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Road vehicles — Multimedia data exchange format for impact tests

Véhicules routiers — Format d'échange de données multimédia pour les essais de choc

Related electronic document A

Descriptors and Hints

Version 2.0 Proposal 6 20090422

Meaning of the colour marks:

black	**no change to the old version 1.5**
red	**proposed change or addition to version 1.5**
light blue	**not clarified at the moment**

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1 Data formats

1.1 Definition of basic and generic data types

Valid basic data types are integer, float and string. Generic data types are date, datetime, coded, reference and filereference.

integer: numbers which don't have any fractional digits.

float: IEEE simple precision floating-point type with the decimal symbol being a point (".") (ASCII 46).

string: a set of characters according to ISO/IEC 8859-1 or ISO/IEC 10646 (UNICODE) without length restrictions.

date: YYYY-MM-DD — in accordance with ISO 8601.

datetime: YYYY-MM-DD hh:mm:ss — in accordance with ISO 8601.

coded: enumeration of valid values (see 2).

reference: value of a channel code part or id used within an other file.

filereference: filename with extension but without pathinformation (according to the filename convention).

1.2 Information files

1.2.1 General rules

Valid descriptors are built from the lexical space ASCII {43, 48 – 57, 65 – 90, 97 – 122}. "+" signs (ASCII 43) at the first position are restricted to partner specific descriptors, which are not defined in this technical specification.

The information of media objects like channels, photos, movies and also testobjects are described in a block structure. Every block starts with a blockbegin-descriptor and ends with a blockend-descriptor. Within a block the position order of the information lines is free.

The hash-symbol "#" (ASCII 35) is restricted to the blockbegin- and blockend-descriptors. These descriptors don't have a value.

All descriptors belonging to the collectivity of media objects of the same type have to be positioned before the first block.

Blocking within a block is not allowed. Valid block-descriptors have to be defined in this document or agreed between the exchanging partners.

1.2.2 Test information

The information about the test has to be stored in the test information file in the main directory. The file extension is "MME". In addition to the standard descriptors special blocks for the NHTSA and for biomechanical testinformations are described.

1.2.2.1 MME standard file

Table 1 — Test information (MME) file

File name:	“filename”.MME, where “filename” is identical to the <testnumber>.			
Location:	main directory			
Contents				
Descriptor	**Mand.**	**Unit**	**Data type**	**Remark**
Data format edition number	YES		coded	**2.0p6**
Timestamp	YES		datetime	creation date of this medium.
Laboratory name	YES		string	
Laboratory contact name	YES		string	person to contact
Laboratory contact phone	YES		string	
Laboratory contact fax	YES		string	
Laboratory contact email	YES		string	
Laboratory test ref number	YES		string	
Customer name	NO		string	
Customer test ref number	NO		string	
Customer project ref number	NO		string	
Customer order number	NO		string	
Customer cost unit	NO		string	
Customer test engineer name	NO		string	
Customer test engineer phone	NO		string	
Customer test engineer fax	NO		string	
Customer test engineer email	NO		string	
Title	NO		string	
Comments	NO		string	
Type of the test	YES		string	for example, frontal impact.
Subtype of the test	YES		string	
Regulation	YES		string	
Date of the test	YES		date	
Reference temperature	NO	[°C]	float	measurement point depends on type of the test.
Relative air humidity	NO	[%]	float	measurement point depends on type of the test.
Number of testobjects	YES		integer	NOVALUE is not allowed
If ‘Number of testobjects’ > 0				
#Begin of testobject	YES			
Type	YES		string	see”Test Object” Column 1 in related electronic document *Channel Codes*.
Filename	YES		filereference	name of the testobject information file (see 1.2.3)
#End of testobject	YES			

1.2.2.2 Additional NHTSA test information

Additional information concerning the test set up and/or conditions required making the ISO-MME impact test dataset transportable into the NHTSA EV5 data exchange format has to be added to the test information file within an own optional information block.

Refer to the NHTSA Test Reference Guide (NHTSA TRG), Volume 1, Vehicle Tests, General Test information section, Version 5 (NTRGV1.PDF -- referred to as TRG in the "Remarks" column) for extended field definitions and codes. This document is available on the NHTSA web site at

http://www-nrd.nhtsa.dot.gov/software/test-reference-guides/test-reference-guides.html

File name:	"filename".mme, where "filename" is identical to the <testnumber>.			
Location:	main directory			
Contents				
Descriptor	**Mand.**	**Unit**	**Data type**	**Remark**
#Begin of NHTSA				
Test type	NO		coded	see TRG
Test configuration	YES		coded	see TRG
Track surface	NO		coded	see TRG
Track condition	NO		coded	see TRG
Closing speed	YES	[m/s]	float	see TRG
Impact angle (clockwise)	YES	[°]	integer	0 to 359 degrees, see TRG
Offset	NO	[m]	float	see TRG
Side impact point	YES	[m]	float	see TRG
Comments	NO		string	multiple lines, 70 char maximum
#End of NHTSA				

1.2.2.3 Additional biomechanical test information

Additional biomechanical information concerning the test set up has to be added to the test information file within an own optional information block.

File name:	"filename".mme, where "filename" is identical to the <testnumber>.			
Location:	main directory			
Contents				
Descriptor	**Mand.**	**Unit**	**Data type**	**Remark**
#Begin of biodynamical				
Financial support	YES		string	for instance EC or national programm
Project ref number	YES		string	for instance Contract number of the EC project
Project contact name	YES		string	name of the coordinator of the project
Project contact email	YES		string	
#End of biodynamical				

1.2.3 Object information

All information concerning testobjects, occupants and restraint systems has to be stored in the Object-subdirectory. Allowed filenames are built from the testnumber and the first characters of the channel codes: the testobject, the position and the main location. Every object is described in an own file with the fileextension “mmi”.

For testobjects the filenames consist of the <testnumber> and the <testobject>. For occupants the filenames consist of the <testnumber>, <testobject> and <position>. For restraint systems the filenames consist of the <testnumber>, <testobject>, <position> and <mainlocation> with AIRB and SEBE stored in separate files.

The MME file contains only the information about the number and the type of testobjects and the testobject information filenames.

