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.B

Date/s Tested	:	31-Oct-2021 - 24-Dec-2021
Report Issue Date	:	9-Feb-2023
Manufacturer/Location	:	Motorola Solutions Malaysia Sdn Bhd Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia
Requestor	:	LEE SZU SEE
Product Type	:	Hand-held
Product Version (PMN)	:	MXP600
Model Number (HVIN)	:	AZH77PCN6TZ5AN
Frequency Band	:	2.402 - 2.480 GHz
Max RF Output Power	:	2.5 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)	:	D55.000.9681

The equipment was tested accordance to the requirement listed below:

(2.4GHz BT) **FCC 47CFR Part 15C** **ISED RSS 247 Issue 2,** **February 2017**	**PASS**

Prepared By:

GAN BOON TEONG
Test Personnel

Approved Signatory:

VINCENT FOONG CHUEN KIT
Responsible Engineer

Table of Contents

1.0. General Information 3
2.0. Summary of Test Results 4
3.0. Measurement Uncertainty 5
4.0. Equipment List 5
5.0. Test Mode Applicability and Test Channel Detail 6
6.0. Transmitter Test Parameters 7
6.1. Conducted RF Output Power (Peak) 7
6.1.1. Test Setup 7
6.1.2. Test Limits: 7
6.1.3. Test Data: 7
6.2. 20dB Channel Bandwidth 11
6.2.1. Test Setup 11
6.2.2. Test Limits: 11
6.2.3. Test Data: 11
6.3. Band-edge Conducted Spurious Emission 15
6.3.1. Test Setup 15
6.3.2. Test Limits 15
6.3.3. Test Result 15
6.4. Dwell time on each channel 19
6.4.1. Test Setup 19
6.4.2. Test Limits: 19
6.4.3. Test Result 20
6.5. Number of hopping Frequency 24
6.5.1. Test Setup 24
6.5.2. Test Limits: 24
6.5.3. Test Result 24
6.6. Channel Separation 26
6.6.1. Test Setup 26
6.6.2. Test Limits: 26
6.6.3. Test Result 26
6.7. Conducted Spurious Emission 30
6.7.1. Test Setup 30
6.7.2. Test Limits: 30
6.7.3. Test Data: 30
6.8. Radiated Emission within restricted Bands 34
6.8.1. Test Setup 34
6.8.2. Test Limits: 35
6.8.3. Test Data: 36
6.9. AC Powerline Conducted Emission 48
6.9.1. Test Setup 94
6.9.2. Test Limits: 95
6.9.3. Test Result 95

REVISION HISTORY

Revision History	Description	Date	Originator
Rev. A	Initial Report	**7-Jan-2022**	**Gan Boon Teong**
Rev. B	Update Report Issue Date	**2-Feb-2023**	**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	Ceramic

The EUT contains following accessory devices and data cable:

Item	Brand	Model or P/N
BELIZE TIA4950 IMPRES HIGH CAP LI ION BATTERY 2850M2900T	MOTOROLA	PMNN4802A
BOTTOM CONNECTOR SERIAL DATA CABLE	MOTOROLA	PMKN4127A
AC Charger	MOTOROLA	PS000227A31-CF1

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:

FCC 47 CFR Part 15 Subpart C
KDB 558074 D01 15.247 Meas Guidance v05
ANSI C63.10-2013

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: 3.783 dBm (2.39 mW)	767TXV0817	Gan
15.247 (a)(1)	RSS-247 5.1(a) RSS-247 5.1(b)	(1) 20dB Channel Bandwidth (2) Channel Separation	Pass	GFSK – 0.840 MHz 840KF1D Pi/4 DQPSK – 1.185 MHz 1M19G1D 8DPSK – 1.175 MHz 1M18G1D	767TXV0817	Gan
15.247(a)(1)(iii)	RSS-247 5.1(d)	Number of hopping Frequency used	Pass	Meet the limit requirement.	767TXV0817	Gan
15.247(a)(1)(iii)	RSS-247 5.1(d)	Dwell time on each channel	Pass	Meet the limit requirement.	767TXV0817	Gan
15.247 (d)	RSS-247 5.5	Band Edge Conducted Spurious Emission	Pass	Worst case emission: -52.06 dB	767TXV0817	Gan
15.247 (d)	RSS-247 5.5	Conducted Spurious Emission	Pass	Worst case emission: -48.89 dBm	767TXV0817	Gan
15.205, 15.209, 15.247 (d)	RSS-247 5.5	Radiated Emission within Restricted Bands	Pass	Worst case emission: RE: 40.6825dBuV/m, margin: 13.3175dB, Noise Floor RBE:41.1154dBuV/m, margin: 12.8846dB, Noise Floor	767TXV0821 767TXV0826	Nazirul&Abid
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) (±dB)
Radiated Emissions up to 1 GHz (Field Strength)	30MHz ~ 1000MHz	5.88
Radiated Emissions above 1 GHz (Field Strength)	1GHz ~ 18GHz	5.84
	18GHz ~ 40GHz	6.02
Conducted Spurious Emissions	9kHz ~ 12.75GHz	2.82

4.0. Equipment List

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

Description	Model	Serial Number	Calibration Date	Calibration Due Date
POWER SUPPLY	6652A	3640A02941	22-Jan-21	22-Jan-22
ANALYZER SPECTRUM	E4440A	US45303111	14-Jul-21	14-Jul-22
CHAMBER	SH-641	92003820	14-Jul-21	14-Jul-22
N to N RF Cable # 1	SF126/11N/11N	NA	NA	NA

Radiated Emission Station (SW Version: EMC FCC RE v1.6.3)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
EMI TEST RECEIVER	ESIB40	100307	08-Jan-21	08-Jan-22
3m Semi-anechoic Chamber	NA	888032	Not Required	Not Required
TURNTABLE FLUSH MOUNT 2M	T-200-S	N/A	Not Required	Not Required
Bore sight Antenna mast	MBS-500	N/A	Not Required	Not Required
PROGRAMMING CONTROLLER	MF-7802BS	N/A	Not Required	Not Required
POWER SUPPLY (0-60V/0-50A, 1000W)	6032A	41001736	28-Jun-21	28-Jun-22
EMI TEST RECEIVER	ESW44	101731	23-Mar-21	23-Mar-22
DATA LOGGER	SDL500	A.016776	17-Jun-21	17-Jun-22
BILOG ANTENNA	CBL6112D	55546	16-Jun-21	16-Jun-22
BILOG ANTENNA	CBL6112B	2964	4-May-21	4-May-22
DRG HORN FREQ.	SAS-571	1143	24-Feb-21	24-Feb-23
DRG HORN FREQ.	SAS-571	719	13-Sep-21	13-Sep-22
PREAMPLIFIER	PAM-0118	427	13-May-20	13-May-23
SIGNAL GENERATOR	SMB100A	180683	13-Apr-21	13-Apr-24
LOOP ANTENNA	6502	00203479	05-Feb-21	05-Feb-22
BROAD-BAND HORN ANTENNA	BBHA9170	BBHA9170255	04-Feb-21	04-Feb-22

4.1. 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	22.3°C, 70.2%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	22.3°C, 70.2%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:

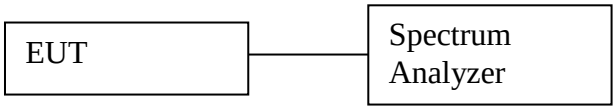
☒This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒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

5.0. Transmitter Test Parameters

5.1. Conducted RF Output Power (Peak)

5.1.1. 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.

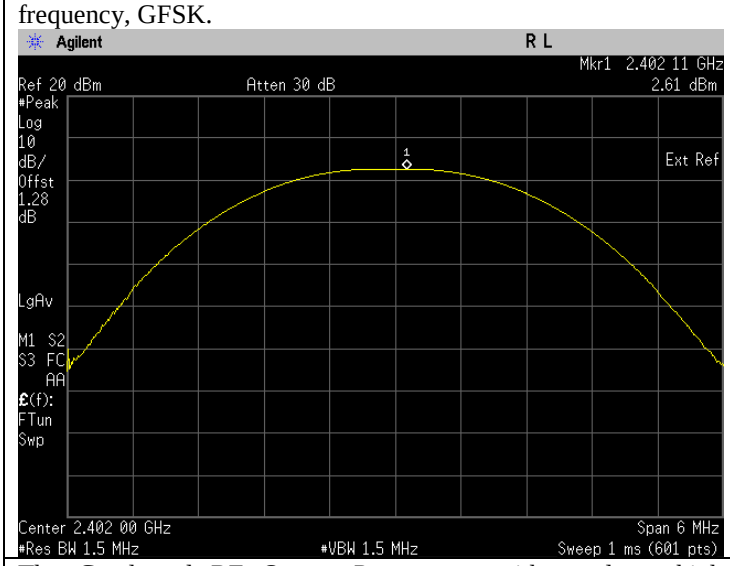
5.1.2. Test Limits:

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

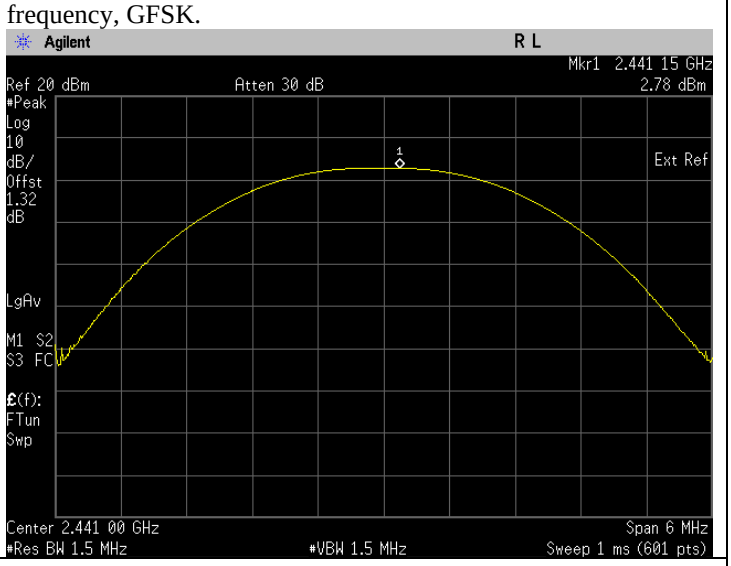
5.1.3. Test Data:

Test Conditions		Test Frequency (GHz)	Results	
Modulation	Voltage(V)		dBm	Status
GFSK	3.80	2.4020	2.607	Pass
		2.4410	2.780	Pass
		2.4800	3.502	Pass
Pi/4DQPSK	3.80	2.4020	3.229	Pass
		2.4410	3.393	Pass
		2.4800	3.096	Pass
8DPSK	3.80	2.4020	3.605	Pass
		2.4410	3.783	Pass
		2.4800	3.486	Pass

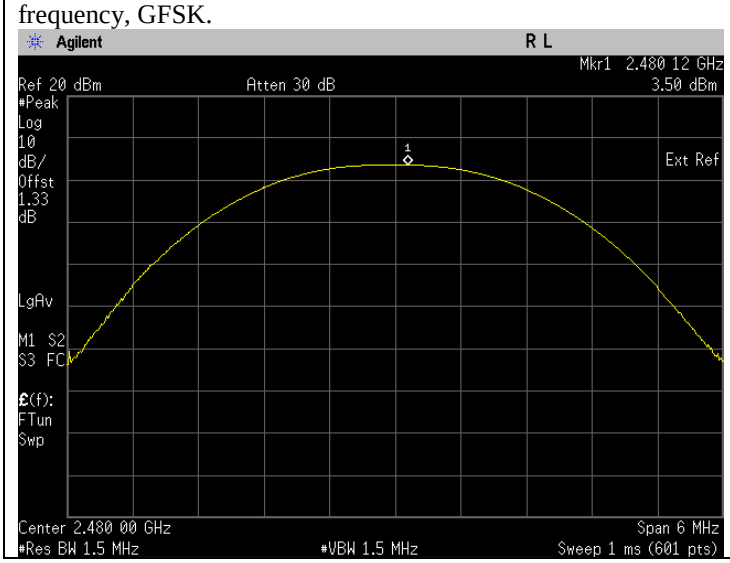
The Conducted RF Output Power test with result at low frequency, GFSK.



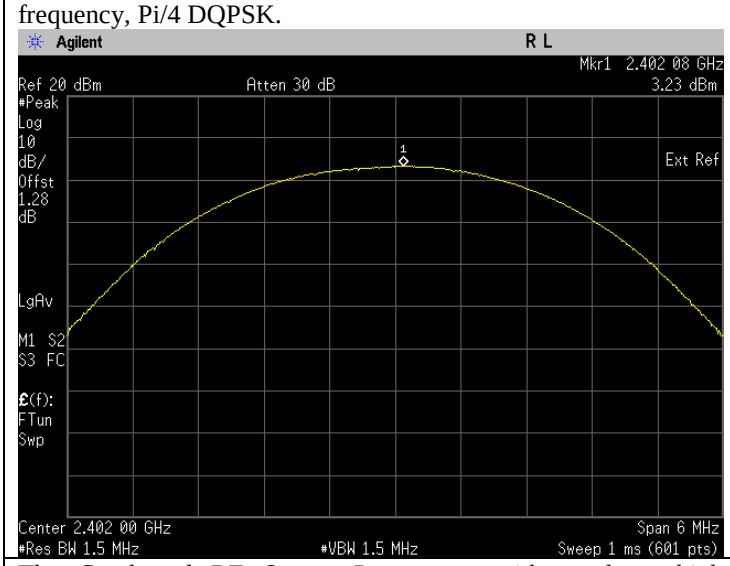
The Conducted RF Output Power test with result at mid frequency, GFSK.



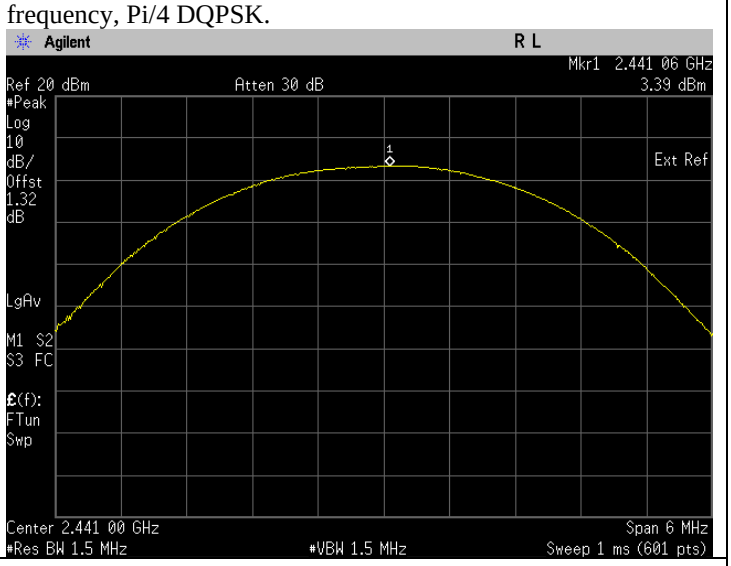
The Conducted RF Output Power test with result at high frequency, GFSK.



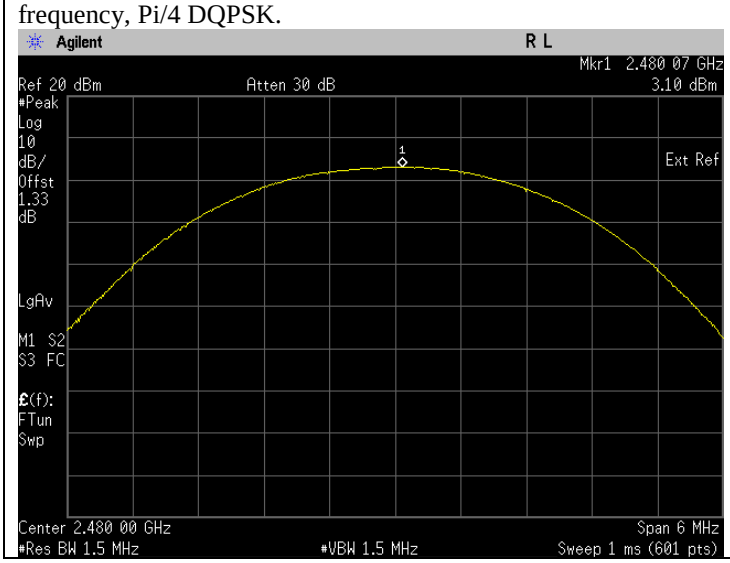
The Conducted RF Output Power test with result at low frequency, Pi/4 DQPSK.



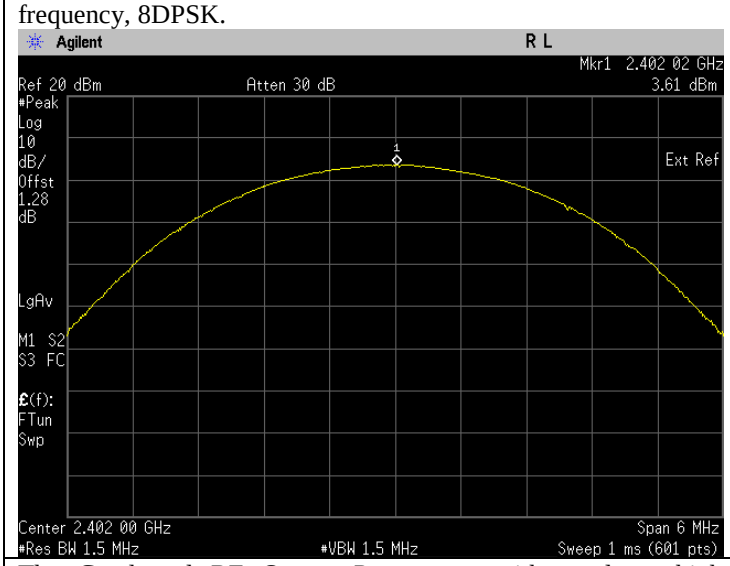
The Conducted RF Output Power test with result at mid frequency, Pi/4 DQPSK.



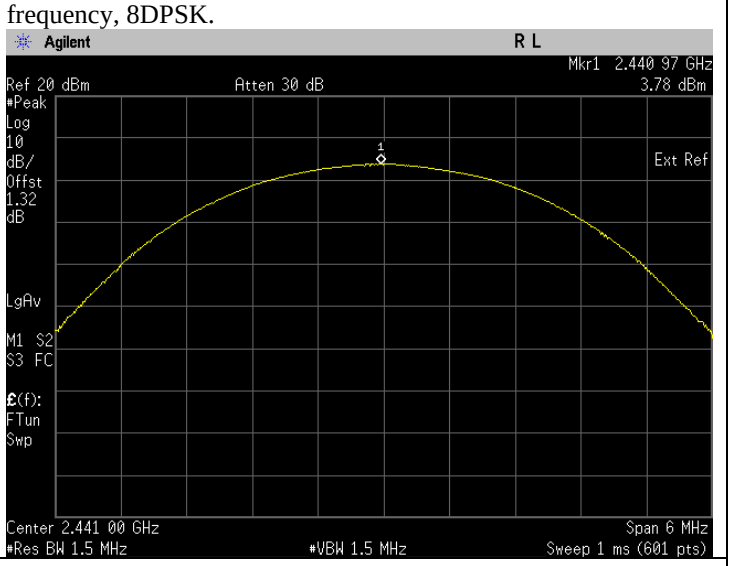
The Conducted RF Output Power test with result at high frequency, Pi/4 DQPSK.



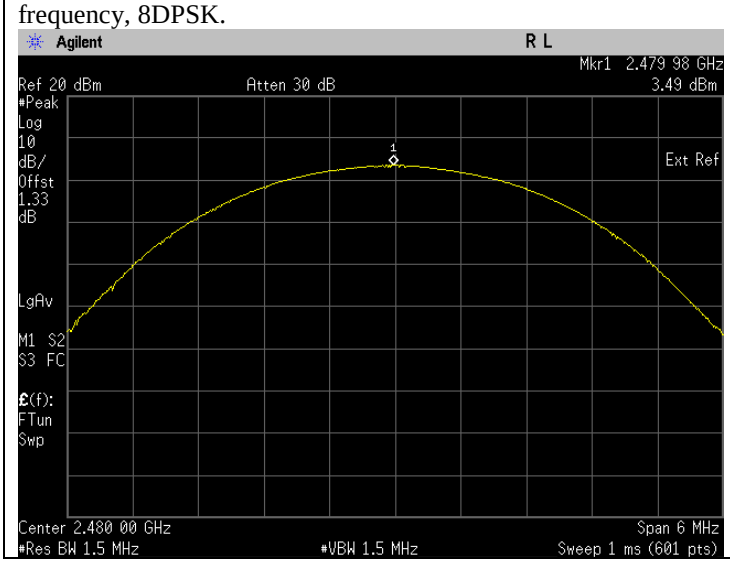
The Conducted RF Output Power test with result at low frequency, 8DPSK.



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

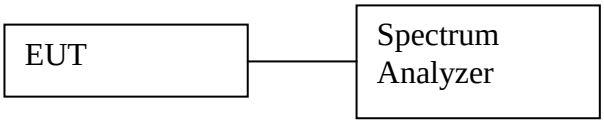


The Conducted RF Output Power test with result at high frequency, 8DPSK.



5.2. 20dB Channel Bandwidth

5.2.1. 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.

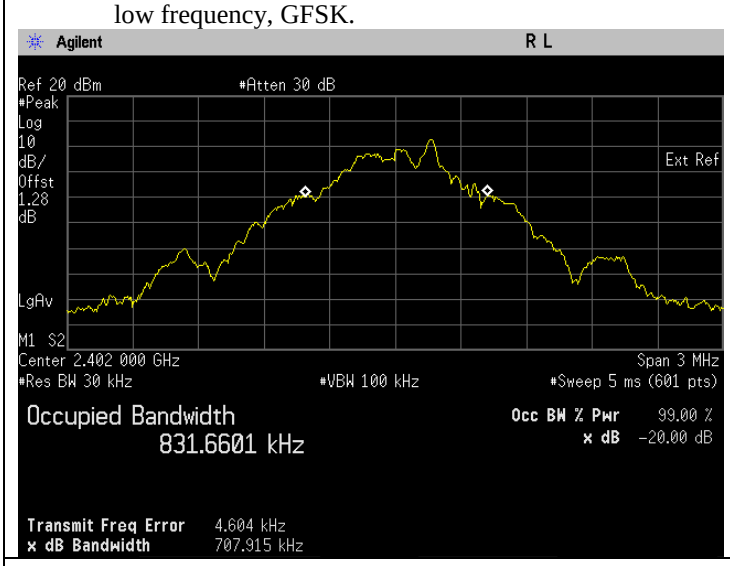
5.2.2. Test Limits:

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.

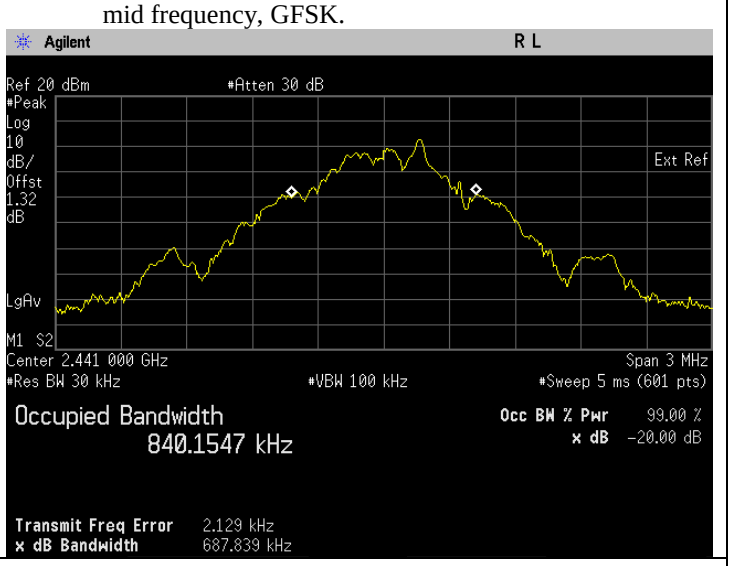
5.2.3. Test Data:

Test Conditions		Test Frequency TX (GHz)	Results (MHz)		
Modulation Type	Voltage(V)		20dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Status
GFSK	3.80	2.4020	0.708	0.832	Pass
		2.4410	0.688	0.840	Pass
		2.4800	0.686	0.828	Pass
Pi/4 DQPSK	3.80	2.4020	1.227	1.185	Pass
		2.4410	1.228	1.184	Pass
		2.4800	1.220	1.181	Pass
8DPSK	3.80	2.4020	1.223	1.175	Pass
		2.4410	1.224	1.174	Pass
		2.4800	1.225	1.174	Pass

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

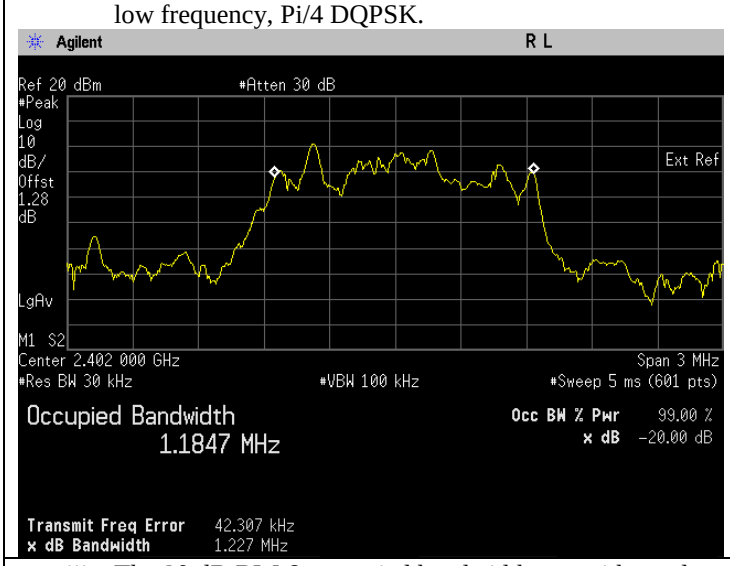


ii. The 20 dB BW & occupied bandwidth test with result at mid frequency, GFSK.

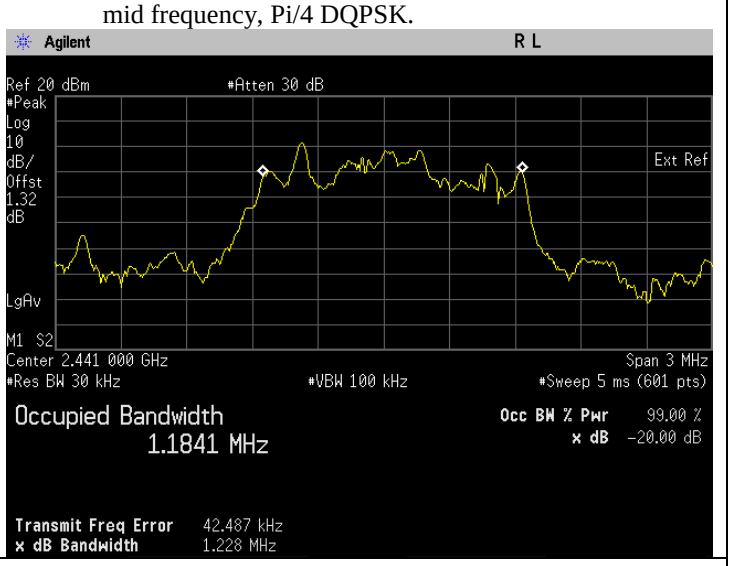


iii. The 20 dB BW & occupied bandwidth test with result at high frequency, GFSK.

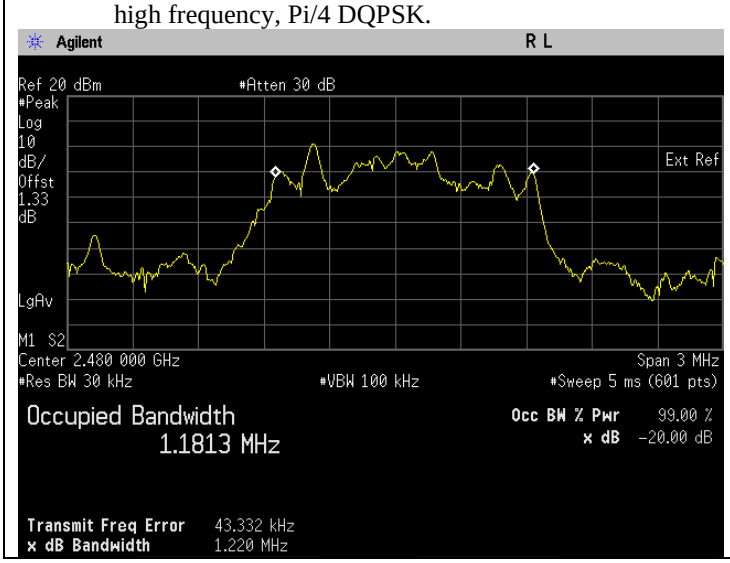
i. The 20 dB BW & occupied bandwidth test with result at low frequency, Pi/4 DQPSK.



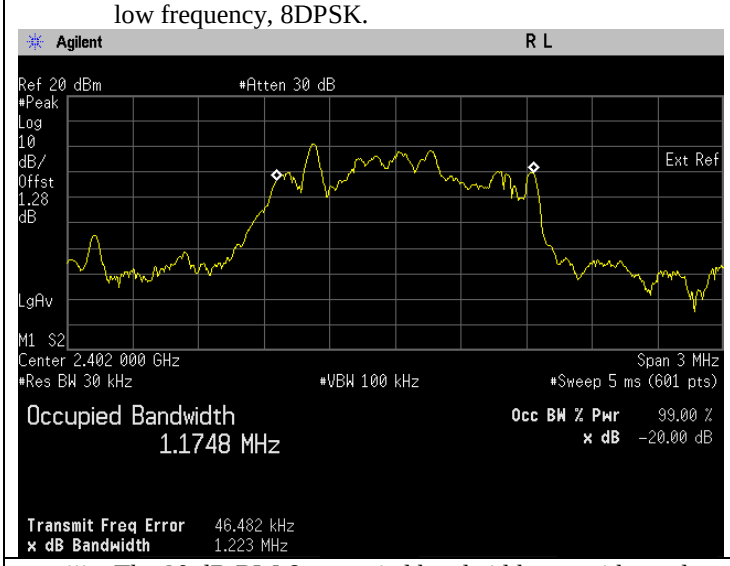
ii. The 20 dB BW & occupied bandwidth test with result at mid frequency, Pi/4 DQPSK.



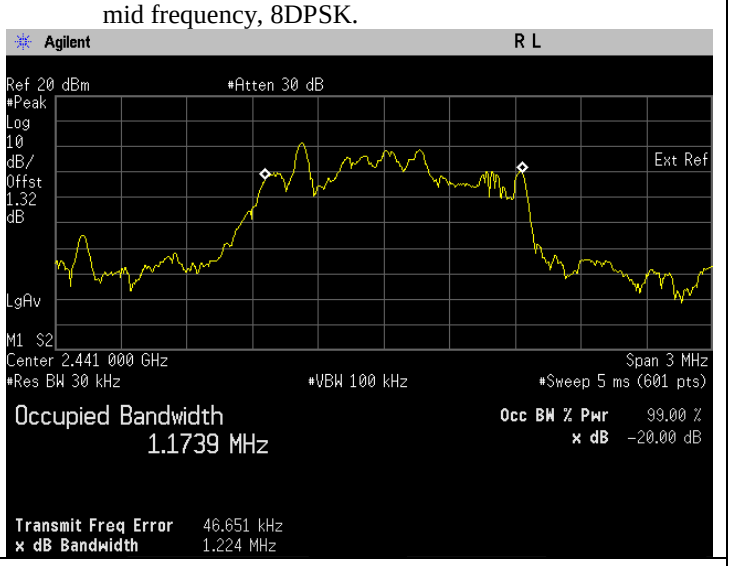
iii. The 20 dB BW & occupied bandwidth test with result at high frequency, Pi/4 DQPSK.



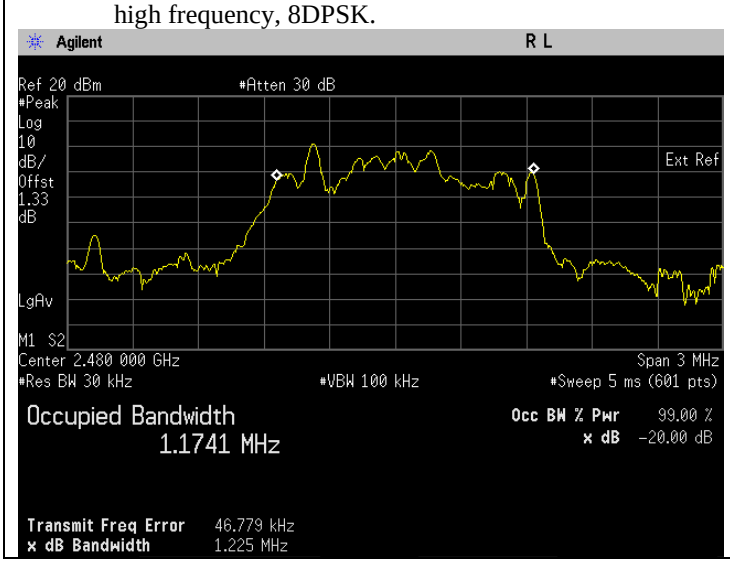
i. The 20 dB BW & occupied bandwidth test with result at low frequency, 8DPSK.



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

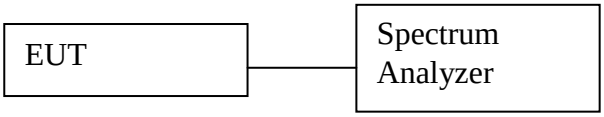


iii. The 20 dB BW & occupied bandwidth test with result at high frequency, 8DPSK.



5.3. Band-edge Conducted Spurious Emission

5.3.1. 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.

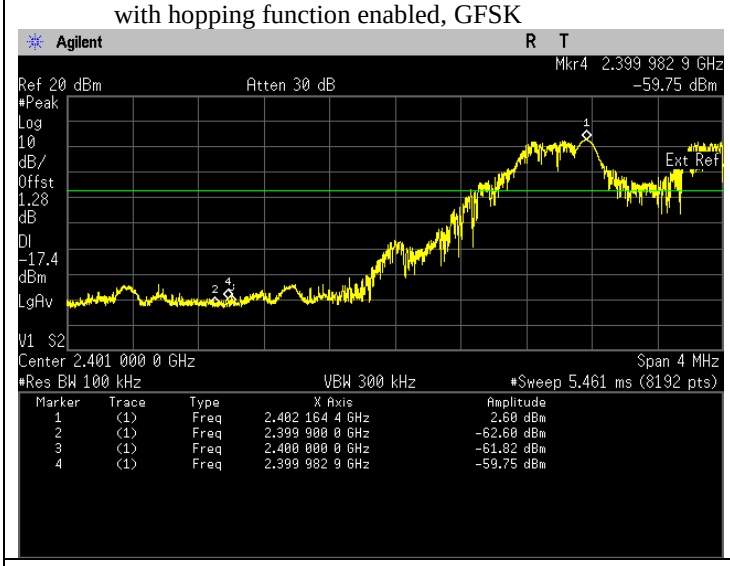
5.3.2. Test Limits

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

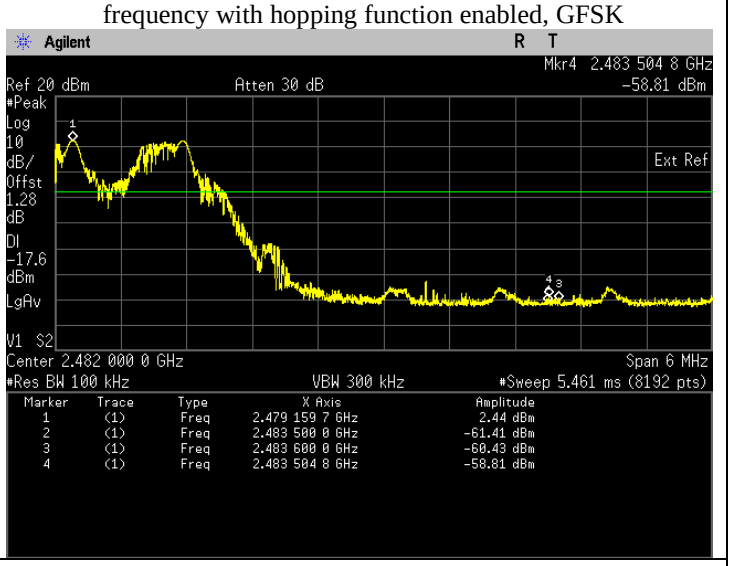
5.3.3. Test Result

Test Conditions		Hopping Method	Test Frequency(GHz)	Results	
Modulation	Voltage(V)			dB	Status
GFSK	3.80	Enabled (continuously)	2.4020	-59.75	Pass
			2.4800	-58.81	Pass
		Disabled (constantly)	2.4020	-57.87	Pass
			2.4800	-57.65	Pass
Pi/4 DQPSK	3.80	Enabled (continuously)	2.4020	-52.88	Pass
			2.4800	-60.03	Pass
		Disabled (constantly)	2.4020	-52.26	Pass
			2.4800	-58.04	Pass
8DPSK	3.80	Enabled (continuously)	2.4020	-52.60	Pass
			2.4800	-57.73	Pass
		Disabled (constantly)	2.4020	-52.06	Pass
			2.4800	-57.85	Pass

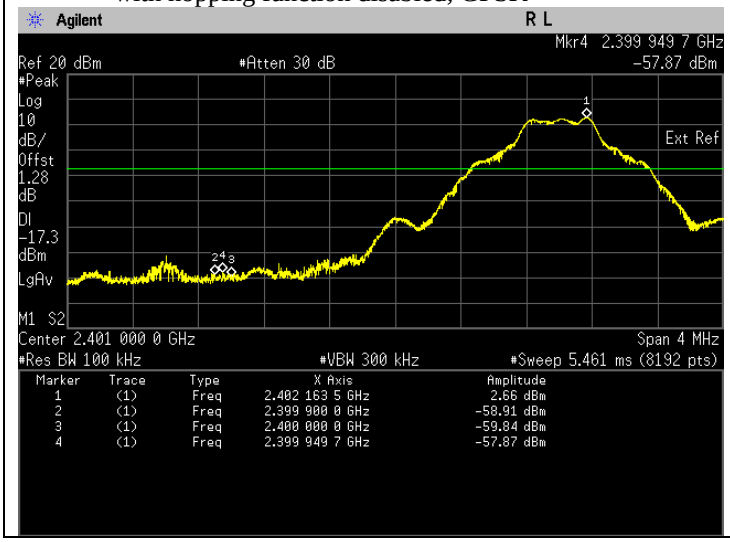
i. The highest band edge emission at low carrier frequency with hopping function enabled, GFSK



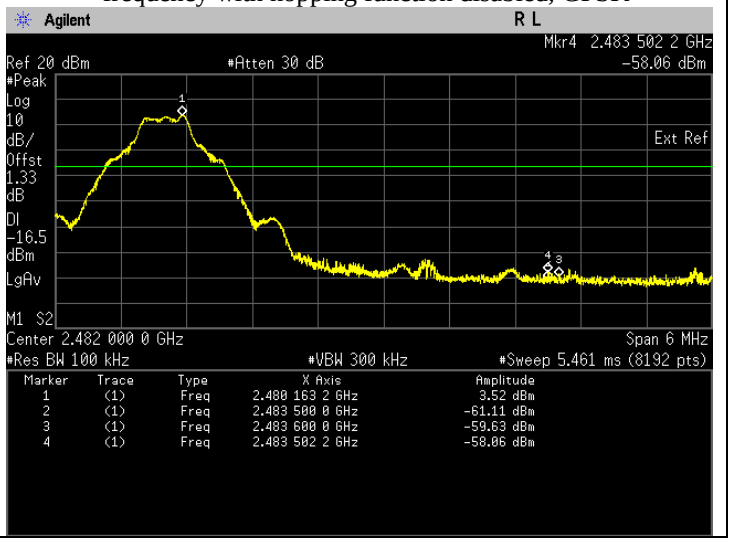
ii. The highest band edge emission at high carrier frequency with hopping function enabled, GFSK



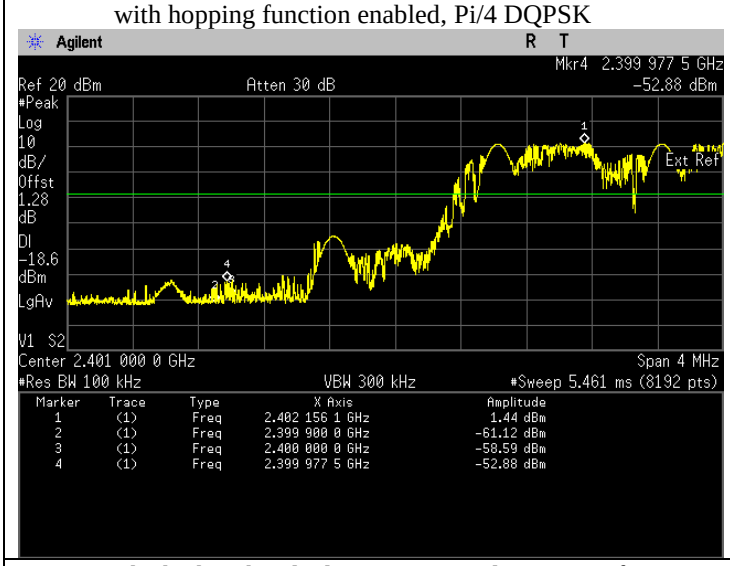
iii. The highest band edge emission at low carrier frequency with hopping function disabled, GFSK



