

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 : SBUBT25XR

REPORT NO. : E950318

RFI / EMI TEST REPORT

APPLICANT : ftech Corporation

E U T Type : Bluetooth GPS Receiver

MODEL NO. : BT2.5MR, BT2.5SR

FCC ID : SBUBT25XR

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

TEST SITE : PEP Testing Laboratory

TEST ENGINEER : JASON KUNG

TEST DATE : OCT. 05, 2006

ISSUED DATE : OCT. 13, 2006

REPORT NO. : E950318

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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 .

APPLICANT : ftech Corporation
PRODUCT : Bluetooth GPS Receiver
FCC ID : SBUBT25XR
MODEL : BT2.5MR, BT2.5SR

M. Y. Tsui

M. Y. TSUI / President

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I . General Information

The equipment under test (EUT) is Bluetooth GPS Receiver, FCC ID: SBUBT25XR, model BT2.5MR and BT2.5SR. These models have identical electrical design and construction except that they are different in model number for marketing purpose. From technical point of view, we took model BT2.5SR as representative for test. The EUT can be used to work for the applications such as car navigation purpose. The working frequency is 2.402GHz-2.480GHz. DC 3.7V from battery or DC 5V from AC-DC adaptor 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 EUT placement on test table was arranged alone to proceed with test. The test was carried out on EUT operational condition of Tx-On mode: continuous transmission state. The worst-case test result of each test mode was recorded and provided 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	:	Bluetooth GPS Receiver
FCC ID	:	SBUBT25XR
EUT Model No.	:	BT2.5MR, BT2.5SR
Frequency Range	:	2.402~2.480 GHz
Support Channel	:	79 channels
Modulation	:	Frequency Hopping Spread Spectrum (FHSS) Built in Active Antenna
Antenna Type	:	Comply with FCC Part 15, Section 15.203;
Power Supply	:	DC 3.7V Li-on Battery
Power Cord	:	N/A

1.2 Supporting Devices for EUT testing

1. Personal Computer

CPU : Intel P4 Socket 478 3.0GHz

FCC ID : Declaration of Conformity(DoC)

Manufacturer : ASUS

Model Number : P5GD2-X

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

FCC ID : SBUBT25XR

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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. Adaptor

Manufacturer : COMPAQ

Model Number : 281855-001

Input : AC 100-240V 50/60Hz 500mA

Output : DC 5V 3A

8. Dungle

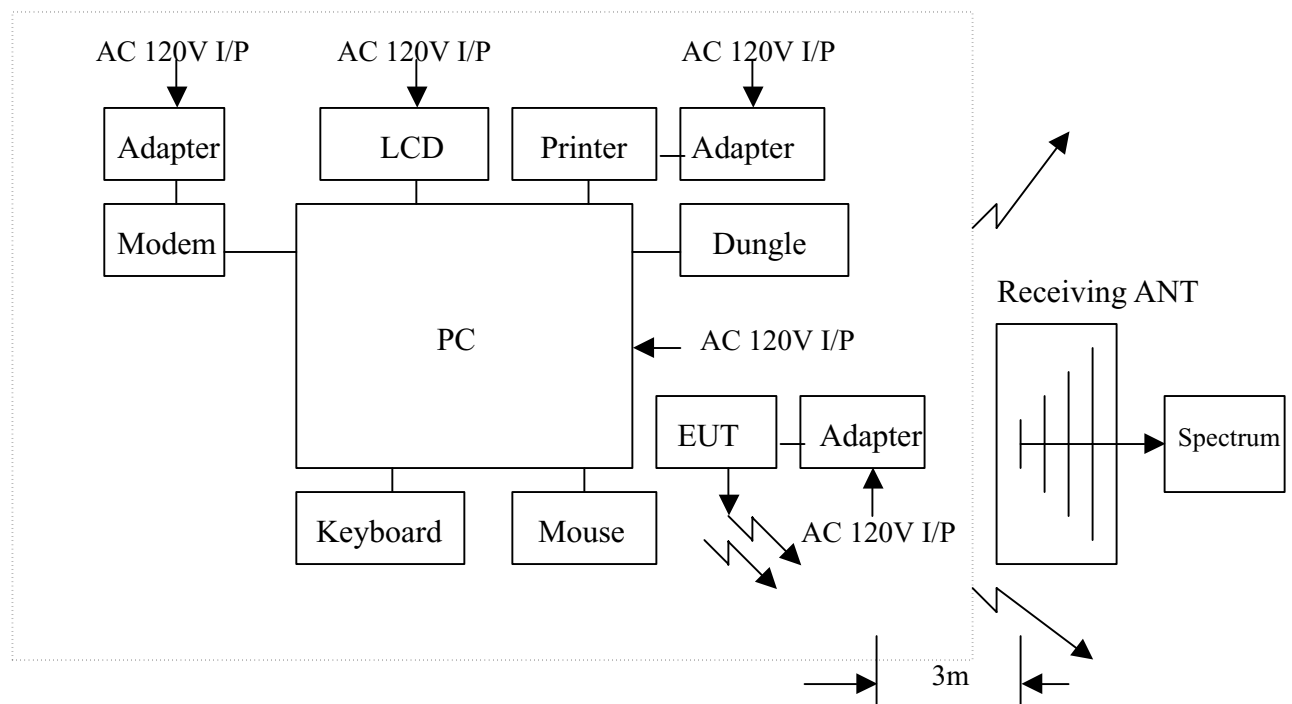
Manufacturer : AmbiCom

Model Number : BT2000C-USB

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, 2.441GHz 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 : BT2.5SR****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

2.1 Testing Description



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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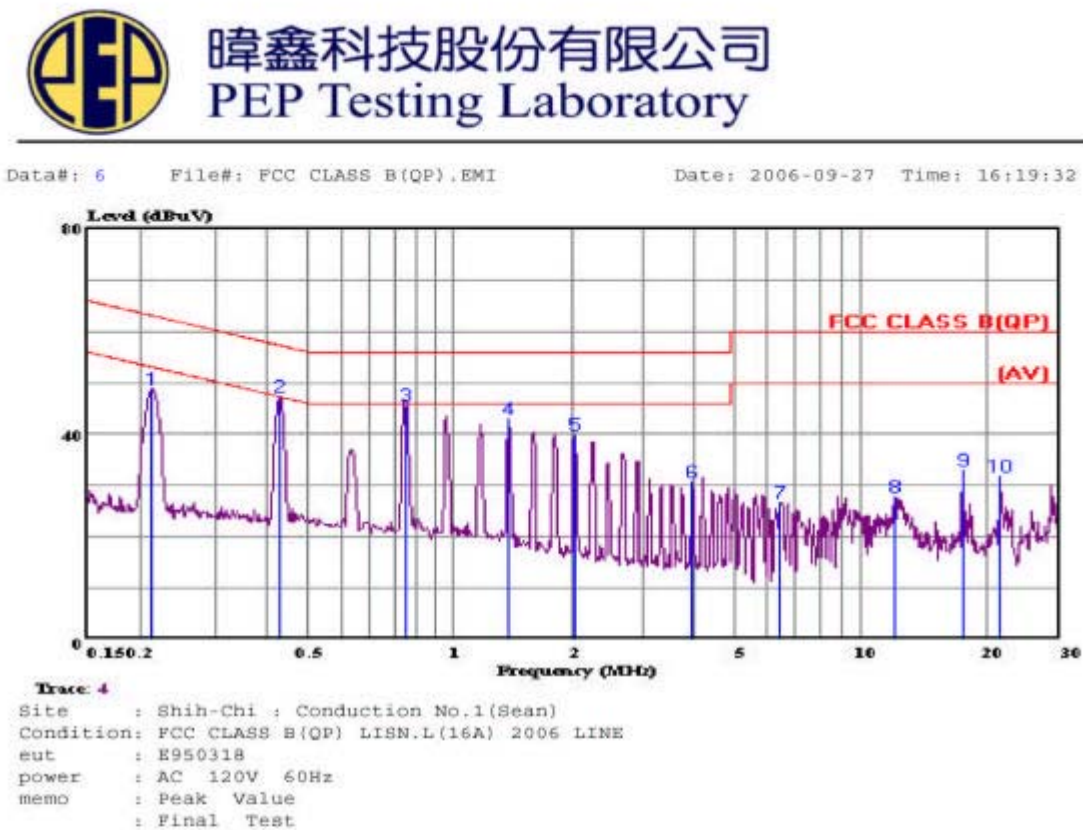
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2.3 Test Result

EUT Model No. BT2.5SR (LINE)

Detector : Peak Value



Page: 1

	Freq	Level	Over	Limit	Read	Probe	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.213	48.79	-14.31	63.10	48.56	0.10	0.13	
2	0.428	47.24	-10.05	57.29	47.04	0.10	0.10	
3	0.852	45.45	-10.55	56.00	45.20	0.10	0.15	QP
4	1.495	43.06	-12.94	56.00	42.70	0.16	0.20	
5	2.144	39.80	-16.20	56.00	39.40	0.20	0.20	
6	4.049	30.55	-25.45	56.00	30.05	0.20	0.30	
7	6.557	26.80	-33.20	60.00	26.23	0.31	0.26	
8	12.253	27.71	-32.29	60.00	26.77	0.54	0.40	
9	17.755	33.03	-26.97	60.00	32.03	0.70	0.30	
10	21.715	31.72	-28.28	60.00	30.58	0.74	0.40	

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FCC ID : SBUBT25XR

REPORT NO. : E950318

EUT Model No.: BT2.5SR (NEUTRAL)

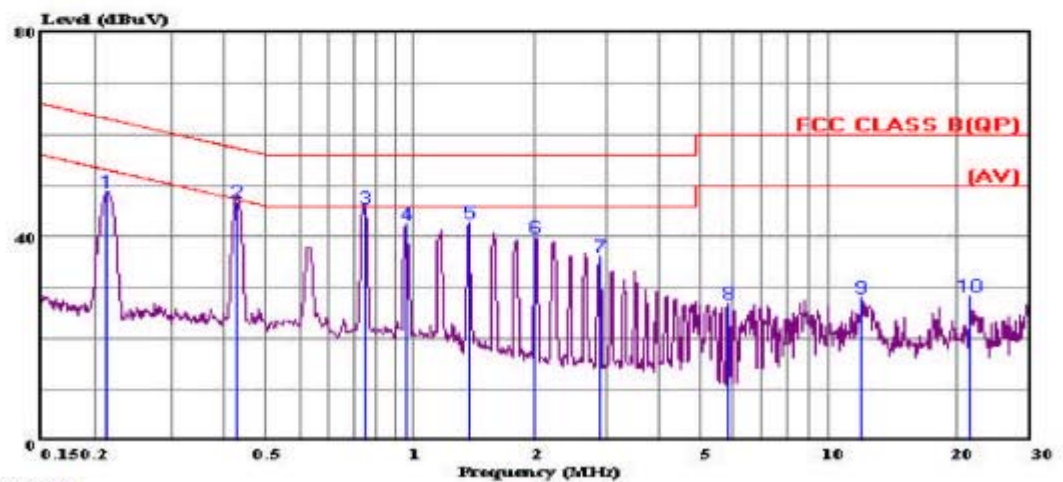
Detector : Peak Value



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Data#: 12 File#: FCC CLASS B(QP).EMI

Date: 2006-09-27 Time: 16:35:00



Trace: 10

Site : Shih-Chi : Conduction No.1 (Sean)
Condition: FCC CLASS B(QP) LISN.N(16A) 2006 NEUTRAL
eut : E950318
power : AC 120V 60Hz
memo : Peak Value
: Final Test

Page: 1

	Freq	Level	Over	Limit	Read	Probe	Cable	
	MHz	dBuV	Limit	Line	Level	Factor	Loss	Remark
			dB	dBuV	dBuV	dB	dB	
1	0.213	48.71	-14.39	63.10	48.48	0.10	0.13	
2	0.429	46.80	-10.49	57.29	46.60	0.10	0.10	QP
3	0.854	45.55	-10.45	56.00	45.30	0.10	0.15	QP
4	1.065	42.47	-13.53	56.00	42.17	0.10	0.20	
5	1.487	42.71	-13.29	56.00	42.41	0.10	0.20	
6	2.110	39.84	-16.16	56.00	39.53	0.11	0.20	
7	2.978	36.23	-19.77	56.00	35.87	0.16	0.20	
8	5.961	27.07	-32.93	60.00	26.62	0.24	0.21	
9	12.124	28.08	-31.92	60.00	27.33	0.35	0.40	
10	21.715	28.34	-31.66	60.00	27.50	0.44	0.40	

2.4 Conducted Emission Test Photo

EUT Model No. BT2.5SR

< FRONT VIEW >



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

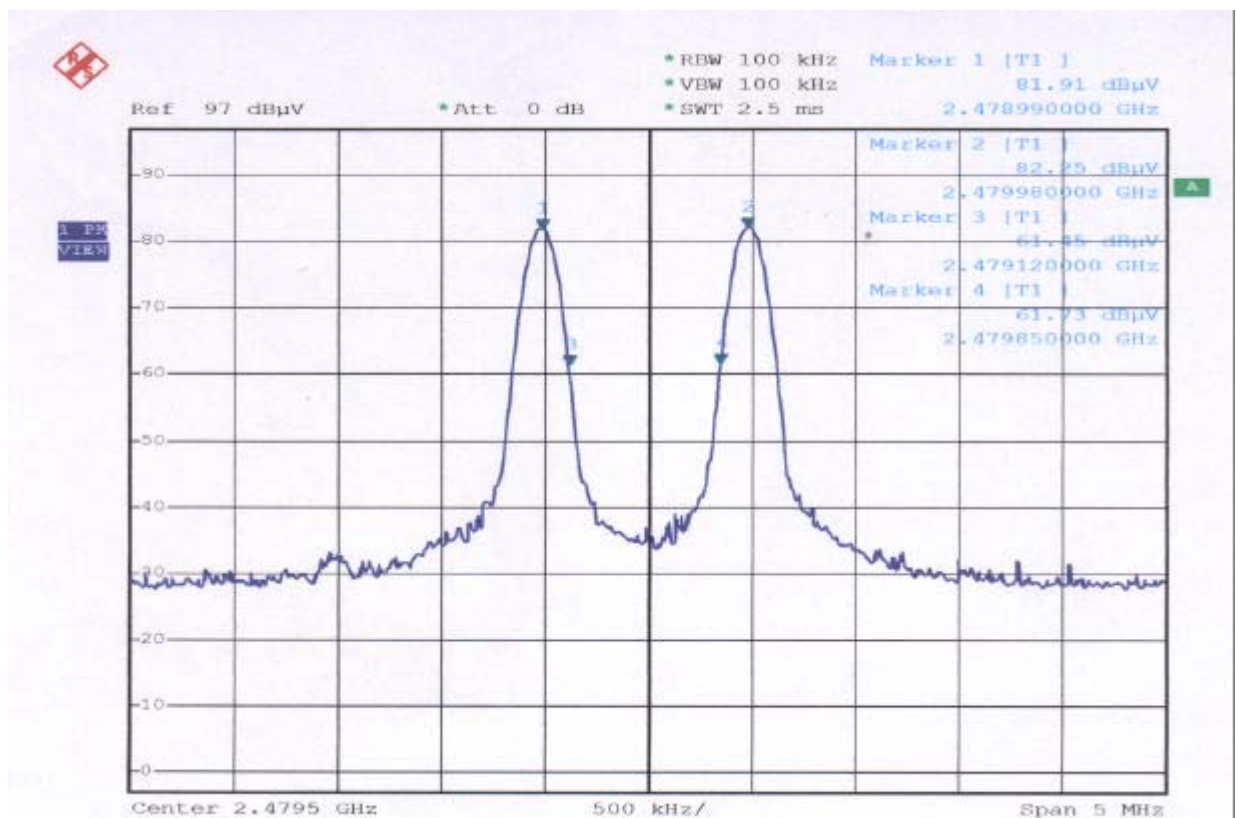
3.1 Test Procedure

- (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	990	25	Pass
Separation at -20dB	730	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. BT2.5SR**