1.2.3.1 Standard testobject information

File name:	“filename”.mmi, where “filename” is identical to the <testnumber>_<testobject>.			
Location:	Object-subdirectory			
Contents for all testobject types				
Descriptor	**Mand.**	**Unit**	**Data type**	**Remark**
Name	YES		string	
Velocity	YES	[m/s]	float	at time zero
Mass	YES	[kg]	float	
Impact side	YES		coded	see “Fine Location 1” in related electronic document *Channel Codes*.
Driver position	NO		coded	see “Position” in related electronic document *Channel Codes*.
Class	NO		string	
Code	NO		string	
Ref number	NO		string	
Offset	NO	[%]	float	overlap in percent
Additional contents for testobject types B and M				
Barrier width	NO	[m]	float	
Barrier height	NO	[m]	float	
Yaw angle	NO	[rad]	float	Angle of barrier with normal to direction of vehicle travel. Units: radians limited to $\pm\pi/2$. 0 rad means that the barrier is perpendicular to the vehicle. Positive sense: Clockwise when viewed from above (SAE J211)
Reference system id	NO		reference	coordinate reference system for the loadcell matrix (see 1.2.4)
Origin X	NO	[m]	float	top left corner of the loadcell matrix within the reference system – X coordinate
Origin Y	NO	[m]	float	top left corner of the loadcell matrix within the reference system – Y coordinate
Origin Z	NO	[m]	float	top left corner of the loadcell matrix within the reference system – Z coordinate

Number of loadcells	NO		integer	

1.2.3.2 Additional NHTSA testobject information

Additional information concerning the testobjects required making the ISO-MME impact test dataset transportable into the NHTSA EV5 data exchange format has to be added to the testobject information files (see 1.2.3.1) within an own optional information block.

File name:	“filename”.mmi, where “filename” is identical to the <testnumber>_<testobject>.			
Location:	Object-subdirectory			
Contents for testobject vehicle				
Field descriptor	**Mand.**	**Unit**	**Data type**	**Remark**
#Begin of NHTSA				
Vehicle make	YES		string	free text
Vehicle model	YES		string	free text
Vehicle year	YES		integer	4 digit year
Body type	YES		coded	see TRG
VIN	YES		string	free text
Engine type	NO		coded	see TRG
Engine size	NO	[liters]	float	
Transmission type	NO		coded	see TRG
Vehicle test weight	YES	[kg]	integer	see TRG
Wheel base	YES	[m]	float	see TRG
Vehicle length	YES	[m]	float	see TRG
Vehicle width	YES	[m]	float	see TRG
Vehicle center of gravity	YES	[m]	float	see TRG
Steering column separation	NO		coded	see TRG
Column collapse mechanism	NO		coded	see TRG
Vehicle modifications	NO		string	50 characters maximum
Vehicle speed	YES	[m/s]	float	see TRG
Crab angle	YES	[°]	integer	see TRG
Principal dir of force	NO	[°]	integer	see TRG
Bumper engagement	NO		coded	see TRG
Sill angagement	NO		coded	see TRG
A-Pillar engagement	NO		coded	see TRG
Damage profile distance 1	NO	[m]	float	see TRG
Damage profile distance 2	NO	[m]	float	see TRG
Damage profile distance 3	NO	[m]	float	see TRG
Damage profile distance 4	NO	[m]	float	see TRG
Damage profile distance 5	NO	[m]	float	see TRG
Damage profile distance 6	NO	[m]	float	see TRG
Vehicle damage index	NO		coded	see TRG
Total length indentation	NO	[m]	float	see TRG

Center damaged area to CG	NO	[m]	float	see TRG
Maximum crush distance	NO	[m]	float	see TRG
Angle of moving cart	YES	[°]	float	see TRG
Veh orientation on cart	YES	[°]	float	see TRG
#End of NHTSA				
Contents for testobject barrier				
Descriptor	**Mand.**	**Unit**	**Data type**	**Remark**
#Begin of NHTSA				
Barrier shape	NO		coded	see TRG
Rigid or deformable barrier	NO		coded	see TRG
Angle of fixed barrier	NO	[°]	coded	see TRG
Diameter of pole barrier	NO	[m]	coded	see TRG
Comments	NO		string	Multiple lines, 70 char maximum
#End of NHTSA				

1.2.3.3 Additional biomechanical testobject information

Additional biomechanical information concerning the testobjects has to be added to the testobject information files. Biomechanical tests are mostly performed with a test subject on a test device. The test device has to be described as one of the possible testobjects (see Column 1 in related electronic document *Channel Codes*). The test subject has to be described within an occupant information file (see 1.2.3.4)

File name:	"filename".mmi, where "filename" is identical to the <testnumber>_<testobject>.			
Location:	Object-subdirectory			
Contents				
Descriptor	**Mand.**	**Unit**	**Data type**	**Remark**
Acceleration	NO	[m/s^2]	float	maximum of acceleration

1.2.3.4 Occupant information

The occupant information for all dummies, volunteers or PMHS have to be stored within separate files in the Object-subdirectory.

File name:	"filename".mmi, where "filename" is identical to the <testnumber>_<testobject><position>.			
Location:	Object-subdirectory			
Contents				
Descriptor	**Mandatory**	**Unit**	**Data type**	**Remark**
Gender	for biomech.		coded	see 2.12
Age	for biomech.		float	in years
Dummy type	for NHTSA		coded	see "Fine Location 3" in related electronic document *Channel Codes*.
Dummy manufacturer/Ser No	NO		string	50 characters maximum
Dummy modifications	NO		string	50 characters maximum

Out of position	NO		coded	YES or NO
Head to windshield header	NO	[m]	float	see TRG
Head to windshield	NO	[m]	float	see TRG
Head to side header	NO	[m]	float	see TRG
Head to side window	NO	[m]	float	see TRG
Chest to dash	NO	[m]	float	see TRG
Chest to steering wheel	NO	[m]	float	see TRG
Arm to door	NO	[m]	float	see TRG
Hip to door	NO	[m]	float	see TRG
Knees to dash	NO	[m]	float	see TRG
Head to seatback	NO	[m]	float	see TRG
Neck to seatback	NO	[m]	float	see TRG
Chest to seatback	NO	[m]	float	see TRG
Knee to seatback	NO	[m]	float	see TRG
Seat track position	for NHTSA		coded	see TRG
1st contact for head	NO		coded	see TRG
2st contact for head	NO		coded	see TRG
1st contact for chest/abdo	NO		coded	see TRG
2st contact for chest/abdo	NO		coded	see TRG
1st contact for legs	NO		coded	see TRG
2st contact for legs	NO		coded	see TRG
Head injury criterion HIC	NO	[-]	integer	nondimensional
Lo HIC time interval	NO	[s]	float	
Up HIC time interval	NO	[s]	float	
Thorax peak accel (CLIP3M)	NO	[m/s^2]	float	
L femur peak load	NO	[N]	float	
R femur peak load	NO	[N]	float	
Chest severity index	NO	[-]	integer	nondimensional
Lap belt peak load	NO	[N]	integer	
Shoulder belt peak load	NO	[N]	integer	
Thoracic trauma index	NO	[-]	float	nondimensional
Pelvis acceleration	NO	[m/s^2]	float	
Comments	NO		string	multiple lines, for NHTSA 70 char max.

