FCC Test Report

Report No.: RF200319D01

FCC ID: QE9Q35

Test Model: Q35

Received Date: Mar. 19, 2020

Test Date: Mar. 26 to Jun. 20, 2020

Issued Date: Jun. 29, 2020

Applicant: Quuppa Oy

Address: Keilaranta 1 2nd floor 02150 Espoo, Finland

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories

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FCC Registration / Designation Number: 198487 / TW2021

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Release Control Record

Issue No.	Description	Date Issued
RF200319D01	Original release.	Jun. 29, 2020

1 Certificate of Conformity

Product: Locator

Brand: Quuppa

Test Model: Q35

Sample Status: Engineering sample

Applicant: Quuppa Oy

Test Date: Mar. 26 to Jun. 20, 2020

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10: 2013

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.

Prepared by : Annie Chang, **Date:** Jun. 29, 2020

Annie Chang / Senior Specialist

Approved by : Rex. Lai, **Date:** Jun. 29, 2020

Rex Lai / Associate Technical Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (SECTION 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit. Minimum passing margin is -8.12dB at 0.64219MHz.
15.205 & 209 & 15.247(d)	Radiated Emissions & Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -4.07dB at 2483.50MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	No antenna connector is used.

Note:
1. For 2.4GHz band compliance with rule 15.247(d) of the band-edge items, the test plots were recorded in Annex A.
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:

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	3.00 dB
Conducted Emissions	9kHz ~ 40GHz	2.63 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	2.61 dB
	30MHz ~ 1GHz	5.43 dB
Radiated Emissions above 1 GHz	Above 1GHz	5.14 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Locator	
Brand	Quuppa	
Test Model	Q35	
Status of EUT	Engineering Sample	
Nominal Voltage	DC 5V from USB port or DC 48V from PoE	
Modulation Type	GFSK	
Transfer Rate	Positioning-Part 1	1Mbps
	Communication-Part 2	1Mbps & 2Mbps
	Communication-Part 3	1Mbps & 2Mbps
Operating Frequency	Positioning-Part 1	2401 ~ 2481MHz
	Communication-Part 2	2402 ~ 2480MHz
	Communication-Part 3	2402 ~ 2480MHz
Number of Channel	Positioning-Part 1	81
	Communication-Part 2	40
	Communication-Part 3	40
Output Power	Positioning-Part 1	3.184mW
	Communication-Part 2	1.117mW
	Communication-Part 3	2.818mW
Antenna Type	Positioning-Part 1	Integrated printed patch (PCB) antenna with 0dBi gain
	Communication-Part 2	2.4 GHz SMT MID Chip antenna with 0dBi gain
	Communication-Part 3	Integrated printed patch (PCB) antenna with 0dBi gain
Antenna Connector	N/A	
Accessory Device	N/A	
Data Cable Supplied	N/A	

Note:

1. The EUT was pre-tested with the following modes:
   - ✧ EUT Operating + power from PoE Adapter
   - ✧ EUT Operating + power from AC Adapter
   - ✧ EUT Operating + power from Notebook

   The worst emission level was found when the EUT tested under **EUT Operating + power from AC Adapter.**

2. Positioning and Communication modes cannot transmit simultaneously.

3. The power setting are list as below:

Modulation Mode	Frequency (MHz)	Power Setting	Frequency (MHz)	Power Setting	Frequency (MHz)	Power Setting
Positioning-Part 1	2401	1	2441	2	2481	1
Communication-Part 2 (1Mbps)	2402	6	2440	6	2480	6
Communication-Part 2 (2Mbps)	2402	6	2440	6	2480	6
Communication-Part 3 (1Mbps)	2402	3	2440	3	2480	3
Communication-Part 3 (2Mbps)	2402	3	2440	3	2480	3

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 Description of Test Modes

Positioning: 81 channels are provided to this EUT:

CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)	CHANNEL	FREQ. (MHz)
0	2401	21	2422	41	2442	61	2462
1	2402	22	2423	42	2443	62	2463
2	2403	23	2424	43	2444	63	2464
3	2404	24	2425	44	2445	64	2465
4	2405	25	2426	45	2446	65	2466
5	2406	26	2427	46	2447	66	2467
6	2407	27	2428	47	2448	67	2468
7	2408	28	2429	48	2449	68	2469
8	2409	29	2430	49	2450	69	2470
9	2410	30	2431	50	2451	70	2471
10	2411	31	2432	51	2452	71	2472
11	2412	32	2433	52	2453	72	2473
12	2413	33	2434	53	2454	73	2474
13	2414	34	2435	54	2455	74	2475
14	2415	35	2436	55	2456	75	2476
15	2416	36	2437	56	2457	76	2477
16	2417	37	2438	57	2458	77	2478
17	2418	38	2439	58	2459	78	2479
18	2419	39	2440	59	2460	79	2480
19	2420	40	2441	60	2461	80	2481
20	2421						

Communication: 40 channels are provided to this EUT:

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE≥1G	RE<1G	PLC	APCM	
1A	√	√	√	√	Positioning-Part 1 (EUT Operating + power from AC Adapter)
1B	-	-	√	-	Positioning-Part 1 (EUT Operating + power from Notebook)
1C	-	-	√	-	Positioning-Part 1 (EUT Operating + power from PoE Adapter)
2A	√	√	√	√	Communication-Part 2 (EUT Operating + power from AC Adapter)
2B	-	-	√	-	Communication-Part 2 (EUT Operating + power from Notebook)
2C	-	-	√	-	Communication-Part 2 (EUT Operating + power from PoE Adapter)
2D	√	√	-	√	Communication-Part 3 (EUT Operating + power from AC Adapter)

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

NOTE: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.

Radiated Emission Test (Above 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
1A	0 to 80	0, 40, 80	GFSK	1
2A	0 to 39	0, 19, 39	GFSK	1, 2
2D	0 to 39	0, 19, 39	GFSK	1, 2

Radiated Emission Test (Below 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
1A	0 to 80	40	GFSK	1
2A	0 to 39	0	GFSK	1, 2
2D	0 to 39	0	GFSK	1, 2

Power Line Conducted Emission Test:

☒ 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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
1A, 1B, 1C	0 to 80	40	GFSK	1
2A, 2B, 2C	0 to 39	0	GFSK	1

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

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

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

EUT Configure Mode	Available Channel	Tested Channel	Modulation Type	Data Rate (Mbps)
1A	0 to 80	0, 40, 80	GFSK	1
2A	0 to 39	0, 19, 39	GFSK	1, 2
2D	0 to 39	0, 19, 39	GFSK	1, 2

Test Condition:

Applicable To	EUT Configure Mode	Environmental Conditions	Input Power	Tested By
RE≥1G	1A & 2A	25deg. C, 76%RH	120Vac, 60Hz (Adapter)	Dalen Dai
	2D	25deg. C, 76%RH	120Vac, 60Hz (Adapter)	Ian Chang
RE<1G	1A & 2A	25deg. C, 76%RH	120Vac, 60Hz (Adapter)	Dalen Dai
	2D	25deg. C, 72%RH	120Vac, 60Hz (Adapter)	Ian Chang
PLC	1A & 2A	25deg. C, 75%RH	120Vac, 60Hz (Adapter)	Starltaly Wu
	1B & 2B	25deg. C, 75%RH	120Vac, 60Hz (System)	Starltaly Wu
	1C & 2C	25deg. C, 75%RH	120Vac, 60Hz (PoE)	Starltaly Wu
APCM	1A & 2A & 2D	25deg. C, 76%RH	120Vac, 60Hz (Adapter)	Dalen Dai

3.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	AC Adapter	Apple	A1305	N/A	N/A	Provided by Lab
B.	PoE Adapter	Microsemi	PD-9001GR/AC	N/A	N/A	Provided by Lab
C.	Notebook PC	Lenove	81LG	PF1NF9V2	FCC DoC Approved	Provided by Lab
D.	Notebook PC	Lenove	81LG	PHNGBDP	FCC DoC Approved	Provided by Lab

Note:

1. All pow er cords of the above support units are non-shielded (1.8m).
2. Items B~C acted as communication partners to transfer data.

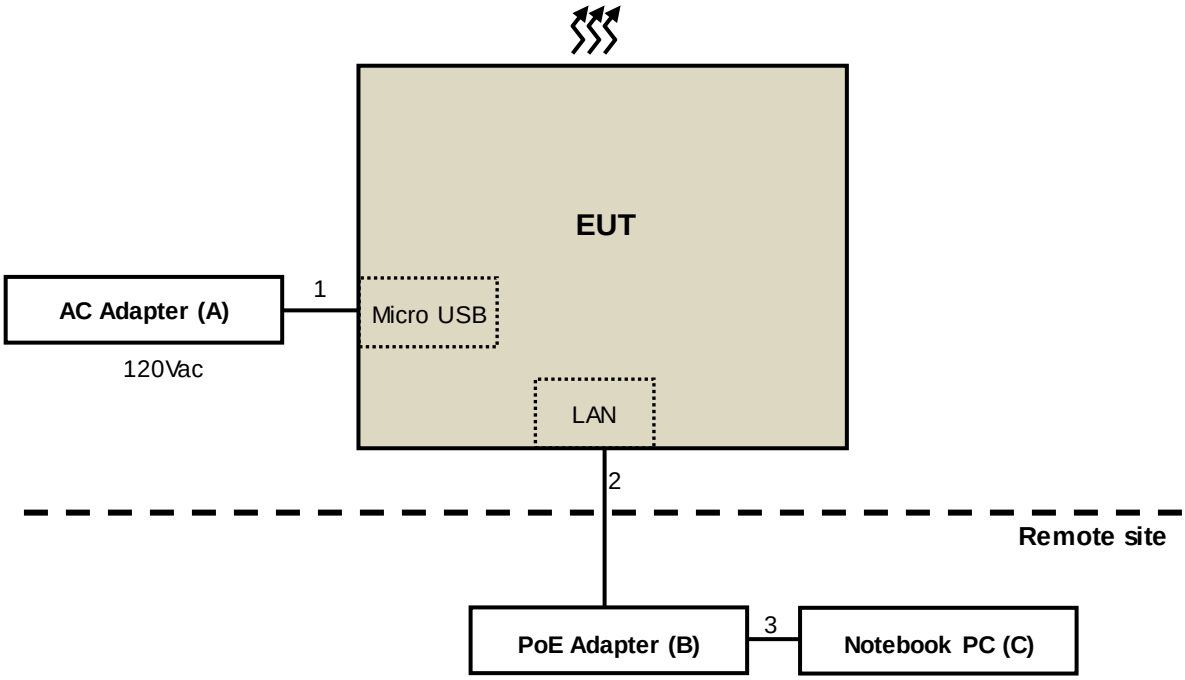
ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB cable	1	1	Y	0	Provided by Lab
2.	LAN cable	1	10	N	0	Provided by Lab (RJ45, Cat.5e)
3.	LAN cable	1	1	N	0	Provided by Lab (RJ45, Cat.5e)

Note: The core(s) is(are) originally attached to the cable(s).

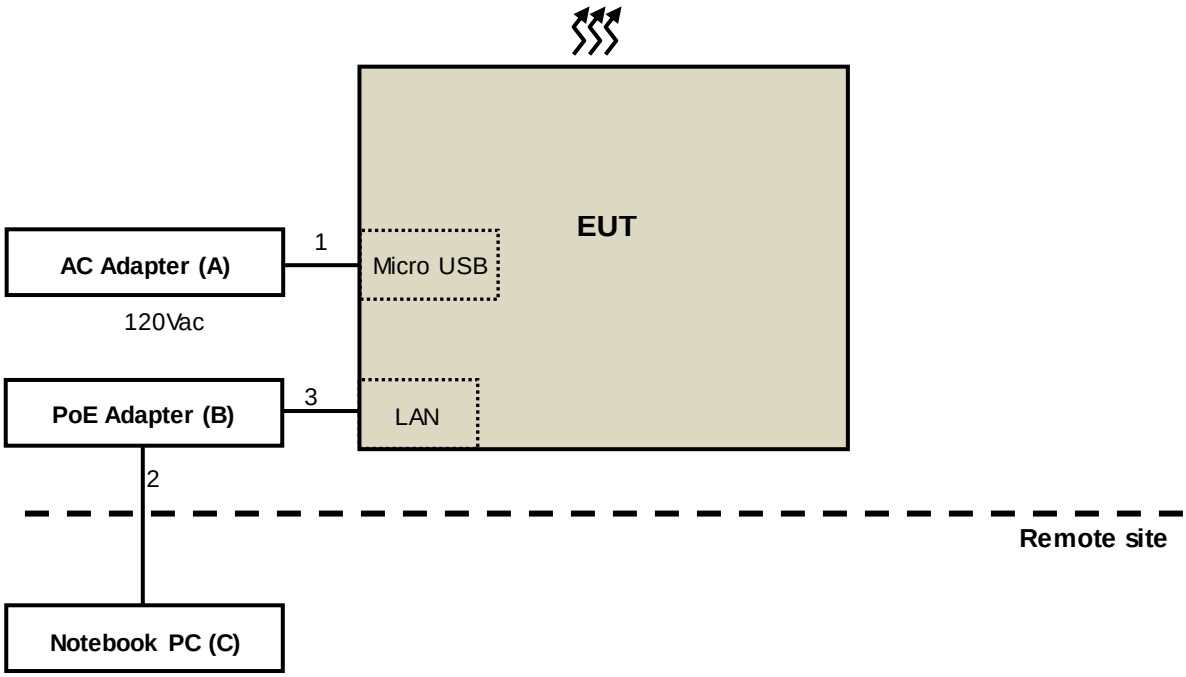
3.3.1 Configuration of System under Test

Mode 1A, 2A & 2D:

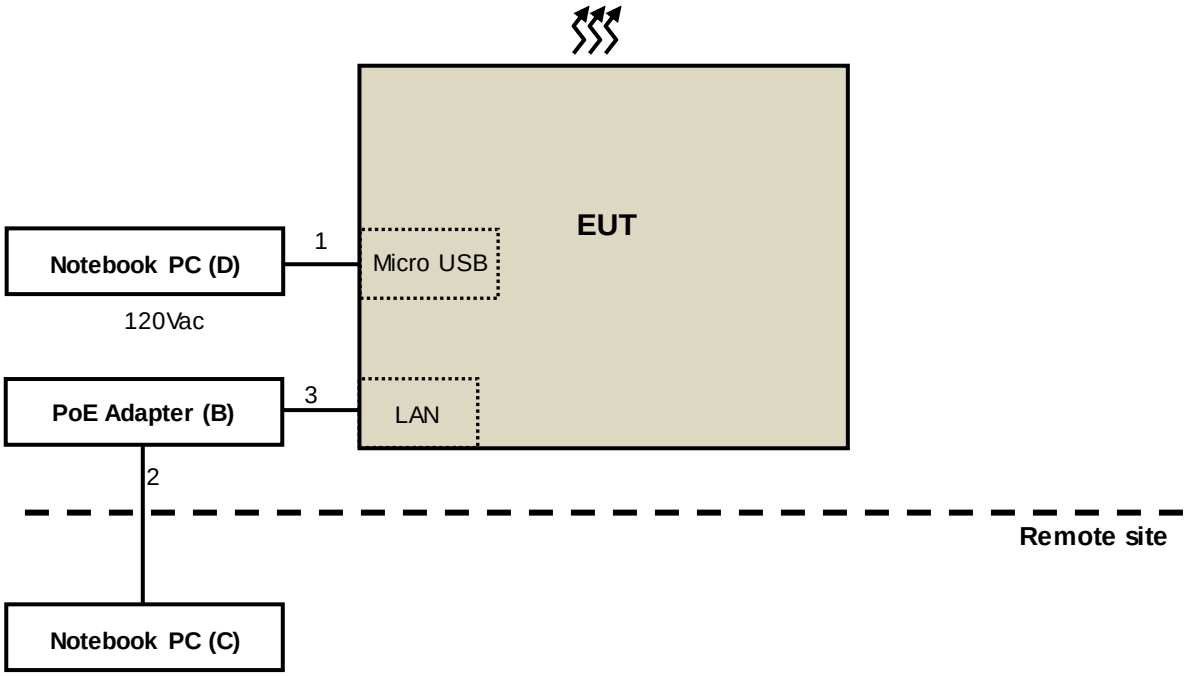
For Radiation Test:



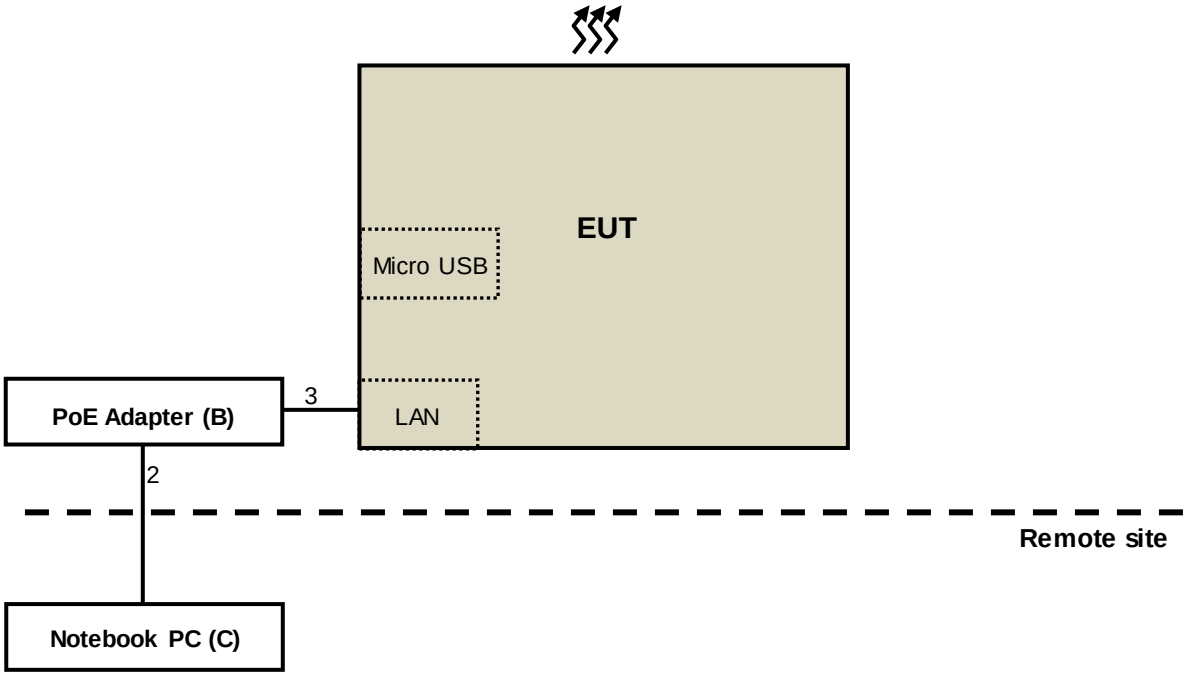
For Conduction Test:



Mode 1B & 2B:



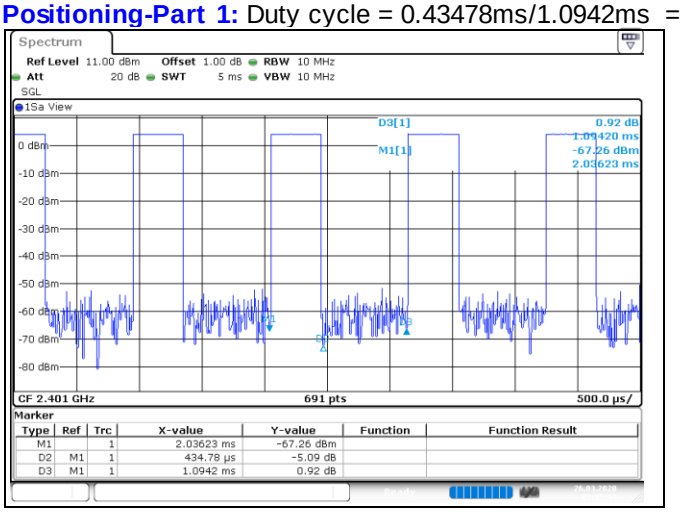
Mode 1C & 2C:



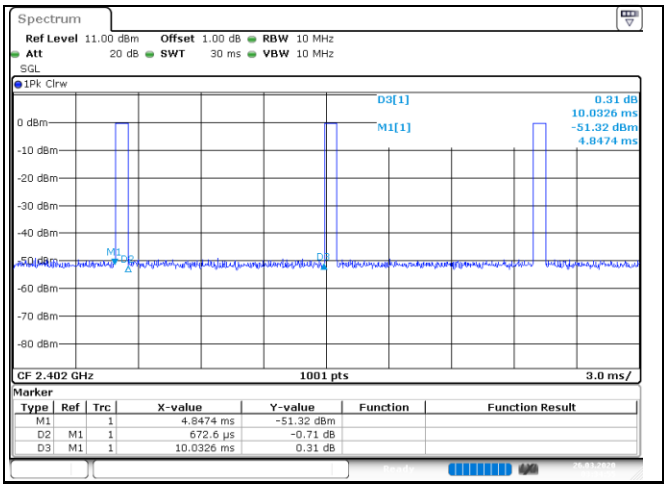
3.4 Duty Cycle of Test Signal

Duty cycle of test signal is < 98 %, duty factor shall be considered.

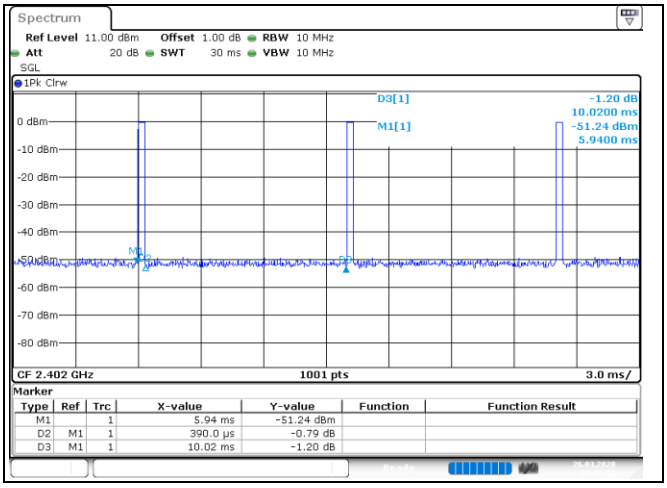
Positioning-Part 1: Duty cycle = 0.43478ms/1.0942ms = 0.397, Duty factor = 10 * log(1/0.397) = 4.01



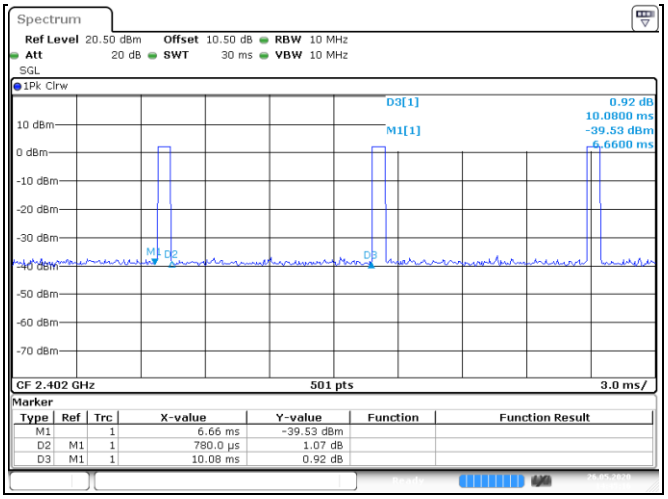
Communication-Part 2 (1Mbps): Duty cycle = 0.6726ms/10.0326ms = 0.067, Duty factor = 10 * log(1/0.067) = 11.74



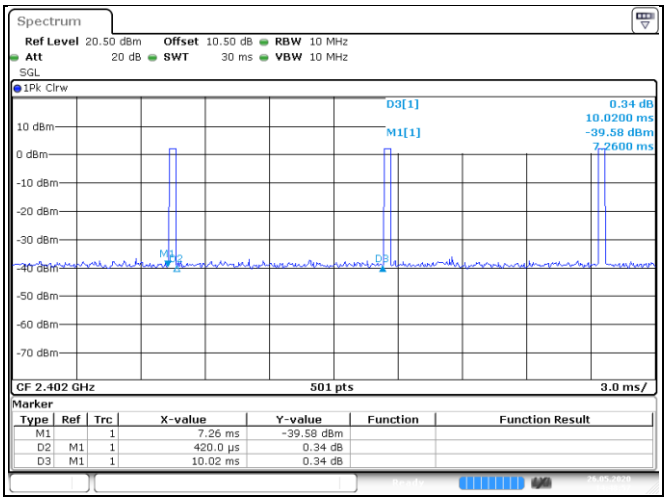
Communication-Part 2 (2Mbps): Duty cycle = 0.39ms/10.02ms = 0.039, Duty factor = 10 * log(1/0.039) = 14.09



Communication-Part 3 (1Mbps): Duty cycle = 0.78ms/10.08ms = 0.077, Duty factor = 10 * log(1/0.077) = 11.14



Communication-Part 3 (2Mbps): Duty cycle = 0.42ms/10.02ms = 0.042, Duty factor = 10 * log(1/0.042) = 13.77



3.5 General Description of Applied Standards and references

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards and references:

Test standard:
FCC Part 15, Subpart C (15.247)
ANSI C63.10-2013
All test items have been performed and recorded as per the above standards.

