





TEST REPORT

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Room 915,Unit 2, Global Trading Center, Dongcheng District, Dongguan, Guangdong, 523123, China
Braven Flye Sport Glo Earbuds
BRAVEN
BFSG
BFSGXX("x" can be replaced by letter A-Z); See items 3.1
Apr. 05, 2017 ~ May 11, 2017 Jul. 12, 2017 ~ Aug. 08, 2017

the tests have been carried out according to the requirements of the following standard:

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Tested by Andy Zhu	Approved by Glyn He
Project Engineer / EMC Department	Supervisor / EMC Department

Date: Sep. 07, 2017

This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification



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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF170401N153-4	Original release	May 11, 2017
RF170712N060-2	Based on the original report RF170401N153-4 added the antenna with 3M9471, and it need to retest RSE test item after engineer evaluated.	Sep. 07, 2017

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1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

A	APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)								
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK						
15.207	AC Power Conducted Emission	N/A	Power by battery						
15.205 15.209	Radiated Emission	PASS	Meet the requirement of limit.						
15.247(d)	Out of band Emission Measurement	PASS	Meet the requirement of limit.						
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.						
15.247(b)	Conducted Output power	PASS	Meet the requirement of limit.						
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.						
15.203	Antenna Requirement	PASS	No antenna connector is used						

2 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	FREQUENCY	UNCERTAINTY
	9KHz ~ 30MHz	2.90dB
Radiated emissions	30MHz ~ 1GMHz	3.83dB
Nadiated emissions	1GHz ~ 18GHz	4.93dB
	18GHz ~ 40GHz	4.80dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.



3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Braven Flye Sport Glo Earbuds
MODEL NO.	BFSG
ADDITIONAL MODEL	BFSGXX("x" can be replaced by letter A-Z)
FCC ID	Z7RBEBB80
NOMINAL VOLTAGE	DC 3.7V From Li-ion Battery
MODULATION TYPE	DTS
MODULATION TECHNOLOGY	BT-LE(GFSK)
OPERATING FREQUENCY	2402-2480MHz
PEAK OUTPUT POWER	1.274mW (Max. Measured)
ANTENNA TYPE	ANT(BI80): FPCB Antenna, -4.01dBi Gain ANT(3M9471): FPCB Antenna, -2.80dBi Gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	N/A

NOTE:

- 1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- 2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
- 3. Please refer to the EUT photo document (Reference No.: 170712N060) for detailed product photo.
- 4. Additional models BFSGXX("x" can be replaced by letter A-Z) are identical with the test model BFSG except the model no. and the color about appearance for trading purpose.
- 5. The EUT charging from pedestal, and EUT in the charging mode that BT function no working.
- 6. For trading purpose, this product can match two different antennas, but a product can only install one.

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3.2 DESCRIPTION OF TEST MODES

40 channels are provided for BT-LE(GFSK):

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

3.2.1. CONFIGURATION OF SYSTEM UNDER TEST

Please see section 5 photographs of the test configuration for reference.

3.2.2. TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports

The worst case was found when positioned on X axis for radiated emission. Following test modes were selected for the final test, and the final worst case is marked in boldface and recorded in the report:

EUT CONFIGURE MODE		APPLICA	ABLE TO		DESCRIPTION
	RE<1G	RE≥1G	PLC	APCM	DESCRIPTION
А	√	√	-	√	Powered by Fully Battery with Bluetooth link

Where RE<1G: Radiated Emission below 1GHz RE≥1G: Radiated Emission above 1GHz
PLC: Power Line Conducted Emission APCM: Antenna Port Conducted Measurement

NOTE: No need to concern of Conducted Emission due to the EUT is powered by battery.

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RADIATED EMISSION TEST (BELOW 1GHz):

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
BT-LE	0 to 39	39	DTS	GFSK	1

For the test results, only the worst case was shown in test report.

