

TEST REPORT

EVALUATION Test for ATC31EYAN&ATC31EYKN

APPLICANT
HYUNDAI MOBIS CO., LTD.

DATE OF ISSUE
September 16, 2019

HCT Co., Ltd.

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**TEST
REPORT**
EVALUATION Test
for ATC31EYAN &
ATC31EYKN

DATE OF ISSUE

September 16, 2019

FCC ID/IC

TQ8-ATC31EYAN / 5074A-ATC31EYKN

Applicant

HYUNDAI MOBIS CO., LTD.

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

Equipment Class(es)

DSS, DTS, UNII

FCC Rule Part(s)

Part 15

ISED Rule Part(s)

RSS-247 Issue 2 (February 2017)

Application's Statement

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

Differences Brief Description

Bluetooth & WLAN hardware and software of this device are identical to the implementation in TQ8-ATB31EYAN/ 5074A-ATB31EYKN.
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.

This test results were applied only to the test methods required by the standard.

Tested by

Kwon Jeong

Technical Manager

Jong Seok Lee

(signature)
(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 ID	Equipment Class	Report Title	Section
FCC ID: TQ8-ATB31EYAN IC: 5074A-ATB31EYKN	DSS	Bluetooth Report	All sections
	DTS	WLAN DTS Report	All sections
	UNII	UNII Test Report	All sections

Appendix A. The Spot check test data

1. Summary of the spot check for Unlicensed EMC

	Test Item	Channel	Measured Frequency	Reference Result [dBuV/m]		Reuse Result [dBuV/m]		Deviation (dB)	
				Peak	Average	Peak	Average	Peak	Average
BT	Band Edge	DH5 / ch78	2483.5 MHz~2500 MHz	53.08	64.36	52.31	63.54	0.77	0.82
	RSE	2DH5/ ch 39	7323 MHz	37.61	51.52	37.26	50.95	0.35	0.57
DTS	Band Edge	g/ ch 11	2483.5 MHz~2500 MHz	39.32	51.90	37.74	49.08	1.58	2.82
	RSE	3rd b/ ch 11	7386 MHz	39.58	51.43	39.02	51.10	0.56	0.33
UNII	Band Edge	ac80/ ch 106	5350 MHz~5460 MHz	48.49	60.57	48.89	60.19	-0.40	0.38
	RSE	n20/ ch 60	10600 MHz	46.75	55.44	40.94	53.87	-	1.57

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
Emco	2090 / Controller	N/A	N/A	060520
Ets	Turn Table	N/A	N/A	N/A
Rohde & Schwarz	Loop Antenna	01/18/2019	Biennial	1513-175
Schwarzbeck	VULB 9160 / Hybrid Antenna	08/09/2019	Biennial	3368
Schwarzbeck	BBHA 9120D / Horn Antenna	11/21/2017	Biennial	9120D-1191
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	12/04/2017	Biennial	BBHA9170541
Rohde & Schwarz	FSP(9 kHz ~ 30 GHz) / Spectrum Analyzer	09/19/2018	Annual	836650/016
Rohde & Schwarz	FSV40-N / Spectrum Analyzer	09/19/2018	Annual	101068-SZ
Wainwright Instruments	WHKX10-2700-3000-18000-40SS / High Pass Filter	01/03/2019	Annual	4
Wainwright Instruments	WHKX8-6090-7000-18000-40SS / High Pass Filter	01/03/2019	Annual	5
Wainwright Instruments	WRCJV2400/2483.5-2370/2520-60/12SS / Band Reject Filter	06/19/2019	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	01/03/2019	Annual	2
Api tech.	18B-03 / Attenuator (3 dB)	06/04/2019	Annual	2
WEINSCHL	56-10 / Attenuator(10 dB)	10/10/2018	Annual	72316
CERNEX	CBLU1183540B-01/Broadband Bench Top LNA	01/03/2019	Annual	28549
CERNEX	CBL06185030 / Broadband Low Noise Amplifier	01/03/2019	Annual	24615
CERNEX	CBL18265035 / Power Amplifier	01/03/2019	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	06/18/2019	Annual	25956
TESCOM	TC-3000C / Bluetooth Tester	03/26/2019	Annual	3000C000276