References Test Guidance:
KDB 558074 D01 15.247 Meas Guidance v05r02
All test items have been performed as a reference to the above KDB test guidance.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB 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

NOTE:

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 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.1.2 Test Instruments

For Mode 1A~1C & 2A~2C:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Feb. 19, 2020	Feb. 18, 2021
HP Preamplifier	8449B	3008A01201	Feb. 20, 2020	Feb. 19, 2021
MITEQ Preamplifier	AMF-6F-260400-33-8P	892164	Feb. 19, 2020	Feb. 18, 2021
Agilent TEST RECEIVER	N9038A	MY51210137	Jun. 6, 2019	Jun. 5, 2020
Schwarzbeck Antenna	VULB 9168	139	Nov. 7, 2019	Nov. 6, 2020
Schwarzbeck Antenna	VHBA 9123	480	Jun. 3, 2019	Jun. 2, 2021
Schwarzbeck Horn Antenna	BBHA-9170	212	Nov. 24, 2019	Nov. 23, 2020
Schwarzbeck Horn Antenna	BBHA 9120-D1	D130	Nov. 24, 2019	Nov. 23, 2020
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	Radiated_V7.6.15.9.5	NA	NA	NA
SUHNER RF cable With 4dB PAD	SF102	Cable-CH6-01	Jul. 10, 2019	Jul. 9, 2020
SUHNER RF cable With 3/4dB PAD	SF102	Cable-CH8-3.6m	Jul. 10, 2019	Jul. 9, 2020
KEYSIGHT MIMO Powermeasurement Test set	U2021XA	U2021XA-001	Jun. 16, 2019	Jun. 15, 2020
KEYSIGHT Spectrum Analyzer	N9030A	MY54490260	Jul. 30, 2019	Jul. 29, 2020
Loop Antenna EMCI	LPA600	270	Aug. 23, 2019	Aug. 22, 2021
EMCO Horn Antenna	3115	00028257	Nov. 24, 2019	Nov. 23, 2020
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA
ROHDE & SCHWARZ Spectrum Analyzer	FSV40	101042	Sep. 23, 2019	Sep. 22, 2020
Anritsu Power Sensor	MA2411B	0738404	Apr. 16, 2019	Apr. 15, 2020
Anritsu Power Meter	ML2495A	0842014	Apr. 16, 2019	Apr. 15, 2020

NOTE:
1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Chamber No. 6.
4. Tested Date: Mar. 26 to Apr. 14, 2020

For Mode 2D:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Feb. 19, 2020	Feb. 18, 2021
HP Preamplifier	8449B	3008A01201	Feb. 20, 2020	Feb. 19, 2021
MITEQ Preamplifier	AMF-6F-260400-33-8P	892164	Feb. 19, 2020	Feb. 18, 2021
Agilent TEST RECEIVER	N9038A	MY51210129	Mar. 18, 2020	Mar. 17, 2021
Schwarzbeck Antenna	VULB 9168	139	Nov. 7, 2019	Nov. 6, 2020
Schwarzbeck Antenna	VHBA 9123	480	Jun. 3, 2019	Jun. 2, 2021
Schwarzbeck Horn Antenna	BBHA-9170	212	Nov. 24, 2019	Nov. 23, 2020
Schwarzbeck Horn Antenna	BBHA 9120-D1	D130	Nov. 24, 2019	Nov. 23, 2020
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	Radiated_V7.6.15.9.5	NA	NA	NA
SUHNER RF cable With 4dB PAD	SF102	Cable-CH6-01	Jul. 10, 2019	Jul. 9, 2020
SUHNER RF cable With 3/4dB PAD	SF102	Cable-CH8-3.6m	Jul. 10, 2019	Jul. 9, 2020
KEYSIGHT MIMO Powermeasurement Test set	U2021XA	U2021XA-001	Jun. 16, 2019	Jun. 15, 2020
			Jun. 16, 2020	Jun. 15, 2021
KEYSIGHT Spectrum Analyzer	N9030A	MY54490260	Jul. 30, 2019	Jul. 29, 2020
Loop Antenna EMCI	LPA600	270	Aug. 23, 2019	Aug. 22, 2021
EMCO Horn Antenna	3115	00028257	Nov. 24, 2019	Nov. 23, 2020
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA
ROHDE & SCHWARZ Spectrum Analyzer	FSV40	101042	Sep. 23, 2019	Sep. 22, 2020
Anritsu Power Sensor	MA2411B	0738404	Apr. 13, 2020	Apr. 12, 2021
Anritsu Power Meter	ML2495A	0842014	Apr. 13, 2020	Apr. 12, 2021

NOTE:
1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Chamber No. 6.
4. Tested Date: May 26 to Jun. 20, 2020

4.1.3 Test Procedures

For Radiated emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. 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.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) 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.

f. The test-receiver system was set to peak and average detect 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.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.

2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.

3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz. (Positioning-Part 1: RBW = 1MHz, VBW = 2.4kHz; Communication-Part 2 (1Mbps): RBW = 1MHz, VBW = 2kHz; Communication-Part 2 (2Mbps): RBW = 1MHz, VBW = 3kHz; Communication-Part 3 (1Mbps): RBW = 1MHz, VBW = 2kHz; Communication-Part 3 (2Mbps): RBW = 1MHz, VBW = 3kHz)

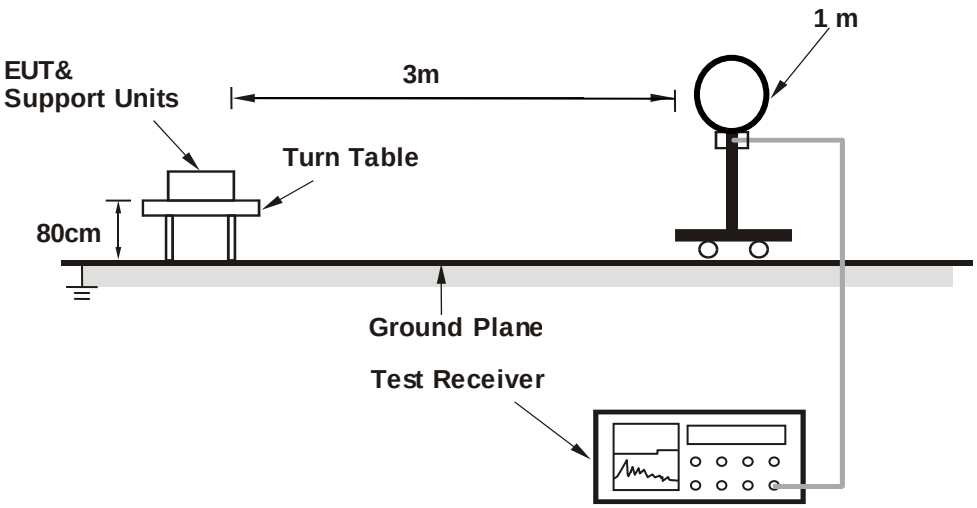
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

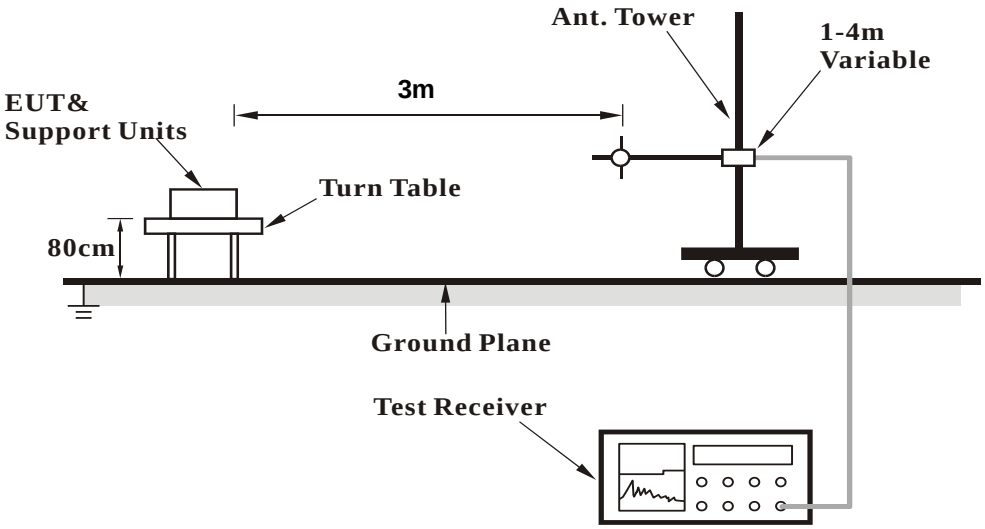
No deviation.

4.1.5 Test Setup

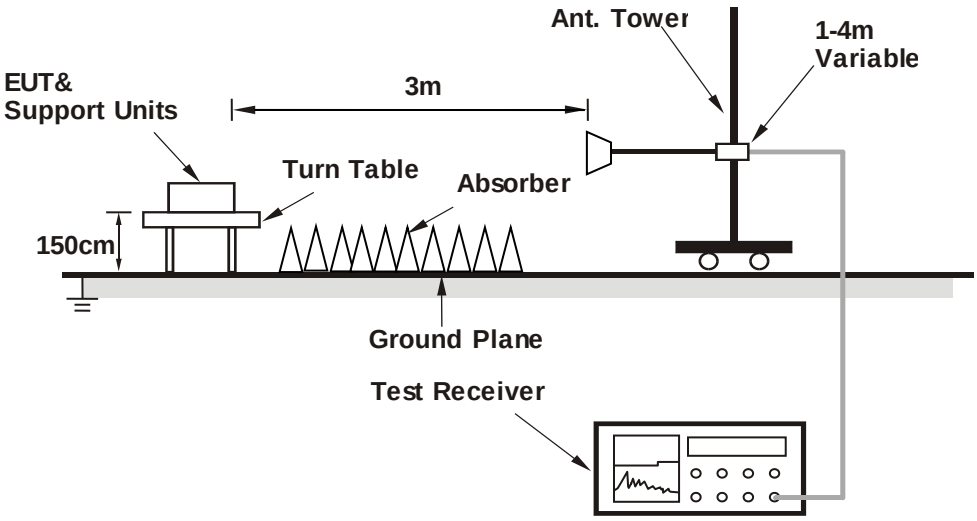
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

a. Connected the EUT with the AC Adapter which is placed on test table.
b. Set the EUT under transmission condition continuously at specific channel frequency continuously.

4.1.7 Test Results

Mode 1A:

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	51.00 PK	74.00	-23.00	3.49 H	132	49.69	1.31
2	2390.00	33.24 AV	54.00	-20.76	3.49 H	132	31.93	1.31
3	*2401.00	87.98 PK			3.49 H	132	86.63	1.35
4	*2401.00	87.31 AV			3.49 H	132	85.96	1.35
5	4802.00	50.49 PK	74.00	-23.51	2.53 H	266	41.72	8.77
6	4802.00	37.50 AV	54.00	-16.50	2.53 H	266	28.73	8.77
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	55.84 PK	74.00	-18.16	3.83 V	211	54.53	1.31
2	2390.00	33.82 AV	54.00	-20.18	3.83 V	211	32.51	1.31
3	*2401.00	90.52 PK			3.83 V	211	89.17	1.35
4	*2401.00	89.88 AV			3.83 V	211	88.53	1.35
5	4802.00	51.08 PK	74.00	-22.92	1.53 V	358	42.31	8.77
6	4802.00	38.66 AV	54.00	-15.34	1.53 V	358	29.89	8.77

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. " * ": Fundamental frequency.

CHANNEL	TX Channel 40	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*2441.00	96.16 PK			3.43 H	138	94.78	1.38
2	*2441.00	95.41 AV			3.43 H	138	94.03	1.38
3	4882.00	51.95 PK	74.00	-22.05	2.59 H	274	42.90	9.05
4	4882.00	38.95 AV	54.00	-15.05	2.59 H	274	29.90	9.05
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*2441.00	98.77 PK			3.86 V	217	97.39	1.38
2	*2441.00	98.25 AV			3.86 V	217	96.87	1.38
3	4882.00	53.70 PK	74.00	-20.30	1.73 V	352	44.65	9.05
4	4882.00	40.70 AV	54.00	-13.30	1.73 V	352	31.65	9.05

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. " * ": Fundamental frequency.

CHANNEL	TX Channel 80	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2481.00	88.71 PK			3.52 H	119	87.18	1.53
2	*2481.00	87.74 AV			3.52 H	119	86.21	1.53
3	2483.50	67.82 PK	74.00	-6.18	3.52 H	119	66.27	1.55
4	2483.50	35.47 AV	54.00	-18.53	3.52 H	119	33.92	1.55
5	4962.00	51.01 PK	74.00	-22.99	2.34 H	277	41.95	9.06
6	4962.00	38.01 AV	54.00	-15.99	2.34 H	277	28.95	9.06
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2481.00	91.36 PK			3.81 V	194	89.83	1.53
2	*2481.00	90.51 AV			3.81 V	194	88.98	1.53
3	**2483.50**	**69.93 PK**	**74.00**	**-4.07**	**3.81 V**	**194**	**68.38**	**1.55**
4	2483.50	37.87 AV	54.00	-16.13	3.81 V	194	36.32	1.55
5	4962.00	51.64 PK	74.00	-22.36	1.66 V	354	42.58	9.06
6	4962.00	38.64 AV	54.00	-15.36	1.66 V	354	29.58	9.06

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. " * ": Fundamental frequency.

Mode 2A:

GFSK (1Mbps)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	46.64 PK	74.00	-27.36	1.00 H	140	45.33	1.31
2	2390.00	33.48 AV	54.00	-20.52	1.00 H	140	32.17	1.31
3	*2402.00	94.73 PK			1.00 H	140	93.38	1.35
4	*2402.00	93.64 AV			1.00 H	140	92.29	1.35
5	4804.00	51.11 PK	74.00	-22.89	1.14 H	238	42.35	8.76
6	4804.00	37.32 AV	54.00	-16.68	1.14 H	238	28.56	8.76
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	46.92 PK	74.00	-27.08	1.02 V	85	45.61	1.31
2	2390.00	33.86 AV	54.00	-20.14	1.02 V	85	32.55	1.31
3	*2402.00	95.62 PK			1.02 V	85	94.27	1.35
4	*2402.00	94.51 AV			1.02 V	85	93.16	1.35
5	4804.00	50.69 PK	74.00	-23.31	1.37 V	53	41.93	8.76
6	4804.00	36.90 AV	54.00	-17.10	1.37 V	53	28.14	8.76

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. " * ": Fundamental frequency.

CHANNEL	TX Channel 19	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*2440.00	94.51 PK			1.00 H	157	93.13	1.38
2	*2440.00	93.44 AV			1.00 H	157	92.06	1.38
3	4880.00	50.98 PK	74.00	-23.02	1.12 H	243	41.94	9.04
4	4880.00	37.25 AV	54.00	-16.75	1.12 H	243	28.21	9.04
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	*2440.00	95.39 PK			1.04 V	94	94.01	1.38
2	*2440.00	94.26 AV			1.04 V	94	92.88	1.38
3	4880.00	50.43 PK	74.00	-23.57	1.46 V	47	41.39	9.04
4	4880.00	36.75 AV	54.00	-17.25	1.46 V	47	27.71	9.04

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. " * ": Fundamental frequency.

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	92.88 PK			1.00 H	152	91.36	1.52
2	*2480.00	91.64 AV			1.00 H	152	90.12	1.52
3	2483.50	48.52 PK	74.00	-25.48	1.00 H	152	46.97	1.55
4	2483.50	32.93 AV	54.00	-21.07	1.00 H	152	31.38	1.55
5	4960.00	49.89 PK	74.00	-24.11	1.15 H	239	40.82	9.07
6	4960.00	36.27 AV	54.00	-17.73	1.15 H	239	27.20	9.07
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	93.95 PK			1.01 V	271	92.43	1.52
2	*2480.00	92.78 AV			1.01 V	271	91.26	1.52
3	2483.50	49.31 PK	74.00	-24.69	1.01 V	271	47.76	1.55
4	2483.50	33.45 AV	54.00	-20.55	1.01 V	271	31.90	1.55
5	4960.00	50.22 PK	74.00	-23.78	1.41 V	51	41.15	9.07
6	4960.00	36.41 AV	54.00	-17.59	1.41 V	51	27.34	9.07

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. " * ": Fundamental frequency.

GFSK (2Mbps)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	45.96 PK	74.00	-28.04	1.48 H	151	44.65	1.31
2	2390.00	33.61 AV	54.00	-20.39	1.48 H	151	32.30	1.31
3	*2402.00	96.45 PK			1.48 H	151	95.10	1.35
4	*2402.00	93.74 AV			1.48 H	151	92.39	1.35
5	4804.00	51.37 PK	74.00	-22.63	1.25 H	253	42.61	8.76
6	4804.00	37.46 AV	54.00	-16.54	1.25 H	253	28.70	8.76
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	2390.00	45.36 PK	74.00	-28.64	1.03 V	78	44.05	1.31
2	2390.00	33.14 AV	54.00	-20.86	1.03 V	78	31.83	1.31
3	*2402.00	94.83 PK			1.03 V	78	93.48	1.35
4	*2402.00	92.09 AV			1.03 V	78	90.74	1.35
5	4804.00	50.77 PK	74.00	-23.23	1.36 V	51	42.01	8.76
6	4804.00	36.95 AV	54.00	-17.05	1.36 V	51	28.19	8.76

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. " * ": Fundamental frequency.

CHANNEL	TX Channel 19	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	95.98 PK			1.29 H	154	94.60	1.38
2	*2440.00	93.12 AV			1.29 H	154	91.74	1.38
3	4880.00	51.04 PK	74.00	-22.96	1.16 H	257	42.00	9.04
4	4880.00	37.28 AV	54.00	-16.72	1.16 H	257	28.24	9.04
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2440.00	94.59 PK			1.02 V	83	93.21	1.38
2	*2440.00	91.78 AV			1.02 V	83	90.40	1.38
3	4880.00	50.65 PK	74.00	-23.35	1.43 V	48	41.61	9.04
4	4880.00	36.81 AV	54.00	-17.19	1.43 V	48	27.77	9.04

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. " * ": Fundamental frequency.

CHANNEL	TX Channel 39	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	92.48 PK			1.49 H	214	90.96	1.52
2	*2480.00	89.67 AV			1.49 H	214	88.15	1.52
3	2483.50	46.68 PK	74.00	-27.32	1.49 H	214	45.13	1.55
4	2483.50	34.56 AV	54.00	-19.44	1.49 H	214	33.01	1.55
5	4960.00	50.93 PK	74.00	-23.07	1.11 H	262	41.86	9.07
6	4960.00	36.98 AV	54.00	-17.02	1.11 H	262	27.91	9.07
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2480.00	90.79 PK			1.01 V	80	89.27	1.52
2	*2480.00	88.03 AV			1.01 V	80	86.51	1.52
3	2483.50	46.33 PK	74.00	-27.67	1.01 V	80	44.78	1.55
4	2483.50	34.08 AV	54.00	-19.92	1.01 V	80	32.53	1.55
5	4960.00	50.52 PK	74.00	-23.48	1.39 V	52	41.45	9.07
6	4960.00	36.77 AV	54.00	-17.23	1.39 V	52	27.70	9.07

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. " * ": Fundamental frequency.

Mode 2D:

GFSK (1Mbps)

Channel	TX Channel 0	**Detector Function**	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**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	2390.00	45.37 PK	74.00	-28.63	3.85 H	115	44.06	1.31
2	2390.00	31.35 AV	54.00	-22.65	3.85 H	115	30.04	1.31
3	*2402.00	87.21 PK			3.85 H	115	85.86	1.35
4	*2402.00	85.68 AV			3.85 H	115	84.33	1.35
5	4804.00	49.02 PK	74.00	-24.98	1.66 H	284	40.26	8.76
6	4804.00	36.10 AV	54.00	-17.90	1.66 H	284	27.34	8.76
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	2390.00	45.40 PK	74.00	-28.60	3.10 V	16	44.09	1.31
2	2390.00	31.44 AV	54.00	-22.56	3.10 V	16	30.13	1.31
3	*2402.00	91.32 PK			3.10 V	16	89.97	1.35
4	*2402.00	89.29 AV			3.10 V	16	87.94	1.35
5	4804.00	50.78 PK	74.00	-23.22	1.50 V	173	42.02	8.76
6	4804.00	40.85 AV	54.00	-13.15	1.50 V	173	32.09	8.76

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. " * ": Fundamental frequency.

Channel	TX Channel 19	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

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	*2440.00	89.94 PK			3.84 H	119	88.56	1.38
2	*2440.00	86.61 AV			3.84 H	119	85.23	1.38
3	4880.00	49.59 PK	74.00	-24.41	1.47 H	128	40.55	9.04
4	4880.00	36.73 AV	54.00	-17.27	1.47 H	128	27.69	9.04
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	*2440.00	94.03 PK			3.06 V	18	92.65	1.38
2	*2440.00	93.08 AV			3.06 V	18	91.70	1.38
3	4880.00	51.69 PK	74.00	-22.31	1.51 V	180	42.65	9.04
4	4880.00	41.43 AV	54.00	-12.57	1.51 V	180	32.39	9.04

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. " * ": Fundamental frequency.

Channel	TX Channel 39	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	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	*2480.00	91.31 PK			3.89 H	120	89.79	1.52
2	*2480.00	90.16 AV			3.89 H	120	88.64	1.52
3	2483.50	55.78 PK	74.00	-18.22	3.89 H	120	54.23	1.55
4	2483.50	32.11 AV	54.00	-21.89	3.89 H	120	30.56	1.55
5	4960.00	49.62 PK	74.00	-24.38	1.55 H	284	40.55	9.07
6	4960.00	36.71 AV	54.00	-17.29	1.55 H	284	27.64	9.07
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	*2480.00	94.61 PK			3.25 V	17	93.09	1.52
2	*2480.00	93.55 AV			3.25 V	17	92.03	1.52
3	2483.50	59.27 PK	74.00	-14.73	3.25 V	17	57.72	1.55
4	2483.50	33.32 AV	54.00	-20.68	3.25 V	17	31.77	1.55
5	4960.00	51.81 PK	74.00	-22.19	1.53 V	200	42.74	9.07
6	4960.00	41.65 AV	54.00	-12.35	1.53 V	200	32.58	9.07

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. " * ": Fundamental frequency.

GFSK (2Mbps)

Channel	TX Channel 0	**Detector Function**	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

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	2390.00	45.27 PK	74.00	-28.73	3.89 H	121	43.96	1.31
2	2390.00	31.43 AV	54.00	-22.57	3.89 H	121	30.12	1.31
3	*2402.00	86.48 PK			3.89 H	121	85.13	1.35
4	*2402.00	83.71 AV			3.89 H	121	82.36	1.35
5	4804.00	49.02 PK	74.00	-24.98	1.66 H	288	40.26	8.76
6	4804.00	36.10 AV	54.00	-17.90	1.66 H	288	27.34	8.76
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	2390.00	45.60 PK	74.00	-28.40	3.11 V	17	44.29	1.31
2	2390.00	32.06 AV	54.00	-21.94	3.11 V	17	30.75	1.31
3	*2402.00	90.78 PK			3.11 V	17	89.43	1.35
4	*2402.00	88.06 AV			3.11 V	17	86.71	1.35
5	4804.00	50.91 PK	74.00	-23.09	2.64 V	132	42.15	8.76
6	4804.00	41.37 AV	54.00	-12.63	2.64 V	132	32.61	8.76

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. " * ": Fundamental frequency.

Channel	TX Channel 19	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

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	*2440.00	91.26 PK			3.84 H	116	89.88	1.38
2	*2440.00	88.03 AV			3.84 H	116	86.65	1.38
3	4880.00	49.24 PK	74.00	-24.76	1.24 H	157	40.20	9.04
4	4880.00	36.40 AV	54.00	-17.60	1.24 H	157	27.36	9.04
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	*2440.00	94.87 PK			3.33 V	10	93.49	1.38
2	*2440.00	92.02 AV			3.33 V	10	90.64	1.38
3	4880.00	51.40 PK	74.00	-22.60	2.34 V	152	42.36	9.04
4	4880.00	41.23 AV	54.00	-12.77	2.34 V	152	32.19	9.04

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. " * ": Fundamental frequency.