RADIATED EMISSION TEST (ABOVE 1GHz):

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
BT-LE	0 to 39	0,19, 39	DTS	GFSK	1

ANTENNA PORT CONDUCTED MEASUREMENT:

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE	TESTED	MODULATION	MODULATION	DATA RATE
	CHANNEL	CHANNEL	TECHNOLOGY	TYPE	(Mbps)
BT-LE	0 to 39	0, 19, 39	DTS	GFSK	1

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	25deg. C, 55%RH	DC 3.7V from Fully Battery	Hardy Leng
RE≥1G	25deg. C, 55%RH	DC 3.7V from Fully Battery	Hardy Leng
PLC	N/A	N/A	N/A
APCM	20deg. C, 55%RH	DC 3.7V from Fully Battery	Robert Cheng



3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C, Section 15.247 558074 D01 DTS Meas Guidance v04 ANSI C63.10-2013

Note: All test items have been performed and recorded as per the above standards.

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	N/A	N/A	N/A	N/A	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A

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Report Version 1



4 TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

FREQUENCIES (MHz)	FIELD STRENGTH (microvolts/meter)	MEASUREMENT DISTANCE (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

- 1. The lower limit shall apply at the transition frequencies.
- 2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
- 3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

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4.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU40	100449	Mar. 11,17	Mar. 10,18
Signal and Spectrum Analyzer	Rohde&Schwar z	FSV40	101094	Apr. 05,17	Apr. 04,18
Bilog Antenna (20MHz~2GHz)	Teseq	CBL 6111D	30643	Jul. 14, 17	Jul. 13, 18
Loop antenna (9kHz~30MHz)	Daze	ZN30900A	0708	Dec. 22,16	Dec. 21,17
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	May 18,17	May 17,18
Horn Antenna (15GHz-40GHz)	SCHWARZBEC K	BBHA 9170	BBHA9170147	Jan. 21,17	Jan. 20,18
GPS Generator+ Antenna	TOJOIN	GNSS-5000A	E1-010119	Aug. 08, 17	Aug. 07, 18
3m Semi-anechoic Chamber	ETS-LINDGRE N	9m*6m*6m	NSEMC003	Mar. 06,17	Mar. 05,18
Test Software	ADT	ADT_Radiated _V7.6.15.9.2	N/A	N/A	N/A
Horn Antenna	SCHWARZBEC K	BBHA 9170	BBHA9170242	Mar. 15,17	Mar. 14,18
Amplifier (9kHz-1GHz)	SONOMA	310D	186955	Mar. 04,17	Mar. 03, 18
Broadband Preamplifier (1GHz~18GHz)	SCHWARZBEC K	BBV9718	305	Mar. 06,17	Mar. 05,18
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 04,16	Nov. 03,17
Test Software	ADT	ADT_Radiated _V7.6.15.9.2	N/A	N/A	N/A

NOTE:

- 1. The test was performed in 966 Chamber.
- 2. The calibration interval of the above test instruments is 12months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
- 3. The horn antenna is used only for the measurement of emission frequency above1GHz if tested.
- 4. The FCC Site Registration No. is 749762.



4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 1.5 meters(above 1GHz) and 0.8 meters(below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

NOTE:

- 1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
- 2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
- 3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.
- 4.All modes of operation were investigated and the worst-case emissions are reported.
- 5.The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.

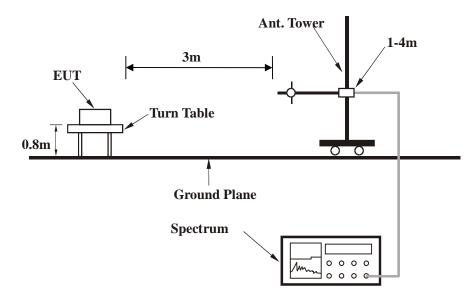
4.1.4 DEVIATION FROM TEST STANDARD

No deviation.



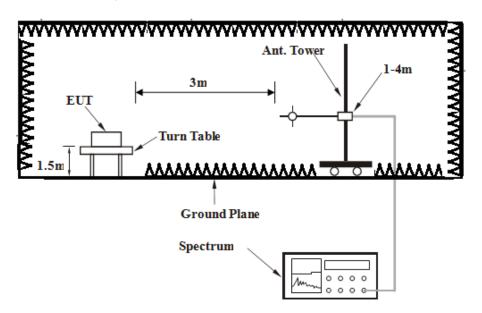
4.1.5 TEST SETUP

Below 1GHz test setup



Note: For the actual test configuration, please refer to the attached file (Test Setup Photo).

