ISED Test Report

Product Name	Bluetooth Headset
Model No.	OTE120L (left earbud), OTE120R (right earbud),
	CPB120 (charging case)
IC ID	2386C-OTE120

Applicant	GN Audio A/S
Address	Lautrupbjerg 7, 2750 Ballerup, Denmark

Date of Receipt	Sep. 09, 2019
Issued Date	Sep. 25, 2019
Report No.	1990125R-RFCAP70V00-A
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein. This report must not be used to claim product endorsement by TAF or any agency of the government.

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Test Report

Issued Date: Sep. 25, 2019 Report No.: 1990125R-RFCAP70V00-A



Product Name	Bluetooth Headset
Applicant	GN Audio A/S
Address	Lautrupbjerg 7, 2750 Ballerup, Denmark
Manufacturer	GN Audio A/S
Model No.	OTE120L (left earbud), OTE120R (right earbud), CPB120 (charging case)
EUT Rated Voltage	DC 3.7V by Battery
EUT Test Voltage	DC 3.7V by Battery
Trade Name	Jabra
Applicable Standard	RSS-247 Issue 2 (Feb, 2017)
	ANSI C63.4: 2014, ANSI C63.10: 2013
	KDB 558074 D01 15.247 Meas Guidance v05r02
Test Result	Complied
Documented By	Elephant Chen
	(Adm. Specialist / Elephant Chen)
Tested By	Yun Che Chen
	(Engineer / Yunche Chen)
Approved By	Hund
	(Director / Vincent Lin)



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1. GENERAL INFORMATION

1.1. EUT Description

Product Name	Bluetooth Headset
Trade Name	Jabra
Model No.	OTE120L (left earbud), OTE120R (right earbud), CPB120 (charging case)
IC ID	2386C-OTE120
Frequency Range	2402 – 2480MHz
Channel Number	V5.0: 40CH
Type of Modulation	V5.0: π/4DQPSK (2Mbps)
Antenna Type	PCB Antenna
Channel Control	Auto
Antenna Gain	Refer to the table "Antenna List"
USB Cable	Non-Shielded, 0.3m

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Jabra	OTE120L/OTE120R	PCB Antenna	-5.83dBi for 2.4GHz

Firmware/Software Version

1	HW Version Identification Number	OTE120L (left earbud), OTE120R (right earbud), CPB120
	(HVIN)	(charging case)
2	Firmware Version Identification	N/A
	Number (FVIN)	
3	Test SW Version	Blue test 3 V3.2.0
4	RF power setting in TEST SW	\boxtimes RF power setting was not able to alter during testing.
		RF power setting was able to alter during testing.
		(See the following table)

Parameters of test software setting

Frequency 2402MHz		2440MHz	2480MHz	
BLE5.0 (1Mpbs) default		default default		
BLE5.0 (2Mpbs)	default	default	default	

Center Frequency of Each Channel: (For V5.0)

1	2	· · ·	/				
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 00:	2402 MHz	Channel 01:	2404 MHz	Channel 02:	2406 MHz	Channel 03:	2408 MHz
Channel 04:	2410 MHz	Channel 05:	2412 MHz	Channel 06:	2414 MHz	Channel 07:	2416 MHz
Channel 08:	2418 MHz	Channel 09:	2420 MHz	Channel 10:	2422 MHz	Channel 11:	2424 MHz
Channel 12:	2426 MHz	Channel 13:	2428 MHz	Channel 14:	2430 MHz	Channel 15:	2432 MHz
Channel 16:	2434 MHz	Channel 17:	2436 MHz	Channel 18:	2438 MHz	Channel 19:	2440 MHz
Channel 20:	2442 MHz	Channel 21:	2444 MHz	Channel 22:	2446 MHz	Channel 23:	2448 MHz
Channel 24:	2450 MHz	Channel 25:	2452 MHz	Channel 26:	2454 MHz	Channel 27:	2456 MHz
Channel 28:	2458 MHz	Channel 29:	2460 MHz	Channel 30:	2462 MHz	Channel 31:	2464 MHz
Channel 32:	2466 MHz	Channel 33:	2468 MHz	Channel 34:	2470 MHz	Channel 35:	2472 MHz
Channel 36:	2474 MHz	Channel 37:	2476 MHz	Channel 38:	2478 MHz	Channel 39:	2480 MHz

- 1. The EUT is a Bluetooth Headset with a built-in Bluetooth V5.0,V2.1+EDR transceiver, this report for Bluetooth V5.0.
- 2. These tests are conducted on a sample for the purpose of demonstrating compliance of Bluetooth V4.0 transmitter with RSS-247 Issue 2 (Feb, 2017) for spread spectrum devices.
- 3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
- 4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
- 5. These tests are conducted on a sample for the purpose of demonstrating compliance of transmitter with RSS-247 Issue 2 for spread spectrum devices.
- 6. The circuit schematics and components of Right earbud (OTE120R) and Left earbud (OTE120L) are the same. So is the antenna, output power and software. The PCB layout of Right earbud and Left earbud are mirrored, but there are small variations in layout due to non-symmetries of certain component footprints (e.g. IC's).
- Right ear and Left ear mode of the EUT,only the worst case(Right ear) is shown in the report. (Addition test of Radiated Emission below 1GHz for Left ear.)

Test Mode	Mode 1: Transmit - BLE (GFSK)
	Mode 2: Charge

1.3. Tested System Datails

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product		Manufacturer	Model No.	Serial No.	Power Cord
1	Notebook PC	DELL	Latitude E5440	FS9TK32	Non-Shielded, 0.8m

BT mode

Signa	ll Cable Type	Signal cable Description
А	USB Cable	Non-Shielded, 1.7m

Charge mode

Signal Cable Type		Signal cable Description
А	USB Cable	Non-Shielded, 0.3m
В	USB Cable	Non-Shielded, 1.7m

1.4. Configuration of tested System

BT mode







1.5. EUT Exercise Software

- 1. Setup the EUT as shown in Section 1.4.
- 2. Execute software "Blue test3, Ver.3.2" on the EUT.
- 3. Configure the test mode, the test channel, and the data rate.
- 4. Press "OK" to start the continuous Transmit.
- 5. Verify that the EUT works properly.

1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

USA : FCC Registration Number: TW3023

Canada : IC Registration Number: 4075A

Site Description:	Accredited by TAF Accredited Number: 3023
Test Laboratory:	DEKRA Testing and Certification Co., Ltd
Address:	No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451,
	Taiwan, R.O.C.
Phone number:	886-2-8601-3788
Fax number:	886-2-8601-3789
Email address:	info.tw@dekra.com
Website:	http://www.dekra.com.tw



1.7. List of Test Equipment

For Conducted	measurements	/CB3/SR8
ror conducted	measurements	CDJ/SKO

	Equipment Manuf		Manufacturer	Model No.	Serial No.	Cali. Date	Due. Date
	Temperature Chamber		WIT GROUP	TH-1S-B	EQ-201-00146	2019/02/26	2020/02/25
Х	Spectrum Analyzer		Agilent	N9010A	MY53470892	2018/09/27	2019/09/26
Х	Peak Power Analyze	er	Keysight	8990B	MY51000410	2019/08/01	2020/07/31
Х	Wideband Power Se	ensor	Keysight	N1923A	MY56080003	2019/07/25	2020/07/24
Х	Wideband Power Se	ensor	Keysight	N1923A	MY56080004	2019/07/25	2020/07/24
Х	EMI Test Receiver		R&S	ESCS 30	100369	2018/11/19	2019/11/18
Х	LISN		R&S	ENV216	101105	2019/03/30	2020/03/29
Х	LISN		R&S	ESH3-Z5	836679/014	2019/04/02	2020/04/01
Х	Coaxial Cable		DEKRA	RG 400	LC018-RG	2019/06/21	2020/06/20
For	Radiated measurem	nents /S	Site3/CB8				
	Equipment	Manuf	acturer	Model No.	Serial No.	Cali. Date	Due. Date
Х	Spectrum Analyzer	R&S		FSP40	100170	2019/03/11	2020/03/10
Х	Loop Antenna	Teseq		HLA6121	37133	2018/10/13	2019/10/12
Х	Bilog Antenna	Schaff	ner Chase	CBL6112B	2707	2019/06/24	2020/06/23
Х	Coaxial Cable	DEKR	A	RG 214	LC003-RG	2019/06/14	2020/06/13
Х	Pre-Amplifier	Jet-Po	wer	JPA-10M1G33	170101000330010	2019/06/14	2020/06/13
Х	Horn Antenna	ETS-L	indgren	3117	00135205	2019/05/03	2020/05/02
Х	Horn Antenna	SCHW	ARZBECK	9120D	576	2018/12/18	2019/12/17
Х	Pre-Amplifier	EMCI		EMC012630SE	980210	2019/04/10	2020/04/09
	Horn Antenna	Com-F	Power	AH-840	101043	2019/01/09	2020/01/08
	Amplifier + Cable	EMCI		EMC184045SE	980370	2019/03/21	2020/03/20
Х	Filter	MICR	O-TRONICS	BRM50702	G270	2019/08/06	2020/08/05
	Filter	MICR	O-TRONICS	BRM50716	G196	2019/08/06	2020/08/05

