

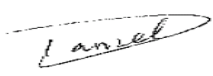
FCC PART 15.247  
EMI MEASUREMENT AND TEST REPORT

For

**Newcont Ele Co., Ltd.**

Unit D, 40/F., Block C, Electronics Science & Technology Bldg  
Shennan Middle Road, Futian District, Shenzhen, Guangdong Province, P.R.China

**FCC ID: QFENTP-3422**

|                                                                                                                                                                                       |                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| <b>This Report Concerns:</b><br><input checked="" type="checkbox"/> Original                                                                                                          | <b>Equipment Type:</b><br>2.4GHz Digital Cordless Telephone<br>with CD Player |
| <div style="text-align: right; margin-bottom: 5px;"></div> <b>Test Engineer:</b> <u>Jerry Wang</u> |                                                                               |
| <b>Report No.:</b> <u>R0505237</u>                                                                                                                                                    |                                                                               |
| <b>Report Date:</b> <u>2005-06-16</u>                                                                                                                                                 |                                                                               |
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## GENERAL INFORMATION

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### Product Description for Equipment Under Test (EUT)

The *Newcont Ele Co., Ltd.*, FCC ID: *QFENTP-3422*, model: *NTP-3422*, or the “EUT” as referred to in this report is the base part of a 2.4GHz Digital Cordless Telephone with Audio, which measures approximately 26.0cmL x 17.0cm W x 17.0cm for Base, and 15.0cmL x 3.5cm W x 5.0cm H for Handset.

*\* The test data gathered are from a production sample, S/N: 1007573, provided by the manufacturer.*

### Objective

This type approval report is prepared on behalf of *Newcont Ele Co., Ltd.* in accordance with Part 2, Subpart J, Part 15, Subparts A, B, C.

### Related Submittal(s)/Grant(s)

No Related Submittals.

### Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003.

### Test Facility

The Open Area Test site used by BACL to collect radiated and conducted emission measurement data is located in the back parking lot of the building at 230 Commercial Street, Sunnyvale, California, USA.

Test site at BACL has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission and Voluntary Control Council for Interference has the reports on file and is listed under FCC file 31040/SIT 1300F2 and VCCI Registration No.: C-1298 and R-1234. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, BACL is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200167-0). The current scope of accreditations can be found at <http://ts.nist.gov/ts/htdocs/210/214/scopes/2001670.htm>

## SYSTEM TEST CONFIGURATION

### Justification

The EUT was configured for testing according to ANSI C63.4-2003.

The EUT was tested in the normal (native) operating mode to represent *worst-case* results during the final qualification test.

### Special Accessories

As shown in following test block diagram, all interface cables used for compliance testing are shielded.

### Schematics / Block Diagram

Please refer to Appendix A.

### Equipment Modifications

No modifications were made to the EUT.

### Local Support Equipment List and Details

| Manufacturer     | Description | Model     | Serial Number | FCC ID |
|------------------|-------------|-----------|---------------|--------|
| Southern Telecom | Telephone   | None      | None          | None   |
| Teltone Corp     | Simulator   | TLS-3B-01 | 80071         | None   |

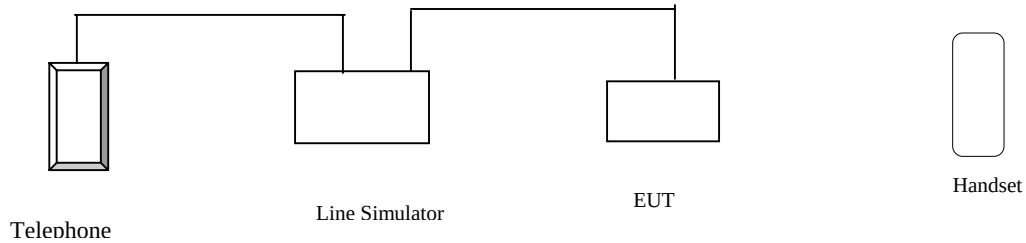
### External I/O Cabling List and Details

| Cable Description         | Length (M) | Port/From         | To                 |
|---------------------------|------------|-------------------|--------------------|
| None-Shielded RJ-11 Cable | 1.5        | RJ-11 Port/EUT    | Simulator RJ11Port |
| None-Shielded RJ-11 Cable | 1.5        | Support telephone | Simulator RJ11Port |

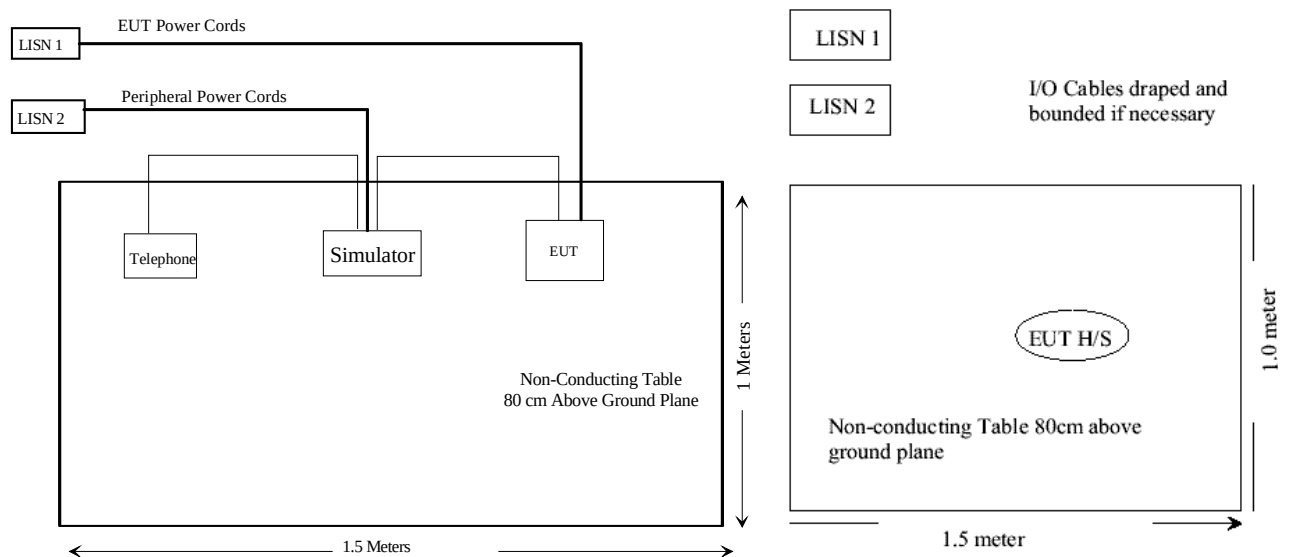
### Power Supply Information

| Manufacturer | Description | Model      | Serial Number | FCC ID |
|--------------|-------------|------------|---------------|--------|
| N/A          | AC Adaptor  | U120150DA4 | N/A           | None   |

