TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**47 CFR FCC Part 15, Subpart C (Section 15.247)**
Report No.:	RFBWIN-WTW-P23020421-2
FCC ID:	J9C-QCNCM825
Product:	Qualcomm WiFi 7/BT Combo module
Brand:	Qualcomm
Model No.:	QCNCM825
Received Date:	2023/2/13
Test Date:	2023/4/13 ~ 2023/5/12
Issued Date:	2023/6/30
Applicant:	Qualcomm Technologies, Inc.
Address:	5775 Morehouse Drive, San Diego, CA 92121-1714
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

Approved by: _____ , **Date:** **2023/6/30**

May Chen / Manager

This test report consists of 110 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The test results in the report only apply to the tested sample. The test results in this report are traceable to the national or international standards.

Prepared by : Vito Lung / Specialist

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RFBWIN-WTW-P23020421-2	Original release.	2023/6/30

1 Certificate

Product:	Qualcomm WiFi 7/BT Combo module
Brand:	Qualcomm
Test Model:	QCNCM825
Sample Status:	Engineering sample
Applicant:	Qualcomm Technologies, Inc.
Test Date:	2023/4/13 ~ 2023/5/12
Standard:	47 CFR FCC Part 15, Subpart C (Section 15.247)
Measurement procedure:	ANSI C63.10-2013 KDB 558074 D01 15.247 Meas Guidance v05r02 KDB 662911 D01 Multiple Transmitter Output v02r01

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
Standard / Clause	Test Item	Result	Remark
15.247 (a)(1)	RF Output Power	Pass	Meet the requirement of limit.
15.247(a)(1) (iii)	Number of Hopping Frequency Used	Pass	Meet the requirement of limit.
15.247(a)(1) (iii)	Dwell Time on Each Channel	Pass	Meet the requirement of limit.
15.247(a)(1)	Hopping Channel Separation	Pass	Meet the requirement of limit.
15.247(a)(1)	20 dB Bandwidth	-	Refer to Note 1
15.247(d)	Conducted Out of Band Emissions	Pass	Meet the requirement of limit.
15.207	AC Power Conducted Emissions	Pass	Minimum passing margin is -9.48 dB at 0.56971 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -3.1 dB at 311.91 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -18.4 dB at 7323.00 MHz
15.203	Antenna Requirement	Pass	Antenna connector is MHF 4L not a standard connector.

Notes:

1. If the Frequency Hopping System operating in 2400-2483.5 MHz band and the output power less than 125 mW. The hopping channel carrier frequencies separated by a minimum of 25 kHz or two-thirds of the 20 dB bandwidth of hopping channel whichever is greater.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 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:

Parameter	Specification	Expanded Uncertainty (k=2) (±)
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.5 dB
AC Power Conducted Emissions	150 kHz ~ 30 MHz	1.9 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.1 dB
	30 MHz ~ 1 GHz	5.1 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	5.1 dB
	18 GHz ~ 40 GHz	5.3 dB

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description

Product	Qualcomm WiFi 7/BT Combo module
Brand	Qualcomm
Test Model	QCNCM825
Status of EUT	Engineering sample
Power Supply Rating	3.3 Vdc from host equipment
Modulation Type	GFSK, π/4-DQPSK, 8DPSK
Modulation Technology	FHSS
Transfer Rate	Up to 3 Mbps
Operating Frequency	2.402 GHz ~ 2.48 GHz
Number of Channel	79
Output Power	35.892 mW (15.55 dBm)

Note:

1. There are Bluetooth and WLAN (2.4 GHz & 5 GHz & 6 GHz) technology used for the EUT.
2. Simultaneously transmission condition.

Condition	Technology	
1	WLAN(2.4 GHz)_Ant 0+1	WLAN(5 GHz)_Ant 0+1
2	WLAN(2.4 GHz)_Ant 0+1	WLAN(6 GHz)_Ant 0+1
3	WLAN(5 GHz)_Ant 0+1	Bluetooth_Ant 0
4	WLAN(5 GHz)_Ant 0+1	Bluetooth_Ant 1
5	WLAN(5 GHz)_Ant 0+1	Bluetooth_Ant 0+1
6	WLAN(6 GHz)_Ant 0+1	Bluetooth_Ant 0
7	WLAN(6 GHz)_Ant 0+1	Bluetooth_Ant 1
8	WLAN(6 GHz)_Ant 0+1	Bluetooth_Ant 0+1
9	WLAN(2.4 GHz)_Ant 0	Bluetooth_Ant 1
10	WLAN(2.4 GHz)_Ant 1	Bluetooth_Ant 0

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna Set	RF Chain No.	Brand	Model	Antenna Net Gain (dBi)	Frequency Range	Cable Loss (dB)	Antenna Type	Connector Type	Cable Length (mm)
1	Chain0/1	Hong-Bo	260-25094	3.53 3.06 3.07 4.81 4.2	2.4~2.4835 GHz 5.15~5.25 GHz 5.25~5.35 GHz 5.47~5.725 GHz 5.725~5.850 GHz	0.74 1.16 1.18 1.26 1.28	PIFA	MHF 4L	300
2	Chain0/1	Hong-Bo	260-25083	5.09 5.14 5.09 5.16 5.12	5.850~5.895 GHz 5.925~6.425 GHz 6.425~6.525 GHz 6.525~6.875 GHz 6.875~7.125 GHz	1.29 1.35 1.38 1.45 1.50	PIFA	MHF 4L	300
3	Chain0/1	Hong-Bo	260-25084	3.22 3.35 3.42 4.77 4.72 4.71 4.75 4.29 4.81 4.74	2.4~2.4835 GHz 5.150~5.250 GHz 5.250~5.350 GHz 5.470~5.725 GHz 5.725~5.850 GHz 5.850~5.895 GHz 5.925~6.425 GHz 6.425~6.525 GHz 6.525~6.875 GHz 6.875~7.125 GHz	0.49 0.76 0.77 0.80 0.84 0.84 0.86 0.91 0.96 0.98	Monopole	MHF 4L	200

Note:
1. Bluetooth has diversity function and transmit chain 0 and chain 1 have been evaluated, the chain 0 will be used as representative test.
2. Max. gain was selected for the final test.

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

3.3 Channel List

79 channels are provided for BT-EDR:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461		

3.4 Test Mode Applicability and Tested Channel Detail

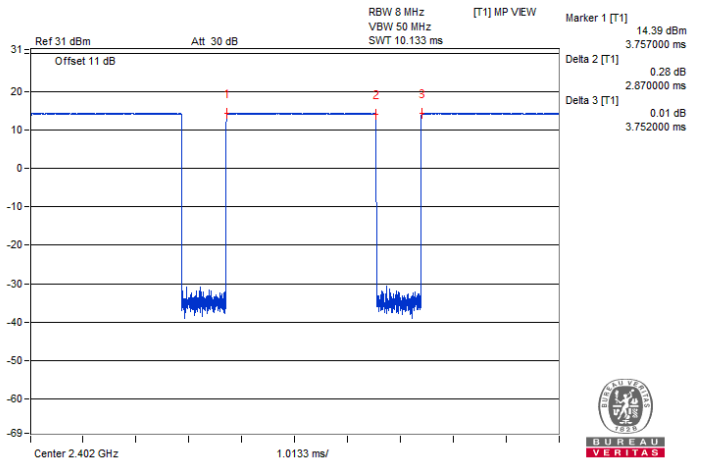
Pre-Scan:	1. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

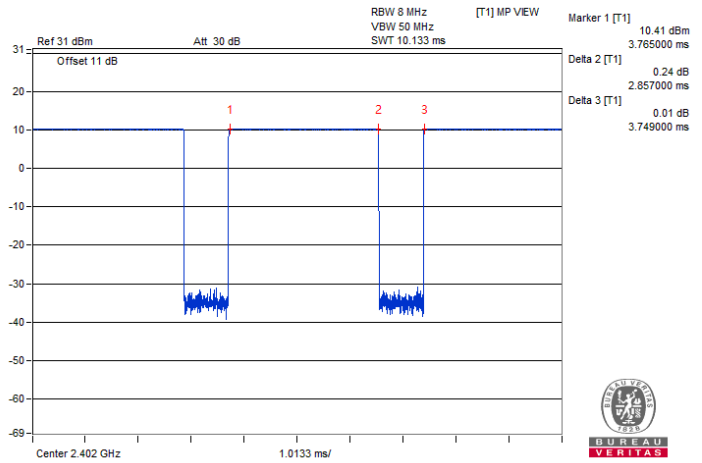
Test Item	EUT Configure Mode	Tested Channel	Tx Antenna	Modulation	Data Rate Parameter
RF Output Power	A	0, 39, 78	1TX, 2TX	GFSK	DH5
				8DPSK	3DH5
Number of Hopping Frequency Used	A	Hopping	1TX, 2TX	GFSK	DH5
				8DPSK	3DH5
Dwell Time on Each Channel	A	Hopping	1TX, 2TX	GFSK	DH1/DH3/DH5
				8DPSK	3DH1/3DH3/3DH5
Hopping Channel Separation / 20 dB Bandwidth	A	0, 39, 78	1TX, 2TX	GFSK	DH5
				8DPSK	3DH5
Conducted Out of Band Emissions	A	Hopping	1TX, 2TX	GFSK	DH5
		0, 78	1TX, 2TX	GFSK	DH5
		Hopping	1TX, 2TX	8DPSK	3DH5
		0, 78	1TX, 2TX	8DPSK	3DH5
AC Power Conducted Emissions	B	39	1TX	GFSK	DH5
Unwanted Emissions below 1 GHz	A, B	39	1TX	GFSK	DH5
Unwanted Emissions above 1 GHz	A, B	0, 39, 78	1TX, 2TX	GFSK	DH5
				8DPSK	3DH5
EUT Configure Mode:	A	EUT only (w/o antenna)			
	B	EUT with 50 ohm terminator			

3.5 Duty Cycle of Test Signal

GFSK: Duty cycle = 2.87 ms / 3.752 ms x 100% = 76.5%, duty factor = 10 * log (1/Duty cycle) = 1.16 dB
8DPSK: Duty cycle = 2.857 ms / 3.749 ms x 100% = 76.2%, duty factor = 10 * log (1/Duty cycle) = 1.18 dB



GFSK



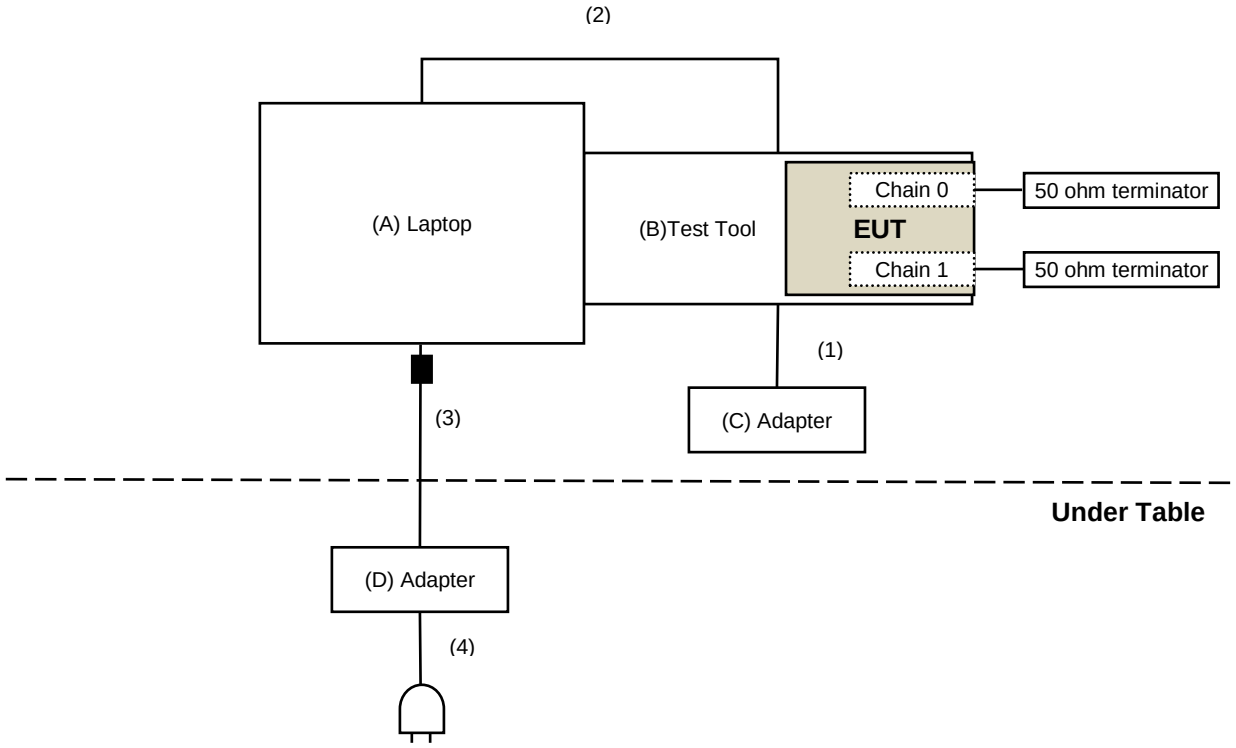
8DPSK

3.6 Test Program Used and Operation Descriptions

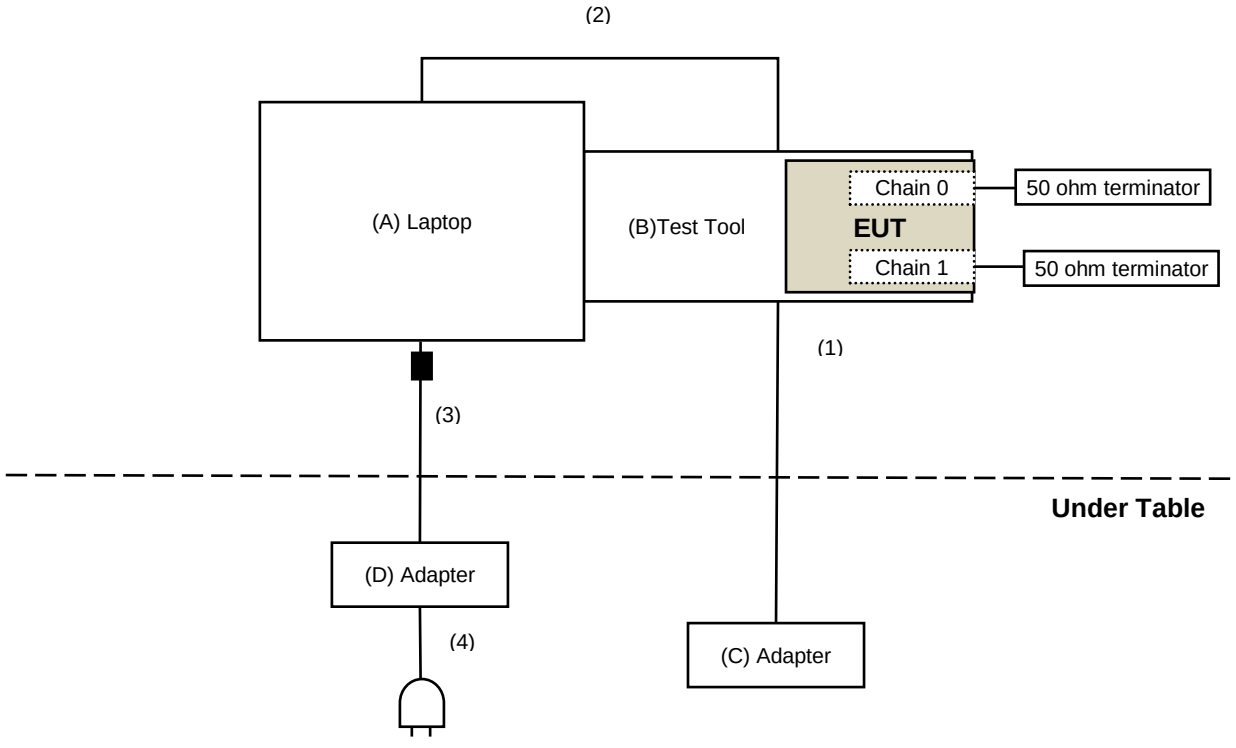
Controlling software (QRCT 4.0.00159.1) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices

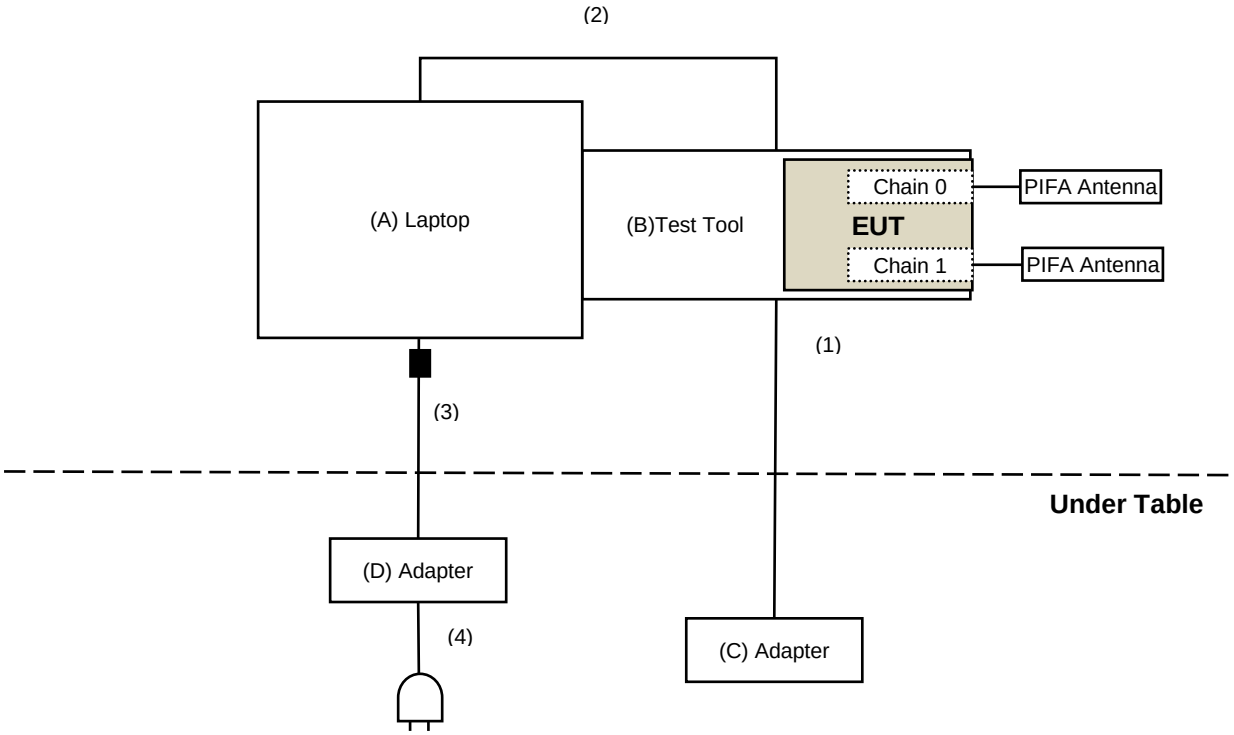
For AC Power Conducted Emission test



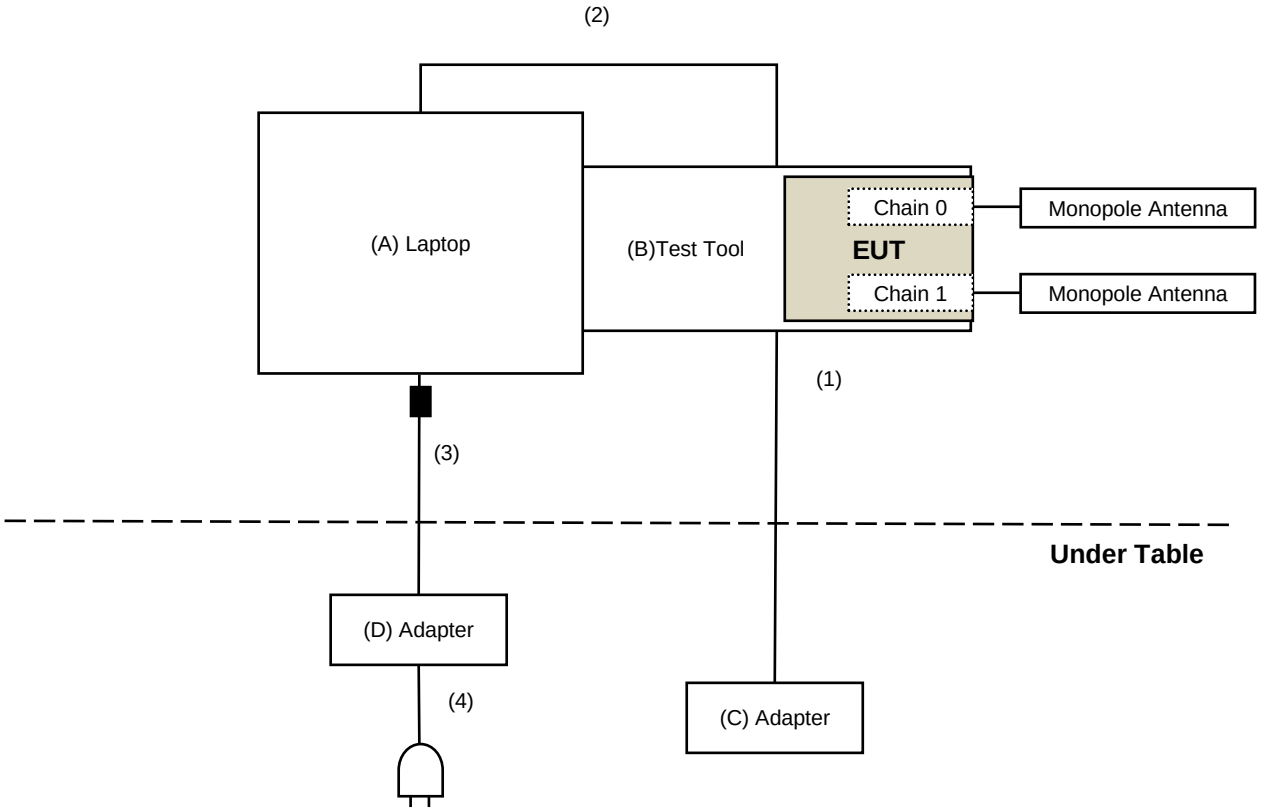
For Unwanted Emission test



For Unwanted Emission Above 1GHz with Antenna A test



For Unwanted Emission Above 1GHz with Antenna C test



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Laptop	Dell	E5420	6FGHKV1	N/A	Provided by Lab
B	Test Tool	Qualcomm	N/A	N/A	N/A	Supplied by applicant
C	Adapter	PHIHONG	PSAA12A-120L6	N/A	N/A	Supplied by applicant
D	Adapter	Dell	LLA65NS2-01	N/A	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	DC Cable	1	1.2	NO	0	Supplied by applicant
2	Micro USB Cable	1	0.6	Yes	0	Provided by Lab
3	DC Cable	1	1.8	NO	1	Provided by Lab
4	AC Cable	1	1.5	NO	0	Provided by Lab

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2023/3/27	2024/3/26
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-02	2023/3/27	2024/3/26
Power Meter Anritsu	ML2495A	1529002	2022/6/22	2023/6/21
Pulse Power Sensor Anritsu	MA2411B	1726434	2022/6/22	2023/6/21

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/5/2

4.2 Number of Hopping Frequency Used

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2023/3/27	2024/3/26
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-02	2023/3/27	2024/3/26
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112409	2023/2/18	2024/2/17

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/5/2

4.3 Dwell Time on Each Channel

Refer to section 4.2 to get information of the instruments.

4.4 Hopping Channel Separation

Refer to section 4.2 to get information of the instruments.

4.5 20 dB Bandwidth

Refer to section 4.2 to get information of the instruments.

4.6 Conducted Out of Band Emissions

Refer to section 4.2 to get information of the instruments.

4.7 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance	N/A	EMC-01	2022/9/27	2023/9/26
Fixed attenuator STI	STI02-2200-10	005	2022/8/24	2023/8/23
LISN R&S	ESH3-Z5	848773/004	2022/10/18	2023/10/17
RF Coaxial Cable JYEBO	5D-FB	COCCAB-001	2022/8/24	2023/8/23
Software BVADT	BVADT_Cond_V7.3.7.4	N/A	N/A	N/A
TEST RECEIVER R&S	ESCS 30	847124/029	2022/10/14	2023/10/13

Notes:

1. The test was performed in Conduction 1
2. Tested Date: 2023/5/10

4.8 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Bilog Antenna Schwarzbeck	VULB 9168	9168-0842	2022/10/24	2023/10/23
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-ATT5-02	2022/12/28	2023/12/27
LOOP ANTENNA Electro-Metrics	EM-6879	264	2023/2/21	2024/2/20
Pre_Amplifier Agilent	8447D	2944A10636	2023/3/12	2024/3/11
Pre_Amplifier EMCI	EMC330N	980538	2023/4/6	2024/4/5
RF Coaxial Cable COMMATE/PEWC	8D	966-5-1	2023/4/6	2024/4/5
		966-5-2	2023/4/6	2024/4/5
		966-5-3	2023/4/6	2024/4/5
RF Coaxial Cable JYEBO	5D-FB	LOOPCAB-001	2022/12/19	2023/12/18
		LOOPCAB-002	2022/12/19	2023/12/18
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112410	2023/3/6	2024/3/5
Spectrum Analyzer KEYSIGHT	N9030B	MY57141948	2022/5/13	2023/5/12
Test Receiver R&S	ESR3	102528	2023/2/10	2024/2/9

Notes:

1. The test was performed in 966 Chamber No. 5.
2. Tested Date: 2023/4/13

4.9 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2023/3/27	2024/3/26
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-02	2023/3/27	2024/3/26
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-1819	2022/11/13	2023/11/12
	BBHA 9170	9170-739	2022/11/13	2023/11/12
Pre_Amplifier EMCI	EMC12630SE	980509	2023/4/7	2024/4/6
	EMC184045SE	980387	2022/12/28	2023/12/27
RF Cable-Frequency range: 1-40GHz EMCI	EMC102-KM-KM-1200	160924	2022/12/28	2023/12/27
RF Coaxial Cable EMCI	EMC-KM-KM-4000	200214	2023/2/20	2024/2/19
	EMC104-SM-SM-1500	180503	2023/4/7	2024/4/6
	EMC104-SM-SM-2000	180501	2023/4/7	2024/4/6
	EMC104-SM-SM-6000	180506	2023/4/7	2024/4/6
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112410	2023/3/6	2024/3/5
Test Receiver R&S	ESR3	102528	2023/2/10	2024/2/9

Notes:

1. The test was performed in 966 Chamber No. 5.
2. Tested Date: 2023/5/12

5 Limits of Test Items

5.1 RF Output Power

The Maximum Output Power Measurement is 125 mW (21 dBm).

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

5.2 Number of Hopping Frequency Used

At least 15 channels frequencies, and should be equally spaced.

5.3 Dwell Time on Each Channel

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

5.4 Hopping Channel Separation

At least 25 kHz or two-third of 20 dB hopping channel bandwidth (whichever is greater).

5.5 20 dB Bandwidth

Maximum bandwidth is not specified.

5.6 Conducted Out of Band Emissions

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

5.7 AC Power Conducted Emissions

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	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 0.50 MHz.

5.8 Unwanted Emissions below 1 GHz

Radiated emissions up to 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

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).

5.9 Unwanted Emissions above 1 GHz

Radiated emissions above 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

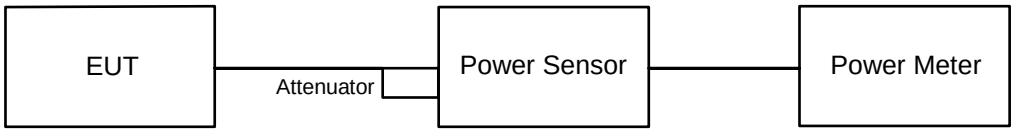
Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, 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 20 dB under any condition of modulation.

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup



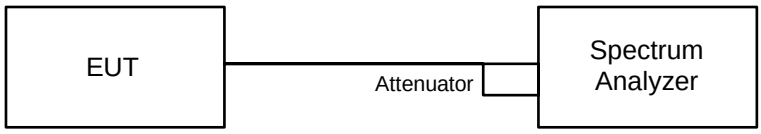
6.1.2 Test Procedure

Peak Power:
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. Record the power level.

Average Power:
Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

6.2 Number of Hopping Frequency Used

6.2.1 Test Setup

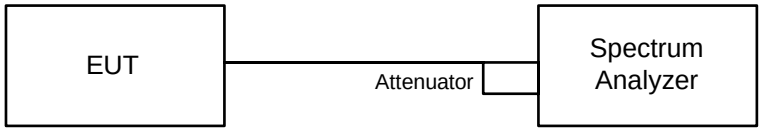


6.2.2 Test Procedure

a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
c. Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
d. Set the SA on View mode and then plot the result on SA screen.
e. Repeat above procedures until all frequencies measured were complete.

6.3 Dwell Time on Each Channel

6.3.1 Test Setup

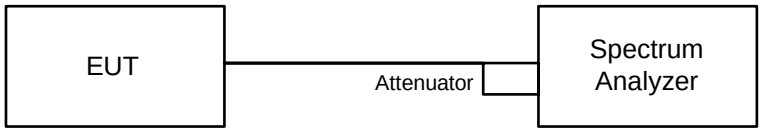


6.3.2 Test Procedure

a. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
b. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
c. Adjust the center frequency of SA on any frequency be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
d. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
e. Repeat above procedures until all different time-slot modes have been completed.

6.4 Hopping Channel Separation

6.4.1 Test Setup

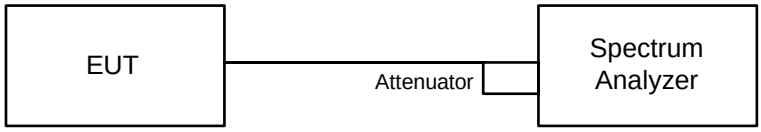


6.4.2 Test Procedure

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.
c. By using the MaxHold function record the separation of two adjacent channels.
d. Measure the frequency difference of these two adjacent channels by SA MARK function. And then plot the result on SA screen.
e. Repeat above procedures until all frequencies measured were complete.

6.5 20 dB Bandwidth

6.5.1 Test Setup

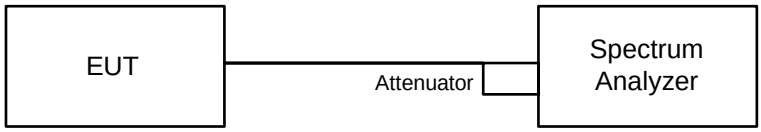


6.5.2 Test Procedure

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 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
d. Repeat above procedures until all frequencies measured were complete.

6.6 Conducted Out of Band Emissions

6.6.1 Test Setup



6.6.2 Test Procedure

MEASUREMENT PROCEDURE REF

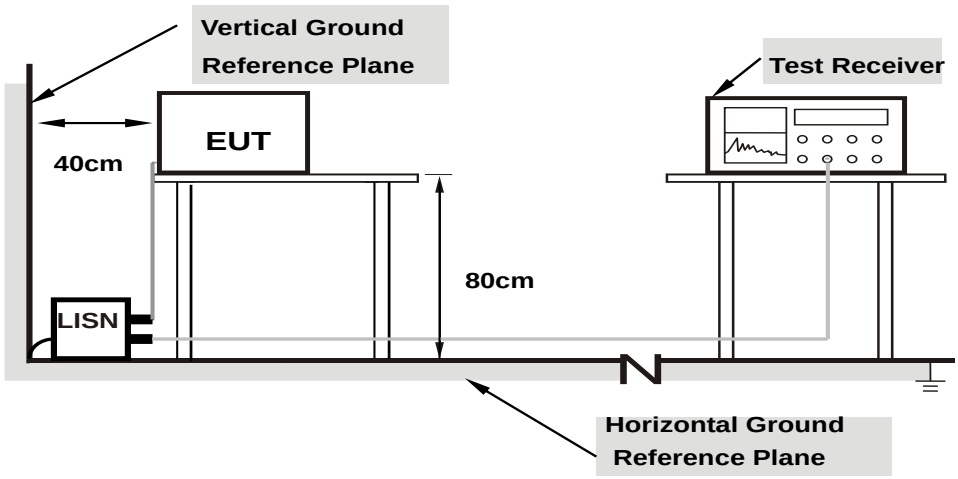
a. Set the RBW = 100 kHz.
b. Set the VBW ≥ 300 kHz.
c. Detector = peak.
d. Sweep time = auto couple.
e. Trace mode = max hold.
f. Allow trace to fully stabilize.
g. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

a. Set RBW = 100 kHz.
b. Set VBW ≥ 300 kHz.
c. Detector = peak.
d. Sweep = auto couple.
e. Trace Mode = max hold.
f. Allow trace to fully stabilize.
g. Use the peak marker function to determine the maximum amplitude level.

6.7 AC Power Conducted Emissions

6.7.1 Test Setup



Note: 1.Support units were connected to second LISN.

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

6.7.2 Test Procedure

a. The EUT was placed on a 0.8 meter to the top of table and 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/ 50 uH of coupling impedance for the measuring instrument.

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

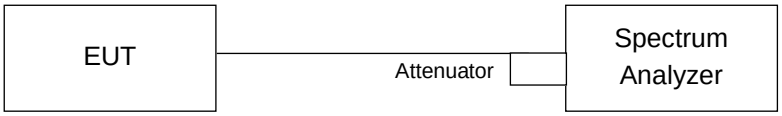
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz-30 MHz.

6.8 Unwanted Emissions below 1 GHz

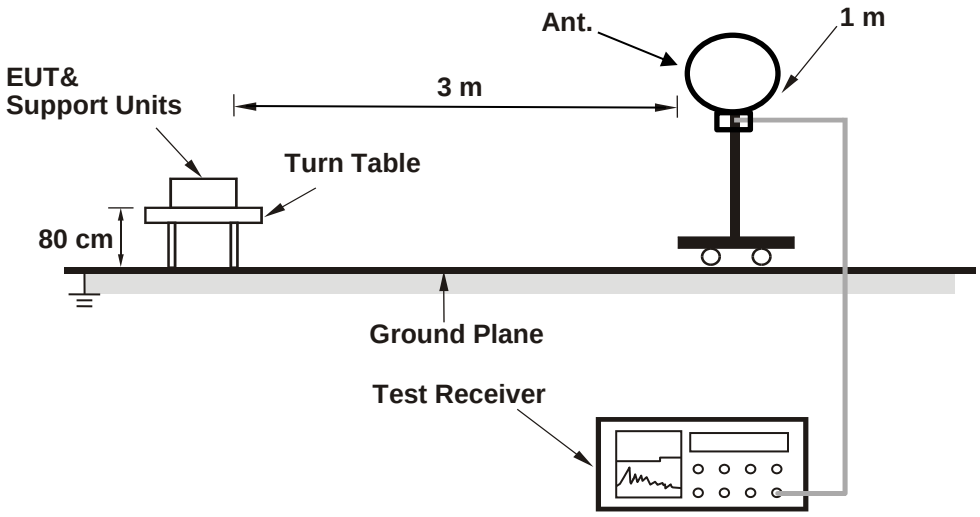
6.8.1 Test Setup

For Conducted Configuration:

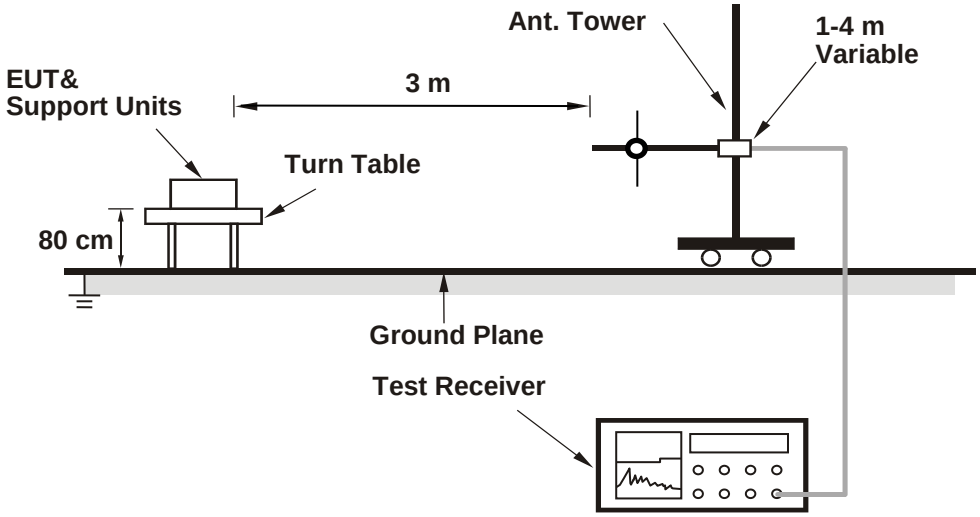


For Radiated Configuration:

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



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

6.8.2 Test Procedure

Radiated versus Conducted Measurement.
The unwanted emission limits in both the restricted and non-restricted bands are based on antenna-port conducted measurements in conjunction with cabinet emissions tests are permitted to demonstrate compliance.
The following steps was performed:

a. Cabinet emissions measurements. Radiated measurement was performed to ensure that cabinet emissions are below the emission limits. For the cabinet-emission measurements the antenna was replaced by a termination matching the nominal impedance of the antenna.

b. Conducted tests was performed using equipment that matches the nominal impedance of the antenna assembly used with the EUT.

c. EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater.

d. EIRP adjustments for multiple outputs. (Follow the procedures specified in FCC KDB Publication 662911)

e. For all of Radiation emission test

For Radiated emission below 30 MHz

e-1.1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

e-1.2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

e-1.3. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

e-1.4. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e-1.5. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.
4. KDB 414788 OATS and Chamber Correlation Justification

   -Based on FCC 15.31(f)(2):measurements may be performed at a distance closer than that specified in the regulations; however, an attempts should be made to avoid making measurements in the near field.

   -OATs and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

For Radiated emission above 30 MHz

e-2.1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

e-2.2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

e-2.3. The height of antenna 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.

e-2.4. 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-2.5. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

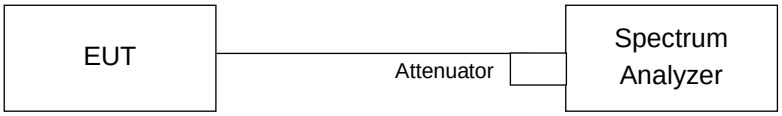
Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP), Average detection (AV), Peak detection (PK) at frequency (30MHz to 1 GHz).
2. All modes of operation were investigated and the worst-case emissions are reported.

