MOTOROLA SOLUTIONS

CERTIFICATE 2518.08

MS ISO/IEC 17025
TESTING
SAMM NO. 0825

MOTOROLA PENANG ADV. COMM. LABORATORY
Motorola Solutions Malaysia Sdn. Bhd.
Plot 2A Medan Bayan Lepas,
Mukim 12, S.W.D. 11900 Bayan Lepas,
Penang, Malaysia.

FCC / ISED TEST REPORT
Report Revision : Rev.A

Date/s Tested	:	21-Jan-2022 - 26-Jan-2022
Report Issue Date	:	15-Feb-2022
Manufacturer/Location	:	Motorola Solutions Malaysia Sdn Bhd Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia
Requestor	:	KHOO TEIK KEAN
Product Type	:	Hand-held
Product Version (PMN)	:	XPR 3500e
Model Number (HVIN)	:	AAH02JDH9VA1AN; IC Model: PMUD2627EABNKA
Frequency Band	:	2.402 - 2.480 GHz
Max RF Output Power	:	10 mWatts
Applicant Name	:	Motorola Solutions Inc
Applicant Address	:	8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322
FCC Registrations	:	461337
IC Registrations	:	MY0001
Firmware Version (FVIN)	:	R02.21.04.3002

The equipment was tested accordance to the requirement listed below:

(2.4GHz BT) **FCC 47CFR Part 15C** **ISED RSS 247 Issue 2**	**PASS**

Prepared By:

GAN BOON TEONG
Test Personnel

Approved Signatory:

VINCENT FOONG CHUEN KIT
Responsible Engineer

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REVISION HISTORY

Revision History	Description	Date	Originator
Rev. A	Initial Report	**15-Feb-2022**	**Gan Boon Teong**

1.0. General Information

EUT Description:

Technologies	2.4GHz BT
TX Frequency range	2402MHz – 2480MHz
Modulation Type	GFSK, Pi/4 DQPSK,8DPSK
Connector type	PROGRAMMING, TEST & ALIGNMENT CABLE
Antenna type	INTERNAL

The EUT contains following accessory devices and data cable:

Item	Brand	Model or P/N
BELIZE NON-TIA HIGH CAP LV LI- ION BATTERY 2950M3000T	MOTOROLA	PMNN4493A
VHF STUBBY ANTENNA (146-160 MHZ)	MOTOROLA	PMAD4120A
PROGRAMMING CABLE USB	MOTOROLA	PMKN4115

Channel number and frequency information:

79 channels are provided to this EUT:

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

General Description of Applied Standards
The EUT is a RF Product. According to the specifications of the manufacturer, the EUT is to comply with the requirements of the following standards:

Deviation from standard
Not applicable as no deviation from standard test method

Modifications to EUT
For RF conducted measurements a pigtail was soldered out of the board while for radiated measurements there were no modifications to the device

Test configuration of EUT
All relevant configurations involving radio models and accessories (including chargers, batteries, antennas) were assessed. Only worst case configurations will be included in this report.

2.0. Summary of Test Results

FCC Clause	ISED Clause	Test Item	Result	Remark	Serial number tested	Tested by
15.247 (b)(1)	RSS-247 5.4(b)	Conducted RF Output Power (Peak)	Pass	Highest output power: 9.521 dBm (8.96 mW)	867TYB2917	Gan
15.247 (a)(1)	RSS-247 5.1(a) RSS-247 5.1(b)	(1) 20dB Channel Bandwidth (2) Channel Separation	Pass	GFSK – 0.859 MHz 859KF1D Pi/4 DQPSK – 1.180 MHz 1M18G1D 8DPSK – 1.180 MHz 1M18G1D	867TYB2917	Gan
15.247(a)(1)(iii)	RSS-247 5.1(d)	Number of hopping Frequency used	Pass	Meet the limit requirement.	867TYB2917	Gan
15.247(a)(1)(iii)	RSS-247 5.1(d)	Dwell time on each channel	Pass	Meet the limit requirement.	867TYB2917	Gan
15.247 (d)	RSS-247 5.5	Band Edge Conducted Spurious Emission	Pass	Worst case emission: -46.67dB	867TYB2917	Gan
15.247 (d)	RSS-247 5.5	Conducted Spurious Emission	Pass	Worst case emission: -45.04 dBm	867TYB2917	Gan
15.205, 15.209, 15.247 (d)	RSS-247 5.5	Radiated Emission within Restricted Bands	Pass	Worst case emission: RBE: 45.6326 dBuV/m, margin 8.3674 dB	867TYB2909	Qawiman&Nazrin
15.207	RSS-Gen 8.8	AC Powerline Conducted Emission	NA	Testing is not required, radio shall turn off during charging mode	NA	NA
15.203	-	Antenna Requirement	NA	Internal antenna is not accessible to the end-user	NA	NA

3.0. Measurement Uncertainty

Measurement	Frequency	Expended Uncertainty (k=1.96) (±)
AC Power Line Conducted Spurious Emission	150kHz ~ 30MHz	3.48 dB
Radiated Emissions up to 1 GHz (Field Strength)	30MHz ~ 1000MHz	5.88 dB
Radiated Emissions above 1 GHz (Field Strength)	1GHz ~ 18GHz	5.84 dB
	18GHz ~ 40GHz	6.02 dB
Conducted Spurious Emissions	9kHz ~ 12.75GHz	2.82 dB
Band Edge Conducted Spurious Emission	9kHz ~ 12.75GHz	2.82 dB

4.0. Equipment List

Bluetooth ATE # 1 (SW Version: Ate Main_3.1.11)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
ANALYZER SPECTRUM	E4440A	US45303111	14-Jul-21	14-Jul-22
CHAMBER	SH-641	92003820	14-Jul-21	14-Jul-22
POWER SUPPLY	6652A	MY40001436	22-Nov-21	22-Nov-22
N to N RF Cable # 1	SF126/11N/11N	NA	NA	NA

Radiated Emission Station (SW Version: EMC FCC RE v1.6.2)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
DRG HORN FREQ.	SAS-571	720	06-Apr-21	06-Apr-23
DRG HORN FREQ.	SAS-571	719	13-Sep-21	13-Sep-22
POWER SUPPLY	N7976A	MY53410110	24-May-21	24-May-22
SIGNAL GENERATOR	SMB 100A	182511	4-Jun-21	4-Jun-24
EMI TEST RECEIVER	ESW44	101731	5-Nov-21	5-Nov-22
EMI TEST RECEIVER	ESIB26	827769/009	11-Mar-21	11-Mar-22
5m SEMI-ANECHOIC CHAMBER	S800-HX	J2308	Not Required	Not Required
BILOG ANTENNA	CBL6112D	55546	06-Jun-21	06-Jun-22
BILOG ANTENNA	CBL6112B	2964	4-May-21	4-May-22
HYGRO-THERMOMETER	SDL500	A.016800	18-May-21	18-May-22
SYSTEM CONTROLLER	SC104V	050806-1	Not Required	Not Required
TURNTABLE FLUSH MOUNT 2M	FM2011	NA	Not Required	Not Required
ANTENNA POSITIONING TOWER	TLT2	NA	Not Required	Not Required
BROAD-BAND HORN ANTENNA	BBHA9170	BBHA9170255	4-Feb-21	4-Feb-22
PREAMPLIFIER 18-40GHz	BBV9721	9721-007	Not Required	Not Required
PREAMPLIFIER	PAM-0118P	361	11-Sep-20	11-Sep-23
LOOP ANTENNA	6502	00208416	8-Oct-21	8-Oct-22

5.0. Test Mode Applicability and Test Channel Detail

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 Technology	Modulation Type	Environmental Conditions
Test Mode	0 to 78	0,39,78	FHSS	GFSK, Pi/4 DQPSK,8DPSK	24.1°C, 70.1%RH

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 Technology	Modulation Type	Environmental Conditions
Test Mode	0 to 78	0,39,78	FHSS	GFSK, Pi/4 DQPSK,8DPSK	24.1°C, 70.1%RH

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.

NAEUT Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Environmental Conditions
Application Mode	0 to 78	AUTO	FHSS	AUTO	NA

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).

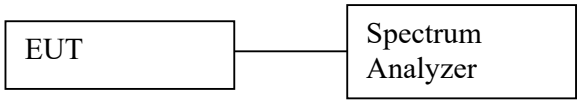
☒Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Environmental Conditions
Test Mode	0 to 78	0,39,78	FHSS	GFSK, Pi/4 DQPSK,8DPSK	25°C, 54.6%RH

6.0. Transmitter Test Parameters

6.1. Conducted RF Output Power (Peak)

6.1.1. Test Setup



a) Check and ensure the spectrum analyzer well calibrate.
b) Turn on the EUT and set EUT to transmit maximum data rate with hopping disable.
c) Connect EUT's antenna terminal to spectrum analyzer with a low loss cable.
d) Setting of Spectrum analyzer :
   a. RBW = > 20 dB bandwidth
   b. VBW = RBW
   c. Detector mode = Peak
   d. AMPLITUDE → Scale/Div = 10 dB
   e. Trace = Max hold
   f. Sweep = auto
e) Measure the captured power within the band and recording the plot.
f) Repeat above procedure with other different mode of operation.

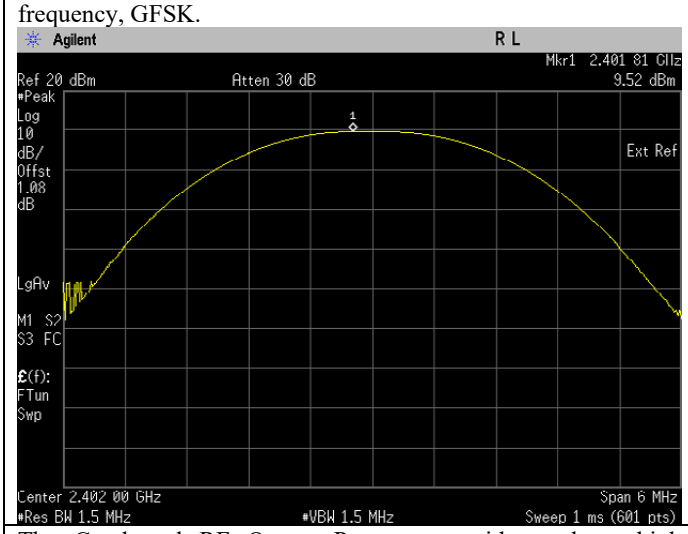
6.1.2. Test Limits:

Normal Condition (25 º C)
≤ 125mW (or 20.9dBm)

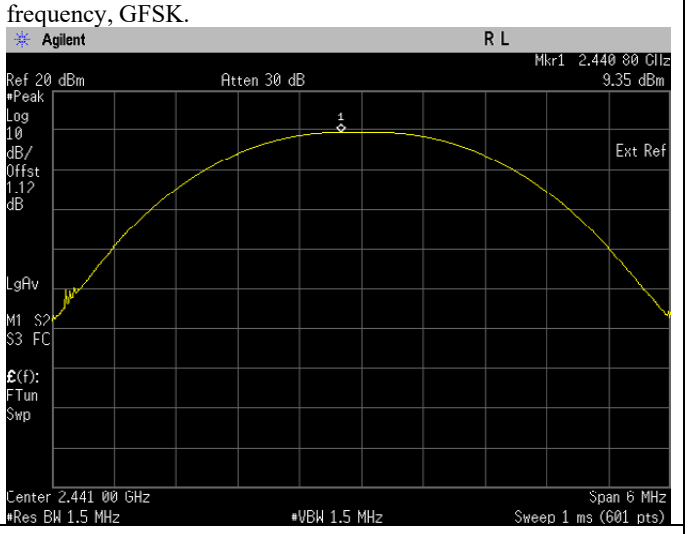
6.1.3. Test Data:

Test Conditions		Test Frequency (GHz)	Results	
Modulation	Voltage(V)		dBm	Status
GFSK	7.50	2.4020	9.521	Pass
		2.4410	9.346	Pass
		2.4800	9.201	Pass
Pi/4DQPSK	7.50	2.4020	8.700	Pass
		2.4410	8.546	Pass
		2.4800	8.397	Pass
8DPSK	7.50	2.4020	8.981	Pass
		2.4410	8.833	Pass
		2.4800	8.691	Pass

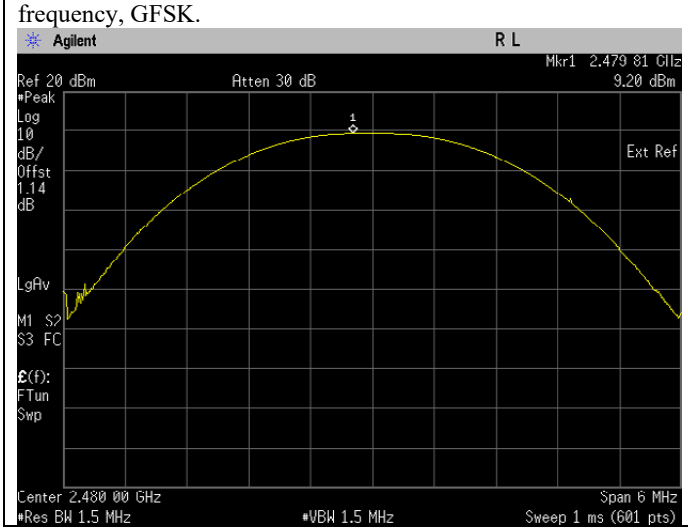
The Conducted RF Output Power test with result at low frequency, GFSK.



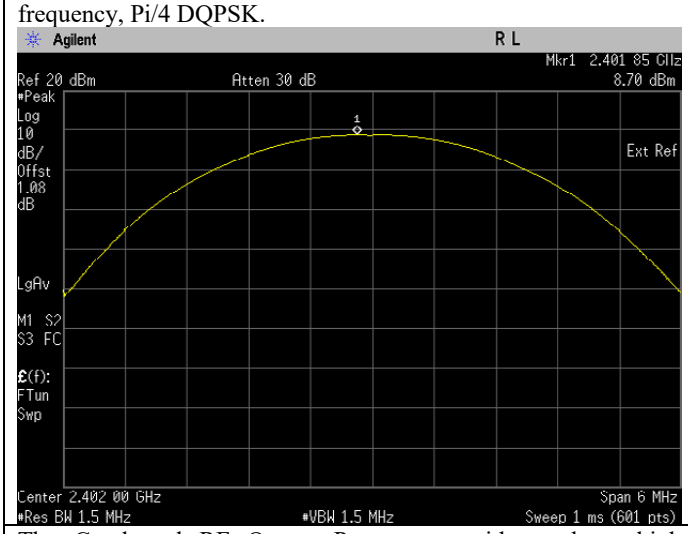
The Conducted RF Output Power test with result at mid frequency, GFSK.



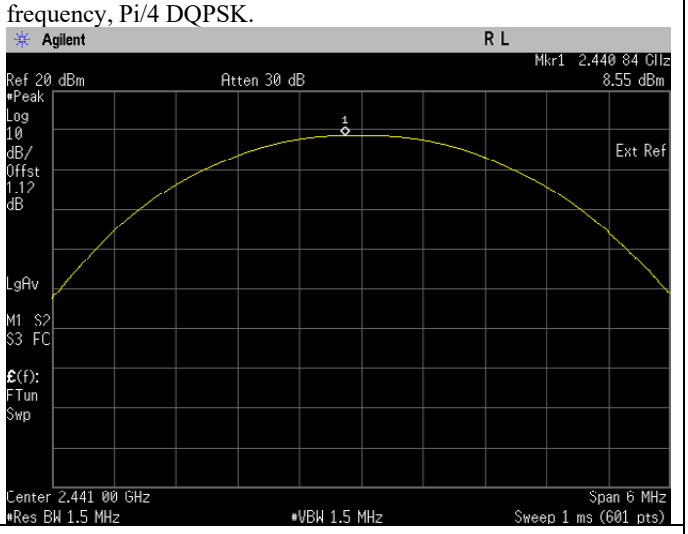
The Conducted RF Output Power test with result at high frequency, GFSK.



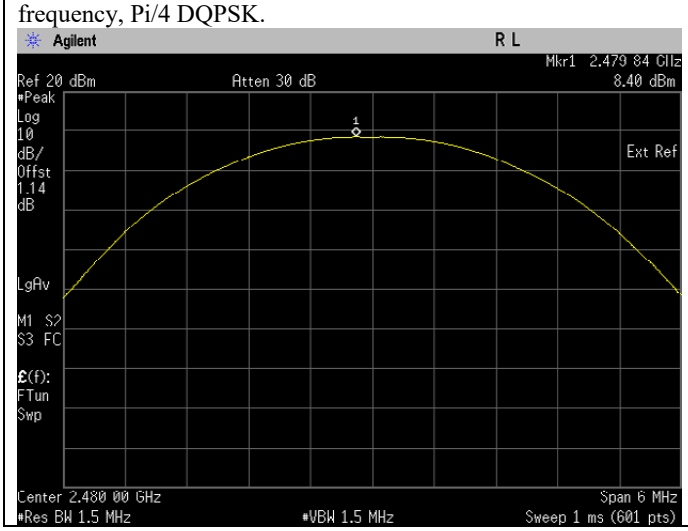
The Conducted RF Output Power test with result at low frequency, Pi/4 DQPSK.



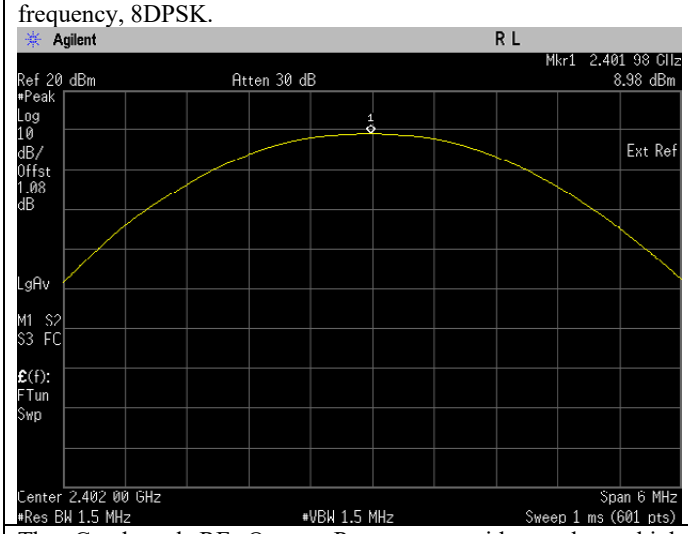
The Conducted RF Output Power test with result at mid frequency, Pi/4 DQPSK.



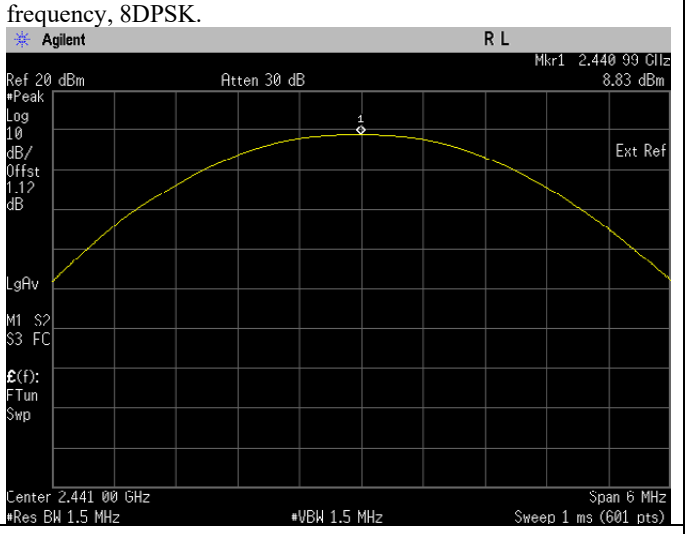
The Conducted RF Output Power test with result at high frequency, Pi/4 DQPSK.



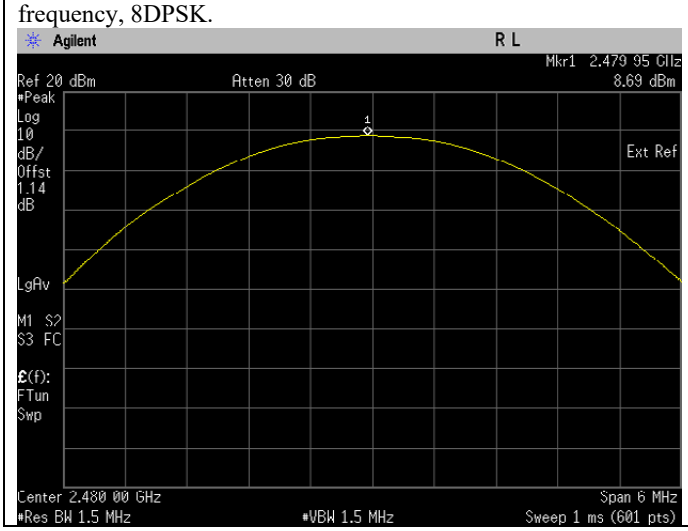
The Conducted RF Output Power test with result at low frequency, 8DPSK.



The Conducted RF Output Power test with result at mid frequency, 8DPSK.

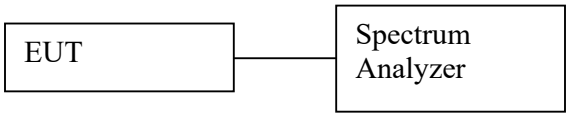


The Conducted RF Output Power test with result at high frequency, 8DPSK.



6.2. 20dB Channel Bandwidth

6.2.1. Test Setup



a) Check and ensure the spectrum analyzer well calibrate.
b) Turn on the EUT and set EUT to transmit maximum data rate with hopping disable.
c) Connect EUT's antenna terminal to spectrum analyzer with a low loss cable.
d) Setting of Spectrum analyzer :
    a. RBW = 30 kHz
    b. VBW = 100 kHz
    c. SPAN = 3 MHz, center on test frequency
    d. AMPLITUDE → Scale/Div = 10 dB
    e. Detector mode = Peak
    f. Trace = Max hold
    g. Sweep = auto
e) Measure the freq different of two frequencies that were attenuated 20dB from peak of the emission & record the frequency difference as the emission bandwidth.
f) Save the plot result from spectrum analyzer screen.
g) Repeat above procedure with other different mode of operation.

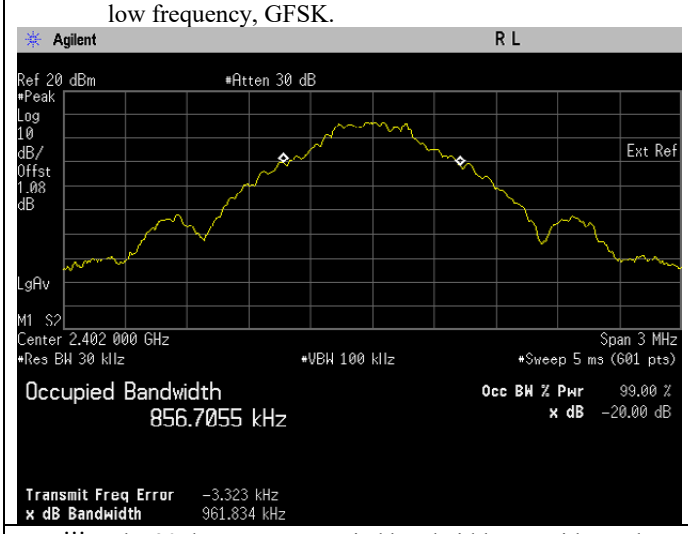
6.2.2. Test Limits:

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

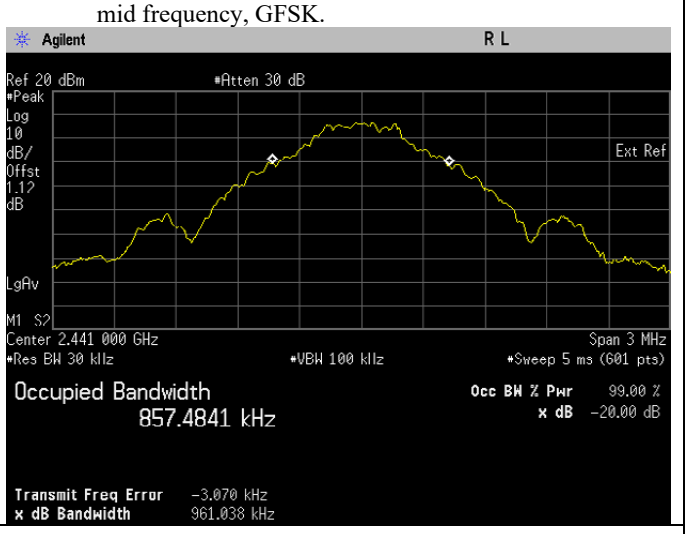
6.2.3. Test Data:

Test Conditions		Test Frequency TX (GHz)	Results (MHz)		
Modulation Type	Voltage(V)		20dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Status
GFSK	7.50	2.4020	0.962	0.857	Pass
		2.4410	0.961	0.857	Pass
		2.4800	0.962	0.859	Pass
Pi/4 DQPSK	7.50	2.4020	1.319	1.179	Pass
		2.4410	1.321	1.178	Pass
		2.4800	1.321	1.180	Pass
8DPSK	7.50	2.4020	1.309	1.177	Pass
		2.4410	1.307	1.177	Pass
		2.4800	1.307	1.180	Pass

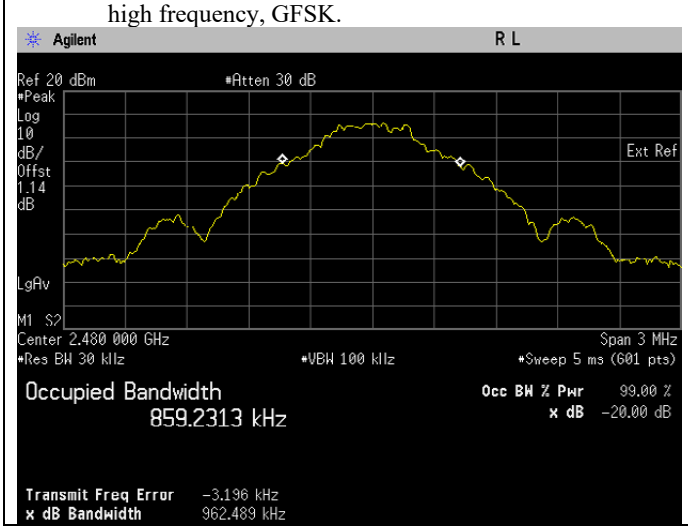
i. The 20 dB BW & occupied bandwidth test with result at low frequency, GFSK.



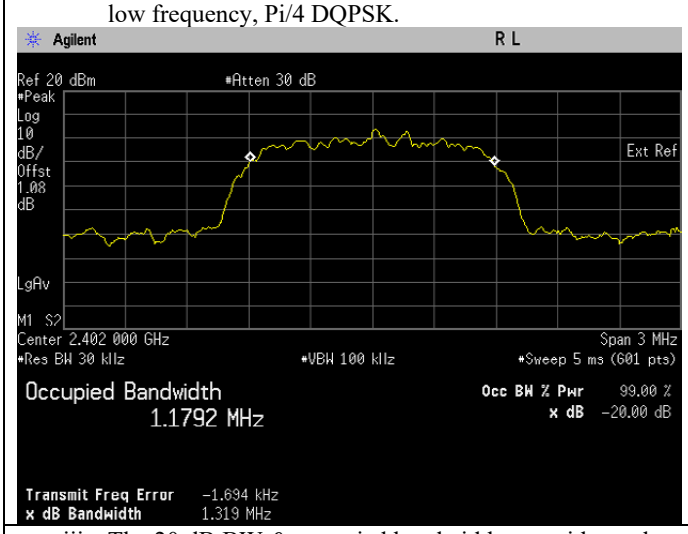
ii. The 20 dB BW & occupied bandwidth test with result at mid frequency, GFSK.



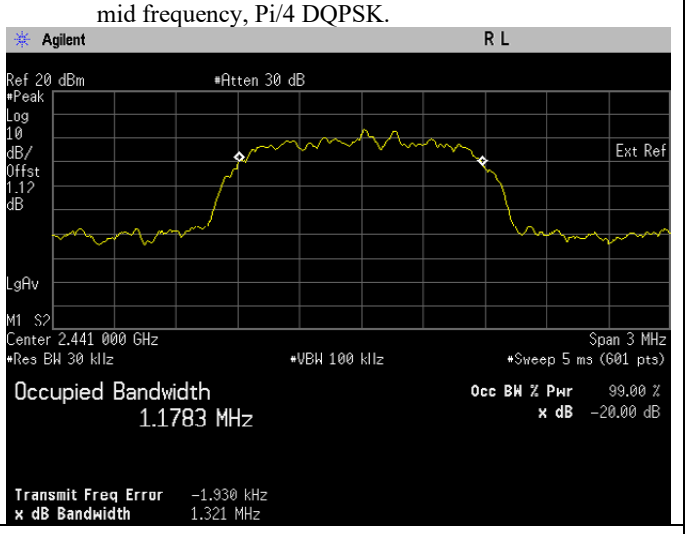
iii. The 20 dB BW & occupied bandwidth test with result at high frequency, GFSK.



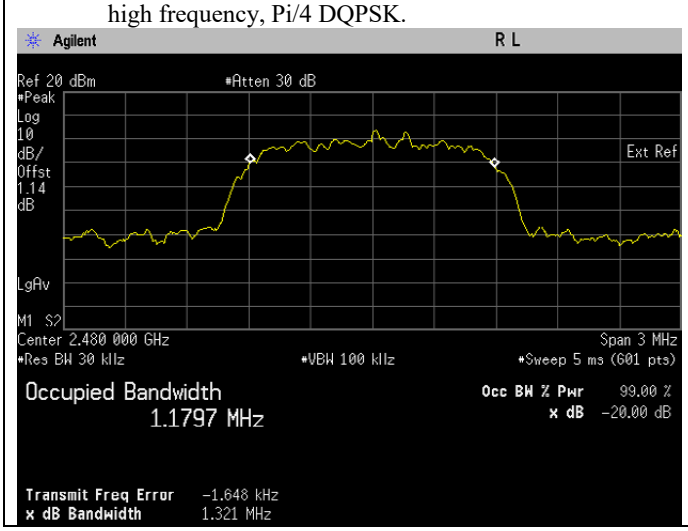
i. The 20 dB BW & occupied bandwidth test with result at low frequency, Pi/4 DQPSK.



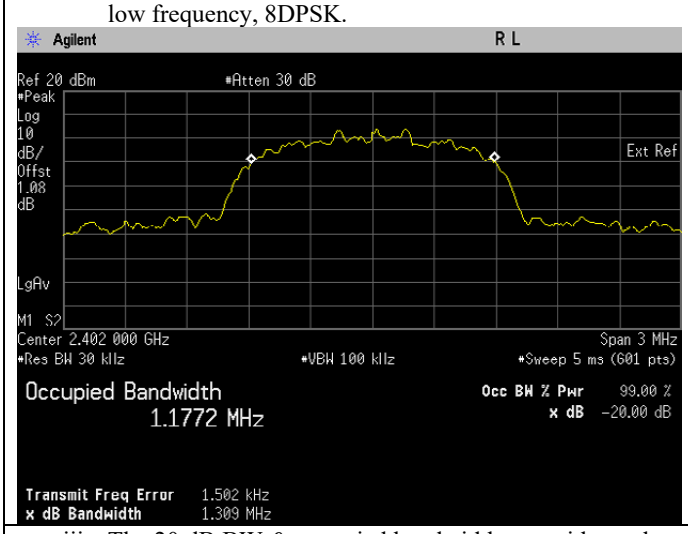
ii. The 20 dB BW & occupied bandwidth test with result at mid frequency, Pi/4 DQPSK.



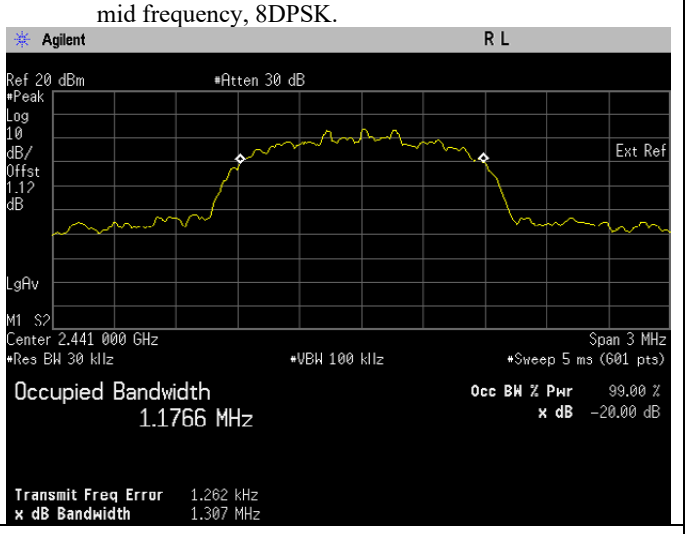
iii. The 20 dB BW & occupied bandwidth test with result at high frequency, Pi/4 DQPSK.



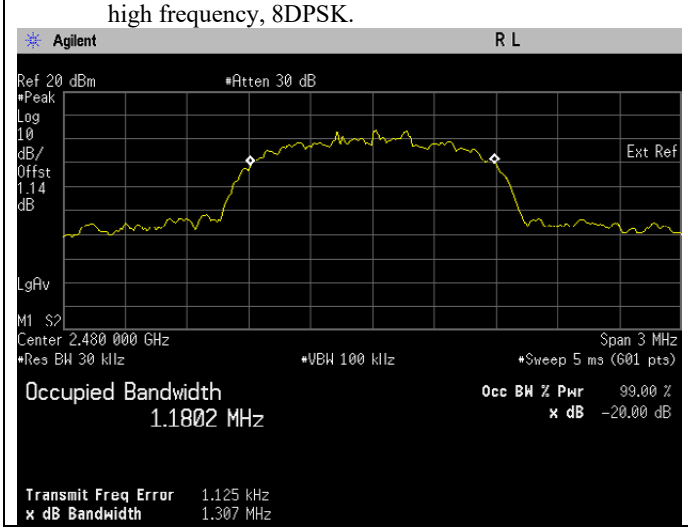
i. The 20 dB BW & occupied bandwidth test with result at low frequency, 8DPSK.



ii. The 20 dB BW & occupied bandwidth test with result at mid frequency, 8DPSK.

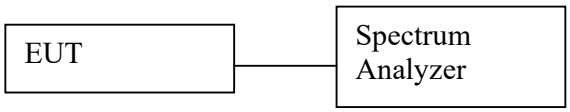


iii. The 20 dB BW & occupied bandwidth test with result at high frequency, 8DPSK.



6.3. Band-edge Conducted Spurious Emission

6.3.1. Test Setup



a) Check and ensure the spectrum analyzer well calibrate.
b) Turn on the EUT and keep the EUT in hopping mode.
c) Connect EUT's antenna terminal to spectrum analyzer with a low loss cable.
d) Setting of Spectrum analyzer :
   a. RBW = 100 kHz
   b. VBW = 300 kHz
   c. SPAN = 4 MHz (Low channel) or 6MHz(High Channel)
   d. Detector mode = Peak
   e. AMPLITUDE → Scale/Div = 10 dB
   f. Trace = Max hold
   g. Sweep = auto
e) Measure the captured band edge emission result and recording the plot.
f) Repeat above on EUT with hopping disable.
g) Repeat above procedure with other different test frequency.

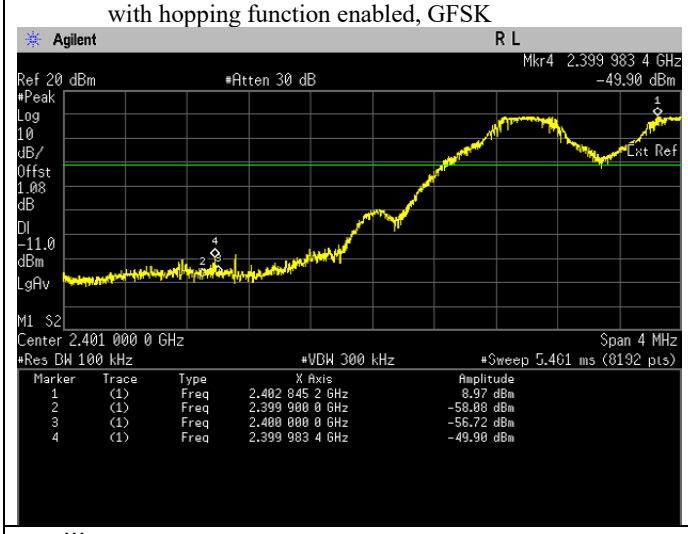
6.3.2. Test Limits

Normal Condition (25 º C)
Shall be at least 20 dB below the peak power.

