

FC

Test Report

Product Name	TwinTouch 600
Model No.	GK-070019/K
FCC ID.	FSUGKZH8

Applicant	KYE SYSTEMS CORP. (Genius)
Address	No.492 Sec.5, Chung Hsin Rd., San Chung, Taipei Hsien, 24160, Taiwan, R.O.C.

Date of Receipt	Apr. 22, 2008
Issued Date	May. 28, 2008
Report No.	084347R-RFUSP03V01
Version	V1.0

The Test Results relate only to the samples tested.
The test report shall not be reproduced except in full without the written approval of Quietek Corporation.
This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Test Report Certification

Test Date: May. 28, 2008

Report No.: 084347R-RFUSP03V01



Product Name	TwinTouch 600
Applicant	KYE SYSTEMS CORP. (Genius)
Address	No.492 Sec.5, Chung Hsin Rd., San Chung, Taipei Hsien, 24160, Taiwan, R.O.C.
Manufacturer	KYE SYSTEMS CORP. (Genius)
Model No.	GK-070019/K
FCC ID.	FSUGKZH8
Rated Voltage	AC 120V/60Hz
EUT Working Voltage	DC 3V(Power By Battery)
Trade Name	Genius
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2007 ANSI C63.4: 2003 CISPR 22: 2005
Test Result	Complied



The Test Results relate only to the samples tested.

The test report shall not be reproduced except in full without the written approval of Quietek Corporation.

This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

Documented By : Genie Chang
(Adm. Specialist / Genie Chang)



Tested By : Tim Sung
(Senior Engineer / Tim Sung)

Approved By : Vincent Lin
(Deputy Manager / Vincent Lin)



TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION.....	4
1.1. EUT Description	4
1.2. Operational Description	5
1.3. Test System Details	6
1.4. Configuration of Test System	6
1.5. EUT Exercise Software	6
1.6. Test Facility	7
2. Conducted Emission	8
2.1. Test Equipment	8
2.2. Test Setup	8
2.3. Limits.....	8
2.4. Test Procedure	9
2.5. Uncertainty.....	9
2.6. Test Data of Conducted Emission	9
3. Radiated Emission	10
3.1. Test Equipment	10
3.2. Test Setup	11
3.3. Limits.....	12
3.4. Test Procedure	13
3.5. Uncertainty.....	13
3.6. Test Data of Radiated Emission	14
4. Band Edge	19
4.1. Test Equipment	19
4.2. Test Setup	19
4.3. Limit	20
4.4. Test Procedure	20
4.5. Test Result of Band Edge.....	21
5. EMI Reduction Method During Compliance Testing	22
Attachment 1: EUT Test Photographs	
Attachment 2: EUT Detailed Photographs	

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	TwinTouch 600
Trade Name	Genius
FCC ID.	FSUGKZH8
Model No.	GK-070019/K
EUT Working Voltage	DC 3V(Power By Battery)
Frequency Range	27.145MHz
Type of Modulation	FSK Modulation
Type of antenna	Loop Antenna
Number of Channel	1
Channel Control	Manual

Frequency of Each Channel:

Channel	Frequency
Channel 01:	27.145MHz

Note:

1. The EUT is a TwinTouch 600 used in household and office PC system or related application.
2. The EUT is including two models and the difference is counted differently for the button.
3. These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC CFR Title 47 Part 15 Subpart C Paragraph 15.227.

1.2. Operational Description

The EUT is a TwinTouch 600 used in household and office PC system. The number of the channels is 1 in 27.145MHz.

The device adapts FSK modulation. The Printed antenna provides diversity function to improve the transmitting function.

Test Mode	Mode 1: Transmitter
-----------	---------------------

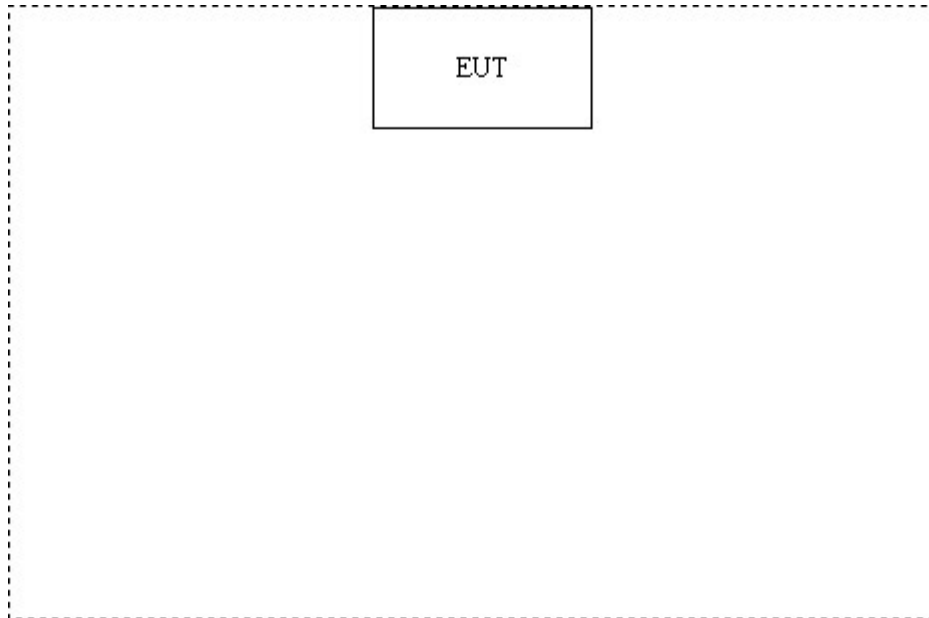
1.3. Test System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
N/A					