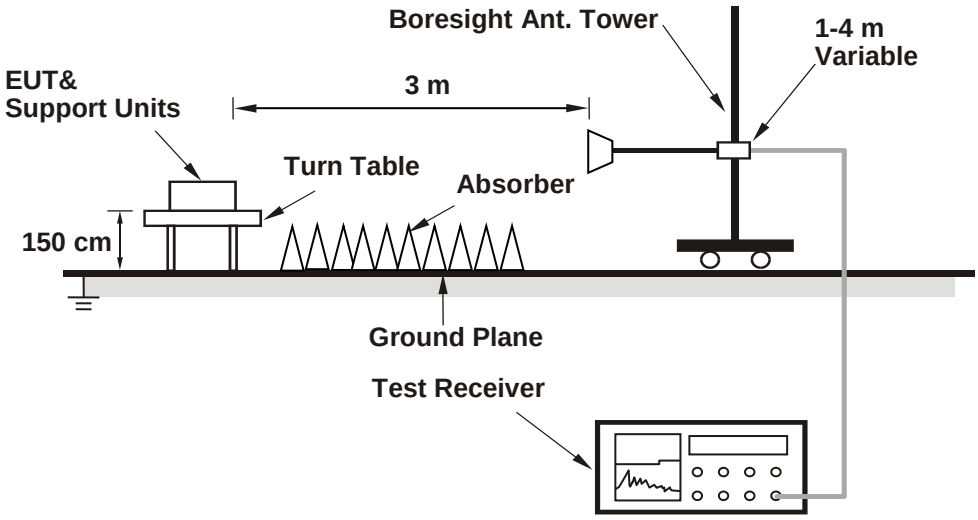
6.9 Unwanted Emissions above 1 GHz

6.9.1 Test Setup

For Conducted Configuration:



For Radiated Configuration:



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

6.9.2 Test Procedure

Radiated versus Conducted Measurement.
The unwanted emission limits in both the restricted and non-restricted bands are based on antenna-port conducted measurements in conjunction with cabinet emissions tests are permitted to demonstrate compliance.
The following steps was performed:

a. Cabinet emissions measurements. Radiated measurement was performed to ensure that cabinet emissions are below the emission limits. For the cabinet-emission measurements the antenna was replaced by a termination matching the nominal impedance of the antenna.

b. Conducted tests was performed using equipment that matches the nominal impedance of the antenna assembly used with the EUT.

c. EIRP calculation. A value representative of an upper bound on out-of-band antenna gain (in dBi) shall be added to the measured antenna-port conducted emission power to compute EIRP within the specified measurement bandwidth. (For emissions in the restricted bands, additional calculations are required to convert EIRP to field strength at the specified distance.) The upper bound on antenna gain for a device with a single RF output shall be selected as the maximum in-band gain of the antenna across all operating bands or 2 dBi, whichever is greater.

d. EIRP adjustments for multiple outputs. (Follow the procedures specified in FCC KDB Publication 662911)

e. For all of Radiation emission test

e-1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

e-2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

e-3. The height of antenna 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.

e-4. 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-5. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Notes:

1. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
2. For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10 Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1 GHz.
3. All modes of operation were investigated and the worst-case emissions are reported.

7 Test Results of Test Item

7.1 RF Output Power

Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Kevin Ko

For Peak Power

GFSK 1TX

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	2402	30.903	14.90	21	Pass
39	2441	35.892	15.55	21	Pass
78	2480	26.977	14.31	21	Pass

Note: The antenna gain is 3.53 dBi < 6 dBi, so the output power limit shall not be reduced.

8DPSK 1TX

Chan.	Chan. Freq. (MHz)	Peak Power (mW)	Peak Power (dBm)	Power Limit (dBm)	Test Result
0	2402	24.322	13.86	21	Pass
39	2441	29.107	14.64	21	Pass
78	2480	20.941	13.21	21	Pass

Note: The antenna gain is 3.53 dBi < 6 dBi, so the output power limit shall not be reduced.

GFSK 2TX

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
0	2402	10.50	11.66	25.876	14.13	20.46	Pass
39	2441	10.76	11.74	26.84	14.29	20.46	Pass
78	2480	9.80	10.90	21.853	13.40	20.46	Pass

Notes:

1. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
2. The directional gain is 6.54 dBi > 6 dBi, so the output power limit shall be reduced to 21-(6.54-6) = 20.46 dBm.

8DPSK 2TX

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
0	2402	9.04	10.07	18.179	12.60	20.46	Pass
39	2441	9.20	10.75	20.203	13.05	20.46	Pass
78	2480	8.62	9.48	16.149	12.08	20.46	Pass

Notes:

1. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
2. The directional gain is 6.54 dBi > 6 dBi, so the output power limit shall be reduced to 21-(6.54-6) = 20.46 dBm.

For Average Power

GFSK 1TX

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	29.992	14.77
39	2441	35.318	15.48
78	2480	26.242	14.19

8DPSK 1TX

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	12.388	10.93
39	2441	13.964	11.45
78	2480	11.749	10.70

GFSK 2TX

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
0	2402	10.34	11.32	24.366	13.87
39	2441	10.65	11.53	25.838	14.12
78	2480	9.69	10.72	21.114	13.25

8DPSK 2TX

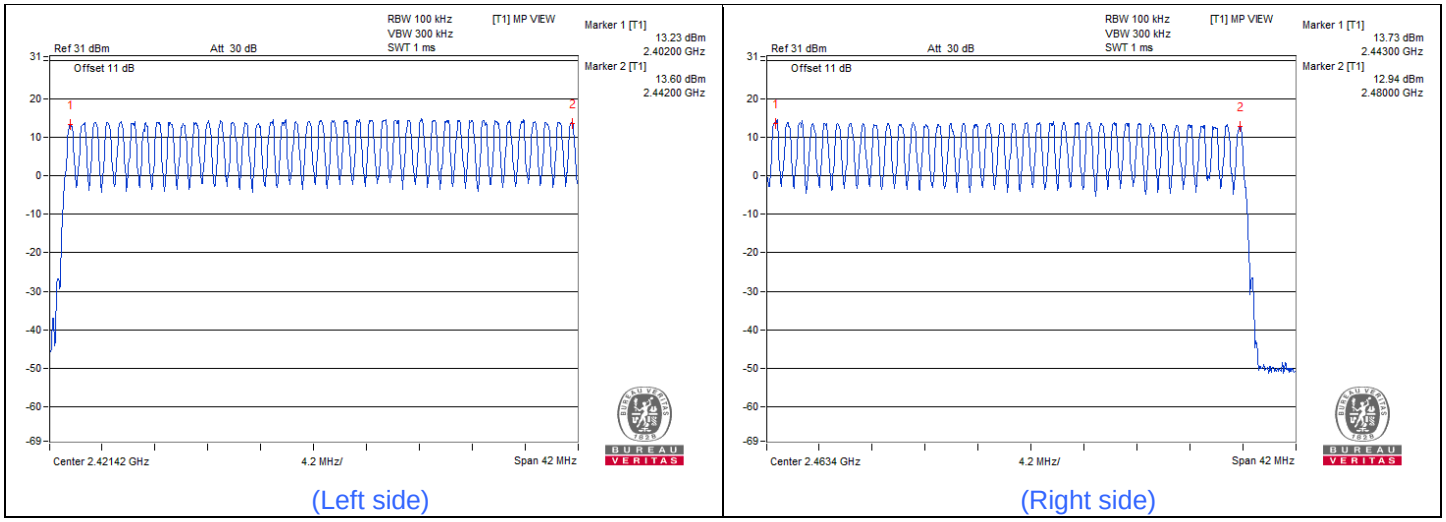
Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
0	2402	5.80	7.03	8.849	9.47
39	2441	6.45	7.65	10.237	10.10
78	2480	5.56	6.34	7.903	8.98

7.2 Number of Hopping Frequency Used

Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Kevin Ko

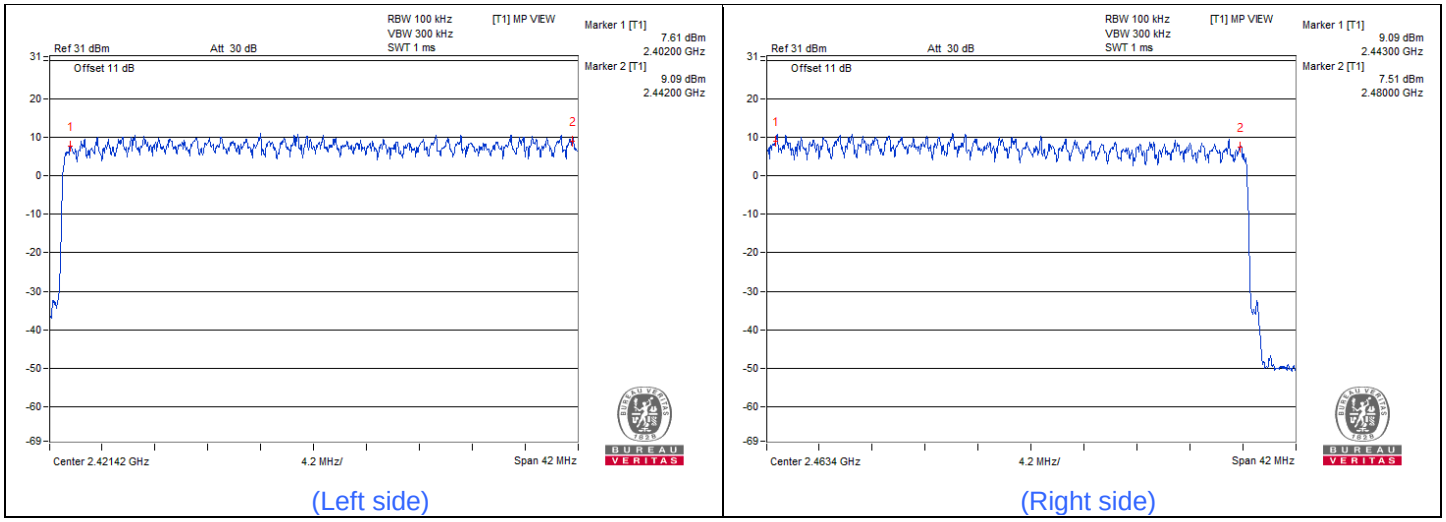
GFSK 1TX



(Left side) (Right side)

Note: There are 79 hopping frequencies in the hopping mode. On the plots, it shows that the hopping frequencies are equally spaced.

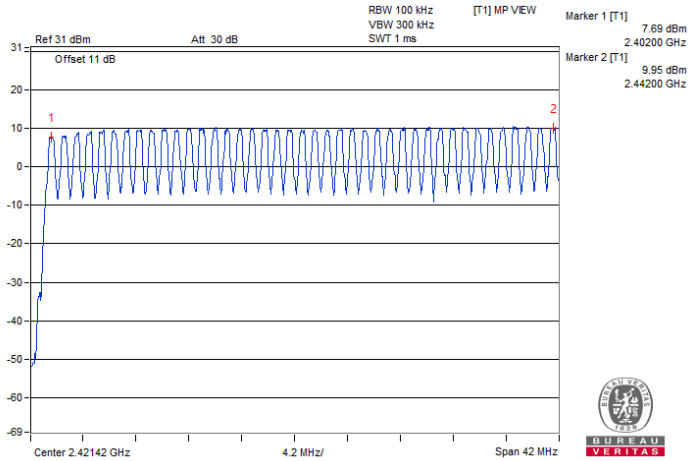
8DPSK 1TX



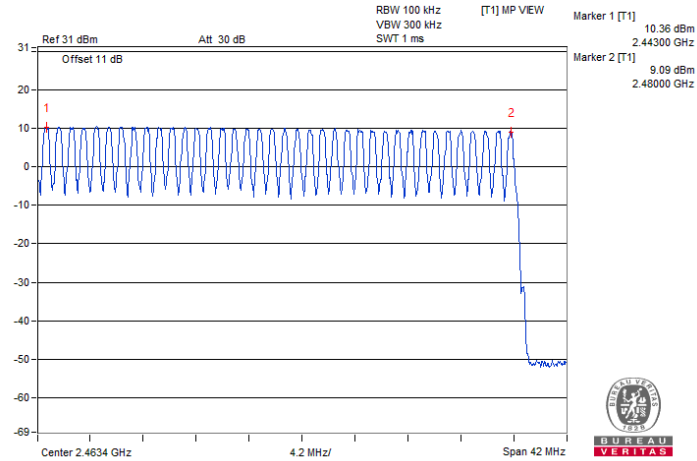
(Left side) (Right side)

Note: There are 79 hopping frequencies in the hopping mode. On the plots, it shows that the hopping frequencies are equally spaced.

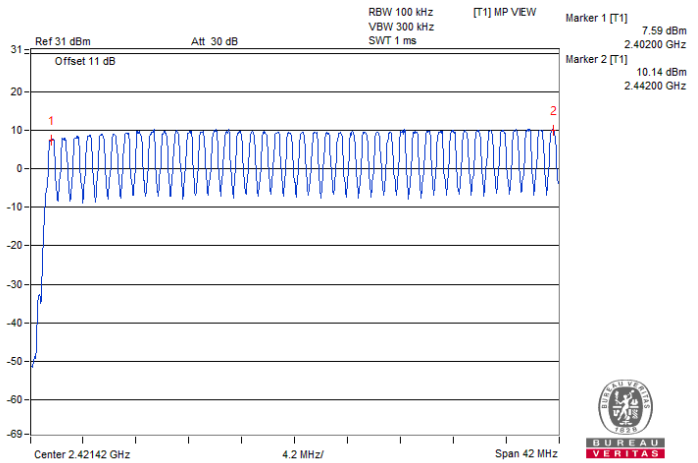
GFSK 2TX



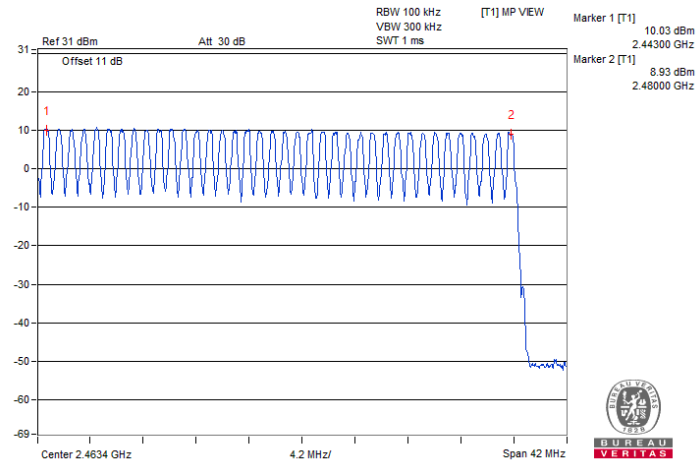
GFSK 2TX / Chain 0 (Left side)



GFSK 2TX / Chain 0 (Right side)



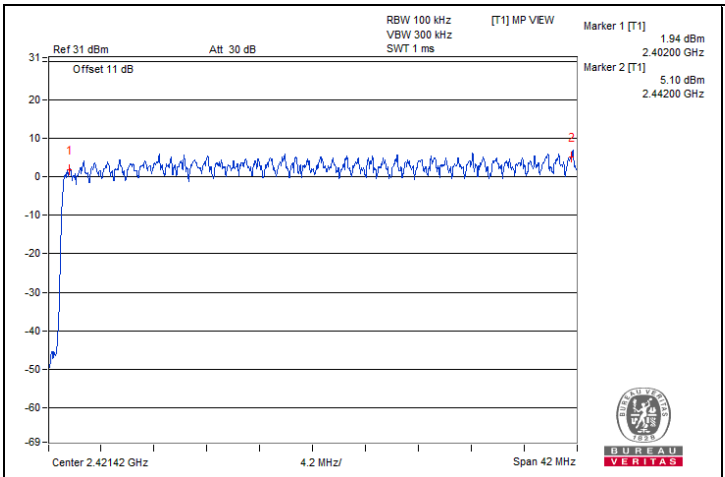
GFSK 2TX / Chain 1 (Left side)



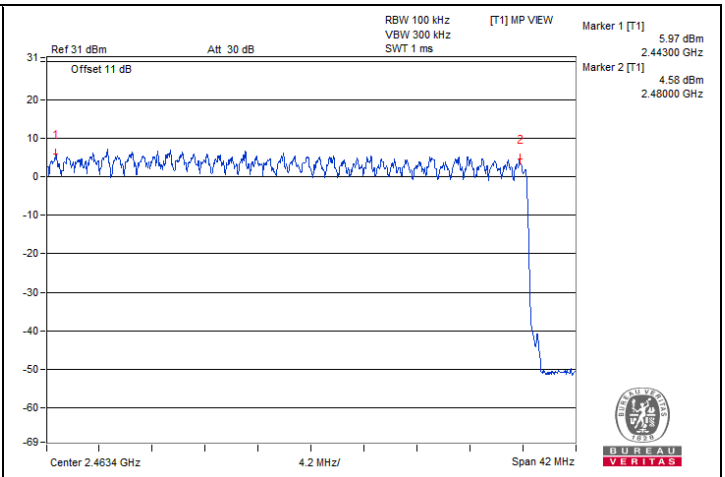
GFSK 2TX / Chain 1 (Right side)

Note: There are 79 hopping frequencies in the hopping mode. On the plots, it shows that the hopping frequencies are equally spaced.

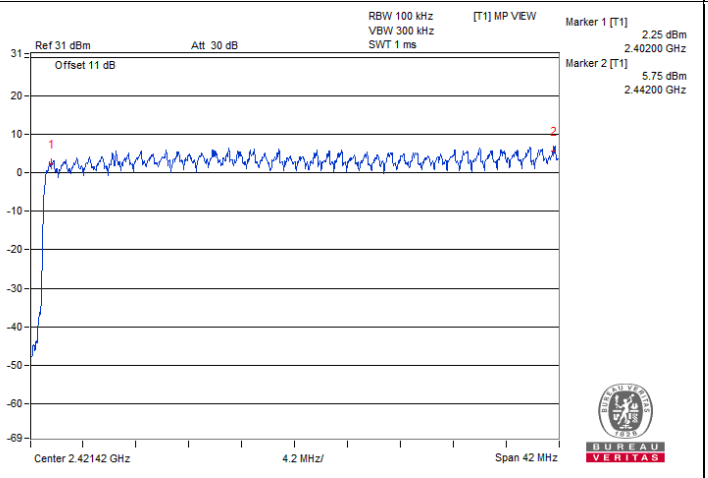
8DPSK 2TX



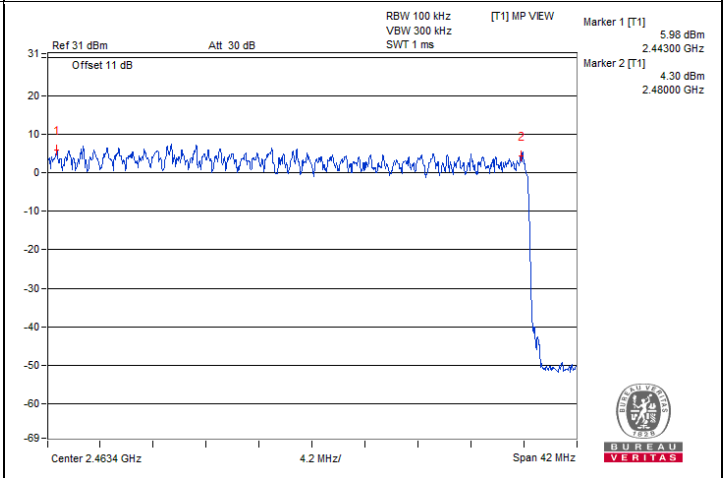
8DPSK 2TX / Chain 0 (Left side)



8DPSK 2TX / Chain 0 (Right side)



8DPSK 2TX / Chain 1 (Left side)



8DPSK 2TX / Chain 1 (Right side)

Note: There are 79 hopping frequencies in the hopping mode. On the plots, it shows that the hopping frequencies are equally spaced.

7.3 Dwell Time on Each Channel

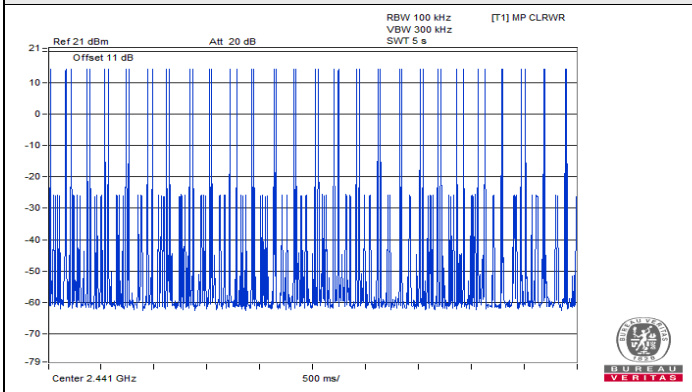
Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Kevin Ko

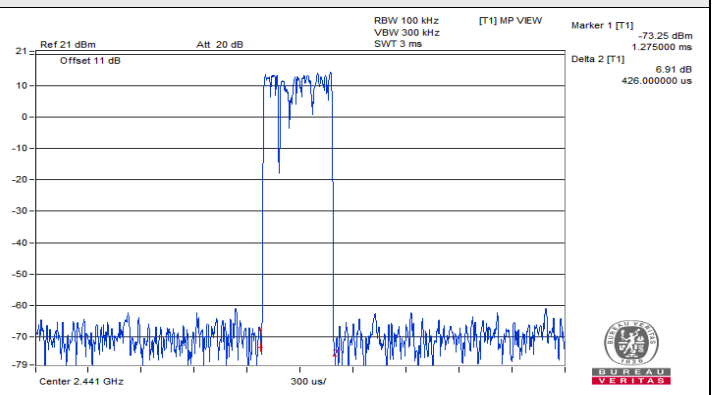
GFSK 1TX

Mode	Number of transmission in 31.6 sec	Length of transmission time (msec)	Result (msec)	Limit (msec)	Test Result
DH1	51 (times / 5 sec) * 6.32 = 323 times	0.426	137.6	400	Pass
DH3	26 (times / 5 sec) * 6.32 = 165 times	1.705	281.33	400	Pass
DH5	17 (times / 5 sec) * 6.32 = 108 times	2.968	320.54	400	Pass

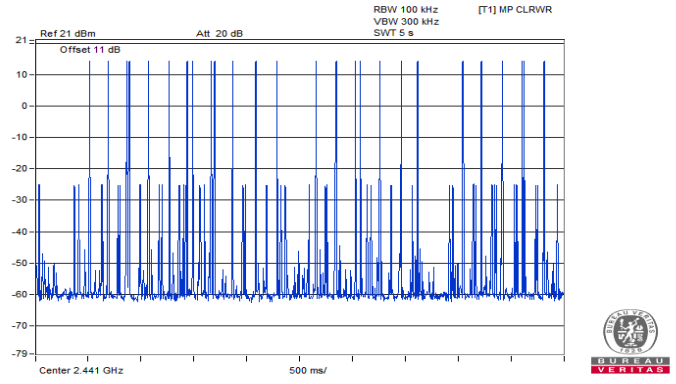
Spectrum plots of Dwell Time



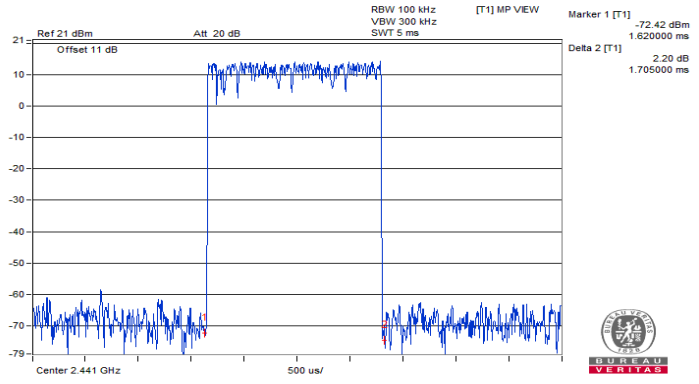
GFSK 1TX DH1



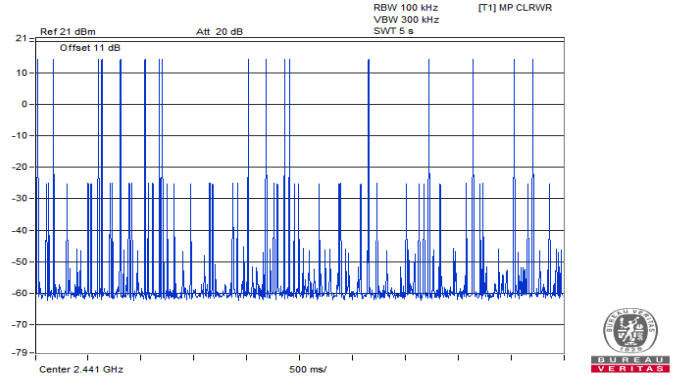
GFSK 1TX DH1



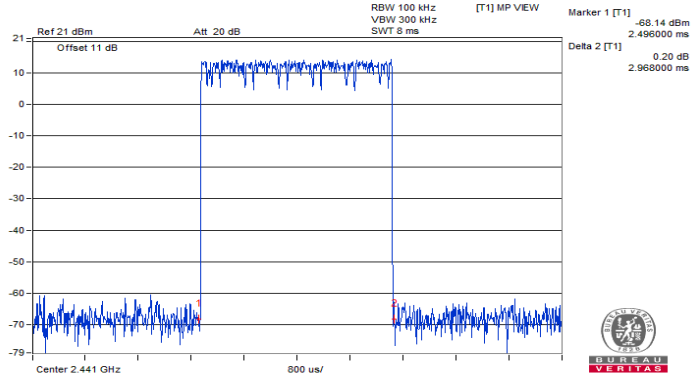
GFSK 1TX DH3



GFSK 1TX DH3



GFSK 1TX DH5

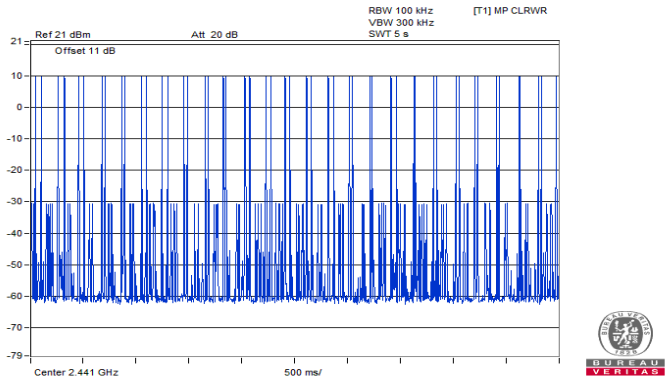


GFSK 1TX DH5

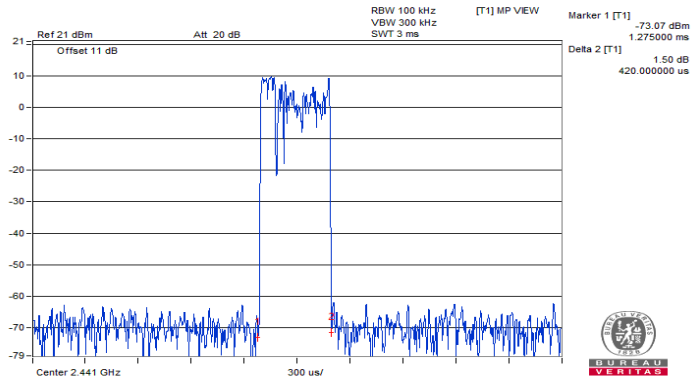
8DPSK 1TX

Mode	Number of transmission in 31.6 sec	Length of transmission time (msec)	Result (msec)	Limit (msec)	Test Result
3DH1	51 (times / 5 sec) * 6.32 = 323 times	0.42	135.66	400	Pass
3DH3	25 (times / 5 sec) * 6.32 = 158 times	1.67	263.86	400	Pass
3DH5	16 (times / 5 sec) * 6.32 = 102 times	2.928	298.66	400	Pass

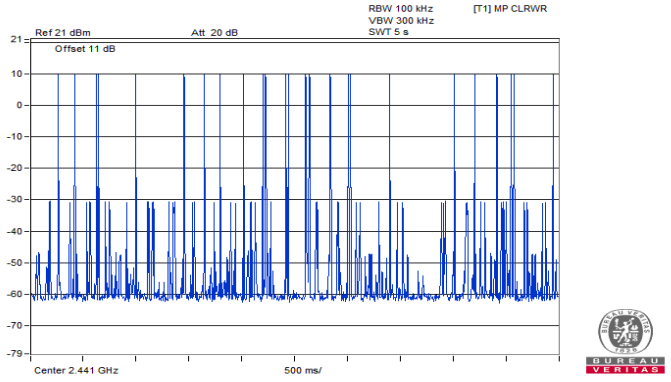
Spectrum plots of Dwell Time



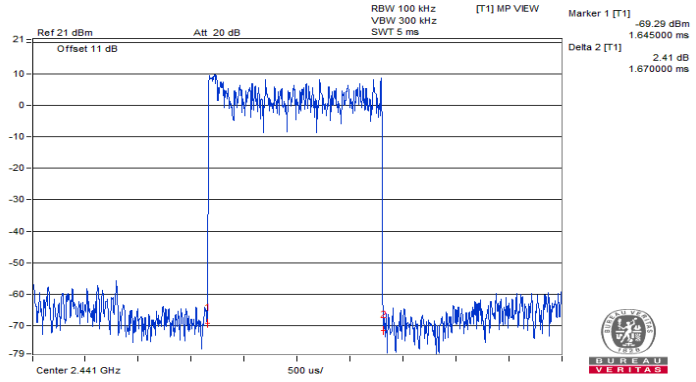
8DPSK 1TX 3DH1



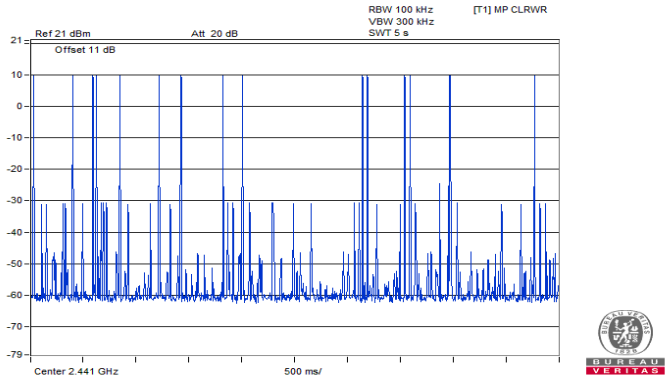
8DPSK 1TX 3DH1



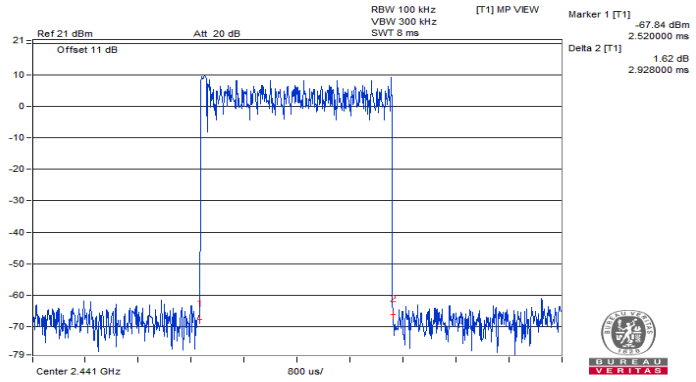
8DPSK 1TX 3DH3



8DPSK 1TX 3DH3



8DPSK 1TX 3DH5

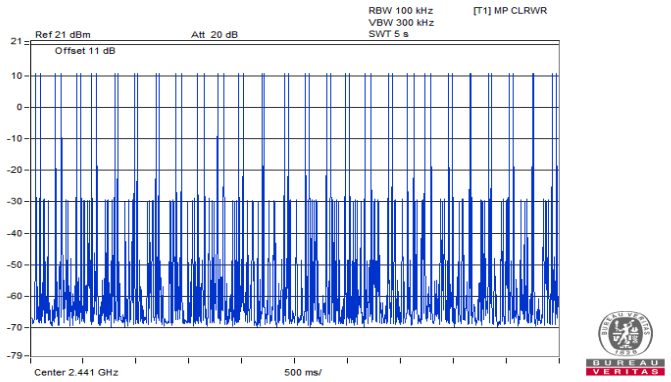


8DPSK 1TX 3DH5

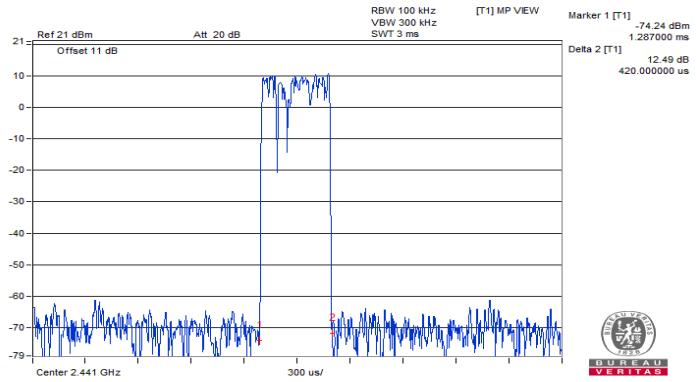
GFSK 2TX

Mode	Number of transmission in 31.6 sec	Length of transmission time (msec)	Result (msec)	Limit (msec)	Test Result
DH1	52 (times / 5 sec) * 6.32 = 329 times	0.42	138.18	400	Pass
DH3	25 (times / 5 sec) * 6.32 = 158 times	1.675	264.65	400	Pass
DH5	16 (times / 5 sec) * 6.32 = 102 times	2.92	297.84	400	Pass

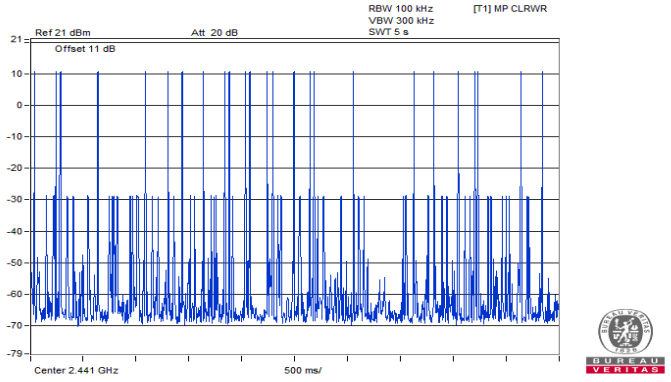
Spectrum plots of Dwell Time



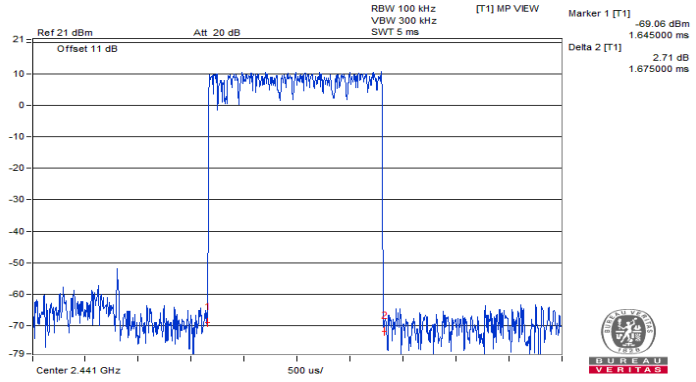
GFSK 2TX DH1



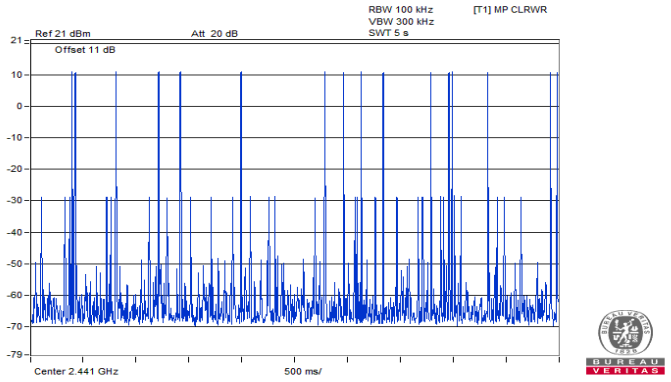
GFSK 2TX DH1



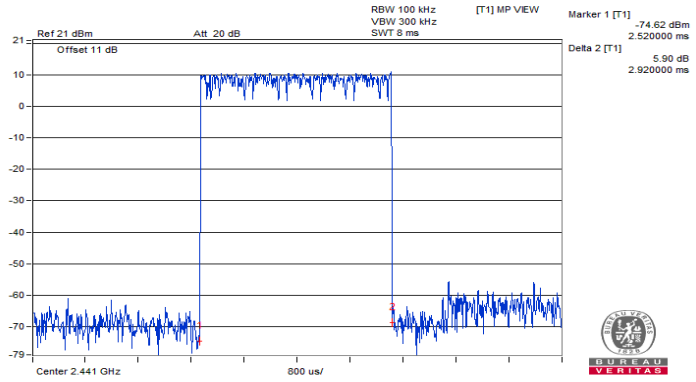
GFSK 2TX DH3



GFSK 2TX DH3



GFSK 2TX DH5



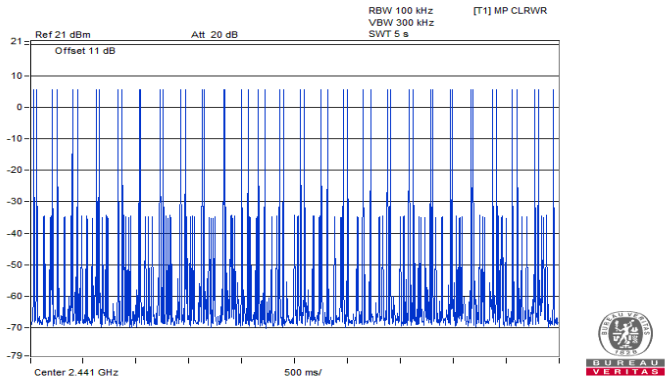
GFSK 2TX DH5

Note: After evaluation, the data of the two paths are the similar, so only chain 0 is used as the representative data in test report.

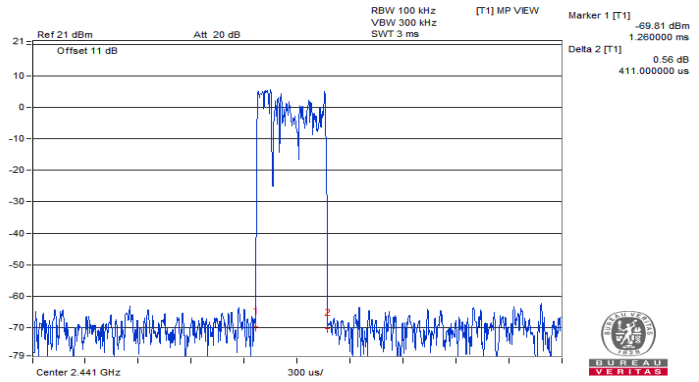
8DPSK 2TX

Mode	Number of transmission in 31.6 sec	Length of transmission time (msec)	Result (msec)	Limit (msec)	Test Result
3DH1	51 (times / 5 sec) * 6.32 = 323 times	0.411	132.75	400	Pass
3DH3	26 (times / 5 sec) * 6.32 = 165 times	1.685	278.03	400	Pass
3DH5	18 (times / 5 sec) * 6.32 = 114 times	2.968	338.35	400	Pass

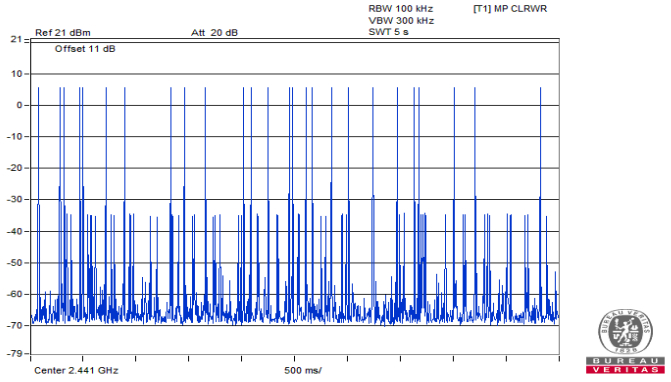
Spectrum plots of Dwell Time



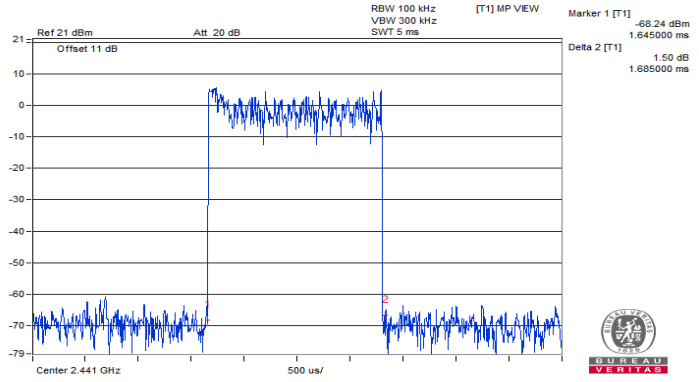
8DPSK 2TX 3DH1



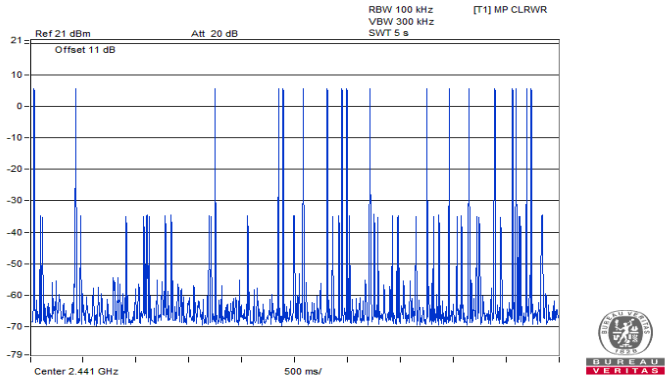
8DPSK 2TX 3DH1



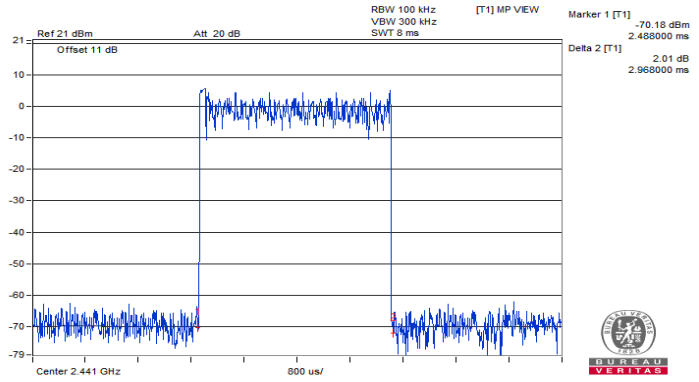
8DPSK 2TX 3DH3



8DPSK 2TX 3DH3



8DPSK 2TX 3DH5



8DPSK 2TX 3DH5

Note: After evaluation, the data of the two paths are the similar, so only chain 0 is used as the representative data in test report.