Channel	TX Channel 39	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	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	*2480.00	91.12 PK			3.86 H	118	89.60	1.52
2	*2480.00	88.05 AV			3.86 H	118	86.53	1.52
3	2483.50	56.17 PK	74.00	-17.83	2.86 H	118	54.62	1.55
4	2483.50	33.81 AV	54.00	-20.19	2.86 H	118	32.26	1.55
5	4960.00	49.32 PK	74.00	-24.68	2.84 H	251	40.25	9.07
6	4960.00	36.38 AV	54.00	-17.62	2.84 H	251	27.31	9.07
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	*2480.00	95.33 PK			2.98 V	15	93.81	1.52
2	*2480.00	92.39 AV			2.98 V	15	90.87	1.52
3	2483.50	60.13 PK	74.00	-13.87	2.98 V	15	58.58	1.55
4	2483.50	36.44 AV	54.00	-17.56	2.98 V	15	34.89	1.55
5	4960.00	51.58 PK	74.00	-22.42	1.94 V	25	42.51	9.07
6	4960.00	41.81 AV	54.00	-12.19	1.94 V	25	32.74	9.07

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. " * ": Fundamental frequency.

Below 1GHz Data:

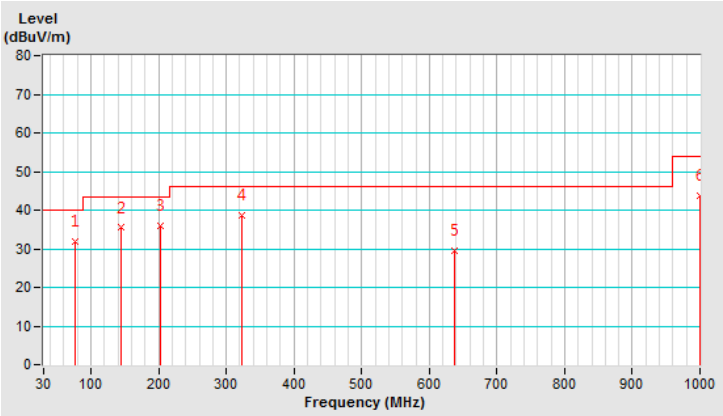
Mode 1A:

CHANNEL	TX Channel 40	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	77.19	31.80 QP	40.00	-8.20	1.84 H	78	42.59	-10.79
2	145.28	35.43 QP	43.50	-8.07	1.60 H	264	42.29	-6.86
3	202.13	36.00 QP	43.50	-7.50	1.95 H	243	45.28	-9.28
4	322.21	38.74 QP	46.00	-7.26	1.33 H	278	42.87	-4.13
5	636.74	29.53 QP	46.00	-16.47	2.26 H	283	26.64	2.89
6	1000.00	43.83 QP	54.00	-10.17	2.02 H	165	34.92	8.91

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

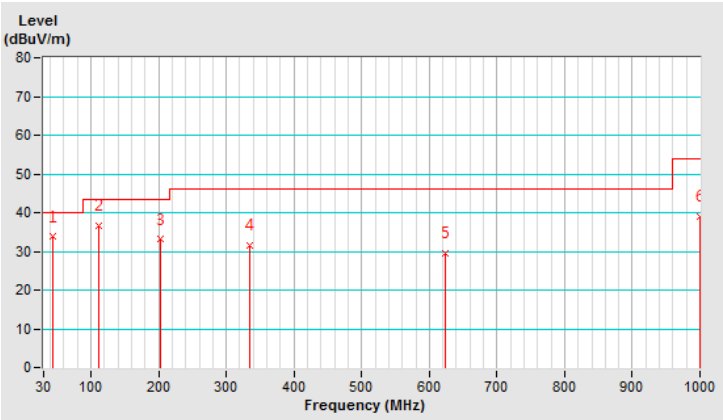


CHANNEL	TX Channel 40	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	43.82	33.75 QP	40.00	-6.25	1.63 V	227	41.11	-7.36
2	110.80	36.61 QP	43.50	-6.89	1.92 V	174	46.56	-9.95
3	202.13	33.12 QP	43.50	-10.38	1.50 V	243	42.40	-9.28
4	334.73	31.62 QP	46.00	-14.38	1.76 V	287	35.62	-4.00
5	623.79	29.49 QP	46.00	-16.51	1.32 V	52	26.79	2.70
6	1000.00	39.09 QP	54.00	-14.91	1.79 V	292	30.18	8.91

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



Mode 2A:

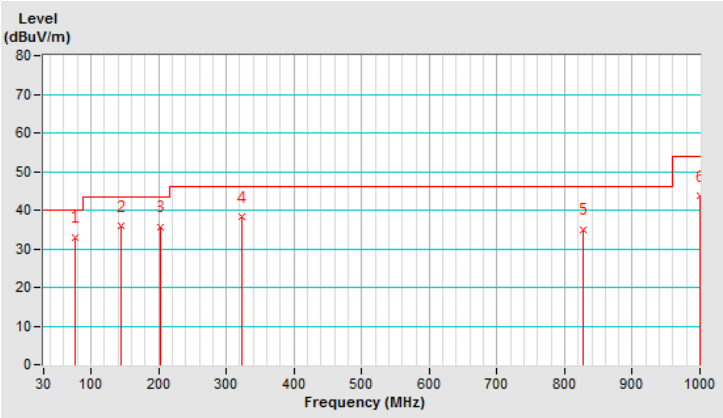
GFSK (1Mbps)

CHANNEL	TX Channel 0	**DETECTOR FUNCTION**	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	77.19	32.85 QP	40.00	-7.15	1.42 H	244	43.64	-10.79
2	145.24	35.83 QP	43.50	-7.67	1.81 H	227	42.69	-6.86
3	202.13	35.74 QP	43.50	-7.76	1.60 H	246	45.02	-9.28
4	322.16	38.20 QP	46.00	-7.80	2.16 H	90	42.34	-4.14
5	826.86	34.86 QP	46.00	-11.14	2.29 H	162	28.55	6.31
6	1000.00	43.64 QP	54.00	-10.36	1.58 H	176	34.73	8.91

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

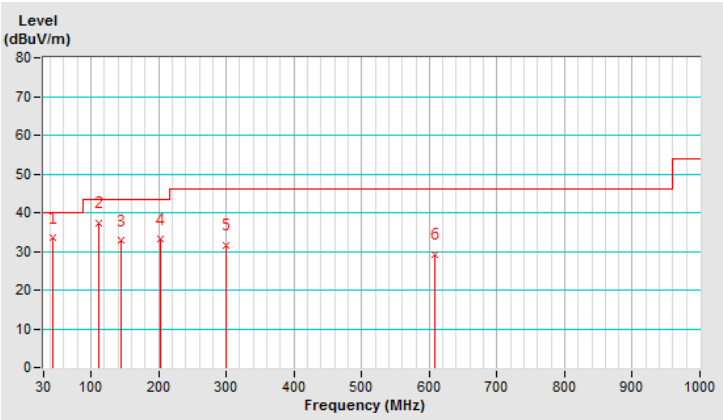


CHANNEL	TX Channel 0	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	43.82	33.47 QP	40.00	-6.53	1.74 V	194	40.83	-7.36
2	110.80	37.25 QP	43.50	-6.25	1.55 V	166	47.20	-9.95
3	145.28	32.75 QP	43.50	-10.75	1.93 V	335	39.61	-6.86
4	202.08	33.06 QP	43.50	-10.44	1.03 V	265	42.34	-9.28
5	300.05	31.54 QP	46.00	-14.46	2.27 V	132	36.31	-4.77
6	608.36	29.14 QP	46.00	-16.86	1.94 V	272	26.92	2.22

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



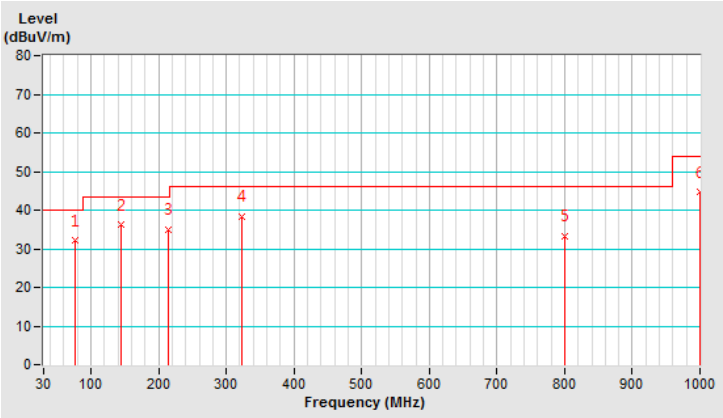
GFSK (2Mbps)

CHANNEL	TX Channel 0	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	77.19	32.05 QP	40.00	-7.95	1.92 H	272	42.84	-10.79
2	145.33	36.13 QP	43.50	-7.37	1.55 H	246	42.98	-6.85
3	214.74	34.86 QP	43.50	-8.64	1.83 H	250	43.74	-8.88
4	322.16	38.30 QP	46.00	-7.70	1.57 H	283	42.44	-4.14
5	799.89	33.35 QP	46.00	-12.65	1.70 H	330	27.52	5.83
6	1000.00	44.60 QP	54.00	-9.40	2.06 H	176	35.69	8.91

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

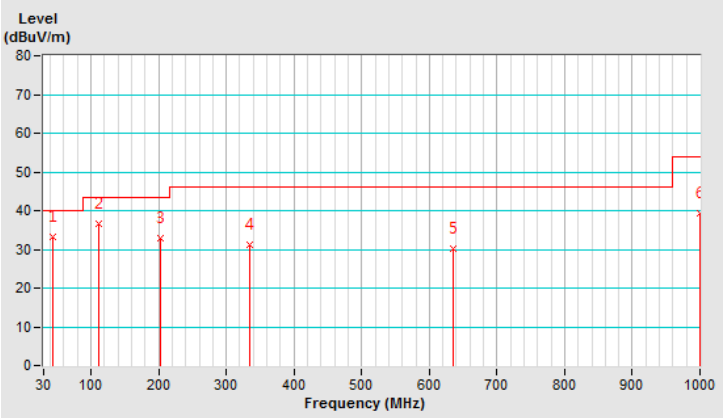


CHANNEL	TX Channel 0	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	43.82	33.24 QP	40.00	-6.76	1.52 V	360	40.60	-7.36
2	110.80	36.54 QP	43.50	-6.96	1.94 V	150	46.49	-9.95
3	202.13	32.96 QP	43.50	-10.54	1.77 V	232	42.24	-9.28
4	334.77	31.34 QP	46.00	-14.66	1.06 V	276	35.34	-4.00
5	636.25	30.22 QP	46.00	-15.78	2.08 V	137	27.34	2.88
6	1000.00	39.36 QP	54.00	-14.64	1.37 V	155	30.45	8.91

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



Mode 2D:

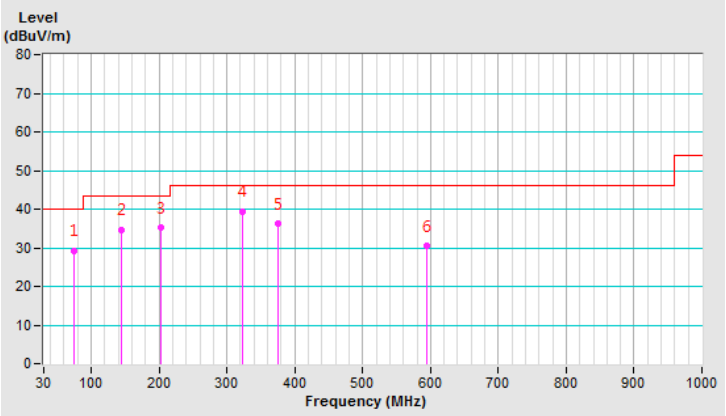
GFSK (1Mbps)

Channel	TX Channel 0	**Detector Function**	Quasi-Peak (QP)
Frequency Range	9kHz ~ 1GHz		

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	74.57	29.16 QP	40.00	-10.84	1.42 H	242	39.21	-10.05
2	145.28	34.57 QP	43.50	-8.93	1.65 H	235	41.43	-6.86
3	202.08	35.12 QP	43.50	-8.38	1.84 H	194	44.40	-9.28
4	322.07	39.24 QP	46.00	-6.76	2.08 H	90	43.38	-4.14
5	374.98	36.11 QP	46.00	-9.89	1.67 H	280	39.35	-3.24
6	593.62	30.38 QP	46.00	-15.62	1.17 H	244	28.35	2.03

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

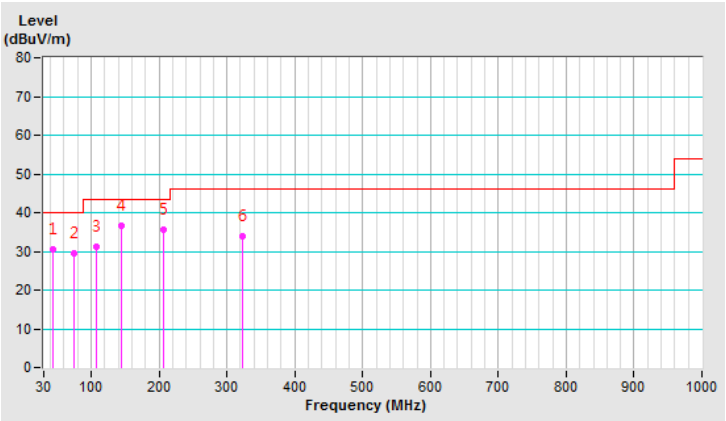


Channel	TX Channel 0	Detector Function	Quasi-Peak (QP)
Frequency Range	9kHz ~ 1GHz		

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	42.95	30.48 QP	40.00	-9.52	1.34 V	322	37.76	-7.28
2	74.57	29.47 QP	40.00	-10.53	2.25 V	18	39.52	-10.05
3	106.73	31.28 QP	43.50	-12.22	2.63 V	164	41.63	-10.35
4	145.28	36.76 QP	43.50	-6.74	2.55 V	13	43.62	-6.86
5	205.76	35.65 QP	43.50	-7.85	1.52 V	232	44.84	-9.19
6	322.12	33.95 QP	46.00	-12.05	1.15 V	236	38.09	-4.14

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



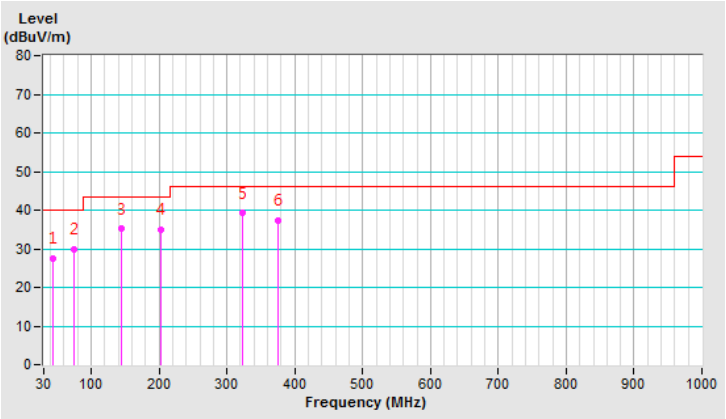
GFSK (2Mbps)

Channel	TX Channel 0	**Detector Function**	Quasi-Peak (QP)
Frequency Range	9kHz ~ 1GHz		

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	43.00	27.56 QP	40.00	-12.44	1.24 H	94	34.83	-7.27
2	74.57	29.75 QP	40.00	-10.25	1.64 H	245	39.80	-10.05
3	145.28	35.12 QP	43.50	-8.38	1.27 H	234	41.98	-6.86
4	202.13	34.89 QP	43.50	-8.61	1.53 H	210	44.17	-9.28
5	322.12	39.21 QP	46.00	-6.79	1.87 H	234	43.35	-4.14
6	375.03	37.41 QP	46.00	-8.59	1.19 H	272	40.66	-3.25

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – 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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

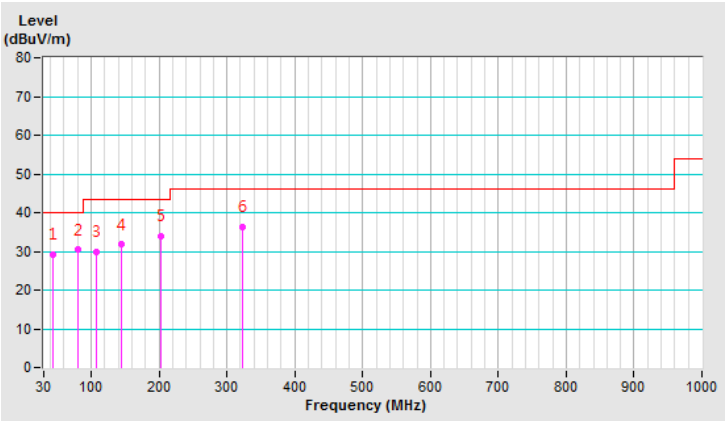


Channel	TX Channel 0	Detector Function	Quasi-Peak (QP)
Frequency Range	9kHz ~ 1GHz		

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	42.95	29.21 QP	40.00	-10.79	1.34 V	360	36.49	-7.28
2	81.17	30.40 QP	40.00	-9.60	1.57 V	229	42.16	-11.76
3	106.73	29.77 QP	43.50	-13.73	2.41 V	157	40.12	-10.35
4	145.33	31.70 QP	43.50	-11.80	1.89 V	40	38.55	-6.85
5	202.13	33.90 QP	43.50	-9.60	2.01 V	236	43.18	-9.28
6	322.12	36.30 QP	46.00	-9.70	1.47 V	244	40.44	-4.14

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 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

Note: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
ROHDE & SCHWARZ TEST RECEIVER	ESCS30	100290	Dec. 19, 2019	Dec. 18, 2020
SCHWARZBECK Artificial Mains Network (for EUT)	NSLK 8128	8128-244	Nov. 11, 2019	Nov. 10, 2020
LISN With Adapter (for EUT)	AD10	C05Ada-001	Nov. 11, 2019	Nov. 10, 2020
ROHDE & SCHWARZ Artificial Mains Network (for peripheral)	ESH3-Z5	100220	Nov. 18, 2019	Nov. 17, 2020
Software	Cond_V7.3.7.4	NA	NA	NA
RF cable (JYEBAO) With 10dB PAD	5D-FB	Cable-C05.01	Jan. 30, 2020	Jan. 29, 2021
LYNICS Terminator (For R&S LISN)	0900510	E1-01-305	Feb. 17, 2020	Feb. 16, 2021

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. 5.
3. The VCCI Site Registration No. C-11093.
4. Tested Date: Mar. 30, 2020

4.2.3 Test Procedures

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

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

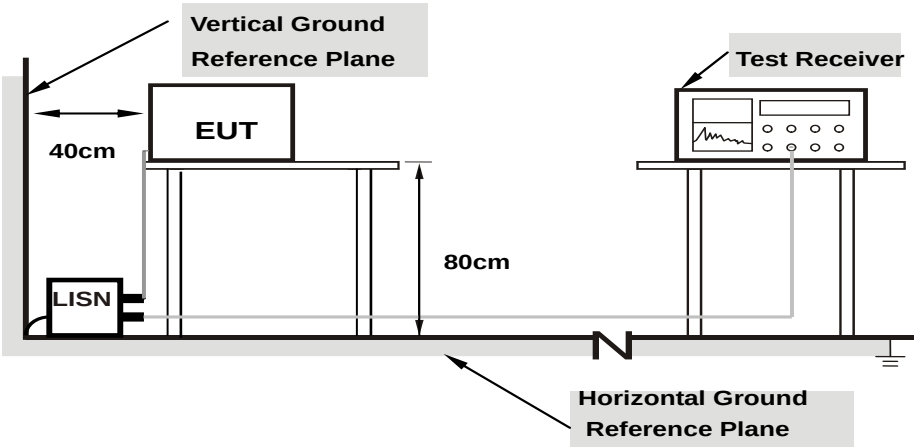
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 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).

4.2.6 EUT Operating Conditions

a. Connected the EUT with the AC Adapter/Notebook/PoE Adapter which is placed on test table.

b. Set the EUT under transmission condition continuously at specific channel frequency continuously.

4.2.7 Test Results

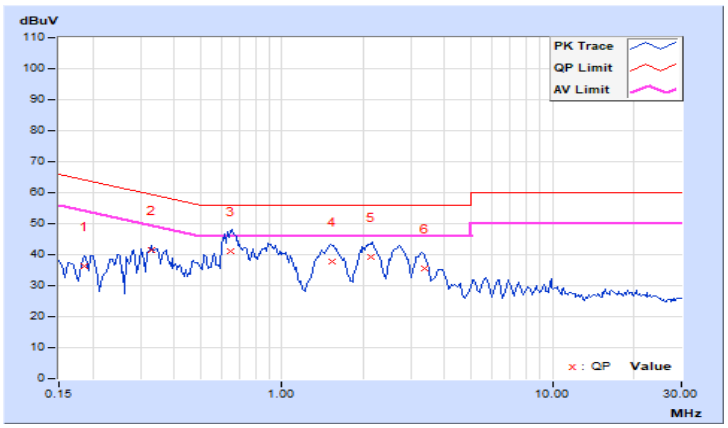
Mode 1A:

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18516	9.90	26.40	19.16	36.30	29.06	64.25	54.25	-27.95	-25.19
2	0.32969	9.91	31.61	24.93	41.52	34.84	59.46	49.46	-17.94	-14.62
3	0.65000	9.94	31.08	21.51	41.02	31.45	56.00	46.00	-14.98	-14.55
4	1.53125	10.00	27.68	18.53	37.68	28.53	56.00	46.00	-18.32	-17.47
5	2.13672	10.03	29.13	20.30	39.16	30.33	56.00	46.00	-16.84	-15.67
6	3.37891	10.12	25.52	18.10	35.64	28.22	56.00	46.00	-20.36	-17.78

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.