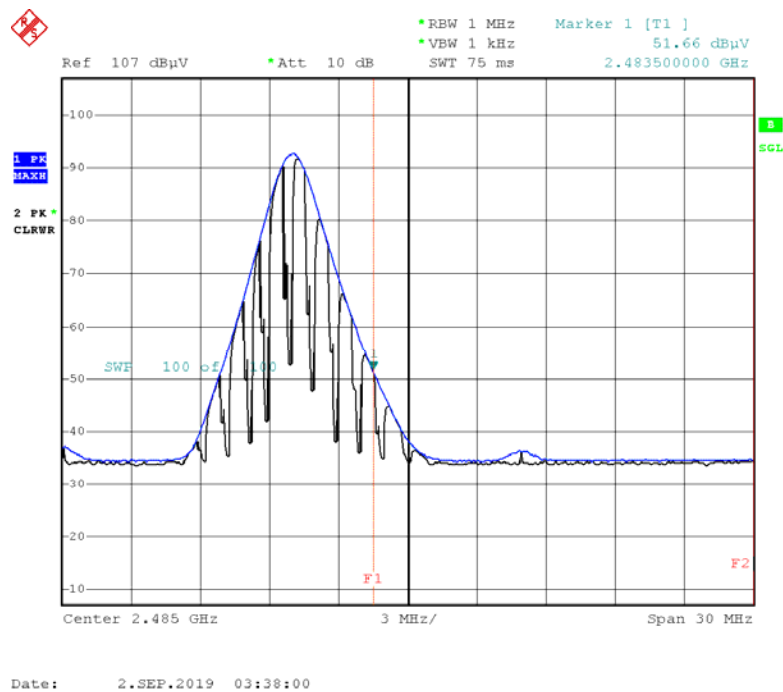
3. Test Plot

BT Band Edge (DH5/ch.78)

Bandedge

Frequency [MHz]	Reading dBuV	※ A.F.+CL [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
2483.5	62.89	0.65	H	0	63.54	73.98	10.44
2483.5	51.66	0.65	H	-24.73	27.58	53.98	26.40

Radiated Restricted Band Edges plot – Average Reading



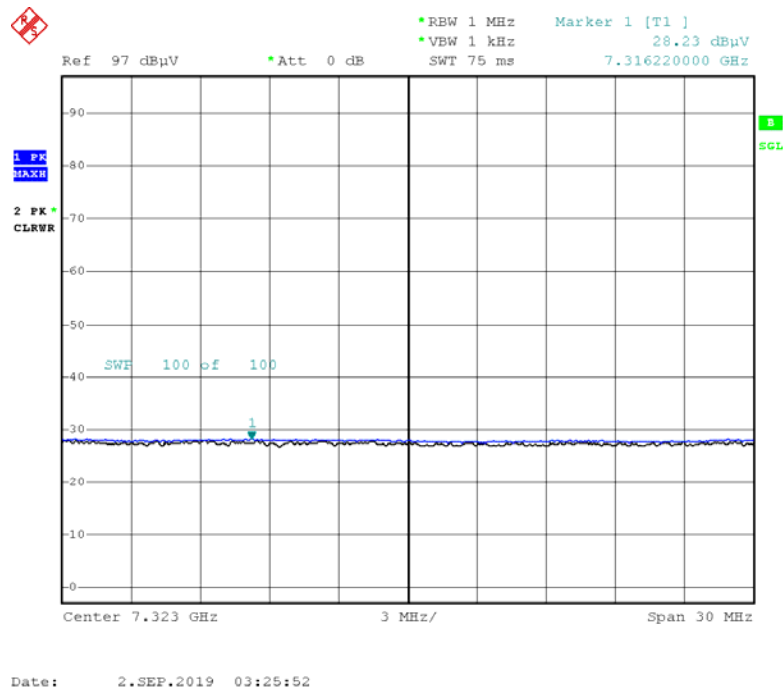


BT R.S.E 3rd Harmonic(2-DH5/ch.39)