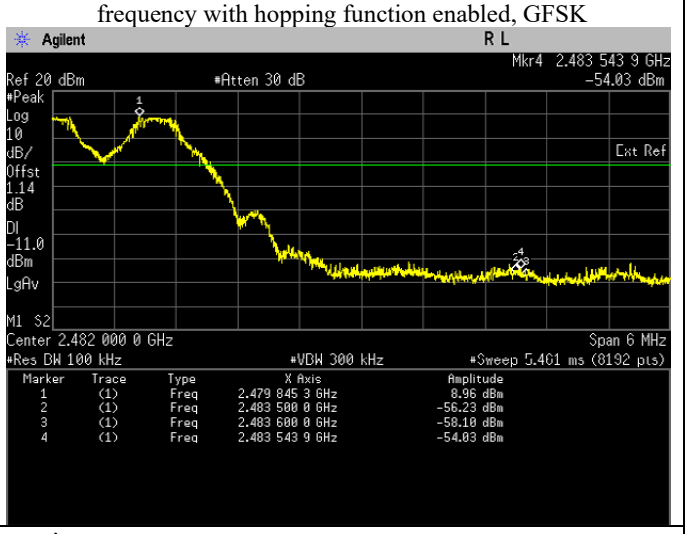
6.3.3. Test Result

Test Conditions		Hopping Method	Test Frequency(GHz)	Results	
Modulation	Voltage(V)			dB	Status
GFSK	7.50	Enabled (continuously)	2.4020	-49.90	Pass
			2.4800	-54.03	Pass
		Disabled (constantly)	2.4020	-49.74	Pass
			2.4800	-52.26	Pass
Pi/4 DQPSK	7.50	Enabled (continuously)	2.4020	-53.94	Pass
			2.4800	-57.81	Pass
		Disabled (constantly)	2.4020	-51.34	Pass
			2.4800	-53.10	Pass
8DPSK	7.50	Enabled (continuously)	2.4020	-46.67	Pass
			2.4800	-55.66	Pass
		Disabled (constantly)	2.4020	-46.72	Pass
			2.4800	-53.71	Pass

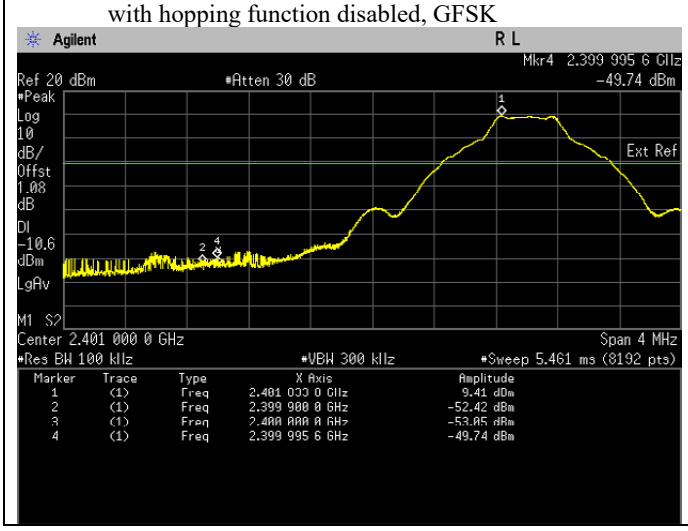
i. The highest band edge emission at low carrier frequency with hopping function enabled, GFSK



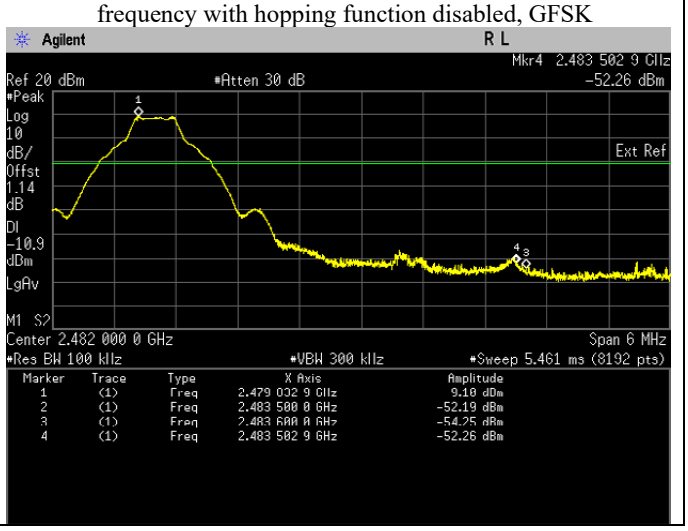
ii. The highest band edge emission at high carrier frequency with hopping function enabled, GFSK



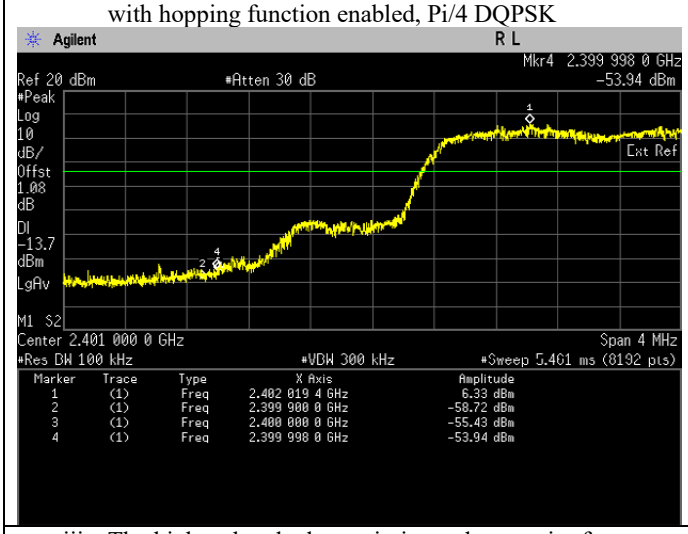
iii. The highest band edge emission at low carrier frequency with hopping function disabled, GFSK



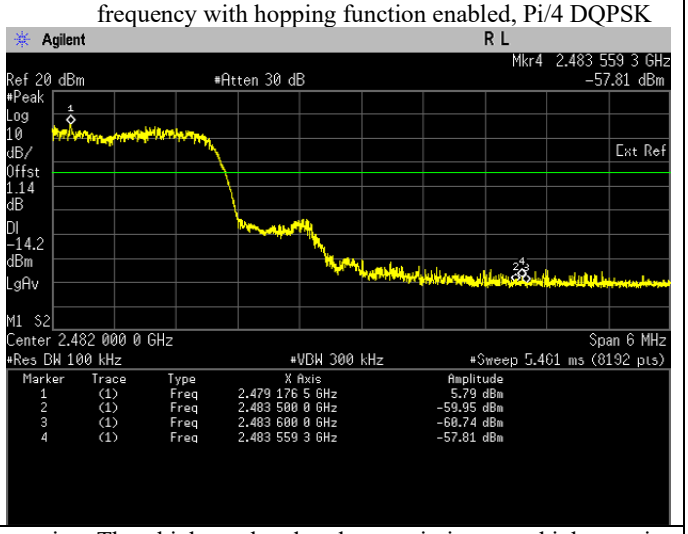
iv. The highest band edge emission at high carrier frequency with hopping function disabled, GFSK



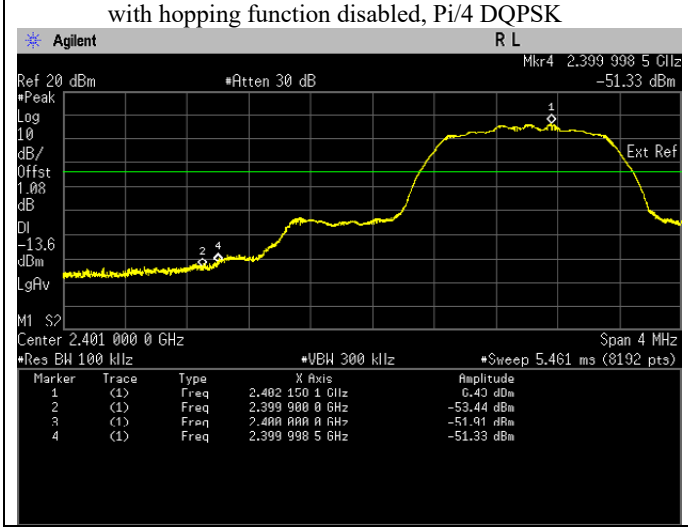
i. The highest band edge emission at low carrier frequency with hopping function enabled, Pi/4 DQPSK



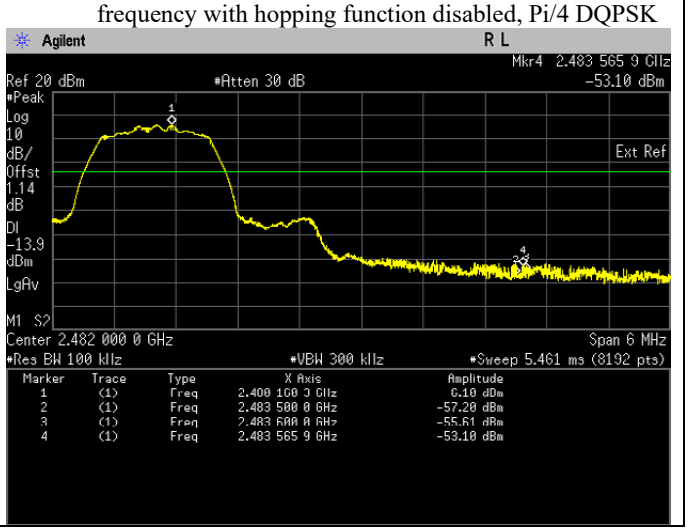
ii. The highest band edge emission at high carrier frequency with hopping function enabled, Pi/4 DQPSK



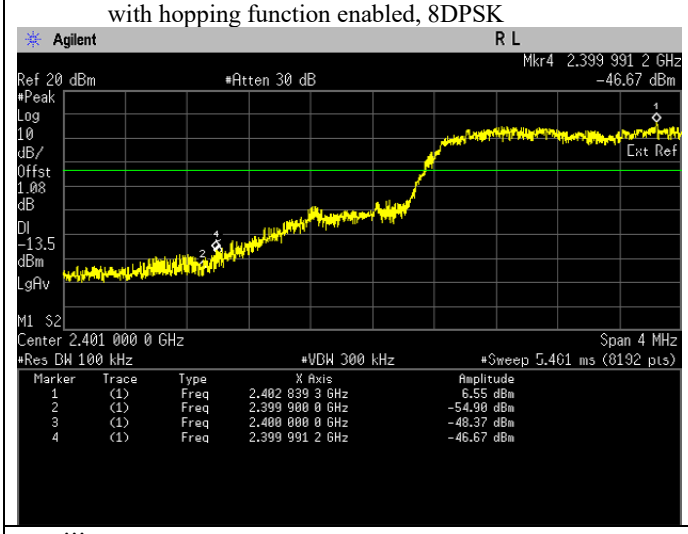
iii. The highest band edge emission at low carrier frequency with hopping function disabled, Pi/4 DQPSK



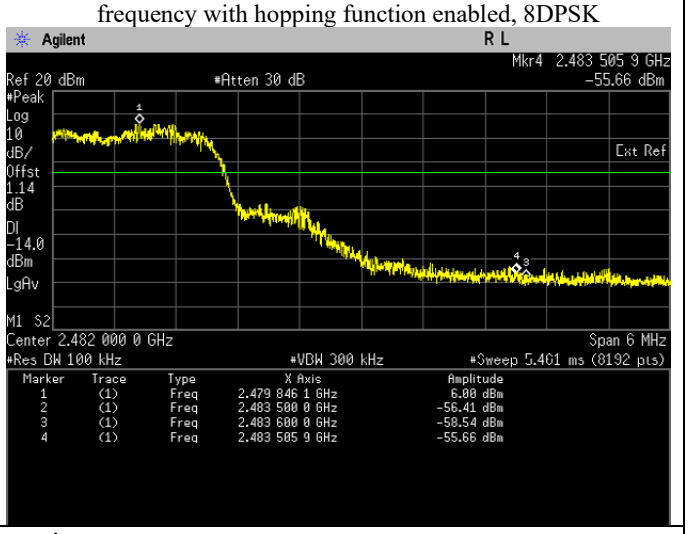
iv. The highest band edge emission at high carrier frequency with hopping function disabled, Pi/4 DQPSK



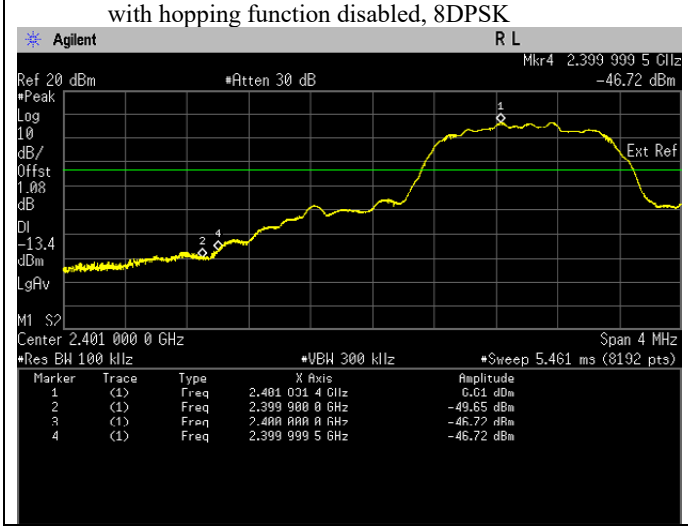
i. The highest band edge emission at low carrier frequency with hopping function enabled, 8DPSK



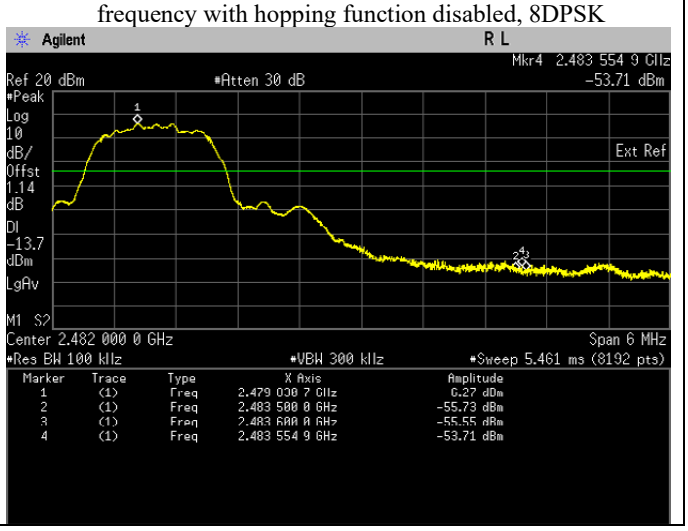
ii. The highest band edge emission at high carrier frequency with hopping function enabled, 8DPSK



iii. The highest band edge emission at low carrier frequency with hopping function disabled, 8DPSK

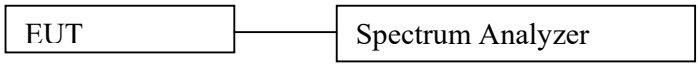


iv. The highest band edge emission at high carrier frequency with hopping function disabled, 8DPSK



6.4. Dwell time on each channel

6.4.1. Test Setup



a) Check and ensure the spectrum analyzer well calibrate.
b) Turn on the EUT and keep the EUT in hopping mode.
c) Connect EUT's antenna terminal to spectrum analyzer with a low loss cable.
d) Setting of Spectrum analyzer :
    a. RBW = 100 kHz
    b. VBW = 300 kHz
    c. SPAN = Zero SPAN, center on hopping frequency
    d. Detector mode = Peak
    e. Trace = Max hold
    f. Sweep time = 5second
    g. Sweep = Single
e) Measure total numbers of transmissions occur in 5 second and save the plot.
f) Change the setting of spectrum analyzer :
    a. RBW = 100 kHz
    b. VBW = 300 kHz
    c. Sweep time = sufficient to capture dwell time for 1 transmission
    d. Sweep = Single
g) Measure dwell time for 1 transmission and save the plot.
h) Calculate accumulate dwell time in a given period equal to number of hopping frequencies x 0.4
i) Repeat above procedure with other different mode of operation.

6.4.2. Test Limits:

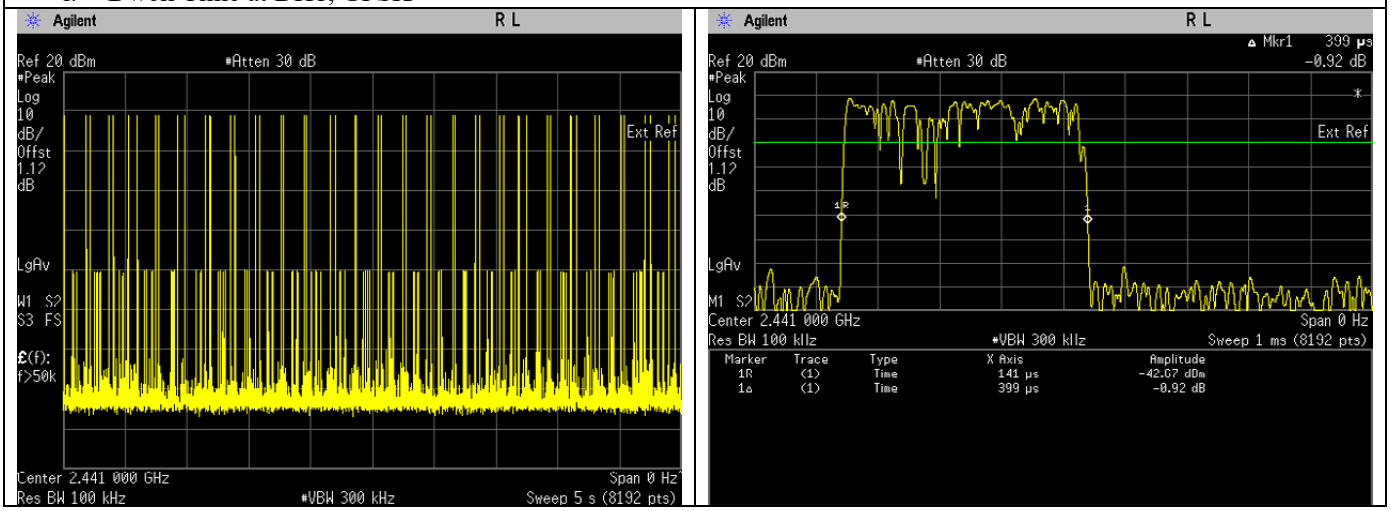
Normal Condition (25 º C)
≤ 400ms

6.4.3. Test Result

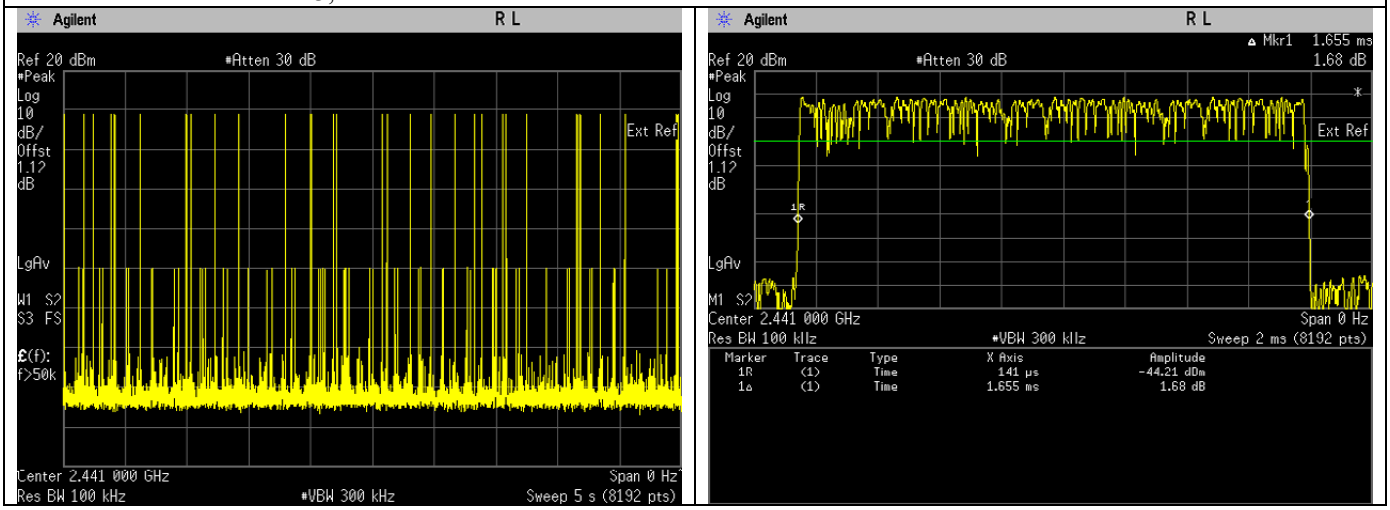
Test Conditions			Data Package	Results			
Modulation	Voltage (V)	Test Frequency (GHz)		No. of transmission in 5s **(a)**	Dwell time in one transmission **(b) (msec)**	Total accumulate dwell time in 31.6s. **(c) (msec)**	Status
GFSK	7.50	2.4410	DH1	52	0.399	131.127360	Pass
			DH3	32	1.655	334.707200	Pass
			DH5	17	2.902	311.790880	Pass
Pi/4 DQPSK	7.50		DH1	51	0.401	129.250320	Pass
			DH3	26	1.654	271.785280	Pass
			DH5	13	2.902	238.428320	Pass
8 DPSK	7.50		DH1	52	0.401	131.784640	Pass
			DH3	26	1.652	271.456640	Pass
			DH5	14	2.903	256.857440	Pass

****Note:** Total dwell time 31.6s (79Hopping*0.4), (c) = (a) x 6.32 x (b)

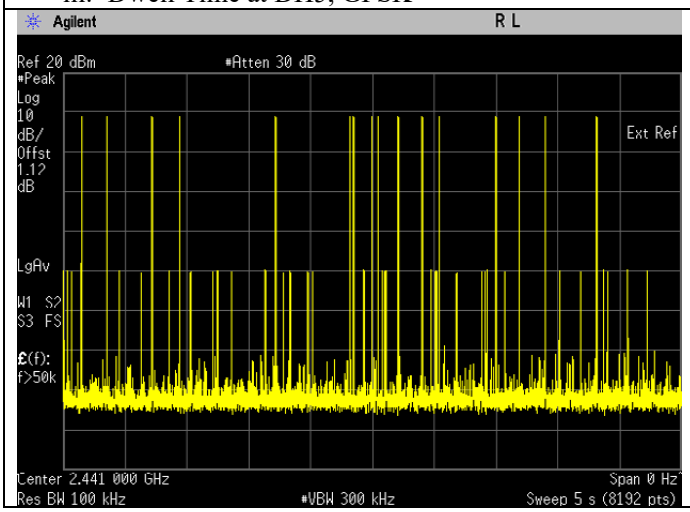
i. Dwell Time at DH1, GFSK

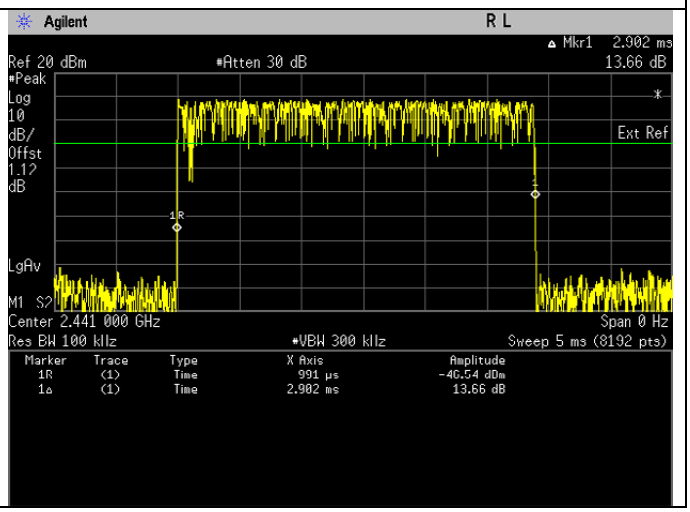


ii. Dwell Time at DH3, GFSK

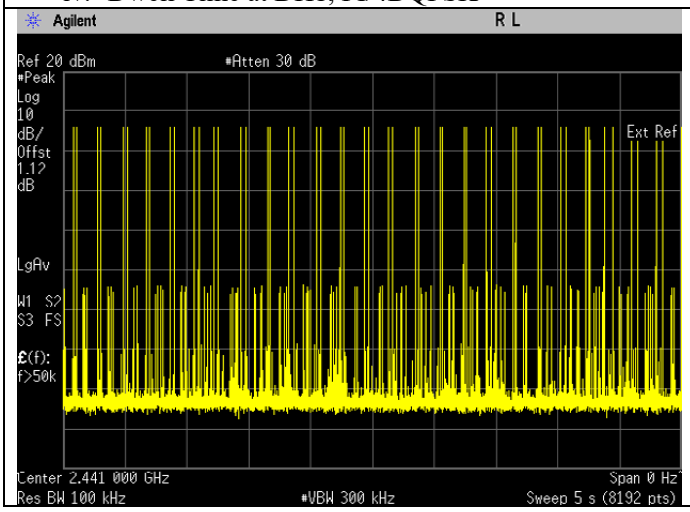


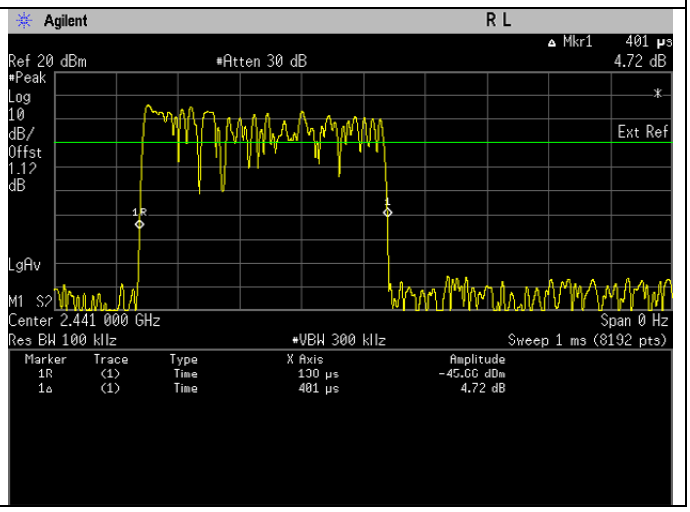
iii. Dwell Time at DH5, GFSK



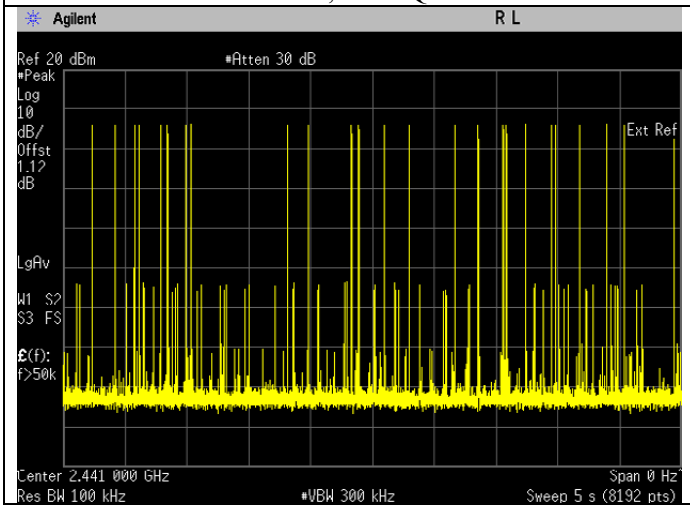


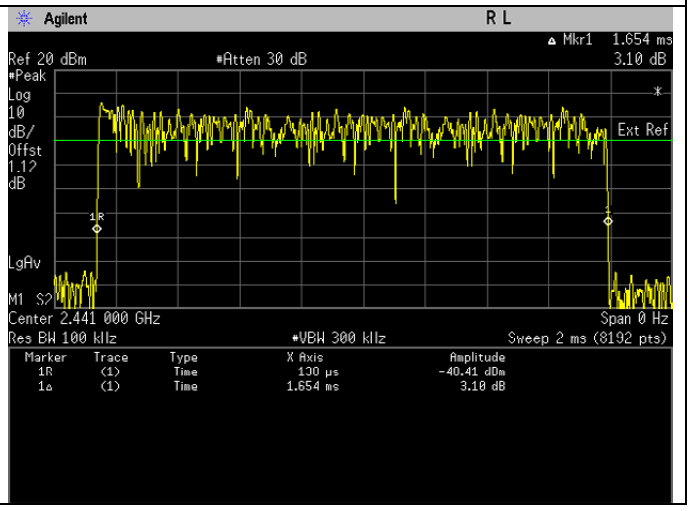
iv. Dwell Time at DH1, PI/4DQPSK



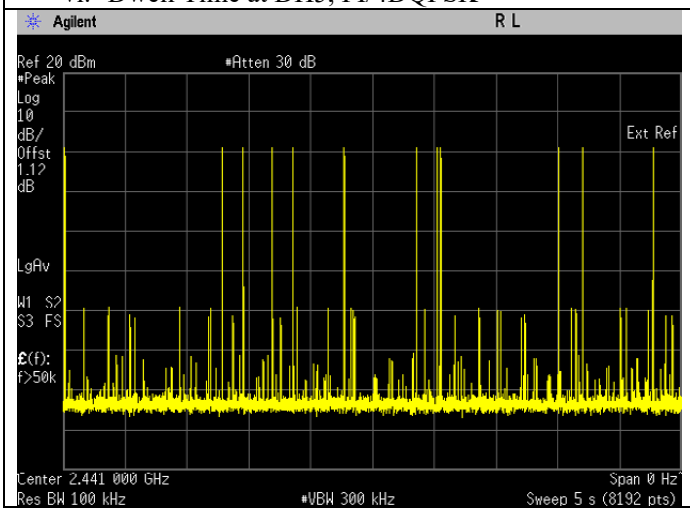


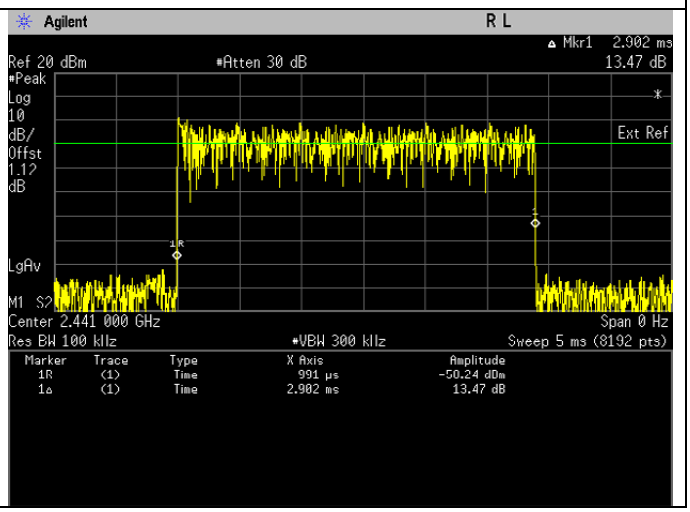
v. Dwell Time at DH3, PI/4DQPSK



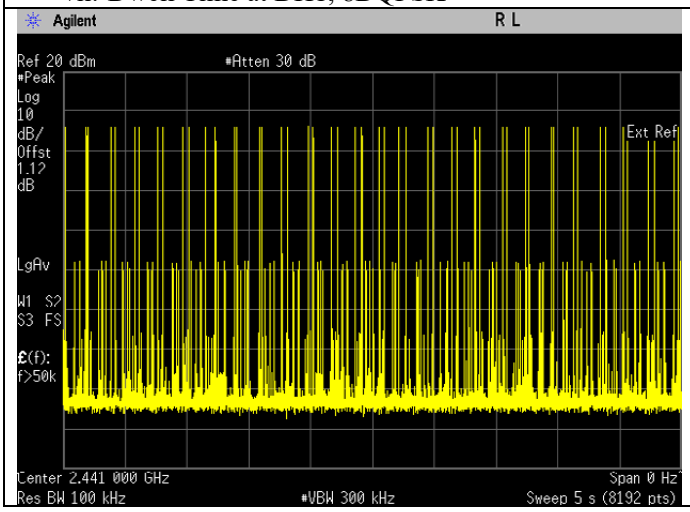


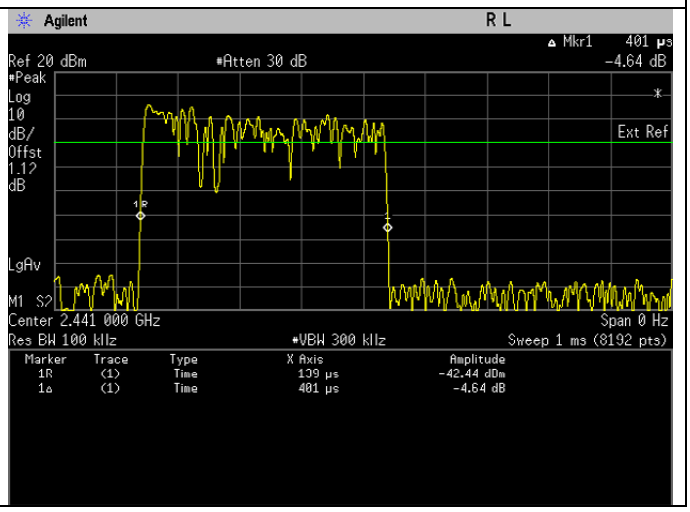
vi. Dwell Time at DH5, PI/4DQPSK



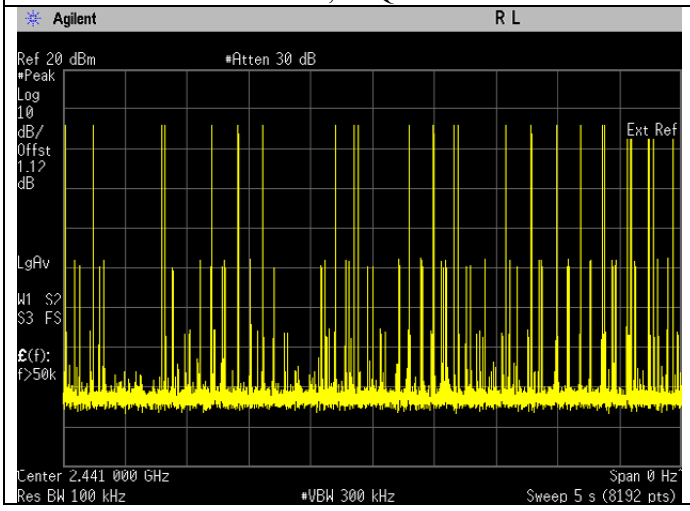


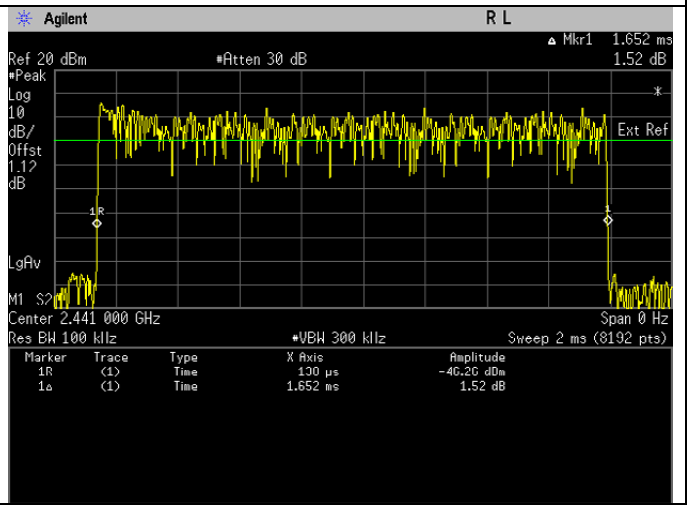
vii. Dwell Time at DH1, 8DQPSK



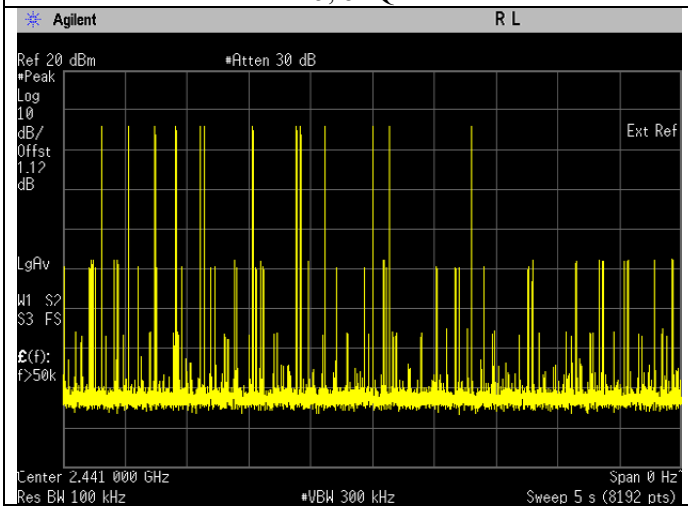


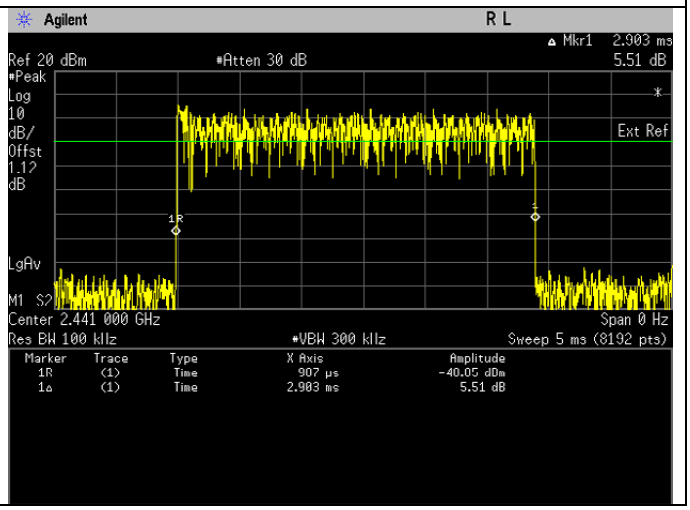
viii. Dwell Time at DH3, 8DQPSK





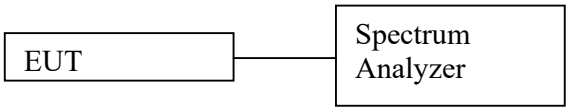
ix. Dwell Time at DH5, 8DQPSK





6.5. Number of hopping Frequency

6.5.1. Test Setup



a) Check and ensure the spectrum analyzer well calibrate.
b) Turn on the EUT and keep the EUT in hopping mode.
c) Connect EUT's antenna terminal to spectrum analyzer with a low loss cable.
d) Setting of Spectrum analyzer :
    a. RBW = 300 kHz
    b. VBW = 300 kHz
    c. Detector mode = Peak
    d. Trace = Max hold
e) Allow the trace to stabilized & save the plot result from spectrum analyzer screen.
f) Count number of channel frequency in the operating.
g) Repeat above procedure for other test frequency.

