Shenzhen Global Test Service Co.,Ltd. No.7-101 and 8A-104, Building 7 and 8, DCC Cultura

No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

FCC PART 15 SUBPART C TEST REPORT

FCC PART 15.249

Report Reference No. GTS20190925001-1-1

FCC ID.: PKX-GAMFBP

Compiled by

(position+printed name+signature) .: File administrators Tracy Hu

thank plu

Supervised by

(position+printed name+signature) .: Test Engineer theory and the signature is the signature of the signature of the signature is the signature of the signatu

Approved by

(position+printed name+signature) .: Manager Simon Hu

Date of issue: Oct.12, 2019

Representative Laboratory Name.: Shenzhen Global Test Service Co.,Ltd.

Pinghu Street, Longgang District, Shenzhen, Guangdong

Applicant's name Trainers Warehouse

Address 89 Washington Ave., Suite K, Natick, MA 01760-3441

Test specification....:

Standard..... FCC Part 15.249

TRF Originator: Shenzhen Global Test Service Co.,Ltd.

Master TRF: Dated 2014-12

Shenzhen Global Test Service Co., Ltd. All rights reserved.

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen Global Test Service Co.,Ltd. is acknowledged as copyright owner and source of the material. Shenzhen Global Test Service Co.,Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Test item description.....: Personal Answer Dome

Trade Aprk: N/A

Manufacturer.....: Trainers Warehouse

Model/Type reference: GAMFBP

Listed Models: N/A

Modulation Type.....: GFSK

Operation Frequency From 2408 - 2446MHz
Rating DC 4.5V from Battery

Result..... PASS

Report No.: GTS20190925001-1-1 Page 2 of 22

TEST REPORT

Tost Poport No :	GTS20190925001-1-1	Oct.12, 2019
Test Report No. :	G1320190923001-1-1	Date of issue

Equipment under Test : Personal Answer Dome

Model /Type : GAMFBP

Listed Models : N/A

Applicant : Trainers Warehouse

Address : 89 Washington Ave., Suite K, Natick, MA 01760-3441.

Manufacturer : Trainers Warehouse

Address : 89 Washington Ave., Suite K, Natick, MA 01760-3441.

Test Result:	PASS

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Contents

1. TEST STANDARDS	4
2. SUMMARY	5
2.1. General ReAprks	5
2.2. Product Description	
2.3. Equipment Under Test	5
2.4. Short description of the Equipment under Test (EUT)	5
2.5. EUT operation mode	5
2.6. Block Diagram of Test Setup	6
2.7. Special Accessories	6
2.8. Related Submittal(s) / Grant (s)	6
2.9. Modifications	6
3. TEST ENVIRONMENT	7
3.1. Address of the test laboratory	7
3.2. Test Facility	7
3.3. Environmental conditions	7
3.4. Test Description	7
3.5. Statement of the measurement uncertainty	
3.6. Equipments Used during the Test	9
4. TEST CONDITIONS AND RESULTS	10
4.1. AC Power Conducted Emission	10
4.2. Radiated Emission	11
4.3. Bandwidth test	15
4.4. Band Edge Compliance Test	17
4.5. Antenna Requirements	18
5. TEST SETUP PHOTOS OF THE EUT	19
6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT	20

Report No.: GTS20190925001-1-1 Page 4 of 22

1. TEST STANDARDS

The tests were performed according to following standards:

ANSI C63.10:2013: American National Standard for Testing Unlicensed Wireless Devices

ANSI C63.4: 2014: —American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz Range of 9 kHz to 40GHz

Report No.: GTS20190925001-1-1 Page 5 of 22

2. SUMMARY

2.1. General ReAprks

Date of receipt of test sample		Sep.25, 2019
Testing commenced on	:	Oct.12, 2019
Testing concluded on	:	Oct.12, 2019

2.2. Product Description

Product Name:	Personal Answer Dome
Trade Aprk:	/
Model/Type reference:	GAMFBP
List Model:	/
Power supply:	DC 4.5V from battery
Antenna Type	Internal Antenna
Operation frequency	2408MHz ~ 2446MHz
Antenna Type:	0 dBi
Modulation Type	GFSK

