

PUBLISHED: 01-NOV-2019
2020.0 DEFENDER (LE), 415-01

INFORMATION AND ENTERTAINMENT SYSTEM

VOICE CONTROL (G2401472)

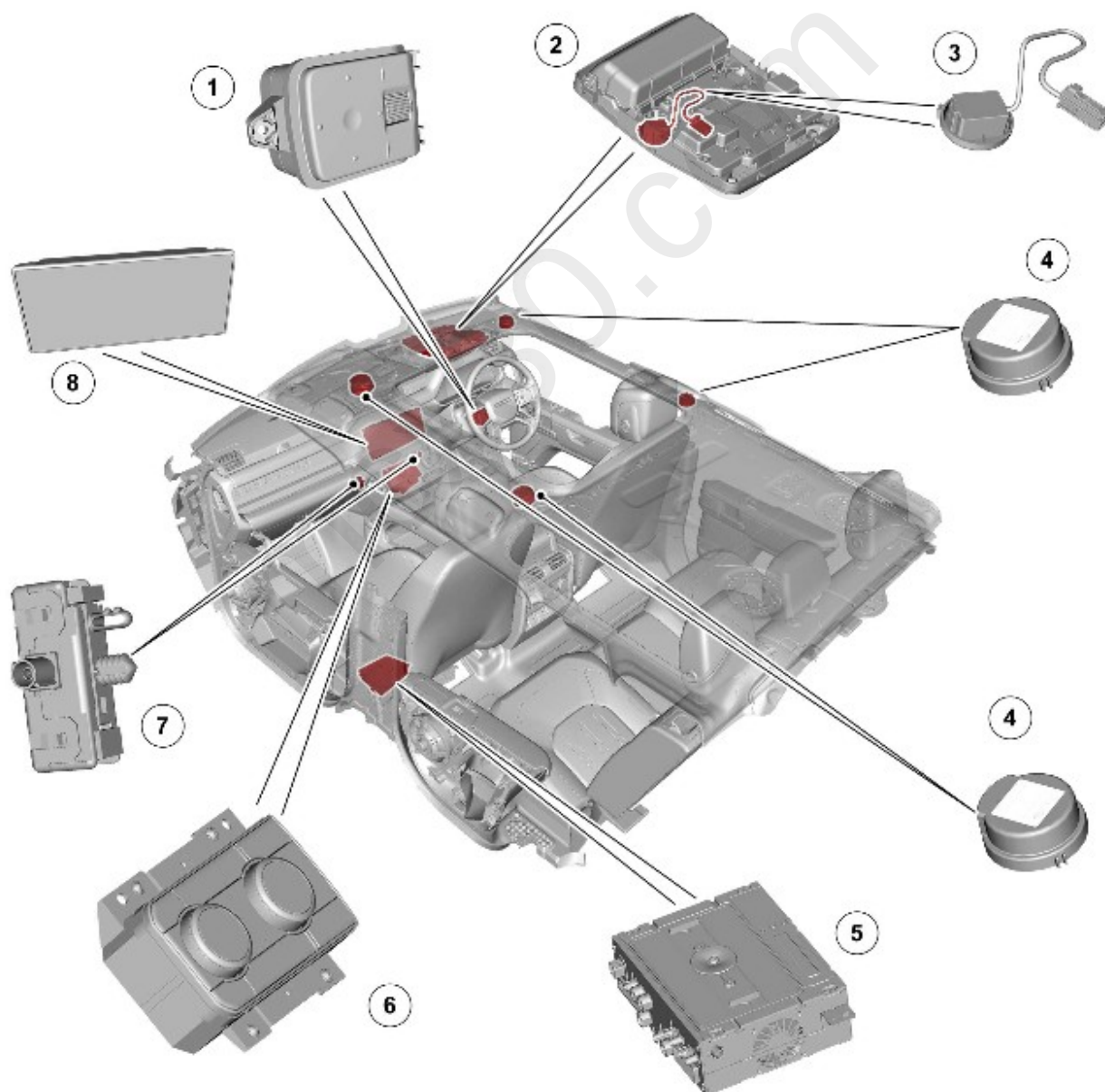
mcx30.com

COMPONENT LOCATION

COMPONENT LOCATION - 1 OF 2

 NOTES:

- Right Hand Drive (RHD) vehicle is shown. Left Hand Drive (LHD) vehicle is similar.
- Vehicle with 5 doors is shown. Vehicle with 3 doors is similar.



