

TEST REPORT

Applicant	Zhiwei Robotics Corp.
Address	Room 603, 2 Boyun Road, Pudong, Shanghai P.R.China

Manufacturer or Supplier	Zhiwei Robotics Corp.
Address	Room 603, 2 Boyun Road, Pudong, Shanghai P.R.China
Product	LattePanda 3 Delta
Brand Name	LattePanda
Model	DFR0981
Additional Model & Model Difference	DFR0982, see item 3.1
Date of tests	Jun. 05, 2022 ~ Jul. 22, 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: Aug. 03, 2022

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.

TABLE OF CONTENTS

RELEASE CONTROL RECORD	4
1 SUMMARY OF TEST RESULTS.....	5
2 MEASUREMENT UNCERTAINTY	5
3 GENERAL INFORMATION	6
3.1 GENERAL DESCRIPTION OF EUT	6
3.2 DESCRIPTION OF TEST MODES	7
3.2.1. CONFIGURATION OF SYSTEM UNDER TEST	7
3.2.2. TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL.....	7
3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS	10
3.4 DESCRIPTION OF SUPPORT UNITS	10
4 TEST TYPES AND RESULTS.....	11
4.1 CONDUCTED EMISSION MEASUREMENT	11
4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT	11
4.1.2 TEST INSTRUMENTS.....	11
4.1.3 TEST PROCEDURES	12
4.1.4 DEVIATION FROM TEST STANDARD	12
4.1.5 TEST SETUP	13
4.1.6 EUT OPERATING CONDITIONS	13
4.1.7 TEST RESULTS	14
4.2 RADIATED EMISSION MEASUREMENT	16
4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT	16
4.2.2 TEST INSTRUMENTS.....	17
4.2.3 TEST PROCEDURES	18
4.2.4 DEVIATION FROM TEST STANDARD	19
4.2.5 TEST SETUP	19
4.2.6 EUT OPERATING CONDITIONS	20
4.2.7 TEST RESULTS	21
4.3 6dB BANDWIDTH MEASUREMENT.....	29
4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT	29
4.3.2 TEST INSTRUMENTS.....	29
4.3.3 TEST PROCEDURE.....	30
4.3.4 DEVIATION FROM TEST STANDARD	30
4.3.5 TEST SETUP	31
4.3.6 EUT OPERATING CONDITIONS	31
4.3.7 TEST RESULTS	32

4.4	CONDUCTED OUTPUT POWER.....	36
4.4.1	LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT	36
4.4.2	TEST SETUP	36
4.4.3	TEST INSTRUMENTS.....	36
4.4.4	TEST PROCEDURES	36
4.4.5	DEVIATION FROM TEST STANDARD	36
4.4.6	EUT OPERATING CONDITIONS	36
4.4.7	TEST RESULTS	37
4.4.7.1	MAXIMUM PEAK OUTPUT POWER	37
4.4.7.2	AVERAGE OUTPUT POWER (FOR REFERENCE)	37
4.5	POWER SPECTRAL DENSITY MEASUREMENT	39
4.5.1	LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT	39
4.5.2	TEST SETUP	39
4.5.3	TEST INSTRUMENTS.....	39
4.5.4	TEST PROCEDURE.....	39
4.5.5	DEVIATION FROM TEST STANDARD	39
4.5.6	EUT OPERATING CONDITION	39
4.5.7	TEST RESULTS	40
4.6	OUT OF BAND EMISSION MEASUREMENT	44
4.6.1	LIMITS OF OUT OF BAND EMISSION MEASUREMENT	44
4.6.2	TEST SETUP	44
4.6.3	TEST INSTRUMENTS.....	44
4.6.4	TEST PROCEDURE.....	44
4.6.5	DEVIATION FROM TEST STANDARD	45
4.6.6	EUT OPERATING CONDITION	45
4.6.7	TEST RESULTS	46
5	PHOTOGRAPHS OF THE TEST CONFIGURATION	49
6	APPENDIX A - MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB	50



Test Report No.: RF2205WDG0306-2

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF2205WDG0306-2	Original release	Aug. 03, 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	Antenna connector is i-pex not a standard connector.

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
Conducted emissions	0.15MHz ~ 30MHz	3.05dB
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	LattePanda 3 Delta
BRAND	LattePanda
MODEL NO.	DFR0981
ADDITIONAL MODEL	DFR0982
FCC ID	2AIDMLPDF0981
NOMINAL VOLTAGE	Powered by Adapter
MODULATION TECHNOLOGY	DTS
MODULATION TYPE	BT-LE(GFSK)
OPERATING FREQUENCY	2402MHz ~ 2480MHz
PEAK OUTPUT POWER	8.810mW (Measured Max.)
ANTENNA TYPE	FPCB Antenna, 1.56dBi Gain
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	Refer to user's manual

NOTES:

1. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or 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.: 2205WDG0306-1) for detailed product photo.
4. Additional model DFR0982 is identical with the test model DFR0981 except the system software version and model number for marketing purpose.
5. The EUT was powered by the following Adapter:

ADAPTER	
BRAND:	N/A
MODEL:	XYX-PD45X
INPUT:	AC 100-240V 50/60HZ 1A
OUTPUT:	DC 5/9/12/15V 3A, DC 20V 2.25A
DC LINE:	Shielded, Non-detachable, 155cm, with two cores
AC LINE:	Unshielded, Detachable, 45cm

3.2 DESCRIPTION OF TEST MODES

40 channels are provided for BT-LE:

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, power supply voltage range 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 Adapter with BT link

Where

RE<1G: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission

RE≥1G: Radiated Emission above 1GHz
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 channels were selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	0 to 39	39	DTS	GFSK	1

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

RADIATED EMISSION TEST (ABOVE 1GHz):

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

- ☒ Following channels were selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	0 to 39	0,19, 39	DTS	GFSK	1

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 channels were selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	0 to 39	BT LINK	DTS	GFSK	1

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



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 channels were selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A	0 to 39	0, 19, 39	DTS	GFSK	1

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE<1G	25deg. C, 54%RH	Powered by Adapter Input AC 120V 60Hz	Jelly
RE≥1G	25deg. C, 54%RH	Powered by Adapter Input AC 120V 60Hz	Jelly
PLC	25deg. C, 58% RH	Powered by Adapter Input AC 120V 60Hz	Summer
APCM	25deg. C, 60% RH	Powered by Adapter Input AC 120V 60Hz	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

558074 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	Logitech	UE3600	1238CP529108	N/A	N/A
2	Wireless Router	TP-LINK	TL-WDR3310	1.24E+09	N/A
3	Mouse	A4TECH	N360	N/A	N/A
5	Mobile Phone	MEIZU	M3 NOTE	91QEBNJ25CKF	N/A
4	USB Driver 3.0(16G)	Kingston	DTSE9G2/16GB	YVLP9-B8HTAQ-XXAYB	N/A
5	Keyboard	DELL	KB212-B	CN-0N291F-71581-46L-00BB-A01	N/A
6	TF Card (32G)	Kingston	KN003773517	N/A	N/A
7	Monitor	DELL	U2720QM	4383185043	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	Earphone: Unshielded, Non-detachable 1.5m
2	DC Line: Unshielded, Detachable 1.2m
3	USB Line: Unshielded, Non-detachable 1.5m
5	N/A
4	N/A
5	USB: Unshielded, Non-detachable 1.8m
6	N/A
7	AC Line: Unshielded, Detachable 1.5m; HDMI Line: Shielded, Detachable 1.5m

4 TEST TYPES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

- NOTES:**
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	Aug. 05, 22
Coaxial RF Cable	/	CE CABLE	C2310066DG	Jul. 27, 23
Test software	ADT	ADT_Conc_V7.3.7	N/A	N/A

NOTES:

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

4.1.3 TEST PROCEDURES

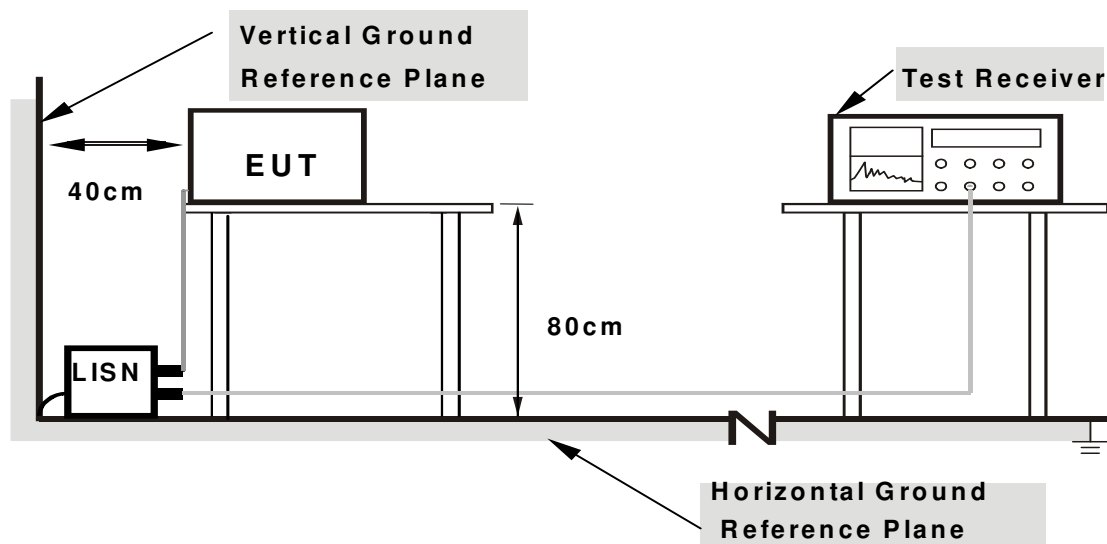
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

