

9. SPURIOUS RADIATED EMISSION TEST

9.1 Standard Applicable

According to §15.247(c), all other emissions outside these bands shall not exceed the general radiated emission limits specified in §15.209(a). And according to §15.33(a)(1), for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

9.2 EUT Setup

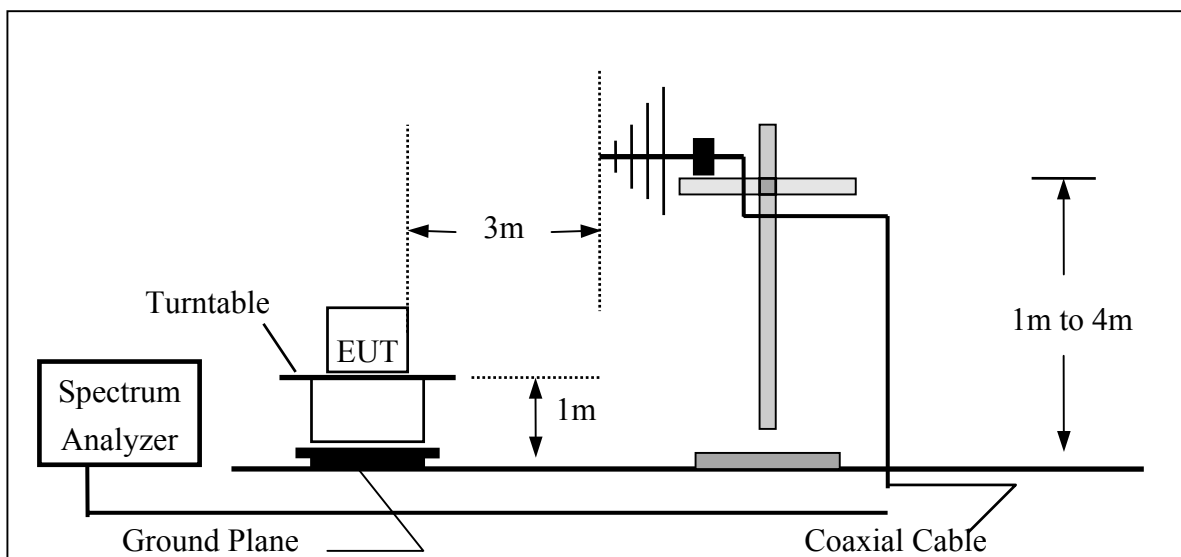
1. The radiated emission tests were performed in the 3 meter open-test site, using the setup in accordance with the ANSI C63.4-1992.
2. The EUT was put in the front of the test table.
4. The spacing between the peripherals was 10 centimeters.
5. External I/O cables were draped along the edge of the test table and bundle when necessary.
6. The AC/DC Power Adapter as connected with 110Vac/60Hz power source.

9.3 Measurement Procedure

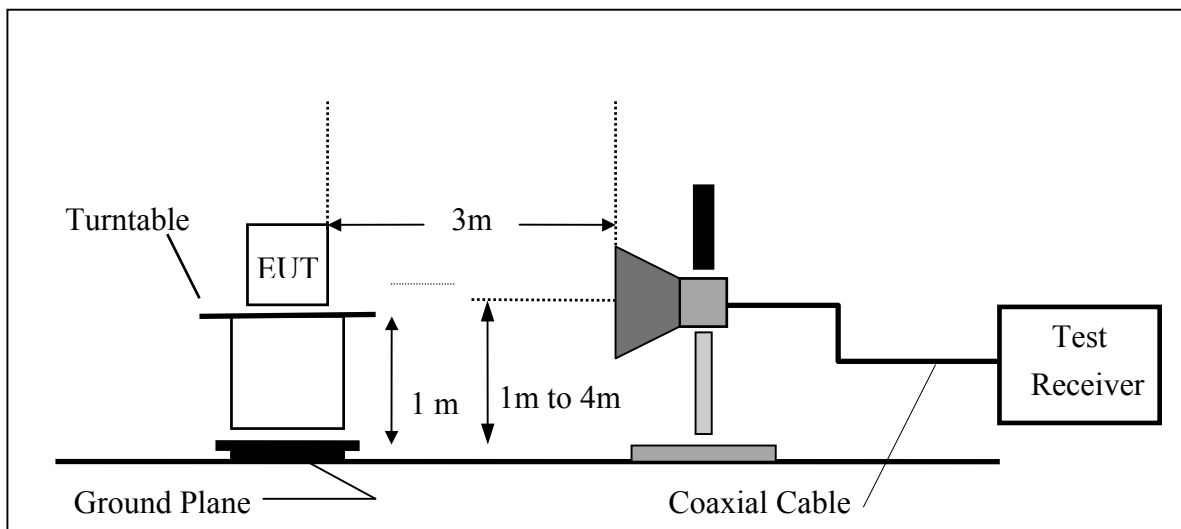
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Repeat above procedures until all frequency measured were complete.

9.4 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



9.5 Measurement Equipment Used:

| Open Area Test Site # 3 | | | | | |
|-------------------------|-------------|--------------|---------------|------------|------------|
| EQUIPMENT TYPE | MFR | MODEL NUMBER | SERIAL NUMBER | LAST CAL. | CAL DUE. |
| Spectrum Analyzer | ADVANTEST | R3261A | N/A | 03/19/2002 | 03/18/2003 |
| Spectrum Analyzer | R&S | FSP30 | 100112 | 7/23/2001 | 7/22/2003 |
| EMI Test Receiver | R&S | ESVS20 | 838804/004 | 01/05/2002 | 01/04/2003 |
| Pre-Amplifier | HP | 8447D | 2944A09173 | 03/04/2002 | 03/03/2003 |
| Bilog Antenna | SCHWAZBECK | VULB9163 | 145 | 07/06/2002 | 07/05/2003 |
| Turn Table | EMCO | 2081-1.21 | 9709-1885 | N.C.R | N.C.R |
| Antenna Tower | EMCO | 2075-2 | 9707-2060 | N.C.R | N.C.R |
| Controller | EMCO | 2090 | 9709-1256 | N.C.R | N.C.R |
| RF Switch | ANRITSU | MP59B | M53867 | N.C.R | N.C.R |
| Site NSA | C&C | N/A | N/A | 11/17/2001 | 11/16/2002 |
| Horn antenna | Schwarzbeck | BBHA 9120 | D210 | 2/24/2002 | 2/23/2003 |
| Pre-Amplifier | HP | 8449B | 3008B00965 | 10/01/2001 | 10/02/2002 |

9.6 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

| | | |
|-------|------------------------|--|
| Where | FS = Field Strength | CL = Cable Attenuation Factor (Cable Loss) |
| | RA = Reading Amplitude | AG = Amplifier Gain |
| | AF = Antenna Factor | |

9.7 Measurement Result (below 1GHz)

Refer to attach tabular data sheets.

NOTE:

The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 100kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.

15.209 Radiated Test Data –TX CH-Low Horizontal (BASE)

C&C LABORATORY CO., LTD.

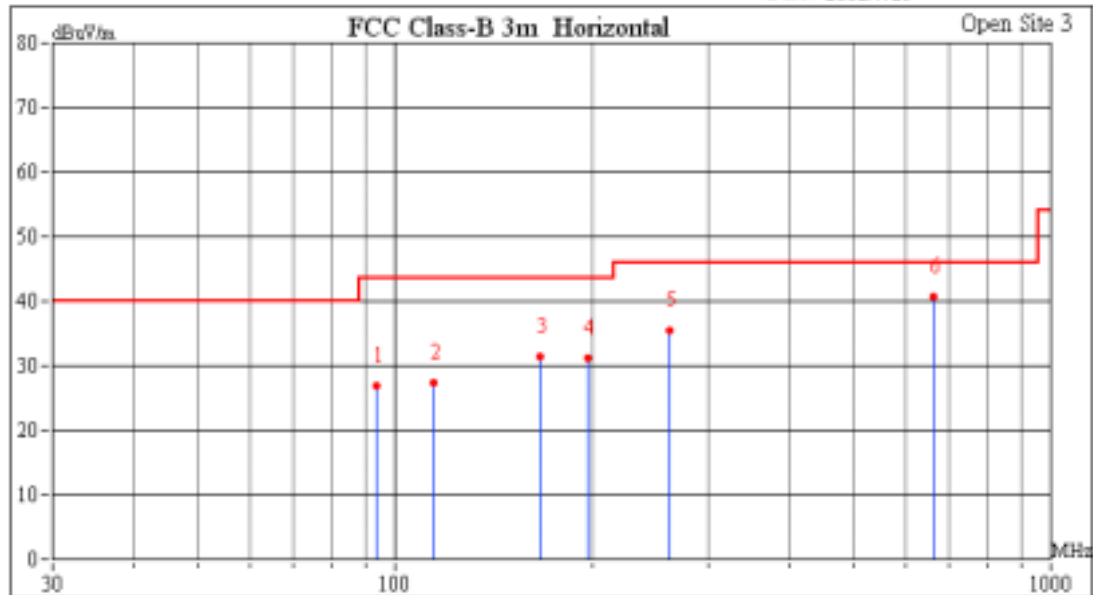
Custom Name: SENAO

Test Mode: BASE TX LOW

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/25

[illegible]

15.209 Radiated Test Data – TX CH-Low Vertical (BASE)

C&C LABORATORY CO., LTD.

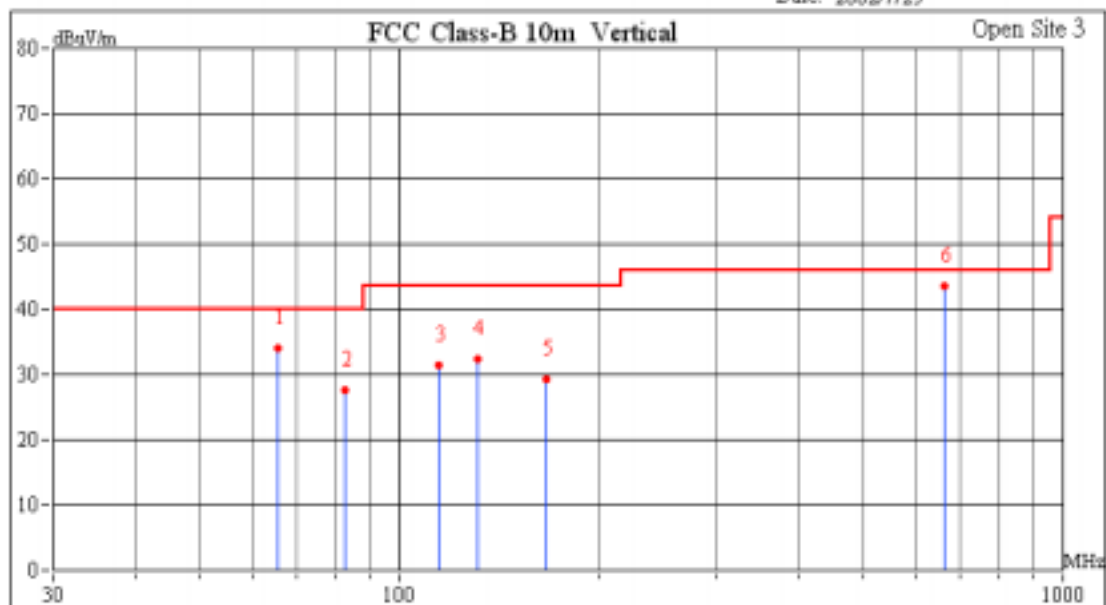
Custom Name: SENAO

Test Mode: BASE TX LOW

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/25

[illegible]

15.209 Radiated Test Data – TX CH-Mid Horizontal (BASE)

C&C LABORATORY CO., LTD.

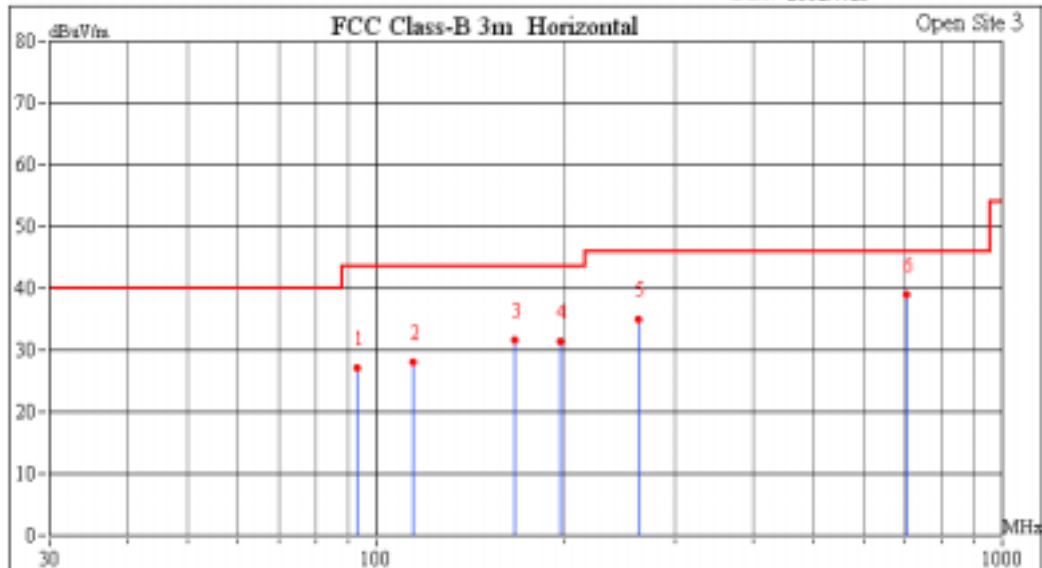
Custom Name: SENAO

Test Mode: BASE TK MIDDLE

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/25

[illegible]

15.209 Radiated Test Data – TX CH-Mid Vertical (BASE)

C&C LABORATORY CO., LTD.

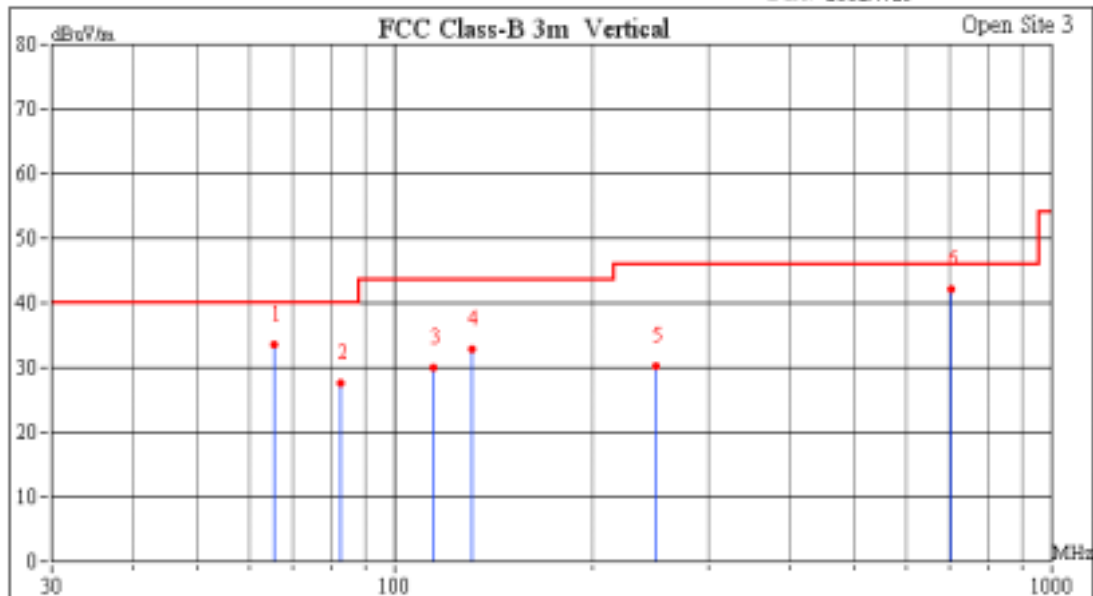
Custom Name: SENAO

Test Mode: BASE TX MIDDLE

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/25

[illegible]

15.209 Radiated Test Data – TX CH-High Horizontal (BASE)

C&C LABORATORY CO., LTD.

