

APPLICATION FOR CERTIFICATION
On Behalf of

Pixel Enterprise Limited

Knight Flashgun TTL Trigger

Model Number: TR-331TX

FCC ID: X5SKNIGHTTX

Prepared for : Pixel Enterprise Limited
Rm1228, 12/F, One Grand Tower, 639 Nathan Road, Mong Kok, Kowloon, Hong Kong

Prepared By : Audix Technology (Shenzhen) Co., Ltd.
No. 6, Ke Feng Rd., 52 Block,
Shenzhen Science & Industrial Park,
Nantou, Shenzhen, Guangdong, China

Tel: (0755) 26639496

Report Number : ACS-F10025
Date of Test : Jan.14~20, 2010
Date of Report : Feb.01, 2010

TABLE OF CONTENTS

<u>Description</u>	<u>Page</u>
1. SUMMARY OF STANDARDS AND RESULTS	1-1
1.1. Description of Standards and Results.....	1-1
2. GENERAL INFORMATION.....	2-1
2.1. Description of Device (EUT)	2-1
2.2. Test Facility.....	2-2
2.3. Measurement Uncertainty (95% confidence levels, k=2)	2-2
3. POWER LINE CONDUCTED EMISSION TEST	3-1
4. RADIATED EMISSION TEST	4-1
4.1. Test Equipment	4-1
4.2. Block Diagram of Test Setup.....	4-1
4.3. Radiated Emission Limit Standard: FCC 15.209 and 15.249	4-2
4.4. EUT Configuration on Test.....	4-3
4.5. Operating Condition of EUT.....	4-3
4.6. Test Procedure.....	4-3
4.7. Radiated Emission Test Results	4-3
5. BAND EDGE COMPLIANCE TEST	5-1
5.1. Test Equipment	5-1
5.2. Limit.....	5-1
5.3. Test Produce	5-1
5.4. Test Results	5-1
6. BANDWIDTH TEST	6-1
6.1. Test Equipment	6-1
6.2. Limit.....	6-1
6.3. Test Results	6-1
7. DEVIATION TO TEST SPECIFICATIONS	7-1
8. PHOTOGRAPH OF TEST	8-1
8.1. Photos of Radiated Emission Test (In Anechoic Chamber).....	8-1
9. PHOTOGRAPH OF EUT	9-1

TEST REPORT CERTIFICATION

Applicant : Pixel Enterprise Limited
 Manufacturer : Pixel Enterprise Limited
 EUT Description : Knight Flashgun TTL Trigger
 (A) MODEL NO. : TR-331TX
 (B) SERIAL NO. : N/A
 (C) POWER SUPPLY : DC 3V
 (D) TEST VOLTAGE : DC 3V

Test Procedure Used:

FCC Rules and Regulations Part 15 Subpart C 2008

The device described above is tested by Audix Technology (Shenzhen) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits for radiated and conducted emissions.

The test results are contained in this test report and Audix Technology (Shenzhen) Co., Ltd. is assumed full responsibility for the accuracy and completeness of tests. Also, this report shows that EUT is technically compliant with FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shenzhen) Co., Ltd.

Date of Test : Jan.14~ 20, 2010

Prepared by : Edie Huang
Edie Huang / Assistant

Reviewer : Jamy Yu
Jamy Yu / Supervisor



Approved & Authorized Signer : Ken Lu / Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION		
Description of Test Item	Standard	Results
Power Line Conducted Emission Test	FCC Part 15C: 15.207 ANSI C63.10: 2009	N/A
Radiated Emission Test	FCC Part 15C: 15.209 FCC Part 15C: 15.249 ANSI C63.10: 2009	PASS
Band Edge Compliance Test	FCC Part 15: 15.249 ANSI C63.10: 2009	PASS
20dB Bandwidth Test	FCC Part 15: 15.215 ANSI C63.10: 2009	PASS
N/A is an abbreviation for Not Applicable.		

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Product name : Knight Flashgun TTL Trigger

Model Number : TR-331TX

FCC ID : X5SKNIGHTTX

Operation frequency : 2414MHz~2470MHz

Modulation : FSK

Applicant : Pixel Enterprise Limited
Rm1228, 12/F, One Grand Tower, 639 Nathan Road, Mong Kok, Kowloon, Hong Kong

Applicant : Pixel Enterprise Limited
Rm1228, 12/F, One Grand Tower, 639 Nathan Road, Mong Kok, Kowloon, Hong Kong

Date of Test : Jan.14~20, 2010

Date of Receipt : Jan.13, 2010

Sample Type : Prototype production

2.2. Test Facility

Site Description	
Name of Firm	: Audix Technology (Shenzhen) Co., Ltd. No. 6, Ke Feng Rd., 52 Block, Shenzhen Science & Industrial Park, Nantou, Shenzhen, Guangdong, China
3m Anechoic Chamber	: Mar.31, 2009 File on Federal Communication Commission Registration Number: 90454
3m & 10m Anechoic Chamber	: Dec. 30, 2009 File on Federal Communication Commission Registration Number: 794232
EMC Lab.	: Accredited by DATech, German Registration Number: DAT-P-091/99-01 Feb. 02, 2009
	Accredited by NVLAP, USA NVLAP Code: 200372-0 Apr. 01, 2009

2.3. Measurement Uncertainty (95% confidence levels, k=2)

Uncertainty for Radiation Emission test in 3m chamber	3.82 dB (Polarize: V) 4.32 dB (Polarize: H)
Uncertainty for Radiation Emission test in 10m chamber (1GHz-18GHz)	3.56 dB (Distance: 3m Polarize: V) 3.84 dB (Distance: 3m Polarize: H)
Uncertainty for Output power test	0.94 dB
Uncertainty for Power density test	2.10 dB
Uncertainty for Temperature and humidity test	2% 1°C
Uncertainty for Frequency range test	1×10^{-9}
Uncertainty for Bandwidth test	1×10^{-9}
Uncertainty for DC power test	0.038 %
Uncertainty for test site temperature and humidity	0.6°C 3%

3. POWER LINE CONDUCTED EMISSION TEST

According to Paragraph (c) of FCC Part 15 section 15.207, Tests to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.

4. RADIATED EMISSION TEST

4.1. Test Equipment

Frequency rang: 30~1000MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	3#Chamber	AUDIX	N/A	N/A	Dec.05,09	1 Year
2	EMI Spectrum	Agilent	E4407B	MY41440292	May.08, 09	1 Year
3	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	May.08, 09	1 Year
4	Amplifier	HP	8447D	2648A04738	May.08, 09	1 Year
5	Bilog Antenna	Schaffner	CBL6111C	2598	Dec.14, 09	1 Year
6	RF Cable	MIYAZAKI	8D-FB	3# Chamber No.1	May.08, 09	1 Year
7	Coaxial Switch	Anritsu	MP59B	M73989	May.08, 09	1 Year

Frequency rang: above 1000MHz

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 09	1 Year
2	Horn Antenna	EMCO	3115	9607-4877	Nov.25, 09	1.5 Year
3	Horn Antenna	EMCO	3116	00060089	Dec.03, 09	1.5 Year
4	Amplifier	Agilent	8449B	3008A00863	May.08, 09	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX102	28620/2	Nov.28, 09	1 Year
6	RF Cable	Hubersuhner	SUCOFLEX102	29091/2	Nov.28, 09	1 Year
7	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	May.08, 09	1 Year

4.2. Block Diagram of Test Setup

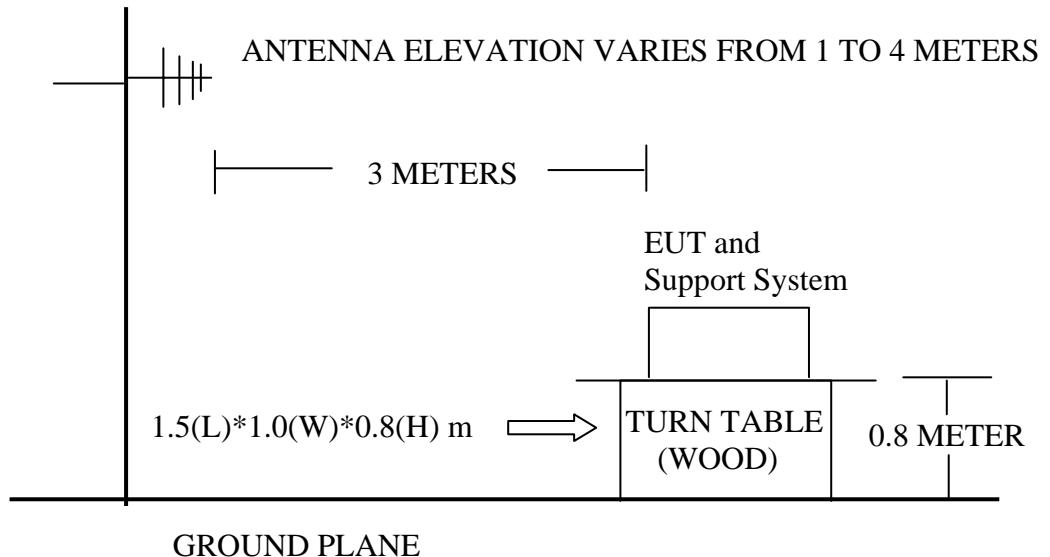
4.2.1. Block Diagram of connection between EUT and simulators



(EUT: Knight Flashgun TTL Trigger)

4.2.2. Anechoic Chamber Setup Diagram

ANTENNA TOWER



4.3. Radiated Emission Limit Standard: FCC 15.209 and 15.249

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μ V/m	dB(μ V)/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1000MHz	3	74.0 dB(μ V)/m (Peak) 54.0 dB(μ V)/m (Average)	
Field Strength of Fundamental emission for 2.4GHz-2.4835GHz	3	94.0 dB(μ V)/m (Average) 114.0 dB(μ V)/m(Peak)	
Field Strength of Harmonics	3	74.0 dB(μ V)/m (Peak) 54.0 dB(μ V)/m (Average)	

Remark :

- (1) Emission level $\text{dB}\mu\text{V} = 20 \log \text{Emission level } \mu\text{V/m}$
- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.
- (4) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

4.4. EUT Configuration on Test

The following equipment are installed on Radiated Emission Test to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.4.1. Knight Flashgun TTL Trigger(EUT)

Model Number : TR-331TX
Serial Number : N/A

4.5. Operating Condition of EUT

4.5.1. Setup the EUT as shown in Section 4.2..

4.5.2. Turned on the power of all equipment.

4.5.3. Let the EUT worked in test mode (Tx Mode) and tested it.

4.6. Test Procedure

The EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on Test. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.10: 2009 on radiated emission Test.