Above 1GHz test setup



Note: For the actual test configuration, please refer to the attached file (Test Setup Photo).

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4.1.6 EUT OPERATING CONDITIONS

- a. Set the EUT under full load condition and placed them on a testing table.
- b. Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.
- c. The necessary accessories enable the EUT in full functions.

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4.1.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA:

BT-LE (GFSK)

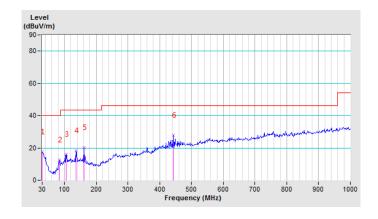
The Antenna(BI80)

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Ougai Pagis (OD)
FREQUENCY RANGE	9KHz ~ 1GHz		Quasi-Peak (QP)

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)	
1	30.00	17.45 QP	40.00	-22.55	1.00 H	180	28.72	-11.27	
2	84.41	12.61 QP	40.00	-27.39	1.00 H	147	33.46	-20.85	
3	106.17	16.04 QP	43.50	-27.46	1.00 H	137	34.13	-18.09	
4	137.26	18.28 QP	43.50	-25.22	1.00 H	108	35.56	-17.28	
5	162.13	20.36 QP	43.50	-23.14	1.00 H	207	37.80	-17.44	
6	443.49	27.70 QP	46.00	-18.30	1.00 H	205	35.87	-8.17	

REMARKS:

- 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 3. The emission levels of other frequencies were less than 20dB margin against the limit.
- 4. Margin value = Emission level Limit value.



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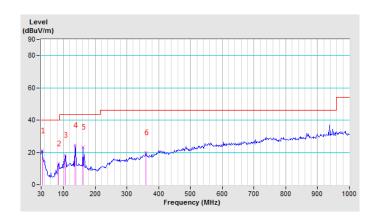


CHANNEL	TX Channel 39	DETECTOR	Ougoi Dook (OD)	
FREQUENCY RANGE	9KHz ~ 1GHz	FUNCTION	Quasi-Peak (QP)	

	ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)	
1	33.11	21.11 QP	40.00	-18.89	2.00 V	170	33.95	-12.84	
2	84.41	13.00 QP	40.00	-27.00	2.00 V	188	33.85	-20.85	
3	106.17	18.42 QP	43.50	-25.08	2.00 V	180	36.51	-18.09	
4	137.26	24.46 QP	43.50	-19.04	2.00 V	165	41.74	-17.28	
5	162.13	23.18 QP	43.50	-20.32	2.00 V	189	40.62	-17.44	
6	359.55	19.79 QP	46.00	-26.21	2.00 V	150	30.05	-10.26	

REMARKS:

- 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 3. The emission levels of other frequencies were less than 20dB margin against the limit.
- 4. Margin value = Emission level Limit value.



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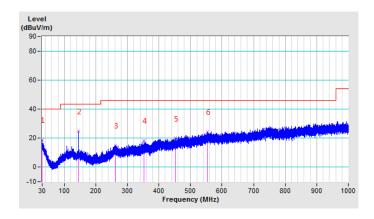
The Antenna(3M9471)

CHANNEL	TX Channel 39	DETECTOR	Ougsi Pools (OD)
FREQUENCY RANGE	9KHz ~ 1GHz	FUNCTION	Quasi-Peak (QP)

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)	
1	30.00	18.85 QP	40.00	-21.15	1.50 H	283	30.12	-11.27	
2	145.91	24.69 QP	43.50	-18.81	1.50 H	272	41.54	-16.85	
3	263.38	15.01 QP	46.00	-30.99	1.50 H	256	27.96	-12.95	
4	353.56	18.35 QP	46.00	-27.65	1.50 H	244	29.06	-10.71	
5	452.37	19.90 QP	46.00	-26.10	1.50 H	232	27.77	-7.87	
6	553.15	24.47 QP	46.00	-21.53	1.50 H	220	28.31	-3.84	

REMARKS:

- 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 3. The emission levels of other frequencies were less than 20dB margin against the limit.
- 4. Margin value = Emission level Limit value.