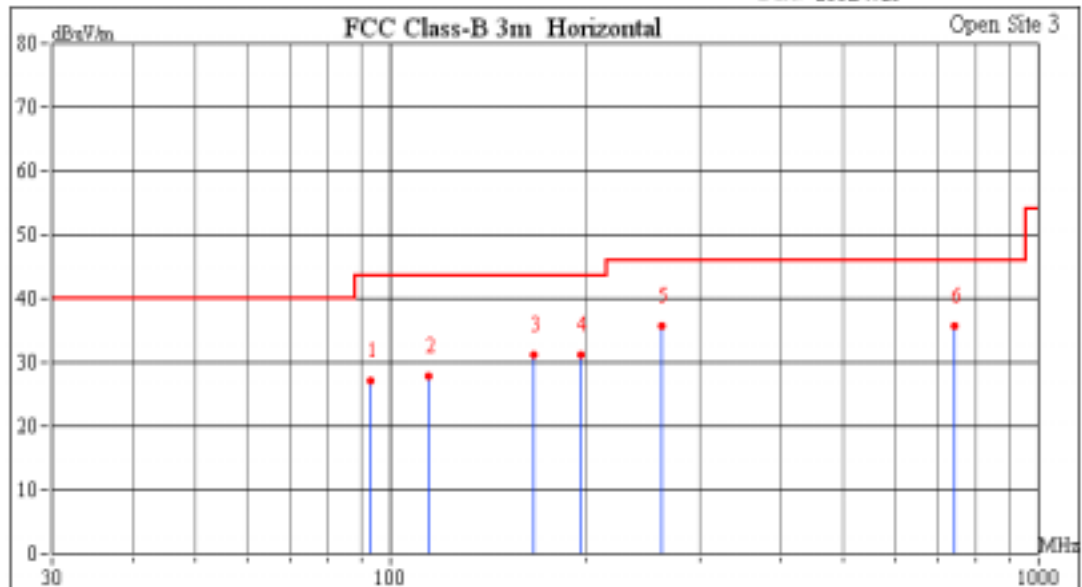
Custom Name: SENA○

Test Mode: BASE TX HIGH

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/25

[illegible]

15.209 Radiated Test Data – TX CH-High Vertical (BASE)

C&C LABORATORY CO., LTD.

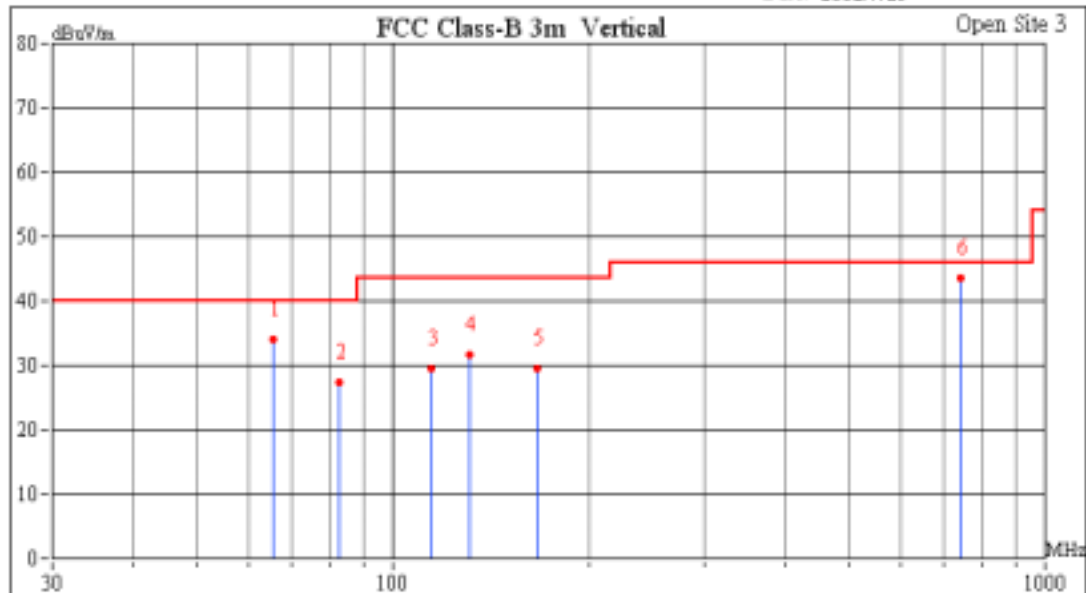
Custom Name: SENAO

Test Mode: BASE TX HIGH

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/25

[illegible]

15.209 Radiated Test Data –TX CH-Low Horizontal (BASE-Antenna 1)

C&C LABORATORY CO., LTD.

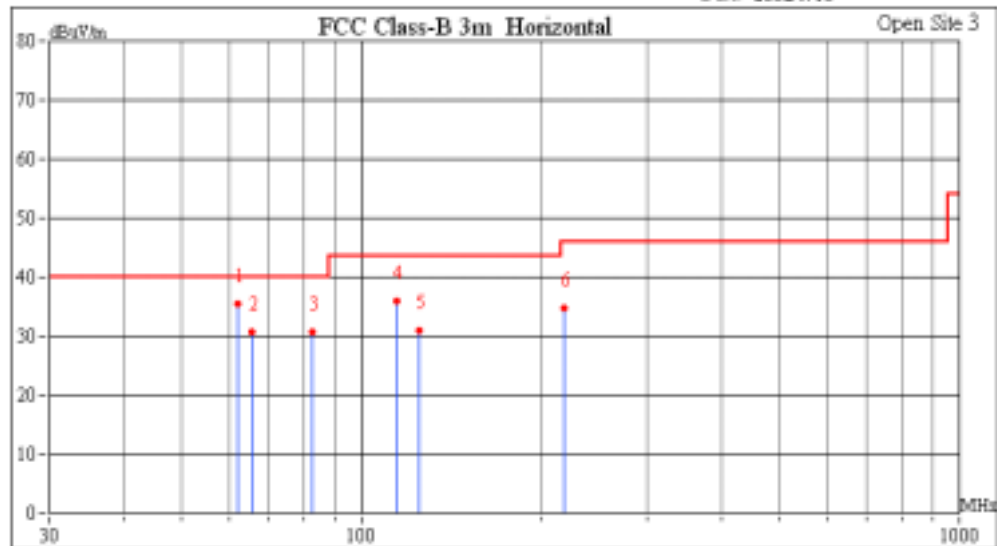
Custom Name: SENAO

Test Mode: External Antenna #1 TX-LOW

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

[illegible]

15.209 Radiated Test Data – TX CH-Low Vertical (BASE-Antenna 1)

C&C LABORATORY CO., LTD.

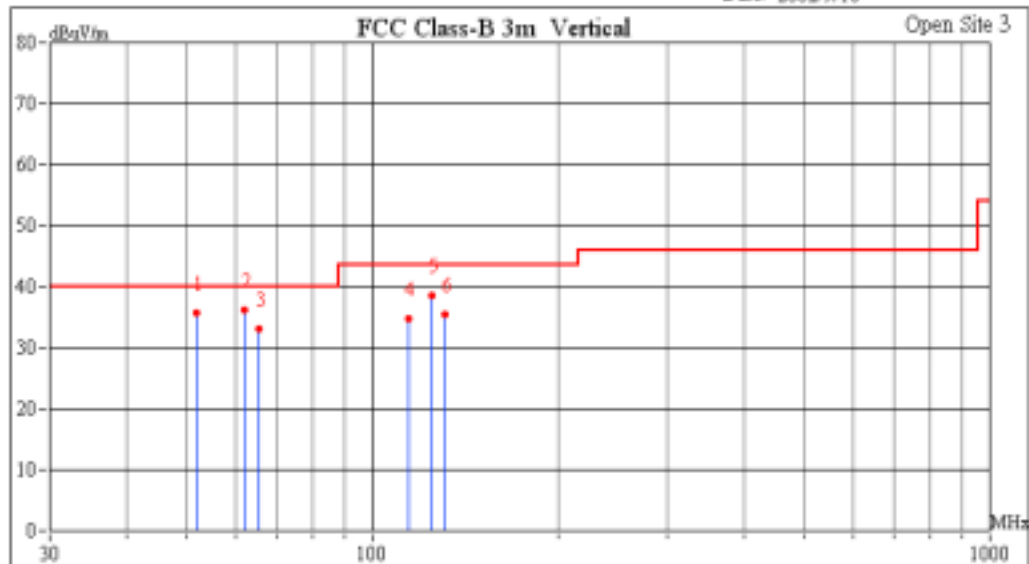
Custom Name: SENAO

Test Mode: External Antenna #1 TX-LOW

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

| |
|--|
| |
|--|

15.209 Radiated Test Data – TX CH-Mid Horizontal (BASE-Antenna 1)

C&C LABORATORY CO., LTD.

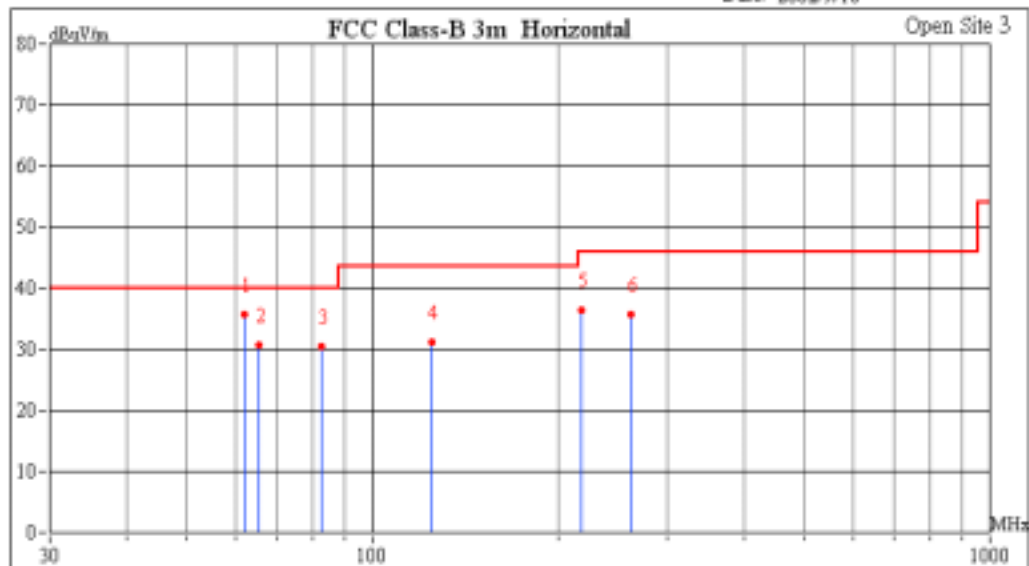
Custom Name: SENAO

Test Mode: External Antenna #1 TX-MID

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

| |
|--|
| |
|--|

15.209 Radiated Test Data – TX CH-Mid Vertical (BASE-Antenna 1)

C&C LABORATORY CO., LTD.

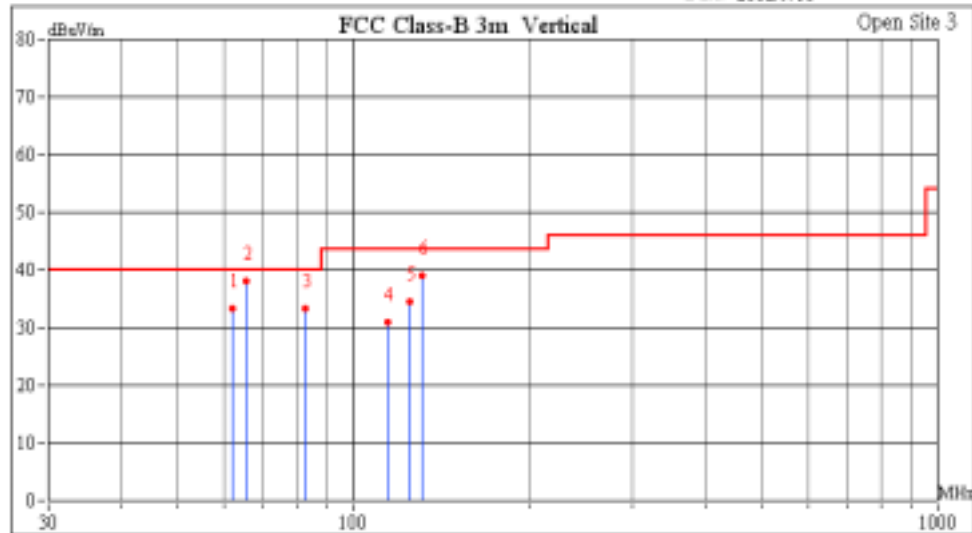
Custom Name: SENA0

Test Mode: External Antenna #1 TX-MID

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

Lab TEL:886-3-3240332 Office TEL:886-2-86422071
FAX:886-3-3245235 FAX:886-2-86422256

15.209 Radiated Test Data – TX CH-High Horizontal (BASE-Antenna 1)

C&C LABORATORY CO., LTD.

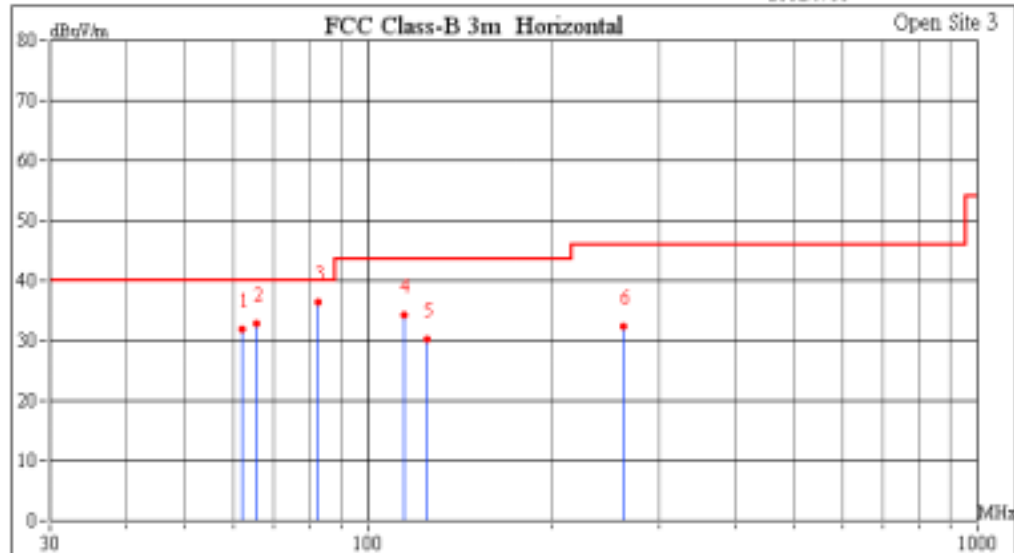
Custom Name: SENAO

Test Mode: External Antenna #1 TX-HIGH

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

| |
|--|
| |
|--|

15.209 Radiated Test Data – TX CH-High Vertical (BASE-Antenna 1)

C&C LABORATORY CO., LTD.

