

# **FCC Test Report**

Report No.: AGC12163220105FE05A

FCC ID	: 2ASF2MA-TW01
APPLICATION PURPOSE	: Original Equipment
PRODUCT DESIGNATION	: Smart RGBIC LED Strip Lights
BRAND NAME	: Linklite, Loycco, Magiacous, isnow
MODEL NAME	KT-S02MB-16.4, MA-HS01, MA-HS02, KT-S02MB, SL004, KT-S02MB-12.5, IS-001, IS-002
APPLICANT	: Shenzhen Linklite Smart Lighting Co., Ltd
DATE OF ISSUE	: Mar. 26, 2022
STANDARD(S) TEST PROCEDURE(S)	: FCC Part 15.247
<b>REPORT VERSION</b>	: V1.0
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#### **REPORT REVISE RECORD**

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Mar. 26, 2022	Valid	Initial Release

#### Note:

The original test report Ref. No. AGC12163220105FE05 dated Mar. 25, 2022, was modified on Mar. 26, 2022 to include the following changes:

- Change product designation;
- Change model name;
- Change the adapter;
- Change the appearance of EUT;
- Change the Control box, but the RF module has not changed;
- The Radiated Emission and Line Conduction Emission tests of the series model have been updated.



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# **1. VERIFICATION OF CONFORMITY**

Applicant	Shenzhen Linklite Smart Lighting Co., Ltd		
Address	4th floor, 3 building, Yangbei industrial park 1st phase, Huangtian, Hangcheng		
Address	street, Bao'an distr, Shenzhen, Guangdong Province, China		
manufacturer	Shenzhen Linklite Smart Lighting Co., Ltd		
Address	4th floor, 3 building, Yangbei industrial park 1st phase, Huangtian, Hangcheng		
Address	street, Bao'an distr, Shenzhen, Guangdong Province, China		
Factory	Shenzhen Linklite Smart Lighting Co., Ltd		
Address	4th floor, 3 building, Yangbei industrial park 1st phase, Huangtian, Hangcheng		
Address	street, Bao'an distr, Shenzhen, Guangdong Province, China		
Product Designation	Smart RGBIC LED Strip Lights		
Brand Name Linklite, Loycco, Magiacous, isnow			
Test Model	KT-S02MB-16.4		
Series Model	MA-HS01, MA-HS02, KT-S02MB, SL004, KT-S02MB-12.5, IS-001, IS-002		
	All the series models are same as the test model except for the model names and		
	the brand names.		
Declaration of Difference	Linklite corresponding to KT-S02MB-16.4, KT-S02MB, KT-S02MB-12.5;		
Decidiation of Difference	Loycco corresponding to SL004;		
	Magiacous corresponding to MA-HS01, MA-HS02;		
	isnow corresponding to IS-001, IS-002.		
Date of test	Feb. 16, 2022 to Mar. 26, 2022		
Deviation	No any deviation from the test method		
Condition of Test Sample	Normal		
Test Result	Pass		
Report Template	AGCRT-US-BGN/RF		

We hereby certify that:

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with radiated emission limits of FCC Rules Part 15.247.

Prepared By Kelly Cheng Mar. 26, 2022 (Project Engineer) Reviewed By Calvin Liu Mar. 26, 2022 (Reviewer) Approved By Max Zhang

(Authorized Officer)

Mar. 26, 2022

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# 2. GENERAL INFORMATION

# 2.1. PRODUCT DESCRIPTION

The EUT is designed as "Smart RGBIC LED Strip Lights". It is designed by way of utilizing the DSSS and OFDM technology to achieve the system operation.