7.4 Hopping Channel Separation

Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Kevin Ko

GFSK 1TX

Channel	Frequency (MHz)	Hopping Channel Separation (MHz)	Minimum Limit (MHz)	Test Result
0	2402	1.00	0.64	Pass
39	2441	1.00	0.63	Pass
78	2480	1.00	0.64	Pass

Note: The minimum limit is two-third 20dB bandwidth.

8DPSK 1TX

Channel	Frequency (MHz)	Hopping Channel Separation (MHz)	Minimum Limit (MHz)	Test Result
0	2402	1.00	0.88	Pass
39	2441	1.00	0.88	Pass
78	2480	1.00	0.88	Pass

Note: The minimum limit is two-third 20dB bandwidth.

GFSK 2TX

Channel	Frequency (MHz)	Hopping Channel Separation (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
0	2402	1.00	1.00	0.63	Pass
39	2441	1.00	1.00	0.64	Pass
78	2480	1.00	1.00	0.63	Pass

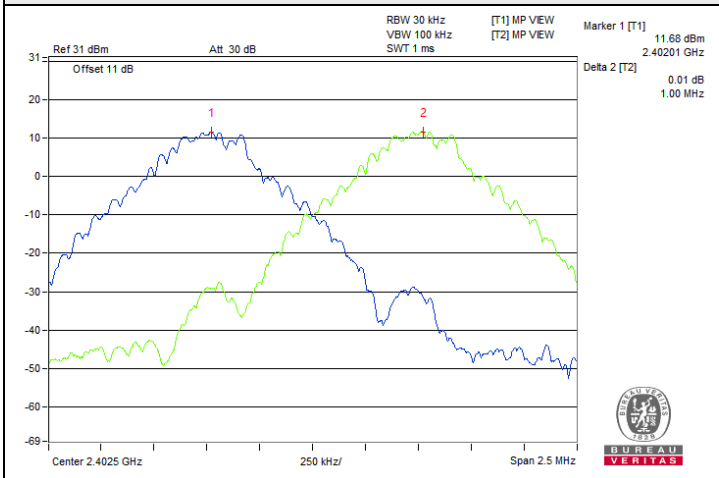
Note: The minimum limit is two-third 20dB bandwidth.

8DPSK 2TX

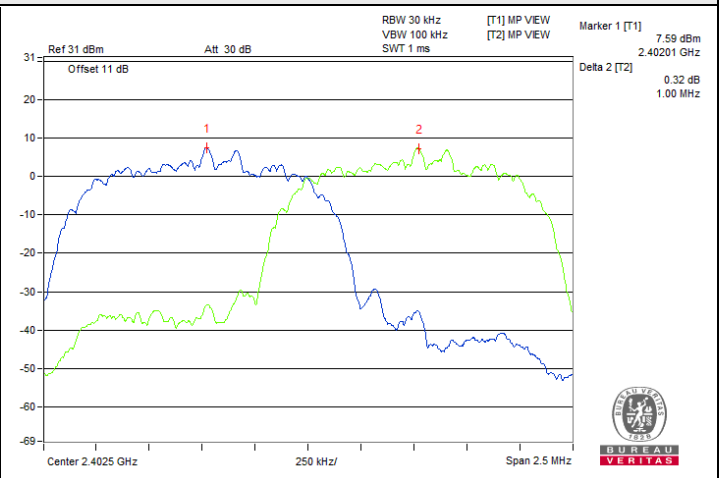
Channel	Frequency (MHz)	Hopping Channel Separation (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
0	2402	1.00	1.00	0.87	Pass
39	2441	1.00	1.00	0.86	Pass
78	2480	1.00	1.00	0.87	Pass

Note: The minimum limit is two-third 20dB bandwidth.

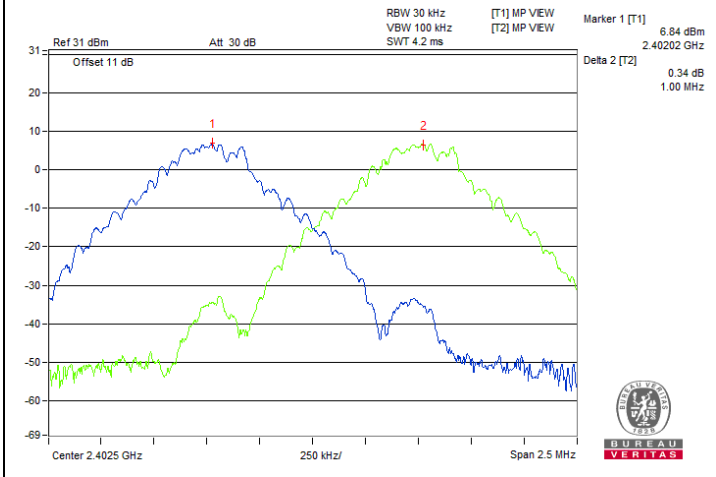
Spectrum Plot of Minimum Value



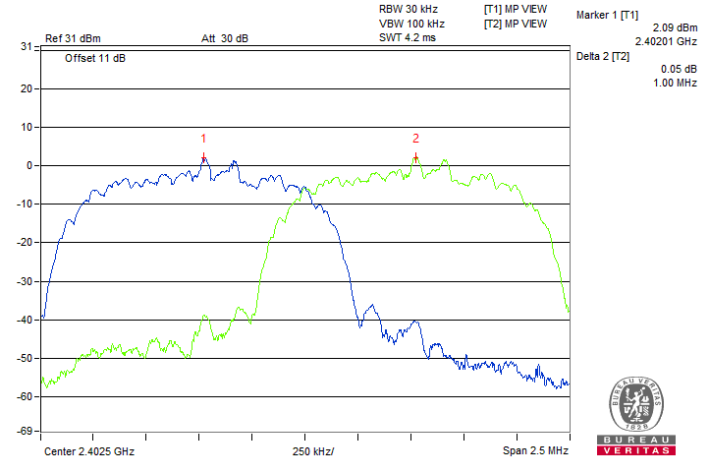
GFSK 1TX : CH 0



8DPSK 1TX : CH 0



GFSK 2TX / Chain 0 : CH 0



8DPSK 2TX / Chain 0 : CH 0

7.5 20 dB Bandwidth

Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Kevin Ko

GFSK 1TX

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
0	2402	0.95
39	2441	0.94
78	2480	0.96

8DPSK 1TX

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
0	2402	1.31
39	2441	1.31
78	2480	1.31

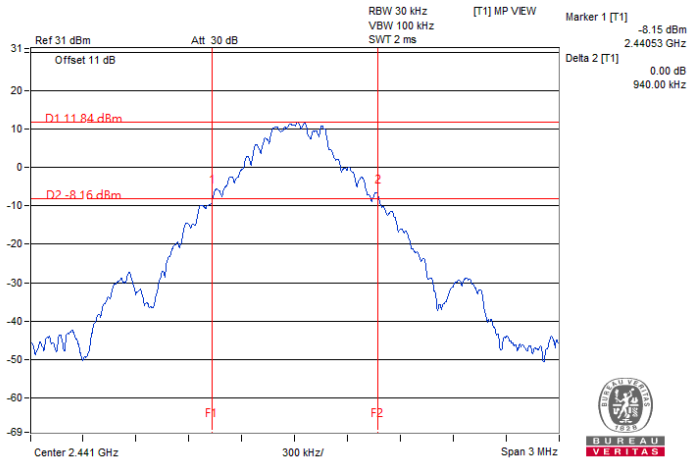
GFSK 2TX

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	
		Chain 0	Chain 1
0	2402	0.95	0.94
39	2441	0.95	0.95
78	2480	0.94	0.95

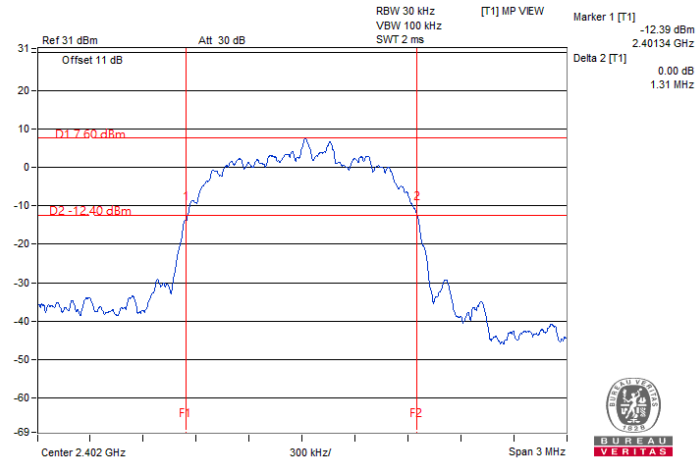
8DPSK 2TX

Channel	Frequency (MHz)	20dB Bandwidth (MHz)	
		Chain 0	Chain 1
0	2402	1.32	1.30
39	2441	1.30	1.29
78	2480	1.30	1.31

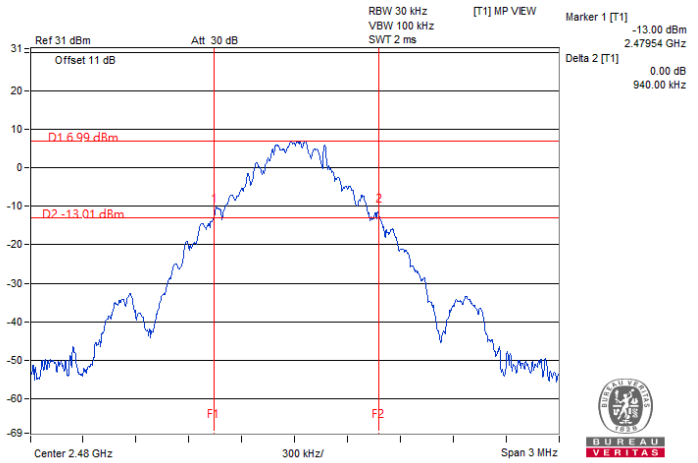
Spectrum Plot of Minimum Value



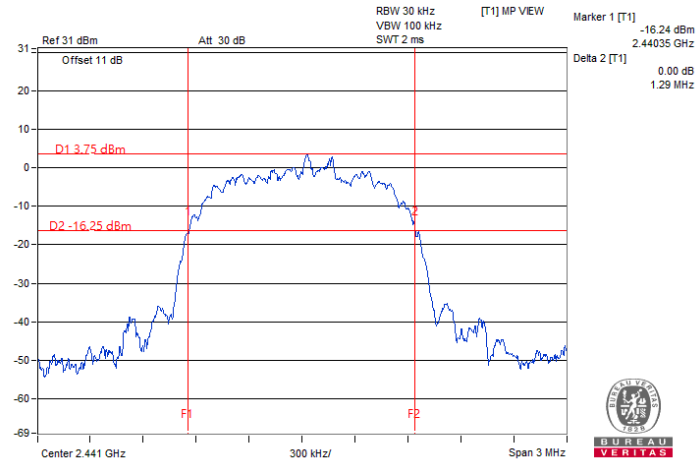
GFSK 1TX : CH 39



8DPSK 1TX : CH 0



GFSK 2TX / Chain 0 : CH 78



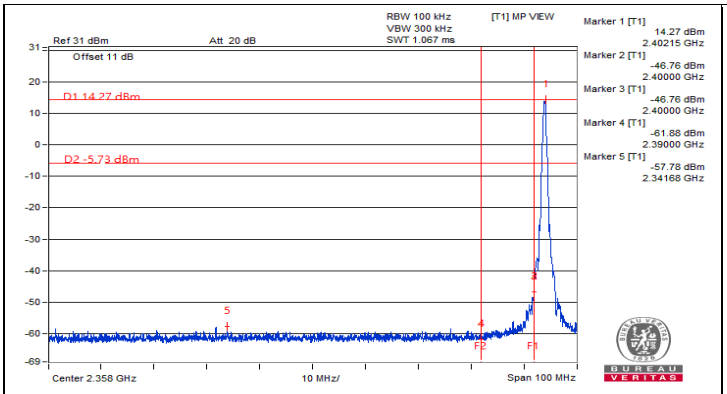
8DPSK 2TX / Chain 1 : CH 39

7.6 Conducted Out of Band Emissions

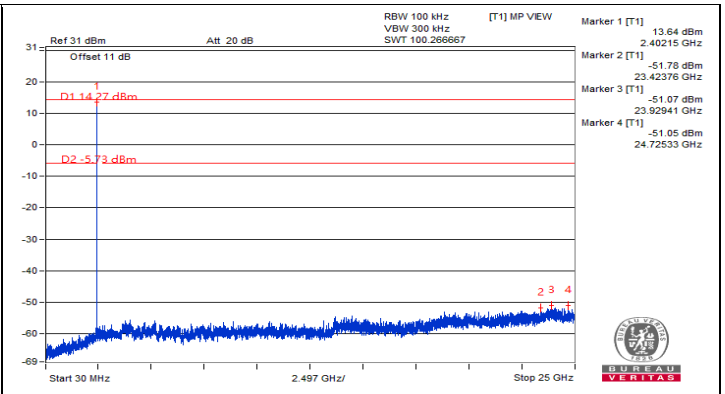
Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Kevin Ko

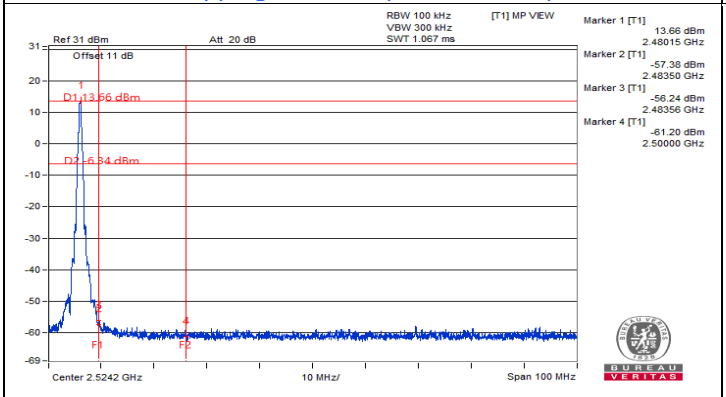
GFSK 1TX



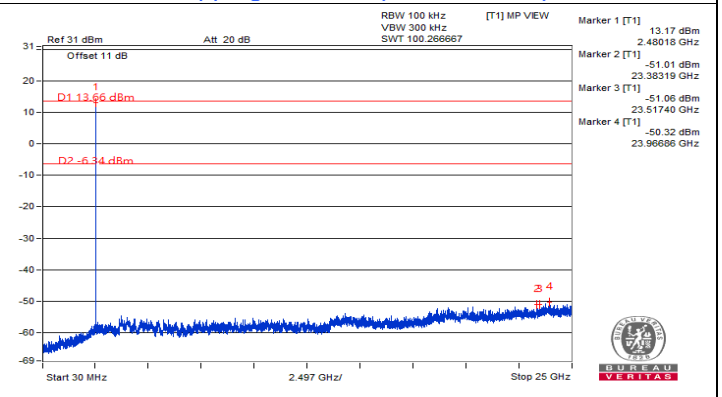
Hopping disabled (Low Channel)



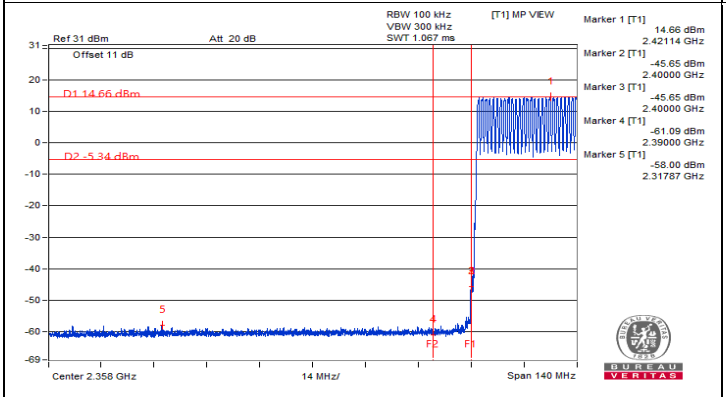
Hopping disabled (Low Channel)



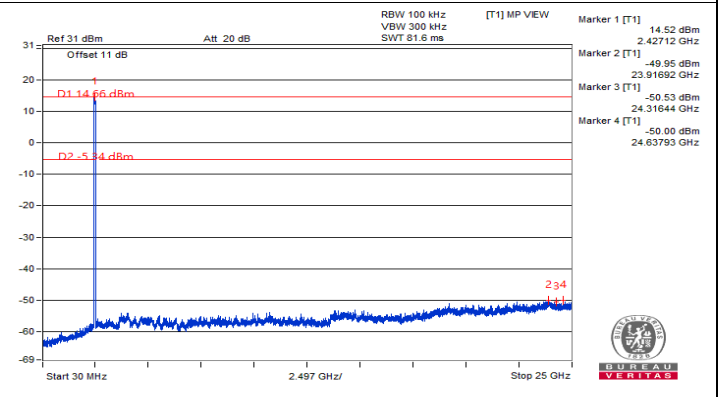
Hopping disabled (High Channel)



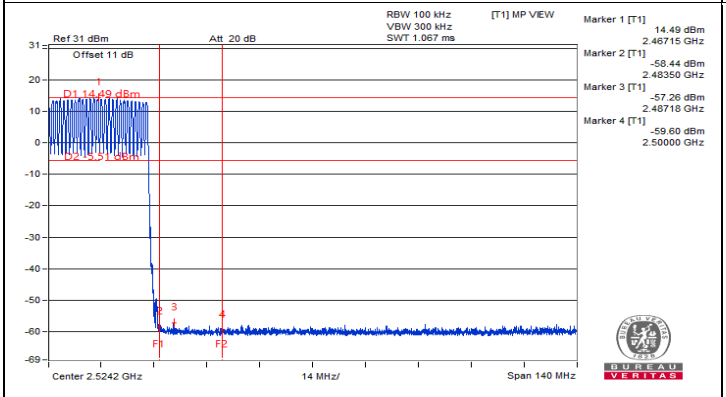
Hopping disabled (High Channel)



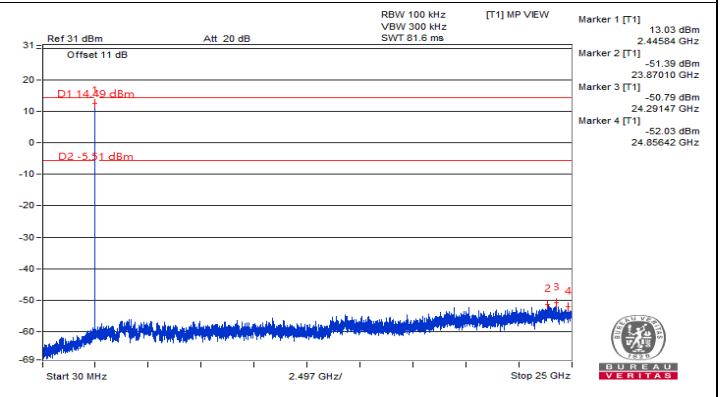
Hopping enabled (Low Channel)



Hopping enabled (Low Channel)

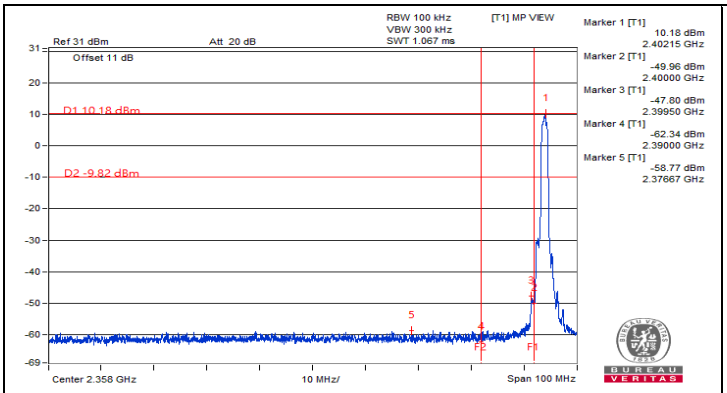


Hopping enabled (High Channel)

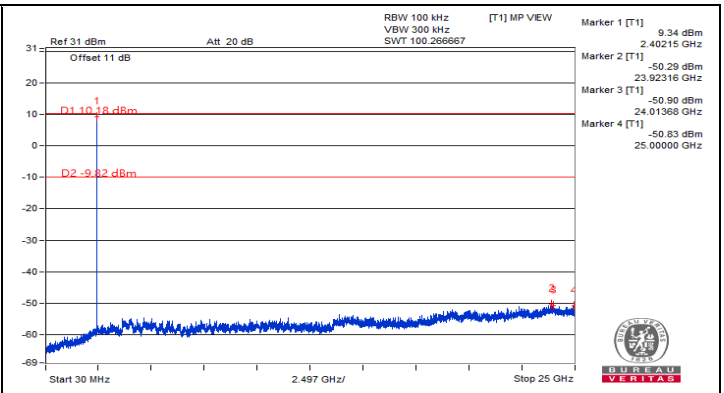


Hopping enabled (High Channel)

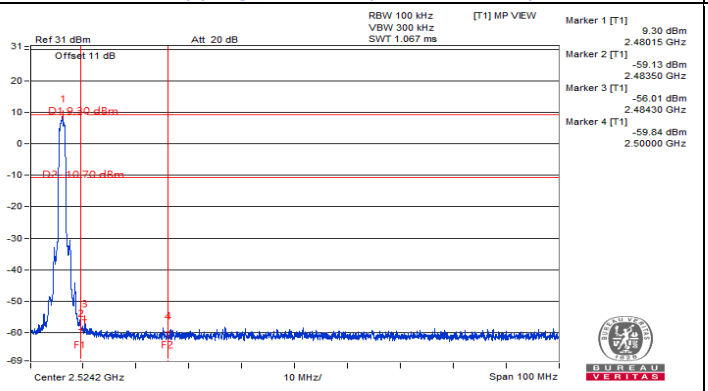
8DPSK 1TX



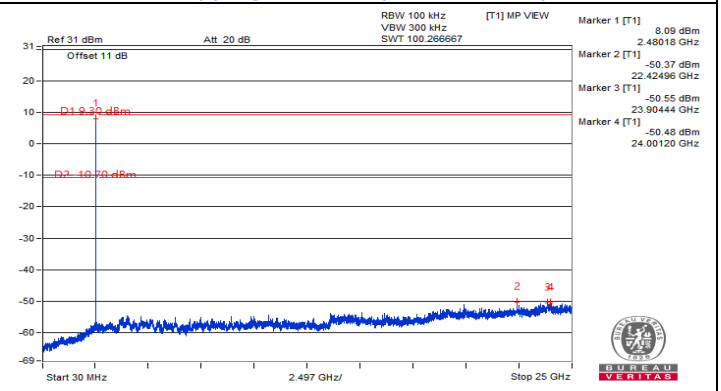
Hopping disabled (Low Channel)



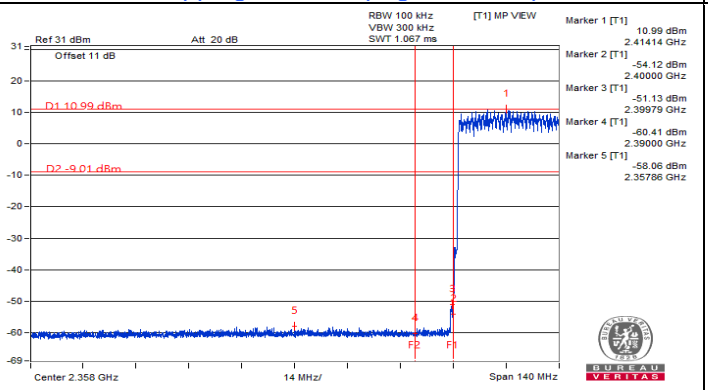
Hopping disabled (Low Channel)



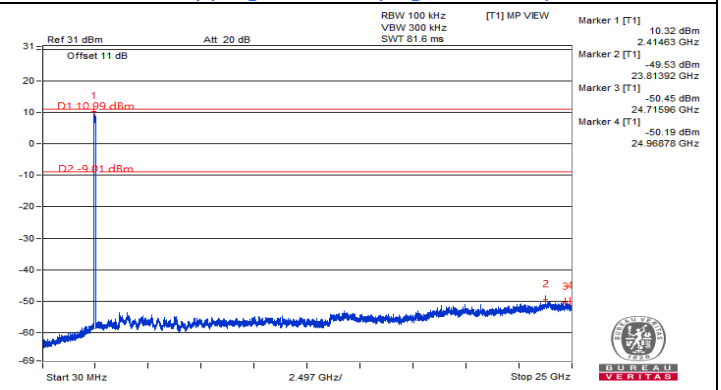
Hopping disabled (High Channel)



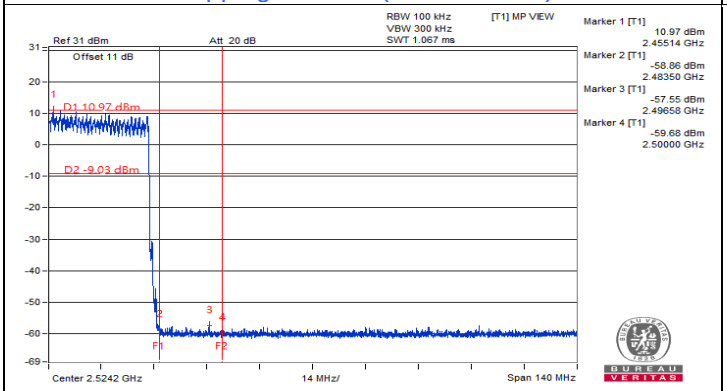
Hopping disabled (High Channel)



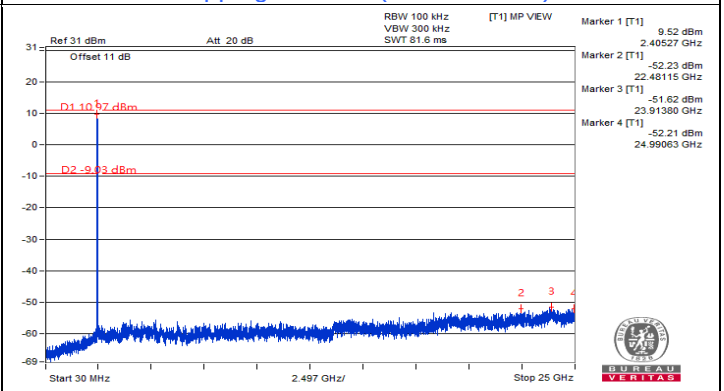
Hopping enabled (Low Channel)



Hopping enabled (Low Channel)



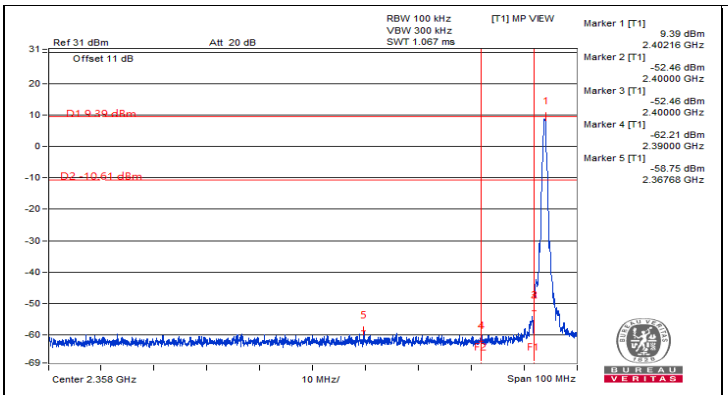
Hopping enabled (High Channel)



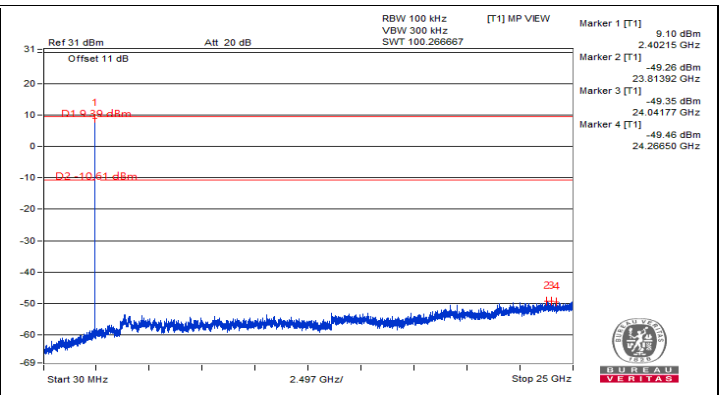
Hopping enabled (High Channel)

GFSK 2TX

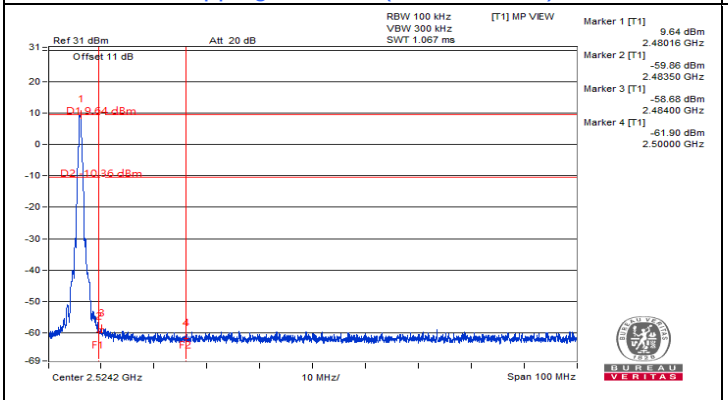
Chain 0



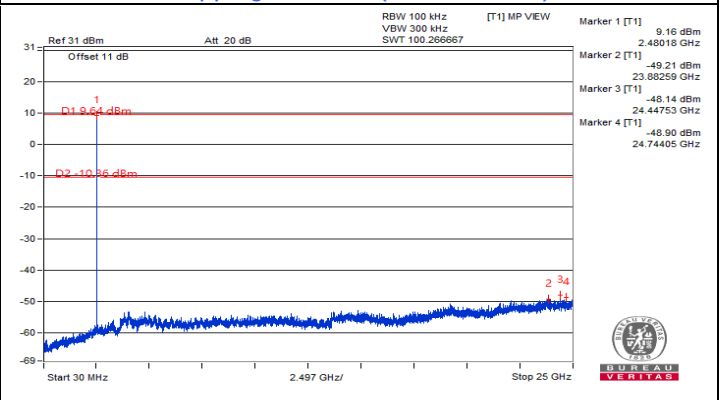
Hopping disabled (Low Channel)



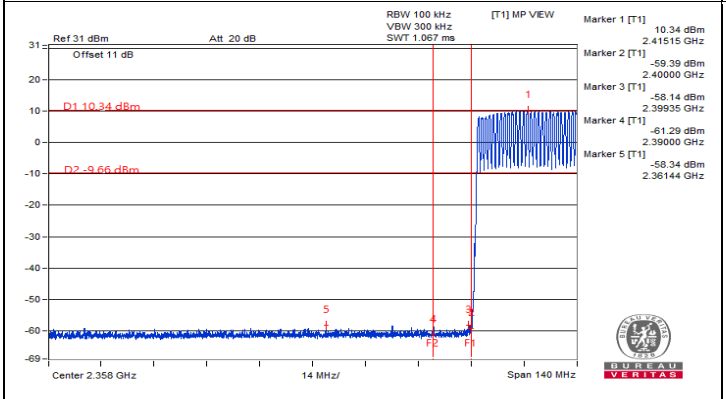
Hopping disabled (Low Channel)



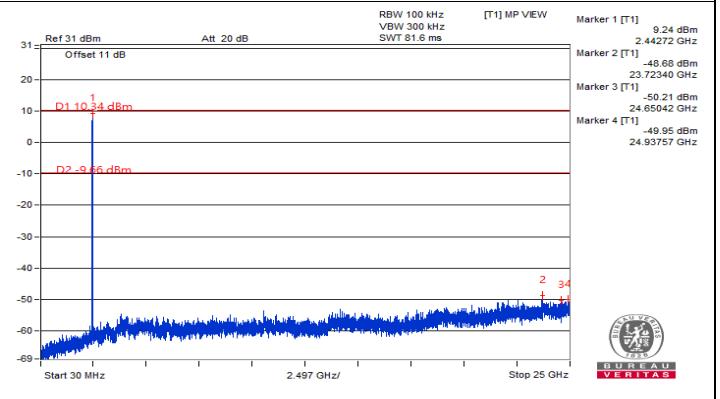
Hopping disabled (High Channel)



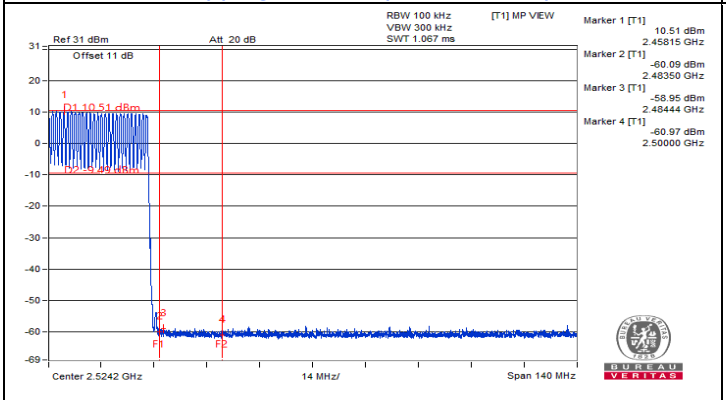
Hopping disabled (High Channel)



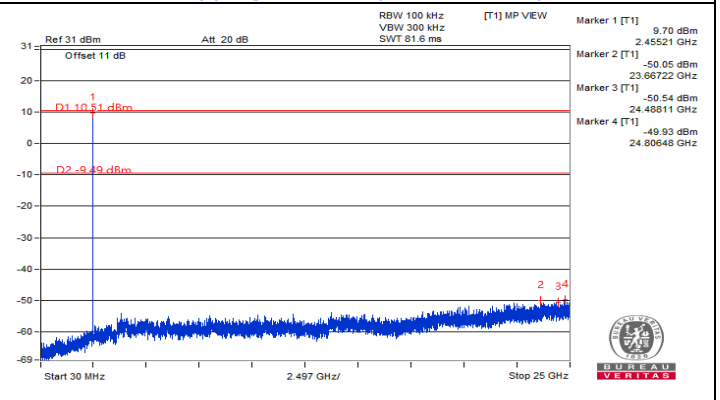
Hopping enabled (Low Channel)



Hopping enabled (Low Channel)

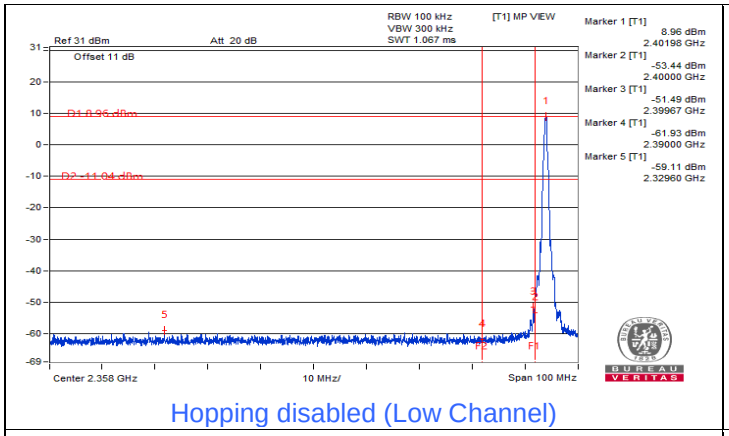


Hopping enabled (High Channel)

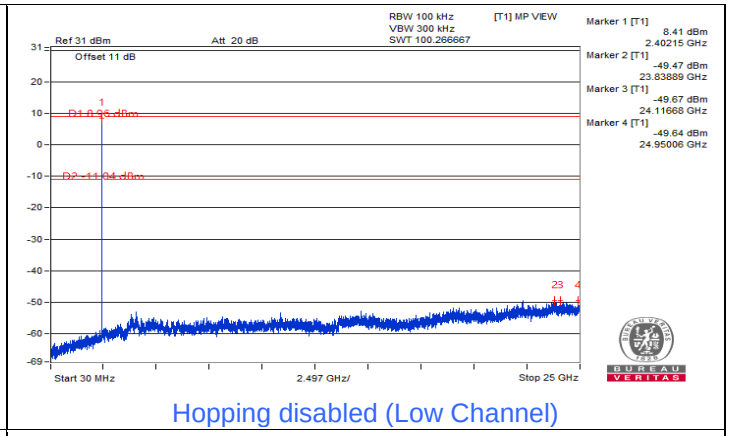


Hopping enabled (High Channel)

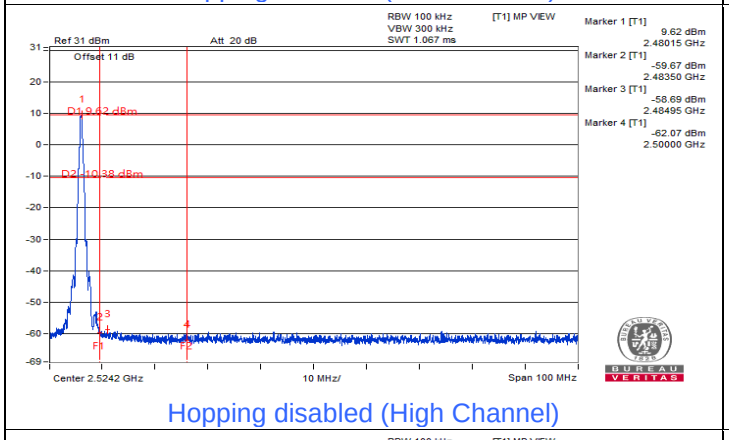
Chain 1



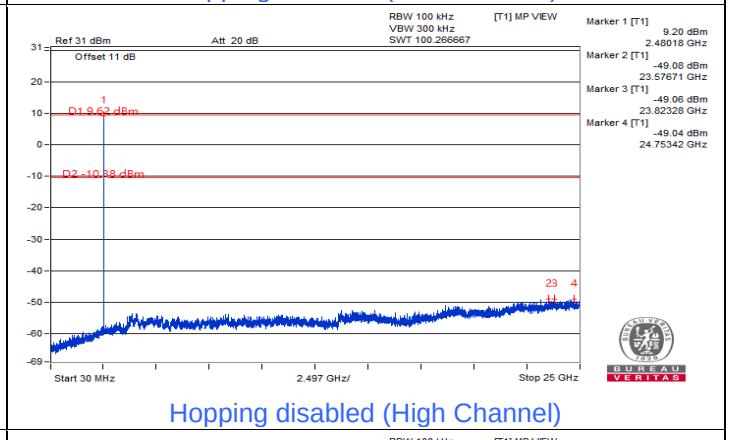
Hopping disabled (Low Channel)