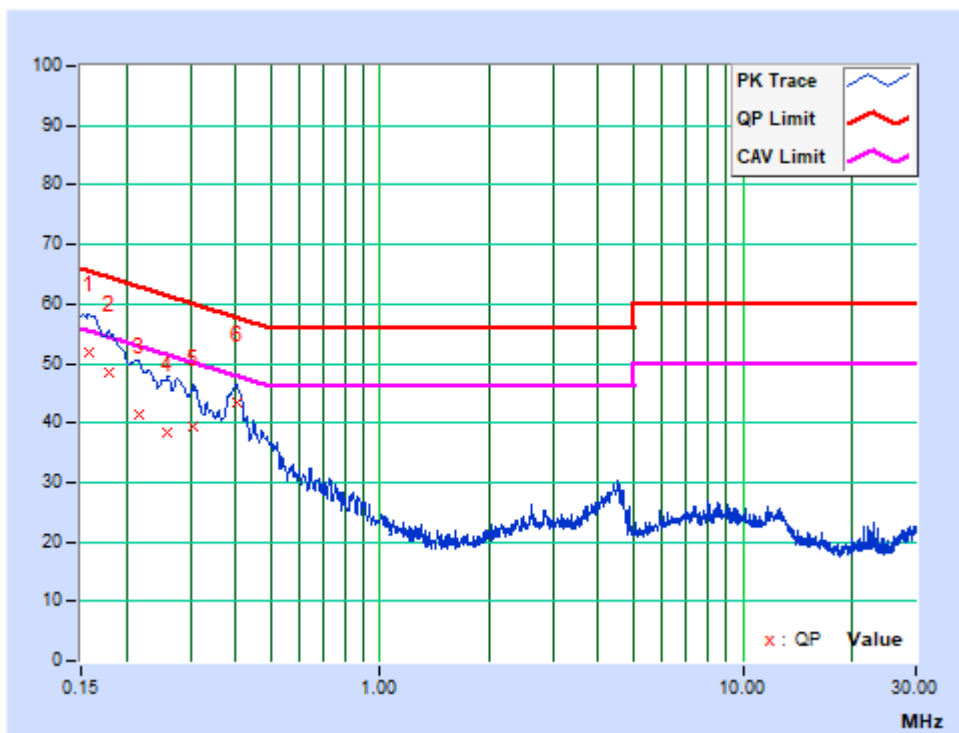
4.1.7 TEST RESULTS

CONDUCTED DATA: BT LINK

PHASE	Line	6dB BANDWIDTH	9kHz
-------	------	---------------	------

No.	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15715	9.95	42.05	26.32	52.00	36.27	65.61	55.61	-13.62	-19.35
2	0.17886	9.99	38.46	23.51	48.45	33.50	64.54	54.54	-16.08	-21.03
3	0.21573	10.05	31.30	19.48	41.35	29.53	62.98	52.98	-21.63	-23.45
4	0.26022	10.09	28.17	17.94	38.26	28.03	61.42	51.42	-23.16	-23.39
5	0.30750	10.11	29.19	21.22	39.30	31.33	60.04	50.04	-20.74	-18.71
6	0.40229	10.14	33.38	26.22	43.52	36.36	57.81	47.81	-14.29	-11.45

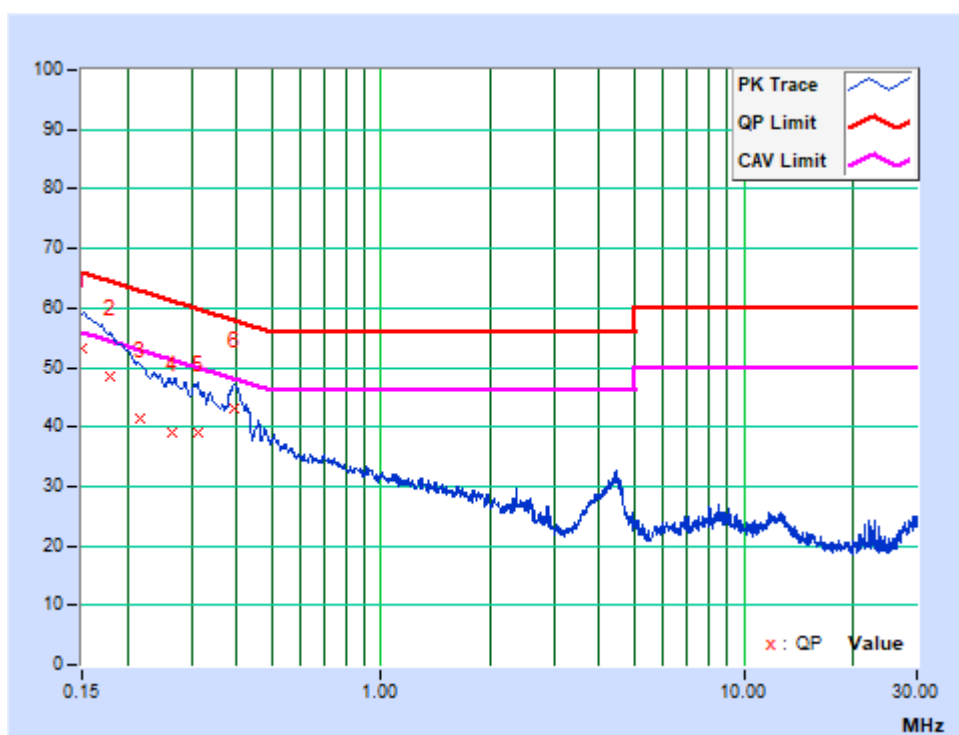
REMARK: The emission levels of other frequencies were very low against the limit.



PHASE	Neutral	6dB BANDWIDTH	9kHz
-------	---------	---------------	------

No.	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.83	43.28	27.61	53.11	37.44	66.00	56.00	-12.89	-18.56
2	0.17886	9.88	38.65	23.55	48.53	33.43	64.54	54.54	-16.01	-21.11
3	0.21750	9.93	31.43	18.08	41.36	28.01	62.91	52.91	-21.55	-24.90
4	0.26577	9.98	29.21	18.47	39.19	28.45	61.25	51.25	-22.06	-22.80
5	0.31200	10.01	28.91	21.19	38.92	31.20	59.92	49.92	-21.00	-18.72
6	0.39492	10.02	33.14	26.76	43.16	36.78	57.96	47.96	-14.80	-11.18

REMARK: 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.
Spectrum Analyzer	Rohde&Schwarz	FSV40-N	101817	Jun 19, 23
Bilog Antenna	SCHWARZBECK	VULB 9168	01281	July 30, 22
Pre-Amplifier	Agilent	8447D	2944A10488	Aug. 08, 22
3m Semi-anechoic Chamber	ETS-Lindgren	9m*6m*6m	D3040003DG-1	July 30, 24
Coaxial RF Cable	Joinfront	JFAA6-NMNM-8000	2100033742	July. 11, 23
Coaxial RF Cable	Joinfront	JFAR-NMBNCM-2000	2100033742	July. 11, 23
Coaxial RF Cable	Joinfront	JFAR-BNCMSMM-500	2100033742	July. 11, 23
Test software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A
Horn Antenna	ETS-Lindgren	3117	00240041	July 22, 22
Horn Antenna	SCHWARZBECK	BBHA 9170	01024	Dec. 25, 22
Pre-Amplifier (1GHz-18GHz)	SCHWARZBECK	BBV 9718C	00142	Jun. 14, 23
Pre-Amplifier (18GHz-40GHz)	Rohde&Schwarz	SCU40	100437	Nov. 16, 22
Coaxial RF Cable	Joinfront	JFAA6-NMNM-8000	2100033742	July. 11, 23
Coaxial RF Cable	Joinfront	JFAA6-NMSMM-2000	2100033742	July. 11, 23
Coaxial RF Cable	Joinfront	JFAA6-NMSMM-800	2100033742	July. 11, 23

NOTES:

1. The test was performed in 966 Chamber-3 (Baodun)
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. 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. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. 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 centre 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:

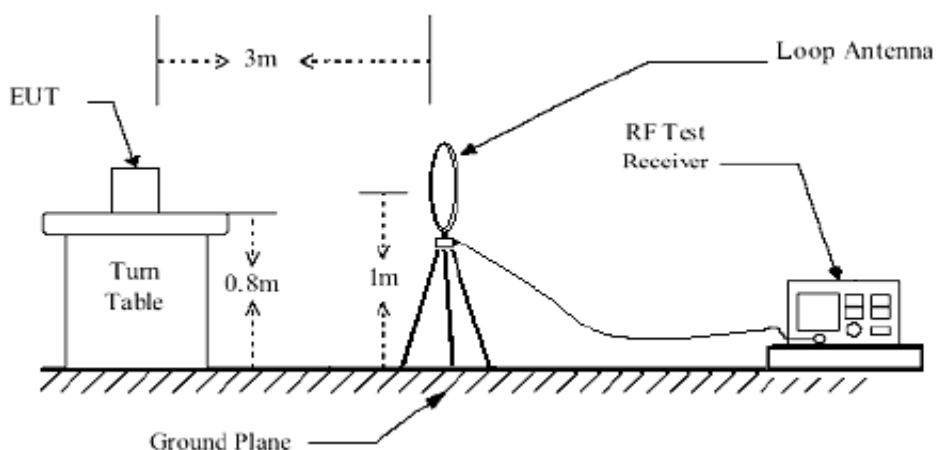
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (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

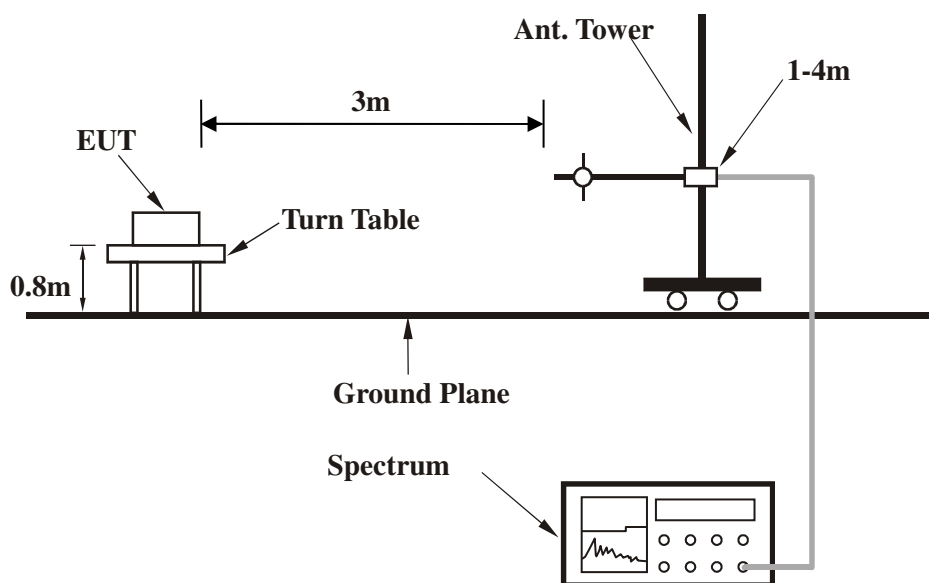
No deviation.

