FCC TEST REPORT

for

GPS Navigator(Bluetooth mode)

Model No.	:	KW-GM7001
FCC ID	:	WNHKW-GM7001
Operating Frequency	:	2400-2483.5 MHz
Applicant	:	Kinwei Technologies (Shenzhen) Co., Ltd 22th Building, Chentian Industrial Zone, Bao'an District, Shenzhen, 518102, China
Regulation	:	***FCC Part 15.247 Subpart C***
Prepared by	:	AOV Testing Technology Co., Ltd AOV Building, Xueyuan Road East, University City, Shenzhen (Tanglang Village, Xili Town, Nanshan District), China
Test Date	:	February 19-24, 2009
Date of Report	:	February 25, 2009

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Description Page

Test Report Declaration

TEST REPORT DECLARATION

Applicant	:	Kinwei Technologies (Shenzhen) Co., Ltd
Manufacturer	:	Kinwei Technologies (Shenzhen) Co., Ltd
EUT Description	:	GPS Navigator

Test Procedure Used:
FCC Part 15.247 Subpart C

The E. U. T. listed below has been completed RFI testing by Shenzhen AOV Testing Technology Co., Ltd at the test site of Bontek Compliance Testing Laboratory Ltd. And the Interference emissions can pass **FCC CLASS B** limitations.

The test configurations and the facility comply with the radiated and AC line conducted test site criteria in **ANSI C63.4-2003**.

Date of Test: February 19-24, 2009

Prepared by:

Project Engineer

Reviewer :

Project Manager

1. GENERAL INFORMATION

1.1 General Information

Applicant : Kinwei Technologies (Shenzhen) Co., Ltd
Lantian Science and Technology Park, Xinyu Road, Xi street, Baoan District, Shenzhen, China.

Manufacturer : Kinwei Technologies (Shenzhen) Co., Ltd
Lantian Science and Technology Park, Xinyu Road, Xi street, Baoan District, Shenzhen, China.

1.2 Test Facility

Test Firm	:	Bontek Compliance Testing Laboratory Ltd. Certificated by FCC, Registration No.: 338263
Address	:	FL.1, Building H-3, Hua Qiao Cheng East Industrial Area Qiaocheng East Road, Nanshan, Shenzhen, P.R.China
Tel	:	86-755-86337020
Fax	:	86-755-86337028

1.3 Test Instrument Used

No.	Equipment	Manufacturer	Model No.	S/N	Calculator date
1.	EMI Test Receiver	R&S	ESPI	100097	2009-2-22
2.	Single Power Conductor Module	FCC	FCC-LISN-5-50-1-01-CISPR25	07101	2009-2-22
3.	EMI Test Receiver	R&S	ESCI	100687	2009-2-22
4.	EMI Test Receiver	R&S	FSU	BCT-019	2009-2-22
5.	Amplifier	HP	8447D	1937A02492	2009-2-22
6.	TRILOG Broadband Test-Antenna	SCHWARZBECK	VULB9163	9163-324	2009-2-22
7.	Horn Antenna	SCHWARZBECK	BBHA9120A	B08000991-0001	2009-2-22
8.	High Field Biconical Antenna	ELECTRO-METRICS	EM-6913	166	2009-2-22
9.	Log Periodic Antenna	ELECTRO-METRICS	EM-6950	811	2009-2-22
10.	Remote Active Vertical Antenna	ELECTRO-METRICS	EM-6892	304	2009-2-22
11.	Teo Line Single Phase Module	SCHWARZBECK	NSLK8128	D-69250	2009-2-22
12.	Positioning Controller	C&C	CC-C-1F	MF7802113	2009-2-22
13.	Triple-Loop Antenna	EVERFINE	LLA-2	607004	2009-2-22
14.	10dB attenuator	SCHWARZBECK	MTAIMP-136	R65.90.0001#06	2009-2-22

1.4 Description of Test System

PC	DELL	Vostro 200 ST
Monitor	DELL	OG335H
Keyboard	DELL	SK-8115
Mouse	DELL	MOC5UO
Test board for bluetooth	N.A.	N.A.
Software	CSR Blue Suite	N.A.

2. POWERLINE CONDUCTED EMISSION TEST

2.1.Test Standard

15.207

2.2.Limits

Frequency MHz	Limits (dBμV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes:

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

2.3.Test Procedure

The EUT is put on the table that is 0.8m high above the ground and at least away from other Metallic surface 0.4m. The EUT is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohms coupling impedance for the testing equipment; and the peripheral equipment powers form other L.I.S.N. Please refer to the block diagram of the test setup and photographs. Both sides of AC line (Line & Neutral) are checked for maximum conducted interference. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables must be changed according to FCC part 15 B.

2.4.Test Result

PASS

Detailed information, Please refer to the following page.

Blueteeh mode, adapter for charging

Line:

Frequency (MHz)	AV Read Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.1860	43.20	54	10.80
5.7570	37.50	50	12.50
13.4500	32.60	50	17.40

Frequency (MHz)	QP Read Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)
0.1815	60.50	64	3.50
0.1860	59.70	64	4.30
13.5000	44.80	60	15.20

Neutral:

Frequency (MHz)	AV Read Level (dBuV)	AV Limit (dBuV)	AV Margin (dBuV)
0.1950	43.40	54	10.60
5.8425	37.30	50	12.70
13.4800	33.40	50	16.60

Frequency (MHz)	QP Read Level (dBuV)	QP Limit (dBuV)	QP Margin (dBuV)
0.1860	60.30	64	3.70
0.2625	53.30	61	7.70
13.4500	45.00	60	15.00

3. MAXIMUM PEAK OUTPUT POWER

3.1.Rules Part No.

