

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

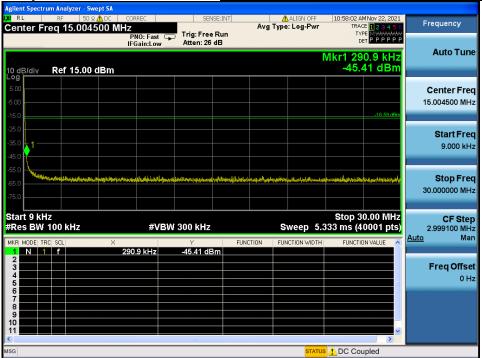
X/ RL RF 50 Ω Center Freq 17.5000	AC CORREC				
	00000 GHz	SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	10:56:15 AMNov 22, 2021 TRACE 1 2 3 4 5 6 TYPE MWWWW	Frequency
10 dB/div Ref 15.00 d	PNO: Fast (IFGain:Low	Trig: Free Run Atten: 26 dB	Mkr3 [/]	16.903 750 GHz -38.46 dBm	Auto Tune
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-25.0 -35.0 -45.0	والمرادف ومراداتهم ومراداتهم				Start Fred 10.000000000 GHz
-55.0					Stop Free 25.000000000 GH:
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2 N 1 f 3 N 1 f 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	× 24.851 875 GHz 21.201 625 GHz 16.903 750 GHz	-34.63 dBm -36.96 dBm -38.46 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	Freq Offse
6 7 8 9 10 11					
<			STATU	5	

Reference for limit

Middle Channel & Modulation : π/4DQPSK



Conducted Spurious Emissions <u>Middle Channel & Modulation : $\pi/4DQPSK</u>$ </u>





Middle Channel & Modulation : π/4DQPSK



Agilent Spectrum An LXI R L RI	F 50Ω AC	CORREC	SENSE:I		ALIGN OFF	10:58:51 AMNov 2		Frequency
Center Freq	17.500000000	PNO: Fast G	Trig: Free Ru Atten: 26 dB		Type: Log-Pwr	TRACE 12 TYPE MAN DET P P F	WARNAR	. requeites
10 dB/div Re	ef 15.00 dBm	I COMILEON			Mkr3 2	21.139 375 (-36.92 d		Auto Tune
Log 5.00 -5.00 -15.0						-16	59.dBm	Center Freq 17.500000000 GHz
-25.0 -35.0 -45.0				م والم المراجع	<mark>}</mark> 3 ♦		2	Start Freq 10.000000000 GHz
-55.0 -65.0 -75.0								Stop Freq 25.000000000 GHz
Start 10.000 (#Res BW 1.0		#VBV	V 3.0 MHz		Sweep 40	Stop 25.000 .00 ms (40001		CF Step 1.50000000 GHz Auto Mar
MKR MODE TRC SC 1 N 1 f 2 N 1 f 3 N 1 f 4 - - - 5 - - - 7 - - - 9 - - - 10 - - -	24.302 21.810	875 GHz 625 GHz 375 GHz	¥ -33.74 dBm -36.92 dBm -36.92 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALU		Freq Offset 0 Hz
MSG					STATUS	3		





High Band-edge

Highest Channel & Modulation : π/4DQPSK



High Band-edge

Hopping mode & Modulation : π/4DQPSK





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

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10 dB/	/div	Ref	15.00	0 dBn		Gain:Lo	IW	Atten:	26 dB					Mkr1 -4	281	9 kHz 9 dBm		Auto Tune
Log - 5.00 - -5.00 -																-16.98 dBn		Center Freq 15.004500 MHz
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Start #Res		00	(Hz		×	#`	VBW	300 kH	lz	FUN	CTION		weep 5.	333 ms)	CF Step 2.999100 MHz Auto Man
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enter	Freq 5	.01500		FHZ PNO: Fast IFGain:Low	Trig: Free Atten: 26		Avg T	ype: Log-Pwr	TY	CE 123456 PE MWWWWWW ET P P P P P P	requercy
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55.0											Stop Fre 10.000000000 GH
tart 30 Res BV	V 1.0 N	/IHz		#V	BW 3.0 MHz			Sweep 1	3.67 ms (4		CF Ste 997.000000 Mł Auto Ma
KR MODE	TRC SCL		× 2.479	88 GHz	۲ 4.70 dl		UNCTION	FUNCTION WIDTH	FUNCTI	ON VALUE	
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Highest Channel & Modulation : π/4DQPSK





