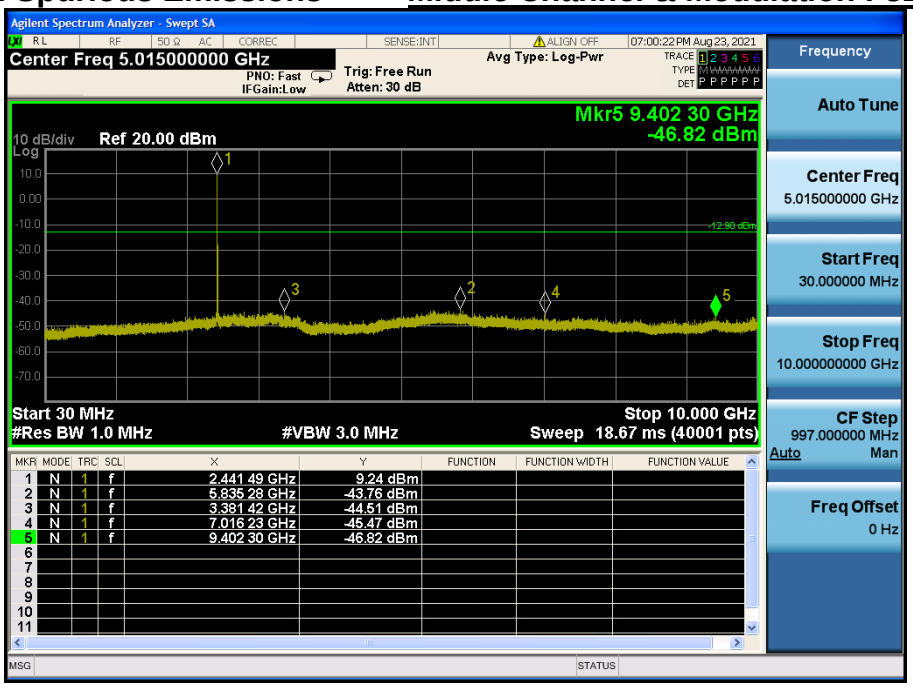
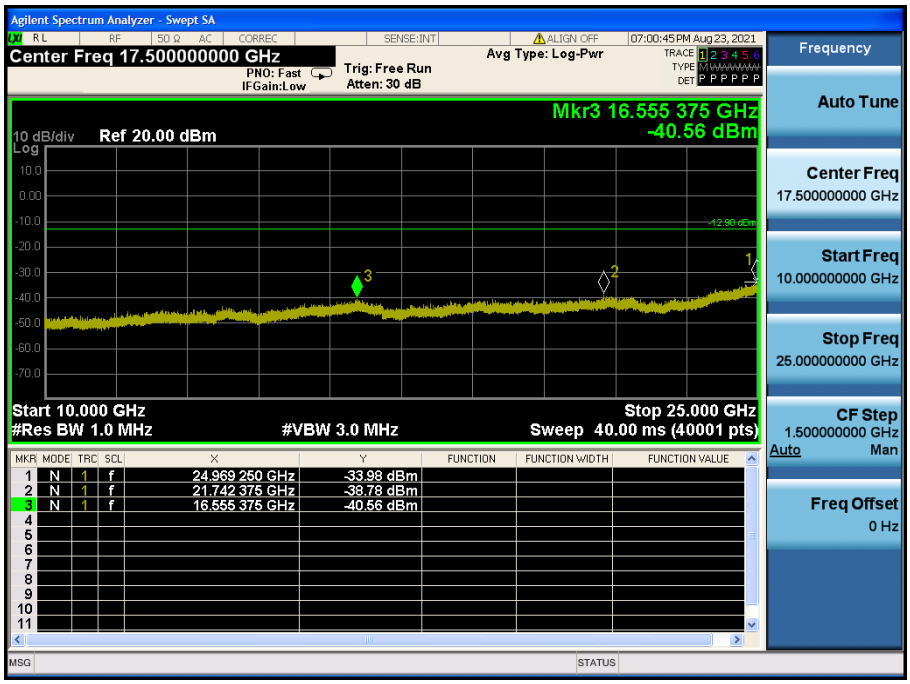
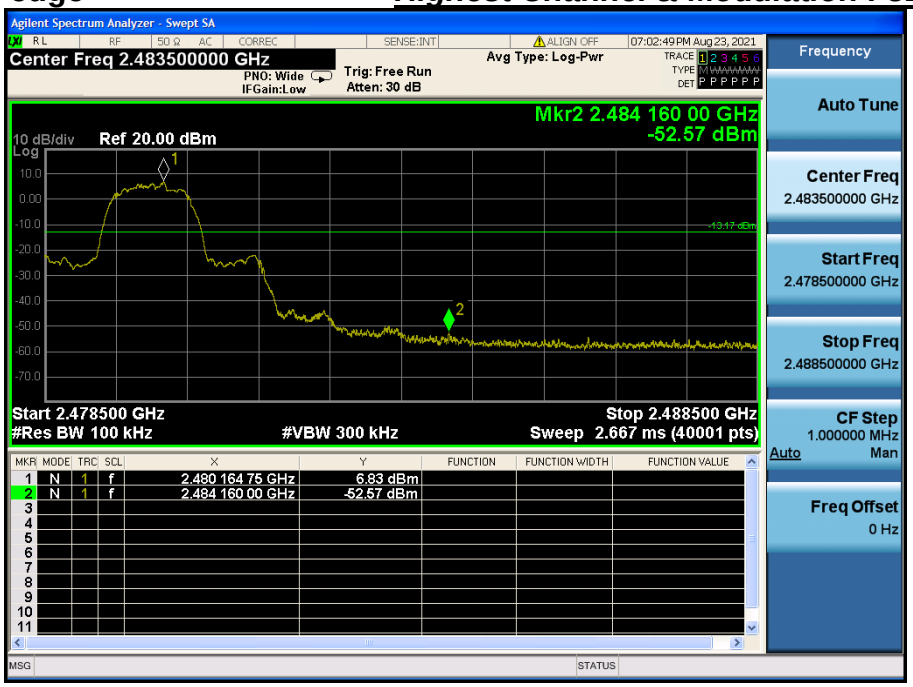
Conducted Spurious Emissions ***Middle Channel & Modulation : 8DPSK***



