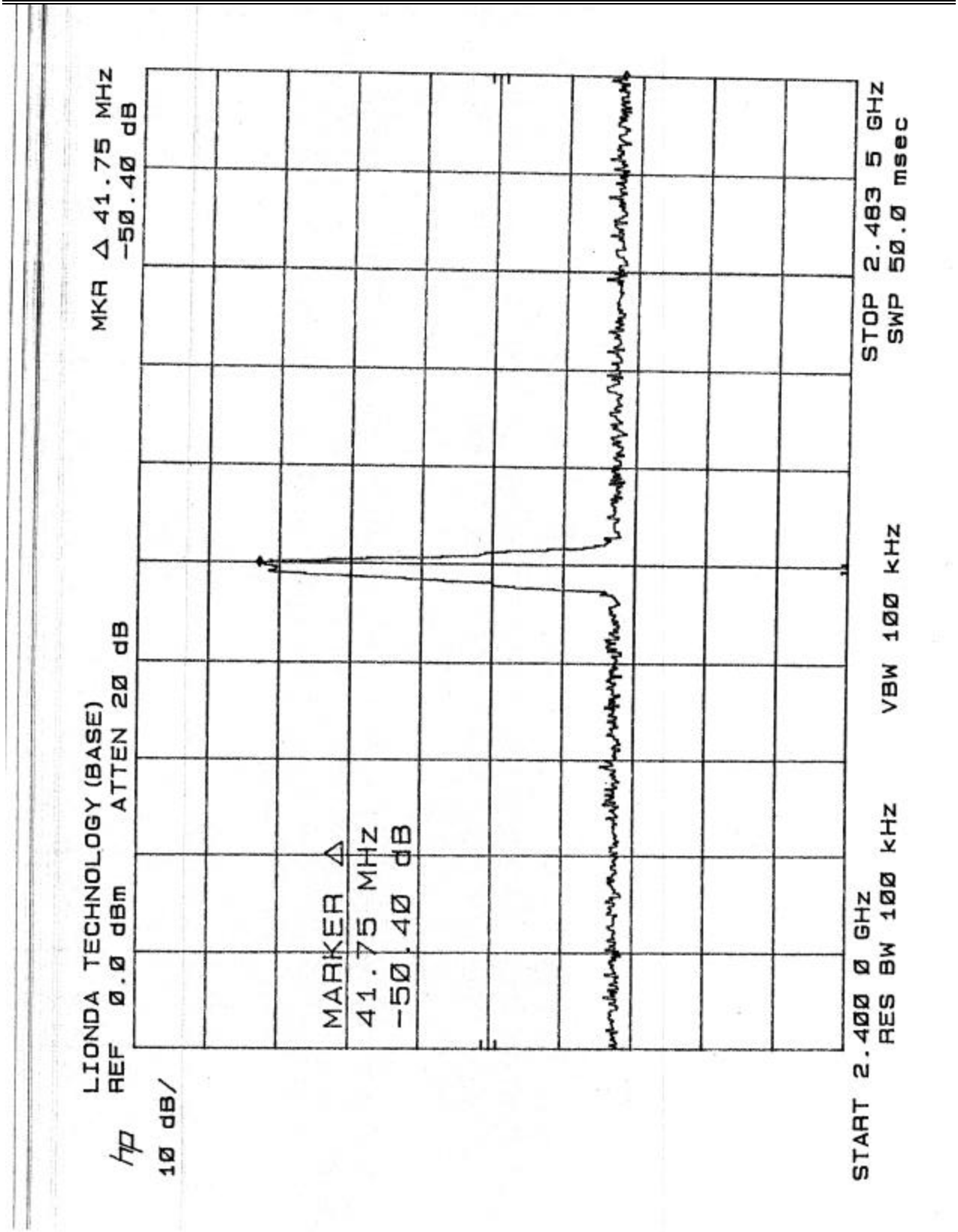

LIONDA TECHNOLOGY (BASE)
REF 0.0 dBm ATTEN 20 dB
10 dB/
MKR Δ 41.75 MHz
-50.40 dB
MARKER Δ
41.75 MHz
-50.40 dB
START 2.400 0 GHz
RES BW 100 kHz
VBW 100 kHz
STOP 2.483 5 GHz
SWP 50.0 msec

8 – POWER DENSITY

8.1 Standard Applicable

According to §15.247 (d), for direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

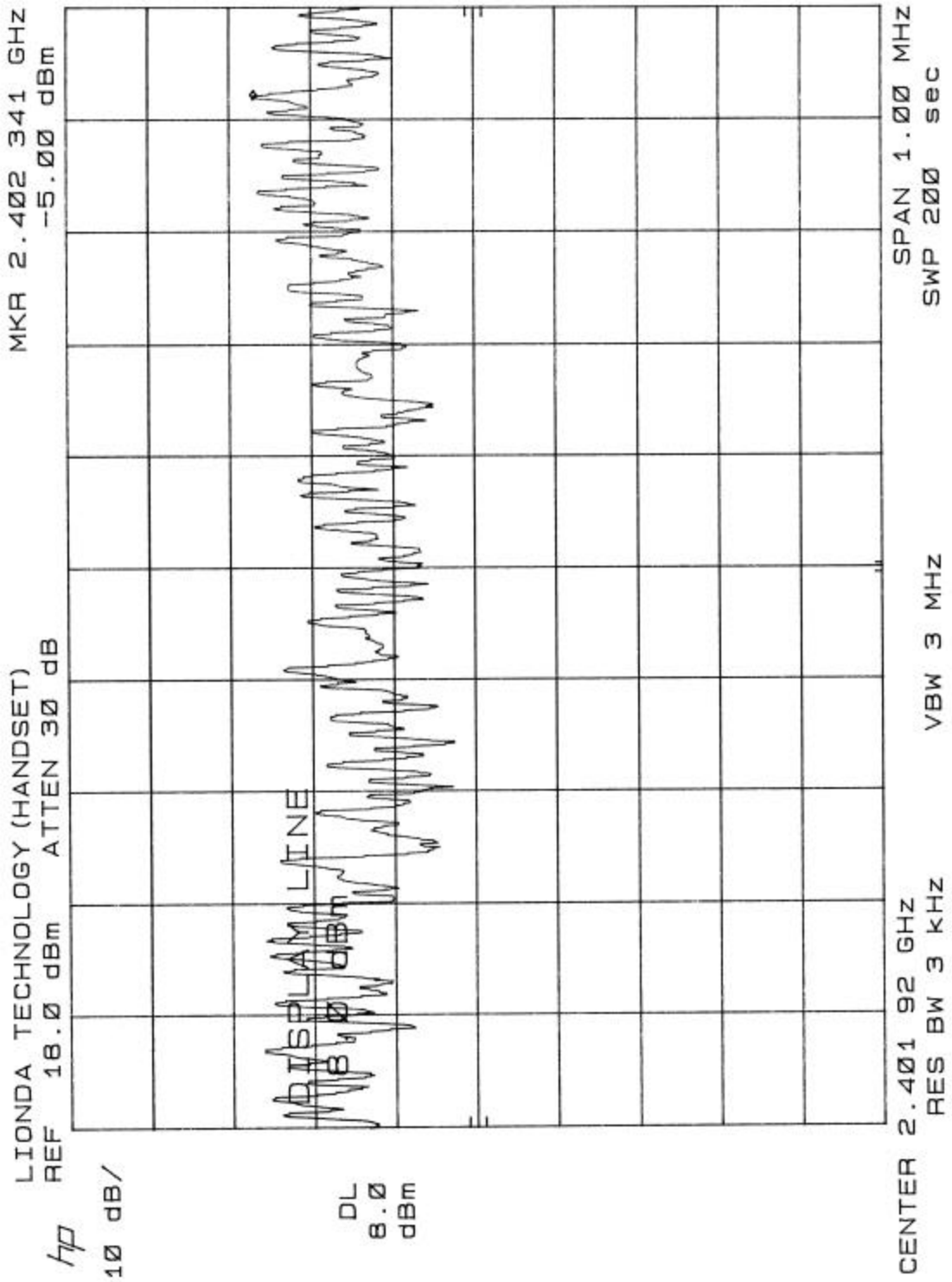
8.2 Measurement Procedure

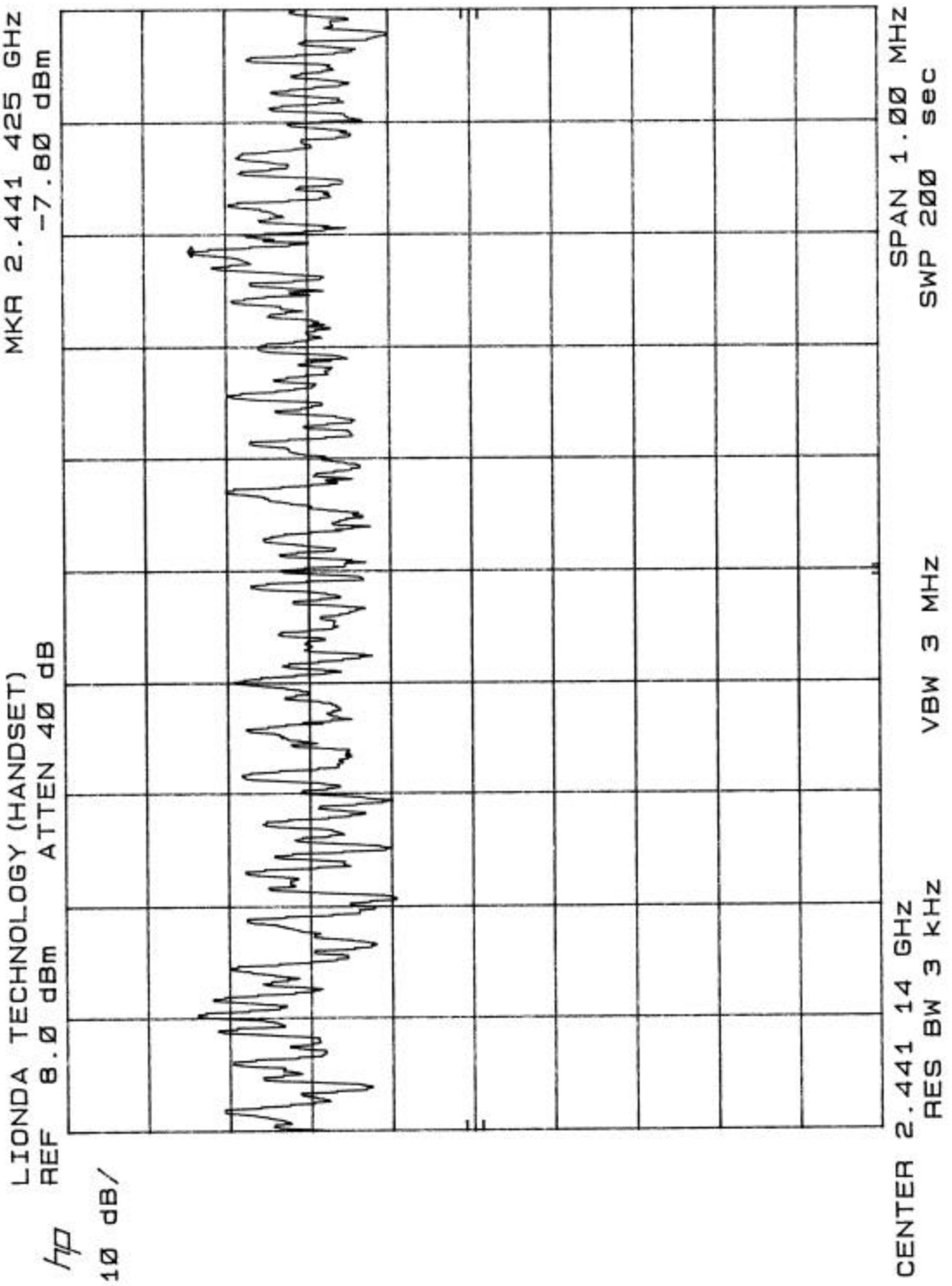
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Adjust the center frequency of SA on any frequency be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
4. Repeat above procedures until all frequencies measured were complete.

