

Validation Review Form

Procedure Performance check is 10 FTIR/ATR

Check the appropriate box: New Validation ☐ Modification ☐ Performance Check ☒

Sign and Date to indicate your acceptance of the procedure/instrument:

Examiner (if applicable) Rebecca Hernandez Date 7-24-13

Unit Supervisor Glenn B. Everett Date 7-24-13

Technical Leader (if different than Supervisor) _____ Date _____

Crime Laboratory Regional Supervisor W. J. Int Date 7-24-13

Quality Assurance Manager Jennifer Hall Date 7-24-13

*All information must be submitted to the Quality Assurance Manager prior to the implementation of the procedure/instrument. If all technical staff training has not been completed, please include a proposed training plan and completion schedule.

Proposal for Performance Check on FTIR with SMART iTR

The TBI Nashville Crime Laboratory has historically used the Golden Gate ATR with either an AVATAR 360 (#4), AVATAR 380, or iS10. Before the first ATR was accepted for use by the laboratory, it was treated by the lab as a new invalidated and unaccepted sampling technique. Therefore the lab proceeded to obtain ATR spectra of every unknown in their possession and to establish their own library standards. ATR was found to be a valid sampling technique in the laboratory. In addition, ATR is a well-accepted scientific technique throughout the scientific community.

In July 2013, the Nashville Laboratory purchased and installed a new Thermo Fisher Nicolet iS10 FTIR with a SMART iTR attachment (#7). The SMART iTR attachment uses a diamond window just like the Golden Gate ATR and uses ZnSe focusing lenses. In addition, the software on the new instrument is essentially the same as the software on the instrument it replaced in that it is a newer version of the OMNIC software that all of our FTIR's use. The Nashville Laboratory currently uses an iS10 FTIR which has been validated and its sampling technique approved for use. Since this is an established sampling technique, there is no need to completely reapprove the validity of the instrument for drug identification. In addition, FTIR is a scientifically proven technique and has been shown to give consistent and reliable data. This is data that can be used to unmistakably identify a compound. Therefore, essentially all that needs to be done is to verify that the new FTIR gives the same data as the Golden Gate ATR gives.

To accomplish this we propose to run a series of 10 standards on the new instrument. These will include Cocaine HCl, Cocaine Base, and Methamphetamine, as these are the compounds that we analyze by FTIR most often. Parallel testing will be done by collecting and comparing the spectral data from the Avatar 360 with a Golden Gate ATR (#4) to the new Thermo Fisher Nicolet iS10 FTIR with a SMART iTR attachment (#7). Where possible the same lot numbers will be used for comparison. After obtaining both sets of data and comparing them to one another, a forensic scientist will check them for accuracy and submit the new Thermo Fisher Nicolet iS10 FTIR with a SMART iTR attachment (#7) for approval.

**Standard Verification Performance Check for the
Thermo Scientific Nicolet iS10 FTIR Serial # AKX1300461
With SMART iTR Attachment**

Validation Procedure:

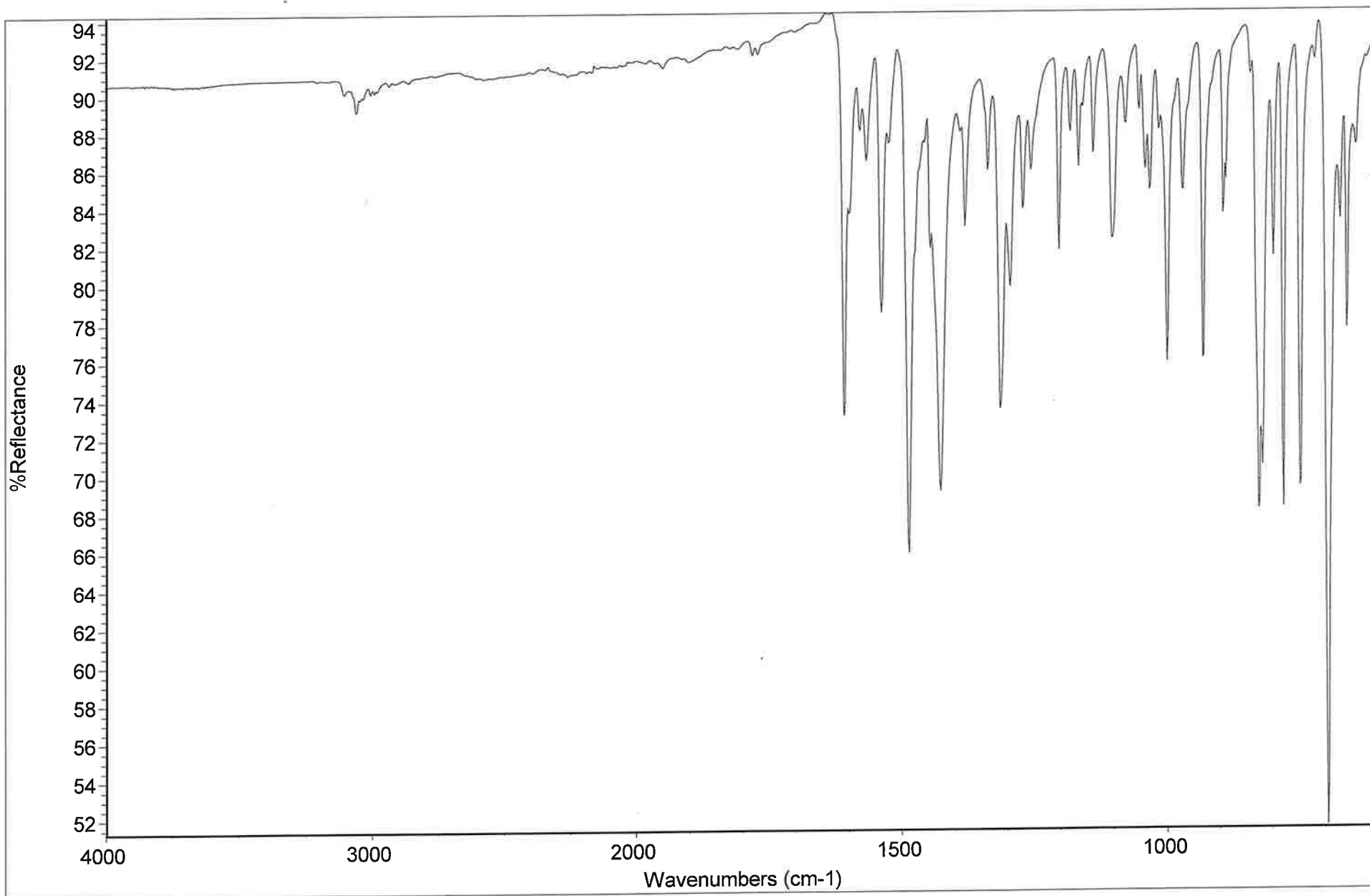
Ten certified drug standards were selected and tested for identification with this instrument. The standards selected are as follows:

Alprazolam – manufactured by Upjohn, Lot # 487RA
Caffeine – manufactured by Eastman Kodak, Lot # 355
Carisoprodol – manufactured by Alltech, Lot # 311 DC-0052
Cocaine Base – manufactured by Merck, Lot # U 7472
Cocaine HCl – manufactured by Sigma, Lot # 50K1124
Diazepam – manufactured by Sigma, Lot # 105F0451
(+)-Methamphetamine – manufactured by Sigma, Lot # 34H0144
3,4-MDMA – manufactured by Alletch, Lot # 151 DC-7073-3
Pethidine – manufactured by SB Penick, Lot # 413NMN-027
Testosterone – manufactured by Sigma, Lot# 50H0345

Several of these standards were chosen because they are frequently encountered in case work and/or analyzed by ATR. All standards were run on the instrument neat – no extractions or washes were performed. When available, the same chemical lots utilized to create the current spectral library were used. The instrument's sampling area was cleaned and a background spectrum was collected between each standard run to rule out any possible cross-contamination.

Conclusion:

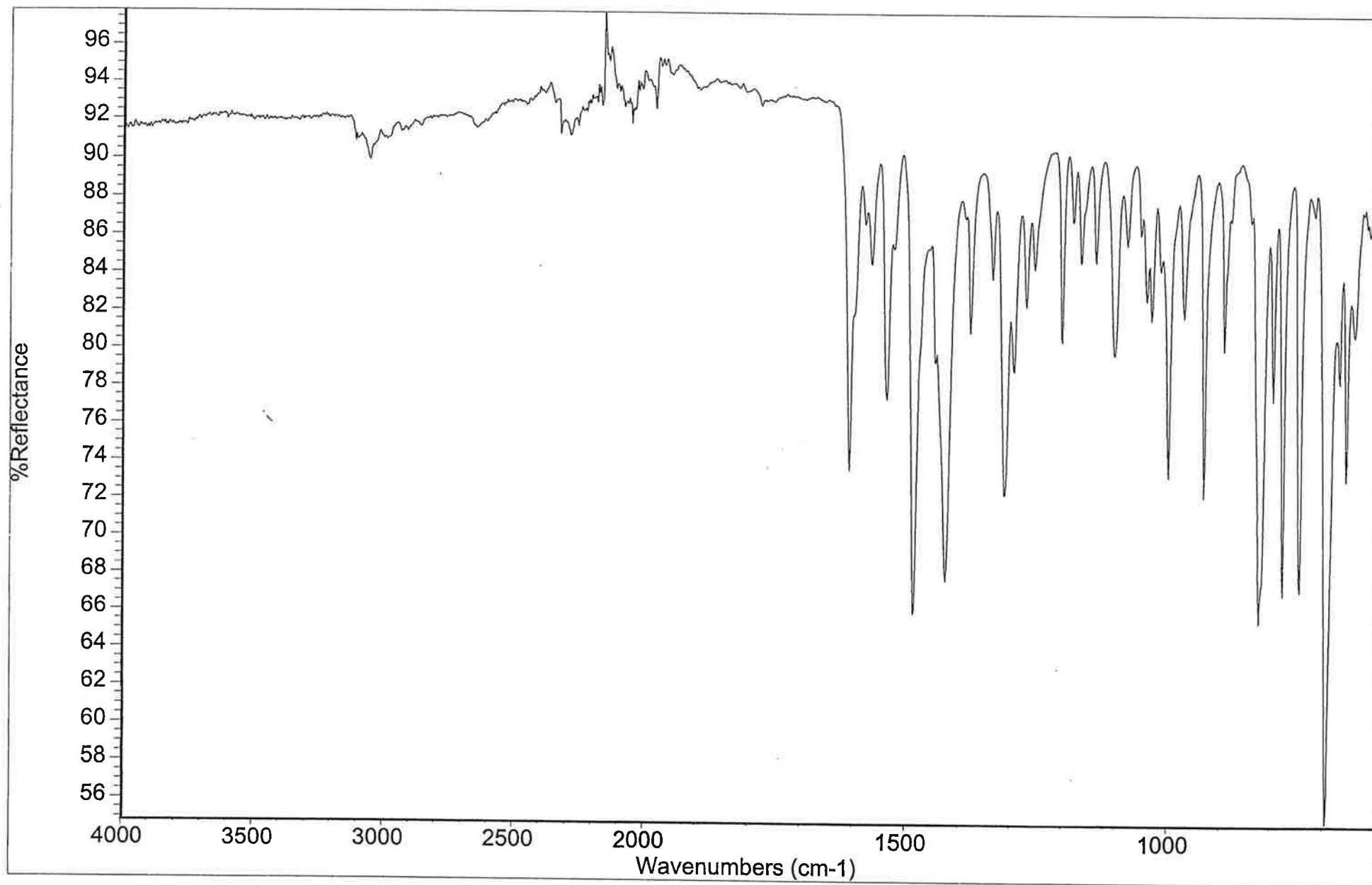
Spectral data was collected from the above reference standards and then compared to previously collected reference standards that were analyzed on a currently validated FTIR/ATR instrument. The results were as expected in that both spectral data was consistent and each match was deemed as satisfactory for identification. The collected spectra as well as the standard spectra used for comparison are included.



