Certificate # 2951.01

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 Noise Canceling Stereo Headset
Brand Name	SONY
Model	YY2966
Additional Model & Model Difference	N/A
Date of tests	Jul. 12, 2022 ~ Jul. 23, 2022

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: Sep. 16, 2022

Bureau Veritas Shenzhen Co., Ltd. Dongguan Branch

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF2207WDG0102-2	Original release	Sep. 16, 2022

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	PASS	Meet the requirement of limit.
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	2.16dB
	30MHz ~ 1GMHz	3.63dB
	1GHz ~ 18GHz	4.96dB
	18GHz ~ 40GHz	4.37dB

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 Noise Canceling Stereo Headset
MODEL NO.	YY2966
ADDITIONAL MODEL	N/A
FCC ID	AK8YY2966
NOMINAL VOLTAGE	DC 5V from USB Host Unit or DC 3.85V from Li-ion Battery
MODULATION TECHNOLOGY	DTS
MODULATION TYPE	BT-LE GFSK(1, 2 Mbps)
OPERATING FREQUENCY	2402-2480MHz
PEAK OUTPUT POWER	6.138mW (Max. Measured)
ANTENNA TYPE	PCB Antenna, 3.35dBi Gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	For mass production product: USB Line: Unshielded, Detachable, 20cm; Aux In Line: Unshielded, Detachable, 120cm
	For demo product: USB Line: Shielded, Non-detachable, 285cm; Aux In Line: Unshielded, Non-detachable, 285cm

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.: 2207WDG0102-1) for detailed product photo.

4. This report is for two types of products, one is a mass production product, the other is a demonstration product, they are identical in RF circuitry. In appearance, the AUX jack position of the demo prototype is fixed with a rechargeable Y-shaped wire for playing audio signals (Type C port is vacant and does not work), while the AUX In port and Type C port of the mass production prototype work independently and the wire is removable. On PCBA, some components and layout are different, the demo prototype PCBA does not have AUX jack, and the USB seat does not support charging function, while the mass production prototype has AUX jack and Type C seat, and the Type C seat supports charging function. In terms of functions, the demo prototype supports both charging and bluetooth, while the production prototype does not work with bluetooth while charging. In view of the differences between the two types, all tests were carried out on the mass production prototype (except conducted emission), and conduction emission test and radiated emission test were carried out on the demonstration prototype, but only the worst case (mass production prototype) was showed in test report, the conduction emissions show the data of the demonstration prototype, since only the demonstration prototype is suitable for conduction testing.
5. The batteries for headphones are provided by different manufacturers, they are identical except the manufacturers (see notes 6). The difference has been considered during this test, full test were performed for the headphones which batteries provided by “722428”, the radiated emission (below 1GHz) test item was performed for the headphones which batteries provided by “702428”, but only the worst case (batteries provided by “702428”) was showed in test report.
6. The battery manufacturer's supply information is as follows:

BATTERY	MANUFACTURERS	BATTERY INFORMATION	TEST DETAILS
Battery (722428)	Chongqing VDL Electronics Co., Ltd.	3.85V, 520mAh	FULL TEST
Battery (702428)	SPRINGPOWER TECHNOLOGY (SHENZHEN) COMPANY LIMITED	3.85V, 520mAh	PARTIAL TEST (for radiated emission)

3.2 DESCRIPTION OF TEST MODES

40 channels are provided for BT-LE (1, 2 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

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 (For mass production prototype)
B	√	√	√	-	Powered by Adapter with Bluetooth link (For demonstration prototype)

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

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 (GFSK)	1
BT-LE	0 to 39	39	DTS	BT-LE (GFSK)	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 (GFSK)	1
BT-LE	0 to 39	0,19, 39	DTS	BT-LE (GFSK)	2

POWER LINE CONDUCTED EMISSION TEST:

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

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

TESTED CONDITION
BT Link

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 (GFSK)	1
BT-LE	0 to 39	0, 19, 39	DTS	BT-LE (GFSK)	2

TEST CONDITION:

(For mass production prototype):

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	27deg. C, 56%RH	DC 3.85V From Fully Battery	Jelly
RE≥1G	27deg. C, 56%RH	DC 3.85V From Fully Battery	Jelly
PLC	-	-	-
APCM	25deg. C, 60%RH	DC 3.85V From Fully Battery	Vincent

(For demonstration prototype):

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	27deg. C, 56%RH	DC 5V From Adaptor Input AC 120V/60Hz	Jelly
RE≥1G	27deg. C, 56%RH	DC 5V From Adaptor Input AC 120V/60Hz	Jelly
PLC	25deg. C, 58%RH	DC 5V From Adaptor Input AC 120V/60Hz	Summer

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 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	Adaptor	GOTO	DSA-18QFB FEU A	N/A	N/A
2	iPhone 6 Plus	Apple	A1522	N/A	BCG-E2817A

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

4 TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE: 1.The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

4.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR7	101494	Jan. 18, 23
Artificial Mains Network	Rohde&Schwarz	ENV216	101173	Jan. 23, 23
Artificial Mains Network	Rohde&Schwarz	ESH3-Z5	100317	Jan. 18, 23
Voltage probe	SCHWARZBECK	TK 9421	TK 9421-176	Jul. 27, 23
Coaxial RF Cable	/	CE CABLE	C2310066DG	Jul. 24, 23
Test software	ADT	ADT_Cond_V7.3.7	N/A	N/A
Shielded Room 553	CHANGMAO	5m*5m*3m	E1-010034	Jan. 27,24

NOTES:

1. The test was performed in shielded room 553.
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.

4.1.3 TEST PROCEDURES

a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

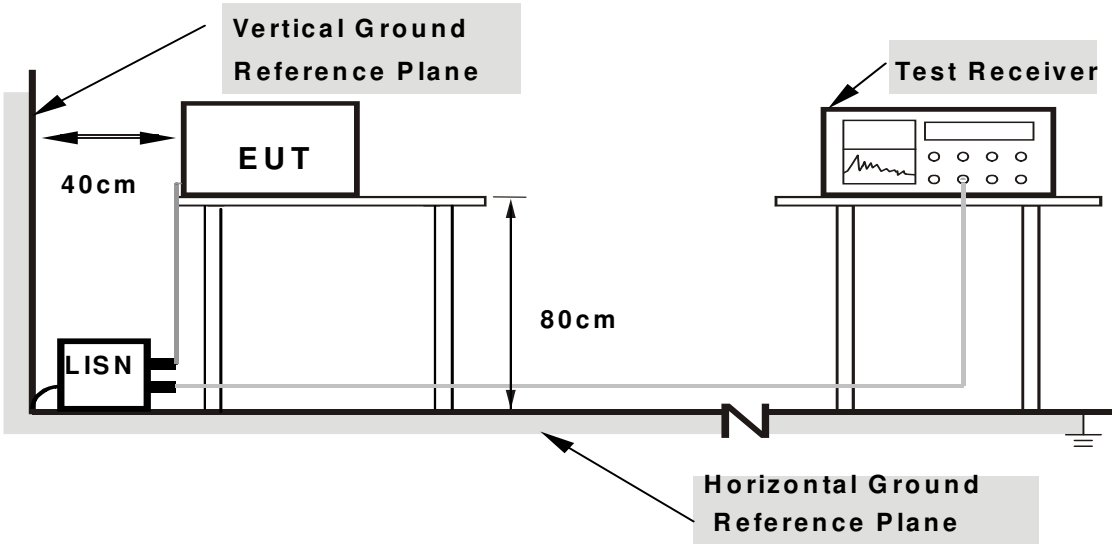
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

4.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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

4.1.6 EUT OPERATING CONDITIONS

a. Turned on the power and connected of all equipment.
b. EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

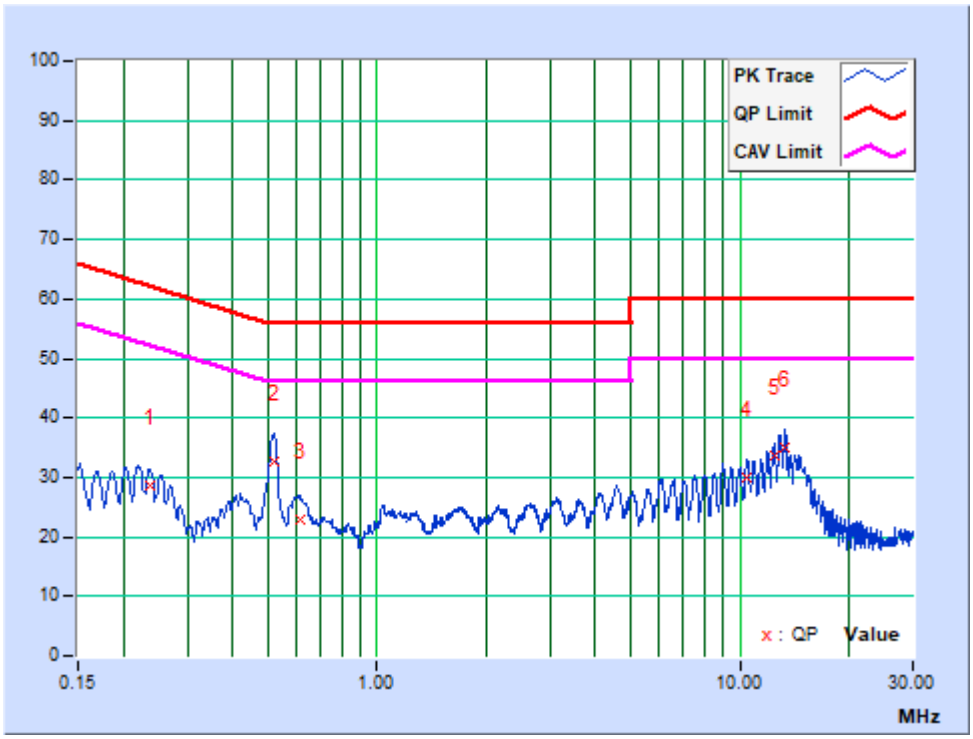
4.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA: BT Link (demonstration prototype + Battery (722428))