The bandwidth of the EMI test receiver (R&S ESVS10) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 1MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz

The frequency range from 30MHz to 10th harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

Note: This test was performed with EUT in X, Y, Z position, and the worse case was found when EUT in X position as the test photo indicated.

4.7. Radiated Emission Test Results

PASS.

All the emissions from 30MHz to 25GHz were comply with the 15.209 and 15.249 Limit.

Test Frequency: 30MHz-1000MHz

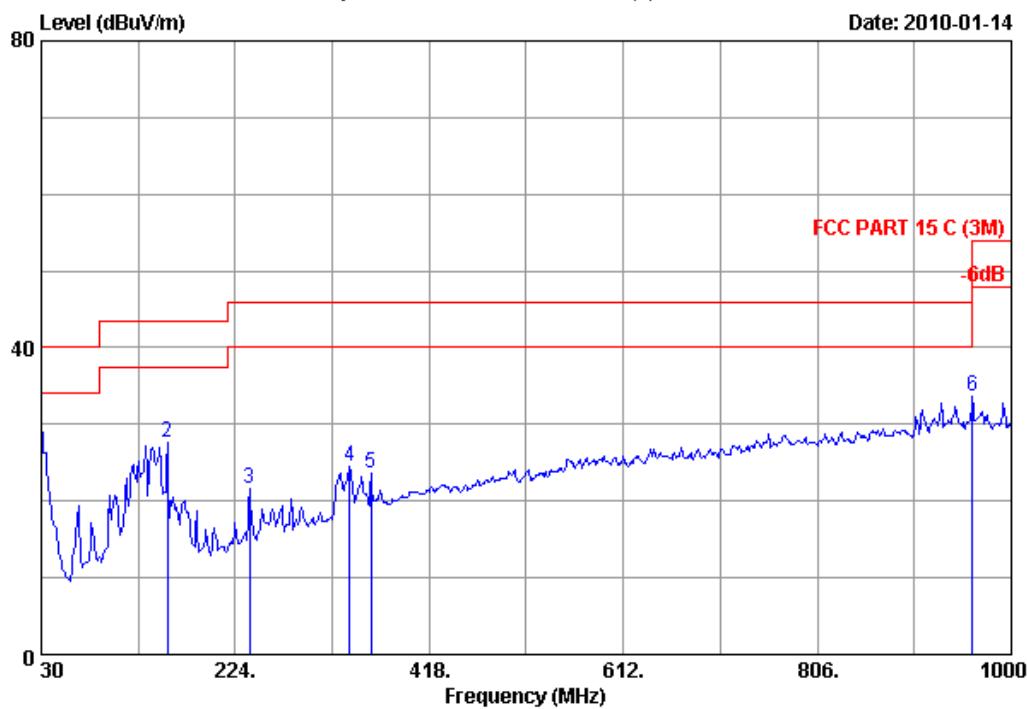


No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 2

File: D:\2010 Repot Data\P\ACS10Q0049.EM6 (4)

Date: 2010-01-14



Site no. : 3m chamber Data no. : 2
 Dis. / Ant. : 3m 2009 CBL6111C Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 C (3M)
 Env. / Ins. : 24*C/56% Engineer : Sunny-lu
 EUT : Knight Flashgun TTL Trigger M/N :TR-331TX
 Power Rating : DC 3V
 Test Mode : Tx Mode

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission			
					Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	30.000	20.00	0.52	9.66	30.18	40.00	9.82	QP
2	156.100	11.26	1.11	15.27	27.64	43.50	15.86	QP
3	238.550	11.70	1.56	8.40	21.66	46.00	24.34	QP
4	338.460	14.73	1.81	8.06	24.60	46.00	21.40	QP
5	359.800	15.60	1.85	6.22	23.67	46.00	22.33	QP
6	961.200	24.38	3.38	5.93	33.69	54.00	20.31	QP

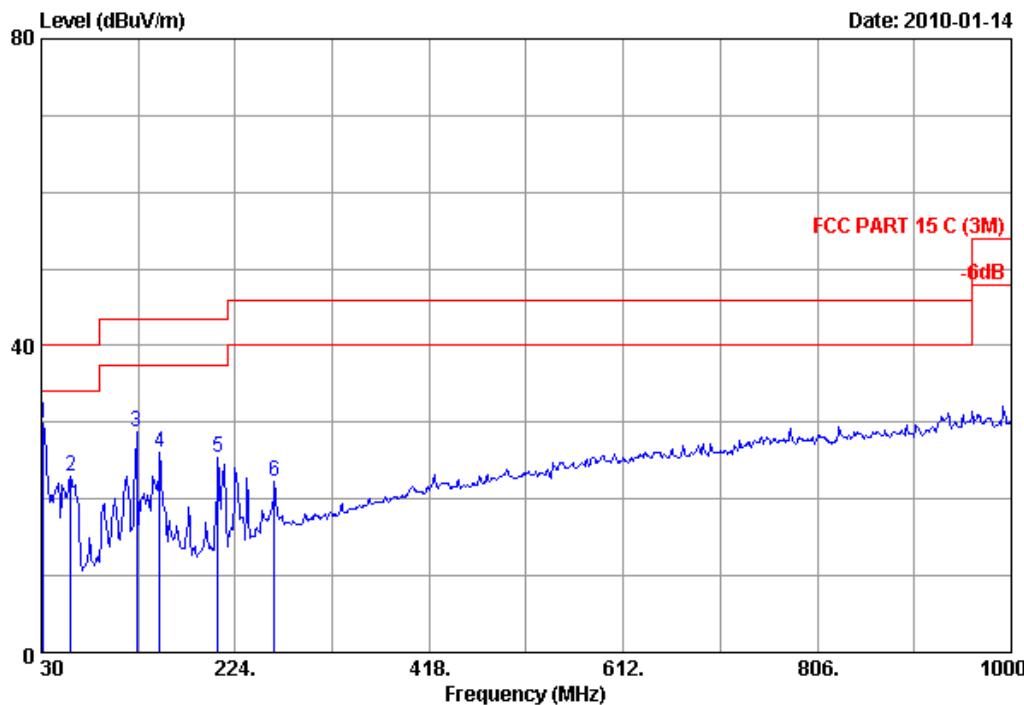
Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official
 limit are not reported.



No.6 Ke Feng Road, Block 52,
ShenZhen Science & Industry Park
Noutou, ShenZhen, GuangDong, China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 1 File: D:\2010 Report Data\P\ACS10Q0049.EM6 (4)

Date: 2010-01-14



Site no. : 3m chamber Data no. : 1
 Dis. / Ant. : 3m 2009 CBL6111C Ant. pol. : VERTICAL
 Limit : FCC PART 15 C (3M)
 Env. / Ins. : 24*C/56% Engineer : Sunny-lu
 EUT : Knight Flashgun TTL Trigger M/N :TR-331TX
 Power Rating : DC 3V
 Test Mode : Tx Mode

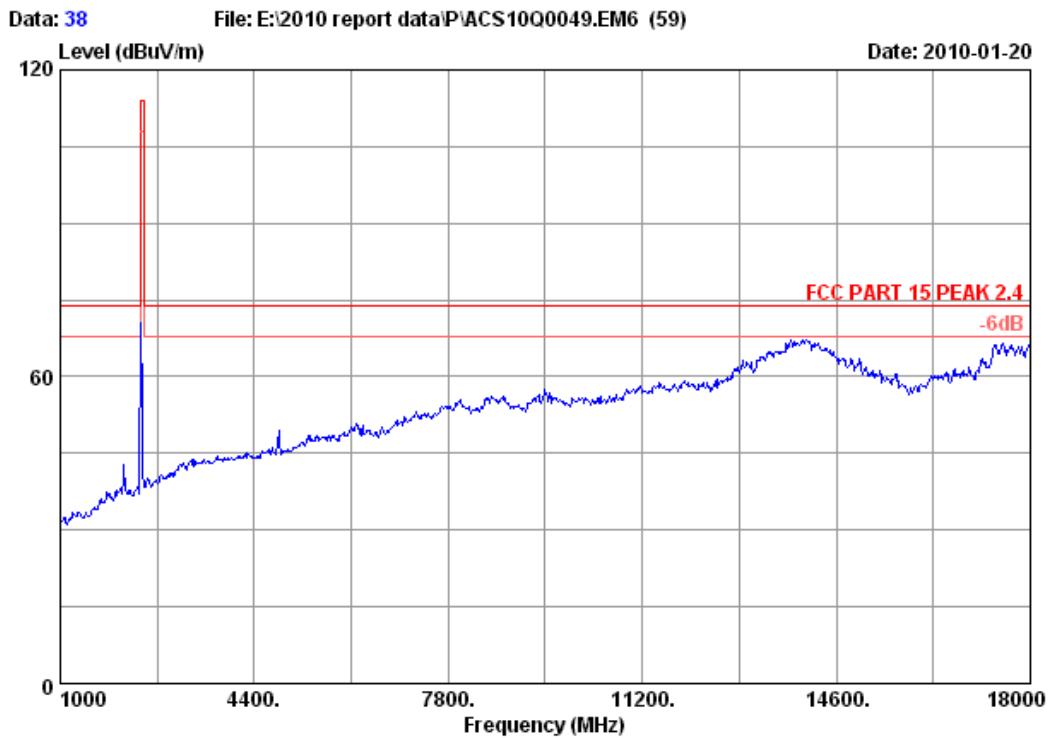
No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Emission				
				Reading (dBuV)	Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	31.940	18.88	0.53	10.45	29.86	40.00	10.14	QP
2	59.100	6.22	0.70	16.08	23.00	40.00	17.00	QP
3	125.060	12.10	1.00	15.56	28.66	43.50	14.84	QP
4	148.340	11.72	1.08	13.17	25.97	43.50	17.53	QP
5	206.540	10.10	1.35	14.01	25.46	43.50	18.04	QP
6	262.800	13.80	1.66	6.90	22.36	46.00	23.64	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
 2. The emission levels that are 20dB below the official limit are not reported.