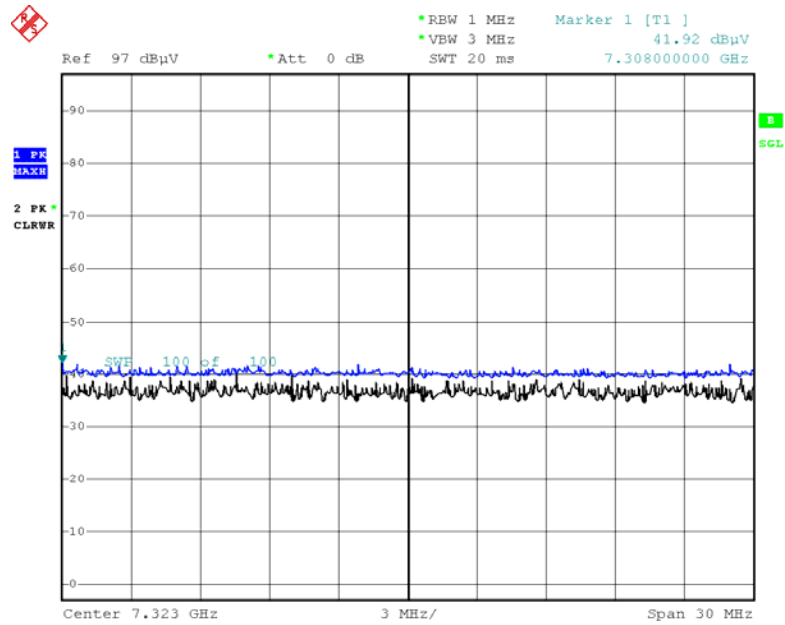
RSE

Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
7323	41.92	9.03	H	50.95	73.98	23.03	PK
7323	28.23	9.03	H	37.26	53.98	16.72	AV

Radiated Spurious Emissions plot – Average Reading



Radiated Spurious Emissions plot – Peak Reading



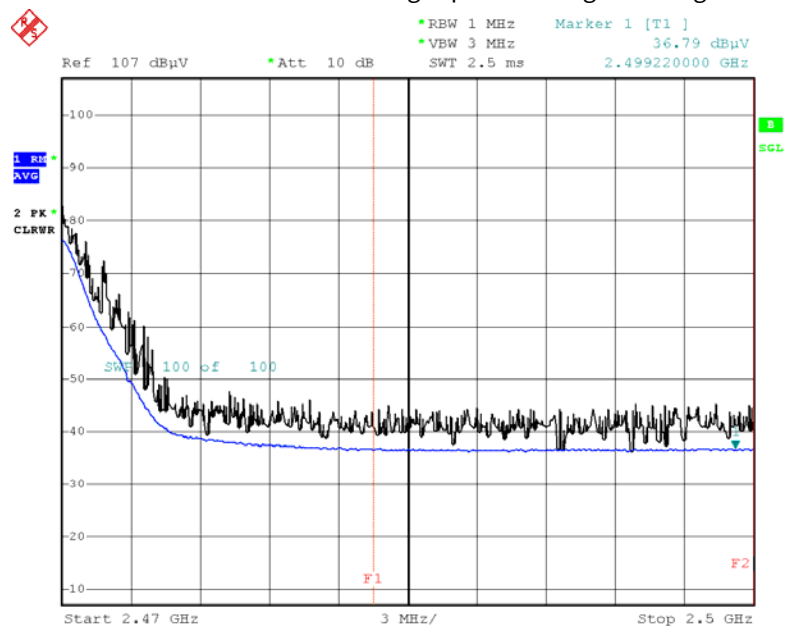
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DTS Band Edge (802.11g_6Mbps/ch.11)

