

	 <p>MS ISO/IEC 17025 TESTING SAMM No. 0825</p>
<p>MOTOROLA PENANG ADV. COMM. LABORATORY Motorola Solutions Malaysia Sdn. Bhd. Innoplex Plot 2A Medan Bayan Lepas, Mukim 12, S.W.D. 11900 Bayan Lepas, Penang, Malaysia.</p>	<p>FCC / ISED TEST REPORT Report Revision : Rev.A</p>
<p>Date/s Tested : 09-Jan-2019 - 22-Jan-2019 Report Issue Date : 23-Jan-2019 Manufacturer/Location : Motorola Solutions - Schaumburg Requestor : HOPKINS, SEAN Product Type : Hand-held Product Version (PMN) : P1B Model Number (HVIN) : H55TGT9PW8AN Frequency Band : 2.402 - 2.480 GHz Max RF Output Power : 11.5 mWatts Applicant Name : Motorola Solutions, Inc Applicant Address : 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322 FCC Registrations : 461337 ISED Registrations : 109AK Firmware Version (FVIN) : D00.00.31</p>  <p>The equipment was tested accordance to the requirement listed below:</p> <p>(2.4GHz BT) FCC 47 CFR Part 15 Subpart C ISED RSS 247 Issue 2, February 2017 PASS</p>	
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REVISION HISTORY

Revision History	Description	Date	Originator
Rev. A	Initial Report	23-Jan-2019	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
Antenna type	Stamped metal

Note:

1. The EUT contains following accessory devices and data cable.

Item	Brand	Model or P/N
Hi-Cap Battery, IMPRES GEN2, LIION, IP68, 5650T	Motorola Solutions	NNTN9089A
Single Unit Charger (SUC), IMPRES 2, 3A, 115VAC, US/NA + PWR SUPPLY WALL CUBE,AC,DC 110VAC FIXED BLADE US 14.5V/2.5A L6 BARREL	Motorola Solutions	NNTN9199A (Charger Base) + PS000040A01 (power supply)
Multi-unit Charger (MUC), IMPRES G2, 6-DISP, BASE with INSERTS + US Line Cord	Motorola Solutions	NNTN9115A (Charger Base) + 3087791G01 (Linecord)
MICRO USB Programming cable	Motorola Solutions	CB000262A01

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.

2.0. Summary of Test Results

FCC Clause	ISED Clause	Test Item	Result	Remark	Serial Number Tested
15.247 (b)(1)	RSS-247 5.4(b)	Conducted RF Output Power (Peak)	Pass	Highest output power: 10.485 dBm	437P1B0032
15.247 (a)(1)	RSS-247 5.1(a) RSS-247 5.1(b)	(1) 20dB Channel Bandwidth (2) Channel Separation	Pass	Highest 99% OCB: 1.178 MHz (1M18G1D)	437P1B0032
15.247(a)(1)(iii)	RSS-247 5.1(d)	Number of hopping Frequency used	Pass	Meet the limit requirement.	437P1B0032
15.247(a)(1)(iii)	RSS-247 5.1(d)	Dwell time on each channel	Pass	Meet the limit requirement.	437P1B0032
15.247 (d)	RSS-247 5.5	Band Edge Conducted Spurious Emission	Pass	Worst case emission: -44.4 dB	437P1B0032
15.247 (d)	RSS-247 5.5	Conducted Spurious Emission	Pass	Worst case emission: -44.82 dBm	437P1B0032
15.205, 15.209, 15.247 (d)	RSS-247 5.5	Radiated Emission within Restricted Bands	NA	Not Performed.	Not Performed.
15.207	RSS-Gen 8.8	AC Powerline Conducted Emission	Pass	Meet the limit requirement.	437P1B0039
15.203	-	Antenna Requirement	Pass	No antenna connector is used.	437P1B0032 437P1B0039

Note: NA → Not Applicable

3.0. Measurement Uncertainty

Measurement	Frequency	Expanded Uncertainty (k=1.96) (±dB)
AC Power Line Conducted Spurious Emission	150KHz ~ 30MHz	3.43
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	5.01
	200MHz ~ 1000MHz	5.01
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.01
	18GHz ~ 25GHz	5.01

4.0. Equipment List

Bluetooth ATE # 1 (SW Version: Ate Main_3.1.10_R2)

Description	Model	Serial Number	Calibration Date	Calibration Due Date
POWER SUPPLY (0-20V / 0-25A)	6652A	MY40001437	17-Aug-17	17-Aug-19
SPECTRUM ANALYZER	FSEK30	838495/014	11-Jul-18	11-Jul-19
SPECTRUM ANALYZER	E4445A	MY46181513	24-Dec-17	24-Dec-19

Conducted Emission Test

Description	Model	Serial Number	Calibration Date	Calibration Due Date
TEMPERATURE & HUMIDITY LOGGER	TM320	12249289	27-Apr-18	27-Apr-19
V-NETWORK 2-LINE	ENV216V	101039	10-Jul-18	10-Jul-19
EMI TEST RECEIVER	ESCI	100225	9-Jul-18	9-Jul-19
PROGRAMMABLE AC SOURCE	61604	ABR000000926	27-Jun-18	27-Jun-19
Test Software	EMC32			
Version	Ver. 8.53.0			

5.0. Test Mode Applicability and Test Channel Detail

Radiated Emission Test (Above 1GHz)

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

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

EUT Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Environmental conditions
Test Mode	0 to 78	0,39,78	FHSS	GFSK, Pi/4 DQPSK,8DPSK	22.9°C, 61%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	22.9°C, 61%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.

EUT Configure Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Environmental conditions
Application Mode	0 to 78	AUTO	FHSS	AUTO	23.7°C, 73%RH

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).

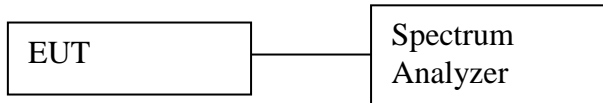
Following channel(s) was (were) selected for the final test as listed below.

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	22.9°C, 61%RH

6.0. Transmitter Test Parameters

6.1. Conducted RF Output Power (Peak)

6.1.1. Test Setup



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

6.1.2. Test Limits:

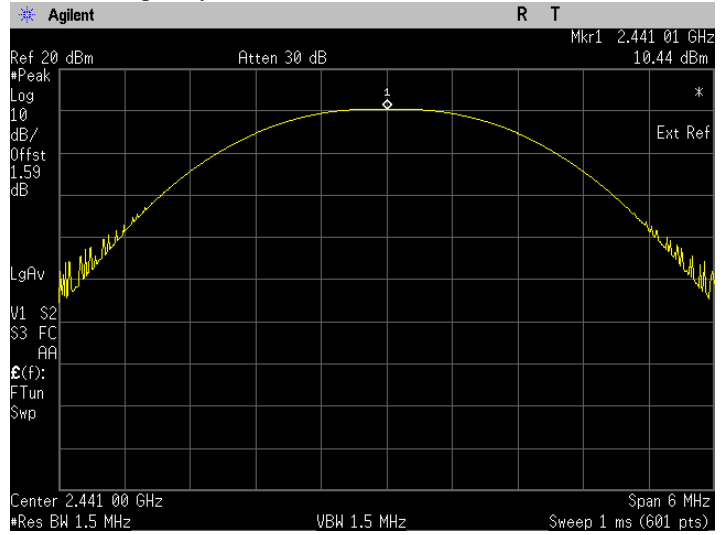
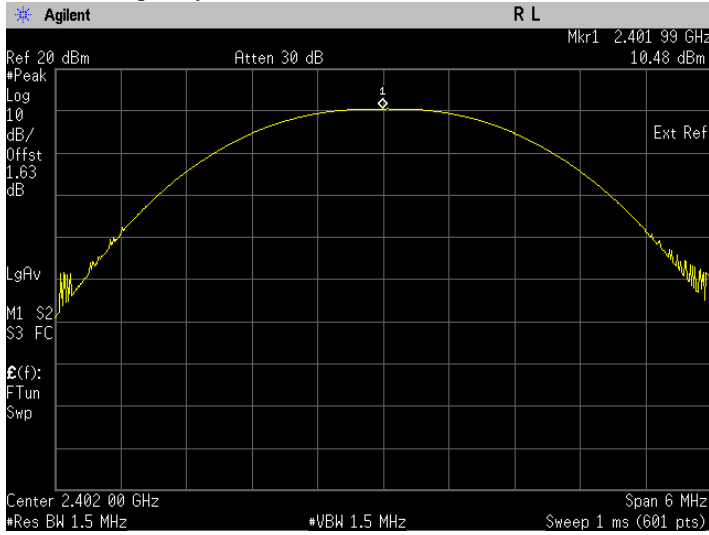
Normal Condition (25 ° C)
≤ 125mW (or 20.9dBm)

6.1.3. Test Data:

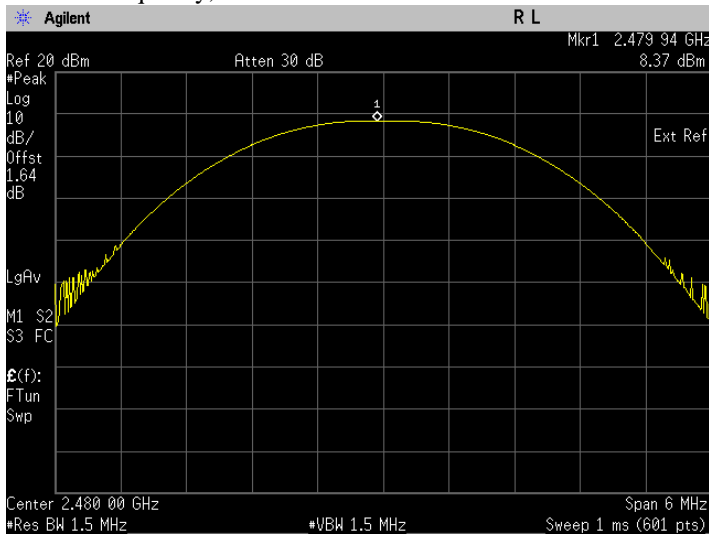
Test Conditions		Test Frequency (GHz)	Results	
Modulation	Voltage(V)		dBm	Status
GFSK	7.50	2.4020	10.485	Pass
		2.4410	10.440	Pass
		2.4800	8.372	Pass
Pi/4DQPSK	7.50	2.4020	10.094	Pass
		2.4410	10.344	Pass
		2.4800	8.010	Pass
8DPSK	7.50	2.4020	10.269	Pass
		2.4410	10.400	Pass
		2.4800	8.235	Pass

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

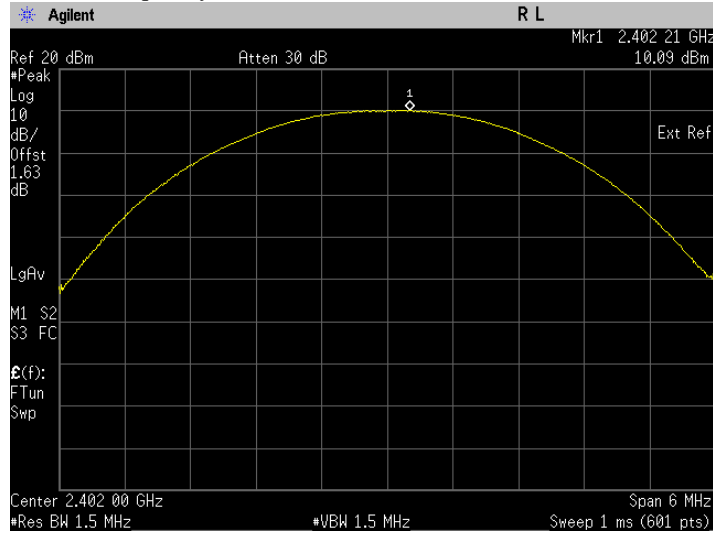
ii. The Conducted RF Output Power test with result at mid frequency, GFSK.



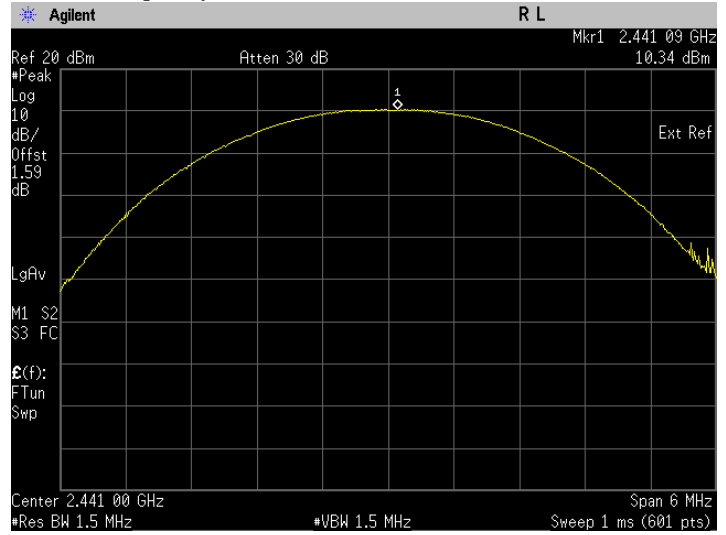
iii. The Conducted RF Output Power test with result at high frequency, GFSK.



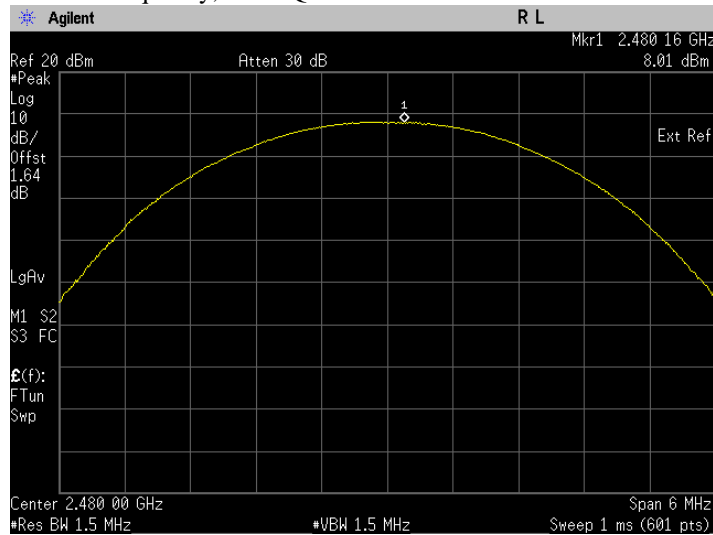
i. The Conducted RF Output Power test with result at low frequency, Pi4/DQPSK.



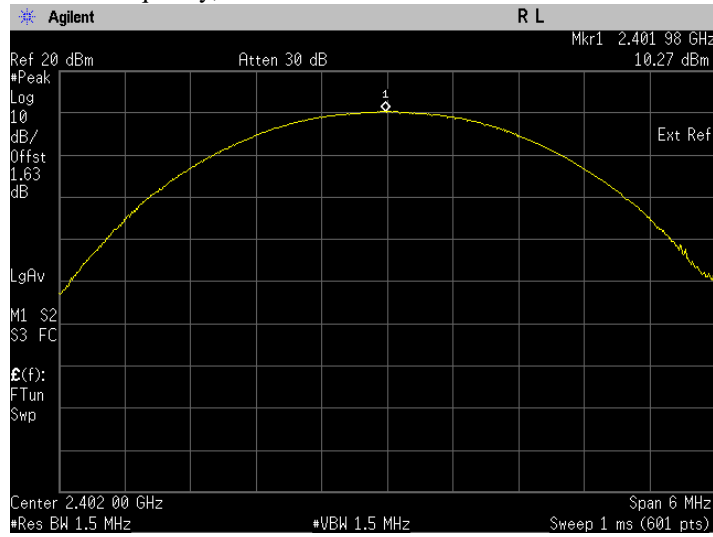
ii. The Conducted RF Output Power test with result at mid frequency, Pi4/DQPSK.



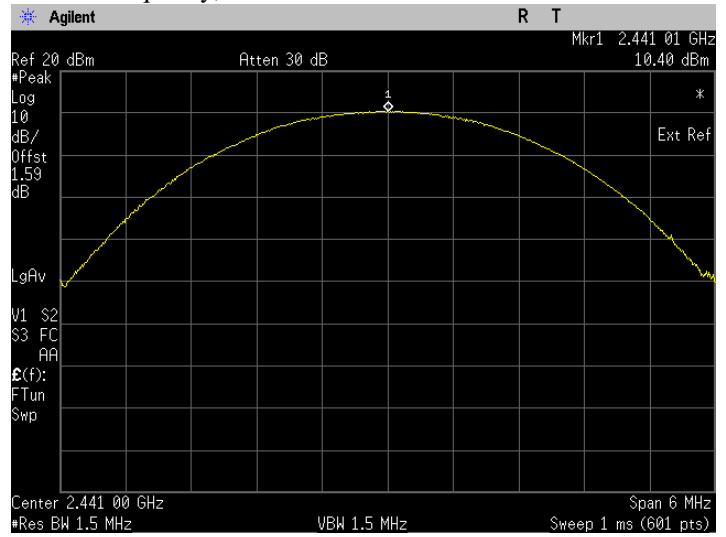
iii. The Conducted RF Output Power test with result at high frequency, Pi4/DQPSK.



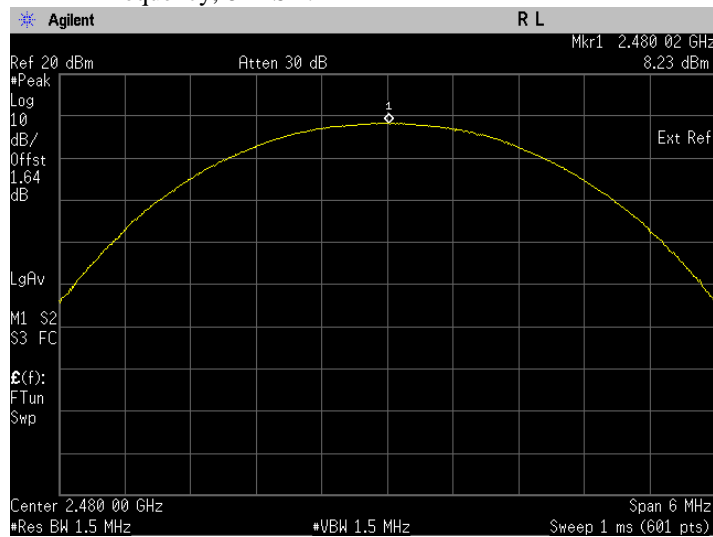
i. The Conducted RF Output Power test with result at low frequency, 8DPSK.



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

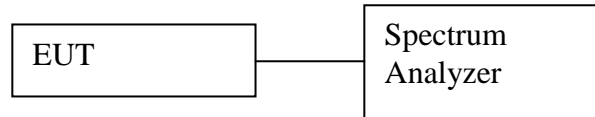


iii. The Conducted RF Output Power test with result at high frequency, 8DPSK.



