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TEST REPORT

Product Name	:	Smart Switch
Brand Mark	:	Globe
Model No.	:	50586
FCC ID	:	2AQUQGE50586
Report Number	:	BLA-EMC-202205-A2101
Date of Sample Receipt	:	2022/5/11
Date of Test	:	2022/5/11 to 2022/6/1
Date of Issue	:	2022/6/1
Test Standard	:	47 CFR Part 15, Subpart C 15.247
Test Result	:	Pass

Prepared for:

Globe Electric Company Inc.

150 Oneida, Montreal, Quebec, Canada, H9R 1A8

Prepared by:

BlueAsia of Technical Services(Shenzhen) Co.,Ltd. Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen, Guangdong Province, China TEL: +86-755-23059481

Compiled by: Approved by:

Jozu Blue Thong

Review by: Date:







REPORT REVISE RECORD

Version No.	Date	Description	
00 2022/6/1		Original	



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1 TEST SUMMARY

Test item	Test Requirement	Test Method	Class/Severity	Result	
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass	
Conducted Band Edges Measurement	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.8 & Section 11.13.3.2	47 CFR Part 15, Subpart C 15.247(d)	Pass	
Radiated Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.4,6.5,6.6	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	Pass	
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	Pass	
Conducted Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.6 & Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass	
Power Spectrum Density	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.10.2	47 CFR Part 15, Subpart C 15.247(e)	Pass	
Conducted Peak Output Power	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.5	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass	
Minimum 6dB Bandwidth	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.8.1	47 CFR Part 15, Subpart C 15.247a(2)	Pass	
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(c)	Pass	



2 GENERAL INFORMATION

Applicant	Globe Electric Company Inc.
Address	150 Oneida, Montreal, Quebec, Canada, H9R 1A8
Manufacturer	Globe Electric Company Inc.
Address	150 Oneida, Montreal, Quebec, Canada, H9R 1A8
Factory	Globe Electric Company Inc.
Address	150 Oneida, Montreal, Quebec, Canada, H9R 1A8
Product Name	Smart Switch
Test Model No.	50586

3 GENERAL DESCRIPTION OF E.U.T.

2

Hardware Version	V1.4
Software Version	35668225
Operation Frequency:	2402MHz-2480MHz
Modulation Type:	GFSK
Channel Spacing:	2MHz
Number of Channels:	40
Antenna Type:	PCB Antenna
Antenna Gain:	3.96dBi(Provided by the applicant)



4 TEST ENVIRONMENT

Environment	Temperature	Voltage
Normal	25°C	DC3.3V

5 TEST MODE

TEST MODE	TEST MODE DESCRIPTION			
Transmitting mode	Keep the EUT in continuously transmitting mode with modulation.			
Remark: BLE1M,BLE2M all have been tested, during the test, BLE1M,BLE2M modulation were all				
pre-scanned on	pre-scanned only BLE2M worse case is reported.			

6 MEASUREMENT UNCERTAINTY

Parameter	Expanded Uncertainty (Confidence of 95%)		
Radiated Emission(9kHz-30MHz)	±4.34dB		
Radiated Emission(30Mz-1000MHz)	±4.24dB		
Radiated Emission(1GHz-18GHz)	±4.68dB		
AC Power Line Conducted Emission(150kHz-30MHz)	±3.45dB		



7 DESCRIPTION OF SUPPORT UNIT

	Device Type	Manufacturer	Model Name	Serial No.	Remark
Ē	N/A	N/A	N/A	N/A	N/A

8 LABORATORY LOCATION

All tests were performed at:

BlueAsia of Technical Services(Shenzhen) Co., Ltd.

Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen, Guangdong Province, China

Telephone: TEL: +86-755-28682673 FAX: +86-755-28682673 No tests were sub-contracted.



9 TEST INSTRUMENTS LIST

Test Equipment Of Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Shield room	SKET	833	N/A	25/11/2020	24/11/2023
Receiver	R&S	ESPI3	101082	24/9/2021	23/9/2022
LISN	R&S	ENV216	3560.6550.15	24/9/2021	23/9/2022
LISN	AT	AT166-2	AKK1806000003	26/9/2021	25/9/2022
EMI software	EZ	EZ-EMC	N/A	N/A	N/A

Test Equipment Of Conducted Band Edges Measurement								
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due			
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022			
Spectrum	Agilent	N9020A	MY49100060	24/9/2021	23/9/2022			
Signal Generator	Agilent	N5182A	MY49060650	24/9/2021	23/9/2022			
Signal Generator	Agilent	E8257D	MY44320250	24/9/2021	23/9/2022			

Test Equipment Of Radiated Spurious Emissions								
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due			
Chamber	SKET	966	N/A	10/11/2020	9/11/2023			
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022			
Receiver	R&S	ESR7	101199	24/9/2021	23/9/2022			
broadband Antenna	Schwarzbeck VUI B9168		00836 P:00227	26/9/2020	25/9/2022			
Horn Antenna	Schwarzbeck	9120D	01892 P:00331	26/9/2020	25/9/2022			



Amplifier	SKET	LNPA-0118-45	N/A	24/9/2021	23/9/2022
EMI software EZ		EZ-EMC N/A		N/A	N/A
Loop antenna	SCHNARZBECK	FMZB1519B	00102	26/9/2020	25/9/2022

Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due	
Chamber	SKET	SKET 966		10/11/2020	9/11/2023	
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022	
Receiver	R&S ESR7 101199		24/9/2021	23/9/2022		
broadband Antenna	Schwarzbeck	VULB9168	00836 P:00227	26/9/2020	25/9/2022	
Horn Antenna	Schwarzbeck	9120D	01892 P:00331	26/9/2020	25/9/2022	
Amplifier	Amplifier SKET		N/A	24/9/2021	23/9/2022	
EMI software	EZ	EZ-EMC	N/A	N/A	N/A	
Loop antenna	SCHNARZBECK	FMZB1519B	00102	26/9/2020	25/9/2022	

Test Equipment Of Conducted Spurious Emissions								
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due			
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022			
Spectrum	Agilent	N9020A	MY49100060	24/9/2021	23/9/2022			
Signal Generator	Agilent	N5182A	MY49060650	24/9/2021	23/9/2022			
Signal Generator	Agilent	E8257D	MY44320250	24/9/2021	23/9/2022			

Test Equipment Of Power Spectrum Density					
EquipmentManufacturerModelS/NCal.DateO					Cal.Due



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Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022
Spectrum	Agilent	N9020A	MY49100060	24/9/2021	23/9/2022
Signal Generator	Agilent	N5182A	MY49060650	24/9/2021	23/9/2022
Signal Generator	Agilent	E8257D	MY44320250	24/9/2021	23/9/2022

Test Equipment Of	Conducted Peak C				
Equipment	Equipment Manufacturer Mo		S/N	Cal.Date	Cal.Due
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022
Spectrum	Agilent	N9020A	MY49100060	24/9/2021	23/9/2022
Signal Generator	Agilent	N5182A	MY49060650	24/9/2021	23/9/2022
Signal Generator	Agilent	E8257D	MY44320250	24/9/2021	23/9/2022

Test Equipment Of Minimum 6dB Bandwidth								
Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due			
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022			
Spectrum	Agilent	N9020A	MY49100060	24/9/2021	23/9/2022			
Signal Generator	Agilent	N5182A	MY49060650	24/9/2021	23/9/2022			
Signal Generator Agilent		E8257D MY44320250		24/9/2021	23/9/2022			
		<u>.</u>						



10 CONDUCTED EMISSIONS AT AC POWER LINE (150KHZ-30MHZ)

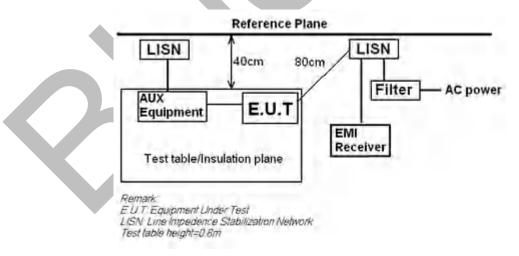
Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 6.2
Test Mode (Pre-Scan)	ТХ
Test Mode (Final Test)	ТХ
Tester	Jozu
Temperature	25°C
Humidity	60%

10.1 LIMITS

Frequency of	Conducted limit(dBµV)				
emission(MHz)	Quasi-peak	Average			
0.15-0.5	66 to 56*	56 to 46*			
0.5-5	56	46			
5-30	60	50			

*Decreases with the logarithm of the frequency.

10.2 BLOCK DIAGRAM OF TEST SETUP



10.3 PROCEDURE

1) The mains terminal disturbance voltage test was conducted in a shielded room.

2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50H + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.