Bandedge

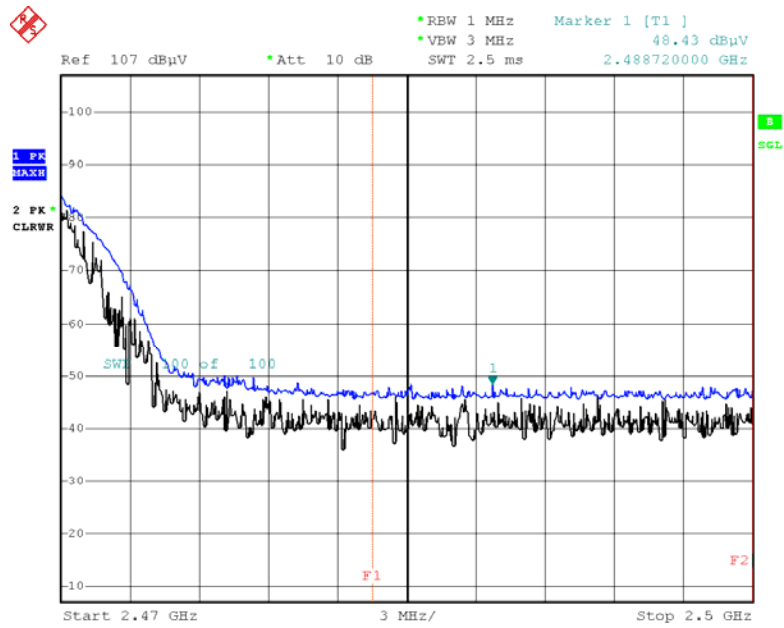
Frequency [MHz]	Reading dBuV	Duty Cycle Factor	※ A.F.+CL [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
2483.5	48.43	0.00	0.65	V	49.08	73.98	24.90	PK
2483.5	36.79	0.30	0.65	V	37.74	53.98	16.24	AV

Radiated Restricted Band Edges plot – Average Reading



Date: 30.AUG.2019 07:28:10

Radiated Restricted Band Edges plot – Peak Reading



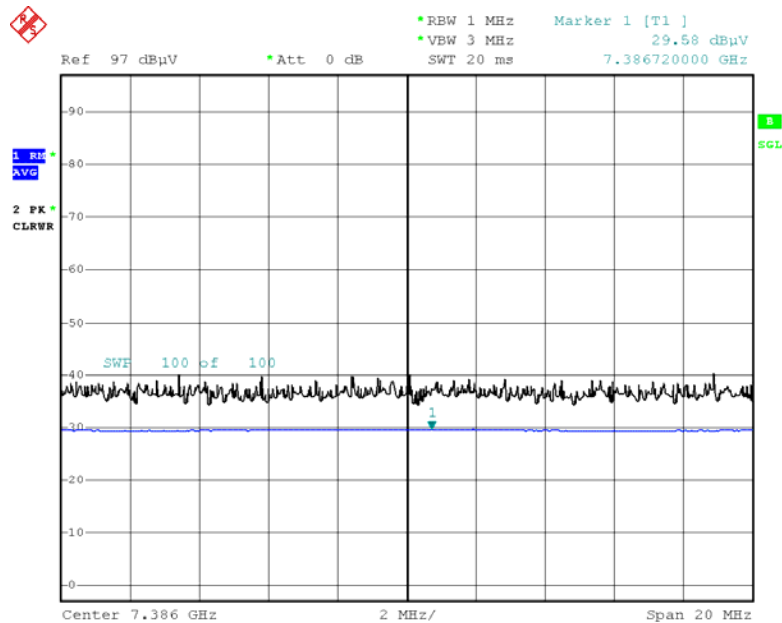
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DTS R.S.E 3rd Harmonic (802.11b 1Mbps/ch. 11)

