

Shenzhen Toby Technology Co., Ltd.

Report No.: TB-FCC149212

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FCC Radio Test Report FCC ID: 2AJOS-GU10

Original Grant

Report No. TB-FCC149212

Applicant GUANGZHOU ADVANSOLUTION TECHNOLOGY CO.,LTD

Equipment Under Test (EUT)

EUT Name GU10 LED SPOT LIGHT

Model No. VKB-004-GU10

Serial No. KP-GU10

Brand Name KASA

Receipt Date 2016-08-15

Test Date 2016-08-16 to 2016-08-29

Issue Date 2016-08-30

Standards FCC Part 15: 2015, Subpart C(15.247)

Test Method ANSI C63.10: 2013

Conclusions PASS

In the configuration tested, the EUT complied with the standards specified above,

Test/Witness

Engineer

Approved&

Authorized

LVAN SU fay Lai.

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

TB-RF-074-1.0

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1. General Information about EUT

1.1 Client Information

Applicant: GUANGZHOU ADVANSOLUTION TECHNOLOGY CO.,LTD

Address : RM801, ZHONGMING BULIDING, LONGKOU WEST RD, TIANHE

DISTRICT, GUANGZHOU, CHINA

Manufacturer : GUANGZHOU ADVANSOLUTION TECHNOLOGY CO.,LTD

Address : RM801, ZHONGMING BULIDING, LONGKOU WEST RD, TIANHE

DISTRICT, GUANGZHOU, CHINA

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	GU10 LED SPOT LIGHT					
Models No.	-	VKB-004-GU10, KP-GU	VKB-004-GU10, KP-GU10				
Model Difference	•		Il these models are identical in the same PCB, layout and electrical ircuit, the only difference is model name for commercial.				
M Turk	•	Operation Frequency: Bluetooth 4.0(BLE): 240	Operation Frequency: Bluetooth 4.0(BLE): 2402MHz~2480MHz				
١		Number of Channel:	Bluetooth 4.0(BLE): 40 channels see note(3)				
Product		RF Output Power:	7.062 dBm Conducted Power				
Description		Antenna Gain:	2 dBi PCB Antenna				
		Modulation Type:	GFSK				
The same		Bit Rate of Transmitter:	1Mbps(GFSK)				
Power Rating	:	AC 85~240V, 50/60Hz					
Connecting I/O Port(S)	:	Please refer to the User's Manual					

Note:

- (1) This Test Report is FCC Part 15.247 for Bluetooth BLE, the test procedure follows the FCC KDB 558074 D01 DTS Meas Guidance v03r05.
- (2) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- (3) Antenna information provided by the applicant.
- (4) Channel List:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	2402	14	2430	28	2458
01	2404	15	2432	29	2460
02	2406	16	2434	30	2462



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		CHILL			
03	2408	17	2436	31	2464
04	2410	18	2438	32	2466
05	2412	19	2440	33	2468
06	2414	20	2442	34	2470
07	2416	21	2444	35	2472
08	2418	22	2446	36	2474
09	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	39	2480
12	2426	26	2454		
13	2428	27	2456		

1.3 Block Diagram Showing the Configuration of System Tested

TX Mode

EUT

1.4 Description of Support Units

The EUT Has been test as an independent unit.

1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test						
Final Test Mode Description						
Mode 1	TX Mode					

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		- D ::			
		For Radia	ted lest		



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Final Test Mode	Description
Mode 2	TX Mode
Mode 3	TX Mode
Mode 3	(Channel 00/20/39)

Note:

(1) For all test, we have verified the construction and function in typical operation. And all the test modes were carried out with the EUT in transmitting operation in maximum power with all kinds of data rate.

According to ANSI C63.10 standards, the measurements are performed at the highest, middle, lowest available channels, and the worst case data rate as follows:

BLE Mode: GFSK Modulation Transmitting mode.

- (2) During the testing procedure, the continuously transmitting with the maximum power mode was programmed by the customer.
- (3) The EUT is considered a mobile unit; in normal use it was positioned on X-plane. The worst case was found positioned on X-plane. Therefore only the test data of this X-plane was used for radiated emission measurement test.

1.6 Description of Test Software Setting

During testing channel& Power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product power parameters of RF setting.

Test Software Version	N/A		
Frequency	2402 MHz	2442MHz	2480 MHz
BLE GFSK	DEF	DEF	DEF



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1.7 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, 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 %.

Test Item	Parameters	Expanded Uncertainty (U _{Lab})
	Level Accuracy:	
Conducted Emission	9kHz~150kHz	±3.42 dB
	150kHz to 30MHz	±3.42 dB
Dadiated Emission	Level Accuracy:	14 CO dD
Radiated Emission	9kHz to 30 MHz	±4.60 dB
Dedicted Emission	Level Accuracy:	14.40 dD
Radiated Emission	30MHz to 1000 MHz	±4.40 dB
Dadiated Emission	Level Accuracy:	14 00 dD
Radiated Emission	Above 1000MHz	±4.20 dB

1.8 Test Facility

The testing was performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at:1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China.

At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

FCC List No.: (811562)

The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number is 811562.

IC Registration No.: (11950A-1)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.



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2. Test Summary

Standard Section		Took Home	ludana ant	O W
FCC IC		Test Item	Judgment	Remark
15.203		Antenna Requirement	PASS	N/A
15.207(a)	RSS-GEN 7.2.4	Conducted Emission	PASS	N/A
15.205&15.247(d)	RSS-GEN 7.2.2	Band-Edge&Unwanted Emissions into Restricted Frequency	PASS	N/A
15.247(a)(2)	RSS 247 5.2 (1)	6dB Bandwidth	PASS	N/A
15.247(b)(3)	RSS 247 5.4 (4)	Conducted Max Output Power	PASS	N/A
15.247(e)	RSS 247 5.2 (2)	Power Spectral Density	PASS	N/A
15.205, 15.209&15.247(d)	RSS 247 5.5	Transmitter Radiated Spurious &Unwanted Emissions into Restricted Frequency	PASS	N/A



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3. Test Equipment

Conducted Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
EMI Test Receiver	Rohde & Schwarz	ESCI	100321	Jul. 22, 2016	Jul. 21, 2017
RF Switching Unit	Compliance Direction Systems Inc	RSU-A4	34403	Jul. 22, 2016	Jul. 21, 2017
AMN	SCHWARZBECK	NNBL 8226-2	8226-2/164	Jul. 22, 2016	Jul. 21, 2017
LISN	Rohde & Schwarz	ENV216	101131	Jul. 22, 2016	Jul. 21, 2017
Radiation	Emission Tes	t			
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 22, 2016	Jul. 21, 2017
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jul. 22, 2016	Jul. 21, 2017
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar. 20, 2016	Mar. 19, 2017
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar. 20, 2016	Mar. 19, 2017
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar. 19, 2016	Mar. 18, 2017
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar. 19, 2016	Mar. 18, 2017
Pre-amplifier	Sonoma	310N	185903	Mar. 20, 2016	Mar. 19, 2017
Pre-amplifier	HP	8447B	3008A00849	Mar. 26, 2016	Mar. 25, 2017
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar. 26, 2016	Mar. 25, 2017
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A
Antenna C	Conducted Em	ission			
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 22, 2016	Jul. 21, 2017
EMI Test Receiver	Rohde & Schwarz	ESCI	100010/007	Jul. 22, 2016	Jul. 21, 2017
Power Meter	Anritsu	ML2495A	25406005	Jul. 22, 2016	Jul. 21, 2017
Power Sensor	Anritsu	ML2411B	25406005	Jul. 22, 2016	Jul. 21, 2017



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4. Conducted Emission Test

4.1 Test Standard and Limit

4.1.1Test Standard FCC Part 15.207

4.1.2 Test Limit

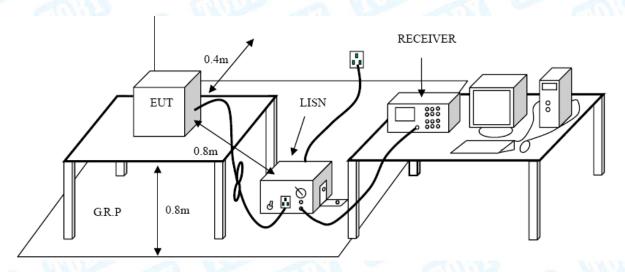
Conducted Emission Test Limit

Evaguanov	Maximum RF Lin	e Voltage (dBμV)
Frequency	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Notes:

- (1) *Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2 Test Setup



4.3 Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.