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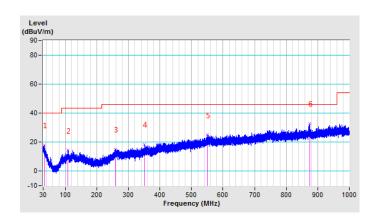


CHANNEL	TX Channel 39	DETECTOR	Ougoi Dook (OD)
FREQUENCY RANGE	9KHz ~ 1GHz	FUNCTION	Quasi-Peak (QP)

	ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)	
1	33.78	18.06 QP	40.00	-21.94	1.50 V	10	31.35	-13.29	
2	107.50	14.43 QP	43.50	-29.07	1.50 V	20	32.59	-18.16	
3	259.47	14.88 QP	46.00	-31.12	1.50 V	32	27.62	-12.74	
4	351.20	18.34 QP	46.00	-27.66	1.50 V	43	29.18	-10.84	
5	549.34	25.00 QP	46.00	-21.00	1.50 V	54	29.08	-4.08	
6	874.48	32.81 QP	46.00	-13.19	1.50 V	68	31.59	1.22	

REMARKS:

- 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 3. The emission levels of other frequencies were less than 20dB margin against the limit.
- 4. Margin value = Emission level Limit value.



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ABOVE 1GHz TEST DATA:

BT-LE (GFSK)

The Antenna(BI80)

CHANNEL	TX Channel 0	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	Average (AV)

		ANTENNA	POLARITY 8	& TEST DIS	TANCE: HO	RIZONTAL	AT 3 M	
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	46.51 PK	74.00	-27.49	1.00 H	122	43.71	2.80
2	2390.00	35.21 AV	54.00	-18.79	1.00 H	122	32.41	2.80
3	*2402.00	93.40 PK			1.00 H	122	90.57	2.83
4	*2402.00	89.85 AV			1.00 H	122	87.02	2.83
5	4804.00	57.48 PK	74.00	-16.52	1.00 H	84	51.85	5.63
6	4804.00	50.55 AV	54.00	-3.45	1.00 H	84	44.92	5.63
7	#7206.00	57.55 PK	74.00	-16.45	1.00 H	360	44.64	12.91
8	#7206.00	43.65 AV	54.00	-10.35	1.00 H	360	30.74	12.91
		ANTENNA	POLARITY	& TEST DI	STANCE: V	ERTICAL A	T 3 M	-
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	46.15 PK	74.00	-27.85	1.00 V	98	43.35	2.80
2	2390.00	33.56 AV	54.00	-20.44	1.00 V	98	30.76	2.80
3	*2402.00	91.77 PK			1.00 V	64	88.94	2.83
4	*2402.00	86.56 AV			1.00 V	64	83.73	2.83
5	4804.00	55.81 PK	74.00	-18.19	1.00 V	167	50.18	5.63
6	4804.00	50.14 AV	54.00	-3.86	1.00 V	167	44.51	5.63
7	#7206.00	49.51 PK	74.00	-24.49	1.00 V	127	36.60	12.91

REMARKS:

- 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 3. The emission levels of other frequencies were less than 20dB margin against the limit.
- 4. Margin value = Emission level Limit value.
- 5. " * ": Fundamental frequency.
- 6. " # ": The radiated frequency is out of the restricted band.

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CHANNEL	TX Channel 19	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	Average (AV)

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	95.32 PK			1.00 H	214	92.38	2.94
2	*2440.00	91.15 AV			1.00 H	214	88.21	2.94
3	4880.00	57.28 PK	74.00	-16.72	1.00 H	360	51.52	5.76
4	4880.00	50.24 AV	54.00	-3.76	1.00 H	360	44.48	5.76
5	7320.00	49.84 PK	74.00	-24.16	1.00 H	84	36.25	13.59
6	7320.00	43.62 AV	54.00	-10.38	1.00 H	84	30.03	13.59
		ANTENNA	POLARITY	& TEST DI	STANCE: V	ERTICAL A	T 3 M	-
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	91.24 PK			1.00 V	273	88.30	2.94
2	*2440.00	87.42 AV			1.00 V	273	84.48	2.94
3	4880.00	54.62 PK	74.00	-19.38	1.25 V	315	48.86	5.76
4	4880.00	44.85 AV	54.00	-9.15	1.25 V	315	39.09	5.76
5	7320.00	58.54 PK	74.00	-15.46	N/A V	223	44.95	13.59
6	7320.00	44.62 AV	54.00	-9.38	N/A V	223	31.03	13.59

REMARKS:

- 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 3. The emission levels of other frequencies were less than 20dB margin against the limit.
- 4. Margin value = Emission level Limit value.
- 5. " * ": Fundamental frequency.