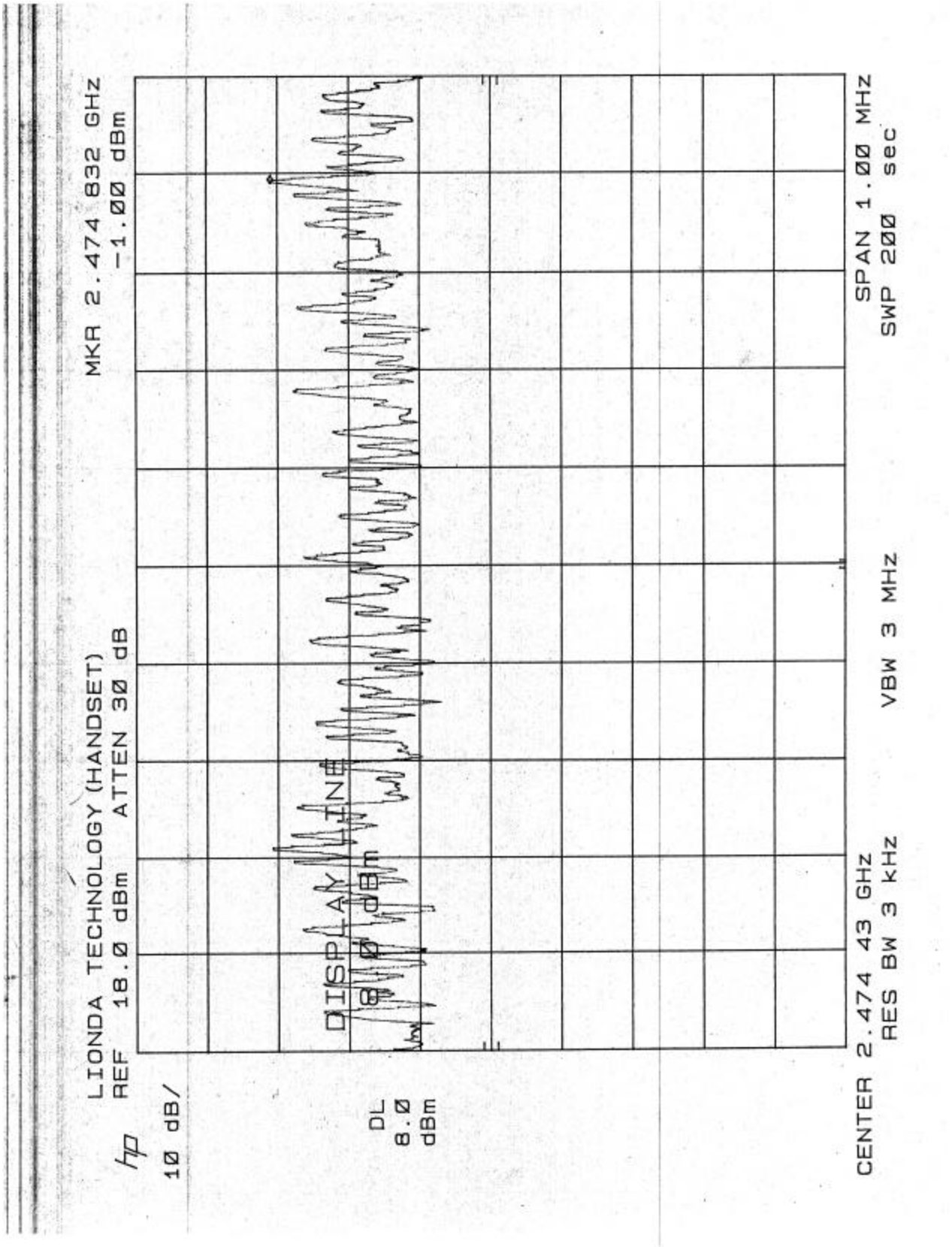
8.3 Test Results

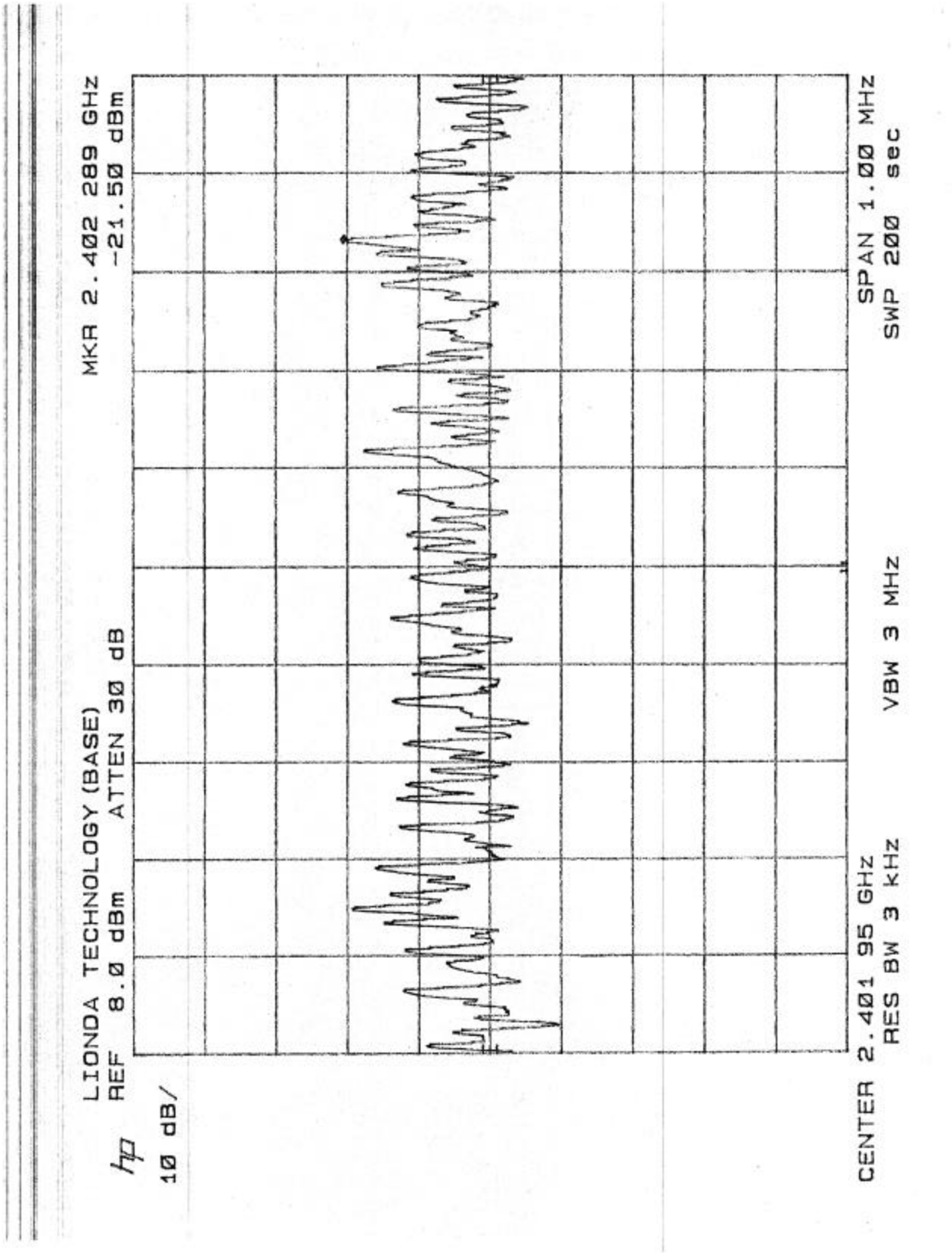
Please refer to the following plot(s).

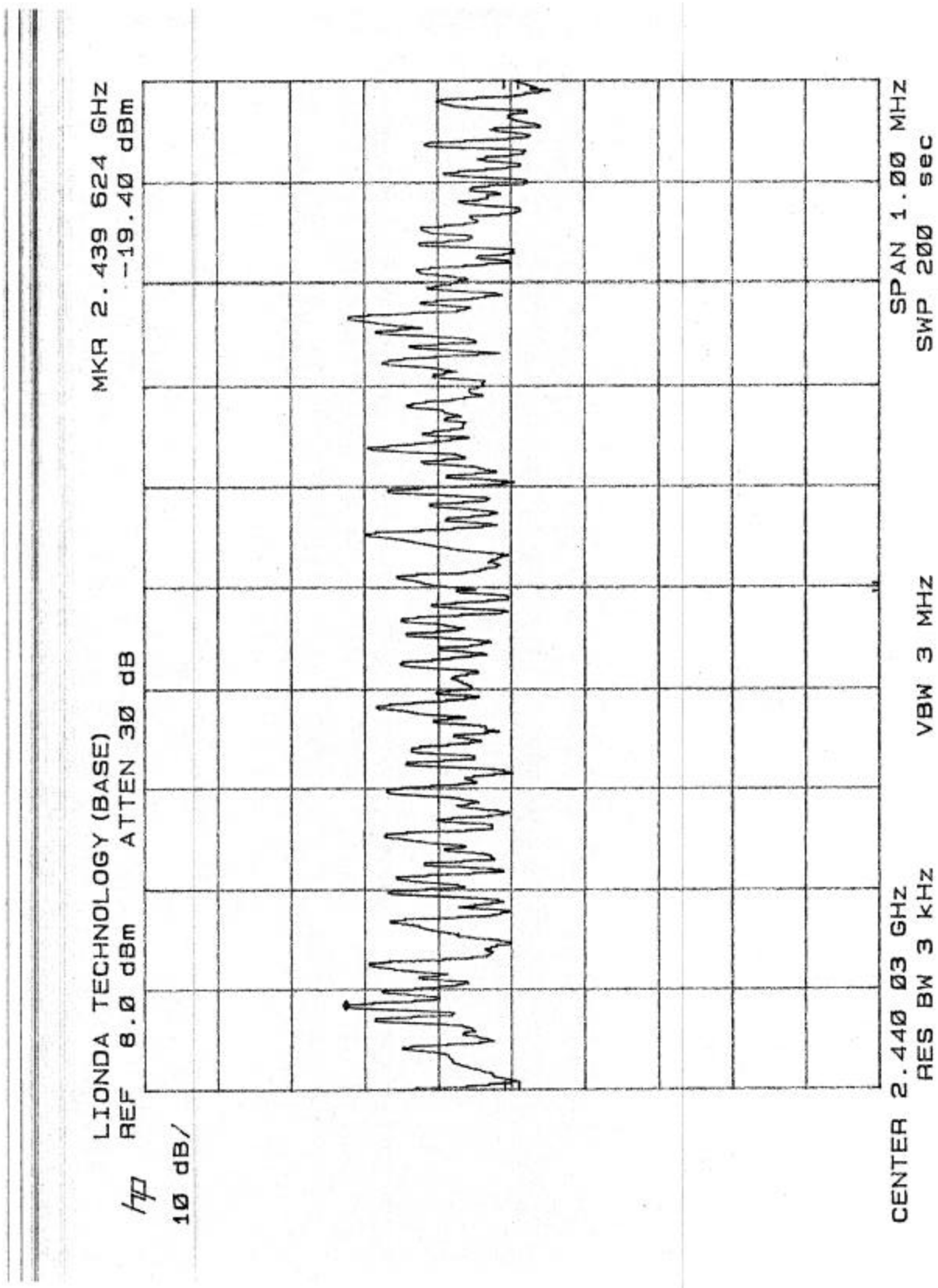
Power Density	Page Reference		Test Result
	Base	Handset	
Low Channel	Page 48	Page 51	Passed
Middle Channel	Page 49	Page 52	Passed
High Channel	Page 50	Page 53	Passed

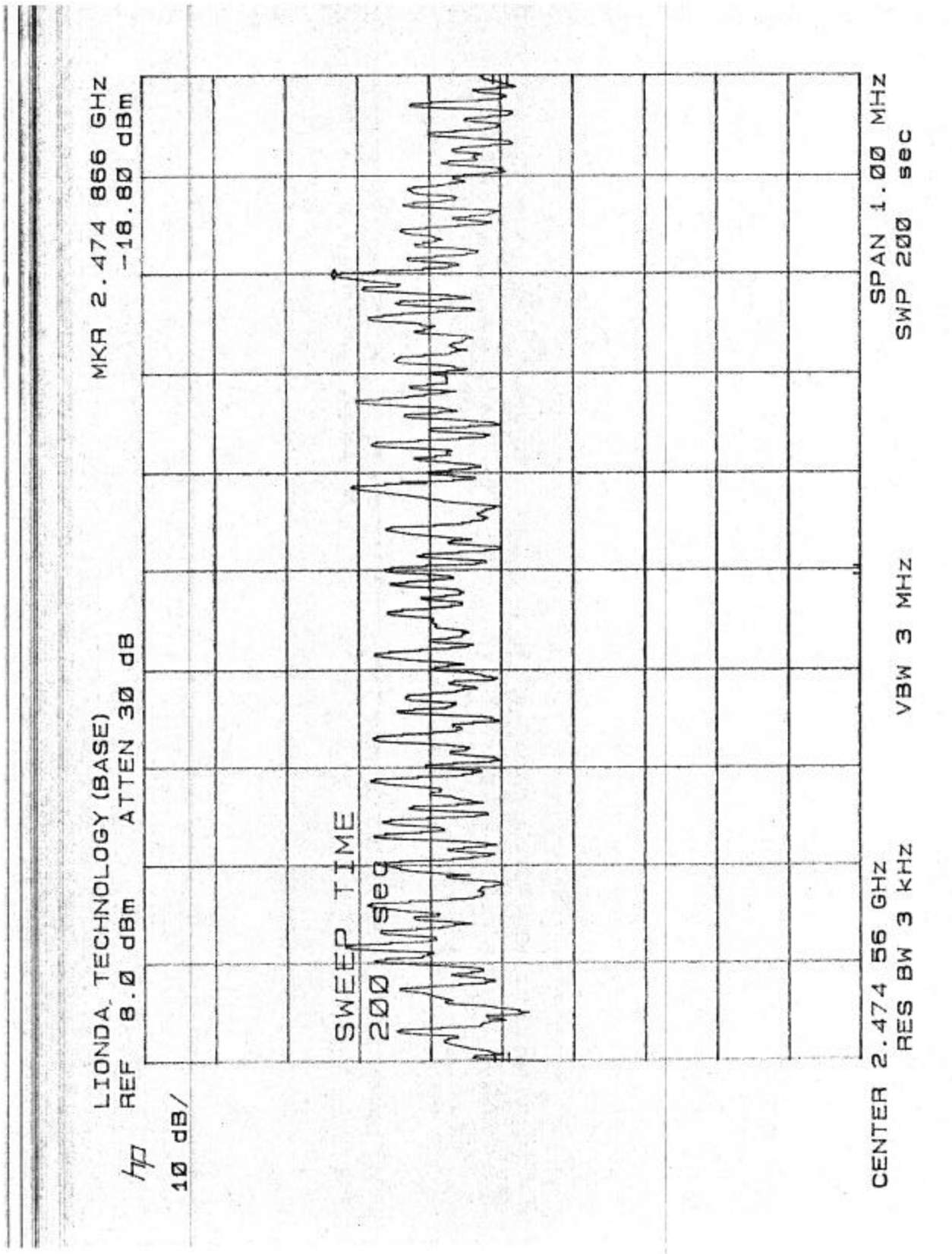

LIONDA TECHNOLOGY (HANDSET)
REF 18.0 dBm ATTEN 30 dB
MKR 2.402 341 GHz
-5.00 dBm
10 dB/
DL
8.0
dBm
DISPLAY LINE
8.0 dBm
CENTER 2.401 92 GHz
RES BW 3 kHz
VBW 3 MHz
SPAN 1.00 MHz
SWP 200 sec


