

## Digital Audio/Video Leased Lines.

### 1 Standard service

- 1.1 Digital Audio Leased Lines for Sound Transmission  
Subject to technical and operational feasibility, MEDIA BROADCAST GmbH (herein after referred to as MEDIA BROADCAST) shall provide the customer with unidirectional R128D, R192D, R256D, R384D, R768D and R2000D or R128DR, R192DR and R256DR Digital Leased Lines for Sound Transmission as digital transmission paths with analog or digital interfaces installed on a permanent basis and with transmission properties as shown in the tables given below.

Within the range of the available bit rate, an unidirectional data link with a transmission rate of 9.6 kbit/s can be used for R128D, R192D, R256D, R384D, R768D and R2000D Digital Leased Lines for Sound Transmission, and an unidirectional data link with a dynamic transmission rate up to a max. of 38.4 kbit/s for transmitting program-associated data - PAD - can be used for R128DR, R192DR and R256DR Digital Leased Lines for Sound Transmission.

The R128DR, R192DR and R256DR Digital Leased Lines for Sound Transmission provided in connection with Digital Radio support the STI (Service Transport Interface) transmission standard pursuant to EN 300797. This standard defines the interface between service providers and ensemble providers and makes it possible, for example, to have the user's audio data controlled by the service provider as well as to implement bit rate management functions (dynamic reconfiguration, RDS-comparable functions).

The Leased Lines for Sound Transmission that are provided shall have normally an annual average availability of 99.7 % (Service Level Standard) relating to the respective transmission path.

If the services of third parties (foreign recognized private operating agencies or PTTs) are called upon in providing this service, this service shall be made available by MEDIA BROADCAST only at the time, to the extent, under the conditions and in the quality allowed by the availability and operability of the services provided by third parties.

- 1.2 Digital Leased Lines for TV

Subject to technical and operational feasibility, MEDIA BROADCAST shall provide the customer with Digital R270D, R270D/WDM, R140D, R34D, R8D, R4D-4 and R2D-4 Leased Lines for TV with a digital stereo sound component (see table below) as permanent digital transmission paths.

Digital R270D Leased Lines for TV are offered only within the local network area and Digital R270D/WDM Leased Lines for TV, only between certain local network areas of Deutsche Telekom AG (see table below), if sufficient network capacity is available.

The Leased Lines for TV shall be normally provided with a Service Level Standard with an average annual availability of 99.7 %, depending on the relevant transmission path.

Exception: R2D-4 is only provided with a Service Level Eco (99.0 %)

If the services of third parties (foreign recognized private operating agencies or PTTs) are called upon in providing this service, this service shall be made available by MEDIA BROADCAST only at the time,

to the extent, under the conditions and in the quality allowed by the availability and operability of the services provided by third parties.

- 1.3 Installation

Leased Lines for Sound or TV Transmission shall be installed by MEDIA BROADCAST, terminated with a delivery point and handed over to the customer, in compliance with the interface requirements (see table below).

- 1.4 Maintenance

Maintenance work shall be carried out on weekdays (Monday through Friday) between 8.00 a.m. and 4.00 p.m. (regular maintenance period). MEDIA BROADCAST shall be entitled during the maintenance work to put the system out of operation.

When setting the time and date for maintenance work, the customer's program-related requirements shall be taken into account to the extent permitted by MEDIA BROADCAST's operational requirements.

### 2 Additional services

By agreement and subject to technical and operational feasibility, MEDIA BROADCAST shall, in particular, render the following additional services against payment of a separate charge based on the price list in effect when the order is placed:

- Clear faults in MEDIA BROADCAST's Leased Lines for Sound or TV Transmission and related equipment and repair any damage attributable to the improper use thereof or other influences for which the customer is responsible.
- Within the same building, relocate, replace or modify the connecting unit and relocate the subscriber's drop.
- Install a Leased Line for Sound or TV Transmission in a manner that deviates from MEDIA BROADCAST's standard installation rules (special installation);
- Shared use by several customers, at different times, of Leased Lines for Sound or TV Transmission to transmitters (shared use).
- Check on capacities available for a Leased Line for Sound or TV Transmission and reservation of capacity.

### 3 Fault clearance

MEDIA BROADCAST shall initiate action within service time of chosen Service Level to eliminate faults after being notified thereof and, subject to technical and operational feasibility, shall clear the fault.

