

TEST REPORT

Applicant:	Belkin International, Inc.
Address:	555 S. Aviation Blvd., Suite 180, El Segundo, CA 90245, USA

Manufacturer or Supplier	Belkin International, Inc.
Address	555 S. Aviation Blvd., Suite 180, El Segundo, CA 90245, USA
Product:	Belkin Stage Wireless Microphone
Brand Name:	belkin
Model:	CTA003
Additional Model & Model Difference	N/A
Date of tests:	May 06, 2025 ~ Jun. 16, 2025

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

FCC Part 15, Subpart C, Section 15.249

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

Prepared by Eric Fang Project Engineer / EMC Department	Approved by Glyn He Assistant Manager / EMC Department
	
	Date: Jul. 01, 2025

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**BUREAU
VERITAS**

Test Report No.: RF2504WDG0387

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF2504WDG0387	Original release	Jul. 01, 2025

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.249)			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
§15.203	Antenna Requirement	PASS	No antenna connector is used
§15.207 (a)	Conducted Emission	N/A	Powered from battery
§15.205	Restricted Band of Operation	PASS	Compliant
§15.209 §15.249(a)	Radiated Emission	PASS	Compliant
§15.215(c)	20dB Bandwidth Test	PASS	Compliant

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	2.72dB
	30MHz ~ 1GMHz	4.24dB
	1GHz ~ 18GHz	4.78dB
	18GHz ~ 40GHz	4.50dB

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	Belkin Stage Wireless Microphone
MODEL NO.	CTA003
ADDITIONAL MODEL	N/A
FCC ID	K7SCTA003
NOMINAL VOLTAGE	Microphone: DC 3.7V From Li-ion Battery
MODULATION TECHNOLOGY	GFSK(1Mbps, 2Mbps)
OPERATING FREQUENCY	2402MHz ~ 2480MHz
ANTENNA TYPE	FPC Antenna, with 1.6dBi gain (Microphone)
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	See section 3.4

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.: 2504WDG0387) for detailed product photo.



3.2 DESCRIPTION OF TEST MODES

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and packet type. The worst case was found when the EUT was positioned on X axis for radiated emission. The EUT was tested under the following mode.

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE<1G	RE≥1G	PLC	BW	
A	√	√	-	√	DC 3.7V from Li-ion Battery

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

RE≥1G: Radiated Emission above 1GHz
BW: 20db bandwidth

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

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

TESTED CHANNEL	TESTED FREQUENCY
Low	2402 MHz
Middle	2440 MHz
High	2480 MHz



Channel List(GFSK 1Mbps, GFSK 2Mbps)

CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)	CHANNEL	FREQ. (MHZ)
1	2402	11	2422	21	2442	31	2462
2	2404	12	2424	22	2444	32	2464
3	2406	13	2426	23	2446	33	2466
4	2408	14	2428	24	2448	34	2468
5	2410	15	2430	25	2450	35	2470
6	2412	16	2432	26	2452	36	2472
7	2414	17	2434	27	2454	37	2474
8	2416	18	2436	28	2456	38	2476
9	2418	19	2438	29	2458	39	2478
10	2420	20	2440	30	2460	40	2480

Note: The more detailed channel, please refer to the product specifications

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE	25deg. C, 55%RH	DC 3.7V from Battery	Ryker
BW	25deg. C, 56%RH	DC 3.7V from Battery	Ryker
PLC	-	-	-

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 15.249

ANSI C63.10-2013

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.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Notebook	DELL	Latitude 5280	77K2GH2	N/A	BV Lab.
B	DC source	LONG WEI	PS-6403D	10934269	N/A	

Description	Length (m)	Shielding (Y/N)	Remark
USB-C to USB-C cable(optional)	0.15	N	-
USB-C to USB-C cable(optional)	0.15	N	DONGGUAN HANK ELECTRONICS., LTD / HKWP21813

3.5 DUTY CYCLE OF TESET SIGNAL

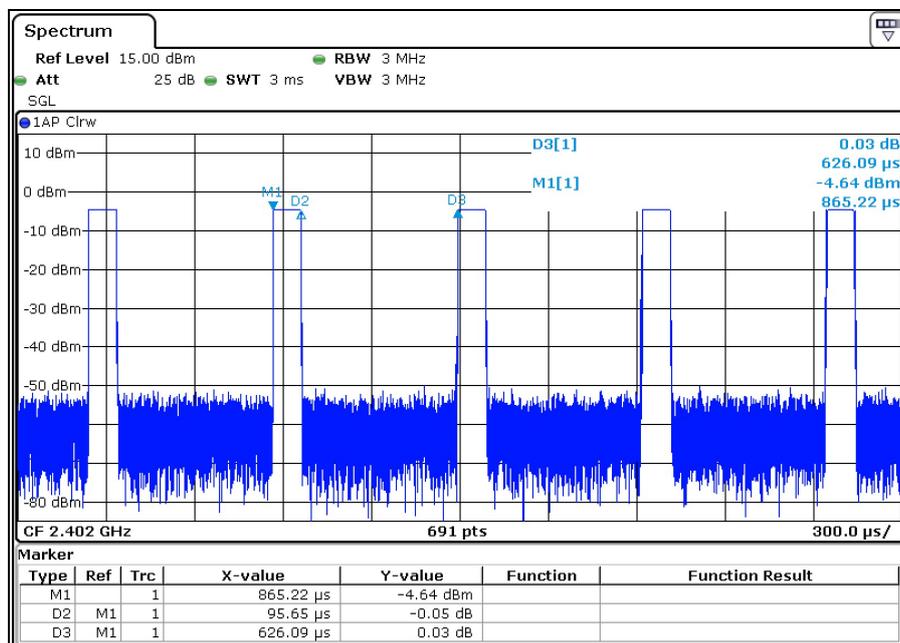
GFSK 1MHz :

$T_p = 626.09\mu s$

$T_{on} = 95.65\mu s$

Duty Cycle = $T_{on} / T_p * 100\% = 95.65/626.09 \approx 15.2774\%$

AV factor = $20 \log(\text{Duty cycle}) = 20 \log(15.2774\%) \approx -16.32 \text{ dB}$



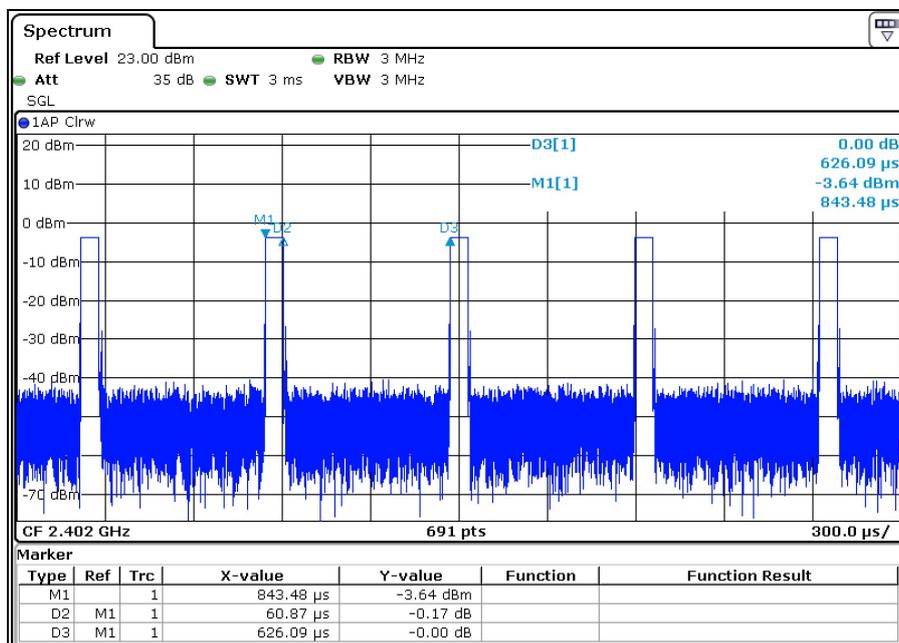
GFSK 2MHz :

$T_p = 626.09\mu s$

$T_{on} = 60.87\mu s$

Duty Cycle = $T_{on} / T_p * 100\% = 60.87/626.09 \approx 9.722\%$

AV factor = $20 \log(\text{Duty cycle}) = 20 \log(9.722\%) \approx -20.24 \text{ dB}$



4. TEST TYPES AND RESULTS

4.1 RADIATED EMISSION MEASUREMENT

4.1.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

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

According to §15.249(a), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental Frequency	Field strength of fundamental (milli-volts/meter)	Field strength of harmonics (micro-volts/meter)
902-928 MHz	50	500
2400-2483.5 MHz	50	500
5725-5875 MHz	50	500
24.0-24.25 GHz	250	2500

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply.

