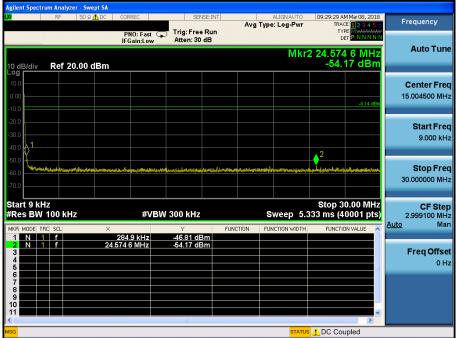


Reference for limit

Middle Channel & Modulation : GFSK



Conducted Spurious Emissions <u>Middle Channel & Modulation : GFSK</u>





Middle Channel & Modulation : GFSK

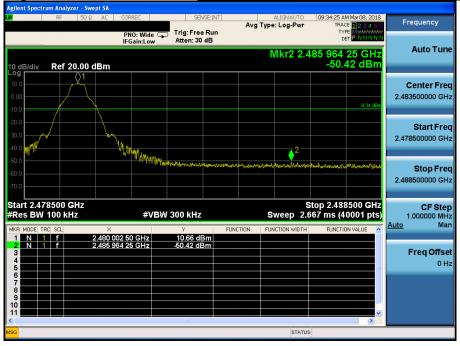




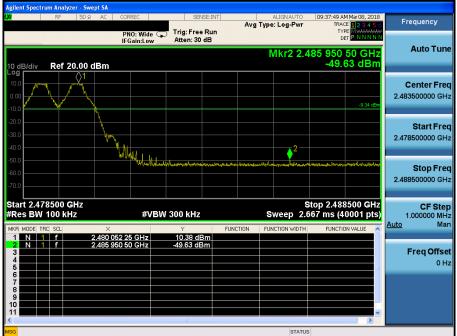


High Band-edge

Highest Channel & Modulation : GFSK

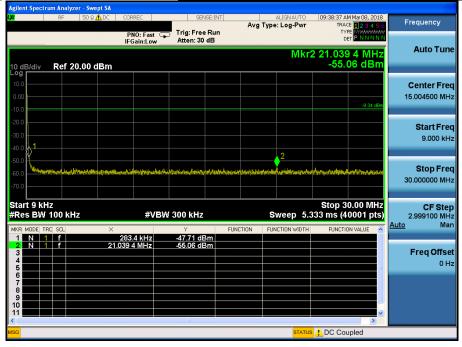


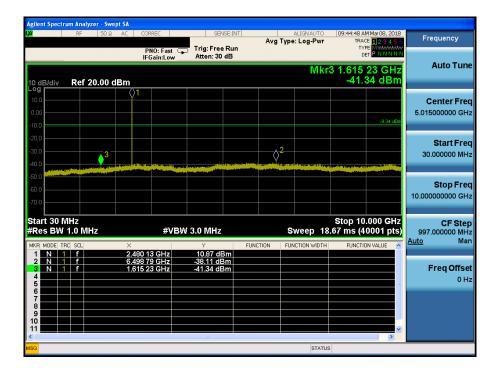
High Band-edge <u>Hopping mode & Modulation : GFSK</u>





