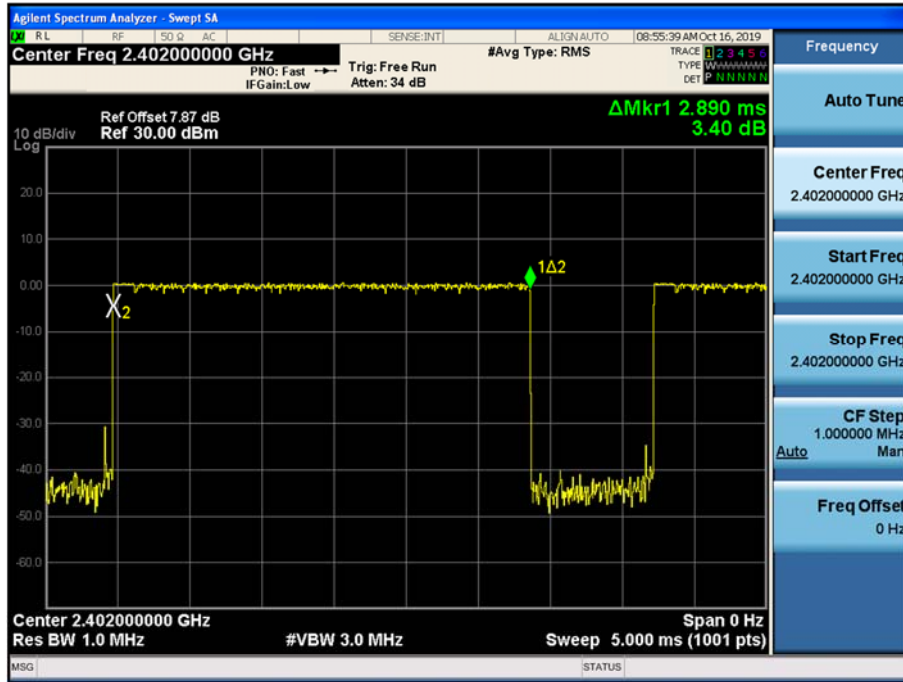
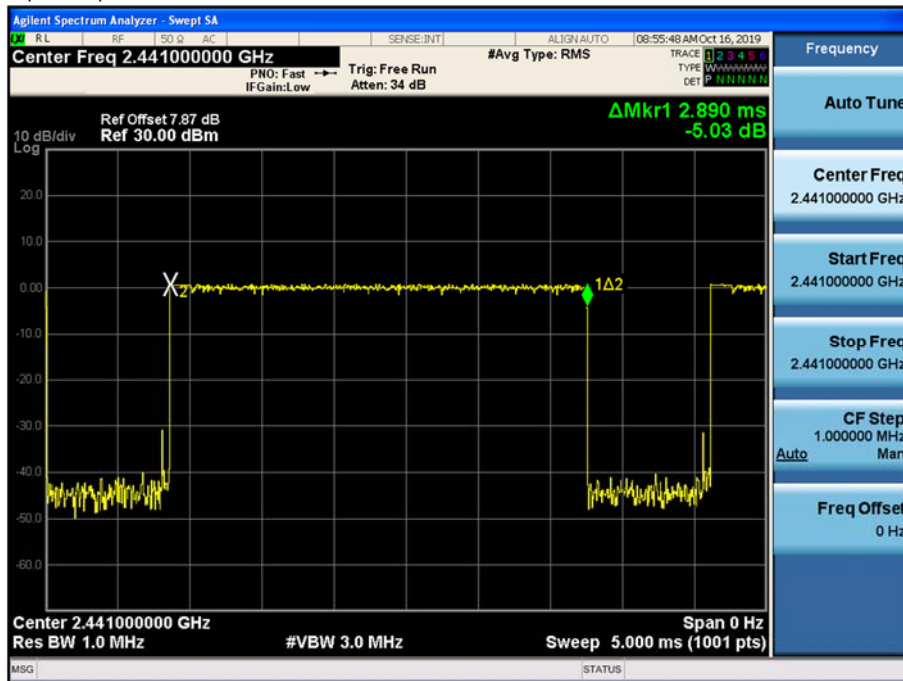


Test Plots ( $\pi/4$ DQPSK)

Dwell Time (CH.0)

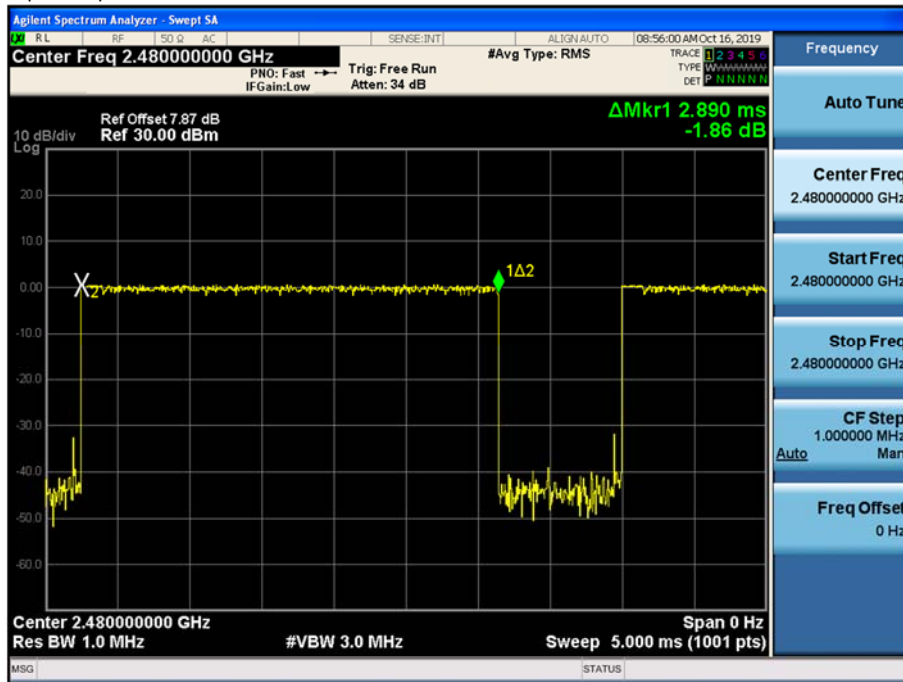

Test Plots ( $\pi/4$ DQPSK)

Dwell Time (CH.39)



Test Plots ( $\pi/4$ DQPSK)

Dwell Time (CH.78)