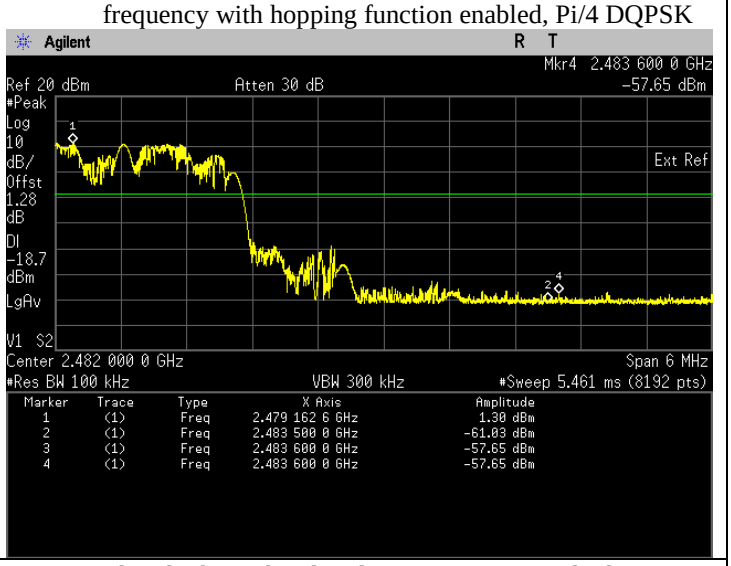
iv. The highest band edge emission at high carrier frequency with hopping function disabled, GFSK



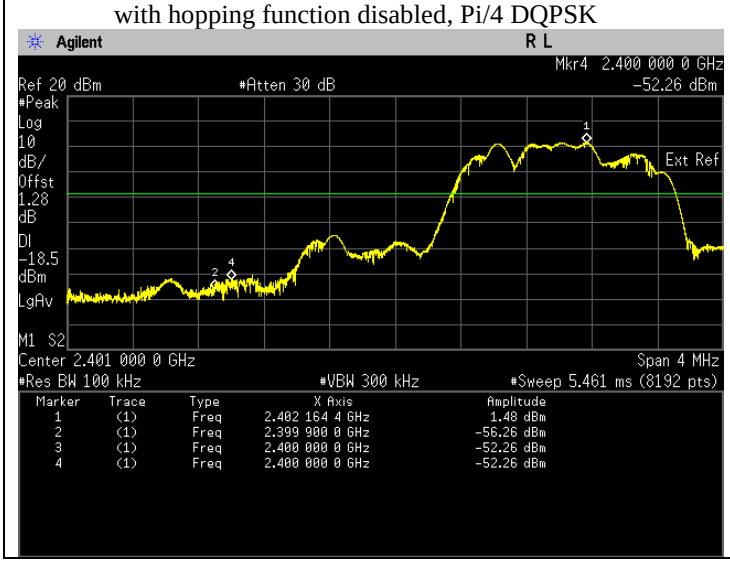
i. The highest band edge emission at low carrier frequency with hopping function enabled, Pi/4 DQPSK



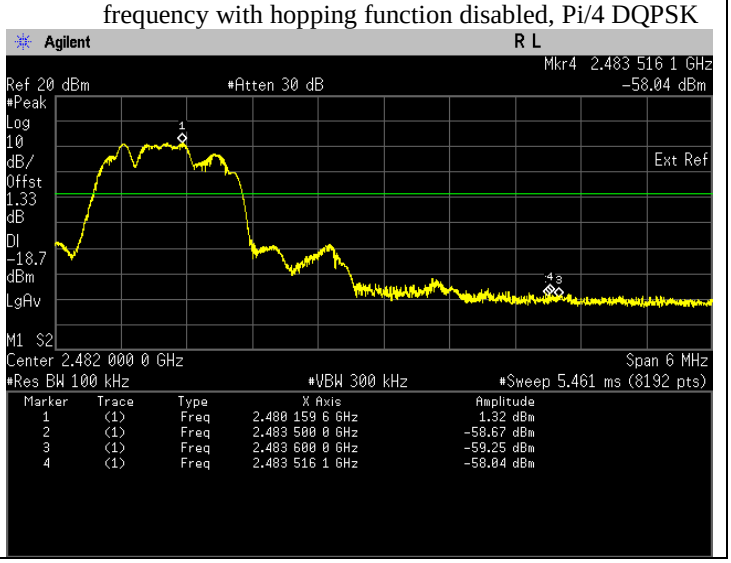
ii. The highest band edge emission at high carrier frequency with hopping function enabled, Pi/4 DQPSK



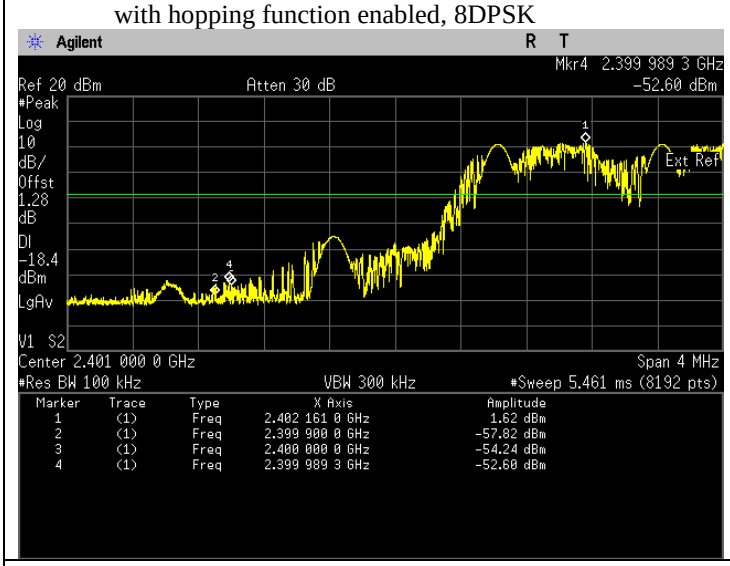
iii. The highest band edge emission at low carrier frequency with hopping function disabled, Pi/4 DQPSK



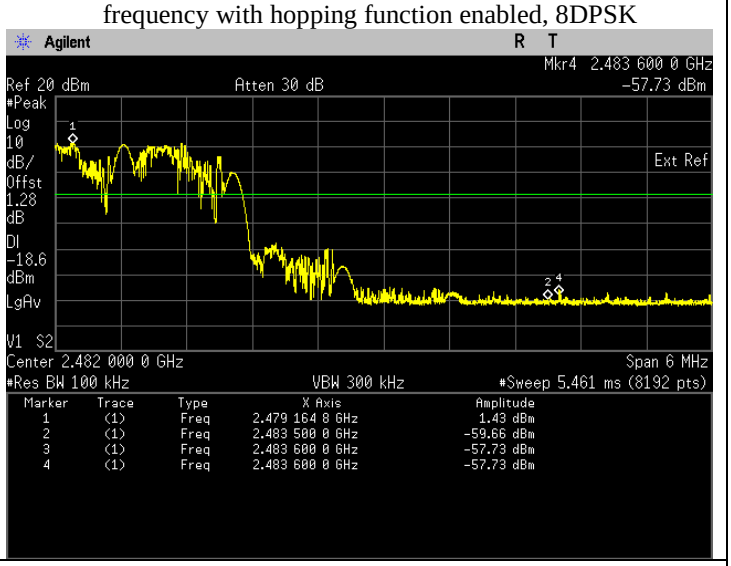
iv. The highest band edge emission at high carrier frequency with hopping function disabled, Pi/4 DQPSK



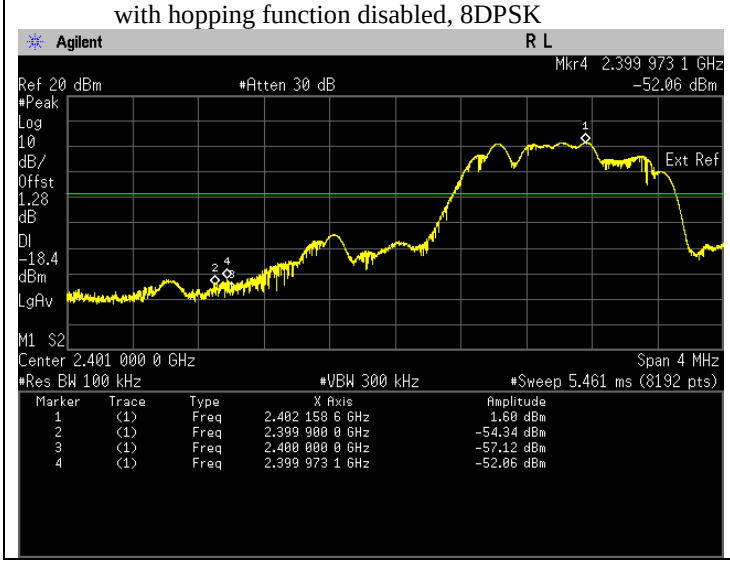
i. The highest band edge emission at low carrier frequency with hopping function enabled, 8DPSK



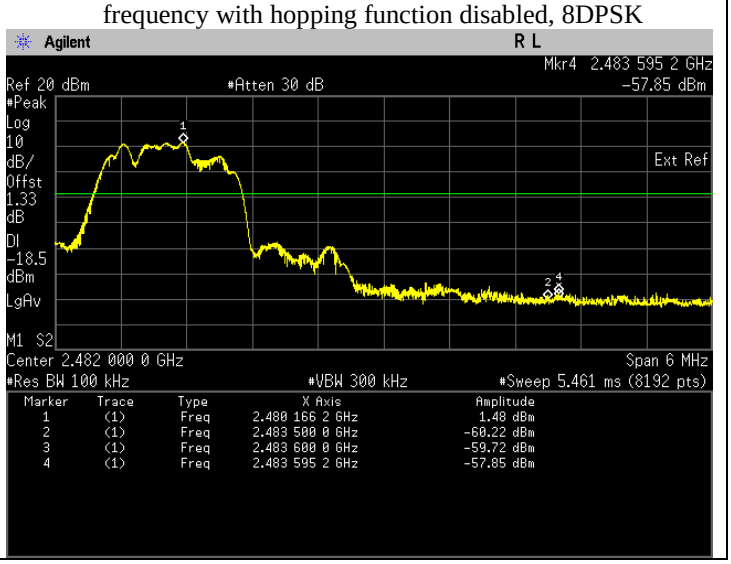
ii. The highest band edge emission at high carrier frequency with hopping function enabled, 8DPSK



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

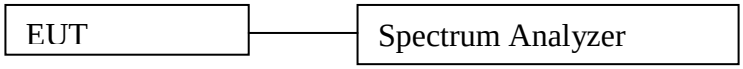


iv. The highest band edge emission at high carrier frequency with hopping function disabled, 8DPSK



5.4. Dwell time on each channel

5.4.1. 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.

5.4.2. Test Limits:

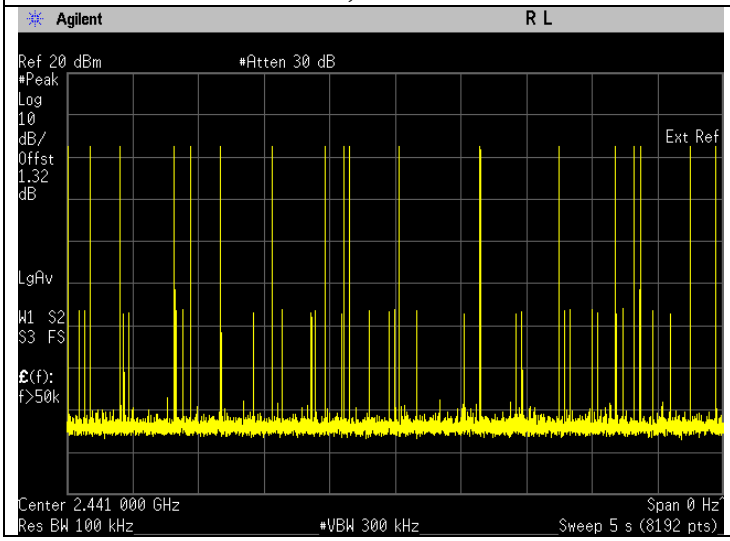
Normal Condition (25 ° C)
≤ 400ms

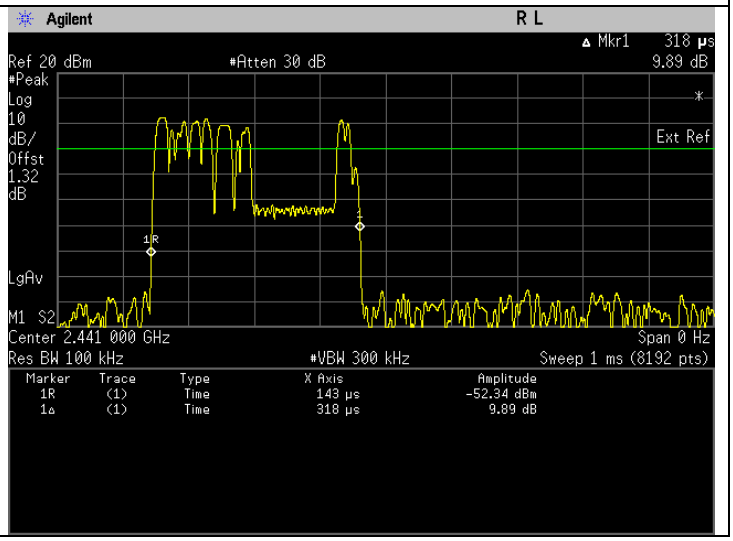
5.4.3. Test Result

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	3.80	2.4410	DH1	19	0.318	38.185440	Pass
			DH3	17	0.327	35.132880	Pass
			DH5	20	2.903	366.939200	Pass
Pi/4 DQPSK	3.80		DH1	14	0.381	33.710880	Pass
			DH3	17	1.541	165.56504	Pass
			DH5	19	2.902	348.47216	Pass
8 DPSK	3.80		DH1	21	0.310	41.1432	Pass
			DH3	13	1.083	88.97928	Pass
			DH5	13	2.902	238.42832	Pass

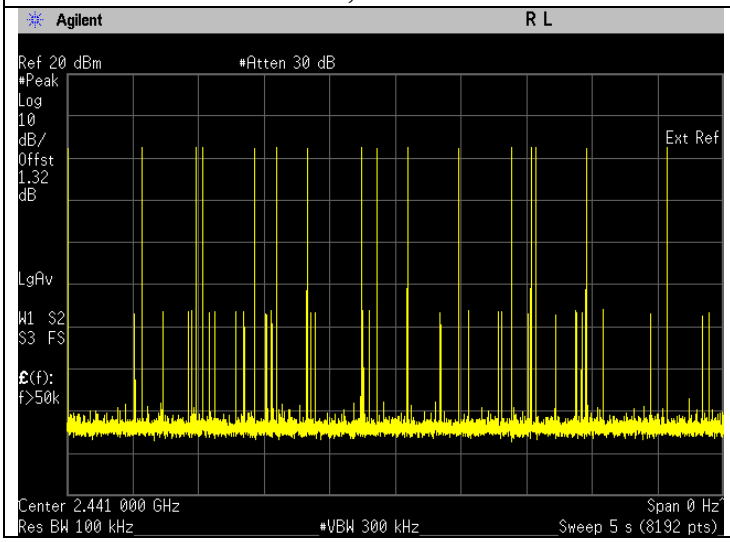
****Note:** Total dwell time 31.6s (79Hopping*0.4), (c) = (a) x 6.32 x (b)

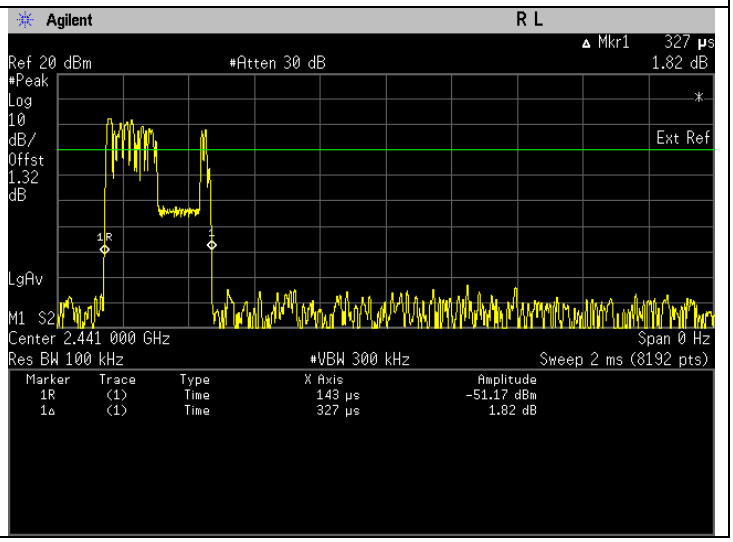
i. Dwell Time at DH1, GFSK



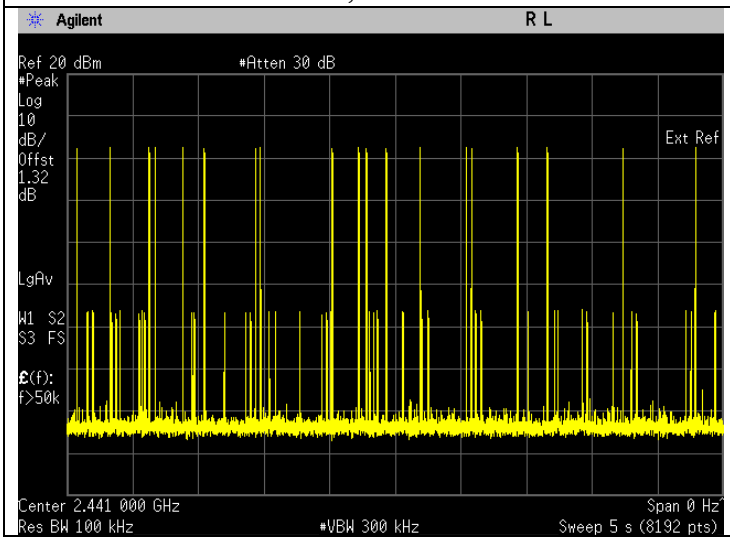


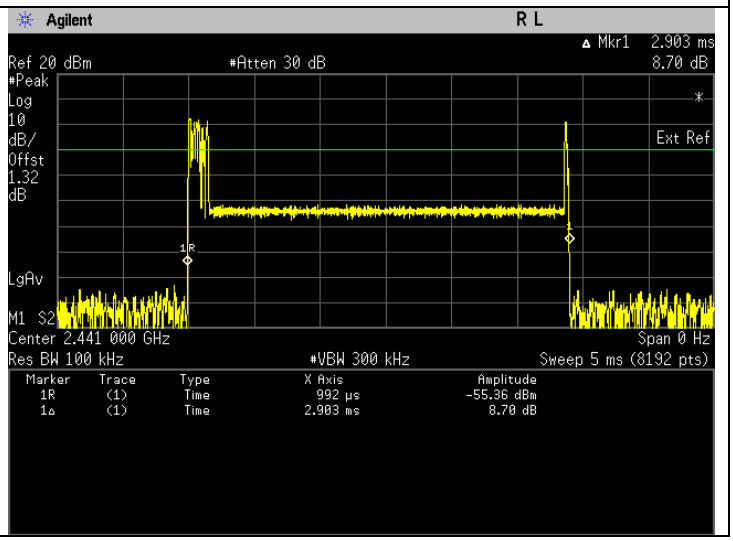
ii. Dwell Time at DH3, GFSK



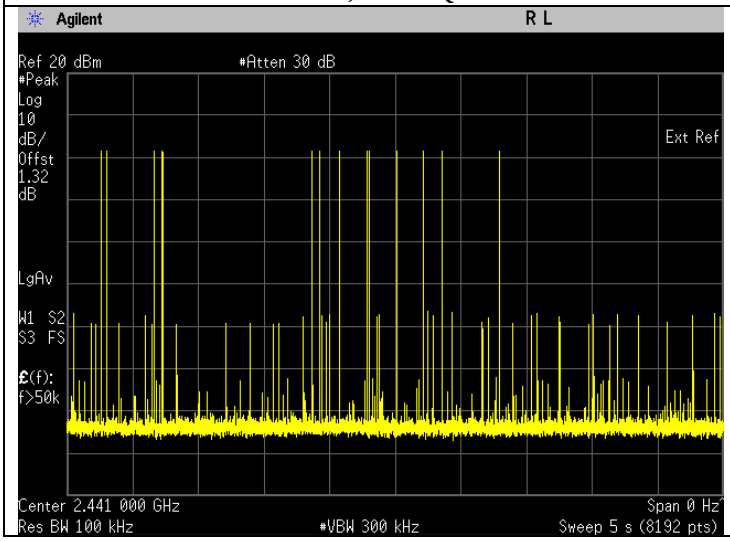


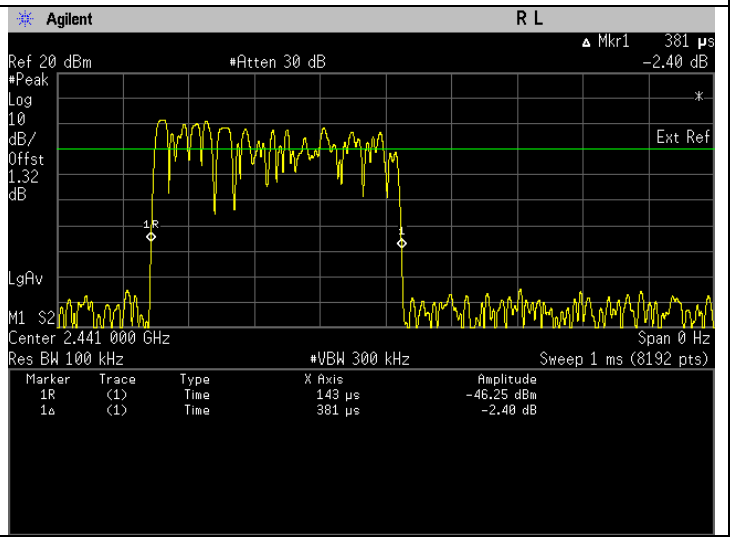
iii. Dwell Time at DH5, GFSK



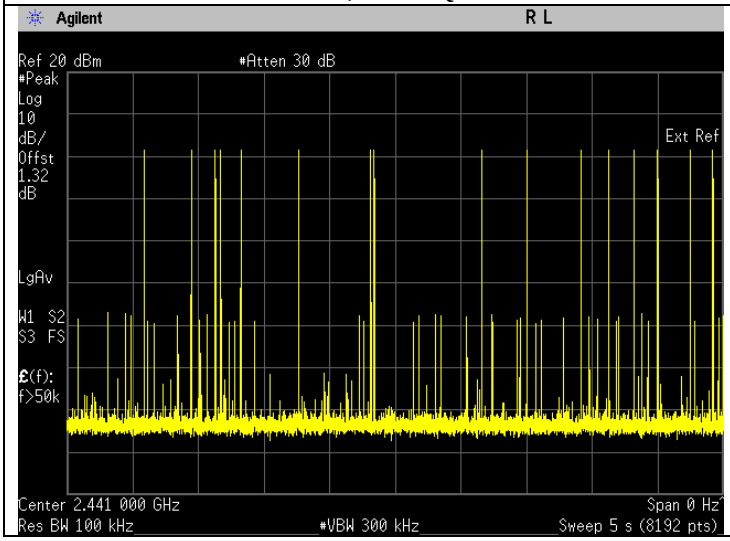


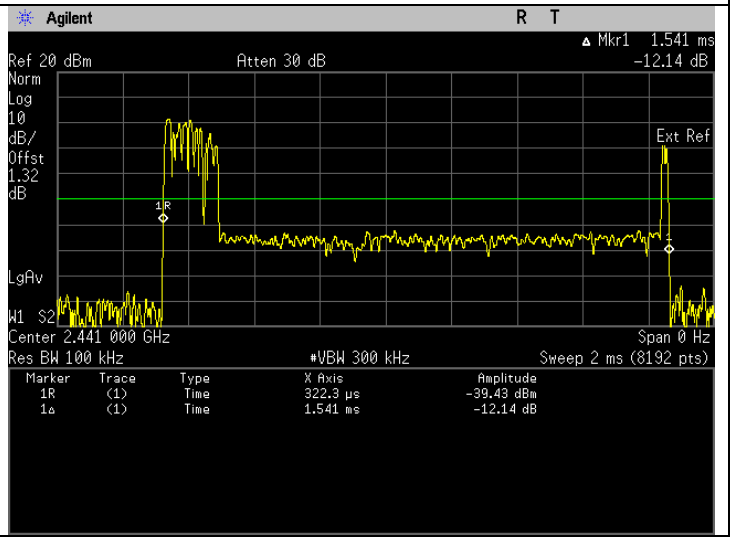
iv. Dwell Time at DH1, PI/4DQPSK



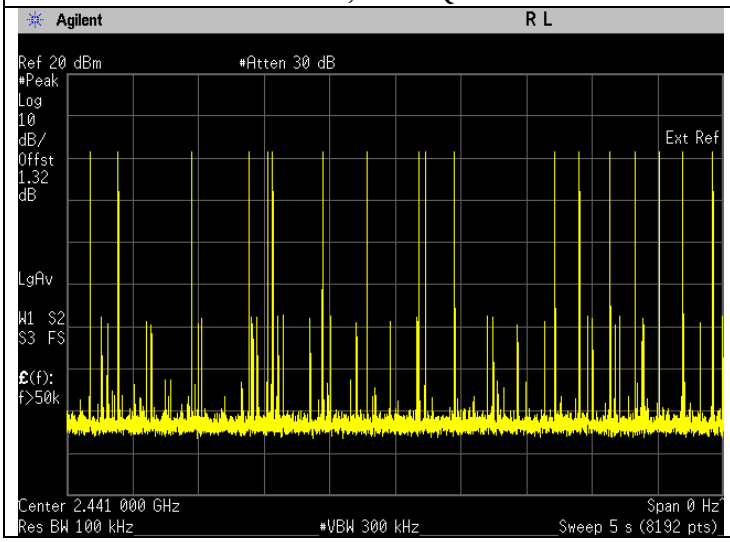


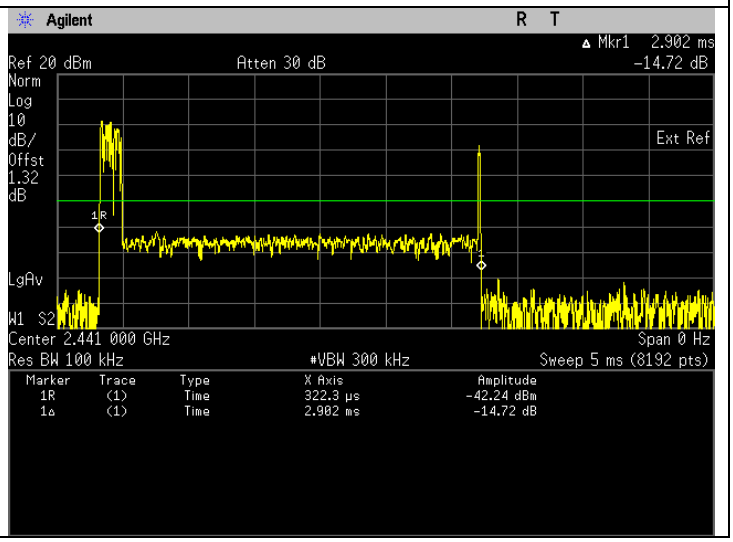
v. Dwell Time at DH3, PI/4DQPSK



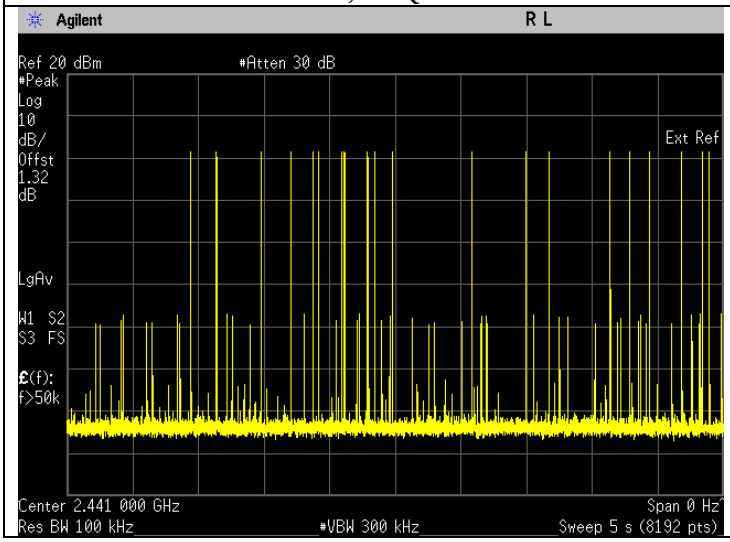


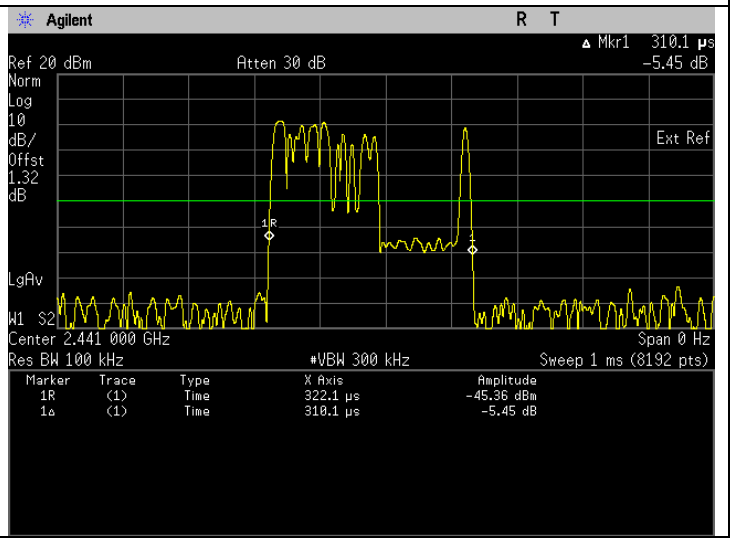
vi. Dwell Time at DH5, PI/4DQPSK



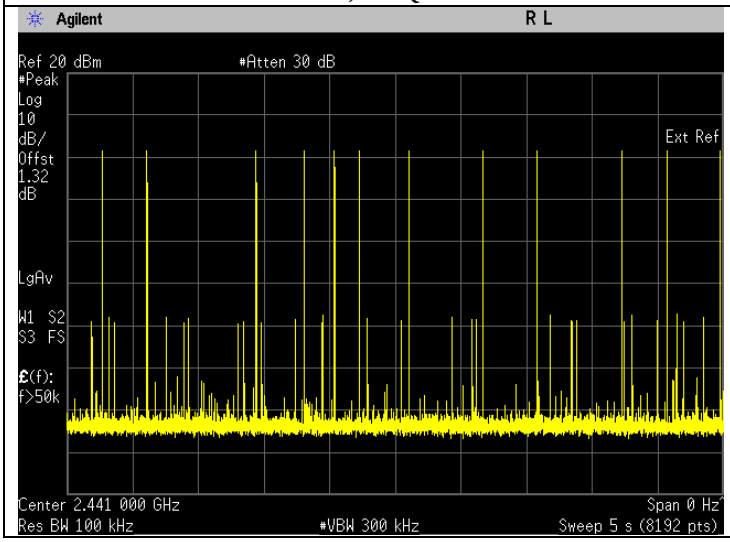


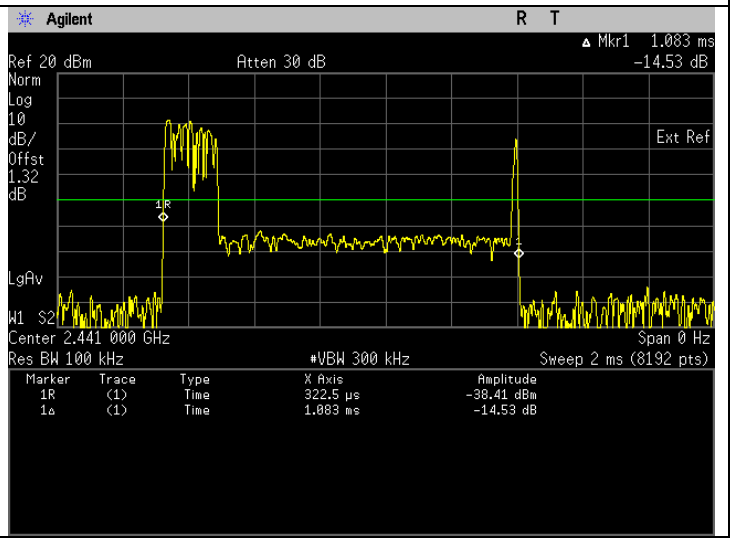
vii. Dwell Time at DH1, 8DQPSK



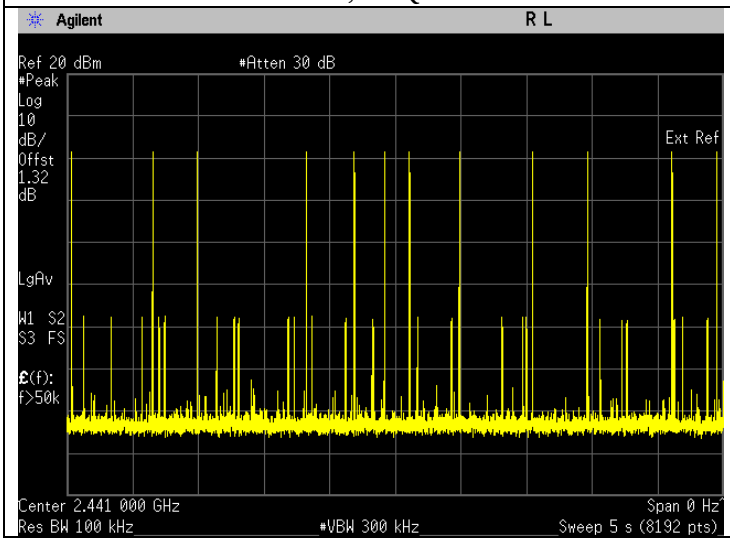


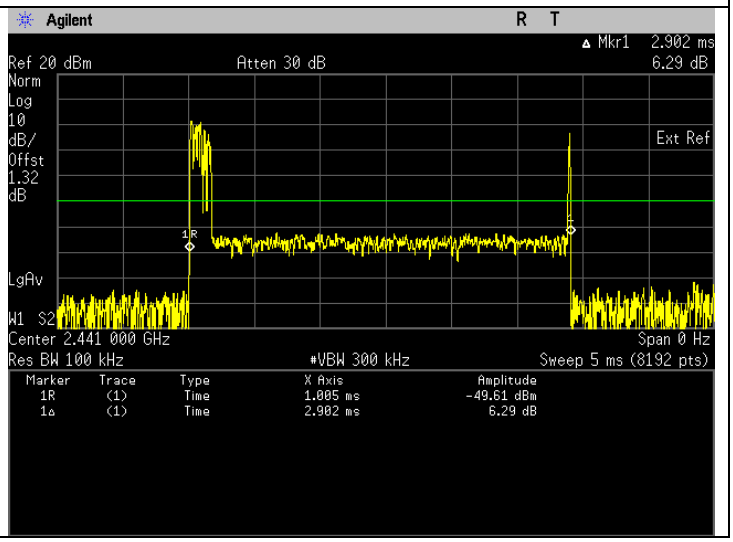
viii. Dwell Time at DH3, 8DQPSK





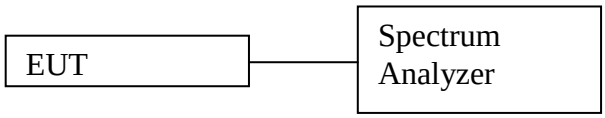
ix. Dwell Time at DH5, 8DQPSK





5.5. Number of hopping Frequency

5.5.1. 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.

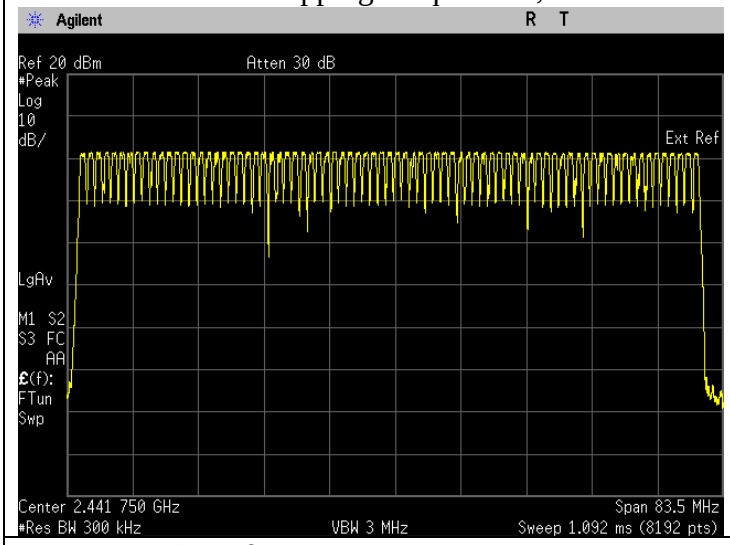
5.5.2. Test Limits:

Normal Condition (25 º C)
≥ 15

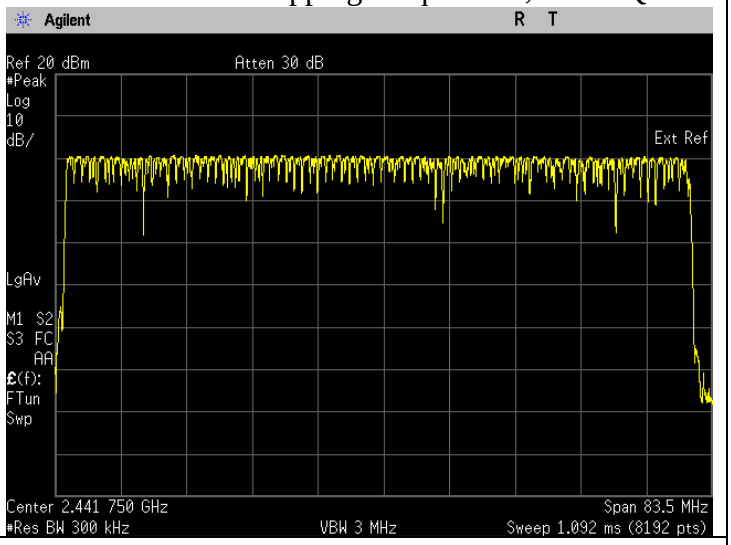
5.5.3. Test Result

Test Conditions		Sweep Range (GHz)	Results	
Modulation	Voltage(V)		No. of Hopping Frequencies	Status
GFSK	3.80	2.4000-2.4835	79	Pass
Pi/4DQPSK	3.80	2.4000-2.4835	79	Pass
8DPSK	3.80	2.4000-2.4835	79	Pass

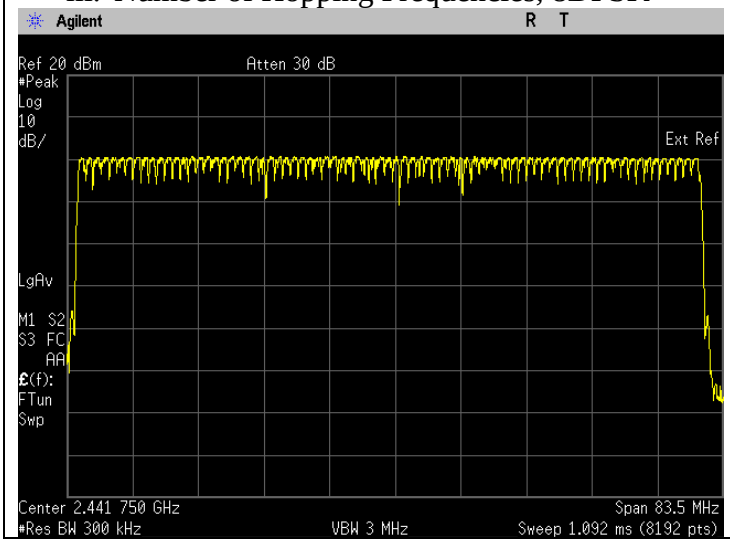
i. Number of Hopping Frequencies, GFSK



ii. Number of Hopping Frequencies, Pi/4 DQPSK

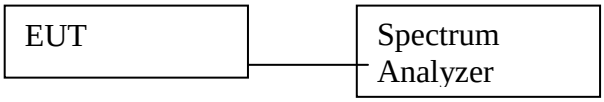


iii. Number of Hopping Frequencies, 8DPSK



5.6. Channel Separation

5.6.1. 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.