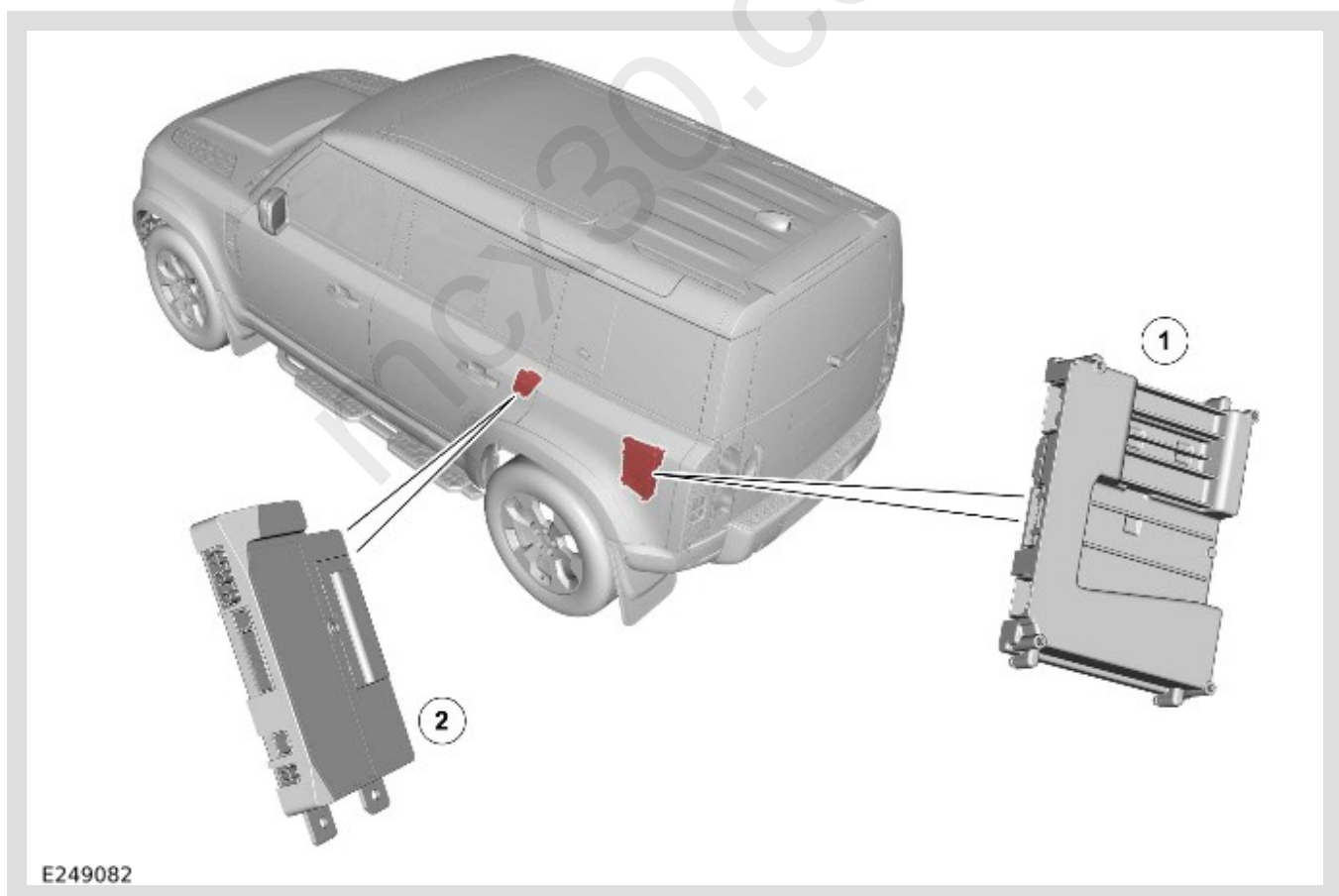
ITEM	DESCRIPTION
1	Steering Wheel Switch (SWS) - Left
2	Front overhead console
3	Microphone - Telematics Control Module (TCU)
4	Microphone - Audio Amplifier Control Module (AAM) (quantity 2 or 4) (if equipped)
5	Front Infotainment Control Module (IGM / ICCM)
6	Integrated Control Panel (FCIM)
7	WiFi/Bluetooth® antenna (quantity 2)
8	Touch Screen (FCDIM)

COMPONENT LOCATION - 2 OF 2



NOTE:

Vehicle with 5 doors is shown. Vehicle with 3 doors is similar.