## 10.6 SPURIOUS EMISSIONS

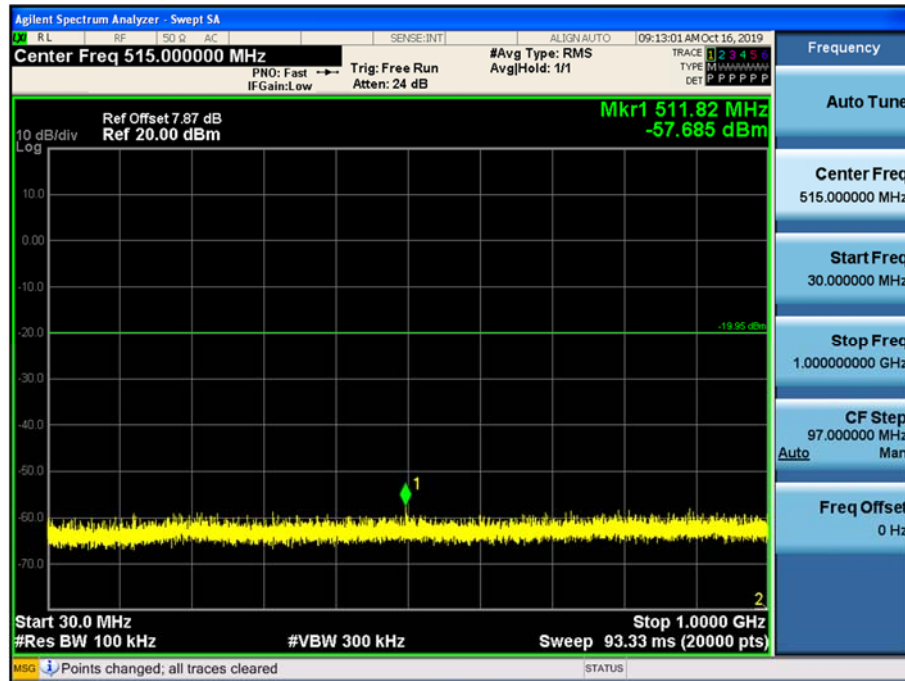
### 10.6.1 CONDUCTED SPURIOUS EMISSIONS

Test Result : please refer to the plot below.

In order to simplify the report, attached plots were only the worst case channel and data rate.

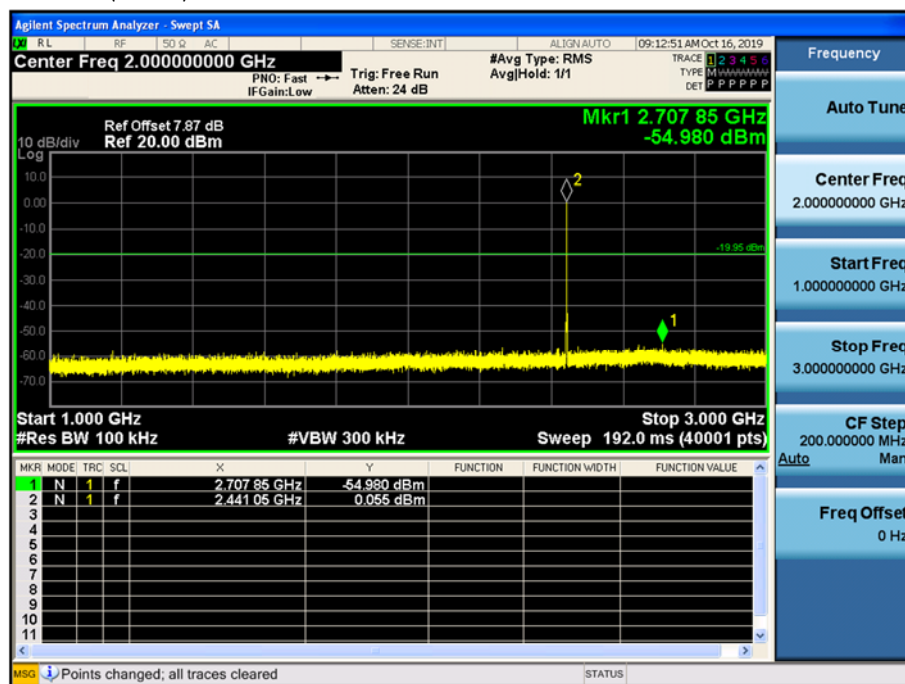
Test Plots (8DPSK)- 30 MHz - 1 GHz

Spurious Emission (CH.39)



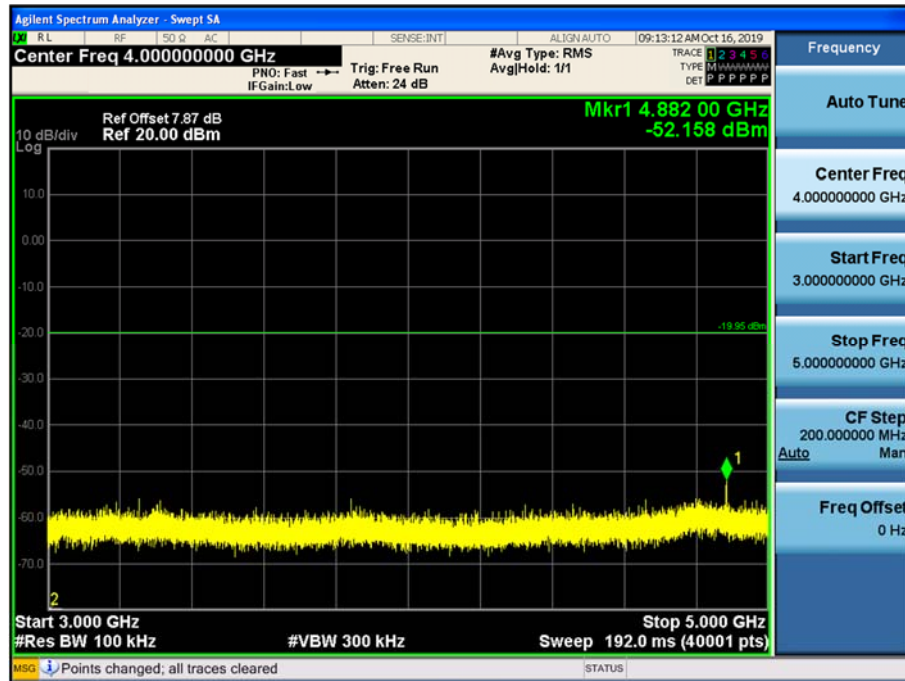
Test Plots (8DPSK)- 1 GHz – 3 GHz

Spurious Emission (CH.39)



