

# 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** 

the report.

LVAN SU fayta.

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

TB-RF-074-1.0

This report details the results of the testing carried out on one sample. The results contained in

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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	/KB-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.				
The Course		Operation Frequency: Bluetooth 4.0(BLE): 2402MHz~2480MHz					
		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

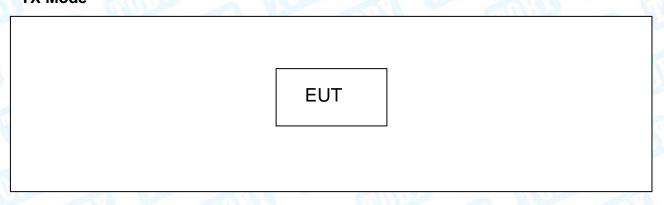


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		CHILL			6
03	2408	17	2436	31	2464
04	2410	18	2438	32	2466
05	2412	19	2440	33	2468
06	2414	20	2442	34	2470
07	2416	21	2444	35	2472
08	2418	22	2446	36	2474
09	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	39	2480
12	2426	26	2454		
13	2428	27	2456		

## 1.3 Block Diagram Showing the Configuration of System Tested

#### **TX Mode**



## 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				

For Radiated Tes	.4	
For Radiated les	L	



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Final Test Mode	Description
Mode 2	TX Mode
Made 0	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 <sub>Lab</sub> )
	Level Accuracy:	
Conducted Emission	9kHz~150kHz	±3.42 dB
	150kHz to 30MHz	±3.42 dB
Dadiated Emission	Level Accuracy:	.4 CO dD
Radiated Emission	9kHz to 30 MHz	±4.60 dB
Dadiated Emission	Level Accuracy:	.4.40 dD
Radiated Emission	30MHz to 1000 MHz	±4.40 dB
Padiated Emission	Level Accuracy:	.4.20 dB
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 S	ection	Took Itam	lu dama ant	
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	d Emission Te	st			
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

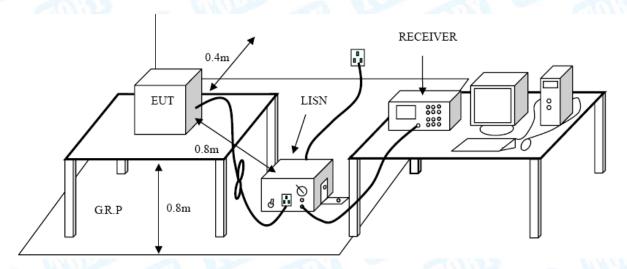
#### **Conducted Emission Test Limit**

TO USE PROPERTY OF THE PARTY OF	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.

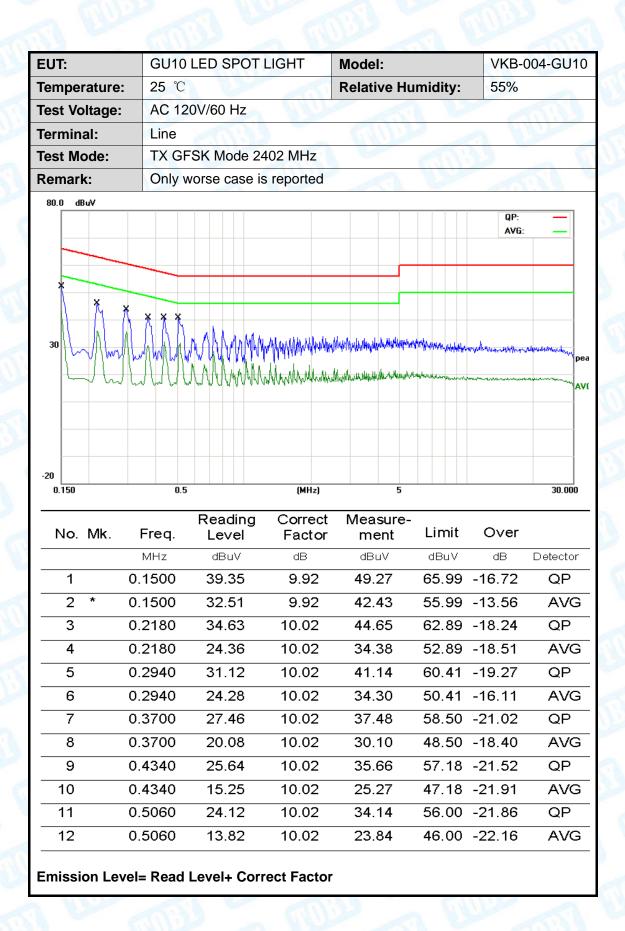
#### 4.5 Test Data

Test data please refer the following pages.