Equipment Type	WLAN 2.4G			
Frequency Band	2400MHz ~ 2483.5MHz			
<b>Operation Frequency</b>	2412MHz ~ 2462MHz			
Output Power (Average)	IEEE 802.11b:14.17dBm; IEEE 802.11g:10.69dBm;			
	IEEE 802.11n(HT20):9.54dBm; IEEE 802.11n(HT40):8.57dBm			
Output Power (Peak)	IEEE 802.11b:17.52dBm; IEEE 802.11g:18.74dBm;			
	IEEE 802.11n(HT20):17.60dBm; IEEE 802.11n(HT40):16.61dBm			
Modulation	802.11b:DQPSK, DBPSK, CCK			
	802.11g/n: 64-QAM, 16-QAM, QPSK, BPSK			
	802.11b: 1/2/5.5/11Mbps			
Data Rate	802.11g: 6/9/12/18/24/36/48/54Mbps			
	802.11n: up to 300Mbps			
Number of channels	11			
Hardware Version	V1.2.3			
Software Version	V1.2.3			
Antenna Designation	PCB antenna (Comply with requirements of the FCC part 15.203)			
Antenna Gain	2.3dBi			
Power Supply	DC 12V by adapter			

A major technical description of EUT is described as following



#### 2.2. TABLE OF CARRIER FREQUENCYS

Frequency Band	Channel Number	Frequency
	1	2412 MHZ
	2	2417 MHZ
	3	2422 MHZ
	4	2427 MHZ
	5	2432 MHZ
2400~2483.5MHZ	6	2437 MHZ
	7	2442 MHZ
	8	2447 MHZ
	9	2452 MHZ
	10	2457 MHZ
	11	2462 MHZ

Note: For 20MHZ bandwidth system use Channel 1 to Channel 11. For 40MHZ bandwidth system use Channel 3 to Channel 9



#### 2.3. IEEE 802.11N MODULATION SCHEME

MCS	Nss	Modulation	R	NBPSC	NCBPS		NDBPS		Data rate(Mbps) 800nsGI	
Index					20MHz	40MHz	20MHz	40MHz	20MHz	40MHz
0	1	BPSK	1/2	1	52	108	26	54	6.5	13.5
1	1	QPSK	1/2	2	104	216	52	108	13.0	27.0
2	1	QPSK	3/4	2	104	216	78	162	19.5	40.5
3	1	16-QAM	1/2	4	208	432	104	216	26.0	54.0
4	1	16-QAM	3/4	4	208	432	156	324	39.0	81.0
5	1	64-QAM	2/3	6	312	648	208	432	52.0	108.0
6	1	64-QAM	3/4	6	312	648	234	489	58.5	121.5
7	1	64-QAM	5/6	6	312	648	260	540	65.0	135.0

Symbol	Explanation
NSS	Number of spatial streams
R	Code rate
NBPSC	Number of coded bits per single carrier
NCBPS	Number of coded bits per symbol
NDBPS	Number of data bits per symbol
GI	Guard interval

## 2.4. RELATED SUBMITTAL(S) / GRANT (S)

This submittal(s) (test report) is intended for **FCC ID: 2ASF2MA-TW01** filing to comply with the FCC Part 15 requirements.

#### 2.5. TEST METHODOLOGY

KDB 558074 D01 15.247 Meas Guidance v05: Guidance for compliance measurements on Digital transmissio n system, frequency hopping spread spectrum system, and hybrid system devices operating under section 15.247 of the FCC rules ANSI C63.10:2013: American National Standard for Testing Unlicensed Wireless Devices

## 2.6. SPECIAL ACCESSORIES

Refer to section 5.2.

## 2.7. EQUIPMENT MODIFICATIONS

#### Not available for this EUT intended for grant.

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

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## 2.8. ANTENNA REQUIREMENT

This intentional radiator is designed with a permanently attached antenna of an antenna to ensure that no antenna other than that furnished by the responsible party shall be used with the device. For more information of the antenna, please refer to the APPENDIX B: PHOTOGRAPHS OF EUT.