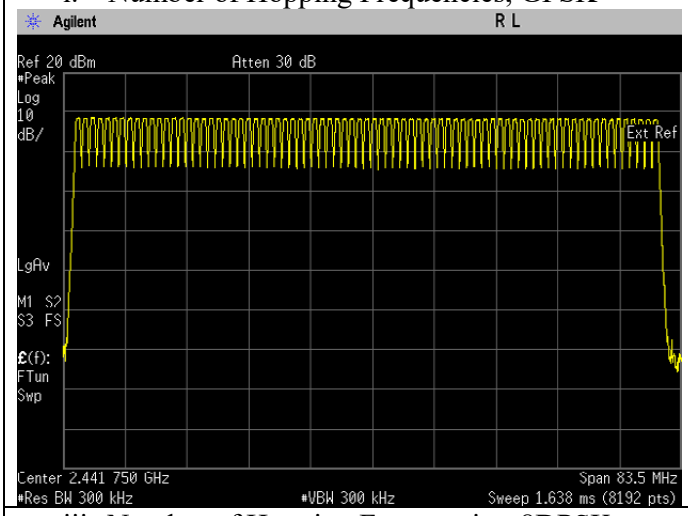
6.5.2. Test Limits:

Normal Condition (25 º C)
≥ 15

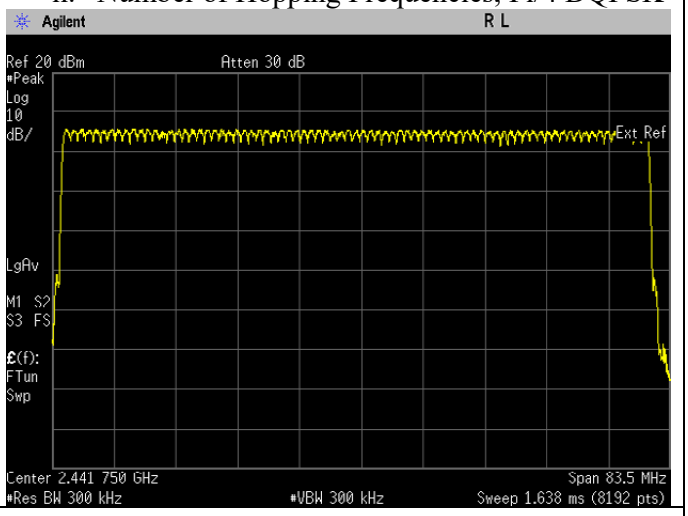
6.5.3. Test Result

Test Conditions		Sweep Range (GHz)	Results	
Modulation	Voltage(V)		No. of Hopping Frequencies	Status
GFSK	7.50	2.4000-2.4835	79	Pass
Pi/4DQPSK	7.50	2.4000-2.4835	79	Pass
8DPSK	7.50	2.4000-2.4835	79	Pass

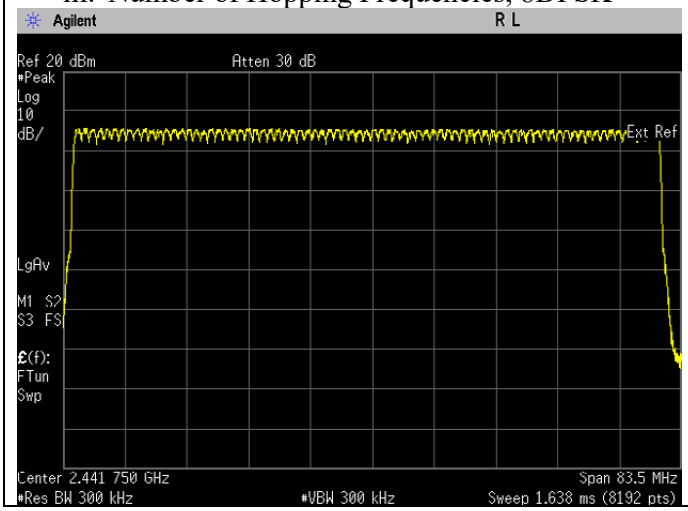
i. Number of Hopping Frequencies, GFSK



ii. Number of Hopping Frequencies, Pi/4 DQPSK

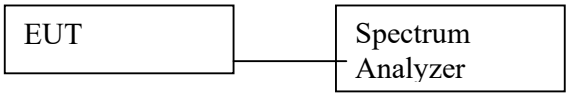


iii. Number of Hopping Frequencies, 8DPSK



6.6. Channel Separation

6.6.1. Test Setup



a) Check and ensure the spectrum analyzer well calibrate.
b) Turn on the EUT and keep the EUT in hopping mode.
c) Connect EUT's antenna terminal to spectrum analyzer with a low loss cable.
d) Setting of Spectrum analyzer :
    a. RBW = 300 kHz
    b. VBW = 300 kHz
    c. SPAN = 3 MHz, center on test frequency
    d. AMPLITUDE → Scale/Div = 5 dB
    e. Detector mode = Peak
    f. Trace = Max hold
    g. Sweep = auto
e) Measure the frequency different of these two adjacent channels with marker delta function & record the measurement results.
f) Repeat above procedure with other different mode of operation.

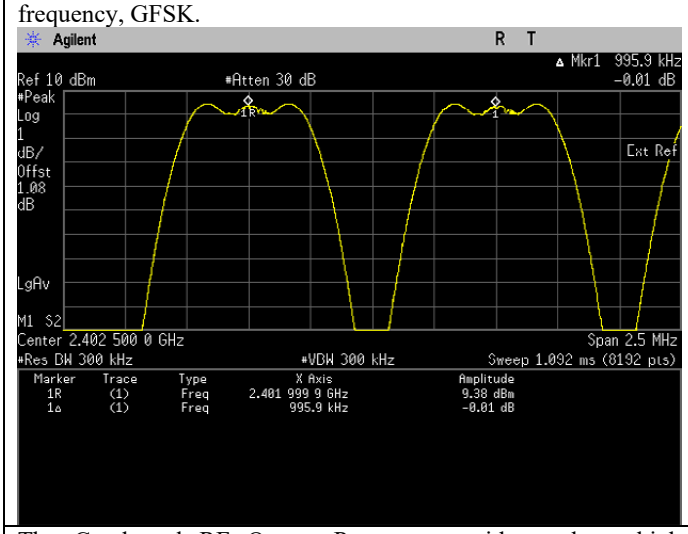
6.6.2. Test Limits:

Normal Condition (25 ° C)
≥ 2/3 of 20dB Bandwidth

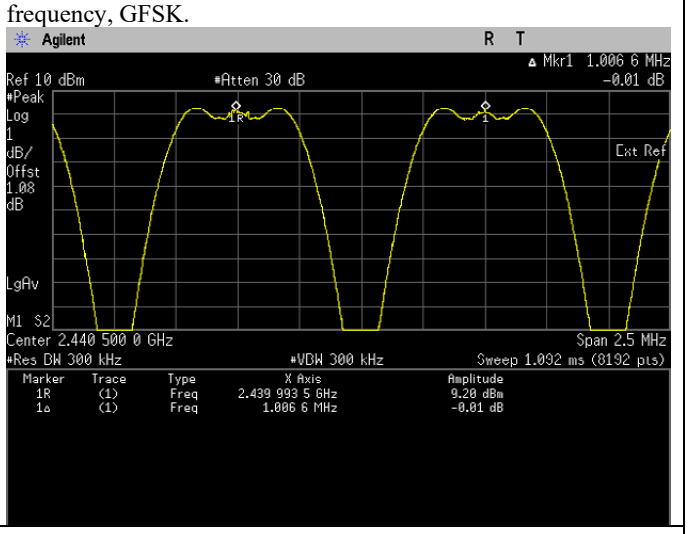
6.6.3. Test Result

Test Conditions		Test Frequency (GHz)	Results			
Modulation	Voltage(V)		Test Data Adjacent Channel Separation (MHz)	20dB Bandwidth (MHz)	Min Limit = 2/3 of 20dB Bandwidth (kHz)	Status
GFSK	7.50	2.4020	0.996	0.962	641.223	Pass
		2.4410	1.007	0.961	640.692	Pass
		2.4800	0.997	0.962	641.659	Pass
Pi/4DQPSK	7.50	2.4020	1.001	1.319	879.554	Pass
		2.4410	0.998	1.321	880.652	Pass
		2.4800	1.008	1.321	880.535	Pass
8DPSK	7.50	2.4020	1.009	1.309	872.399	Pass
		2.4410	1.003	1.307	871.255	Pass
		2.4800	1.005	1.307	871.385	Pass

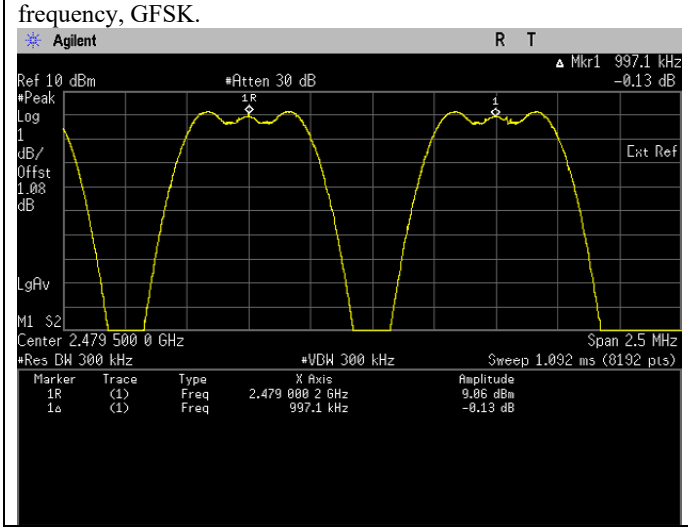
The Conducted RF Output Power test with result at low frequency, GFSK.



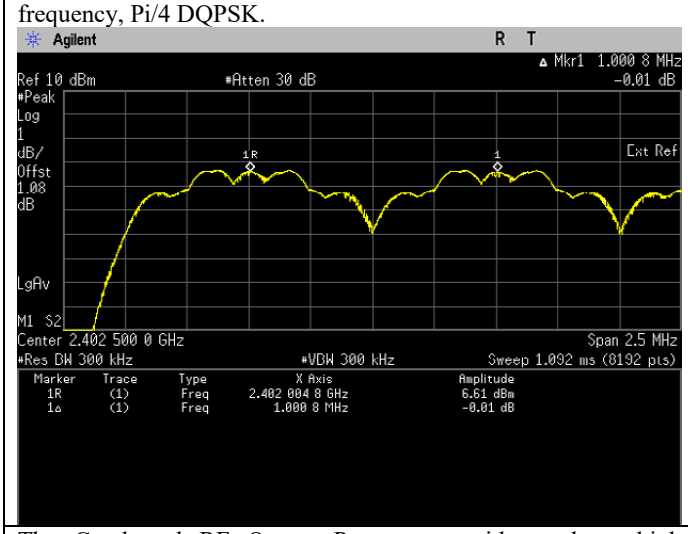
The Conducted RF Output Power test with result at mid frequency, GFSK.



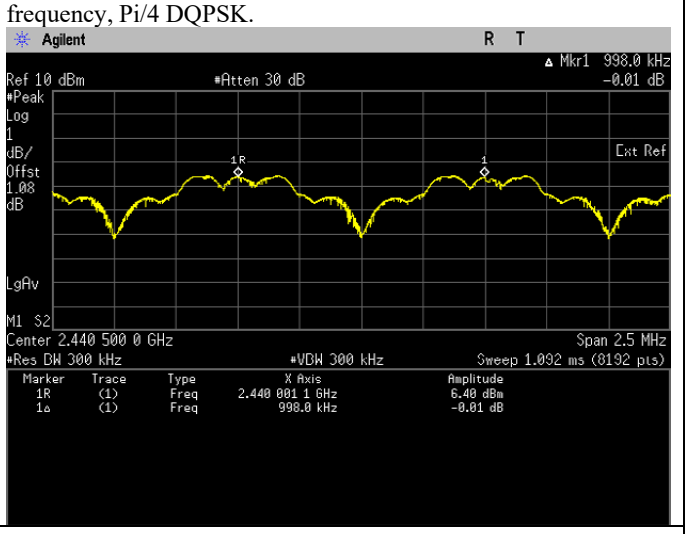
The Conducted RF Output Power test with result at high frequency, GFSK.



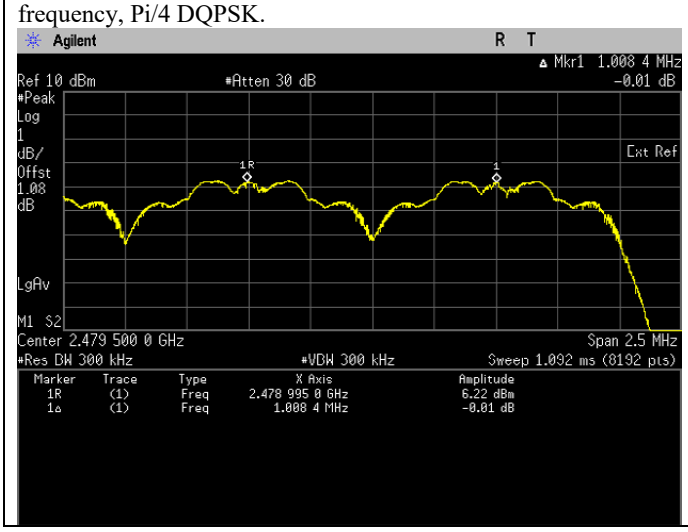
The Conducted RF Output Power test with result at low frequency, Pi/4 DQPSK.



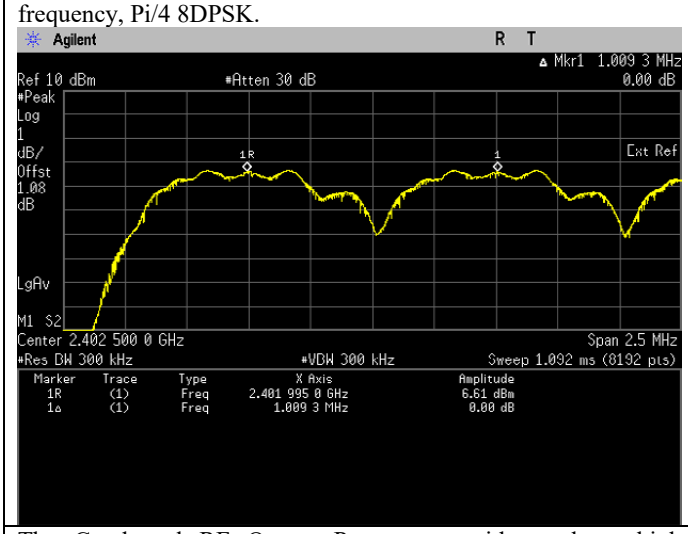
The Conducted RF Output Power test with result at mid frequency, Pi/4 DQPSK.



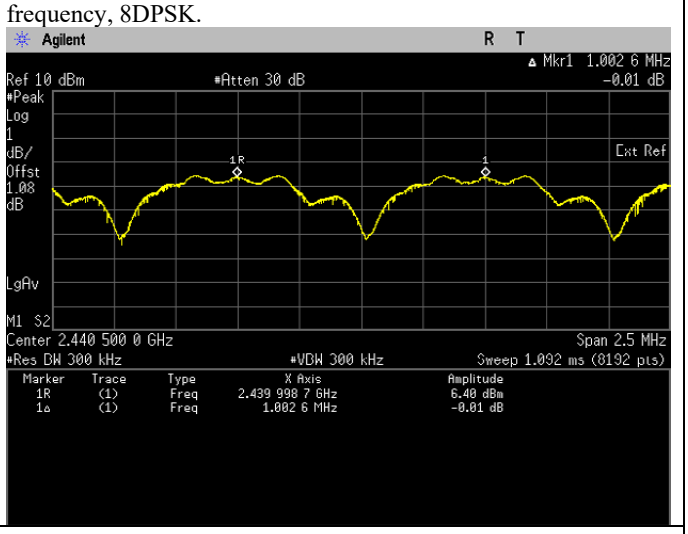
The Conducted RF Output Power test with result at high frequency, Pi/4 DQPSK.



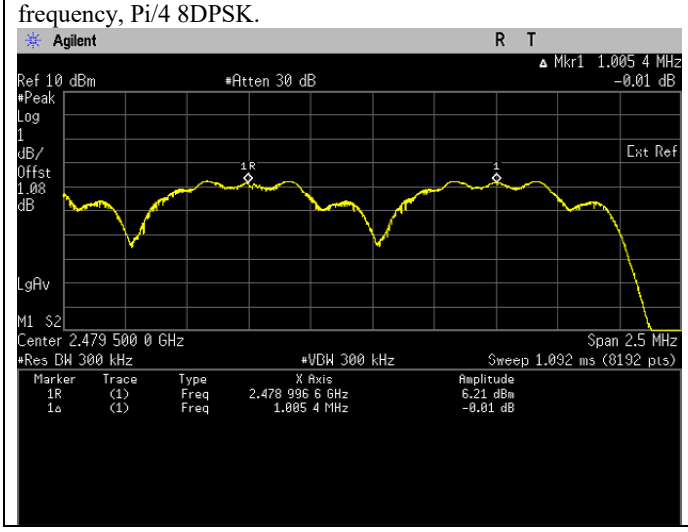
The Conducted RF Output Power test with result at low frequency, Pi/4 8DPSK.



The Conducted RF Output Power test with result at mid frequency, 8DPSK.

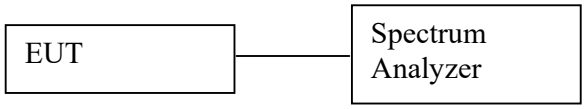


The Conducted RF Output Power test with result at high frequency, Pi/4 8DPSK.



6.7. Conducted Spurious Emission

6.7.1. Test Setup



a) Check and ensure the spectrum analyzer well calibrate.
b) Turn on the EUT and set EUT to transmit maximum data rate with hopping disable.
c) Connect EUT's antenna terminal to spectrum analyzer with a low loss cable.
d) Setting of Spectrum analyzer :
   a. RBW = 100 kHz
   b. VBW = 300 kHz
   c. SPAN = Cover until 10th harmonic
   d. Detector mode = Peak
   e. AMPLITUDE → Scale/Div = 10 dB
   f. Trace = Max hold
   g. Sweep = auto
e) Measure the captured spurious emission result and recording the plot.
f) Repeat above procedure with other different mode of operation.

6.7.2. Test Limits:

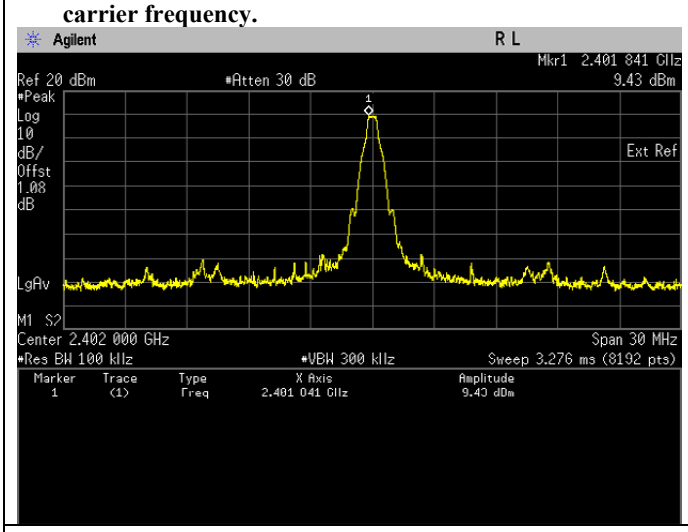
Normal Condition (25 ° C)
Shall be at least 20 dB below for peak power.

6.7.3. Test Data:

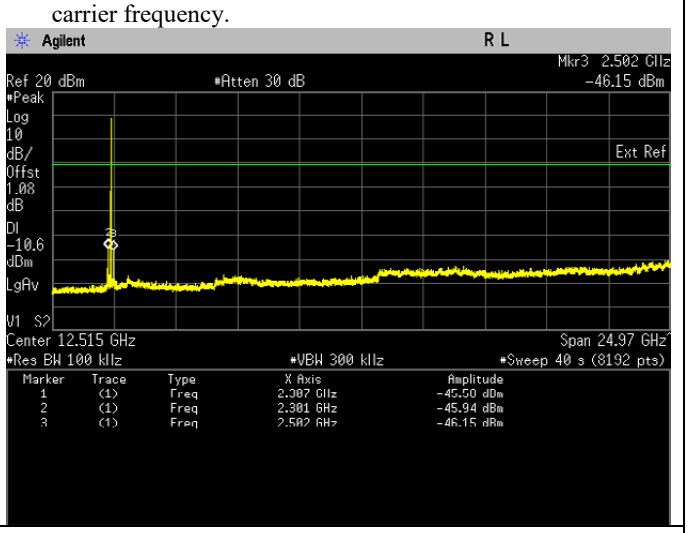
Test Conditions			Results		
Modulation	Voltage(V)	Test Frequency (GHz)	Spurs (MHz)	Level (dBm)	Status
GFSK	7.50	2.4020	2307.000	-45.585	Pass
		2.4410	2344.000	-45.038	Pass
		2.4800	2377.000	-45.349	Pass
Pi/4 DQPSK	7.50	2.4020	2499.000	-50.740	Pass
		2.4410	24784.000	-49.089	Pass
		2.4800	24881.000	-50.537	Pass
8DPSK	7.50	2.4020	24896.000	-51.086	Pass
		2.4410	24500.000	-50.786	Pass
		2.4800	24902.000	-50.240	Pass

GFSK Modulation:

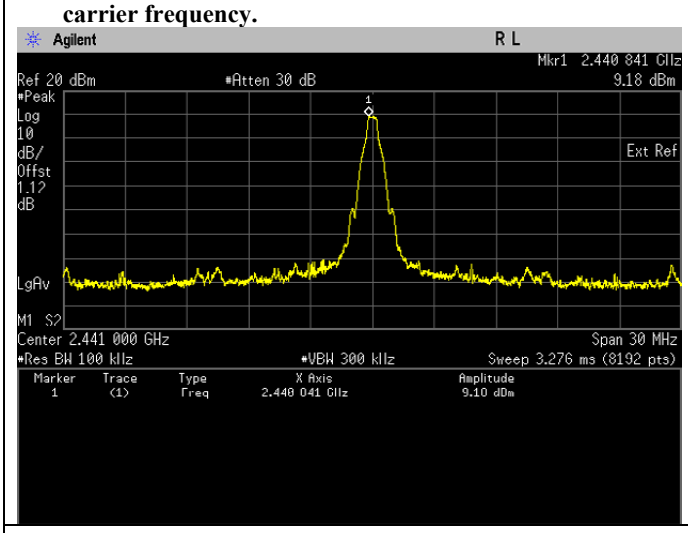
- **The high emission level within the assigned band at low carrier frequency.**



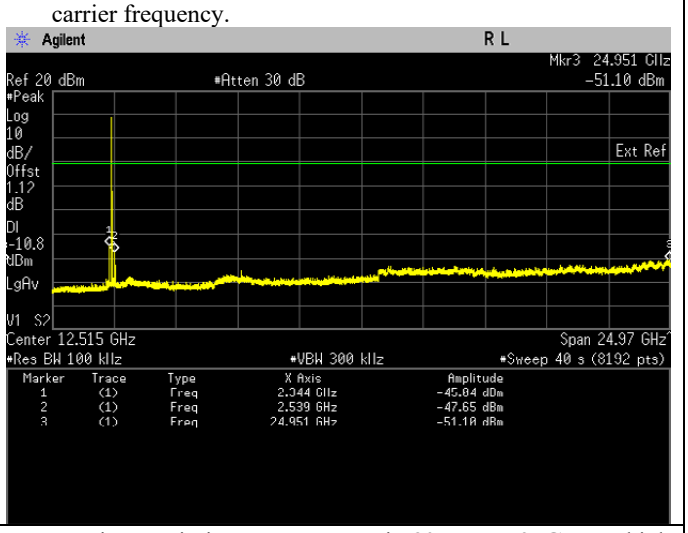
- Spurious emission measurement in **30MHz – 25GHz** at low carrier frequency.



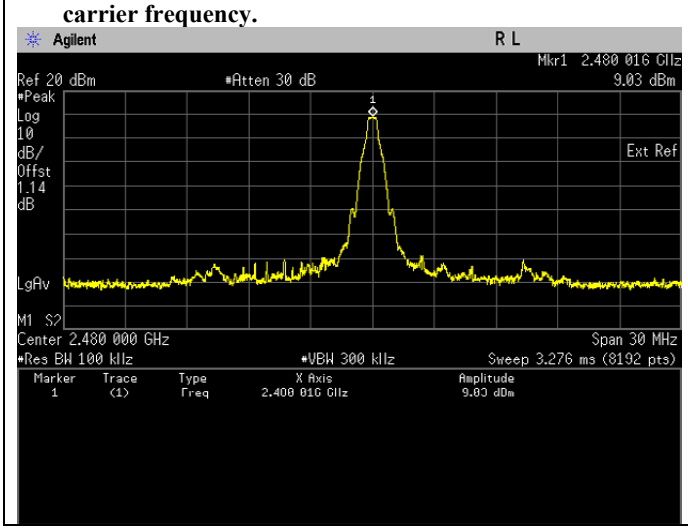
- **The high emission level within the assigned band at mid carrier frequency.**



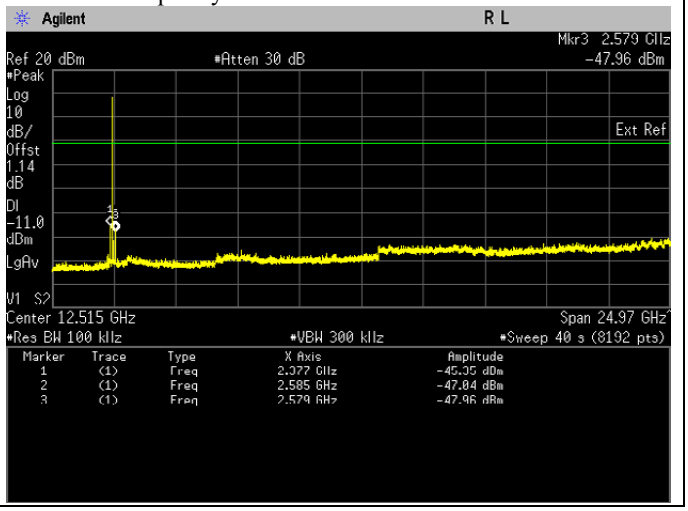
- Spurious emission measurement in **30MHz – 25GHz** at mid carrier frequency.



- **The high emission level within the assigned band at high carrier frequency.**

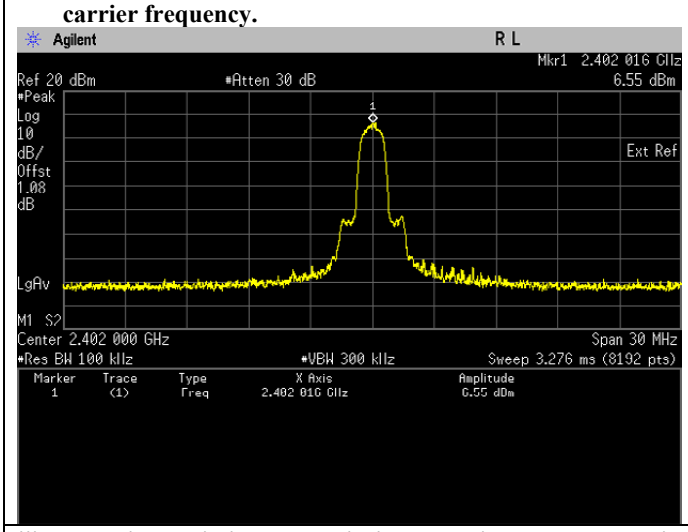


- Spurious emission measurement in **30MHz – 25GHz** at high carrier frequency.

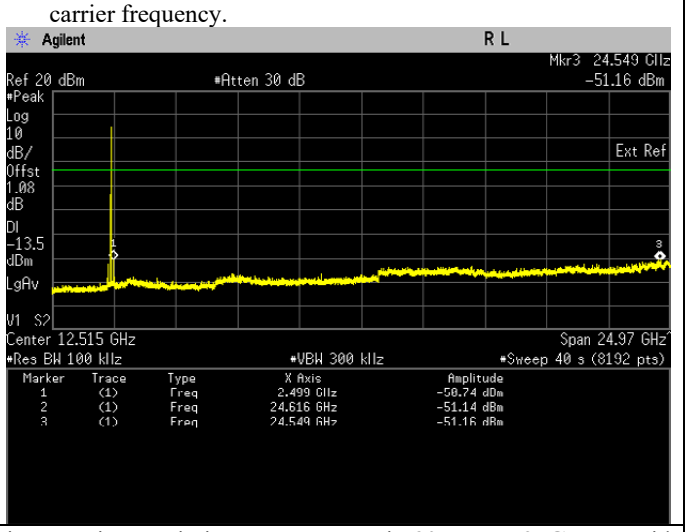


Pi/4 DQPSK Modulation:

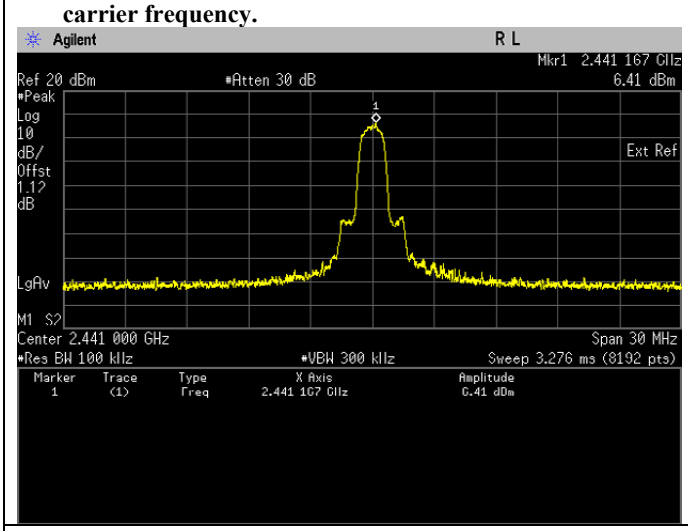
i. The high emission level within the assigned band at low carrier frequency.



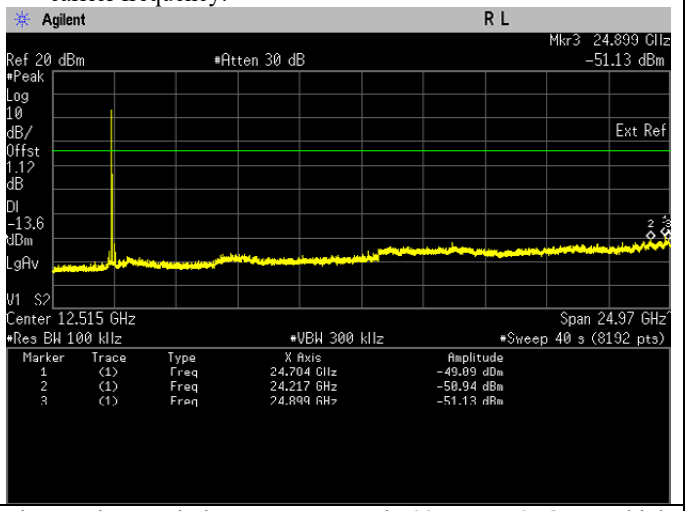
ii. Spurious emission measurement in **30MHz – 25GHz** at low carrier frequency.



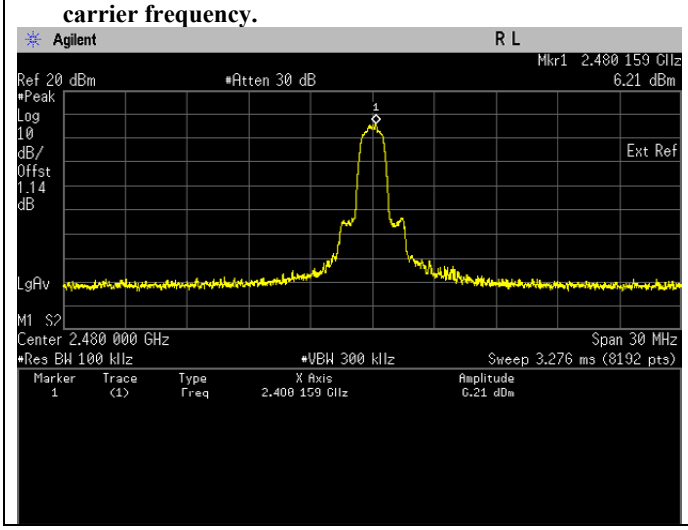
iii. The high emission level within the assigned band at mid carrier frequency.



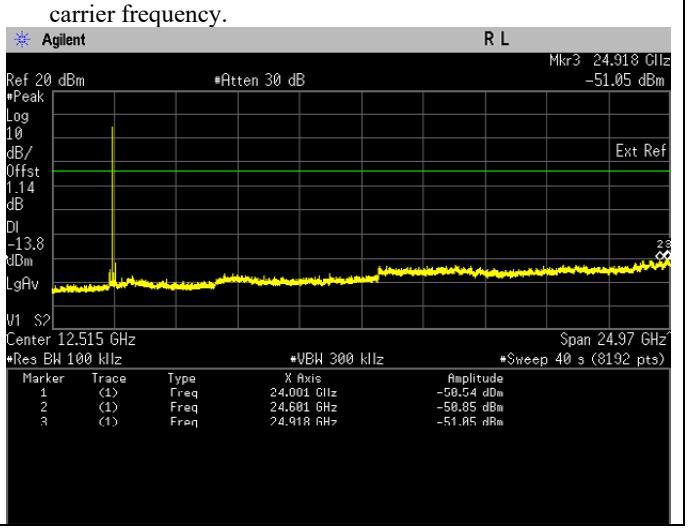
iv. Spurious emission measurement in **30MHz – 25GHz** at mid carrier frequency.



v. The high emission level within the assigned band at high carrier frequency.

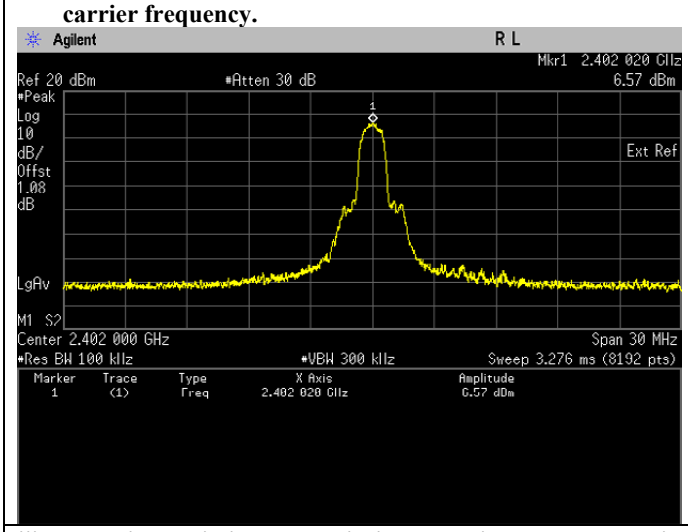


vi. Spurious emission measurement in **30MHz – 25GHz** at high carrier frequency.

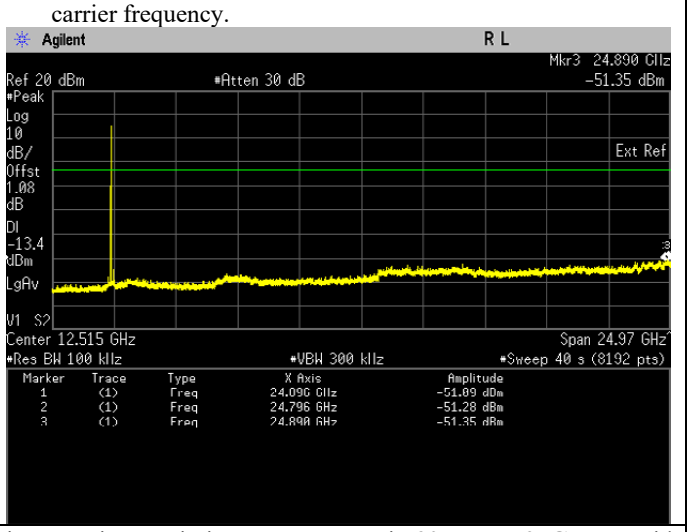


8DPSK Modulation:

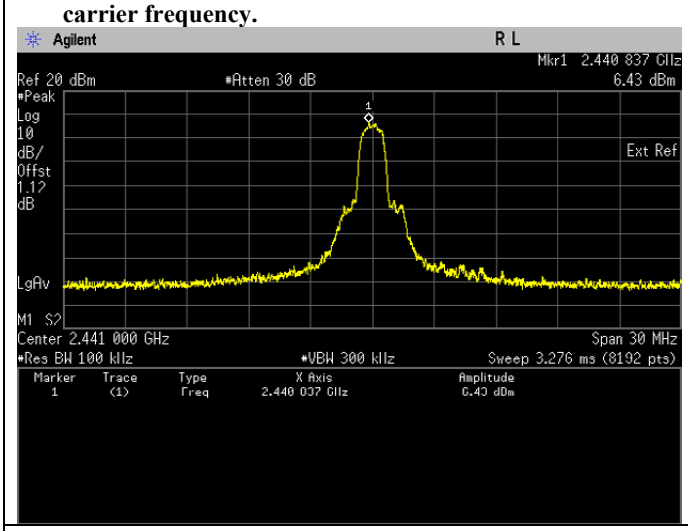
i. The high emission level within the assigned band at low carrier frequency.



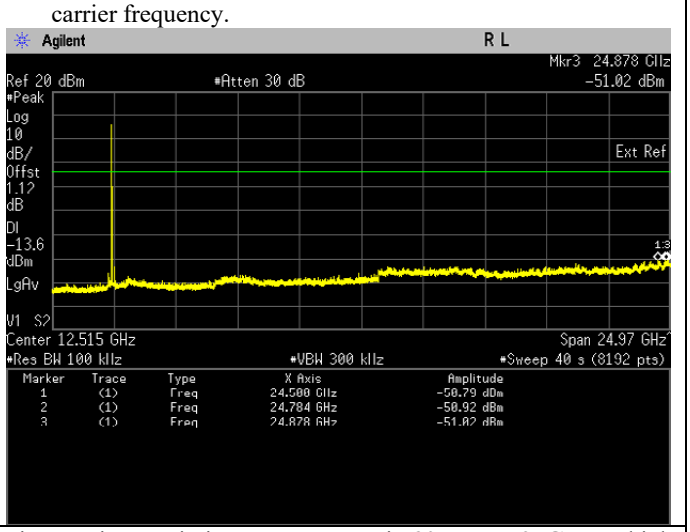
ii. Spurious emission measurement in **30MHz – 25GHz** at low carrier frequency.