## Configuration of Test System



## Test Setup Block Diagram



**SUMMARY OF TEST RESULTS FOR FCC PART 15**

| FCC RULES                   | DESCRIPTION OF TEST                                            | RESULT    |
|-----------------------------|----------------------------------------------------------------|-----------|
| §15.203                     | Antenna Requirement                                            | Compliant |
| § 15.205                    | Restricted Bands                                               | Compliant |
| §15.207 (a)                 | Conducted Emission                                             | Compliant |
| §15.209                     | Radiated Emission                                              | Compliant |
| §15.247 (a) (1)             | Hopping Channel Separation                                     | Compliant |
| §15.247 (a) (1)             | Channel Bandwidth                                              | Compliant |
| §15.247 (a) (1) (iii)       | Number of Hopping Frequencies Used                             | Compliant |
| §15.247 (a) (1) (iii)       | Dwell Time of Each Frequency within a 30 Second Period of time | Compliant |
| §15.247 (b) (1)             | Maximum Peak Output Power                                      | Compliant |
| § 15.247 (b)(5)<br>§ 2.1091 | RF Safety Requirements                                         | Compliant |
| § 15.247 (d)                | 100 kHz Bandwidth of Frequency Band Edge                       | Compliant |
| § 2.1051                    | Spurious Emission at Antenna Port                              | Compliant |

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## ANTENNA REQUIREMENT

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According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to § 15.247 (1), if transmitting antennas of directional gain greater than 6 dBi are used the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The gain of antenna used for transmitting is 0 dBi by default, and the antenna connector is designed with permanent attachment and no consideration of replacement. Please see EUT photo for details.

## §15.207(a) - CONDUCTED EMISSION

### Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at BACL is  $\pm 2.4$  dB.

### Test Setup

The measurement was performed at shield room, using the same setup per ANSI C63.4 – 2003 measurement procedure. The specification used was FCC Class B limits.

External I/O cables were draped along the edge of the test table and bundle when necessary.

The EUT was connected with LISN-1.

### Receiver Setup

The EMI receiver was set to investigate the spectrum from 150 kHz to 30MHz.

### Test Equipment List and Details

| Manufacturer | Description              | Model   | Serial Number | Cal. Date  |
|--------------|--------------------------|---------|---------------|------------|
| R&S          | Receiver, EMI Test       | ESCS30  | 100176        | 2004-09-15 |
| R&S          | Artificial Mains Network | ESH2-Z5 | 871884/039    | 2004-08-16 |
| Fluke        | Calibrated Voltmeter     | 189     | 18485-38      | 2004-07-18 |

**\* Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

### Test Procedure

During the conducted emission test, the power cord of the host system was connected to the mains outlet of the LISN-1.

Maximizing procedure were performed on the six (6) highest emissions of the EUT.

All data was recorded in the peak detection mode, quasi-peak and average. Qusi-Peak readings are distinguished with an "QP". Average readings are distinguished with an "Ave".

### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 23° C     |
| Relative Humidity: | 45%       |
| ATM Pressure:      | 1021 mbar |

*\*The testing was performed by Jerry Wang on 2005-06-03.*

## Summary of Test Results

According to the recorded data in following table, the EUT complied with the FCC Conducted limit for a Class B device, with the *worst* margin reading of:

**-13.9 dB at 0.150 MHz in the Line conductor**

## Conducted Emissions Test Data

| LINE CONDUCTED EMISSIONS |                   |                         |                       | FCC CLASS B   |              |
|--------------------------|-------------------|-------------------------|-----------------------|---------------|--------------|
| Frequency<br>MHz         | Amplitude<br>dBμV | Detector<br>Qp/Ave/Peak | Phase<br>Line/Neutral | Limit<br>dBμV | Margin<br>dB |
| 0.150                    | 52.1              | QP                      | Line                  | 66.00         | -13.9        |
| 21.500                   | 30.2              | Ave                     | Line                  | 50.00         | -19.8        |
| 0.150                    | 45.8              | QP                      | Neutral               | 66.00         | -20.2        |
| 21.500                   | 27.5              | Ave                     | Neutral               | 50.00         | -22.5        |
| 25.600                   | 25.1              | Ave                     | Line                  | 50.00         | -24.9        |
| 27.500                   | 21.3              | Ave                     | Neutral               | 50.00         | -28.7        |
| 27.500                   | 31.1              | QP                      | Neutral               | 60.00         | -28.9        |
| 25.600                   | 31.0              | QP                      | Line                  | 60.00         | -29.0        |
| 21.500                   | 29.4              | QP                      | Line                  | 60.00         | -30.6        |
| 21.500                   | 26.4              | QP                      | Neutral               | 60.00         | -33.6        |
| 0.150                    | 20.4              | Ave                     | Line                  | 56.00         | -35.6        |
| 0.150                    | 16.5              | Ave                     | Neutral               | 56.00         | -39.5        |

## Plot of Conducted Emissions Test Data

Plot(s) of Conducted Emissions Test Data is presented in the following page as reference.

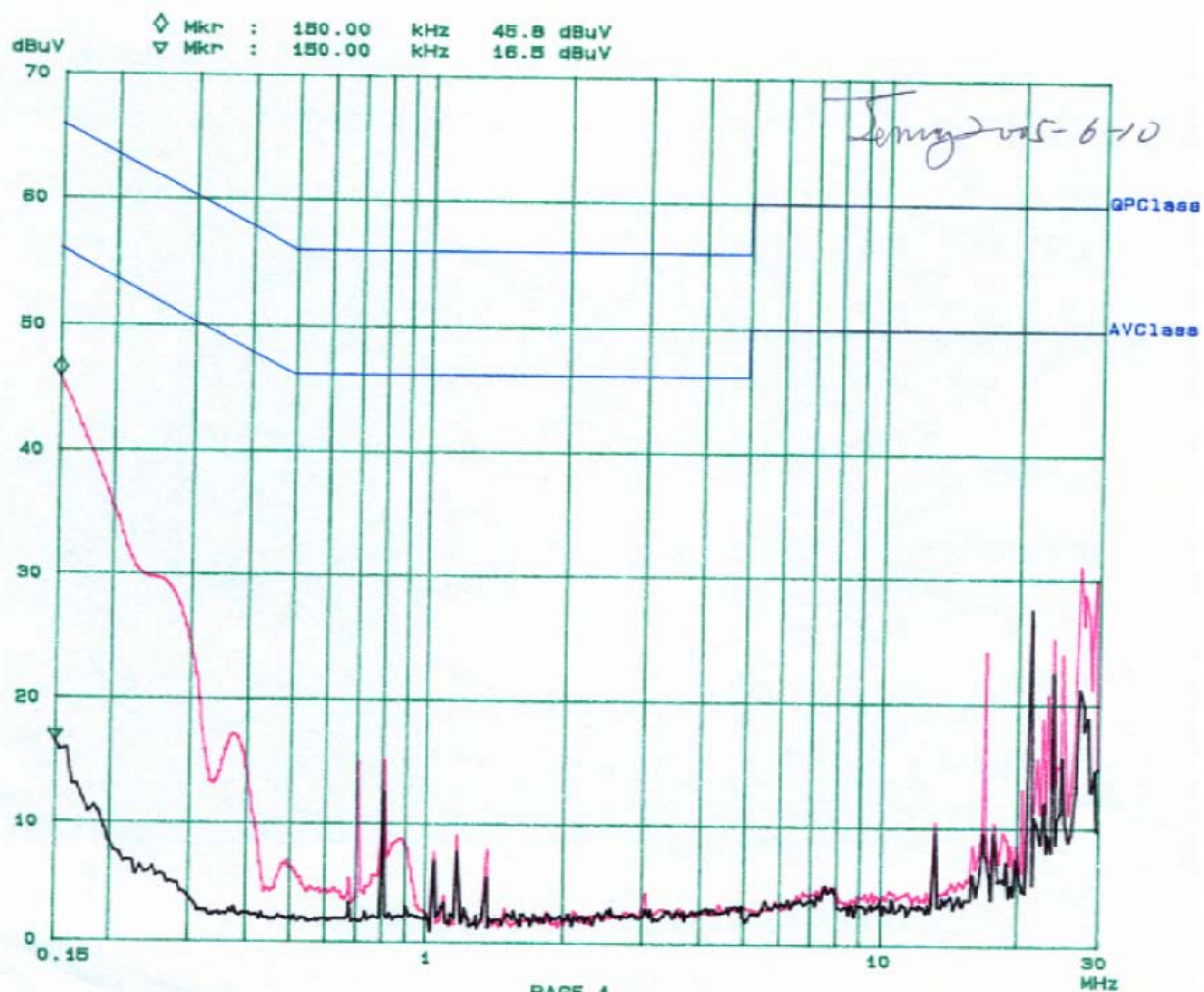
Bay Area Compliance Laboratory Corp  
Class B

