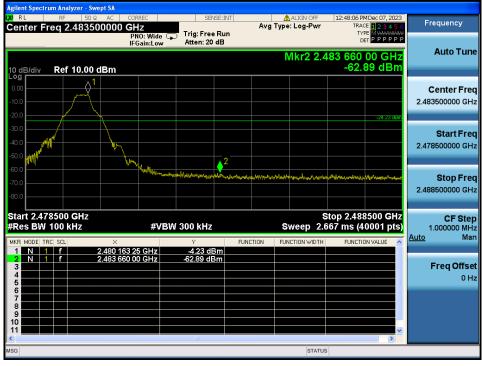


High Band-edge

Highest Channel & Modulation : GFSK



Hopping mode & Modulation : GFSK

High Band-edge rum Analyzer - Swept S/ ALIGN OFF Frequency Center Freq 2.483500000 GHz Trig: Free Run Atten: 20 dB түр PNO: Wide 🖵 IFGain:Low DET PPPPF Auto Tune Mkr1 2.487 000 00 GHz -51.79 dBm Ref 10.00 dBm 10 dB/div ₋og r **Center Freq** 2.483500000 GHz Start Freq 2.478500000 GHz Stop Freq 2.488500000 GHz Start 2.478500 GHz #Res BW 100 kHz Stop 2.488500 GHz Sweep 2.667 ms (40001 pts) CF Step 1.000000 MHz #VBW 300 kHz Man Auto FUNCTION MKR MODE FUNCTION WIDTH FUNCTION VALUE 2.487 000 00 GHz N 1 f -51.79 dBm **Freq Offset** 0 Hz STATUS



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

Agilent Spectrum Analyzer - Swept !							
🗶 RL RF 50 Q 🚹 D		SENSE:IN		ALIGN OFF	12:48:29 PM De	c 07, 2023 2 3 4 5 6	Frequency
Center Freq 15.004500	PNO: Fast G	Trig: Free Rur		e. Log-r wi	TYPE	PPPPP	
	IFGain:Low	Atten: 20 dB			DET 🗜	PPPPP	
					Mkr1 281.	9 kHz	Auto Tune
10 dB/div Ref 10.00 dB	m 0				-43.16		
0.00							Center Free
-10.0							15.004500 MH
-20.0							
						-24.23 dBm	
-30.0							Start Fred
-40.0							9.000 kHz
-50.0							
-60.0							
-70.0	and the second	مالى المرجدة والمجاد المالية	and the second		Levense for the second	Nuntrainat	Stop Free
							30.000000 MH:
-80.0							
Start 9 kHz					Stop 30.0		
#Res BW 100 kHz	#\/R)	V 300 kHz	,	Sween 5'	333 ms (400		CF Step 2.999100 MH
		¥ 500 KHZ		-			Auto Mar
MKR MODE TRC SCL	X	۲ -43.16 dBm	FUNCTION FL	JNCTION WIDTH	FUNCTION V.	ALUE 🔼	<u>/(dro</u> inter
1 N 1 f	281.9 kHz	-43.16 dBm					
3							Freq Offse
4							0 H:
6							
7							
8							
10							
11						>	
NSG				OT A THE	DC Couple		
100				STATUS		u	

L RF S	50 Ω AC CORREC	SENSE:INT		ALIGN OFF	01:07:48 PM Dec 07, 2023	Frequency
	PNO: Fast IFGain:Low	Trig: Free Run Atten: 20 dB	Avg T	ype: Log-Pwr	TRACE 123456 TYPE MWWWWW DET PAAAAA	riequency
OdB/div Ref 10.0				Mkr	5 3.346 77 GHz -50.19 dBm	Auto Tur
•g 					-24.23 dBm	Center Fre 5.015000000 GI
0.0 0.0 0.0	54	2		(uni (14) est recejes destricted	top at 10 may rate and top 2 million to the starting	Start Fro 30.000000 M
						Stop Fr 10.000000000 G
tart 30 MHz Res BW 1.0 MHz	#VE	3W 3.0 MHz		Sweep 18	Stop 10.000 GHz .67 ms (40001 pts)	CF St 997.000000 M
KR MODE TRC SCL	× 2.480 13 GHz	≺3.51 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> M
2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f	3.966 90 GHz 5.699 19 GHz 3.518 00 GHz 3.346 77 GHz	-48.81 dBm -48.81 dBm -50.05 dBm -50.08 dBm -50.19 dBm				Freq Offs 0
6						