6.2. 20dB Channel Bandwidth

6.2.1. Test Setup



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

6.2.2. Test Limits:

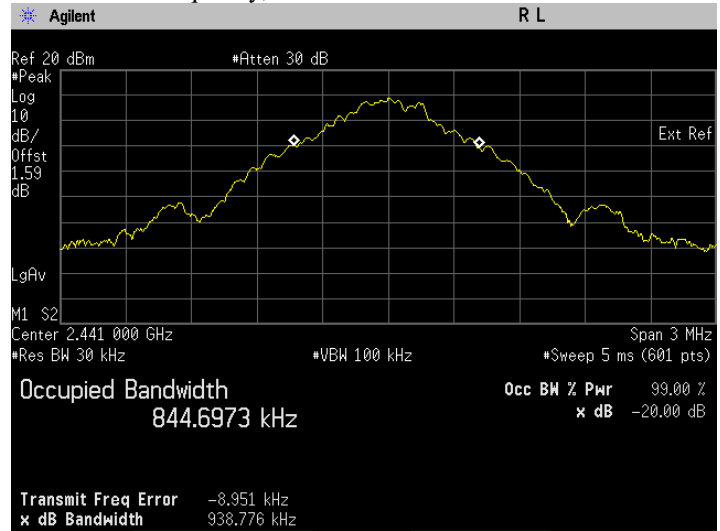
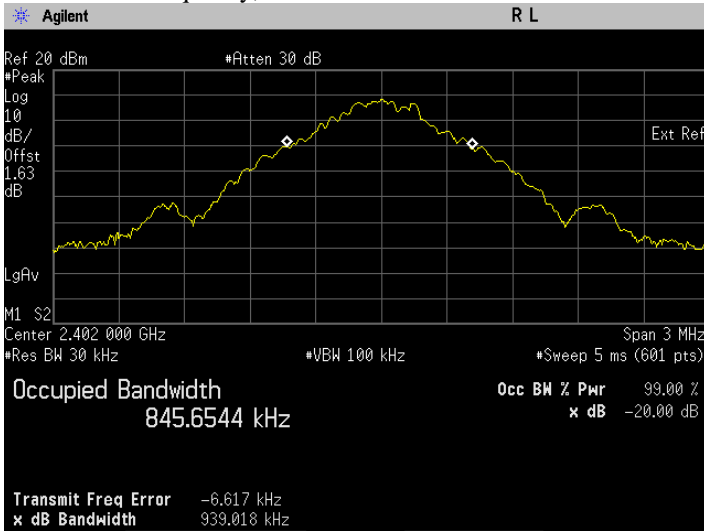
Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

6.2.3. Test Data:

Test Conditions		Test Frequency TX (GHz)	Results (MHz)		
Modulation Type	Voltage(V)		20dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Status
GFSK	7.50	2.4020	0.939	0.846	Pass
		2.4410	0.939	0.845	Pass
		2.4800	0.944	0.847	Pass
Pi/4 DQPSK	7.50	2.4020	1.281	1.170	Pass
		2.4410	1.280	1.170	Pass
		2.4800	1.283	1.170	Pass
8DPSK	7.50	2.4020	1.297	1.172	Pass
		2.4410	1.302	1.176	Pass
		2.4800	1.299	1.178	Pass

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

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

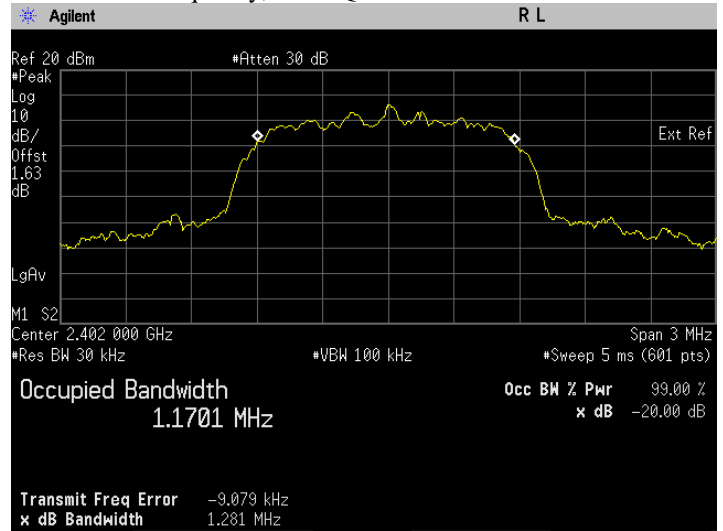
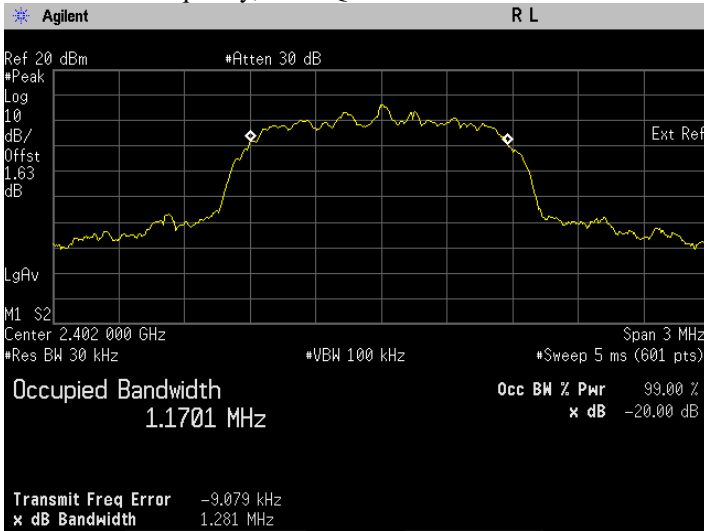


vi. The 20 dB BW & occupied bandwidth test with result at high frequency, GFSK.

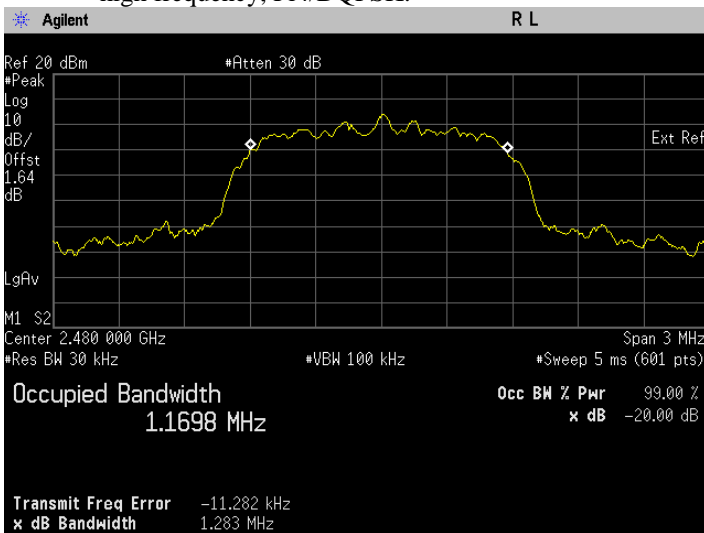


i. The 20 dB BW & occupied bandwidth test with result at low frequency, Pi4/DQPSK.

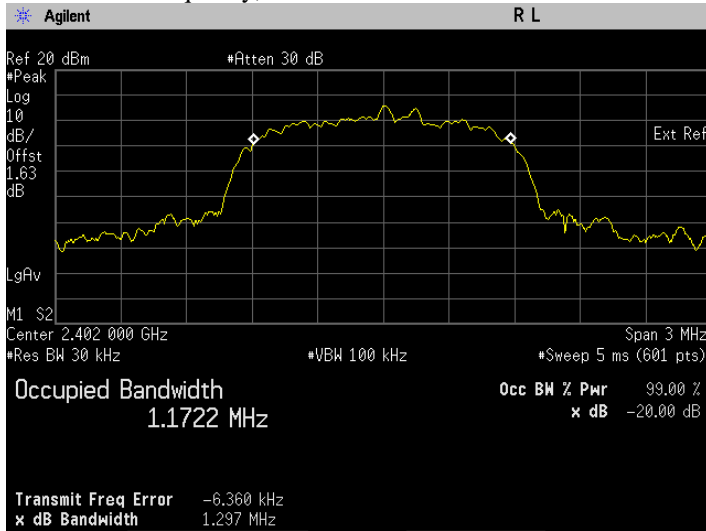
ii. The 20 dB BW & occupied bandwidth test with result at mid frequency, Pi4/DQPSK.



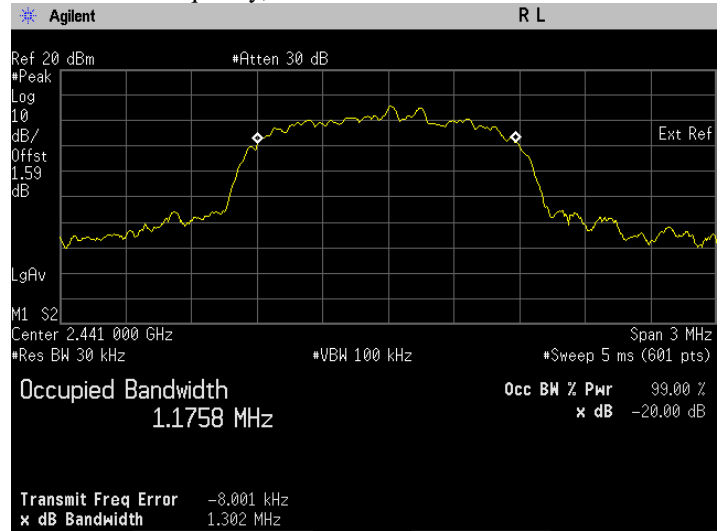
iii. The 20 dB BW & occupied bandwidth test with result at high frequency, Pi4/DQPSK.



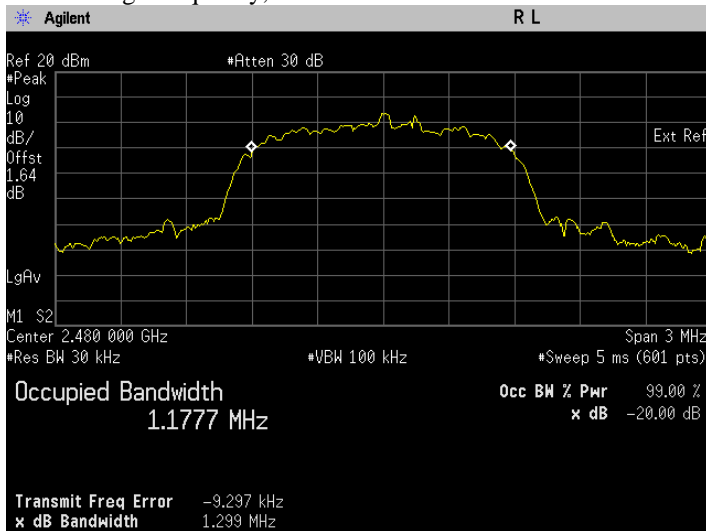
i. The 20 dB BW & occupied bandwidth test with result at low frequency, 8DPSK.



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

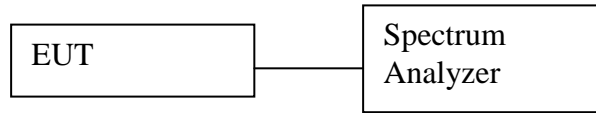


iii. The 20 dB BW & occupied bandwidth test with result at high frequency, 8DPSK.



6.3. Band-edge Conducted Spurious Emission

6.3.1. Test Setup



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

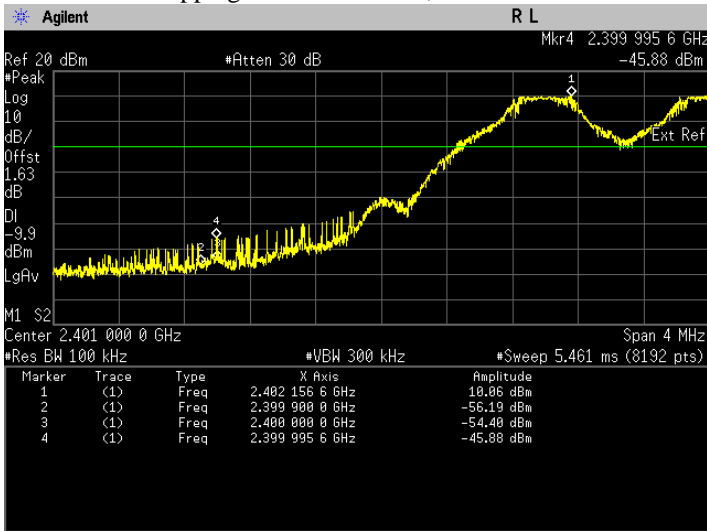
6.3.2. Test Limits

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

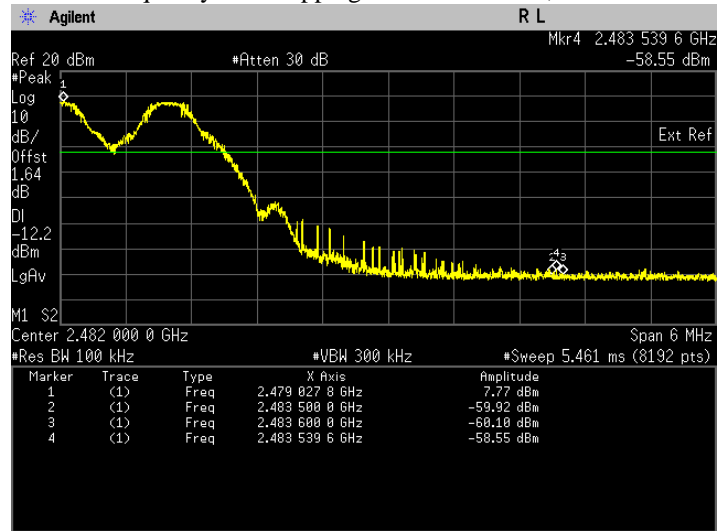
6.3.3. Test Result

Test Conditions		Hopping Method	Test Frequency(GHz)	Results	
Modulation	Voltage(V)			dB	Status
GFSK	7.50	Enabled (continuously)	2.4020	-45.87	Pass
			2.4800	-58.55	Pass
		Disabled (constantly)	2.4020	-44.40	Pass
			2.4800	-56.82	Pass
Pi/4 DQPSK	7.50	Enabled (continuously)	2.4020	-48.80	Pass
			2.4800	-59.66	Pass
		Disabled (constantly)	2.4020	-48.19	Pass
			2.4800	-57.61	Pass
8DPSK	7.50	Enabled (continuously)	2.4020	-48.33	Pass
			2.4800	-59.01	Pass
		Disabled (constantly)	2.4020	-46.87	Pass
			2.4800	-57.72	Pass

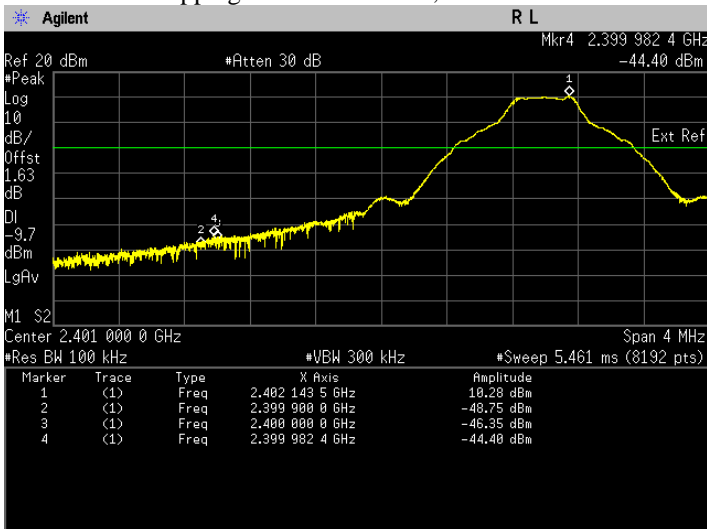
i. The highest band edge emission at low carrier frequency with hopping function enabled, GFSK



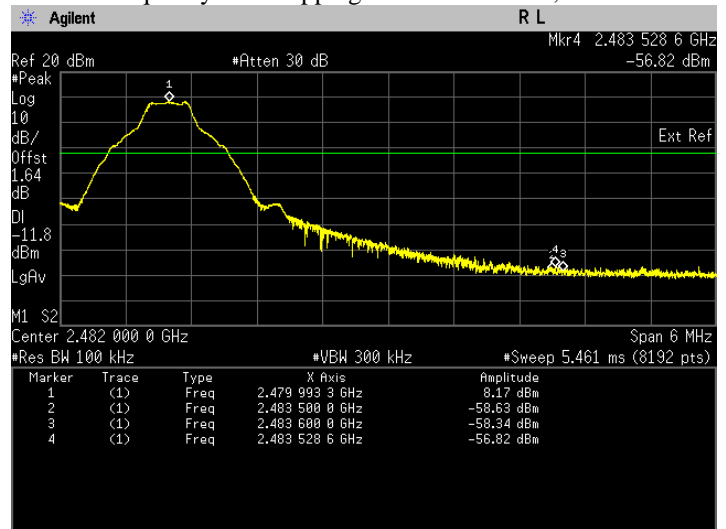
ii. The highest band edge emission at high carrier frequency with hopping function enabled, GFSK



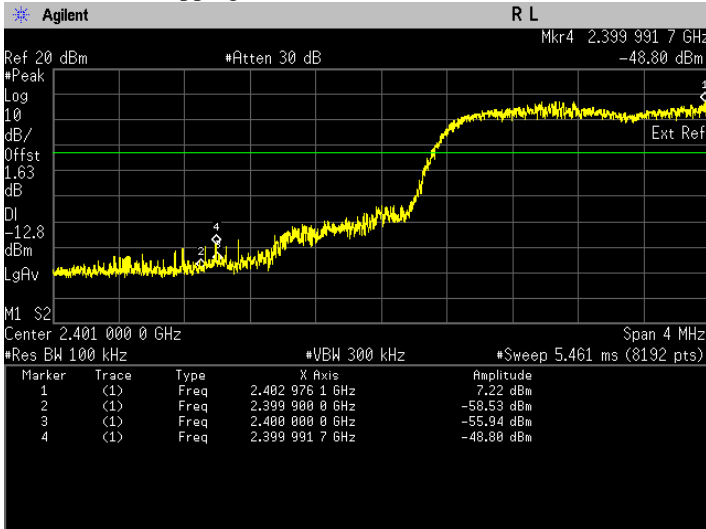
iii. The highest band edge emission at low carrier frequency with hopping function disabled, GFSK



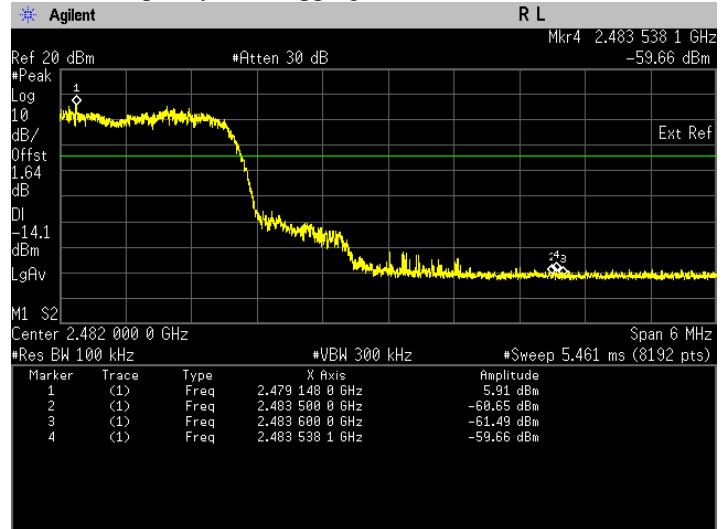
iv. The highest band edge emission at high carrier frequency with hopping function disabled, GFSK



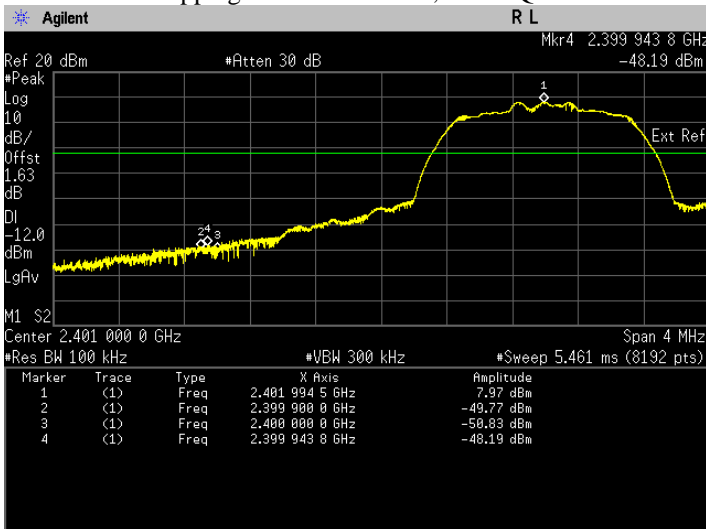
i. The highest band edge emission at low carrier frequency with hopping function enabled, Pi/4 DQPSK