03. Jun 05 09:07

EUT: NTP-3422  
Manuf: New Cont Ele.Co  
Op Cond: Normal  
Operator: Jerry  
Comment: N  
120V

## Scan Settings (3 Ranges)

| Frequencies |      |      | Receiver Settings |          |        |         |        |
|-------------|------|------|-------------------|----------|--------|---------|--------|
| Start       | Stop | Step | IF BW             | Detector | M-Time | Atten   | Preamp |
| 150k        | 1M   | 5k   | 9k                | QP+AV    | 20ms   | 15dB LN | OFF    |
| 1M          | 5M   | 10k  | 9k                | QP+AV    | 1ms    | 15dB LN | OFF    |
| 5M          | 30M  | 100k | 9k                | QP+AV    | 1ms    | 15dB LN | OFF    |



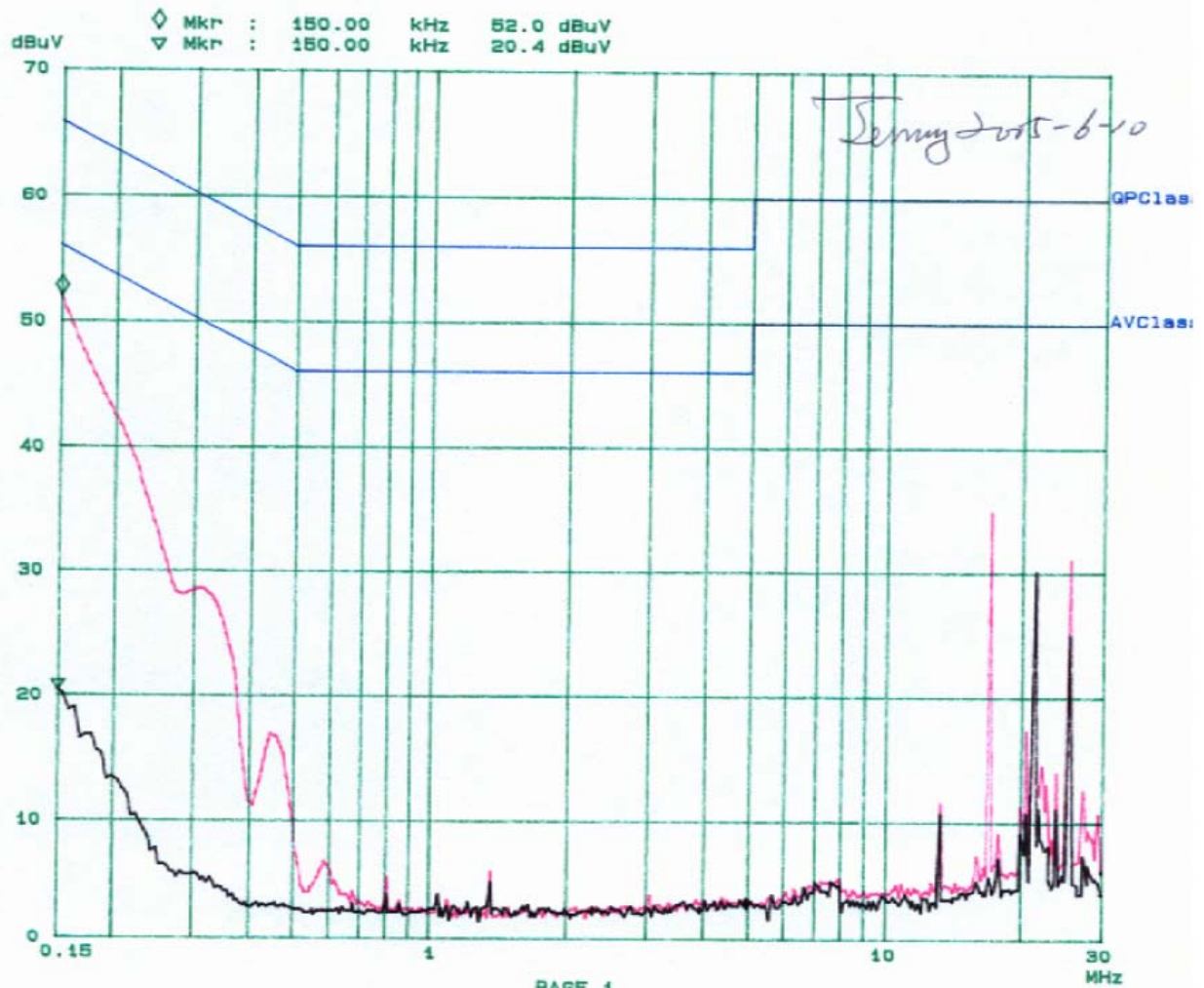
# Bay Area Compliance Laboratory Corp Class B

03. Jun 05 09:24

EUT: NTP-3422  
Manuf: New Cont Ele.Co  
Op Cond: Normal  
Operator: Jerry  
Comment: L  
120V

## Scan Settings (3 Ranges)

| Frequencies |      |      | Receiver Settings |          |        |        |         |
|-------------|------|------|-------------------|----------|--------|--------|---------|
| Start       | Stop | Step | IF BW             | Detector | M-Time | Atten  | Presamp |
| 150k        | 1M   | 5k   | 9k                | GP+AV    | 20ms   | 15dBLN | OFF     |
| 1M          | 5M   | 10k  | 9k                | GP+AV    | 1ms    | 15dBLN | OFF     |
| 5M          | 30M  | 100k | 9k                | GP+AV    | 1ms    | 15dBLN | OFF     |



## §15.205, §15.209 & §15.247 (d) - RADIATED EMISSION

### Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at BACL is  $\pm 4.0$  dB.

