FCC PART 15C TEST REPORT FOR CERTIFICATION
On Behalf of

Acrox Technologies Co,.Ltd

Nano Receiver

Model Number: MRN

FCC ID: PRDRX04

Prepared for : Acrox Technologies Co,.Ltd
437,8f,Rui Guang Road,Nei Hu District,Taipei,Taiwan

Prepared By : EST Technology Co., Ltd.
Santun(guantai Road), Houjie Town,
DongGuan City,GuangDong, China.

Tel: 86-769-83081888-808

Report Number	:	ESTE-R1107005
Date of Test	:	July.1~14, 2011
Date of Report	:	July.14, 2011

TABLE OF CONTENTS

Description Page

TEST REPORT CERTIFICATION

Applicant ：Acrox Technologies Co,.Ltd

Manufacturer ：Acrox Technologies Co,.Ltd

EUT Description ： Nano Receiver

FCC ID ： PRDRX04

(A) MODEL NO. : MRN
(B) SERIAL NO. : N/A
(C) POWER SUPPLY : DC 5V From PC
(D) TEST VOLTAGE : DC 5V From PC

Tested for comply with:
FCC Rules and Regulations Part 15 Subpart C:2008

Test procedure used:
ANSI C63.10:2009

The device described above is tested by EST Technology Co., Ltd. to confirm comply with all the FCC Part 15 Subpart C requirements.

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

Prepared by:	Tested by:	Approved by:
coco	tata.chen	Iceman
Coco / Assistant	Tata Chen/ Engineer	Iceman Hu / Manager

This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of EST Technology Co., Ltd.

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	PASS
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

2. GENERAL INFORMATION

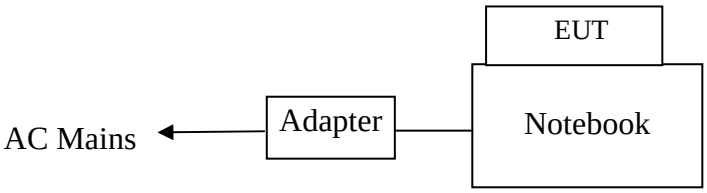
2.1.Description of Device (EUT)

Product Name	:	Nano Receiver
Model Number	:	MRN
FCC ID	:	PRDRX04
Operation frequency	:	2408MHz~2474MHz
Antenna	:	Integrated PCB antenna, -7dBi gain
Modulation	:	GFSK
Power Supply	:	DC 5V form PC
Applicant	:	Acrox Technologies Co,.Ltd 437,8f,Rui Guang Road,Nei Hu District,Taipei,Taiwan
Manufacturer	:	Acrox Technologies Co,.Ltd Hsinmin Industrial,Changan Town, Dongguan City
Sample Type	:	Prototype production

2.2. Tested Supporting System Details

No.	Description	No.	Manufacturer	Model	Serial Number	Approved type
1.	Notebook	N/A	DELL	PP09S	N/A	☑FCC DoC ☑BSMI ID: R41108
		Power Cord: Unshielded, Detachabled, 1.8m Power Adapter: Manufacturer: DELL, M/N: LA65NS1-00 Cable: Unshielded, Detachabled, 4.0m(Bond one ferrite core)				
2.	Notebook	N/A	LENOVO	7454-GHC	N/A	☑ID: 7453GHC
		Power Cord: Unshielded, Detachabled, 1.8m Power Adapter: Manufacturer: LENOVO L				

2.3. EUT Configuration and operation conditions for test.



EUT work continues Tx mode and frequency as below:

Channel	Frequency
Low	2408MHz
Middle	2440MHz
High	2474MHz

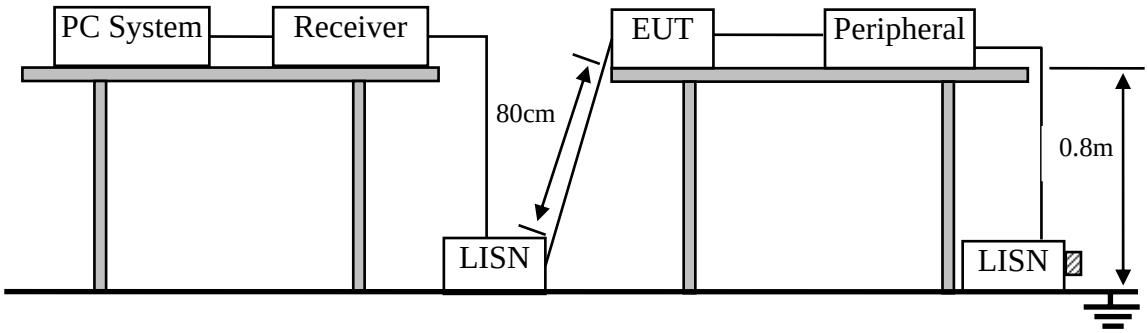
Note：A typical modulation was applied when performance test.

3. POWER LINE CONDUCTED EMISSION TEST

3.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS10	838693/001	Nov.05, 10	1 Year
2.	L.I.S.N.#1	Rohde & Schwarz	ESH2-Z5	834066/011	Nov.05, 10	1 Year
3.	L.I.S.N.#3	Kyoritsu	KNW-242C	8-1920-1	May.08, 11	1 Year
4.	Terminator	Hubersuhner	50Ω	No. 1	May.08, 11	1 Year
5.	Terminator	Hubersuhner	50Ω	No. 2	May.08, 11	1 Year
6.	RF Cable	Fujikura	3D-2W	LISN Cable 1#	May.08, 11	1Year
7.	Coaxial Switch	Anritsu	MP59B	M55367	May.08, 11	1 Year
8.	Passive Probe	Rohde & Schwarz	ESH2-Z3	299.7810.52	May.08, 11	1 Year
9.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100341	May.08, 11	1 Year

3.2.Block Diagram of Test Setup



▨ :50Ω Terminator

3.3. Power Line Conducted Emission Test Limits

Frequency range MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0,15 to 0,5	79	66
0,5 to 30	73	60

Notes: 1. * Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.4. Operating Condition of EUT

3.4.1. Setup the EUT and simulator as shown as Section 2.3

3.4.2. Turn on the power of all equipment.

3.4.3. Let the EUT work in test mode (Tx Mode) and measure it.

3.5. Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Powered from PC which mains connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#3). this provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4-2009 on conducted Emission test.

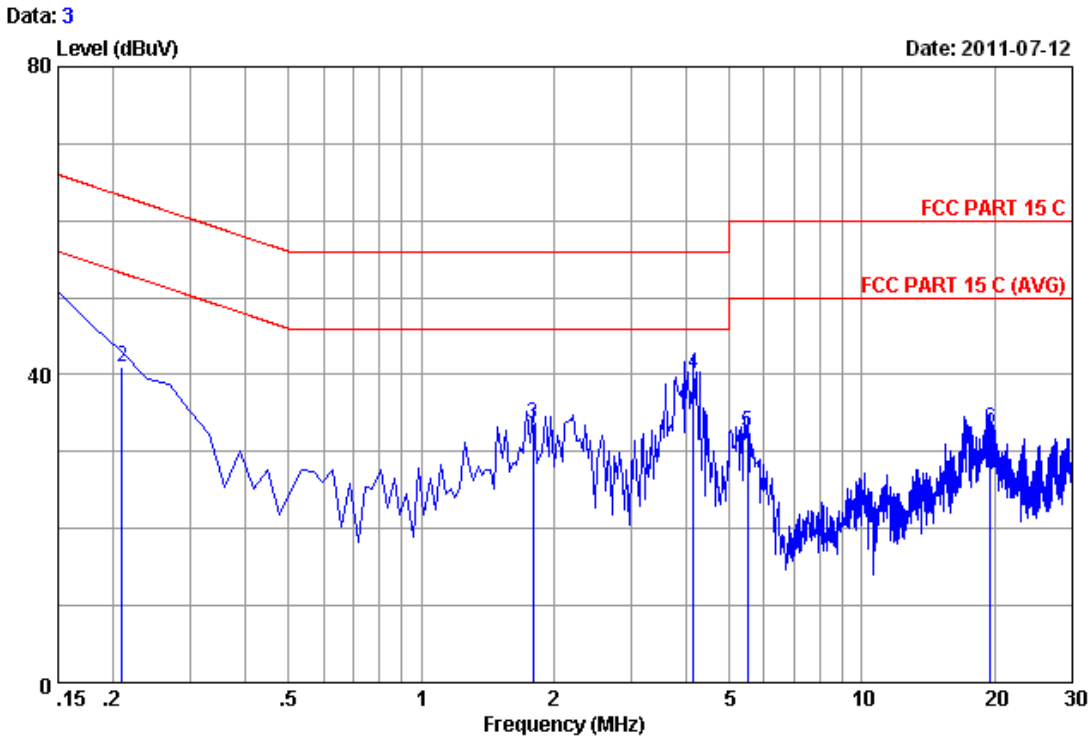
The bandwidth of test receiver (R&S TEST RECEIVER ESHS10) is set at 10kHz.

The frequency range from 150kHz to 30MHz is checked. The test result are reported on Section 3.7.

3.6. Conducted Disturbance at Mains Terminals Test Results

PASS. (All emissions not reported below are too low against the prescribed limits.)

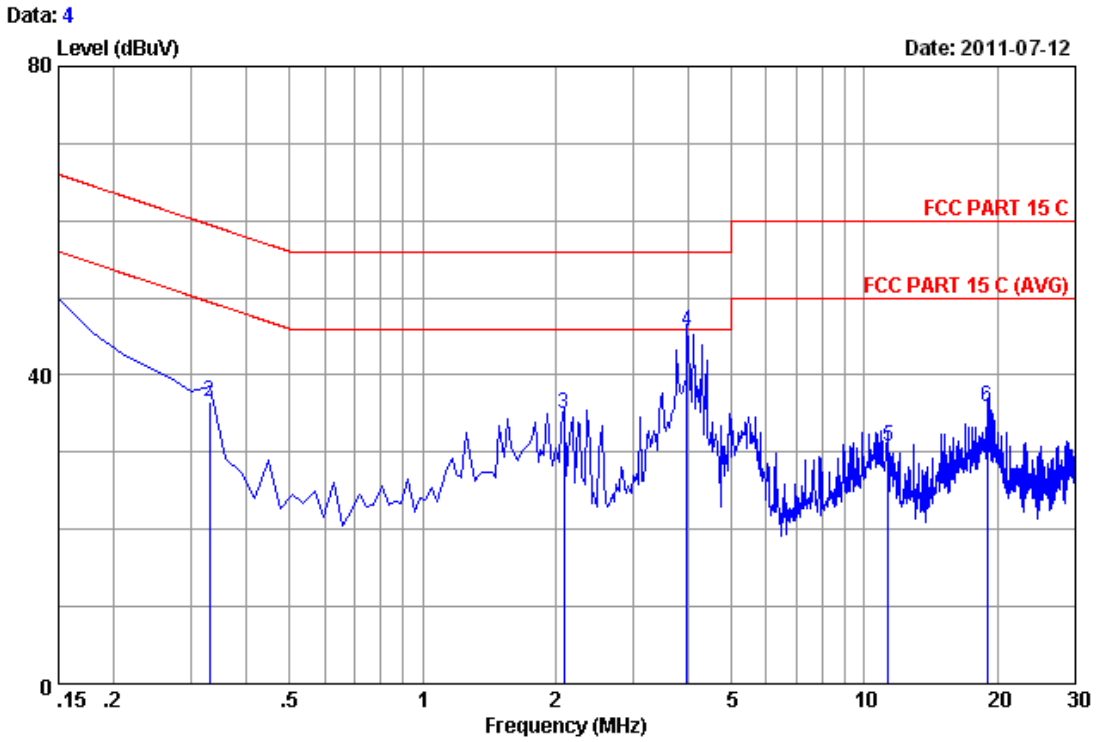
The EUT with the following test modes were tested and selected to read Q.P values and average values, all the test results are listed in next pages.



Site no :1#conduction Data No :3
Dis./Ant. :** 2011 ESH2-Z5 LINE
Limit :FCC PART 15 C
Env./Ins. :Temp:23' Humi:54% ESHS10 Engineer :TaTa Chen
EUT :Nano Receiver
Power Rating :DC 5V From PC input AC 120V/60Hz
Test Mode :Tx Mode
M/N :

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	0.17	9.88	38.72	48.77	66.00	17.23	QP
2	0.20970	0.17	9.88	31.00	41.05	63.22	22.17	QP
3	1.792	0.29	9.90	23.51	33.70	56.00	22.30	QP
4	4.150	0.35	9.94	29.88	40.17	56.00	15.83	QP
5	5.493	0.40	9.94	22.10	32.44	60.00	27.56	QP
6	19.523	0.99	10.08	21.94	33.01	60.00	26.99	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)
+Reading.
2.If the average limit is met when useing a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.



Site no :1#conduction Data No :4
Dis./Ant. :** 2011 ESH2-Z5 NEUTRAL
Limit :FCC PART 15 C
Env./Ins. :Temp:23' Humi:54% ESHS10 Engineer :TaTa Chen
EUT :Nano Receiver
Power Rating :DC 5V From PC input AC 120V/60Hz
Test Mode :Tx Mode
M/N :

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	0.21	9.88	37.77	47.86	66.00	18.14	QP
2	0.32910	0.22	9.88	26.37	36.47	59.47	23.00	QP
3	2.090	0.27	9.91	24.80	34.98	56.00	21.02	QP
4	3.971	0.31	9.94	35.43	45.68	56.00	10.32	QP
5	11.314	0.49	10.00	20.37	30.86	60.00	29.14	QP
6	18.926	0.73	10.07	25.14	35.94	60.00	24.06	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)
+Reading.
2.If the average limit is met when useing a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

4. RADIATED EMISSION TEST

4.1.Test Equipment

Frequency rang: 30~1000MHz

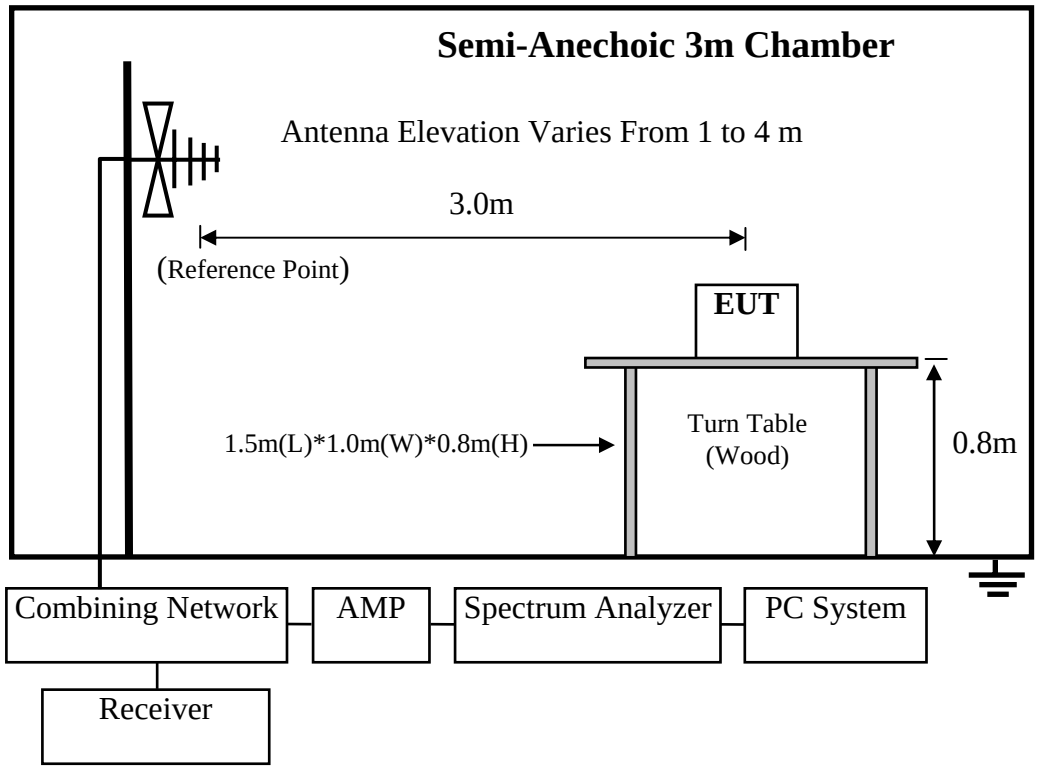
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	3#Chamber	AUDIX	N/A	N/A	Dec.05, 10	1 Year
2	EMI Spectrum	Agilent	E4407B	MY41440292	May.08, 11	1 Year
3	Test Receiver	Rohde & Schwarz	ESVS10	834468/011	May.08, 11	1 Year
4	Amplifier	HP	8447D	2648A04738	May.08, 11	1 Year
5	Bilog Antenna	Schaffner	CBL6112D	25237	Mar. 27,11	1 Year
6	RF Cable	MIYAZAKI	8D-FB	3# Chamber No.1	May.08, 11	1 Year
7	Coaxial Switch	Anritsu	MP59B	M73989	May.08, 11	1 Year

Frequency rang: above 1000MHz

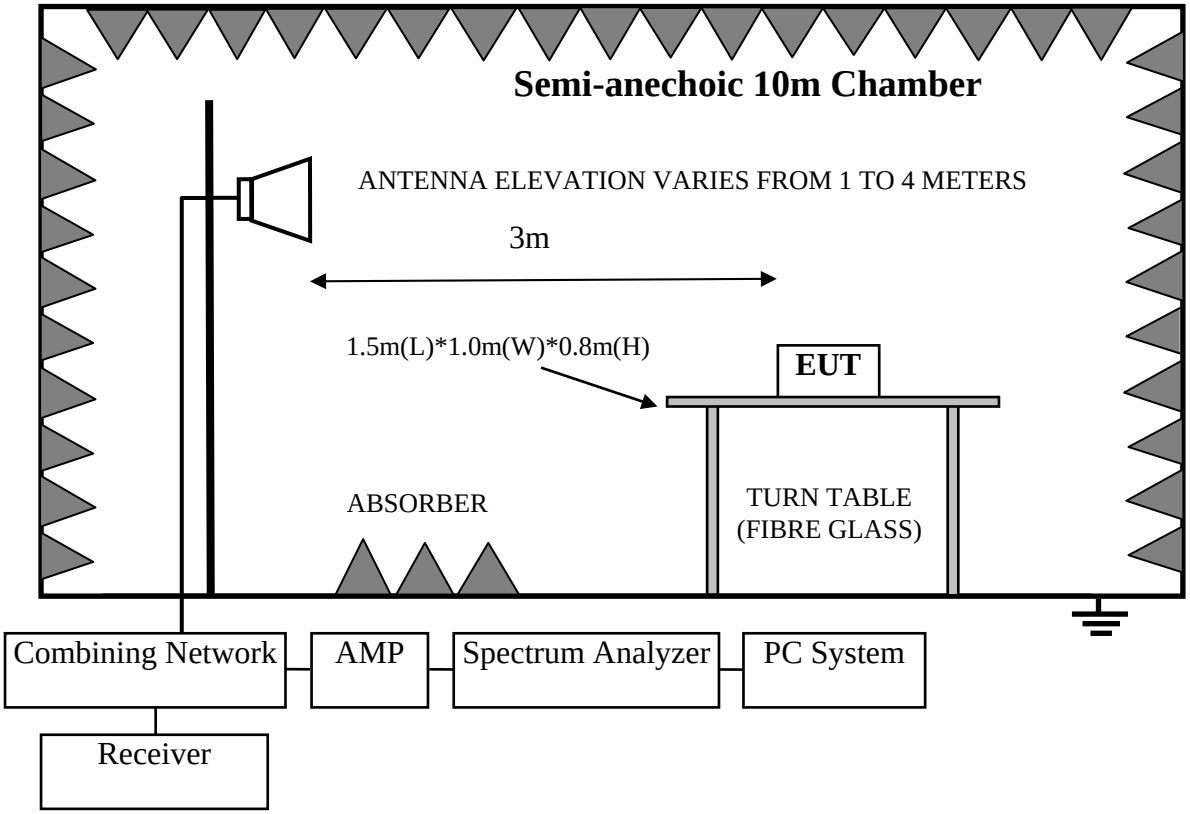
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08, 11	1 Year
2	Horn Antenna	EMCO	3115	9607-4877	May.25, 11	1.5 Year
3	Horn Antenna	EMCO	3116	00060089	May.25, 11	1.5 Year
4	Amplifier	Agilent	8449B	3008A00863	May.08, 11	1 Year
5	RF Cable	Hubersuhner	SUCOFLEX102	28620/2	May.08, 11	1 Year
6	RF Cable	Hubersuhner	SUCOFLEX102	29091/2	May.08, 11	1 Year

4.2.Block Diagram of Test Setup

For frequency range 30MHz-1000MHz



For frequency range above 1GHz



4.3. Radiated Emission Limit Standard: FCC 15.209 and 15.249

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		μV/m	dB(μV)/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(μV)/m (Peak) 54.0 dB(μV)/m (Average)	
Field Strength of fundamental emissions for 2.4GHz-2.4835GHz	3	114.0 dB(μV)/m (Peak) 94.0 dB(μV)/m (Average)	

Remark： (1) Emission level dBμV = 20 log Emission level μV/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.Operating Condition of EUT

4.4.1. Setup the EUT and simulator as shown as Section 4.2.

4.4.2. Turned on the power of all equipment.

4.4.3. Let EUT work in test mode(Tx mode) and test it.

4.5.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.

