

# **FCC RADIO TEST REPORT**

## **FCC ID: 2AX5VKEYPADTF1**

**Product :** Wired touch keypad

**Trade Mark :** AJAX

**Model Name :** KP.G3TS.F-000-Y

**Family Model :** N/A

**Report No. :** S25060400403002

### **Prepared for**

AJAX SYSTEMS CYPRUS HOLDINGS LTD  
Ifigeneias, 17, Strovolos, 2007, Nicosia, Cyprus

### **Prepared by**

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**TEST RESULT CERTIFICATION**

Applicant's Name..... : AJAX SYSTEMS CYPRUS HOLDINGS LTD  
Address ..... : Ifigeneias, 17, Strovolos, 2007, Nicosia, Cyprus  
Manufacturer's Name ..... : "AJAX SYSTEMS MANUFACTURING" LIMITED LIABILITY COMPANY  
Address ..... : Sklyarenka, 5, Kyiv, 04073, Ukraine  
Factory (1) ..... : "AJAX SYSTEMS MANUFACTURING" LIMITED LIABILITY COMPANY  
Address ..... : Sklyarenka, 5, Kyiv, 04073, Ukraine  
Factory (2) ..... : "AJAX TURKEY ELEKTRONİK TİCARET" ANONİM ŞİRKETİ  
Address ..... : Aydınlı Sb Mah. 4.Sk. Desbaş 6 Blok No: 4 İc Kapi No: Z01 Tuzla / Istanbul

**Product description**

Product name ..... : Wired touch keypad  
Model and/or type reference : KP.G3TS.F-000-Y  
Family Model ..... : N/A  
Test Sample Number ..... : S250604004004  
Date of Test..... : Jun. 04, 2025 ~ Jun. 28, 2025

**Standards** ..... : FCC Part15.225

Test procedure..... ANSI C63.10-2013

This device described above has been tested by NTEK, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15, Subpart C (15.225)			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	N/A	
15.205(a) 15.209 15.225	Radiated Spurious Emission	Pass	
15.215	20dB Bandwidth	Pass	
15.225	Frequency Tolerance	Pass	
15.203	Antenna Requirement	Pass	

NOTE:

(1) "N/A" denotes test is not applicable in this Test Report.

## 1.1 TEST FACILITY

All measurement facilities used to collect the measurement data are located at No. 24 Xinfu East Road, Xiangshan Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, People's Republic of China.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

### Site Description

CNAS-Lab. : The Certificate Registration Number is L5516.

IC-Registration The Certificate Registration Number is 9270A.

CAB identifier:CN0074

FCC- Accredited Test Firm Registration Number: 463705.

Designation Number: CN1184

A2LA-Lab. The Certificate Registration Number is 4298.01

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories.

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system

(refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).

Name of Firm : Shenzhen NTEK Testing Technology Co., Ltd.

Site Location : No. 24 Xinfu East Road, Xiangshan Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong, People's Republic of China.

## 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power,conducted	$\pm 0.16\text{dB}$
3	Spurious emissions,conducted	$\pm 0.21\text{dB}$
4	All emissions,radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$

## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

Equipment	Wired touch keypad	
Trade Mark	AJAX	
Model Name	KP.G3TS.F-000-Y	
Family Model	N/A	
Model Difference	N/A	
Product Description	The EUT is a Wired touch keypad	
	Operation Frequency:	13.56MHz
	Modulation Type:	ASK
	Number Of Channel	1CH.
Battery	Antenna Designation:	Induction coil
	2.4V, 500mAh	
	DC 4.8V from battery or DC 24V 0.1A	
	KTF.001.MBU.001v2	
HW Version	KTF.001.PAB.001v2	
	KTF.001.COF.001v0	
	KPG.001.CON.001v2	
	KPG.001.LOG.000v1	
FW Version	KPG.001.NFC.000v3	
	N/A	
SW Version	5.61.x.xx	

Note:

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

## 2.2 DESCRIPTION OF TEST MODES

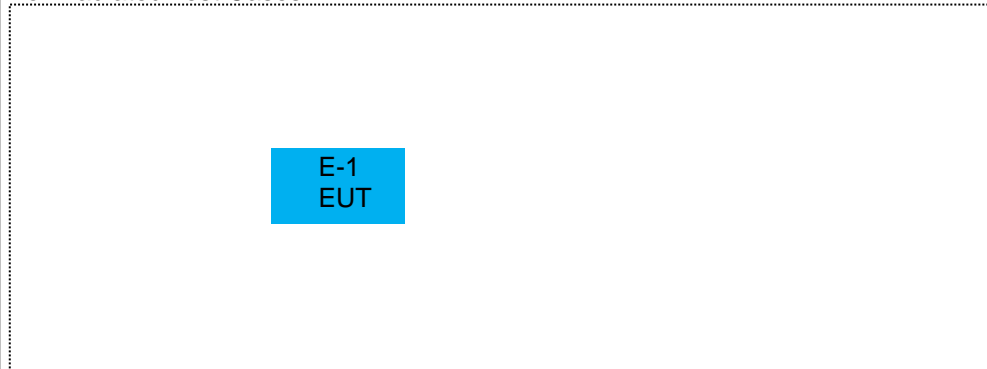
To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration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