### Test Setup

The radiated emission tests were performed in the open area 3-meter test site, using the setup in accordance with ANSI C63.4-2003. The specification used was the FCC 15 Subpart C limits.

The spacing between the peripherals was 10 centimeters.

External I/O cables were draped along the edge of the test table and bundle when necessary.

The EUT was connected with 120Vac/60Hz power source.

### Spectrum Analyzer Setup

According to FCC Rules, 47 CFR §15.33 (a) (1), the system was tested to 40GHz.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

| <i><b>Frequency Range</b></i> | <i><b>RBW</b></i> | <i><b>Video B/W</b></i> |
|-------------------------------|-------------------|-------------------------|
| Below 30MHz                   | 10kHz             | 10kHz                   |
| 30 – 1000MHz                  | 100kHz            | 100kHz                  |
| Above 1000MHz                 | 1MHz              | 1MHz                    |

### Test Equipment List and Details

| <b>Manufacturer</b> | <b>Description</b>        | <b>Model</b>         | <b>Serial Number</b> | <b>Cal. Date</b> |
|---------------------|---------------------------|----------------------|----------------------|------------------|
| Hp                  | Plotter                   | 7475A                | 2517A05739           | N/R              |
| HP                  | Amplifier, Pre, Microwave | 8449B                | 3147A05739           | 2004-06-14       |
| Sunol Science       | Antenna                   | JB1                  | A013105-3            | 2005-02-11       |
| Agilent             | Analyzer, Spectrum        | 8564E                | 3943A01781           | 2004-10-04       |
| Sunol Science       | System Controller         | SC99V                | 122303-1             | N/R              |
| HP                  | Pre, Amplifier            | 8447D                | 2944A10198           | 2004-08-20       |
| Metric              | Antenna, Horn, Std        | SAS-200/571          | 261                  | 2005-04-12       |
| Rohde & Schwarz     | Receiver, EMI Test        | ESCI1166.595<br>0K03 | 100044               | 2004-09-29       |

**\* Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

## Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 24° C     |
| Relative Humidity: | 56%       |
| ATM Pressure:      | 1022 mbar |

*\*The testing was performed by Jerry Wang on 2005-06-07.*

## Test Procedure

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limits), and are distinguished with a "Qp" in the data table.

## Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

## Summary of Test Results

According to the recorded data in following table, the EUT complied with the FCC 15.247, with the *worst* margin reading of:

**Base:** -14.5 dB at 7205.4000 MHz in the **Horizontal** polarization, Low Channel, 3 meters  
-12.8 dB at 4880.3160 MHz in the **Vertical** polarization, Middle Channel, 3 meters  
-14.6 dB at 4958.8000 MHz in the **Vertical** polarization, High Channel, 3 meters  
-6.5 dB at 124.43 MHz in the **Horizontal** polarization, Unintentional Emission, 3 meters

**Handset:** -13.4 dB at 4803.6000 MHz in the **Vertical** polarization, Low Channel, 3 meters  
-12.0 dB at 4880.3160 MHz in the **Horizontal** polarization, Middle Channel, 3 meters  
-11.1 dB at 4958.8000 MHz in the **Vertical** polarization, High Channel, 3 meters  
-10.7 dB at 125.00 MHz in the **Horizontal** polarization, Unintentional Emission, 3 meters

**3 Meters Radiated Emission Test Data for Base**

| Indicated      |        |           | Antenna | Antenna |         | Correction Factor |      |       | FCC 15.247 |        |           |
|----------------|--------|-----------|---------|---------|---------|-------------------|------|-------|------------|--------|-----------|
| Frequency      | Ampl.  | Direction | Height  | Polar   | Antenna | Cable             | Amp. | Corr. | Limit      | Margin | Comments  |
| MHz            | dBμV/m | Degree    | Meter   | H/V     | dB      | Loss              | dB   | Ampl. | dBμV/m     | dB     |           |
| Low Channel    |        |           |         |         |         |                   |      |       |            |        |           |
| 7205.4000      | 33.6   | 200       | 2.3     | H       | 36.3    | 4.3               | 34.7 | 39.5  | 54         | -14.5  | Ave       |
| 7205.4000      | 32.1   | 200       | 1.5     | V       | 36.3    | 4.3               | 34.7 | 38.0  | 54         | -16.0  | Ave       |
| 4803.6000      | 36.1   | 270       | 2.4     | V       | 32.5    | 3.1               | 34.8 | 36.9  | 54         | -17.1  | Ave       |
| 4803.6000      | 35.9   | 180       | 2.2     | H       | 32.5    | 3.1               | 34.8 | 36.7  | 54         | -17.3  | Ave       |
| 4803.6000      | 55.5   | 300       | 1.5     | V       | 32.5    | 3.1               | 34.8 | 56.3  | 74         | -17.7  | Peak      |
| 4803.6000      | 54.8   | 180       | 2.2     | H       | 32.5    | 3.1               | 34.8 | 55.6  | 74         | -18.4  | Peak      |
| 7205.4000      | 46.3   | 200       | 2.3     | H       | 36.3    | 4.3               | 34.7 | 52.2  | 74         | -21.8  | Peak      |
| 7205.4000      | 45.8   | 300       | 1.2     | V       | 36.3    | 4.3               | 34.7 | 51.7  | 74         | -22.3  | Peak      |
| 2401.8000      | 114.6  | 45        | 1.5     | H       | 28.1    | 2.0               | 35.8 | 108.9 |            |        | Fund/Peak |
| 2401.8000      | 113.7  | 45        | 1.2     | V       | 28.1    | 2.0               | 35.8 | 108.0 |            |        | Fund/Peak |
| 2401.8000      | 67.8   | 90        | 1.2     | V       | 28.1    | 2.0               | 35.8 | 62.1  |            |        | Ave       |
| 2401.8000      | 69.6   | 30        | 1.5     | H       | 28.1    | 2.0               | 35.8 | 63.9  |            |        | Ave       |
| Middle Channel |        |           |         |         |         |                   |      |       |            |        |           |
| 4880.3160      | 40.4   | 270       | 1.2     | V       | 32.5    | 3.1               | 34.8 | 41.2  | 54         | -12.8  | Ave       |
| 4880.3160      | 39.7   | 180       | 1.2     | H       | 32.5    | 3.1               | 34.8 | 40.5  | 54         | -13.5  | Ave       |
| 7320.4740      | 33.6   | 180       | 1.2     | H       | 36.3    | 4.3               | 34.7 | 39.5  | 54         | -14.5  | Ave       |
| 7320.4740      | 32.5   | 180       | 1.5     | V       | 36.3    | 4.3               | 34.7 | 38.4  | 54         | -15.6  | Ave       |
| 7320.4740      | 50.1   | 270       | 1.2     | V       | 36.3    | 4.3               | 34.7 | 56.0  | 74         | -18.0  | Peak      |
| 7320.4740      | 48.9   | 180       | 1.5     | H       | 36.3    | 4.3               | 34.7 | 54.8  | 74         | -19.2  | Peak      |
| 4880.3160      | 53.2   | 200       | 1.5     | V       | 32.5    | 3.1               | 34.8 | 54.0  | 74         | -20.0  | Peak      |
| 4880.3160      | 52.9   | 180       | 1.5     | H       | 32.5    | 3.1               | 34.8 | 53.7  | 74         | -20.3  | Peak      |
| 2440.1580      | 109.9  | 45        | 1.2     | H       | 28.1    | 2.0               | 35.8 | 104.2 |            |        | Fund/Peak |
| 2440.1580      | 110.9  | 30        | 1.5     | V       | 28.1    | 2.0               | 35.8 | 105.2 |            |        | Fund/Peak |
| 2440.1580      | 58.4   | 100       | 1.2     | V       | 28.1    | 2.0               | 35.8 | 52.7  |            |        | Ave       |
| 2440.1580      | 54.1   | 30        | 1.5     | H       | 28.1    | 2.0               | 35.8 | 48.4  |            |        | Ave       |
| High Channel   |        |           |         |         |         |                   |      |       |            |        |           |
| 4958.8000      | 58.6   | 270       | 1.6     | V       | 32.5    | 3.1               | 34.8 | 59.4  | 74         | -14.6  | Peak      |
| 7438.2000      | 33.4   | 270       | 1.6     | V       | 36.3    | 4.3               | 34.7 | 39.3  | 54         | -14.7  | Ave       |
| 4958.8000      | 38.1   | 180       | 1.5     | H       | 32.5    | 3.1               | 34.8 | 38.9  | 54         | -15.1  | Ave       |
| 7438.2000      | 32.7   | 180       | 1.5     | H       | 36.3    | 4.3               | 34.7 | 38.6  | 54         | -15.4  | Ave       |
| 4958.8000      | 57.5   | 180       | 1.5     | H       | 32.5    | 3.1               | 34.8 | 58.3  | 74         | -15.7  | Peak      |
| 4958.8000      | 36.7   | 300       | 1.5     | V       | 32.5    | 3.1               | 34.8 | 37.5  | 54         | -16.5  | Ave       |
| 7438.2000      | 49.7   | 270       | 1.2     | V       | 36.3    | 4.3               | 34.7 | 55.6  | 74         | -18.4  | Peak      |
| 7438.2000      | 47.9   | 180       | 1.5     | H       | 36.3    | 4.3               | 34.7 | 53.8  | 74         | -20.2  | Peak      |
| 2479.4000      | 110.7  | 180       | 1.2     | V       | 28.1    | 2.0               | 35.8 | 105.0 |            |        | Fund/Peak |
| 2479.4000      | 112.2  | 180       | 1.2     | H       | 28.1    | 2.0               | 35.8 | 106.5 |            |        | Fund/Peak |
| 2479.4000      | 59.8   | 180       | 1.2     | V       | 28.1    | 2.0               | 35.8 | 54.1  |            |        | Ave       |
| 2479.4000      | 60.1   | 180       | 1.5     | H       | 28.1    | 2.0               | 35.8 | 54.4  |            |        | Ave       |