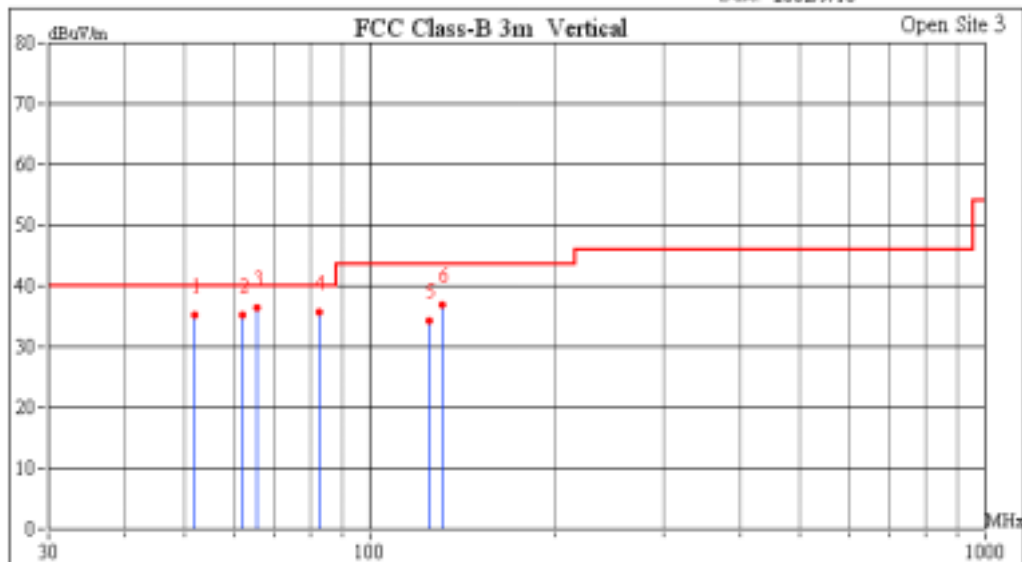
Custom Name: SENAO

Test Mode: External Antenna #1 TX-HIGH

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

15.209 Radiated Test Data –TX CH-Low Horizontal (BASE-Antenna 2)

C&C LABORATORY CO., LTD.

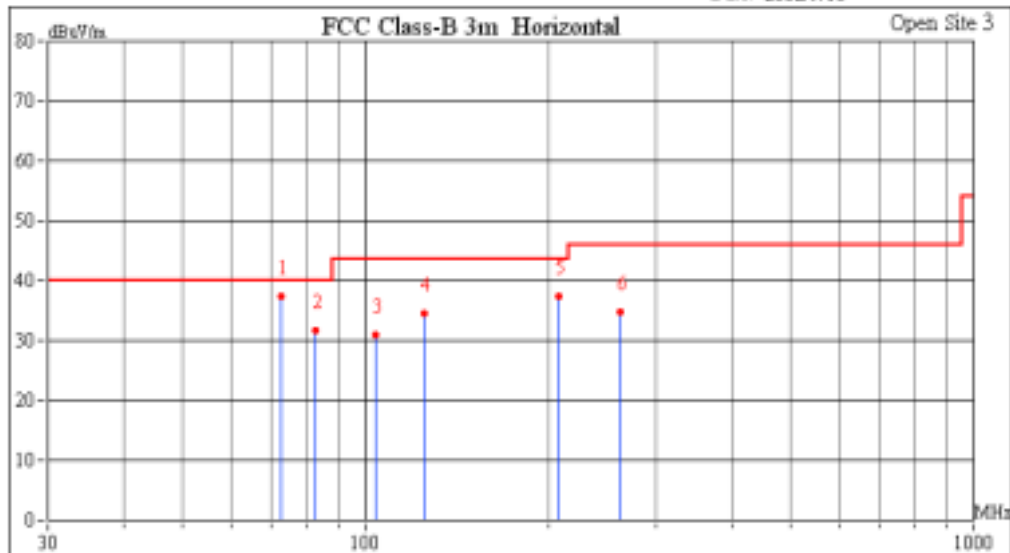
Custom Name: SENAO

Test Mode: External Antenna #2 TX-LOW

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

15.209 Radiated Test Data – TX CH-Low Vertical (BASE-Antenna 2)

C&C LABORATORY CO., LTD.

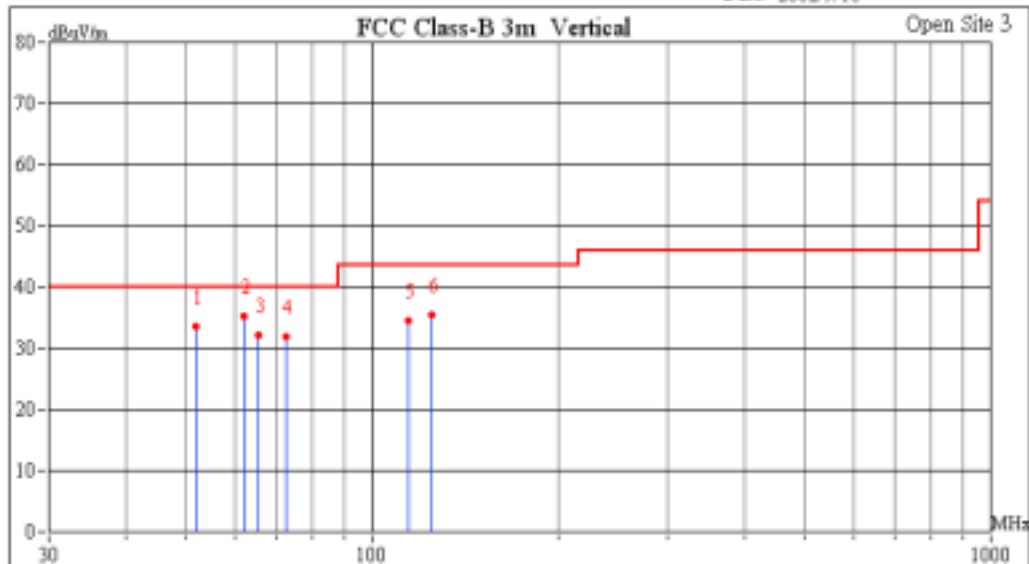
Custom Name: SENAO

Test Mode: External Antenna #2 TX-LOW

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

| |
|--|
| |
|--|

15.209 Radiated Test Data – TX CH-Mid Horizontal (BASE-Antenna 2)

C&C LABORATORY CO., LTD.

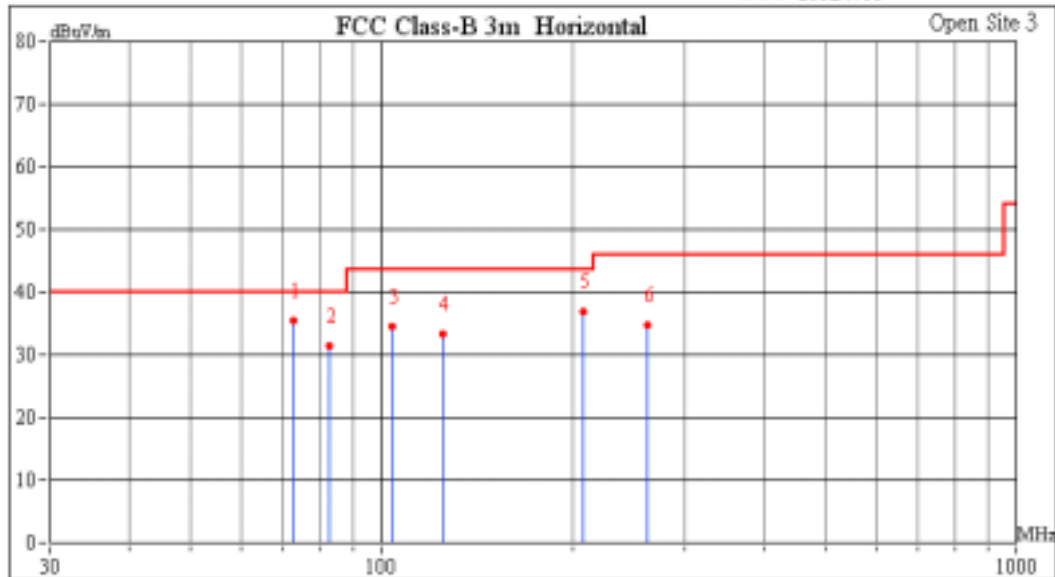
Custom Name: SENAO

Test Mode: External Antenna #2 TK-MID

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

15.209 Radiated Test Data – TX CH-Mid Vertical (BASE-Antenna 2)

C&C LABORATORY CO., LTD.

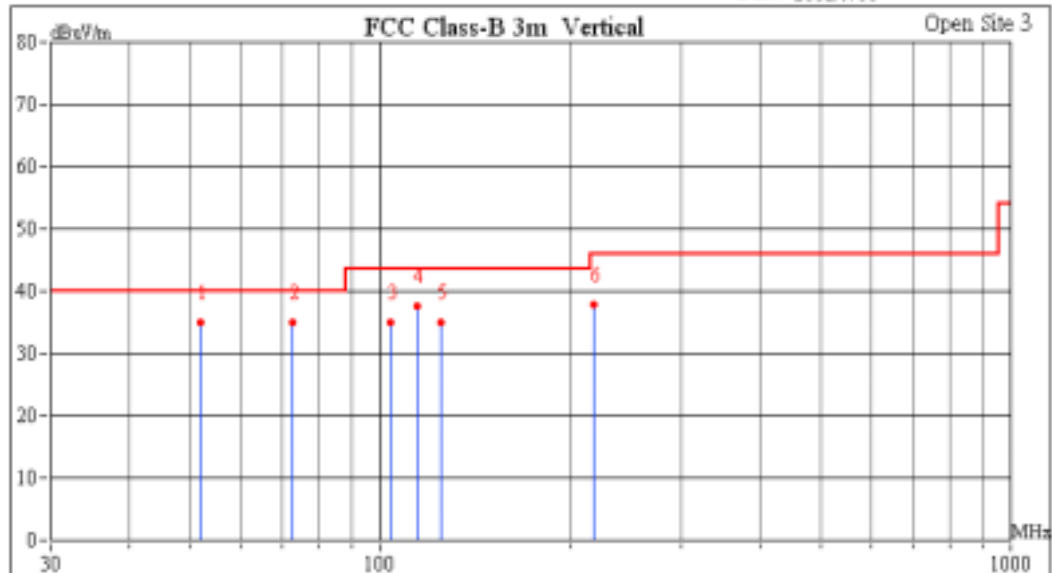
Custom Name: SENAO

Test Mode: External Antenna #2 TX-MID

Model Name: EP-236

Engineer Name: markbalee

Date: 2002/9/10

[illegible]

Comments:

15.209 Radiated Test Data – TX CH-High Horizontal (BASE-Antenna 2)

C&C LABORATORY CO., LTD.

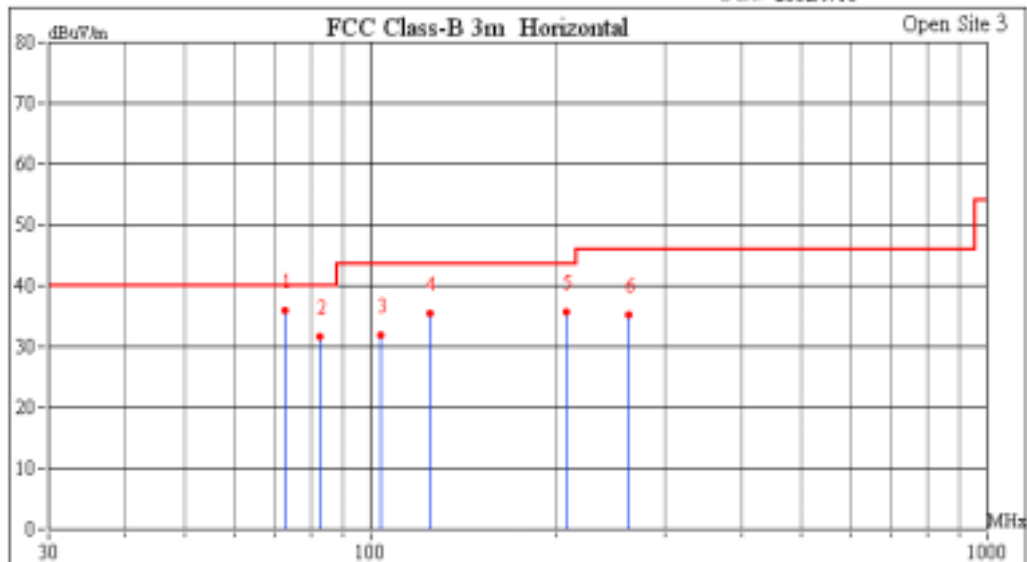
Custom Name: SENAO

Test Mode: External Antenna #2 TX-HIGH

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

[illegible]

15.209 Radiated Test Data – TX CH-High Vertical (BASE-Antenna 2)

C&C LABORATORY CO., LTD.

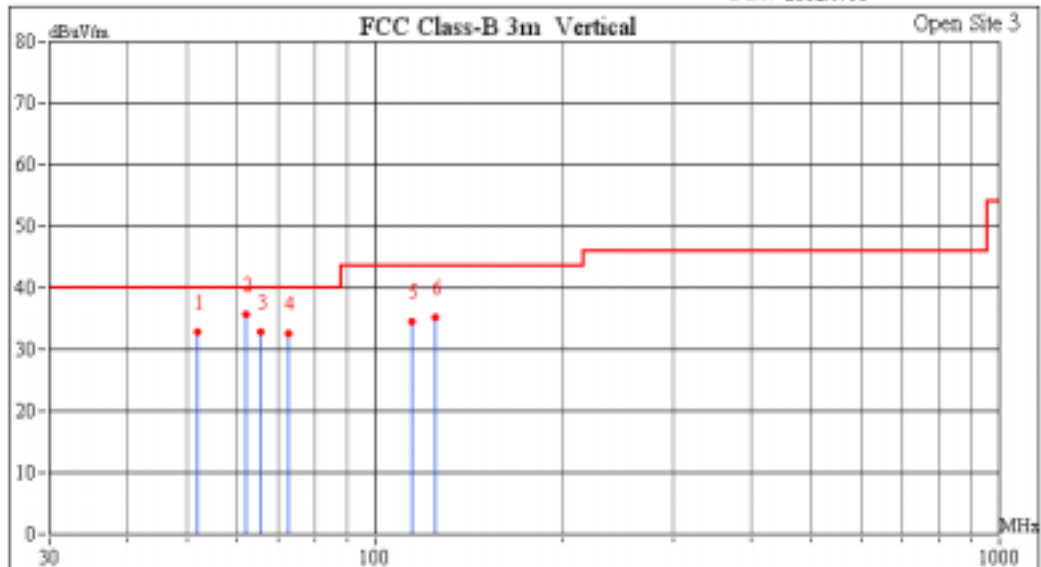
Custom Name: SENAO

Test Mode: External Antenna #2 TX-HIGH

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

Lab TEL:886-3-3240332 Office TEL:886-2-86422071
FAX:886-3-3245235 FAX:886-2-86422256

15.209 Radiated Test Data –TX CH-Low Horizontal (BASE-Antenna 3)

C&C LABORATORY CO., LTD.

