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11. Time of Occupancy (Dwell Time)

11.1 Regulation

According to §15.247(a)(1)(iii), frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

11.2 Limits of Carrier Frequency Separation

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed

11.3 Test Procedure

- 1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2. Set the spectrum analyzer as follows: Span = zero span, centered on a hopping channel; RBW = 1 MHz; VBW \geq RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold
- 3. Measure the dwell time using the marker-delta function.
- 4. Repeat above procedures until all frequencies measured were complete.
- 5. Repeat this test for different modes of operation (e.g., data rate, modulation format, etc.), if applicable.

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11.4 Test Result

Type of Modulation: GFSK

EUT	Eye Massa	Eye Massager With Heat			SD-001
Mode	Keep Tr	ansmitting	Input Voltage	120V~	
Temperatur	re 24 d	leg. C,	Humidity	5	66% RH
Channel	Reading	Hoping	g Rate	Actual	Limit
	DH5				
Middle	2.949ms	266.667	7 hop/s	0.315s	0.4s

Actual = Reading \times (Hopping rate / Number of channels) \times Test period, Test period = 0.4 [seconds / channel] \times 79 [channel] = 31.6 [seconds] NOTE: The EUT makes worst case 1600 hops per second or 1 time slot has a length of 625 μ s with 79 channels.

A DH5 Packet needs 5 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 266.667 hops per second with 79 channels.

A DH3 Packet needs 3 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 400 hops per second with 79 channels.

A DH1 Packet needs 1 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 800 hops per second with 79 channels.

Note: DH5 was the worst case.

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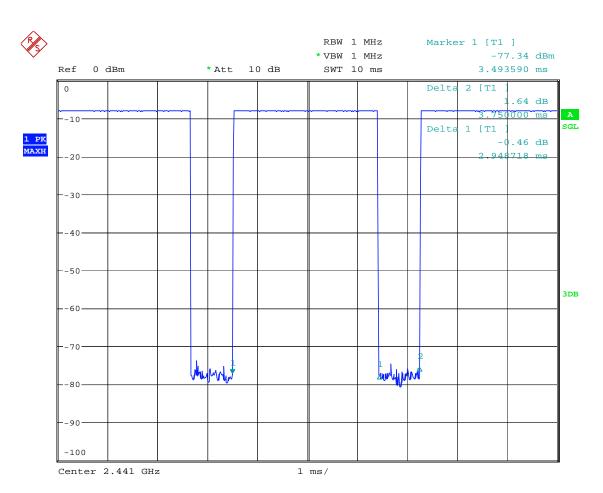
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Test Plots:

DH5



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Test Result

Type of Modulation: Л/4DQPSK

EUT	Eye Massa	Eye Massager With Heat		1	SD-001
Mode	Keep Tr	ansmitting	Input Voltage	120V~	
Temperatur	re 24 c	leg. C,	Humidity	56% RH	
Channel	Reading	Hoping	g Rate	Actual	Limit
	DH5				
Middle	2.965ms	266.66	7 hop/s	0.316s	0.4s

Actual = Reading \times (Hopping rate / Number of channels) \times Test period, Test period = 0.4 [seconds / channel] \times 79 [channel] = 31.6 [seconds] NOTE: The EUT makes worst case 1600 hops per second or 1 time slot has a length of 625 μ s with 79 channels.

A DH5 Packet needs 5 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 266.667 hops per second with 79 channels.

A DH3 Packet needs 3 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 400 hops per second with 79 channels.

A DH1 Packet needs 1 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 800 hops per second with 79 channels.

Note: 2DH5 was the worst case.

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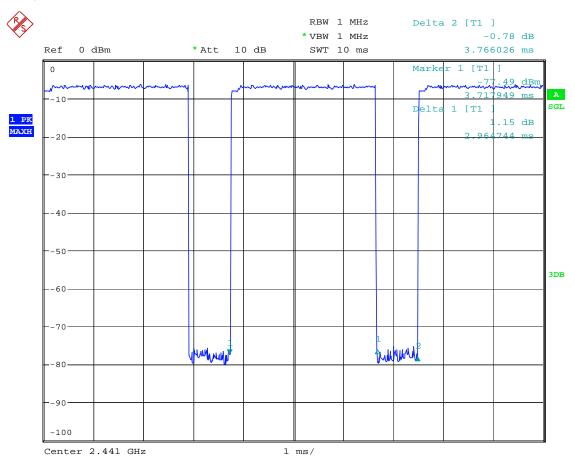
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Test Plots:

2DH5



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Type of Modulation: 8DPSK

EUT	Eye Massa	Eye Massager With Heat		1	SD-001
Mode	Keep Ti	ransmitting	Input Voltage	120V~	
Temperatur	re 24 o	leg. C,	Humidity	5	66% RH
Channel	Reading	Hoping	g Rate	Actual	Limit
	DH5				
Middle	2.949ms	266.66	7 hop/s	0.315s	0.4s

Actual = Reading \times (Hopping rate / Number of channels) \times Test period, Test period = 0.4 [seconds / channel] \times 79 [channel] = 31.6 [seconds] NOTE: The EUT makes worst case 1600 hops per second or 1 time slot has a length of 625 μ s with 79 channels.

A DH5 Packet needs 5 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 266.667 hops per second with 79 channels.

A DH3 Packet needs 3 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 400 hops per second with 79 channels.

A DH1 Packet needs 1 time slot for transmitting and 1 time slot for receiving. Then the EUT makes worst case 800 hops per second with 79 channels.

Note: 3DH5 was the worst case.

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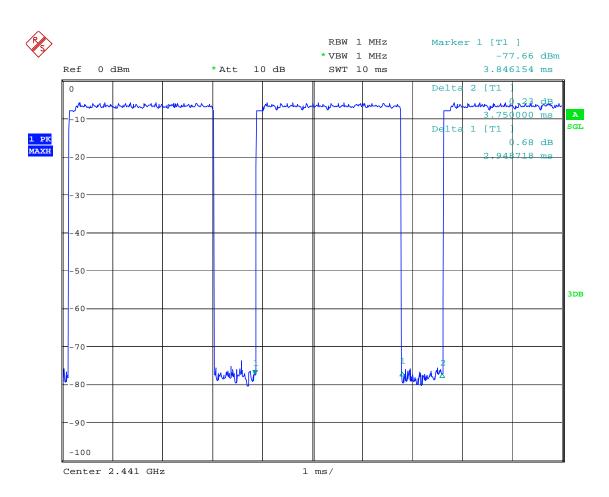
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Test Plots:

3DH5



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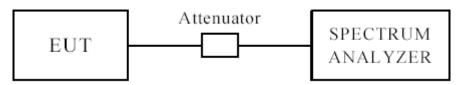
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12 Out of Band Measurement

12.1 Test Setup



The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

12.2 Limits of Out of Band Emissions Measurement

- 1. Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
- 2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

12.3 Test Procedure

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of radiated emission test. Peak values with RBW=VBW=1MHz and PK detector.

For bandage test, the spectrum set as follows: RBW=100 kHz, VBW=300 kHz. A conducted measurement used

Note: 1. For band-edge measurement, the frequency from 30MHz-25GHz was tested. And It met the FCC rule.

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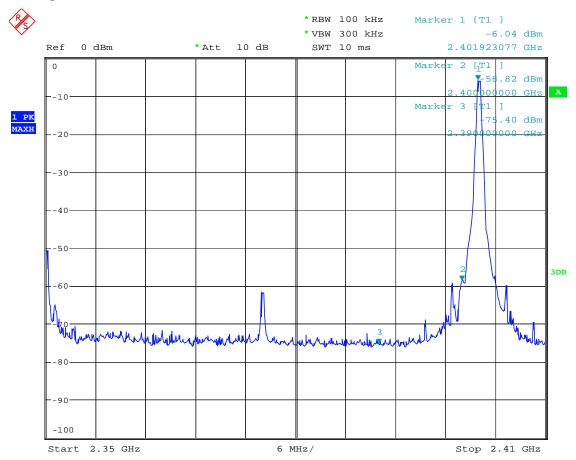


Type of Modulation: GFSK

Band Edge Test Result 12.4

Product:	Eye Massager With Heat	Test Mode:	Low Channel
Mode	Keeping Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



