TEST REPORT On behalf of

Savant Technologies LLC, dba GE Lighting, a Savant company

Product Name: Cync Fixture Canless

Model No.: CFIXCNLR4S1

FCC ID: PUU-CFIXCNLR4S1

Prepared For: Savant Technologies LLC, dba GE Lighting, a Savant company 1975 Noble Road, Cleveland, OH 44112

Prepared By: Audix Technology (Shanghai) Co., Ltd. 3F and 4F, 34Bldg, 680 Guiping Rd., Caohejing Hi-Tech Park, Shanghai 200233, China

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File No.:C1D2111088Report No.:ACI-F21276Date of Test:2021.11.29-12.10Date of Report:2021.12.28

The statement is based on a single evaluation of one sample of the above-mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

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TEST REPORT

Applicant	:	Savant Technologies LLC, dba GE Lighting, a Savant company		
EUT Description	:	Cync Fixture Canless		
		(A) Model No.	:	CFIXCNLR4S1
		(B) Power Supply	:	120V AC 60Hz
		(C) Test Voltage	:	120V/60Hz

Test Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART C AND ANSI C63.10-2013

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report also shows that the EUT (M/N: Refer to Sec2.1), which was tested is technically compliance with the FCC limits.

This report applies to above tested Sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

The test results for EUT's WIFI function are contained in No.ACI-F21277 report.

Date of Test :	2021.11.29-12.10	Date of Report :	2021.12.28	
Producer :	Manchy Wang MINDY WANG / Assistant			
Reviewer : BYRON WU/ Deputy Assistant Manager For and on behalf of Audix Technology (Shanghai) Co., Ltd.				
Signatory : Authorized Signature(s	BYRON KWO/Assistant General Manager	r		

1 SUMMARY OF STANDARDS AND RESULTS

1.1 Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Description / Test Item	Test Standard	Results	Meets Limit		
EMISSION					
	FCC RULES AND REGULATIONS PART 15				
Conducted Emission	SUBPART C	Pass	15.207		
	AND ANSI C63.10:2013				
	FCC RULES AND REGULATIONS PART 15		15.209(a)		
Radiated Emission	SUBPART C	Pass	15.205(a) 15.205(a)(c)		
	AND ANSI C63.10:2013		13.203(a)(c)		
6 dB Bandwidth	FCC RULES AND REGULATIONS PART 15				
Measurement	SUBPART C	Pass	15.247(a)(2)		
Ivieasurement	AND ANSI C63.10:2013				
Maximum Peak Output	FCC RULES AND REGULATIONS PART 15				
Power Measurement	SUBPART C	Pass	15.247(b)(3)		
I Ower Measurement	AND ANSI C63.10:2013				
Emission Limitations	FCC RULES AND REGULATIONS PART 15				
Measurement	SUBPART C	Pass	15.247(d)		
Weasurement	AND ANSI C63.10:2013				
Pand Edga	FCC RULES AND REGULATIONS PART 15				
Band Edge Measurement	SUBPART C	Pass	15.247(d)		
Wieasurement	AND ANSI C63.10:2013				
Dower Spectral Density	FCC RULES AND REGULATIONS PART 15				
Power Spectral Density Measurement	SUBPART C	Pass	15.247(e)		
Measurement	AND ANSI C63.10:2013				
N/A is an abbreviation for Not Applicable.					

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Description	:	Cync Fixture Canless		
Type of EUT	:	\square Production \square Pre-product \square Pro-type		
Model Number	:	CFIXCNLR4S1		
Radio Tech	:	BLE 4.2; IEEE 802.11 b/g/n.		
Note:	:	802.11n-HT40 not support.		
Channel Freq.	:	BLE: 2402MHz-2480MHz; 802.11b/g/n: 2412MHz-2462MHz.		
Modulation	:	BLE: GFSK; 802.11b: DSSS (CCK, DQPSK, DBPSK); 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK).		
Antenna Info.	:	Antenna Type: PCB Antenna Antenna Gain: 0.5 dBi The Antenna was a permanently attached antenna that is comply with 15.203 requirement.		
Test Mode	:	The EUT was set at continuous TX during all the test in the report.		
Applicant	:	Savant Technologies LLC, dba GE Lighting, a Savant company 1975 Noble Road, Cleveland, OH 44112		
Manufacturer	:	same as Applicant		
Factory	:	Foshan Electrical and Lighting Co., Ltd. Gaoming Branch Hecheng Street, Cangjiang Industrial Park, Gaoming District Foshan Guangdong 528000 CHINA		

2.2 EUT Specifications Assessed in Current Report

Mode	Modulation	Data Rate(Mbps)
BLE	GFSK	1

	Channel List				
Channel No. Frequency (MH		Channel No.	Frequency (MHz)		
00	2402	20	2442		
01	2404	21	2444		
02	2406	22	2446		
		•••			
		•••			
		•••			
17	2436	37	2476		
18	2438	38	2478		
19	2440	39	2480		

2.3 Test Information

The test software "RTLBTAPP.exe" was used to control EUT work in TX mode, Power Setting and select test channel.

Modulation	data rate (Mbps)	Power Setting	Test C	hannel	Frequency (MHz)
		Default	Low:	00	2402
BLE	1	Default	Middle:	20	2442
		Default	High:	39	2480

2.4 Sample Description

Test Item	Model Number	Sample Number	Date of receipted
Conducted Emission	CFIXCNLR4S1	E21111799-01/01	2021.11.23
Radiated Emission	CFIXCNLR4S1	E21111796a-01/01	2021.11.23
Conducted RF Test	CFIXCNLR4S1	E21111798a-01/01	2021.11.23

2.5 Supported equipment

Brand	:	Acer
Product Name:	:	Notebook PC
Model Name	:	TravelMate P238 series
Model Number	:	N15W8

2.6 Description of Test Facility

Name of Firm	: Audix Technology (Shanghai) Co., Ltd.
Site Location	: 3F and 4F, 34Bldg, 680 Guiping Rd., Caohejing Hi-Tech Park, Shanghai 200233, China.
Accredited by NVLAP, Lab Code	: 200371-0
FCC Designation Number	: CN5027
Test Firm Registration Number	: 954668

3 CONDUCTED EMISSION TEST

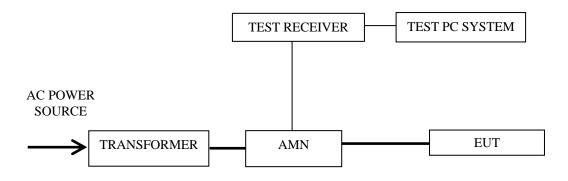
3.1 Test Equipment

The following test equipments are used during the conducted emission test in a shielded room:

Item	Туре	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Test Receiver	R&S	ESCI	101302	2021.04.26	1 Year
2.	Artificial Mains Network (AMN)	R&S	ENV4200	100125	2021.06.24	1 Year
3.	Software	Audix	e3	6.2009-1-15		

3.2 Block Diagram of Test Setup

3.2.1 Conducted Disturbance Test Setup



— : Signal Line

— : Power Line

Frequency Range	Limits $dB(\mu V)$			
(MHz)	Quasi-peak	Average		
0.15 ~ 0.5	66~56	56~46		
0.5 ~ 5	56	46		
5 ~ 30	60	50		
NOTE 2 – The limit of	limit shall apply at the transit lecreases linearly with the log 0.15 MHz~0.50 MHz	1		

3.3 Conducted Emission Limits (§15.207)

3.4 Test Configuration

The EUT (listed in Sec.2.1) was installed as shown on Sec.3.2 to meet FCC requirement and operating in a manner which tends to maximize its emission level in a normal application.

