

EVALUATION REPORT

Applicant Name: SAMSUNG Electronics Co., Ltd.	Date of Evaluation: February 14, 2019
Address: 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea	Test Site/Location: HCT CO., LTD., 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of KOREA

FCC ID:	A3LSMM105G
APPLICANT:	SAMSUNG Electronics Co., Ltd.

Equipment Class(es) : TNE, DSS, DTS
 Rule Part(s) : 15, 22, 27
 Application's Statement : The applicant takes full responsibility that the test data referenced below represents compliance for this FCC ID.
 Differences Brief Description : Some Cellular parts, Bluetooth & WLAN hardware and software of this device are identical to the implementation in A3LSMM105F. 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 detail test data can be found in this documents, Appendix A.

Category	Spot Check	Verdict
Licensed EMC	ERP / EIRP	Share
	RSE	Share
Unlicensed EMC	Band Edge	Share
	Spurious Emissions	Share

Reference Detail Section

Reference FCC ID	Equipment Class	Report Title	Section
A3LSMM105F	TNE	2G Report	All sections
		LTE B41 Report	All sections
	DSS	Bluetooth Report	All sections
	DTS	WLAN DTS Report	All sections
		BT LE Report	All sections



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Appendix A. The Spot check test data

1. Summary of the spot check for Licensed EMC

Though the change does not related to existed cellular bands, yet LTE Band 5 and WCDMA Band 5 were set for full test again because the deviation of ERP found through the spot check is more than expected. As for LTE Band 41 and GSM850, they have been verified and the parent model test results under FCC ID: A3LSMM105F shall remain representative of FCC ID: A3LSMM105G.

1.1 EFFECTIVE RADIATED POWER

Modulation	Frequency		Mode	SM-M105F/DS (dBm)	SM-M105G/DS (dBm)	Deviation (dB)
	MHz	Ch.				
GSM850	848.8	251	VOICE	24.29	23.71	-0.58
WCDMA B5	846.6	4243	RMC	9.28	14.30	5.02
LTE B5	847.5	20635	QPSK(3M)	17.23	14.44	-2.79
	846.5	20625	QPSK(5M)	15.30	14.56	-0.74

1.2 EQUIVALENT ISOTROPIC RADIATED POWER

Modulation	Frequency		Mod/ Bandwidth	SM-M105F/DS (dBm)	SM-M105G/DS (dBm)	Deviation (dB)
	MHz	Ch.				
LTE B41	2680.0	41490	QPSK(20M)	18.81	18.92	0.11

1.3 RADIATED SPURIOUS EMISSIONS

Modulation	Frequency		Mode	SM-M105F/DS (dBm)	SM-M105G/DS (dBm)	Deviation (dB)
	MHz	Ch.				
GSM850	848.8	251	VOICE	-35.15	-51.43	-16.28
WCDMA B5	826.4	4132	RMC	-46.75	-56.28	-9.53
	846.6	4233	RMC	-53.84	-49.77	4.07
LTE B5	836.5	20525	QPSK(3M)	-41.95	-49.28	-7.33
			QPSK(10M)	-48.14	-48.56	-0.42

Modulation	Frequency		Mod/ Bandwidth	SM-M105F/DS (dBm)	SM-M105G/DS (dBm)	Deviation (dB)
	MHz	Ch.				
LTE B41	2685.0	41540	QPSK(10M)	-37.90	-42.99	-5.09

2. Summary of the spot check for Unlicensed EMC

	Test Item	Mod/Channel	Measured Frequency	SM-M105F/DS (dBuV/m)		SM-M105G/DS (dBuV/m)		Deviation (dB)	
				Peak	Average	Peak	Average	Peak	Average
BT	Band Edge	2-DH5/ch.78	2483.5 MHz~2500 MHz	63.57	48.51	62.18	48.30	-1.39	-0.21
	RSE	DH5/ch.0	4804 MHz	53.98	44.09	53.64	40.50	-0.34	-3.59
		DH5/ch.39	7323 MHz	60.52	46.29	59.68	46.36	-0.84	0.07
DTS	Band Edge	802.11n_mcs0/ch.1	2310.0 MHz~2390.0 MHz	67.18	50.85	66.98	48.73	-0.20	-2.12
	RSE	802.11g 6Mbps/ch.6	4874 MHz	53.32	41.25	53.51	41.64	0.19	0.39
		802.11g 6Mbps/ch.6	7311 MHz	60.37	48.36	60.02	48.44	-0.35	0.08
BT(LE)	Band Edge	LE(4.2) 1M 37byte/ch.39	2483.5 MHz~2500 MHz	57.35	48.70	57.48	48.79	0.13	0.09
	RSE	LE(4.2) 1M 37byte/ch.0	4804 MHz	53.45	43.72	53.31	43.50	-0.14	-0.22
		LE(4.2) 1M 37byte/ch.39	7320 MHz	60.18	49.69	60.00	49.84	-0.18	0.15