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

gilent Spectrum Analyzer - Swept SA						
KIRL RF 50Ω AC	CORREC	SENSE:IN		LALIGN OFF e: Log-Pwr	12:49:18 PM Dec 07, TRACE 1 2 3	
Center Freq 17.5000000	PNO: Fast	Trig: Free Run		e. Log-Pwr	TYPE MINA	
	IFGain:Low	Atten: 20 dB			DET PPP	
				Mkr3 1	6.791 625 G	Hz Auto Tu
10 dB/div Ref 10.00 dBm					-43.85 dl	Bm
Log						
0.00						Center Fr
-10.0						17.500000000 G
-20.0					-24.2	23 dBm
-30.0						
-40.0		3				Start Fr
-50.0	والمتعادية وحجرين التحري والمتطالبين	and the section of th	And Street Street Street Street			10.00000000 G
standard and a second se						
-60.0						Stop Fr
-70.0						25.000000000 G
-80.0						
Start 10.000 GHz					Oto 05 000 /	
#Res BW 1.0 MHz	#VRM	3.0 MHz		ween 10	Stop 25.000 (00 ms (40001	GHz CF Sto pts) 1.500000000 G
				•		Auto M
MKR MODE TRC SCL ×	83 875 GHz	≺39.54 dBm	FUNCTION FU	NCTION WIDTH	FUNCTION VALUE	
2 N 1 f 21.8	363 500 GHz	-42.41 dBm				
3 N 1 f 16.7	791 625 GHz	-43.85 dBm				Freq Offs
5						0
6						
8						
9						
11						∼
<						
ISG				STATUS		



Low Band-edge

Lowest Channel & Modulation : π/4DQPSK



Low Band-edge

<u>Hopping mode & Modulation : π/4DQPSK</u>





Lowest Channel & Modulation : π/4DQPSK

Agilent Spe														
L <mark>XI</mark> RL	RF		i0 Ω <u>Λ</u> DC	CORREC			SENSE:I	T		ALIGN OFF		MDec 07, 2023	F	requency
Center	Freq	15.00	4500	MHZ	_	Tria: F	ree Ru	n	Avging	pe: Log-Pwr		CE 123456		, oquono j
				PNO: I IFGain:	Fast ⊂, ∙Low		20 dB					PPPPP		
				ii oaiii	EON		_							Auto Tune
											IVIKT1 28	34.2 kHz		
10 dB/di	v Re	f 10.0	I0 dBm								-44.	75 dBm		
Log														
0.00														Center Freq
-10.0													1	5.004500 MHz
-20.0														
												-23.76 dBm		
-30.0														Start Freq
-40.0														9.000 kHz
-50.0														
-60.0														
1 1	Witness			والمعدم والع		later beingen aus		i the section	and the sector	والطريب المعراب والمروا	and as a second	a dar bi a chan a sh		Stop Freq
-70.0	and a set	Ada a data a	and dealers in the damp is	the life of the state of the st				La detail	alle de la contra d Contra de la contra d	and residently for the	Contract in ratio is		2	0.000000 MHz
-80.0													3	5.000000 MHz
Start 9	kHz										Stop 3	30.00 MHz		CF Step
#Res B	W 100	kHz			#VBW	/ 300 ki	z			Sweep 5.	333 ms (4	10001 pts)		2.999100 MHz
MKR MODE			×			0	1	FUN	TION	UNCTION WIDTH	FUNCT	ION VALUE	Auto	Man
			X	284.2 k	-17	-44.75	dBm	FUN		UNCTION WIDTH	FUNCT	IUN VALUE		
2				204.2 K	112		abiii							
3														Freq Offset
4 5	+													0 Hz
6	\vdash													
7														
8	\vdash													
10	\vdash													
11												~		
<						ш						>		
MSG										STATU	s 🚺 DC Co	upled		