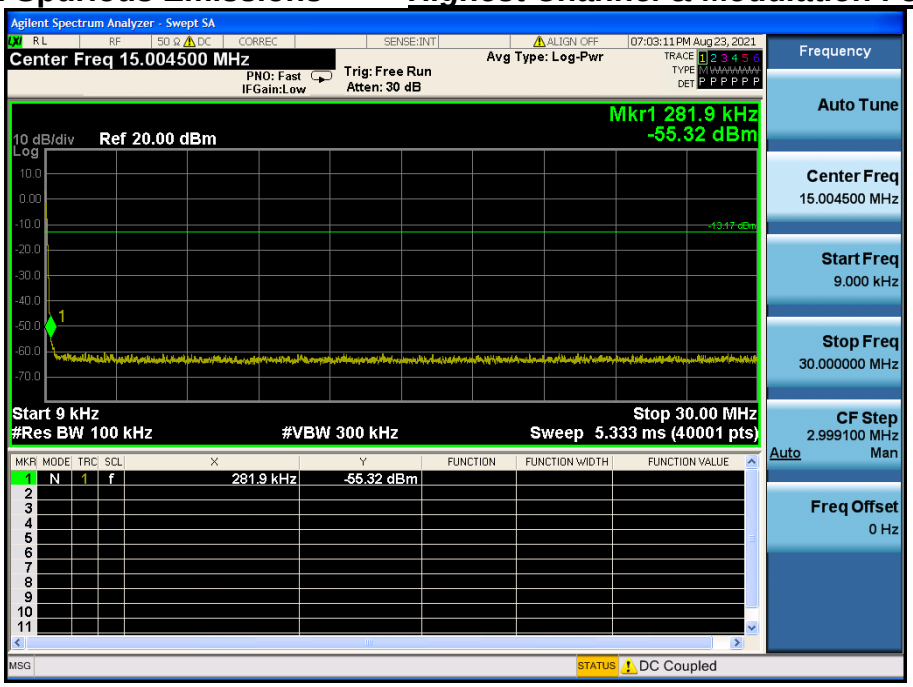


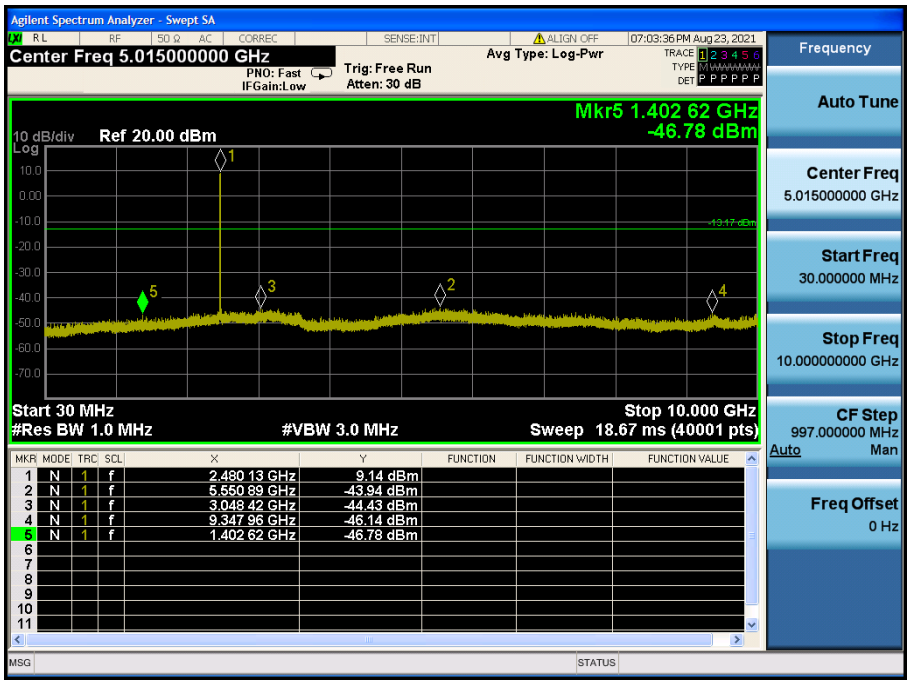
High Band-edge ***Highest Channel & Modulation : 8DPSK***



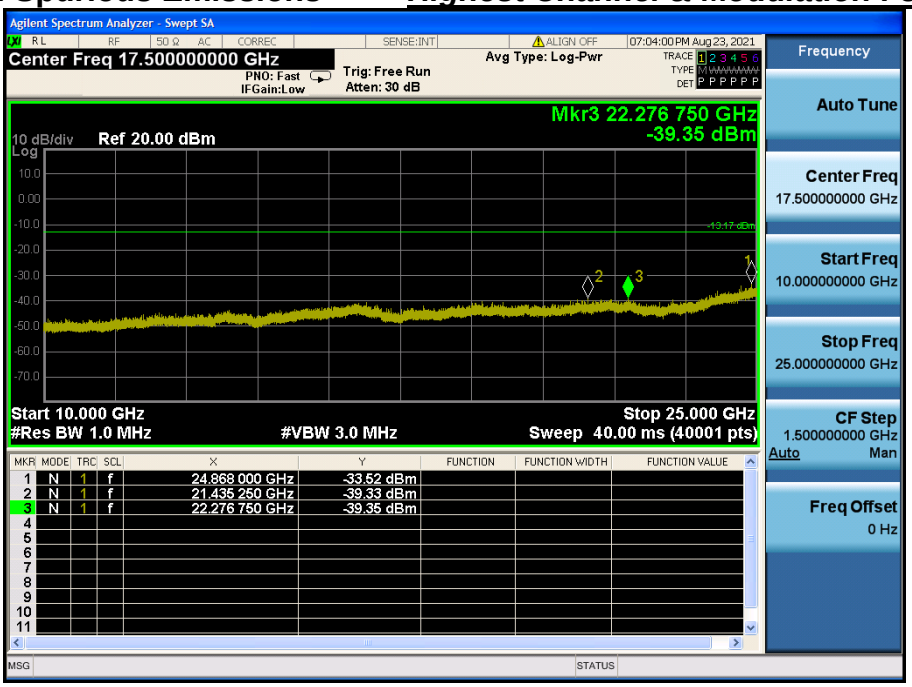
High Band-edge ***Hopping mode & Modulation : 8DPSK***

Conducted Spurious Emissions ***Highest Channel & Modulation : 8DPSK***





Conducted Spurious Emissions ***Highest Channel & Modulation : 8DPSK***



10. AC Power-Line Conducted Emissions

10.1. Test Setup

See test photographs for the actual connections between EUT and support equipment.

10.2. Limit

According to §15.207(a) for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 uH/50 ohm line impedance stabilization network (LISN).

Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.50	66 to 56 *	56 to 46 *
0.5 ~ 5.0	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