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1000	1 🚳 1	K V
	W	





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UT:	GU1	0 LED SPO	T LIGHT	Model:		VKB	-004-GU1
emperature	25 °C	C	-	Relative Hu	umidity:	55%	
est Voltage	: AC 1	20V/60 Hz	dili		N YE		
erminal:	Neut	ral		CALL D			MU
est Mode:	TX C	FSK Mode	2402 MHz		-10	13	
Remark:	Only	worse case	is reported		1133		677
80.0 dBuV							
US.S USAY						QP:	_
						AVG:	_
*							
\	×						
	, X	,					
30		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	Land Land Land Land	Here distance and described	man habita di la construe	naladhina nchileid NA	www.ldwn.ht neak
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	LAAA	Mariana	A	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
	m w w	and any population of the second contractions of	hadarii, aadahadaandiidaandiidagaadiid	eg 18 frag 1 lagradid from the order of the contract of the co	Anna de Maria	and a second	AVG
0.150	0.5		(MHz)	5			30.000
0.150		Reading	Correct	Measure-		0	30.000
	Freq.	Level	Correct Factor	Measure- ment	Limit	Over	
0.150 No. Mk.	Freq.	<b>Level</b> dBuV	Correct Factor	Measure- ment	dBuV	dB	Detector
0.150 No. Mk.	Freq. MHz 0.1500	dBuV 39.54	Correct Factor dB 10.12	Measure- ment dBuV 49.66	dBuV <b>65</b> .99	dB -16.33	Detector QP
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	dBuV 39.54 30.30 32.43	Correct Factor  dB  10.12  10.11	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 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	dB -16.33 -15.57 -20.35 -19.31 -19.53	Detector QP AVG QP AVG
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 60.52	dB -16.33 -15.57 -20.35 -19.31	Detector 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	-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	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	Level  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 9	Freq. MHz 0.1500 0.1500 0.2180 0.2180 0.2900 0.4340 0.4340 0.6500	Devel  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	Measure-ment  dBuV  49.66  40.42  42.54  33.58  40.99  31.90  36.26  25.63  28.68	65.99 55.99 62.89 52.89 60.52 50.52 57.18 47.18 56.00 46.00	-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



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EUT:	GU10 LED SPC	T LIGHT	Model:		VKB	-004-GU10		
Temperature:	25 ℃		Relative Hu	ımidity:	55%	CARL ST		
Test Voltage:	AC 240V/60 Hz	10.5	J MAT			63		
Terminal:	Line	_ine						
Test Mode:	TX GFSK Mode	2402 MHz		1 6		THE STATE OF		
Remark:	Only worse case	e is reported	CHUS					
80.0 dBuV								
					QP: AVG:			
30	Mary Mary Mary Mary Mary Mary Mary Mary	V 9 MAN MARAN MAN MAN MAN MAN MAN MAN MAN MAN MAN M	han planty har har mentale	gille false garage and a	akhanda agan paganaghi	peak AVG		
0.150	0.5	(MHz)	5			30.000		
No. Mk. F	Reading req. Level	Correct Factor	Measure- ment	Limit	Over			
N	MHz dBuV	dB	dBuV	dBuV	dB	Detector		
1 0.1	580 21.90	9.94	31.84	65.56	-33.72	QP		
2 0.1	580 12.14	9.94	22.08	55.56	-33.48	AVG		
3 * 0.2	2220 33.64	10.02	43.66	62.74	-19.08	QP		
4 0.2	2220 22.48	10.02	32.50	52.74	-20.24	AVG		
5 0.2	2620 12.35	10.02	22.37	61.36	-38.99	QP		
6 0.2	2620 6.71	10.02	16.73	51.36	-34.63	AVG		
7 0.3	3860 21.35	10.02	31.37	58.15	-26.78	QP		
8 0.3	3860 14.79	10.02	24.81	48.15	-23.34	AVG		
9 0.4	700 17.64	10.02	27.66	56.51	-28.85	QP		
10 0.4	1700 12.39	10.02	22.41	46.51	-24.10	AVG		
	6660 17.82	10.10	27.92	56.00	-28.08	QP		
	660 13.51	10.10	23.61		-22.39	AVG		
Emission Level=	Read Level+ Co	rect Factor						