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I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

4.4 EUT Operating Mode

Please refer to the description of test mode.

4.5 Test Data

Test data please refer the following pages.



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EUT:	GU10	LED SPOT I	LIGHT	Model:		VKB-	004-GU1
Temperatur	e: 25 ℃	I The	17:51	Relative Hu	midity:	55%	
est Voltage	: AC 12	0V/60 Hz	Alle		N W		
erminal:	Line			(MILL)			Maria
est Mode:	TX GF	SK Mode 24	102 MHz			13	
Remark:	Only v	vorse case is	reported		A TOP		28.0
80.0 dBuV							
						QP: AVG:	_
						,	
×							
A M	X X X X						
30		amandaa a	والمومل المرباط المربيي المام	Majohyulharharidada.Hudharpha	MATHER WALLEL	was harman stable on	Merchilland
M Com		/	11.			a Arra coatte at Hod.	E.
~ \ \	المالسالمال	NUMPHONIA CAR	aNAMANAHA	Hereband day had been been been been been been been bee	holisher with disorder many	Parallel Commence of the Comme	-
20							
0.150	0.5		(MHz)	5			30.000
	0.5	Reading	(MHz)	5 Measure-			30.000
	Freq.			»=-	Limit	Over	30.000
0.150		Reading	Correct	Measure-	Limit	Over	
0.150	Freq.	Reading Level	Correct Factor	Measure- ment			
0.150 No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	dBuV	dB	Detector QP
0.150 No. Mk.	Freq. MHz 0.1500	Reading Level dBuV 39.35	Correct Factor	Measure- ment dBuV 49.27	dBuV 65.99 55.99	dB -16.72	Detector QP
0.150 No. Mk. 1 2 *	Freq. MHz 0.1500 0.1500	Reading Level dBuV 39.35 32.51	Correct Factor dB 9.92 9.92	Measure- ment dBuV 49.27 42.43	dBuV 65.99 55.99 62.89	dB -16.72 -13.56	Detector QP AVG
0.150 No. Mk. 1 2 * 3	Freq. MHz 0.1500 0.1500 0.2180	Reading Level dBuV 39.35 32.51 34.63	Correct Factor dB 9.92 9.92 10.02	Measure- ment dBuV 49.27 42.43 44.65	dBuV 65.99 55.99 62.89 52.89	dB -16.72 -13.56 -18.24	Detector QP AVG
0.150 No. Mk. 1 2 * 3 4	Freq. MHz 0.1500 0.1500 0.2180 0.2180	Reading Level dBuV 39.35 32.51 34.63 24.36	Correct Factor dB 9.92 9.92 10.02	Measure- ment dBuV 49.27 42.43 44.65 34.38	dBuV 65.99 55.99 62.89 52.89 60.41	dB -16.72 -13.56 -18.24 -18.51	QP AVG QP AVG
0.150 No. Mk. 1 2 * 3 4 5	Freq. MHz 0.1500 0.1500 0.2180 0.2180 0.2940	Reading Level dBuV 39.35 32.51 34.63 24.36 31.12	Correct Factor dB 9.92 9.92 10.02 10.02	Measure- ment dBuV 49.27 42.43 44.65 34.38 41.14	dBuV 65.99 55.99 62.89 52.89 60.41 50.41	dB -16.72 -13.56 -18.24 -18.51 -19.27	Detector QP AVG QP AVG
0.150 No. Mk. 1 2 * 3 4 5 6	Freq. MHz 0.1500 0.1500 0.2180 0.2180 0.2940 0.2940	Reading Level 39.35 32.51 34.63 24.36 31.12 24.28	Correct Factor dB 9.92 9.92 10.02 10.02 10.02	Measure- ment dBuV 49.27 42.43 44.65 34.38 41.14 34.30	dBuV 65.99 55.99 62.89 52.89 60.41 50.41 58.50	dB -16.72 -13.56 -18.24 -18.51 -19.27 -16.11	QP AVG QP AVG QP AVG
0.150 No. Mk. 1 2 * 3 4 5 6 7	Freq. MHz 0.1500 0.1500 0.2180 0.2180 0.2940 0.2940 0.3700	Reading Level dBuV 39.35 32.51 34.63 24.36 31.12 24.28 27.46	Correct Factor dB 9.92 9.92 10.02 10.02 10.02 10.02	Measure- ment dBuV 49.27 42.43 44.65 34.38 41.14 34.30 37.48	dBuV 65.99 55.99 62.89 52.89 60.41 50.41 58.50 48.50	dB -16.72 -13.56 -18.24 -18.51 -19.27 -16.11 -21.02	QP AVG QP AVG QP AVG
0.150 No. Mk. 1 2 * 3 4 5 6 7 8 9	Freq. MHz 0.1500 0.1500 0.2180 0.2180 0.2940 0.2940 0.3700 0.3700	Reading Level dBuV 39.35 32.51 34.63 24.36 31.12 24.28 27.46 20.08 25.64	Correct Factor dB 9.92 9.92 10.02 10.02 10.02 10.02 10.02 10.02	Measure- ment dBuV 49.27 42.43 44.65 34.38 41.14 34.30 37.48 30.10 35.66	65.99 55.99 62.89 52.89 60.41 50.41 58.50 48.50	dB -16.72 -13.56 -18.24 -18.51 -19.27 -16.11 -21.02 -18.40 -21.52	QP AVG QP AVG QP AVG QP
No. Mk. 1 2 * 3 4 5 6 7	Freq. MHz 0.1500 0.1500 0.2180 0.2180 0.2940 0.2940 0.3700 0.3700 0.4340	Reading Level dBuV 39.35 32.51 34.63 24.36 31.12 24.28 27.46 20.08	Correct Factor dB 9.92 9.92 10.02 10.02 10.02 10.02 10.02	Measure- ment dBuV 49.27 42.43 44.65 34.38 41.14 34.30 37.48 30.10	65.99 55.99 62.89 52.89 60.41 50.41 58.50 48.50 57.18 47.18	dB -16.72 -13.56 -18.24 -18.51 -19.27 -16.11 -21.02 -18.40	QP AVG QP AVG QP AVG



