Report No.: NTC1912110FV00 FCC ID: 2ALBPET1030



RADIO TEST REPORT

The device described below is tested by Dongguan Nore Testing Center Co., Ltd. to determine the maximum emission levels emanating from the device, the severe levels which the device can endure and E.U.T.'s performance criterion. The test results, data evaluation, test procedures, and equipment of configurations shown in this report were made in accordance with the procedures in ANSI C63.10(2013).

Applicant/ Manufacturer: BESTOM TECHNOLOGY(HK) CO., LIMITED

Address R718 BuildingB1, Huayuan S&TP, No.168 BY Road Xixiang Street,

Shenzhen City, China

Factory : Guangzhou Jinghua Precision Optics Co., Ltd.

Address : 12 Kangda Rd., Dongcheng Zone, Yunpu Industrial District, Huangpu,

Guangzhou, China

E.U.T. : Bestable

Brand Name : N/A

Model No. : ET1030

FCC ID : 2ALBPET1030

Measurement Standard: FCC PART 15.249

Date of Receiver : November 08, 2019

Date of Test : November 08, 2019 to December 09, 2019

Date of Report : December 09, 2019

This Test Report is Issued Under the Authority of :

Prepared by

Rose Hu / Engineer

Approved grauf prized Signer

ri Fan Authorized Signatory

This test report is for the customer shown above and their specific product only. This report applies to above tested sample only and shall not be reproduced in part without written approval of Dongguan Nore Testing Center Co., Ltd.



Table of Contents

1. GENERAL INFORMATION	4
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST	4
1.2 RELATED SUBMITTAL(S) / GRANT (S)	6
1.3 TEST METHODOLOGY	6
1.4 EQUIPMENT MODIFICATIONS	6
1.5 SUPPORT DEVICE	
1.6 TEST FACILITY AND LOCATION	
1.7 DEVIATIONS AND ABNORMALITIES FROM STANDARD CONDITIONS	
1.8 SUMMARY OF TEST RESULTS	
2. SYSTEM TEST CONFIGURATION	9
2.1 EUT CONFIGURATION	9
2.2 SPECIAL ACCESSORIES	9
2.3 DESCRIPTION OF TEST MODES	
2.4 EUT Exercise	
3. CONDUCTED EMISSIONS TEST	10
3.1 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	10
3.2 TEST CONDITION	
3.3 MEASUREMENT RESULTS	10
4. RADIATED EMISSION TEST	13
4.1 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	13
4.2 MEASUREMENT PROCEDURE	
4.3 LIMIT	15
4.4 MEASUREMENT RESULTS	16
5. 20DB BANDWIDTH	20
5.1 Measurement Procedure	20
5.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)	20
5.3 MEASUREMENT RESULTS	20
6. BAND EDGE	26
6.1 MEASUREMENT PROCEDURE	26
6.2 LIMIT	
6.3 MEASUREMENT RESULTS	26
7. ANTENNA REQUIREMENT	29
7.1 MEASUREMENT PROCEDURE	29
7.2 MEASUREMENT RESULTS	
8. TEST EQUIPMENT LIST	30

Dongguan Nore Testing Center Co., Ltd. Report No.: NTC1912110FV00 FCC ID: 2ALBPET1030



Revision History of This Test Report

Report Number	Description	Issued Date
NTC1912110FV00	Initial Issue	2019-12-09

Report No.: NTC1912110FV00 FCC ID: 2ALBPET1030



1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test

E.U.T. : Bestable

Main model number : FT1030

Brand Name : N/A

Rating : DC 5V From Type-C USB Port

Test Voltage : AC 120V 60Hz Adapter Input,

AC 240V 60Hz Adapter Input

Only the worst case was recorded in the test report.

Cable : N/A

Adapter : N/A

Hardware version : V1.0

Software version : V1.0

Note : This report only applies to BT(BDR+EDR) function.