IR VERIFICATION - ALPRAZOLAM STANDARD UPJOHN LOT#487RA RMH. *RA*

IR #7

Collection time: Tue Jul 23 14:41:26 2013 (GMT-05:00)

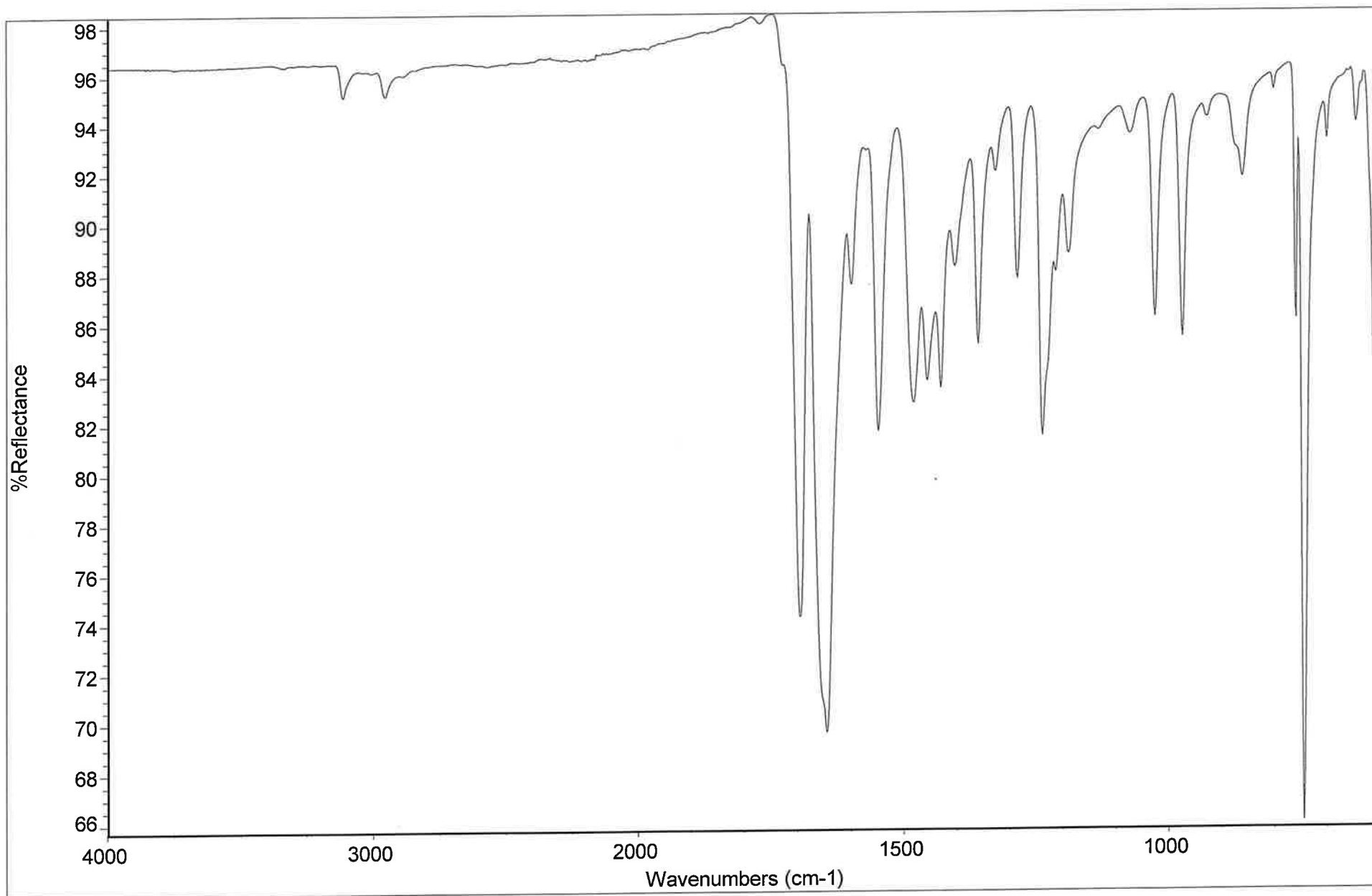


ALPRAZOLAM U31889 LOT #487RA

IR #4

WHS

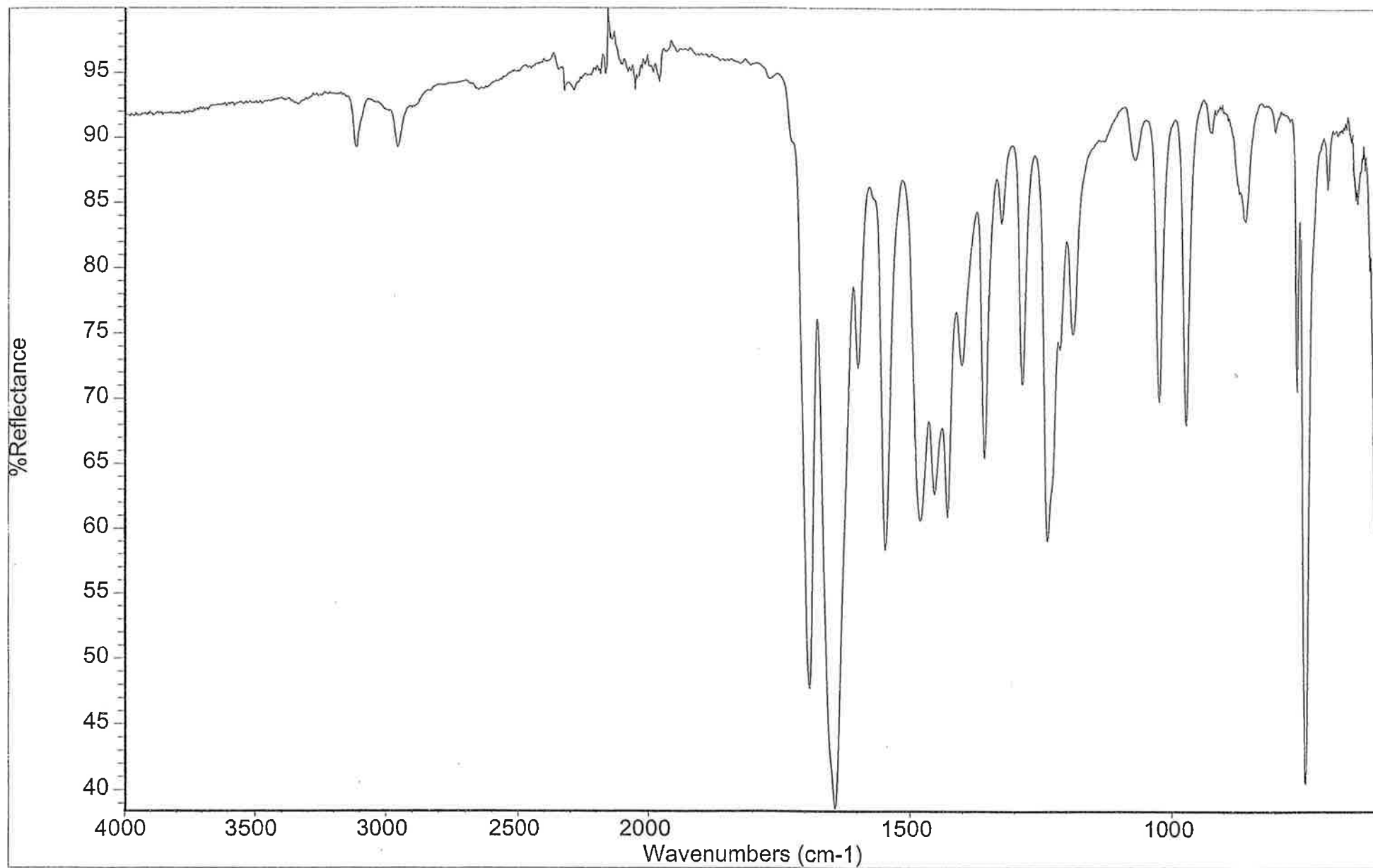
Collection time: Mon Sep 15 14:10:07 2003



IR VERIFICATION - CAFFEINE STANDARD EASTMAN KODAK COMPANY LOT #355 RMH *PH*

IR #7

Collection time: Tue Jul 23 10:55:48 2013 (GMT-05:00)