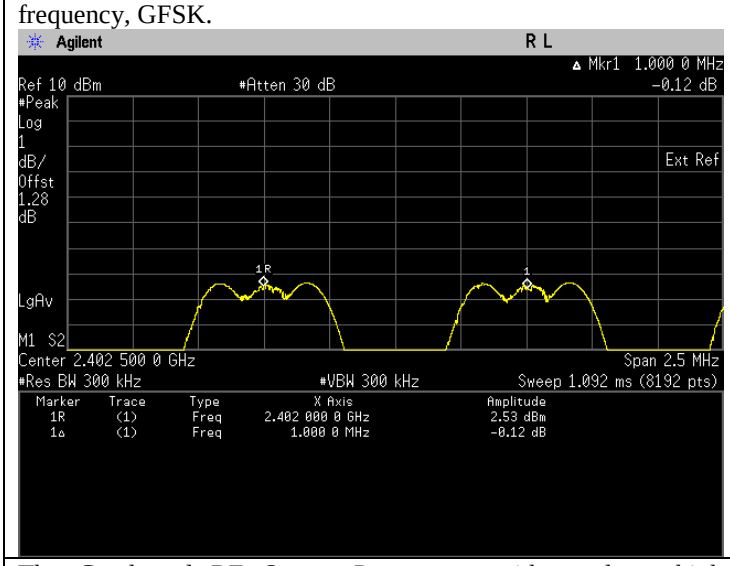
5.6.2. Test Limits:

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

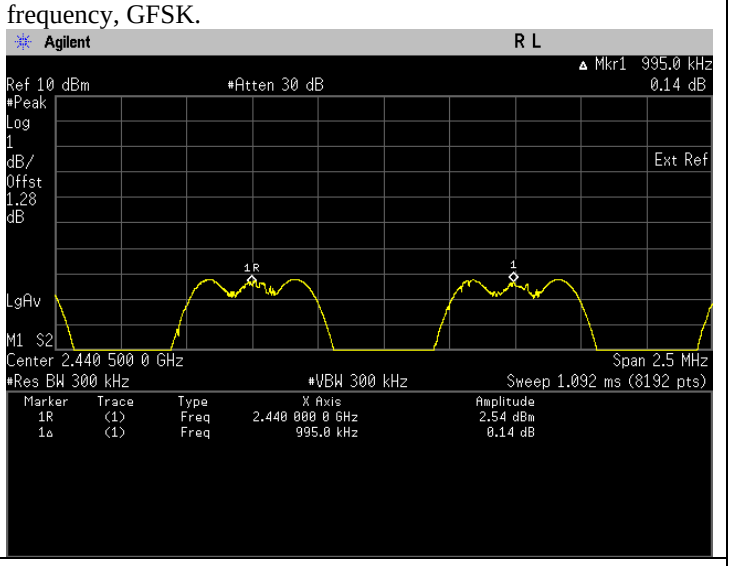
5.6.3. Test Result

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	3.80	2.4020	1.000	0.708	471.943	Pass
		2.4410	0.995	0.688	458.559	Pass
		2.4800	0.997	0.686	457.208	Pass
Pi/4DQPSK	3.80	2.4020	1.002	1.227	817.813	Pass
		2.4410	1.000	1.228	818.860	Pass
		2.4800	0.997	1.220	813.245	Pass
8DPSK	3.80	2.4020	0.995	1.223	815.488	Pass
		2.4410	0.996	1.224	816.121	Pass
		2.4800	0.996	1.225	816.637	Pass

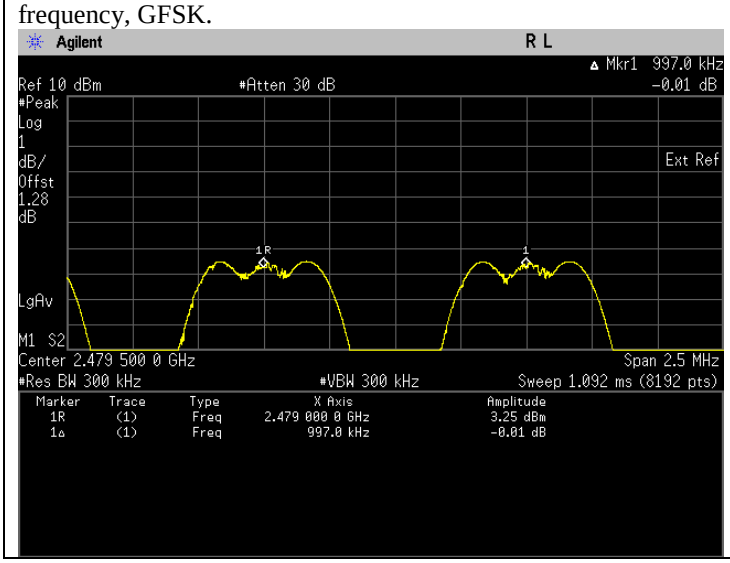
The Conducted RF Output Power test with result at low frequency, GFSK.



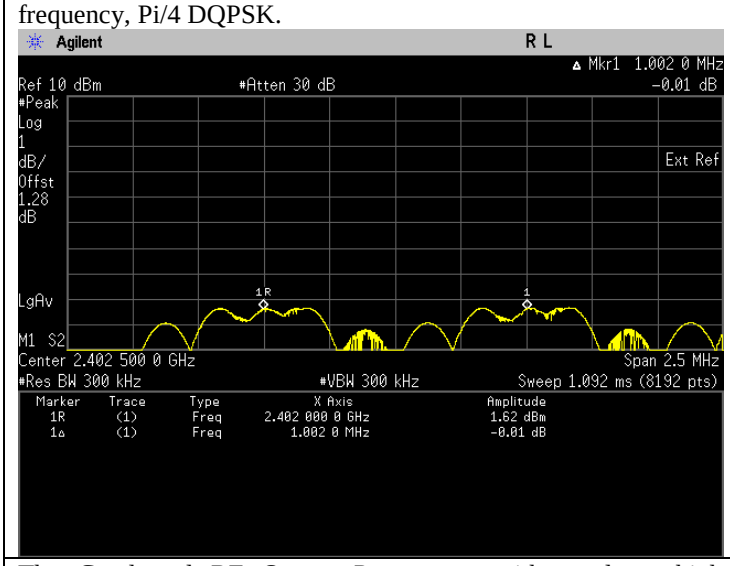
The Conducted RF Output Power test with result at mid frequency, GFSK.



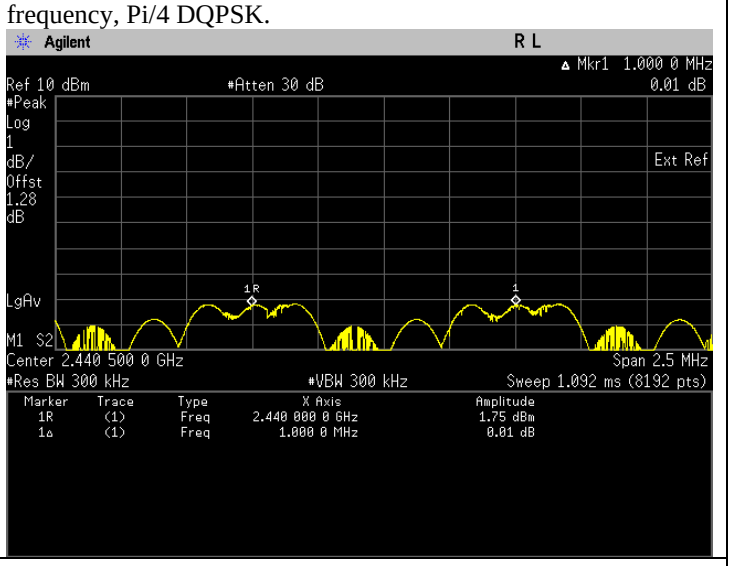
The Conducted RF Output Power test with result at high frequency, GFSK.



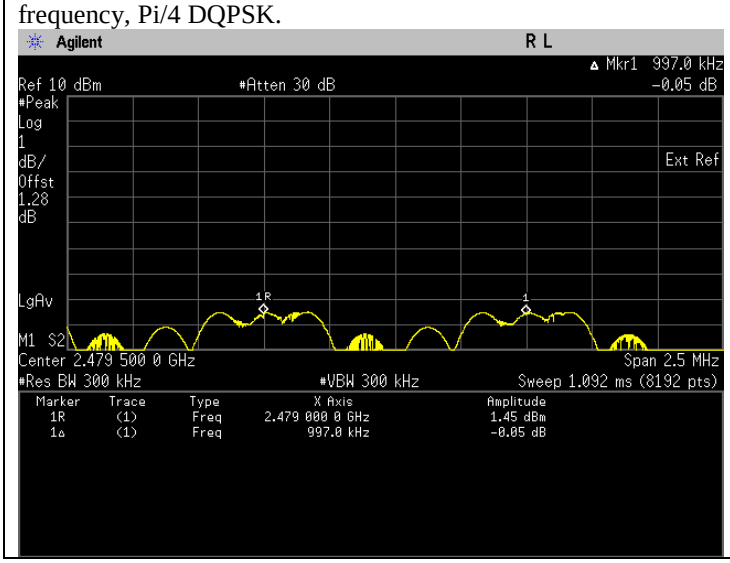
The Conducted RF Output Power test with result at low frequency, Pi/4 DQPSK.



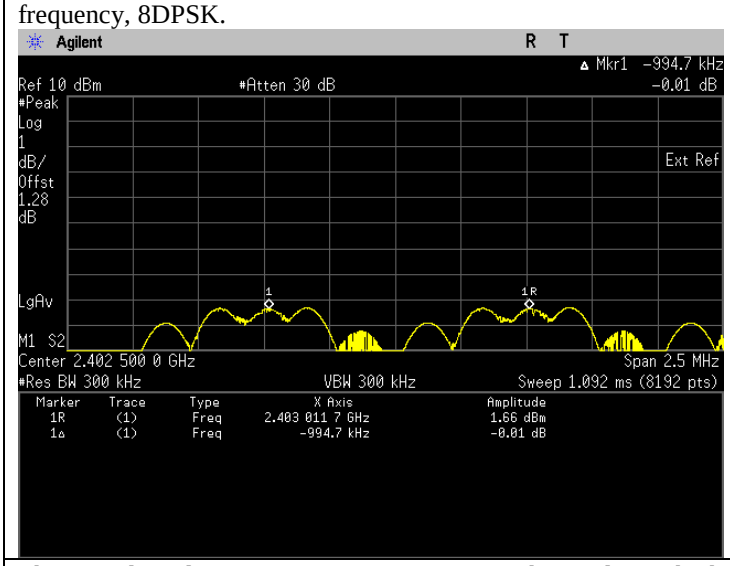
The Conducted RF Output Power test with result at mid frequency, Pi/4 DQPSK.



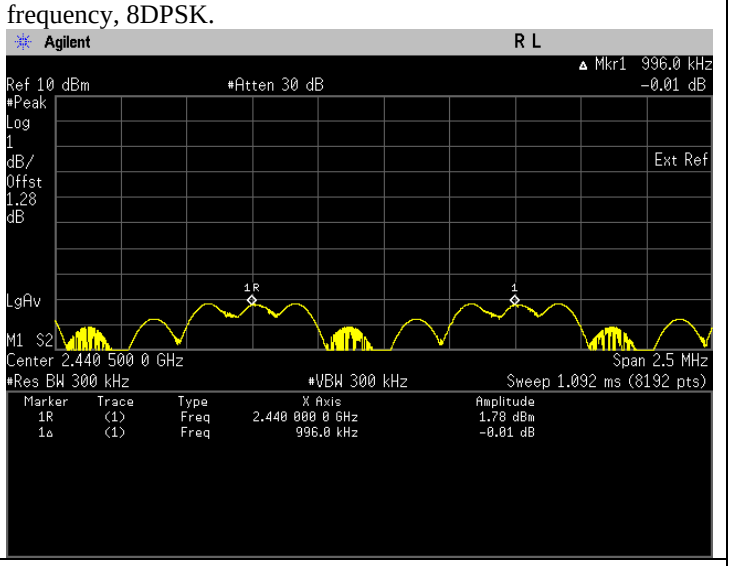
The Conducted RF Output Power test with result at high frequency, Pi/4 DQPSK.



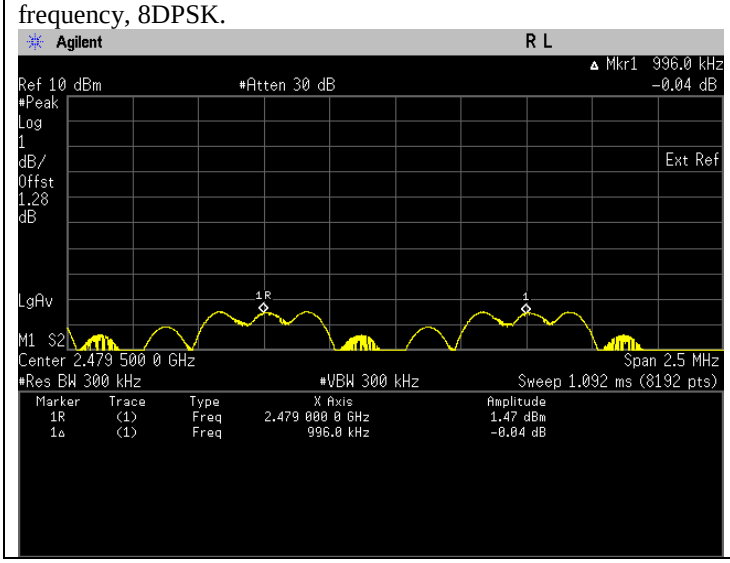
The Conducted RF Output Power test with result at low frequency, 8DPSK.



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

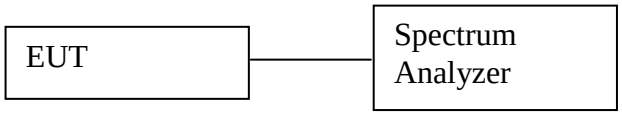


The Conducted RF Output Power test with result at high frequency, 8DPSK.



5.7. Conducted Spurious Emission

5.7.1. 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 10^{th} 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.

5.7.2. Test Limits:

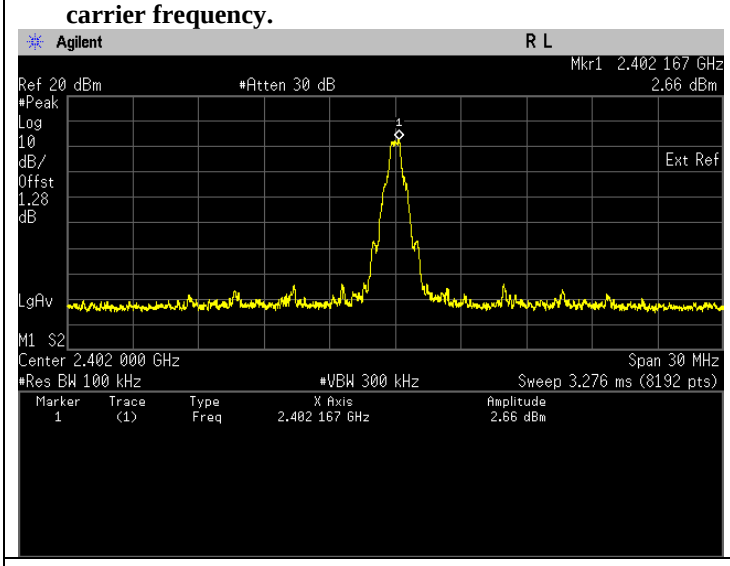
Normal Condition (25 ° C)
Shall be at least 20 dB below for peak power.

5.7.3. Test Data:

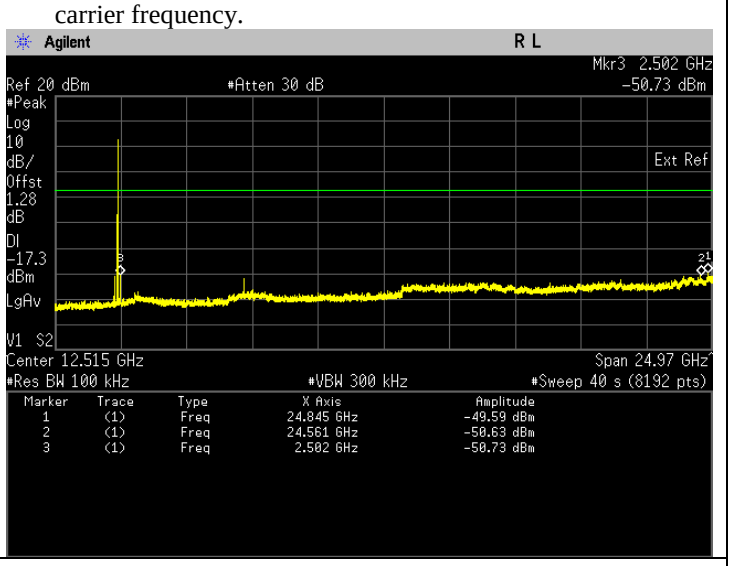
Test Conditions			Results		
Modulation	Voltage(V)	Test Frequency (GHz)	Spurs (MHz)	Level (dBm)	Status
GFSK	3.80	2.4020	24845.000	-49.589	Pass
		2.4410	2545.000	-50.409	Pass
		2.4800	2374.000	-48.888	Pass
Pi/4 DQPSK	3.80	2.4020	24905.000	-49.813	Pass
		2.4410	24848.000	-50.377	Pass
		2.4800	24204.000	-50.811	Pass
8DPSK	3.80	2.4020	24841.000	-49.767	Pass
		2.4410	24890.000	-50.060	Pass
		2.4800	24863.000	-50.627	Pass

GFSK Modulation:

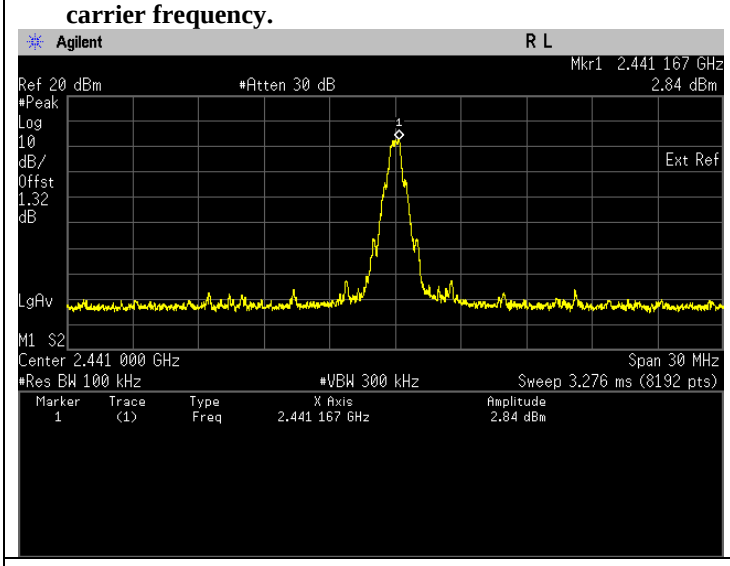
- **The high emission level within the assigned band at low carrier frequency.**



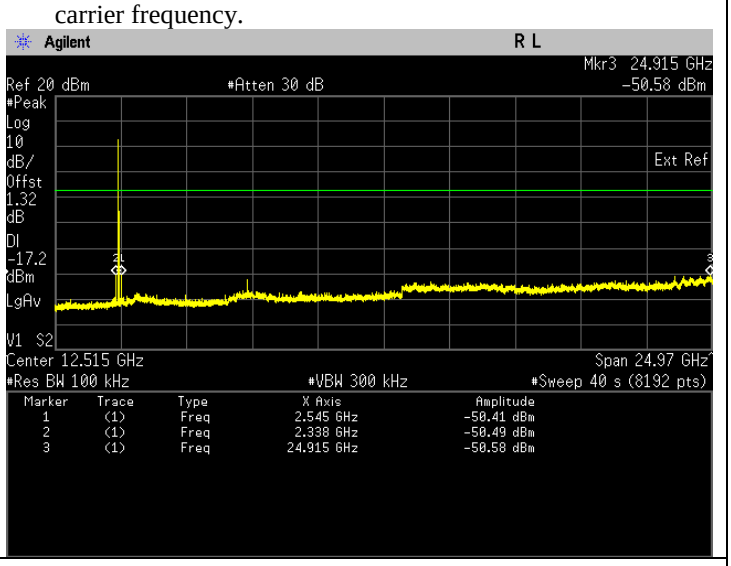
- Spurious emission measurement in **30MHz – 25GHz** at low carrier frequency.



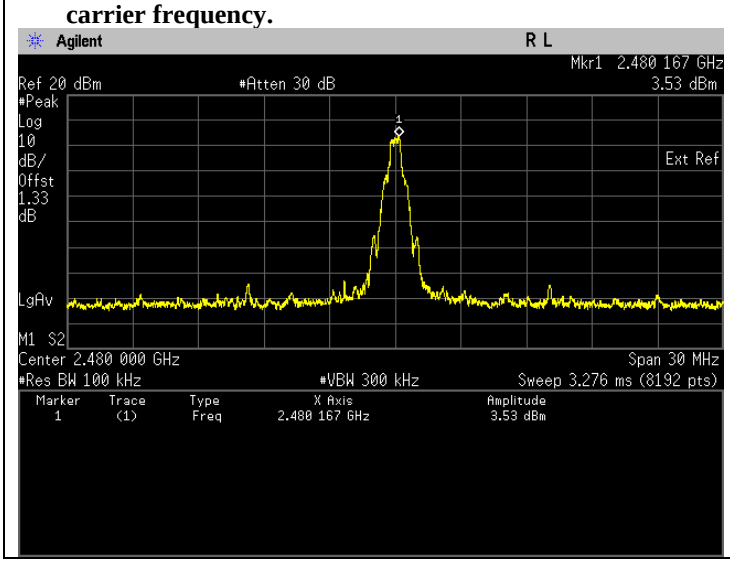
- **The high emission level within the assigned band at mid carrier frequency.**



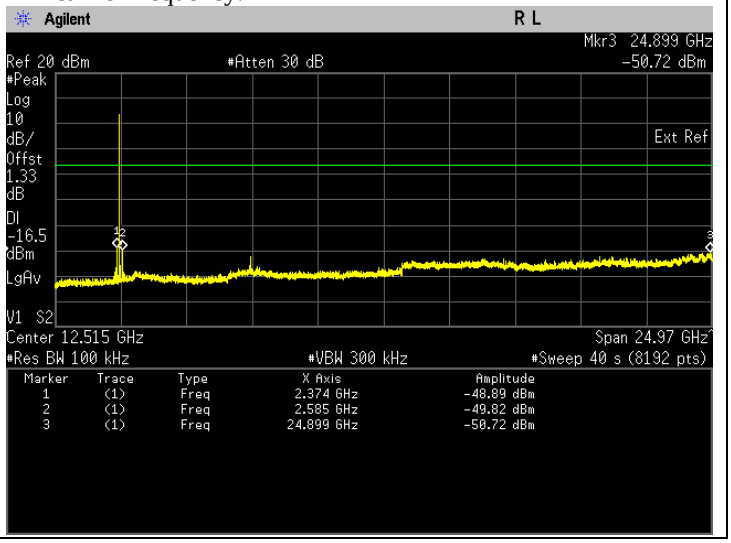
- Spurious emission measurement in **30MHz – 25GHz** at mid carrier frequency.



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

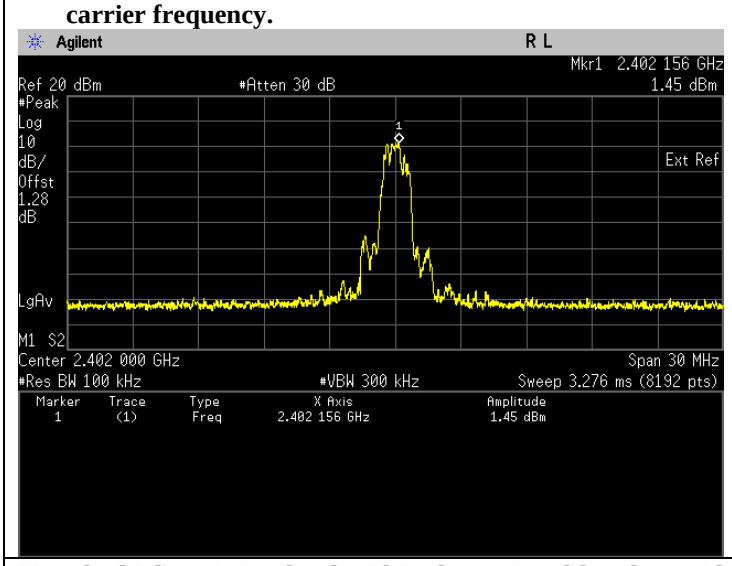


- Spurious emission measurement in **30MHz – 25GHz** at high carrier frequency.

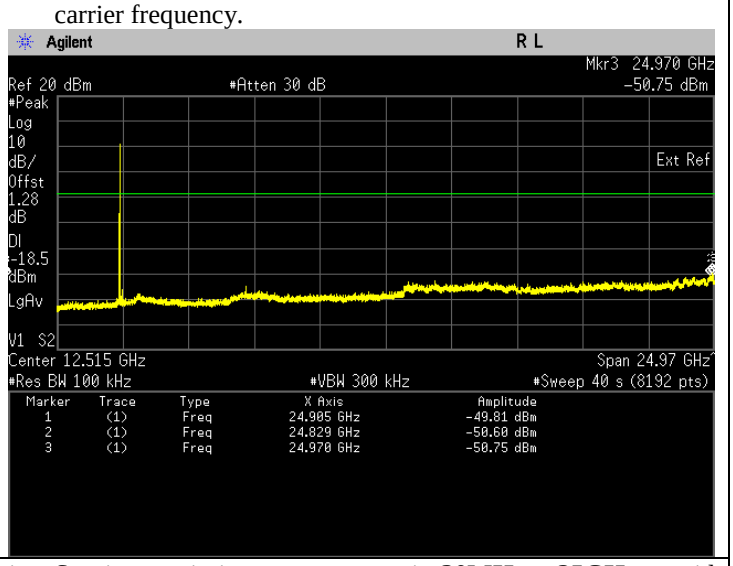


Pi/4 DQPSK Modulation:

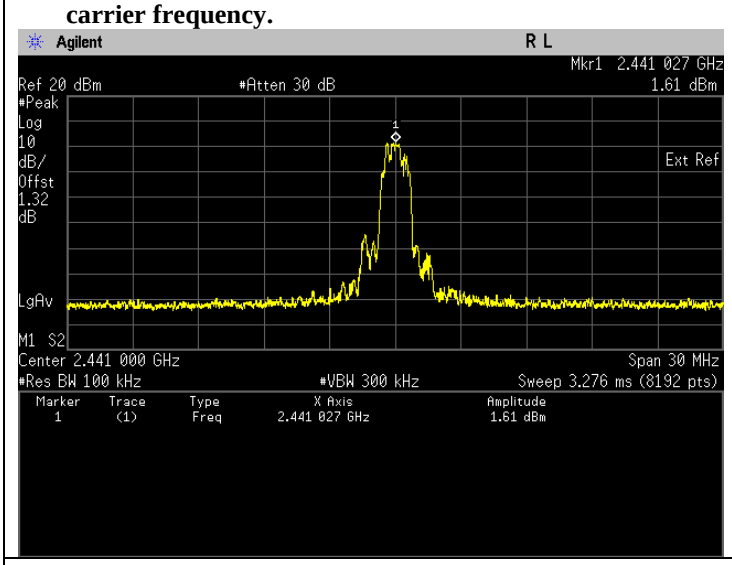
i. The high emission level within the assigned band at low carrier frequency.



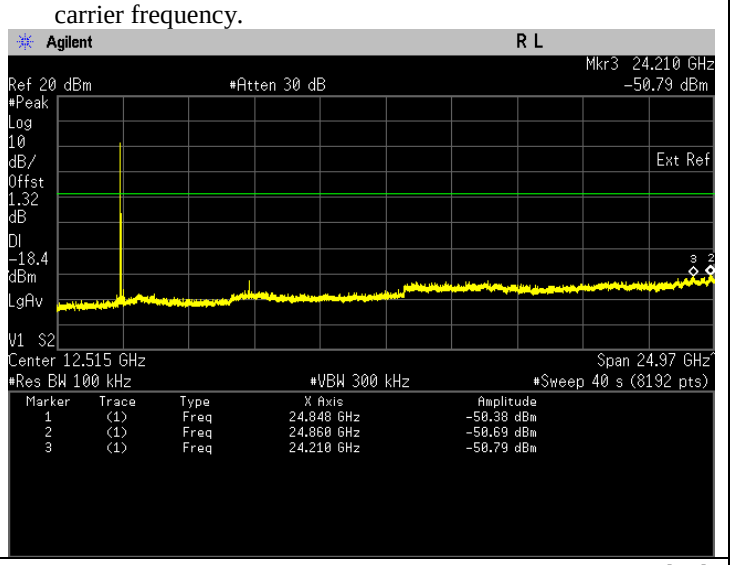
ii. Spurious emission measurement in **30MHz – 25GHz** at low carrier frequency.



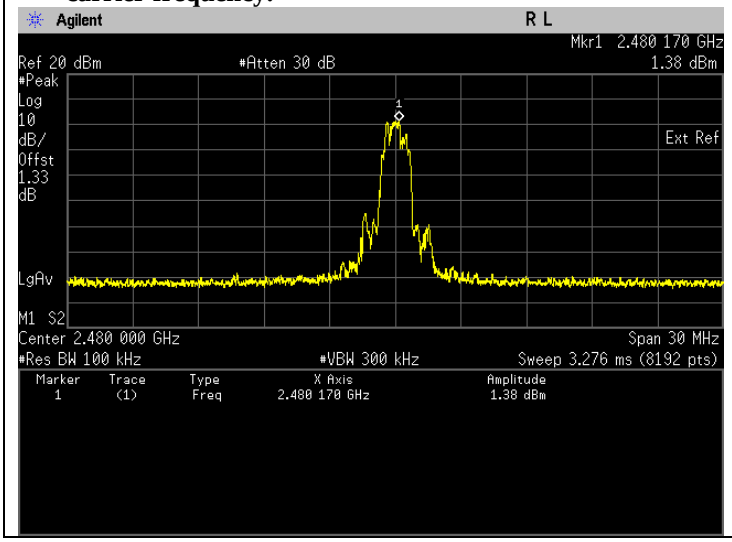
iii. The high emission level within the assigned band at mid carrier frequency.



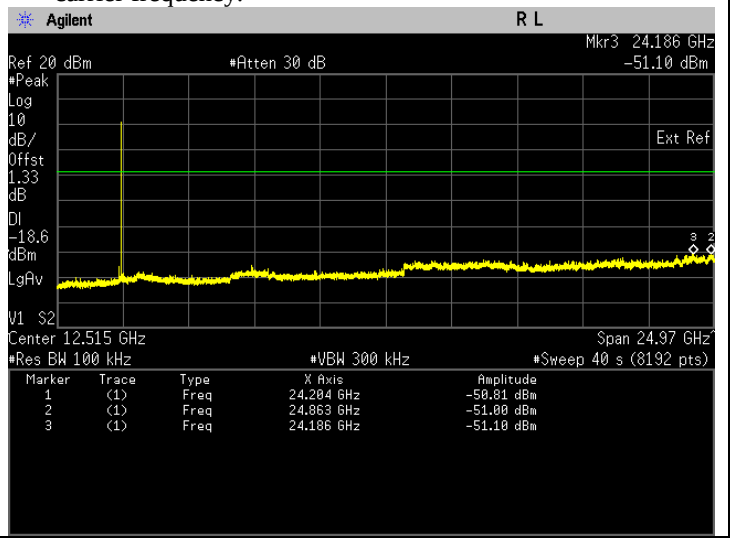
iv. Spurious emission measurement in **30MHz – 25GHz** at mid carrier frequency.



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

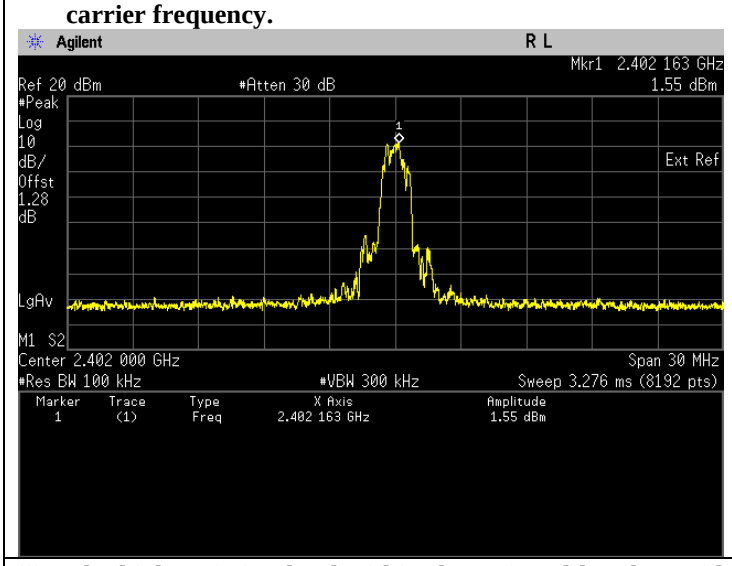


vi. Spurious emission measurement in **30MHz – 25GHz** at high carrier frequency.

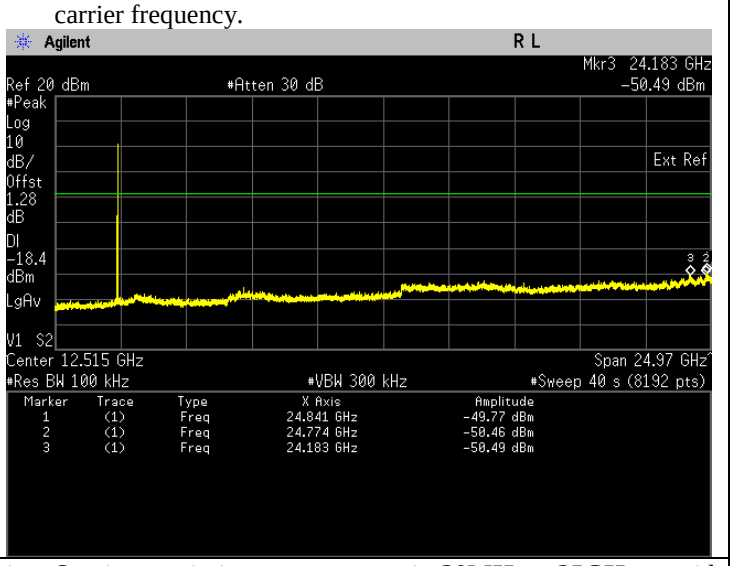


8DPSK Modulation:

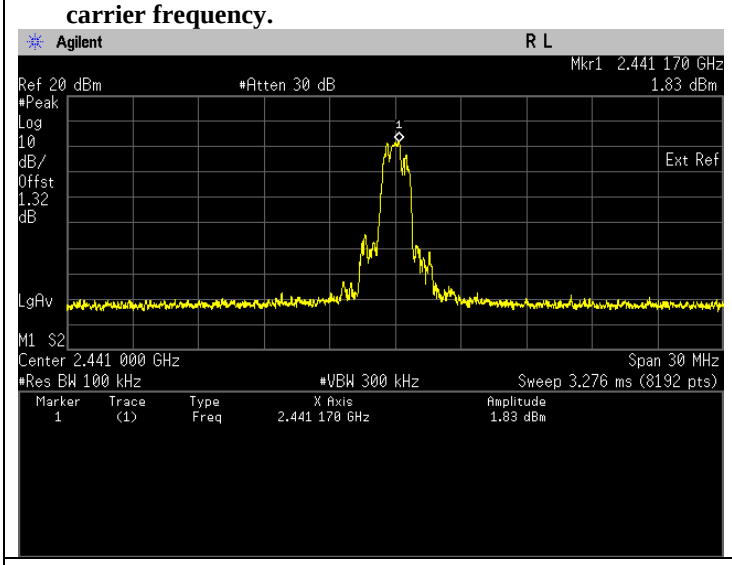
i. The high emission level within the assigned band at low carrier frequency.



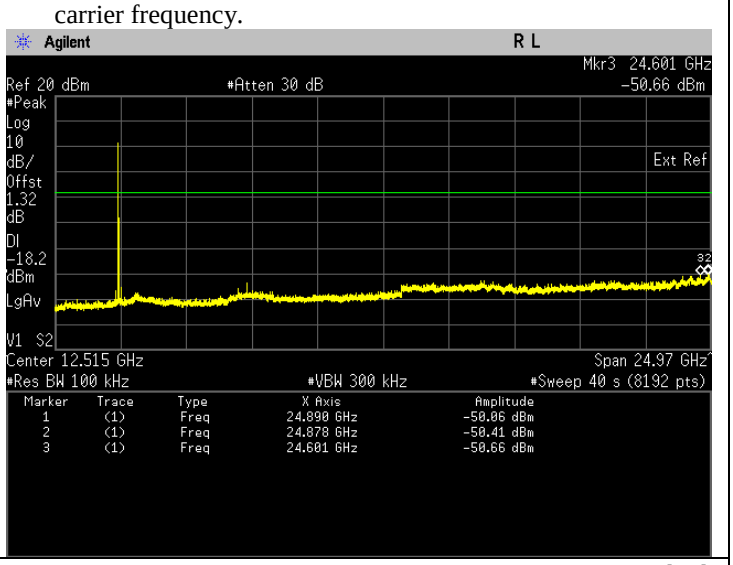
ii. Spurious emission measurement in **30MHz – 25GHz** at low carrier frequency.



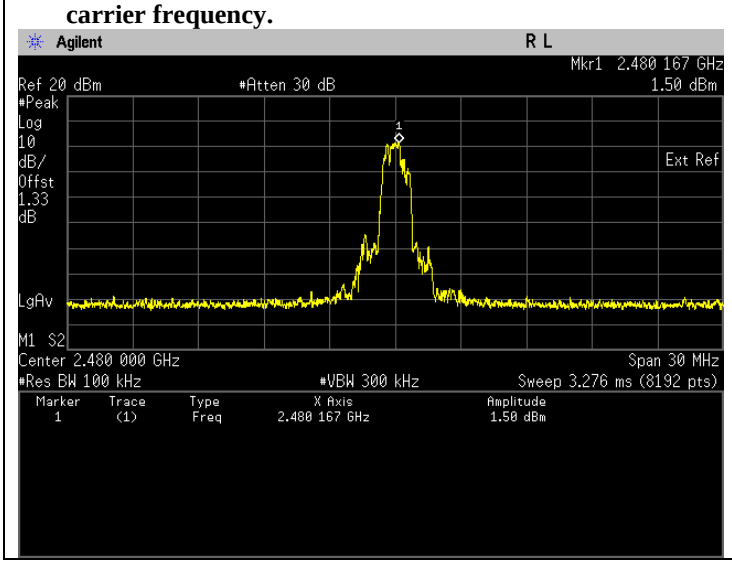
iii. The high emission level within the assigned band at mid carrier frequency.



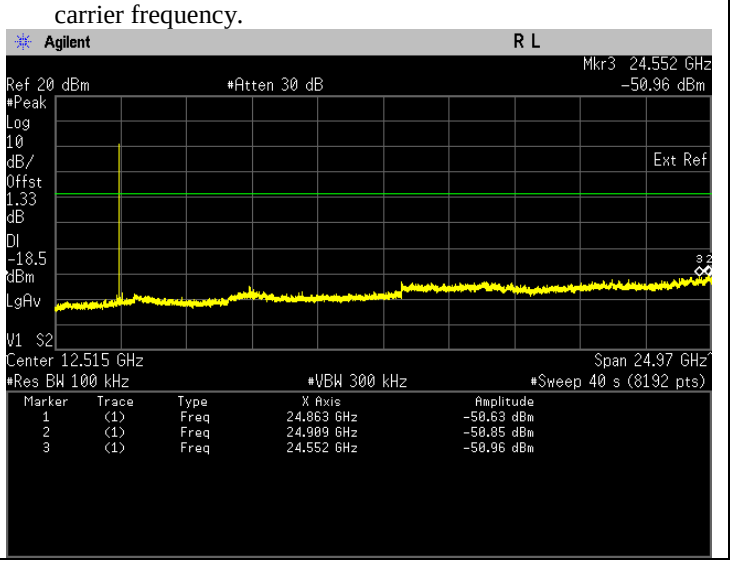
iv. Spurious emission measurement in **30MHz – 25GHz** at mid carrier frequency.



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

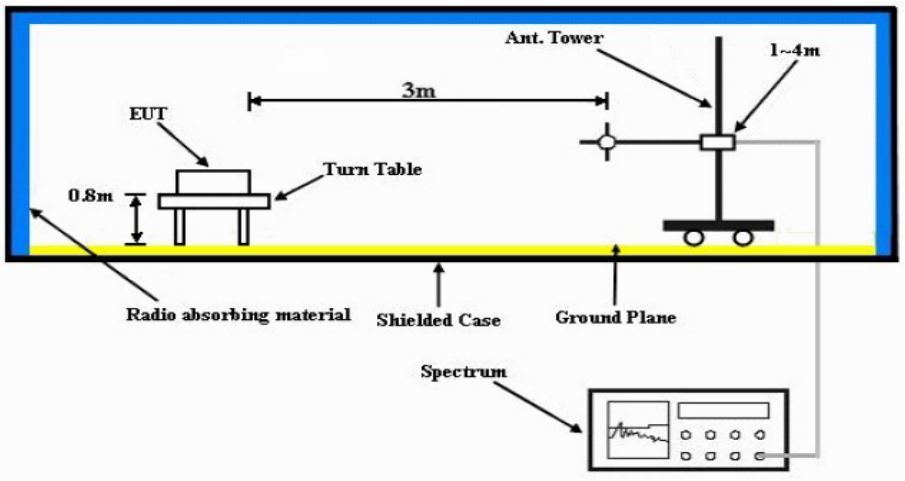


vi. Spurious emission measurement in **30MHz – 25GHz** at high carrier frequency.



5.8. Radiated Emission within restricted Bands

5.8.1. 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.

5.8.2. 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.