Low Band-edge

Lowest Channel & Modulation : 8DPSK



Low Band-edge

Hopping mode & Modulation : 8DPSK





Lowest Channel & Modulation : 8DPSK

IXI RL		RF		wept SA Ω 🔥 DC	CORREC		SE	NSE:INT	1		ALIGN OFF	11:10:47.4	MNov 22, 2021		
				1500 N	٨Hz					Avg Ty	pe: Log-Pwr	TRA	CE 123456 /PE M WWWWW		Frequency
10 dE	3/div	Ref	15.00) dBm	PNO: F IFGain:		Atten: 2					Mkr1 28	^{ет РРРРРР} 31.9 kHz 95 dBm		Auto Tune
Lõg 5.00 -5.00													-16.88 dBm		Center Freq 15.004500 MHz
-25.0 -35.0 -45.0	1-														Start Freq 9.000 kHz
-55.0 -65.0 -75.0		Harriver,	(hijil/ikati	the and the second s	er Hungsalladau Ar	and a start	nga pantan din panta	an present	alanti inte	ji handi di yanggalaga	daftelisi.cominefterbefte	ar tegadigea, dagte dagt age	tarlatarigentlag		Stop Freq 30.000000 MHz
#Res	t 9 kH s BW	100	kHz	X		#VBV	V 300 kHz		FUNC		Sweep 5.	333 ms (4	80.00 MHz 10001 pts)	Auto	CF Step 2.999100 MHz Man
	N 1				281.9 kl		-45.95 d	Bm							Freq Offset 0 Hz
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MSG											STATU	s 🚺 DC Co	upled		

Agilent Spectrum Analyzer - Swe							
RL RF 50 Ω Center Freq 5.01500	AC CORREC	SENSE:INT	Avg Type:	ALIGN OFF	11:11:12 AMN TRACE	123456	Frequency
	PNO: Fast 🗣 IFGain:Low	Trig: Free Run Atten: 26 dB		Mkr	5 7.652 3	1 GHz 0 dBm	Auto Tune
10 dB/div Ref 15.00 d Log 5.00 -5.00 -15.0	3Bm 1				-44.43	-46.88 dBm	Center Fred 5.015000000 GH:
-25.0 -35.0 -45.0	4		23	5-			Start Free 30.000000 MH:
-55.0 -65.0 -75.0							Stop Free 10.000000000 GH:
Start 30 MHz #Res BW 1.0 MHz	#VBW	V 3.0 MHz		weep 18	Stop 10.0 .67 ms (400	001 pts)	CF Step 997.000000 MH <u>Auto</u> Mar
MAR MODE THC State 1 N 1 F 2 N 1 F 3 N 1 F 4 N 1 F 5 N 1 F 6 - - - 7 - - - 8 - - - 9 - - -	2402 11 GHz 5.736 58 GHz 6.538 42 GHz 3.289 69 GHz 7.652 31 GHz	5.09 dBm -43.34 dBm -43.51 dBm -44.06 dBm -44.49 dBm			FUNCTION		Freq Offse 0 H
10 11 MSG				STATUS		~	



