

TEST REPORT

EVALUATION Test for ATC41HSAN&ATC41HSKN

APPLICANT
HYUNDAI MOBIS CO., LTD.

DATE OF ISSUE
March 14, 2020

HCT Co., Ltd.

74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 KOREA
Tel. +82 31 634 6300 F ax. +82 31 645 6401

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TEST REPORT

EVALUATION Test
for ATC41HSAN &
ATC41HSKN

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Model

FCC: ATC41HSAN

IC: ATC41HSKN

Additional Model

FCC: VT260HSAN

IC: VT260HSKN

Applicant

HYUNDAI MOBIS CO., LTD.

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

FCC ID

TQ8-ATC41HSAN

IC

5074A-ATC41HSKN

Equipment Class(es)

DSS, DTS, NII

Rule Part(s)

15

IC Part(s)

RSS-247 Issue 2 (February 2017)

RSS-Gen Issue 5_Amendment 1 (March 2019)

Application's Statement

The applicant takes full responsibility that the test data referenced below represents compliance for this FCC ID.

Differences Brief Description

Bluetooth & WLAN hardware and software of this device are identical to the implementation in TQ8-ATB41HSAN. The operational description includes detailed information about the changes between the devices. The data from that application has been verified through appropriate spot checks to demonstrate compliance for this device as shown in the summary table below.

Test Reference

KDB 484596 D01 Reference Test Data v01

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.

Tested by

Jeong Ho Kim

(signature)

Technical Manager

Jong Seok Lee

(signature)

HCT CO., LTD.

Soo Chan Lee
SooChan Lee / CEO



The detail test data can be found in this documents, Appendix A.

Category	Spot Check	Verdict
Unlicensed EMC	Band Edge	Share
	Spurious Emissions	Share

Reference Detail Section

Reference FCC ID	Equipment Class	Report Title	Section
TQ8-ATB41HSAN	DSS	Bluetooth Report	All sections
	DTS	WLAN DTS Report	All sections
	NII	UNII Test Report	All sections

Appendix A. The Spot check test data

1. Summary of the spot check for Unlicensed EMC

	Test Item	Mod/Channel	Measured Frequency	ATB41HSAN(FCC)& ATB41HSKN(IC) Result [dBuV/m]		ATC41HSAN(FCC)& ATC41HSKN(IC) Result [dBuV/m]		Deviation (dB)	
				Peak	Average	Peak	Average	Peak	Average
Bluetooth	Band Edge	DH5/ch.78	2 483.5 MHz ~ 2 500 MHz	63.24	38.48	66.11	41.35	2.87	2.87
	RSE	DH5/ch.0	7 206 MHz	49.80	25.04	49.84	25.08	0.04	0.04
DTS	Band Edge	802.11g 6 Mbps/ch.1	2 310 MHz ~ 2 390 MHz (2 412 MHz)	56.27	44.21	58.58	45.74	2.31	1.53
	RSE	802.11b 1 Mbps/ch.6	7 311 MHz	56.35	45.91	53.63	42.43	-2.72	-3.48
NII	Band Edge Peak	802.11ac 40MHz MCS0/ch.102	5 460 MHz ~ 5 470 MHz	58.72	-	58.95	-	0.23	-
	Band Edge Average	802.11ac 80MHz MCS0/ch.58	5 350 MHz ~ 5 460 MHz	-	44.62	-	45.40	-	0.78
	RSE	802.11a 6 Mbps/ch.165	17 475 MHz	62.89	-	62.47	-	-0.42	-