This exploratory test was performed with EUT in X, Y, Z position with a USB extend line (0.5m long), and the worse case was found when EUT in X position and direct connected to PC as the test photo indicated and so the final test was performed with this configuration.

The bandwidth of the EMI test receiver is set at 120kHz for frequency range from 30MHz to 1000 MHz

The bandwidth of the Spectrum Analyzer's RBW is set at 1MHz and VBW is set at 3MHz for peak emissions measurement above 1GHz, and 1MHz RBW, 10Hz VBW for average measurement above 1GHz.

Note: For fundamental emissions, it's bandwidth is about 1.3MHz, so the Spectrum Analyzer's RBW was set at 2MHz and VBW was set at 3MHz for fundamental emissions measure.

4.6.Radiated Emission Test Results

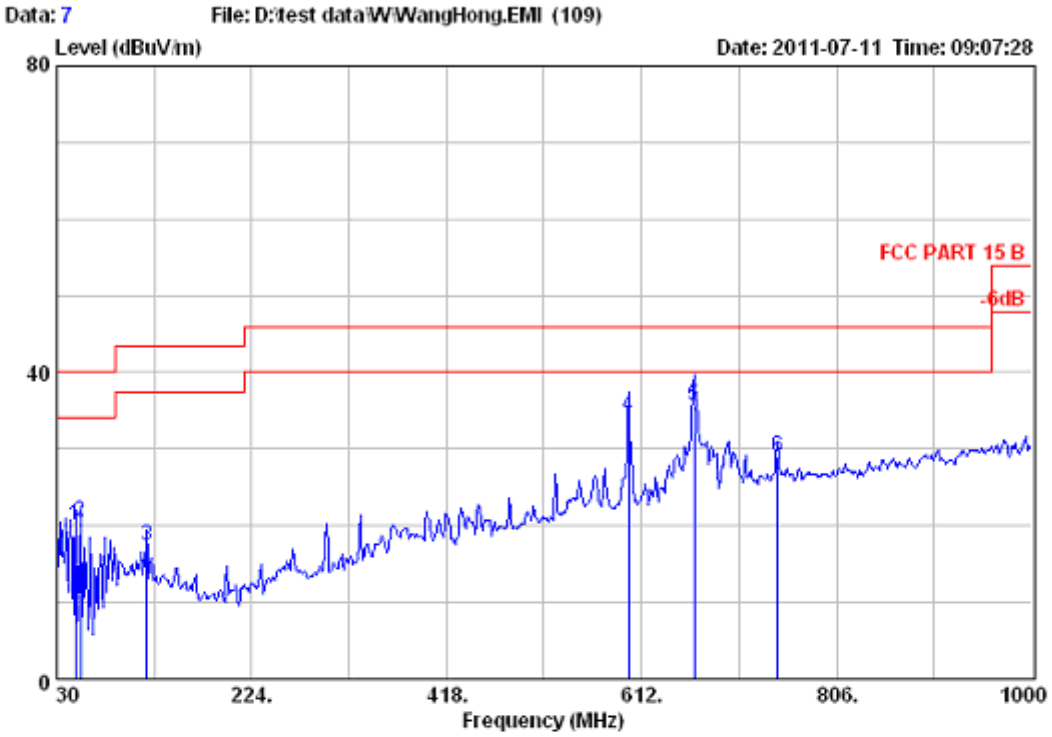
PASS.

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

Emissions from 30MHz to 1GHz：

EST Technology

San Tun Management Zone,Houjie Town,
Dongguan City,Guangdong,China
Tel:+86-769-83081888
Fax:+86-769-83081878

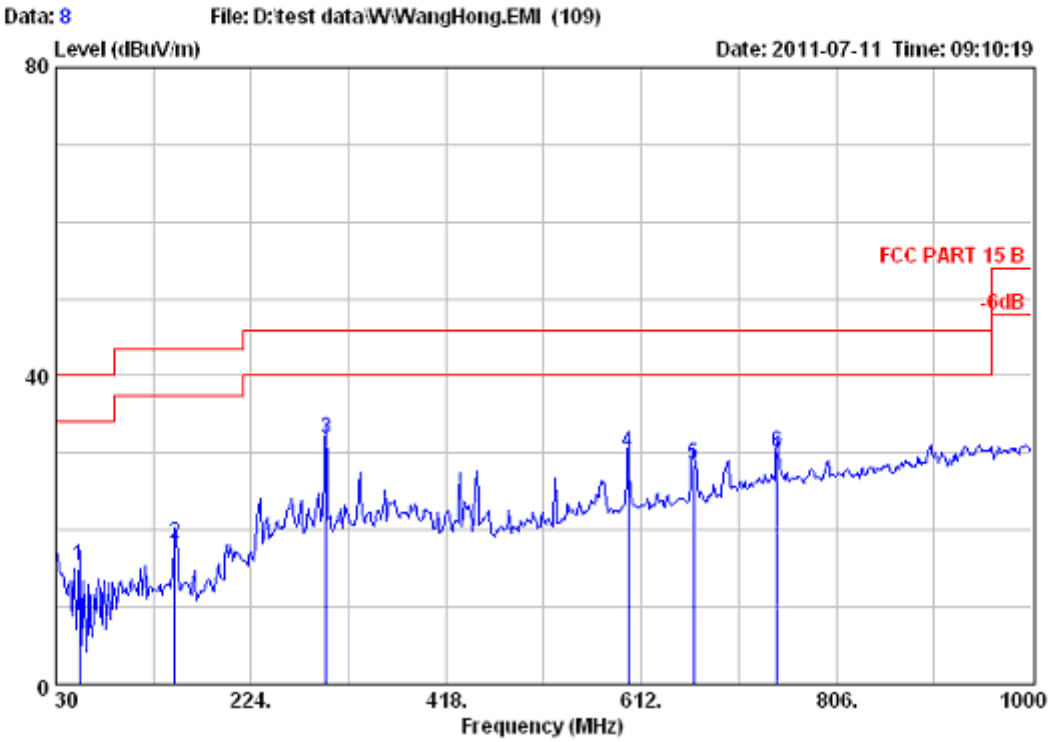



```
Site no.      : 3m Chamber                  Data no. : 7
Dis. / Ant.   : 3m   27137                  Ant. pol. : VERTICAL
Limit         : FCC PART 15 B
Env. / Ins.   : Temp:25.6';Humi:56%;Press:101.52kPa
Engineer      : Tony
EUT           : NANO Receiver
Power         : DC 5V From PC Input AC 120V/60Hz
M/N           : MRN
Test Mode     : TX 2408
```

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	48.43	8.37	0.63	11.09	20.09	40.00	19.91	QP
2	53.28	6.11	0.73	13.66	20.50	40.00	19.50	QP
3	119.24	11.11	1.31	4.88	17.30	43.50	26.20	QP
4	599.39	19.58	3.81	10.98	34.37	46.00	11.63	QP
5	664.38	20.13	4.16	11.44	35.73	46.00	10.27	QP
6	746.83	22.24	4.68	2.05	28.97	46.00	17.03	QP

EST Technology

San Tun Management Zone,Houjie Town,
Dongguan City,Guangdong,China
Tel:+86-769-83081888
Fax:+86-769-83081878

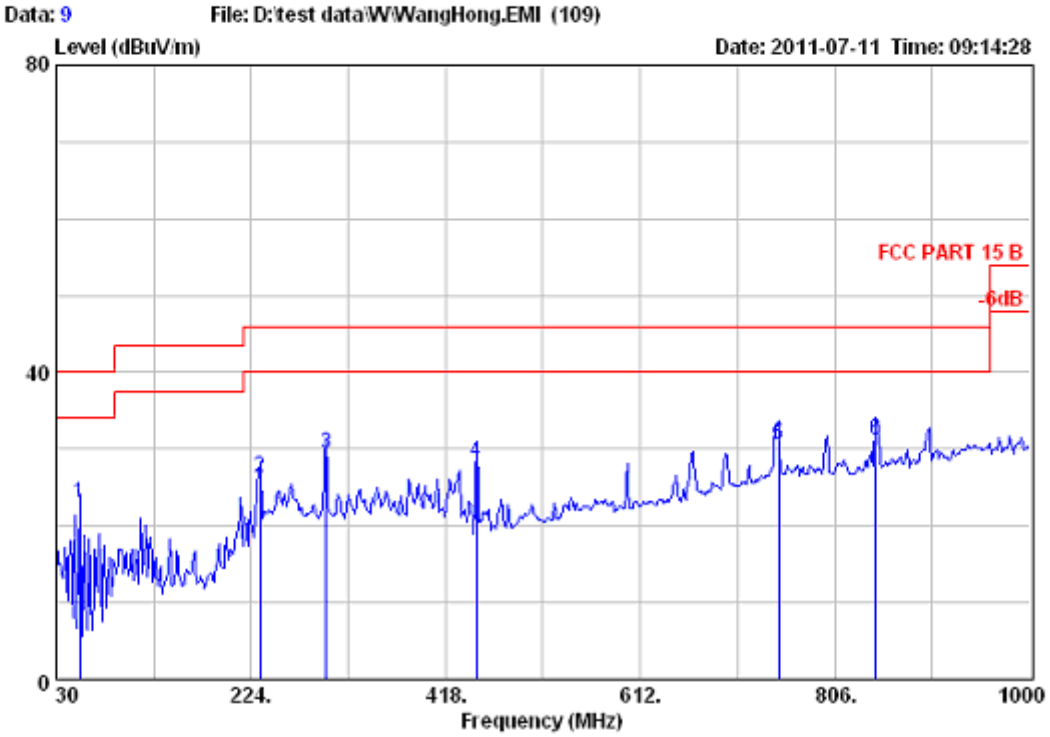


Site no. : 3m Chamber Data no. : 8
Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL
Limit : FCC PART 15 B
Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : NANO Receiver
Power : DC 5V From PC Input AC 120V/60Hz
M/N : MRN
Test Mode : TX 2408

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	53.28	6.11	0.73	8.60	15.44	40.00	24.56	QP
2	148.34	11.00	1.49	5.76	18.25	43.50	25.25	QP
3	298.69	13.00	2.62	16.21	31.83	46.00	14.17	QP
4	599.39	19.58	3.81	6.62	30.01	46.00	15.99	QP
5	664.38	20.13	4.16	4.28	28.57	46.00	17.43	QP
6	746.83	22.24	4.68	3.26	30.18	46.00	15.82	QP

EST Technology

San Tun Management Zone,Houjie Town,
Dongguan City,Guangdong,China
Tel:+86-769-83081888
Fax:+86-769-83081878

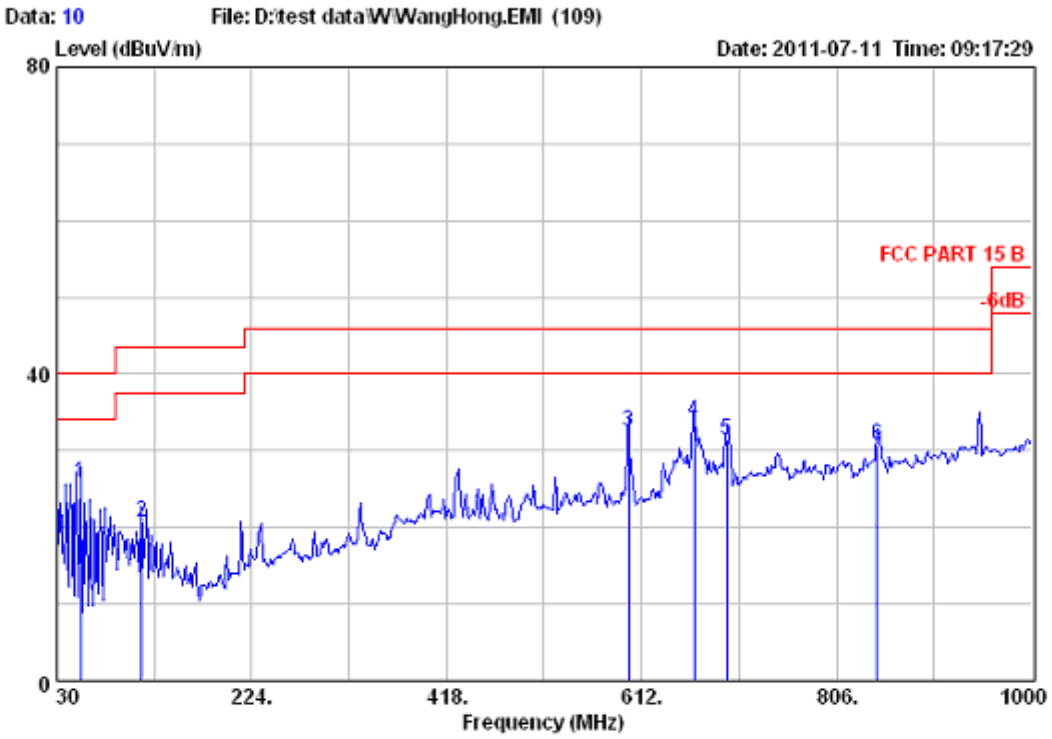


Site no. : 3m Chamber Data no. : 9
Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL
Limit : FCC PART 15 B
Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : NANO Receiver
Power : DC 5V From PC Input AC 120V/60Hz
M/N : MRN
Test Mode : TX 2440

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	53.28	6.11	0.73	16.16	23.00	40.00	17.00	QP
2	232.73	9.59	1.97	14.72	26.28	46.00	19.72	QP
3	298.69	13.00	2.62	13.70	29.32	46.00	16.68	QP
4	449.04	16.45	3.19	8.55	28.19	46.00	17.81	QP
5	749.74	22.19	4.81	3.63	30.63	46.00	15.37	QP
6	846.74	22.85	4.85	3.39	31.09	46.00	14.91	QP

EST Technology

San Tun Management Zone,Houjie Town,
Dongguan City,Guangdong,China
Tel:+86-769-83081888
Fax:+86-769-83081878

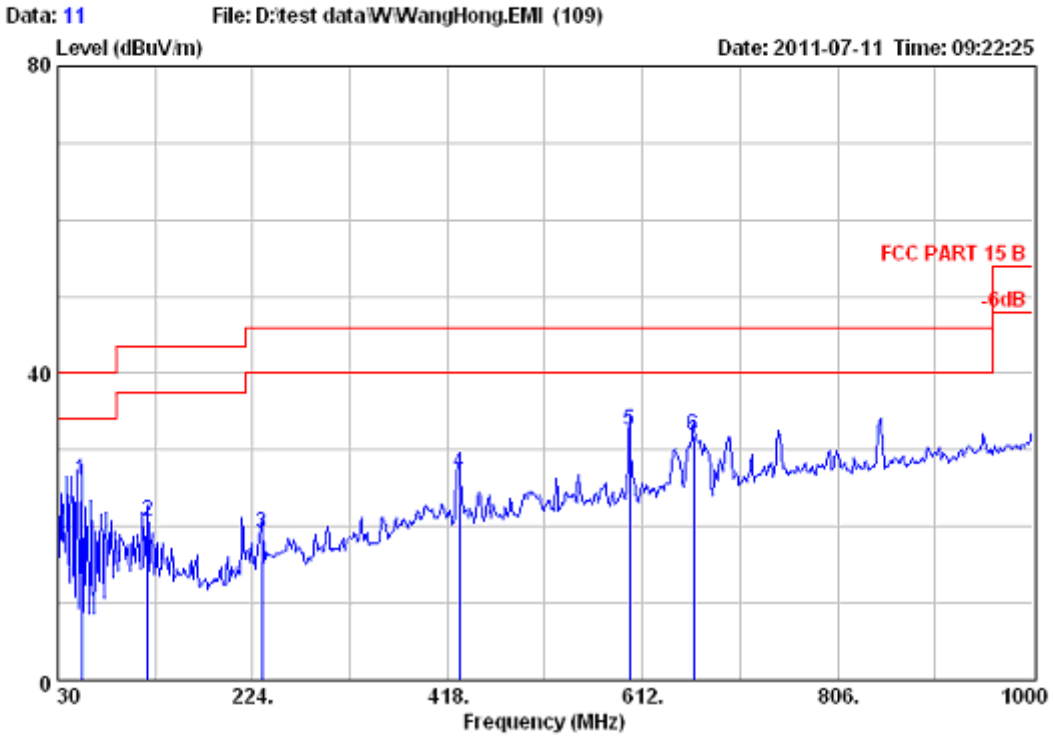


Site no. : 3m Chamber Data no. : 10
Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL
Limit : FCC PART 15 B
Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : NANO Receiver
Power : DC 5V From PC Input AC 120V/60Hz
M/N : MRN
Test Mode : TX 2440

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	53.28	6.11	0.73	19.03	25.87	40.00	14.13	QP
2	114.39	10.85	1.24	8.73	20.82	43.50	22.68	QP
3	599.39	19.58	3.81	9.17	32.56	46.00	13.44	QP
4	664.38	20.13	4.16	9.60	33.89	46.00	12.11	QP
5	696.39	20.50	4.30	6.53	31.33	46.00	14.67	QP
6	846.74	22.85	4.85	3.00	30.70	46.00	15.30	QP

EST Technology

San Tun Management Zone,Houjie Town,
Dongguan City,Guangdong,China
Tel:+86-769-83081888
Fax:+86-769-83081878