NOTES:

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



4.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESU40	100449	Oct. 10, 25
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV7	102331	Apr. 07, 26
Active Loop Antenna (9KHz -30MHz)	SCHWARZBECK	FMZB 1519B	1519B-045	Apr. 13, 26
Amplifier (9KHz -1GHz)	Burgeon	BPA-530	100210	Feb. 21, 26
Trilog-Broadband Antenna	SCHWARZBECK	VULB 9168	9168-554	Dec. 25, 25
Horn Antenna (1GHz -18GHz)	ETS -Lindgren	3117	0085519	Oct. 19, 25
Horn Antenna (18GHz -40GHz)	SCHWARZBECK	BBHA 9170	BBHA9170147	Apr. 12, 26
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	NSEMC003	May 17, 26
Test Software	ADT	ADT_Radiated_V7.6.15.9.2	N/A	N/A
Broadband Preamplifier (1GHz~18GHz)	SCHWARZBECK	BBV9718	305	Feb. 21, 26
Pre-Amplifier (18GHz-40GHz)	EMCI	EMC 184045	980102	Nov. 28 25
BLUETOOTH TESTER	Rohde&Schwarz	CBT32	100811	N/A

NOTES:

1. The test was performed in 966 Chamber.
2. Equipment are calibrated by calibration laboratory accredited to ISO/IEC 17025 by a mutually recognized Accreditation and all tests are conducted within a valid calibration cycle.
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. Designation Number: CN1174.
5. Test site: No. 122, Houjie Avenue West Houjie Town, Dongguan City Guangdong Province, 523960, People's Republic of China.

4.1.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 1.5 meters (above 1GHz) and 0.8 meters (below 1GHz) above the ground at a 3 meters semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. 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 1.3m above the ground.
- g. If the emission level of the EUT in peak mode was lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

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 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. Average value =PK Emission +AV Factor.
4. All modes of operation were investigated and the worst-case emissions are reported.
5. The testing of the EUT was performed on all 3 orthogonal axes; the worst-case test configuration was reported on the file test setup photo.

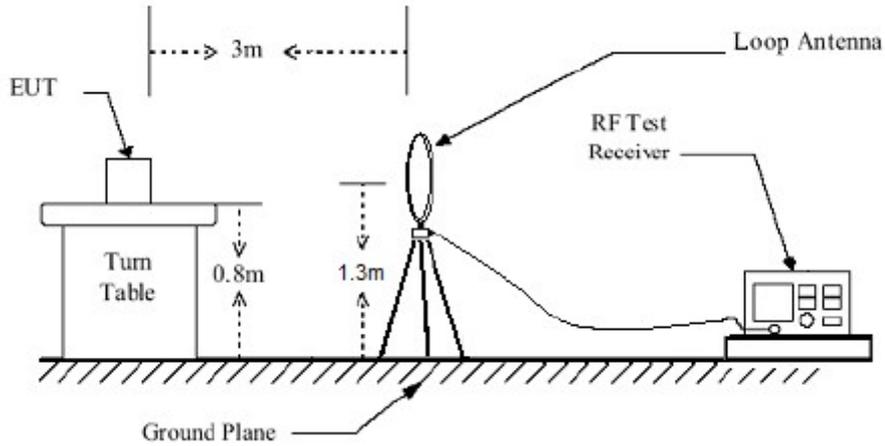
4.1.4 DEVIATION FROM TEST STANDARD

No deviation.

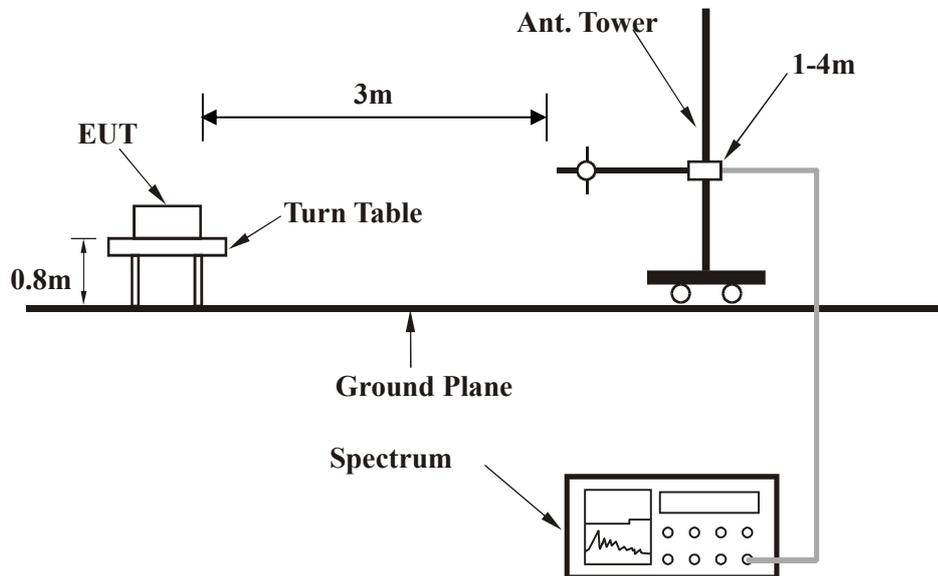


4.1.5 TEST SETUP

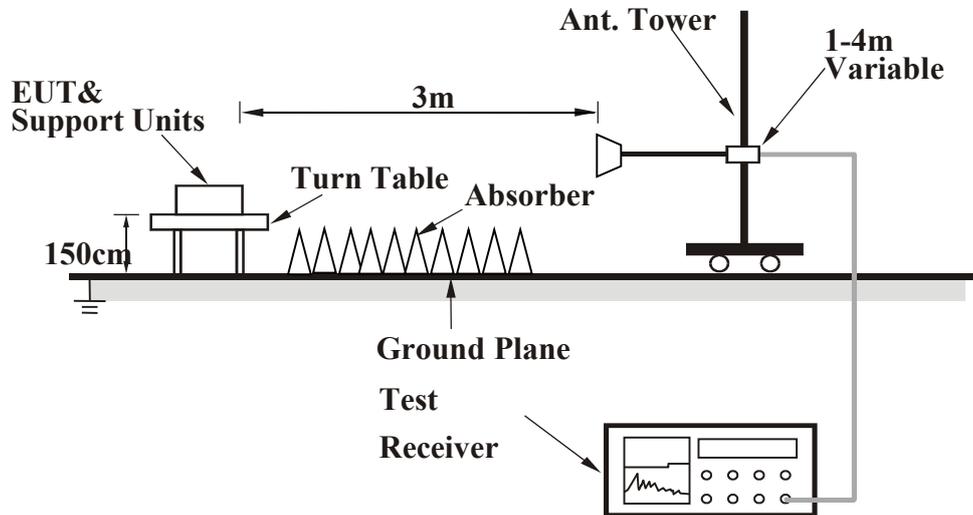
Below 30MHz test setup



Below 1GHz test setup



Above 1GHz test setup



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

4.1.6 EUT OPERATING CONDITIONS

- a) Turned on the power 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

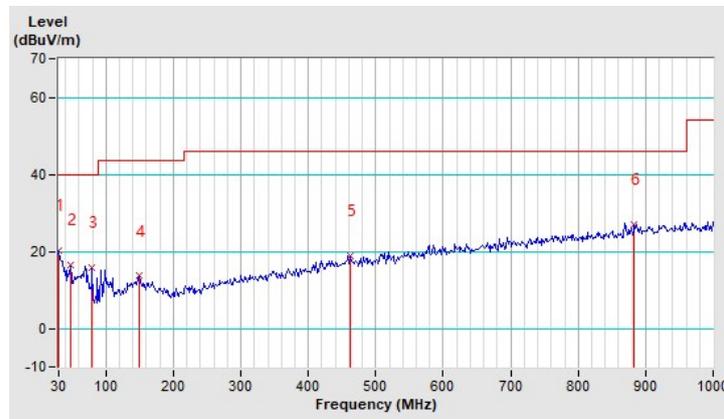
GFSK 1Mbps: BELOW 1GHz WORST-CASE DATA

CHANNEL	TX Middle Channel	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	30.00	20.3 QP	40.0	-19.8	2.18 H	175	39.4	-19.1
2	47.10	16.5 QP	40.0	-23.5	2.32 H	189	34.3	-17.8
3	79.74	15.9 QP	40.0	-24.2	2.03 H	160	38.1	-22.3
4	149.70	13.6 QP	43.5	-29.9	2.46 H	203	30.1	-16.5
5	462.15	19.0 QP	46.0	-27.0	1.86 H	144	29.7	-10.7
6	883.41	27.1 QP	46.0	-18.9	2.65 H	222	30.0	-2.9

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.