ITEM	DESCRIPTION
1	AAM

ITEM	DESCRIPTION
2	TCU

OVERVIEW

The voice control system provides the driver with the option of voice control for a range of supported functions. The following systems can be controlled by voice control:

- Bluetooth® mobile phone system
- Radio
- Media devices
- Navigation.

For a full list of supported functions refer to the command list displayed on the touchscreen.

The voice control system adopts a concept known as 'Say What You See (SWYS)'.

Mobile phone voice commands are only accessible when a Bluetooth® device is paired and connected to the vehicle. Mobile phone voice commands do not work when the mobile phone connects through 'Apple Car Play' or 'AndroidAuto' to the vehicle.

The voice control system allows the vehicle user to concentrate fully on driving the vehicle. There is no need to divert their eyes from the road ahead in order to check information readouts on the touchscreen. The voice control system also feeds back audible information to the vehicle user.

Voice control is mainly a software based system and stored in the IGM / ICCM. Voice control microphones are located in the headliner and are hardwired to the AAM.

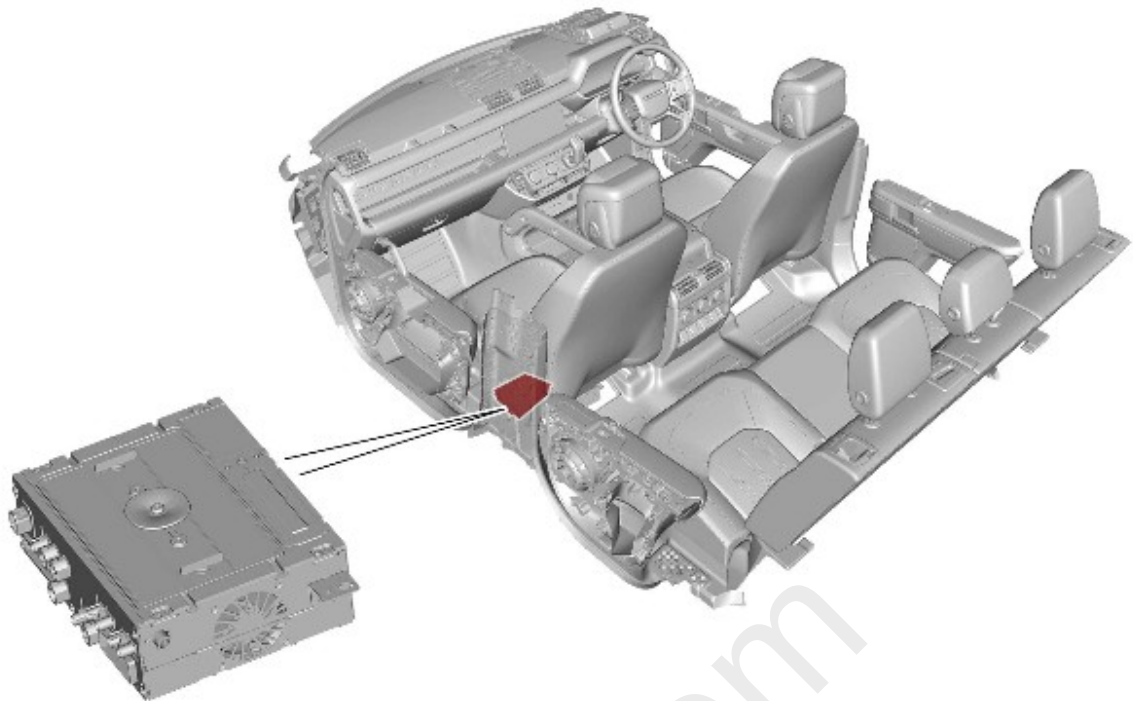
DESCRIPTION

FRONT INFOTAINMENT CONTROL MODULE



NOTES:

- RHD vehicle is shown. LHD vehicle is similar.
- Vehicle with 5 doors is shown. Vehicle with 3 doors is similar.



E249083

The IGM / ICCM is located below the front row seats - left.

The IGM / ICCM contains the following software and functions:

- Recognize - Dialogue parts of the voice engine used to determine what the user wants to control by voice.
- Text-to-Speech used to synthesize text.
- Voice control software.
- Voice language models.

Voice control software is stored in the IGM / ICCM.

