06 48.53 36.19 * * * * * 93.742 36.19 * * * * * * * * * * * * *	Read Level (dBuV) Antenna Factor (dB/m) Cable Loss (dB) 95.66 31.65 2.23 83.40 31.65 2.23 48.94 35.06 2.60 39.11 35.06 2.60 45.53 36.19 3.12 * * * * * * 93.70 31.65 2.23 83.38 31.65 2.23 47.53 35.06 2.60 41.55 35.06 2.60 48.53 36.19 3.12 * * * * * *	Read Level (dBuV) Antenna Factor (dB/m) Cable Loss (dB) Preamp Factor (dB) 95.66 31.65 2.23 36.07 83.40 31.65 2.23 36.07 48.94 35.06 2.60 34.93 39.11 35.06 2.60 34.93 45.53 36.19 3.12 35.11 * * * * 93.70 31.65 2.23 36.07 83.38 31.65 2.23 36.07 47.53 35.06 2.60 34.93 41.55 35.06 2.60 34.93 48.53 36.19 3.12 35.11 * * * * * * * * 48.53 36.19 3.12 35.11 * * * * * * * * * * * * * * * * <tr< td=""><td>Read Level (dBuV) Antenna Factor (dB/m) Cable Loss (dB) Preamp Factor (dB) Level (dBuV/m) 95.66 31.65 2.23 36.07 93.47 83.40 31.65 2.23 36.07 81.21 48.94 35.06 2.60 34.93 51.67 39.11 35.06 2.60 34.93 41.84 45.53 36.19 3.12 35.11 49.73 36.61 36.19 3.12 35.11 40.81 * * * * 93.70 31.65 2.23 36.07 91.51 83.38 31.65 2.23 36.07 81.19 47.53 35.06 2.60 34.93 50.26 41.55 35.06 2.60 34.93 44.28 48.53 36.19 3.12 35.11 52.73 37.42 36.19 3.12 35.11 41.62 * * * * * * *<td>Read Level (dBuV) Antenna Factor (dB/m) Cable Loss (dB) Preamp Factor (dB) Level (dBuV/m) Limit (dBuV/m) 95.66 31.65 2.23 36.07 93.47 114.00 83.40 31.65 2.23 36.07 81.21 94.00 48.94 35.06 2.60 34.93 51.67 74.00 39.11 35.06 2.60 34.93 41.84 54.00 45.53 36.19 3.12 35.11 49.73 74.00 36.61 36.19 3.12 35.11 40.81 54.00 * * * * * * 93.70 31.65 2.23 36.07 91.51 114.00 83.38 31.65 2.23 36.07 81.19 94.00 47.53 35.06 2.60 34.93 50.26 74.00 41.55 35.06 2.60 34.93 44.28 54.00 * * * * * *</td><td>Read Level (dBuV) Antenna Factor (dB/m) Cable Loss (dB) Preamp Factor (dB) Level (dBuV/m) Limit (dBuV/m) Over Limit (dB) 95.66 31.65 2.23 36.07 93.47 114.00 -20.53 83.40 31.65 2.23 36.07 81.21 94.00 -12.79 48.94 35.06 2.60 34.93 51.67 74.00 -22.33 39.11 35.06 2.60 34.93 41.84 54.00 -12.16 45.53 36.19 3.12 35.11 49.73 74.00 -24.27 36.61 36.19 3.12 35.11 40.81 54.00 -13.19 * * * * * * * * 93.70 31.65 2.23 36.07 91.51 114.00 -22.49 83.38 31.65 2.23 36.07 81.19 94.00 -12.81 47.53 35.06 2.60 34.93 50.26 74.00 -23.74</td><td>Read Level (dBuV) Antenna Factor (dB/m) Cable Loss (dB) Preamp Factor (dB) Level (dBuV/m) Limit (dBuV/m) Over Limit (dBuV/m) Pol. 95.66 31.65 2.23 36.07 93.47 114.00 -20.53 V 83.40 31.65 2.23 36.07 81.21 94.00 -12.79 V 48.94 35.06 2.60 34.93 51.67 74.00 -22.33 V 39.11 35.06 2.60 34.93 41.84 54.00 -12.16 V 45.53 36.19 3.12 35.11 49.73 74.00 -24.27 V 36.61 36.19 3.12 35.11 40.81 54.00 -13.19 V *</td></td></tr<>	Read Level (dBuV) Antenna Factor (dB/m) Cable Loss (dB) Preamp Factor (dB) Level (dBuV/m) 95.66 31.65 2.23 36.07 93.47 83.40 31.65 2.23 36.07 81.21 48.94 35.06 2.60 34.93 51.67 39.11 35.06 2.60 34.93 41.84 45.53 36.19 3.12 35.11 49.73 36.61 36.19 3.12 35.11 40.81 * * * * 93.70 31.65 2.23 36.07 91.51 83.38 31.65 2.23 36.07 81.19 47.53 