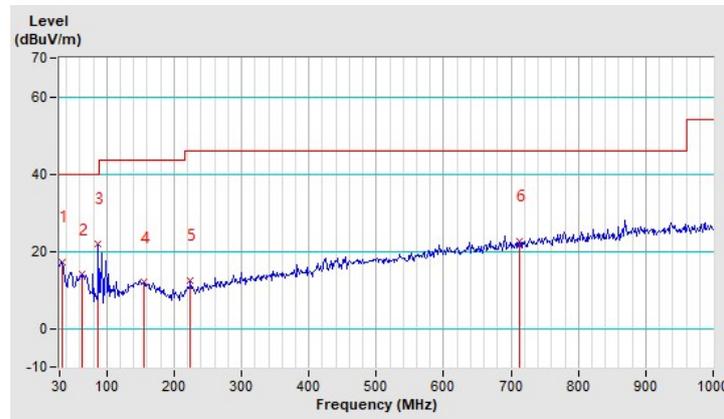


CHANNEL	TX Middle Channel	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9KHz ~ 1GHz		

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	34.66	17.3 QP	40.0	-22.8	1.00 V	233	36.2	-19.0
2	62.64	14.0 QP	40.0	-26.1	1.05 V	216	32.0	-18.1
3	87.52	22.0 QP	40.0	-18.0	1.00 V	264	45.0	-23.0
4	155.91	11.9 QP	43.5	-31.6	1.19 V	201	28.5	-16.6
5	224.31	12.5 QP	46.0	-33.5	1.32 V	188	31.1	-18.6
6	712.42	22.6 QP	46.0	-23.4	1.00 V	283	28.6	-5.9

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.





GFSK 1Mbps: ABOVE 1GHz DATA:

CHANNEL	TX Low Channel	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	2400.00	64.2 PK	74.0	-9.8	1.21 H	189	61.3	2.9
2	2400.00	47.9 AV	54.0	-6.1	1.21 H	189	45.0	2.9
3	*2402.00	86.8 PK	114.0	-27.3	1.75 H	360	83.8	2.9
4	*2402.00	70.4 AV	94.0	-23.6	1.75 H	360	67.5	2.9
5	4804.00	50.2 PK	74.0	-23.9	1.15 H	183	43.2	7.0
6	4804.00	33.8 AV	54.0	-20.2	1.15 H	183	26.9	7.0
7	7206.00	54.3 PK	74.0	-19.7	1.26 H	194	43.4	10.8
8	7206.00	37.9 AV	54.0	-16.1	1.26 H	194	27.1	10.8

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	2400.00	60.2 PK	74.0	-13.8	1.16 V	184	57.3	2.9
2	2400.00	43.8 AV	54.0	-10.2	1.16 V	184	40.9	2.9
3	*2402.00	84.4 PK	114.0	-29.6	1.44 V	112	81.5	2.9
4	*2402.00	68.1 AV	94.0	-25.9	1.44 V	112	65.2	2.9
5	4804.00	50.8 PK	74.0	-23.2	1.78 V	360	43.8	7.0
6	4804.00	34.5 AV	54.0	-19.5	1.78 V	360	27.5	7.0
7	7206.00	53.9 PK	74.0	-20.1	1.90 V	158	43.1	10.8
8	7206.00	37.6 AV	54.0	-16.4	1.90 V	158	26.8	10.8

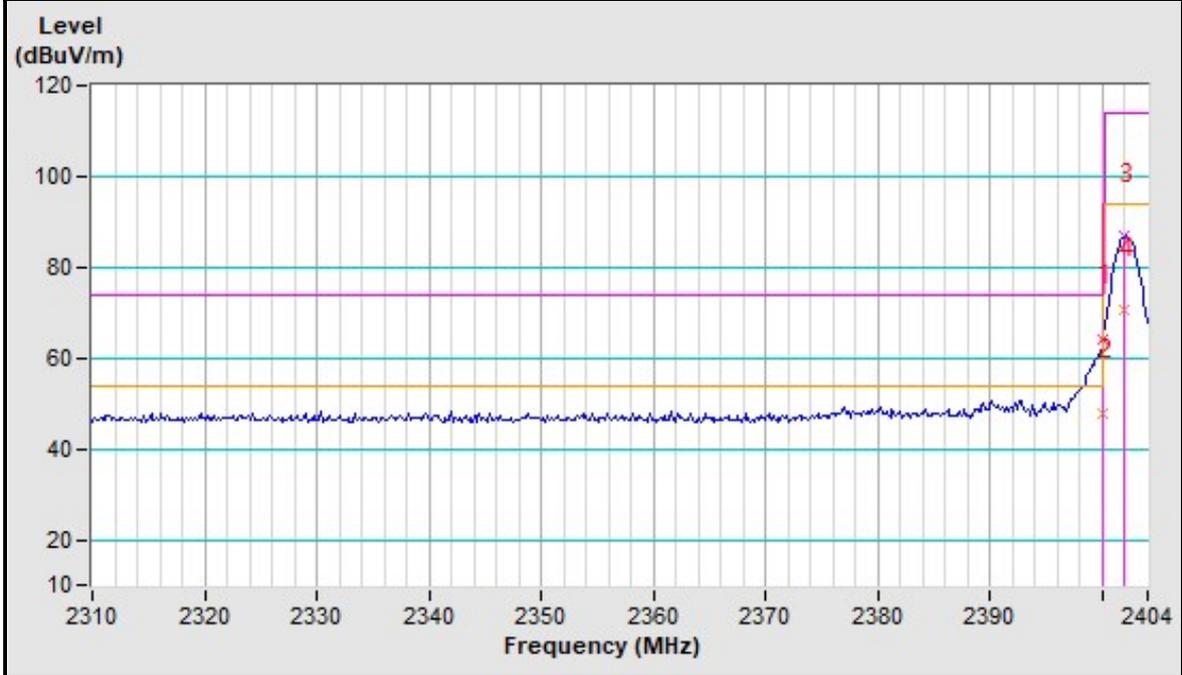
REMARK:

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. Average value =PK Emission +20*log(duty cycle)Where the duty factor is calculated from following formula:20 log (Duty cycle) = 20Log(15.2774%)≈ -16.32dB, Please see page 9 for plotted duty.