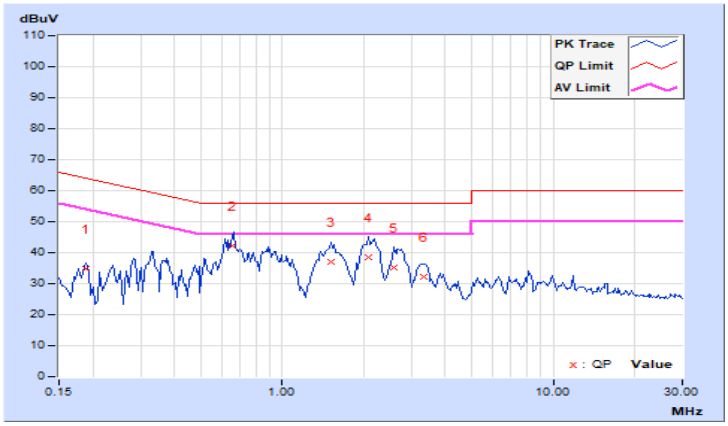


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18906	9.92	24.75	15.18	34.67	25.10	64.08	54.08	-29.41	-28.98
2	0.65781	9.96	32.22	21.88	42.18	31.84	56.00	46.00	-13.82	-14.16
3	1.51172	10.02	27.01	14.48	37.03	24.50	56.00	46.00	-18.97	-21.50
4	2.07813	10.05	28.50	15.88	38.55	25.93	56.00	46.00	-17.45	-20.07
5	2.58594	10.09	24.96	14.03	35.05	24.12	56.00	46.00	-20.95	-21.88
6	3.32031	10.13	22.16	15.11	32.29	25.24	56.00	46.00	-23.71	-20.76

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



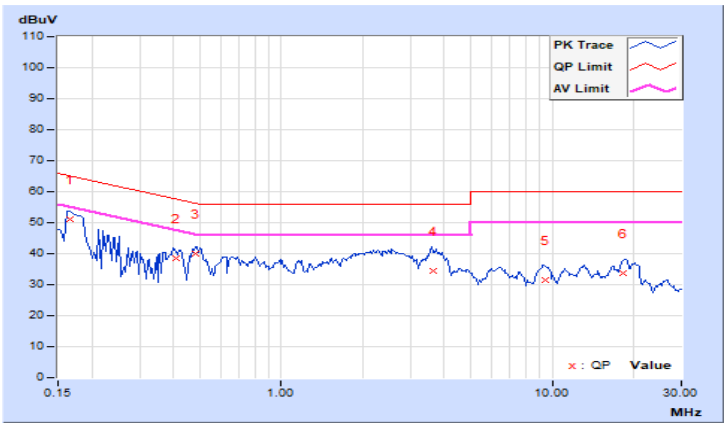
Mode 1B:

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	9.90	41.28	21.89	51.18	31.79	65.18	55.18	-14.00	-23.39
2	0.40781	9.91	28.70	12.71	38.61	22.62	57.69	47.69	-19.08	-25.07
3	0.48203	9.92	30.05	18.02	39.97	27.94	56.30	46.30	-16.33	-18.36
4	3.64844	10.14	24.35	14.61	34.49	24.75	56.00	46.00	-21.51	-21.25
5	9.47266	10.48	20.84	14.49	31.32	24.97	60.00	50.00	-28.68	-25.03
6	18.33203	10.99	22.76	17.06	33.75	28.05	60.00	50.00	-26.25	-21.95

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

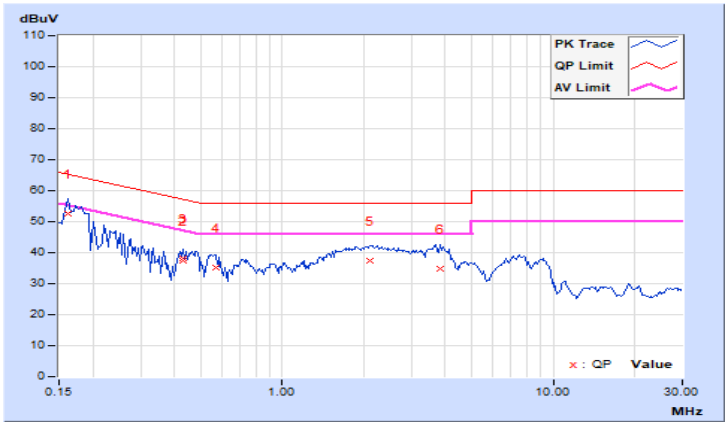


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	9.92	42.55	10.63	52.47	20.55	65.38	55.38	-12.91	-34.83
2	0.43125	9.94	27.61	16.44	37.55	26.38	57.23	47.23	-19.68	-20.85
3	0.43125	9.94	28.28	18.54	38.22	28.48	57.23	47.23	-19.01	-18.75
4	0.56797	9.95	25.38	11.05	35.33	21.00	56.00	46.00	-20.67	-25.00
5	2.10156	10.06	27.38	17.73	37.44	27.79	56.00	46.00	-18.56	-18.21
6	3.80859	10.16	24.49	15.56	34.65	25.72	56.00	46.00	-21.35	-20.28

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



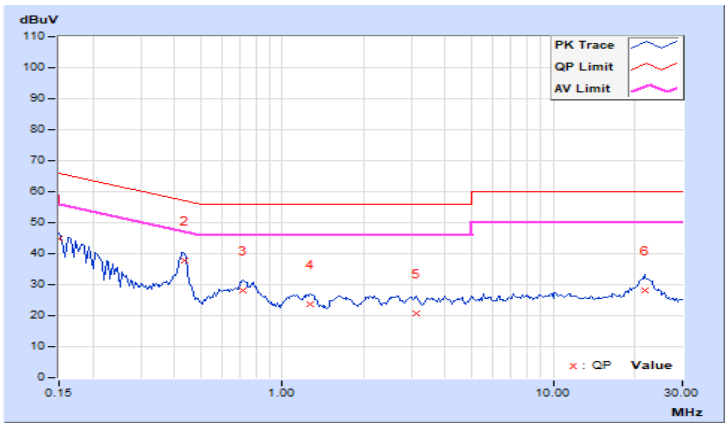
Mode 1C:

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.88	35.09	22.87	44.97	32.75	66.00	56.00	-21.03	-23.25
2	0.43516	9.89	27.90	20.59	37.79	30.48	57.15	47.15	-19.36	-16.67
3	0.72031	9.92	18.22	12.25	28.14	22.17	56.00	46.00	-27.86	-23.83
4	1.26953	9.95	13.60	7.86	23.55	17.81	56.00	46.00	-32.45	-28.19
5	3.11719	10.02	10.73	5.75	20.75	15.77	56.00	46.00	-35.25	-30.23
6	21.73047	10.86	17.15	11.85	28.01	22.71	60.00	50.00	-31.99	-27.29

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

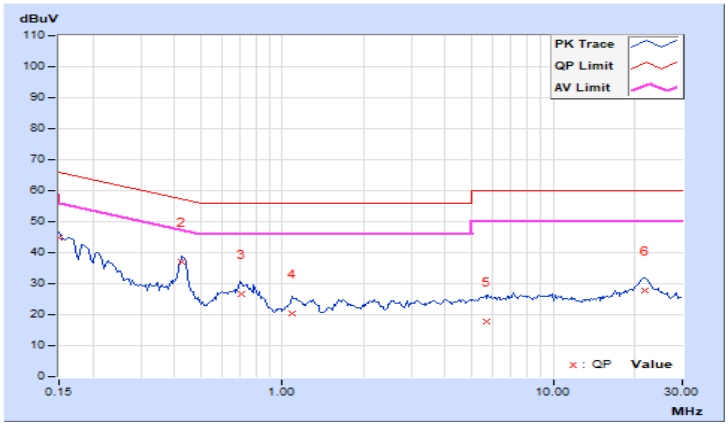


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.89	34.76	21.80	44.65	31.69	66.00	56.00	-21.35	-24.31
2	0.42344	9.90	27.08	22.19	36.98	32.09	57.38	47.38	-20.40	-15.29
3	0.70859	9.93	16.83	10.81	26.76	20.74	56.00	46.00	-29.24	-25.26
4	1.09375	9.95	10.45	4.95	20.40	14.90	56.00	46.00	-35.60	-31.10
5	5.65234	10.16	7.71	1.55	17.87	11.71	60.00	50.00	-42.13	-38.29
6	21.73047	11.03	16.58	11.21	27.61	22.24	60.00	50.00	-32.39	-27.76

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



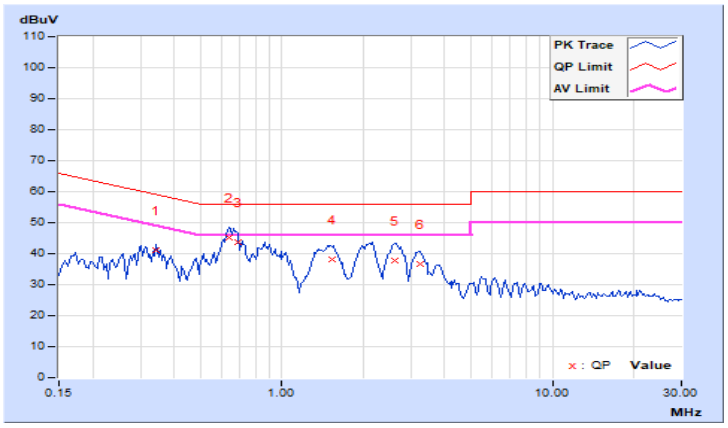
Mode 2A:

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.34141	9.91	31.31	24.58	41.22	34.49	59.17	49.17	-17.95	-14.68
2	**0.64219**	**9.93**	**35.37**	**27.95**	**45.30**	**37.88**	**56.00**	**46.00**	**-10.70**	**-8.12**
3	0.68516	9.94	33.72	25.98	43.66	35.92	56.00	46.00	-12.34	-10.08
4	1.53516	10.00	28.03	18.79	38.03	28.79	56.00	46.00	-17.97	-17.21
5	2.60938	10.06	27.90	19.70	37.96	29.76	56.00	46.00	-18.04	-16.24
6	3.24609	10.11	26.52	19.30	36.63	29.41	56.00	46.00	-19.37	-16.59

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.

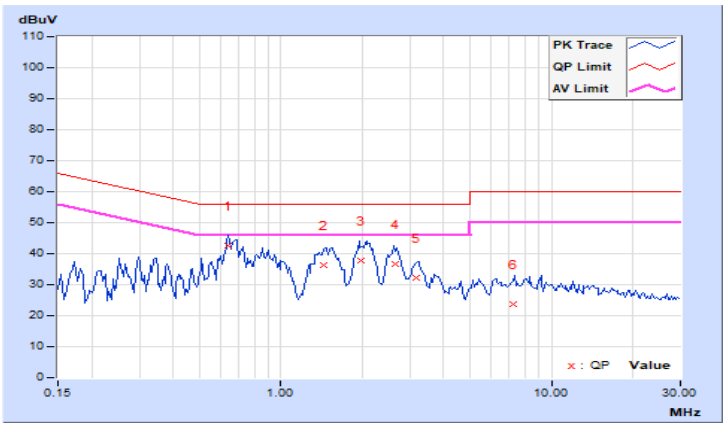


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.64219	9.96	32.56	21.61	42.52	31.57	56.00	46.00	-13.48	-14.43
2	1.44531	10.02	26.11	13.36	36.13	23.38	56.00	46.00	-19.87	-22.62
3	1.98828	10.05	27.79	15.15	37.84	25.20	56.00	46.00	-18.16	-20.80
4	2.63672	10.09	26.50	16.08	36.59	26.17	56.00	46.00	-19.41	-19.83
5	3.16016	10.12	22.15	14.65	32.27	24.77	56.00	46.00	-23.73	-21.23
6	7.23438	10.36	13.42	5.35	23.78	15.71	60.00	50.00	-36.22	-34.29

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.



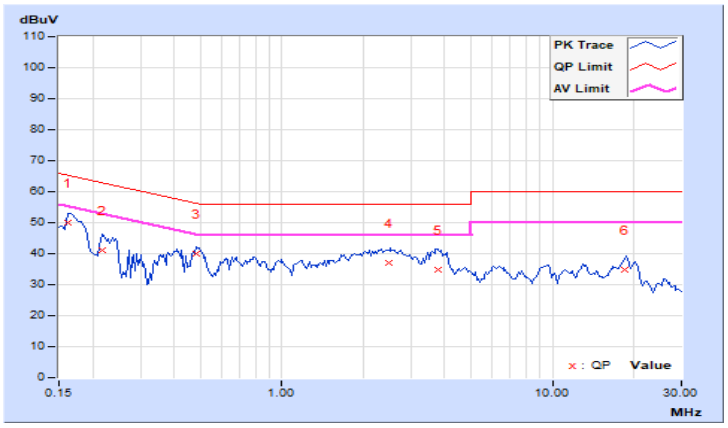
Mode 2B:

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	9.90	40.08	18.16	49.98	28.06	65.38	55.38	-15.40	-27.32
2	0.21641	9.90	31.16	13.60	41.06	23.50	62.96	52.96	-21.90	-29.46
3	0.48203	9.92	30.07	18.61	39.99	28.53	56.30	46.30	-16.31	-17.77
4	2.47656	10.05	26.90	18.08	36.95	28.13	56.00	46.00	-19.05	-17.87
5	3.76563	10.14	24.70	15.87	34.84	26.01	56.00	46.00	-21.16	-19.99
6	18.58594	11.01	23.63	17.99	34.64	29.00	60.00	50.00	-25.36	-21.00

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.

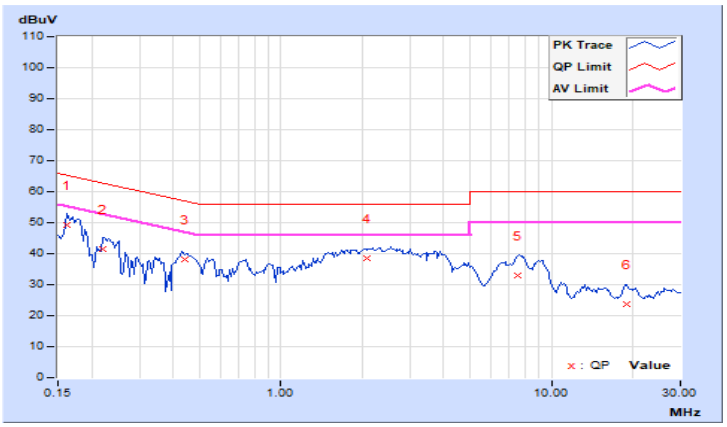


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	9.92	39.37	18.05	49.29	27.97	65.38	55.38	-16.09	-27.41
2	0.22031	9.92	31.40	16.51	41.32	26.43	62.81	52.81	-21.49	-26.38
3	0.44297	9.94	28.29	15.53	38.23	25.47	57.01	47.01	-18.78	-21.54
4	2.07031	10.05	28.44	18.06	38.49	28.11	56.00	46.00	-17.51	-17.89
5	7.50391	10.37	22.49	13.49	32.86	23.86	60.00	50.00	-27.14	-26.14
6	19.07813	11.11	12.74	6.77	23.85	17.88	60.00	50.00	-36.15	-32.12

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.



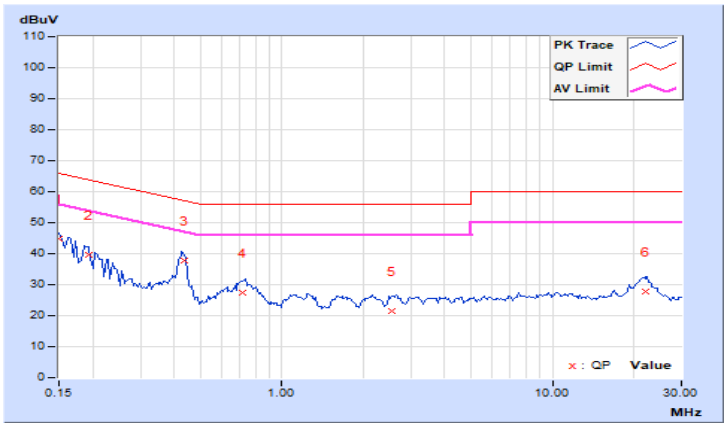
Mode 2C:

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.88	34.88	22.53	44.76	32.41	66.00	56.00	-21.24	-23.59
2	0.19297	9.88	29.93	17.66	39.81	27.54	63.91	53.91	-24.10	-26.37
3	0.43516	9.89	27.98	20.73	37.87	30.62	57.15	47.15	-19.28	-16.53
4	0.71250	9.92	17.47	11.38	27.39	21.30	56.00	46.00	-28.61	-24.70
5	2.56641	10.00	11.42	6.46	21.42	16.46	56.00	46.00	-34.58	-29.54
6	22.01563	10.87	16.74	11.61	27.61	22.48	60.00	50.00	-32.39	-27.52

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.

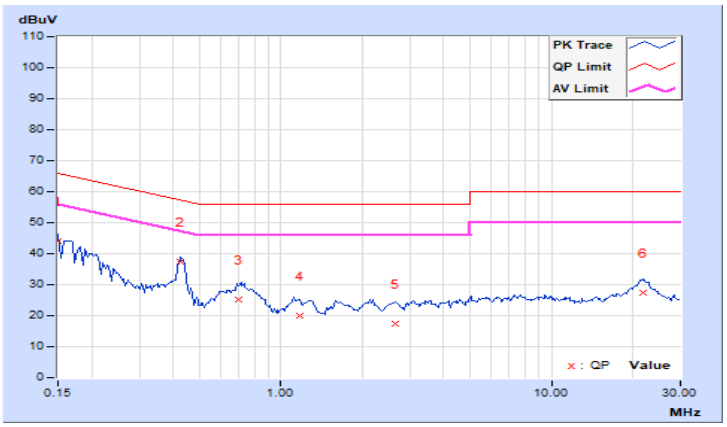


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.89	34.15	21.30	44.04	31.19	66.00	56.00	-21.96	-24.81
2	0.42344	9.90	27.43	22.85	37.33	32.75	57.38	47.38	-20.05	-14.63
3	0.70078	9.93	15.23	9.22	25.16	19.15	56.00	46.00	-30.84	-26.85
4	1.16797	9.96	10.12	3.51	20.08	13.47	56.00	46.00	-35.92	-32.53
5	2.63672	10.01	7.45	2.51	17.46	12.52	56.00	46.00	-38.54	-33.48
6	21.73047	11.03	16.44	11.26	27.47	22.29	60.00	50.00	-32.53	-27.71

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.

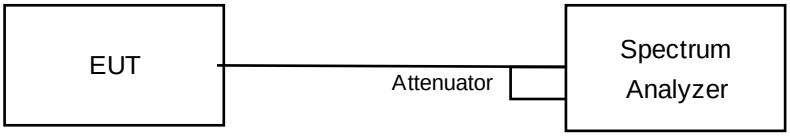


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

a. Set resolution bandwidth (RBW) = 100kHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

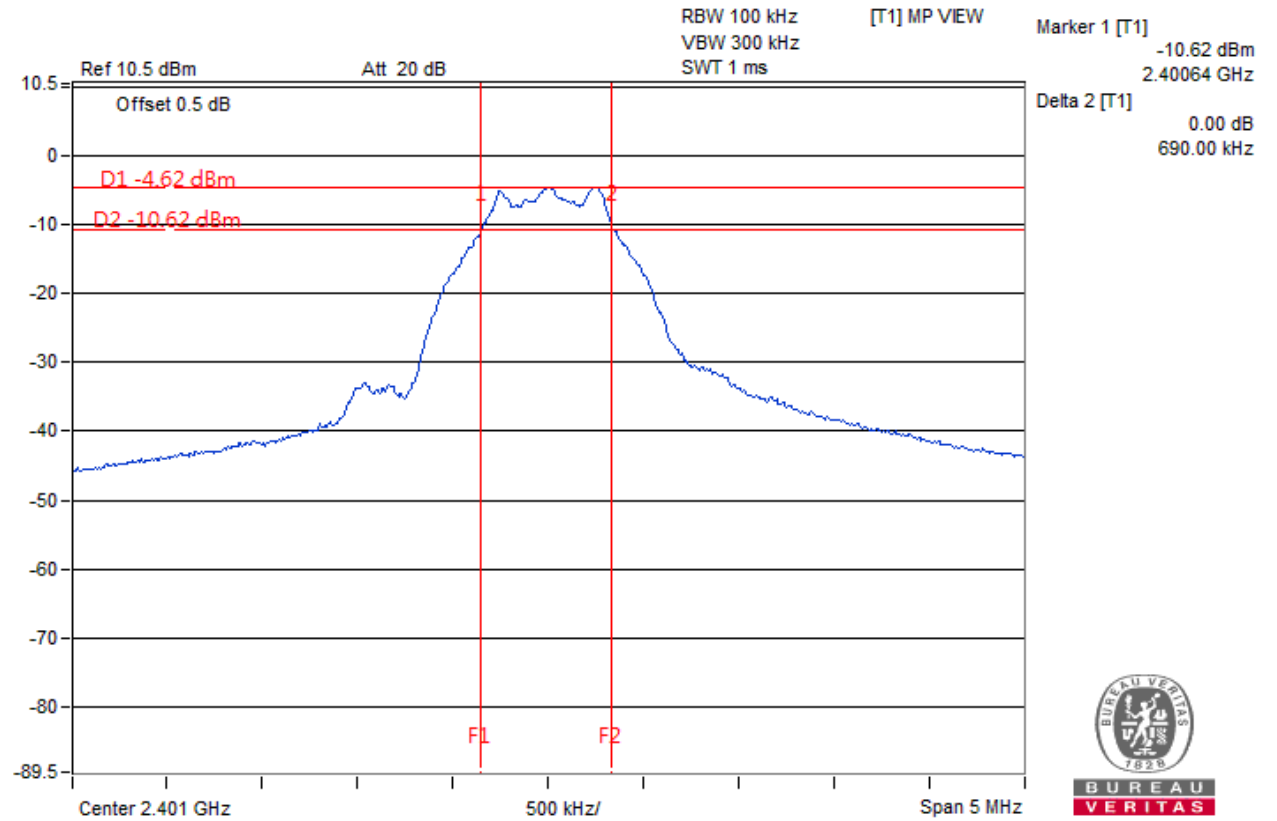
4.3.7 Test Result

Mode 1A:

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2401	0.69	0.5	Pass
40	2441	0.72	0.5	Pass
80	2481	0.71	0.5	Pass

Spectrum Plot of Worst Value

CH 0



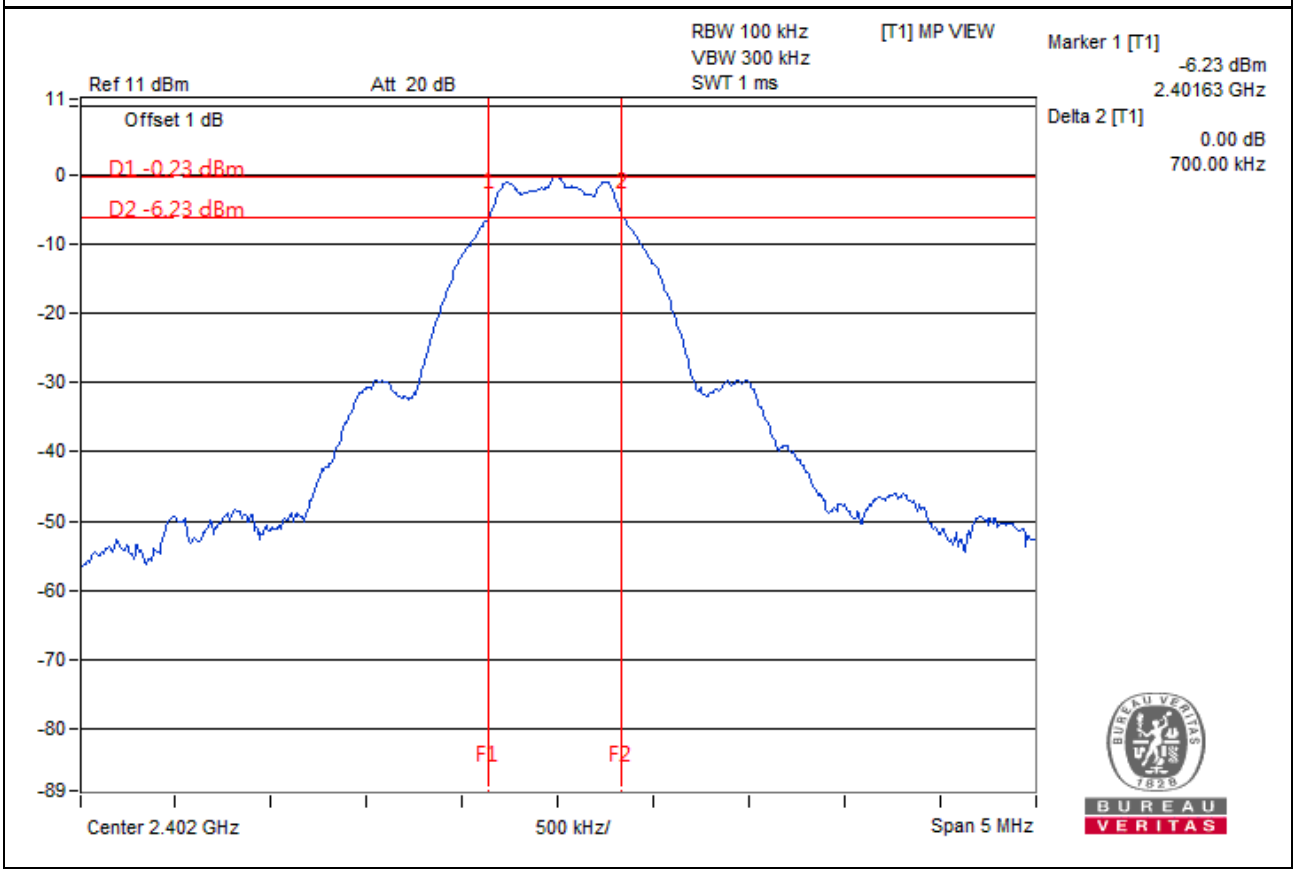
Mode 2A:

GFSK (1Mbps)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	0.70	0.5	Pass
19	2440	0.70	0.5	Pass
39	2480	0.71	0.5	Pass