Pretest Mode	Description
Mode 1	TX-13.56MHz

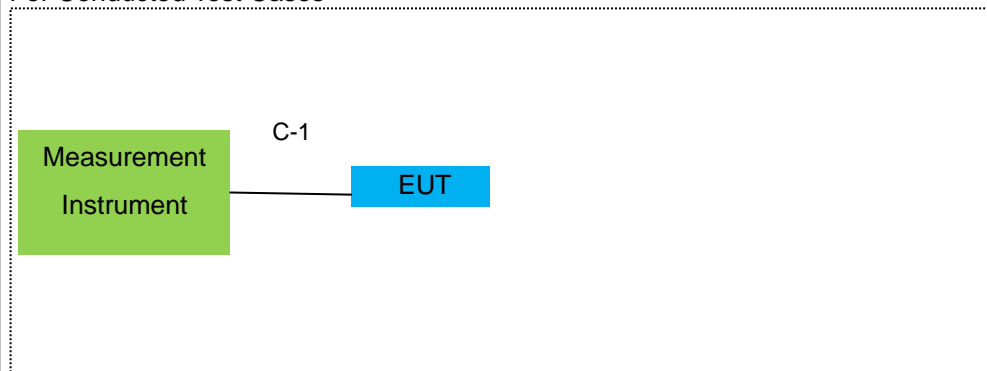
For Radiated Emission	
Final Test Mode	Description
Mode 1	TX-13.56MHz

## 2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

For Radiated Test Cases



For Conducted Test Cases



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.



**2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)**

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Model/Type No.	Series No.	Note
EUT	Wired touch keypad	KP.G3TS.F-000-Y	N/A	

Item	Cable Type	Shielded Type	Ferrite Core	Length
C-1	RF Cable	YES	NO	0.1m

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

**2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS****Radiation& Conducted Test equipment**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Spectrum Analyzer	Agilent	E4440A	MY41000130	2025.04.24	2026.04.23	1 year
2	Spectrum Analyzer	Agilent	N9020A	MY49100060	2025.04.17	2026.04.16	1 year
3	Spectrum Analyzer	R&S	FSV40	101417	2025.04.17	2026.04.16	1 year
4	Test Receiver	R&S	ESPI7	101318	2025.04.17	2026.04.16	1 year
5	Bilog Antenna	TESEQ	CBL6111D	31216	2025.05.11	2026.05.10	1 year
6	50Ω Coaxial Switch	Anritsu	MP59B	6200983705	2024.04.26	2027.04.25	3 year
7	Horn Antenna	SCHWARZBECK	BBHA 9120 D	2816	2024.05.18	2027.05.17	1 year
8	Active Loop Antenna	SCHWARZBECK	FMZB 1519 B	055	2024.05.17	2027.05.16	1 year
9	LF Cable	N/A	R-03	N/A	2023.05.06	2026.05.05	3 year
10	MXG Vector Signal Generator	Agilent	N5182A	MY47070317	2023.05.29	2024.05.28	1 year
11	Test Cable (9KHz-30MHz)	N/A	R-01	N/A	2023.05.06	2026.05.05	3 year
12	Test Cable (30MHz-1GHz)	N/A	R-02	N/A	2023.05.06	2026.05.05	3year

**AC Conduction Test equipment**

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until	Calibration period
1	Test Receiver	R&S	ESCI	101160	2025.04.17	2026.04.16	1 year
2	LISN	R&S	ENV216	101313	2025.04.16	2026.04.15	1 year
3	LISN	SCHWARZBECK	NNLK 8129	8129245	2025.04.16	2026.04.15	1 year
4	50Ω Coaxial Switch	ANRITSU CORP	MP59B	6200983704	2024.04.26	2027.04.25	3 year
5	Test Cable (9KHz-30MHz)	N/A	C01	N/A	2023.05.06	2026.05.05	3 year
6	Test Cable (9KHz-30MHz)	N/A	C02	N/A	2023.05.06	2026.05.05	3 year
7	Test Cable (9KHz-30MHz)	N/A	C03	N/A	2023.05.06	2026.05.05	3 year

**Note:**

1. We will use the temporary antenna connector (soldered on the PCB board) When conducted test And this temporary antenna connector is listed within the instrument list
2. Each piece of equipment is scheduled for calibration once a year except the Test Cable& Aux Equipment which is scheduled for calibration every 3 years.