1.2.3.5 Restraint system information

Additional information concerning airbags and seatbelts has to be added to the restraint system information files in the Object-subdirectory.

File name:	“filename”.mmi, where “filename” is identical to the <testnumber>_<testobject><position><main location>.
Location:	Object-subdirectory
Contents	

Descriptor	Mandatory	Data type	Remark
Restraint mount	NO	coded	see TRG
Restraint type	YES	coded	see TRG
Restraint deployed	NO	coded	see TRG
Comments	NO	string	multiple lines, for NHTSA 70 char maximum

1.2.4 Reference system information

The descriptive information about all reference systems has to be stored within one reference system information file in the Reference-subdirectory.

File name:	"filename".mmi, where "filename" is identical to the <testnumber>_Reference.		
Location:	Reference-subdirectory		
Contents			
Descriptor	**Mandatory**	**Data type**	**Remark**
Number of references	YES	integer	NOVALUE is not allowed
… descriptors, which are valid for all references			
For each reference, if 'Number of references' > 0			
#Begin of reference			
Reference system id	YES	coded	Id used in the reference system data file (see 2.3)
Description	NO	string	general description of the reference coordinate system
X origin	NO	string	description of the origin – X component
Y origin	NO	string	description of the origin – Y component
Z origin	NO	string	description of the origin – Z component
X direction	NO	string	description of the longitudinal axis orientation
Y direction	NO	string	description of the transversal axis orientation
Z direction	NO	string	description of the vertical axis orientation
Comments	NO	string	
#End of reference			

1.2.5 Channel information

The descriptive information about all channels has to be stored within one channel information file in the Channel-subdirectory or in the header section of each channel file. It is possible to use both at the same time. In this case the information of the channel file overrides the information of the channel information file.

File name:	"filename".mmi, where "filename" is identical to the <testnumber>_Channel.
Location:	Channel-subdirectory

Contents			
Descriptor	**Mandatory**	**Data type**	**Remark**
Number of channels	YES	integer	NOVALUE is not allowed
… all descriptors defined in the chapter 1.3.4.1, if they are valid for all channels			
For each channel, if 'Number of channels' > 0			
#Begin of channel			
Channel code	YES	reference	NOVALUE is not allowed
… all descriptors defined in the chapter 1.3.4.1, if they are valid for the specific channel			
#End of channel			

1.2.6 Moving image information

1.2.6.1 Moving image information file

The descriptive information about all films, videos and image sequences has to be stored within one moving image information file in the Movie-subdirectory. If a single image sequence is referenced, the value for 'Name of the movie file' has to point to a subdirectory of the MOVIE directory.

File name:	"filename".mmi, where "filename" is identical to <testnumber>_Movie.			
Location:	Movie-subdirectory			
Contents				
Descriptor	**Mand.**	**Unit**	**Data type**	**Remark**
Number of movies	YES		integer	NOVALUE is not allowed
… descriptors, which are valid for all movies				
For each movie, if 'Number of movies' > 0				
#Begin of movie				
Id number	YES		reference	Id of the movie for referencing
Name of movie file	YES		filereference	
Pixel size	YES	[µm]	float	
Aspect ratio of pixels	YES		float	height of the pixel / width of the pixel
Width of image	YES	[pixel]	integer	
Height of image	YES	[pixel]	integer	
Number of images	YES		integer	
Film speed	YES	[Hz]	float	frames per second
Start time of the movie	YES	[s]	float	time of the first image
End time of the movie	NO	[s]	float	time of the last image
Origin	NO		string	e.g. simulation, test
Description	NO		string	
Camera id number	NO		string	
Camera type	NO		string	
Lens id number	NO		string	
Lens type	NO		string	
Lens focal length	YES		float	

Focus	NO		string	
Aperture	NO		string	
Shutter time	YES	[µs]	float	
Format of movie file	NO		string	e.g. AVI
Colour	NO		string	e.g. B/W, RGB, YUV
Compression code	NO		string	e.g. Indeo
Compression quality	NO		string	e.g. 85%
Keyframes	NO		integer	
Time vector filename	NO		filereference	one component data file in the Channel-subdirectory
Image history filename	NO		filereference	
Correction parameter file	NO		filereference	
Distortion index	NO		float	[%] distortion index according ISO 8721
Movie images corrected	NO		coded	see 2.8
Comments	NO		string	
#End of movie				

1.2.6.2 Correction parameter file

The correction parameter file is optional. It is referenced as value of “Correction parameter file” in the *moving image information file*.The file content for the correction method “bundle adjustment” has to be:

File name:	“filename”.cor, where “filename” is identical to the <testnumber>_<movie id>.			
Location:	Movie-subdirectory			
Contents				
Field descriptor	**Mand.**	**Unit**	**Data type**	**Remark**
Distortion correction type	YES		coded	**bundle adjustment**
Pixel distance x	YES	[mm]	float	
Pixel distance y	YES	[mm]	float	
Principal point x	YES	[pixel]	float	deviation from the centre of the image (positive from left to right)
Principal point y	YES	[pixel]	float	deviation from the centre of the image (positive from left to right)
Calibrated focal length	YES	[mm]	float	as positive value
Distortion unit	YES		coded	**pixel** or **mm,** for the correction coefficients
Distortion correction A1	YES		float	1. corr. coeff. for radial symmetrical distortion
Distortion correction A2	YES		float	2. corr. coeff. for radial symmetrical distortion
Distortion correction A3	YES		float	3. corr. coeff. for radial symmetrical distortion
Distortion correction B1	YES		float	1. corr. coeff. for radial asymmetrical distortion
Distortion correction B2	YES		float	2. corr. coeff. for radial asymmetrical distortion
Distortion correction C1	YES		float	affinity
Distortion correction C2	YES		float	non-othogonality
Distortion correction R0	YES		float	2. zero crossing of the distortion curve

1.2.6.3 Image history file

The image history file is optional. It is referenced as value of *Image history filename* in the moving image information file. The descriptors are not mandatory. They are unique but their position order shall show the time history of the single processing steps. The numbering of the descriptors is used to differentiate between twice or more usage of the same processing item.