Test Frequency: 1GHz-18GHz



No.6 Ke Feng Road,Block 52,
 ShenZhen Science & Industry Park
 Noutou,ShenZhen,GuangDong,China
 Tel:+86-755-26639495-7
 Fax:+86-755-26632877
 Postcode:518057



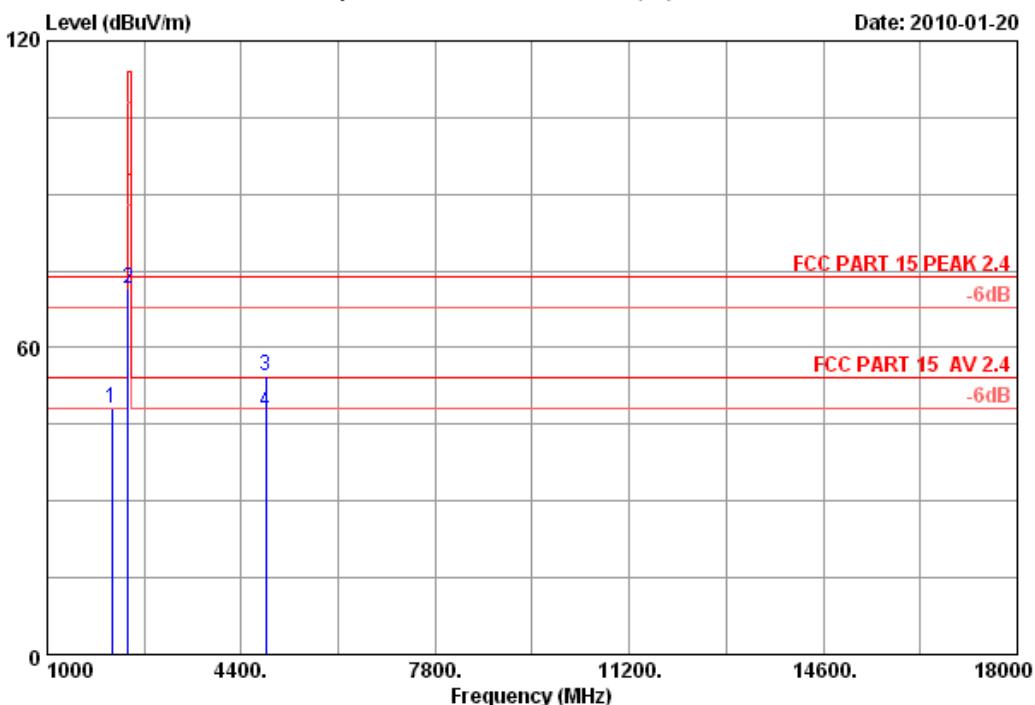
Site no.	:	3m Chamber	Data no.	:	38
Dis. / Ant.	:	3m 3115(0911)	Ant. pol.	:	HORIZONTAL
Limit	:	FCC PART 15 PEAK 2.4			
Env. / Ins.	:	23°C/54%	Engineer	:	Sunny-lu
EUT	:	Knight Flashgun TTL Trigger			
Power	:	DC 3V			
Test mode	:	Tx 2414MHz			
M/N	:	TR-331TX			



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 39 File: E:\2010 report data\P\ACS10Q0049.EM6 (59)

Date: 2010-01-20



Site no. : 3m Chamber Data no. : 39
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23°C/54% Engineer : Sunny-lu
 EUT : Knight Flashgun TTL Trigger
 Power : DC 3V
 Test mode : Tx 2414MHz
 M/N : TR-331TX

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	2139.000	29.28	8.17	35.97	46.62	48.10	25.90
2	2414.000	29.45	8.60	35.95	69.36	71.46	42.54
3	4828.000	34.32	12.58	35.25	42.68	54.33	74.00
4	4828.000	34.32	12.58	35.25	35.65	47.30	54.00
							6.70
							Average

Remarks:

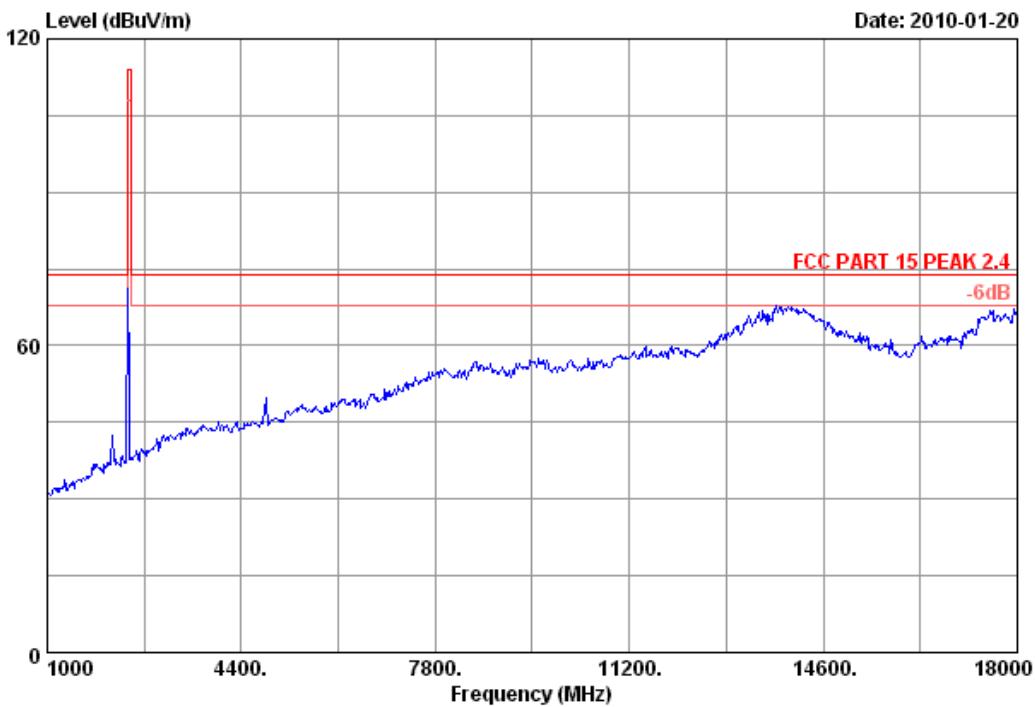
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 40 File: E:\2010 report data\P\ACS10Q0049.EM6 (59)

Date: 2010-01-20



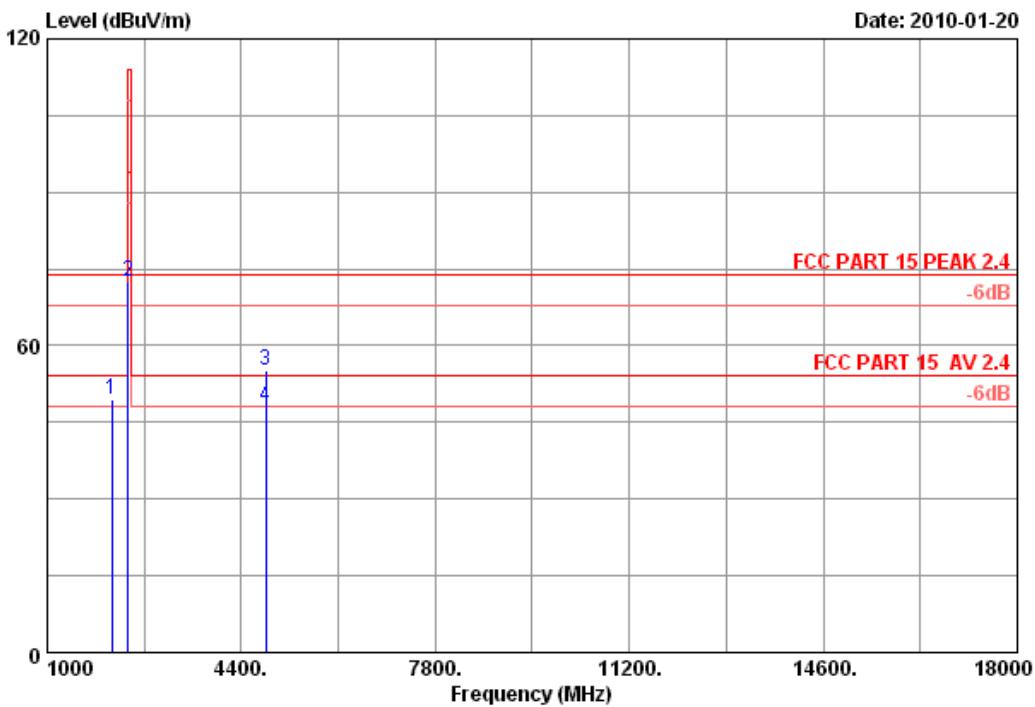
Site no.	: 3m Chamber	Data no.	: 40
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23*C/54%	Engineer	: Sunny-lu
EUT	: Knight Flashgun TTL Trigger		
Power	: DC 3V		
Test mode	: Tx 2414MHz		
M/N	: TR-331TX		



