TEST REPORT On behalf of

Savant Technologies LLC, dba GE Lighting, a Savant company

Product	Model No.
1-INCH 2-CHANNEL POWER MONITOR MODULE, PIGTAIL	GPM-H2SEM-00
QO 2-CHANNEL POWER MONITOR MODULE, PIGTAIL	GPM-Q2SEM-00
QO 2-CHANNEL POWER MONITOR MODULE, PON	GPM-QP2SEM-00
CH 2-CHANNEL POWER MONITOR MODULE, PIGTAIL	GPM-C2SEM-00
CH 2-CHANNEL POWER MONITOR MODULE, PON	GPM-CP2SEM-00

FCC ID: PUU-HQC2SEM

- Prepared For: Savant Technologies LLC, dba GE Lighting, a Savant company 1975 Noble Road Cleveland Ohio United States 44112
- Prepared By: Audix Technology (Shanghai) Co., Ltd. 3F and 4F, 34Bldg, 680 Guiping Rd., Caohejing Hi-Tech Park, Shanghai 200233, China

Tel: +86-21-64955500



File No.:C1D2209033Report No.:ACI-F22167Date of Test:2021.10.14-2022.09.14Date of Report:2022.10.10

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.

TABLE OF CONTENTS

Page

1	SUN	IMARY OF STANDARDS AND RESULTS	.5
	1.1	Description of Standards and Results	. 5
2		NERAL INFORMATION	
	2.1	Description of Equipment Under Test	.6
		EUT Specifications Assessed in Current Report	
	2.3	Test Information	
	2.4	Sample Description	.7
	2.5	Supported equipment	
	2.6	Description of Test Facility	. 8
3	COI	NDUCTED EMISSION TEST	.9
	3.1	Test Equipment	.9
	3.2	Block Diagram of Test Setup	. 9
	3.3	Conducted Emission Limits (§15.207)	
	3.4	Test Configuration	10
	3.5	Operating Condition of EUT	
	3.6	Test Procedures	
	3.7	Test Results	
4	RAI	DIATED EMISSION TEST	13
	4.1	Test Equipment	13
	4.2	Block Diagram of Test Setup	
	4.3	Radiated Emission Limit (§15.209)	
	4.4	Test Configuration	
	4.5	Operating Condition of EUT	
	4.6	Test Procedures	
		Test Results	
5	6 DI	B BANDWIDTH MEASUREMENT	
	5.1	Test Equipment	23
	5.2	Block Diagram of Test Setup	
	5.3	Specification Limits (§15.247(a)(2))	
	5.4	Operating Condition of EUT	
		Test Procedure	
		Test Results	
6	MA	XIMUM PEAK OUTPUT POWER MEASUREMENT	
	6.1	Test Equipment	
	6.2	Block Diagram of Test Setup	
	6.3	Specification Limits ((§15.247(b)(3))	
	6.4	Operating Condition of EUT	
	6.5	Test Procedure	
	6.6	Test Results	
7	EM	ISSION LIMITATIONS MEASUREMENT	
	7.1	Test Equipment	
	7.2	Block Diagram of Test Setup	
	7.3	Specification Limits (§15.247(d))	31

7.4	Operating Condition of EUT	. 31
7.6	Test Results	. 33
POV	VER SPECTRAL DENSITY MEASUREMENT	. 42
8.1	Test Equipment	. 42
8.2	Block Diagram of Test Setup	. 42
8.3	Specification Limits (§15.247(e))	. 42
8.4	Operating Condition of EUT	. 42
8.5	Test Procedure	. 42
8.6	Test Results	. 43
DEV	VIATION TO TEST SPECIFICATIONS	. 46
ME	ASUREMENT UNCERTAINTY LIST	. 47
	7.5 7.6 POV 8.1 8.2 8.3 8.4 8.5 8.6 DEV	 7.4 Operating Condition of EUT 7.5 Test Procedure 7.6 Test Results POWER SPECTRAL DENSITY MEASUREMENT

TEST REPORT

Applicant :	Savant Technologies LLC, dba GE Lighting, a Savant company			
EUT Description :	Refer to Sec.2.1			
	(A) Model No.	:	Refer to Sec.2.1	
	(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.

Date of Test :	2021.10.14-2022.09.14	Date of Report :	2022.10.10
Producer :	HUIMIN YAN / Assistant		
Review :	Byron Wu BYRON WU/Deputy Assistant Ma	anager	
Audix Technology (Shang	hai) Co., Ltd.		
Signatory :			
Authorized Signature(s)	KAMP CHEN / Manager		

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		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		15.200(a)			
Radiated Emission	SUBPART C	Pass	15.209(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)			
wiedsurennenn	AND ANSI C63.10:2013					
Maximum Peak Output	FCC RULES AND REGULATIONS PART 15					
Power Measurement	SUBPART C	Pass	15.247(b)(3)			
	AND ANSI C63.10:2013					
Emission Limitations	FCC RULES AND REGULATIONS PART 15					
Measurement	SUBPART C	Pass	15.247(d)			
wiedsureinent	AND ANSI C63.10:2013					
Band Edge	FCC RULES AND REGULATIONS PART 15					
Measurement	SUBPART C	Pass	15.247(d)			
wiedsurennenn	AND ANSI C63.10:2013					
Power Spectral Density	FCC RULES AND REGULATIONS PART 15					
Measurement	SUBPART C	Pass	15.247(e)			
wicasurchient	AND ANSI C63.10:2013					
N/A is an abbreviation for Not Applicable.						