# **3. MEASUREMENT UNCERTAINTY**

The reported uncertainty of measurement y ±U, where expended uncertainty U is based on a standard

uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Item	Measurement Uncertainty
Uncertainty of Conducted Emission for AC Port	$U_c = \pm 3.1 \text{ dB}$
Uncertainty of Radiated Emission below 1GHz	$U_c = \pm 4.0 \text{ dB}$
Uncertainty of Radiated Emission above 1GHz	$U_c = \pm 4.8 \text{ dB}$
Uncertainty of total RF power, conducted	$U_c = \pm 0.8 \text{ dB}$
Uncertainty of RF power density, conducted	$U_c = \pm 2.6 \text{ dB}$
Uncertainty of spurious emissions, conducted	U <sub>c</sub> = ±2 %
Uncertainty of Occupied Channel Bandwidth	U <sub>c</sub> = ±2 %



# 4. DESCRIPTION OF TEST MODES

NO.	TEST MODE DESCRIPTION					
1	Low channel transmitting (TX)					
2	Middle channel transmitting (TX)					
3	High channel transmitting (TX)					
Note:	Note:					
Transm	Transmit by 802.11b with Date rate (1/2/5.5/11)					
Transm	Transmit by 802.11g with Date rate (6/9/12/18/24/36/48/54)					
Transm	ransmit by 802.11n (20MHz) with Date rate (6.5/13/19.5/26/39/52/58.5/65)					
Transm	ransmit by 802.11n (40MHz) with Date rate (13.5/27/40.5/54/81/108/121.5/135)					
The tes	The test channel for 20MHZ bandwidth system is channel 1, 6 and 11.					
The tes	t channel for 40MHZ bandwidth system is channel 3, 6 and 9.					

#### Note:

- 1. The EUT has been set to operate continuously on the lowest, middle and highest operation frequency Individually, and the EUT is operating at its maximum duty cycle>or equal 98%
- 2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.

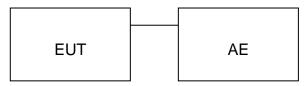
Software Setting

P	Beken Wi-F	i Test Tool V1.6.0				
F	Port Name:	FP_Port	Set Port Con	nect Port Dis	sconnect Port	
	Main					1
	Control		Setting	TX Setting	TX Packet Setup	
	M	AC Address	Channel 13 - MHz	CW FALS	BLE Pattern	_
	Y	flan Mode	Bandwidth 20 🖉 MHz	Temp Cali FALS		th
		sting Item	Data Rate OFDM_6M	TXPwr Auto	• Auto V Auto	
	WiFi - T	Tx 💌	Mode HT-MM -	Xtal C Auto	• •	
	Start	Stop		SAVE IN FLA	SH	
	-RX Packet Test Mode Interval		View Window [EVM]reset_mm [bk]tx_txdesc_fl128ush [EVM]phy init [EVM]set channel:2472 [EVM]tes_mode_bypass_mac [EVM]test_bypass_mac idx:49 pwr_gain:0x200 cal dpll and o129pen int #			×
					<u>Clear di</u>	splay



# 5. SYSTEM TEST CONFIGURATION 5.1. CONFIGURATION OF EUT SYSTEM

Radiated Emission Configure:



Conducted Emission Configure:

EUT	AE

## **5.2. EQUIPMENT USED IN EUT SYSTEM**

Item	Equipment	Model No.	ID or Specification	Remark
1	Smart RGBIC LED Strip Lights	KT-S02MB-16.4	2ASF2MA-TW01	EUT
2	Adapter	HJ-120300	Input:100-240V, 50/60Hz, 1.2 A Output: DC 12V, 3.0A	AE

## **5.3. SUMMARY OF TEST RESULTS**

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.209	Radiated Emission	Compliant
§15.207	Line Conduction Emission	Compliant



## 6. TEST FACILITY

Test Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Designation Number	CN1259
FCC Test Firm Registration Number	975832
A2LA Cert. No.	5054.02
Description	Attestation of Global Compliance(Shenzhen) Co., Ltd is accredited by A2LA

## TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	May 15, 2021	May 14, 2022
LISN	R&S	ESH2-Z5	100086	Jun. 09, 2021	Jun. 08, 2022
Test software	R&S	ES-K1(Ver.V1.71)	N/A	N/A	N/A

## TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESCI	10096	May 15, 2021	May 14, 2022
EXA Signal Analyzer	Aglient	N9010A	MY53470504	Nov. 17, 2021	Nov. 16, 2022
2.4GHz Fliter	Micro-tronics	087	N/A	Mar. 23, 2020	Mar. 22, 2022
2.4GHz Fliter	Micro-tronics	087	N/A	Mar. 22, 2022	Mar. 21, 2024
Attenuator	Weinachel Corp	58-30-33	N/A	Sep. 03, 2020	Sep. 02, 2022
Horn antenna	SCHWARZBECK	BBHA 9170	#768	Oct. 31, 2021	Oct. 30, 2023
Active loop antenna (9K-30MHz)	ZHINAN	ZN30900C	00034609	May 22, 2020	May 21, 2022
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Apr. 23, 2021	Apr. 22, 2022
Broadband Preamplifier	ETS LINDGREN	3117PA	00225134	Sep. 03, 2020	Sep. 02, 2022
ANTENNA	SCHWARZBECK	VULB9168	D69250	Jan. 08, 2020	Jan. 07, 2023
Test software	FARA	EZ-EMC (Ver RA-03A)	N/A	N/A	N/A



# 7. RADIATED EMISSION

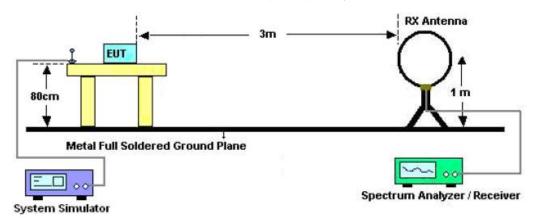
## 7.1. MEASUREMENT PROCEDURE

- 1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
- 2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
- 3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
- 4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
- 5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
- 6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
- 7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
- 8.If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
- 9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
- 10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High Low scan is not required in this case.

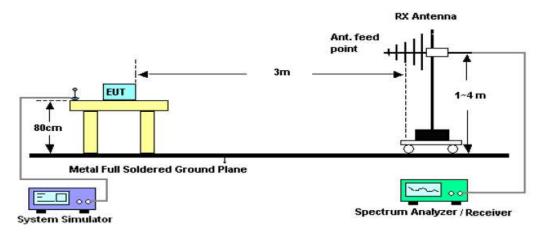


## 7.2. TEST SETUP

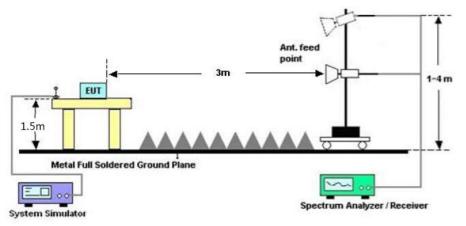
Radiated Emission Test-Setup Frequency Below 30MHz



#### RADIATED EMISSION TEST SETUP 30MHz-1000MHz



## RADIATED EMISSION TEST SETUP ABOVE 1000MHz





## 7.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Note: All modes were tested for restricted band radiated emission,

the test records reported below are the worst result compared to other modes.

## 7.4. TEST RESULT

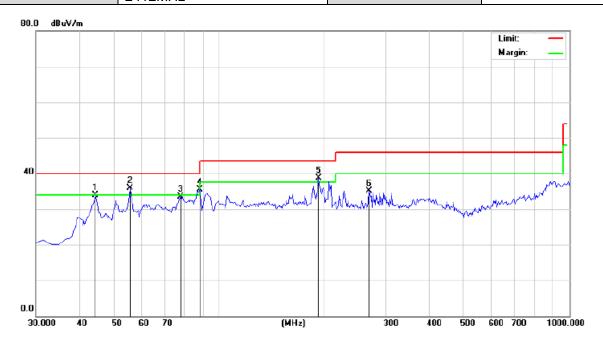
## Radiated emission below 30MHz

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.