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 41 File: E:\2010 report data\P\ACS10Q0049.EM6 (59)

Date: 2010-01-20



Site no. : 3m Chamber Data no. : 41
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23°C/54% Engineer : Sunny-lu
 EUT : Knight Flashgun TTL Trigger
 Power : DC 3V
 Test mode : Tx 2414MHz
 M/N : TR-331TX

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1 2139.000	29.28	8.17	35.97	48.00	49.48	74.00	24.52
2 2414.000	29.45	8.60	35.95	70.35	72.45	114.00	41.55
3 4828.000	34.32	12.58	35.25	43.36	55.01	74.00	18.99
4 4828.000	34.32	12.58	35.25	36.42	48.07	54.00	5.93

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

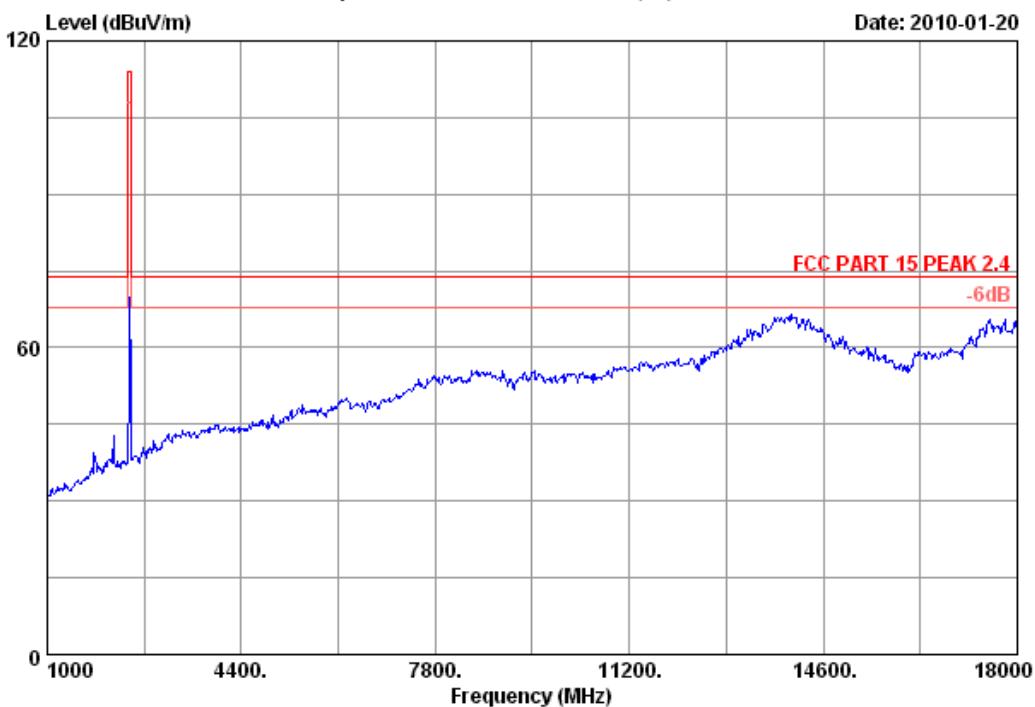


No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 42

File: E:\2010 report data\P\ACS10Q0049.EM6 (59)

Date: 2010-01-20



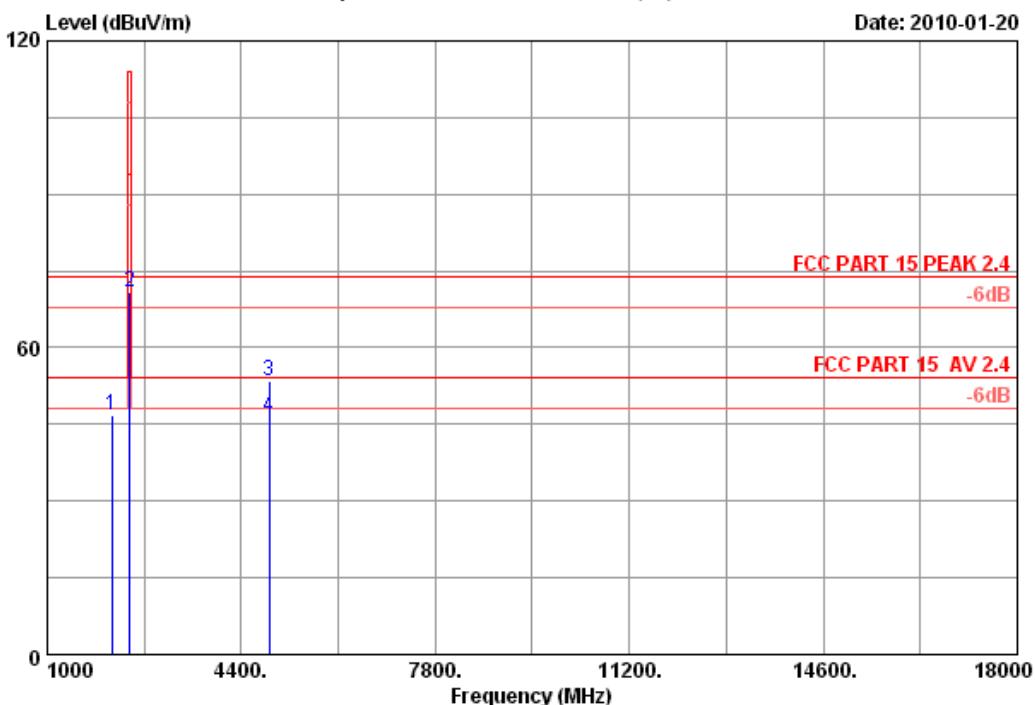
Site no.	: 3m Chamber	Data no.	: 42
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23*C/54%	Engineer	: Sunny-lu
EUT	: Knight Flashgun TTL Trigger		
Power	: DC 3V		
Test mode	: Tx 2442MHz		
M/N	: TR-331TX		



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 43 File: E:\2010 report data\P\ACS10Q0049.EM6 (59)

Date: 2010-01-20



Site no. : 3m Chamber Data no. : 43
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23°C/54% Engineer : Sunny-lu
 EUT : Knight Flashgun TTL Trigger
 Power : DC 3V
 Test mode : Tx 2442MHz
 M/N : TR-331TX

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	2139.000	29.28	8.17	35.97	45.30	46.78	27.22
2	2442.000	29.47	8.48	36.06	68.98	70.87	43.13
3	4884.000	34.41	12.33	35.36	42.12	53.50	74.00
4	4884.000	34.41	12.33	35.36	35.09	46.47	20.50
							Average

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

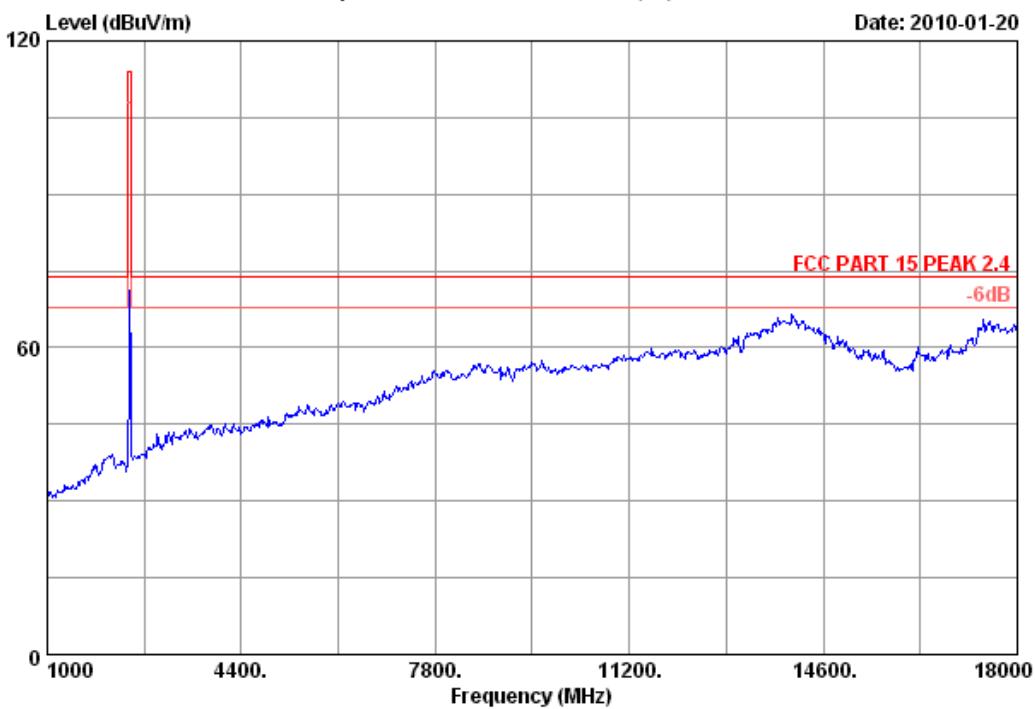


No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 44

File: E:\2010 report data\P\ACS10Q0049.EM6 (59)