2 GENERAL INFORMATION

2.1 Description of Equipment Under Test

Type of EUT	•	Production	□ Pre-product	\Box Pro-type
I ypc of LOI	•			

	Product Name	Model No.	
	1-INCH 2-CHANNEL POWER MONITOR MODULE, PIGTAIL	GPM-H2SEM-00	
	QO 2-CHANNEL POWER MONITOR MODULE, PIGTAIL	GPM-Q2SEM-00	
Information	QO 2-CHANNEL POWER MONITOR MODULE, PON	GPM-QP2SEM-00	
	CH 2-CHANNEL POWER MONITOR MODULE, PIGTAIL	GPM-C2SEM-00	
	CH 2-CHANNEL POWER MONITOR MODULE, PON	GPM-CP2SEM-00	
Difference	 1.The N wire position is different, one (PON) is at the back of the module, another one (PIGTAIL) is at the bottom of the module with a wire. 2.The 1-INCH series, QO series, CH series just the appearance is different. The dimension of enclosure is different to match different companion device type. 		

Test Model	:	GPM-H2SEM-00
Note	:	The model GPM-H2SEM-00, GPM-Q2SEM-00, GPM-QP2SEM-00, GPM-C2SEM-00, GPM-CP2SEM-00 were pre-tested, the results of worst model GPM-H2SEM-00 was selected for report.
Radio Tech	:	BLE 5.0;
Note:	:	Bluetooth LE1M only.
Channel Freq.	:	BLE: 2402MHz-2480MHz;
Modulation	:	BLE: GFSK;
Antenna Info.	:	Antenna Type: PCB Antenna Antenna Gain: 0.99 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 Ohio United States 44112

Manufacturer : same	e as Applicant
---------------------	----------------

Factory : LEEDARSON LIGHTING CO., LTD. Xingtai Industrial Zone, Economic Development Zone, Changtai County, Zhangzhou

2.2 EUT Specifications Assessed in Current Report

Mode	Modulation	Data Rate(Mbps)	
BLE	GFSK	1	

Channel List					
Channel No.	Frequency (MHz)	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 "nRF Connect for Desktop.exe" was used to control EUT work in TX mode, Power Setting and select test channel.

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

2.4 Sample Description

Test Item	Fest Item Model Number		Date of receipted
Conducted Emission	GPM-H2SEM-00	E2209666-01/03	2022.09.13
Radiated Emission	GPM-H2SEM-00	E21091543a-01/03	2021.10.11
Conducted RF Test	GPM-H2SEM-00	E21091543a-01/03	2021.10.11

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

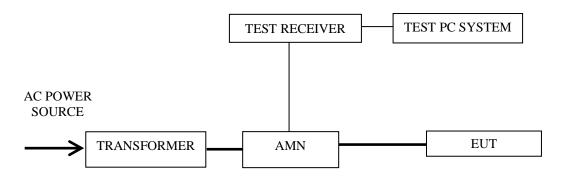
3.1 Test Equipment

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	100841	2022.01.25	1 Year
2.	Artificial Mains Network (AMN)	R&S	ESH2-Z5	843890/011	2022.01.06	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 1 – The lower limit shall apply at the transition frequencies. NOTE 2 – The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz~0.50 MHz						

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	peration Modulation		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	:	1-INCH 2-CHANNEL POWER MONITOR MODULE, PIGTAIL	Temperature :	22°C	
Model No.	:	GPM-H2SEM-00	Humidity :	51%RH	
Test Mode	:	Transmitting	Date of Test :	2022.09.14	

Polarization	Frequency (MHz)	Meter Reading dB (µV)	AMN Factor (dB)	Cable Loss (dB)	Emission Level dB (µV)	Limits	Margin (dB)	Remark
	0.1506	40.6	0.16	0.03	40.79	65.97	25.18	QP
	0.1506	24.4	0.16	0.03	24.59	55.97	31.38	Average
	0.1659	40.5	0.16	0.03	40.69	65.16	24.47	QP
	0.1659	18.3	0.16	0.03	18.49	55.16	36.67	Average
	0.2468	39.3	0.18	0.03	39.51	61.86	22.35	QP
Line	0.2468	17.2	0.18	0.03	17.41	51.86	34.45	Average
Line	0.3465	36.6	0.19	0.03	36.82	59.05	22.23	QP
	0.3465	15	0.19	0.03	15.22	49.05	33.83	Average
	0.6722	25.3	0.21	0.05	25.56	56	30.44	QP
	0.6722	11.5	0.21	0.05	11.76	46	34.24	Average
	1.009	28.2	0.22	0.06	28.48	56	27.52	QP
	1.009	8.9	0.22	0.06	9.18	46	36.82	Average
	0.1504	40.8	0.12	0.03	40.95	65.98	25.03	QP
	0.1504	24.6	0.12	0.03	24.75	55.98	31.23	Average
	0.2151	40	0.13	0.03	40.16	63.01	22.85	QP
	0.2151	20.1	0.13	0.03	20.26	53.01	32.75	Average
	0.2894	38.6	0.15	0.03	38.78	60.54	21.76	QP
Neutral	0.2894	19.7	0.15	0.03	19.88	50.54	30.66	Average
ineutrai	0.7004	22.6	0.23	0.05	22.88	56	33.12	QP
	0.7004	9.5	0.23	0.05	9.78	46	36.22	Average
	0.9582	28.7	0.34	0.06	29.1	56	26.9	QP
	0.9582	15.9	0.34	0.06	16.3	46	29.7	Average
	1.544	23.6	0.35	0.07	24.02	56	31.98	QP
	1.544	14.7	0.35	0.07	15.12	46	30.88	Average

