

92-12 -3

行政院及所屬各機關出國報告
(出國類別:考察)

參觀阿姆斯特丹 IBC2003 SHOW 報告

服務機關:國立教育廣播電臺
出國人 職 稱:組主任、助理工程師
姓 名:張明陽、陳建志

出國地區:荷蘭
出國期間:92年9月11日至9月17日
報告日期:92年12月03日

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參觀阿姆斯特丹IBC2003 SHOW報告

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出國類別: 考察

出國地區: 荷蘭

出國期間: 民國 92 年 09 月 11 日 -民國 92 年 09 月 17 日

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關鍵詞: IBC2003,廣播展覽

內容摘要: 本次考察行程，主要以參觀阿姆斯特丹每年舉辦的International Broadcasting Convention(IBC) 展覽會，本次展覽IBC2003各國參展之廠商及機構共超過 1000個單位，內容相當豐富並值得我國日後在發展數位廣播時參考。本計畫係參觀性質，前後總計七日，期間藉由實際參觀及發問之方式，瞭解目前國際間在廣播此一領域中之最新發展與系統實際運作對廣播現況帶來的改變。期盼藉由本次計畫的執行，能夠瞭解廣播設備及工程技術最新發展情形，作為本臺規劃改善設備之參考。

本文電子檔已上傳至出國報告資訊網

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第一章 前言

1-1 考察目的

交通部電信總局已自民國 89 年 1 月 14 日提出數位廣播試播計劃，採用歐規 Eureka-147 廣播系統，利用頻段中的五個頻道進行試播。參與 DAB 實驗電台包括本臺、中央電台、警察廣播電臺、漢聲廣播電台公營團隊、中國廣播公司、以及飛碟聯播網的台北飛碟電台、台中真善美電台、高雄南台灣之聲等。

配合數位廣播發展趨勢及國內試播進行，及瞭解廣播設備及工程技術最新發展情形，作為本臺規劃更新各項廣播設備、提昇節目製播品質及增進營運管理效能之參考。

1-2 考察過程

本次考察行程，主要以參觀阿姆斯特丹每年舉辦的 International Broadcasting Convention(IBC) 展覽會，本次展覽 IBC2003 各國參展之廠商及機構共超過 1000 個單位，內容相當豐富並值得我國日後在發展數位廣播時參考。

本計畫係參觀性質，前後總計七日，期間藉由實際參觀及發問之方式，瞭解目前國際間在廣播此一領域中之最新發展與系統實際運作對廣播現況帶來的改變。期盼藉由本次計畫的執行，能夠瞭解廣播設備及工程技術最新發展情形，作為本臺規劃改善設備之參考。

表 1-1 考察過程

日 期	地 點	工作紀要
92 年 9 月 11 日	台北→阿姆斯特丹	➤ 啟程

92 年 9 月 12 日	阿姆斯特丹	➤ 09:40 抵達阿姆斯特丹 Schiphol Arpt. ➤ 下午至展示會場參觀展示設備
92 年 9 月 13 日 至 92 年 9 月 16 日	阿姆斯特丹	➤ 至展示會場參觀展示設備
92 年 9 月 16 日 至 92 年 9 月 17 日	阿姆斯特丹→台北	➤ 返程

第二章 IBC 2003 展覽

2-1 IBC 簡介

International Broadcasting Convention 成立於 1967 年，除了舉辦廣播相關研討會外，並提供各廣播、電視、衛星等相關廠商及機構實機展示攤位，每年吸引來自世界一百多個國家三萬多人次的參觀者前往參觀。今年 IBC 2003 Show 提供超過一千個展示攤位，展覽內容涵蓋 Cable & Satellite、Service Providers & Broadcasters、Transmitters、Set top boxes、Broadband、Playout Automation、Media Assist Management、Systems Integration & Consultancy、Telecine Post Production & New Media、Audio & Radio、Content Production 等相關主題。