PHASE	Line	6dB BANDWIDTH	9kHz

No.	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.23600	10.07	18.47	9.30	28.54	19.37	62.24	52.24	-33.69	-32.86
2	0.51971	10.17	22.52	16.97	32.69	27.14	56.00	46.00	-23.31	-18.86
3	0.61125	10.19	12.79	6.51	22.98	16.70	56.00	46.00	-33.02	-29.30
4	10.46175	10.56	19.56	12.08	30.12	22.64	60.00	50.00	-29.88	-27.36
5	12.44850	10.52	23.02	14.81	33.54	25.33	60.00	50.00	-26.46	-24.67
6	13.34400	10.50	24.42	16.34	34.92	26.84	60.00	50.00	-25.08	-23.16

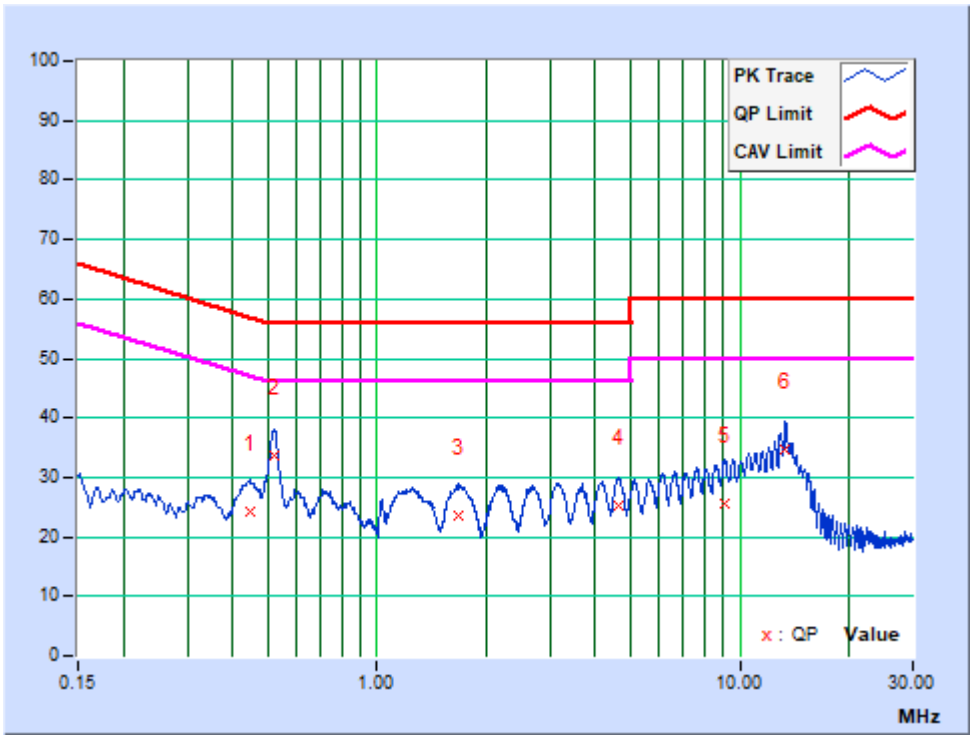
REMARKS: The emission levels of other frequencies were very low against the limit.



PHASE	Neutral	6dB BANDWIDTH	9kHz

No.	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.44474	10.02	14.08	3.88	24.10	13.90	56.97	46.97	-32.87	-33.07
2	**0.52385**	**10.03**	**23.55**	**18.11**	**33.58**	**28.14**	**56.00**	**46.00**	**-22.42**	**-17.86**
3	1.68000	10.17	13.39	8.58	23.56	18.75	56.00	46.00	-32.44	-27.25
4	4.65061	10.40	14.78	11.08	25.18	21.48	56.00	46.00	-30.82	-24.52
5	9.11625	10.45	15.24	9.05	25.69	19.50	60.00	50.00	-34.31	-30.50
6	13.34175	10.36	24.47	12.41	34.83	22.77	60.00	50.00	-25.17	-27.23

REMARKS: The emission levels of other frequencies were very low against the limit.



4.2 RADIATED EMISSION MEASUREMENT

4.2.1 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.

4.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU40	100449	Feb. 22, 23
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	May. 09, 23
Active Loop Antenna (9KHz -30MHz)	SCHWARZBECK	FMZB 1519B	1519B-045	Apr. 27, 23
Amplifier (9KHz -1GHz)	Burgeon	BPA-530	100210	Mar. 08, 23
Trilog-Broadband Antenna(20M-2G)	SCHWARZBECK	VULB 9168	01263	Sep. 30, 22
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	00062558	Apr. 27, 23
Horn Antenna (18GHz -40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170147	Apr. 28, 23
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	May 22, 23
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A
Broadband Preamplifier (1GHz~18GHz)	SCHWARZBECK	BBV9718	305	Apr. 26, 23
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Jan. 10, 23
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	N/A

NOTES:

1. The test was performed in 966 Chamber. (Chenwu)
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 above1GHz if tested.
4. The FCC Site Registration No. is 749762.

4.2.3 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 1m 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 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 ≥ 1/T (Duty cycle < 98%) or 10Hz(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.

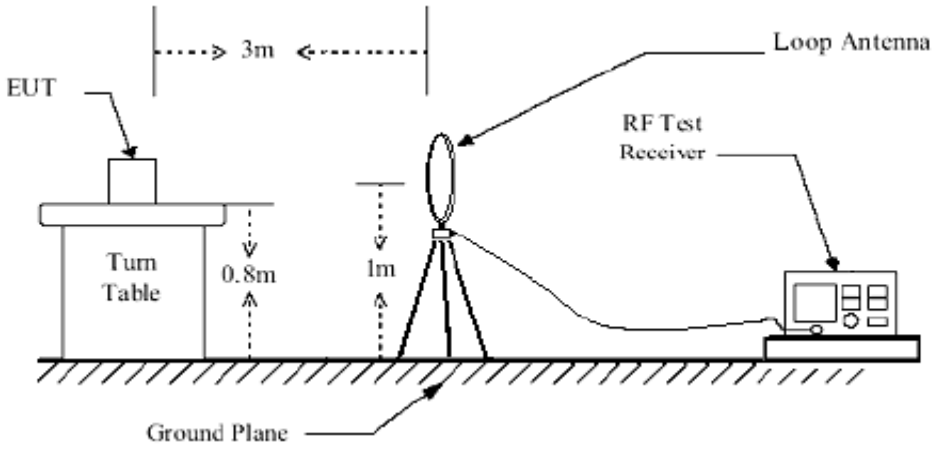
5. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.

4.2.4 DEVIATION FROM TEST STANDARD

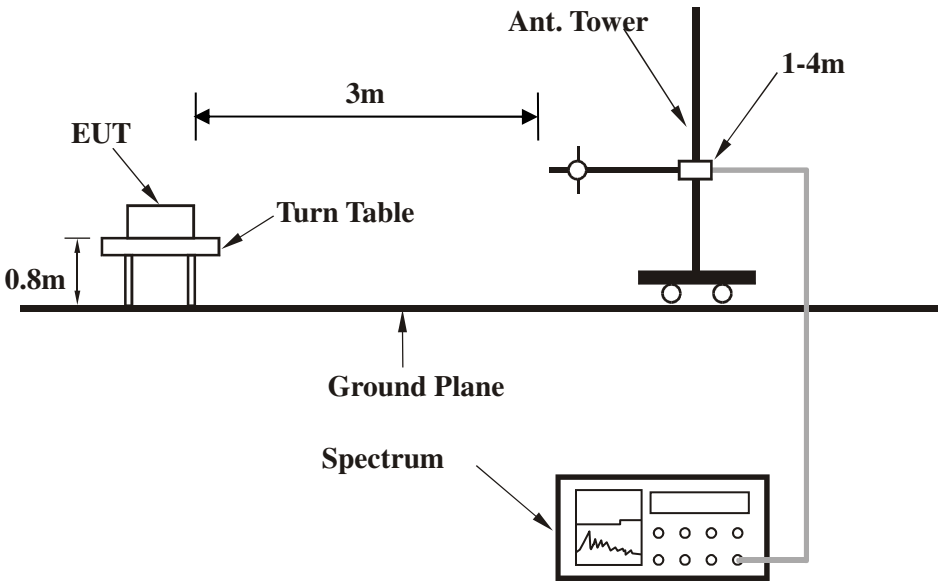
No deviation.

4.2.5 TEST SETUP

Below 30MHz test setup

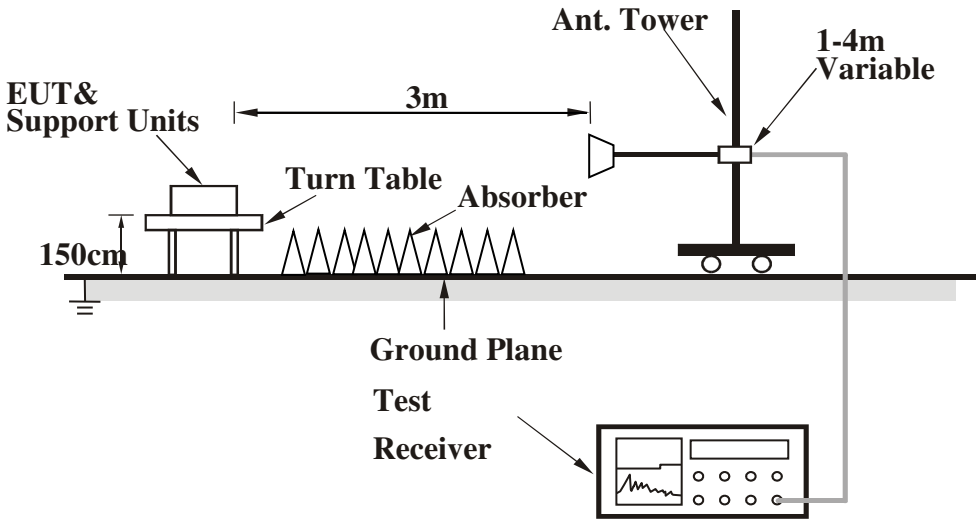


Below 1GHz test setup



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).