2. List of test equipment for EMC

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Innco system	CO3000 / Controller(Antenna mast)	N/A	N/A	CO3000-4p
Innco system	MA4640/800-XP-EP / Antenna Position Tower	N/A	N/A	N/A
Audix	EM1000 / Controller	N/A	N/A	060520
Audix	Turn Table	N/A	N/A	N/A
TNM system	FBSM-01B / Amp & Filter Bank Switch Controller	N/A	N/A	N/A
Rohde & Schwarz	Loop Antenna	04/26/2019	Biennial	1513-175
Schwarzbeck	VULB 9168 / Hybrid Antenna	08/02/2019	Biennial	01039
Schwarzbeck	BBHA 9120D / Horn Antenna	06/28/2019	Biennial	1300
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	04/29/2019	Biennial	BBHA9170342
Rohde & Schwarz	FSP(9 kHz ~ 40 GHz) / Spectrum Analyzer	07/16/2019	Annual	100843
Wainwright Instruments	WRCJV2400/2483.5-2370/2520-60/12SS / Band Reject Filter	01/21/2020	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	02/10/2020	Annual	1
CERNEX	CBL18265035 / Power Amplifier	12/26/2019	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	06/18/2019	Annual	25956
TESCOM	TC-3000C / Bluetooth Tester	03/26/2019	Annual	3000C000276
TNM system	FBSM-05B / HPF(3~18GHz) + LNA1(1~18GHz)	01/21/2020	Annual	F6
TNM system	FBSM-05B / ATT(10dB) + LNA1(1~18GHz)	01/21/2020	Annual	None
TNM system	FBSM-05B / ATT(3dB) + LNA1(1~18GHz)	01/21/2020	Annual	None
TNM system	FBSM-05B / LNA1(1~18GHz)	01/21/2020	Annual	25540
TNM system	FBSM-05B / HPF(7~18GHz) + LNA2(6~18GHz)	01/21/2020	Annual	28550
TNM system	FBSM-05B / Thru(30MHz ~ 18GHz)	01/21/2020	Annual	None

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
3. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5(Version : 2017).

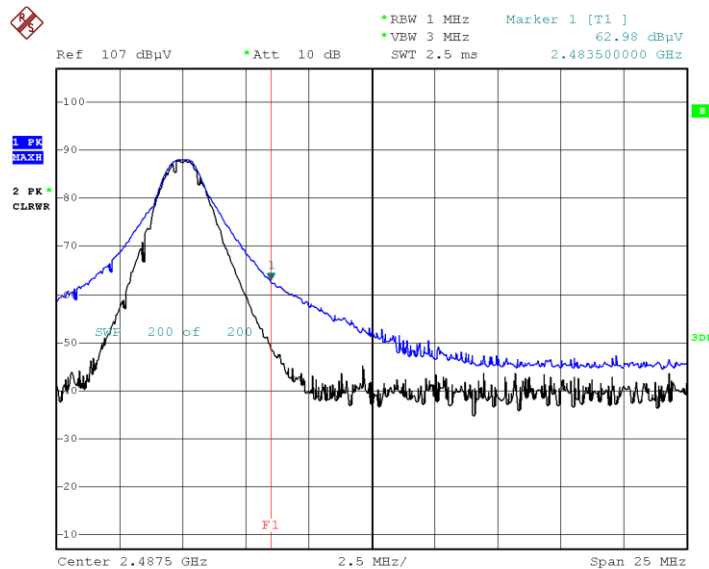
3. Test Plot

Bluetooth Band Edge X-H (DH5/ch.78)

Bandedge

Frequency [MHz]	Reading dBuV	※ A.F+C.L -AMP+ATT+D.F [dB]	ANT. POL [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect [dB]
2483.5	62.98	3.13	H	0	66.11	73.98	7.87	PK
2483.5	62.98	3.13	H	-24.76	41.35	53.98	12.63	AV

Radiated Restricted Band Edges plot – Peak & Average Reading



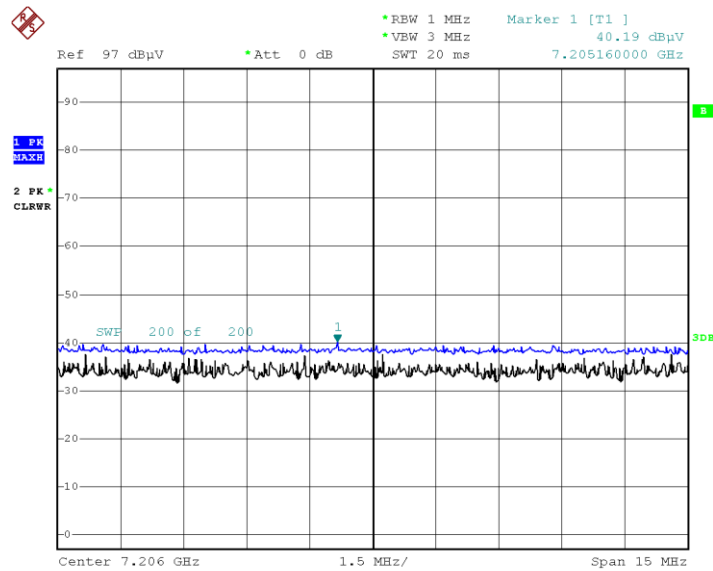
Date: 20.MAR.2020 14:24:56

Bluetooth R.S.E 3rd X-H (DH5/ch.0)