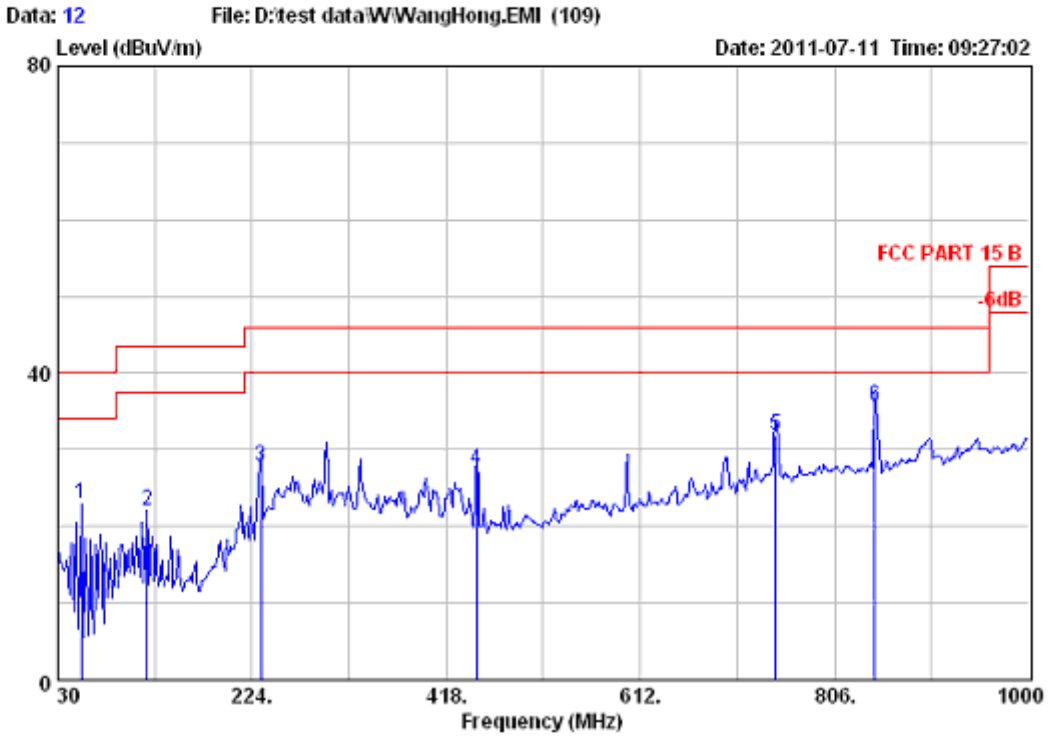


Site no. : 3m Chamber Data no. : 11
Dis. / Ant. : 3m 27137 Ant. pol. : VERTICAL
Limit : FCC PART 15 B
Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : NANO Receiver
Power : DC 5V From PC Input AC 120V/60Hz
M/N : MRN
Test Mode : TX 2474

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	53.28	6.11	0.73	19.28	26.12	40.00	13.88	QP
2	119.24	11.11	1.31	8.26	20.68	43.50	22.82	QP
3	232.73	9.59	1.97	7.61	19.17	46.00	26.83	QP
4	429.64	16.06	2.89	7.91	26.86	46.00	19.14	QP
5	599.39	19.58	3.81	9.05	32.44	46.00	13.56	QP
6	662.44	20.10	4.13	7.62	31.85	46.00	14.15	QP

EST Technology

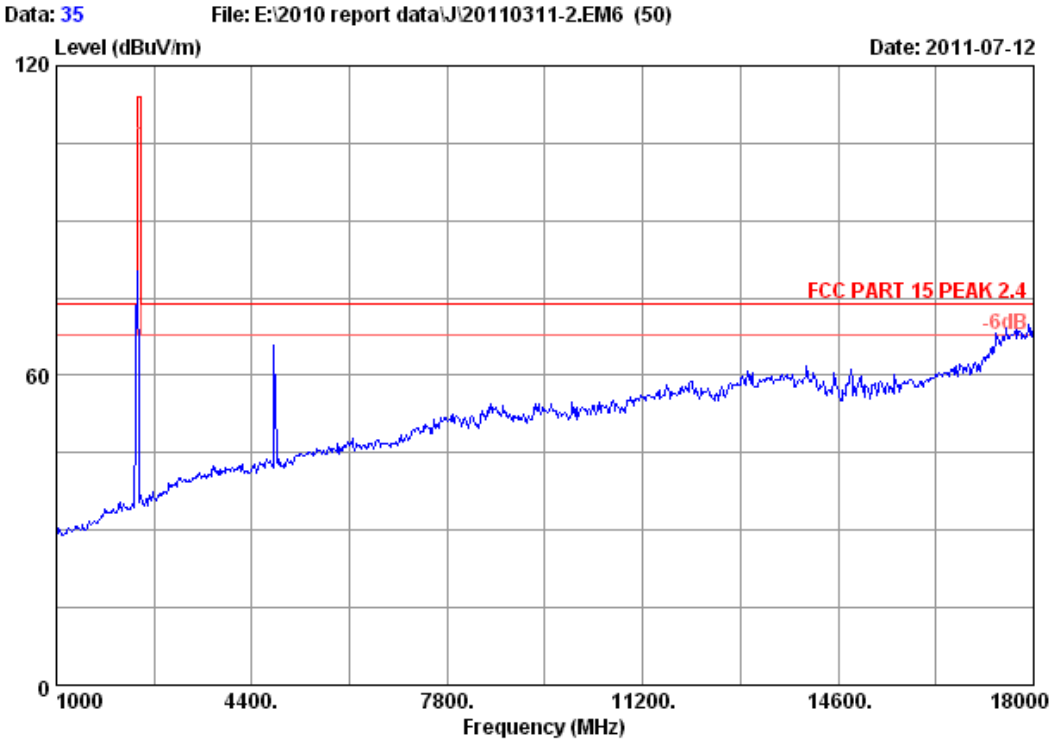
San Tun Management Zone,Houjie Town,
Dongguan City,Guangdong,China
Tel:+86-769-83081888
Fax:+86-769-83081878



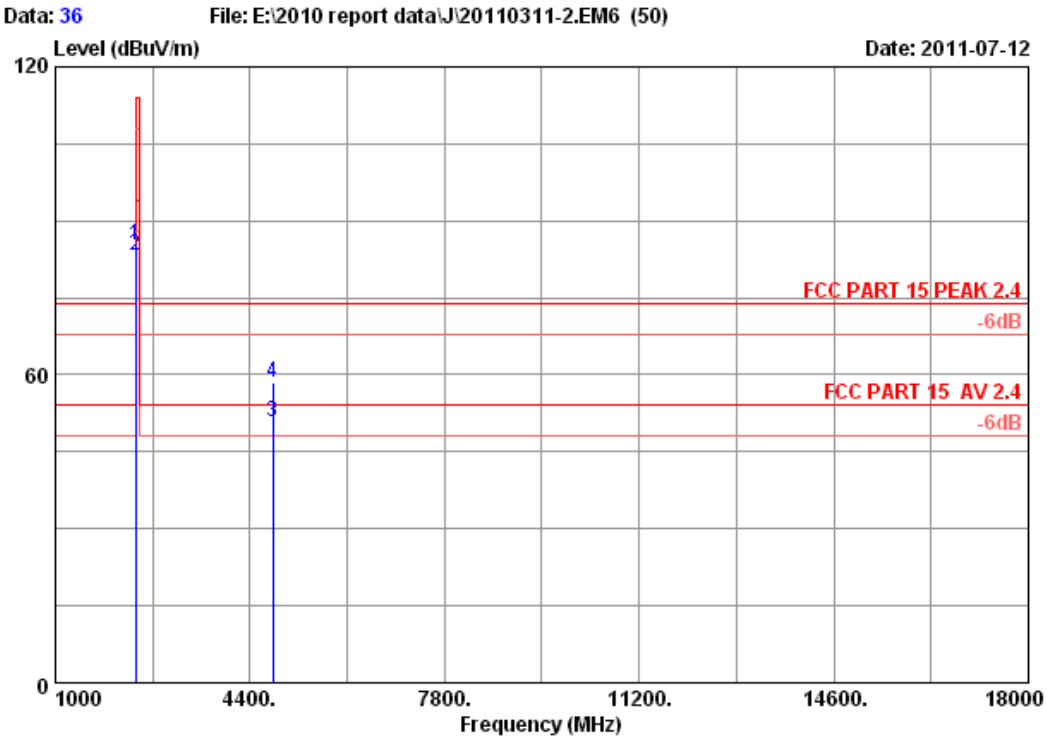
Site no. : 3m Chamber Data no. : 12
Dis. / Ant. : 3m 27137 Ant. pol. : HORIZONTAL
Limit : FCC PART 15 B
Env. / Ins. : Temp:25.6';Humi:56%;Press:101.52kPa
Engineer : Tony
EUT : NANO Receiver
Power : DC 5V From PC Input AC 120V/60Hz
M/N : MRN
Test Mode : TX 2474

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	53.28	6.11	0.73	16.22	23.06	40.00	16.94	QP
2	119.24	11.11	1.31	9.75	22.17	43.50	21.33	QP
3	232.73	9.59	1.97	16.27	27.83	46.00	18.17	QP
4	449.04	16.45	3.19	7.87	27.51	46.00	18.49	QP
5	746.83	22.24	4.68	4.99	31.91	46.00	14.09	QP
6	846.74	22.85	4.85	8.00	35.70	46.00	10.30	QP

Emissions from 1GHz to 25GHz:



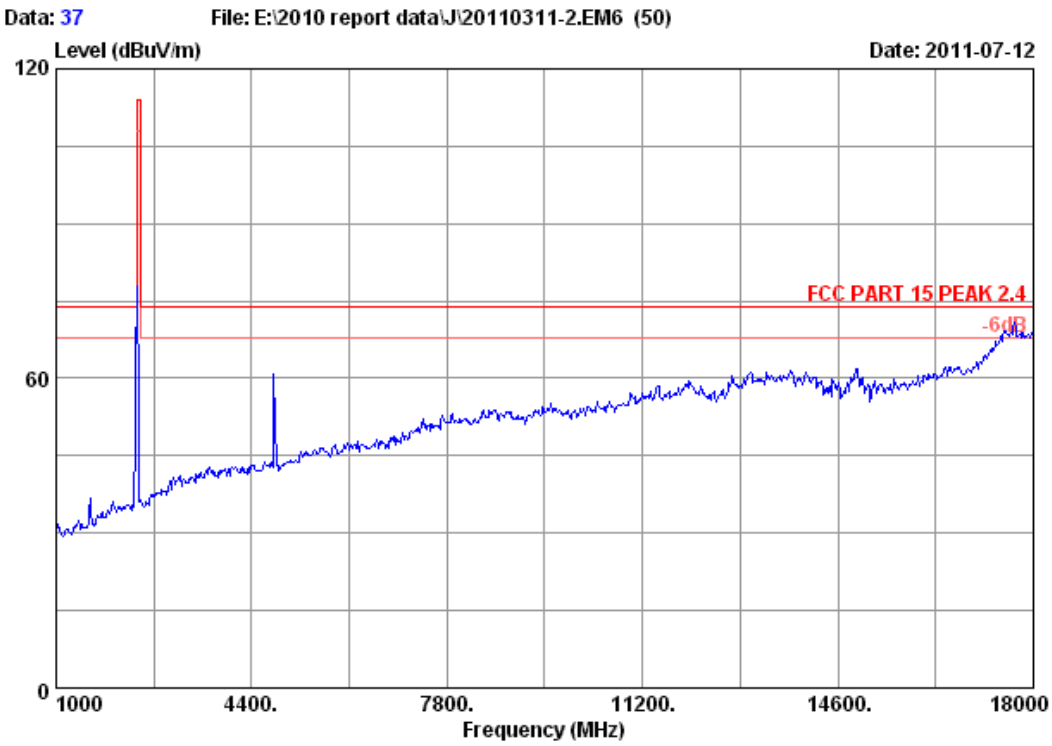
Site no.	: 3# Chamber	Data no.	: 35
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23*C/54%	Engineer	: TaTa Chen
EUT	: Nano Receiver		
Power	: DC 5V From PC		
Test mode	: TX 2408		
M/N	: MRN		



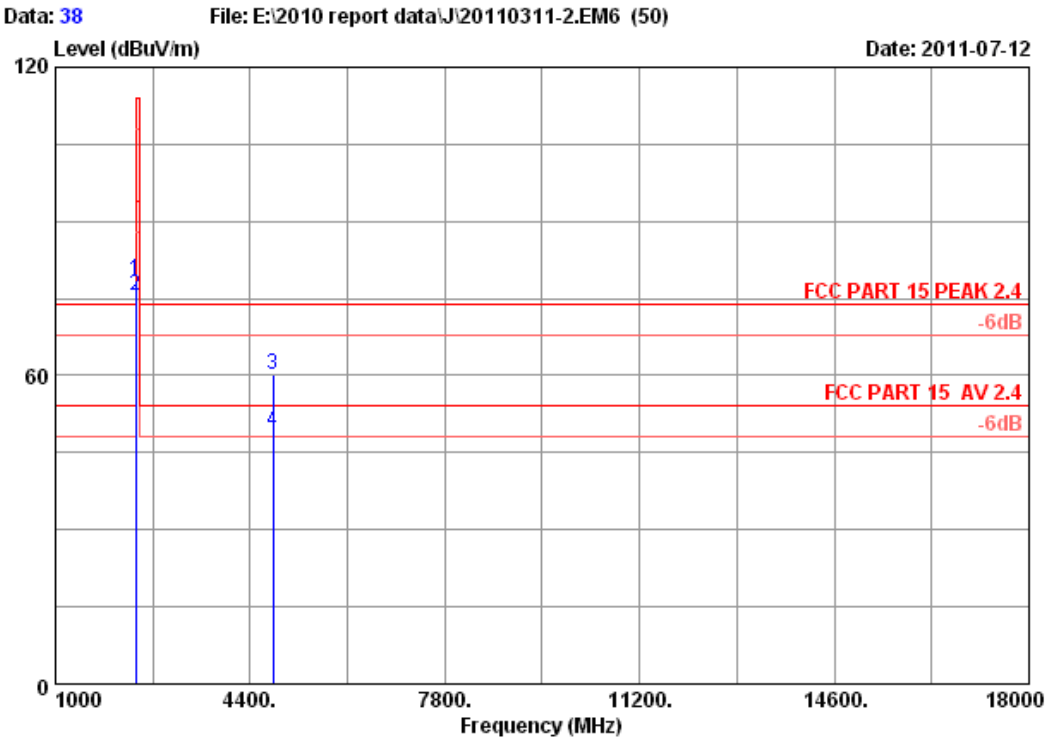
Site no. : 3# Chamber Data no. : 36
Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 23*C/54% Engineer : TaTa Chen
EUT : Nano Receiver
Power : DC 5V From PC
Test mode : TX 2408
M/N : MRN

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2408.000	29.45	7.43	36.62	84.88	85.14	114.00	28.86	Peak
2	2408.000	29.45	7.43	36.62	83.10	83.36	94.00	10.64	Average
3	4816.000	34.30	10.62	35.10	40.88	50.70	54.00	3.30	Average
4	4816.000	34.30	10.62	35.10	48.59	58.41	74.00	15.59	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.



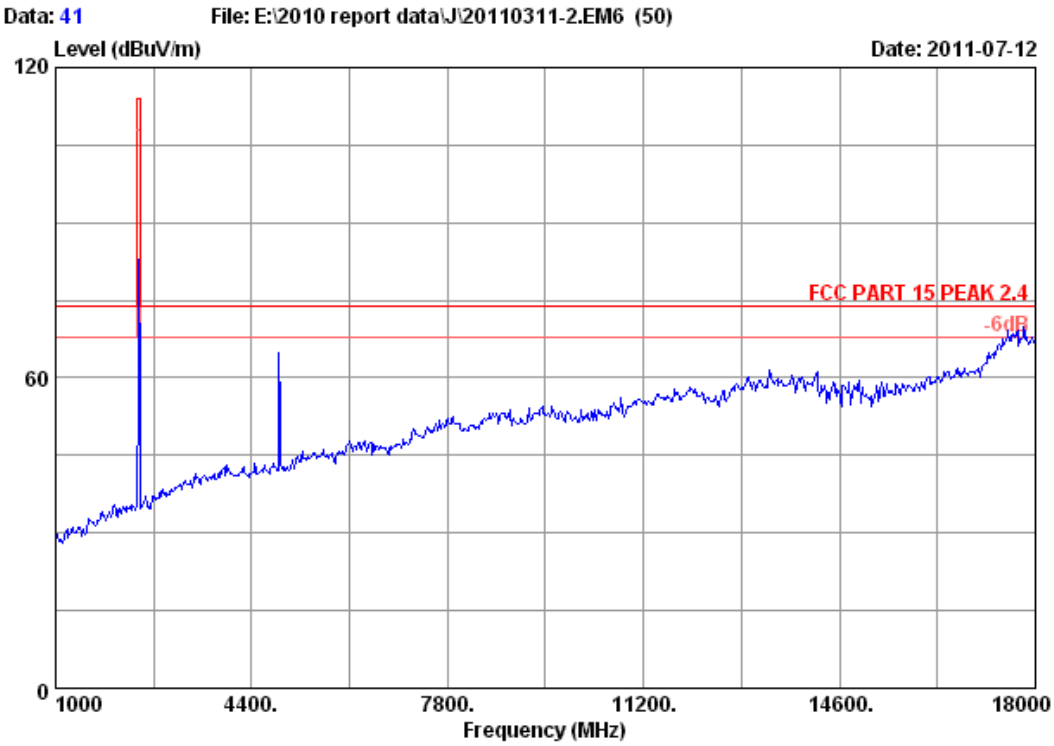
Site no.	: 3# Chamber	Data no.	: 37
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23*C/54%	Engineer	: TaTa Chen
EUT	: Nano Receiver		
Power	: DC 5V From PC		
Test mode	: TX 2408		
M/N	: MRN		



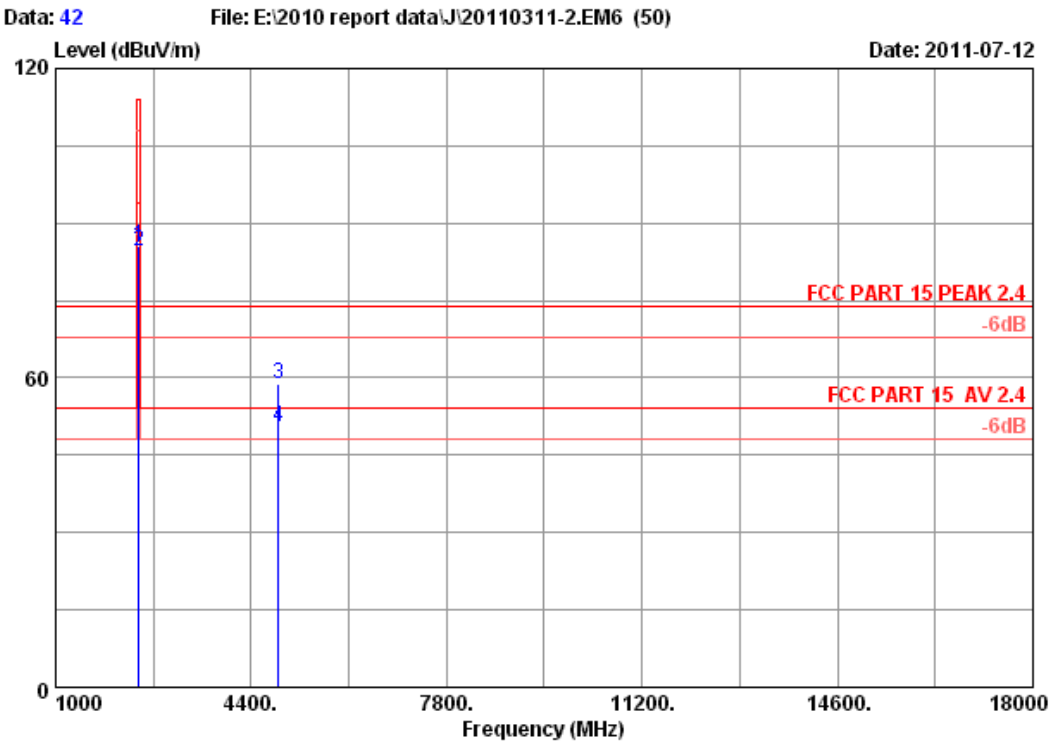
Site no. : 3# Chamber Data no. : 38
Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 23*C/54% Engineer : TaTa Chen
EUT : Nano Receiver
Power : DC 5V From PC
Test mode : TX 2408
M/N : MRN

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2408.000	29.45	7.43	36.62	78.46	78.72	114.00	35.28	Peak
2	2408.000	29.45	7.43	36.62	75.31	75.57	94.00	18.43	Average
3	4816.000	34.30	10.62	35.10	50.19	60.01	74.00	13.99	Peak
4	4816.000	34.30	10.62	35.10	39.32	49.14	54.00	4.86	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.