相關介紹如圖 2.1 至圖 2.6 所示

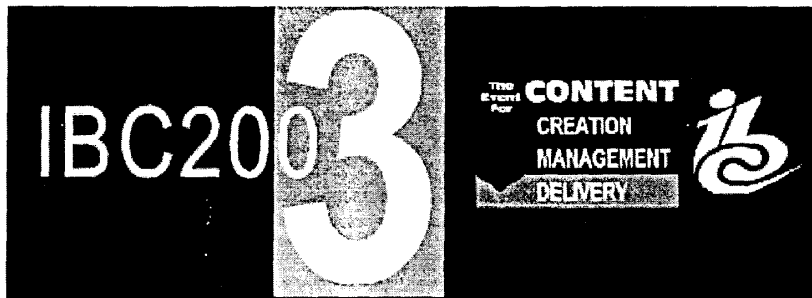


圖 2.1 IBC2003 LOGO



圖 2.2 IBC 2003 展覽會場



圖 2.3 IBC 2003 展覽會場



圖 2.4 IBC 2003 部分展覽會場



圖 2.5 IBC 2003 部分展覽會場

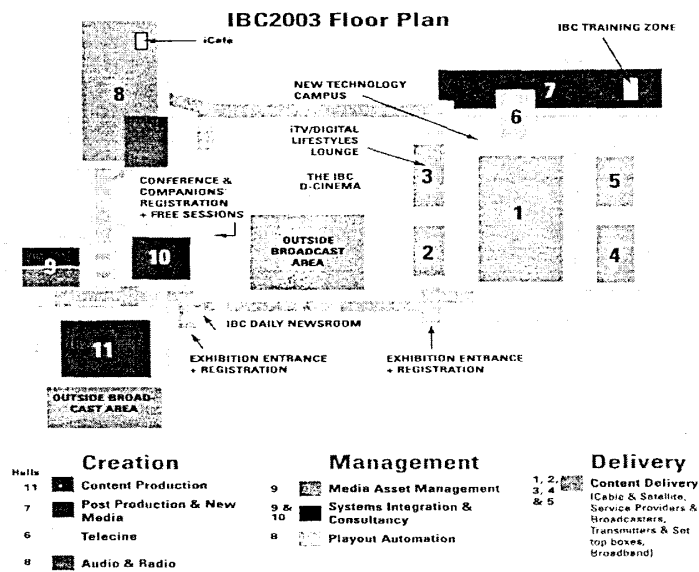


圖 2.6 展覽會場配置圖

2-2 展覽內容簡介

本次展覽內容依據性質共可區分為 Delivery、Management、Creation 等三大專題，共計 11 個子區域。詳細展覽內容請參考附件二。

一、Delivery 部份共分成 5 個子區域，分述如下：

Cable & Satellite

Service Providers & Broadcasters

Transmitters

Set top boxes

Broadband

二、Management 部份共分成 3 個子區域，分述如下：

Playout Automation

Media Assist Management

Systems Integration & Consultancy

三、Creation 部份共分成 4 個子區域，分述如下：

Telecine

Post Production & New Media

Audio & Radio

Content Production

2-3 展覽單位明細

本次 IBC2003 參展之廠商及政府單位共超過 1000 個單位，詳細單位附錄二。

第三章 考察相關課題介紹

針對此次參觀之重點課題作一些介紹，包括線材及音源輸入設備、成音設備、音頻處理器、音訊傳送設備、發射機設備、天線濾波器、數位音訊廣播(DAB)設備。

一、線材及音源輸入設備：

麥克風配合各使用場合之不同，展示的種類相當多，包含有無線式、動圈式、電容式等系列；會議室音訊系統；耳機系列等。在無線式系列部分有廠商加入背光式面板顯示功能(如圖 3.1)，除可顯示電池剩餘使用量、聲音放大增益值及預設無線傳送頻率、靜音等狀況，該等狀況並可隱藏於傳送的無線訊號中，使接收機端亦可同時顯示該等狀況。如此設計使得會議控音人員得以容易掌握現場無線麥克風之運作狀況。

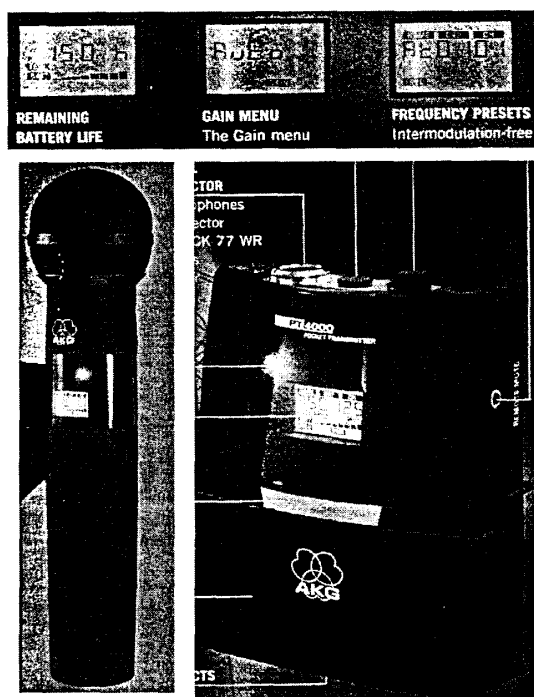


圖 3.1 背光式面板顯示功能

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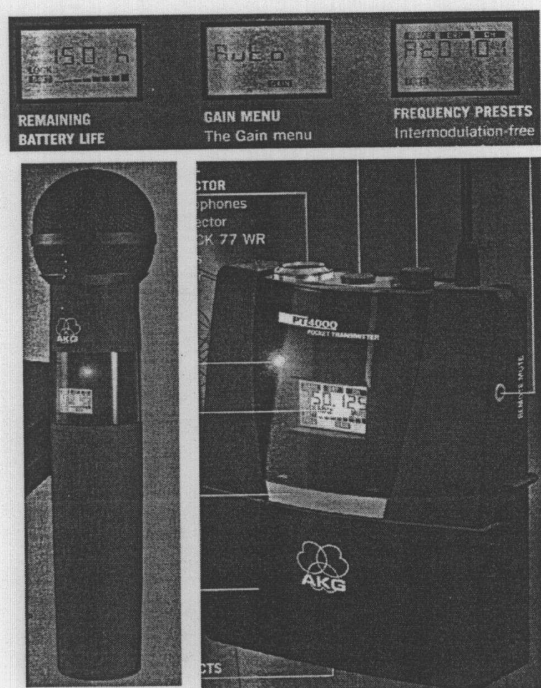


圖 3.1 背光式面板顯示功能

二、成音音控台設備之發展

傳統以類比單機操作之音控台，除外型逐漸走向人性化之設計外，在技術上已步入數位化與網路化的整合系統。其相較於傳統音控台具有下列特性：

數位提供品質的播放效果

控制處理較為單純化

數位採用多規格壓縮可與電腦網路系統做各種傳輸結合

網路系統控制較為方便施工與降低成本

可利用網路系統做遠端控制設定與監管

網路系統可提供多房操作切換與資源共享

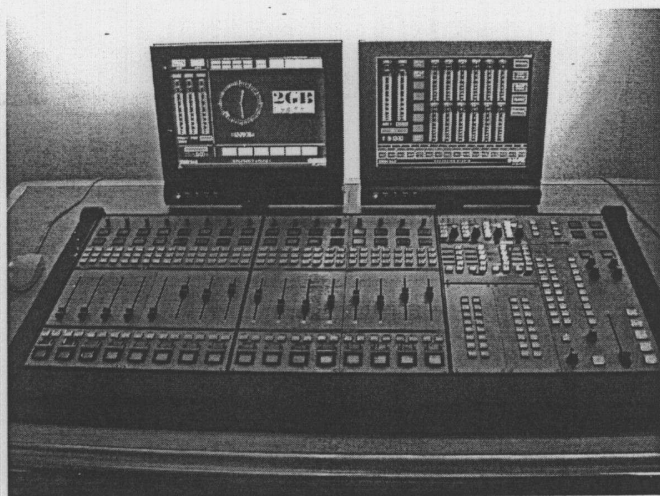


圖3.2 KLOTZ廣播音控台使用網路設計概念

三、音訊傳送設備發展

- 具備全雙工、多通道及多演算法音訊壓縮技術
- 所展示設備已設計成可傳送高品質音訊於各種不同通路中，包

含播音室內部網路、發射機遠端與本地控制端連線、STL 鏈路、

T1 及 E1 數位專線、衛星與微波通路

○ 可運用於 AM,FM,DAB 廣播及專業音訊環境中

○ Offering Both fixed line and ADSL

四、發射機設備展示介紹

○ 發射機設備除了美加 Harris、Nautel、BE 等知名發射機參展外，尚涵蓋歐洲各國的發射機廠商如 Rohde&Schwarz、RVR、Itelco、Telor、TELEFUNKEN.....。