2.3. Equipment Under Test

Power supply system utilised

Power supply voltage	• •	0	230V / 50 Hz	0	120V / 60Hz
		0	12 V DC	0	24 V DC
		•	Other (specified in blank bel	ow	

DC 4.5V from battery

2.4. Short description of the Equipment under Test (EUT)

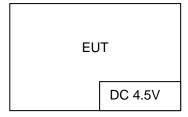
This is a Personal Answer Dome

2.5. EUT operation mode

Channel	Frequency	Channel	Frequency
1	2408MHz	21	2428
2	2409MHz	22	2429
3	2410MHz	23	2430
19	2426	38	2445MHz
20	2427	39	2446MHz

Report No.: GTS20190925001-1-1 Page 6 of 22

2.6. Block Diagram of Test Setup



2.7. Special Accessories

Manufacturer	Description	Model	Serial Number	Certificate
N/A	N/A	N/A	N/A	N/A

2.8. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID:PKX-GAMFBP** filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules.

2.9. Modifications

No modifications were implemented to meet testing criteria.

Report No.: GTS20190925001-1-1 Page 7 of 22

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen Global Test Service Co.,Ltd.

No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

3.2. Test Facility

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

CNAS (No. CNAS L8169)

Shenzhen Global Test Service Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA (Certificate No. 4758.01)

Shenzhen Global Test Service Co., Ltd. has been assessed by the American Association for Laboratory Accreditation (A2LA). Certificate No. 4758.01.

3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15-35 ° C
Humidity:	30-60 %
Atmospheric pressure:	950-1050mbar

3.4. Test Description

Test Items	Test Requirement	Result
Conducted Emissions	15.207	N/A
Radiated Emissions	15.205(a)/15.209/15.249(d)	PASS
Bandwidth	15.249	PASS
Emissions from out of band	15.249	PASS
Antenna Requirement	15.203	PASS

Remark:

- 1. The measurement uncertainty is not included in the test result.
- 2. NA = Not Applicable; NP = Not Performed

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Report No.: GTS20190925001-1-1 Page 8 of 22

3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the Shenzhen Global Test Service Co.,Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen GTS laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	4.10 dB	(1)
Radiated Emission	1~18GHz	4.32 dB	(1)
Radiated Emission	18-40GHz	5.54 dB	(1)
Conducted Disturbance	0.15~30MHz	3.12 dB	(1)

⁽¹⁾ This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.6. Equipments Used during the Test

				Calibration	Calibration
Test Equipment	Manufacturer	Model No.	Serial No.	Date	Due Date
LISN	R&S	ENV216	3560.6550.08	2019/09/28	2020/09/27
LISN	R&S	ESH2-Z5	893606/008	2019/09/27	2020/09/26
By-log Antenna	SCHWARZBECK	VULB9163	000976	2019/09/29	2020/09/28
EMI Test Receiver	R&S	ESCI	101102	2019/09/26	2020/09/25
Spectrum Analyzer	Agilent	N9020A	MY48010425	2019/09/17	2020/09/16
Spectrum Analyzer	R&S	FSV40-N	101800	2019/09/17	2020/09/16
Controller	EM Electronics	Controller EM 1000	N/A	2019/09/21	2020/09/20
Double Ridged Horn Antenna (1~18GHz)	SCHWARZBECK	BBHA 9120D	01622	2019/09/19	2020/09/18
Double Ridged Horn Antenna	Rohde&Schwarz	HF907	100265	2019/09/19	2020/09/18
Active Loop Antenna	SCHWARZBECK	FMZB1519	1519-037	2019/09/19	2020/09/18
Horn Antenna (18GHz~40GHz)	ETS	3116	00086467	2018/12/29	2019/12/28
Amplifier (26.5GHz~40GHz)	EMCI	EMC2654045	980028	2019/09/18	2020/09/17
Amplifier (0.1GHz~26.5GHz)	EMCI	EMC012645SE	980355	2019/09/19	2020/09/18
Temperature/Humidi ty Meter	Gangxing	CTH-608	02	2019/09/20	2020/09/19
High-Pass Filter	K&L	9SH10- 2700/X12750- O/O	N/A	2019/09/20	2020/09/19
High-Pass Filter	K&L	41H10- 1375/U12750- O/O	N/A	2019/09/20	2020/09/19
Data acquisition card	Agilent	U2531A	TW53323507	2019/09/20	2020/09/19
Power Sensor	Agilent	U2021XA	MY5365004	2019/09/20	2020/09/19
RF Cable	HUBER+SUHNER	RG214	N/A	2019/09/20	2020/09/19
Broadband Antenna	SCHWARZBECK	VULB 9163	00976	2019/09/29	2020/09/28
Conducted Emission	ES-K1	V1.71	N/A	N/A	N/A
Radiated Emission	JS32-RE	V2.5.0.9	N/A	N/A	N/A