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EUT:	GU1	0 LED SPOT	LIGHT	Model:		VKB-00	4-GU10
Temperature:	25 °C	C		Relative Hur	midity:	55%	
Test Voltage:	AC 2	40V/60 Hz	Altor				
Terminal:	Neut	ral		CHILD	المسا	a W	Marie
Test Mode:	TX G	SFSK Mode 2	402 MHz				
Remark:	Only	worse case i	s reported		1137		11/15
80.0 dBuV							
						QP: AVG:	
					++++		
M MX							
[/ [/"]	×						
$- \mathbb{W}_{\lambda \lambda} \mathbb{W}_{\lambda \lambda} = \mathbb{W}_{\lambda \lambda} \mathbb{W}_{\lambda \lambda}$	LLAKA Y						
30 7// 7/ 7/	MANAGE OF ANGLE	1 1 1					
30 7 1 1 1 1 1 1	17 T   17 W	Mark Line A in	. 11				
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30	VWV.	Mary Mary Mary Mary Mary Mary Mary Mary	hydrographyronerallyggaronaga	eglewerther when early was entire an	war de wood de grant op de se	hibbinghip kendasan punakhi	
	VW/V	Market market had	halistyleblareradisharman	Allow from the same of more in the formation	word was made on	hiblindely exercises something	pe
	MAN	Market or and harden	hydrifyllyd hewretedgynewynolyd wynollyd hawrau airllennaegh	giften de formation de la company de la comp	we do sold replaced by	Ashlandri peerskasse soomatiis	
		Matin March Market Mark	hydrophyl-haveraugher-soaid yenoloddaerau noblermand	giften helder iller sterre for en	ally death and a separate of the	historyte perspecies comments	
	M. M.	ar Vata Marand Afrika Andre An	kyterytetherretetherretetherretet	appeared from the second of the second	and the state of t	historyko je za odkonom modelni	
	W. J.	ar Vata Marian Hadelpolar Sand Marian Carana Marian	hydisylphaveralgynennagi	golden de la companya	aler de collère persone de la collère de col	historyte, eersterisers wordt	
-20	V	ar Stadistand Harden Sand	type,//witherenewally (february)	All the season of the season o	ardinal area of a	hideoforgeendesservenede	
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-20	V	The state of the s	type,//witherenewally (february)	5	and and an analysis	historyte personal accommend to	Al
-20	0.5	Reading	(MHz)	5 Measure-	Limit	Over	Al
-20 0.150	V	Reading	(MHz)	5			Al
-20 0.150 No. Mk.	0.5	Reading Level	(MHz)  Correct Factor  dB	Measure- ment	<b>Limit</b> dBuV	Over	30.000
-20 0.150 No. Mk.	0.5 Freq. MHz 0.1860	Reading Level dBuV 37.78	(MHz)  Correct Factor  dB  10.12	Measure- ment dBuV 47.90	Limit dBuV 64.21	Over  dB -16.31	30.000  Detecto
-20 0.150 No. Mk.	0.5 Freq. MHz 0.1860 0.1860	Reading Level dBuV 37.78 27.19	(MHz)  Correct Factor dB  10.12 10.12	Measure- ment dBuV 47.90 37.31	Limit dBuV 64.21 54.21	Over  dB  -16.31  -16.90	30.000  Detecto
No. Mk.  1 2 3	0.5 Freq. MHz 0.1860 0.1860 0.2500	Reading Level dBuV 37.78 27.19 35.74	Correct Factor dB 10.12 10.12 10.10	Measure- ment dBuV 47.90 37.31 45.84	Limit dBuV 64.21 54.21 61.75	Over  dB  -16.31  -16.90  -15.91	30.000  Detecto
No. Mk.  1 2 3 4	0.5 Freq. MHz 0.1860 0.1860 0.2500 0.2500	Reading Level dBuV 37.78 27.19 35.74 26.41	(MHz)  Correct Factor  dB  10.12  10.12  10.10  10.10	5 Measure- ment dBuV 47.90 37.31 45.84 36.51	Limit dBuV 64.21 54.21 61.75 51.75	Over  dB  -16.31  -16.90  -15.91  -15.24	30.000  Detector  QP  AVO
No. Mk.  1 2 3 4 5	0.5 Freq. MHz 0.1860 0.2500 0.2500 0.3100	Reading Level dBuV 37.78 27.19 35.74 26.41 27.29	(MHz)  Correct Factor  dB  10.12  10.12  10.10  10.08	Measure- ment dBuV 47.90 37.31 45.84 36.51 37.37	Limit  dBuV  64.21  54.21  61.75  51.75  59.97	Over  dB  -16.31  -16.90  -15.91  -15.24  -22.60	30.000  Detector QP AVO
No. Mk.  1 2 3 4 5 6	0.5 Freq. MHz 0.1860 0.1860 0.2500 0.2500 0.3100 0.3100	Reading Level dBuV 37.78 27.19 35.74 26.41 27.29 19.17	(MHz)  Correct Factor  dB  10.12  10.12  10.10  10.08  10.08	Measure- ment dBuV 47.90 37.31 45.84 36.51 37.37 29.25	Limit dBuV 64.21 54.21 61.75 51.75 59.97 49.97	Over  dB  -16.31  -16.90  -15.91  -15.24  -22.60  -20.72	30.000  Detecto  QP  AVO  QP  AVO
No. Mk.  1 2 3 4 5	0.5 Freq. MHz 0.1860 0.2500 0.2500 0.3100	Reading Level dBuV 37.78 27.19 35.74 26.41 27.29	(MHz)  Correct Factor  dB  10.12  10.12  10.10  10.08	Measure- ment dBuV 47.90 37.31 45.84 36.51 37.37	Limit dBuV 64.21 54.21 61.75 51.75 59.97 49.97	Over  dB  -16.31  -16.90  -15.91  -15.24  -22.60	30.000  Detecto  QP  AVO  QP

Emission Level= Read Level+ Correct Factor

5.07

24.84

21.30

11.98

7.13

10.05

10.02

10.02

10.02

10.02

15.12

34.86

31.32

22.00

17.15

0.4020

0.5020

0.5020

0.6820

0.6820

8

9

10

11

12

AVG

QP

AVG

QP

AVG

47.81 -32.69

56.00 -21.14

46.00 -14.68

56.00 -34.00

46.00 -28.85



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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	

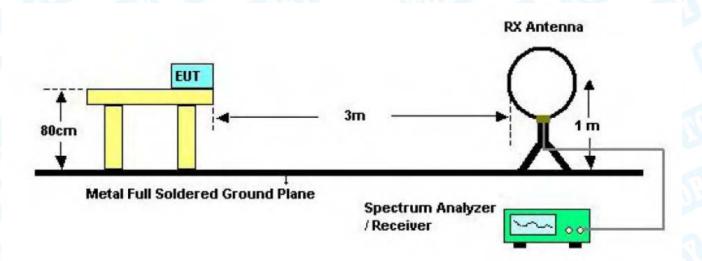
#### Note:

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

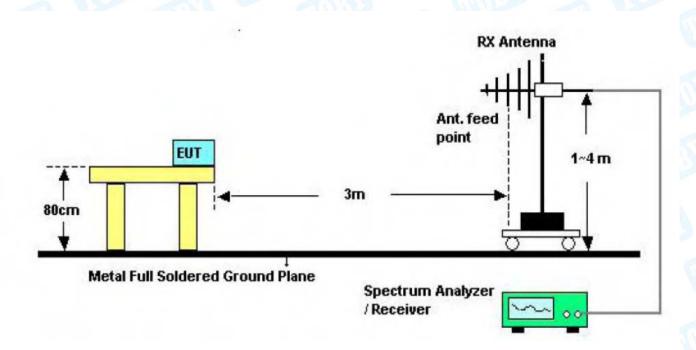


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## 5.2 Test Setup



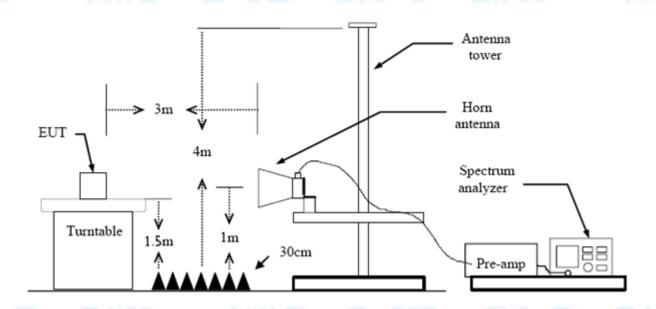
Below 30MHz Test Setup



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

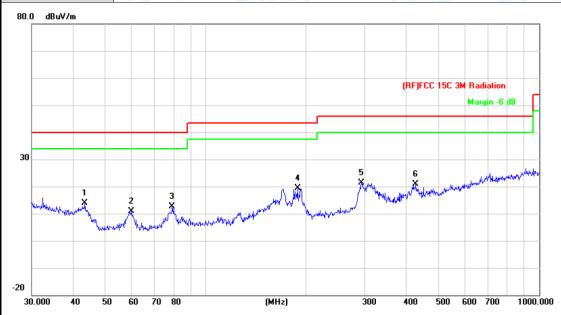
Remark: During testing above 1GHz the measuring instrument use RBW=1 MHz and VBW=3 MHz with Peak Detector for Peak Values, and use RBW=1 MHz and VBW=10 Hz with Peak Detector for Average Values.

Test data please refer the following pages.



Page: 20 of 44

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	BLE TX 2402 Mode					
Remark:	Only worse case is reported						



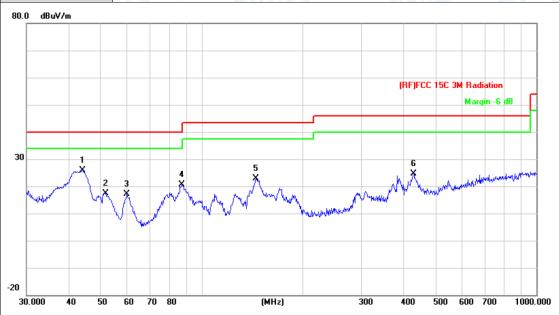
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		43.3534	35.49	-21.71	13.78	40.00	-26.22	peak
2		59.6493	35.40	-24.61	10.79	40.00	-29.21	peak
3		79.2426	35.88	-23.37	12.51	40.00	-27.49	peak
4	*	188.4125	40.00	-20.50	19.50	43.50	-24.00	peak
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

<sup>\*:</sup>Maximum data x:Over limit !:over margin



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GU10 LED SPOT LIGHT	Model:	VKB-004-GU10				
25 ℃	Relative Humidity:	55%				
AC 120V/60Hz	33 - 61					
Vertical		C. Times				
BLE TX 2402 Mode	BLE TX 2402 Mode					
Only worse case is reported						
	25 °C AC 120V/60Hz Vertical BLE TX 2402 Mode	25 °C Relative Humidity: AC 120V/60Hz Vertical BLE TX 2402 Mode				



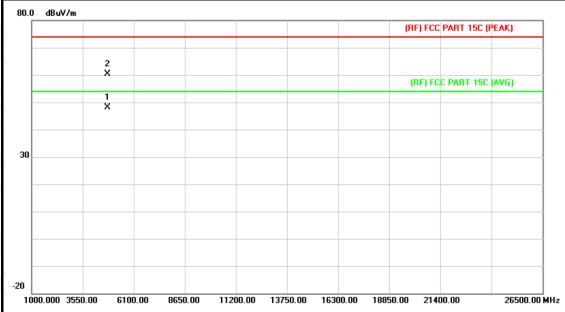
N	o. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	44.1202	47.90	-22.03	25.87	40.00	-14.13	peak
2		51.6616	42.01	-24.52	17.49	40.00	-22.51	peak
3		59.8588	41.73	-24.62	17.11	40.00	-22.89	peak
4		87.4177	43.61	-22.89	20.72	40.00	-19.28	peak
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

<sup>\*:</sup>Maximum data x:Over limit !:over margin



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EUT:	GU10 LED SPOT LIGHT	Model:	VKB-004-GU10				
Temperature:	<b>25</b> ℃	Relative Humidity:	55%				
Test Voltage:	AC 120V/60Hz	33					
Ant. Pol.	Horizontal						
Test Mode:	BLE Mode TX 2402 MHz	BLE Mode TX 2402 MHz					
Remark:	No report for the emission which more than 10 dB below the						
	prescribed limit.						