○ 運用 switching power supply optimixed 技術 20Kw 全晶體調頻發射機整體效率可達 68%。

○ 可以使用乙太網路與 TCP/IP 技術來執行遠端控制與發射機的監控。網路伺服器直接整合到廣播發射機的激勵器內,且使用標準的網頁瀏覽器,不需專屬個別的發射機控制軟體。

○ 發射機遙控遙測介面結合 IP 網路協定,使得主控端可透過瀏覽器(Browser)及網際網路不需安裝額外軟體即可監測發射機狀況。

○ 美加 Harris、Nautel、BE 等調頻發射機均支援美規 IBC 數位廣播技術,調幅發射機則修改或加入模組即可支援 DRM 數位廣播。

五、數位音訊廣播 (DAB) 系統之發展與應用

- Over 300 million people around the world can now receive more than 585 different DAB services. Commercial DAB receivers have now been on the market since summer 1998. There are now more

than 32 different DAB receivers commercially available. (取自 World DAB Forum)

- The DAB Digital Radio range has now grown to include in-home tuners,in-car models,kitchen radios,clock radios, boomboxes , personal CD/radios,hand-held portables,PCI cards and much more. (取自 World DAB Forum)
- Harris 展示兩種數位廣播技術: a DAB transmission chain and DRM broadcast capabilities. The DAB broadcast chain will feature a DAB Head-End, DAB receiver, DAB 660 transmitter and video display with live demos of IP tunneling gateway and MPEG4 encoding.
- With D-IPTUS it is easy to enrich the audio with data services such as Web pages, Video clips and Electronic Program Guide without having to worry about protocol conversion.

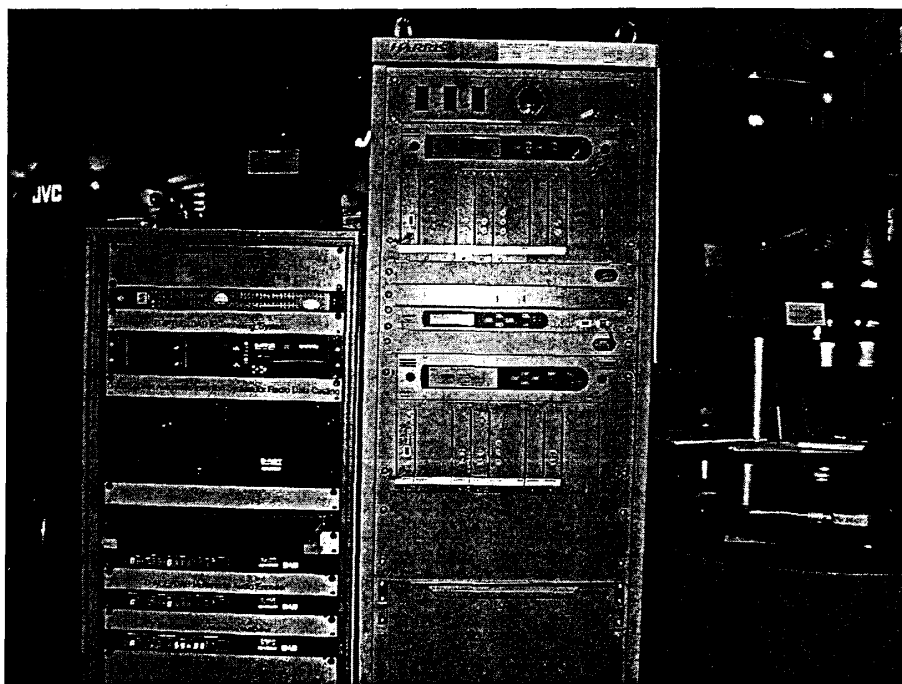


圖 3.3 DAB IP-tunnelling System 實機展示

- AM 數位廣播發展-DRM

- 運用現有調幅發射機及頻道可提供 FM 品質的播音品質
- 可降低發射機電力耗損及提高涵蓋範圍
- 可附加 Data 資訊的傳送
- 會場中展示 DRM 各類型接收機

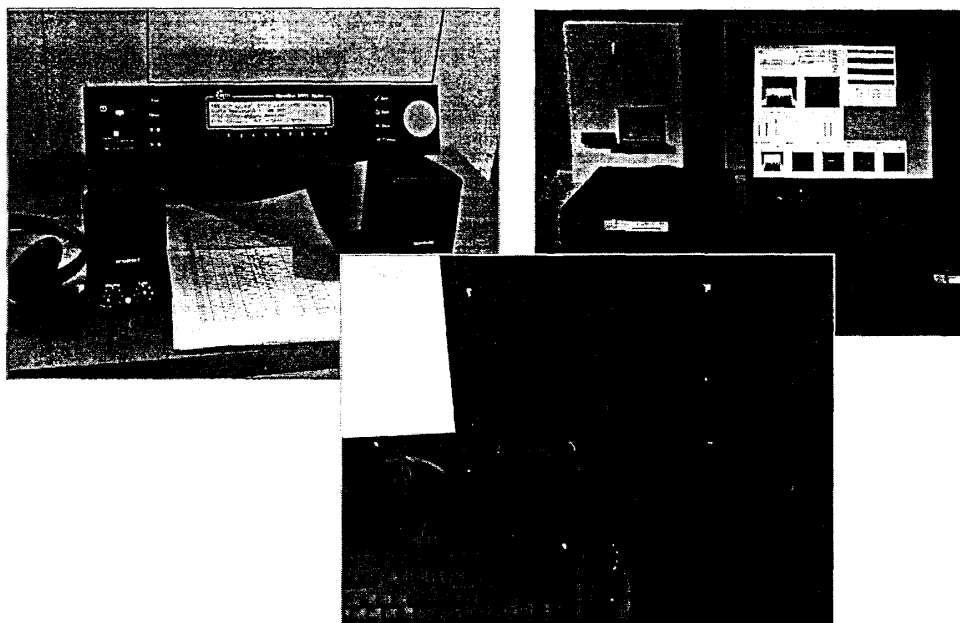


圖 3.4 DRM 接收機

第四章 心得與建議

- 一、已往廣播技術參訪以美國 NAB 展為主，以研考會廣播參訪出國報告為例，與廣播技術相關的主題幾乎都以美國 NAB 展為主題。而由於這幾年國內廣播系統 DAB 採用歐規技術的發展，於阿姆斯特丹舉辦的 IBC Show 涵蓋歐美音訊處理傳送、混音控