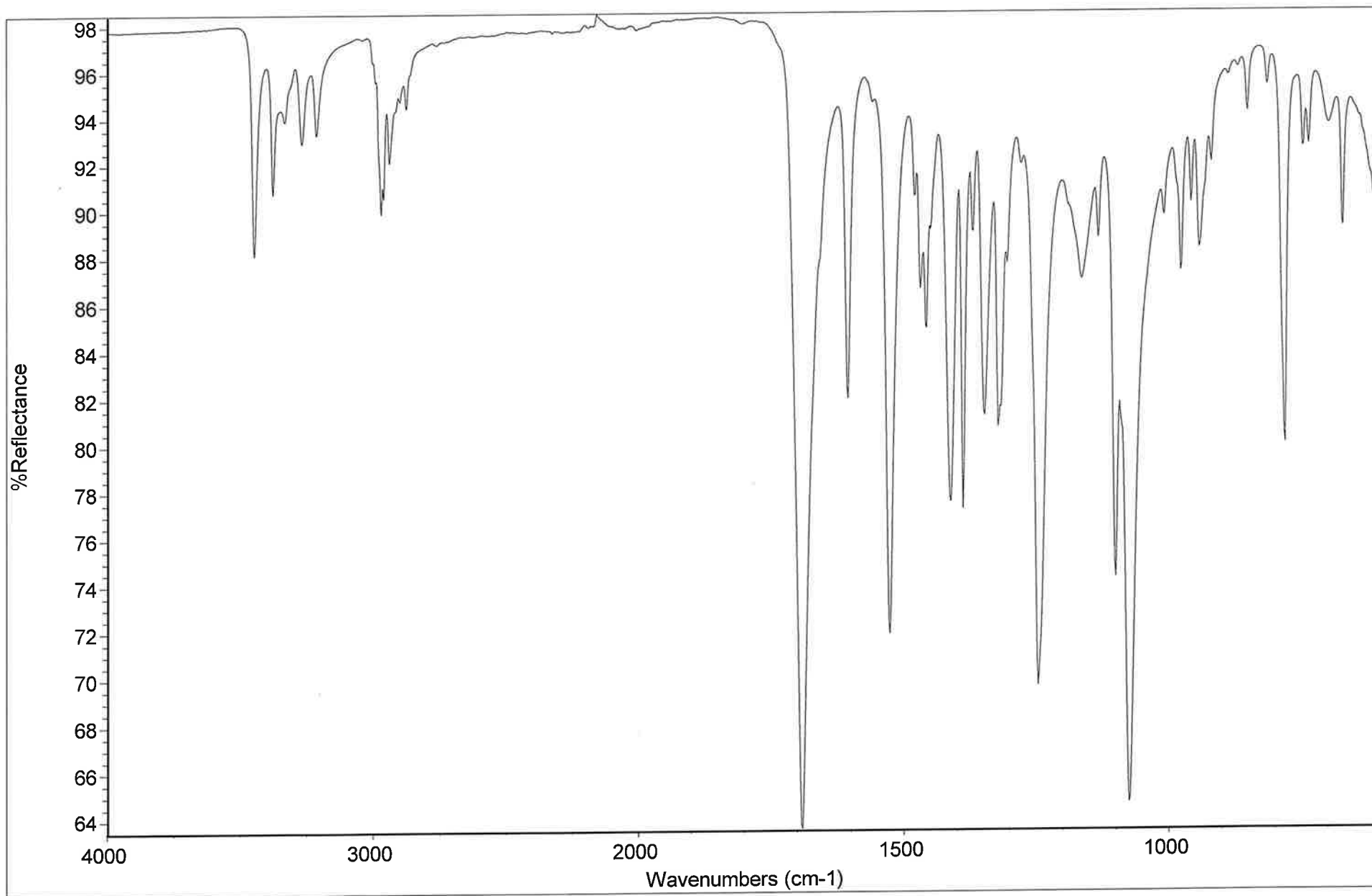


Caffeine Eastman Kodak Lot #355

IR #4

[Handwritten signature]

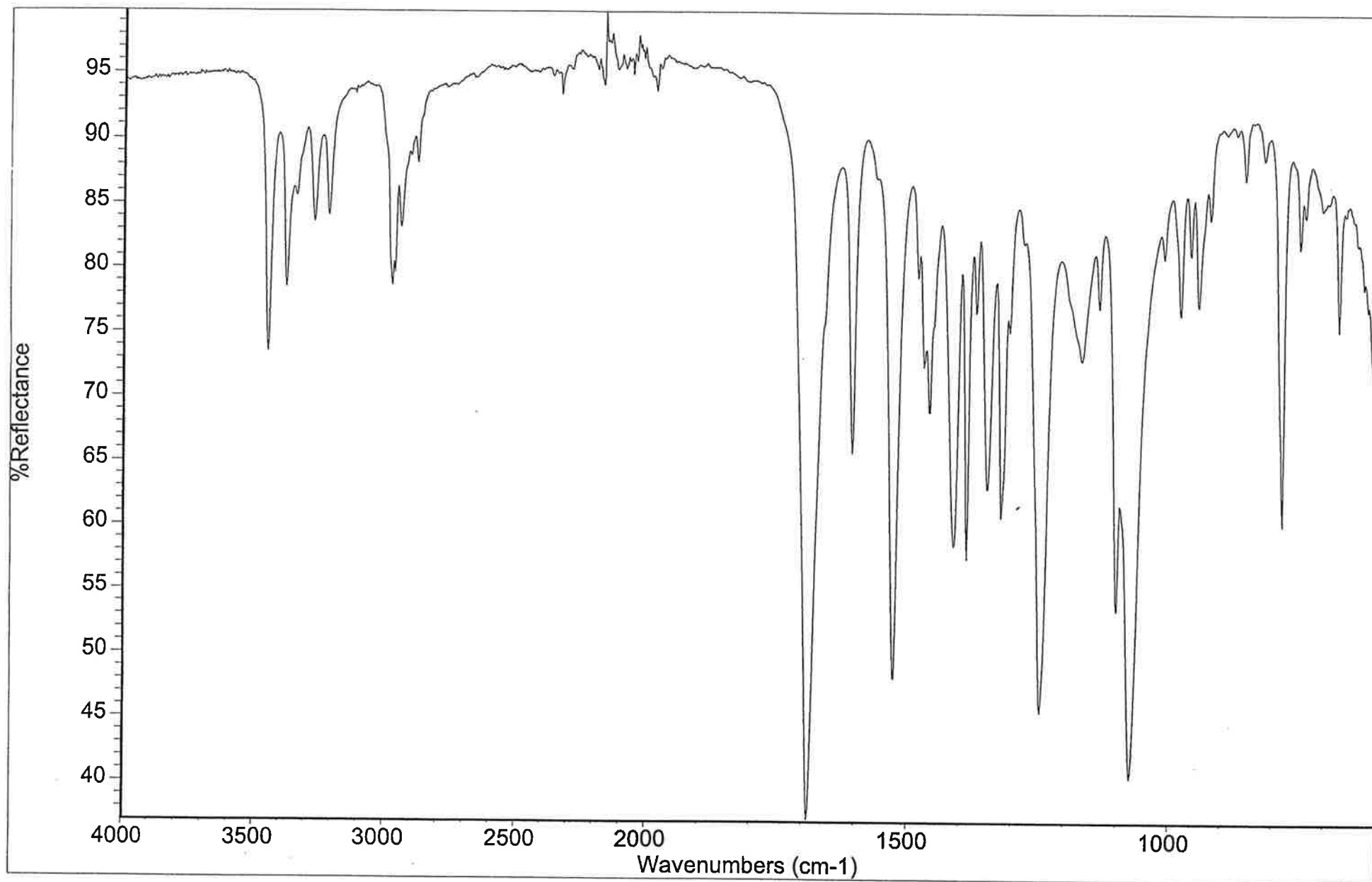
Collection time: Tue Sep 16 13:18:23 2003



IR VERIFICATION - CARISOPRODOL STANDARD ALLTECH LOT#311 DC-0052 RMH *RH*

IR #7

Collection time: Tue Jul 23 11:07:11 2013 (GMT-05:00)

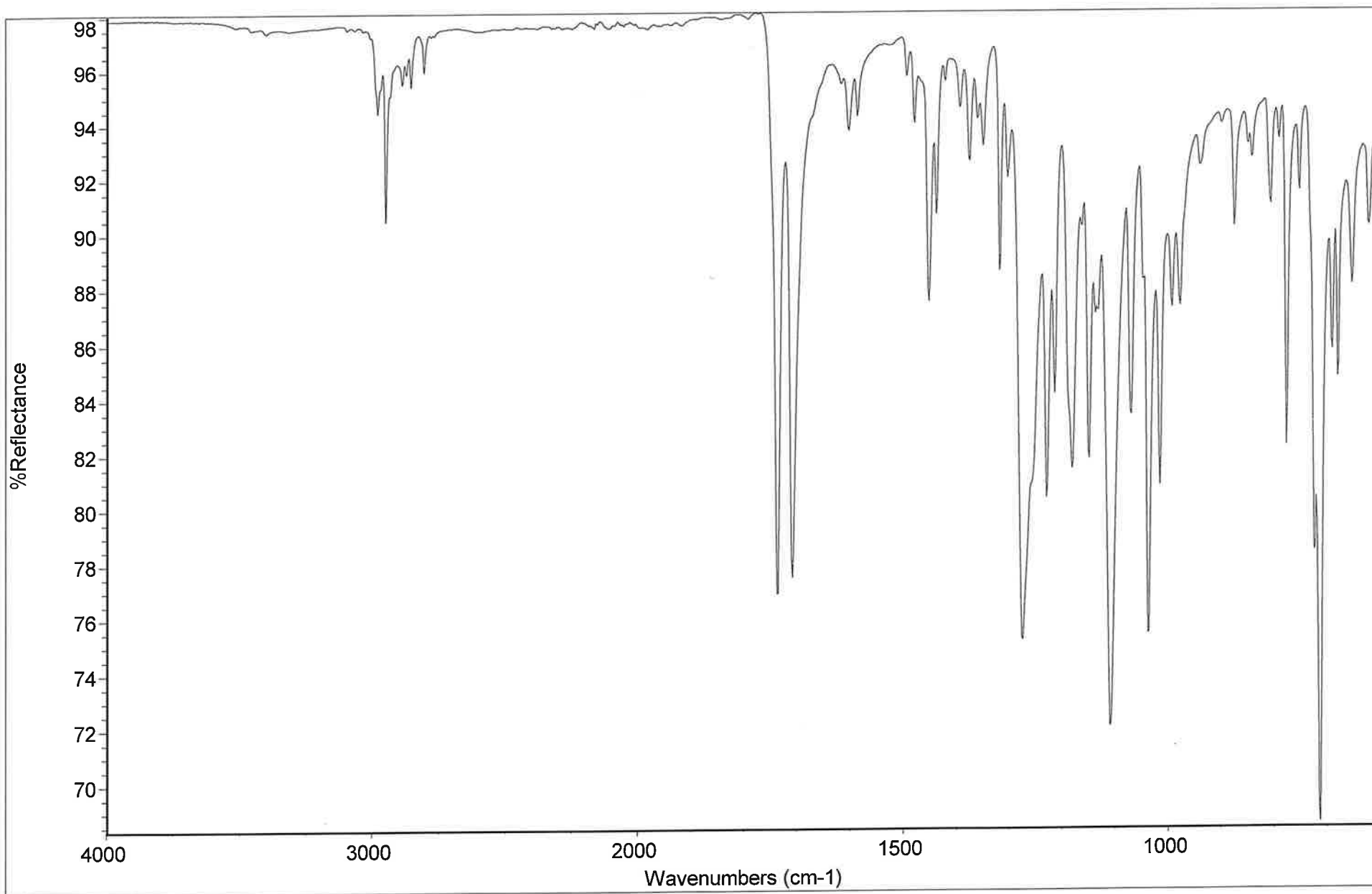


Carisoprodol Alltech Lot #311

IR #4

(Handwritten signature)

