

RF Exposure Evaluation Declaration

Product Name: PIQS Virtual Touch Projector

Model No.: TT

FCC ID: 2ALH2-PFAT100

Applicant: PIQS Technology(Shenzhen) Limited.

Address: West,6F Building 1,No.35 CuiJing Road,Pingshan New

District, Shenzhen City, Guangdong, China.

Date of Receipt: 03-02-2017

Test Date: 03-03-2017~04-16-2017

Issued Date: 04-19-2017

Report No.: UL71220170302FCC/IC002-4

The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration of the equipment and evaluated measurement uncertainty herein.

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Manufacturer: PIQS Technology(Shenzhen) Limited.

Address: West,6F Building 1,No.35 CuiJing Road,Pingshan New District,Shenzhen City,Guangdong,China.

Model No.: TT

EUT Voltage: MIN:16V, NOR:19V, MAX: 23V

Brand Name: PIQS

FCC ID: 2ALH2-PFAT100

Applicable Standard: FCC's Rules (47 C.F.R. §1.1310 and 2.1091)

Test Result: Complied

Performed Location: Unilab (Shanghai) Co.,Ltd.

FCC 2.948 register number is 714465

No.1350, Lianxi Road, Pudong New District, Shangha, China

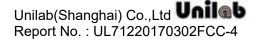
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Reviewed by :	(Senior Engineer: Forest Cao)
Approved by:	Eva wang
	(SupervisorEngineer: Eva Wang)



Product Name:	PIQS Virtual Touch Projector			
Model Name:	ТТ			
Hardware Version:	M3_T826_ARM_V3			
Software Version:	TTCN20170224V001			
RF Exposure Environment:	Uncontrolled			
Bluetooth V3.1				
Frequency Range:	2402MHz~2480MHz			
Carrier Frequency of Each Channel	2402+N*1MHz(N=0~78)			
Type of Modulation:	GFSK, π/4-DQPSK, 8-DPSK			
Channel Number:	79			
Antenna Type:	Internal			
Antenna Peak Gain:	2dBi			
Bluetooth V4.0				
Frequency Range:	2402MHz~2480MHz			
Type of Modulation:	GFSK			
Channel Number:	40			
Antenna Type:	Internal			
Antenna Peak Gain:	2dBi			
WIFI				
Frequency Range:	2412MHz~2472MHz 5150MHz~5350MHz 5725MHz~5850MHz			
Type of Modulation:	BPSK/QPSK/16QAM/64QAM			
Channel Separation:	5MHz			
Antenna Type:	Internal			
Antenna Peak Gain:	2dBi			
Component				
AC Adapter:	Input: AC 100-240V 50/60Hz 1.5A			
Ao Auapier.	Output: DC 19V 3.42A			



2. RF Exposure Evaluation

2.1 Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range	Electric	Magnetic Magnetic	Power Density	Reference Period	
(MHz)	FieldStrength	FieldStrength	(mW/cm ²)	(minutes)	
(=)	(V/m)	(A/m)	(,	(
	(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6	
3.0-30	1842/f	4.89/f	*900/ <i>f</i> ²	6	
30-300	61.4	0.163	1.0	6	
300-1,500	-	-	f/300	6	
1,500-100,000	-	-	5	6	
(B) Limits for General Population/Uncontrolled Exposure					
0.3-1.34	0.3-1.34 614 1.63			30	
1.34-30	824/f	2.19/f	*180/ <i>f</i> ²	30	
30-300	27.5	0.073	0.2	30	
300-1,500	-	-	f/1500	30	
1,500-100,000	-	-	1.0	30	
f = frequency in MHz * = Plane-wave equivalent power density					

RF Field Strength Limits for Controlled Use Devices (Controlled Environment)

11 Field Strength Limits for Controlled Ose Devices (Controlled Environment)					
Frequency Range	Electric Field	Magnetic Field	Power Density	Reference Period	
(MHz)	(V/m rms)	(A/m rms)	(W/m ²)	(minutes)	
0.003-10	170	180	1	Instantaneous*	
1-10	- 1.6/ f		•	6**	
1.29-10	$193/f^{0.5}$	-	1	6**	
10-20	61.4	0.163	10	6	
20-48	$129.8/f^{0.25}$	$0.3444/f^{0.25}$	$44.72/f^{0.5}$	6	
48-100	49.33	0.1309	6.455	6	
100-6000	$15.60 f^{0.25}$	$0.04138 f^{0.25}$	$0.6455 f^{0.5}$	6	
6000-15000	137	0.364	50	6	
15000-150000	137	0.364	50	$616000/f^{1.2}$	
150000-300000	$0.354 f^{0.5}$	$9.40 \times 10^{-4} f^{0.5}$	$3.33 \times 10^{-4} f$	$616000/f^{1.2}$	

Note: *f* is frequency in MHz.

Friis Formula

Friis transmission formula: $Pd = (Pout*G)/(4*Pi*R^2)$

Where

Pd = power density in mW/cm²

Pout = output power to antenna in mW

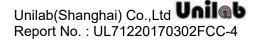
G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

^{*}Based on nerve stimulation (NS).

^{**} Based on specific absorption rate (SAR).



Pd id the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

2.2.Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 22°Cand 53%RH.

2.3.Test Result of RF Exposure Evaluation

This device is evaluated by mobile device with general population/uncontrolled exposure condition For this device, the calculation is using the most conservative values, and the results are as follows:

Test Mode	Antenn a Gain (dBi)	Maximu m Output Power (dBm)	EIRP (dBm)	Peak EIRP (mW)	Calculated RF Exposure at d = 20cm (mW/cm²)	FCC MPE Limit (mW/cm²)
BT 3.1	2.0	9.8	11.8	15.1	0.0030	1.00
BT 4.0	2.0	8.3	10.3	10.7	0.0021	1.00
WiFi 2.4G	2.0	12.9	14.9	30.9	0.0062	1.00
WiFi 5G	2.0	11.4	13.4	21.9	0.0044	1.00
WiFi 5.8G	2.0	11.3	13.3	21.4	0.0043	1.00
Duty cycle = 100%						

This device can pass RF exposure limit.

---END OF THE REPORT---