§15.247 (a) (1) - CHANNEL BANDWIDTH

Standard Applicable

According to §15.247(a)(l), frequency hopping systems 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. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

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 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. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. 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 Result

Base

Channel	Frequency MHz	Channel Bandwidth KHz
Low	2401.800	835
Mid	2440.159	820
High	2479.401	820

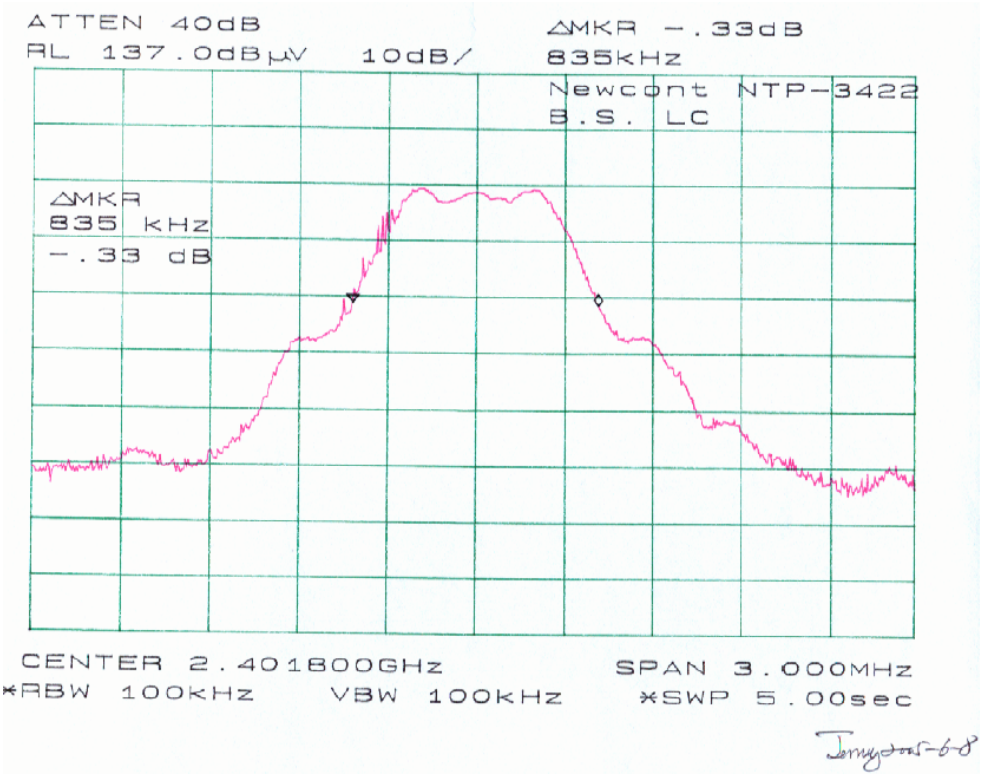
Handset

Channel	Frequency MHz	Channel Bandwidth KHz
Low	2401.800	895
Mid	2440.159	815
High	2479.401	895

