

PEP Testing Laboratory

12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,

Taipei Hsien, Taiwan, R. O. C.

TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SRKWPBT100S

REPORT NO. : E960134

RFI / EMI TEST REPORT

APPLICANT : **WONDE PROUD TECHNOLOGY CO., LTD.**

E U T Type : **Bluetooth GPS Receiver**

MODEL NO. : **BT100S, BT100X, BT100Y**

FCC ID : **SRKWPBT100S**

REGULATION : **CFR 47 , Part 15 Subpart C , Class B**

TEST SITE : **PEP Testing Laboratory**

TEST ENGINEER : **JASON KUNG**

TEST DATE : **APR. 23, 2007**

ISSUED DATE : **JUNE 01, 2007**

REPORT NO. : **E960134**

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VERIFICATION

WE HEREBY VERIFY THAT:

The EUT listed below has completed RFI testing by PEP Testing Laboratory and it does comply with the limitation of FCC Part 15, Section 15.247 limitations .

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

Any data in this RFI report is “ **reference** “ only .

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PRODUCT : **Bluetooth GPS Receiver**
FCC ID : **SRKWPBT100S**
MODEL : **BT100S, BT100X, BT100Y**

M. Y. Tsui

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I . General Information

The equipment under test (EUT) is Bluetooth GPS Receiver, FCC ID SRKWPBT100S, model BT100S BT100S, BT100X and BT100Y. Those models have identical electrical design and construction except enclosure painting for marketing purpose. At the technical point of view, we took model: BT100S as representative for test.. The EUT is designed for the applications such as car navigation purpose. The working frequencies for EUT transmitter and receiver functions are 2.4GHz and 1.575GHz respectively. 3.7V lithium battery or via USB interface is required to operate EUT. For more detail specification about EUT, please refer to the user's manual.

Test method: According to the major function designed, the test was respectively carried out on the following two operation modes:

(1) GPS mode: connect EUT to PC USB port and set EUT to continuous operation condition.

(2) Battery charging mode: battery charging form PC USB port.

After preliminary tests on all operation modes, we took the worst-case mode: GPS mode for final test. The worst-case test result was recorded in this report.

At the frequencies where the peak values of the emission exceeded the quasi-peak limit, the emissions were also measured with the quasi-peak detectors. The average detector also measured the emission either (A) quasi-peak values were under quasi-peak limit but exceeded average limit, or (B) peak values were under quasi-peak limit but exceeded average limit.

1.1 Description of EUT

EUT Type : **GPS Bluetooth Receiver**
FCC ID : **SRKWPBT100S**
EUT Model No. : **BT100S, BT100X, BT100Y**

Frequency Range : **2.402~2.480GHz**
Support Channel : **79 channels**
Modulation : **DSSS**
Antenna Type : **Comply with FCC Part 15, Section 15.203;**
Build-in PCB trace type, can't be removed by the user
Power Supply : **1) DC 5V ----- From PC**
2) DC 3.7V ----- From Battery

Power Cord : **N/A**

1.2 Supporting Devices for EUT testing

1. Personal Computer (PC3)

CPU : Intel P4 Socket 478 1.6GHz
FCC ID : Declaration of Conformity(DoC)
Manufacturer : LEMEL
Model Number : LMIH1A2
Power Supply : Switching
Power Cord : Non-Shielded, Detachable, 1.8m
Data Cable : N/A

2. Keyboard (KBS1 PS/2)

FCC ID : E5XKB5121WTH0110
Manufacturer : BTC
Model Number : 5121W
Power Supply : +5Vdc from PS2 of PC
Power Cord : N/A
Data Cable : **1** > Shielded , Non-detachable,1.6m
2 > Back Shell : Metal

3. LCD (LCD1 15")

FCC ID : Declaration of Conformity(DoC)
Manufacturer : MiTAC
Model Number : LC51
Power Supply : Switching
Power Cord : Non-Shielded, Detachable, 1.8m
Data Cable : **1** > Shielded , Detachable,1.2m
2 > Back Shell : Metal

4. Printer (PRN1)

FCC ID : B94C2642X
Manufacturer : Hewlett-Packard
Model Number : C2642E
Power Supply : Linear, 30Vdc O/P
Power Cable : Non-Shielded , Detachable,1.8m
Data Cable : **1** > Shielded , Detachable,1.2m
2 > Back Shell : Metal

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5. Modem (MOD1)

FCC ID : IFAXDM1414

Manufacturer : ACEEX

Model Number : 1414

Power Supply : Linear, 9Vac O/P

Power Cable : Non-Shielded , Detachable,1.7m

Data Cable : 1 > Shielded , Detachable,1m

2 > Back Shell : Metal

6. Mouse (MOUS/1 PS/2)

FCC ID : DZL211106

Manufacturer : LOGITECH

Model Number : M-S43

Power Supply : +5Vdc from PS2 of PC

Power Cord : N/A

Data Cable : 1 > Shielded , Non-detachable,1.8m

2 > Back Shell : Metal

7. DUNGLE

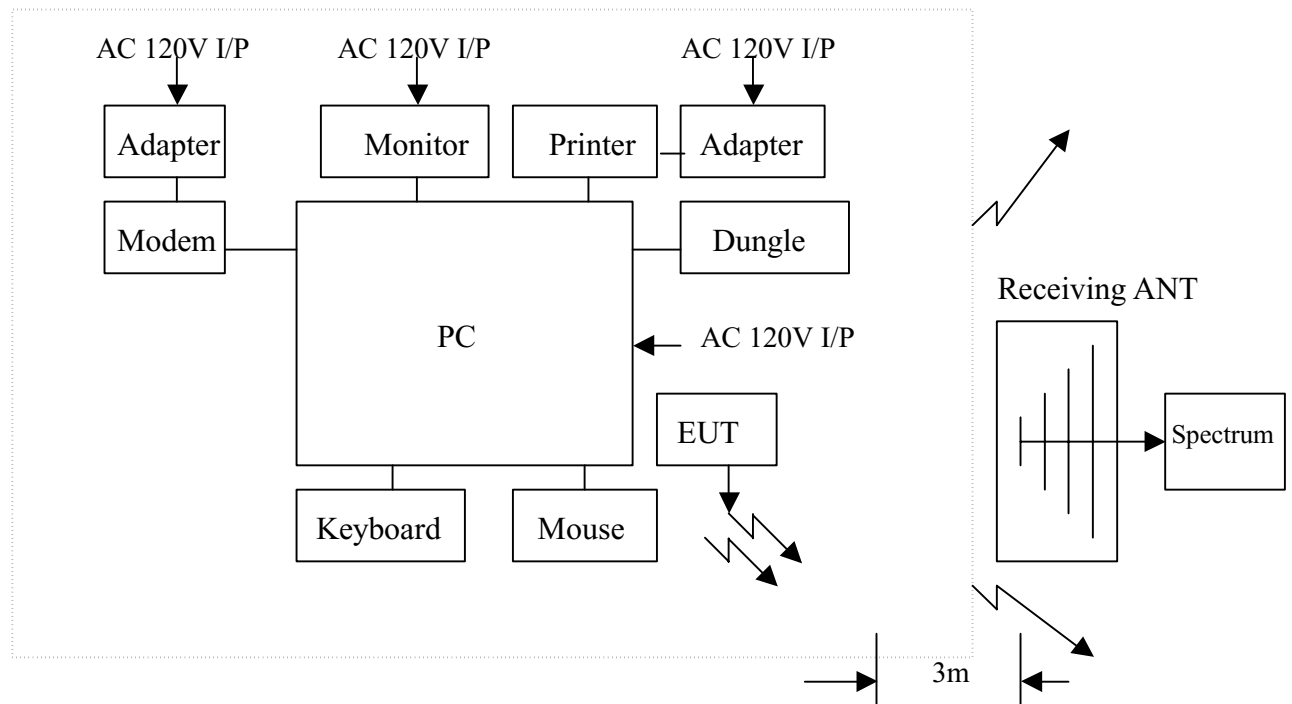
Manufacturer : Bluetooth-SIG. Inc, USA

Model Number : UBTCR3C1E-N

1.3 EUT Test Setup Configuration

- (A)Test Procedure: As required by ANSI C63.4 (2003)
- (B)Channel Verification: In order to force selection of the typical channels for testing, Dungle was connected PC through USB interface and using the driver “CSR BlueSuite”, under WinXP to force the channel selection by control PC, then set the EUT in high power and continuously transmitting mode for detecting the operating frequency, the test result for 79 channels is operating within 2.402~2.480GHz band.
- (C)Measurement Procedure: As required by FCC Part15, Section 15.31(m) measurements on intentional radiators or receiver should be performed at three frequencies for operating frequency over 10MHz, one near top, one near middle and one near bottom.
- (D)Test Channel: Due to the support channels are 79 channels, the selected three frequencies for testing would be 2.402GHz near top for CH LOW, 2.442GHz near middle for CH MID and 2.480GHz near bottom for CH HIGH.
- (E) At the frequencies where the peak values of the emission exceeded the quasi-peak limit, the emissions were also measured with the quasi-peak detectors. The average detector also measured the emission either (a) quasi-peak values were under quasi-peak limit but exceeded average limit, or (b) peak values were under quasi-peak limit but exceeded average limit.
- (F) In this RFI test report, we provided the worst case conducted emission test data and radiated emission test data. The entire testing data was recorded and provided in this report.

1.4 Channels Verification



a. EUT Type : Bluetooth GPS Receiver**b. EUT Model : BT100S****c. TX Channel No. : 79**

Channel 01: 2402 MHz

Channel 02: 2403 MHz

Channel 03: 2404 MHz

Channel 04: 2405 MHz

Channel 05: 2406 MHz

Channel 06: 2407 MHz

Channel 07: 2408 MHz

Channel 08: 2409 MHz

Channel 09: 2410 MHz

Channel 10: 2411 MHz

Channel 11: 2412 MHz

Channel 12: 2413 MHz

Channel 13: 2414 MHz

Channel 14: 2415 MHz

Channel 15: 2416 MHz

Channel 16: 2417 MHz

Channel 17: 2418 MHz

Channel 18: 2419 MHz

Channel 19: 2420 MHz

Channel 20: 2421 MHz

Channel 21: 2422 MHz

Channel 22: 2423 MHz

Channel 23: 2424 MHz

Channel 24: 2425 MHz

Channel 25: 2426 MHz

Channel 26: 2427 MHz

Channel 27: 2428 MHz

Channel 28: 2429 MHz

Channel 29: 2430 MHz

Channel 30: 2431 MHz

Channel 31: 2432 MHz

Channel 32: 2433 MHz

Channel 33: 2434 MHz

Channel 34: 2435 MHz

Channel 35: 2436 MHz

Channel 36: 2437 MHz

Channel 37: 2438 MHz

Channel 38: 2439 MHz

Channel 39: 2440 MHz

Channel 40: 2441 MHz

Channel 41: 2442 MHz

Channel 42: 2443 MHz

Channel 43: 2444 MHz

Channel 44: 2445 MHz

Channel 45: 2446 MHz

Channel 46: 2447 MHz

Channel 47: 2448 MHz

Channel 48: 2449 MHz

Channel 49: 2450 MHz

Channel 50: 2451 MHz

Channel 51: 2452 MHz

Channel 52: 2453 MHz

Channel 53: 2454 MHz

Channel 54: 2455 MHz

Channel 55: 2456 MHz

Channel 56: 2457 MHz

Channel 57: 2458 MHz

Channel 58: 2459 MHz

Channel 59: 2460 MHz

Channel 60: 2461 MHz

Channel 61: 2462 MHz

Channel 62: 2463 MHz

Channel 63: 2464 MHz

Channel 64: 2465 MHz

Channel 65: 2466 MHz

Channel 66: 2467 MHz

Channel 67: 2468 MHz

Channel 68: 2469 MHz

Channel 69: 2470 MHz

Channel 70: 2471 MHz

Channel 71: 2472 MHz

Channel 72: 2473 MHz

Channel 73: 2474 MHz

Channel 74: 2475 MHz

Channel 75: 2476 MHz

Channel 76: 2477 MHz

Channel 77: 2478 MHz

Channel 78: 2479 MHz

Channel 79: 2480 MHz

Frequency Range : 2.402 GHz to 2.480 GHz

Note :

1. All channels located in the frequency range as below :

2.4 GHz --- 2.4835 GHz



Yes



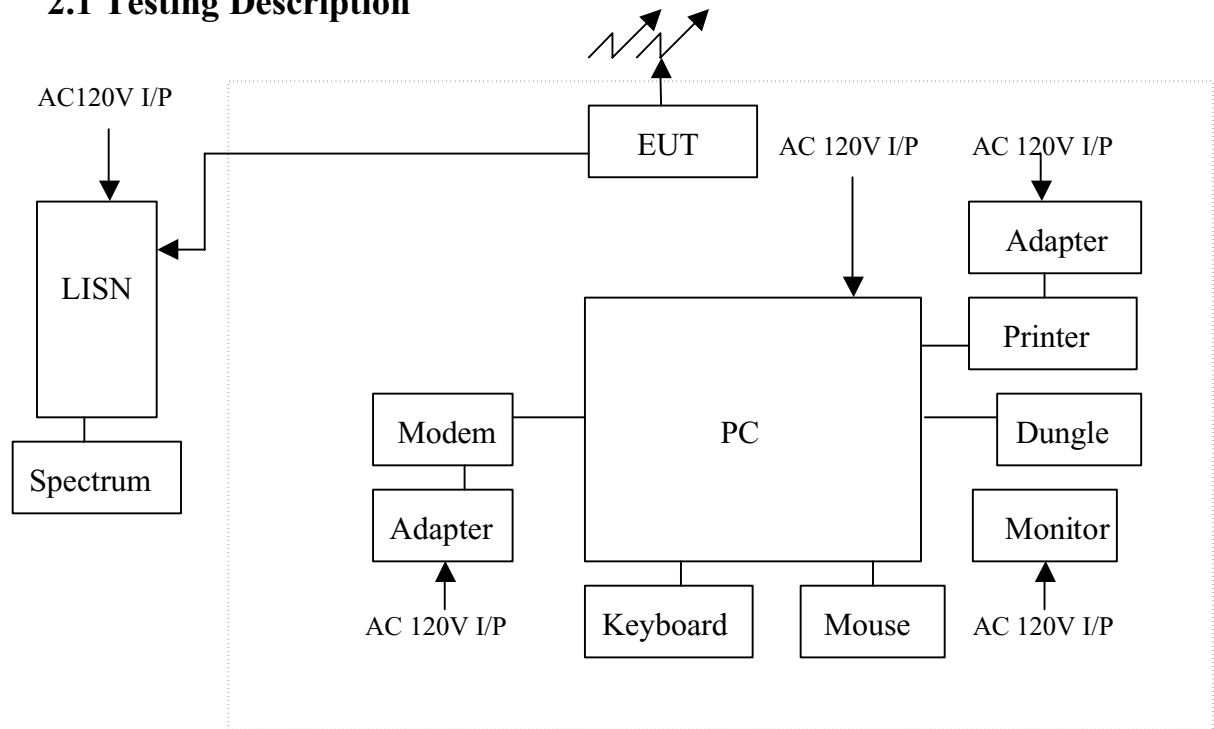
No

Typical Channel for testing :

Channel	Channel Number	Frequency (GHz)
LOW	1	2.402
MID	40	2.441
HIGH	79	2.480

II. 15.207 Power Line Conducted Emission Test

2.1 Testing Description



2.2 Software Using

The driver of “CSR BlueSuite” is used to select the support channel as mentioned on section 1.3 (b) listed above