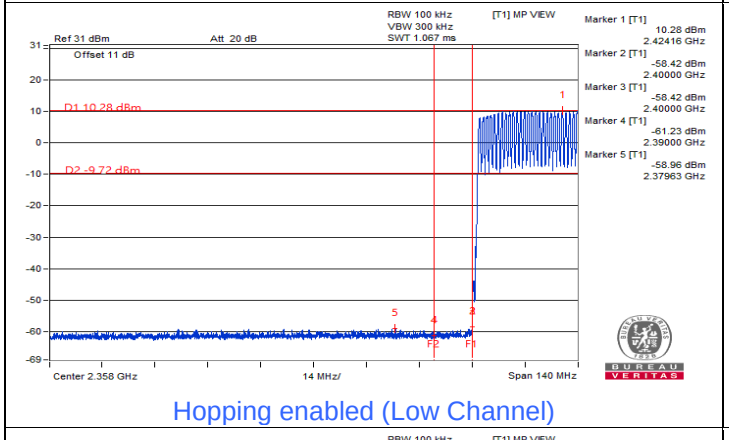
Hopping disabled (Low Channel)



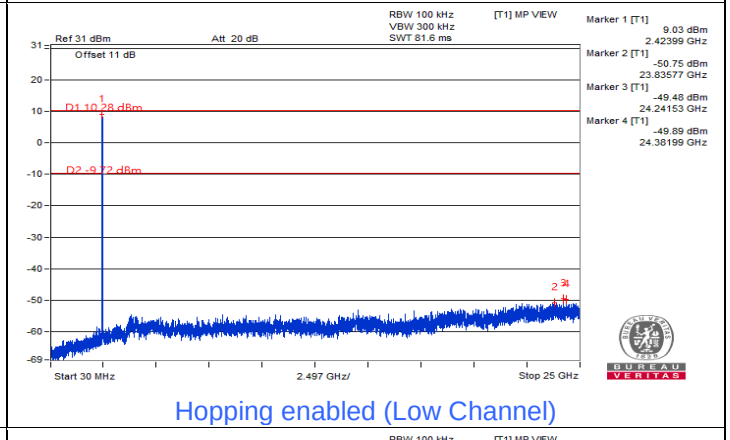
Hopping disabled (High Channel)



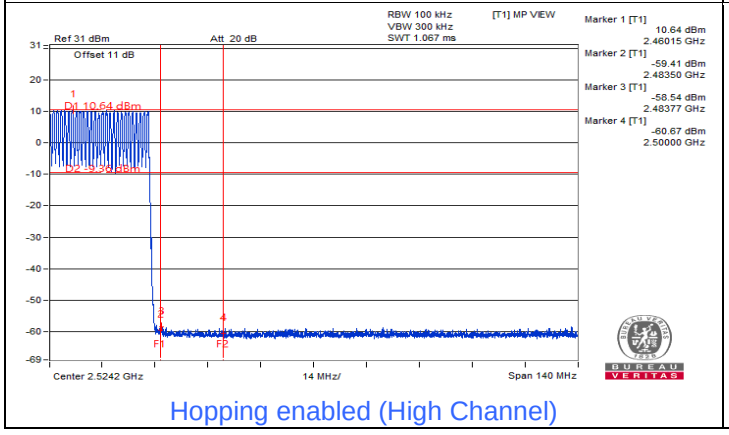
Hopping disabled (High Channel)



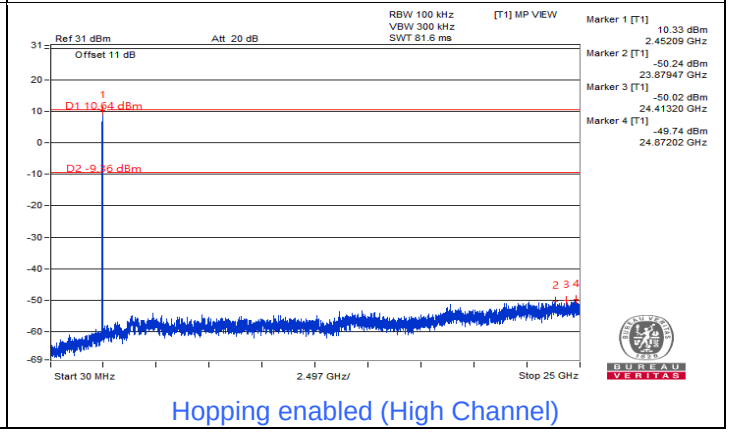
Hopping enabled (Low Channel)



Hopping enabled (Low Channel)



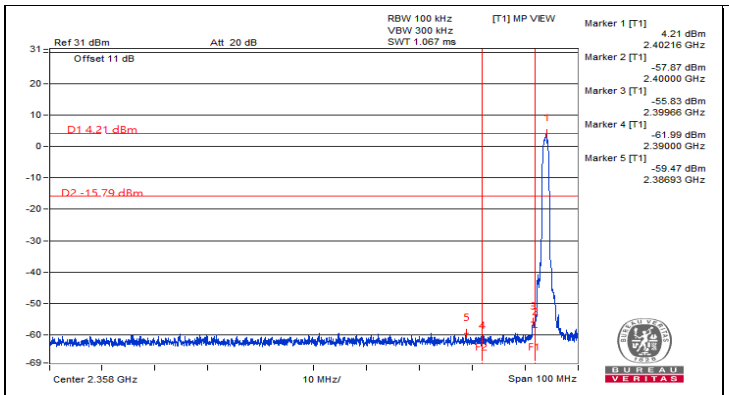
Hopping enabled (High Channel)



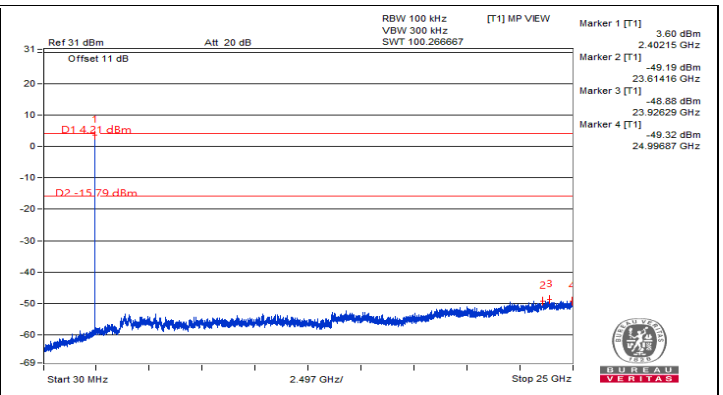
Hopping enabled (High Channel)

8DPSK 2TX

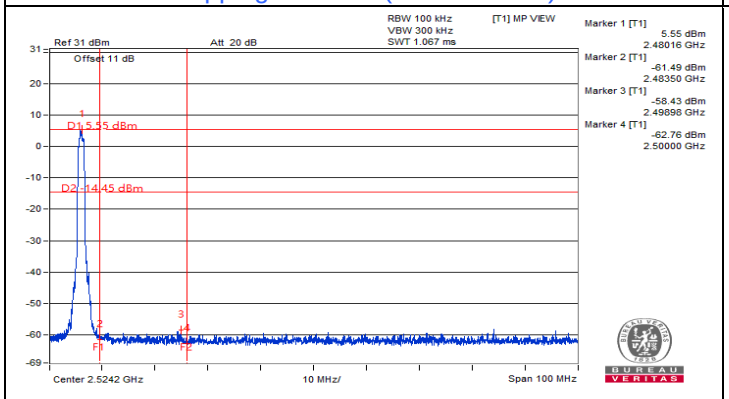
Chain 0



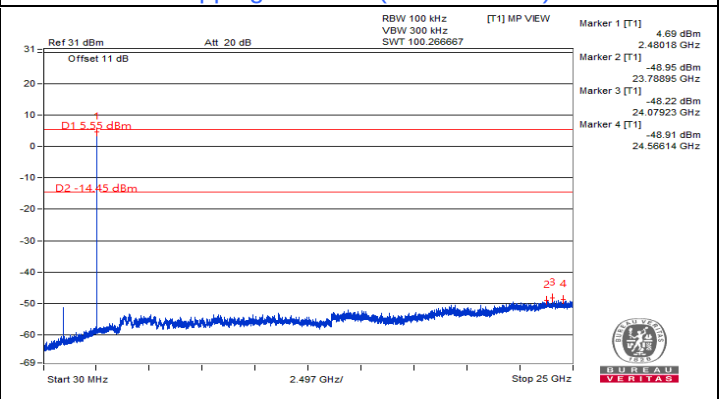
Hopping disabled (Low Channel)



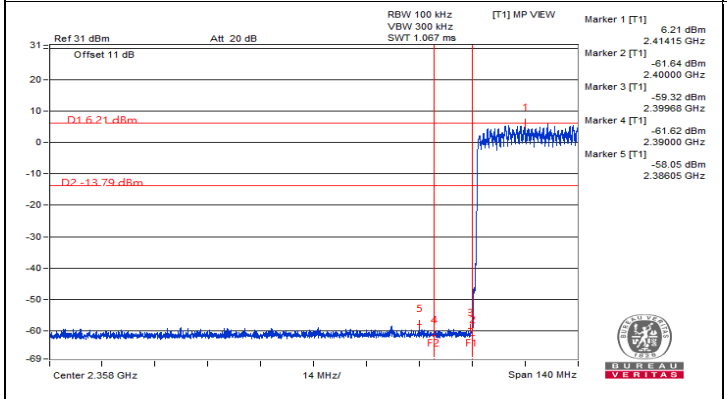
Hopping disabled (Low Channel)



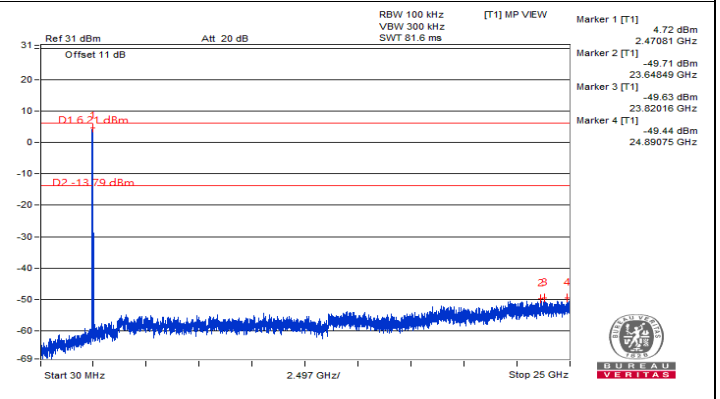
Hopping disabled (High Channel)



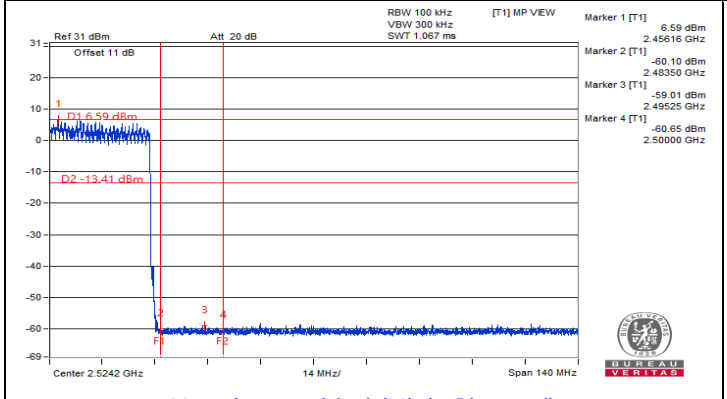
Hopping disabled (High Channel)



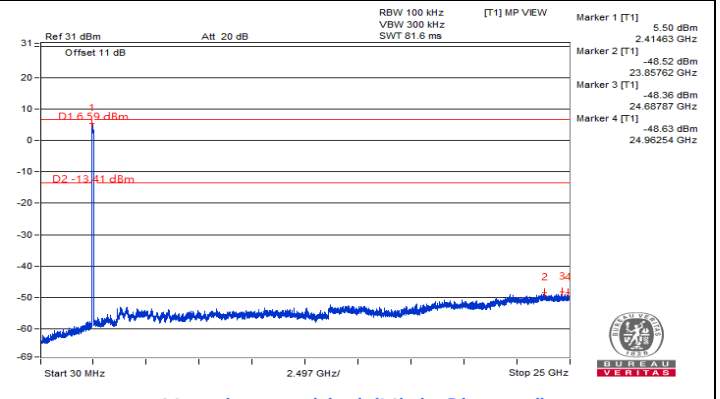
Hopping enabled (Low Channel)



Hopping enabled (Low Channel)

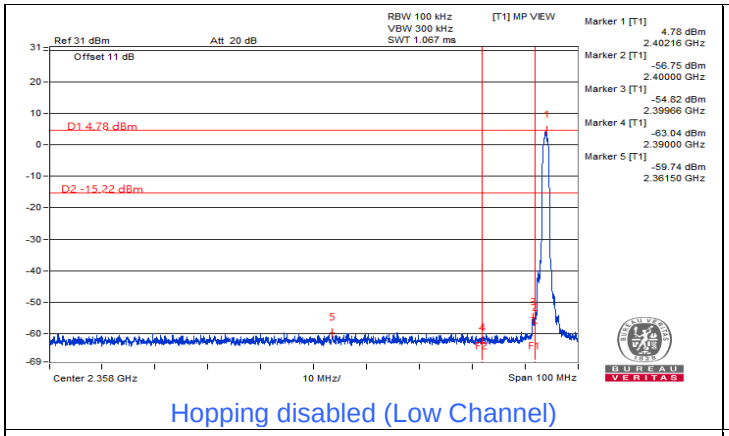


Hopping enabled (High Channel)

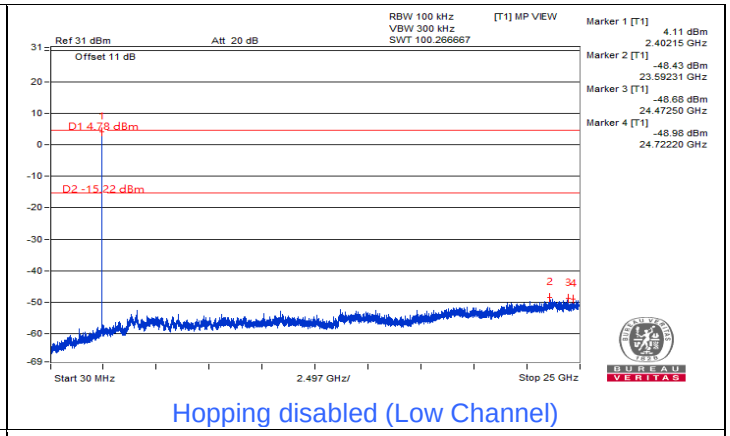


Hopping enabled (High Channel)

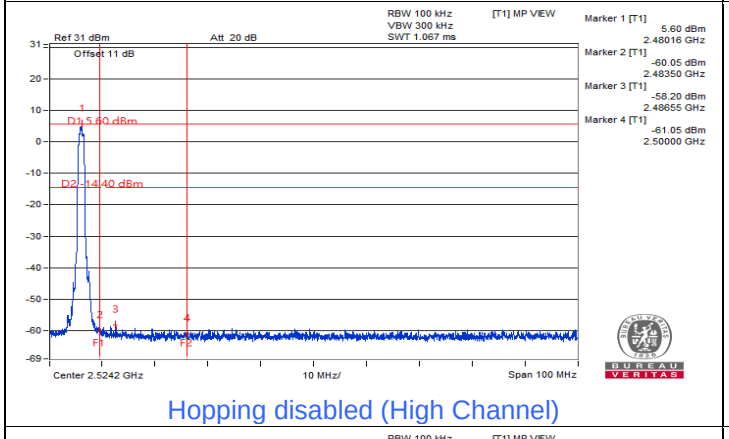
Chain 1



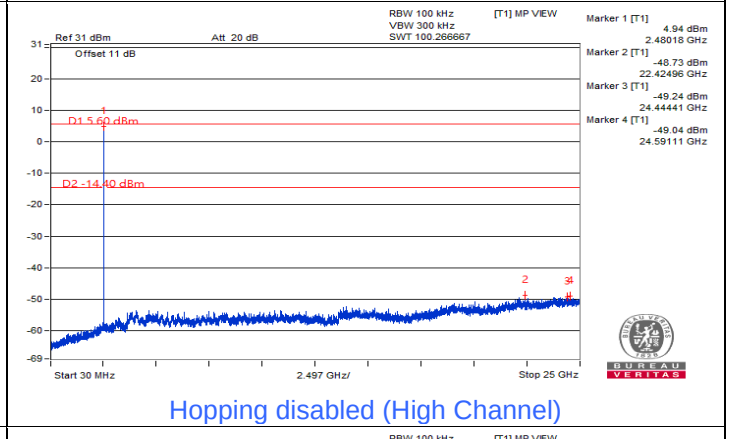
Hopping disabled (Low Channel)



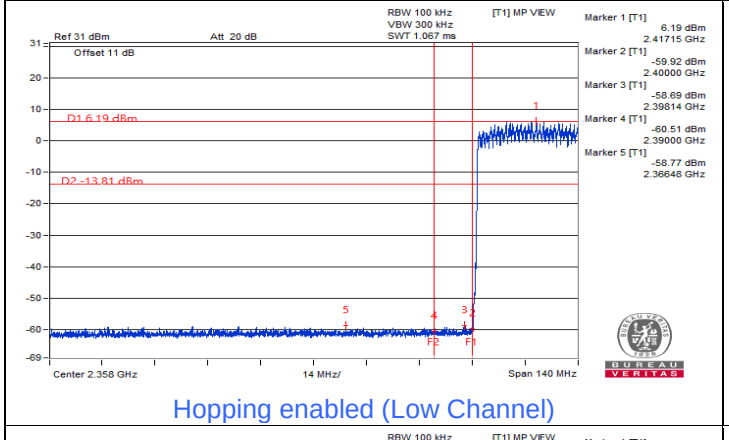
Hopping disabled (Low Channel)



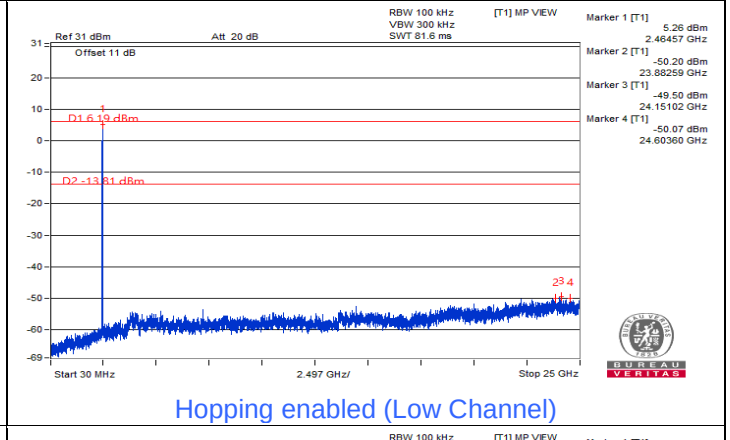
Hopping disabled (High Channel)



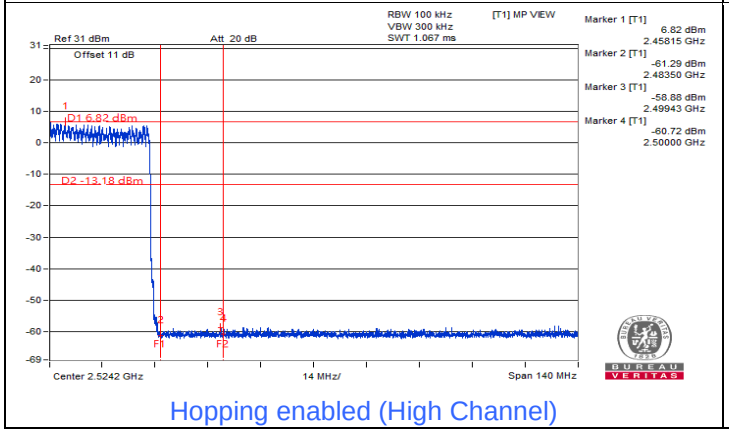
Hopping disabled (High Channel)



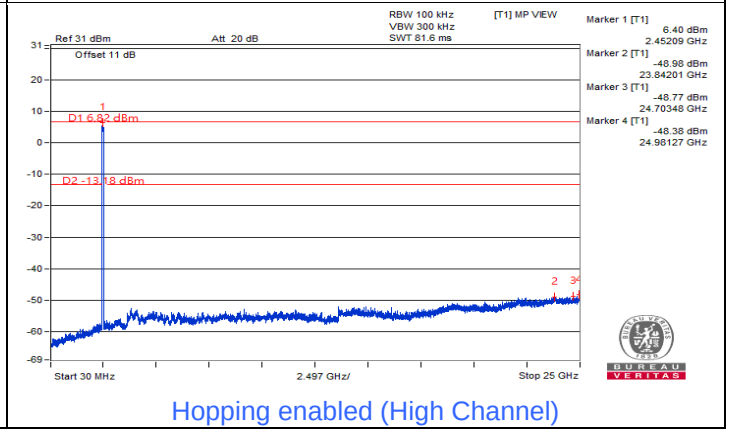
Hopping enabled (Low Channel)



Hopping enabled (Low Channel)



Hopping enabled (High Channel)



Hopping enabled (High Channel)

7.7 AC Power Conducted Emissions

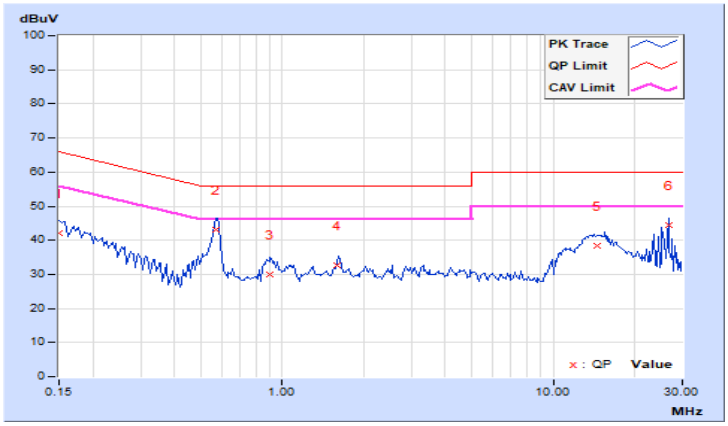
Mode B

RF Mode	BT GFSK	**Channel**	CH 39：2441 MHz
Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 68% RH
Tested By	Tom Yang		

Phase Of Power : Line (L)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.15027	9.97	32.01	24.72	41.98	34.69	65.99	55.99	-24.01	-21.30
2	**0.56971**	**9.99**	**32.95**	**26.53**	**42.94**	**36.52**	**56.00**	**46.00**	**-13.06**	**-9.48**
3	0.90172	10.01	20.06	16.34	30.07	26.35	56.00	46.00	-25.93	-19.65
4	1.60157	10.04	22.54	18.16	32.58	28.20	56.00	46.00	-23.42	-17.80
5	14.60155	10.72	27.67	20.82	38.39	31.54	60.00	50.00	-21.61	-18.46
6	26.61157	11.22	33.31	28.52	44.53	39.74	60.00	50.00	-15.47	-10.26

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

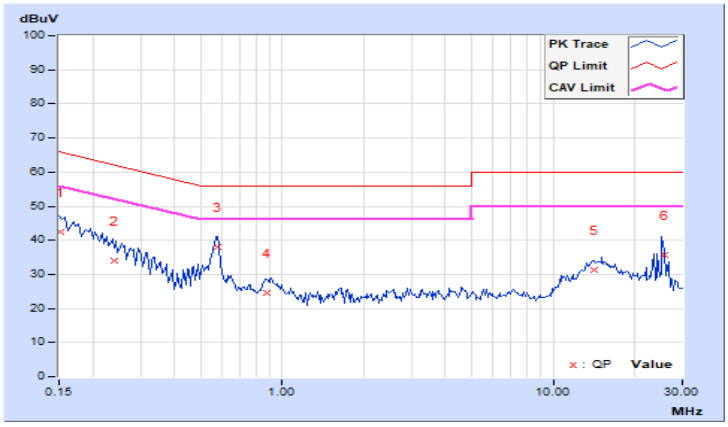


RF Mode	BT GFSK	**Channel**	CH 39：2441 MHz
Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 68% RH
Tested By	Tom Yang		

Phase Of Power : Neutral (N)										
No	**Frequency (MHz)**	**Correction Factor (dB)**	**Reading Value (dBuV)**		**Emission Level (dBuV)**		**Limit (dBuV)**		**Margin (dB)**	
			Q.P.	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**	**Q.P.**	**AV.**
1	0.15194	10.01	32.53	19.56	42.54	29.57	65.89	55.89	-23.35	-26.32
2	0.23935	10.02	24.06	10.37	34.08	20.39	62.12	52.12	-28.04	-31.73
3	0.57715	10.04	27.89	18.74	37.93	28.78	56.00	46.00	-18.07	-17.22
4	0.88154	10.05	14.53	2.82	24.58	12.87	56.00	46.00	-31.42	-33.13
5	14.18152	10.61	20.62	13.15	31.23	23.76	60.00	50.00	-28.77	-26.24
6	25.89171	10.89	24.85	18.34	35.74	29.23	60.00	50.00	-24.26	-20.77

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



7.8 Unwanted Emissions below 1 GHz

Radiated versus Conducted Measurement
For Radiated measurement: The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation) For Conducted measurement: The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).

Conducted Emission Convert Formula
a. Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8 d = measurement distance in 3 meters. b. EIRP Level (dBm) = Raw Value(dBm) + Correction Factor(dB) c. Correction Factor is directional gain, and the composite gain will be used when signal support the correlated signal For the out of band spurious the gain for the specific band may have been used rather than the highest gain across all bands. For the band edge the gain for the specific band may have been used. Notes: 1. In restricted bands below 1000 MHz, add upper bound on ground plane reflection: For f = 30 – 1000 MHz, add 4.7 dB. 2. The conducted emission test was considered some factor to compute test result.

Mode A

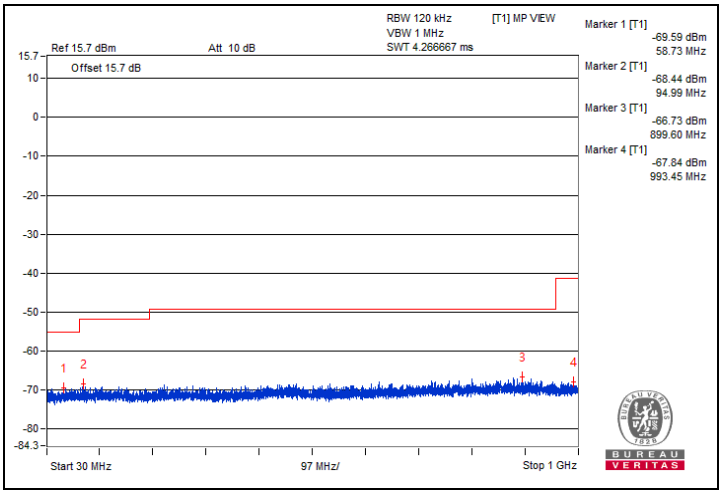
GFSK 1TX - Channel 39

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	58.73	30.83	40	-9.17	-69.59	5.16	-64.43
2	94.99	31.98	43.5	-11.52	-68.44	5.16	-63.28
3	244	31.76	46	-14.24	-68.66	5.16	-63.50
4	546.88	32.06	46	-13.94	-68.36	5.16	-63.20
5	783.2	32.74	46	-13.26	-67.68	5.16	-62.52
6	899.6	33.69	46	-12.31	-66.73	5.16	-61.57

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



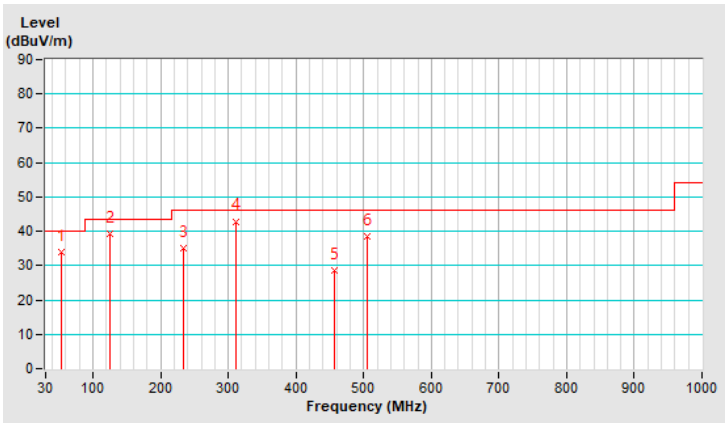
Mode B

RF Mode	BT GFSK	Channel	CH 39：2441 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 68% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	52.33	33.9 QP	40.0	-6.1	1.00 H	123	47.6	-13.7
2	124.96	39.2 QP	43.5	-4.3	1.00 H	130	54.3	-15.1
3	234.38	34.9 QP	46.0	-11.1	1.50 H	64	50.4	-15.5
4	**311.91**	**42.9 QP**	**46.0**	**-3.1**	**2.00 H**	**169**	**55.2**	**-12.3**
5	456.89	28.6 QP	46.0	-17.4	1.00 H	124	37.3	-8.7
6	504.44	38.5 QP	46.0	-7.5	2.00 H	308	46.3	-7.8

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

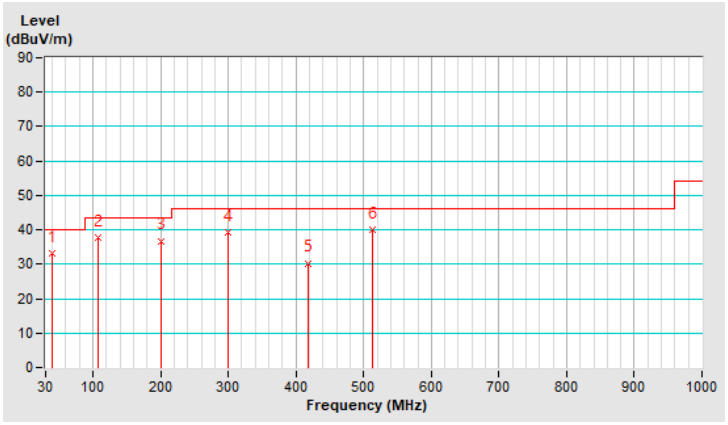


RF Mode	BT GFSK	**Channel**	CH 39：2441 MHz
Frequency Range	30 MHz ~ 1 GHz	**Detector Function & Bandwidth**	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 68% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	39.46	33.2 QP	40.0	-6.8	1.00 V	172	47.4	-14.2
2	108.55	37.7 QP	43.5	-5.8	1.50 V	237	54.4	-16.7
3	199.96	36.8 QP	43.5	-6.7	1.50 V	62	53.4	-16.6
4	299.78	39.3 QP	46.0	-6.7	2.00 V	147	52.0	-12.7
5	417.85	30.3 QP	46.0	-15.7	1.00 V	188	39.9	-9.6
6	512.71	40.0 QP	46.0	-6.0	1.00 V	225	47.5	-7.5

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



7.9 Unwanted Emissions above 1 GHz

Radiated versus Conducted Measurement
For Radiated measurement: The level of unwanted emissions was measured when radiated by the cabinet or structure of the equipment with the antenna connector(s) terminated by a specified load (cabinet radiation) For Conducted measurement: The level of unwanted emissions was measured as their power in a specified load (conducted spurious emissions).

Conducted Emission Convert Formula
a. Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8 d = measurement distance in 3 meters. b. EIRP Level (dBm) = Raw Value(dBm) + Correction Factor(dB) c. Correction Factor is directional gain, and the composite gain will be used when signal support the correlated signal For the out of band spurious the gain for the specific band may have been used rather than the highest gain across all bands. For the band edge the gain for the specific band may have been used. Notes: The conducted emission test was considered some factor to compute test result.

Mode A

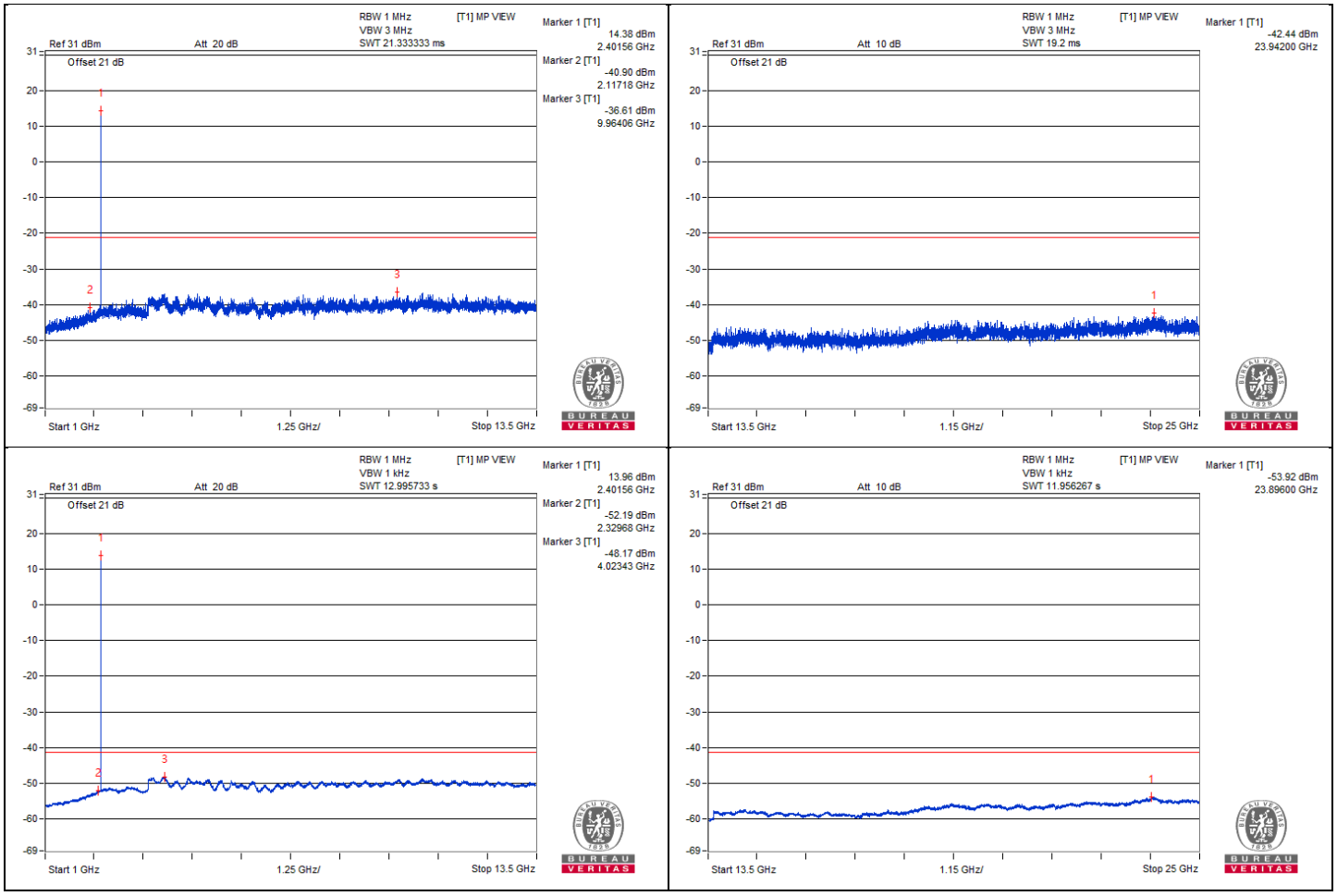
GFSK 1TX - Channel 0

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	4793.75	62.48 PK	74	-11.52	-37.94	5.16	-32.78
2	4823.43	50.74 AV	54	-3.26	-49.68	5.16	-44.52

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

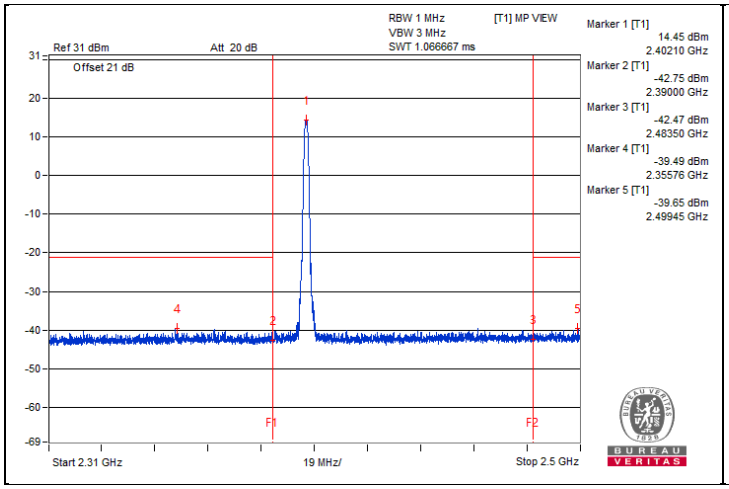


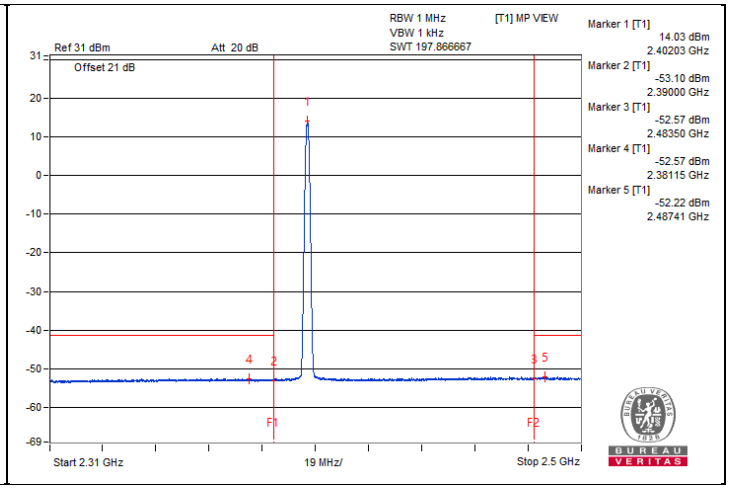
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2355.76	59.3 PK	74	-14.7	-39.49	3.53	-35.96
2	2381.15	46.22 AV	54	-7.78	-52.57	3.53	-49.04
3	2499.45	59.14 PK	74	-14.86	-39.65	3.53	-36.12
4	2487.41	46.57 AV	54	-7.43	-52.22	3.53	-48.69

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.