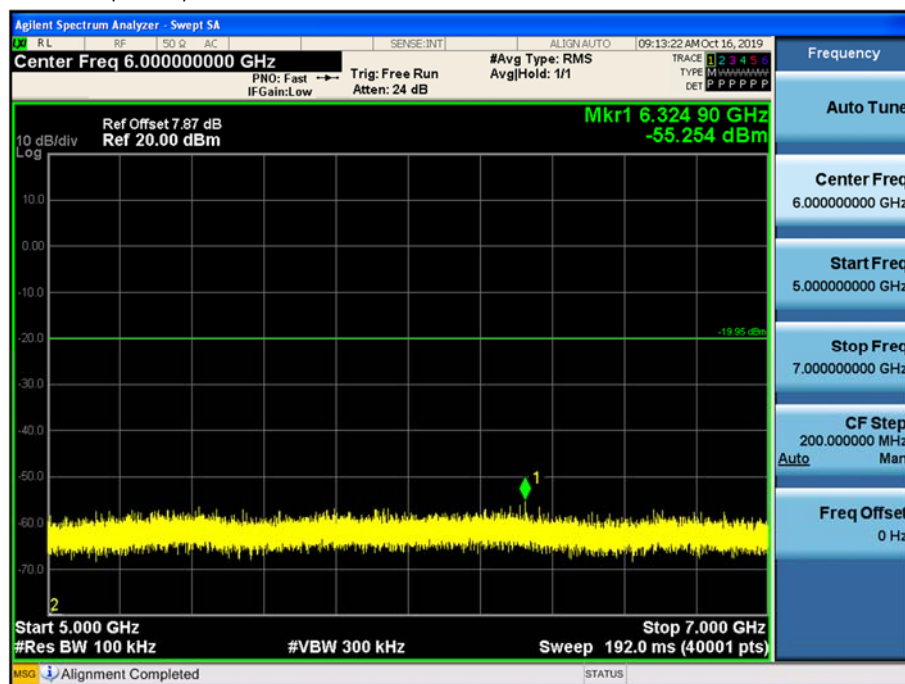
Test Plots(8DPSK)- 3 GHz - 5 GHz

Spurious Emission (CH.39)



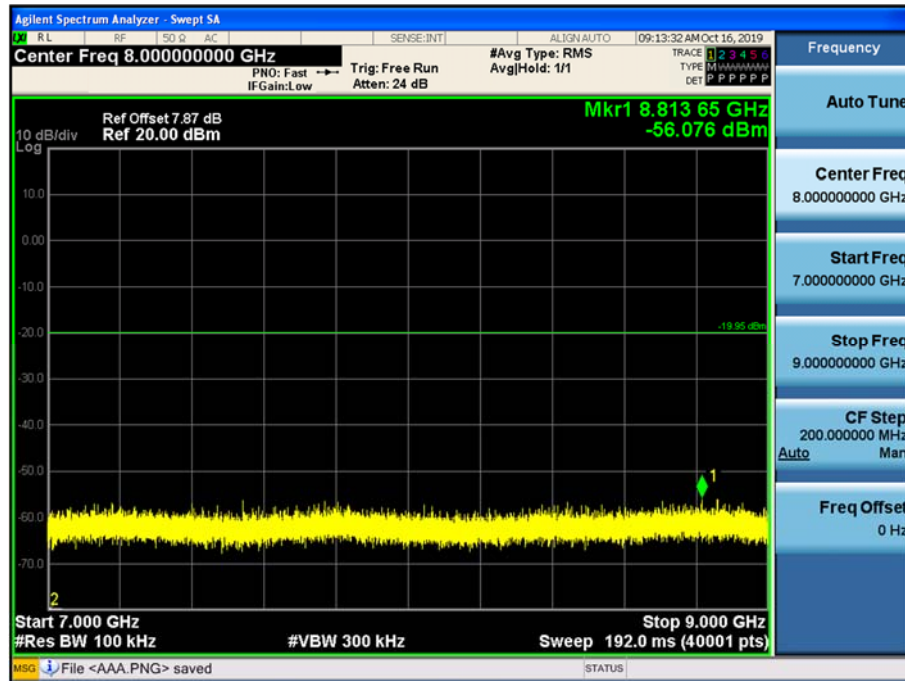
Test Plots (8DPSK)- 5 GHz - 7 GHz

Spurious Emission (CH.39)



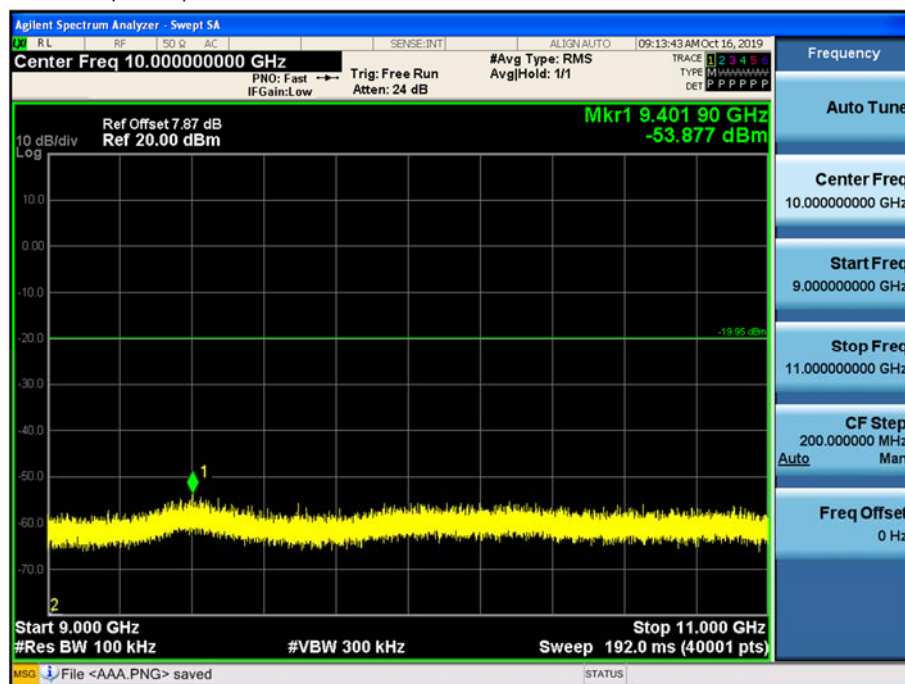
Test Plots(8DPSK)- 7 GHz - 9 GHz

Spurious Emission (CH.39)



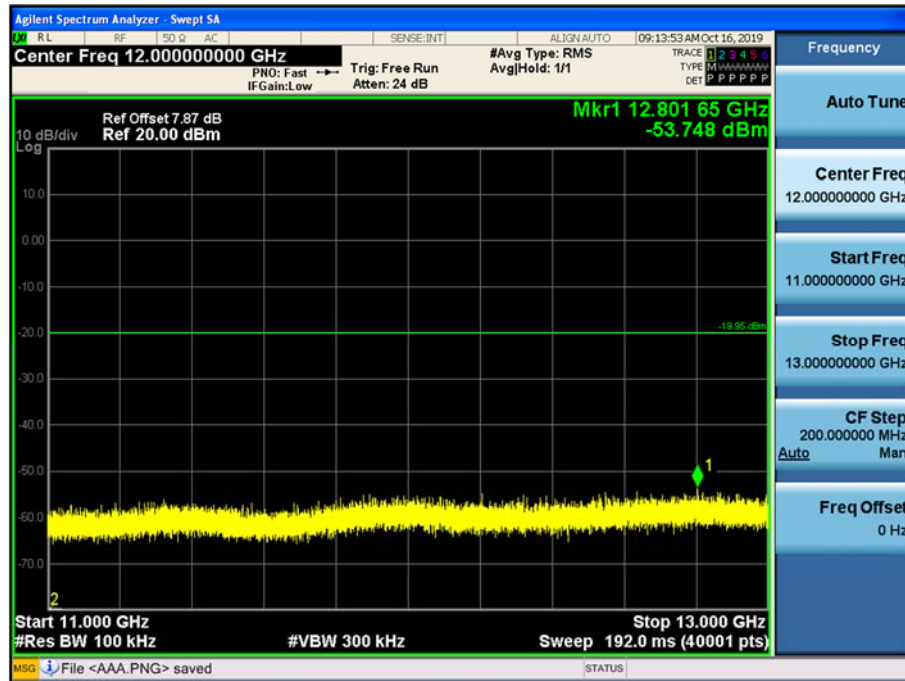
Test Plots(8DPSK)- 9 GHz - 11 GHz

Spurious Emission (CH.39)