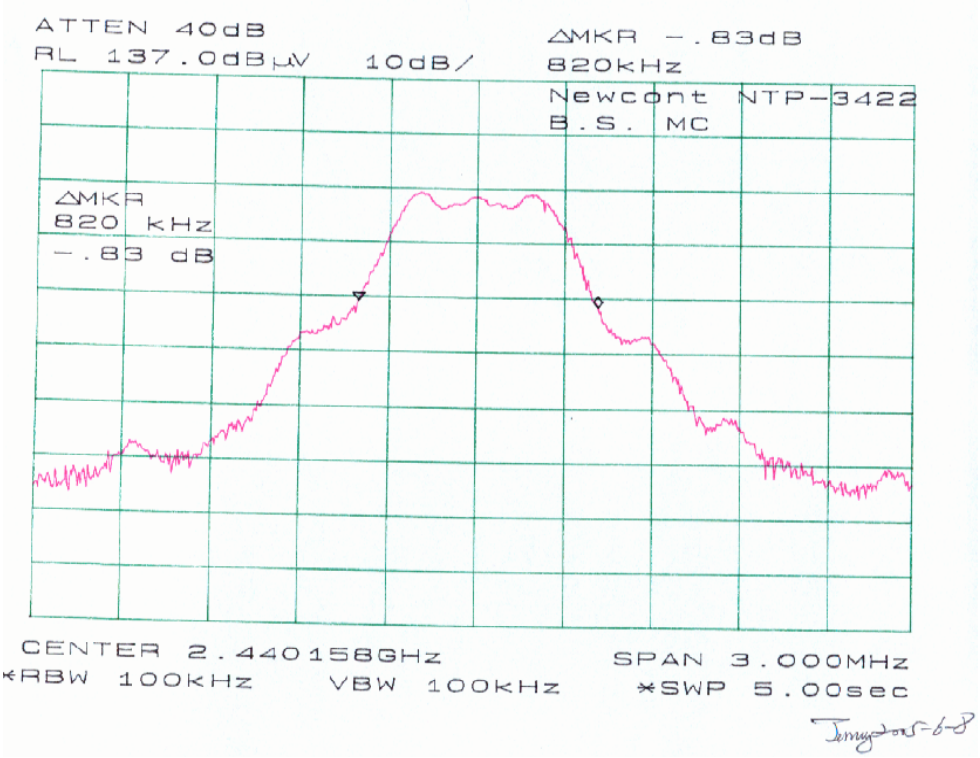
Plot of Channel Bandwidth

Please see the following plots

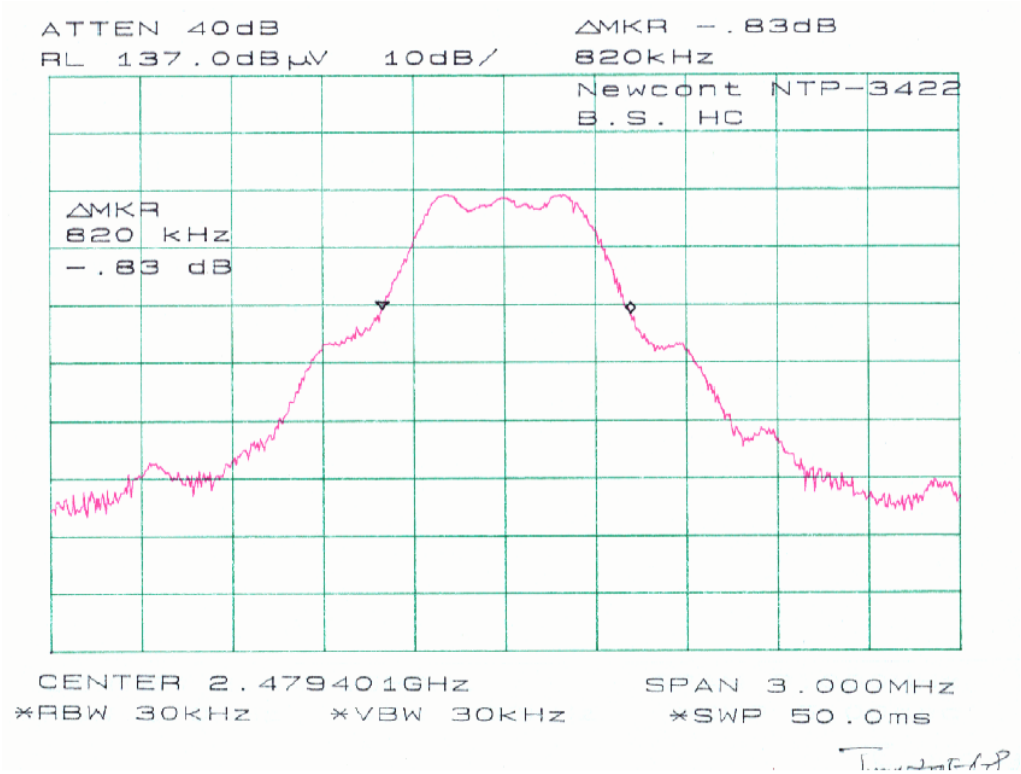
Base: Low Channel



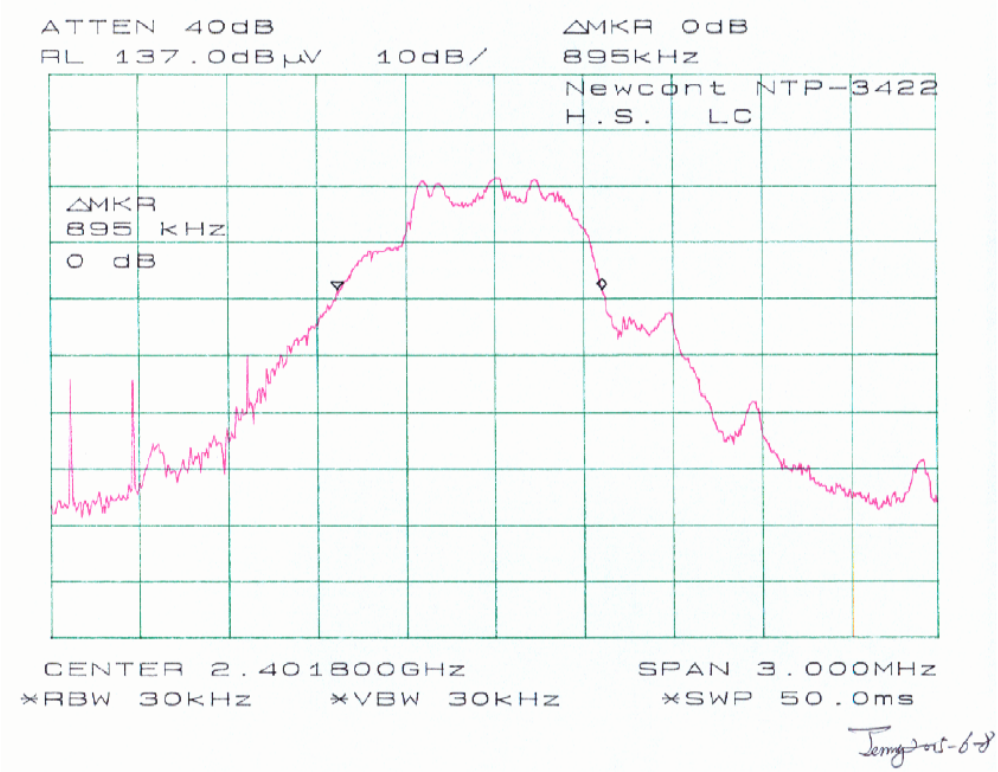