Agilent Spectrum Analyzer - Swe					
LXI L RF 50Ω	AC CORREC	SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	01:06:46 PM Dec 07, 2023 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast 🖵 IFGain:Low	Trig: Free Run Atten: 20 dB		TYPE MWWWWW DET PAAAAA	Auto Tune
10 dB/div Ref 10.00 d	dBm		Mkı	r5 2.771 50 GHz -50.05 dBm	Auto Tunc
0.00	1				Center Freq
-10.0					5.015000000 GHz
-30.0				-23.76 dBm	Start Freq
-40.0	5 € €				30.000000 MHz
-50.0				an a	
-70.0					Stop Freq 10.00000000 GHz
-80.0					
Start 30 MHz #Res BW 1.0 MHz	#VBW	3.0 MHz	Sweep 18	Stop 10.000 GHz 8.67 ms (40001 pts)	CF Step 997.000000 MHz
MKR MODE TRC SCL	X		INCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
2 N 1 f	2.401 86 GHz 3.864 71 GHz	-1.22 dBm -47.25 dBm			
3 N 1 f 4 N 1 f	3.165 81 GHz 3.038 45 GHz	-49.46 dBm -49.93 dBm			Freq Offset
5 N 1 f	2.771 50 GHz	-50.05 dBm		3	0 Hz
7 8					
9					
11 <		Ш		×	
MSG			I o statu	IS	



Lowest Channel & Modulation : π/4DQPSK



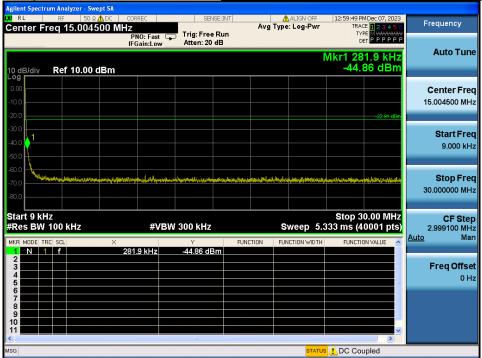


Reference for limit

Middle Channel & Modulation : π/4DQPSK



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





Middle Channel & Modulation : π/4DQPSK



	ım Analyzer - Sv									
Center Fr	RF 50 9 eq 17.500		ORREC		SE:INT		ALIGN OFF	TRAC	4Dec 07, 2023 E <mark>1 2 3 4 5</mark> 6	Frequency
		I	PNO: Fast G Gain:Low	Trig: Free Atten: 20					E MWWWWW P P P P P P	
			Gamileow				Mkr3 1	8.193 7	50 GHz	Auto Tune
10 dB/div	Ref 10.00	dBm							37 dBm	
										Conton From
-10.0										Center Freq 17.50000000 GHz
-20.0									22.04 JD-	17.50000000 GHZ
-30.0									-22.91 dbii	
-40.0					3					Start Freq
50.0	Non-Arrist St. T. St. St. Str. St. St. St. St. St. St. St. St. St. St	all successive states			- Chapter Street Street					10.00000000 GHz
-60.0										
-70.0										Stop Freq
-80.0										25.00000000 GHz
Start 10.00 #Res BW			#VB۱	N 3.0 MHz		s	weep 40		.000 GHz 0001 pts)	
MKR MODE TR	C SCL	×		Y		CTION FU	NCTION WIDTH	FUNCTIO	IN VALUE	<u>Auto</u> Man
1 N 1 2 N 1	f	24.922 00 17.016 62		-38.96 dB -44.36 dB	m m					
3 N 1 4	f	18.193 7		-45.37 dB						Freq Offset
5									=	0 Hz
6										
8										
10										
11 <u> </u>				Ш					>	
MSG							STATUS			