Date: 2010-01-20

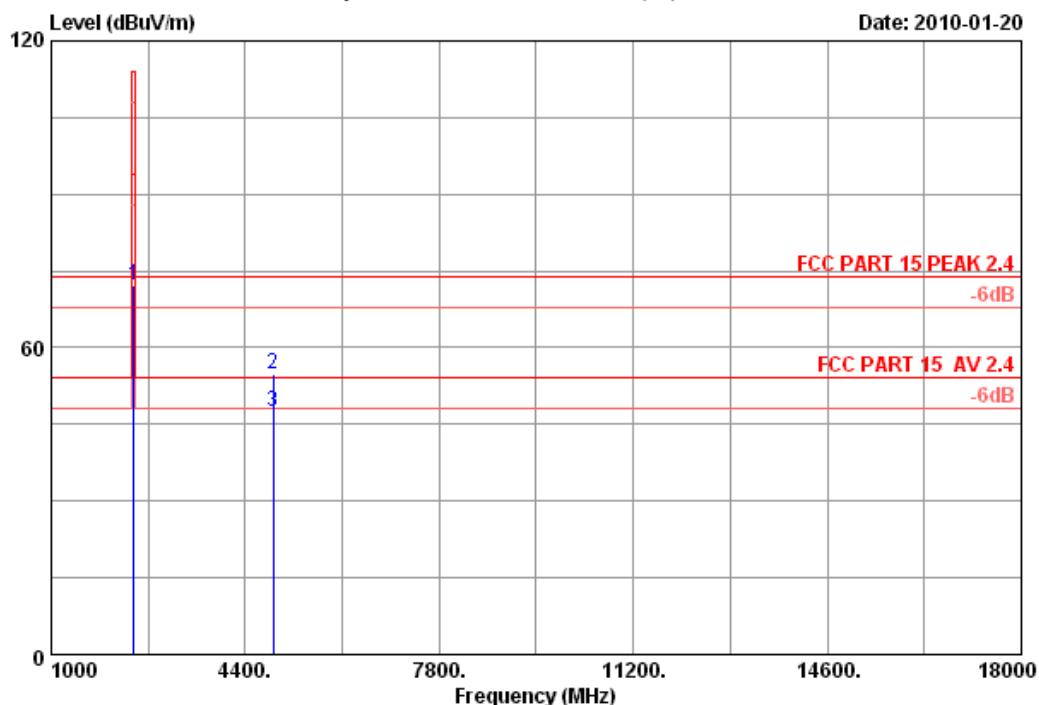


Site no.	: 3m Chamber	Data no.	: 44
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23*C/54%	Engineer	: Sunny-lu
EUT	: Knight Flashgun TTL Trigger		
Power	: DC 3V		
Test mode	: Tx 2442MHz		
M/N	: TR-331TX		



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 45 File: E:\2010 report data\P\ACS10Q0049.EM6 (59)



Site no. : 3m Chamber Data no. : 45
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23°C/54% Engineer : Sunny-lu
 EUT : Knight Flashgun TTL Trigger
 Power : DC 3V
 Test mode : Tx 2442MHz
 M/N : TR-331TX

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	2442.000	29.47	8.48	36.06	70.38	72.27	41.73
2	4884.000	34.41	12.33	35.36	43.27	54.65	19.35
3	4884.000	34.41	12.33	35.36	36.00	47.38	6.62

Remarks:

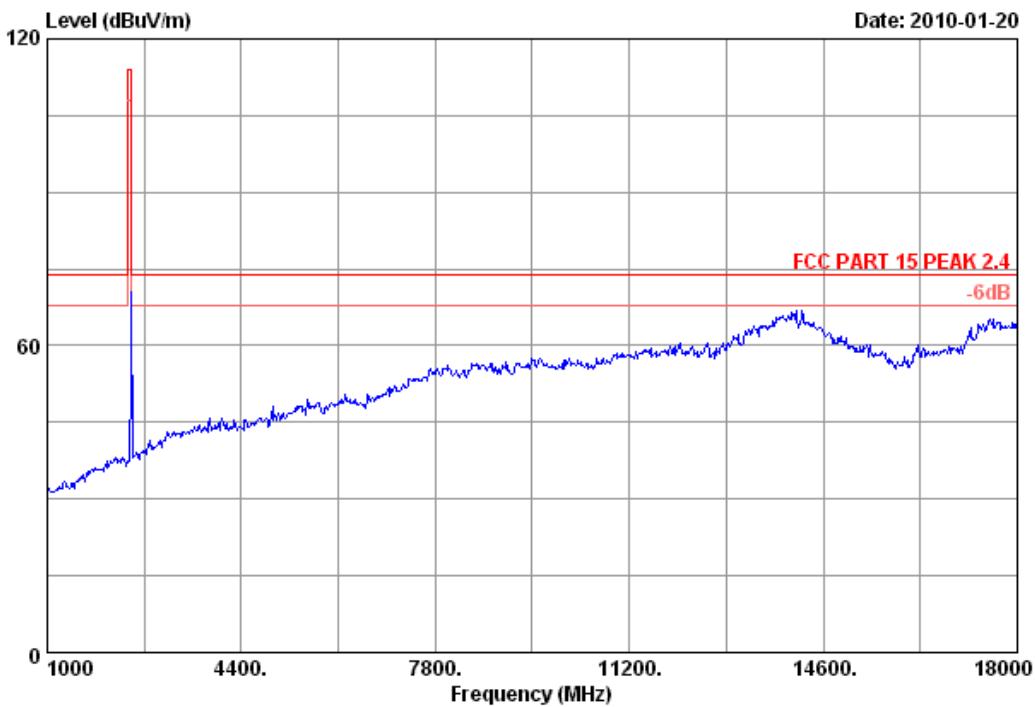
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 46 File: E:\2010 report data\P\ACS10Q0049.EM6 (59)

Date: 2010-01-20



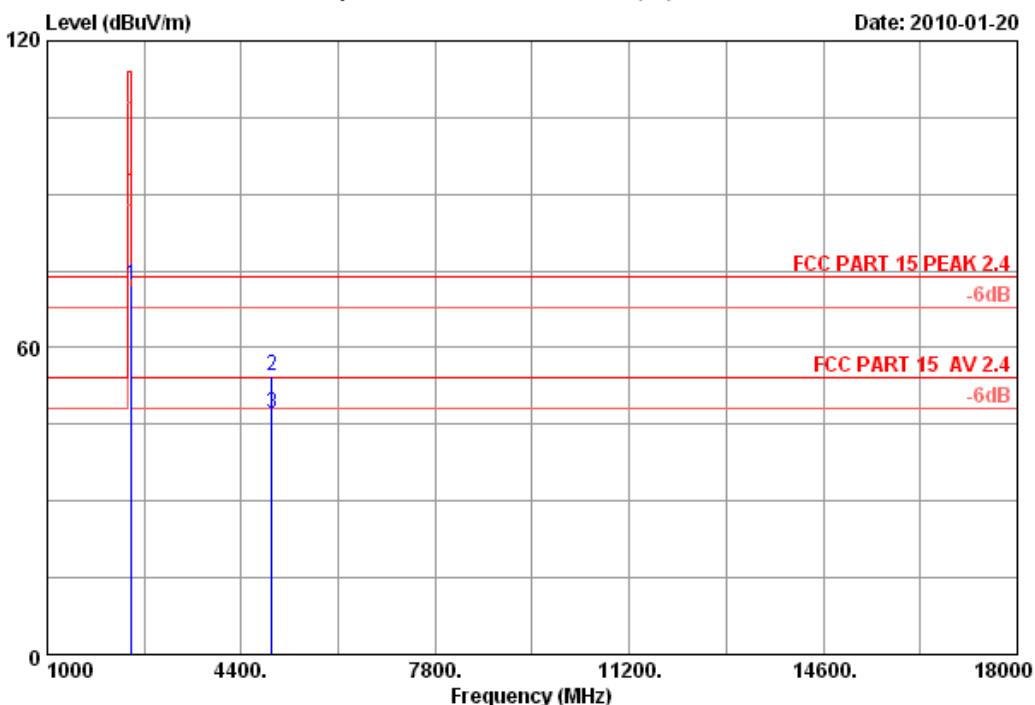
Site no.	: 3m Chamber	Data no.	: 46
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23*C/54%	Engineer	: Sunny-lu
EUT	: Knight Flashgun TTL Trigger		
Power	: DC 3V		
Test mode	: Tx 2470MHz		
M/N	: TR-331TX		



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 47 File: E:\2010 report data\P\ACS10Q0049.EM6 (59)

Date: 2010-01-20



Site no. : 3m Chamber Data no. : 47
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23°C/54% Engineer : Sunny-lu
 EUT : Knight Flashgun TTL Trigger
 Power : DC 3V
 Test mode : Tx 2470MHz
 M/N : TR-331TX

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	2470.000	29.48	8.76	36.02	70.12	72.34	41.66
2	4940.000	34.52	12.63	35.40	42.69	54.44	19.56
3	4940.000	34.52	12.63	35.40	35.42	47.17	54.00
							6.83
							Average