制、廣播發射、節目製作軟體及數位廣播等一千家以上參展廠商，對廣播業者而言實提供了另一參訪的選擇。

二、DAB 技術已趨成熟，除了實際參展的發射機眾多外，接收機的形式也逐漸多樣化，從車用到家用到攜帶式及插卡式均已產品化。

三、AM 數位廣播的發展-DRM

- i. 運用現有調幅發射機及頻道可提供 FM 品質的播音品質
- ii. 可降低發射機電力耗損及提高涵蓋範圍
- iii. 可附加 Data 資訊的傳送

四、由於 DAB 技術數位化、使用標準的 IP 通訊協定及可附加影音數據傳送的功能，使得廣播節目的製作及傳送逐漸多元化，加上 MicroSoft Media 9 Series 的加入，廣播與網路技術已無界限，就以本展覽為例綜觀 Delivery、Management、Creation 三大類，不管是訊號的傳送或是節目內容的製作或設備的管理都融合了廣播通訊與電腦網路及數位化等技術。

五、整個展覽內容及廠家眾多，雖已作區域分類，但同是發射機廠商卻可能分在不同區域，因此可能會有遺珠之憾。

六、由於本年度原計畫參訪 NAB,因美伊戰爭及 SARS 疫情影響而作變更。然而歐洲差旅費用較美國昂貴許多，因此在行程安排上較為匆促。歐洲為 DAB 的發展重地，製造廠及上線營運的廣播業者不在少數，建議未來安排行程時可加入製造廠或廣播電臺的參訪。

七、另外值得一提的是整個阿姆斯特丹城市周邊軟硬體設施的配

合，包含展覽期間公共運輸工具可免費搭乘、電視台每日定時專訪報導、各觀光設施的宣傳配合等等，展現的不僅僅是展覽的本身，更表現出整個城市的魅力及觀光價值。

附件一、 參考文獻

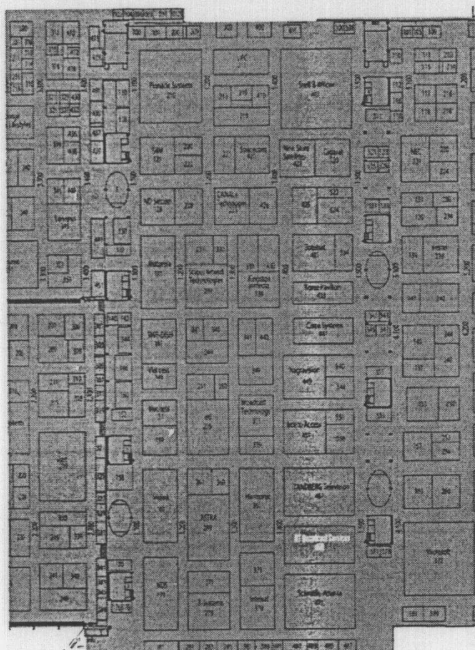
- 1.IBC 2003 Exhibition Catalogue
- 2.IBC 2003 Official Floor Plan
- 3.The IBC daliy
- 4.World DAB Forum : <http://www.worlddab.org>
- 5.AKG Acoustics Gmbh型錄 : <http://www.akg.com>
- 6.DRM-Digital Radio Mondiale : <http://www.drm.com>
- 7.Klotz A.I.S GmbH : <http://www.klotz-ais.com>

附件二、展覽單位明細

HALLS 1

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1.100	Proline BV	1.120	Telecom Data Corporation
1.101	Radio Group	1.121	Went River
1.102	STERLING CANADA	1.122	Hungary Group
1.103	STERLING CANADA	1.123	SNC-DRI Satellite Systems AG
1.104	STERLING CANADA	1.124	Calcom Broadcast Services
1.105	STERLING CANADA	1.125	Microvision UK Ltd
1.106	STERLING CANADA	1.126	Alcatel Space
1.107	STERLING CANADA	1.127	Vaccum
1.108	STERLING CANADA	1.128	RadCast, Inc.
1.109	STERLING CANADA	1.129	Vaccum
1.110	STERLING CANADA	1.130	MTEL, Inc.
1.111	STERLING CANADA	1.131	TechnoMed AG
1.112	STERLING CANADA	1.132	Advent Communications Ltd
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1.141	Microvision Radio Communications	1.161	Swedish Microvision AB
1.142	Microvision Radio Communications	1.162	ADVANTECH AME
1.143	Microvision Radio Communications	1.163	AmCom Inc.
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1.181	Swedish Microvision AB	1.191	AmCom Inc.
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1.199	AmCom Inc.	1.209	AmCom Inc.
1.200	AmCom Inc.	1.210	AmCom Inc.

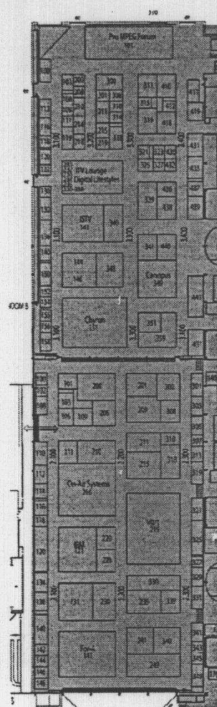


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HALLS 2&3

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Peter Storer & Associates
Teleview
Mediawatch
Shanghai Broadcast Technology Co., Ltd China
NACAD Documentation Programs
Video Multimedia
Weather Services International
Fast Forward Video
SEC-Master Control (co-exhibiting with Media Graphics)
Media Consult S.V. (co-exhibiting with Media Graphics)
Media Graphics

PA Weather Centre
(co-exhibiting with Media Graphics)
Pohlsden Technologies plc
Shower Ltd (co-exhibiting with FortMedia Technologies plc)
Tamed Media Solutions Ltd (co-exhibiting with FortMedia Technologies plc)
MAP multimedia Ltd
Mediterranean Corporation
BIM
Audi (co-exhibiting with BIM)
Pavement

