


## Personal Information

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## Studies

Title of degree	Study Period	Location
<b>Telecommunications Engineering Bachelor</b>	2002 - present	Escuela Superior de Ingenieros de Telecomunicación, Valladolid, Spain

## Diploma Thesis

Company	Title	Abstract
<b>Daimler AG</b>	"Automatic testing of compression formats and their variations in a vehicle telematic Head Unit"	<p>This Diploma Thesis' goal is to perform automated testing for an end-user Headunit, checking whether every possible compressed audio format and its parametrical variations is actually reproduced, and/or calculating the reproduction accuracy compared to the original audio source.</p> <p>To accomplish these goals, this Thesis is composed of two different phases:</p> <ul style="list-style-type: none"><li>• 1. Design and development of a SW-Tool, which encodes and converts audio files from a known source into every possible compression format, and its variation.</li><li>• 2. Design and development of a second SW-Tool, which processes the output signal from the Headunit, showing the accuracy level and finding error patterns.</li></ul>

## Professional Experience

Company/ University	Location	Period	Description
<b>Agosa Electricidad y Telecomunicaciones</b>	Valladolid, Spain	September 2005 – June 2006	Technical helper in an electricity, illumination and telecommunications installer company. Design and on-site work on electric and optical circuit installation, structured wiring and technical solution support.
<b>Technische Universität Dresden</b>	Dresden, Germany	September 2008 – August 2009	Investigation work as a member of an international faculty research team about optical network migration, "Investigation of traffic grooming in optical backbone networks", currently in publication process.
<b>Daimler AG</b>	Sindelfingen, Germany	September 2009 – August 2010	<ul style="list-style-type: none"><li>• Planning, organizing and executing tests on the Headunit NTG2.5.</li><li>• Assistance on failure analysis and costumer support in the context of supervision of NTG2.5's series production.</li></ul>



## Languages

Language	Understanding	Speaking	Reading	Writing	Certificates
Spanish	Mother tongue	Mother tongue	Mother tongue	Mother tongue	
English	High	High	High	High	Cambridge First Certificate of English ELS Masters Level
French	Medium	Medium	Medium	Medium	DEL F 1er Degré
German	Medium	Medium	Medium	Medium	

May 2010

## Current project's short overview:

### Part 1. Encoding and conversion:

A test scenario is created, with a full definition of the Headunit to be tested. Results from past tests are available for analysis.

**Mercedes-Benz Player Tester**

**Headunit info**

Tested Unit S/N: A 172 820 34 89

Type: NTG2.5 Baureihe: CL203

Market: ECE Line: Comand APS+

SW Stand: 3AF492B 001 006

HW Stand: A 172 820 35 89

**Test info**

Date: 1.6.20 Time: 17:34

Medium: SD Card

Comments:

Load Testcase Create Testcase

Test_ID	SerialNumber	Type	Baureihe	Market	Line	SWStand	
1	A 172 820 34 89	NTG2.5	CL203	ECE	Comand APS+	3AF492B 001 006	A
2	AL088081000011	NTG4.212	W212	USA	Audio55	A2118706794	A

EXIT

Depending on the test to be performed, different audio files are generated. All of them are properly encoded in order to allow their subsequent identification.

**DTMF Töne**

Ziel-Verzeichnis: C:\Testcase

Files zu erzeugen: 630

**Decoder**

☒ LAME ☐ Fraunhofer ☐ Nero

**Sampling frequency**

☐ 8 kHz ☐ 16 kHz ☒ 32 kHz ☒ 44,1 kHz ☒ 48 kHz

**Encoding Modus**

☒ CBR ☒ ABR ☒ VBR

**Länge des Tones**

0,5 s

**Default Optionen**

LAME MPEG-1 L-III  
LAME MPEG-2 L-III  
LAME MPEG-2.5 L-III  
Nero AAC  
Fraunhofer AAC

**Bitrate**

☐ 8 Kbps ☒ 32 Kbps ☒ 56 Kbps ☒ 96 Kbps ☐ 144 Kbps ☒ 224 Kbps  
☐ 16 Kbps ☒ 40 Kbps ☒ 64 Kbps ☒ 112 Kbps ☒ 160 Kbps ☒ 256 Kbps  
☐ 24 Kbps ☒ 48 Kbps ☒ 80 Kbps ☒ 128 Kbps ☒ 192 Kbps ☒ 320 Kbps