Channel	Antenna Polarity	Bandwidth (KHz)	Limit (KHz)	Pass/Fail
LOW	H	35	1000	Pass
	V	35	1000	Pass
MID	H	33	1000	Pass
	V	35	1000	Pass
HIGH	H	36	1000	Pass
	V	35	1000	Pass

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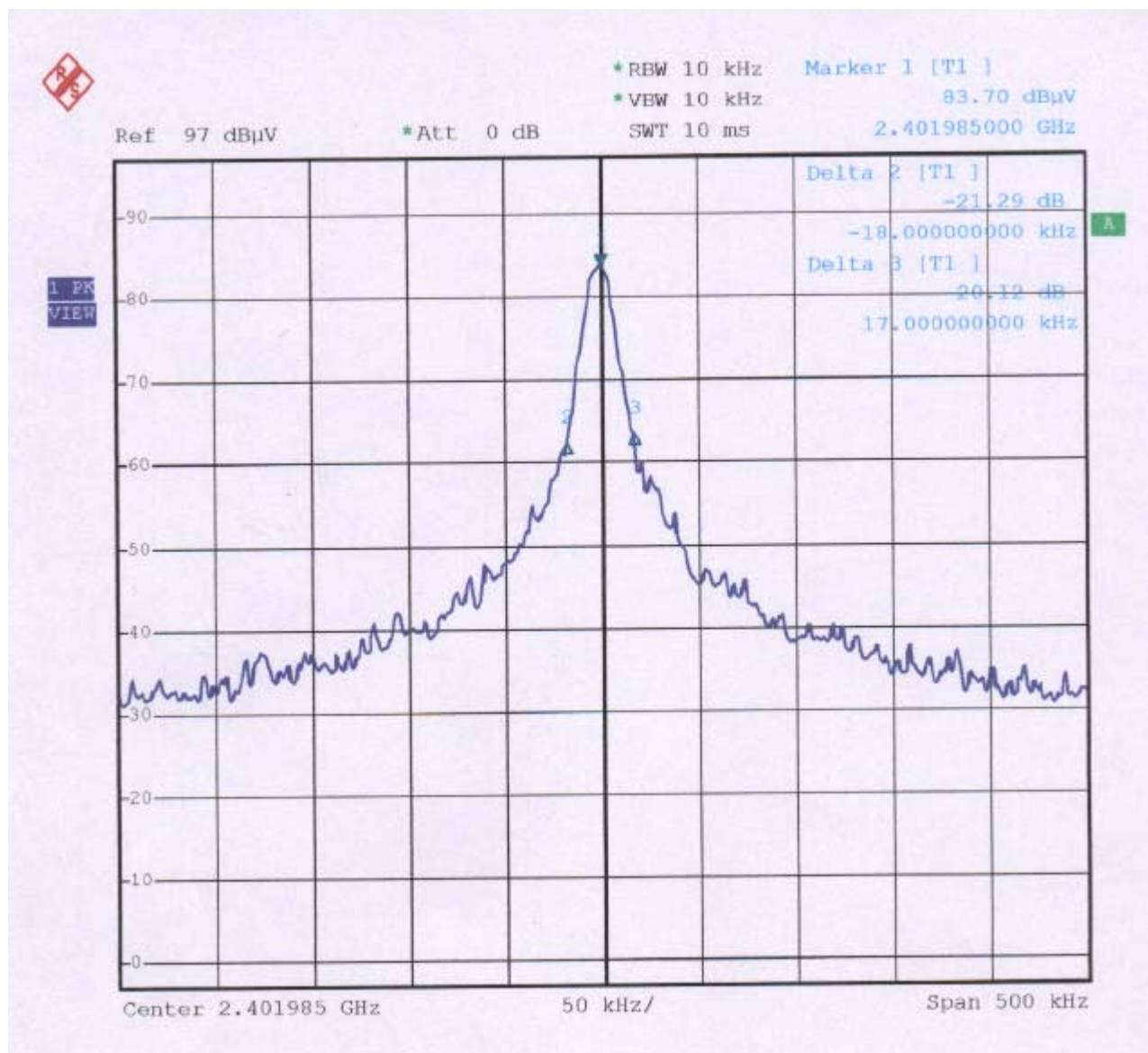
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4.3 Spectrum Plot Data

Channel : CH LOW

Polarity : Horizontal



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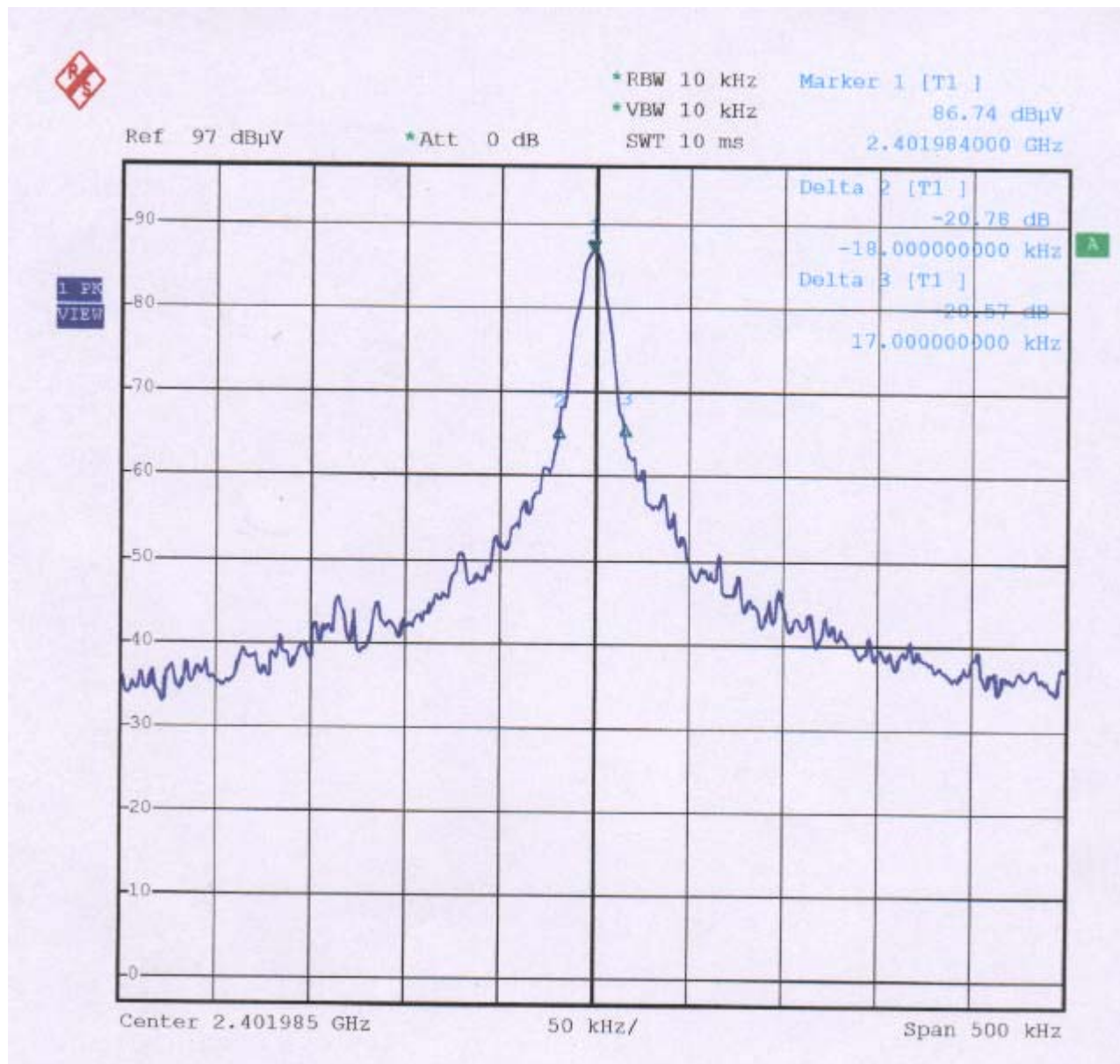
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Channel : CH LOW

Polarity : Vertical



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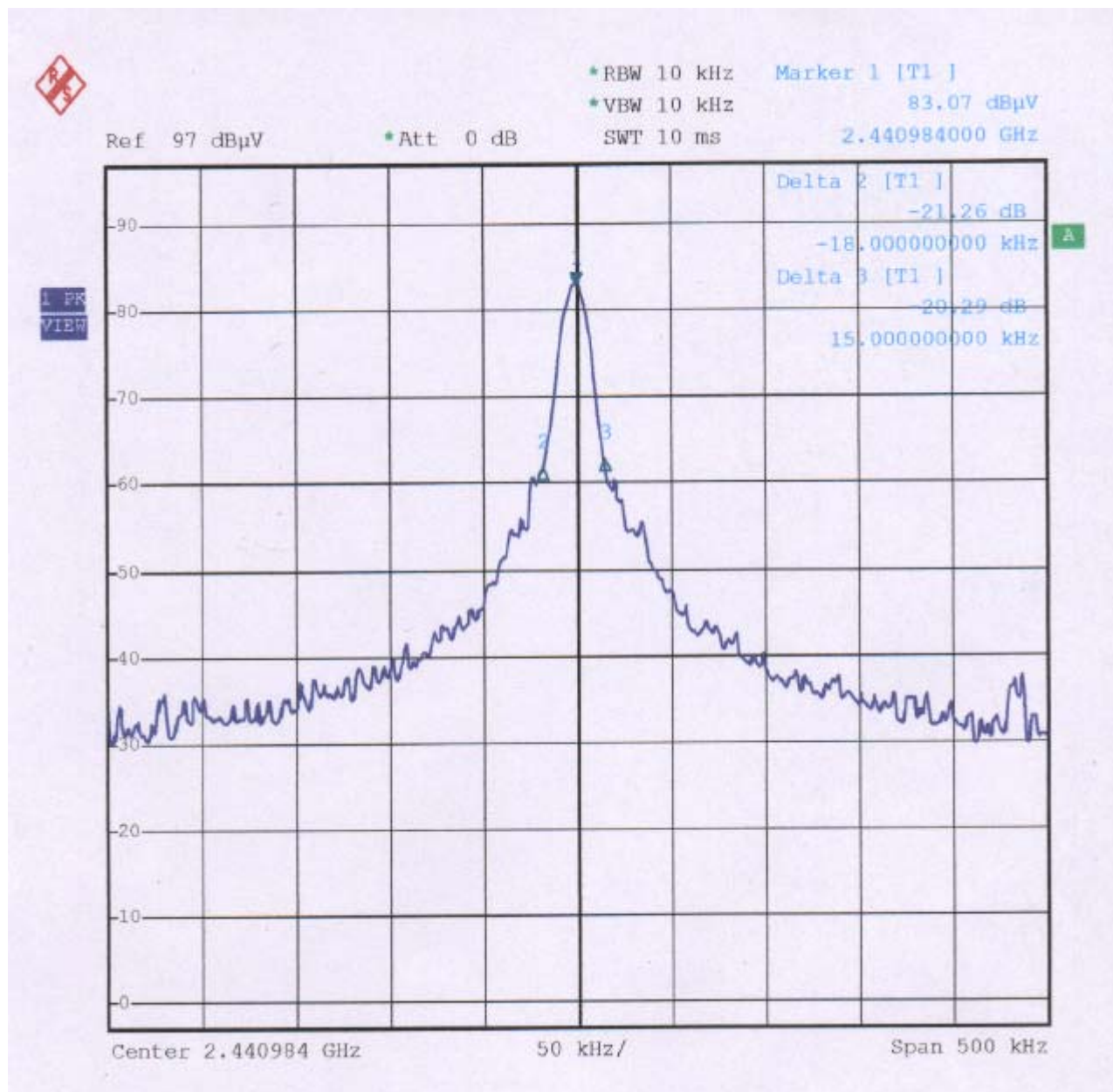
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Channel : CH MID

Polarity : Horizontal



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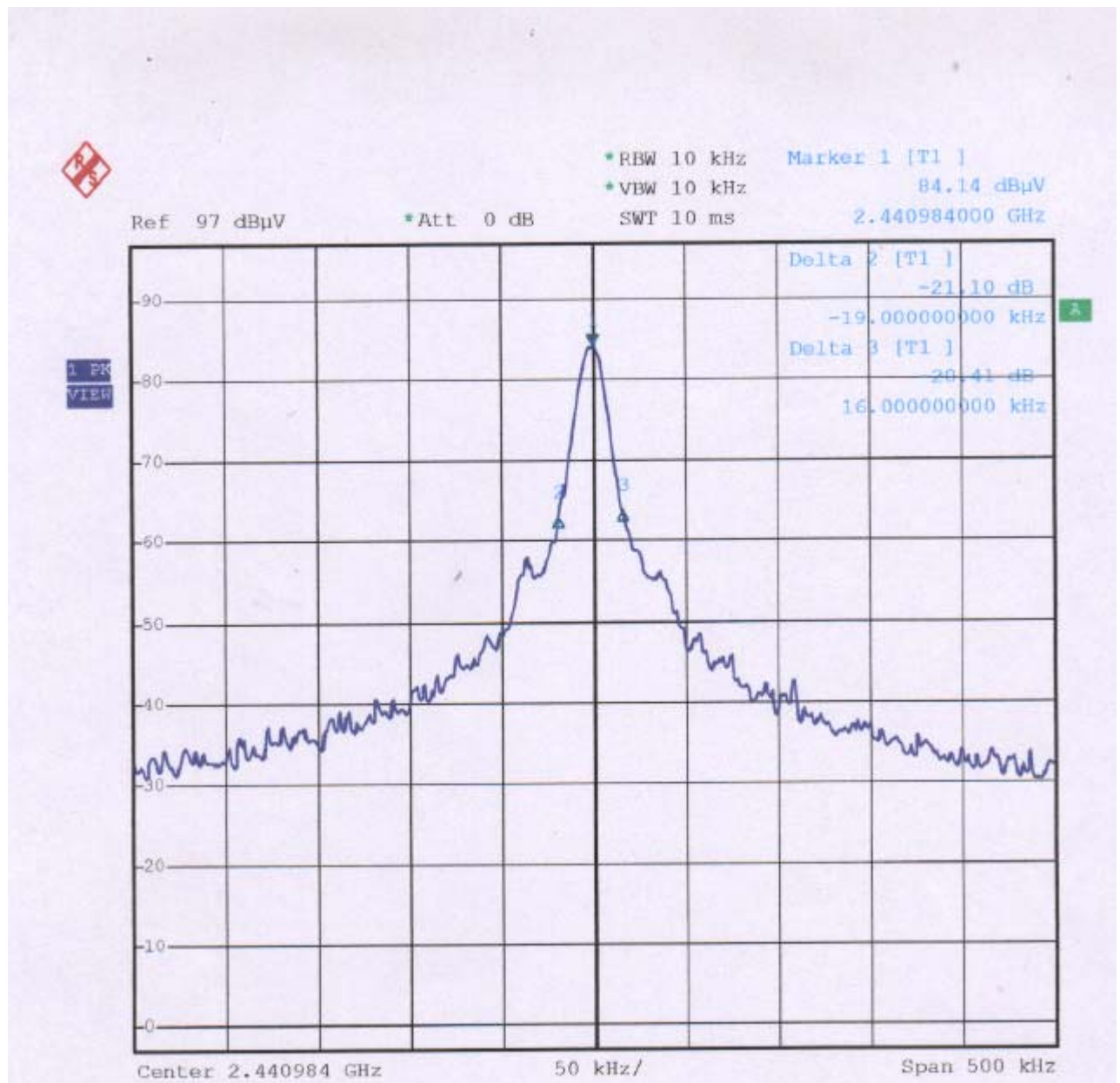
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FCC ID : SBUBT25XR