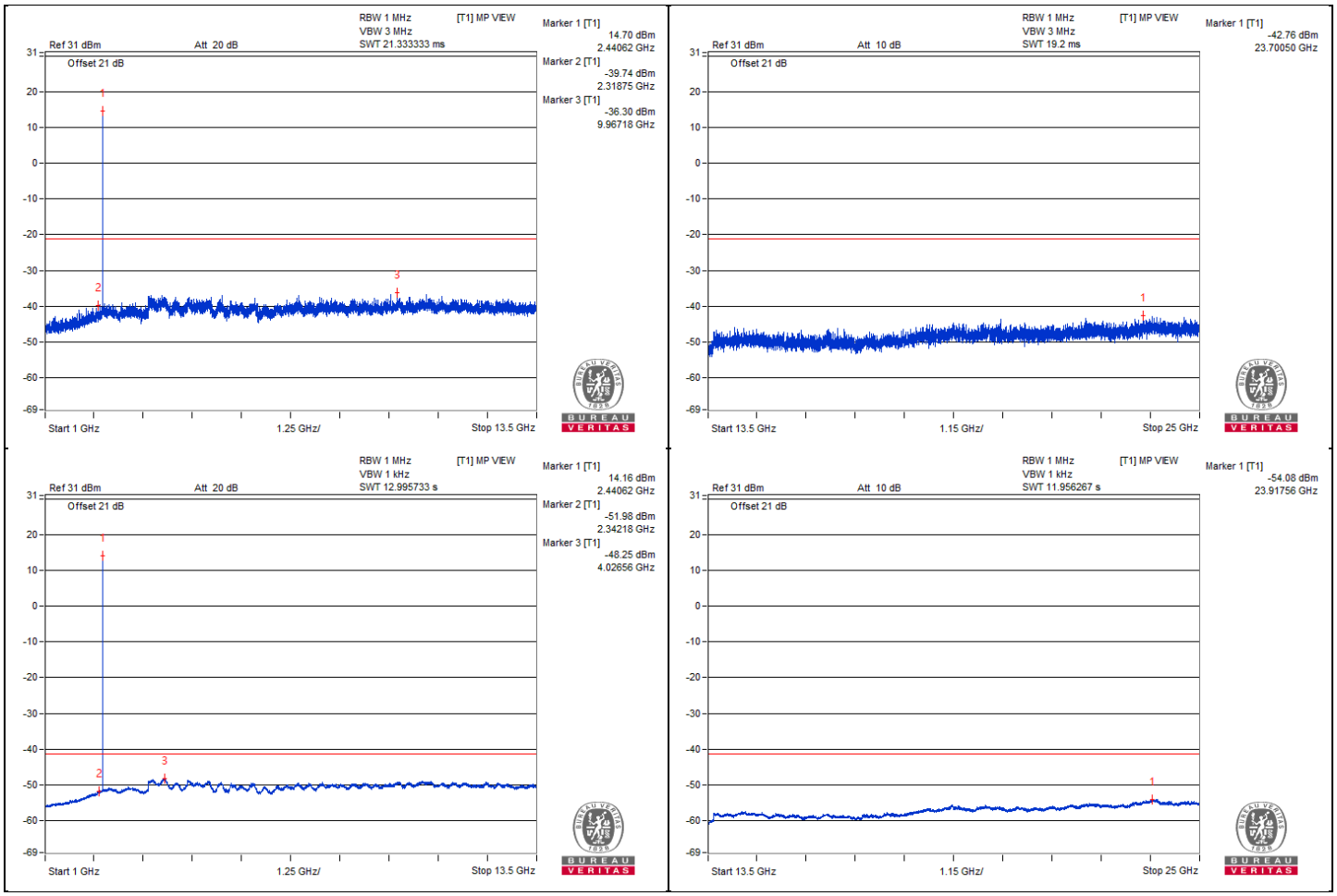
GFSK 1TX - Channel 39

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	4875	61.58 PK	74	-12.42	-38.84	5.16	-33.68
2	4873.43	51 AV	54	-3	-49.42	5.16	-44.26
3	7332.81	61.11 PK	74	-12.89	-39.31	5.16	-34.15
4	7342.18	49.93 AV	54	-4.07	-50.49	5.16	-45.33

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

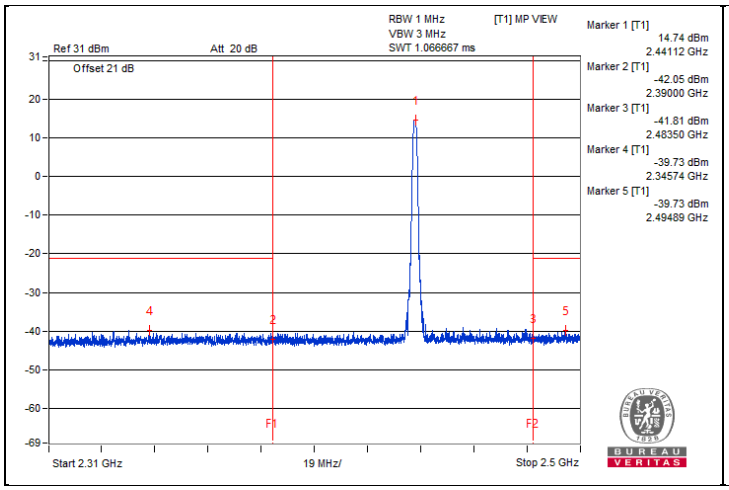


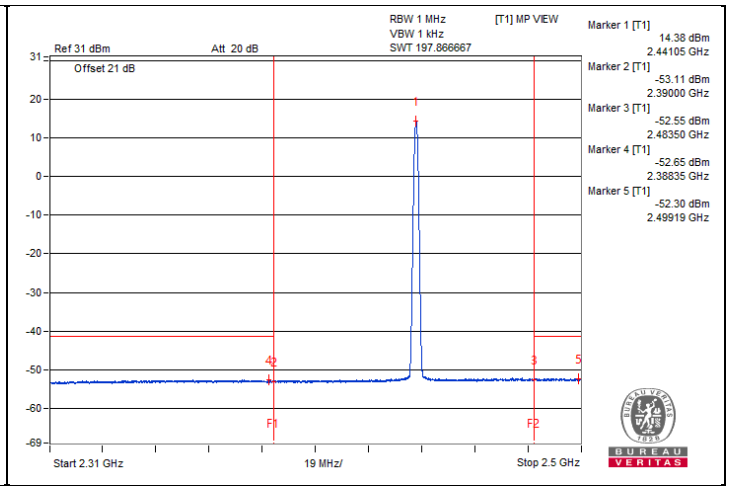
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2345.74	59.06 PK	74	-14.94	-39.73	3.53	-36.20
2	2388.35	46.14 AV	54	-7.86	-52.65	3.53	-49.12
3	2494.89	59.06 PK	74	-14.94	-39.73	3.53	-36.20
4	2499.19	46.49 AV	54	-7.51	-52.3	3.53	-48.77

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.





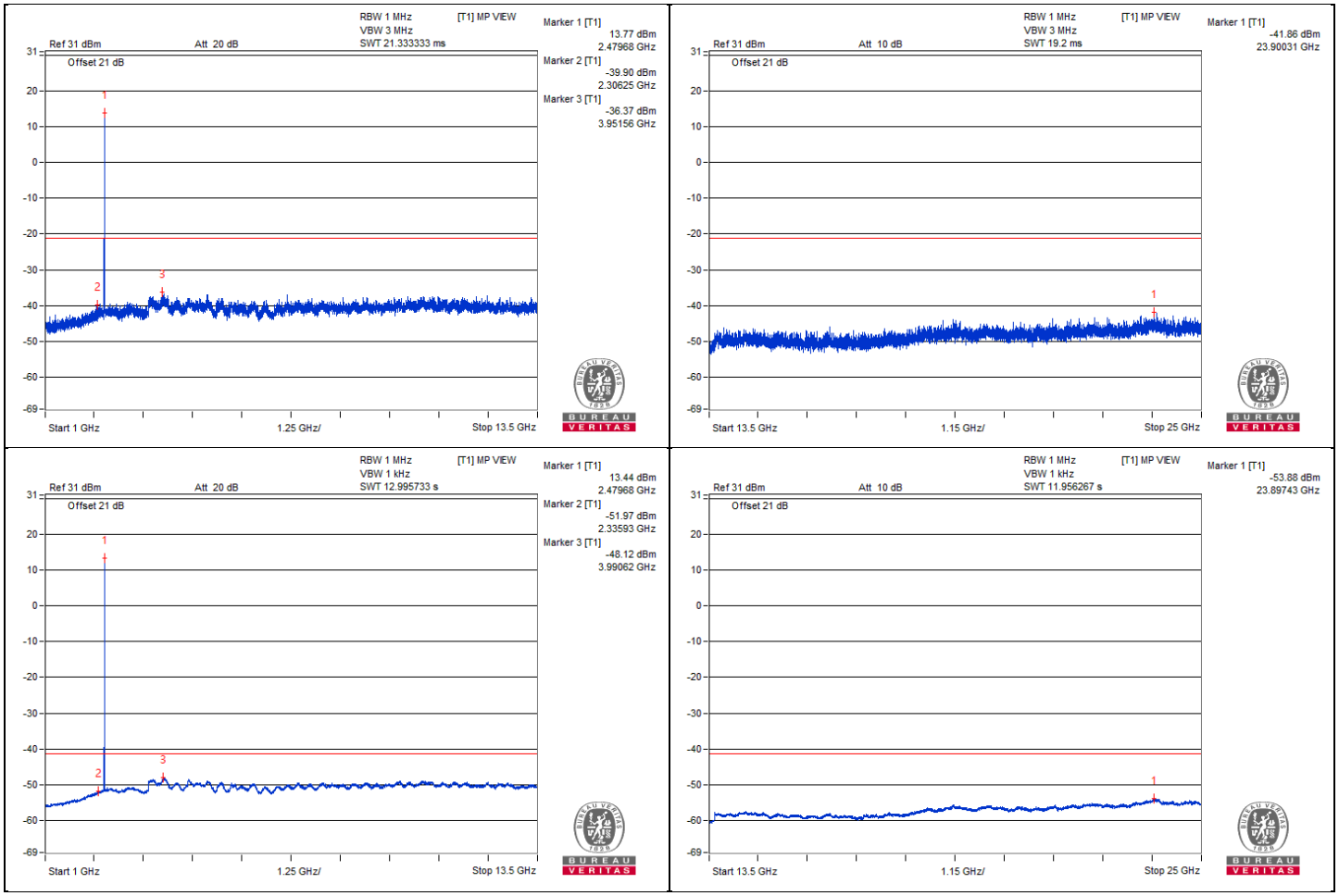
GFSK 1TX - Channel 78

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	4970.31	61.44 PK	74	-12.56	-38.98	5.16	-33.82
2	4943.75	50.48 AV	54	-3.52	-49.94	5.16	-44.78
3	7448.43	61.97 PK	74	-12.03	-38.45	5.16	-33.29
4	7445.31	50.8 AV	54	-3.2	-49.62	5.16	-44.46

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

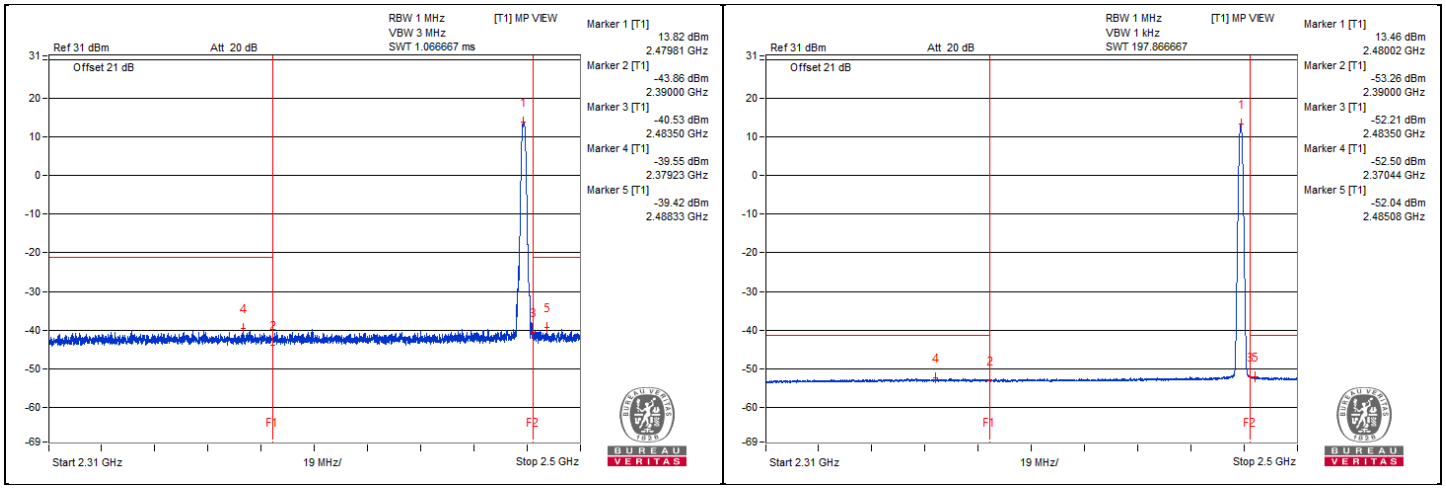


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2379.23	59.24 PK	74	-14.76	-39.55	3.53	-36.02
2	2360.42	46.29 AV	54	-7.71	-52.5	3.53	-48.97
3	2488.31	59.37 PK	74	-14.63	-39.42	3.53	-35.89
4	2485.08	46.75 AV	54	-7.25	-52.04	3.53	-48.51

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



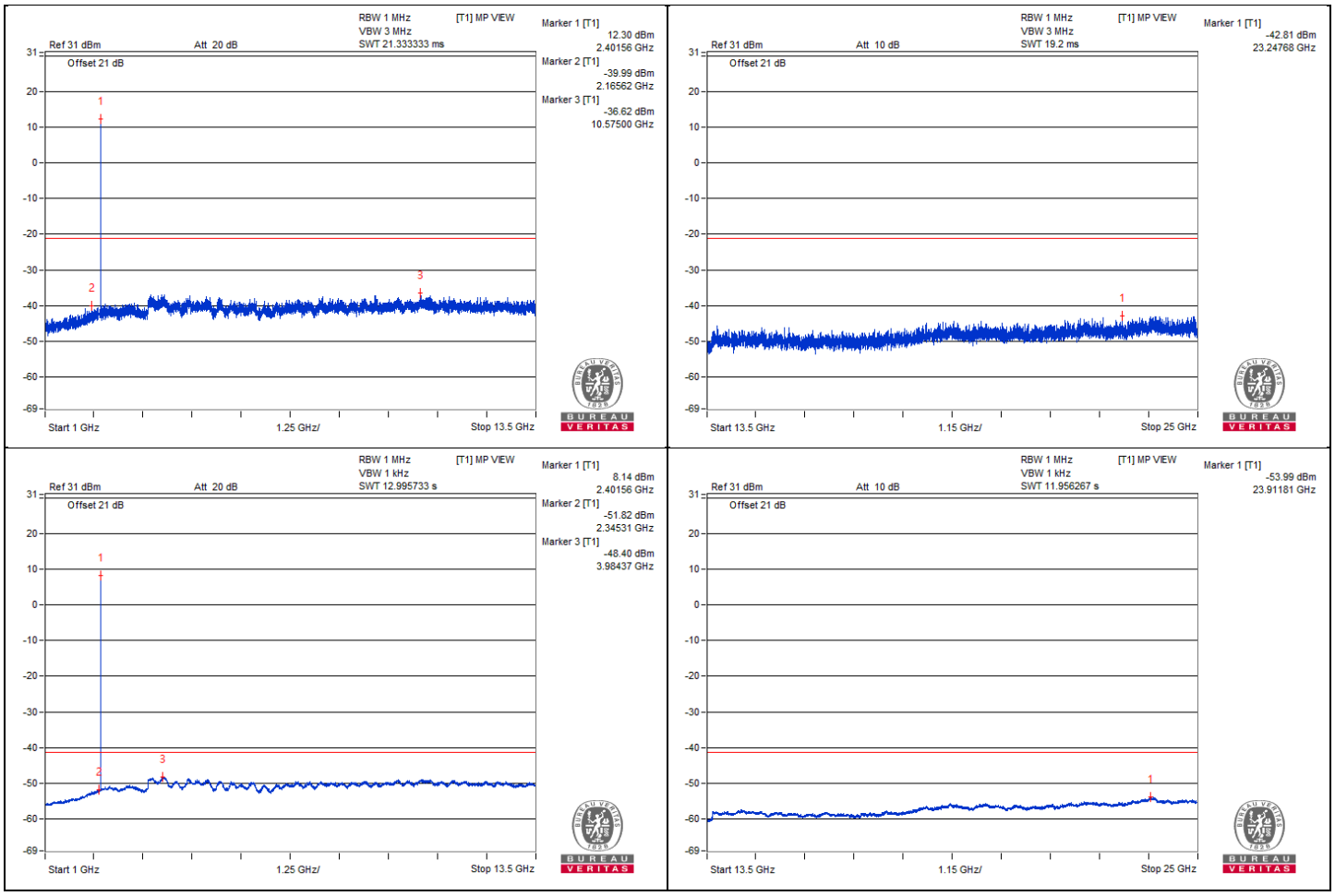
8DPSK 1TX - Channel 0

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	4807.81	61.12 PK	74	-12.88	-39.3	5.16	-34.14
2	4821.87	50.62 AV	54	-3.38	-49.8	5.16	-44.64

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

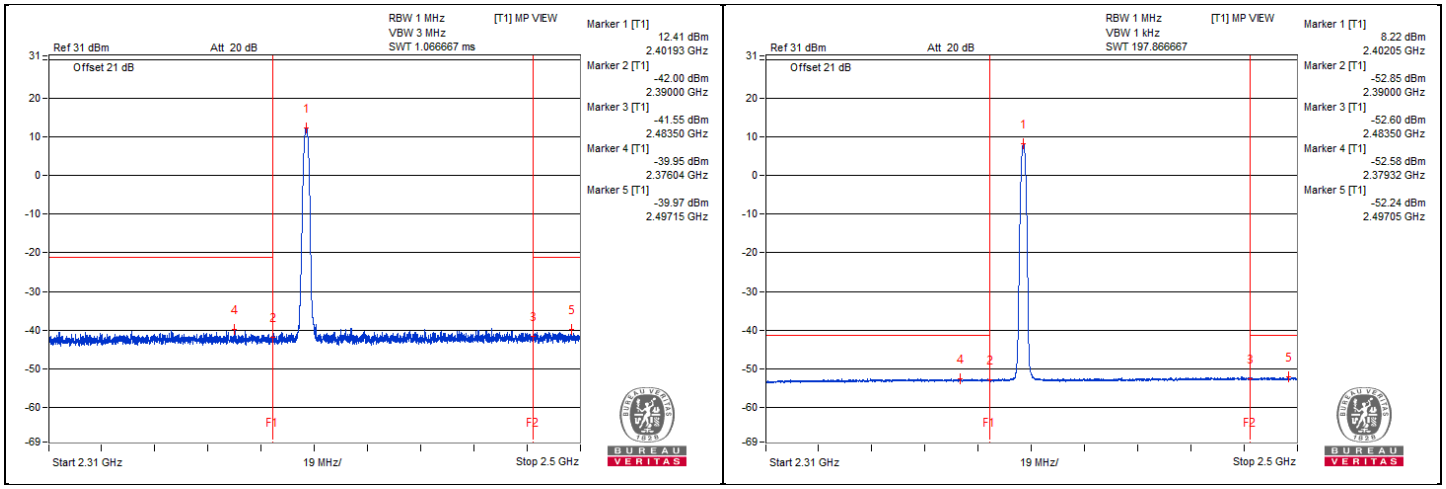


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2376.04	58.84 PK	74	-15.16	-39.95	3.53	-36.42
2	2379.32	46.21 AV	54	-7.79	-52.58	3.53	-49.05
3	2497.15	58.82 PK	74	-15.18	-39.97	3.53	-36.44
4	2497.05	46.55 AV	54	-7.45	-52.24	3.53	-48.71

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



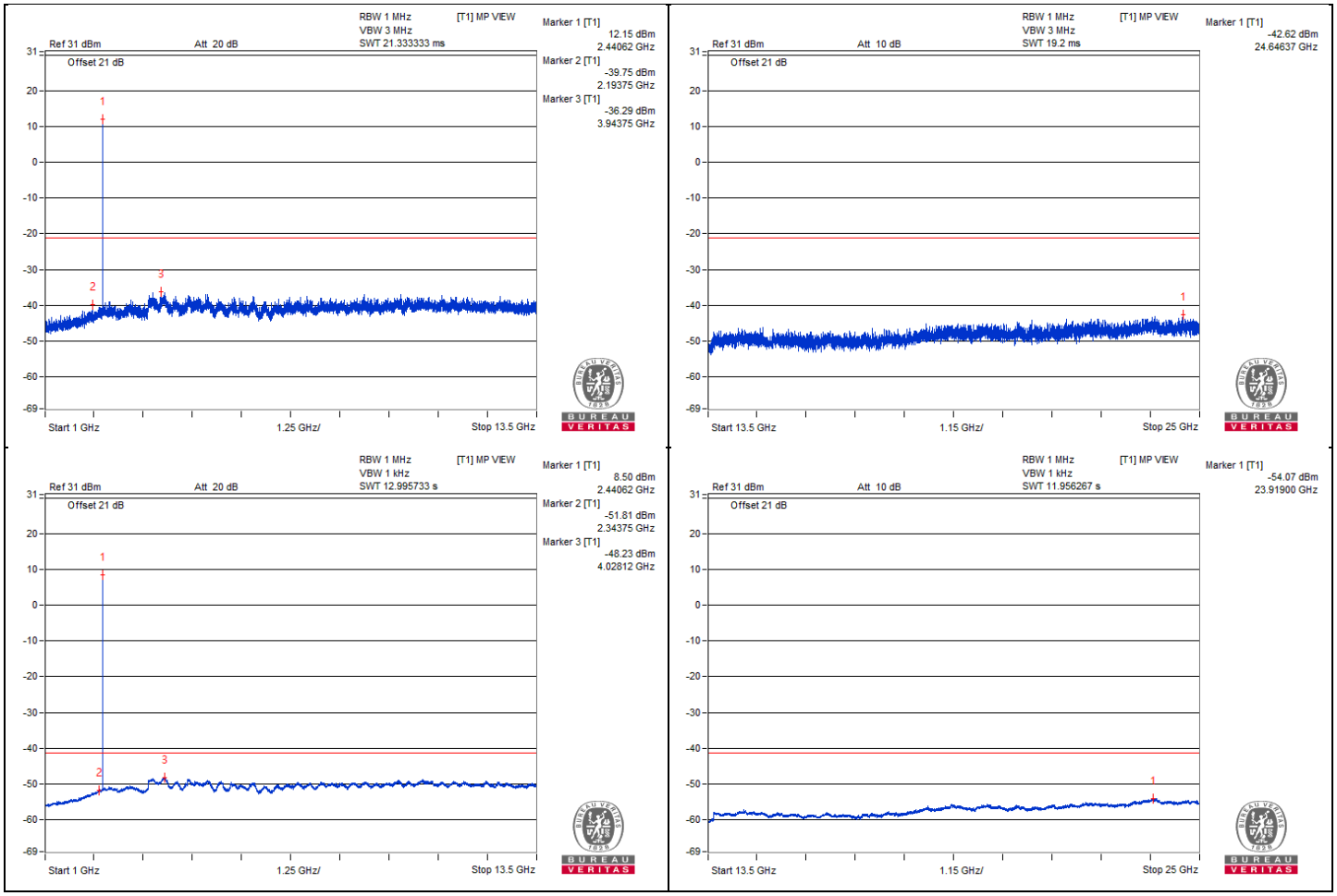
8DPSK 1TX - Channel 39

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	4882.81	62.61 PK	74	-11.39	-37.81	5.16	-32.65
2	4862.5	50.88 AV	54	-3.12	-49.54	5.16	-44.38
3	7342.18	60.43 PK	74	-13.57	-39.99	5.16	-34.83
4	7342.18	49.95 AV	54	-4.05	-50.47	5.16	-45.31

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

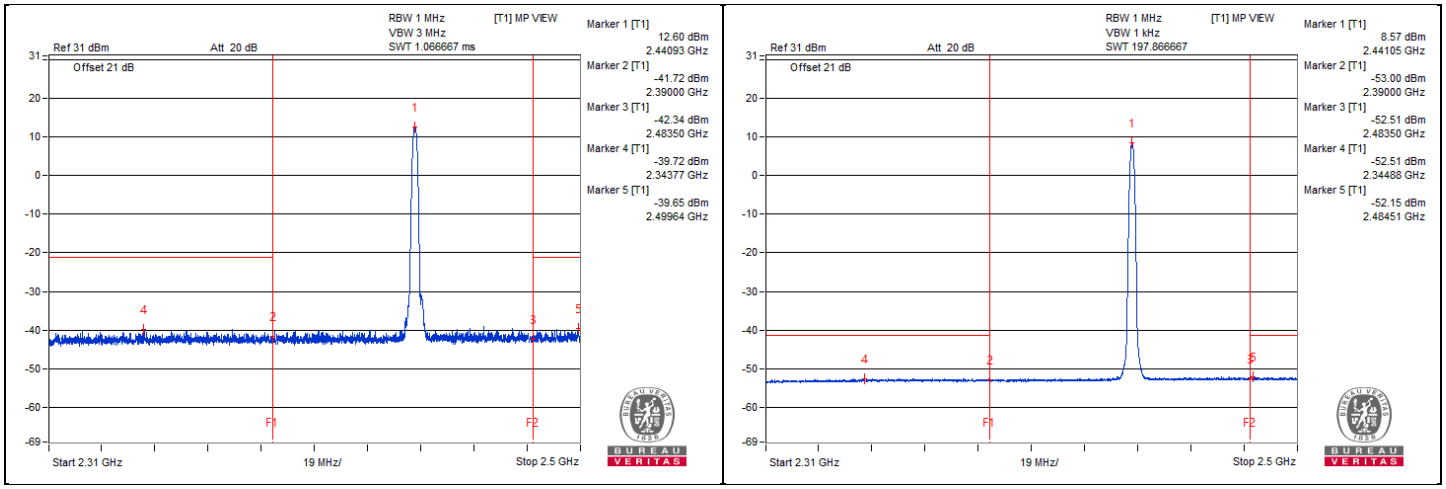


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2343.77	59.07 PK	74	-14.93	-39.72	3.53	-36.19
2	2344.88	46.28 AV	54	-7.72	-52.51	3.53	-48.98
3	2499.64	59.14 PK	74	-14.86	-39.65	3.53	-36.12
4	2484.51	46.64 AV	54	-7.36	-52.15	3.53	-48.62

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.



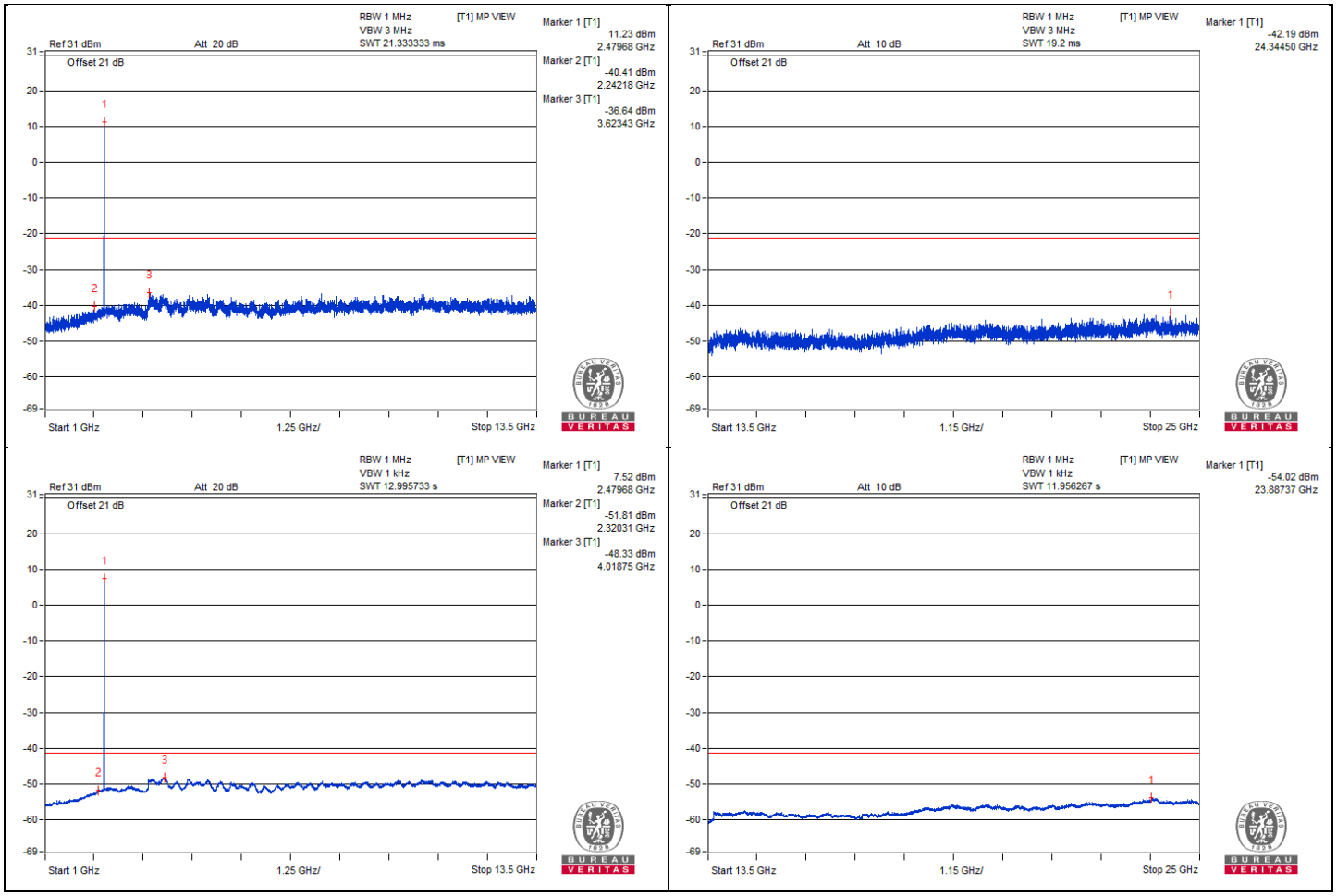
8DPSK 1TX - Channel 78

Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	4940.62	61.35 PK	74	-12.65	-39.07	5.16	-33.91
2	4979.68	50.42 AV	54	-3.58	-50	5.16	-44.84
3	7437.5	61.87 PK	74	-12.13	-38.55	5.16	-33.39
4	7421.87	50.68 AV	54	-3.32	-49.74	5.16	-44.58

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

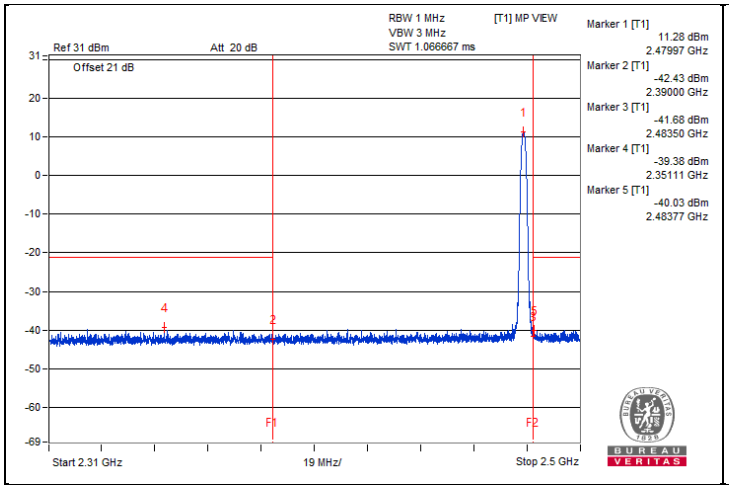


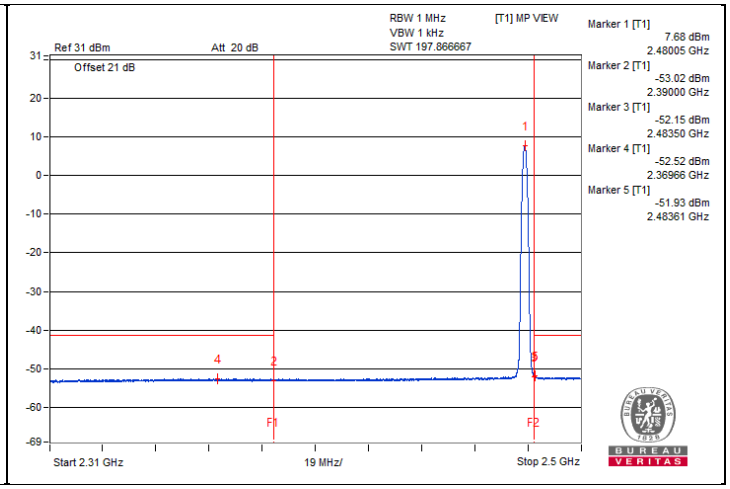
Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2351.11	59.41 PK	74	-14.59	-39.38	3.53	-35.85
2	2369.66	46.27 AV	54	-7.73	-52.52	3.53	-48.99
3	2483.77	58.76 PK	74	-15.24	-40.03	3.53	-36.50
4	2483.61	46.86 AV	54	-7.14	-51.93	3.53	-48.40

Remarks:

1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.





GFSK 2TX - Channel 0

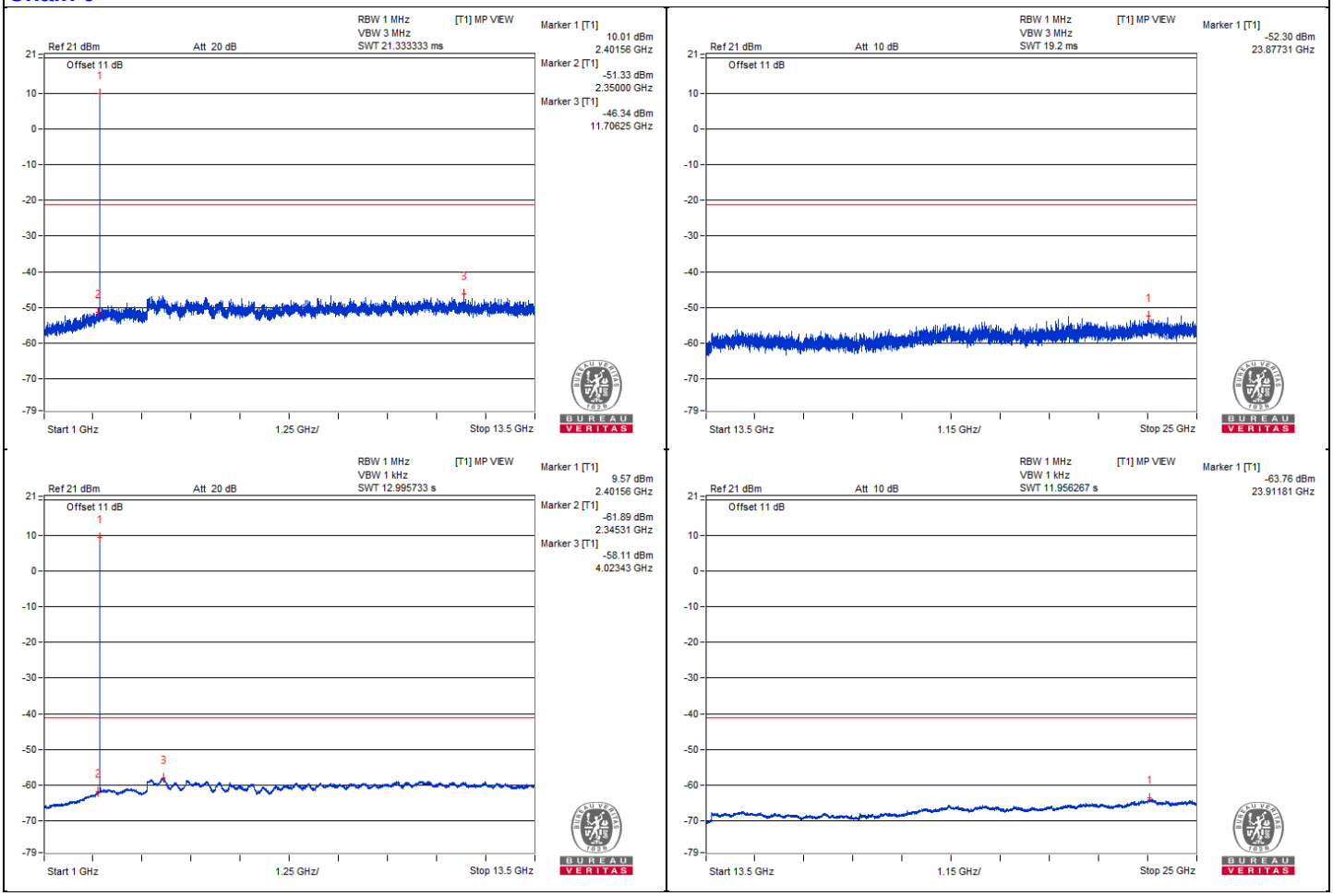
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	4795.31	57.33 PK	74	-16.67	-48.66	-49.61	8.17	-37.93
2	4818.75	46.75 AV	54	-7.25	-59.64	-59.75	8.17	-48.51

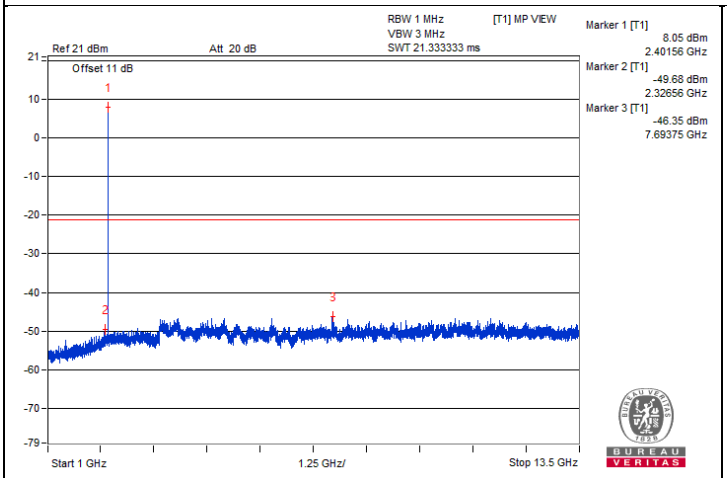
Remarks:

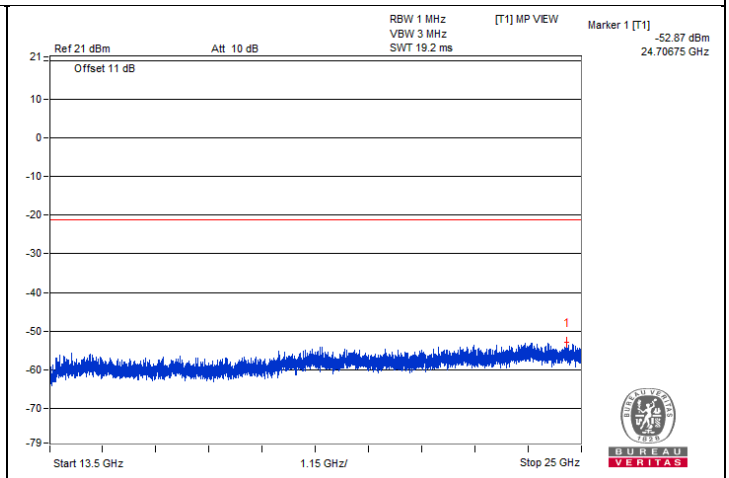
1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