3.5 Operating Condition of EUT

- 3.5.1 Setup the EUT as shown in Sec. 3.2.
- 3.5.2 Turn on the power of all equipment.
- 3.5.3 Turn the EUT on the test mode, and then test.

3.6 Test Procedures

The EUT was placed upon a non-metallic table, which is 0.8 m above the horizontal conducting ground plane and 0.4 m from a vertical reference plane. The EUT was connected to the power mains through an Artificial Mains Network (AMN) to provide a 50 Ω coupling impedance for the measuring equipment. Both sides of AC line (Line & Neutral) were checked to find out the maximum conducted emission according to FCC Part 15 Subpart C and ANSI C63.10: 2013 requirements during conducted disturbance test.

The I.F. bandwidth of Test Receiver ESCI was set at 9 kHz.

The frequency range from 150 kHz to 30 MHz was checked.

Test with a dummy load in lieu of the antenna to determine compliance with Section 15.207 limits within the transmitter's fundamental emission band. (According to KDB 174176 D01 Line Conducted FAQ)

The test modes were done on conducted disturbance test and all the test results are listed in Sec. 3.7

3.7 Test Results

< PASS >

The frequency and amplitude of the highest conducted emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

Worst case emission:

No.	Operation	Modulation	Channel	Frequency (MHz)	Data Page
1.	Transmitting				P12

NOTE 1 – Level = Read Level + AMN Factor + Cable Loss

NOTE 2 – "QP" means "Quasi-Peak" values

NOTE 3 – The emission levels which not reported are too low against the official limit.

Worst case emission

EUT	:	Cync Fixture Canless	Temperature :	22°C
Model No.	:	CFIXCNLR4S1	Humidity :	51%RH
Test Mode	:	Transmitting	Date of Test :	2021.12.10

Polarization	Frequency (MHz)	Meter Reading dB (µV)	AMN Factor (dB)	Cable Loss (dB)	Emission Level dB (µV)	Limits dB (µV)	Margin (dB)	Remark
	0.3067	45.83	0.2	0.03	46.06	60.06	14	QP
	0.3067	32.38	0.2	0.03	32.61	50.06	17.45	Average
	0.3465	51.88	0.2	0.03	52.11	59.05	6.94	QP
	0.3465	37.19	0.2	0.03	37.42	49.05	11.63	Average
	0.3596	51.88	0.2	0.03	52.11	58.74	6.63	QP
Line	0.3596	38.1	0.2	0.03	38.33	48.74	10.41	Average
Line	0.7752	46.54	0.2	0.05	46.79	56	9.21	QP
	0.7752	30.35	0.2	0.05	30.6	46	15.4	Average
	1.01	47.13	0.2	0.06	47.39	56	8.61	QP
	1.01	28.41	0.2	0.06	28.67	46	17.33	Average
	1.129	46.9	0.2	0.07	47.17	56	8.83	QP
	1.129	27.3	0.2	0.07	27.57	46	18.43	Average
	0.3133	46.42	0.2	0.03	46.65	59.88	13.23	QP
	0.3133	32.44	0.2	0.03	32.67	49.88	17.21	Average
	0.3483	52.29	0.2	0.03	52.52	59	6.48	QP
	0.3483	35.6	0.2	0.03	35.83	49	13.17	Average
	0.3596	51.9	0.2	0.03	52.13	58.74	6.61	QP
Neutral	0.3596	38.1	0.2	0.03	38.33	48.74	10.41	Average
Ineutiai	0.7793	47.57	0.2	0.05	47.82	56	8.18	QP
	0.7793	31.53	0.2	0.05	31.78	46	14.22	Average
	0.8803	47.66	0.2	0.06	47.92	56	8.08	QP
	0.8803	31.36	0.2	0.06	31.62	46	14.38	Average
	1.172	45.61	0.2	0.07	45.88	56	10.12	QP
	1.172	29.46	0.2	0.07	29.73	46	16.27	Average

TEST ENGINEER: Jarey

4 RADIATED EMISSION TEST

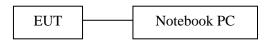
4.1 Test Equipment

The following test equipment are used during the radiated emission test in a semi-anechoic chamber:

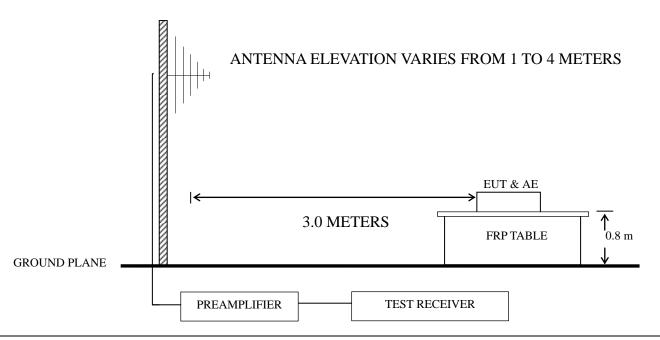
Item	Туре	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Preamplifier	Agilent	8447D	2944A10548	2021.03.08	1 Year
2.	Preamplifier	HP	8449B	3008A00864	2021.03.08	1 Year
3.	Spectrum Analyzer	Agilent	N9010A	MY52221182	2021.09.16	1 Year
4.	Test Receiver	R&S	ESCI	101303	2021.03.08	1 Year
5.	Bilog Antenna+6dB Attenuator	Schwarz beck	VULB 9168+EMCI- N-6-06	707+AT-N0637	2021.03.30	1 Year
6.	Horn Antenna	EMCO	3115	9607-4878	2021.07.27	1 Year
7.	Horn Antenna	EMCO	3116	00062643	2021.10.10	1 Year
8.	Cavity Band Rejection Filter	Microwave	WT-A3882-R 10	WT200312-1-1	2021.09.15	1 Year
9.	Software	Audix	e3	SET00200 9912M295-2		

