



Test Report No.: RF2312WDG0213-2



TEST REPORT

Applicant	Sony Group Corporation
Address	1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan

Manufacturer or Supplier	Sony Group Corporation
Address	1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan
Product	Wireless Stereo Headset
Brand Name	SONY
Models	YY2982
Additional Model & Model Difference	N/A
Date of tests	Dec. 27, 2023 ~ Feb. 28, 2024

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

FCC Part 15, Subpart C, Section 15.247

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

Tested by Lucas Chen
Project Engineer / EMC Department

Approved by Glyn He
Assistant Manager / EMC Department

Date: Mar. 07, 2024

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended 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. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; 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

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Test Report No.: RF2312WDG0213-2

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF2312WDG0213-2	Original release	Mar. 07, 2024

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1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

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	Powered 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
Radiated emissions	9KHz ~ 30MHz	2.80dB
	30MHz ~ 1GMHz	4.65dB
	1GHz ~ 18GHz	5.01dB
	18GHz ~ 40GHz	4.10dB

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	Wireless Stereo Headset
MODEL NO.	YY2982
ADDITIONAL MODEL	N/A
FCC ID	AK8YY2982
NOMINAL VOLTAGE	Earbuds: DC 3.85V from Li-ion Battery or DC 5V from Charging Case
MODULATION TECHNOLOGY	DTS
MODULATION TYPE	BT-LE GFSK (1&2Mbps)
OPERATING FREQUENCY	2402-2480MHz for BLE 1Mbps 2404-2478MHz for BLE 2Mbps
PEAK OUTPUT POWER	Left Earbud: 7.161mW (Max. Measured) Right Earbud: 7.178mW (Max. Measured)
ANTENNA TYPE	Left Earbud: FPC Antenna, -2.08dBi Gain Right Earbud: FPC Antenna, -2.34dBi Gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	Refer to user's manual

NOTES:

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.: 2312WDG0213-1) for detailed product photo.
4. When the EUT in charging that the BT function can't normal working.
5. This product has two Bluetooth Chips (distribute left earbud and right earbud), they are identical in RF circuitry except the antenna gain and Layout of partial components, full tests were performed on the left earbuds and right earbuds respectively.



3.2 DESCRIPTION OF TEST MODES

40 channels are provided for BLE GFSK (1 Mbps):

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

37 channels are provided for BLE GFSK (2 Mbps):

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
/	/	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	/	/	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	/	/



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	APPLICABLE TO				DESCRIPTION
	RE<1G	RE≥1G	PLC	APCM	
A	√	√	-	√	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.

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	BT-LE	1
BT-LE	1 to 38	38	DTS	BT-LE	2

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	BT-LE	1
BT-LE	1 to 38	1,19, 38	DTS	BT-LE	2



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 CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
BT-LE	0 to 39	0, 19, 39	DTS	BT-LE	1
BT-LE	1 to 38	1,19, 38	DTS	BT-LE	2

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	23deg. C, 49%RH	DC 3.85V From Fully Battery	Stalker
RE≥1G	23deg. C, 49%RH	DC 3.85V From Fully Battery	Stalker
PLC	N/A	N/A	N/A
APCM	26deg. C, 57%RH	DC 3.85V From Fully Battery	Vincent



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

KDB558074 D01 15.247 Meas Guidance v05r02

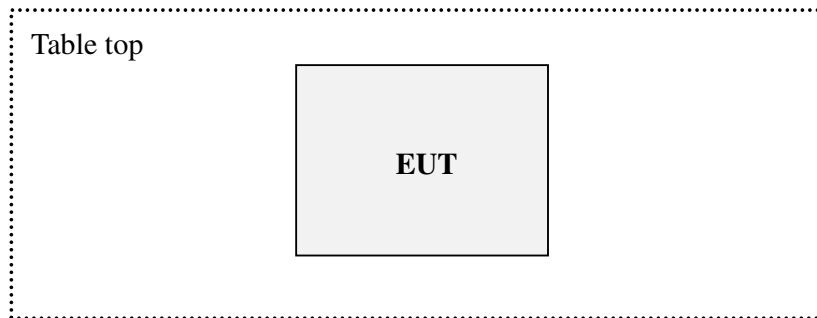
ANSI C63.10-2013

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 without any other necessary accessories or support units.

3.5 CONFIGURATION OF SYSTEM UNDER TEST



(The EUT was powered by built-in Li-ion battery)

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



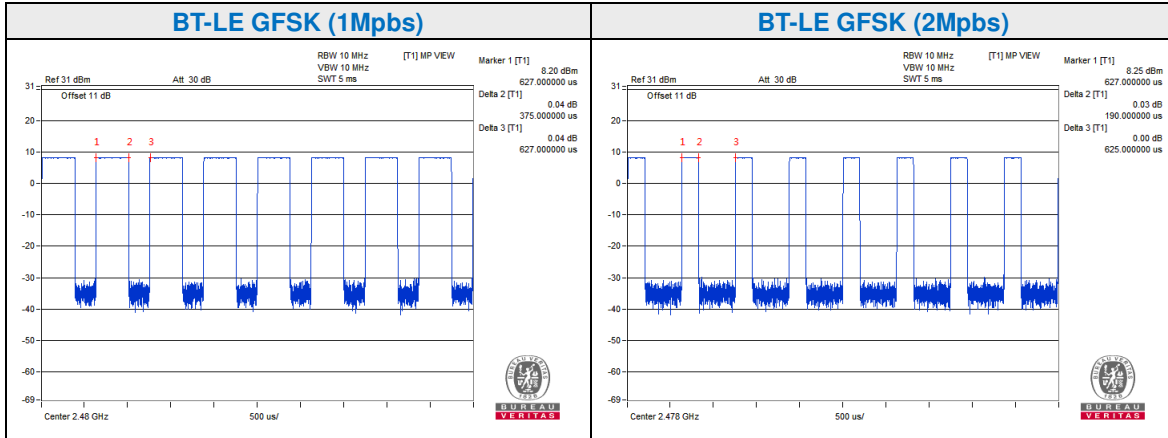
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Test Report No.: RF2312WDG0213-2

3.6 DUTY CYCLE OF TESET SIGNAL

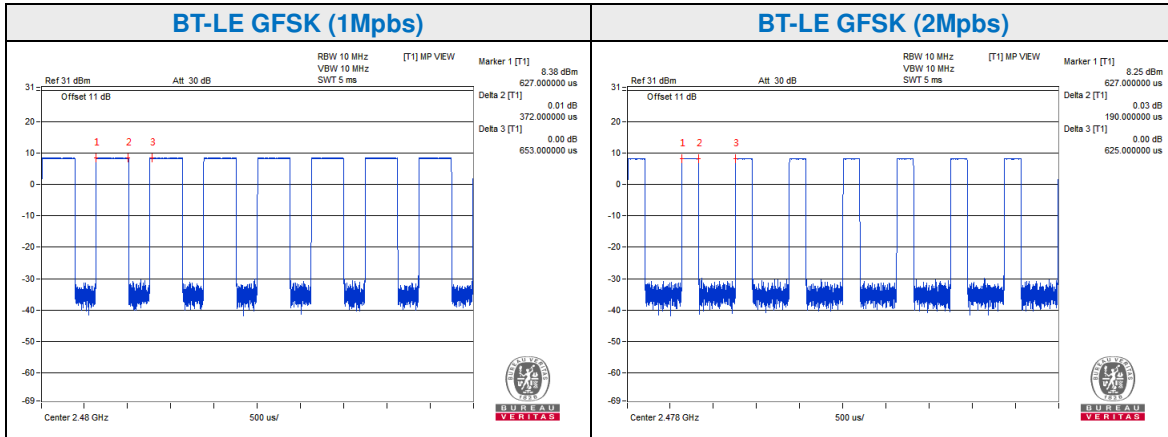
Left Earbud

Test Mode	On Time (ms)	Period (ms)	Duty Cycle (%)	1/T Min. VBW (KHz)	VBW Setting
BT-LE GFSK (1Mbps)	0.375	0.627	59.81	2.67	3KHz
BT-LE GFSK (2Mbps)	0.190	0.625	30.40	5.26	6KHz



Right Earbud

Test Mode	On Time (ms)	Period (ms)	Duty Cycle (%)	1/T Min. VBW (KHz)	VBW Setting
BT-LE GFSK (1Mbps)	0.372	0.653	56.97	2.69	3KHz
BT-LE GFSK (2Mbps)	0.190	0.625	30.40	5.26	6KHz



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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

NOTES:

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.

**4.1.2 TEST INSTRUMENTS**

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU40	100449	Jan. 02, 25
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	Apr. 05, 24
Active Loop Antenna (9KHz -30MHz)	SCHWARZBECK	FMZB 1519B	1519B-045	May. 09, 24
Amplifier (9KHz -1GHz)	Burgeon	BPA-530	100210	Mar. 06, 24
Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-554	Jan. 08, 25
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	Apr. 01, 24
Horn Antenna (18GHz -40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170147	Apr. 01, 24
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	May. 20, 24
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A
Broadband Pre-amplifier (1GHz~18GHz)	SCHWARZBECK	BBV9718	305	Apr. 24, 24
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Jan. 02, 25
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	N/A

NOTES:

1. The test was performed in 966 Chamber.
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.
3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
4. Test Firm Registration Number: 749762.
5. Designation Number: CN1174



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. For below 1GHz was used bilog antenna, and above 1GHz was used horn 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. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the center of the loop shall be 1.3m above the ground.
- g. 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.

NOTES:

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 are 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) 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.

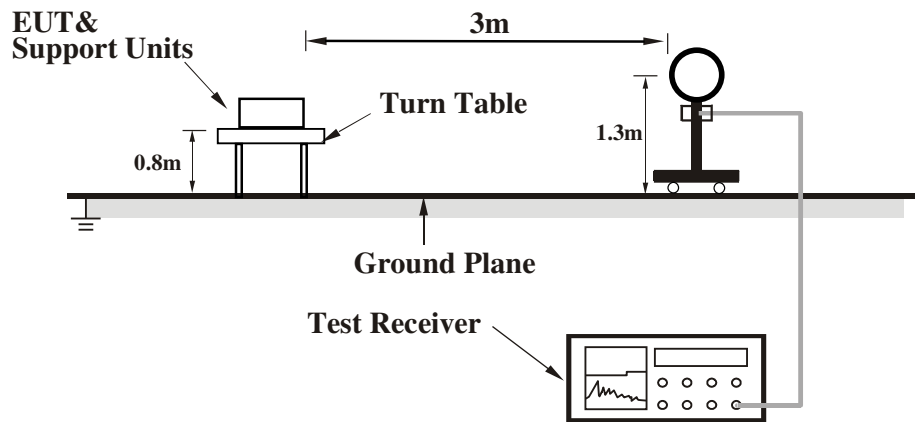


4.1.4 DEVIATION FROM TEST STANDARD

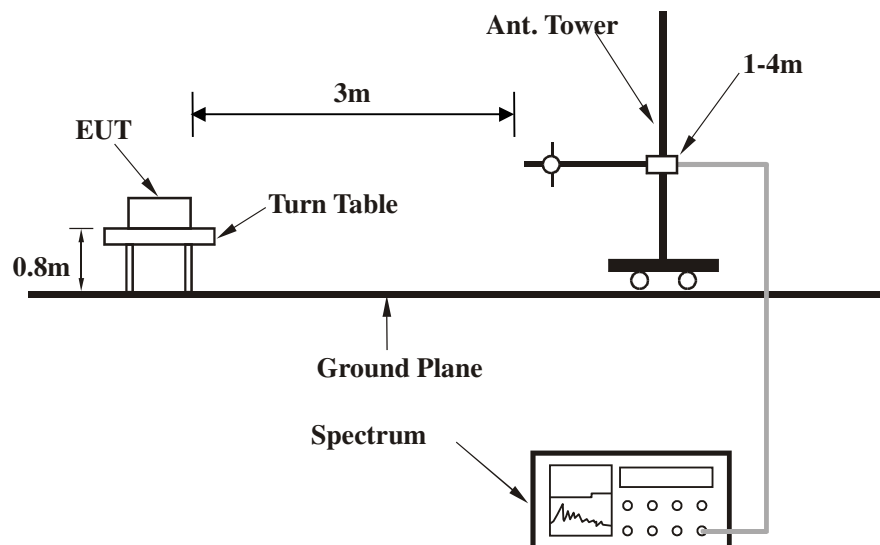
No deviation.

4.1.5 TEST SETUP

Below 30MHz test setup

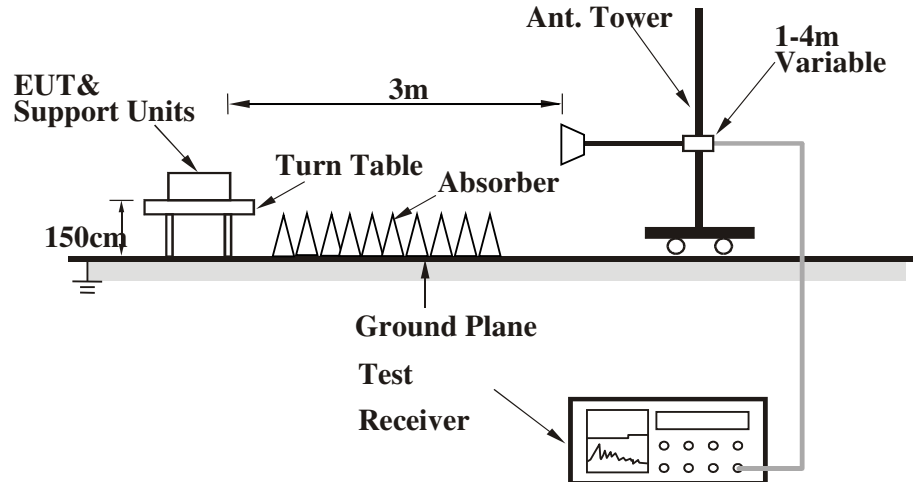


Below 1GHz test setup



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).