Spectrum Plot of Worst Value

CH 0

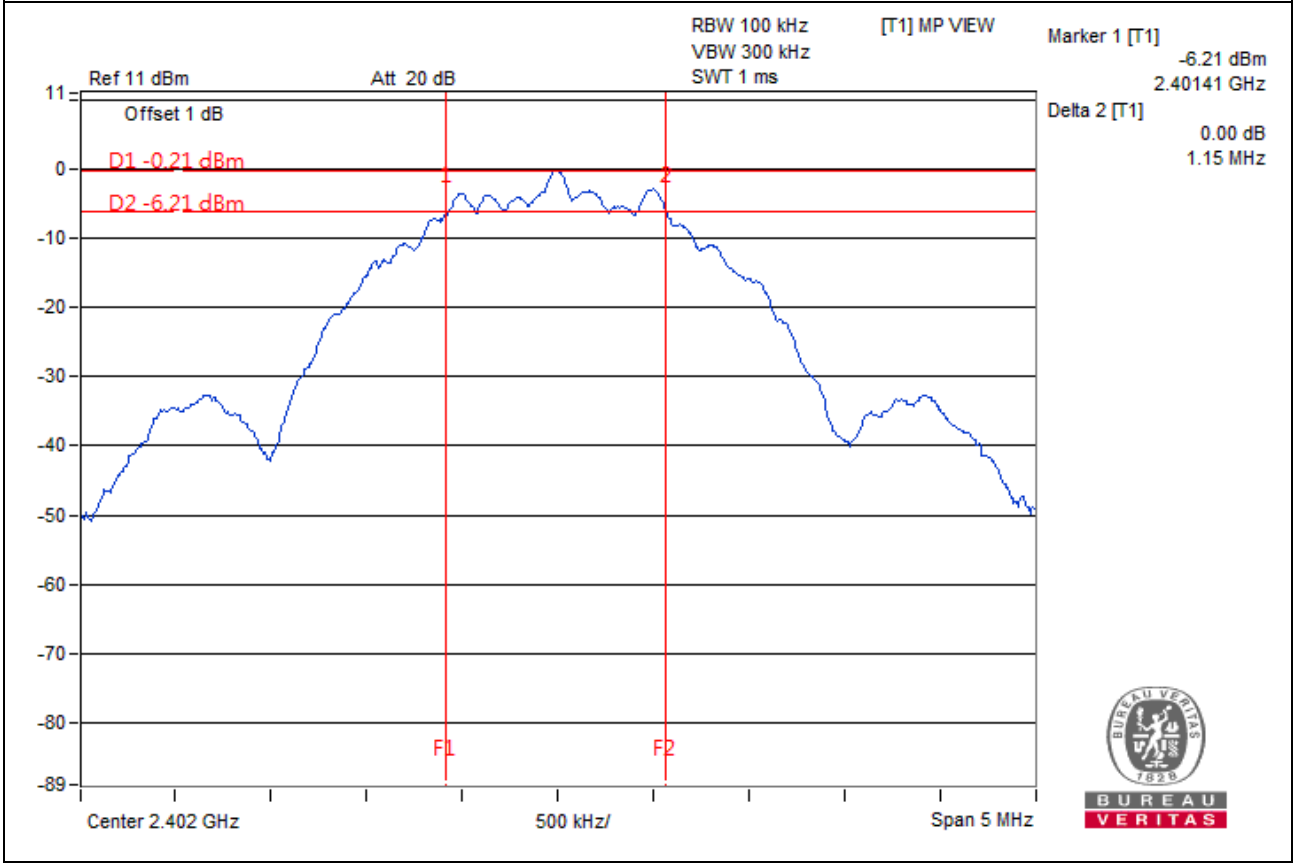


GFSK (2Mbps)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.15	0.5	Pass
19	2440	1.15	0.5	Pass
39	2480	1.16	0.5	Pass

Spectrum Plot of Worst Value

CH 0



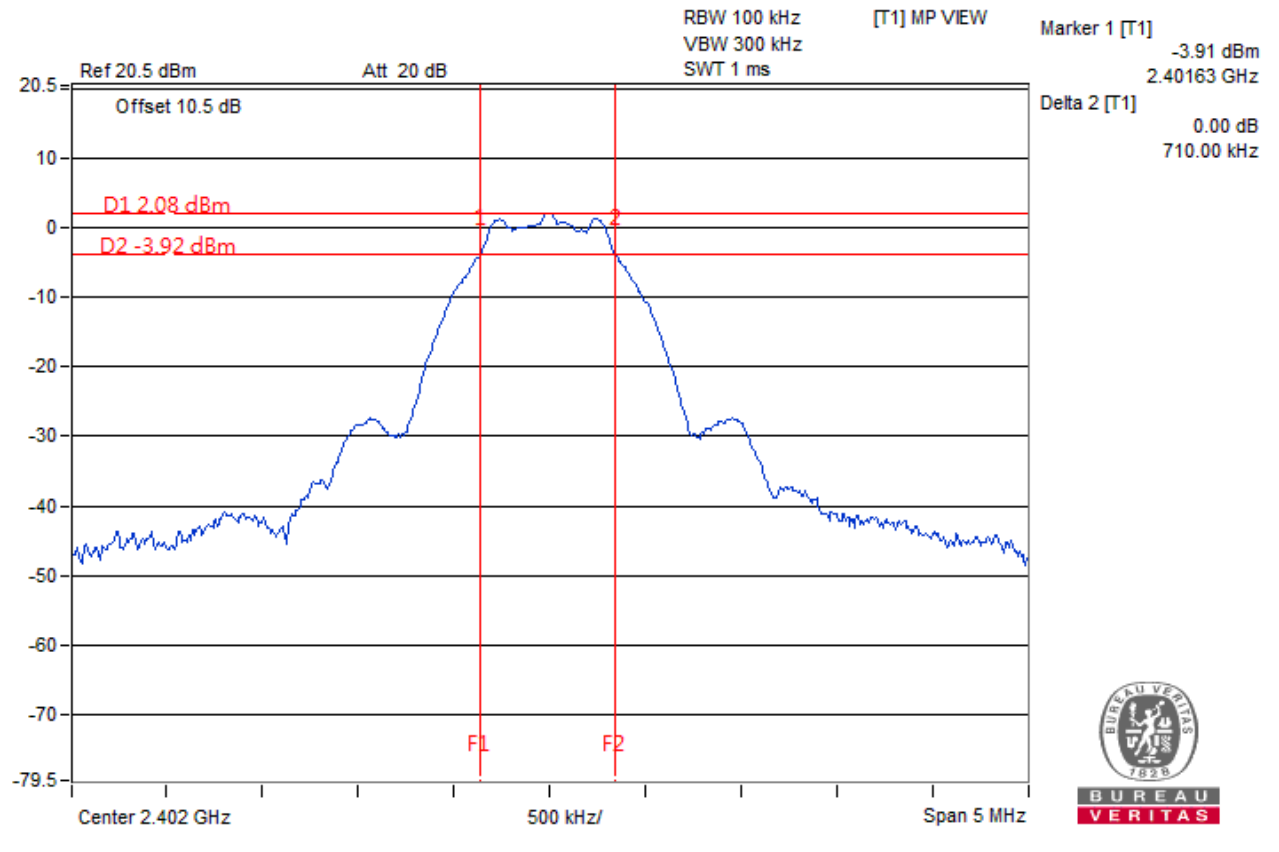
Mode 2D

GFSK (1Mbps)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	0.71	0.5	Pass
19	2440	0.72	0.5	Pass
39	2480	0.72	0.5	Pass

Spectrum Plot of Worst Value

CH 0

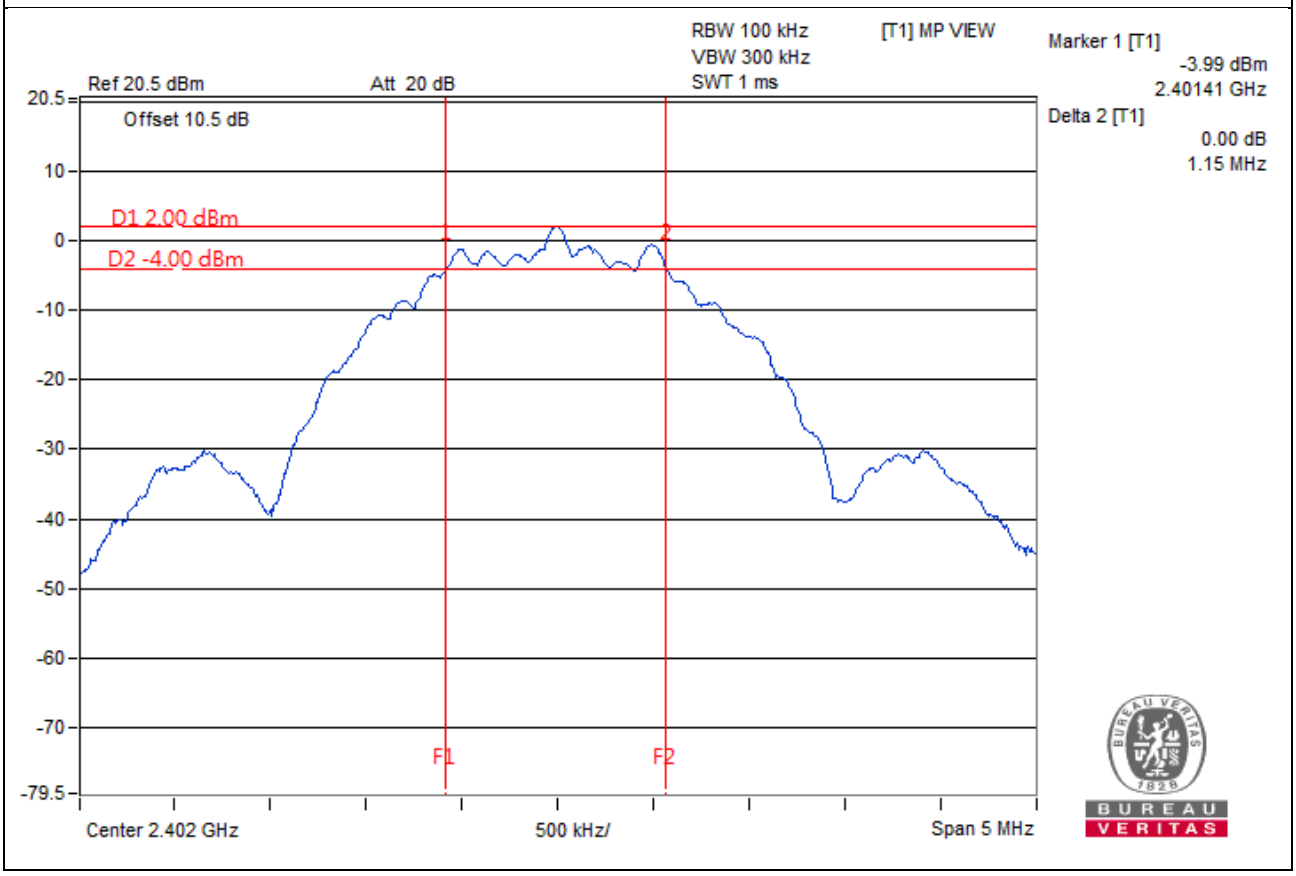


GFSK (2Mbps)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
0	2402	1.15	0.5	Pass
19	2440	1.16	0.5	Pass
39	2480	1.15	0.5	Pass

Spectrum Plot of Worst Value

CH 0

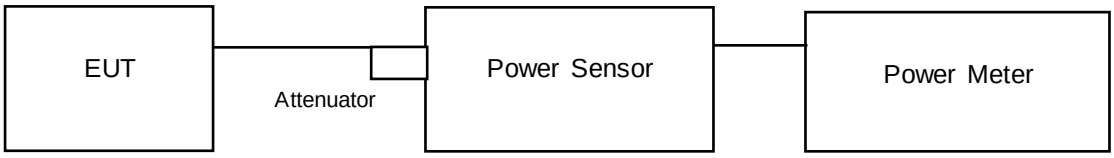


4.4 Conducted Output Power Measurement

4.4.1 Limits OF Conducted Output Power Measurement

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

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

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

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

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

FOR PEAK POWER

Mode 1A:

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
0	2401	0.6166	-2.10	30	Pass
40	2441	**3.184**	5.03	30	Pass
80	2481	0.5821	-2.35	30	Pass

Mode 2A:

GFSK (1Mbps)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
0	2402	**1.117**	0.48	30	Pass
19	2440	1.109	0.45	30	Pass
39	2480	1.030	0.13	30	Pass

GFSK (2Mbps)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
0	2402	1.102	0.42	30	Pass
19	2440	1.094	0.39	30	Pass
39	2480	1.023	0.10	30	Pass

Mode 2D:

GFSK (1Mbps)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
0	2402	1.837	2.64	30	Pass
19	2440	2.529	4.03	30	Pass
39	2480	**2.818**	4.50	30	Pass

GFSK (2Mbps)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
0	2402	1.828	2.62	30	Pass
19	2440	2.518	4.01	30	Pass
39	2480	2.799	4.47	30	Pass

FOR AVERAGE POWER

Mode 1A:

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
0	2401	0.5916	-2.28
40	2441	3.041	4.83
80	2481	0.5546	-2.56

Mode 2A:

GFSK (1Mbps)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	1.074	0.31
19	2440	1.067	0.28
39	2480	0.995	-0.02

GFSK (2Mbps)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	1.064	0.27
19	2440	1.057	0.24
39	2480	0.993	-0.03

Mode 2D:

GFSK (1Mbps)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	1.803	2.56
19	2440	2.449	3.89
39	2480	2.767	4.42

GFSK (2Mbps)

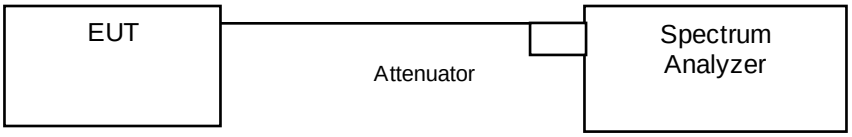
Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
0	2402	1.795	2.54
19	2440	2.443	3.88
39	2480	2.723	4.35

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm per 3 kHz.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.3.3 to get information of above instrument.

4.5.4 Test Procedure

a. Set analyzer center frequency to DTS channel center frequency.
b. Set the span to 1.5 times the DTS bandwidth.
c. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d. Set the VBW ≥ 3 × RBW.
e. Detector = peak.
f. Sweep time = auto couple.
g. Trace mode = max hold.
h. Allow trace to fully stabilize.
i. Use the peak marker function to determine the maximum amplitude level within the RBW.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

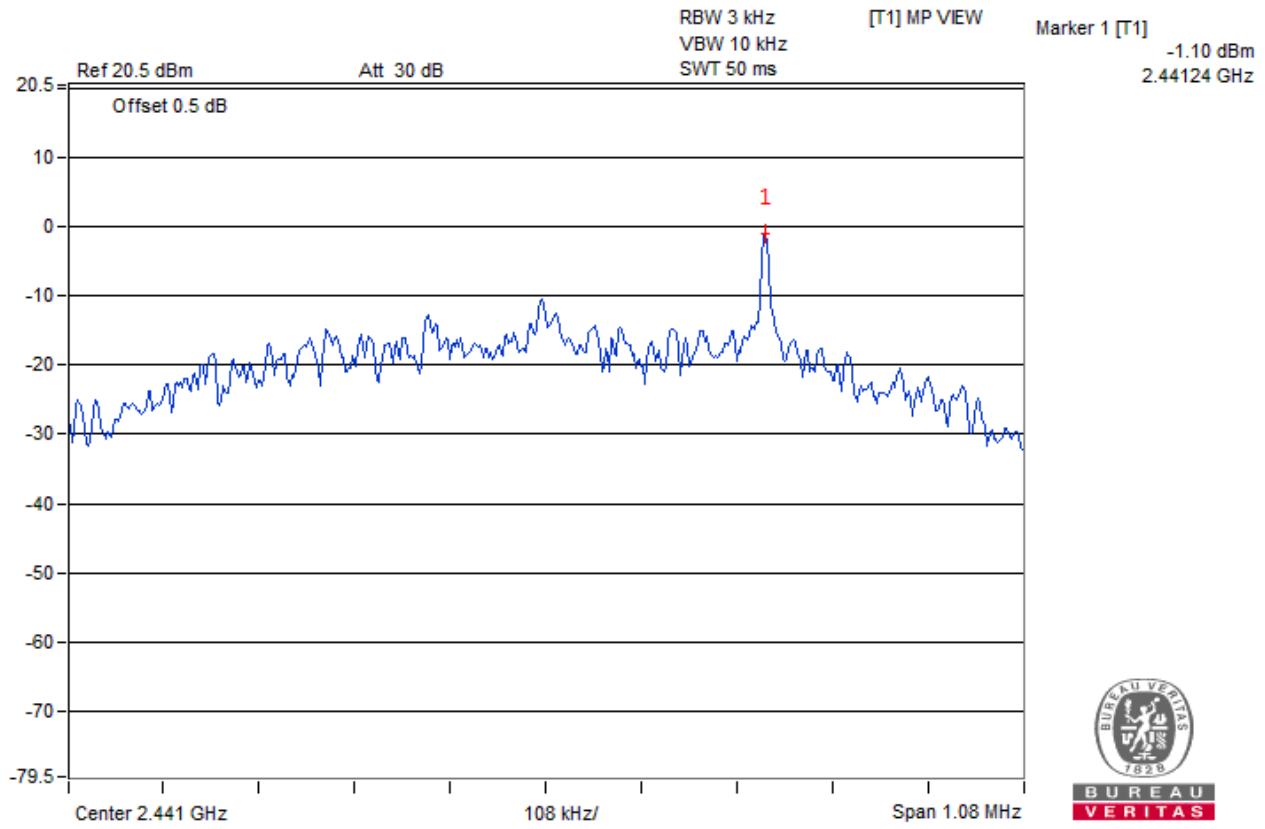
4.5.7 Test Results

Mode 1A:

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	2401	-8.06	8	Pass
40	2441	-1.10	8	Pass
80	2481	-6.83	8	Pass

Spectrum Plot of Worst Value

CH40



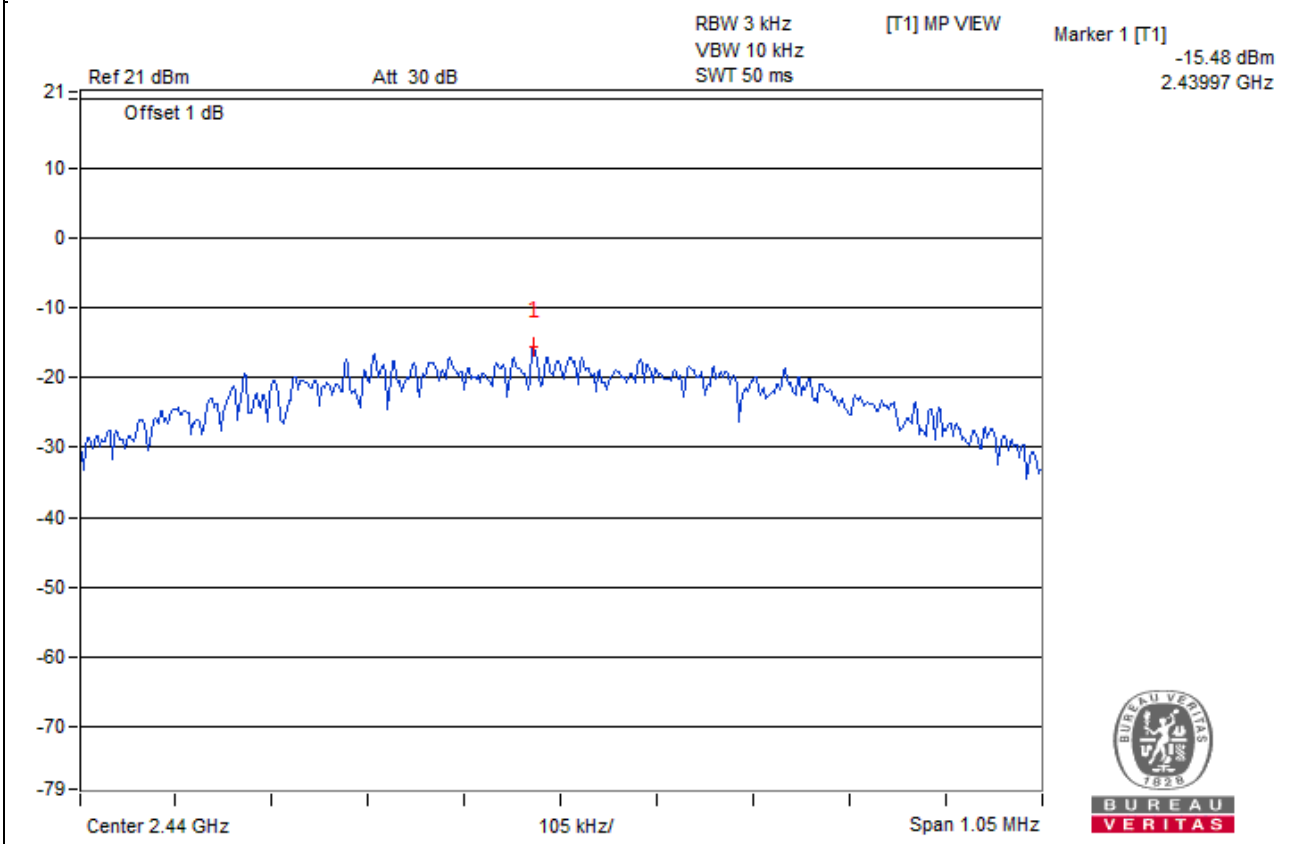
Mode 2A:

GFSK (1Mbps)

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	2402	-15.73	8	Pass
19	2440	-15.48	8	Pass
39	2480	-16.63	8	Pass

Spectrum Plot of Worst Value

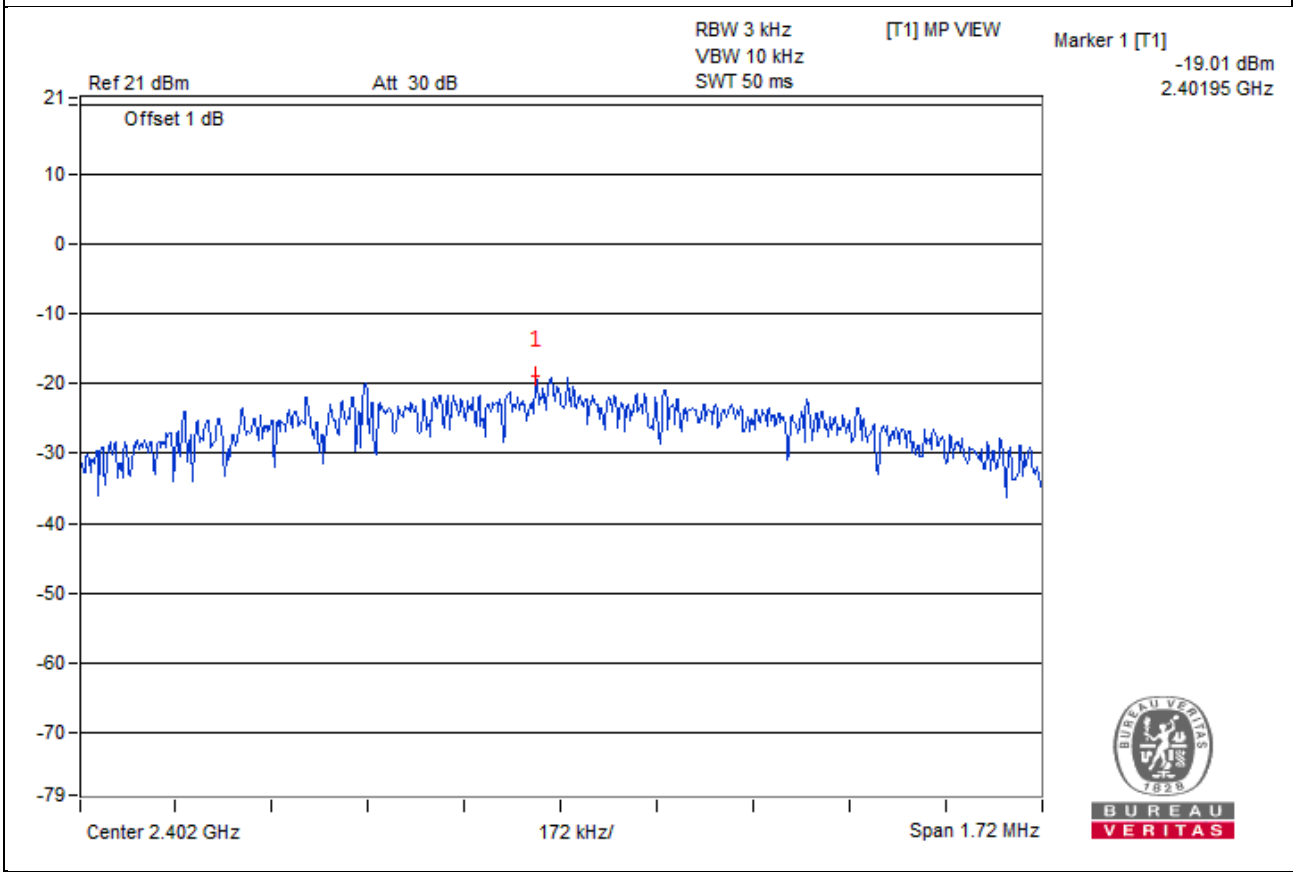
CH19



GFSK (2Mbps)