4.2.5 TEST SETUP

Below 30MHz test setup

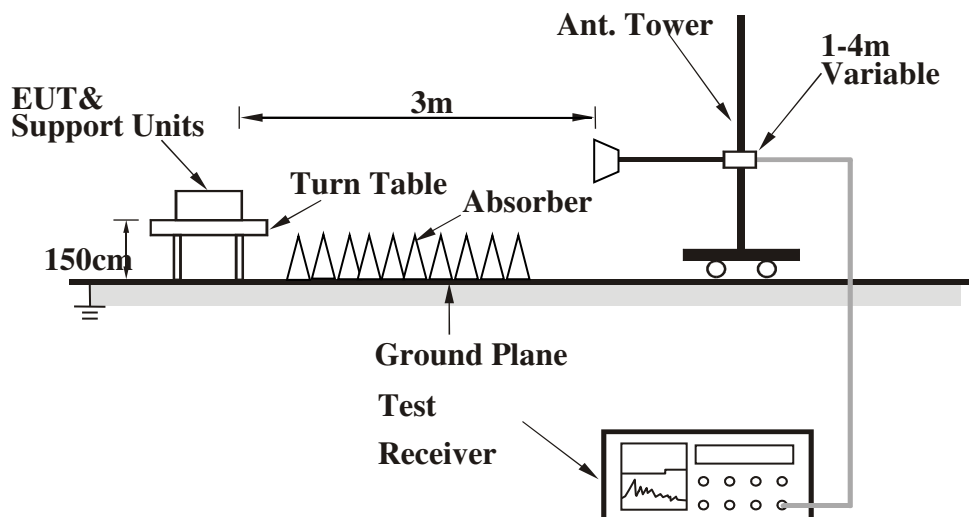


Below 1GHz test setup



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

- 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.



**BUREAU
VERITAS**

Test Report No.: RF2205WDG0306-2

4.2.7 TEST RESULTS

BELOW 1GHz WORST-CASE DATA:

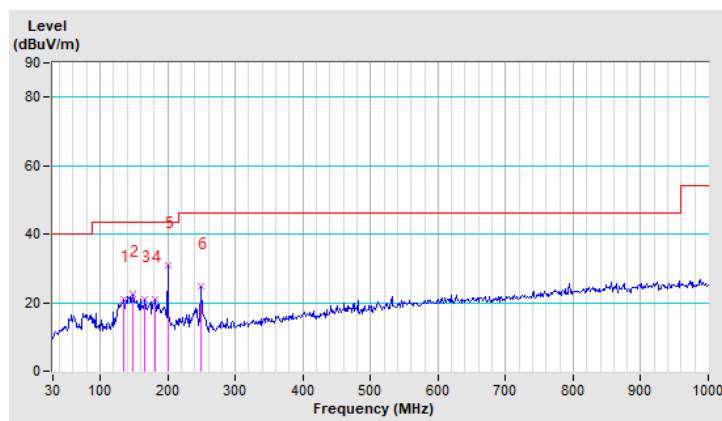
BT-LE GFSK

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)	CORRECTIO N FACTOR (dB/m)
1	135.43	21.04 QP	43.50	-22.46	1.00 H	296	35.61	-14.57
2	148.09	22.42 QP	43.50	-21.08	1.00 H	95	36.15	-13.73
3	166.36	21.03 QP	43.50	-22.47	1.00 H	186	34.94	-13.91
4	181.83	20.79 QP	43.50	-22.71	1.00 H	48	35.79	-15.00
5	200.10	30.83 QP	43.50	-12.67	1.00 H	310	47.23	-16.40
6	249.30	24.85 QP	46.00	-21.15	1.00 H	113	39.10	-14.25

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.



Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

No. 96, Guantai Road (Houjie Section), Houjie
Town, Dongguan City, Guangdong Province.
523942. People's Republic of China.

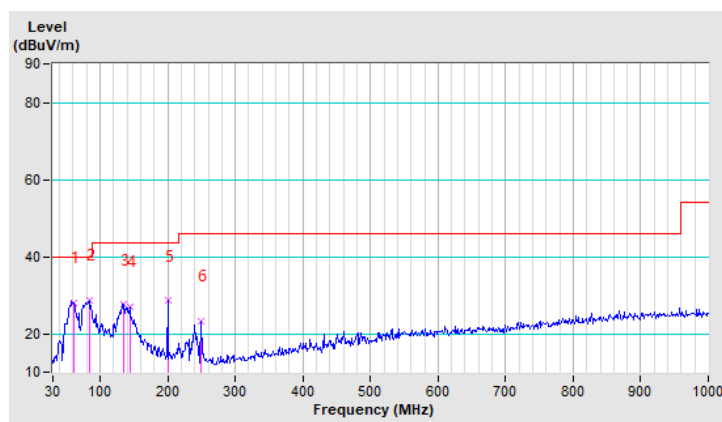
Tel: +86 769 8998 2098
Fax: +86 769 8593 1080
Email: customerservice.dg@bureauveritas.com

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)	CORRECTIO N FACTOR (dB/m)
1	60.93	28.02 QP	40.00	-11.98	1.00 V	155	42.20	-14.18
2	83.42	28.70 QP	40.00	-11.30	1.00 V	63	46.69	-17.99
3	135.43	27.51 QP	43.50	-15.99	1.00 V	305	42.08	-14.57
4	143.87	27.11 QP	43.50	-16.39	1.00 V	98	40.93	-13.82
5	200.10	28.54 QP	43.50	-14.96	1.00 V	154	44.94	-16.40
6	249.30	23.24 QP	46.00	-22.76	1.00 V	308	37.49	-14.25

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:

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	42.19 PK	74.00	-31.81	1.05 H	314	41.18	1.01
2	2390.00	30.43 AV	54.00	-23.57	1.05 H	314	29.42	1.01
3	*2402.00	89.25 PK			1.05 H	314	88.21	1.04
4	*2402.00	83.60 AV			1.05 H	314	82.56	1.04
5	4804.00	46.74 PK	74.00	-27.26	1.52 H	38	42.47	4.27
6	4804.00	33.29 AV	54.00	-20.71	1.52 H	38	29.02	4.27
7	#7206.00	49.81 PK	74.00	-24.19	1.00 H	21	40.43	9.38
8	#7206.00	35.47 AV	54.00	-18.53	1.00 H	21	26.09	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	41.87 PK	74.00	-32.13	2.00 V	175	40.86	1.01
2	2390.00	29.28 AV	54.00	-24.72	2.00 V	175	28.27	1.01
3	*2402.00	86.94 PK			2.00 V	175	85.90	1.04
4	*2402.00	82.49 AV			2.00 V	175	81.45	1.04
5	4804.00	45.19 PK	74.00	-28.81	1.06 V	95	40.92	4.27
6	4804.00	32.11 AV	54.00	-21.89	1.06 V	95	27.84	4.27
7	#7206.00	48.24 PK	74.00	-25.76	1.00 V	234	38.86	9.38
8	#7206.00	34.16 AV	54.00	-19.84	1.00 V	234	24.78	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)
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	89.37 PK			2.00 H	167	88.20	1.17
2	*2440.00	83.40 AV			2.00 H	167	82.23	1.17
3	4880.00	45.26 PK	74.00	-28.74	1.08 H	97	40.84	4.42
4	4880.00	33.39 AV	54.00	-20.61	1.08 H	97	28.97	4.42
5	7320.00	49.57 PK	74.00	-24.43	1.00 H	215	39.84	9.73
6	7320.00	35.16 AV	54.00	-18.84	1.00 H	215	25.43	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	86.44 PK			1.54 V	219	85.27	1.17
2	*2440.00	82.16 AV			1.54 V	219	80.99	1.17
3	4880.00	44.17 PK	74.00	-29.83	2.00 V	109	39.75	4.42
4	4880.00	32.09 AV	54.00	-21.91	2.00 V	109	27.67	4.42
5	7320.00	48.26 PK	74.00	-25.74	1.00 V	351	38.53	9.73
6	7320.00	34.29 AV	54.00	-19.71	1.00 V	351	24.56	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)
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	89.43 PK			1.08 H	251	88.13	1.30
2	*2480.00	83.21 AV			1.08 H	251	81.91	1.30
3	2483.50	45.17 PK	74.00	-28.83	1.08 H	251	43.86	1.31
4	2483.50	33.63 AV	54.00	-20.37	1.08 H	251	32.32	1.31
5	4960.00	47.25 PK	74.00	-26.75	1.74 H	96	42.68	4.57
6	4960.00	34.16 AV	54.00	-19.84	1.74 H	96	29.59	4.57
7	7440.00	50.27 PK	74.00	-23.73	1.00 H	208	40.17	10.10
8	7440.00	36.43 AV	54.00	-17.57	1.00 H	208	26.33	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	86.25 PK			1.09 V	163	84.95	1.30
2	*2480.00	82.19 AV			1.09 V	163	80.89	1.30
3	2483.50	44.34 PK	74.00	-29.66	1.09 V	163	43.03	1.31
4	2483.50	32.17 AV	54.00	-21.83	1.09 V	163	30.86	1.31
5	4960.00	46.19 PK	74.00	-27.81	1.55 V	217	41.62	4.57
6	4960.00	33.24 AV	54.00	-20.76	1.55 V	217	28.67	4.57
7	7440.00	49.21 PK	74.00	-24.79	1.00 V	238	39.11	10.10
8	7440.00	35.17 AV	54.00	-18.83	1.00 V	238	25.07	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	42.91 PK	74.00	-31.09	1.54 H	199	41.90	1.01
2	2390.00	31.44 AV	54.00	-22.56	1.54 H	199	30.43	1.01
3	*2402.00	89.43 PK			1.54 H	199	88.39	1.04
4	*2402.00	83.74 AV			1.54 H	199	82.70	1.04
5	4804.00	47.35 PK	74.00	-26.65	1.06 H	69	43.08	4.27
6	4804.00	34.46 AV	54.00	-19.54	1.06 H	69	30.19	4.27
7	#7206.00	50.22 PK	74.00	-23.78	1.00 H	157	40.84	9.38
8	#7206.00	36.19 AV	54.00	-17.81	1.00 H	157	26.81	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	41.14 PK	74.00	-32.86	2.00 V	75	40.13	1.01
2	2390.00	30.29 AV	54.00	-23.71	2.00 V	75	29.28	1.01
3	*2402.00	87.25 PK			2.00 V	75	86.21	1.04
4	*2402.00	82.91 AV			2.00 V	75	81.87	1.04
5	4804.00	46.52 PK	74.00	-27.48	1.16 V	52	42.25	4.27
6	4804.00	33.43 AV	54.00	-20.57	1.16 V	52	29.16	4.27
7	#7206.00	49.81 PK	74.00	-24.19	1.00 V	315	40.43	9.38
8	#7206.00	35.25 AV	54.00	-18.75	1.00 V	315	25.87	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)
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	89.67 PK			1.33 H	218	88.50	1.17
2	*2440.00	83.52 AV			1.33 H	218	82.35	1.17
3	4880.00	45.34 PK	74.00	-28.66	1.08 H	96	40.92	4.42
4	4880.00	33.28 AV	54.00	-20.72	1.08 H	96	28.86	4.42
5	7320.00	49.17 PK	74.00	-24.83	1.00 H	207	39.44	9.73
6	7320.00	35.44 AV	54.00	-18.56	1.00 H	207	25.71	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	87.21 PK			1.56 V	318	86.04	1.17
2	*2440.00	82.81 AV			1.56 V	318	81.64	1.17
3	4880.00	44.19 PK	74.00	-29.81	1.03 V	314	39.77	4.42
4	4880.00	32.17 AV	54.00	-21.83	1.03 V	314	27.75	4.42
5	7320.00	48.09 PK	74.00	-25.91	1.00 V	17	38.36	9.73
6	7320.00	34.22 AV	54.00	-19.78	1.00 V	17	24.49	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.



**BUREAU
VERITAS**

Test Report No.: RF2205WDG0306-2

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	89.71 PK			1.58 H	49	88.41	1.30
2	*2480.00	83.89 AV			1.58 H	49	82.59	1.30
3	2483.50	45.64 PK	74.00	-28.36	1.58 H	49	44.33	1.31
4	2483.50	34.19 AV	54.00	-19.81	1.58 H	49	32.88	1.31
5	4960.00	48.56 PK	74.00	-25.44	1.12 H	217	43.99	4.57
6	4960.00	35.21 AV	54.00	-18.79	1.12 H	217	30.64	4.57
7	7440.00	51.55 PK	74.00	-22.45	1.00 H	23	41.45	10.10
8	7440.00	37.29 AV	54.00	-16.71	1.00 H	23	27.19	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	87.43 PK			1.09 V	188	86.13	1.30
2	*2480.00	83.01 AV			1.09 V	188	81.71	1.30
3	2483.50	44.27 PK	74.00	-29.73	1.09 V	188	42.96	1.31
4	2483.50	33.63 AV	54.00	-20.37	1.09 V	188	32.32	1.31
5	4960.00	47.49 PK	74.00	-26.51	1.25 V	107	42.92	4.57
6	4960.00	34.17 AV	54.00	-19.83	1.25 V	107	29.60	4.57
7	7440.00	50.46 PK	74.00	-23.54	1.00 V	94	40.36	10.10
8	7440.00	36.22 AV	54.00	-17.78	1.00 V	94	26.12	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.

Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

No. 96, Guantai Road (Houjie Section), Houjie
Town, Dongguan City, Guangdong Province.
523942. People's Republic of China.

Tel: +86 769 8998 2098
Fax: +86 769 8593 1080
Email: customerservice.dg@bureauveritas.com

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.
Wireless Connectivity Tester	Rohde&Schwarz	CMW270	101601	Nov. 21, 22
MXA signal analyzer	Agilent	N9020A	MY49100060	Apr. 18, 23
Spectrum Analyzer	Rohde&Schwarz	FSV40	101094	Jan. 16, 23
Frequency Analyzer	Keysight	N9010B	MY60240432	Nov. 25, 22
Programmable Temperature&Humidity Chamber	Hongjin	HYC-TH-225DH	DG-180746	Feb. 16, 23
DC Source	Agilent	E3640A	MY40004013	Feb. 23, 23
Test software	ADT	ADT_RF Test Software V6.6.5.3	N/A	N/A
Test software	ADT	ADT_RF Test Software V6.6.5.4	N/A	N/A

NOTES:

1. The test was performed in RF Test Shielded Room (Baodun)
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GREGT/CHINA and NIM/CHINA.

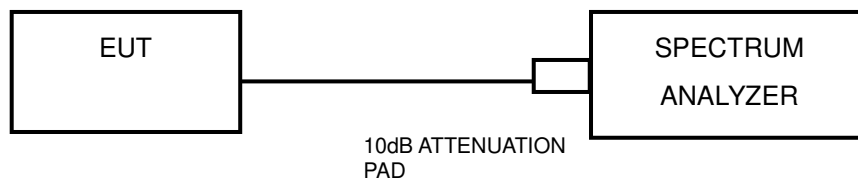
4.3.3 TEST PROCEDURE

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

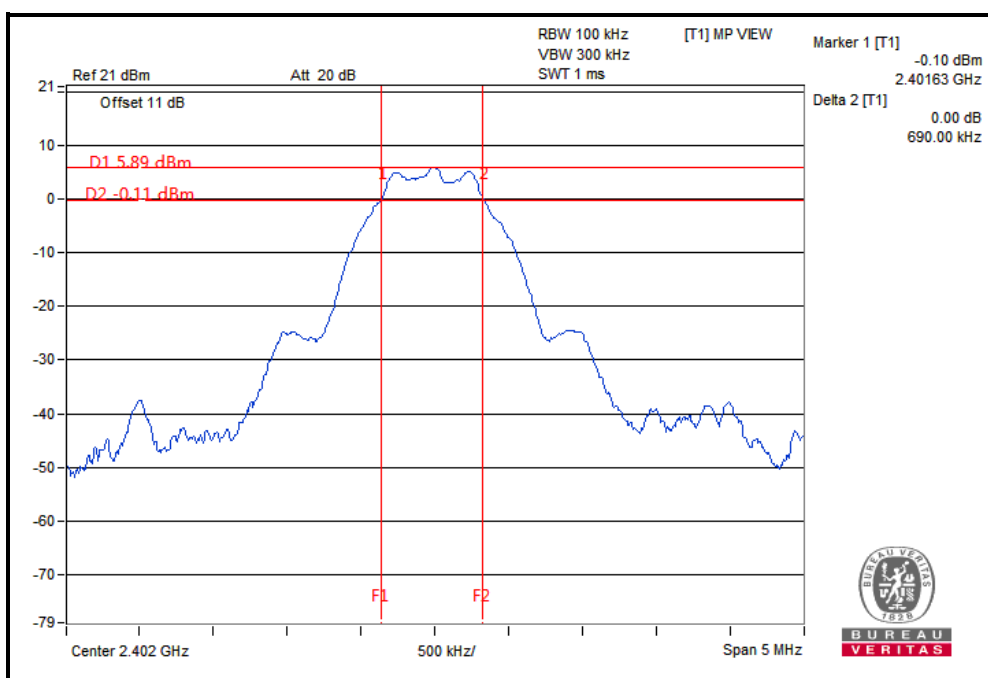
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 TEST RESULTS