4.1.6 EUT OPERATING CONDITIONS

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



4.1.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA:

Left Earbud:

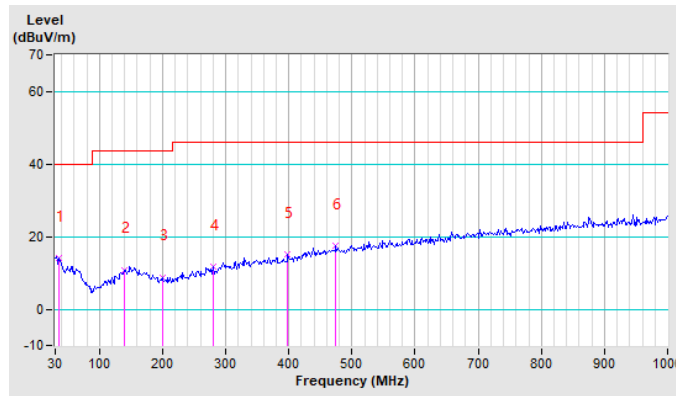
BT-LE GFSK (1Mbps)

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

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	36.22	13.93 QP	40.00	-26.07	2.00 H	125	32.51	-18.58
2	138.81	10.63 QP	43.50	-32.87	2.00 H	125	28.03	-17.40
3	199.44	8.60 QP	43.50	-34.90	1.97 H	344	28.33	-19.73
4	280.27	11.58 QP	46.00	-34.42	1.86 H	330	28.25	-16.67
5	398.41	14.96 QP	46.00	-31.04	1.71 H	316	28.45	-13.49
6	474.58	17.37 QP	46.00	-28.63	1.58 H	303	28.72	-11.35

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 greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value



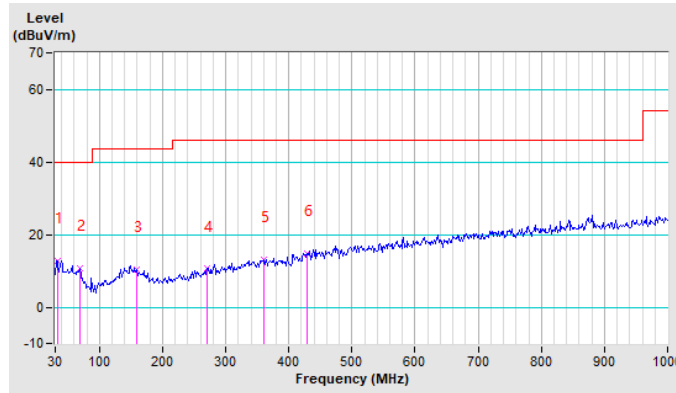


CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 1GHz		

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	12.88 QP	40.00	-27.12	1.00 V	32	31.64	-18.76
2	68.86	10.71 QP	40.00	-29.29	1.00 V	12	29.47	-18.76
3	159.02	10.46 QP	43.50	-33.04	1.00 V	1	27.55	-17.09
4	270.95	10.56 QP	46.00	-35.44	1.00 V	125	27.61	-17.05
5	359.55	13.12 QP	46.00	-32.88	1.00 V	135	27.41	-14.29
6	429.50	14.91 QP	46.00	-31.09	1.00 V	165	27.44	-12.53

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 greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value





Right Earbud:

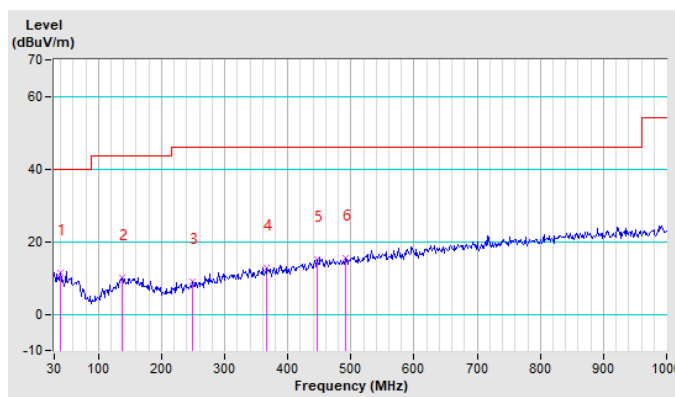
BT-LE GFSK (1Mbps)

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

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	39.33	11.40 QP	40.00	-28.60	2.12 H	296	29.76	-18.36
2	137.26	10.14 QP	43.50	-33.36	1.96 H	281	27.74	-17.60
3	249.18	9.13 QP	46.00	-36.87	1.82 H	267	27.07	-17.94
4	367.32	12.70 QP	46.00	-33.30	1.70 H	255	26.83	-14.13
5	446.60	15.11 QP	46.00	-30.89	1.57 H	242	27.09	-11.98
6	491.68	15.51 QP	46.00	-30.49	1.44 H	229	26.49	-10.98

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 greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value



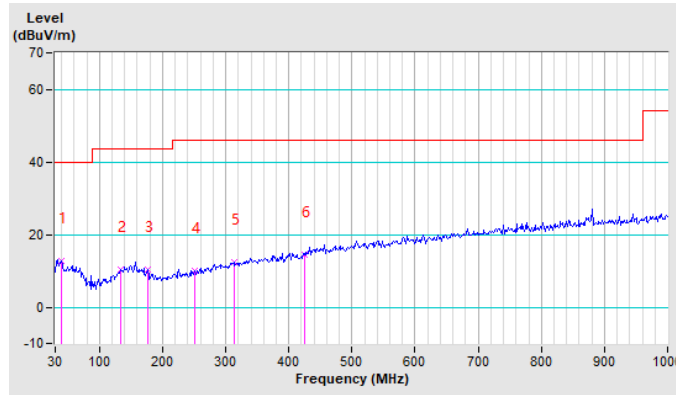


CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 1GHz		

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	39.33	12.81 QP	40.00	-27.19	1.21 V	48	31.17	-18.36
2	134.15	10.32 QP	43.50	-33.18	1.44 V	70	28.32	-18.00
3	176.12	10.33 QP	43.50	-33.17	1.58 V	84	28.82	-18.49
4	250.74	10.03 QP	46.00	-35.97	1.86 V	112	27.91	-17.88
5	312.92	12.51 QP	46.00	-33.49	1.72 V	97	28.02	-15.51
6	424.84	14.38 QP	46.00	-31.62	2.00 V	126	27.05	-12.67

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 greater than 20dB margin.
4. 9KHz~30MHz have been test and test data more than 20dB margin.
5. Margin value = Emission level – Limit value



ABOVE 1GHz TEST DATA:

Left Earbud

BT-LE GFSK (1Mbps)

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2390.00	44.56 PK	74.00	-29.44	1.74 H	93	41.57	2.99
2	2390.00	34.91 AV	54.00	-19.09	1.74 H	93	31.92	2.99
3	*2402.00	97.68 PK			1.74 H	93	94.67	3.01
4	*2402.00	96.51 AV			1.74 H	93	93.50	3.01
5	4804.00	49.81 PK	74.00	-24.19	1.74 H	14	41.98	7.83
6	4804.00	39.20 AV	54.00	-14.80	1.74 H	14	31.37	7.83
7	#7206.00	51.56 PK	74.00	-22.44	1.05 H	41	41.23	10.33
8	#7206.00	40.56 AV	54.00	-13.44	1.05 H	41	30.23	10.33
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	2390.00	44.78 PK	74.00	-29.22	1.00 V	86	41.79	2.99
2	2390.00	34.29 AV	54.00	-19.71	1.00 V	86	31.30	2.99
3	*2402.00	99.43 PK			1.00 V	86	96.42	3.01
4	*2402.00	98.71 AV			1.00 V	86	95.70	3.01
5	4804.00	51.26 PK	74.00	-22.74	1.48 V	25	43.43	7.83
6	4804.00	40.25 AV	54.00	-13.75	1.48 V	25	32.42	7.83
7	#7206.00	51.26 PK	74.00	-22.74	1.06 V	52	40.93	10.33
8	#7206.00	41.38 AV	54.00	-12.62	1.06 V	52	31.05	10.33

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 greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	97.89 PK			1.45 H	90	94.80	3.09
2	*2440.00	96.56 AV			1.45 H	90	93.47	3.09
3	4880.00	51.26 PK	74.00	-22.74	1.23 H	55	43.25	8.01
4	4880.00	40.39 AV	54.00	-13.61	1.23 H	55	32.38	8.01
5	7320.00	52.38 PK	74.00	-21.62	1.54 H	59	41.66	10.72
6	7320.00	41.20 AV	54.00	-12.80	1.54 H	59	30.48	10.72

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	*2440.00	99.72 PK			1.04 V	21	96.63	3.09
2	*2440.00	98.17 AV			1.04 V	21	95.08	3.09
3	4880.00	51.38 PK	74.00	-22.62	1.03 V	22	43.37	8.01
4	4880.00	41.20 AV	54.00	-12.80	1.03 V	22	33.19	8.01
5	7320.00	51.26 PK	74.00	-22.74	1.35 V	22	40.54	10.72
6	7320.00	41.20 AV	54.00	-12.80	1.35 V	22	30.48	10.72

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 greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.



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Test Report No.: RF2312WDG0213-2

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	99.87 PK			1.05 H	41	96.70	3.17
2	*2480.00	98.82 AV			1.05 H	41	95.65	3.17
3	2483.50	51.26 PK	74.00	-22.74	1.00 H	52	48.09	3.17
4	2483.50	40.28 AV	54.00	-13.72	1.00 H	52	37.11	3.17
5	4960.00	51.26 PK	74.00	-22.74	2.01 H	101	43.05	8.21
6	4960.00	40.20 AV	54.00	-13.80	2.01 H	101	31.99	8.21
7	7440.00	51.26 PK	74.00	-22.74	1.05 H	201	40.13	11.13
8	7440.00	41.25 AV	54.00	-12.75	1.05 H	201	30.12	11.13
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	*2480.00	97.82 PK			1.00 V	210	94.65	3.17
2	*2480.00	97.02 AV			1.00 V	210	93.85	3.17
3	2483.50	46.18 PK	74.00	-27.82	1.00 V	210	43.01	3.17
4	2483.50	34.51 AV	54.00	-19.49	1.00 V	210	31.34	3.17
5	4960.00	51.26 PK	74.00	-22.74	1.00 V	25	43.05	8.21
6	4960.00	41.25 AV	54.00	-12.75	1.00 V	25	33.04	8.21
7	7440.00	51.23 PK	74.00	-22.77	1.05 V	207	40.10	11.13
8	7440.00	41.38 AV	54.00	-12.62	1.05 V	207	30.25	11.13

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 greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * " : Fundamental frequency.

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BT-LE GFSK (2Mbps)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2390.00	44.35 PK	74.00	-29.65	2.82 H	62	41.36	2.99
2	2390.00	34.69 AV	54.00	-19.31	2.82 H	62	31.70	2.99
3	*2404.00	98.63 PK			2.85 H	62	95.62	3.01
4	*2404.00	96.92 AV			2.85 H	62	93.91	3.01
5	4808.00	51.41 PK	74.00	-22.59	1.35 H	352	43.58	7.83
6	4808.00	40.28 AV	54.00	-13.72	1.35 H	352	32.45	7.83
7	#7212.00	52.27 PK	74.00	-21.73	1.51 H	360	41.91	10.36
8	#7212.00	41.25 AV	54.00	-12.75	1.51 H	360	30.89	10.36

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	2390.00	44.20 PK	74.00	-29.80	1.56 V	203	41.21	2.99
2	2390.00	34.84 AV	54.00	-19.16	1.56 V	203	31.85	2.99
3	*2404.00	99.95 PK			1.56 V	203	96.94	3.01
4	*2404.00	97.40 AV			1.56 V	203	94.39	3.01
5	4808.00	51.25 PK	74.00	-22.75	1.35 V	25	43.42	7.83
6	4808.00	40.29 AV	54.00	-13.71	1.35 V	25	32.46	7.83
7	#7212.00	51.26 PK	74.00	-22.74	1.05 V	21	40.90	10.36
8	#7212.00	40.37 AV	54.00	-13.63	1.05 V	21	30.01	10.36

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 greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2441.00	98.21 PK			1.00 H	90	95.12	3.09
2	*2441.00	96.92 AV			1.00 H	90	93.83	3.09
3	4882.00	51.26 PK	74.00	-22.74	1.03 H	65	43.24	8.02
4	4882.00	41.37 AV	54.00	-12.63	1.03 H	65	33.35	8.02
5	7323.00	52.30 PK	74.00	-21.70	1.05 H	2	41.56	10.74
6	7323.00	40.35 AV	54.00	-13.65	1.05 H	2	29.61	10.74

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	*2441.00	99.79 PK			1.00 V	15	96.70	3.09
2	*2441.00	97.61 AV			1.00 V	15	94.52	3.09
3	4882.00	51.26 PK	74.00	-22.74	1.02 V	51	43.24	8.02
4	4882.00	40.32 AV	54.00	-13.68	1.02 V	51	32.30	8.02
5	7323.00	52.27 PK	74.00	-21.73	2.15 V	107	41.53	10.74
6	7323.00	41.37 AV	54.00	-12.63	2.15 V	107	30.63	10.74

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 greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.



**BUREAU
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Test Report No.: RF2312WDG0213-2

CHANNEL	TX Channel 38	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2478.00	98.12 PK			1.00 H	52	94.96	3.16
2	*2478.00	96.54 AV			1.00 H	52	93.38	3.16
3	2483.50	47.89 PK	74.00	-26.11	1.05 H	25	44.72	3.17
4	2483.50	34.50 AV	54.00	-19.50	1.05 H	25	31.33	3.17
5	4956.00	51.26 PK	74.00	-22.74	1.02 H	22	43.06	8.20
6	4956.00	40.38 AV	54.00	-13.62	1.02 H	22	32.18	8.20
7	7434.00	51.35 PK	74.00	-22.65	1.35 H	25	40.25	11.10
8	7434.00	40.38 AV	54.00	-13.62	1.35 H	25	29.28	11.10

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	*2478.00	97.23 PK			2.64 V	16	94.07	3.16
2	*2478.00	93.57 AV			2.64 V	16	90.41	3.16
3	2483.50	43.23 PK	74.00	-30.77	2.64 V	16	40.06	3.17
4	2483.50	34.99 AV	54.00	-19.01	2.64 V	16	31.82	3.17
5	4956.00	50.29 PK	74.00	-23.71	1.35 V	108	42.09	8.20
6	4956.00	39.48 AV	54.00	-14.52	1.35 V	108	31.28	8.20
7	7434.00	51.35 PK	74.00	-22.65	1.05 V	52	40.25	11.10
8	7434.00	41.37 AV	54.00	-12.63	1.05 V	52	30.27	11.10

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 greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * " : Fundamental frequency.

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Right Earbud

BT-LE GFSK (1Mbps)

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2390.00	44.42 PK	74.00	-29.58	1.82 H	99	41.43	2.99
2	2390.00	34.49 AV	54.00	-19.51	1.82 H	99	31.50	2.99
3	*2402.00	100.30 PK			1.82 H	98	97.29	3.01
4	*2402.00	98.91 AV			1.82 H	98	95.90	3.01
5	4804.00	51.20 PK	74.00	-22.80	1.05 H	141	43.37	7.83
6	4804.00	40.29 AV	54.00	-13.71	1.05 H	141	32.46	7.83
7	#7206.00	51.26 PK	74.00	-22.74	1.05 H	41	40.93	10.33
8	#7206.00	40.32 AV	54.00	-13.68	1.05 H	41	29.99	10.33

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	2390.00	45.68 PK	74.00	-28.32	1.04 V	2	42.69	2.99
2	2390.00	34.35 AV	54.00	-19.65	1.04 V	2	31.36	2.99
3	*2402.00	97.89 PK			1.04 V	2	94.88	3.01
4	*2402.00	95.20 AV			1.04 V	2	92.19	3.01
5	4804.00	51.28 PK	74.00	-22.72	1.03 V	52	43.45	7.83
6	4804.00	40.38 AV	54.00	-13.62	1.03 V	52	32.55	7.83
7	#7206.00	50.32 PK	74.00	-23.68	1.03 V	52	39.99	10.33
8	#7206.00	40.18 AV	54.00	-13.82	1.03 V	52	29.85	10.33

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 greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2441.00	99.87 PK			1.03 H	52	96.78	3.09
2	*2441.00	97.38 AV			1.03 H	52	94.29	3.09
3	4882.00	51.29 PK	74.00	-22.71	1.45 H	254	43.27	8.02
4	4882.00	40.21 AV	54.00	-13.79	1.45 H	254	32.19	8.02
5	7323.00	51.26 PK	74.00	-22.74	1.05 H	210	40.52	10.74
6	7323.00	41.30 AV	54.00	-12.70	1.05 H	210	30.56	10.74

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	*2441.00	97.10 PK			1.00 V	90	94.01	3.09
2	*2441.00	94.68 AV			1.00 V	90	91.59	3.09
3	4882.00	49.67 PK	74.00	-24.33	1.06 V	51	41.65	8.02
4	4882.00	40.20 AV	54.00	-13.80	1.06 V	51	32.18	8.02
5	7323.00	51.26 PK	74.00	-22.74	1.02 V	52	40.52	10.74
6	7323.00	41.25 AV	54.00	-12.75	1.02 V	52	30.51	10.74

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 greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.



CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	99.97 PK			1.35 H	2	96.80	3.17
2	*2480.00	98.20 AV			1.35 H	2	95.03	3.17
3	2483.50	47.89 PK	74.00	-26.11	1.06 H	52	44.72	3.17
4	2483.50	35.37 AV	54.00	-18.63	1.06 H	52	32.20	3.17
5	4960.00	51.35 PK	74.00	-22.65	1.04 H	21	43.14	8.21
6	4960.00	41.20 AV	54.00	-12.80	1.04 H	21	32.99	8.21
7	7440.00	51.26 PK	74.00	-22.74	1.40 H	12	40.13	11.13
8	7440.00	41.20 AV	54.00	-12.80	1.40 H	12	30.07	11.13

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	*2480.00	97.56 PK			1.03 V	22	94.39	3.17
2	*2480.00	95.10 AV			1.03 V	22	91.93	3.17
3	2483.50	46.72 PK	74.00	-27.28	1.03 V	22	43.55	3.17
4	2483.50	34.21 AV	54.00	-19.79	1.03 V	22	31.04	3.17
5	4960.00	51.37 PK	74.00	-22.63	1.02 V	52	43.16	8.21
6	4960.00	41.20 AV	54.00	-12.80	1.02 V	52	32.99	8.21
7	7440.00	52.38 PK	74.00	-21.62	1.02 V	51	41.25	11.13
8	7440.00	41.20 AV	54.00	-12.80	1.02 V	51	30.07	11.13

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 greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * " : Fundamental frequency.



BT-LE GFSK (2Mbps)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	2390.00	44.19 PK	74.00	-29.81	1.00 H	104	41.20	2.99
2	2390.00	34.98 AV	54.00	-19.02	1.00 H	104	31.99	2.99
3	*2404.00	98.45 PK			1.00 H	104	95.44	3.01
4	*2404.00	96.00 AV			1.00 H	104	92.99	3.01
5	4808.00	51.09 PK	74.00	-22.91	1.00 H	5	43.26	7.83
6	4808.00	40.25 AV	54.00	-13.75	1.00 H	5	32.42	7.83
7	#7212.00	51.26 PK	74.00	-22.74	1.02 H	5	40.90	10.36
8	#7212.00	41.32 AV	54.00	-12.68	1.02 H	5	30.96	10.36

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	2390.00	44.40 PK	74.00	-29.60	1.65 V	186	41.41	2.99
2	2390.00	34.59 AV	54.00	-19.41	1.65 V	186	31.60	2.99
3	*2404.00	98.12 PK			1.65 V	186	95.11	3.01
4	*2404.00	96.12 AV			1.65 V	186	93.11	3.01
5	4808.00	52.16 PK	74.00	-21.84	1.35 V	259	44.33	7.83
6	4808.00	41.25 AV	54.00	-12.75	1.35 V	259	33.42	7.83
7	#7212.00	52.37 PK	74.00	-21.63	1.06 V	4	42.01	10.36
8	#7212.00	41.28 AV	54.00	-12.72	1.06 V	4	30.92	10.36

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 greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.



CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2441.00	97.21 PK			1.06 H	52	94.12	3.09
2	*2441.00	95.70 AV			1.06 H	52	92.61	3.09
3	4882.00	50.32 PK	74.00	-23.68	1.05 H	2	42.30	8.02
4	4882.00	41.02 AV	54.00	-12.98	1.05 H	2	33.00	8.02
5	7323.00	51.29 PK	74.00	-22.71	1.00 H	2	40.55	10.74
6	7323.00	40.35 AV	54.00	-13.65	1.00 H	2	29.61	10.74

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	*2441.00	98.94 PK			1.00 V	352	95.85	3.09
2	*2441.00	96.25 AV			1.00 V	352	93.16	3.09
3	4882.00	50.90 PK	74.00	-23.10	1.02 V	101	42.88	8.02
4	4882.00	41.21 AV	54.00	-12.79	1.02 V	101	33.19	8.02
5	7323.00	51.20 PK	74.00	-22.80	1.04 V	210	40.46	10.74
6	7323.00	41.71 AV	54.00	-12.29	1.04 V	210	30.97	10.74

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 greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.



CHANNEL	TX Channel 38	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		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	*2478.00	97.54 PK			2.48 H	83	94.38	3.16
2	*2478.00	94.93 AV			2.48 H	83	91.77	3.16
3	2483.50	44.85 PK	74.00	-29.15	2.48 H	83	41.68	3.17
4	2483.50	33.78 AV	54.00	-20.22	2.48 H	83	30.61	3.17
5	4956.00	51.02 PK	74.00	-22.98	1.54 H	44	42.82	8.20
6	4956.00	40.32 AV	54.00	-13.68	1.54 H	44	32.12	8.20
7	7434.00	52.37 PK	74.00	-21.63	1.05 H	41	41.27	11.10
8	7434.00	40.27 AV	54.00	-13.73	1.05 H	41	29.17	11.10

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	*2478.00	98.03 PK			1.08 V	175	94.87	3.16
2	*2478.00	95.37 AV			1.08 V	175	92.21	3.16
3	2483.50	44.43 PK	74.00	-29.57	1.08 V	175	41.26	3.17
4	2483.50	33.73 AV	54.00	-20.27	1.08 V	175	30.56	3.17
5	4956.00	51.03 PK	74.00	-22.97	1.05 V	65	42.83	8.20
6	4956.00	39.87 AV	54.00	-14.13	1.05 V	65	31.67	8.20
7	7434.00	52.26 PK	74.00	-21.74	1.35 V	2	41.16	11.10
8	7434.00	41.35 AV	54.00	-12.65	1.35 V	2	30.25	11.10

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 greater than 20dB margin.
4. Margin value = Emission level – Limit value.
5. " * ": Fundamental frequency.



4.2 6dB BANDWIDTH MEASUREMENT

4.2.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
Power Sensor	Keysight	U2021XA	MY57320002	May. 11, 24
Power Meter	Anritsu	ML2495A	1139001	Jul. 11, 24
Power Sensor	Anritsu	MA2411B	1531155	Jul. 11, 24
Digital Multimeter	FLUKE	15B	A1220010DG	N/A
Humid & Temp Programmable Tester	Haida	HD-225T	110807201	Oct. 15, 24
Oscilloscope	Agilent	DSO9254A	MY51260160	Jul. 11, 24
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101094	Jan. 01, 25
Signal Generator	Agilent	N5183A	MY50140980	Jul. 23, 24
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Jul. 11, 24
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	N/A
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A
DC Source	Keysight	E3642A	MY56146098	N/A
Test software	ADT	ADT_RF Test Software V6.6.5.3	N/A	N/A

NOTES:

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

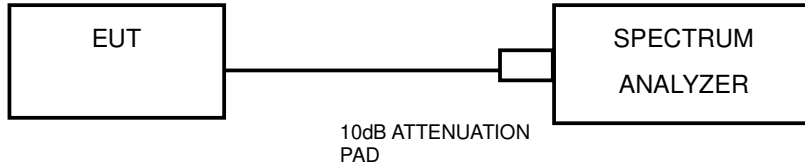
1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points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



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.



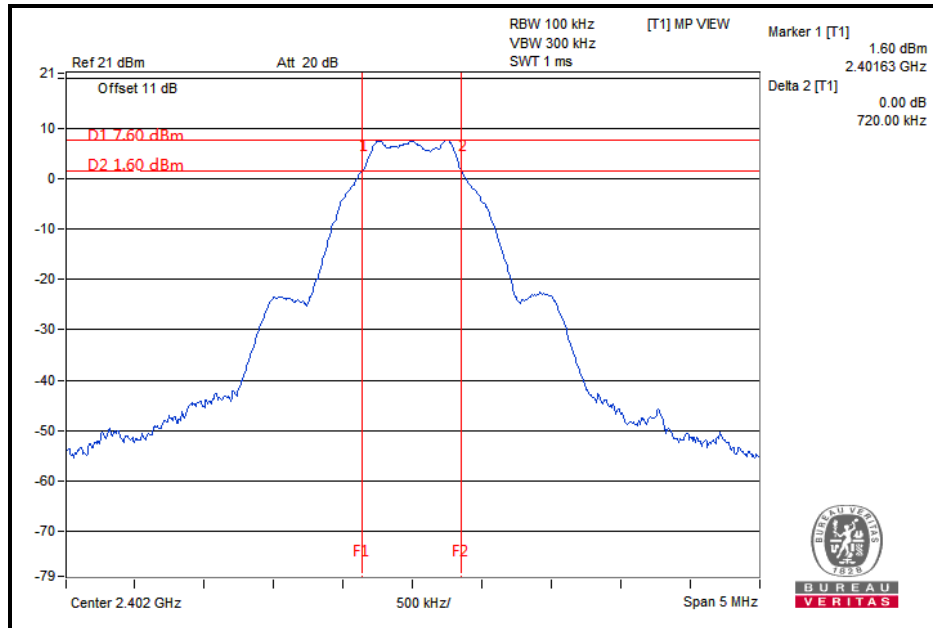
4.2.7 TEST RESULTS

Left Earbud:

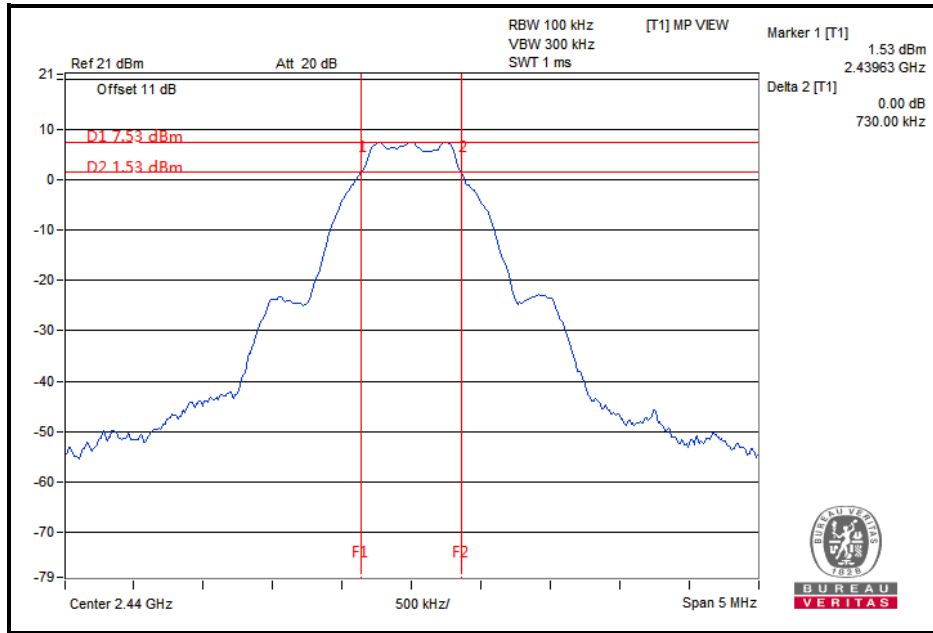
BT-LE (GFSK) (1Mbps)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	0.72	0.5	PASS
19	2440	0.73	0.5	PASS
39	2480	0.72	0.5	PASS

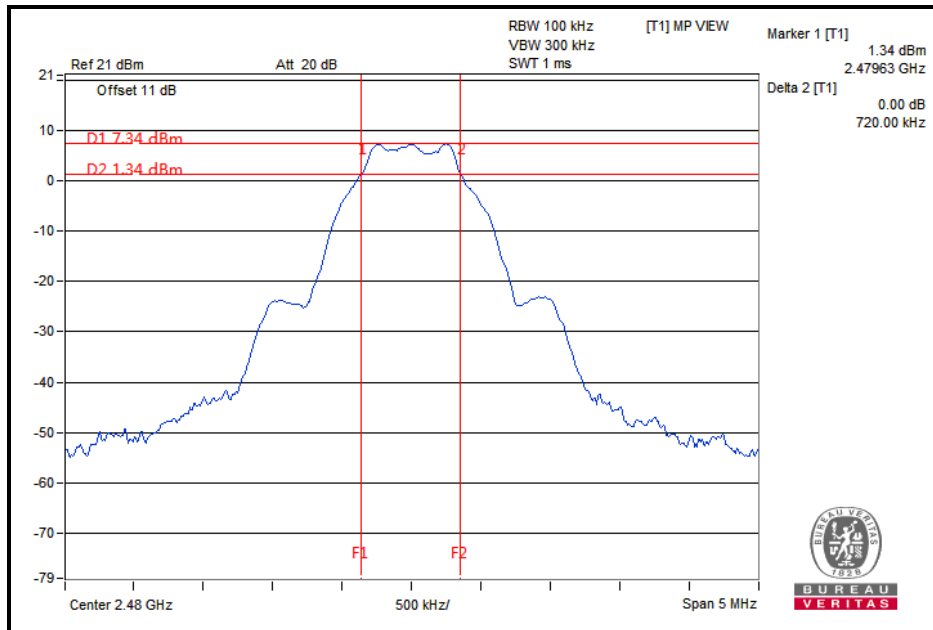
CH 0



CH 19



CH 39





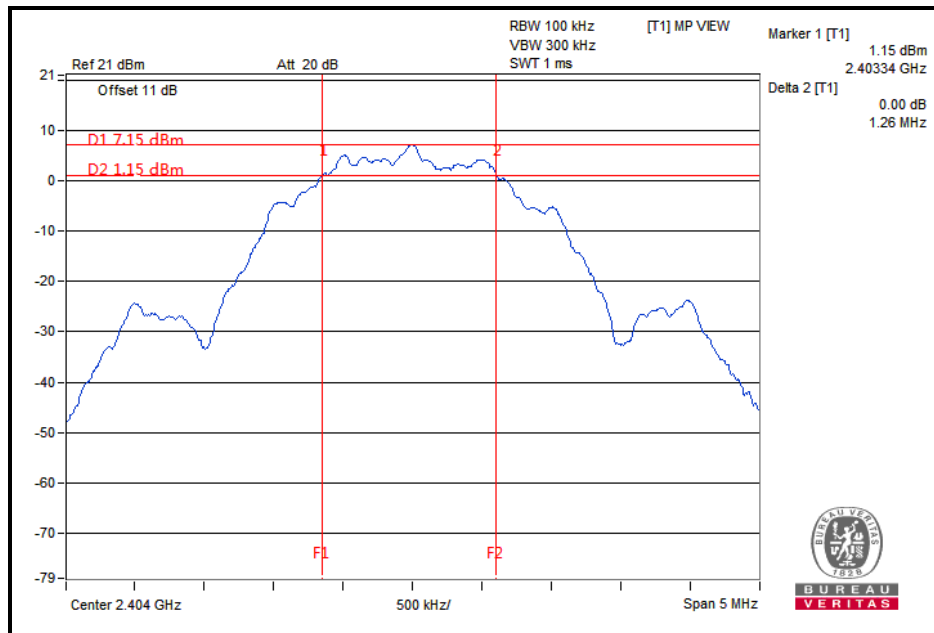
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BT-LE (GFSK) (2Mbps)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2404	1.26	0.5	PASS
19	2440	1.27	0.5	PASS
38	2478	1.24	0.5	PASS