RSE

Frequency [MHz]	Reading dBuV	A.F+C.L-A.G+D.F [dB]	ANT. POL [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
7206	40.19	9.65	H	0.00	49.84	73.98	24.14	PK
7206	40.19	9.65	H	-24.76	25.08	53.98	28.90	AV

Radiated Spurious Emissions plot – Peak & Average Reading



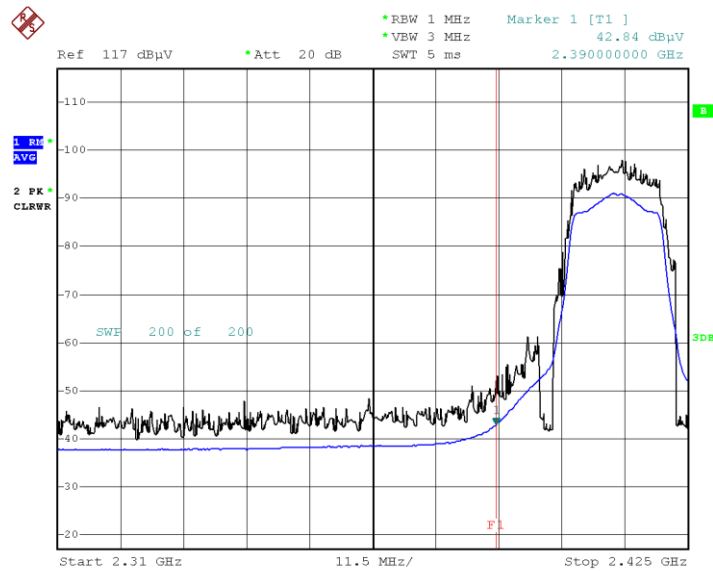
Date: 20.MAR.2020 15:01:12

DTS Band Edge X-V (802.11g_6 Mbps/ch.1)

Bandedge

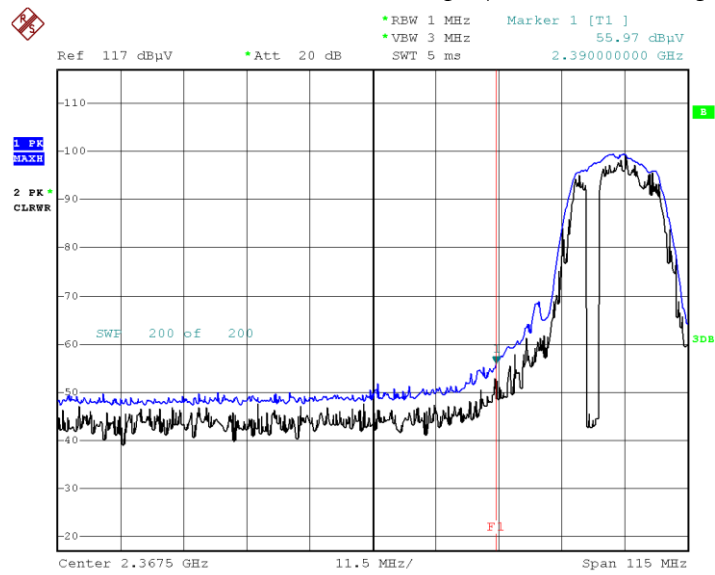
Frequency [MHz]	Reading dBuV	Duty Cycle Factor	※ A.F+C.L- A.G+ATT+D.F [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
2390.0	55.97	0.00	2.61	V	58.58	73.98	15.40	PK
2390.0	42.84	0.29	2.61	V	45.74	53.98	8.24	AV