File name:	"filename".imh, where "filename" is identical to the <testnumber>_< movie id >.		
Location:	Movie-subdirectory		
Contents			
Field descriptor	**Mandatory**	**Data type**	**Remark**
Image processing system	NO	string	with version number
Image interpolation	NO	string	with version number
Sharpening i	NO	string	typically 1 integer value
Colour matrix i	NO	string	
White balance i	NO	string	typically 3 integer values
Brightness i	NO	string	single or matrix of integer
Contrast i	NO	string	single or matrix of integer
Saturation i	NO	string	integer or float
Hue i	NO	string	typically integer
Gamma i	NO	string	typically 1 float value

1.2.7 Photo information

The descriptive information about all fotos has to be stored within one photo information file in the Photo-subdirectory.

File name:	"filename".mmi, where "filename" is identical to <testnumber>_Photo.			
Location:	Photo-subdirectory			
Contents				
Field descriptor	**Mand.**	**Unit**	**Data type**	**Remark**
Number of photos	YES		integer	NOVALUE is not allowed
… descriptors, which are valid for all photos				
For each photo, if 'Number of photos' > 0				
#Begin of photo				
Id number	YES		string	Id of the photo for referencing
Testobject	YES		reference	type of testobject in test information file
Time classification	YES		coded	see 2.7
Width of image	YES	[pixel]	integer	
Height of image	YES	[pixel]	integer	
Aspect ratio of pixels	YES		float	Height of the pixel / width of the pixel
Name of photo file	YES		filereference	
Photographer	NO		string	

Description	NO		string	
Camera type	NO		string	
Direction	NO		string	e.g. left hand side
Aperture	NO		string	
Exposure time	NO	[s]	float	
Format of photo file	NO		string	e.g. TIFF or JPEG file format
Colour	NO		string	e.g. B/W, RGB, YUV
Compression	NO		string	
Comments	NO		string	
#End of photo				

1.2.8 Additional information files

The descriptive information about media objects like documents or reports has to be stored within one information file in the corresponding subdirectory. These information files are optional.

File name:	"filename".mmi, where "filename" is identical to the <testnumber>_<media object>.		
Location:	corresponding subdirectory e.g. Report		
Contents			
Field descriptor	**Mandatory**	**Data type**	**Remark**
Number of <media objects>	YES	integer	NOVALUE is not allowed
… descriptors, which are valid for all <media objects>			
For each <media object>, if 'Number of <media objects>' > 0			
#Begin of <media object>			
Filename	YES	filereference	
Description	NO	string	
Format of file	NO	string	e.g. PDF
Originator	NO	string	
#End of <media object>			

1.3 Data files

1.3.1 General rules

The data block of each data file is surrounded by '#Start of data' and '#End of data' and may be consisting of one ore more columns. The columns are separated by one ore multiple tabulation stops.

Some common used data structures are predefined in the following chapters. The column description of the predefined data structures may be omitted. **MultiChannel** has to be used for all data structures which are not predefined or agreed between the exchanging partners. In this case all columns have to be described in the header section. All descriptors which are identical for all columns shall be positioned before the column block structure.

1.3.2 Multi column data files

File name:	"filename".mmd

Location:	specific subdirectory		
Contents			
Field descriptor	**Mandatory**	**Data type**	**Remark**
#Begin of header			
Data format edition number	NO	coded	**2.0p6**
Data structure	YES	coded	**MultiChannel**
Description	NO	string	
… all descriptors defined in the chapters 1.2 and 1.3, if they are valid for all columns			
#End of header			
... Data section ...			
Contents if 'Data structure' is MultiChannel			
Number of columns	YES	integer	NOVALUE is not allowed
#Begin of column			
Name	YES	string	title of the column
Unit	YES	string	SI unit
Format	YES	coded	see 1.1
… all descriptors defined in the chapters 1.2 and 1.3, if they are valid for the specific column			
Comments	NO	string	
#End of column			

1.3.3 Reference system data file

The relations between all reference systems described in the reference system information file have to be stored within one reference system data file in the Reference-subdirectory. It is a multicolumn data file.

File name:	"filename".mmd, where "filename" is identical to the <testnumber>_Reference.		
Location:	Reference-subdirectory		
Contents			
Field descriptor	**Mandatory**	**Data type**	**Remark**
#Begin of header			
Data format edition number	NO	coded	**2.0p6**
Data structure	YES	coded	**Reference**
#End of header			
... Data section ...			
Column specification if 'Data structure' is References			
Field descriptor	**Value**	**Remark**	
Number of columns	10		
#Begin of column			
Name	Source		
Unit	1		
Format	reference	Reference system id (see 1.2.4 and 2.3)	

#End of column		
#Begin of column		
Name	Destination	
Unit	1	
Format	reference	Reference system id (see 1.2.4 and 2.3)
#End of column		
#Begin of column		
Name	Time	
Unit	s	
Format	float	
#End of column		
#Begin of column		
Name	X	
Unit	m	
Format	float	
#End of column		
#Begin of column		
Name	Y	
Unit	m	
Format	float	
#End of column		
#Begin of column		
Name	Z	
Unit	m	
Format	float	
#End of column		
#Begin of column		
Name	QuaternionW	
Unit	1	
Format	float	
#End of column		
#Begin of column		
Name	QuaternionX	
Unit	1	
Format	float	
#End of column		
#Begin of column		
Name	QuaternionY	
Unit	1	
Format	float	
#End of column		
#Begin of column		
Name	QuaternionZ	

Unit	1	
Format	float	
#End of column		

1.3.4 Channel data files

A channel data file may consist of one ore more channels each belonging to a component of a physical value. The columns are separated by tabulation stops. Allowed filenames are built by the codes defined in the related electronic document *Channel Codes*. The recommended reference system id (see 1.2.4 and 2.3) for channel files with a local reference system according to SAEJ211 is “LOC”.

1.3.4.1 One component data files

One component data files consist of a single data column in the data section and are stored in the Channel-subdirectory.