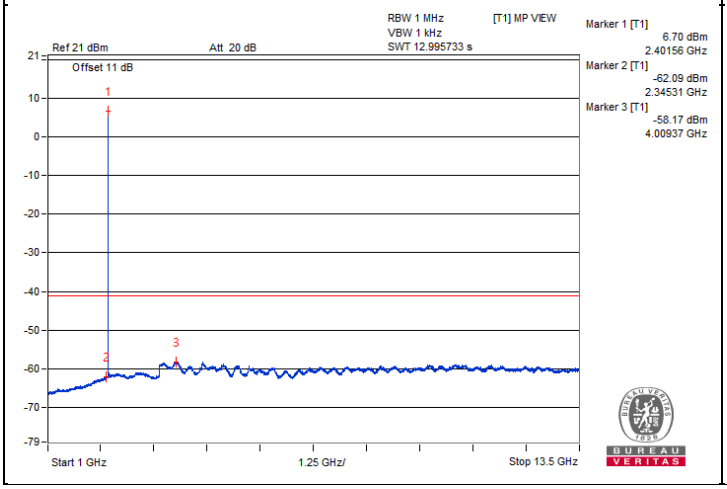
Chain 0

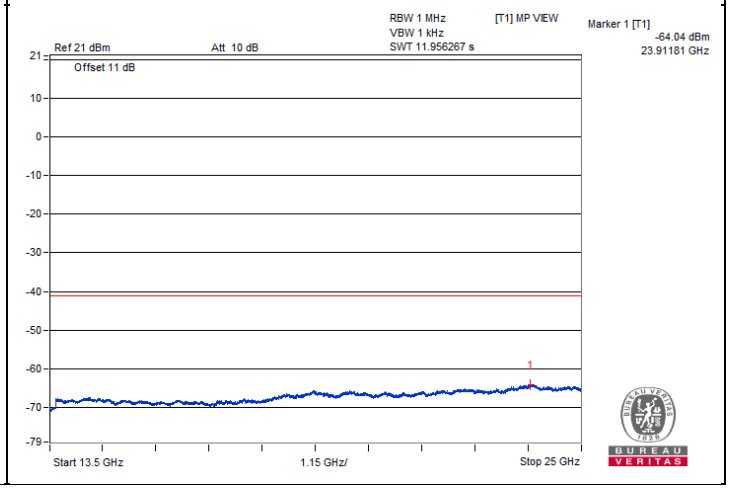


Chain 1


RBW 1 MHz
VBW 3 MHz
SWT 21.333333 ms
[T1] MP VIEW
Ref 21 dBm
Att 20 dB
Offset 11 dB
Marker 1 [T1]
8.05 dBm
2.40156 GHz
Marker 2 [T1]
-49.68 dBm
2.32656 GHz
Marker 3 [T1]
-46.35 dBm
7.69375 GHz
Start 1 GHz
1.25 GHz/
Stop 13.5 GHz


RBW 1 MHz
VBW 3 MHz
SWT 19.2 ms
[T1] MP VIEW
Ref 21 dBm
Att 10 dB
Offset 11 dB
Marker 1 [T1]
-52.87 dBm
24.70675 GHz
Start 13.5 GHz
1.15 GHz/
Stop 25 GHz


RBW 1 MHz
VBW 1 kHz
SWT 12.995733 s
[T1] MP VIEW
Ref 21 dBm
Att 20 dB
Offset 11 dB
Marker 1 [T1]
6.70 dBm
2.40156 GHz
Marker 2 [T1]
-62.09 dBm
2.34531 GHz
Marker 3 [T1]
-58.17 dBm
4.00937 GHz
Start 1 GHz
1.25 GHz/
Stop 13.5 GHz


RBW 1 MHz
VBW 1 kHz
SWT 11.956267 s
[T1] MP VIEW
Ref 21 dBm
Att 10 dB
Offset 11 dB
Marker 1 [T1]
-64.04 dBm
23.91181 GHz
Start 13.5 GHz
1.15 GHz/
Stop 25 GHz

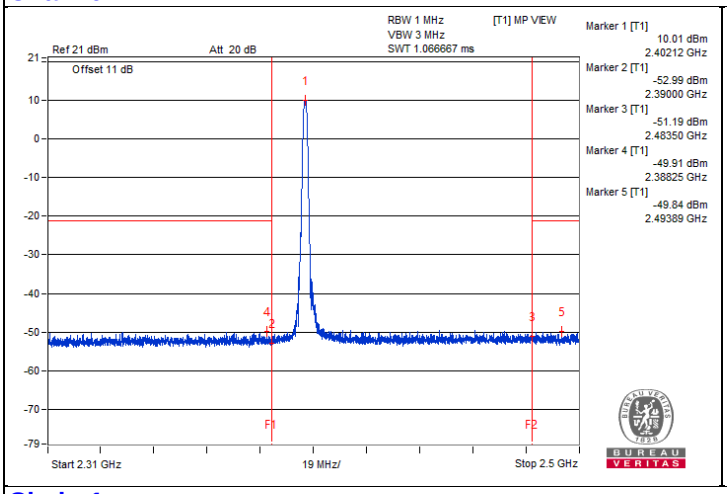
Bandedge table

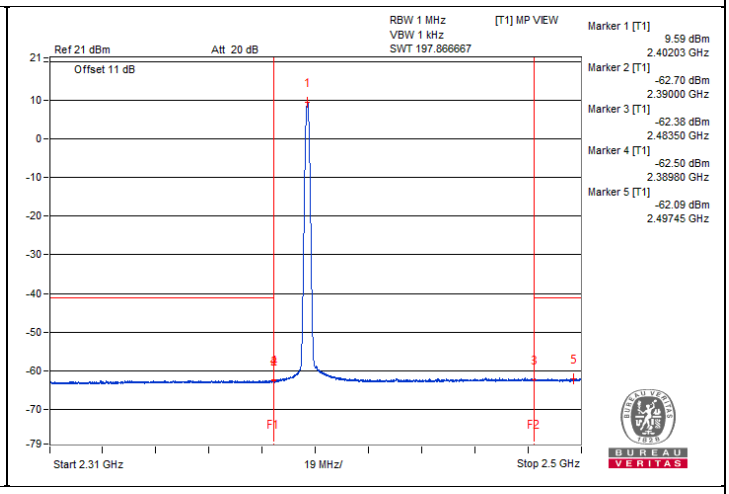
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2383.72	54.37 PK	74	-19.63	-50.35	-50.53	6.54	-40.89
2	2354.19	42.18 AV	54	-11.82	-62.81	-62.46	6.54	-53.08
3	2499.5	54.37 PK	74	-19.63	-50.34	-50.54	6.54	-40.89
4	2495.1	42.55 AV	54	-11.45	-62.18	-62.34	6.54	-52.71

Remarks:

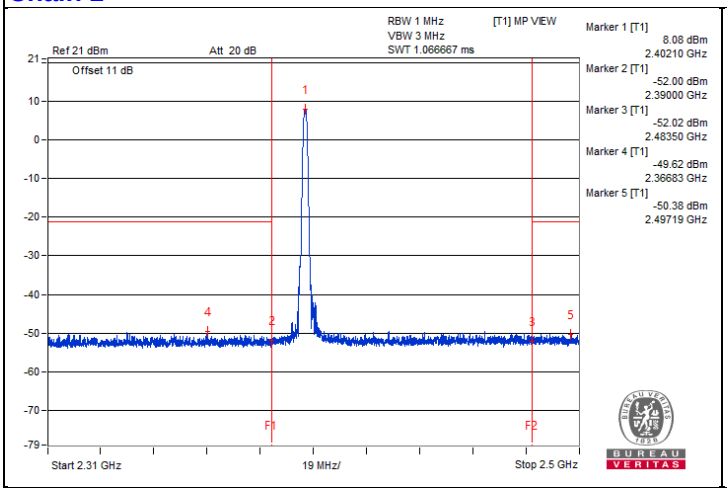
1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

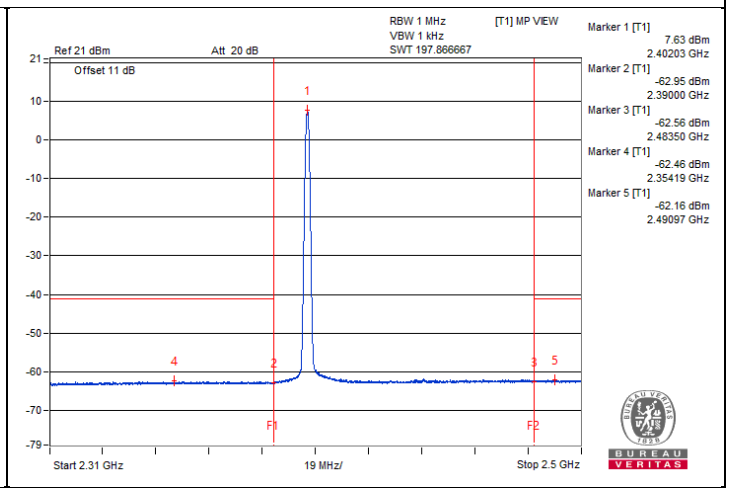
Chain 0





Chain 1





GFSK 2TX - Channel 39

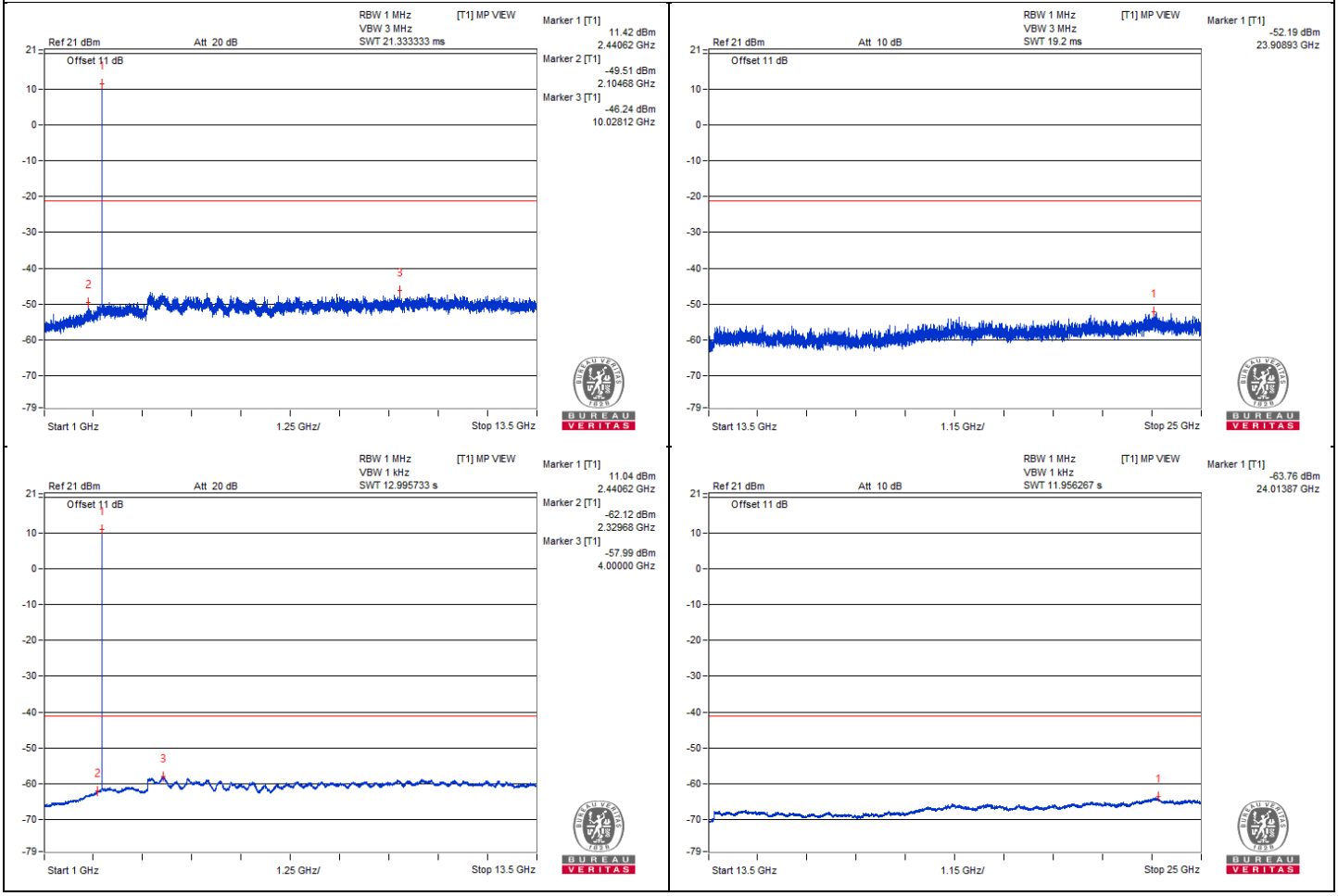
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	4862.5	57.56 PK	74	-16.44	-48.4	-49.41	8.17	-37.70
2	4865.62	46.93 AV	54	-7.07	-59.53	-59.49	8.17	-48.33
3	7307.81	56.53 PK	74	-17.47	-49.55	-50.3	8.17	-38.73
4	7339.06	46 AV	54	-8	-60.45	-60.43	8.17	-49.26

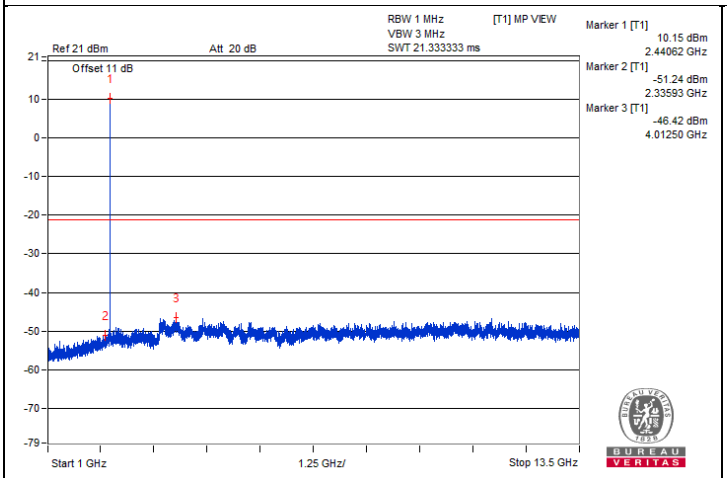
Remarks:

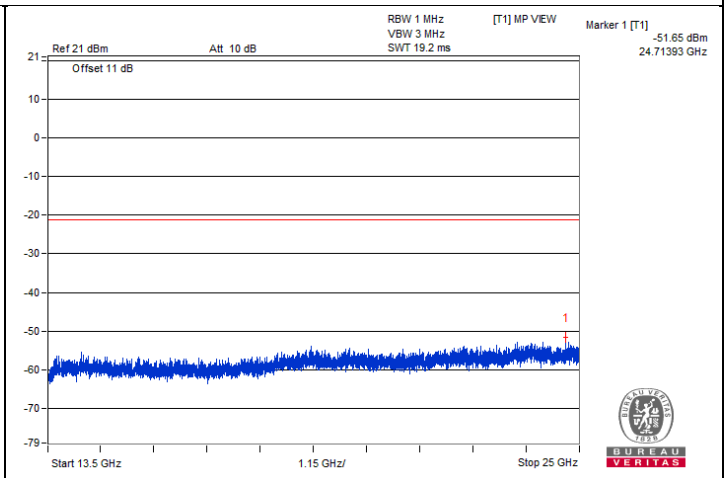
1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

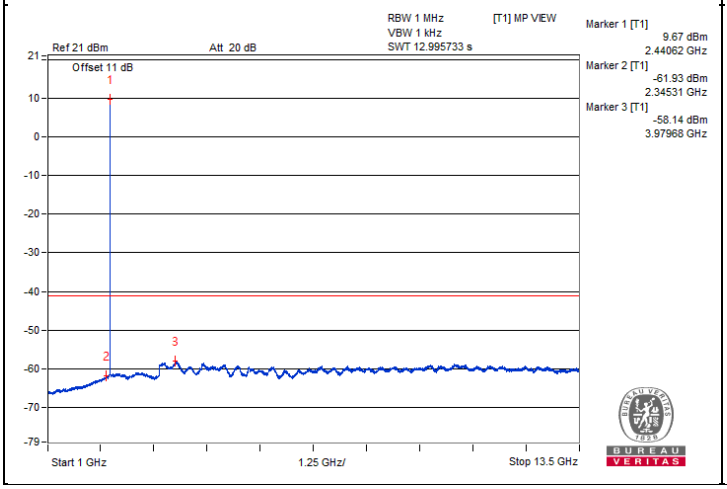
Chain 0

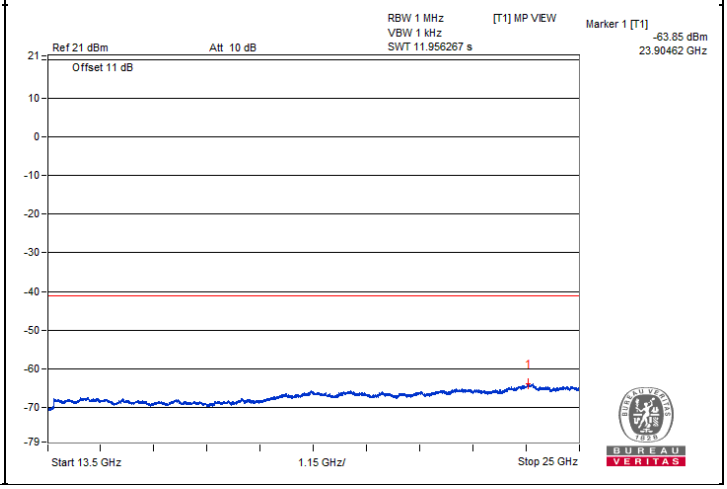


Chain 1


RBW 1 MHz
VBW 3 MHz
SWT 21.333333 ms
[T1] MP VIEW
Ref 21 dBm
Att 20 dB
Offset 11 dB
Marker 1 [T1]
10.15 dBm
2.44062 GHz
Marker 2 [T1]
-51.24 dBm
2.33593 GHz
Marker 3 [T1]
-46.42 dBm
4.01250 GHz
Start 1 GHz
1.25 GHz/
Stop 13.5 GHz


RBW 1 MHz
VBW 3 MHz
SWT 19.2 ms
[T1] MP VIEW
Ref 21 dBm
Att 10 dB
Offset 11 dB
Marker 1 [T1]
-51.65 dBm
24.71393 GHz
Start 13.5 GHz
1.15 GHz/
Stop 25 GHz


RBW 1 MHz
VBW 1 kHz
SWT 12.995733 s
[T1] MP VIEW
Ref 21 dBm
Att 20 dB
Offset 11 dB
Marker 1 [T1]
9.67 dBm
2.44062 GHz
Marker 2 [T1]
-61.93 dBm
2.34531 GHz
Marker 3 [T1]
-58.14 dBm
3.97968 GHz
Start 1 GHz
1.25 GHz/
Stop 13.5 GHz


RBW 1 MHz
VBW 1 kHz
SWT 11.956267 s
[T1] MP VIEW
Ref 21 dBm
Att 10 dB
Offset 11 dB
Marker 1 [T1]
-63.85 dBm
23.90462 GHz
Start 13.5 GHz
1.15 GHz/
Stop 25 GHz

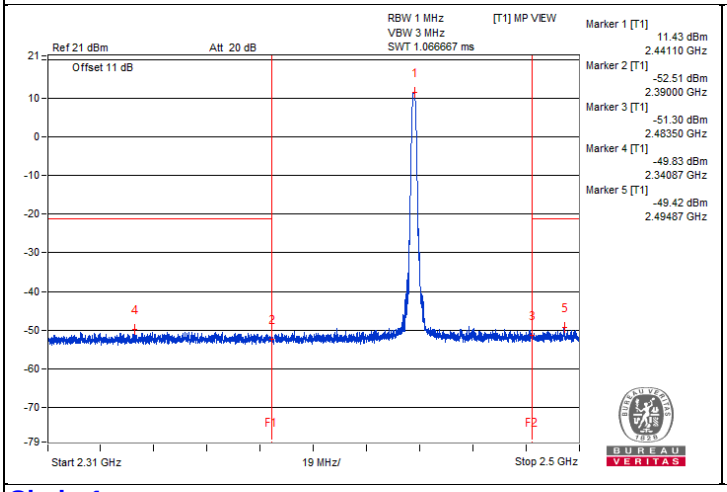
Bandedge table

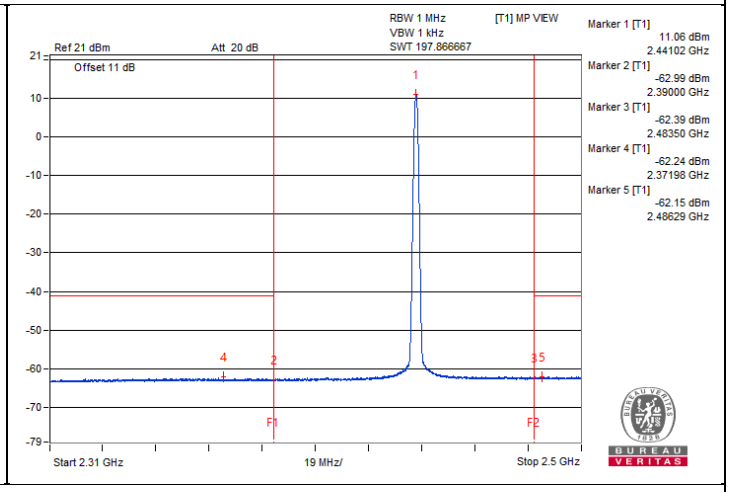
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2363.12	54.18 PK	74	-19.82	-52.61	-49.27	6.54	-41.08
2	2371.98	42.23 AV	54	-11.77	-62.24	-62.95	6.54	-53.03
3	2497.67	54.59 PK	74	-19.41	-50.15	-50.29	6.54	-40.67
4	2485.91	42.59 AV	54	-11.41	-62.3	-62.15	6.54	-52.67

Remarks:

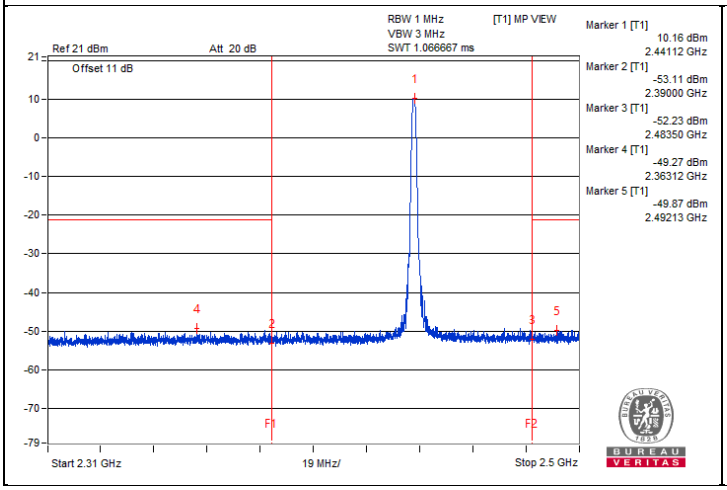
1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

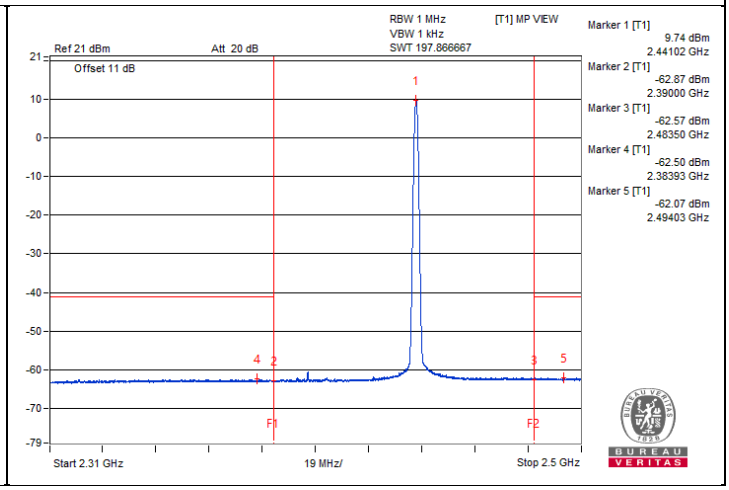
Chain 0





Chain 1





GFSK 2TX - Channel 78

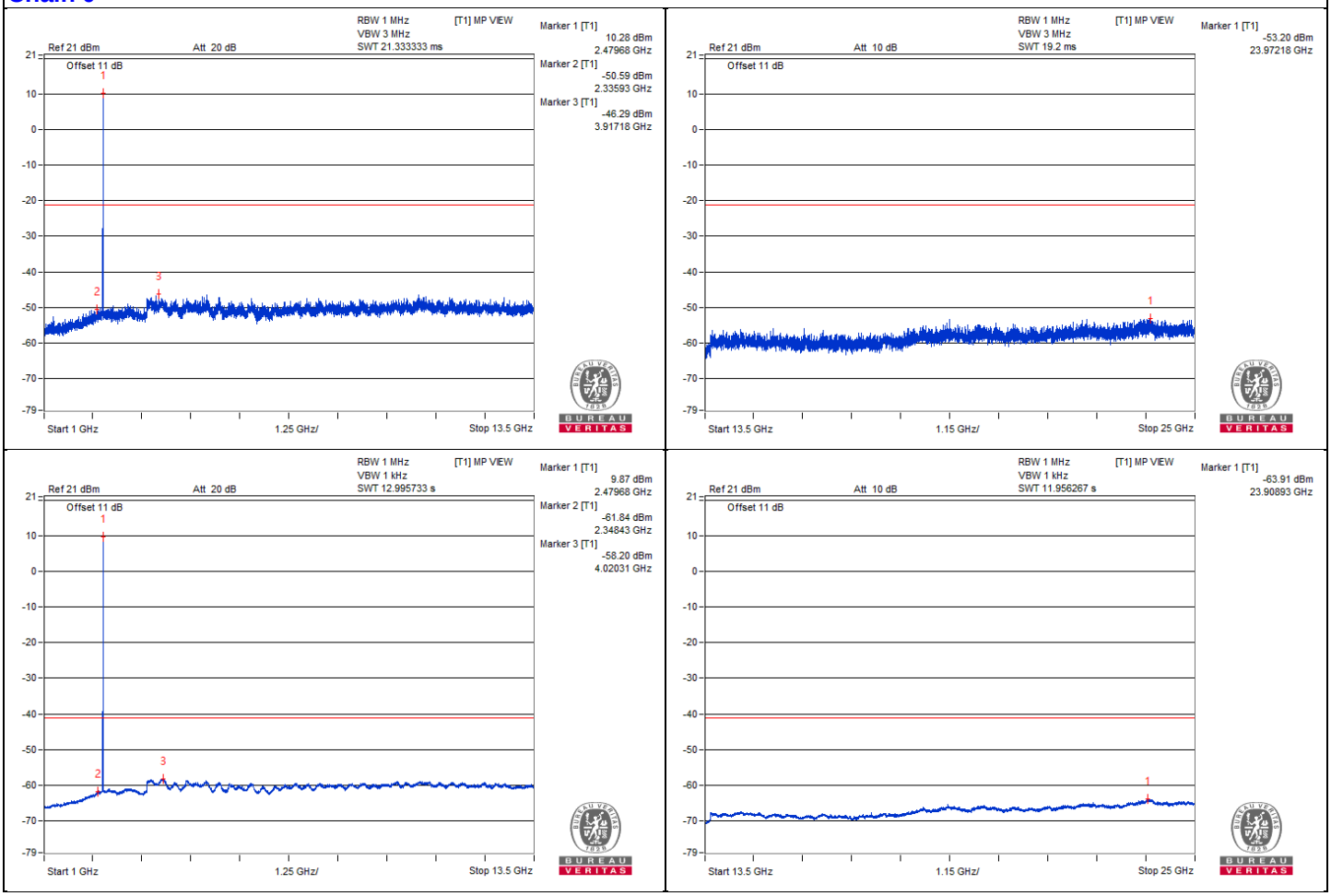
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	4960.93	57.19 PK	74	-16.81	-49.63	-48.91	8.17	-38.07
2	4951.56	46.39 AV	54	-7.61	-60.11	-60	8.17	-48.87
3	7425	57.36 PK	74	-16.64	-48.97	-49.19	8.17	-37.90
4	7439.06	46.86 AV	54	-7.14	-59.48	-59.69	8.17	-48.40

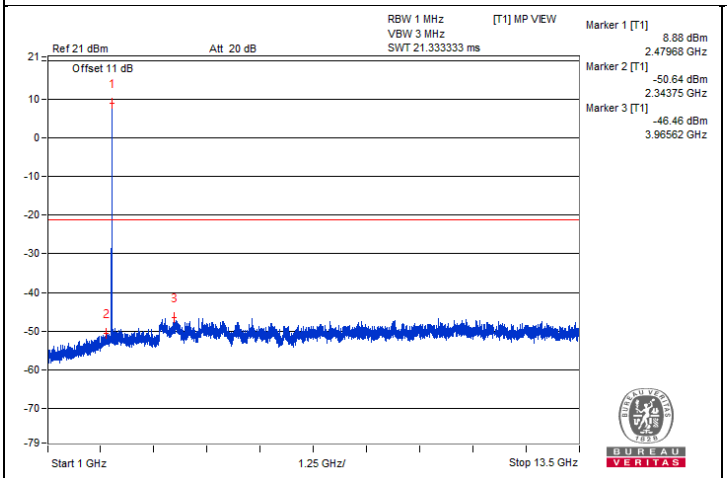
Remarks:

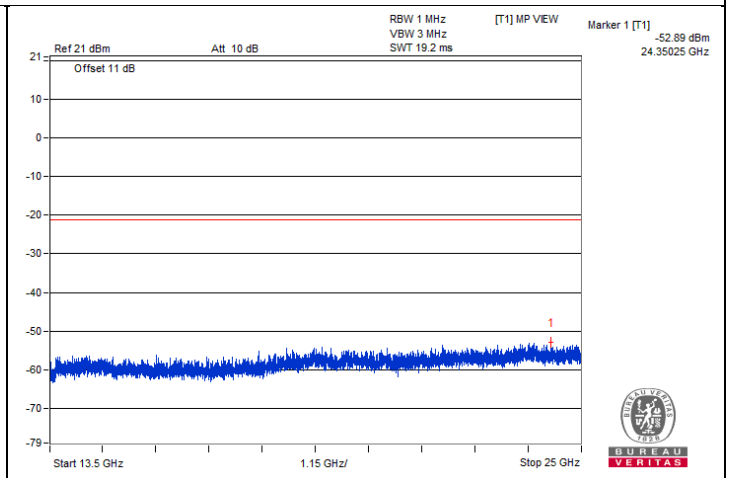
1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

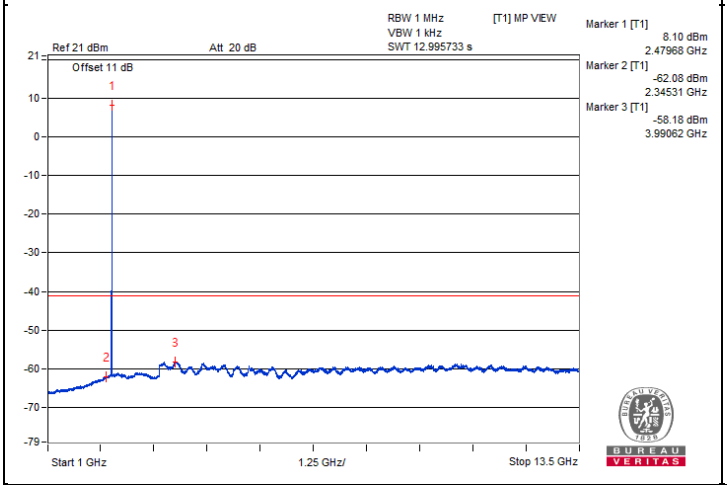
Chain 0

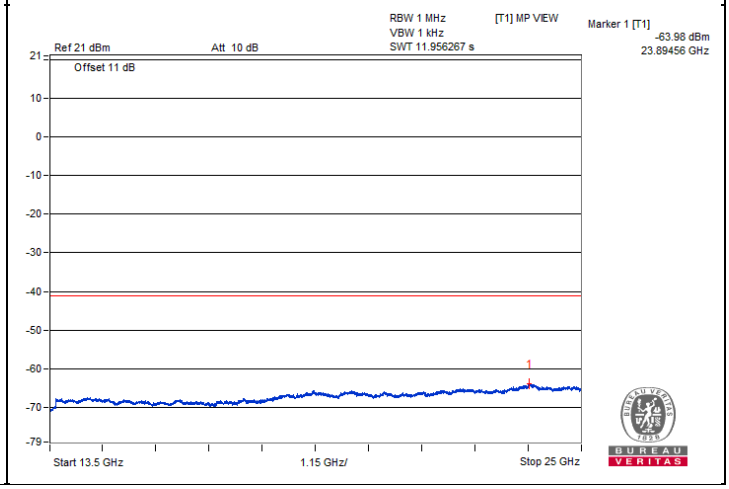


Chain 1


RBW 1 MHz
VBW 3 MHz
SWT 21.333333 ms
[T1] MP VIEW
Ref 21 dBm
Att 20 dB
Offset 11 dB
Marker 1 [T1]
8.88 dBm
2.47968 GHz
Marker 2 [T1]
-50.64 dBm
2.34375 GHz
Marker 3 [T1]
-46.46 dBm
3.96562 GHz
Start 1 GHz
1.25 GHz/
Stop 13.5 GHz


RBW 1 MHz
VBW 3 MHz
SWT 19.2 ms
[T1] MP VIEW
Ref 21 dBm
Att 10 dB
Offset 11 dB
Marker 1 [T1]
-52.89 dBm
24.35025 GHz
Start 13.5 GHz
1.15 GHz/
Stop 25 GHz


RBW 1 MHz
VBW 1 kHz
SWT 12.995733 s
[T1] MP VIEW
Ref 21 dBm
Att 20 dB
Offset 11 dB
Marker 1 [T1]
8.10 dBm
2.47968 GHz
Marker 2 [T1]
-62.08 dBm
2.34531 GHz
Marker 3 [T1]
-58.18 dBm
3.99062 GHz
Start 1 GHz
1.25 GHz/
Stop 13.5 GHz


RBW 1 MHz
VBW 1 kHz
SWT 11.956267 s
[T1] MP VIEW
Ref 21 dBm
Att 10 dB
Offset 11 dB
Marker 1 [T1]
-63.98 dBm
23.89456 GHz
Start 13.5 GHz
1.15 GHz/
Stop 25 GHz

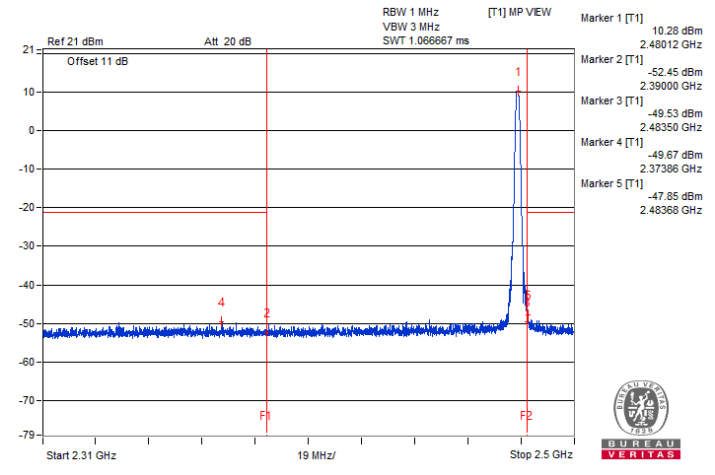
Bandedge table

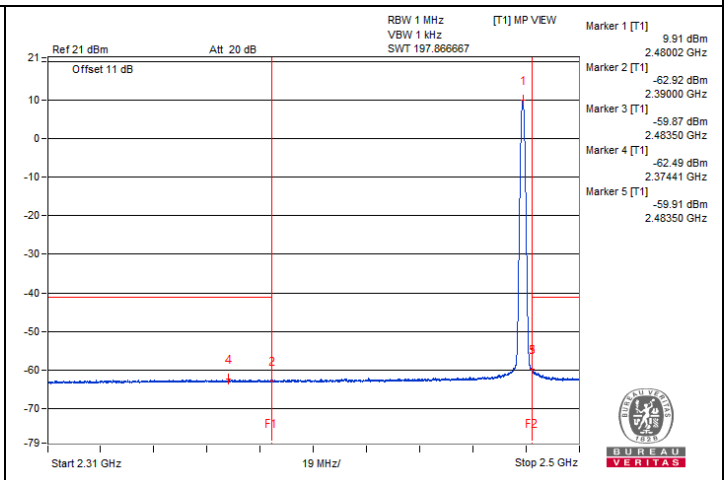
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2373.86	54.58 PK	74	-19.42	-49.67	-50.87	6.54	-40.68
2	2364.05	42.29 AV	54	-11.71	-62.87	-62.19	6.54	-52.97
3	2483.61	59.3 PK	74	-14.7	-48.22	-43.85	6.54	-35.96
4	2483.51	44.58 AV	54	-9.42	-60.02	-60.46	6.54	-50.68

Remarks:

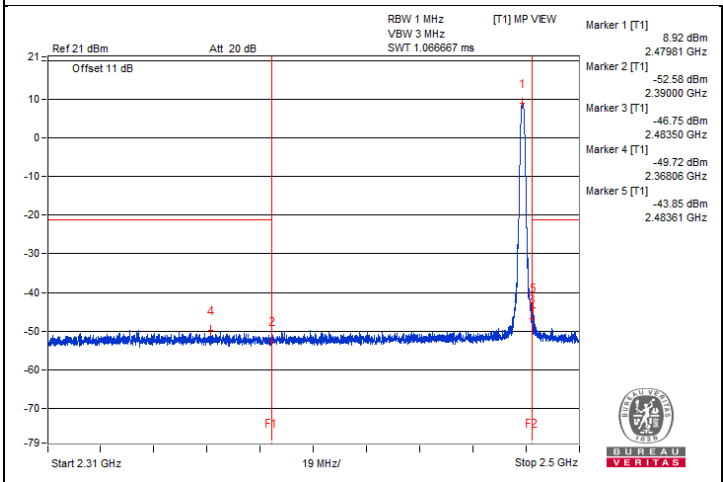
1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