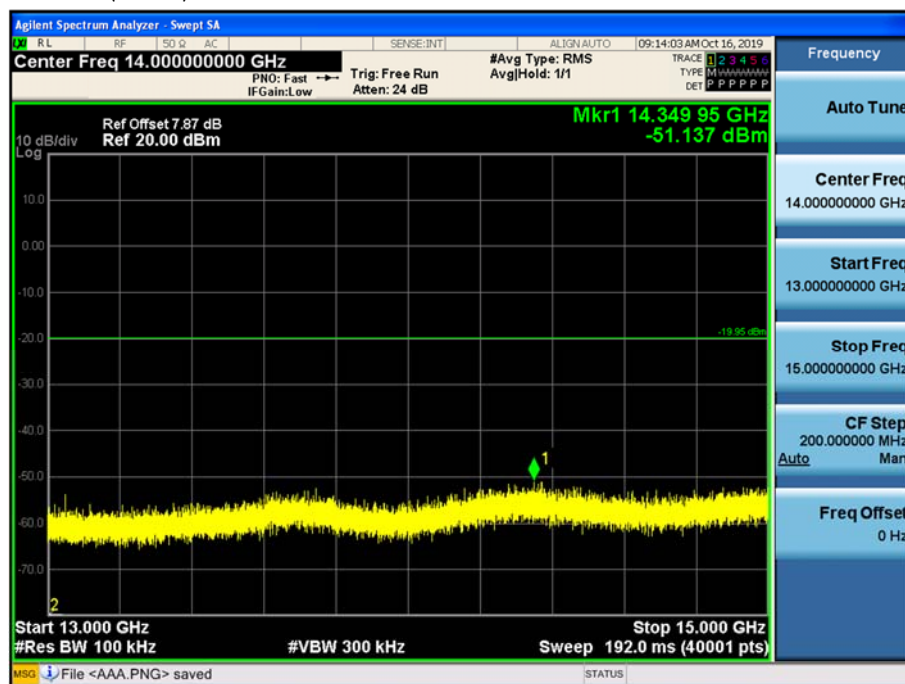
Test Plots(8DPSK) 11 GHz - 13 GHz

Spurious Emission (CH.39)



Test Plots (8DPSK)- 13 GHz – 15 GHz

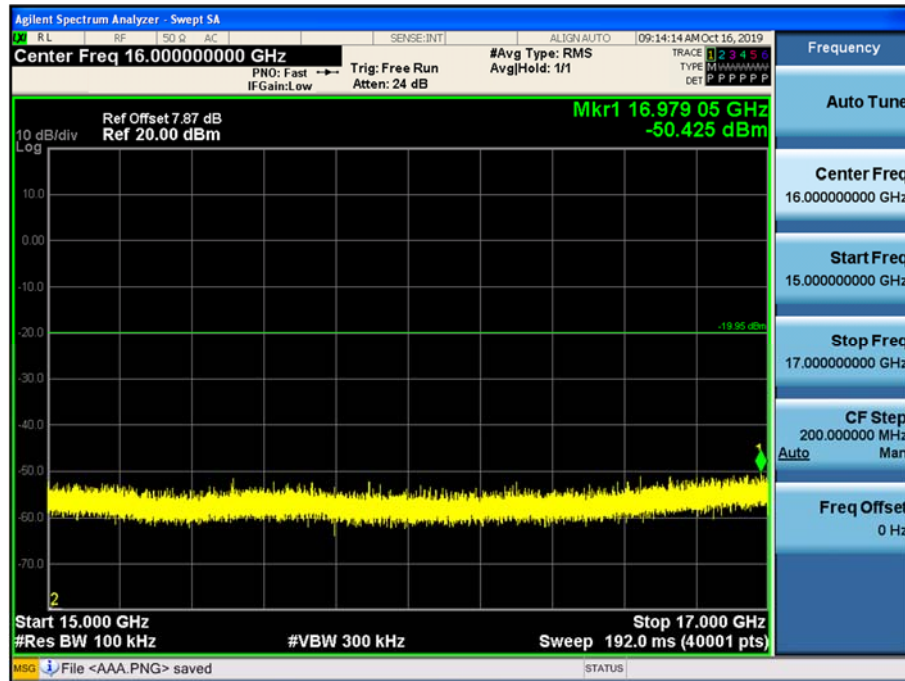
Spurious Emission (CH.39)





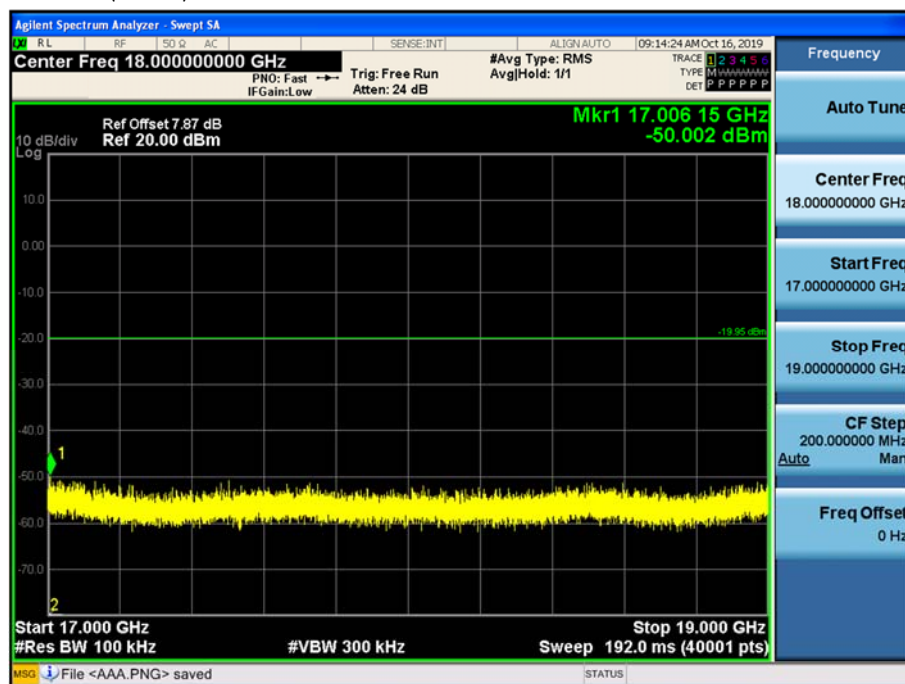
Test Plots(8DPSK)- 15 GHz - 17 GHz

Spurious Emission (CH.39)