Technical parameters

Bluetooth Version : BT 4.0+EDR Frequency Range : 2402-2480MHz

Modulation : GFSK, π/4-DQPSK, 8DPSK

Number of Channel : 79 Channel space : 1MHz

: 1Mbps for GFSK Date Rate

2Mbps for $\pi 4$ /-DQPSK

3Mbps for 8DPSK

Antenna Type : Integral antenna

Antenna Gain : 2 dBi

FCC ID: 2ALBPET1030



BDR+EDR Channel List

Channel	Frequency MHz	Channel	Frequency MHz	Channel	Frequency MHz	Channel	Frequency MHz
1	2402	21	2422	41	2442	61	2462
2	2403	22	2423	42	2443	62	2463
3	2404	23	2424	43	2444	63	2464
4	2405	24	2425	44	2445	64	2465
5	2406	25	2426	45	2446	65	2466
6	2407	26	2427	46	2447	66	2467
7	2408	27	2428	47	2448	67	2468
8	2409	28	2429	48	2449	68	2469
9	2410	29	2430	49	2450	69	2470
10	2411	30	2431	50	2451	70	2471
11	2412	31	2432	51	2452	71	2472
12	2413	32	2433	52	2453	72	2473
13	2414	33	2434	53	2454	73	2474
14	2415	34	2435	54	2455	74	2475
15	2416	35	2436	55	2456	75	2476
16	2417	36	2437	56	2457	76	2477
17	2418	37	2438	57	2458	77	2478
18	2419	38	2439	58	2459	78	2479
19	2420	39	2440	59	2460	79	2480
20	2421	40	2441	60	2461		

Note: According to section 15.31(m), regards to the operating frequency range over 10MHz, the Lowest, middle, and the Highest frequency of channel were selected to perform the test. The selected frequency and test software see below:

Channel	Frequency MHz
1	2402
40	2441
79	2480

Test SW version	EngineerMode.apk
-----------------	------------------

FCC ID: 2ALBPET1030



1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: 2ALBPET1030 filing to comply with Section 15.249 of the FCC Part 15 (2017), Subpart C Rule.

1.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10 (2013). Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans were performed in the semi-anechoic chamber only to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters.

1.4 Equipment Modifications

Not available for this EUT intended for grant.

1.5 Support Device

: Manufacturer: HUWEI Adapter

Model No.: HW-050200C01

Input: AC100-240V 50/60Hz, 0.5A

Output: DC5V 2A

: Manufacturer: Lenovo Notebook

> Model: TP00067A P/N: SL10G10768

S/N: PF-0DS3YC 15/12

Adapter Manufacturer: Lenovo (For Notebook) Model: ADLX65NLC3A

I/P: AC 100-240V 50-60Hz, 1.8A

O/P: DC 20V 3.25A

Report No.: NTC1912110FV00 FCC ID: 2ALBPET1030



1.6 Test Facility and Location

Site Description

EMC Lab : Listed by CNAS, August 13, 2018

The certificate is valid until August 13, 2024

The Laboratory has been assessed and proved to

be in compliance with CNAS/CL01

The Certificate Registration Number is L5795.

Listed by A2LA, November 01, 2017

The certificate is valid until December 31, 2021 The Laboratory has been assessed and proved to

be in compliance with ISO17025

The Certificate Registration Number is 4429.01

Listed by FCC, November 06, 2017 The Designation Number is CN1214 Test Firm Registration Number: 907417

Listed by Industry Canada, June 08, 2017

The Certificate Registration Number. Is 46405-9743

Name of Firm : Dongguan Nore Testing Center Co., Ltd.

(Dongguan NTC Co., Ltd.)

Site Location : Building D, Gaosheng Science and Technology

park, Hongtu road, Nancheng district, Dongguan

city, Guangdong province, China

1.7 Deviations and Abnormalities from Standard Conditions

No additions, deviations and exclusions from the standard.

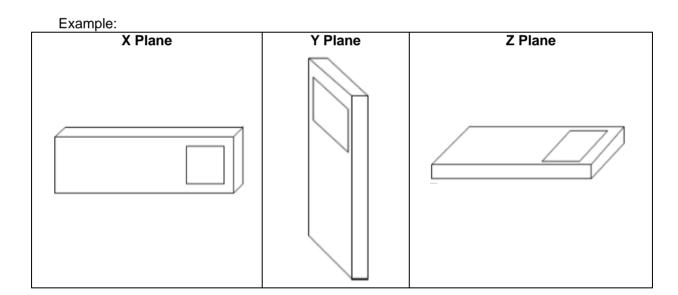
FCC ID: 2ALBPET1030



1.8 Summary of Test Results

FCC Rules	Description Of Test	Uncertainty	Result
§15.207(a)	AC Power Conducted Emission	±1.06dB	PASS
§15.249(a)/ 15.209	Radiated Emissions	±3.70dB	PASS
§15.249(d)/ 15.205	Band Edge	±1.70dB	PASS
§15.215(c)	20dB Bandwidth	±1.42 x10 ⁻⁴ %	PASS
§15.203	Antenna Requirement		PASS

Note: The EUT operating multiple positions, therefore the EUT shall be performed three orthogonal planes. The worst plane is X.



FCC ID: 2ALBPET1030



2. System Test Configuration

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 Special Accessories

Not available for this EUT intended for grant.