3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane,

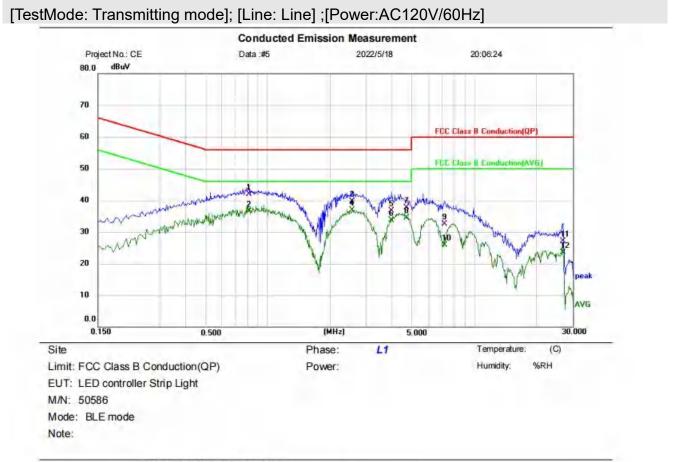
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Remark: LISN=Read Level+ Cable Loss+ LISN Factor



10.4 TEST DATA

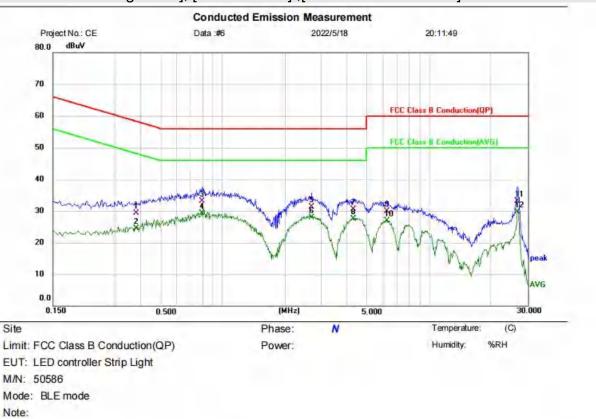


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	_	0.8100	31.97	9.90	41.87	56.00	-14.13	QP	
2		0.8100	26.64	9.90	36.54	46.00	-9.46	AVG	
3		2.5540	29.83	9.96	39.79	56.00	-16.21	QP	
4		2.5540	26.94	9.96	36.90	46.00	-9.10	AVG	
5		3.9700	26.78	9.98	36.76	56.00	-19.24	QP	
6		3.9700	23.78	9.98	33.76	46.00	-12.24	AVG	
7		4.7060	27.73	10.01	37.74	56.00	-18.26	QP	
8		4.7060	24.43	10.01	34.44	46.00	-11.56	AVG	
9		7.1980	22.34	10.10	32.44	60.00	-27.56	QP	
10		7.1980	15.90	10.10	26.00	50.00	-24.00	AVG	
11		26.9300	16.60	10.45	27.05	60.00	-32.95	QP	
12		26.9300	13.04	10.45	23.49	50.00	-26.51	AVG	

*:Maximum data x:Over limit !:over margin

(Reference Only





[TestMode: Transmitting mode]; [Line: Neutral] ;[Power:AC120V/60Hz]

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.3780	19.45	9.78	29.23	58.32	-29.09	QP	
2		0.3780	14.75	9.78	24.53	48.32	-23.79	AVG	
3		0.7940	23.33	9.82	33.15	56.00	-22.85	QP	
4	•	0.7940	19.55	9.82	29.37	46.00	-16.63	AVG	
5		2.6940	21.51	9.89	31.40	56.00	-24.60	QP	
6	1	2.6940	18.00	9.89	27.89	46.00	-18.11	AVG	
7		4.2780	20.66	9.92	30.58	56.00	-25.42	QP	
8		4.2780	17.49	9.92	27.41	46.00	-18.59	AVG	
9	-	6.2500	19.84	9.99	29.83	60.00	-30.17	QP	
10		6.2500	16.85	9.99	26.84	50.00	-23.16	AVG	
11		26.7900	22.67	10.45	33.12	60.00	-26.88	QP	
12		26.7900	19.18	10.45	29.63	50.00	-20.37	AVG	
_									

*:Maximum data x:Over limit !:over margin

(Reference Only



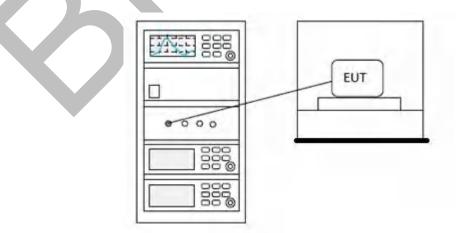
11 CONDUCTED BAND EDGES MEASUREMENT

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.8 & Section 11.13.3.2
Test Mode (Pre-Scan)	ТХ
Test Mode (Final Test)	ТХ
Tester	Jozu
Temperature	25°C
Humidity	60%

11.1 LIMITS

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.209(a) (see §15.205(c)).

11.2 BLOCK DIAGRAM OF TEST SETUP





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11.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details



12 RADIATED SPURIOUS EMISSIONS

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 6.4,6.5,6.6
Test Mode (Pre-Scan)	ТХ
Test Mode (Final Test)	ТХ
Tester	Jozu
Temperature	25 ℃
Humidity	60%

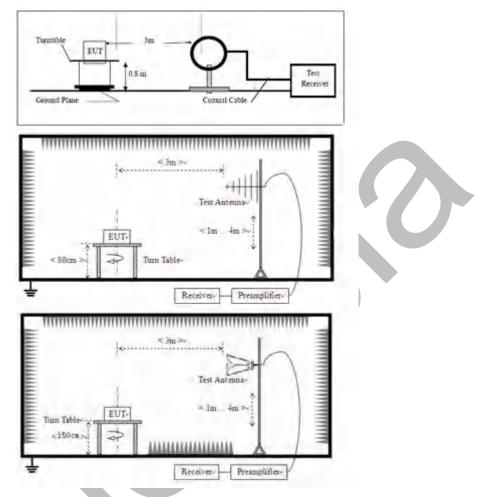
12.1 LIMITS

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.



12.2 BLOCK DIAGRAM OF TEST SETUP



12.3 PROCEDURE

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.



h. Test the EUT in the lowest channel, the middle channel, the Highest channel.

i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

j. Repeat above procedures until all frequencies measured was complete.

Remark:

1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor

3) Scan from 9kHz to 25GHz, the disturbance above 12.75GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported. fundamental frequency is blocked by filter, and only spurious emission is shown.

4) For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.



12.4 TEST DATA



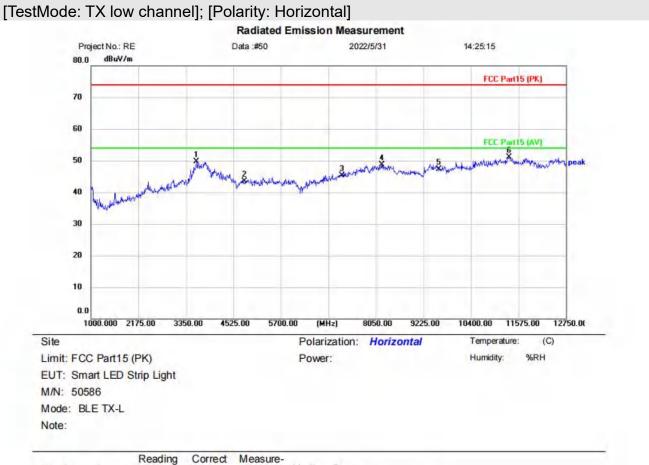
[TestMode: TX low char	nel]; [Polarity: Vertical]
------------------------	----------------------------

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment	
1		3831.750	42.37	7.25	49.62	74.00	-24.38	peak		
2		4804.000	38.50	3.71	42.21	74.00	-31.79	peak		
3	-	7206.000	38.92	5.96	44.88	74.00	-29.12	peak		
4		7838.500	40.83	7.75	48.58	74.00	-25.42	peak		
5		9608.000	37.42	9.29	46.71	74.00	-27.29	peak		
6	*	11340.000	39.81	11.85	51.66	74.00	-22.34	peak		

*:Maximum data x:Over limit !:over margin

(Reference Only

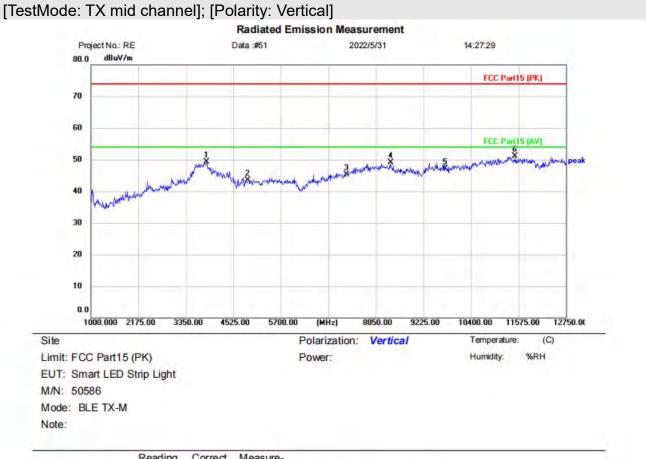




No.	Mk	. Freq.	Level	Factor	ment	Limit	Over			
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment	
1		3608.500	41.86	7.80	49.66	74.00	-24.34	peak		
2		4804.000	39.74	3.71	43.45	74.00	-30.55	peak		
3	-	7206.000	39.44	5.96	45.40	74.00	-28.60	peak		
4		8191.000	40.50	8.20	48.70	74.00	-25.30	peak		
5		9608.000	38.06	9.29	47.35	74.00	-26.65	peak		
6	*	11351.750	39.27	11.82	51.09	74.00	-22.91	peak		