Highest Channel & Modulation : GFSK







Highest Channel & Modulation : GFSK





Low Band-edge

Lowest Channel & Modulation : π/4DQPSK



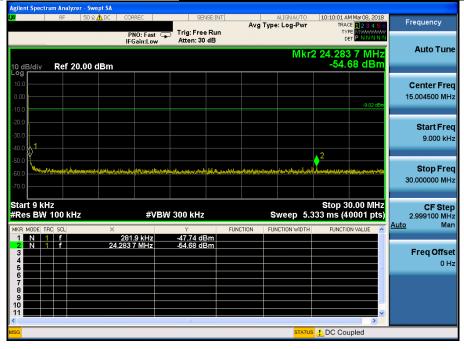
Low Band-edge

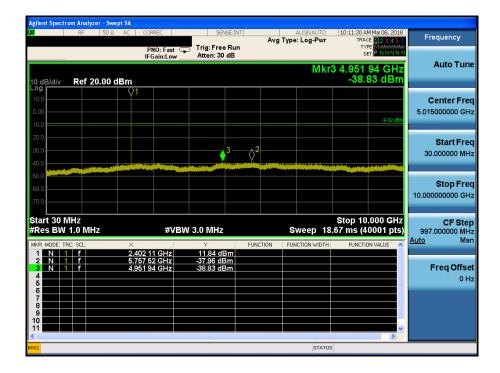
Hopping mode & Modulation : π/4DQPSK





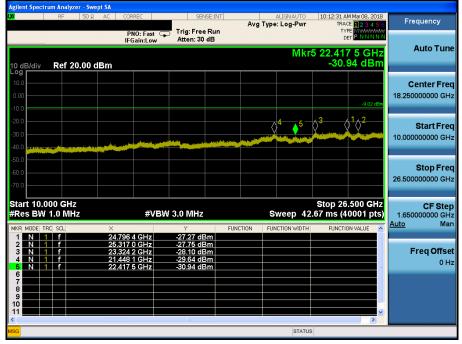
Lowest Channel & Modulation : π/4DQPSK







Lowest Channel & Modulation : π/4DQPSK



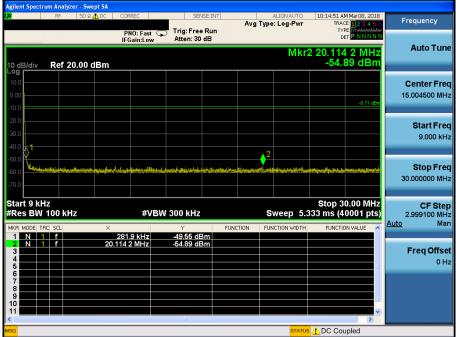


Reference for limit

Middle Channel & Modulation : π/4DQPSK



Conducted Spurious Emissions <u>Middle Channel & Modulation : π/4DQPSK</u>





Middle Channel & Modulation : π/4DQPSK

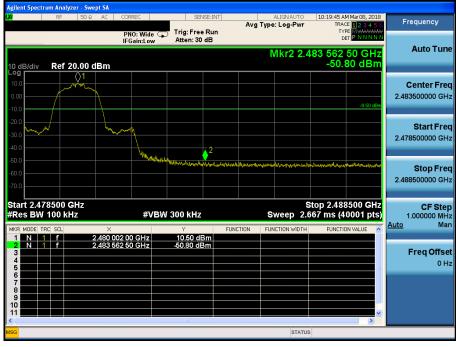






High Band-edge

Highest Channel & Modulation : π/4DQPSK



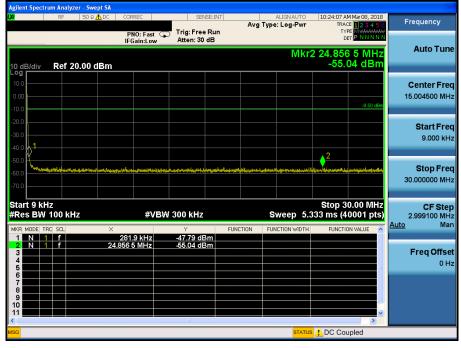
High Band-edge

Hopping mode & Modulation : π/4DQPSK





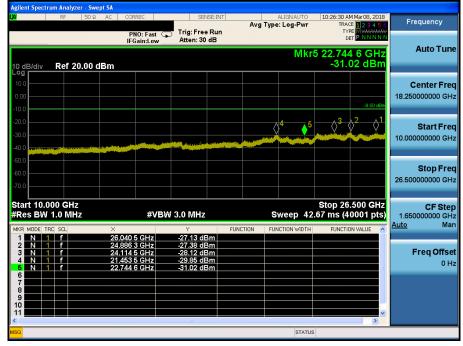
Highest Channel & Modulation : π/4DQPSK



Agilent Spectrum Analyzer XI RE							
RF	50 Ω AC CORREC	SENSE:I	Avg Ty	ALIGNAUTO	10:25:32 AM Mar TRACE	23456	Frequency
	PNO: Fas IFGain:Lo		n	Mkr	4 8.197 67		Auto Tune
10 dB/div Ref 20.	00 dBm				-40.04	dBm	
0.00						-9.50 dBm	Center Fred 5.015000000 GHz
-20.0			2		4		Start Fred 30.000000 MHz
-50.0							Stop Fred 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz	Res BW 1.0 MHz #VBW 3.0 MHz Sweep 18.67 ms (40001 pts)					CF Step 997.000000 MH;	
MKR MODE TRC SCL	× 2.480 38 GHz	۲ 11.67 dBm	FUNCTION	UNCTION WIDTH	FUNCTION VA	LUE	<u>Auto</u> Mar
2 N 1 f 3 N 1 f 4 N 1 f 5	5.727 61 GHz 3.150 11 GHz 8.197 67 GHz	-38.18 dBm -39.14 dBm -40.04 dBm					Freq Offset 0 Hz
6 7 8 9 10							
						~	
SG STATUS							