2.134 DTInteractive
2.135 Land Street
2.136 Jansing Way
2.141 Broadcast Multimedia (co-exhibiting with Pro-A (SR) Ltd)
2.142 Pro-A (SR) Ltd
2.143 Telenor
2.144 DTL Broadcast Ltd
2.145 Surface Imaging Systems Ltd
2.146 Alameda Broadcast
2.147 Sank Solutions
2.151 Crystal Vision Ltd
2.152 Land Heavy Console Systems Ltd
2.153 Ush Schwartz
2.154 Daily Laboratories Inc
2.155 DefTech
(co-exhibiting with Plasmatic Corporation Pro Ltd)
2.156 Plasmatic & DefTech
2.157 Denta Electronics Limited
2.158 On-Air Systems Ltd
2.159 West
2.160 F.A. Broadcast GmbH, FRG
2.161 Camera Image Products AB
2.162 Helmut (co-exhibiting with Onca Interactive)
2.163 Helmut (co-exhibiting with Onca Interactive)
2.164 Onca Interactive
2.165 Garmisch Industrial Automation S.V.
(co-exhibiting with Lemo SA)
2.166 Lemo SA
2.167 PESI Switching Systems
2.168 Optima
2.169 Artek
2.170 The Switching Company (co-exhibiting with Artek)
2.171 ASTRA-CHINA
2.172 Mediatech AG
2.173 View Motion Ltd
2.174 e-mediaworld.com
2.175 BroadcastAsia2004 (co-exhibiting with Media Development Authority of Singapore (MDA))
2.176 BSC Technology PTE Ltd
2.177 BSC Technology Pte Ltd (co-exhibiting with Media Development Authority of Singapore (MDA))
2.178 Media Development Authority of Singapore (MDA)
2.179 Singapore Exhibition Services Pte Ltd
(BroadcastAsia2004) (co-exhibiting with Media Development Authority of Singapore (MDA))
2.180 Dorval Technologies
2.181 TDS by
2.182 SAV
2.183 Blackmagic Design
2.184 Pathologic BV
2.185 Core Computer & Motion GmbH
2.186 Advanced Broadcast Services Ltd
2.187 Brite Media
2.188 Wenzel Ltd
2.189 Copyright Limited
2.190 WarnerOne
2.191 TVC Multimedia
2.192 Manager Electronics
2.193 Broadcast Project Research
2.194 Helios Inc
2.195 Technosonic
2.196 AFP Association (co-exhibiting with Pro-SPER Forum)
2.197 Pro-SPER Forum
2.198 TV-Asians Forum (co-exhibiting with Pro-SPER Forum)
2.199 Hangei Wireless Electronics Co., Ltd. (co-exhibiting with Shanghai Shengyong Electrical Appliances Co., Ltd.)
2.200 Shanghai Shengyong Electrical Appliances Co., Ltd.
2.201 LINAH POKHYUHAN CABLES CO.LTD (co-exhibiting with Hangei Changyong E-Teck Co., Ltd.)
2.202 Hangei Changyong E-Teck Co., Ltd.
2.203 Gintech Systems (Shanghai) Ltd.
2.204 Green Lighting, Inc.
2.205 Westpac
2.206 Garmisch Shanghai Electronics
2.207 The Screen Works
2.208 MRF Engineering Services, Inc.
2.209 Performance Systems Limited
2.210 AD Telecom, S.L.
2.211 DECTEX Digital Video BV
2.212 Povey

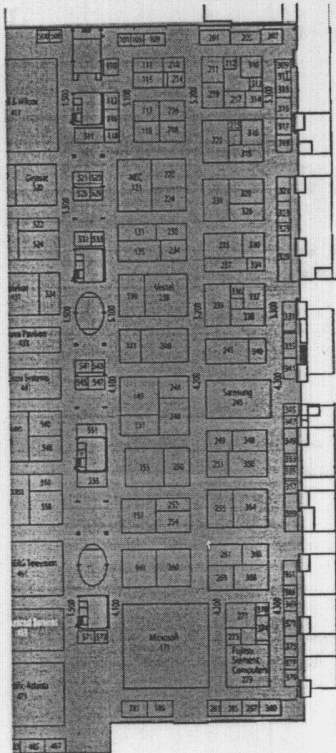
2.213 BT Interactive (co-exhibiting with Vid - Vweb - BT)
2.214 VId - VWeb - BT
2.215 VId Video Digital Studio/Control Room (co-exhibiting with VId - VWeb - BT)
2.216 Vweb (co-exhibiting with VId - VWeb - BT)
2.217 BT Information Society Technologies Village
2.218 Business Broadcast
2.219 Mosaic
2.220 Broadcast Systems Ltd
2.221 Chyron Corporation
2.222 Pro-Bar (co-exhibiting with Chyron Corporation)
2.223 Jangel Luchoway Gyroscopic Balance &
Technology Co. Ltd
2.224 MultiConcept AG
2.225 Joran Corporation (co-exhibiting with MultiConcept AG)
2.226 WincAD
2.227 Patrick Graphics Systems
2.228 Sigma Electronics, Inc.
2.229 Exabyte
2.230 China Hangei Hengye Electrical Corp.
2.231 SHANGHAI CHONGYONG ELECTRONIC APPLIANCE CO., LTD. (co-exhibiting with China Hangei Hengye Electrical Corp.)
2.232 Hangei Changyong E-Teck Co., Ltd.
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4.142	Tenneco (co-exhibiting with ProConsultant International)	5.102	Videotex Ltd
4.143	ProConsultant International	5.103	COM-TECH SA
4.144	Post Communications	5.104	Forcecom
4.145	Concurrent Computer Corporation	5.105	Intelsat Systems International S.A.
4.146	Procast Communications AG	5.106	Telco
4.147	Procast Interactive Television Group	5.107	Telecom Laboratories, Inc
4.148	Microsoft Corporation	5.108	Versity International Ltd
4.149	Monaco Satellite Communications	5.109	LS Wilson AG
4.150	Monaco Systems, Inc.	5.110	Telecom Electronics
4.151	CYTA Global / No Satellite Satellite Services	5.111	SEC Corporation
4.152	Real Global & Co. AG	5.112	Novel Limited
4.153	Samung Electronics	5.113	Novel Limited
4.154	Solo Digital	5.114	Novel Limited
4.155	Telnet	5.115	Novel Limited
4.156	SEC Technologies (Pty) Ltd	5.116	Novel Limited
4.157	Comcast	5.117	Novel Limited
4.158	Procast Radio Communications	5.118	Novel Limited
4.159	Procast Television BV	5.119	Novel Limited
4.160	sat Telecom Co. Ltd.	5.120	Novel Limited
4.161	Sat-Com Ltd	5.121	Novel Limited
4.162	Satcom	5.122	Novel Limited
4.163	Comcast RF Data	5.123	Novel Limited
4.164	Comcast Inc	5.124	Novel Limited
4.165	Comcast Inc (co-exhibiting with AT Technology Inc)	5.125	Novel Limited
4.166	Comcast Inc (co-exhibiting with AT Technology Inc)	5.126	Novel Limited
4.167	Comcast Inc (co-exhibiting with AT Technology Inc)	5.127	Novel Limited
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4.195	Comcast Inc (co-exhibiting with AT Technology Inc)	5.155	Novel Limited
4.196	Comcast Inc (co-exhibiting with AT Technology Inc)	5.156	Novel Limited
4.197	Comcast Inc (co-exhibiting with AT Technology Inc)	5.157	Novel Limited
4.198	Comcast Inc (co-exhibiting with AT Technology Inc)	5.158	Novel Limited
4.199	Comcast Inc (co-exhibiting with AT Technology Inc)	5.159	Novel Limited
4.200	Comcast Inc (co-exhibiting with AT Technology Inc)	5.160	Novel Limited