Date: 12.NOV.2019 12:29:40

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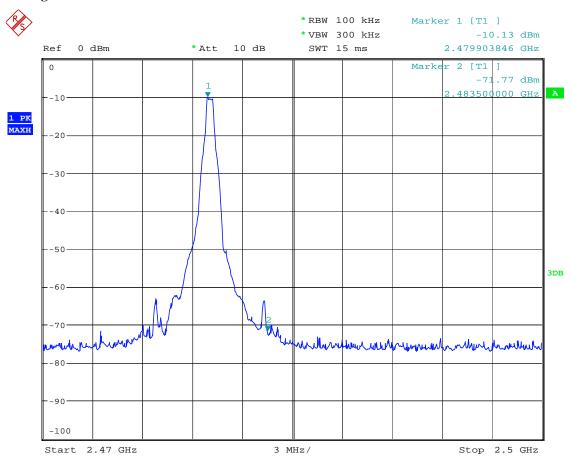


Type of Modulation: GFSK

Band Edge Test Result 12.4

Product:	Eye Massager With Heat	Test Mode:	High Channel
Mode	Keeping Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



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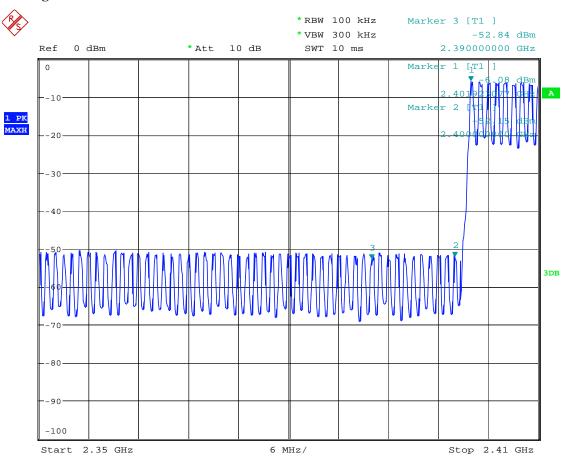


Type of Modulation: GFSK

Band Edge Test Result

Product:	Eye Massager With Heat	Test Mode:	Hopping mode
Mode	Hopping On	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



Date: 12.NOV.2019 09:36:15

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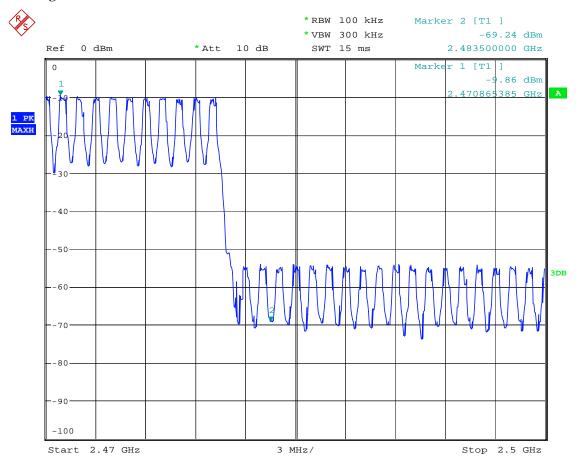


Type of Modulation: GFSK

Band Edge Test Result

Product:	Eye Massager With Heat	Test Mode:	Hopping mode
Mode	Hopping On	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



Date: 12.NOV.2019 09:39:12

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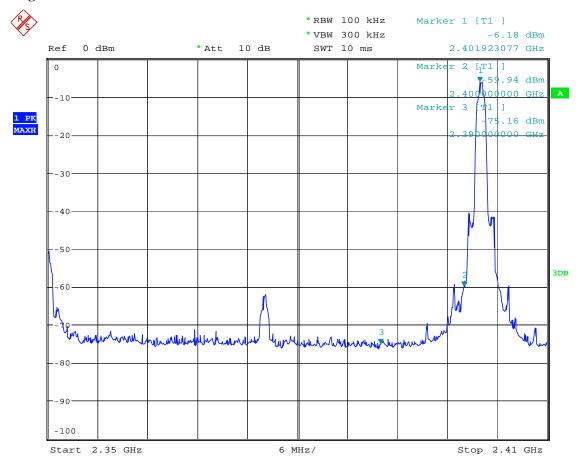


Type of Modulation: Л/4DQPSK

12.4 Out of Band Test Result

Product:	Eye Massager With Heat	Test Mode:	Low Channel
Mode	Keeping Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