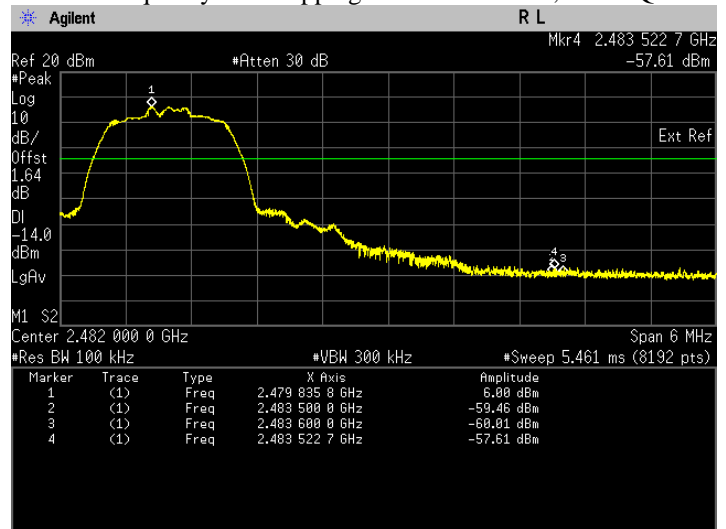
ii. The highest band edge emission at high carrier frequency with hopping function enabled, Pi/4 DQPSK



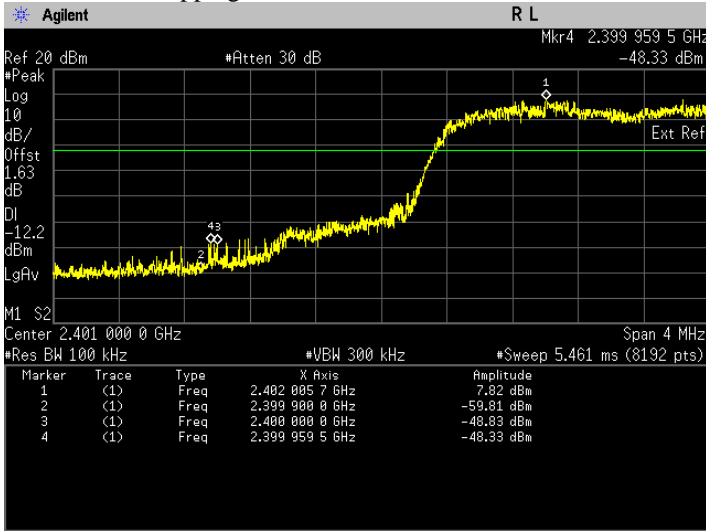
iii. The highest band edge emission at low carrier frequency with hopping function disabled, Pi/4 DQPSK



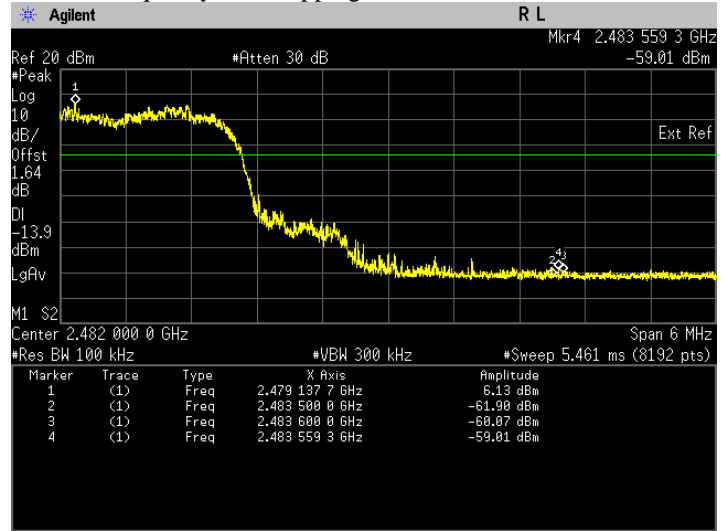
iv. The highest band edge emission at high carrier frequency with hopping function disabled, Pi/4 DQPSK



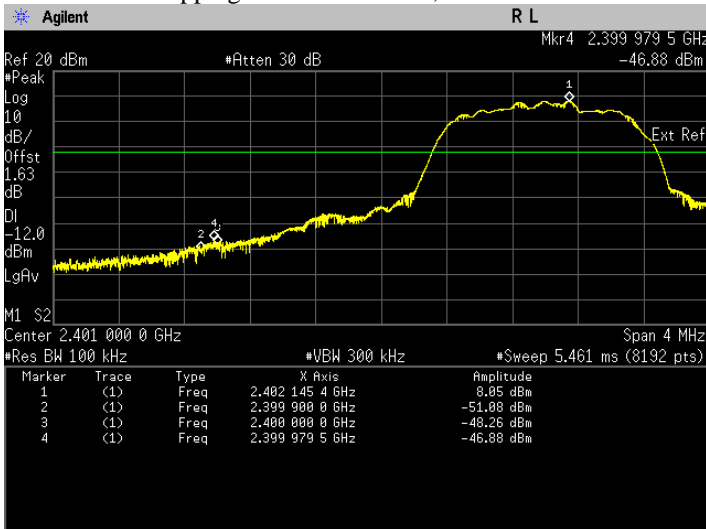
i. The highest band edge emission at low carrier frequency with hopping function enabled, 8DPSK



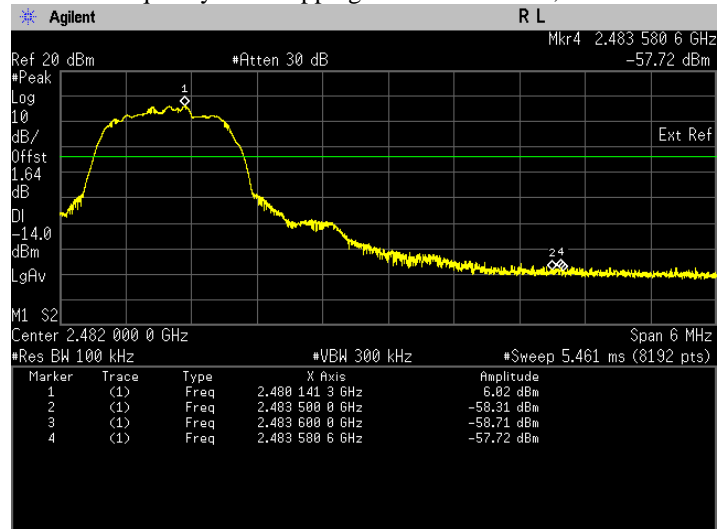
ii. The highest band edge emission at high carrier frequency with hopping function enabled, 8DPSK



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

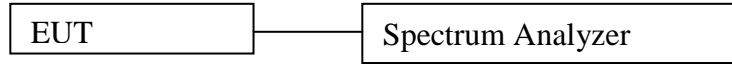


iv. The highest band edge emission at high carrier frequency with hopping function disabled, 8DPSK



6.4. Dwell time on each channel

6.4.1. Test Setup



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

6.4.2. Test Limits:

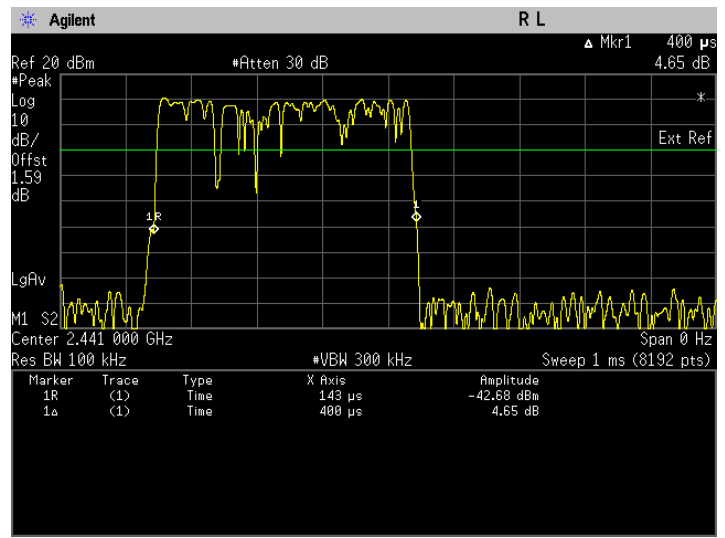
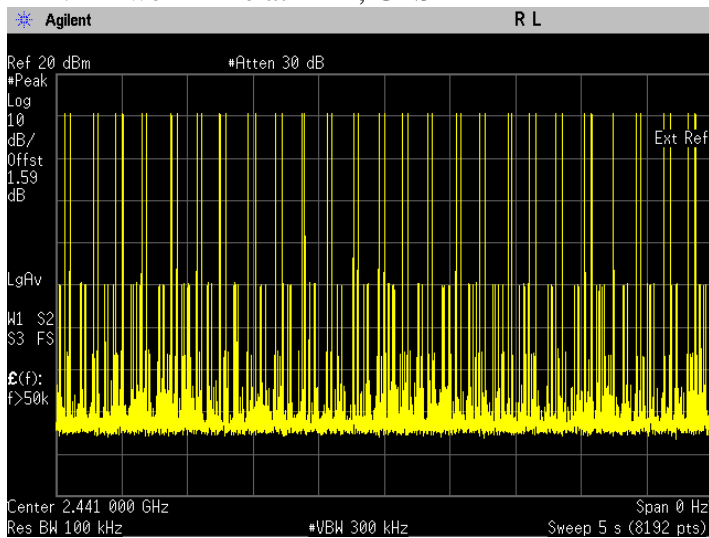
Normal Condition (25 ° C)
≤ 400ms

6.4.3. Test Result

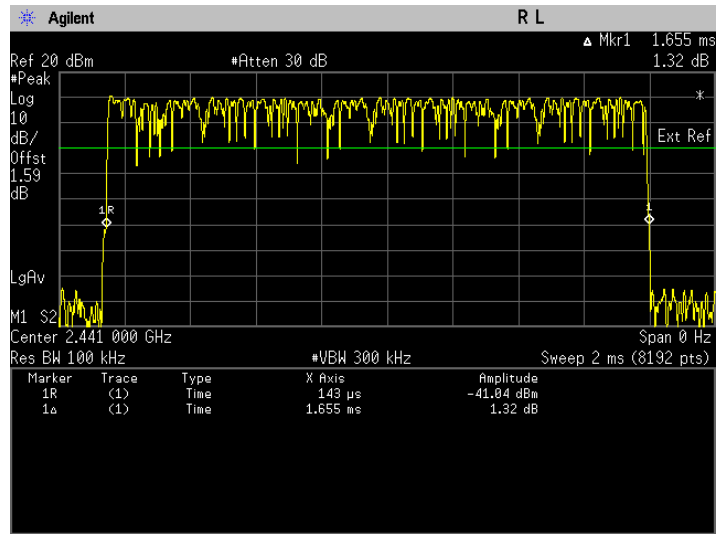
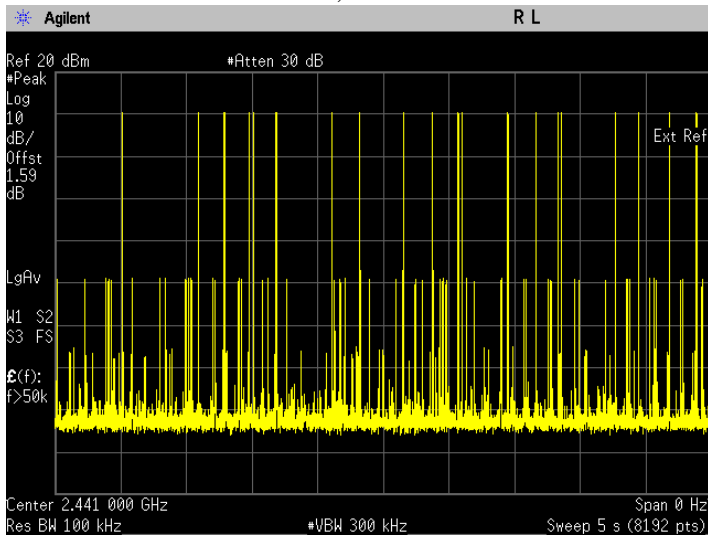
Test Conditions			Data Package	Results			
Modulation	Voltage (V)	Test Frequency (GHz)		No. of transmission in 5s (a)	Dwell time in one transmission (b) (msec)	Total accumulate dwell time in 31.6s. (c) (msec)	Status
GFSK	7.50	2.4410	DH1	50	0.400	126.400000	Pass
			DH3	22	1.655	230.111200	Pass
			DH5	15	2.903	275.204400	Pass
Pi/4 DQPSK	7.50		DH1	51	0.411	132.473520	Pass
			DH3	26	1.657	272.278240	Pass
			DH5	16	2.912	294.461440	Pass
8DPSK	7.50		DH1	50	0.412	130.192000	Pass
			DH3	27	1.663	283.774320	Pass
			DH5	19	2.907	349.072560	Pass

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

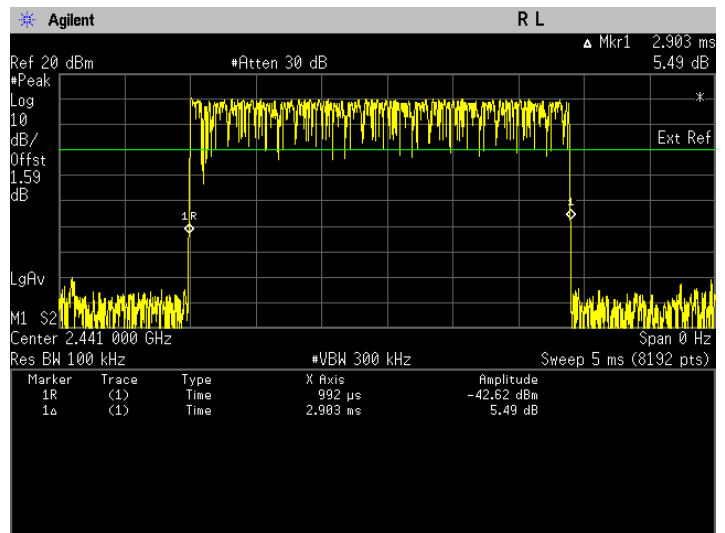
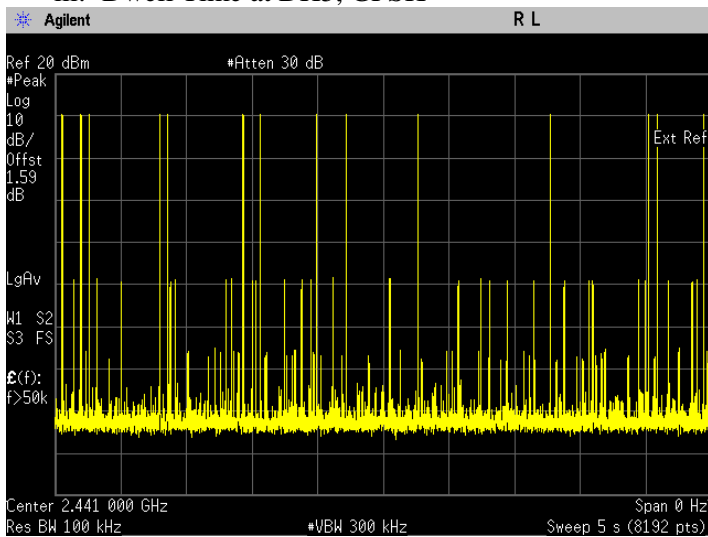
i. Dwell Time at DH1, GFSK



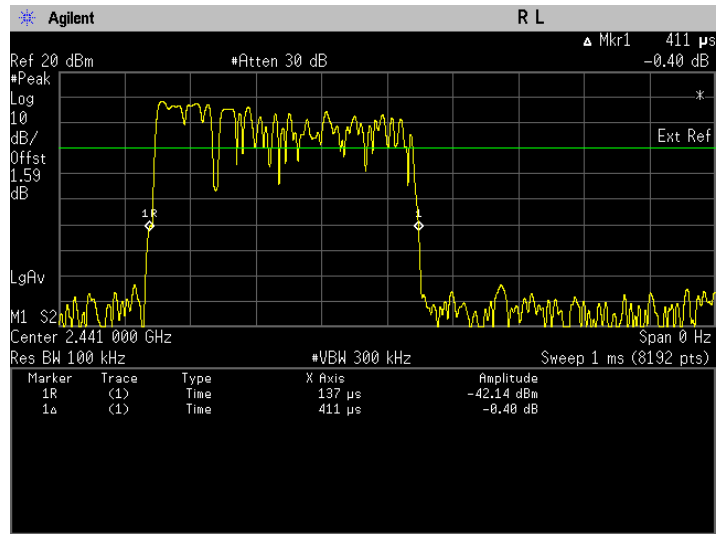
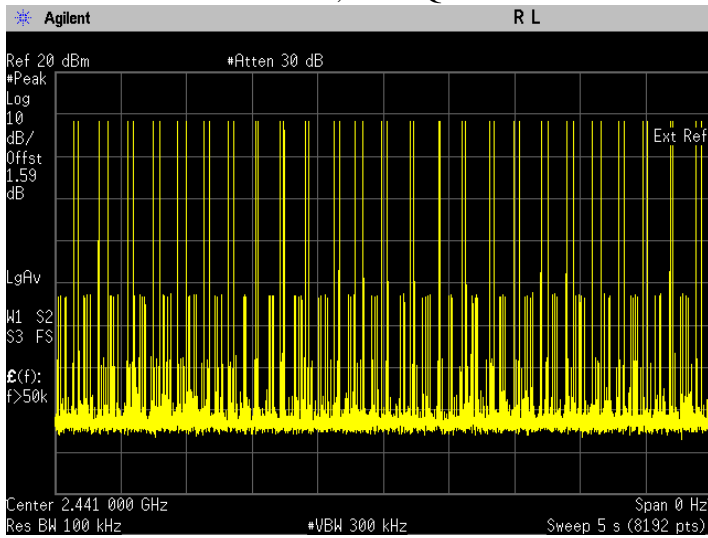
ii. Dwell Time at DH3, GFSK



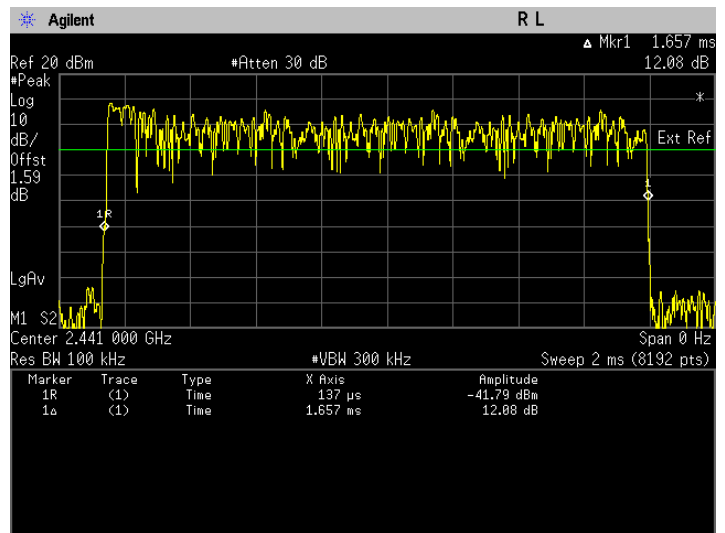
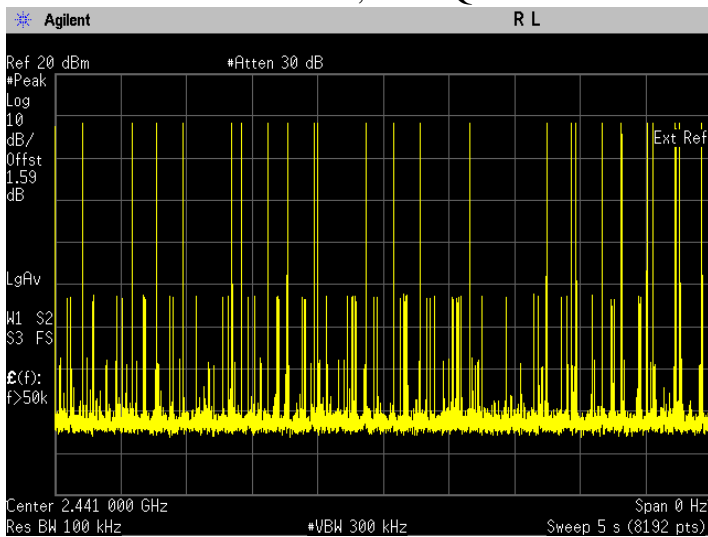
iii. Dwell Time at DH5, GFSK