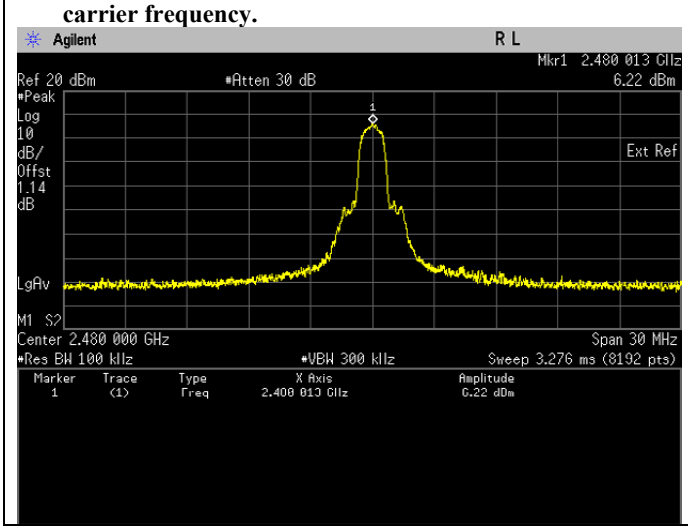
iii. The high emission level within the assigned band at mid carrier frequency.



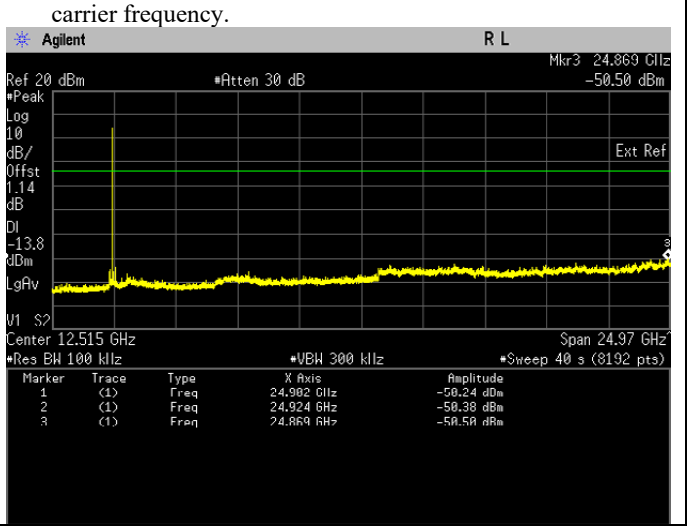
iv. Spurious emission measurement in **30MHz – 25GHz** at mid carrier frequency.



v. The high emission level within the assigned band at high carrier frequency.

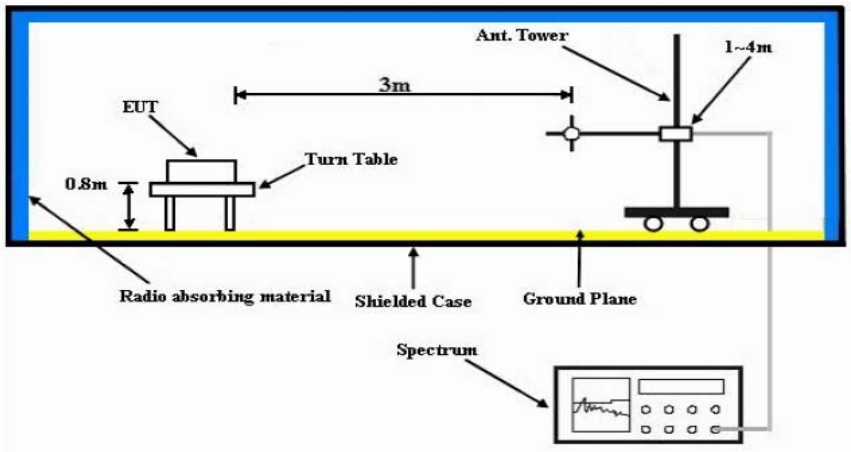


vi. Spurious emission measurement in **30MHz – 25GHz** at high carrier frequency.



6.8. Radiated Emission within restricted Bands

6.8.1. Test Setup



a. The EUT is placed on the top of a rotating table 0.8m (<1GHz) or 1.5m (>1GHz) above the ground at a 3m semi-anechoic chamber. The table is rotated 360 degrees to determine the position of the highest radiation.
b. The EUT is set 3m away from the interference-receiving antenna, which is mounted on the top of a variable-height antenna tower.
c. The antenna is Bilog/Horn antenna depend on which frequency range uses, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT is arranged to its worst case and then the antenna is tuned to heights from 1m to 4m and the rotatable table is turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system is set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode is fall within the range of 10dB from the limit specified, the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet. Otherwise, the testing could be stopped and the peak values of the EUT would be reported.

NOTE:

a. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1GHz.
b. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth is 3 MHz for Peak detection at frequency above 1 GHz.
c. All modes of operation were investigated and the worst-case emissions are reported.

6.8.2. Test Limits:

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.

Frequency (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:

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

6.8.3. Test Data:

Test: Bluetooth SAC Restricted Band Edge
Model Number: AAH02JDH9VA1AN S/N: 867TYB2909 EMC SR ID#: 32751-EMC-00012
Battery: PMNN4493A Accessory: PMAD4120A
Test Channel: Low Test Frequency: 2402.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (GFSK)

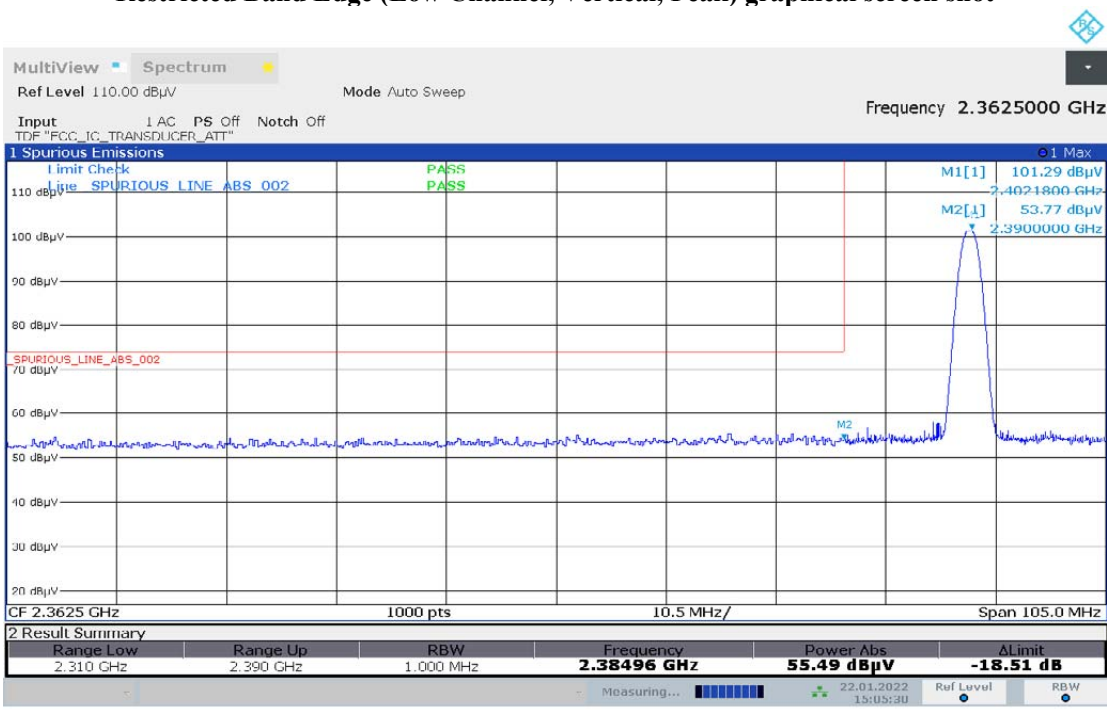
Restricted Band Edge (Low Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
2390.0000	-	53.2001	43.0990	-	74.0000	54.0000	-	-20.7999	-10.9010	-
Horizontal Radiated Emission Result										
2390.0000	-	54.6323	43.3338	-	74.0000	54.0000	-	-19.3677	-10.6662	-

Remarks: Pass Result	Marginal Result	Fail Result

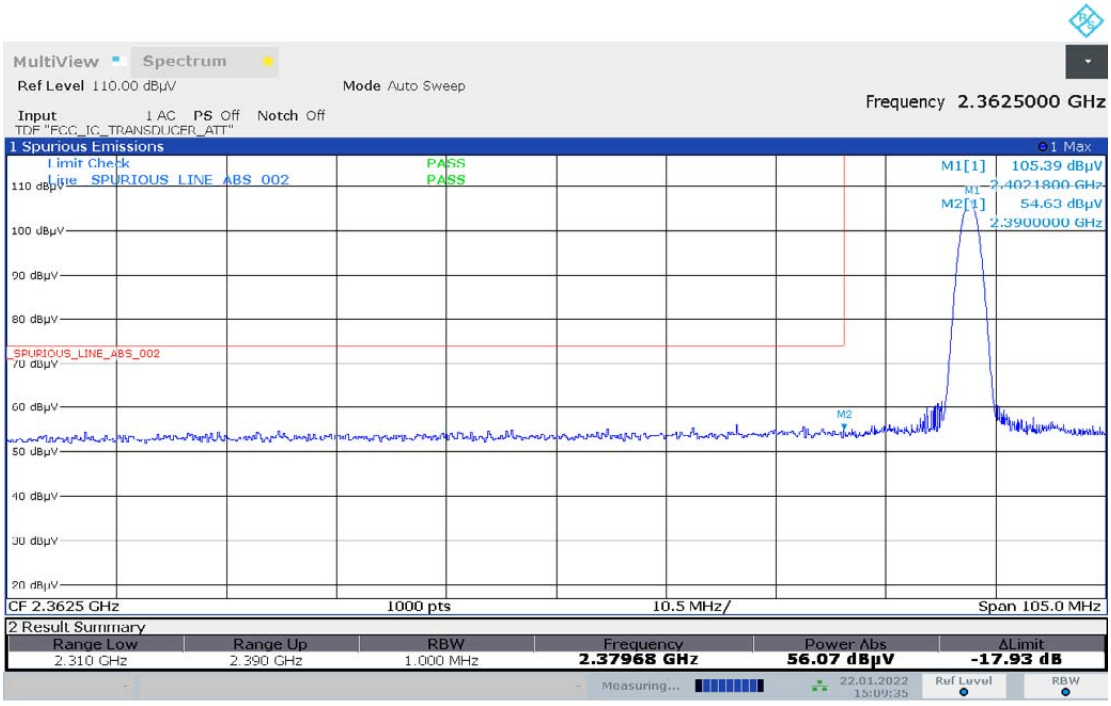
Temperature (degC): 24.1 **Humidity (%): 70.1**
Test Performed by: Qawiman&Nazrin **Test Date: Sat, 22 Jan, 2022** **System MU: 5.84dB**

Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



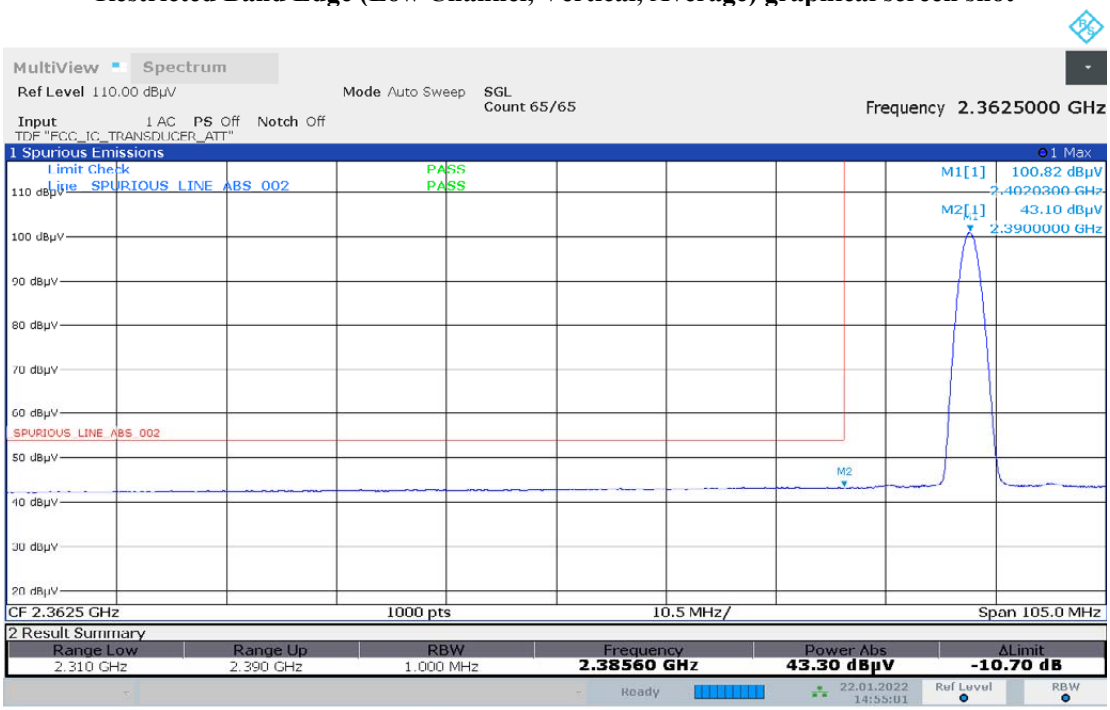
15:05:31 22.01.2022

Restricted Band Edge (Low Channel, Horizontal, Peak) graphical screen shot



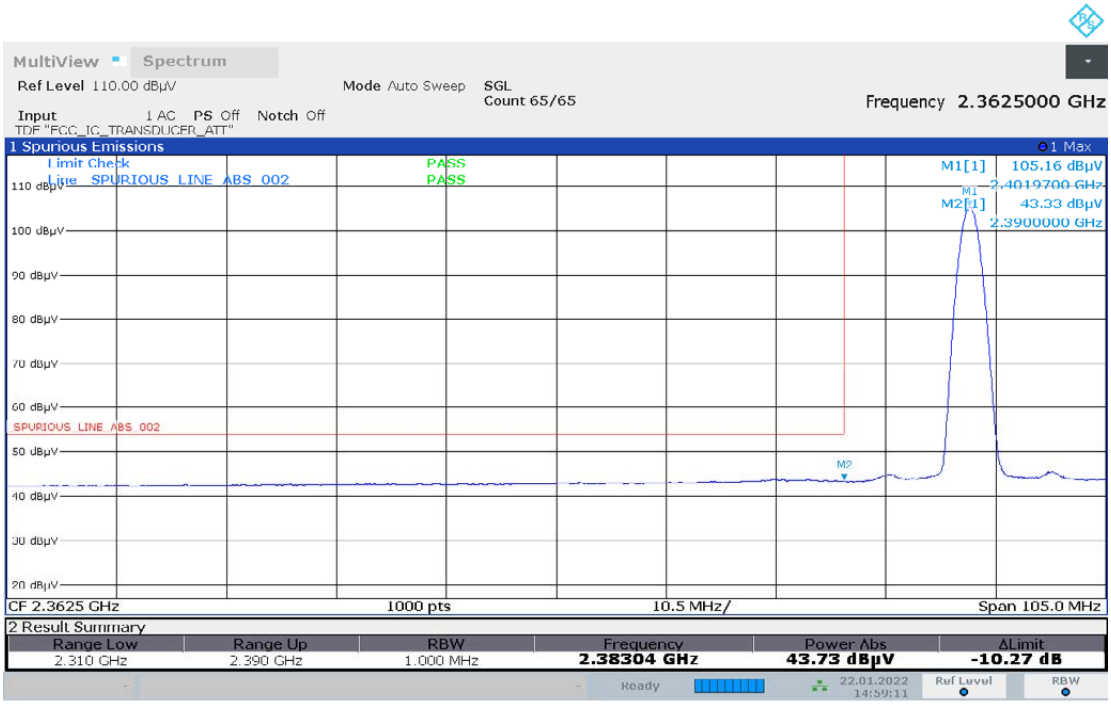
15:09:35 22.01.2022

Restricted Band Edge (Low Channel, Vertical, Average) graphical screen shot



14:55:02 22.01.2022

Restricted Band Edge (Low Channel, Horizontal, Average) graphical screen shot



14:59:11 22.01.2022

Test: Bluetooth SAC Restricted Band Edge
Model Number: AAH02JDH9VA1AN S/N: 867TYB2909 EMC SR ID#: 32751-EMC-00012
Battery: PMNN4493A Accessory: PMAD4120A
Test Channel: High Test Frequency: 2480.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (GFSK)

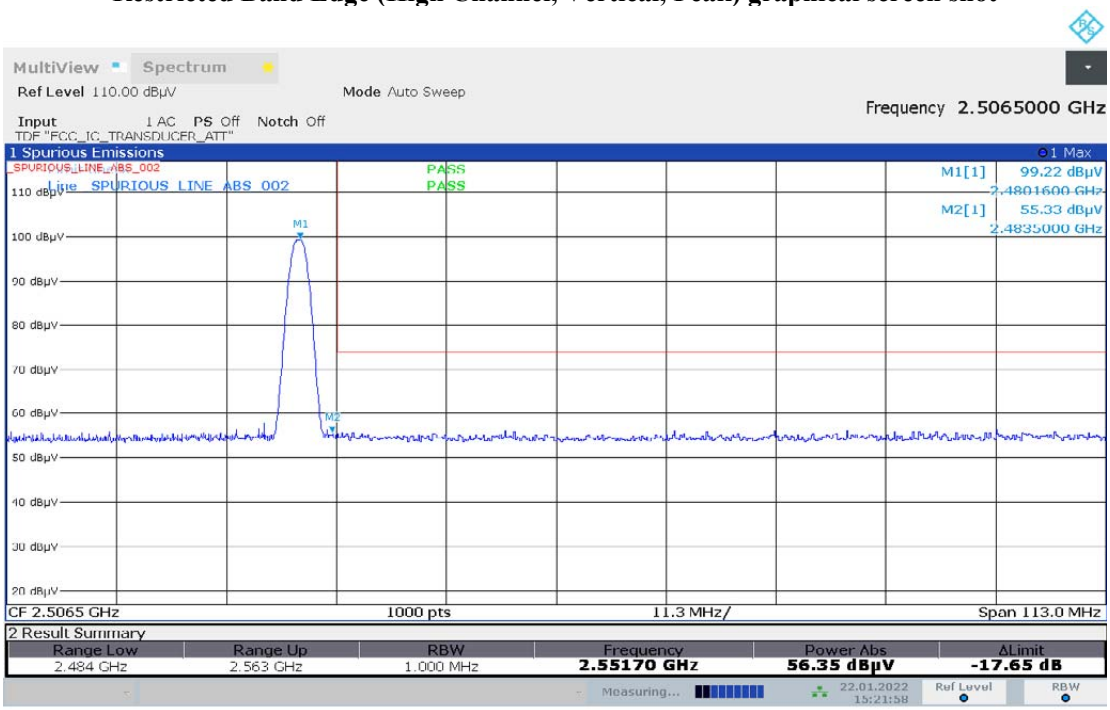
Restricted Band Edge (High Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
2483.5000	-	55.3287	44.3837	-	74.0000	54.0000	-	-18.6713	-9.6163	-
Horizontal Radiated Emission Result										
2483.5000	-	55.7941	45.3167	-	74.0000	54.0000	-	-18.2059	-8.6833	-

Remarks: Pass Result	Marginal Result	Fail Result

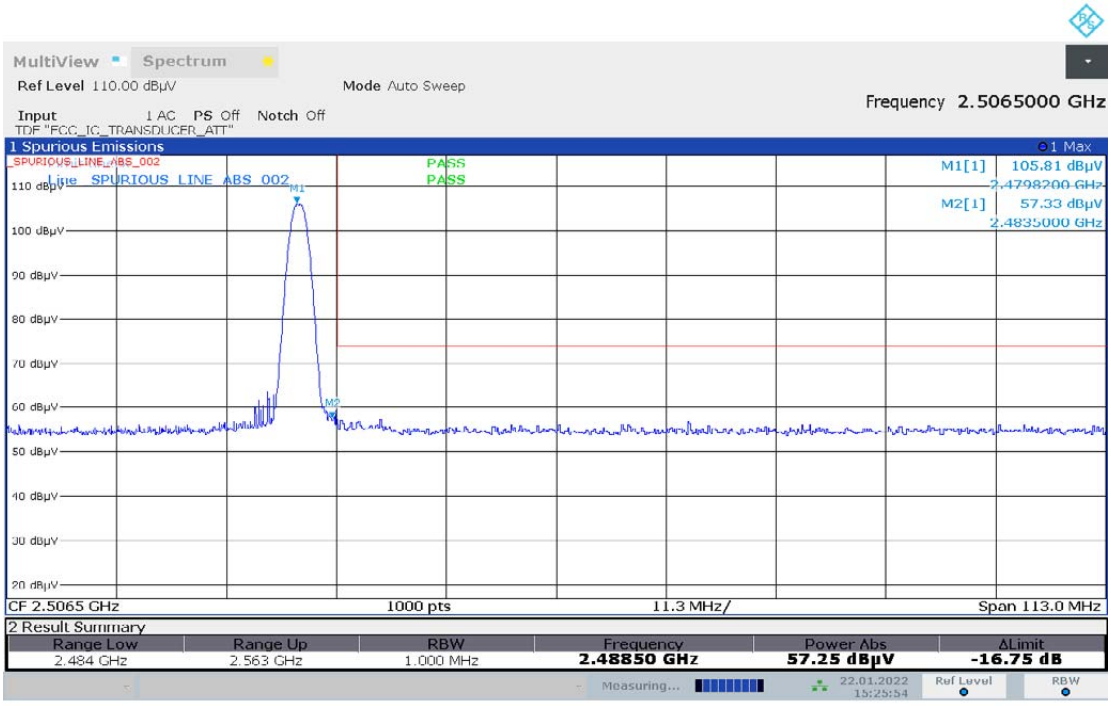
Temperature (degC): 24.1 **Humidity (%): 70.1**
Test Performed by: Qawiman&Nazrin **Test Date: Sat, 22 Jan, 2022**
System MU: 5.84dB

Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



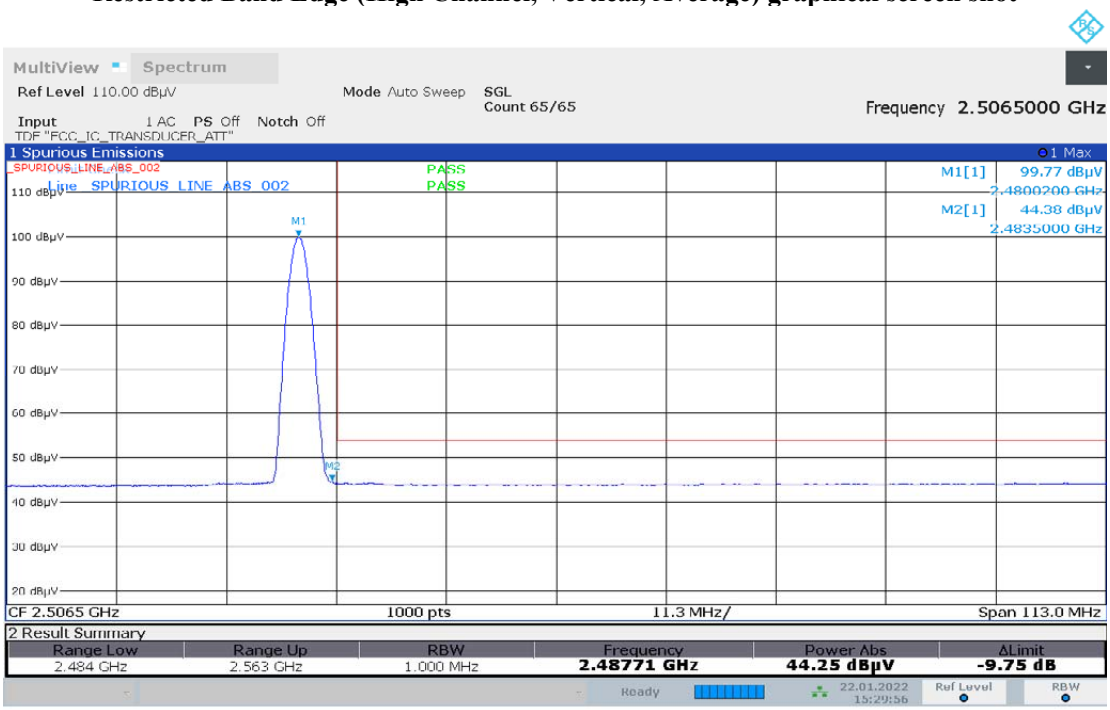
15:21:58 22.01.2022

Restricted Band Edge (High Channel, Horizontal, Peak) graphical screen shot



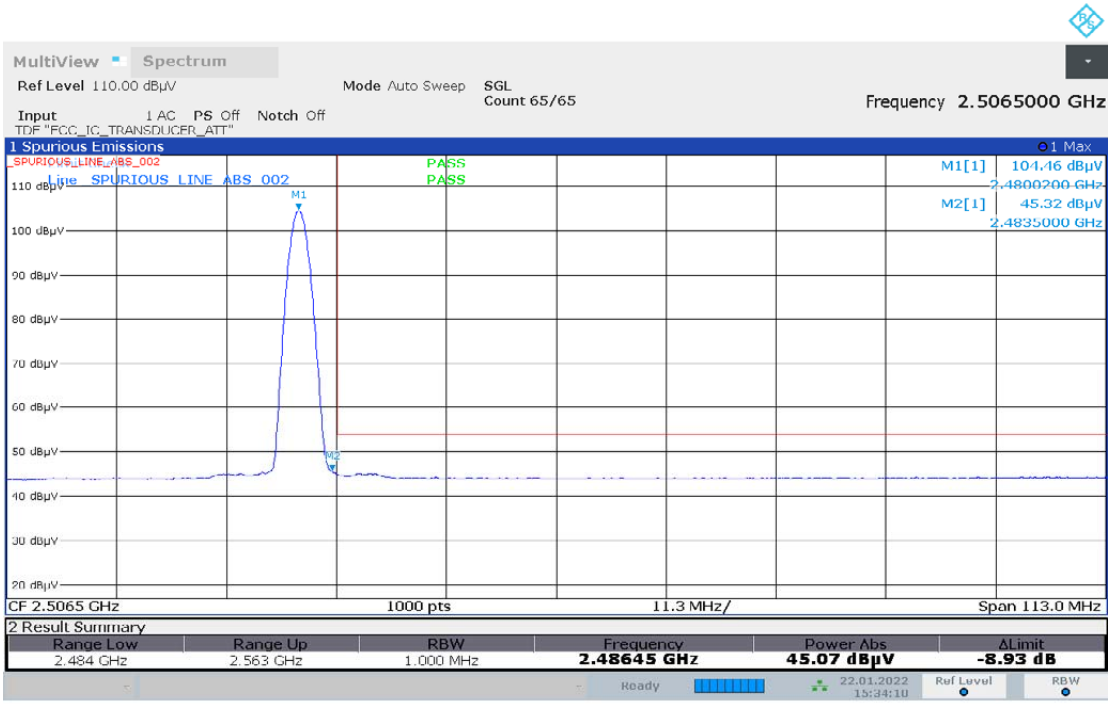
15:25:55 22.01.2022

Restricted Band Edge (High Channel, Vertical, Average) graphical screen shot



15:29:56 22.01.2022

Restricted Band Edge (High Channel, Horizontal, Average) graphical screen shot



15:34:11 22.01.2022

Test: Bluetooth SAC Restricted Band Edge
Model Number: AAH02JDH9VA1AN S/N: 867TYB2909 EMC SR ID#: 32751-EMC-00012
Battery: PMNN4493A Accessory: PMAD4120A
Test Channel: Low Test Frequency: 2402.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (DQPSK)

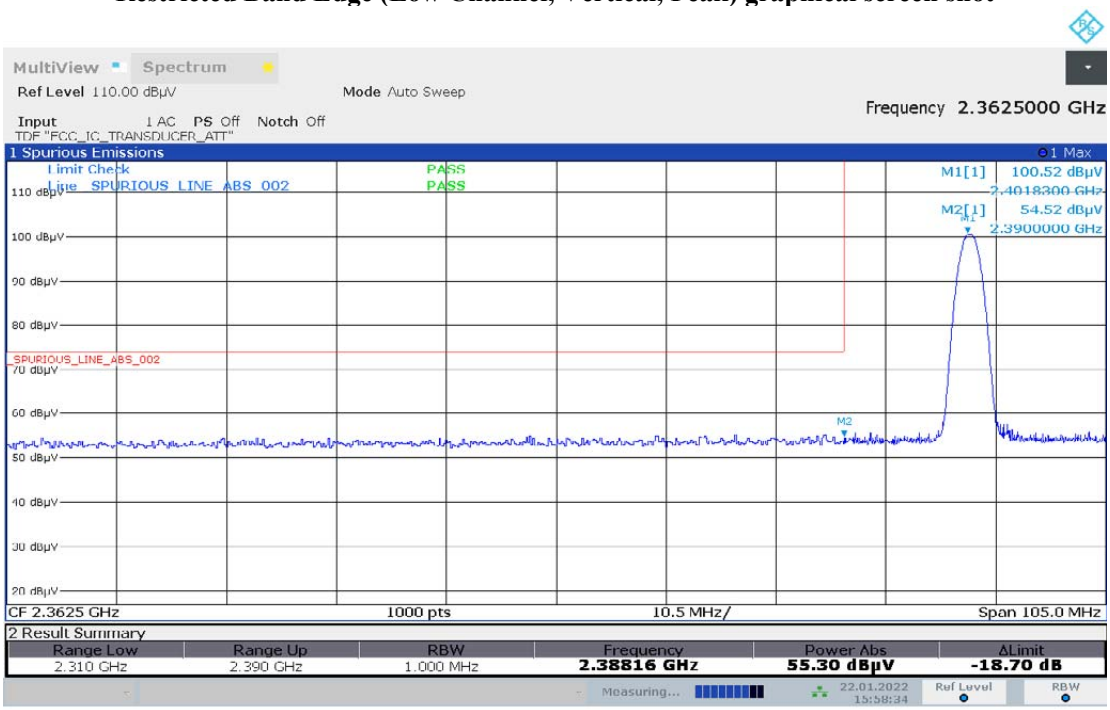
Restricted Band Edge (Low Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
2390.0000	-	54.5170	43.0990	-	74.0000	54.0000	-	-19.4830	-10.9010	-
Horizontal Radiated Emission Result										
2390.0000	-	55.1668	43.3338	-	74.0000	54.0000	-	-18.8332	-10.6662	-

Remarks: Pass Result	Marginal Result	Fail Result

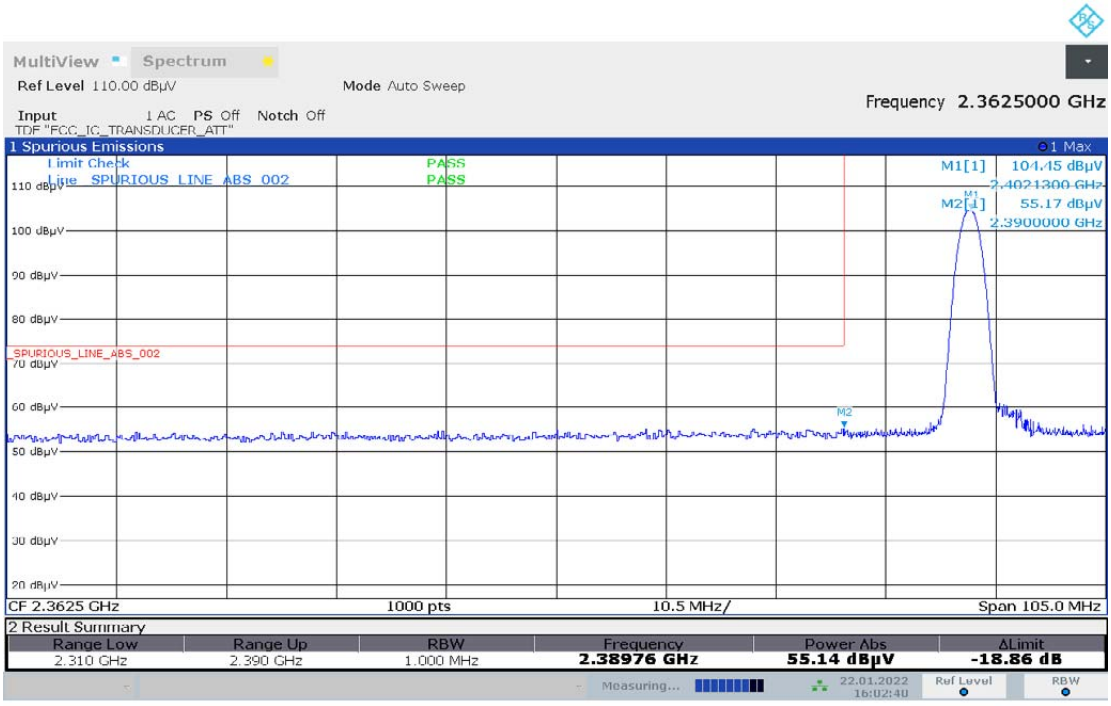
Temperature (degC): 24.1 **Humidity (%): 70.1**
Test Performed by: Qawiman&Nazrin **Test Date: Sat, 22 Jan, 2022**
System MU: 5.84dB

Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



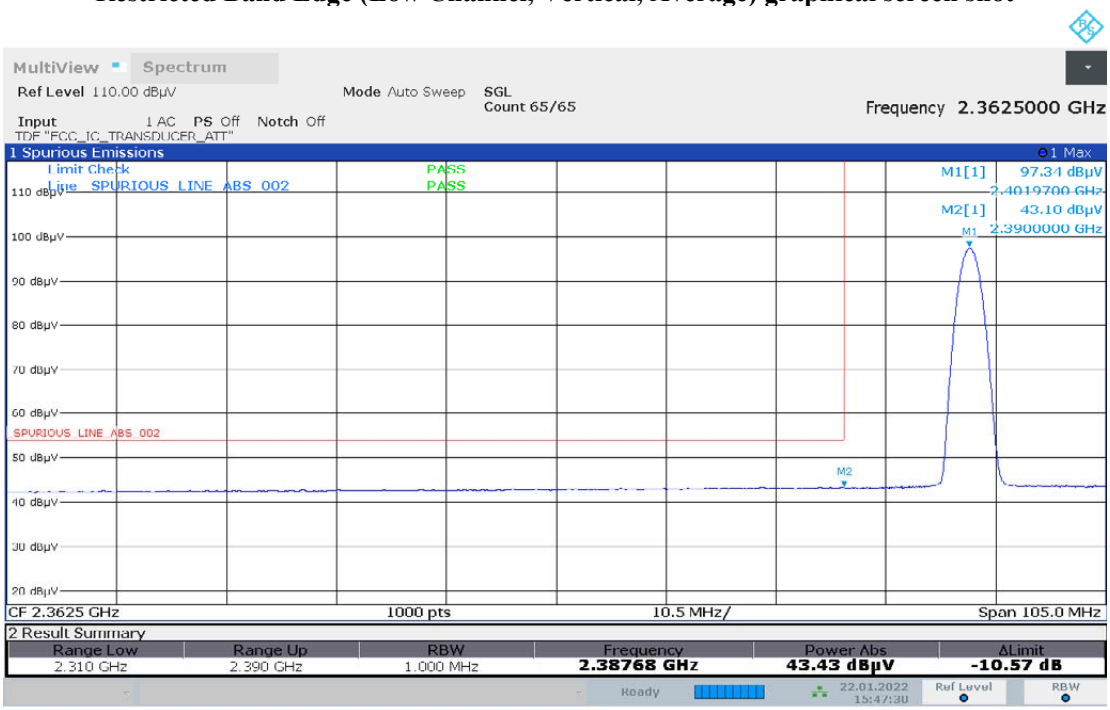
15:58:35 22.01.2022

Restricted Band Edge (Low Channel, Horizontal, Peak) graphical screen shot



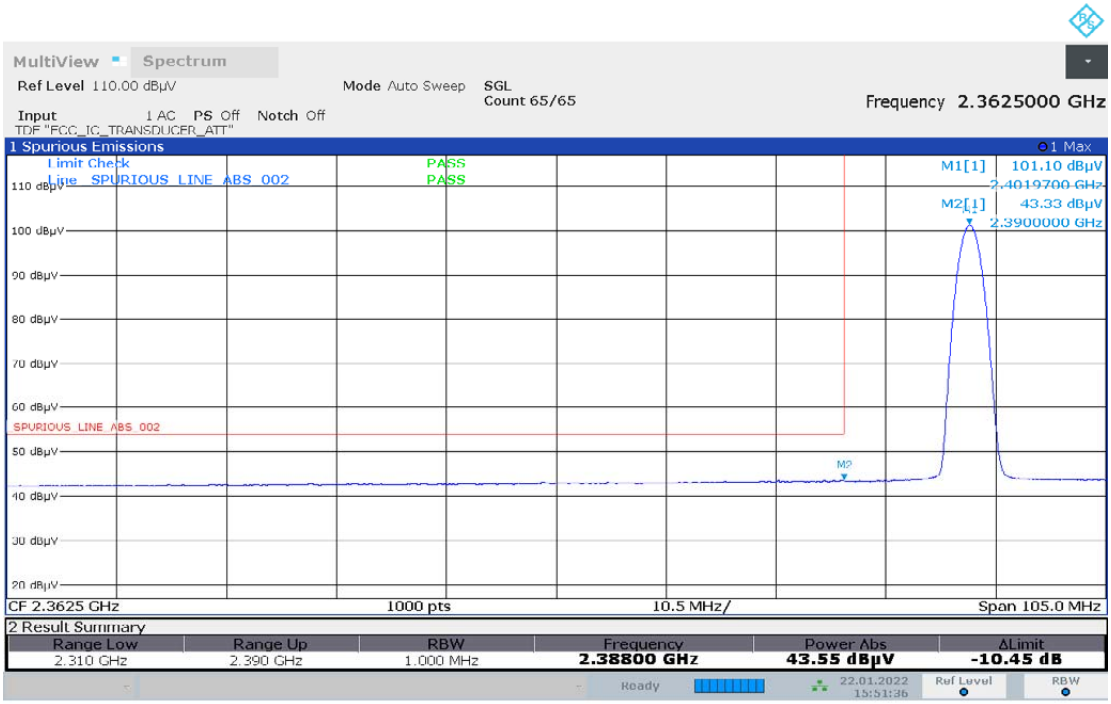
16:02:40 22.01.2022

Restricted Band Edge (Low Channel, Vertical, Average) graphical screen shot



15:47:30 22.01.2022

Restricted Band Edge (Low Channel, Horizontal, Average) graphical screen shot



15:51:37 22.01.2022

Test: Bluetooth SAC Restricted Band Edge
Model Number: AAH02JDH9VA1AN S/N: 867TYB2909 EMC SR ID#: 32751-EMC-00012
Battery: PMNN4493A Accessory: PMAD4120A
Test Channel: High Test Frequency: 2480.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (DQPSK)