(Reference Only

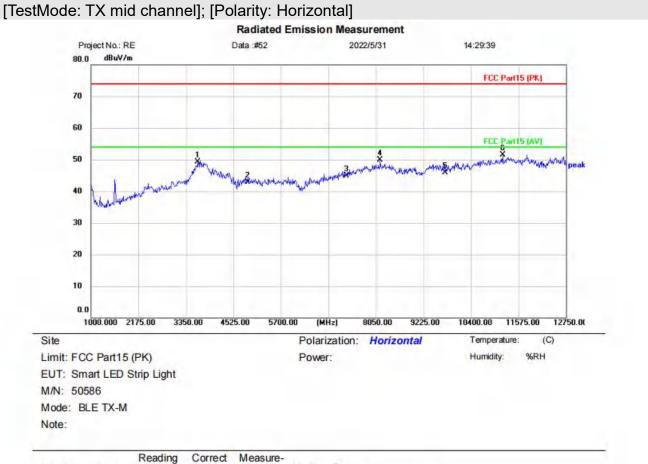




No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment	
1		3855.250	42.32	6.97	49.29	74.00	-24.71	peak		
2		4884.000	40.11	3.34	43.45	74.00	-30.55	peak		
3		7326.000	38.93	6.44	45.37	74.00	-28.63	peak		
4		8414.250	40.79	8.26	49.05	74.00	-24.95	peak		
5		9768.000	37.42	9.63	47.05	74.00	-26.95	peak		
6	*	11492.750	39.29	11.90	51.19	74.00	-22.81	peak		

(Reference Only





No.	Mk.	Freq.	Level	Factor	ment	Limit	Over			
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment	
1		3643.750	41.64	7.76	49.40	74.00	-24.60	peak		
2		4884.000	39.61	3.34	42.95	74.00	-31.05	peak		
3	-	7326.000	38.50	6.44	44.94	74.00	-29.06	peak		
4		8155.750	41.74	8.15	49.89	74.00	-24.11	peak		
5		9768.000	36.32	9.63	45.95	74.00	-28.05	peak		
6	*	11187.250	39.47	12.04	51.51	74.00	-22.49	peak		

(Reference Only

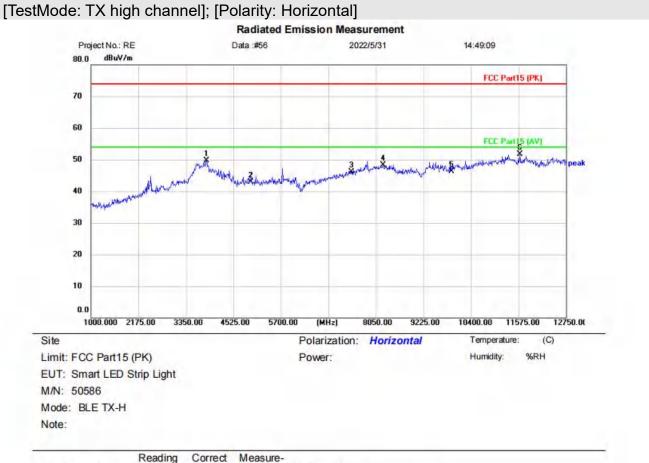




No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment	
1		3655.500	41.95	7.76	49.71	74.00	-24.29	peak		
2		4960.000	39.20	3.75	42.95	74.00	-31.05	peak		
3	_	7440.000	39.67	6.86	46.53	74.00	-27.47	peak		
4		8496.500	40.77	8.14	48.91	74.00	-25.09	peak		
5		9920.000	37.56	10.16	47.72	74.00	-26.28	peak		
6	*	11387.000	39.11	11.78	50.89	74.00	-23.11	peak		

(Reference Only





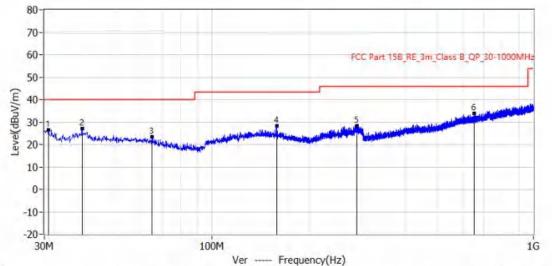
No.	Mk.	. Freq.	Level	Factor	ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		3855.250	42.79	6.97	49.76	74.00	-24.24	peak	
2		4960.000	39.11	3.75	42.86	74.00	-31.14	peak	
3	_	7440.000	39.25	6.86	46.11	74.00	-27.89	peak	
4		8226.250	40.10	8.22	48.32	74.00	-25.68	peak	
5		9920.000	36.14	10.16	46.30	74.00	-27.70	peak	
6	*	11610.250	39.69	12.03	51.72	74.00	-22.28	peak	

(Reference Only



[TestMode: TX mode (SE) below 1G]; [Polarity: Vertical]

Test Lab: BlueAsia EMC Lab(RE #1)	Project: BLA-EMC-202205-A21	
EUT: Smart LED Strip Light	Test Engineer: York	
M/N: 50586	Temperature:	
S/N:	Humidity:	
Test Mode: BLE TX mode	Test Voltage:	
Note:	Test Data: 2022-05-20 18:42:48	

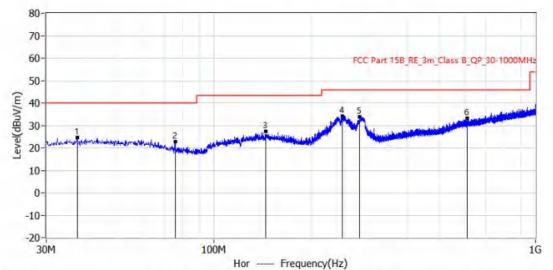


No.	Frequency	Limit dBuV/m	Level dBuV/m	Delta dB	Reading dBuV	Factor dB/m	Detector	Polar	Height cm	Angle deg
1*	30.970MHz	40.0	26.6	-13.4	4.1	22.5	QP	Ver	100.0	164.0
2*	39.336MHz	40.0	27.2	-12.8	3.2	24.0	QP	Ver	100.0	158.0
3*	64.920MHz	40.0	23.3	-16.7	0.8	22.5	QP	Ver	100.0	150.0
4*	158.525MHz	43.5	28.2	-15.3	4.9	23.3	QP	Ver	100.0	228.0
5*	282.564MHz	46.0	28.3	-17.7	4.6	23.7	QP	Ver	100.0	274.0
6*	653.831MHz	46.0	34.0	-12.0	2.4	31.6	QP	Ver	100.0	317.0



[TestMode: TX mode (SE) below 1G]; [Polarity: Horizontal]

Test Lab: BlueAsia EMC Lab (RE #1)	Project: BLA-EMC-202205-A21			
EUT: Smart LED Strip Light	Test Engineer: York			
M/N: 50586	Temperature:			
S/N:	Humidity:			
Test Mode: BLE TX mode	Test Voltage:			
Note:	Test Data: 2022-05-20 18:45:04			



No.	Frequency	Limit dBuV/m	Level dBuV/m	Delta dB	Reading dBuV	Factor dB/m	Detector	Polar	Height cm	Angle deg
1*	37.396MHz	40.0	24.5	-15.5	0.7	23.8	QP	Hor	100.0	146.0
2*	75.590MHz	40.0	22.8	-17.2	2.3	20.5	QP	Hor	100.0	0.0
3*	144.945MHz	43.5	27.3	-16.2	3.7	23.6	QP	Hor	100.0	0.0
4*	250.796MHz	46.0	34.1	-11.9	11.4	22.7	QP	Hor	100.0	66.0
5*	283.049MHz	46.0	33.7	-12.3	10.0	23.7	QP	Hor	100.0	170.0
6*	614.183MHz	46.0	33.2	-12.8	1.8	31.4	QP	Hor	100.0	0.0



13 RADIATED EMISSIONS WHICH FALL IN THE RESTRICTED BANDS

Test Standard	47 CFR Part 15, Subpart C 15.247							
Test Method	ANSI C63.10 (2013) Section 6.10.5							
Test Mode (Pre-Scan)	ТХ							
Test Mode (Final Test)	ТХ							
Tester	Jozu							
Temperature	25°C							
Humidity	60%							

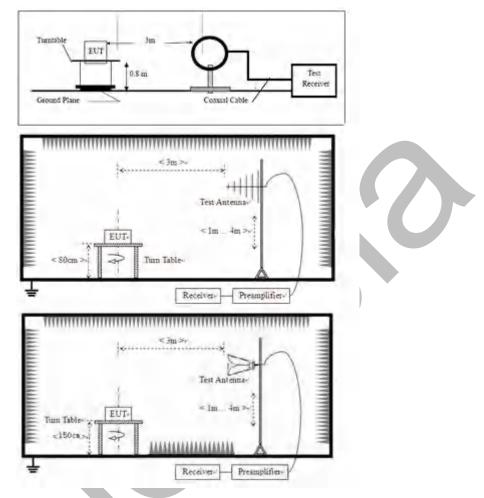
13.1 LIMITS

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)		
0.009-0.490	2400/F(kHz)	300		
0.490-1.705	24000/F(kHz)	30		
1.705-30.0	30	30		
30-88	100	3		
88-216	150	3		
216-960	200	3		
Above 960	500	3		

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.