5.8.3. Test Data:

Test: Bluetooth SAC Restricted Band Edge
Model Number: AZH77PCN6TZ5AN S/N: 767TXV0821 EMC SR ID#: 19613-EMC-00216
Battery: PMNN4802A Accessory: NA
Test Channel: Low Test Frequency: 2402.0000 MHz Test Standard: ANSI C63.10-2013
Worst Case Plane: X-Plane (GFSK)

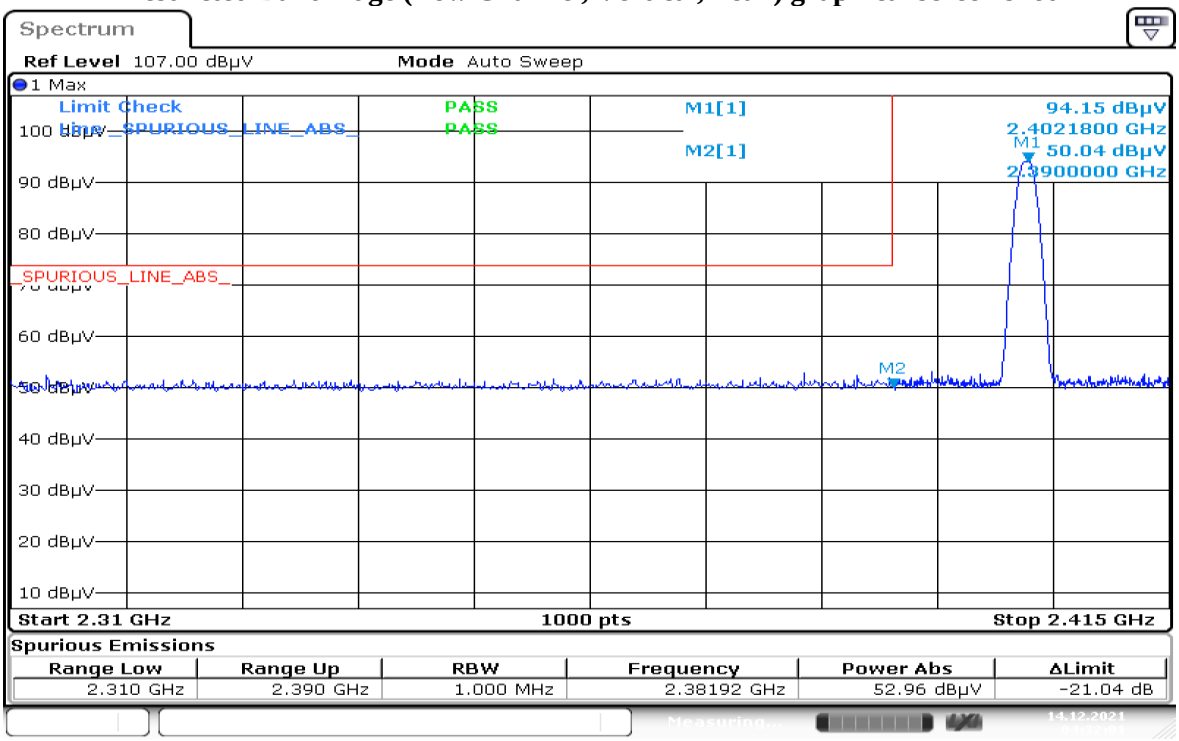
Restricted Band Edge (Low Channel) tabular data

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	-	50.0442	40.3842	-	74.0000	54.0000	-	-23.9558	-13.6158	-
Horizontal Radiated Emission Result										
2390.0000	-	50.8173	40.3388	-	74.0000	54.0000	-	-23.1827	-13.6612	-

Remarks: Pass Result	Marginal Result	Fail Result

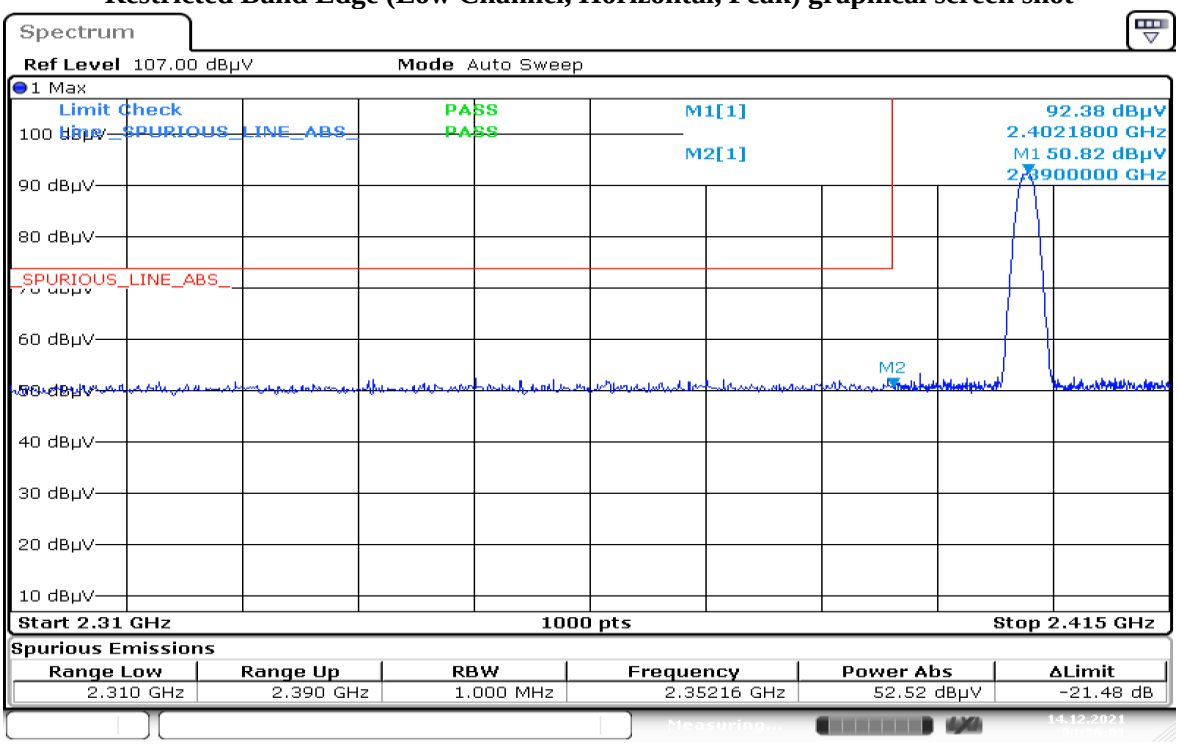
Temperature (degC): 22.3 **Humidity (%): 70.2**
Test Performed by: Nazirul&Abid **Test Date: Tue, 14 Dec, 2021**
System MU: 5.84dB

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



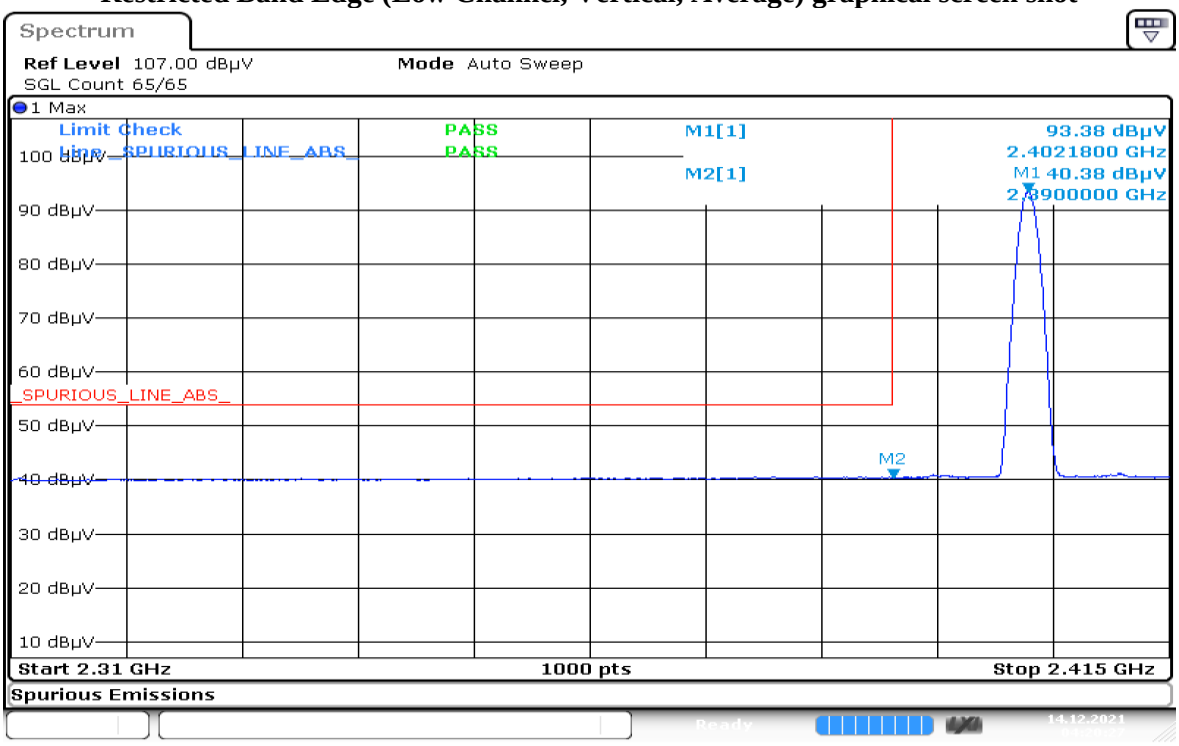
Date: 14.DEC.2021 04:32:01

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



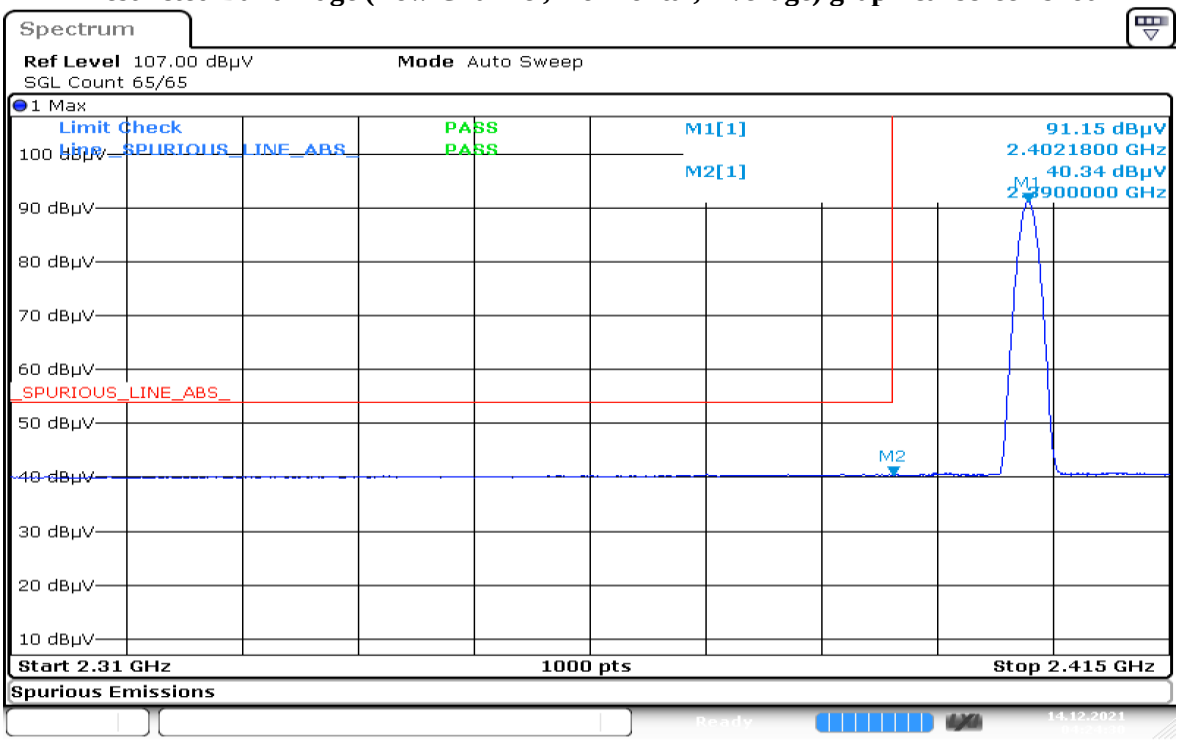
Date: 14.DEC.2021 04:36:01

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



Date: 14.DEC.2021 04:20:28

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



Date: 14.DEC.2021 04:24:31

Test: Bluetooth SAC Restricted Band Edge

Model Number: AZH77PCN6TZ5AN **S/N: 767TXV0821** **EMC SR ID#: 19613-EMC-00216**

Battery: PMNN4802A **Accessory: NA**

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	-	50.8903	41.0705	-	74.0000	54.0000	-	-23.1097	-12.9295	-
Horizontal Radiated Emission Result										
2483.5000	-	51.6608	41.1154	-	74.0000	54.0000	-	-22.3392	-12.8846	-

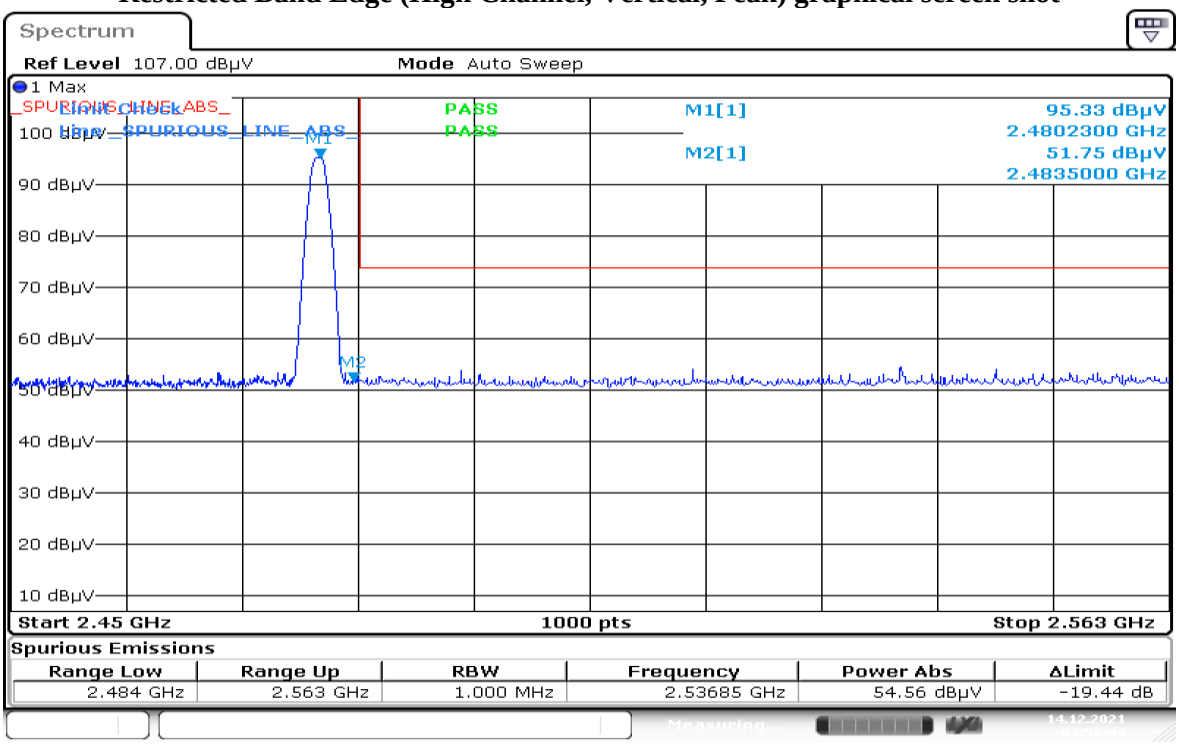
Remarks: Pass Result	Marginal Result	Fail Result

Temperature (degC): 22.3 **Humidity (%): 70.2**

Test Performed by: Nazirul&Abid **Test Date: Tue, 14 Dec, 2021**

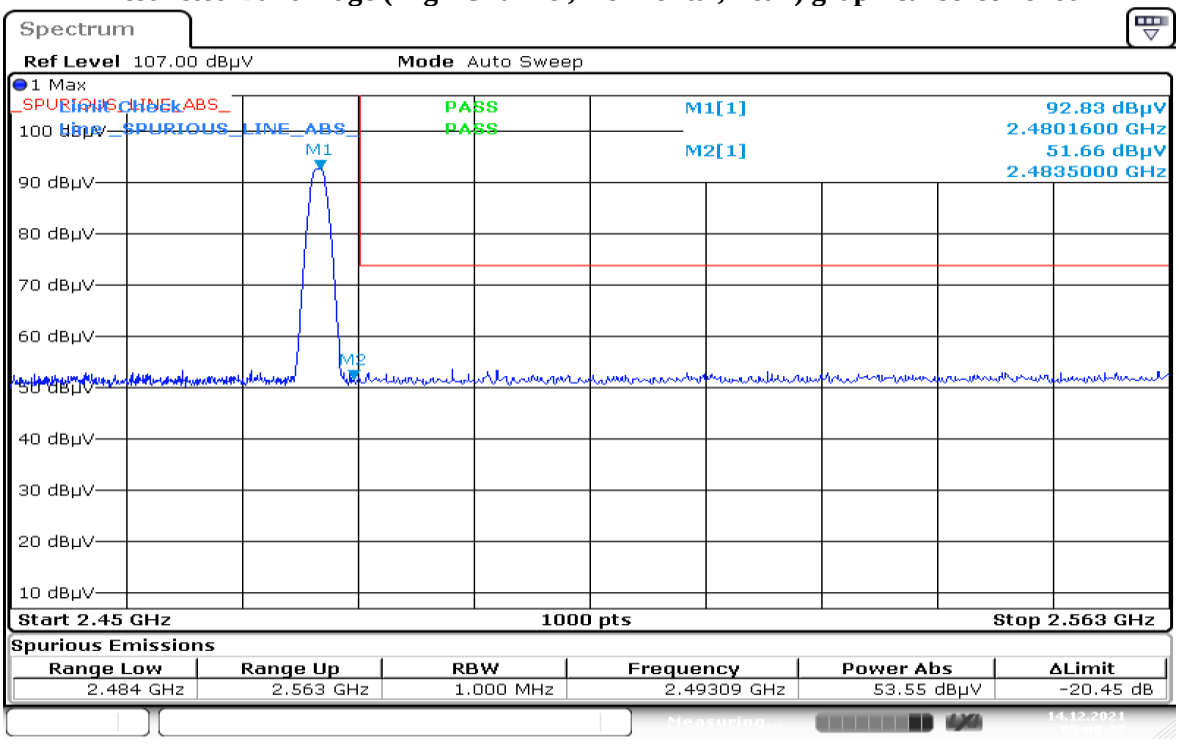
System MU: 5.84dB

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



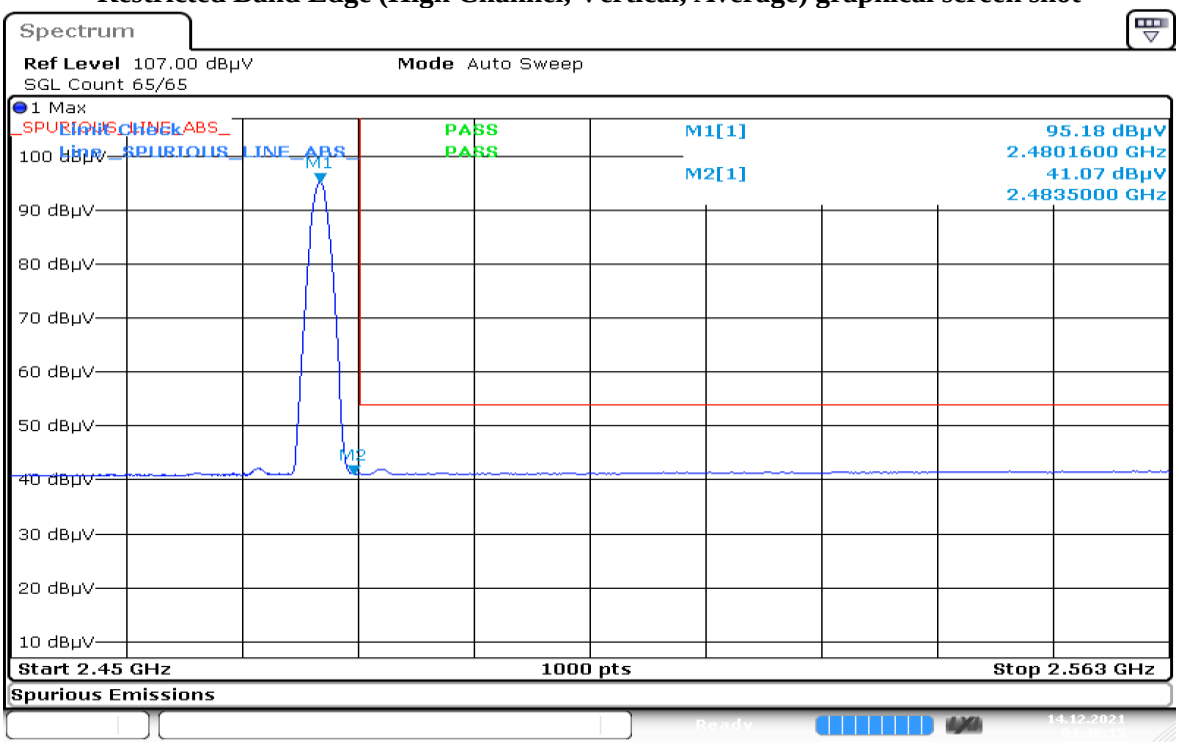
Date: 14.DEC.2021 04:56:45

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



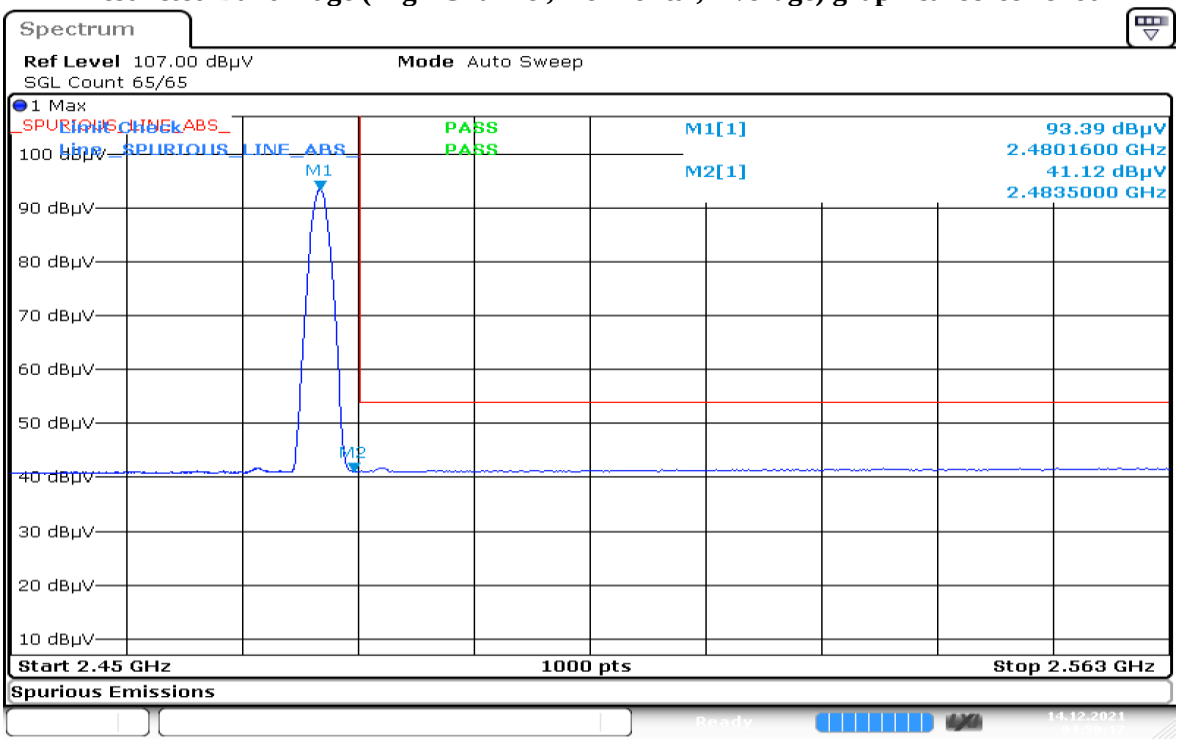
Date: 14.DEC.2021 05:00:37

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



Date: 14.DEC.2021 04:46:16

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



Date: 14.DEC.2021 04:50:17

Test: Bluetooth SAC Restricted Band Edge

Model Number: AZH77PCN6TZ5AN **S/N: 767TXV0821** **EMC SR ID#: 19613-EMC-00216**

Battery: PMNN4802A **Accessory: NA**

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	-	51.2636	40.3388	-	74.0000	54.0000	-	-22.7364	-13.6612	-
Horizontal Radiated Emission Result										
2390.0000	-	50.6516	40.3388	-	74.0000	54.0000	-	-23.3484	-13.6612	-

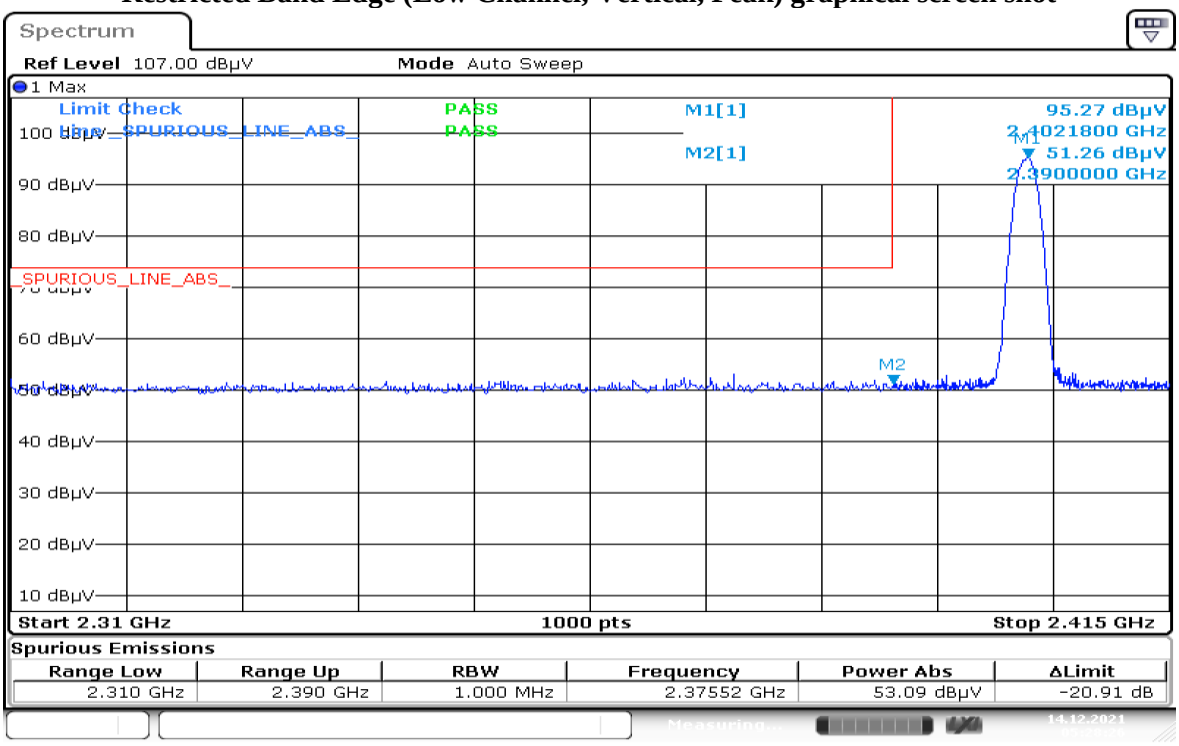
Remarks: Pass Result	Marginal Result	Fail Result

Temperature (degC): 22.3 **Humidity (%): 70.2**

Test Performed by: Nazirul&Abid **Test Date: Tue, 14 Dec, 2021**

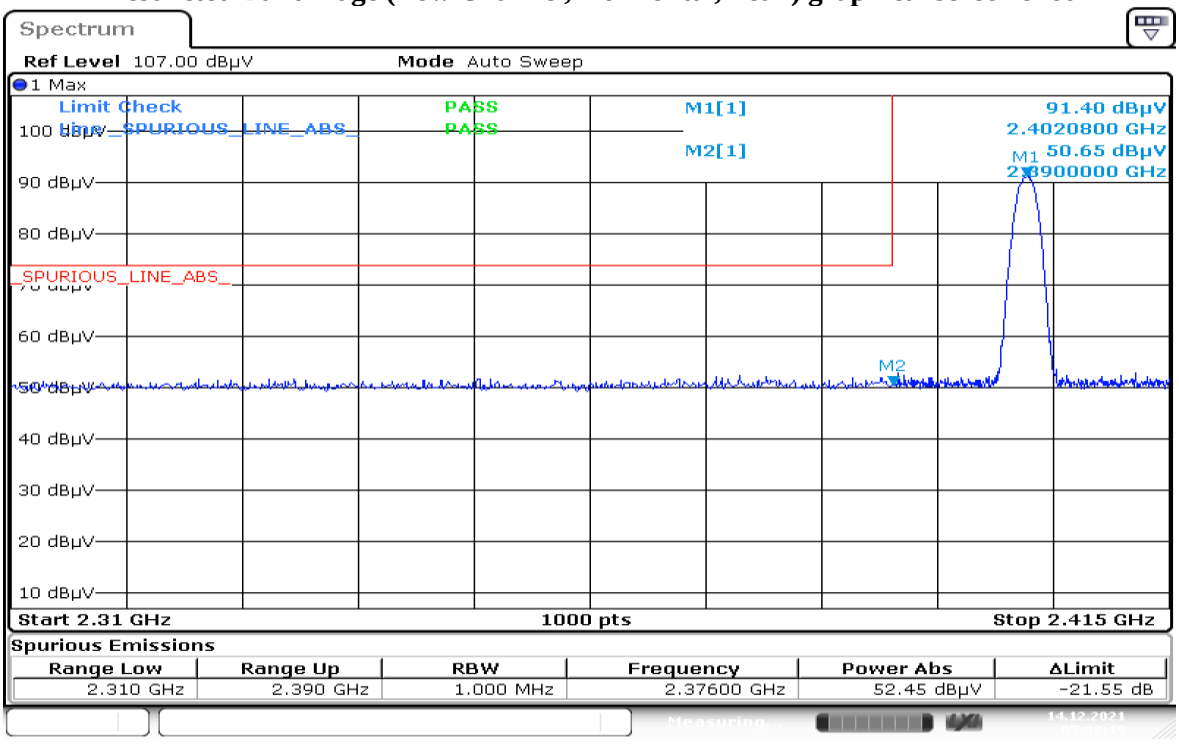
System MU: 5.84dB

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



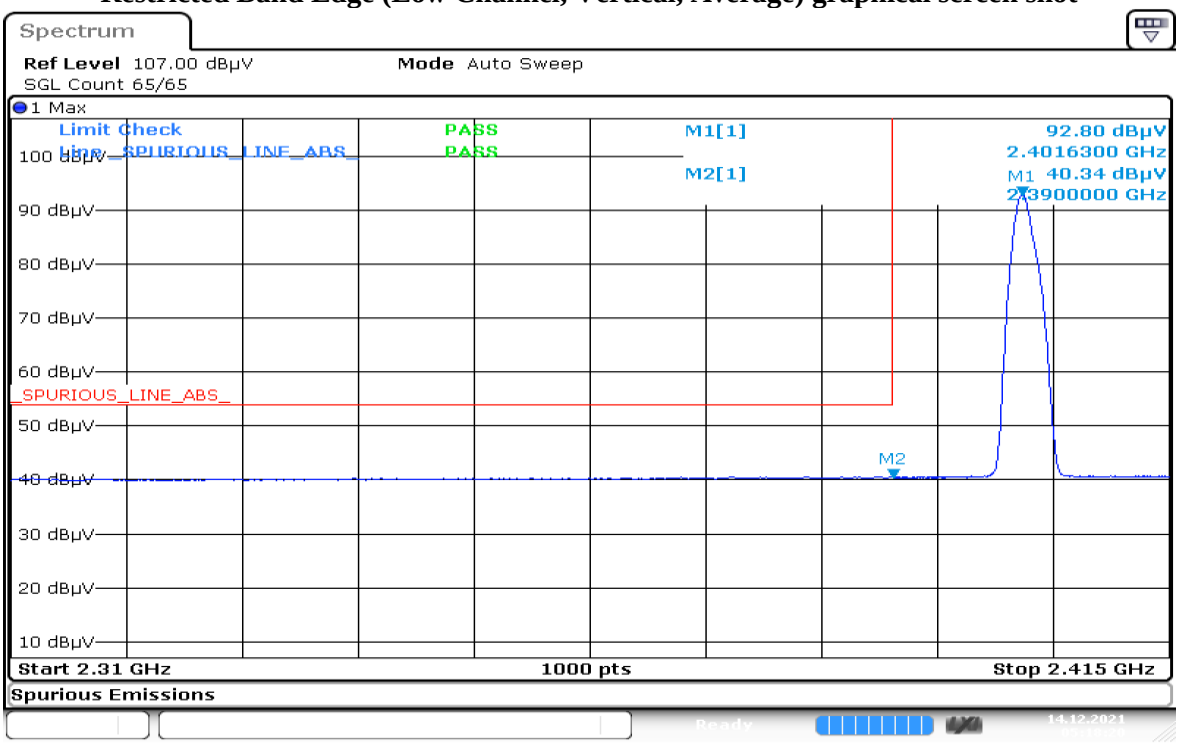
Date: 14.DEC.2021 05:28:27

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



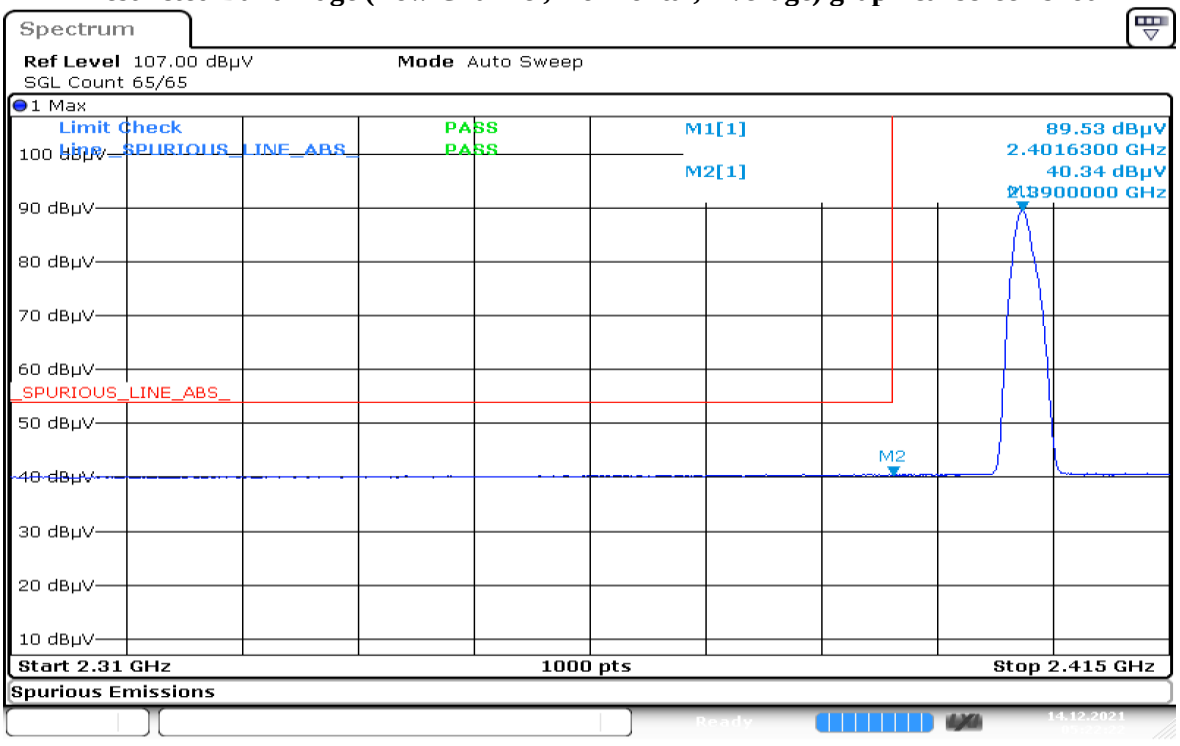
Date: 14.DEC.2021 05:32:19

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



Date: 14.DEC.2021 05:18:20

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



Date: 14.DEC.2021 05:22:23

Test: Bluetooth SAC Restricted Band Edge

Model Number: AZH77PCN6TZ5AN **S/N: 767TXV0821** **EMC SR ID#: 19613-EMC-00216**

Battery: PMNN4802A **Accessory: NA**

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	-	51.1254	40.9344	-	74.0000	54.0000	-	-22.8746	-13.0656	-
Horizontal Radiated Emission Result										
2483.5000	-	50.8367	40.8886	-	74.0000	54.0000	-	-23.1633	-13.1114	-

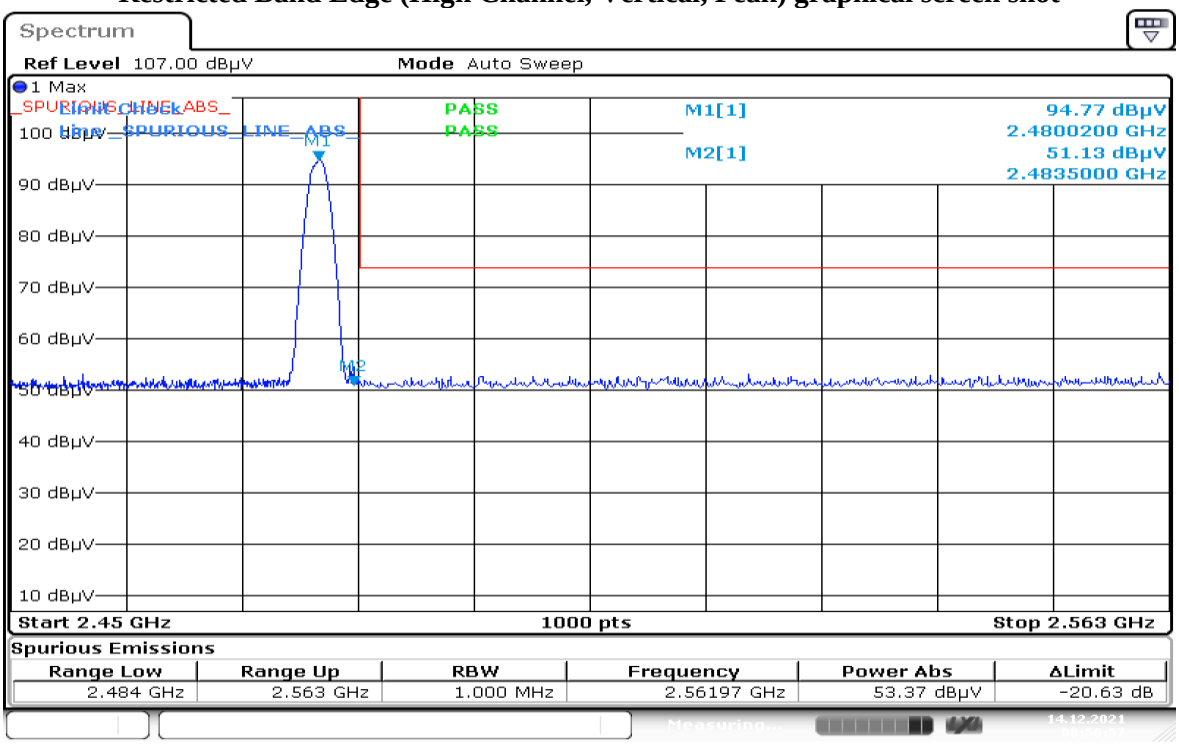
Remarks: Pass Result	Marginal Result	Fail Result