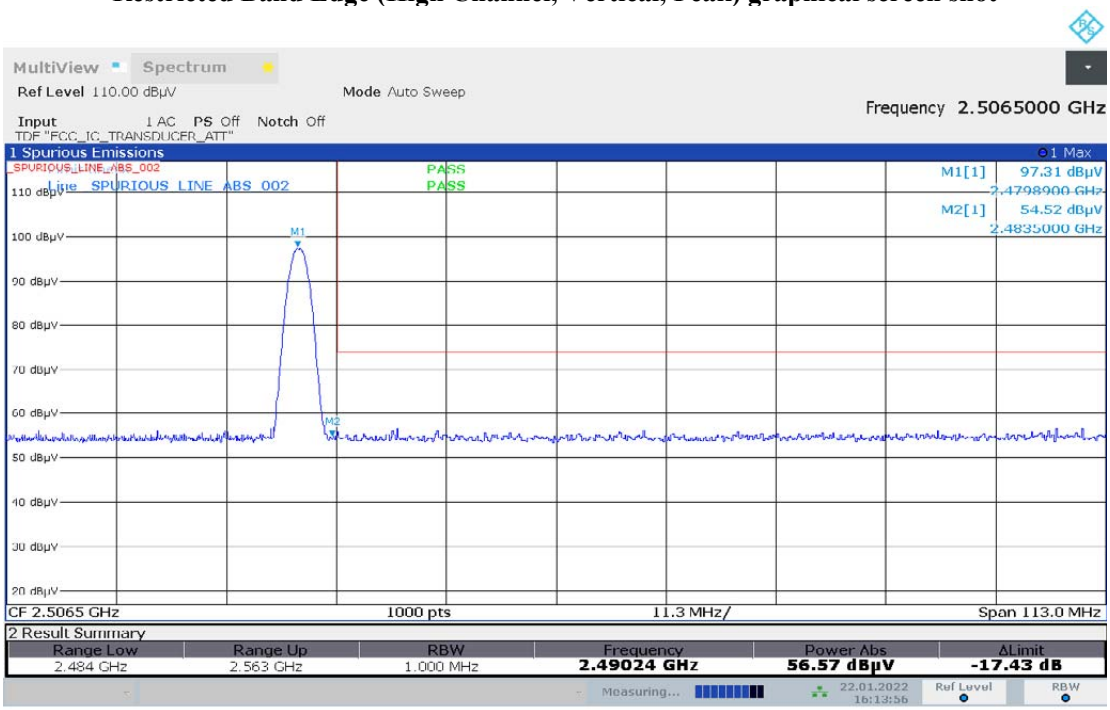
Restricted Band Edge (High Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
2483.5000	-	54.5186	44.0179	-	74.0000	54.0000	-	-19.4814	-9.9821	-
Horizontal Radiated Emission Result										
2483.5000	-	54.5076	44.9050	-	74.0000	54.0000	-	-19.4924	-9.0950	-

Remarks: Pass Result	Marginal Result	Fail Result

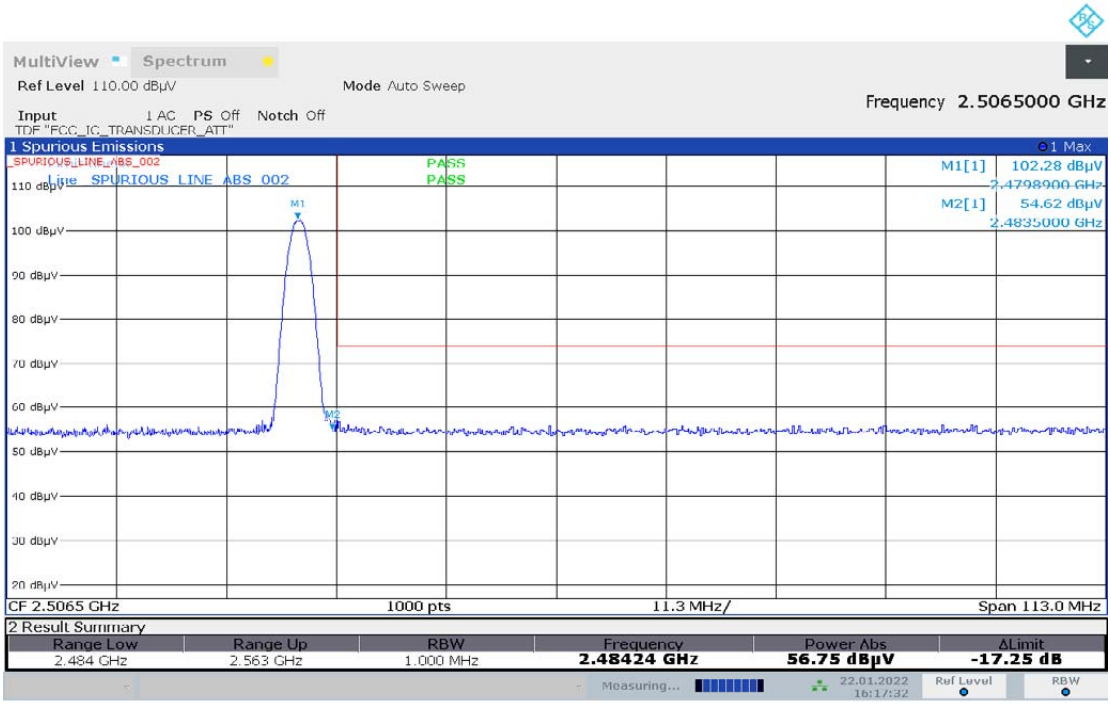
Temperature (degC):24.1 **Humidity (%): 70.1**
Test Performed by: Qawiman&Nazrin **Test Date: Sat, 22 Jan, 2022**
System MU: 5.84dB

Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



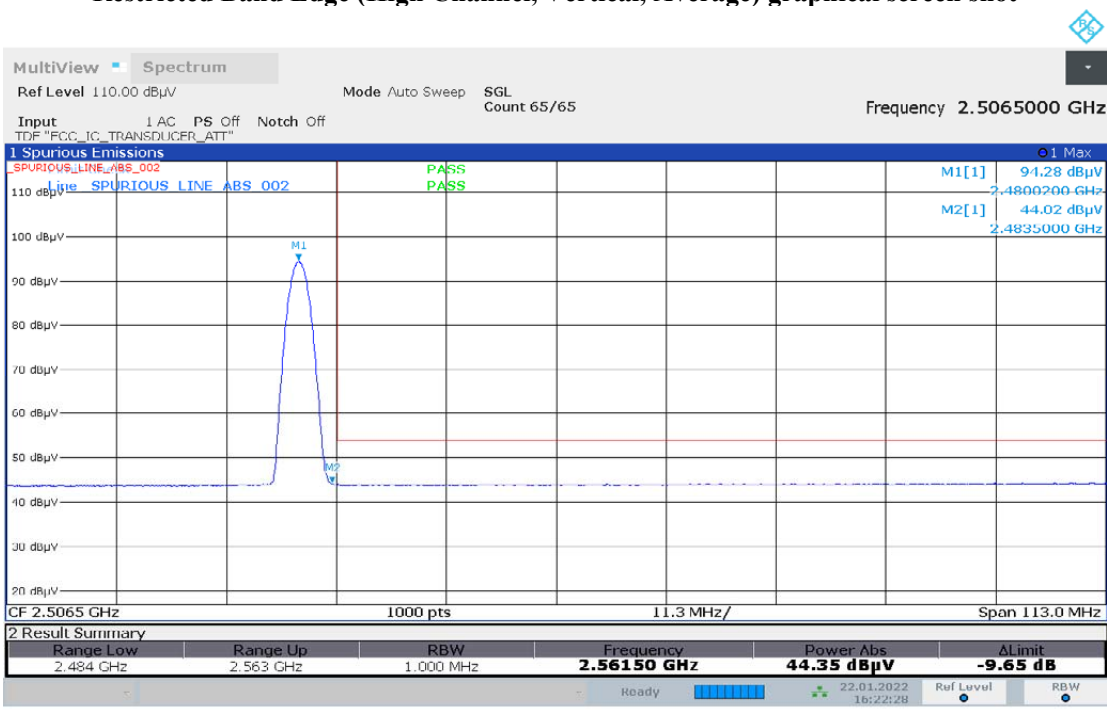
16:13:56 22.01.2022

Restricted Band Edge (High Channel, Horizontal, Peak) graphical screen shot



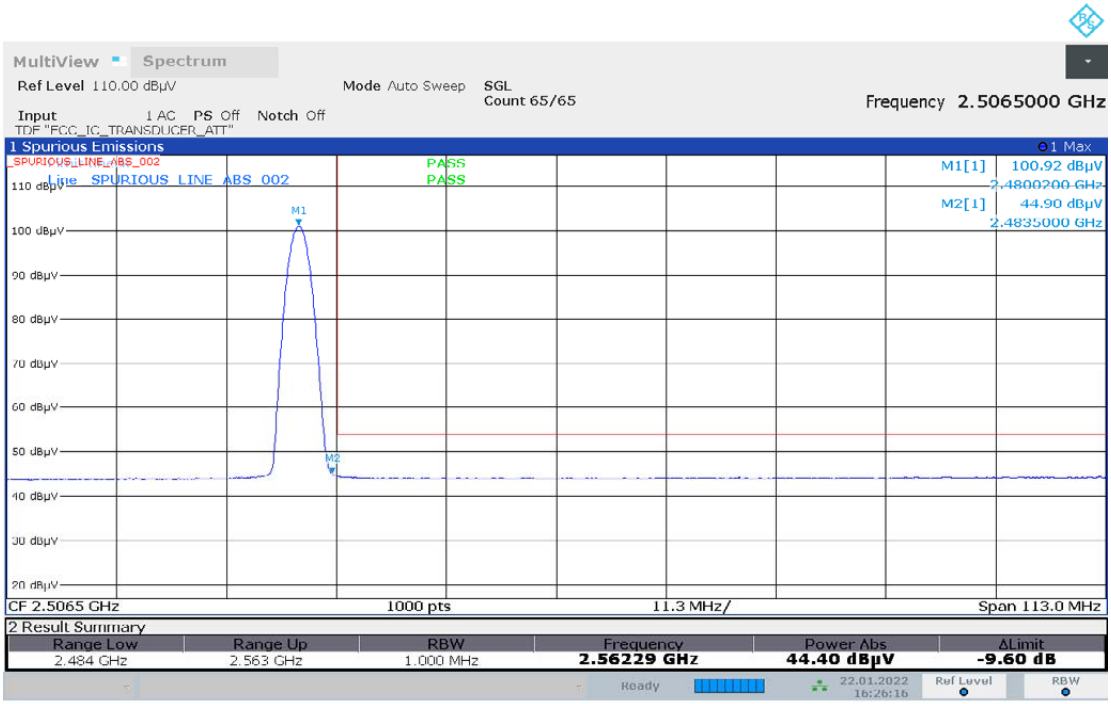
16:17:33 22.01.2022

Restricted Band Edge (High Channel, Vertical, Average) graphical screen shot



16:22:29 22.01.2022

Restricted Band Edge (High Channel, Horizontal, Average) graphical screen shot



16:26:17 22.01.2022

Test: Bluetooth SAC Restricted Band Edge
Model Number: AAH02JDH9VA1AN S/N: 867TYB2909 EMC SR ID#: 32751-EMC-00012
Battery: PMNN4493A Accessory: PMAD4120A
Test Channel: Low Test Frequency: 2402.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (8DPSK)

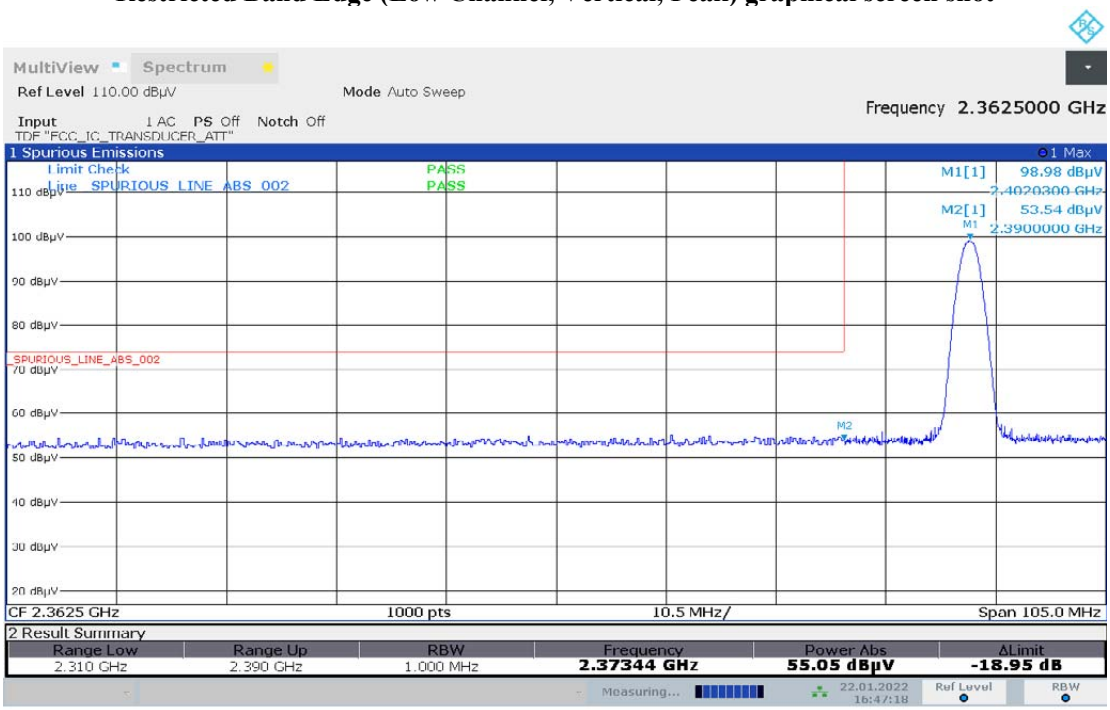
Restricted Band Edge (Low Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
2390.0000	-	53.5391	43.1583	-	74.0000	54.0000	-	-20.4609	-10.8417	-
Horizontal Radiated Emission Result										
2390.0000	-	53.6874	43.3338	-	74.0000	54.0000	-	-20.3126	-10.6662	-

Remarks: Pass Result	Marginal Result	Fail Result

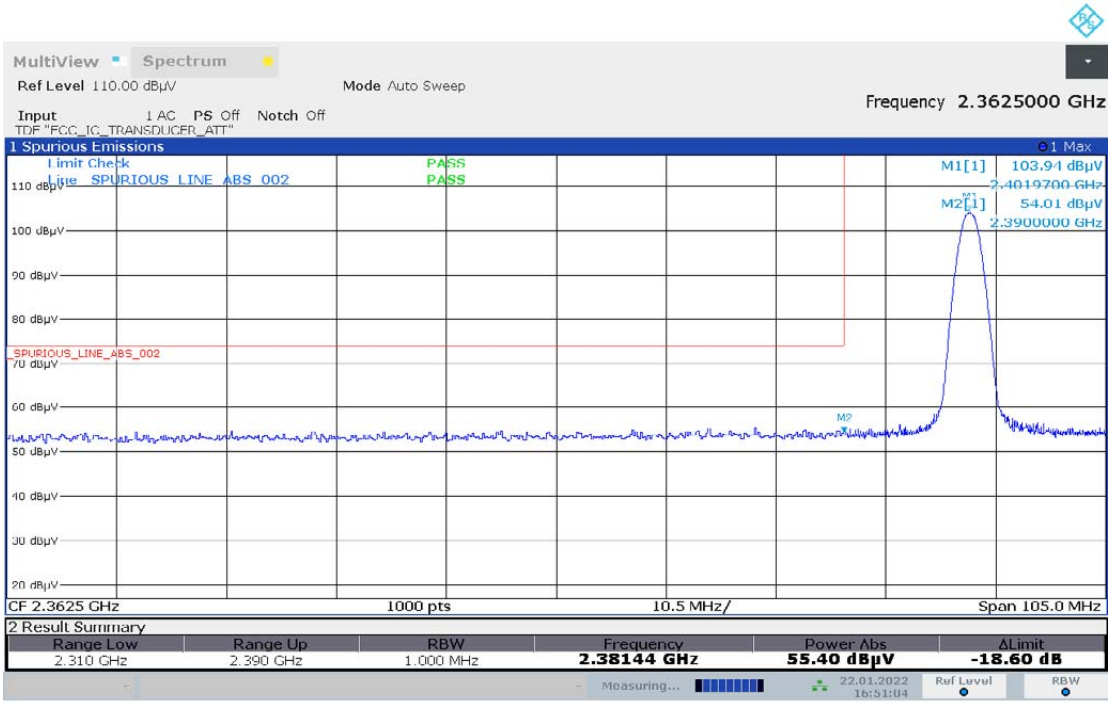
Temperature (degC): 24.1 **Humidity (%): 70.1**
Test Performed by: Qawiman&Nazrin **Test Date: Sat, 22 Jan, 2022**
System MU: 5.84dB

Restricted Band Edge (Low Channel, Vertical, Peak) graphical screen shot



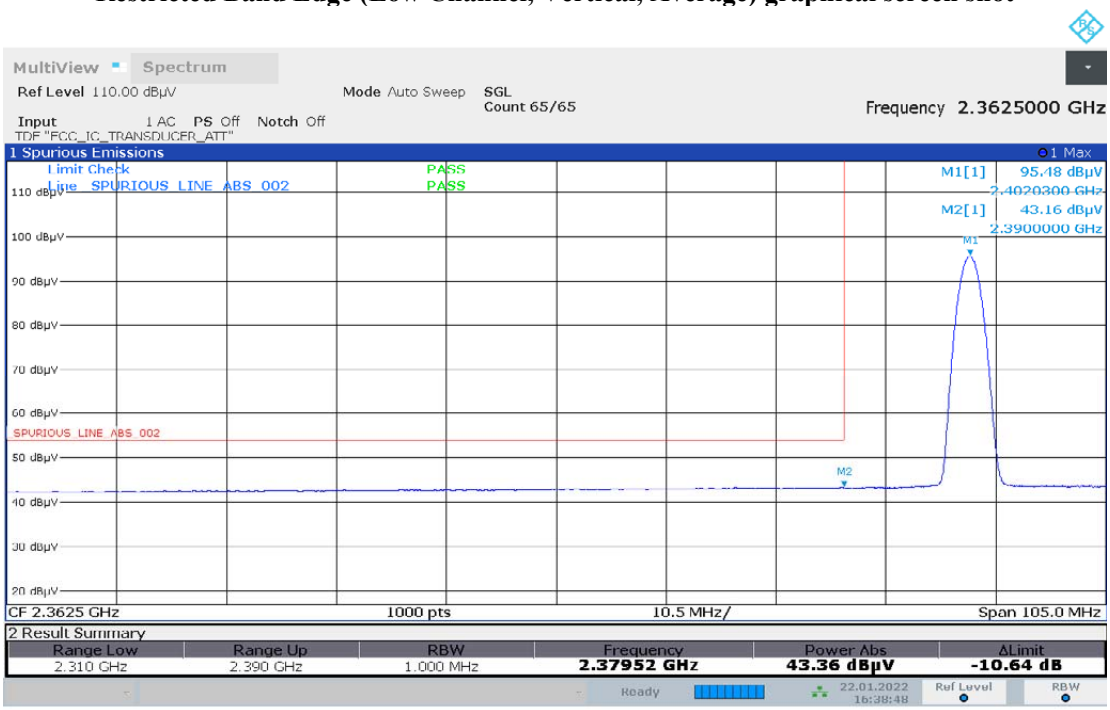
16:47:18 22.01.2022

Restricted Band Edge (Low Channel, Horizontal, Peak) graphical screen shot



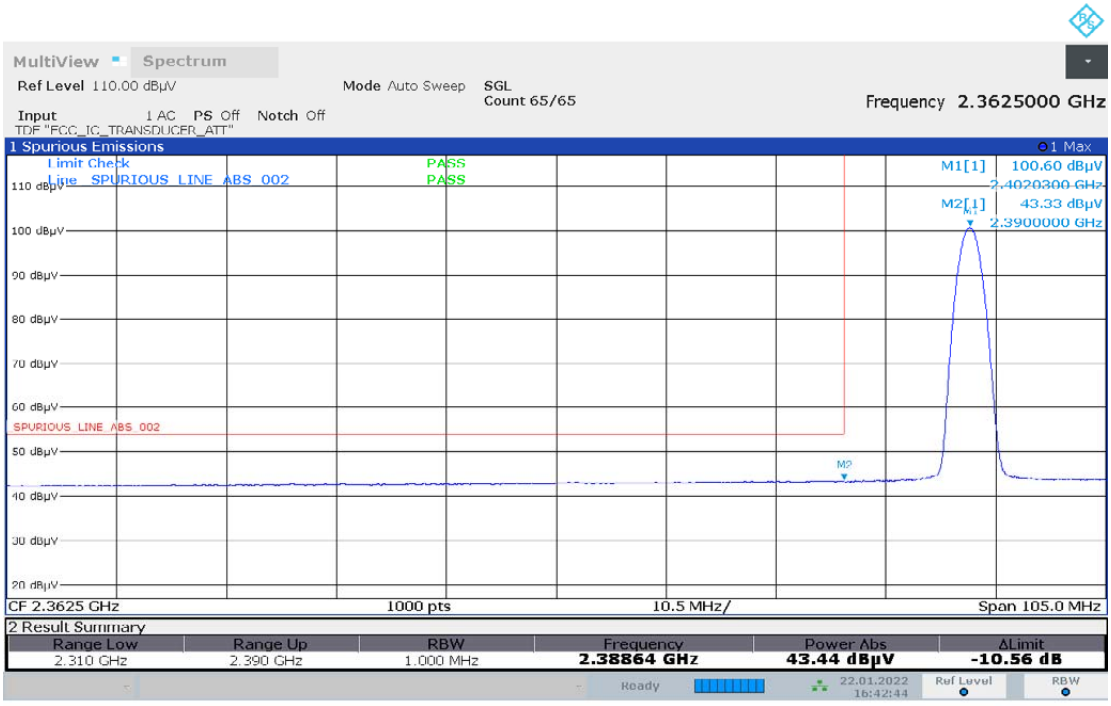
16:51:04 22.01.2022

Restricted Band Edge (Low Channel, Vertical, Average) graphical screen shot



16:38:48 22.01.2022

Restricted Band Edge (Low Channel, Horizontal, Average) graphical screen shot



16:42:44 22.01.2022

Test: Bluetooth SAC Restricted Band Edge
Model Number: AAH02JDH9VA1AN S/N: 867TYB2909 EMC SR ID#: 32751-EMC-00012
Battery: PMNN4493A Accessory: PMAD4120A
Test Channel: High Test Frequency: 2480.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (8DPSK)

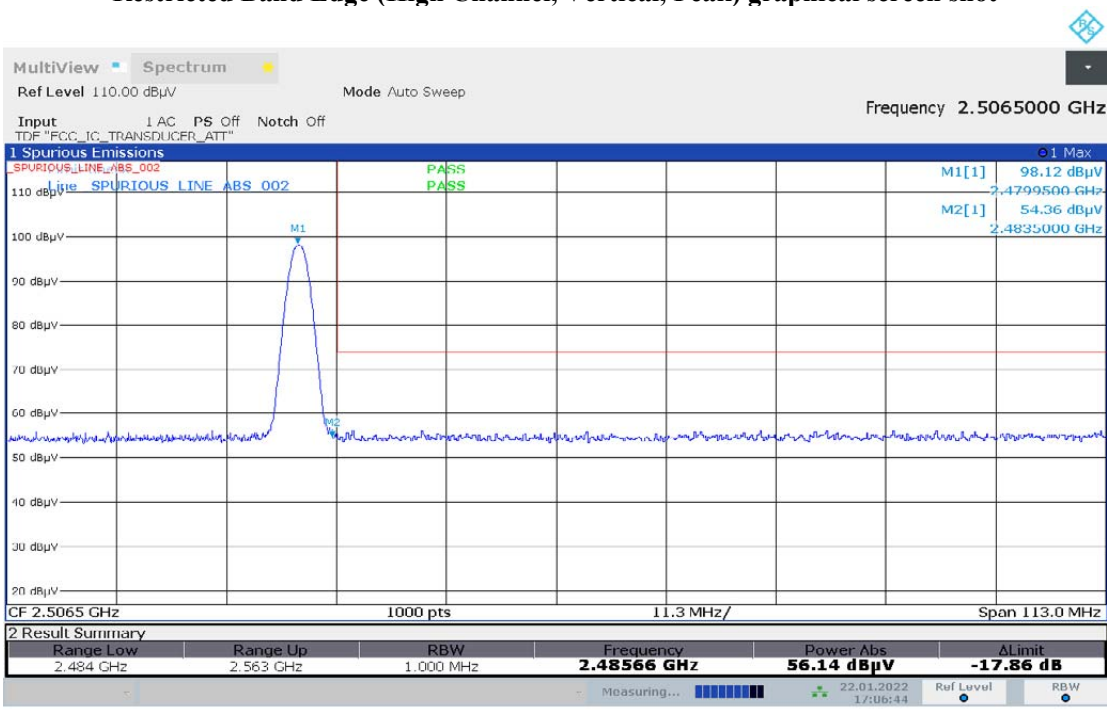
Restricted Band Edge (High Channel) tabular data

Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
2483.5000	-	53.8944	44.2937	-	74.0000	54.0000	-	-20.1056	-9.7063	-
Horizontal Radiated Emission Result										
2483.5000	-	57.2256	45.6326	-	74.0000	54.0000	-	-16.7744	-8.3674	-

Remarks: Pass Result	Marginal Result	Fail Result

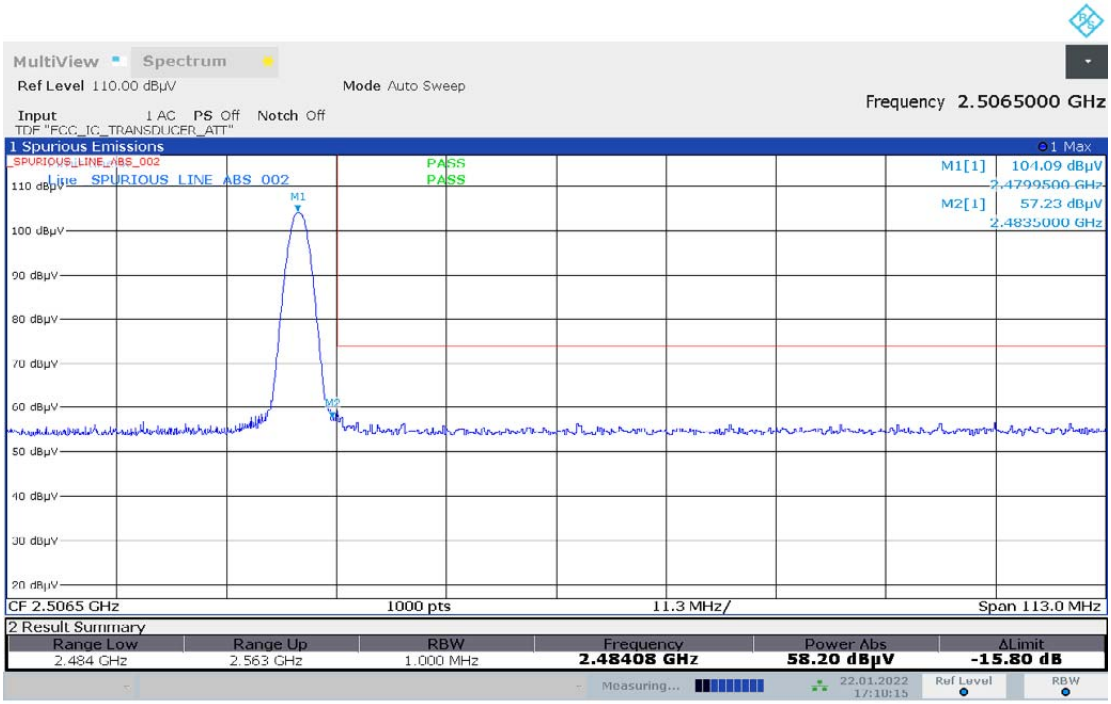
Temperature (degC): 24.1 **Humidity (%): 70.1**
Test Performed by: Qawiman&Nazrin **Test Date: Sun, 23 Jan, 2022**
System MU: 5.84dB

Restricted Band Edge (High Channel, Vertical, Peak) graphical screen shot



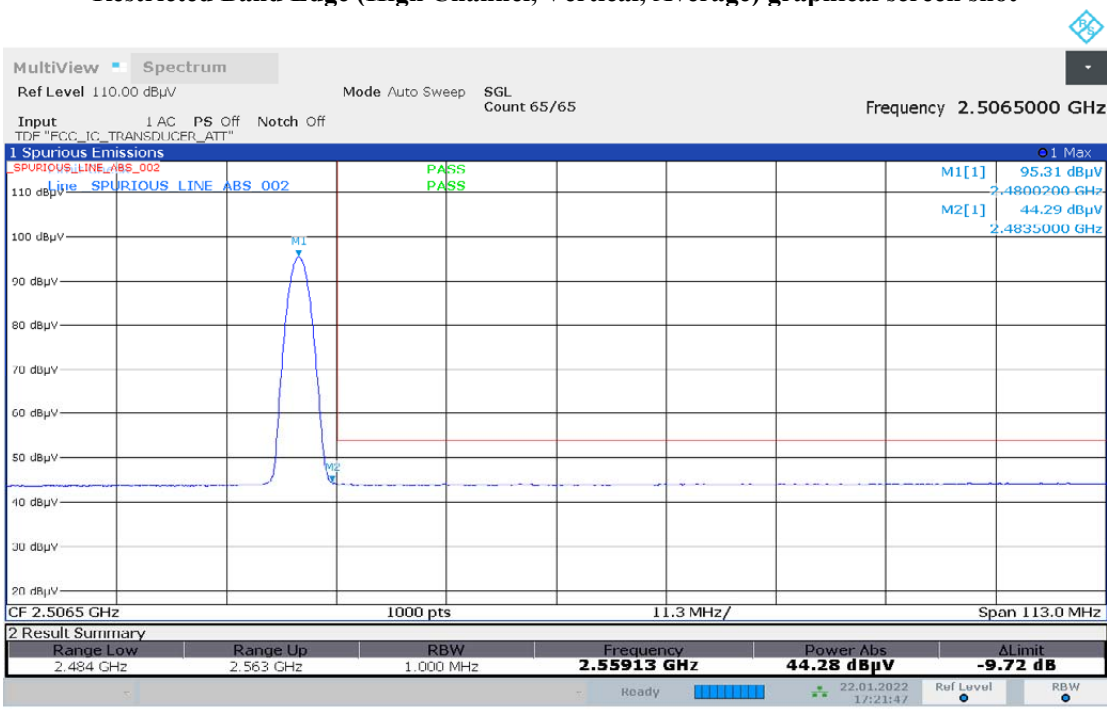
17:06:44 22.01.2022

Restricted Band Edge (High Channel, Horizontal, Peak) graphical screen shot



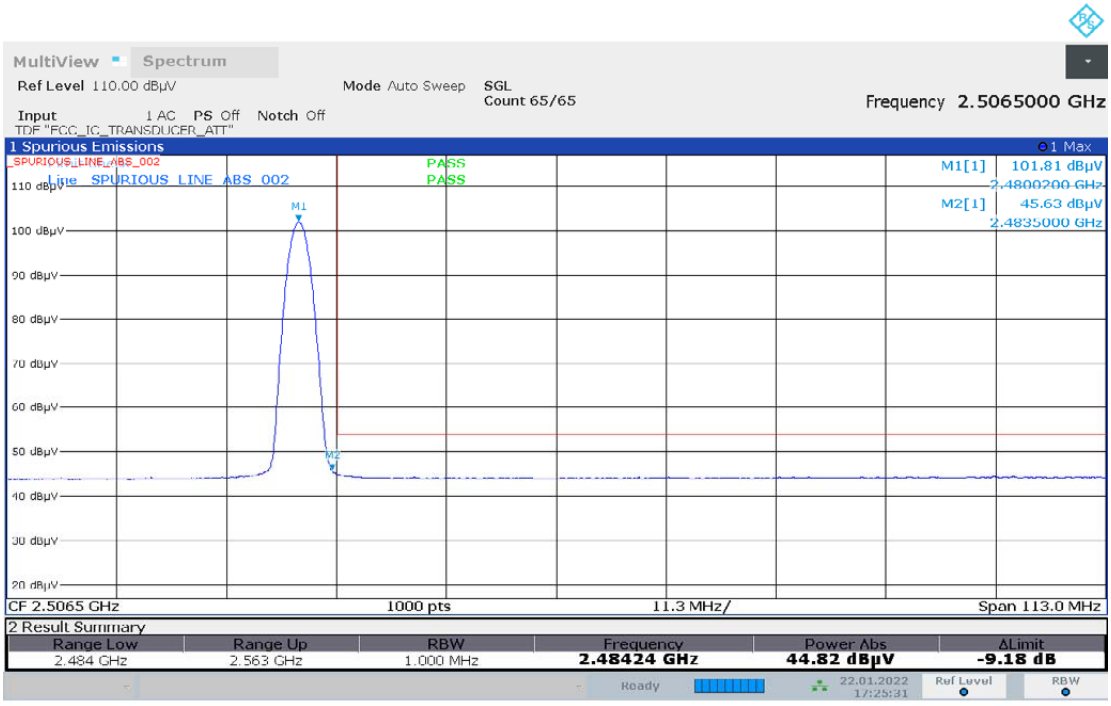
17:10:15 22.01.2022

Restricted Band Edge (High Channel, Vertical, Average) graphical screen shot



17:21:48 22.01.2022

Restricted Band Edge (High Channel, Horizontal, Average) graphical screen shot



17:25:32 22.01.2022

Test: Bluetooth SAC Transmitter Radiated Emission
Model#: AAH02JDH9VA1AN S/N: 867TYB2909 EMC SR ID#: 32751-EMC-00012
Battery: PMNN4493A Accessory: PMAD4120A
Test Channel: Low Test Frequency: 2402.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (GFSK)

Radiated Emission (Low Channel) tabular data

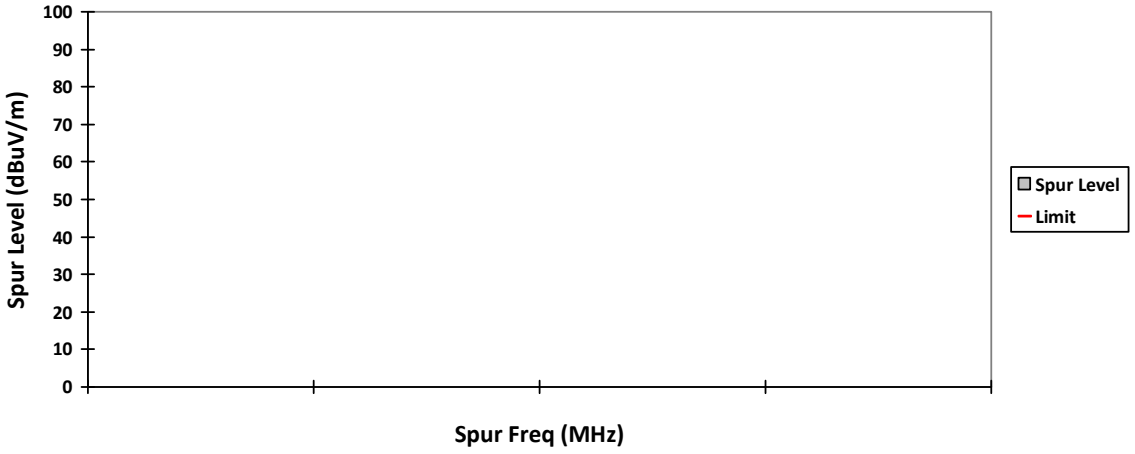
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4804	-	48.5678**	-	-	74.0	-	-	25.4322	-	-
7206	-	54.6442**	-	-	86.6335	-	-	31.9893	-	106.6335
9608	-	55.5547**	-	-	86.6335	-	-	31.0788	-	106.6335
12010	-	60.6672**	38.1672**	-	74.0	54.0	-	13.3328	15.8328	-
14412	-	63.0366**	-	-	86.6335	-	-	23.5969	-	106.6335
16814	-	63.2174**	-	-	86.6335	-	-	23.4161	-	106.6335
19216	-	35.4254**	-	-	74.0	-	-	38.5746	-	-
21618	-	37.7050**	-	-	86.6335	-	-	48.9285	-	106.6335
24020	-	37.7966**	-	-	74.0	54.0	-	48.8369	-	106.6335
Horizontal Radiated Emission Result										
4804	-	49.8736**	-	-	74.0	-	-	24.1264	-	-
7206	-	53.8469**	-	-	86.6335	-	-	32.7866	-	106.6335
9608	-	57.4129**	-	-	86.6335	-	-	29.2206	-	106.6335
12010	-	60.3134**	37.8134**	-	74.0	54.0	-	13.6866	16.1866	-
14412	-	62.3375**	-	-	86.6335	-	-	242960	-	106.6335
16814	-	63.5810**	-	-	86.6335	-	-	23.0525	-	106.6335
19216	-	34.8205**	-	-	74.0	-	-	39.1795	-	-
21618	-	37.1108**	-	-	86.6335	-	-	49.5227	-	106.6335
24020	-	36.9338**	-	-	74.0	54.0	-	49.6997	-	106.6335