2.3 Description of test modes

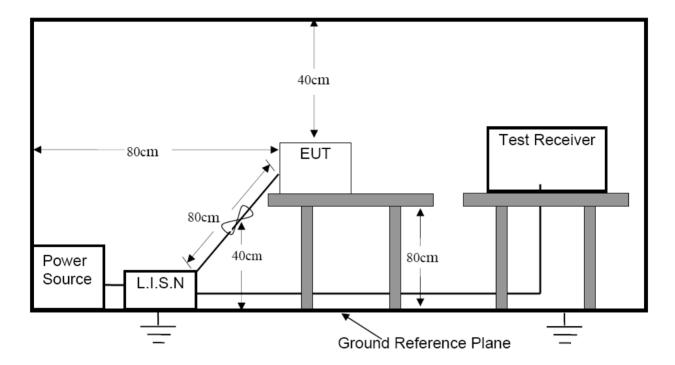
The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and normal mode is programmed. The Lowest, middle and highest channel were chosen for testing, and all packets DH1, DH3 and DH5 mode in all modulation type GFSK, $\pi/4$ -DQPSK, 8DPSK were tested.

2.4 EUT Exercise

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements.

3. Conducted Emissions Test

3.1 Test SET-UP (Block Diagram of Configuration)



3.2 Test Condition

Test Requirement: FCC Part 15.207

Frequency Range: 150KHz ~ 30MHz

Detector: RBW 9KHz, VBW 30KHz

Operation Mode: TX

3.3 Measurement Results

Please refer to following plots of the worst case: GFSK Low channel.

The worst test voltage: AC 120V 60Hz

FCC ID: 2ALBPET1030

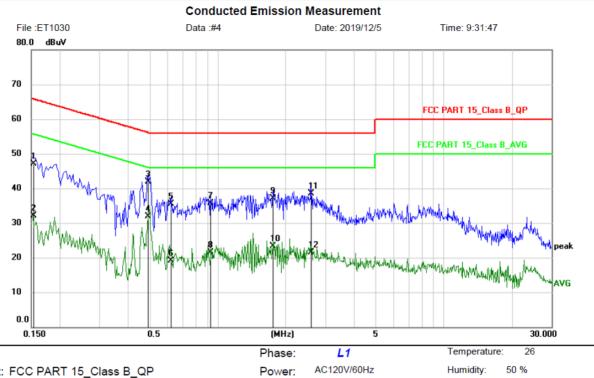




Dongguan NTC Co., Ltd.

Tel: +86-769-22022444 Fax: +86-769-22022799

Web: Http://www.ntc-c.com



Limit: FCC PART 15_Class B_QP

EUT: Bestable M/N: ET1030 Mode: TX-BT

Note:

Site

No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1539	36.50	10.60	47.10	65.79	-18.69	QP	
2	0.1539	21.60	10.60	32.20	55.79	-23.59	AVG	
3 *	0.4940	31.27	10.63	41.90	56.10	-14.20	QP	
4	0.4940	21.27	10.63	31.90	46.10	-14.20	AVG	
5	0.6220	24.95	10.65	35.60	56.00	-20.40	QP	
6	0.6220	8.55	10.65	19.20	46.00	-26.80	AVG	
7	0.9300	25.11	10.69	35.80	56.00	-20.20	QP	
8	0.9300	10.81	10.69	21.50	46.00	-24.50	AVG	
9	1.7620	26.50	10.70	37.20	56.00	-18.80	QP	
10	1.7620	12.70	10.70	23.40	46.00	-22.60	AVG	
11	2.5940	27.89	10.71	38.60	56.00	-17.40	QP	
12	2.5940	10.89	10.71	21.60	46.00	-24.40	AVG	

FCC ID: 2ALBPET1030

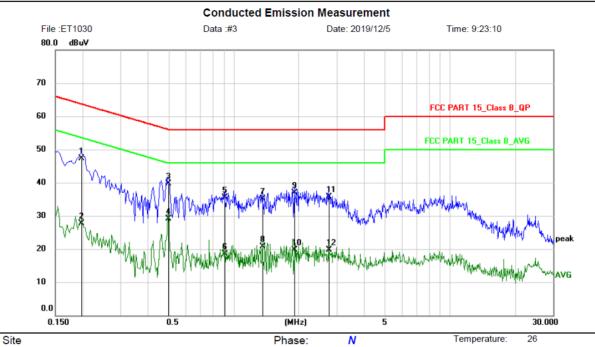




Dongguan NTC Co., Ltd.