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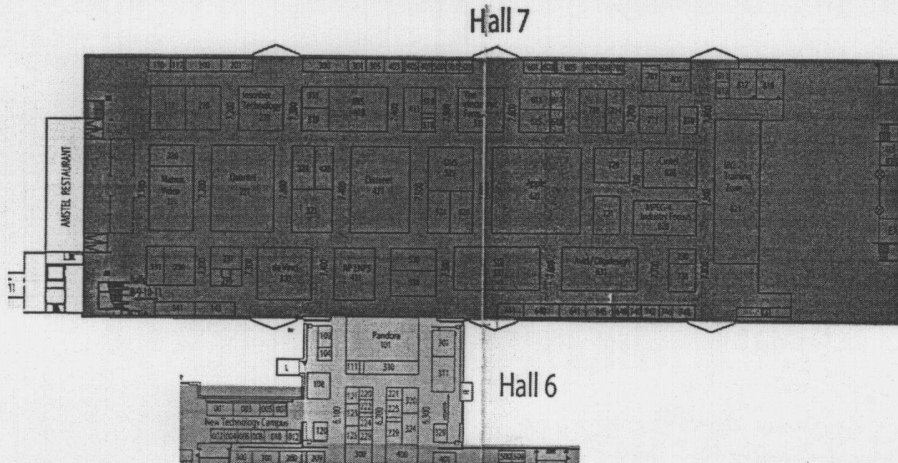


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HALLS 6&7

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6.001 InterVision
6.002 Communications Research Centre Canada
6.003 GIGAM
6.004 Digital Imaging Research Centre (Ryerson University)
6.005 DVI Project (EPRI/Intel)
6.006 Digital Film Centre Europe
6.007 Interactive TV Research Institute
6.008 BPP/WPP/PP
6.009 GIGAMUS
6.010 Mediatek Video, Inc.
6.011 Diction GmbH
6.012 Pensions International
6.013 BNC Diagnostics Computing GmbH
6.014 Jahn
6.015 Star Lab Systems Inc.
6.016 Phoenix Landing Ltd.
6.017 RJE Electronics Limited
6.018 Atty Digital Video Drivers
6.019 Mark Roberts Action Control Ltd.
6.020 Infrared Film Co.
6.021 Challen Supply Company
6.022 DIT Images
6.023 Thomson Electronics Inc.
6.024 EMI
6.025 International Broadcasting Corp.
6.026 RTT Broadcasters
6.027 CTM Data
6.028 BNP Inc. (co-exhibiting with RTI / Lippman Smith)
6.029 Lippman Smith Motion Picture Company (co-exhibiting with RTI / Lippman Smith)

6.310 RTI / Lippman Smith
6.311 Zoom Smart (co-exhibiting with RTI / Lippman Smith)
6.312 Zoom Soft (co-exhibiting with RTI / Lippman Smith)
6.313 Foster Connections
6.314 Ford Press
6.315 Asten
6.316 CED Systems
6.317 Niles, Ross GmbH
6.318 Rensight
6.319 Artec Technologies AG
6.320 Androm Video
6.321 Star Broadcast Systems Ltd.
6.322 MAS Blue
6.323 M&S - National Association of Broadcasters
6.324 Ergo Research
6.325 Smart Video Systems
6.326 Audio Multimedia Corporation
6.327 Moving Technologies S.A. (co-exhibiting with Audio Multimedia Corporation)
6.328 Inceptor Technology Corporation
6.329 Dwyer Technology Development Inc.
6.330 Quantum Ltd.
6.331 Pixel Power Ltd.
6.332 Digital Imaging
6.333 Mediagroup plc Ltd (co-exhibiting with Digital Imaging)
6.334 Automatic Audio (co-exhibiting with Digital Imaging)
6.335 Comco (co-exhibiting with Digital Imaging)
6.336 Digital Journey
6.337 RTI Video Effects, Inc. (co-exhibiting with Digital Imaging)

6.430 Synthetic Aperture (co-exhibiting with Digital Imaging)
6.431 Tricore (co-exhibiting with Digital Imaging)
6.432 Vector 3
6.433 Chromatic
6.434 Pioneer Media Process Ltd.
6.435 Verano
6.436 Hyper Multimedia GmbH
6.437 Argon Ltd.
6.438 de Vries
6.439 Starline Technologies Ltd.
6.440 BPN Film
6.441 Embedded On Air
6.442 GDS
6.443 Alamo Technology
6.444 Substrate Technology Europe B.V.
6.445 GoImage
6.446 AP SMP
6.447 Media Corporation
6.448 Spectra
6.449 Microboards Technology
6.450 The Electronic Fair
6.451 Engstrom Systems
6.452 Ultramatic Corporation
6.453 DVS Digital Video Systems
6.454 Digital Vision AF
6.455 V2
6.456 Media 100
6.457 Videotron Limited
6.458 A.T. Systems Inc.
6.459 Interactive Content Factory (ICF-700)