Temperature (degC): 22.3 **Humidity (%): 70.2**

Test Performed by: Nazirul&Abid **Test Date: Tue, 14 Dec, 2021**

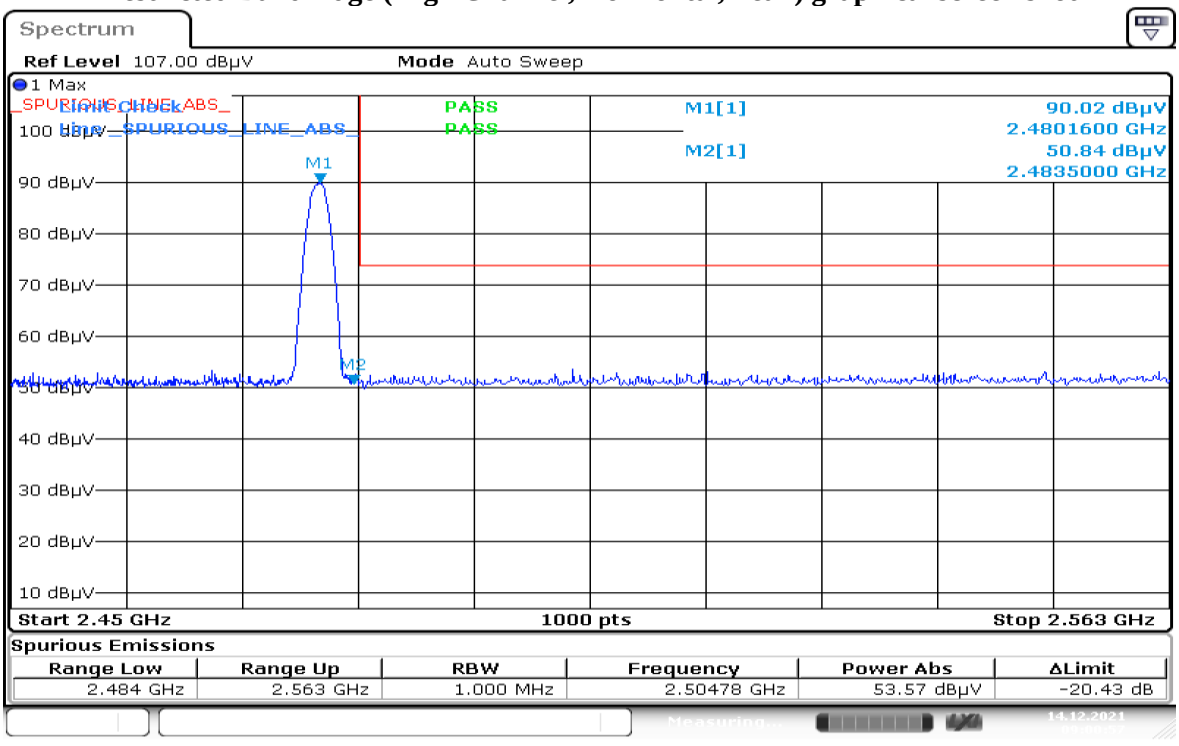
System MU: 5.84dB

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



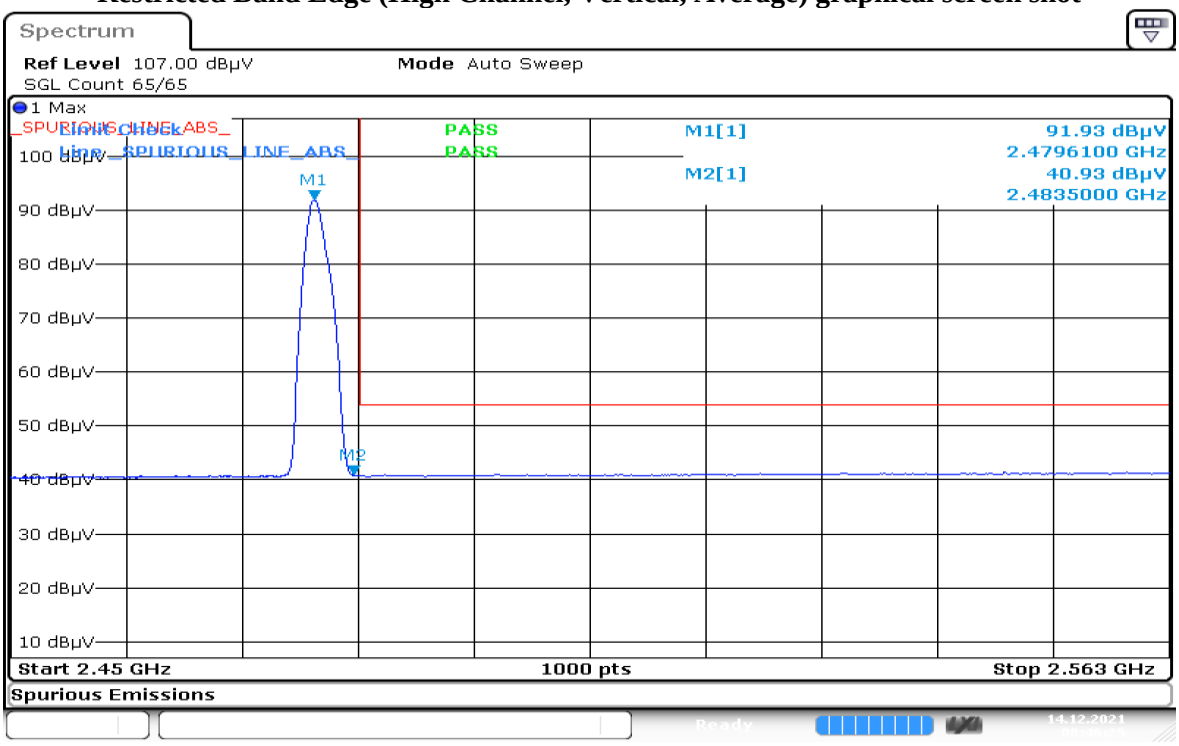
Date: 14.DEC.2021 08:56:58

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



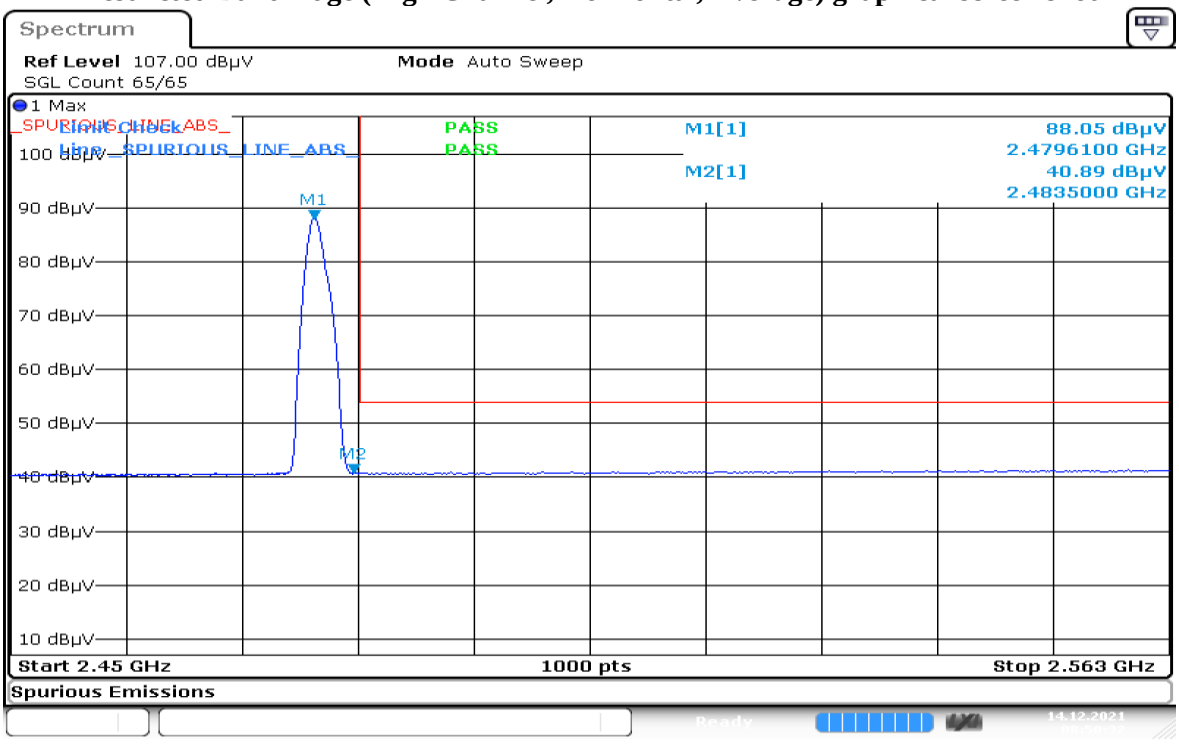
Date: 14.DEC.2021 09:00:57

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



Date: 14.DEC.2021 08:46:25

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



Date: 14.DEC.2021 08:50:32

Test: Bluetooth SAC Restricted Band Edge

Model Number: AZH77PCN6TZ5AN **S/N: 767TXV0821** **EMC SR ID#: 19613-EMC-00216**

Battery: PMNN4802A **Accessory: NA**

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	-	49.9112	40.0145	-	74.0000	54.0000	-	-24.0888	-13.9855	-
Horizontal Radiated Emission Result										
2390.0000	-	50.5890	40.1550	-	74.0000	54.0000	-	-23.4110	-13.8450	-

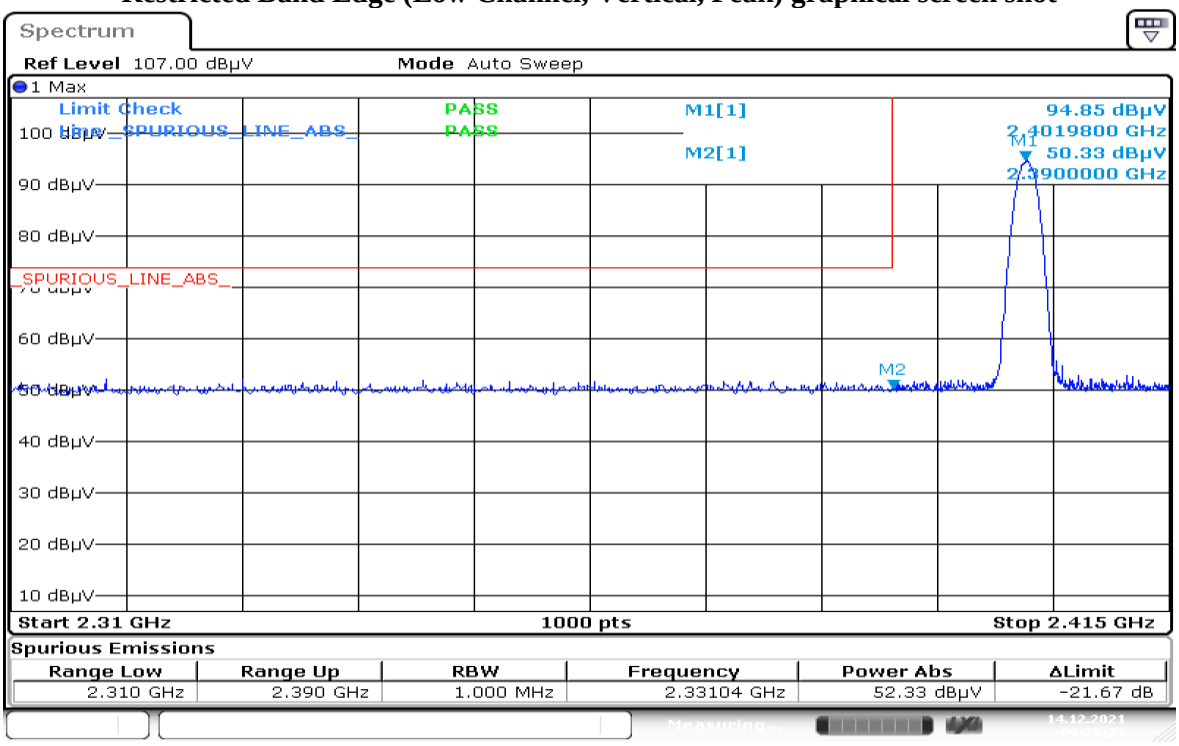
Remarks: Pass Result	Marginal Result	Fail Result

Temperature (degC): 22.3 **Humidity (%): 70.2**

Test Performed by: Nazirul&Abid **Test Date: Tue, 14 Dec, 2021**

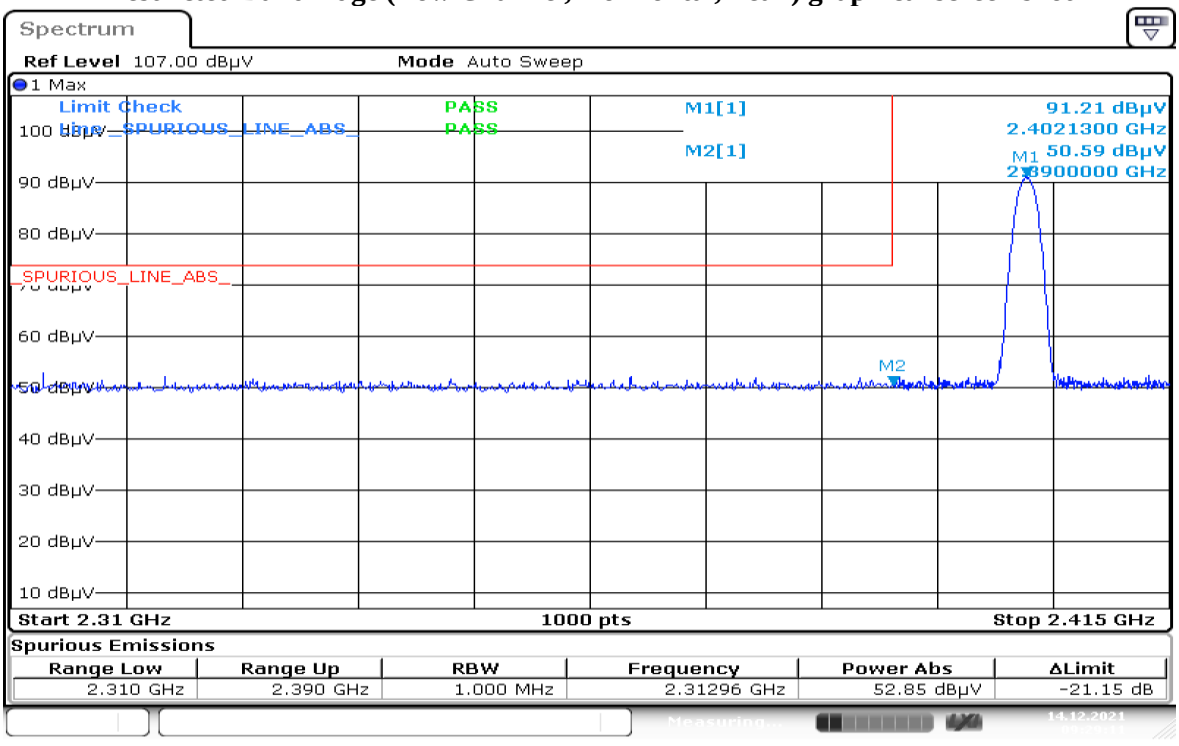
System MU: 5.84dB

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



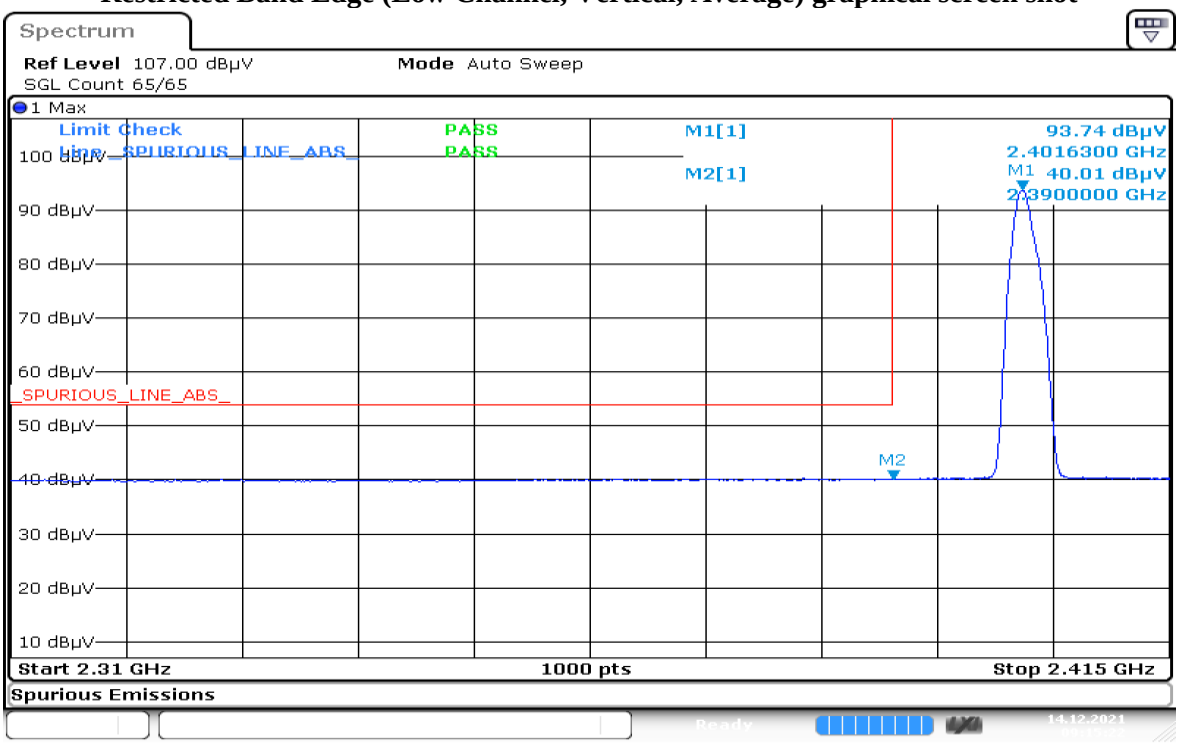
Date: 14.DEC.2021 09:25:21

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



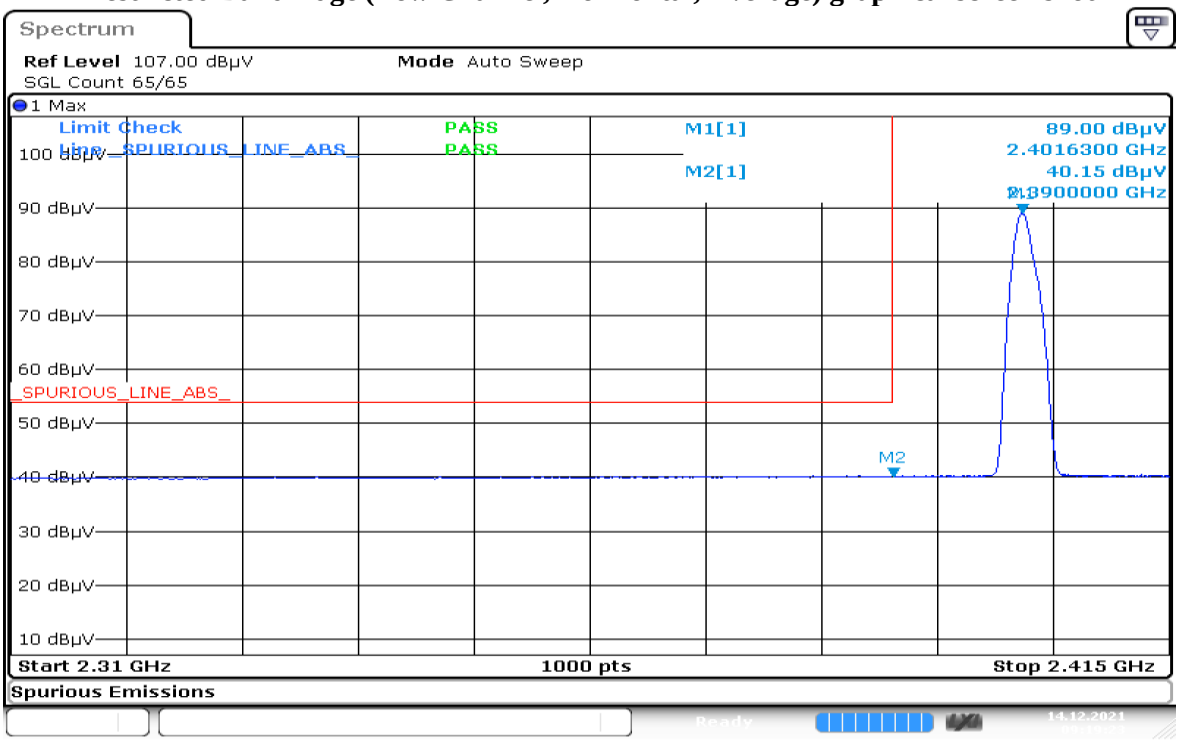
Date: 14.DEC.2021 09:29:11

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



Date: 14.DEC.2021 09:15:23

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



Date: 14.DEC.2021 09:19:23

Test: Bluetooth SAC Restricted Band Edge

Model Number: AZH77PCN6TZ5AN **S/N: 767TXV0821** **EMC SR ID#: 19613-EMC-00216**

Battery: PMNN4802A **Accessory: NA**

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	-	53.3754	41.0254	-	74.0000	54.0000	-	-20.6246	-12.9746	-
Horizontal Radiated Emission Result										
2483.5000	-	50.9559	40.7496	-	74.0000	54.0000	-	-23.0441	-13.2504	-

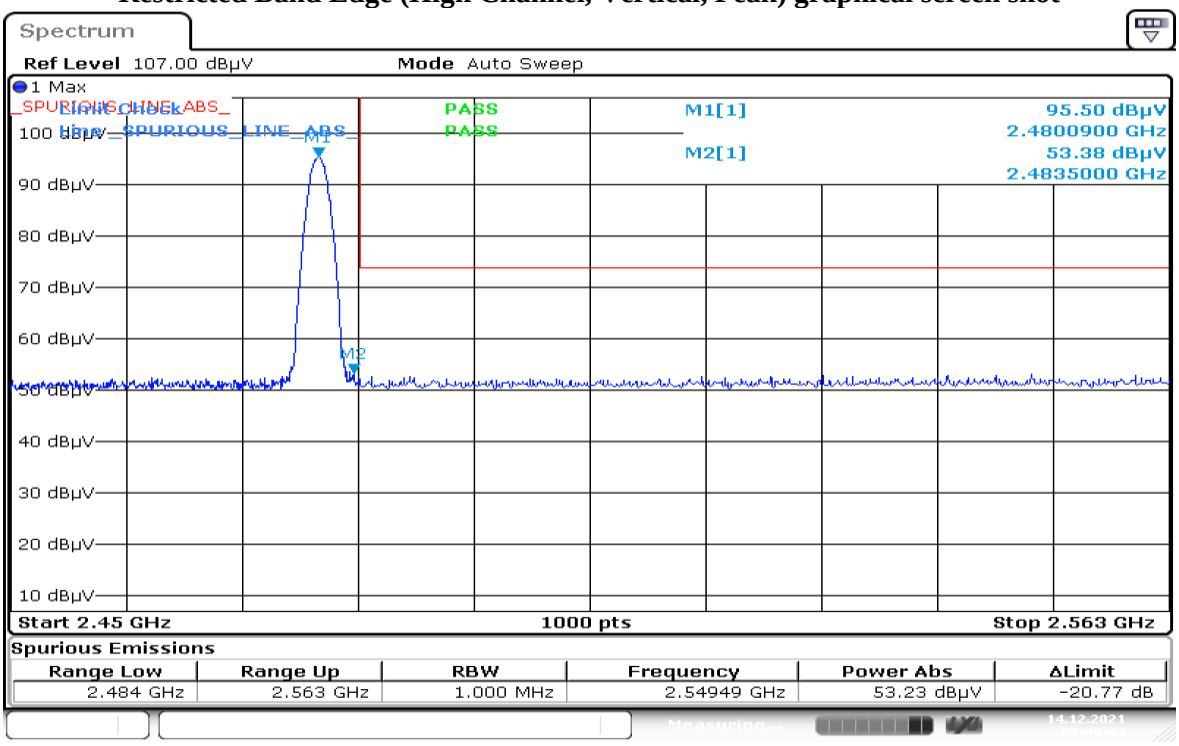
Remarks: Pass Result	Marginal Result	Fail Result

Temperature (degC): 22.3 **Humidity (%): 70.2**

Test Performed by: Nazirul&Abid **Test Date: Tue, 14 Dec, 2021**

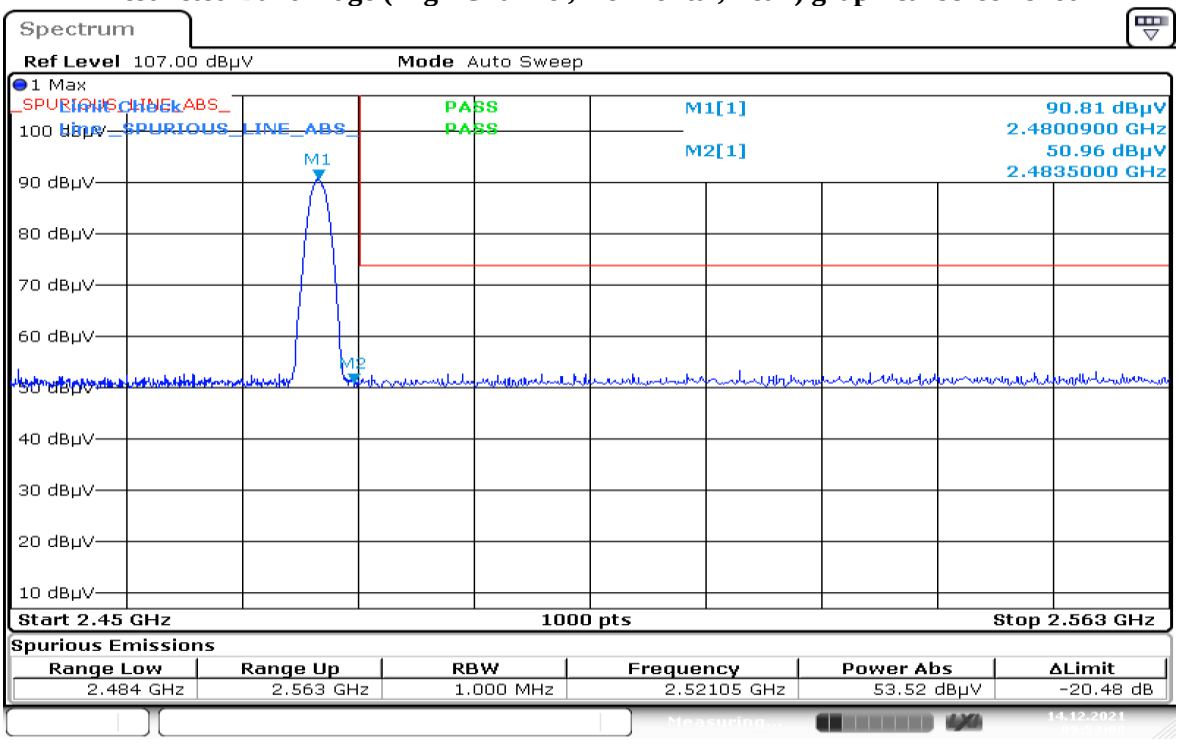
System MU: 5.84dB

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



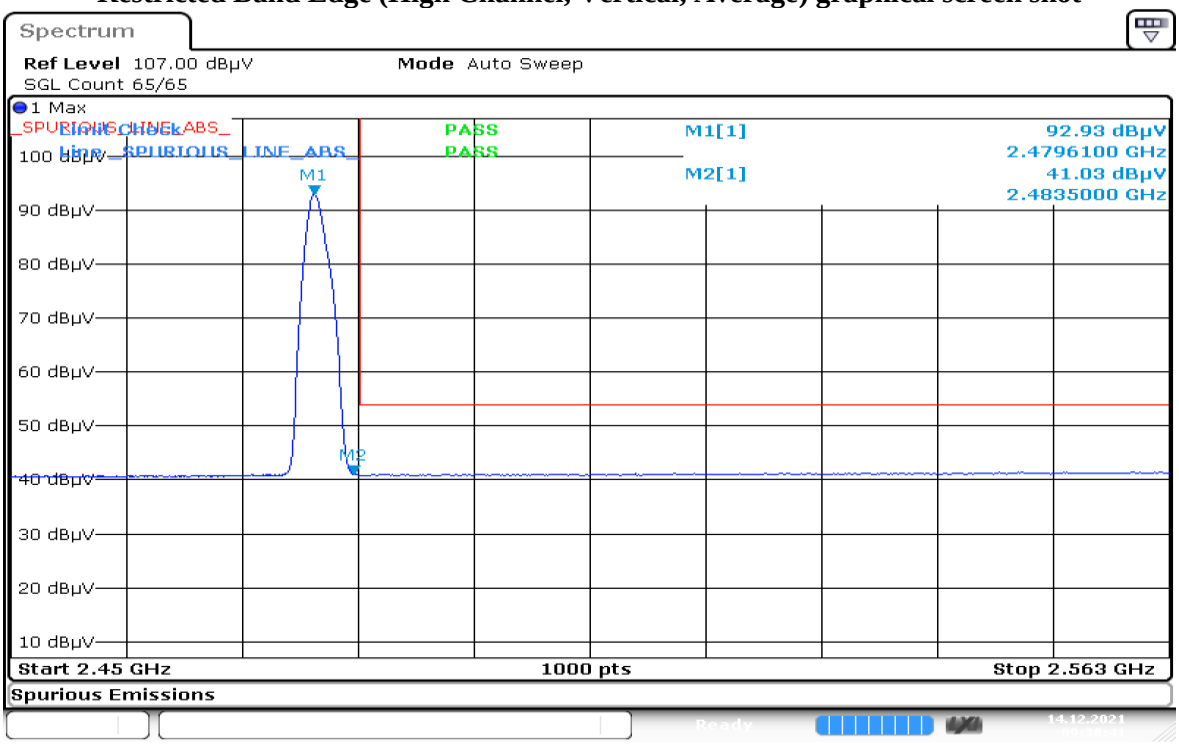
Date: 14.DEC.2021 09:49:04

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



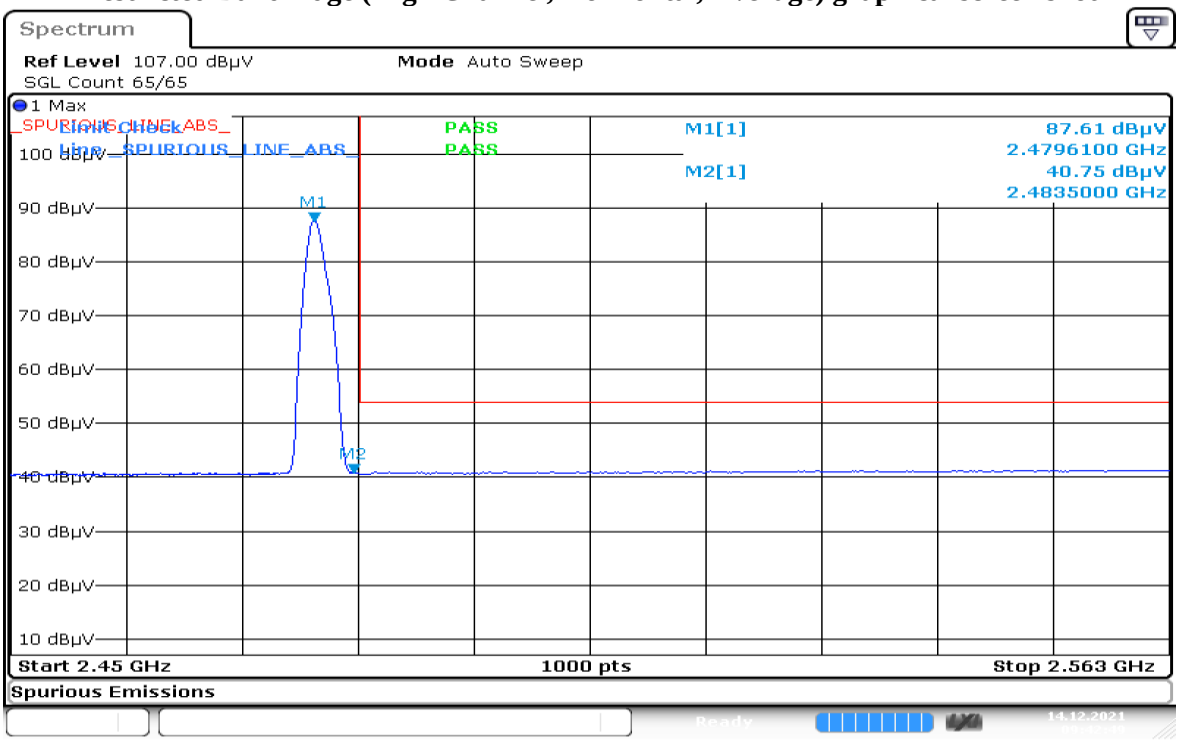
Date: 14.DEC.2021 09:53:08

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



Date: 14.DEC.2021 09:38:41

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



Date: 14.DEC.2021 09:42:49

Test: Bluetooth SAC Transmitter Radiated Emission
Model#: AZH77PCN6TZ5AN S/N: 767TXV0821 EMC SR ID#: 19613-EMC-00216
Battery: PMNN4802A Accessory: NA
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

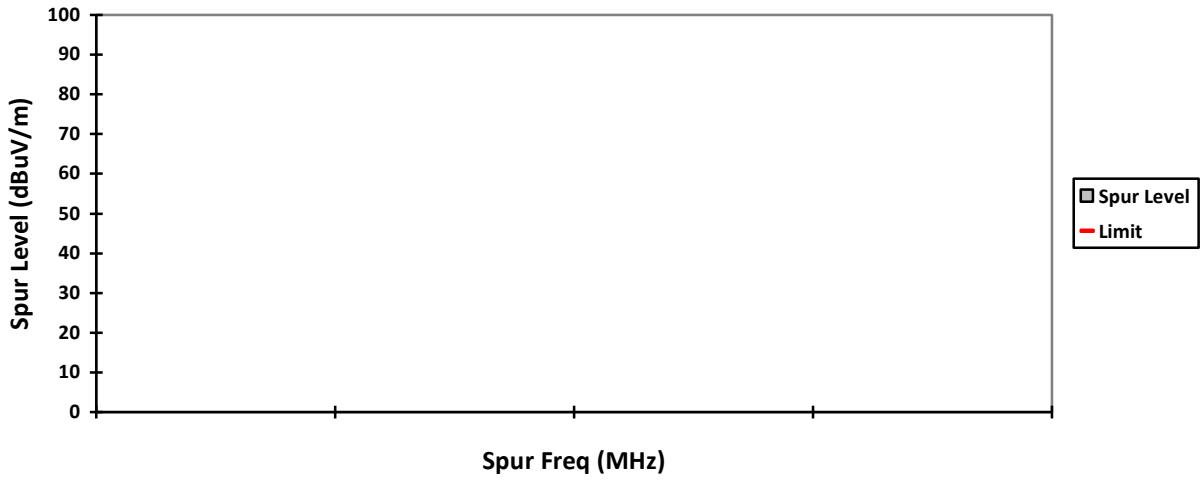
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4804	-	47.1322**	-	-	74.0	-	-	26.8678	-	-
7206	-	51.6675**	-	-	74.0	-	-	22.3325	-	-
9608	-	54.8578**	-	-	74.7036	-	-	19.1422	-	94.7036
12010	-	62.1771**	39.6771**	-	74.0	54.0	-	11.8229	14.3229	-
14412	-	62.9574**	-	-	74.7036	-	-	11.0426	-	94.7036
16814	-	63.2827**	-	-	74.7036	-	-	10.7173	-	94.7036
19216	-	32.9337**	-	-	74.0	-	-	41.0663	-	-
21618	-	30.1748**	-	-	74.7036	-	-	43.8252	-	94.7036
24020	-	30.5012**	-	-	74.7036	-	-	43.4988	-	94.7036
Horizontal Radiated Emission Result										
4804	-	47.2927**	-	-	74.0	-	-	26.7073	-	-
7206	-	50.6231**	-	-	74.0	-	-	23.3769	-	-
9608	-	54.7979**	-	-	74.7036	-	-	19.2021	-	94.7036
12010	-	62.0570**	39.557**	-	74.0	54.0	-	11.9430	14.443	-
14412	-	61.8169**	-	-	74.7036	-	-	12.1831	-	94.7036
16814	-	63.4632**	-	-	74.7036	-	-	10.5368	-	94.7036
19216	-	32.6082**	-	-	74.0	-	-	41.3918	-	-
21618	-	29.5156**	-	-	74.7036	-	-	44.4844	-	94.7036
24020	-	30.1922**	-	-	74.7036	-	-	43.8078	-	94.7036

Remarks: Pass Result	Marginal Result	Fail Result

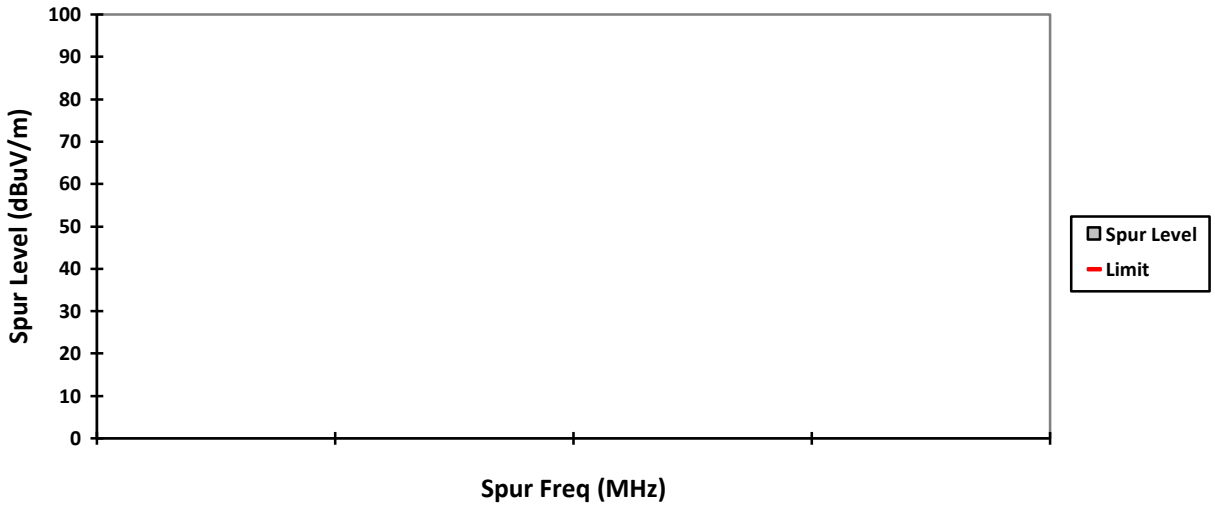
Temperature (degC): 22.3 Humidity (%): 70.2
Test Performed by: Nazirul&Abid Test Date: Wed, 15 Dec, 2021
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

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.**

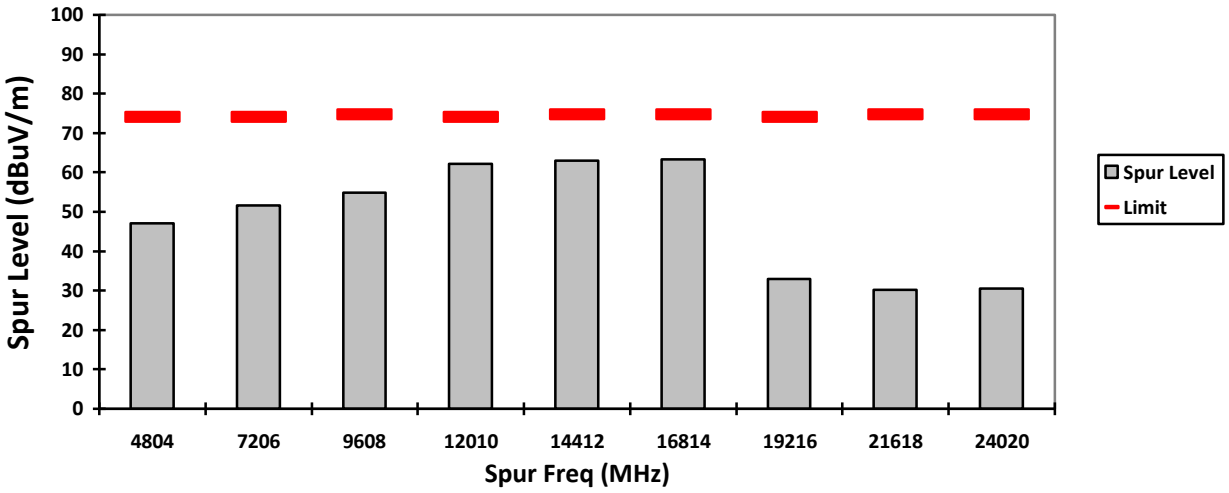
VERTICAL, QPK



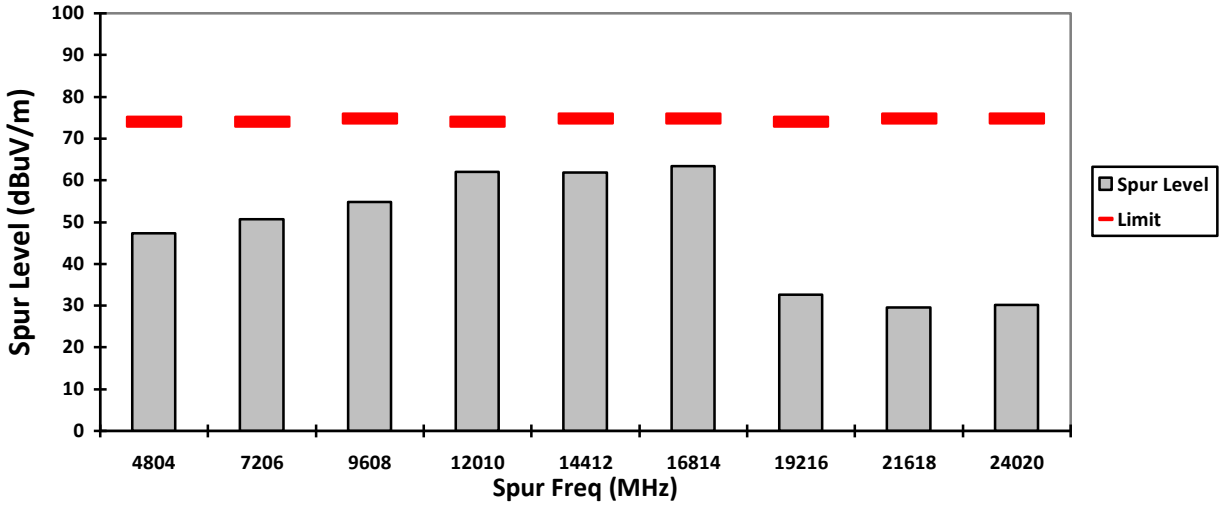
HORIZONTAL, QPK



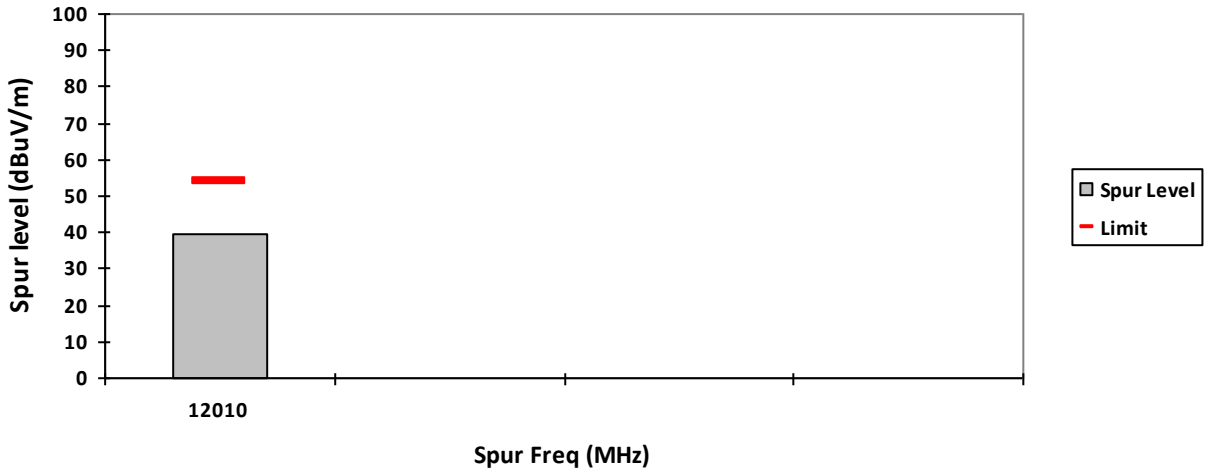
VERTICAL, PK



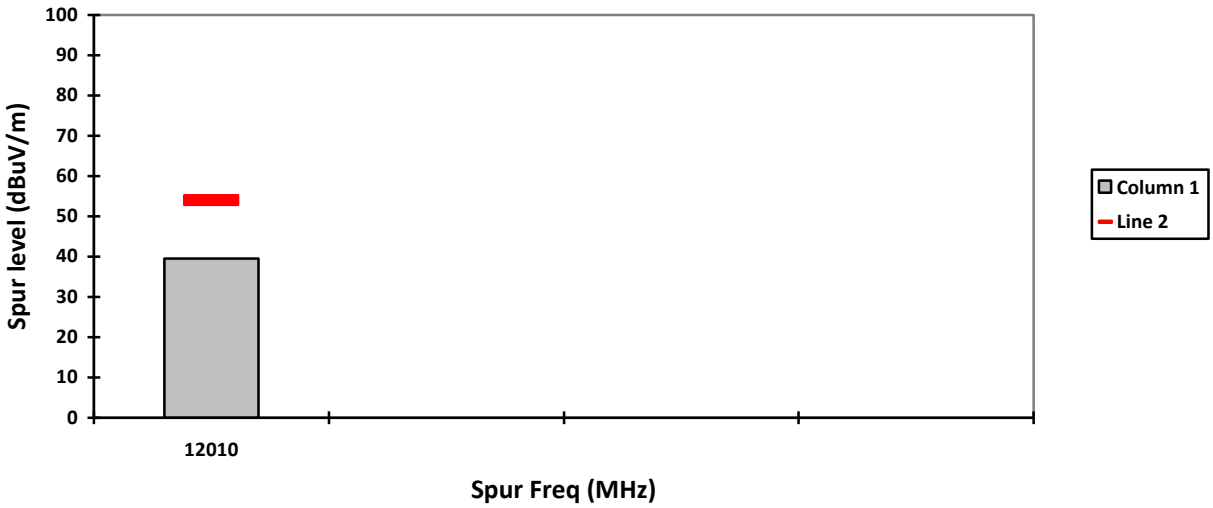
HORIZONTAL, PK



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#: AZH77PCN6TZ5AN S/N: 767TXV0821 EMC SR ID#: 19613-EMC-00216
Battery: PMNN4802A Accessory: NA
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