4.2.6 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.

4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA: (mass production prototype + Battery (702428))

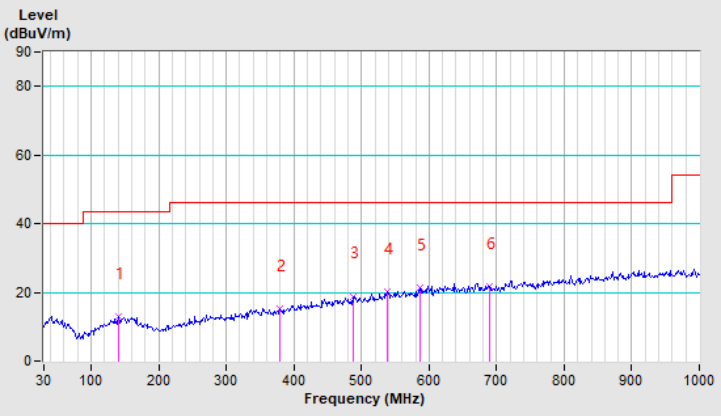
BT-LE (GFSK) (1Mbps)

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	140.37	13.06 QP	43.50	-30.44	1.00 H	24	30.24	-17.18
2	379.76	15.12 QP	46.00	-30.88	1.00 H	124	28.50	-13.38
3	487.02	18.88 QP	46.00	-27.12	1.00 H	25	29.51	-10.63
4	538.32	20.23 QP	46.00	-25.77	1.00 H	47	29.52	-9.29
5	586.51	21.25 QP	46.00	-24.75	1.00 H	233	29.31	-8.06
6	689.10	21.82 QP	46.00	-24.18	1.00 H	14	28.47	-6.65

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

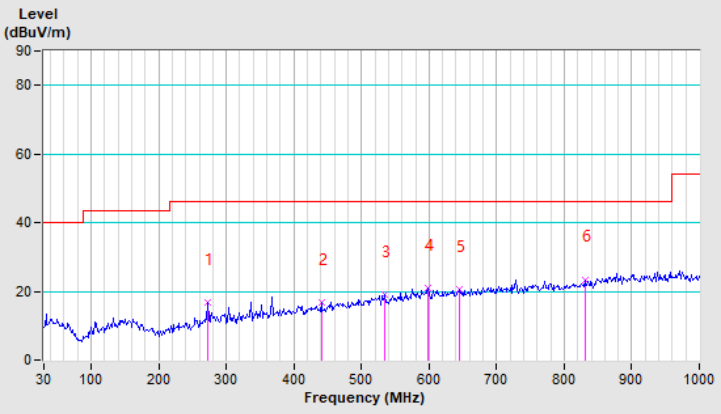


CHANNEL	TX Channel 39	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 1GHz		

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	272.50	16.85 QP	46.00	-29.15	1.00 V	96	33.08	-16.23
2	440.38	16.80 QP	46.00	-29.20	1.00 V	56	28.64	-11.84
3	535.21	19.13 QP	46.00	-26.87	1.00 V	82	28.50	-9.37
4	598.94	21.07 QP	46.00	-24.93	1.00 V	69	28.82	-7.75
5	645.58	20.70 QP	46.00	-25.30	1.00 V	131	27.93	-7.23
6	**830.56**	**23.45 QP**	**46.00**	**-22.55**	**1.00 V**	**110**	**27.90**	**-4.45**

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 WORST-CASE DATA: (mass production prototype + Battery (722428))

BT-LE (GFSK) (1Mbps)

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

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	42.75 PK	74.00	-31.25	1.08 H	196	41.47	1.28
2	2390.00	32.15 AV	54.00	-21.85	1.08 H	196	30.87	1.28
3	*2402.00	98.54 PK			1.08 H	196	97.22	1.32
4	*2402.00	97.48 AV			1.08 H	196	96.16	1.32
5	4804.00	47.49 PK	74.00	-26.51	1.50 H	205	42.91	4.58
6	4804.00	33.84 AV	54.00	-20.16	1.50 H	205	29.26	4.58
7	#7206.00	51.79 PK	74.00	-22.21	1.00 H	88	42.41	9.38
8	#7206.00	36.22 AV	54.00	-17.78	1.00 H	88	26.84	9.38
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	43.84 PK	74.00	-30.16	1.49 V	262	42.56	1.28
2	2390.00	32.43 AV	54.00	-21.57	1.49 V	262	31.15	1.28
3	*2402.00	99.71 PK			1.49 V	262	98.39	1.32
4	*2402.00	98.70 AV			1.49 V	262	97.38	1.32
5	4804.00	48.19 PK	74.00	-25.81	1.17 V	96	43.61	4.58
6	4804.00	34.25 AV	54.00	-19.75	1.17 V	96	29.67	4.58
7	#7206.00	52.11 PK	74.00	-21.89	1.00 V	315	42.73	9.38
8	#7206.00	37.54 AV	54.00	-16.46	1.00 V	315	28.16	9.38

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	98.54 PK			1.08 H	218	97.08	1.46
2	*2440.00	97.11 AV			1.08 H	218	95.65	1.46
3	4880.00	47.29 PK	74.00	-26.71	1.51 H	46	42.49	4.80
4	4880.00	33.26 AV	54.00	-20.74	1.51 H	46	28.46	4.80
5	7320.00	51.09 PK	74.00	-22.91	1.00 H	257	41.36	9.73
6	7320.00	36.25 AV	54.00	-17.75	1.00 H	257	26.52	9.73
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	99.89 PK			1.39 V	67	98.43	1.46
2	*2440.00	98.54 AV			1.39 V	67	97.08	1.46
3	4880.00	48.26 PK	74.00	-25.74	1.00 V	251	43.46	4.80
4	4880.00	34.31 AV	54.00	-19.69	1.00 V	251	29.51	4.80
5	7320.00	52.49 PK	74.00	-21.51	1.00 V	108	42.76	9.73
6	7320.00	37.62 AV	54.00	-16.38	1.00 V	108	27.89	9.73

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	98.90 PK			1.07 H	158	97.30	1.60
2	*2480.00	97.86 AV			1.07 H	158	96.26	1.60
3	2483.50	56.22 PK	74.00	-17.78	1.07 H	158	54.61	1.61
4	2483.50	33.14 AV	54.00	-20.86	1.07 H	158	31.53	1.61
5	4960.00	47.22 PK	74.00	-26.78	1.57 H	319	42.19	5.03
6	4960.00	33.46 AV	54.00	-20.54	1.57 H	319	28.43	5.03
7	7440.00	51.73 PK	74.00	-22.27	1.00 H	48	41.63	10.10
8	7440.00	36.25 AV	54.00	-17.75	1.00 H	48	26.15	10.10
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	*2480.00	100.03 PK			1.38 V	153	98.43	1.60
2	*2480.00	98.91 AV			1.38 V	153	97.31	1.60
3	2483.50	57.45 PK	74.00	-16.55	1.38 V	153	55.84	1.61
4	2483.50	34.26 AV	54.00	-19.74	1.38 V	153	32.65	1.61
5	4960.00	48.48 PK	74.00	-25.52	1.05 V	97	43.45	5.03
6	4960.00	34.17 AV	54.00	-19.83	1.05 V	97	29.14	5.03
7	7440.00	52.61 PK	74.00	-21.39	1.00 V	104	42.51	10.10
8	7440.00	37.79 AV	54.00	-16.21	1.00 V	104	27.69	10.10

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.

BT-LE (GFSK) (2Mbps)

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	43.04 PK	74.00	-30.96	2.00 H	163	41.76	1.28
2	2390.00	32.28 AV	54.00	-21.72	2.00 H	163	31.00	1.28
3	*2402.00	98.17 PK			2.00 H	163	96.85	1.32
4	*2402.00	96.39 AV			2.00 H	163	95.07	1.32
5	4804.00	47.21 PK	74.00	-26.79	1.36 H	215	42.63	4.58
6	4804.00	33.15 AV	54.00	-20.85	1.36 H	215	28.57	4.58
7	#7206.00	51.43 PK	74.00	-22.57	1.00 H	78	42.05	9.38
8	#7206.00	36.22 AV	54.00	-17.78	1.00 H	78	26.84	9.38
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	43.20 PK	74.00	-30.80	1.48 V	262	41.92	1.28
2	2390.00	33.10 AV	54.00	-20.90	1.48 V	262	31.82	1.28
3	*2402.00	99.26 PK			1.48 V	262	97.94	1.32
4	*2402.00	97.48 AV			1.48 V	262	96.16	1.32
5	4804.00	48.59 PK	74.00	-25.41	2.00 V	43	44.01	4.58
6	4804.00	34.28 AV	54.00	-19.72	2.00 V	43	29.70	4.58
7	#7206.00	52.11 PK	74.00	-21.89	1.00 V	206	42.73	9.38
8	#7206.00	37.08 AV	54.00	-16.92	1.00 V	206	27.70	9.38

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	98.19 PK			2.00 H	153	96.73	1.46
2	*2440.00	96.45 AV			2.00 H	153	94.99	1.46
3	4880.00	47.46 PK	74.00	-26.54	1.03 H	316	42.66	4.80
4	4880.00	33.25 AV	54.00	-20.75	1.03 H	316	28.45	4.80
5	7320.00	51.27 PK	74.00	-22.73	1.00 H	74	41.54	9.73
6	7320.00	36.14 AV	54.00	-17.86	1.00 H	74	26.41	9.73
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	99.25 PK			2.00 V	155	97.79	1.46
2	*2440.00	97.38 AV			2.00 V	155	95.92	1.46
3	4880.00	48.38 PK	74.00	-25.62	1.05 V	68	43.58	4.80
4	4880.00	34.19 AV	54.00	-19.81	1.05 V	68	29.39	4.80
5	7320.00	52.14 PK	74.00	-21.86	1.00 V	319	42.41	9.73
6	**7320.00**	**37.28 AV**	**54.00**	**-16.72**	**1.00 V**	**319**	**27.55**	**9.73**