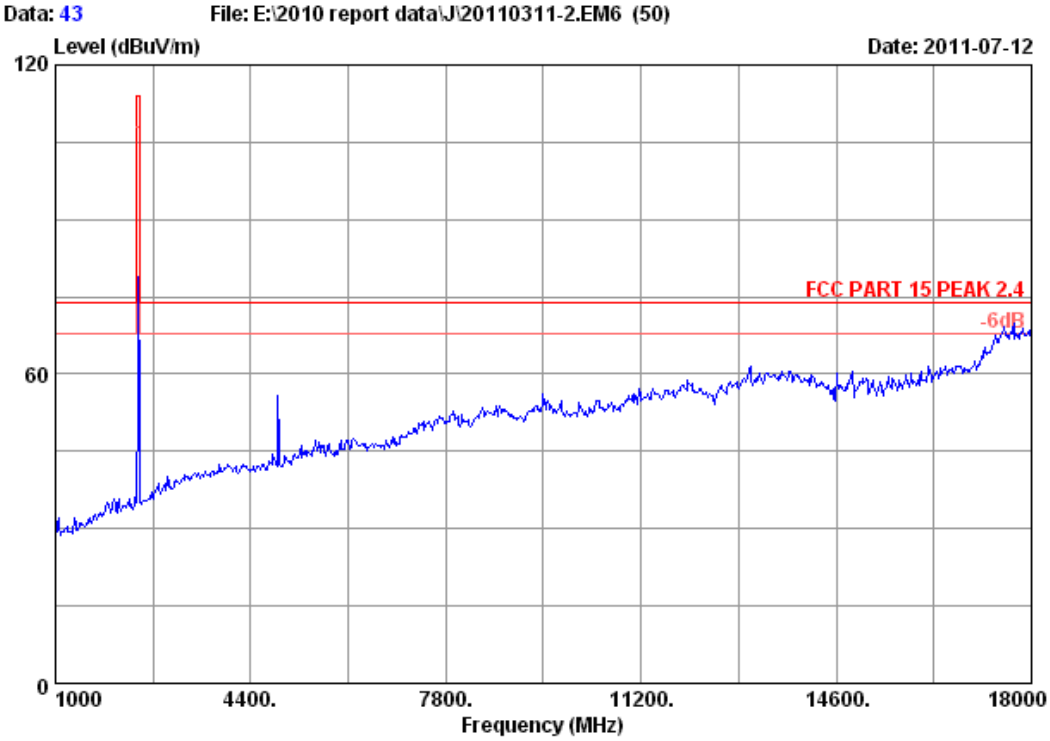
Site no.	: 3# Chamber	Data no.	: 41
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23*C/54%	Engineer	: TaTa Chen
EUT	: Nano Receiver		
Power	: DC 5V From PC		
Test mode	: TX 2440		
M/N	: MRN		



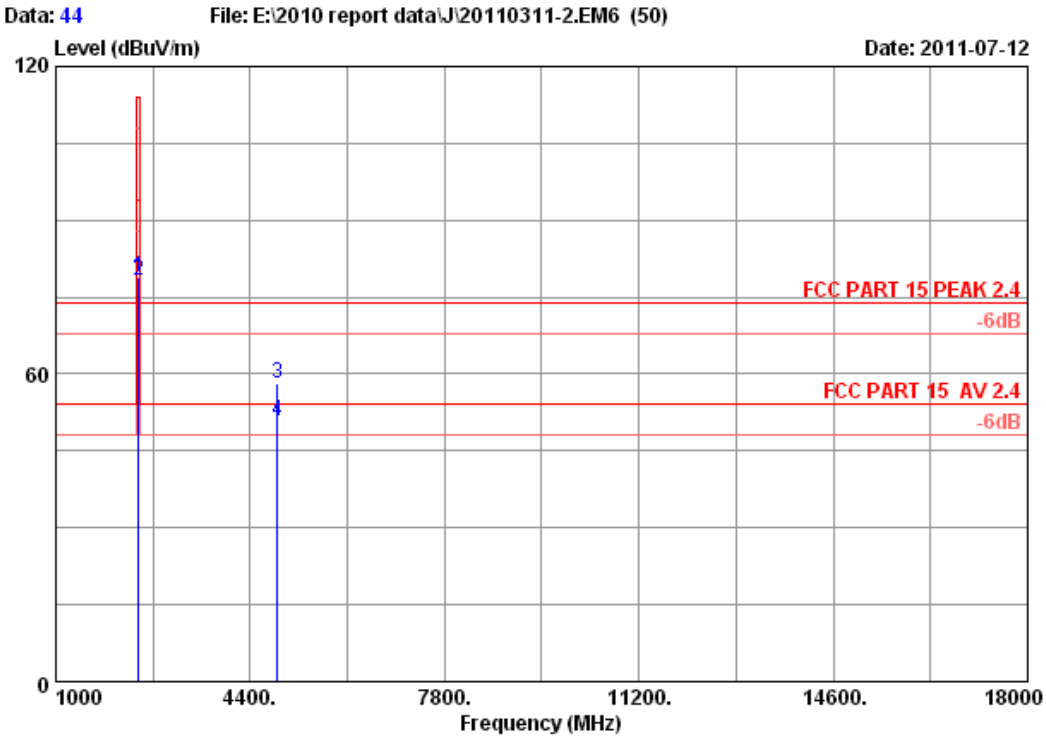
Site no. : 3# Chamber Data no. : 42
Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 23*C/54% Engineer : TaTa Chen
EUT : Nano Receiver
Power : DC 5V From PC
Test mode : TX 2440
M/N : MRN

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2440.000	29.47	7.50	36.61	85.26	85.62	114.00	28.38	Peak
2	2440.000	29.47	7.50	36.61	84.32	84.68	94.00	9.32	Average
3	4880.000	34.41	10.71	35.03	48.67	58.76	74.00	15.24	Peak
4	4880.000	34.41	10.71	35.03	40.36	50.45	54.00	3.55	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.



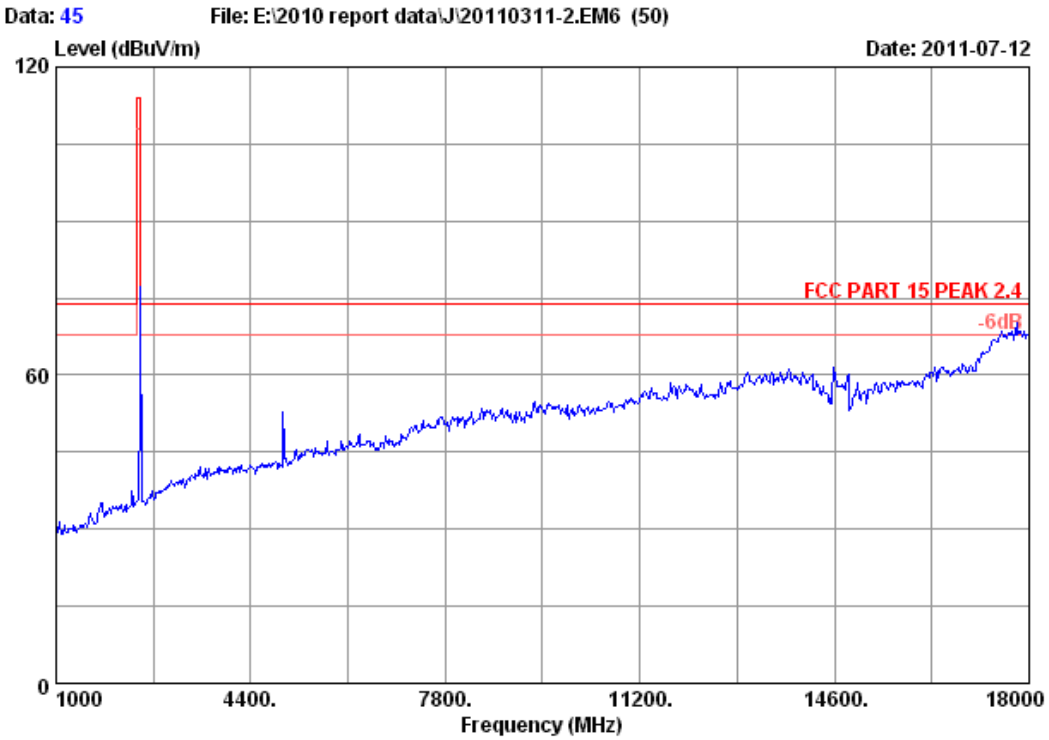
Site no.	: 3# Chamber	Data no.	: 43
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23*C/54%	Engineer	: TaTa Chen
EUT	: Nano Receiver		
Power	: DC 5V From PC		
Test mode	: TX 2440		
M/N	: MRN		



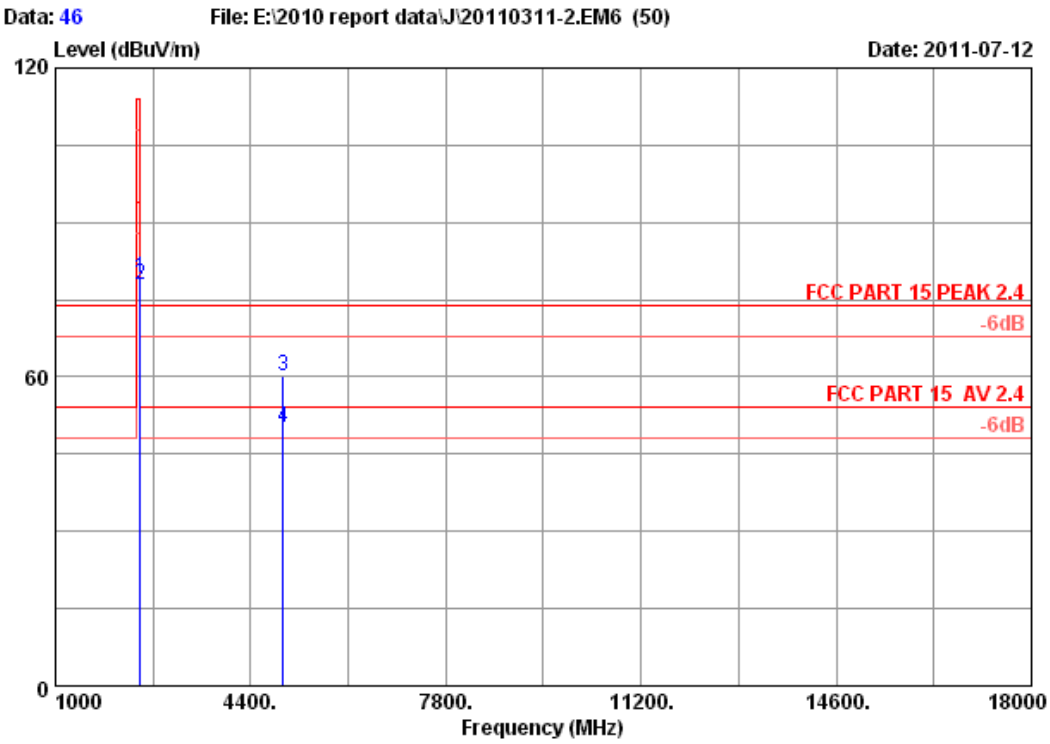
Site no. : 3# Chamber Data no. : 44
Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 23*C/54% Engineer : TaTa Chen
EUT : Nano Receiver
Power : DC 5V From PC
Test mode : TX 2440
M/N : MRN

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2440.000	29.47	7.50	36.61	78.38	78.74	114.00	35.26	Peak
2	2440.000	29.47	7.50	36.61	77.95	78.31	94.00	15.69	Average
3	4880.000	34.41	10.71	35.03	48.21	58.30	74.00	15.70	Peak
4	4880.000	34.41	10.71	35.03	40.55	50.64	54.00	3.36	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.



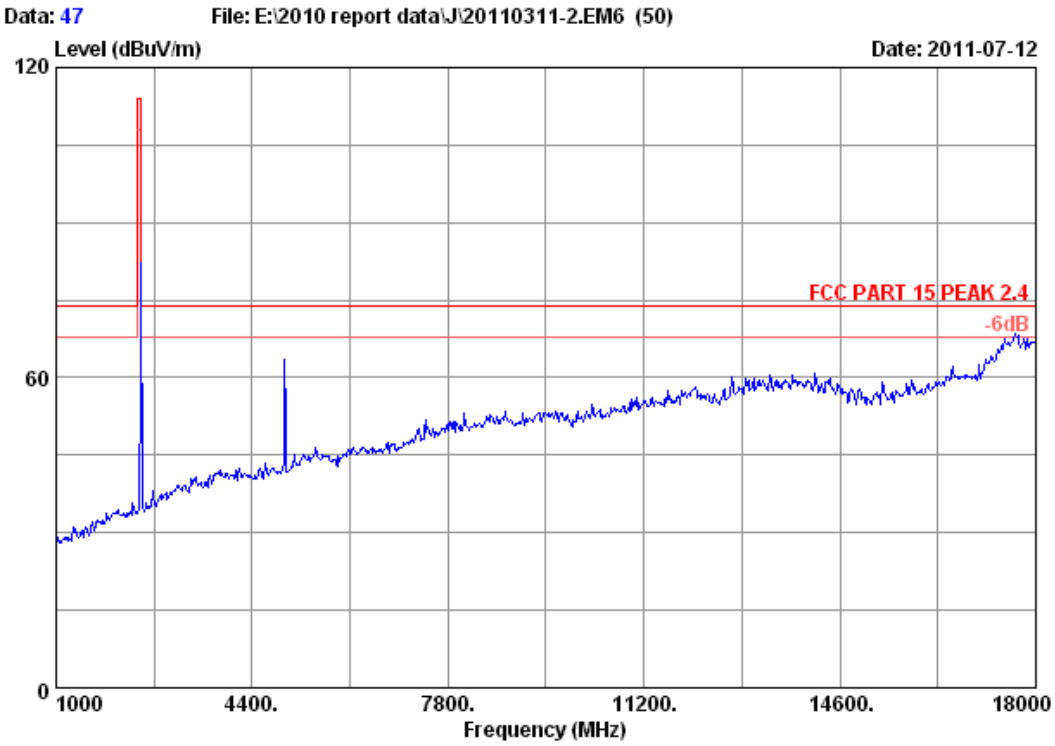
Site no.	: 3# Chamber	Data no.	: 45
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: VERTICAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23*C/54%	Engineer	: TaTa Chen
EUT	: Nano Receiver		
Power	: DC 5V From PC		
Test mode	: TX 2474		
M/N	: MRN		



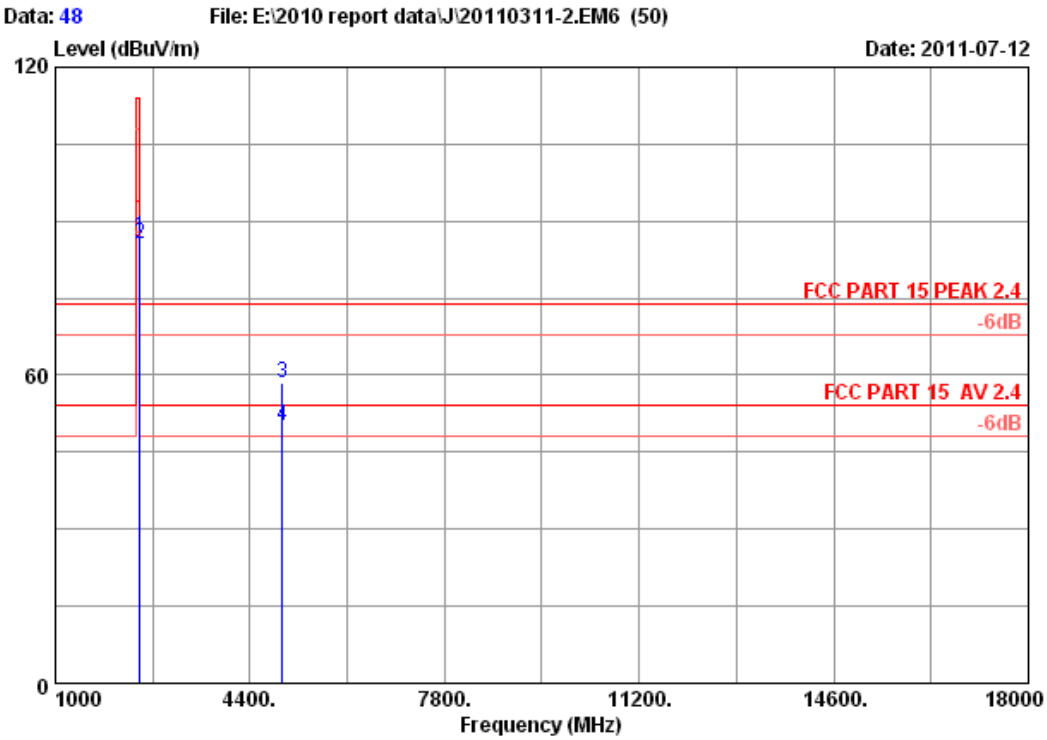
Site no. : 3# Chamber Data no. : 46
Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 23*C/54% Engineer : TaTa Chen
EUT : Nano Receiver
Power : DC 5V From PC
Test mode : TX 2474
M/N : MRN

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2474.000	29.49	7.58	36.60	78.86	79.33	114.00	34.67	Peak
2	2474.000	29.49	7.58	36.60	77.51	77.98	94.00	16.02	Average
3	4948.000	34.54	10.80	34.95	49.72	60.11	74.00	13.89	Peak
4	4948.000	34.54	10.80	34.95	39.70	50.09	54.00	3.91	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.