Date: 12.NOV.2019 12:31:14

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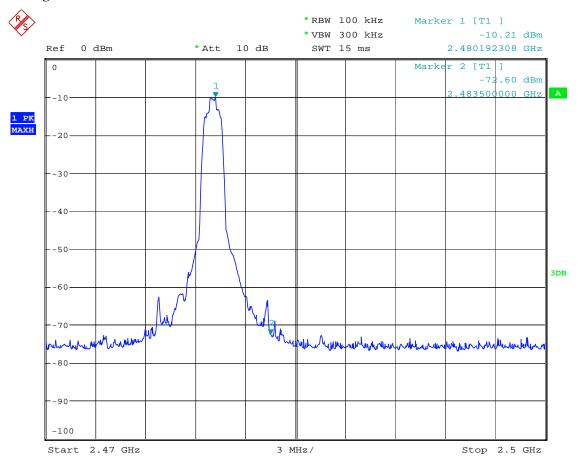


Type of Modulation: Л/4DQPSK

Band Edge Test Result 12.4

Product:	Eye Massager With Heat	Test Mode:	High Channel
Mode	Keeping Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



Date: 12.NOV.2019 12:32:38

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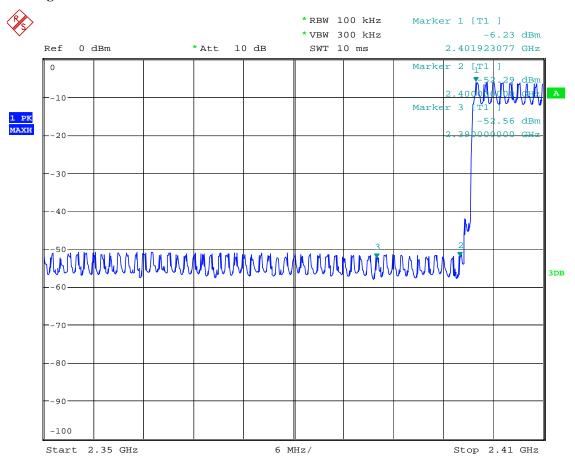


Type of Modulation: JI/4DQPSK

12.4 Out of Band Test Result

Product:	Eye Massager With Heat	Test Mode:	Hopping mode
Mode	Hopping On	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



Date: 12.NOV.2019 13:00:18

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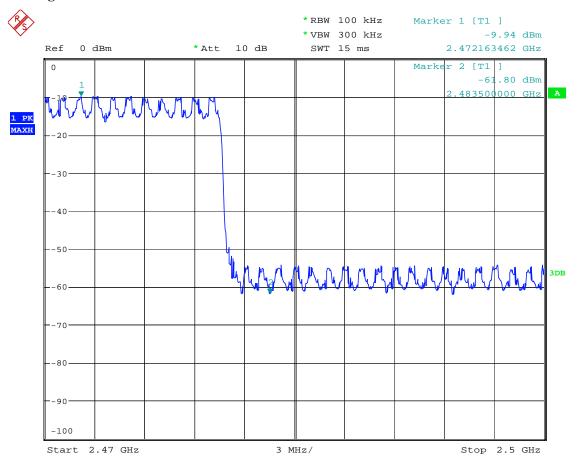


Type of Modulation: Л/4DQPSK

Out of Band Test Result

Product:	Eye Massager With Heat	Test Mode:	Hopping mode
Mode	Hopping On	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



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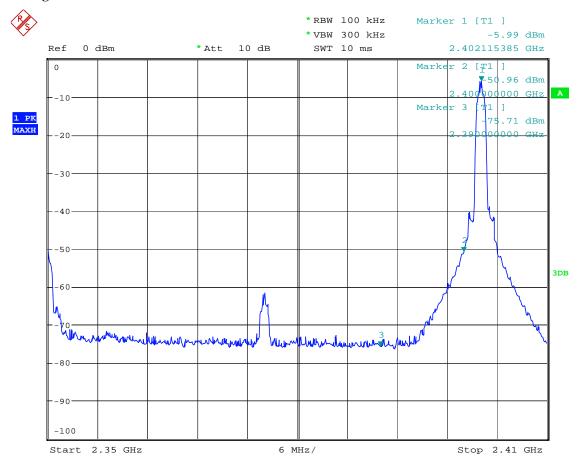


Type of Modulation: 8DPSK

12.4 Band Edge Test Result

Product:	Eye Massager With Heat	Test Mode:	Low Channel
Mode	Keeping Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