REPORT NO. : E950318

Channel : CH MID

Polarity : Vertical



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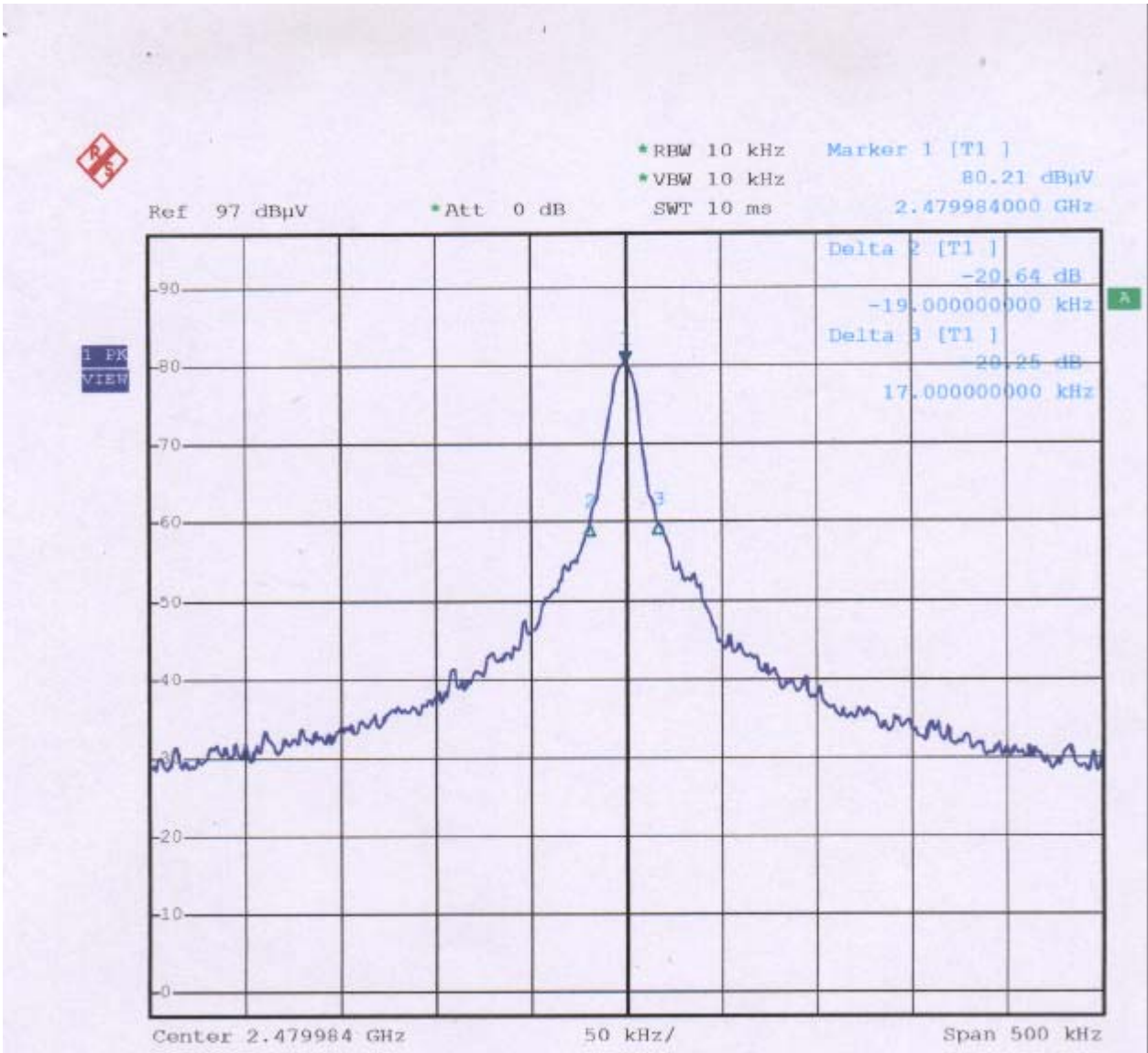
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Channel : CH HIGH

Polarity : Horizontal



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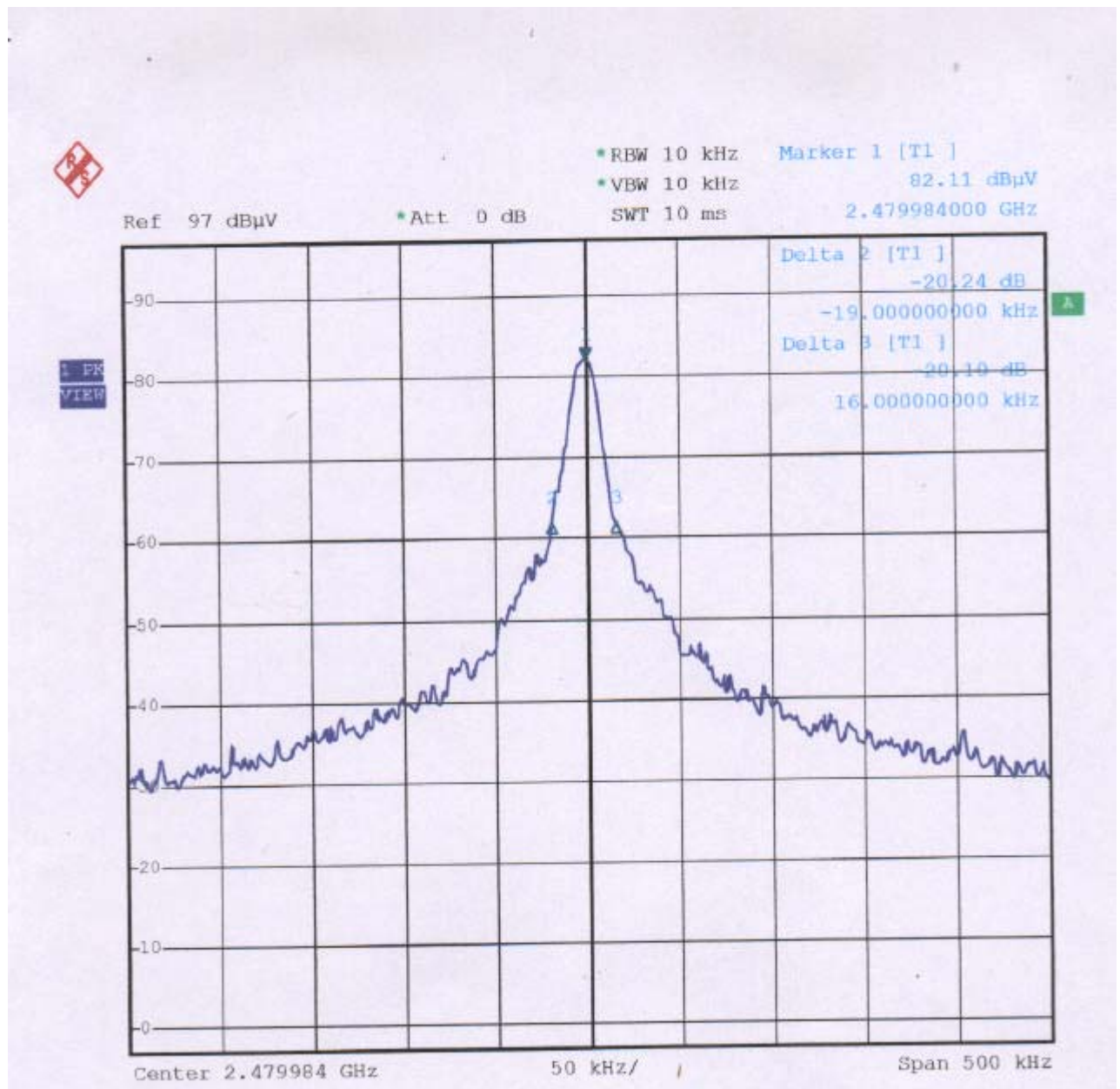
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REPORT NO. : E950318

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= $30(1600/79)*t = 30(20.25)*420\mu\text{Sec} = 255\text{m Sec} < 0.4\text{S}$

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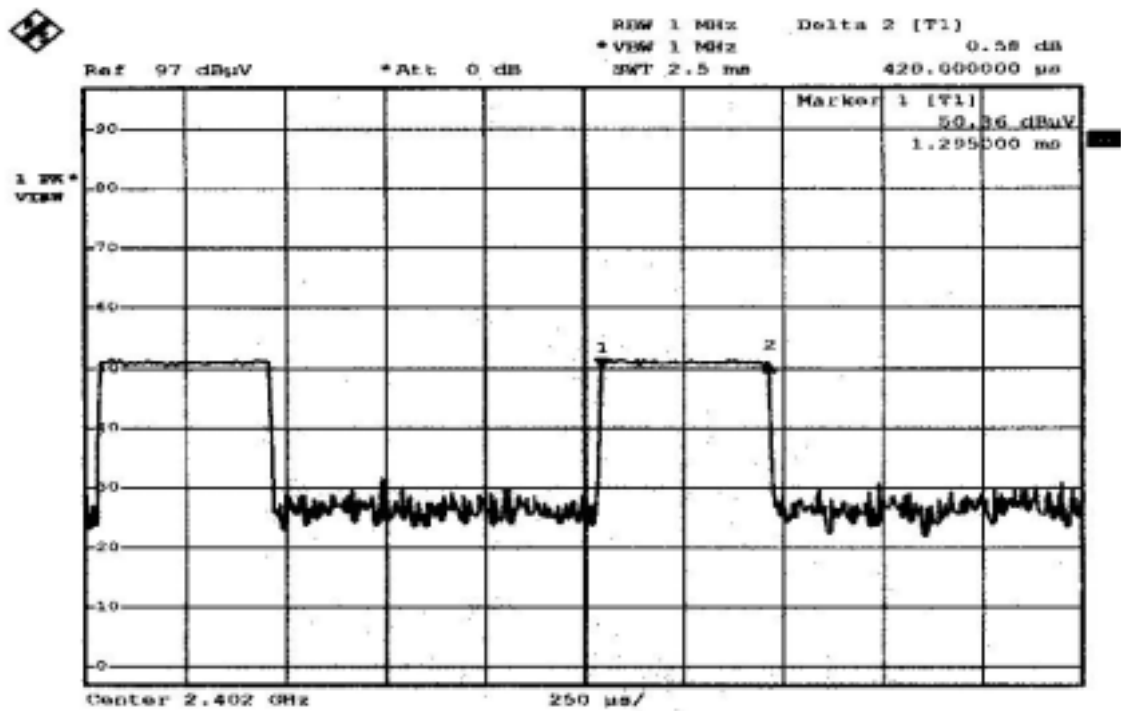
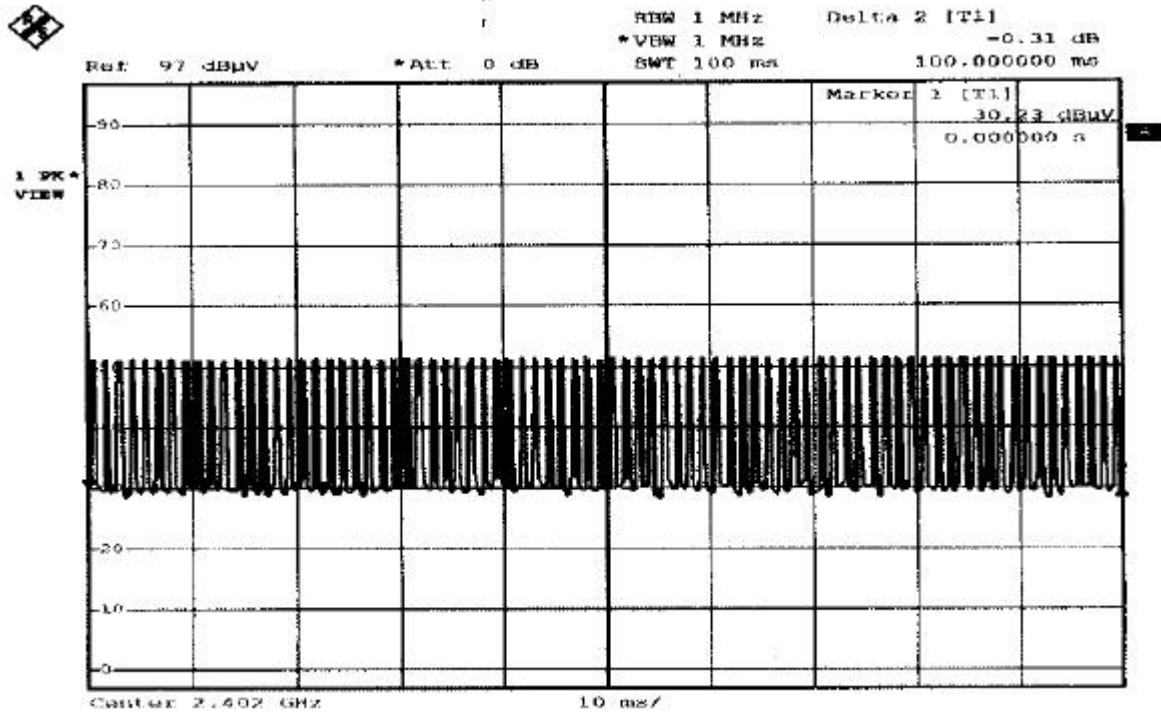
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FCC ID : SBUBT25XR

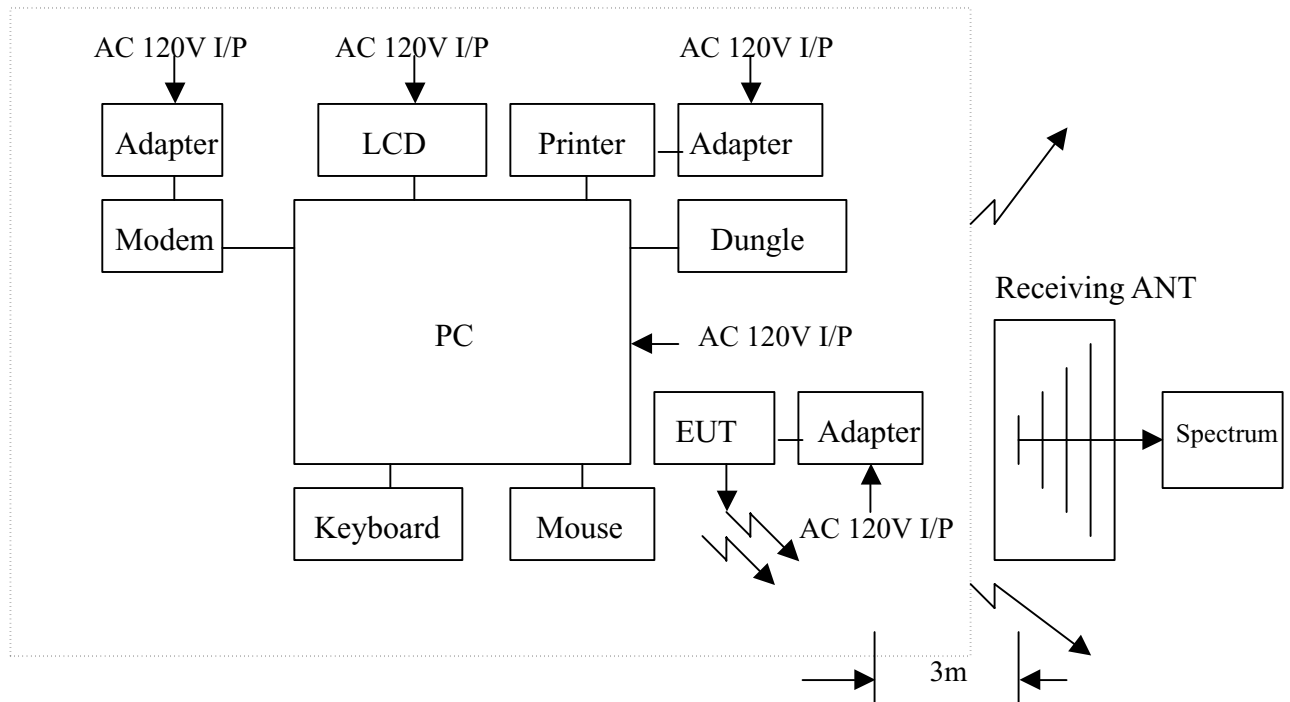
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5.3 Spectrum Plot Data