Remarks: Pass Result	Marginal Result	Fail Result

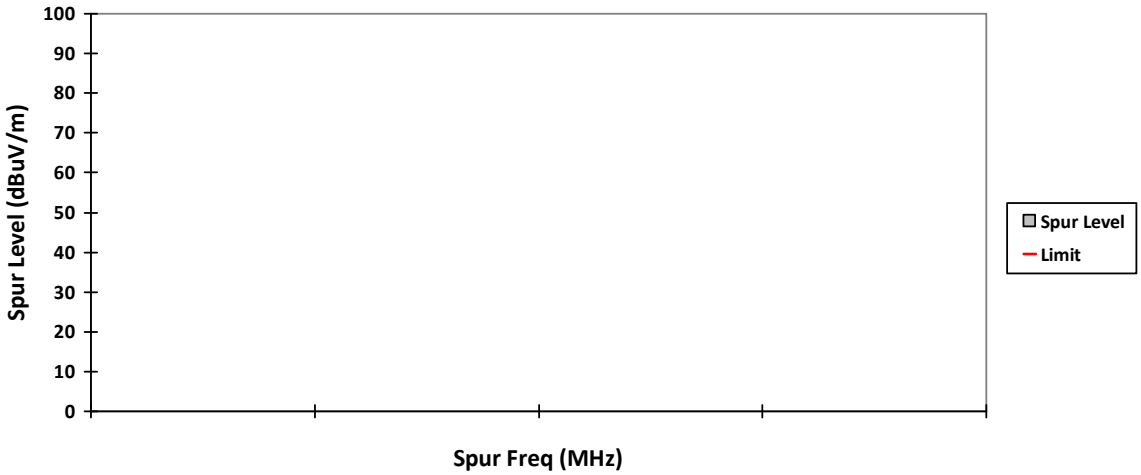
Temperature (degC): 24.1 **Humidity (%): 70.1**
Test Performed by: Qawiman&Nazrin **Test Date: Sun, 23 Jan, 2022** **System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)**

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

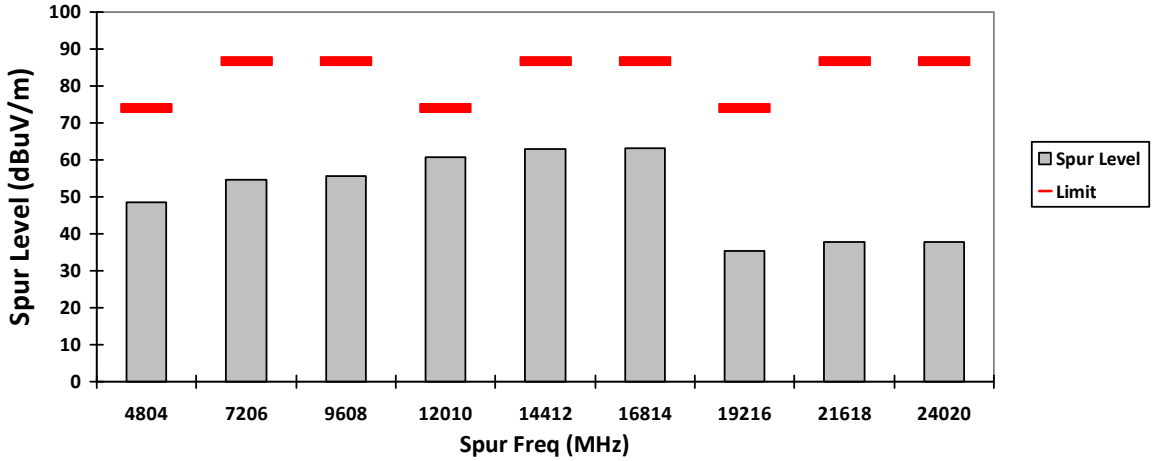
VERTICAL, QPK



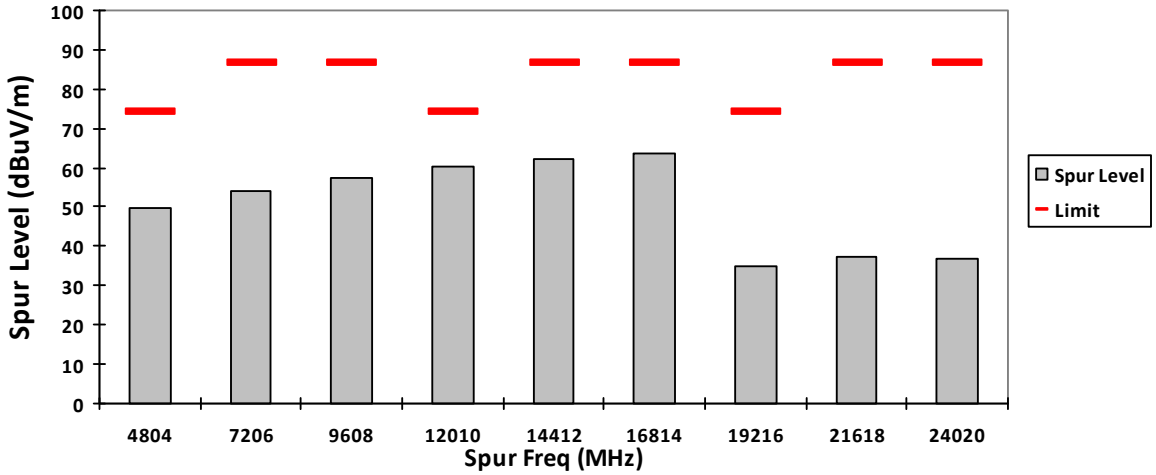
HORIZONTAL, QPK



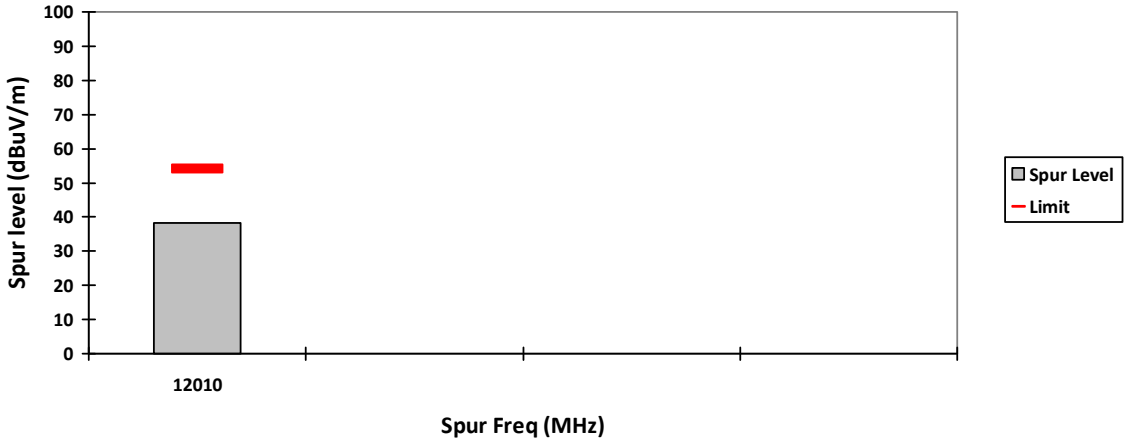
VERTICAL, PK



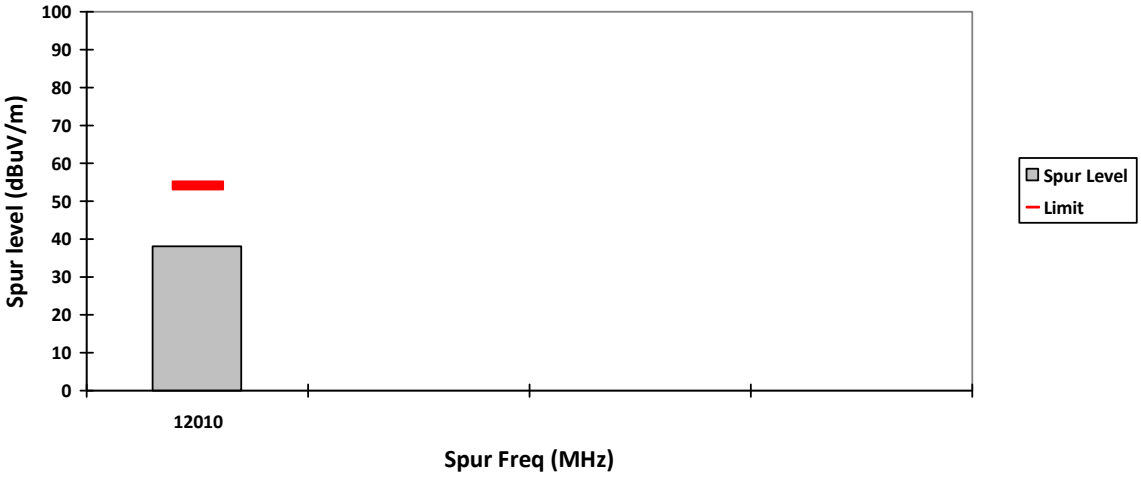
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: Bluetooth SAC Transmitter Radiated Emission
Model#: AAH02JDH9VA1AN S/N: 867TYB2909 EMC SR ID#: 32751-EMC-00012
Battery: PMNN4493A Accessory: PMAD4120A
Test Channel: Mid Test Frequency: 2441.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (GFSK)

Radiated Emission (Mid Channel) tabular data

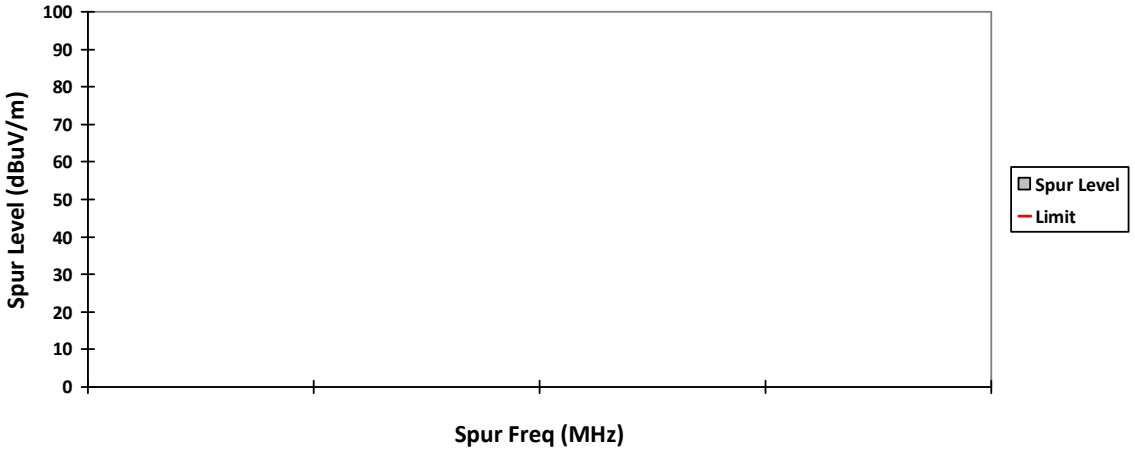
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4882	-	50.4036**	-	-	74.0	-	-	23.5964	-	-
7323	-	55.3404**	32.8404**	-	74.0	54.0	-	18.6596	21.1596	-
9764	-	56.7931**	-	-	86.6335	-	-	29.8404	-	106.6335
12205	-	60.7577**	38.2577**	-	74.0	54.0	-	13.2423	15.7423	-
14646	-	62.1194**	-	-	86.6335	-	-	24.5141	-	106.6335
17087	-	67.8015**	-	-	86.6335	-	-	18.8320	-	106.6335
19528	-	34.4668**	-	-	74.0	-	-	39.5332	-	-
21969	-	36.4724**	-	-	86.6335	-	-	50.1511	-	106.6335
24410	-	39.9866**	-	-	86.6335	-	-	46.6469	-	106.6335
Horizontal Radiated Emission Result										
4882	-	48.5907**	-	-	74.0	-	-	25.4093	-	-
7323	-	54.8817**	32.3817**	-	74.0	54.0	-	19.1183	21.6183	-
9764	-	56.1851**	-	-	86.6335	-	-	30.4484	-	106.6335
12205	-	60.7735**	38.2735**	-	74.0	54.0	-	13.2265	15.7265	-
14646	-	63.0321**	-	-	86.6335	-	-	23.6014	-	106.6335
17087	-	66.2681**	-	-	86.6335	-	-	20.3654	-	106.6335
19528	-	34.7449**	-	-	74.0	-	-	39.2551	-	-
21969	-	36.6360**	-	-	86.6335	-	-	49.9975	-	106.6335
24410	-	39.5416**	-	-	86.6335	-	-	47.0919	-	106.6335

Remarks: Pass Result	Marginal Result	Fail Result

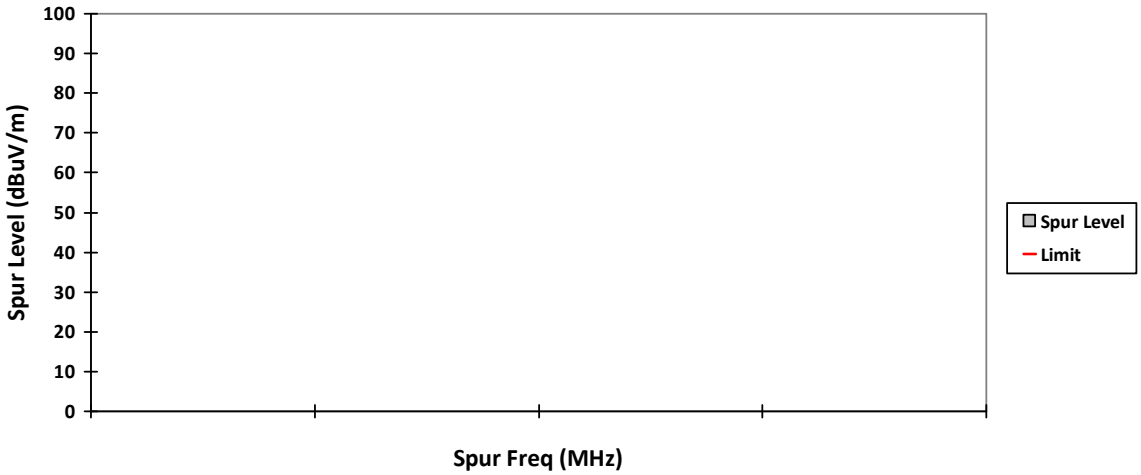
Temperature (degC): 24.1 **Humidity (%): 70.1**
Test Performed by: Qawiman&Nazrin **Test Date: Sun, 23 Jan, 2022** **System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)**

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

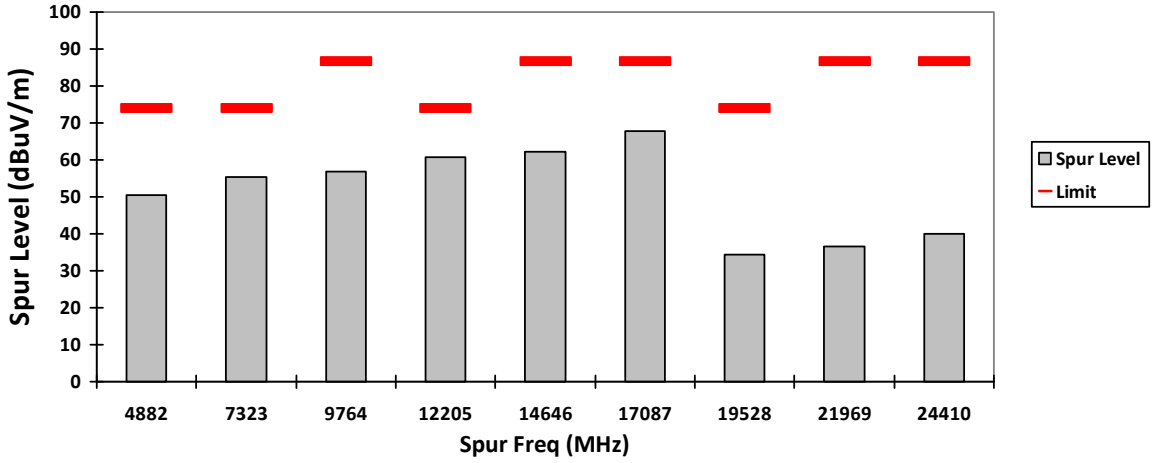
VERTICAL, QPK



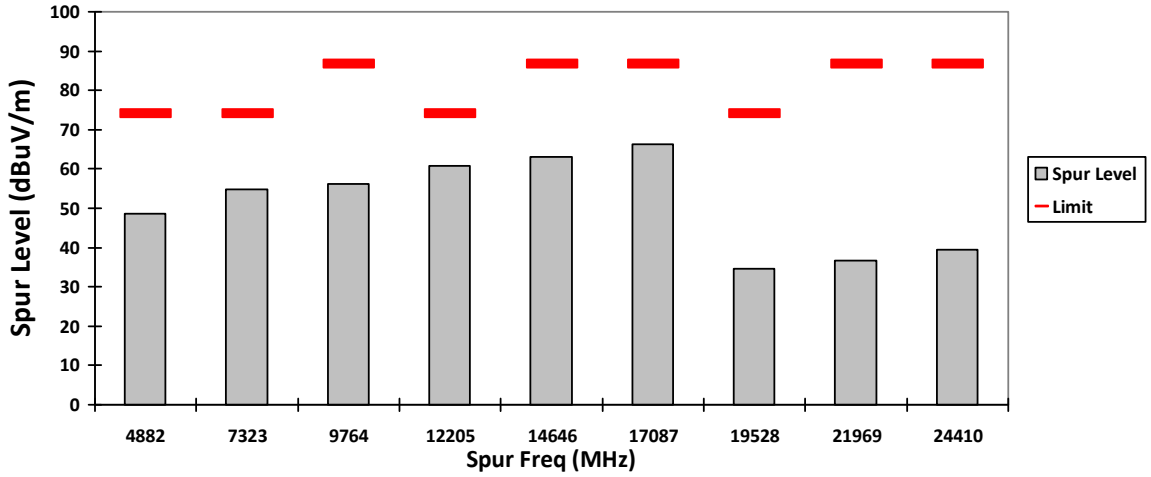
HORIZONTAL, QPK



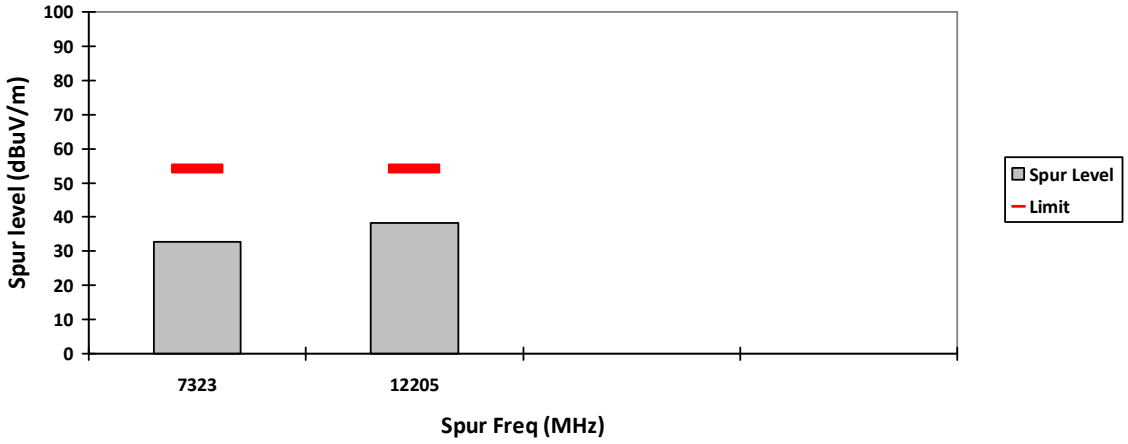
VERTICAL, PK



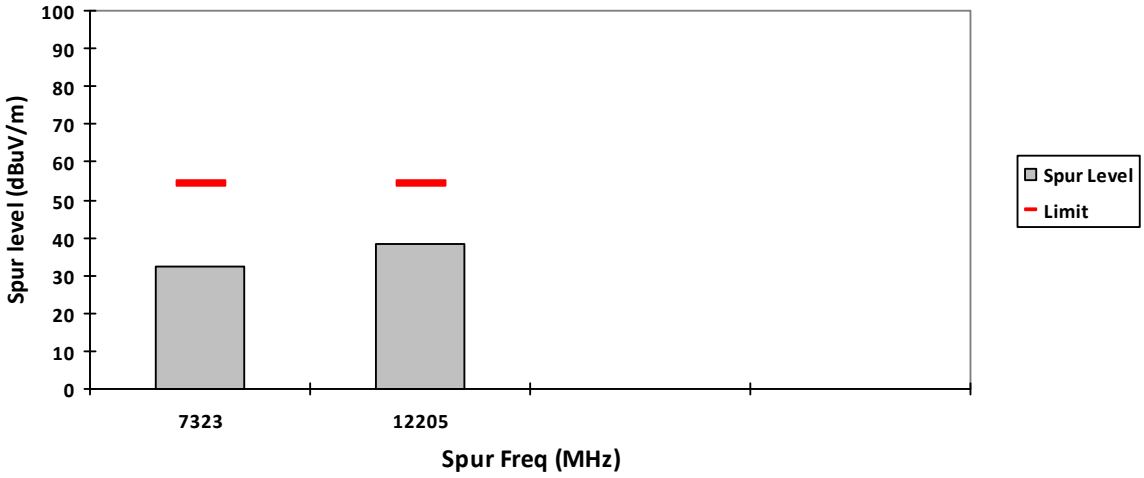
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: Bluetooth SAC Transmitter Radiated Emission
Model#: AAH02JDH9VA1AN S/N: 867TYB2909 EMC SR ID#: 32751-EMC-00012
Battery: PMNN4493A Accessory: PMAD4120A
Test Channel: High Test Frequency: 2480.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (GFSK)

Radiated Emission (High Channel) tabular data

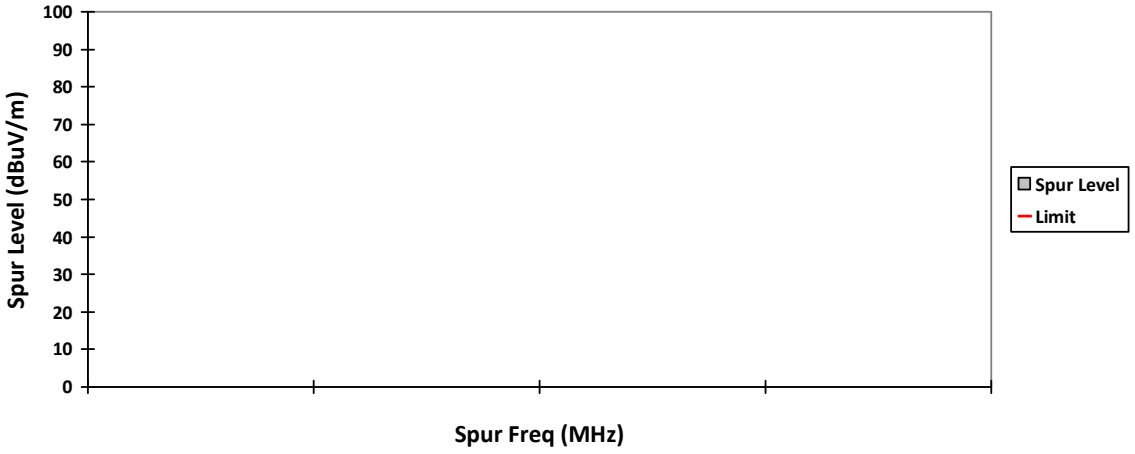
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4960	-	49.1412**	-	-	74.0	-	-	24.8588	-	-
7440	-	55.3638**	32.8638**	-	74.0	54.0	-	18.6362	21.1362	-
9920	-	55.8768**	-	-	86.6335	-	-	30.7567	-	106.6335
12400	-	62.9561**	40.4561**	-	74.0	54.0	-	11.0439	13.5439	-
14880	-	61.6841**	-	-	86.6335	-	-	24.9494	-	106.6335
17360	-	65.5855**	-	-	86.6335	-	-	21.0480	-	106.6335
19840	-	34.2818**	-	-	74.0	-	-	39.7182	-	-
22320	-	36.6685**	-	-	74.0	-	-	37.3315	-	-
24800	-	40.7087**	-	-	86.6335	-	-	45.9248	-	106.6335
Horizontal Radiated Emission Result										
4960	-	48.8901**	-	-	74.0	-	-	25.1099	5.1099	-
7440	-	54.5183**	32.0183**	-	74.0	54.0	-	19.4817	21.9817	-
9920	-	58.2844**	-	-	86.6335	-	-	28.3491	-4.2844	106.6335
12400	-	62.5340**	40.0340**	-	74.0	54.0	-	11.4660	13.9660	-
14880	-	61.6362**	-	-	86.6335	-	-	24.9973	-	106.6335
17360	-	65.3131**	-	-	86.6335	-	-	21.3204	-	106.6335
19840	-	34.5340**	-	-	74.0	-	-	39.4660	-	-
22320	-	36.8673**	-	-	74.0	-	-	37.1327	-	-
24800	-	40.6684**	-	-	86.6335	-	-	45.9651	-	106.6335

Remarks: Pass Result	Marginal Result	Fail Result

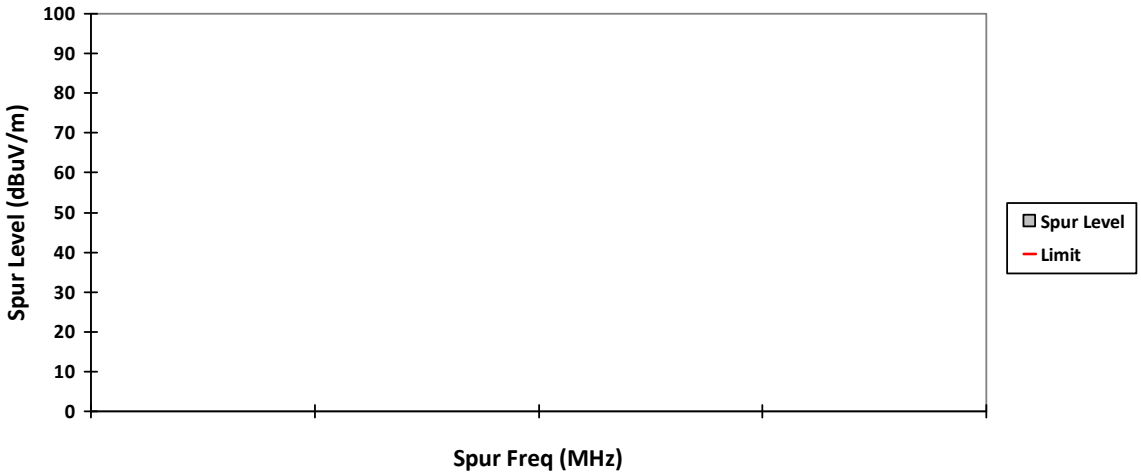
Temperature (degC): 24.1 **Humidity (%): 70.1**
Test Performed by: Qawiman&Nazrin **Test Date: Sun, 23 Jan, 2022** **System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)**

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

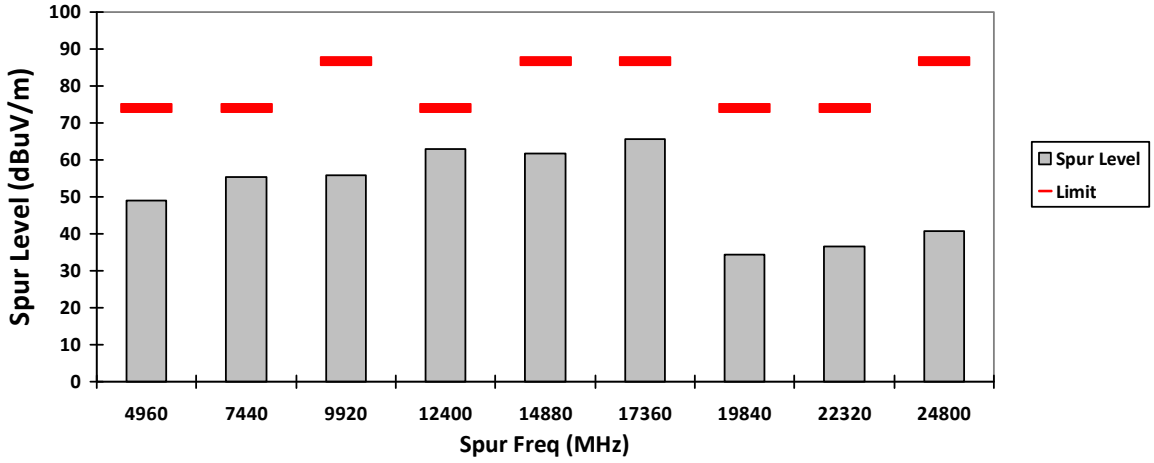
VERTICAL, QPK



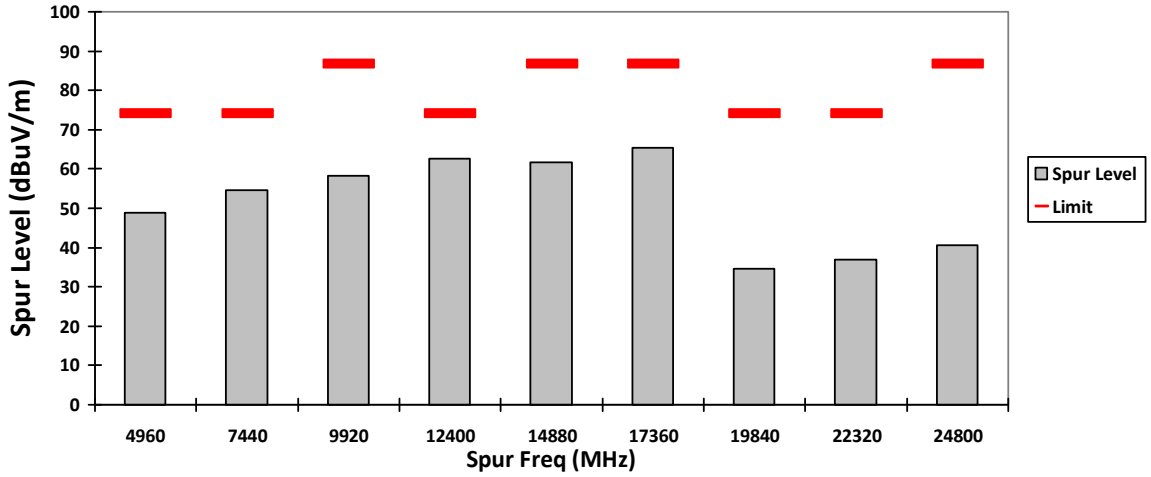
HORIZONTAL, QPK



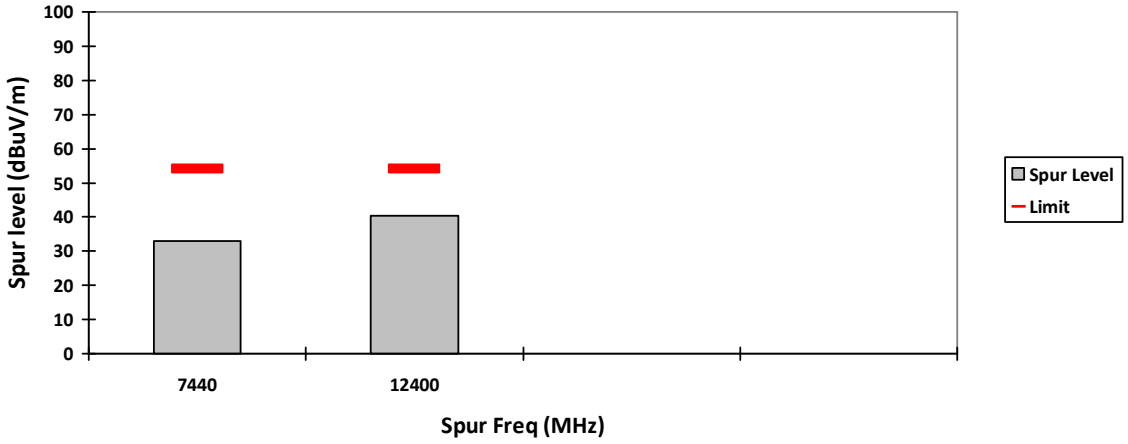
VERTICAL, PK



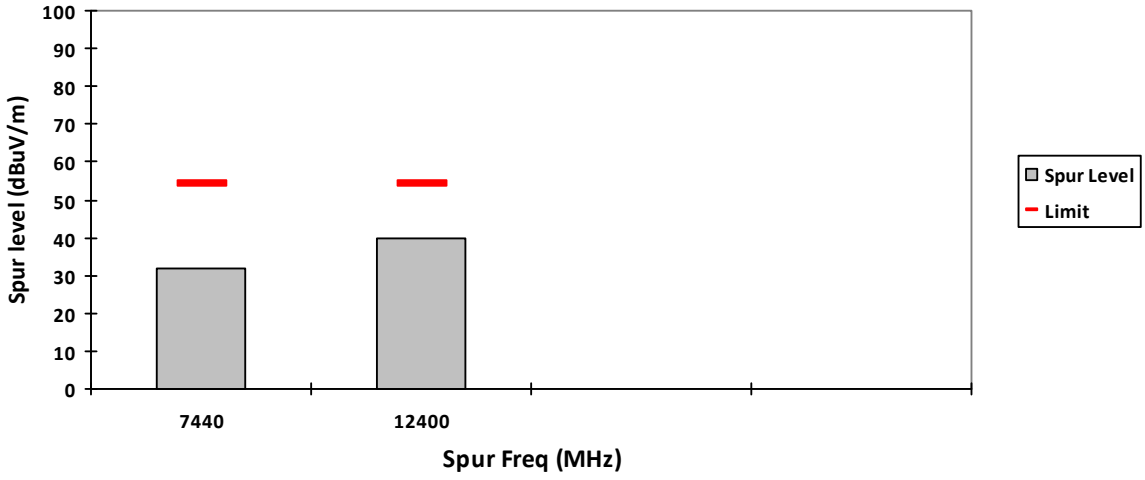
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



NOTE:
Transmitter Duty Cycle Calculation, FCC Rule 15.35 (b,c)

Based on the Bluetooth Specification Version 2.1+EDR, and worst case AFH mode, transmitter ON time is independent of packet type (DH1, DH3 and DH5) and packet length, the AFH mode Duty cycle connection factor as below:

Channel hop rate = 800 hops/second (AFH Mode)
Adjusted channel hop rate for DH5 mode = 133.33 hops/second
Time per channel hop = 1 / 133.33 hops/second = 7.5 ms
Time to cycle through all channels = 7.5 x 20 channels = 150 ms
Number of times transmitter hits on one channel = 100 ms / 150 ms = 1 time(s)
Worst case dwell time = 7.5 ms
Duty cycle connection factor = $20\log_{10}$ (7.5ms / 100ms) = **-22.5 dB**

Test: Bluetooth SAC Transmitter Radiated Emission
Model#: AAH02JDH9VA1AN S/N: 867TYB2909 EMC SR ID#: 32751-EMC-00012
Battery: PMNN4493A Accessory: PMAD4120A
Test Channel: Low Test Frequency: 2402.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (DQPSK)

Radiated Emission (Low Channel) tabular data

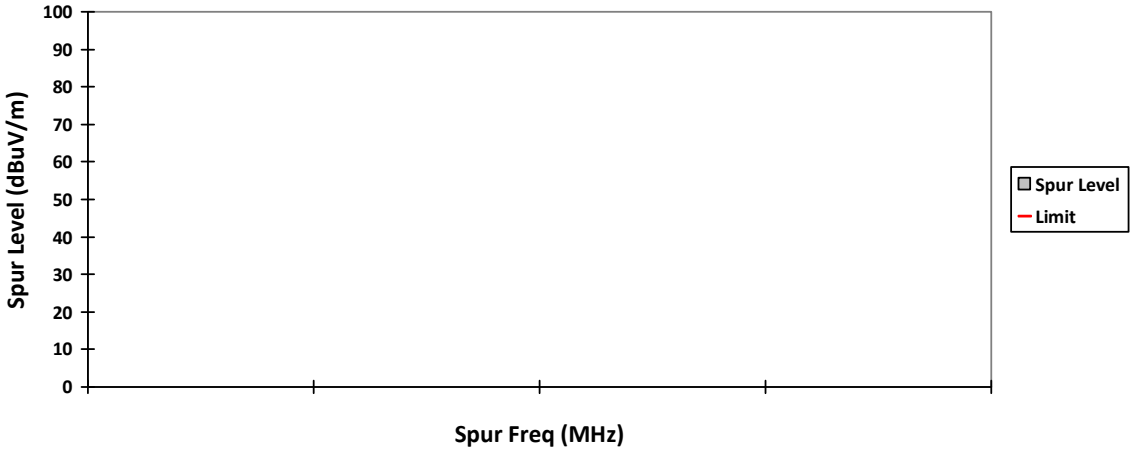
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4804	-	49.2265**	-	-	74.0	-	-	24.7735	-	-
7206	-	53.8776**	-	-	86.6335	-	-	32.7559	-	106.6335
9608	-	56.7228**	-	-	86.6335	-	-	29.9107	-	106.6335
12010	-	61.4713**	38.9713**	-	74.0	54.0	-	12.5287	15.0287	-
14412	-	62.8274**	-	-	86.6335	-	-	23.8061	-	106.6335
16814	-	63.6031**	-	-	86.6335	-	-	23.0304	-	106.6335
19216	-	35.0383**	-	-	74.0	-	-	38.9617	-	-
21618	-	37.5452**	-	-	86.6335	-	-	49.0883	-	106.6335
24020	-	37.5730**	-	-	86.6335	-	-	49.0605	-	106.6335
Horizontal Radiated Emission Result										
4804	-	49.9216**	-	-	74.0	-	-	24.0784	-	-
7206	-	55.5482**	-	-	86.6335	-	-	31.0853	-	106.6335
9608	-	58.5252**	-	-	86.6335	-	-	28.1083	-	106.6335
12010	-	60.8899**	38.3899**	-	74.0	54.0	-	13.1101	15.6101	-
14412	-	62.1249**	-	-	86.6335	-	-	24.5086	-	106.6335
16814	-	66.1299**	-	-	86.6335	-	-	20.5036	-	106.6335
19216	-	36.0184**	-	-	74.0	-	-	37.9816	-	-
21618	-	37.9650**	-	-	86.6335	-	-	48.6685	-	106.6335
24020	-	38.6999**	-	-	86.6335	-	-	47.9336	-	106.6335