Note:

1. All equipments are calibrated every one year.

2. The test instruments marked with "X" are used to measure the final test results.

3. Test Software version :QuieTek EMI 2.0 V2.1.113.



2. Conducted Emission

2.1. Test Setup





2.2. Limits

RSS-Gen Issue 5 Section 8.8				
Frequency	Limits (dBµV)			
MHz	QP	AVG		
0.15 - 0.50	66-56	56-46		
0.50-5.0	56	46		
5.0 - 30	60	50		

2.3. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2013 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

2.4. Uncertainty

± 2.26 dB



2.5. Test Result of Conducted Emission

Product	:	Bluetooth Headset
Test Item	:	Conducted Emission Test
Test date	:	2019/09/17
Test Mode	:	Mode 1: Transmit - BLE (GFSK)_ 2Mbps (2440MHz)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV)	(dB)	(dBuV)	
1		0.189	9.670	27.900	37.570	-27.316	64.886	QUASIPEAK
2		0.252	9.673	33.380	43.053	-20.033	63.086	QUASIPEAK
3	*	1.146	9.722	27.060	36.782	-19.218	56.000	QUASIPEAK
4		3.705	9.834	26.200	36.034	-19.966	56.000	QUASIPEAK
5		6.556	9.919	19.220	29.139	-30.861	60.000	QUASIPEAK
6		22.564	10.195	14.640	24.835	-35.165	60.000	QUASIPEAK

Note:

1. All Reading Levels are Quasi-Peak and average value.

2. " * ", means this data is the worst emission level.

3. Measurement Level = Reading Level + Correct Factor



Product	:	Bluetooth Headset
Test Item	:	Conducted Emission Test
Test date	:	2019/09/17
Test Mode	:	Mode 1: Transmit - BLE (GFSK)_ 2Mbps (2440MHz)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV)	(dB)	(dBuV)	
1		0.189	9.670	12.330	22.000	-32.886	54.886	AVERAGE
2	*	0.252	9.673	30.210	39.883	-13.203	53.086	AVERAGE
3		1.146	9.722	22.230	31.952	-14.048	46.000	AVERAGE
4		3.705	9.834	14.520	24.354	-21.646	46.000	AVERAGE
5		6.556	9.919	10.830	20.749	-29.251	50.000	AVERAGE
6		22.564	10.195	8.020	18.215	-31.785	50.000	AVERAGE

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. " * ", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Product	:	Bluetooth Headset
Test Item	:	Conducted Emission Test
Test date	:	2019/09/17
Test Mode	:	Mode 1: Transmit - BLE (GFSK)_ 2Mbps (2440MHz)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV)	(dB)	(dBuV)	
1	*	0.255	9.703	33.140	42.843	-20.157	63.000	QUASIPEAK
2		0.630	9.724	22.960	32.684	-23.316	56.000	QUASIPEAK
3		1.658	9.800	24.260	34.060	-21.940	56.000	QUASIPEAK
4		3.045	9.859	25.860	35.719	-20.281	56.000	QUASIPEAK
5		13.763	10.190	18.240	28.430	-31.570	60.000	QUASIPEAK
6		22.314	10.393	17.960	28.353	-31.647	60.000	QUASIPEAK

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. " * ", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Product	:	Bluetooth Headset
Test Item	:	Conducted Emission Test
Test date	:	2019/09/17
Test Mode	:	Mode 1: Transmit - BLE (GFSK)_ 2Mbps (2440MHz)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV)	(dB)	(dBuV)	
1	*	0.255	9.703	29.860	39.563	-13.437	53.000	AVERAGE
2		0.630	9.724	19.240	28.964	-17.036	46.000	AVERAGE
3		1.658	9.800	13.220	23.020	-22.980	46.000	AVERAGE
4		3.045	9.859	19.240	29.099	-16.901	46.000	AVERAGE
5		13.763	10.190	13.150	23.340	-26.660	50.000	AVERAGE
6		22.314	10.393	11.800	22.193	-27.807	50.000	AVERAGE

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. " * ", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Product	:	Bluetooth Headset
Test Item	:	Conducted Emission Test
Test date	:	2019/09/17
Test Mode	:	Mode 2: Charge



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV)	(dB)	(dBuV)	
1		0.252	9.673	32.900	42.573	-20.513	63.086	QUASIPEAK
2		0.509	9.687	23.780	33.467	-22.533	56.000	QUASIPEAK
3	*	1.158	9.723	26.400	36.123	-19.877	56.000	QUASIPEAK
4		3.595	9.832	25.720	35.552	-20.448	56.000	QUASIPEAK
5		6.162	9.910	21.680	31.590	-28.410	60.000	QUASIPEAK
6		21.224	10.193	13.520	23.713	-36.287	60.000	QUASIPEAK

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. " * ", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Product	:	Bluetooth Headset
Test Item	:	Conducted Emission Test
Test date	:	2019/09/17
Test Mode	:	Mode 2: Charge



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV)	(dB)	(dBuV)	
1	*	0.252	9.673	29.480	39.153	-13.933	53.086	AVERAGE
2		0.509	9.687	20.870	30.557	-15.443	46.000	AVERAGE
3		1.158	9.723	21.240	30.963	-15.037	46.000	AVERAGE
4		3.595	9.832	16.950	26.782	-19.218	46.000	AVERAGE
5		6.162	9.910	10.620	20.530	-29.470	50.000	AVERAGE
6		21.224	10.193	8.830	19.023	-30.977	50.000	AVERAGE

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. " * ", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Product	:	Bluetooth Headset
Test Item	:	Conducted Emission Test
Test date	:	2019/09/17
Test Mode	:	Mode 2: Charge



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV)	(dB)	(dBuV)	
1		0.252	9.703	32.960	42.663	-20.423	63.086	QUASIPEAK
2		0.638	9.724	23.000	32.724	-23.276	56.000	QUASIPEAK
3		1.654	9.800	24.620	34.420	-21.580	56.000	QUASIPEAK
4	*	3.709	9.874	27.000	36.874	-19.126	56.000	QUASIPEAK
5		14.130	10.197	16.920	27.117	-32.883	60.000	QUASIPEAK
6		21.795	10.388	17.660	28.048	-31.952	60.000	QUASIPEAK

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. " * ", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor



Product	:	Bluetooth Headset
Test Item	:	Conducted Emission Test
Test date	:	2019/09/17
Test Mode	:	Mode 2: Charge



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV)	(dB)	(dBuV)	
1		0.252	9.703	25.860	35.563	-17.523	53.086	AVERAGE
2		0.638	9.724	15.650	25.374	-20.626	46.000	AVERAGE
3		1.654	9.800	15.650	25.450	-20.550	46.000	AVERAGE
4	*	3.709	9.874	20.870	30.744	-15.256	46.000	AVERAGE
5		14.130	10.197	10.620	20.817	-29.183	50.000	AVERAGE
6		21.795	10.388	11.230	21.618	-28.382	50.000	AVERAGE

- 1. All Reading Levels are Quasi-Peak and average value.
- 2. " * ", means this data is the worst emission level.
- 3. Measurement Level = Reading Level + Correct Factor

3. Peak Power Output

3.1. Test Setup

Conduction Power Measurement



3.2. Limits

According to RSS-247 Issue 2, 5.4(b) (Feb, 2017), the maximum peak power shall be less 1 Watt and the e.i.r.p. shall not exceed 4 Watt.

3.3. Test Procedure

The EUT was tested according to DTS test procedure of KDB 558074 for compliance to RSS-247 requirements. The maximum peak conducted output power using KDB 558074 D01 DTS Meas Guidance v04 section 9.1.3 PKPM1 Peak power meter method.

3.4. Uncertainty

± 1.19 dB



3.5. Test Result of Peak Power Output

Product	:	Bluetooth Headset
Test Item	:	Peak Power Output
Test Site	:	No.3 OATS
Test date	:	2019/09/20
Test Mode	:	Mode 1: Transmit - BLE (GFSK)_ 1Mpbs

Channel No.	Frequency	Peak Measurement	Required Limit	Result
	(MHz)	(dBm)		
Channel 00	2402.00	8.34	1 Watt= 30 dBm	Pass
Channel 19	2440.00	8.44	1 Watt= 30 dBm	Pass
Channel 39	2480.00	8.55	1 Watt= 30 dBm	Pass

	Frequency Output Antenna EIRP		EIRP Limit				
Channel No	Range	Power	gain			Result	
	(MHz)	(dBm)	(dBi)	(dBm)	(dBm)		
Channel 00	2402	8.34	-5.83	2.51	36	Pass	
Channel 19	2440	8.44	-5.83	2.61	36	Pass	
Channel 39	2480	8.55	-5.83	2.72	36	Pass	



- Product : Bluetooth Headset
- Test Item : Peak Power Output
- Test Site : No.3 OATS
- Test date : 2019/09/20
- Test Mode : Mode 1: Transmit BLE (GFSK)_ 2Mpbs

Channel No.	Frequency	Peak Measurement	Required Limit	Result
	(MHz)	(dBm)		
Channel 00	2402.00	8.39	1 Watt= 30 dBm	Pass
Channel 19	2440.00	8.47	1 Watt= 30 dBm	Pass
Channel 39	2480.00	8.57	1 Watt= 30 dBm	Pass

Channel No	Frequency Range	Output Power	Antenna gain	EIRP	EIRP Limit	Result
	(MHz)	(dBm)	(dBi)	(dBm)	(dBm)	
Channel 00	2402	8.39	-5.83	2.56	36	Pass
Channel 19	2440	8.47	-5.83	2.64	36	Pass
Channel 39	2480	8.57	-5.83	2.74	36	Pass



4. Radiated Emission

4.1. Test Setup

Under 30MHz





Above 1GHz



4.2. Limits

➤ General Radiated Emission Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in RSS-Gen Issue 5 Section 8.9, whichever is the lesser attenuation.