15.247(b)

3.2.Limits

The maximum peak output power measurement is 1w (30dBm).

3.3.Test Procedure

The antenna of the EUT was connected to the RF input cord of power meter with a coaxial cable, power was read directly from the meter and cable loss was added to the reading to obtain power at the EUT antenna terminal. The EUT output power was set to maximum to produce the worse case test result.

3.4.Test Result

PASS

Channel	Frequency (MHz)	Peak output power (dBm)	Limit (dBm)
Low	2402	5.37	30
Middle	2441	5.44	30
High	2480	5.42	30

4. HOPPING CHANNEL SEPARATION AND BANDWIDTH

4.1.Test Standard

15.247(a)

4.2.Limits

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater,

4.3.Test Procedure

Record the respond of frequency waveform when the EUT was working by a spectrum analyzer or EMI Receiver.

4.4.Test Result

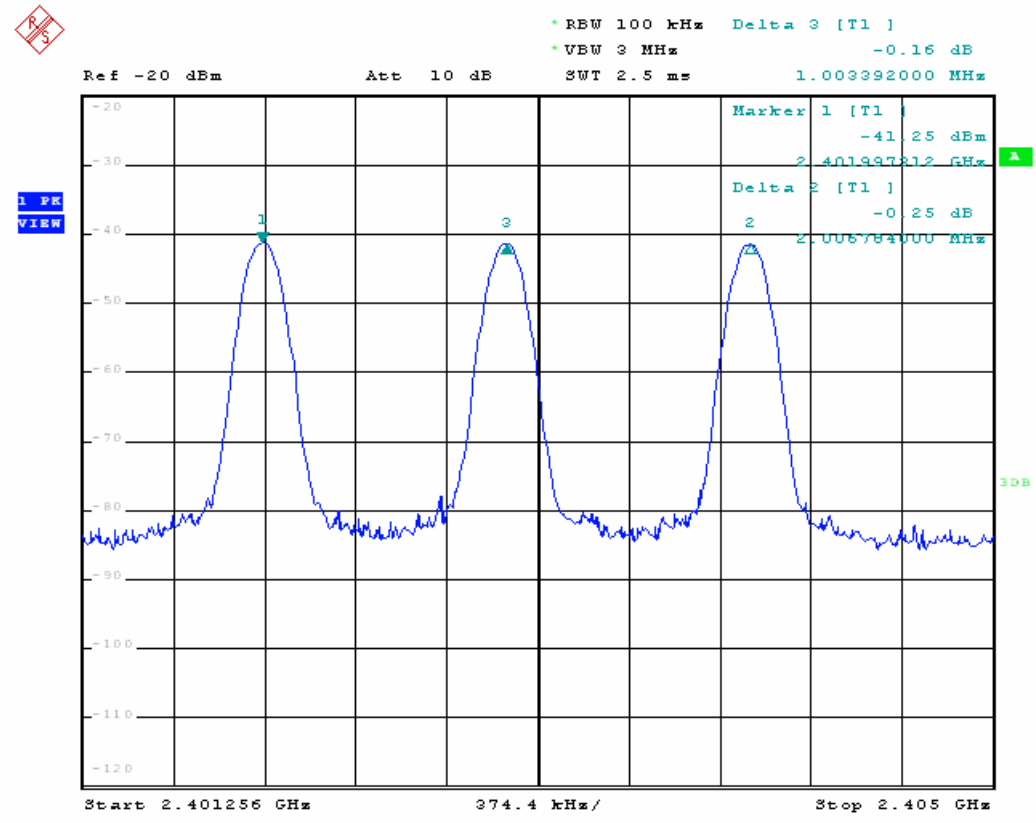
PASS

Channel	Frequency (MHz)	Channel Separation (MHz)
Low	2402	1.00
Middle	2441	1.00
High	2480	1.00