Note:

FUND: Fundamental  
 AVG: Average

## Unintentional Emission

| Frequency<br>MHz | Indicated             |                     | Antenna<br>Height<br>Meter | Antenna      |               | Correction Factor   |            |                                | FCC 15.247            |              |
|------------------|-----------------------|---------------------|----------------------------|--------------|---------------|---------------------|------------|--------------------------------|-----------------------|--------------|
|                  | Ampl.<br>dB $\mu$ V/m | Direction<br>Degree |                            | Polar<br>H/V | Antenna<br>dB | Cable<br>Loss<br>dB | Amp.<br>dB | Corr.<br>Ampl.<br>dB $\mu$ V/m | Limit<br>dB $\mu$ V/m | Margin<br>dB |
| 124.43           | 52.3                  | 200                 | 1.5                        | H            | 11.7          | 1.6                 | 28.6       | 37.0                           | 43.5                  | -6.5         |
| 248.85           | 51.2                  | 180                 | 1.5                        | H            | 13.8          | 2.2                 | 28.0       | 39.1                           | 46.0                  | -6.9         |
| 165.90           | 48.9                  | 180                 | 1.5                        | H            | 13.0          | 1.8                 | 28.4       | 35.3                           | 43.5                  | -8.2         |
| 179.74           | 48.6                  | 200                 | 1.2                        | V            | 13.1          | 1.9                 | 28.3       | 35.3                           | 43.5                  | -8.2         |
| 124.43           | 50.1                  | 200                 | 1.2                        | V            | 11.7          | 1.6                 | 28.6       | 34.8                           | 43.5                  | -8.7         |
| 248.85           | 48.6                  | 200                 | 1.2                        | V            | 13.8          | 2.2                 | 28.0       | 36.5                           | 46.0                  | -9.5         |
| 69.14            | 48.5                  | 200                 | 1.2                        | V            | 9.3           | 1.2                 | 28.7       | 30.3                           | 40.0                  | -9.7         |
| 124.43           | 48.9                  | 100                 | 1.2                        | V            | 11.7          | 1.6                 | 28.6       | 33.6                           | 43.5                  | -9.9         |
| 179.73           | 45.6                  | 270                 | 1.5                        | H            | 13.1          | 1.9                 | 28.3       | 32.3                           | 43.5                  | -11.2        |
| 345.62           | 38.9                  | 180                 | 1.5                        | H            | 15.4          | 2.3                 | 28.0       | 28.6                           | 46.0                  | -17.4        |