CHANNEL	TX Channel 39	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	Average (AV)

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)	
1	*2480.00	87.74 PK			1.00 H	243	84.47	3.27	
2	*2480.00	84.95 AV			1.00 H	243	81.68	3.27	
3	2483.50	40.03 PK	74.00	-33.97	1.00 H	243	36.76	3.27	
4	2483.50	34.25 AV	54.00	-19.75	1.00 H	243	30.98	3.27	
5	4960.00	57.00 PK	74.00	-17.00	1.00 H	149	51.61	5.39	
6	4960.00	51.42 AV	54.00	-2.58	1.00 H	149	46.03	5.39	
7	7440.00	48.04 PK	74.00	-25.96	1.00 H	244	35.22	12.82	
8	7440.00	42.03 AV	54.00	-11.97	1.00 H	244	29.21	12.82	
		ANTENNA	POLARITY	& TEST DI	STANCE: V	ERTICAL A	T 3 M		
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)	
1	*2480.00	86.40 PK			1.85 V	350	83.13	3.27	
2	*2480.00	84.83 AV			1.85 V	350	81.56	3.27	
3	2483.50	39.17 PK	74.00	-34.83	1.85 V	350	35.90	3.27	
4	2483.50	34.11 AV	54.00	-19.89	1.85 V	350	30.84	3.27	
5	4960.00	54.33 PK	74.00	-19.67	2.00 V	273	48.94	5.39	
6	4960.00	49.55 AV	54.00	-4.45	2.00 V	273	44.16	5.39	
7	7440.00	48.93 PK	74.00	-25.07	1.00 V	258	36.11	12.82	
8	7440.00	41.55 AV	54.00	-12.45	1.00 V	258	28.73	12.82	

REMARKS:

- 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 3. The emission levels of other frequencies were less than 20dB margin against the limit.
- 4. Margin value = Emission level Limit value.
- 5. " * ": Fundamental frequency.



The Antenna(3M9471)

CHANNEL	TX Channel 0	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	Average (AV)

		ANTENNA	POLARITY 8	& TEST DIS	TANCE: HO	RIZONTAL	AT 3 M	
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	52.13 PK	74.00	-21.87	1.50 H	260	49.07	3.06
2	2390.00	40.14 AV	54.00	-13.86	1.50 H	260	37.08	3.06
3	*2402.00	92.30 PK			1.50 H	260	89.21	3.09
4	*2402.00	88.09 AV			1.50 H	260	85.00	3.09
5	4804.00	64.88 PK	74.00	-9.12	1.50 H	220	58.95	5.93
6	4804.00	51.75 AV	54.00	-2.25	1.50 H	220	45.82	5.93
7	#7206.00	63.71 PK	74.00	-10.29	1.50 H	210	51.53	12.18
8	#7206.00	50.14 AV	54.00	-3.86	1.50 H	210	37.96	12.18
		ANTENNA	POLARITY	& TEST DI	STANCE: V	ERTICAL A	T 3 M	
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	50.09 PK	74.00	-23.91	1.50 V	253	47.03	3.06
2	2390.00	36.10 AV	54.00	-17.90	1.50 V	253	33.04	3.06
3	*2402.00	86.06 PK			1.50 V	253	82.97	3.09
4	*2402.00	82.64 AV			1.50 V	253	79.55	3.09
5	4804.00	60.46 PK	74.00	-13.54	1.50 V	232	54.53	5.93
6	4804.00	48.62 AV	54.00	-5.38	1.50 V	232	42.69	5.93
7	#7206.00	63.88 PK	74.00	-10.12	1.50 V	177	51.70	12.18
8	#7206.00	50.89 AV	54.00	-3.11	1.50 V	177	38.71	12.18

REMARKS:

- 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 3. The emission levels of other frequencies were less than 20dB margin against the limit.
- 4. Margin value = Emission level Limit value.
- 5. " * ": Fundamental frequency.
- 6. " # ": The radiated frequency is out of the restricted band.