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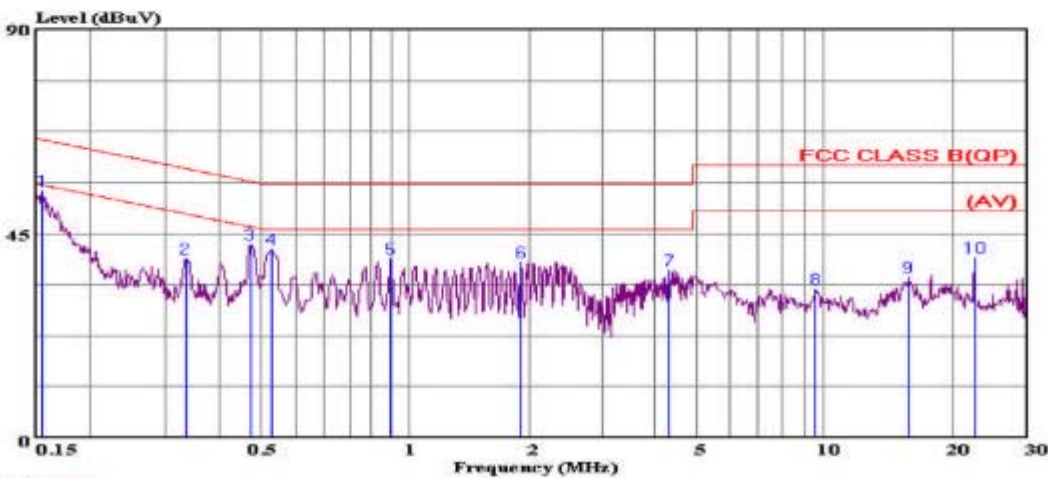
2.3 Test Result

EUT Model No. BT100S (LINE)

Detector : Peak Value



Data#: 134 File#: FCC CLASS B(QP).EMI Date: 2007-04-23 Time: 16:54:45



Trace: 133
Site : Shih-Chi : Conduction No.1(Dennis)
Condition: FCC CLASS B(QP) LISN.L(63A) 2006 LINE
eut : E960134
power : AC 120V 60Hz
memo : Peak Value
memo : Final Test
memo : BT-100S
memo : GPS mode

Page: 1

	Freq	Level	Over	Limit	Read	Probe	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.155	54.31	-11.43	65.74	54.11	0.10	0.10	
2	0.334	39.49	-19.86	59.35	39.29	0.10	0.10	
3	0.471	42.57	-13.92	56.49	42.33	0.10	0.14	
4	0.527	41.54	-14.46	56.00	41.27	0.10	0.17	
5	0.994	39.42	-16.58	56.00	39.12	0.10	0.20	
6	2.001	38.82	-17.18	56.00	38.42	0.20	0.20	
7	4.407	36.89	-19.11	56.00	36.36	0.23	0.30	
8	9.654	32.68	-27.32	60.00	31.89	0.49	0.30	
9	15.885	35.33	-24.67	60.00	34.42	0.53	0.38	
10	22.655	39.82	-20.18	60.00	38.66	0.76	0.40	

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FCC ID : SRKWPBT100S

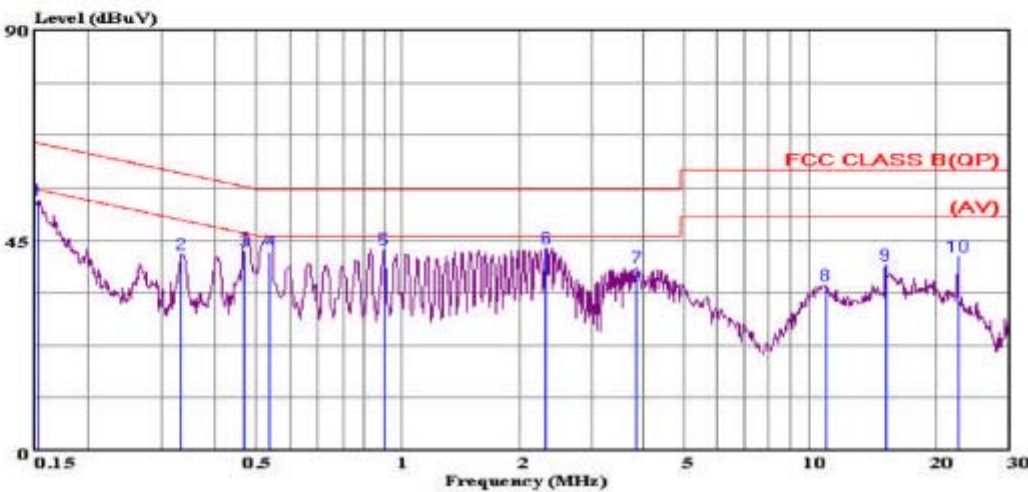
REPORT NO. : E960134

EUT Model No.: BT100S (NEUTRAL)

Detector : Peak Value



Data#: 140 File#: FCC CLASS B(QP).EMI Date: 2007-04-23 Time: 16:57:14



Trace: 138
Site : Shih-Chi : Conduction No.1(Dennis)
Condition: FCC CLASS B(QP) LISN.N(63A) 2006 NEUTRAL
eut : E960134
power : AC 120V 60Hz
memo : Peak Value
memo : Final Test
memo : BT-100S
memo : GPS mode

Page: 1

	Freq	Level	Over	Limit	Read	Probe	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
		dBuV	dB	dBuV	dBuV	dB	dB	
1	0.152	53.58	-12.29	65.87	53.38	0.10	0.10	
2	0.332	41.94	-17.46	59.40	41.74	0.10	0.10	
3	0.468	42.90	-13.64	56.54	42.66	0.10	0.14	QP
4	0.538	42.67	-13.33	56.00	42.40	0.10	0.17	QP
5	1.000	43.05	-12.95	56.00	42.75	0.10	0.20	
6	2.409	43.33	-12.67	56.00	42.93	0.20	0.20	
7	3.943	39.20	-16.80	56.00	38.71	0.20	0.29	
8	11.021	35.45	-24.55	60.00	34.74	0.40	0.31	
9	15.307	39.69	-20.31	60.00	38.97	0.40	0.32	
10	22.655	41.47	-18.53	60.00	40.57	0.50	0.40	

2.4 Conducted Emission Test Photo

EUT Model No. BT100S

< FRONT VIEW >



III. §15.247(a)(1) : Hopping Channel Frequency Separation

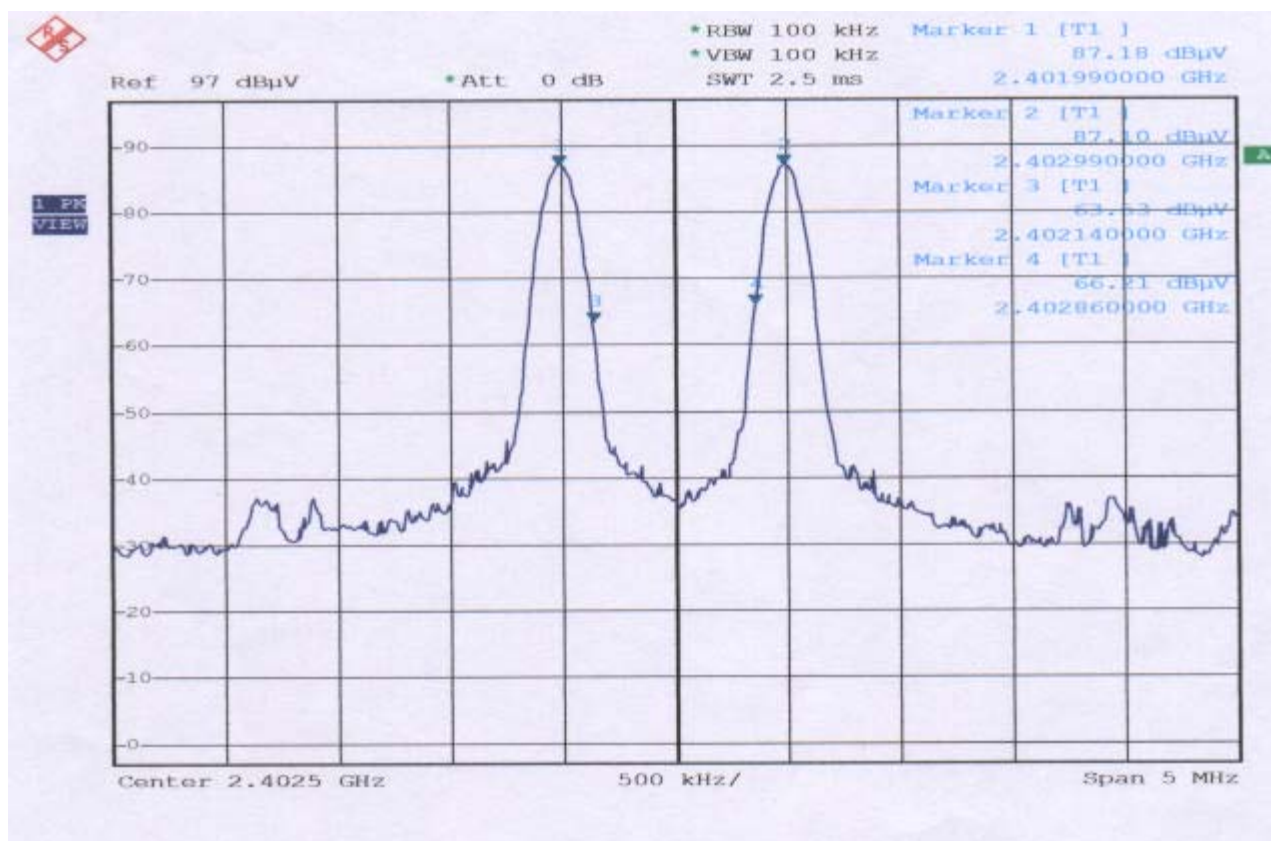
3.1 Test Procedure

- (1)The Hopping Channel Frequency Separation was measured in max hold analyzer mode with span wide enough to capture the peaks of two adjacent channels.
- (2)Set the Spectrum as RBW=VBW=100KHz
- (3) 3.3 Spectrum Plot Data show the Frequency Separation test results.

3.2 Test result of Frequency Separation

	Measured Separation (KHz)	Limit (KHz)	Pass/Fail
Channel Separation	1000	25	Pass
Separation at -20dB	720	25	Pass

3.3 Spectrum Plot Data



IV. §15.247(a)(1) : 20dB Bandwidth

4.1 Test Procedure

- (1)The 20dB bandwidth was measured at the EUT antenna terminal in max hold analyzer mode with span wide enough to capture the hopping channel emissions.
- (2)Set the Spectrum as RBW=VBW=10KHz
- (3) 4.2 Spectrum Plot Data show the 20dB Bandwidth test results.

4.2 Test result of Bandwidth

EUT Model No. BT100S

Channel	Antenna Polarity	Bandwidth (KHz)	Limit (KHz)	Pass/Fail
LOW	H	30.0	1000	Pass
	V	29.4	1000	Pass
MID	H	30.6	1000	Pass
	V	30.6	1000	Pass
HIGH	H	28.8	1000	Pass
	V	31.2	1000	Pass

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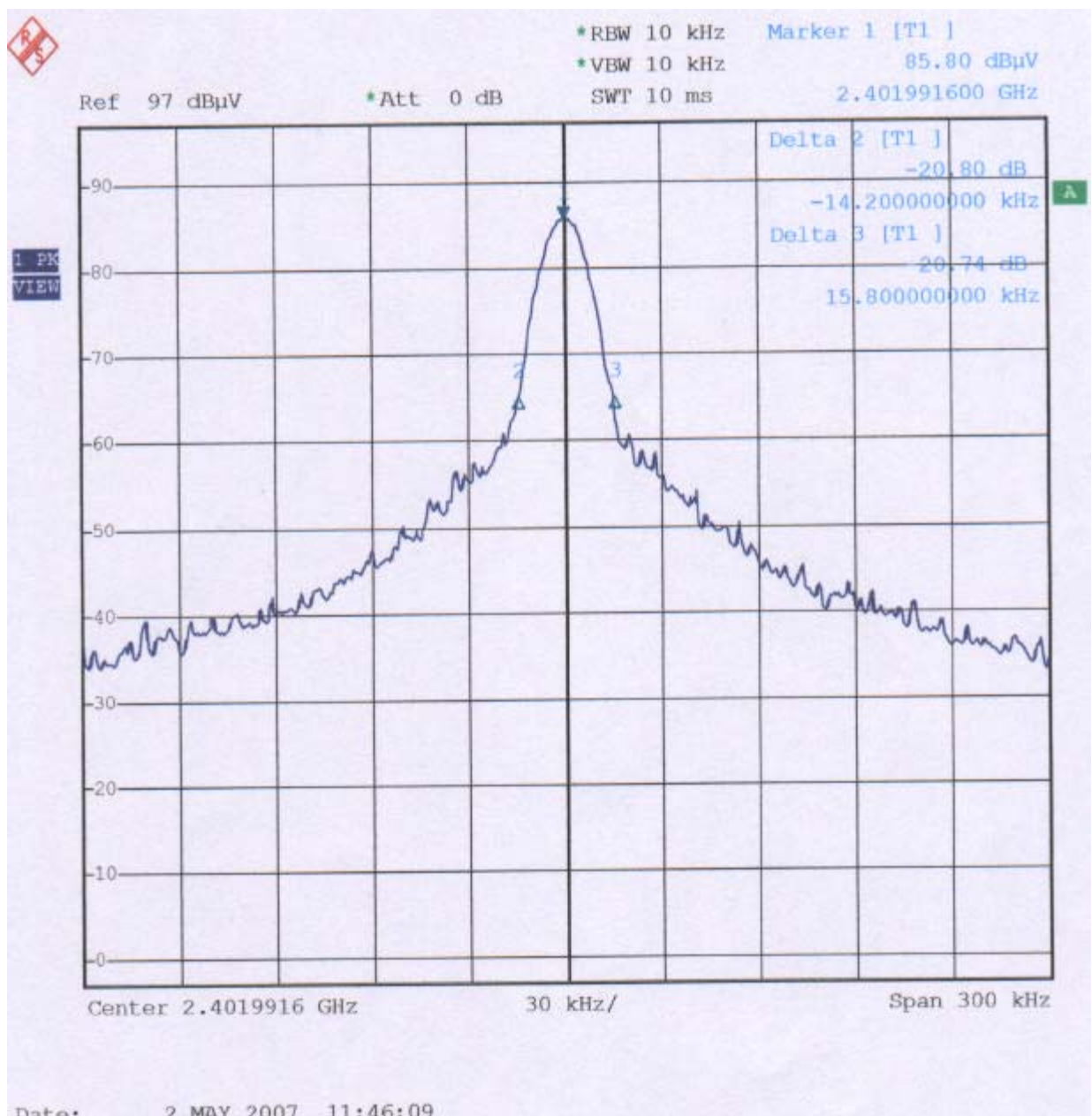
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REPORT NO. : E960134

4.3 Spectrum Plot Data

Channel : CH LOW

Polarity : Horizontal



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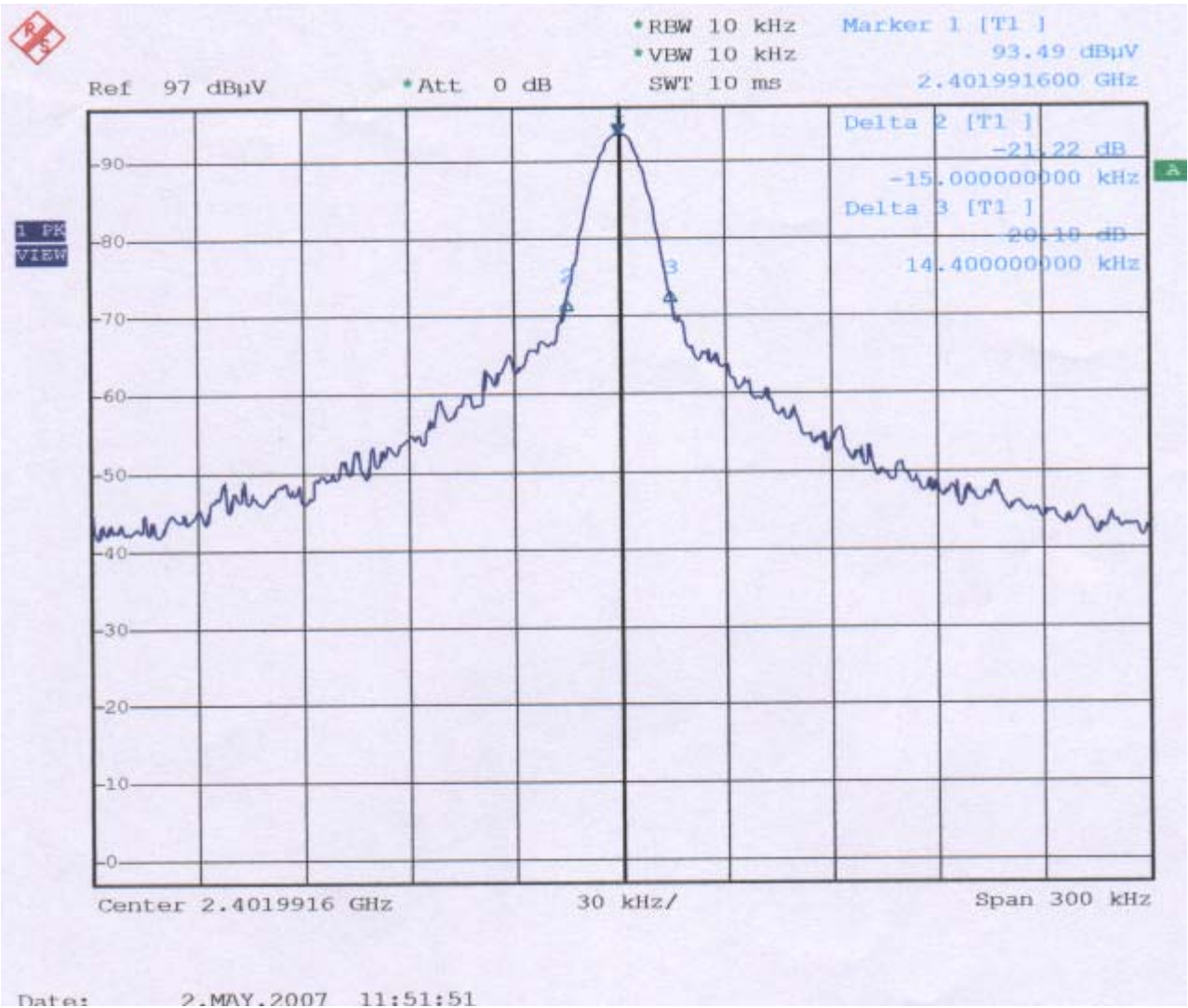
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REPORT NO. : E960134