CH 1

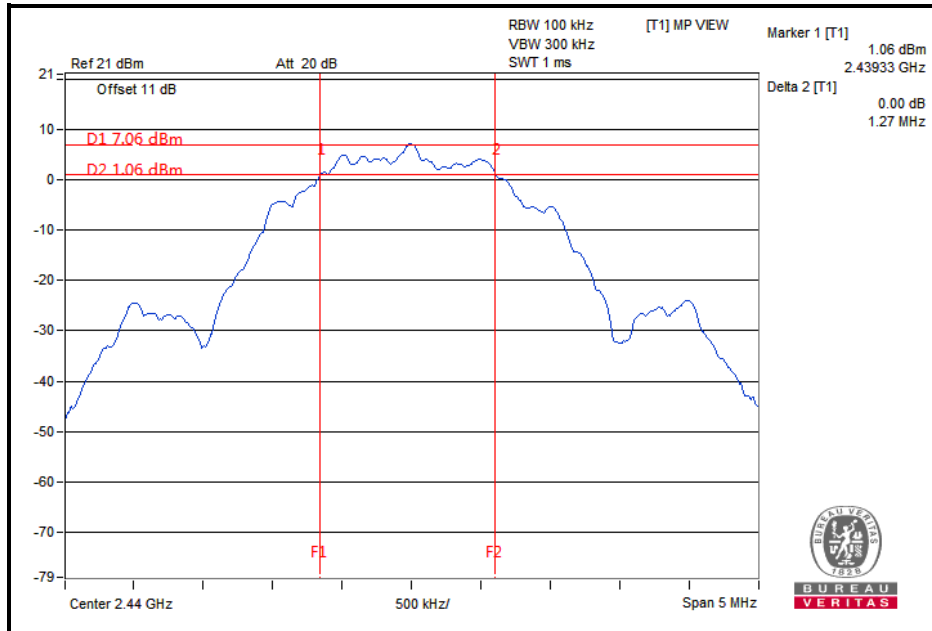


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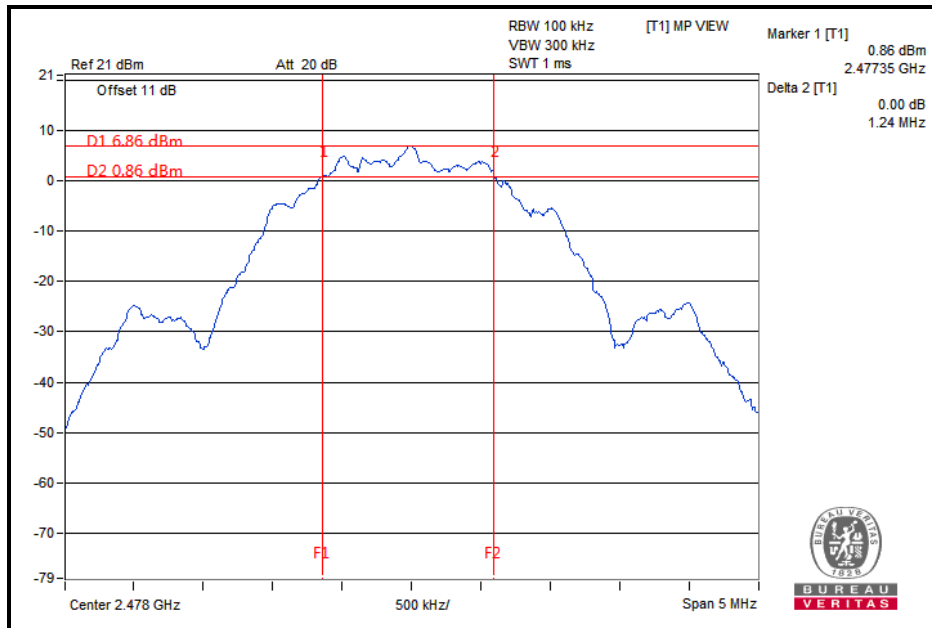
No. 96, Guantai Road (Houjie Section), Houjie
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CH 19



CH 38





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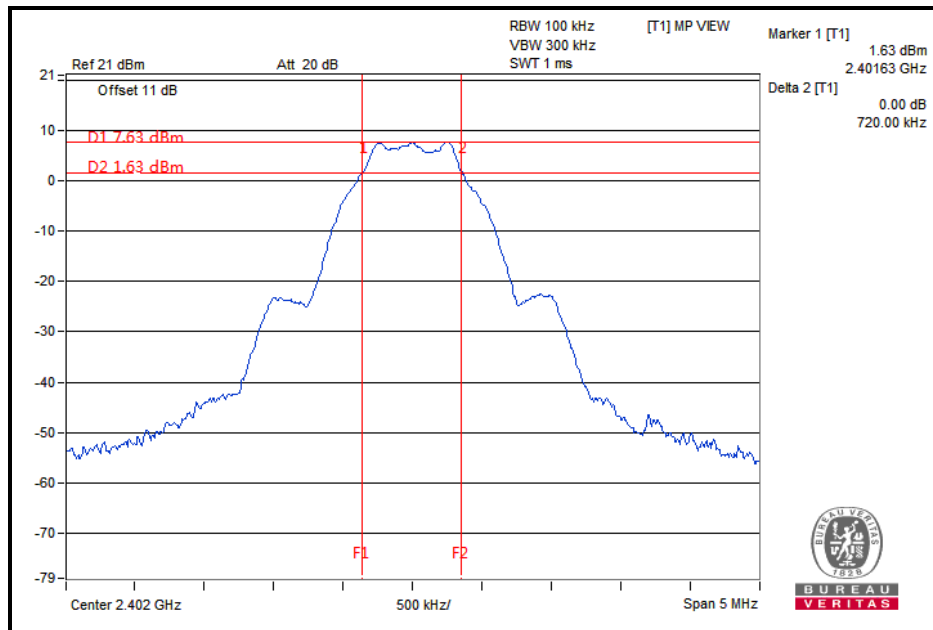
Test Report No.: RF2312WDG0213-2

Right Earbud:

BT-LE (GFSK) (1Mbps)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	0.72	0.5	PASS
19	2440	0.72	0.5	PASS
39	2480	0.72	0.5	PASS

CH 0

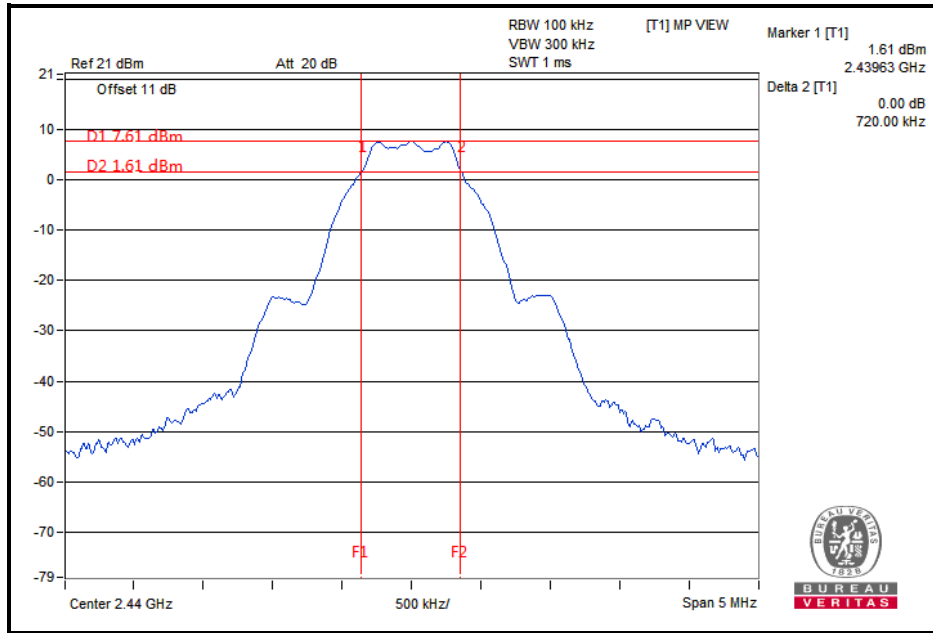


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Dongguan Branch**

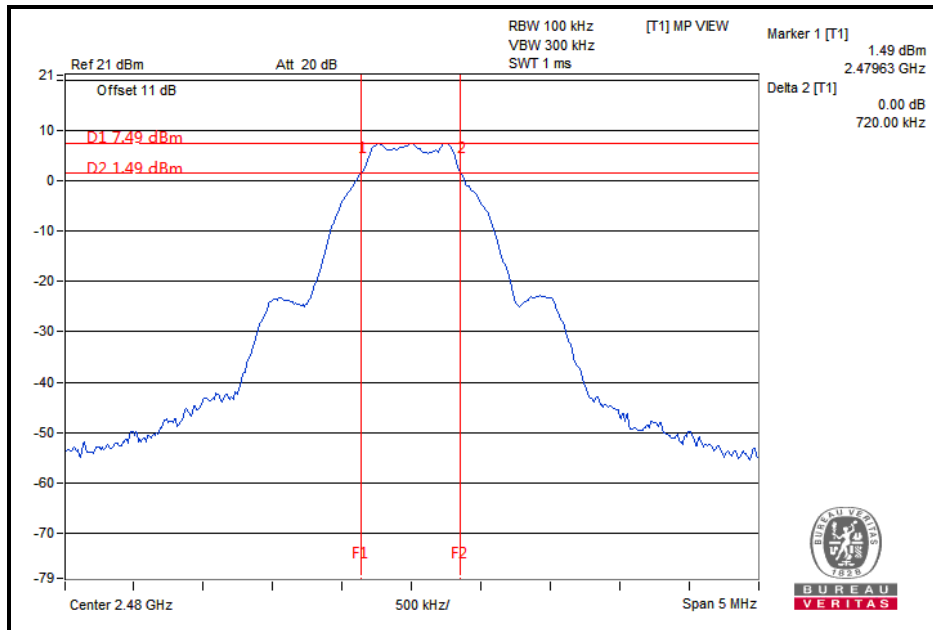
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CH 19



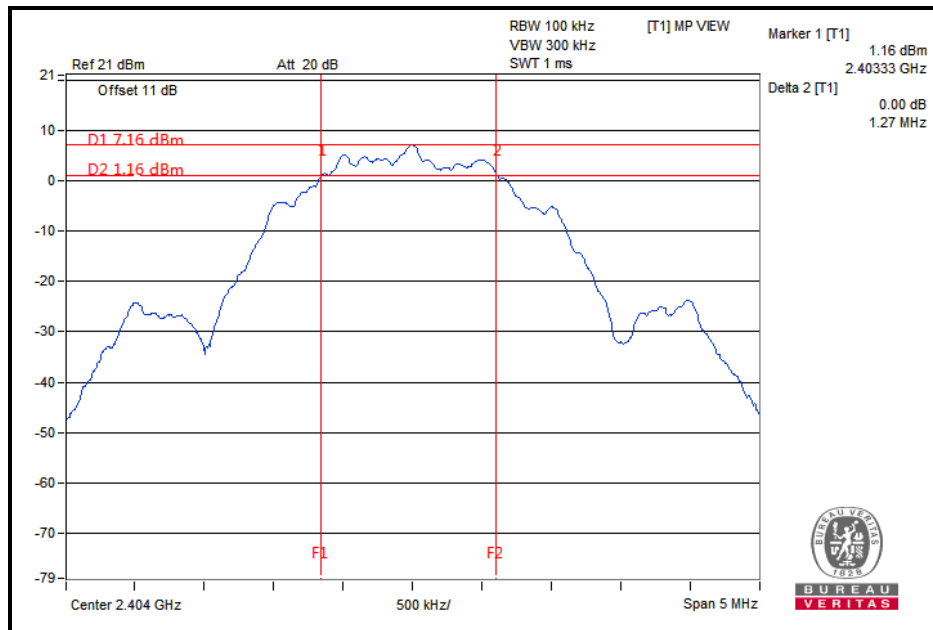
CH 39



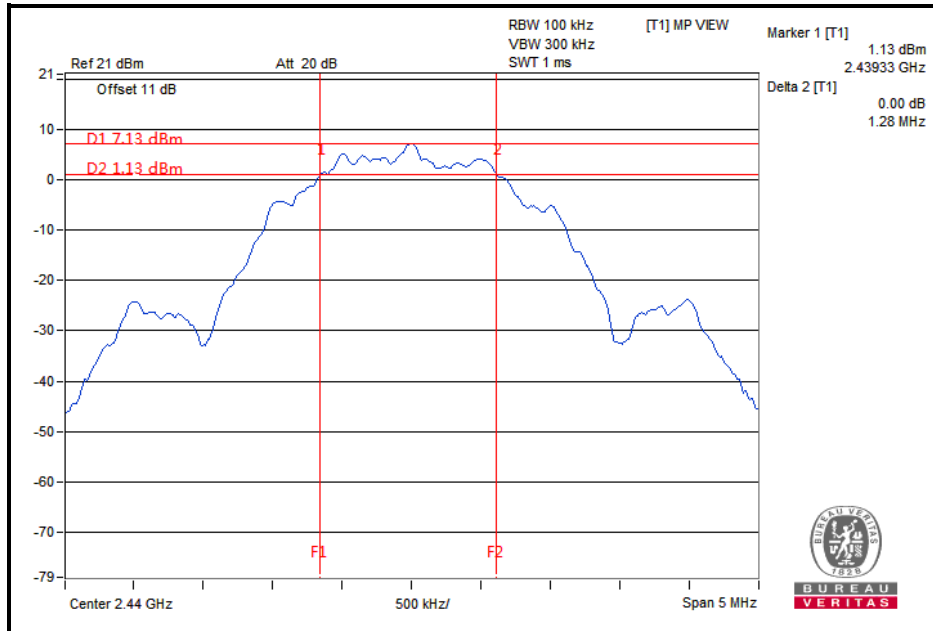
BT-LE (GFSK) (2Mbps)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
1	2404	1.27	0.5	PASS
19	2440	1.28	0.5	PASS
38	2478	1.25	0.5	PASS