MKR 2.441 425 GHz
-7.80 dBm
LIONDA TECHNOLOGY (HANDSET)
REF 8.0 dBm ATTEN 40 dB
10 dB/
SPAN 1.00 MHz
SWP 200 sec
VBW 3 MHz
CENTER 2.441 14 GHz
RES BW 3 kHz


LIONDA TECHNOLOGY (HANDSET)
MKR 2.474 832 GHz
-1.00 dBm
REF 18.0 dBm ATTEN 30 dB
10 dB/
DISPLAY LINE
18.0 dBm
DL
8.0
dBm
CENTER 2.474 43 GHz
RES BW 3 kHz
VBW 3 MHz
SPAN 1.00 MHz
SWP 200 sec


LIONDA TECHNOLOGY (BASE)
REF 8.0 dBm ATTEN 30 dB
10 dB/
MKR 2.402 289 GHz
-21.50 dBm
CENTER 2.401 95 GHz
RES BW 3 kHz
VBW 3 MHz
SPAN 1.00 MHz
SWP 200 sec


LIONDA TECHNOLOGY (BASE)
REF 8.0 dBm ATTEN 30 dB
MKR 2.439 624 GHz
-19.40 dBm
10 dB/
CENTER 2.440 03 GHz
RES BW 3 kHz
VBW 3 MHz
SPAN 1.00 MHz
SWP 200 sec


LIONDA TECHNOLOGY (BASE)
MKR 2.474 866 GHz
-18.80 dBm
REF 8.0 dBm
ATTEN 30 dB
10 dB/
SWEEP TIME
200 sec
SPAN 1.00 MHz
SWP 200 sec
CENTER 2.474 56 GHz
RES BW 3 kHz
VBW 3 MHz

9 - ANTENNA REQUIREMENT

9.1 Standard Applicable

For intentional device, 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.

9.2 Antenna Connected Construction

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

10 – RF SAFETY REQUIREMENTS TO 2.1091

According to section 3 of Supplement C to OET Bulleting 65, Part 15 Transmitters are categorically excluded from Routine Environmental Evaluation by measurement or precise computations unless otherwise required by the Commissions.

The unit under evaluation has an external antenna of 0 dBi gain with a measured output power of 3.5 mW Watts at the antenna terminals.

Due to the low power of the EUT, environmental evaluation should be deemed unnecessary since the EUT's operational frequency range is 2400-2483.05 MHz and the Effective radiated power (ERP) is considerably less than 3 Watts.

A warning statement is also included in the user manual.

11 – SPURIOUS RADIATED EMISSION DATA

11.1 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.

11.2 EUT Setup

The radiated emission tests were performed in the open area 3-meter test site, using the setup in accordance with the ANSI C63.4 - 1992. The specification used was the FCC 15 Subpart C limits.

The EUT was connected to a 110 VAC / 60 Hz power source and it was placed on the back edge of the test table. The simulator was placed on one side of the EUT, and the telephone was placed on the other side of the EUT. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.

The spacing between the peripherals was 10 centimeters.

Input / Output cables were draped along the edge of the test table and bundle when necessary.

11.3 Spectrum Analyzer Setup

According to FCC Rules, 47 CFR §15.33 (a) (1), the system was tested to 24000 MHz.

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

Start Frequency	30 MHz
Stop Frequency	24000 MHz
Sweep Speed	Auto
IF Bandwidth	1 MHz
Video Bandwidth	1 MHz
Quasi-Peak Adapter Bandwidth	120 kHz
Quasi-Peak Adapter Mode	Normal
Resolution Bandwidth	1MHz

11.4 Test Procedure

For the radiated emissions test, both the EUT and all support equipment power cords were connected to the AC floor outlet since the power supply used in the EUT did not provide an accessory power outlet.

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 dBμV of specification limits), and are distinguished with a "**Qp**" in the data table.

11.5 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:

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

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

Margin = Corr. Ampl. - Class B Limit

11.6 Summary of Test Results

According to the data in section 11.7, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.205, 15.207, and 15.247, and had the worst margin of:

For Base:

- 4.1 (Peak) dBmV at **38.20 MHz** in the **Vertical** polarization, 30 MHz to 24000 MHz., **3 meters.**

For Handset:

-1.4 (Peak) dBmV at **4803.00 MHz** in the **Vertical** polarization, at low channel, 30 MHz to 24000 MHz., **3 meters.**

-0.9 (Peak) dBmV at **4882.00 MHz** in the **Vertical** polarization, at middle channel, 30 MHz to 24000 MHz., **3 meters.**

-1.1 (Peak) dBmV at **4950.00 MHz** in the **Horizontal** polarization, at low channel, 30 MHz to 24000 MHz., **3 meters.**

11.7.a. Final Test Data, Base Unit, Low Channel, 30MHz to 24000 MHz, 3 meters.

INDICATED			TABLE	ANTENNA		CORRECTION FACTOR			CORRECTED AMPLITUDE	FCC 15 Subpart C	
Frequency MHz	Ampl. dBmV/m	Comments	Angle Degree	Height Meter	Polar H/ V	Antenna dBmV/m	Cable DB	Amp. DB	Corr. Ampl. dBmV/m	Limit dBmV/m	Margin dB
38.20	42.0	Peak	90	1.2	V	13.3	0.5	19.9	35.9	40.0	-4.1
192.00	43.2	Peak	270	2.2	H	14.4	2.7	22.5	37.8	43.5	-5.7
192.00	43.1	Peak	90	1.2	V	14.4	2.7	22.5	37.7	43.5	-5.8
38.20	40.0	Peak	320	2.2	H	13.3	0.5	19.9	33.9	40.0	-6.1
115.22	43.4	Peak	270	1.2	V	11.9	1.8	19.8	37.3	43.5	-6.2
384.00	35.6	Peak	270	1.2	V	16.2	3.9	19.8	35.9	46.0	-10.1
180.63	34.9	Peak	200	1.2	V	13.6	4.0	21.8	30.7	43.5	-12.8
230.40	40.1	Peak	90	2.2	H	12.0	1.2	21.2	32.1	46.0	-13.9
480.02	32.6	Peak	270	2.2	H	18.7	2.5	22.4	31.4	46.0	-14.6
518.42	30.8	Peak	90	2.2	H	19.3	3.5	22.7	30.9	46.0	-15.1
480.02	31.9	Peak	180	1.2	V	18.7	2.5	22.4	30.7	46.0	-15.3
307.22	33.5	Peak	90	2.2	H	15.1	4.6	22.9	30.3	46.0	-15.7
230.40	36.9	Peak	270	1.2	V	12.0	1.2	21.2	28.9	46.0	-17.1
4803.00	29.0	Ave	270	1.2	V	32.5	4.9	30.0	36.4	54.0	-17.6
7205.00	23.9	Ave	90	1.2	H	35.1	5.6	30.0	34.6	54.0	-19.4
4803.00	26.4	Ave	270	1.4	H	32.5	4.9	30.0	33.8	54.0	-20.2
4803.00	45.6	Peak	270	1.2	V	32.5	4.9	30.0	53.0	74.0	-21.0
7205.00	21.2	Ave	90	1.2	V	35.1	5.6	30.0	31.9	54.0	-22.1
7205.00	35.4	Peak	90	1.2	V	35.1	5.6	30.0	46.1	74.0	-27.9
4803.00	38.6	Peak	270	1.4	H	32.5	4.9	30.0	46.0	74.0	-28.0
7205.00	34.2	Peak	90	1.2	H	35.1	5.6	30.0	44.9	74.0	-29.1
2401.92	80.7	Peak	230	1.2	V	28.1	3.4	30.0	82.2	114.0	-31.8
2401.92	80.4	Peak	230	1.4	H	28.1	3.4	30.0	81.9	114.0	-32.1

11.7.b Final Test Data, Base Unit, Middle Channel, 30MHz to 24000 MHz, 3 meters.

INDICATED			TABLE	ANTENNA		CORRECTION FACTOR			CORRECTED AMPLITUDE	FCC 15 Subpart C	
Frequency MHz	Ampl. dBmV/m	Comments	Angle Degree	Height Meter	Polar H/ V	Antenna dBmV/m	Cable dB	Amp. dB	Corr. Ampl. dBmV/m	Limit dBmV/m	Margin dB
38.20	42.0	Peak	90	1.2	V	13.3	0.5	19.9	35.9	40.0	-4.1
192.00	43.2	Peak	270	2.2	H	14.4	2.7	22.5	37.8	43.5	-5.7
192.00	43.1	Peak	90	1.2	V	14.4	2.7	22.5	37.7	43.5	-5.8
38.20	40.0	Peak	320	2.2	H	13.3	0.5	19.9	33.9	40.0	-6.1
115.22	43.4	Peak	270	1.2	V	11.9	1.8	19.8	37.3	43.5	-6.2
384.00	35.6	Peak	270	1.2	V	16.2	3.9	19.8	35.9	46.0	-10.1
180.63	34.9	Peak	200	1.2	V	13.6	4.0	21.8	30.7	43.5	-12.8
4882.00	33.7	Ave	180	1.2	V	32.5	4.9	30.0	41.1	54.0	-12.9
230.40	40.1	Peak	90	2.2	H	12.0	1.2	21.2	32.1	46.0	-13.9
7323.00	28.9	Ave	340	1.4	V	35.1	5.6	30.0	39.6	54.0	-14.4
7323.00	28.8	Ave	340	1.6	H	35.1	5.6	30.0	39.5	54.0	-14.5
480.02	32.6	Peak	270	2.2	H	18.7	2.5	22.4	31.4	46.0	-14.6
518.42	30.8	Peak	90	2.2	H	19.3	3.5	22.7	30.9	46.0	-15.1
480.02	31.9	Peak	180	1.2	V	18.7	2.5	22.4	30.7	46.0	-15.3
4882.00	31.1	Ave	180	1.2	H	32.5	4.9	30.0	38.5	54.0	-15.5
307.22	33.5	Peak	90	2.2	H	15.1	4.6	22.9	30.3	46.0	-15.7
230.40	36.9	Peak	270	1.2	V	12.0	1.2	21.2	28.9	46.0	-17.1
4882.00	46.4	Peak	180	1.2	V	32.5	4.9	30.0	53.8	74.0	-20.2
7323.00	37.5	Peak	340	1.4	V	35.1	5.6	30.0	48.2	74.0	-25.8
7323.00	36.4	Peak	340	1.6	H	35.1	5.6	30.0	47.1	74.0	-26.9
4882.00	37.6	Peak	180	1.2	H	32.5	4.9	30.0	45.0	74.0	-29.0
2441.00	81.6	Peak	180	1.4	V	28.1	3.4	30.0	83.1	114.0	-30.9
2441.00	79.3	Peak	180	1.4	H	28.1	3.4	30.0	80.8	114.0	-33.2

11.7.c Final Test Data, Base Unit, High Channel, 30MHz to 24000 MHz, 3 meters.