Channel : CH LOW

Polarity : Vertical



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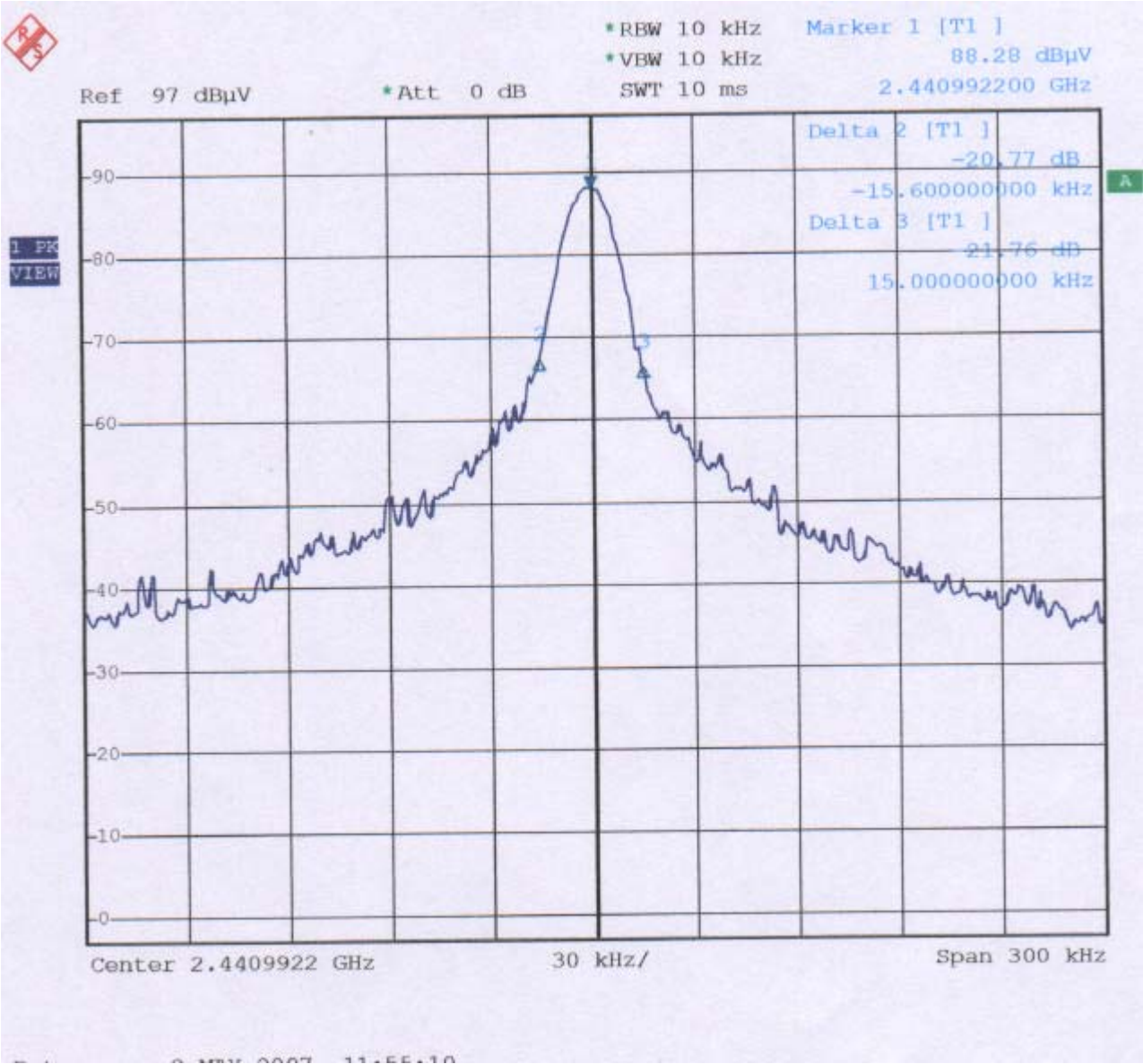
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FCC ID : SRKWPBT100S

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Channel : CH MID

Polarity : Horizontal



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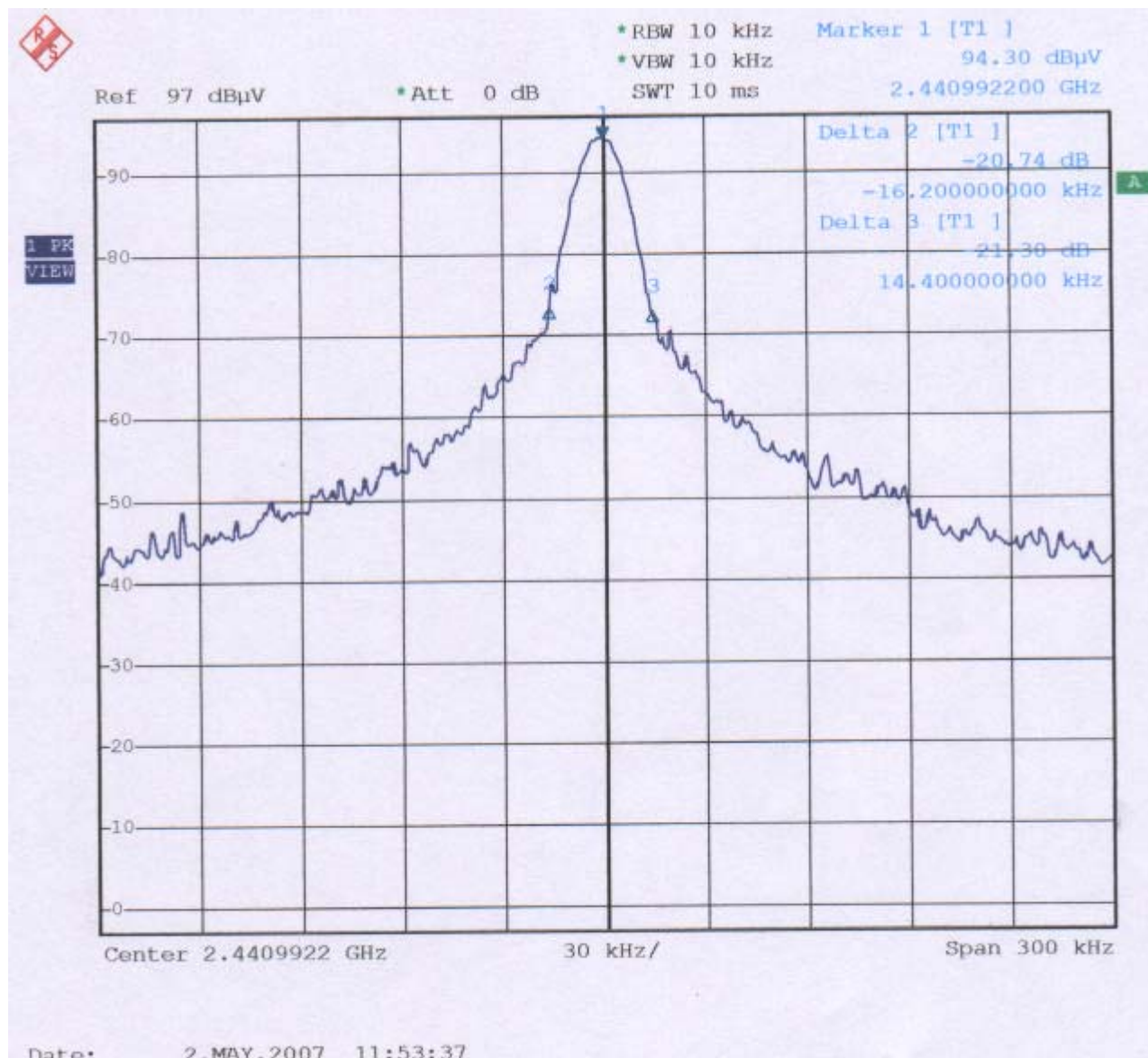
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SRKWPBT100S

REPORT NO. : E960134

Channel : CH MID

Polarity : Vertical



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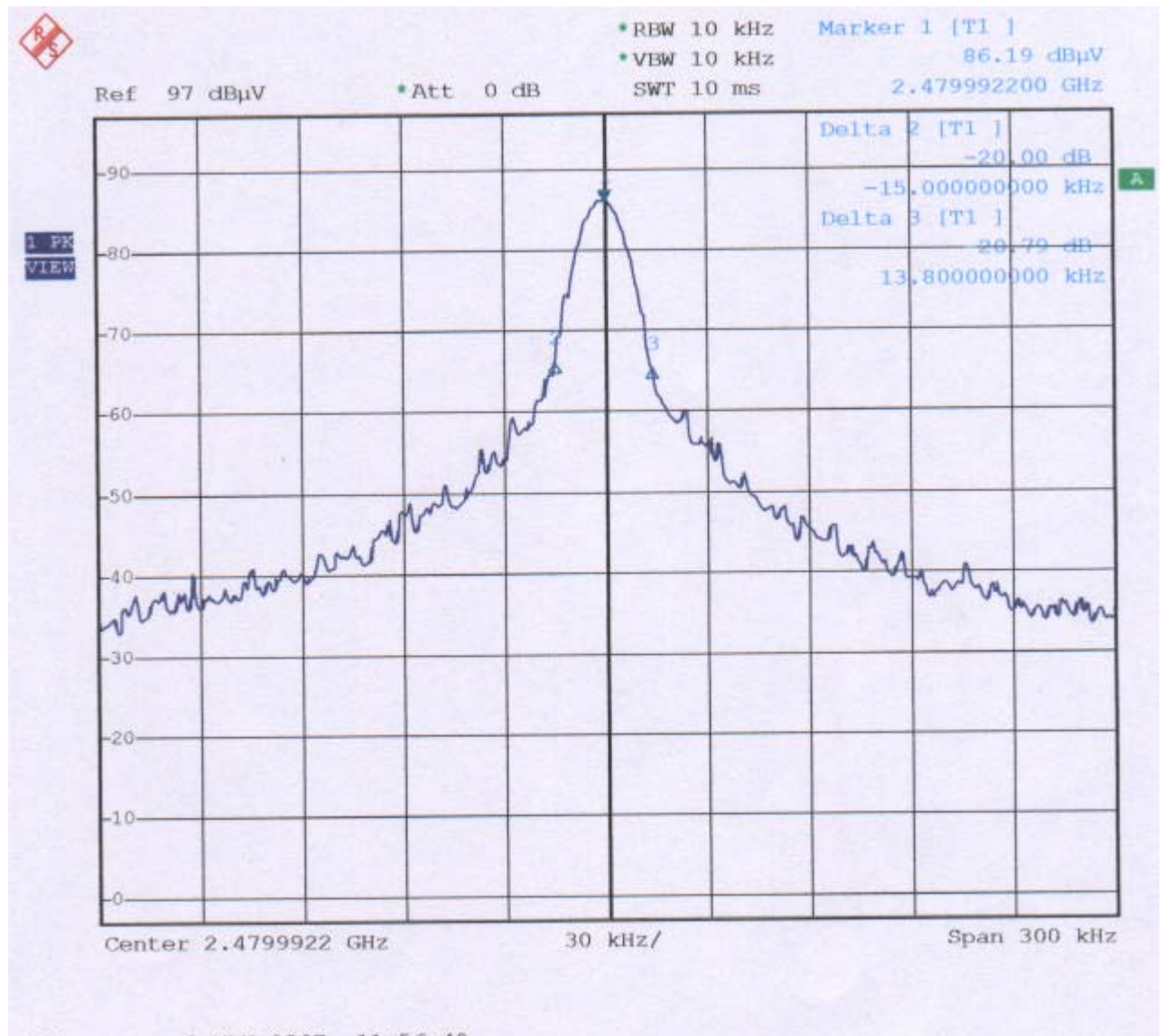
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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Channel : CH HIGH

Polarity : Horizontal



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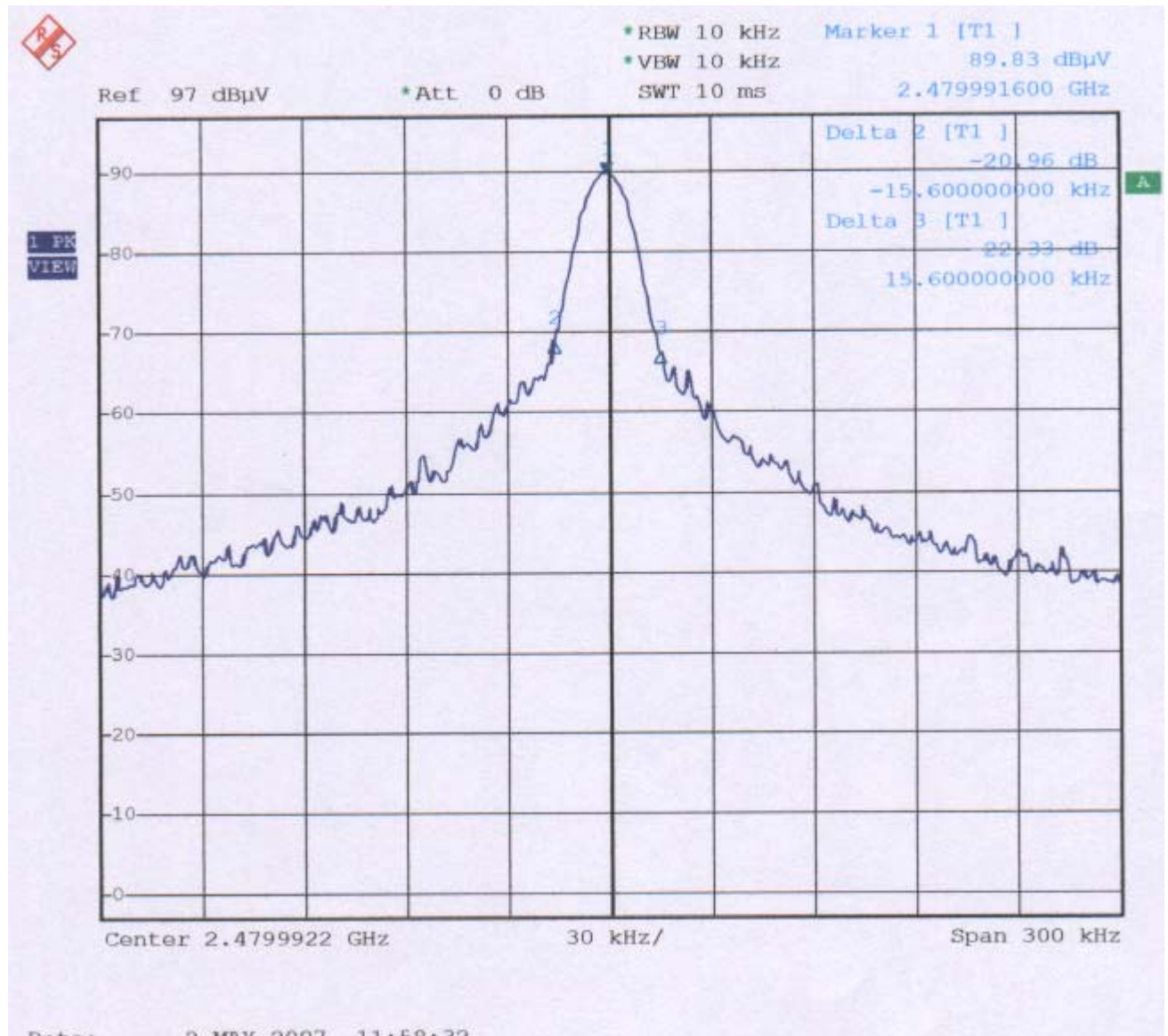
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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Channel : CH HIGH

Polarity : Vertical



V. §15.247(a) (1): Time of Occupancy(Dwell Time)

5.1 Test Procedure

- (1)The Time of Occupancy was measured in “max hold” analyzer mode with zero span and different sweep time to calculate the Time of Occupancy.
- (2)Set the Spectrum as RBW=VBW=1MHz
- (3)5.3 Spectrum Plot Data show the Time of Occupancy test results.