Collection time: Tue Sep 16 11:24:37 2003

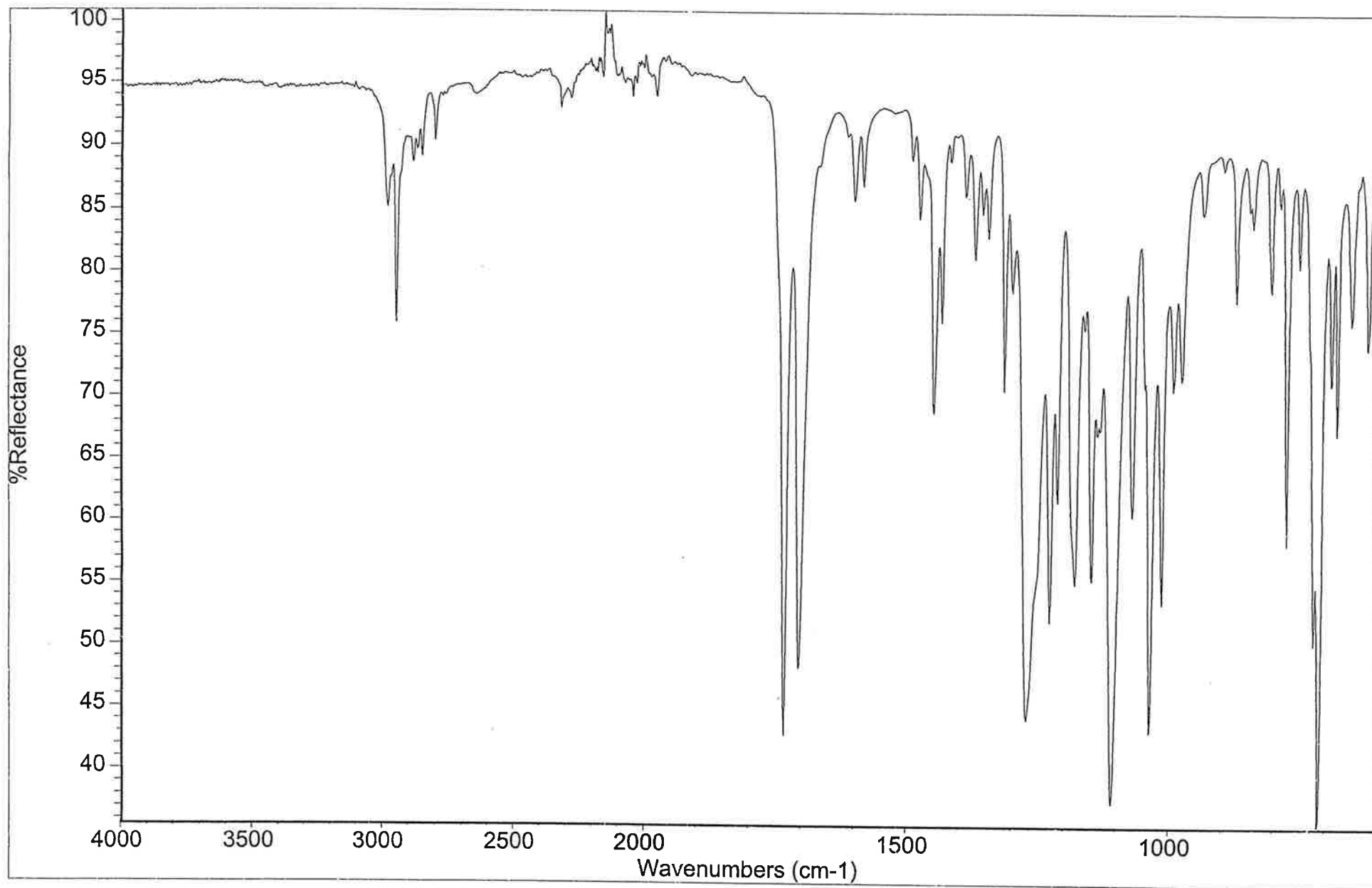


IR VERIFICATION - COCAINE BASE MERK AND CO. LOT#U7472 RMH

IR #7

PA

Collection time: Tue Jul 23 13:33:23 2013 (GMT-05:00)