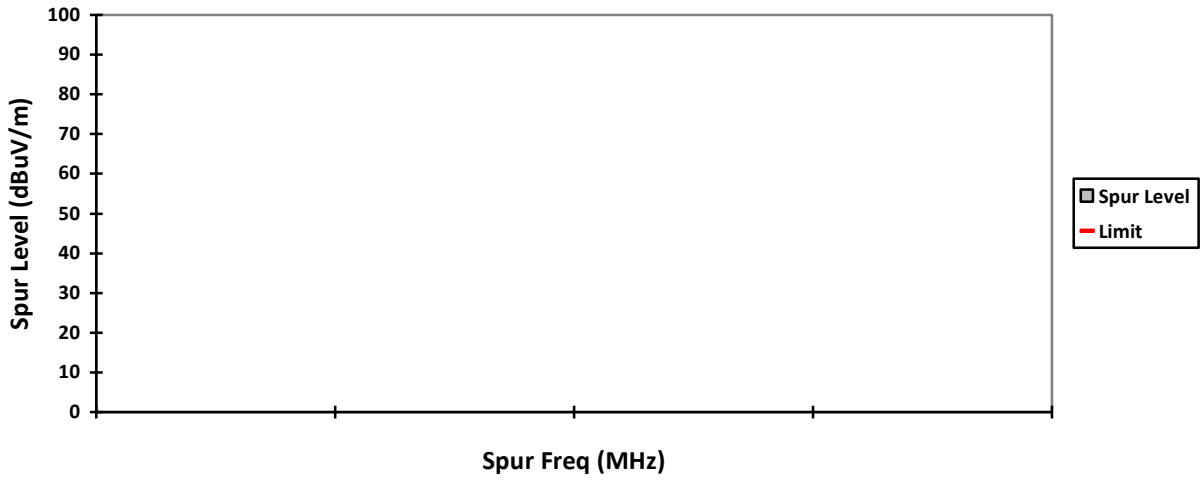
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4882	-	48.1175**	-	-	74.0	-	-	25.8825	-	-
7323	-	51.6757**	-	-	74.0	-	-	22.3243	-	-
9764	-	54.8105**	-	-	74.7036	-	-	19.1895	-	94.7036
12205	-	62.6465**	40.1465**	-	74.0	54.0	-	11.3535	13.8535	-
14646	-	61.2376**	-	-	74.7036	-	-	12.7624	-	94.7036
17087	-	63.9899**	-	-	74.7036	-	-	10.0101	-	94.7036
19528	-	30.8378**	-	-	74.0	-	-	43.1622	-	-
21969	-	31.0943**	-	-	74.7036	-	-	42.9057	-	94.7036
24410	-	32.3243**	-	-	74.7036	-	-	41.6757	-	94.7036
Horizontal Radiated Emission Result										
4882	-	46.9788**	-	-	74.0	-	-	27.0212	-	-
7323	-	51.0121**	-	-	74.0	-	-	22.9879	-	-
9764	-	55.2672**	-	-	74.7036	-	-	18.7328	-	94.7036
12205	-	62.7173**	40.2173**	-	74.0	54.0	-	11.2827	13.7827	-
14646	-	60.1193**	-	-	74.7036	-	-	13.8807	-	94.7036
17087	-	63.3157**	-	-	74.7036	-	-	10.6843	-	94.7036
19528	-	30.9983**	-	-	74.0	-	-	43.0017	-	-
21969	-	31.4348**	-	-	74.7036	-	-	42.5652	-	94.7036
24410	-	31.2417**	-	-	74.7036	-	-	42.7583	-	94.7036

Remarks: Pass Result	Marginal Result	Fail Result

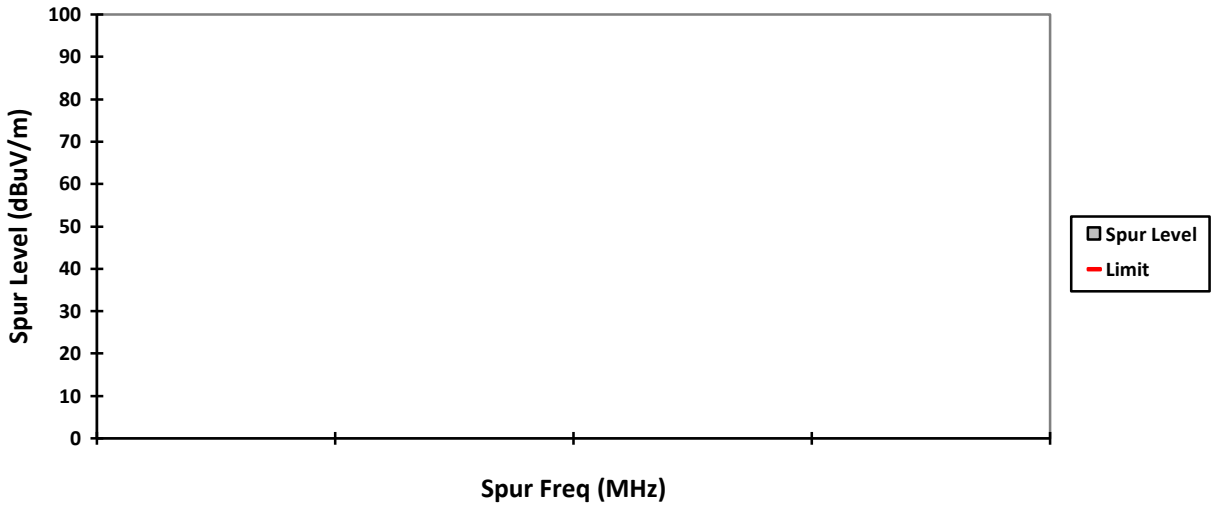
Temperature (degC): 22.3 **Humidity (%): 70.2**
Test Performed by: Nazirul&Abid **Test Date: Wed, 15 Dec, 2021**
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

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.**

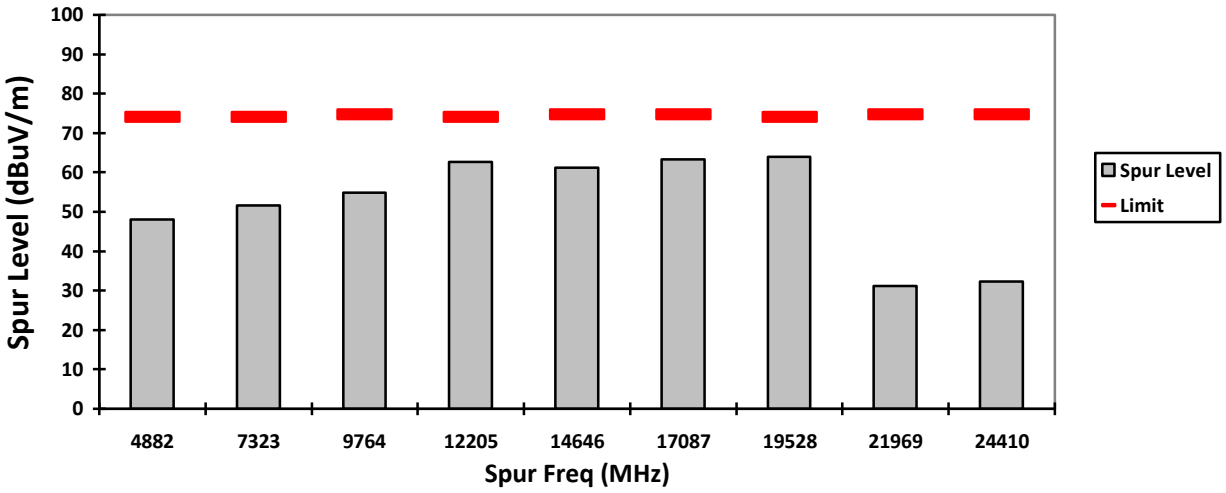
VERTICAL, QPK



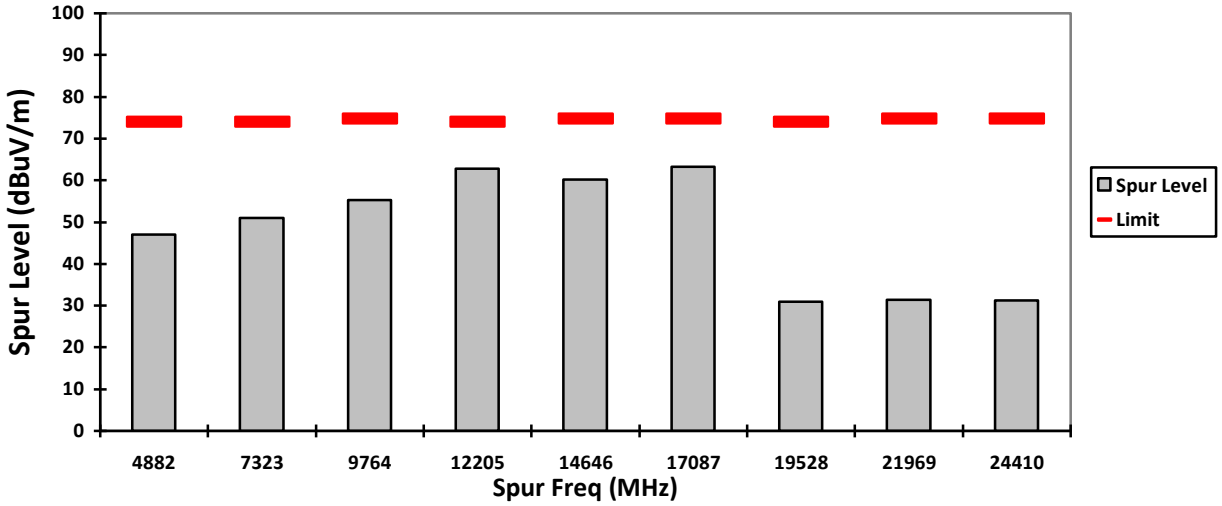
HORIZONTAL, QPK

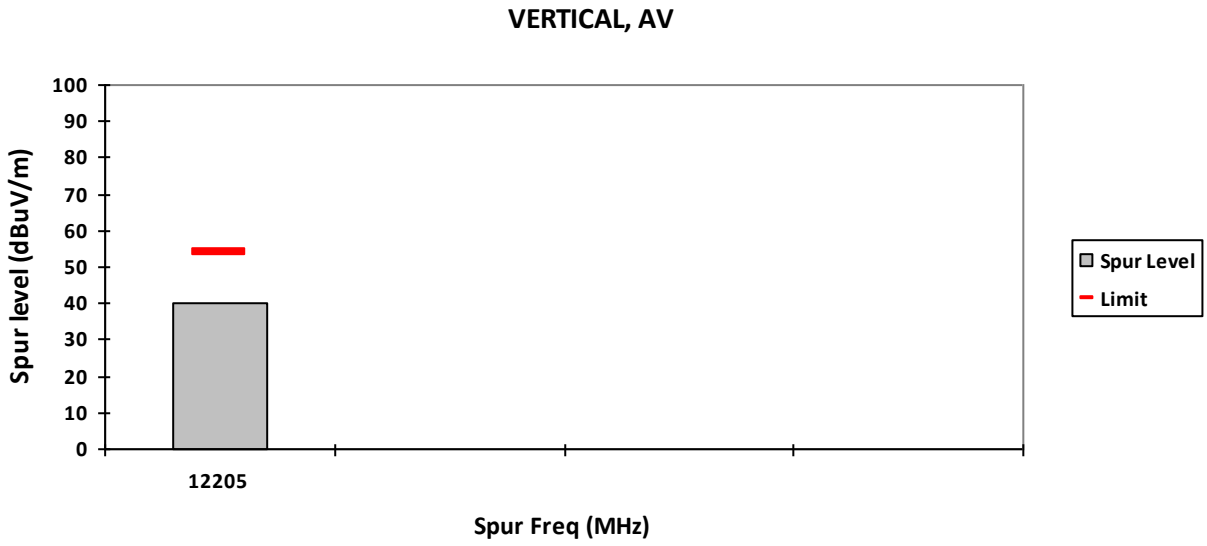


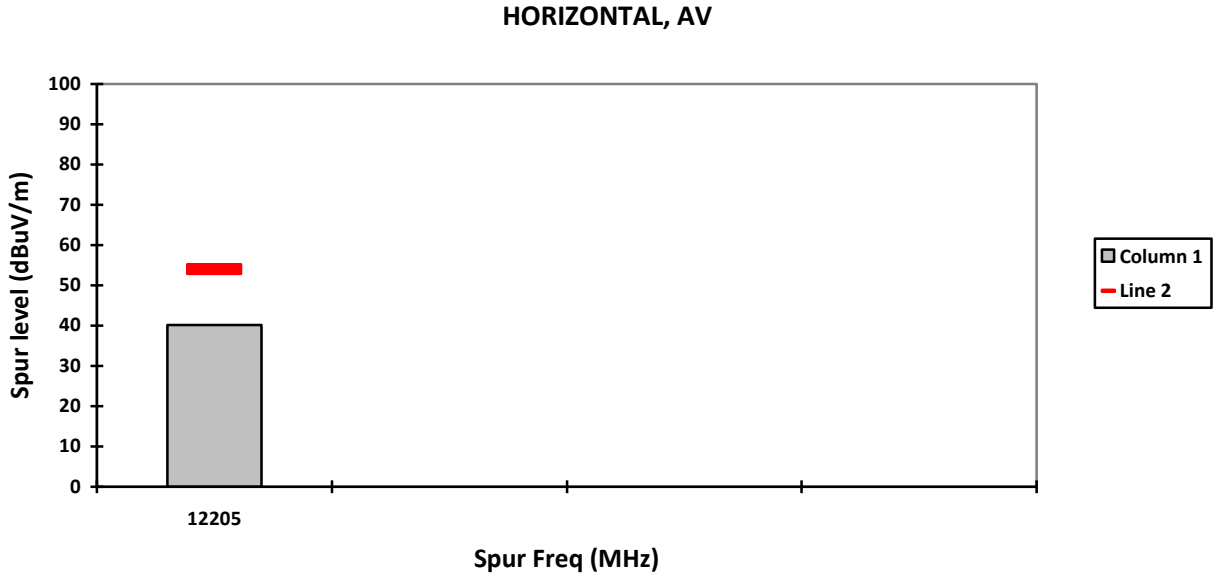
VERTICAL, PK



HORIZONTAL, PK







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#: AZH77PCN6TZ5AN S/N: 767TXV0821 EMC SR ID#: 19613-EMC-00216
Battery: PMNN4802A Accessory: NA
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

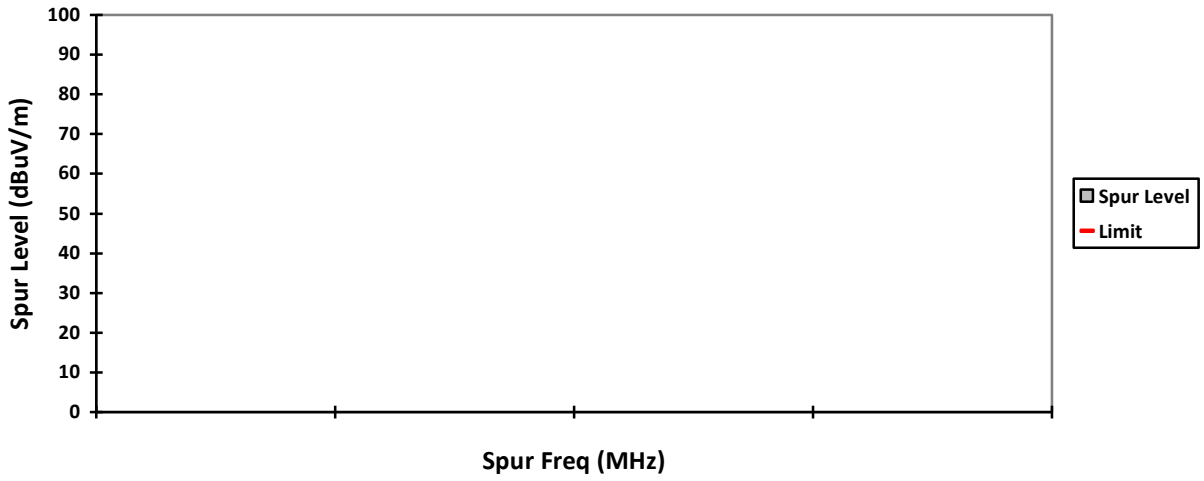
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4960	-	47.6135**	-	-	74.0	-	-	26.3865	-	-
7440	-	49.4054**	-	-	74.0	-	-	24.5946	-	-
9920	-	54.6180**	-	-	74.7036	-	-	20.0856	-	94.7036
12400	-	62.6244**	40.1244**	-	74.0	54.0	-	11.3756	13.8756	-
14880	-	61.3355**	-	-	74.7036	-	-	13.3681	-	94.7036
17360	-	64.9025**	-	-	74.7036	-	-	9.8011	-	94.7036
19840	-	32.9236**	-	-	74.0	-	-	41.0764	-	-
22320	-	30.8754**	-	-	74.0	-	-	43.1246	-	-
24800	-	30.7186**	-	-	74.7036	-	-	43.985	-	94.7036
Horizontal Radiated Emission Result										
4960	-	46.9577**	-	-	74.0	-	-	27.0423	-	-
7440	-	48.6492**	-	-	74.0	-	-	25.3508	-	-
9920	-	54.0886**	-	-	74.7036	-	-	20.615	-	94.7036
12400	-	62.8939**	40.3939**	-	74.0	54.0	-	11.1061	13.6061	-
14880	-	61.8275**	-	-	74.7036	-	-	12.8761	-	94.7036
17360	-	64.4462**	-	-	74.7036	-	-	10.2574	-	94.7036
19840	-	31.5178**	-	-	74.0	-	-	42.4822	-	-
22320	-	30.8127**	-	-	74.0	-	-	43.1873	-	-
24800	-	30.8426**	-	-	74.7036	-	-	43.861	-	94.7036

Remarks: Pass Result	Marginal Result	Fail Result

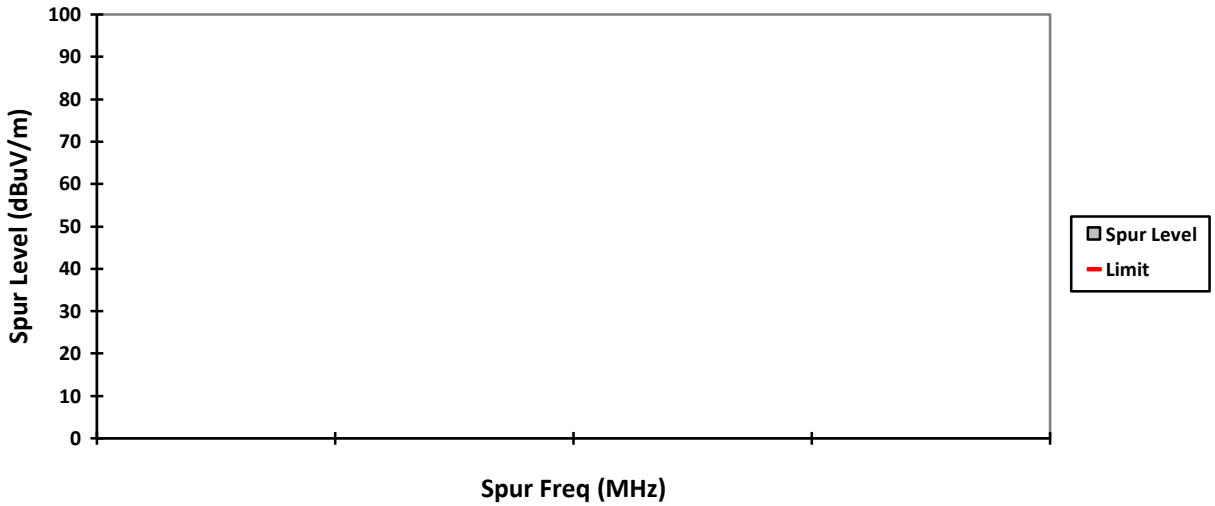
Temperature (degC): 22.3 **Humidity (%): 70.2**
Test Performed by: Nazirul&Abid **Test Date: Wed, 15 Dec, 2021**
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

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.**

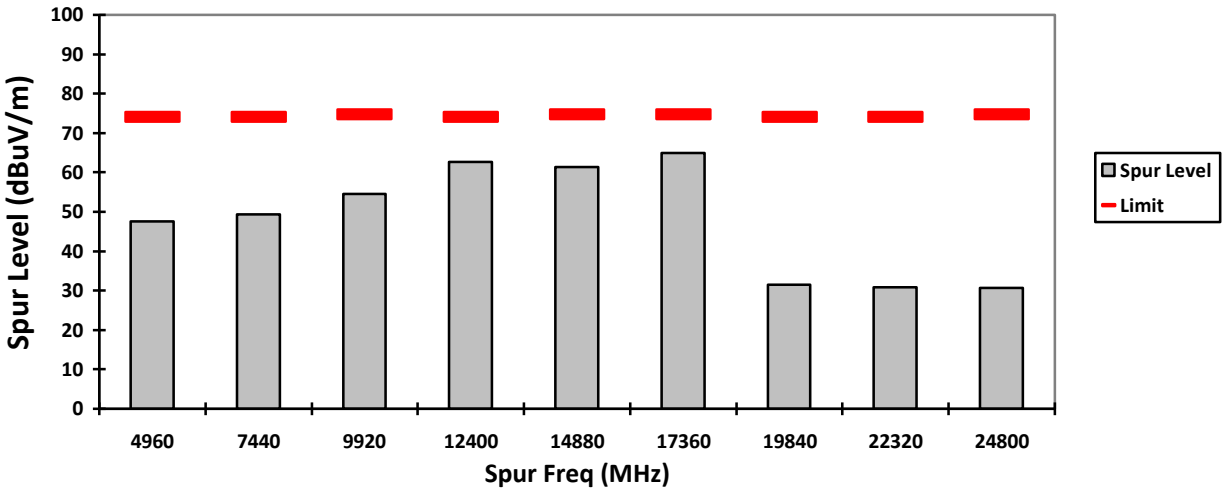
VERTICAL, QPK



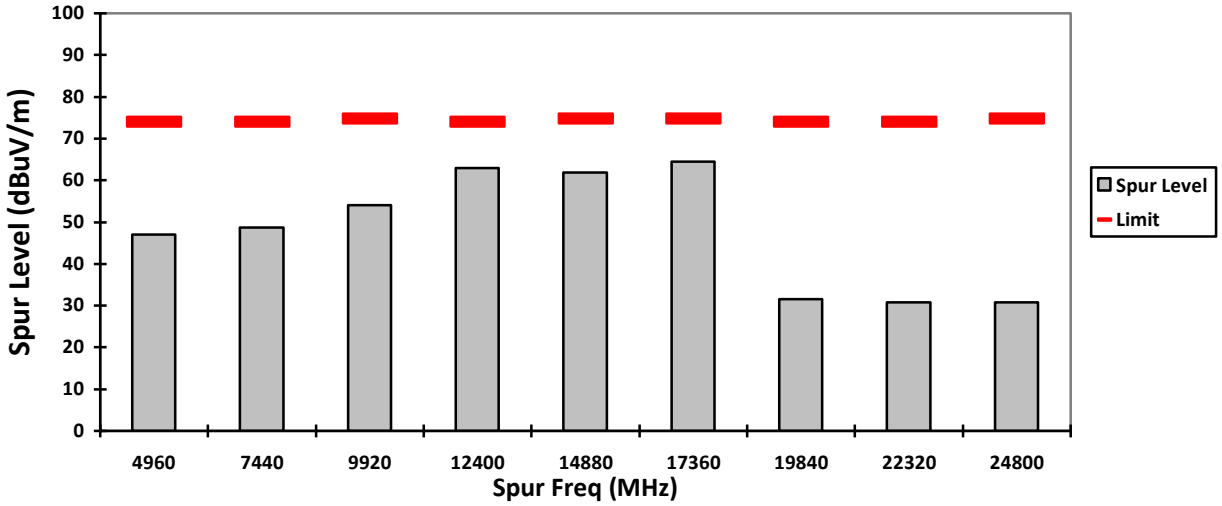
HORIZONTAL, QPK



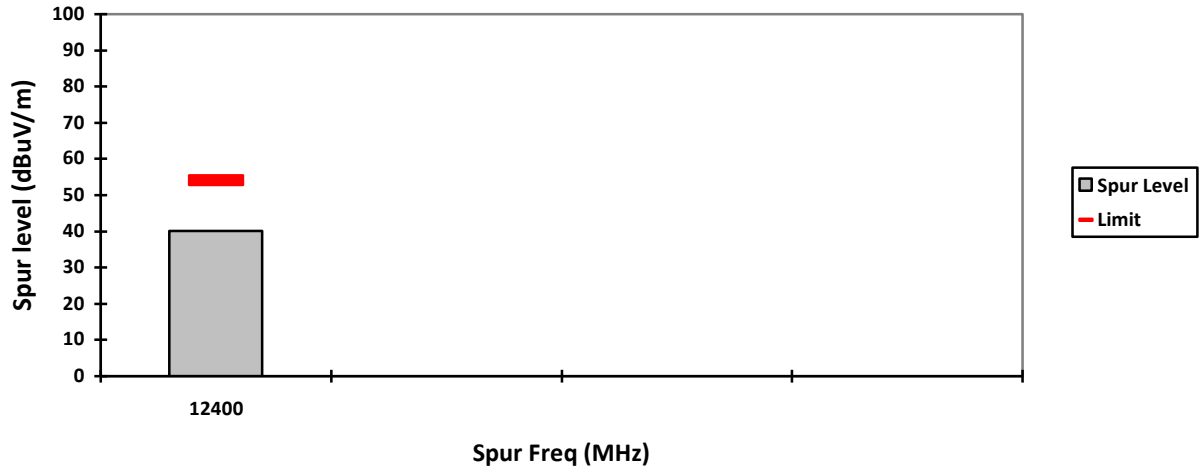
VERTICAL, PK



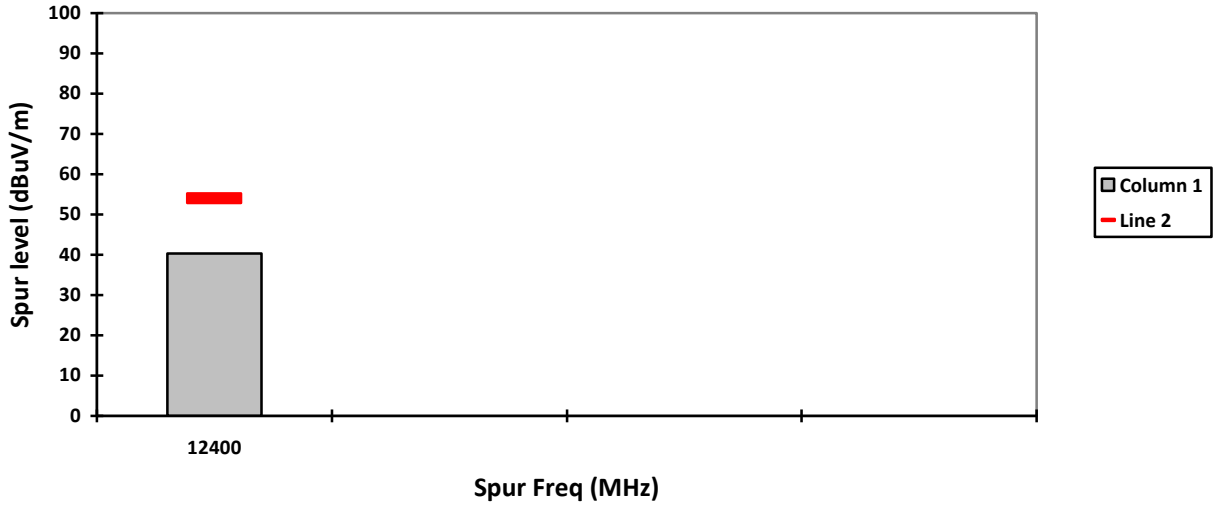
HORIZONTAL, PK



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#: AZH77PCN6TZ5AN S/N: 767TXV0821 EMC SR ID#: 19613-EMC-00216
Battery: PMNN4802A Accessory: NA
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

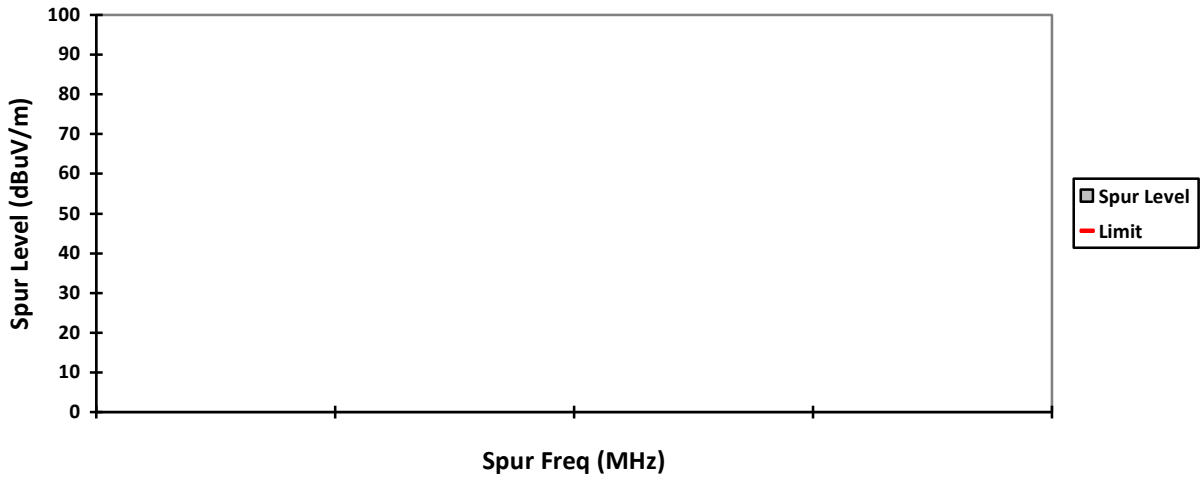
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4804	-	47.2701**	-	-	74.0	-	-	26.7299	-	-
7206	-	51.4562**	-	-	74.0	-	-	22.5438	-	-
9608	-	54.0103**	-	-	74.7036	-	-	19.9897	-	94.7036
12010	-	62.0034**	39.5034**	-	74.0	54.0	-	11.9966	14.4966	-
14412	-	62.6423**	-	-	74.7036	-	-	11.3577	-	94.7036
16814	-	64.4993**	-	-	74.7036	-	-	9.5007	-	94.7036
19216	-	32.9804**	-	-	74.0	-	-	41.0196	-	-
21618	-	29.5286**	-	-	74.7036	-	-	44.4714	-	94.7036
24020	-	30.0799**	-	-	74.7036	-	-	43.9201	-	94.7036
Horizontal Radiated Emission Result										
4804	-	49.4098**	-	-	74.0	-	-	24.5902	-	-
7206	-	51.5448**	-	-	74.0	-	-	22.4552	-	-
9608	-	55.1740**	-	-	74.7036	-	-	18.8260	-	94.7036
12010	-	62.2591**	39.7591**	-	74.0	54.0	-	11.7409	14.2409	-
14412	-	61.9750**	-	-	74.7036	-	-	12.0250	-	94.7036
16814	-	65.7579**	-	-	74.7036	-	-	8.2421	-	94.7036
19216	-	32.4317**	-	-	74.0	-	-	41.5683	-	-
21618	-	30.4998**	-	-	74.7036	-	-	43.5002	-	94.7036
24020	-	30.2427**	-	-	74.7036	-	-	43.7573	-	94.7036

Remarks: Pass Result	Marginal Result	Fail Result

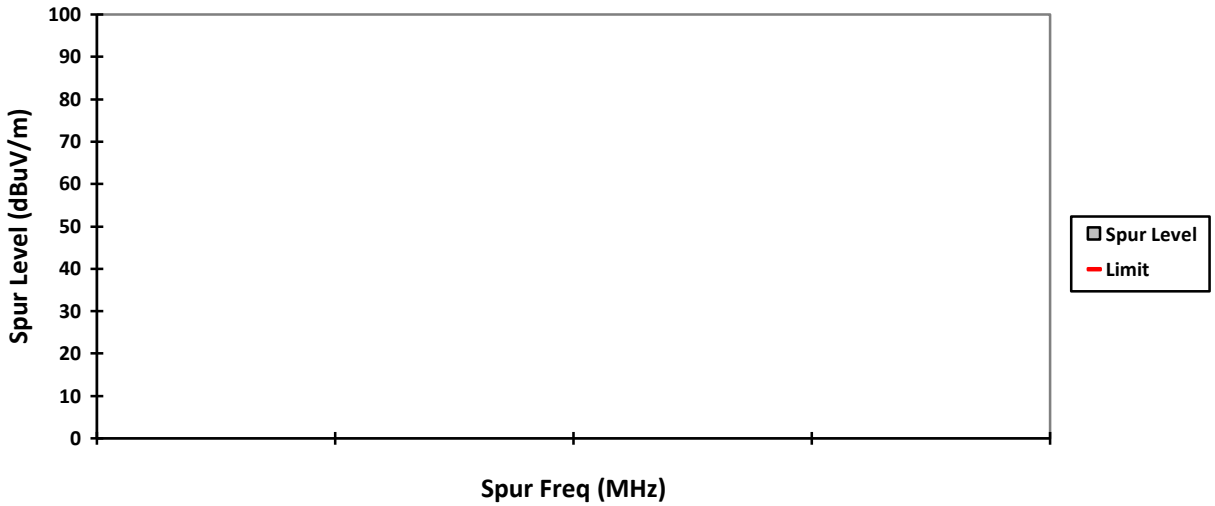
Temperature (degC): 22.3 **Humidity (%): 70.2**
Test Performed by: Nazirul&Abid **Test Date: Wed, 15 Dec, 2021**
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

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.**

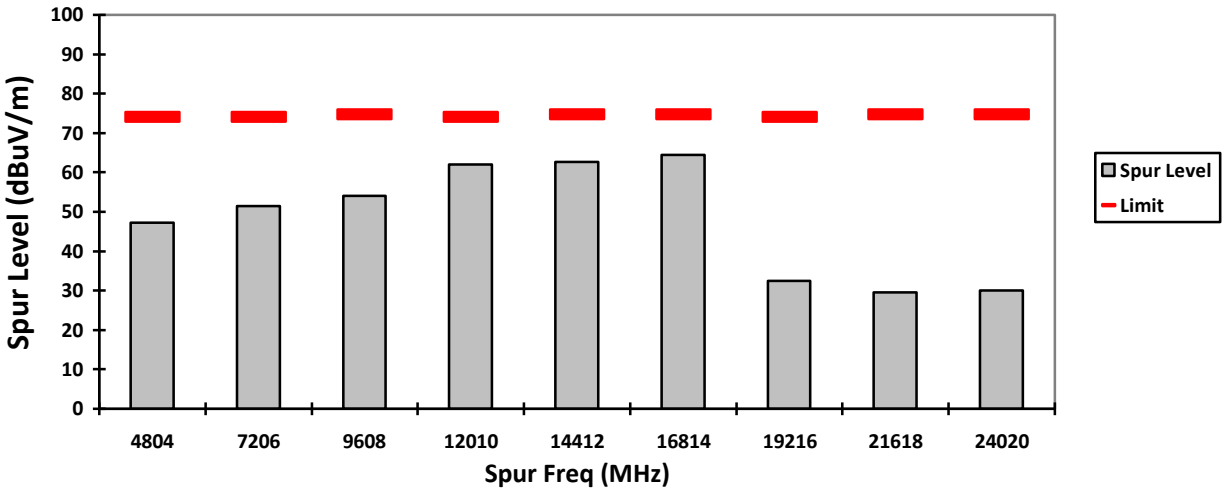
VERTICAL, QPK



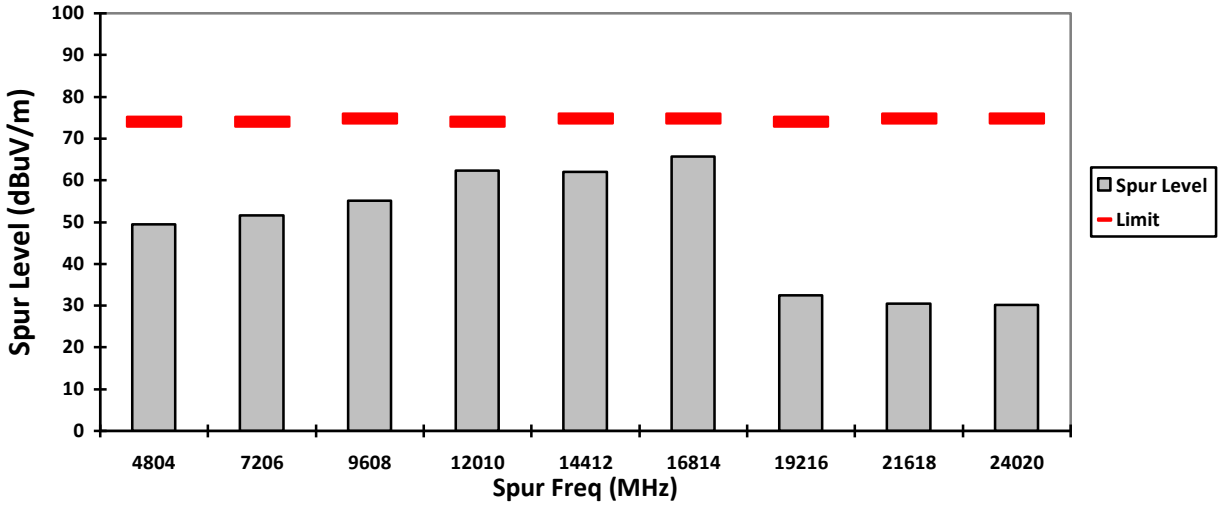
HORIZONTAL, QPK



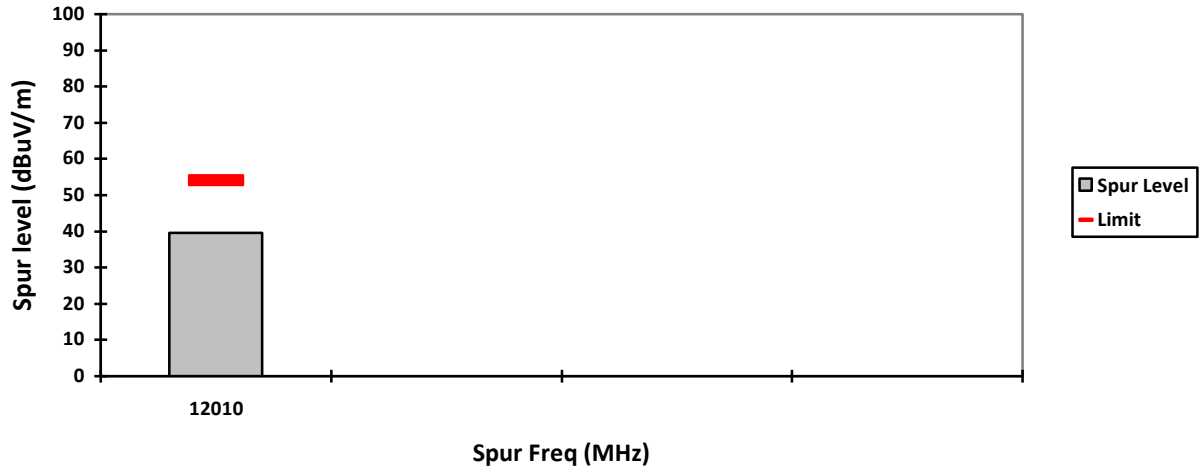
VERTICAL, PK



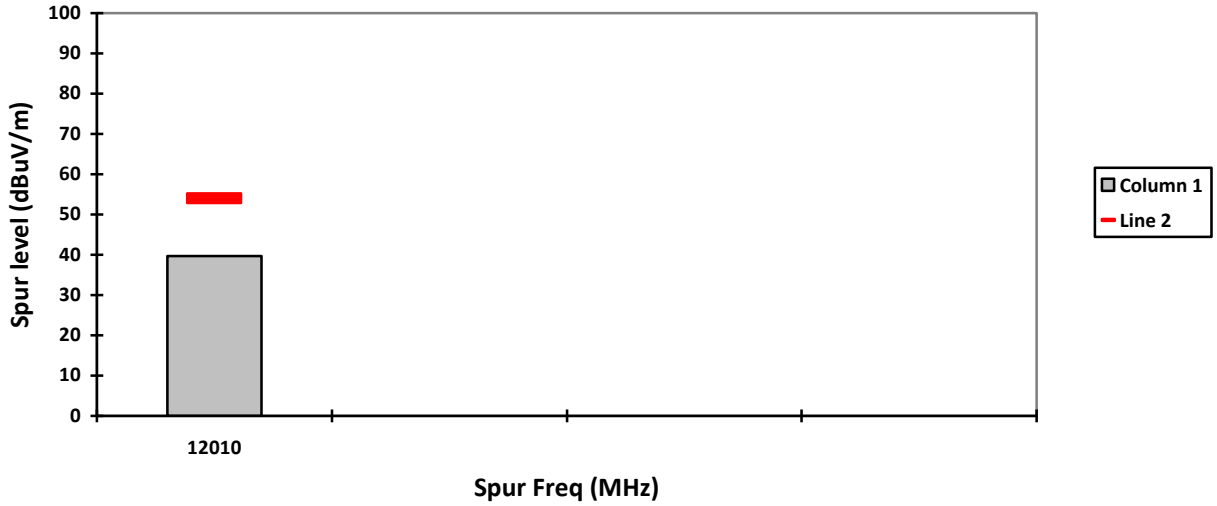
HORIZONTAL, PK



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#: AZH77PCN6TZ5AN S/N: 767TXV0821 EMC SR ID#: 19613-EMC-00216
Battery: PMNN4802A Accessory: NA
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