Base: Middle Channel



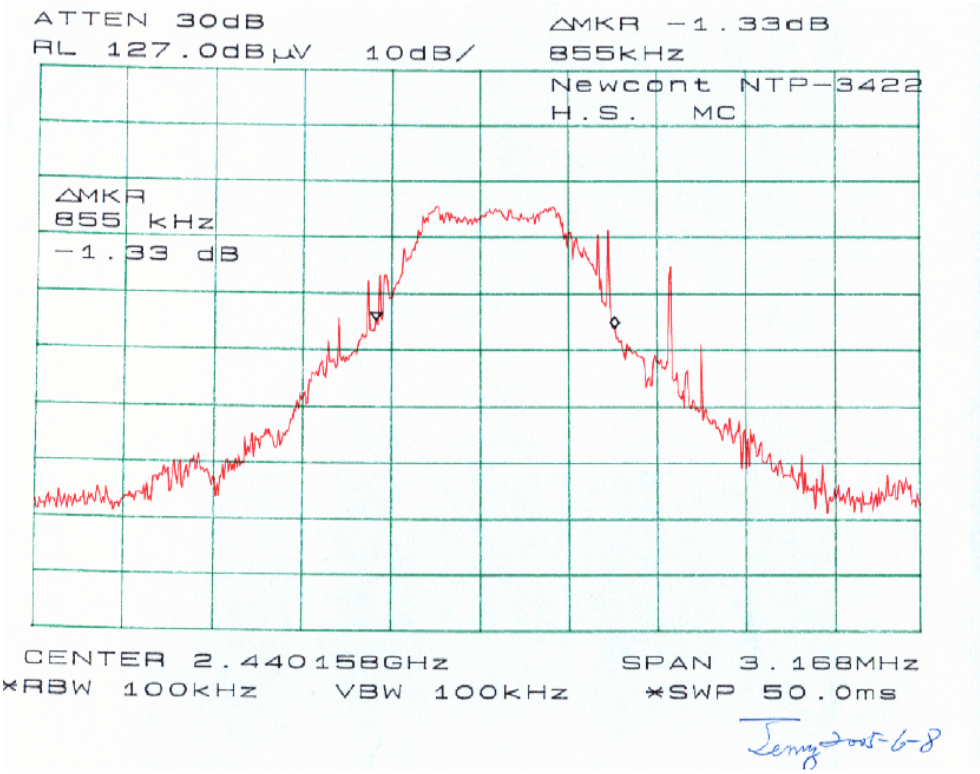
High Channel



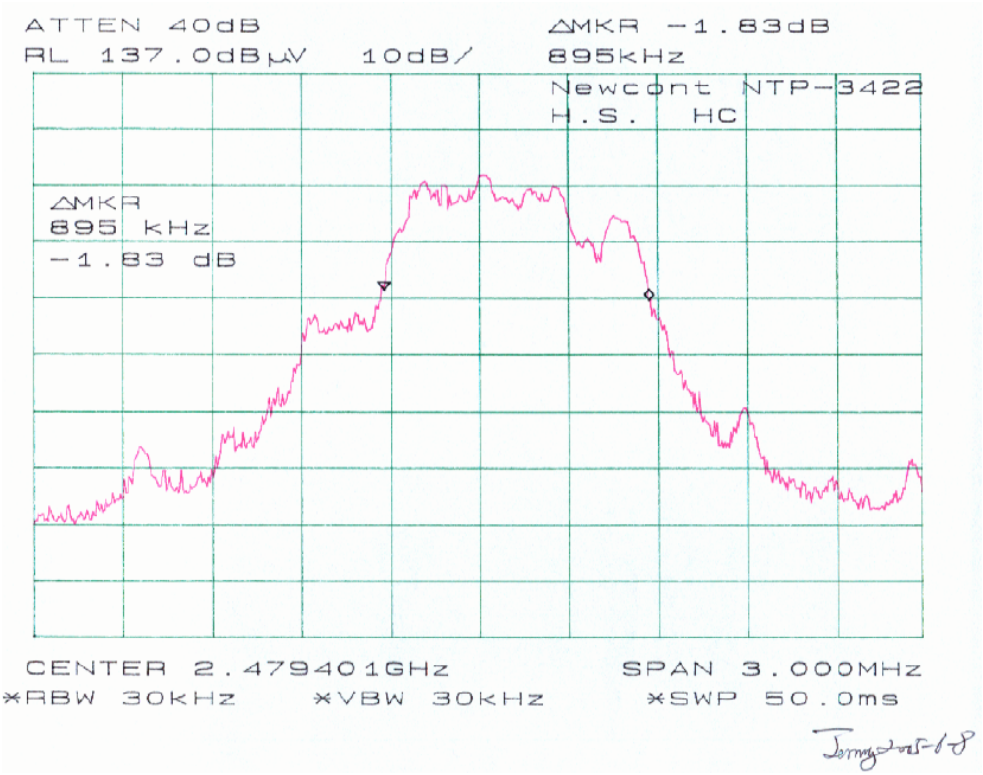
Handset: Low Channel



Middle Channel



Handset: High Channel



§15.247 (a) (1) (iii) - NUMBER OF HOPPING FREQUENCY USED

Standard Applicable

According to §15.247(a)(1)(iii), frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

