

Title	Certification Construction File MFD2.x navigation system		
Project	Stuttgart	Doc ID	TT00113919
Author	Richard van den Baart	Version	2.1
Date	26-01-2016	Status	Released

Purpose

This Certification Construction File (CCF) is the umbrella document which is used by the test houses and certification bodies to perform the certification of the TomTom navigation system and by the authorities to assess compliance of product to applicable legislation.

This document provides evidence for the product design being in accordance with relevant legal requirements.

This document lists the regulations, directives, standards and norms applicable for the TomTom navigation system subject to certification.

This CCF provides relevant technical details regarding the TomTom navigation system (e.g. intended use, product design, etc), labeling and packaging information, instructions for use, instructions for certification testing and more.

This CCF describes the assessment activities and contains the results of these activities.

Scope

The scope of this document is the certification of the TomTom navigation system 1ME09/1ME09C (MFD2.x).

Document history

Version	Status	Date	Author	Changes
0.1	Draft	29-11-2013	Richard van den Baart	First version
1.0	Released	29-11-2013	Richard van den Baart	Released version
1.1	Released	19-05-2014	Richard van den Baart	Added 1ME0.001.33, 1ME0.001.34, 1ME0.001.35, 1ME0.001.36
2.0	Released	19-05-2014	Richard van den Baart	Added 1ME0.001.40, 1ME0.001.41, 1ME0.001.42, 1ME0.001.43
2.1	Released	26-01-2016	D. Bondor	Added 1ME0.001.44, 1ME0.001.45, 1ME0.001.46, 1ME0.001.47

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1 Introduction

The product to be certified is the following:

Product name: MFD (Multifunctional Display)
Brand name: TomTom

Model name: **1ME09**
1ME09C (1ME09 for China)

Differences between the part numbers are the SW aspects.
See drawings below for the differences:

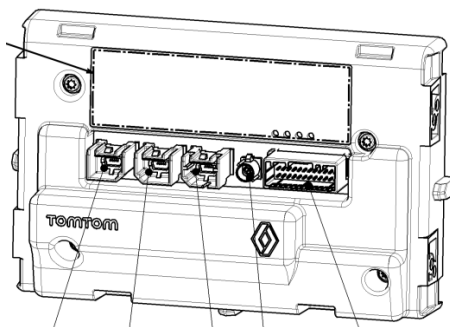
Part numbers:

TomTom PN	Renault PN	Daimler PN	GM PN	Type
1ME0.001.20	259153464R	(4539004100)*		Basic
1ME0.001.27	259154108R	4539001301		Basic
1ME0.001.28	259150111R	(4539004100) *		Basic
1ME0.001.30	259156960R	(4539004100) *		Basic
1ME0.001.31	259152780R	4538201700		Basic
1ME0.001.32	259150137R	(4539004100) *		Basic
1ME0.001.33	259154967R	(4539004100) *		Reverse
1ME0.001.34	259156761R	(4539004100) *		Basic
1ME0.001.35	259158893R	4539000302		Basic
1ME0.001.36	259151728R	(4539004100) *		Basic
1ME0.001.37	259155415R	4539000402		Basic
1ME0.001.38	259153779R	4539003302		Basic
1ME0.001.40	259158357R	(4538203400) *		Basic
1ME0.001.41	259153918R	4539000203		Basic
1ME0.001.42	259158129R	4539000103		Basic
1ME0.001.43	259152966R	(4538203400) *		Basic
1ME0.001.44	259153934R	(4538203400)		Basic
1ME0.001.45	259156244R	4539002904		Basic
1ME0.001.46	259159991R	4539002604		Basic
1ME0.001.47	259156643R	-	93459603	Basic

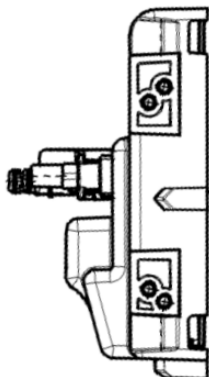
*The part numbers marked with a * are not printed on the product label.