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	2402	-19.01	8	Pass
19	2440	-19.09	8	Pass
39	2480	-19.55	8	Pass

Spectrum Plot of Worst Value
CH0



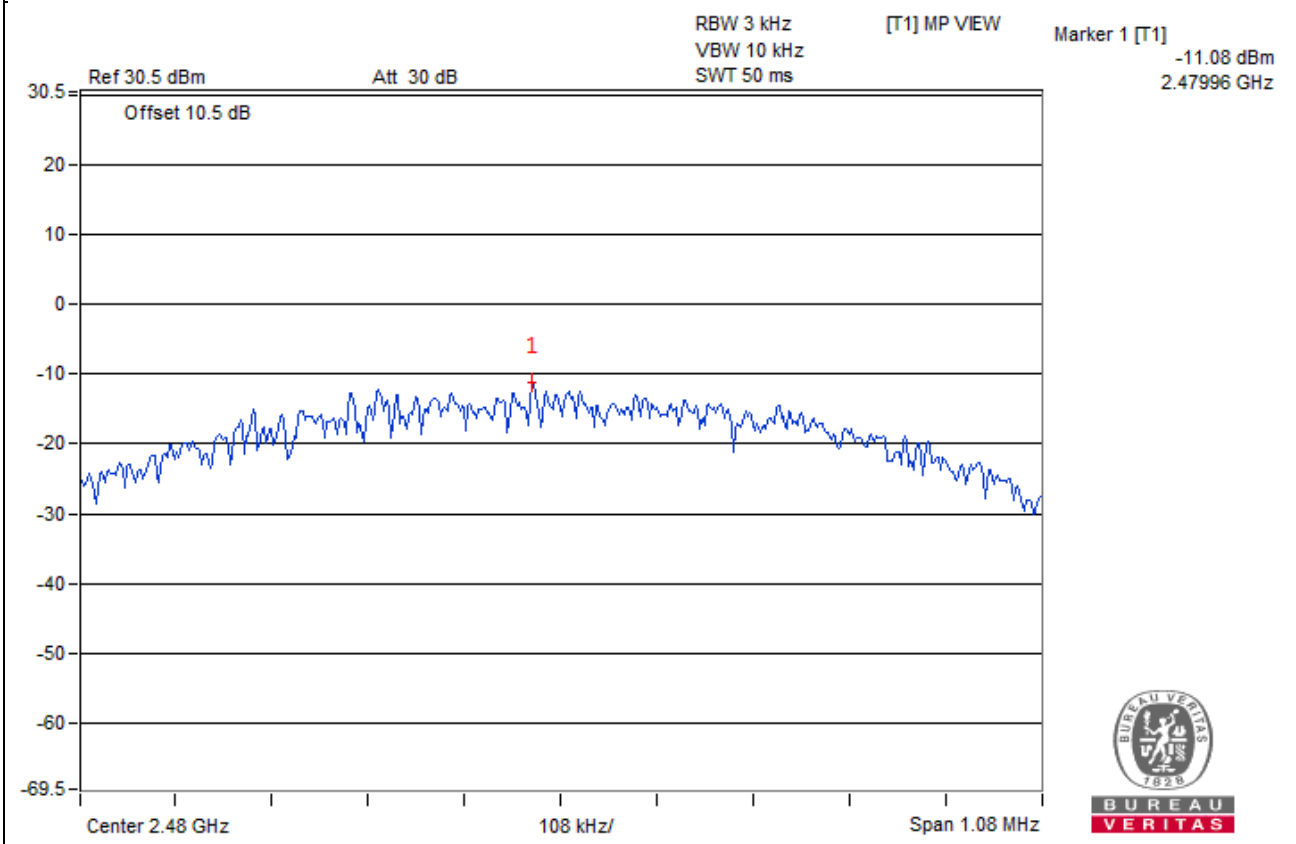
Mode 2D:

GFSK (1Mbps)

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	2402	-13.23	8	Pass
19	2440	-11.89	8	Pass
39	2480	-11.08	8	Pass

Spectrum Plot of Worst Value

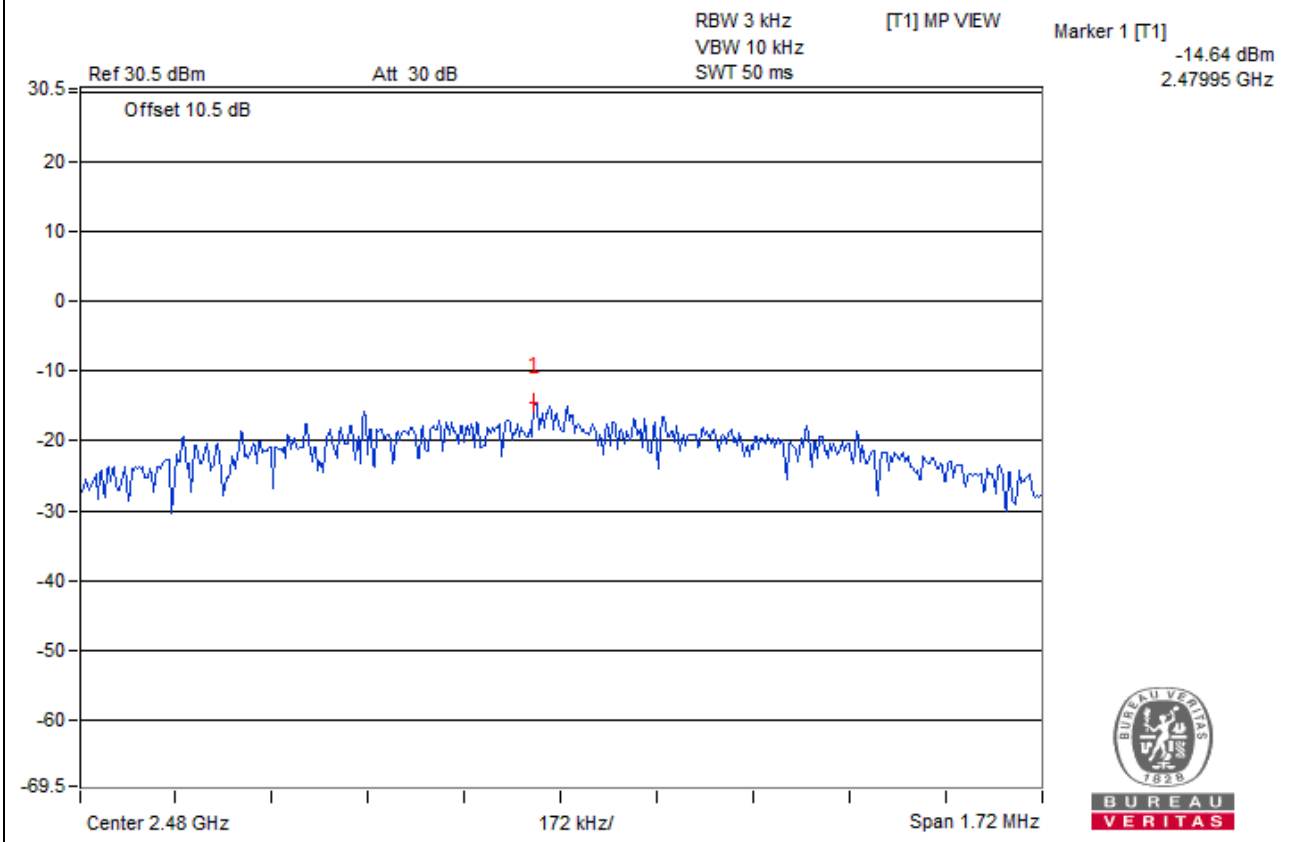
CH39



GFSK (2Mbps)

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
0	2402	-16.83	8	Pass
19	2440	-16.02	8	Pass
39	2480	-14.64	8	Pass

Spectrum Plot of Worst Value
CH39

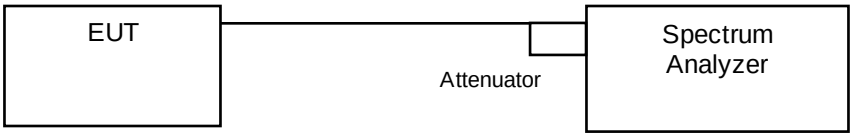


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.3.3 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

1. Set RBW = 100 kHz.
2. Set VBW ≥ 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.6.5 Deviation from Test Standard

No deviation.

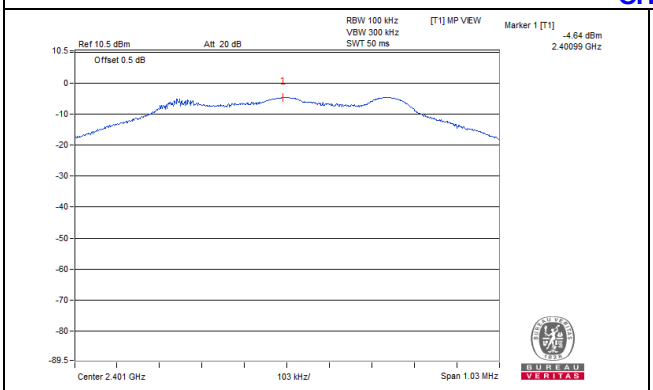
4.6.6 EUT Operating Condition

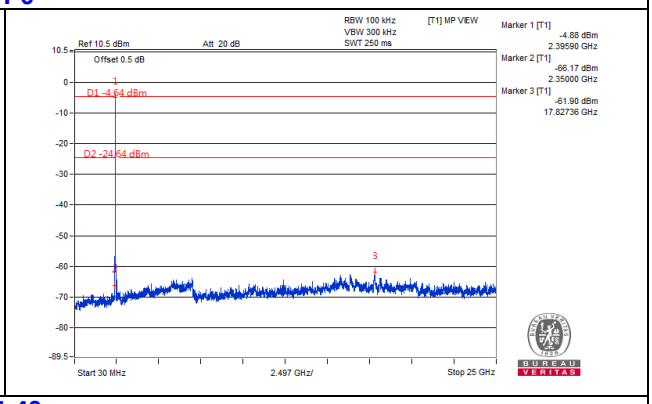
Same as Item 4.3.6

4.6.7 Test Results

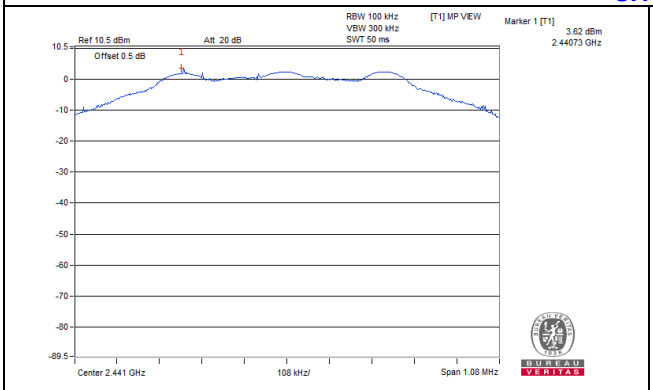
Mode 1A:

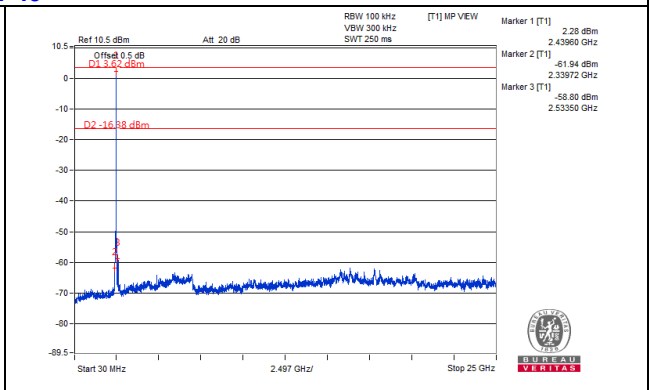
CH 0



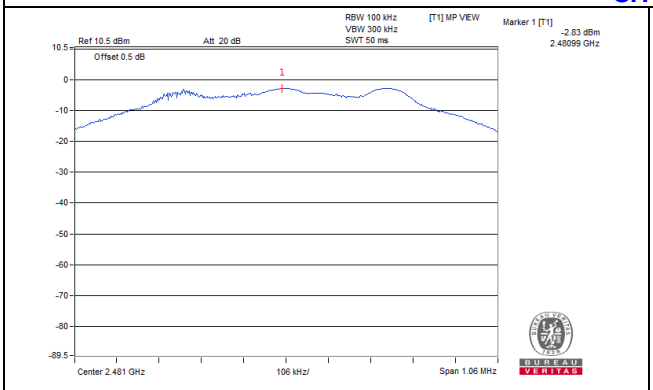


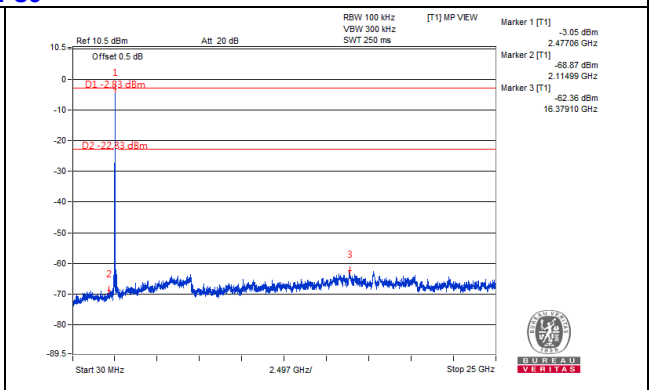
CH 40



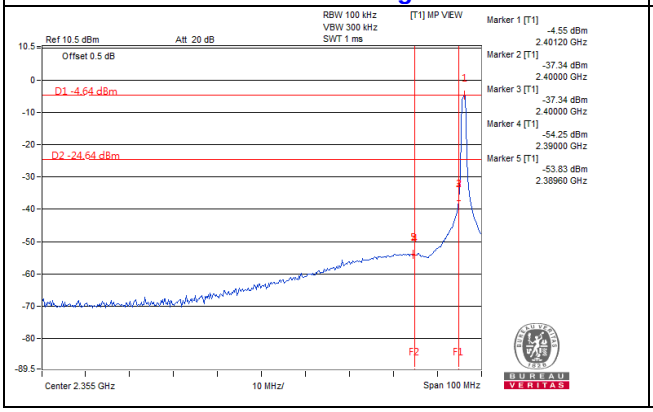


CH 80

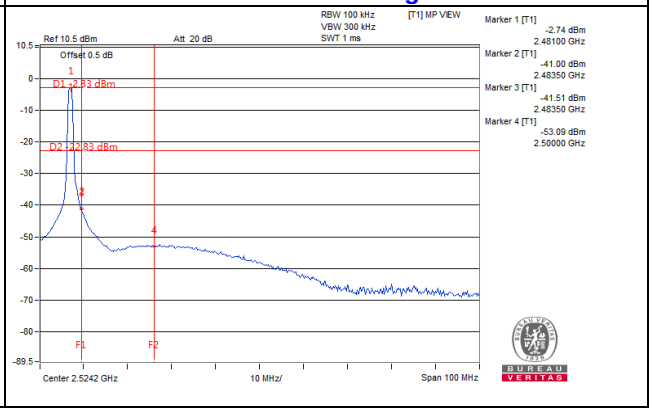




CH 0 Band edge

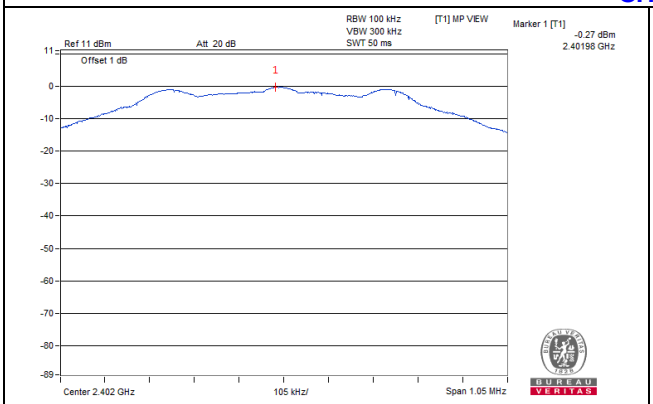


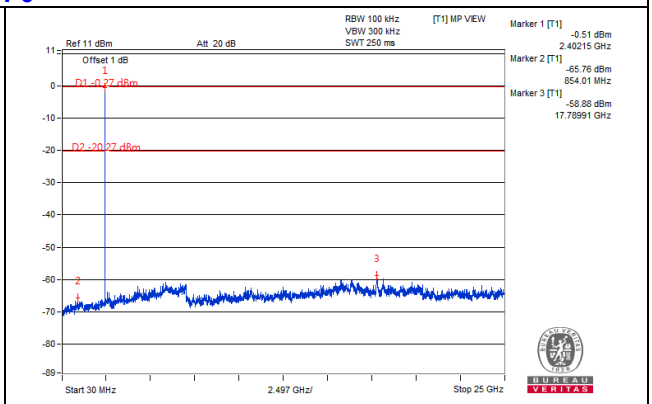
CH 80 Band edge



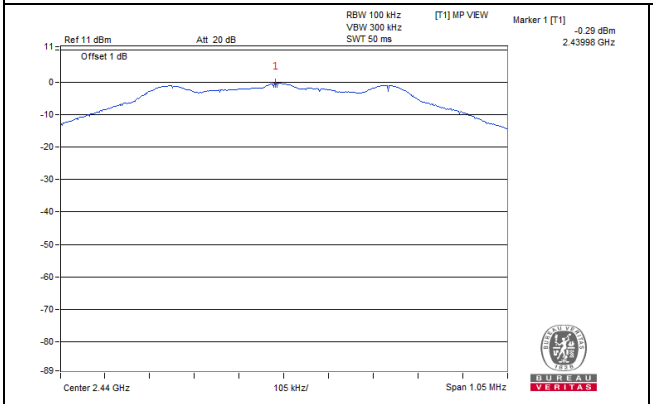
Mode 2A:
GFSK (1Mbps)

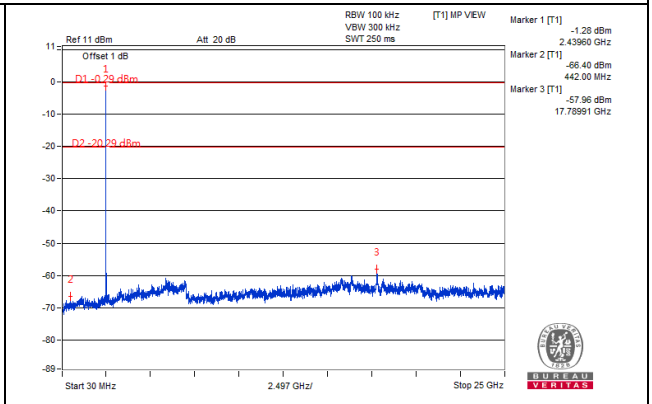
CH 0



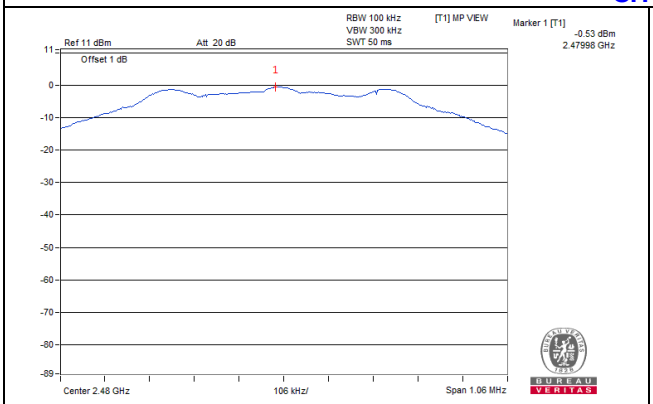


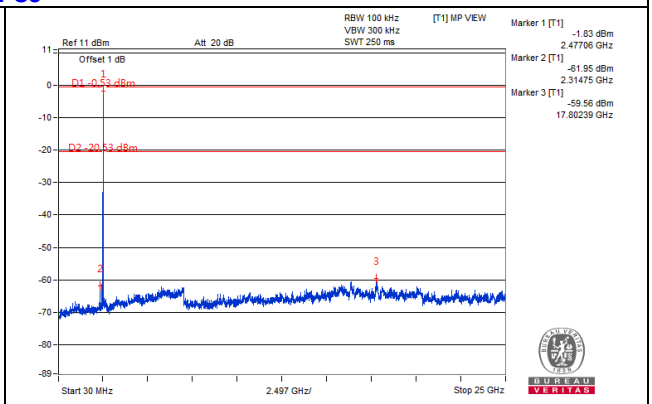
CH 19



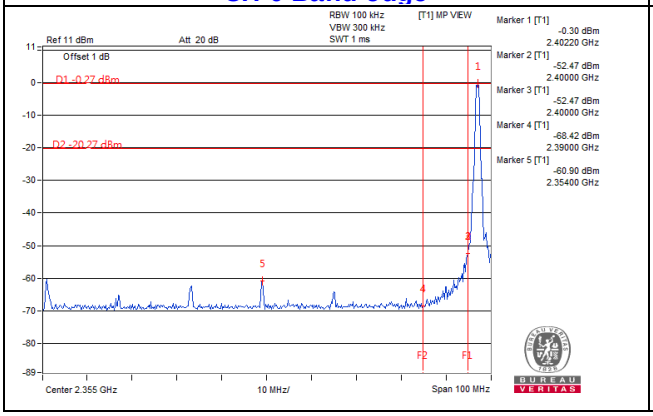


CH 39

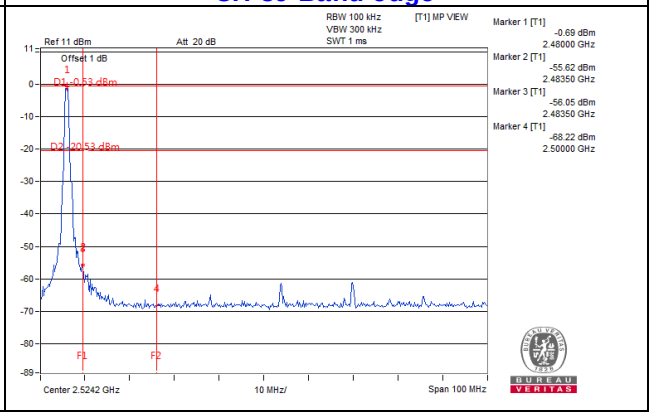




CH 0 Band edge

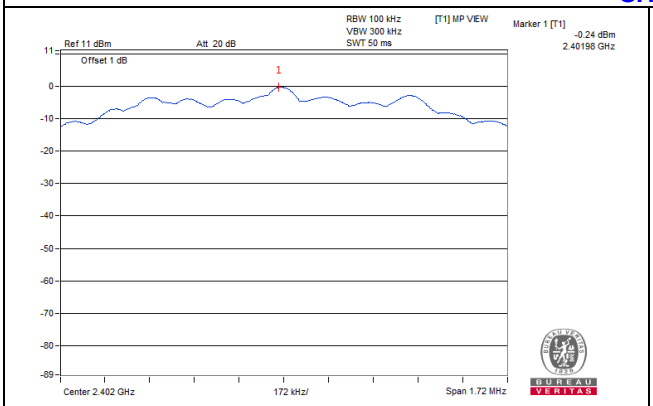


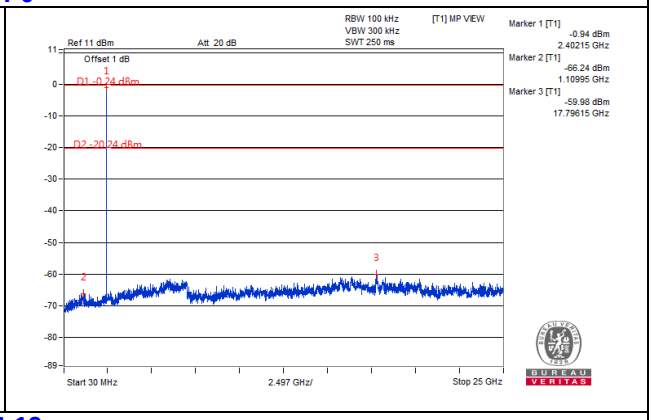
CH 39 Band edge



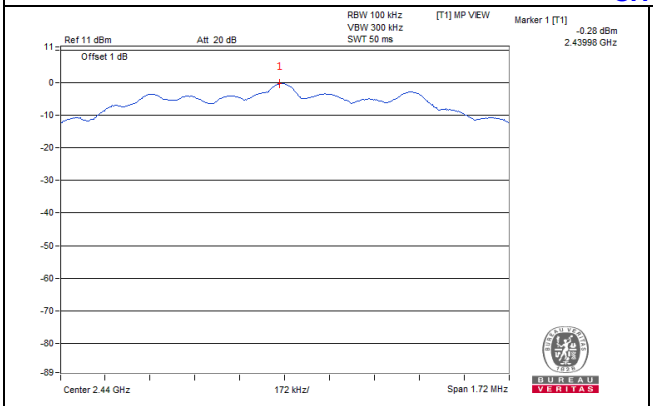
GFSK (2Mbps)

