

Mobile World Congress 2009

ABERTIS TELECOM

Official Mobile TV Network Provider

**Information & Technical Parameters for
Receiver Manufacturers v2.0**



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Abertis Telecom Requirements for Mobile World Congress 2009

1. Object

The object of this document is to provide information to receiver manufacturers and official technical forums, concerning the coverage and facilities that Abertis Telecom is going to provide during the Mobile World Congress 2009 for mobile TV.

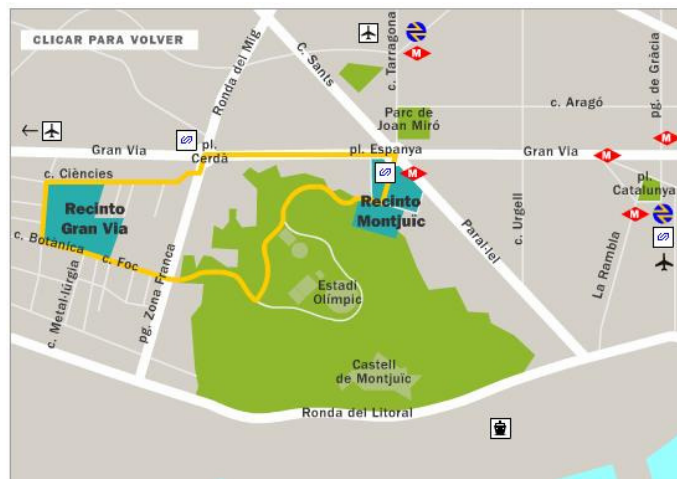
2. Introduction

The Mobile World Congress will take place in Barcelona the 16-19 of February 2009. The event will be performed in Fira de Barcelona with the following address:

Fira de Barcelona – Montjuïc
Avinguda Reina Maria Cristina, s/n
08004 Barcelona
Spain



Fig 1. La Fira Barcelona.



Abertis Telecom, the main broadcast network operator in Spain, is the Official Mobile TV Network Provider of the event.

Abertis Telecom will have at one's disposal a technical area room where all platform head end, equipments, content aggregations signals and distribution equipments will be centralized. This room is located in hall 7. See fig.2 below.

From there, all the signals will be encapsulated ready to be transmitted and sent to the roof of the building from where will be broadcasted. As last year, the signals will be distributed also to several buildings to ensure indoor coverage.

