

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)

Report No.: PRBWIN-WTW-P22110682-2

Product: Qualcomm WiFi 7/BT Combo module

Brand: Qualcomm

Model No.: QCNCM865

Received Date: 2022/11/24

Test Date: 2023/1/9 ~ 2023/4/27

Issued Date: 2023/5/11

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 / 723255 / TW2022

Designation Number:

Approved by: _____, **Date:** 2023/5/11
May Chen / Manager

This test report consists of 112 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 : Claire Kuan / Specialist

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

Table of Contents

Release Control Record	4
1 Certificate.....	5
2 Summary of Test Results	6
2.1 Measurement Uncertainty	6
2.2 Supplementary Information	6
3 General Information	7
3.1 General Description	7
3.2 Antenna Description of EUT	8
3.3 Channel List	9
3.4 Test Mode Applicability and Tested Channel Detail	10
3.5 Duty Cycle of Test Signal	11
3.6 Test Program Used and Operation Descriptions	12
3.7 Connection Diagram of EUT and Peripheral Devices	12
3.8 Configuration of Peripheral Devices and Cable Connections	13
4 Test Instruments	14
4.1 RF Output Power	14
4.2 Number of Hopping Frequency Used	14
4.3 Dwell Time on Each Channel	14
4.4 Hopping Channel Separation	14
4.5 20 dB Bandwidth	14
4.6 Conducted Out of Band Emissions	14
4.7 AC Power Conducted Emissions	15
4.8 Unwanted Emissions below 1 GHz	15
4.9 Unwanted Emissions above 1 GHz	16
5 Limits of Test Items.....	17
5.1 RF Output Power	17
5.2 Number of Hopping Frequency Used	17
5.3 Dwell Time on Each Channel	17
5.4 Hopping Channel Separation	17
5.5 20 dB Bandwidth	17
5.6 Conducted Out of Band Emissions	17
5.7 AC Power Conducted Emissions	17
5.8 Unwanted Emissions below 1 GHz	18
5.9 Unwanted Emissions above 1 GHz	18
6 Test Arrangements.....	19
6.1 RF Output Power	19
6.1.1 Test Setup	19
6.1.2 Test Procedure	19
6.2 Number of Hopping Frequency Used	19
6.2.1 Test Setup	19
6.2.2 Test Procedure	19
6.3 Dwell Time on Each Channel	20
6.3.1 Test Setup	20
6.3.2 Test Procedure	20
6.4 Hopping Channel Separation	20
6.4.1 Test Setup	20
6.4.2 Test Procedure	20
6.5 20 dB Bandwidth	21
6.5.1 Test Setup	21
6.5.2 Test Procedure	21
6.6 Conducted Out of Band Emissions	21
6.6.1 Test Setup	21
6.6.2 Test Procedure	21
6.7 AC Power Conducted Emissions	22

6.7.1	Test Setup	22
6.7.2	Test Procedure	22
6.8	Unwanted Emissions below 1 GHz	23
6.8.1	Test Setup	23
6.8.2	Test Procedure	24
6.9	Unwanted Emissions above 1 GHz	25
6.9.1	Test Setup	25
6.9.2	Test Procedure	26
7	Test Results of Test Item	27
7.1	RF Output Power	27
7.2	Number of Hopping Frequency Used	33
7.3	Dwell Time on Each Channel	36
7.4	Hopping Channel Separation	40
7.5	20 dB Bandwidth	42
7.6	Conducted Out of Band Emissions	44
7.7	AC Power Conducted Emissions	50
7.8	Unwanted Emissions below 1 GHz	52
7.9	Unwanted Emissions above 1 GHz	56
8	Pictures of Test Arrangements	111
9	Information of the Testing Laboratories	112

Qualcomm
 Confidential - May Contain Trade Secrets
 2024-06-25 00:58:37 GMT
 vera.yu@gigabyte.com

Release Control Record

Issue No.	Description	Date Issued
PRBWIN-WTW-P22110682-2	Original release.	2023/5/11

Qualcomm
Confidential - May Contain Trade Secrets
2024-06-25 00:58:37 GMT
vera.yu@gigabyte.com

1 Certificate

Product: Qualcomm WiFi 7/BT Combo module

Brand: Qualcomm

Test Model: QCNCM865

Sample Status: Engineering sample

Applicant: Qualcomm Technologies, Inc.

Test Date: 2023/1/9 ~ 2023/4/27

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)

Measurement ANSI C63.10-2013

procedure: KDB 558074 D01 15.247 Meas Guidance v05r02

KDB 662911 D01 Multiple Transmitter Output v02r01

(Following test report has been performed to fulfill Chile power limit. Therefore test results are applicable for Chile market only.)

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) (Following test report has been performed to fulfill Chile power limit. Therefore test results are applicable for Chile market only.)			
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 -9.43 dB at 0.56793 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -4.3 dB at 297.22 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -27.6 dB at 7440.00 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	QCNCM865
Status of EUT	Engineering sample
Power Supply Rating	3.3Vdc from host equipment
Modulation Type	GFSK, $\pi/4$ -DQPSK, 8DPSK
Modulation Technology	FHSS
Transfer Rate	Up to 3 Mbps
Operating Frequency	2.402 GHz ~ 2.48 GHz
Number of Channel	79
Max. EIRP	80.168 mW (19.04 dBm)

Note:

1. There are Bluetooth and WLAN (2.4 GHz & 5 GHz & 5.9 GHz & 6 GHz) technology used for the EUT.
2. Simultaneously transmission condition.

DBS			
Condition	Technology		
1	WLAN(2.4GHz)_Ant 0+1		WLAN(5GHz) _Ant 0+1
2	WLAN(2.4GHz) _Ant 0+1		WLAN(6GHz) _Ant 0+1
HBS+BT			
Condition	Technology		
3	Bluetooth _Ant 0+1		WLAN(5GHz) _Ant 0+1
4	Bluetooth _Ant 0+1		WLAN(6GHz) _Ant 0+1
5	WLAN(5GHz _U-NII-1, U-NII-2A) _Ant 0+1	WLAN(5GHz _U-NII-2C, U-NII-3, U-NII-4) _Ant 0+1	Bluetooth
6	WLAN(5GHz _U-NII-1, U-NII-2A) Ant 0+1	WLAN(6GHz) _Ant 0+1	Bluetooth

3. QCNCM865 has HW variant SKUs below to support different Microsoft Windows platform system and feature:

SKU	Support platform system and feature
NCM865	X86 platform, support DBS and HBS
NCM865A	Qualcomm platform, support DBS and HBS
NCM835	X86 platform, support DBS
NCM835A	Qualcomm platform, support DBS
Note: From the above SKUs, the worst was found in SKU (NCM865) . Therefore only the test data of the modes were recorded in this report.	

4. 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
1	Chain0/1	Hong-Bo	260-25094	3.53	2.4~2.4835GHz	0.74	PIFA	MHF 4L	300mm
				3.06	5.15~5.25GHz	1.16			
				3.07	5.25~5.35GHz	1.18			
				4.81	5.47~5.725GHz	1.26			
				4.2	5.725~5.850GHz	1.28			
2	Chain0/1	Hong-Bo	260-25083	5.09	5.850~5.895 GHz	1.29	PIFA	MHF 4L	300mm
				5.14	5.925~6.425 GHz	1.35			
				5.09	6.425~6.525 GHz	1.38			
				5.16	6.525~6.875 GHz	1.45			
				5.12	6.875~7.125 GHz	1.50			
3	Chain0/1	Hong-Bo	260-25084	3.22	2.4~2.4835 GHz	0.49	Monopole	MHF 4L	200mm
				3.35	5.150~5.250 GHz	0.76			
				3.42	5.250~5.350 GHz	0.77			
				4.77	5.470~5.725 GHz	0.80			
				4.72	5.725~5.850 GHz	0.84			
				4.71	5.850~5.895 GHz	0.84			
				4.75	5.925~6.425 GHz	0.86			
				4.29	6.425~6.525 GHz	0.91			
				4.81	6.525~6.875 GHz	0.96			
				4.74	6.875~7.125 GHz	0.98			

* 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			

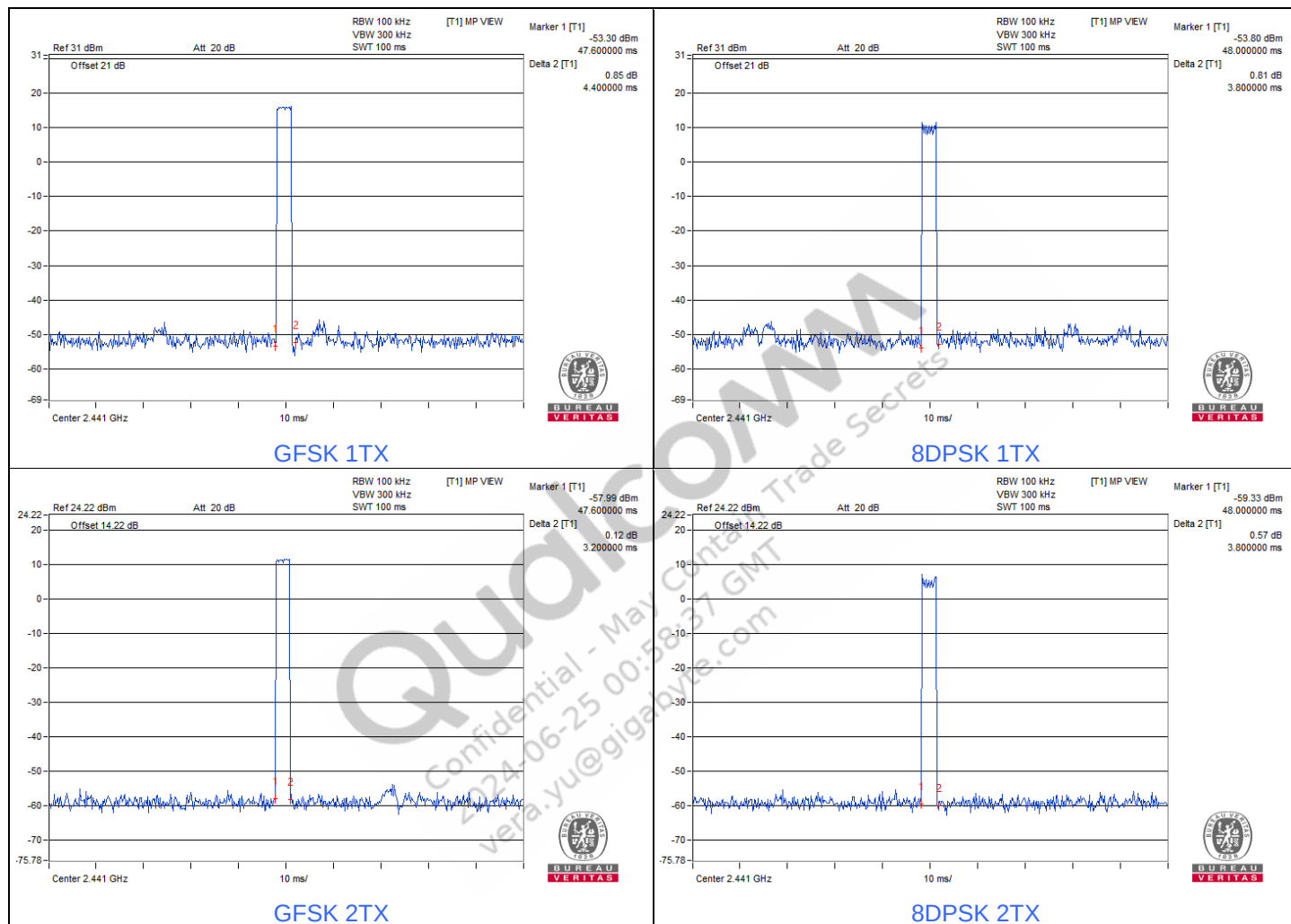
3.5 Duty Cycle of Test Signal

GFSK 1TX: Duty cycle = 4.4 ms / 100 ms x 100% = 4.4%

8DPSK 1TX: Duty cycle = 3.8 ms / 100 ms x 100% = 3.8%

GFSK 2TX: Duty cycle = 3.2 ms / 100 ms x 100% = 3.2%

8DPSK 2TX: Duty cycle = 3.8 ms / 100 ms x 100% = 3.8%

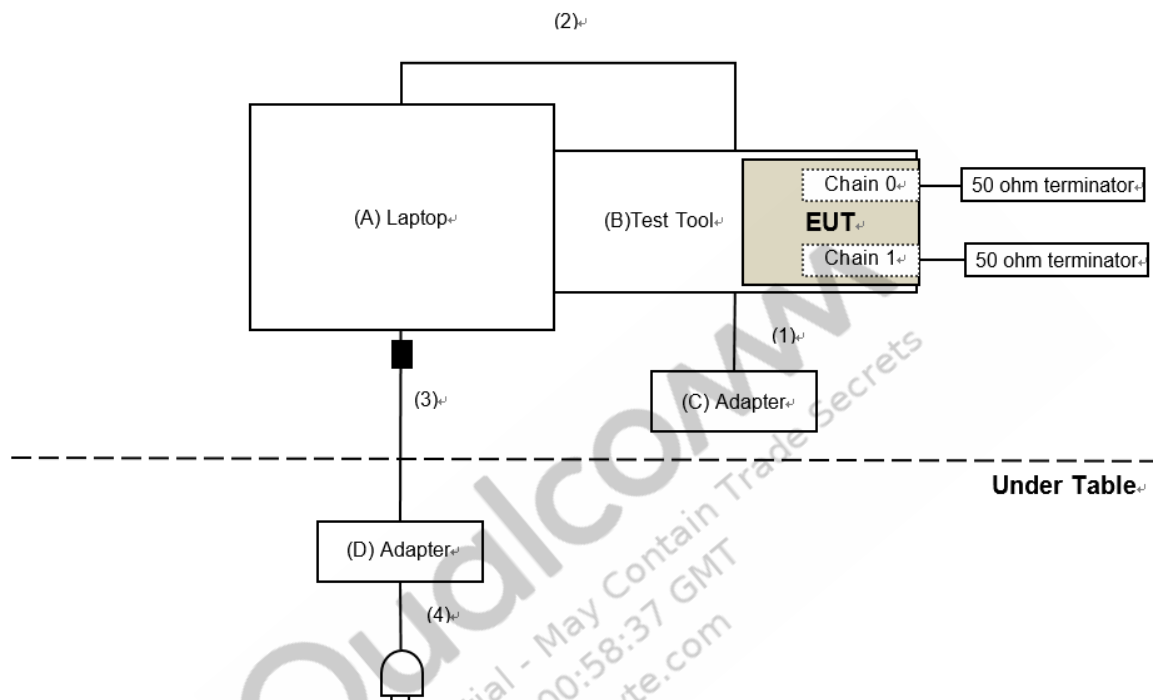


3.6 Test Program Used and Operation Descriptions

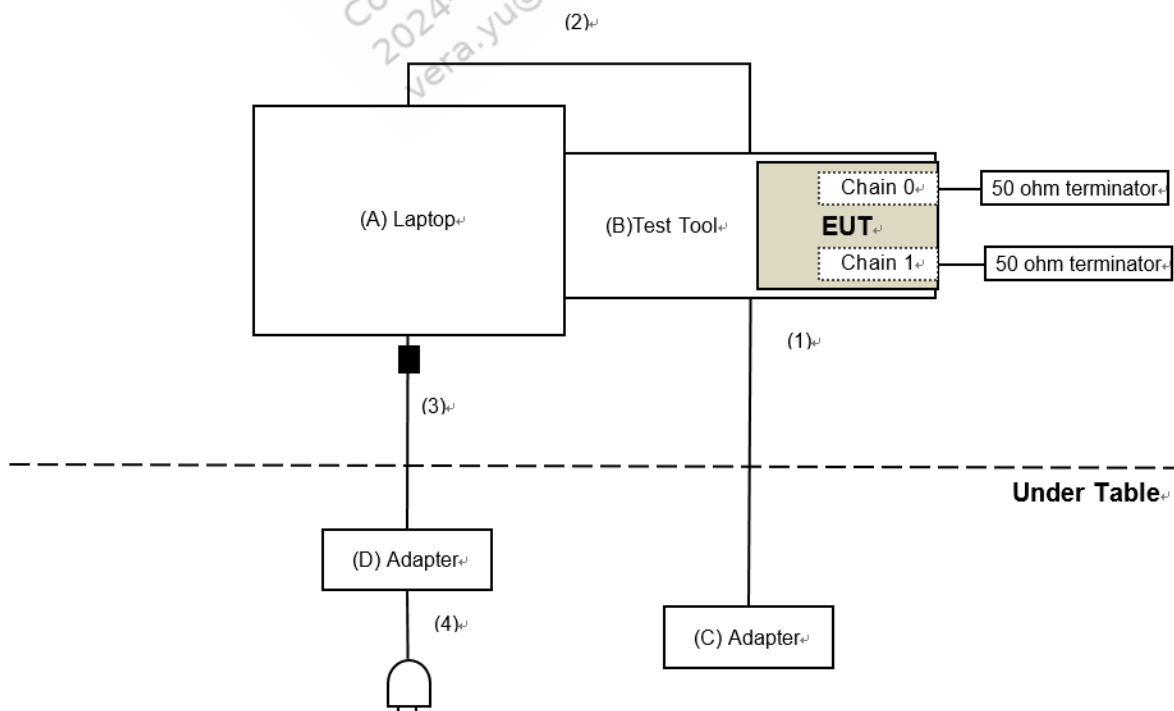
Controlling software (QRCT 4.0.00159.1) has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices

For AC Power Conducted Emission test



For Unwanted Emission test



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	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

Qualcomm
 Confidential - May Contain Trade Secrets
 2024-06-25 00:58:37 GMT
 vera.yu@gigabyte.com

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
Spectrum Analyzer Keysight	N9020B	MY60112409	2023/2/18	2024/2/17
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2023/3/27	2024/3/26
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/4/27

4.2 Number of Hopping Frequency Used

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Attenuator WOKEN	MDCS18N-10	MDCS18N-10-01	2022/4/5	2023/4/4
Software	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112409	2022/3/11	2023/3/10

Notes:

1. The test was performed in Oven room 2.
2. Tested Date: 2023/1/9 ~ 2023/1/18

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: 2023/2/20

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	2022/3/18	2023/3/17
Pre_Amplifier Agilent	8447D	2944A10636	2022/3/19	2023/3/18
Pre_Amplifier EMCI	EMC330N	980538	2022/4/25	2023/4/24
RF Coaxial Cable COMIMATE/PEWC	8D	966-5-1	2022/4/25	2023/4/24
		966-5-2	2022/4/25	2023/4/24
		966-5-3	2022/4/25	2023/4/24
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	2022/3/13	2023/3/12
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: 2023/2/15

4.9 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
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	2022/4/25	2023/4/24
	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	2022/3/8	2023/3/7
	EMC104-SM-SM-1500	180503	2022/4/25	2023/4/24
	EMC104-SM-SM-2000	180501	2022/4/25	2023/4/24
	EMC104-SM-SM-6000	180506	2022/4/25	2023/4/24
Software	ADT_Radiated_V8.7.08	N/A	N/A	N/A
Spectrum Analyzer Keysight	N9020B	MY60112410	2022/3/13	2023/3/12
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: 2023/2/20

5 Limits of Test Items

5.1 RF Output Power

Limits of Chile's power

Frequency Band	Limit
2400 ~ 2483.5 MHz (indoor, outdoor)	The maximum EIRP shall not exceed 1W (30dBm)

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

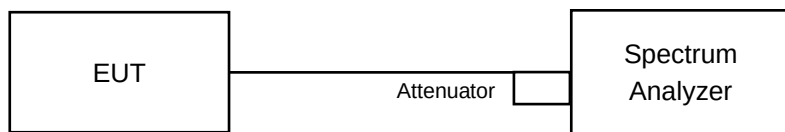
Notes:

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

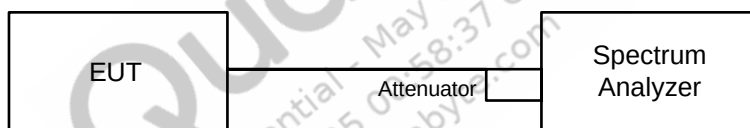


6.1.2 Test Procedure

- Set the RBW $\geq 1\%$ to 5% of the emission bandwidth
- Set the VBW $\geq 3 \times$ RBW
- Set the span $\geq [1.5 \times \text{DTS bandwidth}]$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Record the max value

6.2 Number of Hopping Frequency Used

6.2.1 Test Setup

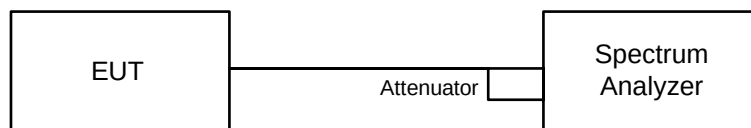


6.2.2 Test Procedure

- Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- 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.
- 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.
- Set the SA on View mode and then plot the result on SA screen.
- Repeat above procedures until all frequencies measured were complete.

6.3 Dwell Time on Each Channel

6.3.1 Test Setup

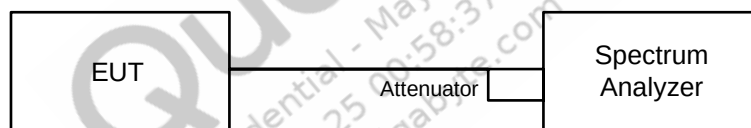


6.3.2 Test Procedure

- Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
- 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.
- 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.
- Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
- Repeat above procedures until all different time-slot modes have been completed.

6.4 Hopping Channel Separation

6.4.1 Test Setup

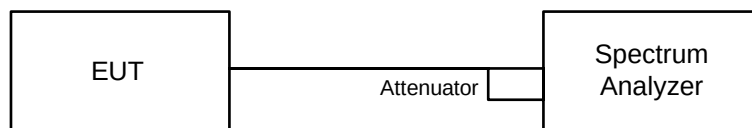


6.4.2 Test Procedure

- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
- By using the MaxHold function record the separation of two adjacent channels.
- Measure the frequency difference of these two adjacent channels by SA MARK function. And then plot the result on SA screen.
- Repeat above procedures until all frequencies measured were complete.

6.5 20 dB Bandwidth

6.5.1 Test Setup

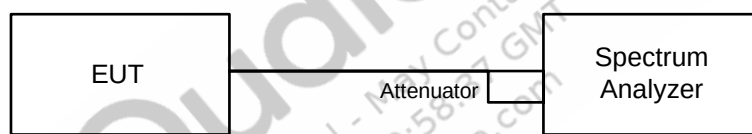


6.5.2 Test Procedure

- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 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.
- Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
- 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

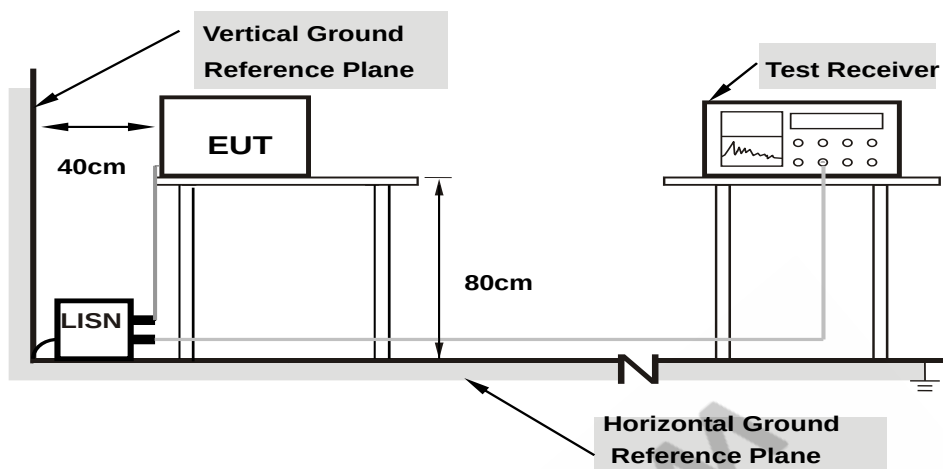
- Set the RBW = 100 kHz.
- Set the VBW $\geq$ 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

- Set RBW = 100 kHz.
- Set VBW $\geq$ 300 kHz.
- Detector = peak.
- Sweep = auto couple.
- Trace Mode = max hold.
- Allow trace to fully stabilize.
- 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

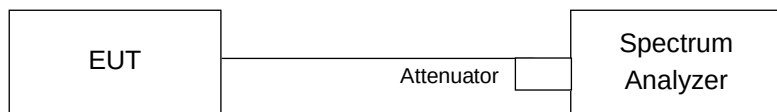
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- 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

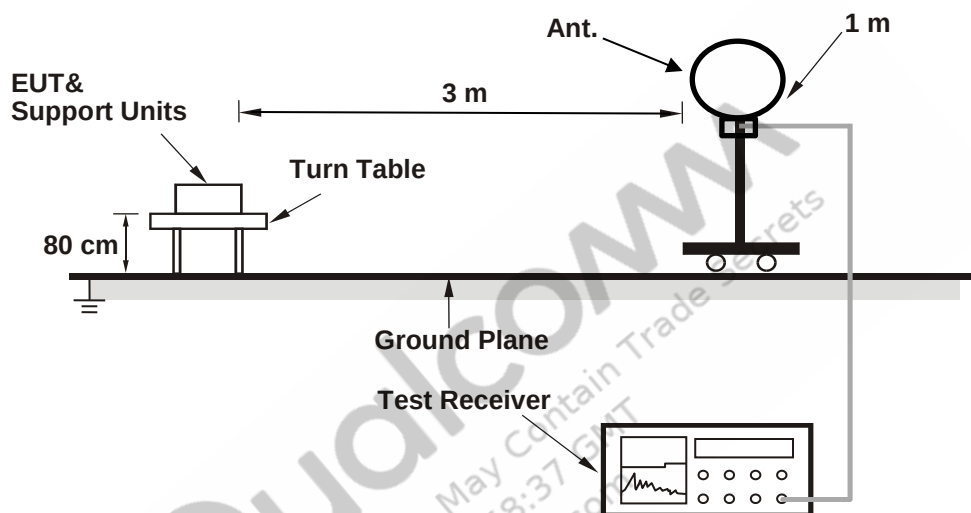
6.8.1 Test Setup

For Conducted Configuration:

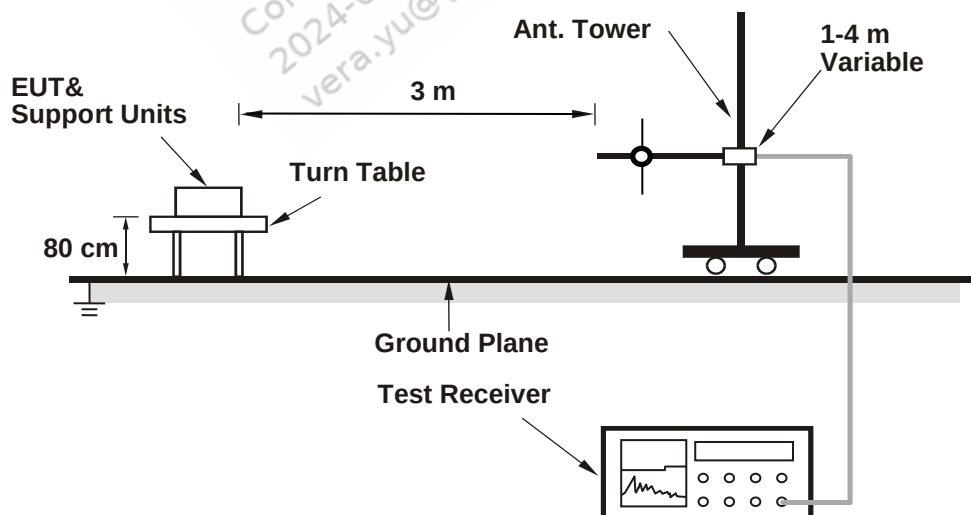


For Radiated Configuration:

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

Following FCC KDB 789033 D02 General UNII Test Procedures:

Radiated versus Conducted Measurements.

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

- a. 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.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. 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. 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.

For Radiated emission above 30 MHz

- a. 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.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The 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.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

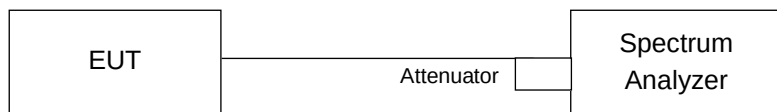
Notes:

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

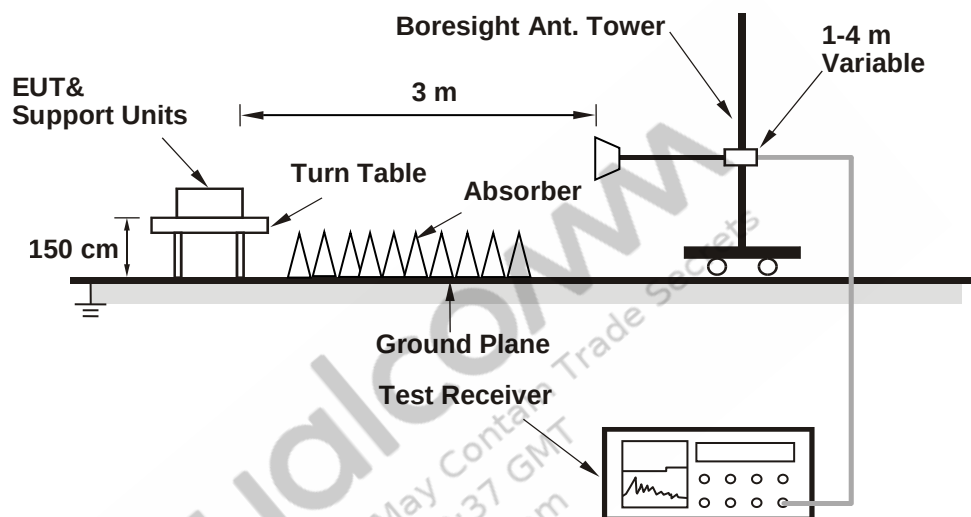
6.9 Unwanted Emissions above 1 GHz

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

Following FCC KDB 789033 D02 General UNII Test Procedures:

Radiated versus Conducted Measurements.