RSS-Gen Issue 5 Section 8.9					
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)			
0.009-0.490	2400/F(kHz)	300			
0.490-1.705	24000/F(kHz)	30			
1.705-30	30	30			
30-88	100	3			
88-216	150	3			
216-960	200	3			
Above 960	500	3			

Remarks : 1. RF Voltage $(dB\mu V) = 20 \log RF$ Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.

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.

4.3. Test Procedure

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas. The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna. The measurement frequency range form 9kHz - 10th Harmonic of fundamental was investigated.

RBW and VBW Parameter setting:

According to KDB 558074 Peak power measurement procedure

RBW = as specified in Table 1.

VBW \geq 3 x RBW.

Table 1 — RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

According to KDB 558074 Average power measurement procedure

RBW = 1MHz.

VBW = 10Hz, when duty cycle \ge 98 %

VBW \geq 1/T, when duty cycle < 98 %

(T refers to the minimum transmission duration over which the transmitter is on and is

<u> </u>	-			-	
2.4GHz band	Duty Cycle T		1/T	VBW	
	(%)	(ms)	(Hz)	(Hz)	
BLE 1M	84.13	2.1200	472	500	
BLE 2M	57.45	1.0800	926	1000	

transmitting at its maximum power control level for the tested mode of operation.)

Note: Duty Cycle Refer to Section 10

4.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz



4.5. Test Result of Radiated Emission

Product	:	Bluetooth Headset
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK)(2402MHz) _ 1Mbps

Horizontal



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	4804.000	4.604	48.540	53.144	-20.856	74.000	PEAK
2		7206.000	11.659	38.510	50.169	-23.831	74.000	PEAK
3		9608.000	11.907	37.800	49.707	-24.293	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.
- 5. The emission levels of other frequencies are very lower than the limit and not show in test report..



Product	:	Bluetooth Headset
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK)(2402MHz) _ 1Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4804.000	4.604	45.230	49.834	-24.166	74.000	PEAK
2	*	7206.000	11.659	40.630	52.289	-21.711	74.000	PEAK
3		9608.000	11.907	36.730	48.637	-25.363	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.
- 5. The emission levels of other frequencies are very lower than the limit and not show in test report..



Product	:	Bluetooth Headset
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2440MHz) _ 1Mbps

Horizontal



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	4880.000	5.302	45.840	51.142	-22.858	74.000	PEAK
2		7320.000	11.795	38.030	49.825	-24.175	74.000	PEAK
3		9760.000	11.929	37.790	49.720	-24.280	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.
- 5. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product:Bluetooth HeadsetTest Item:Harmonic Radiated EmissionTest Site:No.3 OATSTest date:2019/09/18Test Mode:Mode 1: Transmit - BLE (GFSK) (2440MHz) _ 1Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4880.000	5.302	44.360	49.662	-24.338	74.000	PEAK
2	*	7320.000	11.795	40.760	52.555	-21.445	74.000	PEAK
3		9760.000	11.929	38.420	50.350	-23.650	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.
- 5. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	Bluetooth Headset
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz) _ 1Mbps

Horizontal



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4960.000	6.035	41.870	47.905	-26.095	74.000	PEAK
2		7440.000	10.977	37.780	48.757	-25.243	74.000	PEAK
3	*	9920.000	12.758	36.470	49.227	-24.773	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.
- 5. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	Bluetooth Headset
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz) _ 1Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4960.000	6.035	42.480	48.515	-25.485	74.000	PEAK
2	*	7440.000	10.977	40.020	50.997	-23.003	74.000	PEAK
3		9920.000	12.758	36.850	49.607	-24.393	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.
- 5. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	Bluetooth Headset
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK)(2402MHz) _ 2Mbps

Horizontal



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	4804.000	4.604	48.150	52.754	-21.246	74.000	PEAK
2		7206.000	11.659	37.760	49.419	-24.581	74.000	PEAK
3		9608.000	11.907	36.640	48.547	-25.453	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.
- 5. The emission levels of other frequencies are very lower than the limit and not show in test report..



Product	:	Bluetooth Headset
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK)(2402MHz) _ 2Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4804.000	4.604	45.450	50.054	-23.946	74.000	PEAK
2	*	7206.000	11.659	39.580	51.239	-22.761	74.000	PEAK
3		9608.000	11.907	37.790	49.697	-24.303	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.
- 5. The emission levels of other frequencies are very lower than the limit and not show in test report..



Product	:	Bluetooth Headset
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2440MHz) _ 2Mbps

Horizontal



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	4880.000	5.302	45.940	51.242	-22.758	74.000	PEAK
2		7320.000	11.795	37.710	49.505	-24.495	74.000	PEAK
3		9760.000	11.929	37.790	49.720	-24.280	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.
- 5. The emission levels of other frequencies are very lower than the limit and not show in test report.


Product	:	Bluetooth Headset
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2440MHz) _ 2Mbps





		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4880.000	5.302	44.580	49.882	-24.118	74.000	PEAK
2	*	7320.000	11.795	39.730	51.525	-22.475	74.000	PEAK
3		9760.000	11.929	38.010	49.940	-24.060	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.
- 5. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	Bluetooth Headset
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz) _ 2Mbps





		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4960.000	6.035	42.290	48.325	-25.675	74.000	PEAK
2		7440.000	10.977	37.110	48.087	-25.913	74.000	PEAK
3	*	9920.000	12.758	36.240	48.997	-25.003	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.
- 5. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	Bluetooth Headset
Test Item	:	Harmonic Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz) _ 2Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		4960.000	6.035	41.940	47.975	-26.025	74.000	PEAK
2	*	7440.000	10.977	39.920	50.897	-23.103	74.000	PEAK
3		9920.000	12.758	37.440	50.197	-23.803	74.000	PEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The average measurement was not performed when the peak measured data under the limit of average detection.
- 5. The emission levels of other frequencies are very lower than the limit and not show in test report.



Product	:	Bluetooth Headset
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/17
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2440MHz) _ 1Mbps(Right ear)





		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		98.884	-16.266	42.178	25.912	-17.588	43.500	QUASIPEAK
2	*	211.348	-18.197	53.268	35.070	-8.430	43.500	QUASIPEAK
3		351.928	-13.196	42.517	29.321	-16.679	46.000	QUASIPEAK
4		492.507	-11.335	44.741	33.406	-12.594	46.000	QUASIPEAK
5		634.493	-8.631	34.084	25.453	-20.547	46.000	QUASIPEAK
6		832.710	-8.624	35.467	26.843	-19.157	46.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 5. No emission found between lowest internal used/generated frequency to 30MHz.



Product	:	Bluetooth Headset
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/17
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2440MHz) _ 1Mbps(Right ear)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	45.464	-18.197	47.110	28.913	-11.087	40.000	QUASIPEAK
2		142.464	-18.164	42.737	24.572	-18.928	43.500	QUASIPEAK
3		225.406	-17.797	41.038	23.241	-22.759	46.000	QUASIPEAK
4		493.913	-11.247	36.265	25.019	-20.981	46.000	QUASIPEAK
5		602.159	-6.758	29.825	23.066	-22.934	46.000	QUASIPEAK
6		832.710	-8.624	38.314	29.690	-16.310	46.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 5. No emission found between lowest internal used/generated frequency to 30MHz.



Product	:	Bluetooth Headset
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/17
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2440MHz) _ 2Mbps(Right ear)





		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		97.478	-16.559	42.033	25.474	-18.026	43.500	QUASIPEAK
2	*	218.377	-18.105	53.029	34.924	-11.076	46.000	QUASIPEAK
3		353.333	-13.111	43.292	30.181	-15.819	46.000	QUASIPEAK
4		493.913	-11.247	46.020	34.774	-11.226	46.000	QUASIPEAK
5		635.899	-8.679	35.091	26.412	-19.588	46.000	QUASIPEAK
6		832.710	-8.624	37.753	29.129	-16.871	46.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 5. No emission found between lowest internal used/generated frequency to 30MHz.