Conducted Spurious Emissions <u>L</u>

Lowest Channel & Modulation : 8DPSK

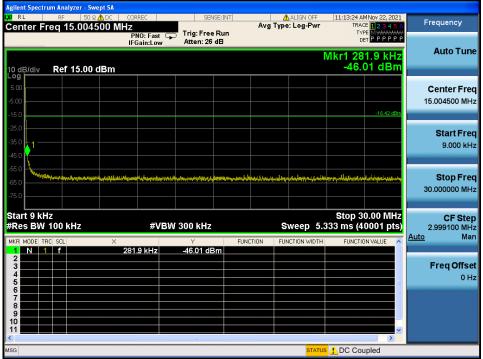


Reference for limit

Middle Channel & Modulation : 8DPSK



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





Middle Channel & Modulation : 8DPSK



Agilent Spectr										
Center Fr		0000000 GH			E:INT		ALIGN OFF	TRAC	MNov 22, 2021	Frequency
	•		: Fast 🖵 in:Low	Trig: Free F Atten: 26 d				TYI Di	E MWWWWW P P P P P P	
							Mkr3 2		00 GHz	Auto Tune
10 dB/div Log	Ref 15.0	0 dBm						-36.	76 dBm	
5.00										Center Freq
-5.00										17.500000000 GHz
-15.0									-16.42 dBm	
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Start 10.0 #Res BW			#\/D\\/	3.0 MHz			weep 40		.000 GHz	CF Step 1.50000000 GHz
MKR MODE TF		×	# V L) V V	y Y	ELING					Auto Man
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High Band-edge

Highest Channel & Modulation : 8DPSK



High Band-edge

Hopping mode & Modulation : 8DPSK





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

Agnent Spectrum Analyzer - Swept SA		Avg Type: Log-Pv	VI TRACE 123456	Frequency
10 dB/div Ref 15.00 dBm	PNO: Fast 🖵 Trig: Free R IFGain:Low Atten: 26 dt		Mkr1 281.9 kHz -45.44 dBm	Auto Tune
5.00 -15.0			-16.91 dBm	Center Freq 15.004500 MHz
-25.0 -35.0 + 1				Start Freq 9.000 kHz
-55.0 -65.0 -75.0	nderman findenset forein finnenen pronte hereite	elayaryi takan fi kindiyata yang yang barta kindan kujarandar	arreitynt on de laterein likk yn innerfrank	Stop Freq 30.000000 MHz
Start 9 kHz #Res BW 100 kHz	#VBW 300 kHz		Stop 30.00 MHz 5.333 ms (40001 pts)	CF Step 2.999100 MHz <u>Auto</u> Man
1 N 1 f 2 2 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	281.9 kHz -45.44 dBm			Freq Offset 0 Hz
7 8 9 10 11			×	
MSG	1111	ST/	TUS DC Coupled	

Agilent Spectrum Analyz RE RE Center Freq 5.0	er - Swept SA 50 Ω AC CORREC 015000000 GHz PN0: Fast	SENSE:IN	Avg Type	ALIGN OFF	11:16:22 AMNov TRACE TYPE	22,2021 2 3 4 5 6	Frequency
	IFGain:Lov 5.00 dBm	Atten: 26 dB		Mkr	5 8.346 23 -44.28	GHz	Auto Tune
5.00 -5.00 -15.0						16.91 dBm	Center Free 5.015000000 GH
-25.0 -35.0 -45.0		و و و و و و و و و و و و و و و و و و و	¢4	3	5	B And	Start Free 30.000000 MH
-55.0							Stop Free 10.000000000 GH
Start 30 MHz #Res BW 1.0 MH	lz #V	BW 3.0 MHz		weep 18	Stop 10.00 .67 ms (4000	01 pts)	CF Stej 997.000000 MH <u>Auto</u> Ma
1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f	2.480 13 GHz 3.317 86 GHz 7.218 62 GHz 6.510 00 GHz 8.346 23 GHz	4.71 dBm -43.51 dBm -44.18 dBm -44.23 dBm -44.28 dBm					Freq Offse 0 H
7 8 9 10 11							
۲ ASG		111		STATUS	6		



Highest Channel & Modulation : 8DPSK



10. AC Power-Line Conducted Emissions

10.1. Test Setup

NA

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.