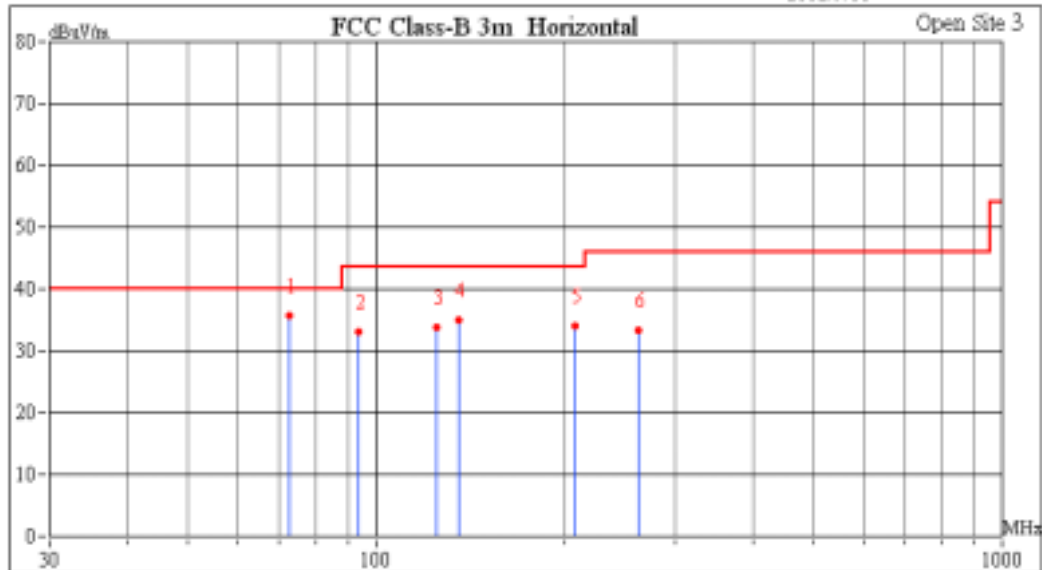
Custom Name: SENA0

Test Mode: External Antenna #3 TX-LOW

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

15.209 Radiated Test Data – TX CH-Low Vertical (BASE-Antenna 3)

C&C LABORATORY CO., LTD.

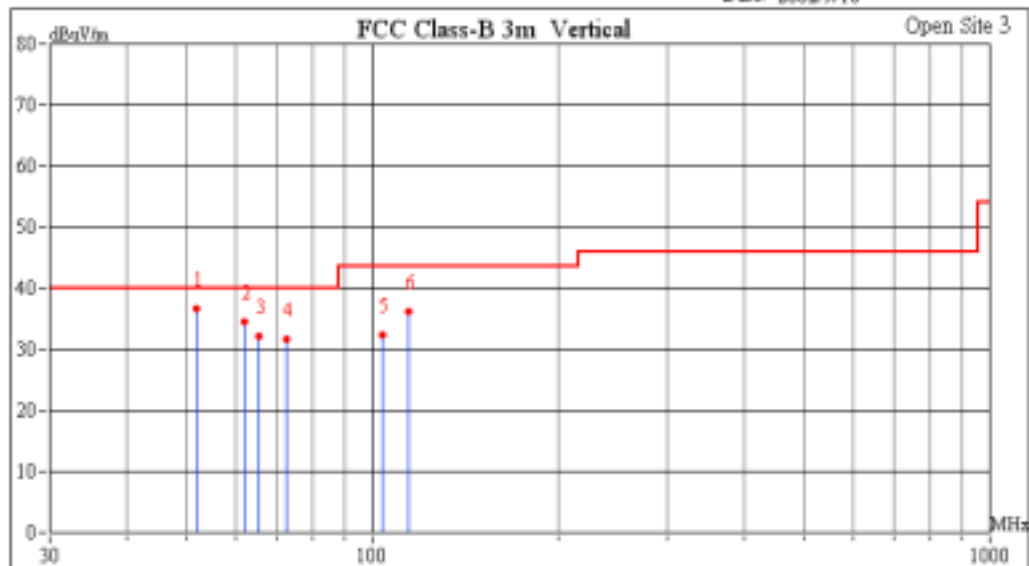
Custom Name: SENAO

Test Mode: External Antenna #3 TX-LOW

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

| |
|--|
| |
|--|

15.209 Radiated Test Data – TX CH-Mid Horizontal (BASE-Antenna 3)

C&C LABORATORY CO., LTD.

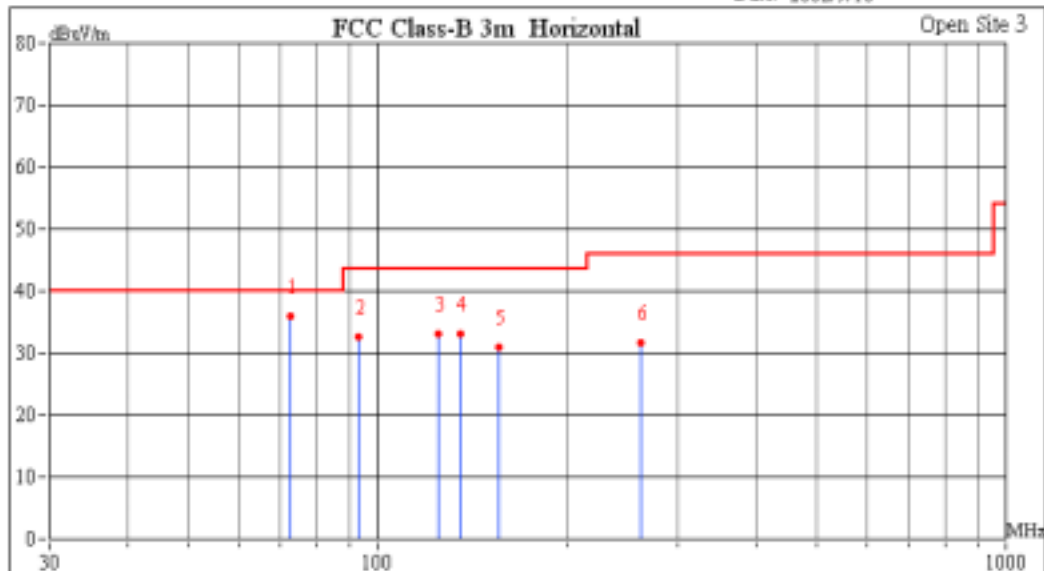
Custom Name: SENAO

Test Mode: External Antenna #3 TX-MID

Model Name: EP-236

Engineer Name: mark b a lee

Date: 2002/9/10

[illegible]

Comments:

15.209 Radiated Test Data – TX CH-Mid Vertical (BASE-Antenna 3)

C&C LABORATORY CO., LTD.

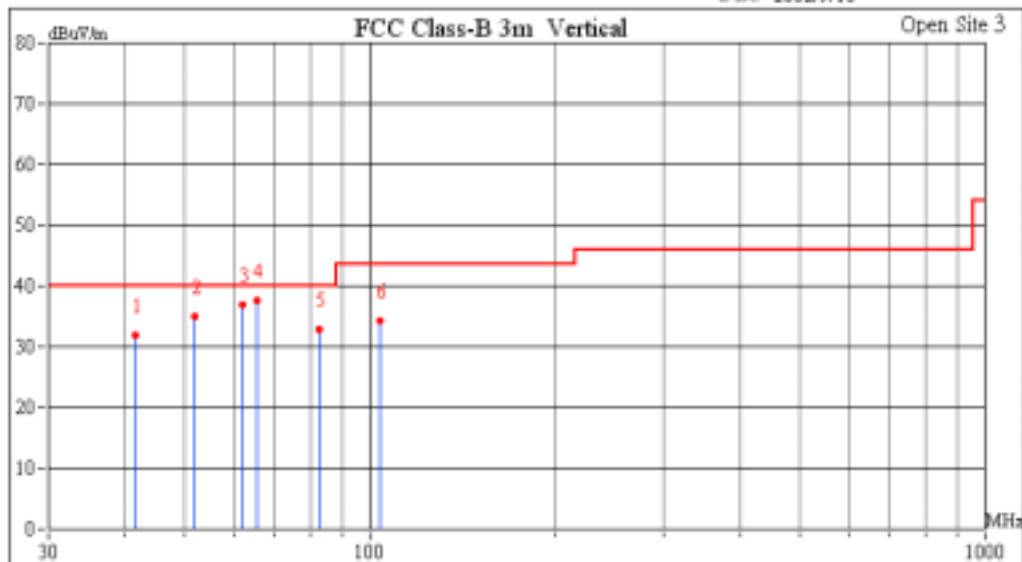
Custom Name: SENAO

Test Mode: External Antenna #3 TX-MID

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

| |
|--|
| |
|--|

15.209 Radiated Test Data – TX CH-High Horizontal (BASE-Antenna 3)

C&C LABORATORY CO., LTD.

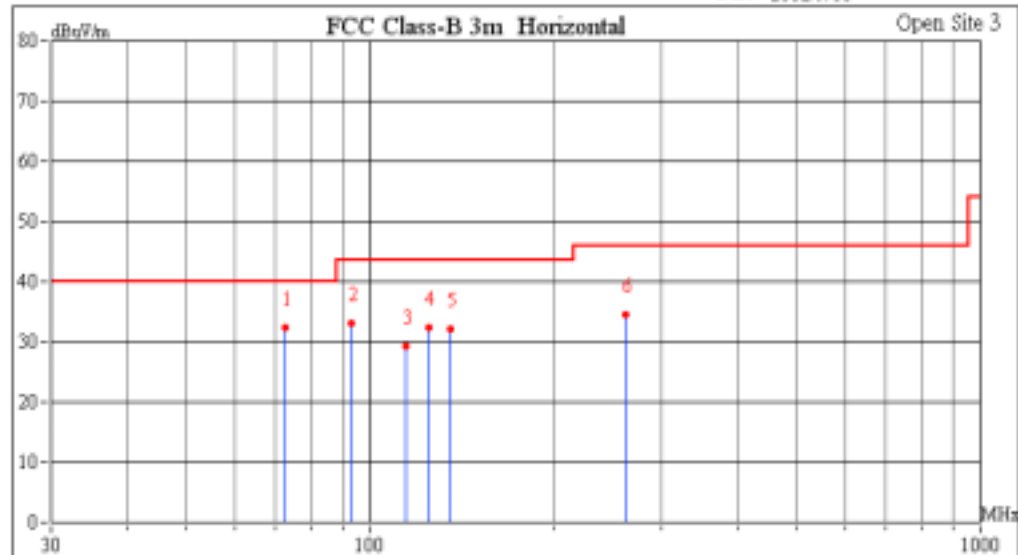
Custom Name: SENAO

Test Mode: External Antenna #3 TX-HIGH

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

15.209 Radiated Test Data – TX CH-High Vertical (BASE-Antenna 3)

C&C LABORATORY CO., LTD.

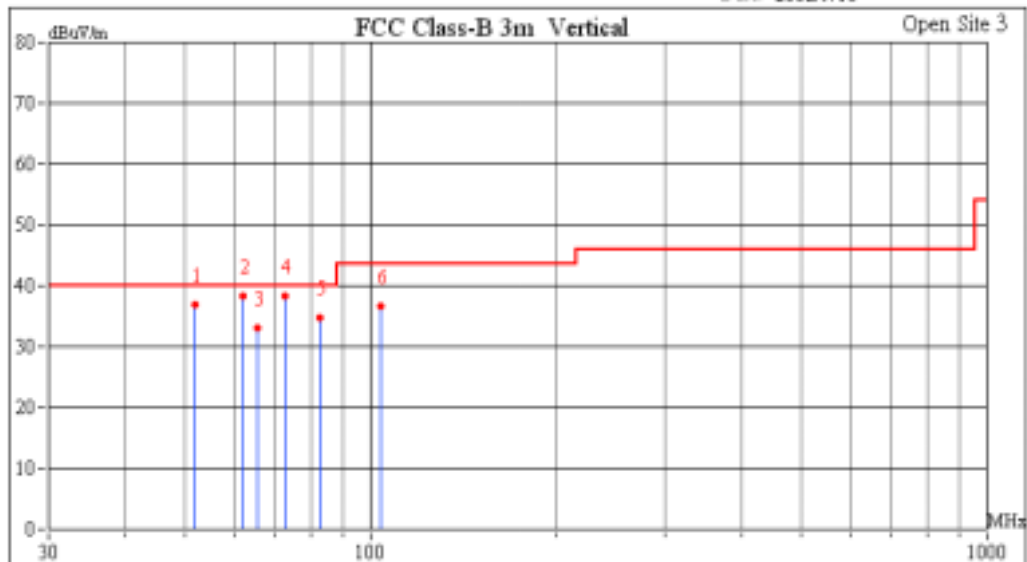
Custom Name: SENAO

Test Mode: External Antenna #3 TK-HIGH

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

15.209 Radiated Test Data –TX CH-Low Horizontal (BASE-Antenna 4)

C&C LABORATORY CO., LTD.

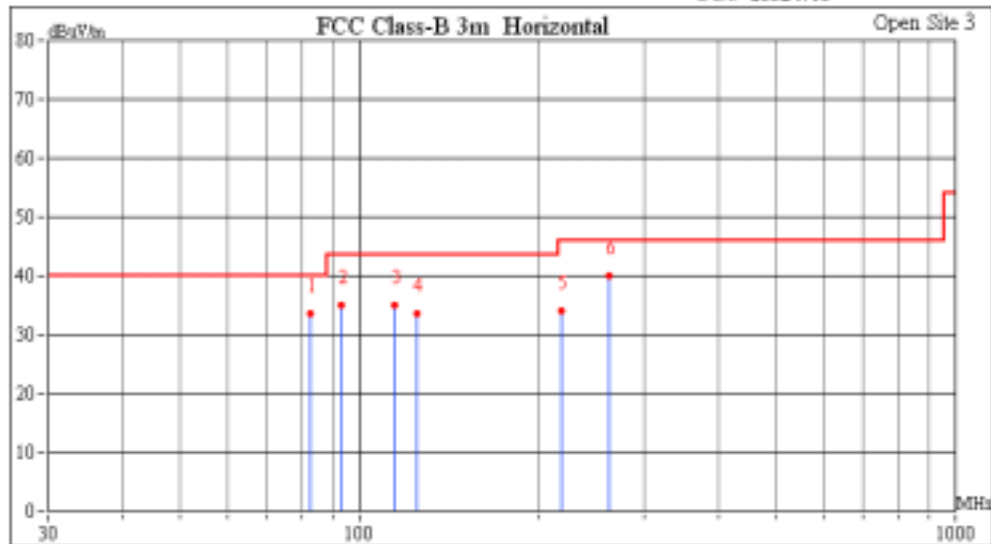
Custom Name: SENAO

Test Mode: External Antenna #4 TX-LOW

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

Lab TEL:886-3-3240332 Office TEL:886-2-86422071
FAX:886-3-3245235 FAX:886-2-86422256

15.209 Radiated Test Data – TX CH-Low Vertical (BASE-Antenna 4)

C&C LABORATORY CO., LTD.