Product characteristics

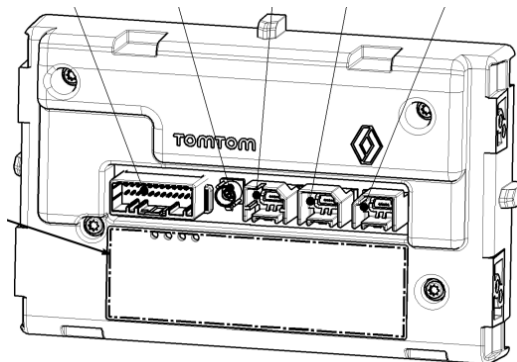
Basic Back view:



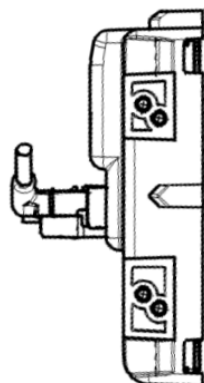
Basic Side view:



Reverse Back view:



Reverse Side view:



1.1 Product intended use

The MFD2.x navigation module is a TomTom product, intended to be installed in cars at the production line. This product has a 7" color LCD screen with touch panel functionality and an attractive HMI with multi media features. The product may also be installed at authorized retailers, where the system is acquired or repaired. The communication in the vehicle is done indirectly over the CAN interface. Video is streamed via wiring to the screen; audio is streamed via wiring to and from the module to the car. In order to get access to the TomTom "Live services", the product communicates via USB with a TCU module (Telematics Control Unit). In this way, the TomTom module adds full navigation functionality to vehicles. Additionally the module offers external device connectivity, phone application, voice recognition and telematics features.

The module cannot be used stand alone but needs to be build-in, but it benefits fully from the TomTom HOME SW application when updating map via the SD cards at a PC.

2 Product overview

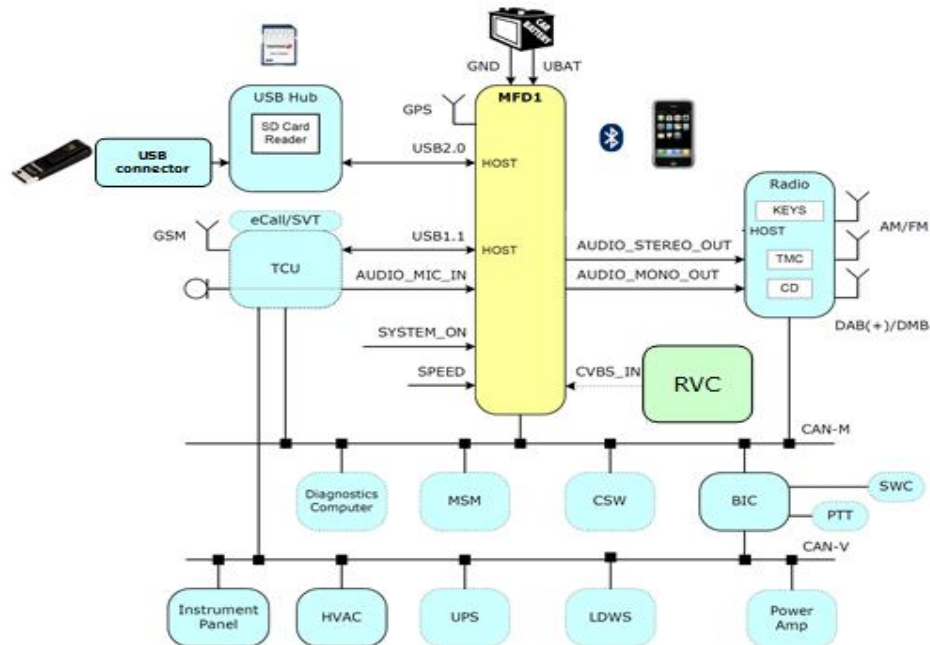
2.1 Photographic 1ME09/1ME09C

The pictures below show the inner part of the product with both sides of the main PCB. The referenced zip file (TT00116252 Stuttgart_Certification_CCF_pictures) show pictures of the front frame, back frame, and inner pictures of the PCB.