Remarks: Pass Result	Marginal Result	Fail Result

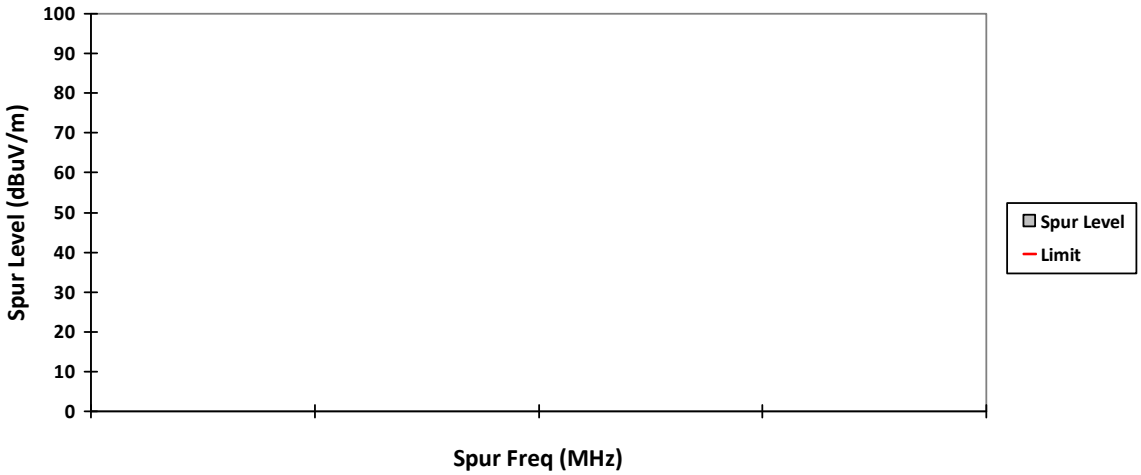
Temperature (degC): 24.1 **Humidity (%): 70.1**
Test Performed by: Qawiman&Nazrin **Test Date: Sun, 23 Jan, 2022**
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

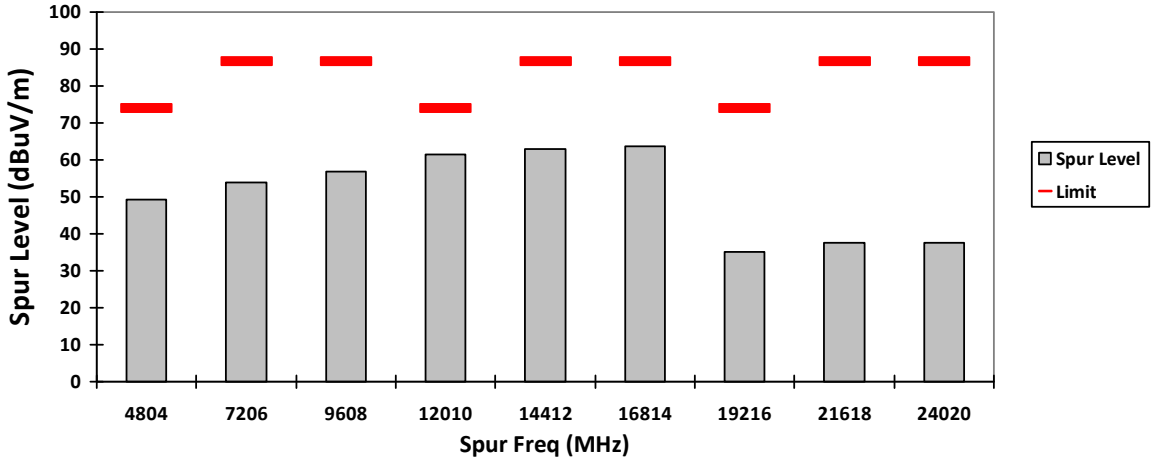
VERTICAL, QPK



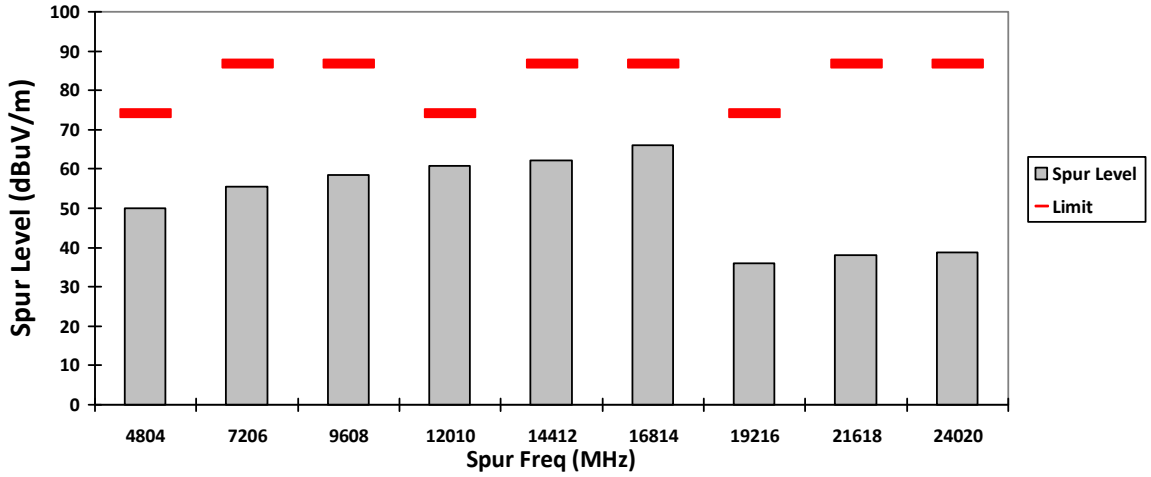
HORIZONTAL, QPK



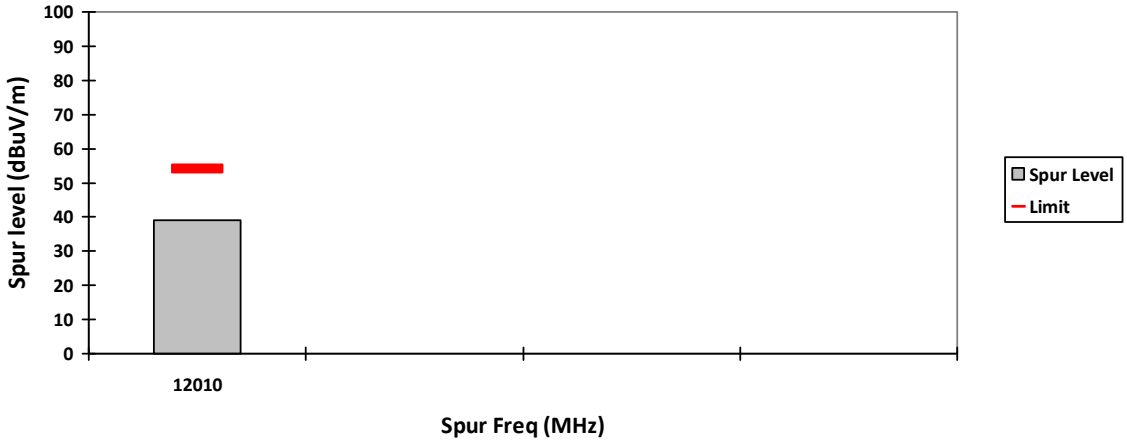
VERTICAL, PK



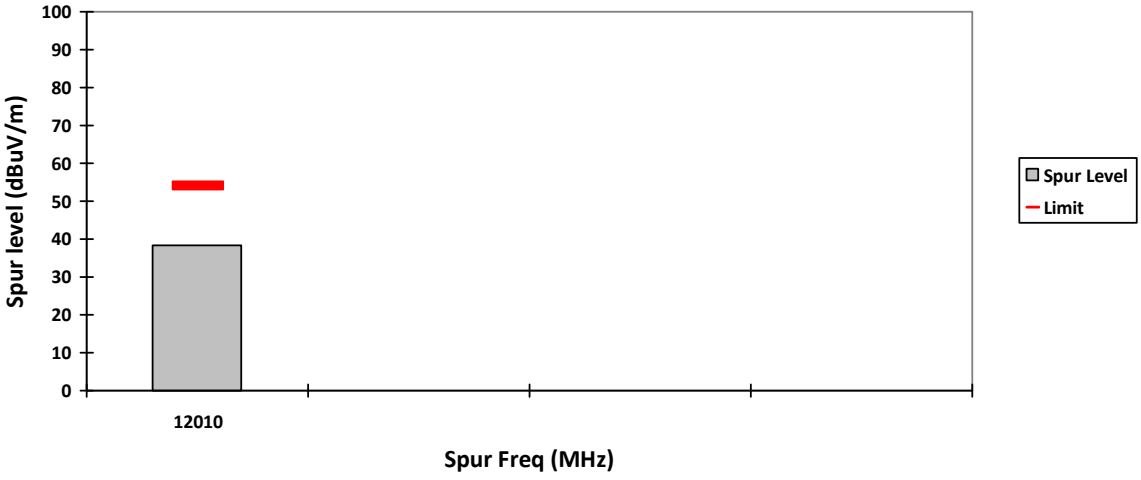
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: Bluetooth SAC Transmitter Radiated Emission
Model#: AAH02JDH9VA1AN S/N: 867TYB2909 EMC SR ID#: 32751-EMC-00012
Battery: PMNN4493A Accessory: PMAD4120A
Test Channel: Mid Test Frequency: 2441.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (DQPSK)

Radiated Emission (Mid Channel) tabular data

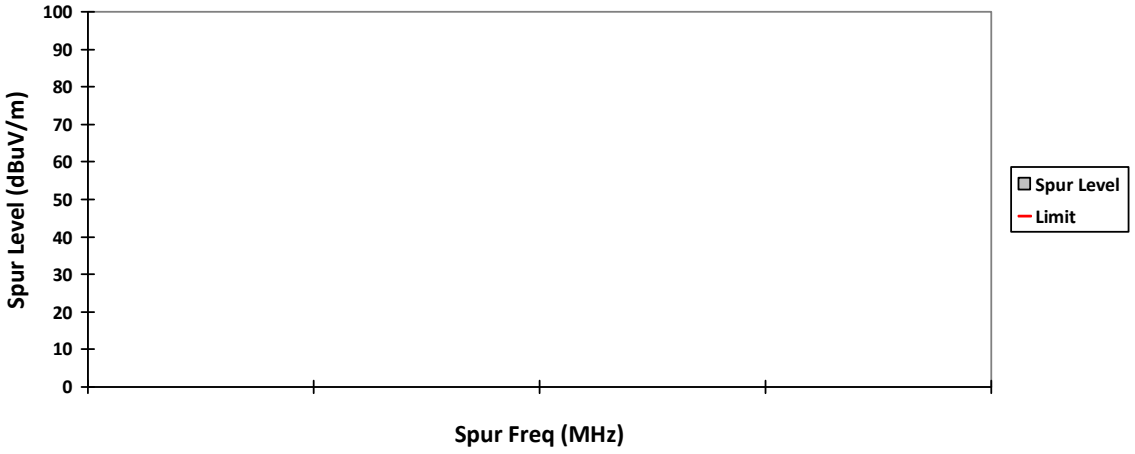
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4882	-	50.3833**	-	-	74.0	-	-	23.6167	-	-
7323	-	54.4697**	31.9697**	-	74.0	54.0	-	19.5303	22.0303	-
9764	-	57.0086**	-	-	86.6335	-	-	29.6249	-	106.6335
12205	-	60.2965**	37.7965**	-	74.0	54.0	-	13.7035	16.2035	-
14646	-	63.2652**	-	-	86.6335	-	-	23.3683	-	106.6335
17087	-	65.4846**	-	-	86.6335	-	-	21.1489	-	106.6335
19528	-	34.5079**	-	-	74.0	-	-	39.4921	-	-
21969	-	35.5878**	-	-	86.6335	-	-	51.0457	-	106.6335
24410	-	40.6296**	-	-	86.6335	-	-	46.0039	-	106.6335
Horizontal Radiated Emission Result										
4882	-	50.1539**	-	-	74.0	-	-	23.8461	-	-
7323	-	54.3742**	31.8742**	-	74.0	54.0	-	19.6258	22.1258	-
9764	-	56.7872**	-	-	86.6335	-	-	29.8463	-	106.6335
12205	-	60.7444**	38.2444**	-	74.0	54.0	-	13.2556	15.7556	-
14646	-	62.0821**	-	-	86.6335	-	-	24.5514	-	106.6335
17087	-	66.1312**	-	-	86.6335	-	-	20.5023	-	106.6335
19528	-	34.7886**	-	-	74.0	-	-	39.2114	-	-
21969	-	36.6644**	-	-	86.6335	-	-	49.9691	-	106.6335
24410	-	39.1821**	-	-	86.6335	-	-	47.4514	-	106.6335

Remarks: Pass Result	Marginal Result	Fail Result

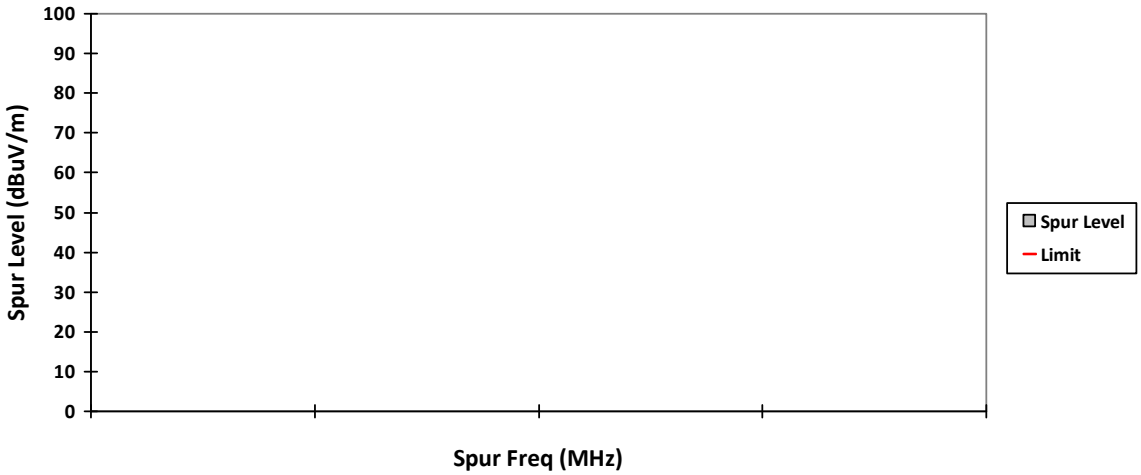
Temperature (degC): 24.1 **Humidity (%): 70.1**
Test Performed by: Qawiman&Nazrin **Test Date: Sun, 23 Jan, 2022**
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

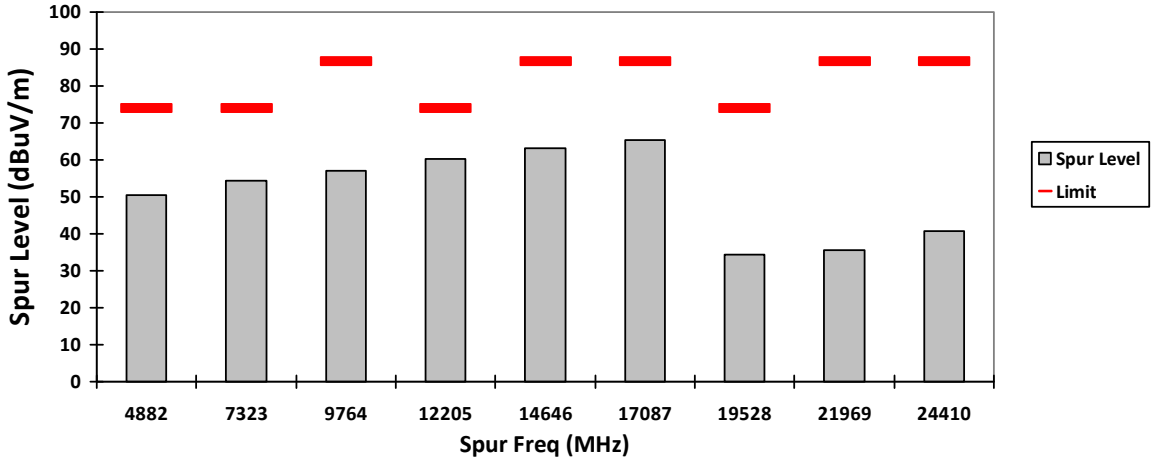
VERTICAL, QPK



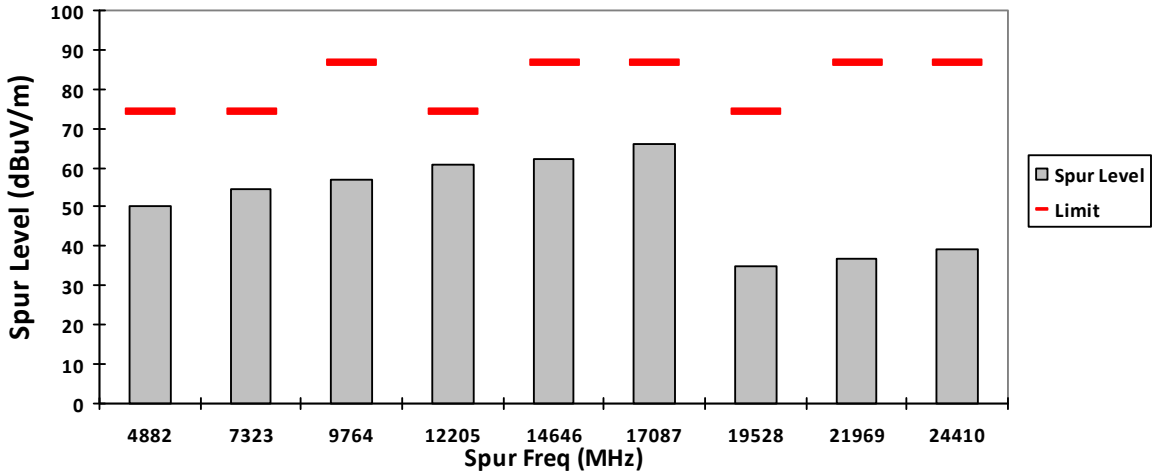
HORIZONTAL, QPK



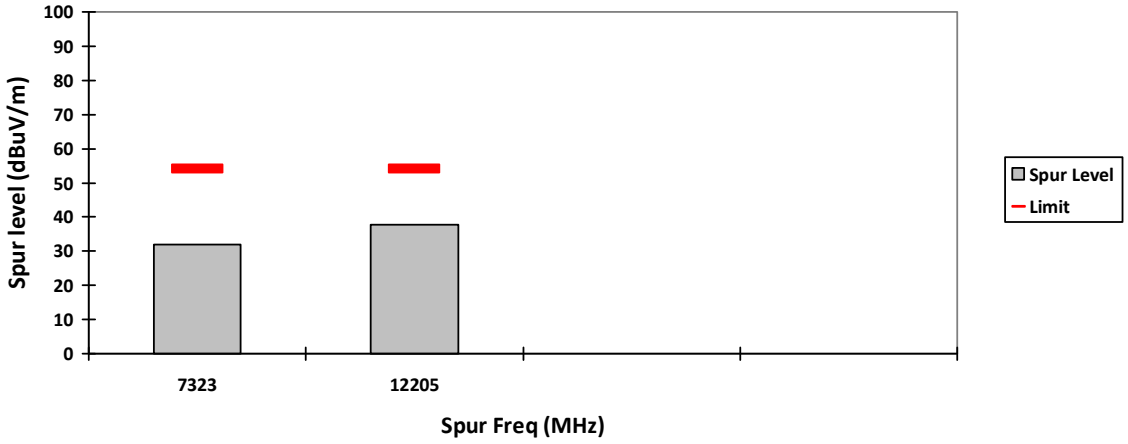
VERTICAL, PK



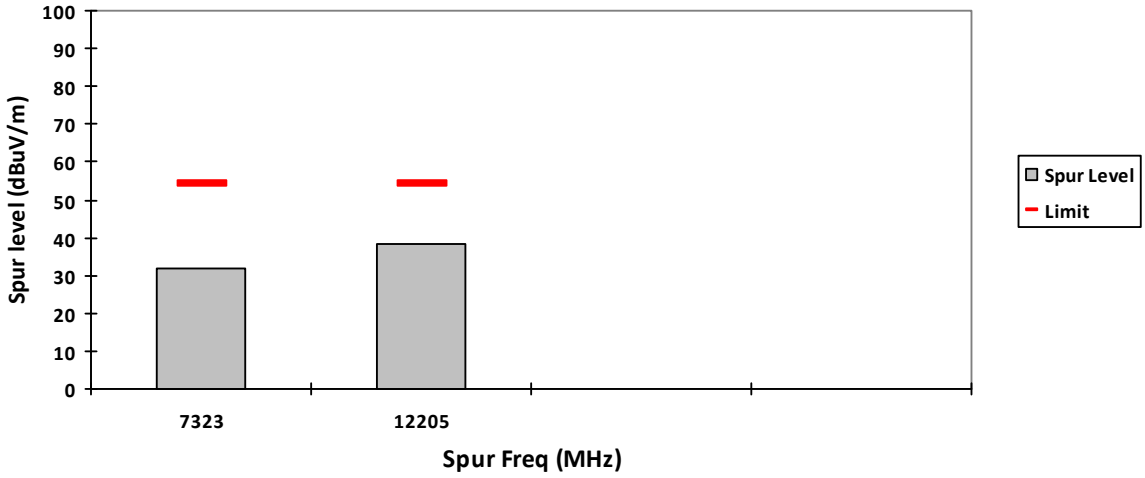
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: Bluetooth SAC Transmitter Radiated Emission
Model#: AAH02JDH9VA1AN S/N: 867TYB2909 EMC SR ID#: 32751-EMC-00012
Battery: PMNN4493A Accessory: PMAD4120A
Test Channel: High Test Frequency: 2480.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (DQPSK)

Radiated Emission (High Channel) tabular data

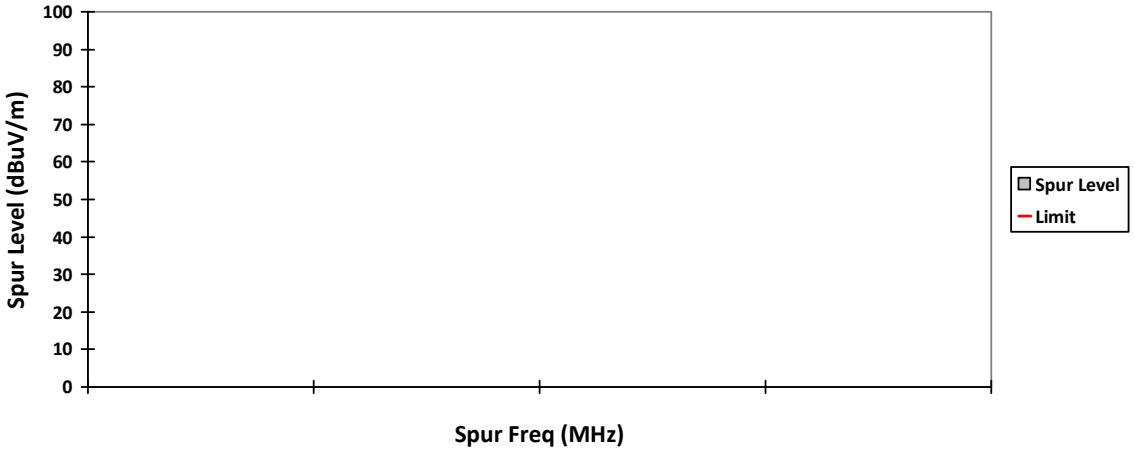
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4960	-	49.8610**	-	-	74.0	-	-	24.1390	-	-
7440	-	55.1048**	32.6048**	-	74.0	54.0	-	18.8952	21.3952	-
9920	-	56.8632**	-	-	86.6335	-	-	29.7703	-	106.6335
12400	-	62.4532**	39.9532**	-	74.0	54.0	-	11.5468	14.0468	-
14880	-	61.9548**	-	-	86.6335	-	-	24.6787	-	106.6335
17360	-	66.3065**	-	-	86.6335	-	-	20.3270	-	106.6335
19840	-	35.3965**	-	-	74.0	-	-	38.6035	-	-
22320	-	37.5097**	-	-	74.0	-	-	36.4903	-	-
24800	-	41.5183**	-	-	86.6335	-	-	45.1152	-	106.6335
Horizontal Radiated Emission Result										
4960	-	49.0783**	-	-	74.0	-	-	24.9217	-	-
7440	-	55.4605**	32.9605**	-	74.0	54.0	-	18.5395	21.0395	-
9920	-	56.4521**	-	-	86.6335	-	-	30.1814	-	106.6335
12400	-	61.8068**	39.3068**	-	74.0	54.0	-	12.1932	14.6932	-
14880	-	64.0106**	-	-	86.6335	-	-	22.6229	-	106.6335
17360	-	65.5379**	-	-	86.6335	-	-	21.0956	-	106.6335
19840	-	34.2635**	-	-	74.0	-	-	39.7365	-	-
22320	-	36.1607**	-	-	74.0	-	-	37.8393	-	-
24800	-	40.6804**	-	-	86.6335	-	-	45.9531	-	106.6335

Remarks: Pass Result	Marginal Result	Fail Result

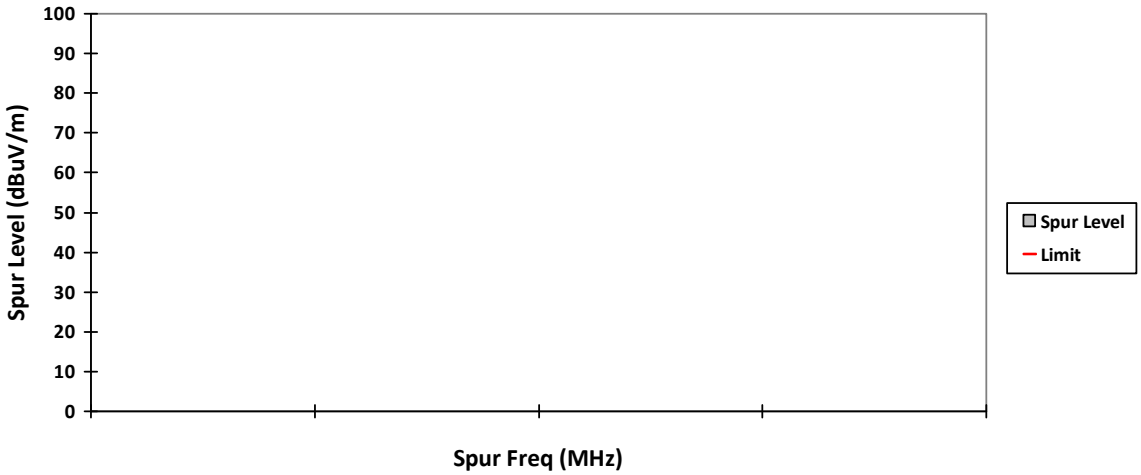
Temperature (degC): 24.1 **Humidity (%): 70.1**
Test Performed by: Qawiman&Nazrin **Test Date: Sun, 23 Jan, 2022**
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

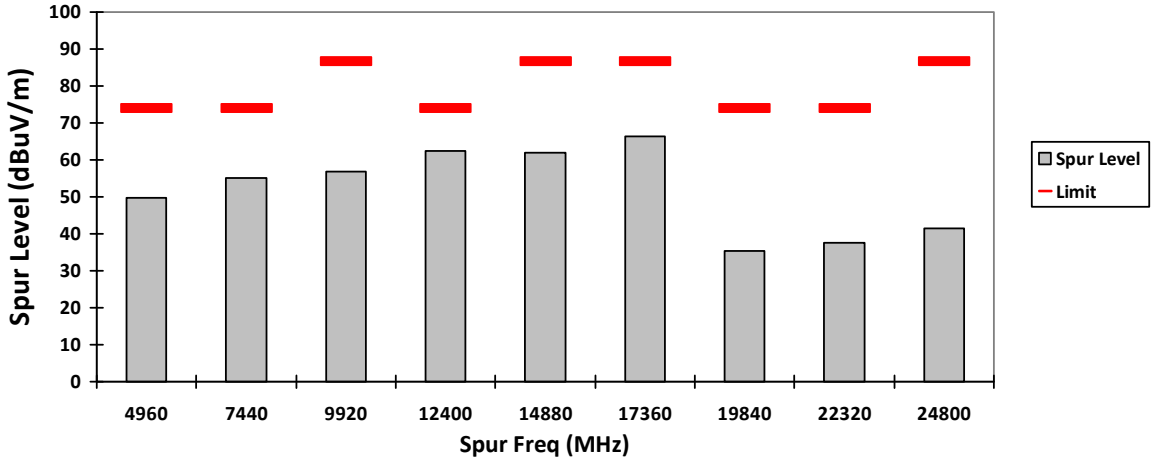
VERTICAL, QPK



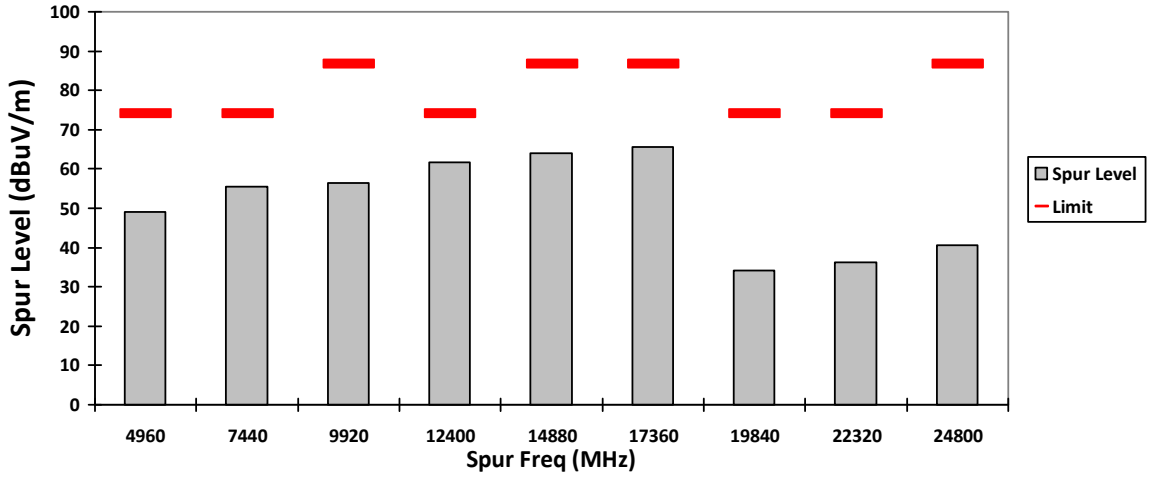
HORIZONTAL, QPK



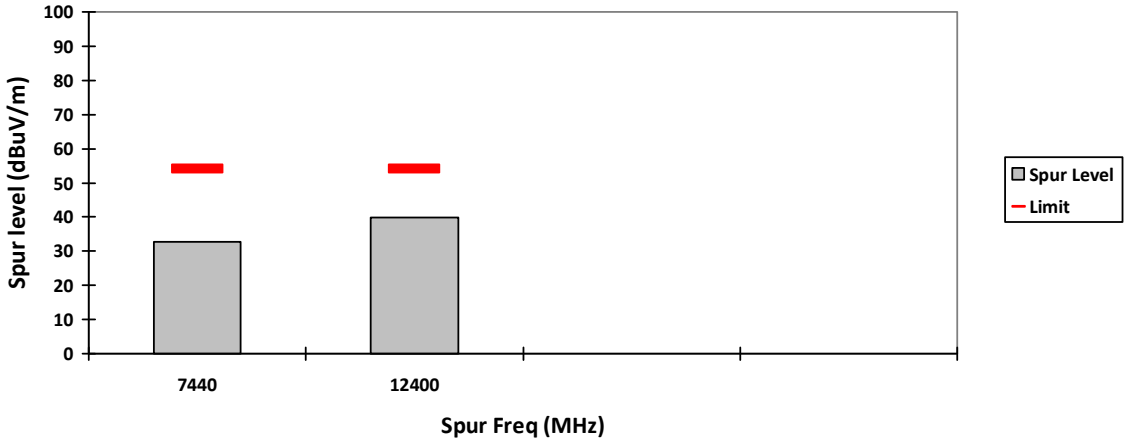
VERTICAL, PK



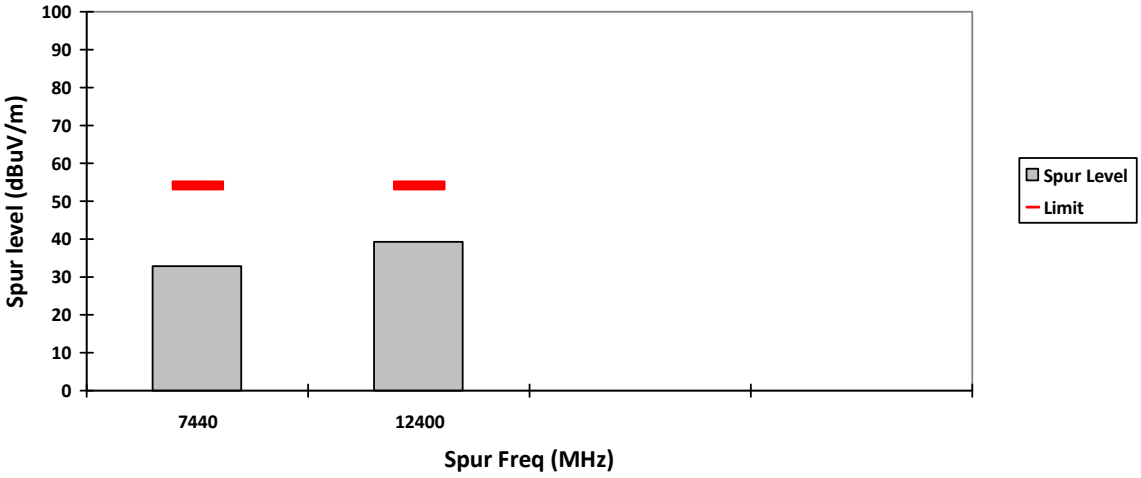
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



NOTE:
Transmitter Duty Cycle Calculation, FCC Rule 15.35 (b,c)

Based on the Bluetooth Specification Version 2.1+EDR, and worst case AFH mode, transmitter ON time is independent of packet type (DH1, DH3 and DH5) and packet length, the AFH mode Duty cycle connection factor as below:

Channel hop rate = 800 hops/second (AFH Mode)
Adjusted channel hop rate for DH5 mode = 133.33 hops/second
Time per channel hop = 1 / 133.33 hops/second = 7.5 ms
Time to cycle through all channels = 7.5 x 20 channels = 150 ms
Number of times transmitter hits on one channel = 100 ms / 150 ms = 1 time(s)
Worst case dwell time = 7.5 ms
Duty cycle connection factor = $20\log_{10}$ (7.5ms / 100ms) = **-22.5 dB**

Test: Bluetooth SAC Transmitter Radiated Emission
Model#: AAH02JDH9VA1AN S/N: 867TYB2909 EMC SR ID#: 32751-EMC-00012
Battery: PMNN4493A Accessory: PMAD4120A
Test Channel: Low Test Frequency: 2402.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (8DPSK)

Radiated Emission (Low Channel) tabular data

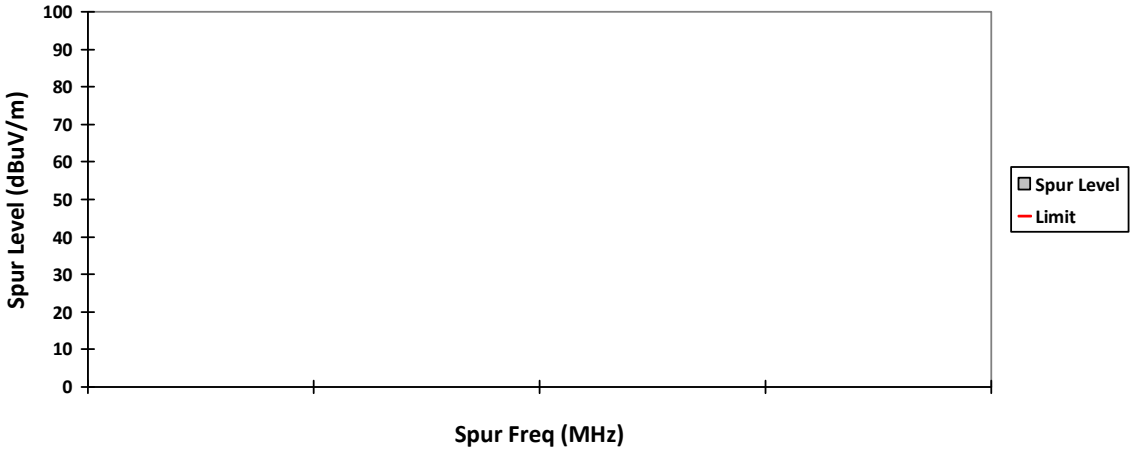
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4804	-	49.0440**	-	-	74.0	-	-	24.9560	-	-
7206	-	54.9807**	-	-	86.6335	-	-	31.6528	-	106.6335
9608	-	57.5775**	-	-	86.6335	-	-	29.0560	-	106.6335
12010	-	60.8474**	38.3474**	-	74.0	54.0	-	13.1526	15.6526	-
14412	-	61.8310**	-	-	86.6335	-	-	24.8025	-	106.6335
16814	-	63.8271**	-	-	86.6335	-	-	22.8064	-	106.6335
19216	-	35.4654**	-	-	74.0	-	-	38.5346	-	-
21618	-	36.9156**	-	-	86.6335	-	-	49.7179	-	106.6335
24020	-	37.3009**	-	-	86.6335	-	-	49.3326	-	106.6335
Horizontal Radiated Emission Result										
4804	-	48.8976**	-	-	74.0	-	-	25.1024	-	-
7206	-	54.7746**	-	-	86.6335	-	-	31.8589	-	106.6335
9608	-	57.6834**	-	-	86.6335	-	-	28.9501	-	106.6335
12010	-	60.0831**	37.5831**	-	74.0	54.0	-	13.9169	16.4169	-
14412	-	62.0609**	-	-	86.6335	-	-	24.7526	-	106.6335
16814	-	64.6373**	-	-	86.6335	-	-	21.9962	-	106.6335
19216	-	35.8869**	-	-	74.0	-	-	38.1131	-	-
21618	-	38.1481**	-	-	86.6335	-	-	48.4854	-	106.6335
24020	-	37.5801**	-	-	86.6335	-	-	49.0534	-	106.6335