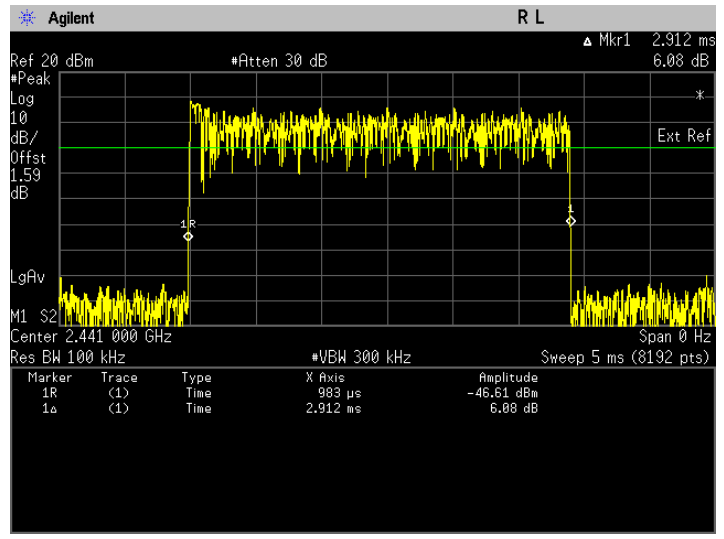
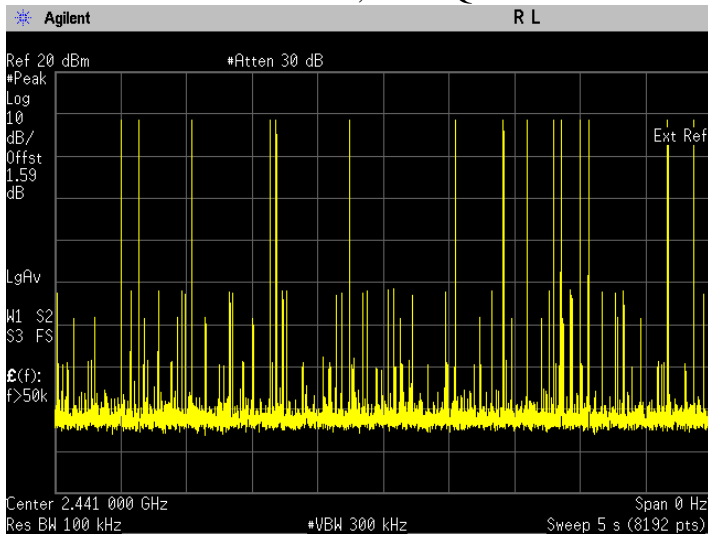
iv. Dwell Time at DH1, PI/4DQPSK



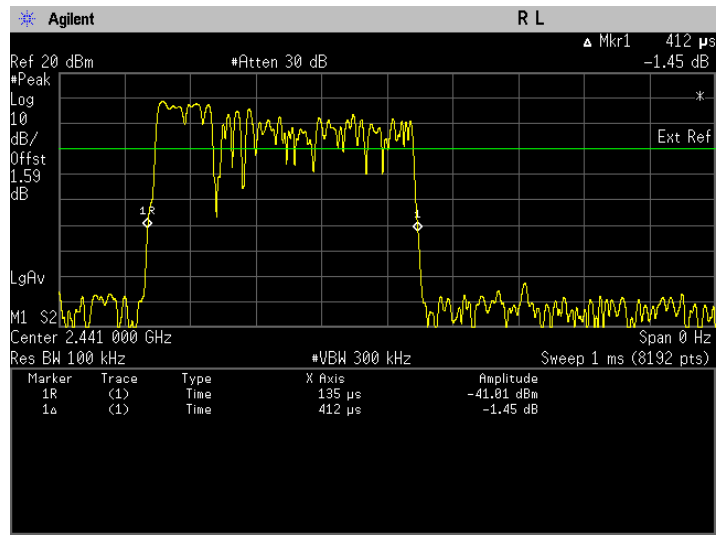
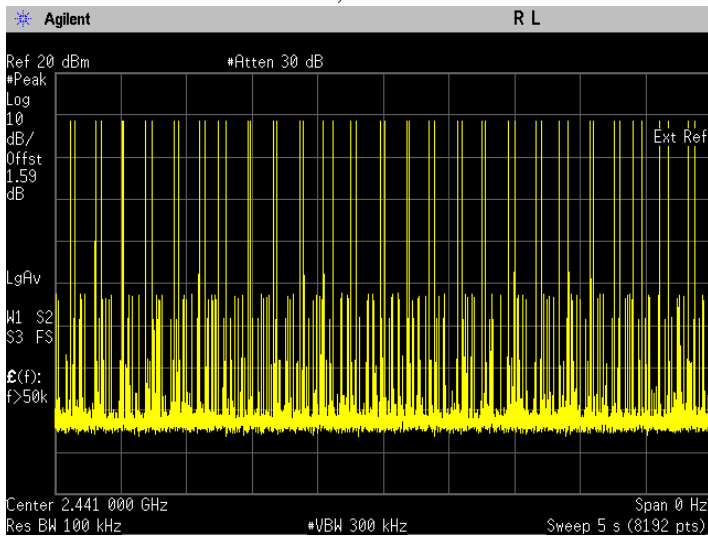
v. Dwell Time at DH3, PI/4DQPSK



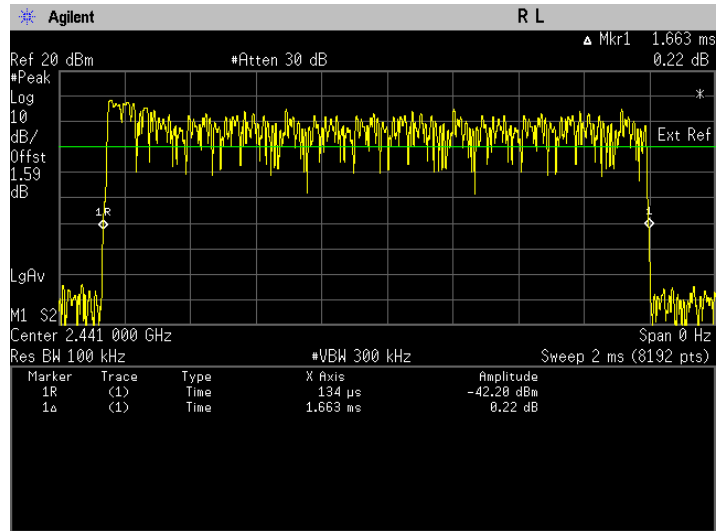
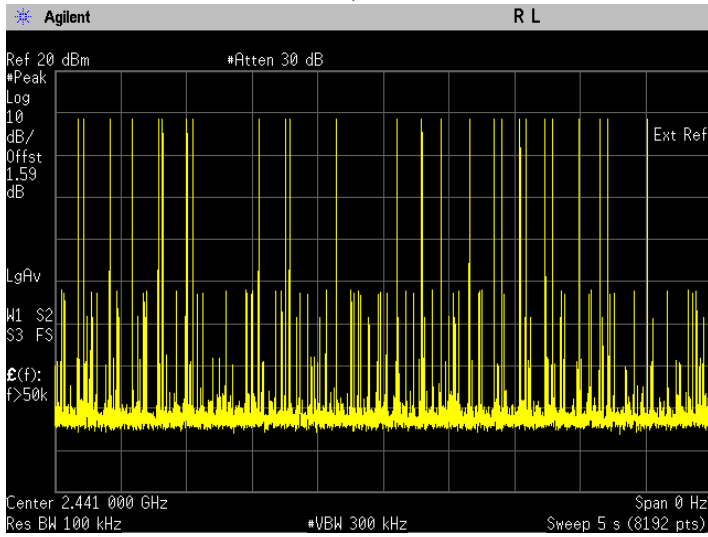
vi. Dwell Time at DH5, PI/4DQPSK



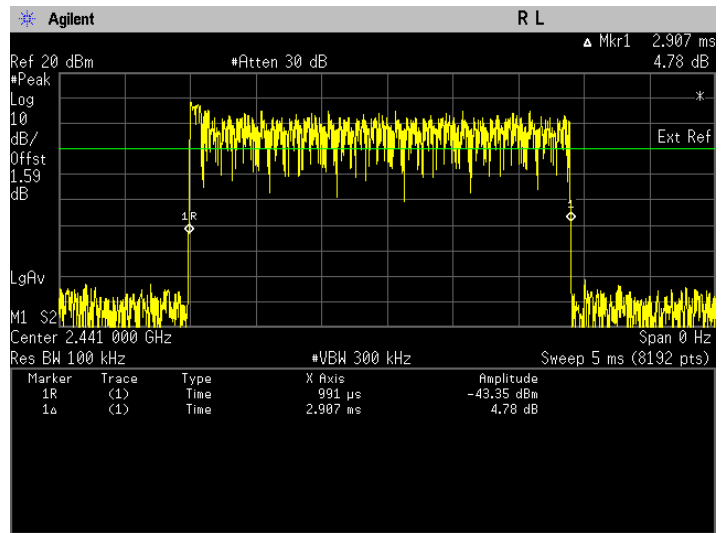
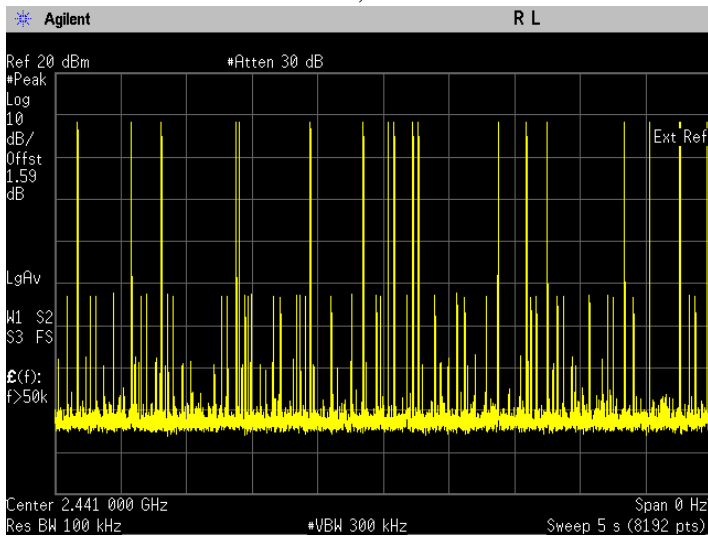
vii. Dwell Time at DH1, 8DPSK



viii. Dwell Time at DH3, 8DPSK

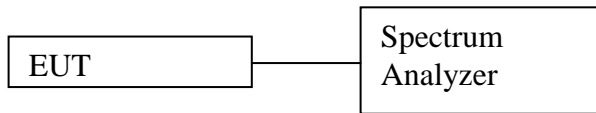


ix. Dwell Time at DH5, 8DPSK



6.5. Number of hopping Frequency

6.5.1. Test Setup



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

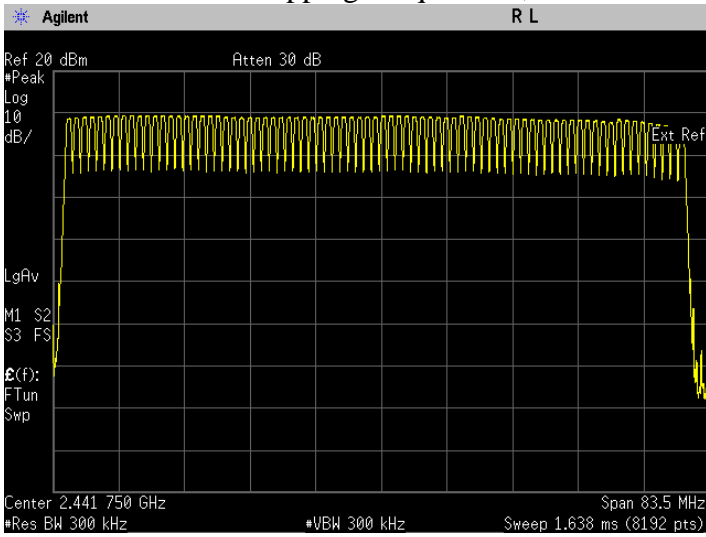
6.5.2. Test Limits:

Normal Condition (25 ° C)
≥ 15

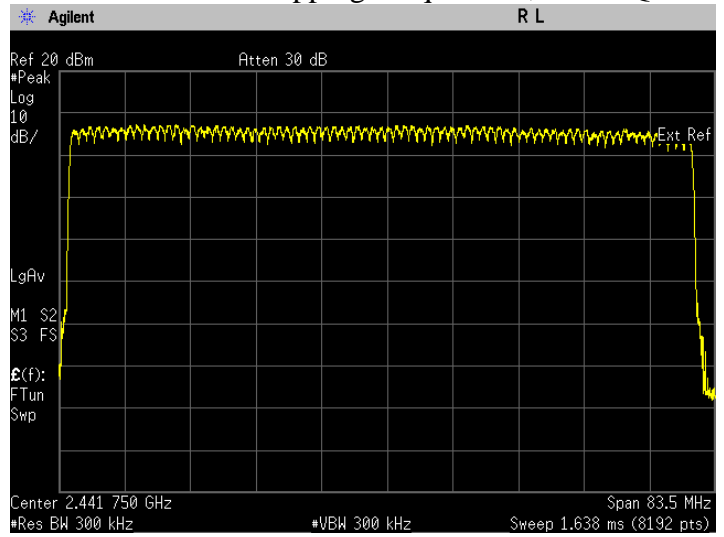
6.5.3. Test Result

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

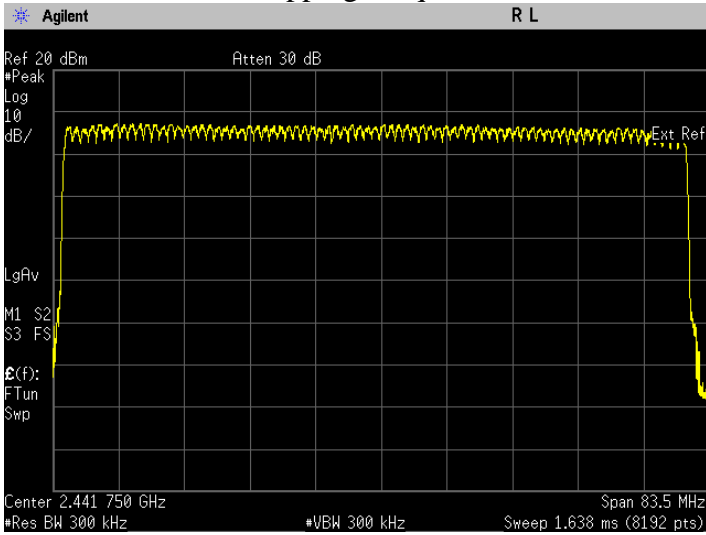
i. Number of Hopping Frequencies, GFSK



ii. Number of Hopping Frequencies, Pi/4 DQPSK

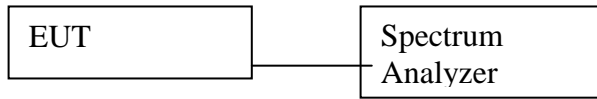


iii. Number of Hopping Frequencies, 8DPSK



6.6. Channel Separation

6.6.1. Test Setup



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

6.6.2. Test Limits:

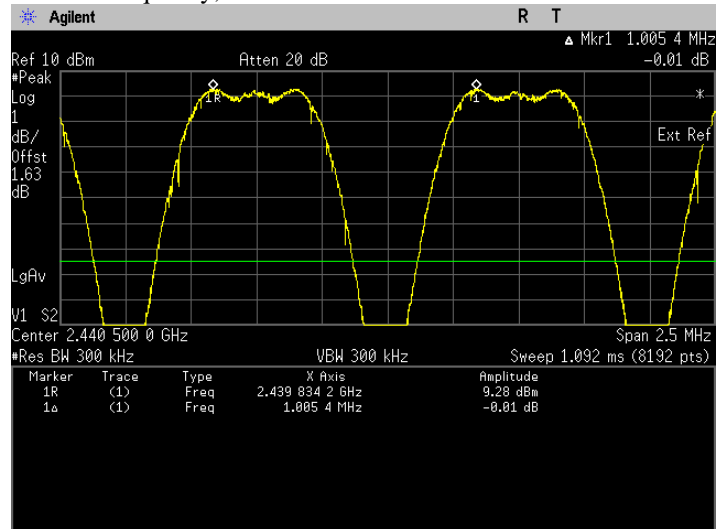
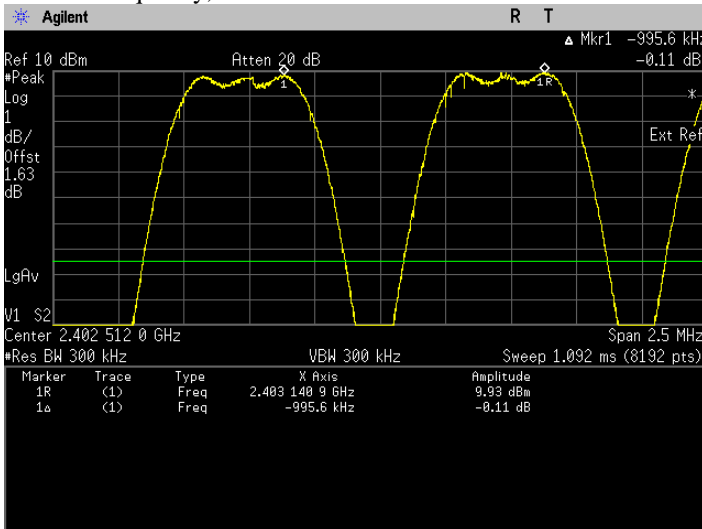
Normal Condition (25 ° C)
≥ 2/3 of 20dB Bandwidth

6.6.3. Test Result

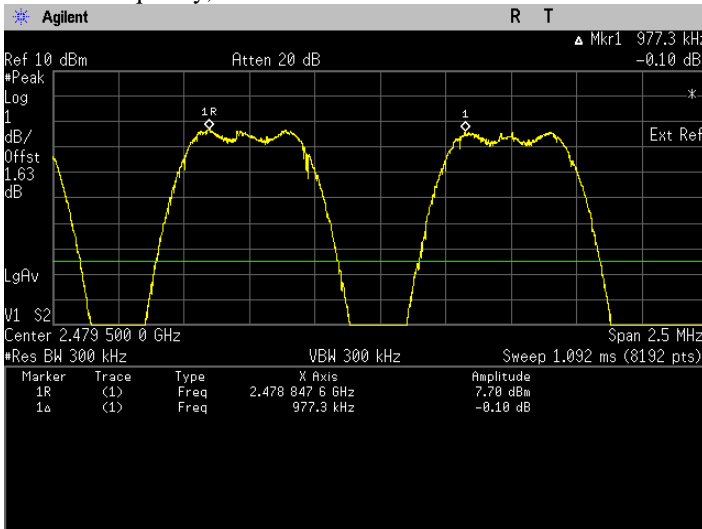
Test Conditions		Test Frequency (GHz)	Results			
Modulation	Voltage(V)		Test Data Adjacent Channel Separation (MHz)	20dB Bandwidth (MHz)	Min Limit = 2/3 of 20dB Bandwidth (kHz)	Status
GFSK	7.50	2.4020	0.996	0.939	626.012	Pass
		2.4410	1.005	0.939	625.851	Pass
		2.4800	0.977	0.944	629.412	Pass
Pi/4DQPSK	7.50	2.4020	0.987	1.281	854.075	Pass
		2.4410	0.994	1.280	853.542	Pass
		2.4800	0.991	1.283	855.317	Pass
8DPSK	7.50	2.4020	1.006	1.297	864.595	Pass
		2.4410	1.146	1.302	868.314	Pass
		2.4800	1.317	1.299	865.842	Pass

i. The Channel Separation test with result at low frequency, GFSK.