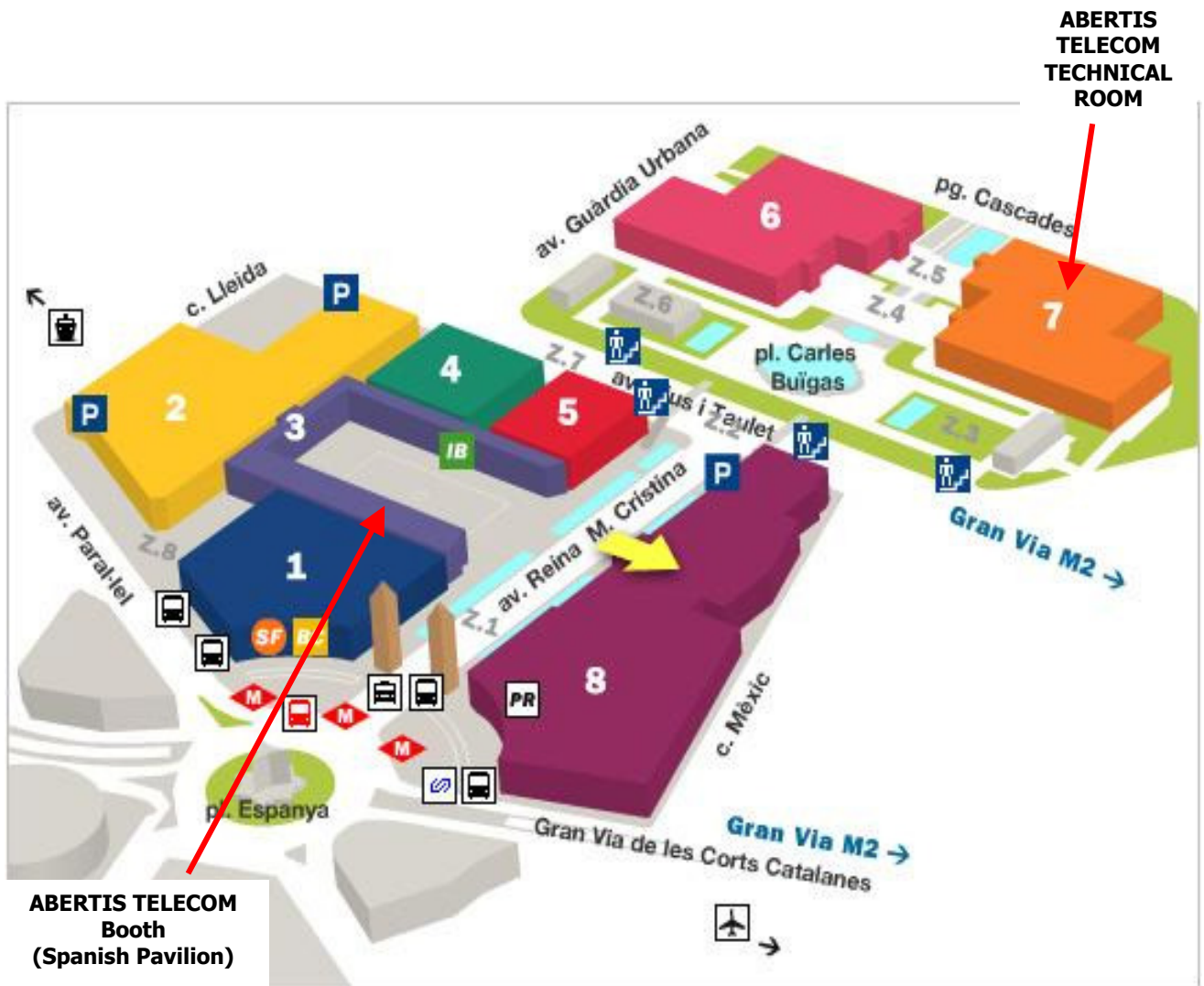


Fig.2 Fira Barcelona Technical room & Booth location

Abertis Telecom booth will be located in the Spanish pavilion in front of hall number 1. All the technologies and platforms will be demonstrated by Abertis personnel during the event show.

To ensure Abertis Telecom personnel availability for demonstrations during those dates, you can contact marketing department to close possible meeting schedules.

3. Infrastructure Description

3.1. Broadcast Network

Abertis Telecom Mobile TV networks are composed of 3 dedicated DVB-H multiplexes and 3 dedicated DVB-SH networks. Abertis Telecom will provide outdoor coverage to the fairground and indoor coverage to several buildings. The transmitters will be compliant with the DVB-H and DVB-SH standards.

The 3 DVB-H platform manufacturers are:

Platform Provider	Description	Coverage
Nokia - NSN	OMA	City Wide
Thomson	SCP-OSF	Congress
SIDSA	SCP-OSF	Congress

The 3 DVB-SH platform manufacturers are:

Platform Provider	Description	Coverage
Eutelsat		City Wide
ALU		Congress
ALU		Congress

3.2. Network Parameters

Platform Provider	Channel	Frequency	Cell ID	Platform ID	TS ID	Service ID range
Nokia	22	482	1	1	22200	36600- 36649
Thomson	28	530	2	2	22201	36660- 36699
SIDSA	42	642	3	16773123	22203	36700- 36749
EUTELSAT	S-Band	2177.5	4	4	22204	36760- 36799
ALU	S-Band	2182.5	5	5	22205	36800- 36849
ALU	30	546	6	6	22206	36860- 36899

For all the platforms:

PSI/SI Parameter	Value
Original Network ID	8916
Network ID	12780
Demo Platform Name	Abertis
Demo Platform Provider Name	Abertis

3.3. Physical parameters

For all the DVB-H platforms:

Parameter	Value
Band	UHF
Network	SFN (dedicated MUX)
Bandwidth	8 MHz
Mode	8k
Modulation	QPSK (non hierarchical)
Code Rate	1/2
Guard Interval	1/8
TPS Signaling	DVB-H signaling Cell Id

The total channel capacity for the proposed network configuration is of **5.53 Mbps** (without MPE-FEC).

Each platform provider will decide if MPE-FEC is applied to the services attending the channel capacity.