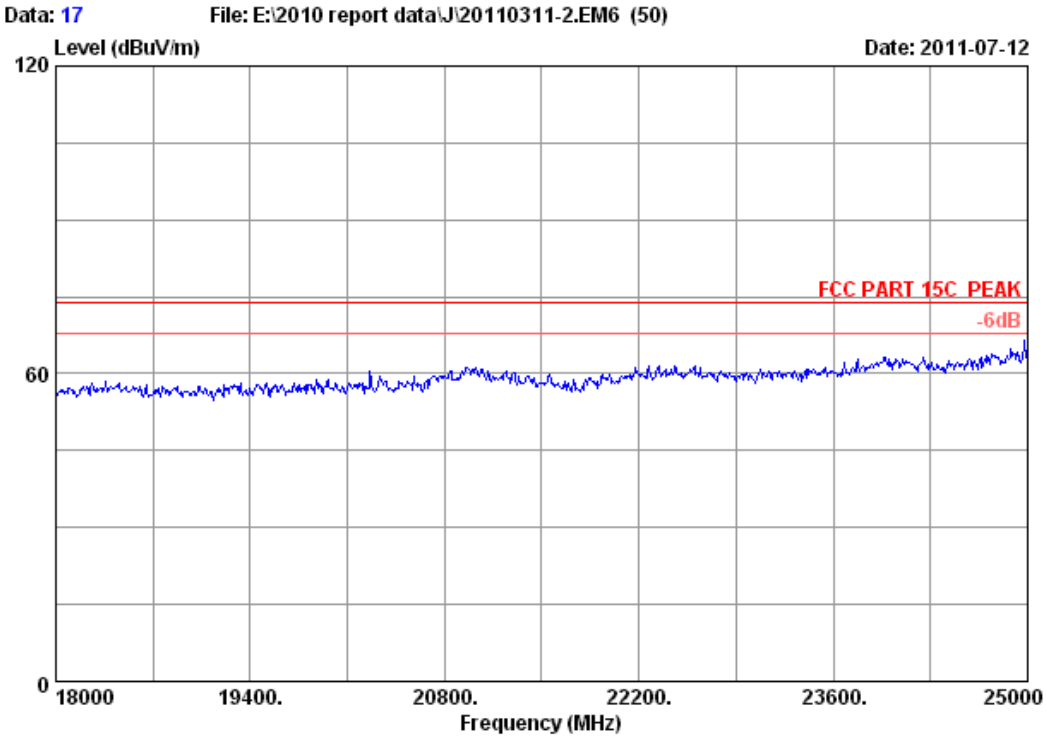
Site no.	: 3# Chamber	Data no.	: 47
Dis. / Ant.	: 3m 3115(0911)	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15 PEAK 2.4		
Env. / Ins.	: 23*C/54%	Engineer	: TaTa Chen
EUT	: Nano Receiver		
Power	: DC 5V From PC		
Test mode	: TX 2474		
M/N	: MRN		



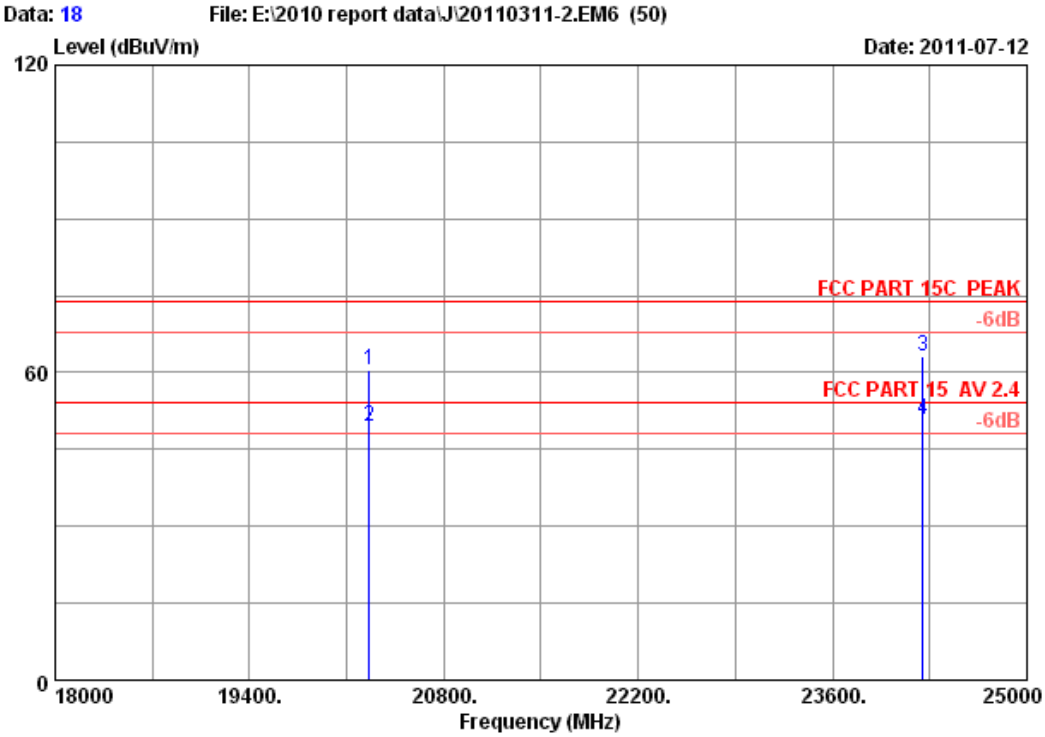
Site no. : 3# Chamber Data no. : 48
Dis. / Ant. : 3m 3115(0911) Ant. pol. : HORIZONTAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 23*C/54% Engineer : TaTa Chen
EUT : Nano Receiver
Power : DC 5V From PC
Test mode : TX 2474
M/N : MRN

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2474.000	29.49	7.58	36.60	86.31	86.78	114.00	27.22	Peak
2	2474.000	29.49	7.58	36.60	85.09	85.56	94.00	8.44	Average
3	4948.000	34.54	10.80	34.95	48.16	58.55	74.00	15.45	Peak
4	4948.000	34.54	10.80	34.95	39.64	50.03	54.00	3.97	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.



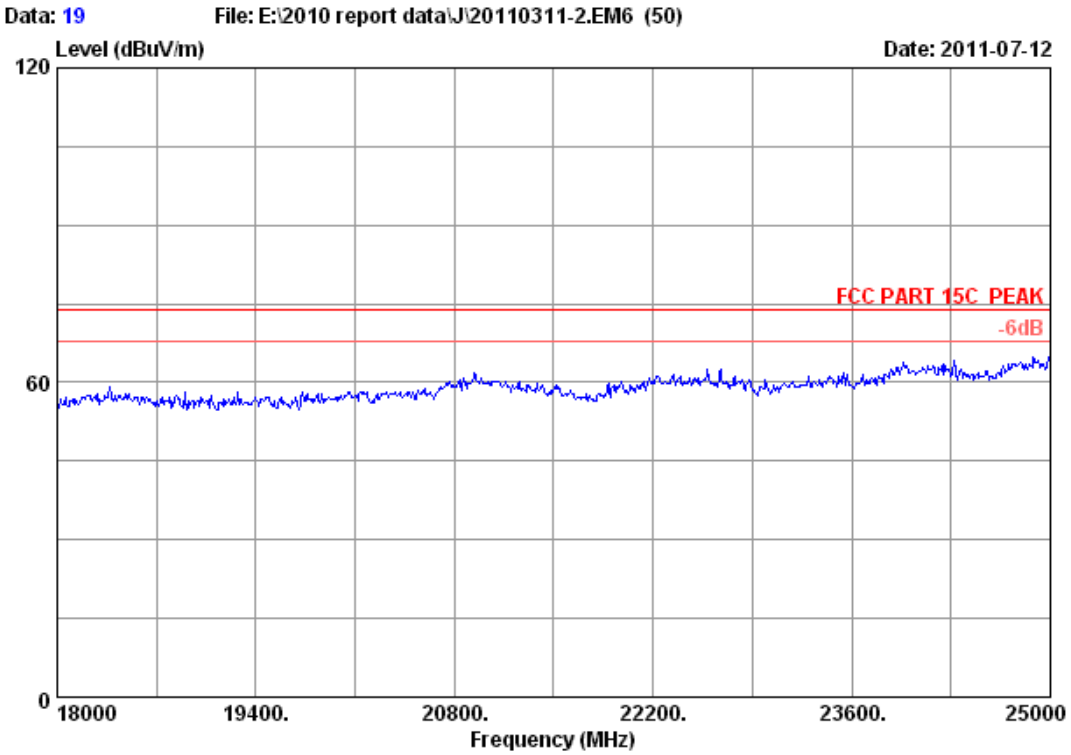
Site no.	: 3# Chamber	Data no.	: 17
Dis. / Ant.	: 3m 3116 T	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23*C/54%	Engineer	: TaTa Chen
EUT	: Nano Receiver		
Power	: DC 5V From PC		
Test mode	: TX 2474		
M/N	: MRN		



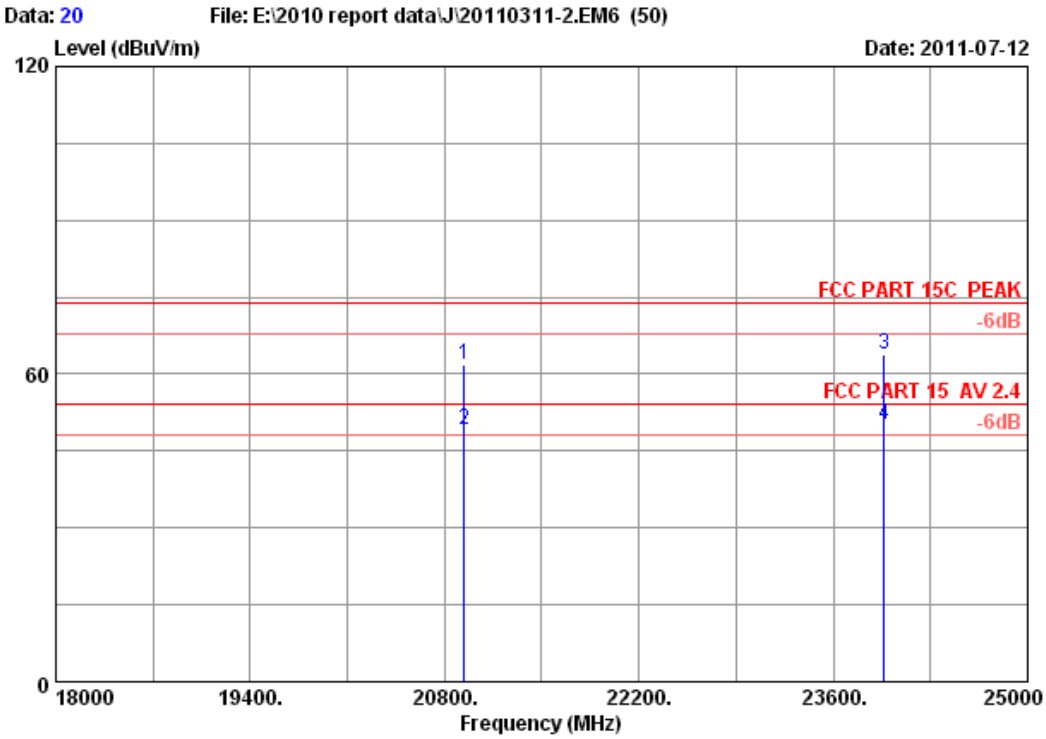
Site no. : 3# Chamber Data no. : 18
Dis. / Ant. : 3m 3116 T Ant. pol. : VERTICAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : TaTa Chen
EUT : Nano Receiver
Power : DC 5V From PC
Test mode : TX 2474
M/N : MRN

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	20261.000	40.05	18.46	35.40	37.31	60.42	74.00	13.58	Peak
2	20261.000	40.05	18.46	35.40	26.36	49.47	54.00	4.53	Average
3	24251.000	39.65	20.05	33.90	37.21	63.01	74.00	10.99	Peak
4	24251.000	39.65	20.05	33.90	24.95	50.75	54.00	3.25	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.



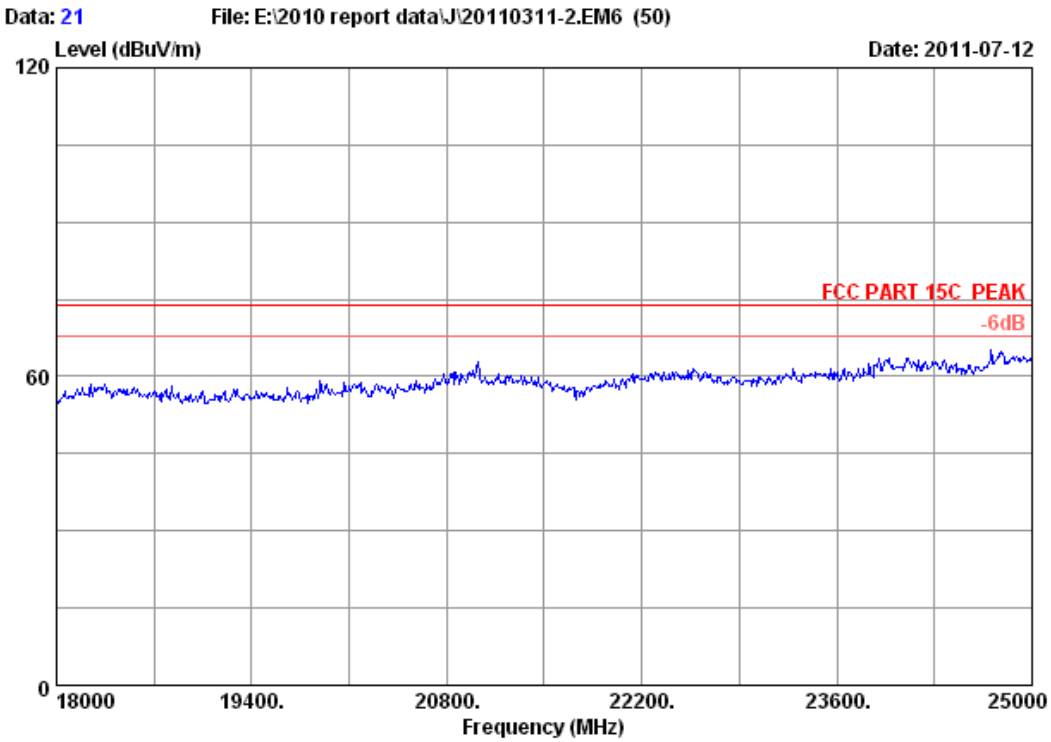
Site no. : 3# Chamber Data no. : 19
Dis. / Ant. : 3m 3116 T Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : TaTa Chen
EUT : Nano Receiver
Power : DC 5V From PC
Test mode : TX 2474
M/N : MRN



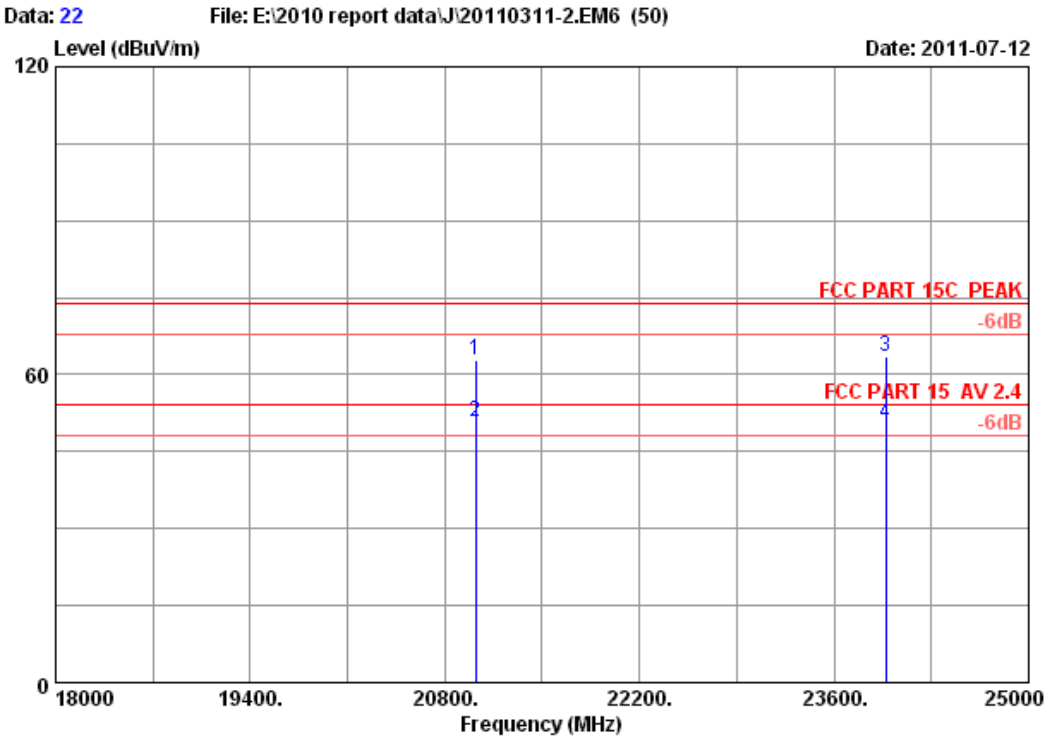
Site no. : 3# Chamber
Data no. : 20
Dis. / Ant. : 3m 3116 T
Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
Engineer : TaTa Chen
EUT : Nano Receiver
Power : DC 5V From PC
Test mode : TX 2474
M/N : MRN

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	20940.000	40.27	18.73	33.58	36.48	61.90	74.00	12.10	Peak
2	20940.000	40.27	18.73	33.58	23.66	49.08	54.00	4.92	Average
3	23964.000	39.61	19.93	33.16	37.41	63.79	74.00	10.21	Peak
4	23964.000	39.61	19.93	33.16	23.65	50.03	54.00	3.97	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.