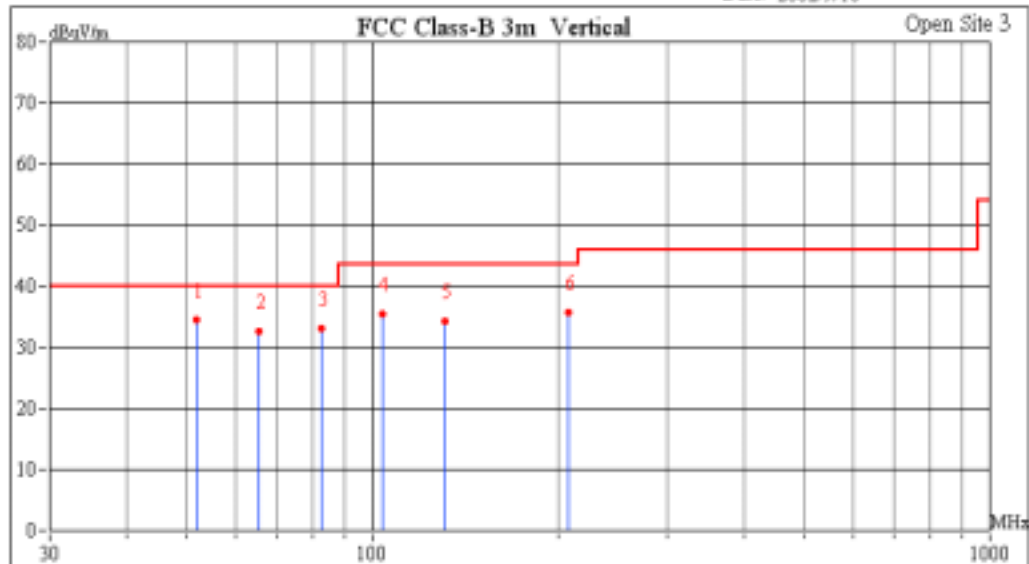
Custom Name: SENAO

Test Mode: External Antenna #4 TX-LOW

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

| |
|--|
| |
|--|

15.209 Radiated Test Data – TX CH-Mid Horizontal (BASE-Antenna 4)

C&C LABORATORY CO., LTD.

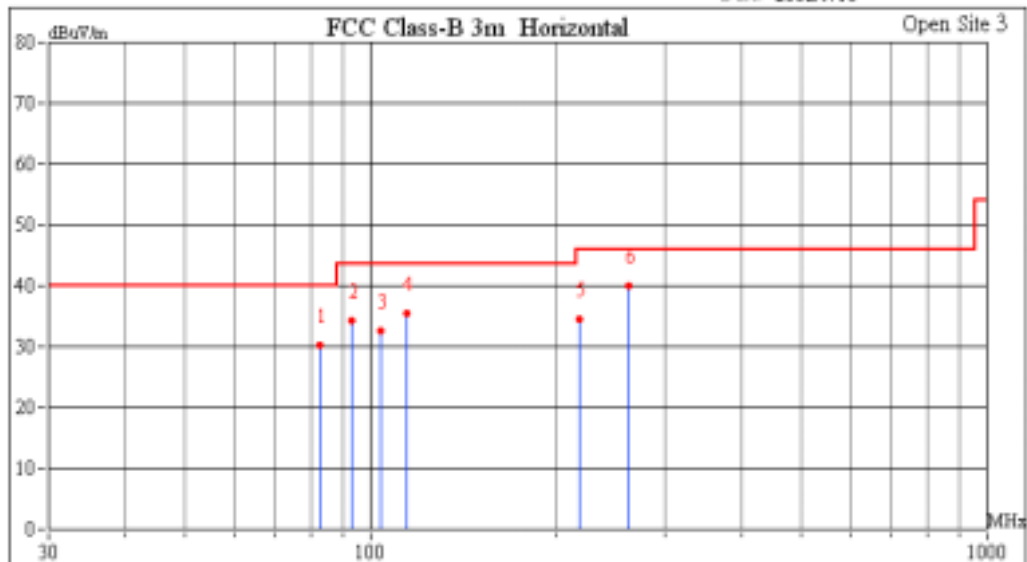
Custom Name: SENAO

Test Mode: External Antenna #4 TX-MID

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

| |
|--|
| |
|--|

15.209 Radiated Test Data – TX CH-Mid Vertical (BASE-Antenna 4)

C&C LABORATORY CO., LTD.

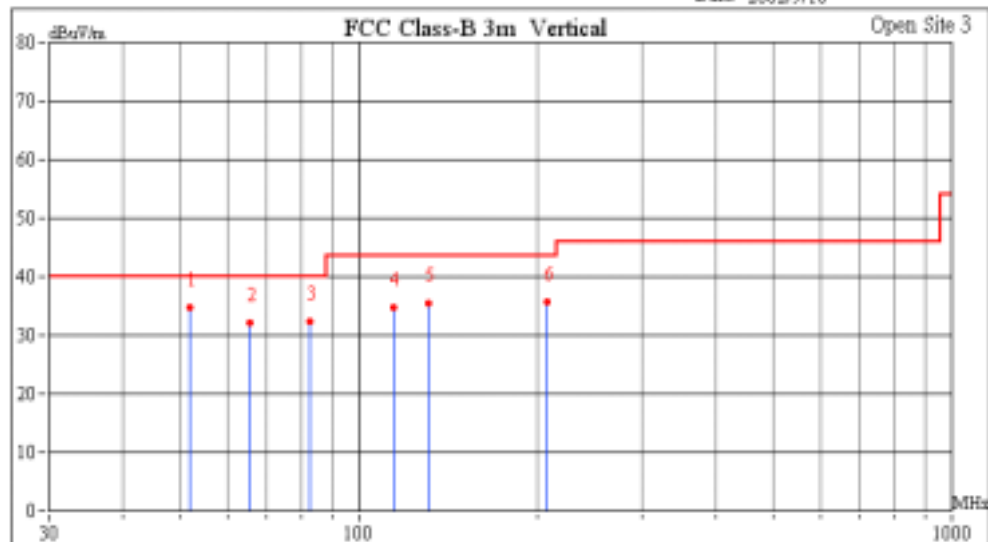
Custom Name: SENAO

Test Mode: External Antenna #4 TX-MID

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

Lab TEL:886-3-3240332 Office TEL:886-2-86422071
FAX:886-3-3245235 FAX:886-2-86422256

15.209 Radiated Test Data – TX CH-High Horizontal (BASE-Antenna 4)

C&C LABORATORY CO., LTD.

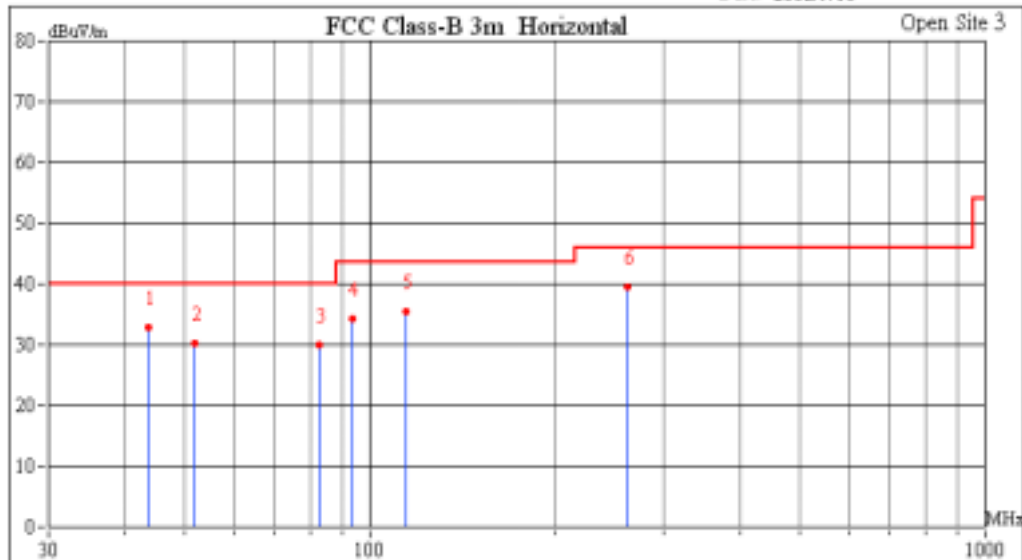
Custom Name: SENAO

Test Mode: External Antenna #4 TK-HIGH

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

| |
|--|
| |
|--|

15.209 Radiated Test Data – TX CH-High Vertical (BASE-Antenna 4)

C&C LABORATORY CO., LTD.

Custom Name: SENAO

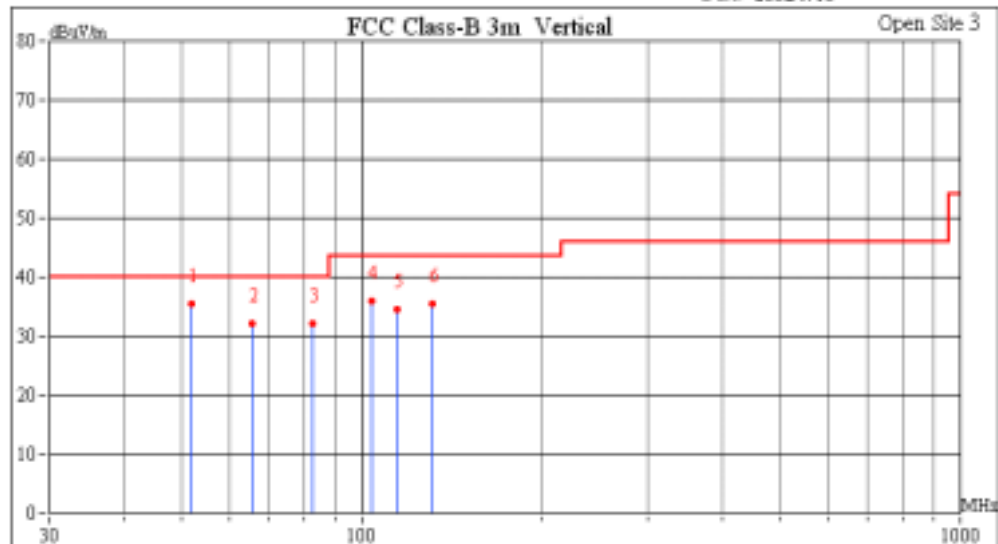
Test Mode: External Antenna #4 TX-HIGH

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

Open Site 3

[illegible]

Comments:

Lab TEL:886-3-3240332 Office TEL:886-2-86422071
FAX:886-3-3245235 FAX:886-2-86422256

15.209 Radiated Test Data –TX CH-Low Horizontal (BASE-Antenna 5)

C&C LABORATORY CO., LTD.

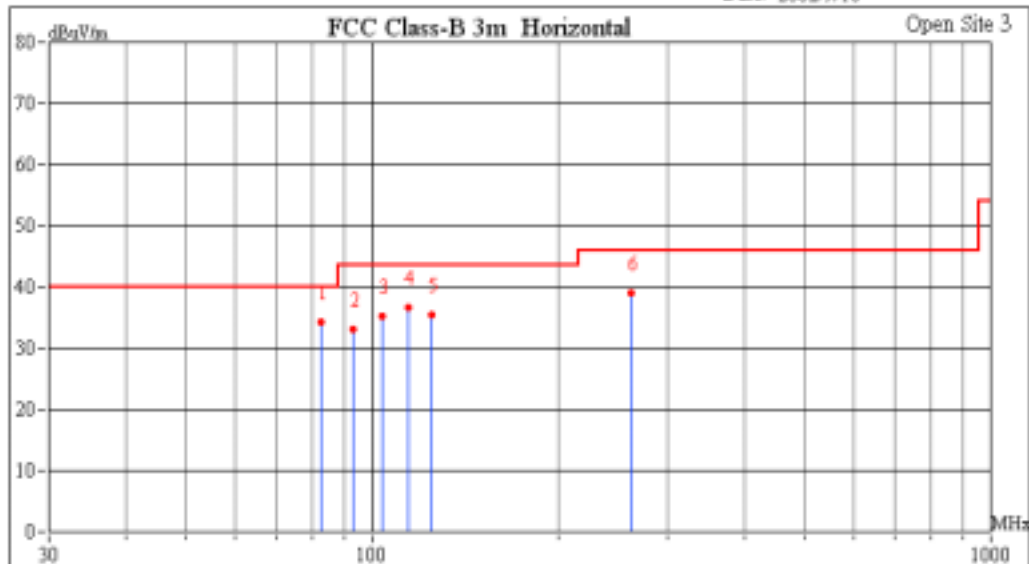
Custom Name: SENAO

Test Mode: External Antenna #5 TX-LOW

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

15.209 Radiated Test Data – TX CH-Low Vertical (BASE-Antenna 5)

C&C LABORATORY CO., LTD.

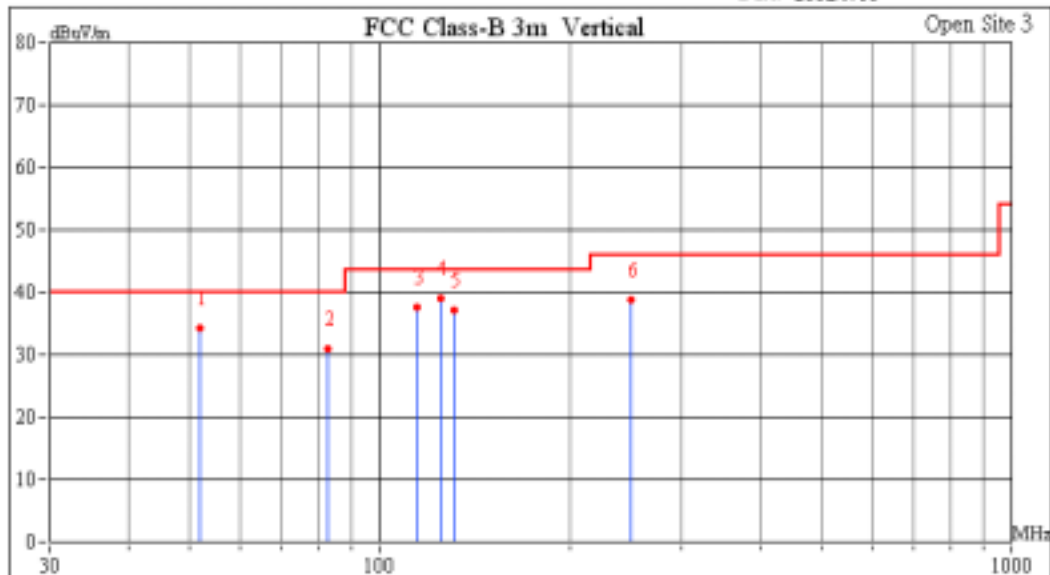
Custom Name: SENAO

Test Mode: External Antenna #5 TX-LOW

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

15.209 Radiated Test Data – TX CH-Mid Horizontal (BASE-Antenna 5)

C&C LABORATORY CO., LTD.