For all the DVB-SH platforms:

Parameter	Value
Band	S-Band
Network	SFN
Bandwidth	5 MHz
Mode	
Modulation	
Code Rate	
Guard Interval	
TPS Signaling	DVB-SH signaling Cell Id

The total channel capacity for the proposed network configuration is of tbd. **Mbps** (without MPE-FEC).

Each platform provider will decide if MPE-iFEC is applied to the services attending the channel capacity.

3.4. Video channel

Abertis Telecom will provide the baseband video channels. The program selection is the following:

	Channel	Feed	Language	Audio	Content
1	24h TVE	DTT	Spanish	1 audio	news
2	TVE1	DTT	Spanish	1 audio	generalist
3	TV2	DTT	Spanish	1 audio	generalist
4	CLAN 50	DTT	Spanish	1 audio	TV films and comedy
5	TVE Internacional	SAT	Spanish	1 audio	generalist
6	VEOtv	DTT	Spanish	1 audio	TV films and comedy
7	Veo (Sony Entertainment TV)	DTT	Spanish	2 audios - Spanish / English (movies)	TV films and comedy
8	Cuatro	DTT	Spanish	1 audio	generalist
9	CNN +	DTT	Spanish	1 audio	news
10	La Sexta	DTT	Spanish	1 audio	generalist
11	105TV	DTT	Spanish	1 audio	Music
12	40 Latino	DTT	Spanish	1 audio	music
13	Tele 5	DTT	Spanish	1 audio	generalist
14	FDF	DTT	Spanish	1 audio	TV Films and Comedy
15	Teledeporte	DTT	Spanish	1 audio	sports
16	Tele 5 - 2	DTT	Spanish	1 audio	TV films
17	A3	DTT	Spanish	1 audio	generalist
18	A3 Neox	DTT	Spanish	1 audio	generalist
19	A3 Nova	DTT	Spanish	1 audio	generalist
20	TV3	DTT	Catalan	1 audio	generalist
21	Canal 300	DTT	Catalan	2 audios - Catalan / English (movies)	TV films and comedy
22	TVCi	SAT	Catalan	1 audio	generalist
23	Barça TV (Enc)	SAT	Spanish	1 audio	sports
24	3GSM TV	Live Signal	English	1 audio	Informational
25	C33	DTT	Catalan	1 audio	generalist
26	3 24	DTT	Catalan	1 audio	news
27	CNBC	SAT	English	1 audio	news

The content selection for each platform will be assigned by Abertis Telecom ensuring 3GSM Media Partners and Sponsors inclusion, which are not all in the list above.

Abertis Telecom can also provide the output **MPEG-2 TS** stream delivered by the satellite receiver, if requested outside of the fairground, for any other demonstration or events during those dates. If you are interested, please contact Abertis Telecom marketing department for possible proposals.

3.5. Head-end infrastructure

The Head-end infrastructure will be placed in a 50 sq. m room in Hall 7, that will be shared by all the platform providers.