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. BT2.5SR**

Channel	Frequency (MHz)	Antenna Polarity (H/V)	Level (dBuV/m)	E.I.R.P. (W)
LOW	2401.995	H	82.04	48.0×10^{-6}
	2401.95	V	84.51	84.7×10^{-6}
MID	2440.99	H	81.54	42.8×10^{-6}
	2440.98	V	82.63	55.0×10^{-6}
HIGH	2479.98	H	79.47	26.6×10^{-6}
	2479.98	V	81.24	40.0×10^{-6}

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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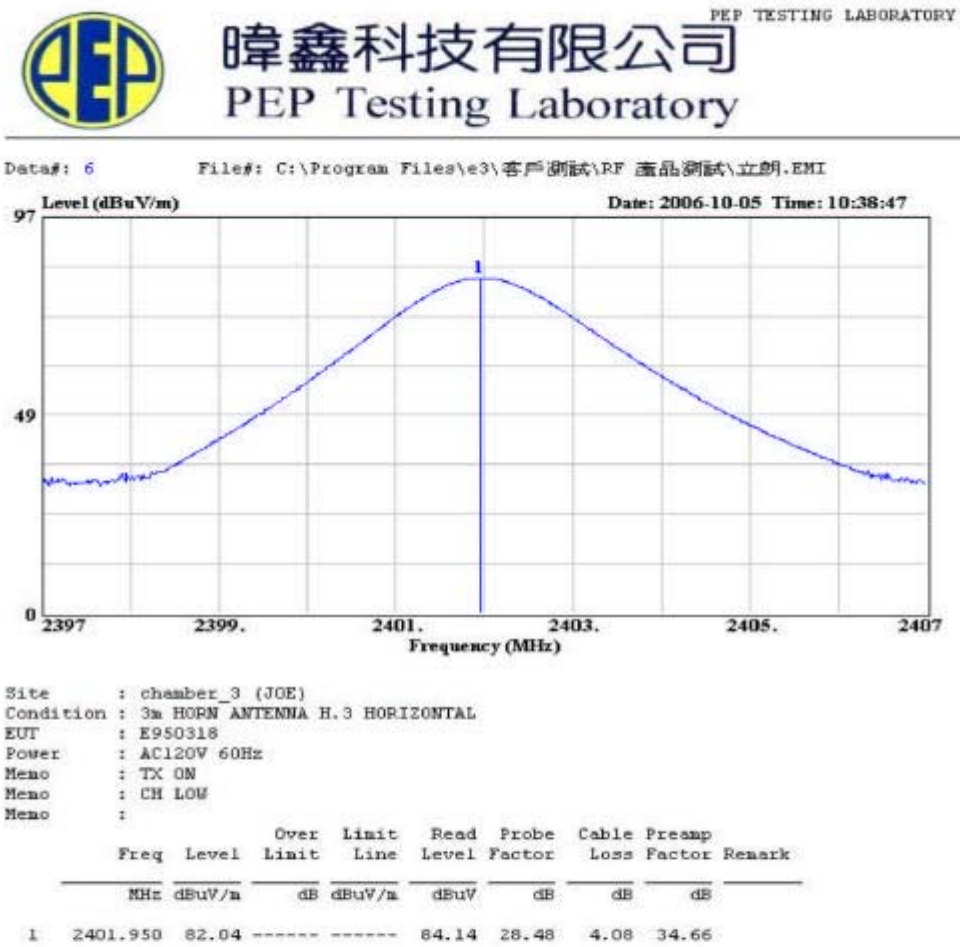
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REPORT NO. : E950318

EUT Model No. BT2.5SR

Channel : CH LOW

Polarity : Horizontal



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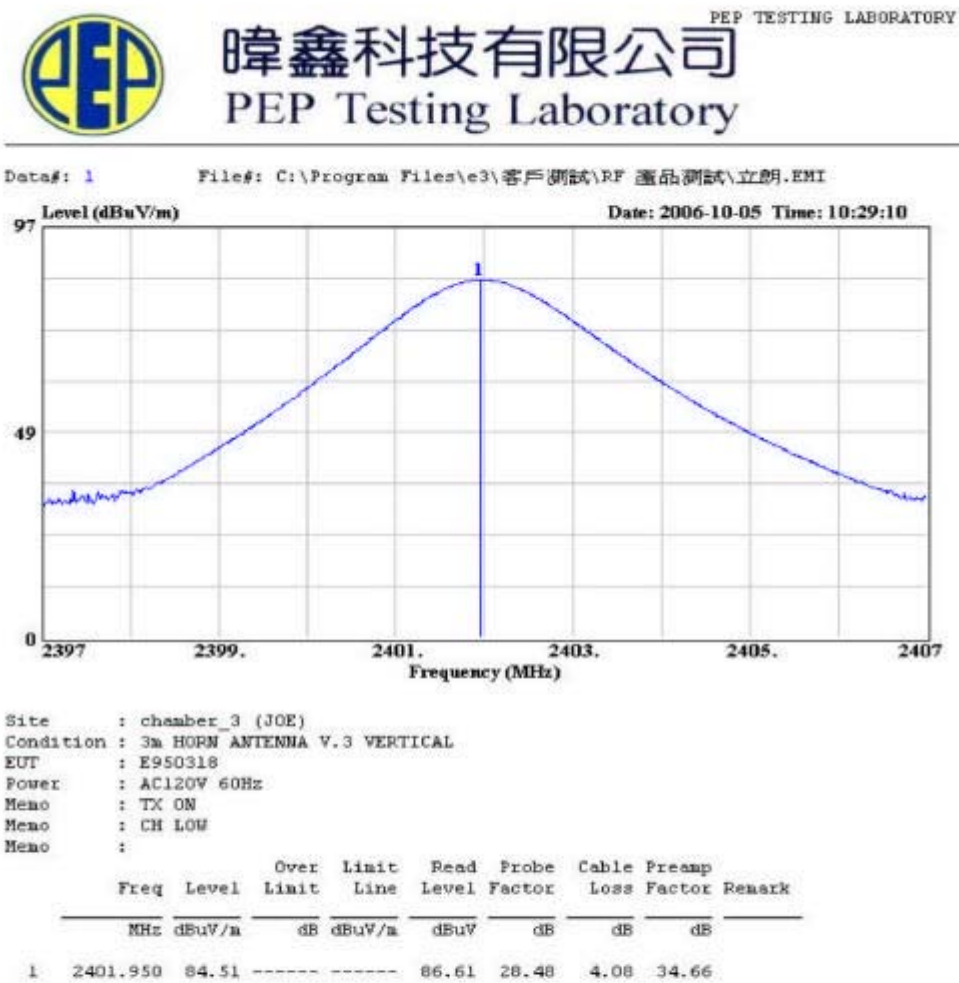
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FCC ID : SBUBT25XR

REPORT NO. : E950318

Channel : CH LOW

Polarity : Vertical



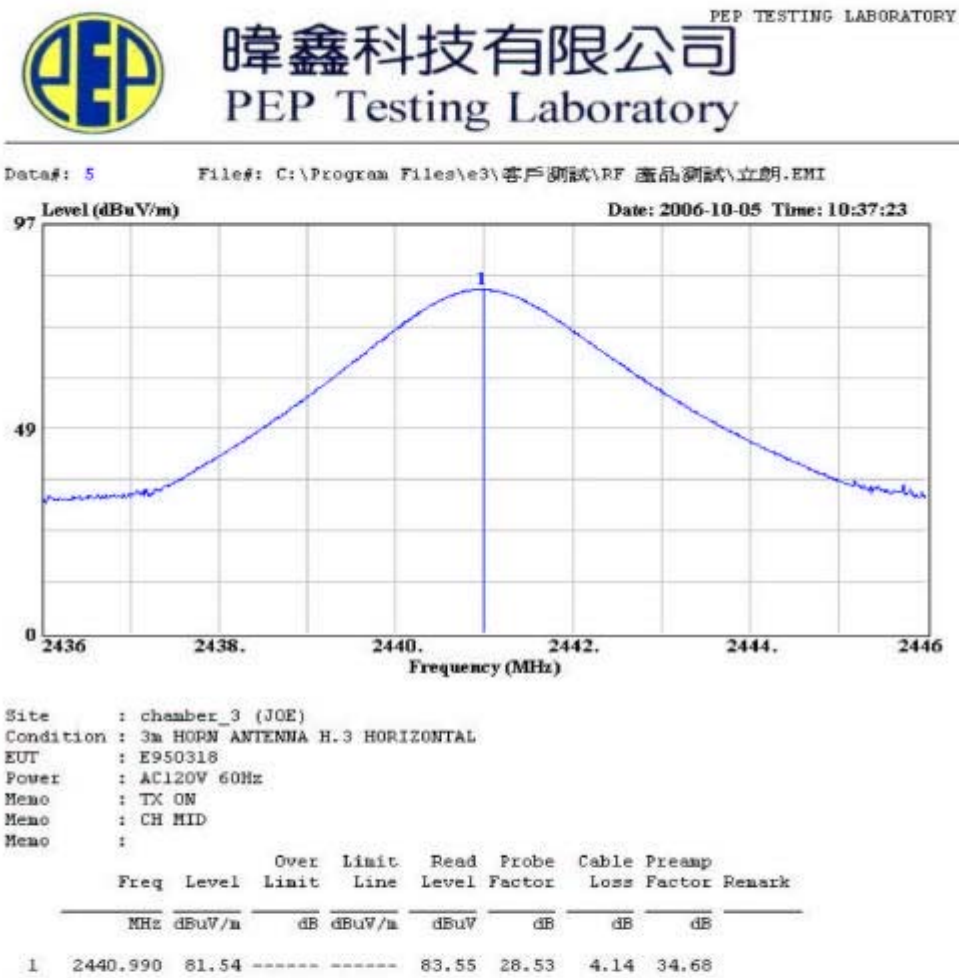
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12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,
Taipei Hsien, Taiwan, R. O. C.
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SBUBT25XR

REPORT NO. : E950318

Channel : CH MID
Polarity : Horizontal



PEP Testing Laboratory

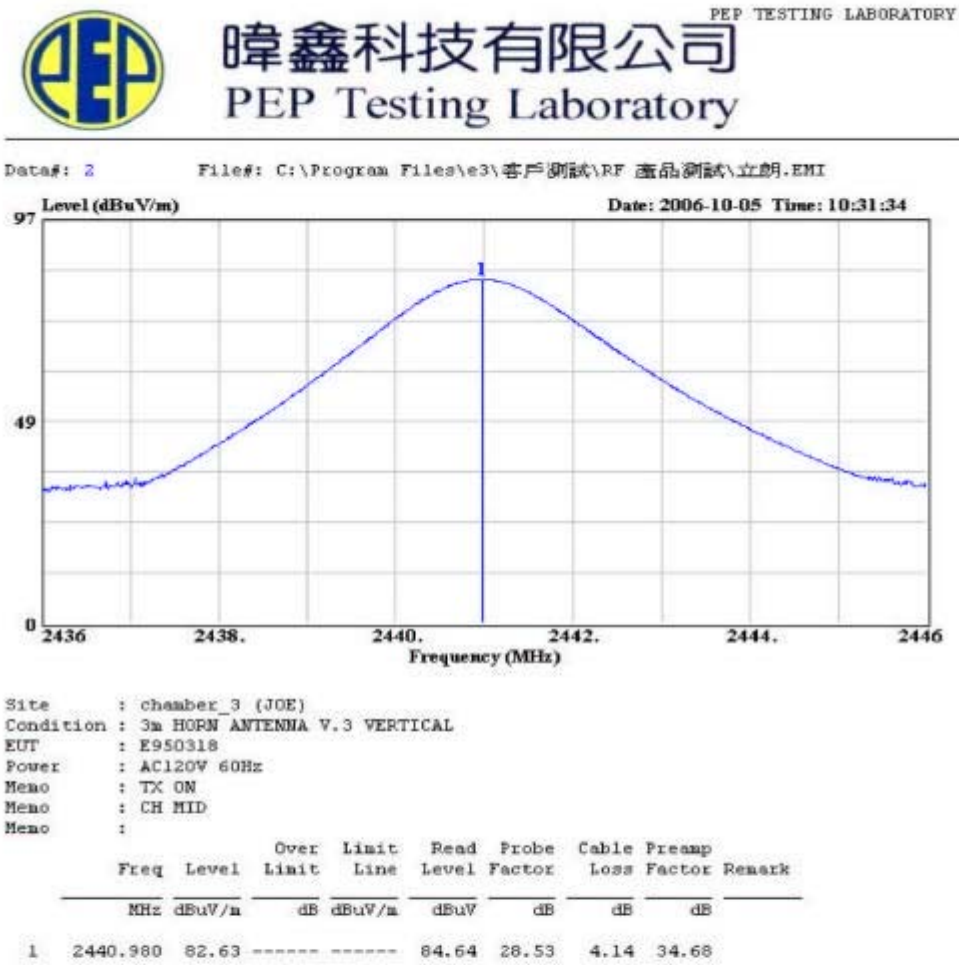
12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,
Taipei Hsien, Taiwan, R. O. C.
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SBUBT25XR

REPORT NO. : E950318

Channel : CH MID

Polarity : Vertical



PEP Testing Laboratory

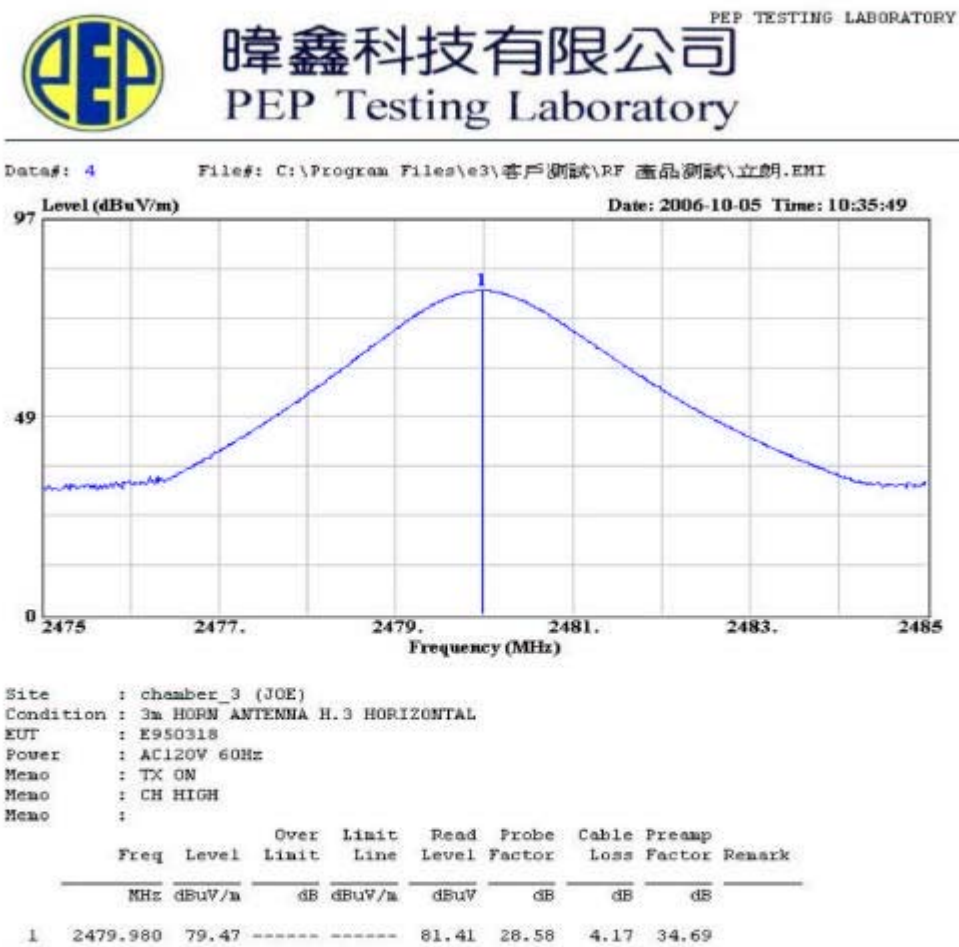
12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,
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FCC ID : SBUBT25XR