**3 Meters Radiated Emission Test Data for Handset**

| Indicated      |        |           | Antenna | Antenna |         | Correction Factor |      |       | FCC 15.247 |        |           |
|----------------|--------|-----------|---------|---------|---------|-------------------|------|-------|------------|--------|-----------|
| Frequency      | Ampl.  | Direction | Height  | Polar   | Antenna | Cable             | Amp. | Corr. | Limit      | Margin | Comments  |
| MHz            | dBμV/m | Degree    | Meter   | H/V     | dB      | Loss              | dB   | Ampl. | dBμV/m     | dB     |           |
| Low Channel    |        |           |         |         |         |                   |      |       |            |        |           |
| 4803.6000      | 39.8   | 270       | 2.4     | V       | 32.5    | 3.1               | 34.8 | 40.6  | 54         | -13.4  | Ave       |
| 7205.4000      | 34.6   | 200       | 1.5     | V       | 36.3    | 4.3               | 34.7 | 40.5  | 54         | -13.5  | Ave       |
| 4803.6000      | 38.6   | 180       | 2.2     | H       | 32.5    | 3.1               | 34.8 | 39.4  | 54         | -14.6  | Ave       |
| 4803.6000      | 57.4   | 300       | 1.5     | V       | 32.5    | 3.1               | 34.8 | 58.2  | 74         | -15.8  | Peak      |
| 7205.4000      | 31.3   | 200       | 2.3     | H       | 36.3    | 4.3               | 34.7 | 37.2  | 54         | -16.8  | Ave       |
| 4803.6000      | 53.8   | 180       | 2.2     | H       | 32.5    | 3.1               | 34.8 | 54.6  | 74         | -19.4  | Peak      |
| 7205.4000      | 47.8   | 300       | 1.2     | V       | 36.3    | 4.3               | 34.7 | 53.7  | 74         | -20.3  | Peak      |
| 7205.4000      | 43.2   | 200       | 2.3     | H       | 36.3    | 4.3               | 34.7 | 49.1  | 74         | -24.9  | Peak      |
| 2401.8000      | 119.9  | 30        | 1.5     | H       | 28.1    | 2.0               | 35.8 | 114.1 |            |        | Fund/Peak |
| 2401.8000      | 120.2  | 30        | 1.5     | V       | 28.1    | 2.0               | 35.8 | 114.5 |            |        | Fund/Peak |
| 2401.8000      | 70.4   | 100       | 1.2     | V       | 28.1    | 2.0               | 35.8 | 64.7  |            |        | Ave       |
| 2401.8000      | 69.6   | 30        | 1.5     | H       | 28.1    | 2.0               | 35.8 | 63.9  |            |        | Ave       |
| Middle Channel |        |           |         |         |         |                   |      |       |            |        |           |
| 4880.3160      | 61.2   | 180       | 1.5     | H       | 32.5    | 3.1               | 34.8 | 62.0  | 74         | -12.0  | Peak      |
| 7320.4740      | 34.8   | 180       | 1.5     | H       | 36.3    | 4.3               | 34.7 | 40.7  | 54         | -13.3  | Ave       |
| 4880.3160      | 59.6   | 270       | 1.6     | V       | 32.5    | 3.1               | 34.8 | 60.4  | 74         | -13.6  | Peak      |
| 7320.4740      | 33.5   | 270       | 1.6     | V       | 36.3    | 4.3               | 34.7 | 39.4  | 54         | -14.6  | Ave       |
| 4880.3160      | 34.2   | 180       | 1.5     | H       | 32.5    | 3.1               | 34.8 | 35.0  | 54         | -19.0  | Ave       |
| 4880.3160      | 32.2   | 300       | 1.5     | V       | 32.5    | 3.1               | 34.8 | 33.0  | 54         | -21.0  | Ave       |
| 7320.4740      | 46.1   | 180       | 1.5     | H       | 36.3    | 4.3               | 34.7 | 52.0  | 74         | -22.0  | Peak      |
| 7320.4740      | 45.7   | 270       | 1.2     | V       | 36.3    | 4.3               | 34.7 | 51.6  | 74         | -22.4  | Peak      |
| 2440.1580      | 122.0  | 200       | 1.2     | V       | 28.1    | 2.0               | 35.8 | 116.3 |            |        | Fund/Peak |
| 2440.1580      | 119.6  | 180       | 1.2     | H       | 28.1    | 2.0               | 35.8 | 113.9 |            |        | Fund/Peak |
| 2440.1580      | 68.9   | 180       | 1.2     | V       | 28.1    | 2.0               | 35.8 | 63.2  |            |        | Ave       |
| 2440.1580      | 67.4   | 200       | 1.5     | H       | 28.1    | 2.0               | 35.8 | 61.7  |            |        | Ave       |
| High Channel   |        |           |         |         |         |                   |      |       |            |        |           |
| 4958.8000      | 62.1   | 270       | 1.2     | V       | 32.5    | 3.1               | 34.8 | 62.9  | 74         | -11.1  | Peak      |
| 4958.8000      | 60.7   | 180       | 1.5     | H       | 32.5    | 3.1               | 34.8 | 61.5  | 74         | -12.5  | Peak      |
| 7438.2000      | 35.6   | 200       | 1.2     | V       | 36.3    | 4.3               | 34.7 | 41.5  | 54         | -12.5  | Ave       |
| 7438.2000      | 34.9   | 180       | 1.5     | H       | 36.3    | 4.3               | 34.7 | 40.8  | 54         | -13.2  | Ave       |
| 4958.8000      | 34.6   | 270       | 1.2     | V       | 32.5    | 3.1               | 34.8 | 35.4  | 54         | -18.6  | Ave       |
| 7438.2000      | 48.2   | 180       | 1.5     | H       | 36.3    | 4.3               | 34.7 | 54.1  | 74         | -19.9  | Peak      |
| 7438.2000      | 47.8   | 300       | 1.2     | V       | 36.3    | 4.3               | 34.7 | 53.7  | 74         | -20.3  | Peak      |
| 4958.8000      | 32.5   | 200       | 1.5     | H       | 32.5    | 3.1               | 34.8 | 33.3  | 54         | -20.7  | Ave       |
| 2479.4000      | 121.4  | 180       | 1.2     | V       | 28.1    | 2.0               | 35.8 | 115.7 |            |        | Fund/Peak |
| 2479.4000      | 119.6  | 180       | 1.2     | H       | 28.1    | 2.0               | 35.8 | 113.9 |            |        | Fund/Peak |
| 2479.4000      | 70.5   | 180       | 1.2     | V       | 28.1    | 2.0               | 35.8 | 64.8  |            |        | Ave       |
| 2479.4000      | 67.4   | 200       | 1.5     | H       | 28.1    | 2.0               | 35.8 | 61.7  |            |        | Ave       |

Note:

FUND: Fundamental  
 AVG: Average

## Unintentional Emission

| Frequency<br>MHz | Indicated             |                     | Antenna<br>Height<br>Meter | Antenna      |               | Correction Factor   |            |                                | FCC 15.247            |              |
|------------------|-----------------------|---------------------|----------------------------|--------------|---------------|---------------------|------------|--------------------------------|-----------------------|--------------|
|                  | Ampl.<br>dB $\mu$ V/m | Direction<br>Degree |                            | Polar<br>H/V | Antenna<br>dB | Cable<br>Loss<br>dB | Amp.<br>dB | Corr.<br>Ampl.<br>dB $\mu$ V/m | Limit<br>dB $\mu$ V/m | Margin<br>dB |
| 125              | 47.9                  | 200                 | 1.2                        | H            | 11.9          | 1.6                 | 28.5       | 32.8                           | 43.5                  | -10.7        |
| 250              | 47.3                  | 180                 | 1.5                        | H            | 13.3          | 2.2                 | 28.0       | 34.8                           | 46.0                  | -11.2        |
| 172              | 45.7                  | 200                 | 1.2                        | V            | 13.0          | 1.9                 | 28.3       | 32.2                           | 43.5                  | -11.3        |
| 166              | 45.3                  | 180                 | 1.5                        | H            | 13.0          | 1.8                 | 28.4       | 31.7                           | 43.5                  | -11.8        |
| 250              | 46.4                  | 200                 | 1.2                        | V            | 13.3          | 2.2                 | 28.0       | 33.9                           | 46.0                  | -12.1        |
| 72               | 45.3                  | 200                 | 1.2                        | V            | 9.2           | 1.2                 | 28.8       | 26.9                           | 40.0                  | -13.1        |
| 125              | 45.3                  | 200                 | 1.5                        | H            | 11.9          | 1.6                 | 28.5       | 30.2                           | 43.5                  | -13.3        |

## §15.247 (a) (1) - HOPPING CHANNEL SEPARATION

### Standard Applicable

According to §15.247(a)(1), frequency hopping system shall have, hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudorandomly ordered list of hopping frequencies.