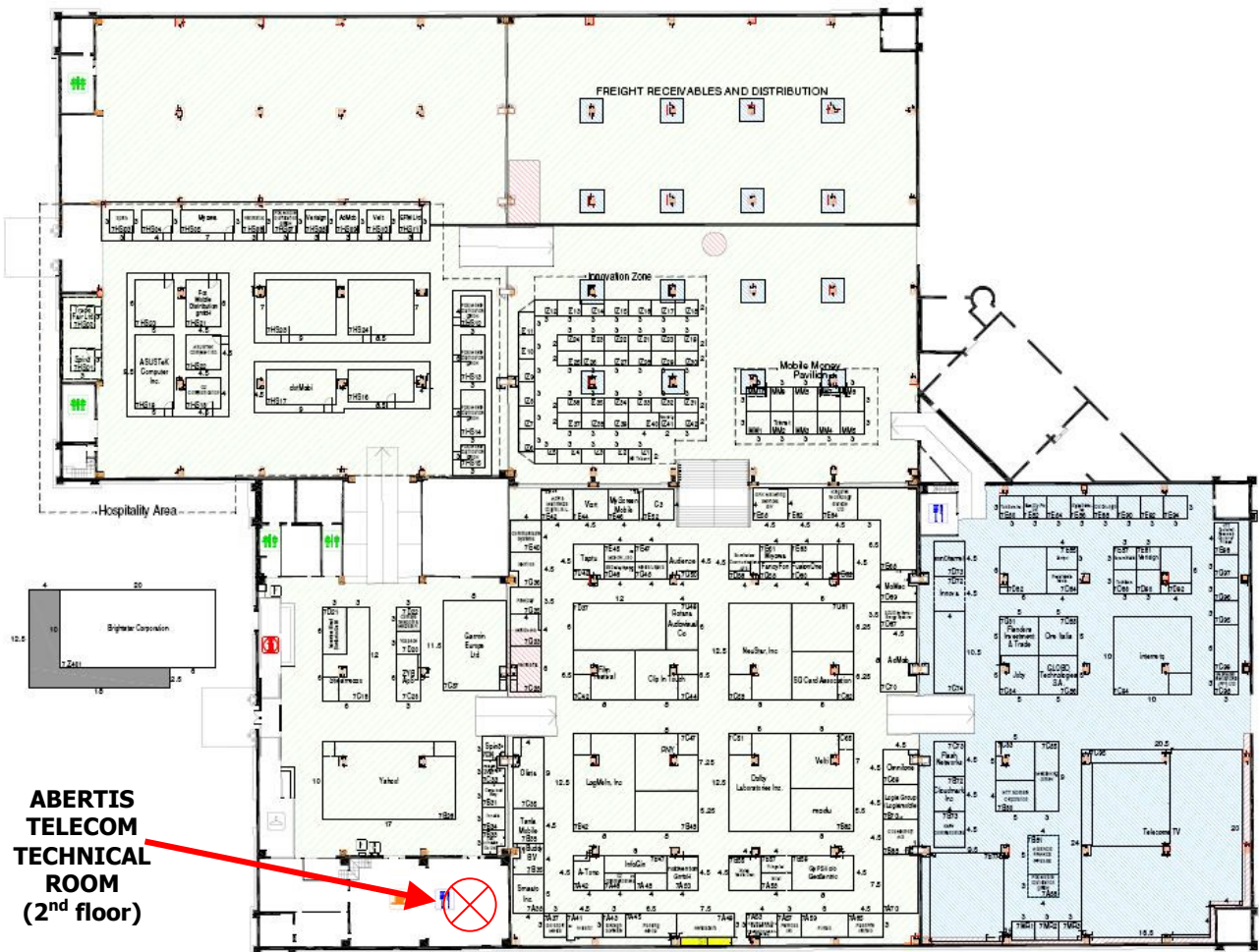


Fig.3 Hall 7 map & technical room area location.

4. Platform Information

4.1. Platform Configuration

4.1.1. PSI/SI Signalling

Compliant with TS 102 470 [2]

Repetition Rate	Value
NIT	< 10s
PAT	≤ 100 ms
PMT	≤ 100 ms
INT	≤ 10s

The recommended capacity reserved for PSI/SI is 300 kbps.

4.1.2. MPE-FEC Parameters

The parameters from Nokia platform are:

Parameter	Value
MPE-FEC Code Rate	15%
Burst Duration	~150 ms
Burst Size	< 2 Mbit
Peak Bit Rate per Burst	~ 5.5 Mbps
MPE-FEC Rows	512

The parameters from Thomson platform are:

Parameter	Value
MPE-FEC Code Rate	3/4
Burst Duration	
Burst Size	
Peak Bit Rate per Burst	
MPE-FEC Rows	1024

The parameters from SIDA platform are:

Parameter	Value
MPE-FEC Code Rate	3/4
Burst Duration	~ 215 ms
Burst Size	< 1.2 Mb
Peak Bit Rate per Burst	5.23 Mbps
MPE-FEC Rows	512

The parameters from Alcatel platform are:

Parameter	Value
MPE-iFEC : Parameter EP	
MPE-iFEC : Parameter B	
MPE-iFEC : Parameter S	
MPE-iFEC : Parameter D	
Burst Duration	
Burst Size	
Peak Bit Rate per Burst	
MPE-iFEC Rows	

The parameters from Eutelsat platform are:

Parameter	Value
MPE-iFEC : Parameter EP	
MPE-iFEC : Parameter B	
MPE-iFEC : Parameter S	
MPE-iFEC : Parameter D	
Burst Duration	
Burst Size	
Peak Bit Rate per Burst	
MPE-iFEC Rows	

The maximum receiver synchronization time should be 100 ms.