### 4 Refund in the event the ensured availability is not provided

- 4.1 If the customer is not able to use the Digital R128D, R192D, R256D, R384D, R768D and R2000D or the Digital R128DR, R192DR and R256DR Leased Lines for Sound Transmission, or the Digital R270D, Digital R270D/WDM, Digital R140D, Digital R34D, Digital R8D, Digital R4D Leased Lines for TV transmission with an average annual availability according to the ordered Service Level and this is attributable to MEDIA BROADCAST, the latter shall credit 1.0 % of the total charge for the relevant Leased Line for Sound or TV Transmission for one calendar year to the cus-

tomers for every one-tenth of one percent below the average availability. Fractions of one-tenth of one percent shall be rounded up to whole one-tenths of one percent. If provided for part of a calendar year, the amount reimbursed shall be reduced proportionately.

In the case of Leased Lines for TV Transmission, the following valuation factor  $F_B$  is used to determine the downtime that is taken into account for

the availability:

$F_B = 1.0$  if the video circuit fails;

$F_B = 0.1$  if one sound channel fails;

$F_B = 0.2$  if both sound channels fail.

- 4.2 MEDIA BROADCAST shall offset the credit against amounts due on the basis of this agreement.
- 4.3 This shall be without prejudice to any compensation claims of the customer.

### Transmission properties

#### Digital Leased Lines for Sound Transmission

Type of circuit	Transmission frequency range	Compression	Term	Idle channel noise in acc. with ITU-R Recommendation 468-4	Connecting unit
<b>Digital R128D</b>	40 Hz to 15 kHz	MPEG-1, Layer II	> 100 ms	< -65 dBq0ps	see tables below
<b>Digital R192D</b>	40 Hz to 15 kHz	MPEG-1, Layer II	> 100 ms	< -65 dBq0ps	see tables below
<b>Digital R256D</b>	40 Hz to 15 kHz	MPEG-1, Layer II	> 100 ms	< -65 dBq0ps	see tables below
<b>Digital R384D</b>	40 Hz to 15 kHz	MPEG-1, Layer II	> 100 ms	< -65 dBq0ps	see tables below
<b>Digital R768D</b>	40 Hz to 15 kHz	ITU-T Recommendation J.41	≤ 6.5 ms	< -60 dBq0ps	see tables below
<b>Digital R2000D</b>	40 Hz to 20 kHz	ITU-T Recommendation J.57	≤ 12 ms	< -70 dBq0ps	see tables below
<b>Digital R128DR</b>	40 Hz to 15 kHz	MPEG-1, Layer II	> 100 ms	< -65 dBq0ps	see tables below
<b>Digital R192DR</b>	40 Hz to 15 kHz	MPEG-1, Layer II	> 100 ms	< -65 dBq0ps	see tables below
<b>Digital R256DR</b>	40 Hz to 15 kHz	MPEG-1, Layer II	> 100 ms	< -65 dBq0ps	see tables below

### Audio interface specification

#### R128D, R192D, R256D, R384D, R778D and R2000D Digital Leased Lines for Sound Transmission, and R128DR, R192DR and R256DR Digital Leased Lines for Sound Transmission

Interface		Signal transfer/delivery level	Input/output resistance	Connecting unit
<b>Digital</b>	Input:	2 to 7 V <sub>pp</sub>	110 Ω ± 5 % balanced	XLR female
	Output:	2 to 7 V <sub>pp</sub>	110 Ω ± 5 % balanced	XLR male
<b>Analog</b>	Input:	0 dBr or -3 dBr max. sound signal level: + 9 dBu0s	600 Ω or > 12 kΩ	XLR female
	Output:	0 dBr or -3 dBr max. sound signal level: + 9 dBu0s	600 Ω or = 20 Ω	XLR male

### Data interface description

#### R128D, R192D, R256D, R384D, R778D and R2000D Digital Leased Lines for Sound Transmission

Interface	Transmission rate	Connecting unit
RS-232 or RS-422	9.6 kbit/s	Sub-D 9-pin female

### PAD interface specification

#### R128DR, R192DR and R256DR Digital Leased Lines for Sound Transmission

Interface	Transmission rate	Connecting unit
RS-232	Dynamic up to 38.4 kbit/s (up to 11.3 kbit/s recommended)	Sub-D 9-pin female