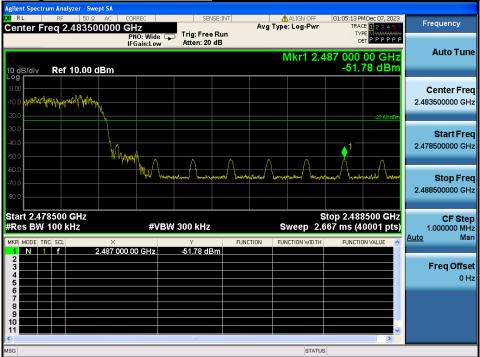
High Band-edge

Highest Channel & Modulation : π/4DQPSK



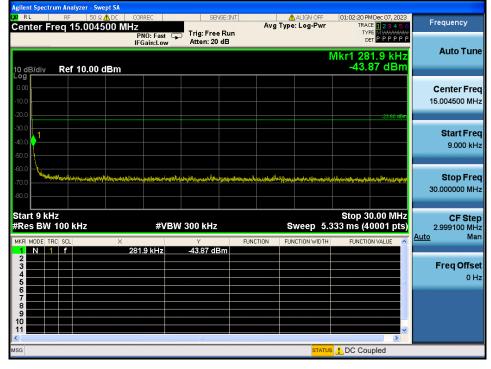
High Band-edge

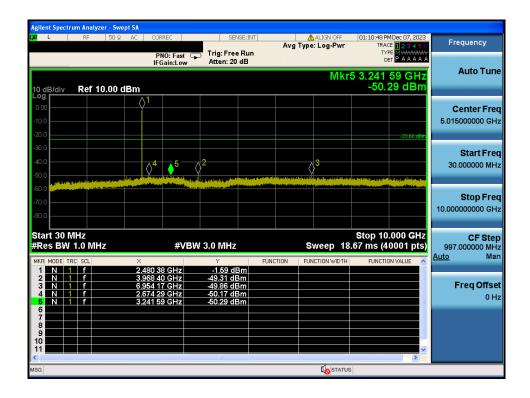
Hopping mode & Modulation : π/4DQPSK





Highest Channel & Modulation : π/4DQPSK







Highest Channel & Modulation : π/4DQPSK





Low Band-edge

Lowest Channel & Modulation : 8DPSK



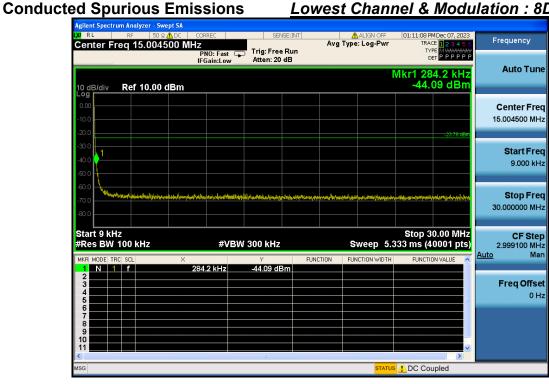
Low Band-edge

Hopping mode & Modulation : 8DPSK





Lowest Channel & Modulation : 8DPSK



Agilent Spectrum Analyzer - Sw	Pept SA	SENSE:INT	Â	ALIGN OFF	01:12:26 PM Dec 07, 2023	
V L NA 30 M			Avg Type:		TRACE 1 2 3 4 5 TYPE MILLION	Frequency
	PNO: Fast G	Atten: 20 dB			DET PAAAA	A
10 dB/div Ref 10.00	dBm			Mkr	5 2.778 98 GHz -50.29 dBm	
0.00 -10.0 -20.0	1 				-23.76 dBn	Center Fred 5.015000000 GHz
-30.0 -40.0	5 4		like to grad a first of a state of a first of a state o	3	ran better and provide the second state of the	Start Free 30.000000 MHz
-60.0 -70.0 -80.0				tera politici tito de		Stop Fred 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz	#VB\	V 3.0 MHz	Sv	veep 18	Stop 10.000 GHz .67 ms (40001 pts	997.000000 MH
MKR MODE TRC SCL	X	Y	FUNCTION FUNC	TION WIDTH	FUNCTION VALUE	Auto Mar
2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f	2.402 11 GHz 3.843 28 GHz 6.995 29 GHz 3.330 82 GHz 2.778 98 GHz	-1.00 dBm -48.99 dBm -49.89 dBm -50.17 dBm -50.29 dBm				Freq Offset 0 Hz
N T 6 - 7 - 8 - 9 - 10 - 11 -	2.11898 GHZ	-50.29 dBm				
<		Ш		1	>	
IISG						



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

RL RF 50 Center Freq 17.500	Ω AC CORREC 0000000 GHz PNO: Fast C IFGain:Low	Trig: Free Run Atten: 20 dB	ALIGN OFF	01:11:58 PM Dec 07, 2023 TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P P P P P P	Frequency