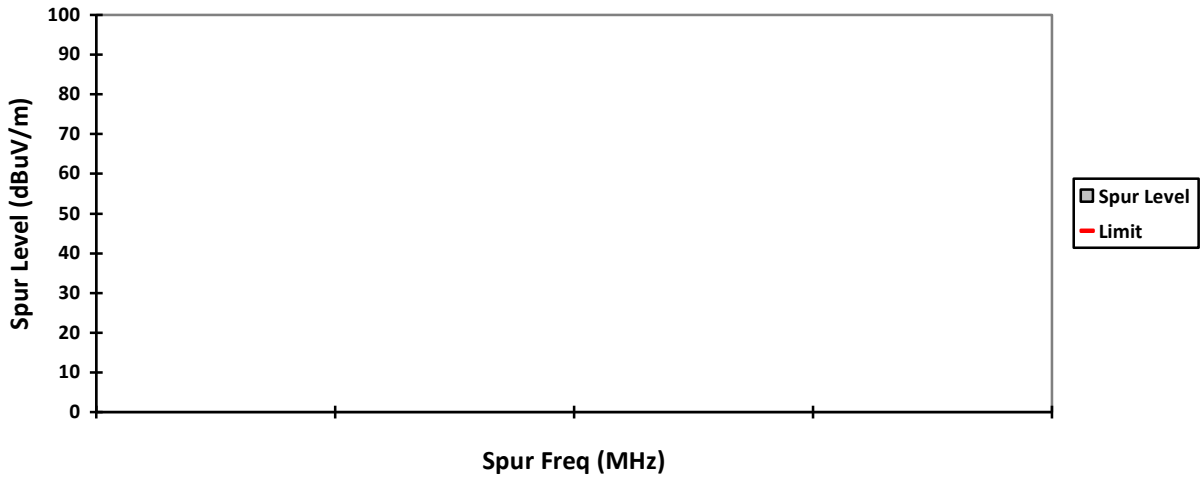
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4882	-	46.8596**	-	-	74.0	-	-	27.1404	-	-
7323	-	51.2145**	-	-	74.0	-	-	22.7855	-	-
9764	-	55.5246**	-	-	74.7036	-	-	19.179	-	94.7036
12205	-	62.2073**	39.7073**	-	74.0	54.0	-	11.7927	14.2927	-
14646	-	61.7816**	-	-	74.7036	-	-	12.9220	-	94.7036
17087	-	62.5797**	-	-	74.7036	-	-	12.1239	-	94.7036
19528	-	31.9935**	-	-	74.0	-	-	42.0065	-	-
21969	-	31.3978**	-	-	74.7036	-	-	43.3058	-	94.7036
24410	-	32.6277**	-	-	74.7036	-	-	42.0759	-	94.7036
Horizontal Radiated Emission Result										
4882	-	48.1559**	-	-	74.0	-	-	25.8441	-	-
7323	-	51.5685**	-	-	74.0	-	-	22.4315	-	-
9764	-	54.8188**	-	-	74.7036	-	-	19.8848	-	94.7036
12205	-	62.0474**	39.5474**	-	74.0	54.0	-	11.9526	14.4526	-
14646	-	62.0186**	-	-	74.7036	-	-	12.6850	-	94.7036
17087	-	62.8532**	-	-	74.7036	-	-	11.8504	-	94.7036
19528	-	30.4801**	-	-	74.0	-	-	43.5199	-	-
21969	-	30.8197**	-	-	74.7036	-	-	43.8839	-	94.7036
24410	-	31.8776**	-	-	74.7036	-	-	42.8260	-	94.7036

Remarks: Pass Result	Marginal Result	Fail Result

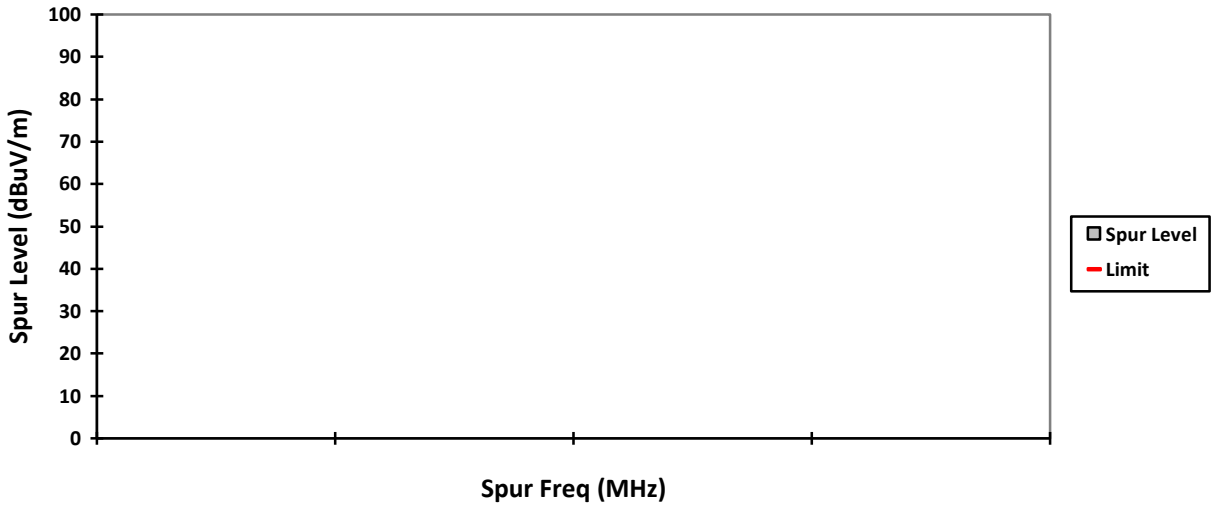
Temperature (degC): 22.3 Humidity (%): 70.2
Test Performed by: Nazirul&Abid Test Date: Wed, 15 Dec, 2021
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

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.**

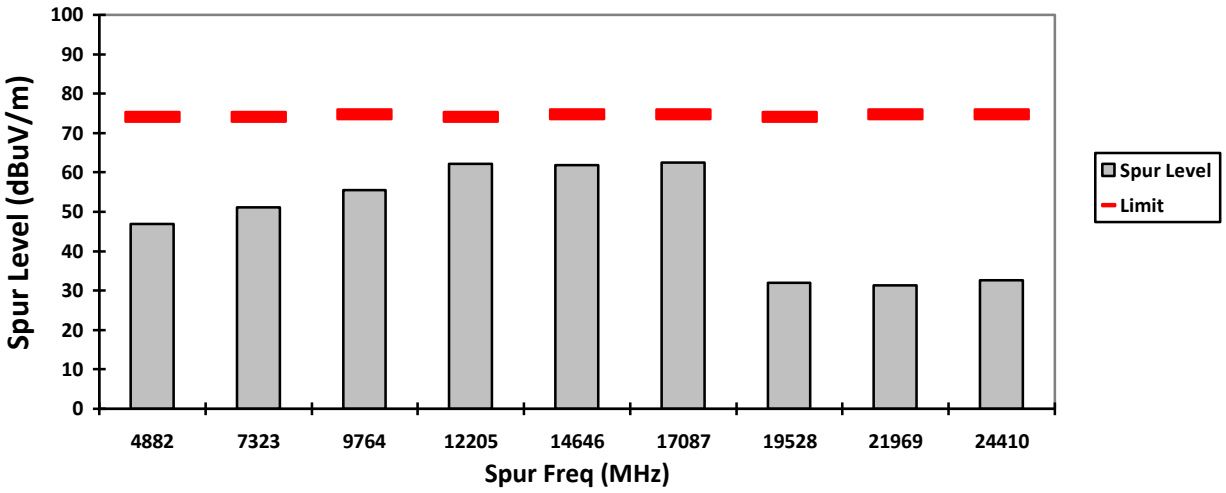
VERTICAL, QPK



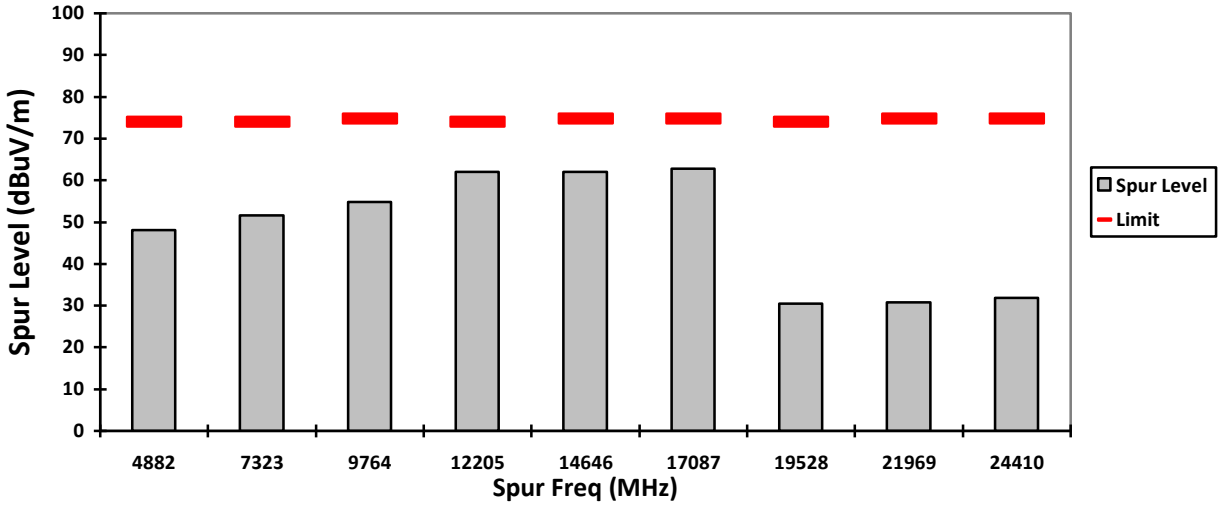
HORIZONTAL, QPK



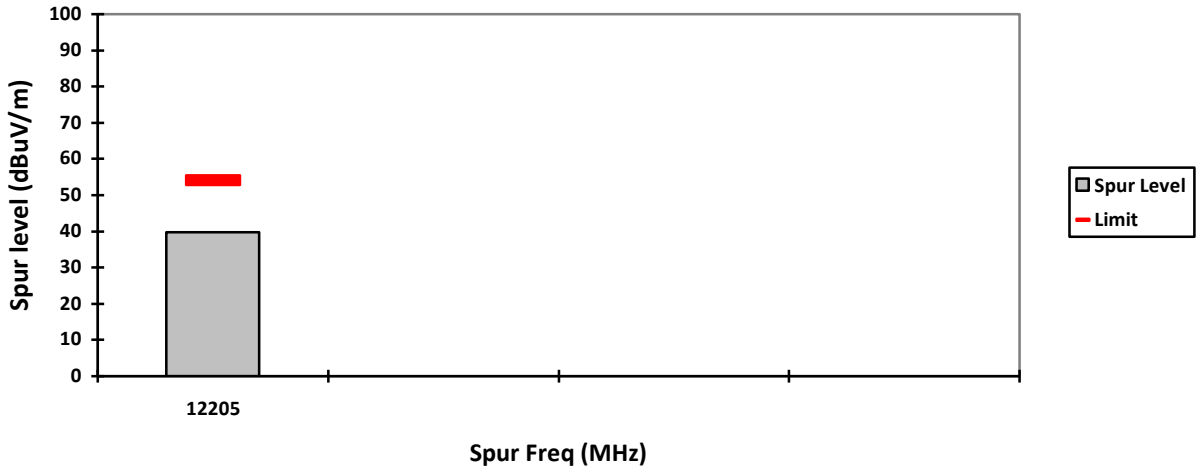
VERTICAL, PK



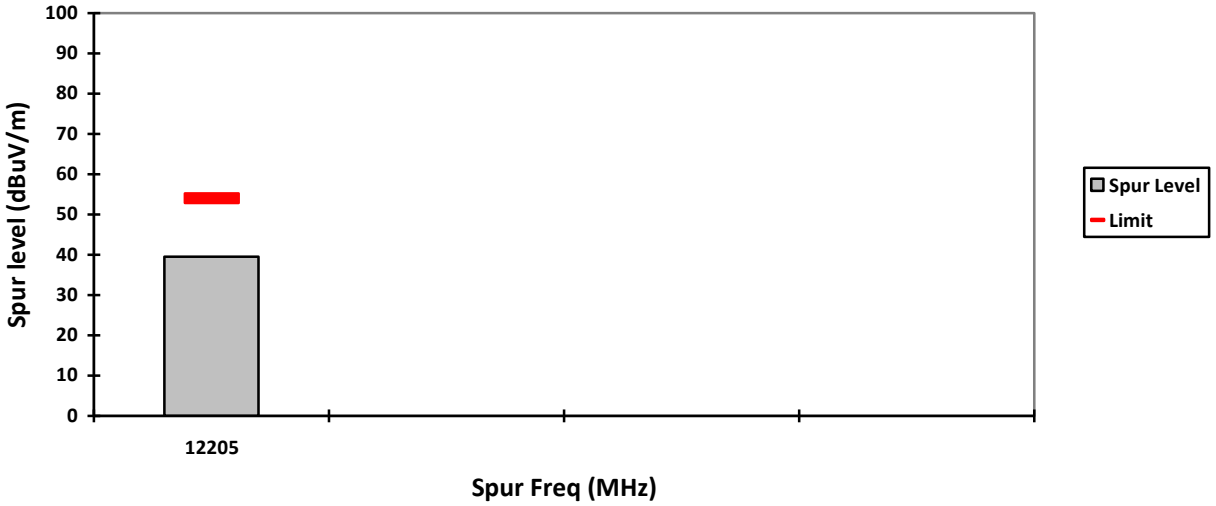
HORIZONTAL, PK



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#: AZH77PCN6TZ5AN S/N: 767TXV0821 EMC SR ID#: 19613-EMC-00216
Battery: PMNN4802A Accessory: NA
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

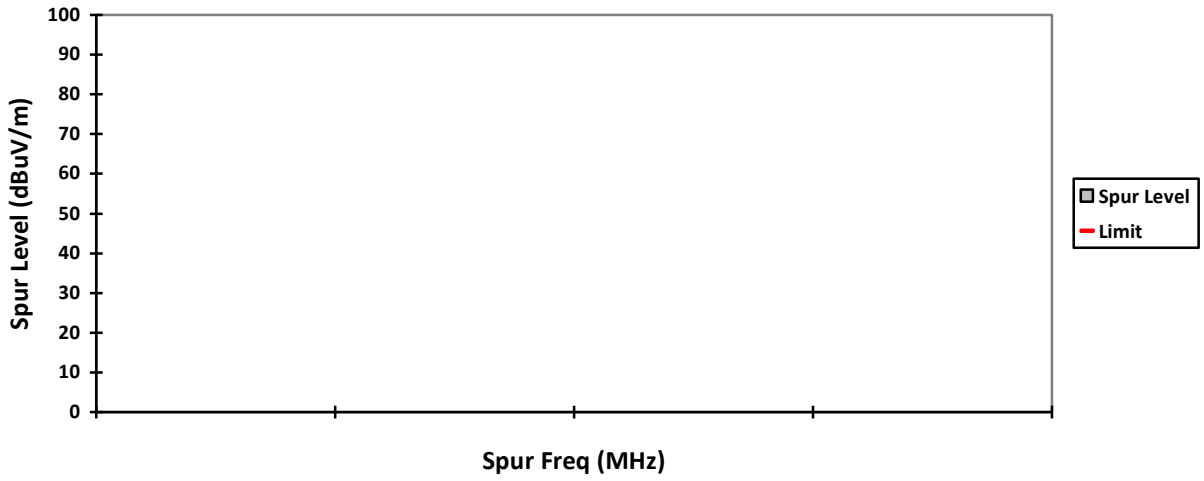
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4960	-	46.9166**	-	-	74.0	-	-	27.0834	-	-
7440	-	50.8287**	-	-	74.0	-	-	23.1713	-	-
9920	-	55.4874**	-	-	74.7036	-	-	19.2162	-	94.7036
12400	-	63.1825**	40.6825**	-	74.0	54.0	-	10.8175	13.3175	-
14880	-	62.6518**	-	-	74.7036	-	-	12.0518	-	94.7036
17360	-	64.1690**	-	-	74.7036	-	-	10.5346	-	94.7036
19840	-	32.5187**	-	-	74.0	-	-	41.4813	-	-
22320	-	30.8679**	-	-	74.0	-	-	43.1321	-	-
24800	-	31.5463**	-	-	74.7036	-	-	43.1573	-	94.7036
Horizontal Radiated Emission Result										
4960	-	47.0303**	-	-	74.0	-	-	26.9697	-	-
7440	-	50.1360**	-	-	74.0	-	-	23.8640	-	-
9920	-	54.1268**	-	-	74.7036	-	-	20.5768	-	94.7036
12400	-	62.9578**	40.4578**	-	74.0	54.0	-	11.0422	13.5422	-
14880	-	61.8761**	-	-	74.7036	-	-	12.8275	-	94.7036
17360	-	64.2953**	-	-	74.7036	-	-	10.4083	-	94.7036
19840	-	32.2052**	-	-	74.0	-	-	41.7948	-	-
22320	-	30.6298**	-	-	74.0	-	-	43.3702	-	-
24800	-	31.1056**	-	-	74.7036	-	-	43.5980	-	94.7036

Remarks: Pass Result	Marginal Result	Fail Result

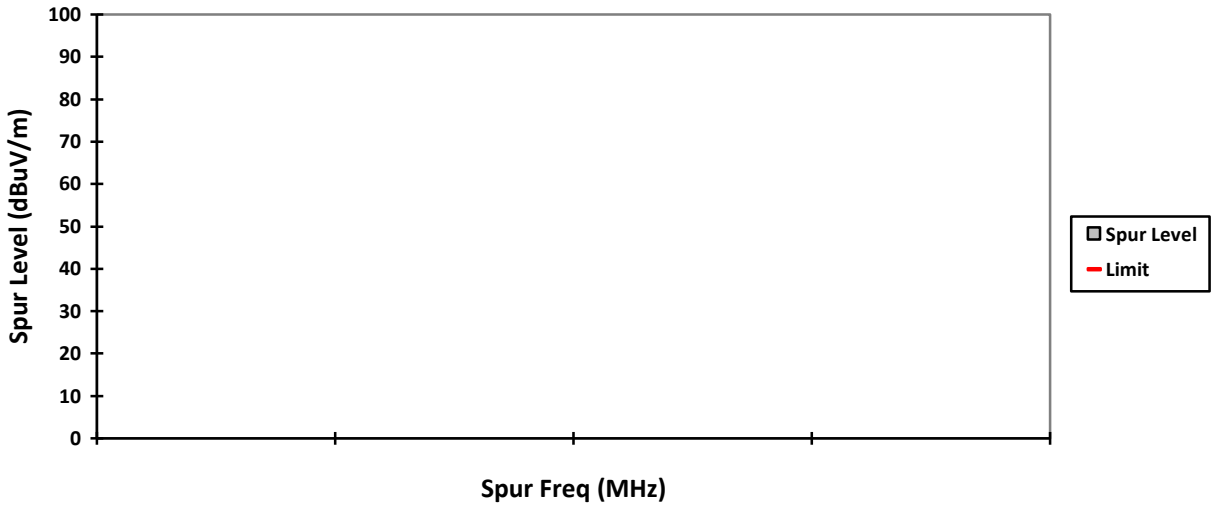
Temperature (degC): 22.3 Humidity (%): 70.2
Test Performed by: Nazirul&Abid Test Date: Wed, 15 Dec, 2021
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

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.**

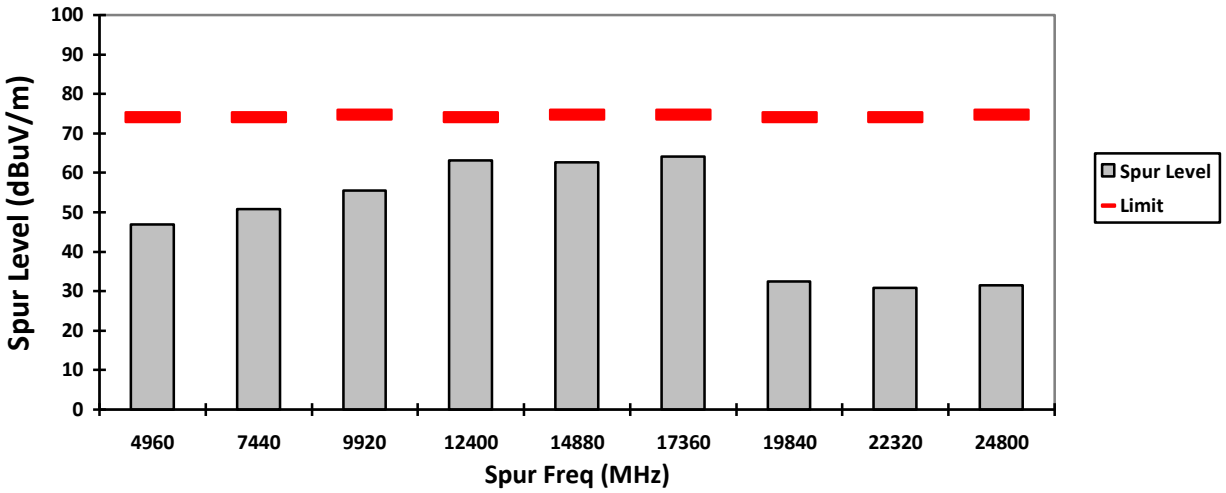
VERTICAL, QPK



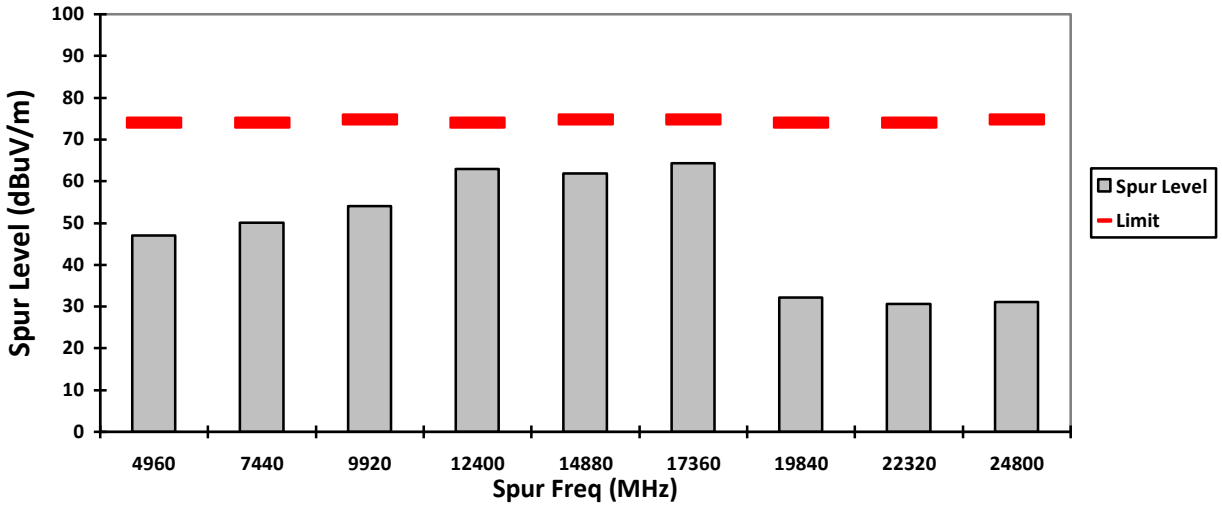
HORIZONTAL, QPK



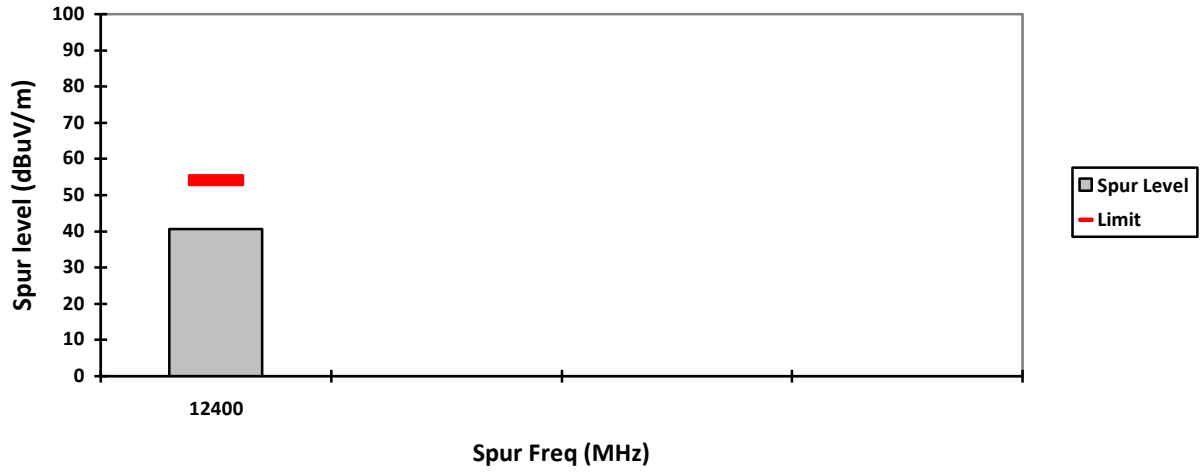
VERTICAL, PK



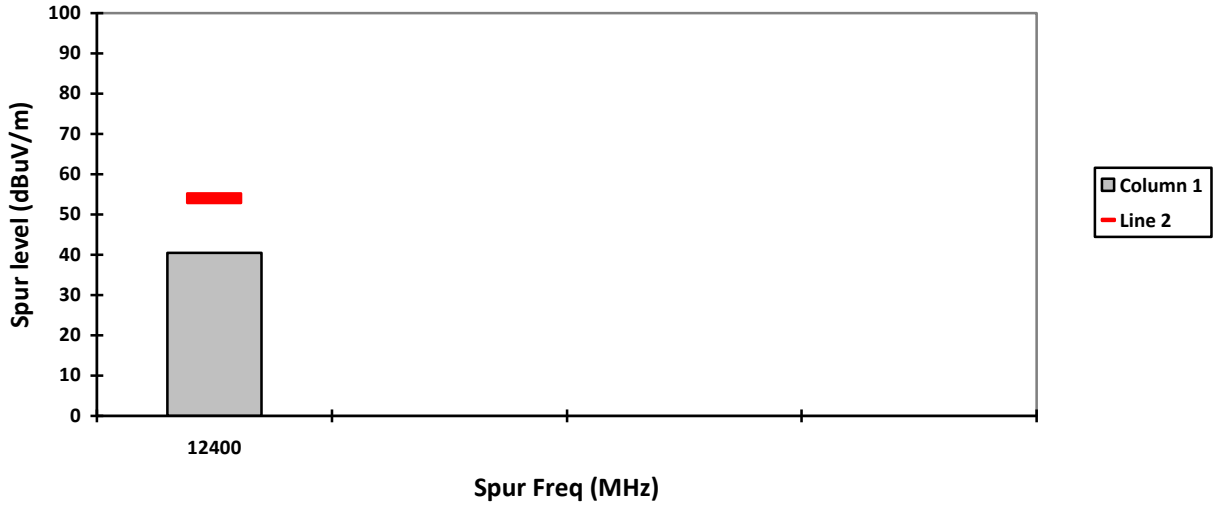
HORIZONTAL, PK



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#: AZH77PCN6TZ5AN S/N: 767TXV0821 EMC SR ID#: 19613-EMC-00216
Battery: PMNN4802A Accessory: NA
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

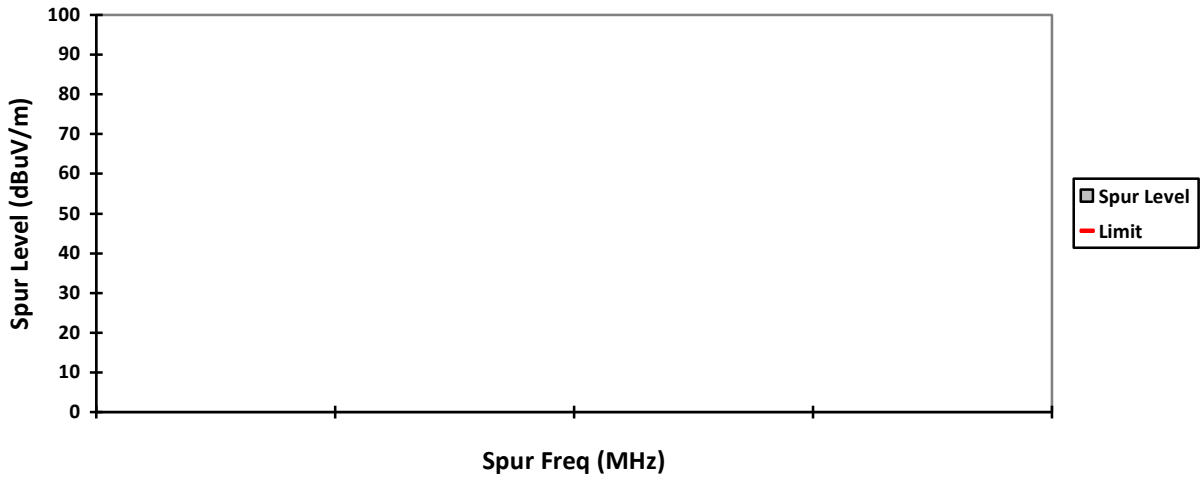
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4804	-	46.4149**	-	-	74.0	-	-	27.5851	-	-
7206	-	50.9704**	-	-	74.0	-	-	23.0296	-	-
9608	-	55.2689**	-	-	74.7036	-	-	19.4347	-	94.7036
12010	-	62.3187**	39.8187**	-	74.0	54.0	-	11.6813	14.1813	-
14412	-	62.0775**	-	-	74.7036	-	-	12.6261	-	94.7036
16814	-	62.8585**	-	-	74.7036	-	-	11.8451	-	94.7036
19216	-	33.6613**	-	-	74.0	-	-	40.3387	-	-
21618	-	30.0635**	-	-	74.7036	-	-	44.6401	-	94.7036
24020	-	30.4105**	-	-	74.7036	-	-	44.2931	-	94.7036
Horizontal Radiated Emission Result										
4804	-	47.0445**	-	-	74.0	-	-	26.9555	-	-
7206	-	51.2349**	-	-	74.0	-	-	22.7651	-	-
9608	-	55.4685**	-	-	74.7036	-	-	19.2351	-	94.7036
12010	-	62.0743**	39.5743**	-	74.0	54.0	-	11.9257	14.4257	-
14412	-	61.8128**	-	-	74.7036	-	-	12.8908	-	94.7036
16814	-	63.1805**	-	-	74.7036	-	-	11.5231	-	94.7036
19216	-	32.1095**	-	-	74.0	-	-	41.8905	-	-
21618	-	30.3827**	-	-	74.7036	-	-	44.3209	-	94.7036
24020	-	29.5835**	-	-	74.7036	-	-	45.1201	-	94.7036

Remarks: Pass Result	Marginal Result	Fail Result

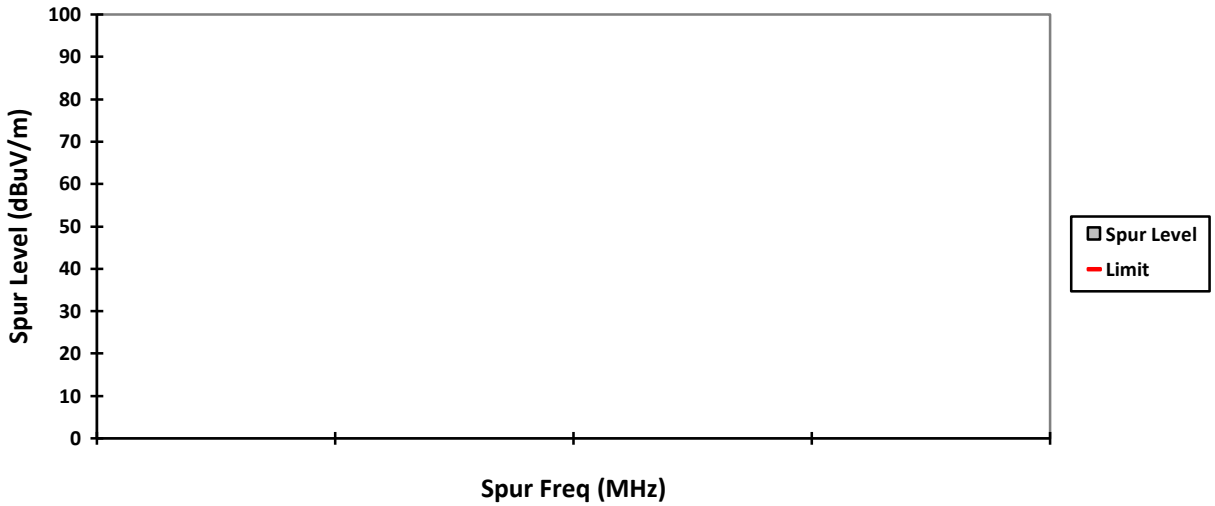
Temperature (degC): 22.3 Humidity (%): 70.2
Test Performed by: Nazirul&Abid Test Date: Wed, 15 Dec, 2021
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

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.**

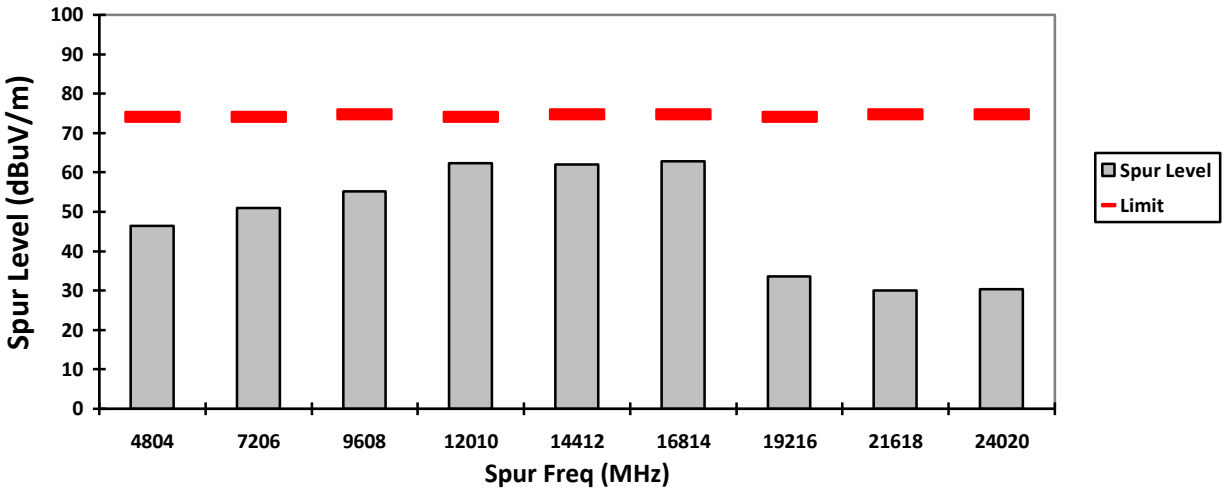
VERTICAL, QPK



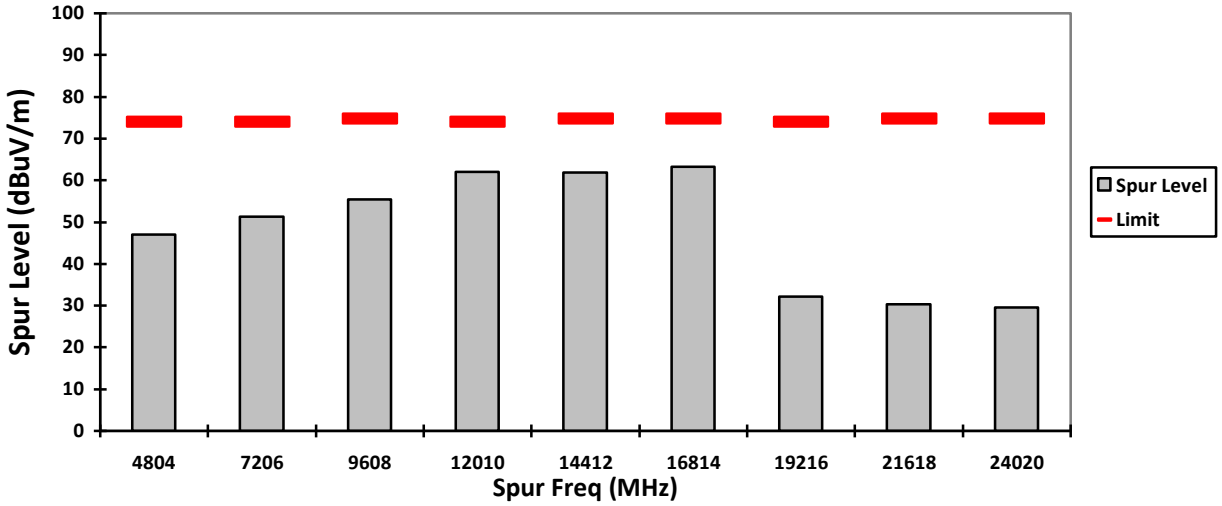
HORIZONTAL, QPK



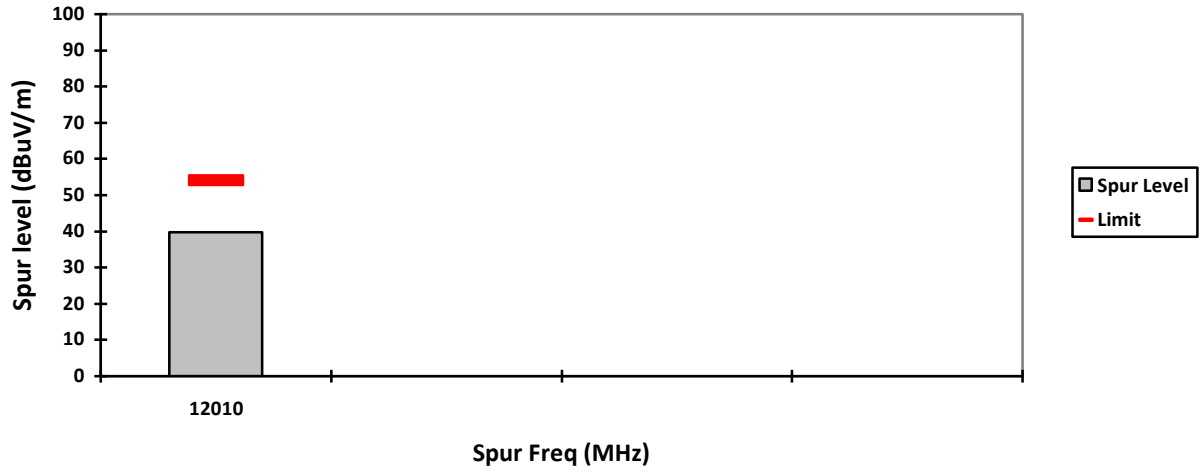
VERTICAL, PK



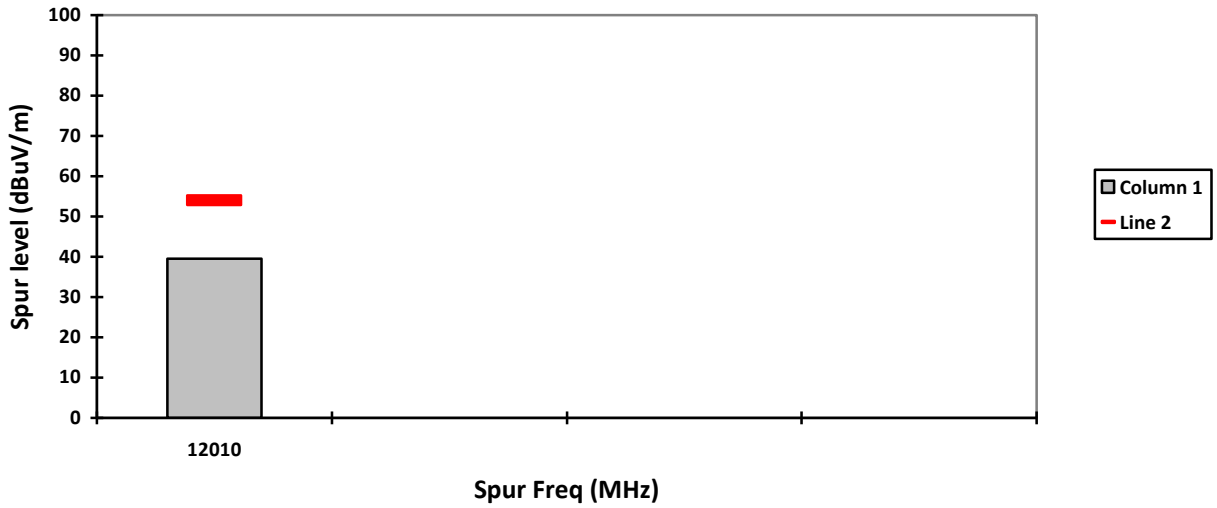
HORIZONTAL, PK



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#: AZH77PCN6TZ5AN S/N: 767TXV0821 EMC SR ID#: 19613-EMC-00216
Battery: PMNN4802A Accessory: NA
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