Radiated Restricted Band Edges plot –Average Reading



Date: 20.MAR.2020 15:23:01

Radiated Restricted Band Edges plot – Peak Reading



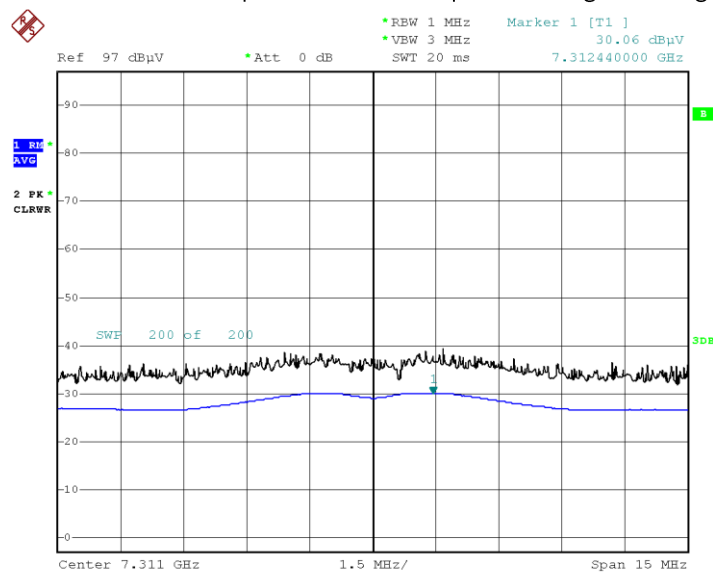
Date: 20.MAR.2020 15:21:43

DTS R.S.E 3rd X-V (802.11b 1 Mbps/ch.6)

RSE

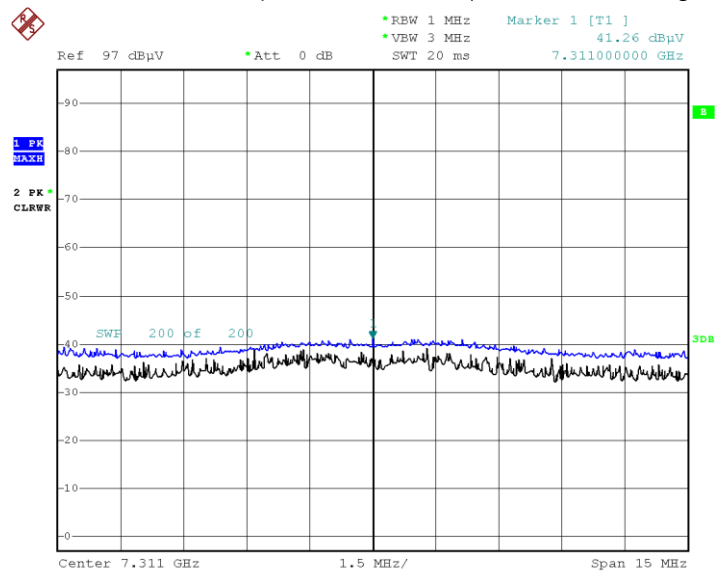
Frequency [MHz]	Reading dBuV	A.F+C.L-AMP+D.F [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
7311	41.26	12.37	V	53.63	73.98	20.35	PK
7311	30.06	12.37	V	42.43	53.98	11.55	AV

Radiated Spurious Emissions plot – Average Reading



Date: 20.MAR.2020 15:39:47

Radiated Spurious Emissions plot – Peak Reading



Date: 20.MAR.2020 15:38:11

U-NII Band Band X-V

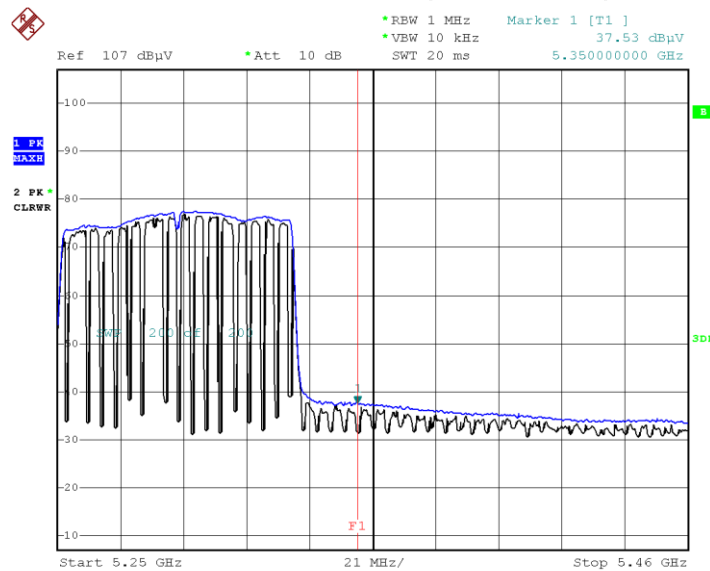
Edge Peak (802.11ac 40MHz MCS0/ch.102)