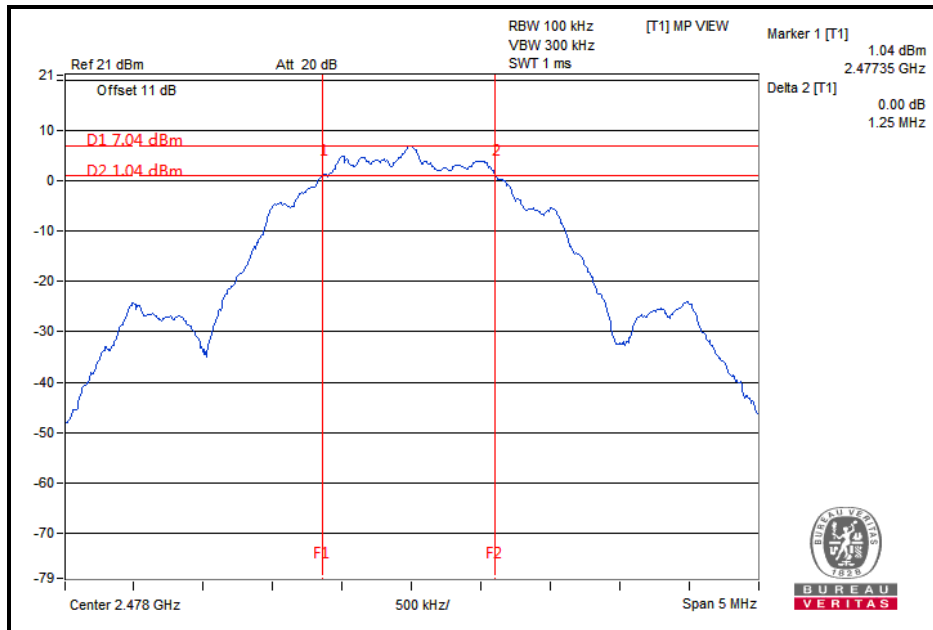
CH 1



CH 19



CH 38





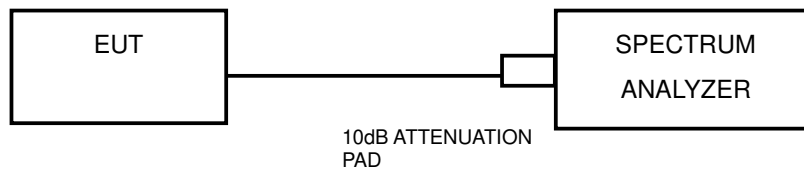
4.3 CONDUCTED OUTPUT POWER

4.3.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

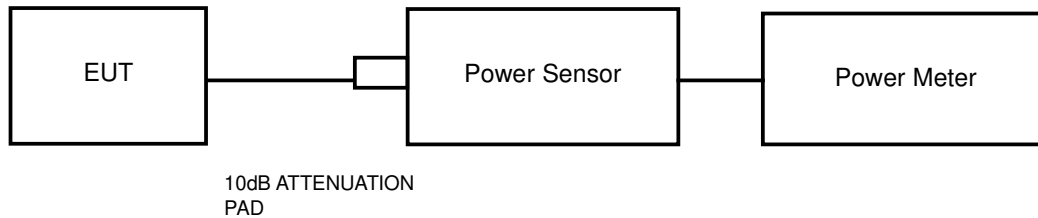
For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm)

4.3.2 TEST SETUP

MAXIMUM PEAK OUTPUT POWER :



AVERAGE OUTPUT POWER :





4.3.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
Power Sensor	Keysight	U2021XA	MY57320002	May. 11, 24
Power Meter	Anritsu	ML2495A	1139001	Jul. 11, 24
Power Sensor	Anritsu	MA2411B	1531155	Jul. 11, 24
Digital Multimeter	FLUKE	15B	A1220010DG	N/A
Humid & Temp Programmable Tester	Haida	HD-225T	110807201	Oct. 15, 24
Oscilloscope	Agilent	DSO9254A	MY51260160	Jul. 11, 24
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101094	Jan. 01, 25
Signal Generator	Agilent	N5183A	MY50140980	Jul. 23, 24
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Jul. 11, 24
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	N/A
Attenuator	MINI	BW-S10W2+	S130129FGE2	N/A
DC Source	Keysight	E3642A	MY56146098	N/A
Test software	ADT	ADT_RF Test Software V6.6.5.3	N/A	N/A

- NOTES:** 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

MAXIMUM PEAK OUTPUT POWER :

- a. Set the span to approximately five times the 20 dB bandwidth, centered on a hopping channel.
- b. Set the RBW = 3 MHz, VBW ≥ 3 x RBW, Detector = peak.
- c. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.

AVERAGE OUTPUT POWER:

Use the peak marker function to determine the maximum amplitude level. An average power sensor was used on the output port of the EUT. A power meter was used to read the response of the average power sensor and set the detector to AVERAGE. Record the power level.

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

Left Earbud:

BT-LE GFSK (1Mbps)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	EIRP (mW)	PEAK POWER LIMIT (W)	EIRP LIMIT (W)	PASS/FAIL
0	2402	8.55	7.161	4.436	1	/	PASS
19	2440	8.48	7.047	4.365	1	/	PASS
39	2480	8.29	6.745	4.178	1	/	PASS

Note: EIRP=Conducted output power + Ant gain(-2.08dBi)

BT-LE GFSK (2Mbps)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	EIRP (mW)	PEAK POWER LIMIT (W)	EIRP LIMIT (W)	PASS/FAIL
1	2404	8.49	7.063	4.375	1	/	PASS
19	2440	8.43	6.966	4.315	1	/	PASS
38	2478	8.25	6.683	4.140	1	/	PASS

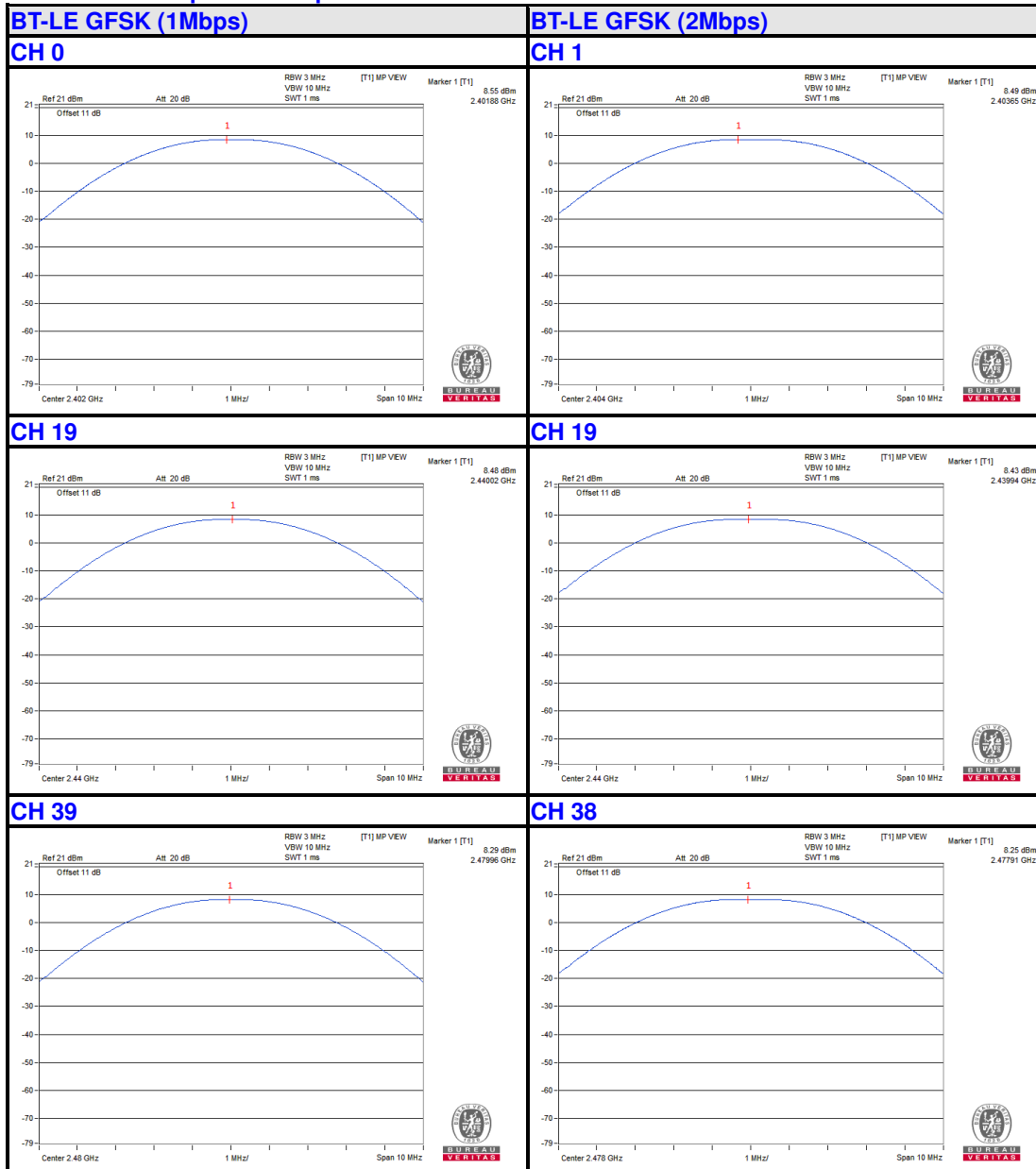
Note: EIRP=Conducted output power + Ant gain(-2.08dBi)



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Test Report No.: RF2312WDG0213-2

Left Earbud Peak power test plot



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Right Earbud:

BT-LE GFSK (1Mbps)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	EIRP (mW)	PEAK POWER LIMIT (W)	EIRP LIMIT (W)	PASS/FAIL
0	2402	8.56	7.178	4.188	1	/	PASS
19	2440	8.54	7.145	4.169	1	/	PASS
39	2480	8.42	6.950	4.055	1	/	PASS

Note: EIRP=Conducted output power + Ant gain(-2.34dBi)

BT-LE GFSK (2Mbps)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	EIRP (mW)	PEAK POWER LIMIT (W)	EIRP LIMIT (W)	PASS/FAIL
1	2404	8.52	7.112	4.150	1	/	PASS
19	2440	8.50	7.079	4.130	1	/	PASS
38	2478	8.39	6.902	4.027	1	/	PASS

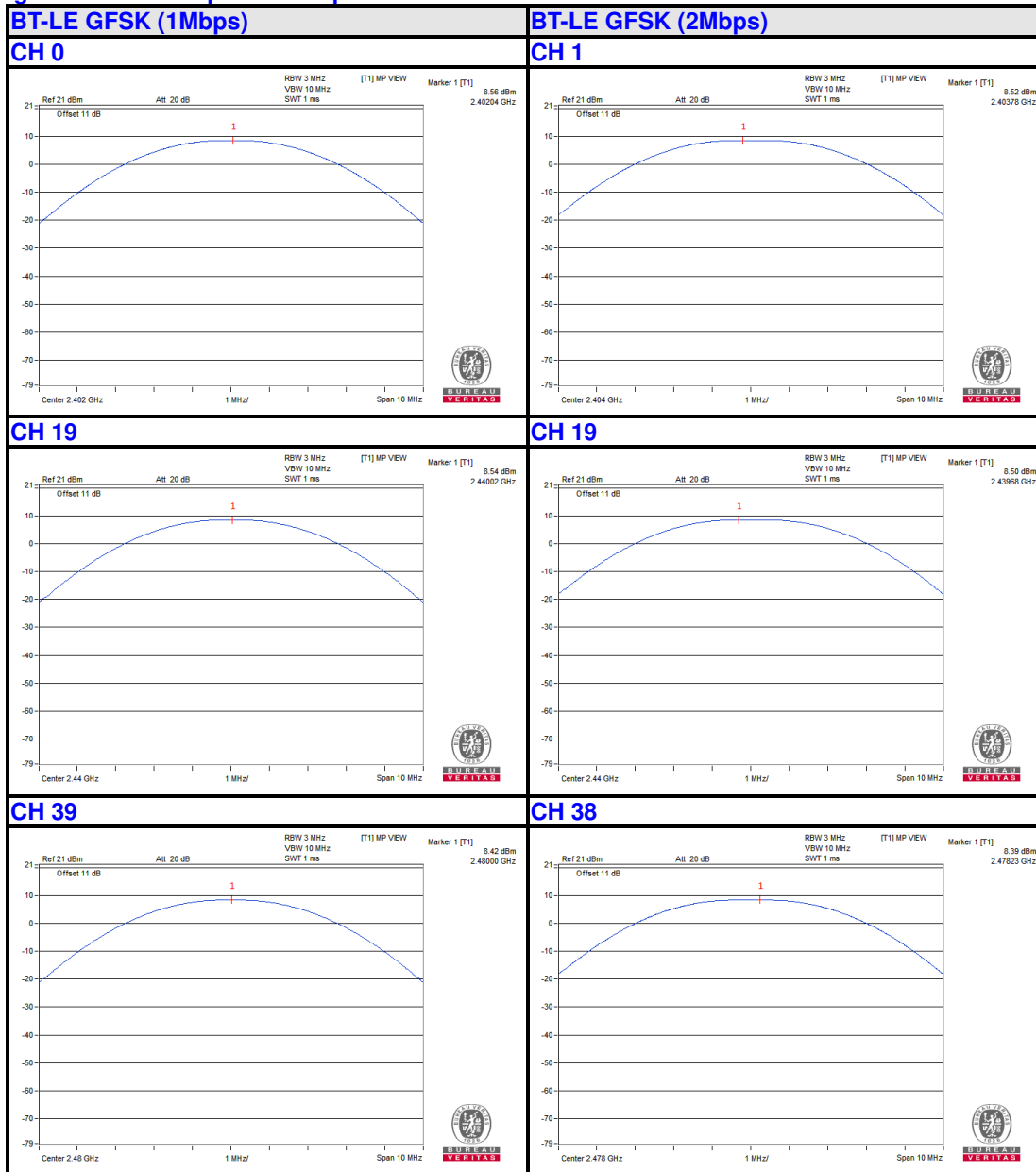
Note: EIRP=Conducted output power + Ant gain(-2.34dBi)



BUREAU VERITAS

Test Report No.: RF2312WDG0213-2

Right Earbud Peak power test plot



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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.

Left Earbud:

BT-LE GFSK (1Mbps)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)
0	2402	8.44
19	2440	8.36
39	2480	8.17

BT-LE GFSK (2Mbps)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)
1	2404	8.48
19	2440	8.34
38	2478	8.16

Right Earbud:

BT-LE GFSK (1Mbps)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)
0	2402	8.44
19	2440	8.45
39	2480	8.36

BT-LE GFSK (2Mbps)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)
1	2404	8.41
19	2440	8.39
38	2478	8.31

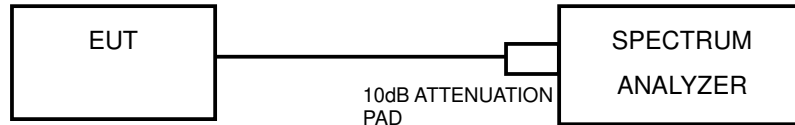


4.4 POWER SPECTRAL DENSITY MEASUREMENT

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 $\geq 3 \times$ 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.