5.2 Test Result of Dwell Time

Dwell Time= $30(1600/79)*t=30(20.25)*400\mu\text{Sec} = 243\text{m Sec} < 0.4\text{S}$

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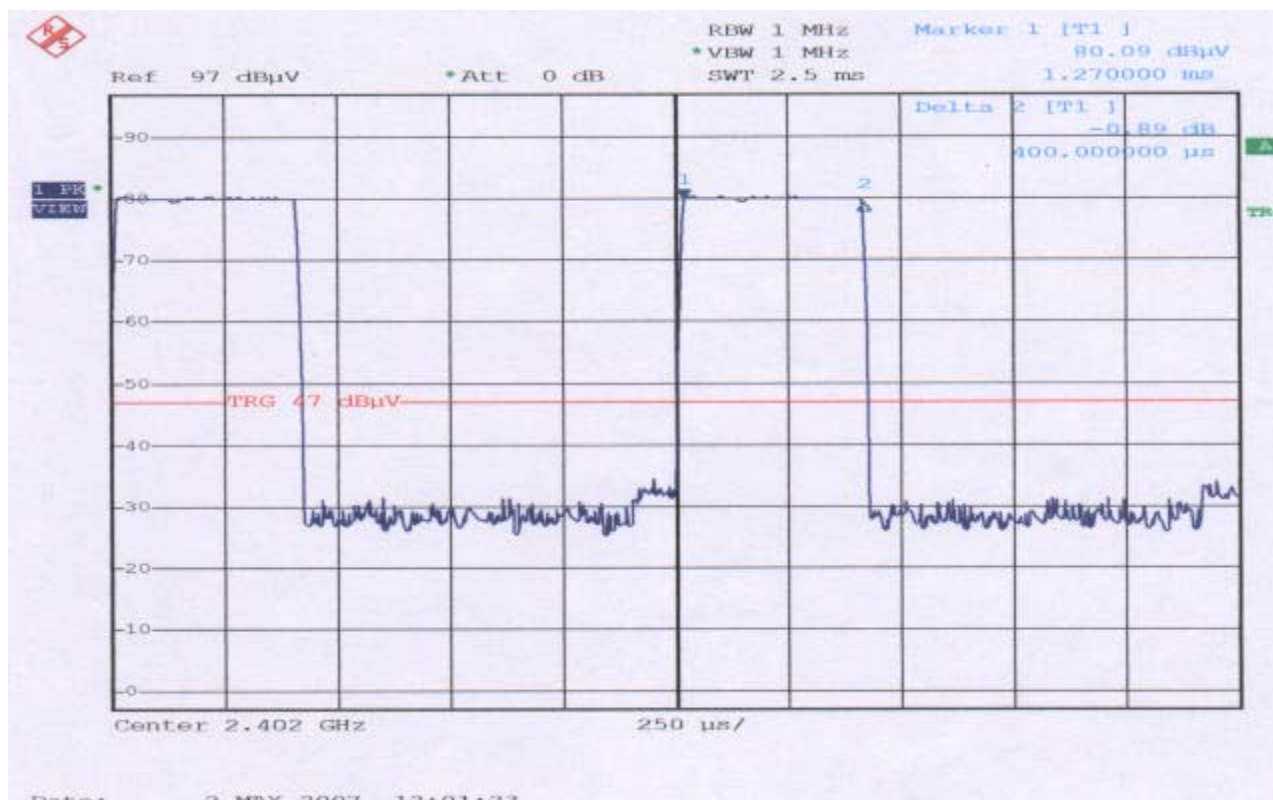
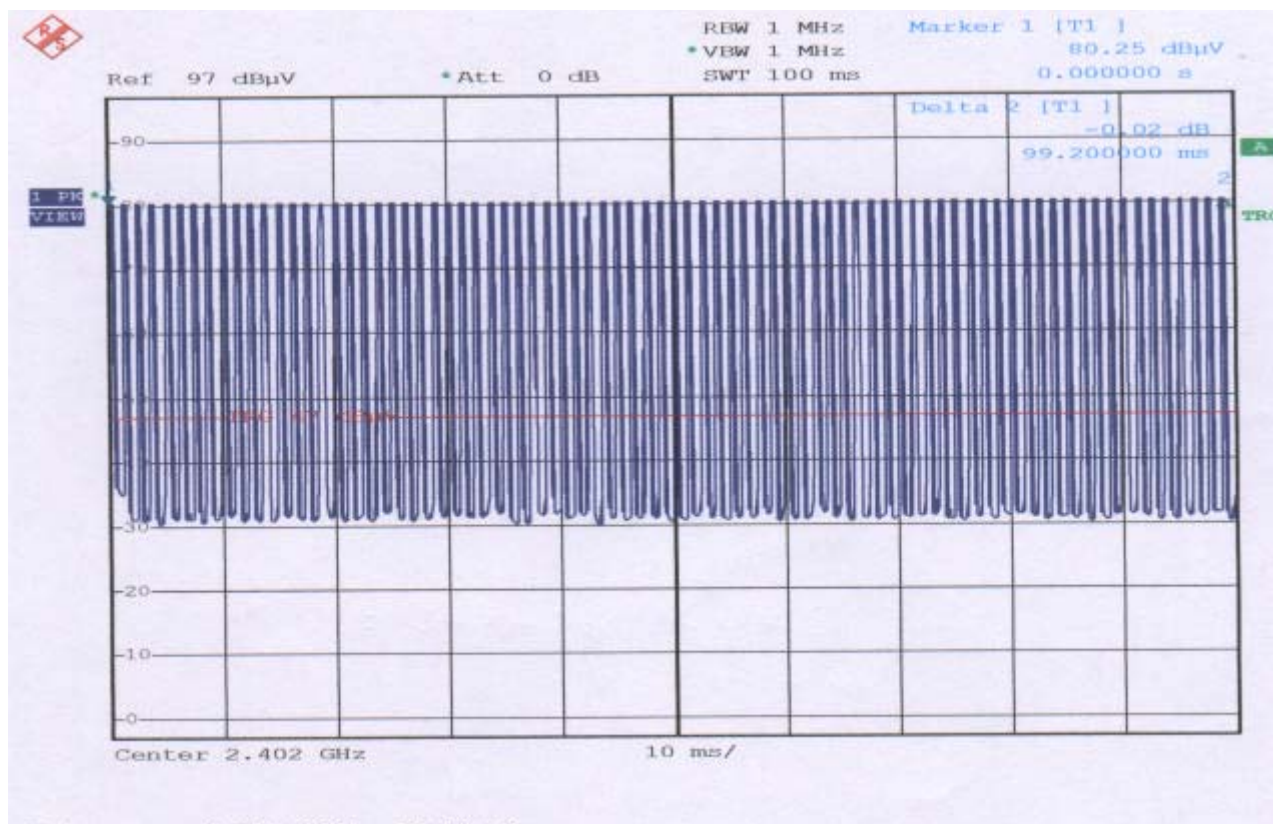
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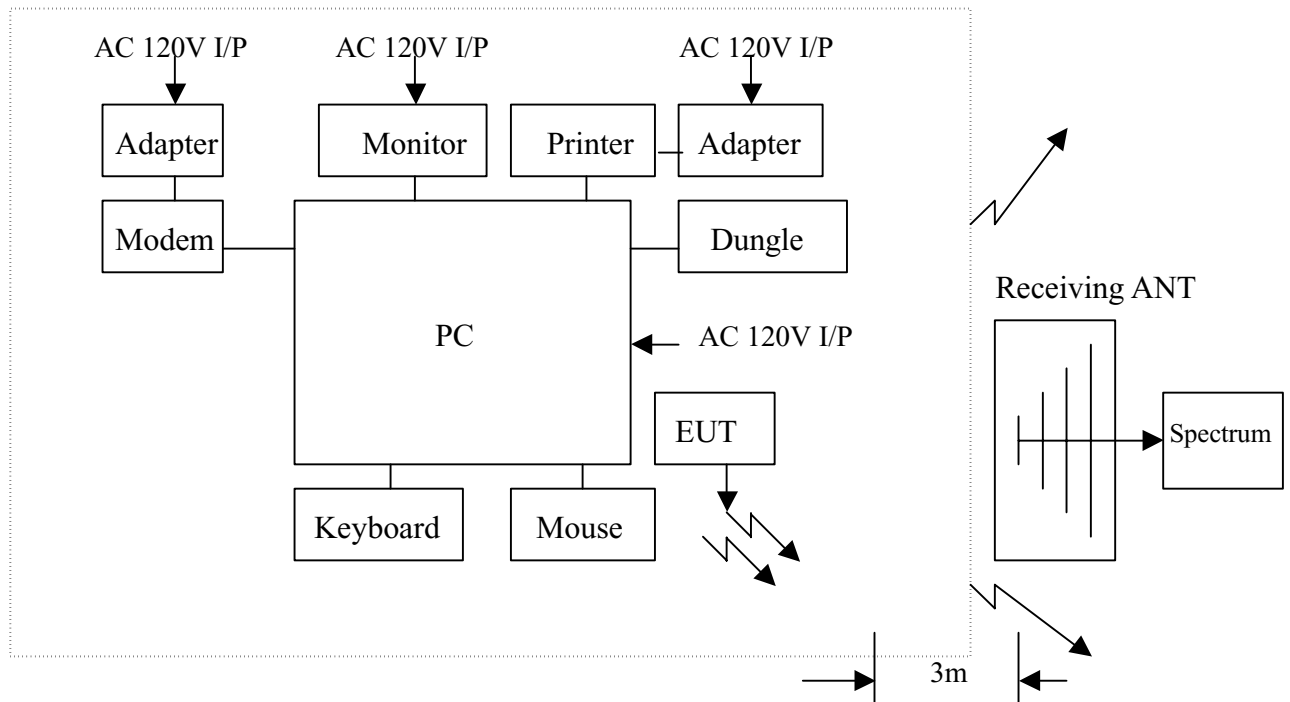
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5.3 Spectrum Plot Data



VI. §15.247(b) : The maximum peak output power ($\leq 1\text{watt}$)

6.1 Testing Description



Three channels were tested : CH LOW, CH MID AND CH HIGH Measurements were taken by using both horizontal and vertical antenna polarization, and the antenna was raised and lowered from one to four meters to find the worst emission levels.

6.2 Software Using

The driver of “CSR BlueSuite” is used to select the support channel as mentioned on section 1.3 (b) listed above

6.3 Test Result of Fundamental Emissions

EUT Model No. BT100S

Channel	Frequency (MHz)	Antenna Polarity (H/V)	Level (dBuV/m)	E.I.R.P. (W)
LOW	2401.980	H	91.93	0.477×10^{-3}
	2401.980	V	97.07	1.528×10^{-3}
MID	2440.980	H	89.69	0.279×10^{-3}
	2440.950	V	96.94	1.483×10^{-3}
HIGH	2479.980	H	87.08	0.153×10^{-3}
	2479.990	V	90.21	0.315×10^{-3}

Note :

1. "C.F." means corrected factor = antenna factor + cable loss – preamplifier Gain.
2. Level means emission amplitude = S.P. + C.F. + duty cycle factor
3. Conducted output power : $P = (E d)^2 / 30G$

where $E (V) = \text{Level (V)}$

$d (m) = \text{measurement distance} = 3m$

$G = 1$ (the gain of the transmitting antenna over isotropic antenna)

$P = \text{E.I.R.P.}$

4. Example :

If Level = 120 dBuV/m

$$10^{(120/20)} \times 10^{-6} = 1 \text{ V}$$

$$\text{E.I.R.P.} = (1 \times 3)^2 / 30 = 300 \text{ mW}$$

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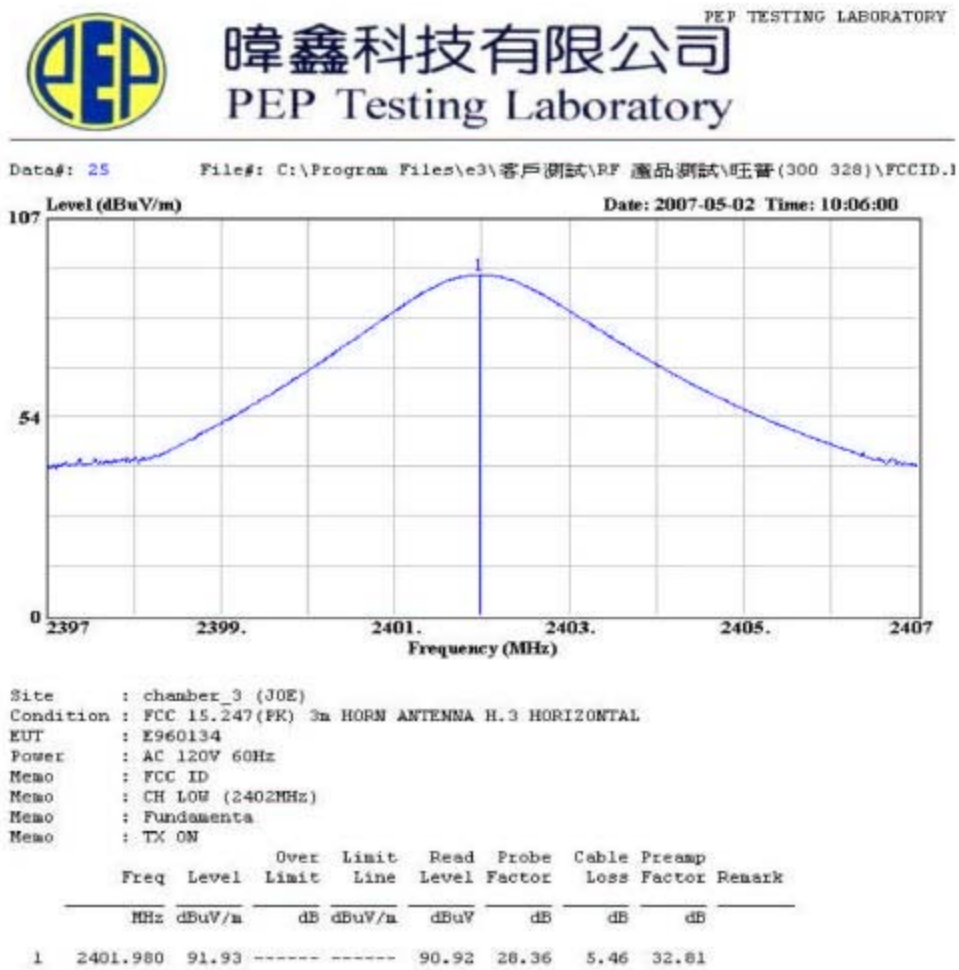
FCC ID : SRKWPBT100S