Product	:	Bluetooth Headset
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/17
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2440MHz) _ 2Mbps(Right ear)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	49.681	-17.989	46.243	28.254	-11.746	40.000	QUASIPEAK
2		96.072	-16.854	41.214	24.360	-19.140	43.500	QUASIPEAK
3		204.319	-18.166	43.264	25.098	-18.402	43.500	QUASIPEAK
4		492.507	-11.335	36.823	25.488	-20.512	46.000	QUASIPEAK
5		603.565	-6.860	30.240	23.380	-22.620	46.000	QUASIPEAK
6		832.710	-8.624	38.319	29.695	-16.305	46.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 5. No emission found between lowest internal used/generated frequency to 30MHz.



Product	:	Bluetooth Headset
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/17
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2440MHz) _ 1Mbps(Left ear)





		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		94.667	-17.077	42.076	24.999	-18.501	43.500	QUASIPEAK
2	*	205.725	-18.177	54.233	36.056	-7.444	43.500	QUASIPEAK
3		353.333	-13.111	41.593	28.482	-17.518	46.000	QUASIPEAK
4		492.507	-11.335	41.092	29.757	-16.243	46.000	QUASIPEAK
5		599.348	-6.631	30.180	23.549	-22.451	46.000	QUASIPEAK
6		832.710	-8.624	35.212	26.588	-19.412	46.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 5. No emission found between lowest internal used/generated frequency to 30MHz.



Product	:	Bluetooth Headset
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/17
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2440MHz) _ 1Mbps(Left ear)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		96.072	-16.854	41.950	25.096	-18.404	43.500	QUASIPEAK
2	*	205.725	-18.177	45.506	27.329	-16.171	43.500	QUASIPEAK
3		457.362	-10.408	38.186	27.778	-18.222	46.000	QUASIPEAK
4		493.913	-11.247	37.134	25.888	-20.112	46.000	QUASIPEAK
5		602.159	-6.758	30.036	23.277	-22.723	46.000	QUASIPEAK
6		832.710	-8.624	38.265	29.641	-16.359	46.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 5. No emission found between lowest internal used/generated frequency to 30MHz.



Product	:	Bluetooth Headset
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/17
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2440MHz) _ 2Mbps(Left ear)





		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		94.667	-17.077	43.567	26.490	-17.010	43.500	QUASIPEAK
2	*	202.913	-18.158	52.049	33.891	-9.609	43.500	QUASIPEAK
3		351.928	-13.196	41.831	28.635	-17.365	46.000	QUASIPEAK
4		492.507	-11.335	45.974	34.639	-11.361	46.000	QUASIPEAK
5		595.130	-6.823	30.328	23.505	-22.495	46.000	QUASIPEAK
6		834.116	-8.589	37.350	28.761	-17.239	46.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 5. No emission found between lowest internal used/generated frequency to 30MHz.



Product	:	Bluetooth Headset
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/17
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2440MHz) _ 2Mbps(Left ear)



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		49.681	-17.989	45.227	27.238	-12.762	40.000	QUASIPEAK
2		222.594	-17.945	43.933	25.987	-20.013	46.000	QUASIPEAK
3	*	357.551	-12.856	50.018	37.162	-8.838	46.000	QUASIPEAK
4		499.536	-10.867	34.424	23.558	-22.442	46.000	QUASIPEAK
5		730.087	-7.221	30.112	22.892	-23.108	46.000	QUASIPEAK
6		832.710	-8.624	37.845	29.221	-16.779	46.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 5. No emission found between lowest internal used/generated frequency to 30MHz.



Product	:	Bluetooth Headset
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/19
Test Mode	:	Mode 2: Charge



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		101.696	-15.816	49.510	33.694	-9.806	43.500	QUASIPEAK
2		195.884	-17.289	52.755	35.466	-8.034	43.500	QUASIPEAK
3	*	351.928	-10.645	49.027	38.383	-7.617	46.000	QUASIPEAK
4		493.913	-9.618	46.563	36.945	-9.055	46.000	QUASIPEAK
5		633.087	-7.188	34.743	27.556	-18.444	46.000	QUASIPEAK
6		832.710	-7.386	39.498	32.113	-13.887	46.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 5. No emission found between lowest internal used/generated frequency to 30MHz.



Product	:	Bluetooth Headset
Test Item	:	General Radiated Emission
Test Site	:	No.3 OATS
Test date	:	2019/09/19
Test Mode	:	Mode 2: Charge



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	41.246	-16.998	49.980	32.982	-7.018	40.000	QUASIPEAK
2		79.203	-18.214	48.336	30.122	-9.878	40.000	QUASIPEAK
3		351.928	-10.645	36.409	25.765	-20.235	46.000	QUASIPEAK
4		499.536	-9.360	38.956	29.596	-16.404	46.000	QUASIPEAK
5		666.826	-7.624	33.435	25.811	-20.189	46.000	QUASIPEAK
6		832.710	-7.386	42.526	35.141	-10.859	46.000	QUASIPEAK

- 1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. Correct Factor = Antenna factor + Cable loss Amplifier gain.
- 4. The emission levels of other frequencies are very lower than the limit and not show in test report.
- 5. No emission found between lowest internal used/generated frequency to 30MHz.

5. **RF Antenna Conducted Test**

5.1. Test Setup



5.2. Limits

According to RSS-247 Issue 2, 5.5 (Feb, 2017). In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

5.3. Test Procedure

The EUT was setup to ANSI C63.10, 2013; According to RSS-247 Issue 2, 5.5 (Feb, 2017)

5.4. Uncertainty

± 1.20dB

5.5. Test Result of RF Antenna Conducted Test

Product	:	Bluetooth Headset
Test Item	:	RF Antenna Conducted Test
Test Site	:	No.3 OATS
Test date	:	2019/08/28
Test Mode	:	Mode 1: Transmit - BLE (GFSK)

Figure Channel 00:



Figure Channel 19:



Figure Channel 39:





Product	:	Bluetooth Headset
Test Item	:	RF Antenna Conducted Test
Test Site	:	No.3 OATS
Test date	:	2019/09/10
Test Mode	:	Mode 1: Transmit - BLE (GFSK) _ 2Mbps

Figure Channel 00:



Figure Channel 19:



Figure Channel 39:





6. Band Edge

6.1. Test Setup

RF Radiated Measurement:



6.2. Limits

According to RSS-247 Issue 2, 5.5 (Feb, 2017). In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

6.3. Test Procedure

The EUT and its simulators are placed on a turn table which is 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.10: 2013 on radiated measurement.

The bandwidth below 1GHz setting on the field strength meter is 120 kHz, above 1GHz are 1 MHz.

RBW and VBW Parameter setting:

According to KDB 558074 Peak power measurement procedure

RBW = as specified in Table 1.

VBW \ge 3 x RBW.

Table 1 — RBW as a function of frequency

Frequency	RBW
9-150 kHz	200-300 Hz
0.15-30 MHz	9-10 kHz
30-1000 MHz	100-120 kHz
> 1000 MHz	1 MHz

According to KDB 558074 Average power measurement procedure

RBW = 1MHz.

VBW = 10Hz, when duty cycle \ge 98 %

VBW \geq 1/T, when duty cycle < 98 %

(T refers to the minimum transmission duration over which the transmitter is on and is

	A			A
2.4GHz band	Duty Cycle	Т	1/T	VBW
	(%)	(ms)	(Hz)	(Hz)
BLE 1M	84.13	2.1200	472	500
BLE 2M	57.45	1.0800	926	1000

transmitting at its maximum power control level for the tested mode of operation.)

Note: Duty Cycle Refer to Section 10

6.4. Uncertainty

- ± 4.08 dB above 1GHz
- \pm 4.22 dB below 1GHz



6.5. Test Result of Band Edge

Product	:	Bluetooth Headset
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2402MHz) _ 1Mbps

Horizontal



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		2390.000	8.763	40.122	48.885	-25.115	74.000	PEAK
2		2400.000	8.799	63.111	71.910			PEAK
3	*	2401.884	8.806	93.614	102.420			PEAK

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	Bluetooth Headset	
Test Item	:	Band Edge	
Test Site	:	No.3 OATS	
Test date	:	2019/09/18	
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2402MHz)	1Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		2390.000	8.763	25.015	33.778	-20.222	54.000	AVERAGE
2		2400.000	8.799	51.207	60.006			AVERAGE
3	*	2402.029	8.807	93.331	102.137			AVERAGE

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	Bluetooth Headset
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2402MHz) _ 1Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		2388.261	8.757	42.757	51.514	-22.486	74.000	PEAK
2		2390.000	8.763	40.112	48.875	-25.125	74.000	PEAK
3		2400.000	8.799	58.286	67.085			PEAK
4	*	2401.739	8.806	88.392	97.197			PEAK

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	Bluetooth Headset
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2402MHz) _ 1Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		2390.000	8.763	23.720	32.483	-21.517	54.000	AVERAGE
2		2400.000	8.799	45.999	54.798			AVERAGE
3	*	2402.029	8.807	88.104	96.910			AVERAGE

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. The average measurement was not performed when the peak measured data under the limit of average detection.