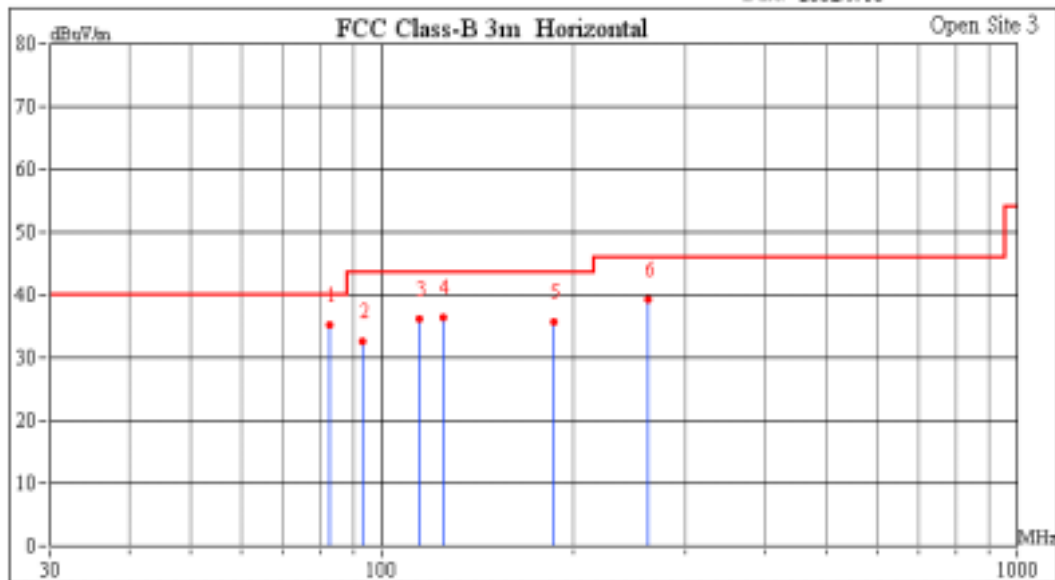
Custom Name: SENAO

Test Mode: External Antenna #5 TX-MID

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

15.209 Radiated Test Data – TX CH-Mid Vertical (BASE-Antenna 5)

C&C LABORATORY CO., LTD.

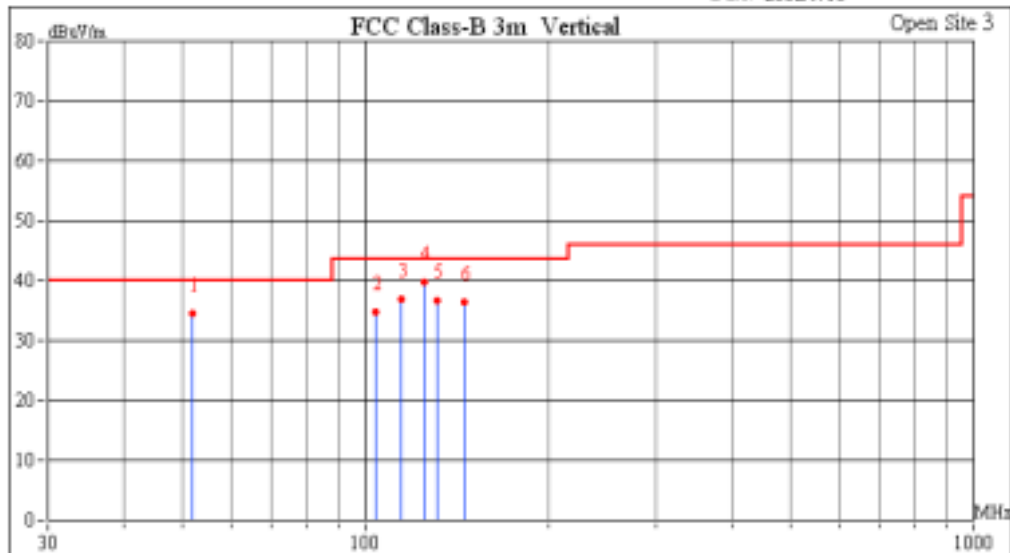
Custom Name: SENAO

Test Mode: External Antenna #5 TX-MID

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

15.209 Radiated Test Data – TX CH-High Horizontal (BASE-Antenna 5)

C&C LABORATORY CO., LTD.

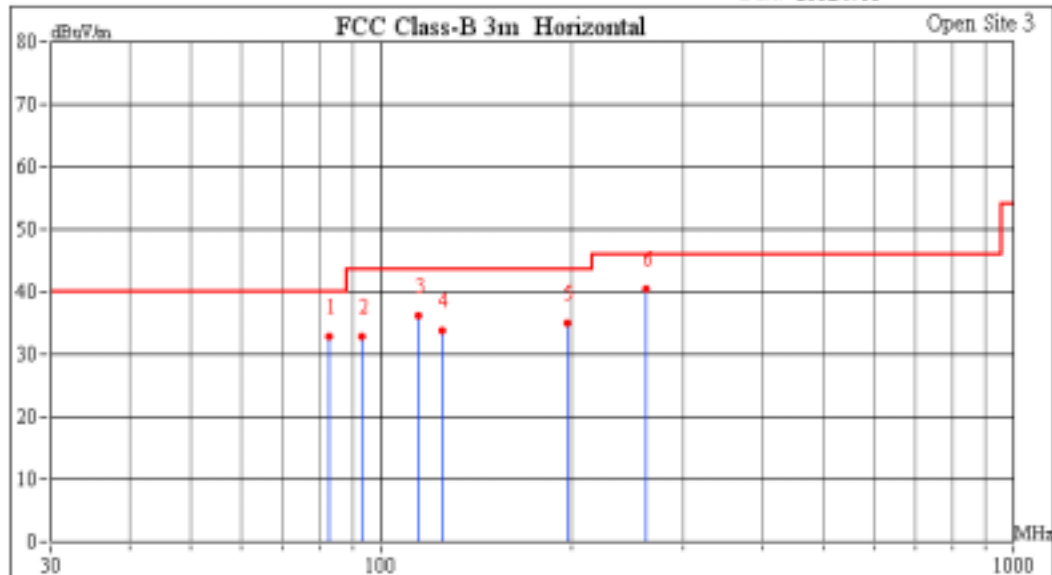
Custom Name: SENAO

Test Mode: External Antenna #5 TX-HIGH

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

15.209 Radiated Test Data – TX CH-High Vertical (BASE-Antenna 5)

C&C LABORATORY CO., LTD.

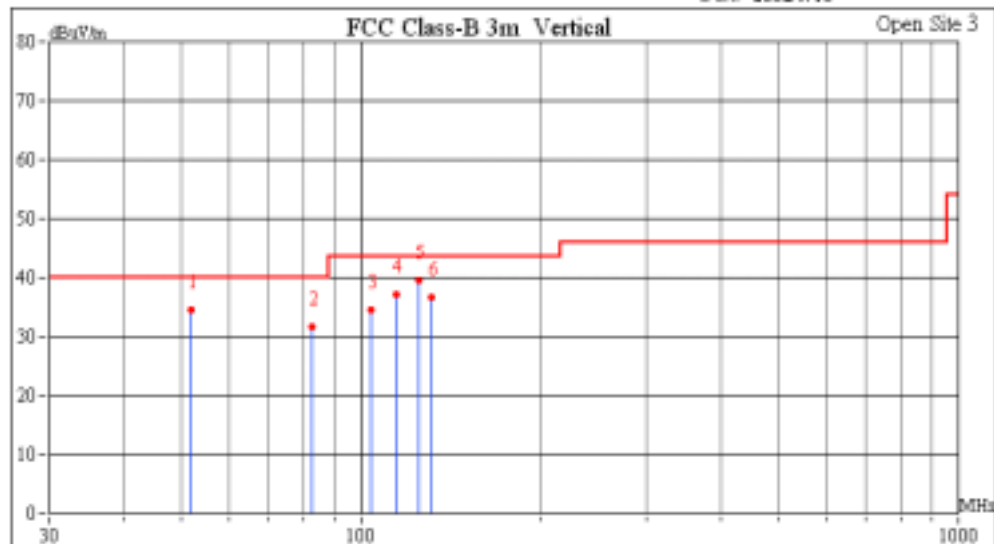
Custom Name: SENAO

Test Mode: External Antenna #5 TX-HIGH

Model Name: EP-236

Engineer Name: markba lee

Date: 2002/9/10

[illegible]

Comments:

Lab TEL:886-3-3240332 Office TEL:886-2-86422071
FAX:886-3-3245235 FAX:886-2-86422256

15.209 Radiated Test Data –TX CH-Low Horizontal (HANDSET)

C&C LABORATORY CO., LTD.

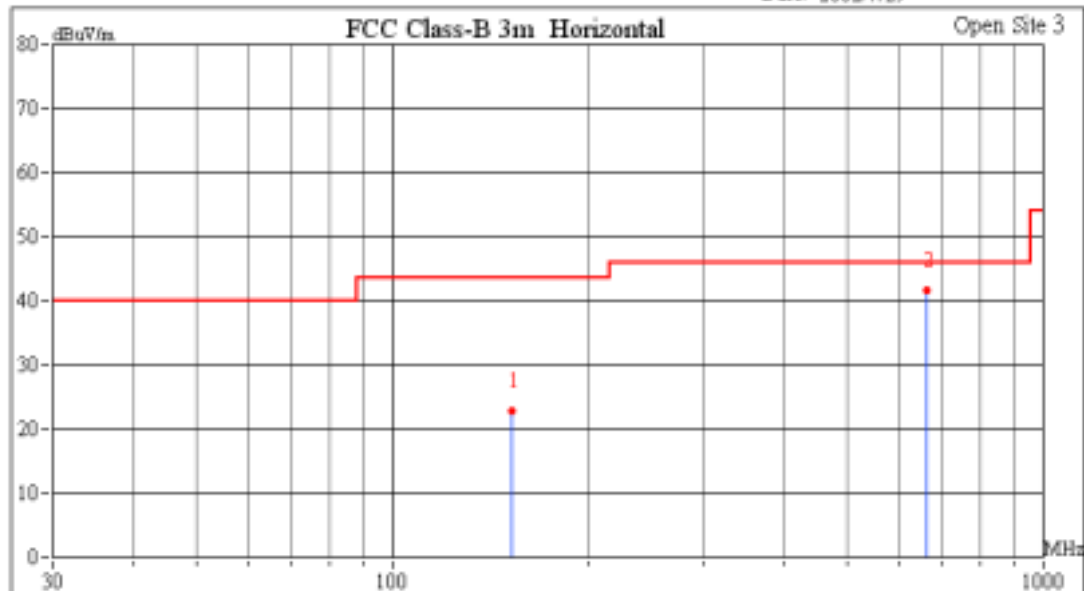
Custom Name: SENAO

Test Mode: HANDSET TX LOW-X

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/29

[illegible]

15.209 Radiated Test Data – TX CH-Low Vertical (HANDSET)

C&C LABORATORY CO., LTD.

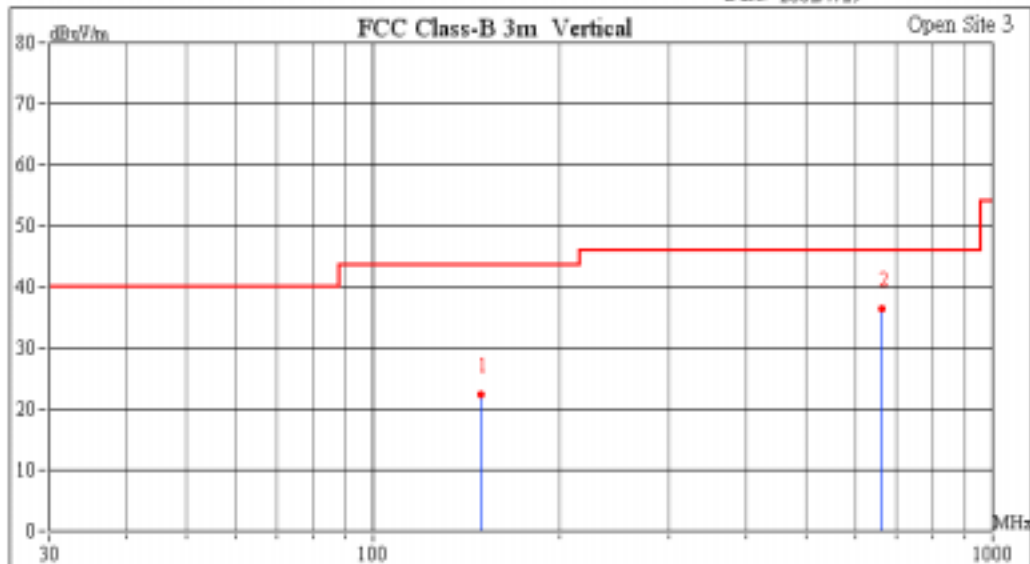
Custom Name: SENAO

Test Mode: HANDSET TX LOW-X

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/29

[illegible]

15.209 Radiated Test Data – TX CH-Mid Horizontal (HANDSET)

C&C LABORATORY CO., LTD.

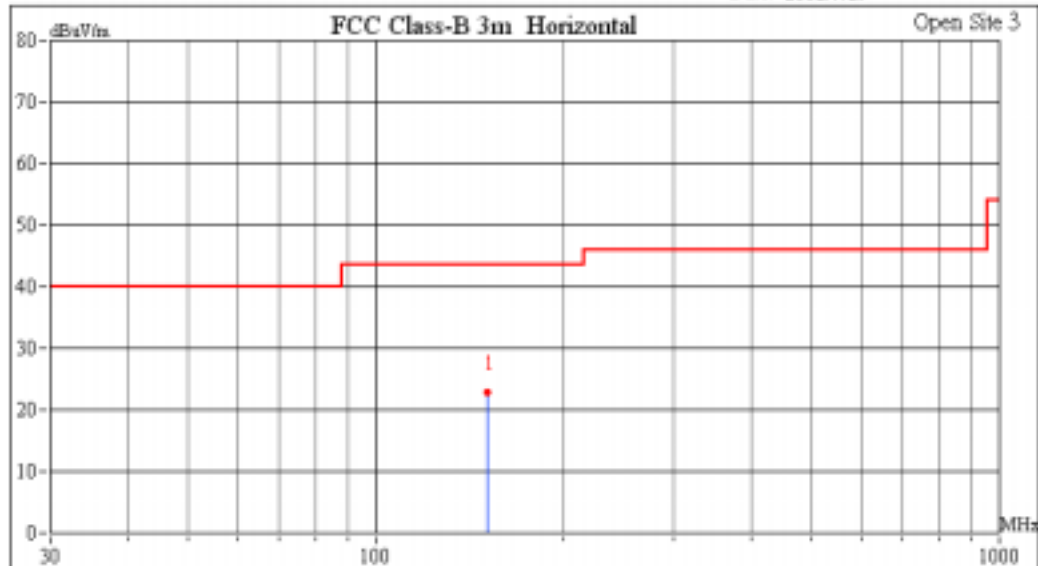
Custom Name: SENA0

Test Mode: HANDSET TX MIDDLE-X

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/29

[illegible]

15.209 Radiated Test Data – TX CH-Mid Vertical (HANDSET)

C&C LABORATORY CO., LTD.