Test Plots(8DPSK)- 17 GHz - 19 GHz

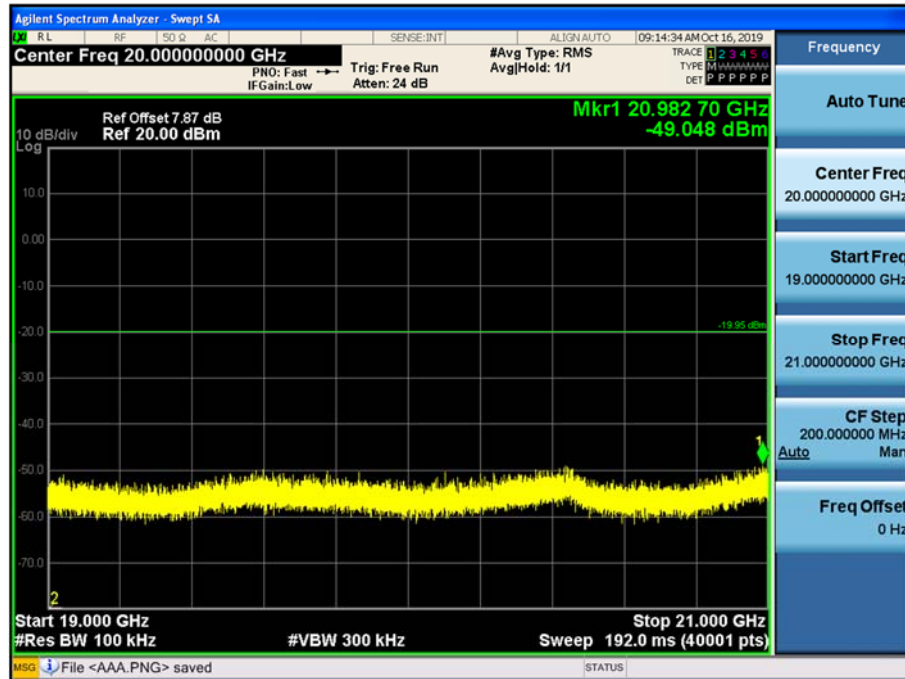
Spurious Emission (CH.39)





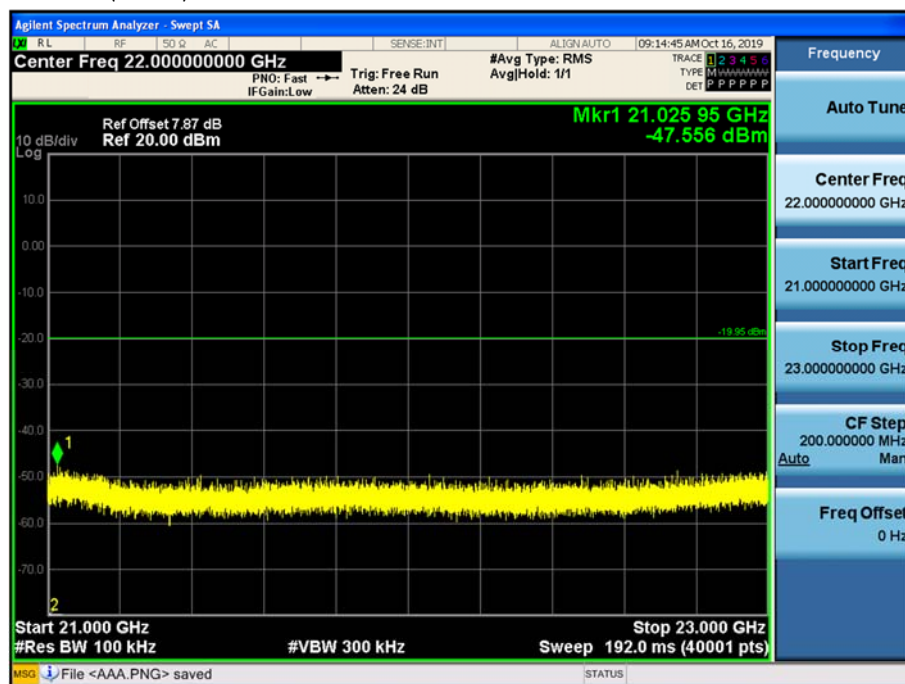
Test Plots (8DPSK)- 19 GHz - 21 GHz

Spurious Emission (CH.39)



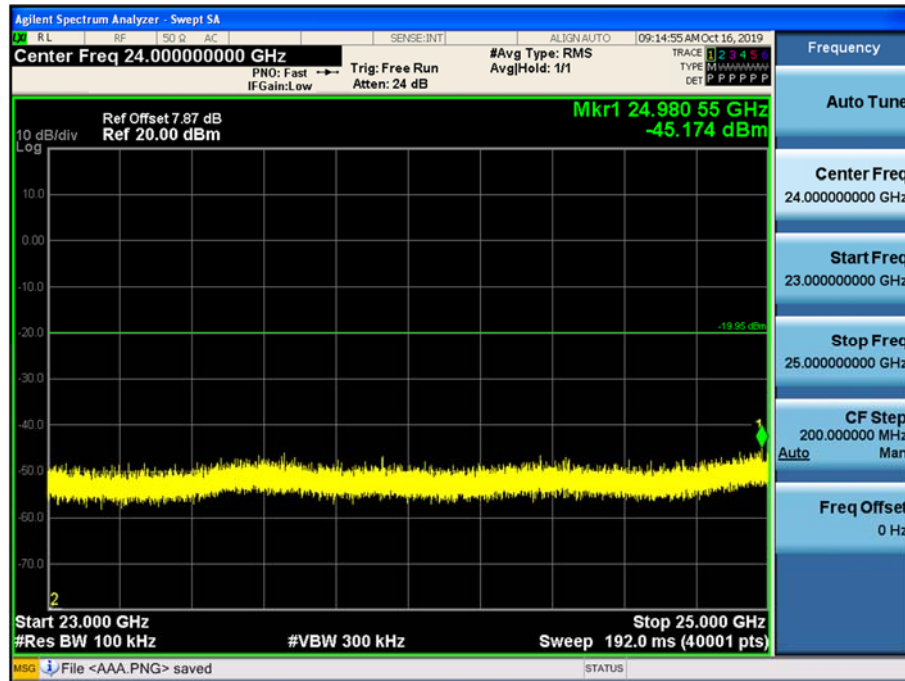
Test Plots (8DPSK)- 21 GHz - 23 GHz

Spurious Emission (CH.39)



Test Plots (8DPSK)- 23 GHz - 25 GHz

Spurious Emission (CH.39)



### 10.6.2 RADIATED SPURIOUS EMISSIONS

#### Frequency Range : 9 kHz – 30MHz

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBuV/m	dBm/m	dBm	(H/V)	dBuV/m	dBuV/m	dB
No Critical peaks found							

**Note:**

1. The reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
2. Distance extrapolation factor =  $40 \times \log(\text{specific distance} / \text{test distance})$  (dB)
3. Limit line = specific Limits (dBuV) + Distance extrapolation factor
4. Radiated test is performed with hopping off.