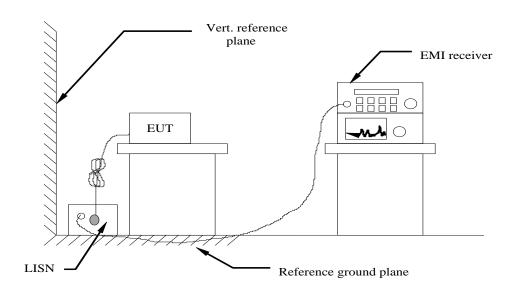
Note: The Cal.Interval was one year.

Report No.: GTS20190925001-1-1 Page 10 of 22

4. TEST CONDITIONS AND RESULTS

4.1. AC Power Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

- 1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10-2013.
- 2 Support equipment, if needed, was placed as per ANSI C63.10-2013
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2013
- 4 The EUT received DC 5V power from adapter, the adapter received AC120V/60Hz and AC 240V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5 All support equipments received AC power from a second LISN, if any.
- 6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8 During the above scans, the emissions were maximized by cable manipulation.

AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following:

Eroguanay rango (MHz)	Limit (dBuV)					
Frequency range (MHz)	Quasi-peak	Average				
0.15-0.5	66 to 56*	56 to 46*				
0.5-5	56	46				
5-30	60	50				
* Decreases with the logarithm of the frequency.						

TEST RESULTS

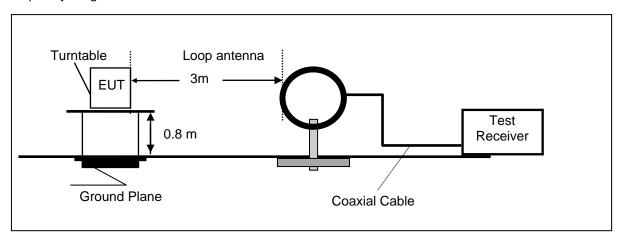
There is no need for conduction emissions test, because the power supply of the EUT is dry battery only.