4.2 Block Diagram of Test Setup

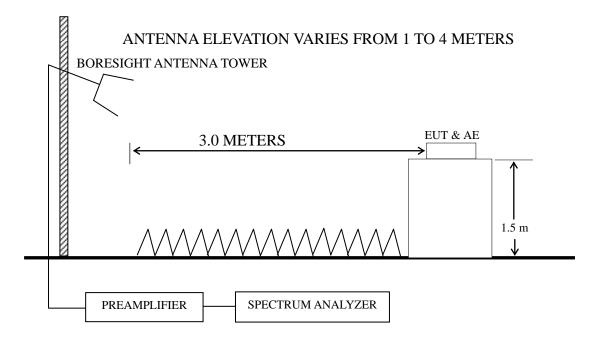
4.2.1 EUT & Peripherals



4.2.2 Below 1GHz



4.2.3 Above 1GHz



4.3 Radiated Emission Limit (§15.209)

Frequency	Distance	Field strength limits ($\mu V/m$)		
(MHz)	(m)	(µV/m)	dB(µV/m)	
30 ~ 88	3	100	40.0	
88 ~ 216	3	150	43.5	
216 ~ 960	3	200	46.0	
Above 960	3	500	54.0	
NOTE 2 - The NOTE 3 - Dis ins sys NOTE 4 - The equ NOTE 5 - Ab	e tighter limit appli stance refers to the trument antenna an tem. e limits shown are l al to 1GHz and Av ove 1 GHz, the lim	V/m) = 20 log Emission T es at the band edges. distance in meters betwee d the closed point of any based on Quasi-peak value verage value detector abo- it on peak emission is 20 assion limit applicable to	en the measuring part of the device or le detector below or ve 1GHz. dB above the maximum	

4.4 Test Configuration

The EUT (listed in Sec.2.1) and the simulators (listed in Sec.2.2) were installed as shown on Sec.4.2 to meet FCC requirements and operating in a manner that tends to maximize its emission level in a normal application.

4.5 Operating Condition of EUT

- 4.5.1 Setup the EUT as shown in Sec. 4.2.
- 4.5.2 Turn on the power of all equipment.
- 4.5.3 Turn the EUT on the test mode, and then test.
- 4.6 Test Procedures

Radiated emission test applies to harmonics/spurs that fall in the restricted bands listed in Section 15.205. The maximum permitted average field strength is listed in Section 15.209. A pre-amp is necessary for this measurement. For measurement above 1 GHz, set RBW = 1MHz, VBW = 10 Hz, Sweep: Auto. If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correction factor, derived from the appropriate duty cycle calculation.

The EUT was placed on a turntable. Below 1 GHz, the table height is 80 cm above the reference ground plane. Above 1 GHz, the table height is 1.5 m. The turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (Calibrated Bilog Antenna) or Horn antenna was used as receiving antenna. Both horizontal and vertical polarizations of the antenna were set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to ANSI C63.10: 2013 requirements during radiated emission test.

The bandwidth of Test Receiver R&S ESCI was set at 120 kHz from 30MHz to 1000MHz.

The bandwidth of Agilent N9010A was set at 1MHz for above 1GHz.

The frequency range from 30 MHz to 25 GHz (Up to 10th harmonics from fundamental frequency) was checked.

All the test results are listed in Sec.4.7.

4.7 Test Results

<PASS>

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

_								
1	No.	Operation	Modulation	Channel	Frequency	Data Page		
	1.			00	2402 MHz	P17		
	2.	Transmitting	BLE	20	2442 MHz	P17		
	3.			39	2480 MHz	P18		

Frequency range: below 1GHz (Worst case emission)

Frequency range: above 1GHz

No.	Operation	Modulation	Channel	Frequency	Data Page
1.			00	2402 MHz	P19
2.	Transmitting	BLE	20	2442 MHz	P19
3.			39	2480 MHz	P20

Restricted bands:

]	No.	Operation	Modulation	Channel	Frequency	Data Page
	1.	Transmitting	BIE	00	2402 MHz	P21
	2.	Transmitting	DLE	39	2480 MHz	P21

NOTE 1 - Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor

NOTE 2 - "QP" means "Quasi-Peak" values

- NOTE $3 0^{\circ}$ was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.
- NOTE 4 The emission levels which not reported are too low against the official limit.
- NOTE 5 The emission levels recorded below is data of EUT configured in Standing direction, for Standing direction was the maximum emission direction during the test. The data of Side & Lying direction are too low against the official limit to be reported.
- NOTE 6 All reading are Quasi-Peak values below or equal to 1GHz, Peak and Average values above 1GHz. For above 1GHz test, if the peak measured value complies with the
- average limit, it is unnecessary to perform an average measurement. NOTE 7 The frequency range 2310-2390MHz & 2483.5-2500MHz were

tested for Restricted bands.

Worst case emission < 1GHz

EUT	: _	Cync Fixture Canless	Temperature :	22°C
Model No.	: _	CFIXCNLR4S1	Humidity :	51%RH
Test Mode	: _	Transmitting	Date of Test :	2021.11.30

BLE CH2402MHz

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)	Remark
	54.261	24.29	19.62	0.79	28.18	16.52	40	23.48	QP
	119.86	27.9	16.6	1.19	27.9	17.79	43.5	25.71	QP
Horizontal	144.34	29.12	18.85	1.29	27.82	21.44	43.5	22.06	QP
Horizontai	263.82	27.43	17.84	1.74	27.1	19.91	46	26.09	QP
	444.85	26	22.6	2.28	27.78	23.1	46	22.9	QP
	796.18	24.43	27.9	3.06	26.94	28.45	46	17.55	QP
	52.391	23.39	19.5	0.78	28.19	15.48	40	24.52	QP
	127.22	22.61	17.4	1.22	27.87	13.36	43.5	30.14	QP
Vertical	159.78	23.91	19	1.35	27.73	16.53	43.5	26.97	QP
vertical	315.48	23.09	19.5	1.94	27.11	17.42	46	28.58	QP
	468.88	25.37	22.63	2.37	27.84	22.53	46	23.47	QP
	787.85	24.71	27.9	3.02	26.99	28.64	46	17.36	QP

BLE CH2442MHz

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)	Remark
	58.613	23.71	19.4	0.82	28.17	15.76	40	24.24	QP
	119.86	27.75	16.6	1.19	27.9	17.64	43.5	25.86	QP
Horizontal	169.01	28.21	18.7	1.39	27.66	20.64	43.5	22.86	QP
Horizontai	263.82	28.58	17.84	1.74	27.1	21.06	46	24.94	QP
	432.55	26.48	22.1	2.24	27.73	23.09	46	22.91	QP
	785.09	23.17	27.9	3.02	26.99	27.1	46	18.9	QP
	53.693	23.72	19.57	0.78	28.18	15.89	40	24.11	QP
	99.878	25.49	15	1.1	28	13.59	43.5	29.91	QP
Vertical	159.78	23.29	19	1.35	27.73	15.91	43.5	27.59	QP
vertical	263.82	25.16	17.84	1.74	27.1	17.64	46	28.36	QP
	462.35	25.27	22.77	2.34	27.83	22.55	46	23.45	QP
	900.15	23.58	28.4	3.35	26.3	29.03	46	16.97	QP