### Measurement Procedure

1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. Position the EUT on a bench without connection to measurement instrument Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
3. By using the Max-Hold function record the separation of two adjacent channels.
4. Measure the frequency difference of these two adjacent channels by SA MARK function, and then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

### Test Equipment

| Manufacturer | Description       | Model No. | Serial No. | Calibration Date |
|--------------|-------------------|-----------|------------|------------------|
| HP           | Spectrum Analyzer | 8565EC    | 3946A00131 | 2004-08-06       |
| HP           | Plotter           | 7475A     | 2517A05739 | N/R              |

**\* Statement of Traceability: BACL Corp.** attests that all calibrations have been performed per the NVLAP requirements, traceable to the NIST.

### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 22° C     |
| Relative Humidity: | 59%       |
| ATM Pressure:      | 1020 mbar |

*\*The testing was performed by Jerry Wang on 2005-06-08.*

**Measurement Results**

## Base

| Channel | Frequency<br>MHz | Channel Separation<br>KHz |
|---------|------------------|---------------------------|
| Low     | 2401.808         | 905                       |
| Mid     | 2440.159         | 910                       |
| High    | 2479.401         | 890                       |

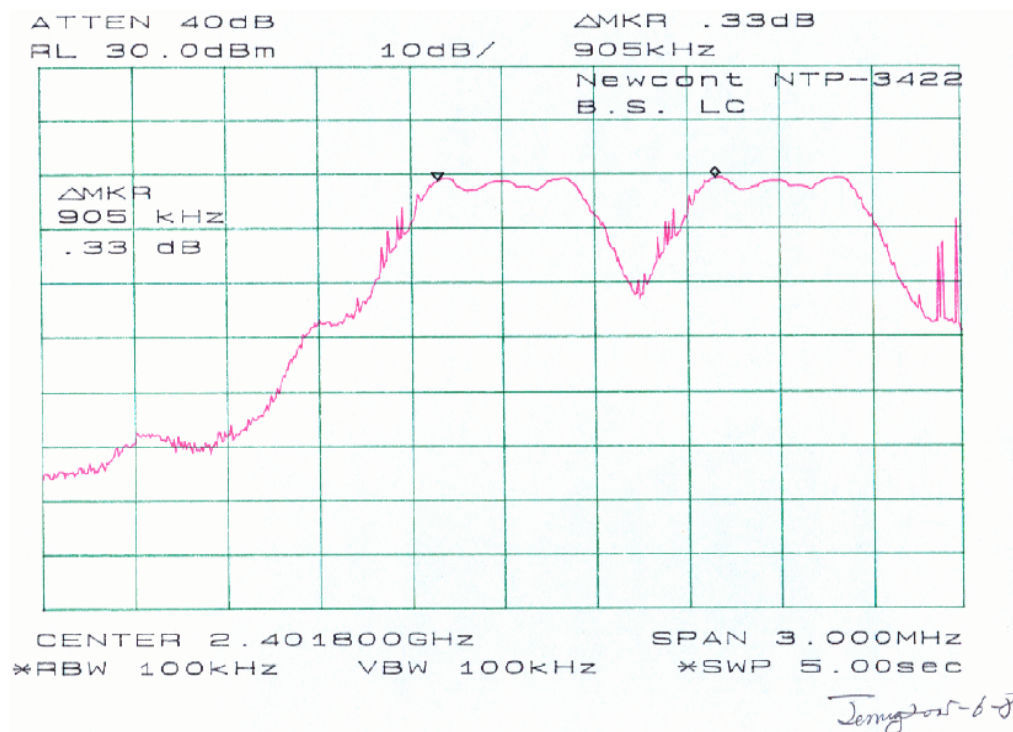
## Handset

| Channel | Frequency<br>MHz | Channel Separation<br>KHz |
|---------|------------------|---------------------------|
| Low     | 2401.808         | 945                       |
| Mid     | 2440.159         | 880                       |
| High    | 2479.401         | 905                       |