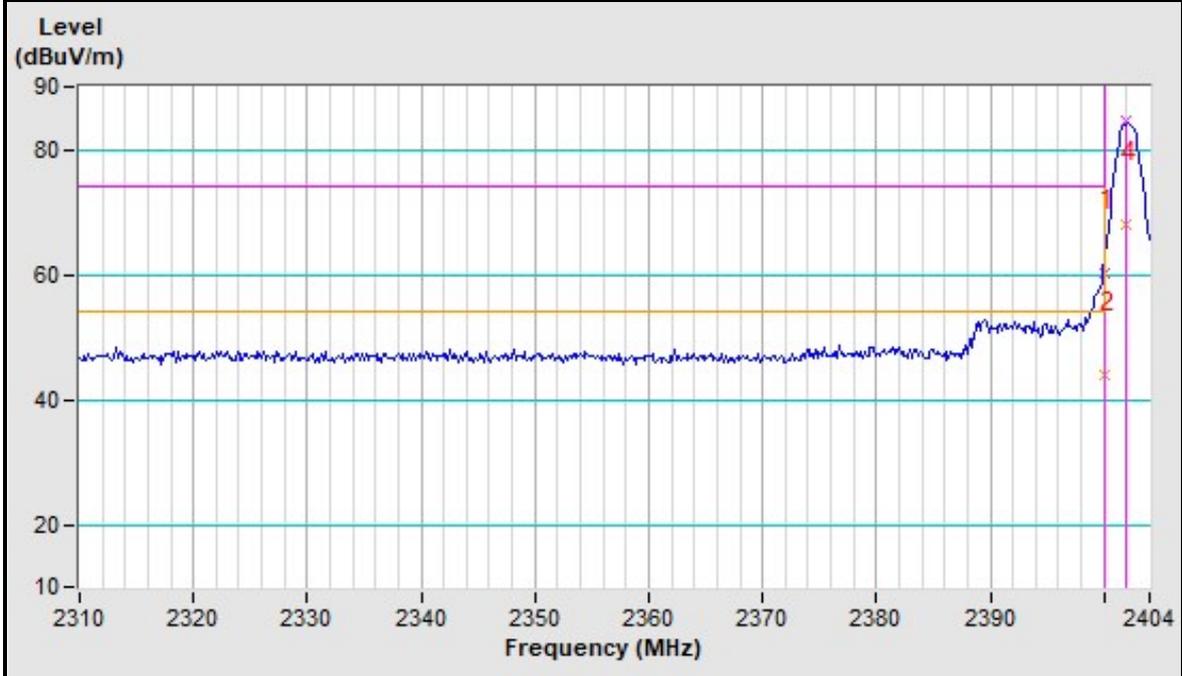


Band edge Plot

2402MHz Horizontal



2402MHz Vertical





CHANNEL	TX Middle Channel	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	92.4 PK	114.0	-21.6	3.21 H	45	89.4	3.0
2	*2440.00	76.1 AV	94.0	-17.9	3.21 H	45	73.1	3.0
3	4880.00	54.6 PK	74.0	-19.4	3.21 H	145	47.4	7.2
4	4880.00	38.3 AV	54.0	-15.7	3.21 H	145	31.1	7.2
5	7320.00	55.0 PK	74.0	-19.1	2.10 H	23	43.7	11.2
6	7320.00	38.6 AV	54.0	-15.4	2.10 H	23	27.4	11.2
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	90.8 PK	114.0	-23.2	2.31 V	45	87.8	3.0
2	*2440.00	74.5 AV	94.0	-19.5	2.31 V	45	71.5	3.0
3	4880.00	61.3 PK	74.0	-12.7	3.21 V	154	54.1	7.2
4	4880.00	45.0 AV	54.0	-9.0	3.21 V	154	37.8	7.2
5	7320.00	55.3 PK	74.0	-18.8	3.21 V	14	44.0	11.2
6	7320.00	38.9 AV	54.0	-15.1	3.21 V	14	27.7	11.2

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. Average value =PK Emission +20*log(duty cycle)Where the duty factor is calculated from following formula:20 log (Duty cycle) = 20Log(15.2774%)≈ -16.32dB, Please see page 9 for plotted duty.



CHANNEL	TX High Channel	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	91.9 PK	114.0	-22.1	3.21 H	154	88.8	3.1
2	*2480.00	75.6 AV	94.0	-18.4	3.21 H	154	72.5	3.1
3	2483.50	51.6 PK	74.0	-22.5	3.21 H	145	48.4	3.2
4	2483.50	35.2 AV	54.0	-18.8	3.21 H	145	32.1	3.2
5	4960.00	54.4 PK	74.0	-19.6	3.21 H	45	47.0	7.4
6	4960.00	38.1 AV	54.0	-15.9	3.21 H	45	30.7	7.4
7	7440.00	54.9 PK	74.0	-19.1	3.21 H	12	43.3	11.6
8	7440.00	38.6 AV	54.0	-15.5	3.21 H	12	26.9	11.6

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	90.4 PK	114.0	-23.6	2.01 V	335	87.3	3.1
2	*2480.00	74.1 AV	94.0	-19.9	2.01 V	335	71.0	3.1
3	2483.50	50.6 PK	74.0	-23.4	2.28 V	145	47.4	3.2
4	2483.50	34.3 AV	54.0	-19.7	2.28 V	145	31.1	3.2
5	4960.00	53.9 PK	74.0	-20.1	3.21 V	145	46.5	7.4
6	4960.00	37.6 AV	54.0	-16.4	3.21 V	145	30.2	7.4
7	7440.00	55.1 PK	74.0	-18.9	3.66 V	48	43.5	11.6
8	7440.00	38.8 AV	54.0	-15.2	3.66 V	48	27.2	11.6

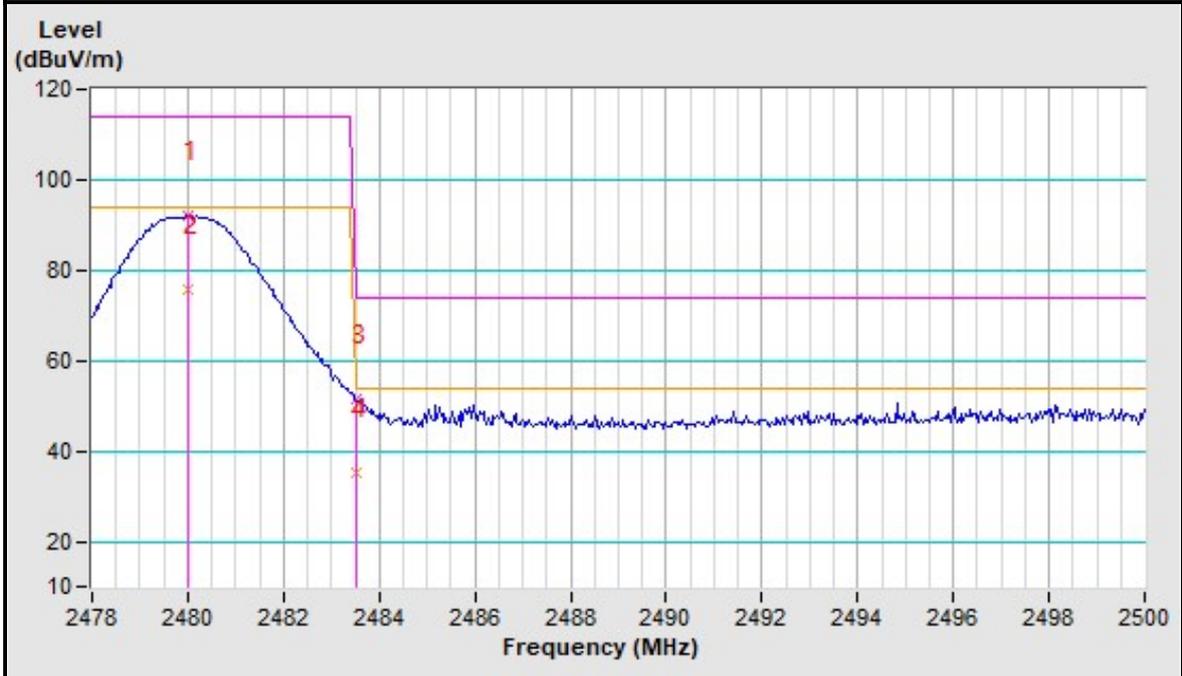
REMARK:

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. Average value =PK Emission +20*log(duty cycle)Where the duty factor is calculated from following formula:20 log (Duty cycle) = 20Log(15.2774%)≈ -16.32dB, Please see page 9 for plotted duty.