#### Frequency Range : Below 1 GHz

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBuV/m	dBm/m	dBm	(H/V)	dBuV/m	dBuV/m	dB
No Critical peaks found							

**Note:**

1. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.
2. Radiated test is performed with hopping off.

### Frequency Range : Above 1 GHz

Operation Mode: CH Low(GFSK)

Frequency [MHz]	Reading [dBuV]	AN.+CL-AMP G [dB]	Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4804	52.90	2.17	V	55.07	73.98	18.91	PK
4804	48.26	2.17	V	50.43	53.98	3.55	AV
7206	42.45	8.97	V	51.42	73.98	22.56	PK
7206	28.31	8.97	V	37.28	53.98	16.70	AV
4804	51.98	2.17	H	54.15	73.98	19.83	PK
4804	46.18	2.17	H	48.35	53.98	5.63	AV
7206	42.15	8.97	H	51.12	73.98	22.86	PK
7206	28.04	8.97	H	37.01	53.98	16.97	AV

Operation Mode: CH Mid(GFSK)

Frequency [MHz]	Reading [dBuV]	AN.+CL-AMP G [dB]	Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4882	51.37	2.68	V	54.05	73.98	19.93	PK
4882	47.60	2.68	V	50.28	53.98	3.70	AV
7323	42.75	9.03	V	51.78	73.98	22.20	PK
7323	28.37	9.03	V	37.4	53.98	16.58	AV
4882	51.05	2.68	H	53.73	73.98	20.25	PK
4882	46.07	2.68	H	48.75	53.98	5.23	AV
7323	41.49	9.03	H	50.52	73.98	23.46	PK
7323	28.22	9.03	H	37.25	53.98	16.73	AV

Operation Mode: CH High(GFSK)

Frequency [MHz]	Reading [dBuV]	AN.+CL-AMP G [dB]	Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4960	51.97	1.54	V	53.51	73.98	20.47	PK
4960	47.61	1.54	V	49.15	53.98	4.83	AV
7440	42.55	9.82	V	52.37	73.98	21.61	PK
7440	28.31	9.82	V	38.13	53.98	15.85	AV
4960	50.98	1.54	H	52.52	73.98	21.46	PK
4960	46.07	1.54	H	47.61	53.98	6.37	AV
7440	41.15	9.82	H	50.97	73.98	23.01	PK
7440	28.19	9.82	H	38.01	53.98	15.97	AV

Operation Mode: CH Low( $\pi/4$ DQPSK)

Frequency [MHz]	Reading [dBuV]	AN.+CL-AMP G [dB]	Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4804	52.97	2.17	V	55.14	73.98	18.84	PK
4804	44.00	2.17	V	46.17	53.98	7.81	AV
7206	42.50	8.97	V	51.47	73.98	22.51	PK
7206	28.64	8.97	V	37.61	53.98	16.37	AV
4804	51.54	2.17	H	53.71	73.98	20.27	PK
4804	42.58	2.17	H	44.75	53.98	9.23	AV
7206	42.42	8.97	H	51.39	73.98	22.59	PK
7206	28.51	8.97	H	37.48	53.98	16.50	AV

Operation Mode: CH Mid( $\pi/4$ DQPSK)

Frequency [MHz]	Reading [dBuV]	AN.+CL-AMP G [dB]	Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4882	51.68	2.68	V	54.36	73.98	19.62	PK
4882	42.95	2.68	V	45.63	53.98	8.35	AV
7323	41.99	9.03	V	51.02	73.98	22.96	PK
7323	28.42	9.03	V	37.45	53.98	16.53	AV
4882	51.04	2.68	H	53.72	73.98	20.26	PK
4882	41.03	2.68	H	43.71	53.98	10.27	AV
7323	41.54	9.03	H	50.57	73.98	23.41	PK
7323	28.12	9.03	H	37.15	53.98	16.83	AV

Operation Mode: CH High( $\pi/4$ DQPSK)

Frequency [MHz]	Reading [dBuV]	AN.+CL-AMP G [dB]	Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4960	51.50	1.54	V	53.04	73.98	20.94	PK
4960	43.11	1.54	V	44.65	53.98	9.33	AV
7440	42.07	9.82	V	51.89	73.98	22.09	PK
7440	28.56	9.82	V	38.38	53.98	15.60	AV
4960	51.07	1.54	H	52.61	73.98	21.37	PK
4960	41.85	1.54	H	43.39	53.98	10.59	AV
7440	41.96	9.82	H	51.78	73.98	22.20	PK
7440	28.06	9.82	H	37.88	53.98	16.10	AV

## Operation Mode: CH Low(8DPSK)

Frequency [MHz]	Reading [dBuV]	AN.+CL-AMP G [dB]	Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4804	53.12	2.17	V	55.29	73.98	18.69	PK
4804	44.14	2.17	V	46.31	53.98	7.67	AV
7206	42.47	8.97	V	51.44	73.98	22.54	PK
7206	28.49	8.97	V	37.46	53.98	16.52	AV
4804	52.07	2.17	H	54.24	73.98	19.74	PK
4804	42.39	2.17	H	44.56	53.98	9.42	AV
7206	41.78	8.97	H	50.75	73.98	23.23	PK
7206	28.12	8.97	H	37.09	53.98	16.89	AV