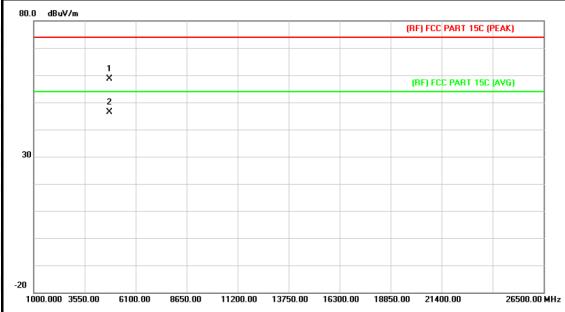


No	. Mk	. Freq.	Reading Level		Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4802.971	34.69	13.43	48.12	54.00	-5.88	AVG
2		4805.224	46.97	13.45	60.42	74.00	-13.58	peak



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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. Times
Test Mode:	BLE Mode TX 2402 MHz		J. F. Donne
Remark:	No report for the emission w	hich more than 10 dB b	elow the
	prescribed limit.	0	

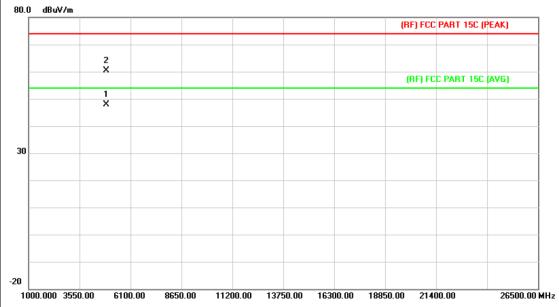


N	۱o.	Mk.	Freq.	Reading Level		Measure- ment	Limit	Over	
			MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1			4802.914	45.25	13.43	58.68	74.00	-15.32	peak
2		*	4802.962	32.99	13.43	46.42	54.00	-7.58	AVG



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GU10 LED SPOT LIGHT	Model:	VKB-004-GU10
25 ℃	Relative Humidity:	55%
AC 120V/60Hz		
Horizontal		
BLE Mode TX 2442 MHz	CHULL THE	A FILL
No report for the emission wh	ich more than 10 dB be	elow the
prescribed limit.		
	25 ℃ AC 120V/60Hz Horizontal BLE Mode TX 2442 MHz No report for the emission wh	25 °C Relative Humidity:  AC 120V/60Hz  Horizontal  BLE Mode TX 2442 MHz  No report for the emission which more than 10 dB be

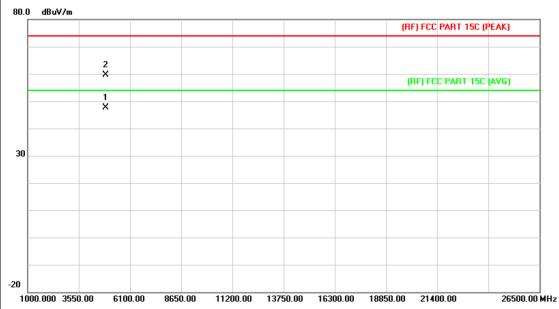


No	. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4882.983	34.03	13.90	47.93	54.00	-6.07	AVG
2		4885.116	46.48	13.93	60.41	74.00	-13.59	peak



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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 2442 MHz	CHILD	a Vive
Remark:	No report for the emission w	hich more than 10 dB	below the
	prescribed limit.		

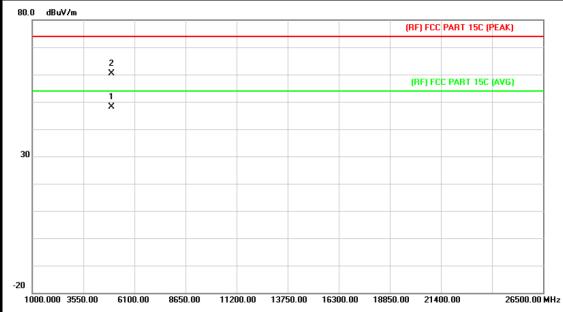


No	. MI	k. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4883.037	33.81	13.91	47.72	54.00	-6.28	AVG
2		4885.191	45.66	13.93	59.59	74.00	-14.41	peak



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EUT:	GU10 LED SPOT LIGHT	Model:	VKB-004-GU10
Temperature:	<b>25</b> ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz	33	
Ant. Pol.	Horizontal		
Test Mode:	BLE Mode TX 2480 MHz		
Remark:	No report for the emission v	which more than 10 dB	below the
	prescribed limit.	- A W	

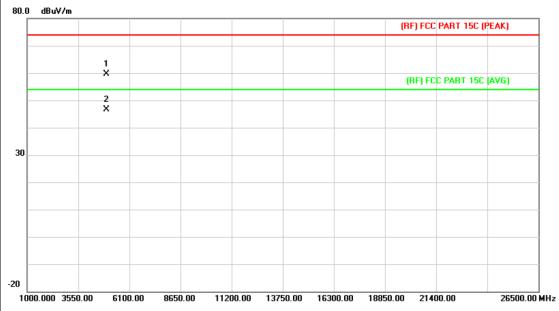


No	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	4959.058	33.69	14.36	48.05	54.00	-5.95	AVG
2		4959.208	46.10	14.36	60.46	74.00	-13.54	peak



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EUT:	GU10 LED SPOT LIGHT	Model:	VKB-004-GU10
Temperature:	25 ℃	Relative Humidity:	55%
Test Voltage:	AC 120V/60Hz	10 - 00	TO THE PARTY OF TH
Ant. Pol.	Vertical		
Test Mode:	BLE Mode TX 2480 MHz		A LIVE
Remark:	No report for the emission v	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

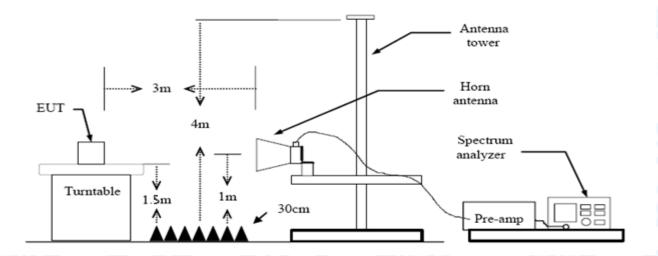
#### 6.1 Test Standard and Limit

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.