4 RADIATED EMISSION TEST

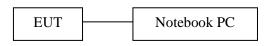
4.1 Test Equipment

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

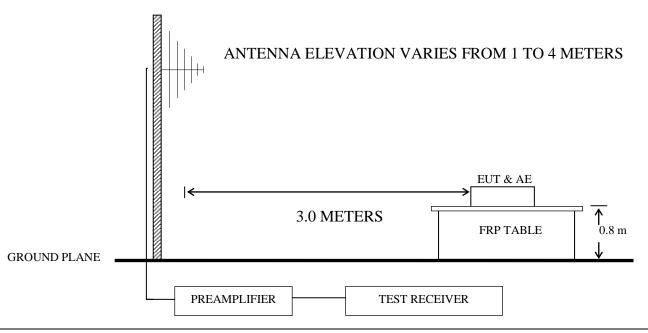
Item	Туре	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Preamplifier	Agilent	8447D	2944A10548	2021.03.08	1 Year
2.	Preamplifier	HP	8449B	3008A00864	2021.03.08	1 Year
3.	Spectrum Analyzer	Agilent	N9010A	MY52221182	2021.09.16	1 Year
4.	Test Receiver	R&S	ESCI	101303	2021.03.08	1 Year
5.	Bilog Antenna+6dB Attenuator	3 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- R10	WT200312-1-1	2021.09.15	1 Year
9.	Software	Audix	e3	SET00200 9912M295-2		

4.2 Block Diagram of Test Setup

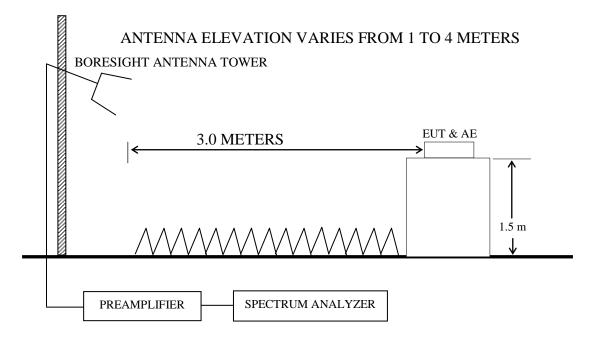
4.2.1 EUT & Peripherals



4.2.2 Below 1GHz



4.2.3 Above 1GHz



4.3 Radiated Emission Limit (§15.209)

Frequency	Distance	Field strength limits (µV/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 1 - Emission Level dB (μ V/m) = 20 log Emission Level (μ V/m)NOTE 2 - The tighter limit applies at the band edges.NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.							
 NOTE 4 - The limits shown are based on Quasi-peak value detector below or equal to 1GHz and Average value detector above 1GHz. NOTE 5 - Above 1 GHz, the limit on peak emission is 20 dB above the maximum permitted average emission limit applicable to the EUT 							

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.

No.	Operation	Modulation	Channel	Frequency	Data Page
1.	1		00	2402 MHz	P17
2.	Transmitting	BLE	20	2442 MHz	P17
3.	Transmitting		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.	1.2.	DIE	00	2402 MHz	P21
2.		DLE	39	2480 MHz	P21

Band-Edge measurement:

No.	Operation	Modulation	Channel	Frequency	Data Page
1.	Transmitting	BIF	00	2402 MHz	P22
2.	1. Transmitting 2. 2.	DLE	39	2480 MHz	P22

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	1-INCH 2-CHANNEL : POWER MONITOR MODULE, PIGTAIL		Temperature :	22°C
Model No.	: _	GPM-H2SEM-00	Humidity :	51%RH
Test Mode	:	Transmitting	Date of Test :	2021.10.14