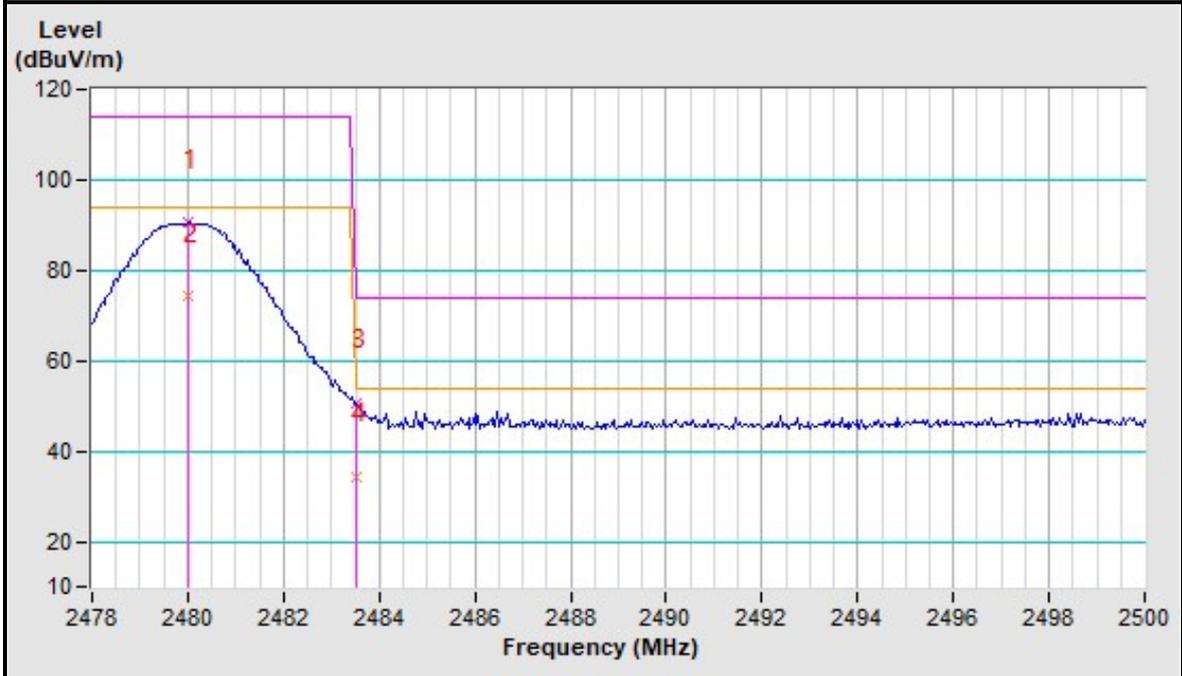


Band edge Plot

2480MHz Horizontal



2480MHz Vertical





GFSK 2Mbps: ABOVE 1GHz DATA:

CHANNEL	TX Low Channel	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	2400.00	68.4 PK	74.0	-5.7	1.35 H	111	65.4	2.9
2	2400.00	48.1 AV	54.0	-5.9	1.35 H	111	45.2	2.9
3	*2402.00	87.4 PK	114.0	-26.7	1.35 H	111	84.4	2.9
4	*2402.00	67.1 AV	94.0	-26.9	1.35 H	111	64.2	2.9
5	4804.00	50.2 PK	74.0	-23.8	1.55 H	124	43.3	7.0
6	4804.00	30.0 AV	54.0	-24.0	1.55 H	124	23.0	7.0
7	7206.00	54.1 PK	74.0	-19.9	1.11 H	187	43.3	10.8
8	7206.00	33.9 AV	54.0	-20.1	1.11 H	187	23.0	10.8

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	2400.00	65.7 PK	74.0	-8.3	1.66 V	142	62.8	2.9
2	2400.00	45.4 AV	54.0	-8.6	1.66 V	142	42.5	2.9
3	*2402.00	84.5 PK	114.0	-29.5	1.51 V	27	81.6	2.9
4	*2402.00	64.3 AV	94.0	-29.7	1.51 V	27	61.4	2.9
5	4804.00	50.6 PK	74.0	-23.4	1.60 V	136	43.6	7.0
6	4804.00	30.4 AV	54.0	-23.6	1.60 V	136	23.4	7.0
7	7206.00	54.0 PK	74.0	-20.0	1.01 V	77	43.2	10.8
8	7206.00	33.8 AV	54.0	-20.2	1.01 V	77	22.9	10.8

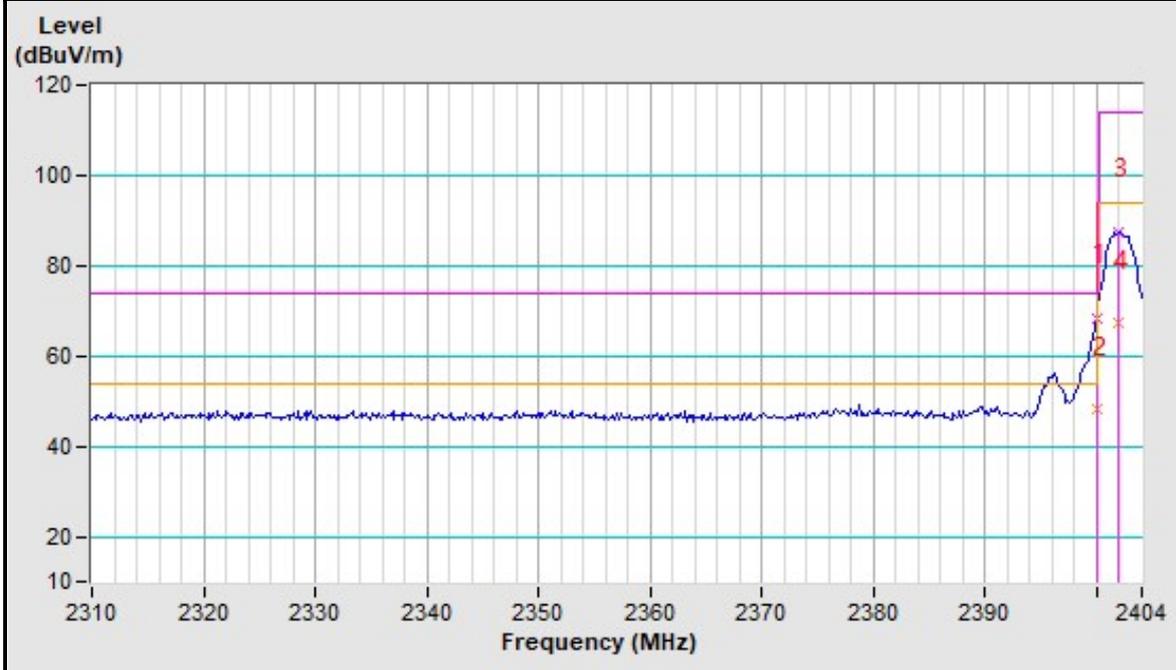
REMARK:

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. Average value =PK Emission +20*log(duty cycle)Where the duty factor is calculated from following formula:20 log (Duty cycle) = 20Log(9.722%)≈ -20.24dB, Please see page 10 for plotted duty.

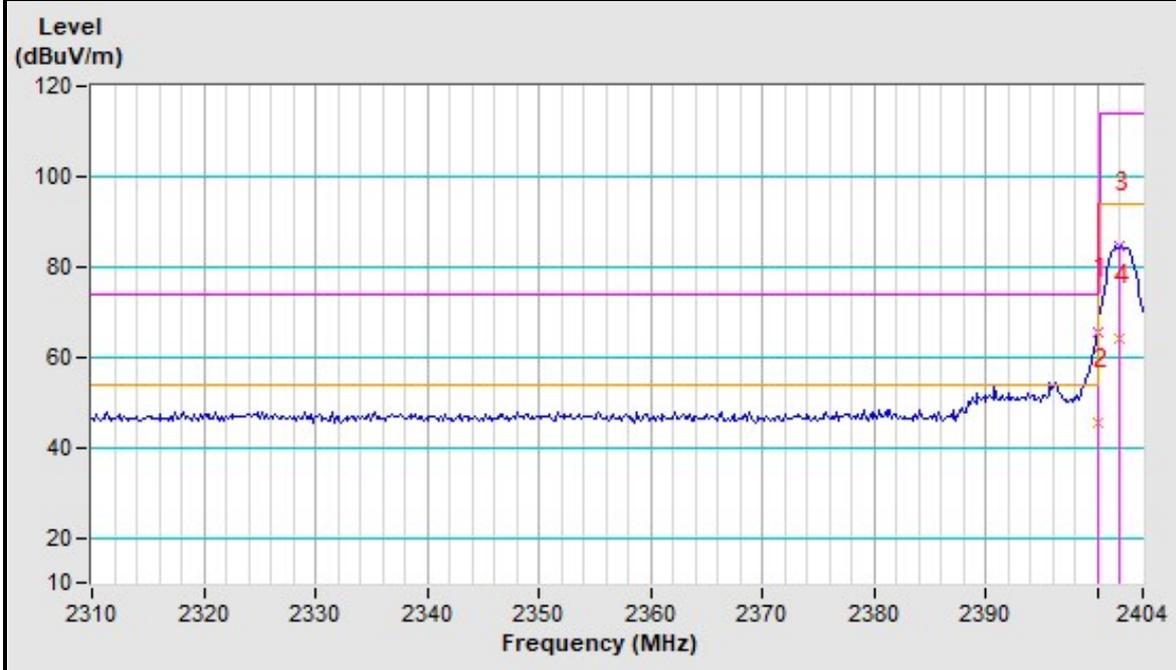


Band edge Plot

2402MHz Horizontal



2402MHz Vertical





CHANNEL	TX Middle Channel	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	91.8 PK	114.0	-22.2	3.21 H	45	88.8	3.0
2	*2440.00	71.6 AV	94.0	-22.4	3.21 H	45	68.6	3.0
3	4880.00	54.6 PK	74.0	-19.5	3.88 H	78	47.4	7.2
4	4880.00	34.3 AV	54.0	-19.7	3.88 H	78	27.1	7.2
5	7320.00	54.5 PK	74.0	-19.5	3.19 H	87	43.3	11.2
6	7320.00	34.3 AV	54.0	-19.7	3.19 H	87	23.1	11.2