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

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	98.24 PK			1.52 H	216	96.64	1.60
2	*2480.00	96.11 AV			1.52 H	216	94.51	1.60
3	2483.50	56.35 PK	74.00	-17.65	1.52 H	216	54.74	1.61
4	2483.50	33.24 AV	54.00	-20.76	1.52 H	216	31.63	1.61
5	4960.00	47.26 PK	74.00	-26.74	1.33 H	69	42.23	5.03
6	4960.00	33.19 AV	54.00	-20.81	1.33 H	69	28.16	5.03
7	7440.00	51.45 PK	74.00	-22.55	1.00 H	185	41.35	10.10
8	7440.00	36.39 AV	54.00	-17.61	1.00 H	185	26.29	10.10
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	*2480.00	99.94 PK			2.00 V	152	98.34	1.60
2	*2480.00	97.36 AV			2.00 V	152	95.76	1.60
3	2483.50	57.22 PK	74.00	-16.78	2.00 V	152	55.61	1.61
4	2483.50	34.49 AV	54.00	-19.51	2.00 V	152	32.88	1.61
5	4960.00	48.18 PK	74.00	-25.82	1.00 V	215	43.15	5.03
6	4960.00	34.26 AV	54.00	-19.74	1.00 V	215	29.23	5.03
7	7440.00	52.09 PK	74.00	-21.91	1.00 V	359	41.99	10.10
8	7440.00	37.22 AV	54.00	-16.78	1.00 V	359	27.12	10.10

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.

4.3 6dB BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
Power Sensor	Keysight	U2021XA	MY57320002	Feb. 23, 23
Digital Multimeter	FLUKE	15B	A1220010DG	N/A
Humid & Temp Programmable Tester	Haida	HD-225T	110807201	Nov. 03, 22
Oscilloscope	Agilent	DSO9254A	MY51260160	Aug. 11, 22
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101094	Jan. 16, 23
Signal Generator	Agilent	N5183A	MY50140980	Jul. 20, 23
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Jul. 20, 23
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. (Chenwu)
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.

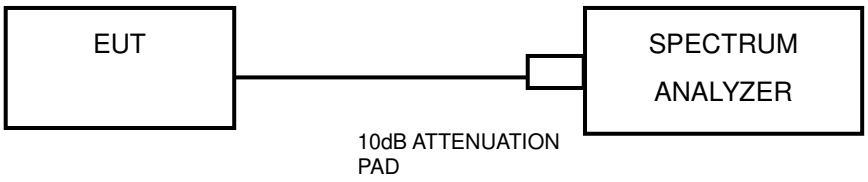
4.3.3 TEST PROCEDURE

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.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation.

4.3.5 TEST SETUP



4.3.6 EUT OPERATING CONDITIONS

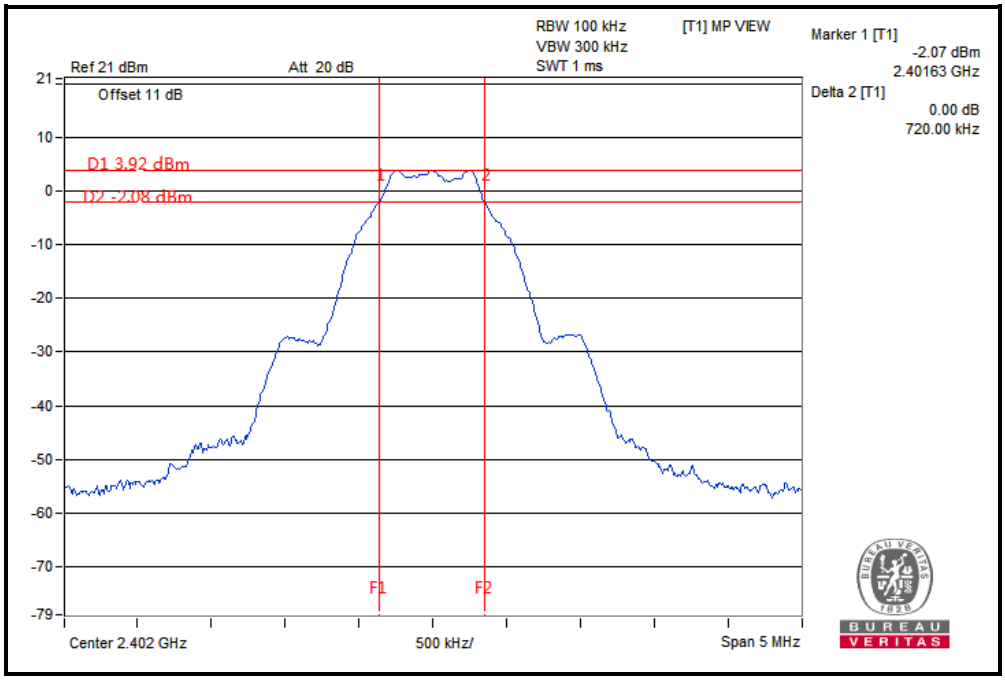
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

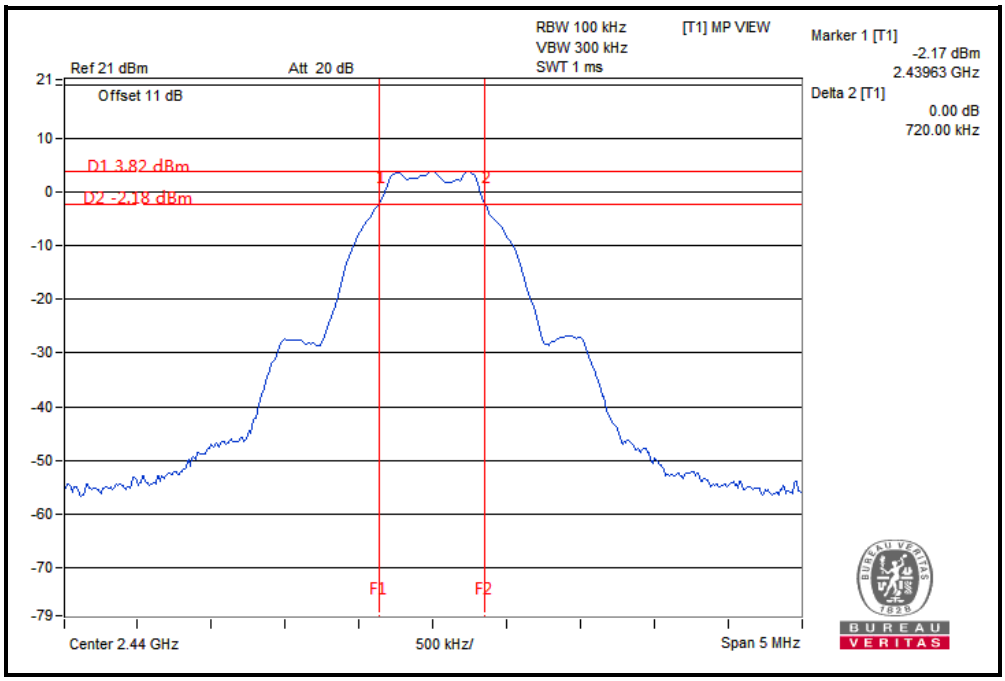
BT-LE (GFSK) (1Mbps)

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

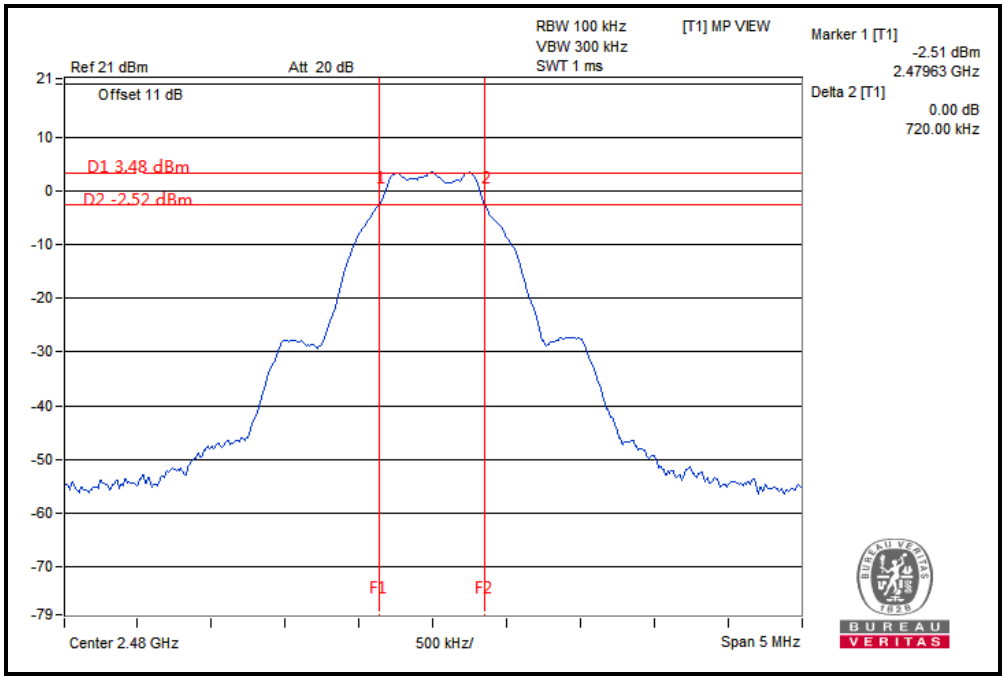
CH 0



CH 19


RBW 100 kHz
VBW 300 kHz
SWT 1 ms
[T1] MP VIEW
Marker 1 [T1]
-2.17 dBm
2.43963 GHz
Delta 2 [T1]
0.00 dB
720.00 kHz
Ref 21 dBm
Att 20 dB
Offset 11 dB
D1 3.82 dBm
D2 -2.18 dBm
21
10
0
-10
-20
-30
-40
-50
-60
-70
-79
F1
F2
Center 2.44 GHz
500 kHz/
Span 5 MHz