INDICATED			TABLE	ANTENNA		CORRECTION FACTOR			CORRECTED AMPLITUDE	FCC 15 Subpart C	
Frequency MHz	Ampl. dBmV/m	Comments	Angle Degree	Height Meter	Polar H/ V	Antenna dBmV/m	Cable dB	Amp. dB	Corr. Ampl. dBmV/m	Limit dBmV/m	Margin dB
38.20	42.0	Peak	90	1.2	V	13.3	0.5	19.9	35.9	40.0	-4.1
192.00	43.2	Peak	270	2.2	H	14.4	2.7	22.5	37.8	43.5	-5.7
192.00	43.1	Peak	90	1.2	V	14.4	2.7	22.5	37.7	43.5	-5.8
38.20	40.0	Peak	320	2.2	H	13.3	0.5	19.9	33.9	40.0	-6.1
115.22	43.4	Peak	270	1.2	V	11.9	1.8	19.8	37.3	43.5	-6.2
384.00	35.6	Peak	270	1.2	V	16.2	3.9	19.8	35.9	46.0	-10.1
7425.00	32.2	Ave	90	1.2	V	35.1	5.6	30.0	42.9	54.0	-11.1
4950.00	35.0	Ave	270	1.4	V	32.5	4.9	30.0	42.4	54.0	-11.6
180.63	34.9	Peak	200	1.2	V	13.6	4.0	21.8	30.7	43.5	-12.8
230.40	40.1	Peak	90	2.2	H	12.0	1.2	21.2	32.1	46.0	-13.9
7425.00	28.7	Ave	90	1.2	H	35.1	5.6	30.0	39.4	54.0	-14.6
480.02	32.6	Peak	270	2.2	H	18.7	2.5	22.4	31.4	46.0	-14.6
518.42	30.8	Peak	90	2.2	H	19.3	3.5	22.7	30.9	46.0	-15.1
480.02	31.9	Peak	180	1.2	V	18.7	2.5	22.4	30.7	46.0	-15.3
307.22	33.5	Peak	90	2.2	H	15.1	4.6	22.9	30.3	46.0	-15.7
4950.00	29.6	Ave	270	1.4	H	32.5	4.9	30.0	37.0	54.0	-17.0
230.40	36.9	Peak	270	1.2	V	12.0	1.2	21.2	28.9	46.0	-17.1
4950.00	46.8	peak	270	1.4	V	32.5	4.9	30.0	54.2	74.0	-19.8
7425.00	42.9	peak	90	1.2	V	35.1	5.6	30.0	53.6	74.0	-20.4
4950.00	41.6	Peak	270	1.4	H	32.5	4.9	30.0	49.0	74.0	-25.0
7425.00	37.6	Peak	90	1.2	H	35.1	5.6	30.0	48.3	74.0	-25.7
2475.00	81.3	Peak	245	1.4	V	28.1	3.4	30.0	82.8	114.0	-31.2
2475.00	81.2	Peak	180	1.6	H	28.1	3.4	30.0	82.7	114.0	-31.3

11.7.d Final Test Data, Handset Unit, Low Channel, 30MHz to 24000 MHz, 3 meters.

INDICATED			TABLE	ANTENNA		CORRECTION FACTOR			CORRECTED AMPLITUDE	FCC 15 Subpart C	
Frequency MHz	Ampl. dBmV/m	Comments	Angle Degree	Height Meter	Polar H/ V	Antenna dBmV/m	Cable dB	Amp. dB	Corr. Ampl. dBmV/m	Limit dBmV/m	Margin dB
4803.00	65.2	Peak	180	1.2	V	32.5	4.9	30.0	72.6	74.0	-1.4
4803.00	65.1	Peak	180	1.2	H	32.5	4.9	30.0	72.5	74.0	-1.5
4803.00	44.4	Ave	180	1.2	H	32.5	4.9	30.0	51.8	54.0	-2.2
4803.00	43.6	Ave	180	1.2	V	32.5	4.9	30.0	51.0	54.0	-3.0
38.20	42.0	Peak	90	1.2	V	13.3	0.5	19.9	35.9	40	-4.1
2401.92	108.0	Peak	45	1.4	H	28.1	3.4	30.0	109.5	114.0	-4.5
192.00	43.2	Peak	270	2.2	H	14.4	2.7	22.5	37.8	43.5	-5.7
192.00	43.1	Peak	90	1.2	V	14.4	2.7	22.5	37.7	43.5	-5.8
38.20	40.0	Peak	320	2.2	H	13.3	0.5	19.9	33.9	40	-6.1
115.22	43.4	Peak	270	1.2	V	11.9	1.8	19.8	37.3	43.5	-6.2
7205.00	36.1	Ave	45	1.4	V	35.1	5.6	30.0	46.8	54.0	-7.2
2401.92	104.7	Peak	45	1.4	V	28.1	3.4	30.0	106.2	114.0	-7.8
7205.00	55.2	Peak	45	1.4	V	35.1	5.6	30.0	65.9	74.0	-8.1
384.00	35.6	Peak	270	1.2	V	16.2	3.9	19.8	35.9	46	-10.1
7205.00	33.0	Ave	45	1.4	H	35.1	5.6	30.0	43.7	54.0	-10.3
7205.00	52.5	Peak	45	1.4	H	35.1	5.6	30.0	63.2	74.0	-10.8
180.63	34.9	Peak	200	1.2	V	13.6	4.0	21.8	30.7	43.5	-12.8
230.40	40.1	Peak	90	2.2	H	12.0	1.2	21.2	32.1	46	-13.9
480.02	32.6	Peak	270	2.2	H	18.7	2.5	22.4	31.4	46	-14.6
518.42	30.8	Peak	90	2.2	H	19.3	3.5	22.7	30.9	46	-15.1
480.02	31.9	Peak	180	1.2	V	18.7	2.5	22.4	30.7	46	-15.3
307.22	33.5	Peak	90	2.2	H	15.1	4.6	22.9	30.3	46	-15.7
230.40	36.9	Peak	270	1.2	V	12.0	1.2	21.2	28.9	46	-17.1

11.7.3.e Final Test Data, Handset Unit, Middle Channel, 30MHz to 24000 MHz, 3 meters.

INDICATED			TABLE	ANTENNA		CORRECTION FACTOR			CORRECTED AMPLITUDE	FCC 15 Subpart C	
Frequency MHz	Ampl. dBmV/m	Comments	Angle Degree	Height Meter	Polar H/ V	Antenna dBmV/m	Cable dB	Amp. dB	Corr. Ampl. dBmV/m	Limit dBmV/m	Margin dB
4882.00	65.7	Peak	180	1.2	V	32.5	4.9	30.0	73.1	74.0	-0.9
4882.00	65.0	Peak	180	1.4	H	32.5	4.9	30.0	72.4	74.0	-1.6
4882.00	44.5	Ave	180	1.4	H	32.5	4.9	30.0	51.9	54.0	-2.1
4882.00	44.4	Ave	180	1.2	V	32.5	4.9	30.0	51.8	54.0	-2.2
2441.00	108.7	Peak	180	1.2	V	28.1	3.4	30.0	110.2	114.0	-3.8
38.20	42.0	Peak	90	1.2	V	13.3	0.5	19.9	35.9	40.0	-4.1
7323.00	57.8	Peak	45	1.2	V	35.1	5.6	30.0	68.5	74.0	-5.5
192.00	43.2	Peak	270	2.2	H	14.4	2.7	22.5	37.8	43.5	-5.7
192.00	43.1	Peak	90	1.2	V	14.4	2.7	22.5	37.7	43.5	-5.8
7323.00	37.4	Ave	45	1.2	V	35.1	5.6	30.0	48.1	54.0	-5.9
38.20	40.0	Peak	320	2.2	H	13.3	0.5	19.9	33.9	40.0	-6.1
115.22	43.4	Peak	270	1.2	V	11.9	1.8	19.8	37.3	43.5	-6.2
2441.00	106.2	Peak	150	1.4	H	28.1	3.4	30.0	107.7	114.0	-6.3
384.00	35.6	Peak	270	1.2	V	16.2	3.9	19.8	35.9	46.0	-10.1
7323.00	31.2	Ave	45	1.2	H	35.1	5.6	30.0	41.9	54.0	-12.1
180.63	34.9	Peak	200	1.2	V	13.6	4.0	21.8	30.7	43.5	-12.8
230.40	40.1	Peak	90	2.2	H	12.0	1.2	21.2	32.1	46.0	-13.9
480.02	32.6	Peak	270	2.2	H	18.7	2.5	22.4	31.4	46.0	-14.6
518.42	30.8	Peak	90	2.2	H	19.3	3.5	22.7	30.9	46.0	-15.1
480.02	31.9	Peak	180	1.2	V	18.7	2.5	22.4	30.7	46.0	-15.3
307.22	33.5	Peak	90	2.2	H	15.1	4.6	22.9	30.3	46.0	-15.7
7323.00	46.6	peak	45	1.2	H	35.1	5.6	30.0	57.3	74.0	-16.7
230.40	36.9	Peak	270	1.2	V	12.0	1.2	21.2	28.9	46.0	-17.1

11.7.3.f Final Test Data, Handset Unit, High Channel, 30MHz to 24000 MHz, 3 meters.

INDICATED			TABLE	ANTENNA		CORRECTION FACTOR			CORRECTED AMPLITUDE	FCC 15 Subpart C	
Frequency MHz	Ampl. dBmV/m	Comments	Angle Degree	Height Meter	Polar H/ V	Antenna dBmV/m	Cable dB	Amp. dB	Corr. Ampl. dBmV/m	Limit dBmV/m	Margin dB
4950.00	65.5	Peak	230	1.6	H	32.5	4.9	30.0	72.9	74.0	-1.1
4950.00	64.0	Peak	230	1.2	V	32.5	4.9	30.0	71.4	74.0	-2.6
4950.00	42.7	Ave	230	1.6	H	32.5	4.9	30.0	50.1	54.0	-3.9
38.20	42.0	Peak	90	1.2	V	13.3	0.5	19.9	35.9	40.0	-4.1
2475.00	107.6	Peak	360	1.2	V	28.1	3.4	30.0	109.1	114.0	-4.9
4950.00	40.9	Ave	230	1.2	V	32.5	4.9	30.0	48.3	54.0	-5.7
192.00	43.2	Peak	270	2.2	H	14.4	2.7	22.5	37.8	43.5	-5.7
192.00	43.1	Peak	90	1.2	V	14.4	2.7	22.5	37.7	43.5	-5.8
38.20	40.0	Peak	320	2.2	H	13.3	0.5	19.9	33.9	40.0	-6.1
115.22	43.4	Peak	270	1.2	V	11.9	1.8	19.8	37.3	43.5	-6.2
2475.00	105.6	Peak	180	1.6	H	28.1	3.4	30.0	107.1	114.0	-6.9
384.00	35.6	Peak	270	1.2	V	16.2	3.9	19.8	35.9	46.0	-10.1
180.63	34.9	Peak	200	1.2	V	13.6	4.0	21.8	30.7	43.5	-12.8
7425.00	30.4	Ave	180	1.2	V	35.1	5.6	30.0	41.1	54.0	-12.9
7425.00	29.4	Ave	180	1.6	H	35.1	5.6	30.0	40.1	54.0	-13.9
230.40	40.1	Peak	90	2.2	H	12.0	1.2	21.2	32.1	46.0	-13.9
480.02	32.6	Peak	270	2.2	H	18.7	2.5	22.4	31.4	46.0	-14.6
518.42	30.8	Peak	90	2.2	H	19.3	3.5	22.7	30.9	46.0	-15.1
480.02	31.9	Peak	180	1.2	V	18.7	2.5	22.4	30.7	46.0	-15.3
307.22	33.5	Peak	90	2.2	H	15.1	4.6	22.9	30.3	46.0	-15.7
230.40	36.9	Peak	270	1.2	V	12.0	1.2	21.2	28.9	46.0	-17.1
7425.00	45.6	Peak	180	1.6	H	35.1	5.6	30.0	56.3	74.0	-17.7
7425.00	39.6	Peak	180	1.2	V	35.1	5.6	30.0	50.3	74.0	-23.7

12 - CONDUCTED EMISSIONS TEST DATA

12.1 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.

12.2 EUT Setup

The measurement was performed at the **O**pen **A**rea **T**est **S**ite, using the same setup per ANSI C63.4 - 1992 measurement procedure. The specification used was FCC Class B limits.

The EUT was connected to a 110 VAC / 60 Hz power source and it was placed on the back edge of the test table. The simulator was placed on one side of the EUT, and the telephone was placed on the other side of the EUT. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.

The spacing between the peripherals was 10 centimeters.

Input / Output cables were draped along the edge of the test table and bundle when necessary.

12.3 Spectrum Analyzer Setup

The spectrum analyzer was set with the following configurations during the conduction test:

Start Frequency	450 kHz
Stop Frequency	30 MHz
Sweep Speed	Auto
IF Bandwidth	100 kHz
Video Bandwidth	100 kHz
Quasi-Peak Adapter Bandwidth	9 kHz
Quasi-Peak Adapter Mode	Normal

12.4 Test Procedure

During the conducted emission test, the power cord of the host system was connected to the auxiliary outlet of the first LISN.

Maximizing procedure was performed on the six (6) highest emissions of each modes tested to ensure EUT is compliant with all installation combination.

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

12.5 Summary of Test Results

According to the data in section 12.6, the EUT complied with the FCC Conducted margin for a Class B device and these test results is deemed satisfactory evidence of compliance with ICES-003 of the Canadian Interference-Causing Equipment Regulations, with the *worst* margin reading of:

--12.1 dBmV at **0.600 MHz** in the **Neutral** mode, 450KHz – 30 MHz.