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EUT:	GU1	0 LED SPOT	FLIGHT	Model:		VKB.	-004-GU1
Temperature	: 25 °C			Relative Hu	ımidity:	55%	
est Voltage:	: AC 1	20V/60 Hz	BAILT				
Terminal:	Neut	ral		CHILD			MU
Test Mode:	TX G	FSK Mode 2	2402 MHz	1	M	33	
Remark:	Only	worse case	is reported		Miles		188
80.0 dBuV							
						QP: AVG:	
30		Markatalana Markatalana	Lapelfarthertheise Laurenne	likhikula palamapanapanapanakalasakan wasani mahamani dinakana muunuwa	and the state of t	ndadon, and see y by	vern Wenner peak
-20							
-20 0.150	0.5		(MHz)	5			30.000
10000	0.5	Reading Level	(MHz) Correct Factor	Measure- ment	Limit	Over	30.000
0.150		_	Correct	Measure-	Limit	Over	30.000
0.150	Freq.	Level	Correct Factor	Measure- ment	dBuV		
0.150 No. Mk.	Freq. MHz 0.1500 0.1500	39.54 30.30	Correct Factor dB 10.12	Measure- ment dBuV 49.66 40.42	dBuV 65.99 55.99	dB -16.33 -15.57	Detector QP AVG
0.150 No. Mk. 1 2 * 3	Freq. MHz 0.1500 0.1500 0.2180	39.54 30.30 32.43	Correct Factor dB 10.12 10.12	Measure- ment dBuV 49.66 40.42 42.54	dBuV 65.99 55.99 62.89	dB -16.33 -15.57 -20.35	Detector QP AVG QP
0.150 No. Mk. 1 2 * 3 4	Freq. MHz 0.1500 0.1500 0.2180	39.54 30.30 32.43 23.47	Correct Factor dB 10.12 10.12 10.11 10.11	Measure- ment dBuV 49.66 40.42 42.54 33.58	dBuV 65.99 55.99 62.89 52.89	dB -16.33 -15.57 -20.35 -19.31	Detector QP AVG QP AVG
0.150 No. Mk. 1 2 * 3	Freq. MHz 0.1500 0.1500 0.2180 0.2180 0.2900	39.54 30.30 32.43	Correct Factor dB 10.12 10.12 10.11 10.11 10.09	Measure- ment dBuV 49.66 40.42 42.54 33.58 40.99	dBuV 65.99 55.99 62.89 52.89 60.52	dB -16.33 -15.57 -20.35 -19.31 -19.53	Detector QP AVG QP
0.150 No. Mk. 1 2 * 3 4 5 6	Freq. MHz 0.1500 0.1500 0.2180 0.2180 0.2900 0.2900	39.54 30.30 32.43 23.47 30.90 21.81	Correct Factor dB 10.12 10.12 10.11 10.11 10.09 10.09	Measure- ment dBuV 49.66 40.42 42.54 33.58 40.99 31.90	dBuV 65.99 55.99 62.89 52.89 60.52 50.52	dB -16.33 -15.57 -20.35 -19.31 -19.53 -18.62	Detector QP AVG QP AVG QP AVG
0.150 No. Mk. 1 2 * 3 4 5	Freq. MHz 0.1500 0.1500 0.2180 0.2180 0.2900	39.54 30.30 32.43 23.47 30.90	Correct Factor dB 10.12 10.12 10.11 10.11 10.09	Measure- ment dBuV 49.66 40.42 42.54 33.58 40.99	dBuV 65.99 55.99 62.89 52.89 60.52 50.52	dB -16.33 -15.57 -20.35 -19.31 -19.53	Detector QP AVG QP AVG
0.150 No. Mk. 1 2 * 3 4 5 6	Freq. MHz 0.1500 0.1500 0.2180 0.2180 0.2900 0.2900	39.54 30.30 32.43 23.47 30.90 21.81	Correct Factor dB 10.12 10.12 10.11 10.11 10.09 10.09	Measure- ment dBuV 49.66 40.42 42.54 33.58 40.99 31.90	dBuV 65.99 55.99 62.89 52.89 60.52 50.52 57.18	dB -16.33 -15.57 -20.35 -19.31 -19.53 -18.62	Detector QP AVG QP AVG QP AVG
0.150 No. Mk. 1 2 * 3 4 5 6 7	Freq. MHz 0.1500 0.1500 0.2180 0.2180 0.2900 0.2900 0.4340	39.54 30.30 32.43 23.47 30.90 21.81 26.22	Correct Factor dB 10.12 10.12 10.11 10.11 10.09 10.09 10.04	Measure- ment dBuV 49.66 40.42 42.54 33.58 40.99 31.90 36.26	dBuV 65.99 55.99 62.89 52.89 60.52 50.52 57.18 47.18	dB -16.33 -15.57 -20.35 -19.31 -19.53 -18.62 -20.92	Detector QP AVG QP AVG QP AVG
0.150 No. Mk. 1 2 * 3 4 5 6 7 8	Freq. MHz 0.1500 0.1500 0.2180 0.2180 0.2900 0.4340 0.4340	dBuV 39.54 30.30 32.43 23.47 30.90 21.81 26.22 15.59	Correct Factor dB 10.12 10.12 10.11 10.09 10.09 10.04 10.04	Measure- ment dBuV 49.66 40.42 42.54 33.58 40.99 31.90 36.26 25.63	dBuV 65.99 55.99 62.89 52.89 60.52 50.52 57.18 47.18 56.00	dB -16.33 -15.57 -20.35 -19.31 -19.53 -18.62 -20.92 -21.55	Detector QP AVG QP AVG QP AVG AVG
0.150 No. Mk. 1 2 * 3 4 5 6 7 8	Freq. MHz 0.1500 0.1500 0.2180 0.2180 0.2900 0.2900 0.4340 0.4340 0.6500	ABuV 39.54 30.30 32.43 23.47 30.90 21.81 26.22 15.59 18.66	Correct Factor dB 10.12 10.12 10.11 10.11 10.09 10.09 10.04 10.04 10.02	Measure- ment dBuV 49.66 40.42 42.54 33.58 40.99 31.90 36.26 25.63 28.68	dBuV 65.99 55.99 62.89 52.89 60.52 50.52 57.18 47.18 56.00 46.00	dB -16.33 -15.57 -20.35 -19.31 -19.53 -18.62 -20.92 -21.55 -27.32	Detector QP AVG QP AVG QP AVG QP AVG QP