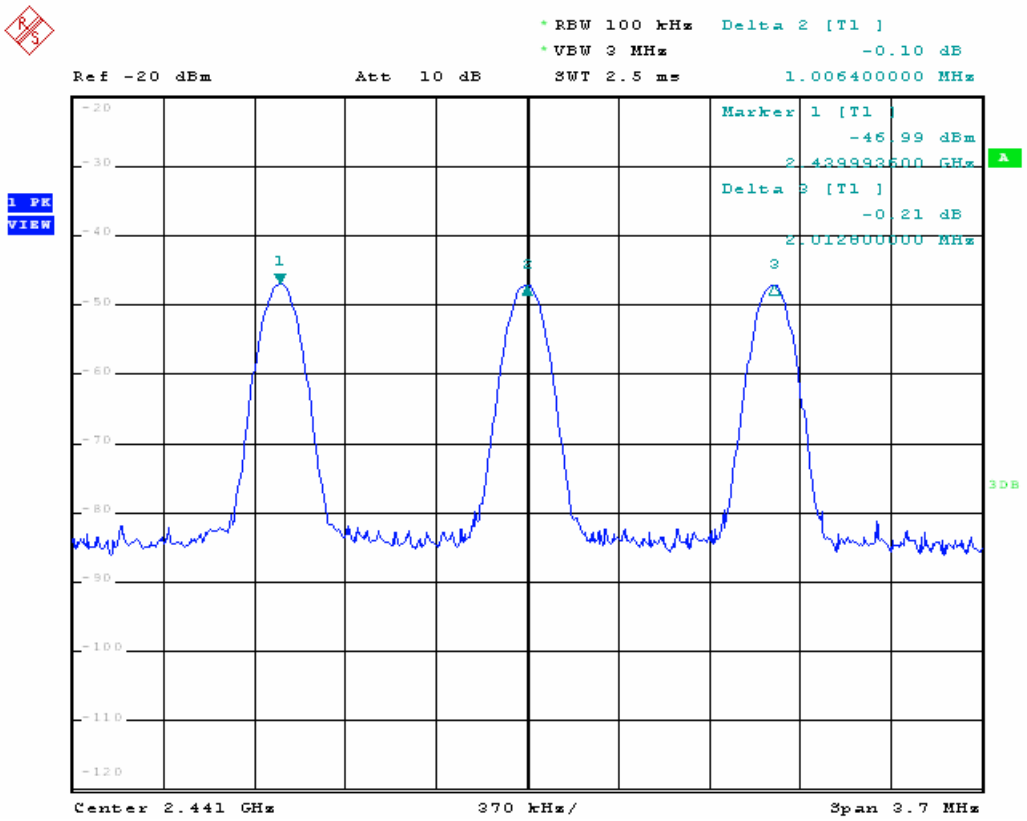
Channel Separation > 2/3 of 20dB Bangwidth

Detailed information, Please refer to the following page.

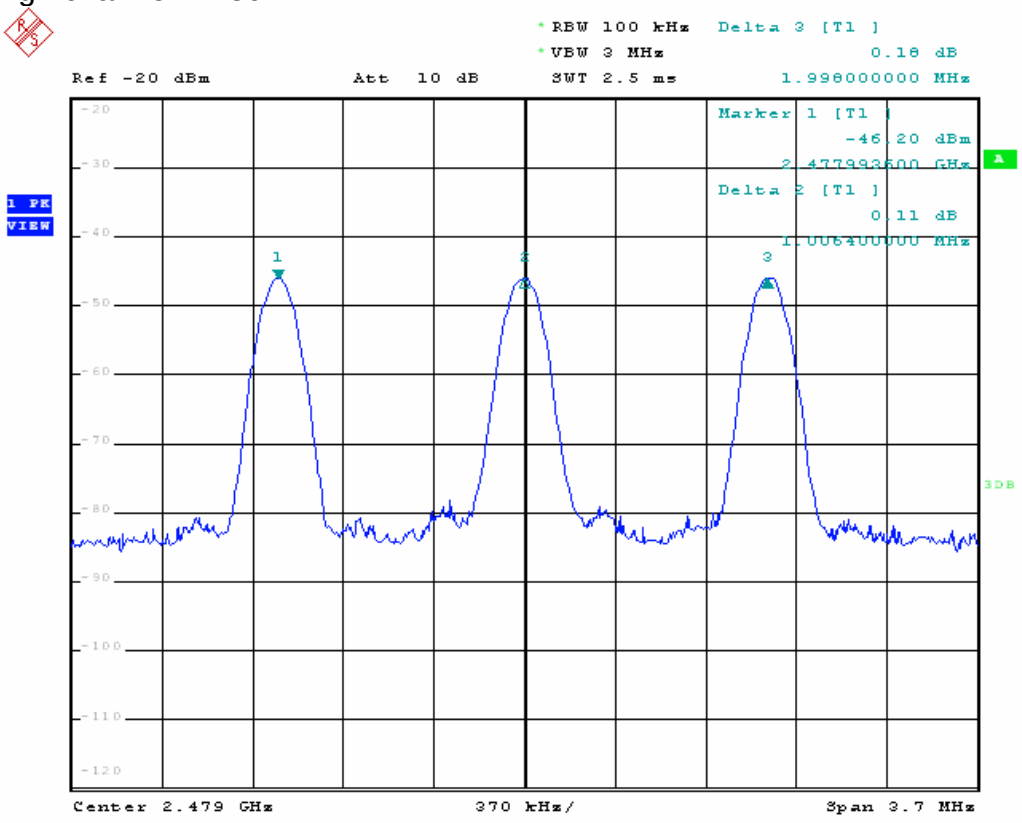
Low channel: 2402MHz



Middle Channel: 2441MHz



High channel: 2480MHz



5. NUMBER OF HOPPING FREQUENCY

5.1.Test Standard

15.247(b)

5.2.Limits

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels.