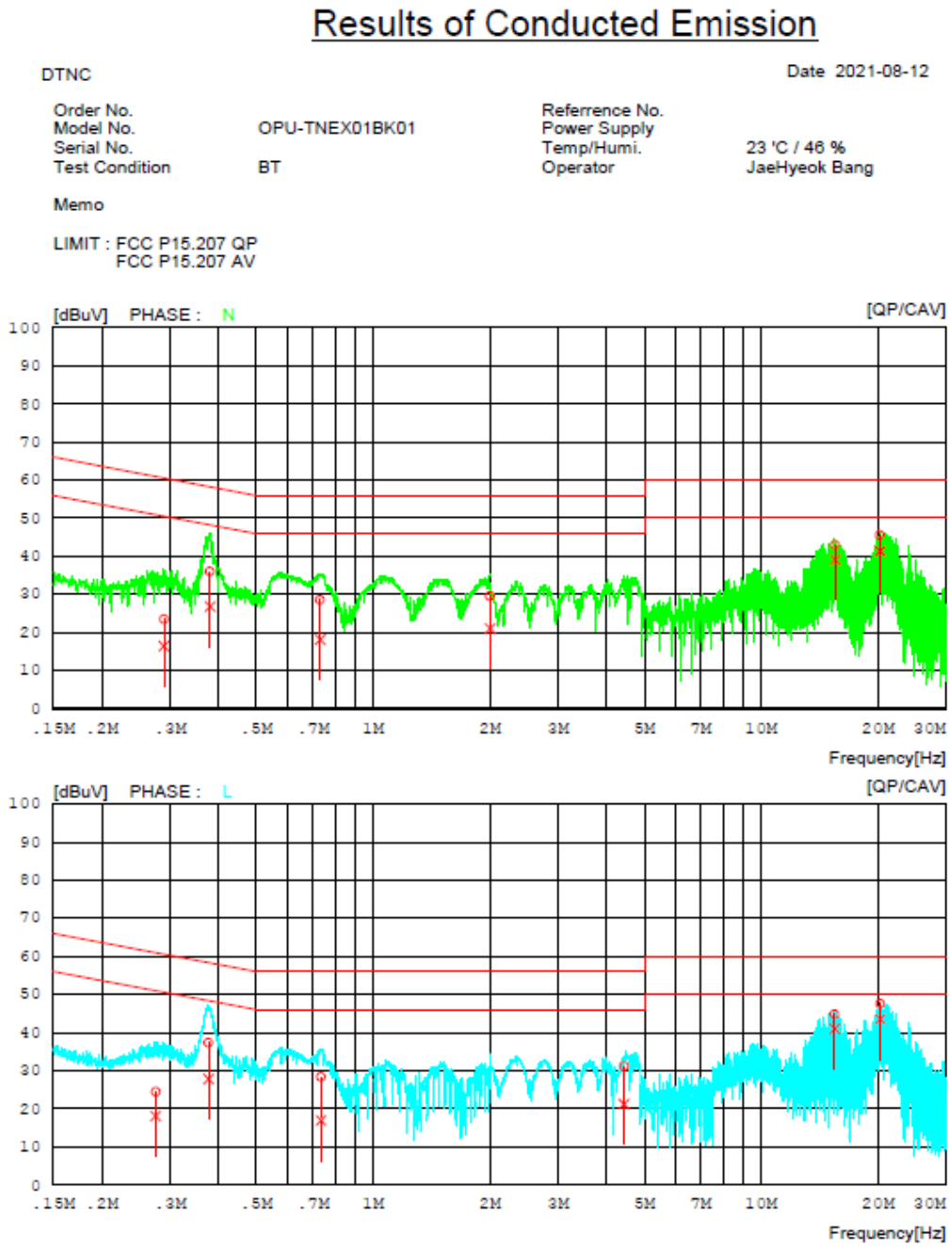
10.3. Test Procedure

Conducted emissions from the EUT were measured according to the ANSI C63.10.

1. The test procedure is performed in a 6.5 m × 3.5 m × 3.5 m (L × W × H) shielded room. The EUT along with its peripherals were placed on a 1.0 m (W) × 1.5 m (L) and 0.8 m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.
2. The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room.
3. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room.
4. The excess power cable between the EUT and the LISN was bundled. The power cables of peripherals were unbundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.

10.4. Test Results

AC Power-Line Conducted Emissions (Graph) = Modulation : *TM1 & GFSK*



AC Power-Line Conducted Emissions (List) = Modulation : *TM1 & GFSK*

Results of Conducted Emission

DTNC

Date 2021-08-12

Order No.		Referrence No.	
Model No.	OPU-TNEX01BK01	Power Supply	
Serial No.		Temp/Humi.	23 'C / 46 %
Test Condition	BT	Operator	JaeHyeok Bang

Memo

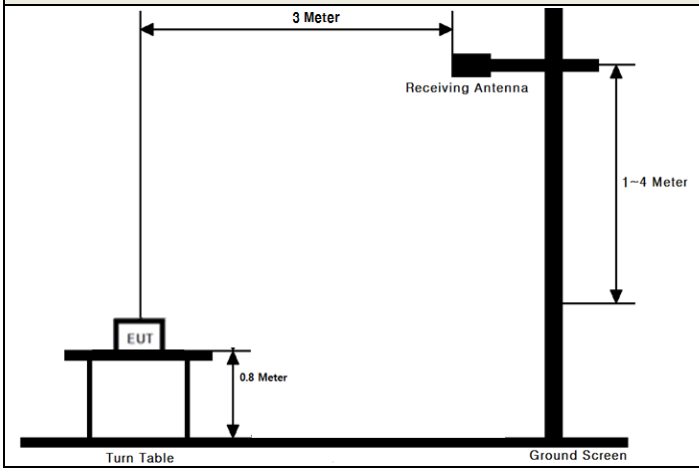
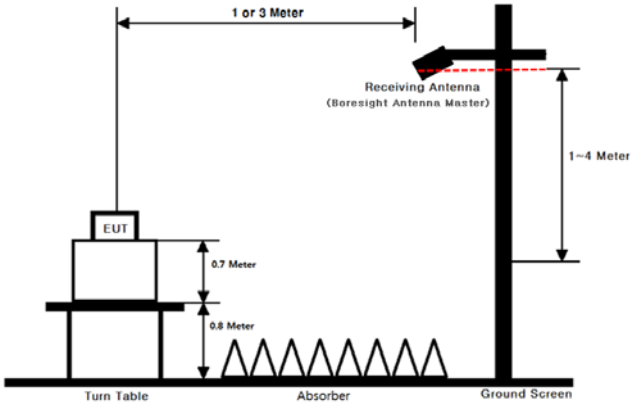
LIMIT : FCC P15.207 QP
FCC P15.207 AV

NO	FREQ	READING QP	READING CAV	C.FACTOR	RESULT QP	RESULT CAV	LIMIT QP	LIMIT CAV	MARGIN QP	MARGIN CAV	PHASE
	[MHz]	[dBuV]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	
1	0.28909	13.56	6.63	9.90	23.46	16.53	60.55	50.55	37.09	34.02	N
2	0.37981	26.15	16.95	9.91	36.06	26.86	58.28	48.28	22.22	21.42	N
3	0.73047	18.66	8.23	9.91	28.57	18.14	56.00	46.00	27.43	27.86	N
4	2.00256	19.44	10.89	10.07	29.51	20.96	56.00	46.00	26.49	25.04	N
5	15.52122	32.56	28.72	10.38	42.94	39.10	60.00	50.00	17.06	10.90	N
6	20.24035	35.15	30.89	10.46	45.61	41.35	60.00	50.00	14.39	8.65	N
7	0.27532	14.60	8.15	9.90	24.50	18.05	60.96	50.96	36.46	32.91	L
8	0.37649	27.40	17.84	9.91	37.31	27.75	58.36	48.36	21.05	20.61	L
9	0.73405	18.37	6.91	9.98	28.35	16.89	56.00	46.00	27.65	29.11	L
10	4.43722	20.98	11.11	10.10	31.08	21.21	56.00	46.00	24.92	24.79	L
11	15.47974	34.46	30.66	10.37	44.83	41.03	60.00	50.00	15.17	8.97	L
12	20.28018	37.25	33.17	10.36	47.61	43.53	60.00	50.00	12.39	6.47	L

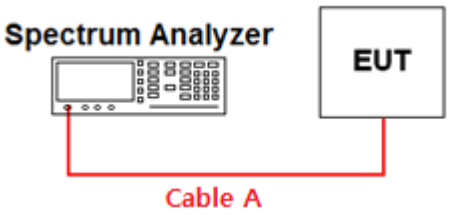
APPENDIX I

Test set up diagrams

▪ Radiated Measurement

Below 1 GHz	Above 1 GHz
	

▪ Conducted Measurement



Path loss information

Frequency (GHz)	Path Loss (dB)	Frequency (GHz)	Path Loss (dB)
0.03	0.55	15	2.19
1	0.58	20	2.21
2.402 & 2.441 & 2.480	1.14	25	5.48
5	2.09	-	-
10	2.12	-	-