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EUT:		GU10 LI	ED SPOT L	IGHT I	Model:		VKB	-004-GU10
Tempe	rature:	25 ℃		F	Relative Hu	midity:	55%	(Anna)
Test Vo	oltage:	AC 240\	√/60 Hz		I MATE			1
Termin	al:	Line	Usan		3	179	110	
Test Mo		TX GFS	K Mode 240	02 MHz				
Remarl	k:	Only wo	rse case is	reported	CHILI			
80.0 dB	uV						OD	
							QP: AVG:	
-								
*	. ×							
M	Jahren A	W. M	. A .					
30	<u> </u>		1 My Kanppphoning	phonenylyphiallybyths	hat representative the contractive and the con	helicological promoved	etransfergerspergersper	peak
1) // ////	ola Arly Arth	My Wardania	And have been been been been been been been be		mumm	refrankerikansk-frankerik	AVG
								1
-20								
-20 0.150		0.5		(MHz)	5			30.000
0.150	BAIL F	Re	_	Correct I	Measure-	Limit	Over	30.000
0.150		Req. L	_evel	Correct I Factor	Measure- ment	Limit	Over	
0.150 No.	М	Reg. L	_ evel dBuV	Correct I Factor	Measure- ment	dBuV	dB	Detector
No.	М 0 .13	Req. L Hz 580 2	_evel dBuV 21.90	Correct I Factor dB 9.94	Measure- ment dBuV 31.84	dBu∀ 65.56	dB -33.72	Detector QP
0.150 No.	М 0 .13	Req. L Hz 580 2	_ evel dBuV	Correct I Factor	Measure- ment dBuV 31.84	dBuV	dB -33.72	Detector
No.	0.15 0.15	Req. L Hz 580 2	_evel dBuV 21.90 12.14	Correct I Factor dB 9.94	Measure- ment dBuV 31.84 22.08	dBu∀ 65.56	dB -33.72 -33.48	Detector QP
No.	0.15 0.15 * 0.22	Req. L Hz 580 2 580 1 220 3	Level dBuV 21.90 12.14 33.64	Correct Factor dB 9.94 9.94	Measure- ment dBuV 31.84 22.08 43.66	dBuV 65.56 55.56	-33.72 -33.48 -19.08	Detector QP AVG
No. 1 2 3	M 0.15 0.15 * 0.22 0.22	Req. L Hz 580 2 580 1 220 3	Level dBuV 21.90 12.14 33.64 22.48	Orrect Factor 9.94 9.94 10.02	Measure- ment dBuV 31.84 22.08 43.66 32.50	dBuV 65.56 55.56 62.74	dB -33.72 -33.48 -19.08 -20.24	Detector QP AVG QP
No. 1 2 3 4	M 0.15 0.15 * 0.22 0.22 0.26	Req. L Hz 580 2 580 1 220 3	Level dBuV 21.90 12.14 33.64 22.48 12.35	Dorrect Factor 9.94 9.94 10.02 10.02	Measure- ment dBuV 31.84 22.08 43.66 32.50 22.37	dBuV 65.56 55.56 62.74 52.74	-33.72 -33.48 -19.08 -20.24 -38.99	Detector QP AVG QP AVG
No. 1 2 3 4 5 6	M 0.15 0.15 * 0.22 0.22 0.26 0.26	Req. L Hz 580 2 580 1 220 3 220 2 620 1	Level dBuV 21.90 12.14 33.64 22.48 12.35 6.71	Dorrect Factor 9.94 9.94 10.02	Measure- ment dBuV 31.84 22.08 43.66 32.50 22.37 16.73	dBuV 65.56 55.56 62.74 52.74 61.36 51.36	-33.72 -33.48 -19.08 -20.24 -38.99 -34.63	Detector QP AVG QP AVG QP AVG
No. 1 2 3 4 5 6 7	M 0.15 0.15 * 0.22 0.26 0.26 0.36	Req. L Hz 580 2 580 1 220 3 220 2 620 1 620	Level dBuV 21.90 12.14 33.64 22.48 12.35 6.71 21.35	Dorrect Factor 9.94 9.94 10.02 10.02 10.02 10.02	Measure-ment dBuV 31.84 22.08 43.66 32.50 22.37 16.73 31.37	dBuV 65.56 55.56 62.74 52.74 61.36 51.36 58.15	-33.72 -33.48 -19.08 -20.24 -38.99 -34.63 -26.78	Detector QP AVG QP AVG QP AVG QP
No. 1 2 3 4 5 6 7	M 0.15 0.15 * 0.25 0.26 0.26 0.36 0.36	Req. L Hz 580 2 580 1 220 3 220 2 620 1 620 860 2	Level dBuV 21.90 12.14 33.64 22.48 12.35 6.71 21.35 14.79	Dorrect Factor 9.94 9.94 10.02	Measure-ment dBuV 31.84 22.08 43.66 32.50 22.37 16.73 31.37 24.81	dBuV 65.56 55.56 62.74 52.74 61.36 51.36 58.15 48.15	-33.72 -33.48 -19.08 -20.24 -38.99 -34.63 -26.78 -23.34	Detector QP AVG QP AVG QP AVG AVG QP AVG
No. 1 2 3 4 5 6 7 8 9	* 0.26 0.38 0.38 0.47	Req. L Hz 580 2 580 1 220 3 220 2 620 1 620 860 2 860 1 700 1	Level dBuV 21.90 12.14 33.64 22.48 12.35 6.71 21.35 14.79 17.64	Dorrect Factor 9.94 9.94 10.02	Measure-ment dBuV 31.84 22.08 43.66 32.50 22.37 16.73 31.37 24.81 27.66	dBuV 65.56 55.56 62.74 52.74 61.36 51.36 58.15 48.15	-33.72 -33.48 -19.08 -20.24 -38.99 -34.63 -26.78 -23.34 -28.85	Detector QP AVG QP AVG QP AVG QP AVG QP AVG
0.150 No. 1 2 3 4 5 6 7 8 9 10	* 0.26 0.38 0.38 0.43	Req. L Hz 580 2 580 1 220 3 220 2 620 1 620 860 1 700 1	Level dBuV 21.90 12.14 33.64 22.48 12.35 6.71 21.35 14.79 17.64 12.39	Dorrect Factor 9.94 9.94 10.02	Measure-ment dBuV 31.84 22.08 43.66 32.50 22.37 16.73 31.37 24.81 27.66 22.41	dBuV 65.56 55.56 62.74 52.74 61.36 51.36 58.15 48.15 56.51 46.51	dB -33.72 -33.48 -19.08 -20.24 -38.99 -34.63 -26.78 -23.34 -28.85 -24.10	Detector QP AVG QP AVG QP AVG QP AVG QP AVG
0.150 No. 1 2 3 4 5 6 7 8 9	* 0.26 0.38 0.38 0.43	Req. L Hz 580 2 580 1 220 3 220 2 620 1 620 860 1 700 1 660 1	Level dBuV 21.90 12.14 33.64 22.48 12.35 6.71 21.35 14.79 17.64 12.39 17.82	Dorrect Factor 9.94 9.94 10.02	Measure-ment dBuV 31.84 22.08 43.66 32.50 22.37 16.73 31.37 24.81 27.66 22.41 27.92	dBuV 65.56 55.56 62.74 52.74 61.36 51.36 58.15 48.15	dB -33.72 -33.48 -19.08 -20.24 -38.99 -34.63 -26.78 -23.34 -28.85 -24.10 -28.08	Detector QP AVG QP AVG QP AVG QP AVG QP AVG



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EUT:	GU1	0 LED SPOT	LIGHT	Model:		VKB-00	4-GU10
Temperature	25 °C	C	1	Relative Hu	midity:	55%	
Test Voltage:	: AC 2	AC 240V/60 Hz					
Terminal:	Neut	Neutral					Mass
Test Mode:	TX G	TX GFSK Mode 2402 MHz					-
Remark:	Only	worse case i	is reported		1120		18
80.0 dBuV							
						QP: AVG:	_
30	Www.	Material market hard	4000 Marie 100 M	let glant from the open after some two	mandenthappaninghe	Ashlandrickerskesser zum ett i	
-20 0.150	0.5		(MHz)	5			30.000
	0.5	Reading Level	(MHz) Correct Factor	Measure-	Limit	Over	
0.150			Correct	Measure-		Over	
0.150	Freq.	Level	Correct Factor	Measure- ment	Limit		30.000
0.150 No. Mk.	Freq.	Level dBuV	Correct Factor	Measure- ment	dBuV 64.21	dB	30.000
0.150 No. Mk.	Freq. MHz 0.1860	dBuV 37.78	Correct Factor	Measure- ment dBuV 47.90	dBuV 64.21 54.21	dB -16.31	30.000 Detecto
0.150 No. Mk.	Freq. MHz 0.1860 0.1860	dBuV 37.78 27.19	Correct Factor dB 10.12 10.12	Measure- ment dBuV 47.90 37.31	dBuV 64.21 54.21 61.75	dB -16.31 -16.90	30.000 Detecto
No. Mk. 1 2 3	Freq. MHz 0.1860 0.1860 0.2500	37.78 27.19 35.74	Correct Factor dB 10.12 10.12	Measure- ment dBuV 47.90 37.31 45.84	dBuV 64.21 54.21 61.75 51.75	dB -16.31 -16.90 -15.91	30.000 Detecto QP AVC
No. Mk. 1 2 3 4	Freq. MHz 0.1860 0.1860 0.2500 0.2500	37.78 27.19 35.74 26.41	Correct Factor dB 10.12 10.12 10.10	Measure- ment dBuV 47.90 37.31 45.84 36.51	64.21 54.21 61.75 51.75 59.97	dB -16.31 -16.90 -15.91 -15.24	30.000 Detecto QP AVC
0.150 No. Mk. 1 2 3 4 5	Freq. MHz 0.1860 0.1860 0.2500 0.2500 0.3100	27.19 35.74 26.41 27.29	Correct Factor dB 10.12 10.12 10.10 10.10	Measure- ment 47.90 37.31 45.84 36.51 37.37	64.21 54.21 61.75 51.75 59.97 49.97	dB -16.31 -16.90 -15.91 -15.24 -22.60	30.000 Detecto QP AVC QP

Emission Level= Read Level+ Correct Factor

24.84

21.30

11.98

7.13

10.02

10.02

10.02

10.02

34.86

31.32

22.00

17.15

56.00 -21.14

46.00 -14.68

56.00 -34.00

46.00 -28.85

0.5020

0.5020

0.6820

0.6820

9

10

11

12

QP

AVG

QP

AVG



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5. Radiated Emission Test

5.1 Test Standard and Limit

5.1.1 Test Standard FCC Part 15.247(d)

5.1.2 Test Limit

Radiated Emission Limits (9kHz~1000MHz)

Frequency (MHz	Field Strength (microvolt/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

Radiated Emission Limit (Above 1000MHz)

Frequency	Class A (dBu	V/m)(at 3 M)	Class B (dBuV/m)(at 3		
(MHz)	Peak	Average	Peak	Average	
Above 1000	80	60	74	54	