13.2 BLOCK DIAGRAM OF TEST SETUP



13.3 PROCEDURE

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.



h. Test the EUT in the lowest channel, the middle channel, the Highest channel.

i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

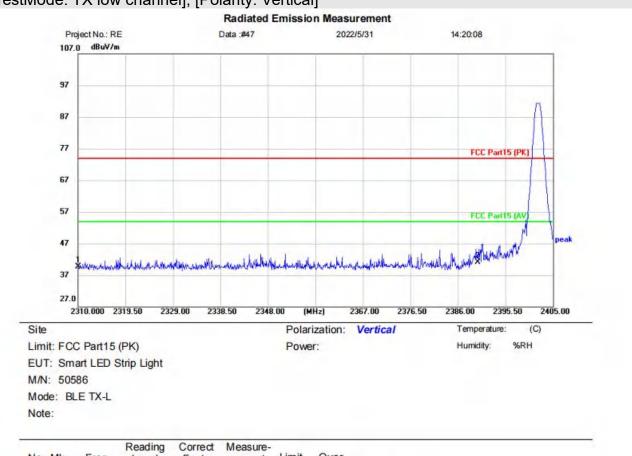
j. Repeat above procedures until all frequencies measured was complete.

Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.



13.4 TEST DATA



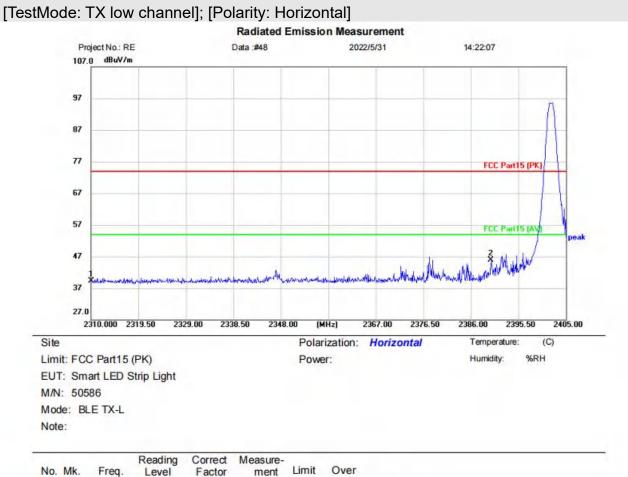
[TestMode: TX l	ow channel]; [Po	larity: Vertical]
-----------------	------------------	-------------------

No.	. <mark>M</mark> k.	Mk.	Mk.	Mk.	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over			
		MHz	MHz dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment				
1		2310.000	43.59	-3.93	39.66	74.00	-34.34	peak					
2	*	2390.000	44.65	-3.58	41.07	74.00	-32.93	peak					

x:Over limit !:over margin *:Maximum data

(Reference Only

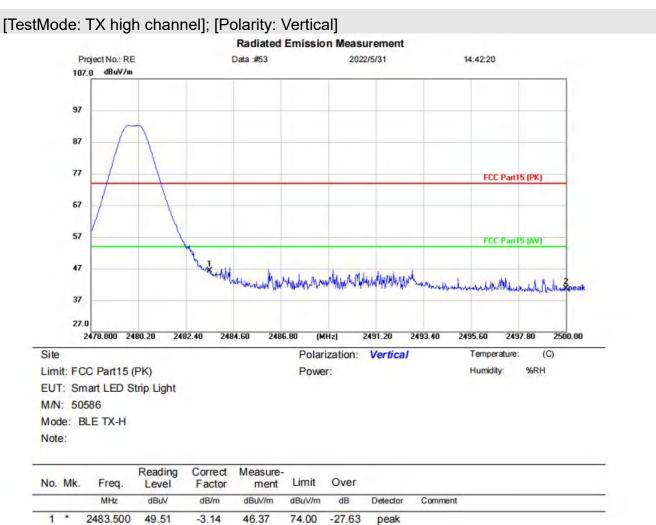




No. Mk.	Freq.	Level	Factor	ment	Limit	Over			
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment	
1	2310.000	43.14	-3.93	39.21	74.00	-34.79	peak		
2 *	2390.000	49.43	-3.58	45.85	74.00	-28.15	peak		

(Reference Only





43.77

-3.08

40.69

74.00

-33.31

peak

2500.000

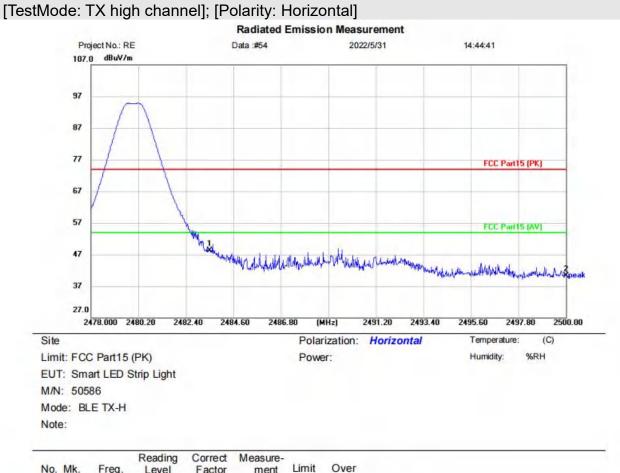
*:Maximum data x:Over limit !:over margin

(Reference Only

Test Result: Pass

2





No.	Mk.	Freq.	Level	Factor	Measure- ment		Over			
		MHz	MHz dBuV dB/m	dBuV/m	dBuV/m	dB	Detector	Comment		
1	*	2483.500	51.44	-3.14	48.30	74.00	-25.70	peak		
2		2500.000	43.32	-3.08	40.24	74.00	-33.76	peak		

(Reference Only



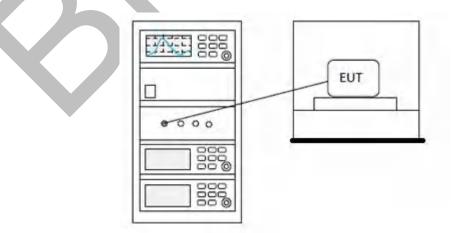
14 CONDUCTED SPURIOUS EMISSIONS

Test Standard	47 CFR Part 15, Subpart C 15.247					
Test Method	ANSI C63.10 (2013) Section 7.8.6 & Section 11.11					
Test Mode (Pre-Scan)	ТХ					
Test Mode (Final Test)	ТХ					
Tester	Jozu					
Temperature	25°C					
Humidity	60%					

14.1 LIMITS

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

14.2 BLOCK DIAGRAM OF TEST SETUP





Report No.: BLA-EMC-202205-A2101 Page 37 of 78

14.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details



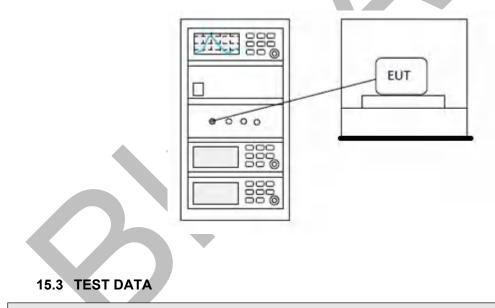
15 POWER SPECTRUM DENSITY

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 11.10.2
Test Mode (Pre-Scan)	ТХ
Test Mode (Final Test)	ТХ
Tester	Jozu
Temperature	25°C
Humidity	60%

15.1 LIMITS

Limit: ≤ 8 dBm in any 3 kHz band during any time interval of continuous transmission

15.2 BLOCK DIAGRAM OF TEST SETUP



Pass: Please Refer To Appendix: Appendix1 For Details



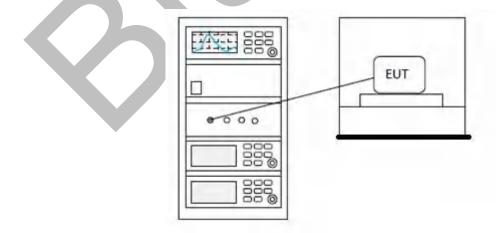
16 CONDUCTED PEAK OUTPUT POWER

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.5
Test Mode (Pre-Scan)	ТХ
Test Mode (Final Test)	ТХ
Tester	Jozu
Temperature	25°C
Humidity	60%

16.1 LIMITS

Frequency range(MHz)	Output power of the intentional radiator(watt)		
	1 for \geq 50 hopping channels		
902-928	0.25 for $25 \le$ hopping channels < 50		
	1 for digital modulation		
	1 for \geq 75 non-overlapping hopping channels		
2400-2483.5	0.125 for all other frequency hopping systems		
	1 for digital modulation		
	1 for frequency hopping systems and digital		
5725-5850	modulation		