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)	Remark
	56.593	23.22	19.44	0.81	28.17	15.3	40	24.7	QP
	119.86	26.53	16.6	1.19	27.9	16.42	43.5	27.08	QP
Horizontal	169.01	25.29	18.7	1.39	27.66	17.72	43.5	25.78	QP
Horizontal	248.55	27.79	17.47	1.68	27.16	19.78	46	26.22	QP
	428.02	25.97	21.97	2.23	27.72	22.45	46	23.55	QP
	796.18	24.42	27.9	3.06	26.94	28.44	46	17.56	QP
	60.069	24.58	19.2	0.84	28.16	16.46	40	23.54	QP
	99.878	24.98	15	1.1	28	13.08	43.5	30.42	QP
Vertical	159.78	23.38	19	1.35	27.73	16	43.5	27.5	QP
vertical	263.82	22.86	17.84	1.74	27.1	15.34	46	30.66	QP
	444.85	26.43	22.6	2.28	27.78	23.53	46	22.47	QP
	798.98	23.58	27.8	3.06	26.9	27.54	46	18.46	QP

BLE CH2480MHz

TEST ENGINEER: Jarey

Radiated Emission > 1GHz

EUT	:	Cync Fixture Canless	Temperature :	22°C
Model No.	: _	CFIXCNLR4S1	Humidity : _	51%RH
Test Mode	:	Transmitting	Date of Test :	2021.11.30

BLE CH2402MHz

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)	Remark
	3472	41.96	31.25	6.36	35.15	44.42	74	29.58	Peak
	4804	43.47	33.21	7.55	34.75	49.48	74	24.52	Peak
Horizontal	4804	38.43	33.21	7.55	34.75	44.44	54	9.56	Average
Horizontai	7216	36.76	36.15	9.47	34.8	47.58	74	26.42	Peak
	9868	36.65	38.37	11.33	34.61	51.74	74	22.26	Peak
	12220	34.93	38.83	12.45	34.13	52.08	74	21.92	Peak
	2836	43.31	29.62	5.78	35.44	43.27	74	30.73	Peak
	4960	39.32	33.83	7.67	34.71	46.11	74	27.89	Peak
Vertical	6952	38.05	35.5	9.18	34.8	47.93	74	26.07	Peak
vertical	8836	37.29	38.32	10.64	34.71	51.54	74	22.46	Peak
	10600	37.44	38.39	11.55	34.48	52.9	74	21.1	Peak
	11416	36.52	38.8	11.99	34.32	52.99	74	21.01	Peak

BLE CH2442MHz

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)	Remark
	3244	41.07	30.71	6.14	35.22	42.7	74	31.3	Peak
	4884	42.69	33.55	7.61	34.73	49.12	74	24.88	Peak
Horizontal	4884	35.62	33.55	7.61	34.73	42.05	54	11.95	Average
Horizontai	7192	36.74	36.1	9.47	34.8	47.51	74	26.49	Peak
	9064	35.72	38.22	10.79	34.69	50.04	74	23.96	Peak
	12544	34.94	38.65	12.68	34.03	52.24	74	21.76	Peak
	3292	41.71	30.82	6.18	35.2	43.51	74	30.49	Peak
	5344	38.47	34.07	7.94	34.7	45.78	74	28.22	Peak
Vartical	7408	36.14	36.6	9.69	34.8	47.63	74	26.37	Peak
Vertical	9268	35.58	38.25	10.88	34.67	50.04	74	23.96	Peak
	10564	35.56	38.36	11.51	34.49	50.94	74	23.06	Peak
	12016	34.78	39	12.33	34.19	51.92	74	22.08	Peak

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)	Remark
	3496	41.49	31.3	6.36	35.14	44.01	74	29.99	Peak
	4960	40.06	33.83	7.67	34.71	46.85	74	27.15	Peak
Horizontal	4960	32.1	33.83	7.67	34.71	38.89	54	15.11	Average
Horizontai	7276	36.25	36.3	9.58	34.8	47.33	74	26.67	Peak
	9484	36.04	38.29	11.06	34.65	50.74	74	23.26	Peak
	11620	34.9	38.85	12.1	34.28	51.57	74	22.43	Peak
	3244	41.9	30.71	6.14	35.22	43.53	74	30.47	Peak
	5104	38.39	34.02	7.78	34.7	45.49	74	28.51	Peak
Vertical	7408	36.4	36.6	9.69	34.8	47.89	74	26.11	Peak
vertical	9040	36.4	38.21	10.79	34.69	50.71	74	23.29	Peak
	10792	35.16	38.58	11.6	34.44	50.9	74	23.1	Peak
	12004	35.72	39	12.33	34.2	52.85	74	21.15	Peak

BLE CH2480MHz

TEST ENGINEER: Jarey

Emissions in restricted frequency bands:

EUT	:	Cync Fixture Canless	Temperature :	22°C
Model No.	:	CFIXCNLR4S1	Humidity :	51%RH
Test Mode	:	Transmitting	Date of Test :	2021.11.30

BLE CH2402MHz

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)	Remark
	2330.5	48.83	28.06	5.29	35.93	46.25	74	27.75	Peak
	2330.5	37.29	28.06	5.29	35.93	34.71	54	19.29	Average
Horizontal	2358.4	48.88	28.14	5.32	35.89	46.45	74	27.55	Peak
Horizontai	2358.4	36.59	28.14	5.32	35.89	34.16	54	19.84	Average
	2389.5	54.29	28.21	5.36	35.86	52	74	22	Peak
	2389.5	37.73	28.21	5.36	35.86	35.44	54	18.56	Average
	2335.6	49.18	28.06	5.29	35.92	46.61	74	27.39	Peak
	2335.6	37.32	28.06	5.29	35.92	34.75	54	19.25	Average
Vertical	2361.8	48.94	28.14	5.32	35.89	46.51	74	27.49	Peak
vertical	2361.8	36.79	28.14	5.32	35.89	34.36	54	19.64	Average
	2390	55.64	28.21	5.36	35.86	53.35	74	20.65	Peak
	2390	38.36	28.21	5.36	35.86	36.07	54	17.93	Average

BLE CH2480MHz

Polarization	Frequency (MHz)	Meter Reading dB (µV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Emission Level dB (µV/m)	Limits dB (µV/m)	Margin (dB)	Remark
	2483.6	55.76	28.46	5.43	35.76	53.89	74	20.11	Peak
	2483.6	41.48	28.46	5.43	35.76	39.61	54	14.39	Average
Horizontal	2490.3	51.43	28.48	5.47	35.76	49.62	74	24.38	Peak
Horizoillai	2490.3	37.64	28.48	5.47	35.76	35.83	54	18.17	Average
	2496.4	49.21	28.5	5.47	35.76	47.42	74	26.58	Peak
	2496.4	37.92	28.5	5.47	35.76	36.13	54	17.87	Average
	2483.8	50.29	28.46	5.43	35.76	48.42	74	25.58	Peak
	2483.8	37.53	28.46	5.43	35.76	35.66	54	18.34	Average
Vertical	2489.4	50.14	28.48	5.47	35.76	48.33	74	25.67	Peak
ventical	2489.4	37.31	28.48	5.47	35.76	35.5	54	18.5	Average
	2494.7	49.52	28.48	5.47	35.76	47.71	74	26.29	Peak
	2494.7	36.25	28.48	5.47	35.76	34.44	54	19.56	Average

TEST ENGINEER: Jarey

5 6 dB BANDWIDTH MEASUREMENT

5.1 Test Equipment

The following test equipment was used during the Emission Bandwidth measurement:

I	tem	Туре	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
	1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	2021.09.15	1 Year
	2.	Coaxial Cable	WOKEN	SFL402-105F LEX	F02-150819-0 45	2021.03.08	1 Year
	3.	10 dB Attenuator	Mini-Circuits	VAT-10W2+	001	2021.08.06	1 Year

5.2 Block Diagram of Test Setup

Spectrum Analyzer	EUT	Notebook PC
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5.3 Specification Limits (§15.247(a)(2))

The minimum 6 dB bandwidth shall be at least 500 kHz.