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

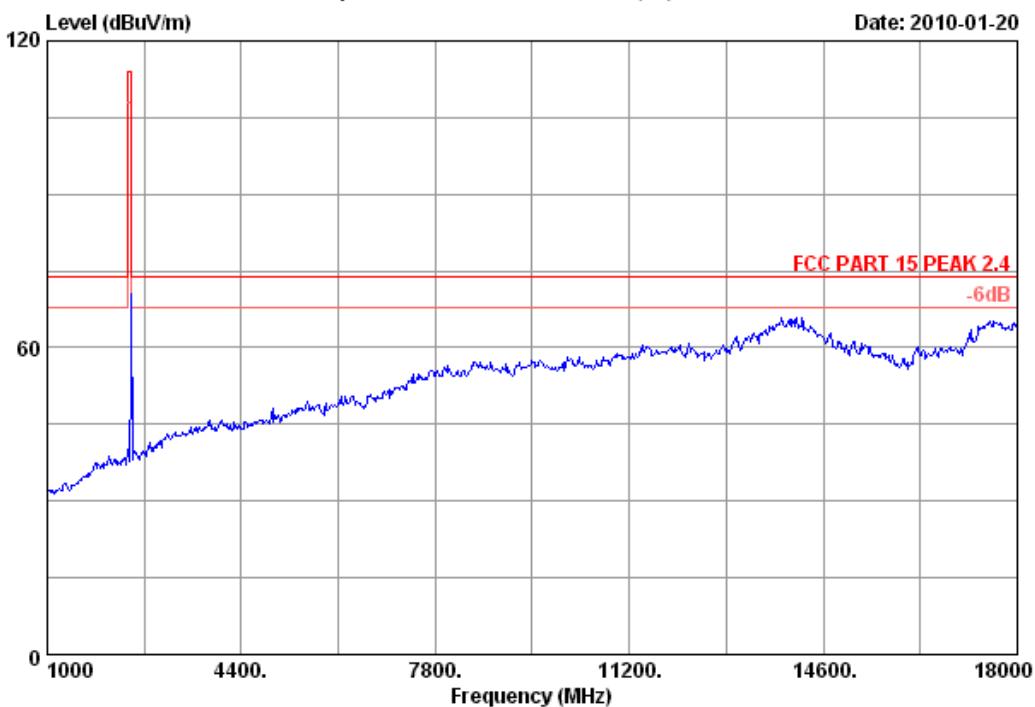


No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 48

File: E:\2010 report data\P\ACS10Q0049.EM6 (59)

Date: 2010-01-20

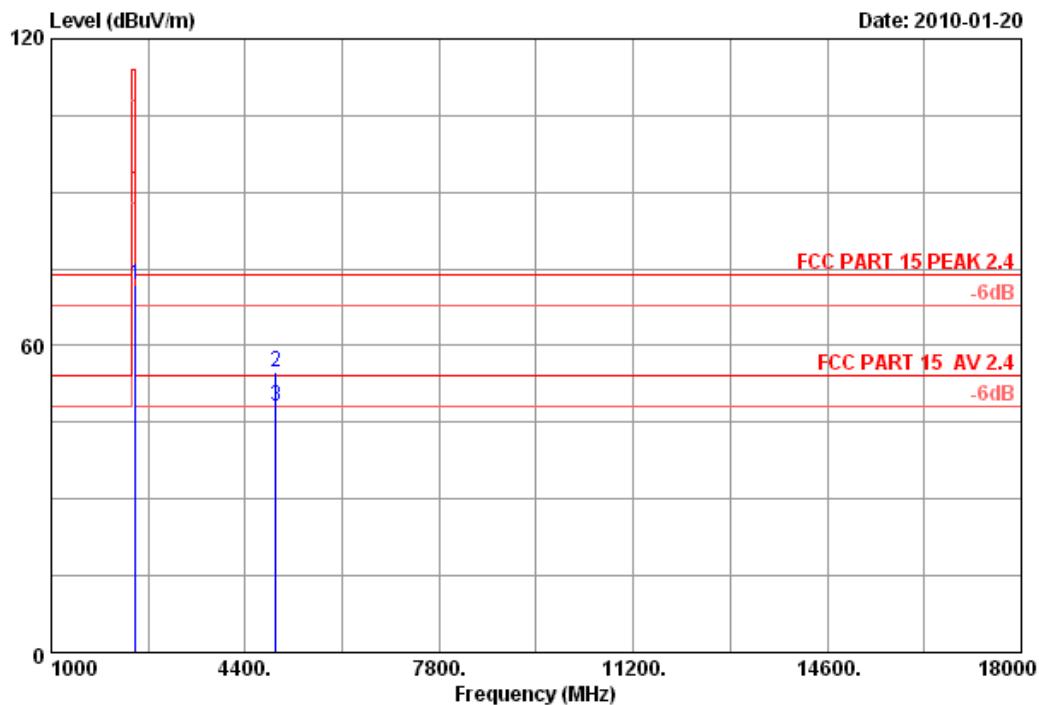


Site no.	: 3m Chamber	Data no.	: 48
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23*C/54%	Engineer	: Sunny-lu
EUT	: Knight Flashgun TTL Trigger		
Power	: DC 3V		
Test mode	: Tx 2470MHz		
M/N	: TR-331TX		



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 49 File: E:\2010 report data\P\ACS10Q0049.EM6 (59)



Site no. : 3m Chamber Data no. : 49
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23°C/54% Engineer : Sunny-lu
 EUT : Knight Flashgun TTL Trigger
 Power : DC 3V
 Test mode : Tx 2470MHz
 M/N : TR-331TX

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	2470.000	29.48	8.76	36.02	69.57	71.79	42.21
2	4940.000	34.52	12.63	35.40	42.98	54.73	19.27
3	4940.000	34.52	12.63	35.40	36.24	47.99	54.00
							6.01
							Average

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

5. BAND EDGE COMPLIANCE TEST

5.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 09	1 Year
2	Horn Antenna	EMCO	3115	9607-4877	Nov.25, 09	1.5 Year
3	Amplifier	Agilent	8449B	3008A00863	May.08, 09	1 Year
4	RF Cable	Hubersuhner	SUCOFLEX102	28620/2	Nov.28, 09	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX102	29091/2	Nov.28, 09	1 Year
6	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	May.08, 09	1 Year

5.2. Limit

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

5.3. Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above the ground plane and worked at highest radiated power.
2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upperband-edges of the emission:

PEAK: RBW=1MHz; VBW=1MHz; PK detector; Sweep=Auto

Average: RBW=1MHz; VBW=10Hz; PK detector; Sweep=Auto

Note: This test was performed with EUT in X, Y, Z position, and the worse case was found when EUT in X position as the test photo indicated.

5.4. Test Results

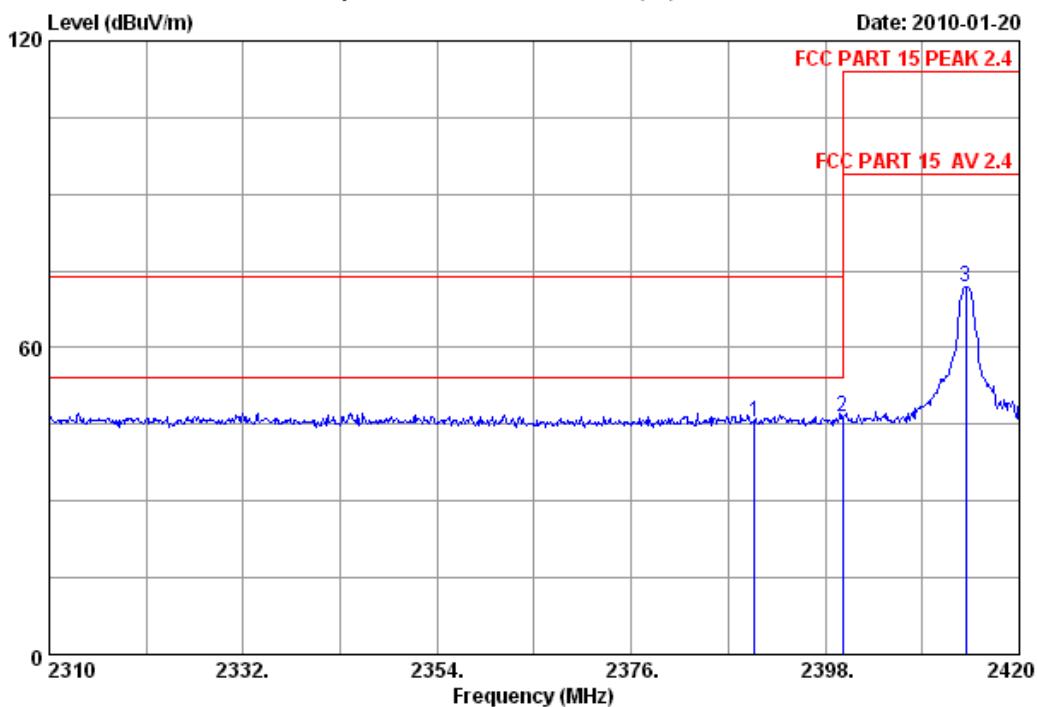
Pass (The testing data was attached in the next pages.)