### 3. ANTENNA REQUIREMENT

#### 3.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 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.

#### 3.2 EUT ANTENNA

The EUT antenna is permanent attached antenna. It comply with the standard requirement.

## 4. EMC EMISSION TEST

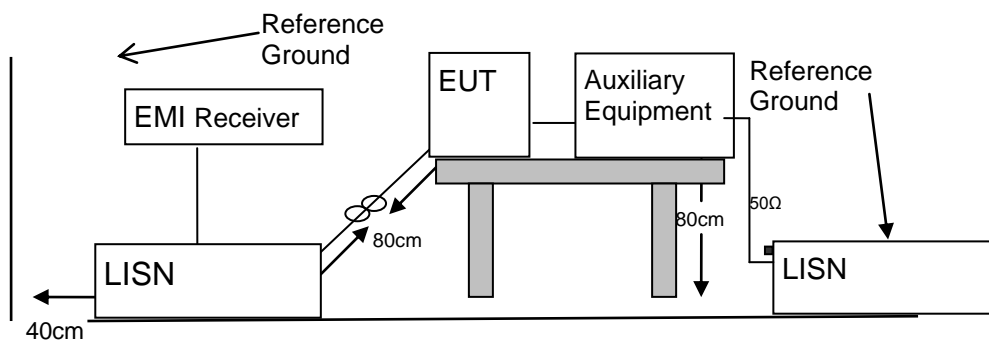
### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

Frequency(MHz)	Conducted Emission Limit	
	Quasi-peak	Average
0.15-0.5	66-56*	56-46*
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. \*Decreases with the logarithm of the frequency  
 2. The lower limit shall apply at the transition frequencies  
 3. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

#### 4.1.2 TEST CONFIGURATION



#### 4.1.3 TEST PROCEDURE

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room.
2. The EUT was placed on a table which is 0.8m above ground plane.
3. Connect EUT to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
4. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40cm long.
5. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
6. LISN at least 80 cm from nearest part of EUT chassis.
7. The frequency range from 150KHz to 30MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth(IF bandwidth=9KHz) with Maximum Hold Mode
9. For the actual test configuration, please refer to the related Item –EUT Test Photos.

**4.1.4 TEST RESULT**

EUT :	Wired touch keypad	Model Name :	KP.G3TS.F-000-Y
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N/A
Test Voltage :	N/A	Test Mode :	N/A

Note: Product doesn't support AC charging, this item isn't applicable.

## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 Radiated Emission Limits (FCC 15.209)

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dBuV/m)=20log Emission level (uV/m).

### LIMITS OF RADIATED EMISSION MEASUREMENT (FCC 15.225)

- (a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters, equal to 104dBuV/m at 3 meters.
- (b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters, equal to 74.5dBuV/m at 3 meters.
- (c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters, equal to 60.5dBuV/m at 3 meters.
- (d) The field strength of any emissions appearing outside of the 13.110-14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz / 1MHz for Peak

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

#### 4.2.2 TEST PROCEDURE

- The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz And above 1GHz,
- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m meter. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

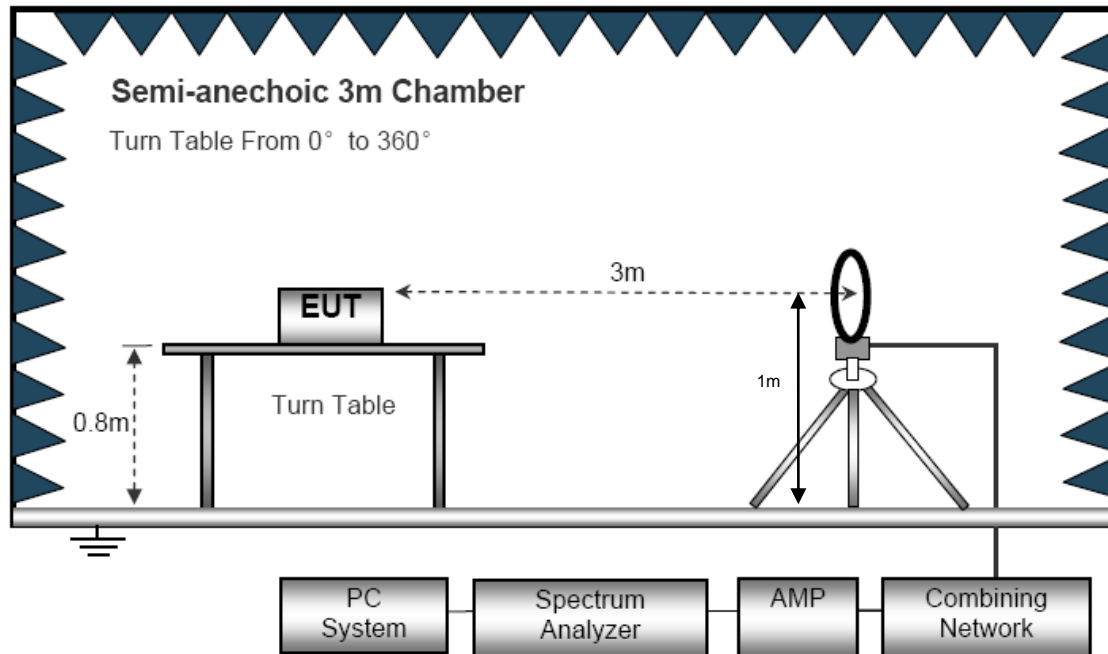
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