16.2 BLOCK DIAGRAM OF TEST SETUP





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16.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details



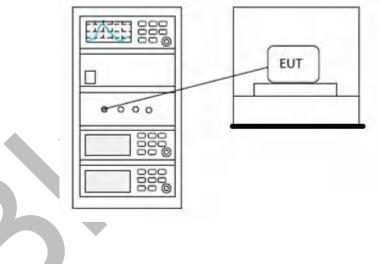
17 MINIMUM 6DB BANDWIDTH

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 11.8.1
Test Mode (Pre-Scan)	ТХ
Test Mode (Final Test)	ТХ
Tester	Jozu
Temperature	25°C
Humidity	60%

17.1 LIMITS

Limit: \geq 500 kHz

17.2 BLOCK DIAGRAM OF TEST SETUP



17.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details



18 ANTENNA REQUIREMENT

	47 CFR Part 15, Subpart C 15.247
Test Method	N/A

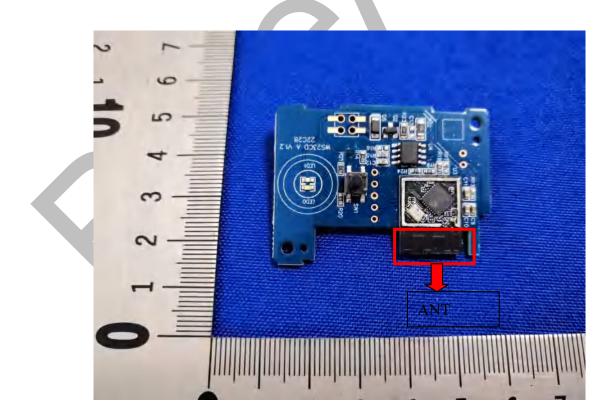
18.1 CONCLUSION

Standard 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 antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of an so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 3.96dBi.





19 APPENDIX

Maximum Conducted Output Power

Condition	Mode	Frequency	Antenna	Conducted Power (dBm)	Limit	Verdict
		(MHz)			(dBm)	
NVNT	BLE	2402	Antl	-0.164	30	Pass
	1M					
NVNT	BLE	2442	Antl	0.545	30	Pass
	1M					
NVNT	BLE	2480	Ant1	-0.217	30	Pass
	1M					
NVNT	BLE	2402	Ant1	0.429	30	Pass
	2M					
NVNT	BLE	2442	Ant1	0.804	30	Pass
	2M					
NVNT	BLE	2480	Ant1	-0.428	30	Pass
	2M					

Power NVNT BLE 1M 2402MHz Ant1



Power NVNT BLE 1M 2442MHz Ant1





Power NVNT BLE 1M 2480MHz Ant1



Power NVNT BLE 2M 2402MHz Ant1





Power NVNT BLE 2M 2442MHz Ant1



Power NVNT BLE 2M 2480MHz Ant1



ilent Spectrum Analy R T RF	50 Q AC	5	ENSE:INT	ALIGNAUTO	11:58:23	AM May 24, 2022
enter Freq 2.	480000000 GHz	PNO: Fast	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr Avg Hold: 100/100	TF	TYPE MWMMMMM DET P NNNNN
dB/div Ref 2	ffset 2.08 dB 20.00 dBm			М	kr1 2.479 -0.	926 GHz 428 dBm
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enter 2.480000 Res BW 2.0 M		#VB	V 6.0 MHz	Sweep	Span 1.333 ms	10.00 MHz (10001 pts)
G				STATUS		

5



-6dB Bandwidth

Condition	Mode	Frequency	Antenna	-6 dB Bandwidth	Limit -6 dB	Verdict
		(MHz)		(MHz)	Bandwidth (MHz)	
NVNT	BLE	2402	Ant1	0.634	0.5	Pass
	1M					
NVNT	BLE	2442	Ant1	0.65	0.5	Pass
	1M					
NVNT	BLE	2480	Ant1	0.621	0.5	Pass
	1M					
NVNT	BLE	2402	Ant1	1.045	0.5	Pass
	2M					
NVNT	BLE	2442	Ant1	1.108	0.5	Pass
	2M					
NVNT	BLE	2480	Ant1	1.134	0.5	Pass
	2M					

-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1



-6dB Bandwidth NVNT BLE 1M 2442MHz Ant1



Center Freq 2.442000000 GHz		SENSEINT ALIGNAUTO Center Freq: 2.442000000 GHz Trig: Free Run Avg Hold: 100/100 #Atten: 30 dB		11:48:07 AM May 24, 202 Radio Std: None Radio Device: BTS		
Ref Offset 2.03 dB/div Ref 22.03 dB	B	#Atten: 50 db		Mkr3		8 GHz
og		1	1	T	1.1.4	
03	02	01	.3			-
37	2		m			
8.0				man		
6.0			+ + +		the second	minin
8.0					- AND	
8.0						1.11
80						
enter 2.442 GHz Res BW 100 kHz		#VBW 300 k	Hz		Spar Sweep 1	n 2 MHz .333 ms
Occupied Bandwid	th .0375 MHz	Total Power	5.71 dBm			
Transmit Freq Error	2.673 kHz	OBW Power	99.00 %			
x dB Bandwidth	650.3 kHz	x dB	-6.00 dB			
ss			STATUS			

-6dB Bandwidth NVNT BLE 1M 2480MHz Ant1



-6dB Bandwidth NVNT BLE 2M 2402MHz Ant1









-6dB Bandwidth NVNT BLE 2M 2480MHz Ant1



R T RF 50 Q AC Center Freq 2.480000000 GHz		Center Freq: 2.4800000 Trig: Free Run #Atten: 30 dB	11:58:38 AM May 24, 202 Radio Std: None Radio Device: BTS			
Ref Offset 2.08 dB dB/div Ref 22.08 dBm				Mkr3	2.480569 -6.6275	
21						
08	() ²	- Arman	3			-
192	man	and the second	ma quind me	www.		
19					man	-
1.9)	M
9						
7.9						
enter 2.48 GHz					Onen	3 MHz
Res BW 100 kHz		#VBW 300 k	Hz		Sweep 1.3	
Occupied Bandwidth	1.11	Total Power	5.12 dBm			
2.02	96 MHz					
Transmit Freq Error	2.560 kHz	OBW Power	99.00 %			
x dB Bandwidth	1.134 MHz	x dB	-6.00 dB			
c			CTATILO			



Occupied Channel Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	BLE 1M	2402	Ant1	1.031534064
NVNT	BLE 1M	2442	Ant1	1.034314648
NVNT	BLE 1M	2480	Ant1	1.029386538
NVNT	BLE 2M	2402	Ant1	2.031555315
NVNT	BLE 2M	2442	Ant1	2.034079207
NVNT	BLE 2M	2480	Antl	2.041861246

OBW NVNT BLE 1M 2402MHz Ant1



OBW NVNT BLE 1M 2442MHz Ant1





OBW NVNT BLE 1M 2480MHz Ant1



OBW NVNT BLE 2M 2402MHz Ant1



enter Freq 2.402000000	GHz #IFGain:Low	Center Freq: 2.4020000	ALIGNAUTO 100 GHz AvgjHold: 100/100	Radio Std: N Radio Devic	
Ref Offset 2.01 dB 0 dB/div Ref 22.01 dBm					_
.og					
2.01					
.90	- mmm	month	month		
18.0				m harment	
38.0					m
18.0					2
58.0					
80					
Center 2.402 GHz Res BW 30 kHz		#VBW 100 ki	Hz		pan 3 MHz 3.333 ms
Occupied Bandwidth 2.0) 0316 MHz	Total Power	5.95 dBm		
Transmit Freq Error	18.614 kHz	OBW Power	99.00 %		
x dB Bandwidth	2.418 MHz	x dB	-26.00 dB		

OBW NVNT BLE 2M 2442MHz Ant1



OBW NVNT BLE 2M 2480MHz Ant1



R T RF Center Freq 2.48	50 Q AC	GHz #IFGain:Low	Center Freq: 2.4800000	ALIGNAUTO 00 GHz Avg Hold: 100/100	11:58:30 AM May 24, 2022 Radio Std: None Radio Device: BTS
10 dB/div Ref :	ffset 2.08 dB 22.08 dBm				
og 12.1					
80.8			54		
7.92		mon	muntan	mann	
27.9	soft -				manner
37.9					-M
17:9 A					1
57.9					
Center 2.48 GHz Res BW 30 kHz			#VBW 100 ki	Hz	Span 3 MHz Sweep 3.333 ms
Occupied Ba	andwidth	1	Total Power	5.19 dBm	
		0419 MHz			
Transmit Freq	Error	10.183 kHz	OBW Power	99.00 %	
x dB Bandwid	th	2.417 MHz	x dB	-26.00 dB	
ISG				STATUS	