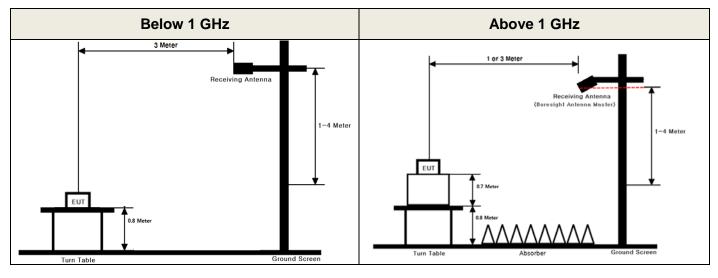
10.4. Test Results

NA

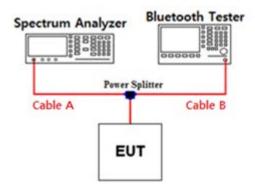
APPENDIX I

Test set up diagrams

Radiated Measurement



Conducted Measurement



Path loss information

Frequency (GHz)	Path Loss (dB)	Frequency (GHz)	Path Loss (dB)
0.03	6.53	15	7.33
1	6.62	20	7.86
2.402 & 2.441 & 2.480	6.89	25	8.29
5	7.07	-	-
10	7.26	-	-

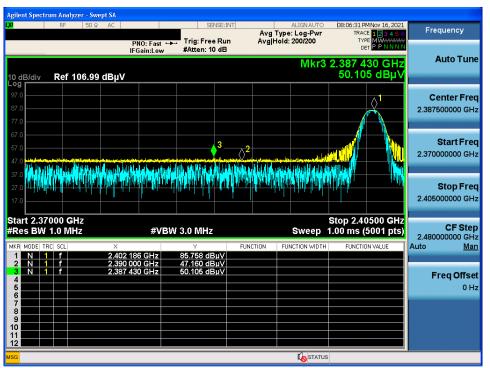
Note 1: The path loss from EUT to Spectrum analyzer was measured and used for test. Path loss (S/A's correction factor) = Cable A + Power Splitter