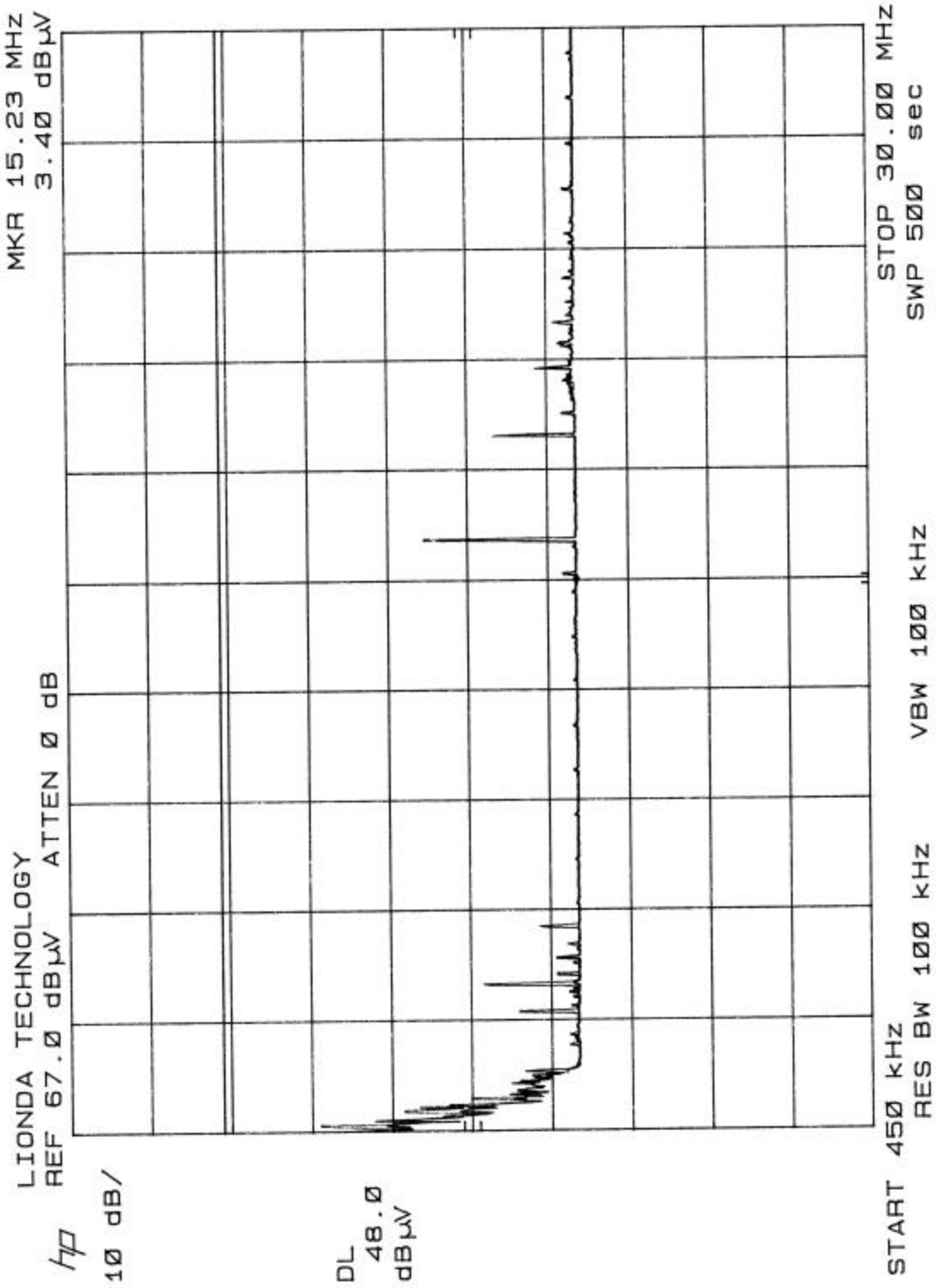
12.6 Conducted Emissions Test Data

12.6.1 Test Data, 0.45 - 30 MHz.

LINE CONDUCTED EMISSIONS				FCC CLASS B	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dBµV	Qp/Ave/Peak	Line/Neutral	dBµV	dB
0.600	35.9	QP	Neutral	48	-12.1
0.450	33.0	QP	Line	48	-15.0
0.980	25.5	QP	Neutral	48	-22.5
16.320	22.4	QP	Neutral	48	-25.6
16.350	20.6	QP	Line	48	-27.4
0.980	18.6	QP	Line	48	-29.4

12.7 Plot of Conducted Emissions Test Data

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


MKR 15.23 MHz
3.40 dBµV
LIONDA TECHNOLOGY
REF 67.0 dBµV
ATTEN 0 dB
10 dB/
DL
48.0
dBµV
START 450 kHz
RES BW 100 kHz
VBW 100 kHz
STOP 30.00 MHz
SWP 500 sec

13 – PROCESSING GAIN

13.1 Processing Gain Measurements for LD01, GH9504 Report

Introduction

Scope

This document is a Lionda Technology Co., Ltd Engineering test report for Model No.: LD01, GH9504 2.4 GHz 70-Channel DSS Basic Cordless Telephone.

This document details the results of measurement of the processing gain of a 2.4 GHz 70-Channel DSS Basic Cordless Telephone.

Reference Documents

This section lists documents that are referenced within or are materially relevant to this document.

Code of Federal Regulations, Title 47, Chapter 1, Part 15 Radio Frequency Devices (FCC)

Definitions

FCC	Federal Communications Commission
SNR	Signal to Noise Ratio
JSR	Jammer to Signal Ratio
CW	Continuous wave (jammer)
HS	Handset
BS	Basestation
DBPSK	Differential Binary Phase Shift Keying

An Overview of the FCC Method for measuring Processing Gain

Two methods are specified for measuring processing gain by the FCC in 15.247 (e). The first method simply involves calculating the signal to ratio noise (SNR) with the spreading code switched on with the SNR when the spreading code is switched off. The difference between the two is the processing gain. The SNR is measured at the demodulated output of the receiver. In principle this an acceptable method to measure the processing gain of any direct sequence spread spectrum communication system, however, it does not take into consideration that the non-spread spectrum portion of the system may operate under the assumption that the signal being transmitted is a spread spectrum signal and when the spreading code is switched off the system may fail to operate or operate at greatly reduced efficiency. In either case the measurement of processing gain will be meaningless.

The second method specified by the FCC to measure processing gain is detailed in 15.247 (e)(1). This involves transmitting a CW jammer in the RF passband of the system and measuring the jammer to signal ratio (JSR) required to achieve a certain bit error rate. The choice of the actual value of the bit error rate is left up to the tester. The jammer is stepped in 50 kHz increments across the entire passband and in each case the JSR to achieve the desired bit error rate is measured. The JSR is measured at the RF input to the system under test. The lowest 20% of the JSR data (in dB) is discarded. The processing gain can then be calculated as follows:-

$$G_p = \left(\frac{S}{N}\right)_{theory} + \left(\frac{J}{S}\right)_{measured} + L_{system}$$

where G_p is the processing gain, the SNR is that theoretically predicted for the system under the test to achieve the desired bit error rate, the JSR is the lowest value (in dB) in the remaining data set and L_{sys} adjusts for non-ideal system losses. L_{sys} can not be greater than 2 dB.

Processing Gain Measurement Results

The following parameters were used in the test setup.

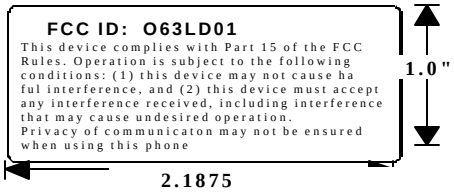
Central Channel Frequency	2401.92 MHz
Modulation	11.00dB
System Lose	2.00dB
Cable Lose (DUT Path)	21.50dBm
Cable Lose (SG Path)	-24.50dBm

PG=S/N mod + Pj/Pg Result 14.36dB
Ps= Psa + Cable Loss (DUT Path) Conclusion : Pass
Pj = Pg + Cable Loss (SG Path)

Frequency	Pg (dBm)	Pj (dBm)	Psa (dBm)	Ps (dBm)	PG(dB)
2401.92	-9.90	-34.40	-14.05	-35.55	14.15
2403.07	-9.70	-34.20	-14.05	-35.55	14.35
2404.22	-9.70	-34.70	-14.05	-35.55	14.35
2405.37	-9.70	-34.20	-14.05	-35.55	14.35
2407.68	-9.70	-34.20	-14.05	-35.55	14.35
2408.83	-9.50	-34.20	-14.05	-35.55	14.55
2401.92	-9.50	-34.00	-14.05	-35.55	14.55
2404.22	-9.10	-33.60	-14.05	-35.55	14.95
2405.37	-8.60	-33.10	-14.05	-35.55	15.45
2407.68	-8.20	-32.70	-14.05	-35.55	15.85
2408.83	-8.10	-32.60	-14.05	-35.55	15.95
2401.92	-7.20	-31.10	-14.05	-35.55	16.85
2403.07	-6.10	-30.60	-14.05	-35.55	17.95
2405.37	-4.70	-29.20	-14.05	-35.55	19.35
2401.92	-3.70	-28.20	-14.05	-35.55	20.35
2403.07	-3.10	-27.60	-14.05	-35.55	20.95
2405.37	-2.50	-27.00	-14.05	-35.55	21.55
2403.07	-2.00	-26.50	-14.05	-35.55	22.05
2408.83	-1.00	-25.50	-14.05	-35.55	23.05
2401.92	-0.20	-24.70	-14.05	-35.55	23.85

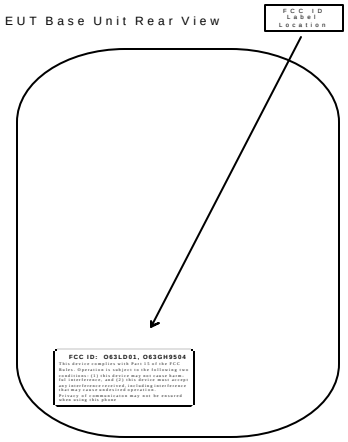
14 – FCC PRODUCT LABELING AND WARNING STATEMENT

14.1 FCC ID Label

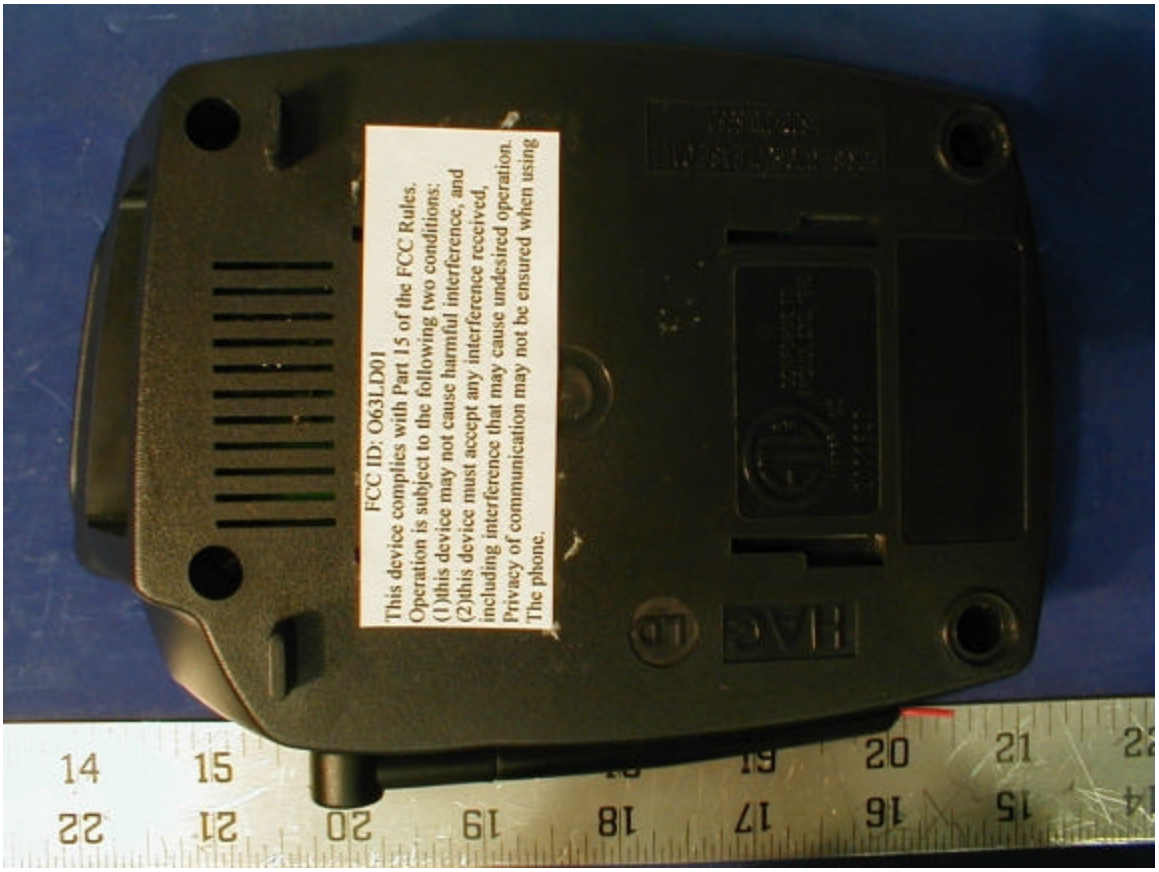


Specifications: Text is black or white in color and is left justified. Labels are silk-screened and shall be "permanently affixed" at a conspicuous location on the EUT.