Maximum delta_T jitter of 10 ms [5]

4.1.3. Detailed Service Parameters

The parameters from Nokia platform are:

Service	PID	Rows	MPE-FEC	Burst length	Average Bit rate	Description
Main ESG	1100	512	3/4	~200 ms	~350 kbps	ESG
Program 1	1200	512	3/4	~200 ms	~350 kbps	TV
Program 2	1300	512	3/4	~200 ms	~350 kbps	TV
Program 3	1400	512	3/4	~200 ms	~350 kbps	TV
Program 4	1500	512	3/4	~200 ms	~350 kbps	TV
Program 5	1600	512	3/4	~200 ms	~350 kbps	TV
Program 6	1700	512	3/4	~200 ms	~350 kbps	TV
Program 7	1800	512	3/4	~200 ms	~350 kbps	TV
Program 8	1900	512	3/4	~200 ms	~350 kbps	TV

Service	IP Version	Multicast Address	RTP/UDP ports	PID	Average Bitrate	Codec	Description
Main ESG	IPV4	224.0.23.14	9214				
BCAST ESG	IPV4						
Program 1	IPV4	232.1.1.0	11000	1100-1199	~350 kbps		
Program 2	IPV4	232.1.2.0	12000	1200-1299	~350 kbps		
Program 3	IPV4	232.1.3.0	13000	1300-1399	~350 kbps		
Program 4	IPV4	232.1.4.0	14000	1400-1499	~350 kbps		
Program 5	IPV4	232.1.5.0	15000	1500-1599	~350 kbps		
Program 6	IPV4	232.1.6.0	16000	1600-1699	~350 kbps		
Program 7	IPV4	232.1.7.0	17000	1700-1799	~350 kbps		
Program 8	IPV4	232.1.8.0	18000	1800-1899	~350 kbps		

The parameters from Thomson platform are:

Service	PID	Rows	MPE-FEC	Burst length	Average Bit rate	Description
ESG	300	1024	3/4			ESG
Program1	1001	1024	3/4		~350 kbps	TV
Program2	1002	1024	3/4		~350 kbps	TV
Program3	1003	1024	3/4		~350 kbps	TV
Program4	1004	1024	3/4		~350 kbps	TV
Program5	1005	1024	3/4		~350 kbps	TV
Program6	1006	1024	3/4		~350 kbps	TV
Program7	1007	1024	3/4		~350 kbps	TV
Program8	1008	1024	3/4		~350 kbps	TV
Program9(EMM)	1100	1024	3/4		~350 kbps	EMM

Service	IP Version	Multicast Address	RTP/UDP ports	PID	Average Bitrate	Codec	Description
ESG	4	226.1.1.1 226.1.1.2 226.1.1.3 226.1.1.4 235.1.2.4 235.1.2.5	5000 6002 6003 6004 5001 5002	300			IPDC announce IPDC service plan IPDC today IPDC tomorrow OMA announce OMA SG
Program1	4	230.1.1.1	4000	1001	~350 kbps	H264 Baseline	TV
Program2	4	230.1.1.2	4000	1002	~350 kbps	H264 Baseline	TV
Program3	4	230.1.1.3	4000	1003	~350 kbps	H264 Baseline	TV
Program4	4	230.1.1.4	4100	1004	~350 kbps	H264 Baseline	TV
Program5	4	230.1.1.5	4000	1005	~350 kbps	H264 Baseline	TV
Program6	4	230.1.1.6	4000	1006	~350 kbps	H264 Baseline	TV
Program7	4	230.1.1.7	4000	1007	~350 kbps	H264 Baseline	TV
Program8	4	230.1.1.8	4000	1008	~350 kbps	H264 Baseline	TV
Program9	4	230.1.1.100		1100			EMM

The parameters from SIDA platform are:

Service	PID	Rows	MPE-FEC	Burst length	Average Bit rate	Description
ESG	0x66	512	¾	~ 215 ms	~ 450 kbps	ESG
Program1	0x67	512	¾	~ 215 ms	~ 325 kbps	TV
Program2	0x68	512	¾	~ 215 ms	~ 325 kbps	TV
Program3	0x69	512	¾	~ 215 ms	~ 325 kbps	TV
Program4	0x6A	512	¾	~ 215 ms	~ 325 kbps	TV
Program5	0x6D	512	¾	~ 215 ms	~ 325 kbps	TV
Program6	0x6E	512	¾	~ 215 ms	~ 325 kbps	TV