Tel: +86-769-22022444 Fax: +86-769-22022799

Web: Http://www.ntc-c.com



AC120V/60Hz

Humidity:

50 %

Limit: FCC PART 15_Class B_QP

EUT: Bestable M/N: ET1030 Mode: TX-BT

Note:

No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1 *	0.1980	36.80	10.60	47.40	63.69	-16.29	QP	
2	0.1980	17.20	10.60	27.80	53.69	-25.89	AVG	
3	0.4979	29.07	10.63	39.70	56.03	-16.33	QP	
4	0.4979	18.57	10.63	29.20	46.03	-16.83	AVG	
5	0.9100	24.81	10.69	35.50	56.00	-20.50	QP	
6	0.9100	7.81	10.69	18.50	46.00	-27.50	AVG	
7	1.3619	24.40	10.70	35.10	56.00	-20.90	QP	
8	1.3619	10.00	10.70	20.70	46.00	-25.30	AVG	
9	1.9179	26.20	10.70	36.90	56.00	-19.10	QP	
10	1.9179	9.10	10.70	19.80	46.00	-26.20	AVG	
11	2.7580	24.99	10.71	35.70	56.00	-20.30	QP	
12	2.7580	8.99	10.71	19.70	46.00	-26.30	AVG	

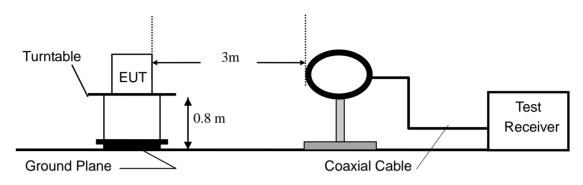
Power:

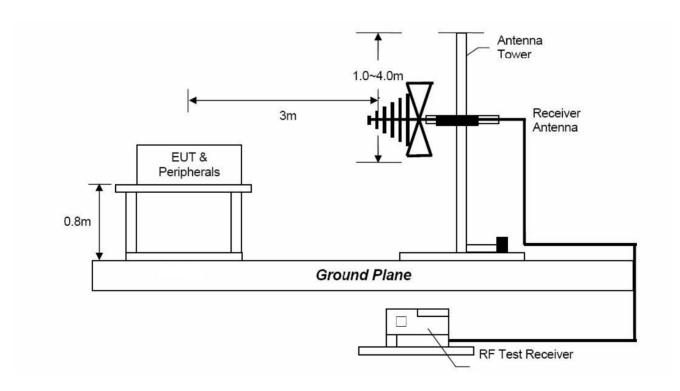


4. Radiated Emission Test

4.1 Test SET-UP (Block Diagram of Configuration)

4.1.1 Radiated Emission Test Set-Up, Frequency Below 30MHz

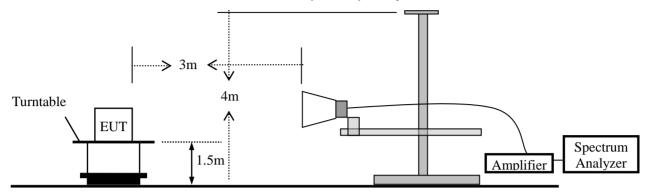




Report No.: NTC1912110FV00 FCC ID: 2ALBPET1030

NTC Nore Testing Center

4.1.2 Radiated Emission Test Set-Up, Frequency above 1GHz



4.2 Measurement Procedure

- a. Blow 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi- anechoic chamber room.
- b. For the radiated emission test above 1GHz:
 - The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter full anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. 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.
- c. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to peak detect function and specified bandwidth with maximum hold mode.
- f. A Quasi-peak measurement was then made for that frequency point for below 1GHz test. PK and AV for above 1GHz emission test.
 - During the radiated emission test, the spectrum analyzer was set with the following configurations:

Report No.: NTC1912110FV00

FCC ID: 2ALBPET1030



Frequency Band (MHz)	Level	Resolution Bandwidth	Video Bandwidth		
30 to 1000	QP	120 kHz	300 kHz		
Ab av a 4000	Peak	1 MHz	3 MHz		
Above 1000	Average	1 MHz	10 Hz		

4.3 Limit

Frequency range	Distance Meters	Field Strengths	Limit (15.209)		
MHz		μV/m			
0.009 ~ 0.490	300	2400/F	(kHz)		
0.490 ~ 1.705	30	24000/	F(kHz)		
1.705 ~ 30	30	30	0		
30 ~ 88	3	10	0		
88 ~ 216	3	150			
216 ~ 960	3	200			
Above 960	3	500			
Frequency range	Distance Meters	Field Strengths	Limit (15.249)		
MHz		mV/m	μV/m		
		(Field strength of	(Field strength of		
		fundamental)	Harmonics)		
902 ~ 928	3	50 500			
2400 ~ 2483.5	3	50 500			
5725 ~ 5875	3	50	500		
24000 ~ 2425000	3	250	2500		