5.4 Operating Condition of EUT

The switch ON/OFF was used to enable the EUT to change the channel one by one.

5.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. The bandwidth of the fundamental frequency was measure by spectrum analyzer with settings: RBW = 100kHz, $VBW \ge 3 \times RBW$.

The 6 dB bandwidth is defined as the total spectrum the power of which is lower than peak power minus 6 dB .

The test procedure is defined in ANSI C63.10-2013 (the 11.8.2 Measurement Procedure "Option 2" was used).

5.6 Test Results **PASSED.**

All the test results are attached in next pages.

(Test Date: 2021.11.29 Temperature: 23°C Humidity: 51 %)

Modulation	Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit
	00	2402	659.2	500 kHz
BLE	20	2442	662.9	500 kHz
	39	2480	658.8	500 kHz

BLE CH2402MHz



BLE CH2442MHz

J Agilent Spectrum Analyzer - Occupied BW	1				
Center Freq 2.44200000		SENSE:INT enter Freq: 2.442000000 G	Hz Radio S	08 PM Nov 29, 2021 Std: None	Frequency
		rig: Free Run Avg Atten: 20 dB	Hold:>10/10 Radio I	evice: BTS	
 Ref Offset 11 dE					
10 dB/div Ref 20.00 dB					
Log					Center Freq
0.00					2.442000000 GHz
-10.0					
-20.0					
-30.0					
-40.0					
-50.0					
-60.0					
-70.0					CF Step
Center 2.442 GHz				Span 2 MHz	200.000 kHz <u>Auto</u> Man
#Res BW 100 kHz		#VBW 300 kHz	\$	weep 1 ms	
Occupied Bandwid	th	Total Power	12.3 dBm		Freq Offset
	.0454 MHz				0 Hz
			00.00.00		
Transmit Freq Error	-162 Hz				
x dB Bandwidth	662.9 kHz	x dB	-6.00 dB		
MSG			STATUS		

BLE CH2480MHz

🇾 Agilent Spectrum	Analyzer - Occupied BW					_ 0 ×
Center Fred	RF 50 Ω DC q 2.480000000 Ref Offset 11 dB	Trig: I	sense:INT r Freq: 2.480000000 GHz Free Run Avg Hc n: 20 dB	ALIGN AUTO	03:10:52 PM Nov 29, 2021 Radio Std: None Radio Device: BTS	Frequency
10 dB/div Log	Ref 20.00 dBm					
10.0 0.00						Center Freq 2.480000000 GHz
-10.0						
-30.0						
-50.0						
-70.0 Center 2.48	GHz				Span 2 MHz	CF Step 200.000 kHz Auto Man
#Res BW 10		#	VBW 300 kHz		Sweep 1 ms	
Occupie	ed Bandwidth	ո 0402 MHz	Total Power	12.4	dBm	Freq Offset 0 Hz
	t Freq Error	35 Hz	OBW Power		.00 %	
x dB Ban	ndwidth	658.8 kHz	x dB	-6.	00 dB	
MSG				STATUS	3	

6 MAXIMUM PEAK OUTPUT POWER MEASUREMENT

6.1 Test Equipment

The following test equipment was used during the maximum peak output power measurement:

	Item	Туре	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
	1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	2021.09.15	1 Year
ſ	2.	Coaxial Cable	WOKEN	SFL402-105F LEX	F02-150819-0 45	2021.03.08	1 Year
	3.	10 dB Attenuator	Mini-Circuits	VAT-10W2+	001	2021.08.06	1 Year

6.2 Block Diagram of Test Setup

The Same as Section. 5.2.

6.3 Specification Limits ((§15.247(b)(3))

The Limits of maximum Peak Output Power for digital modulation in 2400-2483.5 MHz is: 1 Watt. (30 dBm)

6.4 Operating Condition of EUT

The switch ON/OFF was used to enable the EUT to change the channel one by one.

6.5 Test Procedure

The transmitter output was connected to the spectrum analyzer.

The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement:

- a) RBW \geq DTS Bandwidth.
- b) VBW $\geq [3 \times RBW]$.
- c) Span $\geq [3 \times RBW]$.
- d) Sweep time = auto.
- e) Detector = peak.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use peak marker function to determine the peak amplitude level.

The test procedure is defined in ANSI C63.10-2013 (11.9.1.1 Measurement Procedure " RBW \geq DTS bandwidth" was used).

6.6 Test Results **PASSED.**

All the test results are listed below.

(Test Date: 2021.11.29 Temperature: 23°C Humidity: 51 %)

Modulation	Channel	Frequency (MHz)	Peak Output Power (dBm)	Limit
	00	2402	6.256	30 dBm
BLE	20	2442	5.952	30 dBm
	39	2480	5.883	30 dBm

BLE CH2402MHz

🏬 Agilent Spec	trum Analyzer - Occupied BW					
<mark>w</mark> Marker 1	RF 50 Ω DC 2.401992000000) GHz PNO: Fast ⊊ IFGain:Low	SENSE:INT Trig: Free Run Atten: 20 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	03:08:29 PM Nov 29, 2021 TRACE 1 2 3 4 5 6 TYPE MWWWW DET PNNNN	Peak Search
10 dB/div Log	Ref Offset 11 dB Ref 20.00 dBm			Mkr1	2.401 992 GHz 6.256 dBm	Next Peak
10.0			1			Next Pk Right
-10.0						Next Pk Left
-20.0						Marker Delta
-40.0						Mkr→CF
-60.0						Mkr→RefLvl
Center 2.4	402000 GHz 1.0 MHz	#VBM	7 3.0 MHz	Sweep	Span 2.000 MHz 1.00 ms (1001 pts)	More 1 of 2
MSG				STATUS		