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
	47.994	26.02	19.5	0.73	28.21	18.04	40	21.96	QP
	95.427	31.33	14.43	1.07	28.02	18.81	43.5	24.69	QP
Horizontal	143.33	28.37	18.75	1.29	27.82	20.59	43.5	22.91	QP
Horizontai	216.02	36.82	15.48	1.58	27.31	26.57	46	19.43	QP
	408.95	32.25	21.27	2.18	27.63	28.07	46	17.93	QP
	798.98	24.43	27.8	3.06	26.9	28.39	46	17.61	QP
	47.994	26.29	19.5	0.73	28.21	18.31	40	21.69	QP
	103.81	32.66	15.67	1.12	27.98	21.47	43.5	22.03	QP
Vertical	160.35	24.24	19	1.36	27.73	16.87	43.5	26.63	QP
vertical	263.82	25.69	17.84	1.74	27.1	18.17	46	27.83	QP
	399.03	29.86	21.1	2.15	27.58	25.53	46	20.47	QP
	796.18	24.35	27.9	3.06	26.94	28.37	46	17.63	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
	47.994	25.69	19.5	0.73	28.21	17.71	40	22.29	QP
	96.099	32.01	14.5	1.07	28.02	19.56	43.5	23.94	QP
Horizontal	143.83	29.76	18.8	1.29	27.82	22.03	43.5	21.47	QP
Horizontai	210.79	36.84	15.5	1.58	27.34	26.58	43.5	16.92	QP
	383.93	32	20.9	2.12	27.5	27.52	46	18.48	QP
	851.04	26.1	28.1	3.2	26.6	30.8	46	15.2	QP
	47.492	26.79	19.55	0.73	28.21	18.86	40	21.14	QP
	95.427	28.99	14.43	1.07	28.02	16.47	43.5	27.03	QP
Vartical	152.66	24	19.05	1.32	27.78	16.59	43.5	26.91	QP
Vertical	263.82	25.74	17.84	1.74	27.1	18.22	46	27.78	QP
	410.38	32.01	21.3	2.18	27.63	27.86	46	18.14	QP
	796.18	25.63	27.9	3.06	26.94	29.65	46	16.35	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
	47.492	26.09	19.55	0.73	28.21	18.16	40	21.84	QP
	96.099	32.54	14.5	1.07	28.02	20.09	43.5	23.41	QP
Horizontal	143.83	28.51	18.8	1.29	27.82	20.78	43.5	22.72	QP
Horizontai	214.51	36.07	15.5	1.58	27.32	25.83	43.5	17.67	QP
	420.58	32.5	21.7	2.22	27.68	28.74	46	17.26	QP
	798.98	25.53	27.8	3.06	26.9	29.49	46	16.51	QP
	47.994	26.18	19.5	0.73	28.21	18.2	40	21.8	QP
	95.427	30.08	14.43	1.07	28.02	17.56	43.5	25.94	QP
Vertical	142.82	28.08	18.7	1.29	27.82	20.25	43.5	23.25	QP
vertical	216.02	33.07	15.48	1.58	27.31	22.82	46	23.18	QP
	411.82	31.25	21.37	2.2	27.65	27.17	46	18.83	QP
	798.98	25.3	27.8	3.06	26.9	29.26	46	16.74	QP

BLE CH2480MHz

Radiated Emission > 1GHz

EUT	:	1-INCH 2-CHANNEL POWER MONITOR MODULE, PIGTAIL	Temperature :	22°C		
Model No.	:	GPM-H2SEM-00	Humidity :	51%RH		
Test Mode	:	Transmitting	Date of Test :	2021.10.14		

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
	1765	45.11	26.28	4.65	36.3	39.74	74	34.26	Peak
	3187	43.57	30.58	6.09	35.24	45	74	29	Peak
Horizontal	4627	40.24	32.47	7.36	34.81	45.26	74	28.74	Peak
Horizontai	5986	37.88	34.29	8.35	34.7	45.82	74	28.18	Peak
	7525	37.89	36.84	9.79	34.8	49.72	74	24.28	Peak
	9316	36.04	38.26	10.97	34.67	50.6	74	23.4	Peak
	3187	52.13	30.58	6.09	35.24	53.56	74	20.44	Peak
	3187	39.42	30.58	6.09	35.24	40.85	54	13.15	Average
Vertical	4798	41.53	33.21	7.55	34.75	47.54	74	26.46	Peak
ventical	6076	38.55	34.31	8.43	34.71	46.58	74	27.42	Peak
	7327	37.5	36.4	9.58	34.8	48.68	74	25.32	Peak
	9361	36.96	38.27	10.97	34.66	51.54	74	22.46	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
	1369	48.84	24.85	4.07	36.3	41.46	74	32.54	Peak
	3187	46.22	30.58	6.09	35.24	47.65	74	26.35	Peak
Horizontal	4627	40.14	32.47	7.36	34.81	45.16	74	28.84	Peak
Horizontai	6211	37.71	34.34	8.6	34.72	45.93	74	28.07	Peak
	7876	36.61	37.5	10.11	34.8	49.42	74	24.58	Peak
	9370	36.64	38.27	10.97	34.66	51.22	74	22.78	Peak
	3196	51.68	30.6	6.09	35.23	53.14	74	20.86	Peak
	3196	38.47	30.6	6.09	35.23	39.93	54	14.07	Average
Vertical	4798	39.86	33.21	7.55	34.75	45.87	74	28.13	Peak
vertical	6391	38.89	34.38	8.76	34.74	47.29	74	26.71	Peak
	7732	37.01	37.25	10.01	34.8	49.47	74	24.53	Peak
	9334	37.01	38.27	10.97	34.66	51.59	74	22.41	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
	1351	50.88	24.79	4.07	36.3	43.44	74	30.56	Peak
	3187	44.45	30.58	6.09	35.24	45.88	74	28.12	Peak
Horizontal	4798	40.17	33.21	7.55	34.75	46.18	74	27.82	Peak
Horizontai	6193	38.39	34.34	8.52	34.72	46.53	74	27.47	Peak
	7624	37	37.05	9.9	34.8	49.15	74	24.85	Peak
	9208	36.45	38.24	10.88	34.68	50.89	74	23.11	Peak
	3187	50.16	30.58	6.09	35.24	51.59	74	22.41	Peak
	3187	37.22	30.58	6.09	35.24	38.65	54	15.35	Average
Vertical	4798	39.96	33.21	7.55	34.75	45.97	74	28.03	Peak
vertical	6517	37.45	34.45	8.85	34.75	46	74	28	Peak
	8056	36.73	37.83	10.28	34.79	50.05	74	23.95	Peak
	9064	37.56	38.22	10.79	34.69	51.88	74	22.12	Peak

Emissions in restricted frequency bands:

EUT	:	1-INCH 2-CHANNEL POWER MONITOR MODULE, PIGTAIL	Temperature :	22°C
Model No.	:	GPM-H2SEM-00	Humidity :	51%RH
Test Mode	:	Transmitting	Date of Test :	2021.10.14