REPORT NO. : E950318

Channel : CH HIGH

Polarity : Horizontal



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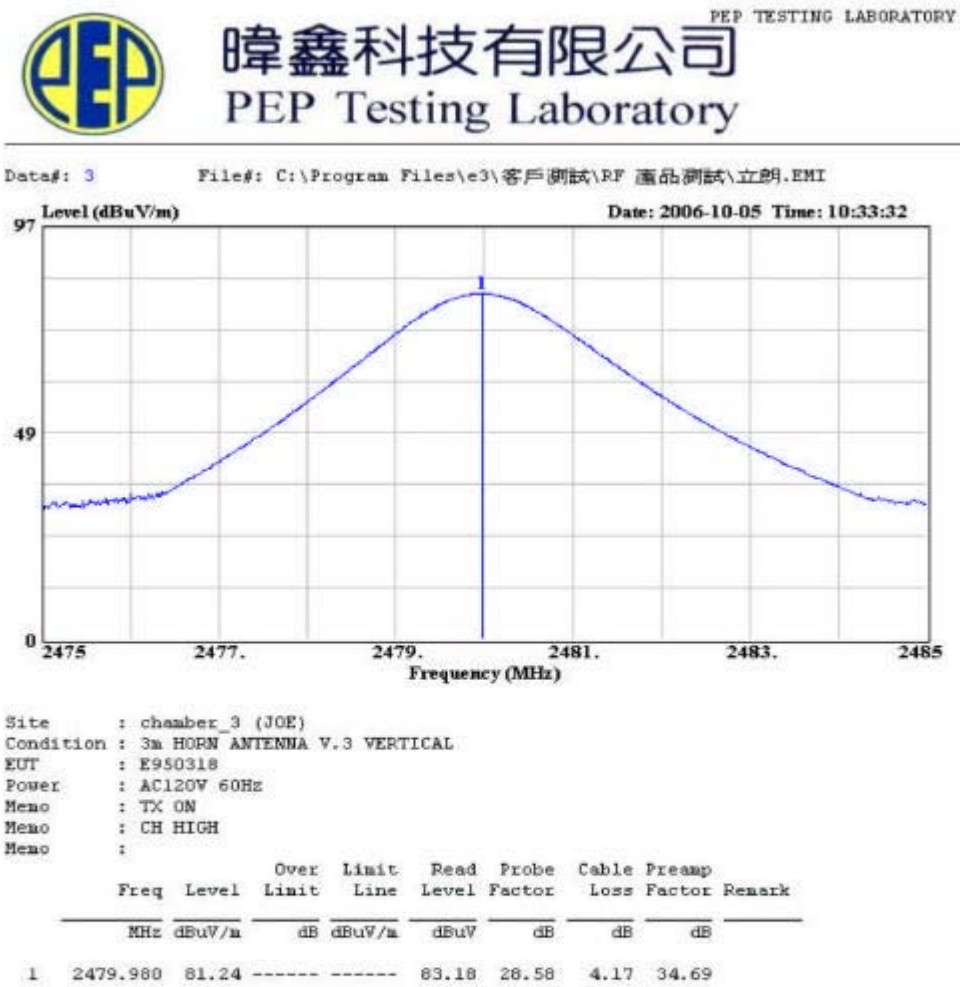
12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,
Taipei Hsien, Taiwan, R. O. C.
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SBUBT25XR

REPORT NO. : E950318

Channel : CH HIGH

Polarity : Vertical

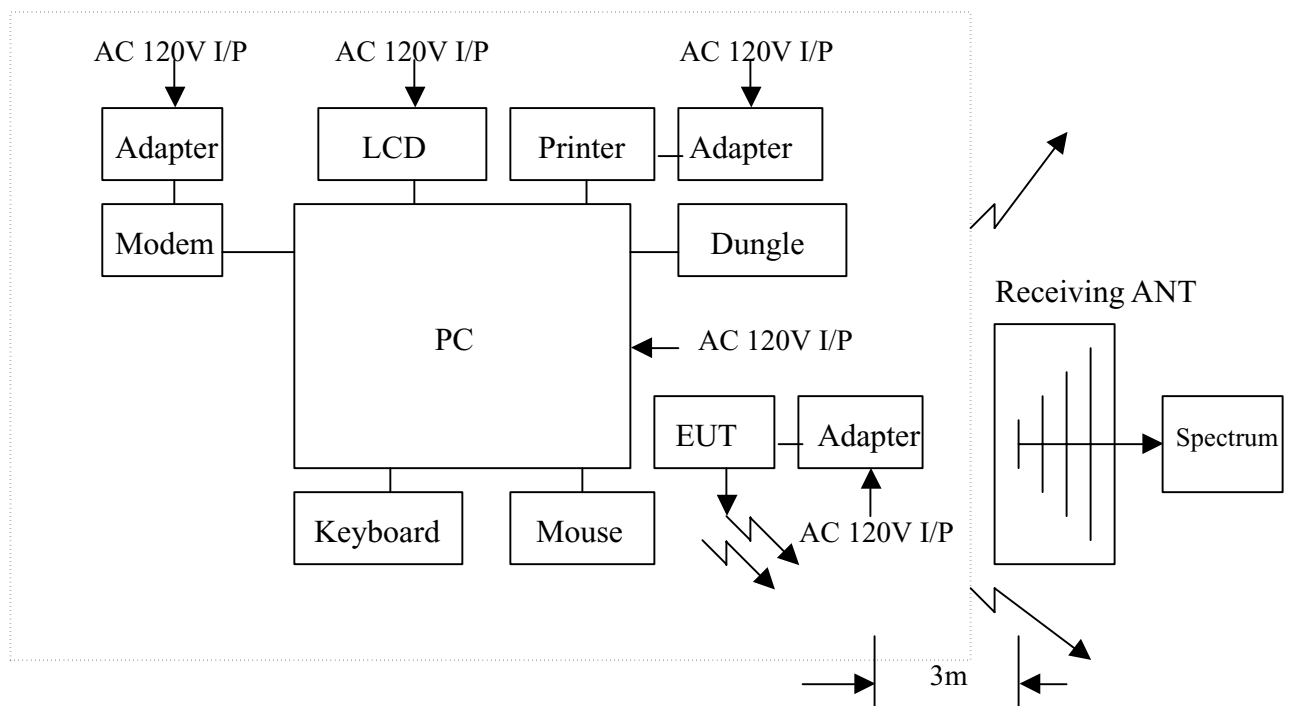


VII. §15.247(b)(4) Maximum Permissible Exposure (MPE)

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. BT2.5SR**

Channel	Frequency (MHz)	A.P. (H/V)	Level (dBuV/m)	Power density at 20cm (m W / cm ²)
LOW	2401.995	H	82.04	2.13×10^{-7}
	2401.950	V	84.51	3.77×10^{-7}
MID	2440.990	H	81.54	1.90×10^{-7}
	2440.980	V	82.63	2.44×10^{-7}
HIGH	2479.980	H	79.47	1.18×10^{-7}
	2479.980	V	81.24	1.77×10^{-7}

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

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

$$\text{E.I.R.P.} = (1 \times 0.2)^2 / 30 = 1.33 \text{ mW/cm}^2$$

VIII. §15.247(c) : Spurious Radiated Emissions**8.1 Out side band below 1GHz****Test Results :****Model No. : BT2.5SR****Frequency range : 30MHz - 1GHz****Detector : Quasi-Peak Value****Temperature : 28° C****Humidity : 56 %****Antenna polarization : HORIZONTAL ; Test distance : 3 m ;**

Freq.	Level	Over	Limit
(MHz)	(dBuV/m)	Limit	Line
		(dB)	(dBuV/m)
430.900	37.43	- 8.57	46.00
528.200	35.80	-10.20	46.00
575.800	34.82	-11.18	46.00
623.400	37.75	- 8.25	46.00
671.700	34.81	-11.19	46.00
713.300	34.03	-11.97	46.00

Antenna polarization : VERTICAL ; Test distance : 3 m ;

Freq.	Level	Over	Limit
(MHz)	(dBuV/m)	Limit	Line
		(dB)	(dBuV/m)
35.940	35.61	- 4.39	40.00
575.800	35.56	-10.44	46.00
623.400	33.15	-12.85	46.00
834.100	33.98	-12.02	46.00
890.100	33.33	-12.67	46.00
929.300	33.79	-12.21	46.00

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 : SBUBT25XR

REPORT NO. : E950318

8.2 Out side band above 1GHz

Test Results :

Model No. : BT2.5SR
Frequency range : above 1GHz
Temperature : 28° C
Channel : LOW
Detector : Peak / Average Value
Humidity : 56 %

Antenna polarization : HORIZONTAL ; Test distance : 3 m ;

Freq. (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Remark
4804.010	54.20	-19.80	74	PK
4803.940	52.82	- 1.18	54	AV
7205.970	49.60	-24.40	74	PK
-----	-----	-----	-----	-----

Antenna polarization : VERTICAL ; Test distance : 3 m ;

Freq. (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Remark
4804.040	50.58	-23.42	74	PK
-----	-----	-----	-----	-----
7206.050	48.53	-25.47	74	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 : SBUBT25XR

REPORT NO. : E950318

Model No. : BT2.5SR
Frequency range : above 1GHz
Temperature : 28° C
Channel : MID
Detector : Peak / Average Value
Humidity : 56 %

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

Freq. (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Remark
4882.040	50.17	-23.83	74	PK
-----	-----	-----	-----	-----
7323.060	47.51	-26.49	74	PK
-----	-----	-----	-----	-----

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

Freq. (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Remark
4882.030	48.72	-25.28	74	PK
-----	-----	-----	-----	-----
7323.000	46.36	-27.64	74	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 : SBUBT25XR

REPORT NO. : E950318

Model No. : BT2.5SR
Frequency range : above 1GHz **Detector : Peak / Average Value**
Temperature : 28° C **Humidity : 56 %**
Channel : HIGH

Antenna polarization : HORIZONTAL ; Test distance : 3 m ;

Freq. (MHz)	Level (dBuV/m)	Over	Limit	Remark
		Limit (dB)	Line (dBuV/m)	
4959.910	54.25	-19.75	74	PK
4959.970	53.20	- 0.80	54	AV
7440.030	46.71	-27.29	74	PK
-----	-----	-----	-----	-----

Antenna polarization : VERTICAL ; Test distance : 3 m ;

Freq. (MHz)	Level (dBuV/m)	Over	Limit	Remark
		Limit (dB)	Line (dBuV/m)	
4959.920	54.10	-19.90	74	PK
4959.990	52.58	- 1.42	54	AV
7439.960	46.70	-27.30	74	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. BT2.5SR

< FRONT VIEW >



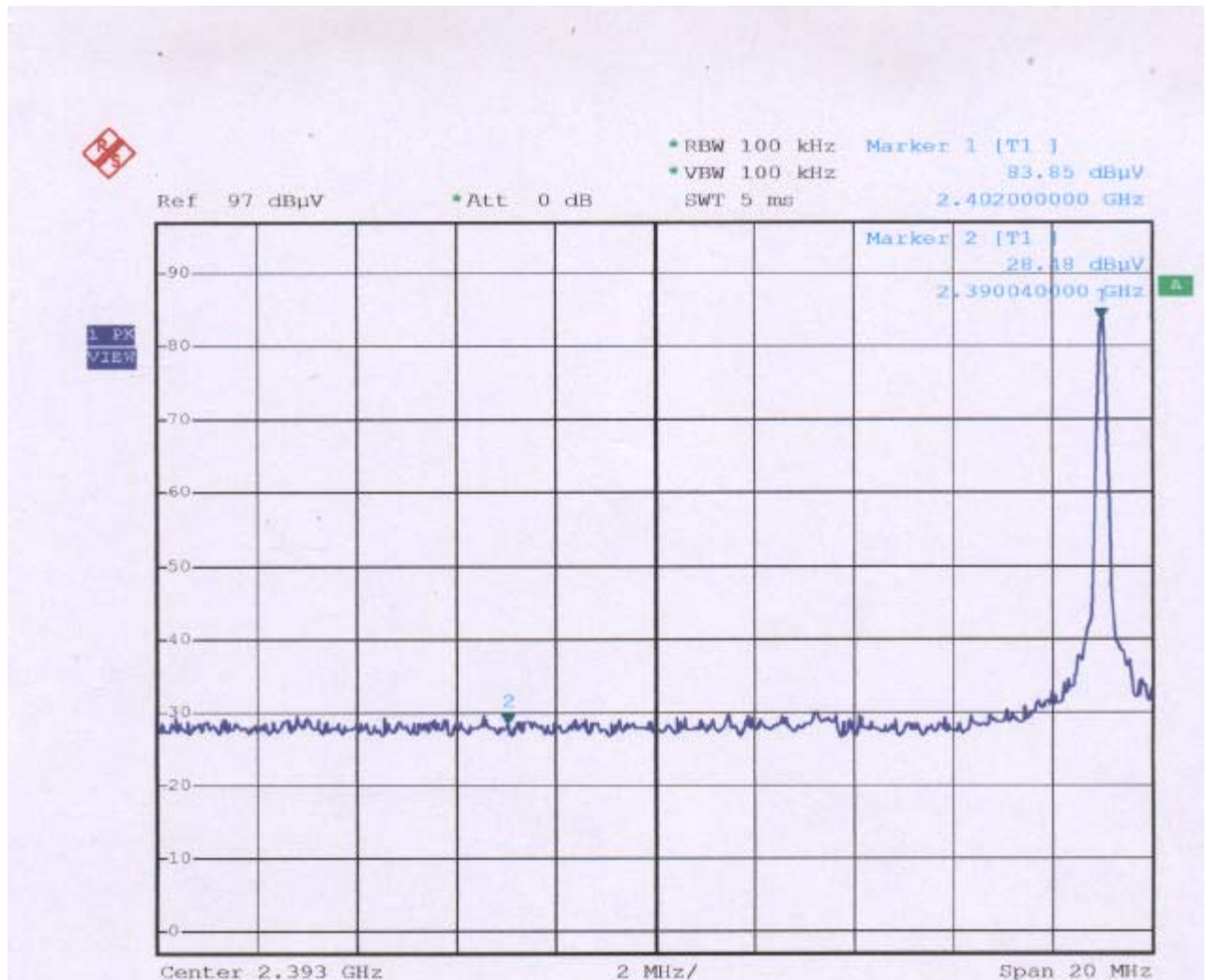
< REAR VIEW >



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 :