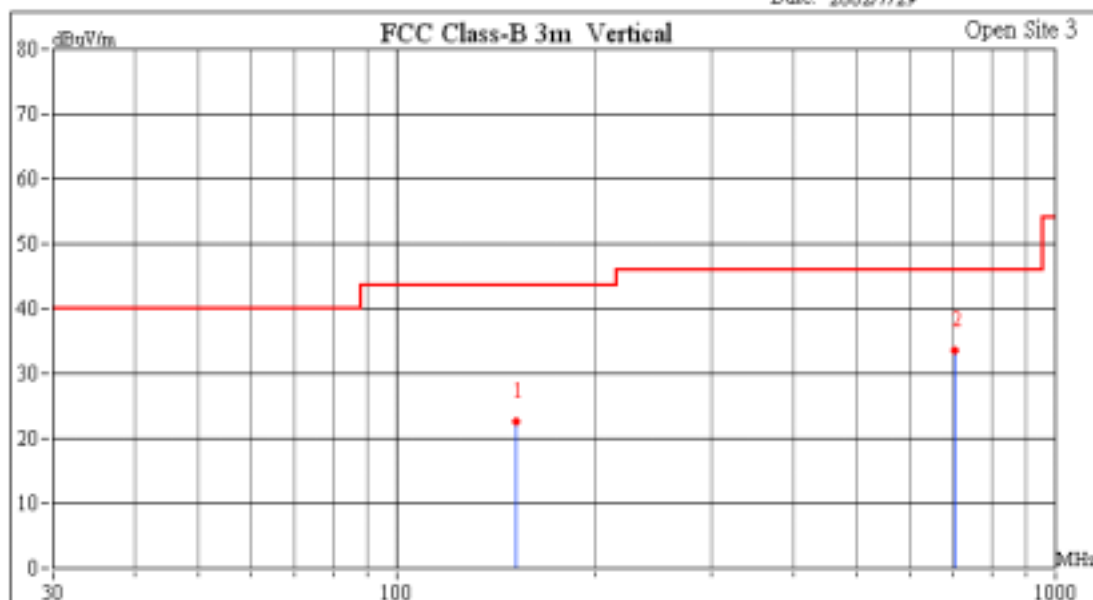
Custom Name: SENAO

Test Mode: HANDSET TX MIDDLE-X

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/29

[illegible]

15.209 Radiated Test Data – TX CH-High Horizontal (HANDSET)

C&C LABORATORY CO., LTD.

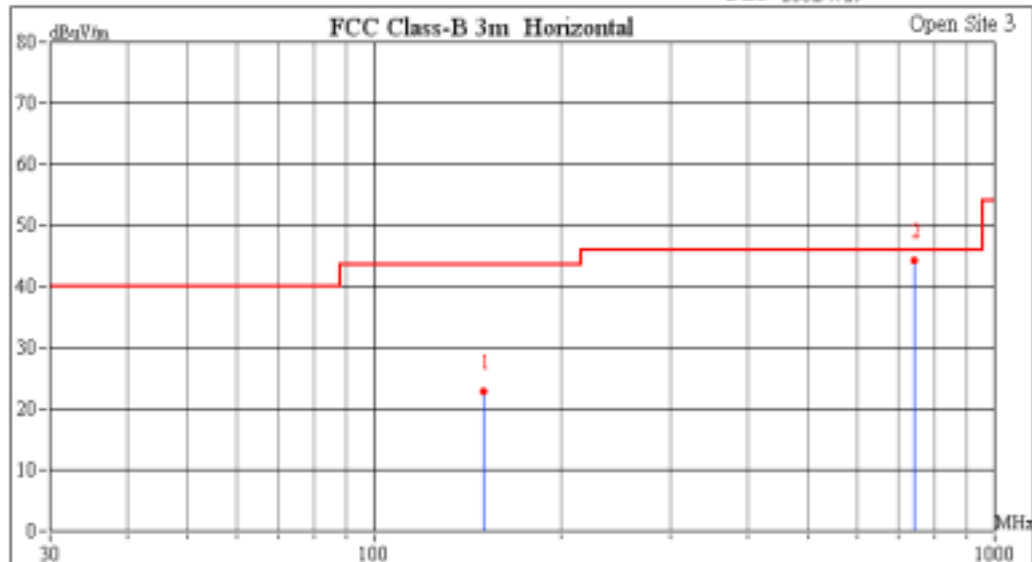
Custom Name: SENAO

Test Mode: HANDSET TX HIGH-X

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/29

[illegible]

15.209 Radiated Test Data – TX CH-High Vertical (HANDSET)

C&C LABORATORY CO., LTD.

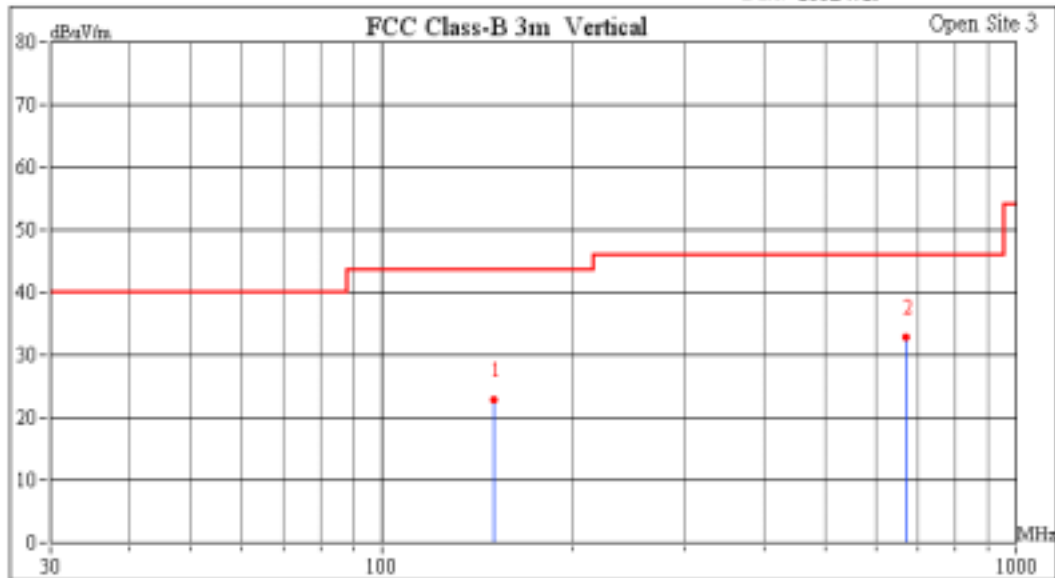
Custom Name: SENAO

Test Mode: HANDSET TX MIDDLE-X

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/29

[illegible]

15.209 Radiated Test Data –TX CH-Low Horizontal (HANDSET)

C&C LABORATORY CO., LTD.

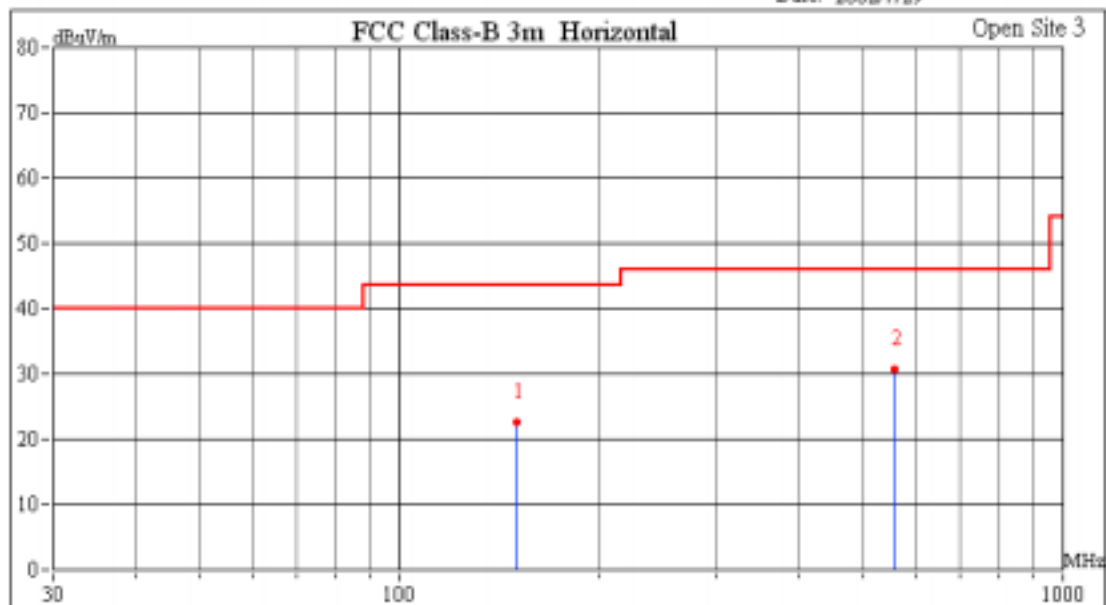
Custom Name: SENAO

Test Mode: HANDSET TX LOW-Y

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/29

[illegible]

15.209 Radiated Test Data – TX CH-Low Vertical (HANDSET)

C&C LABORATORY CO., LTD.

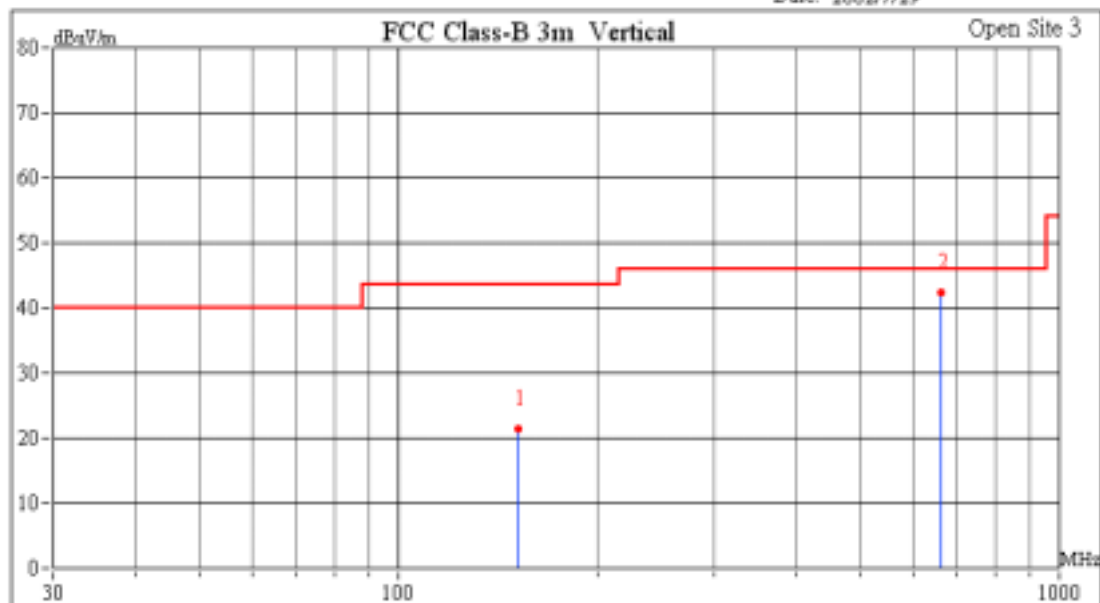
Custom Name: SENAO

Test Mode: HANDSET TX LOW-Y

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/29

[illegible]

15.209 Radiated Test Data – TX CH-Mid Horizontal (HANDSET)

C&C LABORATORY CO., LTD.

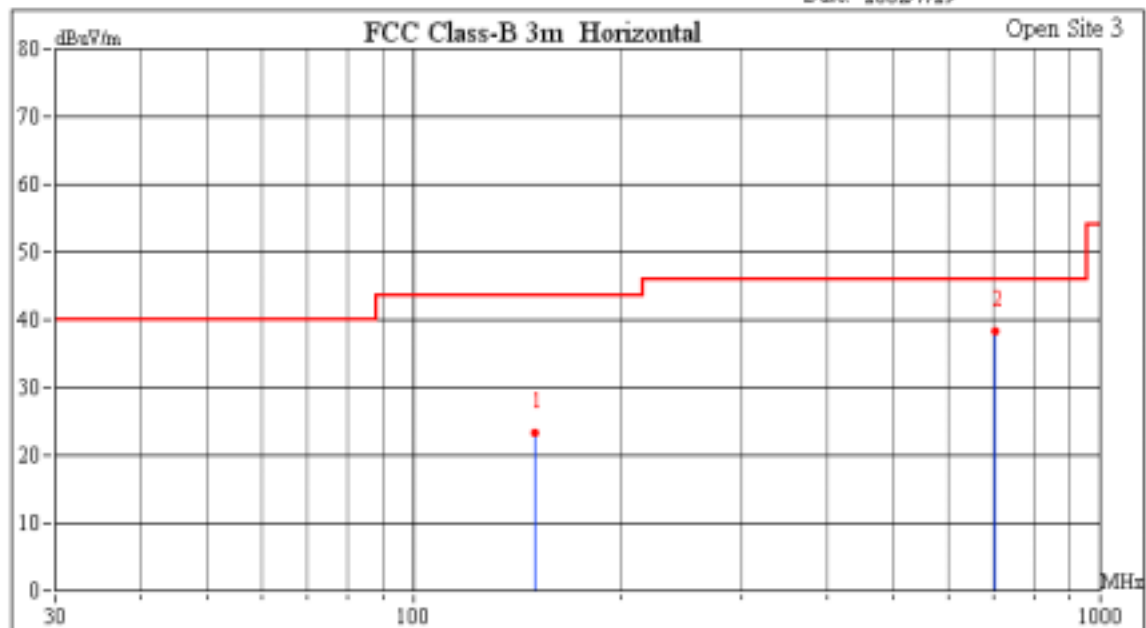
Custom Name: SENA0

Test Mode: HANDSET TX MIDDLE-Y

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/29

[illegible]

15.209 Radiated Test Data – TX CH-Mid Vertical (HANDSET)

C&C LABORATORY CO., LTD.

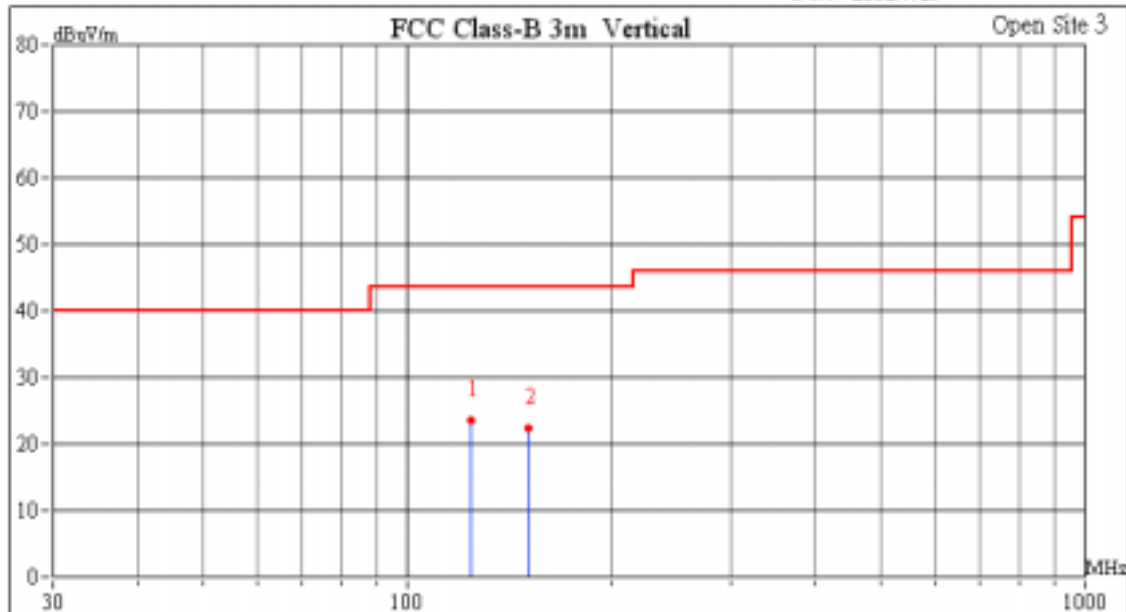
Custom Name: SENAO

Test Mode: HANDSET TX MIDDLE-Y

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/29

[illegible]

15.209 Radiated Test Data – TX CH-High Horizontal (HANDSET)

C&C LABORATORY CO., LTD.