#### 4.2.3 DEVIATION FROM TEST STANDARD

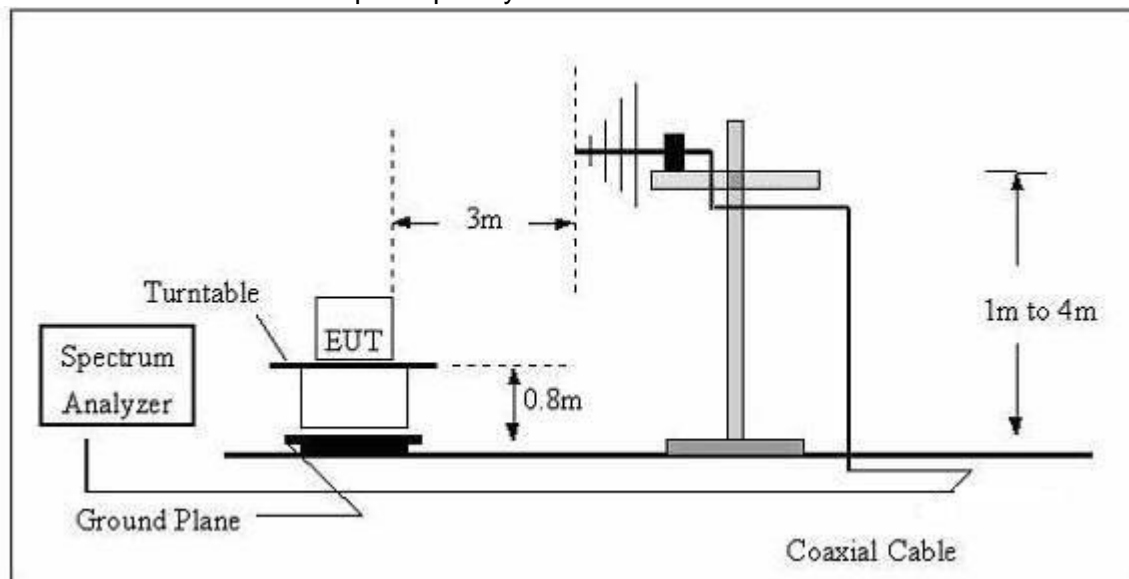
No deviation

#### 4.2.4 TEST SETUP

##### (A) Radiated Emission Test-Up Frequency Below 30MHz



##### (B) Radiated Emission Test-Up Frequency 30MHz~1GHz

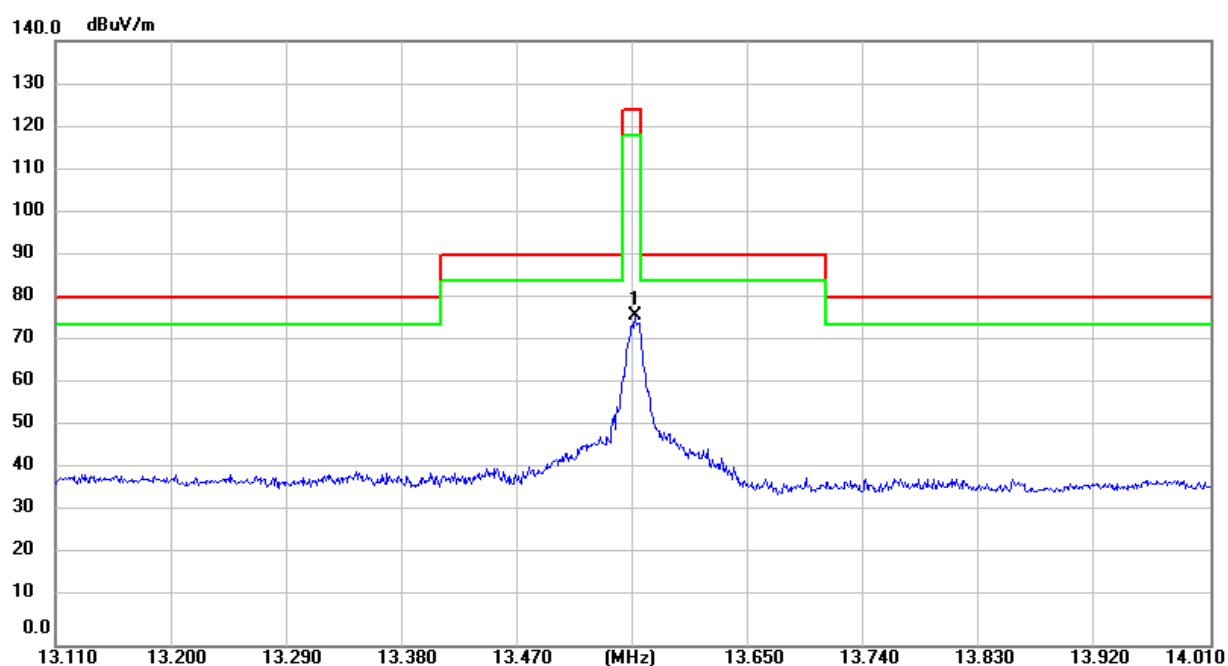