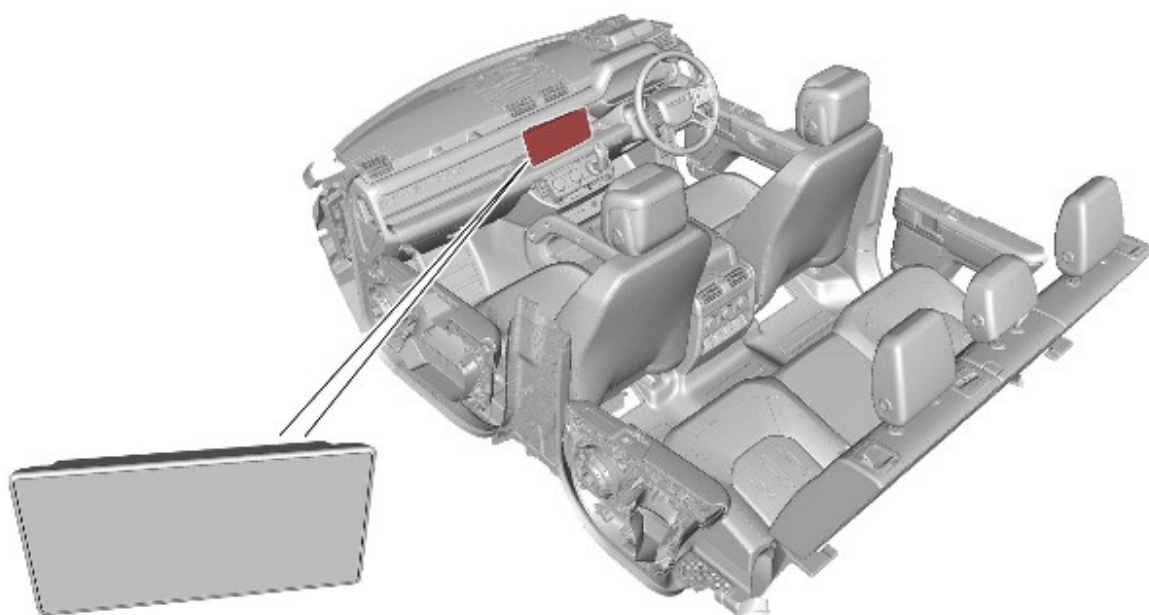
For additional information, refer to: [Audio System](#) (415-01 Information and Entertainment System, Description and Operation).

The microphones are connected to the AAM. The AAM is connected to the IGM / ICCM through BroadR-Reach® Ethernet. The microphones are used for the voice control system and hands-free telephony.

TOUCH SCREEN

NOTES:

- RHD vehicle is shown. LHD vehicle is similar.
- Vehicle with 5 doors is shown. Vehicle with 3 doors is similar.



E249084

The FCDIM is located in the center of the instrument panel.

The FCDIM provides information to a 'visual prompter' image in the FCDIM which determines what is displayed during a dialogue with the voice system.

The driver can start voice functions by briefly operating the voice control switch on the left SWS. The IGM / ICCM initiates a voice session in the FCDIM. The session allows the user to say voice commands to activate some of the infotainment system features.

For additional information, refer to: [Audio System](#) (415-01 Information and Entertainment System, Description and Operation).

AUDIO AMPLIFIER CONTROL MODULE

NOTE:

Vehicle with 5 doors is shown. Vehicle with 3 doors is similar.



E249085

The microphones are connected to the AAM. The AAM is connected to the IGM / ICCM with a BroadR-Reach® Ethernet connection.

The AAM sends the audio to the vehicle speakers.