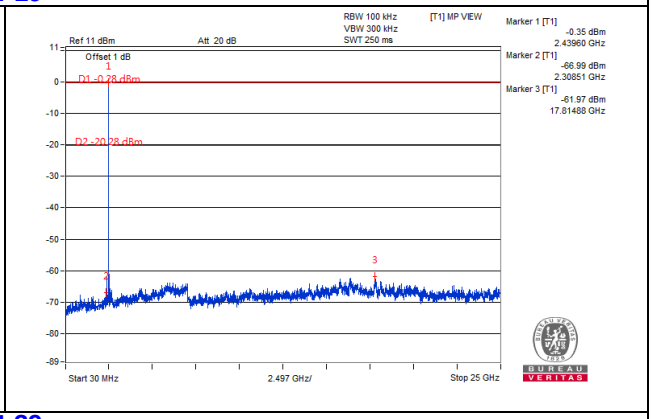
CH 0



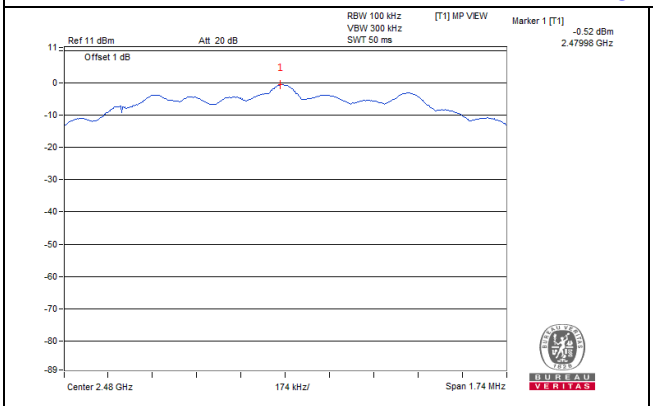


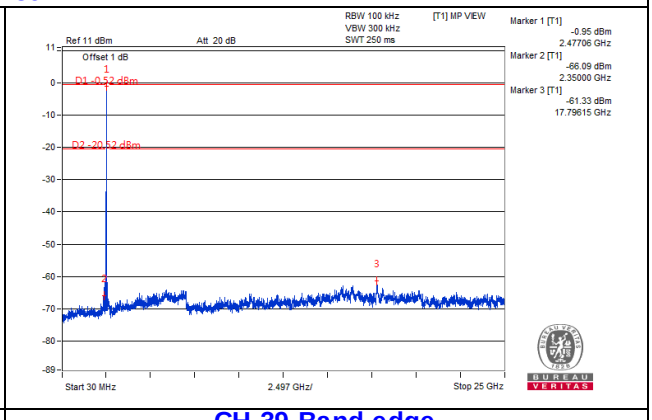
CH 19



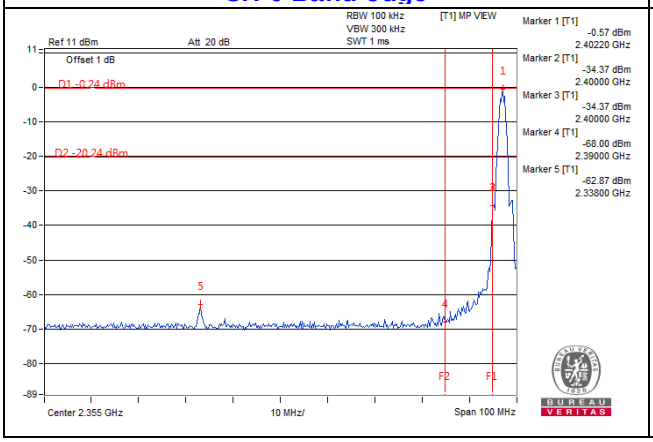


CH 39

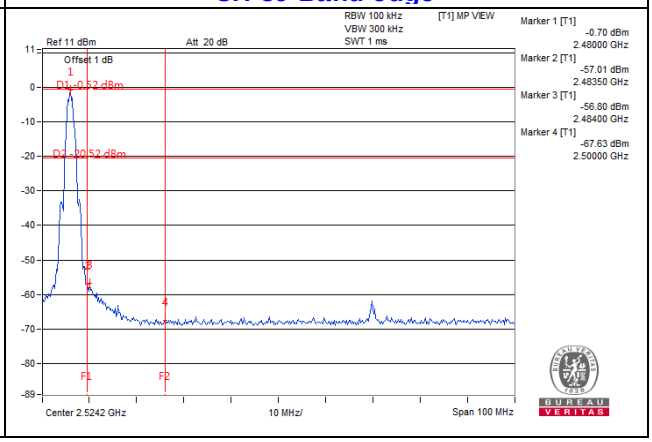




CH 0 Band edge

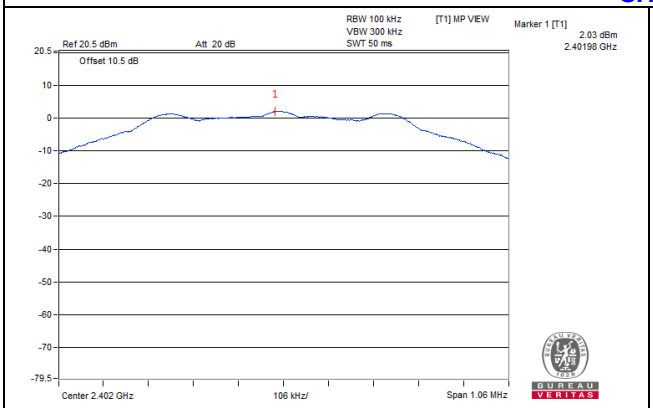


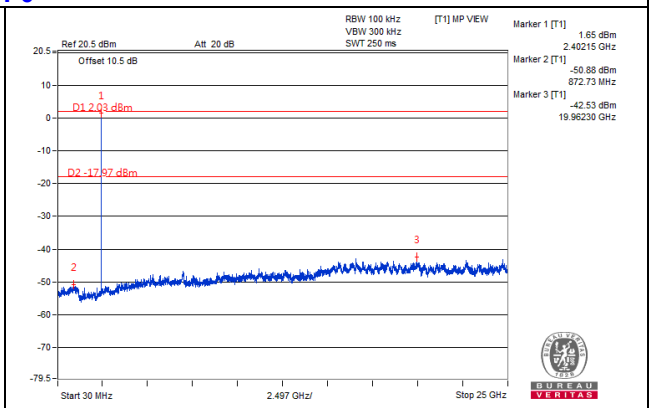
CH 39 Band edge



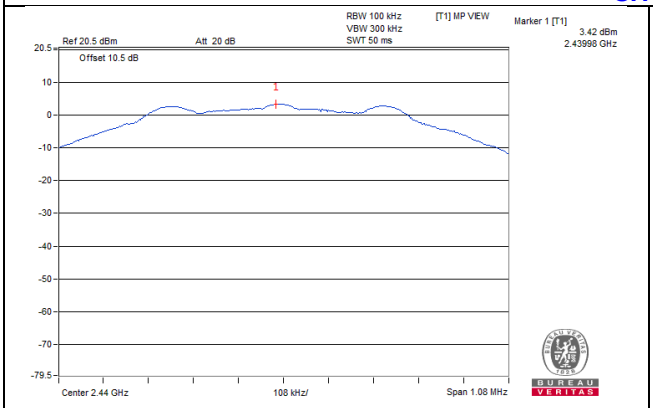
Mode 2D:
GFSK (1Mbps)

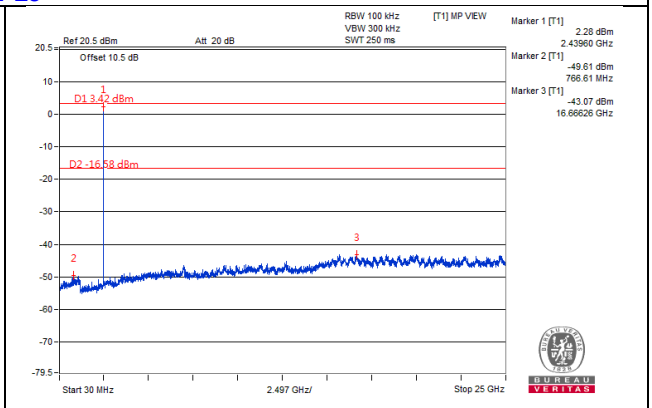
CH 0



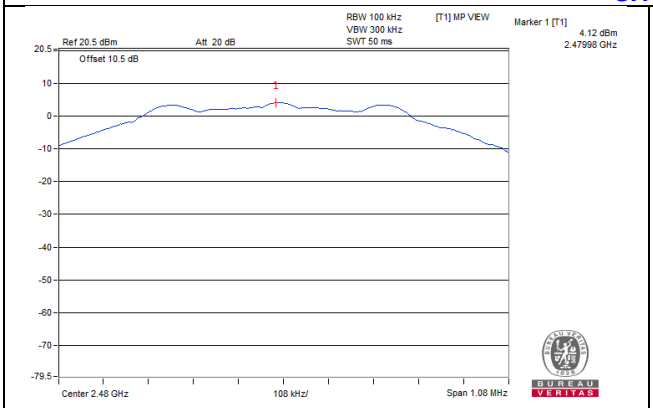


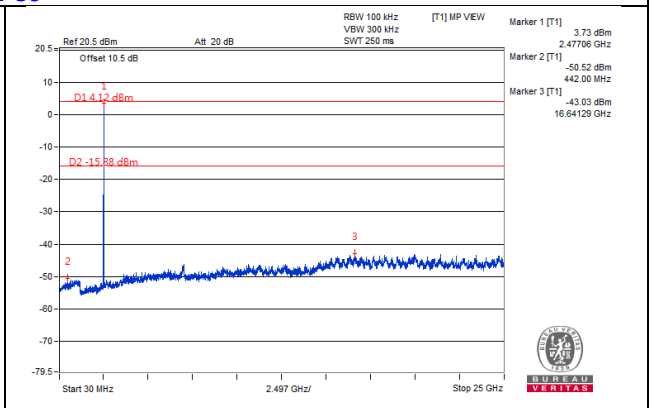
CH 19



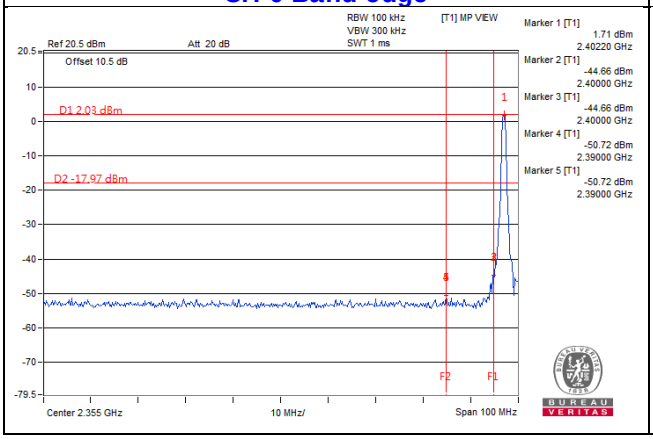


CH 39

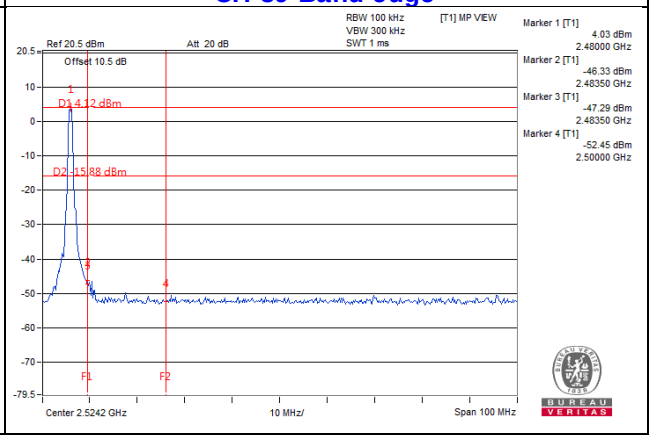




CH 0 Band edge

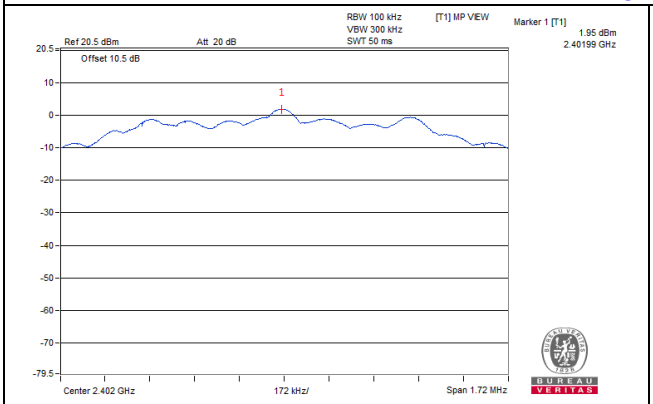


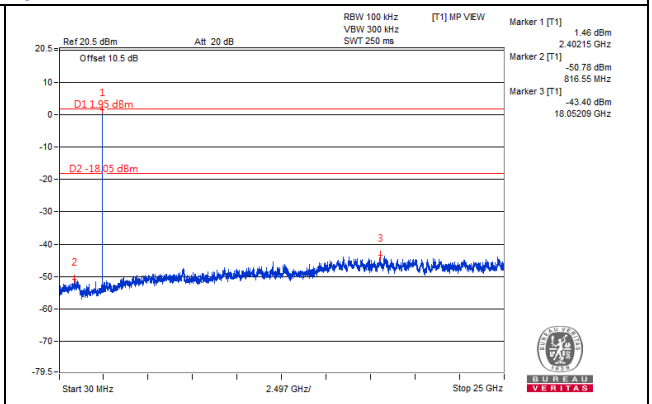
CH 39 Band edge



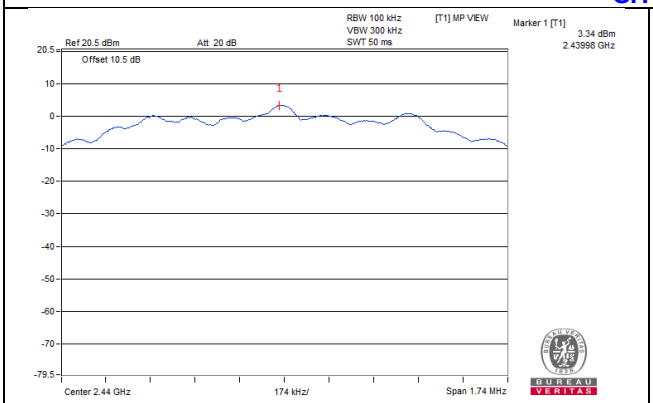
GFSK (2Mbps)

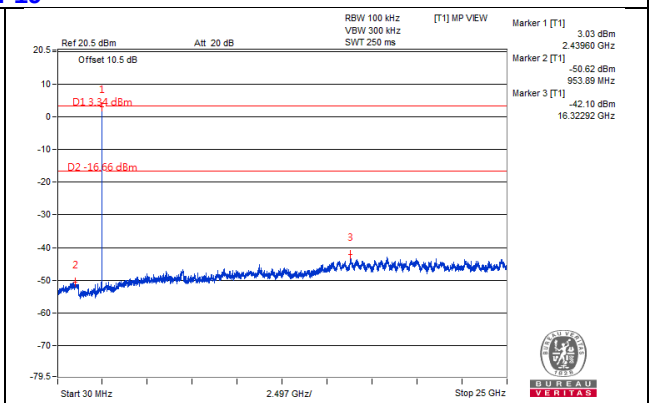
CH 0



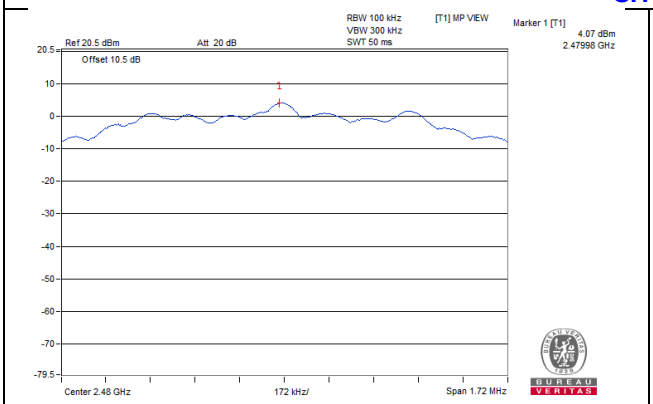


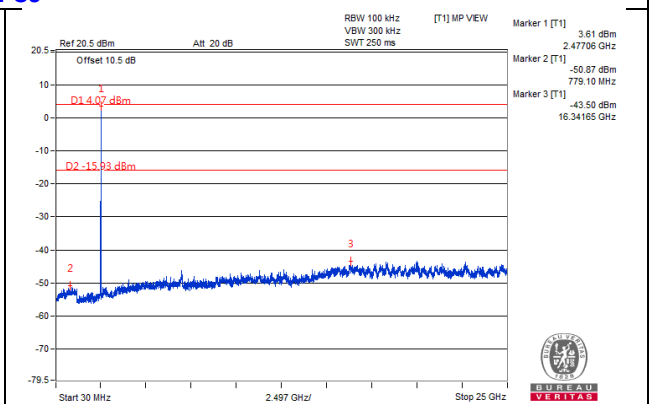
CH 19



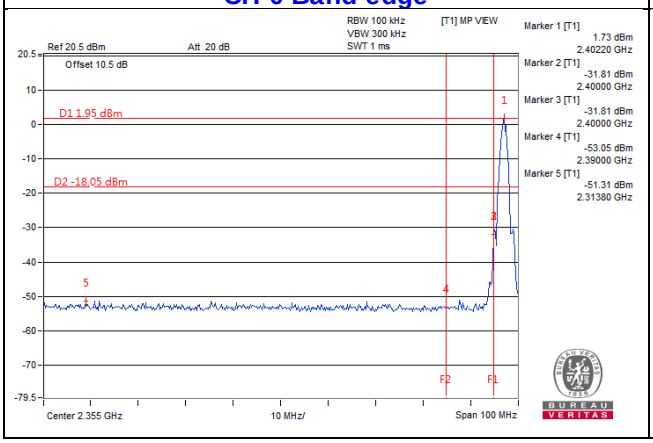


CH 39

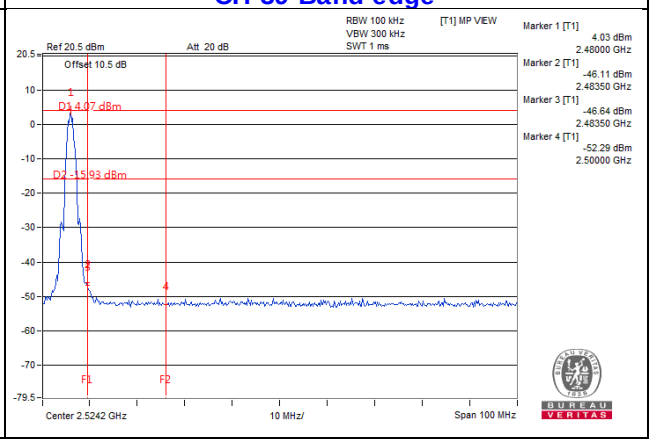




CH 0 Band edge



CH 39 Band edge

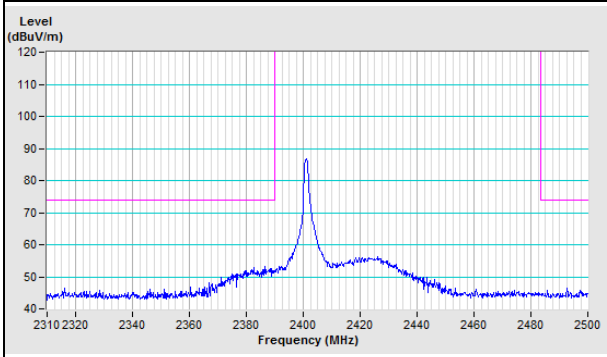


Annex A- Band Edge Measurement

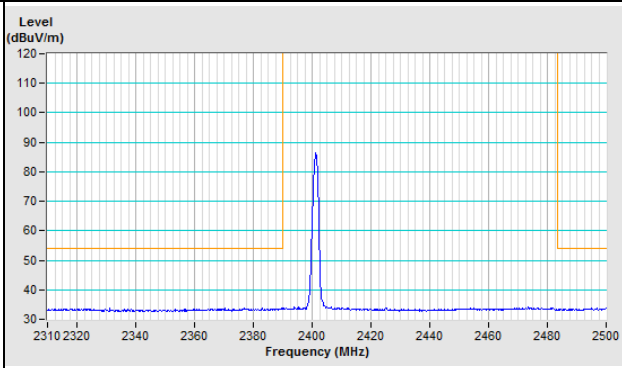
Mode 1A:

Channel 0

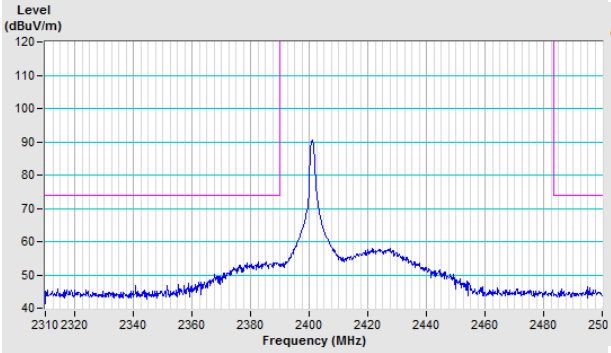
Horizontal (Peak)



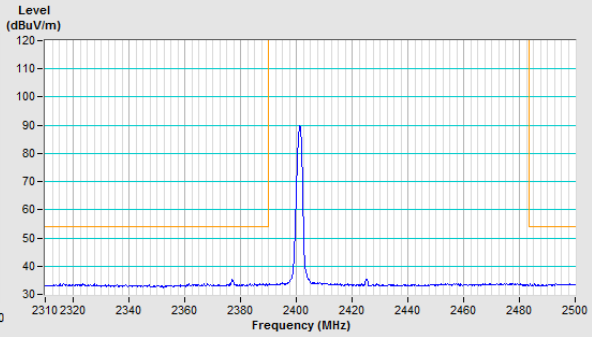
Horizontal (Average)



Vertical (Peak)

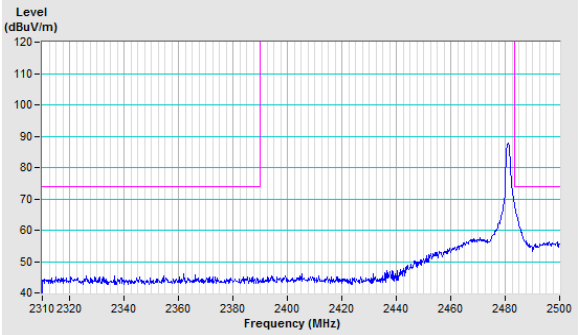


Vertical (Average)

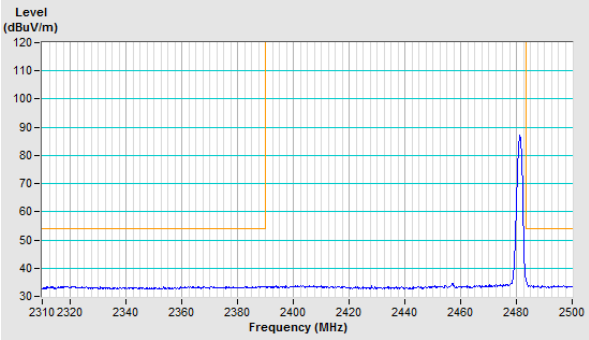


Channel 80

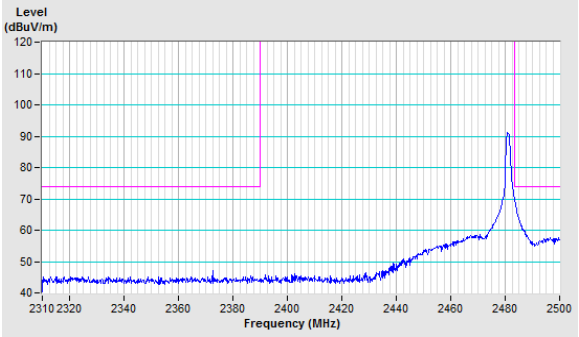
Horizontal (Peak)