5.3.Test Procedure

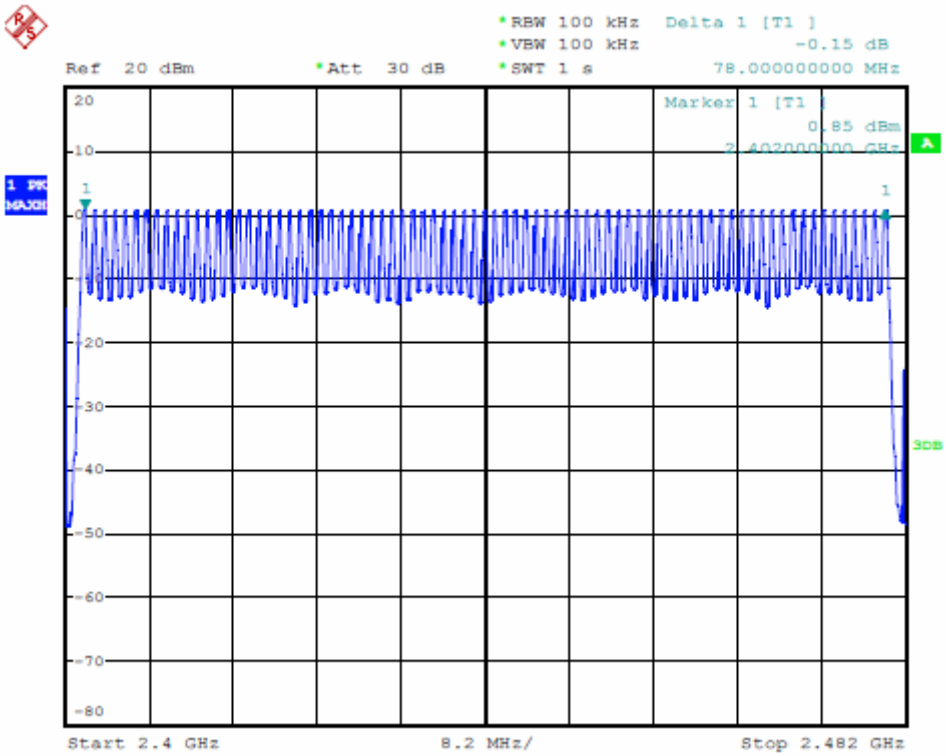
Record the respond of frequency waveform when the EUT was working by a spectrum analyzer or EMI Receiver.

5.4.Test Result

PASS

Hopping Channel is 79.

Detailed information, Please refer to the following page.



6. BAND EDGE

6.1.Rules Part No.

15.247(c)

6.2.Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

6.3.Test Procedure

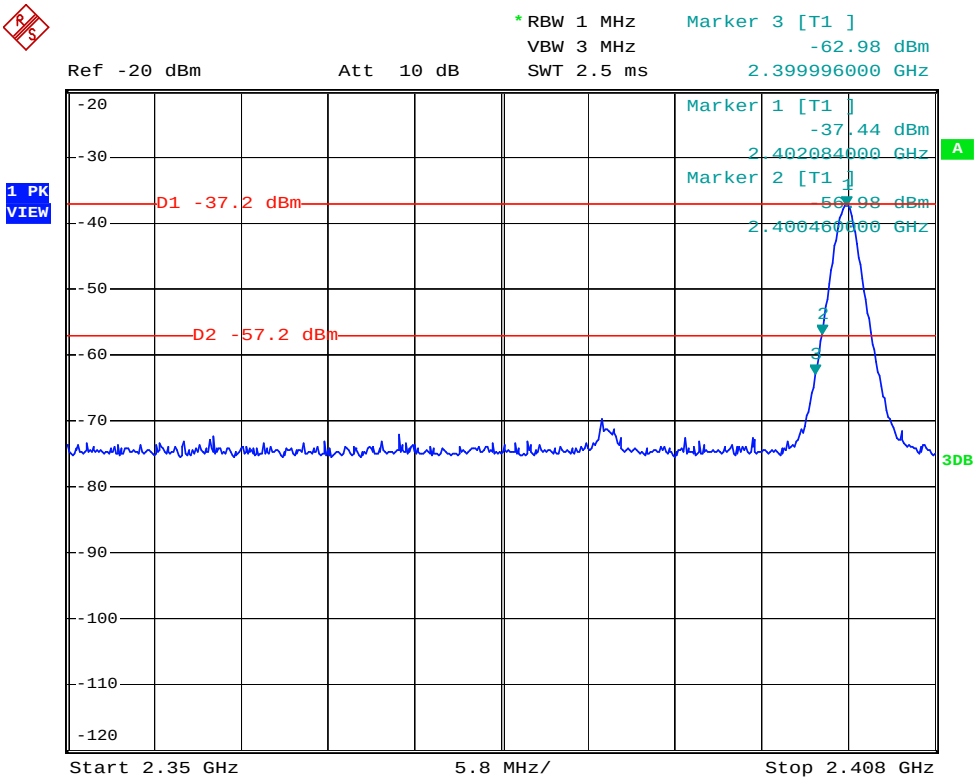
The transmitter output was connected to EMI receiver with a low lose cable, the band edge was measured and recorded.