Report No.: GTS20190925001-1-1 Page 11 of 22

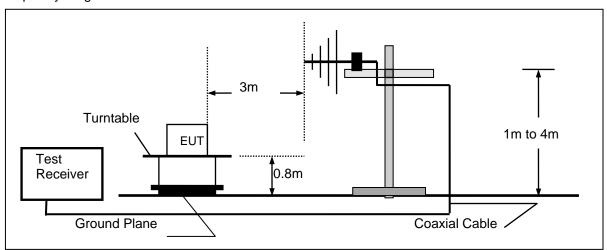
4.2. Radiated Emission

TEST CONFIGURATION

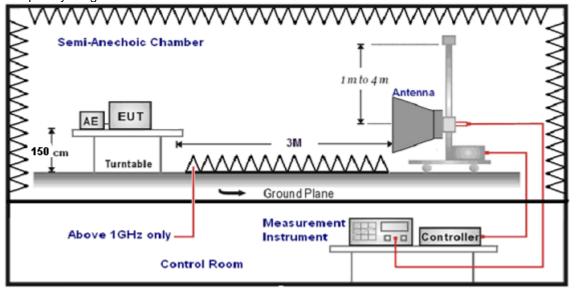
Frequency range 9 KHz - 30MHz



Frequency range 30MHz - 1000MHz



Frequency range above 1GHz-25GHz



Report No.: GTS20190925001-1-1 Page 12 of 22

TEST PROCEDURE

- The EUT was placed on a turn table which is 0.8m above ground plane when testing frequency range 9 KHz 1GHz; the EUT was placed on a turn table which is 1.5m above ground plane when testing frequency range 1GHz – 25GHz.
- 2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° to acquire the highest emissions from EUT.
- 3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 4. Repeat above procedures until all frequency measurements have been completed.
- 5. Radiated emission test frequency band from 9KHz to 25GHz.
- 6. The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Ultra-Broadband Antenna	3
1GHz-18GHz	Double Ridged Horn Antenna	3
18GHz-25GHz	Horn Anternna	1

7. Setting test receiver/spectrum as following table states:

Test Frequency range Test Receiver/Spectrum Setting		Detector
9KHz-150KHz	9KHz-150KHz RBW=200Hz/VBW=3KHz,Sweep time=Auto	
150KHz-30MHz	150KHz-30MHz RBW=9KHz/VBW=100KHz,Sweep time=Auto	
30MHz-1GHz RBW=120KHz/VBW=1000KHz,Sweep time=Auto		QP
	Peak Value: RBW=1MHz/VBW=3MHz,	
1GHz-40GHz	Sweep time=Auto	
	Average Value: RBW=1MHz/VBW=10Hz,	Peak
	Sweep time=Auto	

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

Transd=AF +CL-AG

RADIATION LIMIT

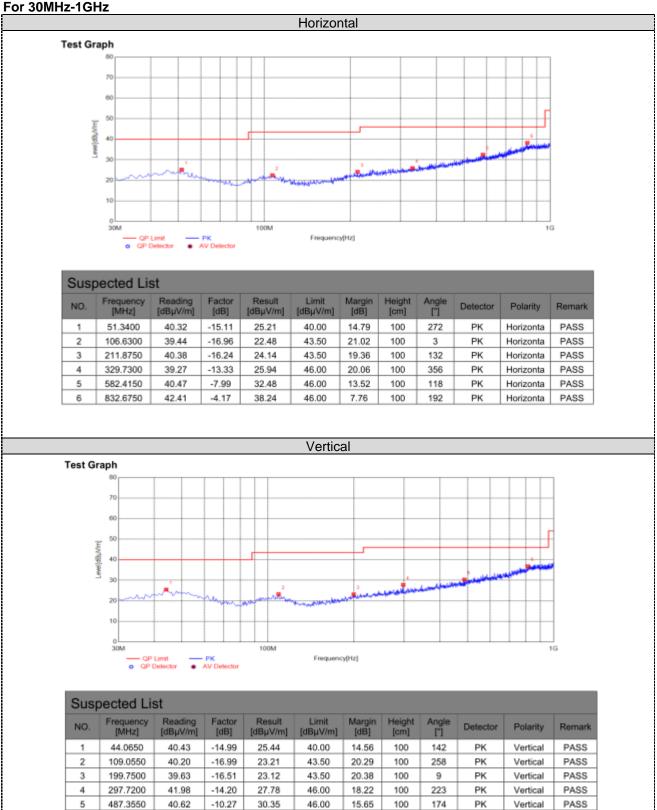
For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table. According to § 15.247(d), in any 100kHz bandwidth outside the frequency band in which the EUT is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the100kHz bandwidth within the band that contains the highest level of desired power.

The pre-test have done for the EUT in three axes and found the worst emission at position shown in test setup photos.

Frequency (MHz)	Distance (Meters)	Radiated (dBµV/m)	Radiated (μV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

Report No.: GTS20190925001-1-1 Page 13 of 22

TEST RESULTS



Note:

6

812.3050

Pre-scan all modes and recorded the worst case results in this report.