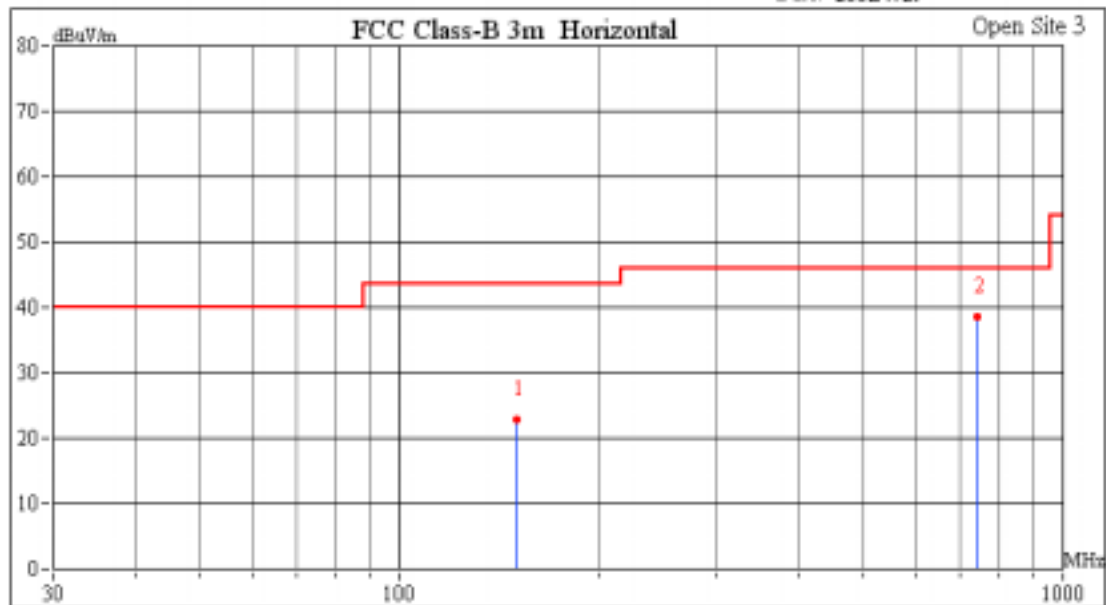
Custom Name: SENA O

Test Mode: HANDSET TX HIGH-Y

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/29

[illegible]

15.209 Radiated Test Data – TX CH-High Vertical (HANDSET)

C&C LABORATORY CO., LTD.

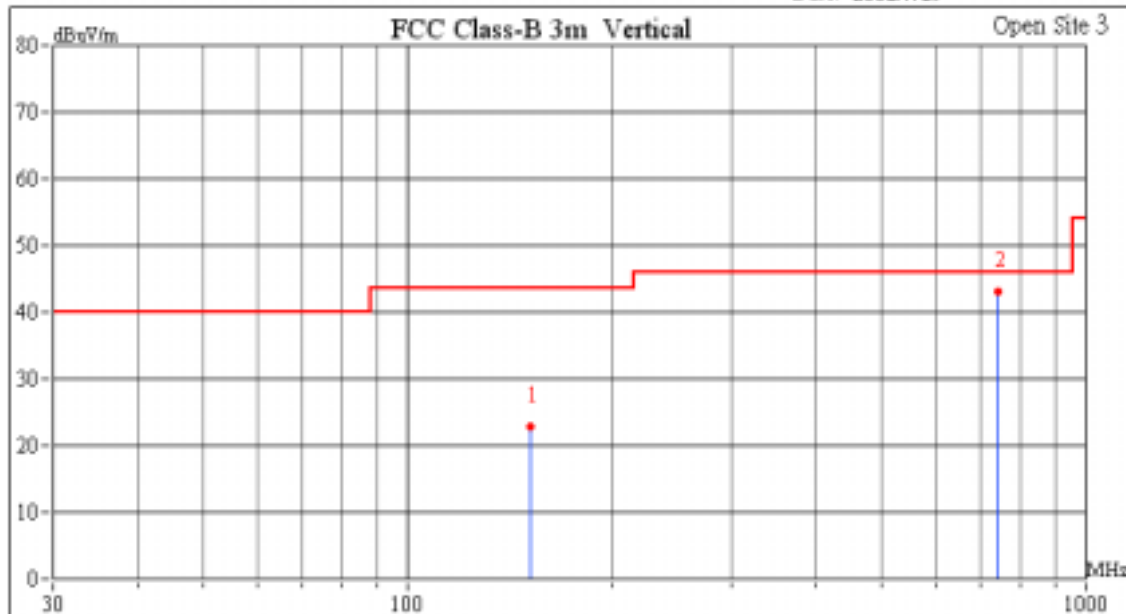
Custom Name: SENAO

Test Mode: HANDSET TX HIGH-Y

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/29

[illegible]

15.209 Radiated Test Data – TX CH-Mid Horizontal (HANDSET)

C&C LABORATORY CO., LTD.

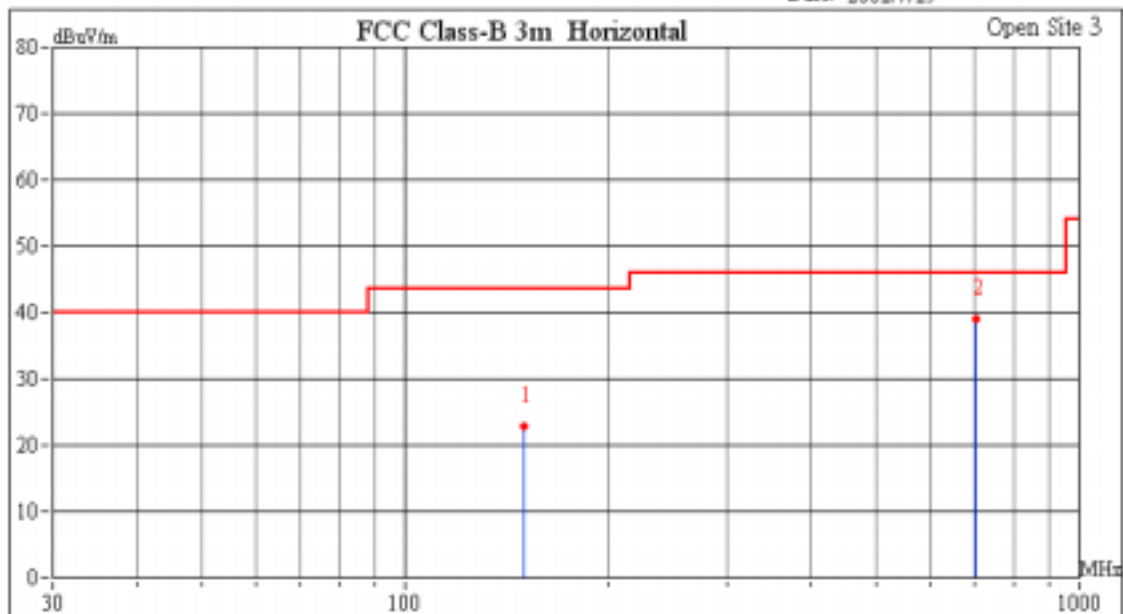
Custom Name: SENAO

Test Mode: HANDSET TX MIDDLE-2

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/29

[illegible]

15.209 Radiated Test Data – TX CH-Mid Vertical (HANDSET)

C&C LABORATORY CO., LTD.

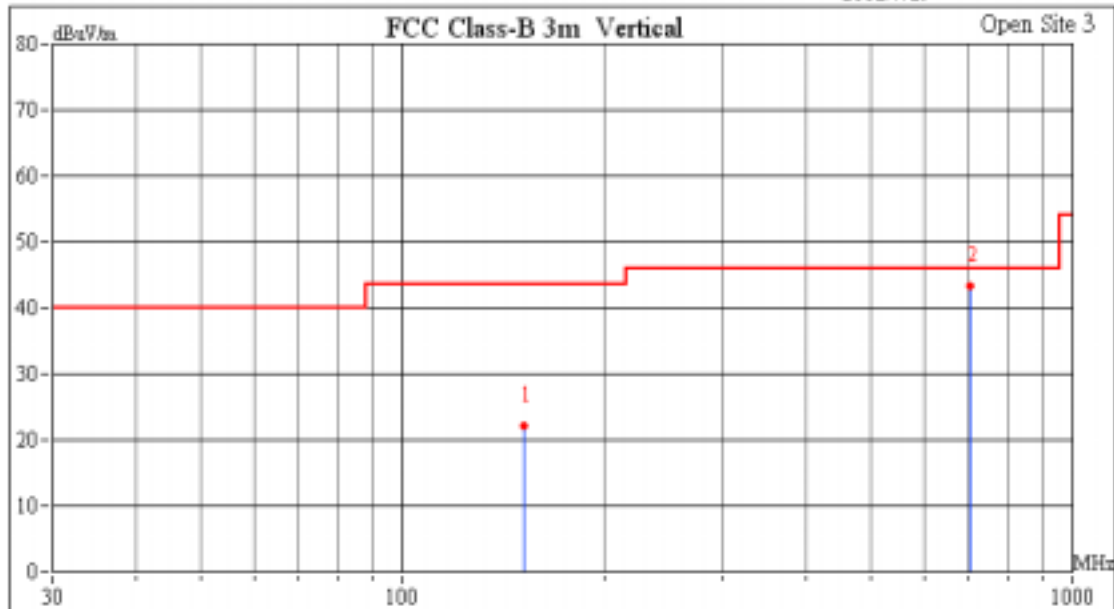
Custom Name: SENAO

Test Mode: HANDSET TK MIDDLE-2

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/29

[illegible]

15.209 Radiated Test Data – TX CH-High Horizontal (HANDSET)

C&C LABORATORY CO., LTD.

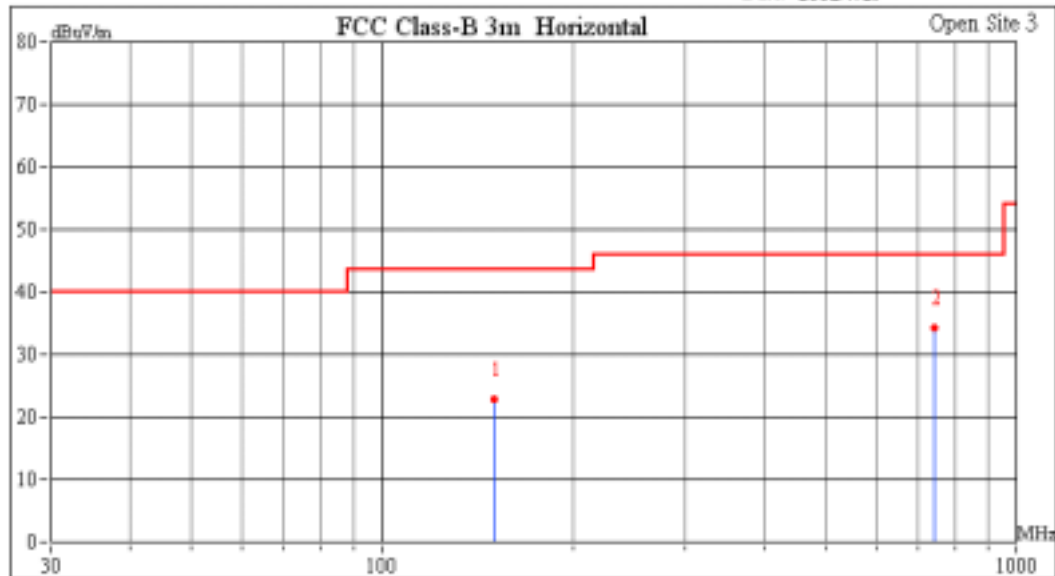
Custom Name: SENAO

Test Mode: HANDSET TX HIGH-Z

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/29

[illegible]

15.209 Radiated Test Data – TX CH-High Vertical (HANDSET)

C&C LABORATORY CO., LTD.

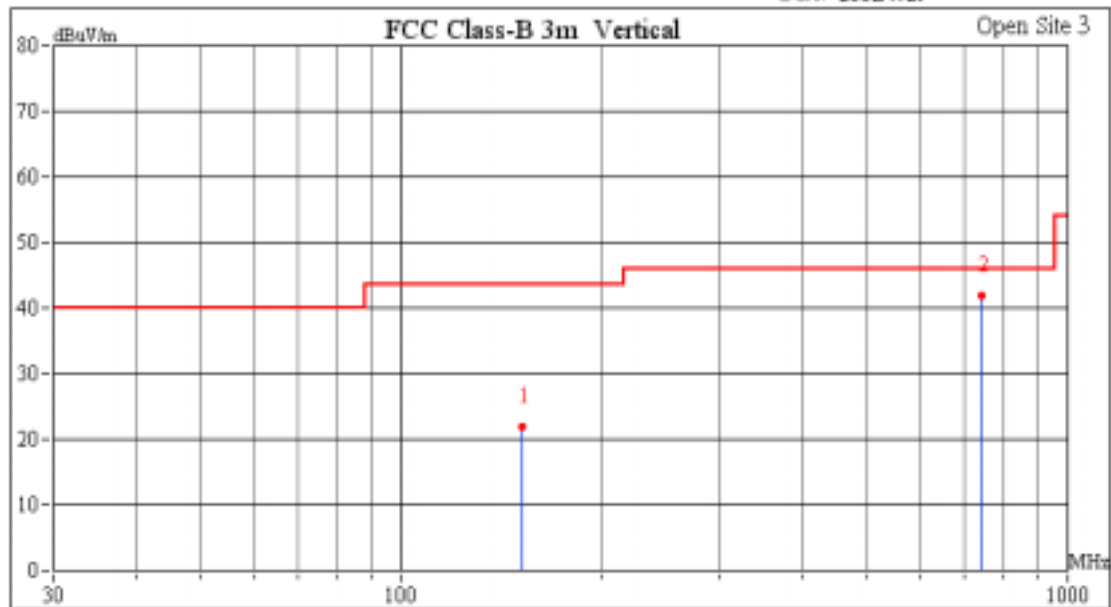
Custom Name: SENAO

Test Mode: HANDSET TX HIGH-Z

Model Name: EP-236

Engineer Name: JOE

Date: 2002/7/29

[illegible]