Signal Cable Type	Signal cable Description
N/A	

1.4. Configuration of Test System



1.5. EUT Exercise Software

1	Setup the EUT as shown on 1.4.
2	Turn on the power for EUT.
3	The EUT to enter RF test mode.
4	The EUT will continuously transmit the radio signal.
5	Repeat the above procedure (3) to (4)

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	30-65
Barometric pressure (mbar)	860-1060	950-1000

Site Description: Federal Communications Commission
 FCC Engineering Laboratory
 7435 Oakland Mills Road
 Columbia, MD 21046
 Registration Number: 92195



Accreditation on NVLAP
 NVLAP Lab Code: 200533-0



Site Name: Quietek Corporation
 Site Address: No. 5-22, Ruei-Shu Valley, Ruei-Ping Tsuen,
 Lin-Kou Shiang, Taipei,
 Taiwan, R.O.C.
 TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789
 E-Mail : service@quietek.com

FCC Accreditation Number: TW1014



2. Conducted Emission

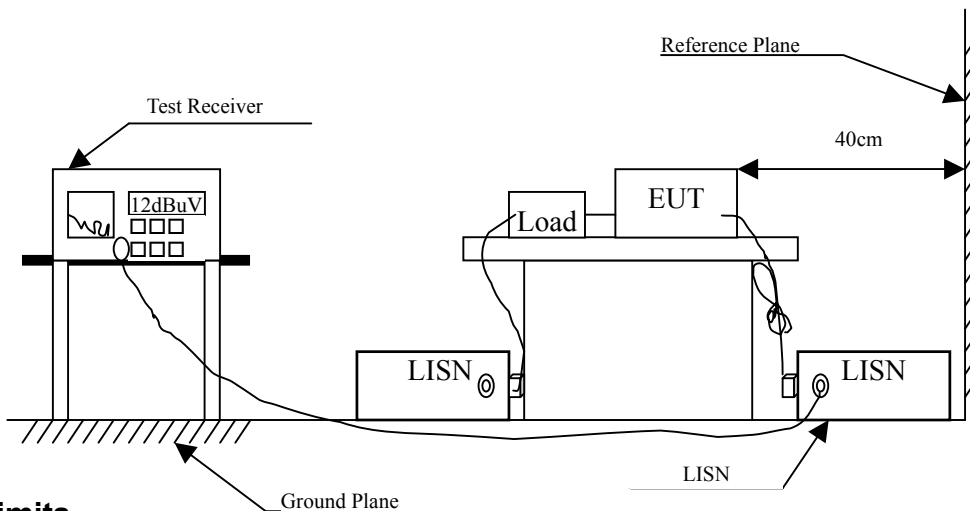
2.1. Test Equipment

The following test equipments are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./Serial No	Last Cal.	Remark
1	Test Receiver	R & S	ESCS 30/838251/001	May, 2008	
2	L.I.S.N.	R & S	ESH3-Z5/836679/0023	May, 2008	EUT
3	L.I.S.N.	R & S	ENV 4200/833209/0023	May, 2008	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2	May, 2008	
6	No.1 Shielded Room				

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

2.2. Test Setup



2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit		
Frequency MHz	Limits	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks : In the above table, the tighter limit applies at the band edges.

2.4. Test Procedure

The EUT was setup and tested according to ANSI C63.4, 2003 test procedure.

The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.5. Uncertainty

± 2.26 dB

2.6. Test Data of Conducted Emission

The EUT is powered by batteries Owing to the DC operation. This test item is not performed