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 the bench 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. Set the SA on Max-Hold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
4. Set the SA on View mode 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

Measurement	Standard	Result
65	15	Compliant

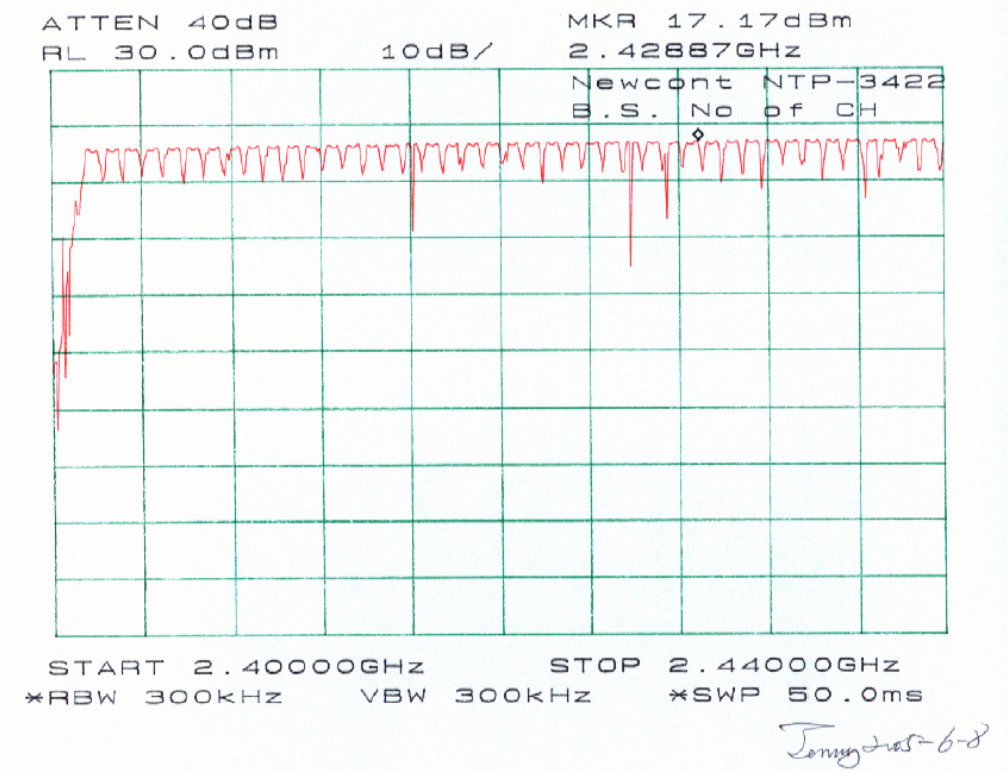
Handset

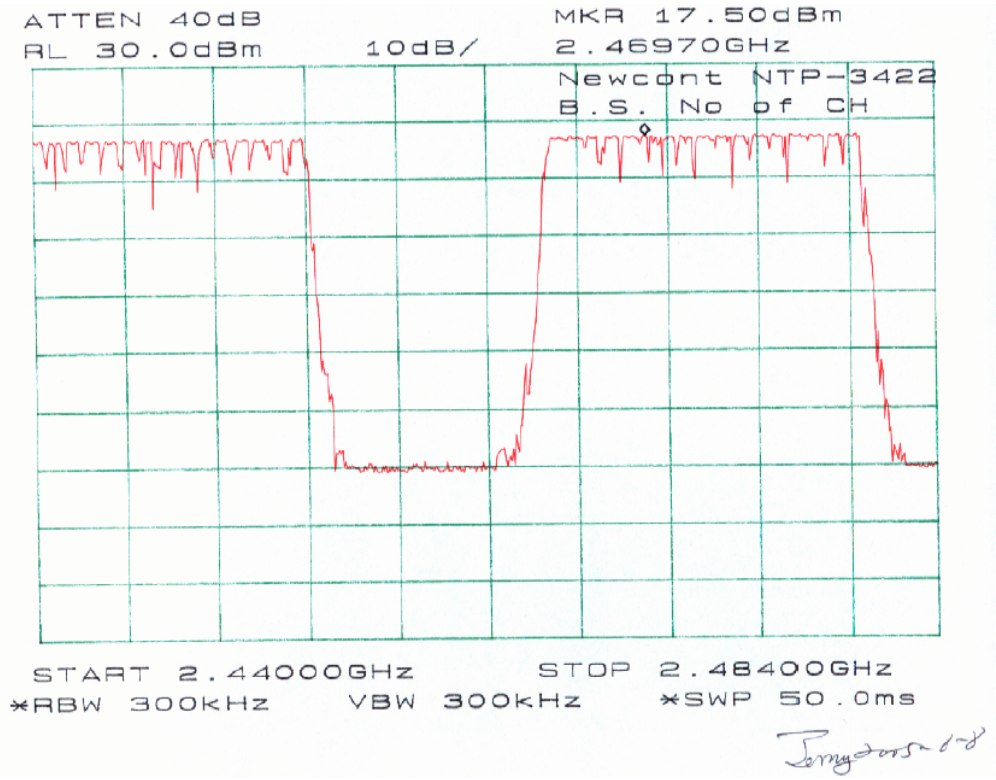
Measurement	Standard	Result
65	15	Compliant

Plots of Number of Hopping Frequency

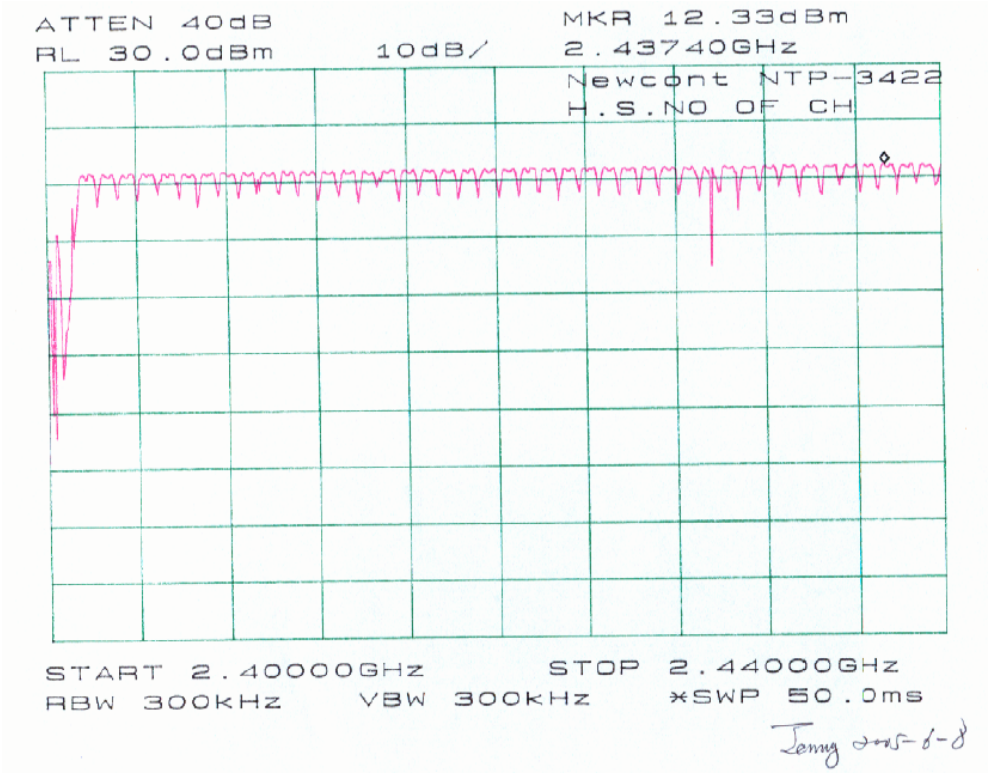
Please refer to the following plots.