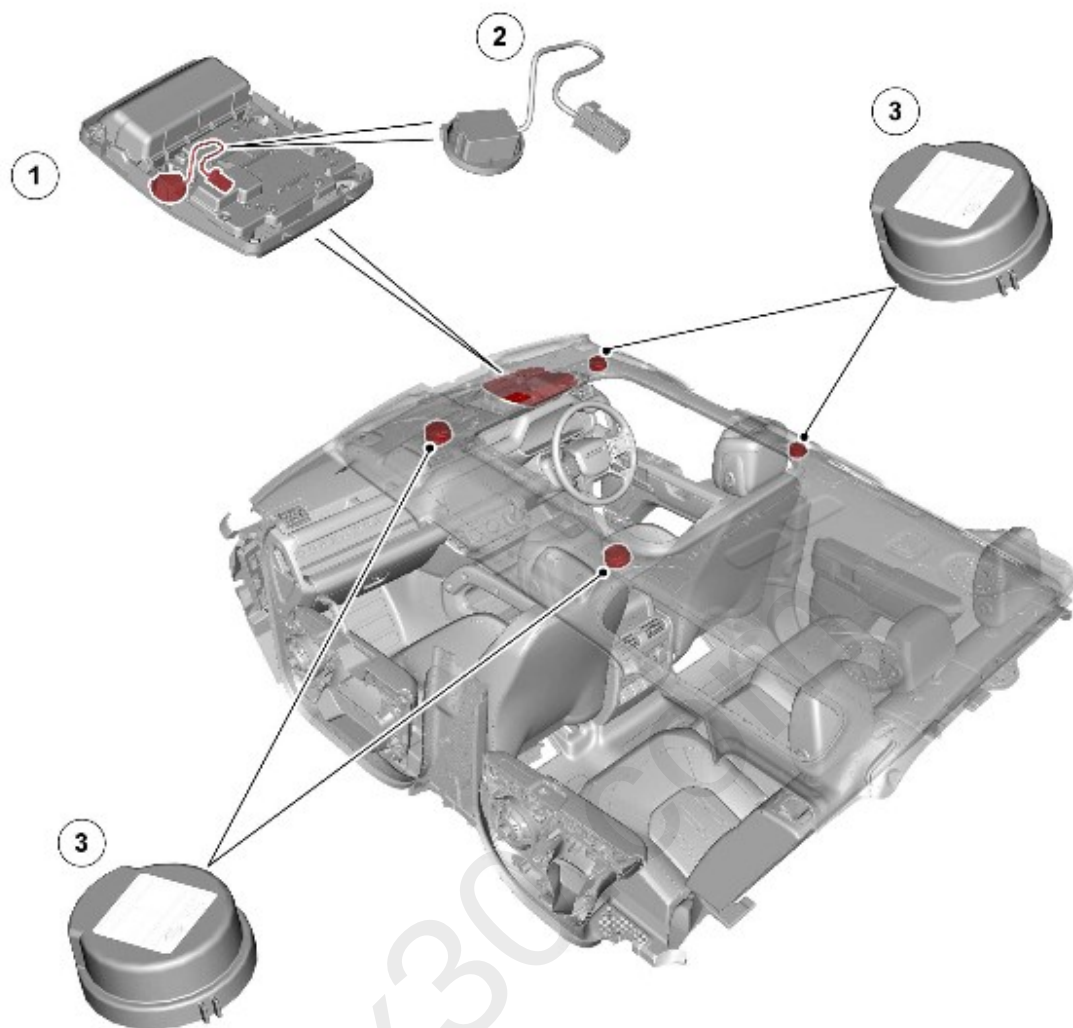
For additional information, refer to: [Audio System](#) (415-01 Information and Entertainment System, Description and Operation).

For additional information, refer to: [Speakers](#) (415-01 Information and Entertainment System, Description and Operation).

MICROPHONE

NOTES:

- RHD vehicle is shown, LHD vehicle is similar.
- Vehicle with 5 doors is shown. Vehicle with 3 doors is similar.



E249086

ITEM	DESCRIPTION
1	Front overhead console
2	Microphone - TCU
3	Microphone - AAM (quantity 2 or 4) (if equipped)

There are 2 types microphone.

The microphone in the front overhead console is connected to the TCU.

For additional information, refer to: [Telematics](#) (415-01 Information and Entertainment System, Description and Operation).