3 Product design

3.1 System concept/block diagram/functional description/connection diagram

3.1.1 MFD system concept



MFD (yellow colored) - **M**ulti **F**unction **D**isplay, the Renault product name for the display-, multimedia- and navigation-unit.

[Internal TomTom project name: Strasbourg]

TCU

- **T**elematics **C**ontrol **U**nit

USB-HUB

- Unit, connected via USB to the MFD, allowing access to "end-user" SD-Card and USB-devices.

BIC

- **C**AN interconnection **B**us **I**nterface unit.

CSW

- **C**entral **S**witch

Radio

- An AM/FM, digital- and satellite radio reception unit, including TMC, with power-amplifier and speakers and optional CD-drive and/or a hands-free car-kit.

Rear view camera

- Camera interface for displaying an image from the back of the car on the MFD screen when driving in reverse.

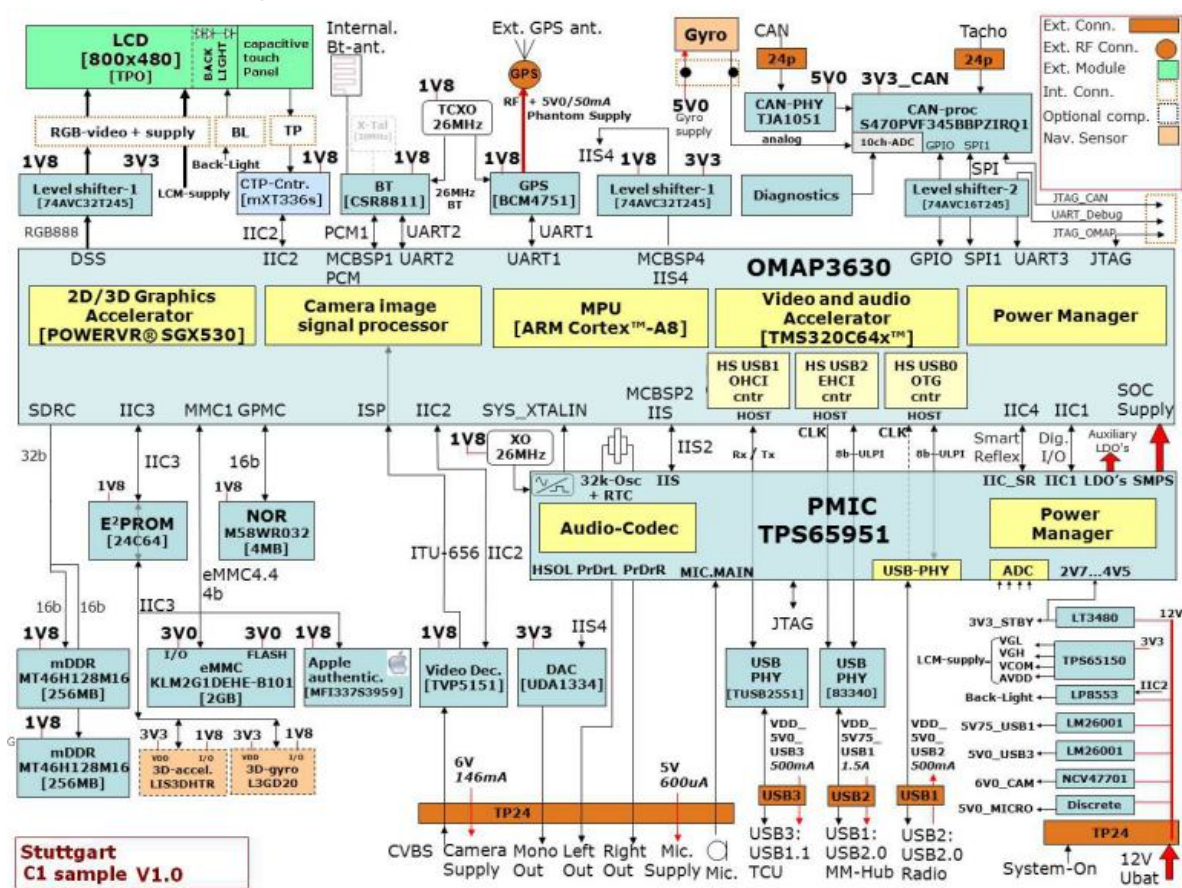
GPS antenna