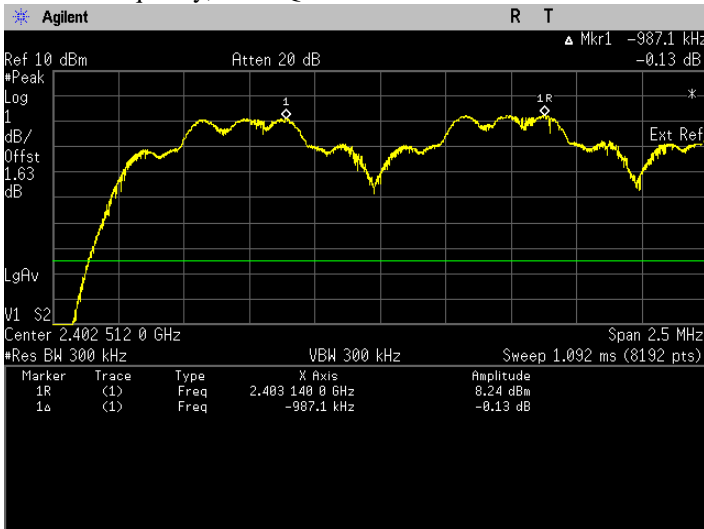
ii. The Channel Separation test with result at mid frequency, GFSK.



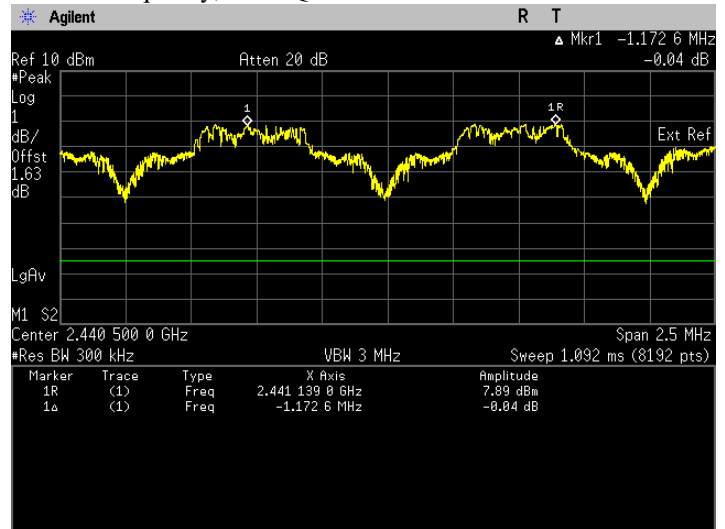
iii. The Channel Separation test with result at high frequency, GFSK.



i. The Channel Separation test with result at low frequency, Pi4/DQPSK.



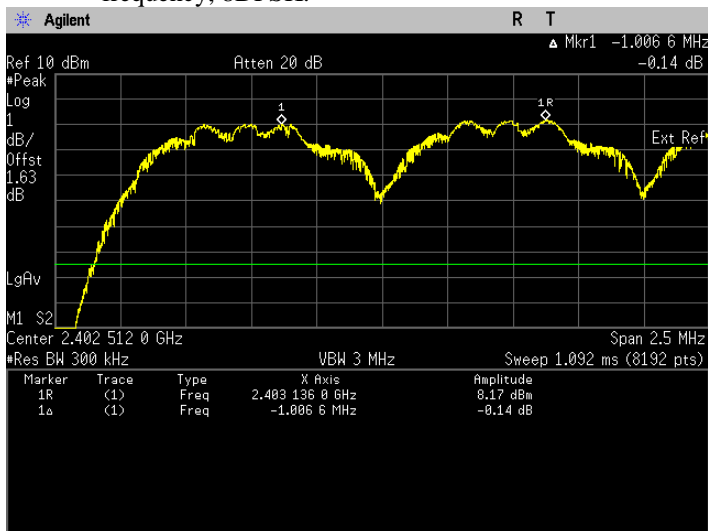
ii. The Channel Separation test with result at mid frequency, Pi4/DQPSK.



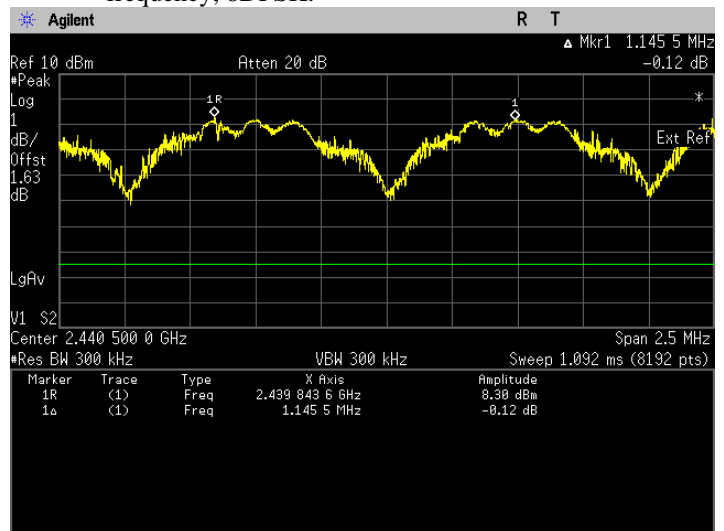
iii. The Channel Separation test with result at high frequency, Pi4/DQPSK.



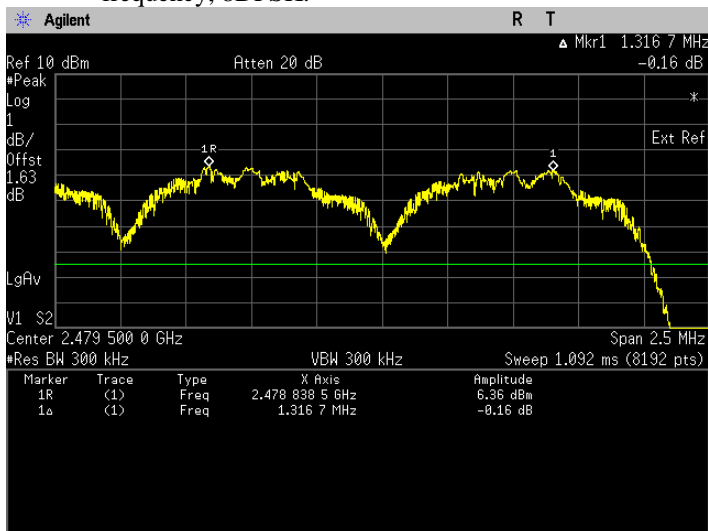
i. The Channel Separation test with result at low frequency, 8DPSK.



ii. The Channel Separation test with result at mid frequency, 8DPSK.

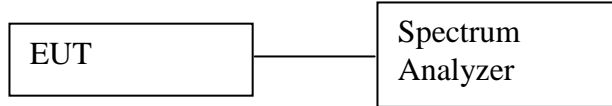


iii. The Channel Separation test with result at high frequency, 8DPSK.



6.7. Conducted Spurious Emission

6.7.1. Test Setup



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

6.7.2. Test Limits:

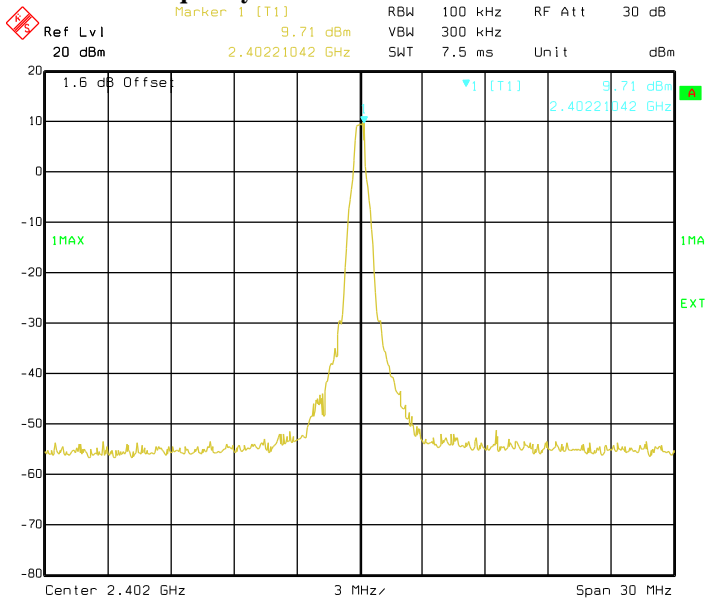
Normal Condition (25 ° C)
Shall be at least 20 dB below for peak power.

6.7.3. Test Data:

Test Conditions			Results		
Modulation	Voltage(V)	Test Frequency (GHz)	Spurs (MHz)	Level (dBm)	Status
GFSK	7.50	2.4020	14191.343	-50.022	Pass
		2.4410	14191.343	-48.431	Pass
		2.4800	2381.884	-44.820	Pass
Pi/4 DQPSK	7.50	2.4020	14191.343	-49.808	Pass
		2.4410	14191.343	-50.056	Pass
		2.4800	14191.343	-49.452	Pass
8DPSK	7.50	2.4020	14191.343	-49.456	Pass
		2.4410	14191.343	-49.682	Pass
		2.4800	14191.343	-48.458	Pass

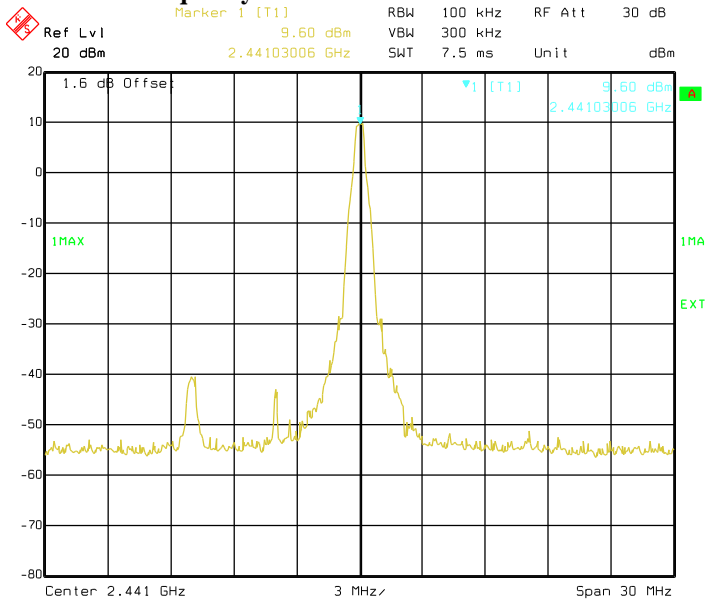
GFSK Modulation:

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



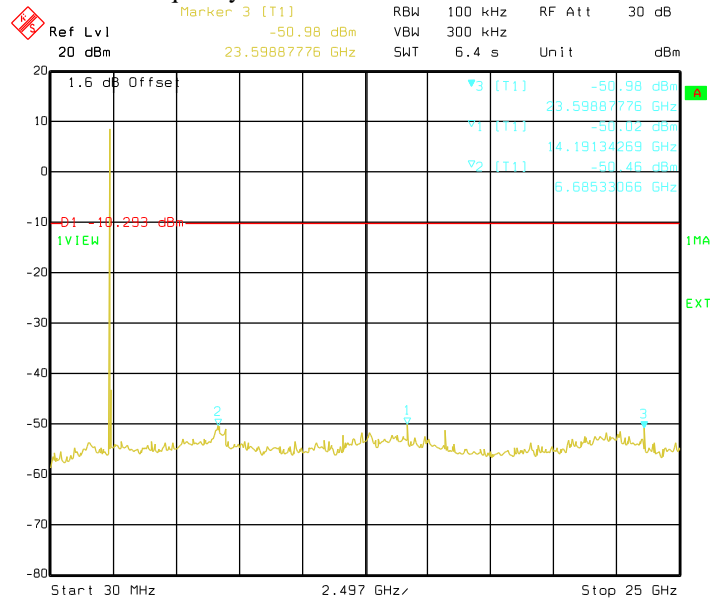
Date: 14. JAN. 2019 13:12:47

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



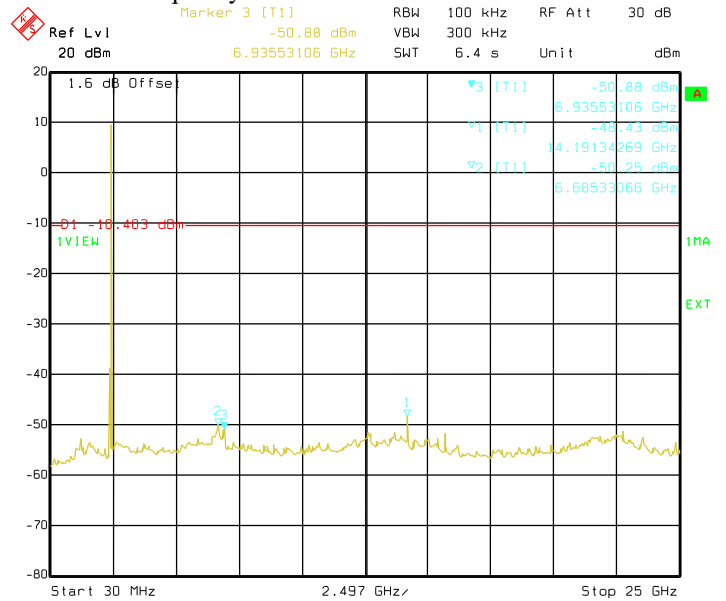
Date: 14. JAN. 2019 13:15:40

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



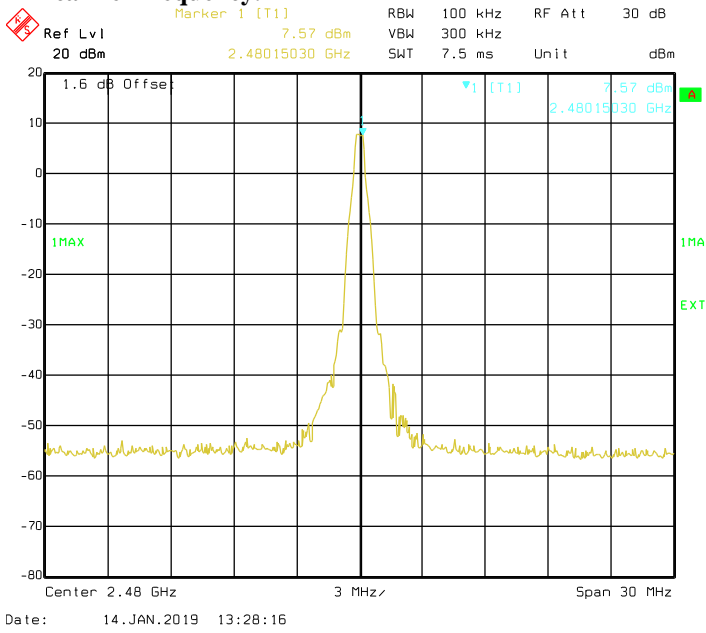
Date: 14. JAN. 2019 13:13:40

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

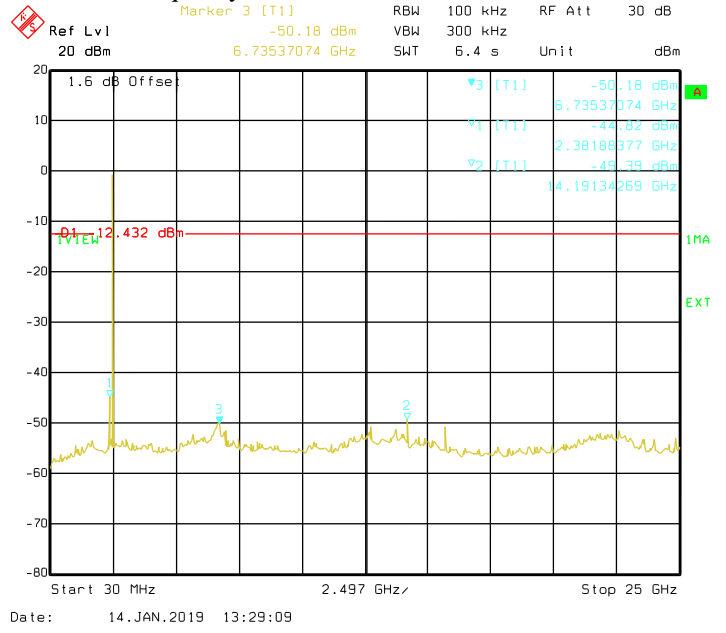


Date: 14. JAN. 2019 13:16:33

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

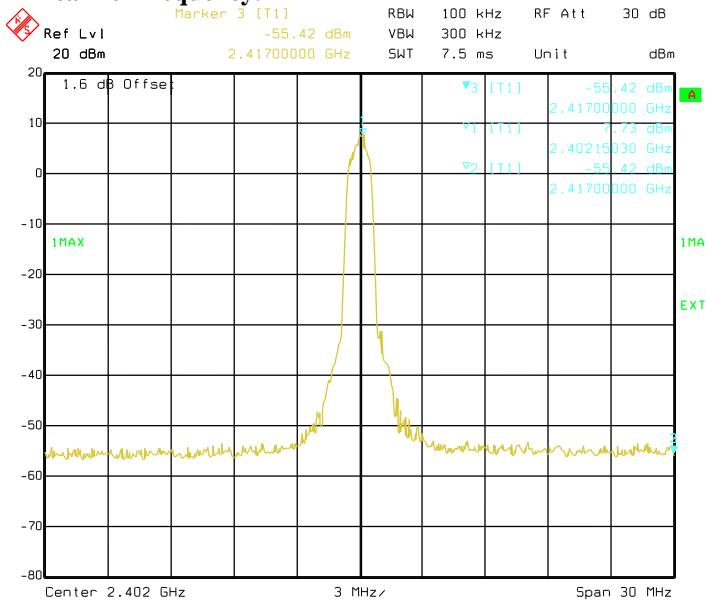


- Spurious emission measurement in 30MHz – 25GHz at high carrier frequency.