14.2 Proposed Label Location on EUT



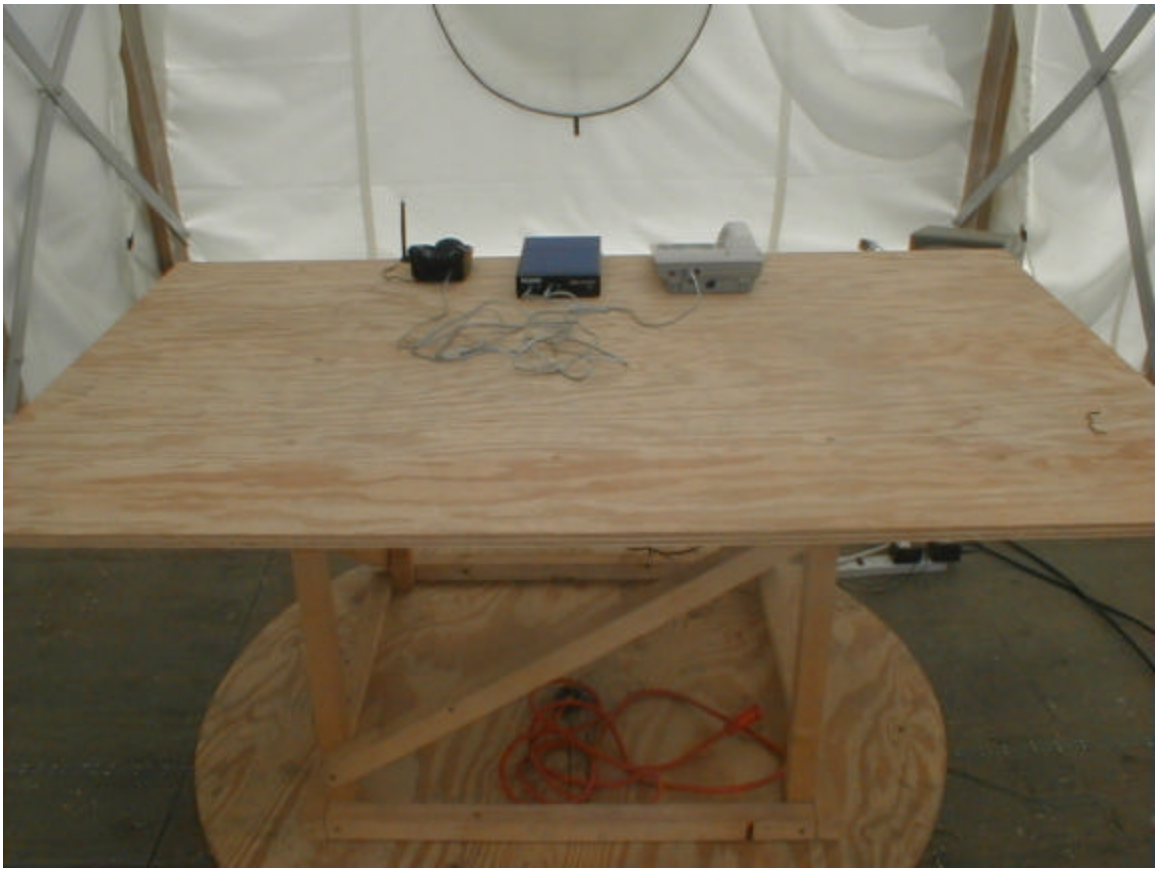
14.3 FCC Label on EUT View



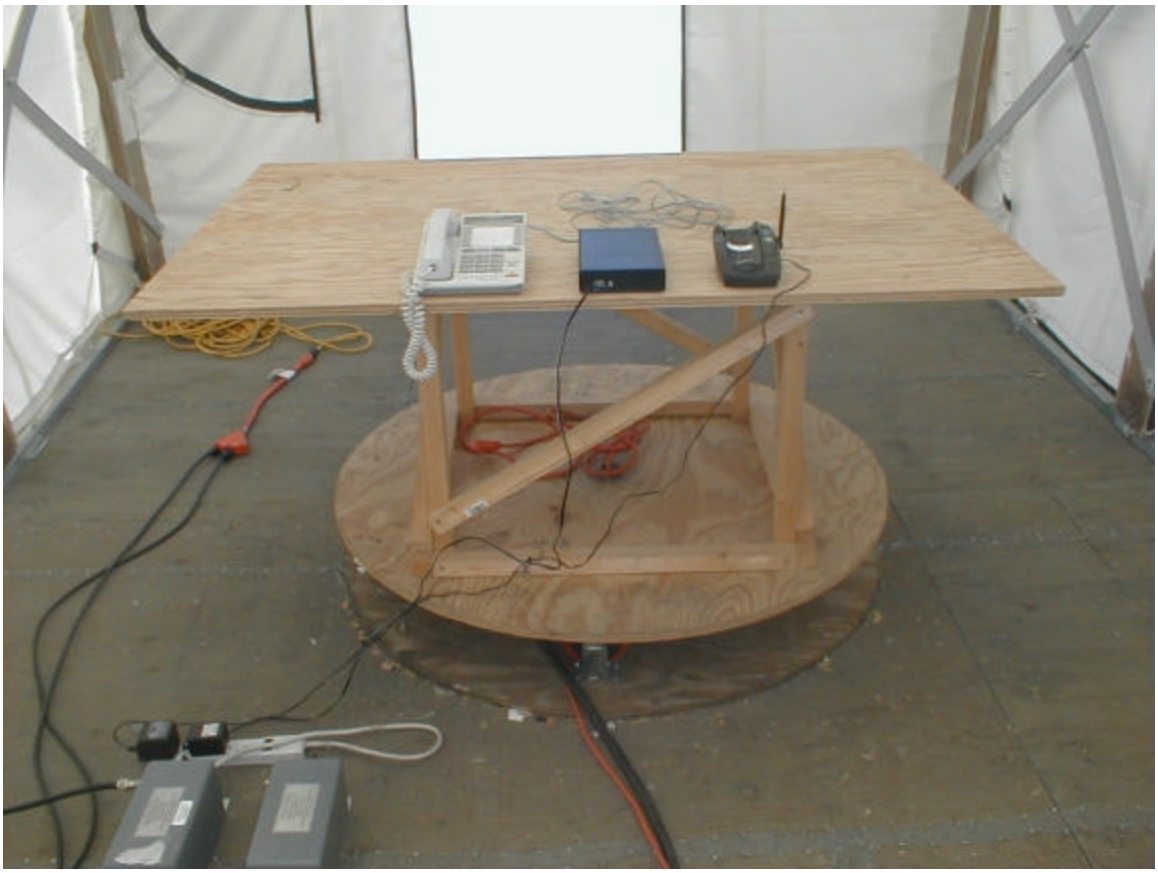

FCC ID: O63LD01

15 Conducted and Radiated Setup Photographs

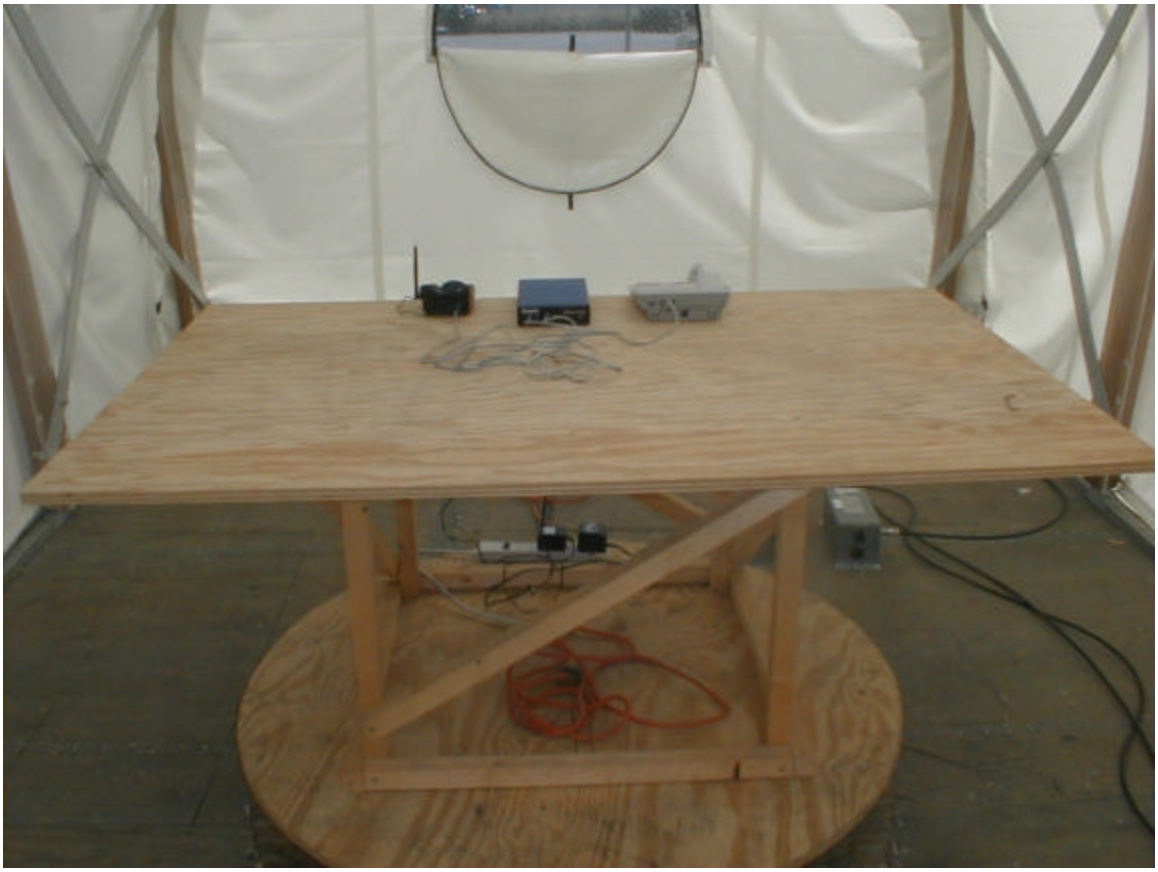
15.1 EUT Base Conducted Emission Setup Photograph – Front View



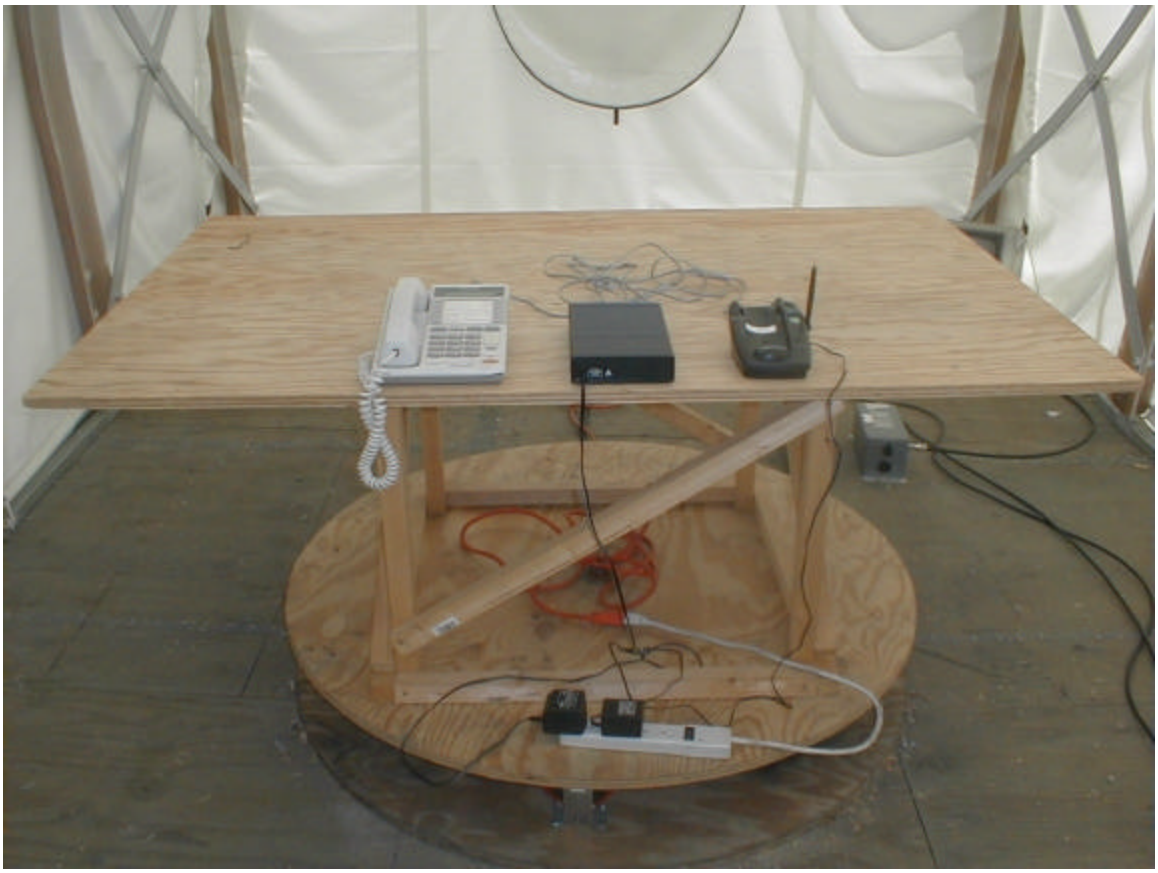
15.2 EUT Base Conducted Emission Setup Photograph – Side View