:	Bluetooth Headset
:	Band Edge
:	No.3 OATS
:	2019/09/18
:	Mode 1: Transmit - BLE (GFSK) (2480MHz) _ 1Mbps
	::



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	2479.732	9.086	92.070	101.156			PEAK
2		2483.500	9.100	42.693	51.792	-22.208	74.000	PEAK

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	Bluetooth Headset
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz) _ 1Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	2480.022	9.086	91.726	100.813			AVERAGE
2		2483.500	9.100	30.023	39.122	-14.878	54.000	AVERAGE

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	Bluetooth Headset
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz) _ 1Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	2479.732	9.086	86.146	95.232			PEAK
2		2483.500	9.100	40.950	50.049	-23.951	74.000	PEAK

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	Bluetooth Headset	
Test Item	:	Band Edge	
Test Site	:	No.3 OATS	
Test date	:	2019/09/18	
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz)	1Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	2480.022	9.086	85.760	94.847			AVERAGE
2		2483.500	9.100	26.060	35.159	-18.841	54.000	AVERAGE

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	Bluetooth Headset	
Test Item	:	Band Edge	
Test Site	:	No.3 OATS	
Test date	:	2019/09/18	
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2402MHz)	2Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		2390.000	8.763	40.927	49.690	-24.310	74.000	PEAK
2		2400.000	8.799	73.043	81.842			PEAK
3	*	2401.449	8.805	93.622	102.426			PEAK

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	Bluetooth Headset
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2402MHz) _ 2Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		2369.710	8.690	25.646	34.336	-19.664	54.000	AVERAGE
2		2390.000	8.763	25.137	33.900	-20.100	54.000	AVERAGE
3		2400.000	8.799	63.325	72.124			AVERAGE
4	*	2402.029	8.807	91.854	100.660			AVERAGE

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	Bluetooth Headset
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2402MHz) _ 2Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		2346.522	8.606	42.782	51.388	-22.612	74.000	PEAK
2		2390.000	8.763	39.861	48.624	-25.376	74.000	PEAK
3		2400.000	8.799	67.835	76.634			PEAK
4	*	2401.449	8.805	88.439	97.243			PEAK

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	Bluetooth Headset
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2402MHz) _ 2Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1		2390.000	8.763	23.799	32.562	-21.438	54.000	AVERAGE
2		2400.000	8.799	58.147	66.946			AVERAGE
3	*	2402.029	8.807	86.602	95.408			AVERAGE

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	Bluetooth Headset
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz) _ 2Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	2479.442	9.084	91.920	101.004			PEAK
2		2483.500	9.100	48.460	57.559	-16.441	74.000	PEAK

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	Bluetooth Headset
Test Item	:	Band Edge
Test Site	:	No.3 OATS
Test date	:	2019/09/18
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz) _ 2Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	2480.022	9.086	90.072	99.159			AVERAGE
2		2483.500	9.100	33.821	42.920	-11.080	54.000	AVERAGE

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	Bluetooth Headset	
Test Item	:	Band Edge	
Test Site	:	No.3 OATS	
Test date	:	2019/09/18	
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz)	2Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	2479.442	9.084	86.323	95.407			PEAK
2		2483.500	9.100	45.241	54.340	-19.660	74.000	PEAK

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. The average measurement was not performed when the peak measured data under the limit of average detection.



Product	:	Bluetooth Headset	
Test Item	:	Band Edge	
Test Site	:	No.3 OATS	
Test date	:	2019/09/18	
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz)	2Mbps



		Frequency	Correct Factor	Reading Level	Measure Level	Margin	Limit	Detector Type
		(MHz)	(dB)	(dBuV)	(dBuV/m)	(dB)	(dBuV/m)	
1	*	2480.022	9.086	84.444	93.531			AVERAGE
2		2483.500	9.100	30.281	39.380	-14.620	54.000	AVERAGE

- 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
- 2. Measurement Level = Reading Level + Correct Factor.
- 3. The average measurement was not performed when the peak measured data under the limit of average detection.


7. 99% Occupied Bandwidth

7.1. Test Setup



7.2. Limits

No Required

7.3. Uncertainty

± 283Hz

7.4. Test Result of 99% Occupied Bandwidth

Product	:	Bluetooth Headset
Test Item	:	99% Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2402MHz)_ 1Mpbs

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	1097.8		NA

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Product	:	Bluetooth Headset
Test Item	:	99% Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2440MHz)_ 1Mpbs

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
19	2440	1096.1		NA

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)ccu	pied Ban	dwidth				Tota	al Po	ower	13.8	dBm		
			1.09	61 MH	-17								Eron Offect
				••••••									
Г	rans	mit Freq E	rror	4.309 k	Hz		OB	N Pe	ower	99	.00 %		0 H2
x	x dB Bandwidth 1.344 MHz				x dB			-26.	-26.00 dB				
MSG										STATUS			<u></u>



Product	:	Bluetooth Headset
Test Item	:	99% Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz)_ 1Mpbs

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2480	1093.7		NA

🊺 Keysight	t Spectrum Analyzer - (Occupied BW									
LXI ∟ Contor	RF 50		1-	Cent	SENSE:IN	T 48000	0000 GHz	ALIGN AUTO	04:44:28 Al	M Sep 11, 2019	Frequency
Center	FIEQ 2.4000	00000 Gr	1 <u>2</u>	Trig	Trig: Free Run Avg Hold: 10/10					DTC	
-		#IF	Gain:Low	#Att	en: 30 dB				Radio Dev	ICE: DI S	
10 dB/di	Ref Offs v Ref 20 .	et 0.5 dB 50 dBm									
Log 10.5											Contor From
n 500					$ \land$						2 48000000 GHz
-9.50						5					2.400000000000112
-19.5											
.29.5				\sim		\bigvee	λ				
-39.5			\sim				$\backslash \Lambda$				
-49.5		<i>.</i>	میں اس میں اس میں اس میں اس				~ V				
-59.5 unn	Martine work The	where the						Wingow Waland	Wedder haven	he have	
-30.5 60 £											
-05.0											
Center #Res B	2.48 GHz W 100 kHz			#VBW 100 kHz					Spa #Sweep	CF Step	
0.00	unied Ban	dwidth			То	tal P	ower	1/ 1	dBm		<u>Auto</u> Man
000	upieu Ban				10	un	00001	14.1	ubm		
		1.09	37 MI	ΗZ							Freq Offset
Tran	Transmit Freq Error 3.642 kHz			κHz	OB	WP	ower	99	.00 %		0 Hz
x dB	x dB Bandwidth 1.339 MHz			IHz	xdB -2			-26.	00 dB		
MSG								STATUS	;		



Product	:	Bluetooth Headset
Test Item	:	99% Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2402MHz)_ 2Mpbs

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	2082.1		NA

🎉 Keysight S	pectrum Analyzer - Occ	upied BW								
L∐ Contor	RF 50 Ω		-	SEI	NSE:INT	0000 GHz	ALIGN AUTO	05:00:39 AM	Sep 11, 2019	Frequency
Center	_req 2.40200]	#IFC	Z Gain:Low	#Atten: 3	e Run 0 dB	Avg Hold	: 10/10	Radio Device: BTS		
10 dB/div	Ref Offset Ref 20.5	0.5 dB 0 dB m								
Log 10.5 0.500				~~~~	h					Center Freq 2.402000000 GHz
-9.50 -19.5 -29.5		/	\sim			_~~	\			
-39.5 -49.5	with and the second second						- hours	hund walkersty	waylesson redained	
-69.5									40 MU-	
#Res BV	2.402 GH2 V 100 kHz			#VE	3W 100 k	Hz		spar #Sweep	500 ms	CF Step 1.000000 MHz
Осси	ipied Band	width			Total P	ower	15.5	dBm		<u>Auto</u> Man
		2.08	21 MI	Ηz						Freq Offset
Trans	mit Freq Err	or	7.799	κHz	OBW Po	ower	99	.00 %		0 Hz
x dB l	Bandwidth		2.527 N	1Hz	x dB		-26.	00 dB		
MSG							STATUS			



Product	:	Bluetooth Headset
Test Item	:	99% Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2440MHz)_ Mpbs