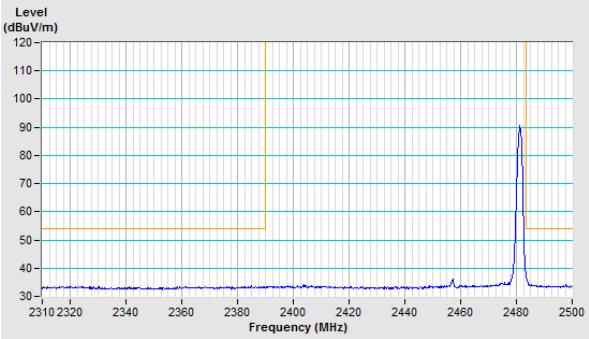
Horizontal (Average)



Vertical (Peak)



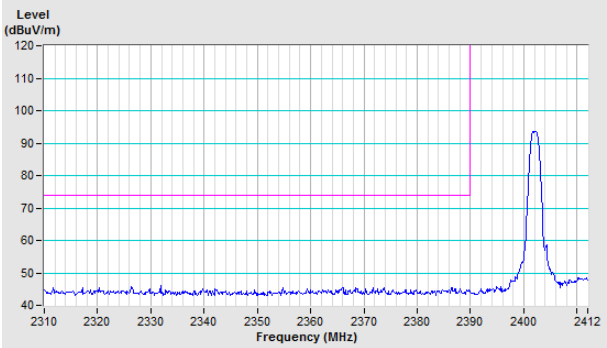
Vertical (Average)



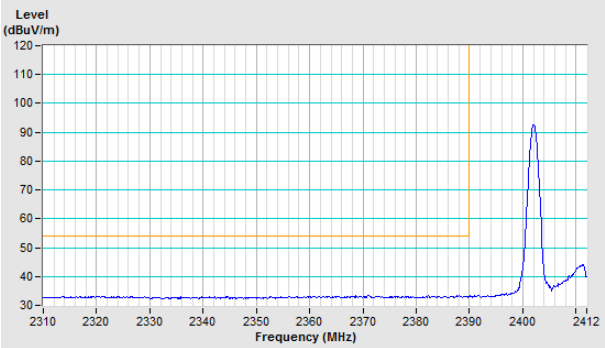
Mode 2A:
GFSK (1Mbps)

Channel 0

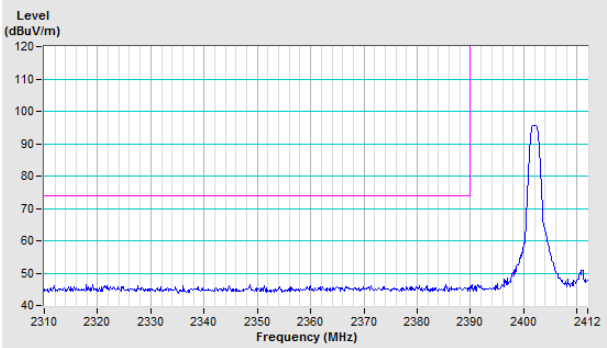
Horizontal (Peak)



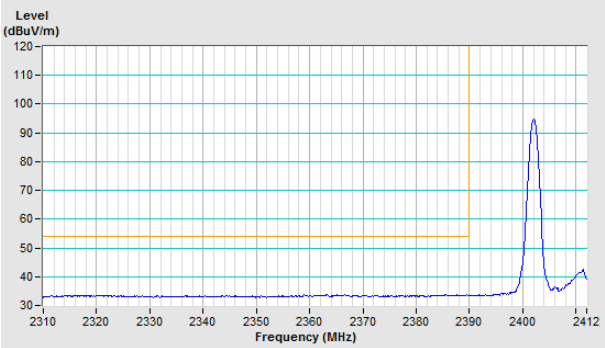
Horizontal (Average)



Vertical (Peak)

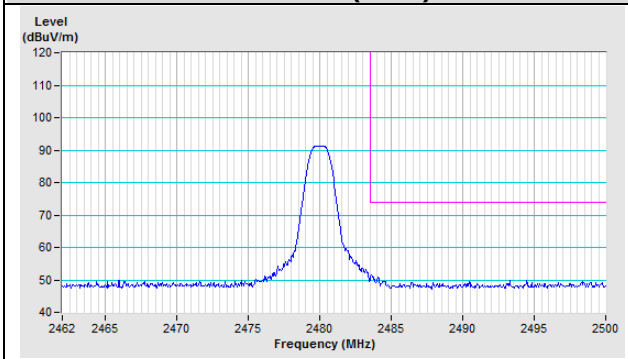


Vertical (Average)

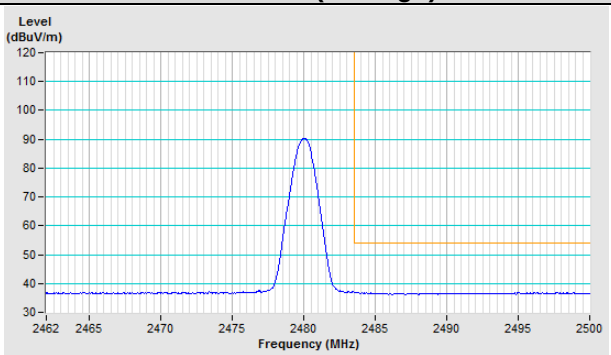


Channel 39

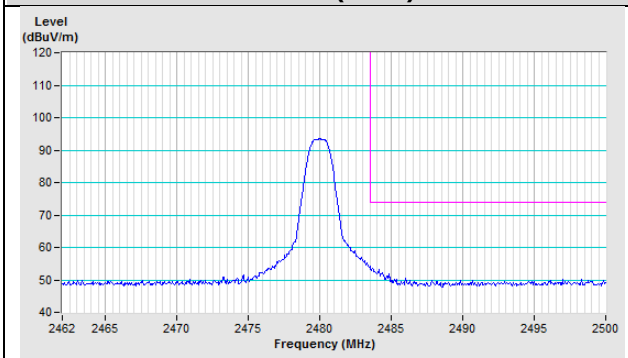
Horizontal (Peak)



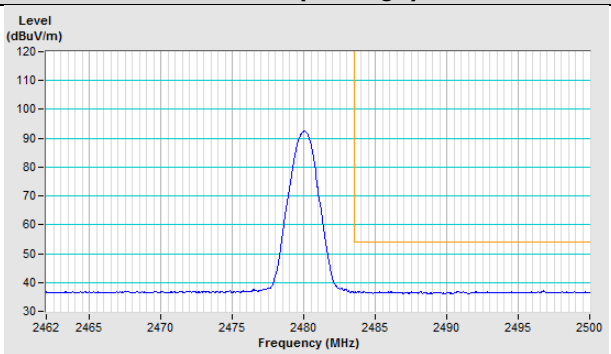
Horizontal (Average)



Vertical (Peak)



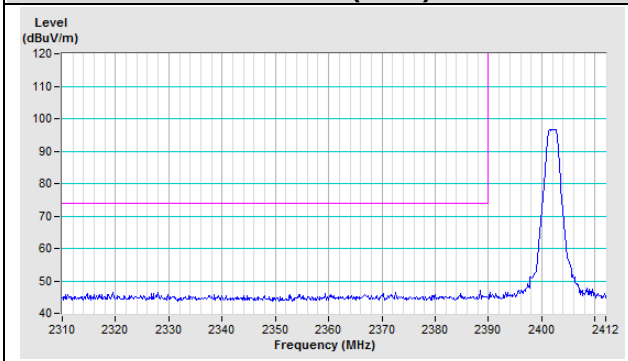
Vertical (Average)



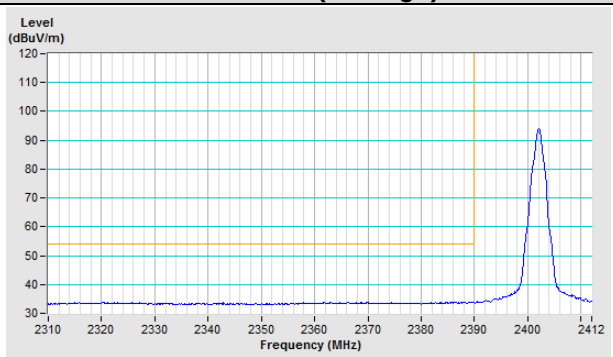
GFSK (2Mbps)

Channel 0

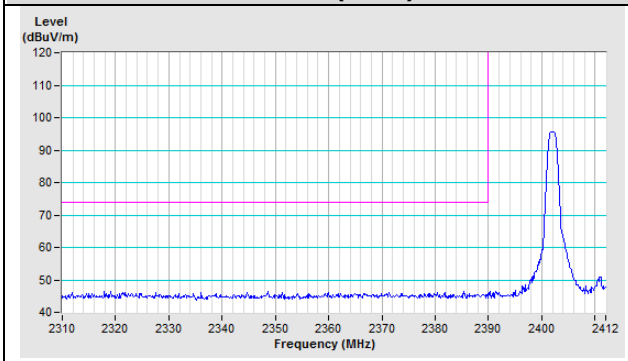
Horizontal (Peak)



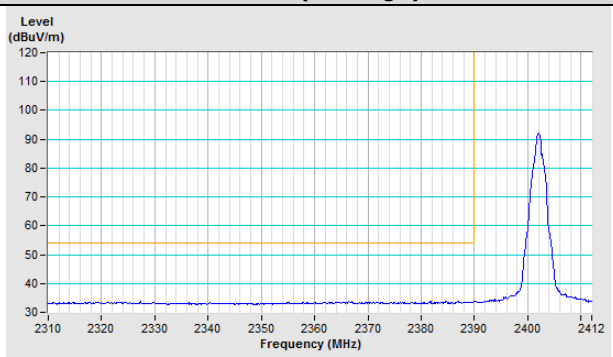
Horizontal (Average)



Vertical (Peak)

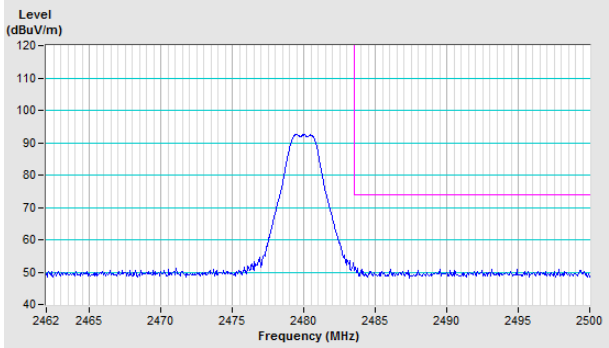


Vertical (Average)

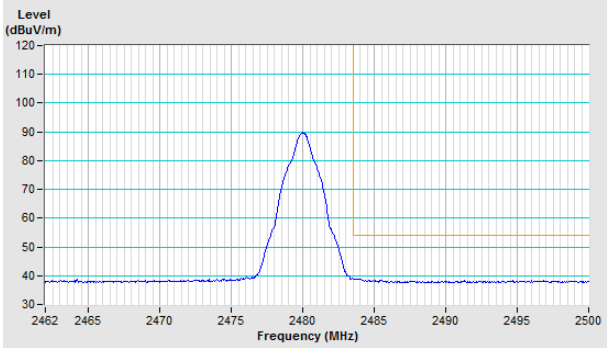


Channel 39

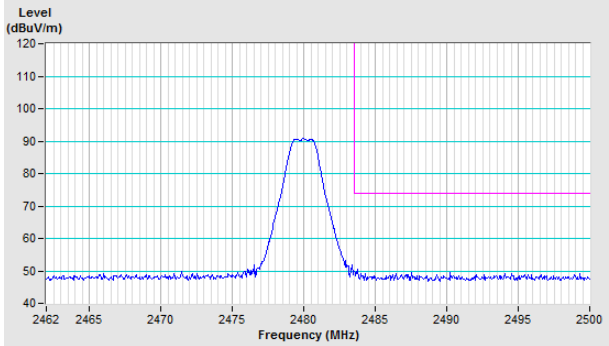
Horizontal (Peak)



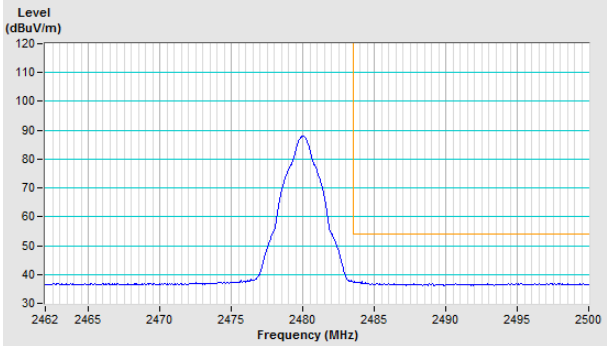
Horizontal (Average)



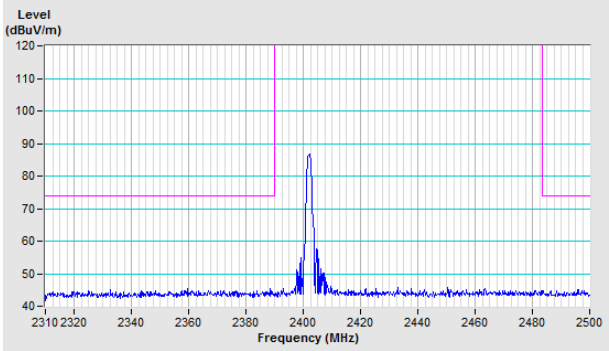
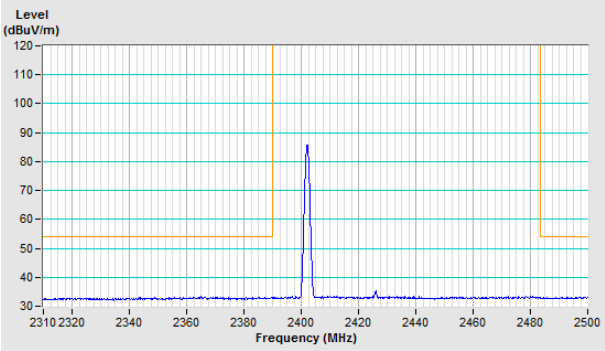
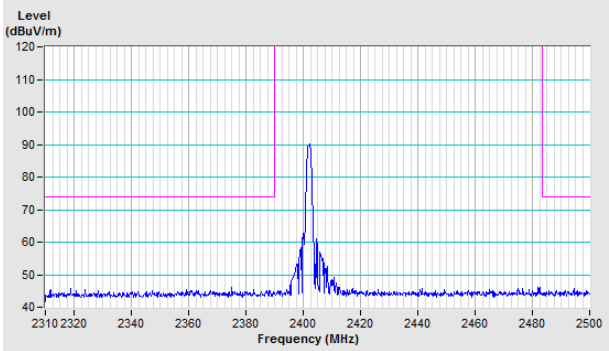
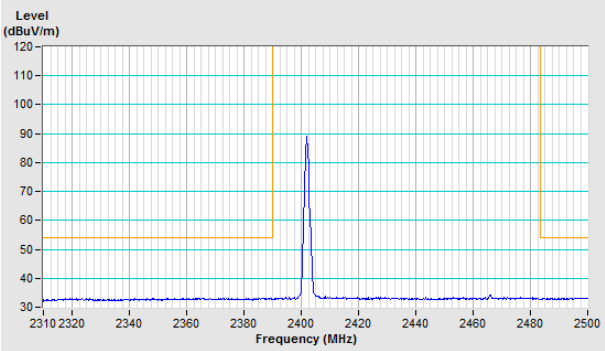
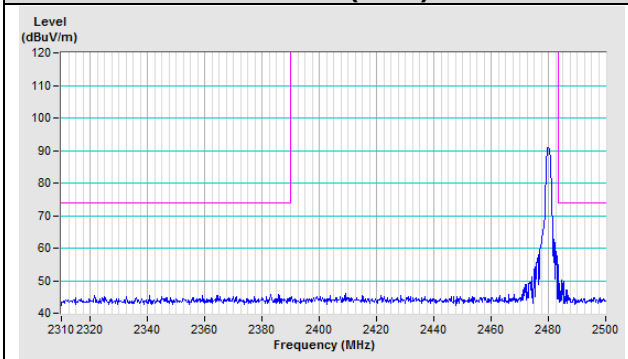
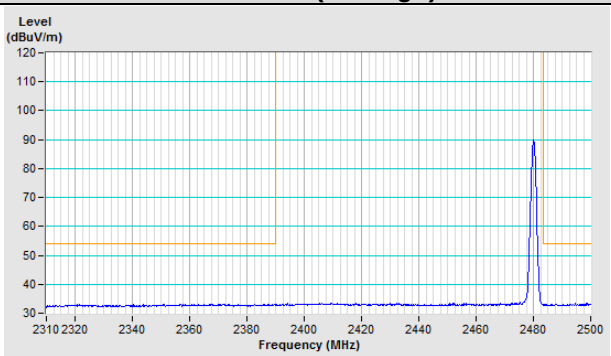
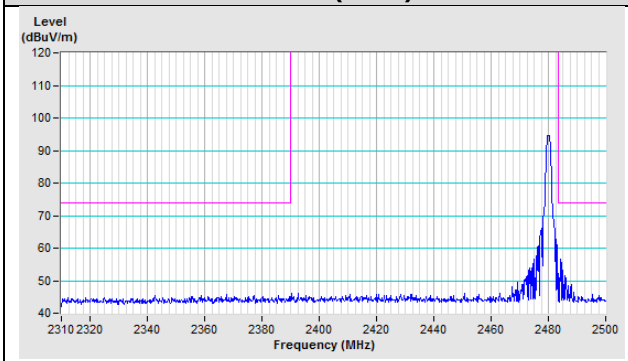
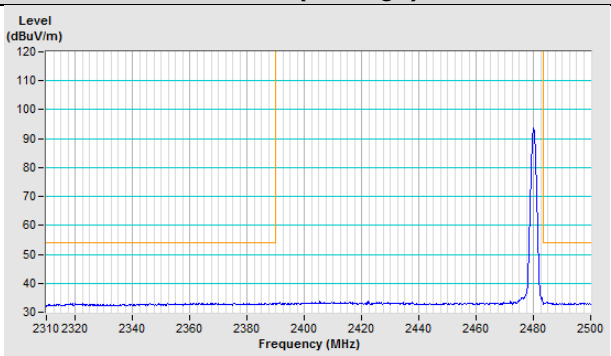
Vertical (Peak)



Vertical (Average)



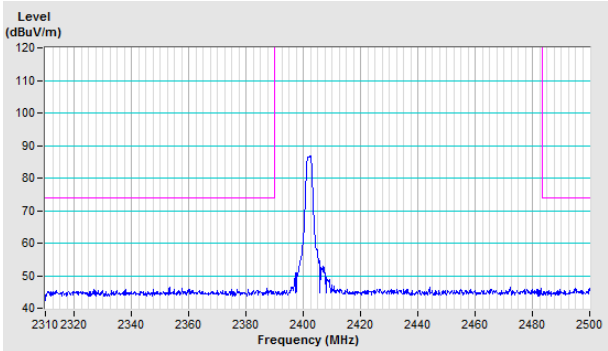
Mode 2D:
GFSK (1Mbps)

Channel 0	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
Channel 39	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

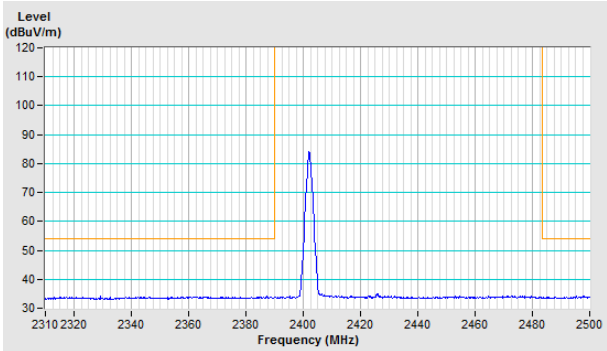
GFSK (2Mbps)

Channel 0

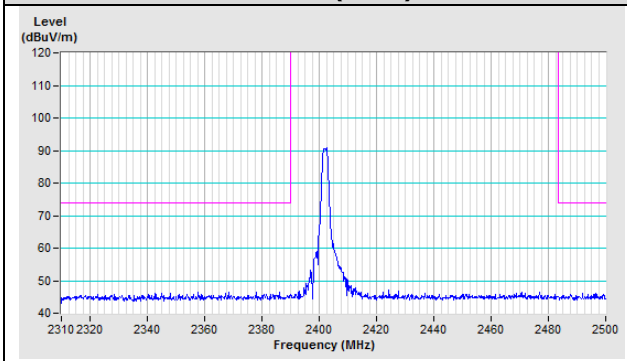
Horizontal (Peak)



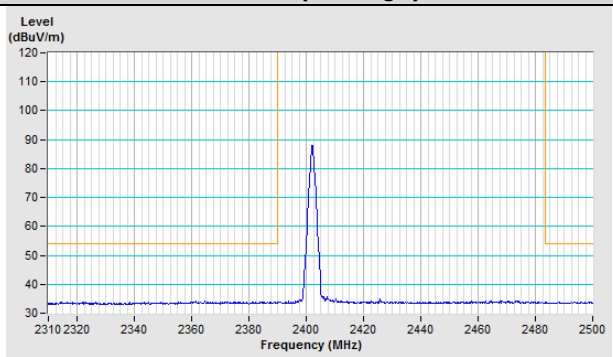
Horizontal (Average)



Vertical (Peak)

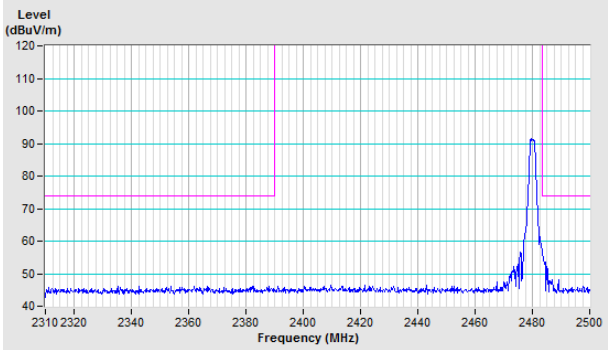


Vertical (Average)

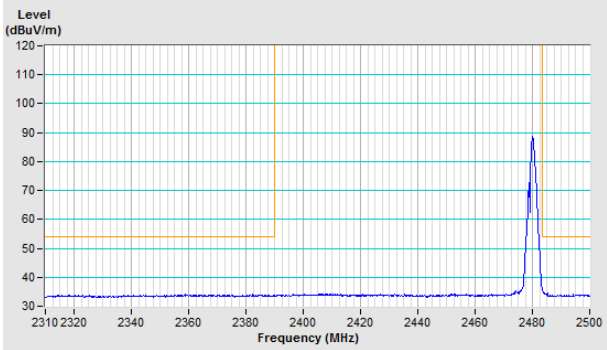


Channel 39

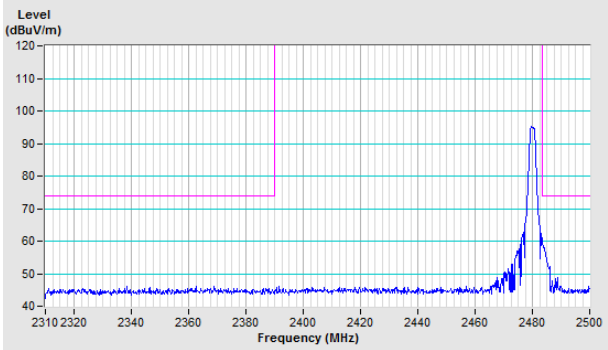
Horizontal (Peak)



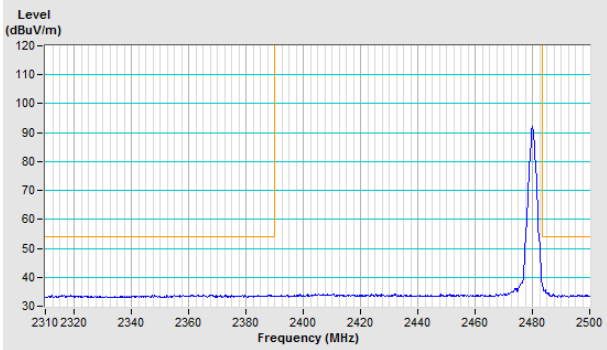
Horizontal (Average)



Vertical (Peak)



Vertical (Average)



5 Pictures of Test Arrangements

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

Appendix – 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:

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Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

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