EUT Smart RGBIC LED Strip Lights		Model Name	KT-S02MB-16.4	
Temperature	25°C	Relative Humidity	58%	
Pressure	960hPa	Test Voltage	Normal Voltage	
Test Mode	802.11g with date rate 1 2412MHz	Antenna	Horizontal	



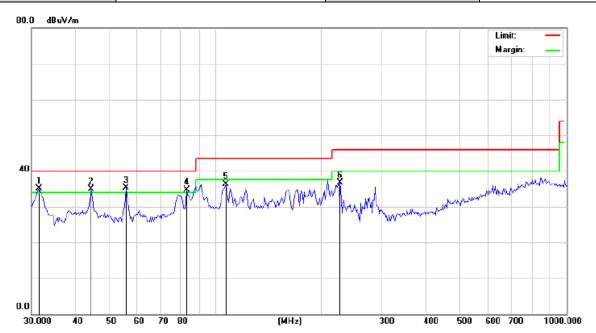


No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		44.5499	24.37	9.47	33.84	40.00	-6.16	peak
2	*	55.8667	25.61	10.34	35.95	40.00	-4.05	peak
3		77.7742	24.68	8.87	33.55	40.00	-6.45	peak
4		88.2000	25.80	9.61	35.41	43.50	-8.09	peak
5	İ	193.2831	29.74	9.04	38.78	43.50	-4.72	peak
6		269.2667	26.08	9.07	35.15	46.00	-10.85	peak

## **RESULT: PASS**



EUT Smart RGBIC LED Strip Lights		Model Name	KT-S02MB-16.4	
Temperature	25°C	Relative Humidity	58%	
Pressure	960hPa	Test Voltage	Normal Voltage	
Test Mode	802.11g with date rate 1 2412MHz	Antenna	Vertical	



No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1	İ	31.6167	27.81	7.22	35.03	40.00	-4.97	peak
2	İ	44.5499	25.57	9.31	34.88	40.00	-5.12	peak
3	*	55.8667	24.89	10.42	35.31	40.00	-4.69	peak
4	İ	83.3499	24.66	9.95	34.61	40.00	-5.39	peak
5		107.5999	26.34	9.89	36.23	43.50	-7.27	peak
6		227.2333	25.18	11.48	36.66	46.00	-9.34	peak

#### **RESULT: PASS**

Note: 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

2. The "Factor" value can be calculated automatically by software of measurement system.

3. All test modes had been pre-tested. The 802.11g at low channel is the worst case and recorded in the report.



## Radiated emission above 1GHz

EUT Smart RGBIC LED Strip Lights		Model Name	KT-S02MB-16.4	
Temperature	25°C	Relative Humidity	58%	
Pressure	960hPa	Test Voltage	Normal Voltage	
Test Mode	802.11g with date rate 1 2412MHz	Antenna	Horizontal	

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin		
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Value Type	
4824.000	56.31	0.08	56.39	74	-17.61	peak	
4824.000	46.28	0.08	46.36	54	-7.64	AVG	
7236.000	50.25	2.21	52.46	74	-21.54	peak	
7236.000	41.46	2.21	43.67	54	-10.33	AVG	
Remark:							
actor = Antenna Factor + Cable Loss – Pre-amplifier.							

EUT	Smart RGBIC LED Strip Lights	Model Name	KT-S02MB-16.4
Temperature	25°C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with date rate 1 2412MHz	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	- Value Type
4824.000	55.34	0.08	55.42	74	-18.58	peak
4824.000	46.37	0.08	46.45	54	-7.55	AVG
7236.000	51.29	2.21	53.5	74	-20.5	peak
7236.000	41.53	2.21	43.74	54	-10.26	AVG
Remark:						
actor = Anter	nna Factor + Cabl	e Loss – Pre-	amplifier.			