Date: 12.NOV.2019 12:28:02

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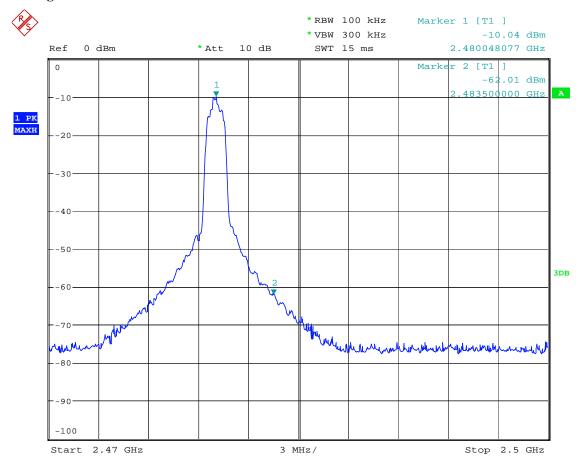


Type of Modulation: 8DPSK

Band Edge Test Result 12.4

Product:	Eye Massager With Heat	Test Mode:	High Channel
Mode	Keeping Transmitting	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



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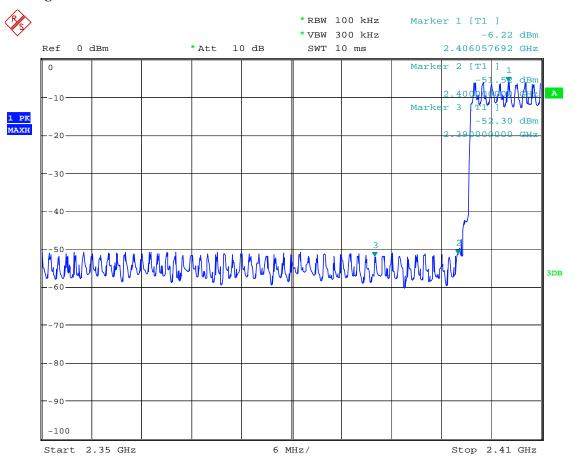


Type of Modulation: 8DPSK

Band Edge Test Result

Product:	Eye Massager With Heat	Test Mode:	Hopping mode
Mode	Hopping On	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



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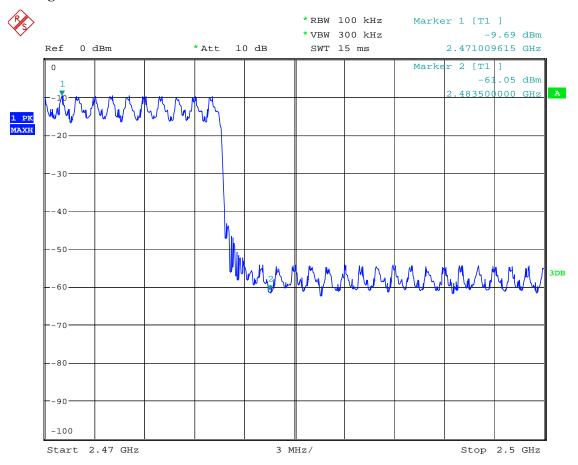


Type of Modulation: 8DPSK

Band Edge Test Result

Product:	Eye Massager With Heat	Test Mode:	Hopping mode
Mode	Hopping On	Input Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

Test Figure:



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12.4 Restrict Band Measurement

	EUT	Γ Eye Massager With Heat				Model		SD-001			
	Mode Keep Transmitting				Keep Transmitting Input Voltage				DC3.7V		
Teı	Temperature 24 deg. C,					Humidity	y		56% R	Н	
Те	Test Result: Pass Modulation Type 8DPS						SK(worse	e case)			
	5B Class B 1GHz-18GH	z - 2					_				
90- 80- 70- 60- 50-						ديان ديان					
30-2360							i andre programme de la companya de	No.		Address	
2360)				Frequency (MH	lz)				2410	
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict	
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)			
		†	-3.53	54.0	-10.03	Peak	183.00	100	Н	Pass	

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12.4 Restrict Band Measurement

EUT		Eye l	Massage	r With Heat		Model			SD-001	
	Mode Keep Transmitting				Keep Transmitting Input Voltage					
Te	Temperature 24 deg. C,				I	Humidity			56% RH	
Te	Test Result: Pass Modulation Type 8DPSK(worse case)						ase)			
CC Part 1	5B Class B 1GHz-18GH:	z - 2					•			
70- (w//ngp) 60-										
40-	hership hership hill be and	almillach d'airith de		Halifflerentleit						
2360)				Frequency (MH	lz)				2410
	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
No.				l	(4D)			(cm)		
No.	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(0)		