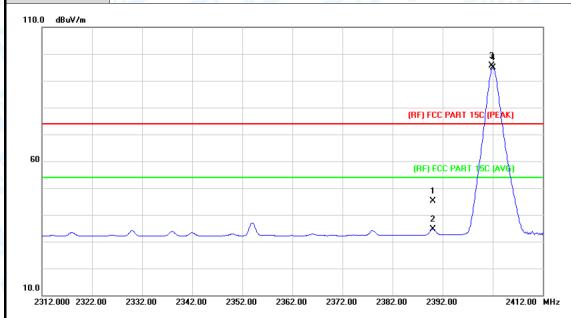
Test data please refer the following pages.



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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		THE PARTY OF THE P
Test Mode:	BLE Mode TX 2402 MHz	1	(1)
Remark:	N/A	- A W	

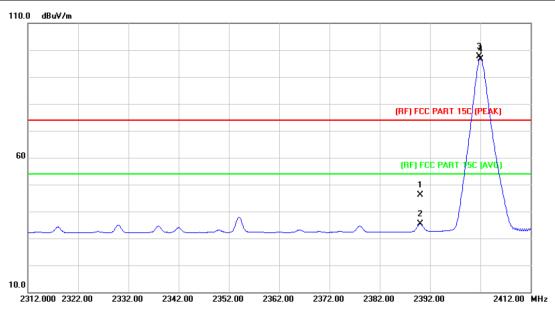


No.	Mk.	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	44.35	0.77	45.12	74.00	-28.88	peak
2		2390.000	33.90	0.77	34.67	54.00	-19.33	AVG
3	Х	2401.800	94.75	0.82	95.57	Fundamental	Frequency	peak
4	*	2402.000	93.97	0.82	94.79	Fundamental	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	CHILD	
Remark:	N/A		10 V

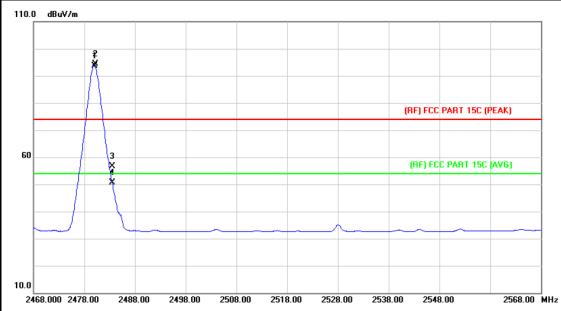


No.	Mk.	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1		2390.000	45.34	0.77	46.11	74.00	-27.89	peak
2		2390.000	34.63	0.77	35.40	54.00	-18.60	AVG
3	Χ	2401.800	96.69	0.82	97.51	Fundamental	Frequency	peak
4	*	2402.000	95.92	0.82	96.74	Fundamental	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	10 - 01	
Ant. Pol.	Horizontal		
Test Mode:	BLE Mode TX 2480 MHz		
Remark:	N/A		
110.0 dRuV/m	-		



N	Vo.	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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EUT:		GU10	LED SP	OT LIGHT	Model:		VKB-004-	GU10
Temperatu	ıre:	25 ℃	671	11979	Relative I	Humidity:	55%	
Test Voltag	ge:	AC 12	20V/60Hz		13/1		UPE	
Ant. Pol.		Vertica	al	WATER OF		501		M. Th
Test Mode	:	BLE N	/lode TX :	2480 MHz	0/1/			L. Box
Remark:		N/A	Millian		1	600		
110.0 dBuV/m								
	<u>b</u>							
	+/-							
	$\bot \bot$							
	+					(RF) FC	C PART 15C (PEA	KJ
60	3	<u> </u>				(RF) F	CC PART 15C (AV	<b>G</b> )
	*	<b>S</b>						
4		1						
10.0 2468.000 243	78.00	2488.00	2498.00	2508.00 2518.	00 2528.00	2538.00 25	48.00	2568.00 MF
			Readin	ng Correc	t Measur	0-		
No. Mk	. F	req.	Level	•		Limit	Over	
		MHz	dBuV		dBuV/m	n dBuV/r	n dB	Detecto
4 1/				dB/m				
1 X		9.800	94.15	1.15	95.30	Fundament	al Frequency	peak
	248	0.000	93.52	1.15	94.67	Fundamen	tal Frequency	AVG
2 *	240	3.500	56.28	1.17	57.45	74.00	-16.55	peak
3 *	240					E4.00	2.40	AVG
		3.500	50.34	1.17	51.51	54.00	-2.49	A V ( 3

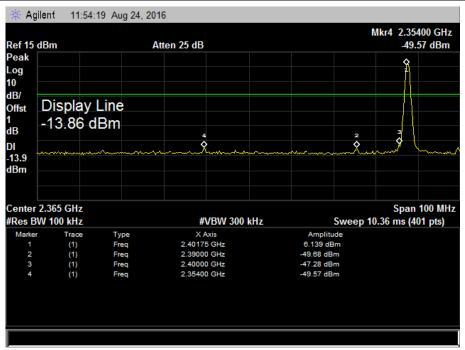


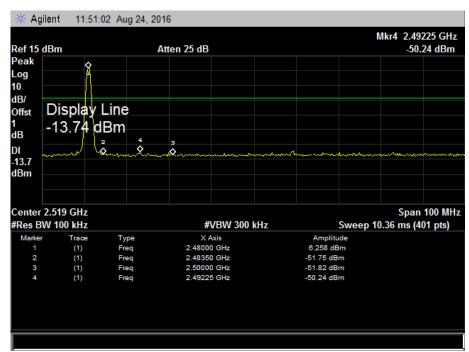


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## (2) Conducted Test

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 / B	LE Mode TX 2480MHz	a Millian
Remark:	The EUT is programed in co	entinuously 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 P	art 15 Subpart C(15.247)/	RSS-247
Test Item	Limit	Frequency Range(MHz)
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.



