User Manual
(TFGMEIBBCD1
Alt. TFGMEIBBCD2,
TFGMEIBBCD3)

BEJTFGMEIBBCD1 [FCC ID]
2703H-TFGMEIBBCD1 [ISED ID]

History

Ver.	Date	Contents	Written by	Checked by	Approved by	Note
1.0	2022.07.25					
1.1	2022.01.02		Namjun Park			

Contents

1. Product Introduction

The RF platform of **TFGMEIBBCD1** supports highly integrated RF transceiver, with all necessary features to enable multi mode, multi band car telematics applications. **TFGMEIBBCD1** compliant high speed data and control interface, a multi mode timer unit and all necessary front end signals for the complete RF Engine control. Overall the TM05FNNAGM0 directly supports RF engines with up to 5G bands.

FCC ID : BEJTFGMEIBBCD1
Contains FCC ID : BEJTM05FNNAGM0
ISED ID : 2703H-TFGMEIBBCD1
Contains ISED ID : 2703H-BEJTM05FNNAGM0

Table 1. Supported Band

Region		NA (North America)	MX (Mexico)
Band	NR	n2/n5/n7/n12/n13/n14/n25/n26/ n29(Rx only)/n30(Rx only)/n41/n66 /n71/n77/n78	-
	LTE	B2/B4/B5/B7/B12/B13/B14/ B29(Rx only)/B30(Rx only)/B66	B2/B4/B5/B7/B12/B13/B14/B28 / B29(Rx only)/B30(Rx only)/B66
	WCDMA	B2/B4/B5	B2/B4/B5

1.1 Block Diagram

<Confidential>

1.2 Environmental Specifications

The environmental specification for operating and storage of the **TFGMEIBBCD1** are defined in the table below.

Table 2. Environmental Specifications

Parameter	Temperature Range
Operating Temperature	-40℃ to 90℃
Storage Temperature	-40℃ to 95℃
Humidity	95% or less

1.3 Electrical Specifications

This section provides details for some of the key electrical specifications of the **TFGMEIBBCD1** embedded modules.

1.3.1 Absolute Maximum Rating

Range of Operating Power : 13.5V (Min_6V~Max_18V)
Maximum DC Voltage : 18V↓
Maximum DC Current : 1A↓

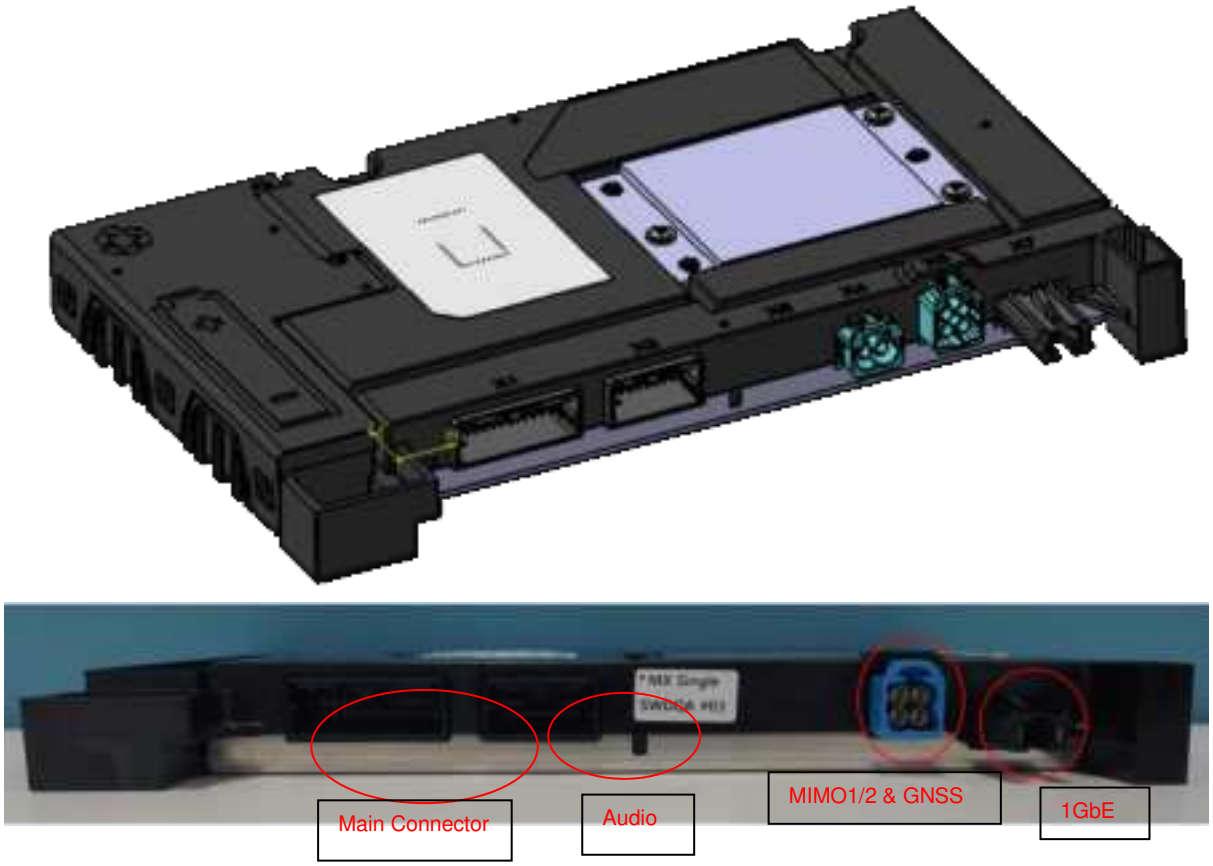
Warning: If these parameters are exceeded, even momentarily, damage may occur to the device.