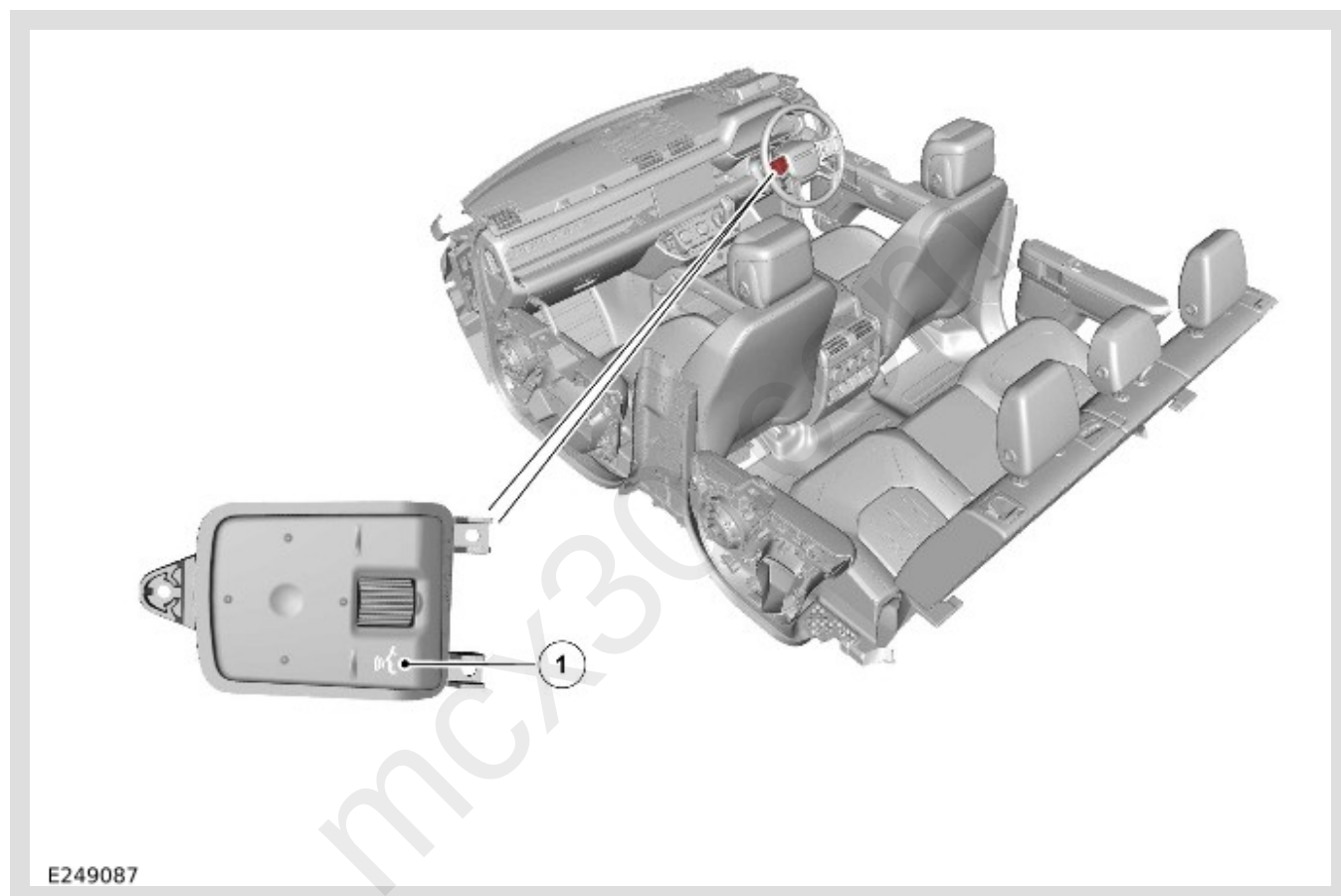
The microphones in the headliner are connected to the AAM for hands-free telephony and voice control systems. The front microphones are standard and the rear microphones are optional.

The IGM / ICCM has an integrated noise suppression and echo cancellation system for hands-free mobile phone use.

VOICE CONTROL SWITCH

NOTES:

- RHD vehicle is shown, LHD vehicle is similar.
- Vehicle with 5 doors is shown. Vehicle with 3 doors is similar.



ITEM	DESCRIPTION
1	Voice control switch

The voice control switch for the voice system is located on the left SWS. The driver uses the voice control switch like this:

- Press briefly to start a voice session.
- Press and hold to cancel a voice session.
- Interrupting during a voice session. The interruption stops playing the current feedback and moves directly to the next listening tone. The interruption allows the user to immediately enter the next command rather than having to wait.

TELEMATICS CONTROL MODULE

For further information on the TCU.

For additional information, refer to: [Telematics](#) (415-01 Information and Entertainment System, Description and Operation).

OPERATION

The voice control system uses a 'visual prompter' system. The 'visual prompter' shown in the touchscreen guides the user through the flow. The 'visual prompter' shows examples of what they can say next and also confirmation of where they are in the conversation flow.

The voice control system is operated by the voice control switch on the left SWS. Voice commands are detected by the dedicated microphone in the headliner. When giving a voice command, audible feedback plays through the vehicle audio speakers.