REPORT NO. : E960134

EUT Model No. BT100S

Channel : CH LOW

Polarity : Horizontal



PEP Testing Laboratory

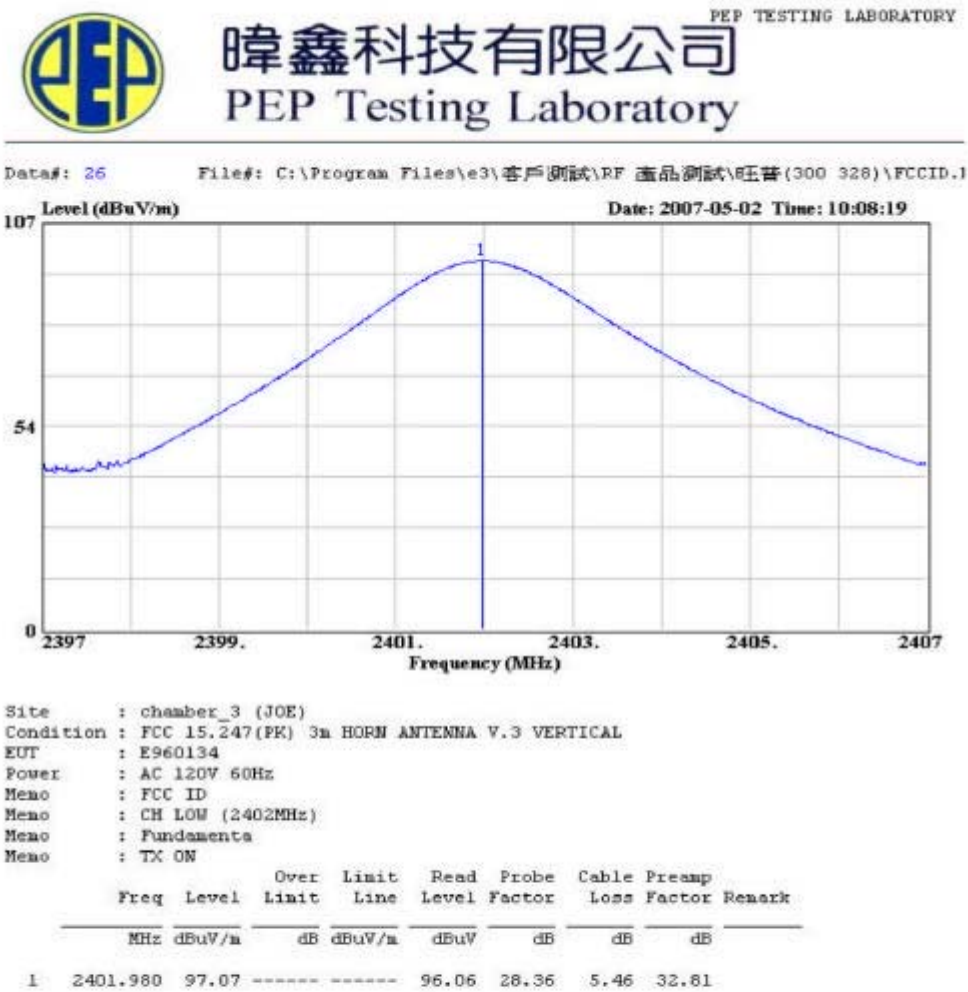
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Taipei Hsien, Taiwan, R. O. C.
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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Channel : CH LOW

Polarity : Vertical



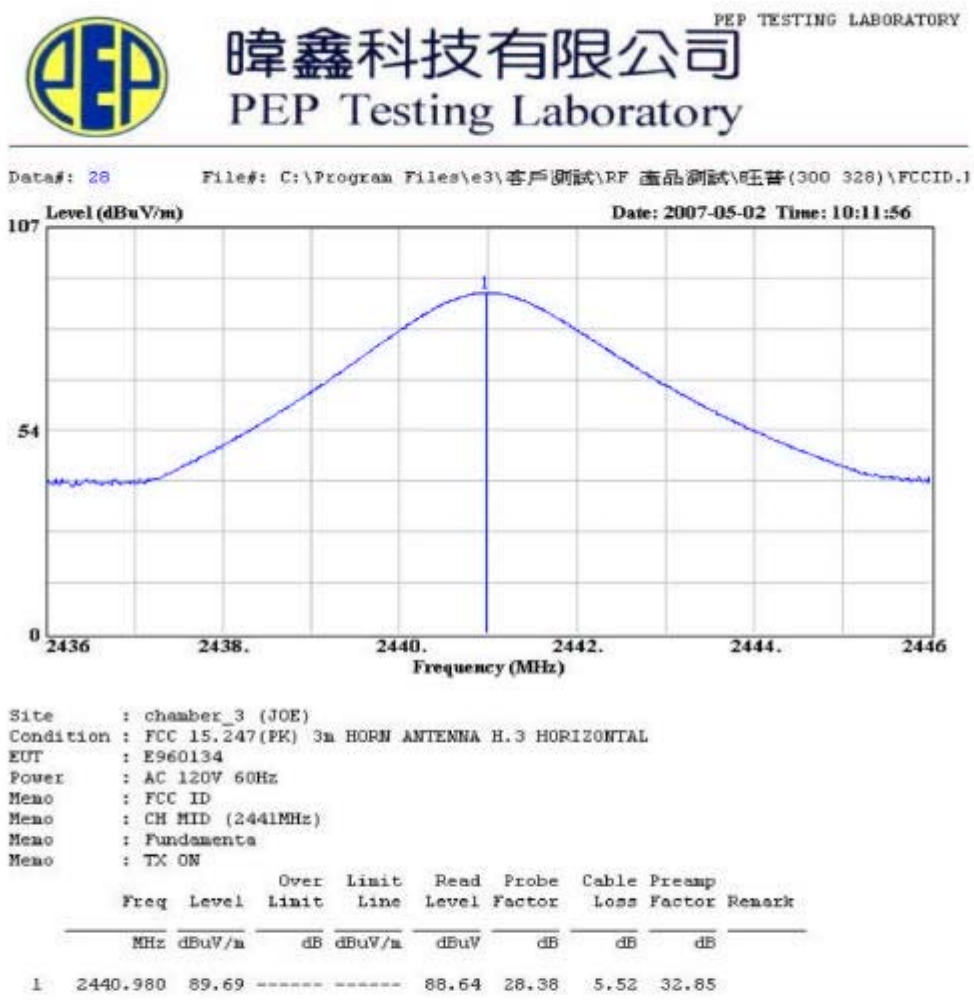
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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Channel : CH MID
Polarity : Horizontal



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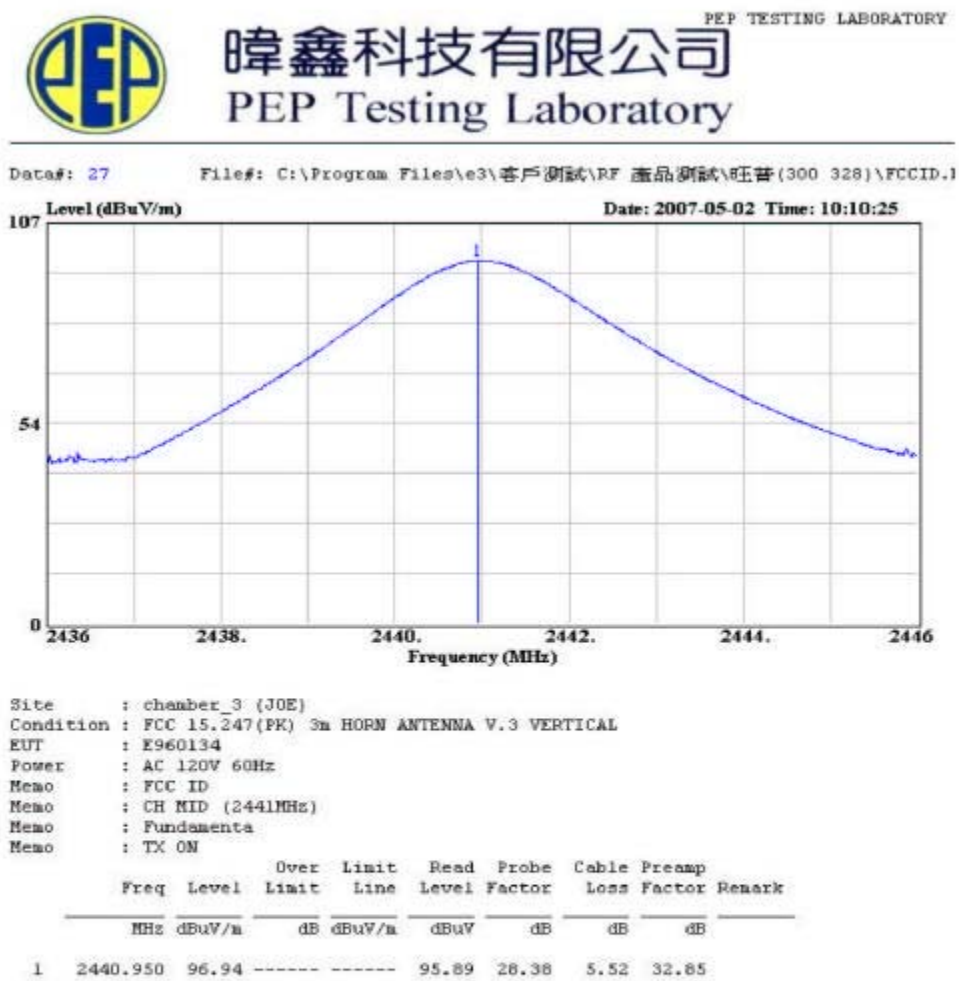
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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Channel : CH MID

Polarity : Vertical



PEP Testing Laboratory

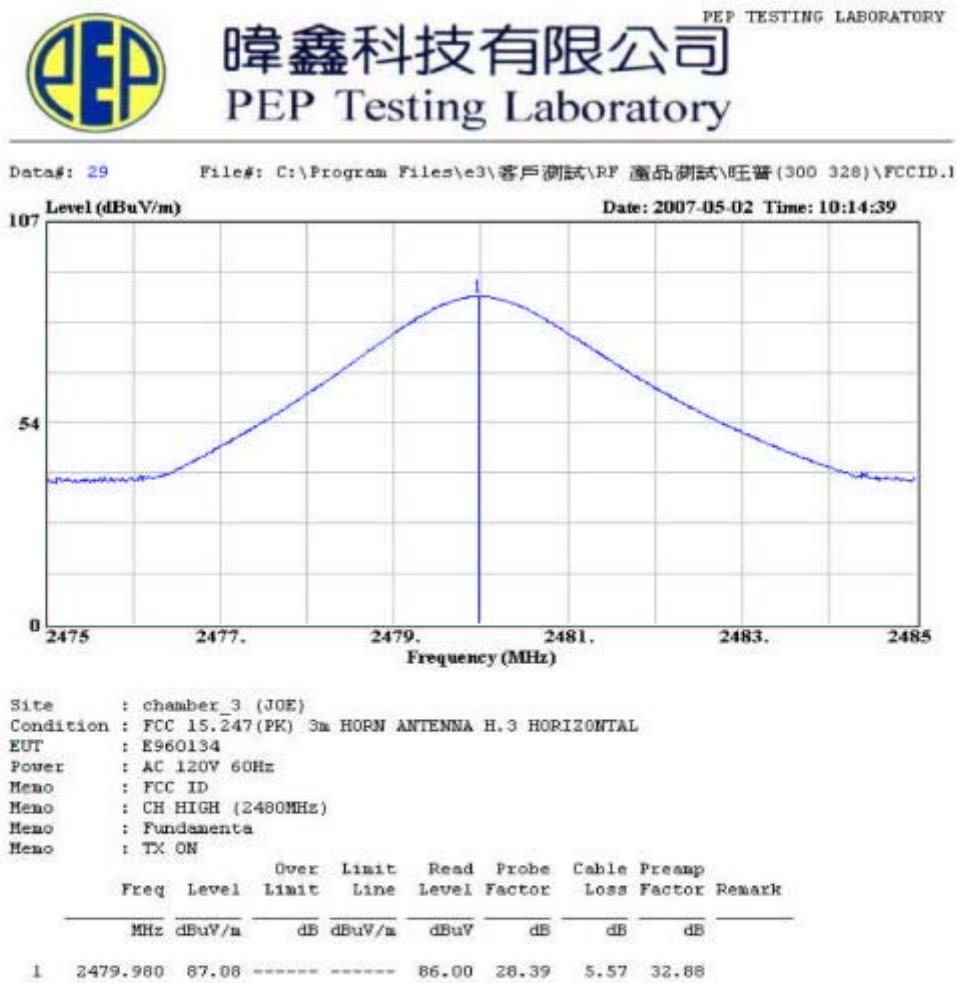
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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Channel : CH HIGH

Polarity : Horizontal



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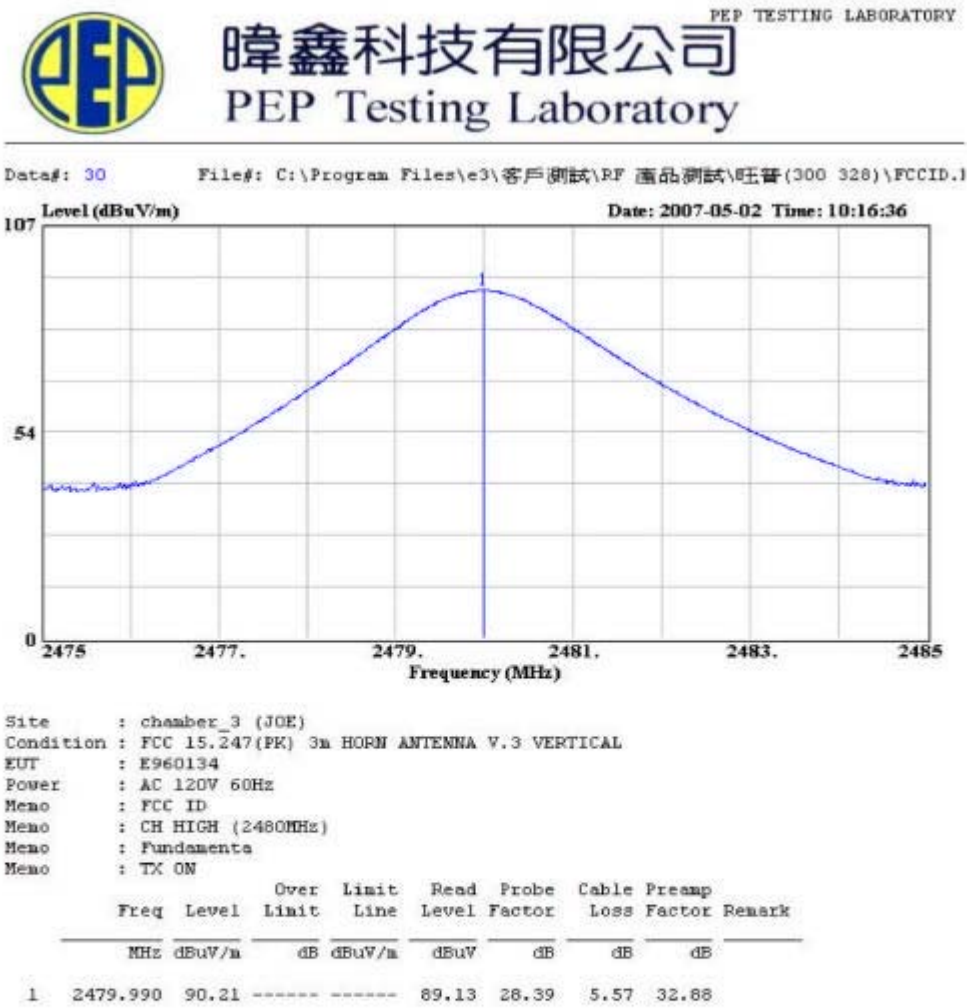
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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Channel : CH HIGH