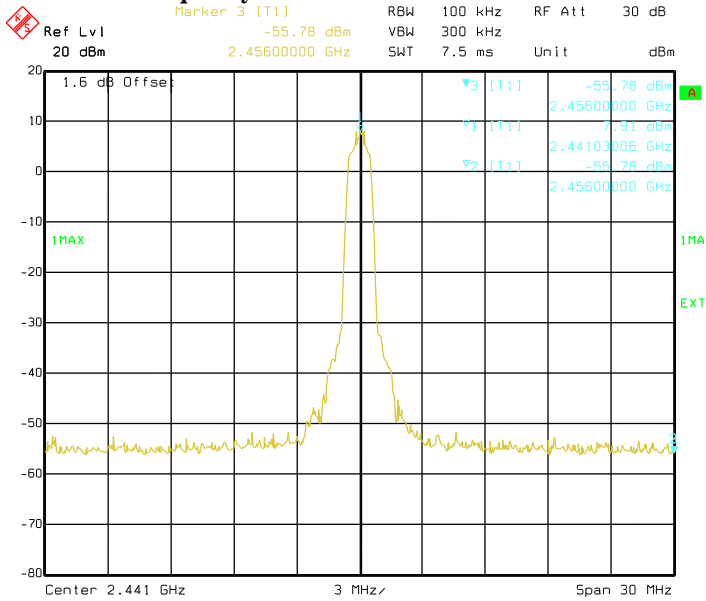
Pi/4 DQPSK Modulation:

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



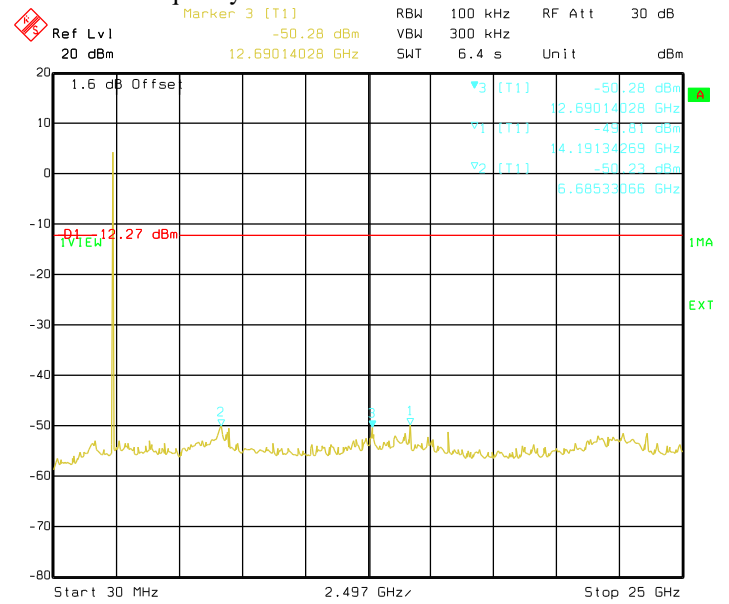
Date: 09. JAN. 2019 13:36:18

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



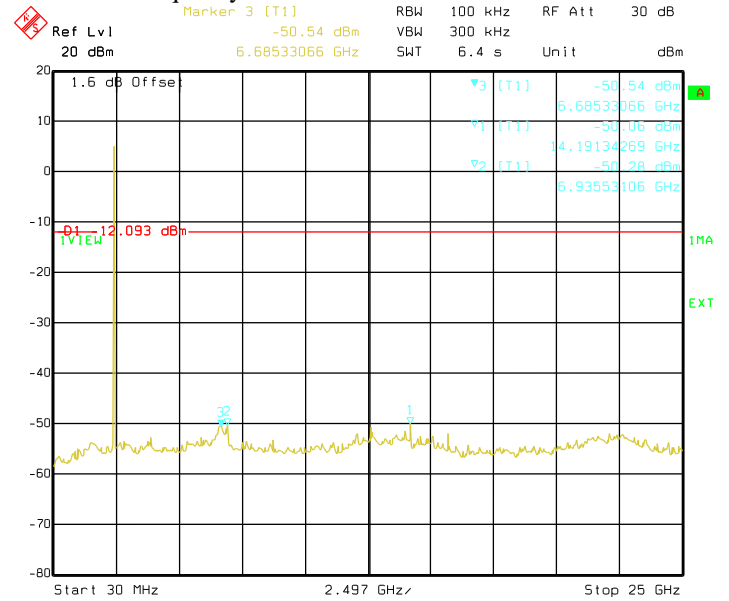
Date: 09. JAN. 2019 13:41:42

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



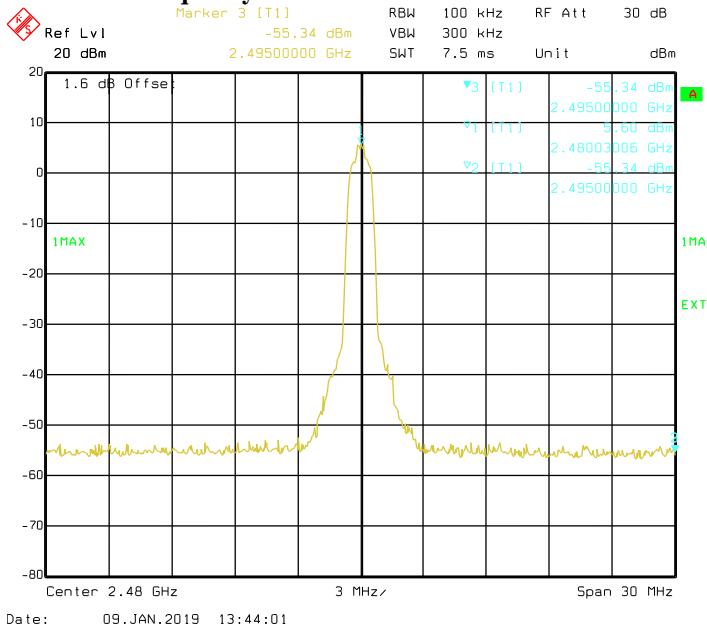
Date: 09. JAN. 2019 13:37:08

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

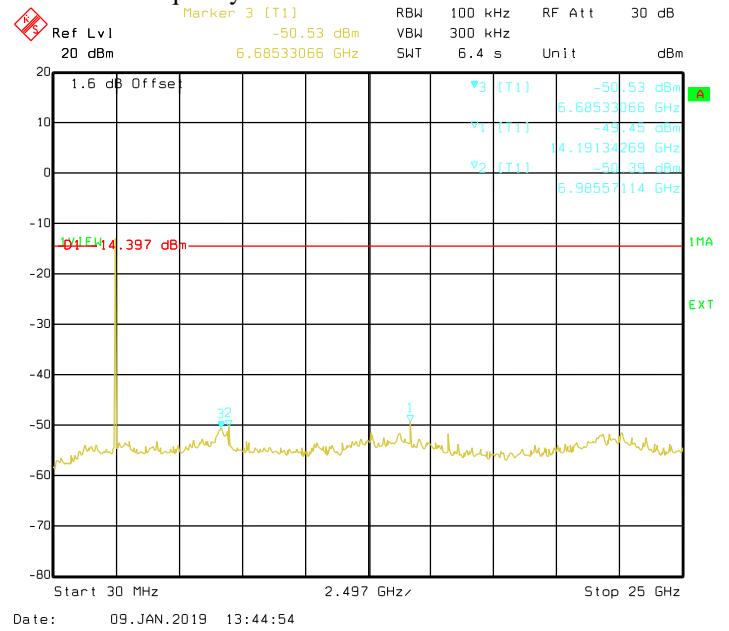


Date: 09. JAN. 2019 13:42:35

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

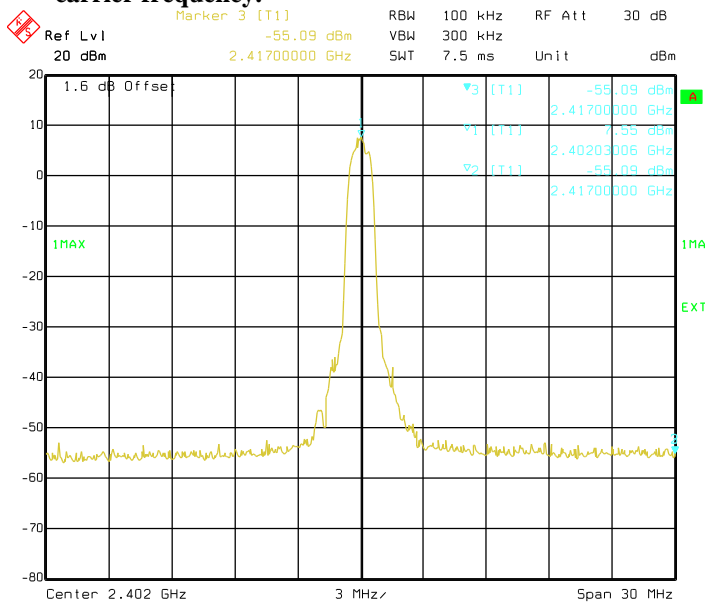


vi. Spurious emission measurement in 30MHz – 25GHz at high carrier frequency.



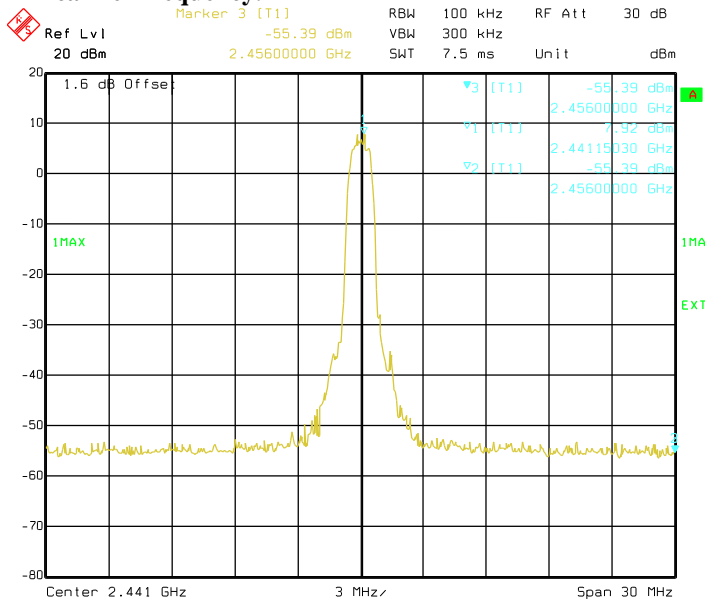
8DPSK Modulation:

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



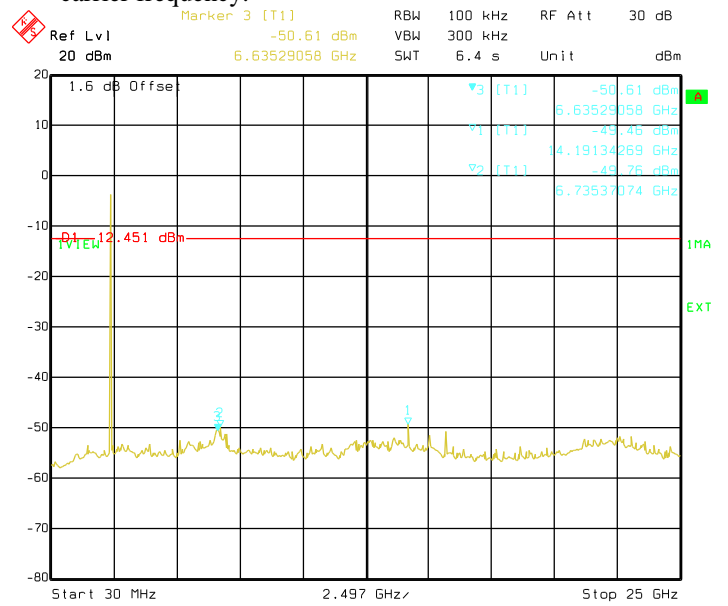
Date: 09. JAN. 2019 13:53:21

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



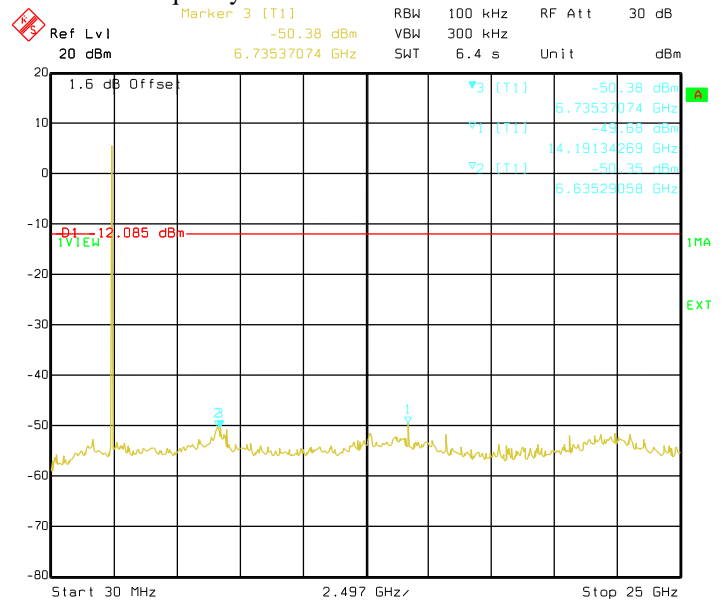
Date: 09. JAN. 2019 13:57:27

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



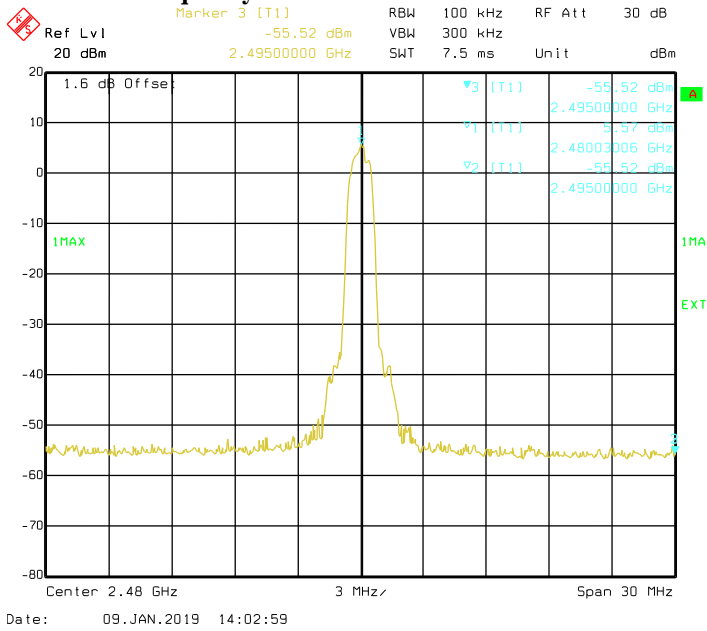
Date: 09. JAN. 2019 13:54:14

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

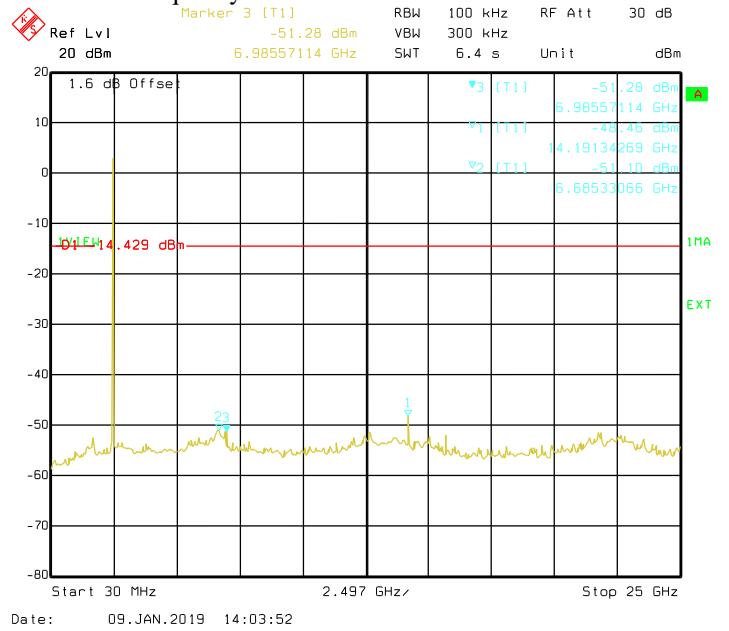


Date: 09. JAN. 2019 13:58:19

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

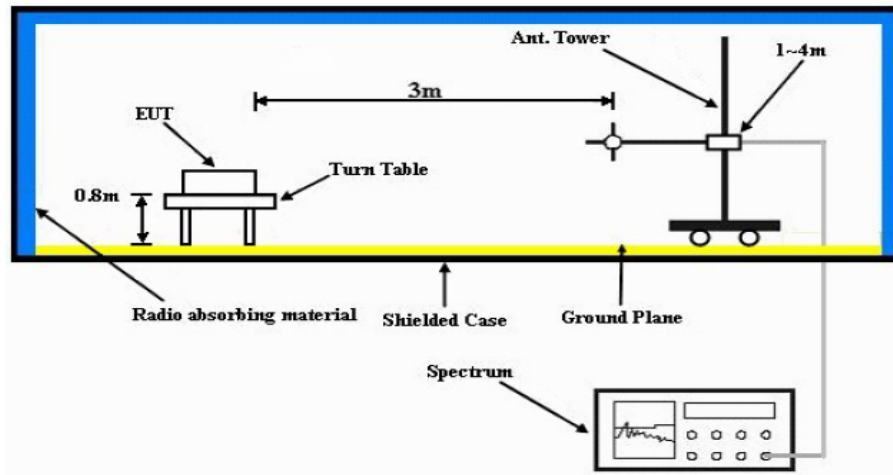


vi. Spurious emission measurement in 30MHz – 25GHz at high carrier frequency.



6.8. Radiated Emission within restricted Bands

6.8.1. Test Setup



- The EUT is placed on the top of a rotating table 0.8m above the ground at a 3m semi-anechoic chamber. The table is rotated 360 degrees to determine the position of the highest radiation.
- The EUT is set 3m away from the interference-receiving antenna, which is mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- The test-receiver system is set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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:

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

6.8.2. Test Limits:

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

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

NOTE:

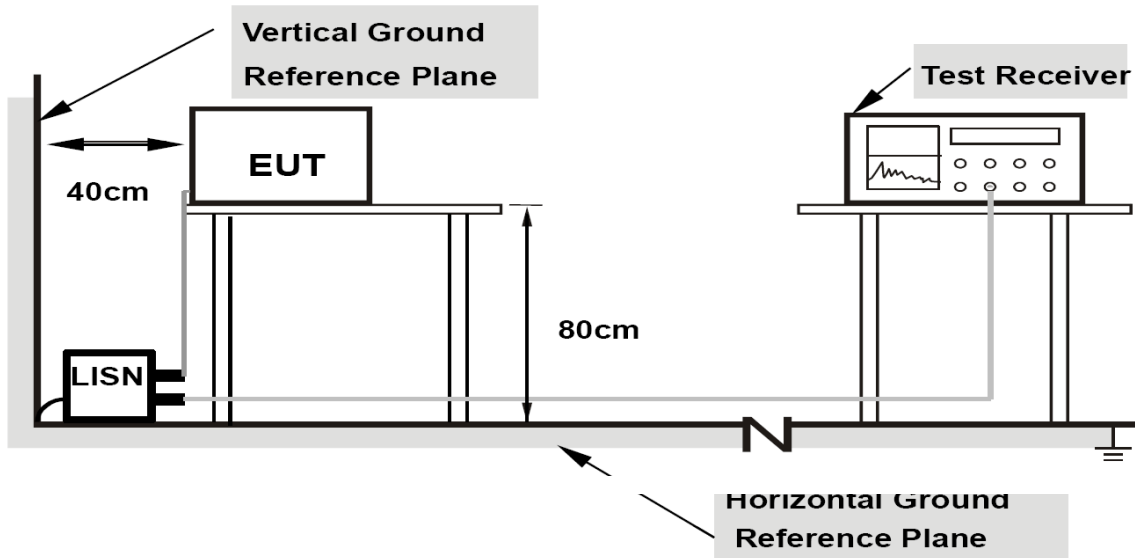
- a. The lower limit shall apply at the transition frequencies.
- b. Emission level (dBuV/m) = 20 log Emission level (uV/m).
- c. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted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

6.8.3. Test Data:

Not Performed.