## Operation Mode: CH Mid(8DPSK)

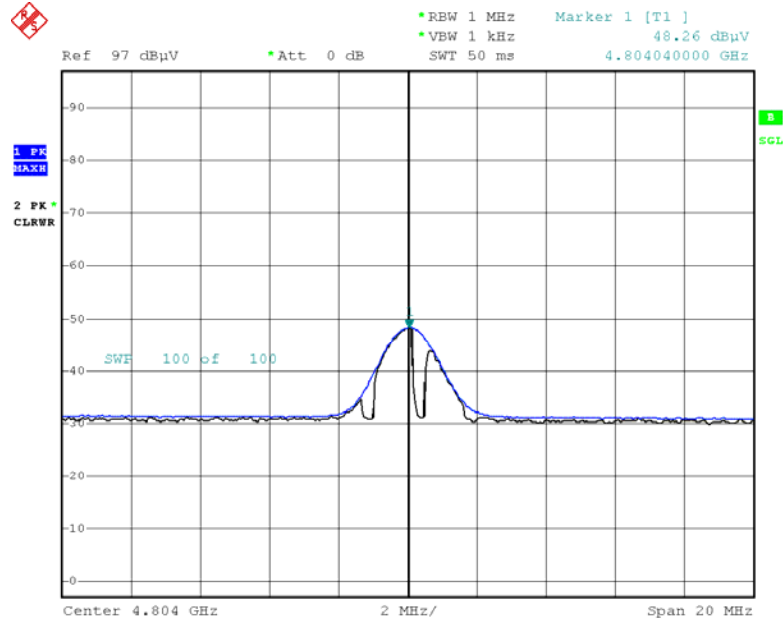
Frequency [MHz]	Reading [dBuV]	AN.+CL-AMP G [dB]	Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4882	51.55	2.68	V	54.23	73.98	19.75	PK
4882	43.28	2.68	V	45.96	53.98	8.02	AV
7323	42.35	9.03	V	51.38	73.98	22.60	PK
7323	28.43	9.03	V	37.46	53.98	16.52	AV
4882	50.69	2.68	H	53.37	73.98	20.61	PK
4882	41.89	2.68	H	44.57	53.98	9.41	AV
7323	41.99	9.03	H	51.02	73.98	22.96	PK
7323	28.23	9.03	H	37.26	53.98	16.72	AV

## Operation Mode: CH High(8DPSK)

Frequency [MHz]	Reading [dBuV]	AN.+CL-AMP G [dB]	Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4960	51.97	1.54	V	53.51	73.98	20.47	PK
4960	43.46	1.54	V	45.00	53.98	8.98	AV
7440	42.51	9.82	V	52.33	73.98	21.65	PK
7440	28.50	9.82	V	38.32	53.98	15.66	AV
4960	50.99	1.54	H	52.53	73.98	21.45	PK
4960	41.54	1.54	H	43.08	53.98	10.90	AV
7440	41.75	9.82	H	51.57	73.98	22.41	PK
7440	28.22	9.82	H	38.04	53.98	15.94	AV

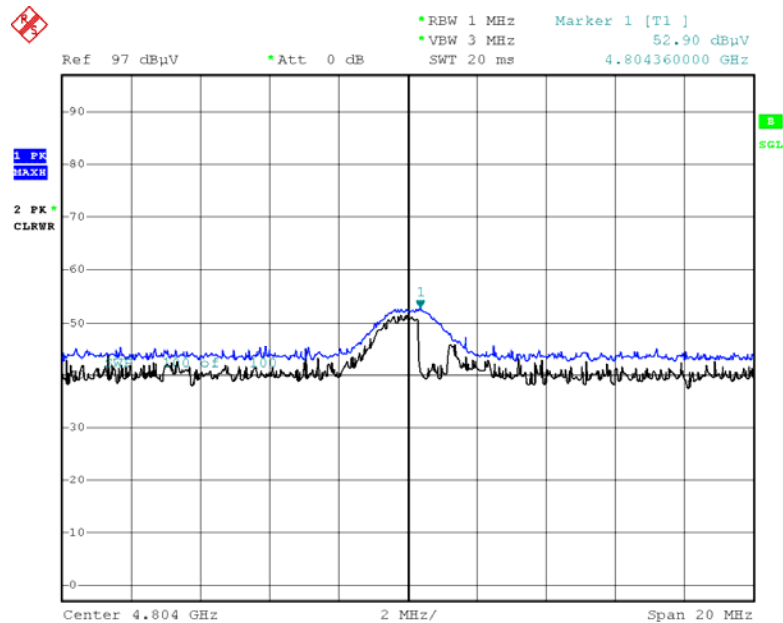
## RESULT PLOTS (Worst case : X-V)

### Radiated Spurious Emissions plot – Average Reading (GFSK, Ch.0 2nd Harmonic)



Date: 5.NOV.2019 03:05:18

### Radiated Spurious Emissions plot – Peak Reading (GFSK, Ch.0 2nd Harmonic)



Date: 5.NOV.2019 03:05:34

### Note:

Plot of worst case are only reported.



### 10.6.3 RADIATED RESTRICTED BAND EDGES

Operation Mode	Normal(GFSK)
Operating Frequency	2402 MHz, 2480 MHz
Channel No	CH 0, CH 78

Frequency [MHz]	Reading [dBuV]	※ A.F.+CL [dB]	Pol. [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	48.59	0.22	H	0	48.81	73.98	25.17	PK
2390.0	37.28	0.22	H	-24.73	12.77	53.98	41.21	AV
2390.0	48.87	0.22	V	0	49.09	73.98	24.89	PK
2390.0	37.68	0.22	V	-24.73	13.17	53.98	40.81	AV
2483.5	56.58	0.65	H	0	57.23	73.98	16.75	PK
2483.5	52.25	0.65	H	-24.73	28.17	53.98	25.81	AV
2483.5	58.07	0.65	V	0	58.72	73.98	15.26	PK
2483.5	55.20	0.65	V	-24.73	31.12	53.98	22.86	AV

Operation Mode	EDR(8DPSK)
Operating Frequency	2402 MHz, 2480 MHz
Channel No	CH 0, CH 78

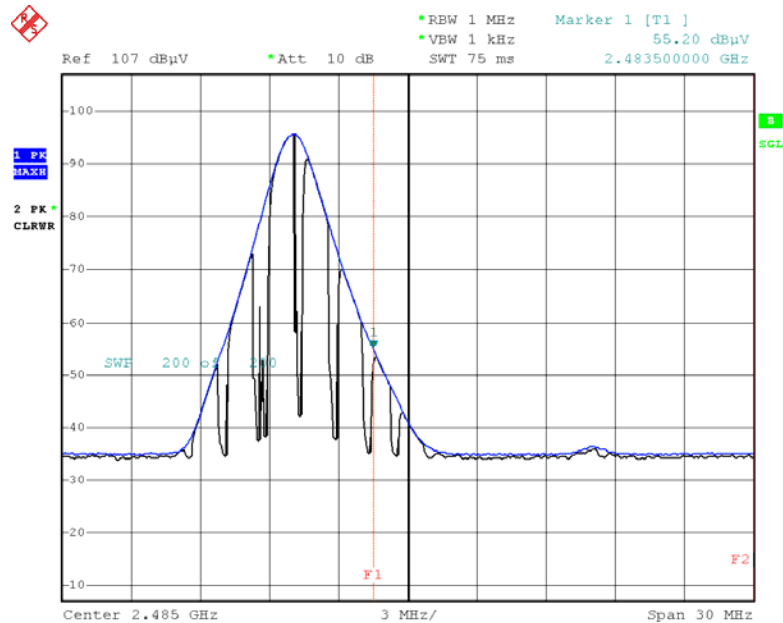
Frequency [MHz]	Reading [dBuV]	※ A.F.+CL [dB]	Pol. [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	48.25	0.22	H	0	48.47	73.98	25.51	PK
2390.0	36.57	0.22	H	-24.73	12.06	53.98	41.92	AV
2390.0	48.27	0.22	V	0	48.49	73.98	25.49	PK
2390.0	36.85	0.22	V	-24.73	12.34	53.98	41.64	AV
2483.5	57.08	0.65	H	0	57.73	73.98	16.25	PK
2483.5	51.75	0.65	H	-24.73	27.67	53.98	26.31	AV
2483.5	58.44	0.65	V	0	59.09	73.98	14.89	PK
2483.5	53.67	0.65	V	-24.73	29.59	53.98	24.39	AV