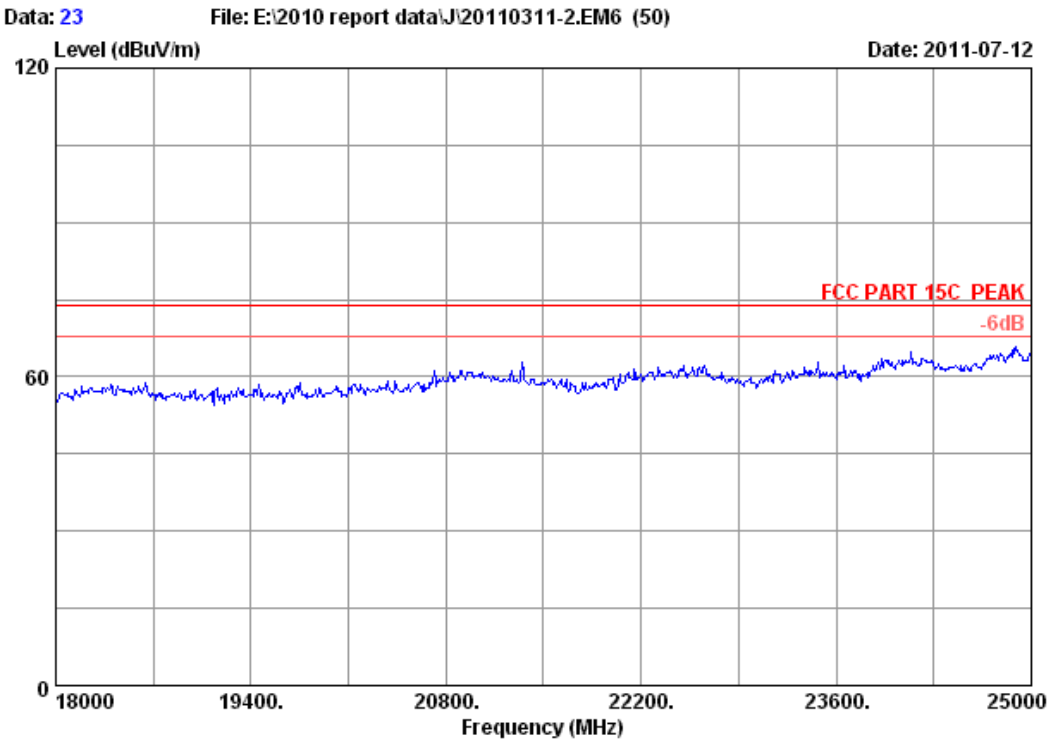
Site no.	: 3# Chamber	Data no.	: 21
Dis. / Ant.	: 3m 3116 T	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23*C/54%	Engineer	: TaTa Chen
EUT	: Nano Receiver		
Power	: DC 5V From PC		
Test mode	: TX 2440		
M/N	: MRN		



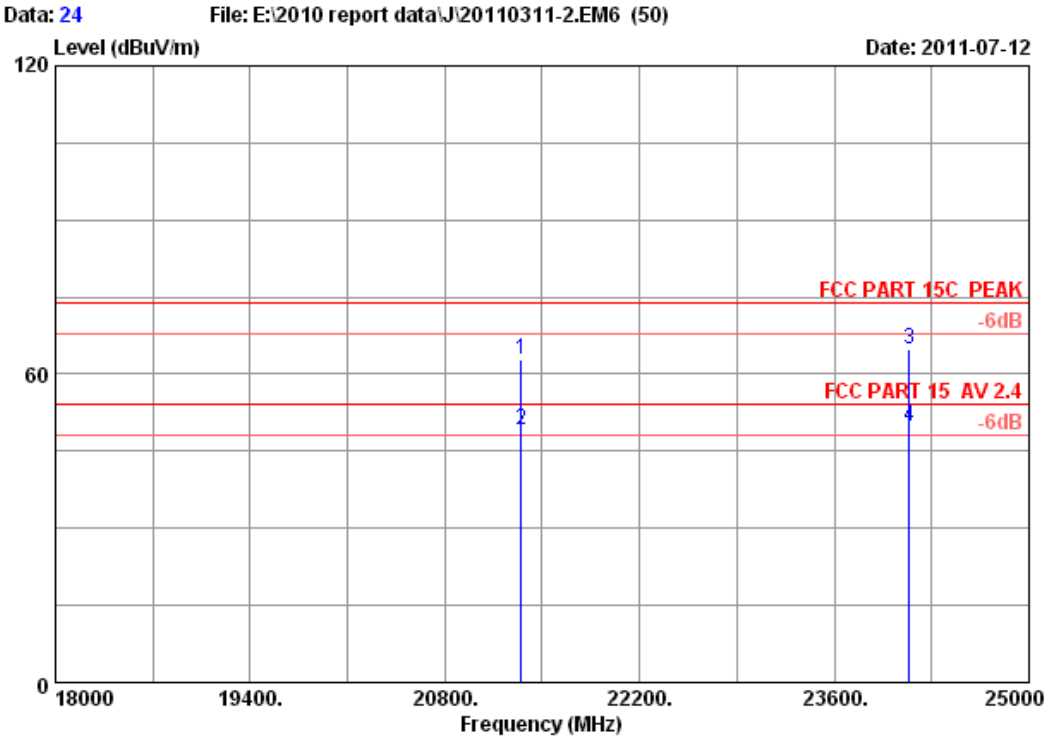
Site no. : 3# Chamber Data no. : 22
Dis. / Ant. : 3m 3116 T Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54% Engineer : TaTa Chen
EUT : Nano Receiver
Power : DC 5V From PC
Test mode : TX 2440
M/N : MRN

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	21024.000	40.29	18.76	33.49	37.21	62.77	74.00	11.23	Peak
2	21024.000	40.29	18.76	33.49	25.35	50.91	54.00	3.09	Average
3	23971.000	39.61	19.93	33.16	37.26	63.64	74.00	10.36	Peak
4	23971.000	39.61	19.93	33.16	23.96	50.34	54.00	3.66	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.



Site no.	: 3# Chamber	Data no.	: 23
Dis. / Ant.	: 3m 3116 T	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23*C/54%	Engineer	: TaTa Chen
EUT	: Nano Receiver		
Power	: DC 5V From PC		
Test mode	: TX 2440		
M/N	: MRN		

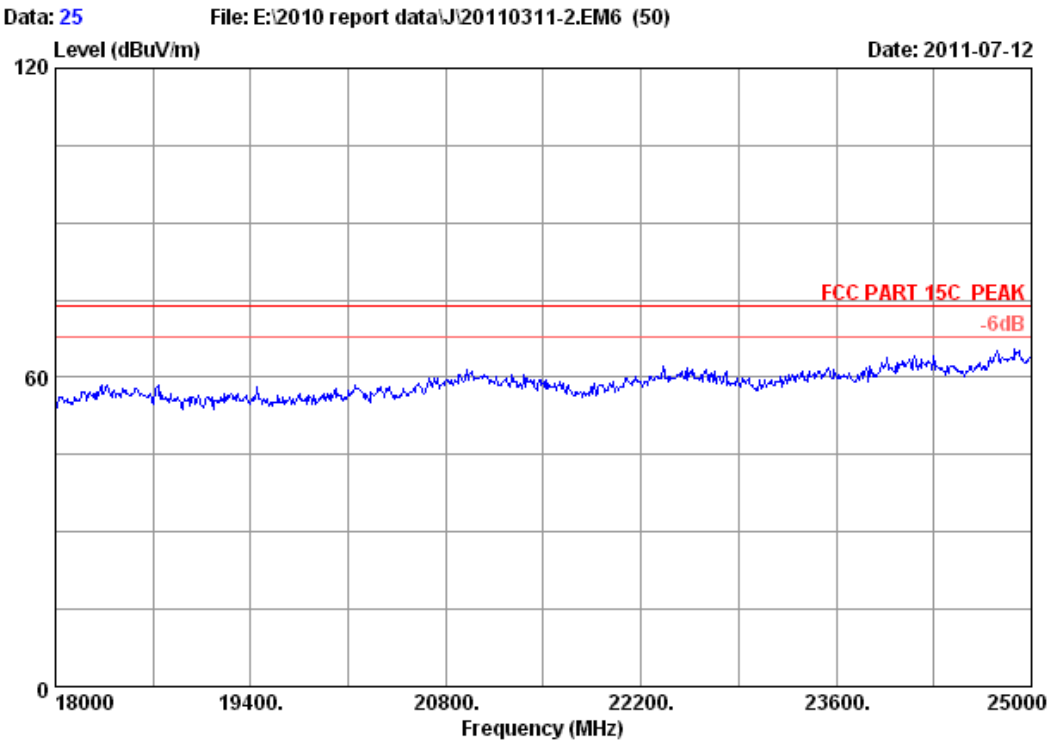


Site no. : 3# Chamber
Dis. / Ant. : 3m 3116 T
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
EUT : Nano Receiver
Power : DC 5V From PC
Test mode : TX 2440
M/N : MRN

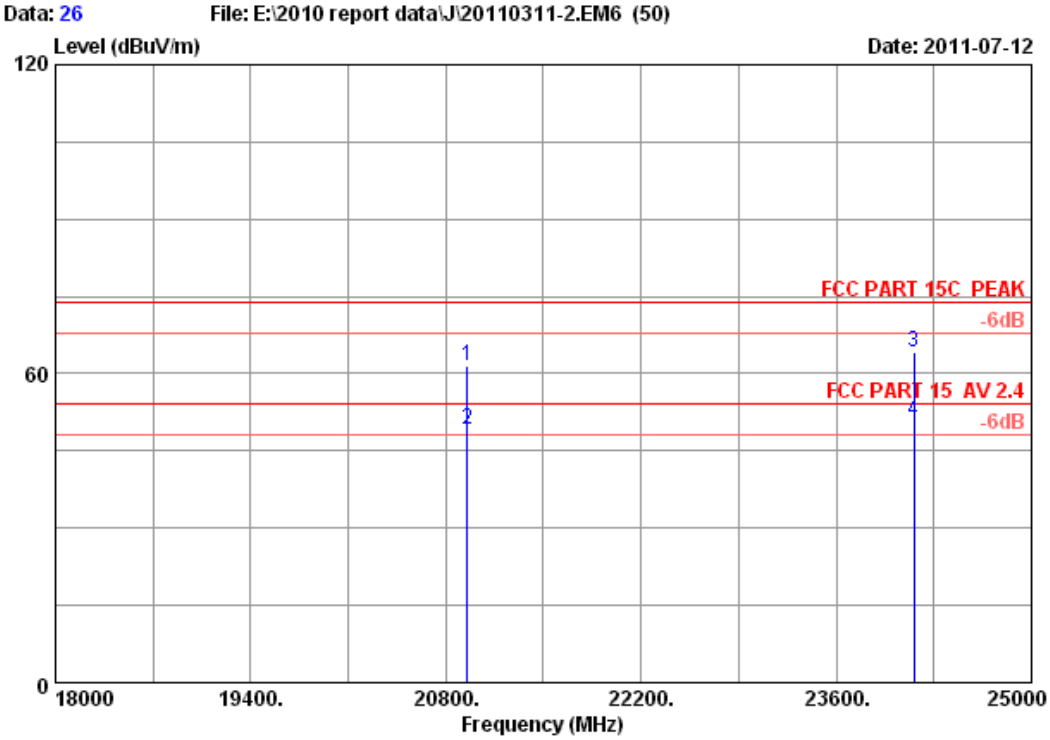
Data no. : 24
Ant. pol. : VERTICAL
Engineer : TaTa Chen

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	21346.000	40.09	18.89	34.59	38.58	62.97	74.00	11.03	Peak
2	21346.000	40.09	18.89	34.59	24.74	49.13	54.00	4.87	Average
3	24139.000	39.63	20.00	33.50	38.79	64.92	74.00	9.08	Peak
4	24139.000	39.63	20.00	33.50	23.58	49.71	54.00	4.29	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.



Site no.	: 3# Chamber	Data no.	: 25
Dis. / Ant.	: 3m 3116 T	Ant. pol.	: VERTICAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23*C/54%	Engineer	: TaTa Chen
EUT	: Nano Receiver		
Power	: DC 5V From PC		
Test mode	: TX 2408		
M/N	: MRN		

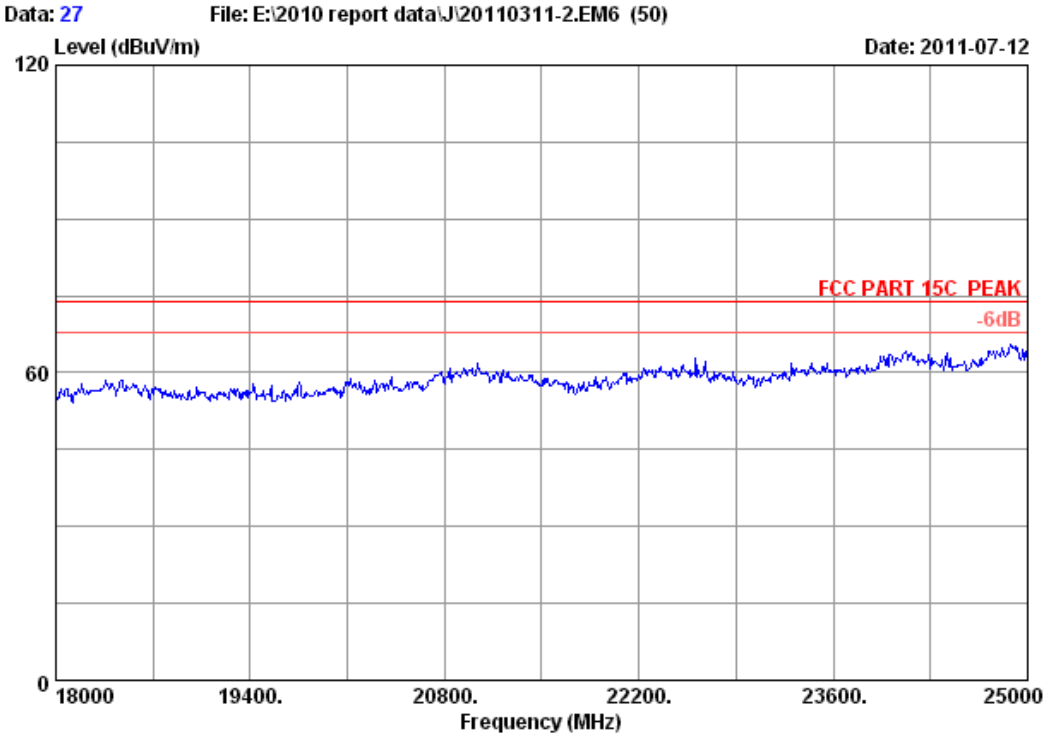


Site no. : 3# Chamber
Dis. / Ant. : 3m 3116 T
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
EUT : Nano Receiver
Power : DC 5V From PC
Test mode : TX 2408
M/N : MRN

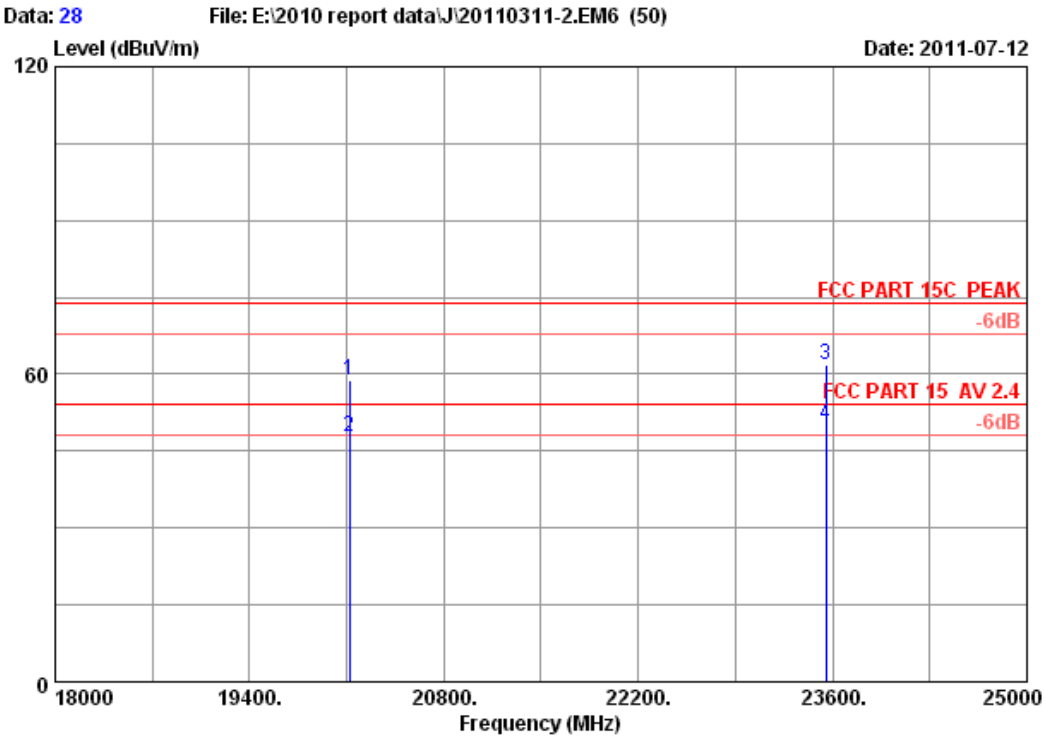
Data no. : 26
Ant. pol. : VERTICAL
Engineer : TaTa Chen

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	20954.000	40.27	18.73	33.49	35.92	61.43	74.00	12.57	Peak
2	20954.000	40.27	18.73	33.49	23.70	49.21	54.00	4.79	Average
3	24160.000	39.63	20.01	33.58	38.25	64.31	74.00	9.69	Peak
4	24160.000	39.63	20.01	33.58	24.67	50.73	54.00	3.27	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.



Site no.	: 3# Chamber	Data no.	: 27
Dis. / Ant.	: 3m 3116 T	Ant. pol.	: HORIZONTAL
Limit	: FCC PART 15C PEAK		
Env. / Ins.	: 23*C/54%	Engineer	: TaTa Chen
EUT	: Nano Receiver		
Power	: DC 5V From PC		
Test mode	: TX 2408		
M/N	: MRN		



Site no. : 3# Chamber
Data no. : 28
Dis. / Ant. : 3m 3116 T
Ant. pol. : HORIZONTAL
Limit : FCC PART 15C PEAK
Env. / Ins. : 23*C/54%
Engineer : TaTa Chen
EUT : Nano Receiver
Power : DC 5V From PC
Test mode : TX 2408
M/N : MRN

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	20121.000	40.08	18.40	35.55	35.86	58.79	74.00	15.21	Peak
2	20121.000	40.08	18.40	35.55	24.76	47.69	54.00	6.31	Average
3	23551.000	39.69	19.77	34.27	36.67	61.86	74.00	12.14	Peak
4	23551.000	39.69	19.77	34.27	24.86	50.05	54.00	3.95	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. 20 DB BANDWIDTH TEST

5.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyz	Rohde &Schwarz	FSP	101130	Jun 17.14	1 Year

5.2. Limit

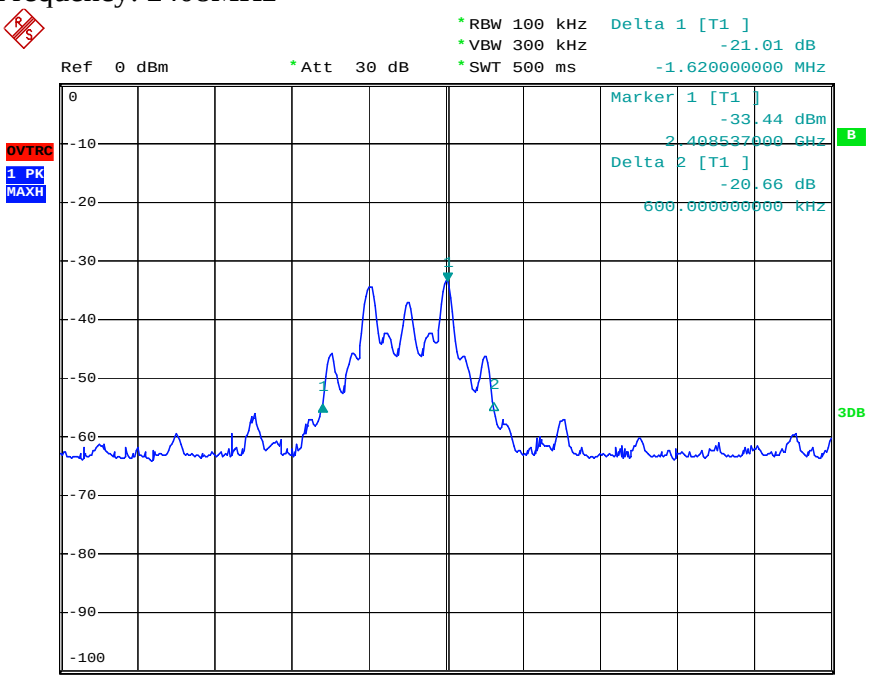
Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific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

5.3. Test Results

EUT: Nano Receiver		
M/N: MRN		
Test date:2011-07-12	Pressure:101.8 kpa	Humidity:54 %
Tested by: TaTa Chen	Test site: RF site	Temperature：24.1 ℃