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
19	2440	2079		NA

🊺 Keysight	Spectrum Analyzer - Oc	cupied BW									
<mark>₩</mark> L Center	RF 50 Ω		7	SEI Center Fi	SENSE:INT ALIGN AUTO				M Sep 11, 2019 None	Frequency	
Conter		#EG	∠ ain:low	Trig: Free #Atten: 3	e Run 0 dB	Avg Hold	: 10/10	Radio Dev	Radio Device: BTS		
		#11 C	am.cow								
10 dB/div	Ref Offset Ref 20.5	0.5 dB 0 dBm									
Log 10.5										Contor From	
D.500				m	m					2.440000000 GHz	
-9.50				~~~	~	\					
-19.5						2					
-29.5		— A	\sim			- V~~	<u> </u>				
-39.5								1			
-49.5	and and a state of the state of	*					~	June Carley	Mar and a second		
-59.5											
-69.5											
Center	2.44 GHz							Spa	n 10 MHz	CE Stop	
#Res B∖	N 100 kHz			#VE	#VBW 100 kHz				#Sweep 500 ms 1.000000 MH		
0.00	unied Band	width			Total P	ower	15.6	dBm		<u>Auto</u> Man	
		2 07	00 M.	1-							
		2.07	90 IVII	12						Freq Offset	
Tran	smit Freq Eri	ror	7.211	κHz	OBW Po	ower	99	.00 %		0 Hz	
x dB	x dB Bandwidth 2.525 M			Hz xdB -26			-26.	·26.00 dB			
MSG							STATUS				



Product	:	Bluetooth Headset
Test Item	:	99% Occupied Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz)_ 2Mpbs

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2480	2079.4		NA

🎉 Keysight	Spectrum Analyzer - O	ccupied BW								
	RF 50 9		<u> </u>	SEI	NSE:INT	0000 GH7	ALIGN AUTO	05:07:46 AM	Sep 11, 2019	Frequency
Center	Freq 2.4800	00000 GF #F	1Z Gain:Low	#Atten: 3	Trig: Free Run Avg Hold: 10/10 #Atten: 30 dB			Radio Std.	ice: BTS	
10 dB/div	Ref Offse Ref 20.	t 0.5 dB 50 dBm								
10.5				~~~	h.					Center Freq 2.480000000 GHz
-9.50 -19.5 -29.5		/	\sim			V	<u>\</u>			
-39.5 -49.5	an of the state of							Land and the second sec	Waldware with they'	
-69.5	2.40.00								40 BBU-	
#Res B	2.48 GH2 N 100 kHz			#VBW 100 kHz				spai #Sweep	500 ms	CF Step 1.000000 MHz
Осс	upied Ban	dwidth			Total P	ower	15.9	dBm	<u>Auto</u> Man	
		2.07	94 MI	Ηz						Freq Offset
Tran	smit Freq Er	ror	7.625	kHz	OBW Po	ower	99	.00 %		0 Hz
x dB	Bandwidth		2.522 N	1Hz	x dB		-26.	00 dB		
MSG							STATUS			

8. 6dB Bandwidth

8.1. Test Setup



8.2. Limits

According to RSS-247 Issue 2, 5.2 (a)(Feb, 2017). The minimum bandwidth shall be at least 500kHz.

8.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013; tested according to DTS test procedure of KDB 558074 for compliance to RSS-247 Issue 2 (Feb, 2017) requirements.

8.4. Uncertainty

 \pm 283Hz

8.5. Test Result of 6dB Bandwidth

Product	:	Bluetooth Headset
Test Item	:	6dB Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2402MHz) _ 1Mbps

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
00	2402	710	>500	Pass

🍺 К	eysight	Spect	rum A	nalyzer - Swe	pt SA								- 0 🔀
w Cer	L nter	Fre	RF Pq 2	50 Ω 2.40200	AC 0000 G	Hz	SEI	NSE:INT	Avg Typ	ALIGN AUTO	04:37:22 A	MSep 11, 2019 CE 1 2 3 4 5 6	Frequency
			Ref	Offset 0.5	dB	PNO: Wide C FGain:Low	#Atten: 3	odB		Mkr	2 2.401	63 GHz	Auto Tune
10 c Log 10.(0.500 -9.50		/	Ref	20.50 d	IBM		2 ²	1			2.	2.42 dBm	Center Freq 2.402000000 GHz
-19.6 -29.6 -39.6	; ; ;									~			Start Freq 2.397000000 GHz
-49.5 -59.5 -69.5	; ;	~	~~~	un (ment	w w					More Con		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Stop Freq 2.407000000 GHz
Cei #Re	nter es B ¹	2.40 W 1	0200 00	00 GHz kHz		#VB	W 300 kHz	EUN	Sweep	(#Swp) 1	Span 1 .000 ms (0.00 MHz 1001 pts)	CF Step 1.000000 MHz <u>Auto</u> Man
1 3 4 5 6 7 8 9 10 11 <	NODE N N				2.402 2.401 2.402	01 GHz 63 GHz 34 GHz	8.42 dl 2.11 dl 2.41 dl				FUNCT		Freq Offset 0 Hz
MSG										STATU	S		



Product	:	Bluetooth Headset
Test Item	:	6dB Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2440MHz) _ 1Mbps

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
19	2440	710	>500	Pass

🊺 Ke	ysight Sp	ectrum	Analyzer - Swe	ept SA								
<mark>⊮</mark> Cen	∟ nter F	req	50 Ω 2.44000	AC 0000 GH	lz	SEN	ISE:INT	Avg Typ	ALIGN AUTO	04:40:40 A TRA	M Sep 11, 2019 CE 1 2 3 4 5 6	Frequency
	PNO: Wide C Hg. Tee Run IFGain:Low #Atten: 30 dB DET P NNNNN Ref Offset 0.5 dB 2 47 dBm										Auto Tune	
10 di Log 10.5 0.500	B/div	Re	f 20.50 c	IBM		2 ²	2 <mark>3</mark>			2.	2.52 dBm	Center Freq 2.440000000 GHz
-19.5 -29.5 -39.5						m -						Start Freq 2.435000000 GHz
-49.5 -59.5 -69.5	~~~	www	- Con	hand have a							~~~~	Stop Freq 2.445000000 GHz
Cen #Re	ter 2. s BW	.4400 100	000 GHz kHz	X	#VBW	/ 300 kHz Y	FUNC	Sweep	(#Swp) 1	Span 1 .000 ms (0.00 MHz 1001 pts)	CF Step 1.000000 MHz <u>Auto</u> Man
1 2 3 4 5 6	N N N	1 f 1 f		2.440 0 2.439 6 2.440 3	1 GHz 4 GHz 5 GHz	8.52 dE 2.47 dE 2.20 dE	3m 3m 3m				=	Freq Offset 0 Hz
7 8 9 10 11												
MSG									STATU	S		<u> </u>



Product	:	Bluetooth Headset
Test Item	:	6dB Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz) _ 1Mbps

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2480	710	>500	Pass

🊺 Ke	ysight	Spect	rum A	Analyzer - Swe	ept SA								
<mark>ير،</mark> Cen	L nter	Fre	RF Pq 2	50 Ω 2.48000	AC 00000 GH	lz	SE	NSE:INT	Avg Ty	ALIGN AUTO	04:44:48 A TRAC	M Sep 11, 2019 DE 1 2 3 4 5 6 PE M WWWWW	Frequency
10 d	B/div		Ref Ref	Offset 0.5	i dB	NO: Wide Gain:Low	#Atten: 3	30 dB		Mkı	°2 2.479 2.	64 GHz 71 dBm	Auto Tune
Log 10.5 0.500 -9.50							2	¹ ³				2.80 dBm	Center Freq 2.48000000 GHz
-19.5 -29.5 -39.5													Start Freq 2.475000000 GHz
-49.5 -59.5 -69.5	m	∕^ъ		~~~~						har a construction	n ha	man Mynn	Stop Freq 2.485000000 GHz
Cen #Re	nter s B	2.48 W 1	800 00	00 GHz kHz		#VE	300 kHz	2	Sweep	o (#Swp) 1	Span 1 .000 ms (0.00 MHz 1001 pts)	CF Step 1.000000 MHz <u>Auto</u> Man
MKR 1 2 3 4 5 6 7 8 9 10 11 <			f f f		x 2.480 0 2.479 6 2.480 3	1 GHz 4 GHz 5 GHz	¥ <u>8.80 d</u> 2.71 d 2.38 d	Bm Bm Bm Bm		UNCTION WIDTH	FUNCTI		Freq Offset 0 Hz
MSG										STATU	s		<u>[]</u>



Product	:	Bluetooth Headset
Test Item	:	6dB Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2402MHz) _ 2Mbps

Channel No.	Frequency (MHz)	Measurement Level	Required Limit	Result
	(101112)	(KHZ)	(KIIZ)	
00	2402	1290	>500	Pass