Highest Channel & Modulation : π/4DQPSK





Low Band-edge

Lowest Channel & Modulation : 8DPSK



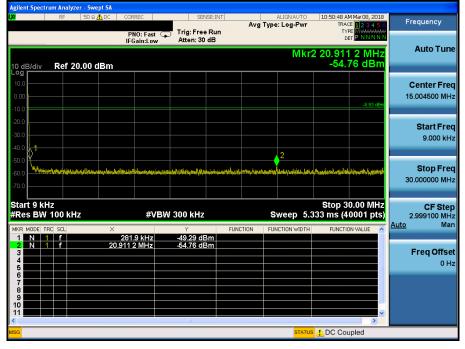
Low Band-edge

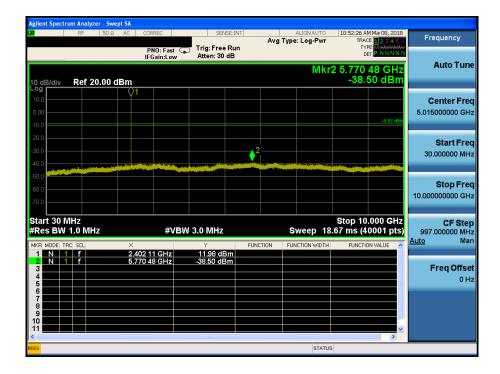
Hopping mode & Modulation : 8DPSK





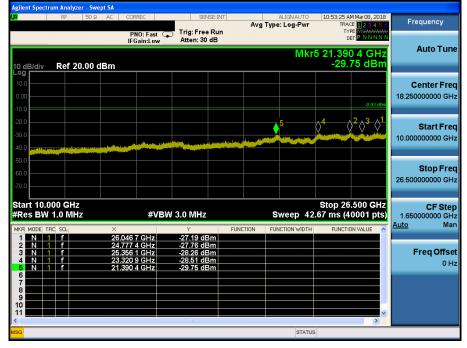
Lowest Channel & Modulation : 8DPSK







Lowest Channel & Modulation : 8DPSK



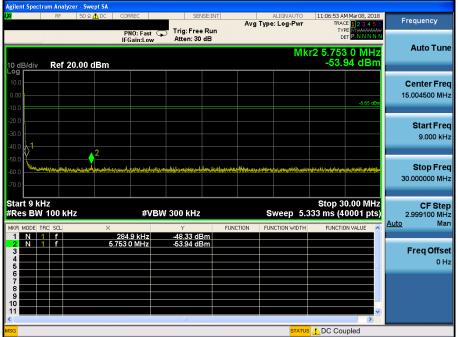


Reference for limit



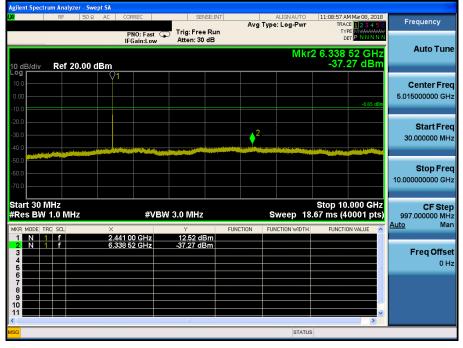


Conducted Spurious Emissions <u>Middle Channel & Modulation : 8DPSK</u>





Middle Channel & Modulation : 8DPSK

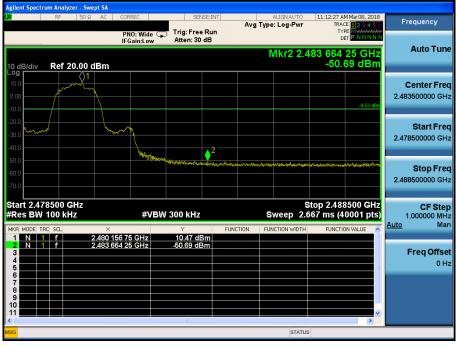






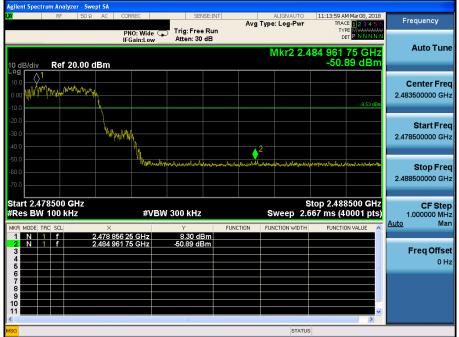
High Band-edge