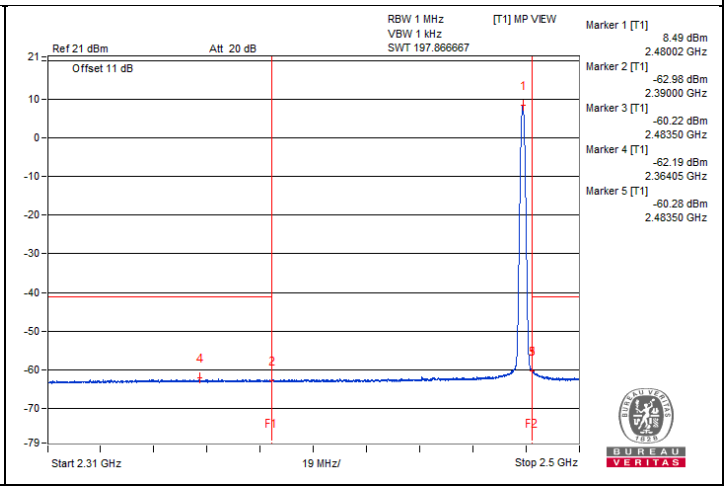
Chain 0





Chain 1





8DPSK 2TX - Channel 0

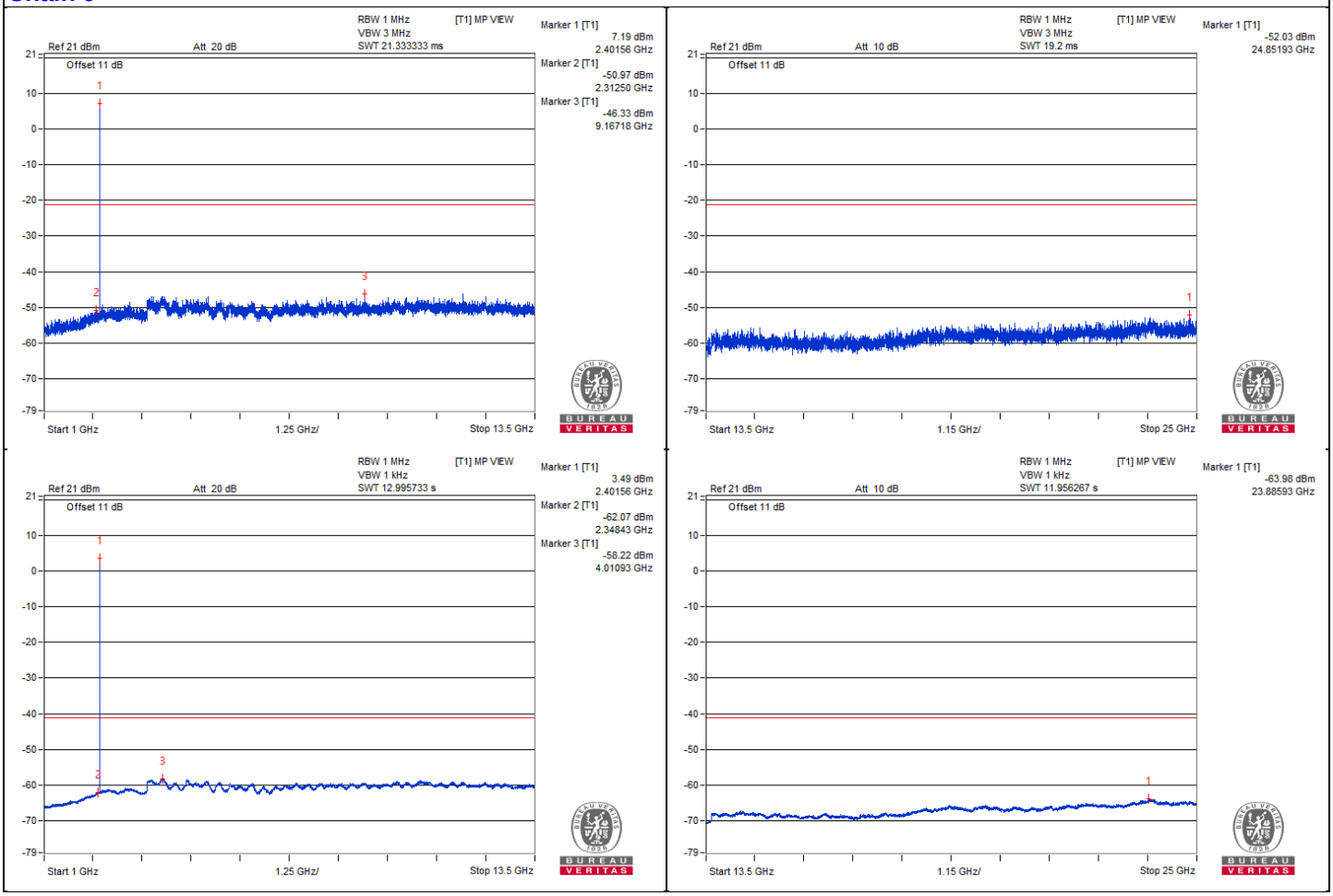
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	4803.12	57.97 PK	74	-16.03	-48.01	-48.98	8.17	-37.29
2	4814.06	46.74 AV	54	-7.26	-59.57	-59.83	8.17	-48.52

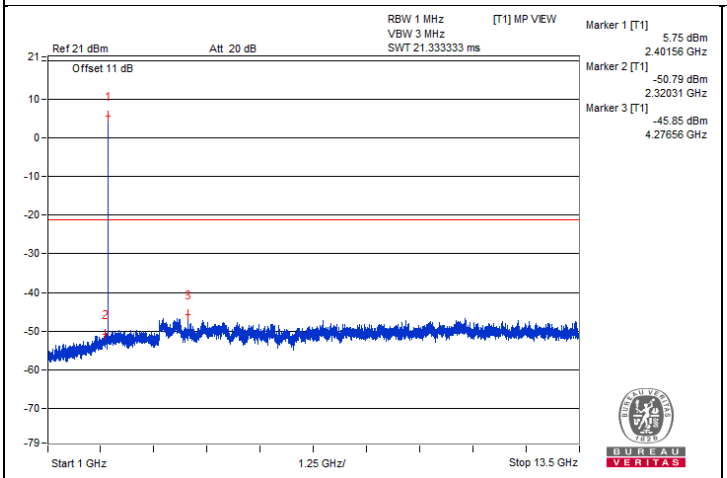
Remarks:

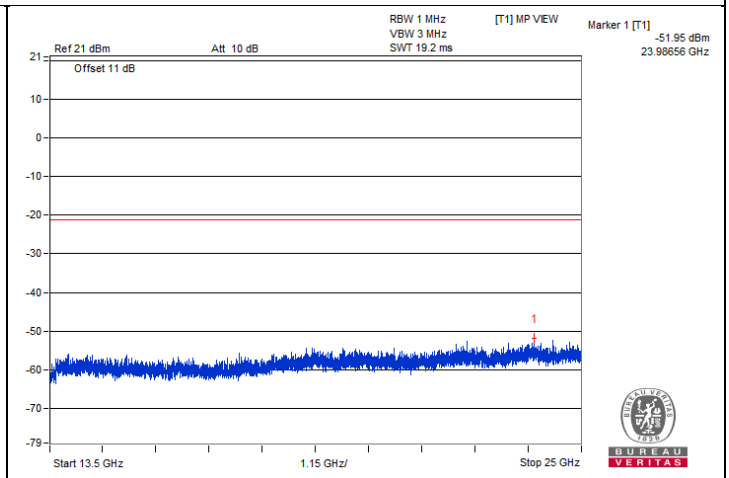
1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

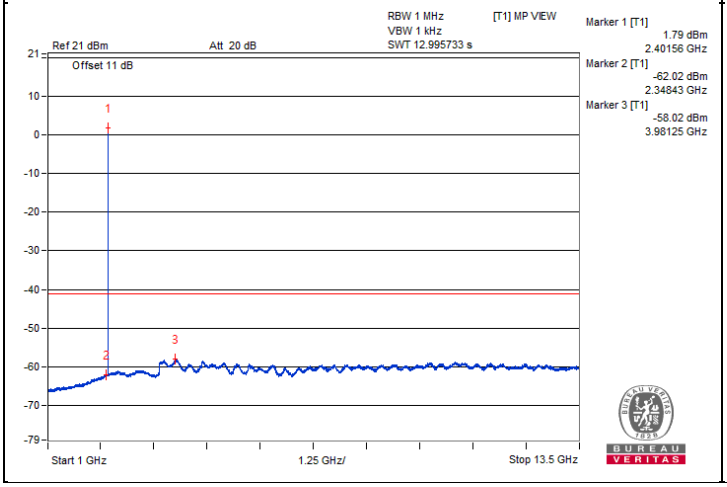
Chain 0

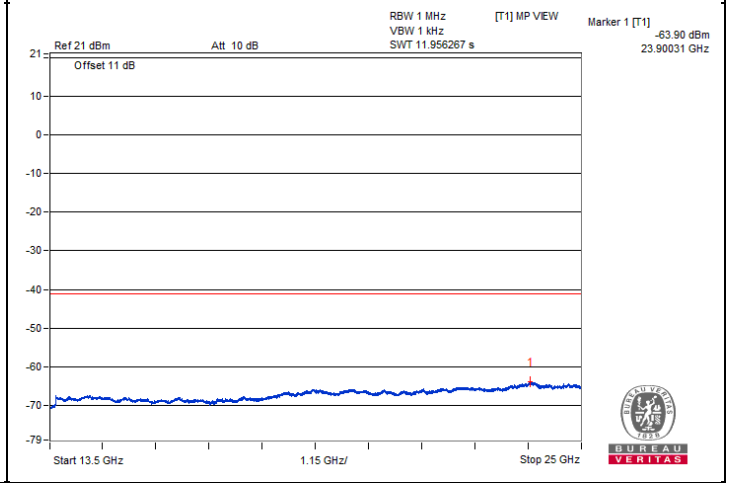


Chain 1


RBW 1 MHz
VBW 3 MHz
SWT 21.333333 ms
[T1] MP VIEW
Ref 21 dBm
Att 20 dB
Offset 11 dB
Marker 1 [T1]
5.75 dBm
2.40156 GHz
Marker 2 [T1]
-50.79 dBm
2.32031 GHz
Marker 3 [T1]
-45.85 dBm
4.27656 GHz
Start 1 GHz
1.25 GHz/
Stop 13.5 GHz


RBW 1 MHz
VBW 3 MHz
SWT 19.2 ms
[T1] MP VIEW
Ref 21 dBm
Att 10 dB
Offset 11 dB
Marker 1 [T1]
-51.95 dBm
23.98656 GHz
Start 13.5 GHz
1.15 GHz/
Stop 25 GHz


RBW 1 MHz
VBW 1 kHz
SWT 12.995733 s
[T1] MP VIEW
Ref 21 dBm
Att 20 dB
Offset 11 dB
Marker 1 [T1]
1.79 dBm
2.40156 GHz
Marker 2 [T1]
-62.02 dBm
2.34843 GHz
Marker 3 [T1]
-58.02 dBm
3.98125 GHz
Start 1 GHz
1.25 GHz/
Stop 13.5 GHz


RBW 1 MHz
VBW 1 kHz
SWT 11.956267 s
[T1] MP VIEW
Ref 21 dBm
Att 10 dB
Offset 11 dB
Marker 1 [T1]
-63.90 dBm
23.90031 GHz
Start 13.5 GHz
1.15 GHz/
Stop 25 GHz

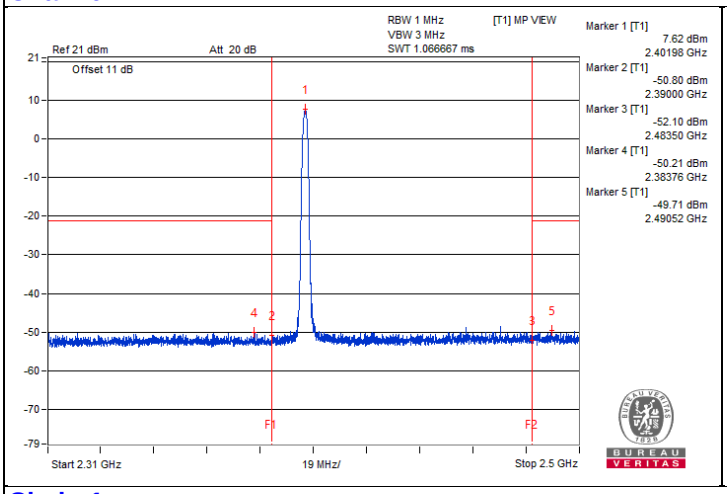
Bandedge table

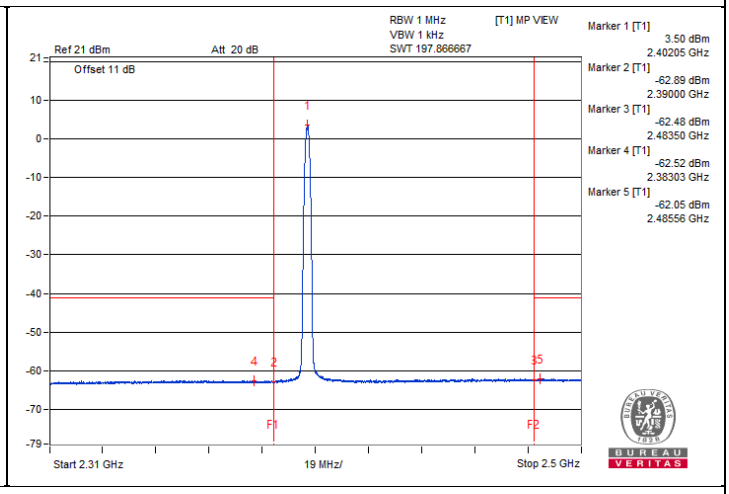
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2312.39	54 PK	74	-20	-51.11	-50.53	6.54	-41.26
2	2382.98	42.22 AV	54	-11.78	-62.56	-62.63	6.54	-53.04
3	2498.45	54.66 PK	74	-19.34	-49.93	-50.39	6.54	-40.60
4	2489.81	42.62 AV	54	-11.38	-62.24	-62.15	6.54	-52.64

Remarks:

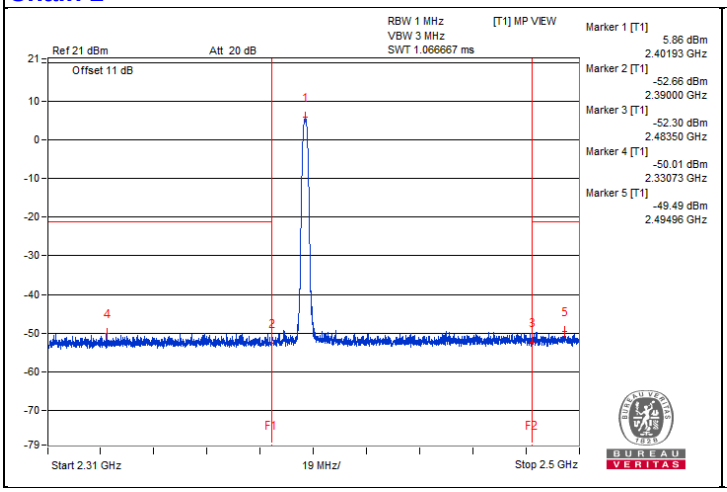
1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

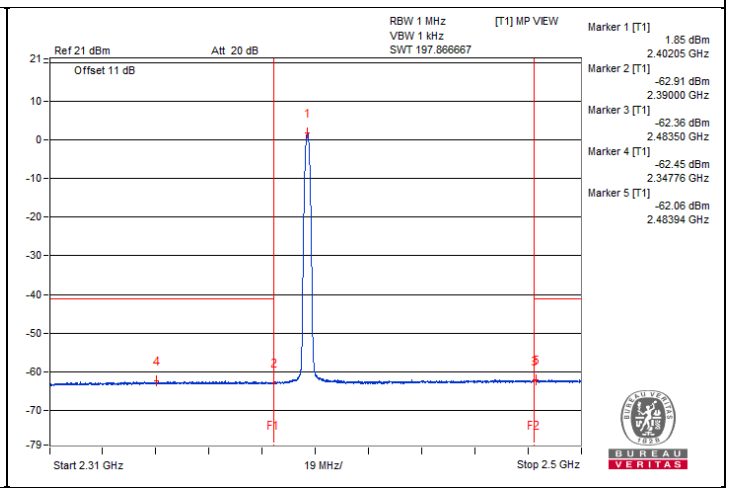
Chain 0





Chain 1





8DPSK 2TX - Channel 39

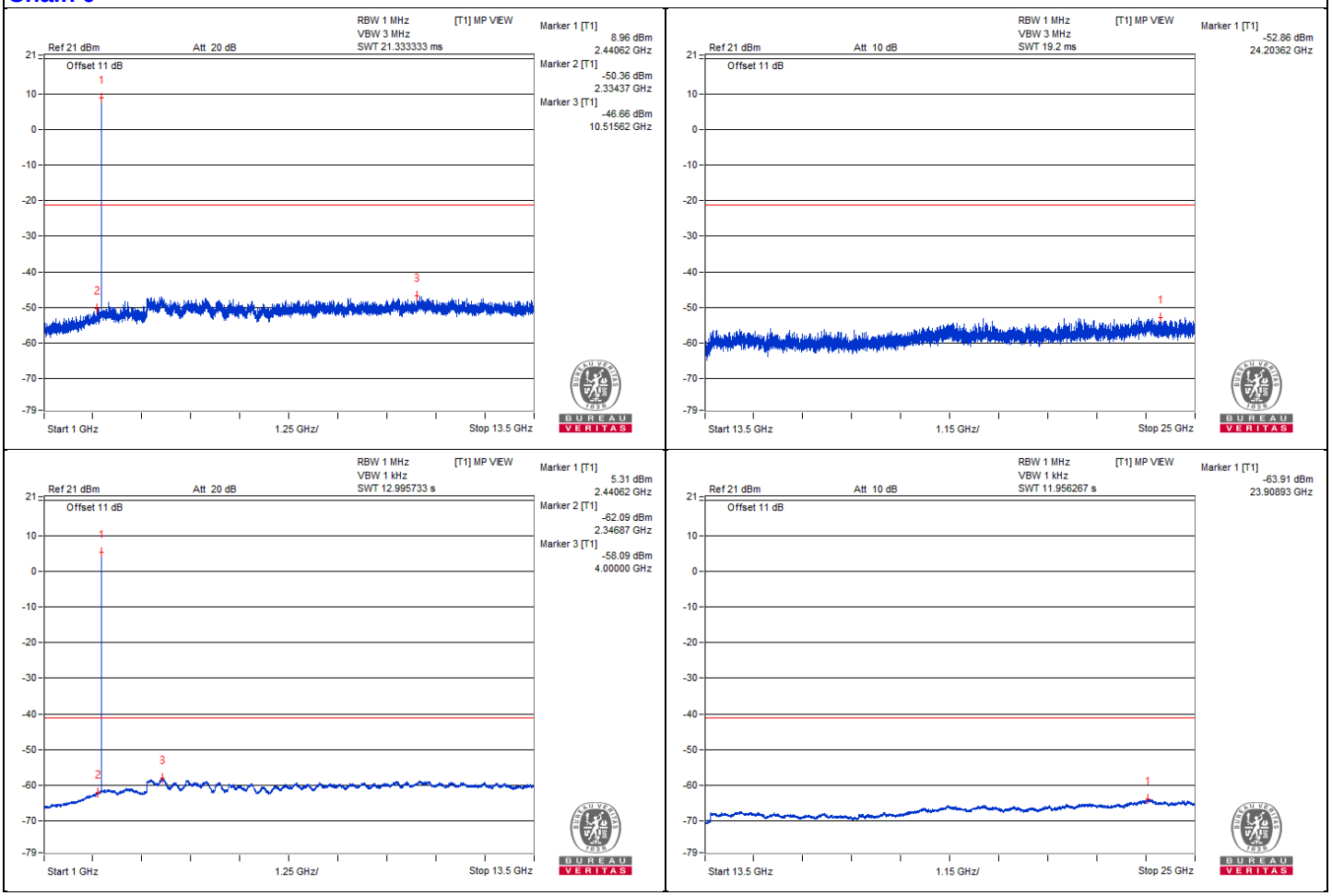
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	4862.5	58.38 PK	74	-15.62	-47.78	-48.36	8.17	-36.88
2	4878.12	46.93 AV	54	-7.07	-59.61	-59.41	8.17	-48.33
3	7318.75	57.22 PK	74	-16.78	-48.53	-50.05	8.17	-38.04
4	7337.5	46.05 AV	54	-7.95	-60.67	-60.12	8.17	-49.21

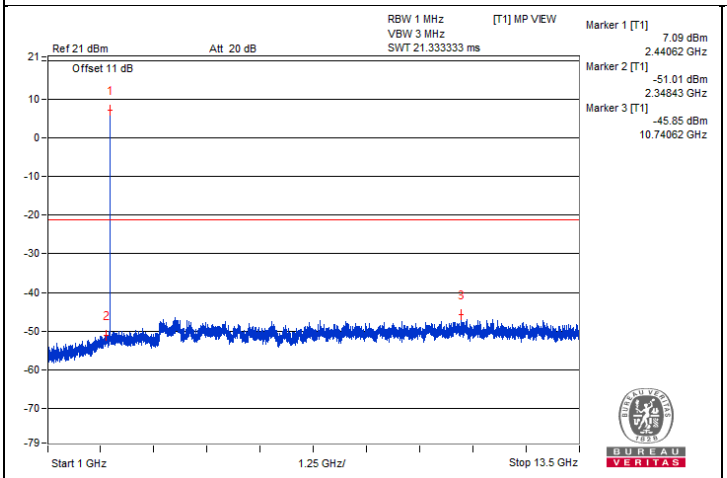
Remarks:

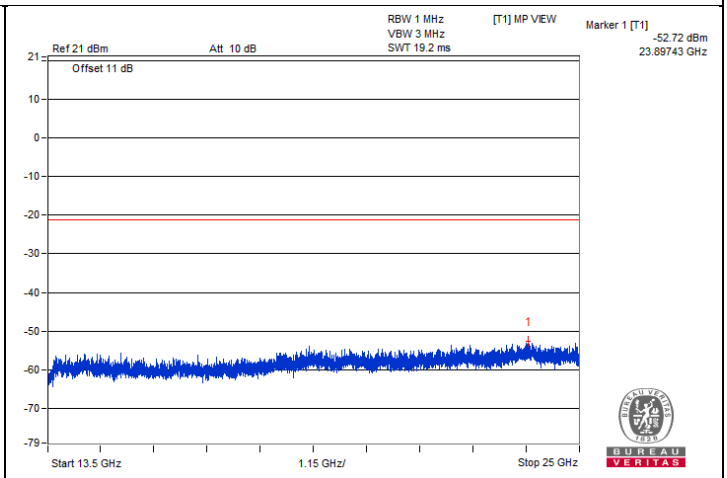
1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

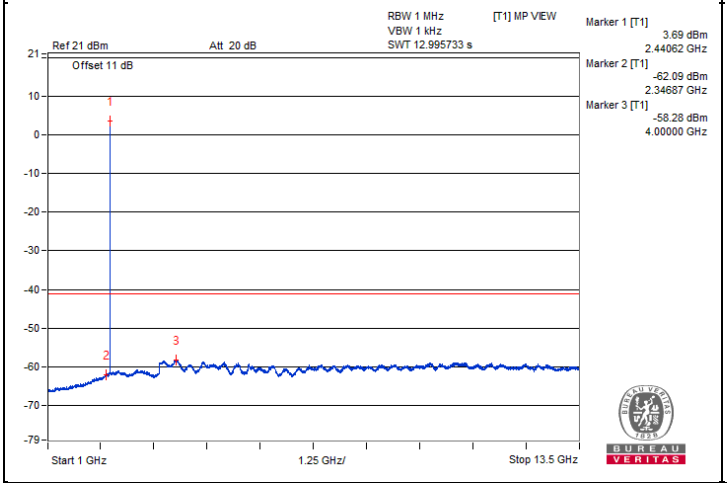
Chain 0

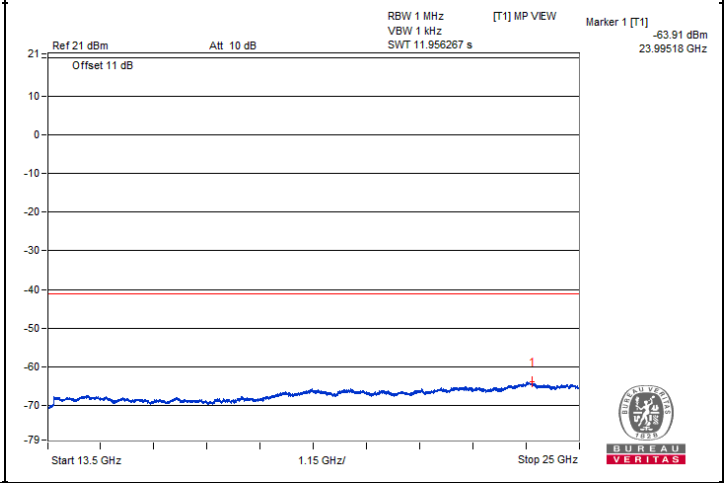


Chain 1


RBW 1 MHz
VBW 3 MHz
SWT 21.333333 ms
[T1] MP VIEW
Ref 21 dBm
Att 20 dB
Offset 11 dB
Marker 1 [T1]
7.09 dBm
2.44062 GHz
Marker 2 [T1]
-51.01 dBm
2.34843 GHz
Marker 3 [T1]
-45.85 dBm
10.74062 GHz
Start 1 GHz
1.25 GHz/
Stop 13.5 GHz


RBW 1 MHz
VBW 3 MHz
SWT 19.2 ms
[T1] MP VIEW
Ref 21 dBm
Att 10 dB
Offset 11 dB
Marker 1 [T1]
-52.72 dBm
23.89743 GHz
Start 13.5 GHz
1.15 GHz/
Stop 25 GHz


RBW 1 MHz
VBW 1 kHz
SWT 12.995733 s
[T1] MP VIEW
Ref 21 dBm
Att 20 dB
Offset 11 dB
Marker 1 [T1]
3.69 dBm
2.44062 GHz
Marker 2 [T1]
-62.09 dBm
2.34687 GHz
Marker 3 [T1]
-58.28 dBm
4.00000 GHz
Start 1 GHz
1.25 GHz/
Stop 13.5 GHz


RBW 1 MHz
VBW 1 kHz
SWT 11.956267 s
[T1] MP VIEW
Ref 21 dBm
Att 10 dB
Offset 11 dB
Marker 1 [T1]
-63.91 dBm
23.99518 GHz
Start 13.5 GHz
1.15 GHz/
Stop 25 GHz

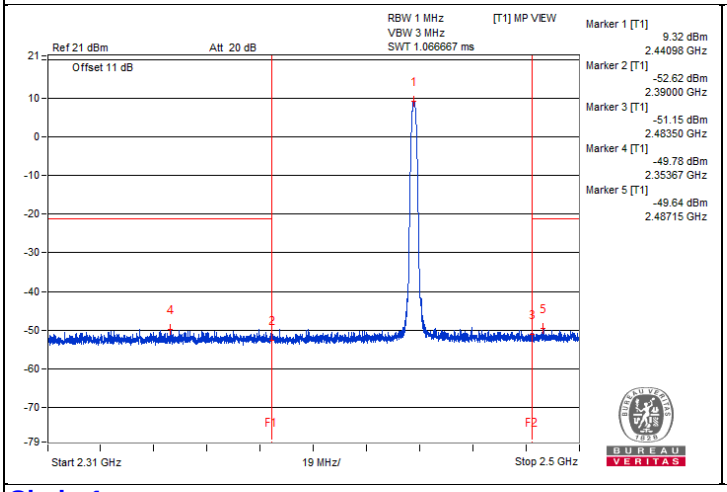
Bandedge table

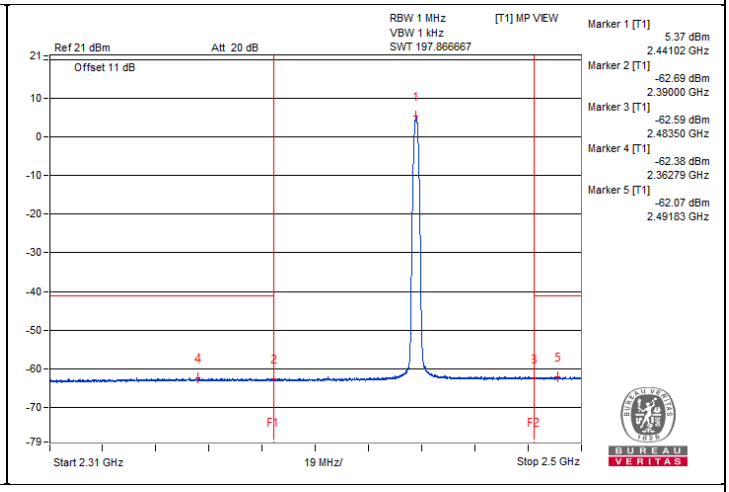
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2386.42	54.38 PK	74	-19.62	-51.74	-49.43	6.54	-40.88
2	2381.55	42.22 AV	54	-11.78	-62.69	-62.5	6.54	-53.04
3	2487.15	54.44 PK	74	-19.56	-49.64	-51.25	6.54	-40.82
4	2491.4	42.58 AV	54	-11.42	-62.37	-62.1	6.54	-52.68

Remarks:

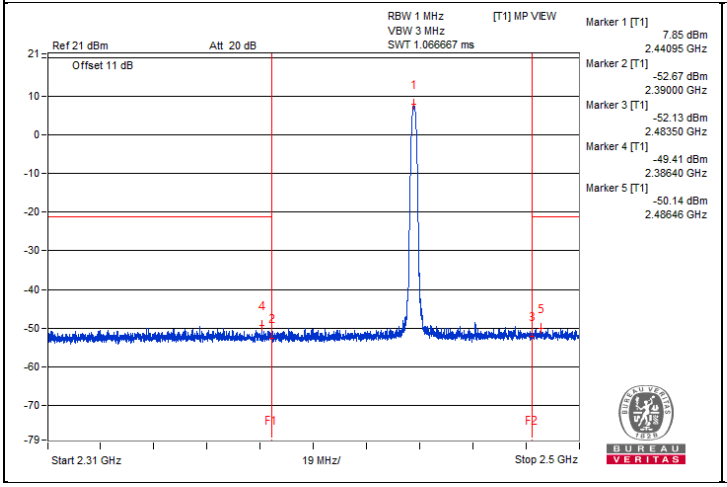
1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

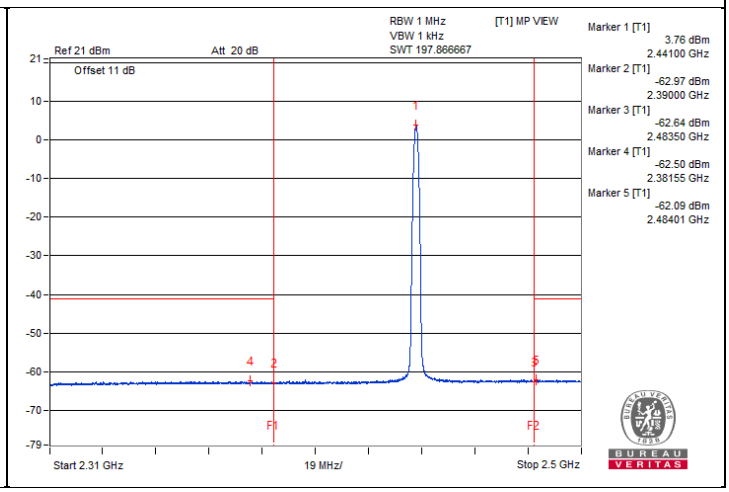
Chain 0





Chain 1





8DPSK 2TX - Channel 78

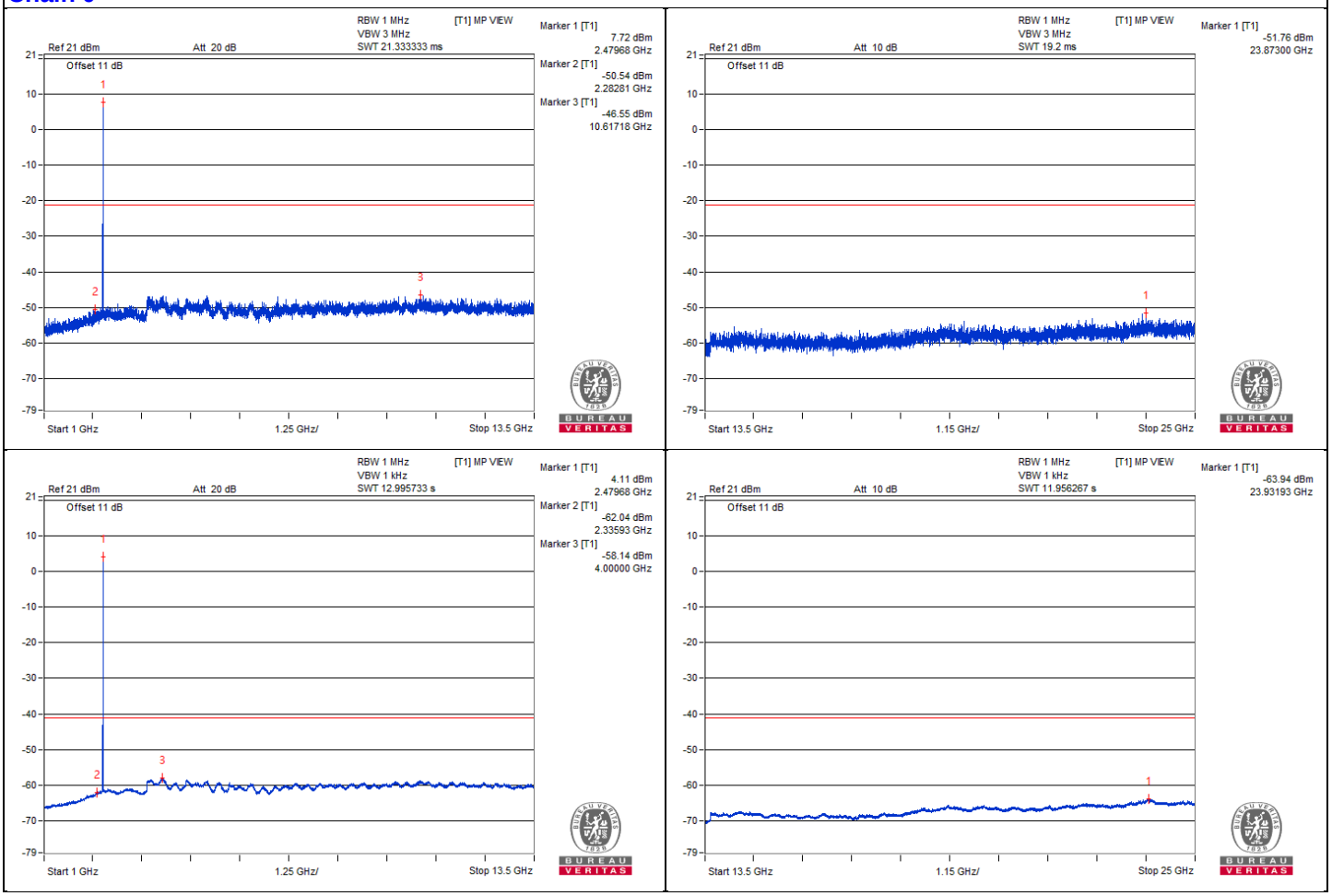
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	4970.31	57.36 PK	74	-16.64	-49.45	-48.74	8.17	-37.90
2	4948.43	46.41 AV	54	-7.59	-59.98	-60.08	8.17	-48.85
3	7428.12	57.71 PK	74	-16.29	-47.69	-50.09	8.17	-37.55
4	7431.25	46.78 AV	54	-7.22	-59.76	-59.56	8.17	-48.48

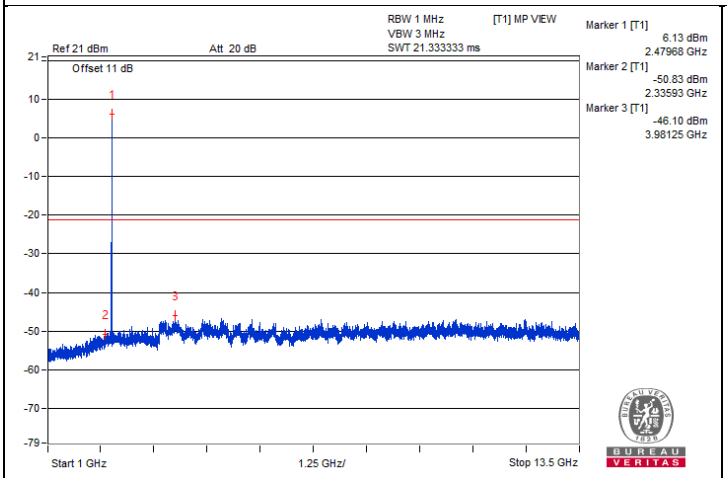
Remarks:

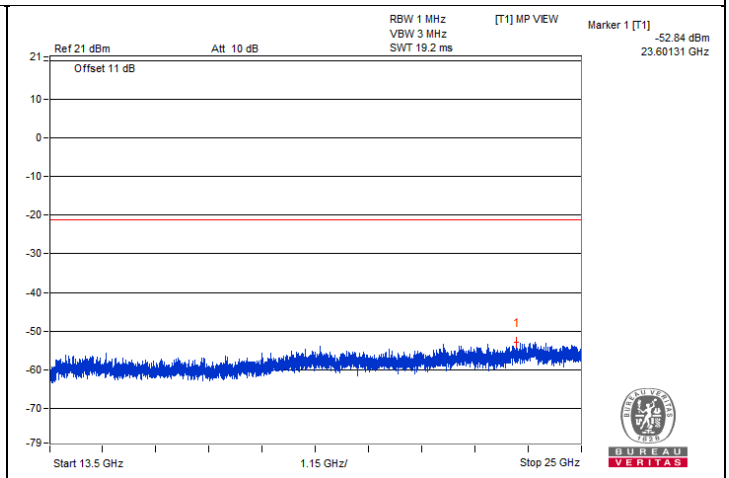
1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

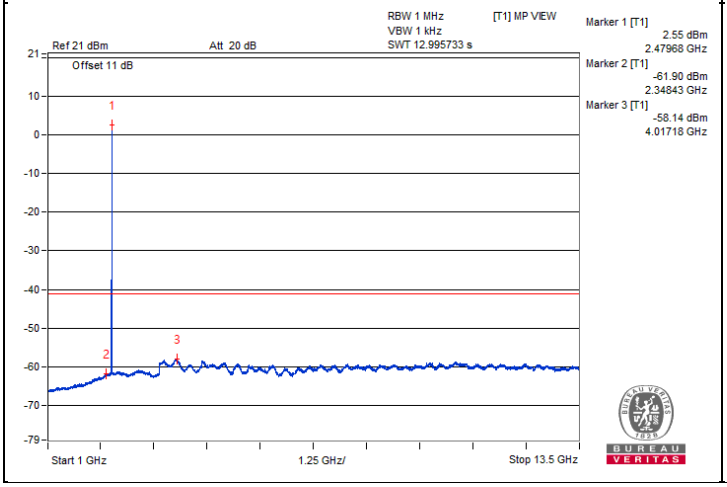
Chain 0

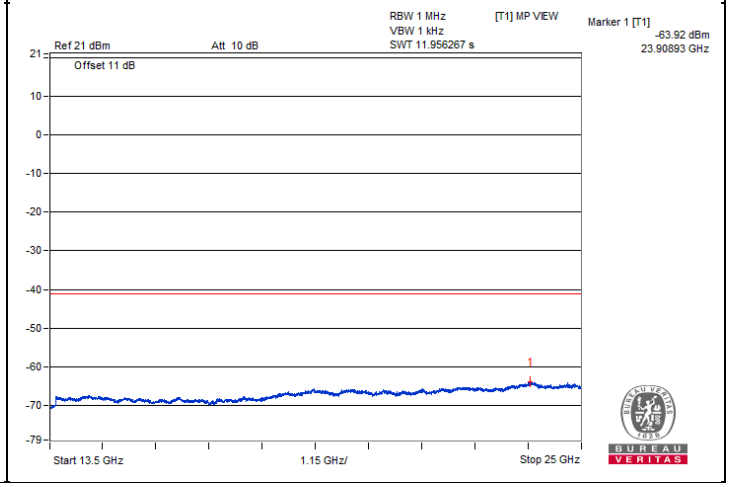


Chain 1


RBW 1 MHz
VBW 3 MHz
SWT 21.333333 ms
[T1] MP VIEW
Ref 21 dBm
Att 20 dB
Offset 11 dB
Marker 1 [T1]
6.13 dBm
2.47968 GHz
Marker 2 [T1]
-50.83 dBm
2.33593 GHz
Marker 3 [T1]
-46.10 dBm
3.98125 GHz
Start 1 GHz
1.25 GHz/
Stop 13.5 GHz


RBW 1 MHz
VBW 3 MHz
SWT 19.2 ms
[T1] MP VIEW
Ref 21 dBm
Att 10 dB
Offset 11 dB
Marker 1 [T1]
-52.84 dBm
23.60131 GHz
Start 13.5 GHz
1.15 GHz/
Stop 25 GHz


RBW 1 MHz
VBW 1 kHz
SWT 12.995733 s
[T1] MP VIEW
Ref 21 dBm
Att 20 dB
Offset 11 dB
Marker 1 [T1]
2.55 dBm
2.47968 GHz
Marker 2 [T1]
-61.90 dBm
2.34843 GHz
Marker 3 [T1]
-58.14 dBm
4.01718 GHz
Start 1 GHz
1.25 GHz/
Stop 13.5 GHz


RBW 1 MHz
VBW 1 kHz
SWT 11.956267 s
[T1] MP VIEW
Ref 21 dBm
Att 10 dB
Offset 11 dB
Marker 1 [T1]
-63.92 dBm
23.90893 GHz
Start 13.5 GHz
1.15 GHz/
Stop 25 GHz

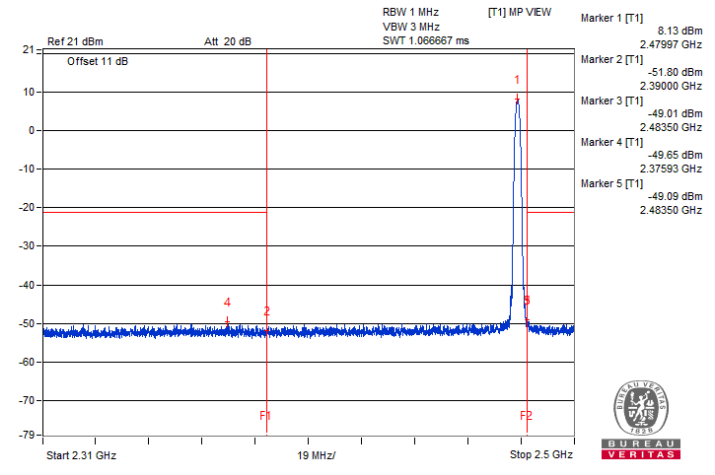
Bandedge table

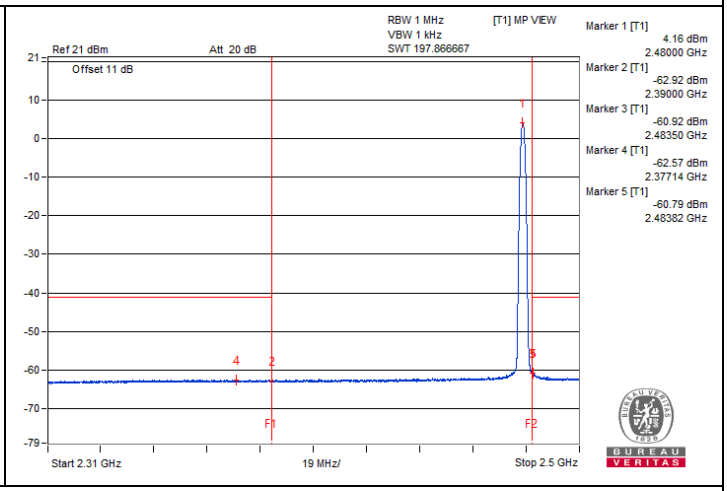
No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2367.9	54.47 PK	74	-19.53	-50.58	-50.12	6.54	-40.79
2	2389.37	42.11 AV	54	-11.89	-62.65	-62.75	6.54	-53.15
3	2483.51	55.4 PK	74	-18.6	-49.33	-49.49	6.54	-39.86
4	2483.54	43.65 AV	54	-10.35	-61.13	-61.2	6.54	-51.61

Remarks:

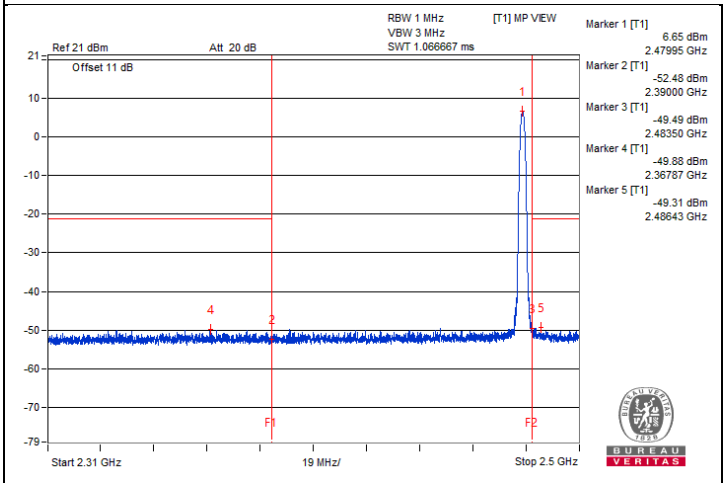
1. Margin value = Emission Level – Limit value
2. The other emission levels were very low against the limit.