0



Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	-10.226	8	Pass
NVNT	BLE 1M	2442	Ant1	-9.707	8	Pass
NVNT	BLE 1M	2480	Ant1	-10.244	8	Pass
NVNT	BLE 2M	2402	Ant1	-10.304	8	Pass
NVNT	BLE 2M	2442	Ant1	-9.829	8	Pass
NVNT	BLE 2M	2480	Ant1	-10.902	8	Pass

PSD NVNT BLE 1M 2402MHz Ant1



PSD NVNT BLE 1M 2442MHz Ant1





PSD NVNT BLE 1M 2480MHz Ant1



PSD NVNT BLE 2M 2402MHz Ant1





PSD NVNT BLE 2M 2442MHz Ant1



PSD NVNT BLE 2M 2480MHz Ant1



R T RF 50 Q AC	- 58	INSE(INT	ALIGN AUTO	11:58:48 AM May 24, 2
enter Freq 2.480000000	PNO: Wide	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr Avg Hold: 100/100	TRACE 1 2 3 4 TYPE MWANN DET P N N N
Ref Offset 2.08 dB dB/div Ref 20.00 dBm			N	/kr1 2.479 997 GI -10.902 dB
0				
0				
0		- a h		
0	MMMAnnamman	many new	Mayamananananananananana	un.
1.0				a Warren with
0 martinet				and the second
0				
.0				
enter 2.480000 GHz				Span 3.000 M
Res BW 10 kHz	#VBV	/ 30 kHz	Swe	ep 28.73 ms (1001 p
CRUCH FOR AN EXAMINE				

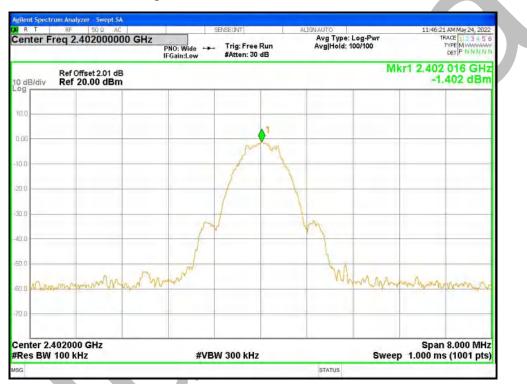
0



Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-53.93	-30	Pass
NVNT	BLE 1M	2480	Ant1	-54.51	-30	Pass
NVNT	BLE 2M	2402	Ant1	-54.92	-30	Pass
NVNT	BLE 2M	2480	Ant1	-54.01	-30	Pass

Band Edge NVNT BLE 1M 2402MHz Ant1 Ref



Band Edge NVNT BLE 1M 2402MHz Ant1 Emission



Agilent Spectrum Analyzer - Swe R T RF 50 Q		SENSE:INT		ALIGNAUTO	11:46-2	AM May 24, 2022
Center Freq 2.35600	0000 GHz	:Fast Trig:Fro in:Low #Atten:	ee Run 30 dB	Avg Type: Log-Pwr Avg Hold: 100/100	TI	RACE 1 2 3 4 5 6 TYPE MWWWWWW DET P N N N N N
Ref Offset 2.0 0 dB/div Ref 20.00 d					Mkr1 2.4 -1.	01 8 GHz 526 dBm
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70.0						
Start 2.30600 GHz Res BW 100 kHz		#VBW 300 ki	łz	Swe	Stop 2. ep 9.600 ms	40600 GHz s (1001 pts)
MUCE TFG SCL 2 N f 3 N f 4 N f 5 6 6 7 8 9 9 10 10	2.401 8 GHz 2.400 0 GHz 2.390 0 GHz 2.373 8 GHz	-1.526 dBm -53.632 dBm -59.426 dBm -55.337 dBm	UNCTION	UNICTION WIDTH	FUNCTION VALUE	A
9 10 11 <						(2)
ISG				STATUS		

Band Edge NVNT BLE 1M 2480MHz Ant1 Ref

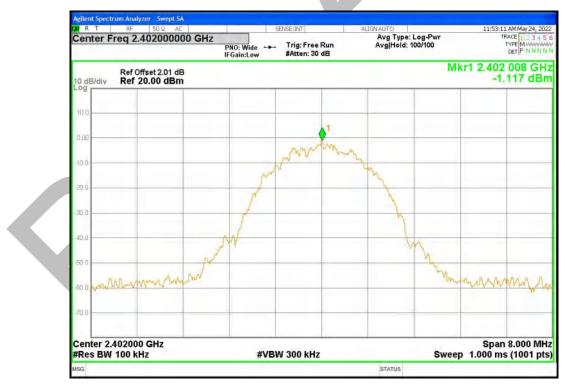


Band Edge NVNT BLE 1M 2480MHz Ant1 Emission



enter Fr	RF 50 Q eq 2.526000	000 GHz	SENSE:INT	a Dun	ALIGNAUTO Avg Type: Log-Pwr Avg Hold: 100/100		2 AM May 24, 2022 RACE 1 2 3 4 5 6 TYPE M MANAGEM
			in:Low #Atten:		Avginoid. 100/100		DETPNINN
0 dB/div	Ref Offset 2.08					Mkr1 2.4	80 0 GHz 268 dBm
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100	1.1.						
tart 2.47 Res BW			#VBW 300 k	Hz	SI	Stop 2 weep 9.600 m	.57600 GHz s (1001 pts)
KR MODE TH		X		FUNCTION	UNCTION WIDTH	FUNCTION VALUE	-
1 N 2 N 3 N 4 N	f f f	2.480 0 GHz 2.483 5 GHz 2.500 0 GHz 2.489 8 GHz	-1.268 dBm -57.884 dBm -58.695 dBm -56.128 dBm				
2 N 3 N 4 5 6 7 8 90							
11							
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Band Edge NVNT BLE 2M 2402MHz Ant1 Ref



Band Edge NVNT BLE 2M 2402MHz Ant1 Emission



53:14 AM May 24, 2022	11-52-	UTO		SENSE(INT)		RF 50.0 A	Spectru	igilent R
TRACE 1 2 3 4 5 6 TYPE MWANNAM DET P N N N N N		vg Type: Log-Pwr vg Hold: 100/100		Fast 🛶 Trig: Free	000 GHz	eq 2.3560000	er Fre	
2.402 2 GHz -2.220 dBm						Ref Offset 2.01 c Ref 20.00 dB	3/div	0 dE
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41.1.2000	_						_	30.0
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-					_		-	70.0
p 2.40600 GHz ms (1001 pts)	Stop 2 ep 9.600 m	Swe		#VBW 300 kH		600 GHz 100 kHz		
UE A	FUNCTION VALUE	MDTH	ION FU	Y 50 -2.220 dBm -48.586 dBm -58.806 dBm -56.047 dBm	× 2.402 2 GHz 2.400 0 GHz 2.390 0 GHz 2.344 1 GHz	G SQL f f f f	N N N N N	
								10
15								11
		STATUŚ						SG