BLE CH2442MHz

Marker 1 2.441974000000 GHz Trig: Free Run IFGain:Low Avg Type: Log-Pwr Avg Hold:>100/100 TRACE TYPE H Det Ref Offset 11 dB Log Mkr1 2.441 974 5.952 10 dB/div Ref 20.00 dBm -000							trum Analyzer - Occupied BW	🌉 Agilent Spec
No dB/div Ref 20.00 dBm 5.952 100 1 1 100 1	Peak Search	03:09:51 PM Nov 29, 2021 TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P N N N N N	Avg Type: Log-	ree Run	Trig: Fre	00 GHz PNO: Fast	RF 50 Ω DC 2.441974000000	<mark>w</mark> Marker 1
	Hz NextPeak Bm	2.441 974 GHz 5.952 dBm	Μ				Ref Offset 11 dB Ref 20.00 dBm	
-10.0 -20.0 -30.0 -40.0 -60.0	Next Pk Right			♦ 1				
-30.0	Next Pk Lef							
-50.0	Marker Delta							
	Mkr→Ci							
-000	Mkr→RefLv							-50.0
-70.0 Center 2,442000 GHz Span 2.000	More 1 of 2	Span 2.000 MHz					442000 GH7	
#Res BW 1.0 MHz #VBW 3.0 MHz Sweep 1.00 ms (100	ots)	1.00 ms (1001 pts)		lz	3W 3.0 MH	#VB		#Res BW

BLE CH2480MHz

📜 Agilent Spect	trum Analyzer - Occupied BW						
<mark>,x</mark> Marker 1	RF 50 Ω DC 2.48016200000) GHz PNO: Fast G	Trig: Free Run Atten: 20 dB	Avg	ALIGN AUTO g Type: Log-Pwr Hold:>100/100	03:11:19 PM Nov 29, 20 TRACE 1 2 3 4 TYPE WWWW DET P N N N	Peak Search
10 dB/div Log	Ref Offset 11 dB Ref 20.00 dBm				Mkr1	2.480 162 GH 5.883 dB	lz NextPeak m
10.0				1			Next Pk Right
-10.0							Next Pk Lef
-20.0							Marker Delta
-40.0							Mkr→C
-50.0							Mkr→RefLv
-70.0	180000 GHz					Span 2.000 MI	Mor 1 of:
#Res BW		#VBW	/ 3.0 MHz		Sweep	1.00 ms (1001 pt	s)
MSG					STATUS		

7 EMISSION LIMITATIONS MEASUREMENT

7.1 Test Equipment

The following test equipment was used during the emission limitations test:

Item	Туре	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	2021.09.15	1 Year
2.	Coaxial Cable	WOKEN	SFL402-105F LEX	F02-150819-0 45	2021.03.08	1 Year
3.	10 dB Attenuator	Mini-Circuits	VAT-10W2+	001	2021.08.06	1 Year

7.2 Block Diagram of Test Setup

The Same as Section. 5.2.

7.3 Specification Limits (§15.247(d))

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)). (%This test result attaching to Section. 3.7)

7.4 Operating Condition of EUT

The switch ON/OFF was used to enable the EUT to change the channel one by one.

7.5 Test Procedure

The transmitter output was connected to the spectrum analyzer.

Establish a reference level by using the following procedure:

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set the span to ≥ 1.5 times the DTS bandwidth.
- c) Set the RBW = 100 kHz.
- d) Set the VBW \geq [3 × RBW].
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum PSD level.
- Note that the channel found to contain the maximum PSD level can be used to

establish the reference level.

Establish an emission level by using the following procedure:

a) Set the center frequency and span to encompass frequency range to be measured.

b) Set the RBW = 100 kHz.

c) Set the VBW \geq [3 × RBW].

d) Detector = peak.

e) Sweep time = auto couple.

f) Trace mode = max hold.

g) Allow trace to fully stabilize.

h) Use the peak marker function to determine the maximum amplitude level.

Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

Scan up through 10th harmonic.

The test procedure is defined in ANSI C63.10-2013 (11.11.2 Reference level measurement and 11.11.3 Emission level measurement was used).

7.6 Test Results **PASSED**.

The test data was attached in the next pages.

(Test Date: 2021.11.29 Temperature: 23°C Humidity: 51 %)

Modulation	Channel	Frequency (MHz)	Data Page
	00	2402	P33-34
BLE	20	2442	P35-36
	39	2480	P37-38

BLE CH2402MHz

Reference level



Emission level



🎩 Agilent Spe	ectrum Analyzer - Occupied BW							
<mark>.x:</mark> Marker ′	RF 50 Ω DC 1 9.792396198099	GHz	SENSE:INT	Avg Type: L		TRAC	Nov 29, 2021	Peak Search
10 dB/div Log	Ref Offset 11 dB Ref 20.00 dBm	PNO: Fast Firg: F IFGain:Low Atten:		Avg Hold:>1		₀ 0.7/1/1	T P NNNNN	Next Peak
10.0								Next Pk Right
-10.0							-13.69 dBm	Next Pk Left
-20.0								Marker Delta
-40.0			1					Mkr→CF
	ath Law Marine Street and Street and a street a	allander ^{here} nstellt bernet der en der er er en er	algendeliger and and	wganithing,gandid	ي ^{يريريز} الأفرار و ^{يررير} الم	hinsish h ^{aquee} r	eren and an and an	Mkr→RefLvl
-70.0 Start 5.0	00 GHz					Stop 15.	000 GHz	More 1 of 2
	/ 100 kHz	#VBW 300 kH	z		Sweep	956 ms (:	2000 pts)	
MSG					STATUS			

🌉 Agilent Spec	trum Analyzer - Occupied BW						
<mark>.x</mark> Marker 1	RF 50 Ω DC 23.69434717358	PNO: Fast 😱	SENSE:INT Trig: Free Run Atten: 20 dB	Avg Ty Avg Ho	ALIGN AUTO pe: Log-Pwr ld:>100/100	04:12:47 PM Nov 29, 2021 TRACE 1 2 3 4 5 6 TYPE MWWWW DET P N N N N N	Peak Search
10 dB/div	Ref Offset 11 dB Ref 20.00 dBm	IFGain:Low	Atten: 20 dB		М	kr1 23.694 GHz -50.317 dBm	Next Peak
10.0							Next Pk Right
-10.00						-13.69 dBm	Next Pk Left
-20.0							Marker Delta
-40.0							Mkr→CF
-50.0	hebriss ^{the} mblisser <mark>heinen des syn h</mark> illisensis	المالعانية المراجع والمراجع والمراجع	industantantantinin tanih sinan terakan	hingniga, aftaka sekilim yaar ayoo ya	and a state of the second state	and and a ferrita an an alter a shill be in provide	Mkr→RefLvl
-70.0 Start 15.0						Stop 25.000 GHz	More 1 of 2
#Res BW		#VBW	300 kHz		Sweep	956 ms (2000 pts)	