10 dB/div Ref 10.00	dBm		Mkr3 2	21.259 000 GHz -42.65 dBm	Auto Tui
-10.0				-23.76 dBm	Center Fre 17.500000000 GI
-30.0 -40.0 -50.0				2 2	Start Fre 10.000000000 GH
-60.0 -70.0 -80.0					Stop Fr 25.000000000 GI
Start 10.000 GHz #Res BW 1.0 MHz	#VB	W 3.0 MHz	Sweep 40	Stop 25.000 GHz 0.00 ms (40001 pts)	CF Ste 1.50000000 GI
MKR MODE TRC SC. 1 N 1 F 2 N 1 F 3 N 1 F 4 F 5 F 7 F 8 S 9 S	X 24.803 875 GHz 21.832 750 GHz 21.259 000 GHz	Y FL 39.42 dBm -42.52 dBm -42.65 dBm	INCTION FUNCTION WIDTH	FUNCTION VALUE	Auto M Freq Offs 0
10				×	



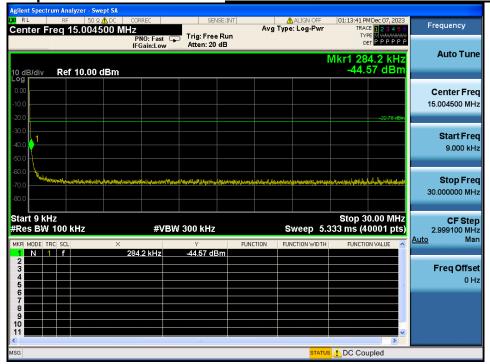
Reference for limit

Middle Channel & Modulation : 8DPSK



Conducted Spurious Emissions

Middle Channel & Modulation : 8DPSK





Middle Channel & Modulation : 8DPSK



Agilent Spectru		wept SA Ω AC CORREC	SEN	SE:INT	ALIGN OFF	01:14:30 P	4Dec 07, 2023	
		0000000 GHz	ast 👝 Trig: Free	Avg Run	g Type: Log-Pwr	TRAC	E 123456 E MWWWWW	Frequency
		IFGain:		dB	Mkr3 /		50 GHz	Auto Tune
10 dB/div Log	Ref 10.00	dBm					40 dBm	
0.00								Center Freq
-10.0								17.50000000 GHz
-20.0						_	-22.78 dBm	
-40.0						$ \rangle^2$		Start Freq 10.00000000 GHz
-50.0						and a state of the		
-60.0								Stop Freq
-80.0								25.00000000 GHz
Start 10.00	00 GHz					Stop 25	.000 GHz	CF Step
#Res BW			#VBW 3.0 MHz		Sweep 40	.00 ms (4	0001 pts)	1.500000000 GHz Auto Man
MKR MODE TRI	C SCL	× 24.141 250 GH	Y Iz -39.54 dE		FUNCTION WIDTH	FUNCTIO	IN VALUE	<u>Adto</u> Mari
2 N 1 3 N 1	f f	22.366 375 GH 16.819 750 GH		3m 3m				Freq Offset
4 5 6							=	0 Hz
7								
9								
11			ш				×	
MSG					STATU	ŝ		