6.9. AC Powerline Conducted Emission

6.9.1. Test Setup



- 1) Tests were conducted for both Receive and Transmit Mode of the EUT.
- 2) The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50uH of coupling impedance for the measuring instrument.
- 3) Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- 4) The frequency range from 150 kHz to 30MHz was measured.

6.9.2. Test Limits:

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

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

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

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

6.9.3. Test Result

EMI Auto Test Template: Voltage with 2-Line-LISN

Hardware Setup: Voltage with 2-Line-LISN
Measurement Type: 2 Line LISN
Frequency Range: 150 kHz - 30 MHz
Graphics Level Range: 0 dB μ V - 80 dB μ V

Preview Measurements:
Scan Test Template: Voltage with 2-Line-LISN pre

Data Reduction:
Limit Line #1: FCC Part 15 Class B Voltage on Mains QP
Limit Line #2: FCC Part 15 Class B Voltage on Mains AV
Peak Search: 6 dB , Maximum Results: 20
Subrange Maxima: 10 Subranges , Maxima per Subrange: 1
Acceptance Offset: -20 dB
Maximum Number of Results: 20

Maximization Measurements:
Template for Single Meas.: Voltage with 2-Line-LISN max

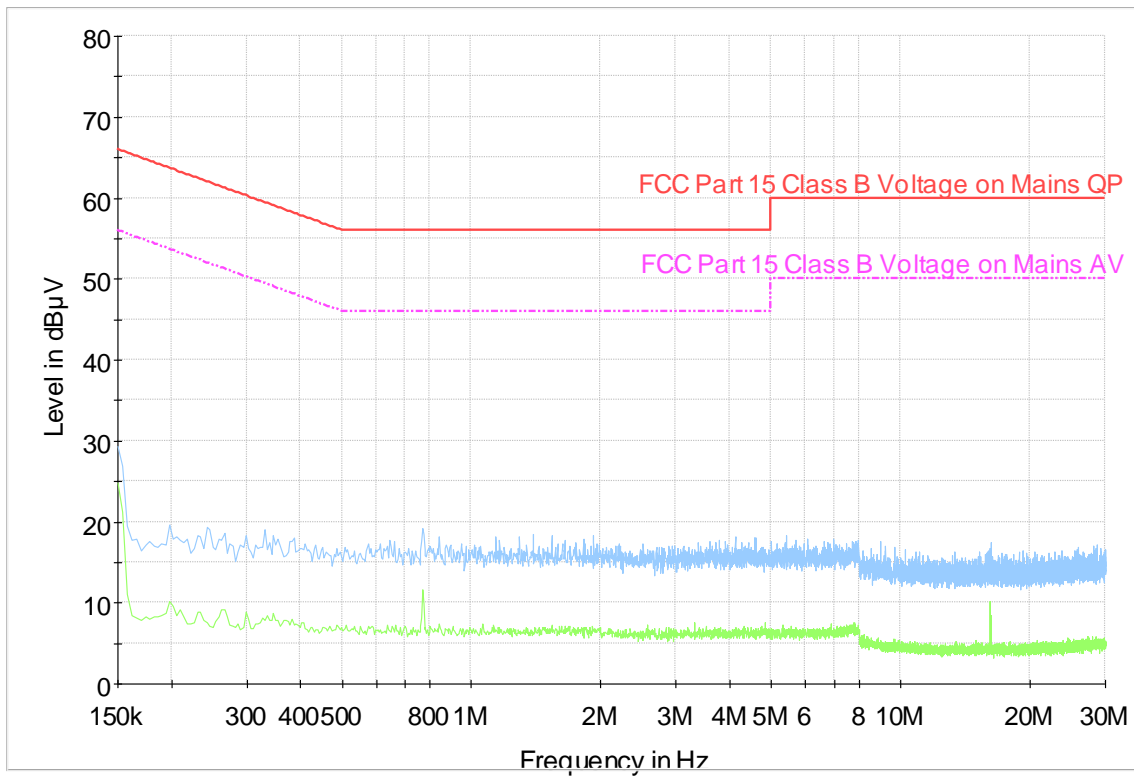
Final Measurements:
Template for Single Meas.: Voltage with 2-Line-LISN fin

Subrange	Step Size	Detectors	IF BW	Meas. Time	Preamp
150 kHz - 30 MHz	4.5 kHz	QPK; CAV	9 kHz	1 s	0 dB

Receiver: [ESCI 3]

1) Ambient Noise

Voltage with 2-Line-LISN

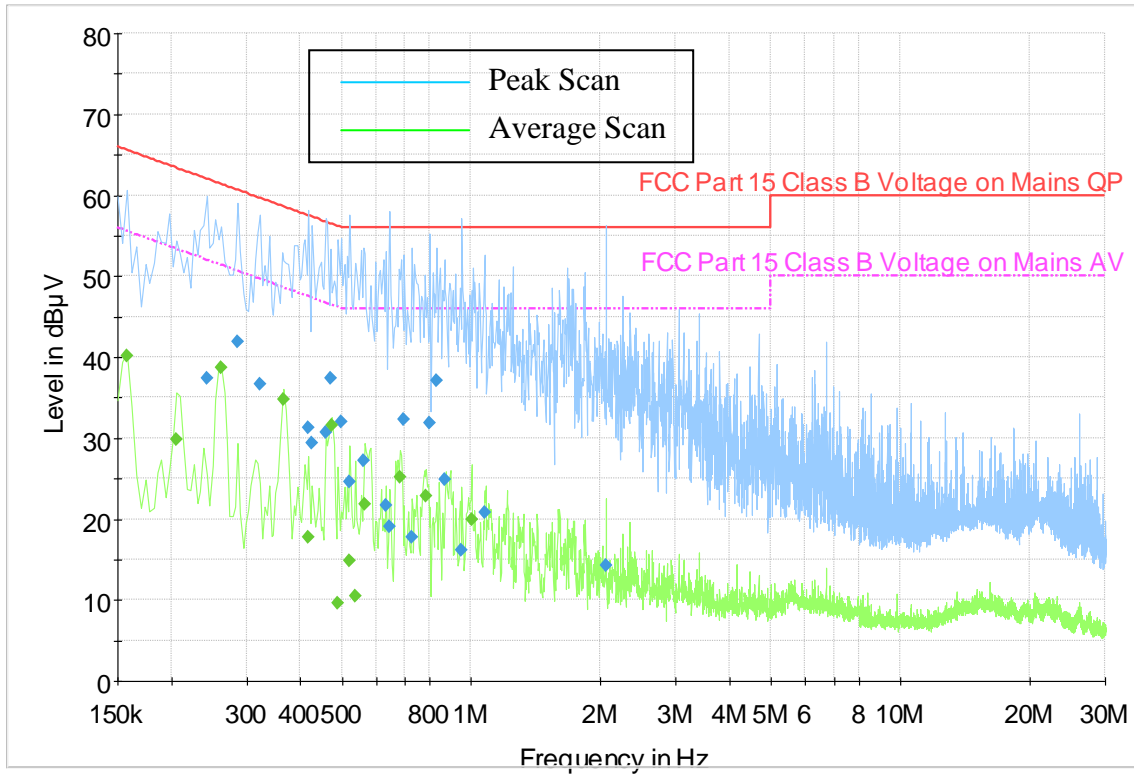


120VAC, 60Hz

SUC

1) Charger Alone

Voltage with 2-Line-LISN



Quasipeak Measurement

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.242000	37.4	1000.0	9.000	On	L1	9.8	24.6	62.0	PASS
0.286000	41.9	1000.0	9.000	On	L1	9.8	18.7	60.6	PASS
0.322000	36.6	1000.0	9.000	On	L1	9.8	23.0	59.7	PASS
0.418000	31.2	1000.0	9.000	On	N	9.9	26.3	57.5	PASS
0.426000	29.4	1000.0	9.000	On	N	9.9	27.9	57.3	PASS
0.458000	30.7	1000.0	9.000	On	L1	10.0	26.0	56.7	PASS
0.470000	37.4	1000.0	9.000	On	N	10.0	19.1	56.5	PASS
0.498000	32.1	1000.0	9.000	On	N	10.0	24.0	56.0	PASS
0.522000	24.6	1000.0	9.000	On	L1	10.0	31.4	56.0	PASS
0.562000	27.3	1000.0	9.000	On	N	9.9	28.8	56.0	PASS
0.634000	21.6	1000.0	9.000	On	N	9.9	34.4	56.0	PASS
0.646000	19.1	1000.0	9.000	On	L1	9.9	36.9	56.0	PASS
0.698000	32.3	1000.0	9.000	On	L1	9.9	23.7	56.0	PASS
0.726000	17.8	1000.0	9.000	On	L1	9.9	38.2	56.0	PASS
0.802000	31.8	1000.0	9.000	On	L1	9.9	24.2	56.0	PASS
0.830000	37.1	1000.0	9.000	On	L1	9.9	18.9	56.0	PASS
0.866000	24.8	1000.0	9.000	On	L1	9.8	31.2	56.0	PASS
0.950000	16.2	1000.0	9.000	On	N	9.9	39.8	56.0	PASS
1.074000	20.9	1000.0	9.000	On	N	9.9	35.1	56.0	PASS
2.062000	14.3	1000.0	9.000	On	N	9.8	41.7	56.0	PASS

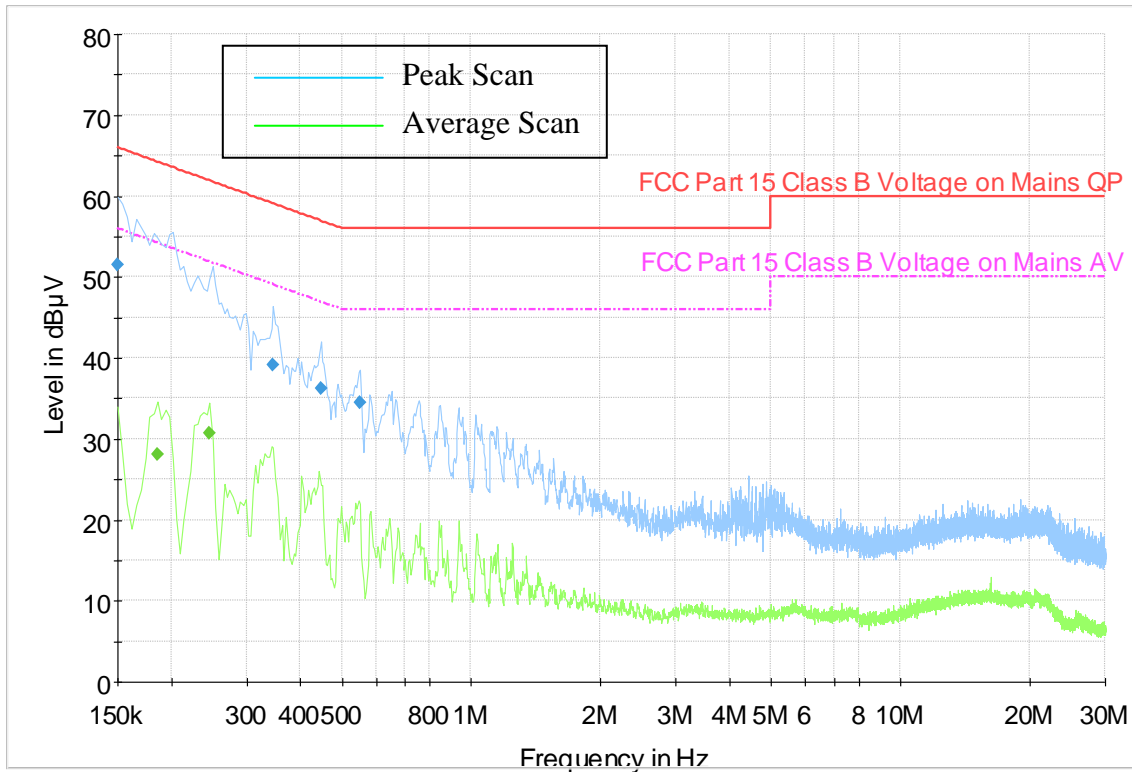
Average Measurement

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.158000	40.2	1000.0	9.000	On	N	10.0	15.4	55.6	PASS
0.206000	29.9	1000.0	9.000	On	N	9.9	23.5	53.4	PASS
0.262000	38.7	1000.0	9.000	On	N	9.8	12.7	51.4	PASS
0.366000	34.7	1000.0	9.000	On	N	9.9	13.9	48.6	PASS
0.418000	17.7	1000.0	9.000	On	N	9.9	29.8	47.5	PASS
0.474000	31.5	1000.0	9.000	On	N	10.0	14.9	46.4	PASS
0.490000	9.6	1000.0	9.000	On	N	10.0	36.5	46.2	PASS
0.522000	14.9	1000.0	9.000	On	N	10.0	31.1	46.0	PASS
0.538000	10.5	1000.0	9.000	On	N	10.0	35.5	46.0	PASS
0.566000	21.8	1000.0	9.000	On	N	9.9	24.2	46.0	PASS
0.682000	25.2	1000.0	9.000	On	N	9.8	20.8	46.0	PASS
0.786000	22.8	1000.0	9.000	On	N	9.8	23.2	46.0	PASS
1.002000	19.9	1000.0	9.000	On	L1	9.8	26.1	46.0	PASS

* Expanded Uncertainty (U) = +/- 3.43 dB

2) Charger with Radio Off

Voltage with 2-Line-LISN



Quasipeak Measurement

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.150000	51.5	1000.0	9.000	On	N	10.0	14.5	66.0	PASS
0.346000	39.1	1000.0	9.000	On	L1	9.9	19.9	59.1	PASS
0.446000	36.2	1000.0	9.000	On	N	10.0	20.8	56.9	PASS
0.550000	34.5	1000.0	9.000	On	N	9.9	21.5	56.0	PASS

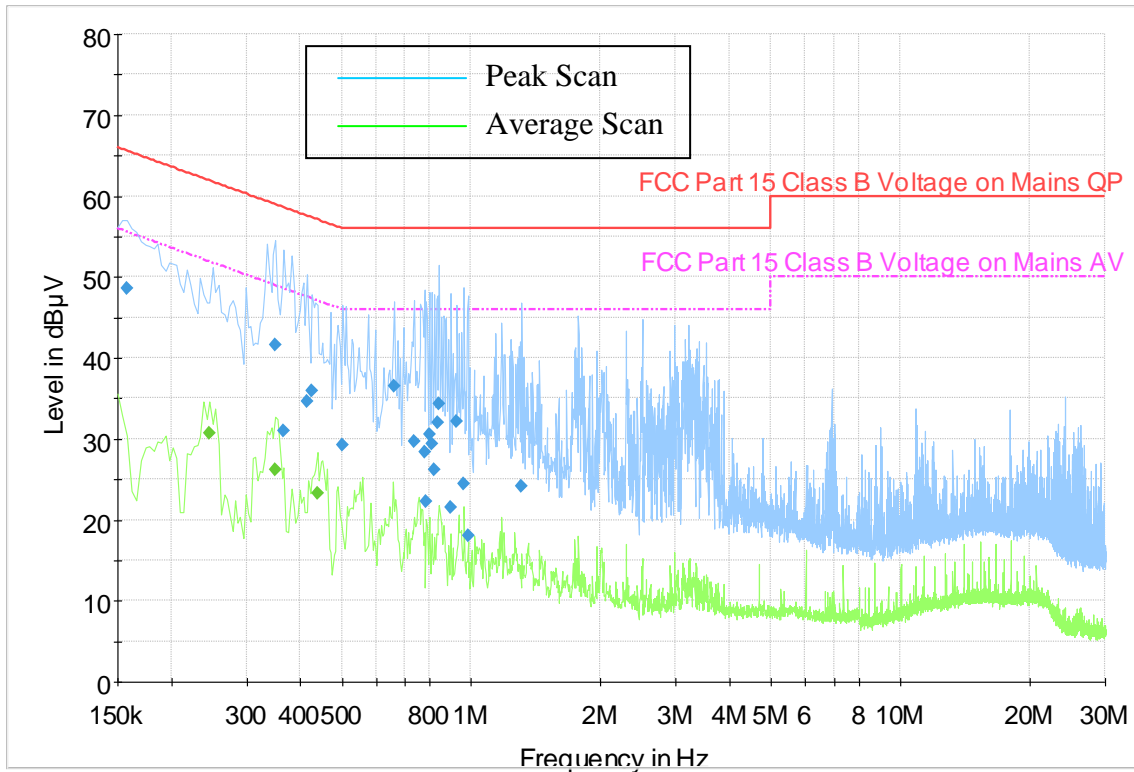
Average Measurement

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.186000	28.1	1000.0	9.000	On	N	9.9	26.1	54.2	PASS
0.246000	30.7	1000.0	9.000	On	L1	9.8	21.2	51.9	PASS

* Expanded Uncertainty (U) = +/- 3.43 dB

3) Charger with Radio Standby Mode

Voltage with 2-Line-LISN



Quasipeak Measurement

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.158000	48.6	1000.0	9.000	On	L1	9.9	16.9	65.6	PASS
0.350000	41.6	1000.0	9.000	On	N	9.9	17.3	59.0	PASS
0.366000	31.0	1000.0	9.000	On	N	9.9	27.6	58.6	PASS
0.414000	34.7	1000.0	9.000	On	L1	9.9	22.9	57.6	PASS
0.426000	36.0	1000.0	9.000	On	N	9.9	21.4	57.3	PASS
0.502000	29.3	1000.0	9.000	On	L1	10.0	26.7	56.0	PASS
0.662000	36.5	1000.0	9.000	On	N	9.8	19.5	56.0	PASS
0.738000	29.7	1000.0	9.000	On	N	9.8	26.3	56.0	PASS
0.778000	28.4	1000.0	9.000	On	N	9.8	27.6	56.0	PASS
0.786000	22.3	1000.0	9.000	On	L1	9.9	33.7	56.0	PASS
0.798000	30.6	1000.0	9.000	On	N	9.8	25.4	56.0	PASS
0.810000	29.3	1000.0	9.000	On	N	9.8	26.7	56.0	PASS
0.822000	26.2	1000.0	9.000	On	N	9.8	29.8	56.0	PASS
0.834000	32.0	1000.0	9.000	On	L1	9.9	24.0	56.0	PASS
0.842000	34.4	1000.0	9.000	On	L1	9.8	21.6	56.0	PASS
0.898000	21.5	1000.0	9.000	On	N	9.9	34.5	56.0	PASS
0.926000	32.2	1000.0	9.000	On	N	9.9	23.8	56.0	PASS
0.962000	24.4	1000.0	9.000	On	L1	9.8	31.6	56.0	PASS
0.982000	18.0	1000.0	9.000	On	N	9.9	38.0	56.0	PASS
1.310000	24.1	1000.0	9.000	On	N	9.9	31.9	56.0	PASS