Remark: (1) Emission level (dB) μ V = 20 log Emission level μ V/m

- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
- (4) The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.
- (5) Sample of data calculate:

Level=Reading + Factor; Margin= Level-Limit

Factor=CF+AF+AG

Where CF=Cable attenuation factor in dB

AF= Antenna factor in dB AG=Amplifier Gain in dB

FCC ID: 2ALBPET1030



4.4 Measurement Results

Please refer to following the test plots of the worst case: GFSK Low channel. The worst test voltage: AC 120V 60Hz

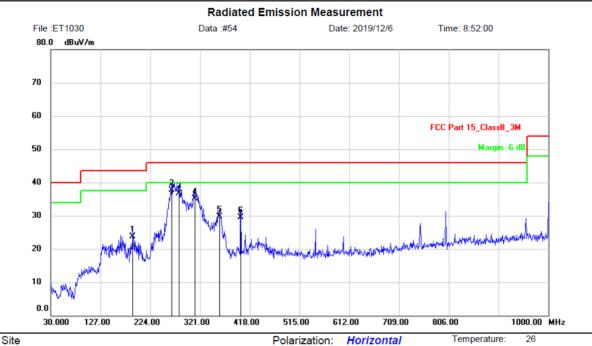
Report No.: NTC1912110FV00 FCC ID: 2ALBPET1030





Dongguan NTC Co., Ltd. Tel:+86-769-22022444 Fax:+86-769-22022799

Web: Http://www.ntc-c.com



Limit: FCC Part 15_ClassB_3M

EUT: Bestable M/N: ET1030 Mode: TX-BT

Note:

Power: AC120V/60Hz

Humidity:

47 %

Distance: 3m

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		190.0500	37.27	-13.57	23.70	43.50	-19.80	QP			
2	*	265.7100	49.09	-11.29	37.80	46.00	-8.20	QP			
3		280.2600	47.77	-10.97	36.80	46.00	-9.20	QP			
4		311.3000	45.26	-10.16	35.10	46.00	-10.90	QP			
5		358.8299	38.94	-9.14	29.80	46.00	-16.20	QP			
6		400.5400	38.69	-9.09	29.60	46.00	-16.40	QP			

Note: Below 30MHz, the emissions are lower than 20dB below the allowable limit.

Report No.: NTC1912110FV00 FCC ID: 2ALBPET1030





Dongguan NTC Co., Ltd.

321.00

418.00

Tel:+86-769-22022444 Fax:+86-769-22022799

Web: Http://www.ntc-c.com

Radiated Emission Measurement Date: 2019/12/6 File:ET1030 Data :#53 Time: 8:45:32 80.0 dBuV/m 70 60 FCC Part 15_ClassB_3M Margin -6 dE 50 40 30 20 10 0.0

Limit: FCC Part 15_ClassB_3M

EUT: Bestable M/N: ET1030 Mode: TX-BT

Note:

Site

Polarization: Vertical
Power: AC120V/60Hz

709.00

JWei. 701207700112

Humidity: 47 %

Temperature:

1000.00 MHz

26

Distance: 3m

515.00

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		129.9100	41.65	-18.15	23.50	43.50	-20.00	QP			
2		149.3100	43.42	-18.52	24.90	43.50	-18.60	QP			
3		184.2300	36.18	-16.88	19.30	43.50	-24.20	QP			
4	*	272.5000	46.03	-13.13	32.90	46.00	-13.10	QP			
5		310.3299	37.00	-12.20	24.80	46.00	-21.20	QP			
6		356.8900	27.82	-11.12	16.70	46.00	-29.30	QP			

Note: Below 30MHz, the emissions are lower than 20dB below the allowable limit.