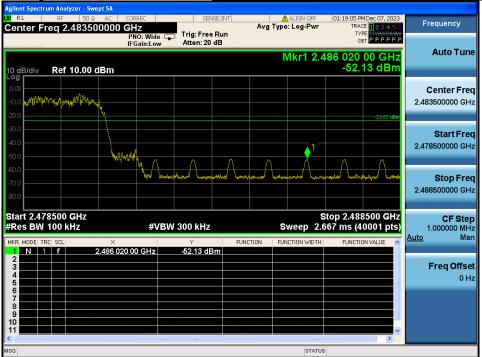
High Band-edge

Highest Channel & Modulation : 8DPSK



High Band-edge

Hopping mode & Modulation : 8DPSK





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

Center Fred	RF 50 Q 🚹 DC	CORREC	SENSE		ALIGN OFF	01:16:12 PMDec 07		Frequency
	15.004500 N	PNO: Fast	🖵 Trig: Free R	un	j Type: Log-Pwr	TRACE 123 TYPE MWW DET P P F	WWWWW	, requeites
10 dB/div R	ef 10.00 dBm	IFGain:Low	Atten: 20 dE	3		Mkr1 291.7 -44.44 d	KHZ	Auto Tune
-10.00						-23	57 dBm	Center Free 15.004500 MH
-30.0								Start Free 9.000 kH
-60.0 -70.0 -80.0	nietheridoogtanijonietheridoo	lavarhallagidir statilar the Namadra	n,midanly-secondryphenetic fiss	antangkais laharan Japaka	hil yhaddi maan kihdellamaan kyn	uhhuduhimiyadhida yana lahad	ye	Stop Fre 30.000000 MH
Start 9 kHz #Res BW 10		#VE	3W 300 kHz			Stop 30.00 333 ms (40001	pts)	CF Stej 2.999100 MH
#Res BW 10	CL X	#VE	BW 300 kHz Y -44.44 dBm	FUNCTION	Sweep 5.	Stop 30.00 333 ms (40001 FUNCTION VALU	pts)	2.999100 MH <u>ito</u> Ma Freq Offse
#Res BW 10 MKR MODE TRC S 1 N 2 3 4	CL X		Y			333 ms (40001	pts)	2.999100 MH

	Analyzer - Swept SA						
	RF 50 Q AC		SENSE		ALIGN OFF	01:16:37 PM Dec 07, 20 TRACE 1 2 3 4	6 Frequency
Conton moe	0.01000000	PNO: Fast (IFGain:Low	Trig: Free R Atten: 20 di				where a second sec
		FOamLOW	Paten: 20 al		Mkr	5 5.363 20 G⊦	Auto Tune
10 dB/div R	ef 10.00 dBm				IVINI	-48.34 dB	
Log 0.00	<	<u>}1</u>					Center Free
-10.0							5.015000000 GH
-20.0						-23.57 d	
-30.0						-25.57 0	
-40.0				<u>مة 5</u>			Start Free
-50.0							30.000000 MH:
-60.0				a shift care of a set			
-70.0							Stop Free
-80.0							10.00000000 GH:
-00.0							
Start 30 MHz						Stop 10.000 GH	
#Res BW 1.0	MHz	#VB	W 3.0 MHz		Sweep 18	.67 ms (40001 pt	S) 997.000000 MH: Auto Mar
MKR MODE TRC S			Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Auto Mar
1 N 1 2 N 1	f 5	.480 38 GHz .355 48 GHz	-1.26 dBm -47.08 dBm	1			
3 N 1		.266 24 GHz .345 01 GHz	-47.98 dBm -48.30 dBm				Freq Offse
5 N 1		.363 20 GHz	-48.34 dBm				0 H
6							
8							
10							
11 <u> </u>			Ш			>	
MSG					STATUS	5	



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.