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
	2354.9	44.98	28.12	5.32	35.9	42.52	74	31.48	Peak
Horizontal	2354.9	32.7	28.12	5.32	35.9	30.24	54	23.76	Average
HOHZOIItai	2388.7	59.71	28.21	5.36	35.86	57.42	74	16.58	Peak
	2388.7	42.28	28.21	5.36	35.86	39.99	54	14.01	Average
	2340.8	45.68	28.08	5.29	35.91	43.14	74	30.86	Peak
Vertical	2340.8	33.37	28.08	5.29	35.91	30.83	54	23.17	Average
vertical	2373.4	47.88	28.17	5.32	35.88	45.49	74	28.51	Peak
	2373.4	34.3	28.17	5.32	35.88	31.91	54	22.09	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
	2489.9	51.06	28.48	5.47	35.76	49.25	74	24.75	Peak
Horizontal	2489.9	36.4	28.48	5.47	35.76	34.59	54	19.41	Average
Horizontai	2494.2	49.29	28.48	5.47	35.76	47.48	74	26.52	Peak
	2494.2	36.63	28.48	5.47	35.76	34.82	54	19.18	Average
	2489.3	57.66	28.48	5.47	35.76	55.85	74	18.15	Peak
Vertical	2489.3	38.46	28.48	5.47	35.76	36.65	54	17.35	Average
vertical	2494.6	55.17	28.48	5.47	35.76	53.36	74	20.64	Peak
	2494.6	37.22	28.48	5.47	35.76	35.41	54	18.59	Average

Band-Edge Measurement:

EUT	:	1-INCH 2-CHANNEL POWER MONITOR MODULE, PIGTAIL	Temperature :	22°C	
Model No.	:	GPM-H2SEM-00	Humidity :	51%RH	
Test Mode	:	Transmitting	Date of Test :	2021.10.14	

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
TT · · · 1	2390	56.14	28.21	5.36	35.86	53.85	74	20.15	Peak
Horizontal	2390	39.63	28.21	5.36	35.86	37.34	54	16.66	Average
Vertical	2390	58.01	28.21	5.36	35.86	55.72	74	18.28	Peak
	2390	40.43	28.21	5.36	35.86	38.14	54	15.86	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
Horizontal	2483.5	57.24	28.46	5.43	35.76	55.37	74	18.63	Peak
Horizontai	2483.5	35.55	28.46	5.43	35.76	33.68	54	20.32	Average
Vertical	2483.5	63.84	28.46	5.43	35.76	61.97	74	12.03	Peak
	2483.5	40.62	28.46	5.43	35.76	38.75	54	15.25	Average

5 6 dB BANDWIDTH MEASUREMENT

5.1 Test Equipment

The following test equipment was used during the Emission Bandwidth 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- 045	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
-------------------	-----	-------------

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.**

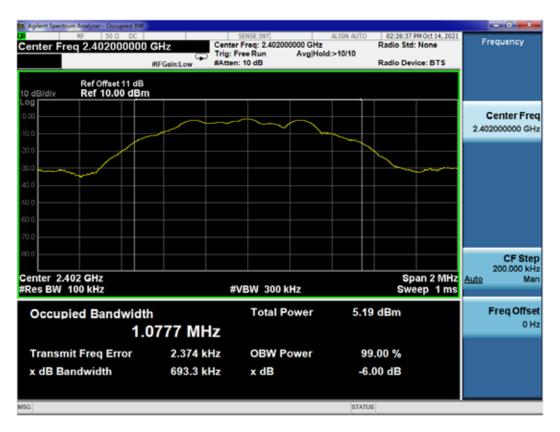
FASSED.

All the test results are attached in next pages.

(Test Date: 2021.10.14 Temperature: 23°C Humidity: 51 %)

Modulation	Channel	Frequency (MHz)	6dB Bandwidth (kHz)	Limit
	00	2402	693.3	500 kHz
BLE	20	2442	691.2	500 kHz
	39	2480	688.9	500 kHz

BLE CH2402MHz



BLE CH2442MHz

🚺 Agilent Spectru	um Analyzer - Occupied BW					- •
Center Fre	RF 50Ω DC eq 2.442000000	Trig	sense:INT ter Freq: 2.442000000 Gi : Free Run Avgi en: 10 dB	ALIGN AUTO Hz Hold:>10/10	02:28:58 PM Oct 14, 2021 Radio Std: None Radio Device: BTS	Frequency
10 dB/div	Ref Offset 11 dB Ref 10.00 dBm					
0.00						Center Freq 2.442000000 GHz
-20.0						
-40.0						
-60.0						
Center 2.4	42 GHz				Span 2 MHz	CF Step 200.000 kHz Auto Man
#Res BW			#VBW 300 kHz		Sweep 1 ms	
Occup	ied Bandwidt		Total Power	4.37	dBm	Freq Offset 0 Hz
		0746 MHz				
	Transmit Freq Error1.485 kx dB Bandwidth691.2 k		OBW Power x dB		99.00 % -6.00 dB	
X UB Ba	mawiaui	091.2 KHZ	XuB	-0.	00 08	
MSG				STATU	S	