File name:	“filename”.mmd, where “filename” is identical to <testnumber>_<referencesystem>_<channelcode>.mmd			
Location:	Channel-subdirectory			
Contents for all channels				
Field descriptor	**Mand.**	**Unit**	**Data type**	**Remark**
Data format edition number	NO		coded	**2.0p6**
Data structure	YES		coded	**Channel**
Instrumentation standard	YES		string	
Testobject	NO		reference	type of testobject in test information file
Name of the channel	YES		coded	see related electronic document *Channel Codes*.
Laboratory channel code	NO		string	
Customer channel code	NO		string	
Channel frequency class	NO		coded	see “Filter class” in related electronic document *Channel Codes*.
Unit	YES		coded	see “Dimension” in related electronic document *Channel Codes*.
Reference system id	YES		reference	see 1.2.4 and 2.3
Reference channel	YES		coded	see 2.6
Reference channel name	NO		reference	<channelcode> of the time reference channel if ‘Reference channel’ is explicit
Data source	YES		coded	see 2.5
Data status	YES		coded	see 2.4
Transducer type	NO		string	
Transducer id	NO		string	
Uuid	NO		string	universally unique identifier
Prefilter type	NO		string	anti-aliasing filter
Cut off frequency	YES	[Hz]	float	-3dB frequency of Pre-filter
Channel amplitude class	YES		float	see ISO 6487
Sampling interval	YES	[s]	float	time step

Bit resolution	YES		integer	
Time of first sample	YES	[s]	float	'minus' before impact
Number of samples	YES		integer	
Comments	NO		string	
First global maximum value	NO		float	without unit
Time of maximum value	NO	[s]	float	
First global minimum value	NO		float	without unit
Time of minimum value	NO	[s]	float	
Start offset interval	NO	[s]	float	'minus' before impact
End offset interval	NO	[s]	float	'minus' before impact
Loadcell width	NO	[mm]	float	width of loadcell
Loadcell height	NO	[mm]	float	height of loadcell
Loadcell top left Y	NO	[mm]	float	defines top, left of loadcell wrt the loadcell martrix origin
Loadcell top left Z	NO	[mm]	float	defines top, left of loadcell wrt the loadcell martrix origin
#Start of data				
... Data section ...				
#End of data				

1.3.4.2 Multi component data files

The components of e.g. a triaxial transducer can be combined and stored in a multicolumn data file in the Channel-subdirectory. If the three spatial components differ only in the direction fields of their Channel codes, the filename includes the Channel code with the direction "M". The three columns contain the values for the X, Y and Z component.

File name:	"filename".mmd, where "filename" is identical to <testnumber>_<referencesystem>_<channelcode>.mmd with the direction "M" in the Channel code		
Location:	Channel-subdirectory		
Contents			
Field descriptor	**Mandatory**	**Data type**	**Remark**
Data format edition number	NO	coded	**2.0p6**
Data structure	YES	coded	**TriaxialChannel**
… all descriptors defined in 1.3.4.1 for an one component data file, if they are valid for all components			
#Start of data			
... Data section ...			
#End of data			
Column specification if 'Data structure' is TriaxialChannel			
Field descriptor	**Value**	**Remark**	
Number of columns	3		
#Begin of column			

Name	X	
Format	float	
#End of column		
#Begin of column		
Name	Y	
Format	float	
#End of column		
#Begin of column		
Name	Z	
Format	float	
#End of column		

1.3.5 Static measurement data file

Static measurement data may consist of points, lines and areas.

File name:	“filename”.mmd, where “filename” is identical to <testnumber>_ StaticData.		
Location:	Static-subdirectory		
Contents			
Field descriptor	**Mandatory**	**Data type**	**Remark**
Data format edition number	NO	coded	**2.0p6**
Data structure	YES	coded	**StaticData**
#Start of data			
... Data section ...			
#End of data			
Column specification if ‘Data structure’ is StaticData			
Field descriptor	**Value**	**Remark**	
Number of columns	7		
#Begin of column			
Name	Name		
Unit	1		
Format	string	shall be the <channelcode>	
#End of column			
#Begin of column			
Name	Refsys		
Unit	1		
Format	reference	Reference system id (see 1.2.4 and 2.3)	
#End of column			
#Begin of column			
Name	Group		
Unit	1		
Format	string	name of line or area, **NOVALUE** for points	

#End of column		
#Begin of column		
Name	Classification	time Classification, see 2.7
Unit	1	
Format	coded	see 2.7
#End of column		
#Begin of column		
Name	X	
Unit	m	
Format	float	
#End of column		
#Begin of column		
Name	Y	
Unit	m	
Format	float	
#End of column		
#Begin of column		
Name	Z	
Unit	m	
Format	float	
#End of column		

1.3.6 3D point data file

The coordinates of a three dimensional point can be combined and stored in a multicolumn data file of data structure **Point** in the Channel-subdirectory. The filename includes the Channel code with the direction “M”. The columns contain the values for the Time, X, Y and Z component. The data structure **PointStdDev** is an enlargement with 3 additional columns for the standard deviations of the spatial components.

File name:	“filename”.mmd, where “filename” is identical to <testnumber>_<referencesystem>_<channelcode>.mmd with the direction “M” in the Channel code		
Location:	Channel-subdirectory		
Contents			
Field descriptor	**Mandatory**	**Data type**	**Remark**
Data format edition number	NO	coded	**2.0p6**
Data structure	YES	coded	**Point, PointStdDev**
#Start of data			
... Data section ...			
#End of data			
Column specification if ‘Data structure’ is Point			
Field descriptor	**Value**	**Remark**	
Number of columns	4		

#Begin of column		
Name	Time	
Format	float	
Unit	s	
#End of column		
#Begin of column		
Name	X	
Format	float	
Unit	m	
#End of column		
#Begin of column		
Name	Y	
Unit	m	
Format	float	
#End of column		
#Begin of column		
Name	Z	
Unit	m	
Format	float	
#End of column		
Column specification if 'Data structure' is PointStdDev		
Number of columns	7	
Field descriptor	**Value**	**Remark**
… the 4 column descriptions of **Points** and in addition		
#Begin of column		
Name	SX	
Format	float	
Unit	m	
#End of column		
#Begin of column		
Name	SY	
Unit	m	
Format	float	
#End of column		
#Begin of column		
Name	SZ	
Unit	m	
Format	float	
#End of column		

1.3.7 Camera position file and 6dObject file

The position and orientation of all cameras can be stored within one camera position file in the Movie-subdirectory. It is a multicolumn data file. This data type is also usable for other media objects which are described by a position and an orientation.