- 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

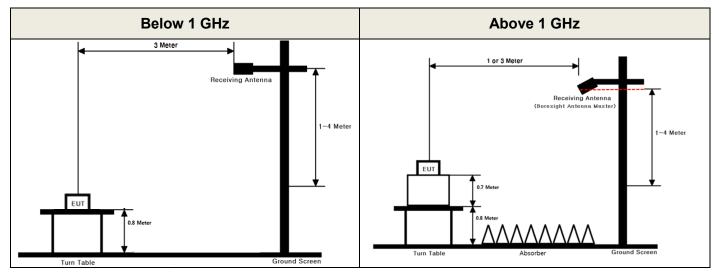
NA



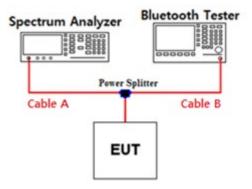
APPENDIX I

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	7.83
1	6.83	20	8.09
2.402 & 2.441 & 2.480	6.96	25	8.69
5	7.04	-	-
10	7.38	-	-

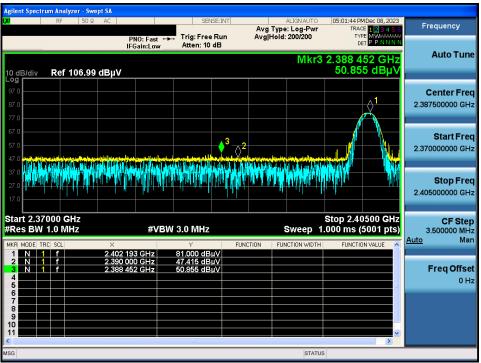
Note 1: The path loss from EUT to Spectrum analyzer was measured and used for test. Path loss (S/A's correction factor) = Cable A + Power Splitter



APPENDIX II

Unwanted Emissions (Radiated) Test Plot

GFSK & Lowest & X & Ver



GFSK & Highest & X & Ver

ctrum Analyzer - Swept SA Frequency Avg Type: Log-Pwr Avg|Hold: 200/200 TRACE TYPE DET 123 MWP PPN Auto Tune Mkr3 2.485 968 4 GHz 49.852 dBµ\ Ref 106.99 dBµV **Center Freq** 2.489000000 GHz Start Freq 2.478000000 GHz $\langle \rangle^2$ Stop Freq 2.50000000 GHz Start 2.47800 GHz #Res BW 1.0 MHz Stop 2.50000 GHz 1.000 ms (5001 pts) CF Step 2.200000 MHz Man #VBW 3.0 MHz Sweep Auto 46.937 dBµ 49.852 dBµ Freq Offset 0 Hz 10

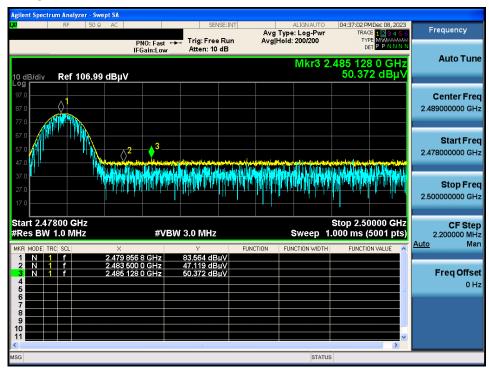
Detector Mode : PK



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

t Spectrum Analyzer - Swept SA SENSE:INT 05:0 Frequency Avg Type: Log-Pwr Avg|Hold: 200/200 Trig: Free Run Atten: 10 dB PNO: Fast IFGain:Low Auto Tune Mkr3 2.386 744 GH2 50.051 dBµ\ Ref 106.99 dBµV 10 dB/div -og **Center Freq** 2.387500000 GHz Start Freq 2.370000000 GHz $\langle \rangle^2$ ĥUtulit Stop Freq 2.40500000 GHz Start 2.37000 GHz #Res BW 1.0 MHz Stop 2.40500 GHz 1.000 ms (5001 pts) CF Step 3.500000 MHz Man #VBW 3.0 MHz Sweep Auto 83.147 dBµV 46.362 dBµV 50.051 dBµV NN **Freq Offset** 0 Hz STATUS