Highest Channel & Modulation : 8DPSK



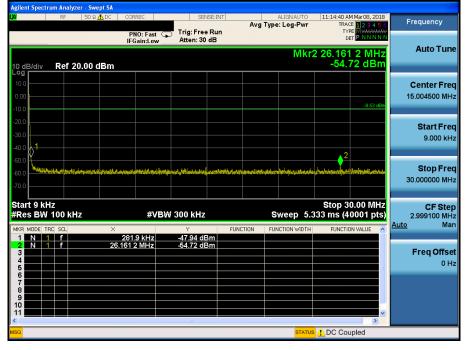
High Band-edge

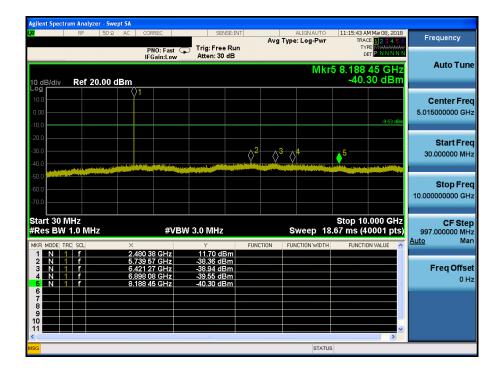
Hopping mode & Modulation : 8DPSK





Highest Channel & Modulation : 8DPSK







Highest Channel & Modulation : 8DPSK



8. Transmitter AC Power Line Conducted Emission

8.1 Test Setup

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

8.2 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.

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

* Decreases with the logarithm of the frequency

8.3 Test Procedures

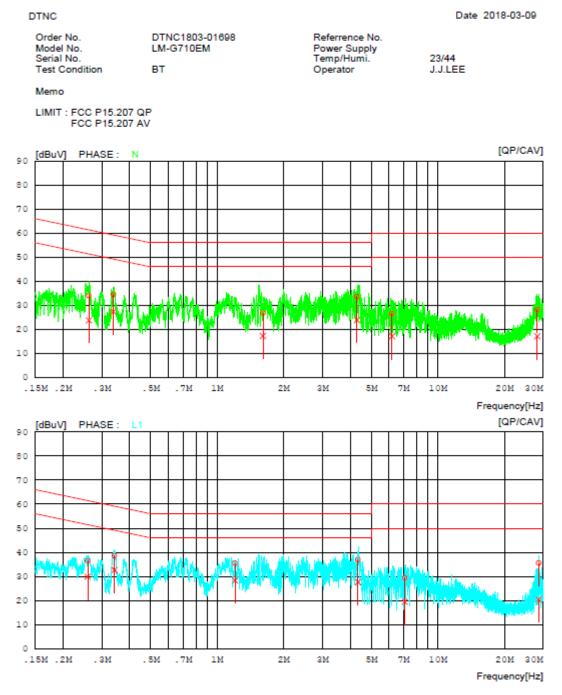
Conducted emissions from the EUT were measured according to the ANSI C63.10.