BLE CH2480MHz

Agilent Spectrum Analyzer - Occupied II RF S0 Q DC Center Freq 2.48000000	0 GHz Cente	SENSE:INT r Freq: 2.480000000 GHz Free Run Avg Hold n: 10 dB	Radio St d:>10/10	5 PM Oct 14, 2021 d: None wice: BTS	Frequency
Ref Offset 11 d 10 dB/div Ref 10.00 dE					
Log 0.00 -10.0 -20.0					Center Freq 2.48000000 GHz
-30.0					
-70.0 -80.0 Center 2.48 GHz			s	pan 2 MHz A	CF Step 200.000 kHz uto Man
#Res BW 100 kHz		VBW 300 kHz	Sw	eep 1 ms	_
Occupied Bandwid	ith .0752 MHz	Total Power	4.28 dBm		Freq Offset 0 Hz
Transmit Freq Error	1.714 kHz	OBW Power	99.00 %		
x dB Bandwidth	688.9 kHz	x dB	-6.00 dB		
мsa 🧼 File <2442_0001.png> s	aved		STATUS		

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
2.	Coaxial Cable	WOKEN	SFL402-105F LEX	F02-150819- 045	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) $RBW \ge DTS$ Bandwidth.
- b) VBW \geq [3 × RBW].
- c) Span \geq [3 × 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 \Box DTS bandwidth" was used).

6.6 Test Results

PASSED.

All the test results are listed below.

(Test Date: 2021.10.14 Temperature: 23°C Humidity: 51 %)

Modulation	Channel	Frequency (MHz)	Peak Output Power (dBm)	Limit
	00	2402	-1.338	30 dBm
BLE	20	2442	-2.059	30 dBm
	39	2480	-2.165	30 dBm

BLE CH2402MHz

Agilent Spectrum Analyzer - Occupie					0 -×
Marker 1 2.401716000		SENSE:INT Trig: Free Run Atten: 10 dB	ALIGN AUTO Avg Type: Log-Pwr Avg Hold:>100/100	02:28:11 PM Oct 14, 2021 TRACE 1 2 3 4 5 6 TYPE MUNNINN DET PINNNNN	Peak Search
Ref Offset 11 dl	в		Mkr1	2.401 716 GHz -1.338 dBm	Next Peak
0.00	1				Next Pk Righ
20.0					Next Pk Le
40.0					Marker Del
50.0					Mkr→C
70.0					Mkr→RefL
© 0 Center 2.402000 GHz Res BW 1.0 MHz	#VBW	3.0 MHz	Sween	Span 2.000 MHz I.00 ms (1001 pts)	Mor 1 of
sg			STATUS		

BLE CH2442MHz

	Analyzer - Occupied BW					- 0 -×
	RF 50 Q DC 441734000000		Trig: Free Run Atten: 10 dB	ALIGN AUTO Avg Type: Log-Pwr Avg[Hold:>100/100	02:28:43 PM Oct 14, 2021 TRACE 2 2 3 4 5 0 TYPE MUSER DET P.NNNNN	Peak Search
R 10 dB/div R	ef Offset 11 dB ef 10.00 dBm	in Gameen		Mkr1	2.441 734 GHz -2.059 dBm	Next Peak
0.00		1				Next Pk Righ
-10.0						Next Pk Lef
40.0						Marker Delta
50.0 60.0						Mkr→C
70.0						Mkr→RefLv
Center 2.442			(2 0 MU-		Span 2.000 MHz	More 1 of 2
Res BW 1.0	minz	#VBV	/ 3.0 MHz	Sweep	1.00 ms (1001 pts)	

BLE CH2480MHz

Agilent Spectrum Analyzer -									
^{®⊧} arker 1 2.48021	50 R DC 2000000	GHz PNO: Fast		e Run 0 dB	Avg Tyj Avg Hol	ALIGN AUTO pe: Log-Pwr d:>100/100	TRACE	Oct 14, 2021	Peak Search
Ref Offse	t 11 dB 00 dBm	II GAMEEN				Mkr1	2.480 21 -2.16	2 GHz 5 dBm	NextPeak
		_			↓ 1				Next Pk Rig
0.0									Next Pk L
0.0									HEAT FRE
0.0									Marker De
0.0									Mkr→
0.0									Mkr→Ref
0.0									M
enter 2.480000 G Res BW 1.0 MHz	Hz	#VB	W 3.0 MHz			Sweep	Span 2.0 1.00 ms (1	000 MHz 001 pts)	1 0
5G						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- 045	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 $\geq [3 \times RBW]$.
- 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: 2021.10.14-2022.01.15 Temperature: 23°C Humidity: 51 %)

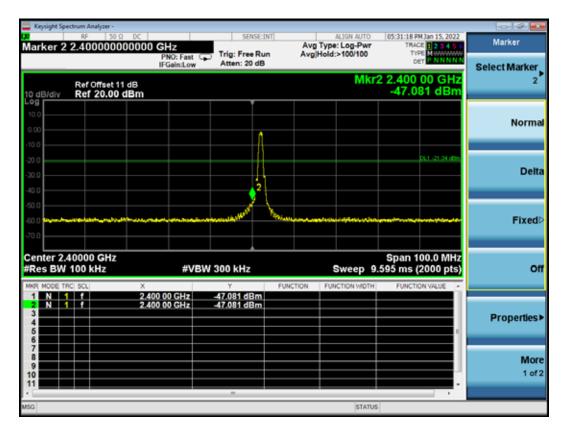
Modulation	Channel	Frequency (MHz)	Data Page
	00	2402	P34-36
BLE	20	2442	P37-38
	39	2480	P39-41