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 above 1 GHz

- a. 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.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The 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.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to peak 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. According to ANSI C63.10 section 6.6.4 and 4.1.4.2.2. For fundamental and harmonic signal measurement, according to ANSI C63.10 section 7.5, the average value = peak value + duty cycle correction factor. For duty cycle correction factor values, see the Test Signal Duty Cycle section in this report.
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

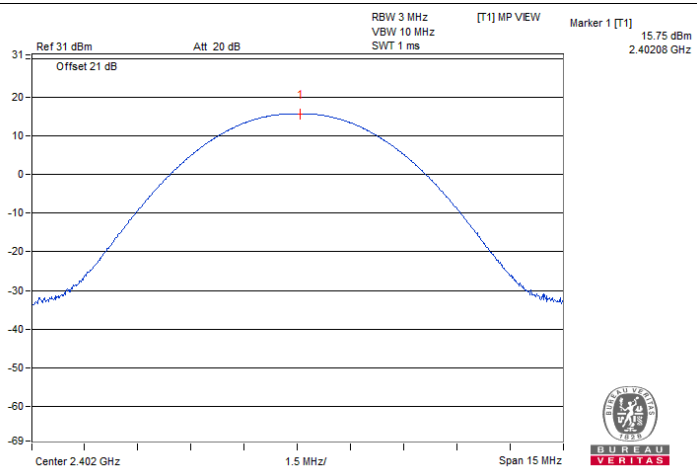
1TX

Composite Antenna Gain Type		Frequency Range		Chain0 (dBi)		Directional Gain (dBi)		Certification Power	
Correlated		2400 ~ 2483.5 MHz:		3.53		3.53		S.A. Peak Power	
Mode	Channel	Frequency (MHz)	Conducted Peak Power (dBm)		EIRP			Pass / Fail	
			Chain0	Total Power					
			Peak	Peak	Value (dBm)	Value (mW)	Limit (mW)		
GFSK	0	2402	15.09	15.09	18.62	72.778	1000	Pass	
	39	2441	15.51	15.51	19.04	80.168	1000	Pass	
	78	2480	14.24	14.24	17.77	59.841	1000	Pass	
8DPSK	0	2402	14.21	14.21	17.74	59.429	1000	Pass	
	39	2441	14.58	14.58	18.11	64.714	1000	Pass	
	78	2480	13.66	13.66	17.19	52.36	1000	Pass	

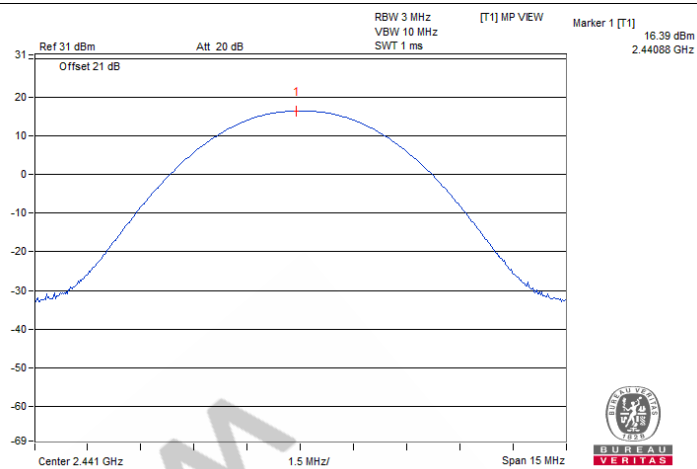
GFSK

Power Plot

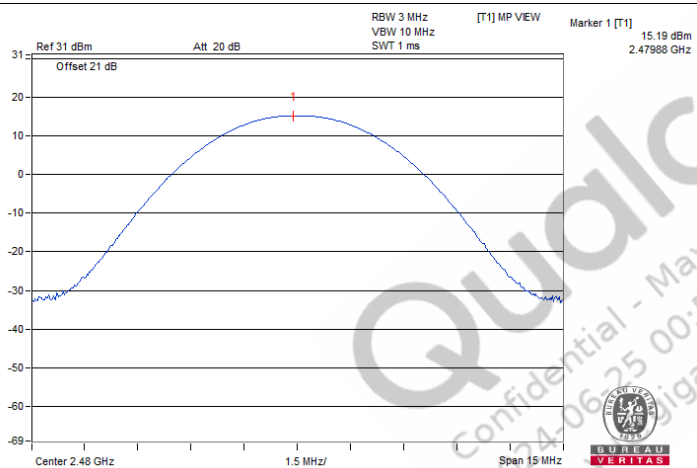
CH 0



CH 39



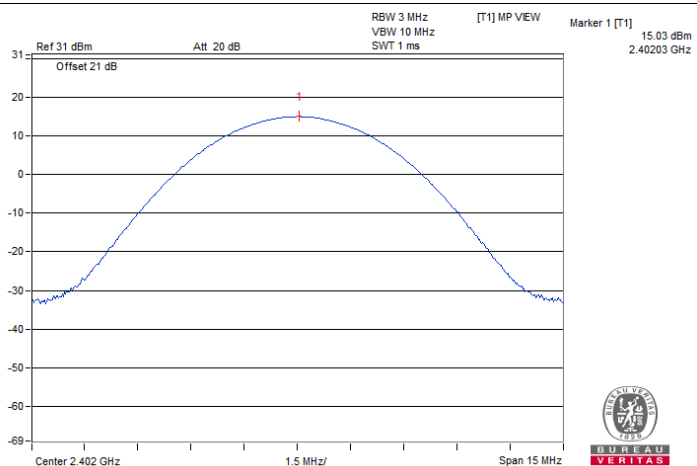
CH 78



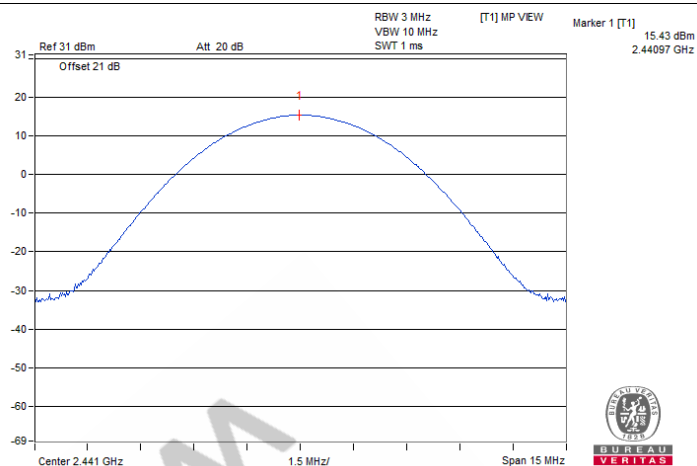
8DPSK

Power Plot

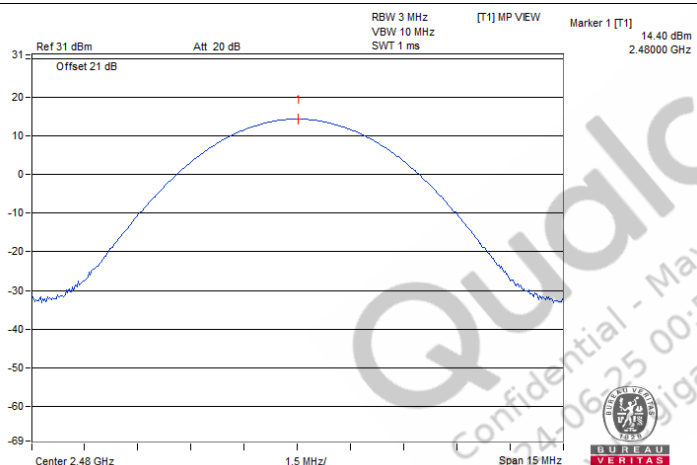
CH 0



CH 39



CH 78



2TX

Composite Antenna Gain Type		Frequency Range		Chain0 (dBi)	Chain1 (dBi)	Directional Gain (dBi)	Certification Power		
Correlated		2400 ~ 2483.5 MHz:		3.53	3.53	3.53	S.A. Peak Power		
Mode	Channel	Frequency (MHz)	Conducted Peak Power (dBm)			EIRP			Pass / Fail
			Chain0	Chain1	Total Power				
			Peak	Peak	Peak	Value (dBm)	Value (mW)	Limit (mW)	
GFSK	0	2402	11.86	10.81	14.38	17.63	57.943	1000	Pass
	39	2441	12.06	11.70	14.89	18.3	67.608	1000	Pass
	78	2480	14.41	13.91	17.18	17.17	52.119	1000	Pass
8DPSK	0	2402	9.60	10.58	13.13	16.16	41.305	1000	Pass
	39	2441	10.53	10.92	13.74	16.9	48.978	1000	Pass
	78	2480	9.57	9.79	12.69	15.79	37.931	1000	Pass

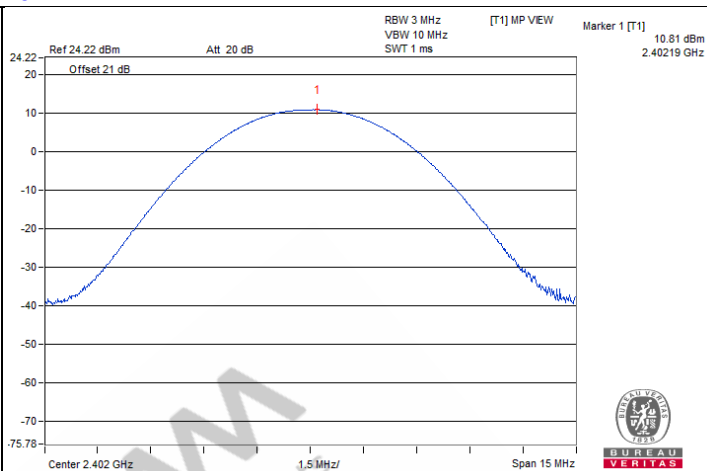
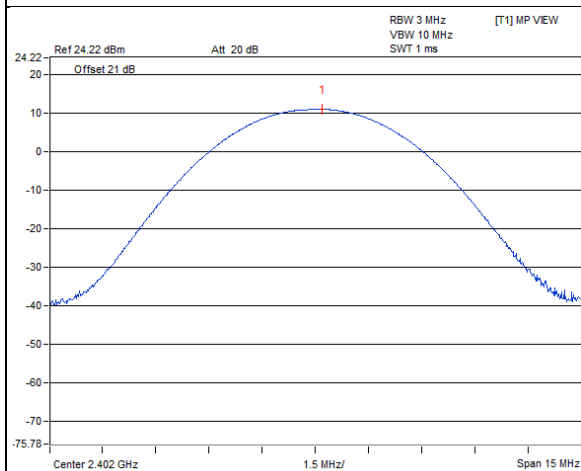
Qualcomm
 Confidential - May Contain Trade Secret
 2024-06-25 00:58:37 GMT
 vera.yu@gigabyte.com

Power Plot

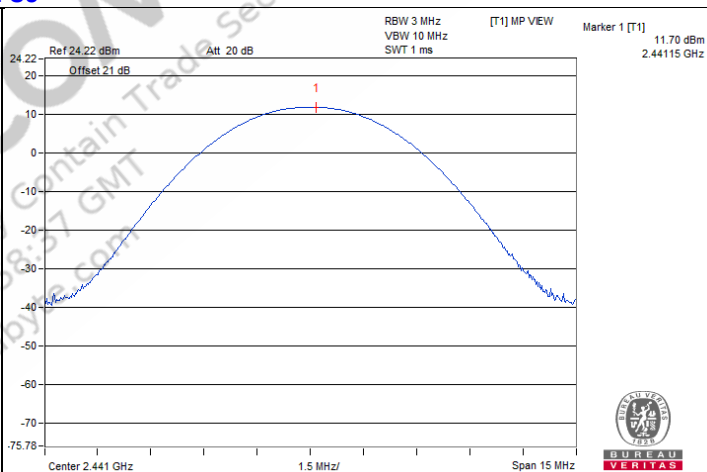
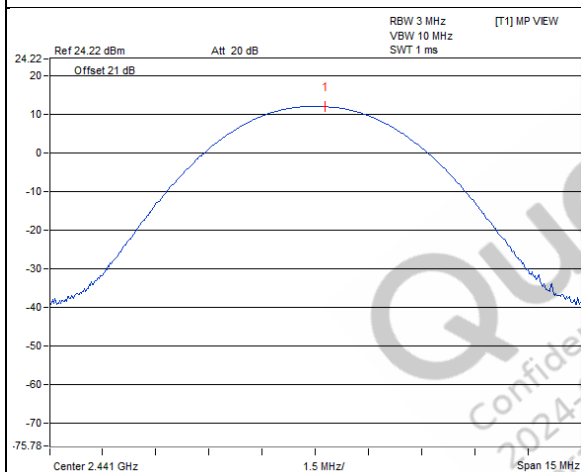
Chain 0

Chain 1

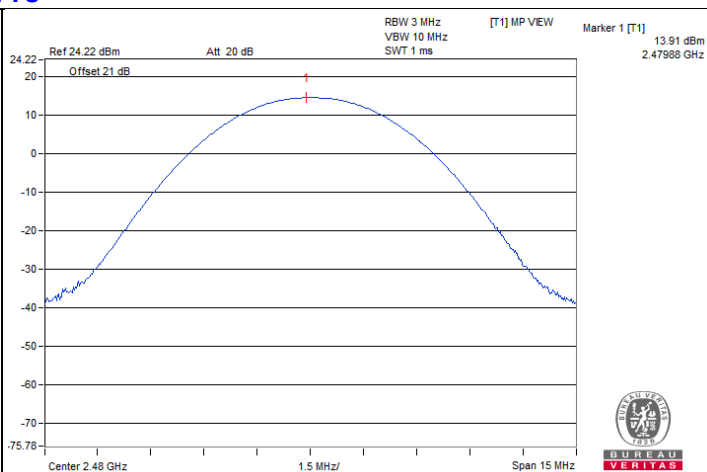
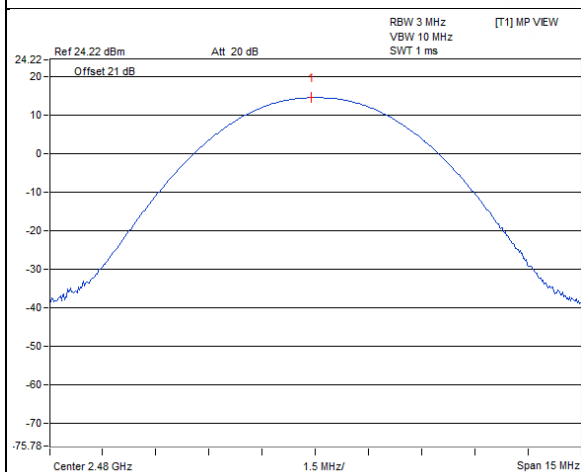
CH 0



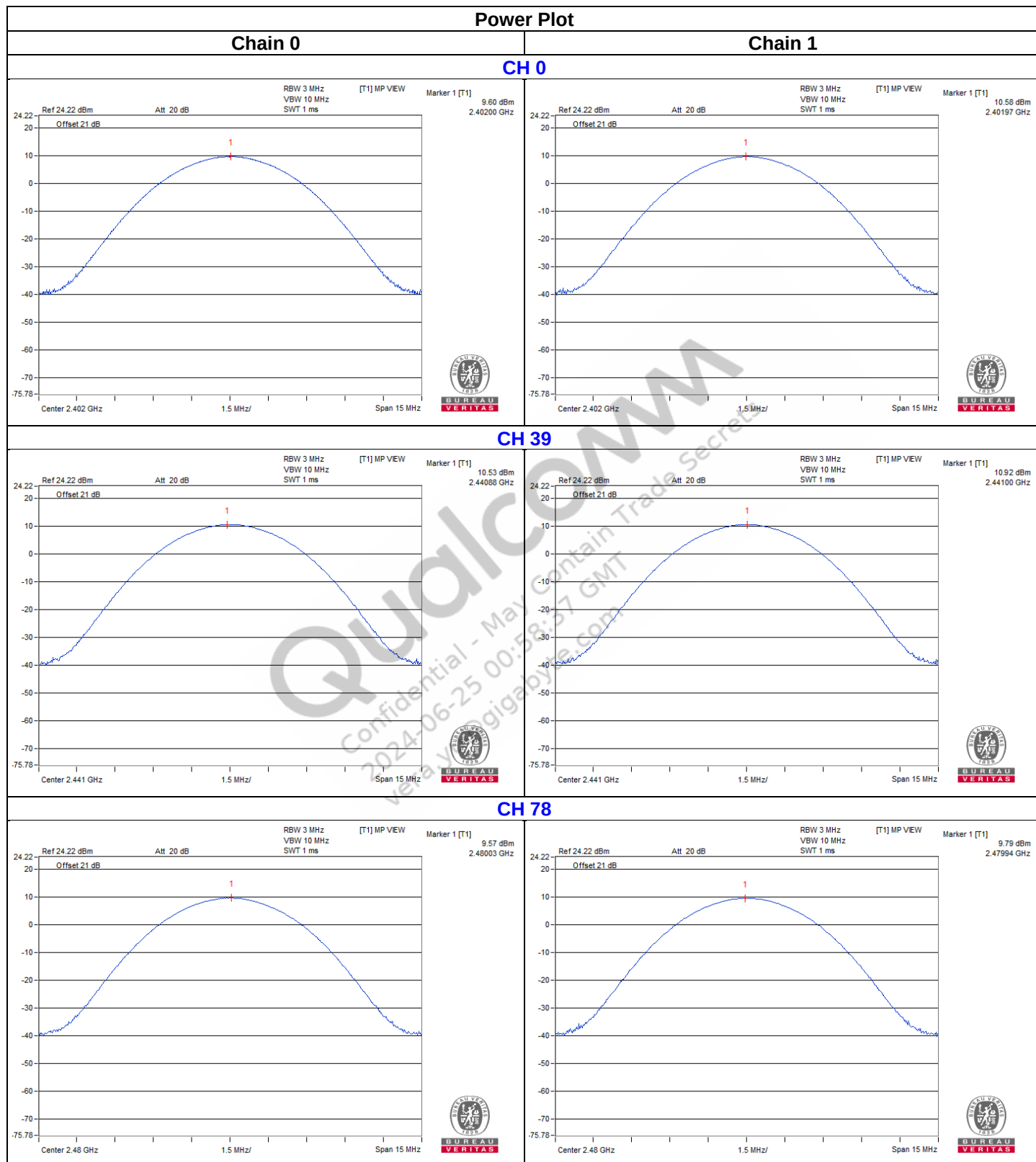
CH 39



CH 78



8DPSK

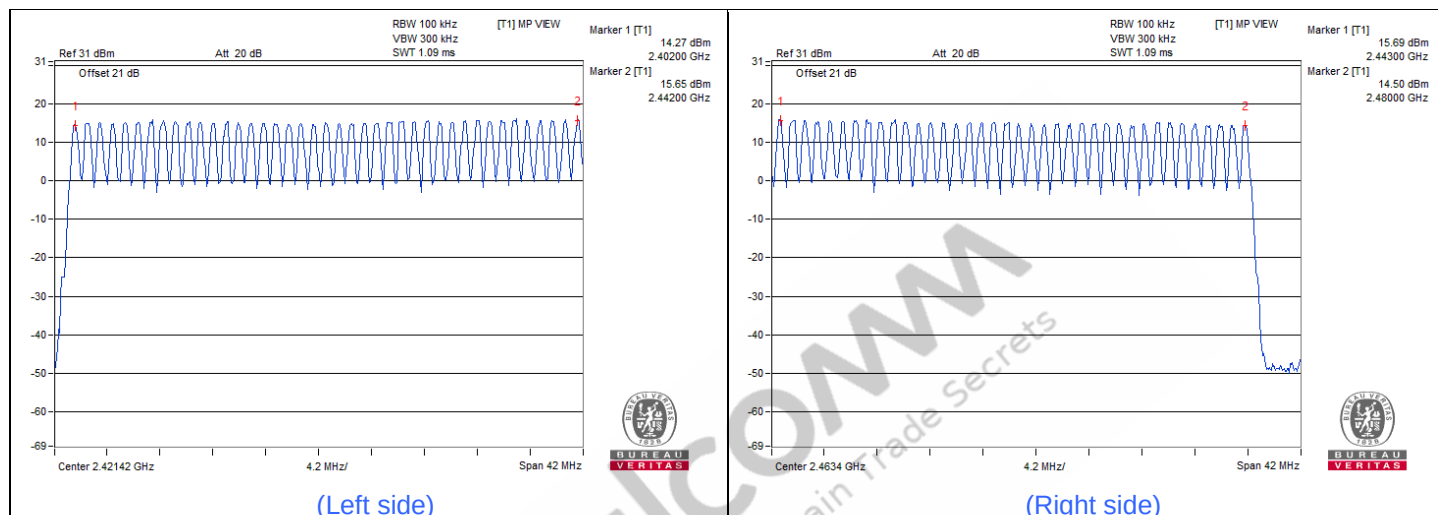


7.2 Number of Hopping Frequency Used

Mode A

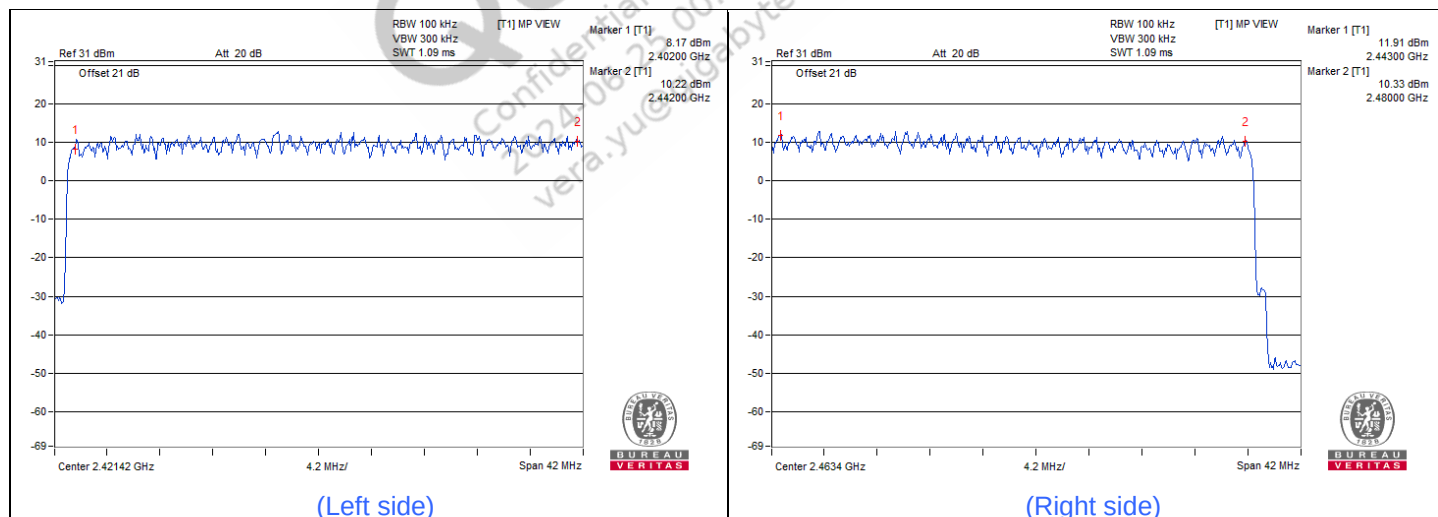
Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 65% RH	Tested By:	Katina Lu
--------------	---------	---------------------------	--------------	------------	-----------

GFSK 1TX



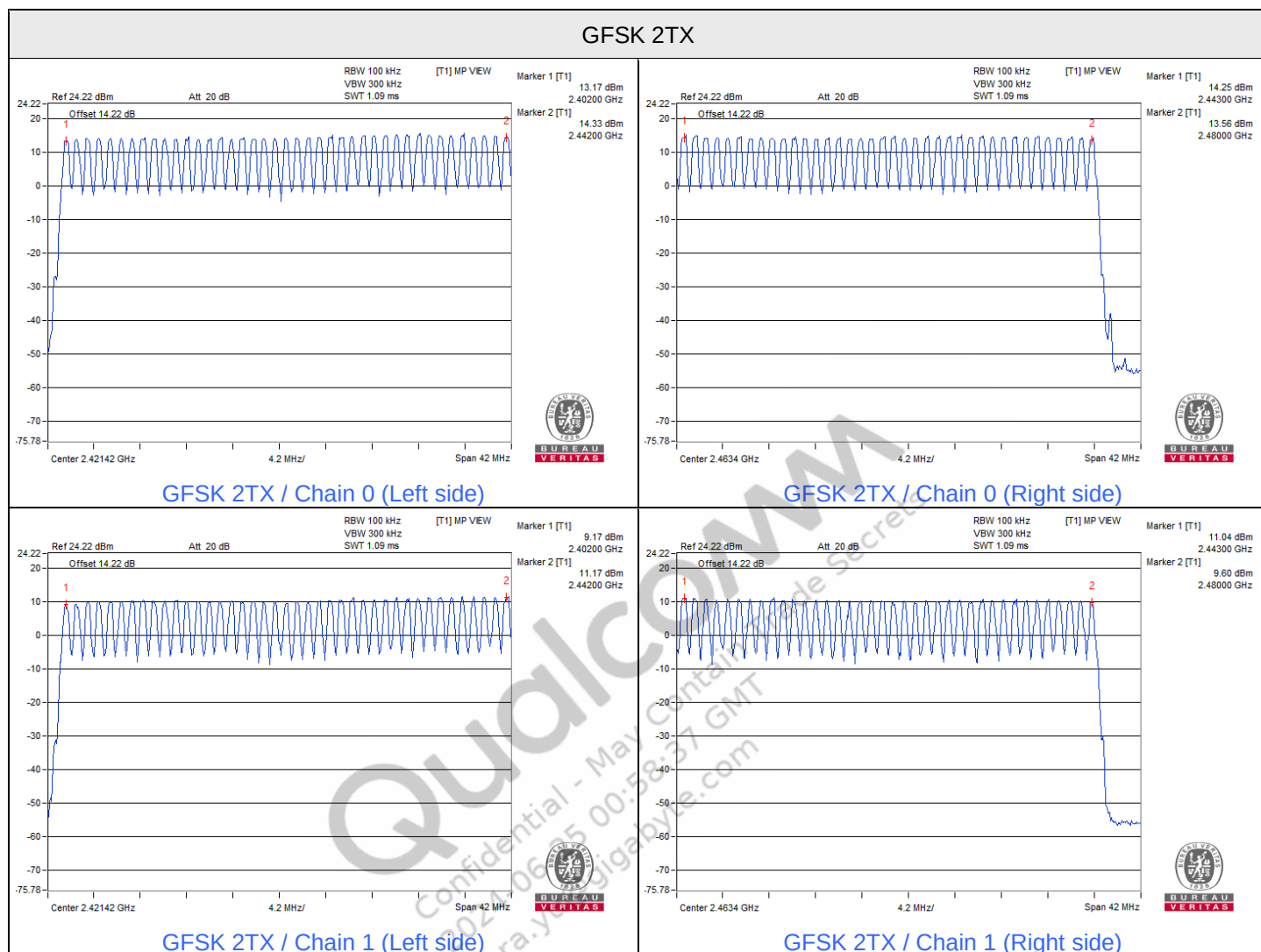
Note: There are 79 hopping frequencies in the hopping mode. On the plots, it shows that the hopping frequencies are equally spaced.

8DPSK 1TX



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

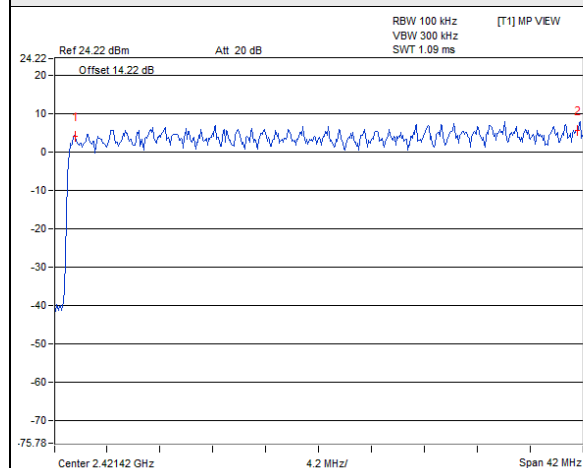
GFSK 2TX



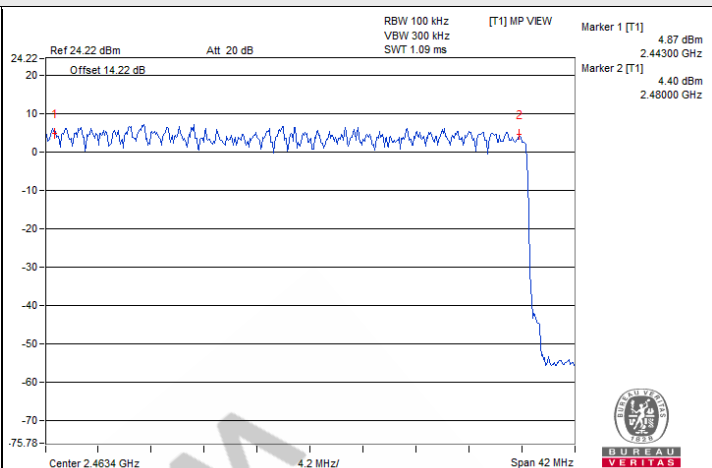
Note: There are 79 hopping frequencies in the hopping mode. On the plots, it shows that the hopping frequencies are equally spaced.

8DPSK 2TX

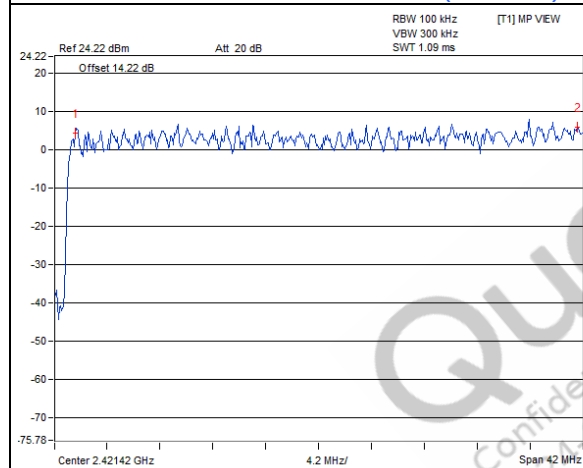
8DPSK 2TX



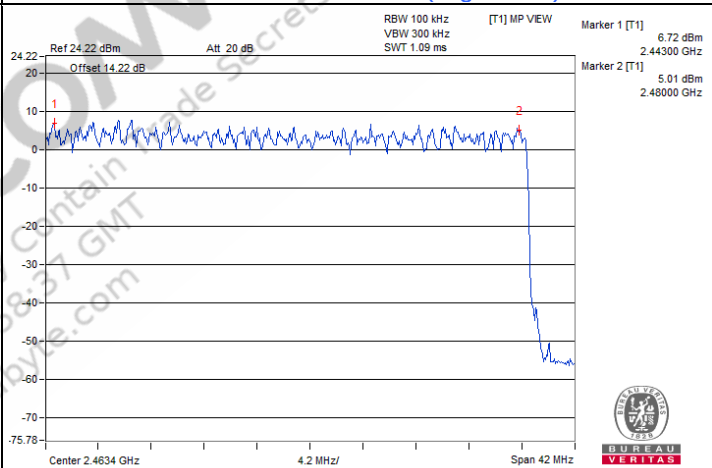
8DPSK 2TX / Chain 0 (Left side)



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, 65% RH	Tested By:	Katina Lu
--------------	---------	---------------------------	--------------	------------	-----------

GFSK 1TX

Mode	Number of transmission in 31.6 sec	Length of transmission time (msec)	Result (msec)	Limit (msec)	Test Result
DH1	50 (times / 5 sec) * 6.32 = 316 times	0.439	138.72	400	Pass
DH3	25 (times / 5 sec) * 6.32 = 158 times	1.72	271.76	400	Pass
DH5	17 (times / 5 sec) * 6.32 = 108 times	3.008	324.86	400	Pass

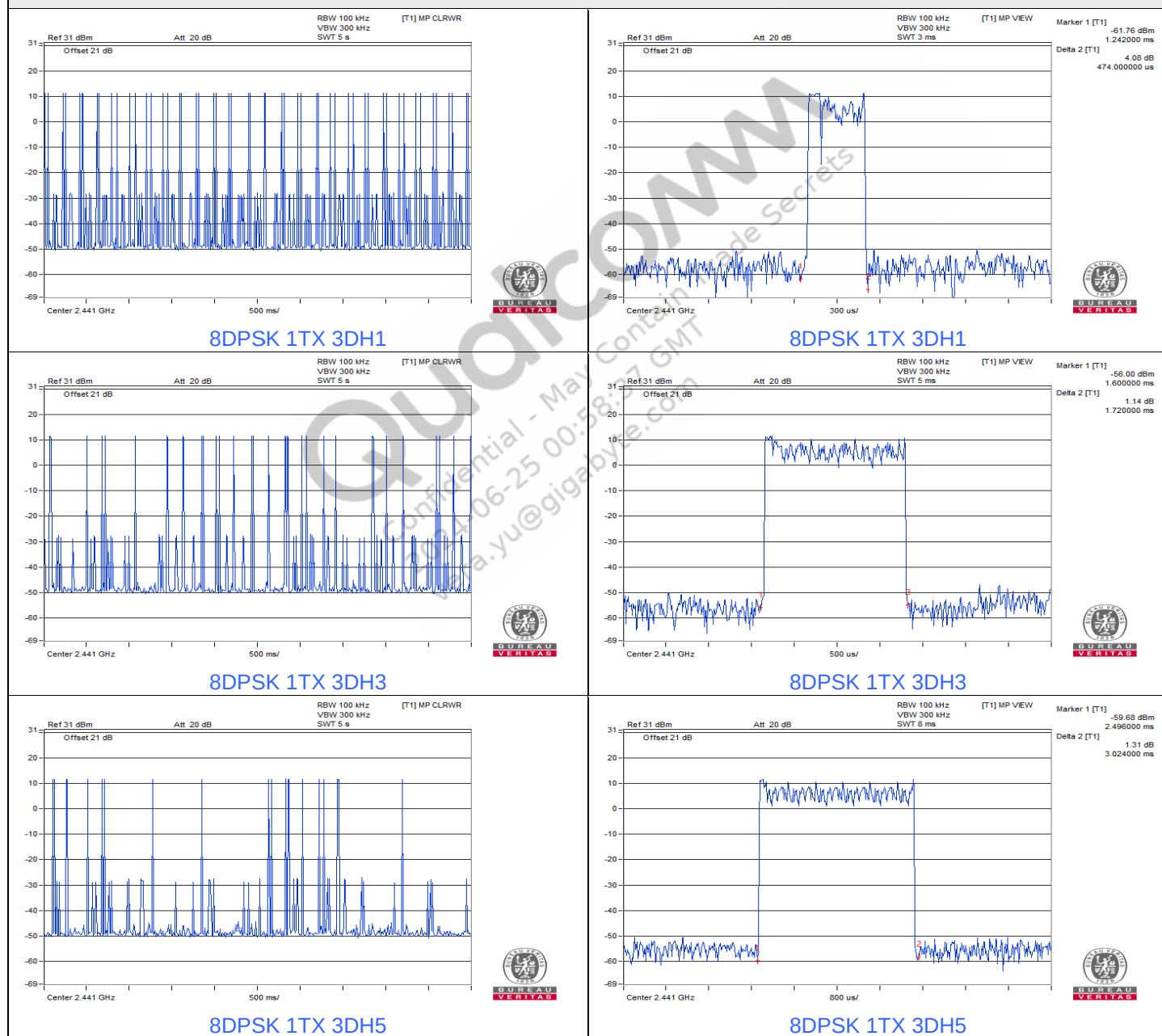
Spectrum plots of Dwell Time



8DPSK 1TX

Mode	Number of transmission in 31.6 sec	Length of transmission time (msec)	Result (msec)	Limit (msec)	Test Result
3DH1	50 (times / 5 sec) * 6.32 = 316 times	0.474	149.78	400	Pass
3DH3	27 (times / 5 sec) * 6.32 = 171 times	1.72	294.12	400	Pass
3DH5	17 (times / 5 sec) * 6.32 = 108 times	3.024	326.59	400	Pass