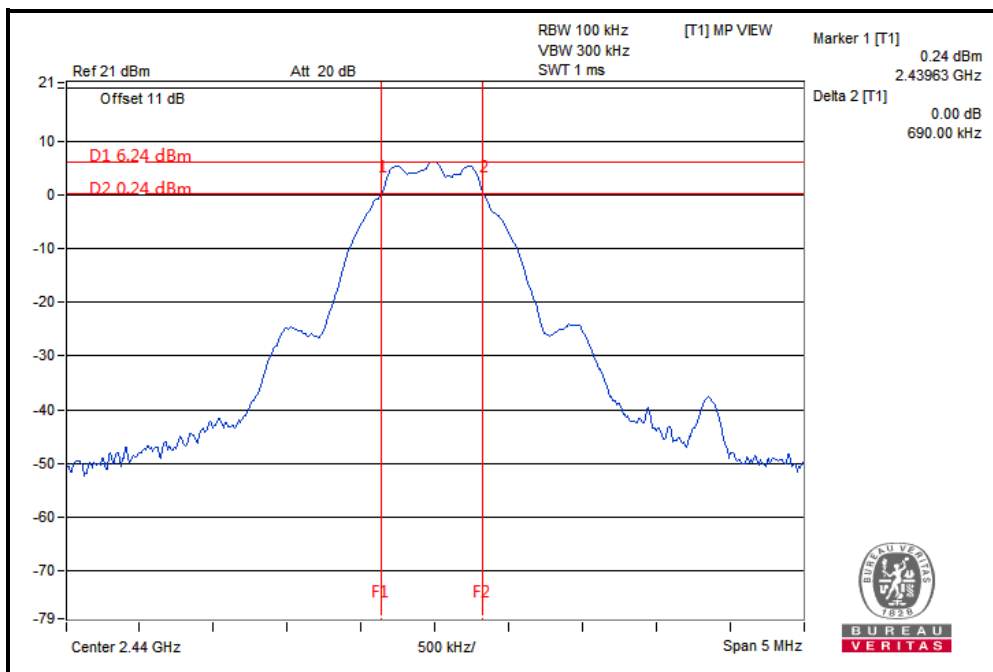
BT-LE GFSK 1MBPS

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	0.69	0.5	PASS
19	2440	0.69	0.5	PASS
39	2480	0.70	0.5	PASS

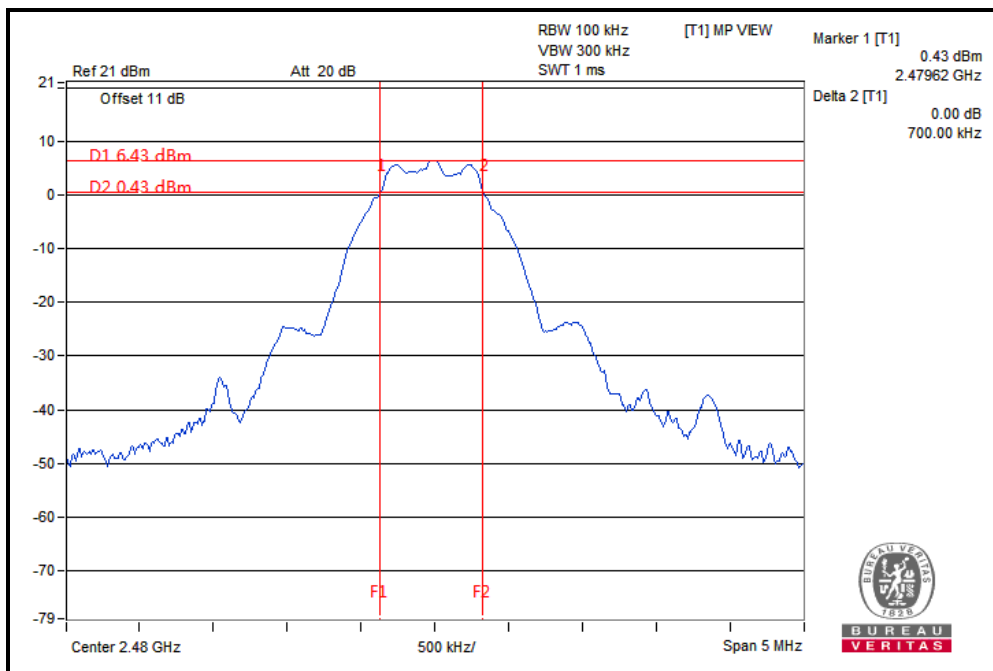
CH 0



CH 19



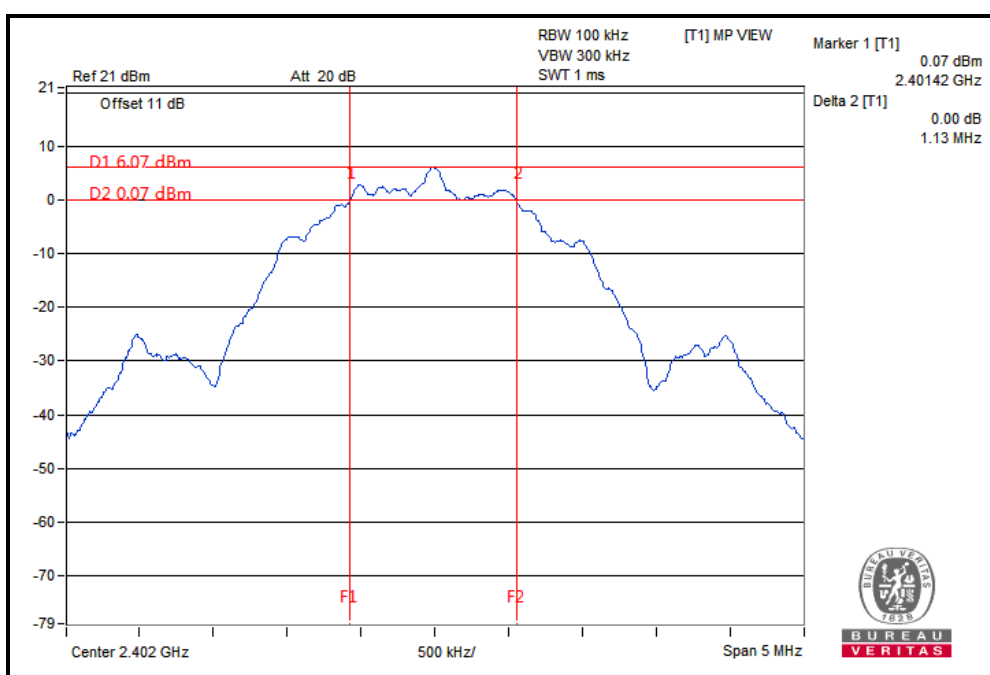
CH 39



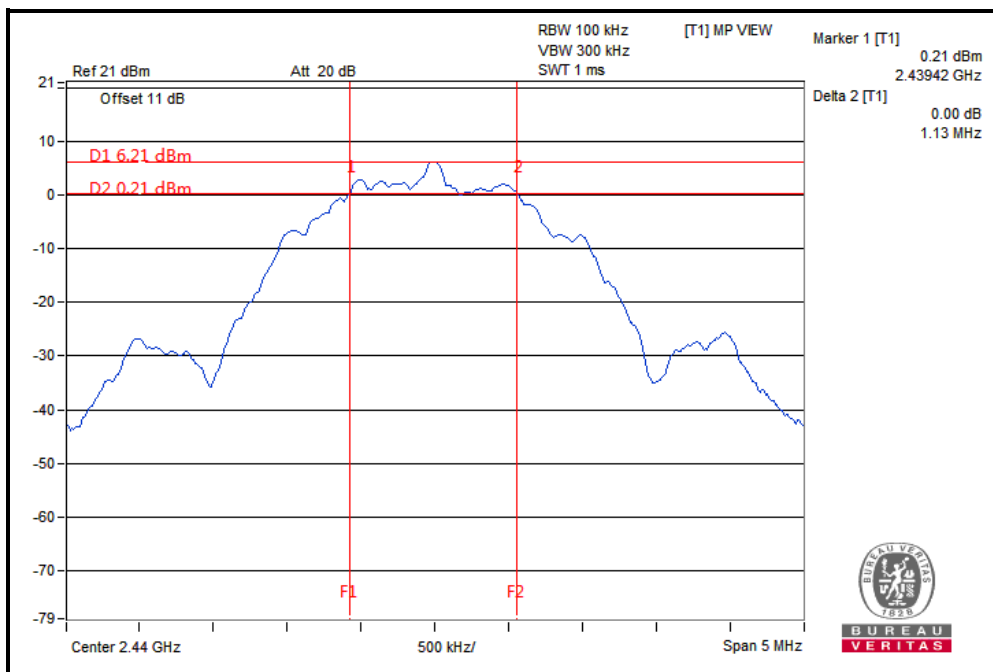
BT-LE GFSK 2MBPS

CHANNEL	CHANNEL FREQUENCY (MHz)	6dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS / FAIL
0	2402	1.13	0.5	PASS
19	2440	1.13	0.5	PASS
39	2480	1.16	0.5	PASS

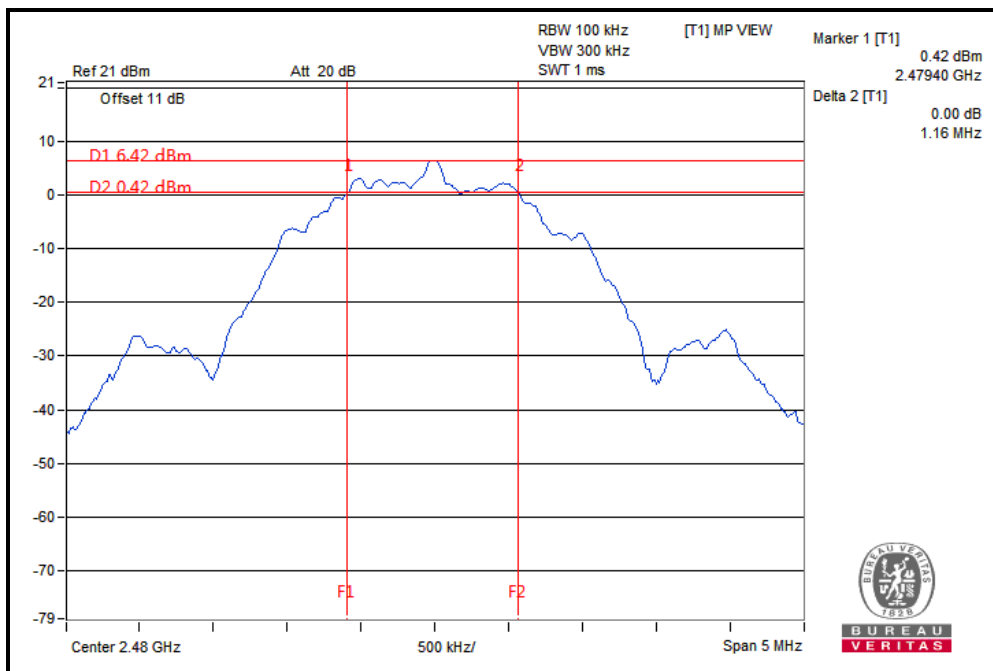
CH 0



CH 19



CH 39

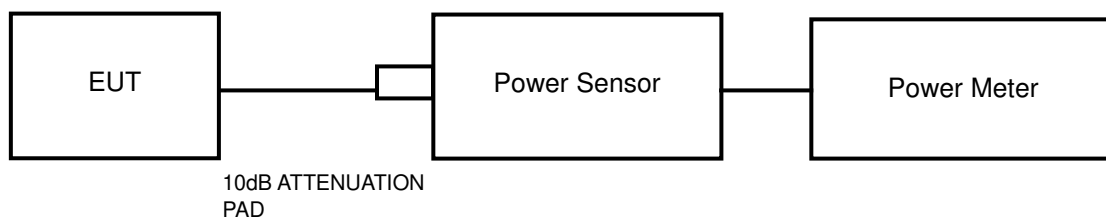


4.4 CONDUCTED OUTPUT POWER

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

Refer to section 4.3.2 to get information of above instrument.