$83.85 \text{ dBuV/m} - 28.48 \text{ dBuV/m} = 55.37 \text{ dBuV/m}$

$82.02 \text{ dBuV/m} - 55.37 \text{ dBuV/m} = 26.65 \text{ dBuV/m}$

$*26.65 \text{ dBuV/m} < \text{Average Limit (54dBuV/m)}$

PEP Testing Laboratory

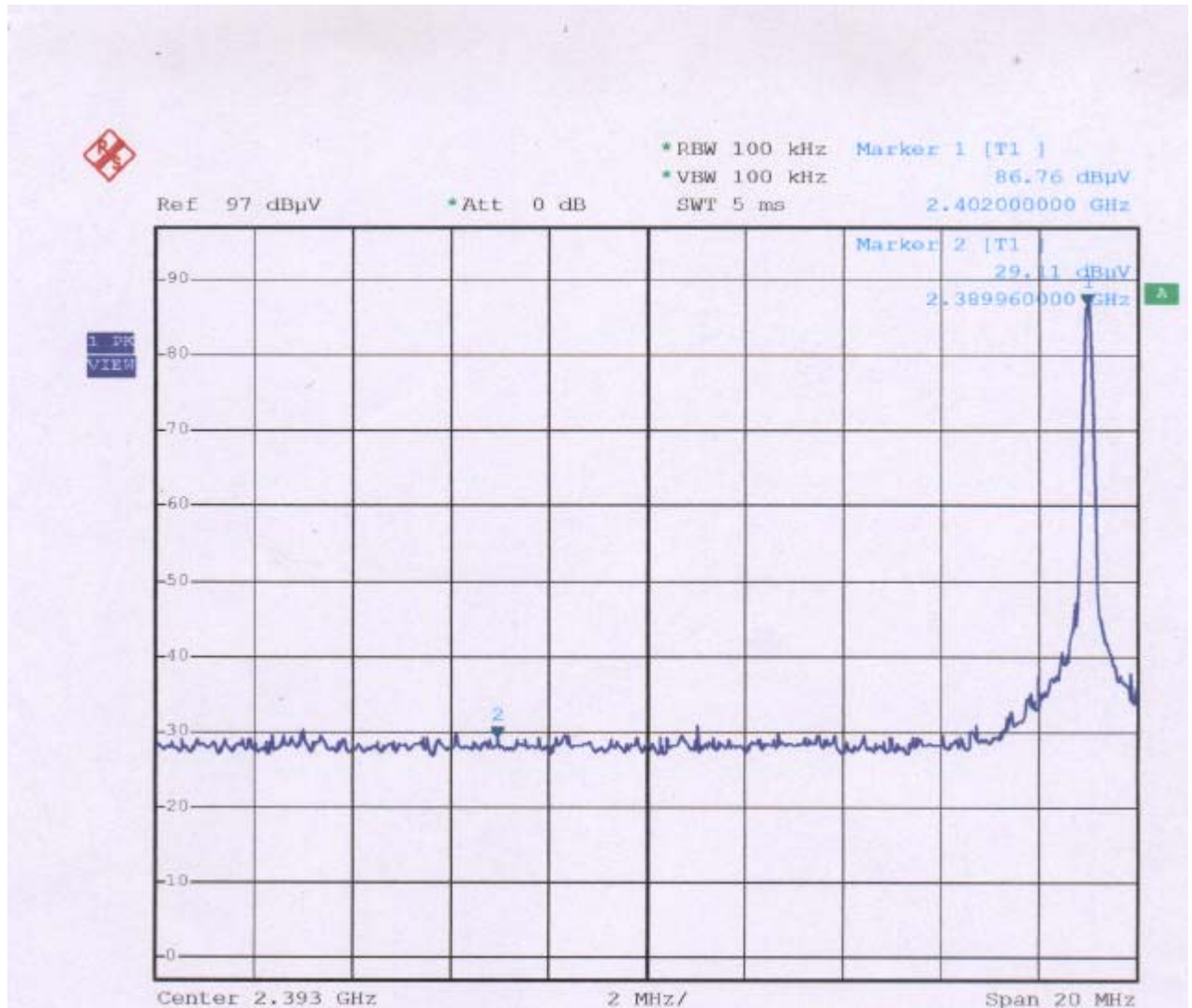
12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,
Taipei Hsien, Taiwan, R. O. C.
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SBUBT25XR

REPORT NO. : E950318

Channel : CH LOW

Polarity : Vertical



Test method : Public Notice DA 00-705

Detect : Peak Value

Marker-Delta method :

$86.76 \text{ dBuV/m} - 29.11 \text{ dBuV/m} = 57.65 \text{ dBuV/m}$

$84.51 \text{ dBuV/m} - 57.65 \text{ dBuV/m} = 26.86 \text{ dBuV/m}$

$*26.86 \text{ dBuV/m} < \text{Average Limit (54 dBuV/m)}$

PEP Testing Laboratory

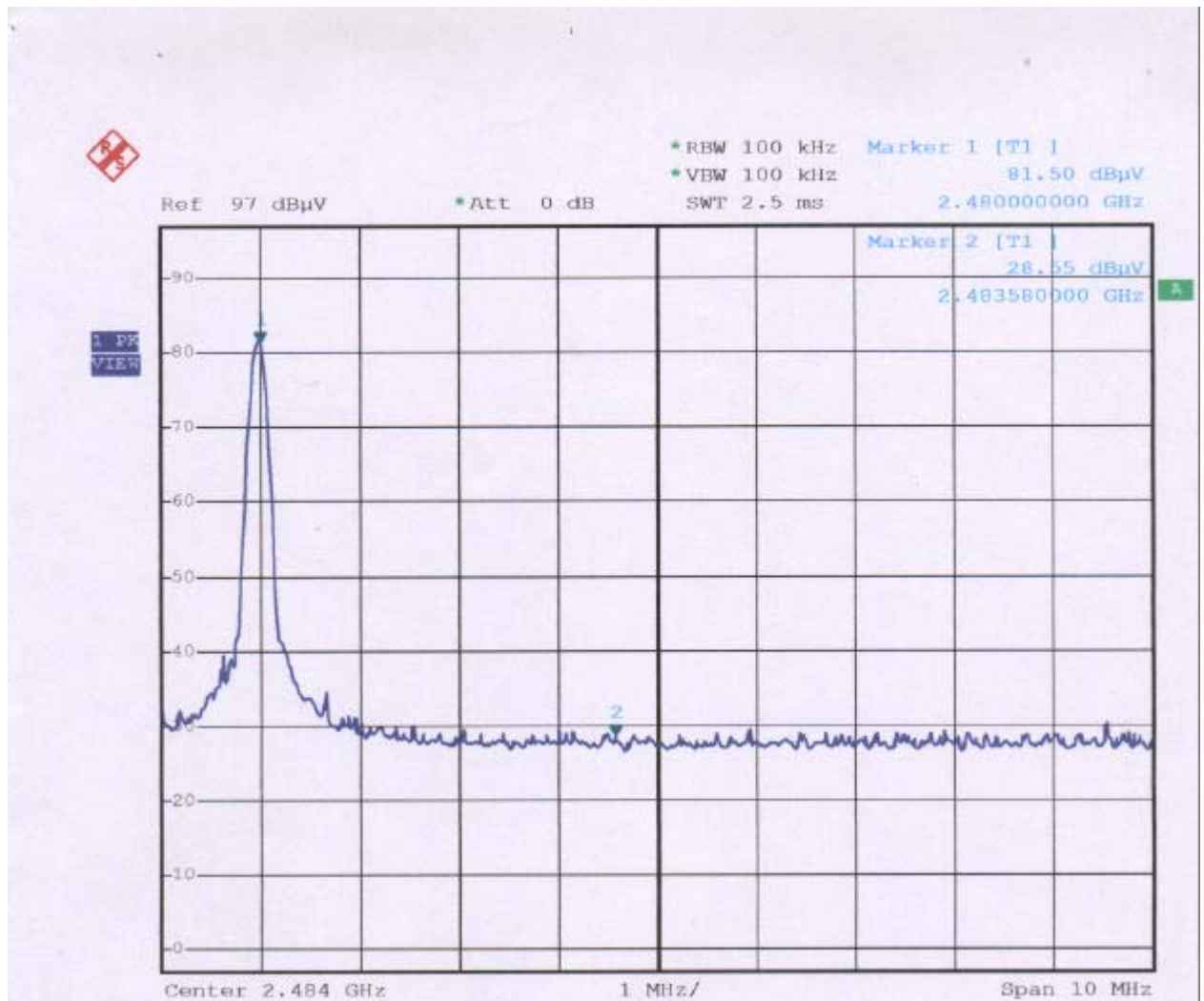
12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,
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TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SBUBT25XR

REPORT NO. : E950318

Channel : CH HIGH

Polarity : Horizontal



Channel : CH HIGH

Polarity : Horizontal

Test method : Public Notice DA 00-705

Detect : Peak Value

Marker-Delta method :

$81.50 \text{ dBuV/m} - 28.55 \text{ dBuV/m} = 52.95 \text{ dBuV/m}$

$79.47 \text{ dBuV/m} - 52.95 \text{ dBuV/m} = 26.52 \text{ dBuV/m}$

$*26.52 \text{ dBuV/m} < \text{Average Limit (54 dBuV/m)}$

PEP Testing Laboratory

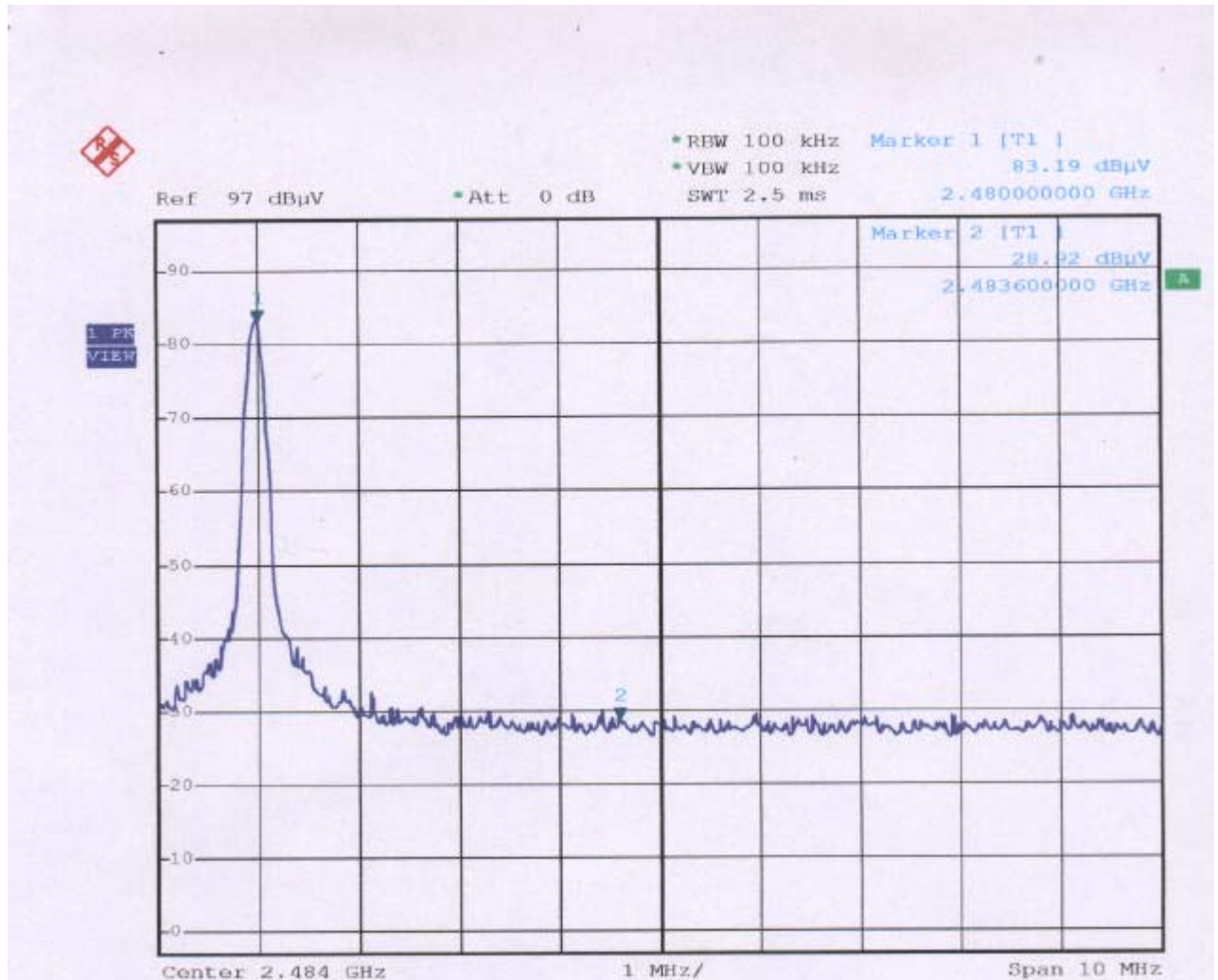
12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,
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TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SBUBT25XR

REPORT NO. : E950318

Channel : CH HIGH

Polarity : Vertical



Test method : Public Notice DA 00-705

Detect : Peak Value

Marker-Delta method :

$83.19 \text{ dBuV/m} - 28.92 \text{ dBuV/m} = 54.27 \text{ dBuV/m}$

$81.24 \text{ dBuV/m} - 54.27 \text{ dBuV/m} = 26.97 \text{ dBuV/m}$

$*26.97 \text{ dBuV/m} < \text{Average Limit (54dBuV/m)}$

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	2401.983	- 8.18	8	Pass
MID	2440.983	-11.85	8	Pass
HIGH	2479.983	-14.29	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

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

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

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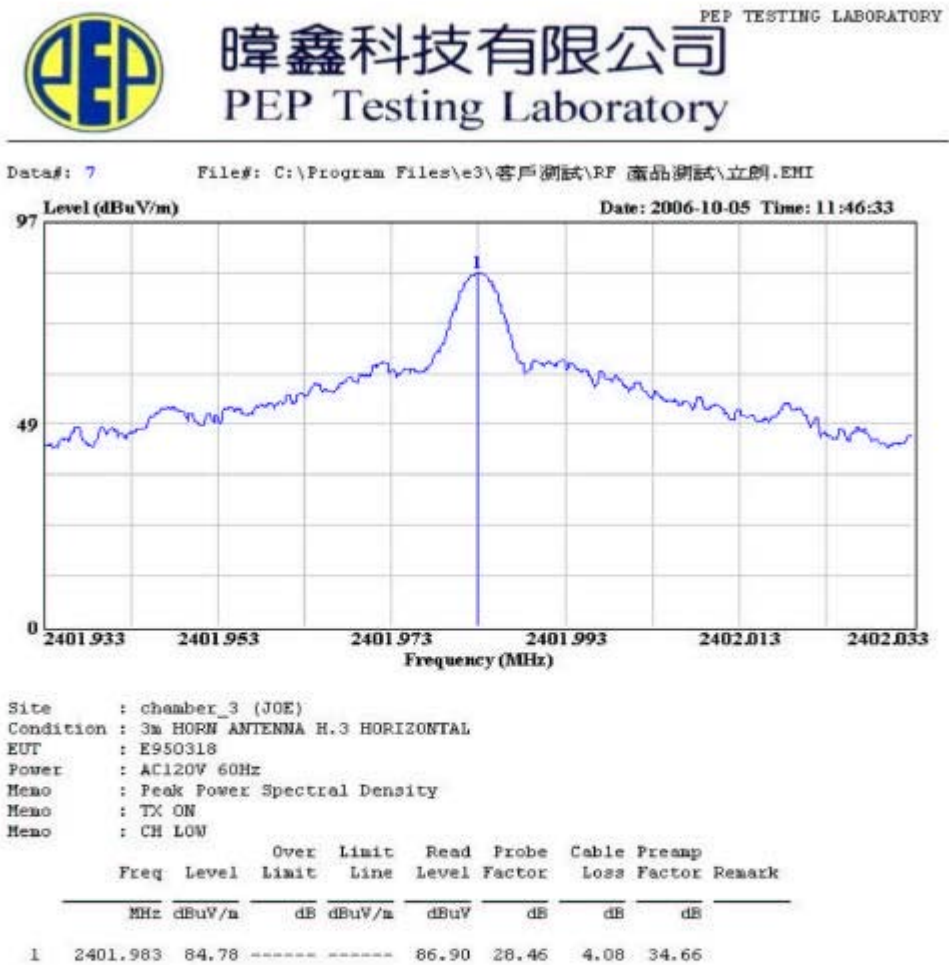
FCC ID : SBUBT25XR