35.06 2.60 34.93 50.26 41.55 35.06 2.60 34.93 44.28 48.53 36.19 3.12 35.11 52.73 37.42 36.19 3.12 35.11 41.62 * * * * * * * <td>Read Level (dBuV) Antenna Factor (dB/m) Cable Loss (dB) Preamp Factor (dB) Level (dBuV/m) Limit (dBuV/m) 95.66 31.65 2.23 36.07 93.47 114.00 83.40 31.65 2.23 36.07 81.21 94.00 48.94 35.06 2.60 34.93 51.67 74.00 39.11 35.06 2.60 34.93 41.84 54.00 45.53 36.19 3.12 35.11 49.73 74.00 36.61 36.19 3.12 35.11 40.81 54.00 * * * * * * 93.70 31.65 2.23 36.07 91.51 114.00 83.38 31.65 2.23 36.07 81.19 94.00 47.53 35.06 2.60 34.93 50.26 74.00 41.55 35.06 2.60 34.93 44.28 54.00 * * * * * *</td> <td>Read Level (dBuV) Antenna Factor (dB/m) Cable Loss (dB) Preamp Factor (dB) Level (dBuV/m) Limit (dBuV/m) Over Limit (dB) 95.66 31.65 2.23 36.07 93.47 114.00 -20.53 83.40 31.65 2.23 36.07 81.21 94.00 -12.79 48.94 35.06 2.60 34.93 51.67 74.00 -22.33 39.11 35.06 2.60 34.93 41.84 54.00 -12.16 45.53 36.19 3.12 35.11 49.73 74.00 -24.27 36.61 36.19 3.12 35.11 40.81 54.00 -13.19 * * * * * * * * 93.70 31.65 2.23 36.07 91.51 114.00 -22.49 83.38 31.65 2.23 36.07 81.19 94.00 -12.81 47.53 35.06 2.60 34.93 50.26 74.00 -23.74</td> <td>Read Level (dBuV) Antenna Factor (dB/m) Cable Loss (dB) Preamp Factor (dB) Level (dBuV/m) Limit (dBuV/m) Over Limit (dBuV/m) Pol. 95.66 31.65 2.23 36.07 93.47 114.00 -20.53 V 83.40 31.65 2.23 36.07 81.21 94.00 -12.79 V 48.94 35.06 2.60 34.93 51.67 74.00 -22.33 V 39.11 35.06 2.60 34.93 41.84 54.00 -12.16 V 45.53 36.19 3.12 35.11 49.73 74.00 -24.27 V 36.61 36.19 3.12 35.11 40.81 54.00 -13.19 V *</td>	Read Level (dBuV) Antenna Factor (dB/m) Cable Loss (dB) Preamp Factor (dB) Level (dBuV/m) Limit (dBuV/m) 95.66 31.65 2.23 36.07 93.47 114.00 83.40 31.65 2.23 36.07 81.21 94.00 48.94 35.06 2.60 34.93 51.67 74.00 39.11 35.06 2.60 34.93 41.84 54.00 45.53 36.19 3.12 35.11 49.73 74.00 36.61 36.19 3.12 35.11 40.81 54.00 * * * * * * 93.70 31.65 2.23 36.07 91.51 114.00 83.38 31.65 2.23 36.07 81.19 94.00 47.53 35.06 2.60 34.93 50.26 74.00 41.55 35.06 2.60 34.93 44.28 54.00 * * * * * *	Read Level (dBuV) Antenna Factor (dB/m) Cable Loss (dB) Preamp Factor (dB) Level (dBuV/m) Limit (dBuV/m) Over Limit (dB) 95.66 31.65 2.23 36.07 93.47 114.00 -20.53 83.40 31.65 2.23 36.07 81.21 94.00 -12.79 48.94 35.06 2.60 34.93 51.67 74.00 -22.33 39.11 35.06 2.60 34.93 41.84 54.00 -12.16 45.53 36.19 3.12 35.11 49.73 74.00 -24.27 36.61 36.19 3.12 35.11 40.81 54.00 -13.19 * * * * * * * * 93.70 31.65 2.23 36.07 91.51 114.00 -22.49 83.38 31.65 2.23 36.07 81.19 94.00 -12.81 47.53 35.06 2.60 34.93 50.26 74.00 -23.74	Read Level (dBuV) Antenna Factor (dB/m) Cable Loss (dB) Preamp Factor (dB) Level (dBuV/m) Limit (dBuV/m) Over Limit (dBuV/m) Pol. 95.66 31.65 2.23 36.07 93.47 114.00 -20.53 V 83.40 31.65 2.23 36.07 81.21 94.00 -12.79 V 48.94 35.06 2.60 34.93 51.67 74.00 -22.33 V 39.11 35.06 2.60 34.93 41.84 54.00 -12.16 V 45.53 36.19 3.12 35.11 49.73 74.00 -24.27 V 36.61 36.19 3.12 35.11 40.81 54.00 -13.19 V *