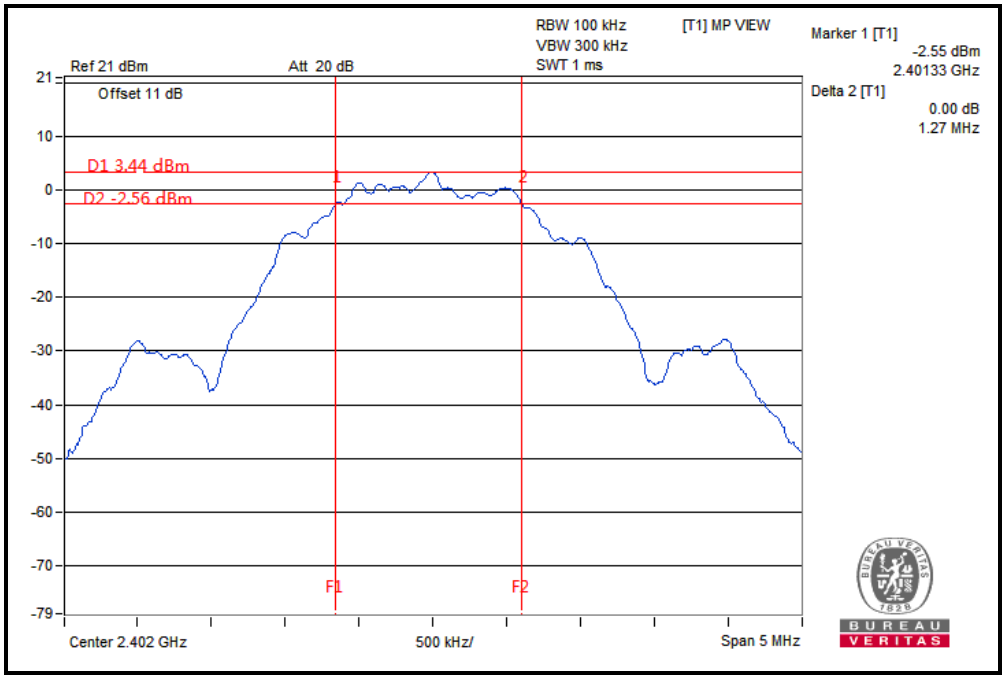
CH 39


RBW 100 kHz
VBW 300 kHz
SWT 1 ms
[T1] MP VIEW
Marker 1 [T1]
-2.51 dBm
2.47963 GHz
Delta 2 [T1]
0.00 dB
720.00 kHz
Ref 21 dBm
Att 20 dB
Offset 11 dB
D1 3.48 dBm
D2 -2.52 dBm
21
10
0
-10
-20
-30
-40
-50
-60
-70
-79
F1
F2
Center 2.48 GHz
500 kHz/
Span 5 MHz

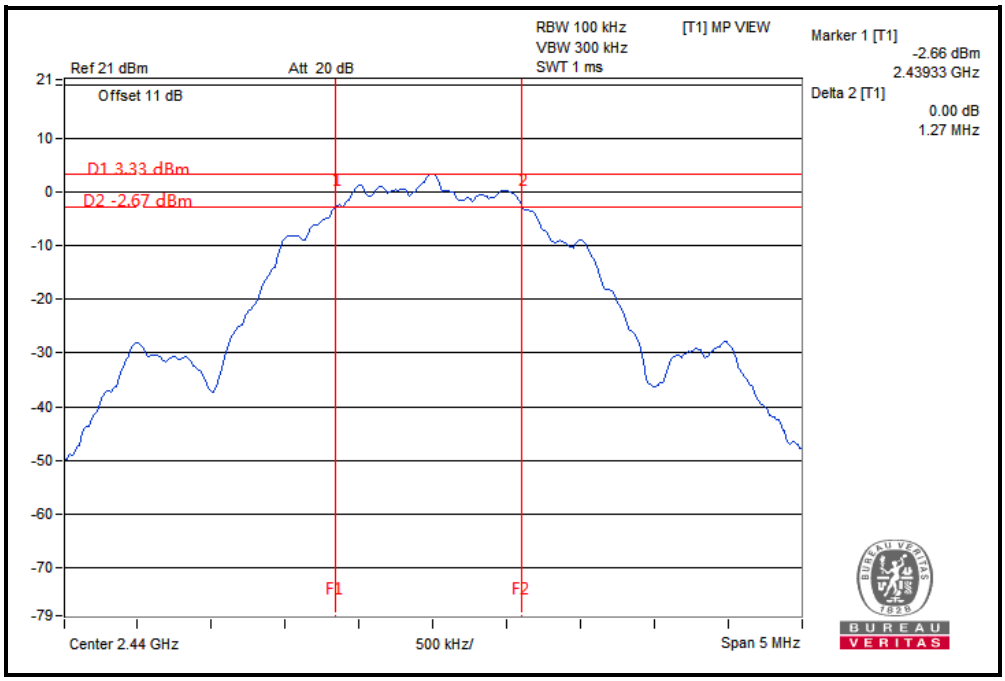
BT-LE (GFSK) (2Mbps)

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	1.27	0.5	PASS
19	2440	1.27	0.5	PASS
39	2480	1.27	0.5	PASS

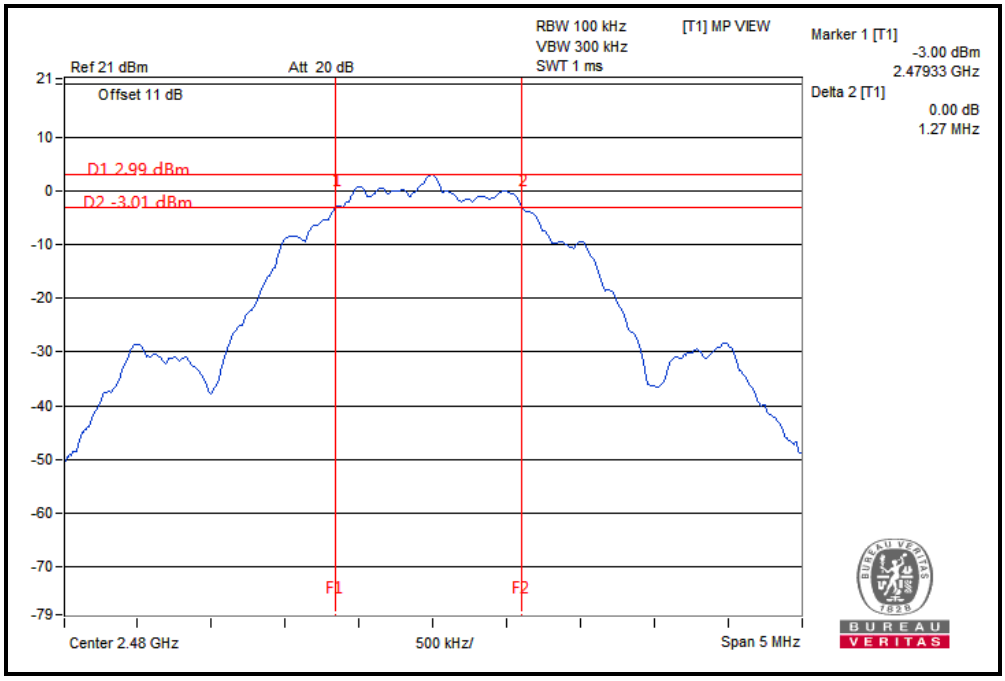
CH 0



CH 19


RBW 100 kHz
VBW 300 kHz
SWT 1 ms
[T1] MP VIEW
Marker 1 [T1]
-2.66 dBm
2.43933 GHz
Delta 2 [T1]
0.00 dB
1.27 MHz
Ref 21 dBm
Att 20 dB
Offset 11 dB
D1 3.33 dBm
D2 -2.67 dBm
21
10
0
-10
-20
-30
-40
-50
-60
-70
-79
F1
F2
Center 2.44 GHz
500 kHz/
Span 5 MHz

CH 39

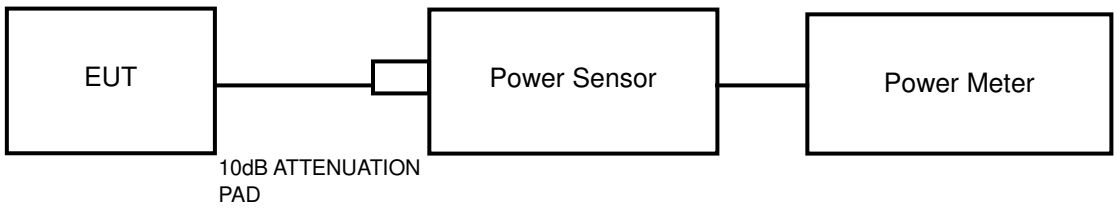

RBW 100 kHz
VBW 300 kHz
SWT 1 ms
[T1] MP VIEW
Marker 1 [T1]
-3.00 dBm
2.47933 GHz
Delta 2 [T1]
0.00 dB
1.27 MHz
Ref 21 dBm
Att 20 dB
Offset 11 dB
D1 2.99 dBm
D2 -3.01 dBm
21
10
0
-10
-20
-30
-40
-50
-60
-70
-79
F1
F2
Center 2.48 GHz
500 kHz/
Span 5 MHz

4.4 CONDUCTED OUTPUT POWER

4.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

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

4.4.2 TEST SETUP



4.4.3 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
Power Sensor	Keysight	U2021XA	MY57320002	Feb. 23, 23
Digital Multimeter	FLUKE	15B	A1220010DG	N/A
Humid & Temp Programmable Tester	Haida	HD-225T	110807201	Nov. 03, 22
Oscilloscope	Agilent	DSO9254A	MY51260160	Aug. 11, 22
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101094	Jan. 16, 23
Signal Generator	Agilent	N5183A	MY50140980	Jul. 20, 23
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Jul. 20, 23
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. (Chenwu)

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.