3. Radiated Emission

3.1. Test Equipment

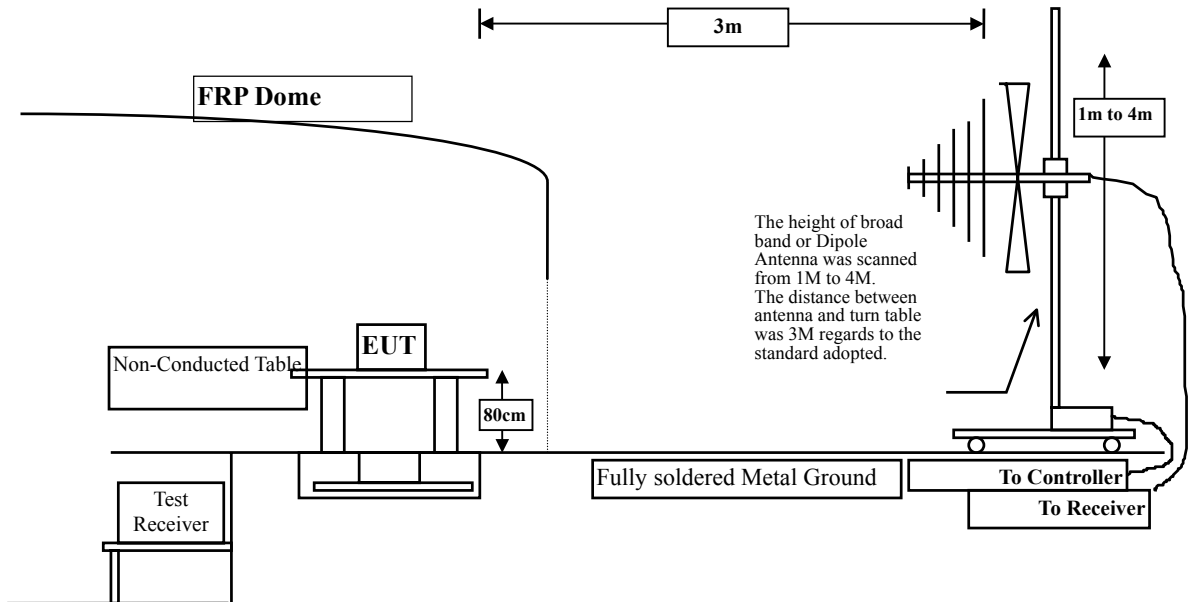
The following test equipment are used during the radiated emission test:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
<input type="checkbox"/> Site # 1	Test Receiver	R & S	ESVS 10 / 834468/003	May, 2008
	Spectrum Analyzer	Advantest	R3162/ 00803480	May, 2008
	Pre-Amplifier	Advantest	BB525C/ 3307A01812	May, 2008
	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	Sep., 2007
<input type="checkbox"/> Site # 2	Test Receiver	R & S	ESCS 30 / 836858 / 022	May, 2008
	Spectrum Analyzer	Advantest	R3162 / 100803466	May, 2008
	Pre-Amplifier	Advantest	BB525C/3307A01814	May, 2008
	Bilog Antenna	SCHAFFNER	CBL6112B / 2705	May, 2008
	Horn Antenna	ETS	3115 / 0005-6160	Sep., 2007
	Pre-Amplifier	QTK	QTK-AMP-01/ 0001	May, 2008
<input checked="" type="checkbox"/> Site # 3	Test Receiver	R & S	ESI 26 / 838786/004	May, 2008
	Spectrum Analyzer	Agilent	E4407B / US39440758	May, 2008
	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	May, 2008
	Horn Antenna	Schwarzbeck	BBHA9120D / 305, 306	July, 2007
	Horn Antenna	Schwarzbeck	BBHA9170 / 208, 209	July, 2007
	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2007
	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2008
	Pre-Amplifier	HP	8449B / 3008A01123	July, 2007

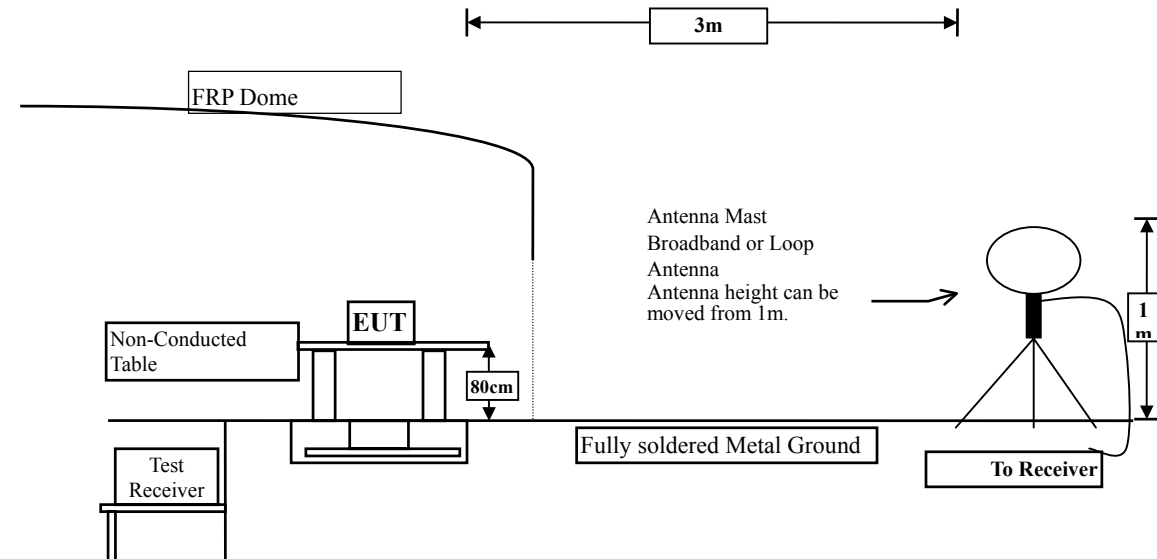
- Note:
1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
 2. The test instruments marked with "X" are used to measure the final test results.