Note:

- 1. Level =Receiver Read level + Antenna Factor + Cable Loss Preamplifier Factor
- 2. "*" means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.



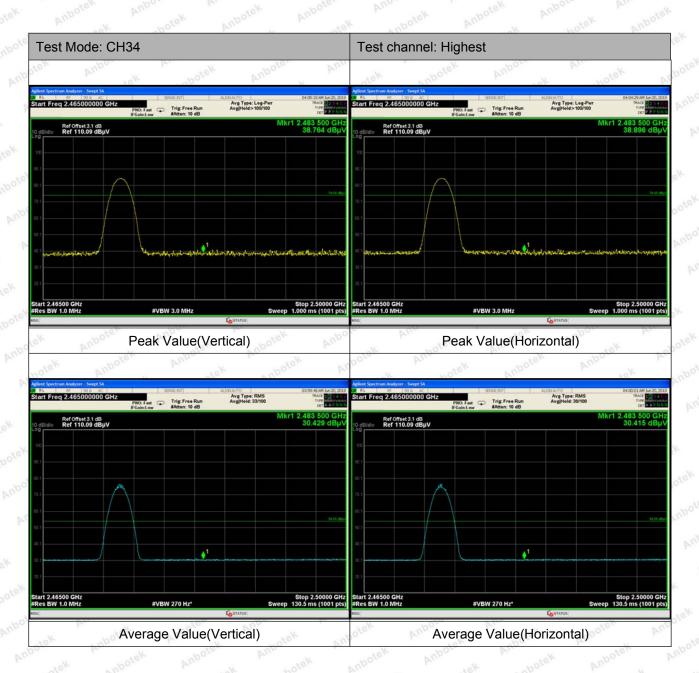
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Radiated Band Edge:





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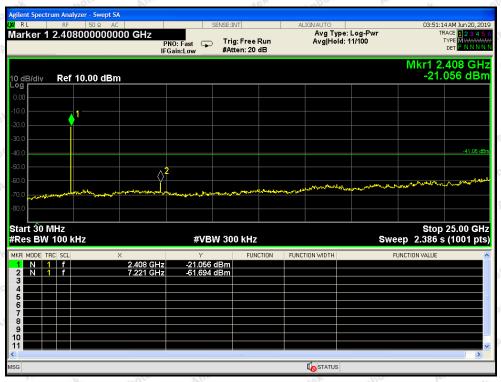
Remark:

1. Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

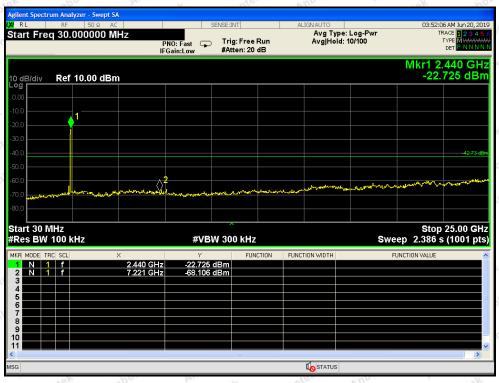


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CH: Low

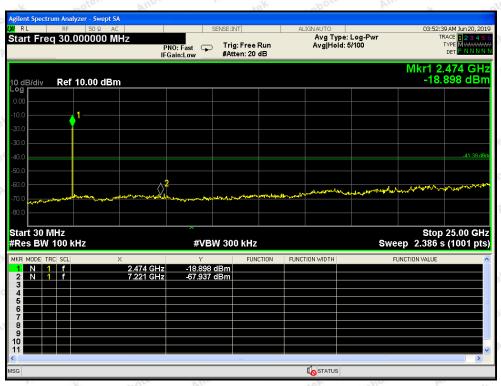


CH: Middle



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CH: High



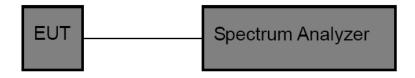
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5. 20dB Bandwidth Test

5.1. Test Standard and Limit

Test Standard FCC Part15 C Section 15.249

5.2. Test Setup



5.3. Test Procedure

- 1. Place the EUT on the table and set it in the transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set the spectrum analyzer as:

RBW = 30kHz, VBW≥3*RBW =100kHz,

Detector= Average

Trace mode= Max hold.

Sweep- auto couple.

- 4. Mark the peak frequency and -20dB (upper and lower) frequency.
- 5. Repeat until all the rest channels are investigated.

5.4. Test Data

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

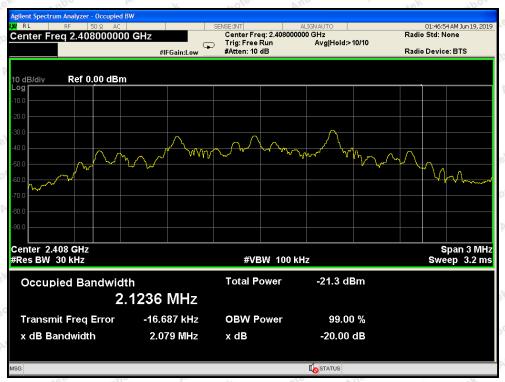
Test Voltage : DC 1.5V battery inside Temperature : 22.4℃

Test Result : PASS Humidity : 55%RH

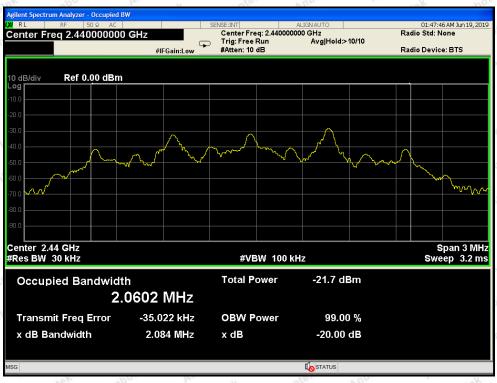
Frequency (MHz)	Bandwidth (kHz)	Result		
2408MHZ	2079	PASS		
2440MHZ	2084	PASS		
2474MHZ	2085	PASS		



