

FCC MPE REPORT

Certification

Applicant Name:
HYUNDAI MOBIS CO., LTD.

Address:
203, Teheran-ro, Gangnam-gu, Seoul, 135-977,
South Korea

Date of Issue:
September 27, 2018

Test Site/Location:
HCT CO., LTD., 74, Seoicheon-ro 578beon-gil, Majang-
myeo, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA
Report No.: HCT-RF-1809-FC103

FCC ID: TQ8-ATB30SNAN

APPLICANT: HYUNDAI MOBIS CO., LTD.

Model: ATB30SNAN

EUT Type: Car Audio System

Frequency Range: 2402 MHz - 2480 MHz (Bluetooth)

The measurements shown in this report were made in accordance with the procedures specified in §2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998, 21 U.S. C. 853(a)



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Approved by : Kwon Jeong
Manager of Telecommunication testing center

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Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-1809-FC103	September 27, 2018	- First Approval Report

RF Exposure Statement

1. LIMITS

According to §1.1310 and §2.1091 RF exposure is calculated.

(B) Limits for General Population/Uncontrolled Exposures

Frequency range (MHz)	Electric field Strength (V/m)	Magnetic field Strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
0.3 - 1.34.....	614	1.63	*(100)	30
1.34 - 30.....	824/f	2.19/f	*(180/ f ²)	30
30 - 300.....	27.5	0.073	0.2	30
300 - 1500.....	f/1500	30
1500 - 100.000.....	1.0	30

F = frequency in MHz

* = Plane-wave equivalent power density

2. MAXIMUM PERMISSIBLE EXPOSURE Prediction

Prediction of MPE limit at a given distance

$$S = PG/4\pi R^2$$

S = Power density

P = power input to antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna

3. RESULTS

3-1. Bluetooth

Average output Power at antenna input terminal	4.000	dBm
Average output Power at antenna input terminal	2.512	mW
Prediction distance	20.00	cm
Prediction frequency	2402 - 2480	MHz
Antenna Gain(typical)	-0.10	dBi
Antenna Gain(numeric)	0.977	-
Power density at prediction frequency(S)	0.000488	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	1.00	mW/cm ²

2.1091

EIRP	3.9 (dBm)
ERP	1.75 (dBm)
ERP	0.001 (W)
ERP Limit	3.00 (W)
MARGIN	33.02 (dB)

3-2. LTE Band 13 (Worst case)

Average output Power at antenna input terminal	25.00	dBm
Average output Power at antenna input terminal	316.228	mW
Prediction distance	20.00	cm
Prediction frequency	777 - 787	MHz
Antenna Gain(typical)	1.440	dBi
Antenna Gain(numeric)	1.393	-
Power density at prediction frequency(S)	0.0876	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5180	mW/cm ²

2.1091

EIRP	26.44 (dBm)
ERP	24.29 (dBm)
ERP	0.27 (W)
ERP Limit	1.50 (W)
MARGIN	7.47 (dB)

3-3. CDMA BC0 (Worst case)

Average output Power at antenna input terminal	26.00	dBm
Average output Power at antenna input terminal	398.107	mW
Prediction distance	20.00	cm
Prediction frequency	824 - 849	MHz
Antenna Gain(typical)	1.870	dBi
Antenna Gain(numeric)	1.538	-
Power density at prediction frequency(S)	0.1218	mW/cm ²
MPE limit for uncontrolled exposure at prediction frequency	0.5493	mW/cm ²

2.1091

EIRP	27.87 (dBm)
ERP	25.72 (dBm)
ERP	0.37 (W)
ERP Limit	1.50 (W)
MARGIN	6.04 (dB)

->Simultaneous MPE 20cm is Bluetooth (0.000488/1.0) + LTE Band 13 (0.0876/0.5180) + CDMA BC0 (0.1218/0.5493)
= 0.209888 < 1