36.80

Emission level (dBuV/m) = Meter Reading+ antenna Factor+ cable loss- preamp factor

46.00

9.20

100

237

Vertical

PASS

Margin value = Limits-Emission level

41.73

-4.93

Report No.: GTS20190925001-1-1 Page 14 of 22

For 1GHz to 25GHz

Frequency (MHz)	Reading (dBµV)	Antenna Factor (dB)	Preamp factor (dB)	cable loss (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµ V/m)	Aprgin (dB)	ReAprk	Polar (H/V)
			Lov	v channe	I(2408MHz)				
2408	84.51	37.92	30.59	5.67	97.51	114	-16.49	Pk	Vertical
2408	76.23	37.92	30.59	5.67	89.23	94	-4.77	AV	Vertical
4816	45.79	32.44	30.25	7.95	55.93	74	-18.07	Pk	Vertical
4816	35.17	32.44	30.25	7.95	45.31	54	-8.69	AV	Vertical
2408	79.65	38.01	30.61	5.62	92.67	114	-21.33	Pk	Horizontal
2408	68.51	38.01	30.61	5.62	81.53	94	-12.47	AV	Horizontal
4816	38.95	32.44	30.25	7.95	49.09	74	-24.91	Pk	Horizontal
4816	30.63	32.44	30.25	7.95	40.77	54	-13.23	AV	Horizontal
			Mido	dle chann	el(2427MHz)				
2427	84.35	37.84	30.54	5.73	97.38	114	-16.62	Pk	Vertical
2427	75.95	37.84	30.54	5.73	88.98	94	-5.02	AV	Vertical
4854	45.08	32.52	30.31	8.12	55.41	74	-18.59	Pk	Vertical
4854	35.47	32.52	30.31	8.12	45.8	54	-8.2	AV	Vertical
2427	78.78	37.84	30.54	5.73	91.81	114	-22.19	Pk	Horizontal
2427	70.24	37.84	30.54	5.73	83.27	94	-10.73	AV	Horizontal
4854	40.78	32.52	30.31	8.12	51.11	74	-22.89	Pk	Horizontal
4854	31.4	32.52	30.31	8.12	41.73	54	-12.27	AV	Horizontal
			Hig	h channe	I(2446MHz)				
2446	85.87	37.62	30.49	5.84	98.84	114	-15.16	Pk	Vertical
2446	76.65	37.62	30.49	5.84	89.62	94	-4.38	AV	Vertical
4892	44.77	32.68	30.27	7.88	55.06	74	-18.94	Pk	Vertical
4892	34.69	32.68	30.27	7.88	44.98	54	-9.02	AV	Vertical
2446	77.95	37.62	30.49	5.84	90.92	114	-23.08	Pk	Horizontal
2446	67.65	37.62	30.49	5.84	80.62	94	-13.38	AV	Horizontal
4892	41.07	32.68	30.27	7.88	51.36	74	-22.64	Pk	Horizontal
4892	31.18	32.68	30.27	7.88	41.47	54	-12.53	AV	Horizontal

Corrected Amplitude=Reading+ Antenna Factor+cable loss-Preamp factor
Aprgin= Absolute Level – Limit
The amplitude of spurious emissions which are attenuated by more than 20dB below the

permissible value has not to be reported.

Report No.: GTS20190925001-1-1 Page 15 of 22

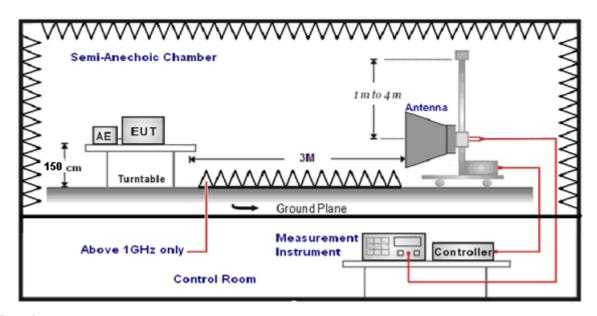
4.3. Bandwidth test

TEST PROCEDURE

a. the EUT was placed on a turn table which is 1.5m above ground plane when testing frequency range 1GHz – 25GHz

b.Spectrum Setting:RBW=27KHz, VBW ≥ RBW, Sweep=Auto.