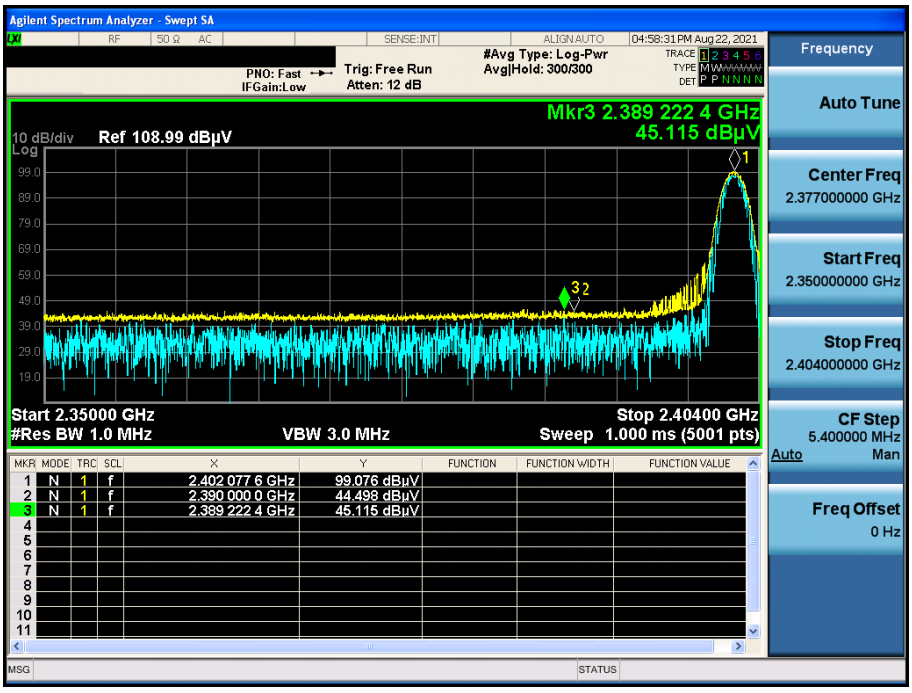
Note 1: The path loss from EUT to Spectrum analyzer was measured and used for test.
Path loss (S/A's correction factor) = Cable A + Power Splitter

APPENDIX II

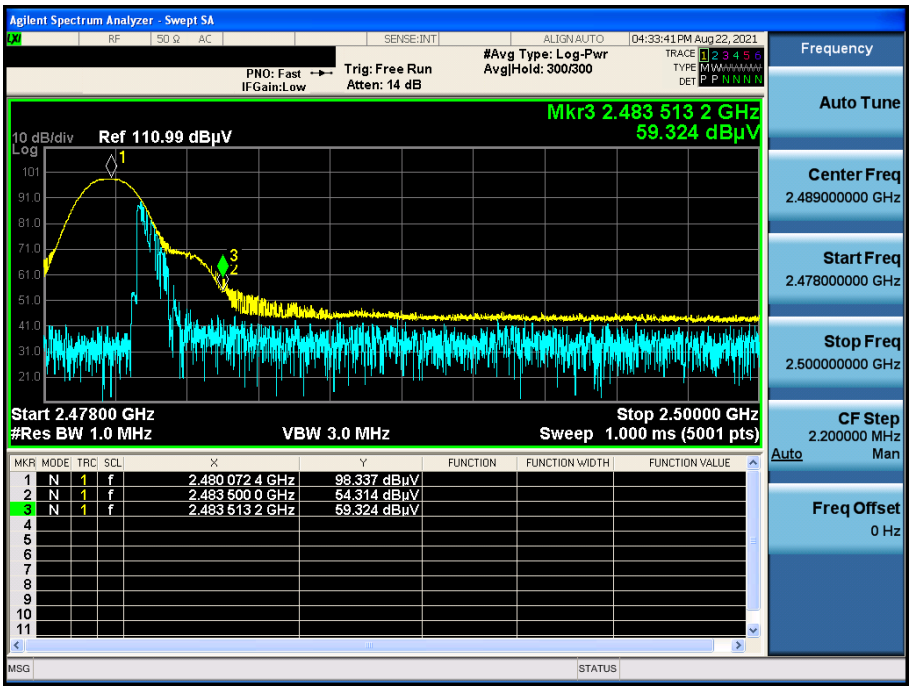
Unwanted Emissions (Radiated) Test Plot

TM 1

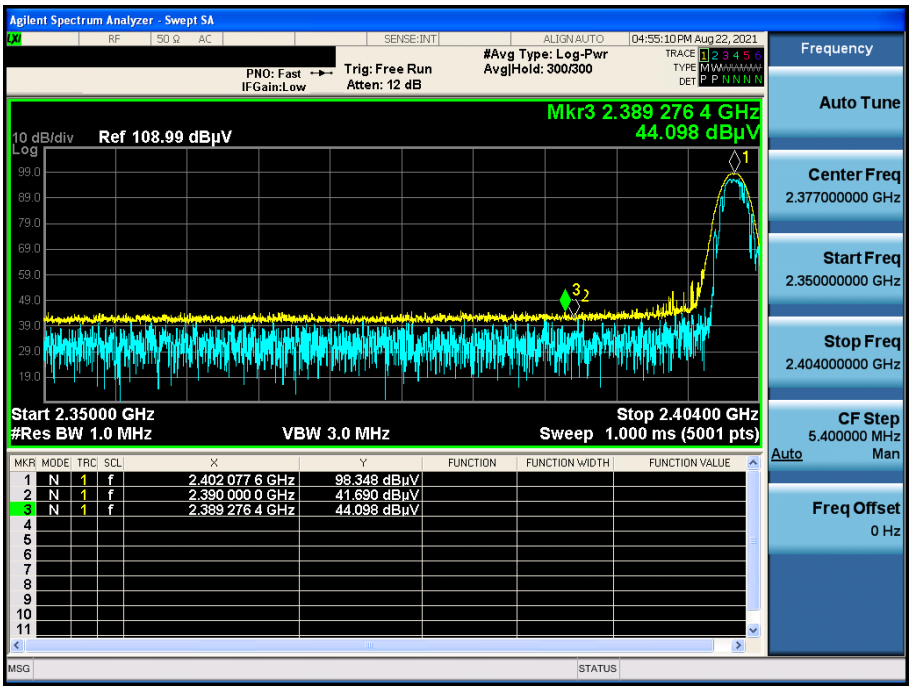
GFSK & Lowest & X & Ver **Detector Mode : PK**