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Test Mode: Low



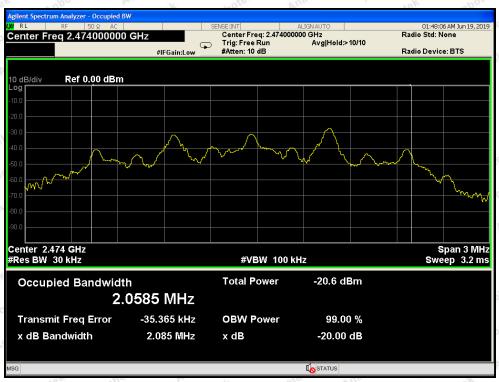
Test Mode: Middle

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Test Mode: High



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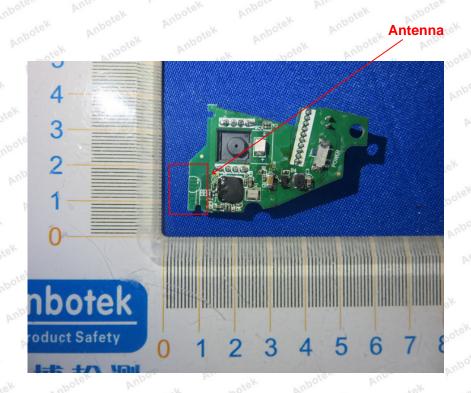
6. Antenna Requirement

6.1. Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203
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

6.2. Antenna Connected Construction

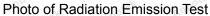
The antenna is a PCB Antenna which permanently attached, and the best case gain of the antenna is -5.51 dBi. It complies with the standard requirement.





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APPENDIX I -- TEST SETUP PHOTOGRAPH







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APPENDIX II -- EXTERNAL PHOTOGRAPH





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Hotline



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APPENDIX III -- INTERNAL PHOTOGRAPH





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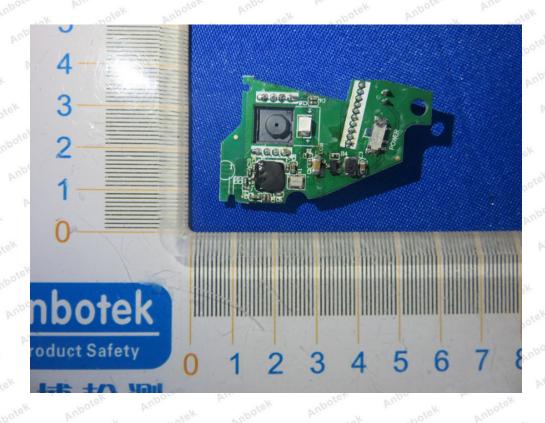
Code: AB-RF-05-a

Hotline 400-003-0500 www.anbotek.com



FCC ID: 2AGLG-TM209G

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FCC ID: 2AGLG-TM209G

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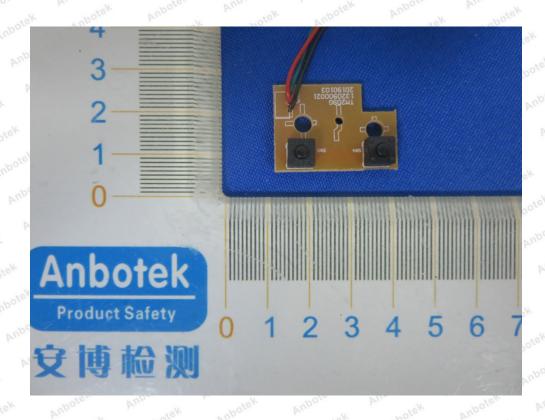


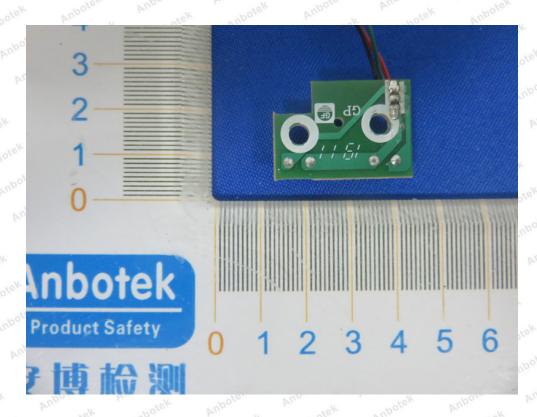
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FCC ID: 2AGLG-TM209G

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- End of Report -

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Tel:(86)755–26066440 Fax:(86)755–26014772 Email:service@anbotek.com