6.531 The Foundry
6.532 Systems Inc.
6.533 RSP Europe
6.534 Curious Software Company Ltd.
6.535 Apple
6.536 Add / Digimagic
6.537 Digimagic / Add
6.538 Celer
6.539 Digital Rights Corporation Ltd.
6.540 Creative Design (Europe) Ltd.
6.541 Bure Fil
6.542 Digital Film Systems
6.543 Motion Data for 3D Manipulators
6.544 System Software Inc.
6.545 AIA Video
6.546 Remedia
6.547 PTV Ltd.
6.548 Selen, Inc.
6.549 Focal Communications
6.550 VDI Building & Imaging
6.551 Quilt Inc.
6.552 Silicon Color
6.553 MPEG-1 Industry Forum (MIF)
6.554 Core Business (co-exhibiting with IBC Training Zone)
6.555 Digit Imaging (co-exhibiting with IBC Training Zone)
6.556 IBC Training Zone
6.557 Core International Ltd.
6.558 Add Systems On The Road

HALLS 6 & 7
18



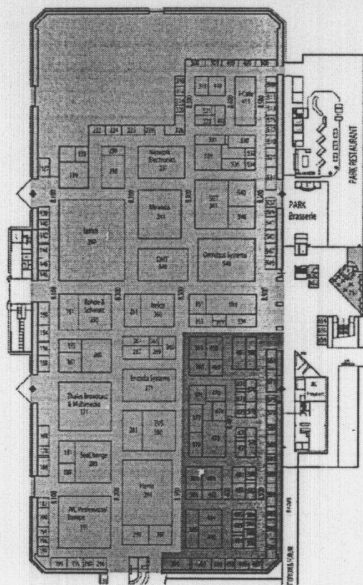
IBE
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HALLS 8

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| \$ 6.125 | Zytec |
| \$ 6.130 | Payflex |
| \$ 6.129 | MBA Focus International Ltd |
| \$ 6.140 | Capital Digital Inc |
| \$ 6.144 | Frankfurt-Institut für Hochschulforschung, Hochschul- |
| \$ 6.144 | Verkehr-Harz-Institut (so-zusammen mit Frankfurt- |
| \$ 6.146 | Institut für Hochschulforschung, Hochschul-Verkehr- |
| \$ 6.148 | Systeme |
| \$ 6.150 | Dynasoft/Cometix (so-zusammen mit TC Electronic + |
| \$ 6.150 | Dynasoft/Cometix + TC-Helicon) |
| \$ 6.150 | TC Electronic + Dynasoft/Cometix + TC-Helicon |
| \$ 6.150 | TC-Helicon (so-zusammen mit TC Electronic + |
| \$ 6.151 | Dynasoft/Cometix + TC-Helicon) |
| \$ 6.154 | Veratix Inc. |
| \$ 6.154 | Stuvia |

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| \$1.55 | Public Search Systems |
| \$1.56 | Maycom Audio Systems |
| \$1.58 | R.O.V.E.R. Laboratories SpA |
| \$1.61 | D.A.V.I.D. GmbH |
| \$1.61 | MAGE SA (go-embedding with D.A.V.I.D. GmbH) |
| \$1.61 | Sci. Inc. (go-embedding with D.A.V.I.D. GmbH) |
| \$1.61 | Sci. Inc. (go-embedding with D.A.V.I.D. GmbH) |
| \$1.61 | SCEN (go-embedding with D.A.V.I.D. GmbH) |
| \$1.61 | MECON software, audio equipment (go-embedding with YouCom Autocom) |
| \$1.68 | TimLine Pp Ltd (go-embedding with YouCom Autocom) |
| \$1.68 | YouCom Autocom |
| \$1.68 | YouCom Autocom |
| \$1.70 | Wavem |
| \$1.71 | Thales Consultant & Multimedia |
| \$1.71 | Tamnet - LCD Video Monitor |
| \$1.71 | OPRS |
| \$1.71 | Parasprint Ltd |
| \$1.82 | Elare Automation |
| \$1.89 | |

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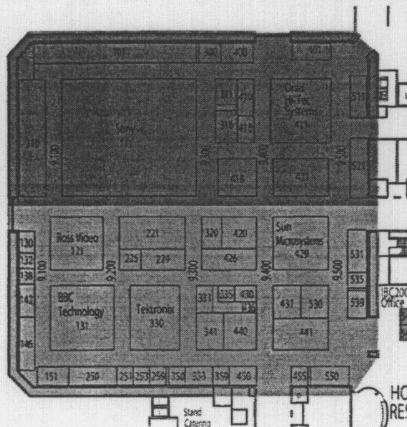
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HALLS 9&10

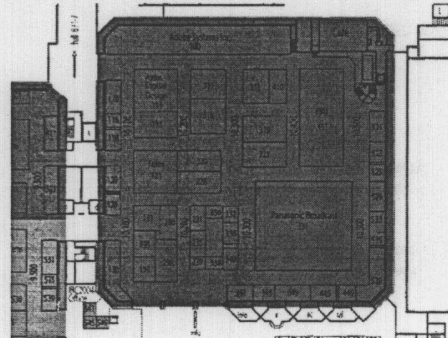
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- 9.001 Sony
- 9.002 Sony Video Ltd
- 9.003 Zetech Systems UK Ltd
- 9.004 BBC Technology
- 9.005 JMS Systems & Media
- 9.006 BBC Audio Solutions
- 9.007 BBC Training & Development
- 9.008 JMS - L&A
- 9.009 BBC
- 9.010 BBC Centre
- 9.011 Teller Media/Consulting, E.A.
- 9.012 Creative Imaging Systems Ltd
- 9.013 BBC
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- 9.400 Blackhawk Pictel (co-exhibiting with Blackhawk Belgium SA - BV)
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- 10.001 Action Systems Incorporated
- 10.002 BSA, Belgium
- 10.003 AACE Digital Design BV
- 10.004 C&S-System Solution Systems
- 10.005 AACE-ABR
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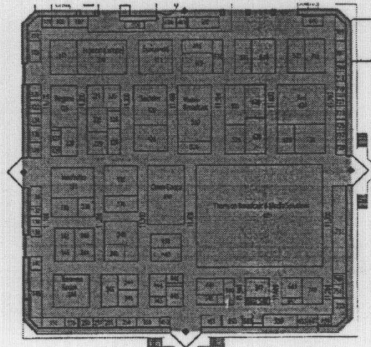
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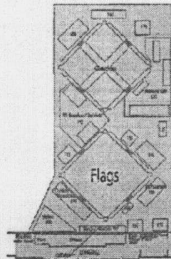
HALLS 11