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	90.7 PK	114.0	-23.3	3.21 V	45	87.7	3.0
2	*2440.00	70.5 AV	94.0	-23.6	3.21 V	45	67.4	3.0
3	4880.00	53.9 PK	74.0	-20.1	3.21 V	144	46.7	7.2
4	4880.00	33.6 AV	54.0	-20.4	3.21 V	144	26.4	7.2
5	7320.00	56.1 PK	74.0	-17.9	2.22 V	57	44.9	11.2
6	7320.00	35.9 AV	54.0	-18.1	2.22 V	57	24.7	11.2

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. Average value =PK Emission +20*log(duty cycle)Where the duty factor is calculated from following formula:20 log (Duty cycle) = 20Log(9.722%)≈ -20.24dB, Please see page 10 for plotted duty.



CHANNEL	TX High Channel	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	92.0 PK	114.0	-22.0	3.27 H	48	88.9	3.1
2	*2480.00	71.8 AV	94.0	-22.2	3.27 H	48	68.6	3.1
3	2483.50	54.2 PK	74.0	-19.8	1.52 H	224	51.0	3.2
4	2483.50	33.9 AV	54.0	-20.1	1.52 H	224	30.8	3.2
5	2485.65	56.3 PK	74.0	-17.7	1.01 H	0	53.2	3.2
6	2485.65	36.1 AV	54.0	-17.9	1.01 H	0	32.9	3.2
7	4960.00	54.2 PK	74.0	-19.9	3.68 H	48	46.7	7.4
8	4960.00	33.9 AV	54.0	-20.1	3.68 H	48	26.5	7.4
9	7440.00	54.1 PK	74.0	-19.9	3.94 H	360	42.5	11.6
10	7440.00	33.8 AV	54.0	-20.2	3.94 H	360	22.2	11.6

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	90.4 PK	114.0	-23.6	3.21 V	88	87.3	3.1
2	*2480.00	70.2 AV	94.0	-23.8	3.21 V	88	67.0	3.1
3	2483.50	53.0 PK	74.0	-21.0	1.57 V	44	49.8	3.2
4	2483.50	32.7 AV	54.0	-21.3	1.57 V	44	29.6	3.2
5	4960.00	55.6 PK	74.0	-18.4	1.32 V	55	48.2	7.4
6	4960.00	35.3 AV	54.0	-18.7	1.32 V	55	27.9	7.4
7	7440.00	56.1 PK	74.0	-17.9	1.56 V	15	44.5	11.6
8	7440.00	35.9 AV	54.0	-18.1	1.56 V	15	24.3	11.6

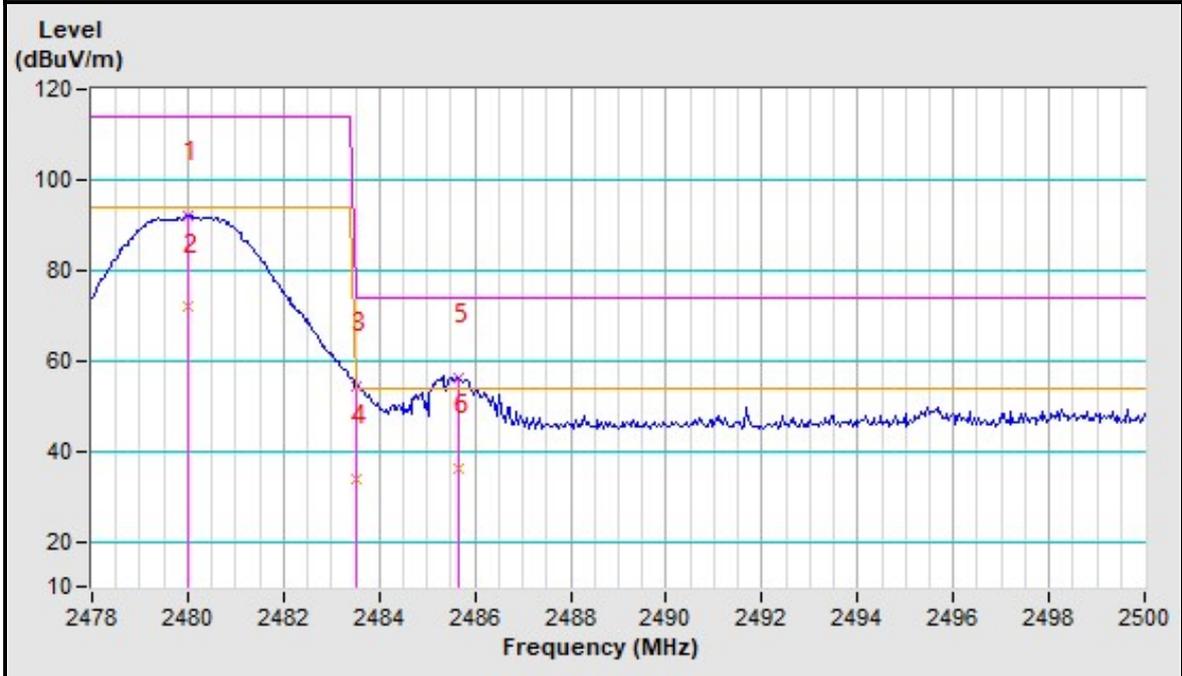
REMARK:

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. Average value =PK Emission +20*log(duty cycle)Where the duty factor is calculated from following formula:20 log (Duty cycle) = 20Log(9.722%)≈ -20.24dB, Please see page 10 for plotted duty.

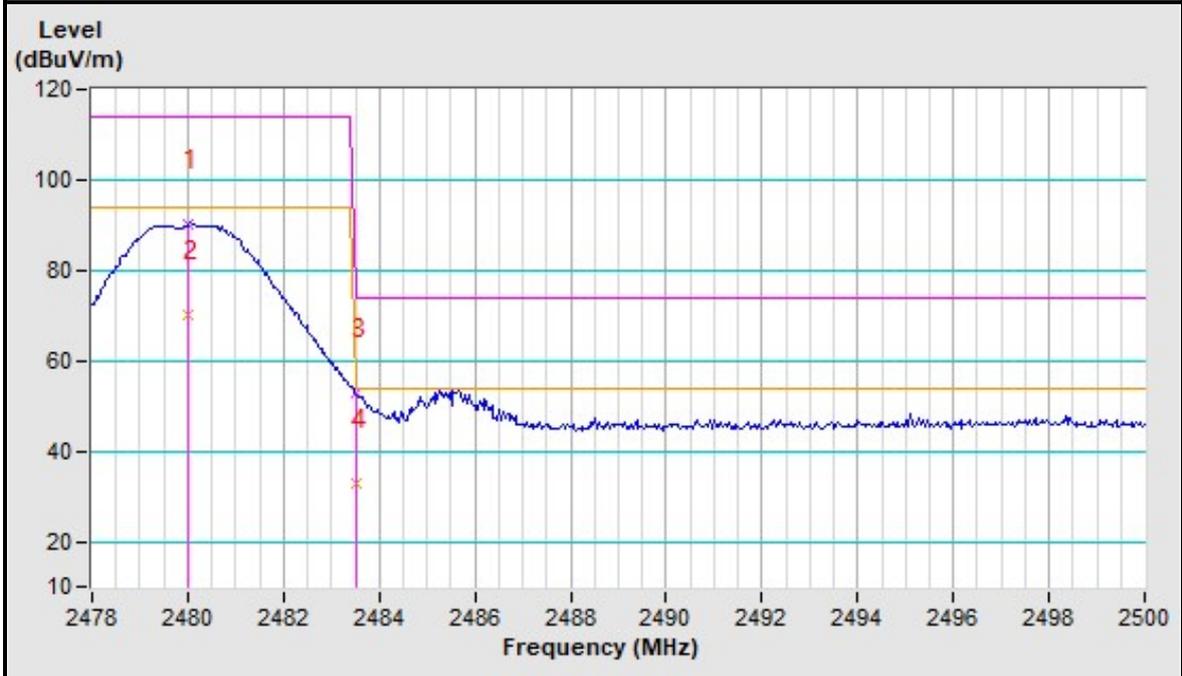


Band edge Plot

2480MHz Horizontal



2480MHz Vertical



4.2 20dB BANDWIDTH MEASUREMENT

4.2.1 LIMITS OF 20dB BANDWIDTH MEASUREMENT

According to FCC 15.215(c), must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