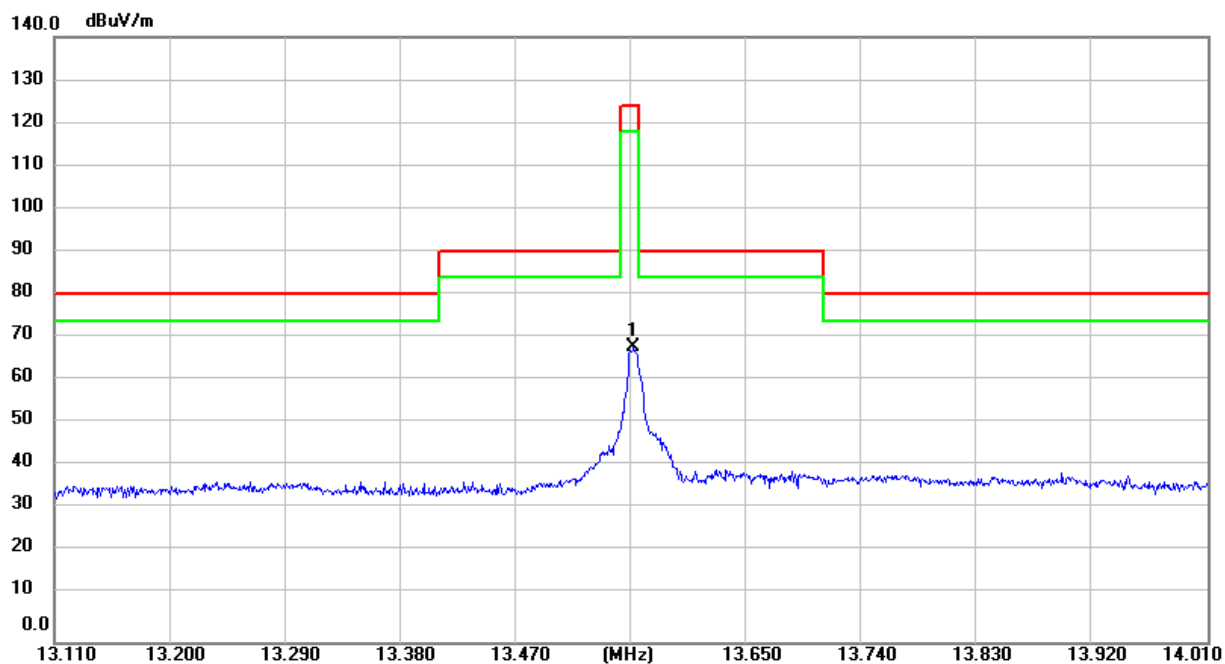
## 4.2.5 TEST RESULTS (BELOW 30MHz)

EUT :	Wired touch keypad	Model Name. :	KP.G3TS.F-000-Y
Temperature :	20 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Voltage :	DC 4.8V
Test Mode :	TX-13.56MHz		