- 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.

8.4 Test Results

AC Line Conducted Emissions (Graph) = Modulation : <u>8DPSK</u>

Results of Conducted Emission



DTNC

AC Line Conducted Emissions (List) = Modulation : <u>8DPSK</u>

Results of Conducted Emission

Date 2018-03-09

Order No. Model No. Serial No. Test Condition	DTNC1803-01698 LM-G710EM BT	Pov Ter	ferrence No. wer Supply mp/Humi. erator	23/44 J.J.LEE		
Memo						
LIMIT : FCC P15.207 QP FCC P15.207 AV						
NO FREQ	READING C.FACTOR		LIMIT	MARGIN	PHASE	
[MHz]	QP CAV [dBuV][dBuV] [dB]	QP CAV [dBuV] [dBuV]	QP CAV [dBuV][dBuV]	QP CAV [dBuV][dBuV]	1	
	24.1413.91 9.95		51.37 51.37	27.28 27.51	N	
	24.5817.44 9.96		9.25 49.25	24.71 21.85	N	
	16.76 7.29 10.02		6.00 46.00	29.22 28.69	N	
	23.5713.83 10.07 16.50 7.09 10.12		6.00 46.00 0.00 50.00	22.3622.10	N N	
	17.85 6.76 10.49		50.00 50.00	31.66 32.75	N	
	26.4519.89 9.95		1.48 51.48	25.08 21.64	L1	
	28.55.22.69 9.96		9.16 49.16	20.6516.51	L1	
	25.4318.31 10.00		6.00 46.00	20.5717.69	L1	
10 4.33780	26.8717.55 10.07		6.00 46.00	19.0618.38	L1	
11 7.07080	19.18 9.26 10.14	29.3219.40 6	0.00 50.00	30.68 30.60	L1	
12 28.56480	25.07 9.92 10.48	35.55 20.40 6	50.00 50.00	24.45 29.60	L1	



9. Antenna Requirement

Describe how the EUT complies with the requirement that either its antenna is permanently attached, or that it employs a unique antenna connector, for every antenna proposed for use with the EUT.

Conclusion: Comply

The antenna is attached on the device by means of unique coupling method (Spring Tension). Therefore this E.U.T Complies with the requirement of §15.203

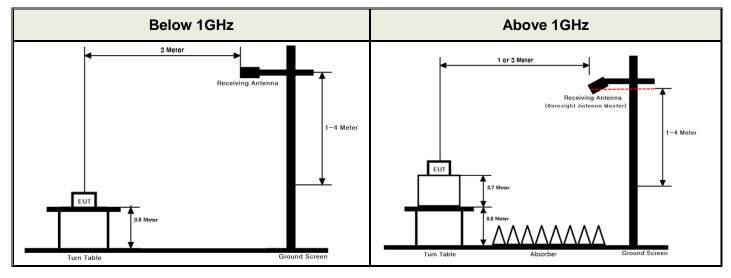
- Minimum Standard :

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions.

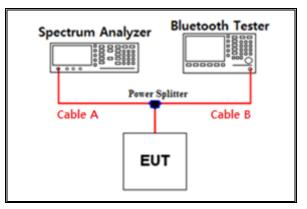
APPENDIX I

Test set up diagrams

Radiated Measurement



Conducted Measurement



Path loss information

Frequency (GHz)	Path Loss (dB)	Frequency (GHz)	Path Loss (dB)
0.03	6.57	15	8.70
1	6.87	20	9.02
2.402 & 2.441 & 2.480	7.09	25	9.03
5	7.40	-	-
10	7.76	-	-

Note 1 : The path loss from EUT to Spectrum analyzer were measured and used for test.