4.4.4 TEST PROCEDURES

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

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	7.98	6.281	1	PASS
19	2440	7.99	6.295	1	PASS
39	2480	8.32	6.792	1	PASS

BT-LE GFSK 2MBPS

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER (dBm)	PEAK POWER (mW)	PEAK POWER LIMIT (W)	PASS/FAIL
0	2402	9.12	8.166	1	PASS
19	2440	9.13	8.185	1	PASS
39	2480	9.45	8.810	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)	AVERAGE POWER (mW)
0	2402	6.28	4.246
19	2440	6.29	4.256
39	2480	6.61	4.581

BT-LE GFSK 2MBPS

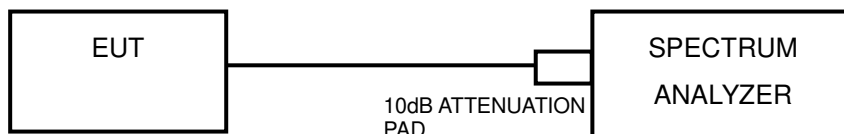
CHANNEL	CHANNEL FREQUENCY (MHz)	AVERAGE POWER (dBm)	AVERAGE POWER (mW)
0	2402	6.30	4.266
19	2440	6.31	4.276
39	2480	6.63	4.603

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 4.3.2 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 $\geq 3 \times$ 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.

4.5.5 DEVIATION FROM TEST STANDARD

No deviation.

4.5.6 EUT OPERATING CONDITION

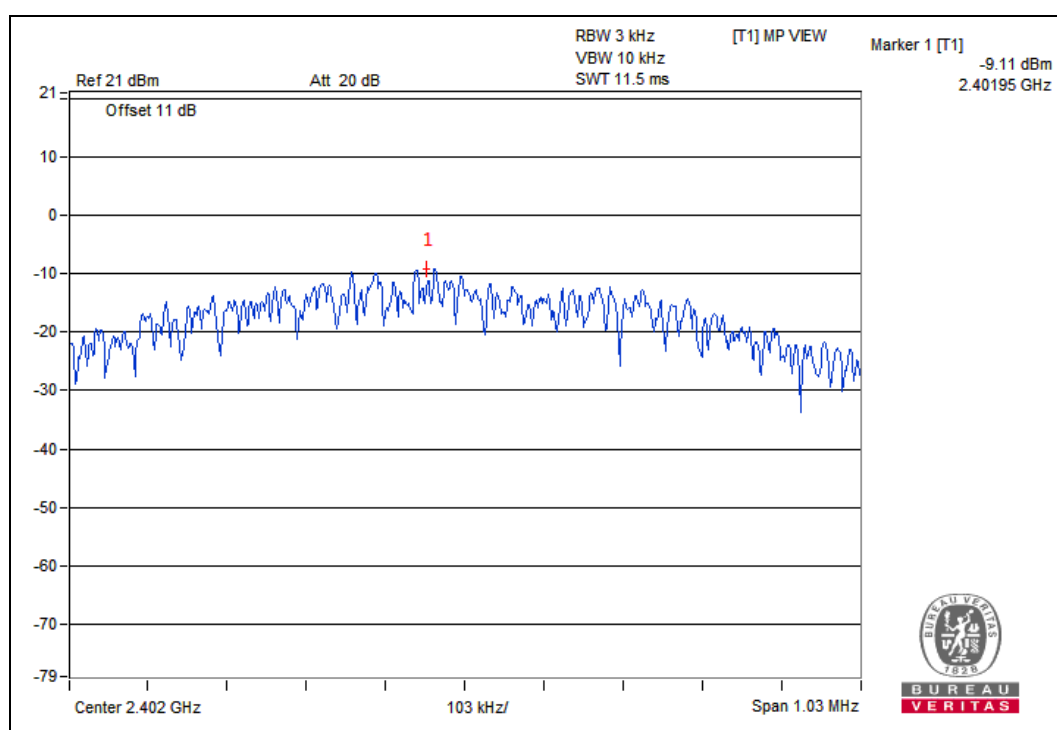
The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.5.7 TEST RESULTS

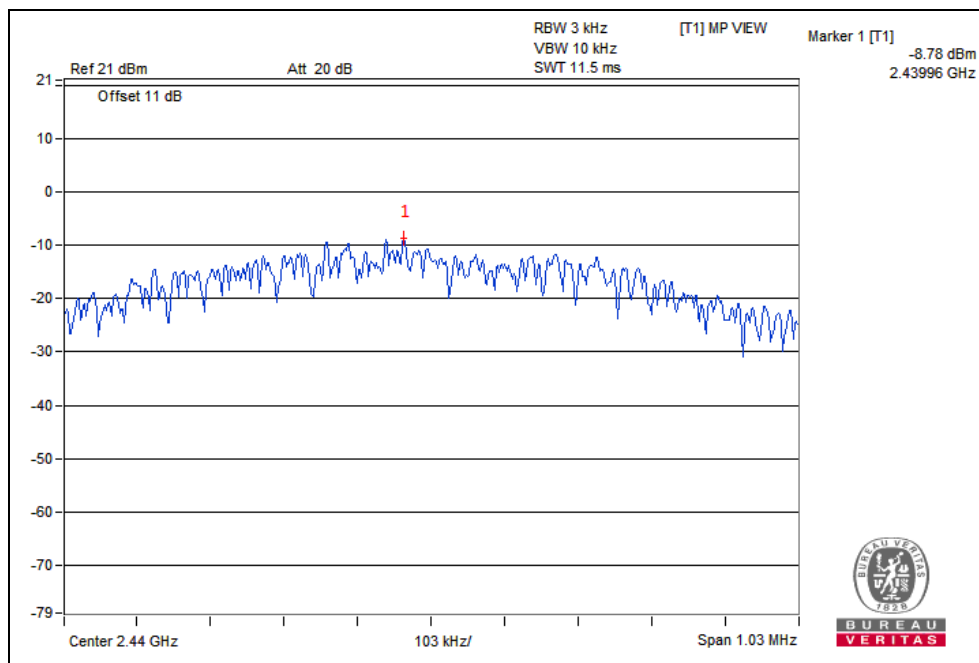
BT-LE GFSK 1MBPS

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	-9.11	8	PASS
19	2440	-8.78	8	PASS
39	2480	-9.02	8	PASS