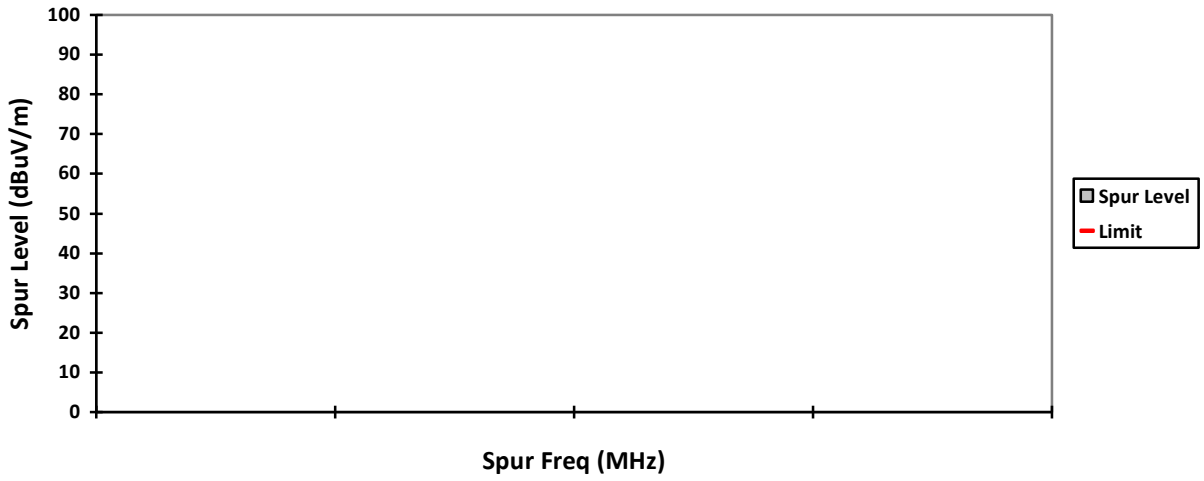
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4882	-	47.1531**	-	-	74.0	-	-	26.8469	-	-
7323	-	51.0727**	-	-	74.0	-	-	22.9273	-	-
9764	-	54.2626**	-	-	74.7036	-	-	20.4410	-	94.7036
12205	-	62.2860**	39.7860**	-	74.0	54.0	-	11.7140	14.2140	-
14646	-	61.7072**	-	-	74.7036	-	-	12.9964	-	94.7036
17087	-	65.8996**	-	-	74.7036	-	-	8.8040	-	94.7036
19528	-	31.0745**	-	-	74.0	-	-	42.9255	-	-
21969	-	30.7870**	-	-	74.7036	-	-	43.9166	-	94.7036
24410	-	31.1332**	-	-	74.7036	-	-	43.5704	-	94.7036
Horizontal Radiated Emission Result										
4882	-	48.2405**	-	-	74.0	-	-	25.7595	-	-
7323	-	51.7809**	-	-	74.0	-	-	22.2191	-	-
9764	-	54.1574**	-	-	74.7036	-	-	20.5462	-	94.7036
12205	-	62.4909**	39.9909	-	74.0	54.0	-	11.5091	14.0091	-
14646	-	62.3582**	-	-	74.7036	-	-	12.3454	-	94.7036
17087	-	62.9193**	-	-	74.7036	-	-	11.7843	-	94.7036
19528	-	30.9322**	-	-	74.0	-	-	43.0678	-	-
21969	-	30.5919**	-	-	74.7036	-	-	44.1117	-	94.7036
24410	-	31.6361**	-	-	74.7036	-	-	43.0675	-	94.7036

Remarks: Pass Result	Marginal Result	Fail Result

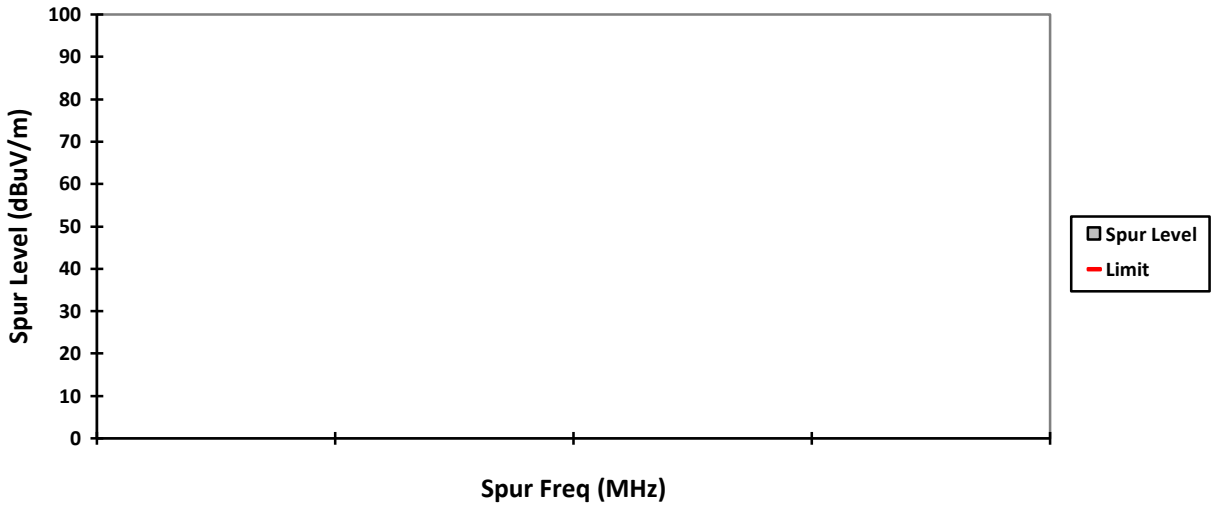
Temperature (degC): 22.3 Humidity (%): 70.2
Test Performed by: Nazirul&Abid Test Date: Wed, 15 Dec, 2021
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

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.**

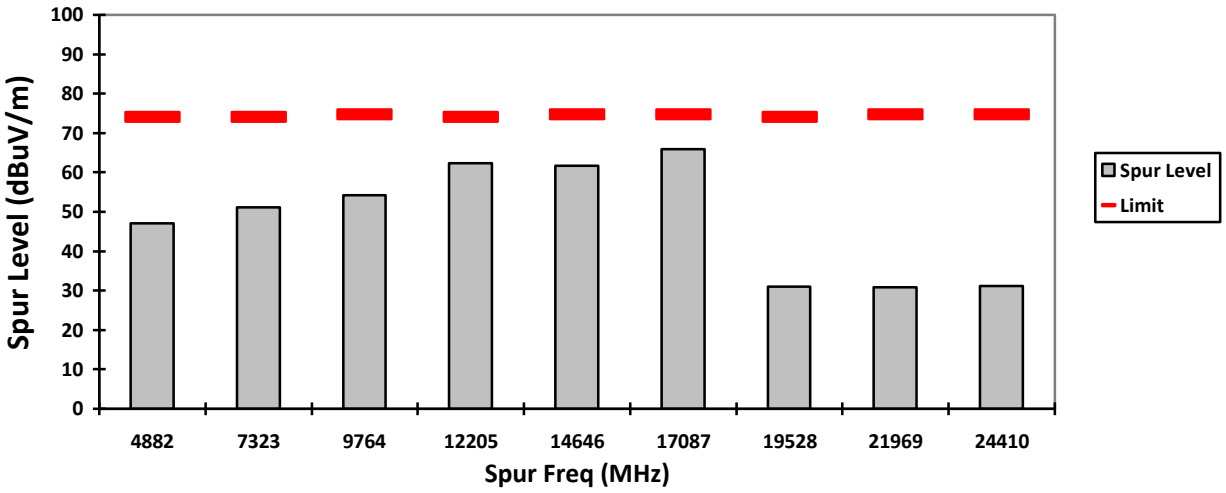
VERTICAL, QPK



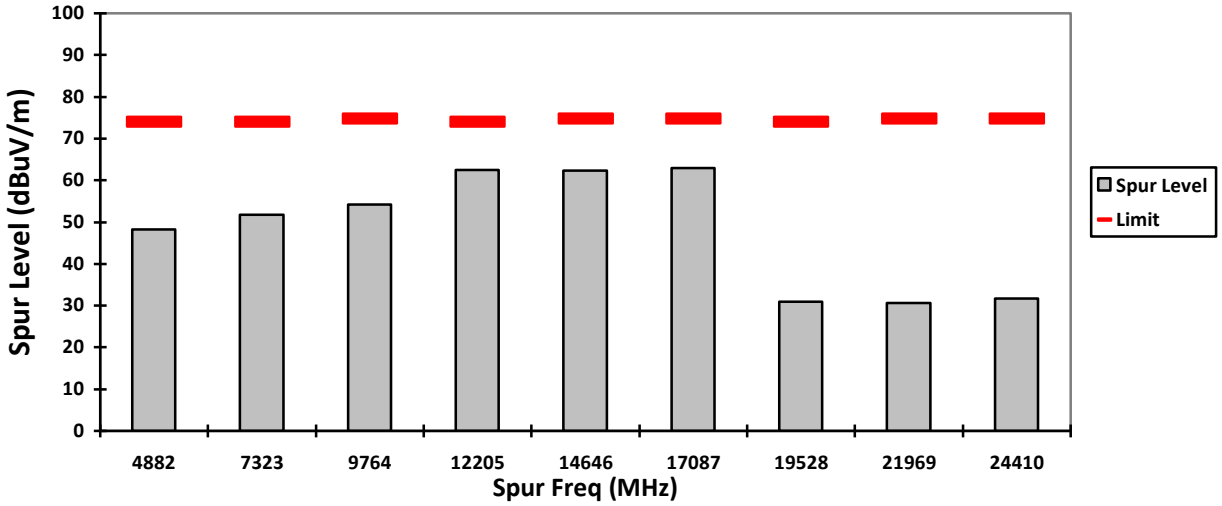
HORIZONTAL, QPK



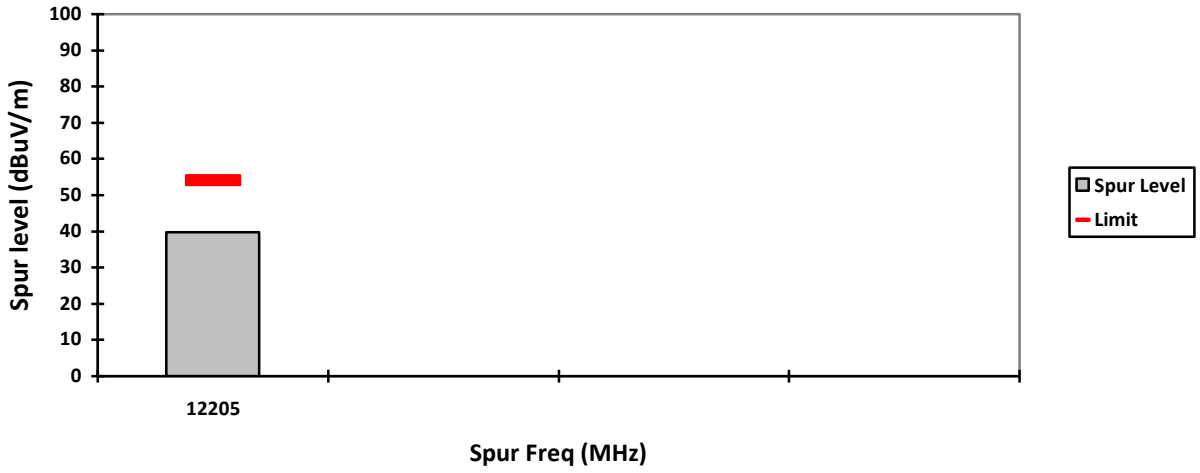
VERTICAL, PK



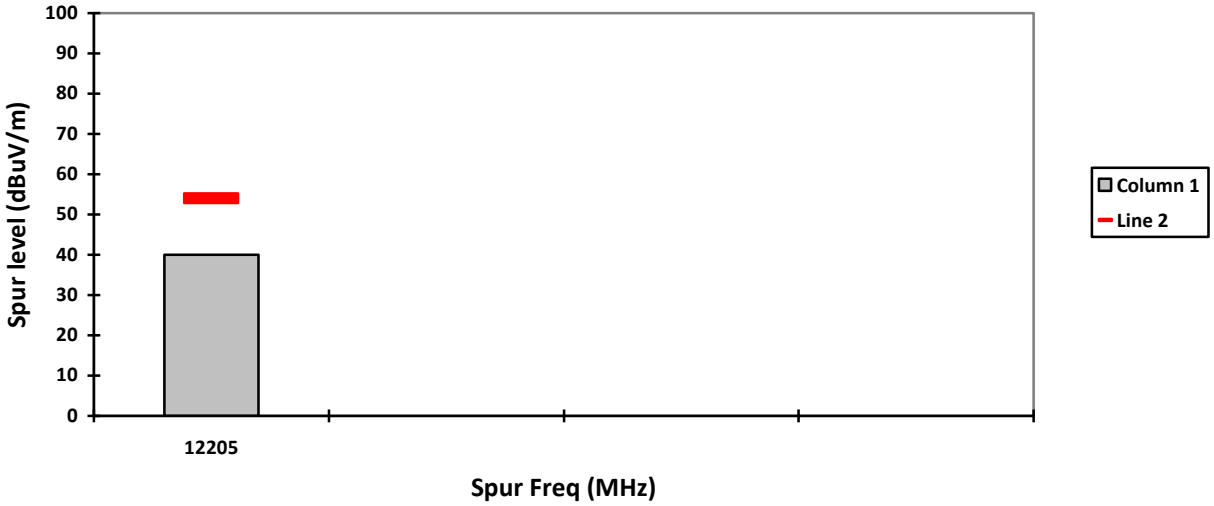
HORIZONTAL, PK



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#: AZH77PCN6TZ5AN S/N: 767TXV0821 EMC SR ID#: 19613-EMC-00216
Battery: PMNN4802A Accessory: NA
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

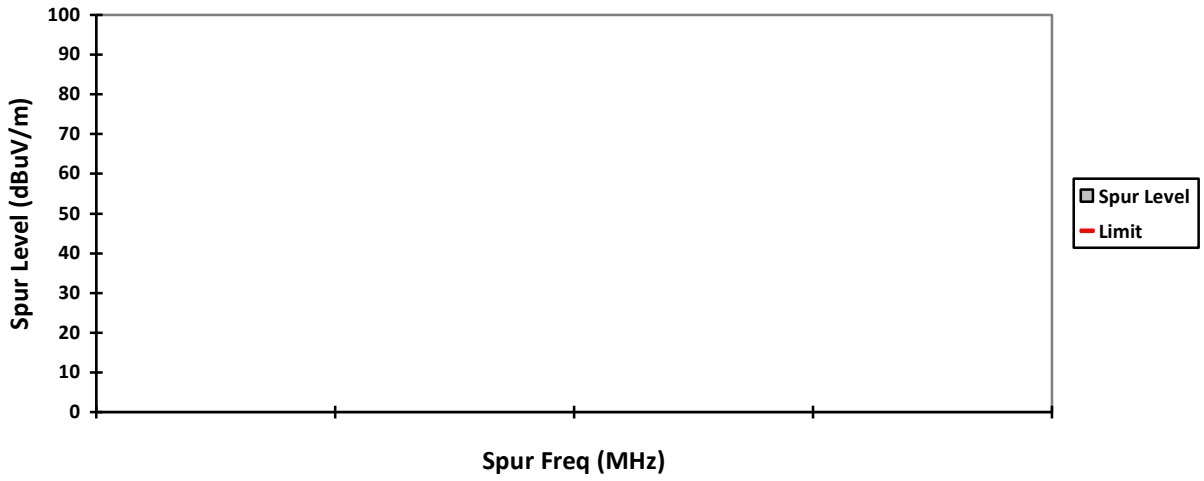
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
4960	-	47.1088**	-	-	74.0	-	-	26.8912	-	-
7440	-	49.0030**	-	-	74.0	-	-	24.9970	-	-
9920	-	53.2564**	-	-	74.7036	-	-	21.4472	-	94.7036
12400	-	63.1366**	40.6366**	-	74.0	54.0	-	10.8634	13.3634	-
14880	-	60.6341**	-	-	74.7036	-	-	14.0695	-	94.7036
17360	-	64.4665**	-	-	74.7036	-	-	10.2371	-	94.7036
19840	-	32.0273**	-	-	74.0	-	-	41.9727	-	-
22320	-	30.6891**	-	-	74.0	-	-	43.3109	-	-
24800	-	30.9633**	-	-	74.7036	-	-	43.7403	-	94.7036
Horizontal Radiated Emission Result										
4960	-	47.6539**	-	-	74.0	-	-	26.3461	-	-
7440	-	50.3973**	-	-	74.0	-	-	23.6027	-	-
9920	-	54.4694**	-	-	74.7036	-	-	20.2342	-	94.7036
12400	-	62.8112**	40.3112**	-	74.0	54.0	-	11.1888	13.6888	-
14880	-	62.1175**	-	-	74.7036	-	-	12.5861	-	94.7036
17360	-	64.7848**	-	-	74.7036	-	-	9.9188	-	94.7036
19840	-	33.5932**	-	-	74.0	-	-	40.4068	-	-
22320	-	30.8851**	-	-	74.0	-	-	43.1149	-	-
24800	-	30.5680**	-	-	74.7036	-	-	44.1356	-	94.7036

Remarks: Pass Result	Marginal Result	Fail Result

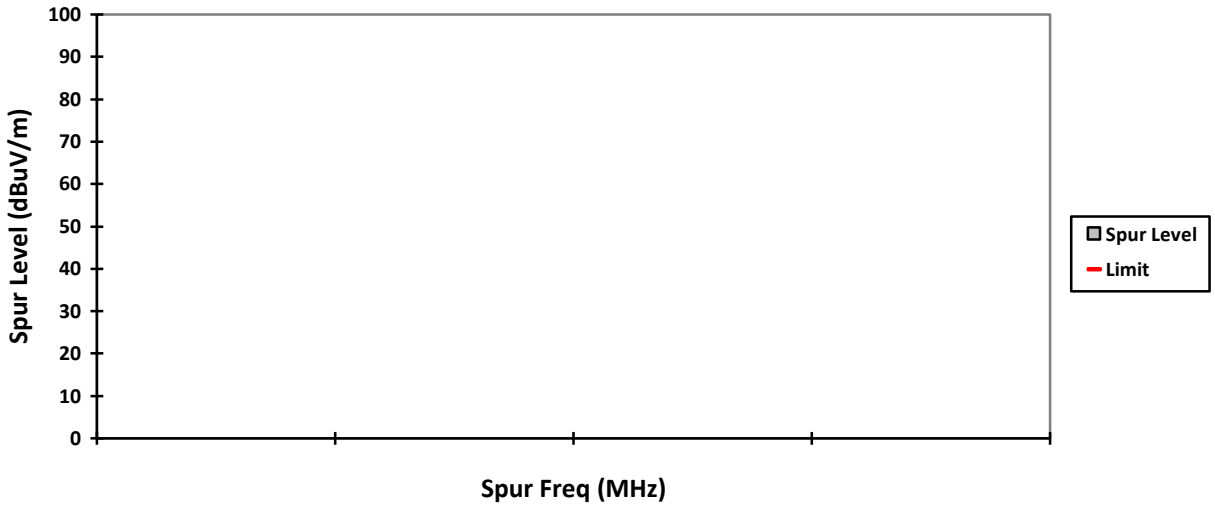
Temperature (degC): 22.3 **Humidity (%): 70.2**
Test Performed by: Nazirul&Abid **Test Date: Wed, 15 Dec, 2021**
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

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.**

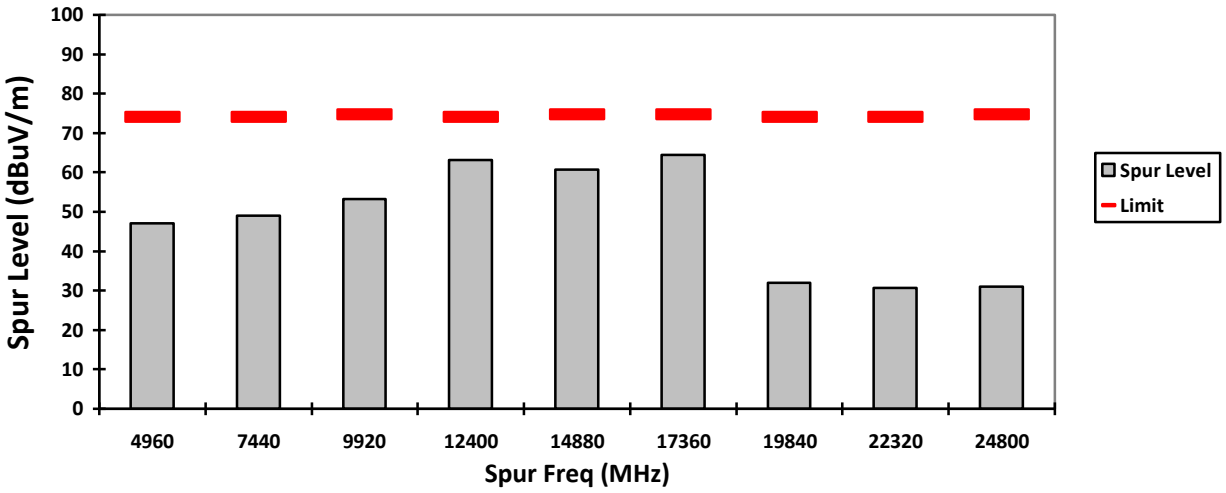
VERTICAL, QPK



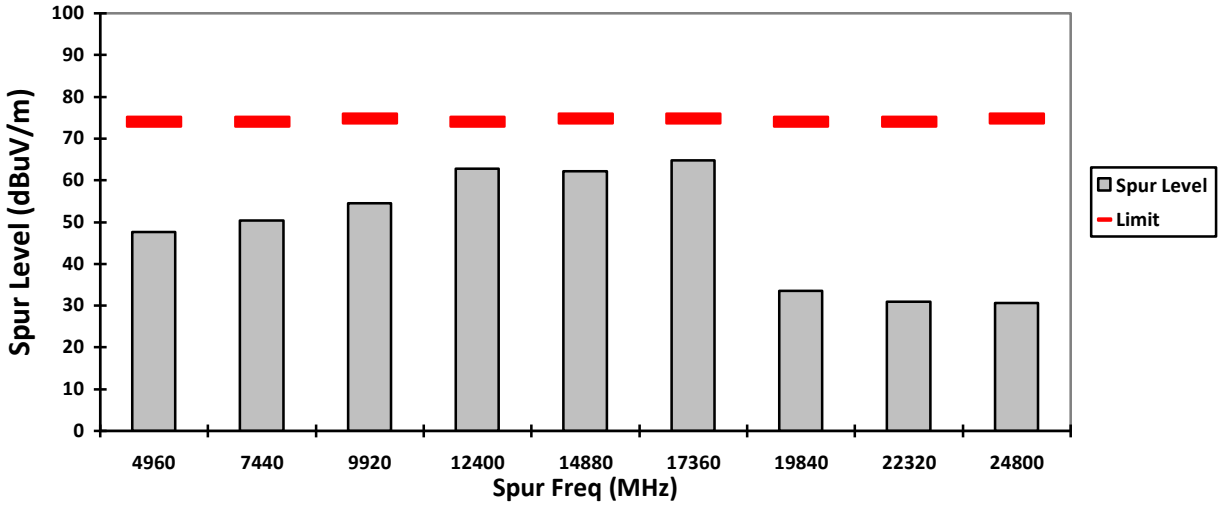
HORIZONTAL, QPK



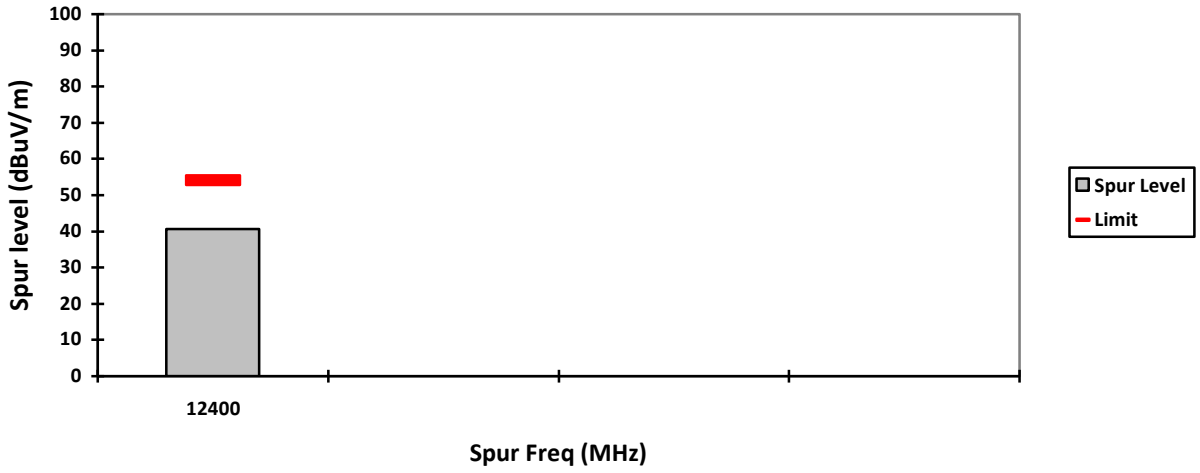
VERTICAL, PK



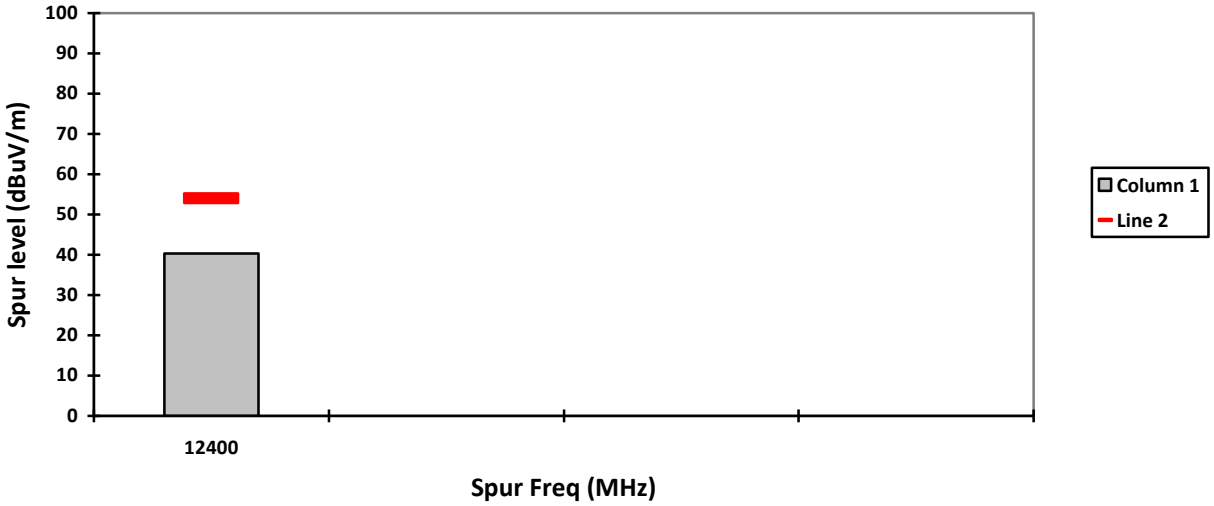
HORIZONTAL, PK



VERTICAL, AV



HORIZONTAL, AV



NOTE:
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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#: AZH77PCN6TZ5AN S/N: 767TXV0826 EMC SR ID#: 19613-EMC-00230
Battery: PMNN4802A Accessory: PS000227A31-CF1
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

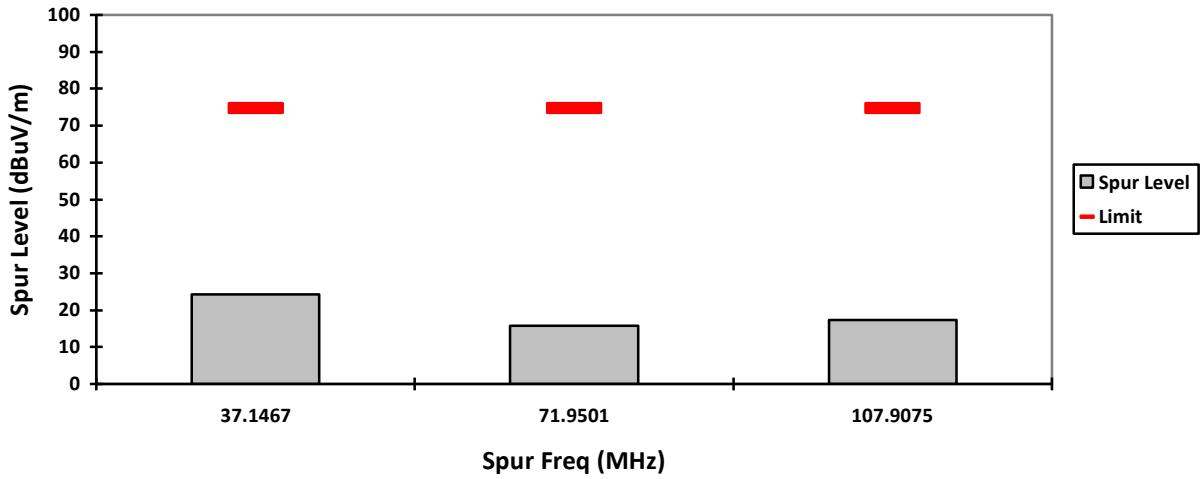
Vertical Radiated Emission Result										
Spur Freq (MHz)	Spur level QPK (dBµV/m)	Spur level PK (dBµV/m)	Spur level AV (dBµV/m)	Limit QPK (dBµV/m)	Limit PK (dBµV/m)	Limit AV (dBµV/m)	Margin QPK (dBµV/m)	Margin PK (dBµV/m)	Margin AV (dBµV/m)	Carrier PK Power (dBµV/m)
37.1467	24.1776	-	-	40	-	-	15.8224	-	-	-
71.9501	15.8545	-	-	40	-	-	24.1455	-	-	-
107.9075	17.3919	-	-	43.5	-	-	26.1081	-	-	-
Horizontal Radiated Emission Result										
34.0806	27.3170	-	-	40	-	-	12.6830	-	-	-
55.5974	14.5036	-	-	40	-	-	25.4954	-	-	-
105.0218	18.0899	-	-	43.5	-	-	25.4101	-	-	-

Remarks: Pass Result	Marginal Result	Fail Result

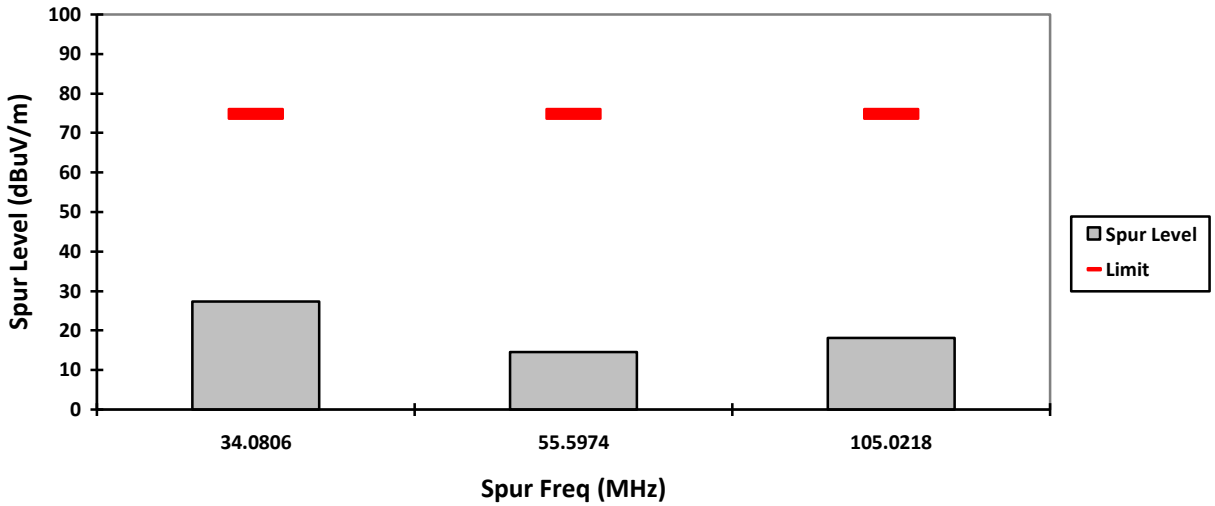
Temperature (degC): 22.2 Humidity (%): 70.1
Test Performed by: Nazirul Test Date: Fri, 24 Dec, 2021
System MU: 5.88 dB (30-1000MHz), 5.84 dB (1000-18000MHz), 6.02 dB (18000MHz-40000MHz)

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

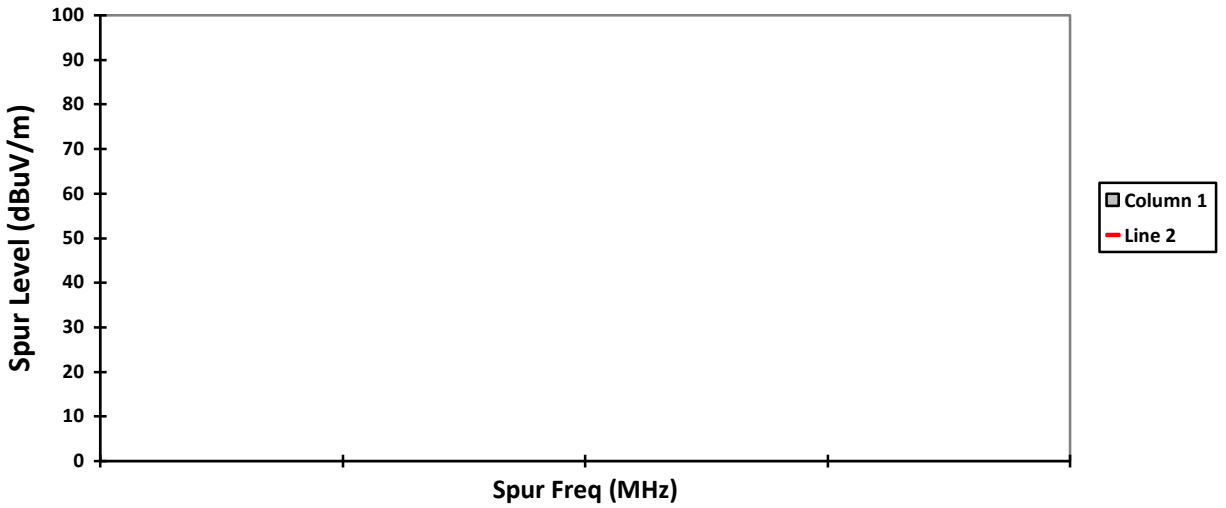


HORIZONTAL, QPK

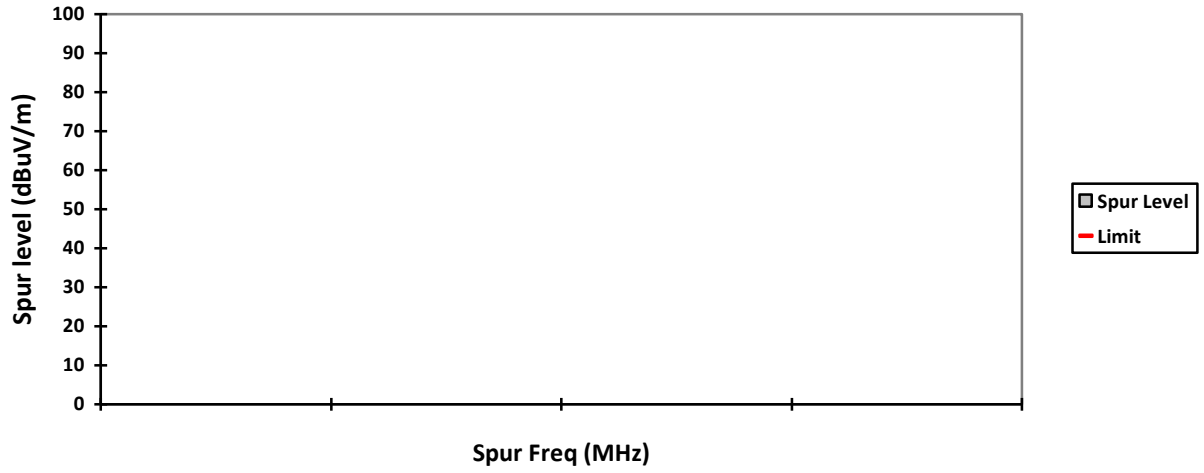


VERTICAL, PK

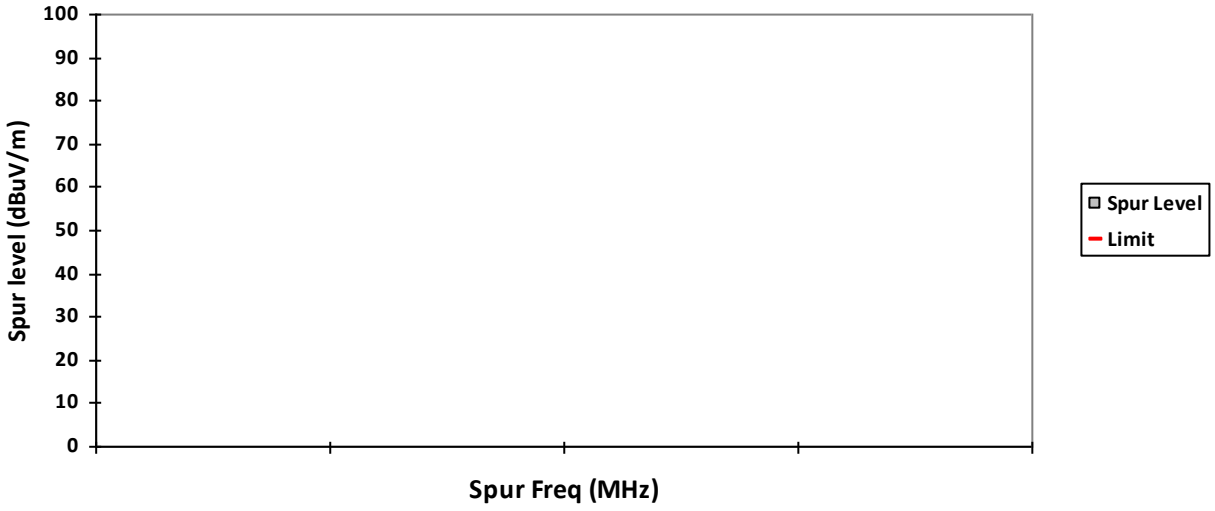
HORIZONTAL, PK



VERTICAL, AV

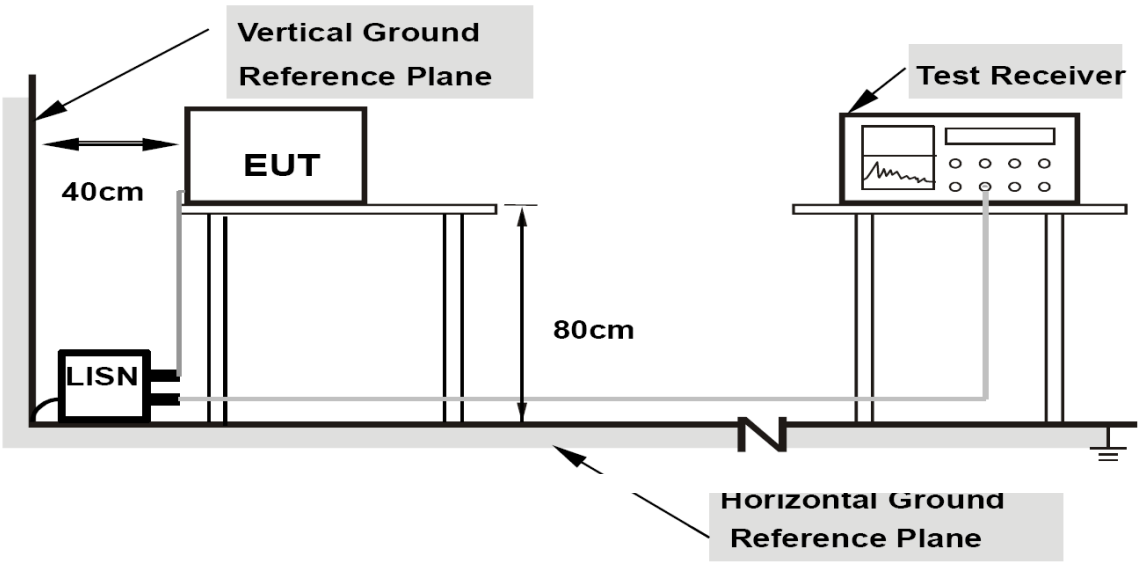


HORIZONTAL, AV



5.9. AC Powerline Conducted Emission

5.9.1. 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.

5.9.2. 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

5.9.3. Test Result

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

END OF TEST REPORT