Spectrum plots of Dwell Time



GFSK 2TX

Mode	Number of transmission in 31.6 sec	Length of transmission time (msec)	Result (msec)	Limit (msec)	Test Result
DH1	50 (times / 5 sec) * 6.32 = 316 times	0.438	138.41	400	Pass
DH3	25 (times / 5 sec) * 6.32 = 158 times	1.73	273.34	400	Pass
DH5	16 (times / 5 sec) * 6.32 = 102 times	3.008	306.82	400	Pass

Spectrum plots of Dwell Time



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	0.426	137.6	400	Pass
3DH3	17 (times / 5 sec) * 6.32 = 108 times	1.7	183.6	400	Pass
3DH5	17 (times / 5 sec) * 6.32 = 108 times	3.072	331.78	400	Pass

Spectrum plots of Dwell Time



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, 65% RH	Tested By:	Katina Lu
--------------	---------	---------------------------	--------------	------------	-----------

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	0.65	Pass
78	2480	1.00	0.65	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	0.64	Pass
39	2441	1.00	1.00	0.64	Pass
78	2480	1.00	1.00	0.64	Pass

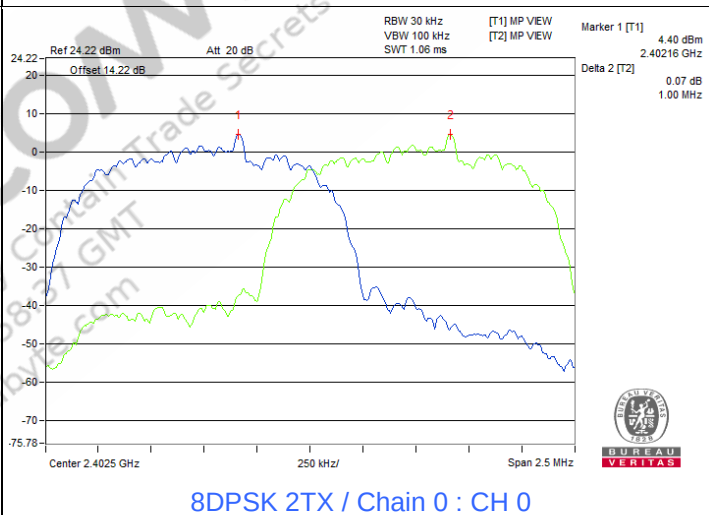
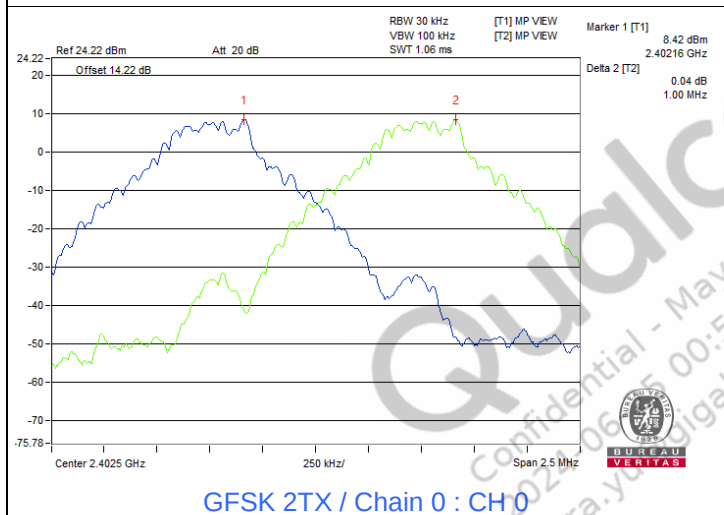
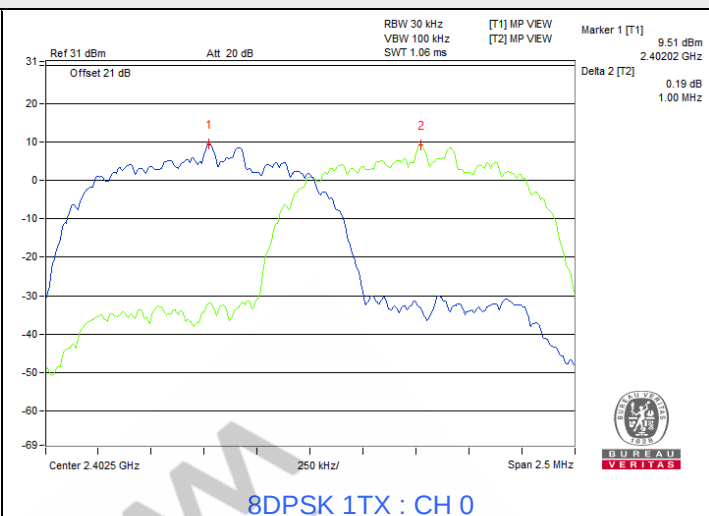
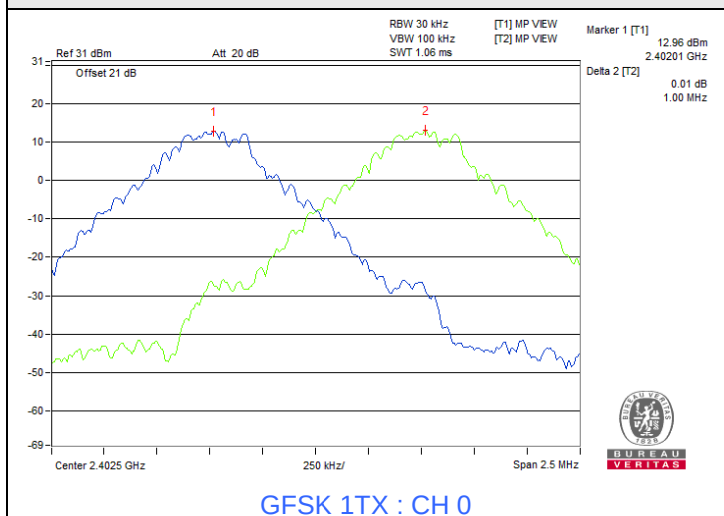
Note: The minimum limit is two-third 20dB bandwidth.

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	0.87	Pass
78	2480	1.00	1.00	0.87	Pass

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

Spectrum Plot of Minimum Value



7.5 20 dB Bandwidth

Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 65% RH	Tested By:	Katina Lu
--------------	---------	---------------------------	--------------	------------	-----------

GFSK 1TX

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
0	2402	0.95
39	2441	0.97
78	2480	0.97

8DPSK 1TX

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

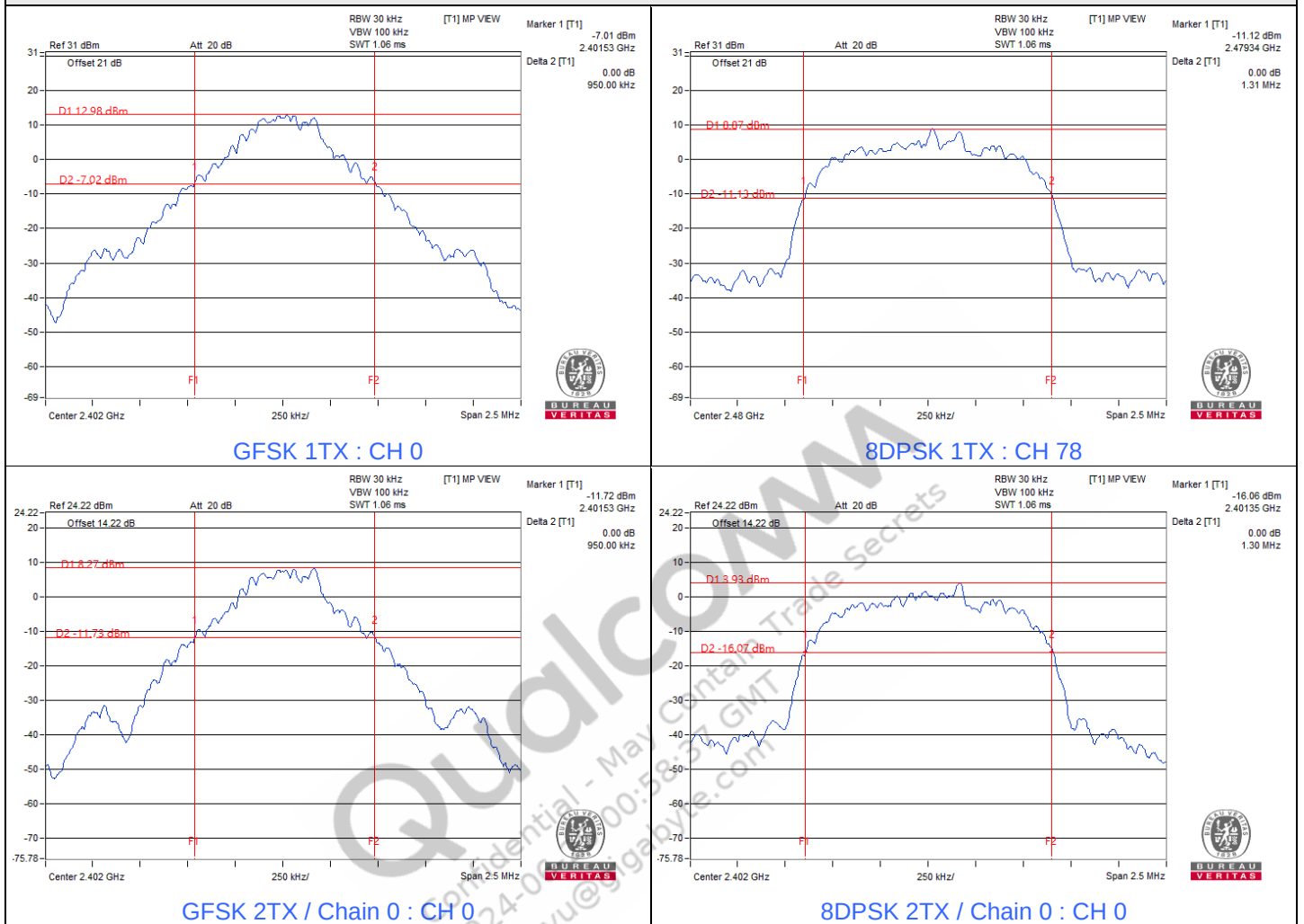
GFSK 2TX

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

8DPSK 2TX

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

Spectrum Plot of Minimum Value

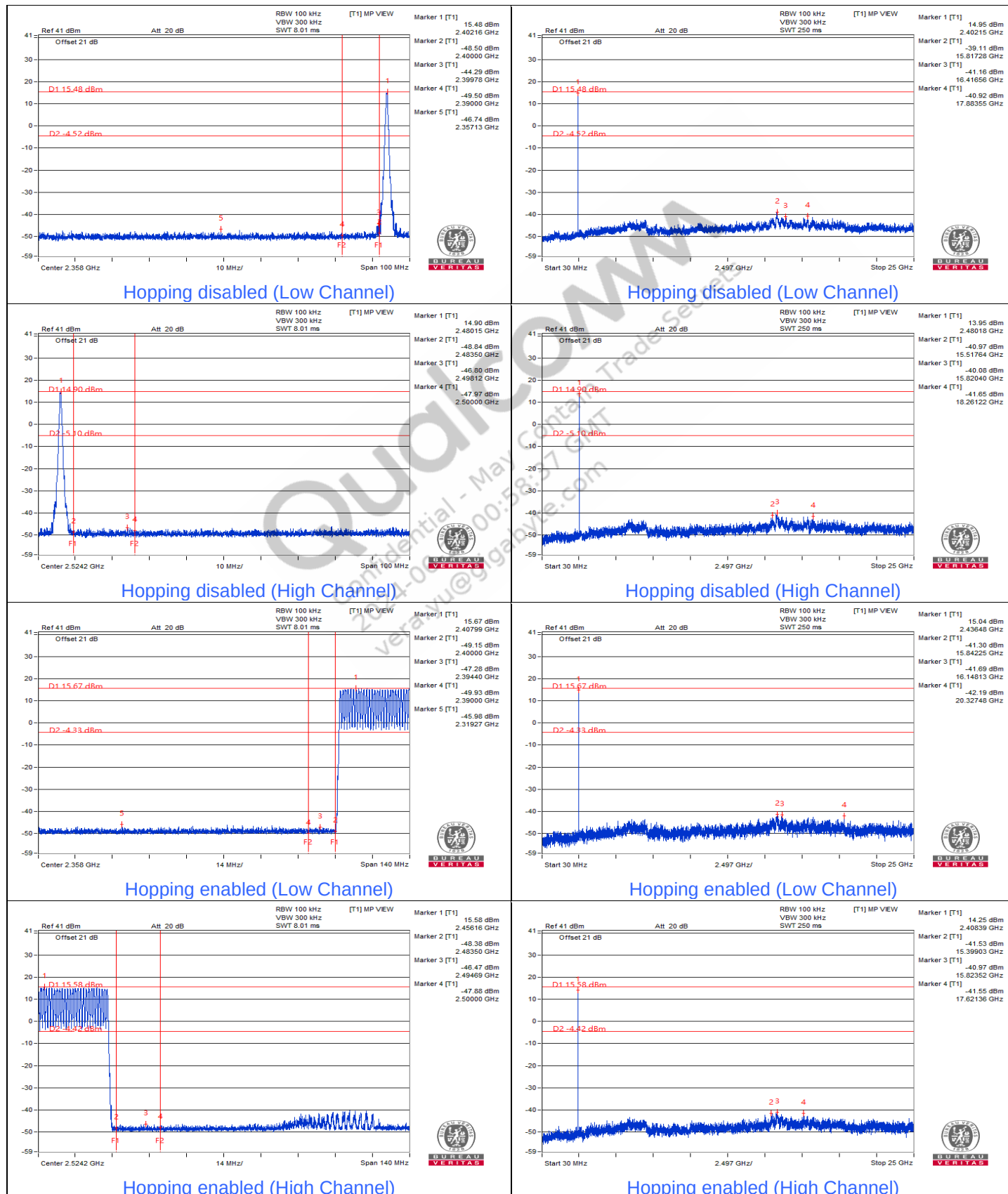


7.6 Conducted Out of Band Emissions

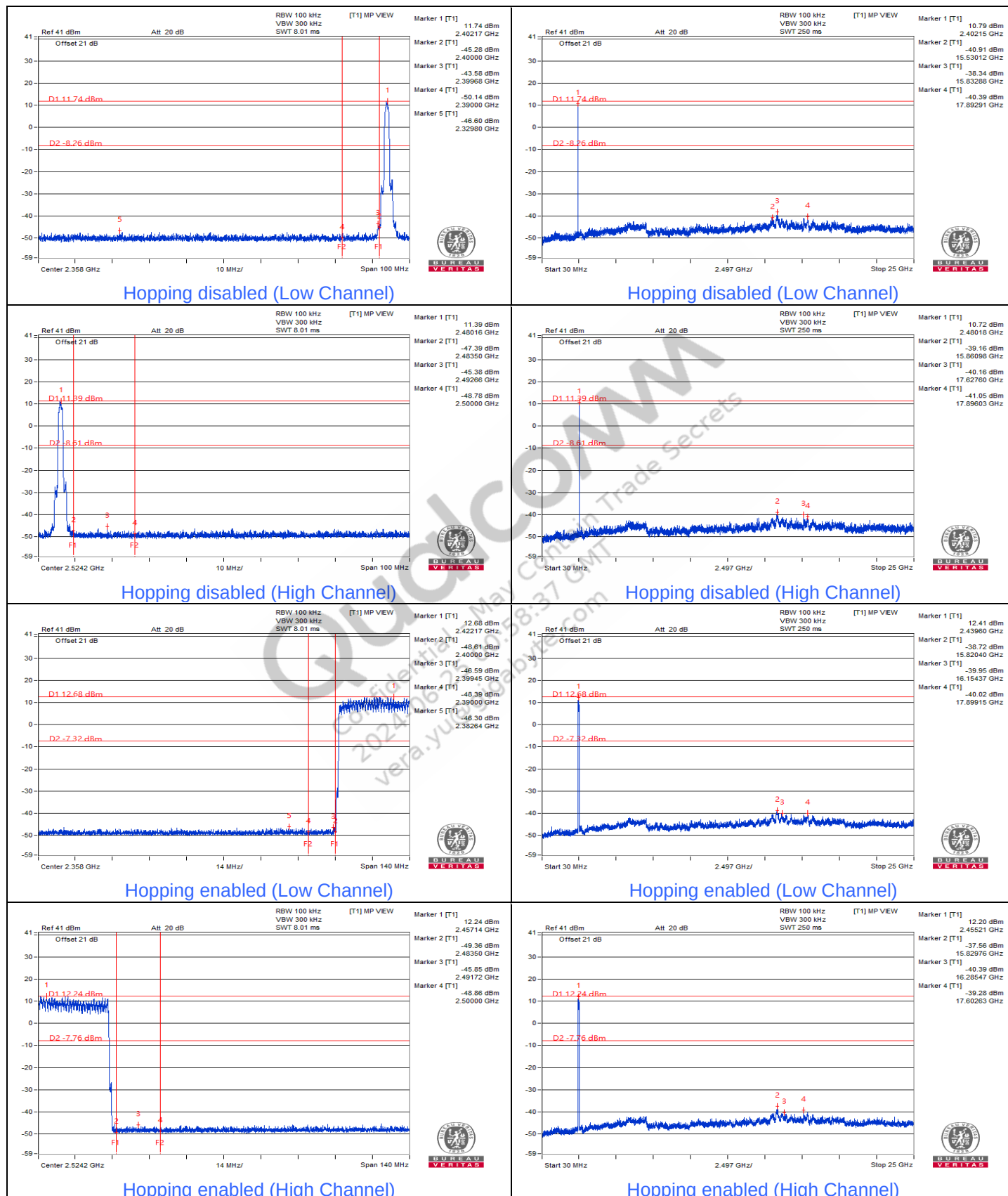
Mode A

Input Power:	3.3 Vdc	Environmental Conditions:	25°C, 65% RH	Tested By:	Katina Lu
--------------	---------	---------------------------	--------------	------------	-----------

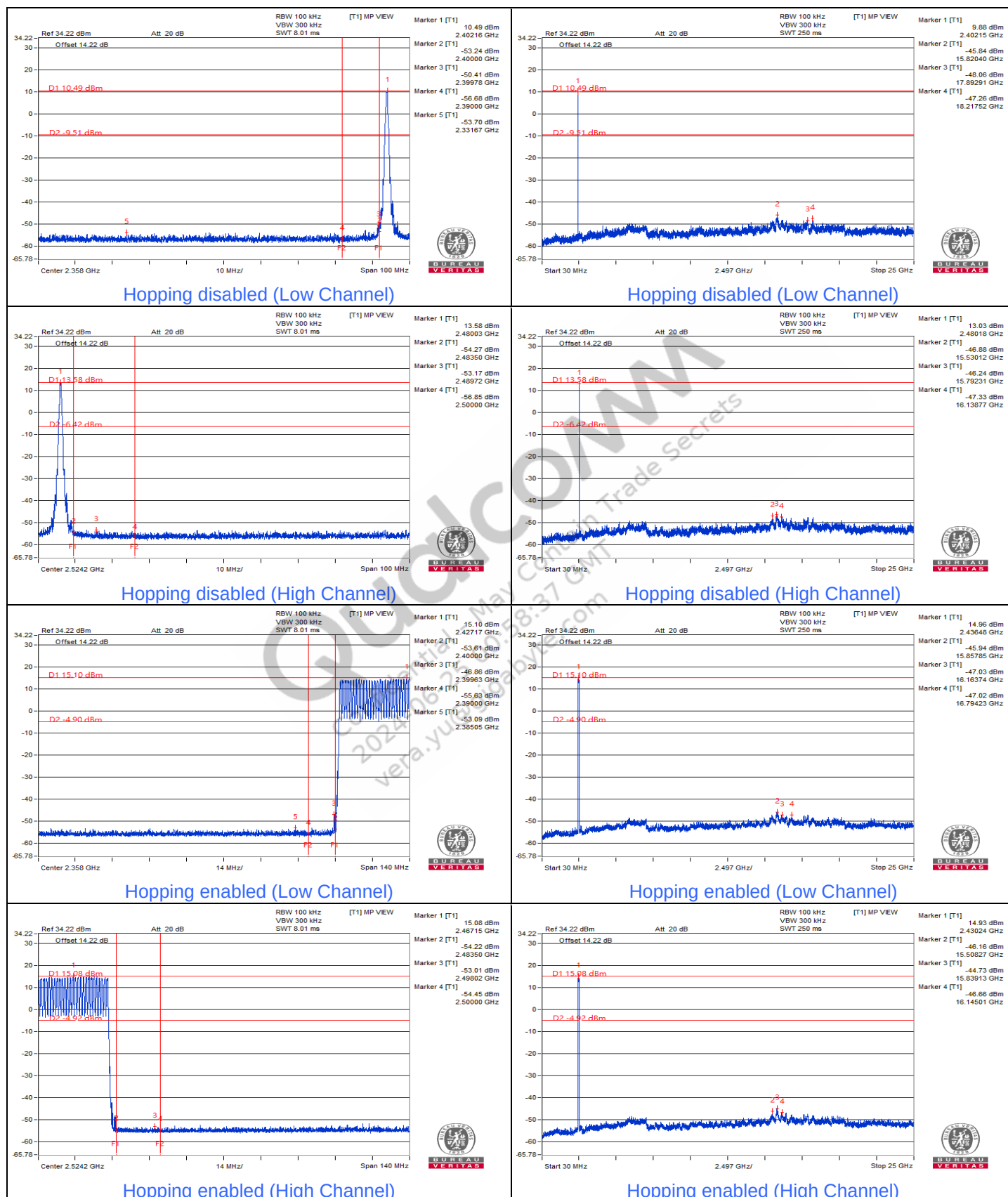
GFSK 1TX



8DPSK 1TX

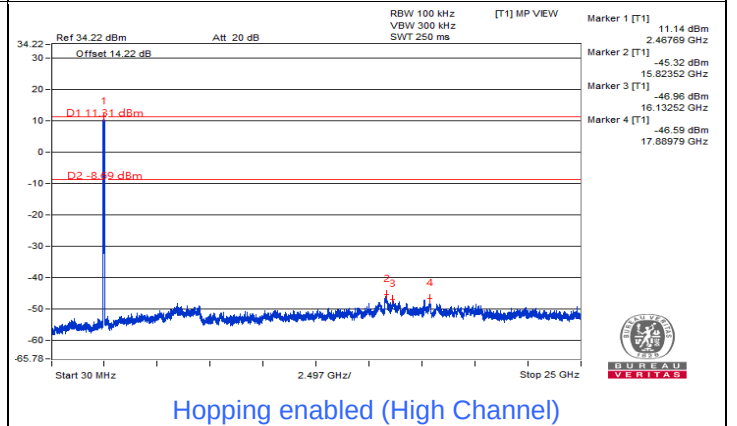
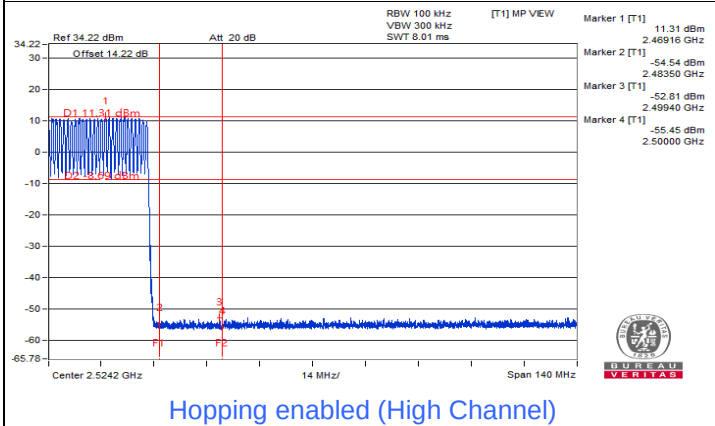
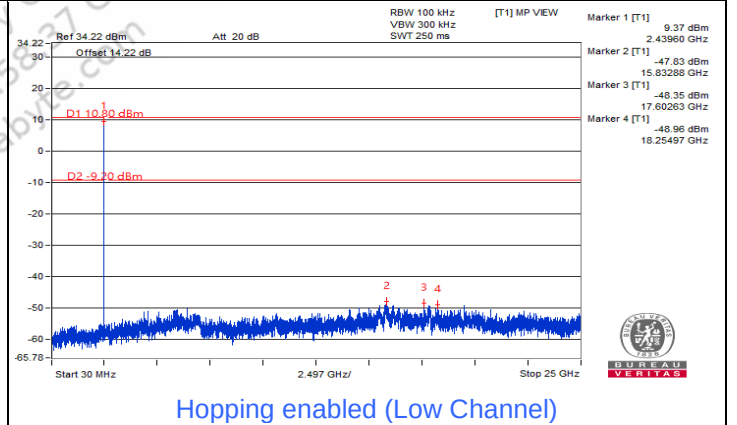
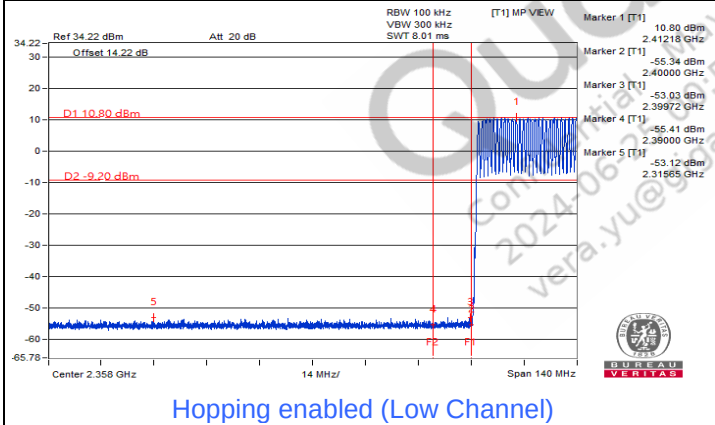
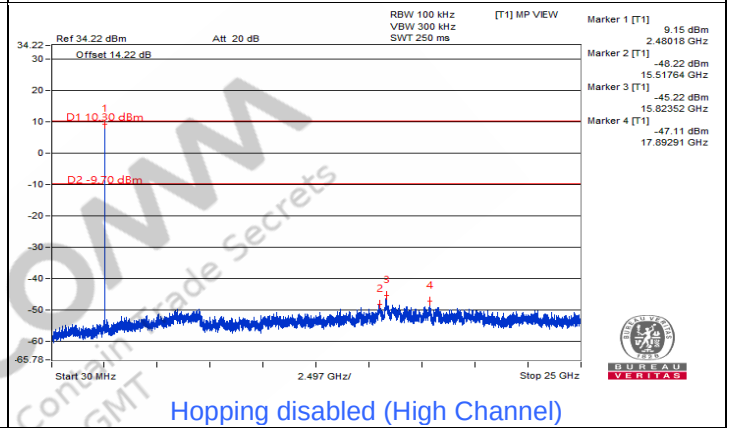
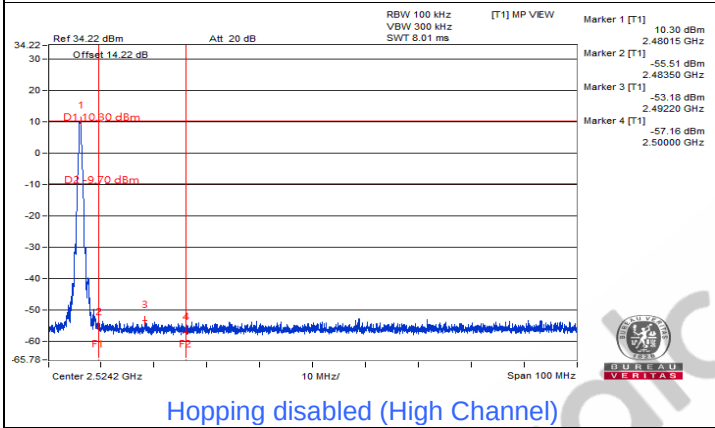
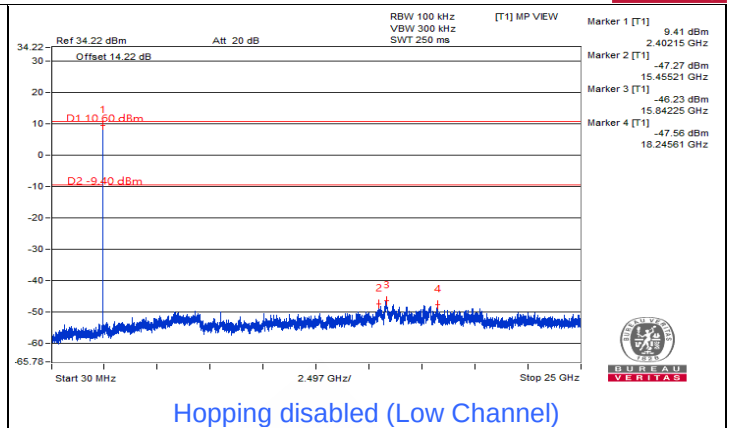
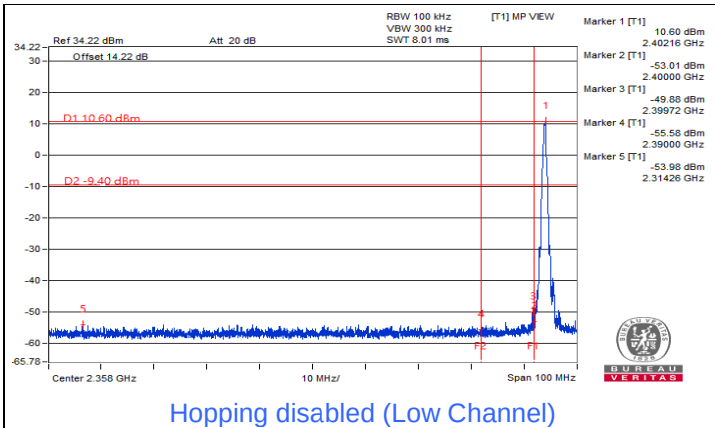