APPENDIX II

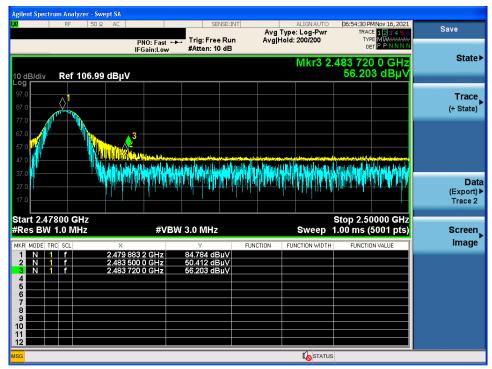
Unwanted Emissions (Radiated) Test Plot

GFSK & Lowest & X & Hor



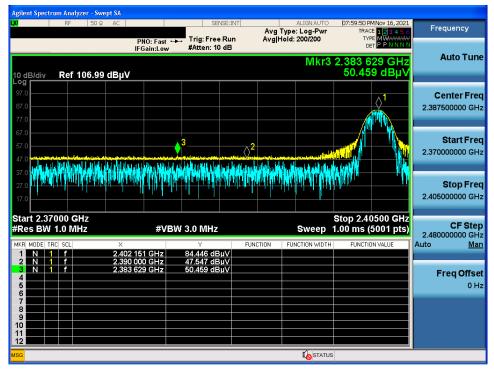
GFSK & Highest & X & Hor

Detector Mode : PK



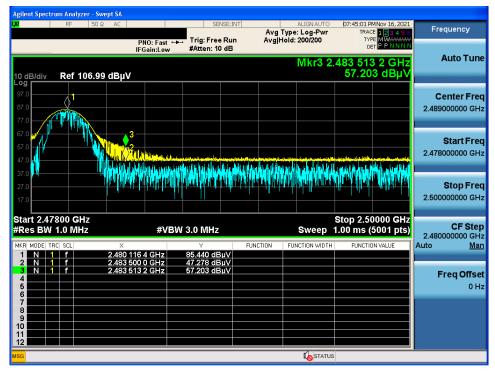


π/4DQPSK & Lowest & X & Hor



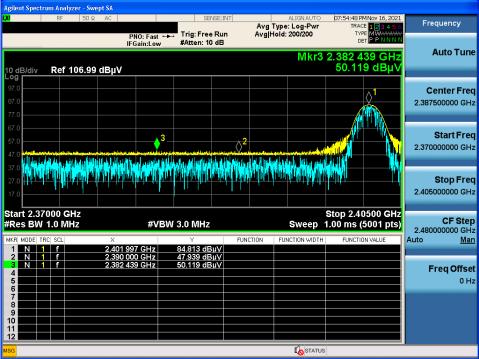
Detector Mode : PK

π /4DQPSK & Highest & X & Hor





8DPSK & Lowest & X & Hor



8DPSK & Highest & X & Hor

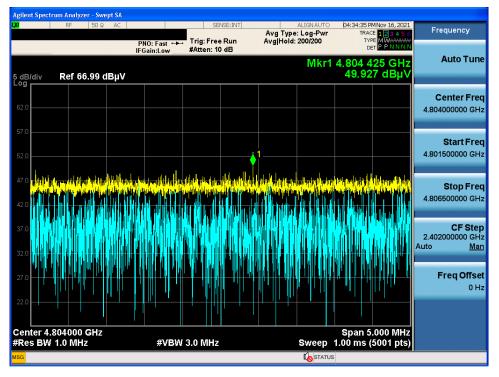
ent Spectrum Analyzer - Swept SA SENSE:INT Frequency Avg Type: Log-Pwr Avg|Hold: 200/200 Trig: Free Run PNO: Fast +++ Trig: Free Rui IFGain:Low #Atten: 10 dB Auto Tune Mkr3 2.483 539 6 GH: 54.203 dBµ\ Ref 106.99 dBµV **Center Freq** 2.489000000 GHz 3 Start Freq 2.478000000 GHz Stop Freq 2.50000000 GHz Start 2.47800 GHz #Res BW 1.0 MHz Stop 2.50000 GHz 1.00 ms (5001 pts) **CF Step** 2.48000000 GHz #VBW 3.0 MHz Sweep Auto Man FUN NN 1 f 2.483 500 0 2.483 539 6 53.765 dBµ\ 54.203 dBµ\ **Freq Offset** 456789 0 Hz 10 11 12 **I**STATUS

Detector Mode : PK

0000000 GHz

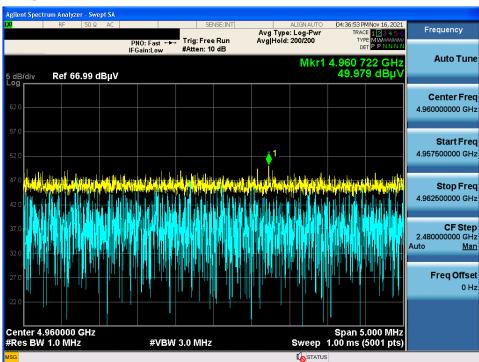


GFSK & Lowest & X & Hor



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

Detector Mode : PK

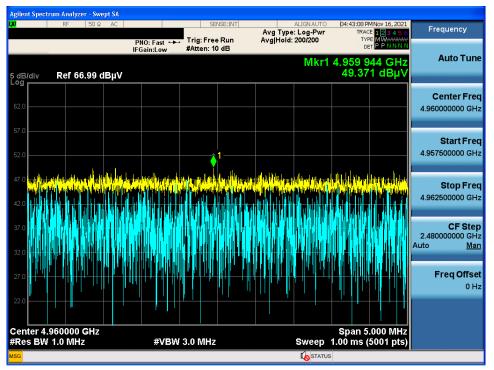


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Pages: 76 / 77



8DPSK & Highest & X & Hor



Detector Mode : PK