1.4 Mechanical Specifications

1.4.1 Function of Active Devices

Ref. No	Function	Part No
1. Baseband Circuit		
IC200	AP	i.MX8xXL
IC600	PMIC	PF7100
IC402	NAND 512MB	MT29F4G08ABAFAH4
IC301	DDR3L 256MB	MT41K128M16JT
IC401	SNOR 8MB	W25Q64JVZPAQ
IC900	1Gb Ethernet PHY	BCM89881
IC1002	Codec	TLV320AIC3109
IC800	HSCAN Transceiver	TI-TCAN1145
2. Rx RF		
N/A		
3. Local Oscillator		
X200	Crystal (AP RTC)	FC-13A 32.768KHZ
X201	Crystal (AP Main)	AV24030001 24MHZ
X900	Crystal (Ethernet)	AM25070309 25MHZ
4. Tx RF		
N/A		

1.4.2 Mechanical Drawing



2. RF Specification

The specifications for the 5G NR, LTE and WCDMA interfaces are defined.
TFGMEIBBCD1 is designed to be compliant with the standard shown in the table below.

Table6. Standards Compliance

Technology	Standards
5G NR	• 3GPP Release 15
LTE	• 3GPP Release 15
WCDMA	• 3GPP Release 9
GSM*	• 3GPP Release 9

* This product does not use GSM.

	Frequency		FDD/TDD	Band		Comment
Band	TX	RX		North America	Mexico	
B2(n2)	1850~1910	1930~1990	FDD	W, L, NR	W, L	
B4	1710~1755	2100~2155	FDD	W, L	W, L	
B5(n5)	824~849	869~894	FDD	W, L, NR	W, L	
B7(n7)	2500~2570	2620~2690	FDD	L, NR		
B12(n12)	699~716	729~746	FDD	L, NR	L	
B13(n13)	777~787	746~756	FDD	L, NR	L	
B14(n14)	788~798	758~768	FDD	L, NR	L	
n25	1850~1915	1930~1995	FDD	NR		
n26	814~849	859~894	FDD	NR		
B28	703~748	758~803	FDD		L	Only mexico
B29(n29)	-	717~728	SDL	L, NR	L	RX Only
B30(n30)	(2305~2315)	2350~2360	FDD	L, NR	L	RX Only
n41	2496~2690		TDD	NR		
B66(n66)	1710~1780	2110~2200	FDD	L, NR	L	
n71	663~698	617~652	FDD	NR		
n77	3300~4200		TDD	NR		
n78	3300~3800		TDD	NR		

- W : WCDMA
- L : LTE
- NR : 5G

Notice

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-Consult the dealer or an experienced radio/TV technician for help.

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. This device should be installed and operated with minimum distance 17 cm between the radiating element of this device and the user.

Notice
This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 17 cm between the radiator & your body.

NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

Avis d'Industrie Canada sur l'exposition aux rayonnements
Cet appareil est conforme aux limites d'exposition aux rayonnements d'Industrie Canada pour un environment non contrôlé.
Il doit être installé de façon à garder une distance minimale de 17 centimétres entre la source de rayonnements et votre corps.

REMARQUE: LE FABRICANT N'EST PAS RESPONSABLE DES INTERFÉRENCES RADIOÉLECTRIQUES CAUSÉES PAR DES MODIFICATIONS NON AUTORISÉES APPORTÉES À CET APPAREIL. DE TELLES MODIFICATIONS POURRAIT ANNULER L'AUTORISATION ACCORDÉE À L'UTILISATEUR DE FAIRE FONCTIONNER L'APPAREIL.

Operation is subject to the following two conditions:
1.This device may not cause interference.
2.This device must accept any interference, including interference that may cause undesired operation of the device.

L'exploitation est autorisée aux deux conditions suivantes :
1.L'appareil ne doit pas produire de brouillage;
2.L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.