4.4.4 TEST PROCEDURES

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor and set the detector to PEAK. Record the power 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.

4.4.5 DEVIATION FROM TEST STANDARD

No deviation.

4.4.6 EUT OPERATING CONDITIONS

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

4.4.7 TEST RESULTS

4.4.7.1 MAXIMUM PEAK OUTPUT POWER

BT-LE (GFSK) (1Mbps)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (W)	PASS/FAIL
0	2402	6.73	4.710	1	PASS
19	2440	6.80	4.786	1	PASS
39	2480	6.38	4.345	1	PASS

BT-LE (GFSK) (2Mbps)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (W)	PASS/FAIL
0	2402	7.81	6.039	1	PASS
19	2440	7.88	**6.138**	1	PASS
39	2480	7.46	5.572	1	PASS

4.4.7.2 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) (1Mbps)

CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)
0	2402	5.09
19	2440	5.16
39	2480	4.74

BT-LE (GFSK) (2Mbps)

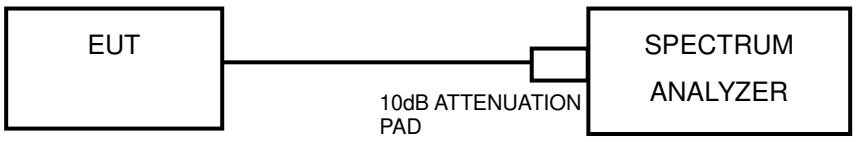
CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)
0	2402	4.98
19	2440	5.08
39	2480	4.66

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

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

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

1. Set the span to 1.5 times the DTS bandwidth
2. Set the RBW = 3 kHz, VBW ≥ 3 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.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

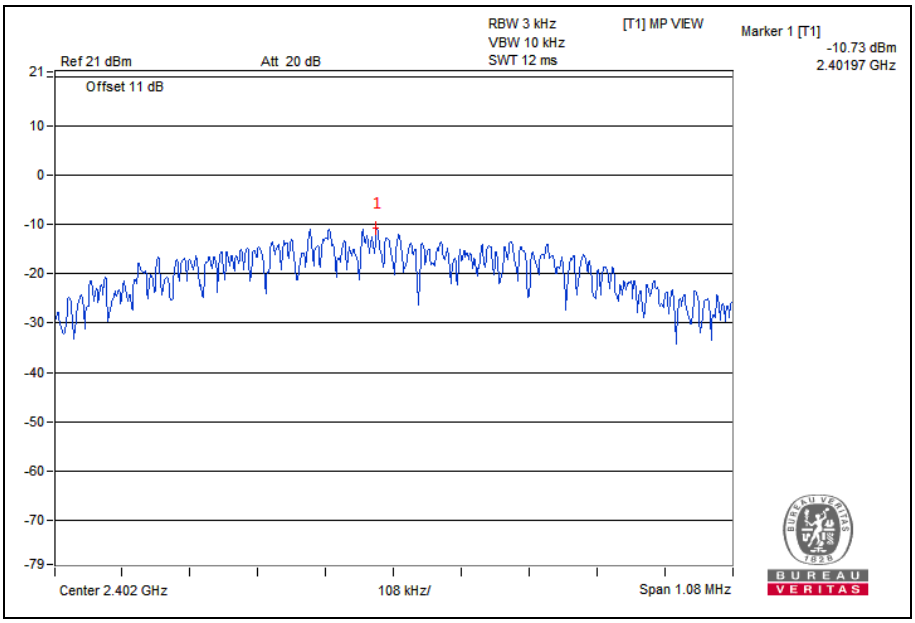
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.5.7 TEST RESULTS

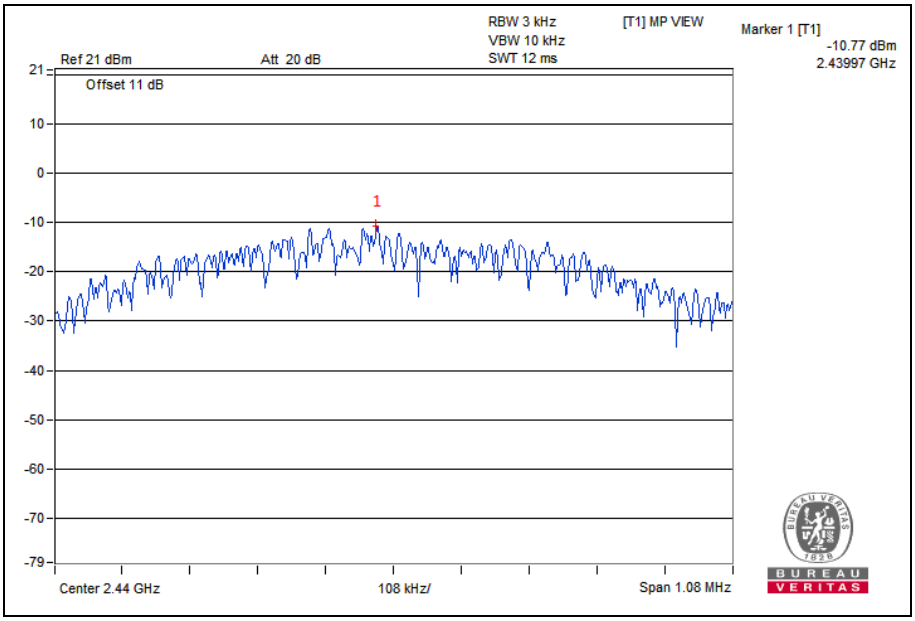
BT-LE (GFSK) (1Mbps)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	-10.73	8	PASS
19	2440	-10.77	8	PASS
39	2480	-11.10	8	PASS

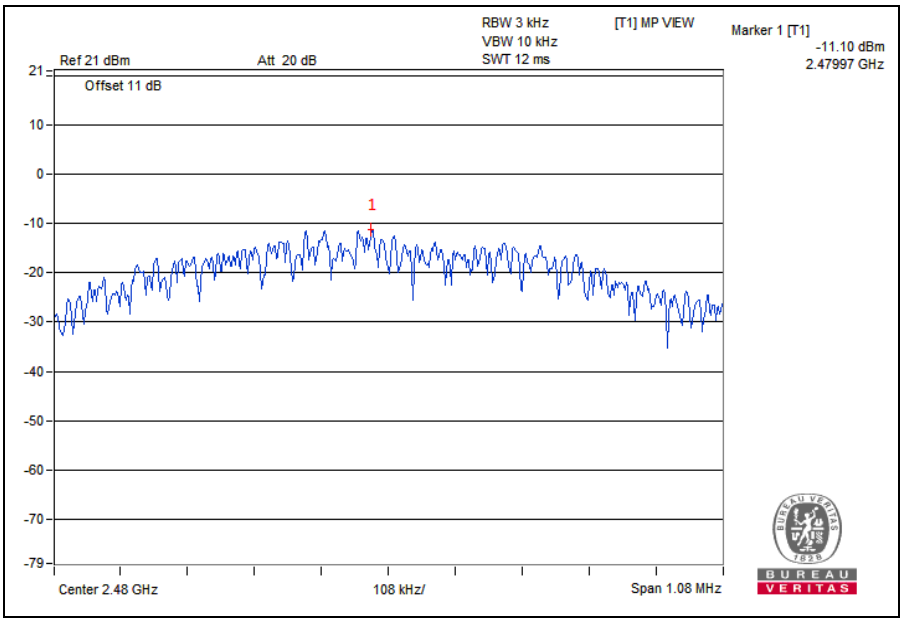
CH 0



CH 19


RBW 3 kHz
VBW 10 kHz
SWT 12 ms
[T1] MP VIEW
Marker 1 [T1]
-10.77 dBm
2.43997 GHz
Ref 21 dBm
Att 20 dB
Offset 11 dB
21
10
0
-10
-20
-30
-40
-50
-60
-70
-79
1
Center 2.44 GHz
108 kHz/
Span 1.08 MHz

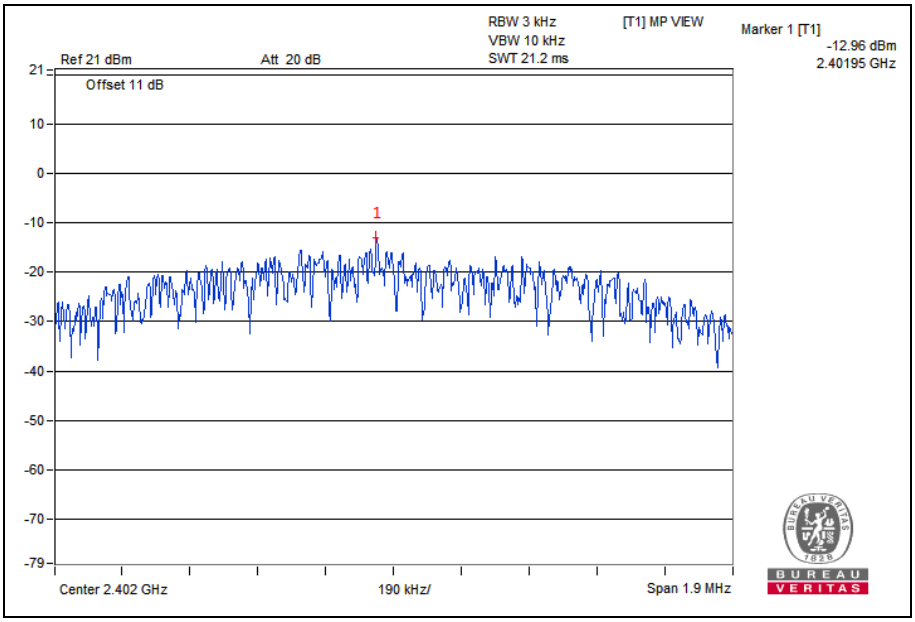
CH 39


RBW 3 kHz
VBW 10 kHz
SWT 12 ms
[T1] MP VIEW
Marker 1 [T1]
-11.10 dBm
2.47997 GHz
Ref 21 dBm
Att 20 dB
Offset 11 dB
21
10
0
-10
-20
-30
-40
-50
-60
-70
-79
1
Center 2.48 GHz
108 kHz/
Span 1.08 MHz