File name:	"filename".mmd, where "filename" is identical to <testnumber>_ CameraPosition or <testnumber>_ 6dObject		
Location:	Movie-subdirectory for camera positions Object-subdirectory for all other objects with 6 degrees of freedom		
Contents			
Field descriptor	**Mandatory**	**Data type**	**Remark**
Data format edition number	NO	coded	**2.0p6**
Data structure	YES	coded	**PositionAndOrientation**
#Start of data			
... Data section ...			
#End of data			
Column specification if 'Data structure' is PositionAndOrientation			
Field descriptor	**Value**	**Remark**	
Number of columns	10		
#Begin of column			
Name	Name		
Unit	1		
Format	reference	Id number of the movie from moving image information file or id number of the 6dObject	
#End of column			
#Begin of column			
Name	Refsys		
Unit	1		
Format	reference	Reference system id (see 1.2.4 and 2.3)	
#End of column			
#Begin of column			
Name	Time		
Unit	1		
Format	string	float value for moving, **static** for nonmoving cameras	
#End of column			
#Begin of column			
Name	X		
Unit	s		
Format	float		
#End of column			
#Begin of column			
Name	Y		
Unit	m		

Format	float	
#End of column		
#Begin of column		
Name	Z	
Unit	m	
Format	float	
#End of column		
#Begin of column		
Name	QuaternionW	
Unit	m	
Format	float	
#End of column		
#Begin of column		
Name	QuaternionX	
Unit	1	
Format	float	
#End of column		
#Begin of column		
Name	QuaternionY	
Unit	1	
Format	float	
#End of column		
#Begin of column		
Name	QuaternionZ	
Unit	1	
Format	float	
#End of column		

1.4 Comment files

All comment files contain unformatted text. To reference a data channel use the channel code with an appended colon.

2 Coded values

2.1 Valid values for the descriptor ‘Data format edition number‘

Value	Remark
2.0	current version
2.0p6	for testing only; actual proposal 5

2.2 Valid values for the descriptor ‘Data structure‘

Value	Remark
MultiChannel	user specific number of columns; see 1.3.2
Reference	10 columns; see 1.3.3
Channel	1 column; see 1.3.4.1
TriaxialChannel	3 columns; see 1.3.4.2
StaticData	7 columns; see 1.3.5
Point	4 columns; see 1.3.6
PointStdDev	7 columns; see 1.3.6
PositionAndOrientation	10 columns; see 1.3.7

2.3 Valid values for the descriptor ‘Reference system id‘

Value	Remark
LOC	local coordinate system for transducers according to SAE J211
nST	testobject n static (see related electronic document *Channel Codes*)
nT0	testobject n at T0 (see related electronic document *Channel Codes*)
nDY	testobject n dynamic (see related electronic document *Channel Codes*)
i	3 digit number i with leading zeros

2.4 Valid values for the descriptor ‘Data status‘

Value	Remark
ok	
channel failed	
meaningless data	
no data	
questionable data	
scaling factor applied	
system failed	
linearised data	
NOVALUE	

2.5 Valid values for the descriptor ‘Data source‘

Value	Remark
transducer	channel data has been generated by transducer
calculation	channel data has been calculated from other channels
camera	channel data has been generated by filmanalysis
simulation	channel data has been generated by simulation
parameter	channel data can be constant or limit curve

2.6 Valid values for the descriptor ‘Reference channel‘

Value	Remark
implicit	Time reference is given with the descriptor values ‘Time of first sample’ and ‘Sampling interval’.
explicit	Explicit time channel exists in test data. Channel name is given with the descriptor ‘Reference channel name’.
NOVALUE	No time reference is available. For example in case of constant channels (filter class ‘X’).

2.7 Valid values for the descriptor ‘Time classification‘

Value	Remark
PRE	before the test
DURING	during the test
POST	after the test
NOVALUE	no time classification is available

2.8 Valid values for the descriptor ‘Movie images corrected‘

Value	Remark
YES	The images of the movie are corrected.
NO	The images of the movie are not corrected.

2.9 Valid values for the descriptor ‘Distortion correction type‘

The descriptor ‘Distortion correction type’ is used within correction parameter files to distinguish the type of correction.

Value	Remark
bundle adjustment	see 1.2.6.2

2.10 Valid values for the descriptor ‘Distortion unit‘

Value	Remark

mm	see 1.2.6.2
pixel	see 1.2.6.2

2.11 Valid values for the descriptor ‘Format‘

Value	Remark
integer	see 1.1
float	see 1.1
string	see 1.1
date	see 1.1
datetime	see 1.1
coded	see 1.1
reference	see 1.1
filereference	see 1.1

2.12 Valid values for the descriptor ‘Gender‘

Value	Remark
male	
female	

2.13 Valid values for block descriptors

Blockbegin- and blockend-descriptors are used within information and data files to structure the information lines. Blocks are surrounded by a ‘#Begin of <value>‘ and a ‘#End of <value>’ descriptor. Predefined values are listed in the following table.

Value	Remark
data	used for the data section within data files
column	used for the description section of multicolumn data files
testobject	used for testobject information in the mme file
NHTSA	used for additional NHTSA specific information
biodynamical	used for the additional information of biodynamical test environments
reference	used within reference system information and data files
movie	used for movie information files
photo	used for photo information files

3 Hints

For future use.

4 Examples

4.1 Examples of information files

4.1.1 Examples of test information files

4.1.1.1 Example of MME file

Filename: 2009ISO2.mme

Data format edition number	:2.0p6
Timestamp	:2009-07-07 09:25:15
Laboratory name	:ALPHA Car Test Laboratory
Laboratory contact name	:Frank N. Stein
Laboratory contact phone	:+49-222/123-4567
Laboratory contact fax	:+49-222/123-8901
Laboratory contact email	:frank.stein@alpha.cartest.com
Laboratory test ref number	:2001WG3
Customer name	:ISO/TC22/SC12/WG3 Safety Laboratory
Customer test ref number	:2001ISO1
Customer project ref number	:ISOTC22
Customer order number	:SC12WG3
Customer cost unit	:2001/0
Customer test engineer name	:Mary Land
Customer test engineer phone	:+44-123/555-123
Customer test engineer fax	:+44-123/555-456
Customer test engineer email	:mary.land@iso.tc22.sc12.wg3.uk
Title	:Simulation Test
Type of the test	:Vehicle into Vehicle
Subtype of the test	:40% Offset both
Regulation	:AMS
Date of the test	:2009-03-03
Reference temperature	:285.5
Relative air humidity	:75
Number of test objects	:2
#Begin of testobject	
Type	:1
Filename	: 2009ISO2_1.INF
#End of testobject	
#Begin of testobject	
Type	:B
Filename	:2009ISO2_B.INF
#End of testobject	

4.1.1.2 Example of additional NHTSA test information

Filename: 2009ISO2.mme

Data format edition number	:2.0p6
Timestamp	:2009-07-07 09:25:15
...	
#Begin of NHTSA	
Test type	NCA
Test configuration	VTB
Track surface	CON
Track condition	DRY
. . .	
#End of NHTSA	

4.1.2 Examples of object information files

4.1.2.1 Example of vehicle information

Filename: 2009ISO2_1.mmi

Name	Vehicle A
Velocity	15.72
Mass	1430.00
Impact side	2
Class	A0
Code	LittleCar
Ref number	007-008
Driver position	1
#Begin of NHTSA	
Vehicle make	CarManu
Vehicle model	Eagle
Vehicle year	2009
. . .	
#End of NHTSA	

4.1.2.2 Example of barrier information

Filename: 2009ISO2_B.mmi

Name	Barrier xyz
Velocity	0.00
Mass	1500.00
Impact side	NOVALUE
Class	NOVALUE
Code	xyz
Ref number	1111-012
Barrier width	3.2
Barrier height	1.64
Reference system id	BST
Comments	according to the SAE J211 coordinate system
Origin X	0.12
Origin Y	-1.4
Origin Z	-1.8
Number of loadcells	64

4.1.2.3 Example of NHTSA occupant information

...