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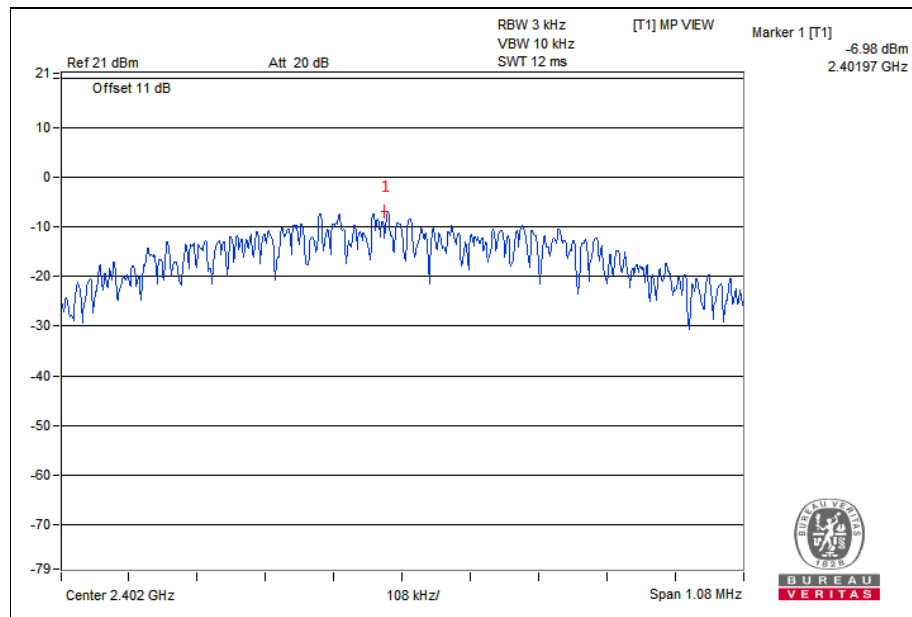
4.4.7 TEST RESULTS

Left Earbud:

BT-LE GFSK (1Mbps)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	-6.98	8	PASS
19	2440	-7.10	8	PASS
39	2480	-7.25	8	PASS

CH 0

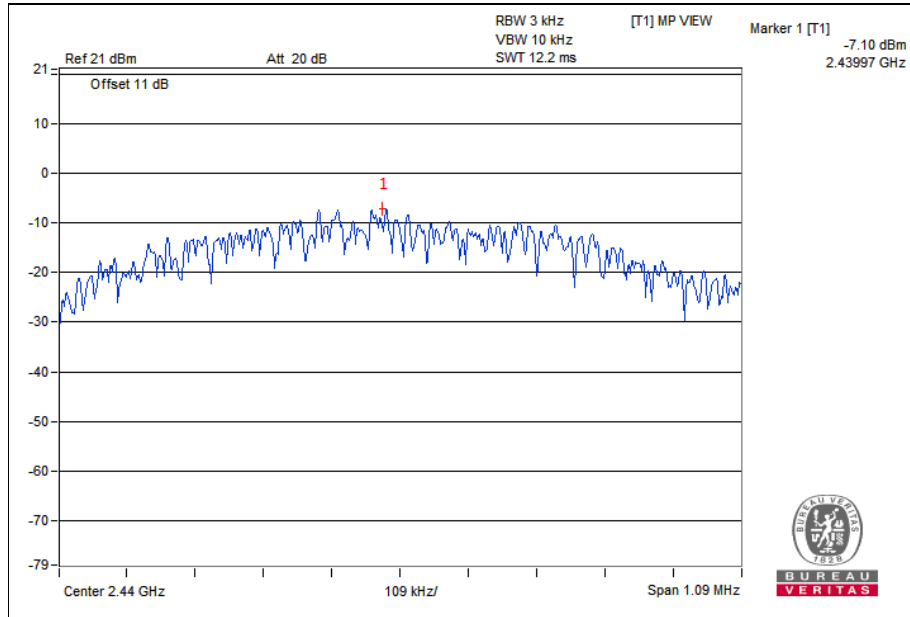


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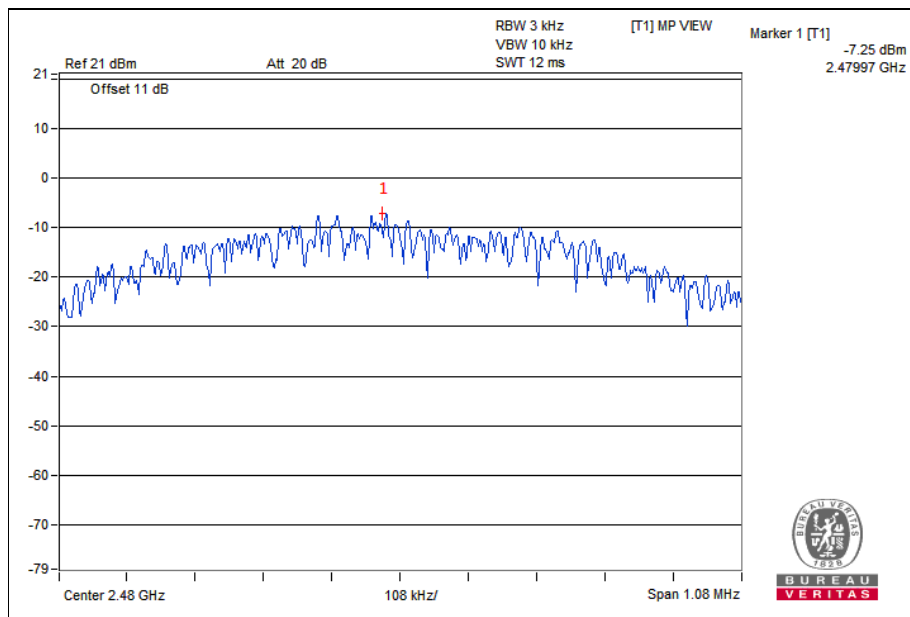
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CH 19



CH 39





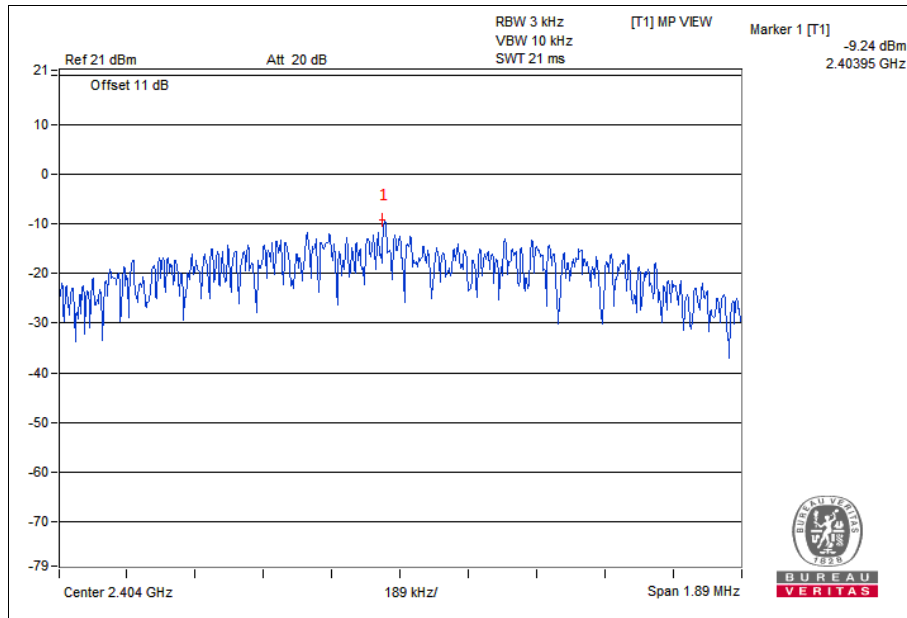
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BT-LE GFSK (2Mbps)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2404	-9.24	8	PASS
19	2440	-9.28	8	PASS
38	2478	-9.57	8	PASS

CH 1

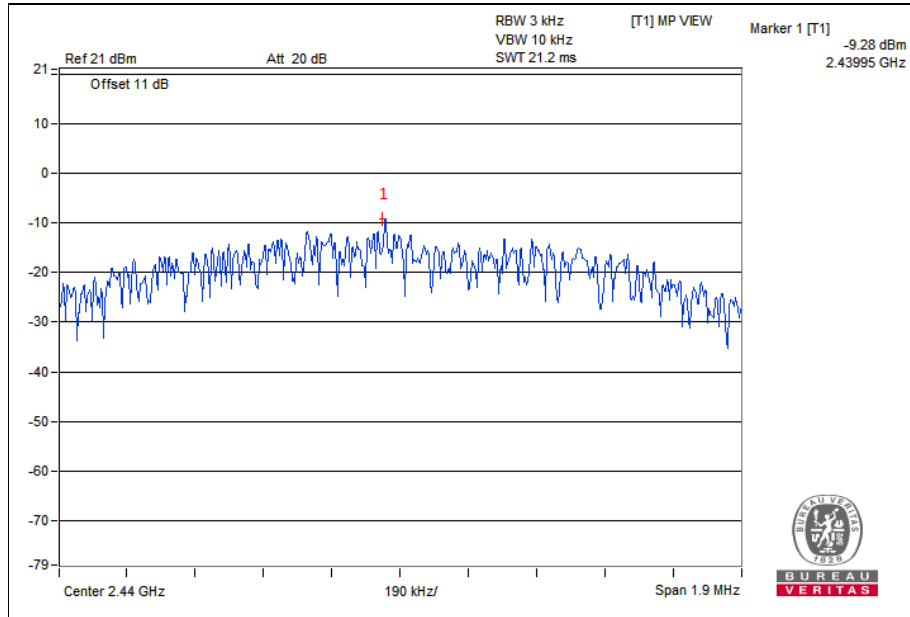


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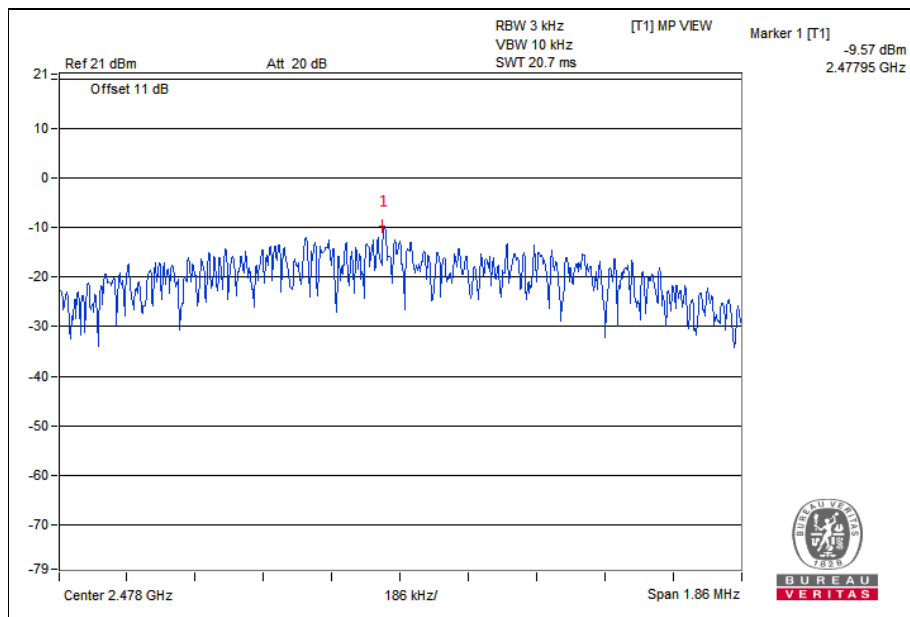
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CH 19



CH 38





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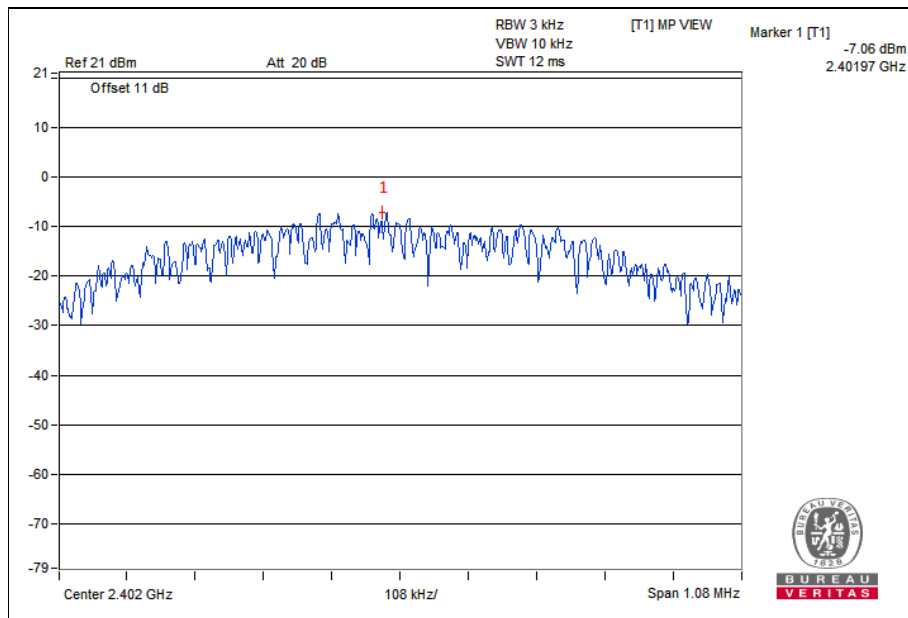
Test Report No.: RF2312WDG0213-2

Right Earbud:

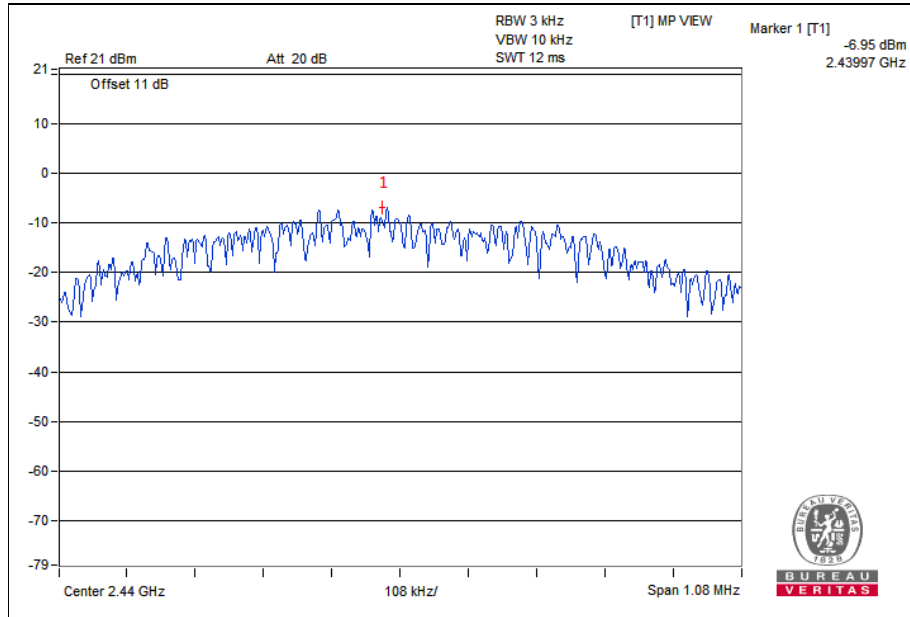
BT-LE GFSK (1Mbps)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	-7.06	8	PASS
19	2440	-6.95	8	PASS
39	2480	-7.11	8	PASS