GFSK 2TX

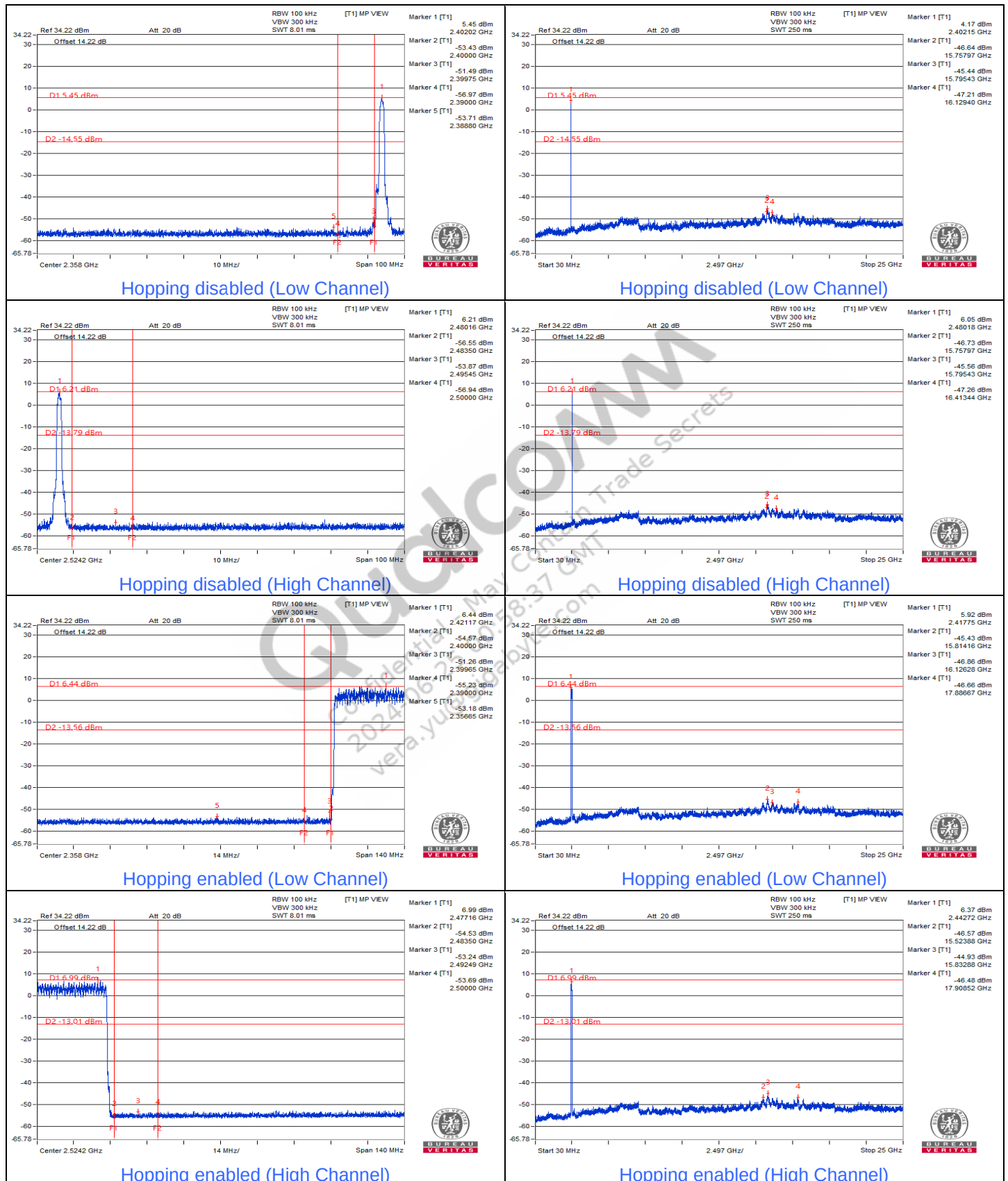


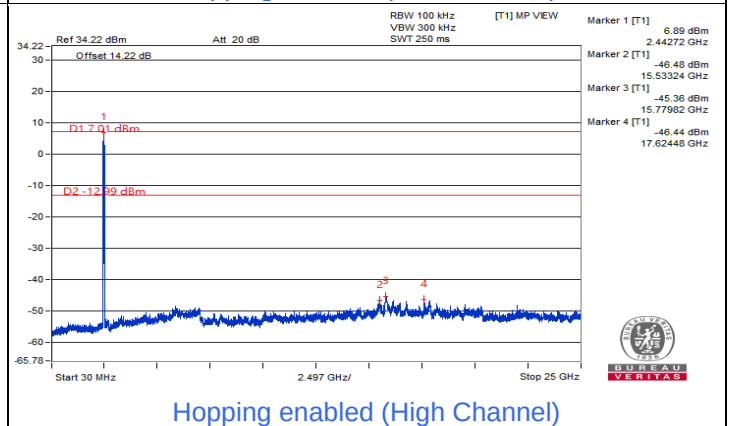
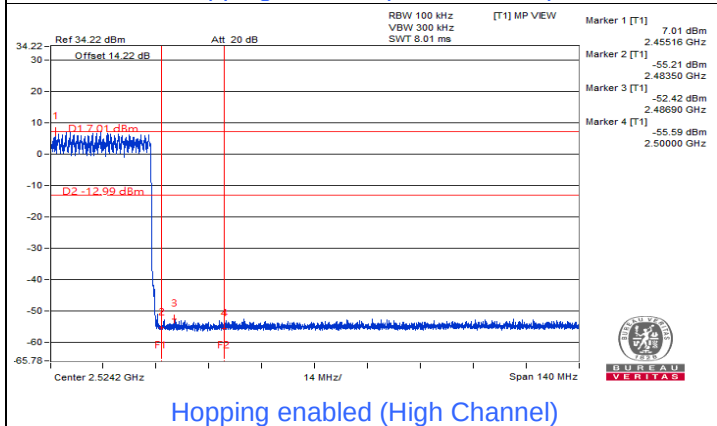
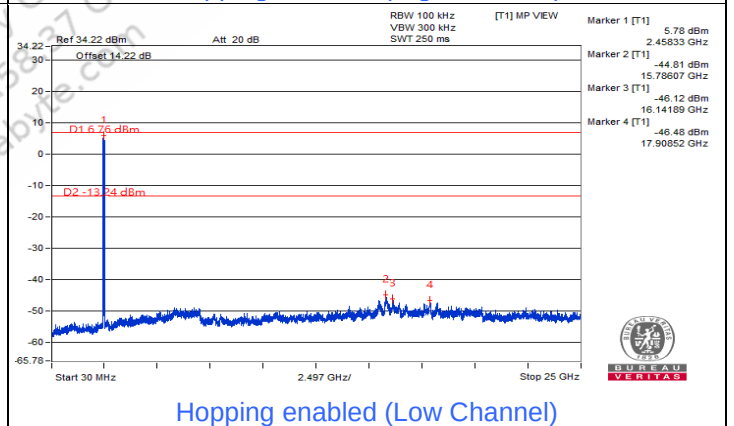
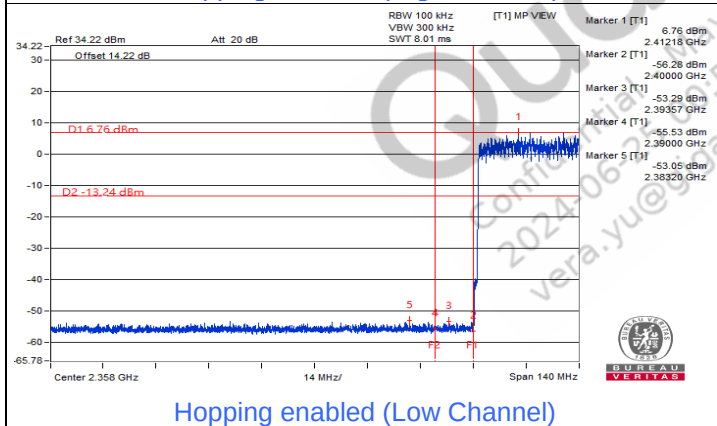
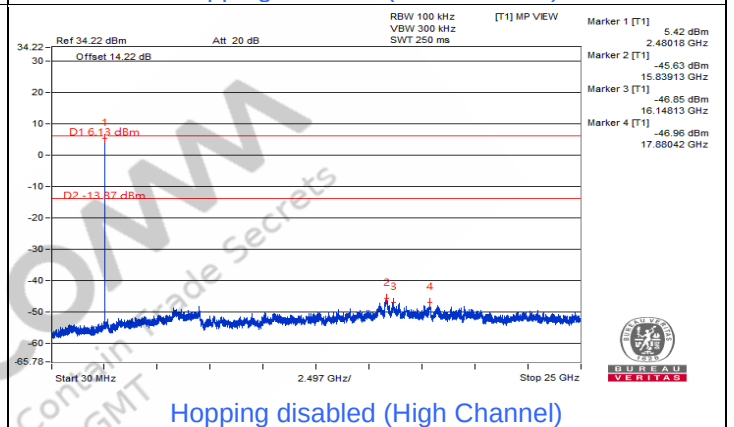
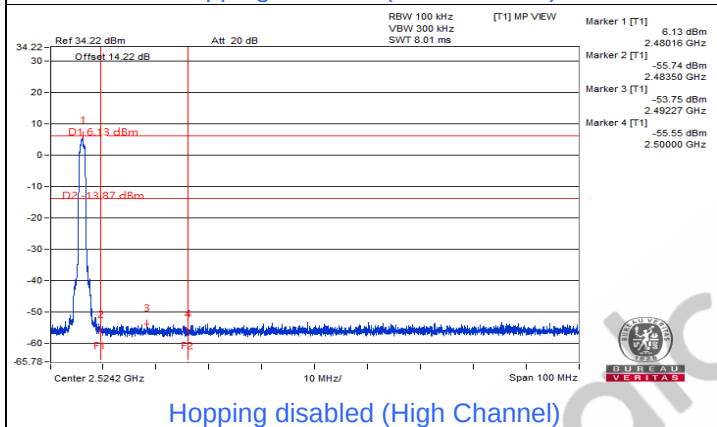
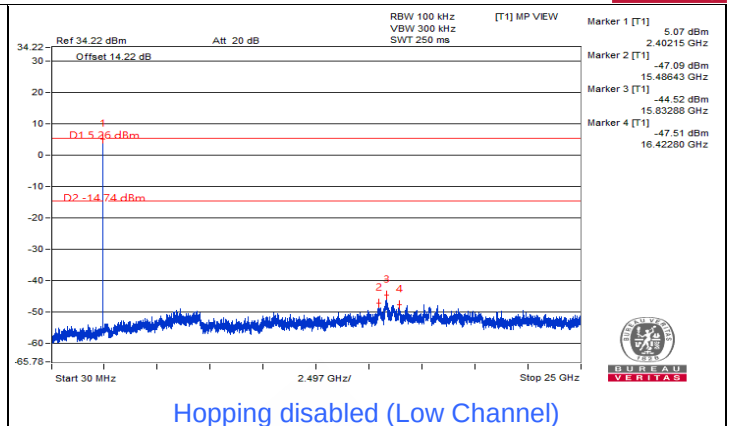
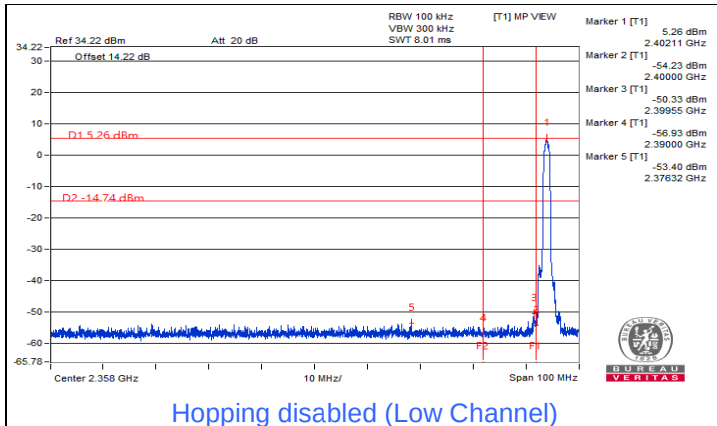


BUREAU
VERITAS



8DPSK 2TX





7.7 AC Power Conducted Emissions

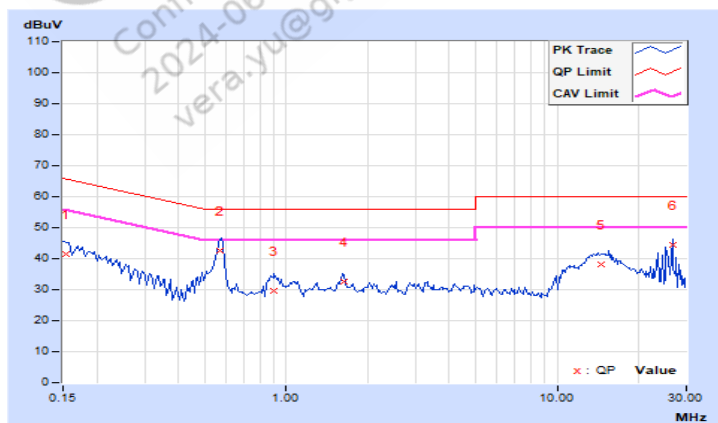
Mode B

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, 75% RH
Tested By	Carter Lin		

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	0.15399	9.96	31.55	24.78	41.51	34.74	65.78	55.78	-24.27	-21.04
2	0.56793	9.98	32.64	26.59	42.62	36.57	56.00	46.00	-13.38	-9.43
3	0.89608	9.99	19.81	16.81	29.80	26.80	56.00	46.00	-26.20	-19.20
4	1.62894	10.03	22.39	18.33	32.42	28.36	56.00	46.00	-23.58	-17.64
5	14.52735	10.77	27.27	20.05	38.04	30.82	60.00	50.00	-21.96	-19.18
6	26.62107	11.21	33.23	28.51	44.44	39.72	60.00	50.00	-15.56	-10.28

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

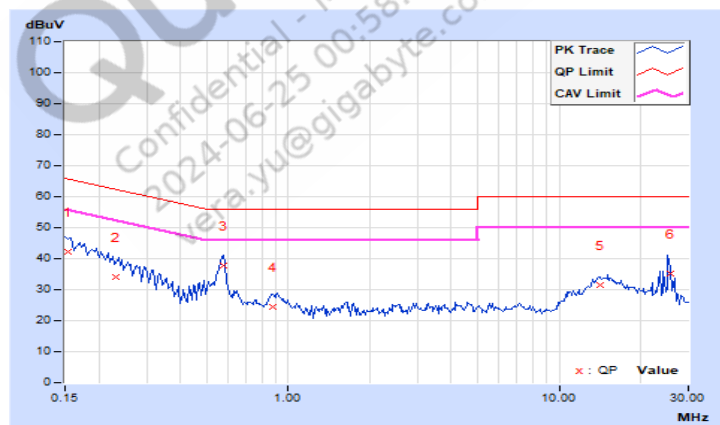


RF Mode	BT GFSK	Channel	CH 39 : 2441 MHz
Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 75% RH
Tested By	Carter Lin		

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	0.15390	9.93	32.47	19.26	42.40	29.19	65.79	55.79	-23.39	-26.60
2	0.23209	9.94	24.24	10.39	34.18	20.33	62.37	52.37	-28.19	-32.04
3	0.57963	9.95	27.98	18.54	37.93	28.49	56.00	46.00	-18.07	-17.51
4	0.88042	9.96	14.42	2.96	24.38	12.92	56.00	46.00	-31.62	-33.08
5	14.17961	10.57	20.77	13.57	31.34	24.14	60.00	50.00	-28.66	-25.86
6	25.85939	10.86	24.28	18.31	35.14	29.17	60.00	50.00	-24.86	-20.83

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

- Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.
- EIRP Level (dBm) = Raw Value(dBm) + Correction Factor(dB)
- 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:

- In restricted bands below 1000 MHz, add upper bound on ground plane reflection:
For f = 30 – 1000 MHz, add 4.7 dB.
- The conducted emission test was considered some factor to compute test result.

Mode A

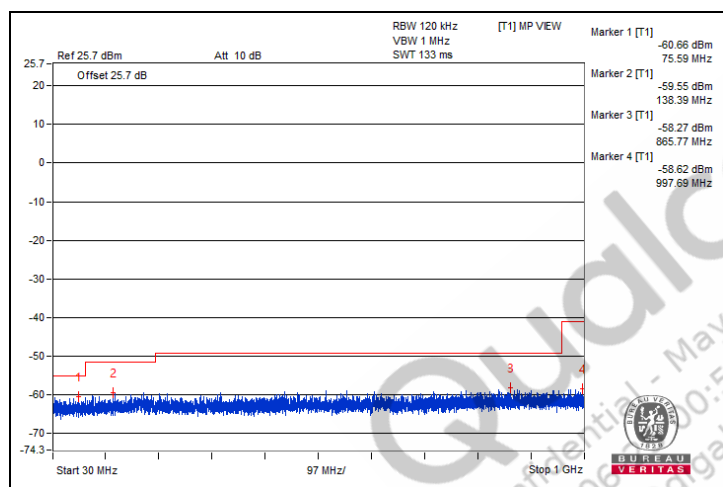
GFSK 1TX - Channel 39

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	75.59	39.76	40	-0.24	-60.66	5.16	-55.50
2	138.39	40.87	43.5	-2.63	-59.55	5.16	-54.39
3	865.77	42.15	46	-3.85	-58.27	5.16	-53.11
4	997.69	41.8	54	-12.2	-58.62	5.16	-53.46

Remarks:

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



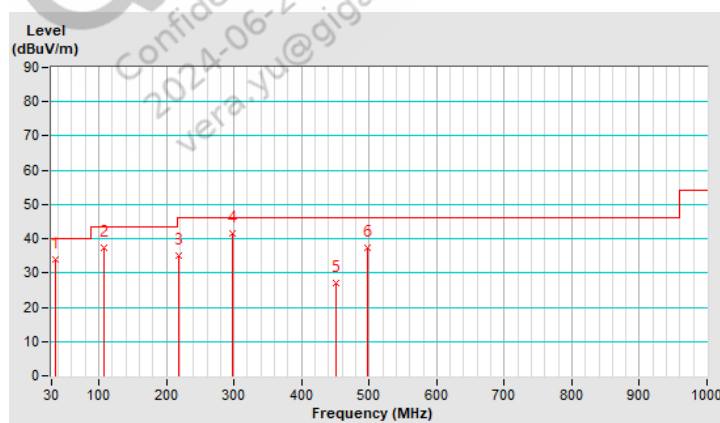
Mode B

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	35.51	34.0 QP	40.0	-6.0	3.00 H	290	47.6	-13.6
2	107.49	37.3 QP	43.5	-6.2	2.00 H	337	53.4	-16.1
3	218.02	35.1 QP	46.0	-10.9	1.00 H	128	51.0	-15.9
4	297.22	41.7 QP	46.0	-4.3	1.00 H	171	54.1	-12.4
5	451.13	27.1 QP	46.0	-18.9	2.00 H	322	35.3	-8.2
6	496.67	37.3 QP	46.0	-8.7	1.50 H	167	44.9	-7.6

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.

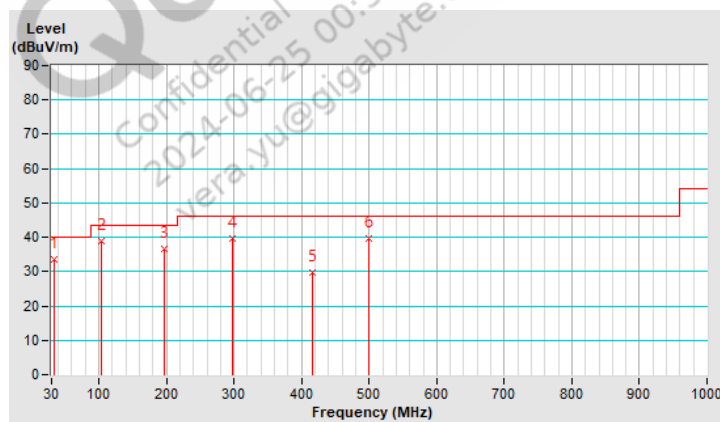


RF Mode	BT GFSK	Channel	CH 39 : 2441 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 68% RH
Tested By	Louis Yang		

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	33.66	33.5 QP	40.0	-6.5	3.00 V	283	47.3	-13.8
2	104.53	38.9 QP	43.5	-4.6	2.00 V	288	55.4	-16.5
3	196.75	36.5 QP	43.5	-7.0	1.50 V	155	52.5	-16.0
4	297.29	39.8 QP	46.0	-6.2	1.00 V	213	52.2	-12.4
5	416.54	29.6 QP	46.0	-16.4	2.00 V	195	38.9	-9.3
6	499.63	39.5 QP	46.0	-6.5	1.50 V	329	47.1	-7.6

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

- Emission Level (dBuV/m) = EIRP Level (dBm) – 20log(d) + 104.8
d = measurement distance in 3 meters.
- EIRP Level (dBm) = Raw Value(dBm) + Correction Factor(dB)
- 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:

- In restricted bands below 1000 MHz, add upper bound on ground plane reflection:
For f = 30 – 1000 MHz, add 4.7 dB.
- The conducted emission test was considered some factor to compute test result.

Mode A

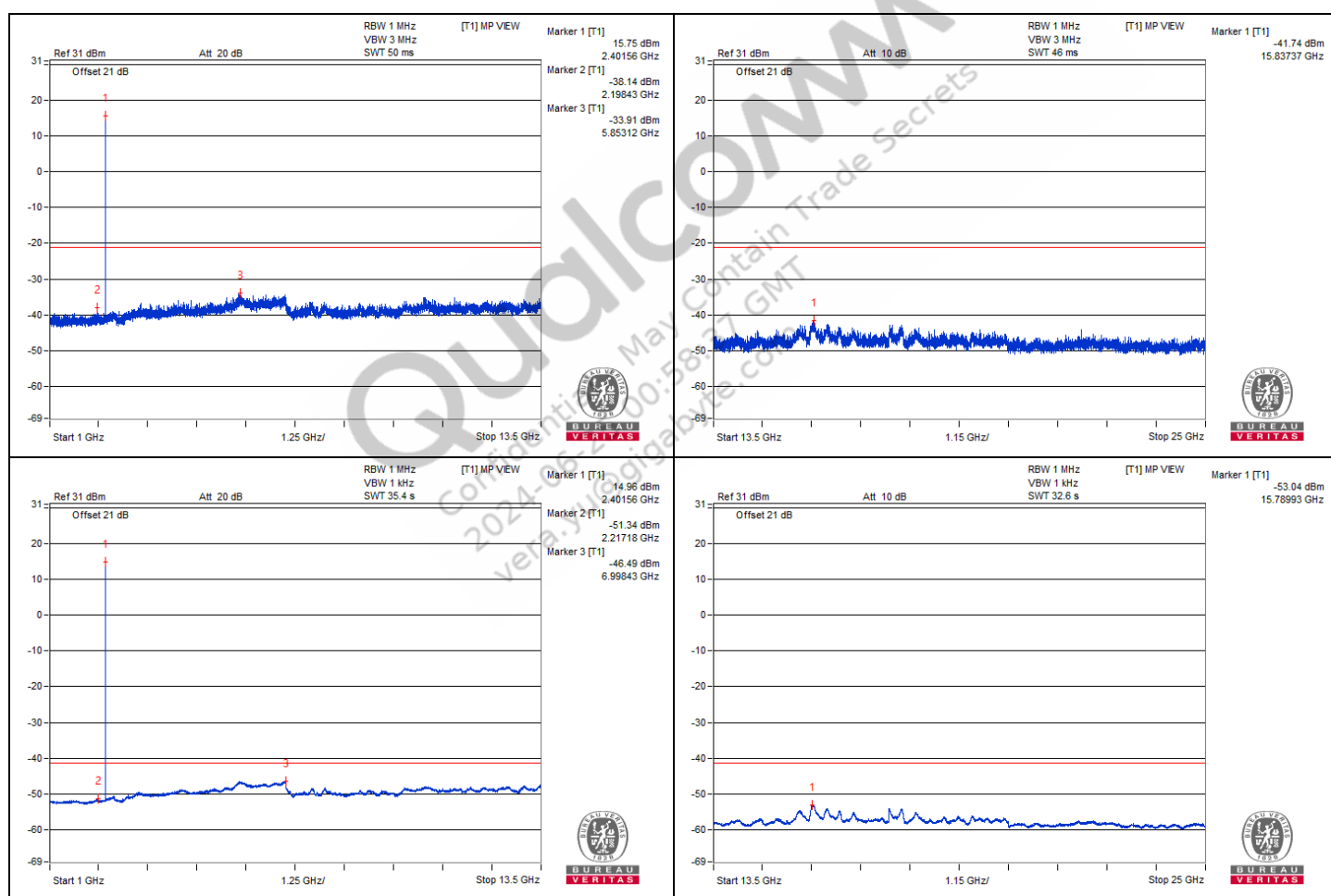
GFSK 1TX - Channel 0

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	15837.37	58.68 PK	74	-15.32	-41.74	5.16	-36.58
2	15789.93	47.38 AV	54	-6.62	-53.04	5.16	-47.88

Remarks:

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

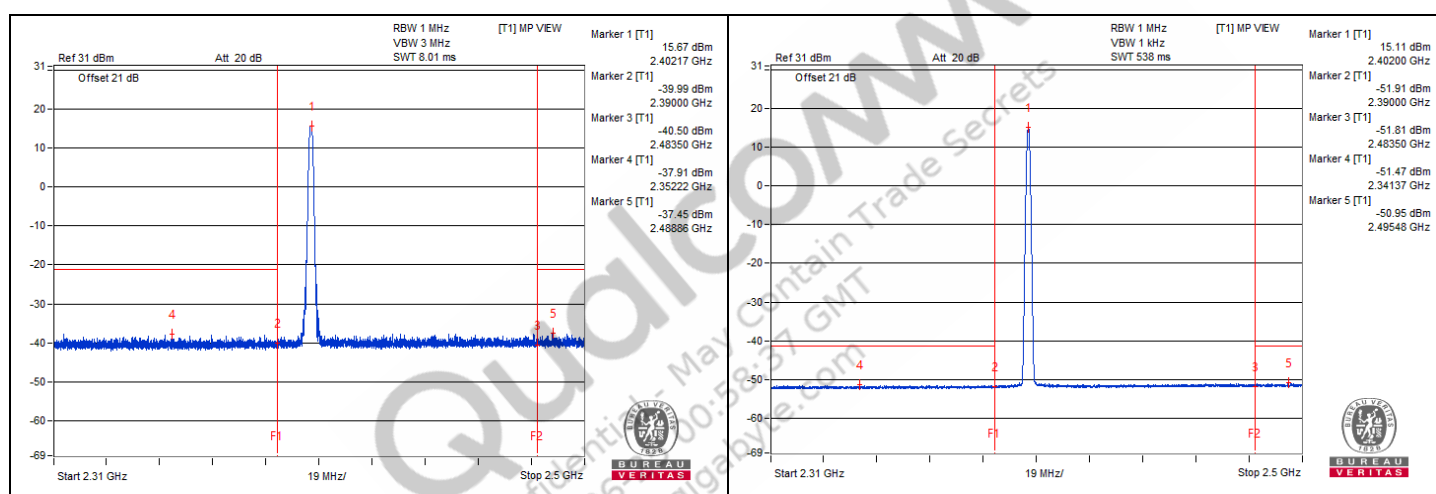


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2352.22	60.88 PK	74	-13.12	-37.91	3.53	-34.38
2	2341.37	47.32 AV	54	-6.68	-51.47	3.53	-47.94
3	2488.86	61.34 PK	74	-12.66	-37.45	3.53	-33.92
4	2495.48	47.84 AV	54	-6.16	-50.95	3.53	-47.42

Remarks:

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



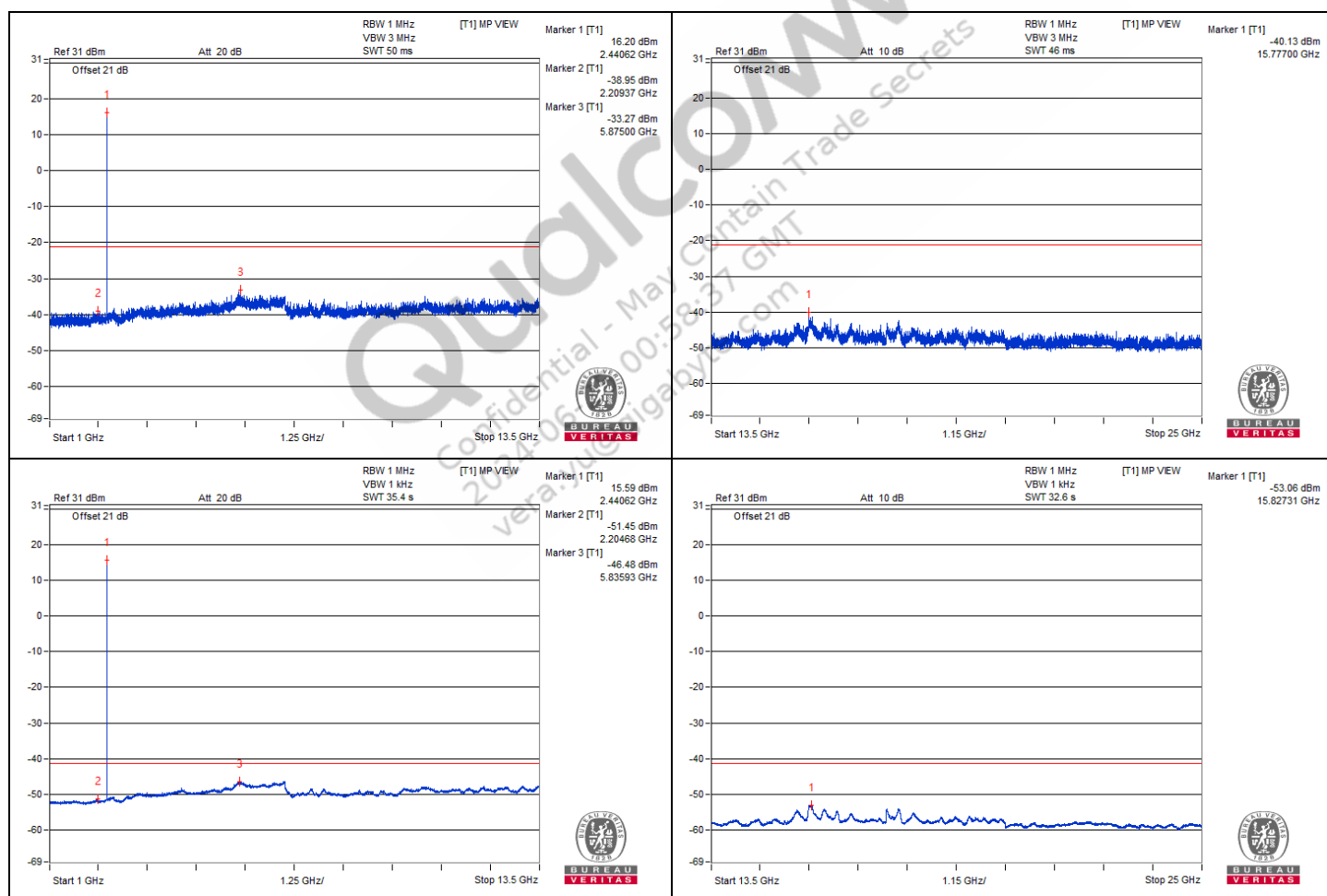
GFSK 1TX - Channel 39

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	2209.37	61.47 PK	74	-12.53	-38.95	5.16	-33.79
2	2204.68	48.97 AV	54	-5.03	-51.45	5.16	-46.29
3	15777	60.29 PK	74	-13.71	-40.13	5.16	-34.97
4	15827.31	47.36 AV	54	-6.64	-53.06	5.16	-47.90

Remarks:

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

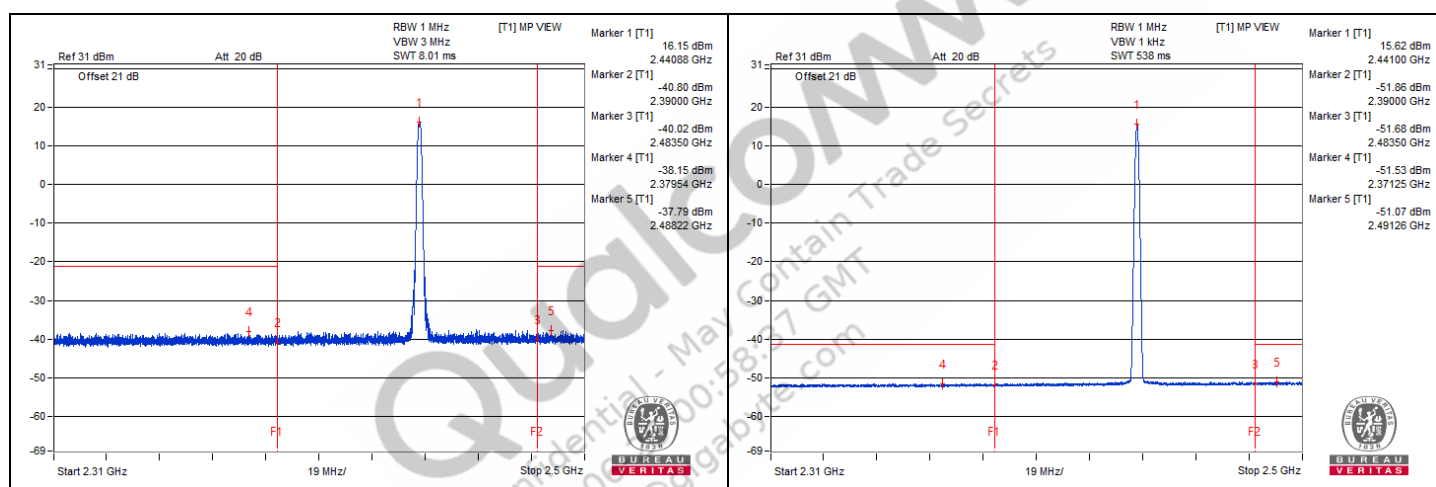


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2379.54	60.64 PK	74	-13.36	-38.15	3.53	-34.62
2	2371.25	47.26 AV	54	-6.74	-51.53	3.53	-48.00
3	2488.22	61 PK	74	-13	-37.79	3.53	-34.26
4	2491.26	47.72 AV	54	-6.28	-51.07	3.53	-47.54

Remarks:

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



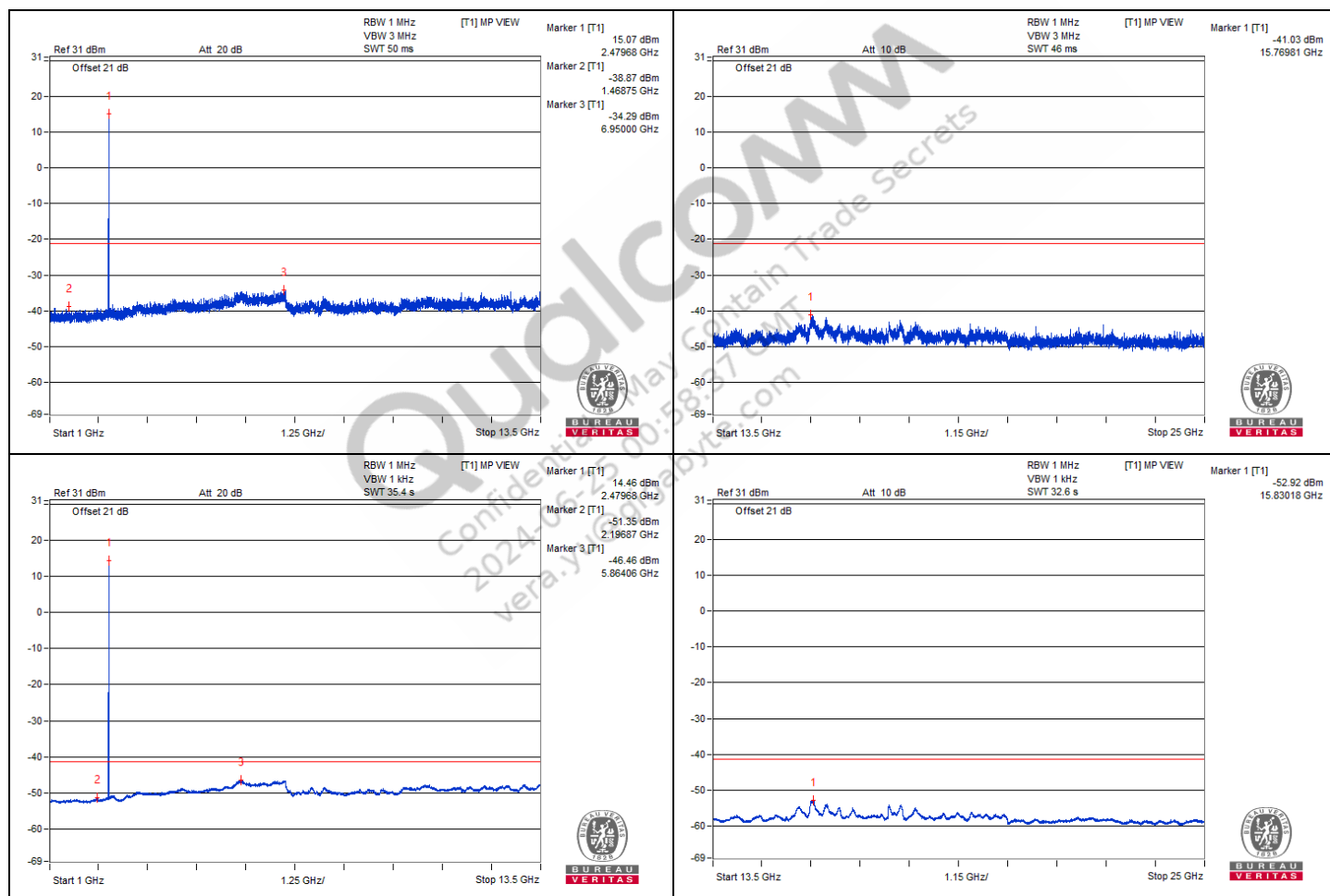
GFSK 1TX - Channel 78

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	15769.81	59.39 PK	74	-14.61	-41.03	5.16	-35.87
2	15830.18	47.5 AV	54	-6.5	-52.92	5.16	-47.76

Remarks:

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

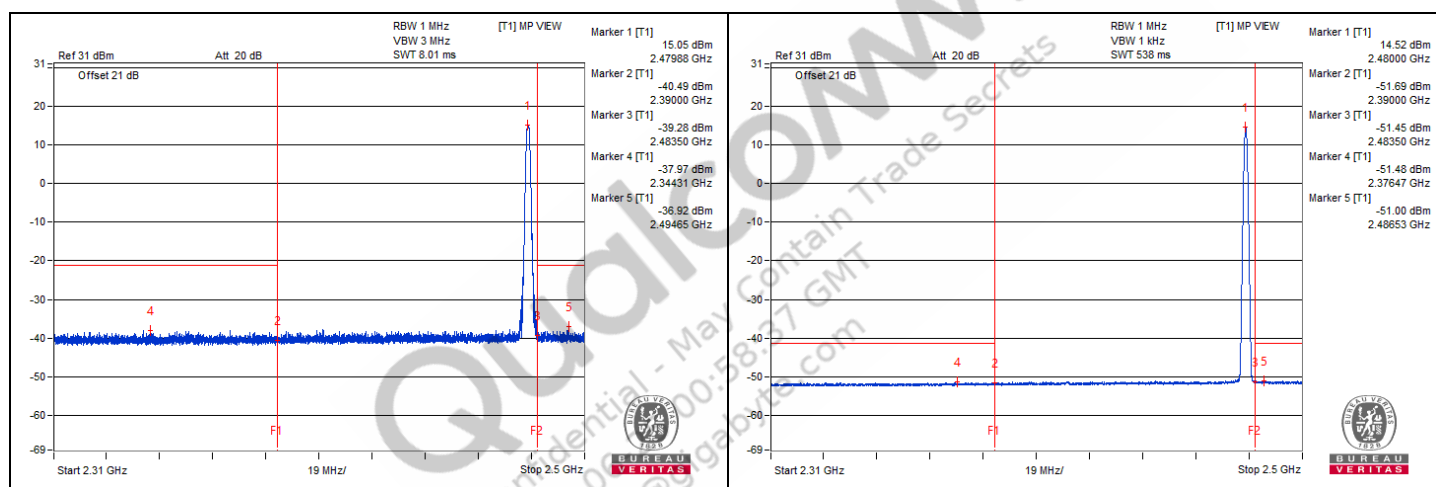


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2344.31	60.82 PK	74	-13.18	-37.97	3.53	-34.44
2	2376.47	47.31 AV	54	-6.69	-51.48	3.53	-47.95
3	2494.65	61.87 PK	74	-12.13	-36.92	3.53	-33.39
4	2486.53	47.79 AV	54	-6.21	-51	3.53	-47.47

Remarks:

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



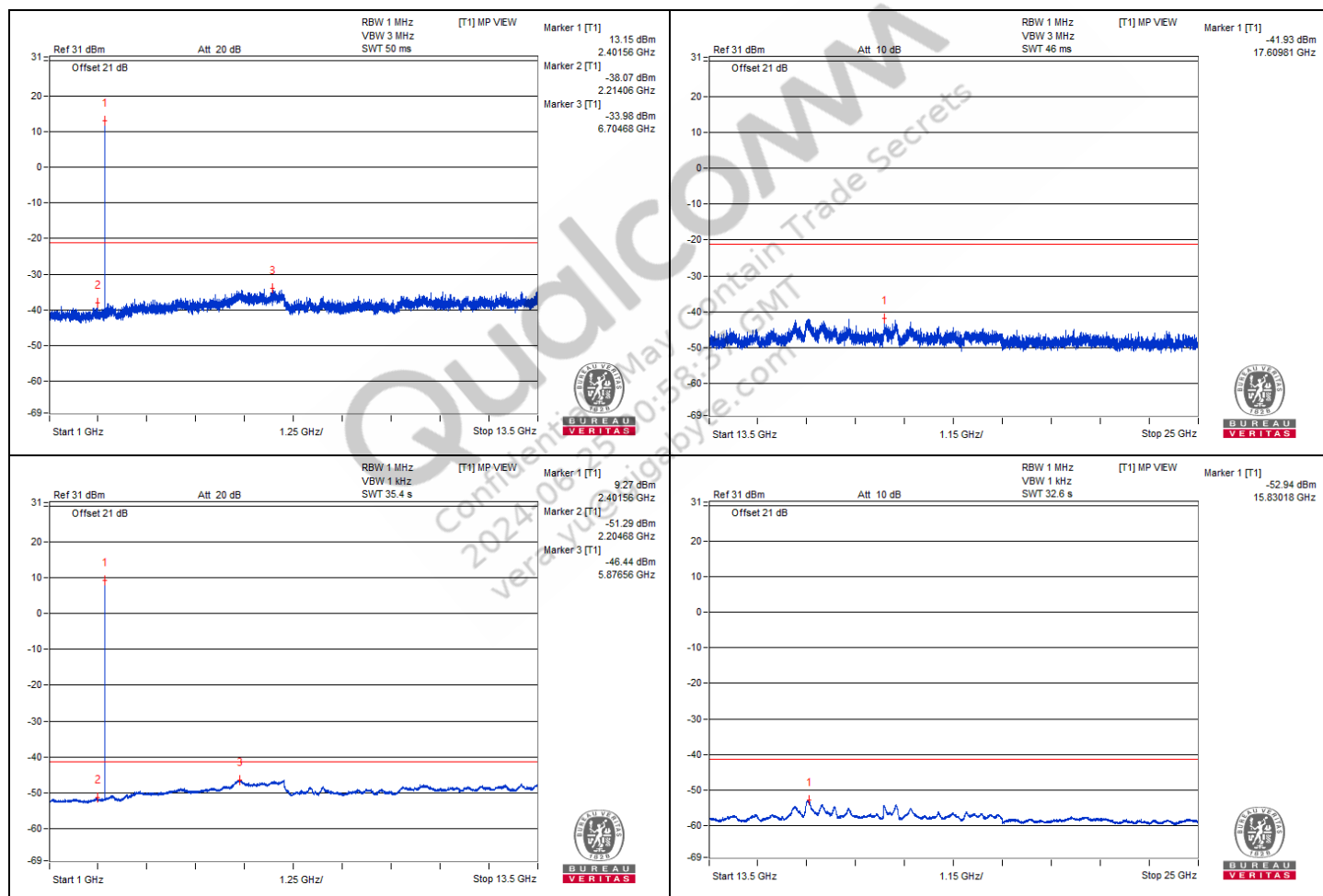
8DPSK 1TX - Channel 0

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	2214.06	62.35 PK	74	-11.65	-38.07	5.16	-32.91
2	2204.68	49.13 AV	54	-4.87	-51.29	5.16	-46.13

Remarks:

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

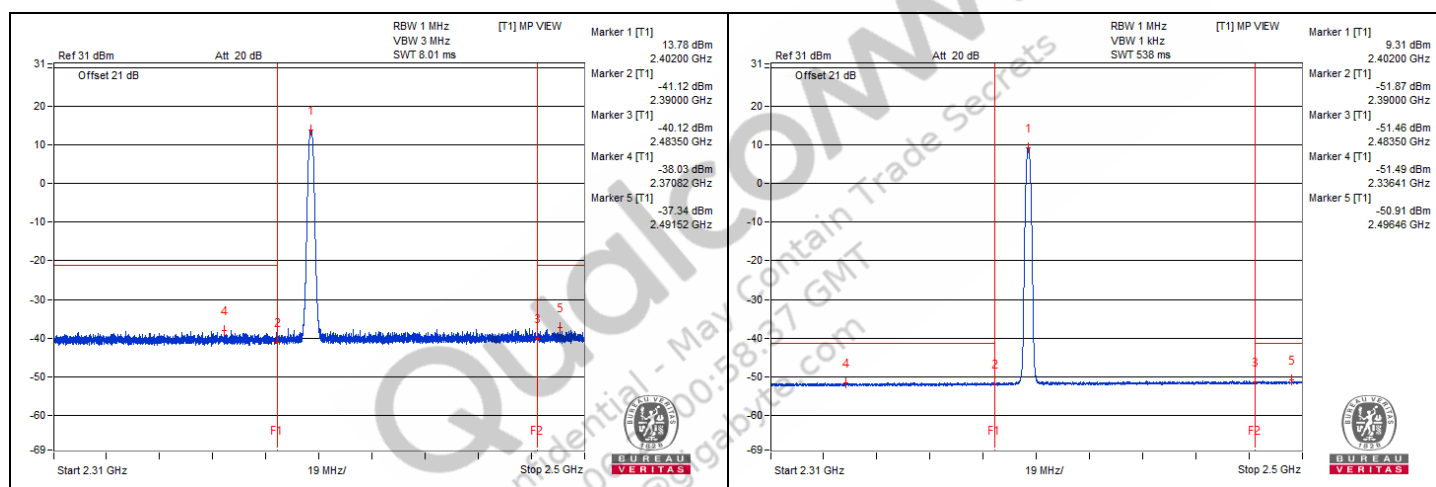


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2370.82	60.76 PK	74	-13.24	-38.03	3.53	-34.50
2	2336.41	47.3 AV	54	-6.7	-51.49	3.53	-47.96
3	2491.52	61.45 PK	74	-12.55	-37.34	3.53	-33.81
4	2496.46	47.88 AV	54	-6.12	-50.91	3.53	-47.38

Remarks:

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



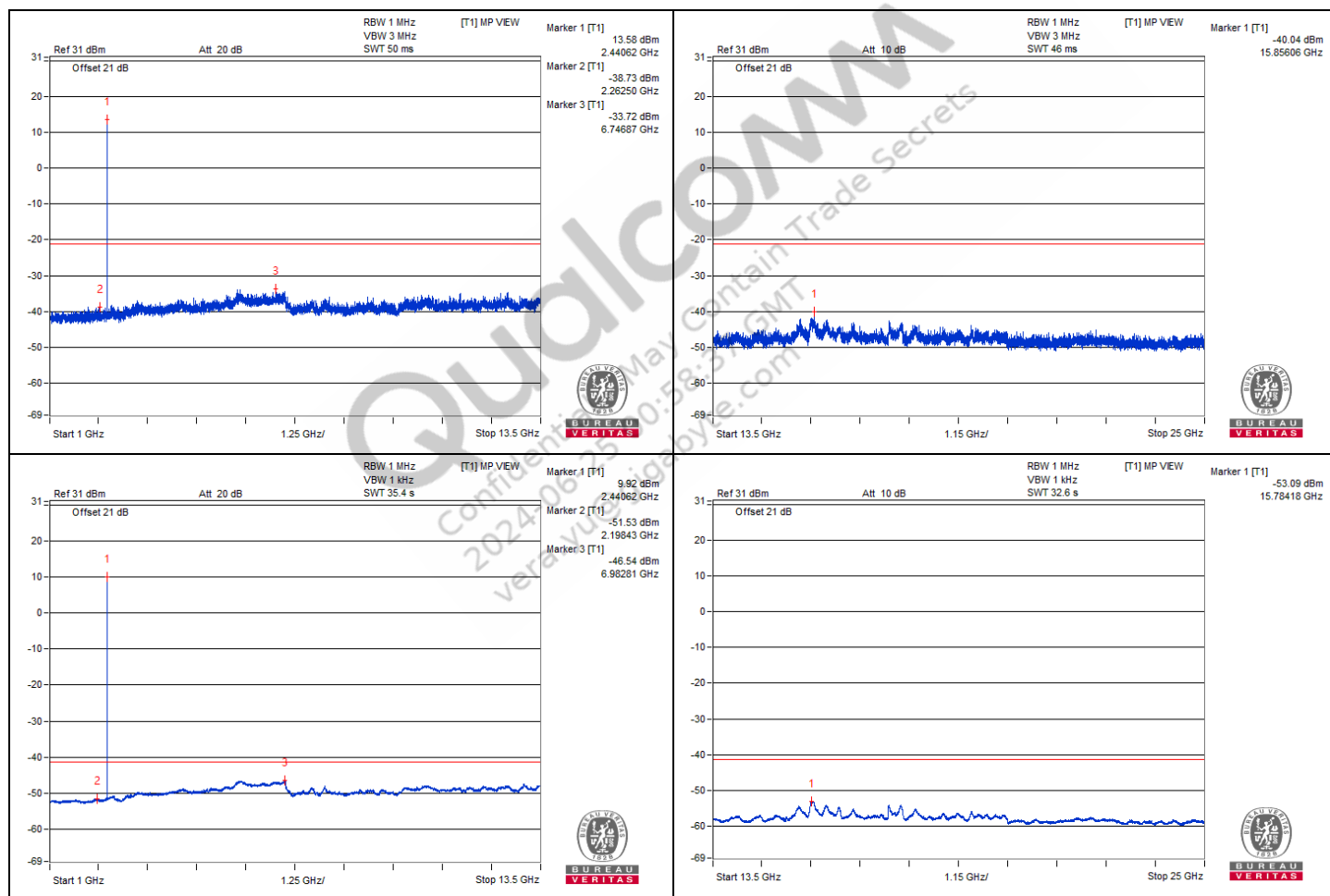
8DPSK 1TX - Channel 39

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	15856.06	60.38 PK	74	-13.62	-40.04	5.16	-34.88
2	15784.18	47.33 AV	54	-6.67	-53.09	5.16	-47.93

Remarks:

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

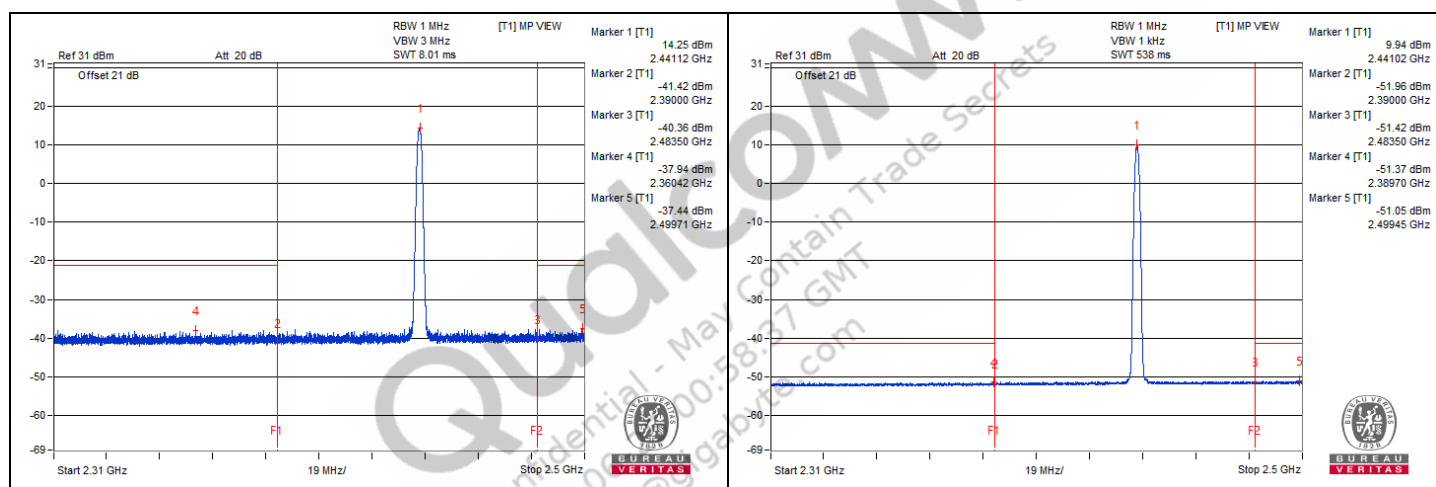


Bandedge table

No.	Frequency (MHz)	Emission Level (dBUV/m)	Limit (dBUV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2360.42	60.85 PK	74	-13.15	-37.94	3.53	-34.41
2	2389.7	47.42 AV	54	-6.58	-51.37	3.53	-47.84
3	2499.71	61.35 PK	74	-12.65	-37.44	3.53	-33.91
4	2499.45	47.74 AV	54	-6.26	-51.05	3.53	-47.52

Remarks:

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



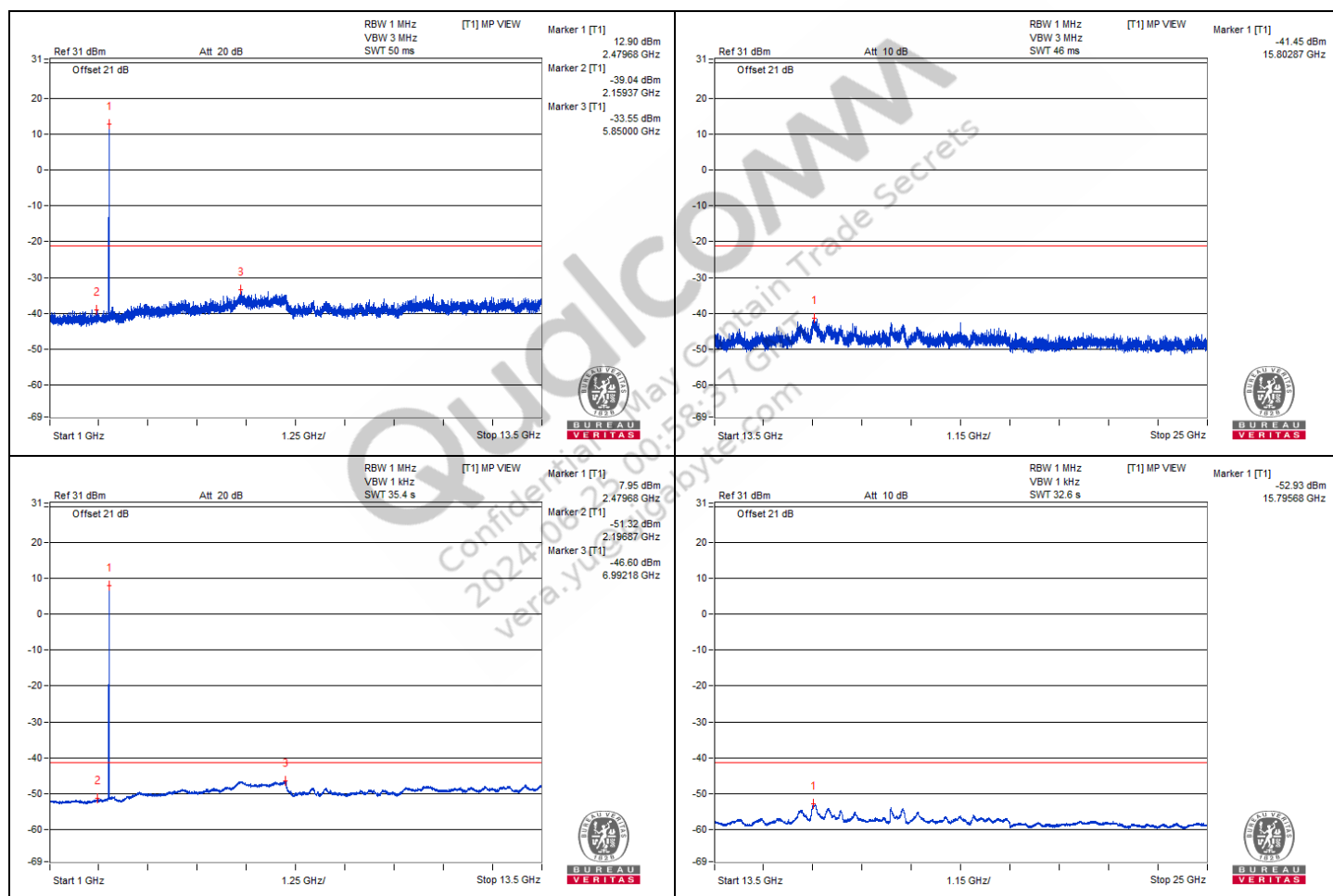
8DPSK 1TX - Channel 78

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	15802.87	58.97 PK	74	-15.03	-41.45	5.16	-36.29
2	15795.68	47.49 AV	54	-6.51	-52.93	5.16	-47.77

Remarks:

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

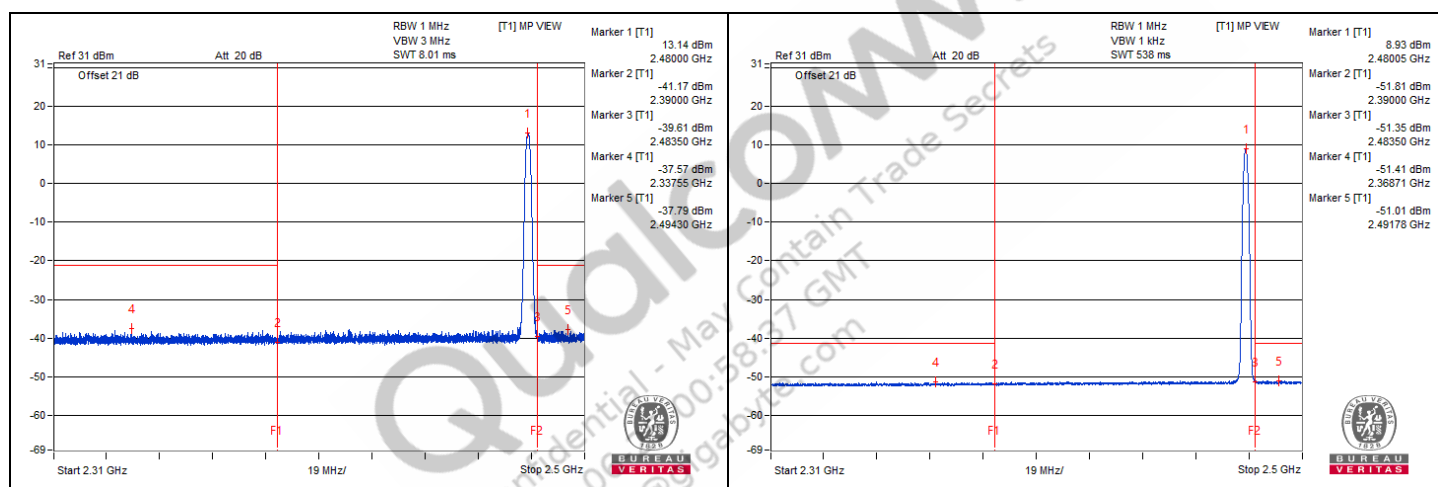


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)	Correction Factor (dB)	EIRP Level (dBm)
1	2337.55	61.22 PK	74	-12.78	-37.57	3.53	-34.04
2	2368.71	47.38 AV	54	-6.62	-51.41	3.53	-47.88
3	2494.3	61 PK	74	-13	-37.79	3.53	-34.26
4	2491.78	47.78 AV	54	-6.22	-51.01	3.53	-47.48

Remarks:

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



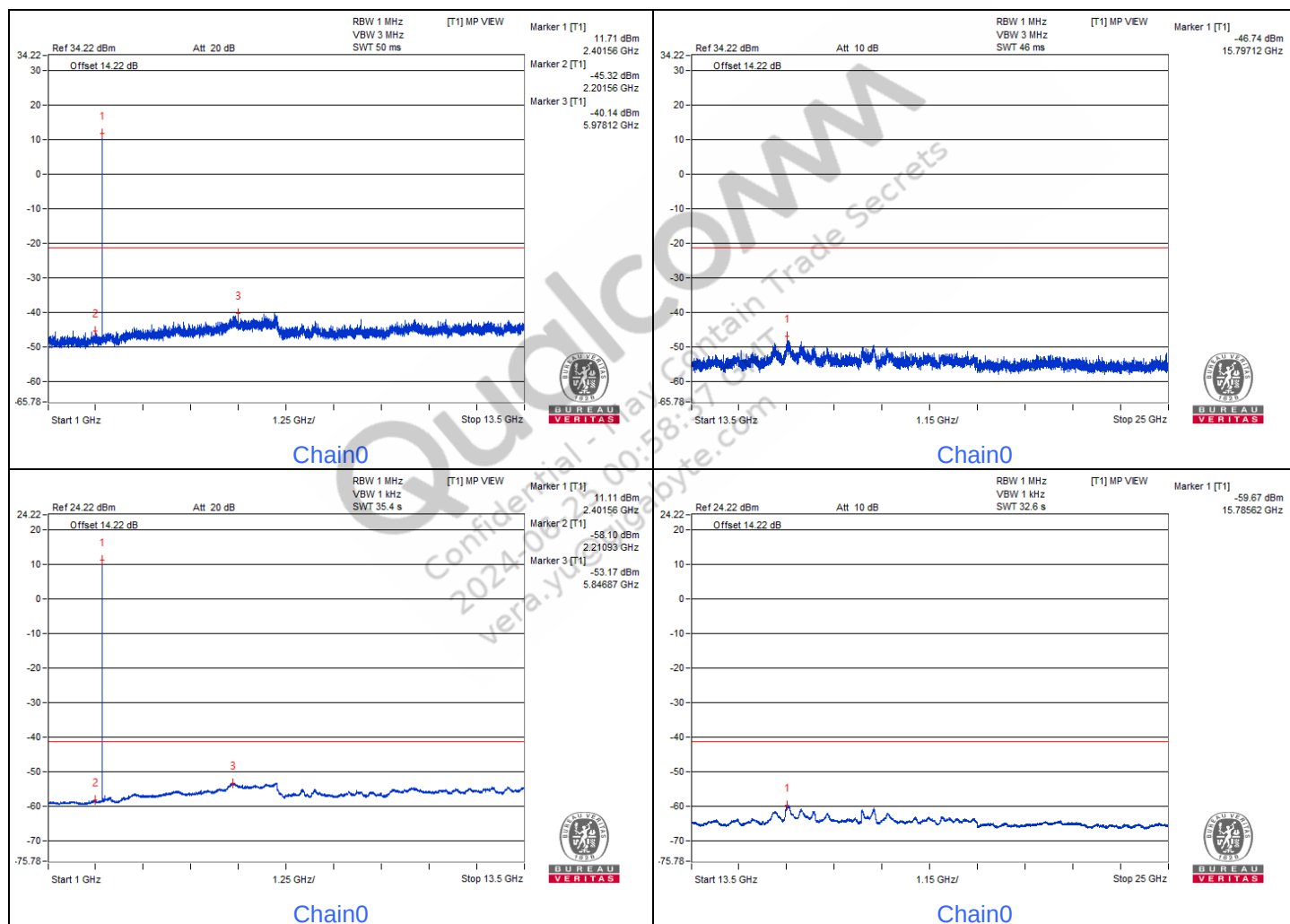
GFSK 2TX - Channel 0

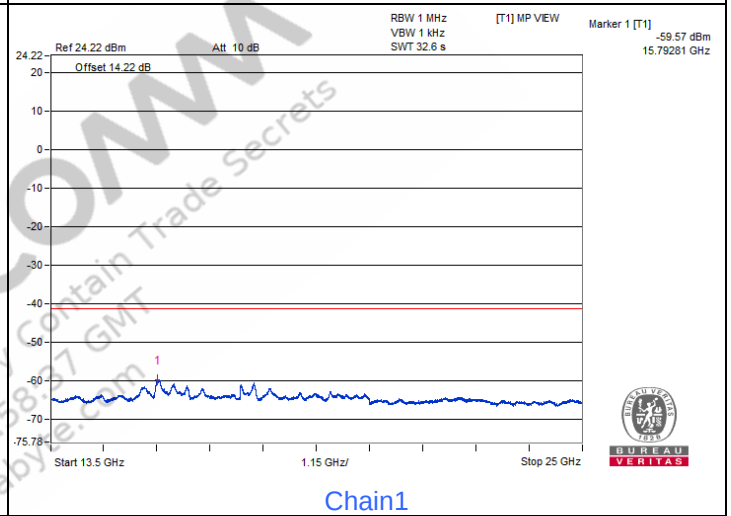
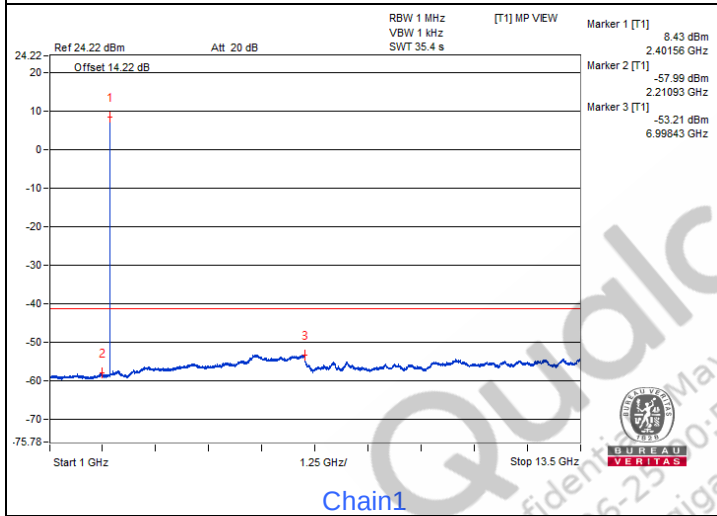
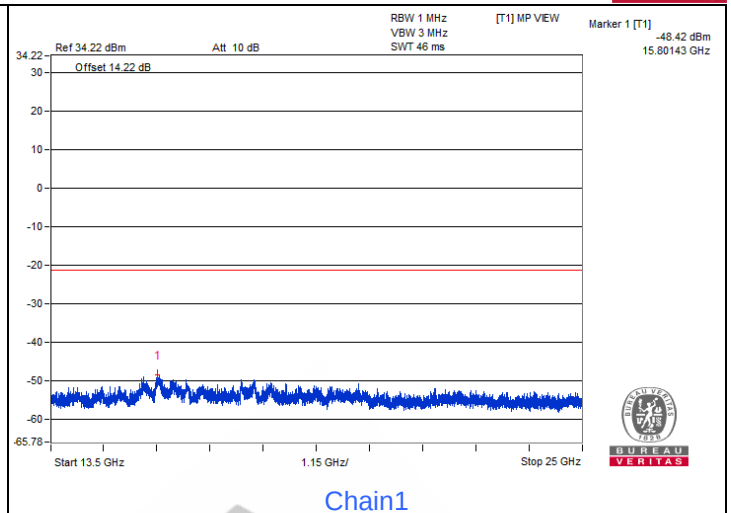
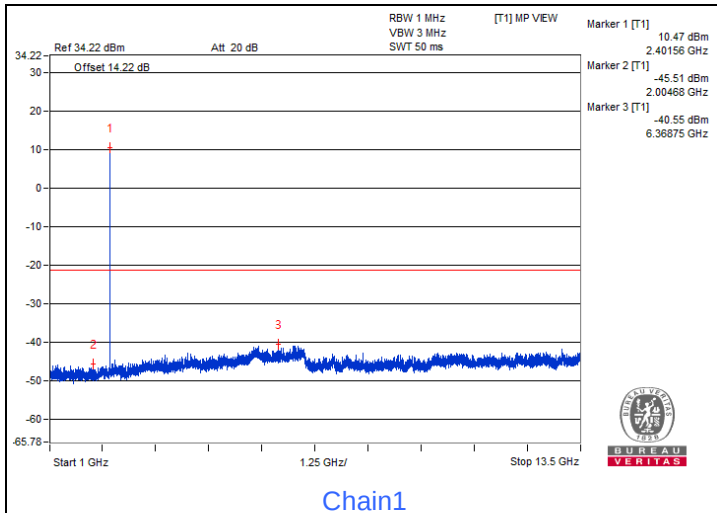
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2315.62	59.17 PK	74	-14.83	-47.1	-47.44	8.17	-36.09
2	2389.06	47.98 AV	54	-6.02	-58.6	-58.32	8.17	-47.28