6.4.Test Result

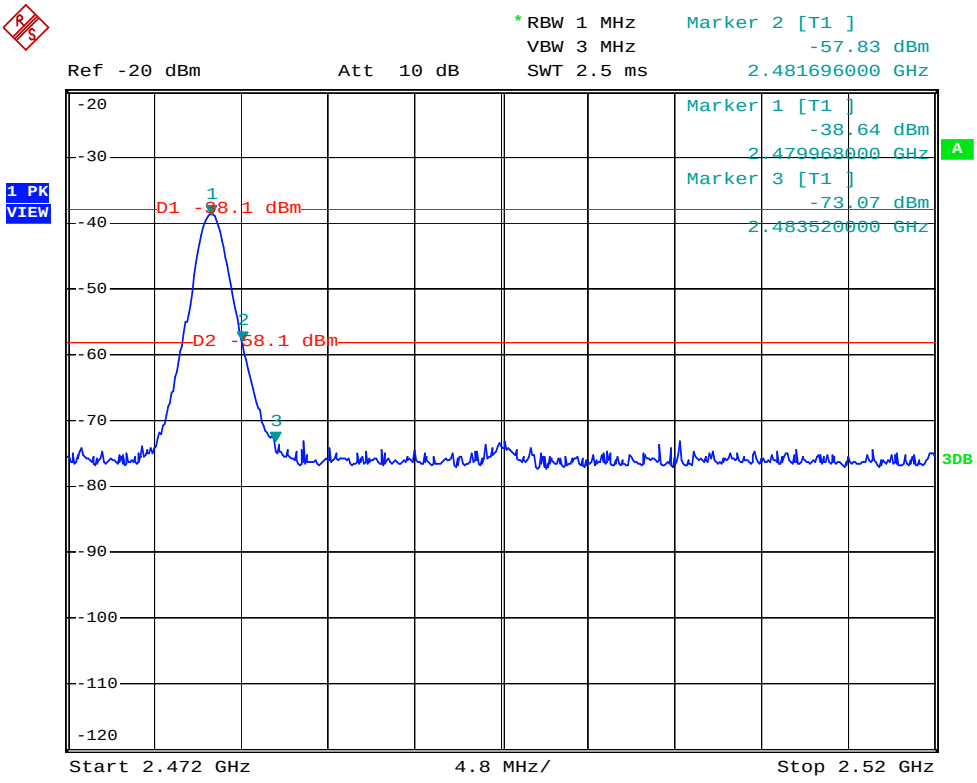
PASS

Detailed information, Please refer to the following page.

Low channel: 2402MHz



High channel: 2480MHz



7. DWELL TIME

7.1.Rules Part No.

15.247(a)

7.2.Limits

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

7.3.Test Procedure

The transmitter output was connected to EMI receiver with a low lose cable, the band edge was measured and recorded.