4.1.2.4 Example of NHTSA restraint system information

...

4.1.3 Example of reference system information

Filename: 2009ISO2_Reference.mmi

Number of references	5
#Begin of reference	

Reference system id	LOC
Description	local systems according to SAE J211
X origin	center of gravity of the transducer
Y origin	center of gravity of the transducer
Z origin	center of gravity of the transducer
X direction	from the rear of the car to the front
Y direction	from the left to the right of the vehicle or dummy
Z direction	in the direction of the force of gravity
#End of reference	
#Begin of reference	
Reference system id	1T0
Description	vehicle system at Time 0
X origin	center of the front axle
Y origin	center of the front axle
Z origin	center of the front axle
X direction	from the front of the car to the rear
Y direction	from the left to the right of the vehicle
Z direction	opposite to the force of gravity
#End of reference	
#Begin of reference	
Reference system id	1DY
Description	vehicle system dynamic
X origin	center of the front axle
Y origin	center of the front axle
Z origin	center of the front axle
X direction	from the front of the car to the rear
Y direction	from the left to the right of the vehicle
Z direction	opposite to the force of gravity
#End of reference	
#Begin of reference	
Reference system id	001
Description	vehicle system at T0 / direction of the axes according to SAE J211
X origin	center of the front axle
Y origin	center of the front axle
Z origin	center of the front axle
X direction	from the rear of the car to the front
Y direction	from the left to the right of the vehicle
Z direction	in the direction of the force of gravity
#End of reference	
#Begin of reference	
Reference system id	TST
Description	testrig static
X origin	Marker on the floor in front of the barrier
Y origin	Marker on the floor in front of the barrier
Z origin	Marker on the floor in front of the barrier
X direction	from the barrier to the vehicle, opposite to the driving direction
Y direction	from the left to the right of the vehicle
Z direction	opposite to the force of gravity
#End of reference	

4.1.4 Example of channel information file

Filename: 2009ISO2_Channel.mmi

Instrumentation standard	ISO 6487 (1987) / SAE J211 (MAR95)
#Begin of channel	
Testobject	:1
Reference system id	LOC
Channel code	:11HEAD0000H3ACXA
Name of the channel	:Head Acceleration X

Laboratory channel code :HEAD01AX
Customer channel code :1HEAD_X_ACC
Data source :transducer
Data status :ok
Reference channel :implicit
Reference channel name :NOVALUE
Channel frequency class :1000
Unit :m/(s*s)
Transducer type :TAU 7270 A
Transducer id 071234
Uuid 071234
Prefilter type :Butterworth, 6 pole
Cut off frequency :2000.0
Channel amplitude class :2000.0
Bit resolution :12
Sampling interval :0.0001
Time of first sample :0.0000
Number of samples :2500
#End of channel
#Begin of channel
Testobject :1
Reference system id LOC
Channel code :11HEAD0000H3ACYA
...

4.1.5 Examples of moving image information

4.1.5.1 Example of moving image information file

Filename: 2009ISO2_Movie.mmi

Number of movies 7
Comments :
Comments : information valid for all movies
Comments :
Origin :Crashtest
Camera type :KAPPA ROC
Pixel size 12
Aspect ratio of pixels :1.00
Format of movie file :AVI
Colour :RGB
Distortion index :NOVALUE
Movie images corrected :NO
Comments :
Comments : specific information of movie 1
Comments :
#Begin of movie
Id number :1
Description :total view of vehicle A from the left side
Camera id number :KAPPA12
Width of image :512
Height of image :384
Lens id number :14579435
Lens type :Schneider
Lens focal length :10
Focus :infinite
Aperture :5.6 - 8
Number of images :351
Film speed :1000
Shutter time 250
Start time of the movie -0.05

End time of the movie 0.3
Time vector filename :2009ISO2_10VEHC000000TI00.mmd
Name of movie file :LEFTATOT.AVI
Compression code :Indeo 5.11
Compression quality :85%
Keyframes :7
Image history filename :KAPPA12.IMH
Correction parameter file :KAPPA12_14579435.COR
#End of movie
Comments
Comments specific information of movie 2
Comments
#Begin of movie
Id number :2
Description :total view of vehicle A from the right side
Camera id number :KAPPA67
. . .

4.1.5.2 Example of COR file

Filename: referenced by the descriptor ‘Correction parameter file’ **from moving image information file**

Distortion correction type :bundle adjustment
Pixel distance x :0.016
Pixel distance y :0.016
Principal point x :-9.38
Principal point y :-8.25
Calibrated focal length :10.128
Distortion unit :mm
Distortion correction A1 :-1.1685e-003
Distortion correction A2 :5.3873e-006
Distortion correction A3 :2.8685e-007
Distortion correction B1 :-1.4558e-005
Distortion correction B2 :-3.2337e-005
Distortion correction C1 :6.6139e-007
Distortion correction C2 :3.6798e-005
Distortion correction R0 :3.413

4.1.6 Example of photo information file

Filename: 2009ISO2_Photo.mmi

Number of photos :6
Comments :
Comments : information valid for all movies
Comments :
Camera type :ETA 007
Aperture 4 – 5.6
Exposure time :0.008
Width of image :1170
Height of image :1000
Aspect ratio of pixels :1.00
Format of photo file :TIFF
Colour :RGB
Compression :LZW
Photographer Hamilton
Comments :##############################
Comments : specific information of photo 1
#Begin of photo
Id number 1
Testobject 1

```
Time classification                 POST
Description                         :partial view of the frontcar of vehicle B
Direction                           :right
Name of photo file                  :BRIGPOST.TIF
#End of photo
Comments                            :##############################
Comments                            : specific information of photo 2
#Begin of photo
Id number                           2
Testobject                          1
Time classification                 POST
. . .
```

4.1.7 Example of report information file

...