3. List of test equipment for Licensed EMC

Manufacture	Model/ Equipment	Serial Number	Calibration Date	Calibration Interval	Calibration Due
REOHDE & SCHWARZ	SCU 18 / AMPLIFIER	10094	04/17/2018	Annual	04/17/2019
Wainwright	WHK1.2/15G-10EF/H.P.F	4	04/04/2018	Annual	04/04/2019
Wainwright	WHK3.3/18G-10EF/H.P.F	2	04/04/2018	Annual	04/04/2019
Hewlett Packard	11667B / Power Splitter(DC~26.5 GHz)	5001	06/07/2018	Annual	06/07/2019
Agilent	E3632A/DC Power Supply	KR75303243	05/09/2018	Annual	05/09/2019
Schwarzbeck	UHAP/ Dipole Antenna	557	03/31/2017	Biennial	03/31/2019
Schwarzbeck	UHAP/ Dipole Antenna	558	03/31/2017	Biennial	03/31/2019
ESPEC	SU-642 / Chamber	93000718	08/07/2018	Annual	08/07/2019
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	147	09/14/2018	Annual	09/14/2019
Schwarzbeck	BBHA 9120D/ Horn Antenna(1~18GHz)	9120D-1298	10/04/2018	Annual	10/04/2019
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170342	04/25/2017	Biennial	04/25/2019
Schwarzbeck	BBHA 9170/ Horn Antenna(15~40GHz)	BBHA9170124	04/25/2017	Biennial	04/25/2019
Agilent	N9020A/Signal Analyzer(10Hz~26.5GHz)	MY52090906	06/08/2018	Annual	06/08/2019
Hewlett Packard	8493C/ATTENUATOR(20dB)	17280	06/21/2018	Annual	06/21/2019
REOHDE & SCHWARZ	FSV40/Spectrum Analyzer(10Hz~40GHz)	100931	10/22/2018	Annual	10/22/2019
Agilent	8960 (E5515C)/ Base Station	MY48360800	09/27/2018	Annual	09/27/2019
Anritsu Corp.	MT8820C/Wideband Radio Communication Tester	6201026545	02/08/2018	Annual	02/08/2019
Schwarzbeck	FMZB1513/ Loop Antenna(9kHz~30MHz)	1513-175	08/23/2018	Biennial	08/23/2020
Schwarzbeck	VULB9160/ Bilog Antenna	9160-3368	08/09/2018	Biennial	08/09/2020
Schwarzbeck	VULB9160/ Hybrid Antenna	760	04/06/2017	Biennial	04/06/2019
REOHDE & SCHWARZ	SMB100A/ SIGNAL GENERATOR (100kHz~40GHz)	177633	07/19/2018	Annual	07/19/2019
REOHDE & SCHWARZ	ESU40 / EMI TEST RECEIVER	100524	07/27/2018	Annual	07/27/2019
HCT CO., LTD.,	FCC LTE Mobile Conducted RF Automation Test Software	-	-	-	-

4. List of test equipment for Unlicensed 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
Rohde & Schwarz	Loop Antenna	08/23/2018	Biennial	1513-175
Schwarzbeck	VULB 9168 / Hybrid Antenna	04/06/2017	Biennial	760
Schwarzbeck	VULB 9168 / Hybrid Antenna	08/09/2018	Annual	3368
Schwarzbeck	BBHA 9120D / Horn Antenna	06/30/2017	Biennial	1300
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	12/04/2017	Biennial	BBHA9170541
Rohde & Schwarz	FSP(9 kHz ~ 40 GHz) / Spectrum Analyzer	07/24/2018	Annual	100843
Wainwright Instruments	WHK3.0/18G-10EF / High Pass Filter	01/03/2019	Annual	F6
Wainwright Instruments	WHFX7.0/18G-8SS / High Pass Filter	05/09/2018	Annual	29
Wainwright Instruments	WRCJV2400/2483.5-2370/2520-60/12SS / Band Reject Filter	06/29/2018	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	01/03/2019	Annual	2
Weinschel	2-3 / Attenuator (3 dB)	10/10/2018	Annual	BR0617
H+S	5910-N-50-010 / Attenuator(10 dB)	11/08/2018	Annual	NONE
CERNEX	CBLU1183540B-01 / Power Amplifier	12/21/2018	Annual	25540
CERNEX	CBL06185030 / Power Amplifier	03/28/2018	Annual	28550
CERNEX	CBL18265035 / Power Amplifier	01/03/2019	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	06/29/2018	Annual	25956
TESCOM	TC-3000C / Bluetooth Tester	03/27/2018	Annual	3000C000276