Report No.: NTC1912110FV00 FCC ID: 2ALBPET1030



The worst case: GFSK

Frequency Range: 1-25GHz Test Date: December 07, 2019

Test Result: PASS Temperature : 21 $^{\circ}$ C Measured Distance: 3m Humidity : 55 $^{\circ}$

Test By: Sance

Freq. Ant.Pol.		Reading		Factor	Emission Level		Limit 3m		Margin		
(MHz) (H/V)	· Level(dBuV)	(dB/m)	(dBuV)		(dBuV/m)		(dB)			
(1711 12)	(11, 7)			AV	PK	AV	PK	AV	PK	AV	
Operation Mode: TX Mode (Low)											
2402	V	88.3	74.09	0.13	88.43	74.22	114.00	94.00	-25.57	-19.78	
4804	V	46.75	31.66	6.30	53.05	37.96	74.00	54.00	-20.95	-16.04	
7206	V	45.75	30.76	10.44	56.19	41.20	74.00	54.00	-17.81	-12.8	
2402	Н	98.46	81.37	0.13	98.59	81.50	114.00	94.00	-15.41	-12.5	
4804	Н	46.51	31.69	6.30	52.81	37.99	74.00	54.00	-21.19	-16.01	
7206	Н	45.79	31.03	10.44	56.23	41.47	74.00	54.00	-17.77	-12.53	
			Оре	eration M	ode: TX I	Mode (M	id)				
2441	V	87.35	72.25	0.24	87.59	72.49	114.00	94.00	-26.41	-21.51	
4882	V	45.76	30.98	6.60	52.36	37.58	74.00	54.00	-21.64	-16.42	
7323	V	45.92	30.72	10.55	56.47	41.27	74.00	54.00	-17.53	-12.73	
2441	Н	96.19	79.09	0.24	96.43	79.33	114.00	94.00	-17.57	-14.67	
4882	Н	46.14	30.66	6.60	52.74	37.26	74.00	54.00	-21.26	-16.74	
7323	Н	45.79	30.5	10.55	56.34	41.05	74.00	54.00	-17.66	-12.95	
Operation Mode: TX Mode (High)											
2480	V	86.56	72.53	0.34	86.90	72.87	114.00	94.00	-27.1	-21.13	
4960	V	45.44	30.32	6.89	52.33	37.21	74.00	54.00	-21.67	-16.79	
7440	V	45.79	30.68	10.60	56.39	41.28	74.00	54.00	-17.61	-12.72	
2480	Н	93.86	78.27	0.34	94.20	78.61	114.00	94.00	-19.8	-15.39	
4960	Н	45.71	31.16	6.89	52.60	38.05	74.00	54.00	-21.4	-15.95	
7440	Н	46.33	31.46	10.60	56.93	42.06	74.00	54.00	-17.07	-11.94	

Note: (1) All Readings are Peak Value and AV.

- (2) Emission Level= Reading Level + Factor
- (3) Factor= Antenna Gain + Cable Loss Amplifier Gain
- (4) Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 10dB below the permissible limits.
- (5) Measurement uncertainty: ±3.7dB.
- (6) Horn antenna used for the emission over 1000MHz.

FCC ID: 2ALBPET1030



5. 20dB Bandwidth

5.1 Measurement Procedure

The 20dB bandwidth of the emission was contained within the frequency band designated which the EUT operated. The effects, if any, from frequency sweeping, frequency hopping, other modulation techniques and frequency stability over excepted variations in temperature and supply voltage were considered, FCC Rule 15.215(c):

The antenna port of the EUT was connected to the input of a spectrum analyzer. Analyzer RBW was chosen so that the display was a result of the hopping channel modulation. For each RF output channel investigated, the spectrum analyzer center frequency was set to the channel carrier. Use the spectrum 20dB down delta function to measure the bandwidth.

5.2 Test SET-UP (Block Diagram of Configuration)



5.3 Measurement Results

Refer to attached data chart.

RBW: 30KHz VBW: 100KHz Spectrum Detector: PK Temperature: 22 $^{\circ}$ C Test By: Sance Humidity: 54 $^{\circ}$

Test Result: PASS Test Date: December 07, 2019

Channel frequency (MHz)	20dB Down BW(kHz)								
GFSK									
2402	1118								
2441	1112								
2480	1115								
π/4-DQPSK									
2402	1175								
2441	1173								
2480	1177								
π/4-DQPSK									
2402	1114								
2441	1119								
2480	1117								