4.2 Examples of data files

4.2.1 Example of reference system data file

Filename: 2009ISO2_Reference.mmd

```
Data format edition number          2.0p6
Data structure                      Reference
Comments                            Name  Refsys  Time    X    Y    Z    Qw   Qx   Qy   Qz
#Start of data
1T0   TST    0.000    2.9522   -7.3176  1.6790     1.00000    0.00000    0.00000    0.00000
001   1T0    0.000    0.0000    0.0000  0.0000     0.00000    0.00000    1.00000    0.00000
1DY   1T0   -2.000    0.0340    0.0000  0.0000     1.00000    0.00000    0.00000    0.00000
1DY   1T0   -1.000    0.0170    0.0000  0.0000     1.00000    0.00000    0.00000    0.00000
1DY   1T0    0.000    0.0000    0.0000  0.0000     1.00000    0.00000    0.00000    0.00000
1DY   1T0    1.000   -0.0160    0.0000  0.0000     1.00000    0.00000    0.00000    0.00000
. . .
#End of data
```

4.2.2 Example of channel data files

4.2.2.1 Example of one component data file

Filename: 2009ISO2_LOC_11HEAD0000H3ACXA.mmd

```
Data format edition number          2.0p6
Data structure                      Channel
Instrumentation standard            ISO 6487 (1987) / SAE J211 (MAR95)
Testobject                          :1
Name of the channel                 :Head Acceleration X
Laboratory channel code             :HEAD01AX
Customer channel code               :1HEAD_X_ACC
Channel code                        :11HEAD0000H3ACXA
Channel frequency class             :1000
Unit                                :m/(s*s)
Reference system id                 LOC
Transducer type                     :TAU 7270 A
Transducer id                       071234
Prefilter type                      :Butterworth, 6 pole
Cut off frequency                   :2000.0
Channel amplitude class             :2000.0
Reference channel                   :implicit
```

Reference channel name :NOVALUE
Data source :transducer
Data status :ok
Sampling interval :0.0001
Bit resolution :12
Time of first sample :0.0000
Number of samples :2500
First global maximum value :+1.237802E+02
Time of maximum value :+0.18450
First global minimum value :-5.489905E+02
Time of minimum value :+0.06860
Start offset interval :-0.0500
End offset interval :+0.0000
#Start of data
-4.788391E-01
. . .
#End of data

4.2.2.2 Example of multicomponent data file

Filename: 2009ISO2_LOC_11HEADLE00H3ACMA.mmd

Data format edition number 2.0p6
Data structure TriaxialChannel
Instrumentation standard ISO 6487 (1987) / SAE J211 (MAR95)
Testobject :1
Name of the channel :Head Acceleration XYZ
Laboratory channel code :HEAD01A
Customer channel code :1HEAD_XYZ_ACC
Channel code :11HEAD0000H3ACMA
Channel frequency class :1000
Unit :m/(s*s)
Reference system id LOC
Transducer type :TAU 7270 A
Transducer id 071234
Prefilter type :Butterworth, 6 pole
Cut off frequency :2000.0
Channel amplitude class :2000.0
Reference channel :implicit
Reference channel name :NOVALUE
Data source :transducer
Data status :ok
Sampling interval :0.0001
Bit resolution :12
Time of first sample :0.0000
Number of samples :2500
Start offset interval :-0.0500
End offset interval :+0.0000
#Begin of column
First global maximum value 502.136
Time of maximum value 0.075
First global minimum value -69.0138
Time of minimum value 0.2499
#End of column
#Begin of column
First global maximum value 165.987
Time of maximum value 0.0838
First global minimum value -84.1962
Time of minimum value 0.1448

#End of column
#Begin of column
First global maximum value 291.26
Time of maximum value 0.0763
First global minimum value -16.7116
Time of minimum value 0.2499
#End of column
#Start of data
-4.788391E-04 +1.915366E-03 -4.788391E-04
-7.182586E-04 +2.394206E-03 -9.576783E-04
. . .
#End of data

Example of static measurement data file

Filename: 2009ISO2_ StaticData.mmd

```
Data format edition number          2.0p6
Data structure                      StaticData
Comments                            Name  Refsys  Group  Classification  X  Y  Z
#Start of data
11APILMI0000DSM0    VST      NOVALUE    PRE     0.361    -0.7885  07172
11APILMI0000DSM0    VST      NOVALUE    POST    0.406    -0.7832  07255
. . .
P0001               VST      Dashboard  PRE     0.300    -0.450   0.655
P0002               VST      Dashboard  PRE     0.301    -0.450   0.654
P0003               VST      Dashboard  PRE     0.302    -0.450   0.653
P0004               VST      Dashboard  PRE     0.303    -0.450   0.652
. . .
#End of data
```

4.2.3 Example of 3D point data file

Filename: 2009ISO2_1T0_11HEADLEMI00DSMV.mmd

```
#Begin of header
Data format edition number          2.0p6
Data structure                      Point
Comments                            Time  X  Y  Z
#Start of data
   -0.0090   4.679542e-001   -4.399675e-001   7.325757e-001
   -0.0080   4.679646e-001   -4.399681e-001   7.326144e-001
   -0.0070   4.679401e-001   -4.399651e-001   7.326324e-001
   -0.0060   4.679460e-001   -4.399436e-001   7.326981e-001
. . .
#End of data
```

4.2.4 Example of camera position file

Filename: 2009ISO2_CameraPosition.mmd

```
Data format edition number          2.0p6
Data structure                      PositionAndOrientation
Comments                            Name  Refsys  Time[s]  X[m]  Y[m]  Z[m]  Qw  Qx  Qy  Qz
#Start of data
L1   TST      0.000    2.9521    -7.3178    1.6081    0.76506    0.64370    0.01340    0.01277
L1   TST      0.001    2.9522    -7.3177    1.6080    0.76506    0.64370    0.01341    0.01277
...
L1   TST      0.150    2.9525    -7.3177    1.6081    0.76506    0.64370    0.01347    0.01272
IN1  1T0      static   0.8000    -0.4000    0.0200    0.96593    0.00000    -0.25882   0.00000
IN2  1T0      static   0.8000    -0.4000    0.0280    0.96126    0.00000    -0.27564   0.00000
. . .
#End of data
```

4.3 Example of comment files

4.3.1 Example of test comment file

...

4.3.2 Example of channel comment file

...