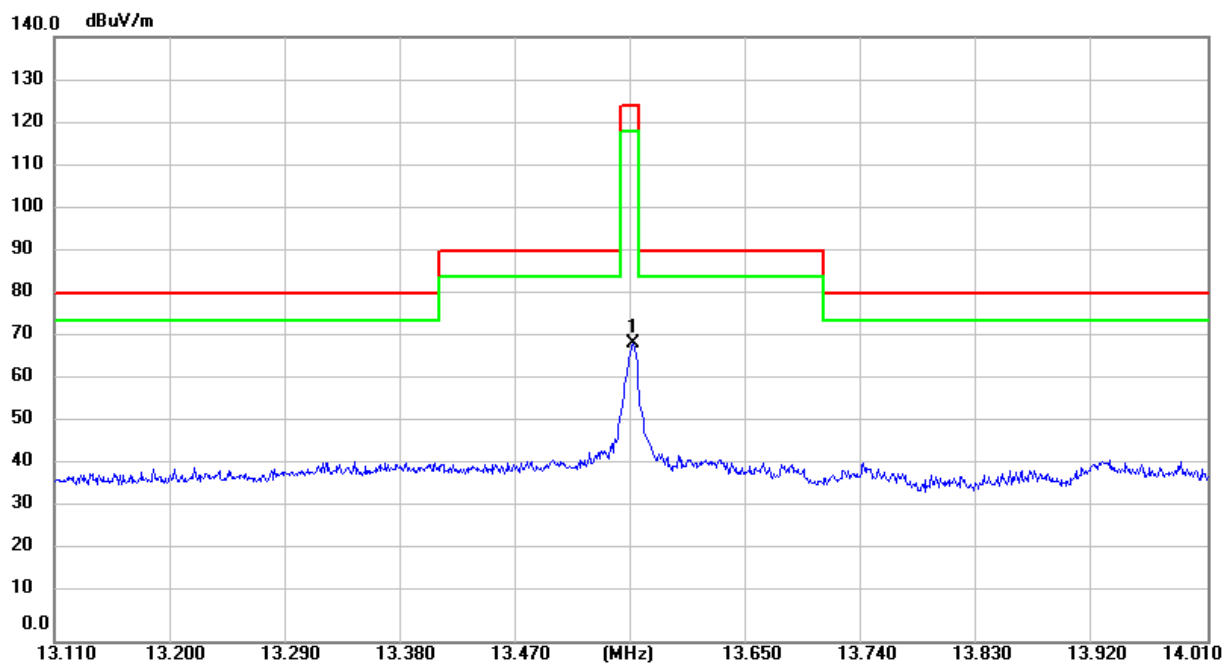
Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Polar
13.5610	76.48	124.00	-47.52	peak	X



Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Polar
13.5622	68.60	124.00	-55.40	peak	Y



Frequency (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Polar
13.5610	68.98	124.00	-55.02	peak	Z



## Spurious emissions at 9kHz~13.110MHz &amp; 14.010MHz~30MHz

Frequency (MHz)	Ant.Pol.	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
0.069	X	46.28	110.827	-64.55	Avg
0.085	X	46.47	109.016	-62.55	Avg
0.136	X	76.48	104.933	-28.45	Avg(fundamental frequency)
0.683	X	43.54	70.916	-27.38	QP
1.672	X	44.98	63.139	-18.16	QP

## Note:

Below 30MHz, Pre-test the X, Y, Z axis to find X axis is worst case, so only record X axis test data.

X: Field strength which this device generates since the position of the charging coil and loop antenna differ by 0 degrees.

Y: Field strength which this device generates since the position of the charging coil and loop antenna differ by 90 degrees.

Z: Field strength which this device generates since the position of the charging coil and loop antenna differ by 180 degrees

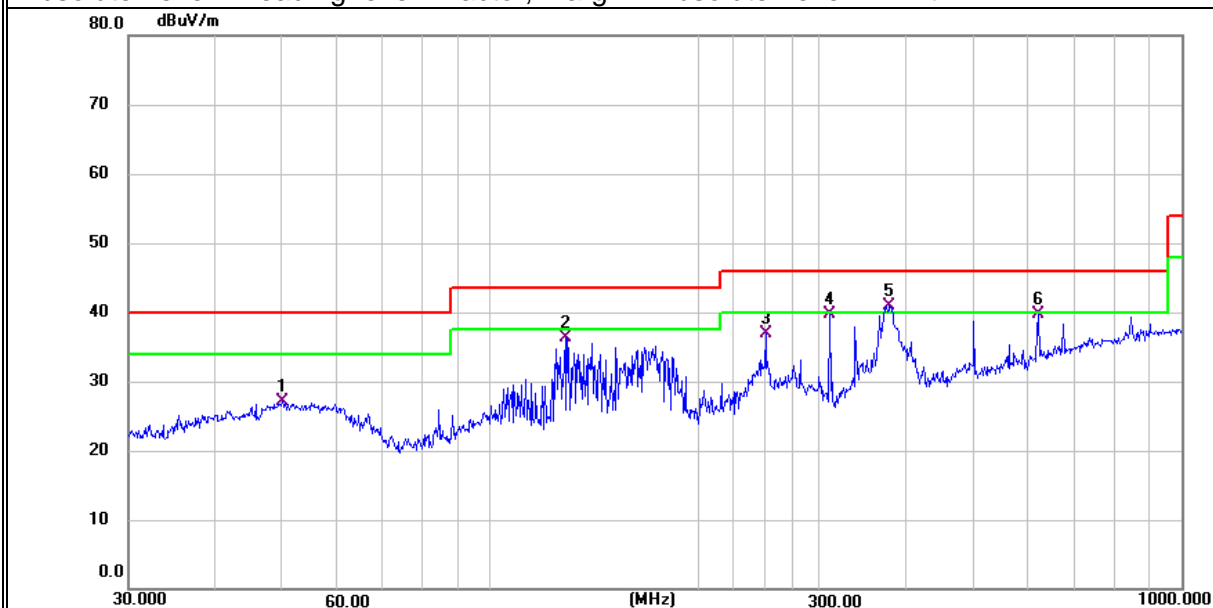
#### 4.2.6 TEST RESULTS (BETWEEN 30 – 1000 MHZ)