Report No.: NTC1912110FV00

FCC ID: 2ALBPET1030



GFSK Lowest Channel



GFSK Middle Channel



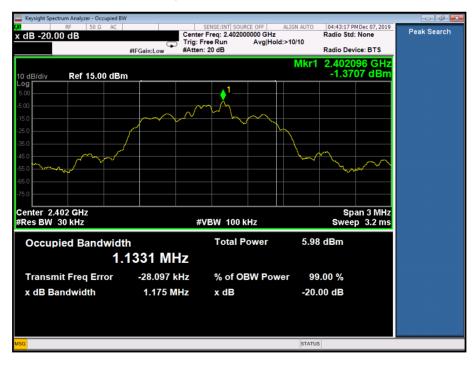
FCC ID: 2ALBPET1030



GFSK Highest Channel



π/4-DQPSK Lowest Channel

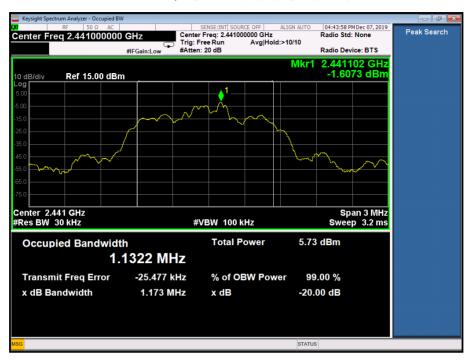


Report No.: NTC1912110FV00

FCC ID: 2ALBPET1030



π/4-DQPSK Middle Channel



π/4-DQPSK Highest Channel



FCC ID: 2ALBPET1030



8DPSK Lowest Channel



8DPSK Middle Channel



FCC ID: 2ALBPET1030



8DPSK Highest Channel



Report No.: NTC1912110FV00 FCC ID: 2ALBPET1030



6. Band Edge

6.1 Measurement Procedure

Same as Radiated Emission Test.

6.2 Limit

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

6.3 Measurement Results

Operation Mode: The wost case: Test Date: December 07, 2019

GFSK

Temperature : 21 $^{\circ}$ Humidity : 55 $^{\circ}$ Test Result: PASS Test By: Sance

Measured Distance: 3m

Freq. (MHz)	Ant.Pol. (H/V)	Reading Level(dBuV)		Factor (dB/m)	Emission Level (dBuV)		Limit 3m (dBuV/m)		Margin (dB)	
		PK	AV	(ub/III)	PK	AV	PK	AV	PK	AV
2390.000	Н	49.77	37.23	0.09	49.86	37.32	74.00	54.00	-24.14	-16.68
2390.000	V	49.65	36.4	0.09	49.74	36.49	74.00	54.00	-24.26	-17.51
2483.500	Н	52.52	44.33	0.35	52.87	44.68	74.00	54.00	-21.13	-9.32
2483.500	V	49.24	38.56	0.35	49.59	38.91	74.00	54.00	-24.41	-15.09

Note: (1) Emission Level= Reading Level + Factor

(2) Factor= Antenna Gain + Cable Loss - Amplifier Gain

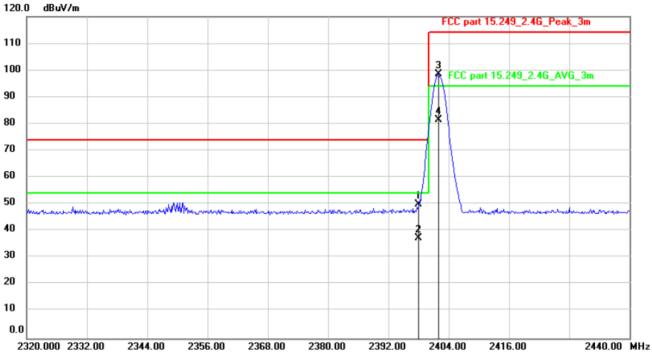
(3) Horn antenna used for the emission over 1000MHz.