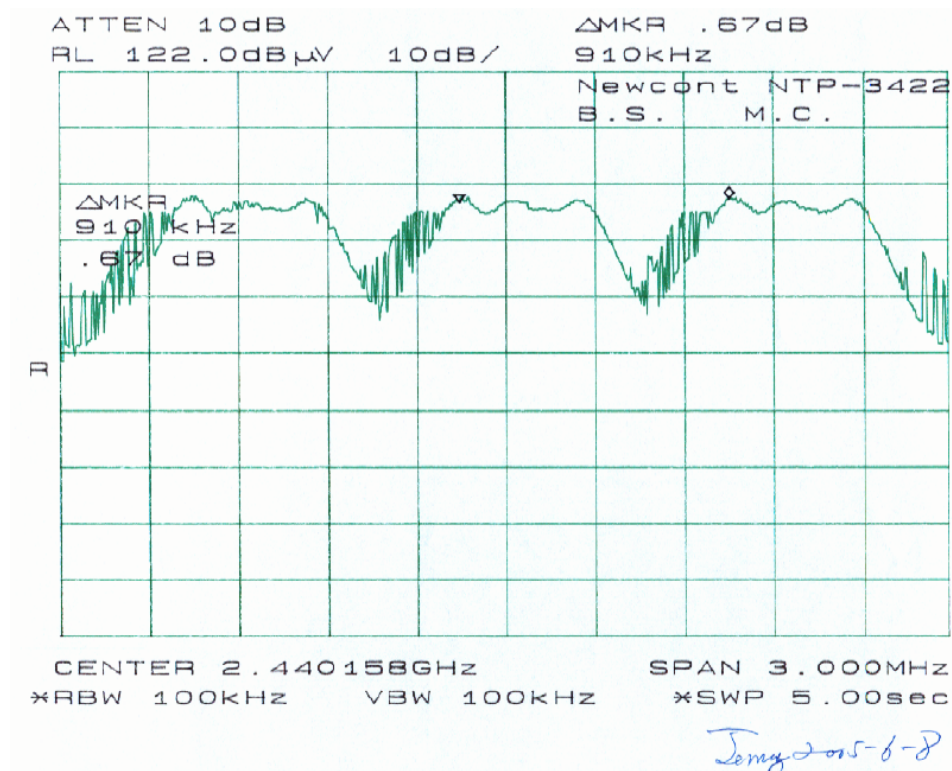
## Plots of Hopping Channel Separation

Please see the following plots

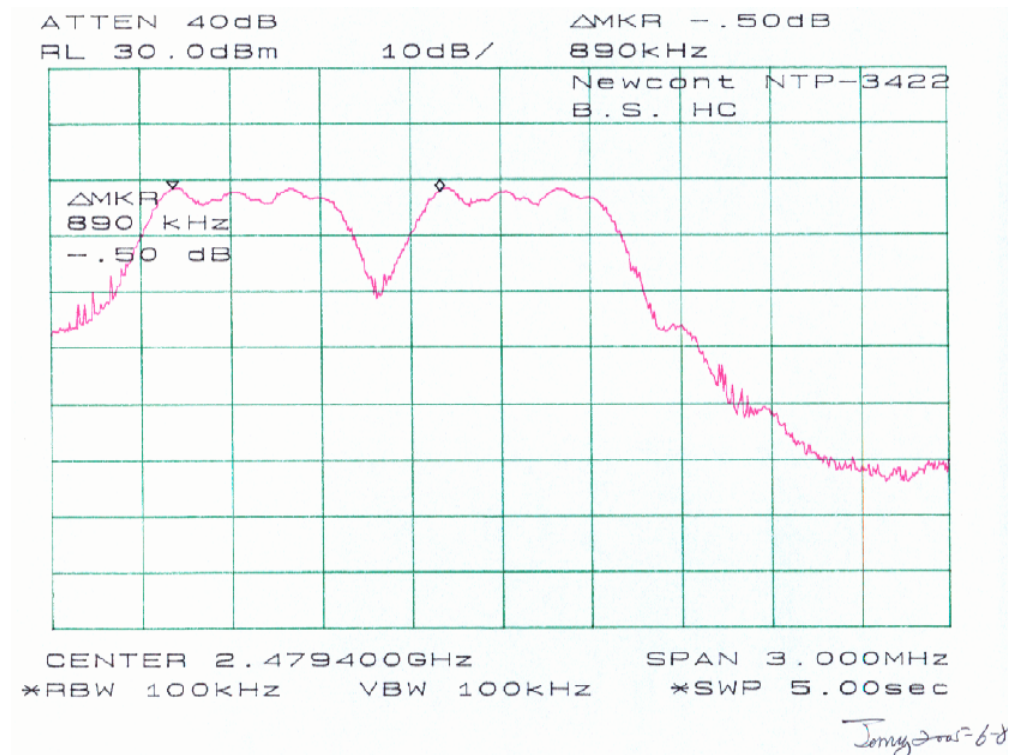
Base: Low Channel



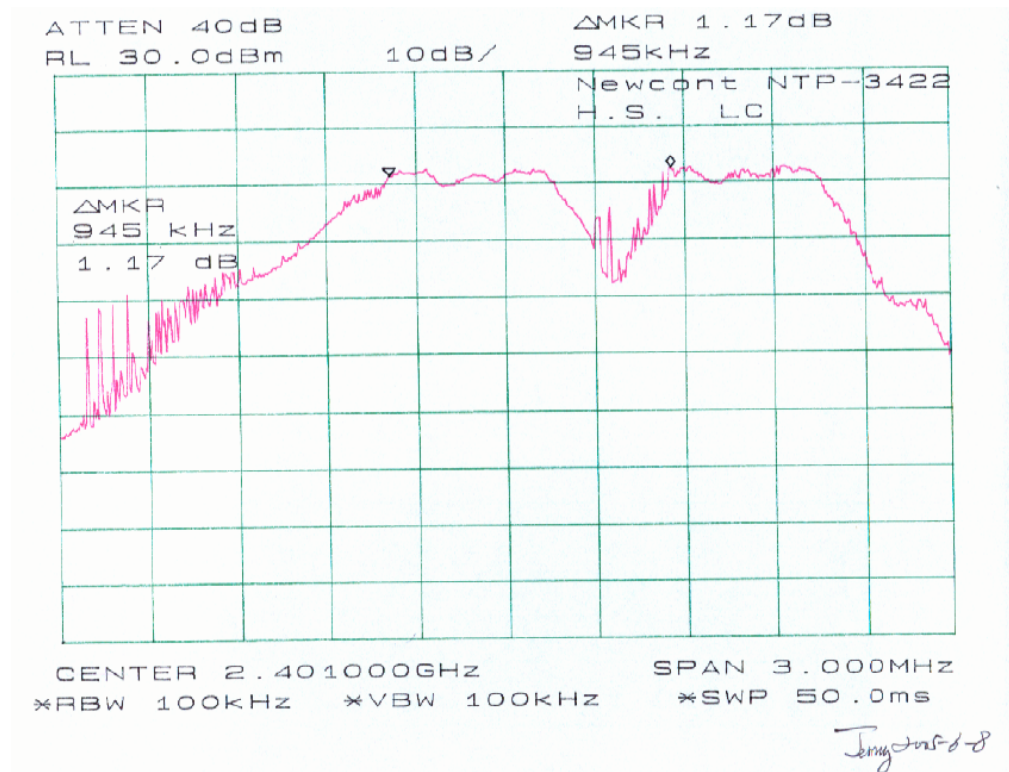
Middle Channel



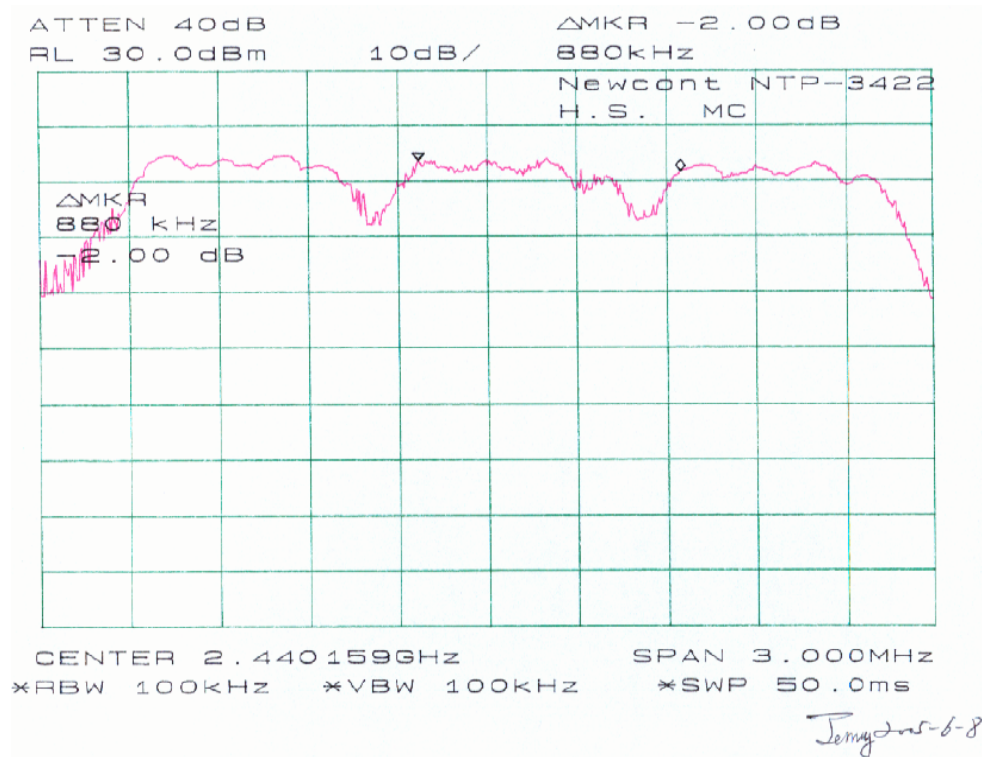
## High Channel



## Handset: Low Channel



## Middle Channel



## High Channel