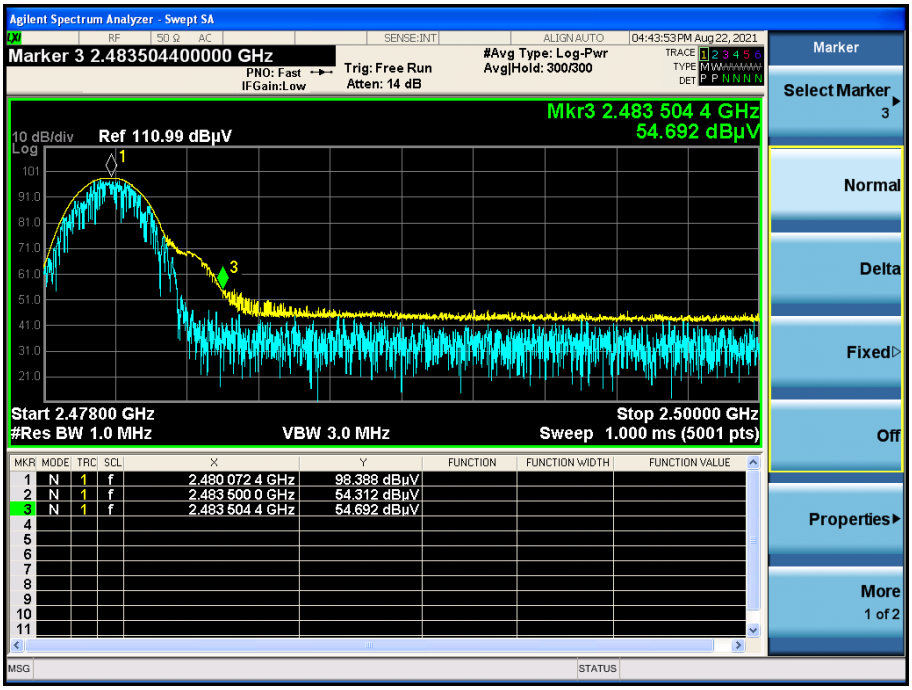
GFSK & Highest & X & Ver **Detector Mode : PK**