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12.4 Restrict Band Measurement

	EUT	Eye	Massage	r With Heat		Model			SD-0	01	
	Mode Keep Transmitting					Input Voltage			DC3.7V		
Teı	mperature		24 deg	g. C,		Humidi	ty		56% F	RH	
Te	Test Result: Pass				N	/Iodulation	Туре	8	DPSK(wo	orse case)	
	5B Class B 1GHz-18GH:	z - 2									
90- 80- 70- 60- 50-						MI					
					/						
40-		ALLE PROPERTY AND A SECOND PROPERTY AND A SE		de de la constitución de la cons		1			Happy Andrews of the State of t		
30- 2460)				Frequency (MH	2483.5 lz)				2500	
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict	
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)			
	2483.5	50.15	-3.57	54.0	-3.85	Peak	116.00	100	Н	Pass	

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12.4 Restrict Band Measurement

	EUT	Eye	Massage	r With Heat		Model		Model			SD-00	1
Mode		K	eep Tran	smitting		Input Volta	age	D		V		
Ten	nperature		24 deg	g. C,		Humidit	у		56% R	Н		
Tes	Test Result: Pass				M	odulation	Туре	8D	PSK(wors	se case)		
C Part 15E	B Class B 1GHz-18GH:	z - 2										
70 - (W/ANDE) ISAN: 50 - 40 -				Nhama Mahama V		M1						
MALLEN			<u> </u>	<u> </u>	Frequency (MH	2483.5 lz)				2500		
30- 2460								1	1			
30- 2460 No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict		
	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict		

Note: 1. For Restricted band test, only the worst case was reported.

2. The measured PK value less than the AV limit, no necessary to take down the AV measurement result.

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13.0 Antenna Requirement

13.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, 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.

And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the mount in dB that the directional gain of the antenna exceeds 6 dBi.

13.2 Antenna Connected constructions

PCB antenna used. The gain of the antennas is 2.6dBi.

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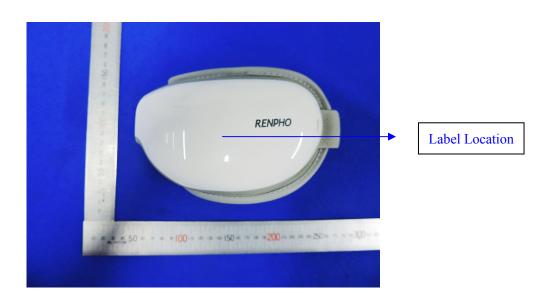


14.0 FCC ID Label

FCC ID: 2AU45-RP-EM001

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

Mark Location:



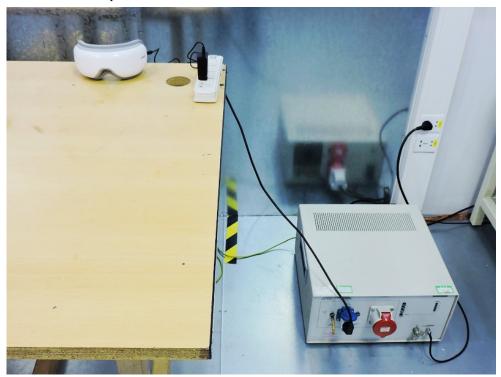
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15.0 Photo of testing

Conducted Emission Test Setup:



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Radiated Emission Test Setup:





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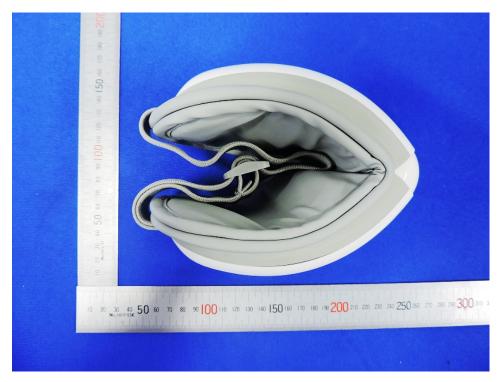