Edge Average (802.11ac 80MHz MCS0/ch.58)

Bandedge

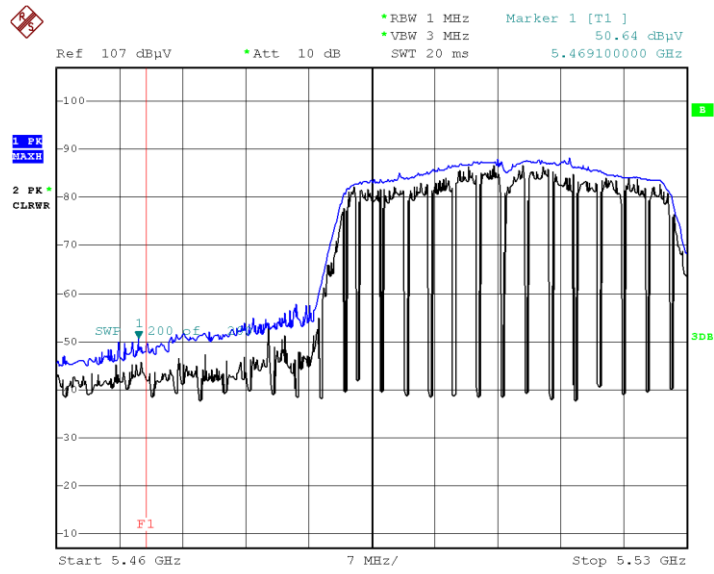
Frequency [MHz]	Reading dBuV	AF+CL+AG+ATT+DF [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5470	50.64	8.31	V	58.95	68.20	9.25	PK
5350	37.53	7.87	V	45.40	53.98	8.58	AV

Radiated Restricted Band Edges plot – Average Reading



Date: 23.MAR.2020 09:40:22

Radiated Restricted Band Edges plot – Peak Reading



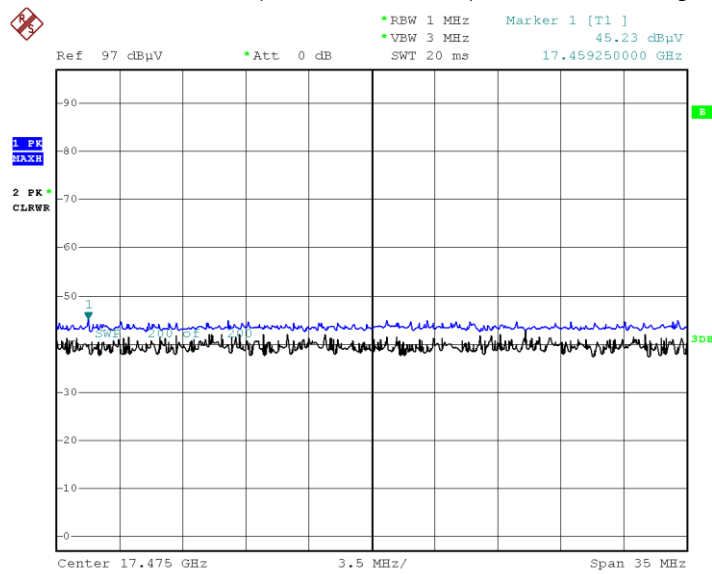
Date: 23.MAR.2020 09:22:51

U-NII R.S.E 3rd X-V (802.11a_20 MHz 6 Mbps/ch.165)

RSE

Frequency [MHz]	Reading dBuV	CL+AF+DF-AG [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
17475	45.23	17.24	V	62.47	68.20	5.73	PK

Radiated Spurious Emissions plot – Peak Reading



Date: 23.MAR.2020 10:02:39