π/4DQPSK & Lowest & X & Ver **Detector Mode : PK**

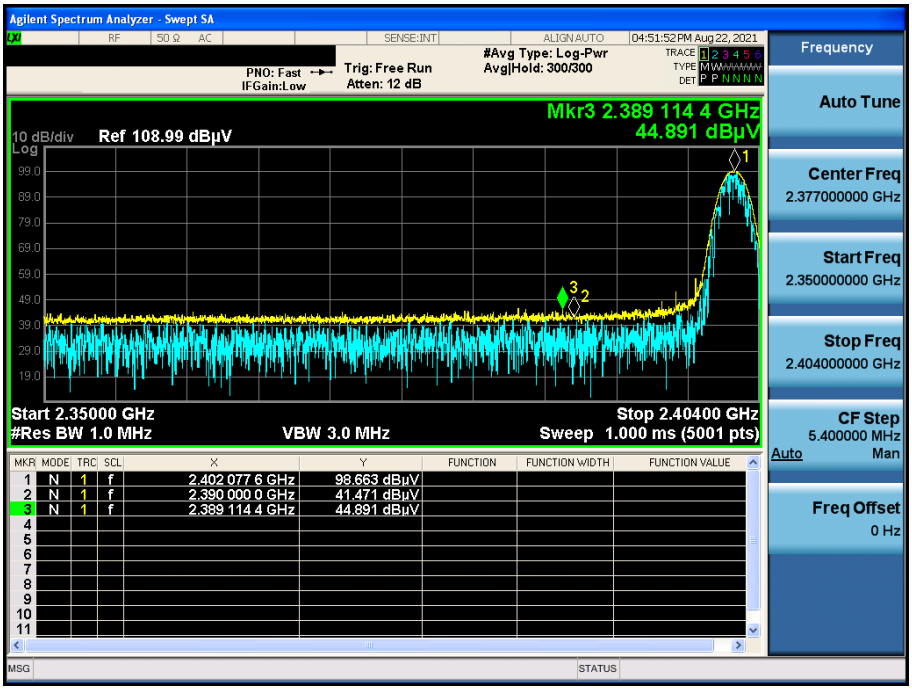


π/4DQPSK & Highest & X & Ver **Detector Mode : PK**



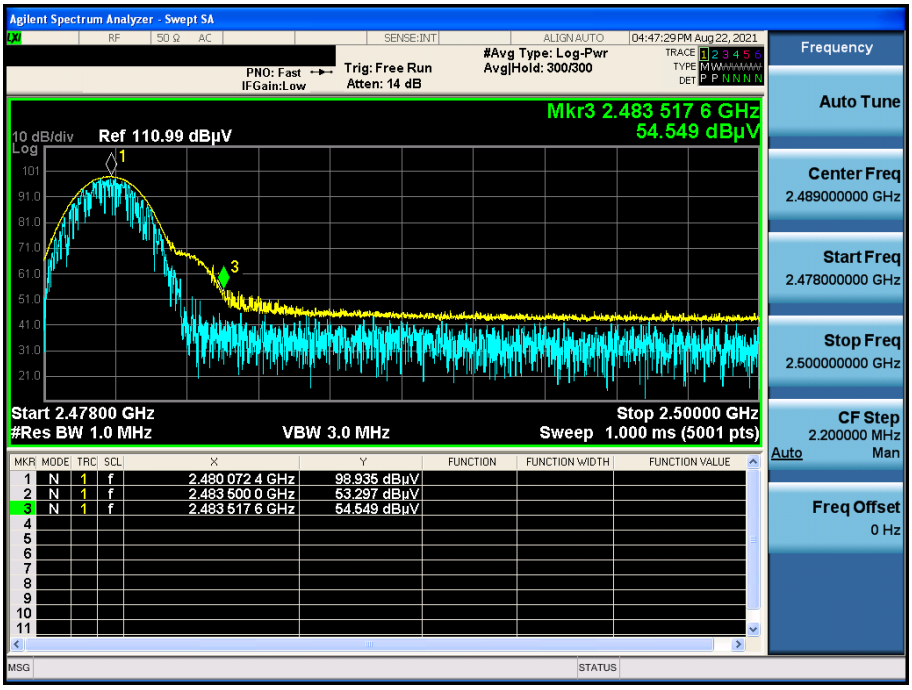
8DPSK & Lowest & X & Ver

Detector Mode : PK

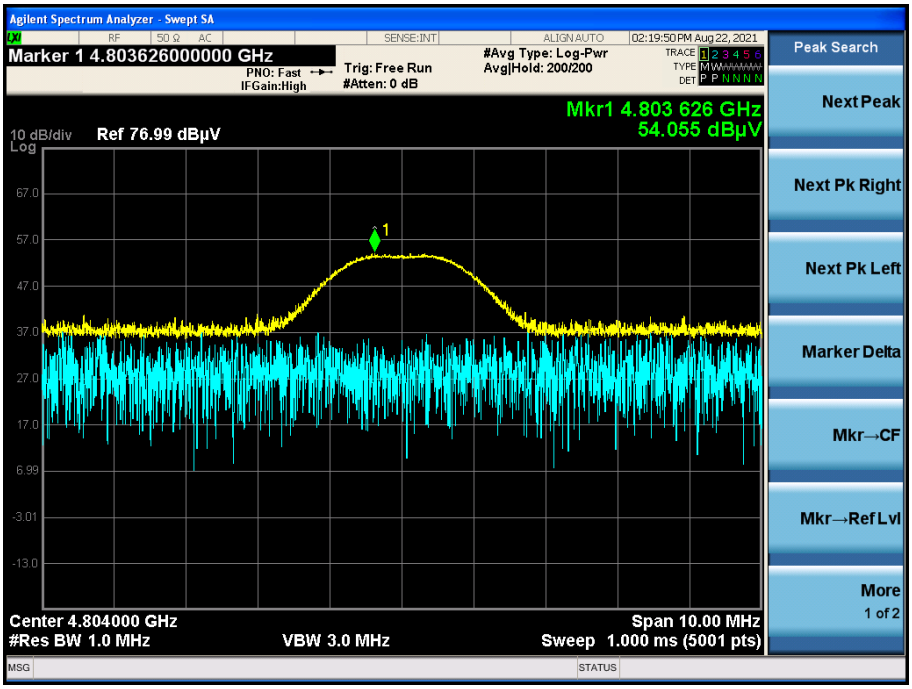


8DPSK & Highest & X & Ver

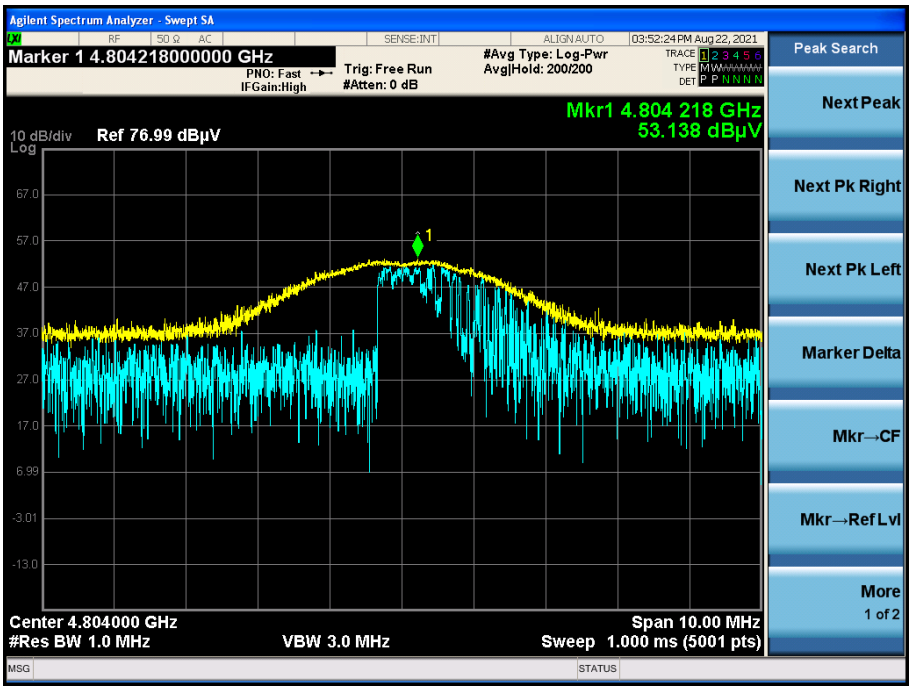
Detector Mode : PK



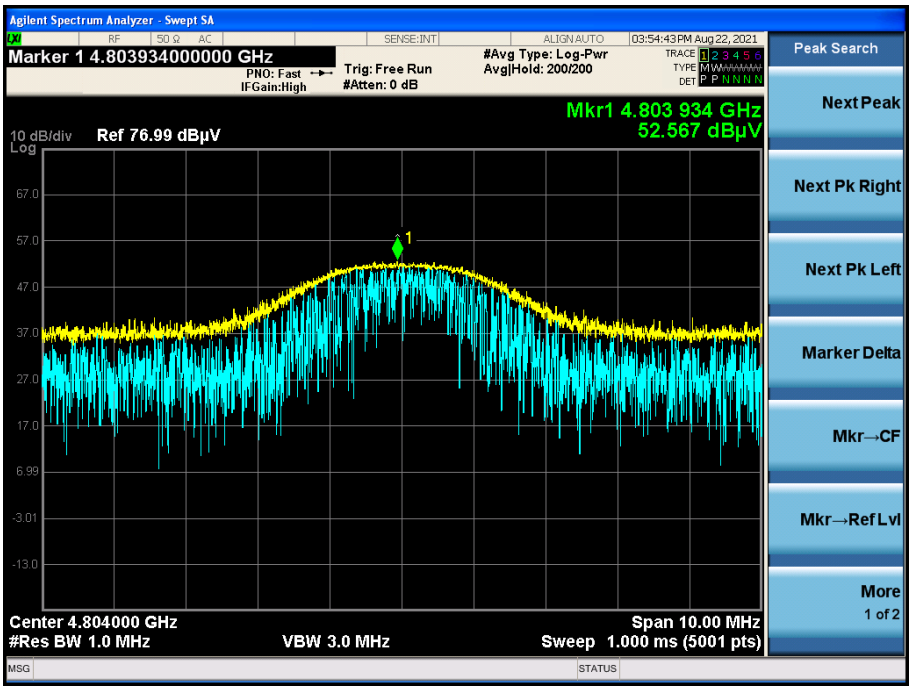
GFSK & Lowest & Z & Hor **Detector Mode : PK**