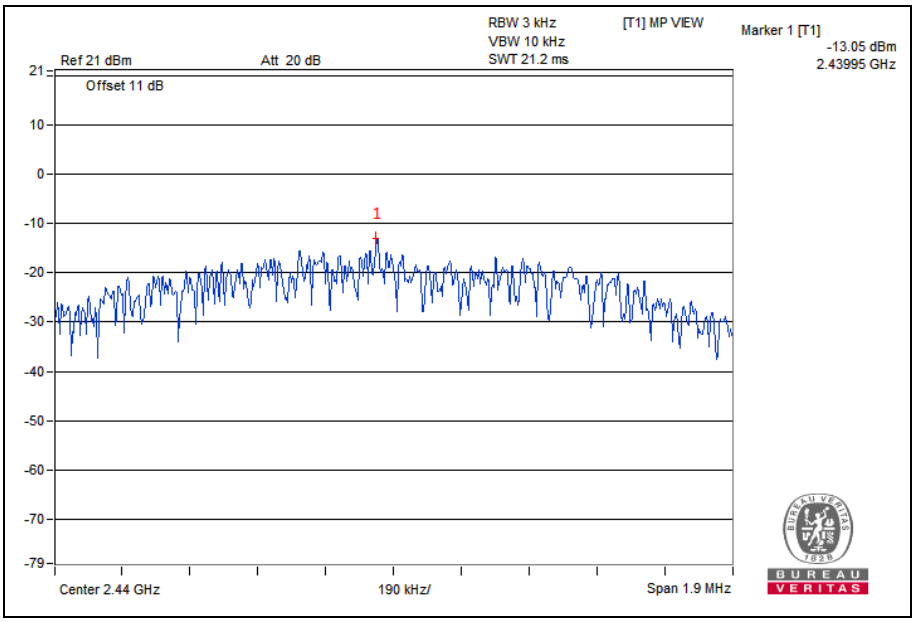
BT-LE (GFSK) (2Mbps)

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	-12.96	8	PASS
19	2440	-13.05	8	PASS
39	2480	-13.42	8	PASS

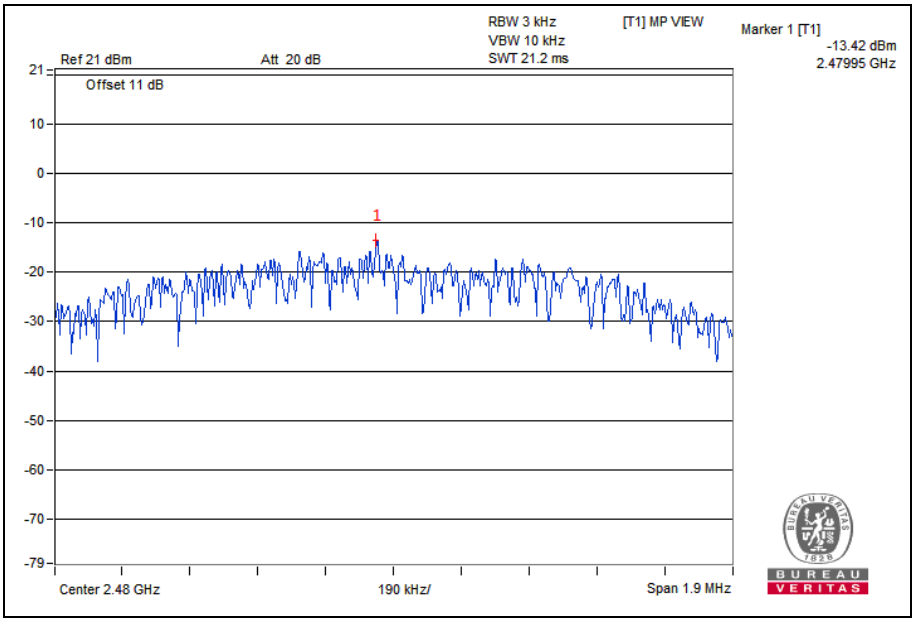
CH 0



CH 19


RBW 3 kHz
VBW 10 kHz
SWT 21.2 ms
[T1] MP VIEW
Marker 1 [T1]
-13.05 dBm
2.43995 GHz
Ref 21 dBm
Att 20 dB
Offset 11 dB
21
10
0
-10
-20
-30
-40
-50
-60
-70
-79
1
Center 2.44 GHz
190 kHz/
Span 1.9 MHz

CH 39

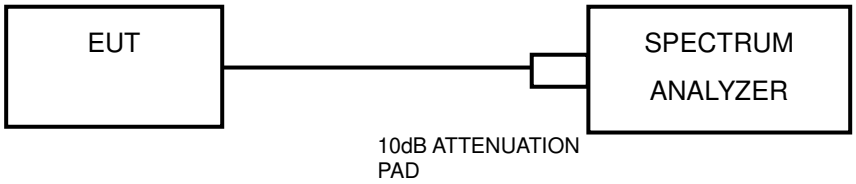

RBW 3 kHz
VBW 10 kHz
SWT 21.2 ms
[T1] MP VIEW
Marker 1 [T1]
-13.42 dBm
2.47995 GHz
Ref 21 dBm
Att 20 dB
Offset 11 dB
21
10
0
-10
-20
-30
-40
-50
-60
-70
-79
1
Center 2.48 GHz
190 kHz/
Span 1.9 MHz

4.6 OUT OF BAND EMISSION MEASUREMENT

4.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

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

4.6.2 TEST SETUP



4.6.3 TEST INSTRUMENTS

Refer to section 4.3.3 to get information of above instrument.

4.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 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.

4.6.5 DEVIATION FROM TEST STANDARD

No deviation.

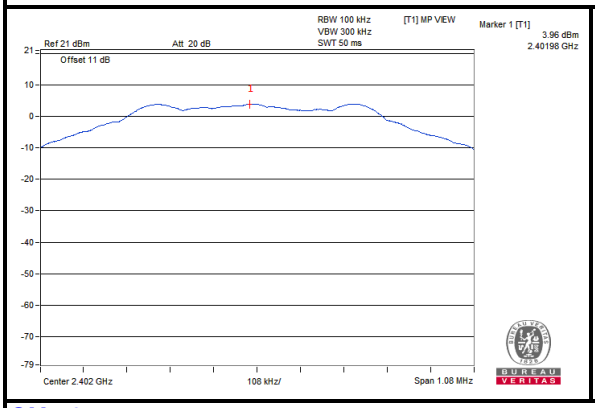
4.6.6 EUT OPERATING CONDITION

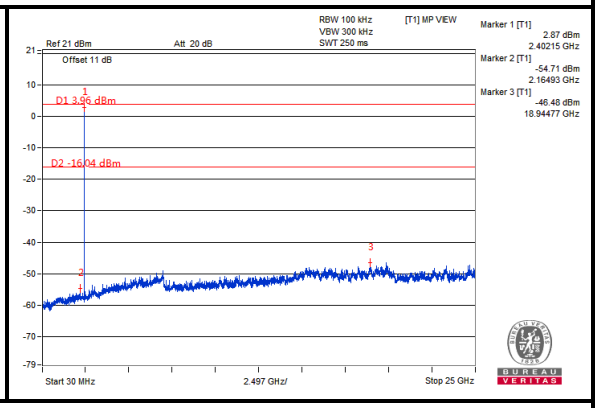
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.6.7 TEST RESULTS

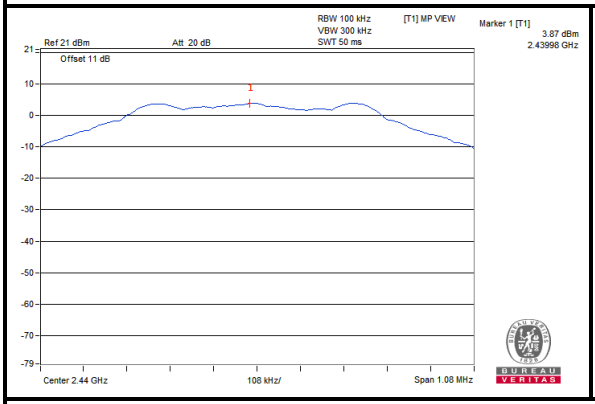
BT-LE (GFSK) (1Mbps)