Polarity : Vertical

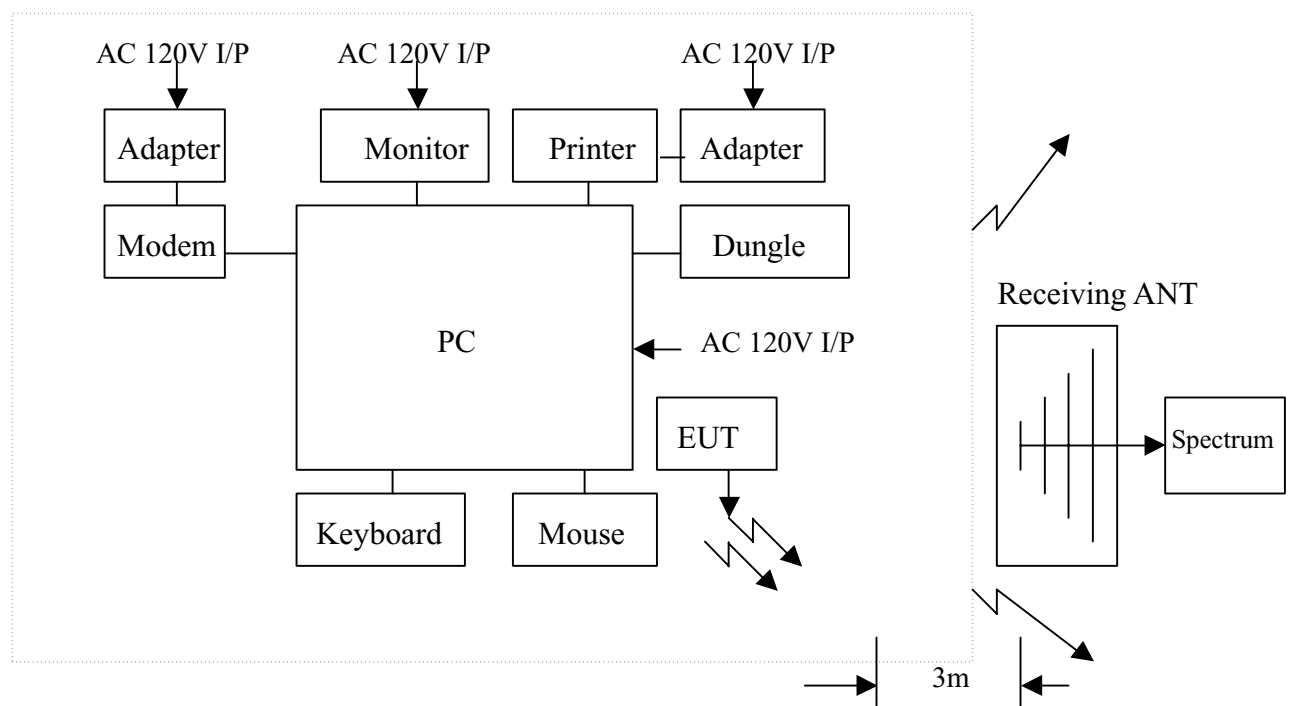


VII. §15.247(b)(4) Maximum Permissible Exposure (MPE)

7.1 MPE distance calculation

$$d = \frac{\sqrt{30G \text{ EIRP}}}{E}$$

7.2 Device operating configurations exposure conditions



7.3 Maximum Permissible Exposure (MPE)**EUT Model No. BT100S**

Channel	Frequency (MHz)	A.P. (H/V)	Level (dBuV/m)	Power density at 20cm (m W / cm ²)
LOW	2401.980	H	91.93	2.079×10^{-6}
	2401.980	V	97.07	6.791×10^{-6}
MID	2440.980	H	89.69	1.241×10^{-6}
	2440.950	V	96.94	6.591×10^{-6}
HIGH	2479.980	H	87.08	0.681×10^{-6}
	2479.990	V	90.21	1.400×10^{-6}

Note :

1. "A.P." means antenna polarity .
2. "S.P." Read means amplitude read by spectrum analyzer .
3. "C.F." means corrected factor = antenna factor + cable loss - Preamplifier Gain .
4. Level means emission amplitude = S.P. + C.F. + duty cycle factor
5. Conducted output power : $P = (E d)^2 / 30G$

where E (V) = Level (V)

d (m) = distance = 20 cm

G = 1 (the gain of the transmitting antenna over isotropic antenna)

P = E.I.R.P.

6. Example :

If Level = 120 dBuV/m

$$10^{(120 / 20)} \times 10^{-6} = 1 \text{ V}$$

$$\text{E.I.R.P.} = (1 \times 0.2)^2 / 30 = 1.333 \text{ mW/cm}^2$$

VIII. §15.247(c) : Spurious Radiated Emissions**8.1 Out side band below 1GHz****Test Results :****Model No. : BT100S****Frequency range : 30MHz - 1GHz****Detector : Quasi-Peak Value****Temperature : 27° C****Humidity : 55 %****Memo : LOW****Antenna polarization : HORIZONTAL ; Test distance : 3 m ;**

Freq. (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Probe Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Remark
39.700	33.86	- 6.14	40.00	41.64	11.72	0.64	20.14	
107.600	35.44	- 8.06	43.50	43.61	10.77	1.01	19.95	
191.990	28.12	-15.38	43.50	34.76	11.61	1.46	19.71	
430.610	30.11	-15.89	46.00	31.00	15.84	2.83	19.56	
500.450	33.18	-12.82	46.00	32.78	16.75	3.28	19.63	
632.370	32.16	-13.84	46.00	28.07	19.55	3.31	18.77	

Antenna polarization : VERTICAL ; Test distance : 3 m ;

Freq. (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Probe Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Remark
95.960	34.64	- 8.86	43.50	43.21	10.50	0.94	20.01	
112.450	35.49	- 8.01	43.50	43.63	10.78	1.03	19.95	
166.770	26.61	-16.89	43.50	27.67	17.42	1.41	19.89	
191.990	28.08	-15.42	43.50	34.72	11.61	1.46	19.71	
500.450	31.66	-14.34	46.00	31.26	16.75	3.28	19.63	
934.040	34.09	-11.91	46.00	24.92	23.04	4.65	18.52	

Note :

1. Level = Read Level + Probe Factor + Cable Loss – Preamp Factor
2. Over Limit = Level – Limit Line
3. All the other frequencies are under the limits more than 20dB

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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Model No. : BT100S
Frequency range : 30MHz - 1GHz
Temperature : 27° C
Memo : MID
Detector : Quasi-Peak Value
Humidity : 55 %

Antenna polarization : HORIZONTAL ; **Test distance** : 3 m ;

Freq. (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Probe Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Remark
112.450	32.91	-10.59	43.50	41.05	10.78	1.03	19.95	
288.020	28.10	-17.90	46.00	33.55	12.16	1.93	19.54	
335.550	28.61	-17.39	46.00	32.43	13.43	2.35	19.60	
430.610	29.98	-16.02	46.00	30.87	15.84	2.83	19.56	
500.450	33.06	-12.94	46.00	32.66	16.75	3.28	19.63	
632.370	32.25	-13.75	46.00	28.16	19.55	3.31	18.77	

Antenna polarization : VERTICAL ; **Test distance** : 3 m ;

Freq. (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Probe Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Remark
95.960	37.18	- 6.32	43.50	45.75	10.50	0.94	20.01	
112.450	32.75	-10.75	43.50	40.89	10.78	1.03	19.95	
144.460	29.40	-14.10	43.50	33.18	14.88	1.26	19.92	
335.550	27.35	-18.65	46.00	31.17	13.43	2.35	19.60	
500.450	34.28	-11.72	46.00	33.88	16.75	3.28	19.63	
623.640	33.83	-12.17	46.00	29.92	19.36	3.54	18.99	

Note :

1. Level = Read Level + Probe Factor + Cable Loss – Preamp Factor
2. Over Limit = Level – Limit Line
3. All the other frequencies are under the limits more than 20dB

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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Model No. : BT100S
Frequency range : 30MHz - 1GHz
Temperature : 27° C
Memo : HIGH
Detector : Quasi-Peak Value
Humidity : 55 %

Antenna polarization : HORIZONTAL; **Test distance** : 3 m ;

Freq. (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Probe Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Remark
95.960	34.58	- 8.92	43.50	43.15	10.50	0.94	20.01	
112.450	30.27	-13.23	43.50	38.41	10.78	1.03	19.95	
191.990	28.76	-14.74	43.50	35.40	11.61	1.46	19.71	
411.210	37.16	- 8.84	46.00	38.82	15.24	2.75	19.65	
500.450	32.48	-13.52	46.00	32.08	16.75	3.28	19.63	
637.220	32.75	-13.25	46.00	28.55	19.66	3.16	18.62	

Antenna polarization : VERTICAL ; **Test distance** : 3 m ;

Freq. (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Probe Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Remark
95.960	38.34	- 5.16	43.50	46.91	10.50	0.94	20.01	
107.600	34.14	- 9.36	43.50	42.31	10.77	1.01	19.95	
191.990	27.24	-16.26	43.50	33.88	11.61	1.46	19.71	
220.120	24.71	-21.29	46.00	32.00	10.90	1.90	20.09	
500.450	32.98	-13.02	46.00	32.58	16.75	3.28	19.63	
934.040	35.27	-10.73	46.00	26.10	23.04	4.65	18.52	

Note :

1. Level = Read Level + Probe Factor + Cable Loss – Preamp Factor
2. Over Limit = Level – Limit Line
3. All the other frequencies are under the limits more than 20dB

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FCC ID : SRKWPBT100S

REPORT NO. : E960134

8.2 Out side band above 1GHz

Test Results :

Model No. : BT100S

Frequency range : above 1GHz

Temperature : 20° C

Channel : LOW

Detector : Peak / Average Value

Humidity : 55 %

Antenna polarization : HORIZONTAL ; Test distance : 3 m ;

Freq. (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Probe Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Remark
4803.980	44.26	-29.74	74	37.07	32.44	7.95	33.20	PK
7206.020	48.58	-25.42	74	34.01	38.17	9.08	32.68	PK

Antenna polarization : VERTICAL ; Test distance : 3 m ;

Freq. (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Probe Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Remark
4804.110	42.87	-31.13	74	35.68	32.44	7.95	33.20	PK
7205.990	48.40	-25.60	74	33.83	38.17	9.08	32.68	PK

Note :

1. Level = Read Level + Probe Factor + Cable Loss – Preamp Factor
2. Over Limit = Level – Limit Line
3. All the other frequencies are under the limits more than 20dB

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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Model No. : BT100S

Frequency range : above 1GHz

Detector : Peak / Average Value

Temperature : 20° C

Humidity : 55 %

Channel : MID

Antenna polarization : HORIZONTAL ; Test distance : 3 m ;

		Over	Limit	Read	Probe	Cable	Preamp	
Freq.	Level	Limit	Line	Level	Factor	Loss	Factor	Remark
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB/m)	(dB)	(dB)	
4882.030	43.45	-30.55	74	36.00	32.64	8.01	33.20	PK
7322.980	48.30	-25.70	74	33.51	38.26	9.13	32.60	PK

Antenna polarization : VERTICAL ; Test distance : 3 m ;

		Over	Limit	Read	Probe	Cable	Preamp	
Freq.	Level	Limit	Line	Level	Factor	Loss	Factor	Remark
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB/m)	(dB)	(dB)	
4882.060	42.91	-31.09	74	35.46	32.64	8.01	33.20	PK
7323.020	48.04	-25.96	74	33.25	38.26	9.13	32.60	PK

Note :

1. Level = Read Level + Probe Factor + Cable Loss – Preamp Factor
2. Over Limit = Level – Limit Line
3. All the other frequencies are under the limits more than 20dB

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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Model No. : BT100S

Frequency range : above 1GHz

Detector : Peak / Average Value

Temperature : 20° C

Humidity : 55 %

Channel : HIGH

Antenna polarization : HORIZONTAL ; Test distance : 3 m ;

		Over	Limit	Read	Probe	Cable	Preamp	
Freq.	Level	Limit	Line	Level	Factor	Loss	Factor	Remark
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB/m)	(dB)	(dB)	
4959.900	43.21	-30.79	74	35.52	32.82	8.07	33.20	PK
7439.980	48.30	-25.70	74	33.29	38.36	9.18	32.53	PK

Antenna polarization : VERTICAL ; Test distance : 3 m ;

		Over	Limit	Read	Probe	Cable	Preamp	
Freq.	Level	Limit	Line	Level	Factor	Loss	Factor	Remark
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB/m)	(dB)	(dB)	
4960.110	42.90	-31.10	74	35.21	32.82	8.07	33.20	PK
7439.990	48.22	-25.78	74	33.21	38.36	9.18	32.53	PK

Note :

1. Level = Read Level + Probe Factor + Cable Loss – Preamp Factor
2. Over Limit = Level – Limit Line
3. All the other frequencies are under the limits more than 20dB

8.3 Spurious Radiate Emission Testing Photos

EUT Model No. BT100S

< FRONT VIEW >



< REAR VIEW >



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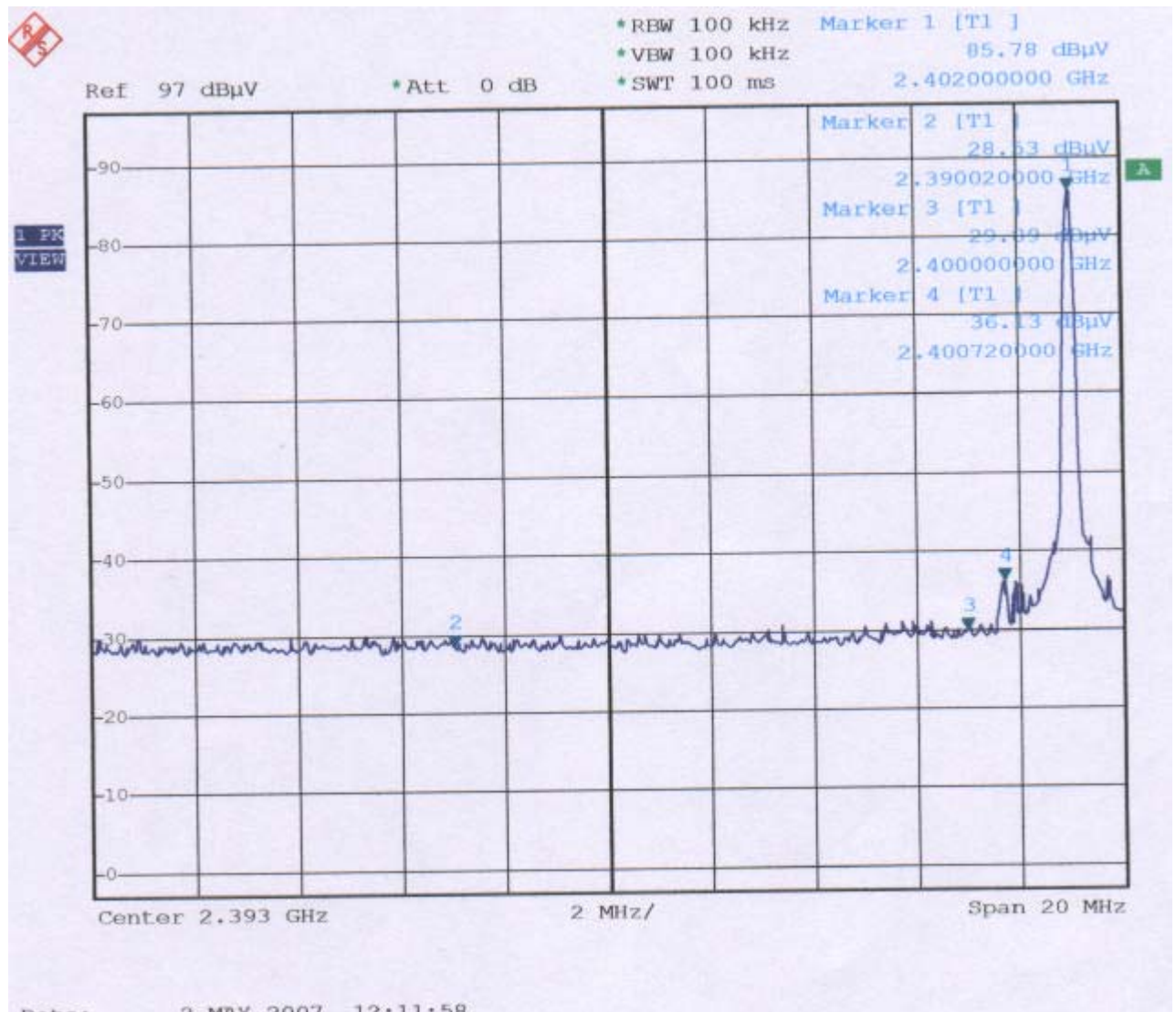
FCC ID : SRKWPBT100S

REPORT NO. : E960134

IX. §15.247(c) : Band-edges Compliance

Channel : CH LOW

Polarity : Horizontal



Test method : Public Notice DA 00-705

Detect : Peak Value

Marker-Delta method :