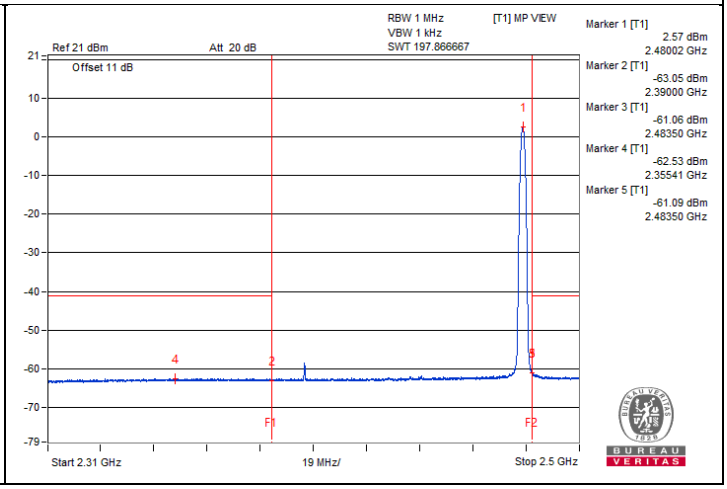
Chain 0





Chain 1





Mode B

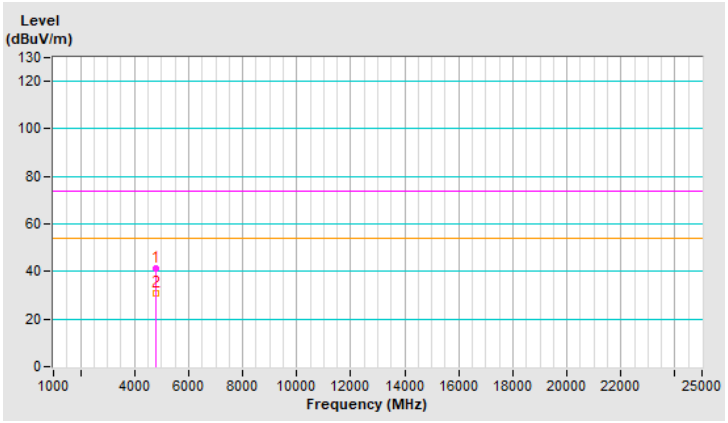
1TX

RF Mode	BT GFSK	Channel	CH 0：2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 300 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4804.00	41.3 PK	74.0	-32.7	1.27 H	302	39.2	2.1
2	4804.00	30.7 AV	54.0	-23.3	1.27 H	302	28.6	2.1

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

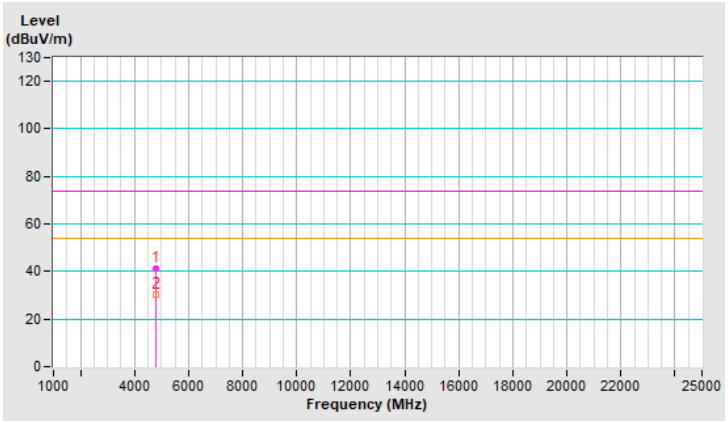


RF Mode	BT GFSK	**Channel**	CH 0：2402 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 300 Hz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	4804.00	41.2 PK	74.0	-32.8	1.66 V	126	39.1	2.1
2	4804.00	30.5 AV	54.0	-23.5	1.66 V	126	28.4	2.1

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

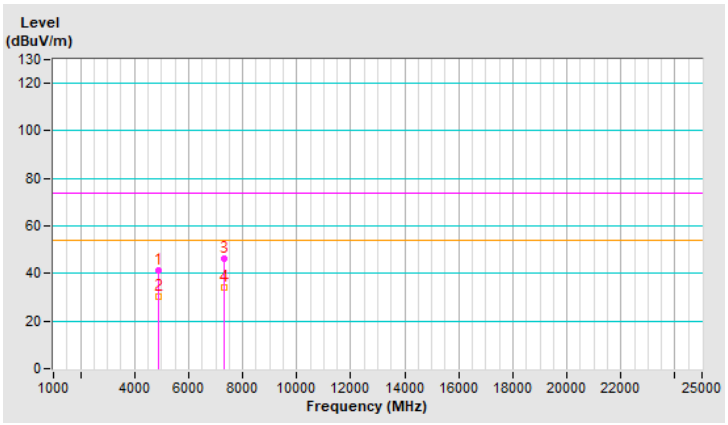


RF Mode	BT GFSK	Channel	CH 39：2441 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 300 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4882.00	41.3 PK	74.0	-32.7	1.31 H	304	39.2	2.1
2	4882.00	30.4 AV	54.0	-23.6	1.31 H	304	28.3	2.1
3	7323.00	46.4 PK	74.0	-27.6	1.86 H	172	38.7	7.7
4	7323.00	34.3 AV	54.0	-19.7	1.86 H	172	26.6	7.7

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

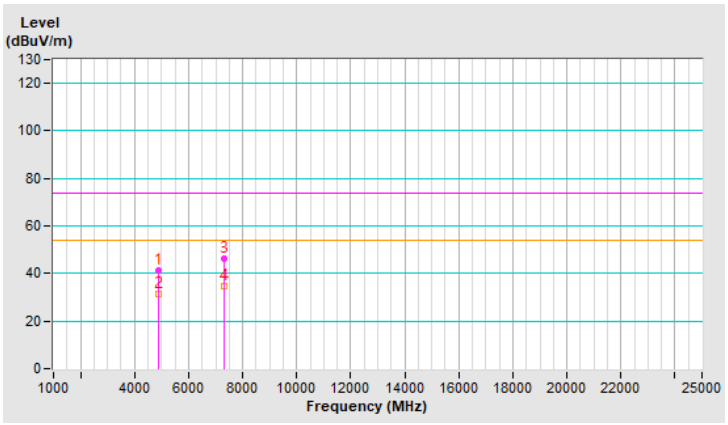


RF Mode	BT GFSK	**Channel**	CH 39：2441 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 300 Hz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	4882.00	41.2 PK	74.0	-32.8	1.59 V	140	39.1	2.1
2	4882.00	31.3 AV	54.0	-22.7	1.59 V	140	29.2	2.1
3	7323.00	46.3 PK	74.0	-27.7	1.86 V	262	38.6	7.7
4	7323.00	34.5 AV	54.0	-19.5	1.86 V	262	26.8	7.7

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

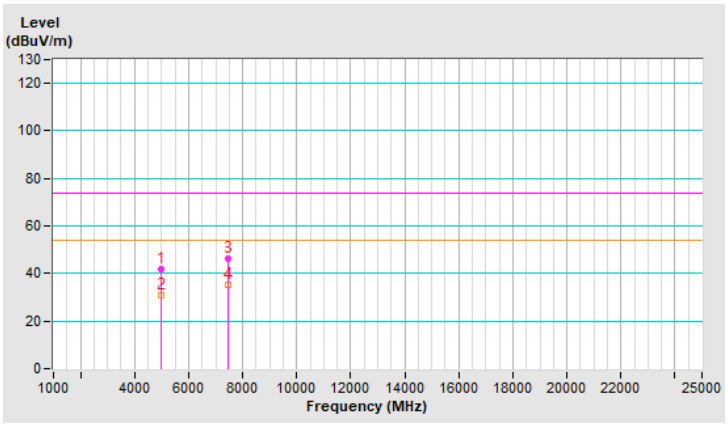


RF Mode	BT GFSK	Channel	CH 78：2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 300 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4960.00	41.6 PK	74.0	-32.4	1.31 H	297	39.4	2.2
2	4960.00	31.0 AV	54.0	-23.0	1.31 H	297	28.8	2.2
3	7440.00	46.1 PK	74.0	-27.9	1.85 H	165	38.3	7.8
4	7440.00	35.0 AV	54.0	-19.0	1.85 H	165	27.2	7.8

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

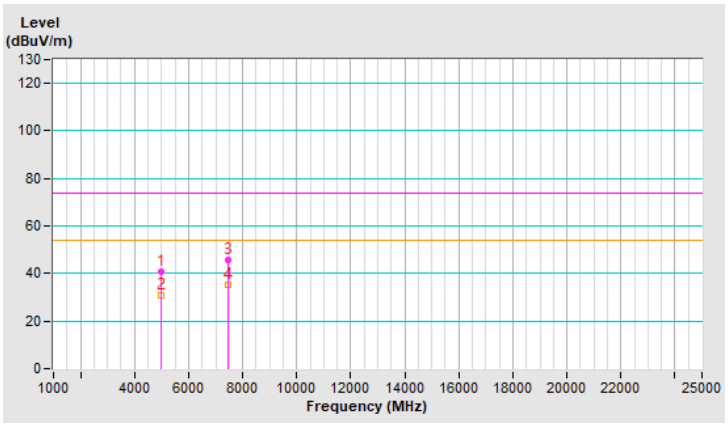


RF Mode	BT GFSK	**Channel**	CH 78：2480 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 300 Hz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	4960.00	40.9 PK	74.0	-33.1	1.58 V	138	38.7	2.2
2	4960.00	30.8 AV	54.0	-23.2	1.58 V	138	28.6	2.2
3	7440.00	45.8 PK	74.0	-28.2	1.88 V	247	38.0	7.8
4	7440.00	35.1 AV	54.0	-18.9	1.88 V	247	27.3	7.8

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

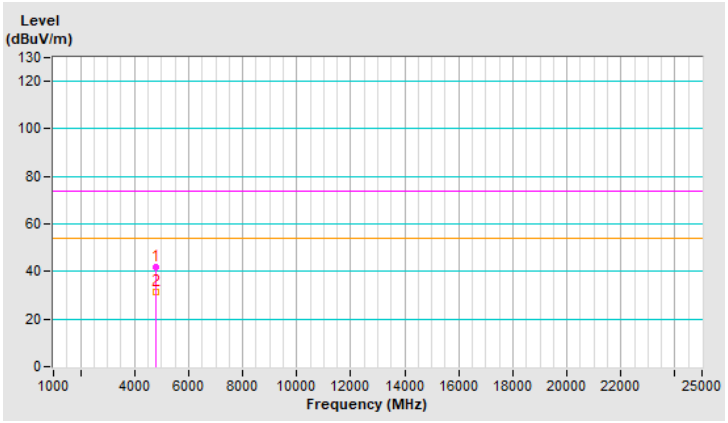


RF Mode	BT 8DPSK	**Channel**	CH 0：2402 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	4804.00	41.9 PK	74.0	-32.1	1.33 H	304	39.8	2.1
2	4804.00	31.3 AV	54.0	-22.7	1.33 H	304	29.2	2.1

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

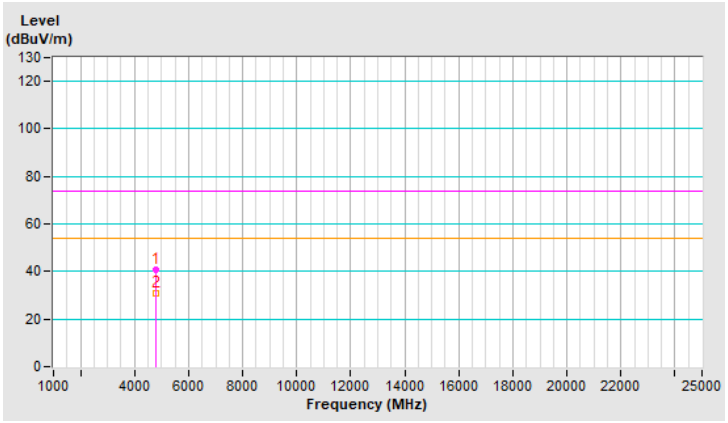


RF Mode	BT 8DPSK	Channel	CH 0：2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4804.00	40.9 PK	74.0	-33.1	1.68 V	144	38.8	2.1
2	4804.00	30.9 AV	54.0	-23.1	1.68 V	144	28.8	2.1

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

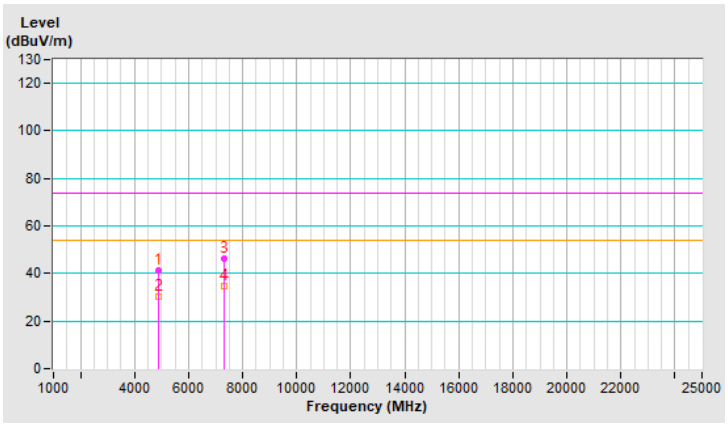


RF Mode	BT 8DPSK	Channel	CH 39：2441 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4882.00	41.5 PK	74.0	-32.5	1.36 H	310	39.4	2.1
2	4882.00	30.5 AV	54.0	-23.5	1.36 H	310	28.4	2.1
3	7323.00	46.3 PK	74.0	-27.7	1.83 H	171	38.6	7.7
4	7323.00	34.5 AV	54.0	-19.5	1.83 H	171	26.8	7.7

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

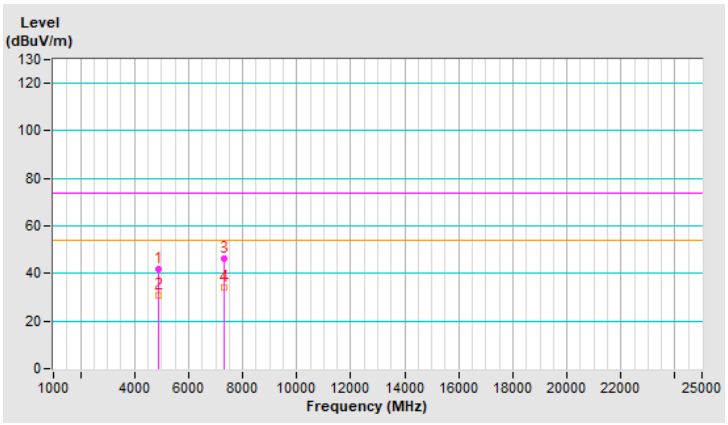


RF Mode	BT 8DPSK	**Channel**	CH 39：2441 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	4882.00	41.6 PK	74.0	-32.4	1.68 V	138	39.5	2.1
2	4882.00	31.0 AV	54.0	-23.0	1.68 V	138	28.9	2.1
3	7323.00	46.4 PK	74.0	-27.6	1.85 V	260	38.7	7.7
4	7323.00	34.3 AV	54.0	-19.7	1.85 V	260	26.6	7.7

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

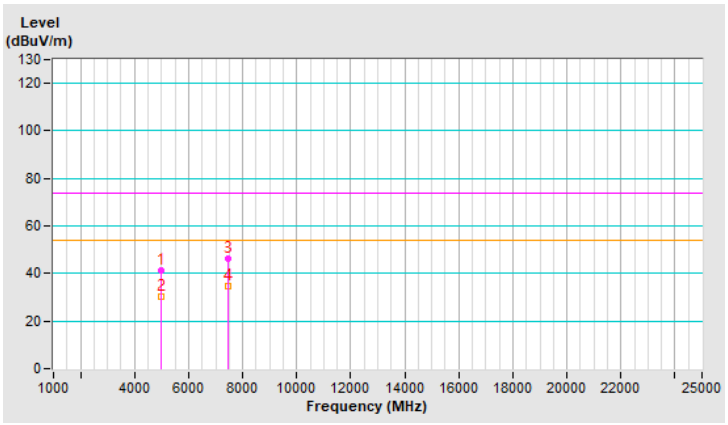


RF Mode	BT 8DPSK	**Channel**	CH 78：2480 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	4960.00	41.1 PK	74.0	-32.9	1.29 H	304	38.9	2.2
2	4960.00	30.4 AV	54.0	-23.6	1.29 H	304	28.2	2.2
3	7440.00	46.1 PK	74.0	-27.9	1.79 H	179	38.3	7.8
4	7440.00	34.7 AV	54.0	-19.3	1.79 H	179	26.9	7.8

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

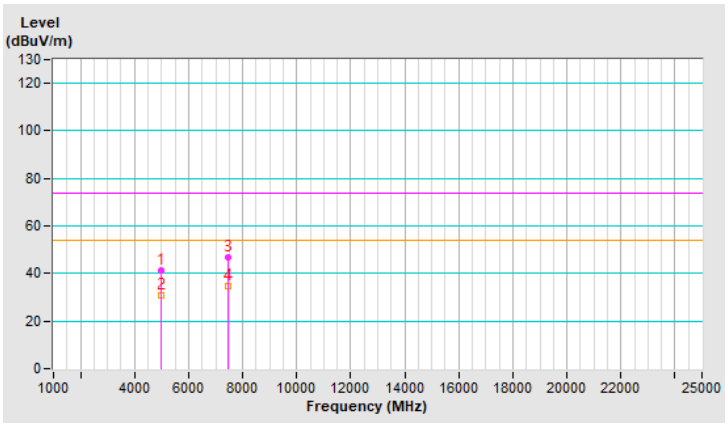


RF Mode	BT 8DPSK	**Channel**	CH 78：2480 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 510 Hz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	4960.00	41.2 PK	74.0	-32.8	1.62 V	125	39.0	2.2
2	4960.00	30.8 AV	54.0	-23.2	1.62 V	125	28.6	2.2
3	7440.00	46.6 PK	74.0	-27.4	1.87 V	259	38.8	7.8
4	7440.00	34.8 AV	54.0	-19.2	1.87 V	259	27.0	7.8

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.



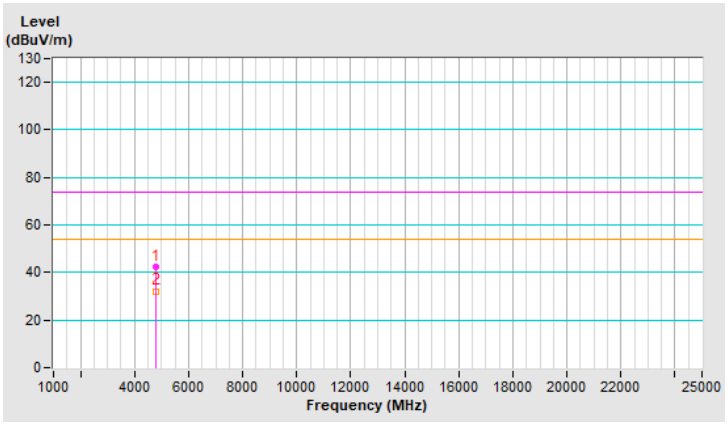
2TX

RF Mode	BT GFSK	Channel	CH 0：2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60Hz	Environmental Conditions	25°C, 68% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4804.00	42.2 PK	74.0	-31.8	1.35 H	297	40.1	2.1
2	4804.00	32.2 AV	54.0	-21.8	1.35 H	297	30.1	2.1

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

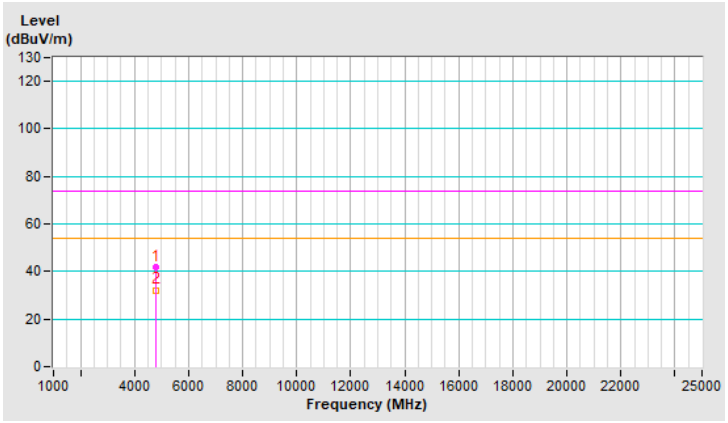


RF Mode	BT GFSK	**Channel**	CH 0：2402 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 300 Hz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	4804.00	42.0 PK	74.0	-32.0	1.70 V	131	39.9	2.1
2	4804.00	32.2 AV	54.0	-21.8	1.70 V	131	30.1	2.1

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

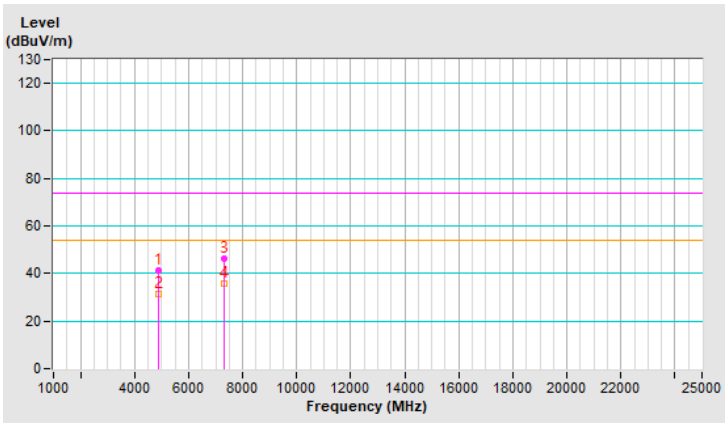


RF Mode	BT GFSK	**Channel**	CH 39：2441 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 300 Hz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	4882.00	41.3 PK	74.0	-32.7	1.34 H	300	39.2	2.1
2	4882.00	31.6 AV	54.0	-22.4	1.34 H	300	29.5	2.1
3	7323.00	46.0 PK	74.0	-28.0	1.76 H	150	38.3	7.7
4	**7323.00**	**35.6 AV**	**54.0**	**-18.4**	**1.76 H**	**150**	**27.9**	**7.7**

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

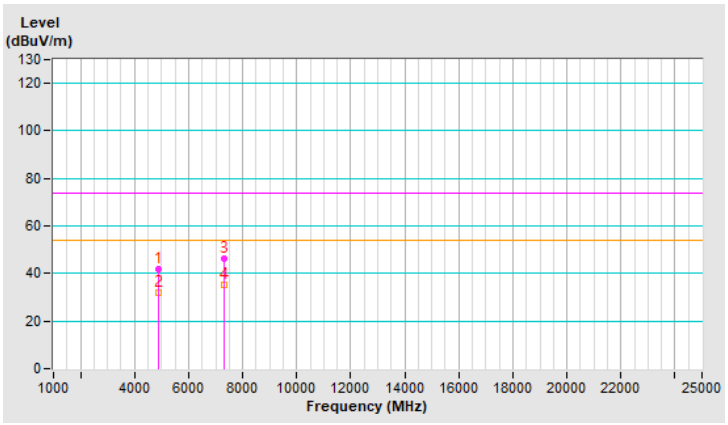


RF Mode	BT GFSK	**Channel**	CH 39：2441 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 300 Hz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	4882.00	41.9 PK	74.0	-32.1	1.69 V	137	39.8	2.1
2	4882.00	31.7 AV	54.0	-22.3	1.69 V	137	29.6	2.1
3	7323.00	46.4 PK	74.0	-27.6	1.93 V	258	38.7	7.7
4	7323.00	35.4 AV	54.0	-18.6	1.93 V	258	27.7	7.7

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

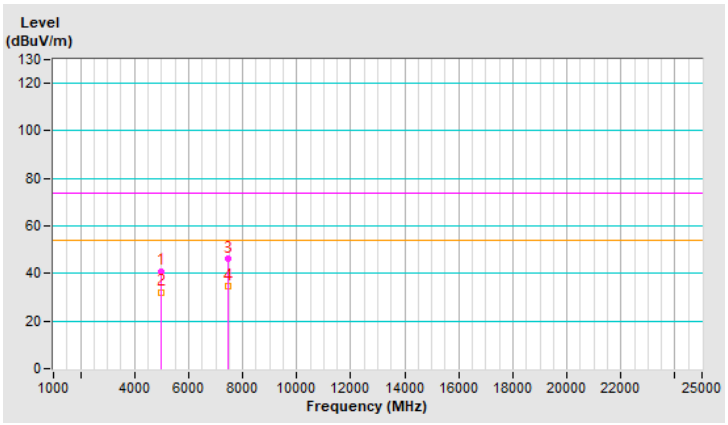


RF Mode	BT GFSK	**Channel**	CH 78：2480 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 300 Hz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	4960.00	41.0 PK	74.0	-33.0	1.35 H	319	38.8	2.2
2	4960.00	32.2 AV	54.0	-21.8	1.35 H	319	30.0	2.2
3	7440.00	46.3 PK	74.0	-27.7	1.81 H	131	38.5	7.8
4	7440.00	34.9 AV	54.0	-19.1	1.81 H	131	27.1	7.8

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

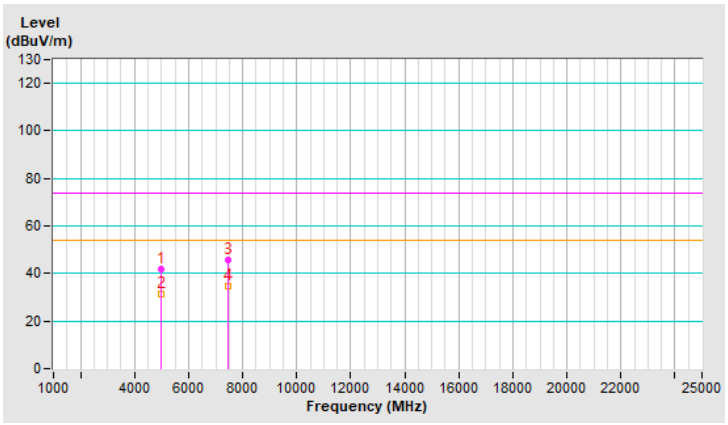


RF Mode	BT GFSK	**Channel**	CH 78：2480 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 300 Hz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	4960.00	41.8 PK	74.0	-32.2	1.65 V	145	39.6	2.2
2	4960.00	31.6 AV	54.0	-22.4	1.65 V	145	29.4	2.2
3	7440.00	45.8 PK	74.0	-28.2	1.87 V	259	38.0	7.8
4	7440.00	34.9 AV	54.0	-19.1	1.87 V	259	27.1	7.8

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

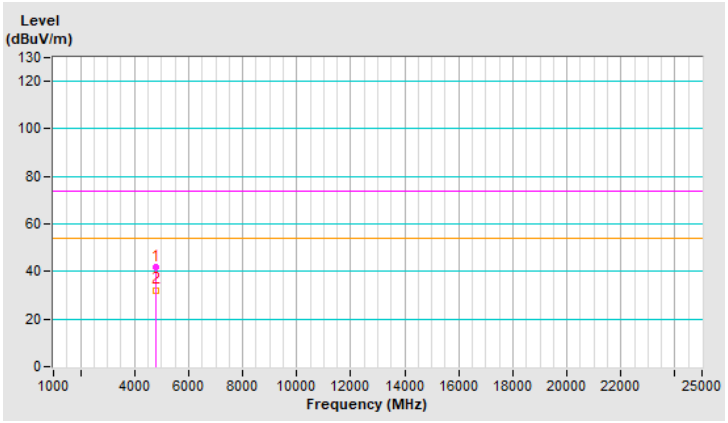


RF Mode	BT 8DPSK	Channel	CH 0：2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4804.00	41.6 PK	74.0	-32.4	1.37 H	309	39.5	2.1
2	4804.00	32.2 AV	54.0	-21.8	1.37 H	309	30.1	2.1

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

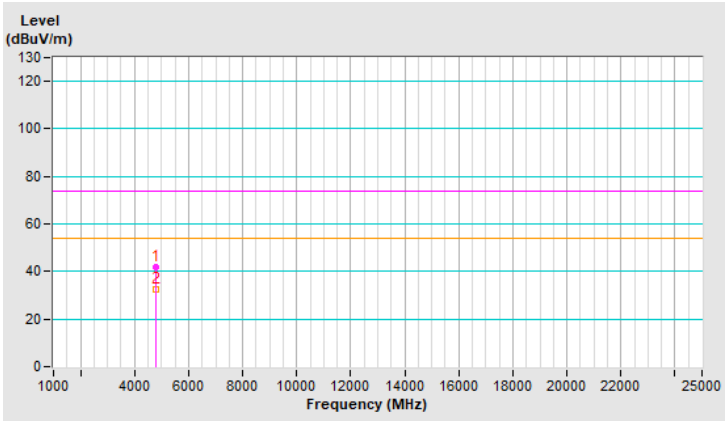


RF Mode	BT 8DPSK	**Channel**	CH 0：2402 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	4804.00	41.9 PK	74.0	-32.1	1.69 V	136	39.8	2.1
2	4804.00	32.3 AV	54.0	-21.7	1.69 V	136	30.2	2.1

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

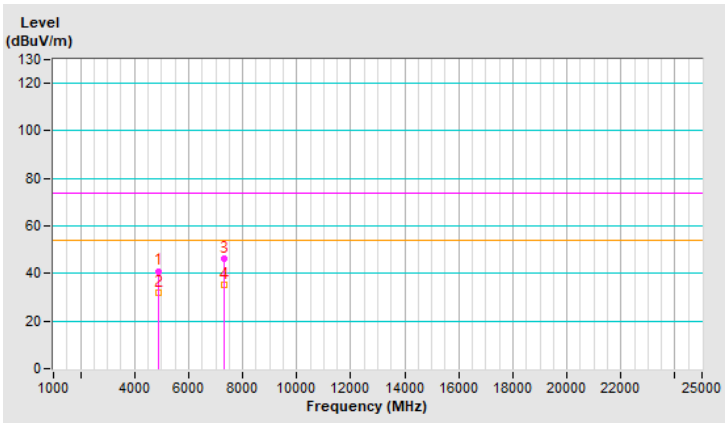


RF Mode	BT 8DPSK	Channel	CH 39：2441 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4882.00	41.0 PK	74.0	-33.0	1.31 H	295	38.9	2.1
2	4882.00	31.9 AV	54.0	-22.1	1.31 H	295	29.8	2.1
3	7323.00	46.0 PK	74.0	-28.0	1.70 H	164	38.3	7.7
4	7323.00	35.4 AV	54.0	-18.6	1.70 H	164	27.7	7.7

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

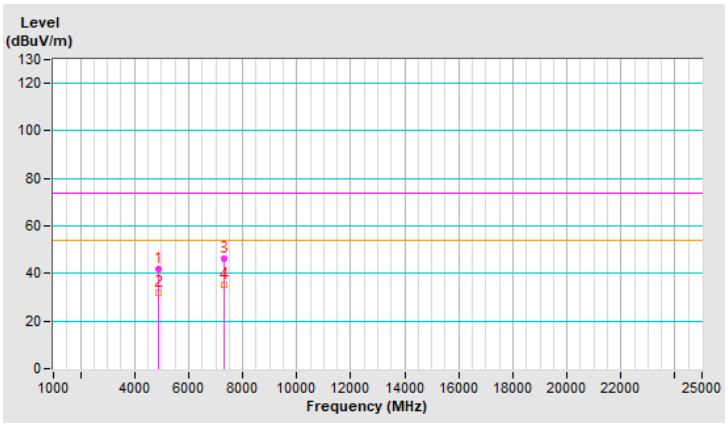


RF Mode	BT 8DPSK	Channel	CH 39：2441 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4882.00	41.6 PK	74.0	-32.4	1.62 V	151	39.5	2.1
2	4882.00	32.1 AV	54.0	-21.9	1.62 V	151	30.0	2.1
3	7323.00	46.0 PK	74.0	-28.0	1.89 V	253	38.3	7.7
4	7323.00	35.1 AV	54.0	-18.9	1.89 V	253	27.4	7.7

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

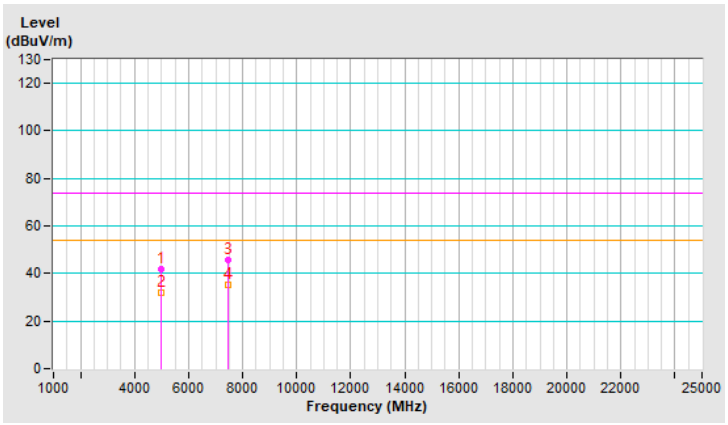


RF Mode	BT 8DPSK	**Channel**	CH 78：2480 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	4960.00	41.7 PK	74.0	-32.3	1.37 H	296	39.5	2.2
2	4960.00	31.9 AV	54.0	-22.1	1.37 H	296	29.7	2.2
3	7440.00	45.9 PK	74.0	-28.1	1.81 H	135	38.1	7.8
4	7440.00	35.0 AV	54.0	-19.0	1.81 H	135	27.2	7.8

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.

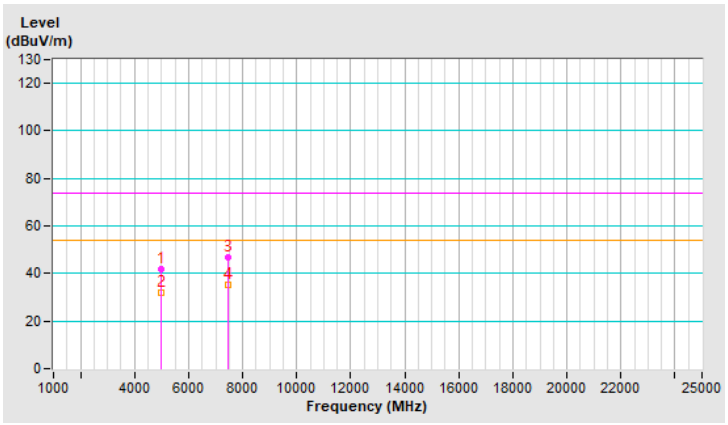


RF Mode	BT 8DPSK	**Channel**	CH 78：2480 MHz
Frequency Range	1 GHz ~ 25 GHz	**Detector Function & Bandwidth**	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power (System)	120 Vac, 60 Hz	**Environmental Conditions**	25°C, 75% RH
Tested By	Louis Yang		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	4960.00	41.7 PK	74.0	-32.3	1.66 V	170	39.5	2.2
2	4960.00	32.0 AV	54.0	-22.0	1.66 V	170	29.8	2.2
3	7440.00	46.6 PK	74.0	-27.4	1.93 V	274	38.8	7.8
4	7440.00	35.2 AV	54.0	-18.8	1.93 V	274	27.4	7.8

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) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.



8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Lin Kou EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-6668565
Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@bureauveritas.com
Web Site: http://ee.bureauveritas.com.tw

The address and road map of all our labs can be found in our web site also.

--- END ---