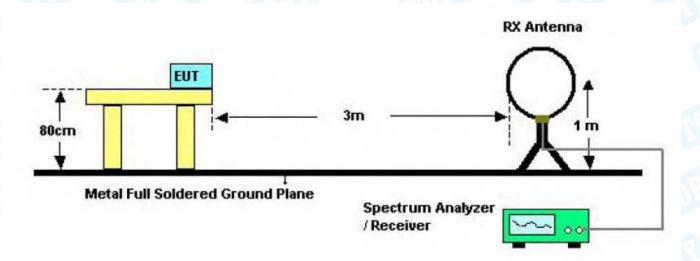
Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission Level(dBuV/m)=20log Emission Level(uV/m)

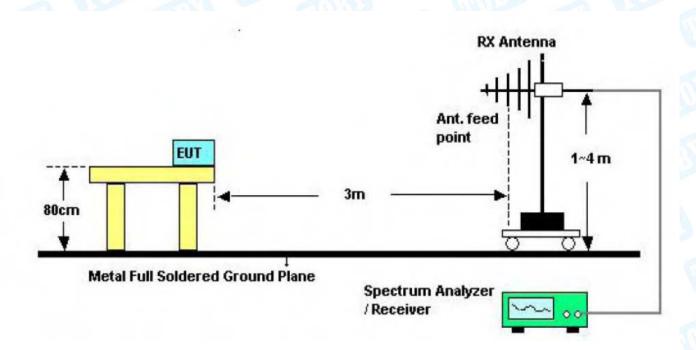


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5.2 Test Setup



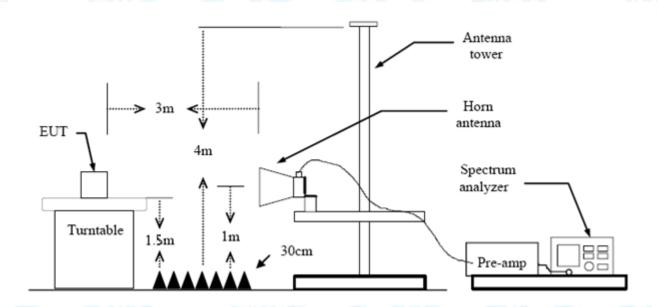
Below 30MHz Test Setup



Below 1000MHz Test Setup



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Above 1GHz Test Setup

5.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.



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5.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

5.5 Test Data

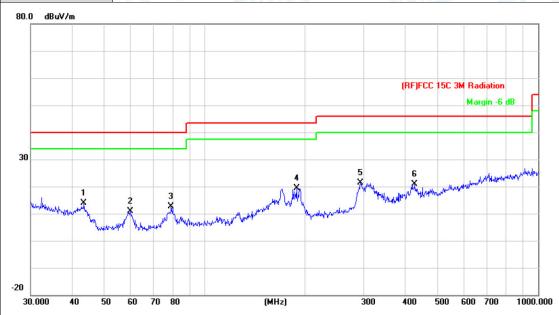
Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

Test data please refer the following pages.



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EUT:	GU10 LED SPOT LIGHT	Model:	VKB-004-GU10
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Horizontal		
Test Mode:	BLE TX 2402 Mode	CHILD	
Remark:	Only worse case is reported	ed	130 V 0



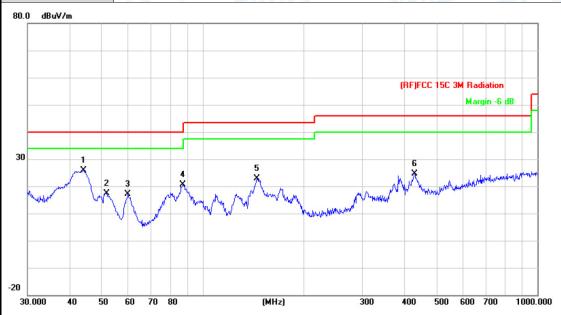
No	. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		43.3534	35.49	-21.71	13.78	40.00	-26.22	peak
2		59.6493	35.40	-24.61	10.79	40.00	-29.21	peak
3		79.2426	35.88	-23.37	12.51	40.00	-27.49	peak
4	*	188.4125	40.00	-20.50	19.50	43.50	-24.00	peak
5		293.0842	38.27	-16.79	21.48	46.00	-24.52	peak
6		426.5210	33.19	-12.42	20.77	46.00	-25.23	peak

^{*:}Maximum data x:Over limit !:over margin



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EUT:	GU10 LED SPOT LIGHT	Model:	VKB-004-GU10
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Ant. Pol.	Vertical		
Test Mode:	BLE TX 2402 Mode	THE PARTY OF THE P	
Remark:	Only worse case is reported		20 _ (0)



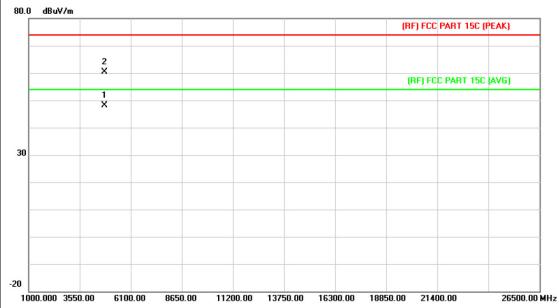
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	44.1202	47.90	-22.03	25.87	40.00	-14.13	peak
2		51.6616	42.01	-24.52	17.49	40.00	-22.51	peak
3		59.8588	41.73	-24.62	17.11	40.00	-22.89	peak
4		87.4177	43.61	-22.89	20.72	40.00	-19.28	peak
5		145.3506	44.17	-21.38	22.79	43.50	-20.71	peak
6		429.5228	37.07	-12.36	24.71	46.00	-21.29	peak

^{*:}Maximum data x:Over limit !:over margin



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EUT:	GU10 LED SPOT LIGHT	Model:	VKB-004-GU10
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz	33	
Ant. Pol.	Horizontal		Carrier State
Test Mode:	BLE Mode TX 2402 MHz	CHILD TO THE PARTY OF THE PARTY	a William
Remark:	No report for the emission w	hich more than 10 dB	below the
	prescribed limit.		

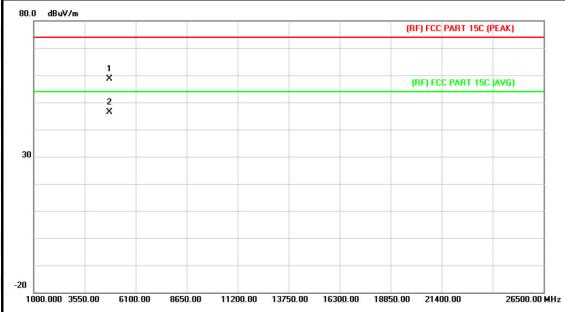


No	. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4802.971	34.69	13.43	48.12	54.00	-5.88	AVG
2		4805.224	46.97	13.45	60.42	74.00	-13.58	peak



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EUT:	GU10 LED SPOT LIGHT Model:		VKB-004-GU10			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	AC 120V/60Hz					
Ant. Pol.	Vertical		C. C. C.			
Test Mode:	BLE Mode TX 2402 MHz		J. P. D.			
Remark:	No report for the emission which more than 10 dB below the					
	prescribed limit.	- a U				

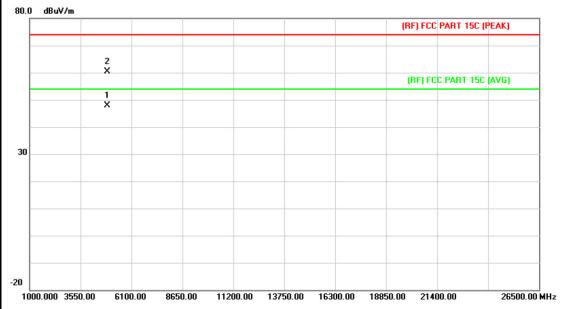


No	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4802.914	45.25	13.43	58.68	74.00	-15.32	peak
2	*	4802.962	32.99	13.43	46.42	54.00	-7.58	AVG



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EUT:	GU10 LED SPOT LIGHT Model: VKB-0		VKB-004-GU10			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	AC 120V/60Hz					
Ant. Pol.	Horizontal		C. C. Times			
Test Mode:	BLE Mode TX 2442 MHz	CHU122	J. F. Donne			
Remark:	No report for the emission which more than 10 dB below the					
	prescribed limit.					