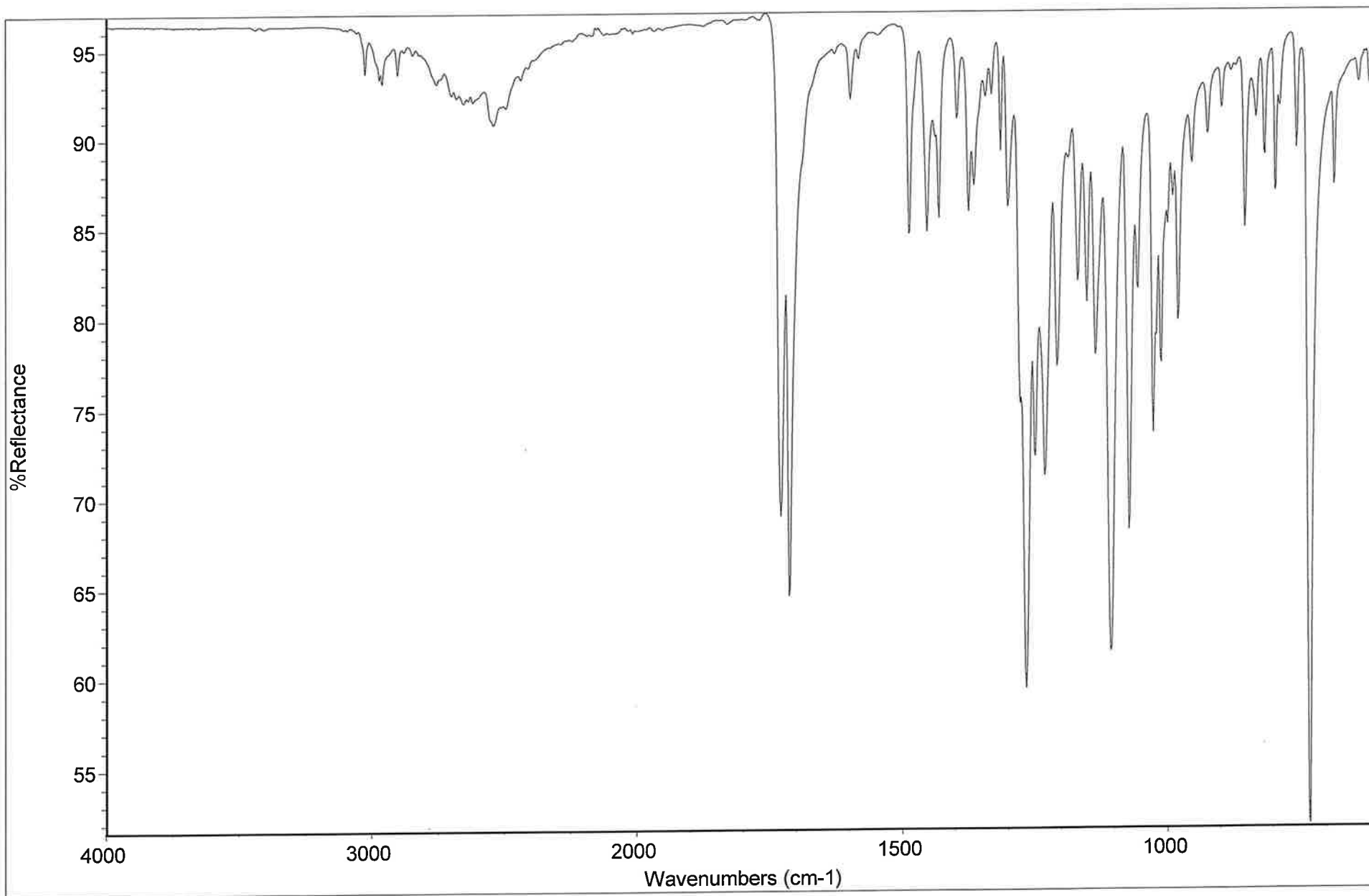


Cocaine Base Merck Lot #U7472

IR #4

Handwritten signature/initials

Collection time: Tue Sep 16 15:18:05 2003

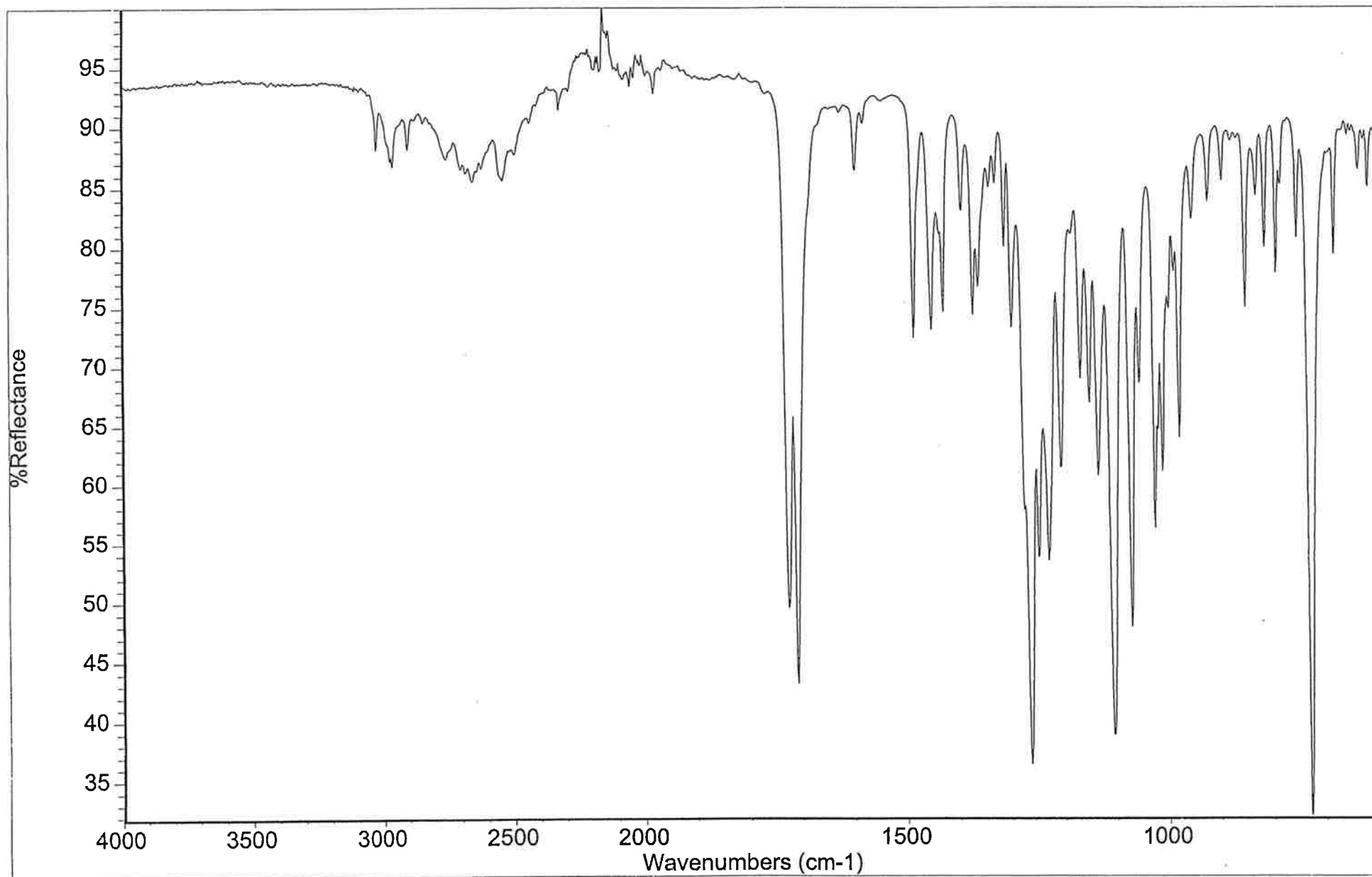


IR VERIFICATION - COCAINE HCL SIGMA LOT#50K1124 RMH

RH

IR #7

Collection time: Tue Jul 23 13:43:10 2013 (GMT-05:00)

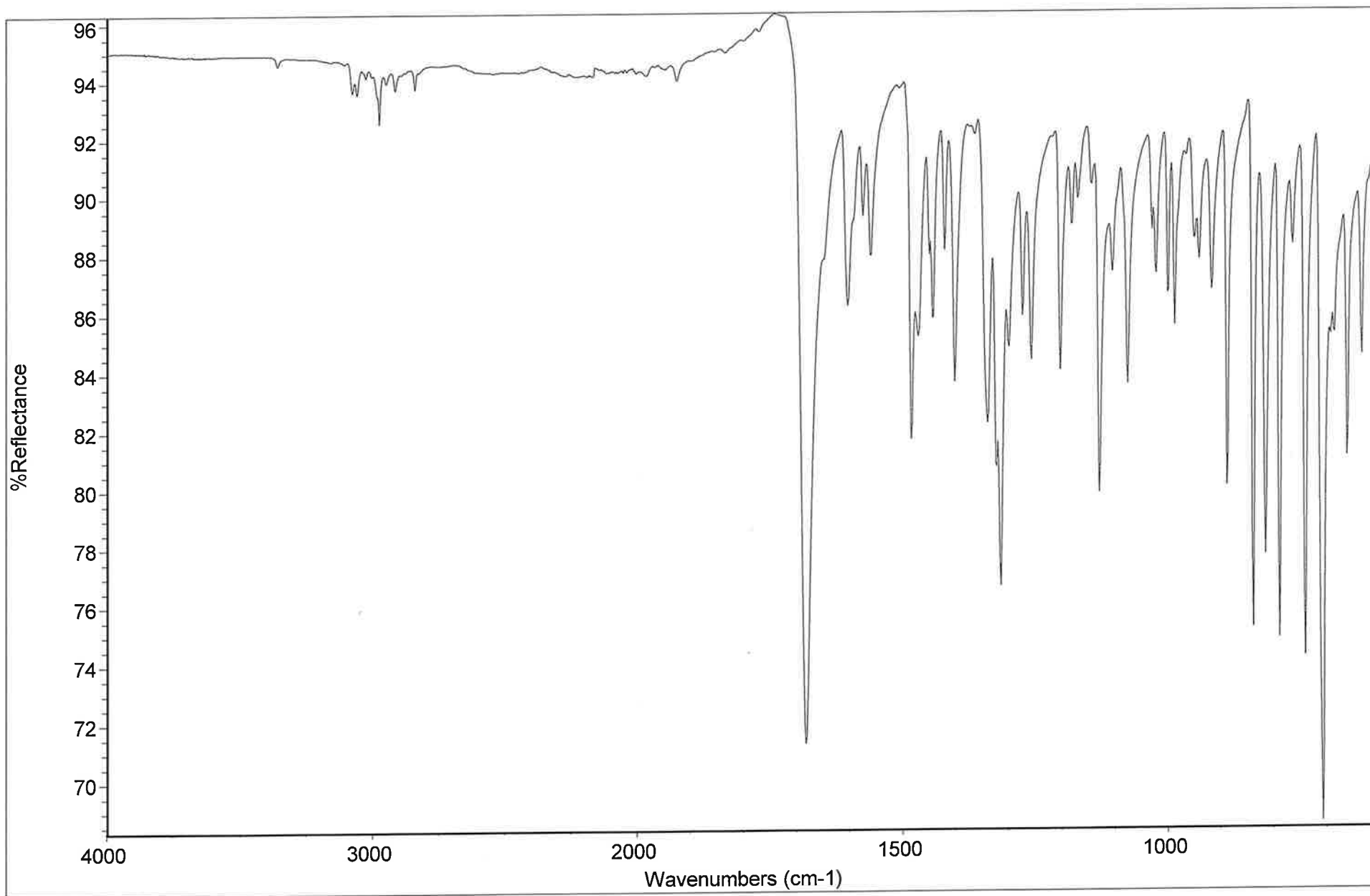


Cocaine HCl Sigma Lot #50K1124

IR #4

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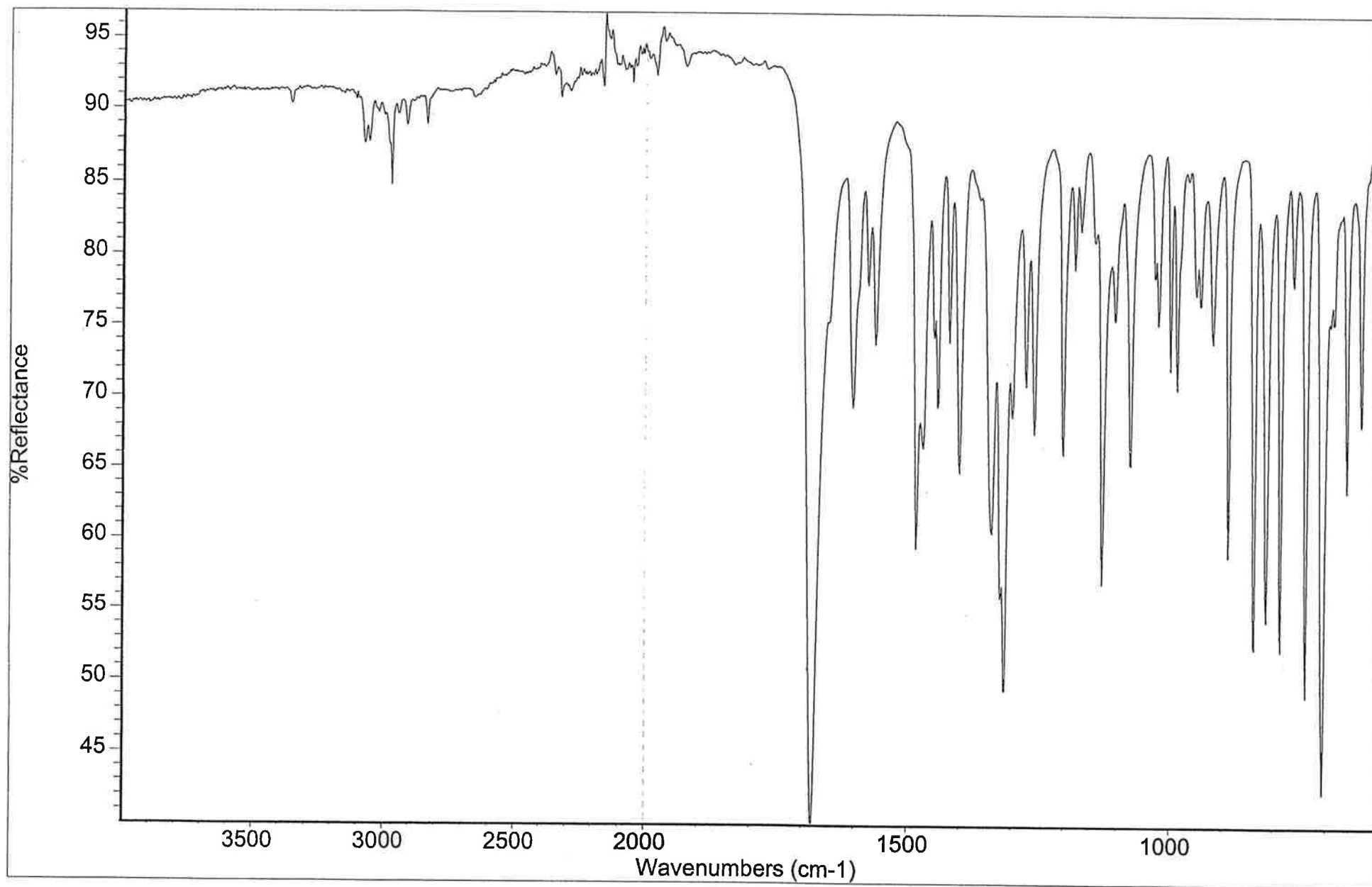
Collection time: Tue Sep 16 15:14:25 2003



IR VERIFICATION - DIAZEPAM STANDARD SIGMA LOT#105F0451 RMH *RH*

IR #7

Collection time: Tue Jul 23 13:51:56 2013 (GMT-05:00)