To allow the voice control to operate efficiently, the user must obey these basic operation instructions:

- Face forward, sitting in a normal driving position.
- After pressing the voice control switch, always wait for the end of the audible tone before speaking.
- Speak naturally, as you were talking to a passenger or using a mobile phone without pausing between words.
- When the voice interrupt setting is turned OFF, always wait for the end of the prompt before responding.
- Always say numbers clearly but at a natural pace.
- Excessive noise, for example, while driving with the windows open, may cause recognition issues with the voice command. When it is too noisy to use a mobile phone, it is likely that voice commands can not be recognized.

The system only supports the accent group matched to the voice supported language. It is possible that other accent groups are recognized but it is not guaranteed. For example, the system supports British native speakers when the voice language is British.

Voice feedback is given in the same language as the command recognition.

All feature items listed that can be activated by voice control, can also be activated by touching the relevant command list item on the touchscreen. A list of the available features can be displayed by saying the voice command, 'More Commands'.

The voice control system works with the user to display the feature lists individually. Say (or select) 'Phone Commands', then only the relevant commands for that feature can be read out and displayed.

Starting a voice session

To start a voice session the driver operates the voice control switch on the left SWS briefly. An audible tone can be heard, followed by the presentation of the 'Say What You See' (SWYS) display in the touchscreen. The display in the

touchscreen is an indication of some commonly used available commands. A voice symbol indicates that the system is listening.

Always wait for the listening tone to finish playing before using the command. To end a session press and hold the voice control switch until a double beep is heard.

When the voice control switch is pressed on the left SWS, a signal is received by the IGM / ICCM. The signal goes through the clockspring assembly on a Local Interconnect Network (LIN). A voltage is sent on a single wire from the switchpack, through a resistive ladder and converted to a LIN signal.

The SWYS 'visual prompter' is calculated and presented in the touchscreen when requested to do so by the IGM / ICCM. The accompanying voice feedback is sent to the AAM for broadcast over the speakers from the IGM / ICCM. When a recognized user instruction is received through the microphone, this is then processed and sent to the touchscreen to perform the required action.

The audio system has speaker adaption that continuously adapts to the person speaking. When a new user speaks, the first 4 to 5 recognitions may be inaccurate as the system is adapting to the new user voice.

Dialling from the Grapheme-to-Phoneme phonebook

When the phonebook has been downloaded through Bluetooth®, the voice system does a Grapheme to Phoneme (G2P) transcription of the names stored in the phonebook. The phonebook is then used by the voice system to allow the user to dial a contact by saying the name stored in the phonebook. There is no need to store a voicetag first.

The user voice command is matched against the phonebook entries and a list of likely recognition candidates is presented in a 'pick list'. The user selects the required name from the list. The voice system works with the user to determine the exact number they wish to dial when the chosen contact has more than 1 number.

The system attempts to recognize names based on the currently selected voice language. Foreign contacts may not be recognized correctly and depending on the characters used, may not be recognized at all.

For additional information, refer to: [Mobile Phone](#) (415-01 Information and Entertainment System, Description and Operation).

Tuning to radio stations

Depending on the region, the user can speak commands to tune to a frequency or to Frequency Modulation (FM) station names.

The voice system should match against the station name as it is shown in the station list. 'Tune to <station name>' is available which matches the user spoken station with the station names as displayed on the station list. When the station is within range of the vehicle it tunes to that station. For example, the user can say "Tune to <Radio 1>".

Playing music from the connected media devices

There are also voice commands to 'Play' music from a Universal Serial Bus (USB) and portable devices connected to the infotainment system.

The user can also give single commands, for example, "Play <Artist Name> <Album Name>" or "Play <Artist name> <Song Name>". The audio system plays songs or albums from a specific artist. For example, the user can say "Play Michael Jackson Bad".

All commands can be spoken irrespective of the current system audio/video mode. The voice system changes modes and audio sources relevant to the command, only when the request is possible. For example, when in 'Tuner' mode, the user requests a song, the infotainment system checks the portable device which is connected to the USB port. When a valid device is found, the mode changes to USB and starts playing the requested song.