Note: All peak emissions comply with average limit, so all levels were deemed to comply with average limit.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 54 File: E:\2010 report data\P\ACS10Q0049.EM6 (59)



Site no. : 3m Chamber Data no. : 54
Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 23°C/54% Engineer : Sunny-lu
EUT : Knight Flashgun TTL Trigger
Power : DC 3V
Test mode : Tx 2414MHz
M/N : TR-331TX

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	2390.000	29.44	8.41	36.09	43.64	45.40	28.60
2	2400.000	29.44	8.60	36.09	44.35	46.30	27.70
3	2413.950	29.45	8.60	35.95	69.79	71.89	114.00

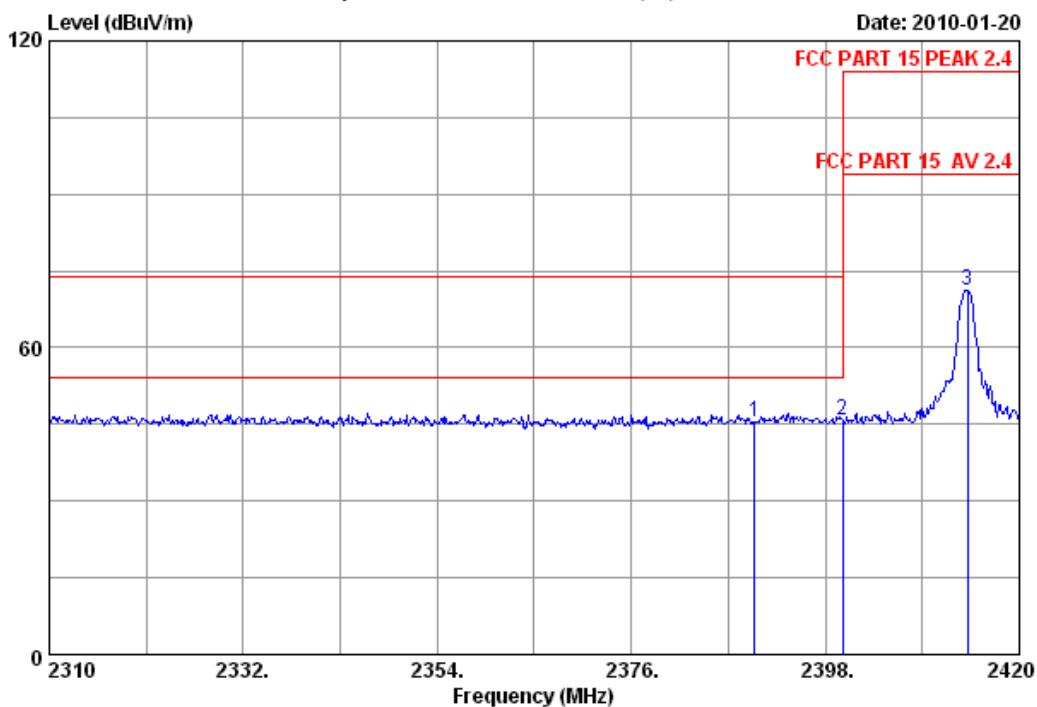
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 55 File: E:\2010 report data\P\ACS10Q0049.EM6 (59)



Site no. : 3m Chamber Data no. : 55
Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 23°C/54% Engineer : Sunny-lu
EUT : Knight Flashgun TTL Trigger
Power : DC 3V
Test mode : Tx 2414MHz
M/N : TR-331TX

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	2390.000	29.44	8.41	36.09	43.68	45.44	74.00 28.56 Peak
2	2400.000	29.44	8.60	36.09	43.85	45.80	74.00 28.20 Peak
3	2414.170	29.45	8.60	35.95	69.06	71.16	114.00 42.84 Peak

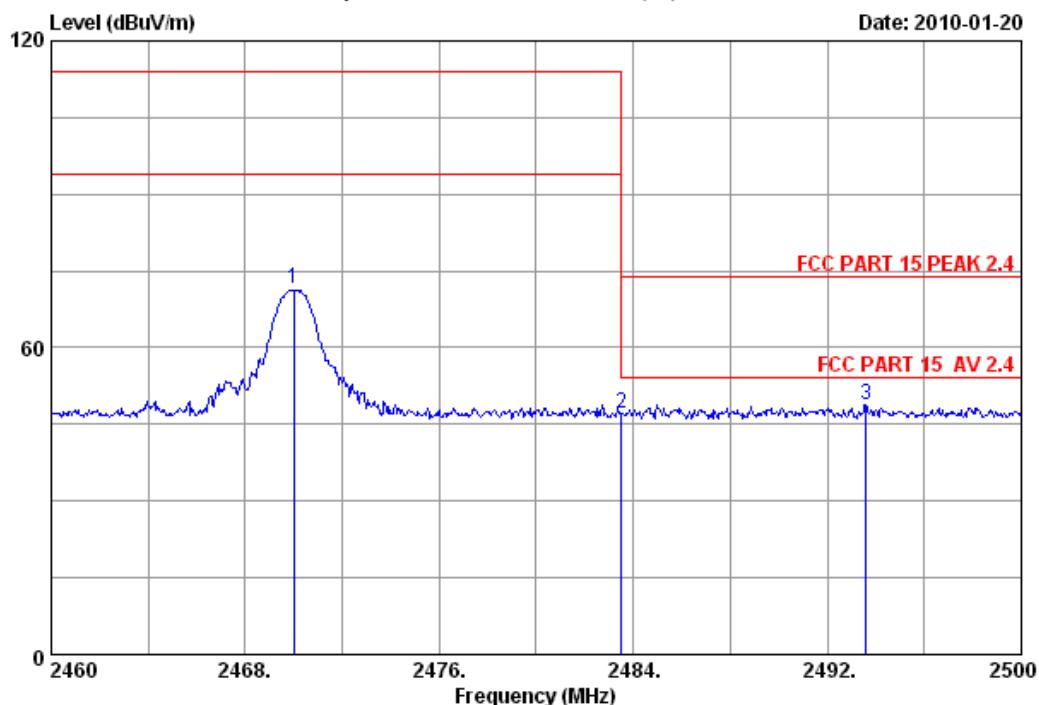
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 56 File: E:\2010 report data\P\ACS10Q0049.EM6 (59)



Site no. : 3m Chamber Data no. : 56
Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 23°C/54% Engineer : Sunny-lu
EUT : Knight Flashgun TTL Trigger
Power : DC 3V
Test mode : Tx 2470MHz
M/N : TR-331TX

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	2470.000	29.48	8.76	36.02	69.40	71.62	42.38
2	2483.500	29.49	8.94	35.97	44.61	47.07	26.93
3	2493.600	29.50	8.94	36.00	46.53	48.97	25.03

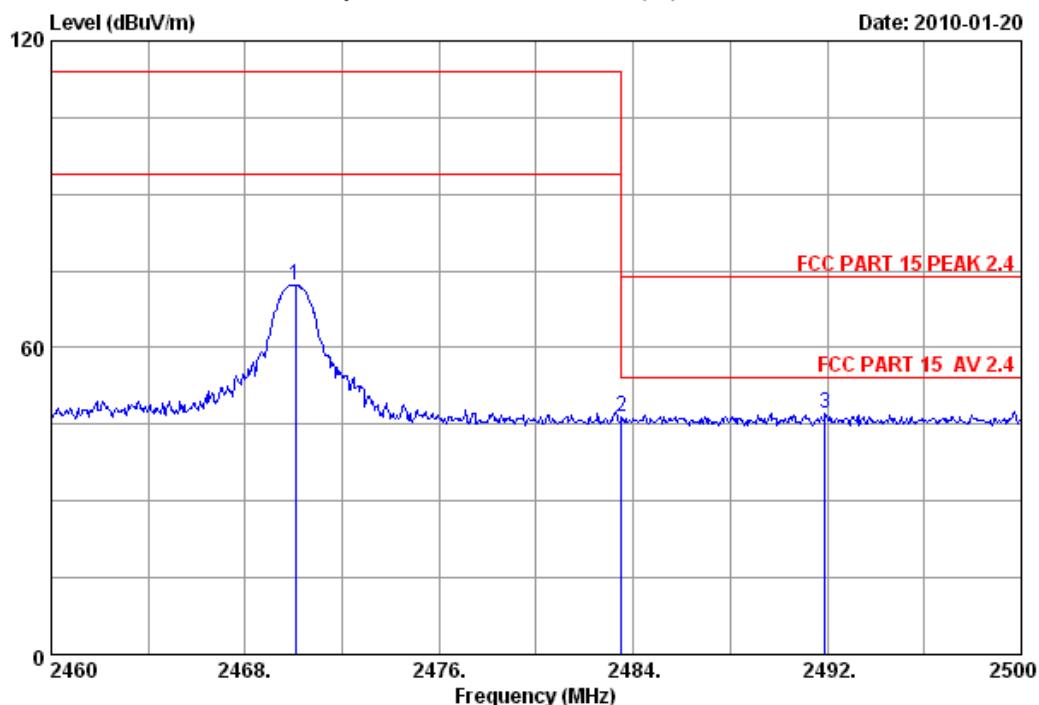
Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



No.6 Ke Feng Road,Block 52,
ShenZhen Science & Industry Park
Noutou,ShenZhen,GuangDong,China
Tel:+86-755-26639495-7
Fax:+86-755-26632877
Postcode:518057

Data: 57 File: E:\2010 report data\P\ACS10Q0049.EM6 (59)



Site no. : 3m Chamber Data no. : 57
 Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL
 Limit : FCC PART 15 PEAK 2.4
 Env. / Ins. : 23°C/54% Engineer : Sunny-lu
 EUT : Knight Flashgun TTL Trigger
 Power : DC 3V
 Test mode : Tx 2470MHz
 M/N : TR-331TX

	Ant.	Cable	Amp.	Emission			
Freq.	Factor	loss	Factor	Reading	Level	Limits	Margin
(MHz)	(dB/m)	(dB)	(dB)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
1	2470.080	29.48	8.76	36.02	70.03	72.25	41.75
2	2483.500	29.49	8.94	35.97	44.12	46.58	27.42
3	2491.920	29.50	8.94	36.00	44.82	47.26	26.74

Remarks:

1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

6. BANDWIDTH TEST

6.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 09	1 Year
2.	RF Cable	Hubersuhner	SUCOFLEX 102	28618/2	May.08, 09	1 Year

