

Submission by:

Dolby Laboratories Inc.

San Francisco, CA

**Response to the Second Consultation on Digital
Terrestrial Broadcasting in Hong Kong**

Submitted to:

**Commerce, Industry and Technology Bureau
Hong Kong Special Administrative Region Government**

27th February 2004

Table of Contents

1. Summary	3
2. World-wide adoption of Dolby AC-3	4
3. Licensing.....	6
4. Responses to the First Consultation Paper supporting the adoption of Dolby AC-3 technology.....	7

1. Summary

- 1.1 Dolby Laboratories welcome the opportunity provided by the Commerce, Industry and Technology Bureau to file information to demonstrate the benefits of the Dolby AC-3 system.
- 1.2 Dolby Laboratories continue to support the view of the First Consultation Paper that the correct selection of an audio format is important for the future of digital television.
- 1.3 Dolby Laboratories continue to support the view of the First Consultation Paper that multichannel, 5.1-channel sound is a requirement for any digital television system.
- 1.4 Dolby Laboratories firmly believe that provision for 5.1-channel audio is essential in any new audio consumer delivery format as a result of the broad consumer acceptance of 5.1-channel audio in DVD-Video, DVD-Audio, Games Consoles and PC's.
- 1.5 Dolby Laboratories firmly believe that to preserve spectrum efficiency the same sound system should be used for multichannel audio and stereo audio broadcasts.
- 1.6 Dolby Laboratories note the tremendous, continued consumer growth of home theatre systems supporting Dolby AC-3 technology in the three years between the First and Second Consultation Papers and that these home theatre systems can be utilised by Digital Terrestrial broadcasts using Dolby AC-3 technology (as is being done by broadcasters world-wide).
- 1.7 Dolby Laboratories note the proposal for a "market-led" approach to the adoption of sound system and respectfully suggests that Dolby AC-3 technology is the clear market leader in providing both multichannel and stereo sound for digital broadcasting.
- 1.8 The remainder of this document provides supporting evidence to this summary.

2. World-wide adoption of Dolby AC-3

2.1 Dolby AC-3 technology is fully supported by both the DVB and ATSC standards.

2.2 Dolby AC-3 technology was first standardized by the ATSC. Since then, AC-3 technology has become an international ITU-R standard, and been incorporated into the DVB Standard. Dolby has made the customary commitment to ATSC, ITU-R and DVB concerning open and fair licensing. Equipment with AC-3 decoders and DTV transmissions with AC-3 audio (including transmissions without MPEG audio) are fully DVB compliant. The cost of AC-3 decoder circuit implementations is currently low, and is rapidly becoming negligible as decoder chips become more highly integrated. The royalty cost of AC-3 decoders is modest.

2.3 The audio quality delivered by AC-3, the compelling feature set, the availability of a multitude of cost-effective consumer decoders, and the high level of applications engineering support provided by Dolby Laboratories to build a robust, supporting infrastructure have led to widespread adoption of AC-3 for applications including:

- All DVB applications (DVB-T, DVB-S, DVB-C)
- DVB-T Digital Television in Australia¹, Singapore, Germany² and Scandinavia³, (trials in France, Spain and Italy)
- DVB-S Digital Television across Europe⁴
- DVB-S Digital Radio services across Europe⁵
- DVB-C Digital Television in Switzerland⁶, Germany, and trials have been conducted in Mainland China
- Direct Broadcast Satellite in the USA⁷ and Canada⁸
- DVD in all regions
- ATSC digital terrestrial television in the US⁹, Canada and Korea
- U.S. digital cable television¹⁰
- Computers and games consoles (e.g. Sony PS2, Microsoft X-box)

2.4 There has been a significant increase in the number of broadcasters using Dolby AC-3 audio in the three years between the first and second consultation papers. Dolby AC-3 audio is used by over 30 broadcasters.

¹ Australian Broadcasting Corporation, Network Seven, Nine Network, Network Ten

² ProSeiben, Sat1, ZDF

³ SVT, YLE

⁴ Premiere, ProSeiben, Sat1, ZDF (Germany), ORF (Austria), TVN, TVP (Poland), BSkyB (UK)

⁵ Bayerischer Rundfunk

⁶ Teleclub AG

⁷ Direct TV, Starz! Encore, Dish Network

⁸ Corus Entertainment, Bell Express Vu, The Movie Network

⁹ CBS, NBC, ABC, Fox, PBS

¹⁰ For example; Showtime, HBO, Discovery Channel

2.5 There has been a significant increase in the number of products produced by consumer electronics manufacturers that license Dolby AC-3 technology.

- Total number of products incorporating Dolby AC-3 technology 539,457,200¹¹
- Dolby AC-3 decoders for Satellite and TV 51,594,410
- Home theatre systems receivers and processors 36,191,060

¹¹ Source www.dolby.com/stats

3. Licensing

- 3.1 The overall implementation cost of AC-3 technology is modest today, and will have a near negligible impact on prices of consumer DTV receivers in the long run. AC-3 technology is the subject of international standards, publicly available and subject to a fair and open licensing policy.
- 3.2 Manufacturers incorporating Dolby AC-3 technology in professional broadcast equipments include; Harris, Tandberg Television, Scientific Atlanta and Harmonic. A complete list can be found at www.dolby.com/digital/lcddpem.html
- 3.3 Chinese Mainland manufacturers incorporating Dolby AC-3 technology in consumer electronics (CE) products include; DTVIA, Shenzen Coship, Skyworth, DVN.
- 3.4 Other manufacturers incorporating Dolby AC-3 technology in consumer electronics (CE) products include; Pace Micro Technology Plc, Matsushita Electric Industrial Co. Ltd., Pioneer Corporation, Humax Co. Ltd, UEC Technologies (Pty) Ltd, BK DGTEC Co. Ltd and Zinwell Corporation.
- 3.5 Dolby Laboratories agreed to an open and fair licensing policy as required by the ITU (International Telecommunications Union).
- 3.6 As part of the commitment to open and fair licensing of the AC-3 technology, Dolby Laboratories has also publicly stated that there will be no charge to broadcasters, network operators or program suppliers when using signals which correspond to the AC-3 specification.

4. Responses to the First Consultation Paper supporting the adoption of Dolby AC-3 technology

4.1 There was broad support for the adoption of Dolby AC-3 as the sound system for Digital Terrestrial Television in Hong Kong in the responses to the First Consultation Paper.

4.2 Pacific Satellite International Ltd.

“We suggest to adopt Dolby AC-3 as the audio encoding standard. First of all, it is not wise to require the audio signals encoded in both Dolby AC-3 and MPEG-2 formats as it is costly to the operator and more important is that it occupies more bandwidth which will not benefit a lot of users eventually. AC-3 is recognized as providing better sound quality than MPEG-2. Therefore, the latter shall not be considered.”

4.3 International Federation of the Phonographic Industry (Hong Kong Group) Limited.

“Audio Coding

It is highly desirable that in order to be flexible enough to allow room for future technological development, the choice of audio codec in digital broadcast should include AC-3 and other algorithms that may fit a certain band width description.”

4.4 Star

“We support the adoption of the DVB-T with Dolby AC-3 as the audio coding standard. We believe the quality of sound from Dolby AC-3 will enhance viewer’s enjoyment as it provides 5.1 channels of high quality audio surround sound. We would also like to point out that both Australia and Singapore have committed to using Dolby AC-3 with their DVB-T transmission format.”