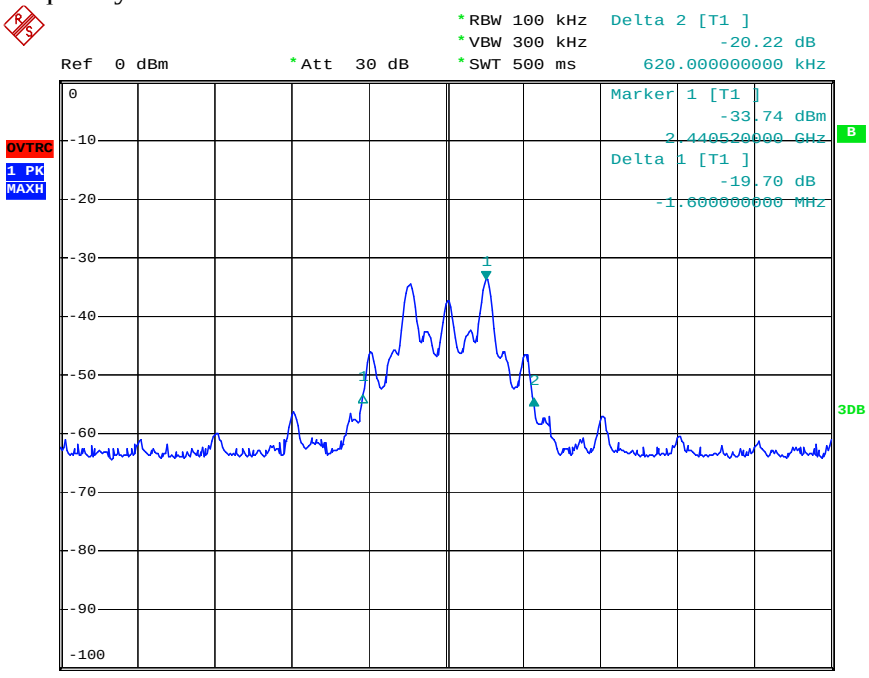
Frequency	20% bandwidth （MHz）	Limit (KHz)
2408	2.220	N/A
2440	2.220	N/A
2474	2.220	N/A
Conclusion：PASS		

Test Frequency: 2408MHz



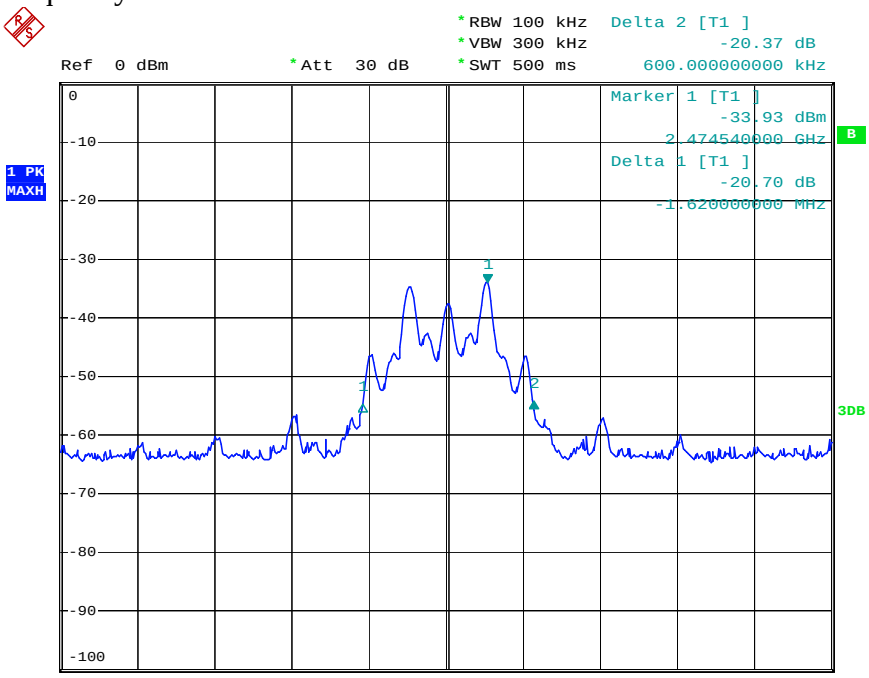
Date: 14.JUL.2011 10:27:09

Test Frequency: 2440MHz



Date: 14.JUL.2011 10:27:58

Test Frequency: 2474MHz



Date: 14.JUL.2011 10:29:04

6. BAND EDGE COMPLIANCE TEST

6.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E4446A	US44300459	May.08,11	1 Year
2.	Horn Antenna	EMCO	3115	9607-4877	May.25, 11	1.5 Year
3.	Amplifier	Agilent	8449B	3008A02495	May.08, 11	1 Year
4.	RF Cable	Hubersuhner	SUCOFLEX102	28620/2	May.08,11	1 Year
5.	RF Cable	Hubersuhner	SUCOFLEX102	28618/2	May.08,11	1 Year
6.	RF Cable	Hubersuhner	SUCOFLEX102	28610/2	May.08,11	1 Year

6.2. Limit

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

6.3. Test Produce

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:

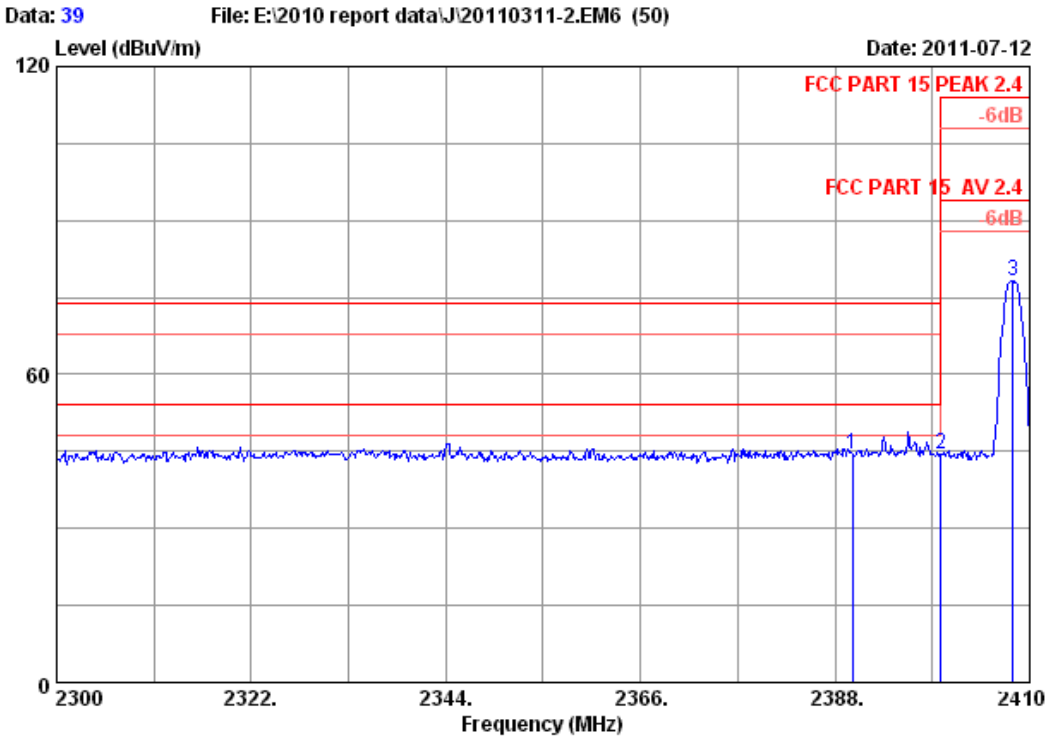
(a) PEAK: RBW=1MHz ;VBW=3MHz, PK detector, Sweep=AUTO

(b) Average: RBW=1MHz ;VBW=10Hz, PK detector, Sweep=AUTO

6.4. Test Results

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

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

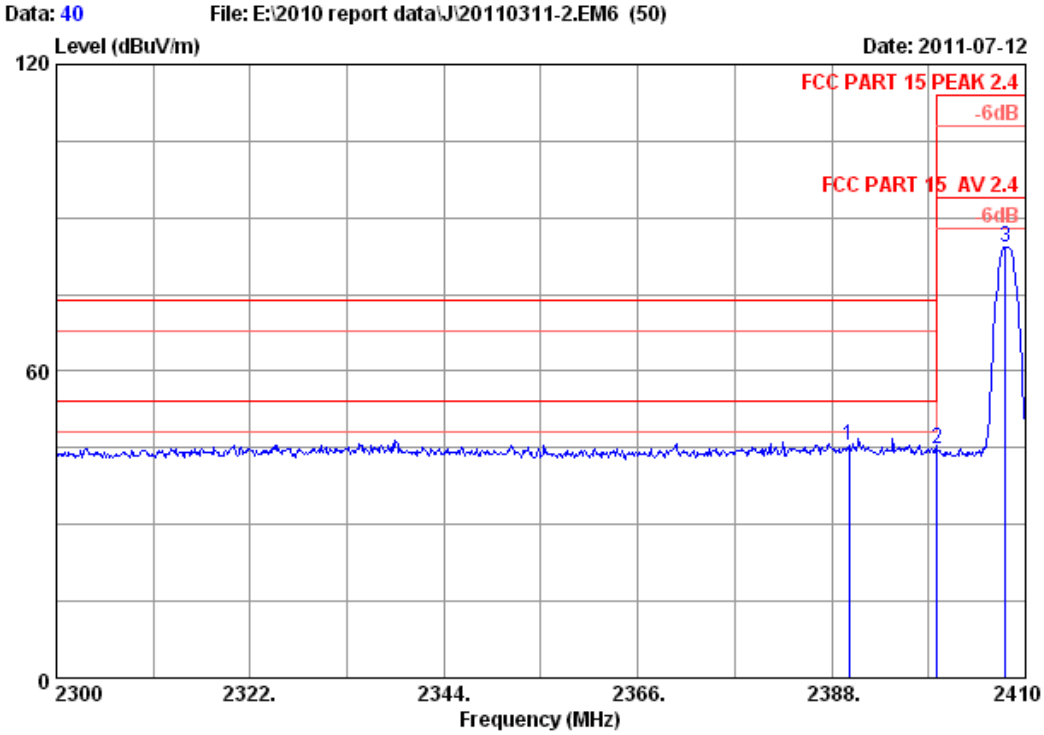


Site no. : 3# Chamber
Dis. / Ant. : 3m 3115(0911)
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 23*C/54%
EUT : Nano Receiver
Power : DC 5V From PC
Test mode : TX 2408
M/N : MRN

Data no. : 39
Ant. pol. : VERTICAL
Engineer : TaTa Chen

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	29.44	7.39	36.62	44.08	44.29	74.00	29.71	Peak
2	2400.000	29.44	7.43	36.62	44.06	44.31	74.00	29.69	Peak
3	2408.070	29.45	7.43	36.62	77.90	78.16	114.00	35.84	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.

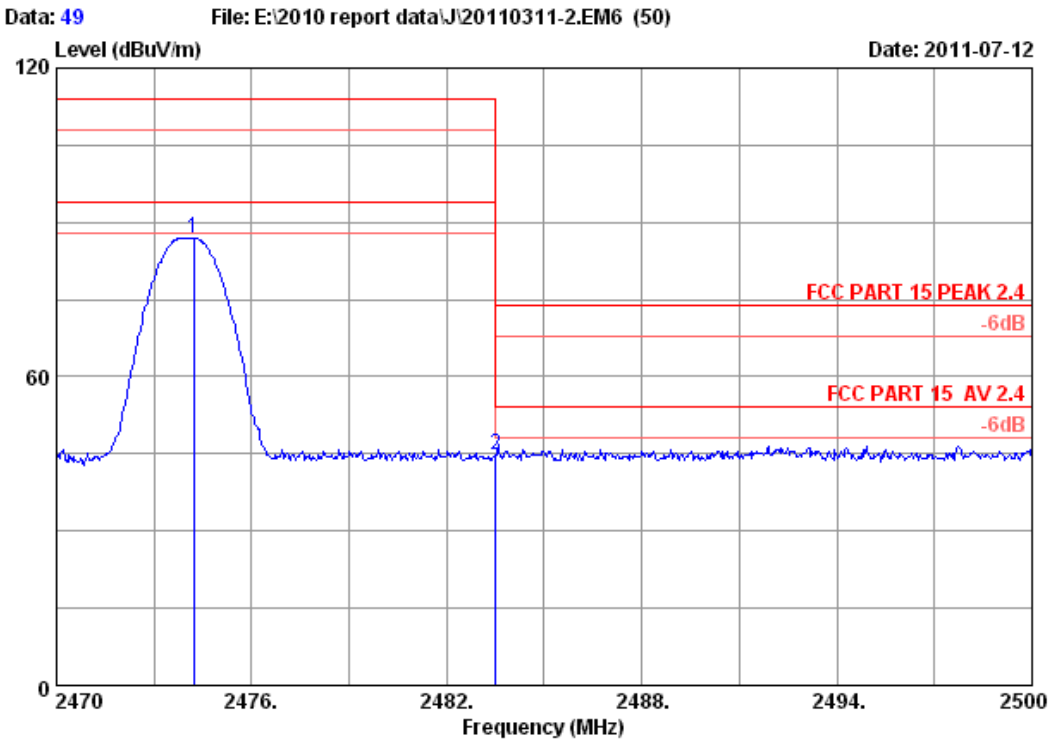


Site no. : 3# Chamber
Dis. / Ant. : 3m 3115(0911)
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 23*C/54%
EUT : Nano Receiver
Power : DC 5V From PC
Test mode : TX 2408
M/N : MRN

Data no. : 40
Ant. pol. : HORIZONTAL
Engineer : TaTa Chen

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.000	29.44	7.39	36.62	45.16	45.37	74.00	28.63	Peak
2	2400.000	29.44	7.43	36.62	44.70	44.95	74.00	29.05	Peak
3	2407.850	29.45	7.43	36.62	84.07	84.33	114.00	29.67	Peak

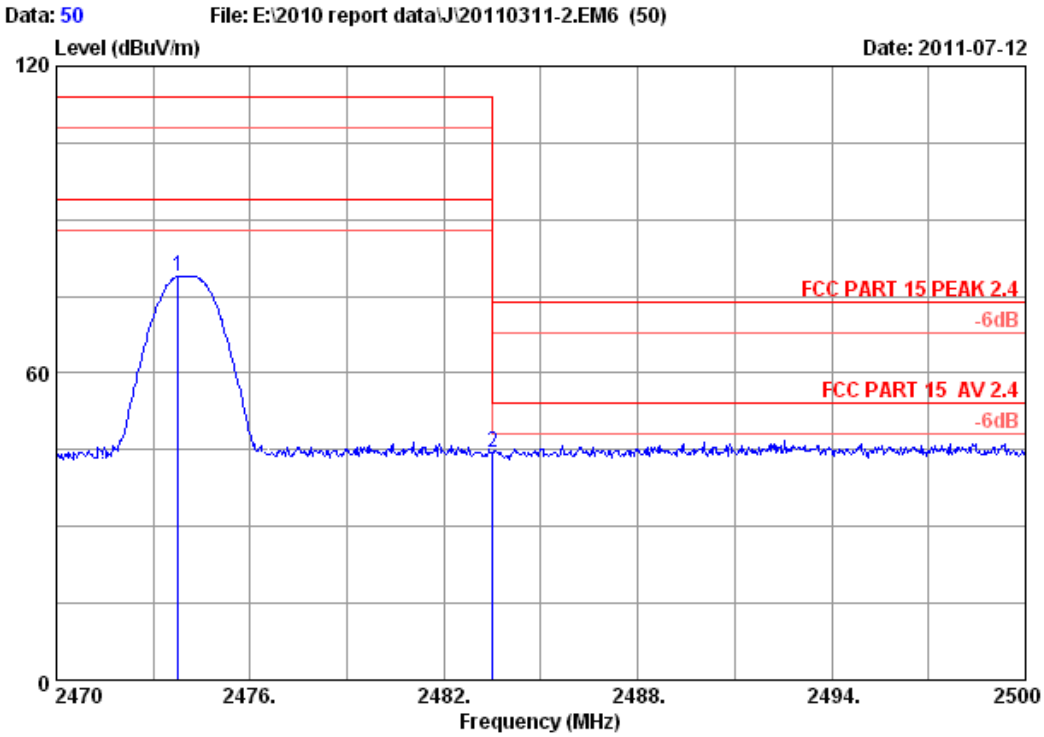
Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.



Site no. : 3# 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 : TaTa Chen
EUT : Nano Receiver
Power : DC 5V From PC
Test mode : TX 2474
M/N : MRN

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2474.200	29.49	7.58	36.60	86.48	86.95	114.00	27.05	Peak
2	2483.500	29.49	7.58	36.60	44.22	44.69	74.00	29.31	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.