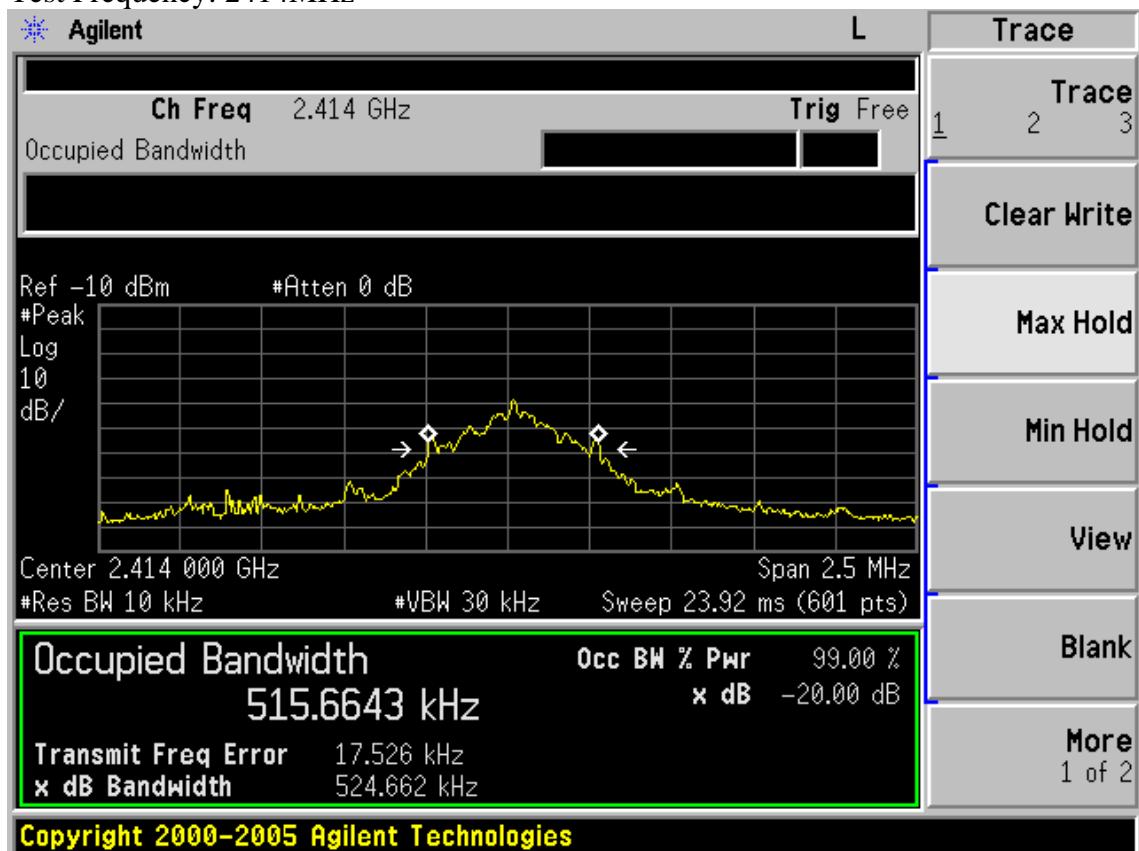
6.2. Limit

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

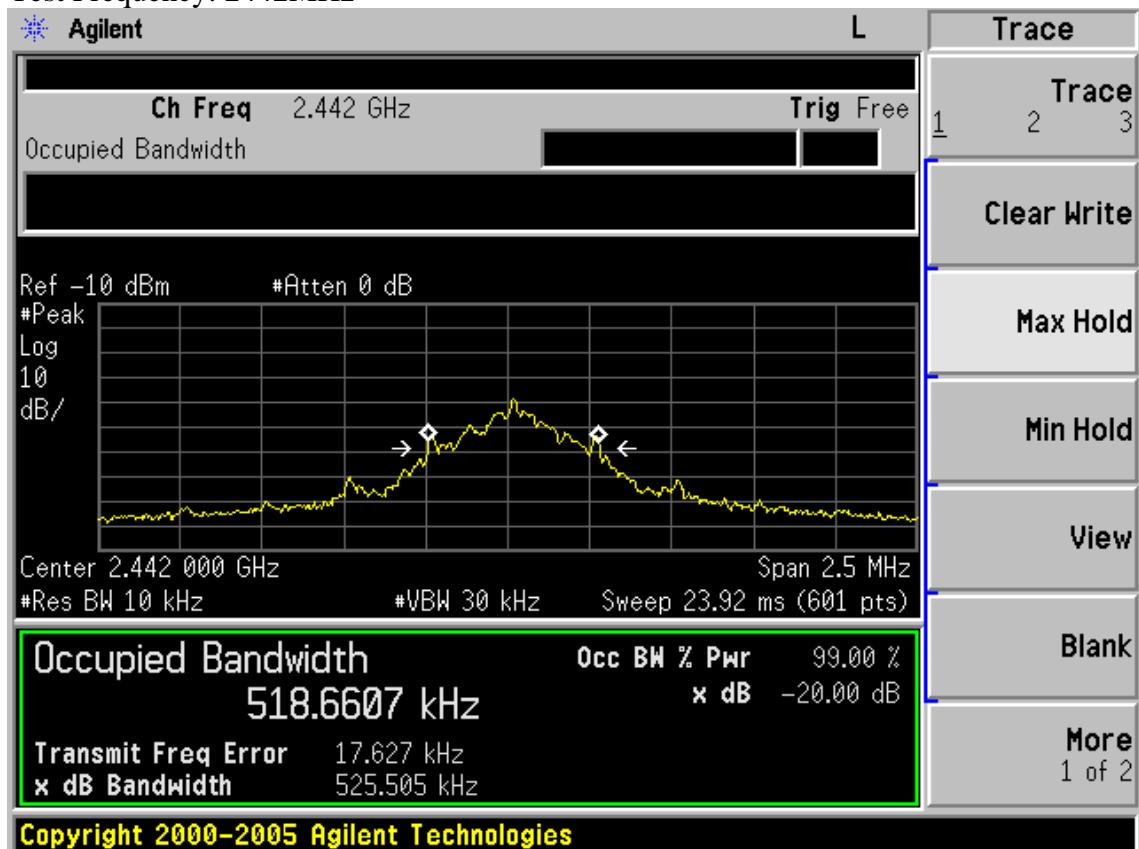
6.3. Test Results

CH	20dB Bandwidth (KHz)	Conclusion
(Low)	524.662	PASS
(Mid)	525.505	PASS
(High)	526.255	PASS

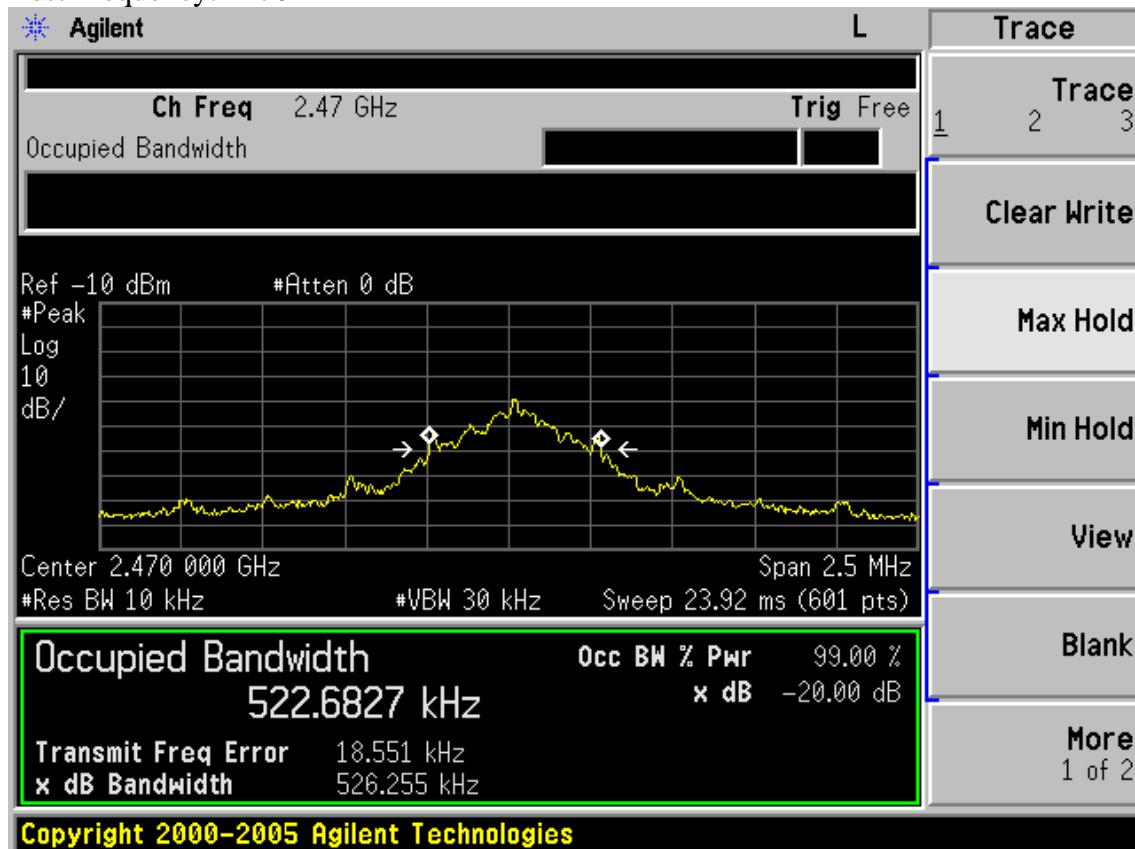
Test Frequency: 2414MHz



Test Frequency: 2442MHz



Test Frequency: 2470MHz



7. DEVIATION TO TEST SPECIFICATIONS

[NONE]