Path loss (S/A's Correction factor) = Cable A + Power splitter

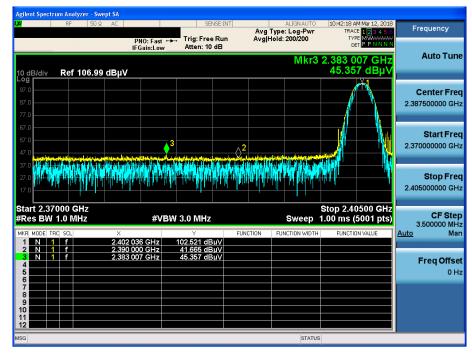


APPENDIX II

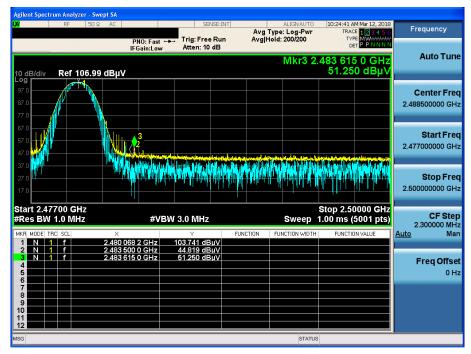
Unwanted Emissions (Radiated) Test Plot

GFSK & Lowest & Y & Hor

Detector Mode : PK



GFSK & Highest & Y & Hor





$\pi/4DQPSK$ & Lowest & Z & Ver

Agilent Spectrum Analyzer - Swept SA						
LXI RF 50 Ω AC	9	ENSE:INT Ava T	ALIGN AUTO	11:21:04 AM Mar 12, 2018 TRACE 1 2 3 4 5 6	Frequency	
	PNO: Fast Trig: Fr	eeRun Avg H	old: 200/200	TYPE MWWWWWWW DET P P N N N N		
	IFGain:Low Atten: 1	10 dB			Auto Tune	
			Mkr3 :	2.382 279 GHz	Auto Tune	
10 dB/div Ref 106.99 dBµV				46.022 dBµV		
97.0					Center Freq	
87.0					2.387500000 GHz	
77.0						
67.0						
57.0	<u>_</u>				Start Freq	
47.0	^ °	<mark>2</mark>	فالعربي والمساجد	A ti <u>4</u> 1	2.370000000 GHz	
	ministration of minist the failed	The second second second		al V		
27.0 MANUAL AND A MANUAL AND			di na kanada da		Stop Freq	
17.0		a, littelalle e nder he	ener de testes auto	l.	2.405000000 GHz	
Start 2.37000 GHz			\$	Stop 2.40500 GHz	05.01	
#Res BW 1.0 MHz	#VBW 3.0 MH	z	Sweep 1	.00 ms (5001 pts)	CF Step 3.500000 MHz	
MKR MODE TRC SCL X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man	
	1 969 GHz 104.312 d 0 000 GHz 40.543 d	BuV				
3 N 1 f 2.382	2 279 GHz 46.022 d				Freq Offset	
4					0 Hz	
6						
7 8						
9						
11						
12						
MSG			STATUS			