**Benutzt Codec**

☒ MPEG-1 L-III ☐ MPEG-4 AAC LC  
☐ MPEG-2 L-III ☐ MPEG-2 AAC LC  
☐ MPEG-2.5 L-III ☐ MPEG-2 AAC LC +SBR  
☐ MPEG-4 AAC LC +SBR  
☐ MPEG-4 ER AAC LC  
☐ MPEG-4 AAC LC +SBR +PS  
☐ WMA

**Operational Opt. (MP3)**

☒ Joint Stereo ☒ Simple Stereo ☒ Force Stereo  
☒ Dual Mono ☒ Mono

**Transmux (AAC)**

☐ Raw ☐ ADIF ☐ ADTS  
☐ MP4 FF ☐ 3GPPFF  
☐ LATM in LOAS

**Zeit Ton/Pause**

80 %

**Generierte Files**

B010104070101.wav  
B010104070102.wav  
B010104070103.wav  
B010104070104.wav  
B010104070105.wav  
B010104070201.wav  
B010104070202.wav  
B010104070203.wav  
B010104070204.wav  
B010104070205.wav  
B010104070301.wav  
B010104070302.wav

**Erzeugung läuft**

Start

EXIT

## Part 2. Detection and analysis:

A database is selected, containing the data from the files involved in the test.

**Database tested**

Codec:

- ☒ LAME MPEG-1
- ☐ LAME MPEG-2
- ☐ LAME MPEG-2.5
- ☐ AAC Fraunhofer
- ☐ AAC Nero

Länge des Tones:

- ☒ 0,5 sec
- ☐ 1 sec

Ton/Leise Relation:

- ☒ 50:50
- ☐ 80:20

Buttons: **Medium hinzufügen**, **Datenbank erzeugen**, **Dateien der Datenbank hinzufügen**, **EXIT**

File_ID	File_Name	Tonfolge	Format	Sampling_Freq	Data_Rate	Play_Time
400	B010109090203....	B010109090203	.mp3	8	32	00:00:01
401	B010109090204....	B010109090204	.mp3	8	32	00:00:01
402	B010109090205....	B010109090205	.mp3	8	32	00:00:01
403	B010109090301....	B010109090301	.mp3	44,1	160	00:00:02
404	B010109090302....	B010109090302	.mp3	44,1	160	00:00:03
405	B010109090303....	B010109090303	.mp3	44,1	160	00:00:02

Incoming signals are detected and processed. Every detected signal is compared to the source audio file in order to obtain the Headunit's accuracy for determined audio format and parameters.

**Erkannte Töne**

B 0 1 0 X X X X X X X X X 0

Active testcase: 2

A 17- 820 34 89

NTG4.212 USA Comand APS

Buttons: **Spektrum gezoomt (0-5000Hz)**, **Freeze Spectrum**, **Save Spectrum Picture**, **button14**, **Manuelle Wahl Medium**, **Erkennungspegel**, **Automatisch festlegen**, **Empfindlichkeit**, **Create Excel Result**, **Stop Spectrum**, **Stop Messung**, **EXIT**

**Debug/Error Viewer**

B010104080101	.mp3 / 44,1 kHz / 8 kBit / Stereo / MPEG 1
B010104080102	.mp3 / 16 kHz / 32 kBit / Joint Stereo / MPEG 2
B010104080103	.mp3 / 44,1 kHz / 8 kBit / Stereo / MPEG 1
B010104080104	.mp3 / 16 kHz / 32 kBit / Joint Stereo / MPEG 2
B010104080105	.mp3 / 22,05 kHz / 32 kBit / Joint Stereo / MPEG 2
B010104080201	.mp3 / 8 kHz / 32 kBit / Joint Stereo / MPEG 2.5
B010104080202	.mp3 / 8 kHz / 32 kBit / Joint Stereo / MPEG 2.5
B010104080203	.mp3 / 8 kHz / 32 kBit / Joint Stereo / MPEG 2.5
B010104080204	.mp3 / 8 kHz / 32 kBit / Joint Stereo / MPEG 2.5

All the gathered info is used to warrant the headunit's format reproduce ability, as well as to help possible failure analysis.