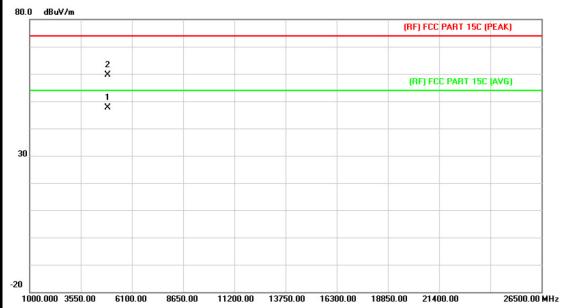


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4882.983	34.03	13.90	47.93	54.00	-6.07	AVG
2		4885.116	46.48	13.93	60.41	74.00	-13.59	peak



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	OLLIAL ED ODOT LIGHT		VKB-004-GU10			
EUT:	GU10 LED SPOT LIGHT	GU10 LED SPOT LIGHT Model: V				
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	AC 120V/60Hz	30 - 01				
Ant. Pol.	Vertical					
Test Mode:	BLE Mode TX 2442 MHz		a live			
Remark:	No report for the emission which more than 10 dB below the					
	prescribed limit.					

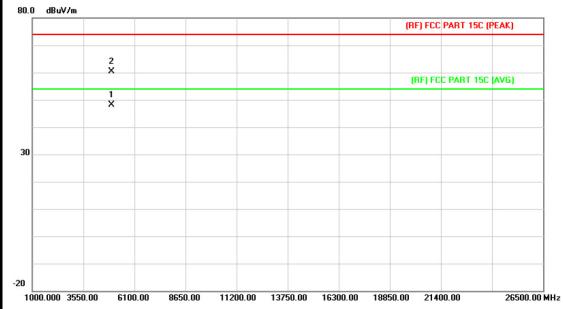


No	. MI	k. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4883.037	33.81	13.91	47.72	54.00	-6.28	AVG
2		4885.191	45.66	13.93	59.59	74.00	-14.41	peak



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EUT:	GU10 LED SPOT LIGHT	Model:	VKB-004-GU10				
Temperature:	25 ℃	Relative Humidity:	55%				
Test Voltage:	AC 120V/60Hz						
Ant. Pol.	Horizontal						
Test Mode:	BLE Mode TX 2480 MHz		a Viva				
Remark:	No report for the emission which more than 10 dB below the						
	prescribed limit.						

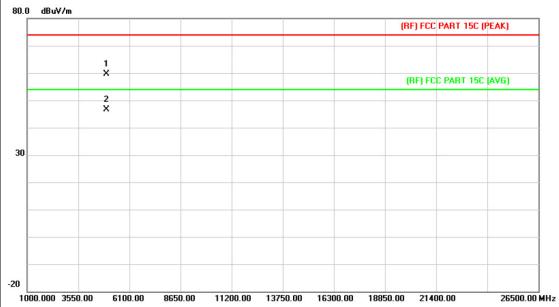


No	o. Mk	ι. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4959.058	33.69	14.36	48.05	54.00	-5.95	AVG
2		4959.208	46.10	14.36	60.46	74.00	-13.54	peak



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EUT:	GU10 LED SPOT LIGHT	Model:	VKB-004-GU10			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	AC 120V/60Hz	33				
Ant. Pol.	Vertical					
Test Mode:	BLE Mode TX 2480 MHz	CHILD TO THE PARTY OF THE PARTY				
Remark:	No report for the emission which more than 10 dB below the					
	prescribed limit.					



No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		4958.839	45.35	14.35	59.70	74.00	-14.30	peak
2	*	4959.037	32.26	14.36	46.62	54.00	-7.38	AVG



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6. Restricted Bands Requirement

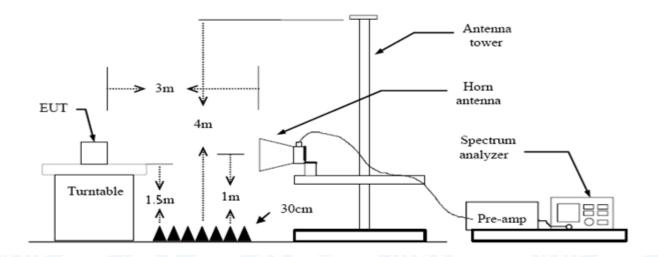
6.1 Test Standard and Limit

6.1.1 Test Standard FCC Part 15.247(d) FCC Part 15.205

6.1.2 Test Limit

Restricted Frequency	Class B (dBuV/m)(at 3 M)			
Band (MHz)	Peak	Average		
2310 ~2390	74	54		
2483.5 ~2500	74	54		

6.2 Test Setup



6.3 Test Procedure

- (1) The measuring distance of 3m shall be used for measurements at frequency up to 1GHz and above 1 GHz. The EUT was placed on a rotating 0.8m high above ground, the table was rotated 360 degrees to determine the position of the highest radiation.
- (2) Measurements at frequency above 1GHz. The EUT was placed on a rotating 1.5m high above the ground. RF absorbers covered the ground plane with a minimum area of 3.0m by 3.0m between the EUT and measurement receiver antenna. The RF absorber shall not exceed 30cm in high above the conducting floor. The table was rotated 360 degrees to determine the position of the highest radiation.
- (3) The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set to make measurement.
- (4) The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked



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and then Quasi Peak detector mode re-measured.

- (5) If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit Bellow 1 GHz, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed. But the Peak Value and average value both need to comply with applicable limit above 1 GHz.
- (6) Testing frequency range below 1GHz the measuring instrument use VBW=120 kHz with Quasi-peak detection.
- (7) Testing frequency range above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.
- (8) For the actual test configuration, please see the test setup photo.

6.4 EUT Operating Condition

The Equipment Under Test was set to Continual Transmitting in maximum power.

6.5 Test Data

Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

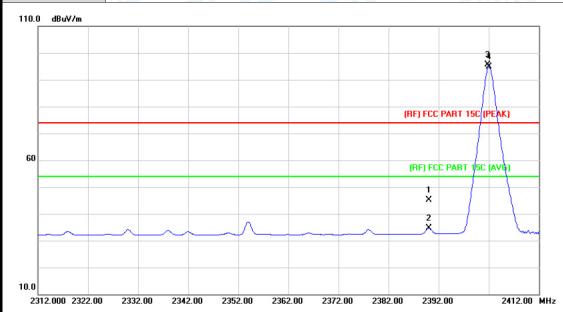
Test data please refer the following pages.



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(1) Radiation Test

EUT:	GU10 LED SPOT LIGHT	Model:	VKB-004-GU10			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	AC 120V/60Hz					
Ant. Pol.	Horizontal	Horizontal				
Test Mode:	BLE Mode TX 2402 MHz					
Remark:	N/A	10	1000			

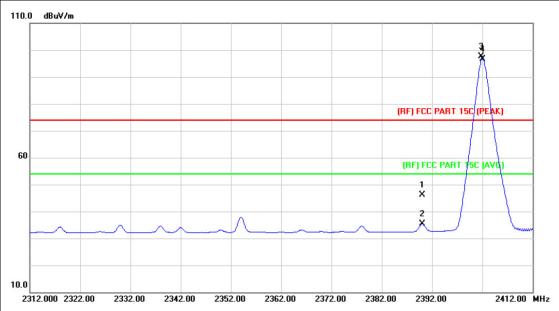


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	44.35	0.77	45.12	74.00	-28.88	peak
2		2390.000	33.90	0.77	34.67	54.00	-19.33	AVG
3	Χ	2401.800	94.75	0.82	95.57	Fundamental	Frequency	peak
4	*	2402.000	93.97	0.82	94.79	Fundamental	Frequency	AVG



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EUT:	GU10 LED SPOT LIGHT	Model:	VKB-004-GU10		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	AC 120V/60Hz				
Ant. Pol.	Vertical				
Test Mode:	BLE Mode TX 2402 MHz				
Remark:	N/A				