BLE CH2402MHz

Reference level



Emission level



🗱 Agilent Spectrum Analyzer - Occupied BW				- 0 -×-
Start Freq 30.000000 MHz	SEN	SE:INT ALIGN AUTO Avg Type: Log-Pwr	03:25:02 PM Oct 14, 2021 TRACE 2 3 4 5 6	Frequency
Ref Offset 11 dB	PNO: Fast Trig: Free IFGain:Low Atten: 10	dB	kr1 4.803 6 GHz -61.139 dBm	Auto Tune
0.00				Center Freq 2.515000000 GHz
-10.0			-21 34 dbs	Start Freq 30.000000 MHz
-30.0				Stop Freq 5.00000000 GHz
-60.0			1	CF Step 497.000000 MHz <u>Auto</u> Man
-70.0	and the second sec	hidrasionan di Airinan generini presidenda	hand the second s	Freq Offset 0 Hz
Start 30 MHz #Res BW 100 kHz	#VBW 300 kHz	Sweep	Stop 5.000 GHz 475 ms (2000 pts)	
MSG		STATU		

- 0 -×								Analyzer - Occu	lent Spectri	📕 Agik
Peak Search	03:27:34 PM Oct 14, 2021 TRACE 2 3 4 5 6 TYPE MUSERNER DET PNNNNN	ALIGN AUTO ype: Log-Pwr old:>100/100				SHz NO: Fast 😱 Gain:Low	346173 G	.384692	ker 1 '	Marl
Next Peak	r1 14.385 GHz -63.830 dBm	M						ef Offset 11 ef 10.00 (3/div	10 dB
Next Pk Righ										0.00
Next Pk Lef	-21-34 dBn									-10.0
Marker Delta										-30.0
Mkr→Cf										-50.0
Mkr→RefLv		و بانده الحو وسار	-	ولي في ا	and the second	in a considera	فهدونته وإستر	فاستهداه	رەنبىرەپ	-60.0 -70.0
More 1 of 2	Stop 15.000 GHz	0			200 644	43/1514			t 5.000	
	956 ms (2000 pts)	Sweep		12	300 kH	#VBW		U KHZ	s BW 1	ASG NSG

Agilent Spec	trum Analyzer - Occupied BW								- 0 - X
Marker 1	RF 50 Q DC 23.61430715357	7 GHz PNO: Fast	Trig: Free F Atten: 10 d	Run		LIGN AUTO Log-Pwr >100/100	TRACI	M Oct 14, 2021 E 2 3 4 5 6 E M M M N N N N	Peak Search Next Peak
0 dB/div	Ref Offset 11 dB Ref 10.00 dBm	in Generative				М	kr1 23.6 -59.79	14 GHz 97 dBm	
0.00									Next Pk Rig
0.0								-21-34-4800	Next Pk Lo
0.0									Marker De
0.0							1		Mkr→
0.0	يا يەرىپىرىيە ھەرەسەردەن مەرىپەرلىر	******	مو <mark>اسم رود ا</mark> ند		الكنينة ج معالين ا		and the second second	internet (grint,	Mkr→RefL
tart 15.0						~	Stop 25.	000 GHz	M0 1 o
Res BW	100 kHz	#VBW	300 kHz			Sweep	956 ms (2	2000 pts)	
9G						STATUS	5		

BLE CH2442MHz

Reference level



Emission level



- 0 <u>-</u> ×					inalyzer - Occupied BW	Agilent Spectr
Peak Search	03:13:39 PM Oct 14, 2021 TRACE 2 3 4 5 0 TYPE MUSERNER DET P NNNNN	ALIGN AUTO Avg Type: Log-Pwr Avg[Hold:>100/100	SENSE:INT Trig: Free Run Atten: 10 dB	B GHz PNO: Fast G	50 Ω DC 419709854928	larker 1
Next Pea	r1 14.420 GHz -63.098 dBm	M		IT GUILLOW	f Offset 11 dB ef 10.00 dBm	0 dB/div
Next Pk Rig						0.00
Next Pk Le						20.0
Marker Del						40.0
Mkr→C						0.0
Mkr→RefL	adagaya yila waxaa w	مرزحان شارمينا الجرواسعي	بىلە ت ەرەپتىلىيەتلىرەتلىرە	an an the second se	tertert	0.0
Mo 1 of	Stop 15.000 GHz 956 ms (2000 pts)	Swaan	300 kHz	#\/B\# *		tart 5.000
	330 ms (2000 pts)	STATUS	500 KH2	#VBW	K112	

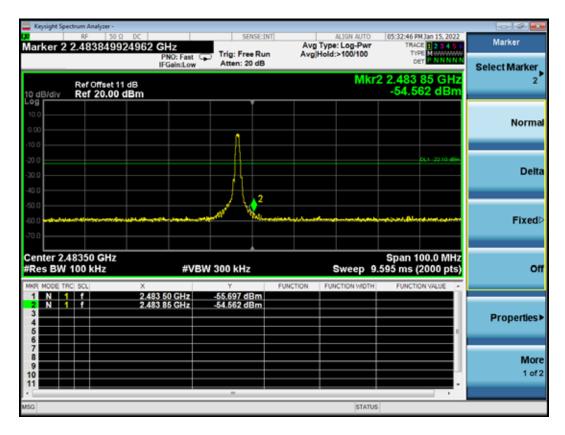
							- Occupied BW		Agilent Spe
Peak Search	03:16:20 PM Oct 14, 2021 TRACE 2 2 3 4 5 6 TYPE MUSIC PNNNNN DET PNNNNN	ALIGN AUTO e: Log-Pwr d:>100/100				2 GHz PNO: Fast	50 Q DC 28964482		Marker 1
Next Peak	kr1 23.579 GHz -60.075 dBm	M				I Gallerow	et 11 dB 00 dBm	Ref Offse Ref 10.	10 dB/div
Next Pk Right									0.00
Next Pk Left	-22100 6.84								-10.0
Marker Delta									-30.0
Mkr→CF	<u></u> 1								-50.0
Mkr→RefLvl	**************************************	eensipetter.	hand and the second	*******	والقرين والتوايط وم	and the second	*****	نويزيو ال <mark>م</mark> روية	•70.0
More 1 of 2	Stop 25.000 GHz 956 ms (2000 pts)	Sween			300 kHz	#\/R\\		000 GHz 100 kHz	Start 15.
		STATUS			500 KH2	#V.DV		100 KHZ	MSG