DIAGNOSTIC

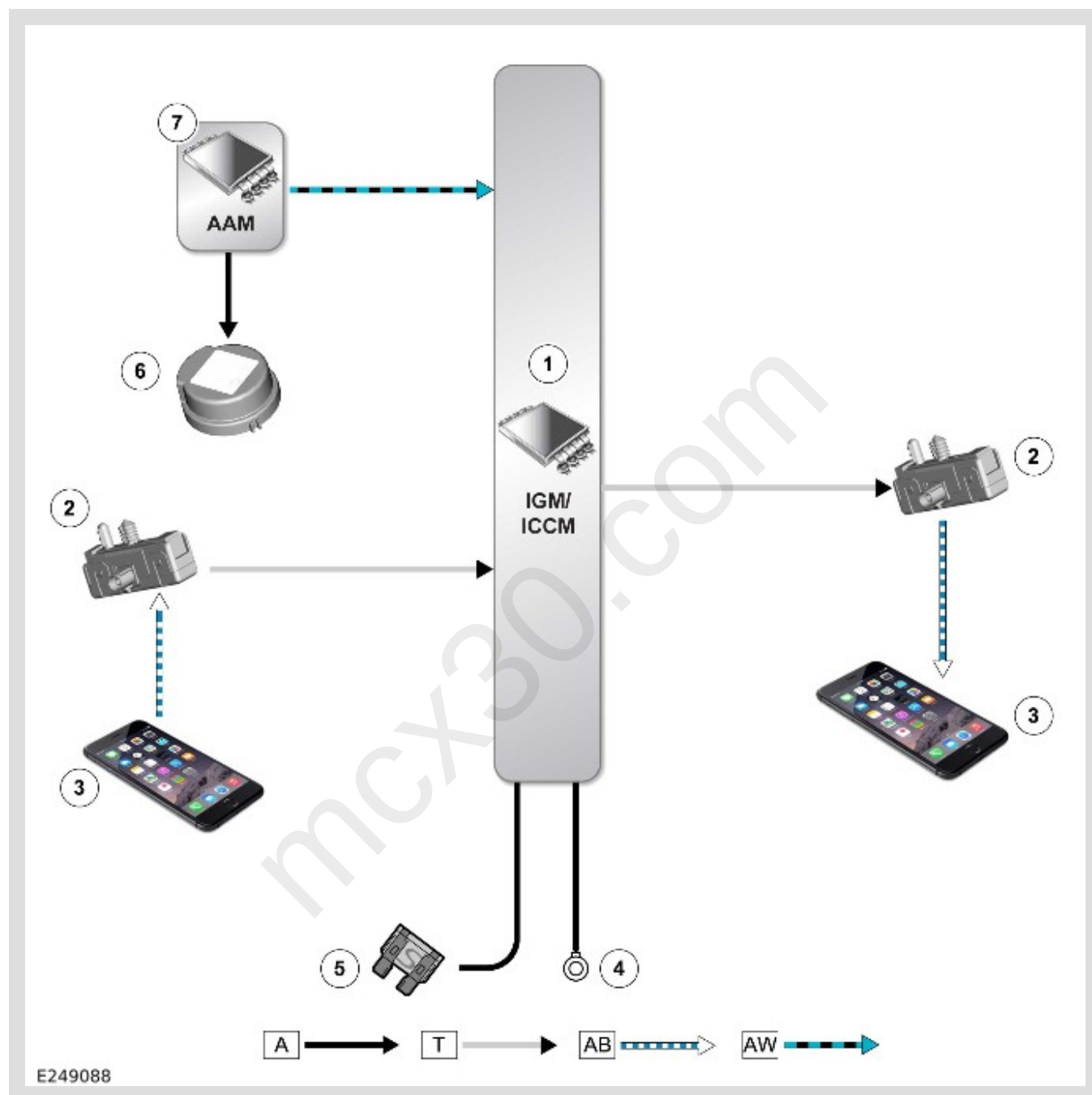
The IGM / ICCM records any Diagnostic Trouble Code(s) (DTC) and related data. The DTC and related data are read using the Jaguar Land Rover (JLR) approved diagnostic equipment.

The JLR approved diagnostic equipment enables certain components to be activated and also read live data.

mcx30.com

CONTROL DIAGRAM

CONTROL DIAGRAM - 1 OF 1



A = HARDWIRED: T = COAXIAL: AB = BLUETOOTH®: AW = ETHERNET.

ITEM	DESCRIPTION
1	IGM / ICCM
2	WiFi/Bluetooth® antenna (quantity 2)
3	Mobile phone

ITEM	DESCRIPTION
4	Ground
5	Power supply
6	Microphone (quantity 2or 4) (if equipped)
7	AAM

cmIjaGFyZG1vcnRvbjsyMDIwLTASLTE4VDEwOjA1OjIwLjExNVo7OTIuNDAMTg5LjUzOw==

mcx30.com