EUT	Smart RGBIC LED Strip Lights	Model Name	KT-S02MB-16.4
Temperature	25°C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with date rate 1 2437MHz	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4874.000	55.16	0.14	55.3	74	-18.7	peak
4874.000	46.37	0.14	46.51	54	-7.49	AVG
7311.000	51.42	2.36	53.78	74	-20.22	peak
7311.000	41.57	2.36	43.93	54	-10.07	AVG
Remark:	1		1		1	
actor = Anter	na Factor + Cabl	e Loss – Pre-a	mplifier.			

EUT	Smart RGBIC LED Strip Lights	Model Name	KT-S02MB-16.4
Temperature	25°C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with date rate 1 2437MHz	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4874.000	55.37	0.14	55.51	74	-18.49	peak
4874.000	46.31	0.14	46.45	54	-7.55	AVG
7311.000	52.17	2.36	54.53	74	-19.47	peak
7311.000	41.58	2.36	43.94	54	-10.06	AVG
Remark:						
Factor = Anter	nna Factor + Cabl	e Loss – Pre-	amplifier.			



EUT	Smart RGBIC LED Strip Lights	Model Name	KT-S02MB-16.4
Temperature	25°C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with date rate 1 2462MHz	Antenna	Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4924.000	55.67	0.22	55.89	74	-18.11	peak
4924.000	45.91	0.22	46.13	54	-7.87	AVG
7386.000	50.26	2.64	52.9	74	-21.1	peak
7386.000	52.11	2.64	54.75	54	0.75	AVG
Remark:	1		1			
Factor = Anter	na Factor + Cabl	e Loss – Pre-	amplifier.			

EUT	Smart RGBIC LED Strip Lights	Model Name	KT-S02MB-16.4
Temperature	25°C	Relative Humidity	58%
Pressure	960hPa	Test Voltage	Normal Voltage
Test Mode	802.11g with date rate 1 2462MHz	Antenna	Vertical

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Value Type
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	value Type
4924.000	54.94	0.22	55.16	74	-18.84	peak
4924.000	45.13	0.22	45.35	54	-8.65	AVG
7386.000	51.27	2.64	53.91	74	-20.09	peak
7386.000	42.33	2.64	44.97	54	-9.03	AVG
Remark:						
actor = Anter	nna Factor + Cabl	e Loss – Pre-	amplifier.			

#### **RESULT: PASS**

#### Note:

The amplitude of other spurious emissions from 1G to 25 GHz which are attenuated more than 20 dB below the permissible value need not be reported.

Factor = Antenna Factor + Cable loss - Amplifier gain, Over=Measure-Limit.

The "Factor" value can be calculated automatically by software of measurement system.

All test modes had been pre-tested. The 802.11g mode is the worst case and recorded in the report.



# 8. LINE CONDUCTED EMISSION TEST

## 8.1. LIMITS OF LINE CONDUCTED EMISSION TEST

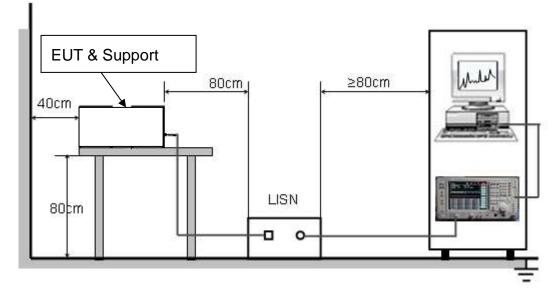
Frequency	Maximum RF Line Voltage			
Frequency	Q.P (dBµV)	Average (dBµV)		
150kHz~500kHz	66-56	56-46		
500kHz~5MHz	56	46		
5MHz~30MHz	60	50		

Note:

1. The lower limit shall apply at the transition frequency.

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

## 8.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST





## 8.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

- The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4. All support equipment received AC120V/60Hz power from a LISN, if any.
- 5. The EUT received DC 12V power from adapter which received AC120V/60Hz power from a LISN.
- 6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 Ohm load; the second scan had Line 1 connected to a 50 Ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
- 8. During the above scans, the emissions were maximized by cable manipulation.
- 9. The test mode(s) were scanned during the preliminary test.