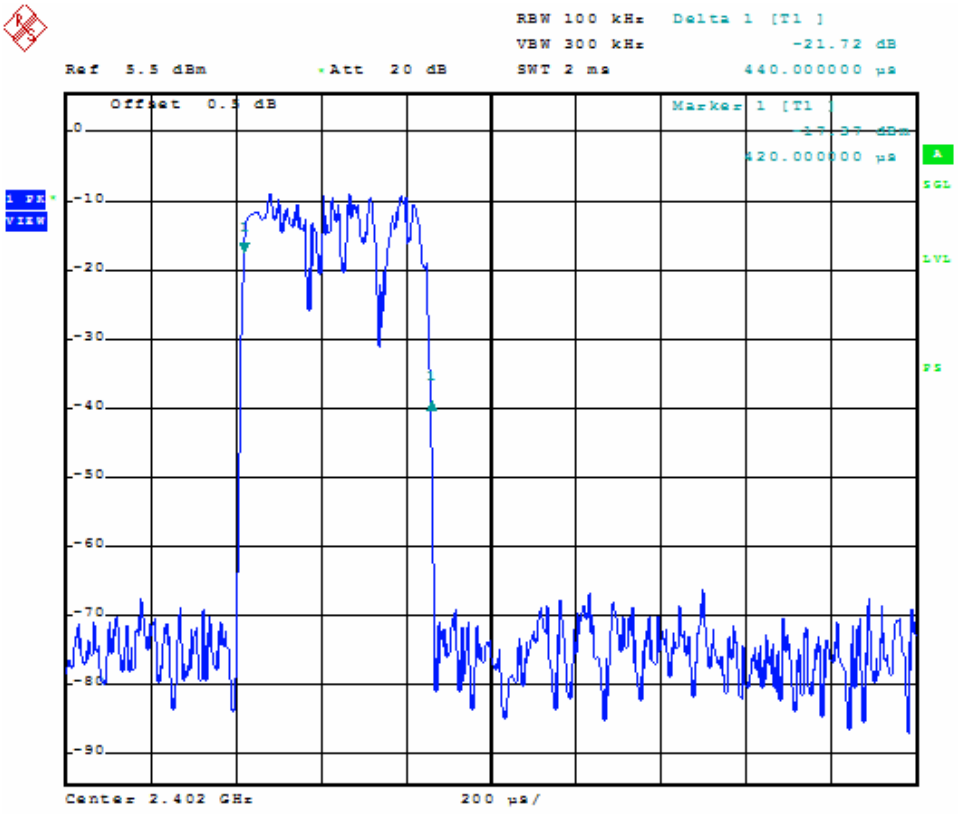
7.4.Test Result

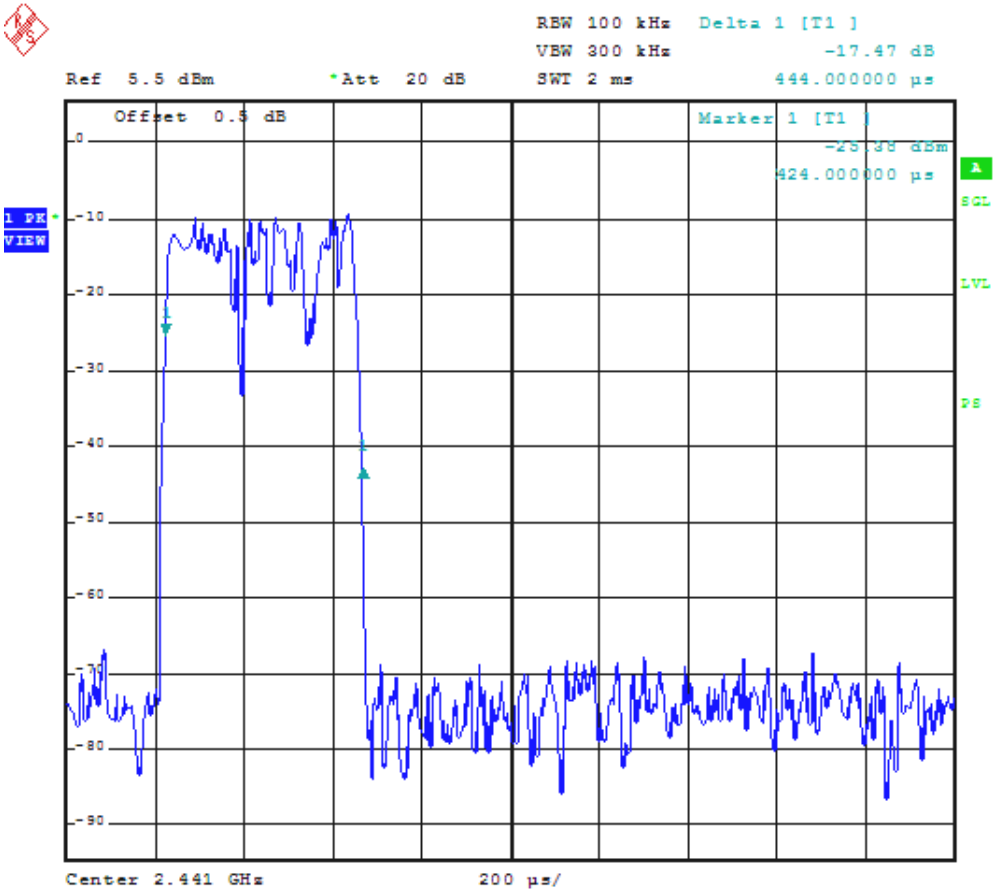
PASS

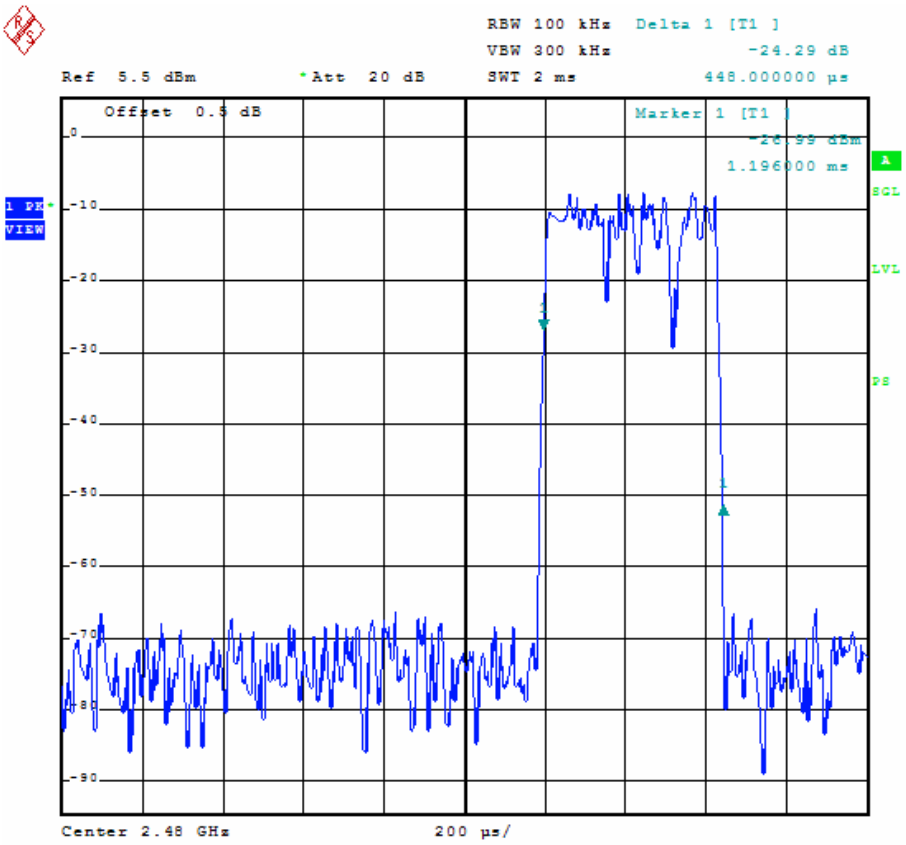
Channel	Frequency (MHz)	Pulse Width (msec)	Occupied Time (0.4 sec X 79)	Dwell Time (ms)	Limit (sec)
Low	2402	0.440	31.6	139.040	0.4
Middle	2441	0.444	31.6	140.304	0.4
High	2480	0.448	31.6	141.568	0.4

Detailed information, Please refer to the following page.