- The external GPS antenna for the MDF providing the GPS-RF signal to the GPS reception unit inside the MFD.

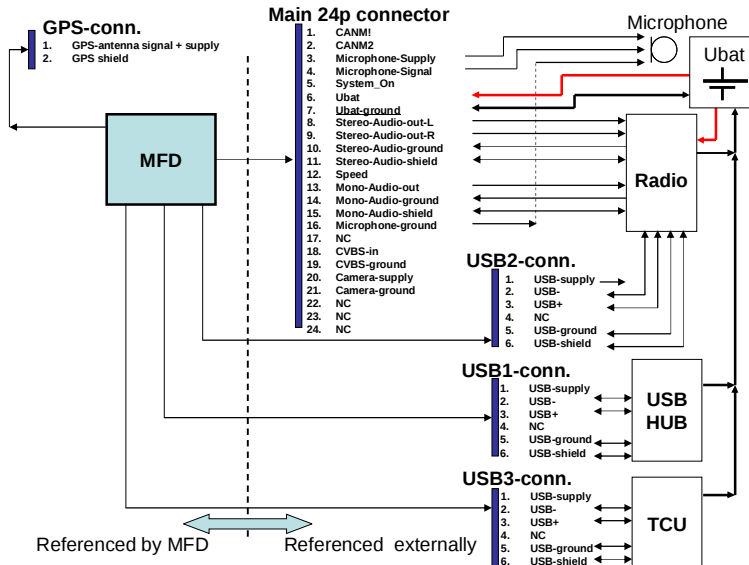
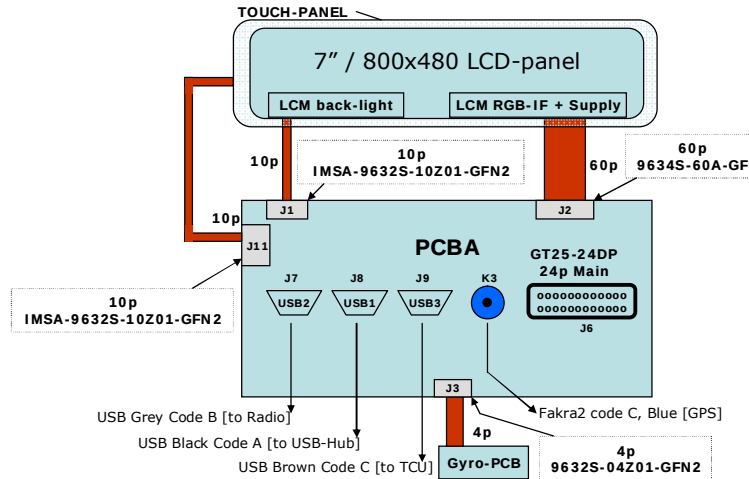
Microphone

- Microphone for vocal telephone calls and voice dialog communication with the system.

3.1.2 Block diagram



3.1.3 Connection diagram



24P main connector GT25-24DP-2.2V

Pin no.	Signal name	Function	Electrical characteristic
1	CANMH1	Multimedia CAN1	500 kbit/s (no termination)
2	CANML1	Multimedia CAN1.	500 kbit/s (no termination)
3	Micro supply	Supply for microphone.	5V
4	Micro signal	Analog microphone signal for voice recognition feature.	Analog audio
5	SYSTEM_ON	ECU wake-up signal.	Classification: IHB6-N
6	+Bat	Power supply of MFD.	Nominal: 9V-16V; 2Amp
7	Ground	MFD ground.	ECU ground
8	Audio Out Left+	Analog stereo left output for multi-media unit audio sources: - Ext. USB audio-source.	Single ended analog audio out.