RSE

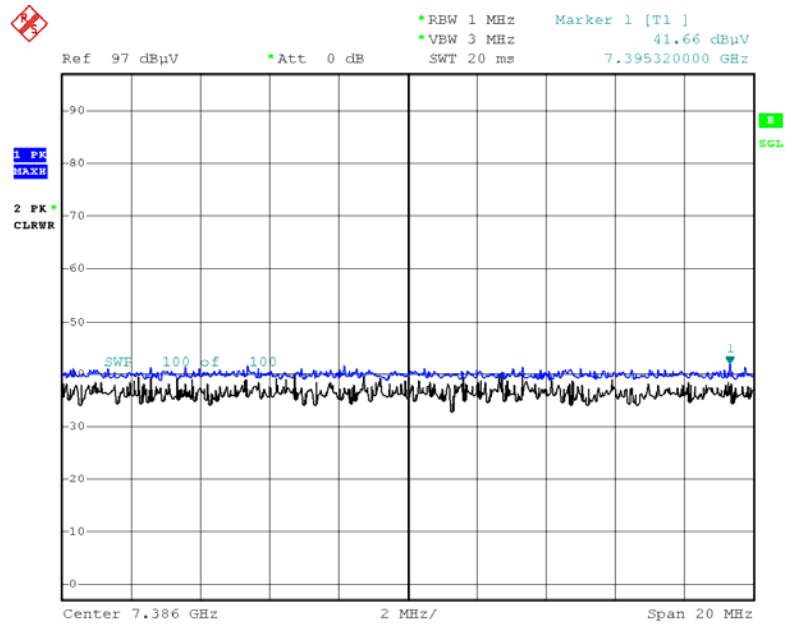
Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
7386	41.66	9.44	H	51.10	73.98	22.88	PK
7386	29.58	9.44	H	39.02	53.98	14.96	AV

Radiated Spurious Emissions plot – Average Reading



Date: 30.AUG.2019 07:41:31

Radiated Spurious Emissions plot – Peak Reading



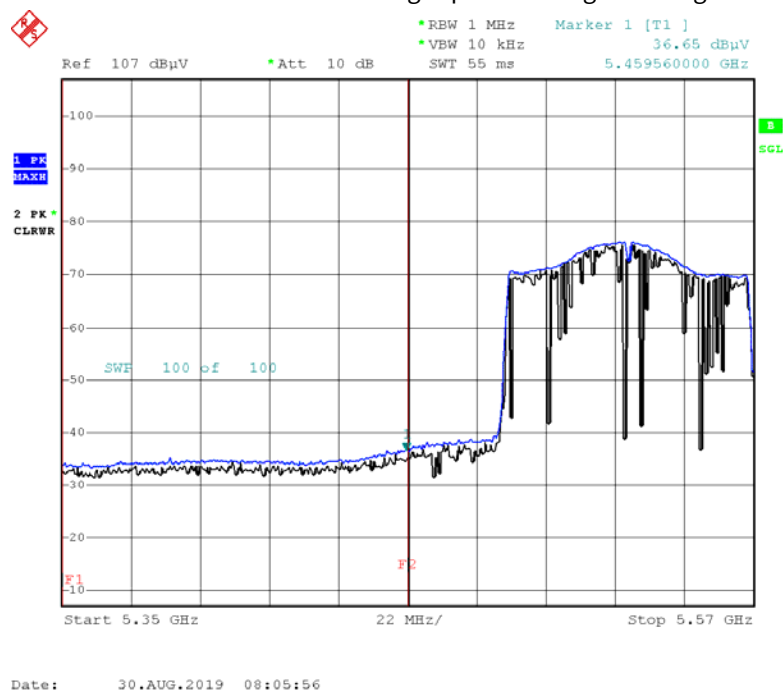
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U-NII Band Edge (802.11ac_80MHz MCS0/ch.106)

Bandedge

Frequency [MHz]	Reading dBuV	CL+AF+DF-AG [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
5460	47.95	12.24	V	60.19	73.98	13.79	PK
5460	36.65	12.24	V	48.89	53.98	5.09	AV