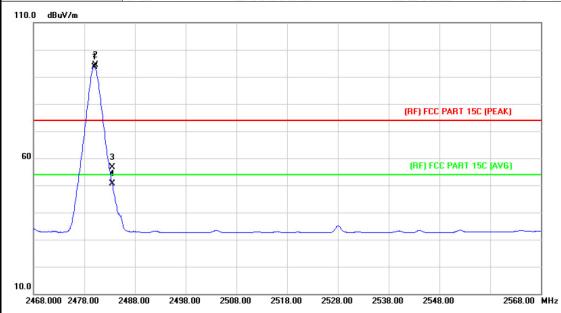


No.	Mk.	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	45.34	0.77	46.11	74.00	-27.89	peak
2		2390.000	34.63	0.77	35.40	54.00	-18.60	AVG
3	Χ	2401.800	96.69	0.82	97.51	Fundamental	Frequency	peak
4	*	2402.000	95.92	0.82	96.74	Fundamental	Frequency	AVG



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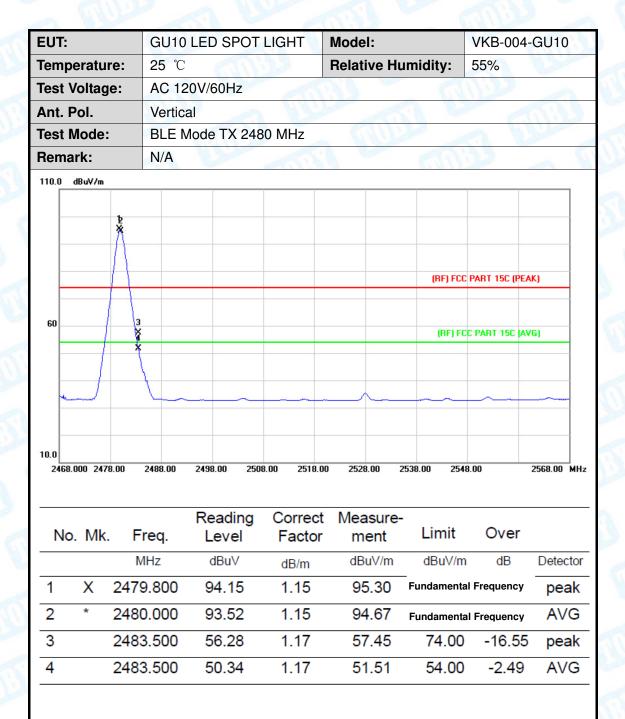
EUT:	GU10 LED SPOT LIGHT	Model:	VKB-004-GU10			
Temperature:	25 ℃	Relative Humidity:	55%			
Test Voltage:	AC 120V/60Hz					
Ant. Pol.	Horizontal					
Test Mode:	BLE Mode TX 2480 MHz	CHULL STORY	2			
Remark:	N/A					
110.0 dBuV/m						



No	o. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBu∀	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	2480.000	92.54	1.15	93.69	Fundamental	Frequency	AVG
2	X	2480.200	93.17	1.15	94.32	Fundamental	Frequency	peak
3		2483.500	55.35	1.17	56.52	74.00	-17.48	peak
4		2483.500	49.38	1.17	50.55	54.00	-3.45	AVG



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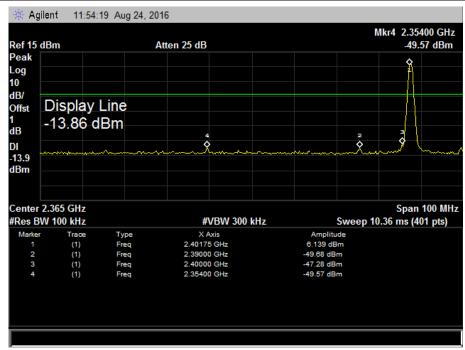


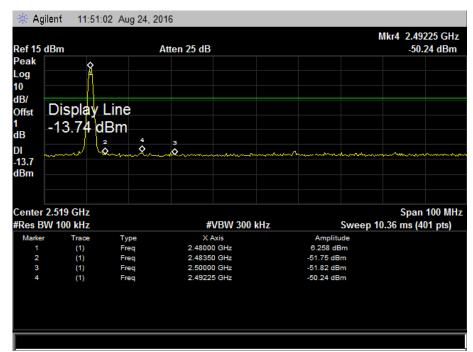


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(2) Conducted Test

EUT:	GU10 LED SPOT LIGHT	Model:	VKB-004-GU10		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	AC 120V/60Hz				
Test Mode:	BLE Mode TX 2402MHz / BLE Mode TX 2480MHz				
Remark:	The EUT is programed in co	ontinuously transmitting	mode		







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7. Bandwidth Test

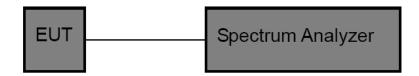
7.1 Test Standard and Limit

7.1.1 Test Standard FCC Part 15.247 (a)(2)

7.1.2 Test Limit

FCC Part 15 Subpart C(15.247)/RSS-247					
Test Item	Test Item Limit Frequency Range(MH				
Bandwidth	>=500 KHz (6dB bandwidth)	2400~2483.5			

7.2 Test Setup



7.3 Test Procedure

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) The bandwidth is measured at an amplitude level reduced 6dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst –case (i.e the widest) bandwidth.
- (3)Measure the channel separation the spectrum analyzer was set to Resolution Bandwidth:100 kHz, and Video Bandwidth:300 kHz, Detector: Peak, Sweep Time set auto.

7.4 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, middle and high channel for the test.



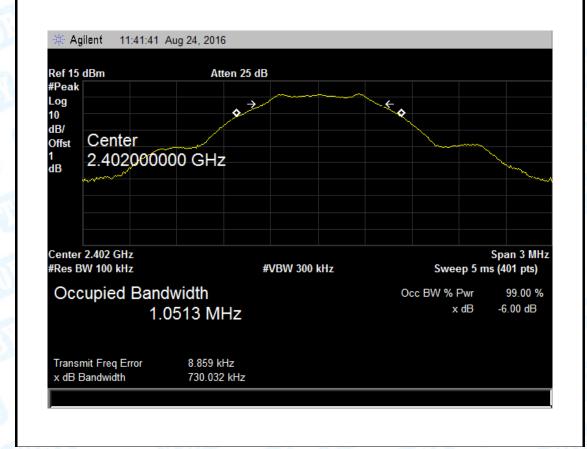
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7.5 Test Data

EUT:	GU10 LED SPOT LIGHT	Model:	VKB-004-GU10		
Temperature:	25 ℃	Relative Humidity:	55%		
Test Voltage:	AC 120V/60Hz	a Gillian			
Test Mode:	BLE TX Mode				
Channel frequence	cy 6dB Bandwidth	99% Bandwidth	Limit		
(MHz)	(kHz)	(kHz)	(kHz)		
2402	730.032	1051.30			
2442	697.420	1033.70	>=500		
2480	670.816	1014.30			
D. F. M.					

BLE Mode

2402 MHz





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8. Peak Output Power Test

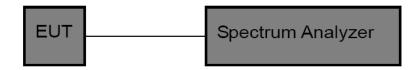
8.1 Test Standard and Limit

8.1.1 Test Standard FCC Part 15.247 (b)(3)

8.1.2 Test Limit

FCC Part 15 Subpart C(15.247)/RSS-247				
Test Item	Limit	Frequency Range(MHz)		
Peak Output Power	1 Watt or 30 dBm	2400~2483.5		

8.2 Test Setup



8.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement is according to section 9.1.1 of KDB 558074 D01 DTS Meas Guidance v03r05.

- (1) Set the RBW≥DTS Bandwidth
- (2) Set VBW≥3*RBW
- (3) Set Span≥3*RBW
- (4) Sweep time=auto
- (5) Detector= peak
- (6) Trace mode= maxhold.
- (7) Allow trace to fully stabilize, and then use peak marker function to determine the peak amplitude level.

8.4 EUT Operating Condition

The EUT was set to continuously transmitting in the max power during the test.