EUT :	Wired touch keypad	Model Name :	KP.G3TS.F-000-Y
Temperature :	20 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Voltage :	DC 4.8V
Test Mode :	TX	Polarization :	Horizontal

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	50.0566	6.61	20.46	27.07	40.00	-12.93	QP
H	128.5630	21.23	15.14	36.37	43.50	-7.13	QP
H	250.3010	17.79	19.13	36.92	46.00	-9.08	QP
H	309.9977	19.18	20.56	39.74	46.00	-6.26	QP
H	378.5842	18.38	22.48	40.86	46.00	-5.14	QP
H	620.7096	13.54	26.20	39.74	46.00	-6.26	QP

#### Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit

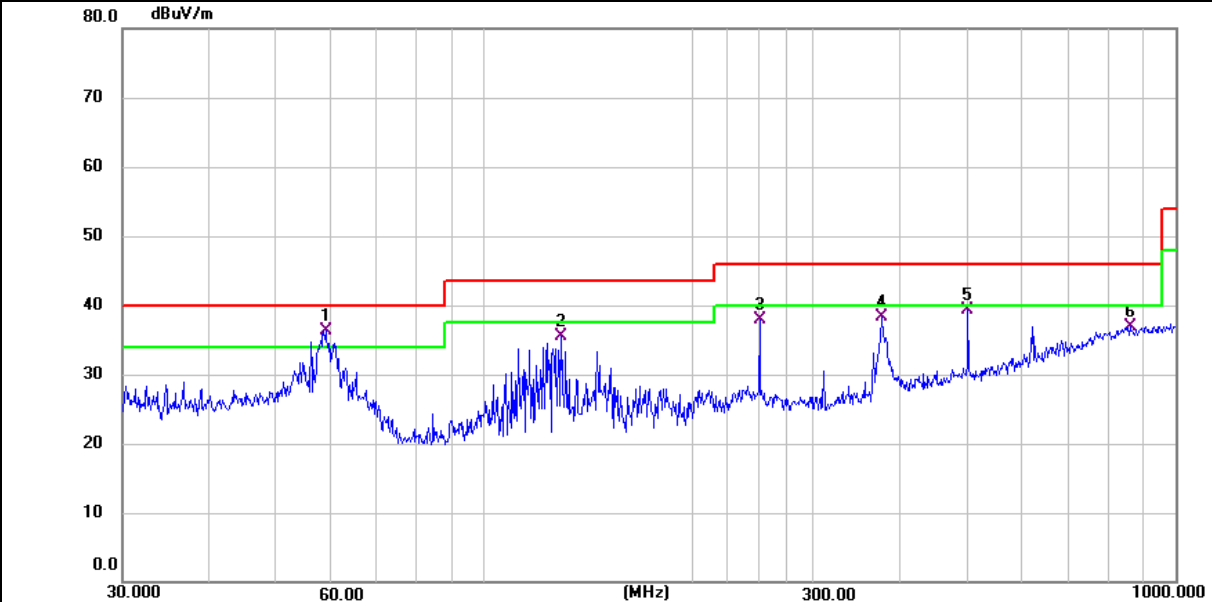


EUT :	Wired touch keypad	Model Name :	KP.G3TS.F-000-Y
Temperature :	20 °C	Relative Humidity :	54%
Pressure :	1010 hPa	Test Voltage :	DC 4.8V
Test Mode :	TX	Polarization :	Vertical

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	59.0251	16.83	19.43	36.26	40.00	-3.74	QP
V	129.4677	20.17	15.24	35.41	43.50	-8.09	QP
V	250.3010	18.76	19.13	37.89	46.00	-8.11	QP
V	375.9384	15.93	22.43	38.36	46.00	-7.64	QP
V	501.1790	14.52	24.75	39.27	46.00	-6.73	QP
V	860.0351	6.96	29.95	36.91	46.00	-9.09	QP

**Remark:**

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



## 5. BANDWIDTH TEST

### 5.1 TEST PROCEDURE

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak mode.
2. 20dB Bandwidth the resolution bandwidth of 1 kHz and the video bandwidth of 1 kHz were used.
3. Measured the spectrum width with power higher than 20dB below carrier.