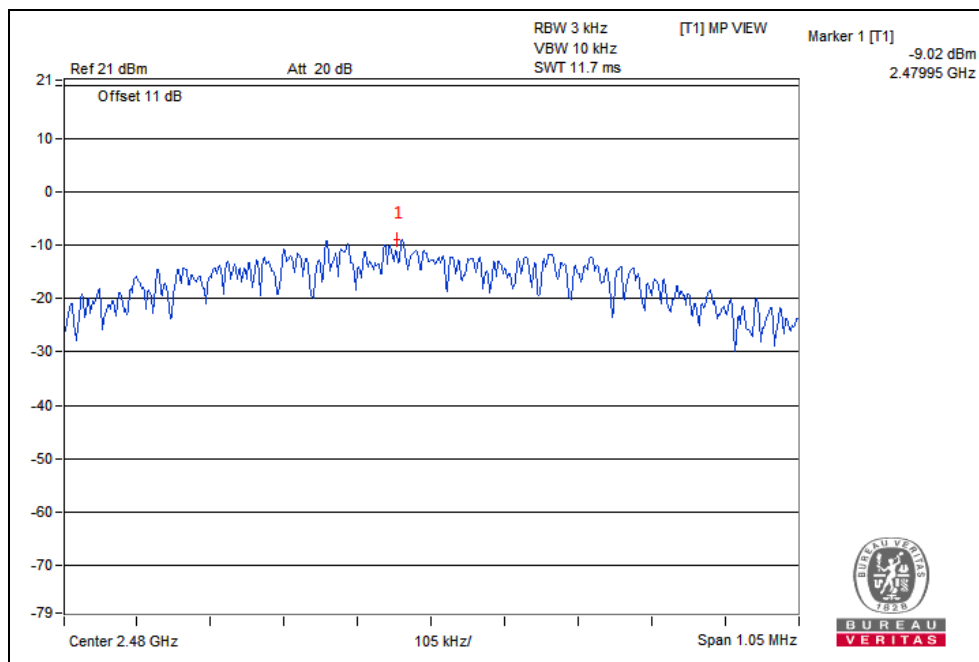
CH 0



CH 19



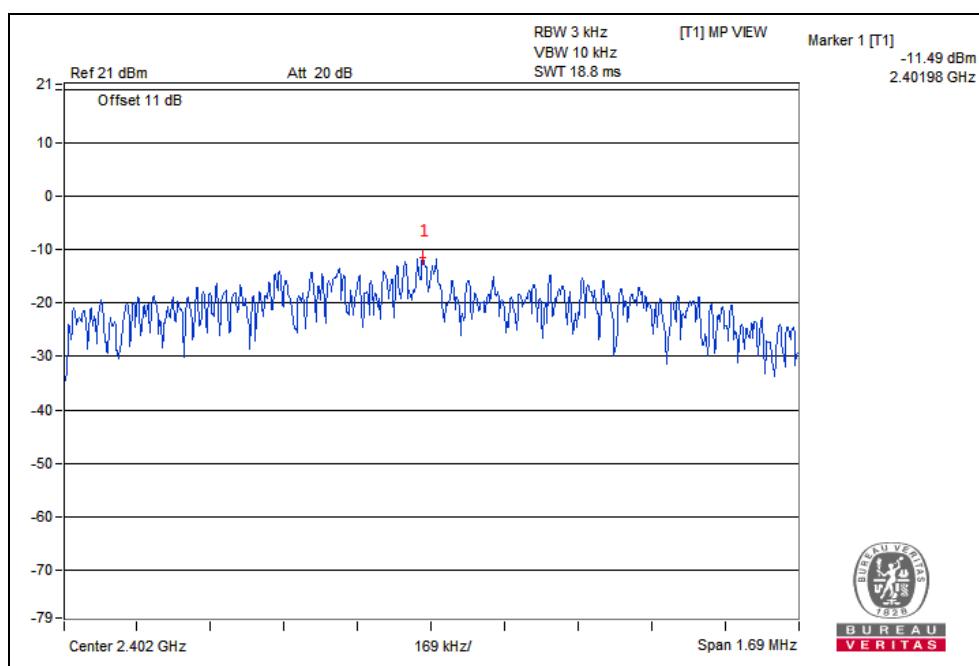
CH 39



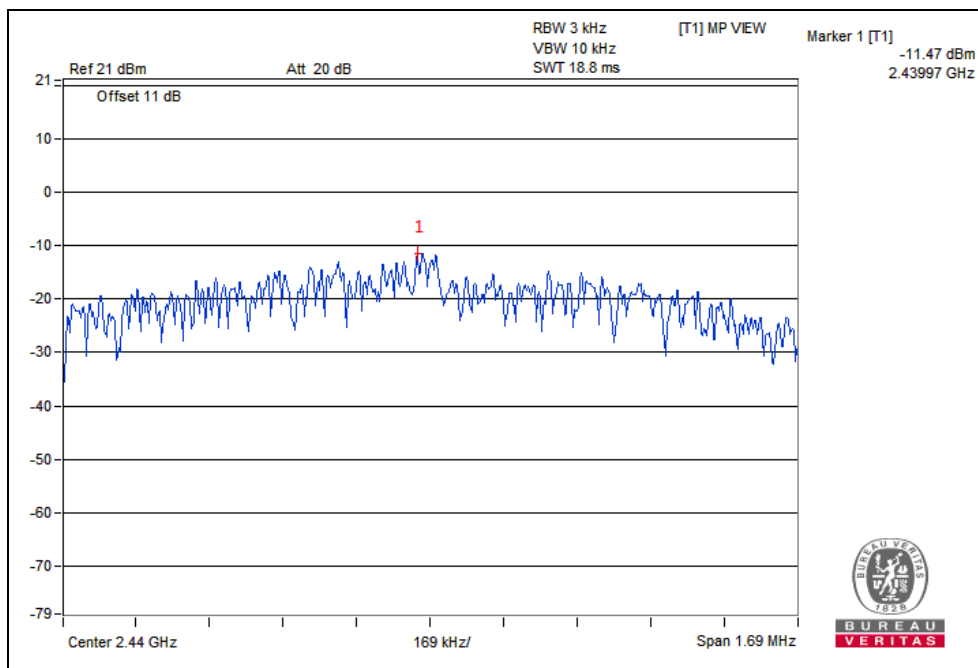
BT-LE GFSK 2MBPS

Channel	FREQ. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	PASS /FAIL
0	2402	-11.49	8	PASS
19	2440	-11.47	8	PASS
39	2480	-11.19	8	PASS

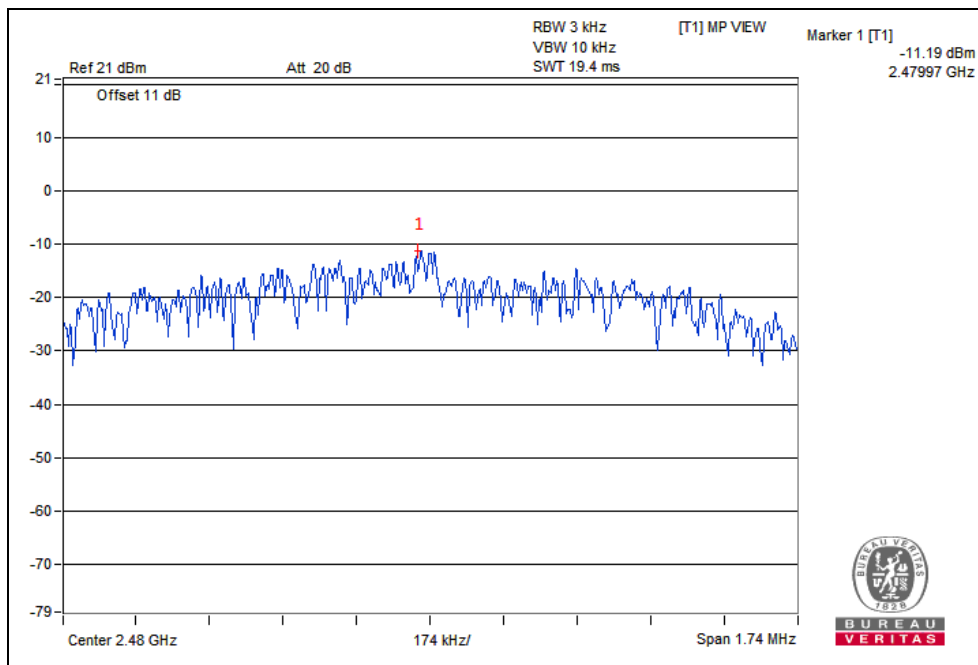
CH 0



CH 19



CH 39

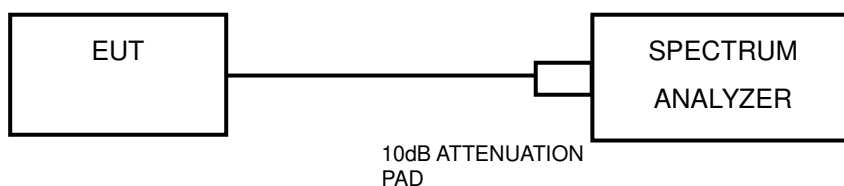


4.6 OUT OF BAND EMISSION MEASUREMENT

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 4.3.2 to get information of above instrument.

4.6.4 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.

4.6.5 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.