🊺 К	eysight	Spect	rum A	Analyzer - Swe	ept SA								
<mark>ير)</mark> Cer	L nter	Fre	RF eq 2	50 Ω 2.40200	AC	lz	SEI	NSE:INT	Avg Ty	ALIGN AUTO pe: Log-Pwr	05:01:00 A TRAC	M Sep 11, 2019 CE 1 2 3 4 5 6	Frequency
			Pof	Offect 0 F	PN IF(IO: Wide ⊂ Gain:Low	#Atten: 3	0 dB		Mkr	2 2.401	34 GHz	Auto Tune
10 c	B/div	,	Ref	5 20.50 c	iBm						2.	16 dBm	
10.6 0.500	5		_				2					2.18 dBm	Center Freq 2.402000000 GHz
-9.50						7			$\overline{\lambda}$				
-19.5 -29.5	; ;					m			V	~			Start Freq 2.397000000 GHz
-39.5 -49.6				~						~~	how we wanted	h-7 0 400 0 7	
-59.5	; 												Stop Freq 2.407000000 GHz
Cer #Re	nter es Bl	2.4(N 1	020 00	00 GHz kHz		#VBV	/ 300 kHz		Sweep) (#Swp) 1	Span 1 .000 ms (0.00 MHz 1001 pts)	CF Step 1.000000 MHz
MKR	MODE	TRC	SCL		X 2 402 0	2 CH 2	Y 9 19 di	FUNC	FTION F	UNCTION WIDTH	FUNCT	ON VALUE	<u>Auto</u> mun
2 3 4 5	NN	1	f		2.402 0 2.401 3 2.402 6	4 GHz 3 GHz	2.16 dl 2.11 dl	3m 3m 3m				=====	Freq Offset 0 Hz
6 7 8 9													
10 11													
MSG										STATU	S	·	



Product	:	Bluetooth Headset
Test Item	:	6dB Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2440MHz) _ 2Mbps

Channel No.	Frequency (MHz)	Measurement Level	Required Limit	Result
19	2440	1300	>500	Pass

🊺 Ke	ysight	Spect	rum A	Analyzer - Swe	ept SA								
<mark>⊯</mark> Cen	L nter	Fre	RF Pq 2	50 Ω 2.44000	AC	lz	SEN	ISE:INT	Avg Ty	ALIGN AUTO	05:04:24 A TRA	M Sep 11, 2019 CE 1 2 3 4 5 6 PF M 444444444	Frequency
			Ref	Offset 0.4	o dB	NO: Wide ⊆ Gain:Low	#Atten: 3) dB		Mk	2 2.439	33 GHz	Auto Tune
10 d	B/div	/	Ref	f 20.50 d	Bm						2.	27 dBm	
10.5							₹ ²					2.37 dBm	Center Freq
-9.50						ļ.,	n n n n n n n n n n n n n n n n n n n	لم ا	<u>\</u>				2.44000000 0112
-19.5 -29.5						m			\mathbf{r}	~			Start Freq
-39.5					~~~~						A		2.40000000 0112
-49.5 -59.5	~~v	~~~~~		And and a start of the start of								mm	Stop Freq
-69.5													2.445000000 GHz
Cen #Re	ter : s B	2.44 N 1	100 00	00 GHz kHz		#VBW	/ 300 kHz		Swee	p (#Swp) /	Span 1 1.000 ms (0.00 MHz (1001 pts)	CF Step 1.000000 MHz Auto Man
MKR	MODE	TRC	SCL		X 2.440.0		Y 9.27 dE	FUNC	TION	FUNCTION WIDTH	FUNCT	ON VALUE	Auto
2 3 4	N N	1	f		2.440 0 2.439 3 2.440 6	3 GHz 3 GHz	2.27 dE 2.16 dE	3m 3m					Freq Offset 0 Hz
6 7													
8 9 10													
11							m				L		
MSG										STATU	s		Ľ



Product	:	Bluetooth Headset
Test Item	:	6dB Bandwidth Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz) _ 2Mbps

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
39	2480	1300	>500	Pass

🊺 Keysig	ght Spectru	m Analyzer - Sv	vept SA								
. <mark>x</mark> ∟ Cente	er Frec	RF 50 S	2 AC	lz	SEN	ISE:INT	Avg Ty	ALIGN AUTO	05:08:08 A	M Sep 11, 2019 CE 1 2 3 4 5 6 PE M WWWWW	Frequency
10 dB/c	R div R	ef Offset 0	.5 dB	iO: Wide G Gain:Low	#Atten: 30) dB		Mkı	2 2.479 2.	33 GHz 60 dBm	Auto Tune
Log 10.5					2		h.			2.75 dBm	Center Fred 2.480000000 GHz
-19.5 — -29.5 —				\sim				~			Start Fred 2.475000000 GH:
-49.5 -59.5	al la contra	A CANO MAN							- Vulgeon	M	Stop Free 2.485000000 GH:
Cente #Res I	r 2.480 BW 10	0000 GHz 0 kHz	2	#VBV	V 300 kHz	- L SUM	Swee	p (#Swp) 1	Span 1 1.000 ms (0.00 MHz 1001 pts)	CF Step 1.000000 MH <u>Auto</u> Ma
1 N 2 N 3 N 4 5		f f f	2.480 0 2.479 3 2.480 6	1 GHz 3 GHz 3 GHz	8.75 dE 2.60 dE 2.56 dE	3m 3m 3m		FUNCTION			Freq Offse 0 H
8 9 10 11											
•										E E	
MSG								STATU	s		

9. **Power Density**

9.1. Test Setup



9.2. Limits

According to RSS-247 Issue 2, 5.2 (b) (Feb, 2017)The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

9.3. Test Procedure

The EUT was setup according to ANSI C63.10, 2013; tested according to DTS test procedure of KDB 558074 for compliance to RSS-247 Issue 2 (Feb, 2017) requirements. The maximum power spectral density using KDB 558074 section 8.4 method.

9.4. Uncertainty

 \pm 1.20 dB

9.5. Test Result of Power Density

Product	:	Bluetooth Headset
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2402MHz) _ 1Mbps

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	7.99	$\leq 8 dBm$	Pass

🊺 Keysight	Spectrum Analyzer - Swept SA						
vu Center	RF 50 Ω AC Freq 2.40200000	0 GHz	SENSE:INT	ALIGN Avg Type: Lo	GPWr TRAC	M Sep 11, 2019 E 1 2 3 4 5 6	Frequency
10 dB/div	Ref Offset 0.5 dB	PNO: Wide () IFGain:Low	#Atten: 30 dB	M	kr1 2.402 00 7.	8 5 GHz 99 dBm	Auto Tune
10.5			1				Center Freq 2.402000000 GHz
-9.50							Start Freq 2.401467500 GHz
-19.5							Stop Freq 2.402532500 GHz
-39.5							CF Step 106.500 kHz <u>Auto</u> Man
-59.5							Freq Offset 0 Hz
-69.5	2.4020000 GHz	#\/P\\/	200 kHz	Support (#2)	Span 1	.065 MHz	
MSG	/¥ 08 KH2	#VBW		Sweep (#Si	status	1001 pts)	



Product	:	Bluetooth Headset	
Test Item	:	Power Density Data	
Test Site	:	No.3OATS	
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2440MHz) _ 1Mbps	
Test Item Test Site Test Mode	: : :	Power Density Data No.3OATS Mode 1: Transmit - BLE (GFSK) (2440MHz) _ 1Mbps	8

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
19	2440	7.91	\leq 8dBm	Pass

🊺 Keysi	ght Spectru	m Analyzer - Sw	vept SA								
uxu ∟ Cente	er Fred	RF 50 G	00000 G	Hz	SEI	NSE:INT	Avg Type	ALIGN AUTO	04:42:09 Al TRAC	E 1 2 3 4 5 6	Frequency
10 dB/	R div R	ef Offset 0. ef 20.50	5 dB dBm	PNO: Wide IFGain:Low	#Atten: 3	0 dB		Mkr1 2	2.440 00 [°] 7.9	1 1 GHz 91 dBm	Auto Tune
10.5						1					Center Freq 2.440000000 GHz
0.500 - -9.50 -										\sim	Start Freq 2.439467500 GHz
-19.5 — -29.5 —											Stop Freq 2.440532500 GHz
-39.5											CF Step 106.500 kHz <u>Auto</u> Man
-59.5 —											Freq Offset 0 Hz
-69.5 —											
Cente #Res	er 2.440 BW 51	00000 GH kHz	Z	#VBW	300 kHz		Sweep	(#Swp)	Span 1 1.000 ms (.065 MHz 1001 pts)	
MSG								STATU	s	i	



Product	:	Bluetooth Headset
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz) _ 1Mbps

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
39	2480	7.61	$\leq 8 dBm$	Pass

🊺 Key	/sight Spec	trum Analyzer - Sv	vept SA								
Cen	ter Fr	eq 2.4800	2 AC 00000 GH	lz	SEI	NSE:INT	Avg Type	ALIGN AUTO : Log-Pwr	05:17:12 A	Sep 11, 2019 E 1 2 3 4 5 6 E M WWWWW	Frequency
10 dE	3/div	Ref Offset 0. Ref 20.50	5 dB dBm	NO: Wide ∟ Gain:Low	#Atten: 3	0 dB		Mkr1 2	.480 00 7.	1 1 GHz 61 dBm	Auto Tune
10.5						1					Center Freq 2.480000000 GHz
0.500 -9.50											Start Freq 2.479467500 GHz
-19.5 -29.5			YM	N	V W				\sim	\mathcal{A}	Stop Freq 2.480532500 GHz
-39.5 -49.5											CF Step 106.500 kHz <u>Auto</u> Man
-59.5											Freq Offset 0 Hz
-69.5 Cent #Res	ter 2.4	800000 GH	z	#VBW	300 kHz		Sweep	(#Swp) 1	Span 1 08.9 ms /	.065 MHz 1001 pts)	
MSG								STATU	Б		