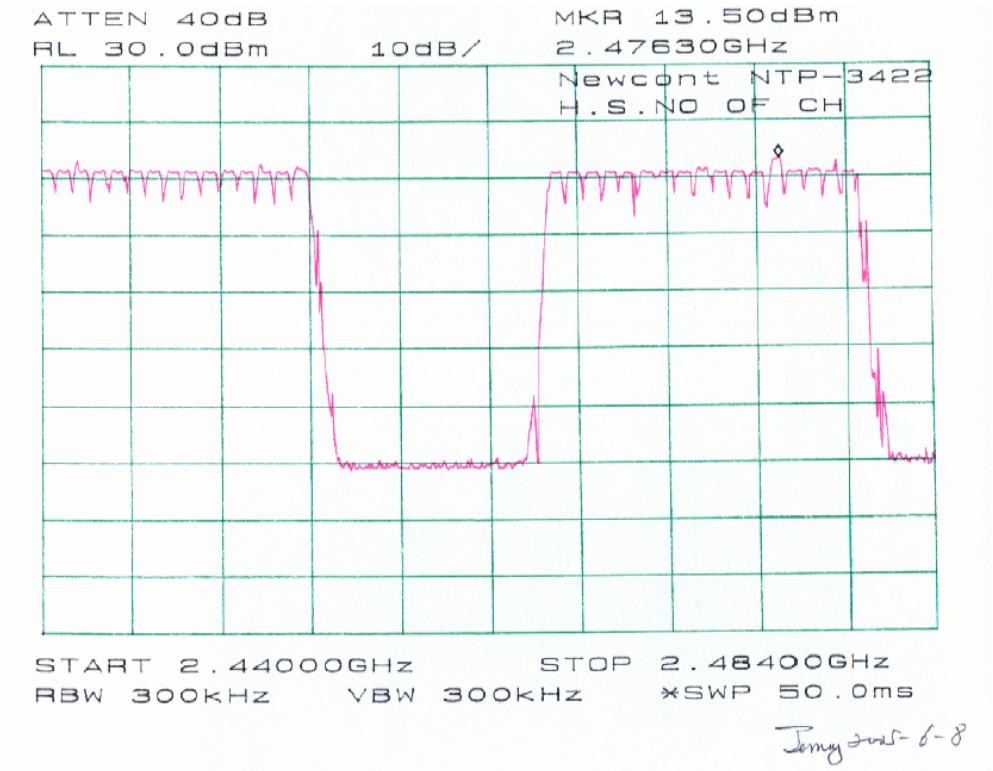
Base:





Handset


ATTEN 40dB
RL 30.0dBm
10dB/
MKR 12.33dBm
2.43740GHz
Newcont NTP-3422
H.S.NO OF CH
START 2.40000GHz
STOP 2.44000GHz
RBW 300kHz
VBW 300kHz
*SWP 50.0ms


ATTEN 40dB
RL 30.0dBm
10dB/
MKR 13.50dBm
2.47630GHz
Newcont NTP-3422
H.S.NO OF CH
START 2.44000GHz
STOP 2.48400GHz
RBW 300kHz
VBW 300kHz
*SWP 50.0ms