REPORT NO. : E950318

10.3 Spectrum Plot Data

Channel : CH LOW

Polarity : Horizontal



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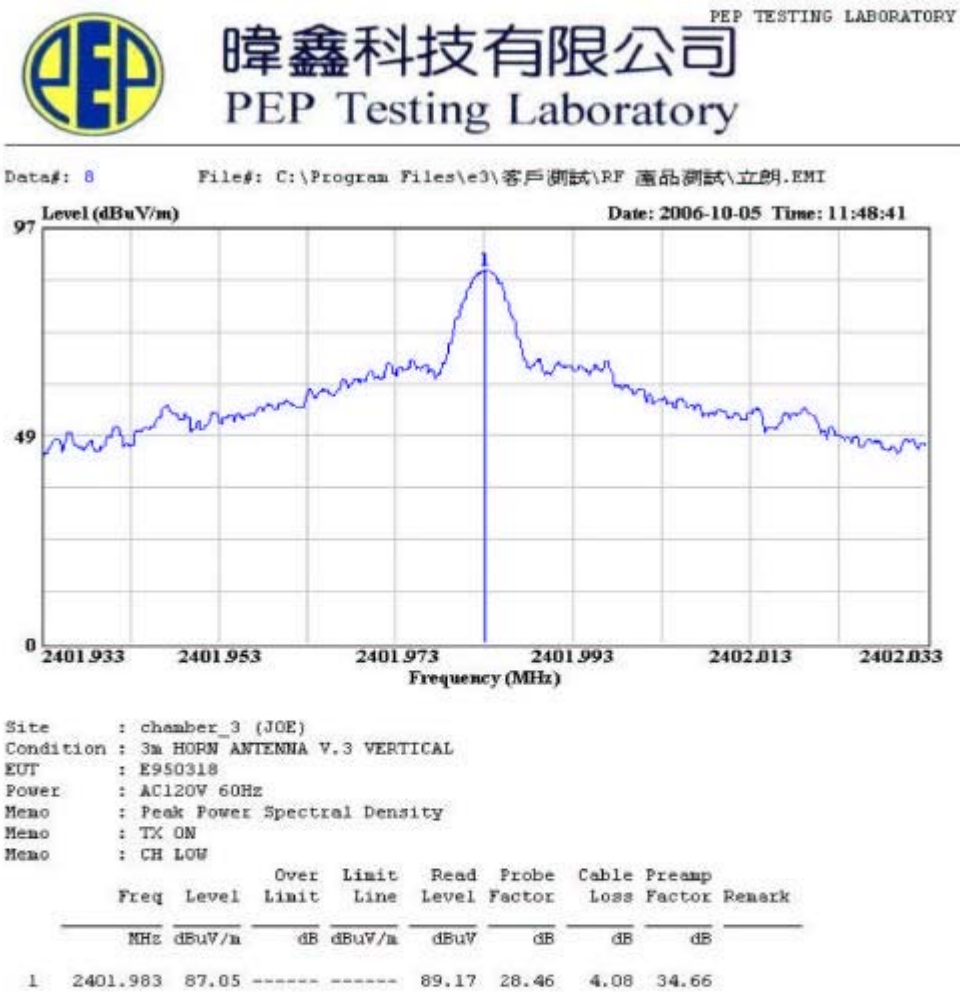
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FCC ID : SBUBT25XR

REPORT NO. : E950318

Channel : CH LOW

Polarity : Vertical



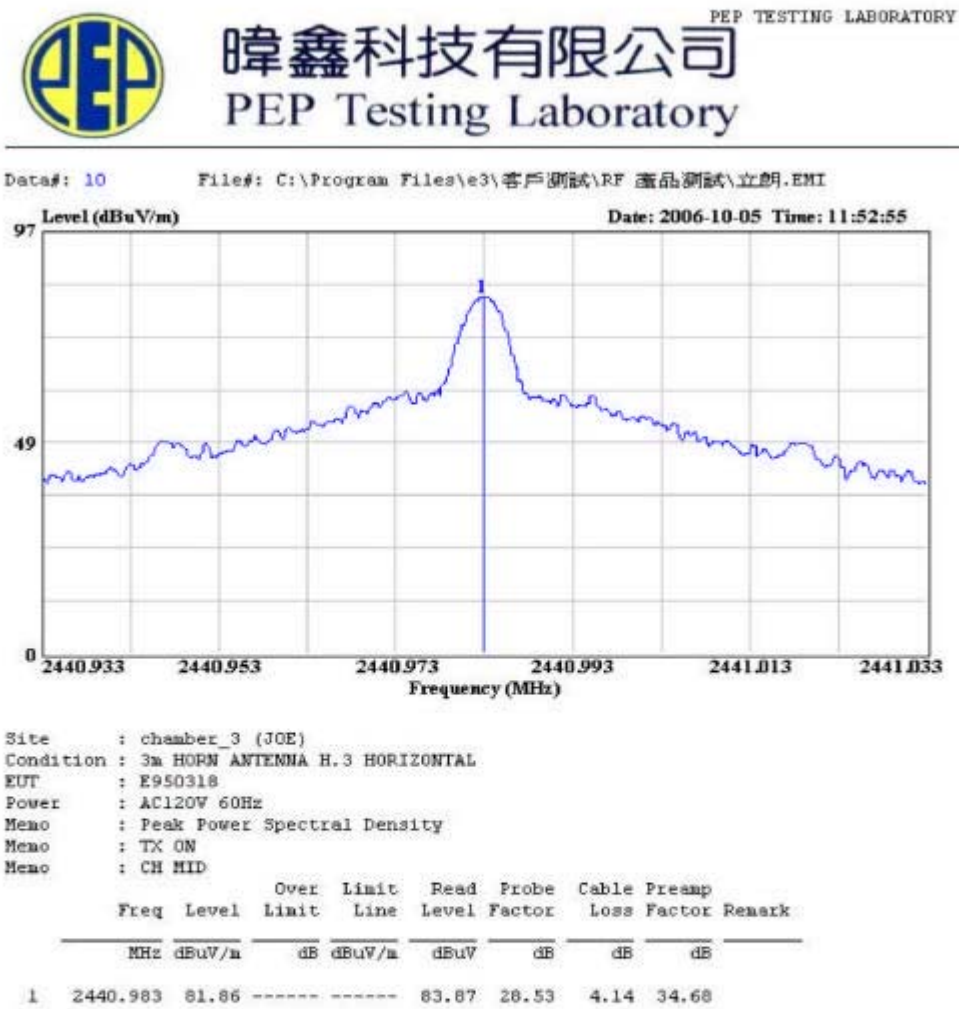
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FCC ID : SBUBT25XR

REPORT NO. : E950318

Channel : CH MID
Polarity : Horizontal



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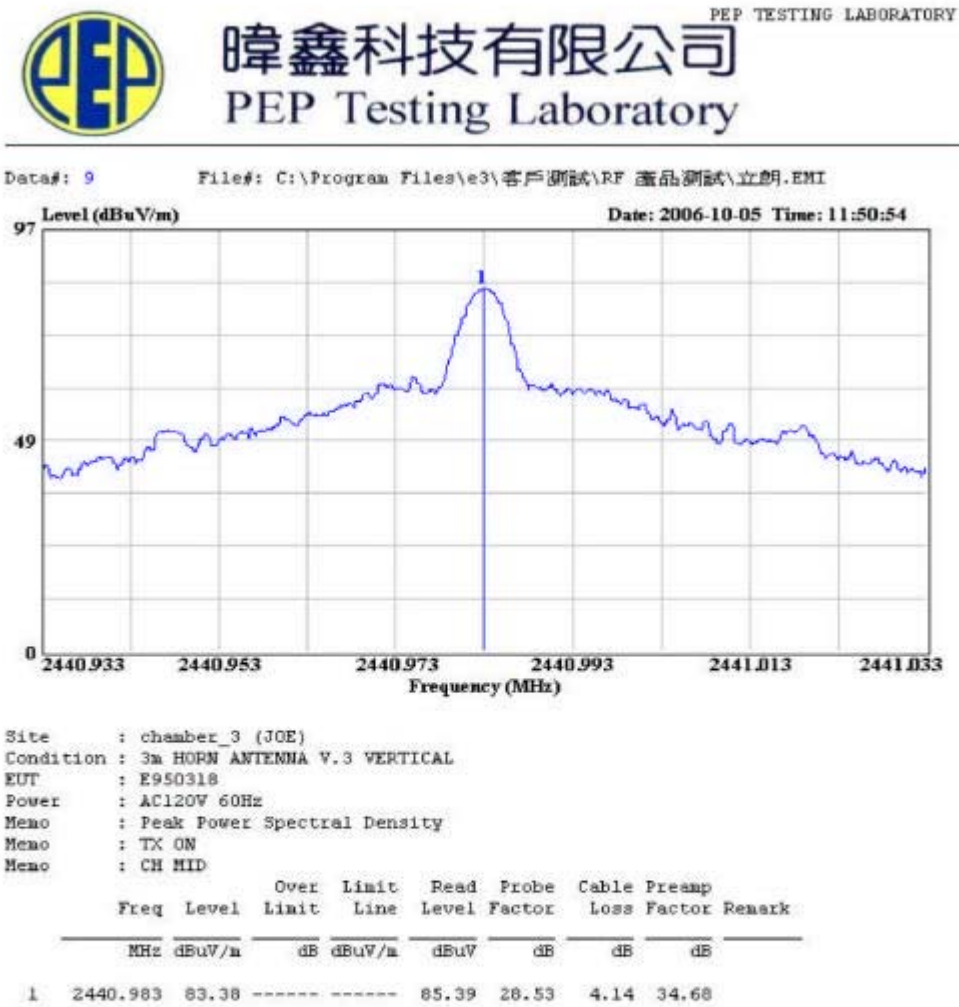
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FCC ID : SBUBT25XR

REPORT NO. : E950318

Channel : CH MID

Polarity : Vertical



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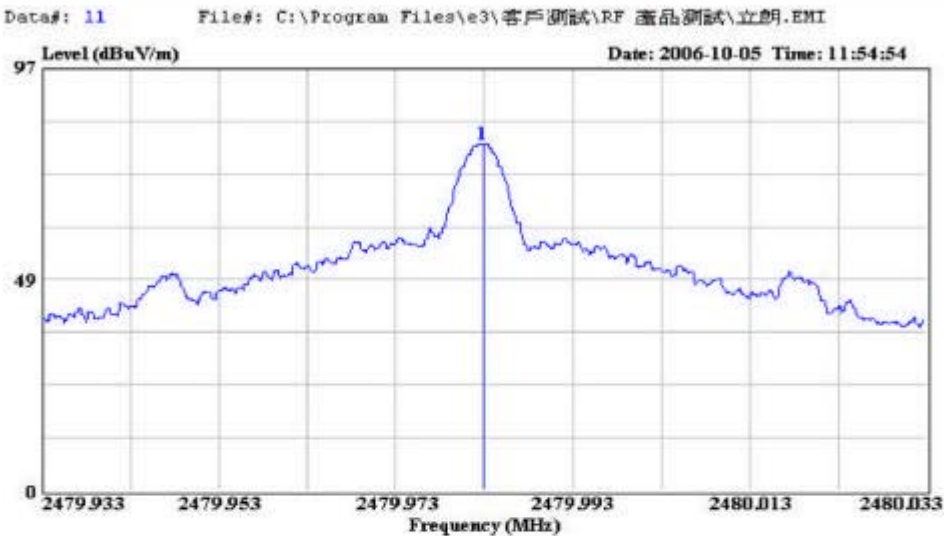
12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,
Taipei Hsien, Taiwan, R. O. C.
TEL: 886-2-26922097 FAX: 886-2-26956236

FCC ID : SBUBT25XR

REPORT NO. : E950318

Channel : CH HIGH

Polarity : Horizontal



Site : chamber_3 (JOE)
Condition : 3m HORN ANTENNA H.3 HORIZONTAL
EUT : E950318
Power : AC120V 60Hz
Memo : Peak Power Spectral Density
Memo : TX ON
Memo : CH HIGH

Freq	Level	Over	Limit	Read	Probe	Cable	Preamp	
MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Remark
1	2479.983	79.73	-----	81.67	28.58	4.17	34.69	

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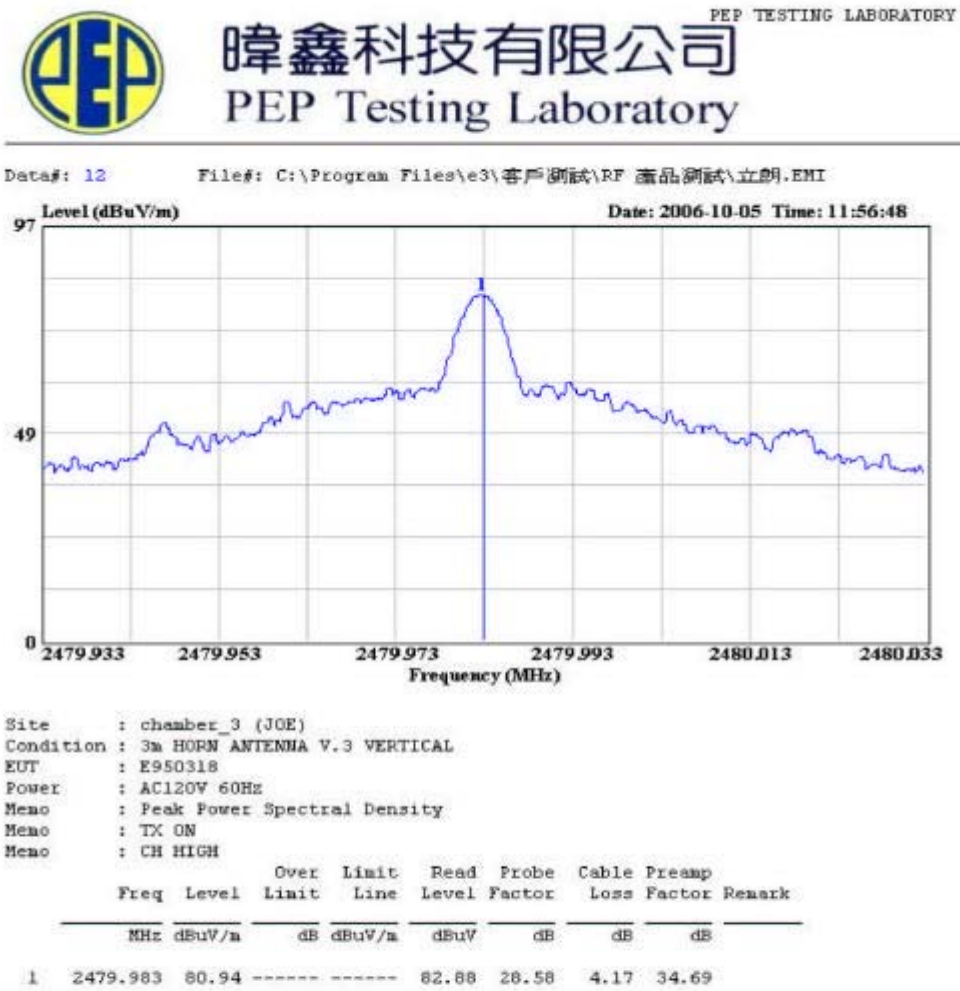
12-3Fl, No. 27-1, Lane 169, Kang-Ning St., Hsi-Chih,
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FCC ID : SBUBT25XR