Remarks:

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



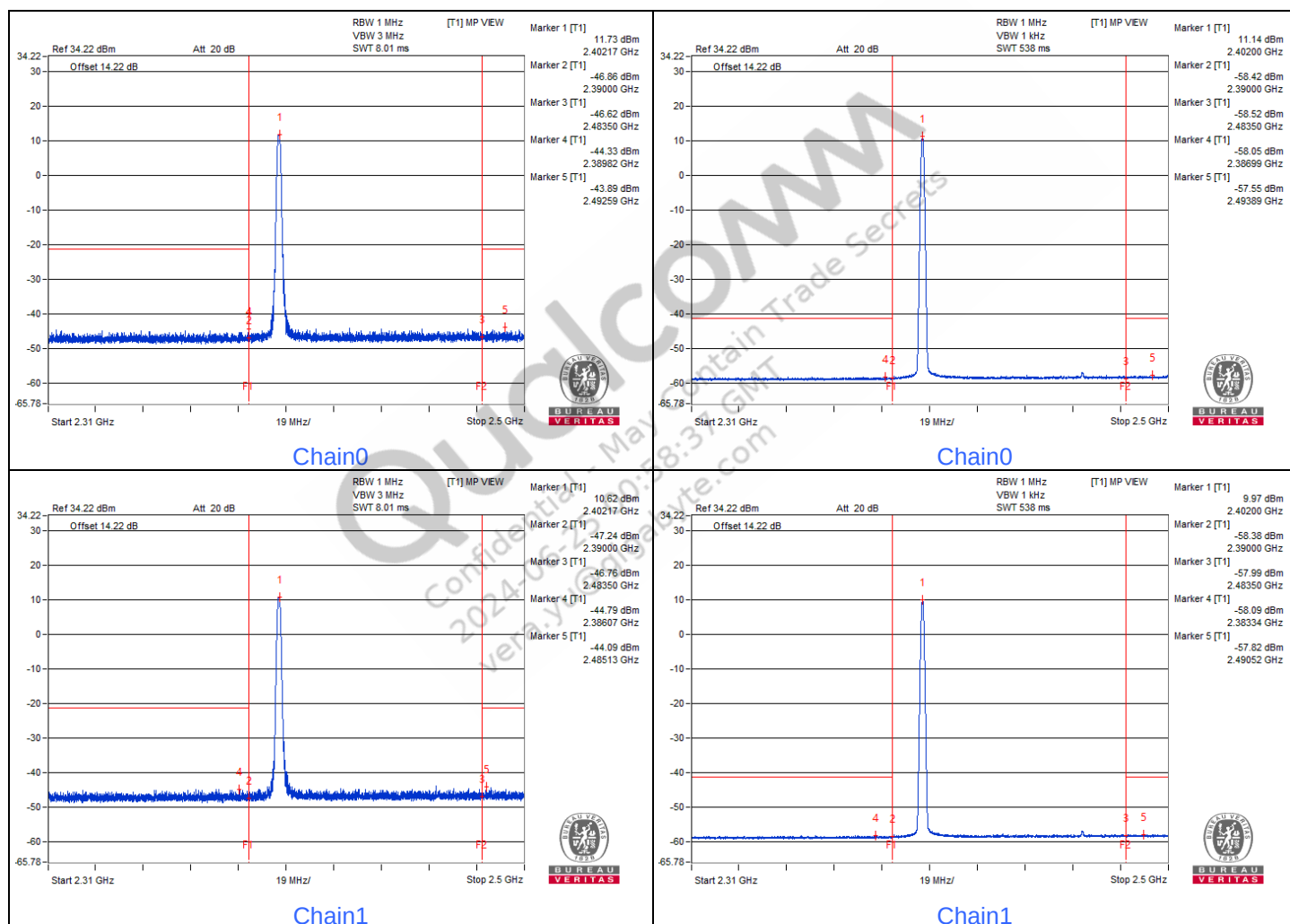


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2389.82	59.6 PK	74	-14.4	-44.33	-46.32	6.54	-35.66
2	2386.99	46.52 AV	54	-7.48	-58.05	-58.55	6.54	-48.74

Remarks:

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



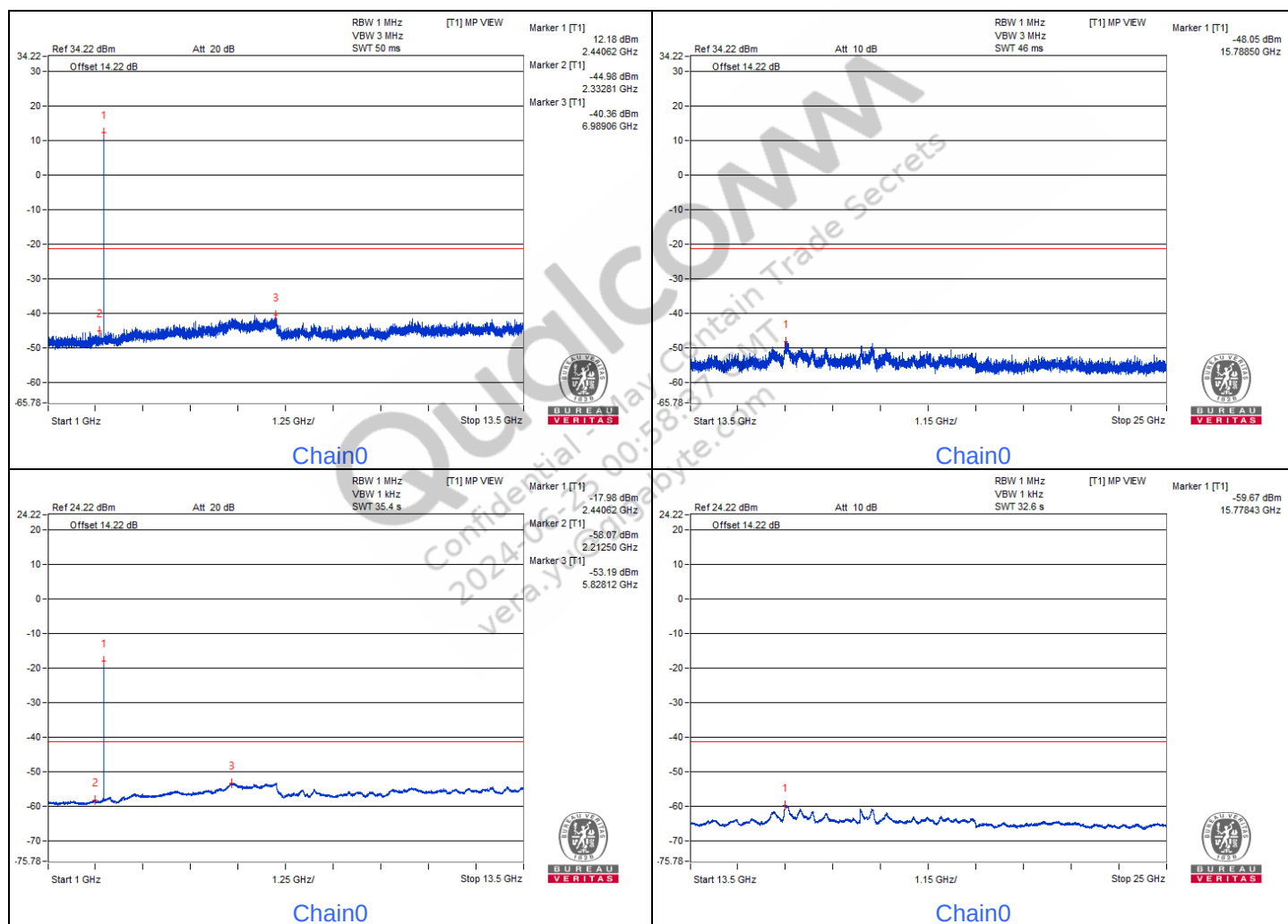
GFSK 2TX - Channel 39

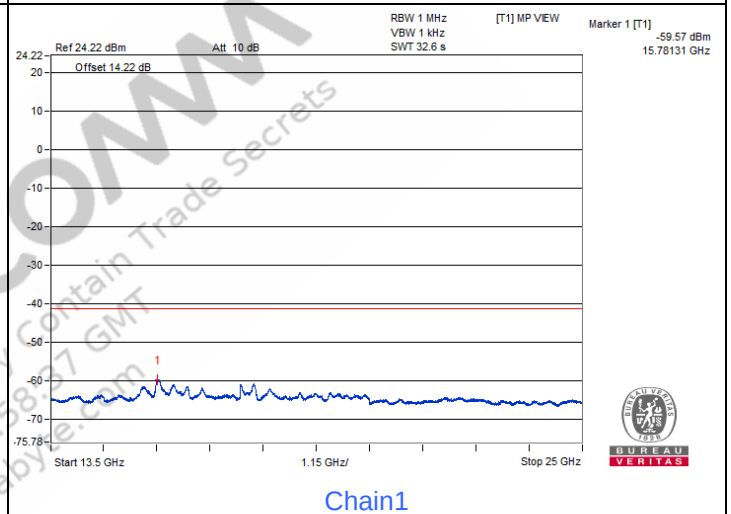
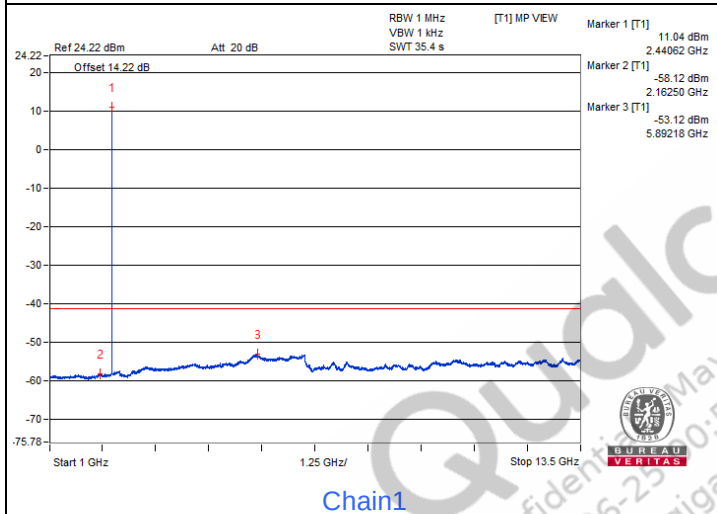
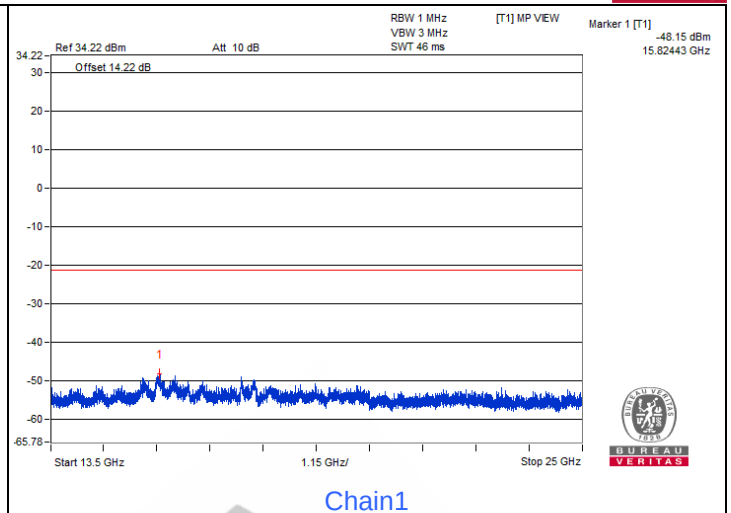
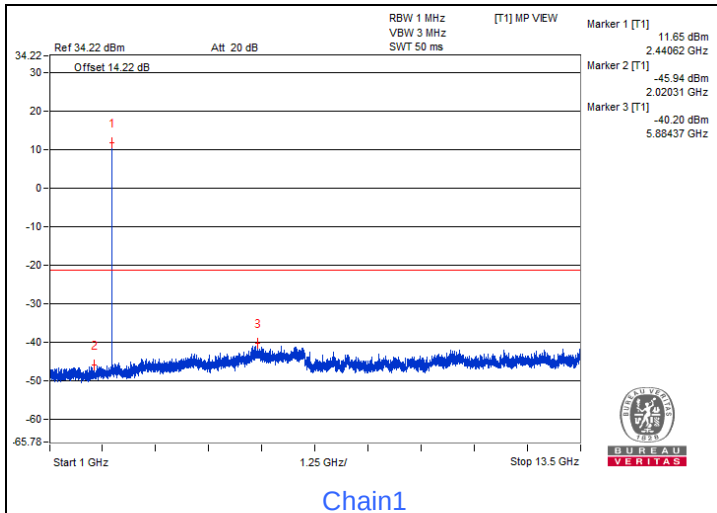
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2381.25	60.14 PK	74	-13.86	-45.59	-47.16	8.17	-35.12
2	2370.31	47.98 AV	54	-6.02	-58.39	-58.53	8.17	-47.28

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)
					Chain0	Chain1		
1	2320.47	60.03 PK	74	-13.97	-43.84	-45.97	6.54	-35.23
2	2380.58	46.49 AV	54	-7.51	-58.3	-58.34	6.54	-48.77

Remarks:

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



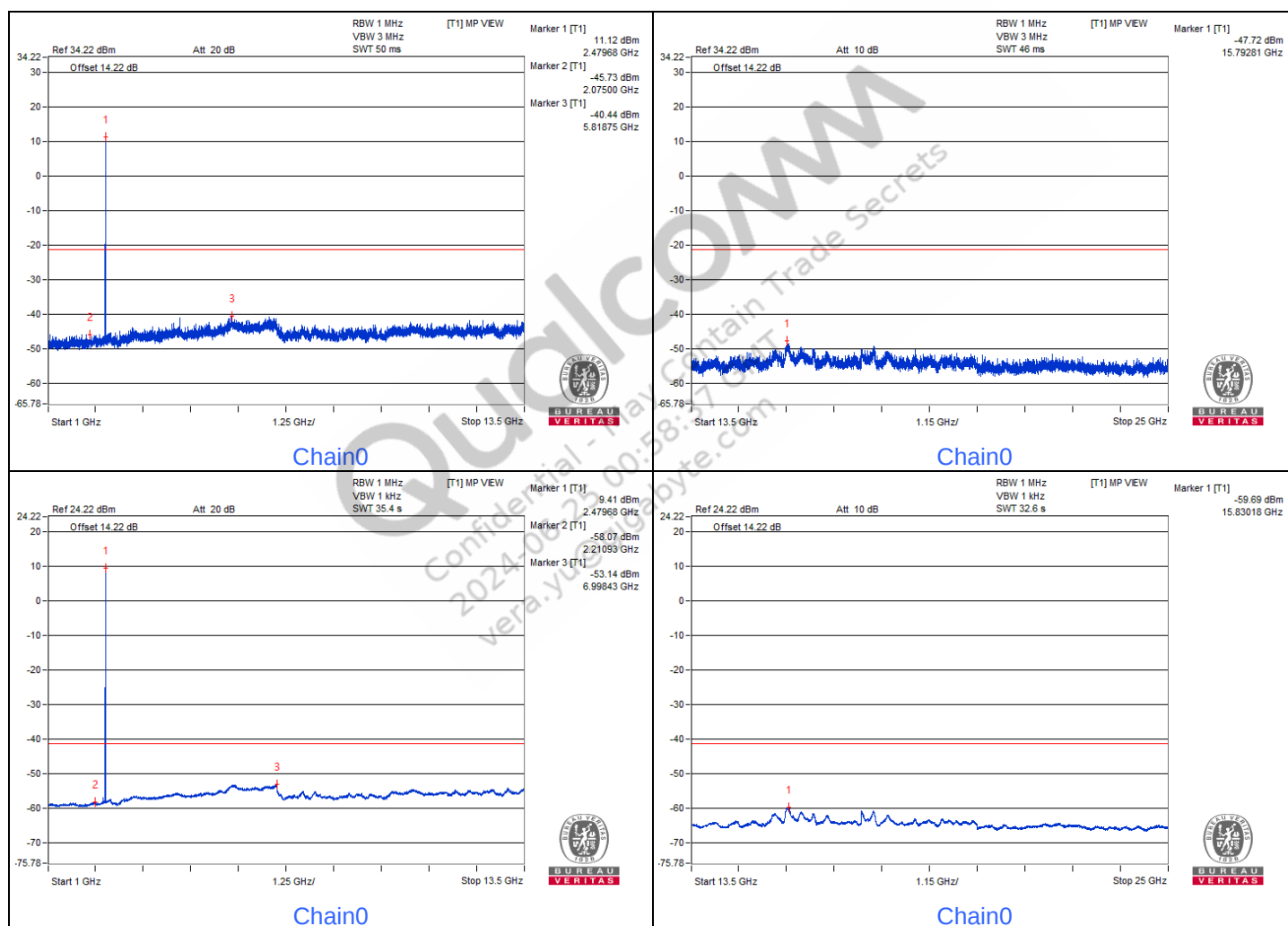
GFSK 2TX - Channel 78

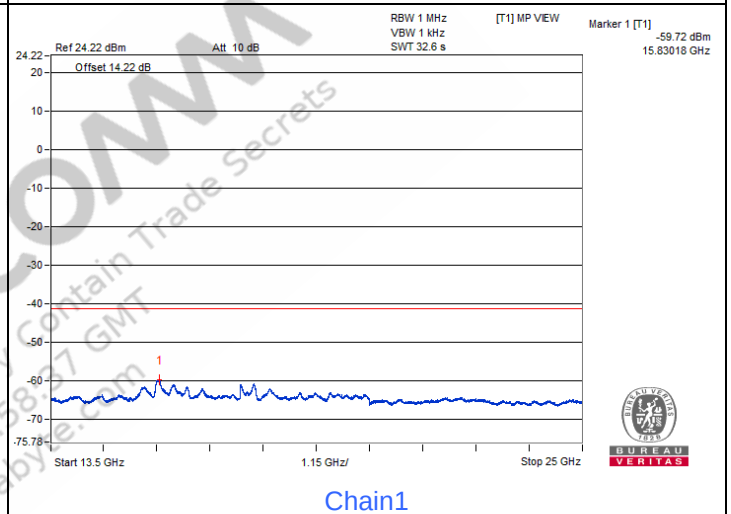
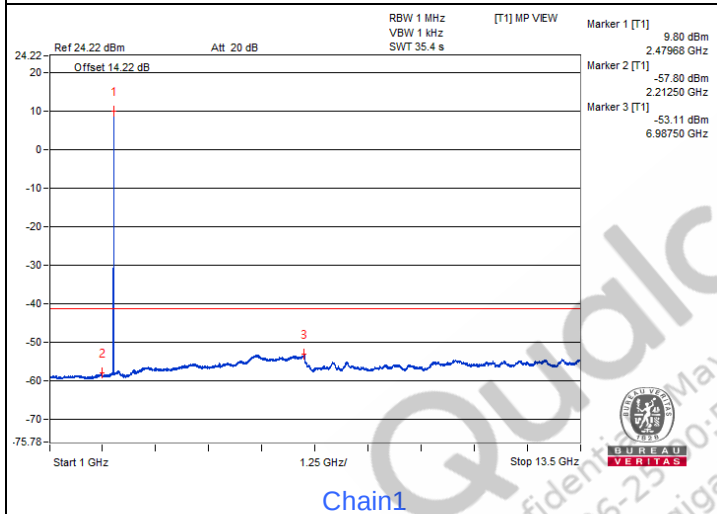
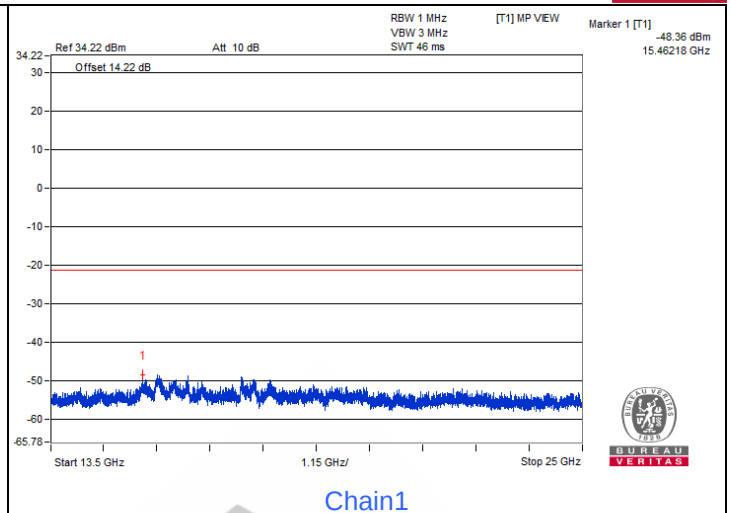
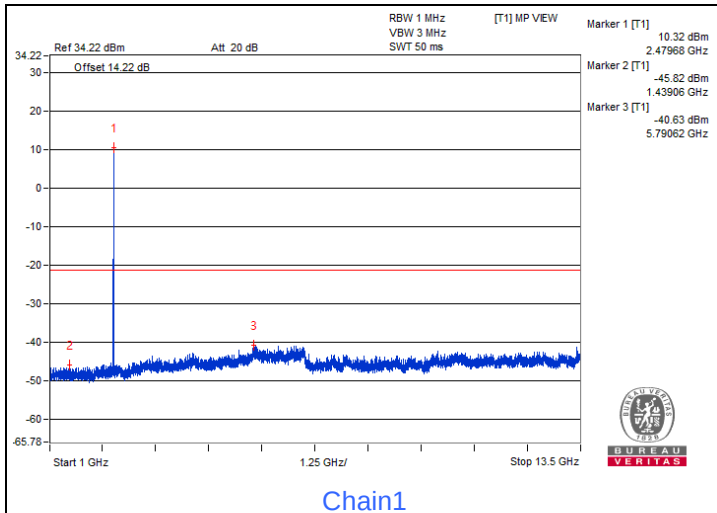
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2318.75	59.99 PK	74	-14.01	-45.94	-47.04	8.17	-35.27
2	2389.06	48.03 AV	54	-5.97	-58.39	-58.44	8.17	-47.23

Remarks:

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



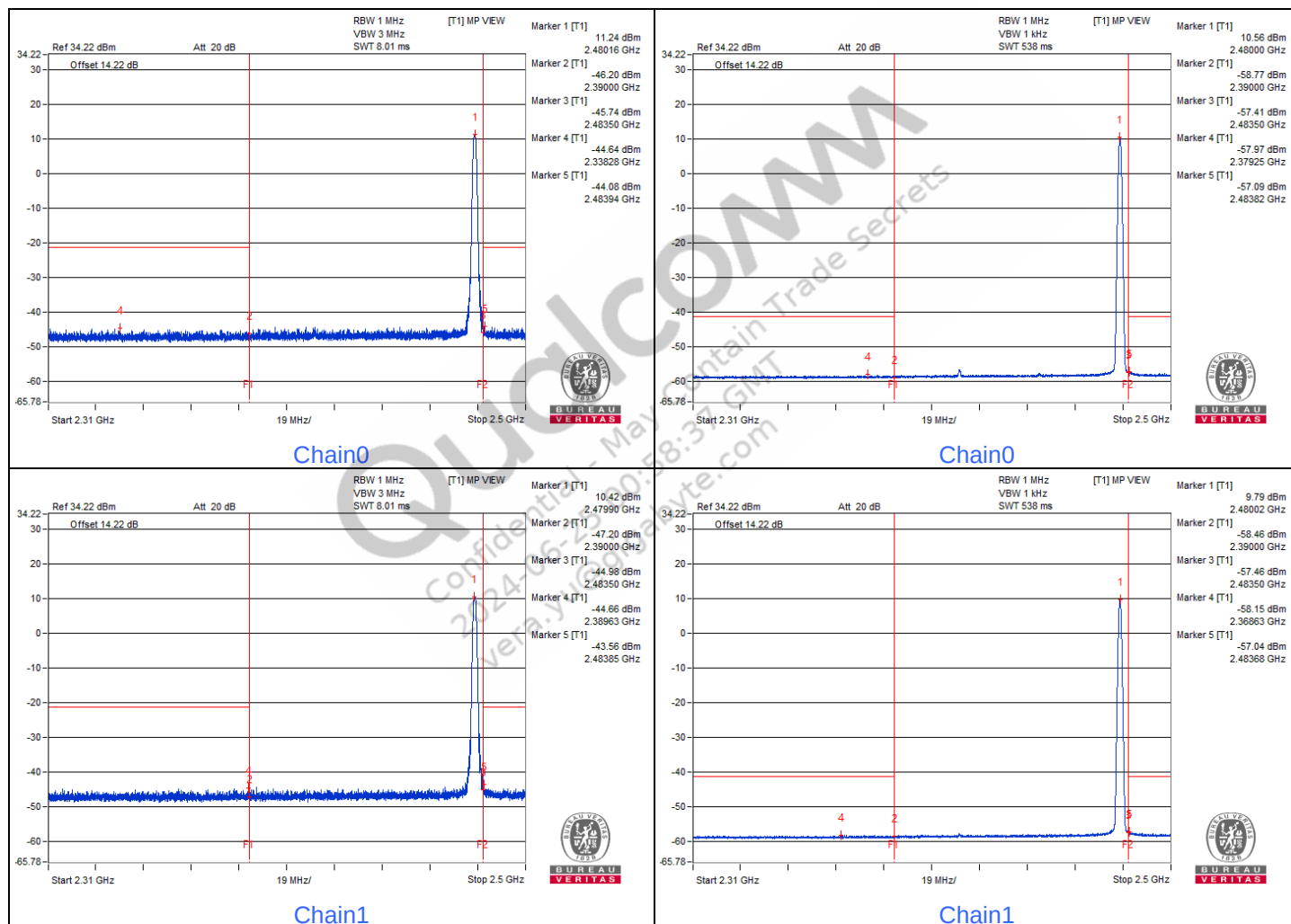


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2382.15	59.29 PK	74	-14.71	-45.77	-45.29	6.54	-35.97
2	2379.25	46.51 AV	54	-7.49	-57.97	-58.66	6.54	-48.75

Remarks:

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



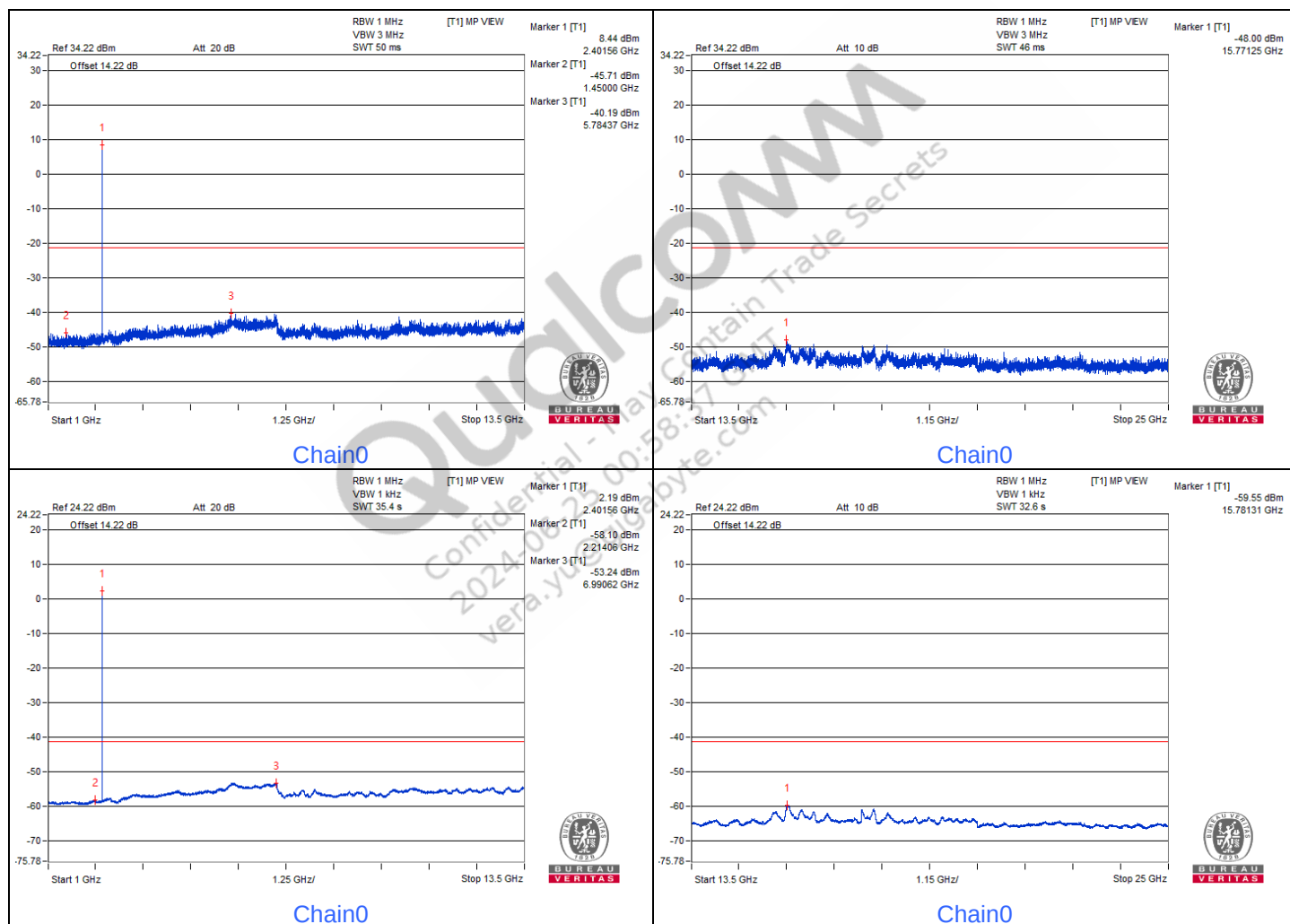
8DPSK 2TX - Channel 0

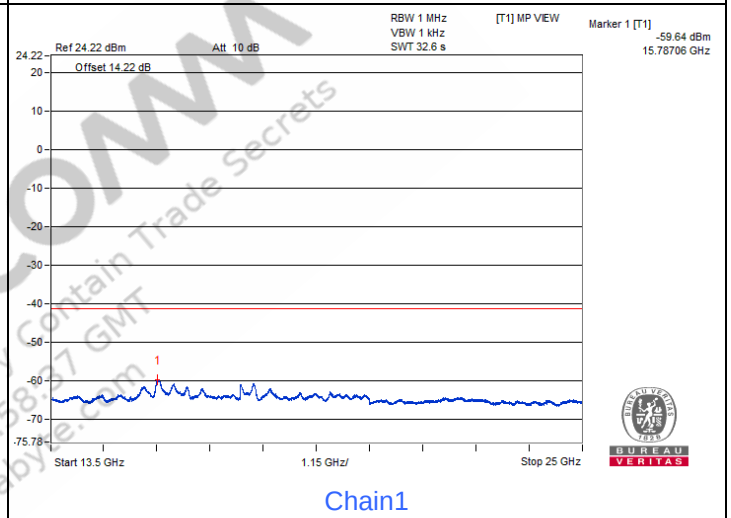
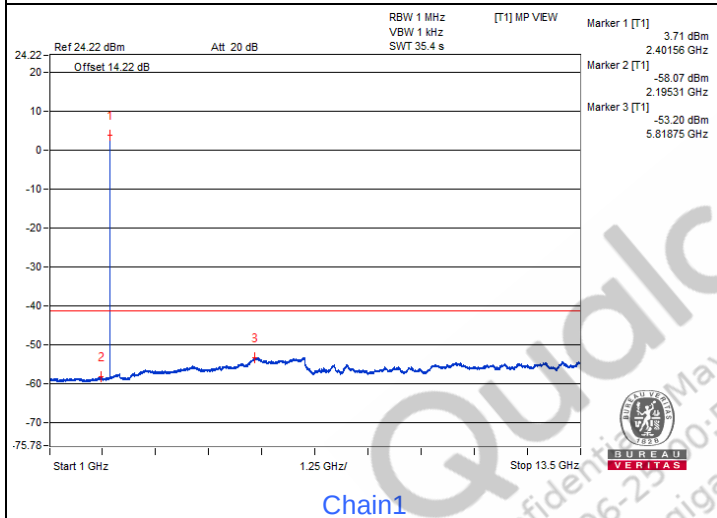
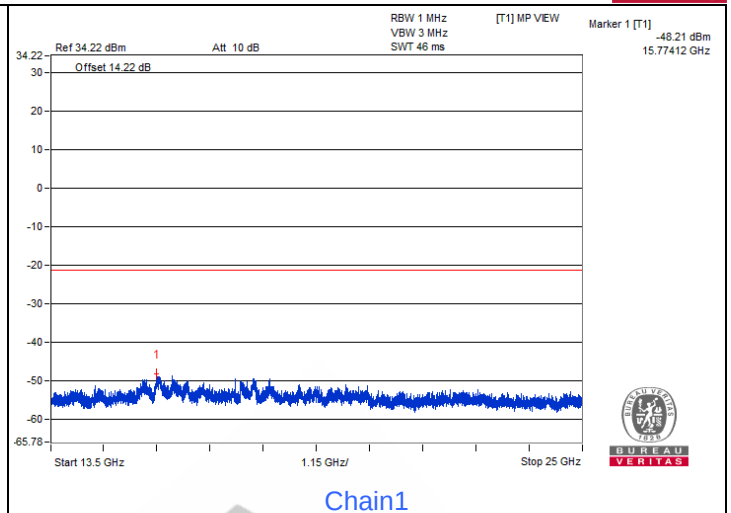
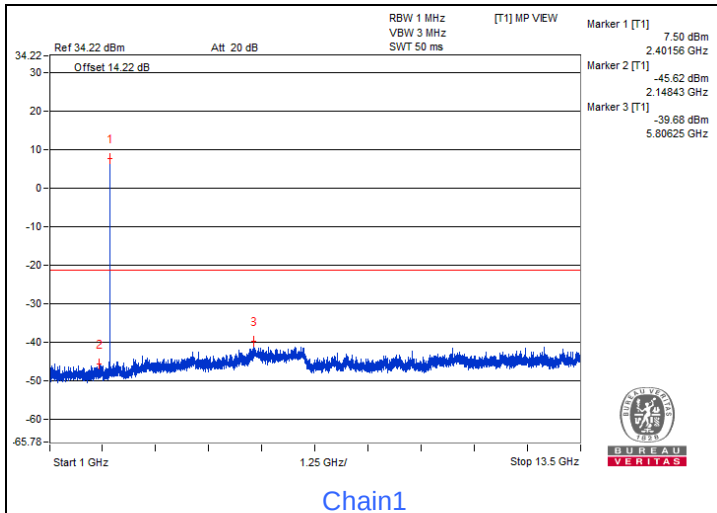
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2384.37	59.99 PK	74	-14.01	-48.56	-45.04	8.17	-35.27
2	2385.93	47.99 AV	54	-6.01	-58.31	-58.59	8.17	-47.27

Remarks:

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



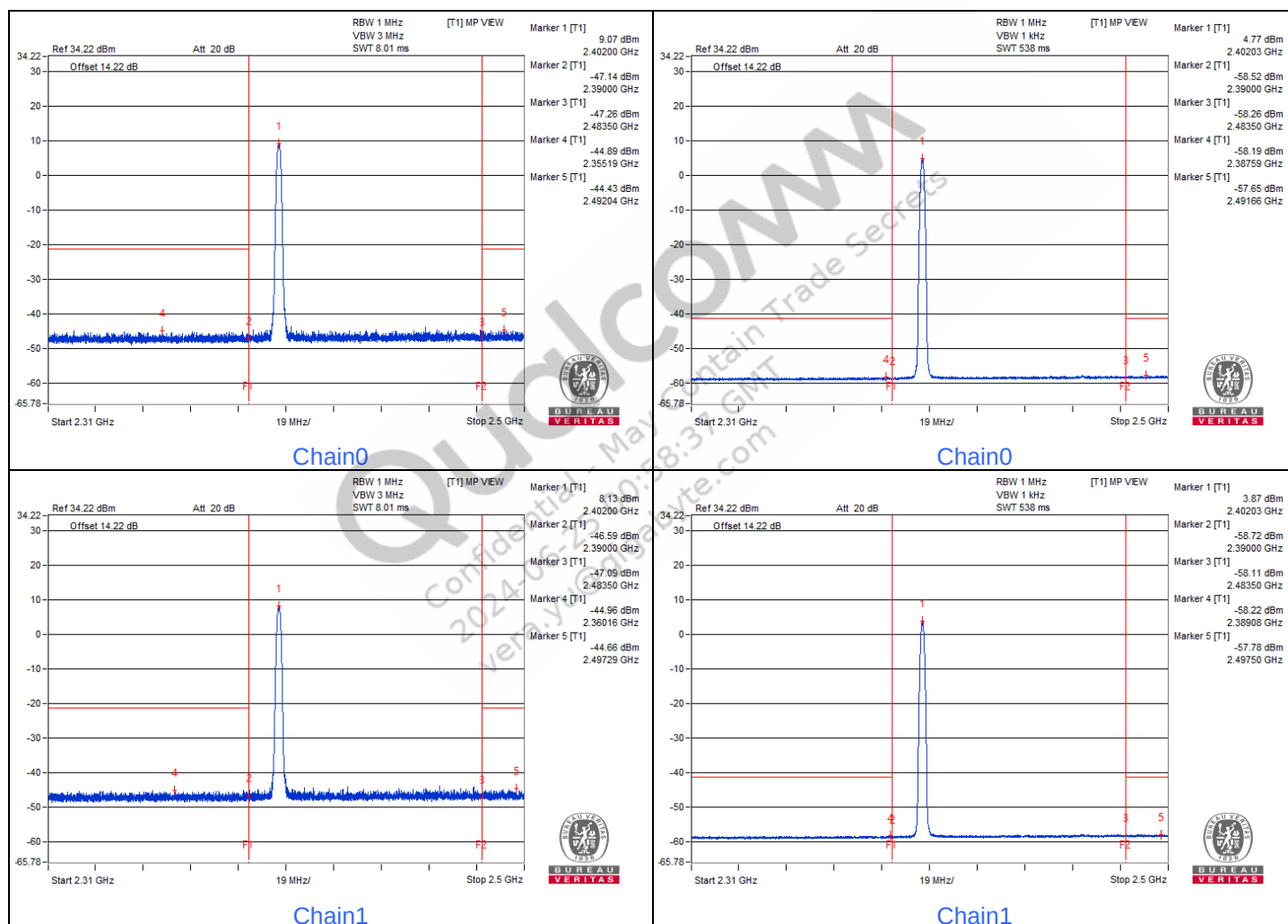


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2368.18	59.3 PK	74	-14.7	-45.21	-45.83	6.54	-35.96
2	2389.08	46.54 AV	54	-7.46	-58.33	-58.22	6.54	-48.72

Remarks:

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



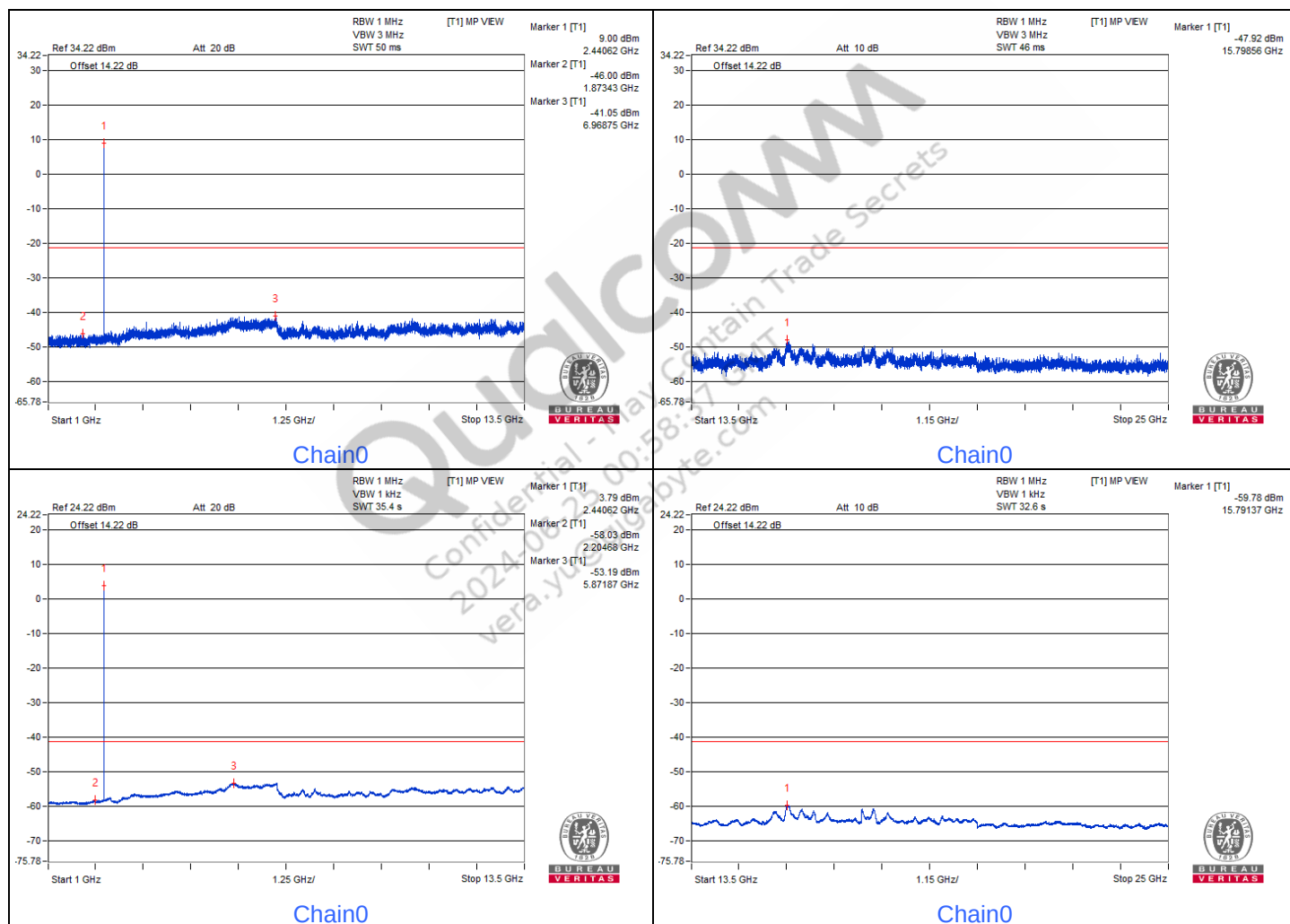
8DPSK 2TX - Channel 39

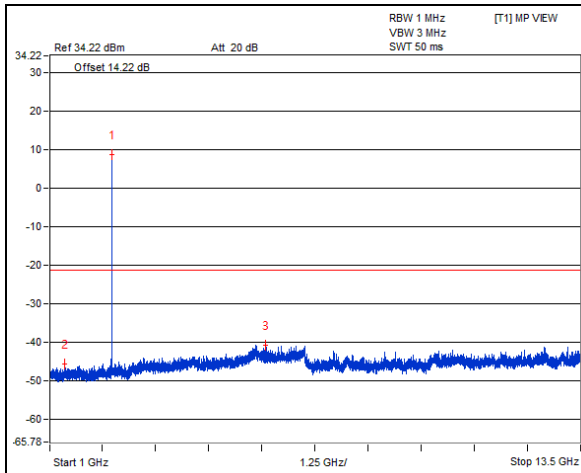
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2375	59.29 PK	74	-14.71	-47.89	-46.51	8.17	-35.97
2	2379.68	47.97 AV	54	-6.03	-58.65	-58.29	8.17	-47.29

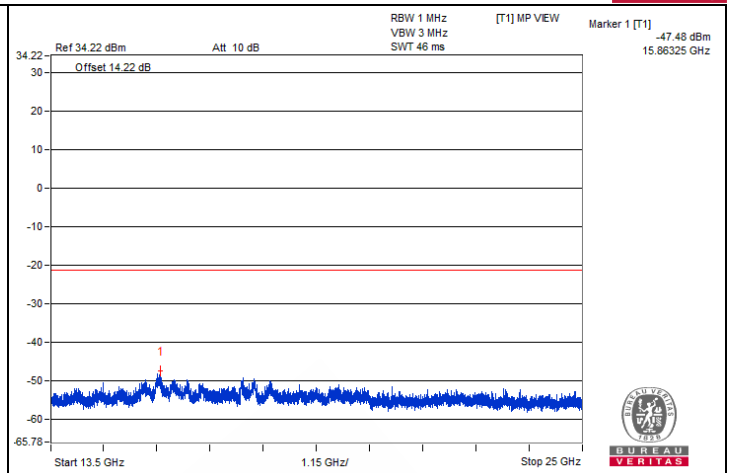
Remarks:

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

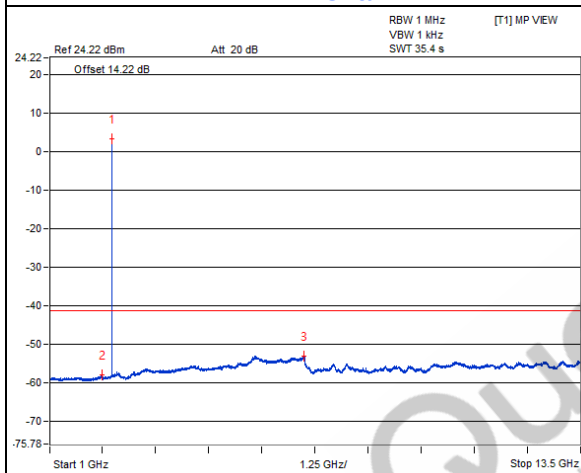




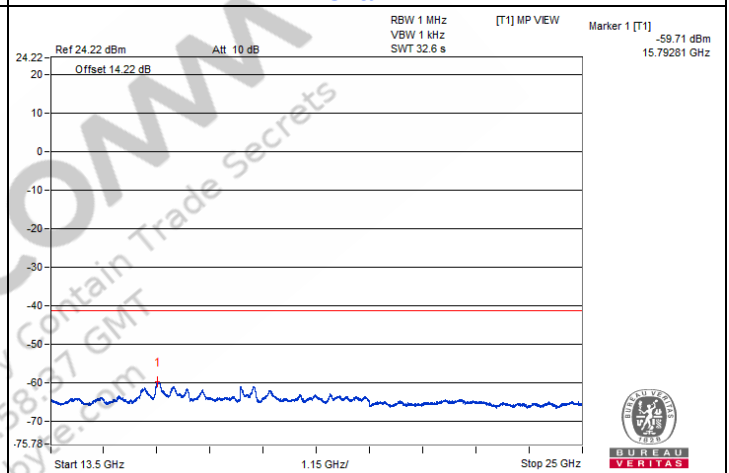
Chain1



Chain1



Chain1



Chain1

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	2359.16	59.64 PK	74	-14.36	-44.24	-46.36	6.54	-35.62
2	2376.38	46.51 AV	54	-7.49	-58.68	-57.95	6.54	-48.75

Remarks:

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



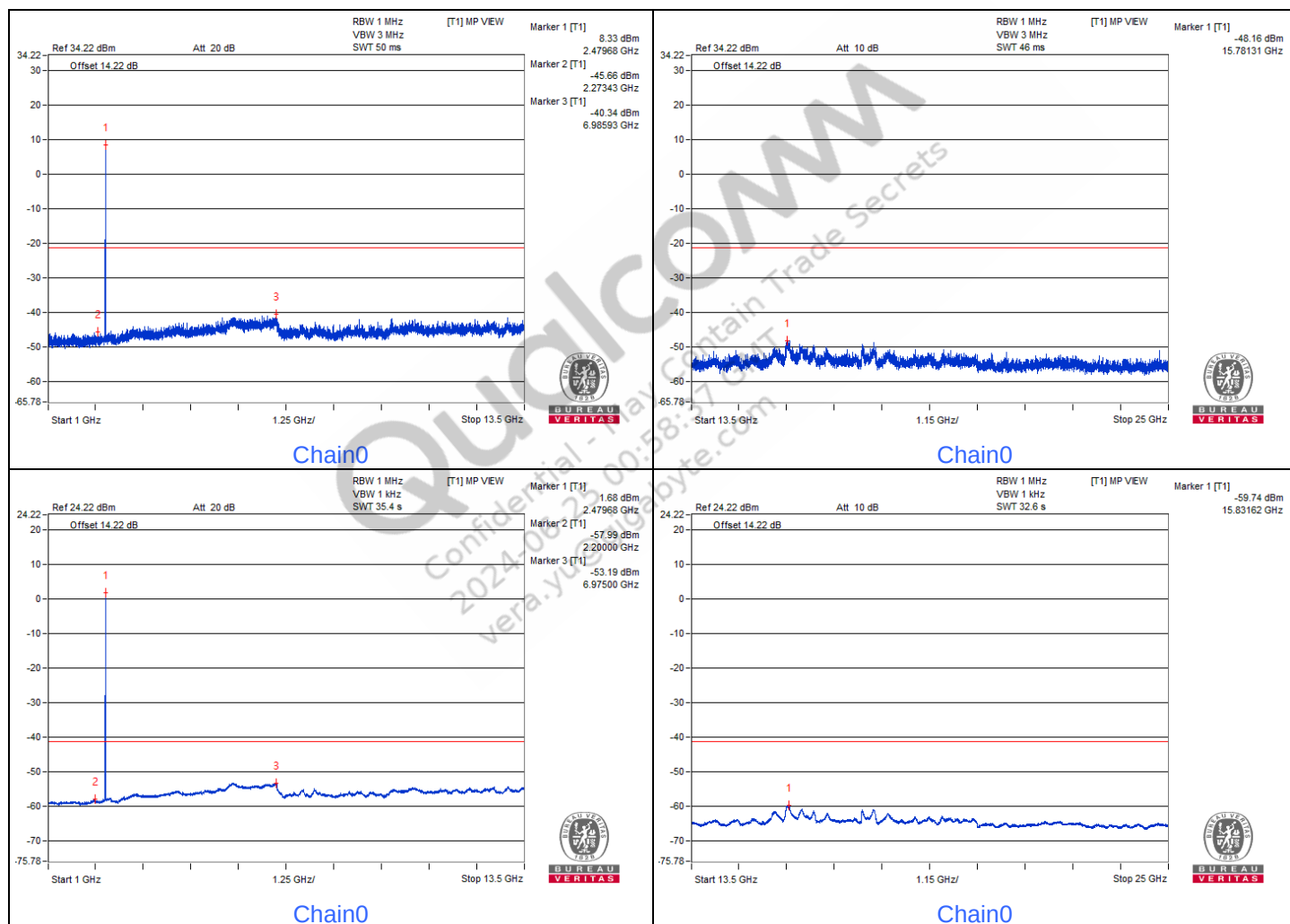
8DPSK 2TX - Channel 78

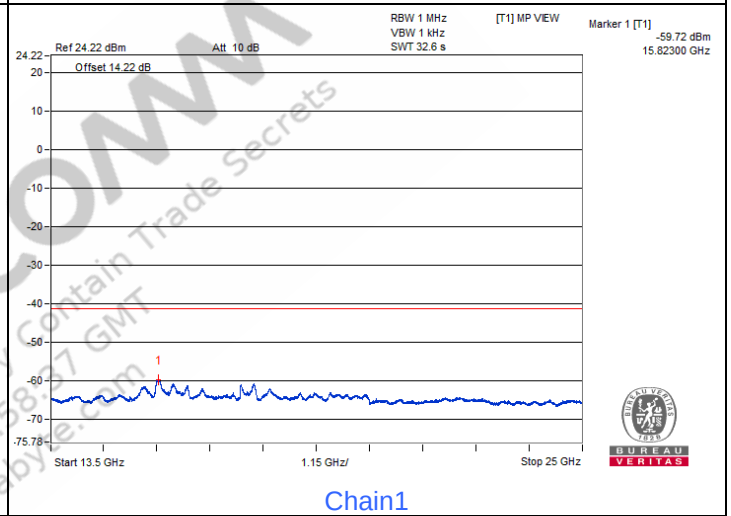
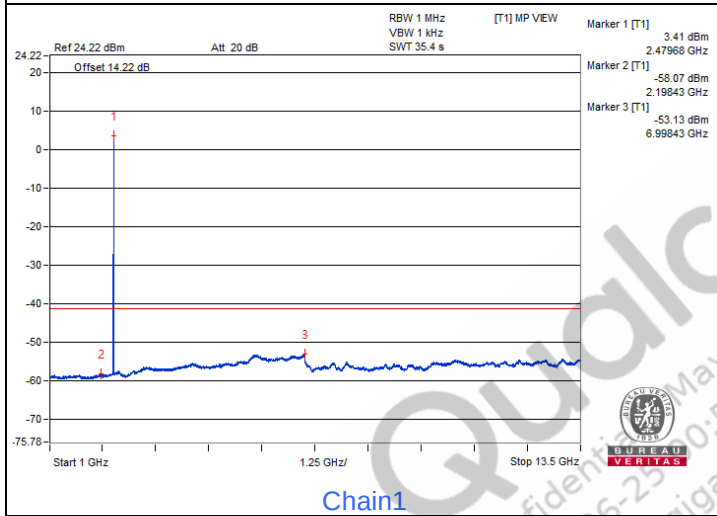
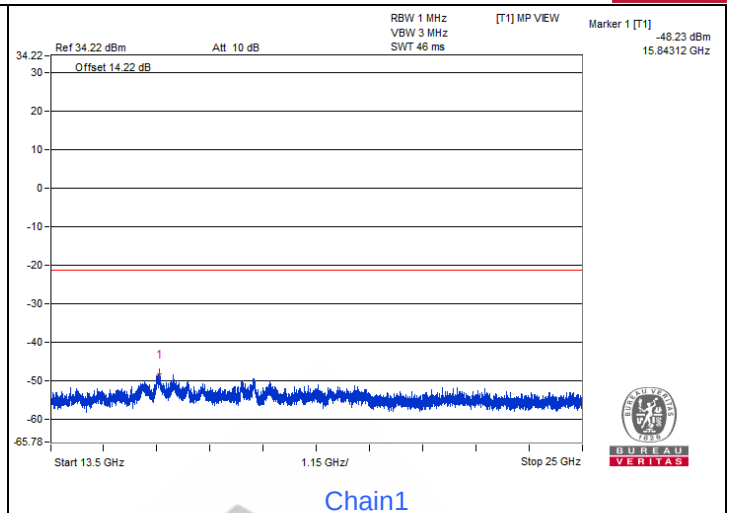
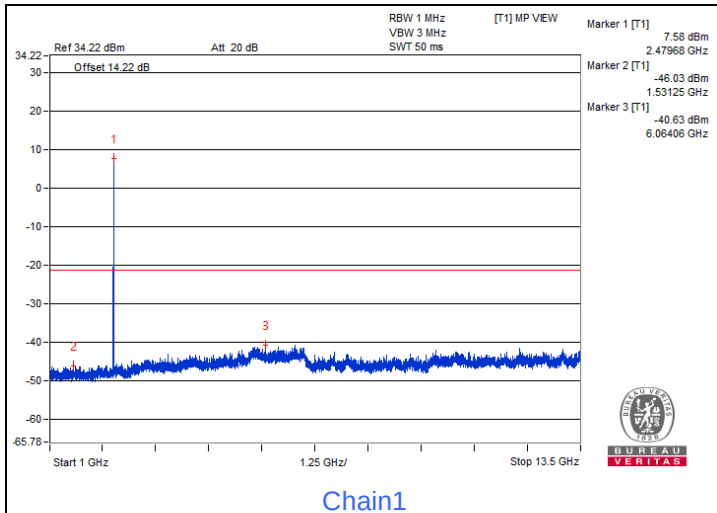
Conducted spurious emission table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2342.18	59.52 PK	74	-14.48	-46	-48.08	8.17	-35.74
2	2328.12	48.1 AV	54	-5.9	-58.32	-58.36	8.17	-47.16

Remarks:

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



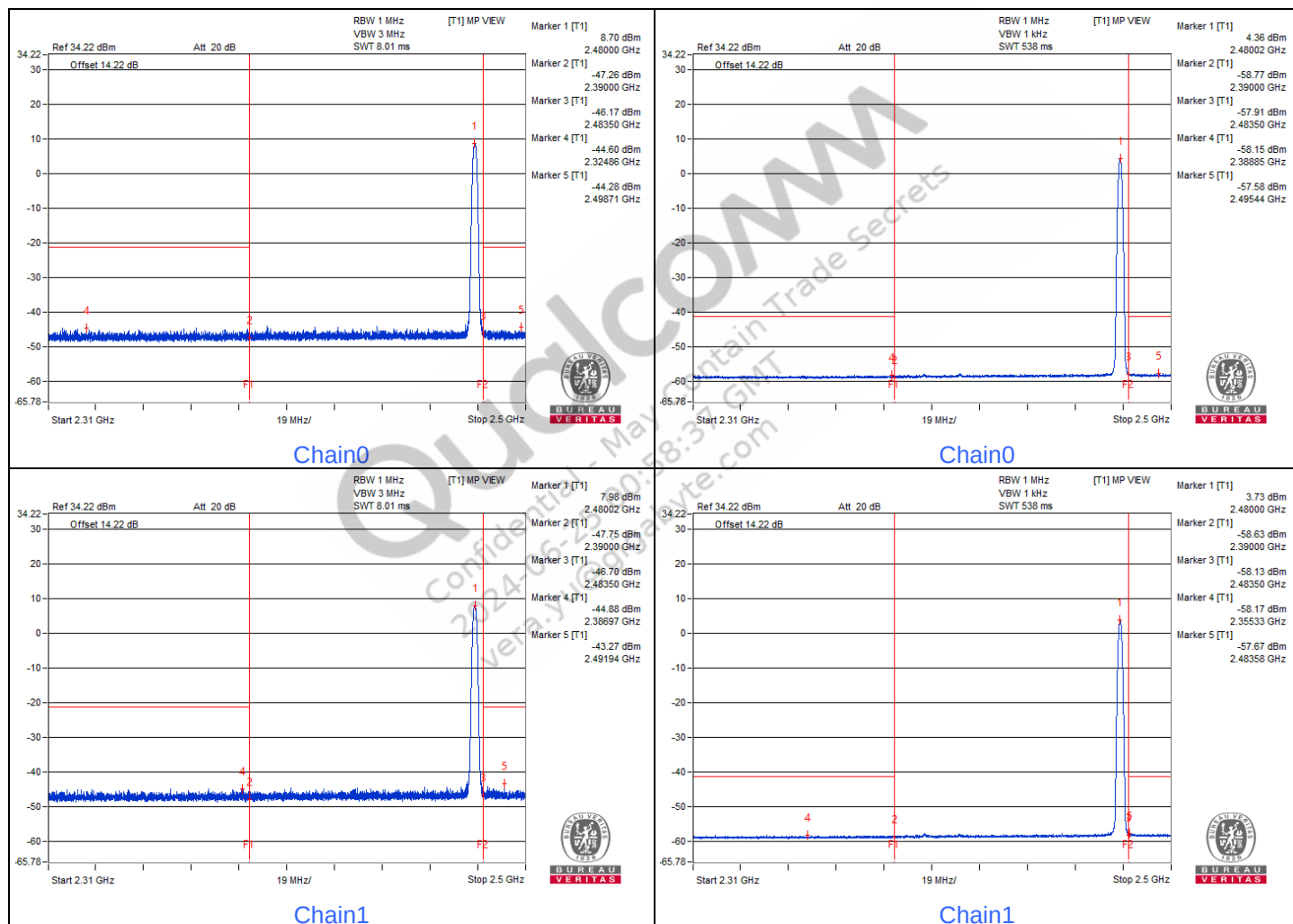


Bandedge table

No.	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Raw Value (dBm)		Correction Factor (dB)	EIRP Level (dBm)
					Chain0	Chain1		
1	2321.21	59.51 PK	74	-14.49	-44.82	-45.84	6.54	-35.75
2	2389.63	46.49 AV	54	-7.51	-58.24	-58.41	6.54	-48.77

Remarks:

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



Mode B

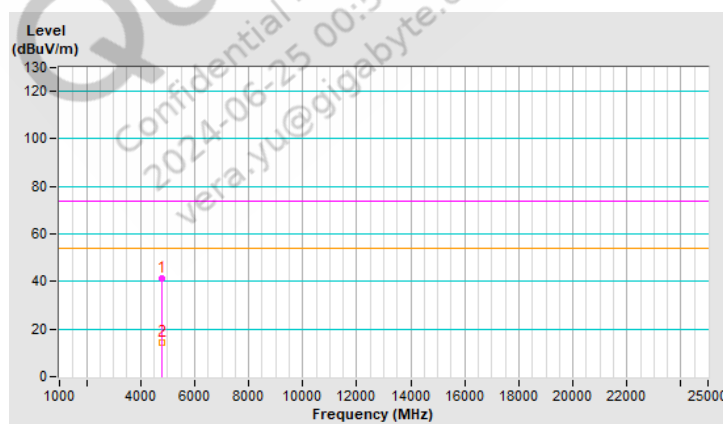
1TX

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 = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% 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	41.2 PK	74.0	-32.8	1.44 H	327	39.8	1.4
2	4804.00	14.1 AV	54.0	-39.9	1.44 H	327	12.7	1.4

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(4.4 \text{ ms} / 100 \text{ ms}) = -27.1 \text{ dB}$

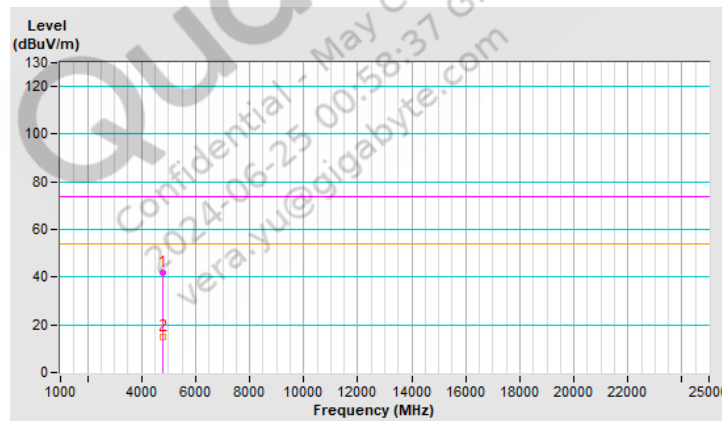


RF Mode	BT GFSK	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	41.8 PK	74.0	-32.2	1.67 V	134	40.4	1.4
2	4804.00	14.7 AV	54.0	-39.3	1.67 V	134	13.3	1.4

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(4.4 \text{ ms} / 100 \text{ ms}) = -27.1 \text{ dB}$