4.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Next Cal.
Power Sensor	Keysight	U2021XA	MY57320002	Apr. 07, 26
Digital Multimeter	FLUKE	15B	A1220010DG	N/A
Humid & Temp Programmable Tester	Haida	HD-225T	110807201	Oct. 10, 25
Oscilloscope	Agilent	DSO9254A	MY51260160	Jul. 07, 25
Signal and Spectrum Analyzer	Rohde&Schwarz	FSV40	101094	Oct. 09, 25
Signal Generator	Agilent	N5183A	MY50140980	Jul. 11, 25
MXG-B RF Vector Signal Generator	Keysight	N5182B	MY56200288	Jul. 11, 25
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 Test Shielded Room.
2. Equipment are calibrated by calibration laboratory accredited to ISO/IEC 17025 by a mutually recognized Accreditation and all tests are conducted within a valid calibration cycle.
3. Test site: No. 122, Houjie Avenue West Houjie Town, Dongguan City Guangdong Province, 523960, People's Republic of China.

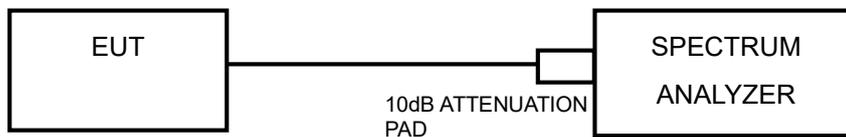
4.2.3 TEST PROCEDURE

- a. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- b. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
- c. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
- d. Repeat above procedures until all frequencies measured were complete.

4.2.4 DEVIATION FROM TEST STANDARD

No deviation.

4.2.5 TEST SETUP



4.2.6 EUT OPERATING CONDITIONS

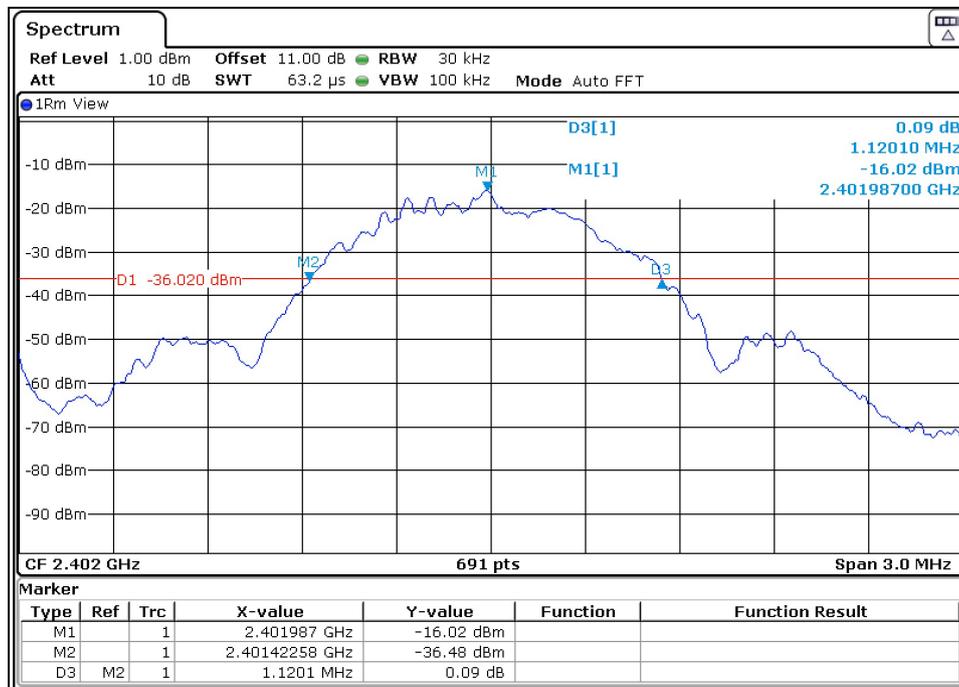
- a) Turned on the power of all equipment.
- b) EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.

4.2.7 TEST RESULTS

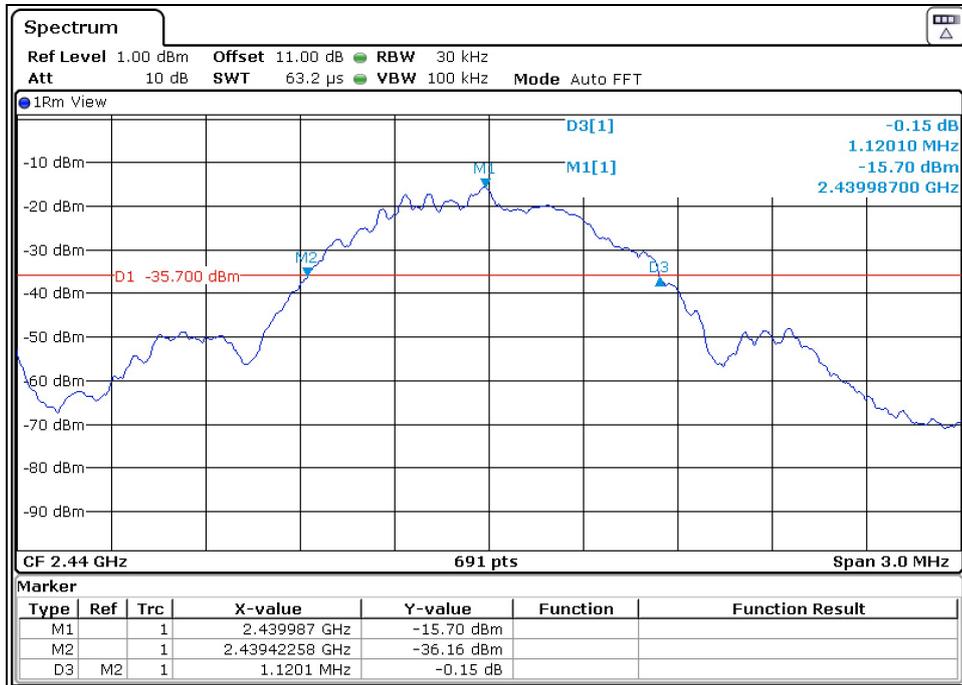
GFSK 1Mbps:

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
Low	2402	1.1201
Middle	2440	1.1201
High	2480	1.1201