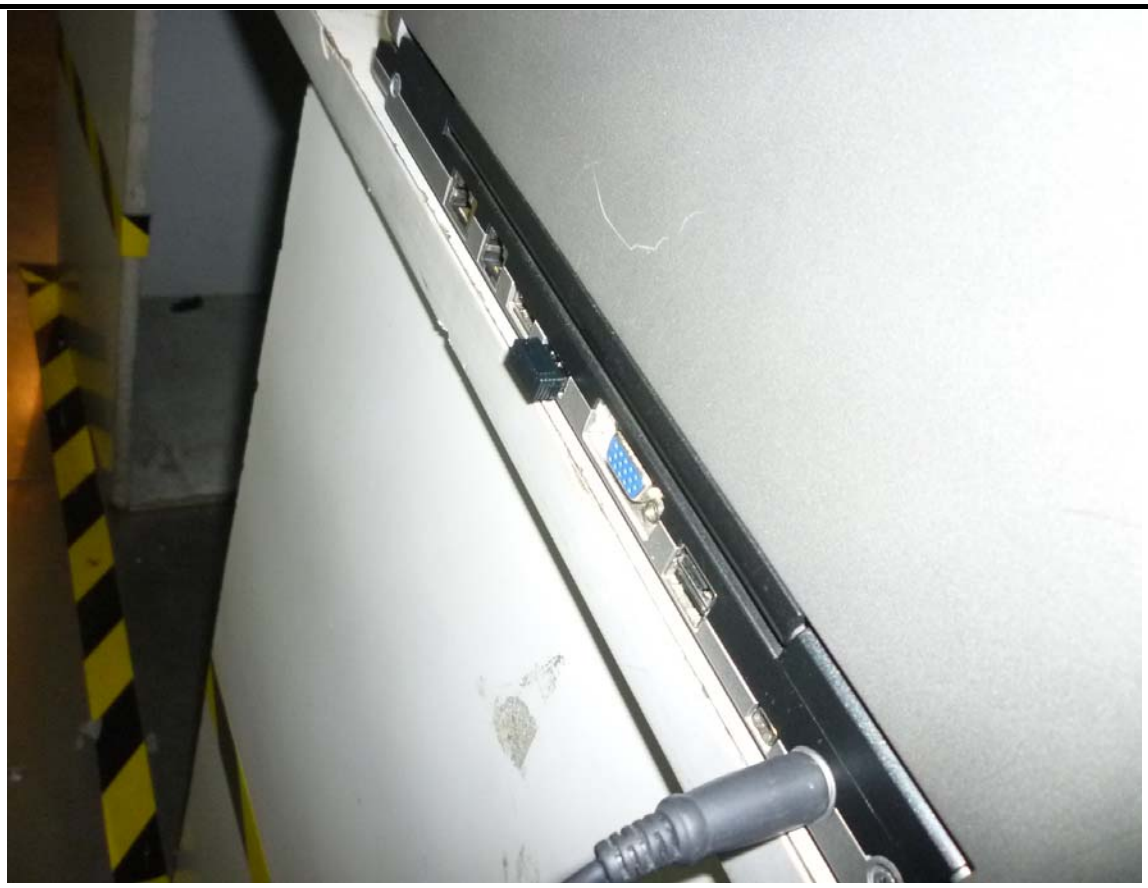
Site no. : 3# Chamber Data no. : 50
Dis. / Ant. : 3m 3115(0911) Ant. pol. : VERTICAL
Limit : FCC PART 15 PEAK 2.4
Env. / Ins. : 23*C/54% Engineer : TaTa Chen
EUT : Nano Receiver
Power : DC 5V From PC
Test mode : TX 2474
M/N : MRN

	Freq. (MHz)	Ant. Factor (dB/m)	Cable loss (dB)	Amp. Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2473.750	29.49	7.58	36.60	78.54	79.01	114.00	34.99	Peak
2	2483.500	29.49	7.58	36.60	43.87	44.34	74.00	29.66	Peak

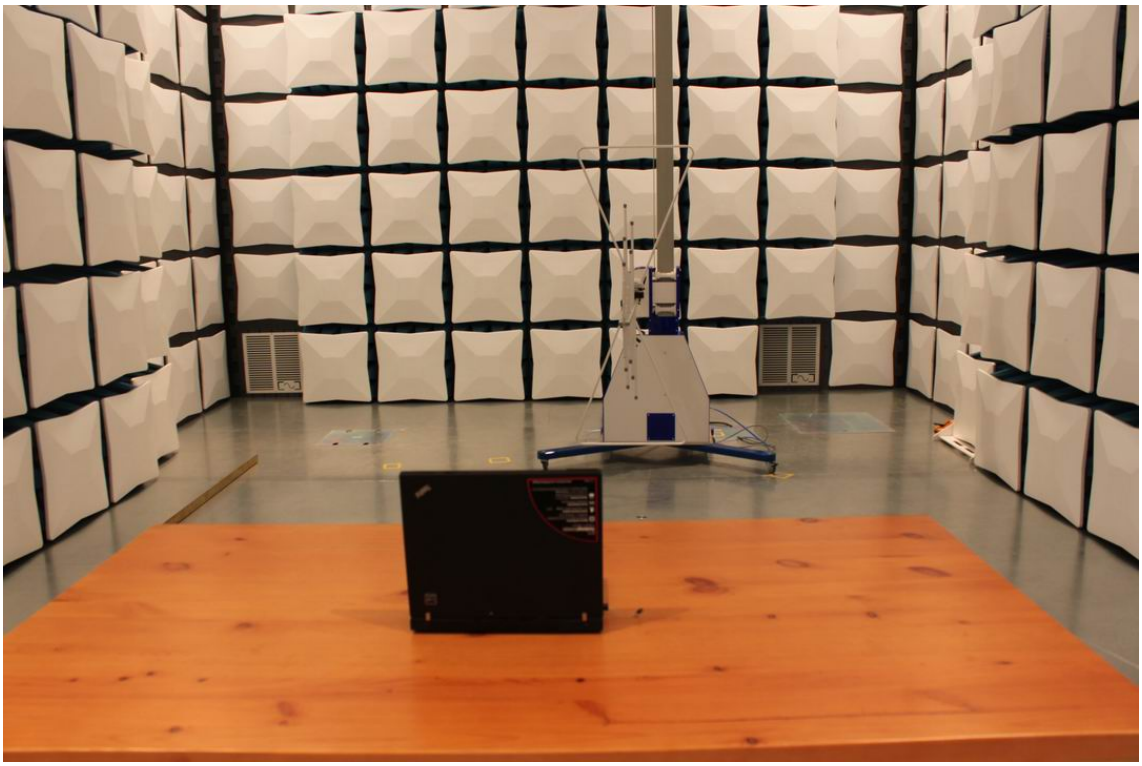
Remarks:
1. Emission Level= Antenna Factor + Cable Loss -Amp Factor + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

7. PHOTOGRAPH OF TEST

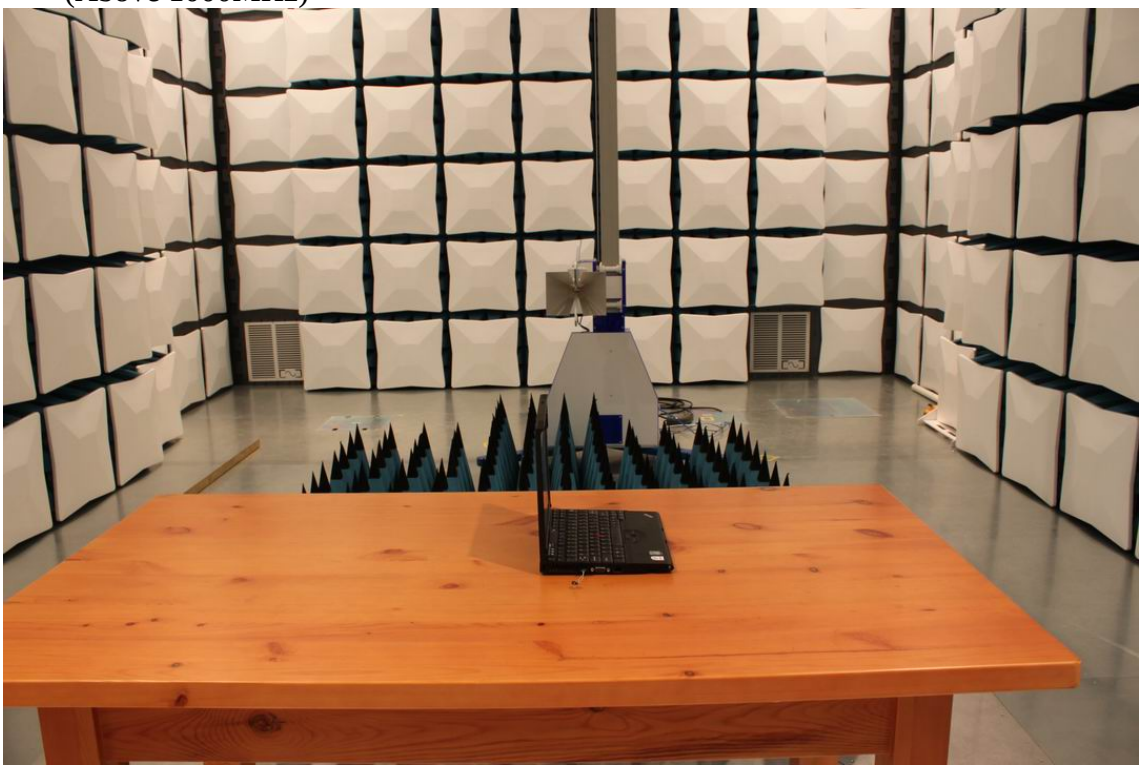
7.1.Photos of Conducted Emission Test (0.15-30MHz)



7.2.Photos of Radiated Emission Test (30-1000MHz)



(Above 1000MHz)



8. PHOTOGRAPH OF EUT

Figure 1
General Appearance of the EUT

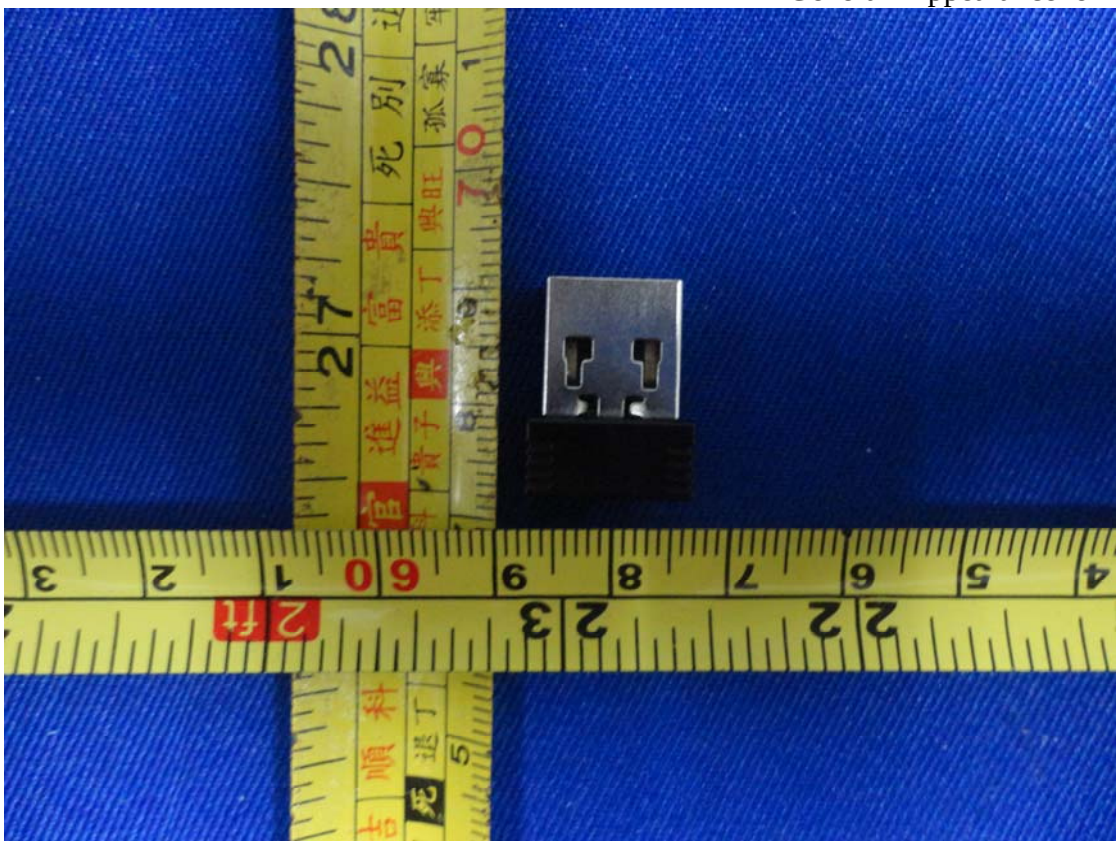


Figure 2
General Appearance of the EUT

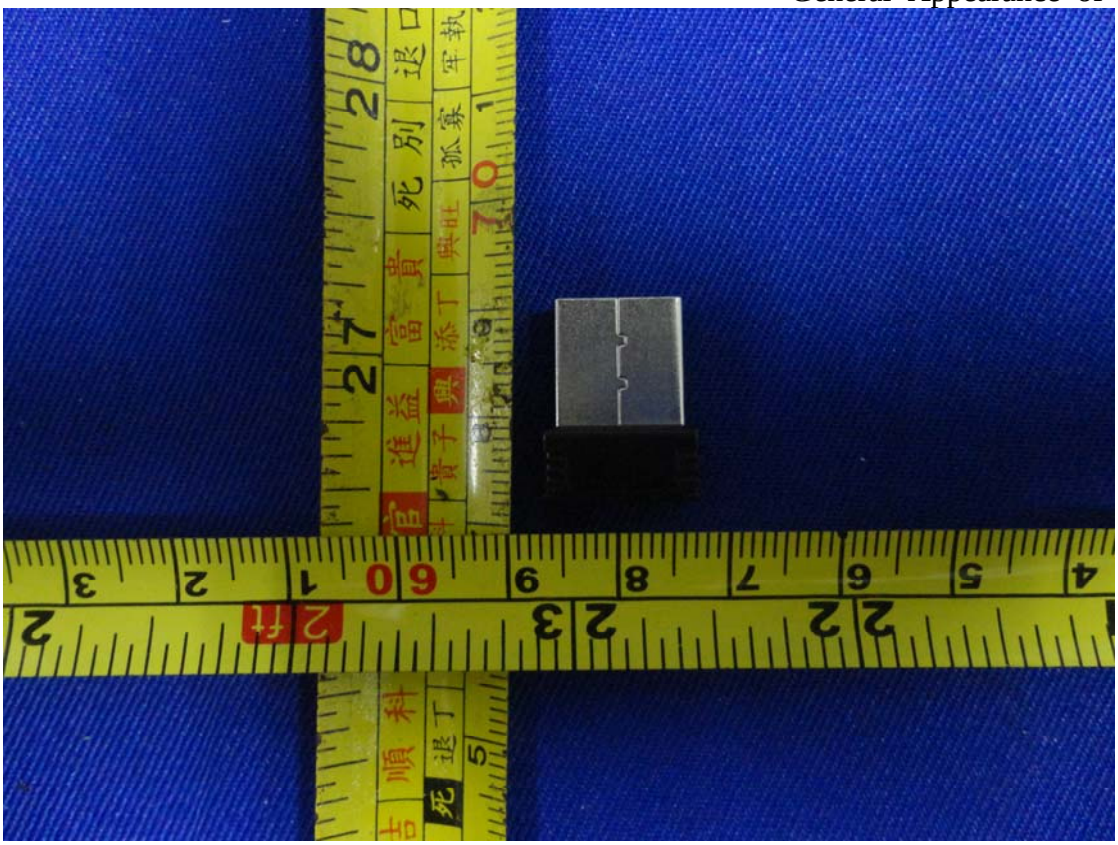


Figure 3
General Appearance of the EUT

Figure 4
General Appearance of the EUT

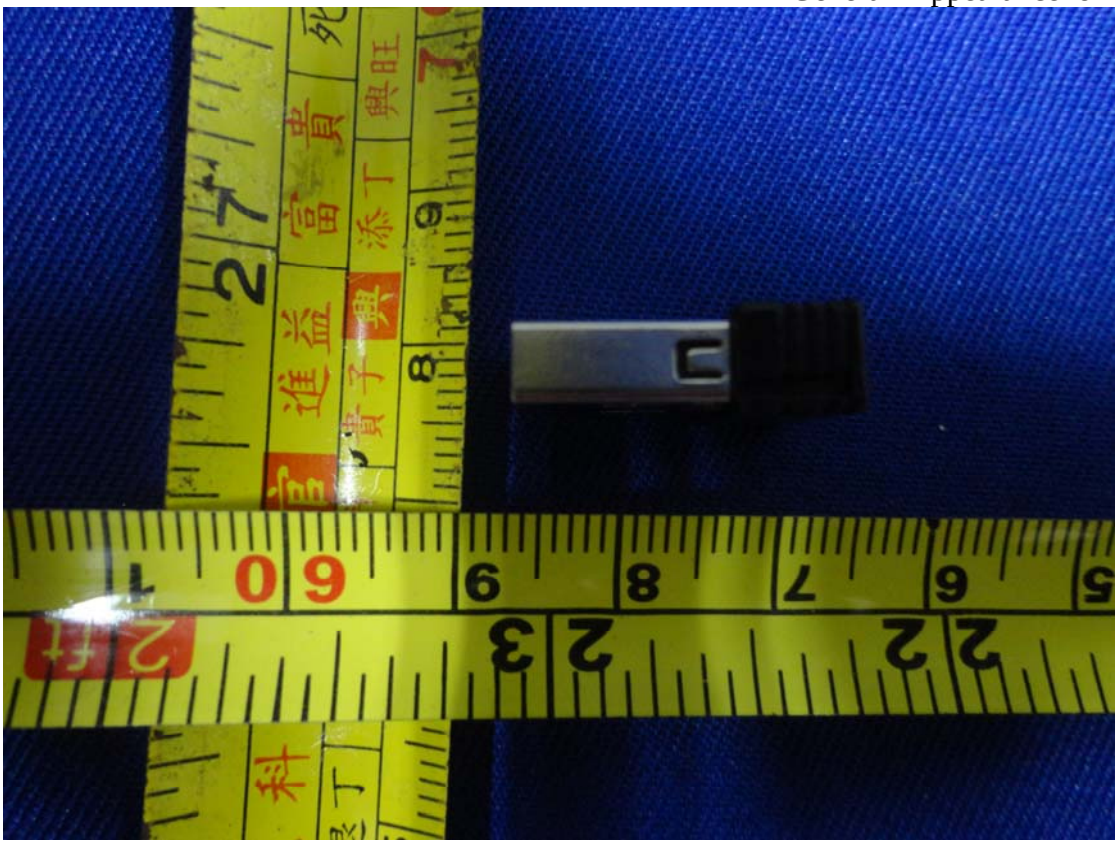


Figure 5
Component Side of the PCB

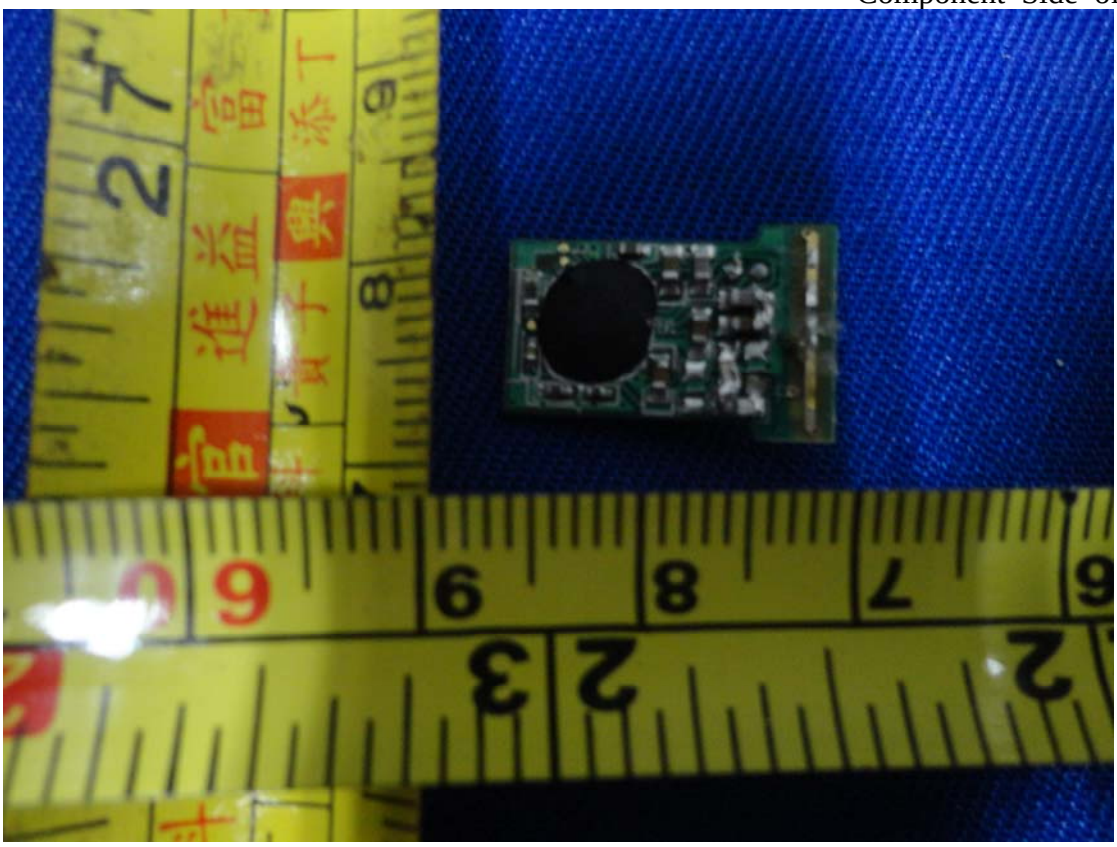


Figure 6
Component Side of the PCB