Service	IP Version	Multicast Address	RTP/UDP ports	PID	Average Bitrate	Codec	Description
ESG	IPv4	224.0.23.14	9214	0x66	~ 50 kbps		Bootstrap
Program1	IPv4	234.5.50.100	20000, 20002	0x67	~ 325 kbps		TV
Program2	IPv4	234.5.50.101	20000, 20002	0x68	~ 325 kbps		TV
Program3	IPv4	234.5.51.100	20000, 20002	0x69	~ 325 kbps		TV
Program4	IPv4	234.5.51.101	20000, 20002	0x6A	~ 325 kbps		TV
Program5	IPv4	234.5.53.100	20000, 20002	0x6D	~ 325 kbps		TV
Program6	IPv4	234.5.53.101	20000, 20002	0x6E	~ 325 kbps		TV

The parameters from Alcatel platform are:

Service	PID	Rows	MPE-FEC	Burst length	Average Bit rate	Description
ESG						
Program1						
Program2						
Program3						
Program4						
Program5						
Program6						
Program7						
Program8						
Program9						
Program10						
Program11						

Service	IP Version	Multicast Address	RTP/UDP ports	PID	Average Bitrate	Codec	Description
ESG							
Program1							
Program2							
Program3							
Program4							
Program5							
Program6							
Program7							
Program8							
Program9							
Program10							
Program11							

The parameters from Eutelsat platform are:

Service	PID	Rows	MPE-FEC	Burst length	Average Bit rate	Description
ESG						
Program1						
Program2						
Program3						
Program4						
Program5						
Program6						
Program7						
Program8						
Program9						
Program10						
Program11						

Service	IP Version	Multicast Address	RTP/UDP ports	PID	Average Bitrate	Codec	Description
ESG							
Program1							
Program2							
Program3							
Program4							
Program5							
Program6							
Program7							
Program8							
Program9							
Program10							
Program11							

All the services should be properly announced in the ESG and PSI/SI tables.

4.1.4. Video and Audio Formats

The parameters from Nokia platform are:

Parameter	Value
Video Codec	H.264AVC
Profile	Baseline, Simple, Level 1.2, 1.3
Picture Size	QVGA, 320x240
Frame Rate	12.5,15,25 fps
Max Bit Rate	384 kbps
Preferred Bit Rate	256 kbps
Video Encapsulation	RTP, RFC 3984
Audio Codec	HE AACv1/v2
Audio Format	Stereo
Audio Bit Rate	24-64 kbps
Audio Sampling Frequency	32-48 kHz
Audio Encapsulation	RTP, RFC 3640
A/V Packetization Mode	Non-interleaved

For Radio Services:

Parameter	Value
Audio Codec	HE AACv1/v2
Audio Format	
Audio Bit Rate	
Audio Sampling Frequency	
Audio Encapsulation	
A/V Packetization Mode	

The parameters from Thomson platform are:

Parameter	Value
Video Codec	NA
IRD Profile	NA
Profile	ISMA profile 2
Picture Size	720 x 480
Frame Rate	29 per second
Max Bit Rate	800 kb/s for one channel
Preferred Bit Rate	350 kb/s
Video Encapsulation	RTP
Audio Codec	AAC-HEv1
Audio Format	Stereo
Audio Bit Rate	32 000
Audio Sampling Frequency	4800 (3200 for channel 1)
Audio Encapsulation	RTP

For Radio Services:

Parameter	Value
Audio Codec	
Audio Format	
Audio Bit Rate	
Audio Sampling Frequency	
Audio Encapsulation	
A/V Packetization Mode	

The parameters from SIDA platform are:

Parameter	Value
Video Codec	H.264
Profile	
Picture Size	320 x 240 (QVGA)
Frame Rate	15 fps
Max Bit Rate	192 kbps
Preferred Bit Rate	192 kbps
Video Encapsulation	RTP
Audio Codec	AAC (LATM)
Audio Format	Stereo
Audio Bit Rate	64 kbps
Audio Sampling Frequency	48 KHz
Audio Encapsulation	RTP
A/V Packetization Mode	

For Radio Services:

Parameter	Value
Audio Codec	AAC (LATM)
Audio Format	Stereo
Audio Bit Rate	64 kbps
Audio Sampling Frequency	48 KHz
Audio Encapsulation	RTP
A/V Packetization Mode	