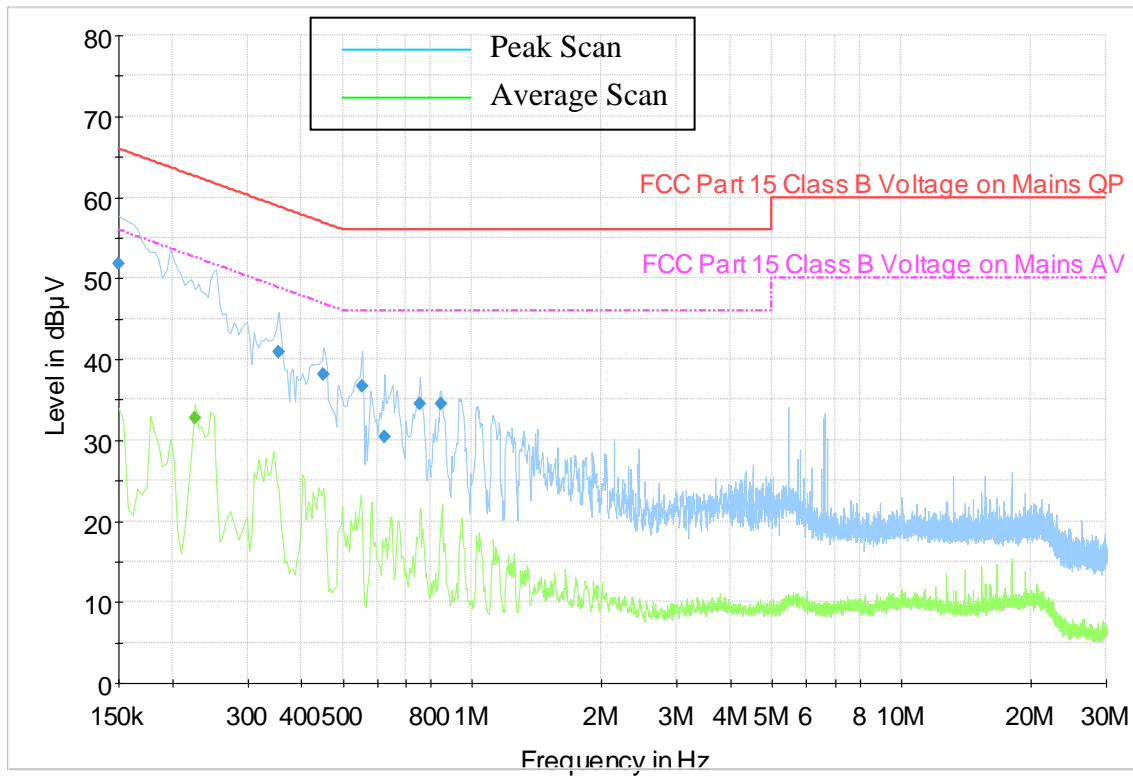
Average Measurement

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.246000	30.7	1000.0	9.000	On	N	9.9	21.1	51.9	PASS
0.350000	26.2	1000.0	9.000	On	N	9.9	22.8	49.0	PASS
0.438000	23.2	1000.0	9.000	On	L1	9.9	23.9	47.1	PASS

* Expanded Uncertainty (U) = +/- 3.43dB

4) Charger with Radio in BT TX Mode

Voltage with 2-Line-LISN



Quasipeak Measurement

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.150000	51.8	1000.0	9.000	On	N	10.0	14.2	66.0	PASS
0.354000	40.9	1000.0	9.000	On	L1	9.9	18.0	58.9	PASS
0.450000	38.1	1000.0	9.000	On	N	10.0	18.8	56.9	PASS
0.554000	36.6	1000.0	9.000	On	L1	10.0	19.4	56.0	PASS
0.626000	30.4	1000.0	9.000	On	L1	9.9	25.6	56.0	PASS
0.754000	34.5	1000.0	9.000	On	L1	9.9	21.5	56.0	PASS
0.846000	34.5	1000.0	9.000	On	L1	9.8	21.5	56.0	PASS

Average Measurement

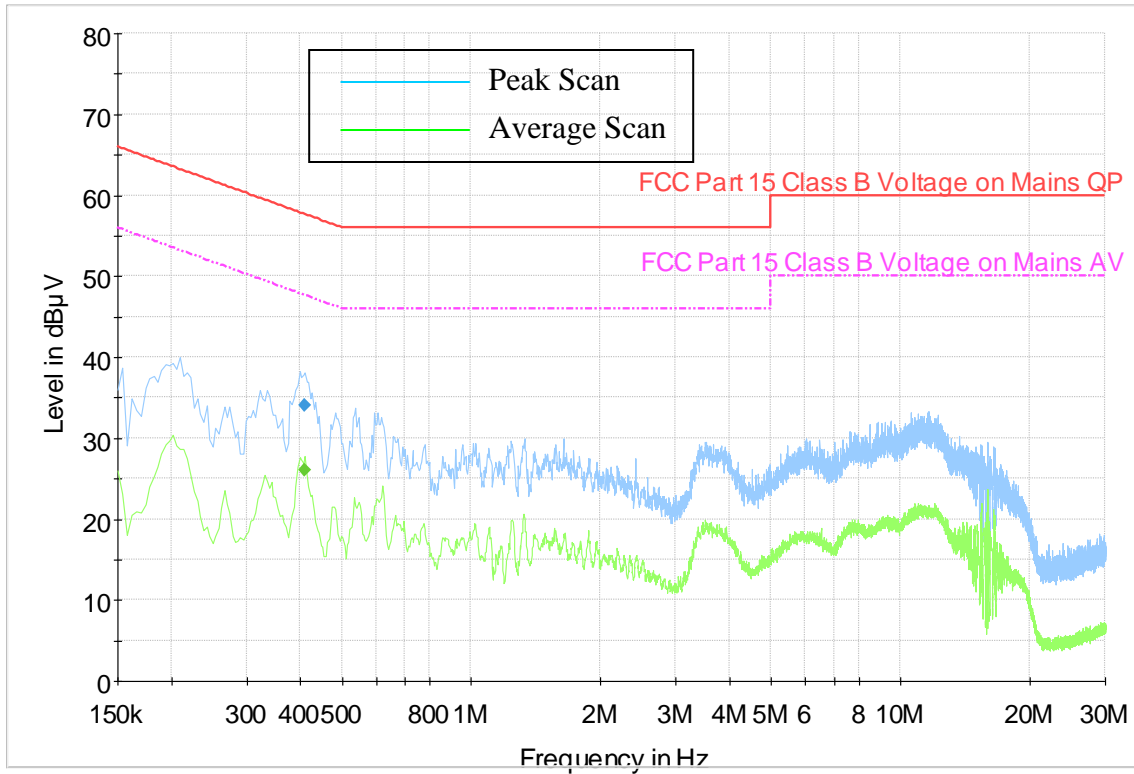
Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.226000	32.7	1000.0	9.000	On	L1	9.8	19.9	52.6	PASS

* Expanded Uncertainty (U) = +/- 3.43 dB

MUC

1) Charger Alone

Voltage with 2-Line-LISN



Quasipeak Measurement

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.410000	34.0	1000.0	9.000	On	L1	9.9	23.6	57.6	PASS

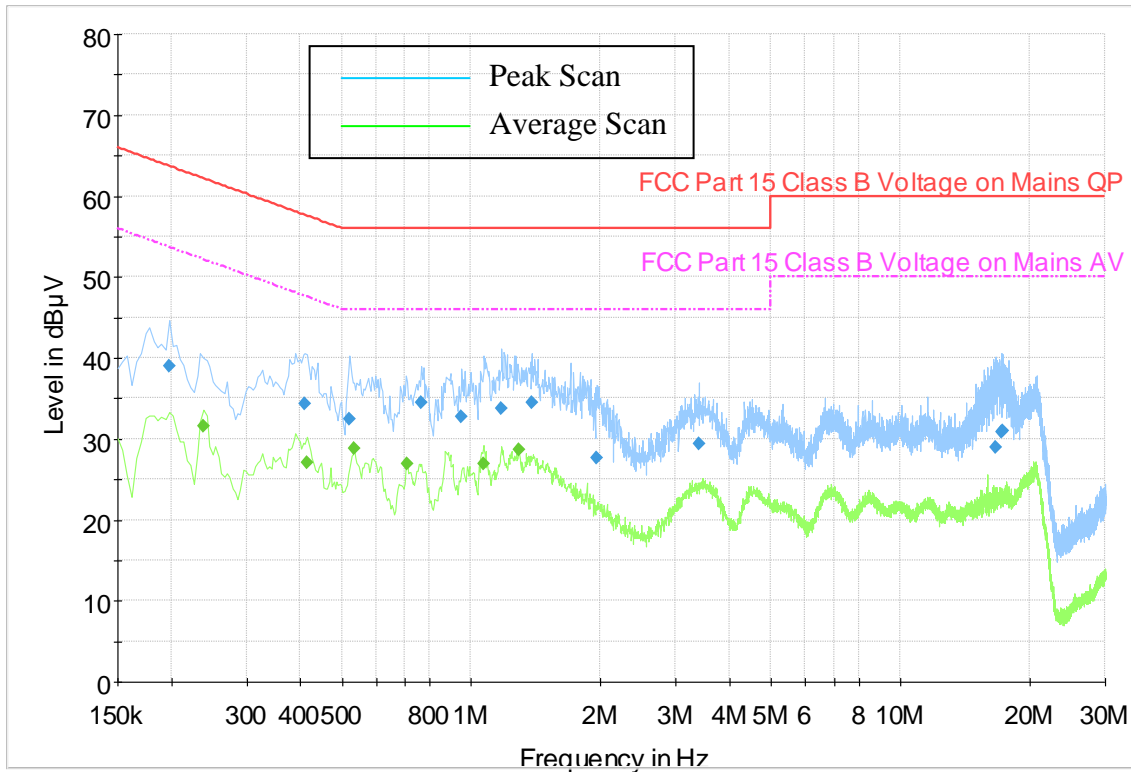
Average Measurement

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.410000	26.0	1000.0	9.000	On	N	9.9	21.7	47.6	PASS

* Expanded Uncertainty (U) = +/- 3.43 dB

2) Charger with Radio Off

Voltage with 2-Line-LISN



Quasipeak Measurement

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.198000	38.9	1000.0	9.000	On	L1	9.9	24.7	63.7	PASS
0.410000	34.4	1000.0	9.000	On	N	9.9	23.3	57.6	PASS
0.522000	32.4	1000.0	9.000	On	N	10.0	23.6	56.0	PASS
0.766000	34.4	1000.0	9.000	On	L1	9.9	21.6	56.0	PASS
0.950000	32.7	1000.0	9.000	On	L1	9.8	23.3	56.0	PASS
1.178000	33.7	1000.0	9.000	On	L1	9.8	22.3	56.0	PASS
1.382000	34.5	1000.0	9.000	On	L1	9.8	21.5	56.0	PASS
1.966000	27.6	1000.0	9.000	On	N	9.8	28.4	56.0	PASS
3.398000	29.3	1000.0	9.000	On	L1	9.7	26.7	56.0	PASS
16.634000	28.9	1000.0	9.000	On	N	9.8	31.1	60.0	PASS
17.246000	30.9	1000.0	9.000	On	N	9.8	29.1	60.0	PASS
17.350000	31.0	1000.0	9.000	On	N	9.8	29.0	60.0	PASS

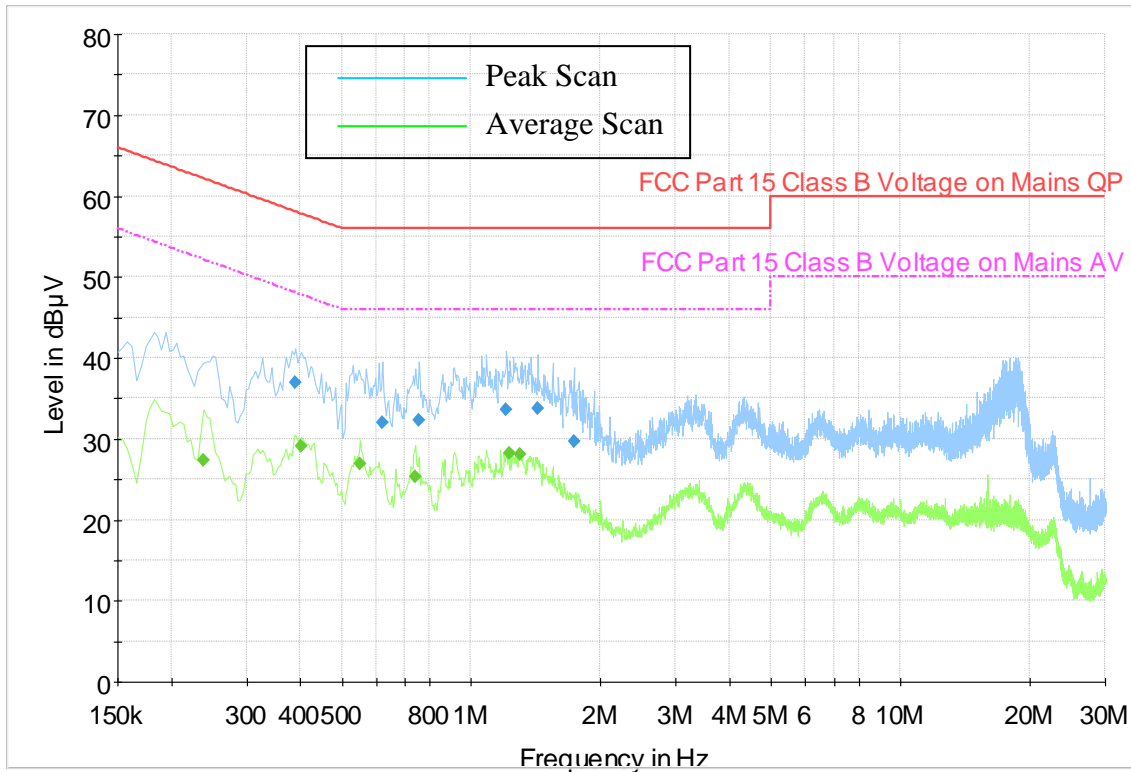
Average Measurement

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.238000	31.6	1000.0	9.000	On	N	9.9	20.6	52.2	PASS
0.414000	27.0	1000.0	9.000	On	N	9.9	20.5	47.6	PASS
0.534000	28.8	1000.0	9.000	On	L1	10.0	17.2	46.0	PASS
0.710000	26.8	1000.0	9.000	On	L1	9.9	19.2	46.0	PASS
1.066000	27.0	1000.0	9.000	On	L1	9.8	19.0	46.0	PASS
1.290000	28.7	1000.0	9.000	On	L1	9.8	17.3	46.0	PASS

* Expanded Uncertainty (U) = +/- 3.43 dB

3) Charger with Radio Standby Mode

Voltage with 2-Line-LISN



Quasipeak Measurement

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.390000	37.0	1000.0	9.000	On	L1	9.9	21.0	58.1	PASS
0.622000	31.9	1000.0	9.000	On	L1	9.9	24.1	56.0	PASS
0.754000	32.3	1000.0	9.000	On	L1	9.9	23.7	56.0	PASS
1.206000	33.5	1000.0	9.000	On	N	9.9	22.5	56.0	PASS
1.430000	33.7	1000.0	9.000	On	L1	9.8	22.3	56.0	PASS
1.734000	29.7	1000.0	9.000	On	L1	9.7	26.3	56.0	PASS

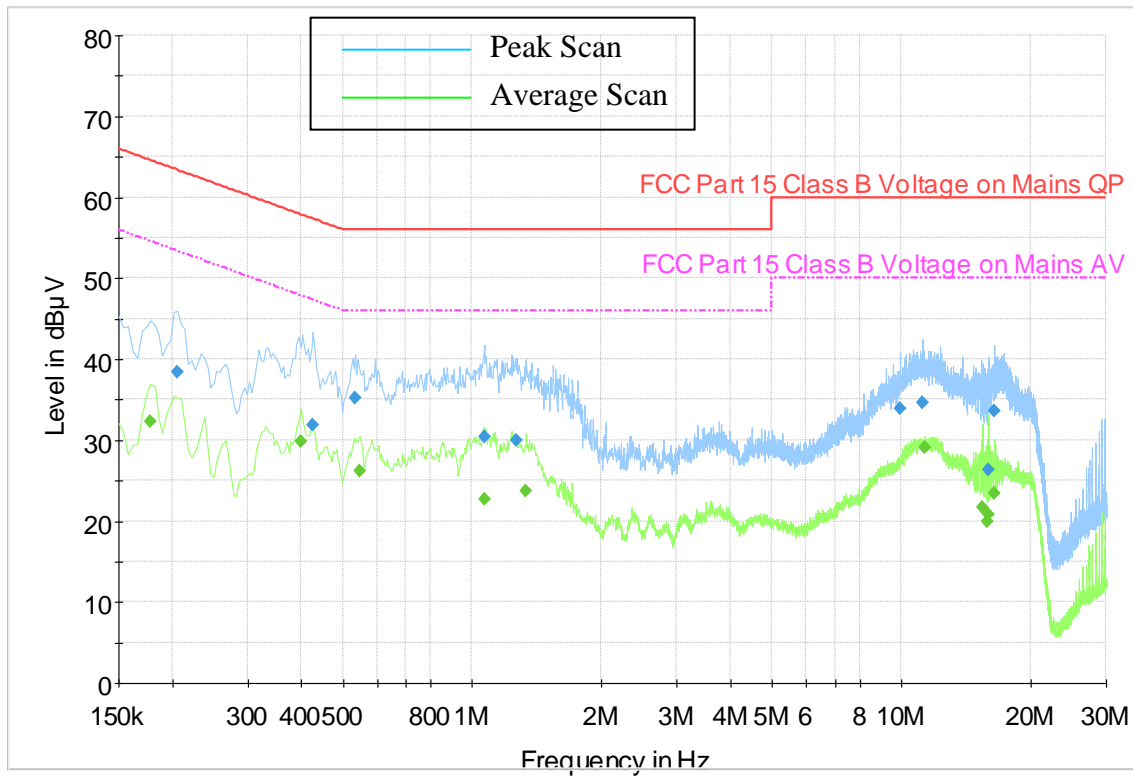
Average Measurement

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.238000	27.3	1000.0	9.000	On	N	9.9	24.8	52.2	PASS
0.402000	29.1	1000.0	9.000	On	L1	9.9	18.7	47.8	PASS
0.550000	26.9	1000.0	9.000	On	L1	10.0	19.1	46.0	PASS
0.742000	25.3	1000.0	9.000	On	L1	9.9	20.7	46.0	PASS
1.230000	28.3	1000.0	9.000	On	L1	9.8	17.7	46.0	PASS
1.302000	28.1	1000.0	9.000	On	L1	9.8	17.9	46.0	PASS

* Expanded Uncertainty (U) = +/- 3.43dB

4) Charger with Radio in BT TX Mode

Voltage with 2-Line-LISN



Quasipeak Measurement

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.206000	38.4	1000.0	9.000	On	L1	9.9	25.0	63.4	PASS
0.426000	31.9	1000.0	9.000	On	N	9.9	25.4	57.3	PASS
0.534000	35.2	1000.0	9.000	On	L1	10.0	20.8	56.0	PASS
1.066000	30.4	1000.0	9.000	On	N	9.9	25.6	56.0	PASS
1.270000	29.9	1000.0	9.000	On	N	9.9	26.1	56.0	PASS
9.962000	33.9	1000.0	9.000	On	N	9.8	26.1	60.0	PASS
11.234000	34.6	1000.0	9.000	On	N	9.8	25.4	60.0	PASS
15.958000	26.4	1000.0	9.000	On	N	9.8	33.6	60.0	PASS
16.482000	33.6	1000.0	9.000	On	N	9.8	26.4	60.0	PASS

Average Measurement

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.178000	32.3	1000.0	9.000	On	N	10.0	22.3	54.6	PASS
0.398000	29.8	1000.0	9.000	On	N	9.9	18.1	47.9	PASS
0.546000	26.2	1000.0	9.000	On	N	9.9	19.8	46.0	PASS
1.066000	22.6	1000.0	9.000	On	L1	9.8	23.4	46.0	PASS
1.334000	23.8	1000.0	9.000	On	L1	9.8	22.2	46.0	PASS
11.334000	29.1	1000.0	9.000	On	N	9.8	21.0	50.0	PASS
15.426000	21.7	1000.0	9.000	On	N	9.8	28.3	50.0	PASS
15.886000	19.9	1000.0	9.000	On	N	9.8	30.1	50.0	PASS
15.958000	20.8	1000.0	9.000	On	N	9.8	29.2	50.0	PASS
16.486000	23.4	1000.0	9.000	On	N	9.8	26.6	50.0	PASS

* Expanded Uncertainty (U) = +/- 3.43 dB

--End of Test Report--