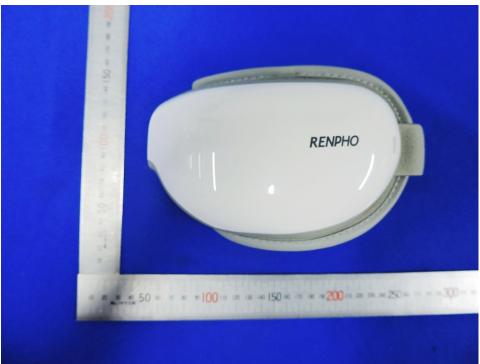
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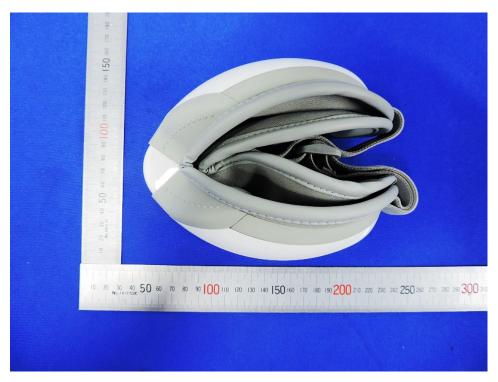


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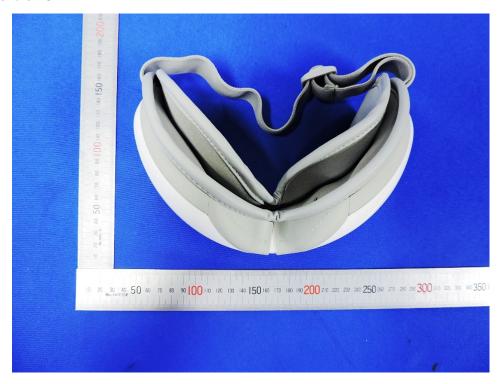


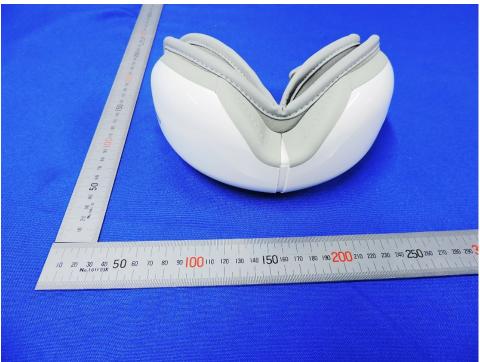
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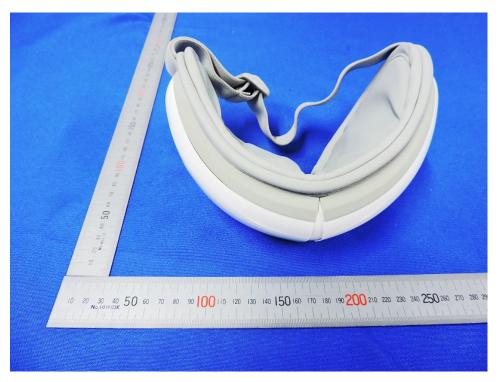
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Photo for the EUT





The report refers only to the sample tested and does not apply to the bulk.

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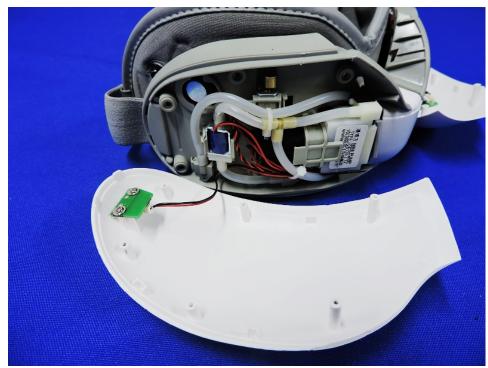
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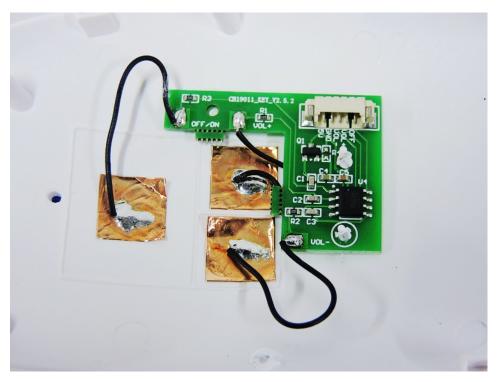