Remarks: Pass Result	Marginal Result	Fail Result

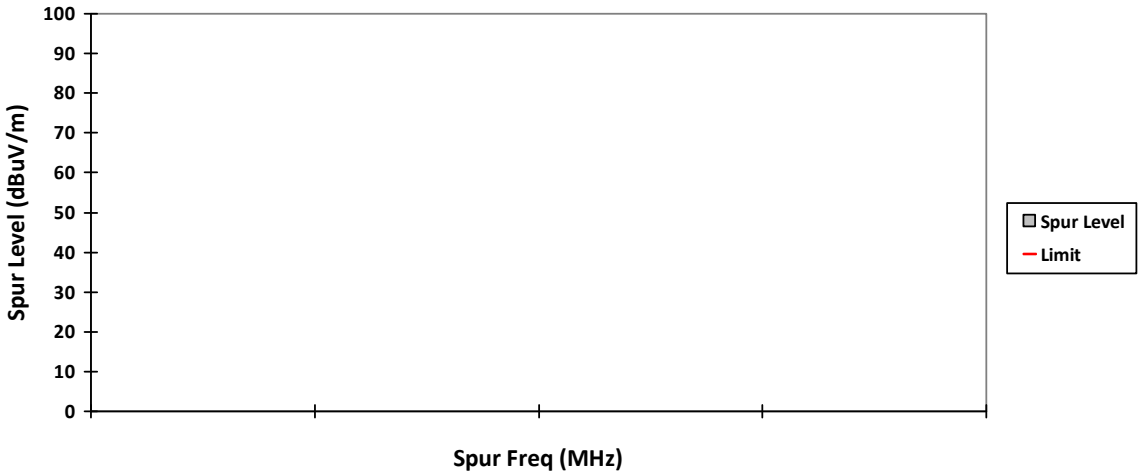
Temperature (degC): 24.1 **Humidity (%): 70.1**
Test Performed by: Qawiman&Nazrin **Test Date: Sun, 23 Jan, 2022**
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

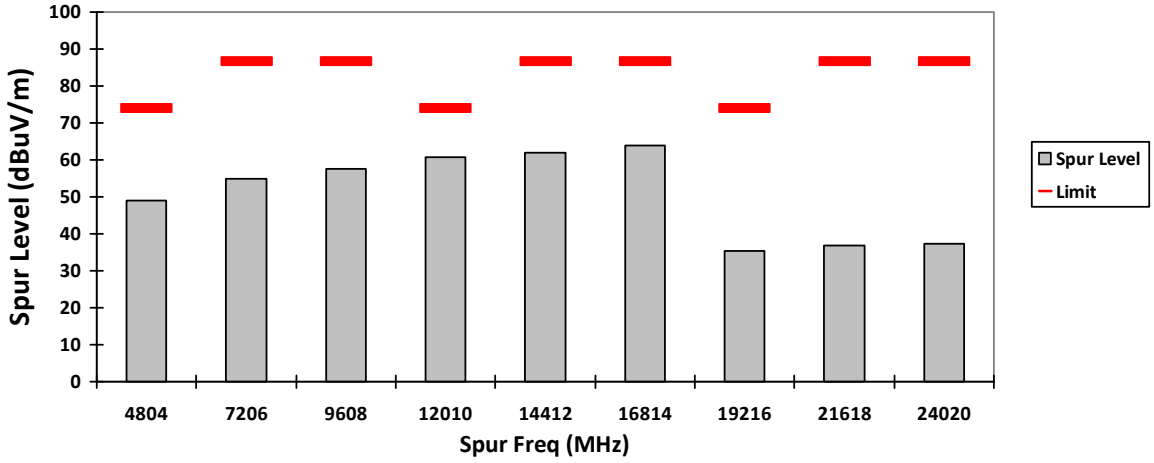
VERTICAL, QPK



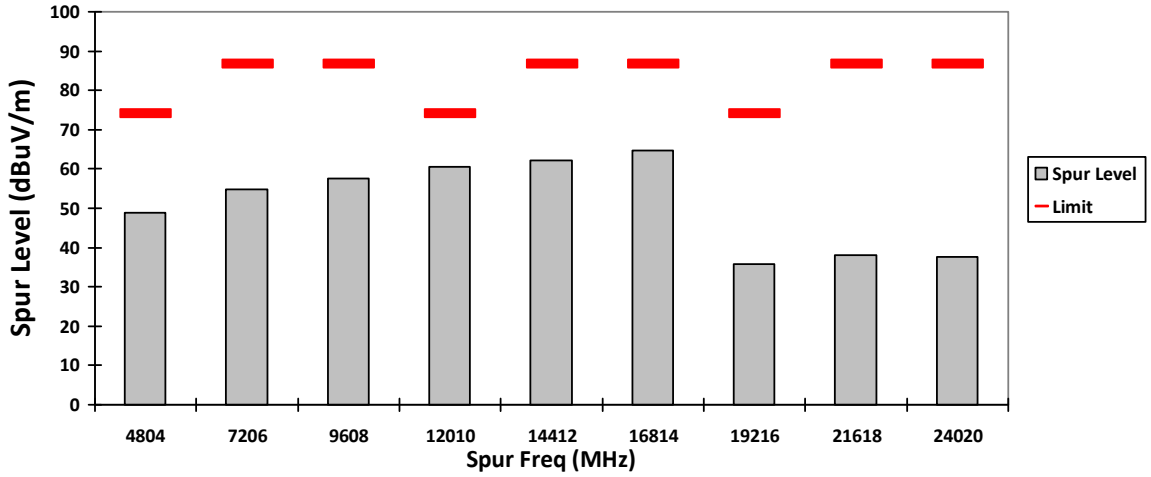
HORIZONTAL, QPK



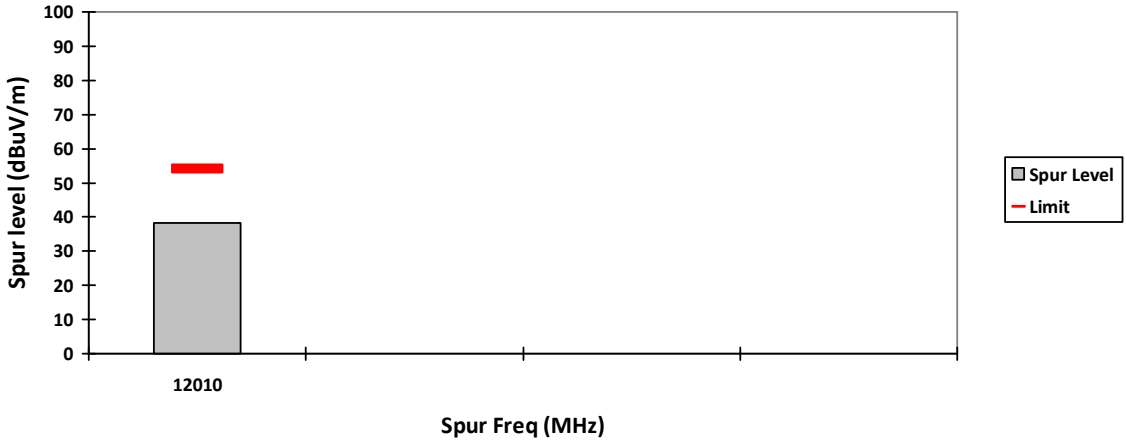
VERTICAL, PK



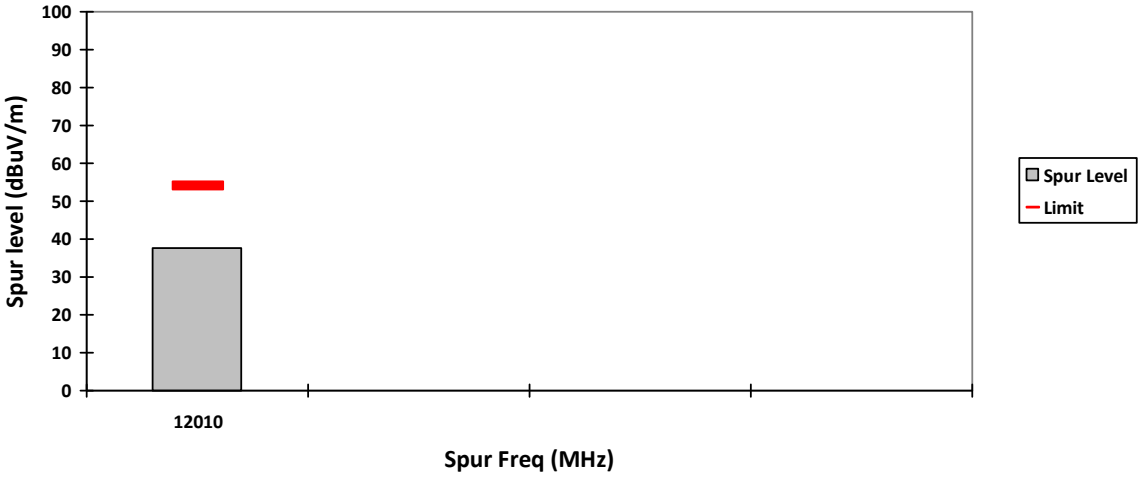
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: Bluetooth SAC Transmitter Radiated Emission
Model#: AAH02JDH9VA1AN S/N: 867TYB2909 EMC SR ID#: 32751-EMC-00012
Battery: PMNN4493A Accessory: PMAD4120A
Test Channel: Mid Test Frequency: 2441.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (8DPSK)

Radiated Emission (Mid Channel) tabular data

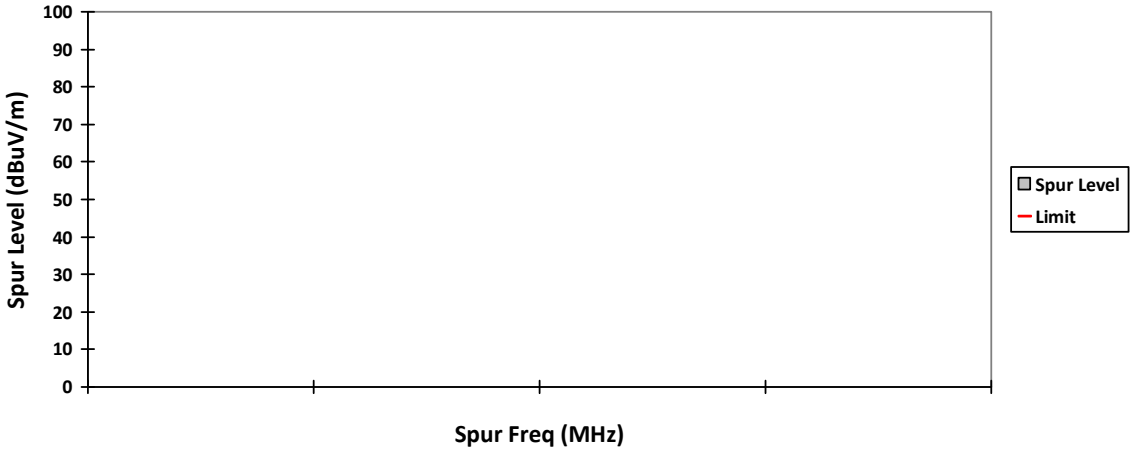
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4882	-	49.6923**	-	-	74.0	-	-	24.3077	-	-
7323	-	55.5039**	33.0039**	-	74.0	54.0	-	18.4961	20.9961	-
9764	-	56.8041**	-	-	86.6335	-	-	29.8294	-	106.6335
12205	-	60.4254**	37.9254**	-	74.0	54.0	-	13.5746	16.0746	-
14646	-	61.7645**	-	-	86.6335	-	-	24.8690	-	106.6335
17087	-	64.9800**	-	-	86.6335	-	-	21.6535	-	106.6335
19528	-	34.1834**	-	-	74.0	-	-	39.8166	-	-
21969	-	35.6192**	-	-	86.6335	-	-	51.0143	-	106.6335
24410	-	40.7129**	-	-	86.6335	-	-	45.9206	-	106.6335
Horizontal Radiated Emission Result										
4882	-	48.8530**	-	-	74.0	-	-	25.1470	-	-
7323	-	54.7608**	32.2608**	-	74.0	54.0	-	19.2392	21.7392	-
9764	-	57.8518**	-	-	86.6335	-	-	28.7817	-	106.6335
12205	-	60.4738**	37.9738**	-	74.0	54.0	-	13.5262	16.0262	-
14646	-	62.5293**	-	-	86.6335	-	-	24.1042	-	106.6335
17087	-	65.3650**	-	-	86.6335	-	-	21.2685	-	106.6335
19528	-	36.2677**	-	-	74.0	-	-	37.7323	-	-
21969	-	36.4534**	-	-	86.6335	-	-	50.1801	-	106.6335
24410	-	40.1256**	-	-	86.6335	-	-	46.5079	-	106.6335

Remarks: Pass Result	Marginal Result	Fail Result

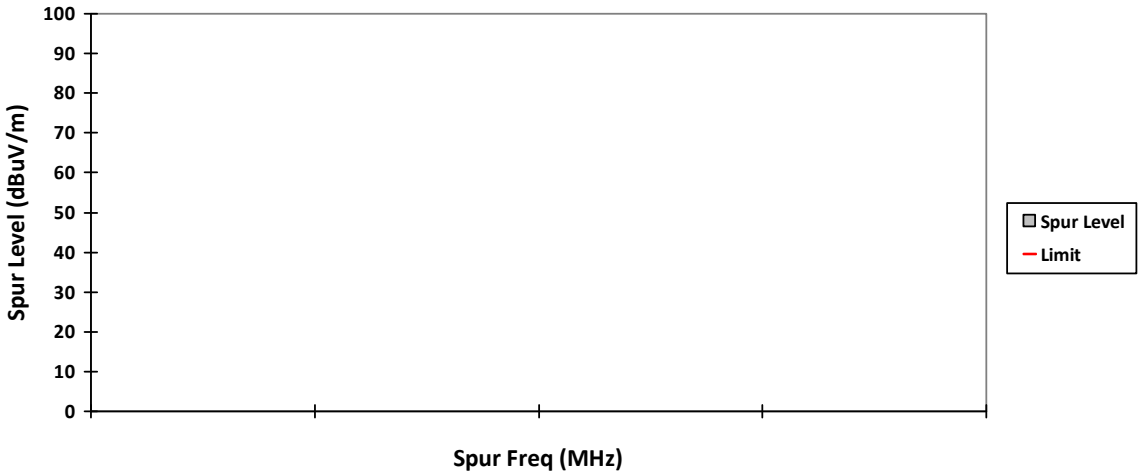
Temperature (degC): 24.1 **Humidity (%): 70.1**
Test Performed by: Qawiman&Nazrin **Test Date: Sun, 23 Jan, 2022**
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

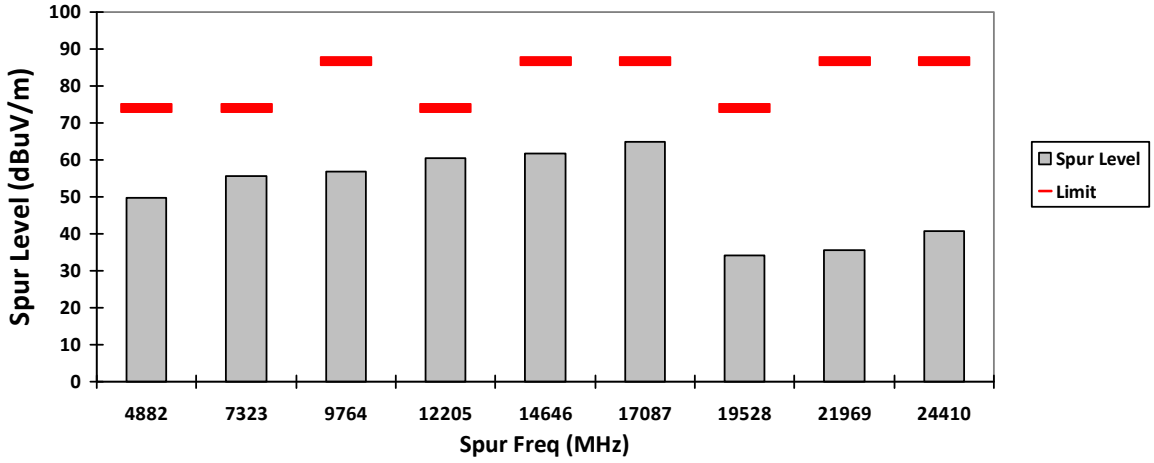
VERTICAL, QPK



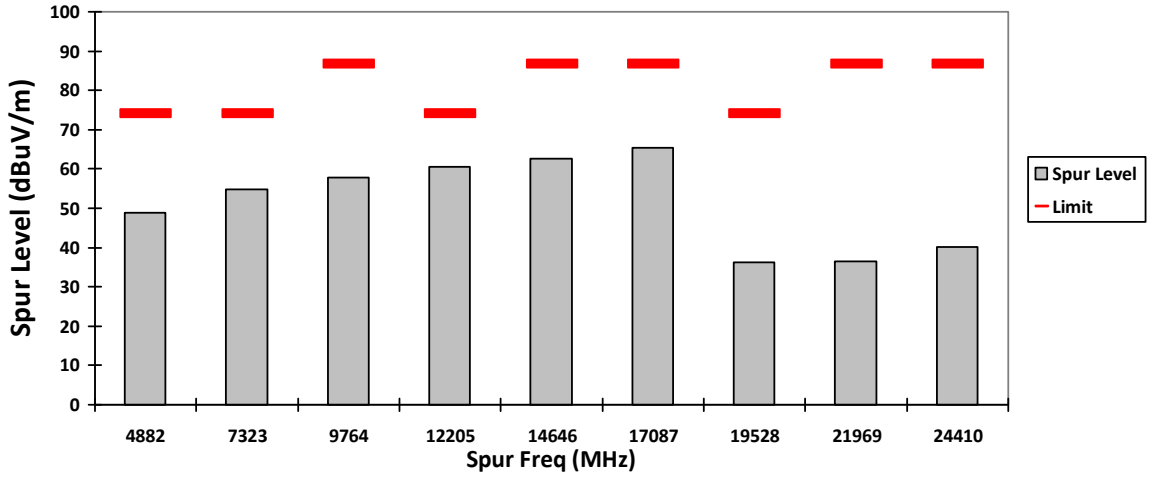
HORIZONTAL, QPK



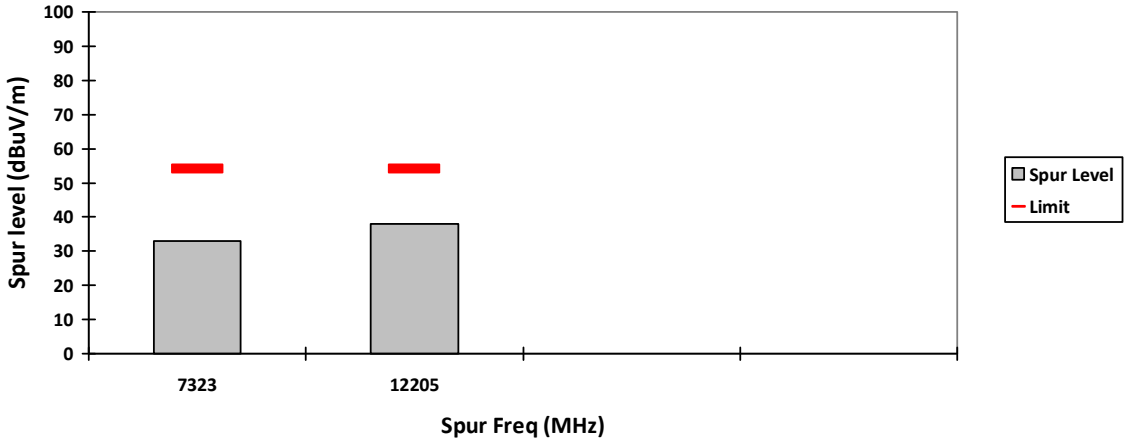
VERTICAL, PK



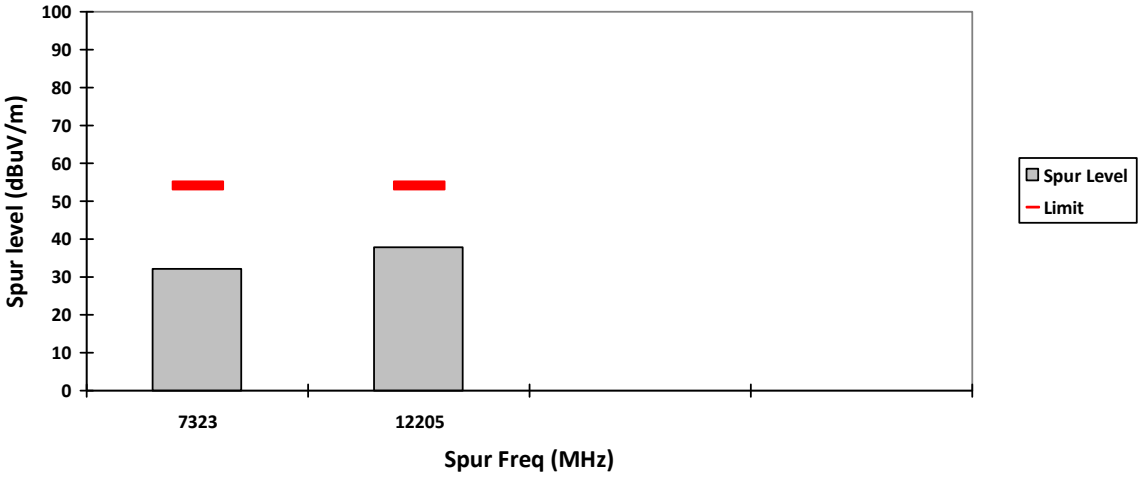
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



Test: Bluetooth SAC Transmitter Radiated Emission
Model#: AAH02JDH9VA1AN S/N: 867TYB2909 EMC SR ID#: 32751-EMC-00012
Battery: PMNN4493A Accessory: PMAD4120A
Test Channel: High Test Frequency: 2480.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (8DPSK)

Radiated Emission (High Channel) tabular data

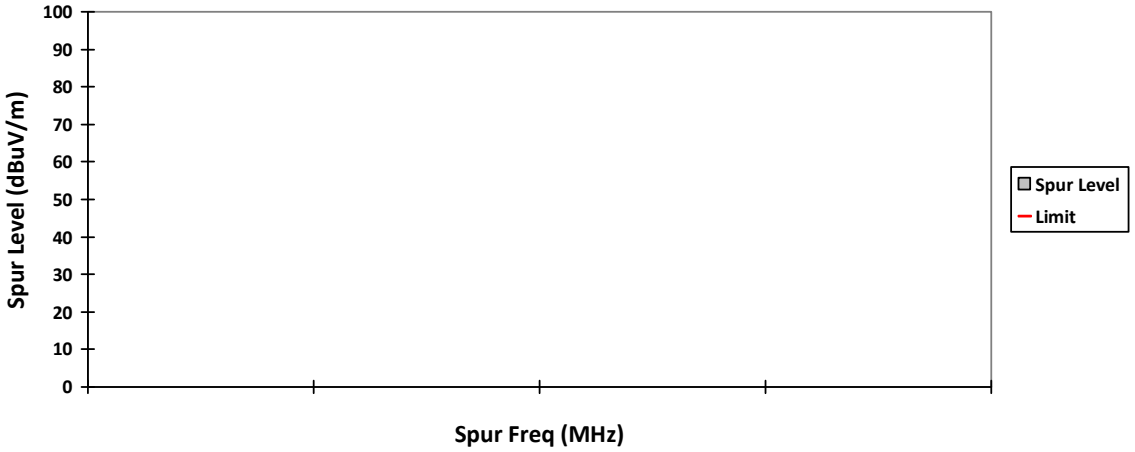
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4960	-	49.3917**	-	-	74.0	-	-	24.6083	-	-
7440	-	55.9621**	33.4621**	-	74.0	54.0	-	18.0379	20.5379	-
9920	-	56.9578**	-	-	86.6335	-	-	29.6757	-	106.6335
12400	-	62.3410**	39.8410**	-	74.0	54.0	-	11.6590	14.1590	-
14880	-	62.3298**	-	-	86.6335	-	-	24.3037	-	106.6335
17360	-	64.7886**	-	-	86.6335	-	-	21.8449	-	106.6335
19840	-	34.7449**	-	-	74.0	-	-	39.2551	-	-
22320	-	36.4257**	-	-	74.0	-	-	37.5743	-	-
24800	-	42.9215**	-	-	86.6335	-	-	43.712	-	106.6335
Horizontal Radiated Emission Result										
4960	-	50.5739**	-	-	74.0	-	-	23.4261	-	-
7440	-	55.3792**	32.8792**	-	74.0	54.0	-	18.6208	21.1208	-
9920	-	56.8905**	-	-	86.6335	-	-	29.7430	-	106.6335
12400	-	63.5439**	41.0439**	-	74.0	54.0	-	10.4561	12.9561	-
14880	-	61.2030**	-	-	86.6335	-	-	25.4305	-	106.6335
17360	-	66.2141**	-	-	86.6335	-	-	20.4194	-	106.6335
19840	-	35.3563**	-	-	74.0	-	-	38.6437	-	-
22320	-	36.1498**	-	-	74.0	-	-	37.8502	-	-
24800	-	41.4018**	-	-	86.6335	-	-	45.2317	-	106.6335

Remarks: Pass Result	Marginal Result	Fail Result

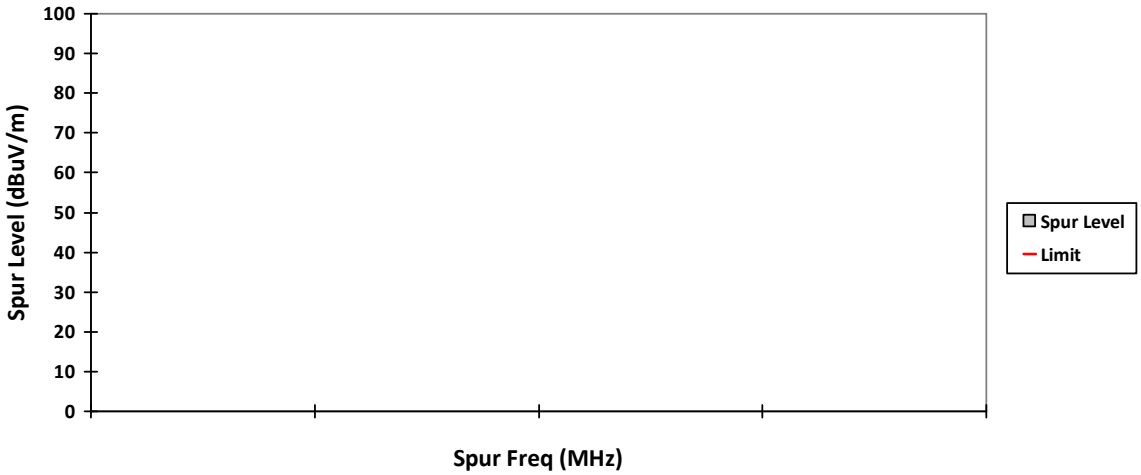
Temperature (degC): 24.1 **Humidity (%): 70.1**
Test Performed by: Qawiman&Nazrin **Test Date: Sun, 23 Jan, 2022**
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported.**

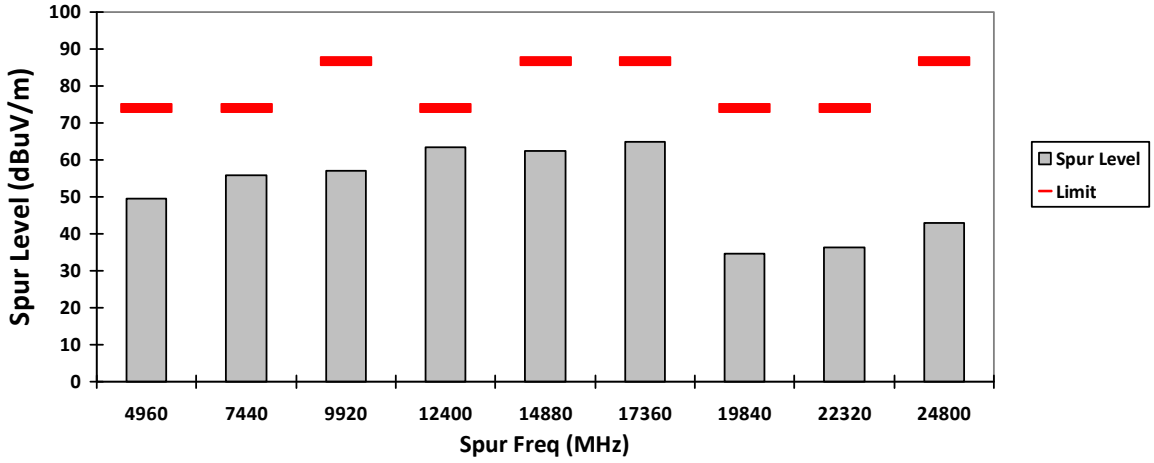
VERTICAL, QPK



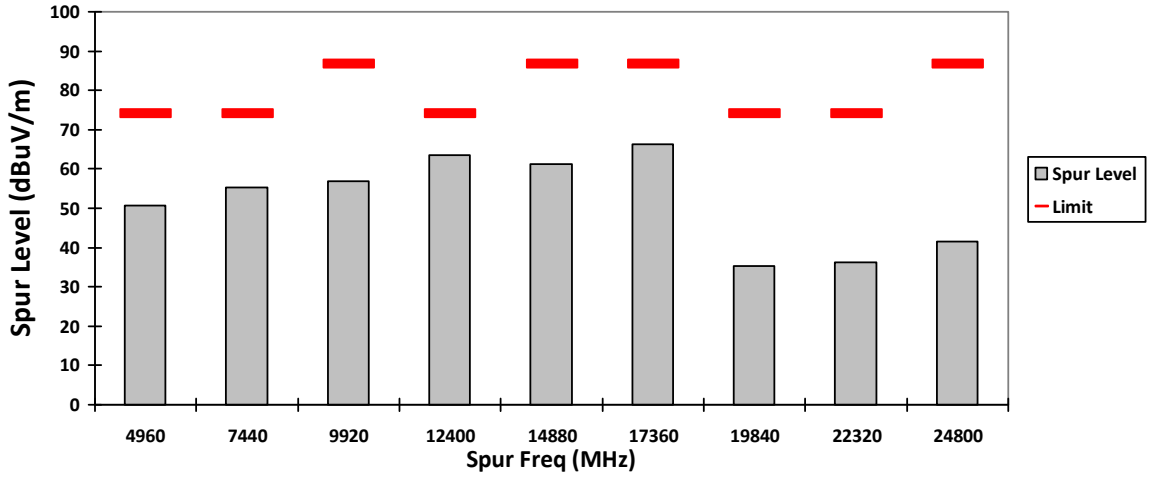
HORIZONTAL, QPK



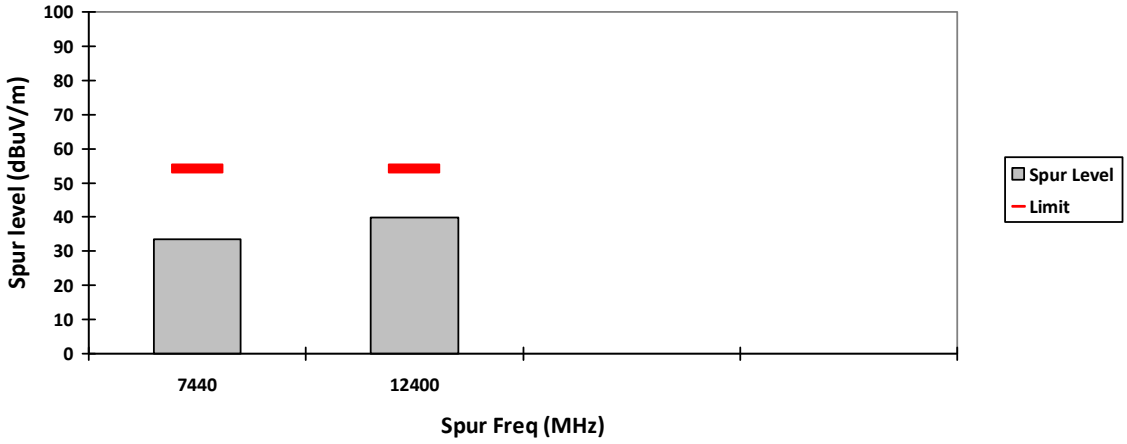
VERTICAL, PK



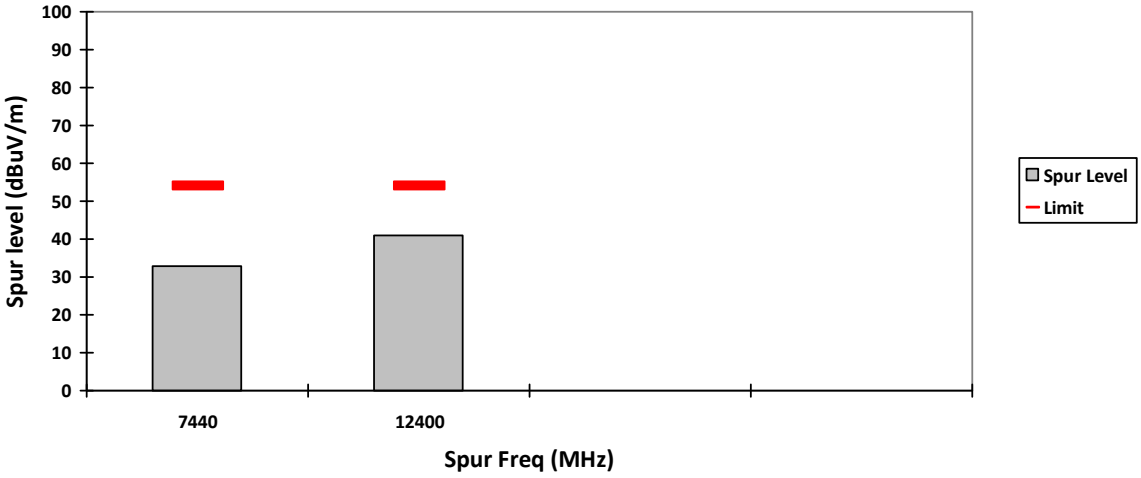
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



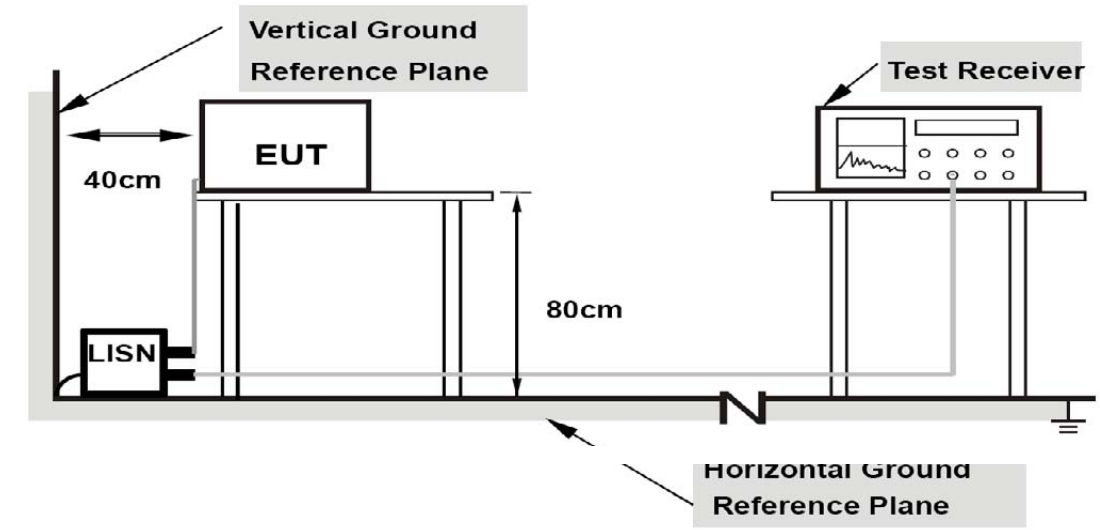
NOTE:
Transmitter Duty Cycle Calculation, FCC Rule 15.35 (b,c)

Based on the Bluetooth Specification Version 2.1+EDR, and worst case AFH mode, transmitter ON time is independent of packet type (DH1, DH3 and DH5) and packet length, the AFH mode Duty cycle connection factor as below:

Channel hop rate = 800 hops/second (AFH Mode)
Adjusted channel hop rate for DH5 mode = 133.33 hops/second
Time per channel hop = 1 / 133.33 hops/second = 7.5 ms
Time to cycle through all channels = 7.5 x 20 channels = 150 ms
Number of times transmitter hits on one channel = 100 ms / 150 ms = 1 time(s)
Worst case dwell time = 7.5 ms
Duty cycle connection factor = $20\log_{10}$ (7.5ms / 100ms) = **-22.5 dB**

6.9 AC Powerline Conducted Emission

6.9.1. Test Setup



1) Tests were conducted for both Receive and Transmit Mode of the EUT.
2) 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.
3) Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
4) The frequency range from 150 kHz to 30MHz was measured.

6.9.2. Test Limits:

For AC Power Line Conducted Test Limit can be Class A or B depends on product classification.

Limits for conducted disturbance at the mains ports of class A ITE

Frequency range MHz	Limits dB(µV)	
	Quasi-peak	Average
0,15 to 0,50	79	66
0,50 to 30	73	60
NOTE The lower limit shall apply at the transition frequency.		

Table 1: Limits for Conducted Disturbance at the Mains Ports of Class A ITE.

Limits for conducted disturbance at the mains ports of class B ITE

Frequency range MHz	Limits dB(µV)	
	Quasi-peak	Average
0,15 to 0,50	66 to 56	56 to 46
0,50 to 5	56	46
5 to 30	60	50
NOTE 1 The lower limit shall apply at the transition frequencies. NOTE 2 The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.		

Table 2: Limits for Conducted Disturbance at the Mains Ports of Class B ITE

6.9.3. Test Result

Not Applicable. Testing is not required, radio shall turn off during charging mode

END OF TEST REPORT