Operation Mode	EDR( $\pi$ /4QPSK)
Operating Frequency	2402 MHz, 2480 MHz
Channel No	CH 0, CH 78

Frequency [MHz]	Reading [dBuV]	※ A.F.+CL [dB]	Pol. [H/V]	Duty Cycle Correction [dB]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	48.59	0.22	H	0	48.81	73.98	25.17	PK
2390.0	36.45	0.22	H	-24.73	11.94	53.98	42.04	AV
2390.0	48.99	0.22	V	0	49.21	73.98	24.77	PK
2390.0	36.78	0.22	V	-24.73	12.27	53.98	41.71	AV
2483.5	56.98	0.65	H	0	57.63	73.98	16.35	PK
2483.5	51.36	0.65	H	-24.73	27.28	53.98	26.70	AV
2483.5	58.74	0.65	V	0	59.39	73.98	14.59	PK
2483.5	53.52	0.65	V	-24.73	29.44	53.98	24.54	AV

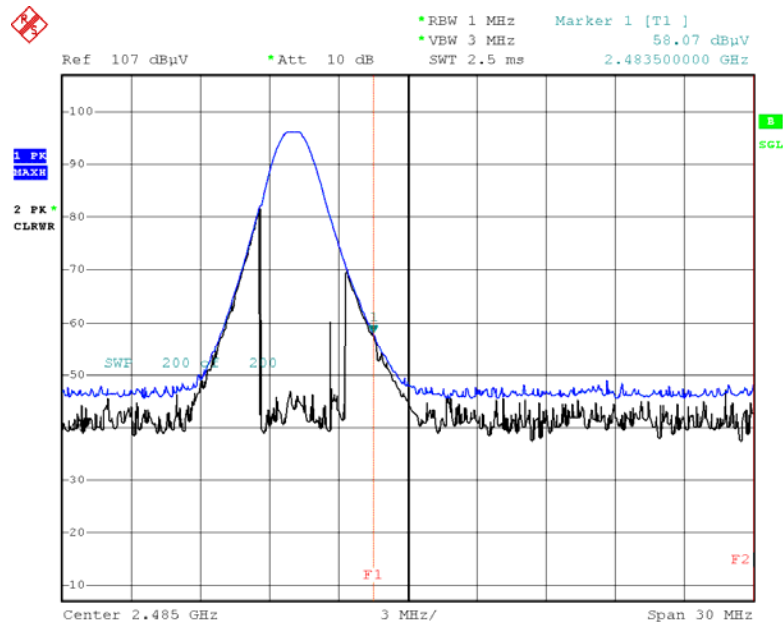
## RESULT PLOTS (Worst case : X-V)

Radiated Restricted Band Edges plot – Average Reading (GFSK, Ch.78)



Date: 5.NOV.2019 02:25:06

Radiated Restricted Band Edges plot – Peak Reading (GFSK, Ch.78)



Date: 5.NOV.2019 02:25:22

### Note:

Plot of worst case are only reported.

## 11. LIST OF TEST EQUIPMENT

### Conducted Test

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Rohde & Schwarz	ENV216 / LISN	12/12/2018	Annual	102245
Rohde & Schwarz	ESCI / Test Receiver	06/18/2019	Annual	100033
ESPAC	SU-642 /Temperature Chamber	03/12/2019	Annual	0093008124
Agilent	N9020A / Signal Analyzer	05/23/2019	Annual	MY51110085
Agilent	N9030A / Signal Analyzer	11/20/2018	Annual	MY49431210
Agilent	N1911A / Power Meter	04/10/2019	Annual	MY45100523
Agilent	N1921A / Power Sensor	04/10/2019	Annual	MY52260025
Agilent	87300B / Directional Coupler	11/20/2018	Annual	3116A03621
Hewlett Packard	11667B / Power Splitter	05/24/2019	Annual	5001
Hewlett Packard	E3632A / DC Power Supply	06/18/2019	Annual	KR75303960
Agilent	8493C / Attenuator(10 dB)	07/02/2019	Annual	07560
Rohde & Schwarz	EMC32 / Software	N/A	N/A	N/A
HCT CO., LTD.	FCC WLAN&BT&BLE Conducted Test Software v3.0	N/A	N/A	N/A
Rohde & Schwarz	CBT / Bluetooth Tester	05/16/2019	Annual	100422

### Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

### Radiated Test

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Innco system	CO3000 / Controller(Antenna mast)	N/A	N/A	CO3000-4p
Innco system	MA4640/800-XP-EP / Antenna Position Tower	N/A	N/A	N/A
Emco	2090 / Controller	N/A	N/A	060520
Ets	Turn Table	N/A	N/A	N/A
Rohde & Schwarz	Loop Antenna	01/18/2019	Biennial	1513-175
Schwarzbeck	VULB 9160 / Hybrid Antenna	08/09/2019	Biennial	3368
Schwarzbeck	BBHA 9120D / Horn Antenna	11/21/2017	Biennial	9120D-1191
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	12/04/2017	Biennial	BBHA9170541
Rohde & Schwarz	FSP(9 kHz ~ 30 GHz) / Spectrum Analyzer	09/11/2019	Annual	836650/016
Rohde & Schwarz	FSV40-N / Spectrum Analyzer	09/26/2019	Annual	101068-SZ
Wainwright Instruments	WHKX10-2700-3000-18000-40SS / High Pass Filter	01/03/2019	Annual	4
Wainwright Instruments	WHKX8-6090-7000-18000-40SS / High Pass Filter	01/03/2019	Annual	5
Wainwright Instruments	WRCJV2400/2483.5-2370/2520-60/12SS / Band Reject Filter	06/19/2019	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	01/03/2019	Annual	2
Api tech.	18B-03 / Attenuator (3 dB)	06/04/2019	Annual	2
WEINSCHL	56-10 / Attenuator(10 dB)	10/08/2019	Annual	72316
CERNEX	CBLU1183540B-01/Broadband Bench Top LNA	01/03/2019	Annual	28549
CERNEX	CBL06185030 / Broadband Low Noise Amplifier	01/03/2019	Annual	24615
CERNEX	CBL18265035 / Power Amplifier	01/03/2019	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	06/18/2019	Annual	25956
TESCOM	TC-3000C / Bluetooth Tester	03/26/2019	Annual	3000C000276

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
3. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5(Version : 2017).

## 12. ANNEX A\_ TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-RF-1911-FC001-P