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CHANNEL	TX Channel 19	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	Average (AV)

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	93.81 PK			1.50 H	265	90.59	3.22
2	*2440.00	89.91 AV			1.50 H	265	86.69	3.22
3	4880.00	63.11 PK	74.00	-10.89	1.50 H	233	57.05	6.06
4	4880.00	46.73 AV	54.00	-7.27	1.50 H	233	40.67	6.06
5	7320.00	62.17 PK	74.00	-11.83	1.50 H	200	49.49	12.68
6	7320.00	48.66 AV	54.00	-5.34	1.50 H	200	35.98	12.68
		ANTENNA	POLARITY	& TEST DI	STANCE: V	ERTICAL A	T 3 M	
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	87.85 PK			1.50 V	262	84.63	3.22
2	*2440.00	83.44 AV			1.50 V	262	80.22	3.22
3	4880.00	64.18 PK	74.00	-9.82	1.50 V	170	58.12	6.06
4	4880.00	48.50 AV	54.00	-5.50	1.50 V	170	42.44	6.06
5	7320.00	64.28 PK	74.00	-9.72	1.50 V	210	51.60	12.68
6	7320.00	48.53 AV	54.00	-5.47	1.50 V	210	35.85	12.68

REMARKS:

- 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 3. The emission levels of other frequencies were less than 20dB margin against the limit.
- 4. Margin value = Emission level Limit value.
- 5. " * ": The radiated frequency is out of the restricted band.

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CHANNEL	TX Channel 39	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz	FUNCTION	Average (AV)

	ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	91.91 PK			1.50 H	271	88.56	3.35
2	*2480.00	88.00 AV			1.50 H	271	84.65	3.35
3	2483.50	51.84 PK	74.00	-22.16	1.50 H	271	48.48	3.36
4	2483.50	46.29 AV	54.00	-7.71	1.50 H	271	42.93	3.36
5	4960.00	65.18 PK	74.00	-8.82	1.50 H	177	58.98	6.20
6	4960.00	50.66 AV	54.00	-3.34	1.50 H	177	44.46	6.20
7	7440.00	62.89 PK	74.00	-11.11	1.50 H	188	49.69	13.20
8	7440.00	47.88 AV	54.00	-6.12	1.50 H	188	34.68	13.20
		ANTENNA	POLARITY	& TEST DI	STANCE: V	ERTICAL A	T 3 M	
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	86.59 PK			1.50 V	250	83.24	3.35
2	*2480.00	83.11 AV			1.50 V	250	79.76	3.35
3	2483.50	50.62 PK	74.00	-23.38	1.50 V	250	47.26	3.36
4	2483.50	43.36 AV	54.00	-10.64	1.50 V	250	40.00	3.36
5	4960.00	62.17 PK	74.00	-11.83	1.50 V	121	55.97	6.20
6	4960.00	49.18 AV	54.00	-4.82	1.50 V	121	42.98	6.20
7	7440.00	62.18 PK	74.00	-11.82	1.50 V	137	48.98	13.20
8	7440.00	47.12 AV	54.00	-6.88	1.50 V	137	33.92	13.20

REMARKS:

Bureau Veritas Shenzhen Co., Ltd.

Dongguan Branch

- 1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
- 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
- 3. The emission levels of other frequencies were less than 20dB margin against the limit.
- 4. Margin value = Emission level Limit value.
- 5. " * ": The radiated frequency is out of the restricted band.