A period transmit time= 79 * 0.4=31.6s
Dwell time= Pulse time * burst（in 1sec）*31.6
Burst in 1 sec.=10 (Burst is 10 times be measured)


RBW 100 kHz
Delta 1 [T1]
VBW 300 kHz
-21.72 dB
Ref 5.5 dBm
Att 20 dB
SWT 2 ms
440.000000 µs
Offset 0.5 dB
Marker 1 [T1]
-17.97 dBm
420.000000 µs
1 PK VIEW
A
SGL
LVL
PS
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.402 GHz
200 µs/


RBW 100 kHz
Delta 1 [T1]
VBW 300 kHz
-17.47 dB
Ref 5.5 dBm
Att 20 dB
SWT 2 ms
444.000000 µs
Offset 0.5 dB
Marker 1 [T1]
-25.38 dBm
424.000000 µs
1 PK VIEW
A
SGL
LVL
PS
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.441 GHz
200 µs/


RBW 100 kHz
Delta 1 [T1]
VBW 300 kHz
-24.29 dB
Ref 5.5 dBm
Att 20 dB
SWT 2 ms
448.000000 µs
Offset 0.5 dB
Marker 1 [T1]
-26.99 dBm
1.196000 ms
1 PK
VIEW
A
SGL
LVL
PS
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Center 2.48 GHz
200 µs/

8. RADIATION INTERFERENCE

8.1.Rules Part No.

15.209

8.2.Limits

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency of (MHz)	Emission Field Strength (microvolts/meter)
30 - 88	100 (40)
88 - 216	150 (43.5)
216 - 960	200 (46.0)
Above 960	500 (54.0)

8.3.Test Procedure

ANSI STANDARD C63.4-2003 10.1.7 MEASUREMENT PROCEDURES:

The EUT is placed on a turned table that is 0.8 meter above the ground. The turned 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 that is mounted on the antenna tower. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (log periodical antenna and horn antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz.

The spectrum was scanned from 30 MHz to 10th harmonic of the fundamental.

8.4.Test Result

PASS

The frequency range from 30MHz to 25GHz is investigated.

Detailed information, Please refer to the following page.

Low Channel: 2402MHz

Horizontal:

Frequency (MHz)	PK (dBuV/m)	Read Level (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)
31.940	34.50	30.10	40.0	9.90
55.220	33.70	31.20	40.0	8.80
910.780	36.20	35.60	46.0	10.40
4804.300	38.60	37.10	54.0	(AV)16.90
7205.800	37.40	37.00	54.0	(AV)17.00

Vertical:

Frequency (MHz)	PK (dBuV/m)	Read Level (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)
32.040	38.10	33.60	40.0	6.40
55.220	33.10	30.70	40.0	9.30
70.620	35.60	33.30	40.0	6.70
869.800	36.90	36.50	46.0	9.50
4804.300	40.20	38.20	54.0	(AV)15.80
7206.400	38.90	37.40	54.0	(AV)16.60

Middle Channel: 2441MHz

Horizontal:

Frequency (MHz)	PK (dBuV/m)	Read Level (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)
31.940	33.60	31.30	40.0	8.70
55.220	31.20	30.50	40.0	9.50
73.820	34.90	33.20	40.0	6.80
898.020	36.10	34.90	46.0	11.10
4882.220	37.60	36.40	54.0	(AV)17.60
7323.320	38.30	37.10	54.0	(AV)16.90

Vertical:

Frequency (MHz)	PK (dBuV/m)	Read Level (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)
30.040	39.00	34.20	40.0	5.80
55.220	32.70	30.10	40.0	9.90
73.820	35.70	34.60	40.0	5.40
898.020	36.80	35.70	46.0	10.30
4882.220	39.80	37.00	54.0	(AV)17.00
7324.000	40.30	37.60	54.0	(AV)16.40

High Channel: 2480MHz

Horizontal:

Frequency (MHz)	PK (dBuV/m)	Read Level (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)
31.940	35.50	30.50	40.0	9.50
55.220	31.20	29.60	40.0	10.40
73.820	34.20	33.00	40.0	7.00
902.180	39.70	36.60	46.0	9.40
4960.020	37.80	37.10	54.0	(AV)16.90
7440.800	41.60	38.10	54.0	(AV)15.90

Vertical:

Frequency (MHz)	PK (dBuV/m)	Read Level (dBuV/m)	Limit (dBuV/m)	Margin (dBuV/m)
31.940	38.60	35.30	40.0	4.70
55.220	33.20	30.50	40.0	9.50
74.620	35.40	34.50	40.0	5.50
898.020	36.90	35.90	46.0	10.10
4960.020	43.20	39.10	54.00	(AV)14.90
7440.800	39.30	37.20	54.00	(AV)16.80