π/4DQPSK & Lowest & X & Ver **Detector Mode : PK**

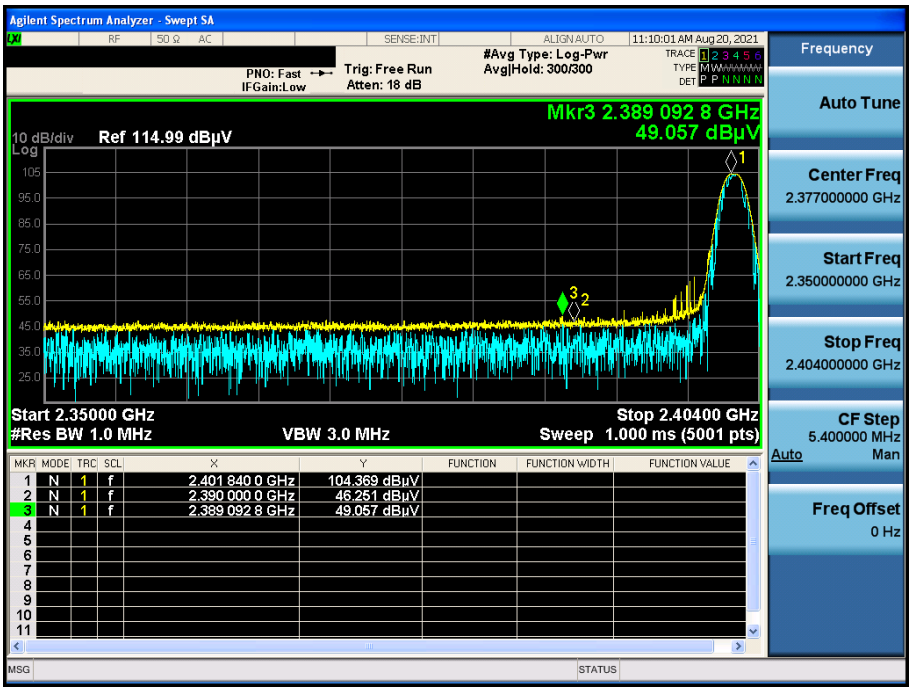


8DPSK & Lowest & Z & Hor **Detector Mode : PK**

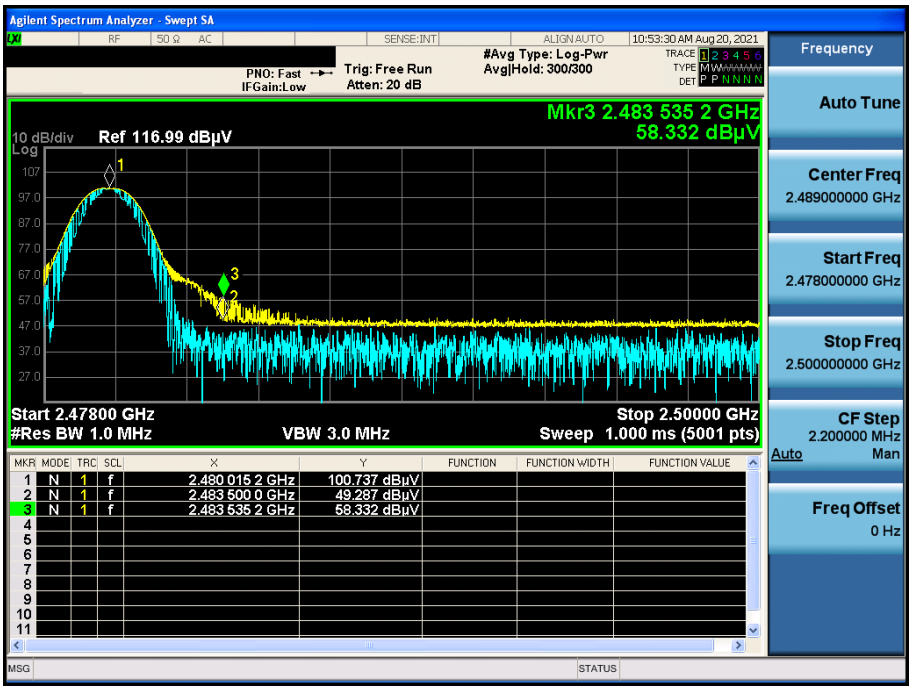


TM 2

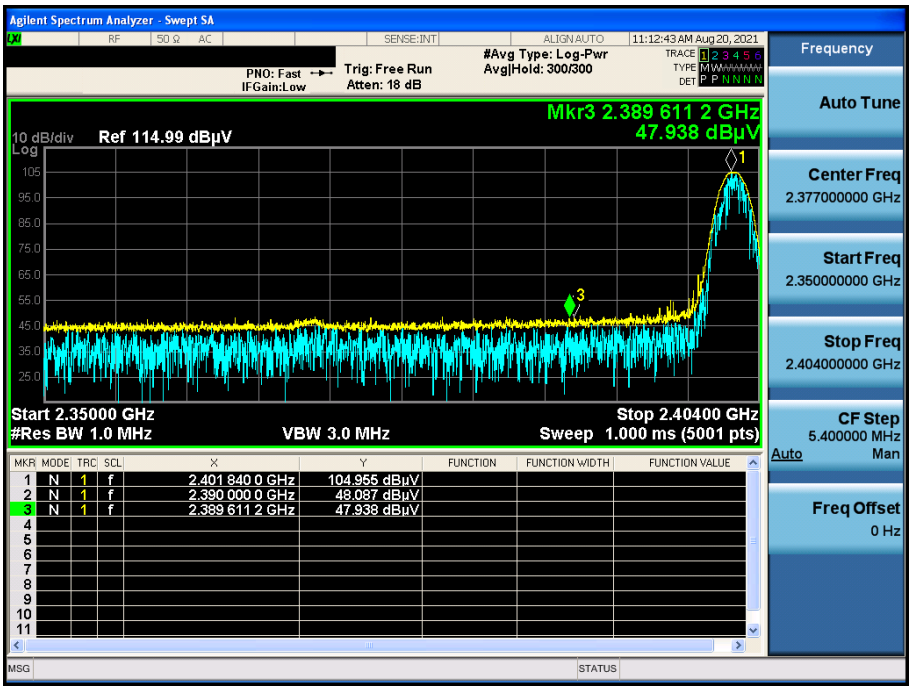
GFSK & Lowest & X & Hor — Detector Mode : PK



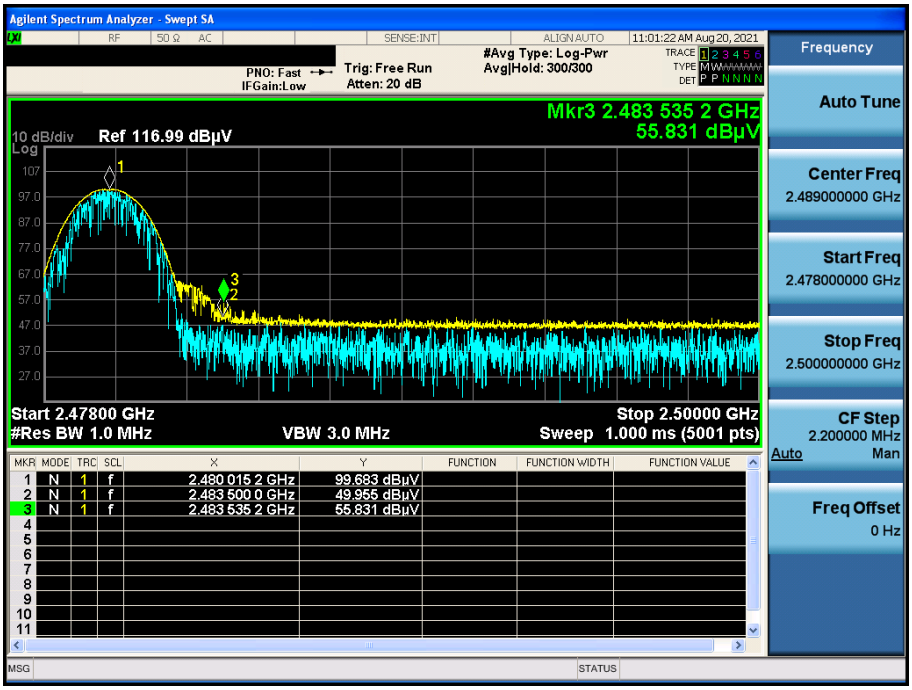
GFSK & Highest & X & Hor — Detector Mode : PK



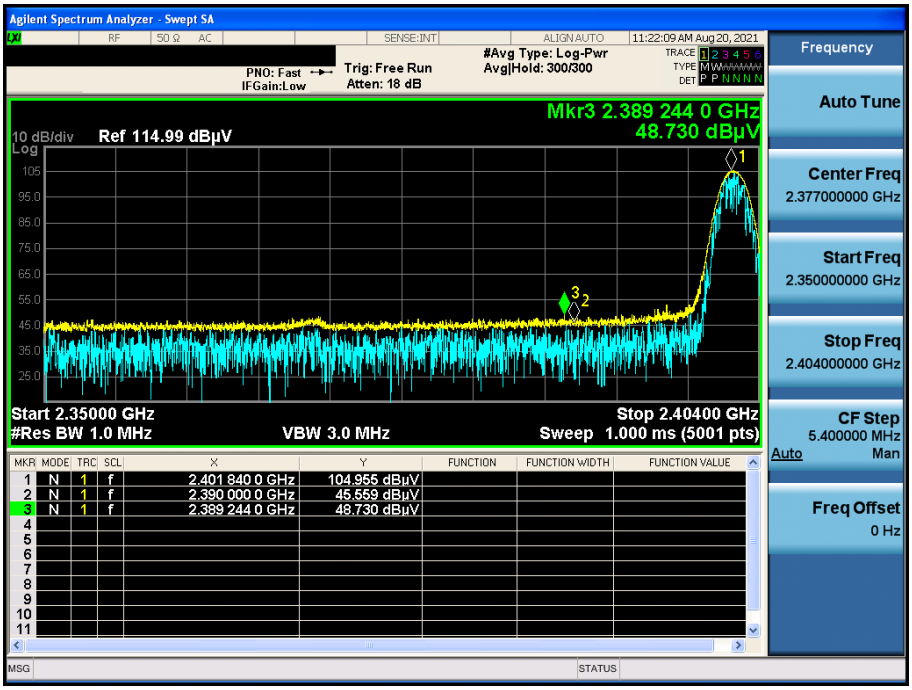
π/4DQPSK & Lowest & X & Hor **Detector Mode : PK**