BLE CH2442MHz

Reference level



Emission level



🌉 Agilent Spect	trum Analyzer - Occupie					
<mark>IXI</mark> Marker 1	RF 50 Ω 14.32466233		SENSE:INT	ALIGN A Avg Type: Log-		Peak Search
Marker	14.32400233	PNO: Fast IFGain:Low	Trig: Free Run Atten: 20 dB	Avg Hold:>100/1		
10 dB/div	Ref Offset 11 di Ref 20.00 dB	B M			Mkr1 14.325 GHz -53.987 dBm	Next Peak
						Next Pk Right
10.0						J
0.00						Next Pk Left
-10.0					-14.06 dBm	
-20.0						Marker Delta
-30.0						
-40.0						Mkr→CF
-50.0					1	
-60.0	arent auflicing and the	Baseyyyiraing L ^{init} lynan mar al all ^{init}	الال مالاج م ^{ينيو} ويرواه الديد	""International and and an adjusted by an advantation	an make what fait is the state of the state of the state of	Mkr→RefLvl
-70.0						
						More
Start 5.00 #Res BW		#VBW	/ 300 kHz	Swe	Stop 15.000 GHz eep 956 ms (2000 pts)	1 of 2
MSG				S	STATUS	

🌉 Agilent Spect	trum Analyzer - Occupied BV	W				
I <mark>XI</mark> Markor 1	RF 50 Ω DC 23.5142571285	564 CHz	SENSE:INT	ALIGN AUTO Avg Type: Log-Pwr	03:53:13 PM Nov 29, 2021 TRACE 1 2 3 4 5 6	Peak Search
	23.3142371203	PNO: Fast IFGain:Low	Trig: Free Run Atten: 20 dB	Avg Hold:>100/100	TYPE MWWWWW DET PNNNNN	NextPeak
10 dB/div Log	Ref Offset 11 dB Ref 20.00 dBm			М	kr1 23.514 GHz -50.085 dBm	Nextreak
						Next Pk Right
10.0						Next F K Right
0.00						
-10.0						Next Pk Left
					-14.06 dBm	
-20.0						Marker Delta
-30.0						
-40.0						Mkr→CF
-50.0					♦ ¹	
and the second	ary of the state o	المرجعة والمحادثة والمعالم والمعالي والمعالي والمحالي والمحالية والمح	etropic-seased, the bank of south data, and the su	to be the second s	hand the second of the second s	
-60.0						Mkr→RefLvl
-70.0						
						More 1 of 2
Start 15.0 #Res BW		#VBW	300 kHz	Sweep	Stop 25.000 GHz 956 ms (2000 pts)	
MSG				STATUS	S	

BLE CH2480MHz

Reference level



Emission level



🅦 Agilent Spec	trum Analyzer - Occup									
<mark>.x</mark> Marker 1	RF 50 Ω	DC 14908 (GHz		NSE:INT	Avg Type	ALIGN AUTO : Log-Pwr	TRAC	MNov 29, 2021 E 1 2 3 4 5 6	Peak Search
		P	NO: Fast Gain:Low	Trig: Free Atten: 20		Avg Hold:	>100/100			
	Ref Offset 11						М	kr1 14.2	60 GHz	Next Peak
10 dB/div	Ref 20.00 d							-53.3	72 dBm	
10.0										Next Pk Right
0.00										
										Next Pk Left
-10.0									-14.11 dBm	
-20.0										
										Marker Delta
-30.0										
-40.0										Mkr→CF
-50.0									1	
		1.41 ¹⁰ 1	مىرايوغانان المان الم	a advision a babeling to	and in sufficience of	وروان و المحمد المحمد		Martin & Britanity	and the busices	
-60.0	م ^{اري} ة المرابعة المراب									Mkr→RefLvl
-70.0										
										More 1 of 2
Start 5.00			40 (D)M	200 64			Cure en	Stop 15	.000 GHz	1012
#Res BW	TUU KHZ		#VBW	300 kHz					2000 pts)	
MSG							STATUS	5		

🌉 Agilent Spec	ctrum Analyzer - Occupied BW						
<mark>w</mark> Marker 1	RF 50 Ω DC 23.61430715357	7 GHz PNO: Fast D Trig: F		ALIGN AUTO : Log-Pwr :>100/100	TRAC	M Nov 29, 2021 E 1 2 3 4 5 6 E M WWWWW T P N N N N N	Peak Search
10 dB/div	Ref Offset 11 dB Ref 20.00 dBm	IFGain:Low Atten:	20 08	М	kr1 23.6 -50.0	14 GHz 53 dBm	Next Peak
10.0							Next Pk Right
-10.00							Next Pk Left
-20.0						-14.11 dBm	Marker Delta
-30.0					. 1		Mkr→CF
-50.0	ي والمراجع المحمد ال	an franksing and a start a	^{nal} laydd Byyr <mark>llylyny</mark> .	 		goolige and an and a start of the	Mkr→RefLvl
-70.0							More
Start 15.0 #Res BW		#VBW 300 kH	Iz	Sweep	Stop 25 956 ms (.000 GHz 2000 pts)	1012
MSG				STATUS	5		

8 BAND EDGES MEASUREMENT

8.1 Test Equipment

The following test equipment was used during the band edges measurement:

Item	Туре	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	2021.09.15	1 Year
2.	Coaxial Cable	WOKEN	SFL402-105F LEX	F02-150819-0 45	2021.03.08	1 Year
3.	10 dB Attenuator	Mini-Circuits	VAT-10W2+	001	2021.08.06	1 Year

8.2 Block Diagram of Test Setup

The Same as section. 5.2.

8.3 Specification Limits (§15.247(d))

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.

8.4 Operating Condition of EUT

The switch ON/OFF was used to enable the EUT to change the channel one by one.

8.5 Test Procedure

The transmitter output was connected to the spectrum analyzer. Set RBW of Test Receiver to 100kHz and VBW to 300kHz with suitable frequency span including 100kHz bandwidth from band edge.

The test procedure is defined in ANSI C63.10-2013 (11.11.3 Emission level measurement was used).

8.6 Test Results **PASSED**.

All the test results are attached in next pages.

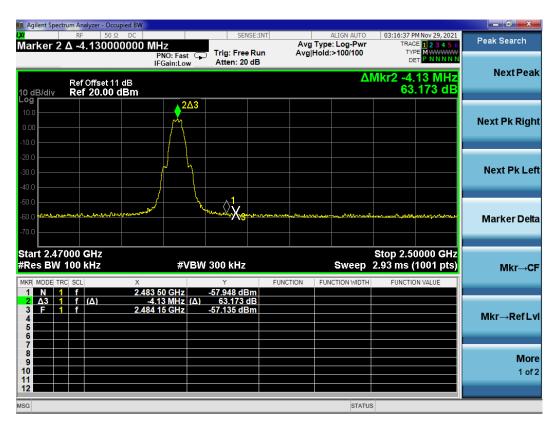
(Test Date: 2021.11.29 Temperature: 23°C Humidity: 51 %)

Modulation	Location	Channel	Frequency (MHz)	Delta Marker (dB)	Result
BLE	Below Band Edge	00	2402	61.254	More than 20 dB below the highest
DLE	Upper Band Edge	39	2480	63.173	level of the desired power

BLE CH2402MHz (Below Edge 2390 MHz)