15.3 EUT Base Radiated Emission Setup Photograph – Front View



15.4 Base Radiated Emission Setup Photograph – Rear View



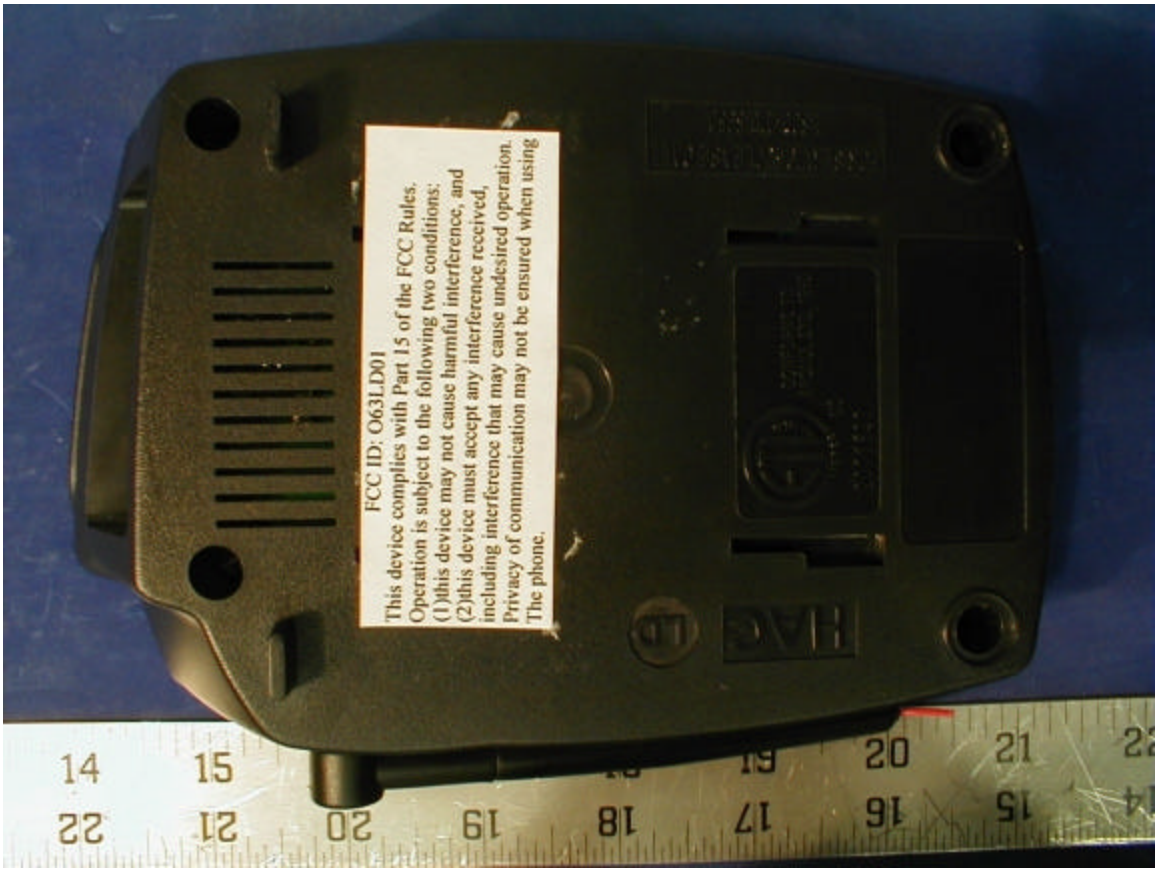
15.5 EUT Handset Radiated Emission Setup – Front View