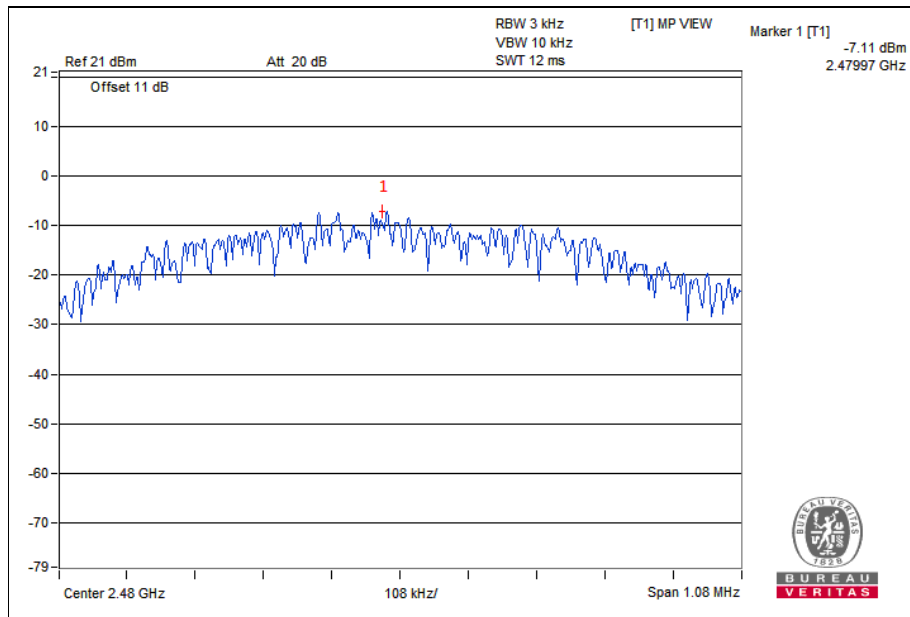
CH 0



CH 19



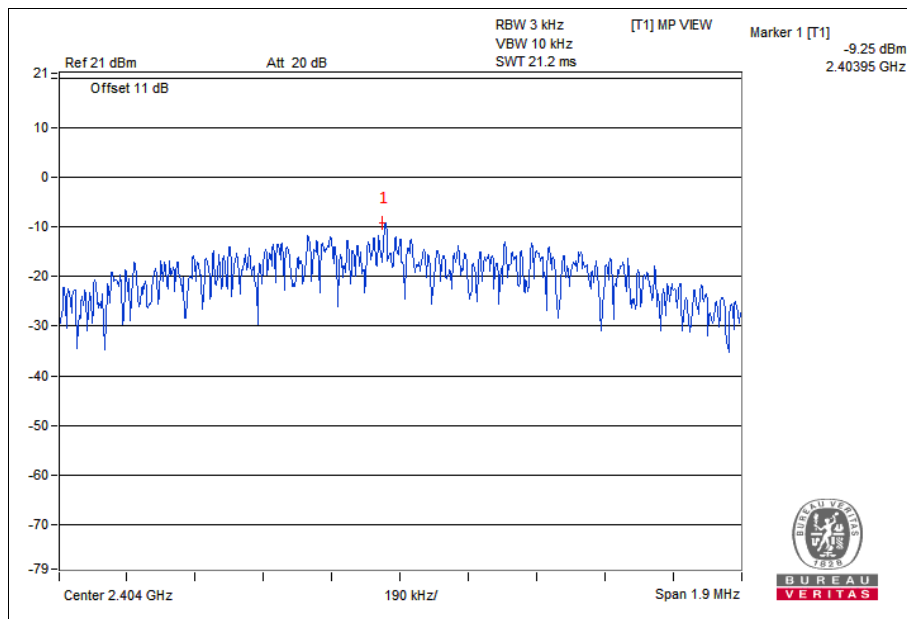
CH 39



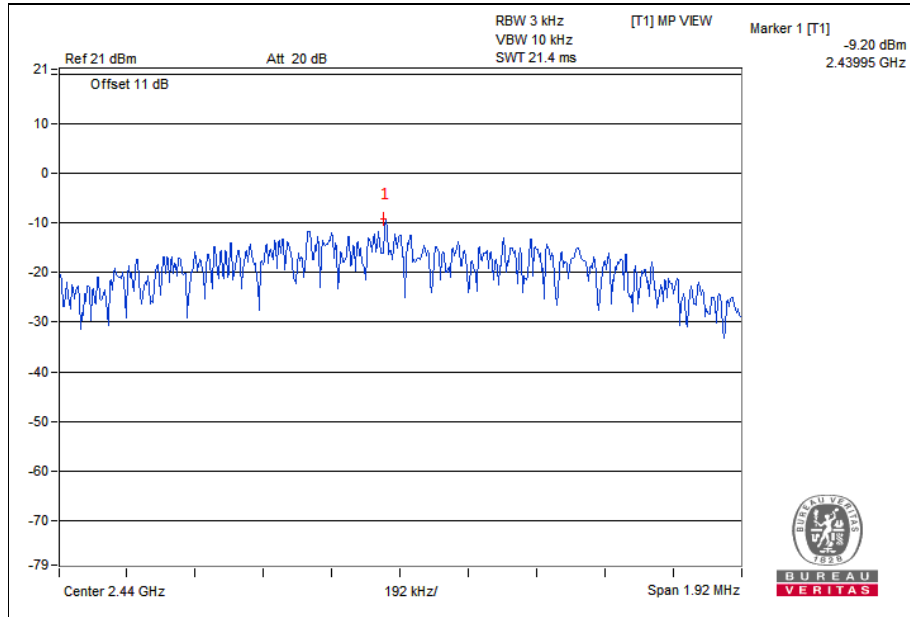
BT-LE GFSK (2Mbps)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
1	2404	-9.25	8	PASS
19	2440	-9.20	8	PASS
38	2478	-9.38	8	PASS

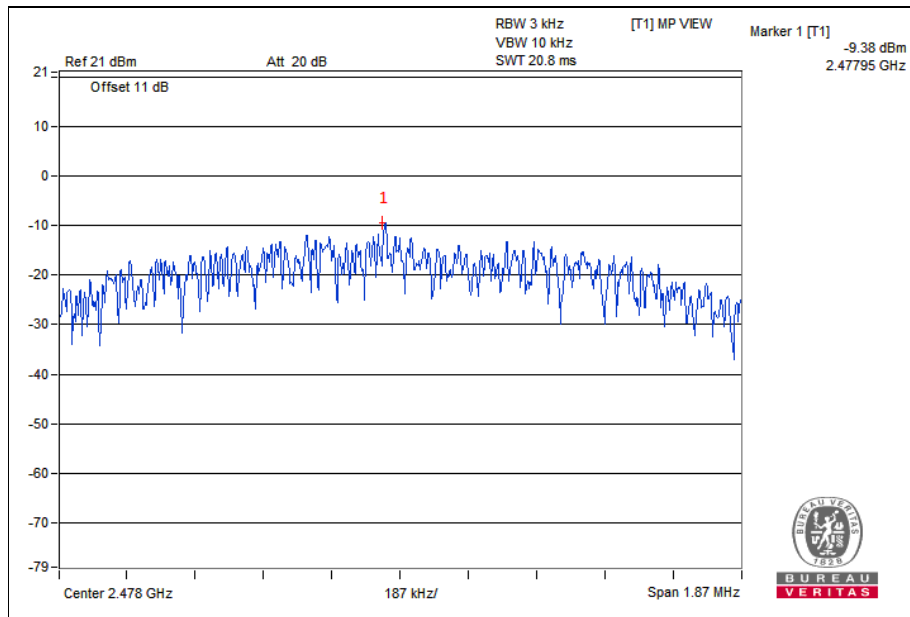
CH 1



CH 19



CH 38



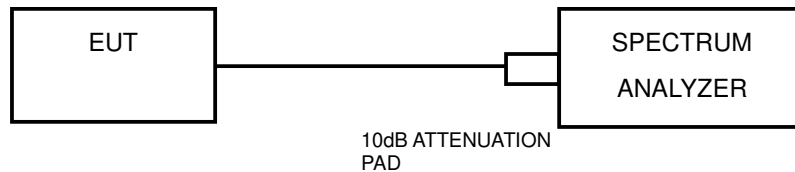


4.5 OUT OF BAND EMISSION MEASUREMENT

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 OOB

1. Set RBW = 100 kHz.
2. Set VBW \geq 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.

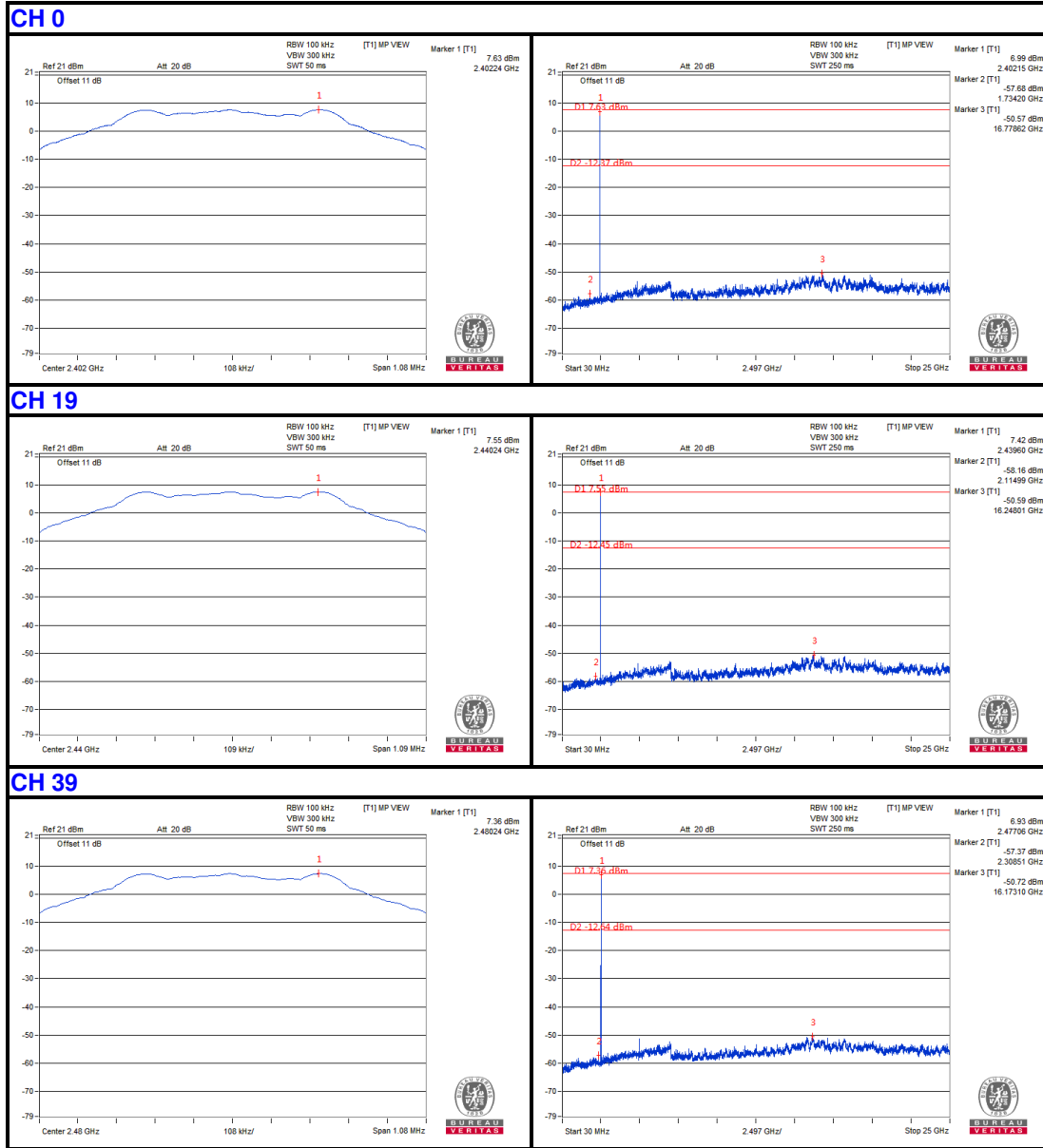


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4.5.7 TEST RESULTS

Left Earbud:
BT-LE GFSK(1Mbps)

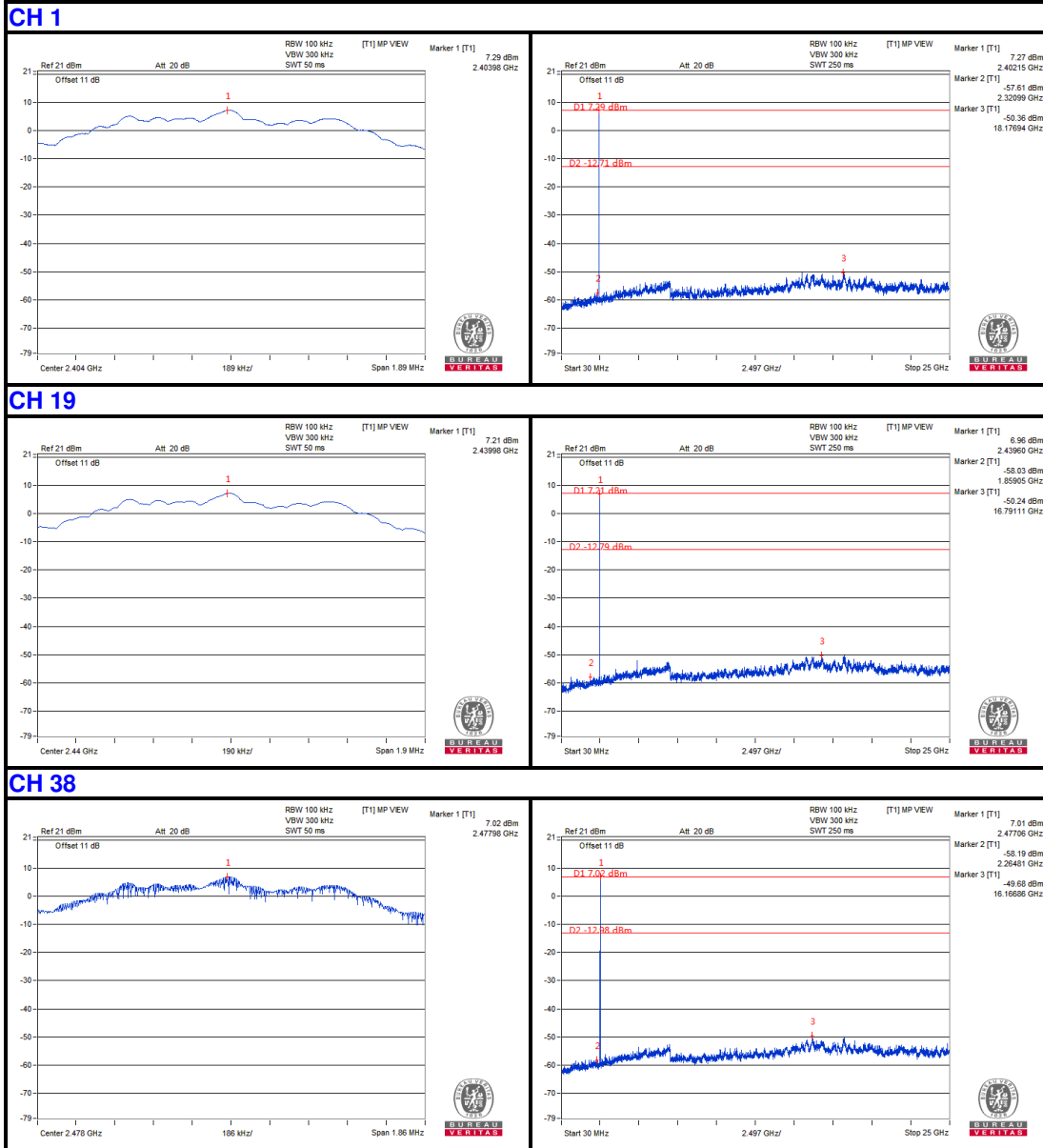


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BT-LE GFSK(2Mbps)