Report No.: NTC1912110FV00 FCC ID: 2ALBPET1030

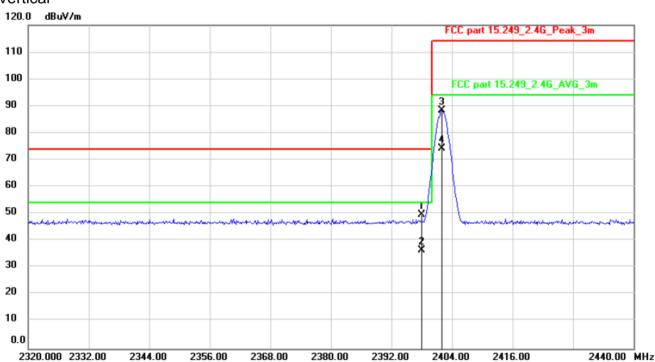


Low channel





Vertical



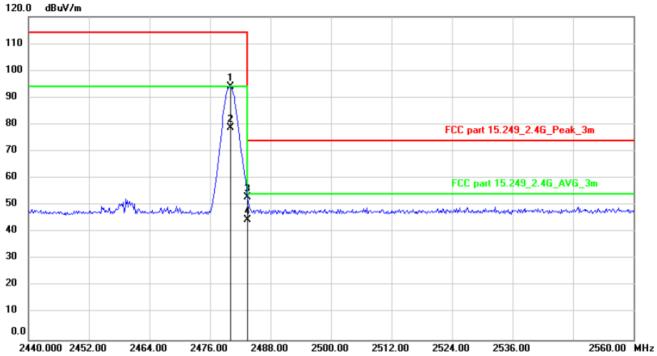
Report No.: NTC1912110FV00

FCC ID: 2ALBPET1030

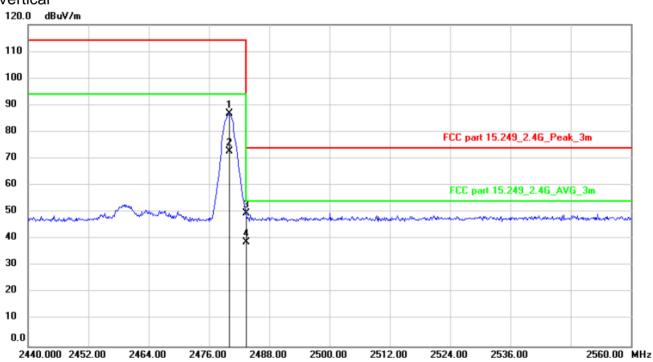


High channel





Vertical



FCC ID: 2ALBPET1030

Nore Testing Center

7. Antenna requirement

7.1 Measurement Procedure

According to of FCC part 15C section 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, 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.

Systems operating in the 2400-2483.5MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum peak output power of the intentional radiator is reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

7.2 Measurement Results

The antenna is Integral antenna and no consideration of replacement, and the best case gain of the antenna is 2 dBi. So, the antenna is consider meet the requirement.

Report No.: NTC1912110FV00 FCC ID: 2ALBPET1030



8. Test Equipment List

Description	Manufacturer	Model Number	Serial Number	Characteristics	Calibration Date	Calibration Due Date
Test Receiver	Rohde & Schwarz	ESCI7	100837	9KHz~7GHz	Mar. 13, 2019	1 Year
Antenna	Schwarzbeck	VULB9162	9162-010	30MHz~7GHz	Mar. 22, 2019	1 Year
Spectrum Analyzer	Rohde & Schwarz	FSU26	200409/026	20Hz~26.5GHz	Mar. 13, 2019	1 Year
Spectrum Analyzer	Keysight	N9020A	MY54200831	20Hz~26.5GHz	Apr. 23, 2019	1 Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	101003	10Hz~40GHz	Apr. 23, 2019	1 Year
Horn Antenna	Schwarzbeck	BBHA9170	9170-372	15GHz~40GHz	Mar. 22, 2019	1 Year
Pre-Amplifier	EMCI	EMC 184045	980102	18GHz~40GHz	Apr. 23, 2019	1 Year
Power Sensor	DARE	RPR3006W	15I00041SN O64	100MHz~6GHz	Mar. 13, 2019	1 Year
Communication Tester	Rohde & Schwarz	CMW500	149004	70MHz~6GHz	Mar. 13, 2019	1 Year
Horn Antenna	COM-Power	AH-118	071078	500MHz~18GHz	Mar. 22, 2019	1 Year
Pre-Amplifier	HP	HP 8449B	3008A00964	1GHz~26.5GHz	Mar. 13, 2019	1 Year
Pre-Amplifier	HP	HP 8447D	1145A00203	100KHz~1.3GHz	Mar. 13, 2019	1 Year
Loop Antenna	Schwarzbeck	FMZB 1513	1513-272	9KHz~30MHz	Apr. 23, 2019	1 Year
Temperature & Humidity Chamber	REMAFEE	SYHR225L	N/A	-40~150℃	Apr. 23, 2019	1 Year
DC Source	MY	MY8811	N/A	0~30V	N/A	N/A
Temporary antenna connector	TESCOM	SS402	N/A	9KHz~25GHz	N/A	N/A
Power Meter	Anritsu	ML2495A	1139001	100k-65GHz	Apr. 23, 2019	1 Year
Power Sensor	Anritsu	MA2411B	100345	300M-40GHz	Apr. 23, 2019	1 Year
Test Software	EZ	EZ_EMC	N/A	N/A	N/A	N/A
Test Receiver	Rohde & Schwarz	ESCI	101152	9KHz-3GHz	Mar. 14, 2019	1 Year
L.I.S.N	Rohde & Schwarz	ENV 216	101317	9KHz-30MHz	Mar. 14, 2019	1 Year
RF Switching Unit	Compliance Direction Systems Inc.	RSU-M2	38311	9KHz-3GHz	Mar.14, 2019	1 Year

Note: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.