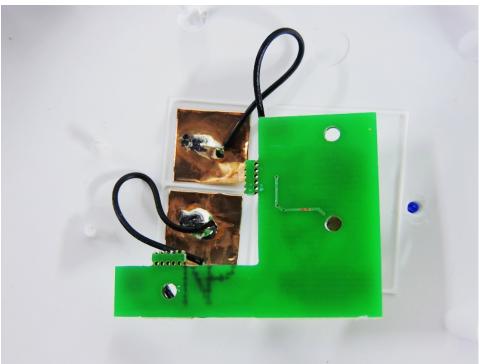
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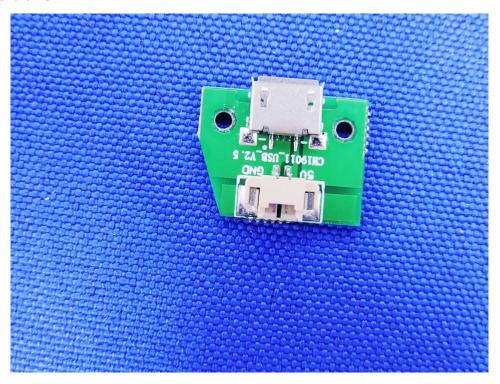


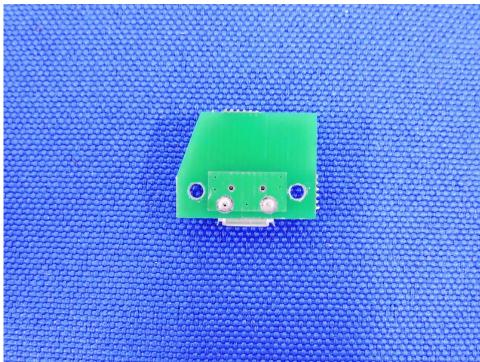
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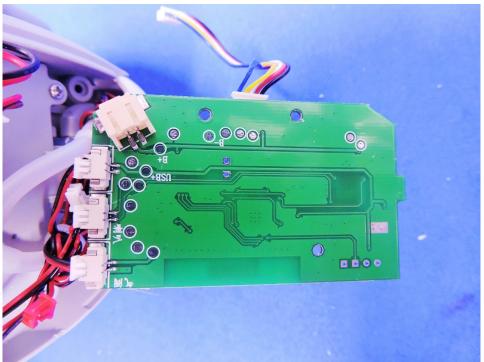
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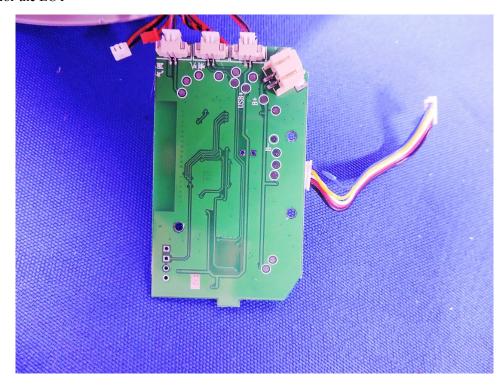


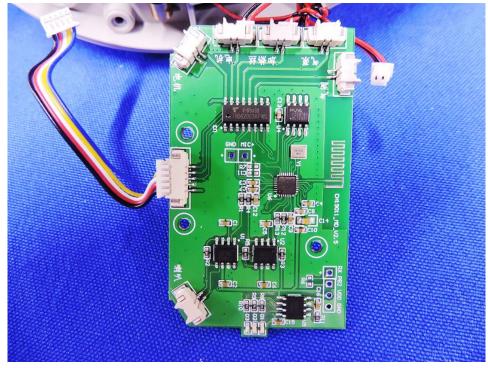
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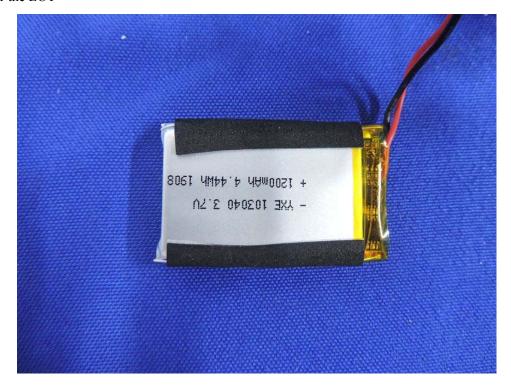


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End of The Report