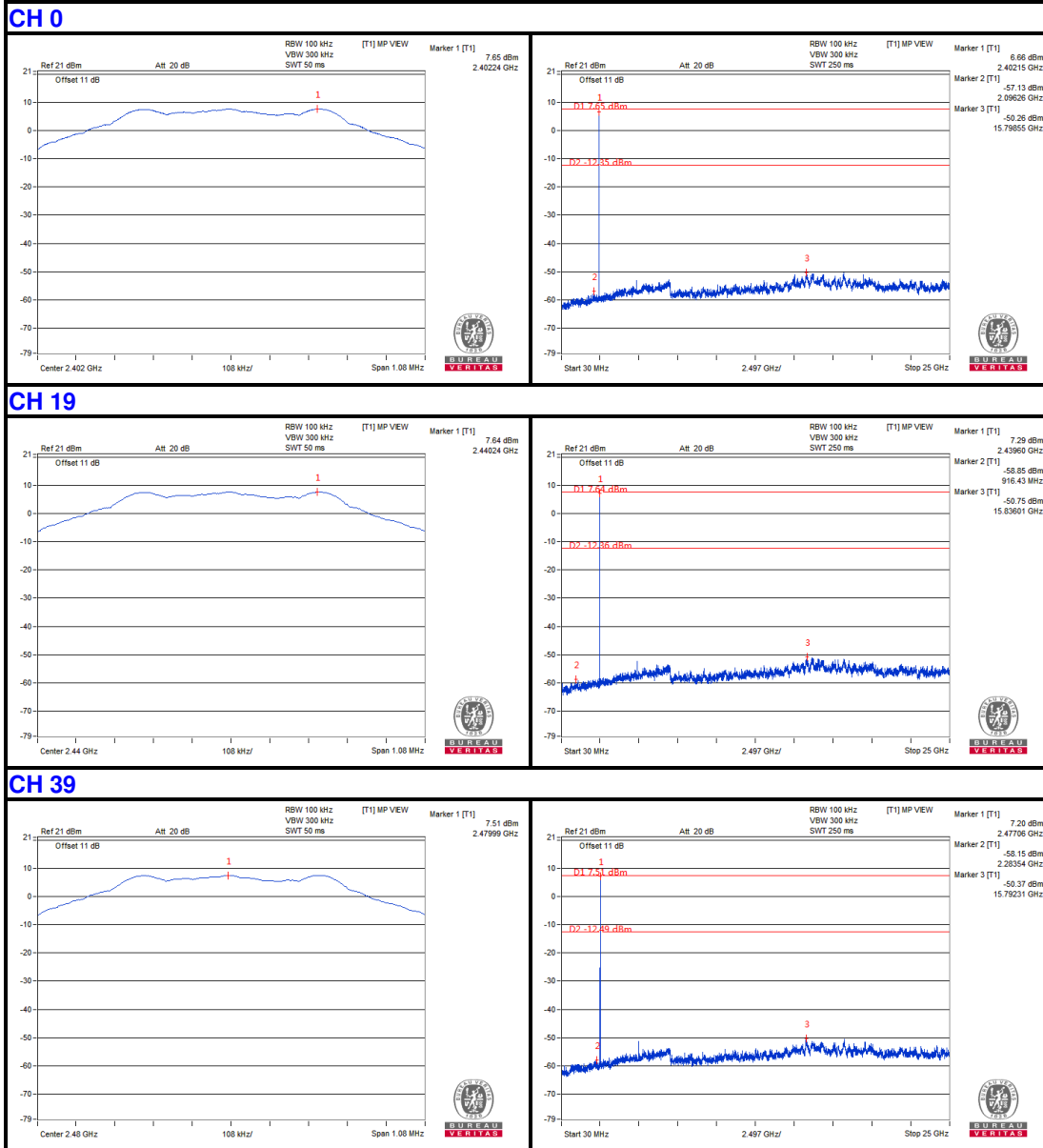




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**Right Earbud:
BT-LE GFSK(1Mbps)**

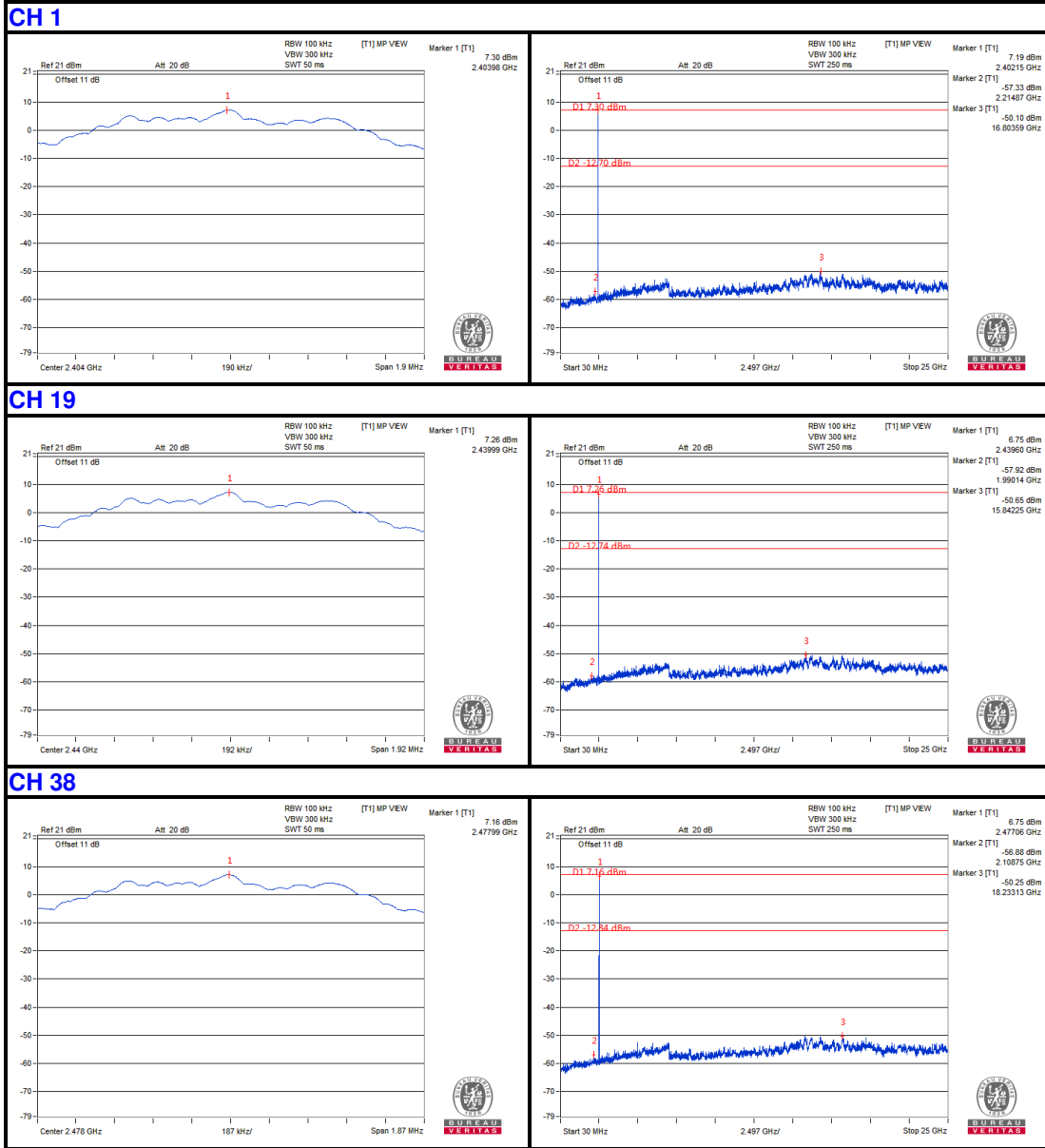


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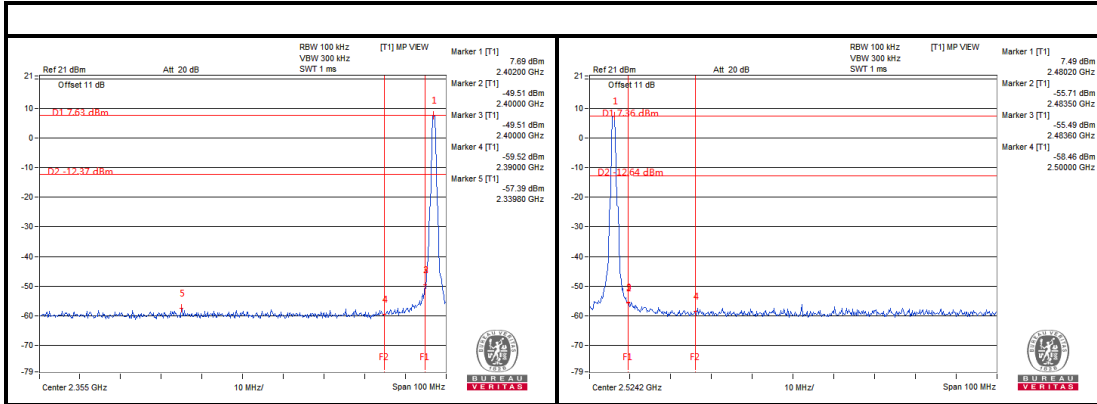
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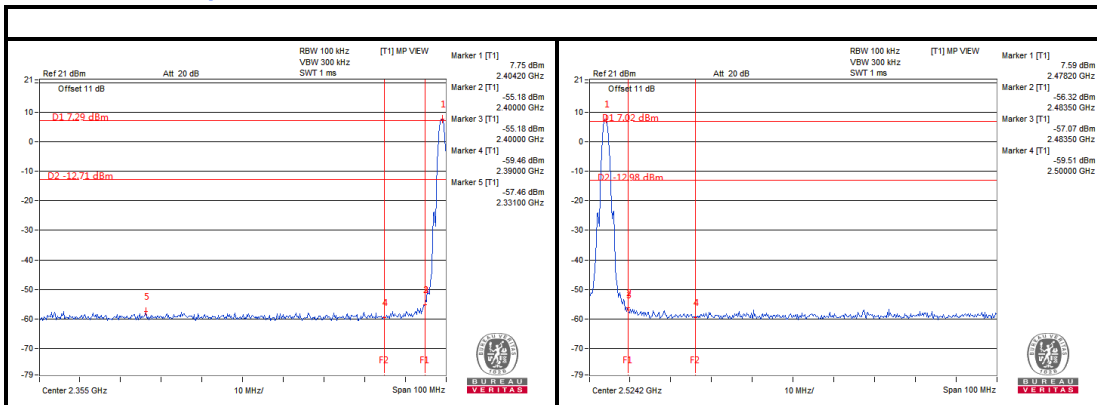
BT-LE GFSK(2Mbps)



**Left Earbud:
Band Edge:
BT-LE GFSK(1Mbps)**



BT-LE GFSK(2Mbps)

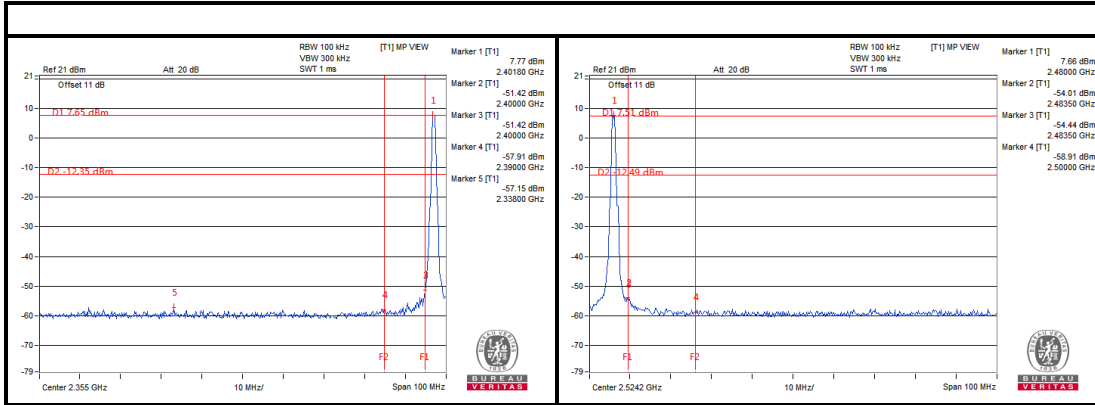




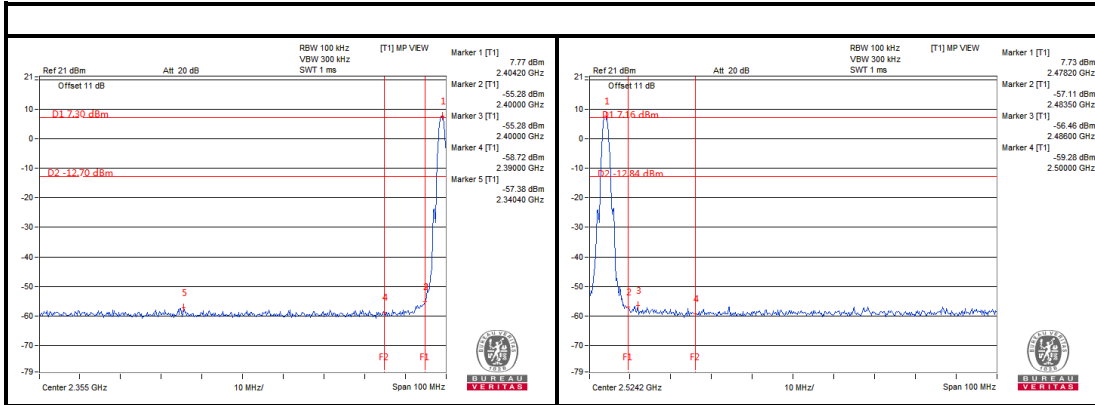
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**Right Earbud:
Band Edge:
BT-LE GFSK(1Mbps)**



BT-LE GFSK(2Mbps)



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5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



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

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

---END---