Test setup



Test data:

Channel Frequency (MHz)	20dB Bandwidth (MHz)	Result		
2408	1.0695	Pass		
2427	1.0645	Pass		
2446	1.0852	Pass		

Test plot as follows:







Report No.: GTS20190925001-1-1 Page 17 of 22

4.4. Band Edge Compliance Test

Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF con-ducted or a radiated measurement.

Test setup

The EUT was placed on a turn table which was 1.5 m above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 m away from the receiving antenna which was mounted on an antenna tower. The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 m to 4 m for both horizontal and vertical polarizations. Set to span from the lowest frequency generated in the device up to and including the tenth harmonic of the highest fundamental frequency

The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure. For all test, used peak detector.

Note: If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

For radiated test as follows:

EUT:	Personal Answer Dome	Model Name :	GAMFBP
Temperature :	25 ℃	Relative Humidity:	54%
Pressure :	1010hPa	Test Voltage :	DC 4.5V
Test Mode:	GFSK		

Frequency	Meter Reading	Antenna Factor	Preamp factor	cable loss	Emission Level	Limits	Aprgin	Detector Type			Comment
(MHz)	(dBµV)	(dB)	(dB)	(dB)	(dBµV/m)	(dBµ V/m)	(dB)				
2390	37.57	37.88	30.45	5.63	50.63	74	-23.37	peak	Vertical		
2390	26.49	37.88	30.45	5.63	39.55	54	-14.45	peak	Horizontal		
2483.5	39.39	37.45	30.38	5.71	52.17	74	-21.83	peak	Vertical		
2483.5	37.57	37.45	30.38	5.71	50.35	54	-3.65	peak	Horizontal		

If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

Report No.: GTS20190925001-1-1 Page 18 of 22

4.5. Antenna Requirements

Limits

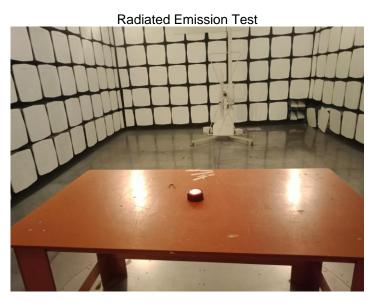
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. 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

Result

The antenna used for this product is Internal antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 0 dBi.

Report No.: GTS20190925001-1-1 Page 19 of 22

5. TEST SETUP PHOTOS OF THE EUT





6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

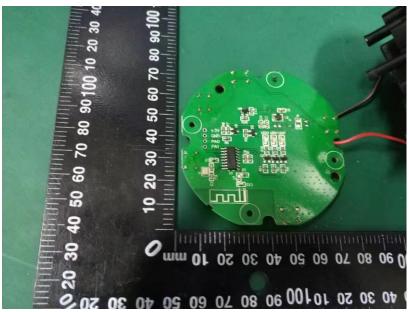


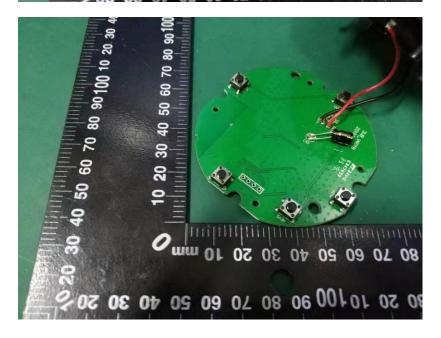




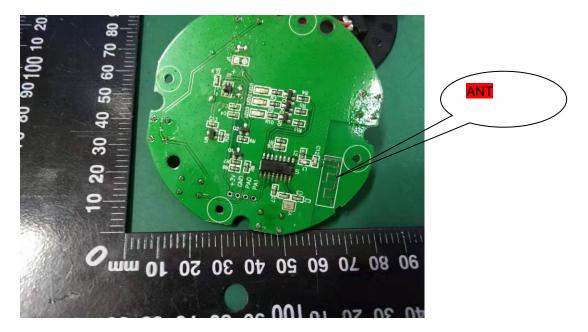
Report No.: GTS20190925001-1-1 Page 21 of 22







Report No.: GTS20190925001-1-1 Page 22 of 22



.....End of Report.....