9. RESTRICTED BANDS OF OPERATION

Section 15.205:
Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 – 0.110	16.42 – 16.423	399.9 – 410	4.5 – 5.15
[1]0.495 – 0.505	16.69475 – 16.69525	608 – 614	5.35 – 5.46
2.1735 – 2.1905	16.80425 – 16.80475	960 – 1240	7.25 – 7.75
4.125 – 4.128	25.5 – 25.67	1300 – 1427	8.025 – 8.5
2. 17725 – 4.17775	37.5 – 38.25	1435 – 1626.5	9.0 – 9.2
2. 20725 – 4.20775	73 – 74.6	1645.5 – 1646.5	9.3 – 9.5
6.215 – 6.218	74.8 – 75.2	1660 – 1710	10.6 – 12.7
6.26775 – 6.26825	108 – 121.94	1718.8 – 1722.2	13.25 – 13.4
6.31175 – 6.31225	123 – 138	2200 – 2300	14.47 – 14.5
8.291 – 8.294	149.9 – 150.05	2310 – 2390	15.35 – 16.2
8.362 – 8.366	156.52475 –	2483.5 – 2500	17.7 – 21.4
8.37625 – 8.38675	156.52525	2655 – 2900	22.01 – 23.12
8.41425 – 8.41475	156.7 – 156.9	3260 – 3267	23.6 – 24.0
12.29 – 12.293	162.0125 – 167.17	3332 – 3339	31.2 – 31.8
12.51975 – 12.52025	167.72 – 173.2	3345.8 – 3358	36.43 – 36.5
12.57675 – 12.57725	240 – 285	3600 – 4400	([2])
13.36 – 13.41	322 – 335.4		

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.
[2] Above 38.6

10.PHOTOGRAPH OF TEST

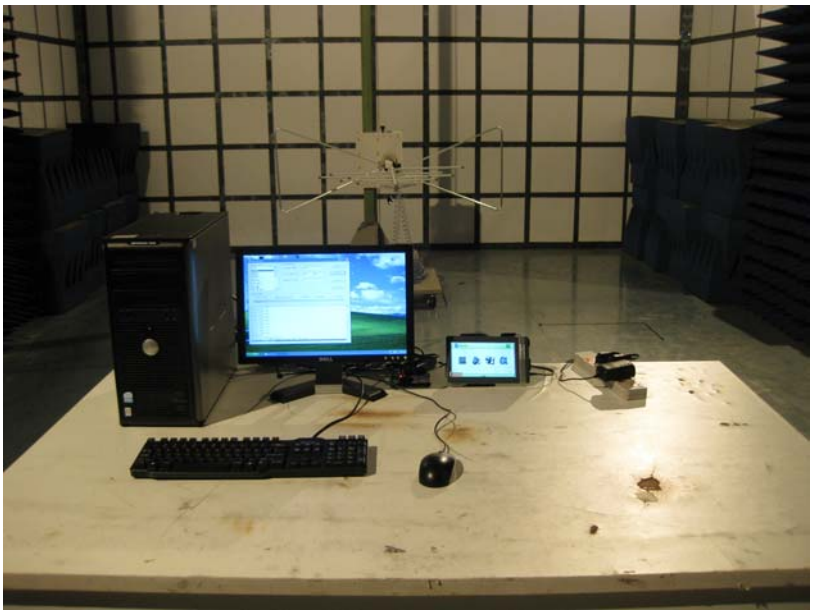
Conducted Emission:

Front

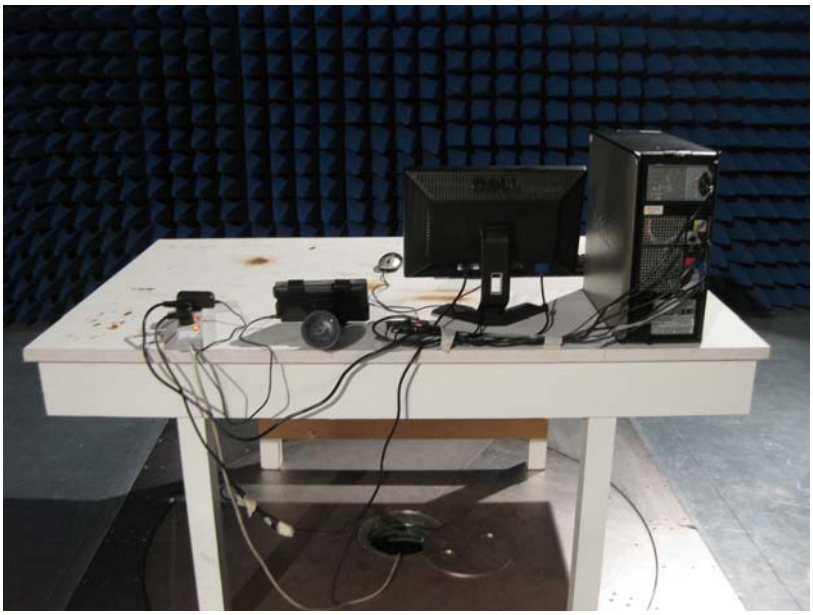
Rear

Radiated Emission

Front



Rear



Front

Rear