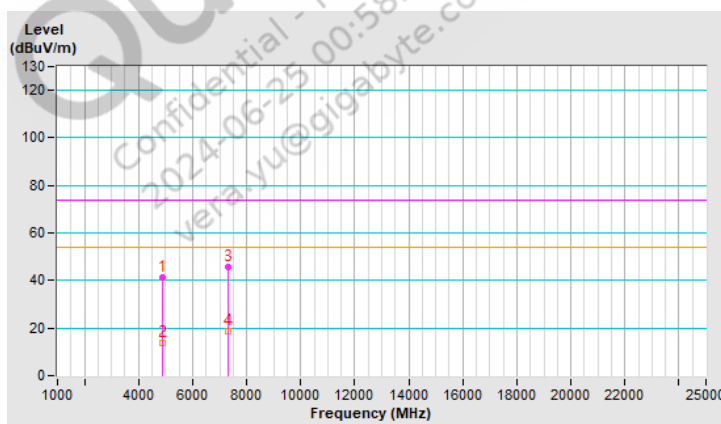


RF Mode	BT GFSK	Channel	CH 39 : 2441 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	41.1 PK	74.0	-32.9	1.39 H	317	39.8	1.3
2	4882.00	14.0 AV	54.0	-40.0	1.39 H	317	12.7	1.3
3	7323.00	45.7 PK	74.0	-28.3	1.77 H	152	38.7	7.0
4	7323.00	18.6 AV	54.0	-35.4	1.77 H	152	11.6	7.0

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(4.4 \text{ ms} / 100 \text{ ms}) = -27.1 \text{ dB}$

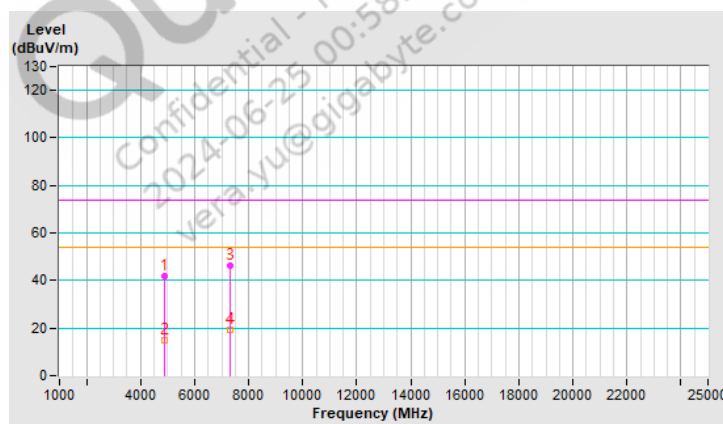


RF Mode	BT GFSK	Channel	CH 39 : 2441 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	41.7 PK	74.0	-32.3	1.69 V	141	40.4	1.3
2	4882.00	14.6 AV	54.0	-39.4	1.69 V	141	13.3	1.3
3	7323.00	46.3 PK	74.0	-27.7	1.92 V	283	39.3	7.0
4	7323.00	19.2 AV	54.0	-34.8	1.92 V	283	12.2	7.0

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(4.4 \text{ ms} / 100 \text{ ms}) = -27.1 \text{ dB}$

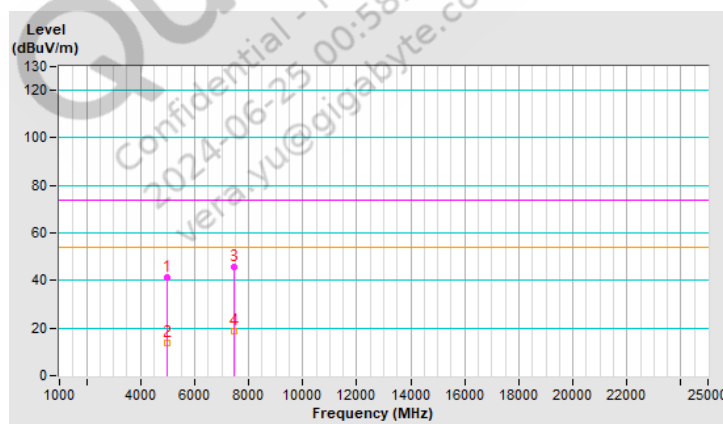


RF Mode	BT GFSK	Channel	CH 78 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	1.43 H	320	39.7	1.4
2	4960.00	14.0 AV	54.0	-40.0	1.43 H	320	12.6	1.4
3	7440.00	45.6 PK	74.0	-28.4	1.77 H	168	38.2	7.4
4	7440.00	18.5 AV	54.0	-35.5	1.77 H	168	11.1	7.4

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(4.4 \text{ ms} / 100 \text{ ms}) = -27.1 \text{ dB}$

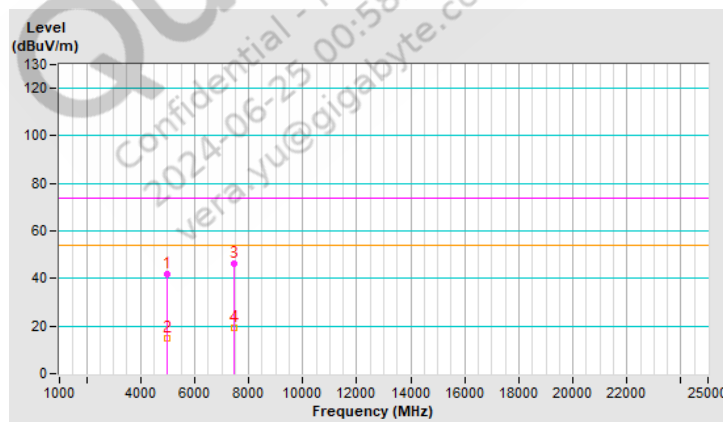


RF Mode	BT GFSK	Channel	CH 78 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	42.0 PK	74.0	-32.0	1.65 V	130	40.6	1.4
2	4960.00	14.9 AV	54.0	-39.1	1.65 V	130	13.5	1.4
3	7440.00	46.4 PK	74.0	-27.6	1.97 V	280	39.0	7.4
4	7440.00	19.3 AV	54.0	-34.7	1.97 V	280	11.9	7.4

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(4.4 \text{ ms} / 100 \text{ ms}) = -27.1 \text{ dB}$

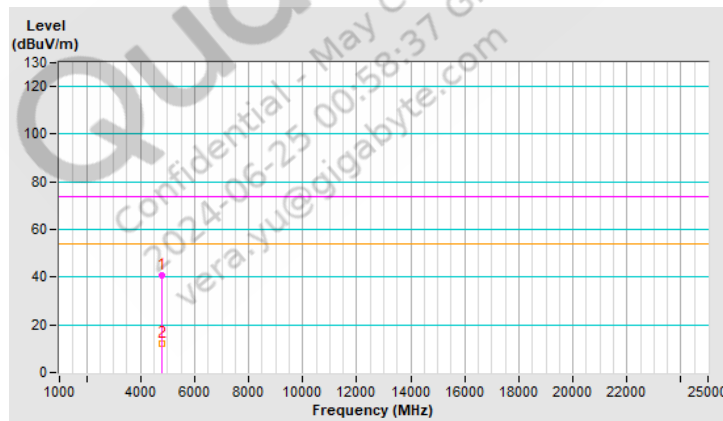


RF Mode	BT 8DPSK	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	40.7 PK	74.0	-33.3	1.40 H	329	39.3	1.4
2	4804.00	12.3 AV	54.0	-41.7	1.40 H	329	10.9	1.4

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.8 \text{ ms} / 100 \text{ ms}) = -28.4 \text{ dB}$

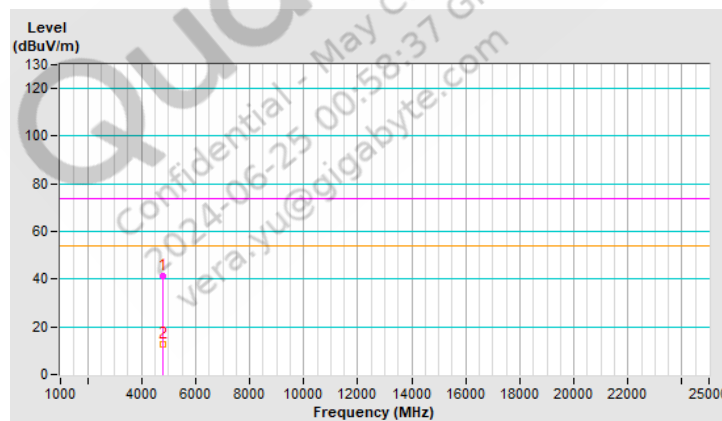


RF Mode	BT 8DPSK	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	41.3 PK	74.0	-32.7	1.67 V	146	39.9	1.4
2	4804.00	12.9 AV	54.0	-41.1	1.67 V	146	11.5	1.4

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.8 \text{ ms} / 100 \text{ ms}) = -28.4 \text{ dB}$

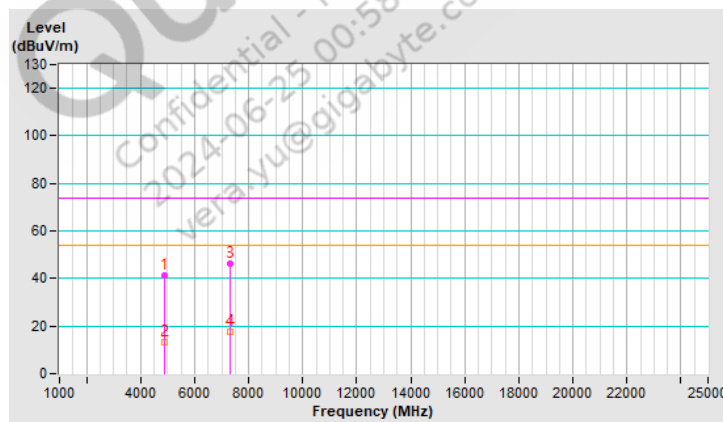


RF Mode	BT 8DPSK	Channel	CH 39 : 2441 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	41.4 PK	74.0	-32.6	1.33 H	310	40.1	1.3
2	4882.00	13.0 AV	54.0	-41.0	1.33 H	310	11.7	1.3
3	7323.00	46.2 PK	74.0	-27.8	1.81 H	167	39.2	7.0
4	7323.00	17.8 AV	54.0	-36.2	1.81 H	167	10.8	7.0

Remarks:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- Margin value = Emission Level – Limit value
- The other emission levels were very low against the limit.
- The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.8 \text{ ms} / 100 \text{ ms}) = -28.4 \text{ dB}$

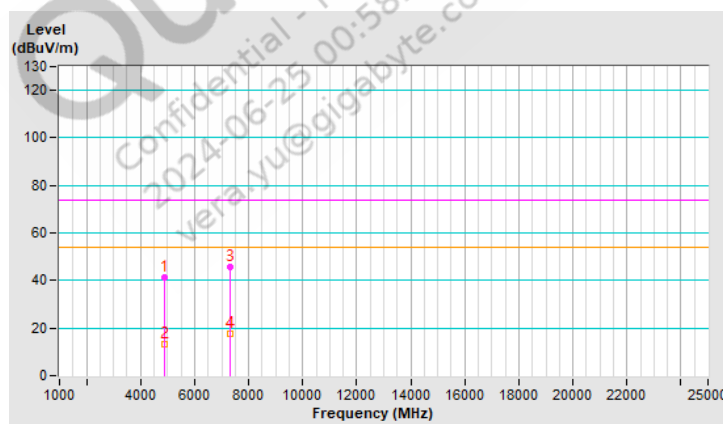


RF Mode	BT 8DPSK	Channel	CH 39 : 2441 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	41.5 PK	74.0	-32.5	1.66 V	152	40.2	1.3
2	4882.00	13.1 AV	54.0	-40.9	1.66 V	152	11.8	1.3
3	7323.00	45.9 PK	74.0	-28.1	1.93 V	268	38.9	7.0
4	7323.00	17.5 AV	54.0	-36.5	1.93 V	268	10.5	7.0

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.8 \text{ ms} / 100 \text{ ms}) = -28.4 \text{ dB}$

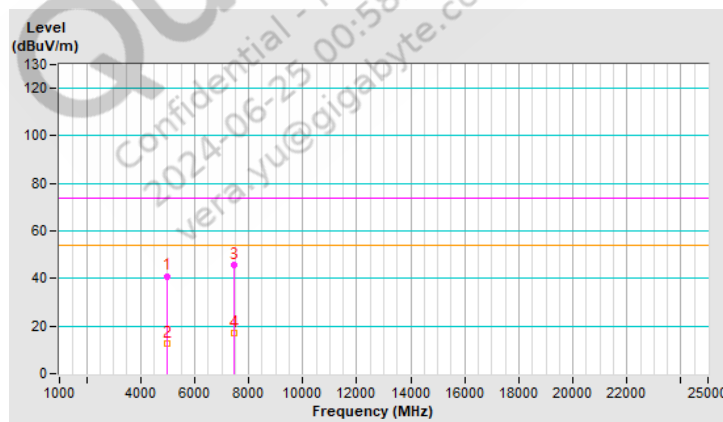


RF Mode	BT 8DPSK	Channel	CH 78 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	1.43 H	320	39.6	1.4
2	4960.00	12.6 AV	54.0	-41.4	1.43 H	320	11.2	1.4
3	7440.00	45.5 PK	74.0	-28.5	1.73 H	146	38.1	7.4
4	7440.00	17.1 AV	54.0	-36.9	1.73 H	146	9.7	7.4

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.8 \text{ ms} / 100 \text{ ms}) = -28.4 \text{ dB}$

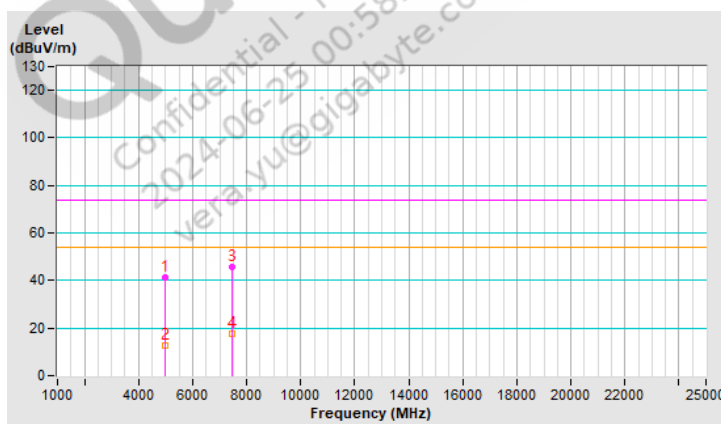


RF Mode	BT 8DPSK	Channel	CH 78 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	41.3 PK	74.0	-32.7	1.63 V	132	39.9	1.4
2	4960.00	12.9 AV	54.0	-41.1	1.63 V	132	11.5	1.4
3	7440.00	45.9 PK	74.0	-28.1	1.89 V	270	38.5	7.4
4	7440.00	17.5 AV	54.0	-36.5	1.89 V	270	10.1	7.4

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.8 \text{ ms} / 100 \text{ ms}) = -28.4 \text{ dB}$



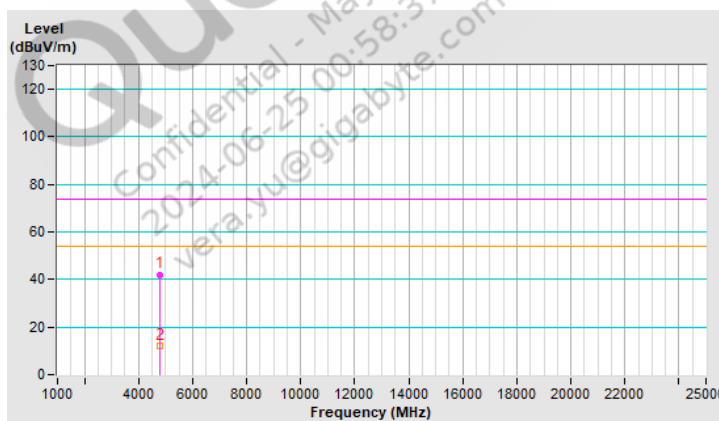
2TX

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, 60 Hz	Environmental Conditions	25°C, 67% 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	42.1 PK	74.0	-31.9	1.40 H	305	40.7	1.4
2	4804.00	12.2 AV	54.0	-41.8	1.40 H	305	10.8	1.4

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.2 \text{ ms} / 100 \text{ ms}) = -29.9 \text{ dB}$

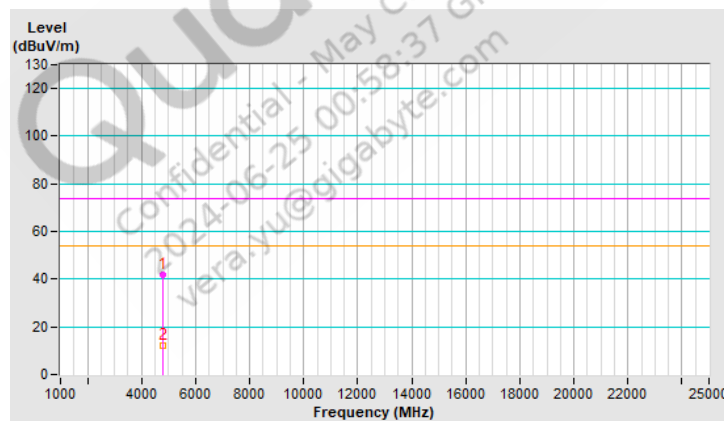


RF Mode	BT GFSK	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	41.8 PK	74.0	-32.2	1.71 V	168	40.4	1.4
2	4804.00	11.9 AV	54.0	-42.1	1.71 V	168	10.5	1.4

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.2 \text{ ms} / 100 \text{ ms}) = -29.9 \text{ dB}$

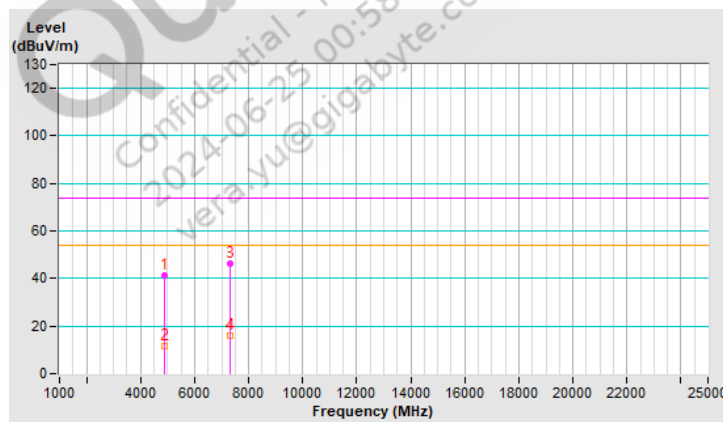


RF Mode	BT GFSK	Channel	CH 39 : 2441 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	1.34 H	316	40.2	1.3
2	4882.00	11.6 AV	54.0	-42.4	1.34 H	316	10.3	1.3
3	7323.00	46.1 PK	74.0	-27.9	1.81 H	144	39.1	7.0
4	7323.00	16.2 AV	54.0	-37.8	1.81 H	144	9.2	7.0

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.2 \text{ ms} / 100 \text{ ms}) = -29.9 \text{ dB}$

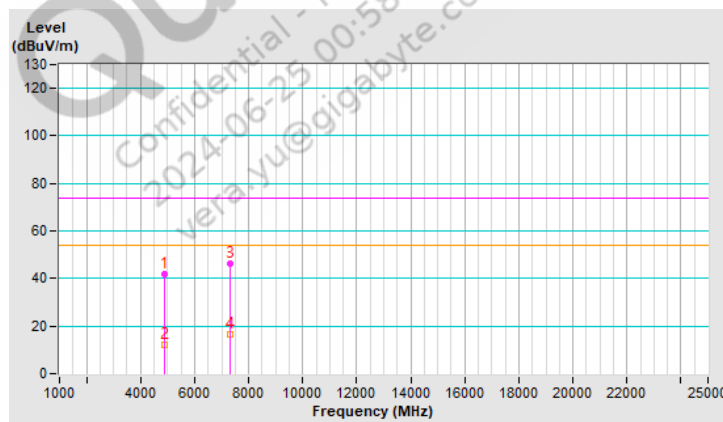


RF Mode	BT GFSK	Channel	CH 39 : 2441 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	1.65 V	130	40.6	1.3
2	4882.00	12.0 AV	54.0	-42.0	1.65 V	130	10.7	1.3
3	7323.00	46.4 PK	74.0	-27.6	1.88 V	293	39.4	7.0
4	7323.00	16.5 AV	54.0	-37.5	1.88 V	293	9.5	7.0

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.2 \text{ ms} / 100 \text{ ms}) = -29.9 \text{ dB}$

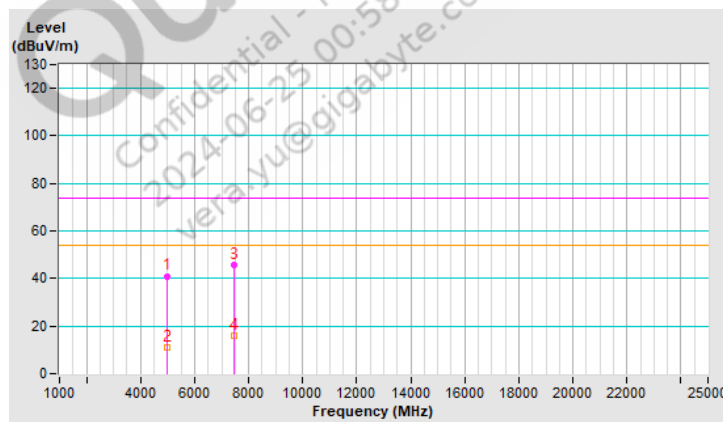


RF Mode	BT GFSK	Channel	CH 78 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	1.29 H	322	39.6	1.4
2	4960.00	11.1 AV	54.0	-42.9	1.29 H	322	9.7	1.4
3	7440.00	45.6 PK	74.0	-28.4	1.78 H	163	38.2	7.4
4	7440.00	15.7 AV	54.0	-38.3	1.78 H	163	8.3	7.4

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.2 \text{ ms} / 100 \text{ ms}) = -29.9 \text{ dB}$

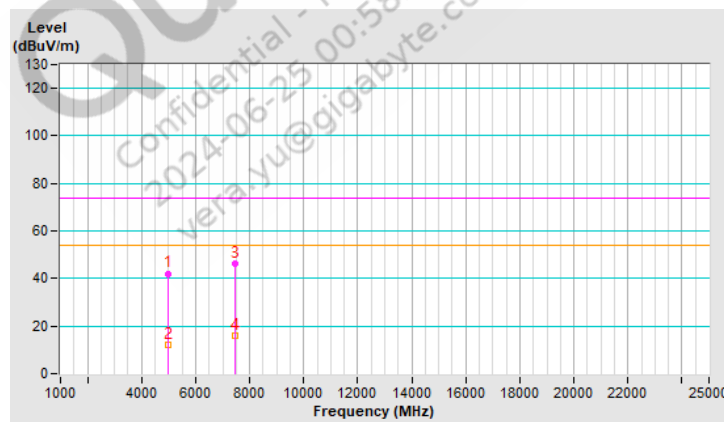


RF Mode	BT GFSK	Channel	CH 78 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	42.1 PK	74.0	-31.9	1.66 V	156	40.7	1.4
2	4960.00	12.2 AV	54.0	-41.8	1.66 V	156	10.8	1.4
3	7440.00	46.0 PK	74.0	-28.0	1.90 V	262	38.6	7.4
4	7440.00	16.1 AV	54.0	-37.9	1.90 V	262	8.7	7.4

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.2 \text{ ms} / 100 \text{ ms}) = -29.9 \text{ dB}$

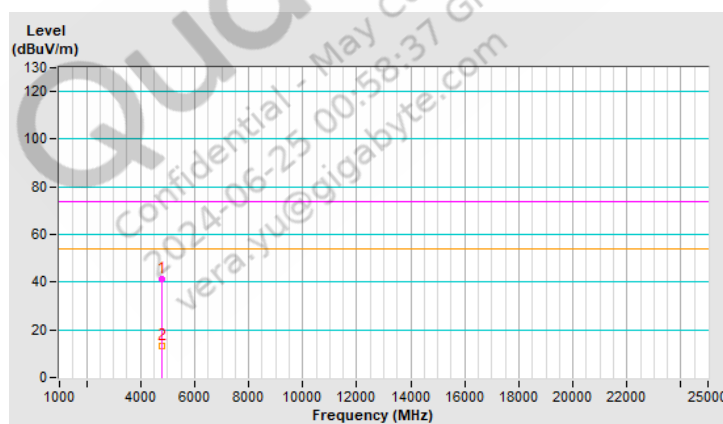


RF Mode	BT 8DPSK	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	41.5 PK	74.0	-32.5	1.32 H	319	40.1	1.4
2	4804.00	13.1 AV	54.0	-40.9	1.32 H	319	11.7	1.4

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.8 \text{ ms} / 100 \text{ ms}) = -28.4 \text{ dB}$

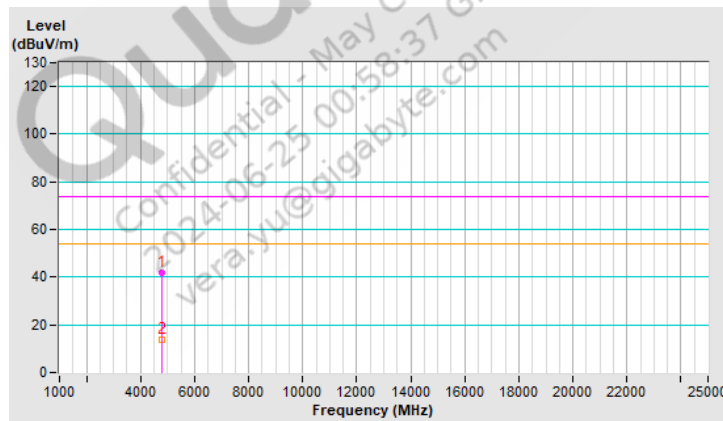


RF Mode	BT 8DPSK	Channel	CH 0 : 2402 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	1.64 V	146	40.5	1.4
2	4804.00	13.5 AV	54.0	-40.5	1.64 V	146	12.1	1.4

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.8 \text{ ms} / 100 \text{ ms}) = -28.4 \text{ dB}$

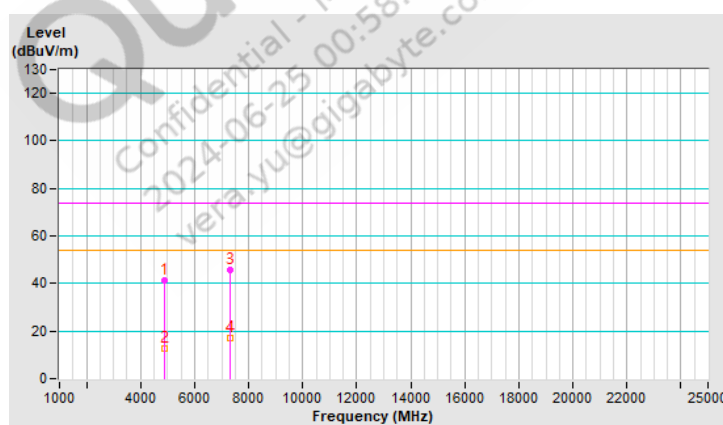


RF Mode	BT 8DPSK	Channel	CH 39 : 2441 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	297	40.0	1.3
2	4882.00	12.9 AV	54.0	-41.1	1.34 H	297	11.6	1.3
3	7323.00	45.5 PK	74.0	-28.5	1.83 H	160	38.5	7.0
4	7323.00	17.1 AV	54.0	-36.9	1.83 H	160	10.1	7.0

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.8 \text{ ms} / 100 \text{ ms}) = -28.4 \text{ dB}$

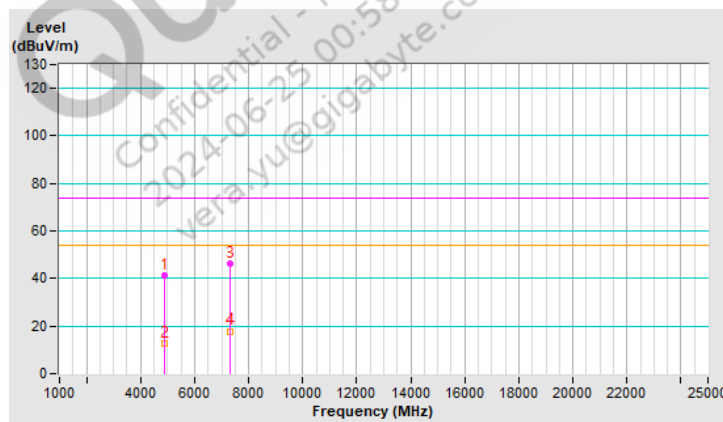


RF Mode	BT 8DPSK	Channel	CH 39 : 2441 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	41.3 PK	74.0	-32.7	1.64 V	145	40.0	1.3
2	4882.00	12.9 AV	54.0	-41.1	1.64 V	145	11.6	1.3
3	7323.00	46.3 PK	74.0	-27.7	1.96 V	285	39.3	7.0
4	7323.00	17.9 AV	54.0	-36.1	1.96 V	285	10.9	7.0

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.8 \text{ ms} / 100 \text{ ms}) = -28.4 \text{ dB}$

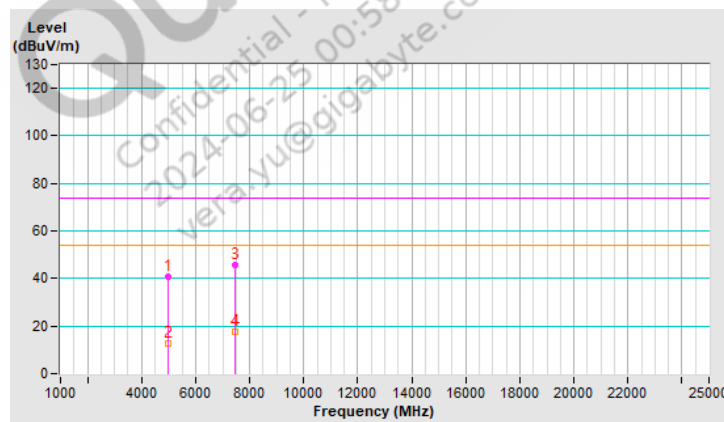


RF Mode	BT 8DPSK	Channel	CH 78 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	40.8 PK	74.0	-33.2	1.35 H	305	39.4	1.4
2	4960.00	12.4 AV	54.0	-41.6	1.35 H	305	11.0	1.4
3	7440.00	45.8 PK	74.0	-28.2	1.80 H	164	38.4	7.4
4	7440.00	17.4 AV	54.0	-36.6	1.80 H	164	10.0	7.4

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.8 \text{ ms} / 100 \text{ ms}) = -28.4 \text{ dB}$

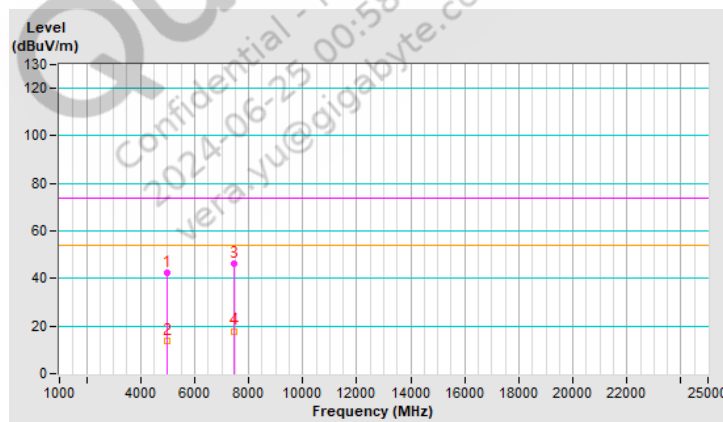


RF Mode	BT 8DPSK	Channel	CH 78 : 2480 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 3 MHz
Input Power (System)	120 Vac, 60 Hz	Environmental Conditions	25°C, 67% RH
Tested By	Louis Yang		

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	42.3 PK	74.0	-31.7	1.66 V	143	40.9	1.4
2	4960.00	13.9 AV	54.0	-40.1	1.66 V	143	12.5	1.4
3	7440.00	46.3 PK	74.0	-27.7	1.90 V	264	38.9	7.4
4	7440.00	17.9 AV	54.0	-36.1	1.90 V	264	10.5	7.4

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.
5. The average value of fundamental and harmonic frequency is: Average = Peak value + 20 log(Duty cycle) Where the duty cycle correction factor is calculated from following formula:
 $20 \log(\text{Duty cycle}) = 20 \log(3.8 \text{ ms} / 100 \text{ ms}) = -28.4 \text{ dB}$



8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

Qualcomm
Confidential - May Contain Trade Secrets
2024-06-25 00:58:37 GMT
vera.yu@gigabyte.com

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 ---

Qualcomm
Confidential - May Contain Trade Secrets
2024-06-25 00:58:37 GMT
vera.yu@gigabyte.com