π /4DQPSK & Highest & X & Ver

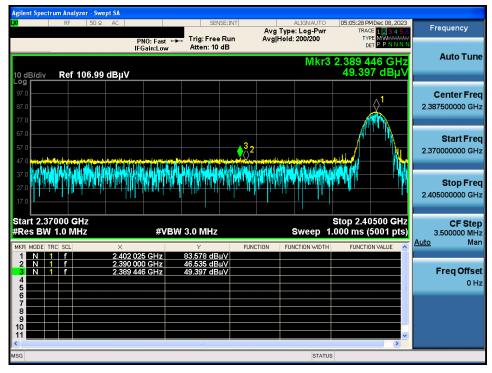


Detector Mode : PK

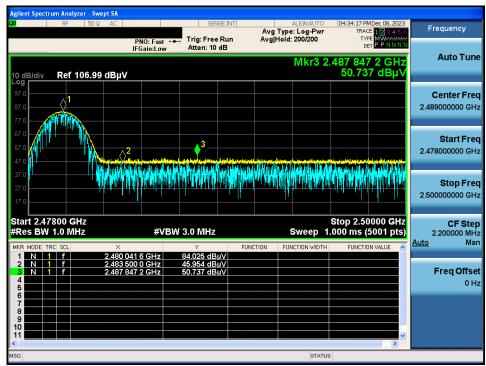


8DPSK & Lowest & X & Ver



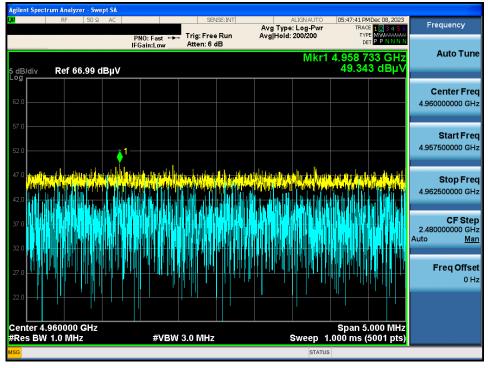


8DPSK & Highest & X & Ver



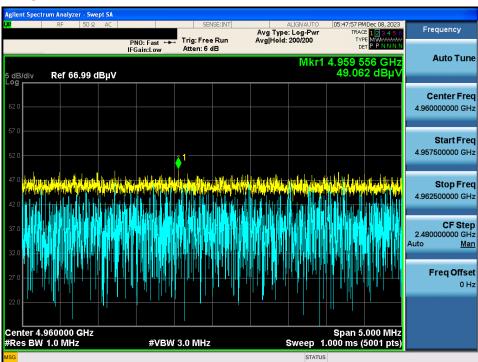


GFSK & Highest & X & Ver



π/4DQPSK & Highest & X & Ver

Detector Mode : PK

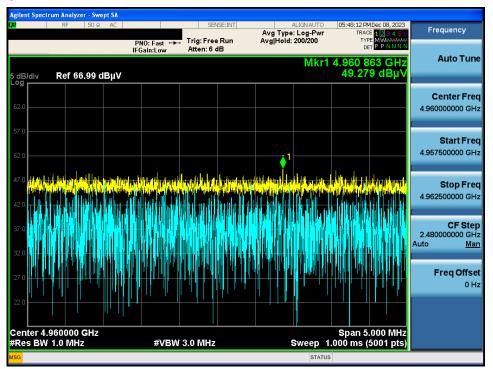


This test report is prohibited to copy or reissue in whole or in part without the approval of Dt&C Co., Ltd. TRF-RF-237(07)210316 F

Detector Mode : PK



8DPSK & Highest & X & Ver



Pages: 75 / 75