**Description of interfaces for Digital Leased Lines for TV**

Type of circuit	Delivery signal	Signal transfer/ delivery level	Input/output resistance	Transmission	Connecting unit
<b>Digital R270D</b> Leased Line for TV (local zone)	270 Mbit/s	800 mV ± 10 % Jitter ≤ 0.2 UI	75 Ω	ITU-R Recommendation R 656 optical	BNC 75 Ω
digital sound component AES/EBU	3,072 Mbit/s	2 to 7 V <sub>pp</sub>	110 Ω ± 5 %	ITU-R Recommendation 647-2	XLR
<b>Digital R270D/WDM</b> Leased Line for TV (long-distance zone)	270 Mbit/s	800 mV ± 10 % Jitter ≤ 0.2 UI	75 Ω	ITU-R Recommendation R 656 optical	BNC 75 Ω
digital sound component AES/EBU	3,072 Mbit/s	2 to 7 V <sub>pp</sub>	110 Ω ± 5 %	ITU-R Recommendation 647-2	XLR
<b>Digital R140D</b> Leased Line for TV	270 Mbit/s SDI	800 mV ± 10 % Jitter ≤ 0.2 UI	75 Ω	Component codec Telekom non-transparent	BNC 75 Ω
digital sound component AES/EBU	3,072 Mbit/s	2 to 7 V <sub>pp</sub>	110 Ω ± 5 %	ITU-R Recommendation 647-2	XLR
<b>Digital R34D</b> Leased Line for TV	270 Mbit/s SDI	800 mV ± 10 % Jitter ≤ 0.2 UI	75 Ω	ETSI 34 Mbit/s MPEG-2, 4:2:2 non-transparent	BNC 75 Ω
digital sound component AES/EBU	3,072 Mbit/s	2 to 7 V <sub>pp</sub>	110 Ω ± 5 %	MPEG Layer II	XLR
<b>Digital R8D</b> Leased Line for TV	270 Mbit/s SDI	800 mV ± 10 % Jitter ≤ 0.2 UI	75 Ω	MPEG-2, 4:2:0 non-transparent	BNC 75 Ω
digital sound component AES/EBU	3,072 Mbit/s	2 to 7 V <sub>pp</sub>	110 Ω ± 5 %	MPEG Layer II	XLR
<b>Digital R4D</b> Leased Line for TV	270 Mbit/s SDI or PAL	800 mV ± 10 % Jitter ≤ 0.2 UI	75 Ω	MPEG-2, 4:2:0 non-transparent	BNC 75 Ω
digital sound component AES/EBU (SDI embedded)	3,072 Mbit/s	2 to 7 V <sub>pp</sub>	110 Ω ± 5 %	MPEG Layer II 192 kbit/s	XLR
<b>Digital R4D</b> Leased Line for TV	270 Mbit/s SDI or PAL	800 mV ± 10 % Jitter ≤ 0.2 UI	75 Ω	MPEG-2, 4:2:0 non-transparent	BNC 75 Ω
analog sound component	40 Hz to 15 kHz	0 dBr or -3 dBr max. sound signal level: +9 dBu0s	600 Ω or > 12 kΩ	MPEG Layer II 192 kbit/s	unbalanced: RCA balanced: XLR
<b>Digital R2D-4</b> Leased Line for TV	270 Mbit/s SDI	800 mV ± 10 % Jitter ≤ 0.2 UI	75 Ω	MPEG-4 non-transparent	BNC 75 Ω
digital sound component AES/EBU (SDI embedded)	3,072 Mbit/s	2 to 7 V <sub>pp</sub>	110 Ω ± 5 %	MPEG Layer II 64 kbit/s	XLR
<b>Digital R2D-4</b> Leased Line for TV	270 Mbit/s SDI	800 mV ± 10 % Jitter ≤ 0.2 UI	75 Ω	MPEG-4 non-transparent	BNC 75 Ω
analog sound component	40 Hz to 15 kHz	0 dBr or -3 dBr max. sound signal level: +9 dBu0s	600 Ω or > 12 kΩ	MPEG Layer II 64 kbit/s	unbalanced: RCA balanced: XLR

**Local network areas of Deutsche Telekom AG, between which R270D/WDM Digital Leased Lines for TV Transmission are provided if sufficient network capacities are available:**

Local network areas	Local area code	Local network areas	Local area code
Berlin	0 30	Cologne	02 21
Dortmund	02 31	Leipzig	03 41
Düsseldorf	02 11	Munich	0 89
Frankfurt/Main	0 69	Nuremberg	09 11
Hamburg	0 40	Stuttgart	07 11
Hannover	05 11		

**Service Level**

Service Level	Availability	MTTR	Service Time
Eco	99,0%	<=24h	Mo-Fr 8-16h
Standard <sup>1)</sup>	99,7%	<= 8h	Mo-Fr 6-22h
Premium <sup>1)</sup>	99,8%	<= 8h	Daily 24h

<sup>1)</sup> not offered for R2D-4