$85.78\text{dB}\mu\text{V}/\text{m} - 28.53\text{ dB}\mu\text{V}/\text{m} = 57.25\text{dB}\mu\text{V}/\text{m}$

$91.93\text{ dB}\mu\text{V}/\text{m} - 57.25\text{ dB}\mu\text{V}/\text{m} = 34.68\text{ dB}\mu\text{V}/\text{m}$

$*34.68\text{dB}\mu\text{V}/\text{m} < \text{Average Limit (54dB}\mu\text{V}/\text{m)}$

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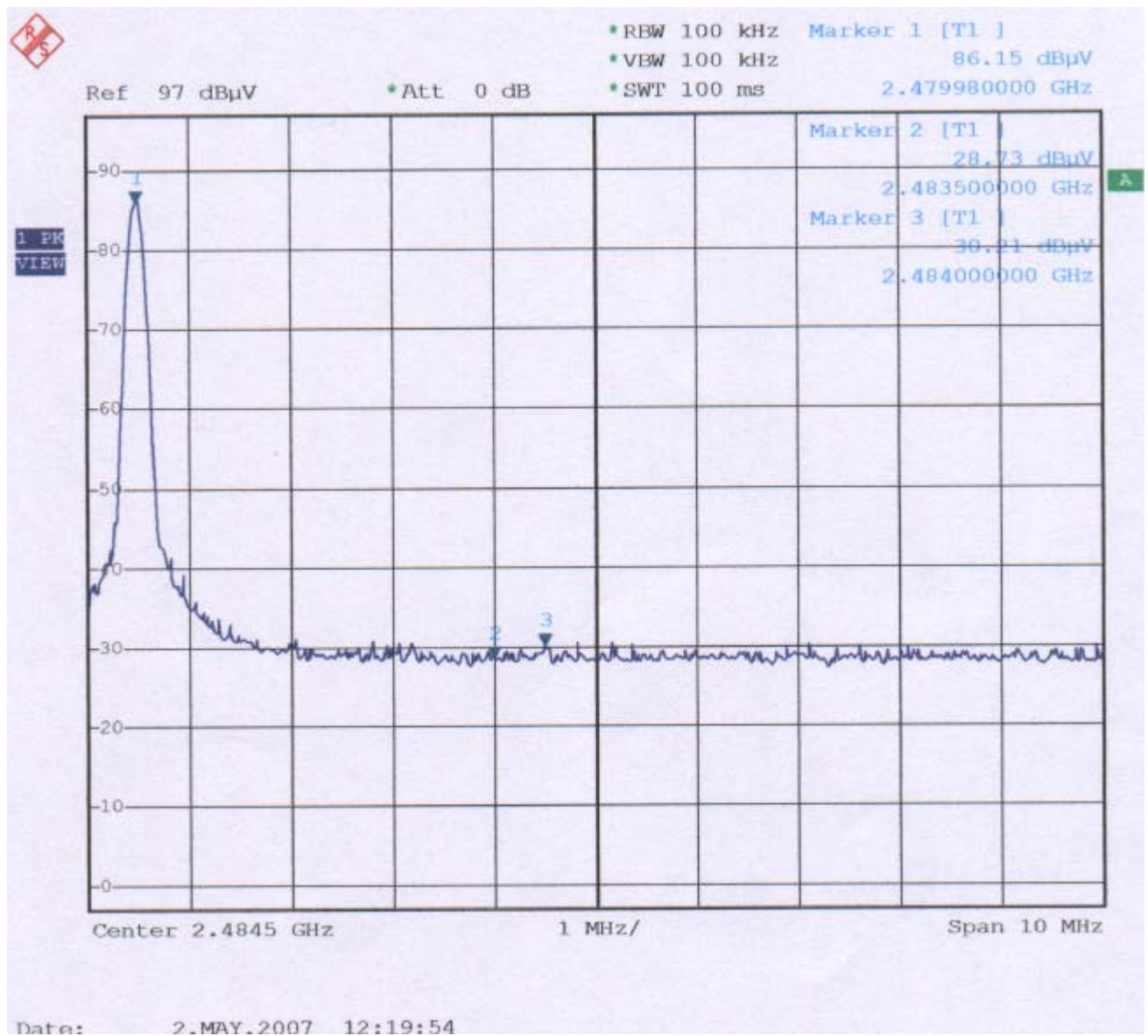
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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Channel : CH HIGH

Polarity : Horizontal



Test method : Public Notice DA 00-705

Detect : Peak Value

Marker-Delta method :

$86.15\text{dBuV/m} - 30.21\text{ dBuV/m} = 55.94\text{dBuV/m}$

$87.08\text{ dBuV/m} - 55.94\text{ dBuV/m} = 31.14\text{ dBuV/m}$

$*31.14\text{dBuV/m} < \text{Average Limit (54dBuV/m)}$

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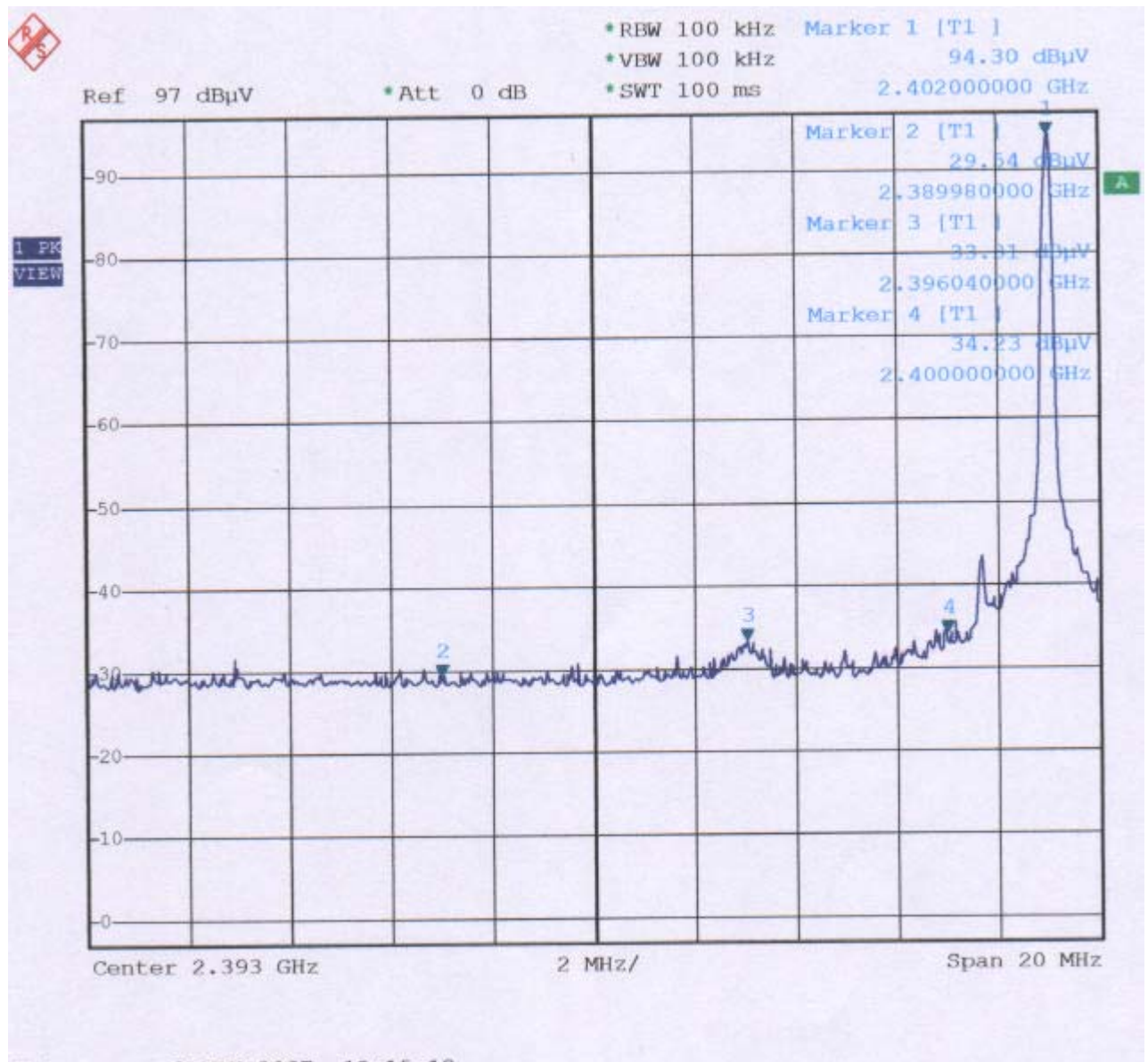
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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Channel : CH LOW

Polarity : Vertical



Test method : Public Notice DA 00-705

Detect : Peak Value

Marker-Delta method :

$94.30\text{dB}\mu\text{V}/\text{m} - 29.54\text{ dB}\mu\text{V}/\text{m} = 64.76\text{dB}\mu\text{V}/\text{m}$

$97.07\text{ dB}\mu\text{V}/\text{m} - 64.76\text{ dB}\mu\text{V}/\text{m} = 32.31\text{ dB}\mu\text{V}/\text{m}$

$*32.31\text{dB}\mu\text{V}/\text{m} < \text{Average Limit (54dB}\mu\text{V}/\text{m)}$

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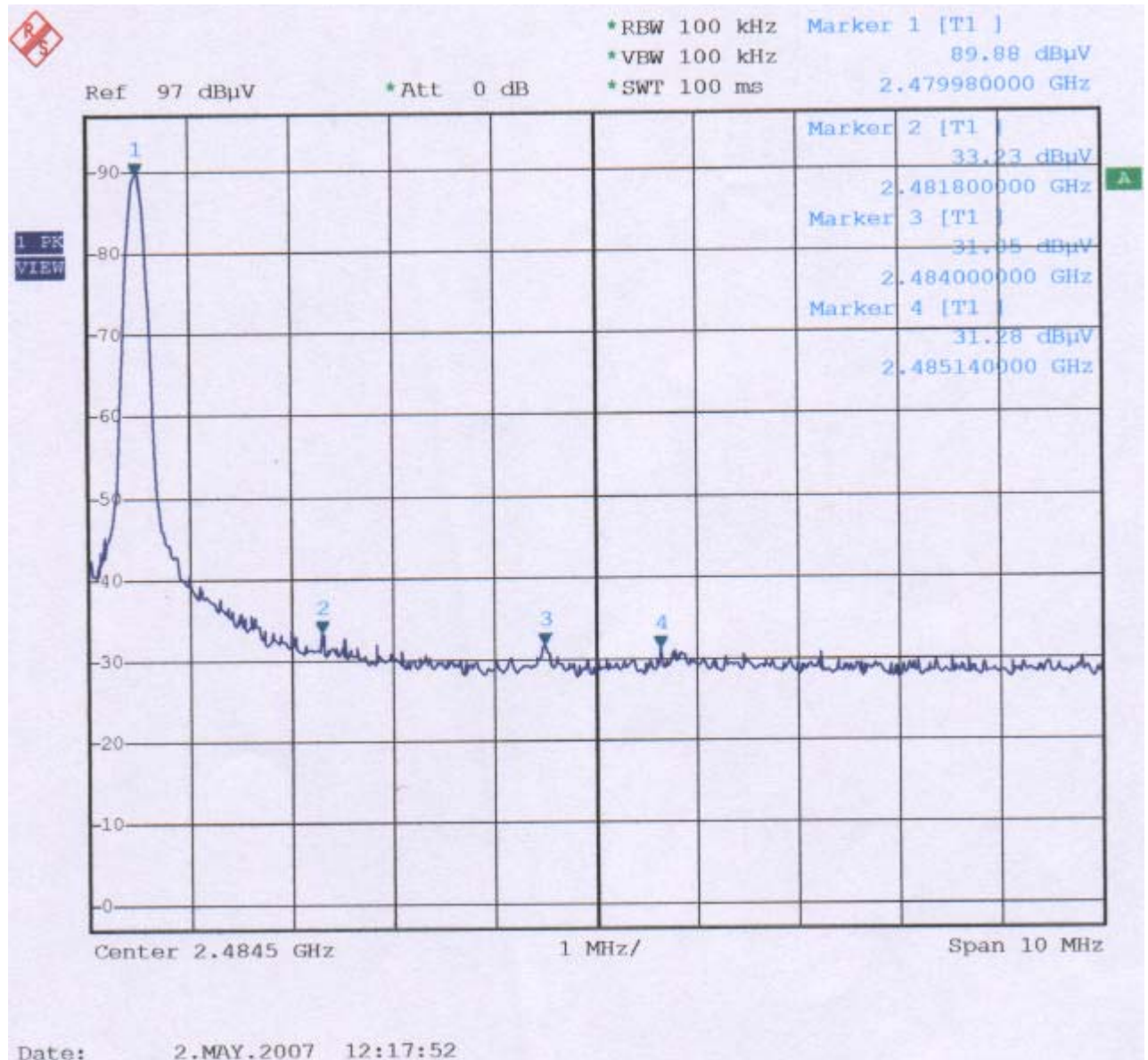
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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Channel : CH HIGH

Polarity : Vertical



Test method : Public Notice DA 00-705

Detect : Peak Value

Marker-Delta method :

$89.88\text{dBuV/m} - 31.35\text{ dBuV/m} = 58.53\text{dBuV/m}$

$90.21\text{ dBuV/m} - 58.53\text{ dBuV/m} = 31.68\text{ dBuV/m}$

$*31.68\text{dBuV/m} < \text{Average Limit (54dBuV/m)}$

X. §15.247(d) : Peak Power Spectral Density

10.1 Test Procedure

- (1) The Peak Power Spectral Density was measured at the EUT antenna terminal in max hold analyzer mode with span wide enough to capture the hopping channel emissions.
- (2) Set Spectrum as RBW=VBW=3KHz , Sweptime:auto.
- (3) 10.3 Spectrum Plot Data show the Peak Power Spectral Density test results.

10.2 Test result of Peak Power Spectral Density

Channel	Frequency (MHz)	Level (dBm)	Limit (dBm)	Pass/Fail
LOW	2401.992	0.801	8	Pass
MID	2440.992	0.980	8	Pass
HIGH	2479.991	-4.159	8	Pass

Note:

1. "S.P. read" means spectrum analyzer read power density.
2. "C.F." means correct factor = antenna factor + cable loss – Preamplifier Gain.
3. "Level" means power spectral density.

$$E.R.P. = (E d)^2 / 30G$$

where E (V) = S.P. read + C.F.

d (m) = measurement distance = 3m

G = 1 (the gain of the transmitting antenna over isotropic antenna)

Example :

If Level = 120 dBuV/m

$$10^{(120/20)} \times 10^{-6} = 1 \text{ V}$$

$$\begin{aligned} E.R.P. &= (1 \times 3)^2 / 30 = 300 \text{ mW} = 10 \text{ Log } (300\text{mW}/1\text{mW}) \\ &= 24.77\text{dBm} \end{aligned}$$

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FCC ID : SRKWPBT100S

REPORT NO. : E960134

10.3 Spectrum Plot Data

Channel : CH LOW

Polarity : Horizontal



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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Channel : CH LOW