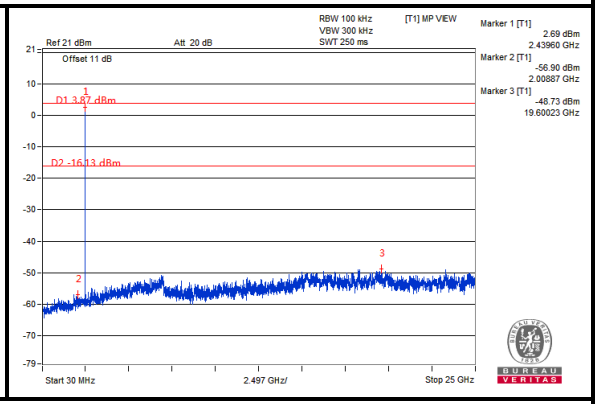
CH 0



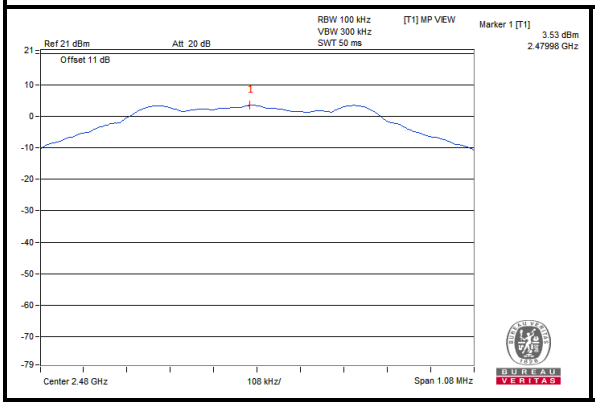


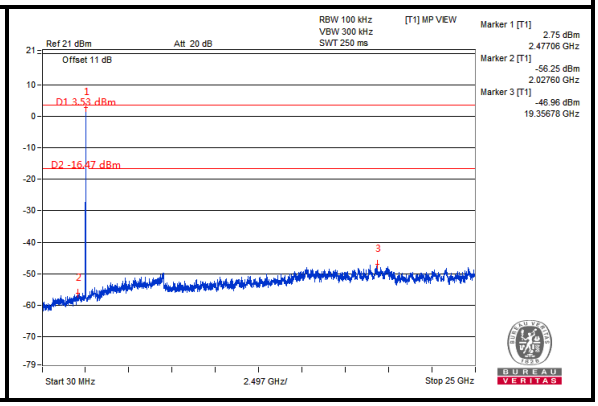
CH 19





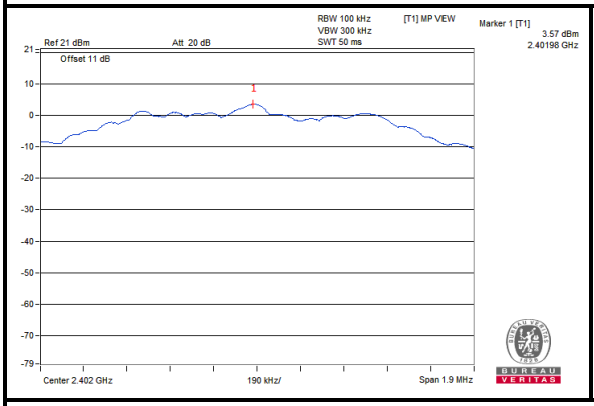
CH 39

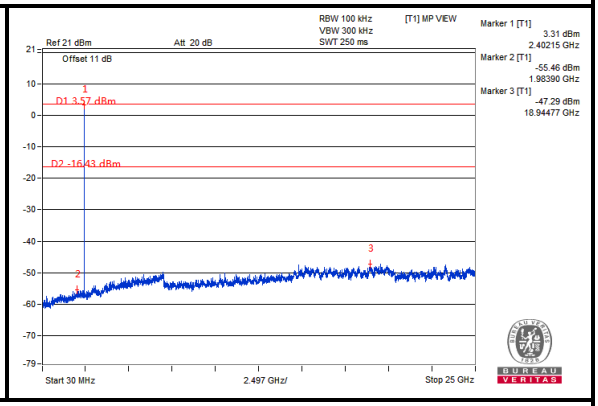




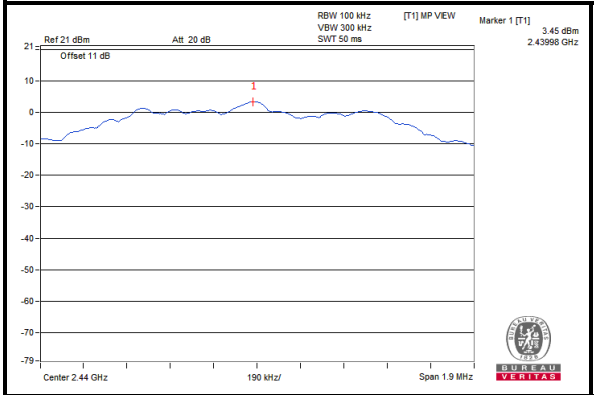
BT-LE (GFSK) (2Mbps)

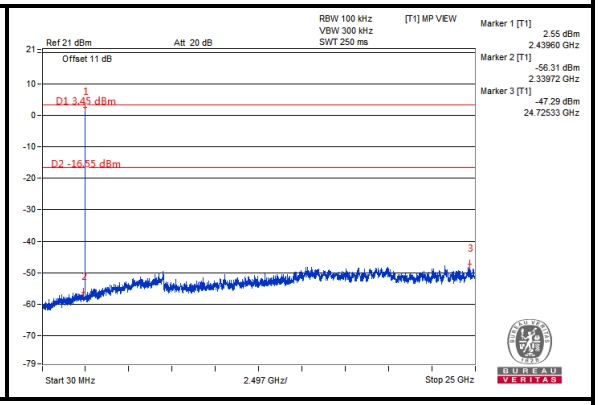
CH 0



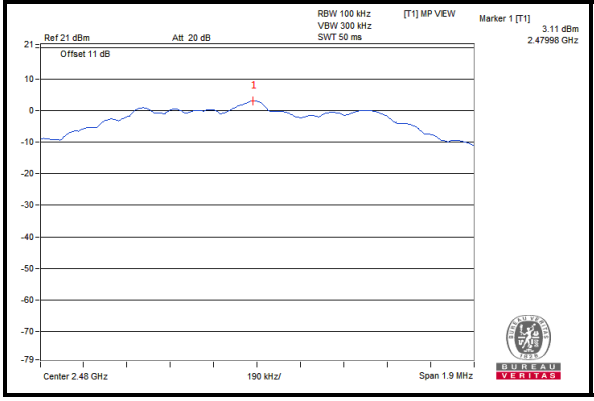


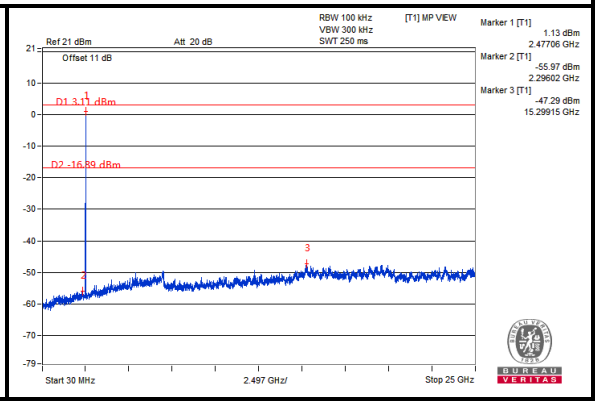
CH 19



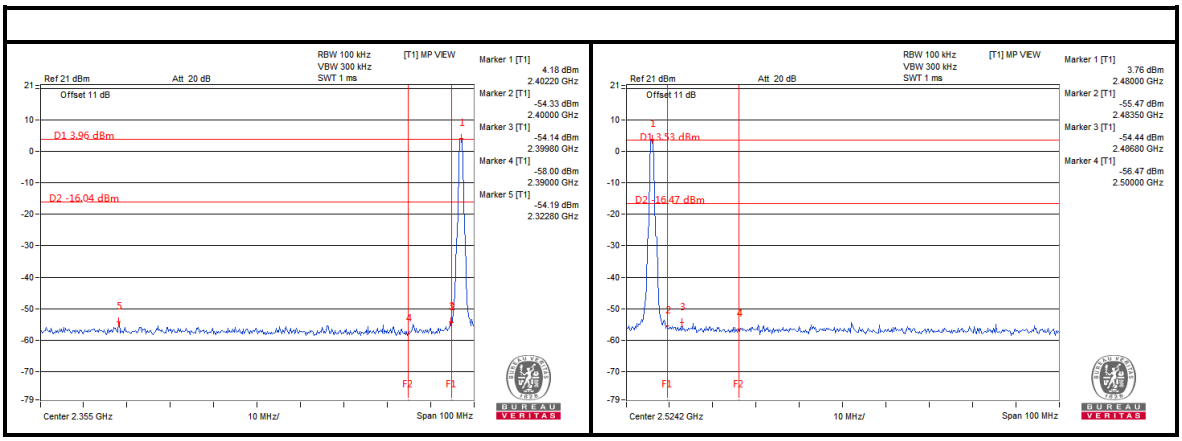


CH 39

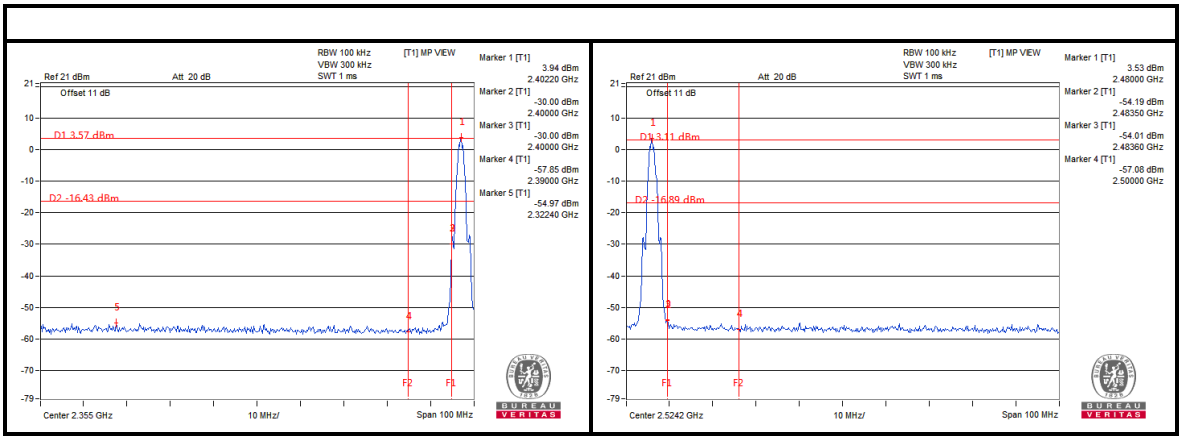




Band Edge (1Mbps):



Band Edge (2Mbps):



Conclusion: PASS

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---