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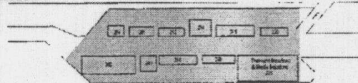


Europe Outdoor Exhibits



Amsterdam Area
A-Town
RNL Video Service
BT Town

Railway station



Holland Outdoor Exhibits

HALL 11
24



11.001	Chase Broadcast	11.008	Exceller
11.002	Logix Energy Systems	11.009	Almest
11.003	C.E.D.	11.010	Comet-Sony BV
11.004	Blue Vision Video Ltd.	11.011	EMC Audio Product Division (co-exhibiting with
11.005	Fujisystems GmbH	11.012	Thomson Broadcast & Media Solutions)
11.006	Videocon Live Controls	11.013	Vocac
11.007	Regent Electronics (Europe) GmbH	11.014	E-M Production/Photo-Sound
11.008	MEEDPART Inc.	11.015	Holzer S&B Kopp OnLine
11.009	Chamers	11.016	Continuum-Webb
11.010	Libe Mirror	11.017	Architect Recording Video Technologies
11.011	LCA - Lights, Camera, Action Ltd	11.018	Scoti GmbH & Co. KG
11.012	Comcast Systems	11.019	YANAP CORP
11.013	Van Damme	11.020	Instant Pop Up Booths
11.014	MICROSOFT HOLLYWOOD	11.021	A & C Ltd
11.015	Average (co-exhibiting with Manufaktur)	11.022	SATA Ltd (co-exhibiting with Optics)
11.016	Glaxo S.A. (co-exhibiting with Manufaktur)	11.023	Optics
11.017	U.F. Industrie Elektronik GmbH (co-exhibiting with	11.024	Schulz
11.018	Manufaktur)	11.025	Vision Broadcast Ltd
11.019	Libe Ltd (co-exhibiting with Manufaktur)	11.026	PAG Ltd
11.020	Manufaktur	11.027	Technoscan
11.021	Stadysack GmbH	11.028	EVISAT LIGHT (co-exhibiting with Pustler GmbH)
11.022	Power Gains Ltd	11.029	Pustler GmbH
11.023	ARC Products	11.030	Slide - Richardson Co
11.024	Comcast Limited	11.031	Glennco Industries, Inc.
11.025	ASCO Lighting	11.032	Spectra Specialist Engineering Ltd
11.026	TDK Corporation	11.033	DMT Industry & Trading Co.
11.027	De Stal Lighting	11.034	K.E. Remme Systems
11.028	Pan-Gear	11.035	DM Corporation
11.029	Joe Davies Camera (JDC)	11.036	Optimex Pro
11.030	AMP Light (co-exhibiting with Laval - Light Mfg, Inc.)	11.037	P-6 Technic
11.031	Laval - Light Mfg, Inc.	11.038	Chin Power & Light International Ltd
11.032	OCamer Engineering	11.039	Avion Broadcast Systems Ltd
11.033	Thomson Angewandte	11.040	Megaphone Broadcast Systems
11.034	Galati/Dalton of Bion Elektronik AG	11.041	Reinert Broadcast Systems Ltd
11.035	Boice S.A.	11.042	REINER Broadcast Engineering
11.036	Blue Pro / Cine Line (Europe) Ltd	11.043	Carlo Video and Broadcasting Products BV
11.037	Lighting Service (co-exhibiting with Blue Pro / Cine	11.044	Go-exhibiting with BSC22 Broadcast Engineering
11.038	Line (Europe) Ltd)	11.045	Lachette Ltd (co-exhibiting with Photon Sound Ltd)
11.039	Lighting Service (co-exhibiting with Blue Pro / Cine	11.046	LCC Photon Technic (co-exhibiting with Photon
11.040	Line (Europe) Ltd)	11.047	Sound Ltd)
11.041	Chamers	11.048	Photon Sound Ltd
11.042	Telestream, Inc.	11.049	Prophets Equipment Ltd (co-exhibiting with Photon
11.043	The Tiller Company	11.050	Sound Ltd)
11.044	Eastern Radio Company	11.051	AGS
11.045	News-World Ltd	11.052	IMA Lighting International
11.046	Colch	11.053	Conson GmbH
11.047	Reiner Audio & Video	11.054	City Factory Munich
11.048	Seitach (co-exhibiting with Deere Audio & Video)	11.055	DMF Controls
11.049	Seitach System SA	11.056	Vision Communications Ltd
11.050	Yamaguchi	11.057	Bruckner/The Production House
11.051	Fujison (Europe) GmbH	11.058	ENCORE
11.052	Optimex BV	11.059	SL COVIS, S.L.
11.053	After Camera Support	11.060	Altehus
11.054	Harco	11.061	Berling
11.055	Hocht GmbH (Europe) GmbH/Hocht GmbH (BG) Ltd	11.062	KM Technology
11.056	Radio Wapnet (Rn GmbH)	11.063	Moveworks
11.057	Reed Pro-Data	11.064	Billing Probus Battery Co., Ltd.
11.058	Reed Pro-Data	11.065	Working Easy
11.059	Reed Pro-Data	11.066	Moveworks
11.060	Reed Pro-Data	11.067	B&B Photo - Video - Pro Audio
11.061	Reed Pro-Data	11.068	ETC Sensor
11.062	Reed Pro-Data	11.069	Technische Lichteconomie GmbH (co-exhibiting with
11.063	Reed Pro-Data	11.070	ETC Sensor)
11.064	Reed Pro-Data	11.071	2000 CASES (BG) Ltd
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