### 5.2 DEVIATION FROM STANDARD

FCC Part15.225

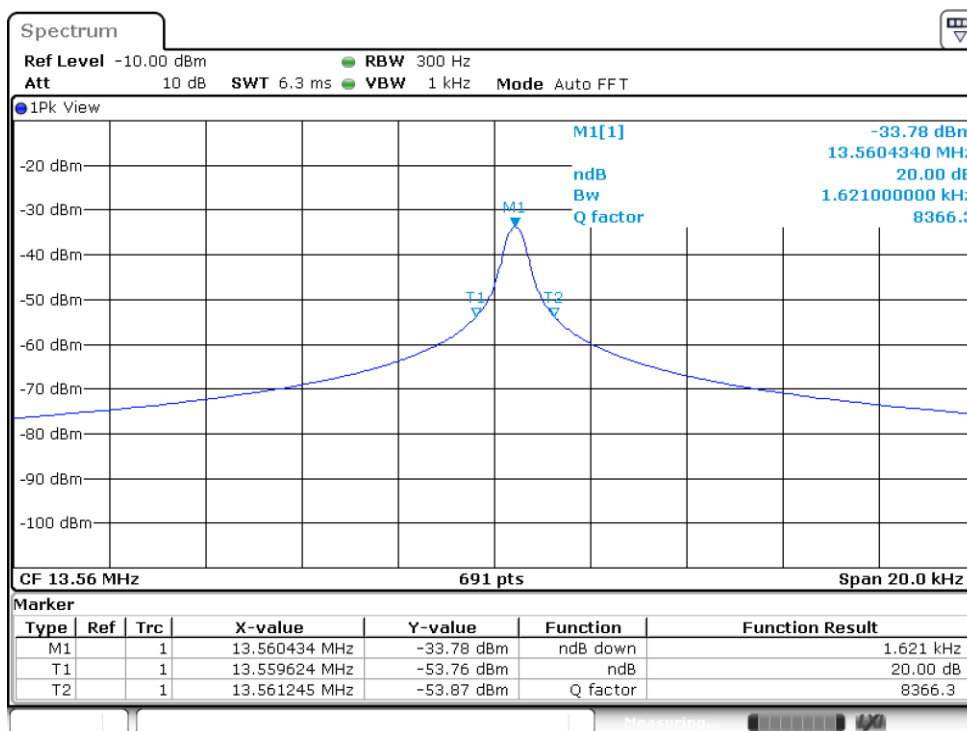
### 5.3 TEST SETUP



## 5.4 TEST RESULTS

EUT :	Wired touch keypad	Model Name :	KP.G3TS.F-000-Y
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1020 hPa	Test Power :	DC 4.8V
Test Mode :	TX		

Test Channel	Frequency (MHz)	20 dBc Bandwidth (kHz)
CH01	13.56	1.621





## 6. FREQUENCY TOLERANCE

### 6.1 Requirement:

Test Requirement: FCC Part15.225

Requirement:

Test Method: ANSI C63.4:2003

Requirement: The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  of the operating frequency over a temperature variation of  $-20$  degrees to  $+50$  degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

### 6.2 Test Procedure

- 1.The EUT was placed on a turn table which is 0.8m above ground plane.
- 2.Set EUT as normal operation
- 3.Set SPA Center Frequency = fundamental frequency, RBW, VBW= 10kHz, Span =100kHz.
- 4.Set SPA Max hold. Mark peak.

**Test Result**

Power Supply	Temperature (°C)	Measured Frequency (MHz)	Frequency Error (MHz)	Result (ppm)	Part 15.225 Limit
DC 5.28V	-20	13.56013	0.00013	9.5870206	+/- 0.01%(100ppm)
	20	13.56041	0.00041	30.2359882	+/- 0.01%(100ppm)
	50	13.56068	0.00068	50.1474926	+/- 0.01%(100ppm)
DC 4.8V	-20	13.56024	0.00024	17.6991150	+/- 0.01%(100ppm)
	20	13.56043	0.00043	31.7109145	+/- 0.01%(100ppm)
	50	13.56056	0.00056	41.2979351	+/- 0.01%(100ppm)
DC 4.32V	-20	13.56028	0.00028	20.6489676	+/- 0.01%(100ppm)
	20	13.56039	0.00039	28.7610619	+/- 0.01%(100ppm)
	50	13.56047	0.00047	34.6607670	+/- 0.01%(100ppm)

END REPORT