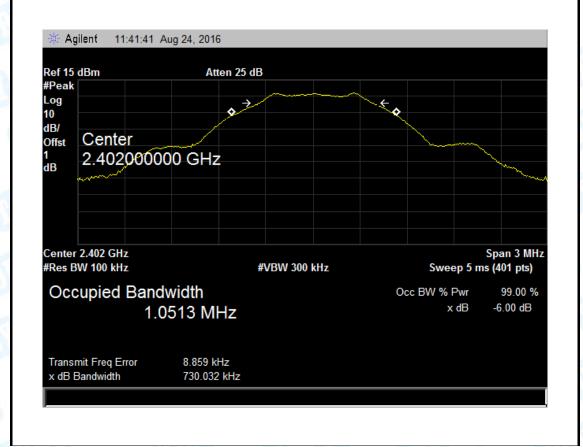
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### 7.5 Test Data

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

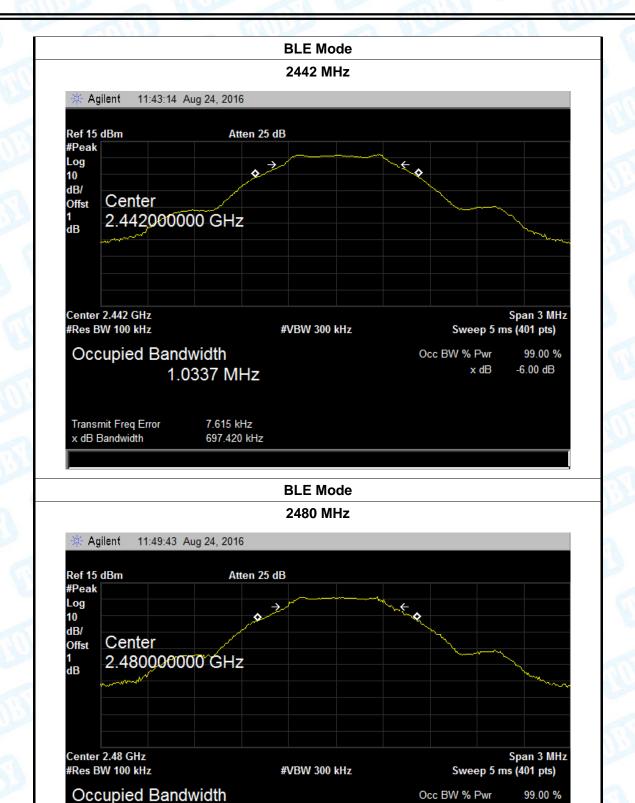
#### **BLE Mode**

#### 2402 MHz





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1.0143 MHz

8.560 kHz

670.816 kHz

Transmit Freq Error

x dB Bandwidth

-6.00 dB

x dB



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## 8. Peak Output Power Test

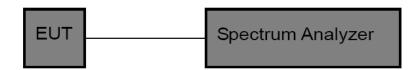
#### 8.1 Test Standard and Limit

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

8.1.2 Test Limit

FCC Par	t 15 Subpart C(15.247)/RS	S-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.