Agilent Spectrum Analyzer - Occupied BW				
X RF 50 Ω DC Marker 2 Δ 24.70000000	0 MHz	ALIGN AUTO Avg Type: Log-Pwr	03:15:53 PM Nov 29, 2021 TRACE 123456	Marker
	PNO: Fast Trig: Free Run IFGain:Low Atten: 20 dB	Avg Hold:>100/100	TYPE MWWWWW DET PNNNNN	Marker Table
Ref Offset 11 dB 10 dB/div Ref 20.00 dBm		Δ	Mkr2 24.7 MHz 61.254 dB	<u>On</u> Off
10.0 0.00			2Δ3	Marker Count
-10.0				Couple Markers On Of
-40.0 -50.0 -60.0	กระแหน่งและสุดภูลสายและการแสนารณ์ไหร	X3	1	
Start 2.31000 GHz #Res BW 100 kHz	#VBW 300 kHz	Sweep 9	Stop 2.41000 GHz 9.60 ms (1001 pts)	
MKR MODE TRC SCL X 1 N 1 f 2 2 Δ3 1 f (Δ)	۲ F 2.390 0 GHz -59.570 dBm 24.7 MHz (Δ) 61.254 dB	UNCTION FUNCTION WIDTH	FUNCTION VALUE	
4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	2.377 3 GHz -54.852 dBm			All Markers Of
7 8 9 10				Mor 2 of:
11 12				

BLE CH2480MHz (Upper Edge 2483.5 MHz)



9 POWER SPECTRAL DENSITY MEASUREMENT

9.1 Test Equipment

The following test equipment was used during the power spectral density measurement:

Item	Туре	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	2021.09.15	1 Year
2.	Coaxial Cable	WOKEN	SFL402-105F LEX	F02-150819-0 45	2021.03.08	1 Year
3.	10 dB Attenuator	Mini-Circuits	VAT-10W2+	001	2021.08.06	1 Year

9.2 Block Diagram of Test Setup

The Same as section 5.2.

9.3 Specification Limits (§15.247(e))

The peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band.

9.4 Operating Condition of EUT

The switch ON/OFF was used to enable the EUT to change the channel one by one.

9.5 Test Procedure

The transmitter output was connected to the spectrum analyzer.

- a) Set analyzer center frequency to DTS channel center frequency.
- b) Set the span to 1.5 times the DTS bandwidth.
- c) Set the RBW to 3 kHz \leq RBW \leq 100 kHz.
- d) Set the VBW \geq [3 × RBW].
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.

i) Use the peak marker function to determine the maximum amplitude level within the RBW.

j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

The test procedure is defined in ANSI C63.10-2013 (11.10.2 Measurement Procedure "Method PKPSD (peak PSD)" was used).

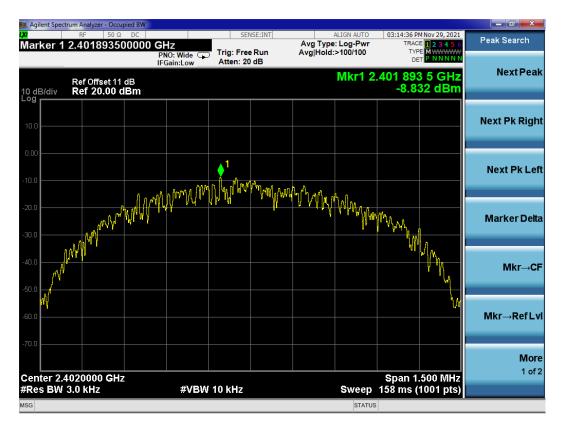
9.6 Test Results **PASSED**.

All the test results are attached in next pages.

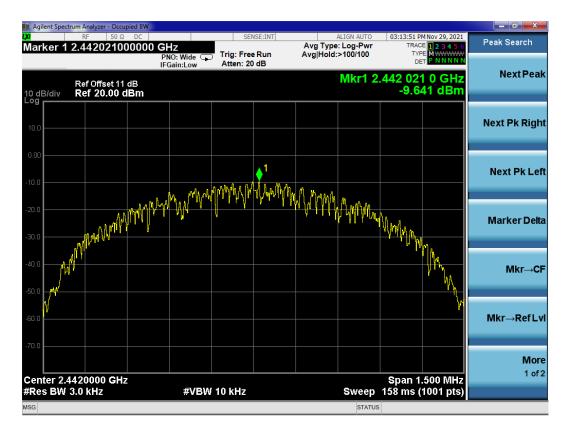
(Test Date: 2021.11.29 Temperature: 23°C Humidity: 51 %)

Modulation	Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limit
	00	2402	-8.832	8 dBm
BLE	20	2442	-9.641	8 dBm
	39	2480	-9.659	8 dBm

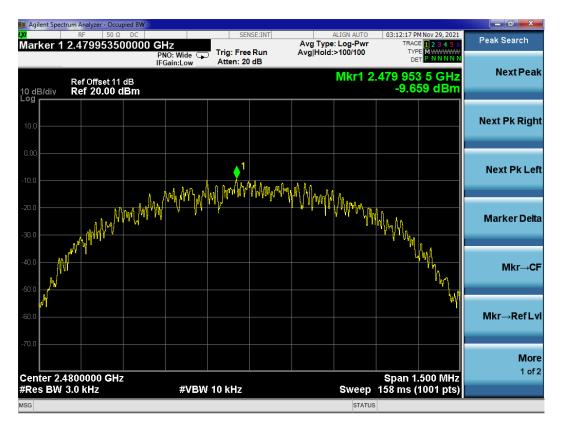
BLE CH2402 MHz



BLE CH2442 MHz



BLE CH2480 MHz



10 DEVIATION TO TEST SPECIFICATIONS

None.

11 MEASUREMENT UNCERTAINTY LIST

The measurement uncertainty was estimated for test on the EUT according to CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage of K=2. The uncertainties value is not used in determining the PASS/FAIL results.

Test Items/Facilities	Frequency/Equipment/Unit	Uncertainty
Conducted Emission	9kHz~150kHz	±3.1 dB
No.1 Shielded Room	150kHz~30MHz	±2.6 dB
Conducted Emission	9kHz~150kHz	±3.1 dB
No.3 Shielded Room	150kHz~30MHz	±2.6 dB
	30MHz~200MHz, Horizontal	±3.8 dB
	30MHz~200MHz, Vertical	±4.1 dB
	200MHz~1000MHz, Horizontal	±3.6 dB
Radiated Emission	200MHz~1000MHz, Vertical	±5.1 dB
	1GHz~6GHz	±5.3 dB
	6GHz~18GHz	±5.3 dB
	18GHz~40GHz	±3.5 dB
Output Power Test	50MHz~18GHz	0.77 dB
Power Density Test	9kHz~6GHz	1.08 dB
RF Frequency Test	9kHz~40GHz	6*10 ⁻⁴
Bandwidth Test	9kHz~6GHz	$1.5*10^{-3}$
RF Radiated Power Test	30MHz~1000MHz	3.06 dB
Conducted Output Power Test	50MHz~18GHz	0.83 dB
AC Voltage(<10kHz) Test	120V~230V	0.04 %
DC Power Test	0V~30V	0.4 %
Temperature	-40°C~+100°C	0.52 °C
Humidity	30%~95%	2.6 %