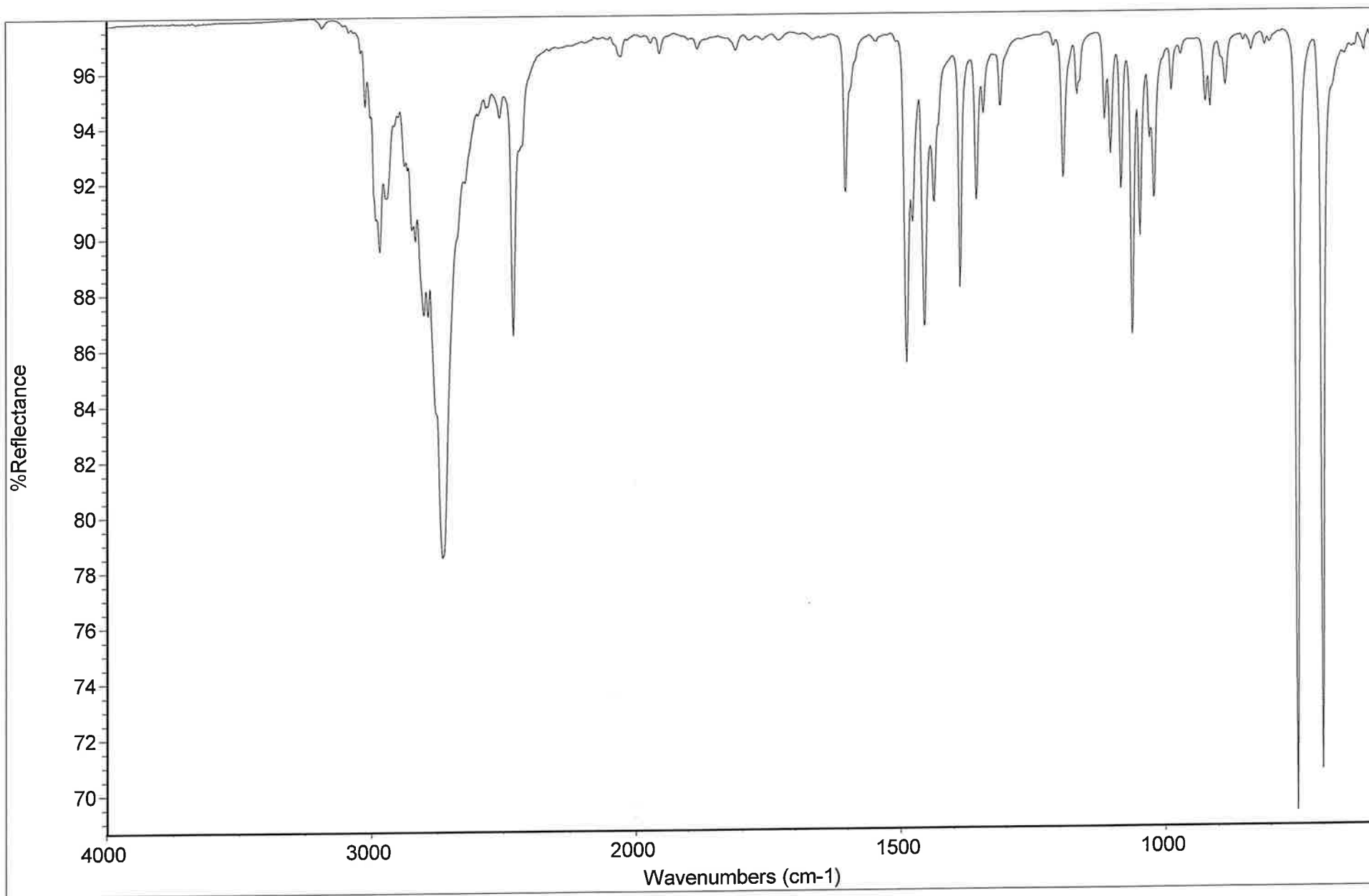


Diazepam Sigma Lot #105F0451

IR #4

WHS

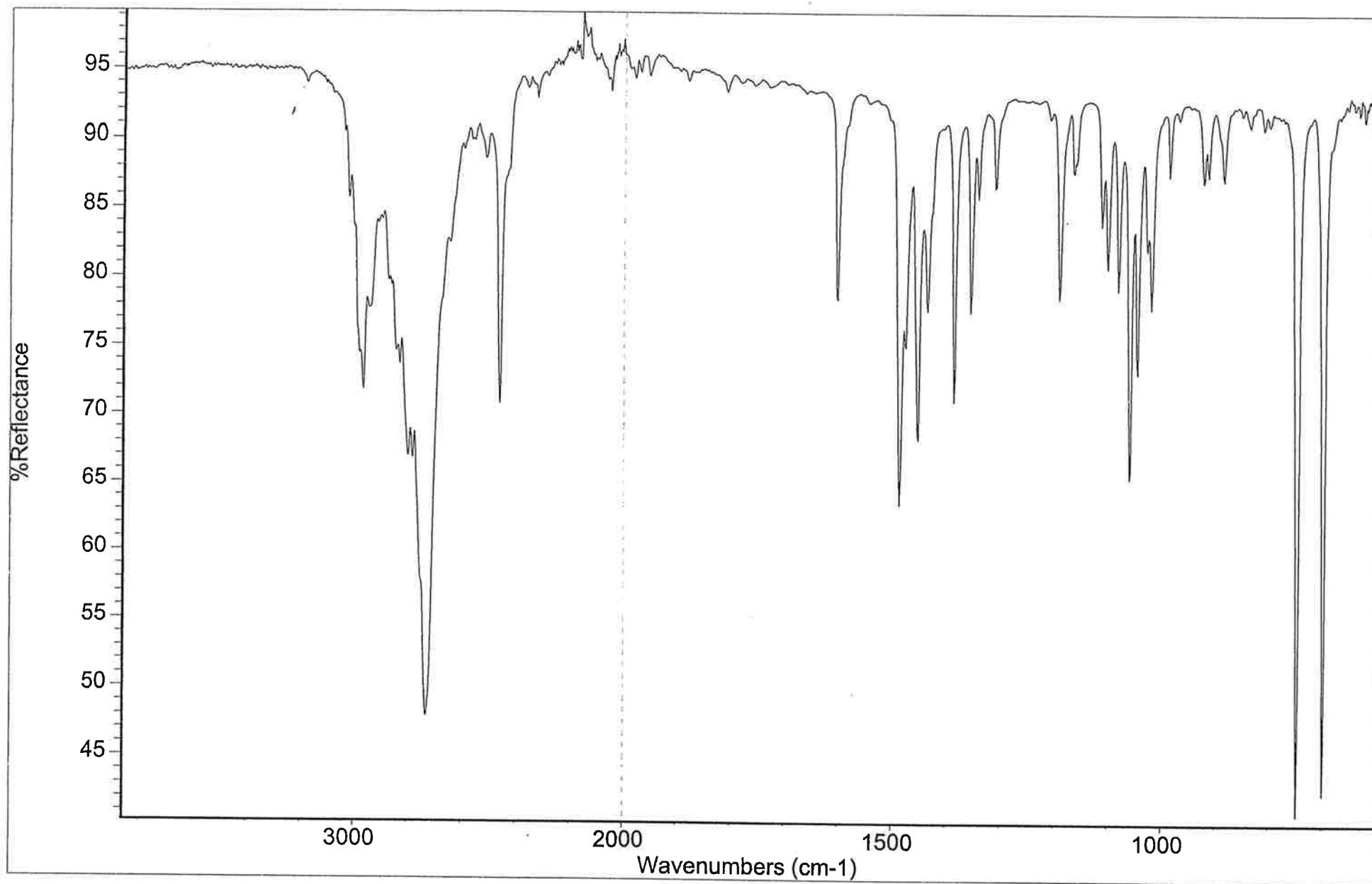
Collection time: Fri Sep 19 08:19:57 2003



IR VERIFICATION - (+)METHAMPHETAMINE HCL STANDARD SIGMA LOT#34H0144 RMH *PA*

IR #7

Collection time: Tue Jul 23 14:02:23 2013 (GMT-05:00)

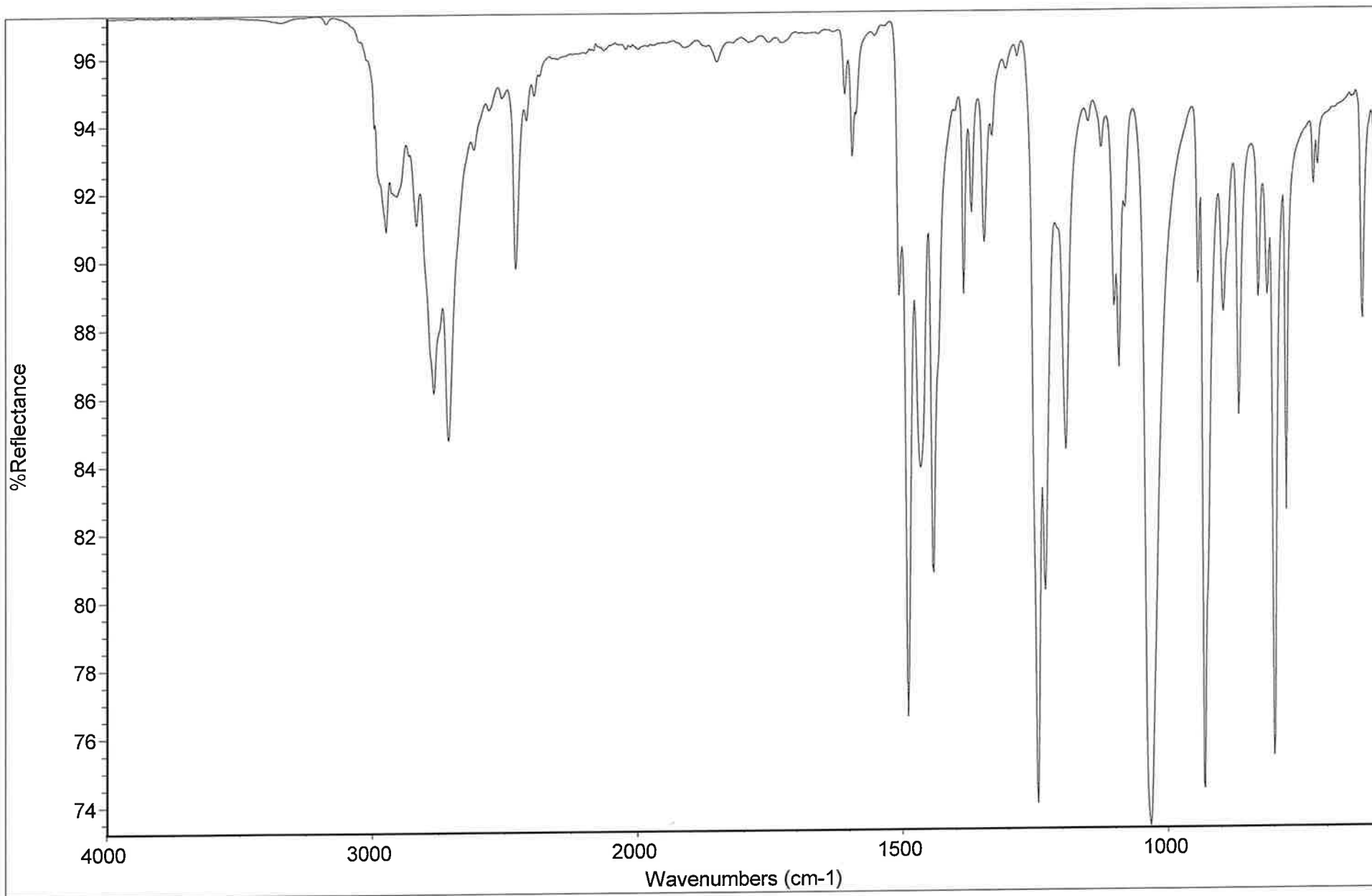


(+)-Methamphetamine HCl Sigma Lot #M-8750

IR #4

(Handwritten signature)