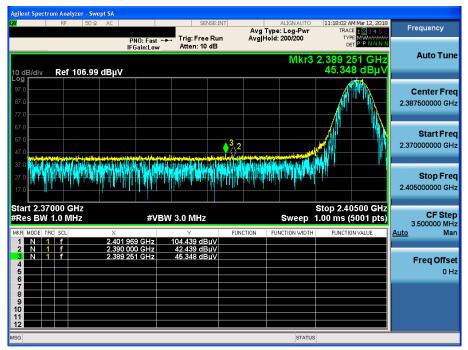
π /4DQPSK & Highest & Z & Ver

Frequency Avg Type: Log-Pwr Avg|Hold: 200/200 Trig: Free Run Atten: 10 dB DET P P PNO: Fast ↔→ IFGain:Low Auto Tune Mkr3 2.483 720 8 GHz 51.402 dBµV Ref 106.99 dBµV **Center Freq** 2.488500000 GHz Start Freq 2.477000000 GHz **Stop Freq** 2.500000000 GHz للم ألار Start 2.47700 GHz #Res BW 1.0 MHz Stop 2.50000 GHz 1.00 ms (5001 pts) CF Step 2.300000 MHz Man #VBW 3.0 MHz Sweep FUNCTION Auto 2.483 500 0 GHz 2.483 720 8 GHz <u>45.010</u> 51.402 Freq Offset 0 Hz STATUS

Detector Mode : PK



8DPSK & Lowest & Z & Ver



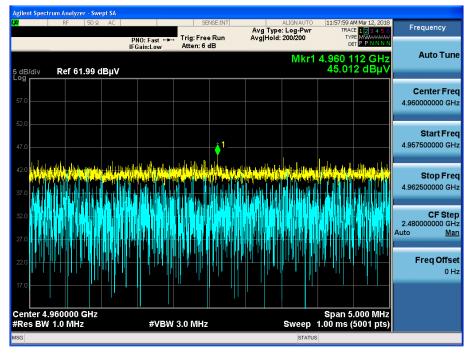
Detector Mode : PK

8DPSK & Highest & Z & Ver

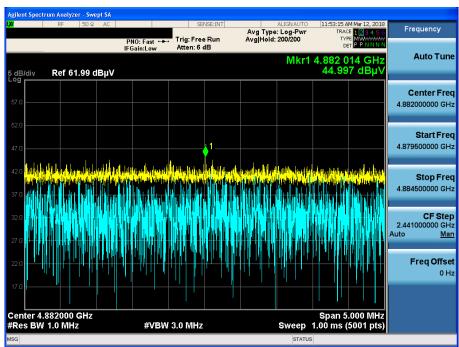




GFSK & Highest & X & Hor

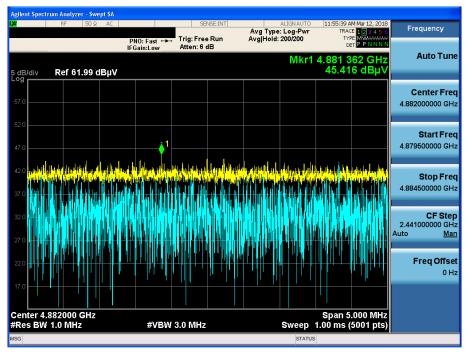


π/4DQPSK & Middle & X & Hor





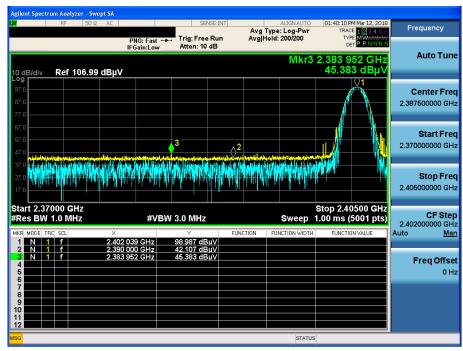
8DPSK & Middle & X & Hor



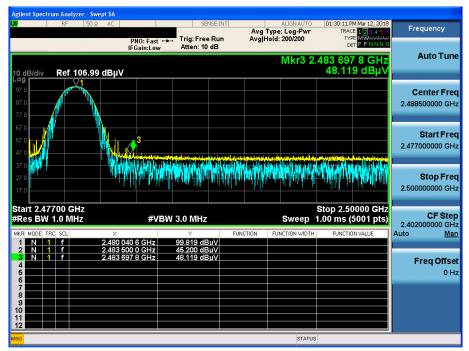
Unwanted Emissions (Radiated) Test Plot _ Wireless Charging