BLE CH2480MHz

Reference level



Emission level



- • - ×-								trum Analyzer - O	Agilent Spec
Marker	02:54:53 PM Oct 14, 2021 TRACE 2 3 4 5 6	ALIGN AUTO e: Log-Pwr		NSE:INT		GHz	0 0 DC 1075538	2.352151	Marker 1
Select Marker	DET P NNNN	:>100/100	Avg Ho		Trig: Free Atten: 10	PNO: Fast G			
1*	r1 2.352 2 GHz -61.997 dBm	Mk						Ref Offset	10 dB/div
Normal									0.00
									-10.0
Delta	-22.10 (89)								-20.0
Fixed⊳									-30.0
									-40.0
off									-50.0
	فسلام والمتهم المدرية والمدار	and a second date	, Juistingen	1. Star	الم المحمد الم				-60.0
Properties ►							- خداها، وروده	نوارميور وارتيو. ا	-70.0 Apita ia
More									-80.0
1 of 2	Stop 5.000 GHz Sweep 475 ms (2000 pts)					#VBW			Start 30 M #Res BW
		STATUS			500 KH2			100 112	ASG

	alyzer - Occupied BW						- • -×-
Narker 1 14.	334667333667	PNO: Fast C Trig:	Free Run n: 10 dB	Avg Type: Avg Hold:>		02:57:40 PM Oct 14, 2021 TRACE 2 2 3 4 5 6 TYPE MWWWWWW DET PNNNNN	Peak Search
	Offset 11 dB f 10.00 dBm				М	kr1 14.335 GHz -63.590 dBm	NextPeal
0.00							Next Pk Righ
20.0						-22.10 d3%	Next Pk Le
30.0							Marker Delt
4D.0 50.0							Mkr→C
10.0	فيامنى ويتعاد والمورية	مياماجورو «جورو» جورويا	, melini un mun	والمراجع والمحاول	لم ^{ي القريبة ع} ليها	alana da ana	Mkr→RefL
80.0 Start 5.000 GI						Stop 15.000 GHz	Mor 1 of
Res BW 100	kHz	#VBW 300	kHz		Sweep	956 ms (2000 pts)	

Agilent Spectrum Analyzer - Occupied B				- 0 - X -
Marker 1 23.579289644	SENSE:IN S22 GHz PNO: Fast IFGain:Low Atten: 10 dB	Avg Type: Log-Pwr	02:59:53 PM Oct 14, 2021 TRACE 2 3 4 5 6 TYPE MWWWWWW DET P NNNNN	Peak Search
Ref Offset 11 dB		М	kr1 23.579 GHz -59.275 dBm	Next Peak
0.00				Next Pk Right
-10.0				Next Pk Left
-30.0				Marker Delta
-60.0			¹	Mkr→CF
-60.0 -70.0	رود بعد المراجع	the same sime of manufacture and for contra	مىنىدە بەلە ^{سىلى} تىنى ب	Mkr→RefLvi
-00.0 Start 15.000 GHz			Stop 25.000 GHz	More 1 of 2
#Res BW 100 kHz	#VBW 300 kHz	Sweep	956 ms (2000 pts)	

8 POWER SPECTRAL DENSITY MEASUREMENT

8.1 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- 045	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(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.

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.

- 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).

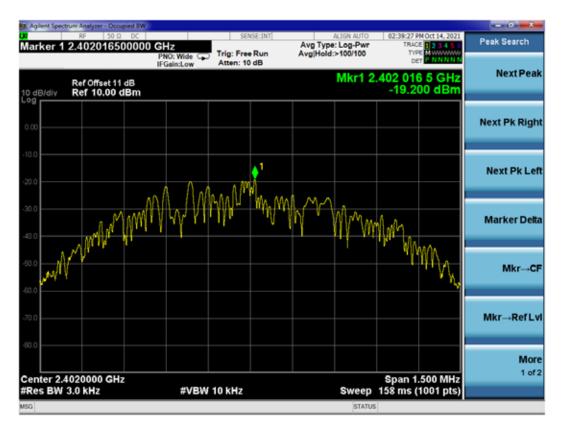
8.6 Test Results **PASSED**.

All the test results are attached in next pages.

(Test Date: 2021.10.14 Temperature: 23°C Humidity: 51 %)

Modulation	Channel	Frequency (MHz)	Power Spectral Density (dBm)	Limit
BLE	00	2402	-19.2	8 dBm
	20	2442	-19.97	8 dBm
	39	2480	-20.146	8 dBm

BLE CH2402 MHz



BLE CH2442 MHz



BLE CH2480 MHz



9 DEVIATION TO TEST SPECIFICATIONS

None.

10 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 %