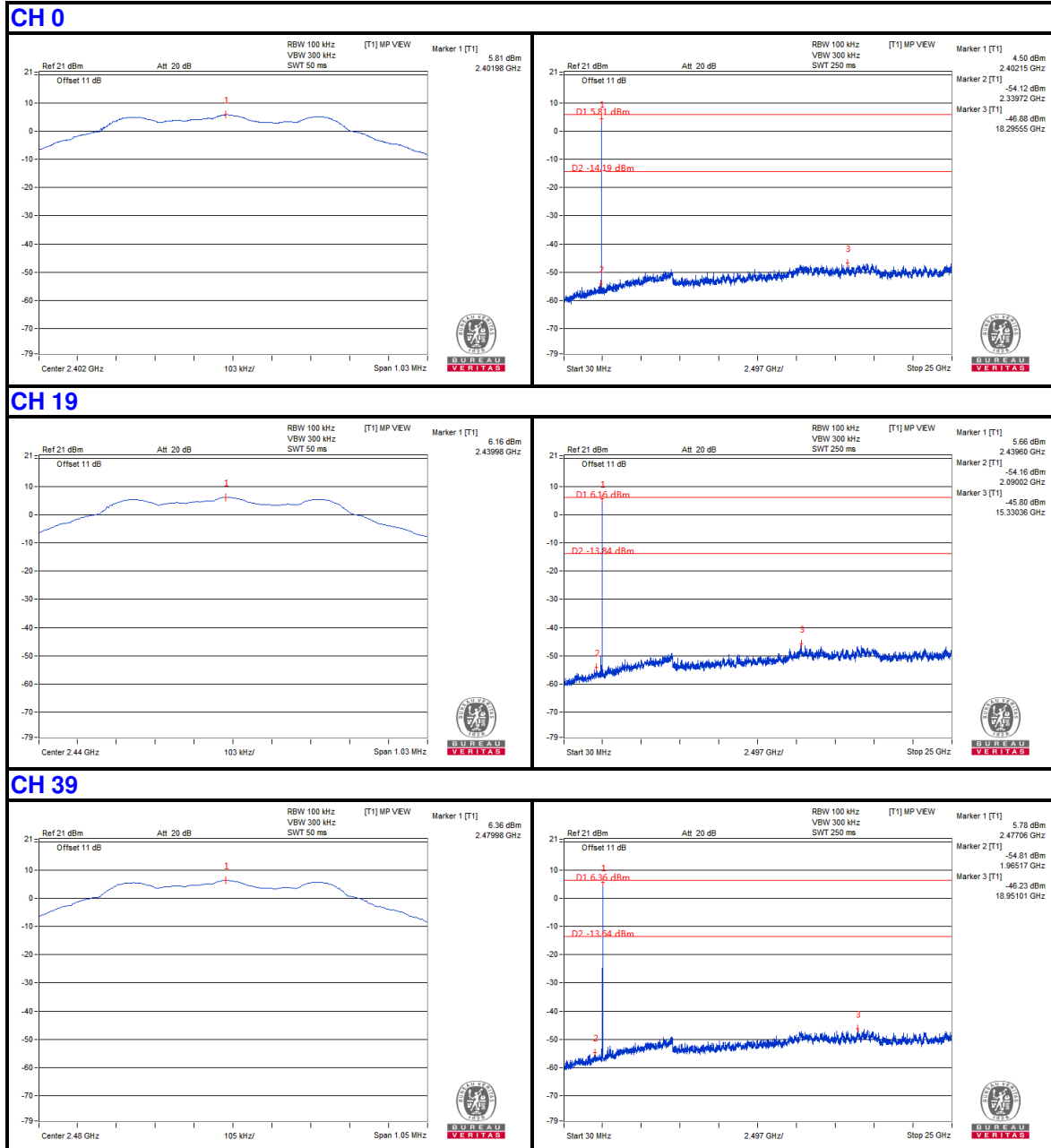


BUREAU
VERITAS

Test Report No.: RF2205WDG0306-2

4.6.7 TEST RESULTS

BT-LE GFSK 1MBPS



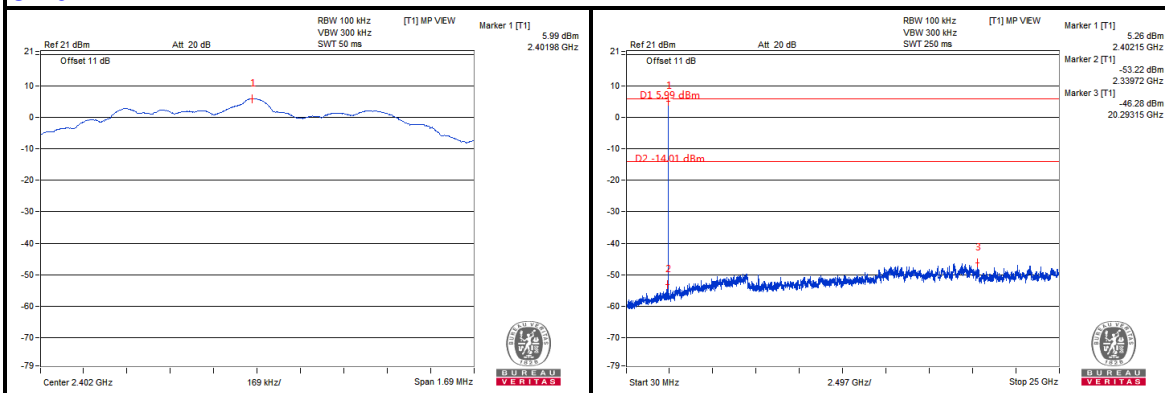
Bureau Veritas Shenzhen Co., Ltd.
Dongguan Branch

No. 96, Guantai Road (Houjie Section), Houjie
Town, Dongguan City, Guangdong Province.
523942. People's Republic of China.

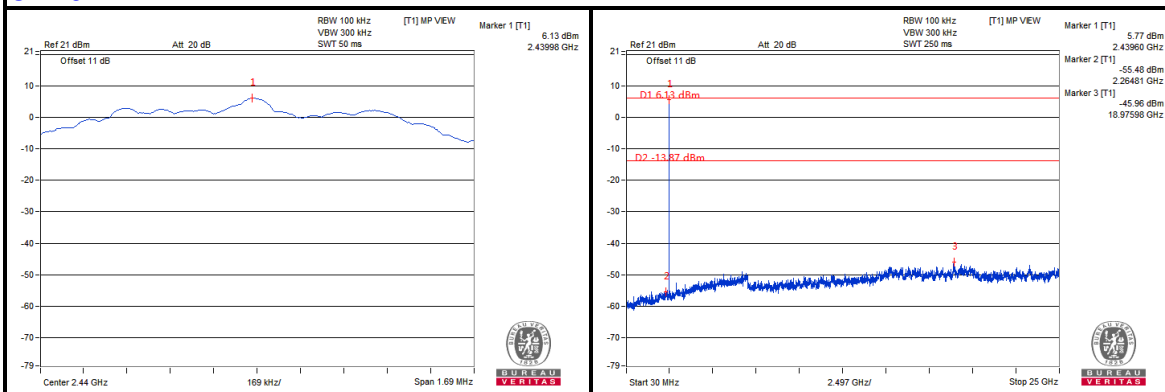
Tel: +86 769 8998 2098
Fax: +86 769 8593 1080
Email: customerservice.dg@bureauveritas.com

BT-LE GFSK 2MBPS

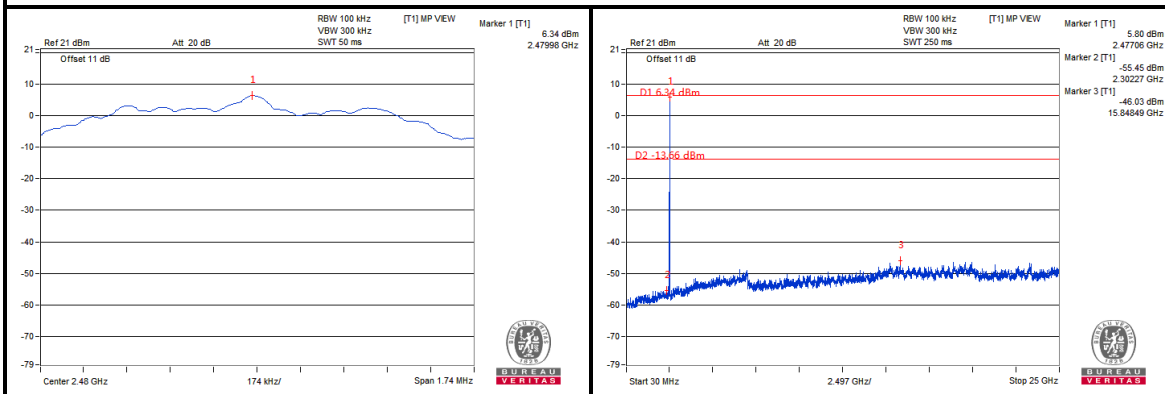
CH 0



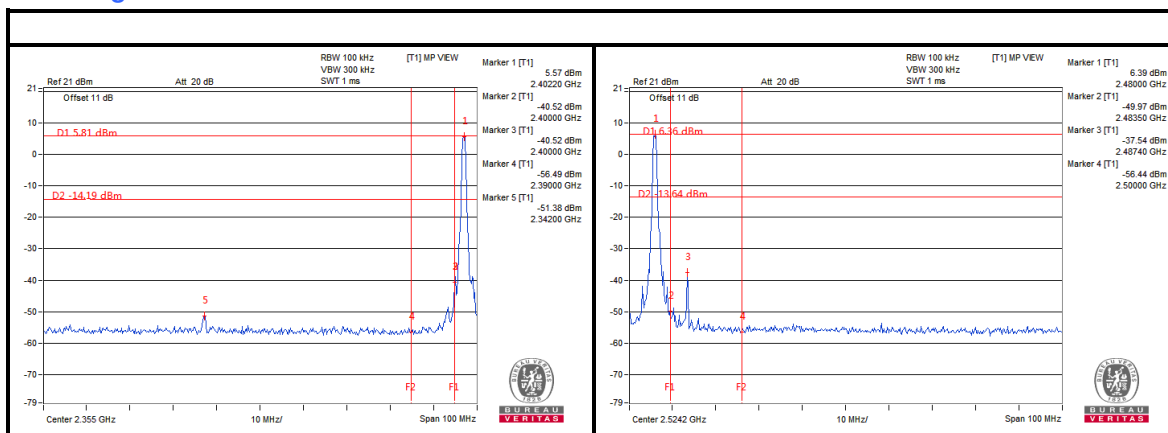
CH 19



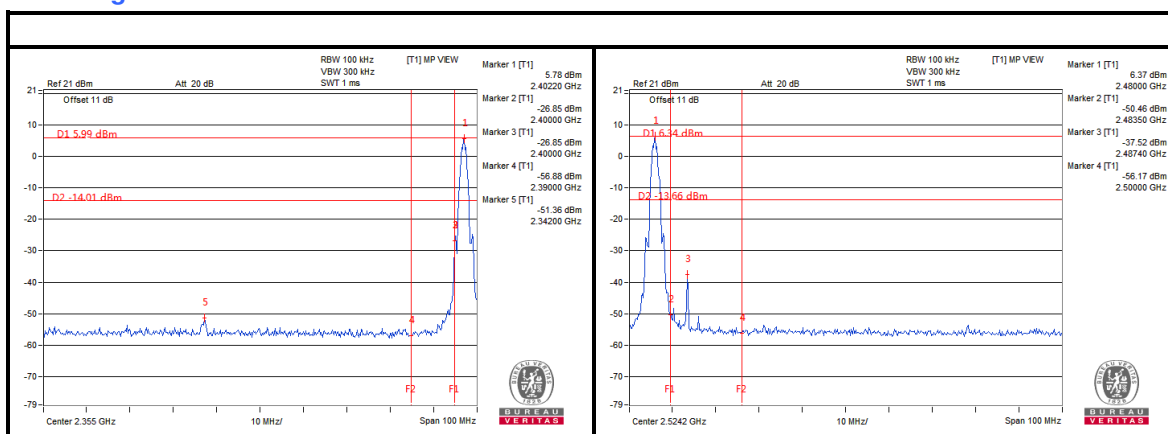
CH 39



Band Edge 1MPBS:



Band Edge 2MPBS:





Test Report No.: RF2205WDG0306-2

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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



Test Report No.: RF2205WDG0306-2

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---