GFSK & Lowest & X & Hor

Detector Mode : PK

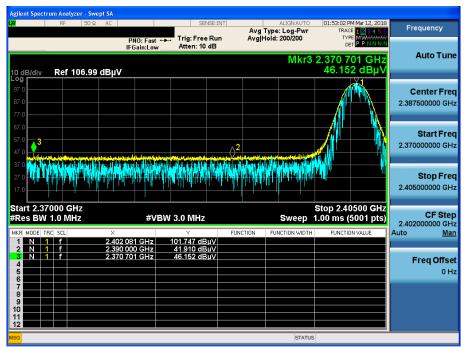


GFSK & Highest & X & Hor





$\pi/4DQPSK$ & Lowest & X & Hor

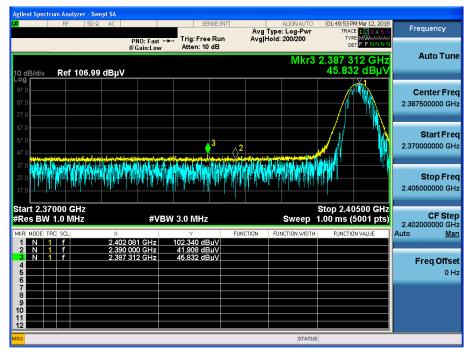


π /4DQPSK & Highest & X & Hor

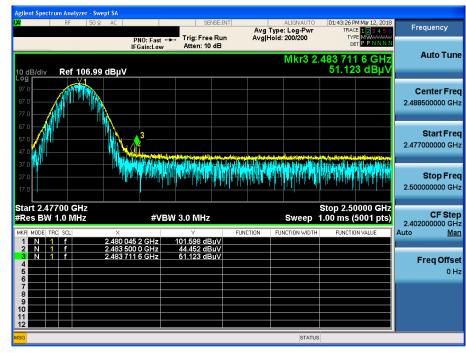
gilent Spectrum Analyzer - Swept SA 1 Mar 12, 3 Frequency Avg Type: Log-Pwr Avg|Hold: 200/200 . Trig: Free Run Atten: 10 dB TYPE MWA PNO: Fast 🔸 Auto Tune Mkr3 2.483 730 0 GH: 49.469 dBµ Ref 106.99 dBµV **Center Freq** 2.488500000 GHz Start Freq 2.477000000 GHz h ni ya wa wanyi wa waka wa kata Stop Freq 2.50000000 GHz Start 2.47700 GHz #Res BW 1.0 MHz Stop 2.50000 GHz 1.00 ms (5001 pts) CF Step 2.402000000 GHz uto <u>Man</u> #VBW 3.0 MHz Sweep uto 2.480 2.483 2.483 Freq Offset 0 Hz STATUS



8DPSK & Lowest & X & Hor

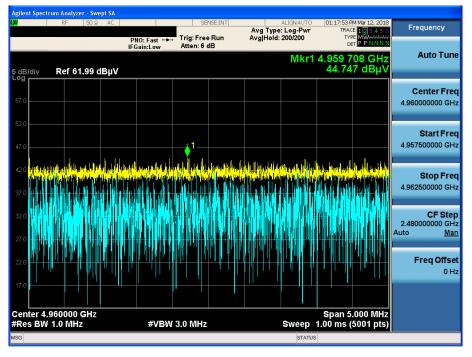


8DPSK & Highest & X & Hor

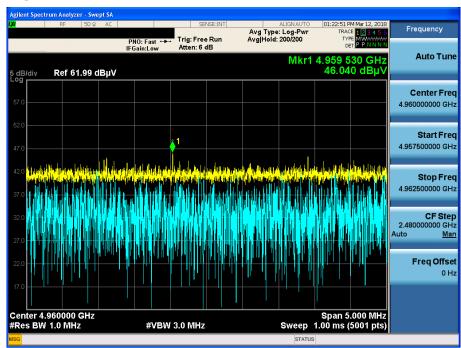




GFSK & Highest & X & Hor



π/4DQPSK & Highest & X & Hor





8DPSK & Highest & X & Hor