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4.2 6dB BANDWIDTH MEASUREMENT

4.2.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Sensor	Keysight	U2021XA	MY55060016	May 04,17	May 03,18
Power Sensor	Keysight	U2021XA	MY55060018	May 04,17	May 03,18
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 13, 16	Oct.12, 17
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.05,16	Sep. 04,17
Oscilloscope	Agilent	DSO9254A	MY51260160	Nov. 04,16	Nov. 03,17
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 04,16	Nov. 03,17
Signal Generator	Agilent	N5183A	MY50140980	Nov. 04,16	Nov. 03,17
Agile Signal Generator	Agilent	8645A	Agilent	Aug.08, 17	Aug.07, 18
Spectrum Analyzer	Keysight	N9020A	MY55400499	Apr. 05,17	Apr. 04,18
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Dec.05, 16	Dec. 04, 17
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A	N/A

NOTE:

- 1. The test was performed in RF Oven room.
- 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.



4.2.3 TEST PROCEDURE

- 1. Set RBW = 100 kHz.
- 2. Set the video bandwidth (VBW) ≥ 3 RBW.
- 3. Detector = Peak.
- 4. Trace mode = max hold.
- 5. Sweep = auto couple.
- 6. Allow the trace to stabilize.
- 7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

4.2.4 DEVIATION FROM TEST STANDARD

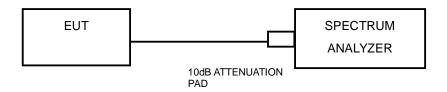
No deviation.

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4.2.5 TEST SETUP



4.2.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

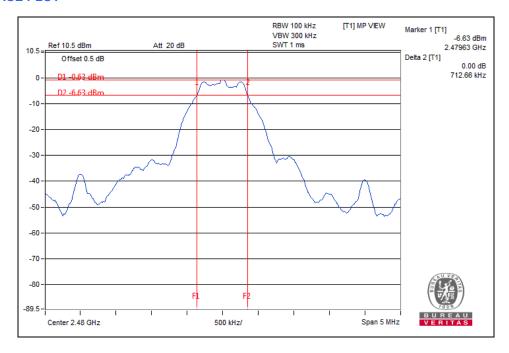


4.2.7 TEST RESULTS

BT-LE (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	0.711	0.5	PASS
19	2440	0.709	0.5	PASS
39	2480	0.713	0.5	PASS

WORSE PLOT



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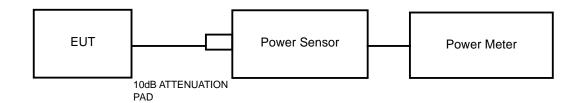


4.3 CONDUCTED OUTPUT POWER

4.3.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm)

4.3.2 TEST SETUP



4.3.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Sensor	Keysight	U2021XA	MY55060016	May 04,17	May 03,18
Power Sensor	Keysight	U2021XA	MY55060018	May 04,17	May 03,18
Digital Multimeter	FLUKE	15B	A1220010DG	Oct. 13, 16	Oct.12, 17
Humid & Temp Programmable Tester	Haida	HD-2257	110807201	Sep.05,16	Sep. 04,17
Oscilloscope	Agilent	DSO9254A	MY51260160	Nov. 04,16	Nov. 03,17
Signal Analyzer	Rohde & Schwarz	FSV7	102331	Nov. 04,16	Nov. 03,17
Signal Generator	Agilent	N5183A	MY50140980	Nov. 04,16	Nov. 03,17
Agile Signal Generator	Agilent	8645A	Agilent	Aug.08, 17	Aug.07, 18
Spectrum Analyzer	Keysight	N9020A	MY55400499	Apr. 05,17	Apr. 04,18
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Dec.05, 16	Dec. 04, 17
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	Aug.08, 17	Aug.07, 18
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A	N/A

NOTE:

- 1. The test was performed in RF Oven room.
- 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

4.3.4 TEST PROCEDURES

A peak sensor was used on the output port of the EUT. A peak power meter was used to read the response of the peak power sensor. Record the peak power level.

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4.3.5 DEVIATION FROM TEST STANDARD

No deviation.

4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

4.3.7.1 MAXIMUM PEAK OUTPUT POWER

BT-LE (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (W)	PASS/FAIL
0	2402	-0.08	0.9817	1	PASS
19	2440	0.64	1.1590	1	PASS
39	2480	1.05	1.2740	1	PASS

4.3.7.2 AVERAGE OUTPUT POWER (FOR REFERENCE)

The average power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

BT-LE (GFSK)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)
0	2402	-2.09
19	2440	-1.28
39	2480	-0.96

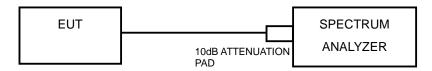


4.4 POWER SPECTRAL DENSITY MEASUREMENT

4.4.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm/3KHz.