Product	:	Bluetooth Headset
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2402MHz) _ 2Mbps

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
00	2402	7.93	\leq 8dBm	Pass

🊺 Key	/sight Spe	ectrum Analyzer - Sw	/ept SA								
LXI L	L	RF 50 Ω	AC AC		SEI	ISE:INT		ALIGN AUTO	05:02:01 A	M Sep 11, 2019	Frequency
Cen	ter Fi	req 2.4020	00000	GHz	Tria: Ero	Bun	Avg Type	e: Log-Pwr	TRAC	DE 1 2 3 4 5 6	rrequency
				PNO: Wide 😱 IFGain:Low	#Atten: 3) dB			D	PNNNNN	
10 dE	3/div	Ref Offset 0.4	5 dB d Bm					Mkr1 :	2.402 00 7.	9 7 GHz 93 dBm	Autorune
Log			1								
						. 1					Center Freq
10.5						<u>}</u> '					2.402000000 GHz
0.500			\square	$h \sim h$		\sum					
0.000							×	•			Start Freq
9.50	\sim	\mathbf{v}								and the second s	2.401032500 GHz
-9.00											
-19.5									_		Stop Fred
											2 /02967500 GHz
-29.5											2.402001000 0112
-39.5											CF Step
											193.500 KHZ Auto Man
-49.5											<u>Auto</u> Mult
-59.5											Freq Offset
											0 Hz
-69.5											
Cent	ter 2.4	1020000 GH	z				-		Span 1	.935 MHz	
#Res	s BW	68 KHZ		#VBW	300 KHZ		Sweep	(#Swp)	1.000 ms (1001 pts)	
MSG								STATU	JS		



Product	:	Bluetooth Headset
Test Item	:	Power Density Data
Test Site	:	No.3OATS
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2440MHz) _ 2Mbps

Channel No.	Frequency (MHz)Measurement Level (dBm)		Required Limit (dBm)	Result
19	2440	7.97	\leq 8dBm	Pass

🊺 Keysig	ght Spectru	ım Analyzer - Sw	ept SA								
Cente	er Fre	RF 50 Ω q 2.44000	AC 00000 GH	Hz	SEI	Run	Avg Type	LIGN AUTO	05:05:37 Al TRAC	A Sep 11, 2019 E 1 2 3 4 5 6 E M WWWWW	Frequency
10 dB/d	F div F	tef Offset 0.5 Ref 20.50 (r⊧ i⊧ iBm	Gain:Low	#Atten: 3	0 dB	r	Mkr1 2.4	440 003 7.9	90 GHz 97 dBm	Auto Tune
10.5 -						1					Center Freq 2.440000000 GHz
0.500 — -9.50 —	~									~~~~	Start Freq 2.439025000 GHz
-19.5 -											Stop Freq 2.440975000 GHz
-39.5											CF Step 195.000 kH: <u>Auto</u> Mar
-49.5 -											Freq Offse 0 H:
-69.5 -	er 2 44	0000 GH	7						Snan 1	950 MHz	
#Res	BW 62	kHz		#VBW	300 kHz		Sweep	(#Swp) 1	.000 ms (1001 pts)	
MSG								STATUS	3		



Product	:	Bluetooth Headset
Test Item	:	Power Density Data
Test Site	:	No.3 OATS
Test Mode	:	Mode 1: Transmit - BLE (GFSK) (2480MHz) _ 2Mbps

Channel No.	Frequency (MHz)	Measurement Level (dBm)	Required Limit (dBm)	Result
39	2480	7.31	\leq 8dBm	Pass

🊺 Ke	ysight Spe	ectrum Analyzer - Sv	vept SA								
<mark>ير)</mark> Cen	ter F	RF 50 Ω req 2.4800	2 AC 00000 GH	lz	SEI		Avg Type	ALIGN AUTO : Log-Pwr	05:09:50 AI	E 1 2 3 4 5 6	Frequency
10 di	3/div	Ref Offset 0. Ref 20.50	5 dB dBm	NO:Wide (_ _₽ _ Gain:Low	#Atten: 3	0 dB	1	Mkr1 2	.480 003 7.	90 GHz 31 dBm	Auto Tune
L og 10.5						1					Center Freq 2.480000000 GHz
0.500 -9.50	~~~			~~~	~~~		~~~~	~~~		m	Start Freq 2.479025000 GHz
-19.5 -29.5											Stop Freq 2.480975000 GHz
-39.5											CF Step 195.000 kHz Auto Man
-59.5											Freq Offset 0 Hz
-69.5 Cen #Re:	ter 2.4 s BW	1800000 GH 39 kHz	z	#VBW	300 kHz		Sweep	(#Swp)	Span 1 1.200 ms (.950 MHz 1001 pts)	
MSG								STAT	US		L

10. Duty Cycle

10.1. Test Setup



10.2. Test Procedure

The EUT was setup according to ANSI C63.10 2013; tested according to DTS test procedure of KDB558074 for compliance to RSS-247 requirements.

10.3. Uncertainty

± 2.31msec



10.4. Test Result of Duty Cycle

Product	:	Bluetooth Headset
Test Item	:	Duty Cycle
Test Mode	:	Mode 1: Transmit - BLE (GFSK) _ 1Mbps

Duty Cycle Formula:

Duty Cycle = Ton / (Ton + Toff)

Duty Factor = 10 Log (1/Duty Cycle)

Results:

2.4GHz band	Ton	Ton + Toff	Duty Cycle	Duty Factor		
	(ms)	(ms)	(%)	(dB)		
BLE	2.1200	2.5200	84.13	0.75		

🎉 Keysight Spectru	ım Analyzer - Swept SA								- d x
Center Fre	RF 50 Ω AC) GHz	SENS	E:INT	Avg Type	ALIGN AUTO	10:08:01 PM S TRACE TYPE	1 2 3 4 5 6	Frequency
	Pef 0 00 dBm	PNO: Fast +	Atten: 10 o	B		Δ	DET Mkr3 2.5 0	20 ms	Auto Tune
-20.0				∂ ^{3∆1}					Center Freq 2.402000000 GHz
-40.0 -50.0 -60.0									Start Freq 2.402000000 GHz
-70.0								P]	Stop Freq 2.402000000 GHz
Center 2.40 Res BW 3.0	2000000 GHz MHz	VBW	3.0 MHz			Sweep 2	Sp 0.00 ms (1	an 0 Hz 001 pts)	CF Step 3.000000 MHz <u>Auto</u> Man
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{c c} \text{ScL} & \times \\ t & \\ t & (\Delta) \\ t & (\Delta) \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$	8.520 ms 2.120 ms (Δ) 2.520 ms (Δ)	Y -21.11 dBt 0.02 d 0.00 d				FUNCTION		Freq Offset 0 Hz



Product	:	Bluetooth Headset
Test Item	:	Duty Cycle
Test Mode	:	Mode 1: Transmit - BLE (GFSK) _ 2Mbps

Duty Cycle Formula:

Duty Cycle = Ton / (Ton + Toff)

Duty Factor = 10 Log (1/Duty Cycle)

Results:

2.4GHz band	Ton	Ton + Toff	Duty Cycle	Duty Factor
	(ms)	(ms)	(%)	(dB)
BLE	1.0800	1.8800	57.45	2.41

🊺 Keysig	ht Spec	trum A	nalyzer	- Swept SA	А															
Cente	r Fr	RF eq 2	2.402	50 Ω A	00 G	Hz		SEI	NSE:IN	Г	Avg T	Al ype:	LIGN AUTO Log-Pwr	10:1	2:30 PI TRAC	M Se	234	2019 4 5 6	Frequ	iency
10 dB/c	liv	Ref	f 0.0(0 dBm		PNO: Fas FGain:Lo	t ↔ w	Atten: 10) dB				Δ	Mkr	3 1.	.88 0.0	30 r	ns dB	Au	ıto Tune
-10.0		1]) ¹ () ²⁴	3∆1][[Cer 2.40200	iter Freq 0000 GHz
-40.0		-																	Si 2.40200	t art Freq 0000 GHz
-70.0 -80.0 -90.0							- - - 1							iu)					S 2.40200	t op Freq 0000 GHz
Cente Res B	r 2.4 W 3.	020 0 M	0000 Hz	0 GHz	:		BW :	3.0 MHz				Span 0 Hz Sweep 20.00 ms (1001 pts)					Hz ots)	3.00 Auto	CF Step 0000 MHz Man	
MKR MOI 1 N 2 Δ1 3 Δ1 4 5 6 7 8 9 10 11 4					× 8 1 1 1	<u>.040 ms</u> .080 ms .880 ms		Y -22.67 dE -0.01 0.02	3m dB dB	FUNC	TION	FUNC			UNCTI	ON V	ALUE		Fre	q Offset 0 Hz
MSG													STATUS	5						



11. EMI Reduction Method During Compliance Testing

No modification was made during testing.