Center 2.402 GHz #Res BW 3 MHz Report No.: TB-FCC149212

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## 8.5 Test Data

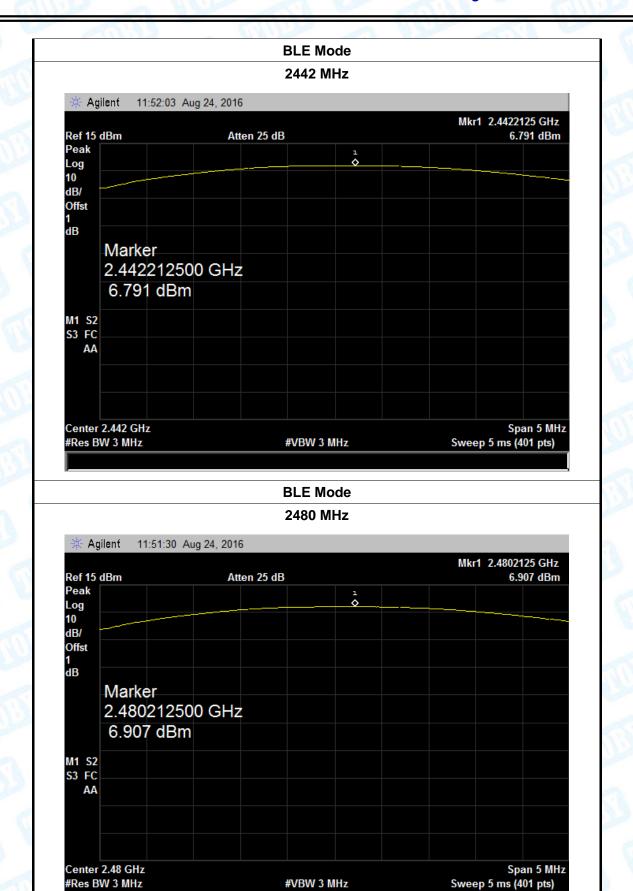
UT:		GU10 LED	SPOT LIGHT	Model:		VKB-004-GU10
empera	ture:	<b>25</b> ℃		Relative I	Humidity:	55%
est Volt	age:	AC 120V/6	60Hz	CHILL		
est Mod	de:	BLE TX M	ode		CIII)	
Channel	frequen	cy (MHz)	Test Result	(dBm)	L	imit (dBm)
	2402		7.062	)		
	2442		6.791			30
	2480		6.907	,		
			BLE Mo	ode		
			2402 M	Hz		
			2402 M	Hz		
₩ Ac	ilent 11:5	4:46 Aug 24, 2	-	Hz		
Aç		4:46 Aug 24, 2	016	Hz	Mkı	r1 2.4021250 GHz 7.062 dBm
Ref 15 Peak			-	Hz	Mkı	r1 2.4021250 GHz 7.062 dBm
Ref 15 Peak Log 10			016	1	Mkı	
Ref 15 Peak Log			016	1	Mki	
Ref 15 Peak Log 10 dB/			016	1	Mki	
Ref 15 Peak Log 10 dB/ Offst 1	<sub>dBm</sub>		016 Atten 25 dB	1	Mkı	
Ref 15 Peak Log 10 dB/ Offst 1	Marker	25000 GI	016 Atten 25 dB	1	Mkı	
Ref 15 Peak Log 10 dB/ Offst 1	<sub>dBm</sub>	25000 GI	016 Atten 25 dB	1	Mki	
Ref 15 Peak Log 10 dB/ Offst 1	Marker 2.4021 7.062	25000 GI	016 Atten 25 dB	1	Mki	

#VBW 3 MHz

Span 5 MHz Sweep 5 ms (401 pts)



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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(MHz)		
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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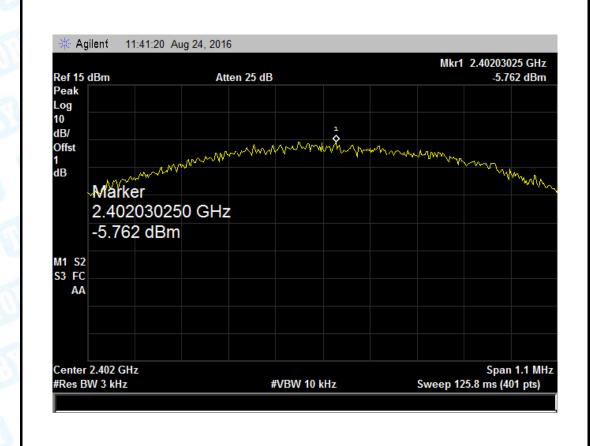
#### 9.5 Test Data

EUT:	GU10 LED SPOT LIGHT	Model:	VKB-004-GU10	
Temperature:	<b>25</b> ℃	Relative Humidity:	55%	
Test Voltage:	AC 120V/60Hz		THE STATE OF THE S	
Test Mode:	BLE TX Mode	THU .		

Channel Frequency	Power Density	Limit	Result
(MHz)	(dBm)	(dBm)	Result
2402	-5.762		PASS
2442	-5.065	8	
2480	-5.723		

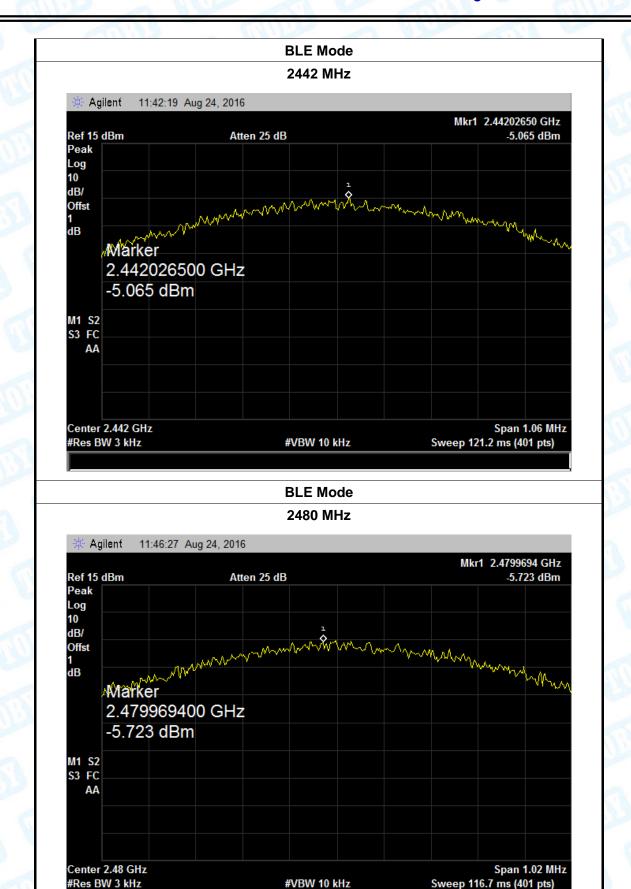
#### **BLE Mode**

#### 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	
3	▼ Permanent attached antenna	
0000	□ Unique connector antenna	
	□ Professional installation antenna	

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