Band Edge NVNT BLE 2M 2480MHz Ant1 Ref



Band Edge NVNT BLE 2M 2480MHz Ant1 Emission



IFGainLow #Atten: 30 dB Mikr1 2.480 2 GH Ref Offset 2.08 dB
Image: Stop 2.57600 GHz Stop 2.57600 GHz Stop 2.57600 GHz #VEW 300 KHz Stop 2.57600 GHz #VEW 300 KHz Stop 2.57600 GHz Stop 2.57600 GHz Stop 2.57600 GHz #VEW 300 KHz Stop 2.57600 GHz Stop 2.57600 GHz Stop 2.57600 GHz #VEW 300 KHz Stop 2.57600 GHz Stop 2.57600 GHz Stop 2.57600 GHz #VEW 300 KHz Stop 2.57600 GHz Stop 2.57600 GHz Stop 2.57600 GHz #VEW 300 KHz Stop 2.57600 GHz Stop 2.57600 GHz Stop 2.57600 GHz \$1.94 dBm N f X Function N f X Function N f X Stop 2.57600 GHz Stop 2.57600 GHz 59.998 dBm N f X Function X Function X Function X Function X Function X Function X Func
X 2 X X Stop 2.57600 GHz 5 BW 100 KHz #VBW 300 KHz Stop 2.57600 GH 8 BW 100 KHz #VBW 300 KHz Stop 2.57600 GH 100 Hz 5.000 GHz -56.003 GHm 100 Hz -56.003 GHm -54.696 dBm 100 Hz -54.696 dBm -54.696 dBm
YEW 300 GHz Stop 2.57600 GHz SBW 100 KHz #VBW 300 KHz Stop 2.57600 GH N f 2.480 2 GHz 3.194 dBm N f 2.480 2 GHz -56.833 dBm N f 2.487 6 GHz -54.686 dBm
YEW 300 GHz Stop 2.57600 GHz SBW 100 KHz #VBW 300 KHz Stop 2.57600 GH N f 2.480 2 GHz 3.194 dBm N f 2.480 2 GHz -56.833 dBm N f 2.487 6 GHz -54.686 dBm
X200 CH Stop 2.57600 GHz s BW 100 kHz #VBW 300 kHz Stop 2.57600 GH N f 2.480 2 GHz 3.194 dBm N f 2.480 2 GHz 3.194 dBm N f 2.480 2 GHz -56.833 dBm N f 2.500 0 GHz -56.998 dBm N f 2.487 6 GHz -54.686 dBm
S BW 100 kHz #VBW 300 kHz Sweep 9.600 ms (1001 pts) X006 TRG SQL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE N f 2.483 5 GHz -56.833 dBm FUNCTION VALUE FUNCTION VALUE N f 2.500 0 GHz -50.996 dBm FUNCTION VALUE FUNCTION VALUE N f 2.487 6 GHz -54.686 dBm FUNCTION VALUE FUNCTION VALUE
S BW 100 kHz #VBW 300 kHz Sweep 9.600 ms (1001 pts) X006 TEC X Y FUNCTION FUNCTION
s BW 100 kHz #VBW 300 kHz Sweep 9.600 ms (1001 pts) X006 ftrac X Y Function Function with) Function value N f 2.480 2 GHz -3.194 dBm Function with) Function value N f 2.483 5 GHz -56.833 dBm Function with) Function value N f 2.500 0 GHz -59.098 dBm Function with) Function value N f 2.487 6 GHz -54.686 dBm Function with) Function value
s BW 100 kHz #VBW 300 kHz Sweep 9.600 ms (1001 pts) X006 ftrac X Y Function Function with) Function value N f 2.480 2 GHz -3.194 dBm Function with) Function value N f 2.483 5 GHz -56.833 dBm Function with) Function value N f 2.500 0 GHz -59.098 dBm Function with) Function value N f 2.487 6 GHz -54.686 dBm Function with) Function value
X00E TEC SEL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE N f 2.480 2 GHz -3.194 dBm FUNCTION WIDTH FUNCTION VALUE N f 2.483 5 GHz -56.833 dBm FUNCTION VALUE FUNCTION VALUE N f 2.500 0 GHz -59.098 dBm FUNCTION VALUE FUNCTION VALUE N f 2.487 6 GHz -54.686 dBm FUNCTION VALUE FUNCTION VALUE
N f 2.480 2 GHz -3.194 dBm N f 2.483 5 GHz -56.833 dBm N f 2.500 0 GHz -59.098 dBm N f 2.487 6 GHz -54.686 dBm
STATUŚ



Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-45.37	-30	Pass
NVNT	BLE 1M	2442	Ant1	-44.32	-30	Pass
NVNT	BLE 1M	2480	Ant1	-44.82	-30	Pass
NVNT	BLE 2M	2402	Ant1	-44.82	-30	Pass
NVNT	BLE 2M	2442	Ant1	-45.99	-30	Pass
NVNT	BLE 2M	2480	Ant1	-43.65	-30	Pass

Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission



	n Analyzer - Swept		SENSE(IN	-	ALIGNAUTO		11:46-59.4	M May 24, 2022
enter Fre	RF 50 ₽ 9q 13.26500) Fast ++ Trig:	Free Run en: 30 dB	Avg Type: Avg Hold:	Log-Pwr 10/10	TRA TY	CE 1 2 3 4 5 6 PE MUMUUM
0 dB/dlv	Ref Offset 2.01 Ref 20.00 dE						Mkr1 2.4 -1.2	12 GHz 48 dBm
og (0.0								
101		_			_			
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30.0	-	-			_			-30 56 dBm
40 0								\Diamond^2
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70,0								-
Res BW 1			#VBW 300	kHz		Swe	Stop 2 ep 2.530 s	26.50 GHz (1001 pts)
IKR MODE TRO	f	× 2.412 GHz	-1.248 dBm	FUNCTION	UNCTION WIDTH	F	UNCTION VALUE	~
2 N 3 N 4 N 5 6 7 8 9	f f f	25.124 GHz 4.953 GHz 7.018 GHz 9.559 GHz	-45.965 dBm -56.457 dBm -56.015 dBm -56.501 dBm					
7 8 9								
11 <								2
ISG					STATUŚ			

Tx. Spurious NVNT BLE 1M 2442MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2442MHz Ant1 Emission



	2 AIC	SENSE(INT		ALIGNAUTO			May 24, 2022
enter Freq 13.265	PNC	: Fast Trig: Fre in:Low #Atten:		Avg Type: L Avg Hold: 10	og-Pwr /10	TYPE	
Ref Offset 2 0 dB/dlv Ref 20.00						Mkr1 2.43 -0.68	39 GHz 12 dBm
.og		1					
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50.0 menter about the	- the work of the	- Suranort				_	
70.0				-			
Start 30 MHz Res BW 100 kHz		#VBW 300 kH	łz		Sweep	Stop 26 2.530 s (1	5.50 GHz 001 pts)
KR MODE THE SEL	X		UNCTION FU	NCTION WIDTH	FUNC	TION VALUE	~
N f 2 N f 2 N f 5 N f 5 N f 6 7 8 9 10	2.439 GHz 26.447 GHz 5.033 GHz 7.362 GHz 9.850 GHz	-0.682 dBm -45.367 dBm -56.632 dBm -55.631 dBm -56.743 dBm					
11							
<				STATUS			(\$)
SG				STATUS			

Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Emission



gilent Spectrum Analyzer - Sw R T RF 50 S	zept SA Σ AC			automa automo.			
Center Freq 13.265	000000 GHz	:Fast ++ Trig:Fre in:Low #Atten:	e Run 30 dB	ALIGNAUTO Avg Type: Avg Hold: 1	Log-Pwr 0/10	TRA	AM May 24, 2022 VCE 1 2 3 4 5 6 VPE M WANNAME DET P N N N N N
Ref Offset 2 0 dB/div Ref 20.00						Mkr1 2.4 -2.2	492 GHz 25 dBm
100			-				_
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içi ç							-a0 55 aBm
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50 0 - dener handration	And	- Deman		about the man and the particular of	deres and	and all all and a second	ap-United
70.0							
tart 30 MHz Res BW 100 kHz		#VBW 300 kH	łz		Swe	Stop 2 ep 2.530 s	26.50 GHz (1001 pts)
MODE TEC SLL 1 N f 2 N f 3 N f 4 N f 5 N f 6 7 8 9 10 11	2.492 GHz 26.229 GHz 5.086 GHz 7.495 GHz 10.036 GHz	Y 5 -2.225 dBm -45.389 dBm -55.841 dBm -54.640 dBm -56.593 dBm	UNCTION	UNCTION WIDTH	F	UNCTION VALUE	×
8 9 10							
11							8
SG				STATUS			

Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Ref



Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Emission



gilent Spectrum	Analyzer - Swept S		SENSE(I)	al I	ALIGNAUTO		11:53:4	9 AM May 24, 2022
	q 13.265000	000 GHz) Fast ++ Trig	: Free Run en: 30 dB	Avg Type: Avg Hold:	Log-Pwr 10/10		RACE 1 3 4 5 6 TYPE MINIMUM DET P N N N N N
0 dB/div	Ref Offset 2.01 d Ref 20.00 dBr							.412 GHz 720 dBm
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1.01	1				_			
8.6	-						-	
20.0	-							
0.0	_							-21.24 aBm
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50.0	Ward and a support	and the second second	- Contraction					
70.0								
Start 30 MH Res BW 10			#VBW 300) kHz		Swe		26.50 GHz s (1001 pts)
KR MODE THC	see me	× 2.412 GHz	-3.720 dBm	FUNCTION	FUNCTION WIDTH	FI	UNCTION VALUE	^
1 N 2 N 3 N 4 N 5 N 6 7 8 9 10	f f f	23.827 GHz 4.848 GHz 7.283 GHz 9.480 GHz	-46.070 dBm -55.947 dBm -55.823 dBm -56.907 dBm					
7 8 9 10								
¢								15
SG					STATUS			

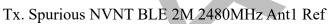
Tx. Spurious NVNT BLE 2M 2442MHz Ant1 Ref



Tx. Spurious NVNT BLE 2M 2442MHz Ant1 Emission



Agilent Spectr	um Analyzer - Si	wept SA			u tetu aurea			
Center Fi	req 13.265		SENSE:INT D: Fast ++ Trig: Free in:Low #Atten:	ee Run 30 dB	ALIGNAUTO Avg Type: Avg Hold: '	Log-Pwr 10/10	TRAC	May 24, 2022 E 1 2 3 4 5 6 E M M M M M T P N N N M M
10 dB/div	Ref Offset 2 Ref 20.00						Mkr1 2.4 -2.61	39 GHz 13 dBm
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70.0					1			
Start 30 M Res BW			#VBW 300 ki	Iz		Swe	Stop 20 ep 2.530 s (1	6.50 GHz 1001 pts)
KR MODE TR	f SCL	2.439 GHz	-2.613 dBm	FUNCTION	FUNCTION WIDTH	F	UNCTION VALUE	~
		23.324 GHz 5.033 GHz 7.309 GHz 9.639 GHz	-45.392 dBm -56.147 dBm -55.391 dBm -55.667 dBm					
2 N 3 4 N 5 6 7 8 9 10 11								
<					or truck			181
ASG					STATUS			





Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Emission

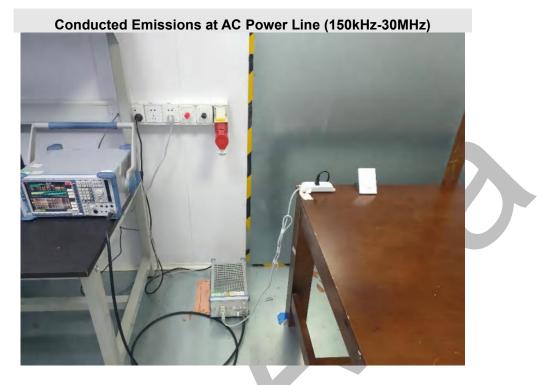


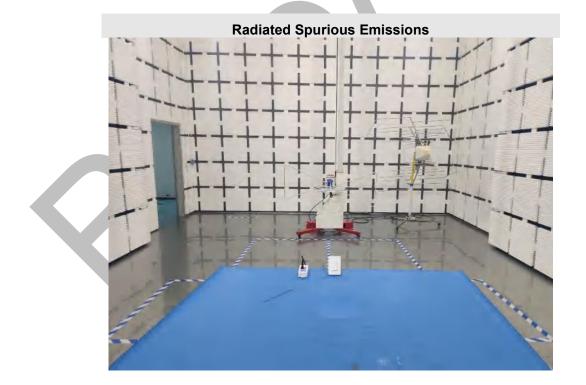
gilent Spectrum Analyzer - Swept SA R T RF 50 Q AC	SENSE(INT	ALIGNAUTO	11:59:32 AM May 24, 2022
enter Freq 13.265000000 GHz		Avg Type: Log-Pwr Avg Hold: 10/10	TRACE 1 3 4 5 6 TYPE M WWWWW DET P N N N N N
Ref Offset 2.08 dB dB/div Ref 20.00 dBm			Mkr1 2.492 GHz -3.894 dBm
00			
07			
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10 Anna Anna	2 Days	might warman with	and any and the
0.0 photostate and the state of			
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tart 30 MHz Res BW 100 kHz	#VBW 300 kHz	Swe	Stop 26.50 GHz ep 2.530 s (1001 pts)
KR MODE TRC SCL X 1 N f 2,492 G	Y FUNCTION	FUNCTION WIDTH	UNCTION VALUE
	Hz -45.375 dBm		
4 N f 7,336 G	Hz -55.597 dBm		
5 N f 10.089 G	Hz -56.762 dBm		
7 8			
2 N f 23,853 G 3 N f 5,006 G 4 N f 7,336 G 5 N f 10,089 G 6 7 8 9 0			
1			8
a		STATUŚ	

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APPENDIX A: PHOTOGRAPHS OF TEST SETUP







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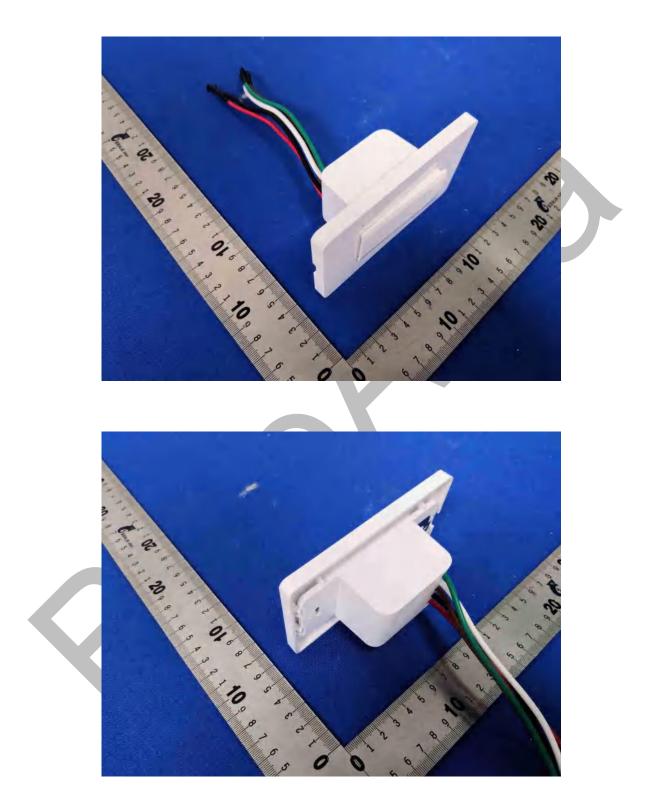
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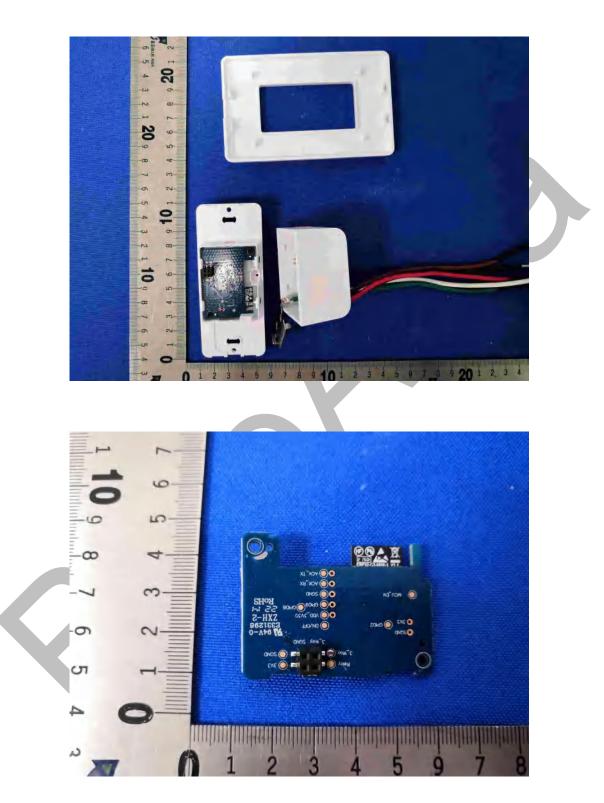
APPENDIX B: PHOTOGRAPHS OF EUT



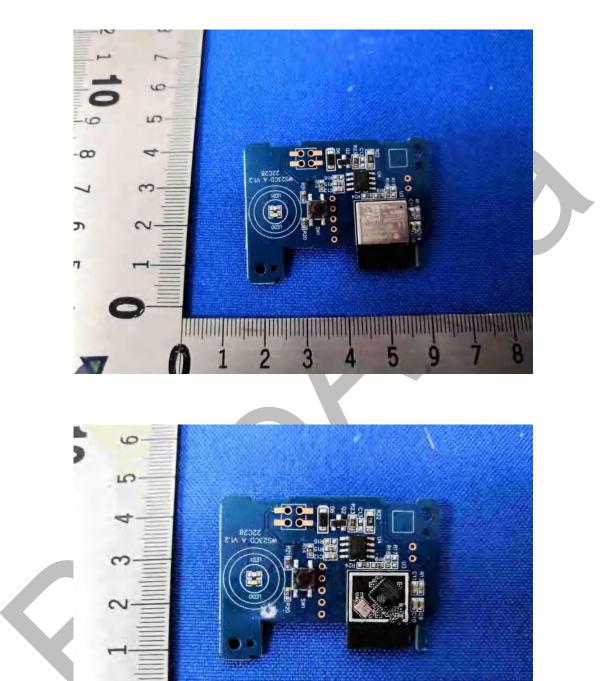
Report No.: BLA-EMC-202205-A2101 Page 74 of 78







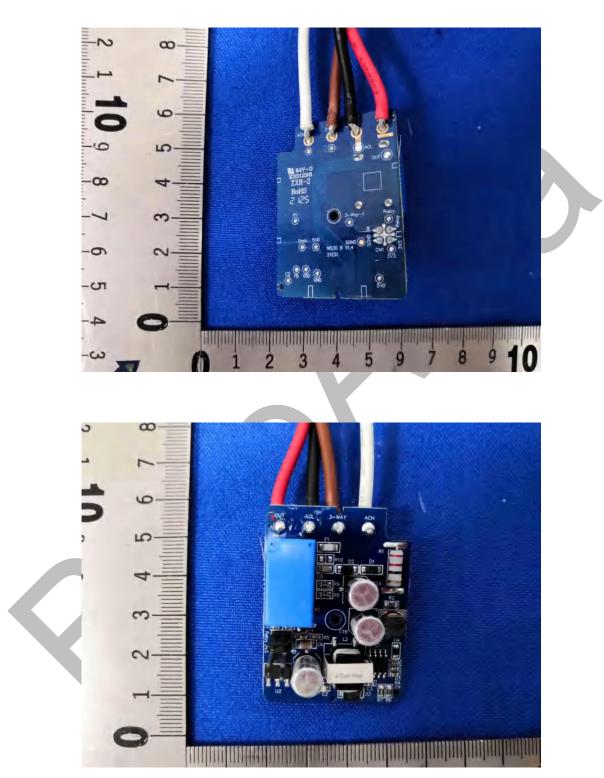




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----END OF REPORT----

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