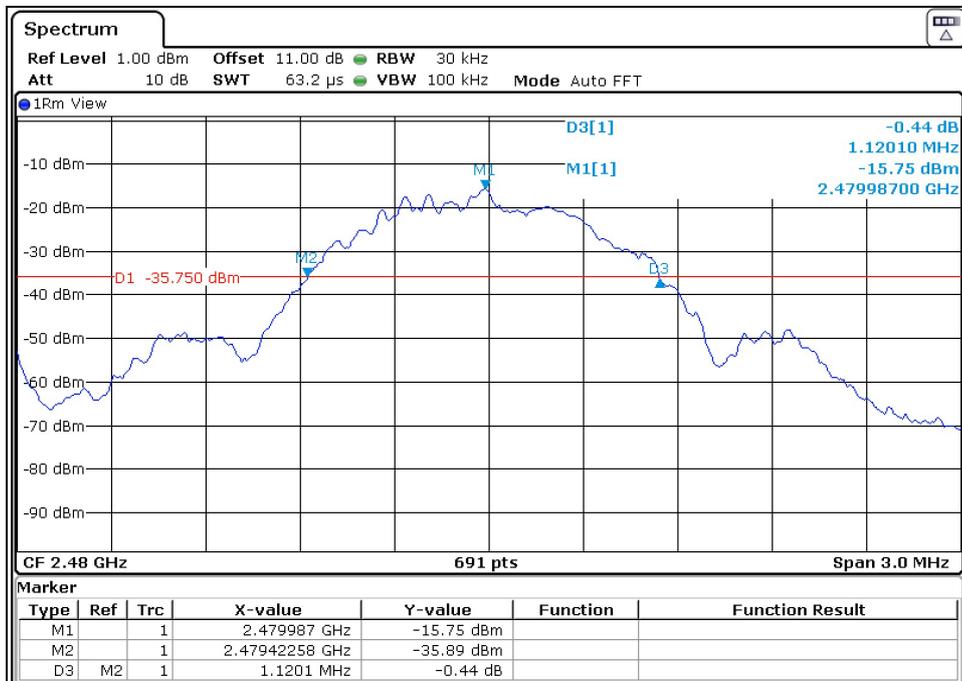
Test Data: Low channel



Test Data: Middle channel



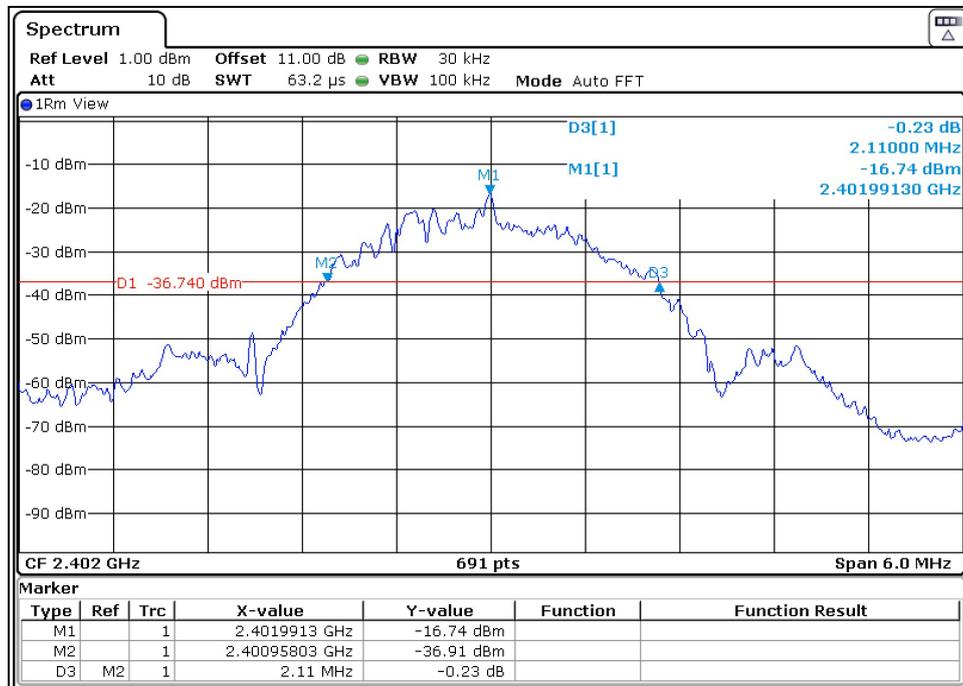
Test Data: High channel



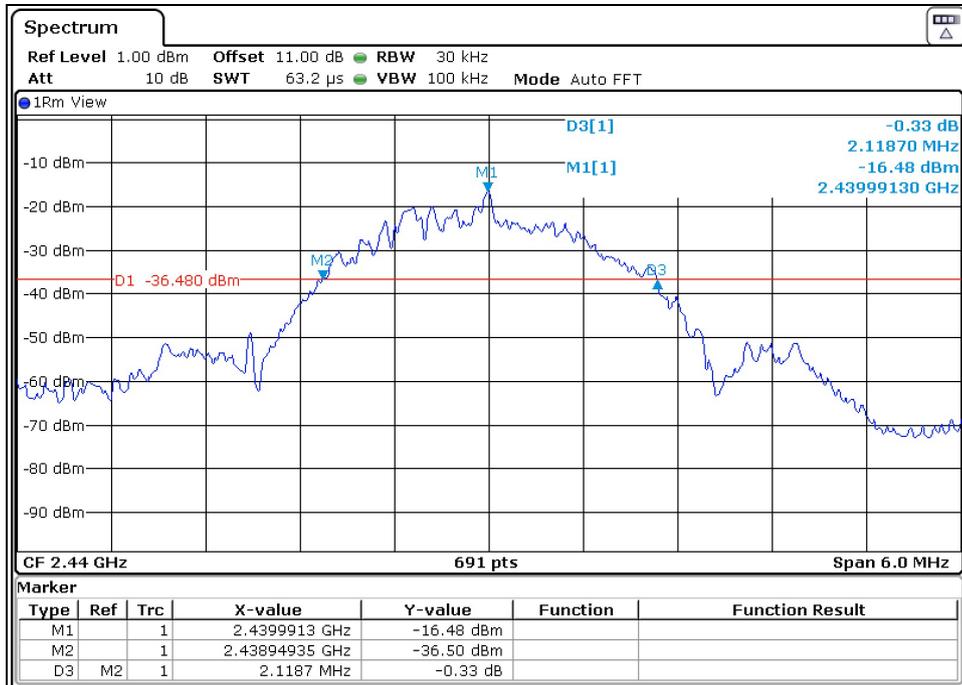
GFSK 2Mbps:

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (MHz)
Low	2402	2.1100
Middle	2440	2.1187
High	2480	2.1274

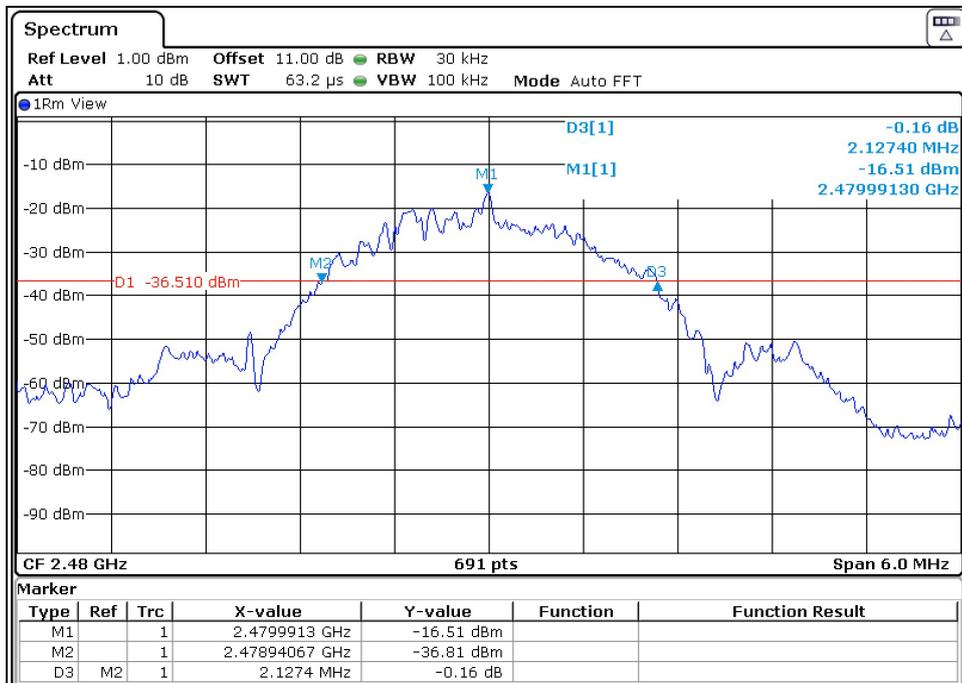
Test Data: Low channel



Test Data: Middle channel



Test Data: High channel





Test Report No.: RF2504WDG0387

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

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



**BUREAU
VERITAS**

Test Report No.: RF2504WDG0387

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---