The parameters from Alcatel platform are:

Parameter	Value
Video Codec	
Profile	
Picture Size	
Frame Rate	
Max Bit Rate	
Preferred Bit Rate	
Video Encapsulation	
Audio Codec	
Audio Format	
Audio Bit Rate	
Audio Sampling Frequency	
Audio Encapsulation	
A/V Packetization Mode	

For Radio Services:

Parameter	Value
Audio Codec	
Audio Format	
Audio Bit Rate	
Audio Sampling Frequency	
Audio Encapsulation	
A/V Packetization Mode	

The parameters from Eutelsat platform are:

Parameter	Value
Video Codec	
Profile	
Picture Size	
Frame Rate	
Max Bit Rate	
Preferred Bit Rate	
Video Encapsulation	
Audio Codec	
Audio Format	
Audio Bit Rate	
Audio Sampling Frequency	
Audio Encapsulation	
A/V Packetization Mode	

For Radio Services:

Parameter	Value
Audio Codec	
Audio Format	
Audio Bit Rate	
Audio Sampling Frequency	
Audio Encapsulation	
A/V Packetization Mode	

4.1.5. ESG

The broadcast ESG should be compliant with specification [3], [10] and [16].
 The parameters from Nokia platform are:

Parameter	Value
Data Model	OMA BCAST
Transport	ALC/FLUTE
Bootstrap IP Address	224.0.23.14
Bootstrap Port Number	9214
ESG Provider ID	1

The parameters from Thomson platform are:

Parameter	Value
Data Model	OMA + IPDC
Transport	FLUTE
Bootstrap IP Address	224.0.23.14
Bootstrap Port Number	9214 + 3937
ESG Provider ID	2

The parameters from SIDA platform are:

Parameter	Value
Data Model	CBMS / OMA BCAST
Transport	ALC / FLUTE
Bootstrap IP Address	224.0.23.14
Bootstrap Port Number	9214
ESG Provider ID	1, 2 & 3 (CBMS Single, CBMS Multiple & OMA BCAST Multiple)

The parameters from Alcatel platform are:

Parameter	Value
Data Model	
Transport	
Bootstrap IP Address	
Bootstrap Port Number	
ESG Provider ID	

The parameters from Eutelsat platform are:

Parameter	Value
Data Model	
Transport	
Bootstrap IP Address	
Bootstrap Port Number	
ESG Provider ID	

4.1.6. Applications

Compliant with TS 102 472 [4]

5. Test Facilities

Abertis telecom will provide some test facilities in their laboratories in order to check the signals and the interoperability before the beginning of the event. In other hand, Abertis will also provide test string of all the platforms available in the ftp site. The information to access to the FTP site is the following. The directory to download is SW_OUT3 in the following address.

Address: ftp://SWD_3:san_8264@195.77.241.164/SW

6. Interoperability Tests

Interoperability among all Platform Providers and Receivers is the main objective of Abertis Telecom. Any receiver manufacturer is invited to attend and perform interoperability tests in the Abertis Technical Room. Abertis Telecom will cooperate with BMCO forum to guarantee interoperability among all the platform providers and receivers.

Contact information for this issue is (luis.moreno@abertistelecom.com)

7. Receiver Performance

The performance of the reference receiver should be in accordance with the corresponding DVB-H Implementation Guidelines [5] and DVB-SH Implementation Guidelines [18].

8. Activities list & Deadlines

Find below all relevant activities along with identified deadlines listed.

Activity	Deadline	Status
Technical proposals tbd	18 December 2009	CLOSED
Platform information & requirements feedback	18 December 2009	CLOSED
Test TS delivery	16 January 2009	
On-site installation	From 2 February to 8 th February.	
Mobile WC Event	From 16 th to 19 th February 2009	
Breakdown period	20 th February 10 A.M to 18 P.M	

9. Contact Information

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"Bmco**forum** Recommendation for Implementation Profile. Launch Profile Version 0.x Dec 4, 2007"
- [18] ETSI TR 102 585 v1.1 (2007-07) : "Digital Video Broadcasting (DVB); System Specifications for Satellite services to Handheld devices (SH) below 3 GHz".
- [19] DVB Document A120 Blue Book (May 2008): "DVB-SH Implementation Guidelines"