		- SD-card audio-source. - Phone (voice & ring) source. - Other from internal MFD.	
9	Audio Out Right+	Analog stereo right output for multi-media unit audio sources: - Ext. USB audio-source. - SD-card audio-source. - Phone (voice & ring) source. - Other from internal MFD	Single ended analog audio out.
10	Audio Out GND	Audio output return.	Analog audio ground
11	Audio Out Shield	Audio output cable shield.	Ground level
12	Speed	Vehicle speed information for navigation function.	Classification: ILB8
13	Mono out signal	Analog mono-audio output - navigation voice and alerts - voice recognition.	Single ended analog audio out.
14	Mono out ground	Mono analog output return.	Analog audio ground
15	Mono out shield	Mono analog output shield.	Ground level
16	Micro ground	Microphone analog out return.	Analog audio ground
17	NC	Reserved	
18	CVBS IN+	Analog video signal from rear camera.	Analog video
19	CVBS GND	Analog video GND	Analog ground
20	Camera_supply	Power supply for rear camera.	Supply 6V0; 200mA
21	Camera_Ground	Camera supply return	Camera supply ground
22	NC	Reserved	
23	NC	Reserved	
24	NC	Reserved	

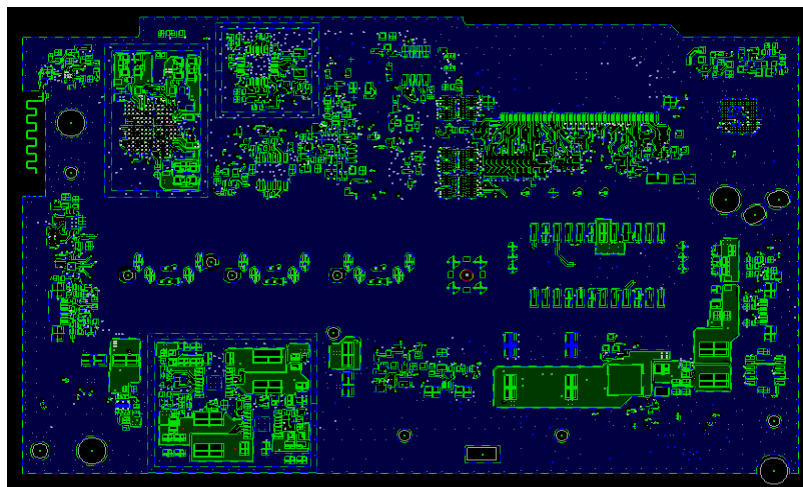
3.2 Schematics

See file **TT00116196_Stuttgart_CCF_MFD2_files**:

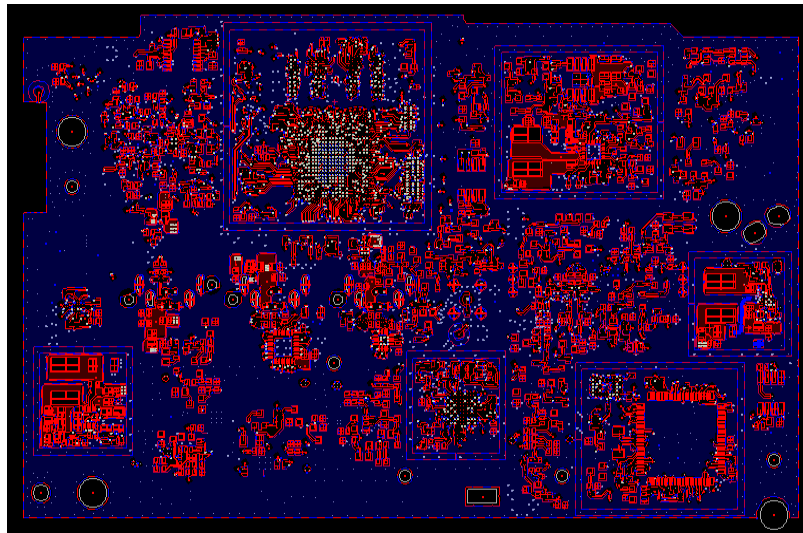
→ TT00094635_STUTTGART_C1_sample_main_board_X10