3.2. Test Setup

Radiated Emission Below 1GHz



Radiated Emission Below 30MHz



3.3. Limits

➤ FCC Part 15 Subpart C Paragraph 15.227 Limit

FCC Part 15 Subpart C Paragraph 15.227 Limits		
Fundamental Frequency MHz	Field strength of fundamental	
	uV/m	dBuV/m
26.96-27.28	10000	80

Remarks :

1. E field strength (dBuV/m) = 20 log E field strength (uV/m)

➤ Frequencies in restricted band are complied to limits on Paragraph 15.209.

FCC Part 15 Subpart C Paragraph 15.209 Limits		
Frequency MHz	uV/m @3m	dBuV/m@3m
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Remarks : 1. E field strength (dBuV/m) = 20 log E field strength (uV/m)

2. In the Above Table, the tighter limit applies at the band edges.

3.4. Test Procedure

The EUT was setup and tested according to ANSI C63.4, 2003.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level.

This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB beamwidth of the antenna.

The worst radiated emission is measured on the Final Measurement.

The frequency range from 30MHz to 10th harmonics is checked.

3.5. Uncertainty

± 3.9 dB above 1GHz

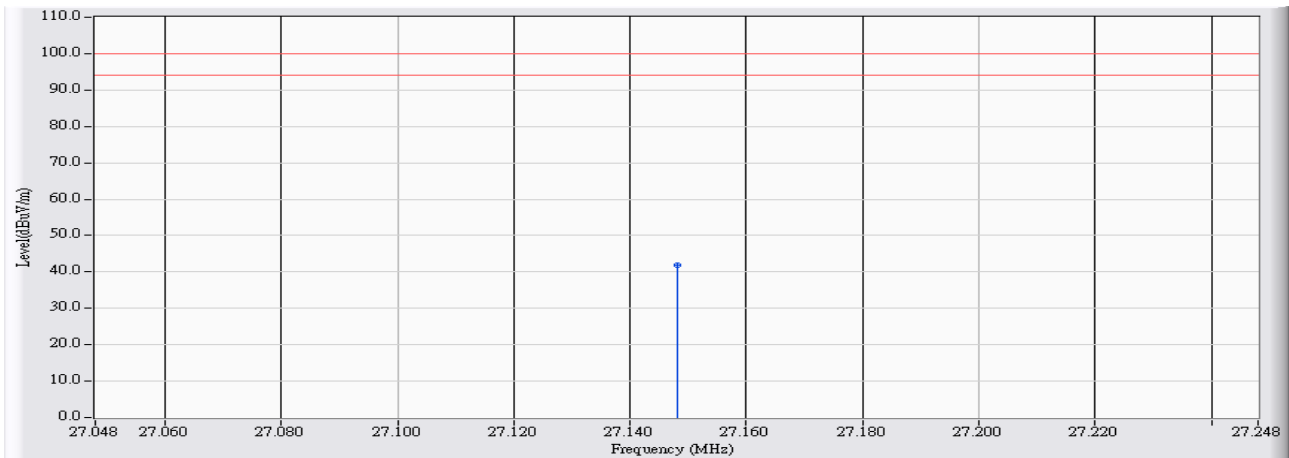
± 3.8 dB below 1GHz

3.6. Test Data of Radiated Emission

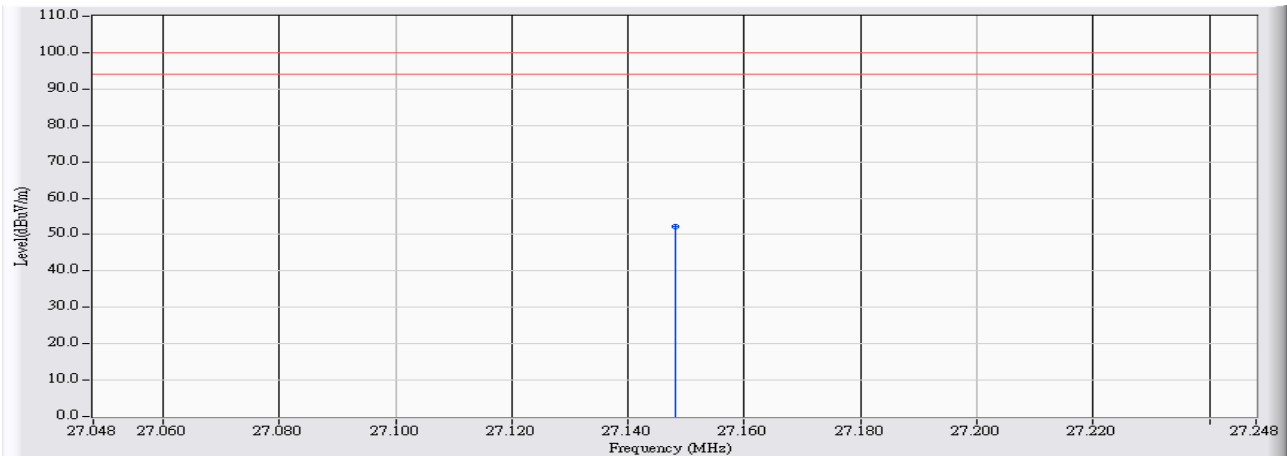
Product : TwinTouch 600
 Test Item : Fundamental Radiated Emission
 Test Site : No.3 OATS
 Test Voltage : AC 120V/60Hz
 Test Mode : Mode 1: Transmitter