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Refer to section 4.3.3 to get information of above instrument.

4.4.4 TEST PROCEDURE

- 1. Set the span to 1.5 times the DTS bandwidth
- 2. Set the RBW = 3 kHz, VBW $\geq 3 \text{ x RBW}$, Detector = peak.
- 3. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
- 4. Use the peak marker function to determine the maximum amplitude level.

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

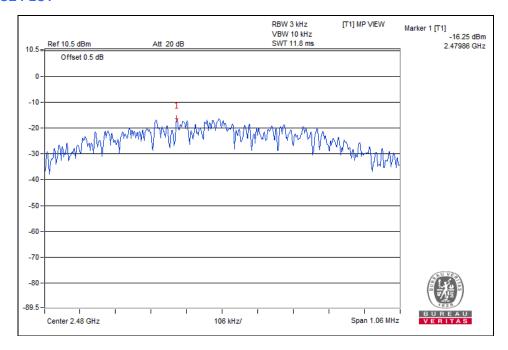


4.4.7 TEST RESULTS

BT-LE (GFSK)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	-17.37	8	PASS
19	2440	-16.58	8	PASS
39	2480	-16.25	8	PASS

WORSE PLOT



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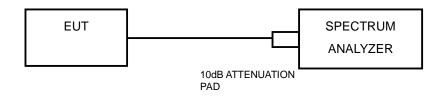


4.5 OUT OF BAND EMISSION MEASUREMENT

4.5.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.5.2 TEST SETUP



4.5.3 TEST INSTRUMENTS

Refer to section 4.3.3 to get information of above instrument.

4.5.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

- 1. Set the RBW = 100 kHz.
- 2. Set the VBW \geq 300 kHz.
- 3. Detector = peak.
- 4. Sweep time = auto couple.
- 5. Trace mode = max hold.
- 6. Allow trace to fully stabilize.
- 7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.



MEASUREMENT PROCEDURE OOBE

- 1. Set RBW = 100 kHz.
- 2. Set VBW ≥ 300 kHz.
- 3. Set span to encompass the spectrum to be examined
- 4. Detector = peak.
- 5. Trace Mode = max hold.
- 6. Sweep = auto couple.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

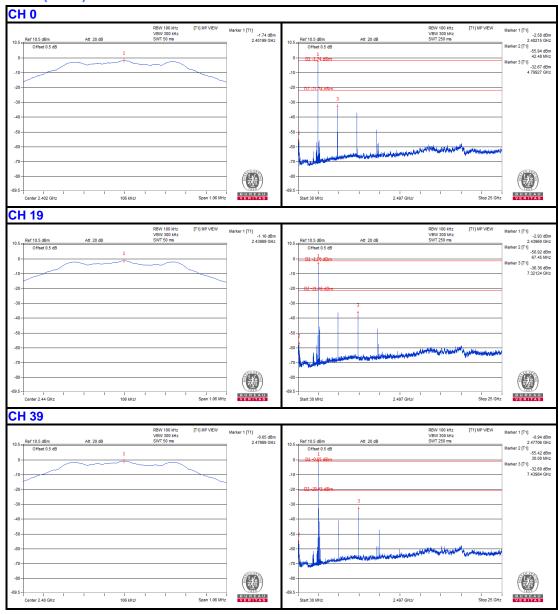
4.5.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



4.5.7 TEST RESULTS

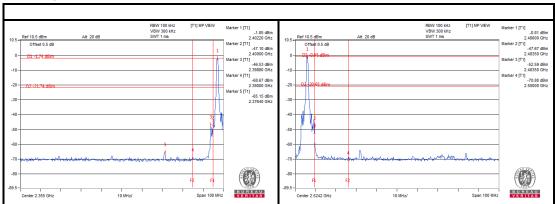
BT-LE (GFSK)



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Band Edge:





5 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



6 APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---

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