3.3 PCB layout

3.3.1 Top side



3.3.2 Bottom side



3.4 Product BOM (electrical and mechanical)

7" LCD
Resistive touch panel
CPU
PCB
GYRO
FLASH
SDRAM
EEPROM
NOR flash
CAN Microprocessor
CAN PHY
Power Supply IC's
GPS IC
Video Chip
Apple authentication IC
Bluetooth IC
Audio IC
USB PHY's
Power Management IC
Main Connector
GPS Connector
USB Connectors
Rear Cover
Front Cover

4 UL Material information

4.1 PCB

See file **TT00116196_Stuttgart_CCF_MFD2_files**:

- Supplier 1 Chin-Poon: Chin-Poon UL.pdf
- Supplier 2 Tripod: Tripod UL.pdf

4.2 Plastic material

See file **TT00116196_Stuttgart_CCF_MFD2_files**:

- EMS_Grivity_GV-4H_UL.pdf

4.3 Connectors

See file **TT00116196_Stuttgart_CCF_MFD2_files**:

- 24p main connector: Connectors SMT GT25 Series.pdf
- GPS Fakra connector: Fakra_SMB_connectors.pdf
- mini-USB connectors: Molex HSAutolink USCAR USB connector.pdf
MOLEX_104004-0511.pdf
MOLEX_104004-0501.pdf
MOLEX_104004-0505.pdf

5 Datasheets

See file **TT00116196_Stuttgart_CCF_MFD2_files**:

- CSR BC8 BT chip: CSR8811A06-ICXR-R_DZ.pdf

6 User manual

The final user manual will be available after product launch via the Renault website.

7 Manufacturer

7.1 Contacts

Manufacturer	TomTom International BV Rembrandtplein 35 1017 CT Amsterdam The Netherlands Marinus Sloff (Project manager) Marinus.Sloff@tomtom.com +31-40-8444655	TomTom BU Automotive Luchthavenweg 48, 5657 EB Eindhoven, The Netherlands
Producer	Quanta Computer Inc. No. 211, Wen Hwa 2nd Road, Kuei Shan Hsiang, Tao Yuan Shien, Taiwan Factory location: No 68, Sanzhuang Rd., Songjiang, Export Processing Zone, Shanghai, China Terry Sheu (Project manager) Terry.sheu@quantatw.com + 886 3 3272345 ext: 17141	

7.2 ISO certification producer

Quanta Shanghai has the following certificates: ISO9001:2008, ISO/TS16949:2003, ISO14001:2004, QC 0800000:2005, OHSAS 18001:2007.

8 Instructions for testing

The MFD2.x can be tested stand alone. Only GPS and the power cable needs to be attached.
For GPS: Connect the corresponding colored connectors to the device:

- GPS: Blue coaxial connector

For Power: Connect the big black connector to the device.
Connect the black banana connector to 0V, Connect red to +12V.
Then connect yellow to the same +12V.

8.1 Navigate demo route:

START

- Menu
- Navigation
- Itineraries
- Amsterdam to Eindhoven
- +
- Go
- +
- Route details
- Show route demo

END

9 Terminology and abbreviations

GSM	Global System Mobile communication
GPS	Global Positioning System
MFD	Multifunctional Display
USB	Universal Serial Bus
PCB	Printed Circuit Board
CAN	Controller Area Network
LCD	Liquid Crystal Display
TCU	Telematics Control Module
PCB	Printed Circuit Board
SoC	System on Chip

10 Related documents

- see the **TT00116196_Stuttgart_CCF_MFD2_files** and **TT00116252 Stuttgart_Certification_CCF_pictures** file which contains all referenced documents.