15.6 EUT Handset Radiated Emission Setup – Rear View

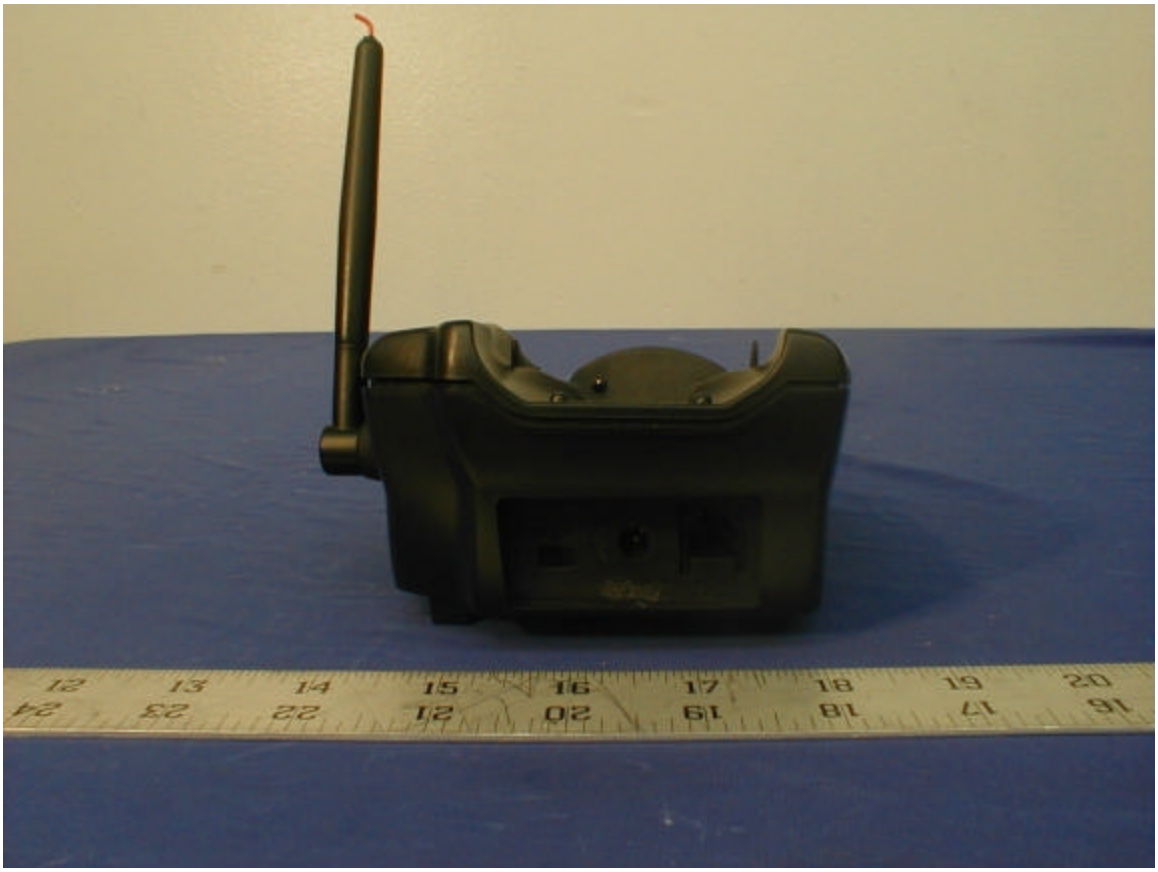
16 EUT PHOTOGRAPHS

16.1 EUT Base Front View

16.2 EUT Base Bottom View



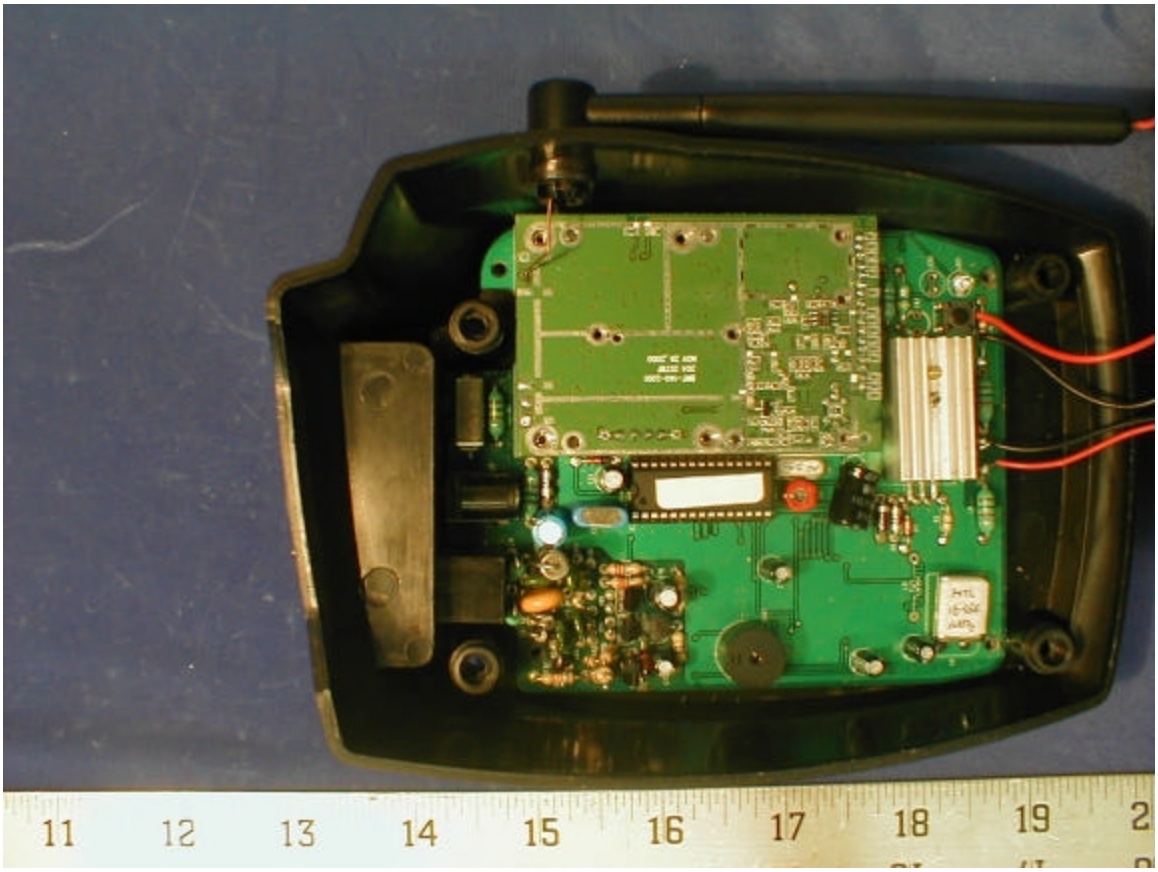
16.3 EUT Base Rear View



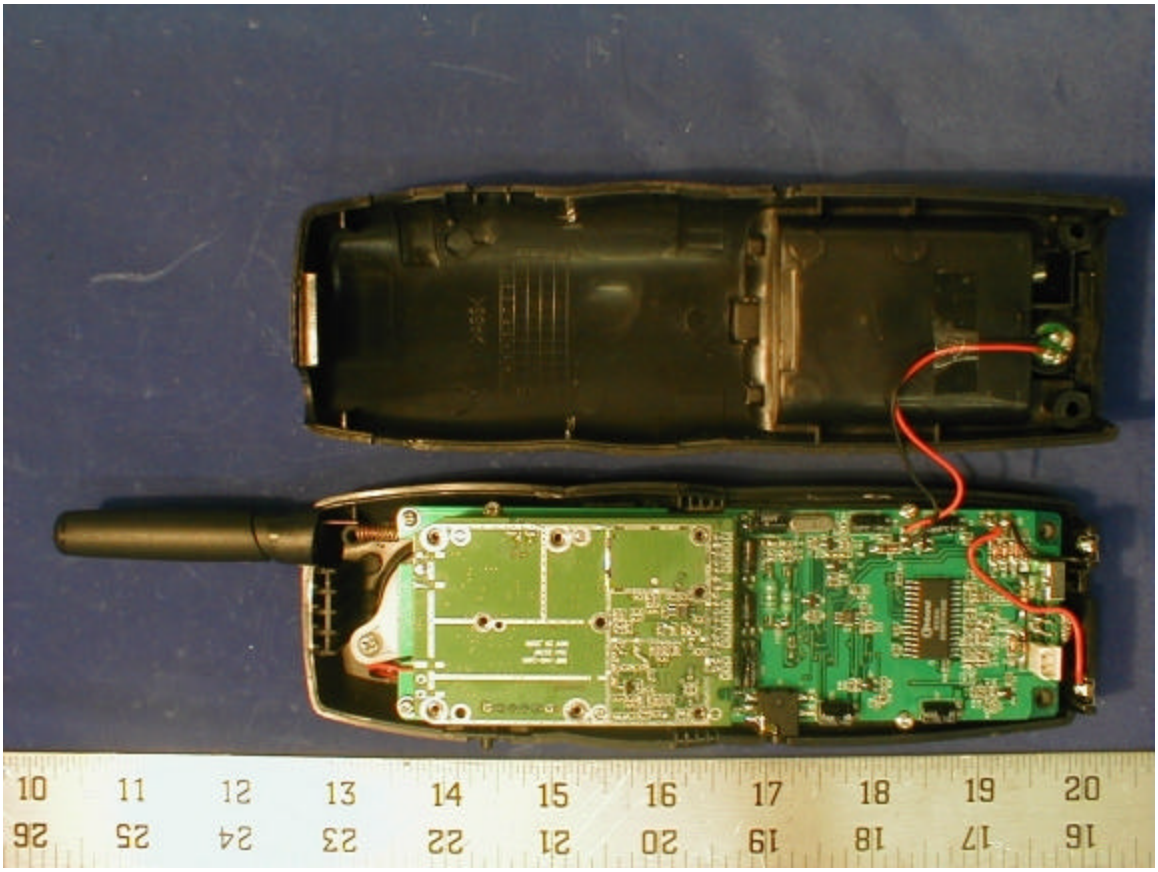
16.4 EUT Handset Front View

16.5 EUT Handset Back View

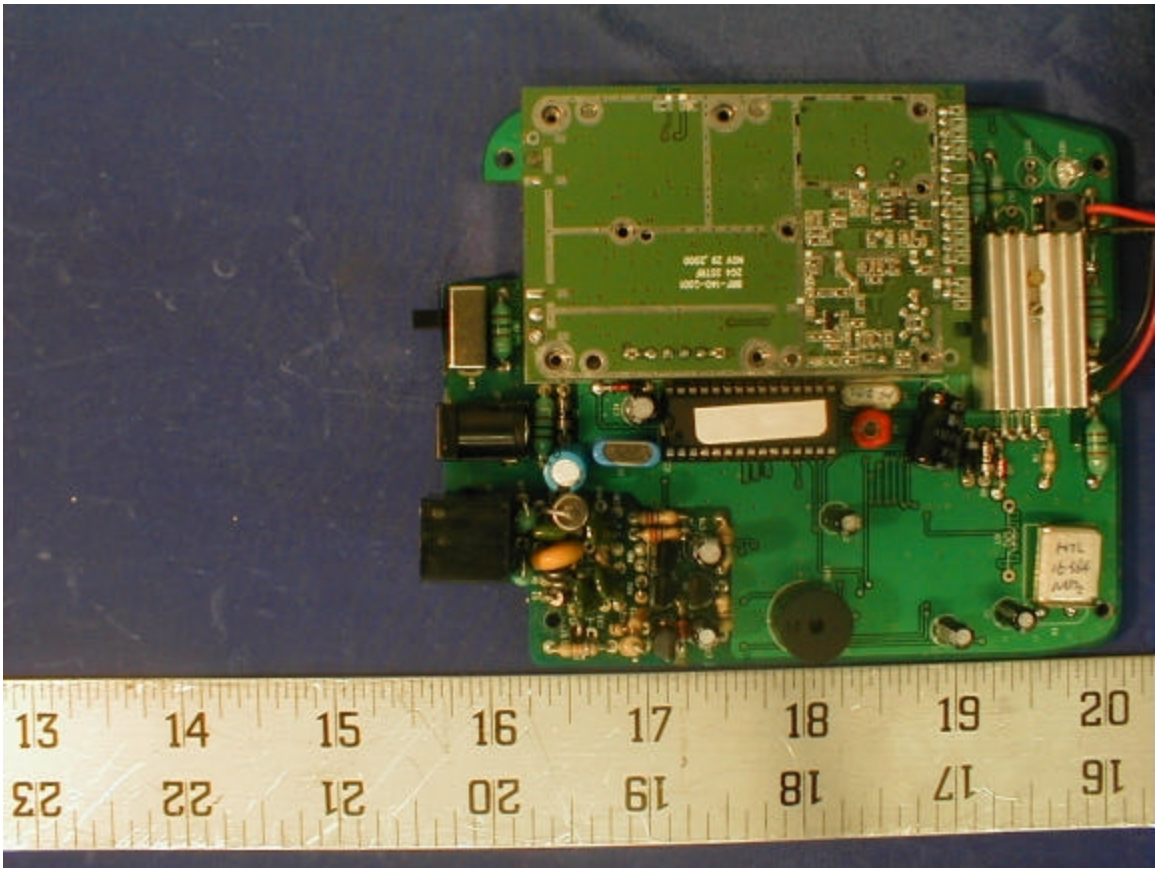
16.7 EUT Base Open Cover View



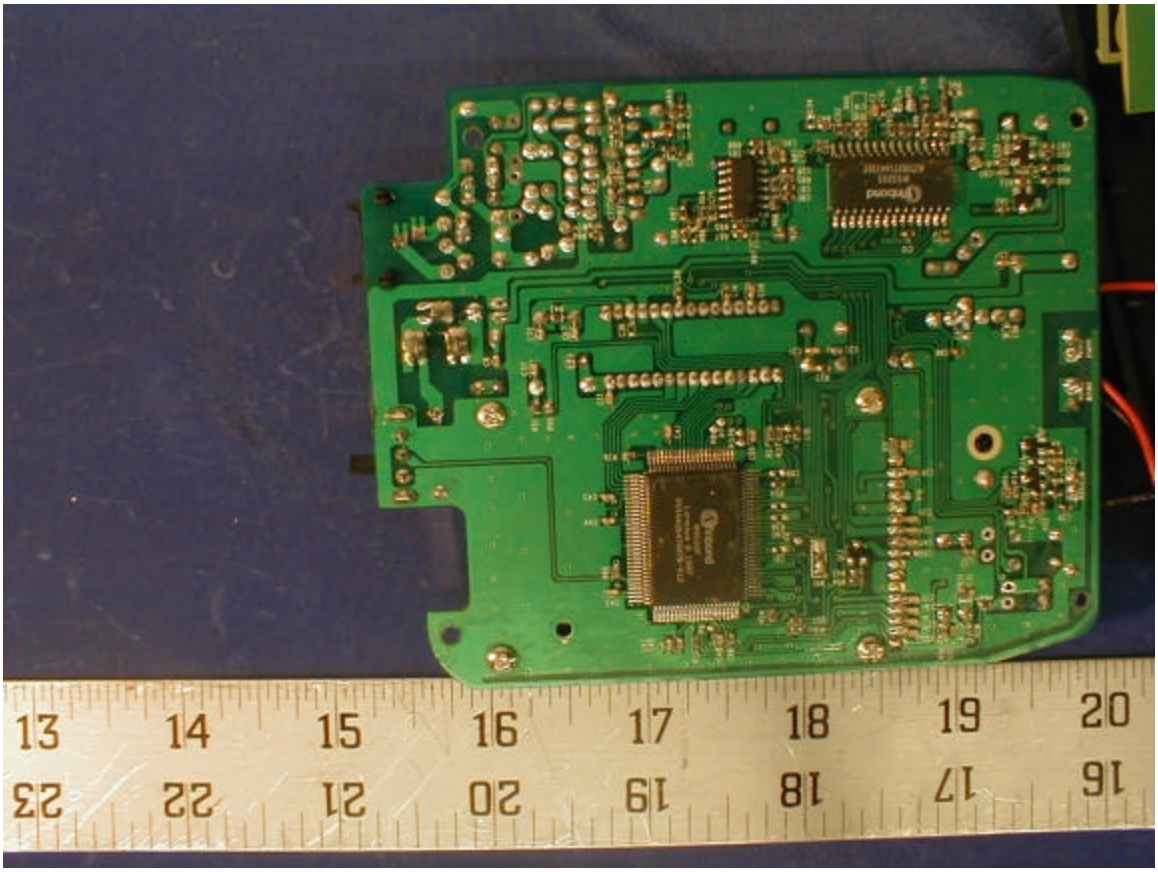
16.8 EUT Handset Open Cover View



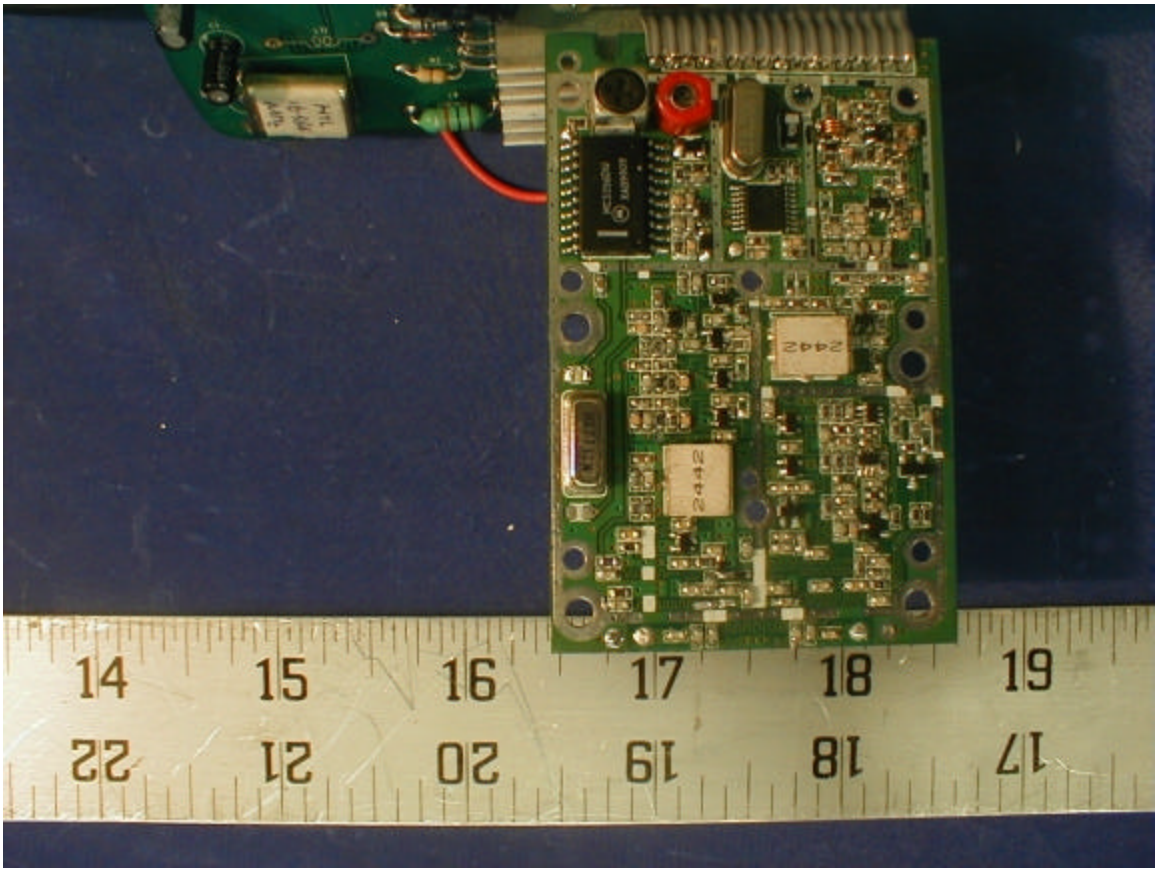
16.9 EUT Base Main Board Component View



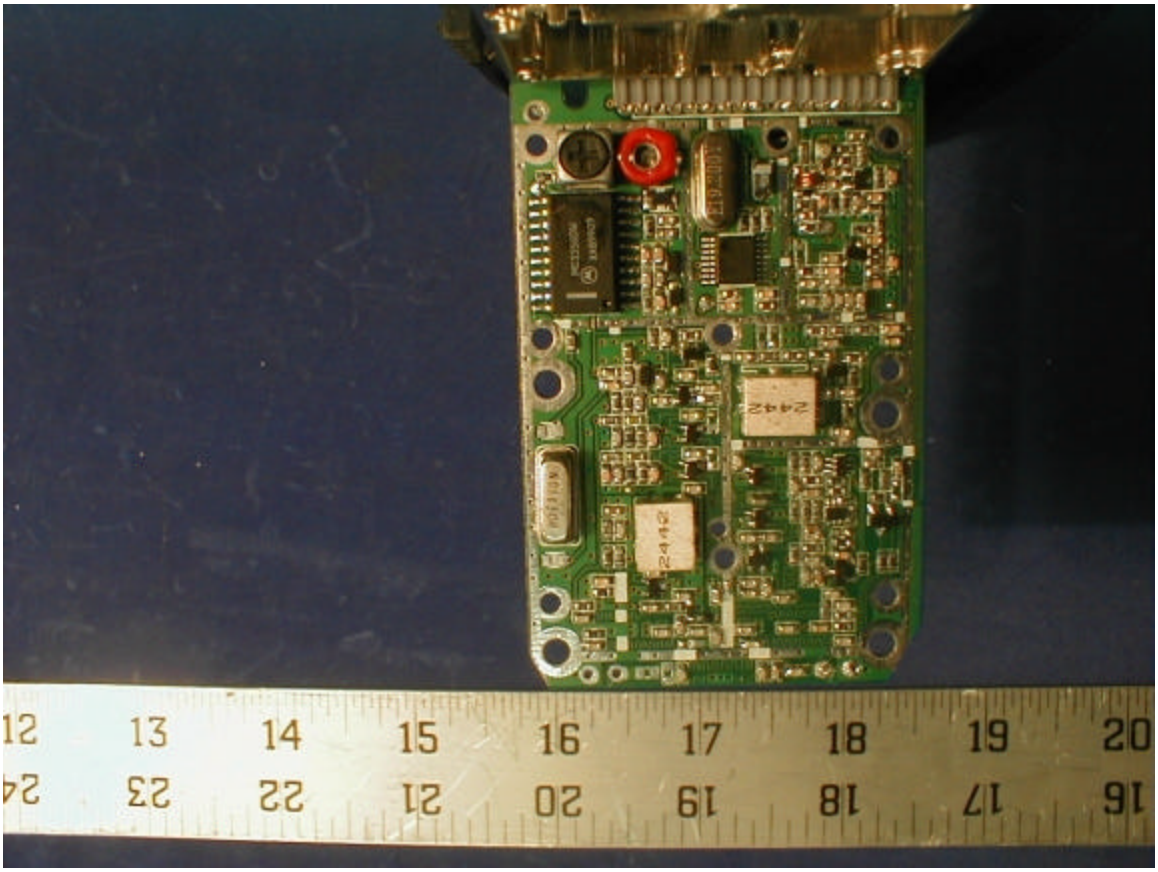
16.10 EUT Base Main Board Solder View



16.11 EUT Base RF Board Component View



16.12 EUT Handset RF Board Solder View



APPENDIX A – AGENT AUTHORIZATION LETTER

APPENDIX B – EUT SECURITY CODE

APPENDIX C – DIAGRAM BLOCK/ SCHEMATICS

APPENDIX D – USER MANUAL

APPENDIX E – TECHNICAL MENUAL