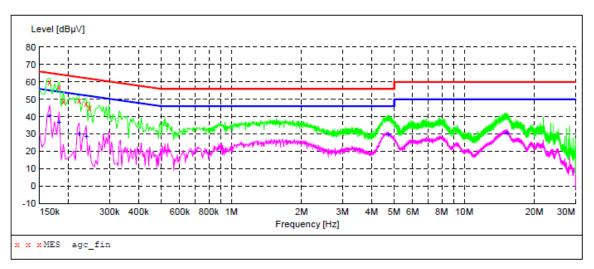
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

## 8.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

- 1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
- A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less – 2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
- 3. The test data of the worst case was reported on the Summary Data page.



## 8.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST



Line Conducted Emission Test Line 1-L

#### MEASUREMENT RESULT: "agc fin"

2022/2/22 17:43 Frequency Level Transd Limit Margin Detector Line dBµV MHz dBµV dB dB 0.166000 59.90 6.8 65 5.3 г1 QP 0.182000 56.80 6.7 64 7.6 г1 QP 0.190000 48.70 6.6 64 15.3 г1 QP 49.20 6.4 0.222000 63 13.5 г1 QP 62 0.238000 47.40 6.3 14.8 г1 QP 0.246000 45.20 6.3 62 16.7 г1 QP

#### MEASUREMENT RESULT: "agc fin2"

2022/2/22 17:	43					
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.166000 0.182000 0.222000 0.238000 4.714000 15.258000	40.70 37.10 30.30 28.90 29.90 30.90	6.8 6.7 6.4 6.3 6.6 8.3	55 54 53 52 46 50	14.5 17.3 22.4 23.3 16.1 19.1	AV AV AV AV	L1 L1 L1 L1 L1 L1

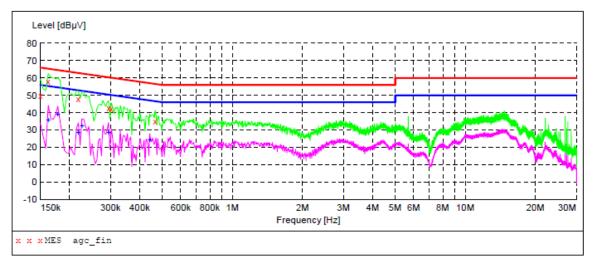
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#### MEASUREMENT RESULT: "agc\_fin"

2022/2/22 17:45

44/4/44 I/:	40					
Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line
MHZ	αвμν	uв	ασμν	uв		
0.150000	49.80	6.9	66	16.2	QP	N
0.162000	57.90	6.8	65	7.5	QP	N
0.218000	47.90	6.4	63	15.0	QP	N
0.294000	42.60	6.1	60	17.8	QP	N
0.302000	42.20	6.0	60	18.0	QP	N
0.466000	35.20	5.5	57	21.4	QP	N

#### MEASUREMENT RESULT: "agc\_fin2"

2022/2/22	17:45					
Frequenc MH	-	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.16200	0 35.80	6.8	55	19.6	AV	N
0.17800	0 39.50	6.7	55	15.1	AV	N
0.21800	0 28.80	6.4	53	24.1	AV	Ν
0.22600	0 32.50	6.4	53	20.1	AV	Ν
0.29400	0 28.60	6.1	50	21.8	AV	Ν
0.44200	0 24.50	5.6	47	22.5	AV	Ν

## **RESULT: PASS**

Note: All test modes had been pre-tested. The 802.11g at low channel is the worst case and recorded in the report.

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# APPENDIX A: PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC12163220105AP02A

# APPENDIX B: PHOTOGRAPHS OF EUT

Refer to the Report No.: AGC12163220105AP03A

----END OF REPORT----



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2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.

3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.

4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.

5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.

6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.

7.Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.

8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.

9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.