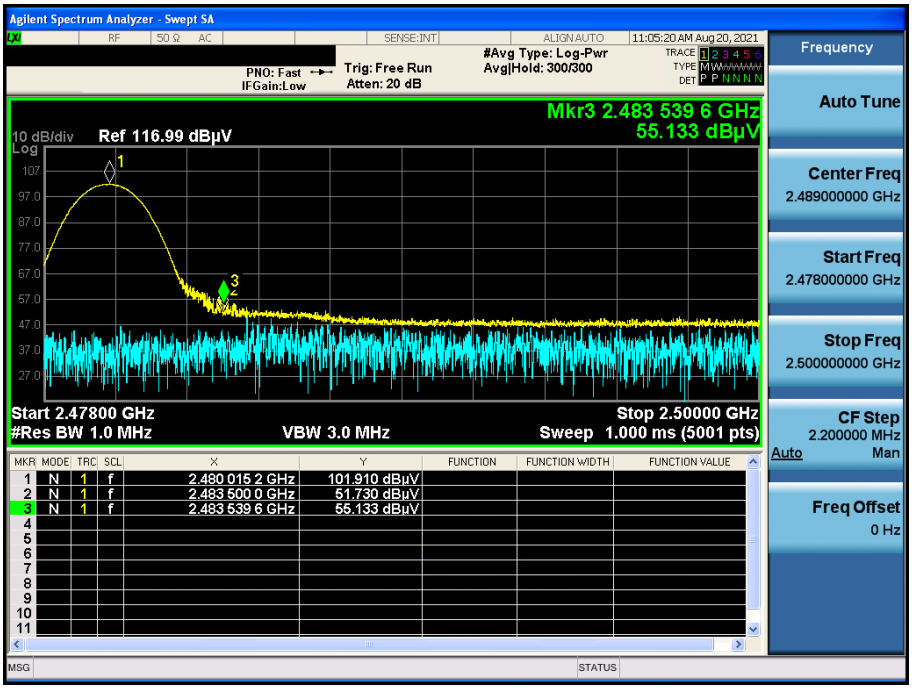
π/4DQPSK & Highest & X & Hor **Detector Mode : PK**



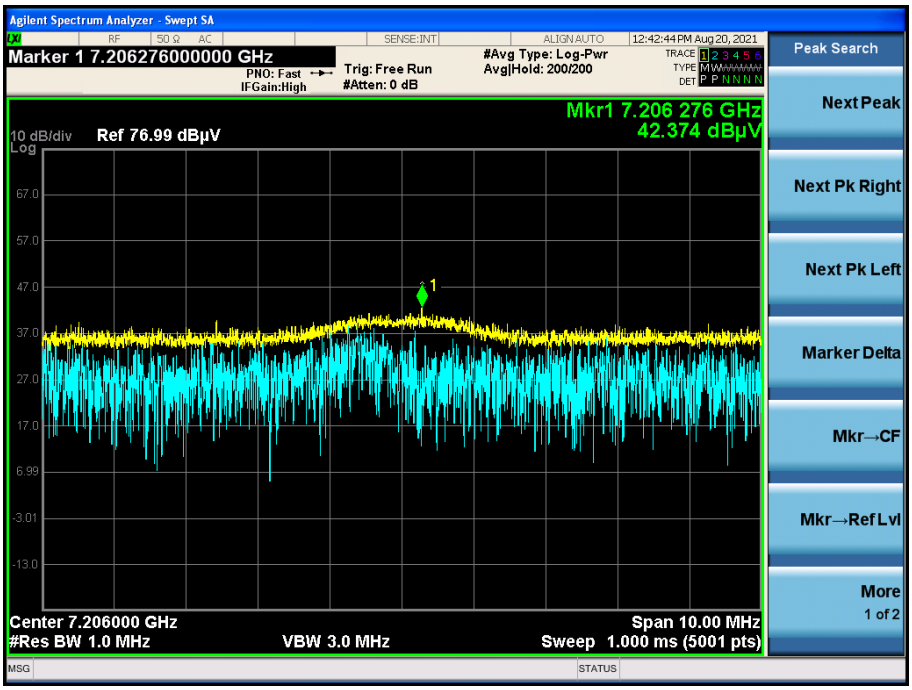
8DPSK & Lowest & X & Hor **Detector Mode : PK**



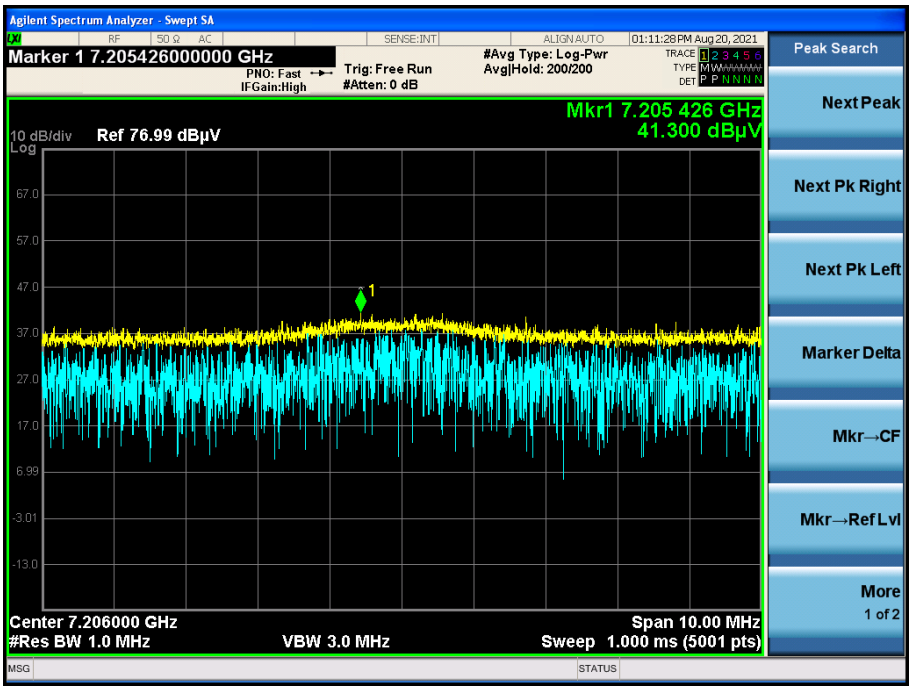
8DPSK & Highest & X & Hor **Detector Mode : PK**



GFSK & Lowest & Z & Ver **Detector Mode : PK**



π/4DQPSK & Lowest & Z & Ver **Detector Mode : PK**



8DPSK & Lowest & Z & Ver **Detector Mode : PK**