REPORT NO. : E950318

Channel : CH HIGH

Polarity : Vertical



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FCC ID : SBUBT25XR

REPORT NO. : E950318

XI. List of Test Instruments

Test Mode	Instrument	Model No.	Serial No.	Next Cal. Date	Cal. Interval
Conduction (No.1)	R & S Receiver	ESHS10	830223/008	May 22, 2007	1Year
	Rolf Heine LISN	NNB-4/63TL	98008	May 01, 2007	1Year
	R & S LISN	ESH3-Z5	844982/039	Aug. 05, 2007	1Year
	Spectrum Analyzer	R3261A	91720076	June 08, 2007	1Year
	RF Cable	Rg400	N/A	May 12, 2007	1Year
	Schaffner ISN	T411	N/A	June 29, 2007	1Year
Radiation (OP No.1)	R & S Receiver	ESVS30	863342/012	May 21, 2007	1Year
	Schaffner Pre-amplifier	CPA9232	1028	May 19, 2007	1Year
	COM-Power Horn Ant.	AH-118 (1GHz~18GHz)	10095	May 20, 2007	2Year
	Schwarzbeck Precision Dipole Ant	VHAP (30MHz~1GHz)	970 + 971 953 + 954	June 26, 2007	3Year
	R &S Signal Generator	SMY01	841104/037	Apr. 28, 2007	2Year
	RF Cable	No. 1	N/A	May 10, 2007	1Year
	EMCO Antenna	3142B (26MHz~2GHz)	9904-1370	Aug. 23, 2007	1Year

XII. EUT Photos

EUT Model No. BT2.5SR



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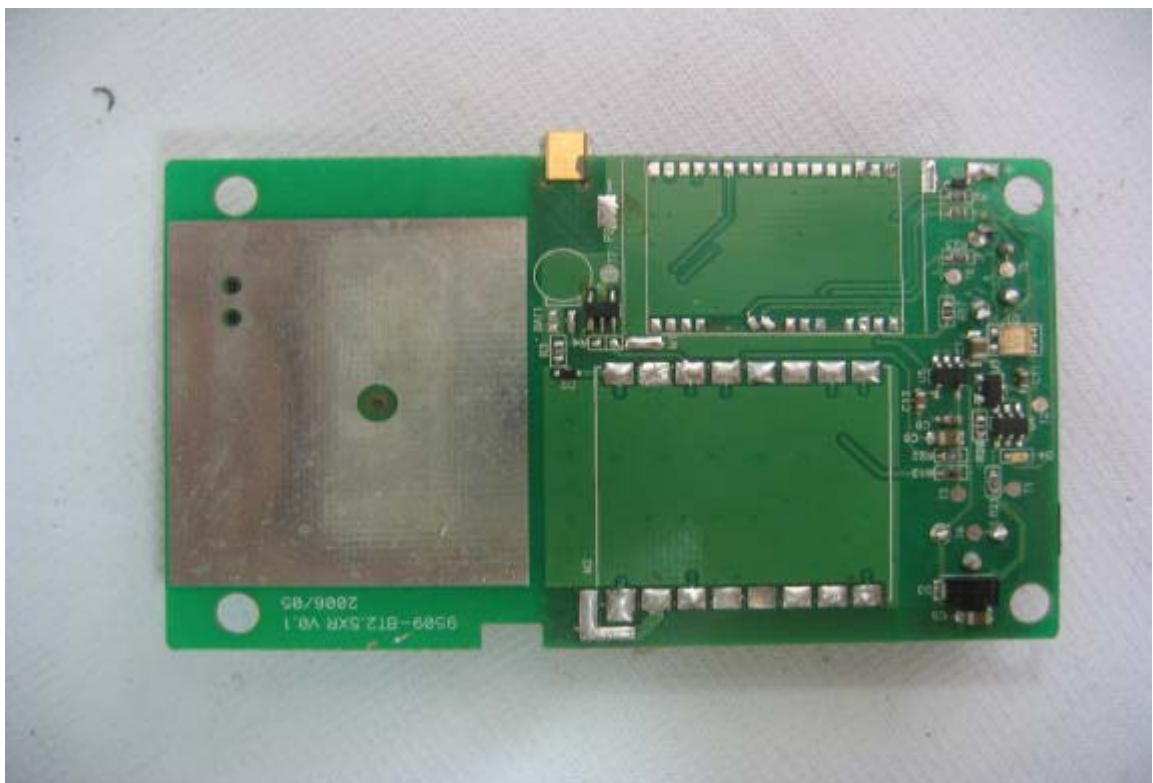
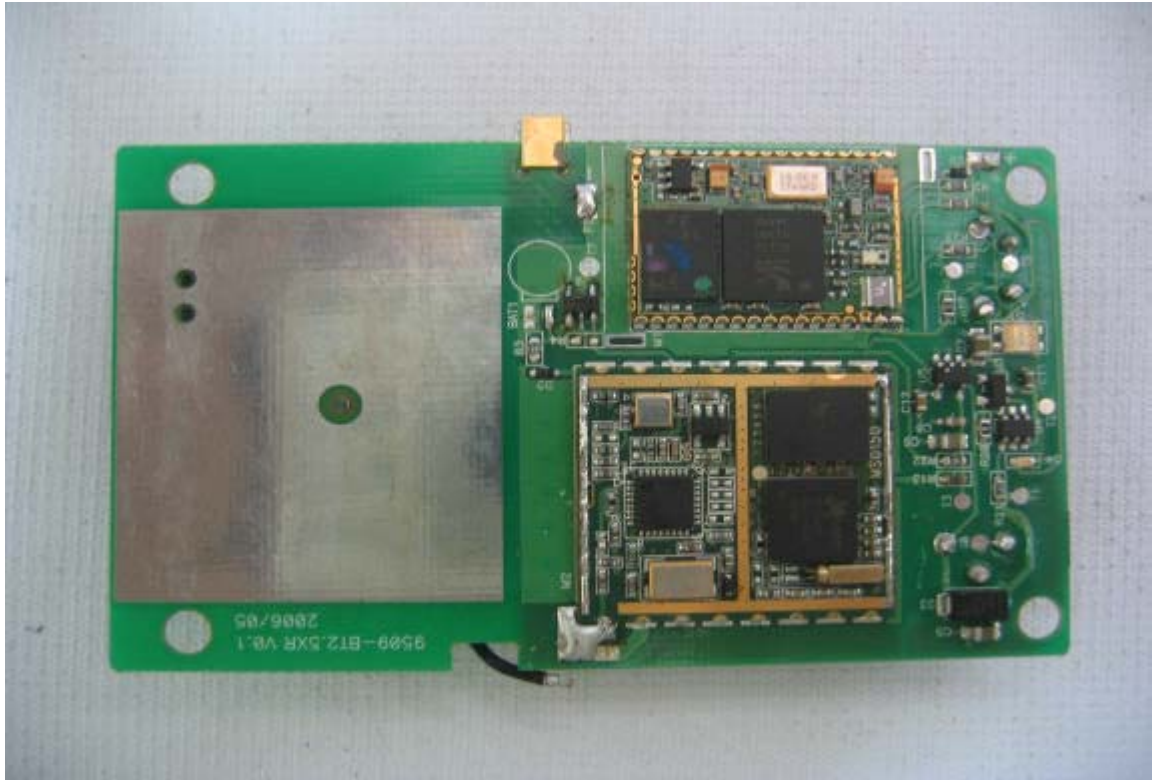
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FCC ID : SBUBT25XR

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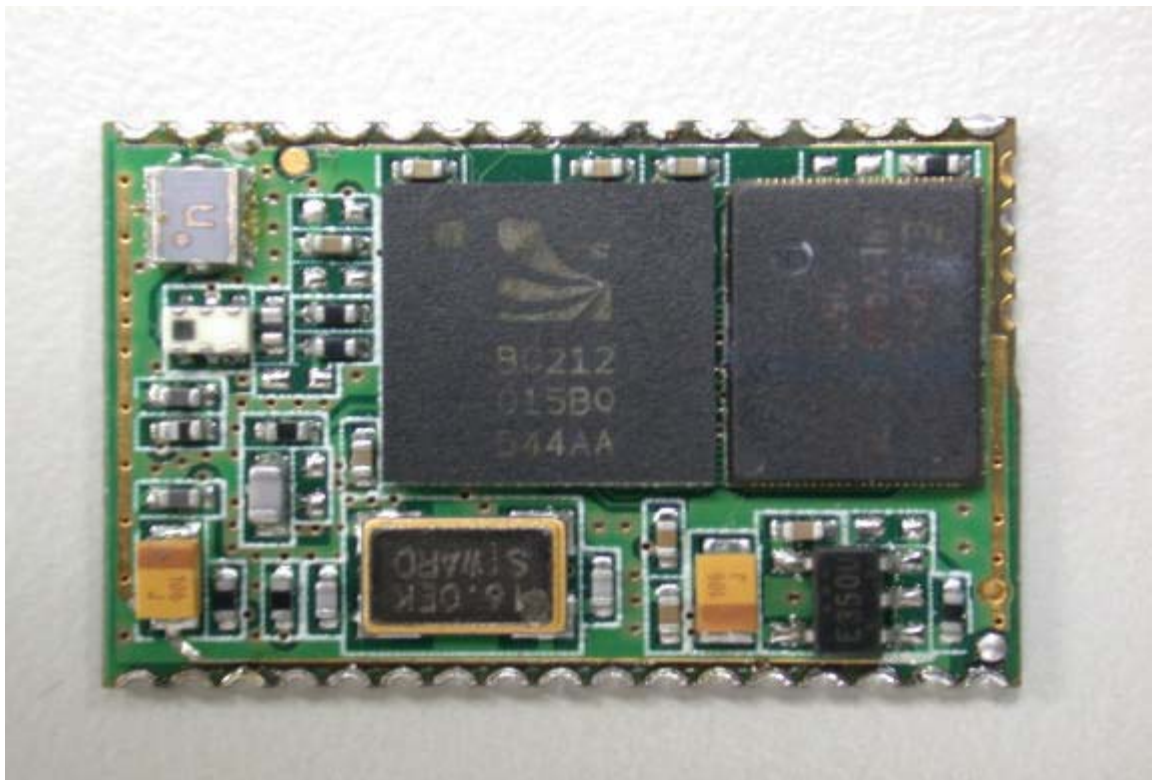
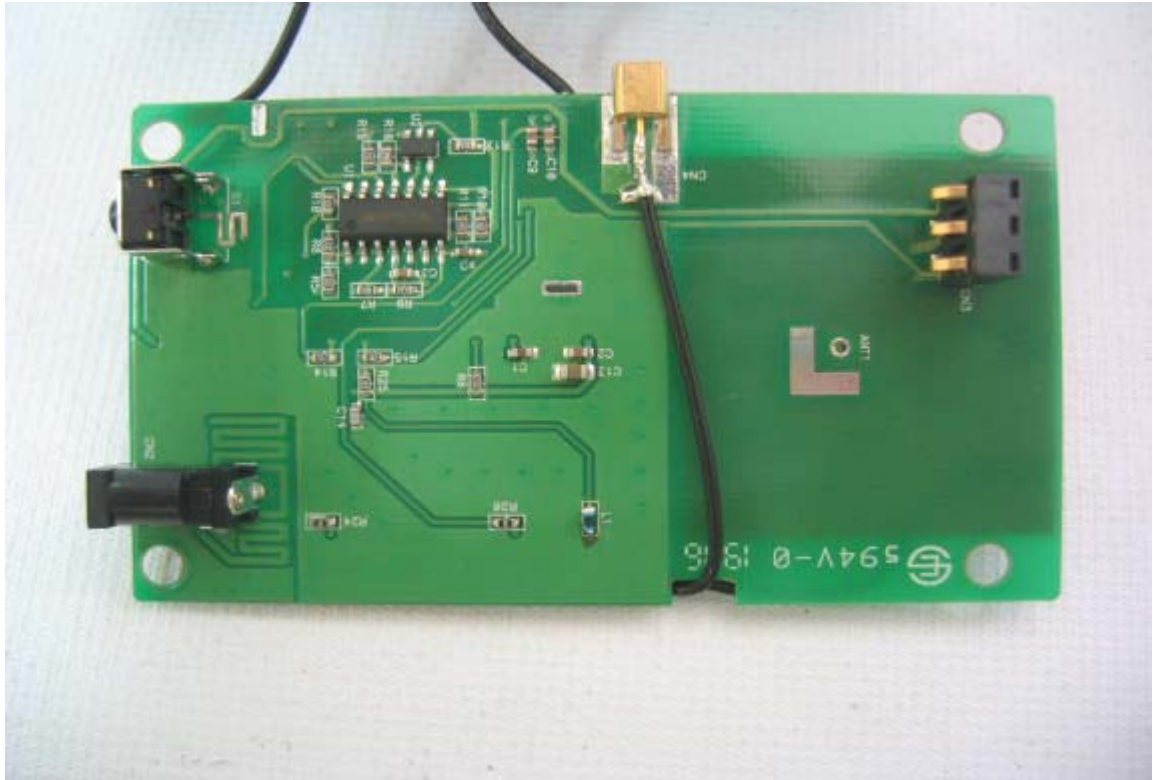


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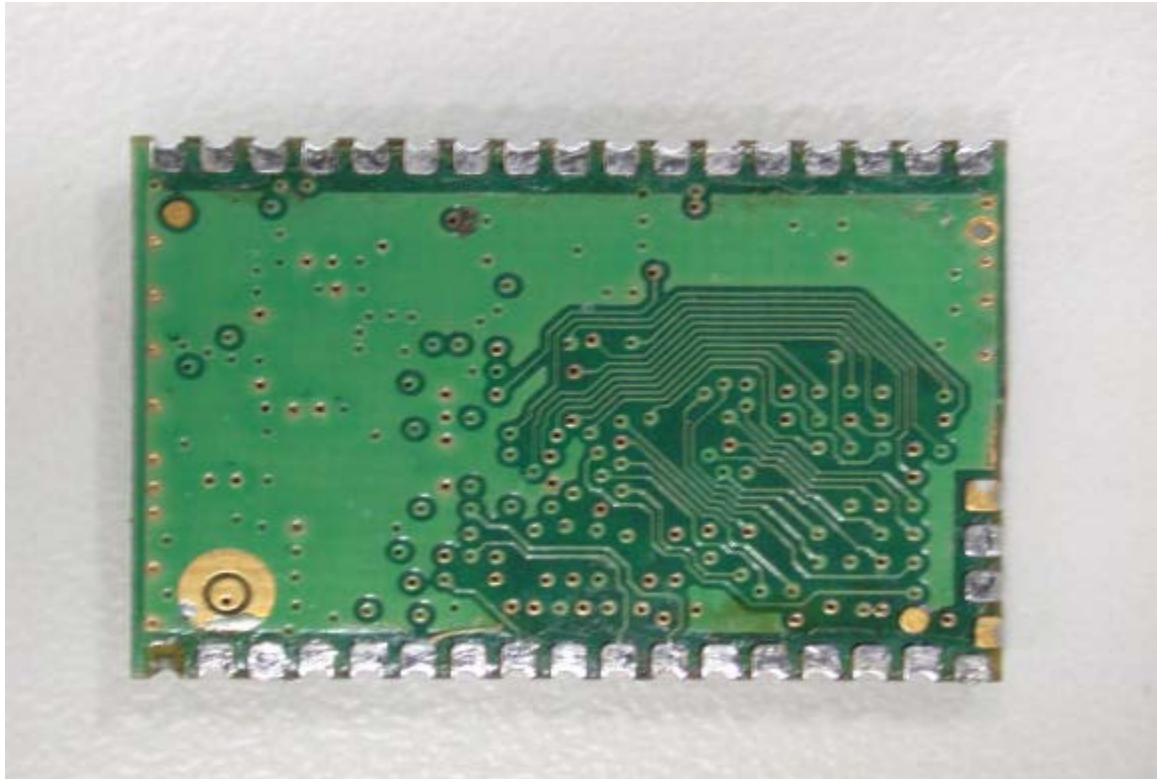


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