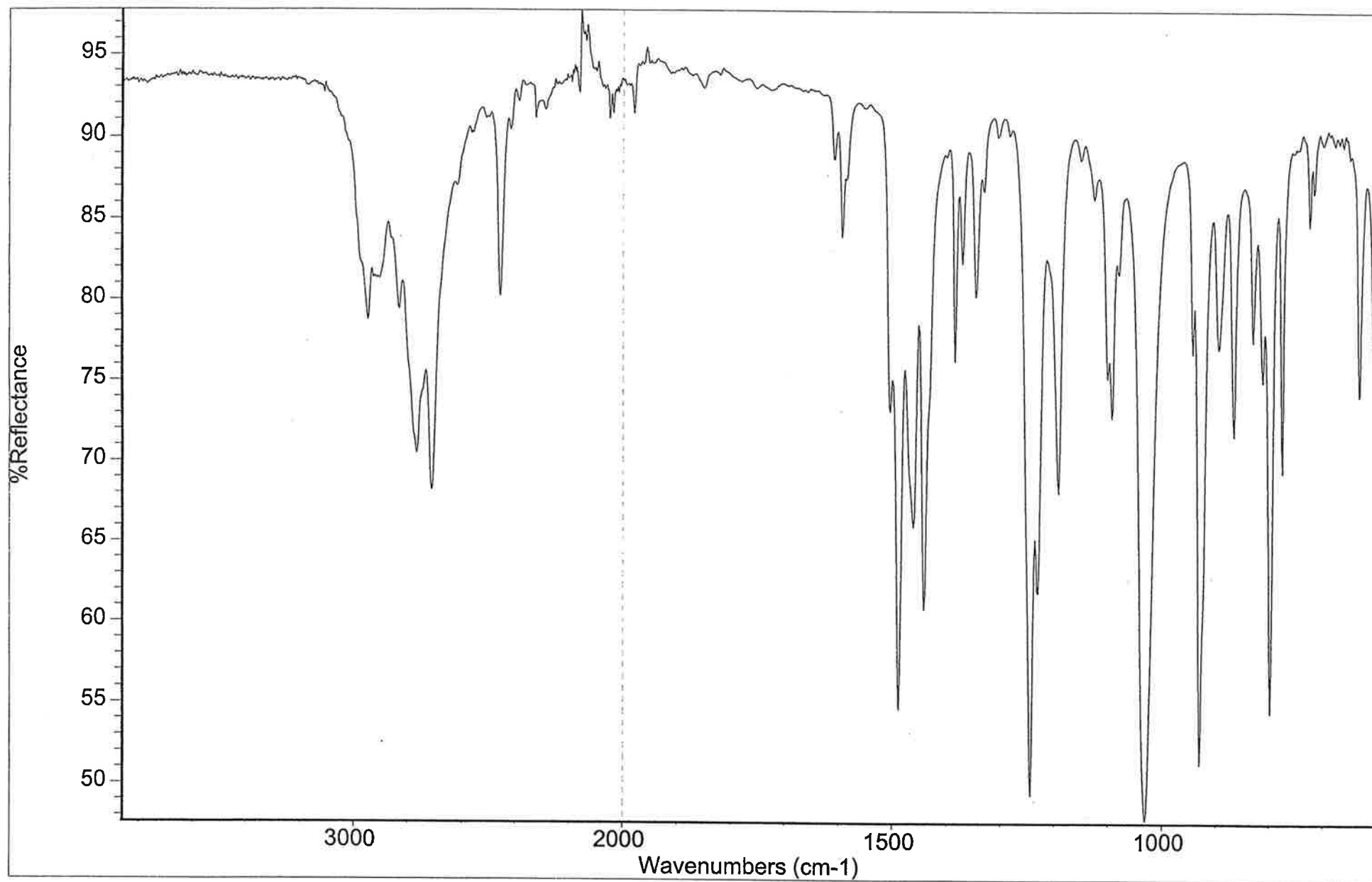
Collection time: Mon Sep 22 14:23:20 2003



IR VERIFICATION - 3,4 MDMA STANDARD ALLTECH LOT#151 DC-7073-3 RMH *pk*

IR #7

Collection time: Tue Jul 23 14:11:56 2013 (GMT-05:00)