Polarity : Vertical



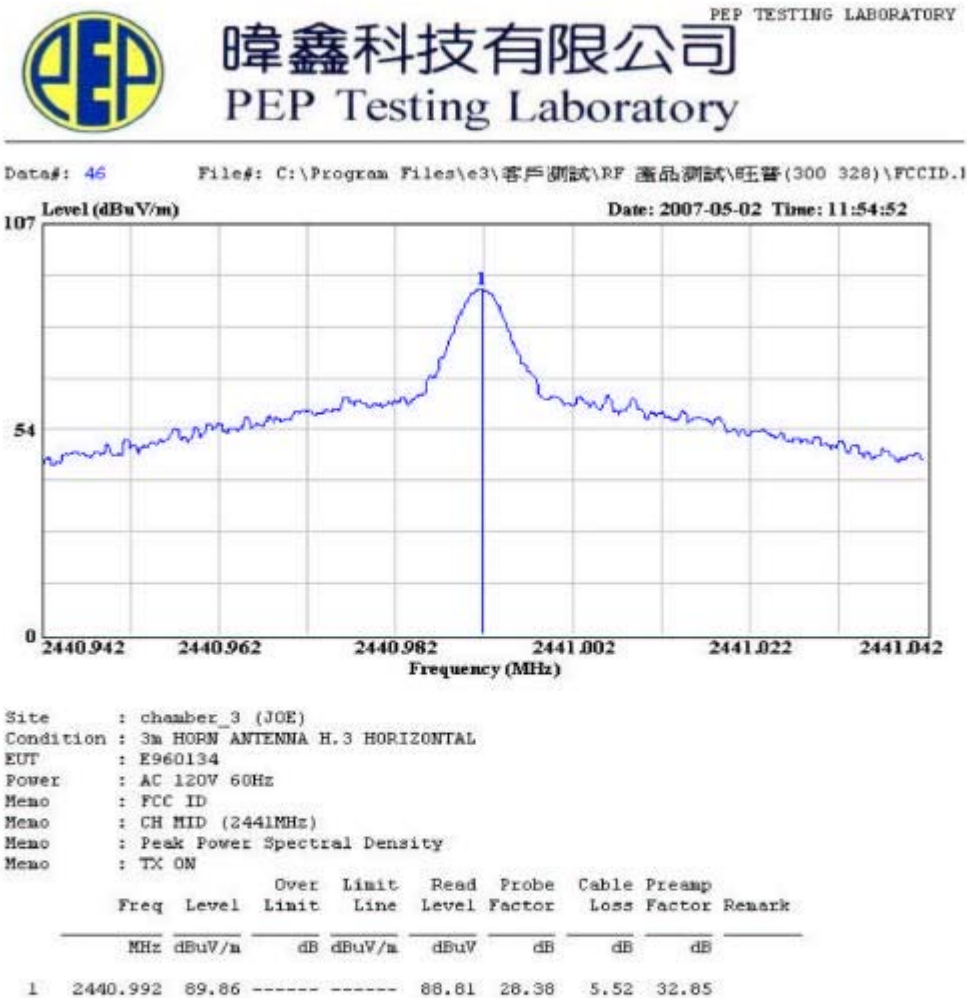
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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Channel : CH MID
Polarity : Horizontal



PEP Testing Laboratory

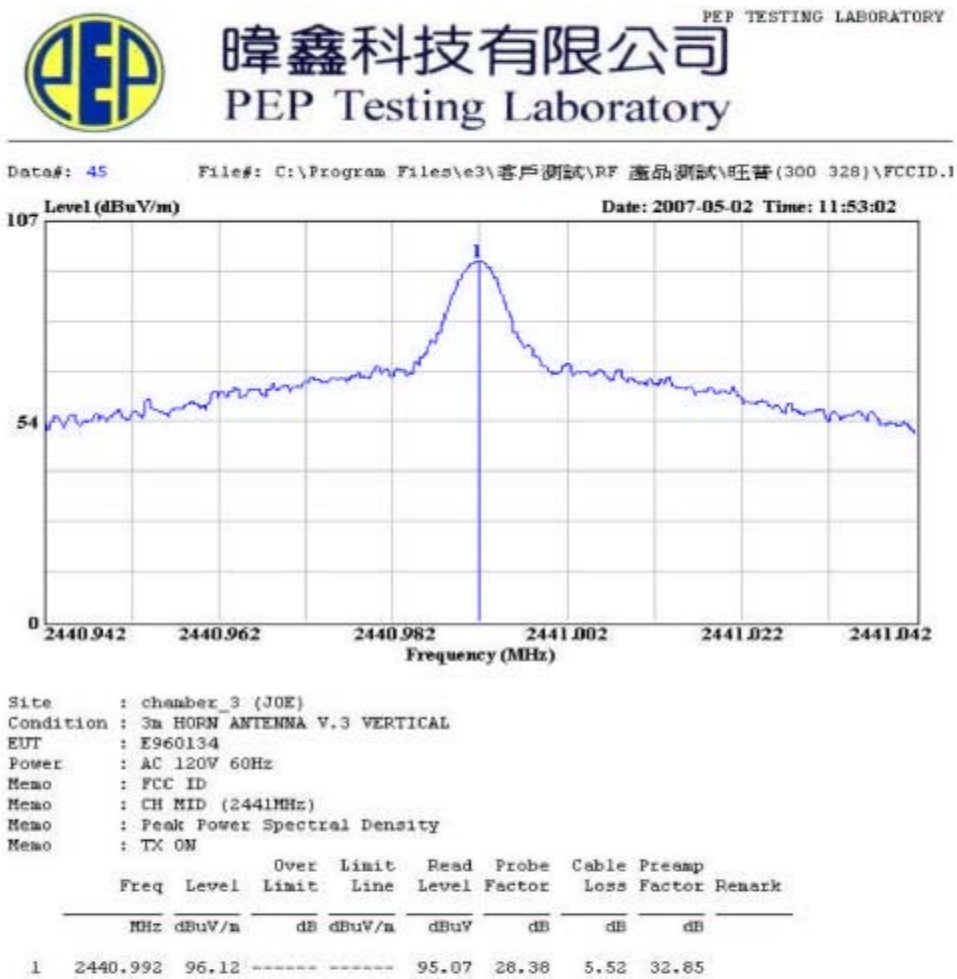
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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Channel : CH MID

Polarity : Vertical



PEP Testing Laboratory

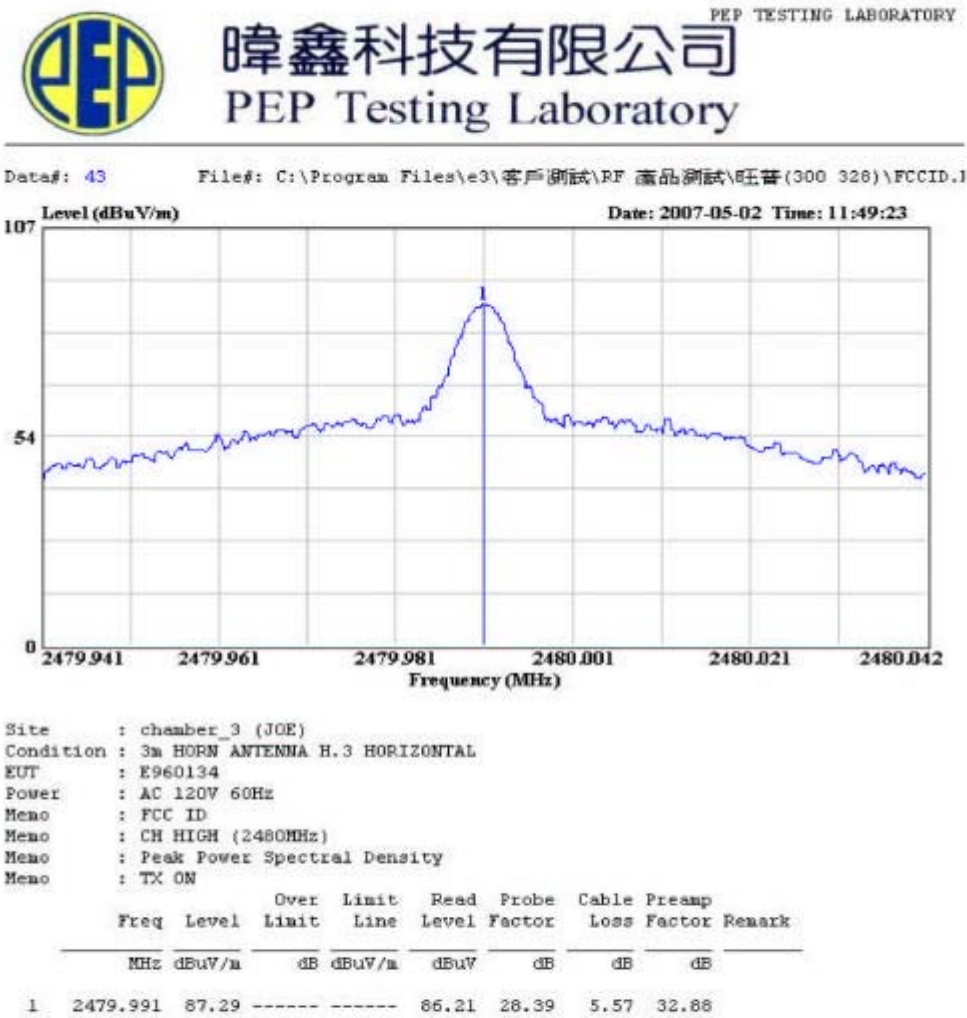
12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,
Taipei Hsien, Taiwan, R. O. C.
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SRKWPBT100S

REPORT NO. : E960134

Channel : CH HIGH

Polarity : Horizontal



PEP Testing Laboratory

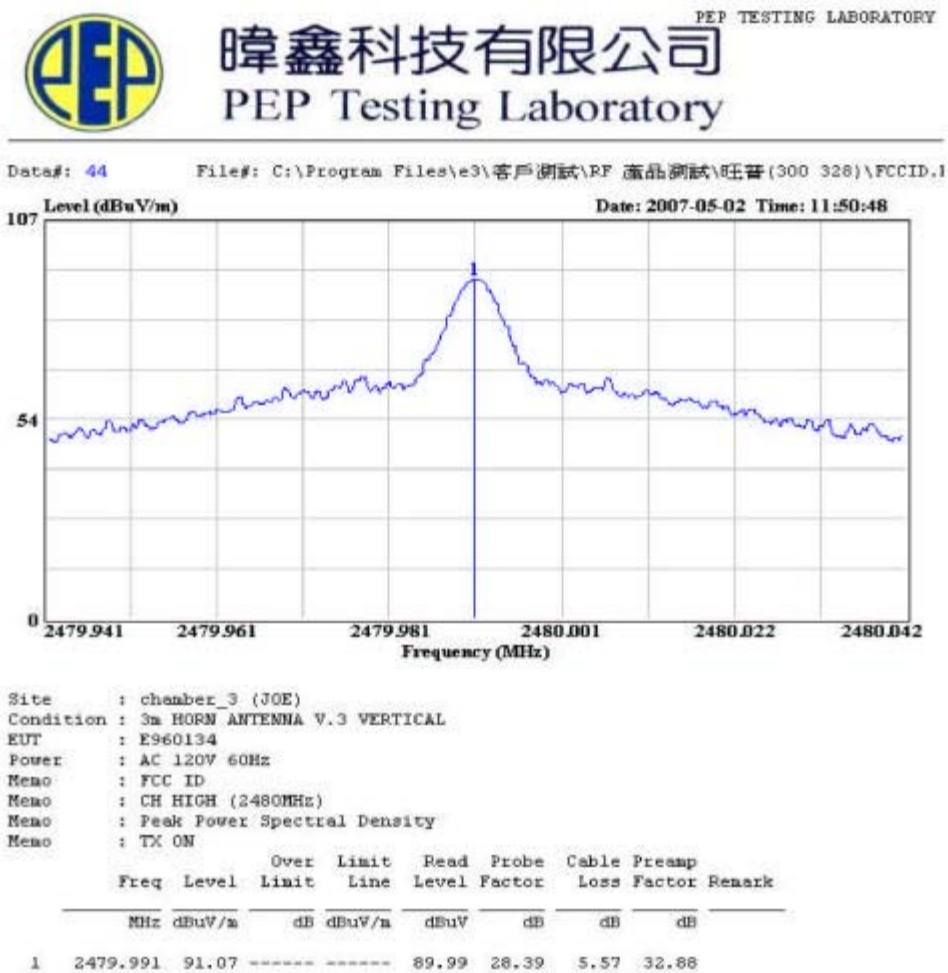
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Taipei Hsien, Taiwan, R. O. C.
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FCC ID : SRKWPBT100S

REPORT NO. : E960134

Channel : CH HIGH

Polarity : Vertical



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FCC ID : SRKWPBT100S

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XI. List of Test Instruments

Test Site	Instrument	Model No.	S/N	Next Cal. Date	Cal. Interval
Conduction (No.1)	R & S Spectrum	FSP 3	833387/001	Aug. 14, 2007	1Year
	R & S Receiver	ESHS10	830223/008	Sep. 10, 2007	1Year
	R & S 16A LISN(EUT)	ESH3-Z5	100070	Sep. 14, 2007	1Year
	ROLF HEINE 63A LISN(EUT)	NNB-4/63TL	98008	Sep. 20, 2007	1Year
	RF Cable	No.4	N/A	Jan. 02, 2008	1Year
Radiation (OP No.3)	R & S Receiver	ESVS 30	863342/012	Aug. 14, 2007	1Year
	Schaffner Pre-Amp.	CPA-9232	1012	Jan. 02, 2008	1Year
	SCHWARZBECK Antenna	9161	9161-4077	July 23, 2007	1Year
	RF Cable	No.3	N/A	Jan. 02, 2008	1Year
	R & S Signal Generator	SMY02	829846/038	May 01, 2008	2Year
Chamber (No. 3)	R&S Spectrum Analyzer	FSP30	100157	Sep. 03, 2007	1Year
	Schaffner Pre-Amplifier	CPA-9232	1028	Jan. 02, 2008	1Year
	SCHWARZBECK Antenna	VULB9161	4078	July 23, 2007	1Year
	R & S Signal Generator	SMY02	830235/019	May 01, 2008	2Years
	30MHz~1GHz RF Cable	NO.3	N/A	Jan. 02, 2008	1Year
	COM POWER HORN ANTENNA	AH-118	10056	Oct. 01, 2008	2Years
	MITEQ Pre-Amplifier	JS4-00101800-28-5A	829013	Sep. 28, 2008	2Years
	1GHz~26.5GHz RF Cable	N/A	N/A	Sep. 28, 2008	2Years

XII. EUT Photos

EUT Model No. BT100S



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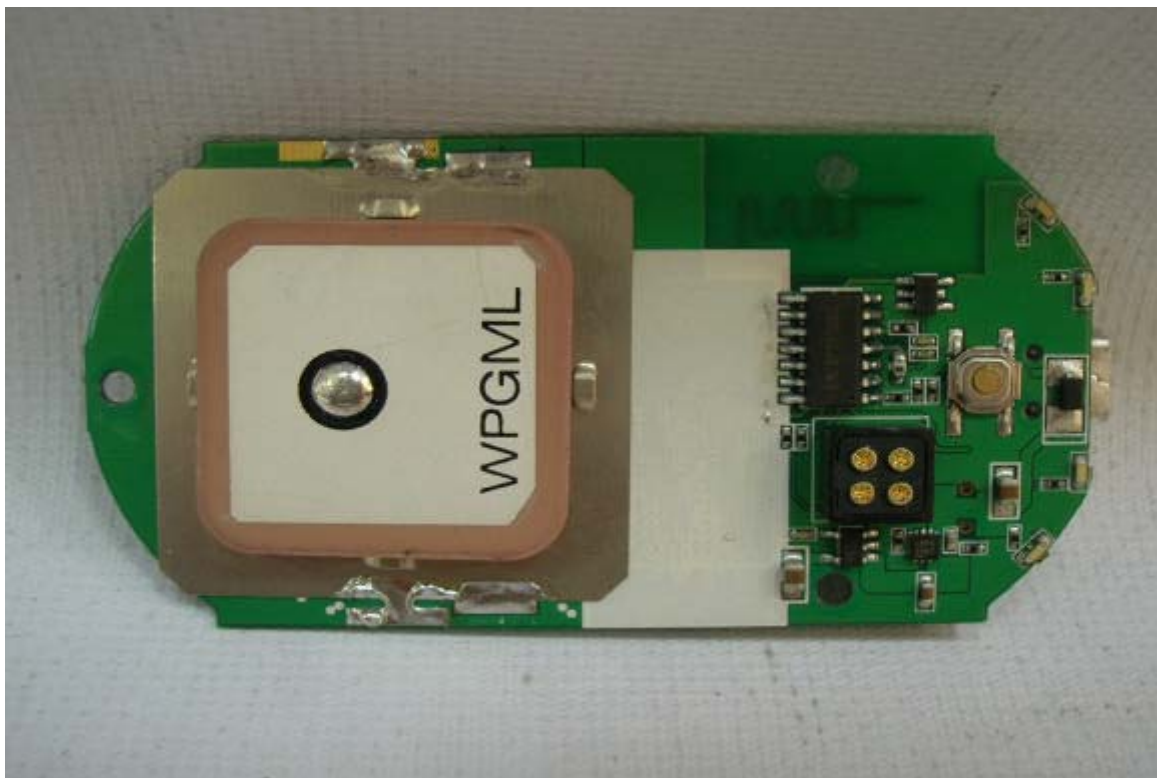
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