Radiated Restricted Band Edges plot – Average Reading



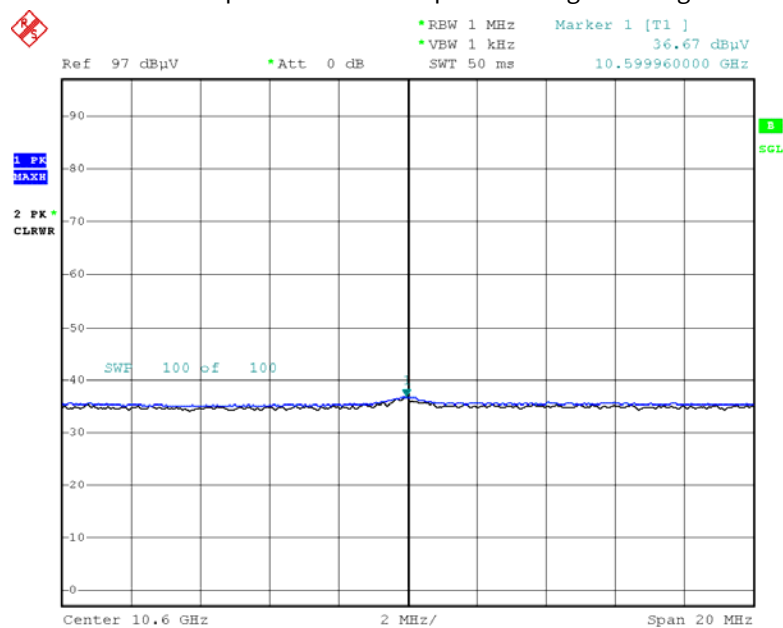


U-NII R.S.E 3rd Harmonic (802.11n_20MHz 6Mbps/ch.60)

RSE

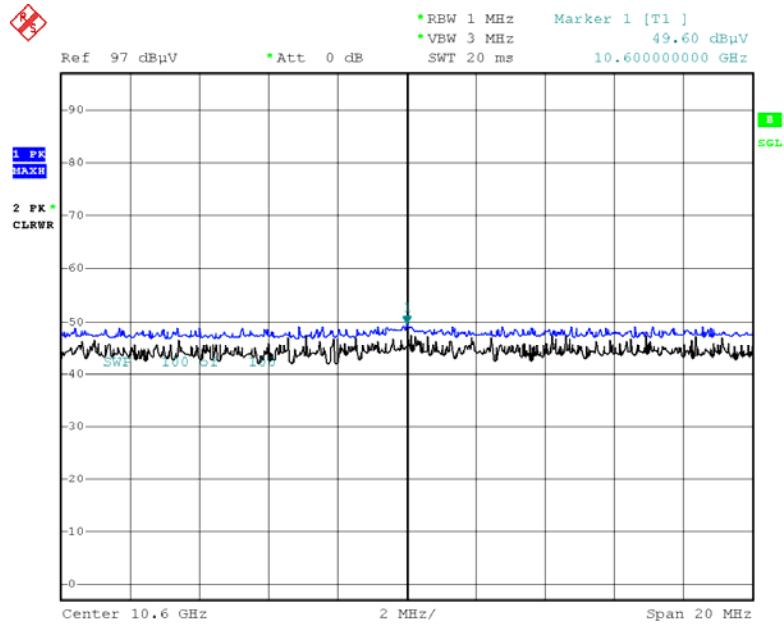
Frequency [MHz]	Reading dBuV	AN.+CL-AMP G [dB]	ANT. POL [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Detect
10600	49.60	4.27	V	53.87	73.98	20.11	PK
10600	36.67	4.27	V	40.94	53.98	13.04	AV

Radiated Spurious Emissions plot – Average Reading



Date: 30.AUG.2019 08:16:54

Radiated Spurious Emissions plot – Peak Reading



Date: 30.AUG.2019 08:17:07