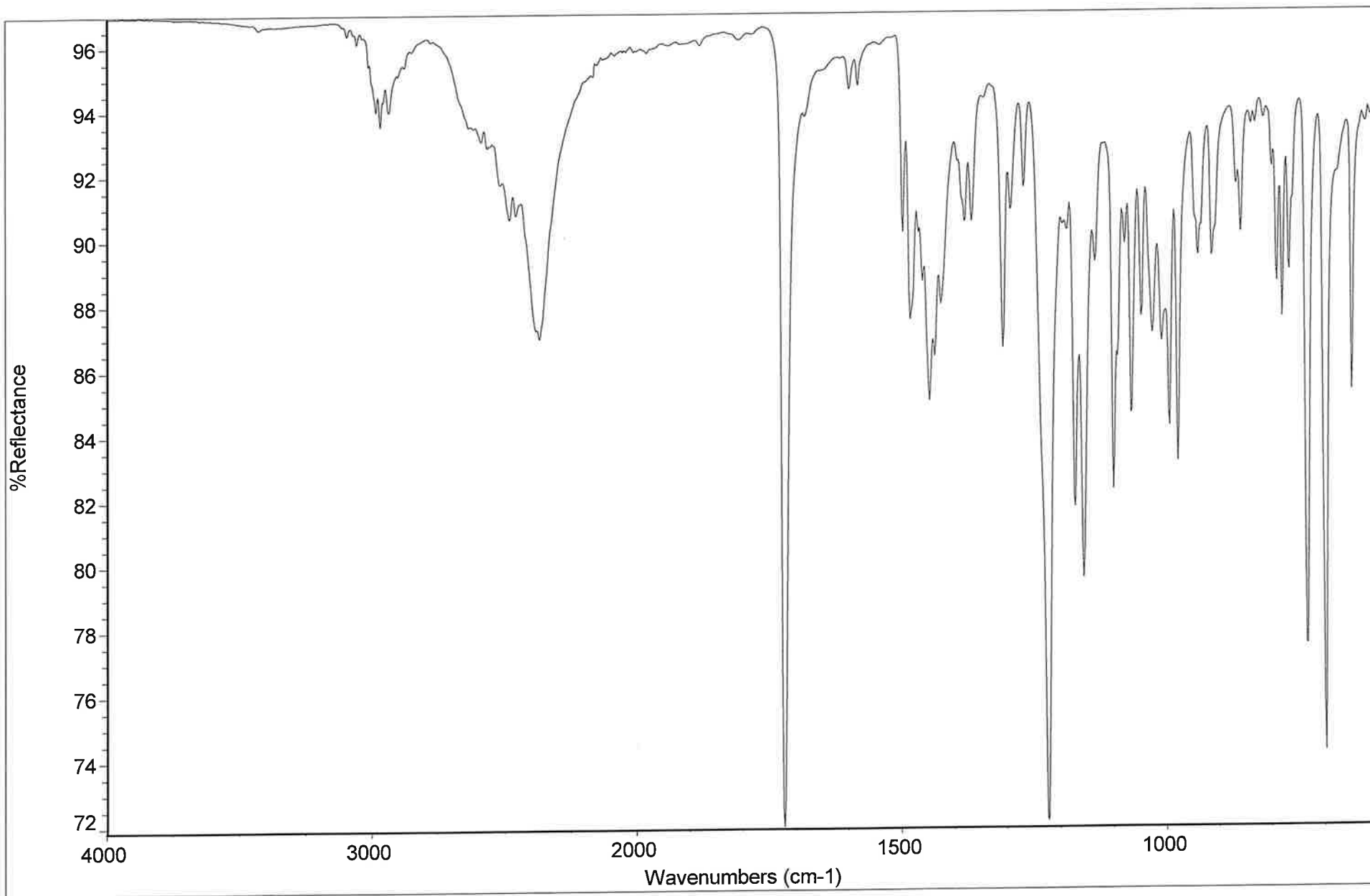


(+,-)-3,4-Methylenedioxymethamphetamine (MDMA) HCl Sigma Lot #60K4096

IR #4

WHS

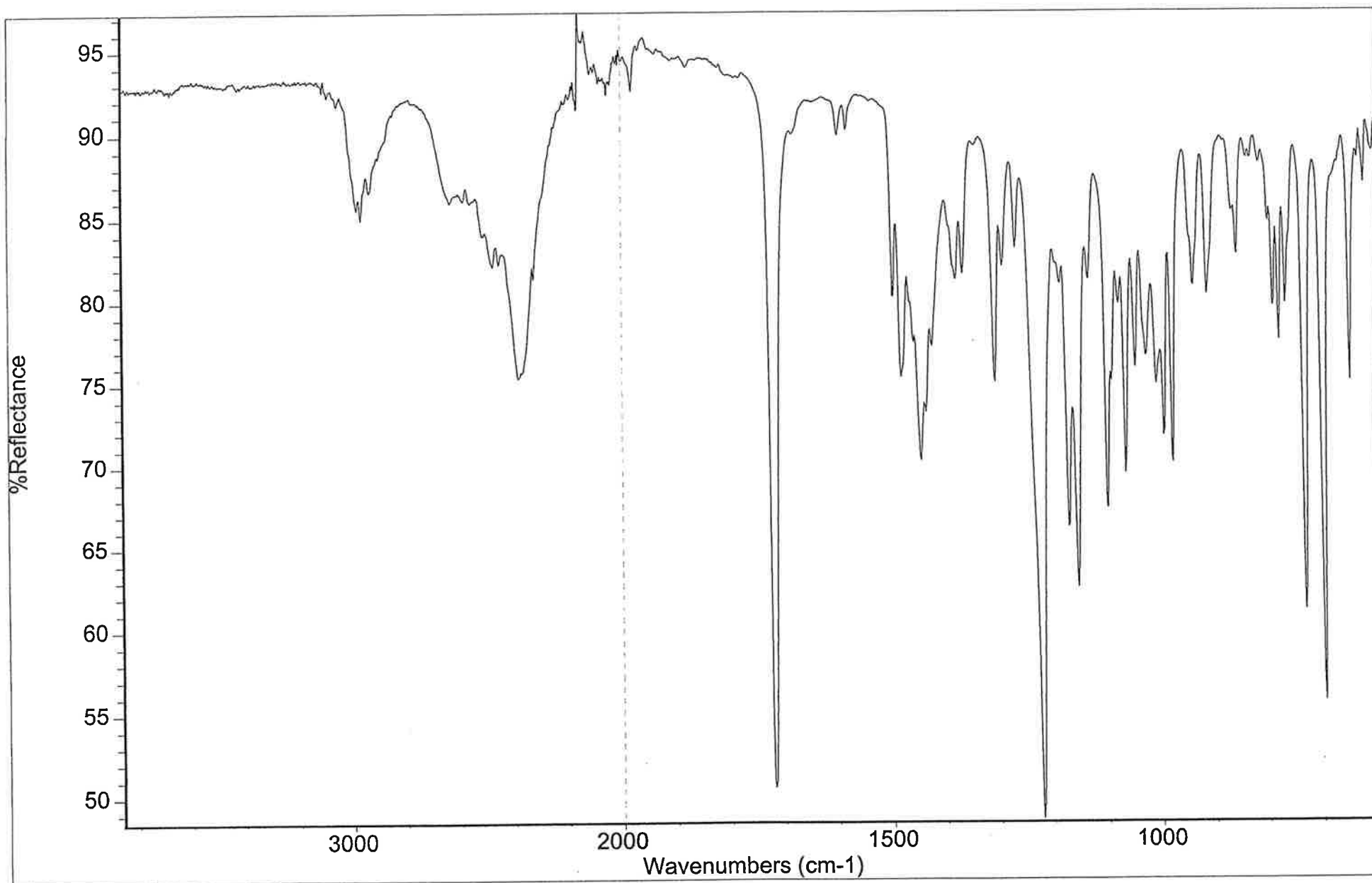
Collection time: Tue Sep 23 11:18:07 2003



IR VERIFICATION - PETHIDINE STANDARD SB PENICK LOT#413 NMN-027 RMH *RA*

IR #7

Collection time: Tue Jul 23 14:23:53 2013 (GMT-05:00)

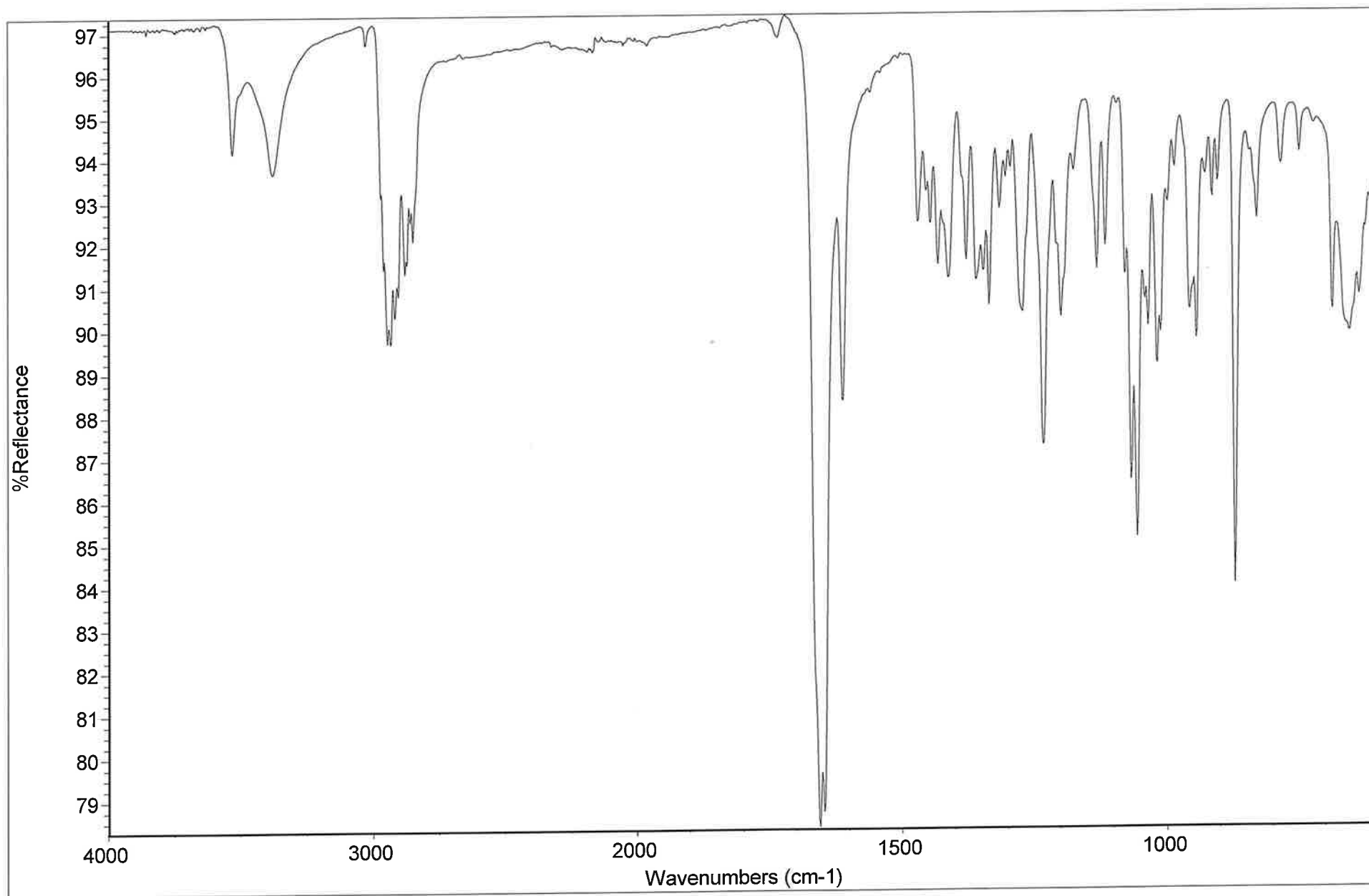


Pethidine HCl S. B. Penick Lot #0501

IR #4

645

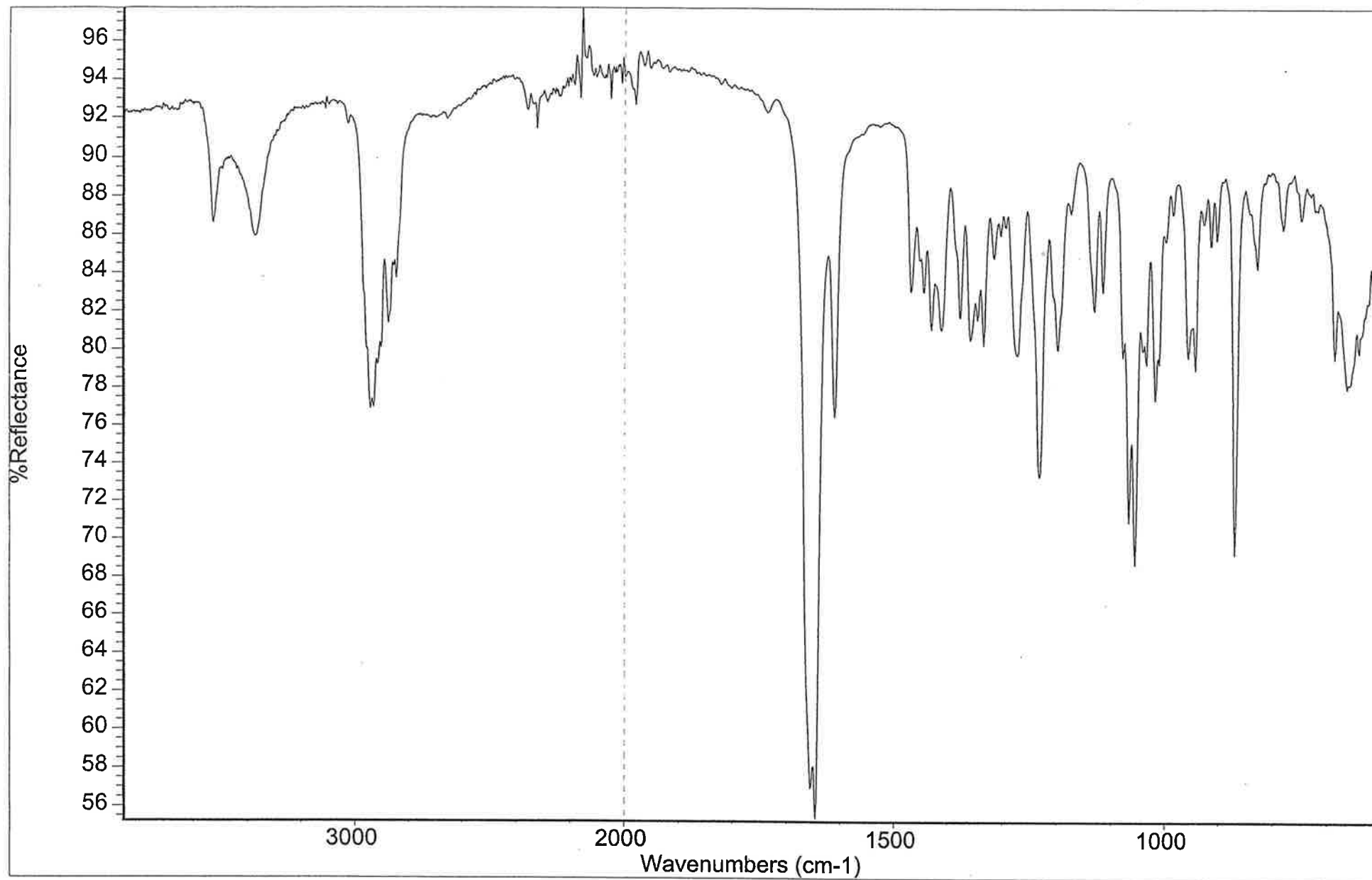
Collection time: Thu Sep 25 15:39:22 2003



IR VERIFICATION - TESTOSTERONE STANDARD SIGMA LOT#50H0345 RMH *pit*

IR #7

Collection time: Tue Jul 23 14:35:00 2013 (GMT-05:00)



Testosterone Sigma Lot #50H0345

IR #4

WHS

Collection time: Fri Sep 26 14:27:09 2003