Polarity	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)
Peak Detector							
X	27.145	-3.490	45.390	41.900	-58.100	100.000	80.000
Y	27.145	-3.490	55.780	52.290	-47.710	100.000	80.000
Z	27.145	-3.490	59.440	55.950	-44.050	100.000	80.000

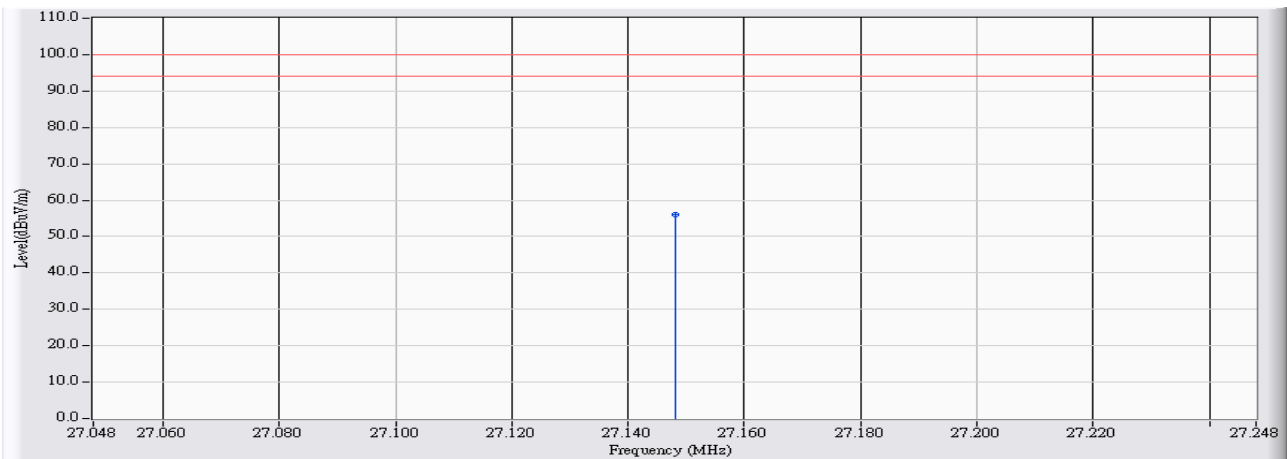
Peak Detector:
 Polarity X



Polarity Y



Polarity Z



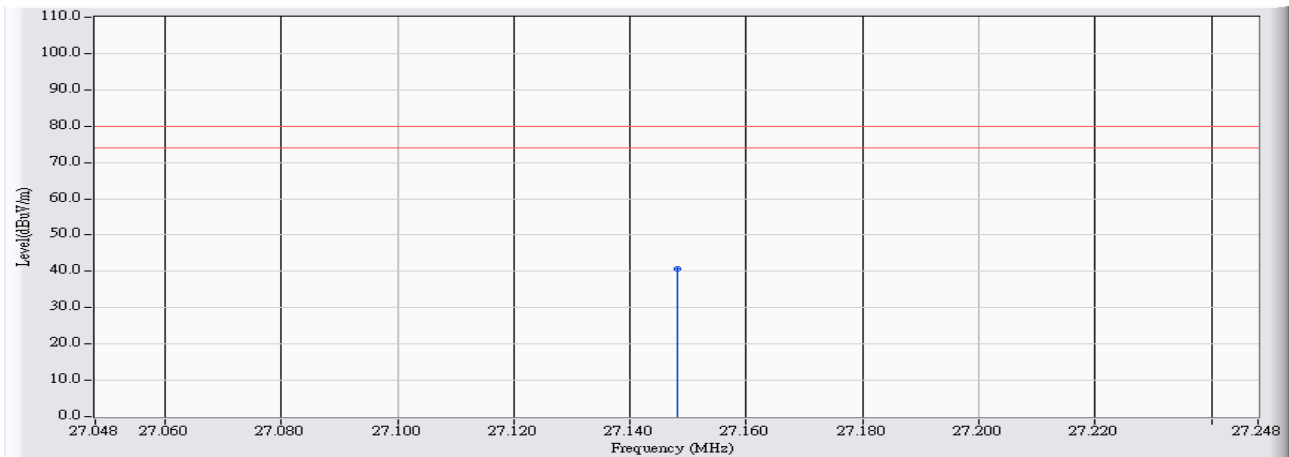
Note:

1. Below 30MHz, the magnetic loop antenna was used.
2. Only fundamental frequency is shown on the test report.
3. For those measured radiated emissions below 30MHz not shown above, mean they are below the limit.
4. Correct factor = Antenna Factor + Cable Loss – Pre-amplifier Gain

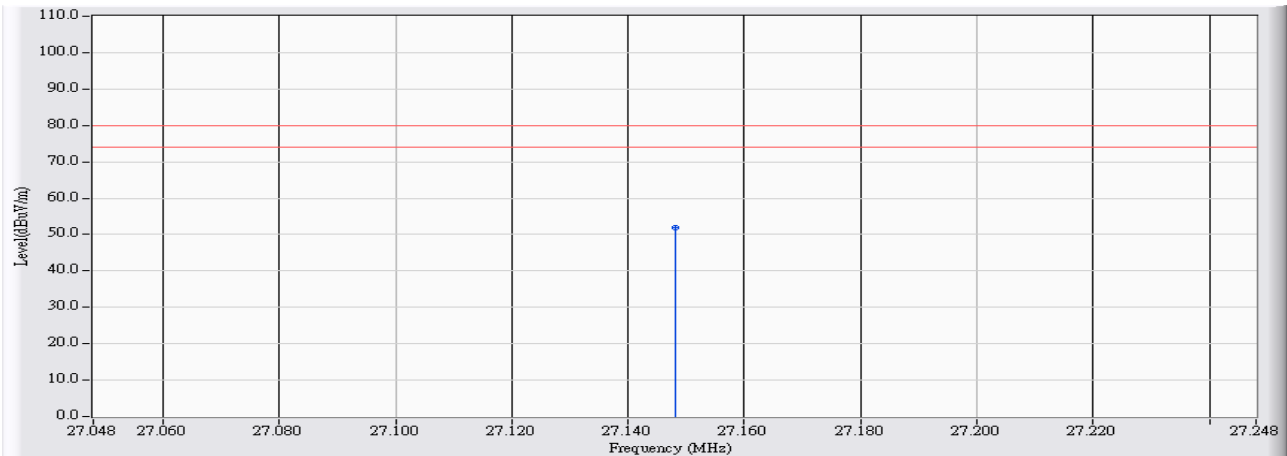
Product : TwinTouch 600
 Test Item : Fundamental Radiated Emission
 Test Site : No.3 OATS
 Test Voltage : AC 120V/60Hz
 Test Mode : Mode 1: Transmitter

Polarity	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)
Average Detector							
X	27.145	-3.490	44.190	40.700	-39.300	100.000	80.000
Y	27.145	-3.490	55.320	51.830	-28.170	100.000	80.000
Z	27.145	-3.490	59.090	55.600	-24.400	100.000	80.000

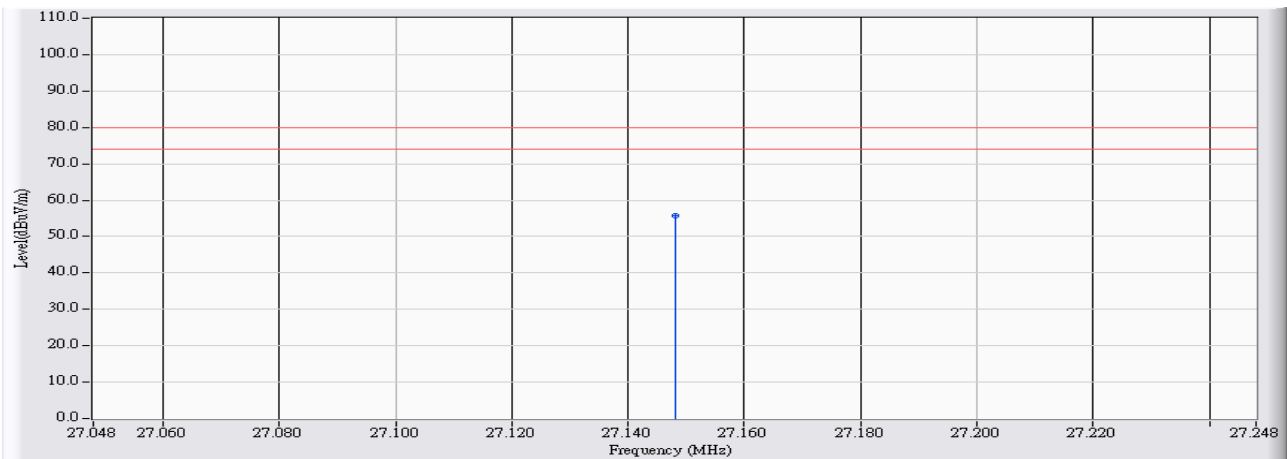
Average Detector:
Polarity X



Polarity Y



Polarity Z



Note:

1. Below 30MHz, the magnetic loop antenna was used.
2. Only fundamental frequency is shown on the test report.
3. For those measured radiated emissions below 30MHz not shown above, mean they are below the limit.
4. Correct factor = Antenna Factor + Cable Loss – Pre-amplifier Gain

Product : TwinTouch 600
 Test Item : General Radiated Emission
 Test Site : No.3 OATS
 Test Voltage : AC 120V/60Hz
 Test Mode : Mode 1: Transmitter

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
Horizontal					
53.327	-24.638	49.734	25.096	-14.904	40.000
80.541	-21.776	55.840	34.064	-5.936	40.000
107.756	-19.000	49.789	30.790	-12.710	43.500
134.970	-24.234	47.709	23.475	-20.025	43.500
162.184	-26.272	47.170	20.898	-22.602	43.500
189.399	-24.447	46.736	22.289	-21.211	43.500
216.613	-21.905	50.240	28.335	-17.665	46.000
243.828	-19.789	46.552	26.763	-19.237	46.000
271.042	-19.328	42.906	23.578	-22.422	46.000
Vertical					
53.327	-26.041	43.793	17.752	-22.248	40.000
80.541	-23.157	47.607	24.451	-15.549	40.000
107.756	-18.314	40.500	22.187	-21.313	43.500
134.970	-19.249	39.395	20.147	-23.353	43.500
162.184	-19.529	41.805	22.276	-21.224	43.500
189.399	-15.247	38.282	23.035	-20.465	43.500
216.613	-13.900	40.931	27.032	-18.968	46.000
243.828	-14.269	36.977	22.708	-23.292	46.000
271.042	-16.988	34.670	17.682	-28.318	46.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
2. "█" means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor
4. Correct Factor = Antenna Factor + Cable Loss – Pre-amplifier Gain

4. Band Edge

4.1. Test Equipment

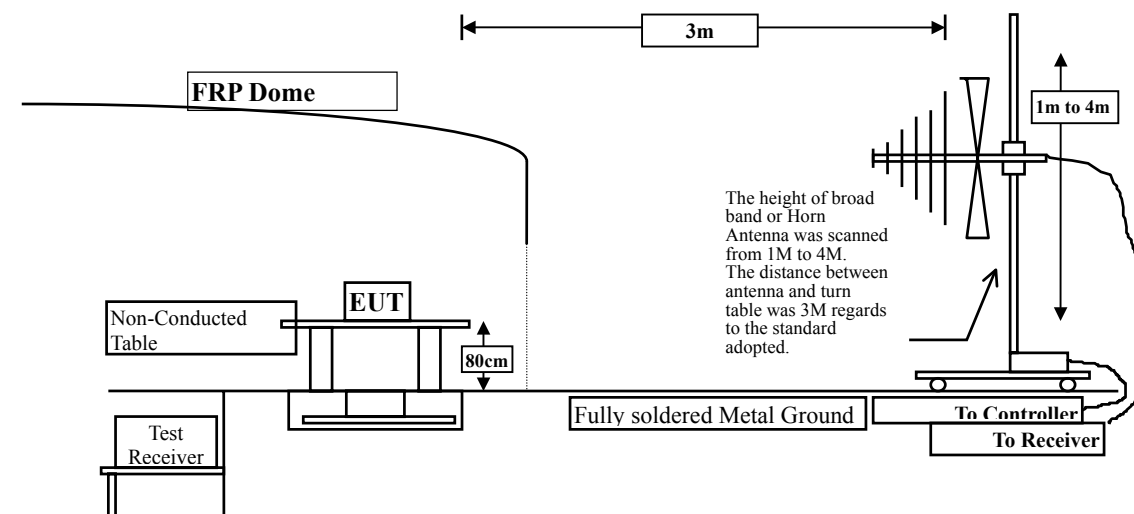
The following test equipment are used during the radiated emission test:

Test Site	Equipment	Manufacturer	Model No./Serial No.	Last Cal.
<input type="checkbox"/> Site # 1	Test Receiver	R & S	ESVS 10 / 834468/003	July, 2007
	Spectrum Analyzer	Advantest	R3162/ 00803480	May, 2008
	Pre-Amplifier	Advantest	BB525C/ 3307A01812	May, 2008
	Bilog Antenna	SCHAFFNER	CBL6112B / 2697	Nov., 2007
<input type="checkbox"/> Site # 2	Test Receiver	R & S	ESCS 30 / 836858 / 022	Nov., 2007
	Spectrum Analyzer	Advantest	R3162 / 100803466	May, 2008
	Pre-Amplifier	Advantest	BB525C/3307A01814	May, 2008
	Bilog Antenna	SCHAFFNER	CBL6112B / 2705	Oct., 2007
<input checked="" type="checkbox"/> Site # 3	Test Receiver	R & S	ESI 26 / 838786 / 004	May, 2008
	Spectrum Analyzer	HP	E4407B / US39440758	May, 2008
	Pre-Amplifier	QTK	QTK-AMP-03 / 0003	May, 2008
	Broadband Antenna	Schwarzbeck	VULB9166/1085	April, 2008
	Horn Antenna	ETS	3115 / 0005-6160	July, 2007
	Loop Antenna	R&S	HFH2-Z2/833799/004	July, 2007
	Pre-Amplifier	QTK	QTK-AMP-01 / 0001	July, 2007

- Note:
1. All equipments are calibrated every one year.
 2. The test instruments marked by "X" are used to measure the final test results.

4.2. Test Setup

RF Radiated Measurement:



4.3. Limit

Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

4.4. Test Procedure

The EUT was setup and tested according to ANSI C63.4, 2003.

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level.

This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.

The additional latch filter below 1GHz was used to measure the level of harmonics radiated emission during field strength of harmonics measurement.

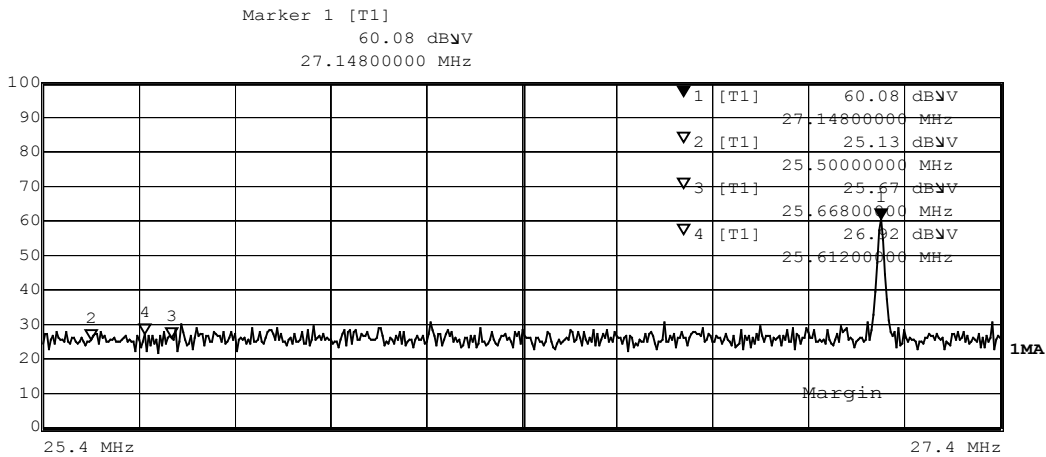
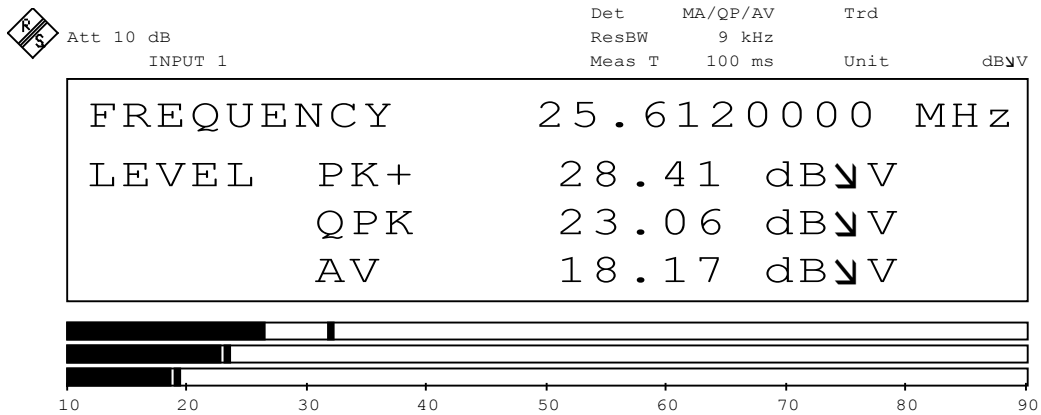
The bandwidth below 30MHz setting on the field strength meter is 9 kHz

4.5. Test Result of Band Edge

Product : TwinTouch 600
 Test Item : Band Edge
 Test Site : No.3 OATS
 Test Mode : Mode 1: Transmitter

RF Radiated Measurement: (Quasi-Peak Detector)

Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Measure Level (dBuV/m)	Margin (dB)	Limit (dBuV/m)
25.612	-3.450	23.06	19.610	-29.930	49.54



Date: 23.MAY.2008 18:44:34

5. EMI Reduction Method During Compliance Testing

No modification was made during testing.