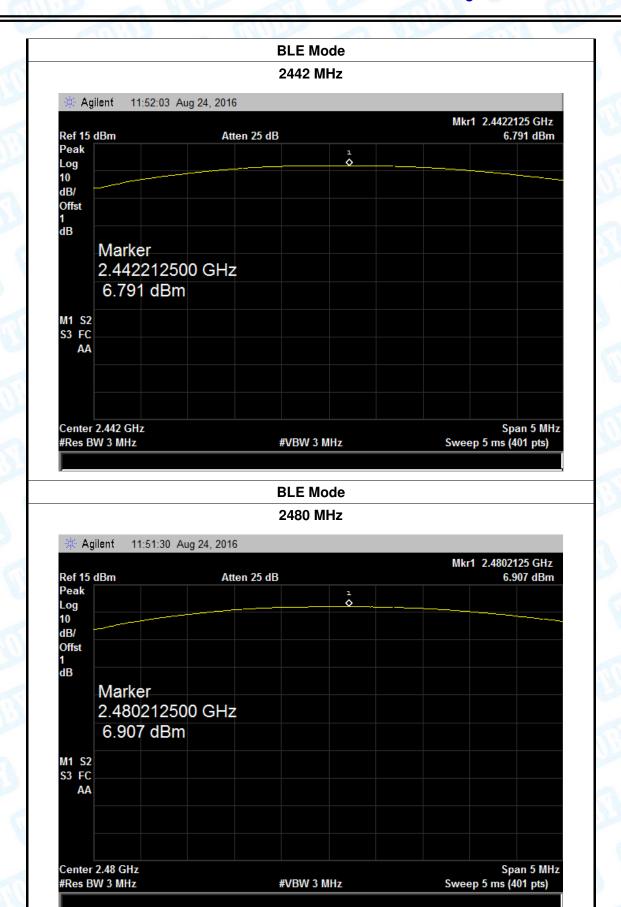
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8.5 Test Data

JT:	GU10 LEI	D SPOT LIGHT Model :			VKB-004-GU10
mperature:	25 ℃		Relative Hu	ımidity:	55%
st Voltage:	AC 120V/	60Hz	diffe		A VIII
st Mode:	BLE TX M	lode		MILE	33
hannel freque	ency (MHz)	Test Result	(dBm)	L	imit (dBm)
2402		7.062			
2442		6.791			30
2480		6.907			
	,	BLE Mo	de		
		2402 M	Hz		
Ref 15 dBm		Atten 25 dB		Mkı	1 2.4021250 GHz 7.062 dBm
Peak		Atten 25 dB	1 0	Mkı	
Peak Log 10		Atten 25 dB		Mkı	
Peak Log		Atten 25 dB		Mkı	
Peak Log 10 dB/		Atten 25 dB		Mkı	
Peak Log 10 dB/ Offst	er	Atten 25 dB		Mkı	
Peak Log 10 dB/ Offst 1 dB Mark 2.402	2125000 GI			Mkı	
Peak Log 10 dB/ Offst 1 dB Mark 2.402				Mkı	
Peak Log 10 dB/ Offst 1 dB Mark 2.402 7.06	2125000 GI			Mkı	
Peak Log 10 dB/ Offst 1 dB Mark 2.402 7.06	2125000 GI			Mkı	
Peak Log 10 dB/ Offst 1 dB Mark 2.402 7.06	2125000 GI			Mkı	
Peak Log 10 dB/ Offst 1 dB Mark 2.402 7.06	2125000 GI			Mkı	
Peak Log 10 dB/ Offst 1 dB Mark 2.402 7.06	2125000 GI 2 dBm			Mkı	



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9. Power Spectral Density Test

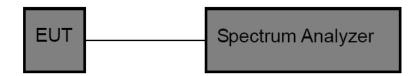
9.1 Test Standard and Limit

9.1.1 Test Standard FCC Part 15.247 (e)

9.1.2 Test Limit

FCC Part 15 Subpart C(15.247)				
Test Item Limit Frequency Range				
Power Spectral Density	8dBm(in any 3 kHz)	2400~2483.5		

9.2 Test Setup



9.3 Test Procedure

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v03r05.

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Set analyser center frequency to DTS channel center frequenyc.
- (3) Set the span to 1.5 times the DTS bandwidth.
- (4) Set the RBW to: 3 kHz(5) Set the VBW to: 10 kHz
- (6) Detector: peak
- (7) Sweep time: auto
- (8) Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

9.4 EUT Operating Condition

The EUT was set to continuously transmitting in each mode and low, Midle and high channel for the test.



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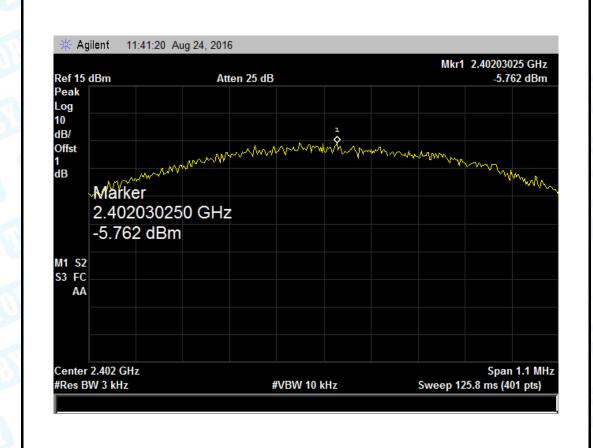
9.5 Test Data

EUT:	GU10 LED SPOT LIGHT	Model:	VKB-004-GU10
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz		
Test Mode:	BLE TX Mode	UNIVERSIT	

Channel Frequency	Power Density	Limit	Result
(MHz)	(dBm)	(dBm)	nesuit
2402	-5.762		
2442	-5.065	8	PASS
2480	-5 723		

BLE Mode

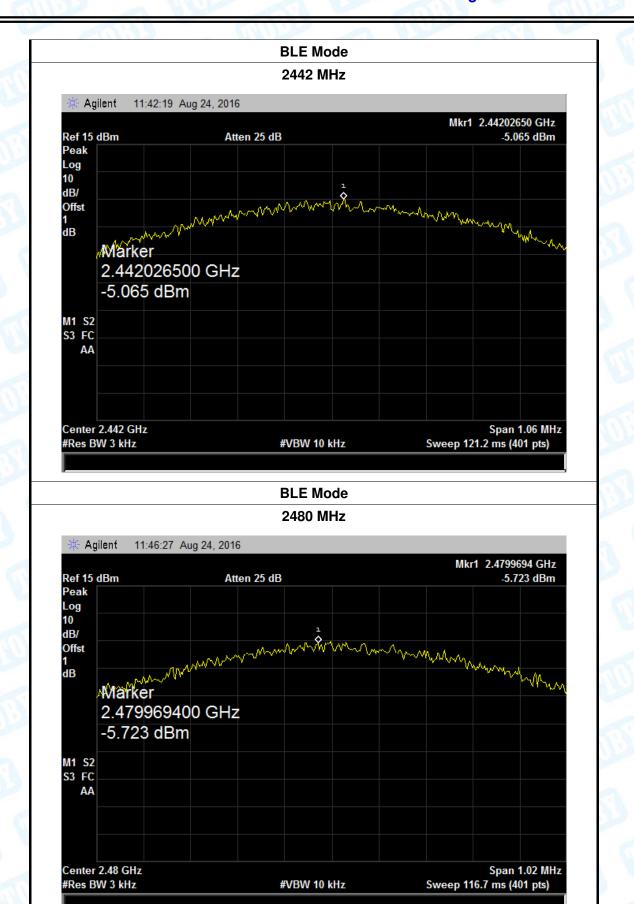
2402 MHz





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10. Antenna Requirement

10.1 Standard Requirement

10.1.1 Standard FCC Part 15.203

10.1.2 Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

10.2 Antenna Connected Construction

The directional gains of the antenna used for transmitting is 2 dBi, and the antenna de-signed with permanent attachment and no consideration of replacement. Please see the EUT photo for details.

10.3 Result

The EUT antenna is a PCB Antenna. It complies with the standard requirement.

Antenna Type		
	▶ Permanent attached antenna	
000	□ Unique connector antenna	
	□ Professional installation antenna	

----END OF REPORT-----