

# 8. Transmitter AC Power Line Conducted Emission

## 8.1 Test Setup

Refer to test setup photo.

# 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.

Frequency Range (MHz)	Conducted	Limit (dBuV)
Frequency hange (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

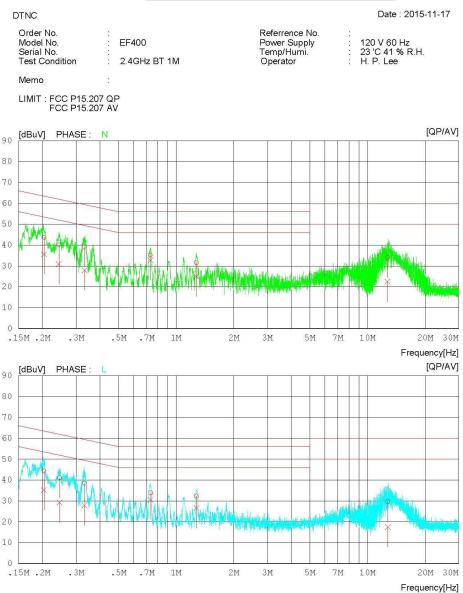
## 8.3 Test Procedures

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>GFSK</u>



# **Results of Conducted Emission**



# AC Line Conducted Emissions (List) = Modulation : <u>GFSK</u>

# **Results of Conducted Emission**

DTNC			Date : 2015-11-17
Order No. Model No. Serial No. Test Condition	EF400 2.4GHz BT 1M	Referrence No. Power Supply Temp/Humi. Operator	120 V 60 Hz 23 'C 41 % R.H. H. P. Lee
Memo	a a		
LIMIT : FCC P15 FCC P15			
NO FREQ [MHz]	READING C.FACTOR QP AV [dBuV][dBuV] [dB]	RESULT LIMIT QP AV QP AV [dBuV][dBuV][dBuV]	MARGIN PHASE QP AV [dBuV][dBuV]
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	19.8 17.9 N 22.0 21.1 N 20.3 21.4 N 20.8 13.2 N 24.4 21.1 N 26.1 27.6 N 19.2 18.3 L 20.9 22.6 L 21.0 21.5 L 22.2 15.5 L 23.8 19.5 L 30.5 32.5 L



# 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 internal antenna is attached on rear case using LDS method. (Please refer to internal photo.)

#### - 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.



# 10. Occupied Bandwidth (99 %)

# 10.1 Test Setup

Refer to the APPENDIX I.

## 10.2 Limit

Limit : Not Applicable

### **10.3 Test Procedure**

The 99 % power bandwidth was measured with a calibrated spectrum analyzer.

The resolution bandwidth (RBW) shall be in the range of 1 % to 5 % of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately  $3 \times RBW$ .

Spectrum analyzer plots are included on the following pages.

## **10.4 Test Results**

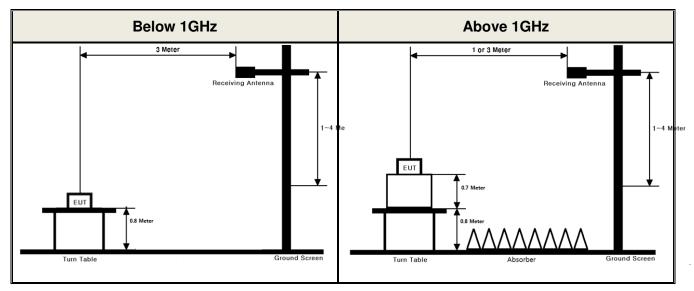
Not Applicable



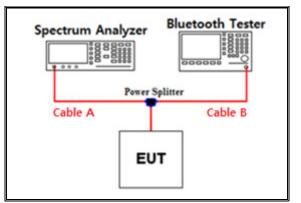
# **APPENDIX I**

## Test set up diagrams

Radiated Measurement



#### Conducted Measurement



#### Path loss information

Frequency (GHz)	Path Loss (dB)	Frequency (GHz)	Path Loss (dB)
0.03	6.49	15	9.14
1	7.13	20	9.40
2402 & 2440 & 2480	7.72	25	9.48
5	8.28	-	-
10	8.87	-	-

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

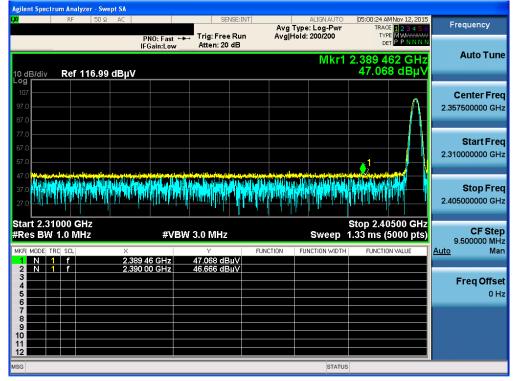
Path loss (S/A's Correction factor) = Cable A + Power splitter



# **APPENDIX II**

## **Unwanted Emissions (Radiated) Test Plot**

#### GFSK & Lowest & X & Hor



## GFSK & Lowest & X & Hor

	r <mark>um Analyze</mark> RF	50 Ω AC		SEN	SE:INT		ALIGN AUTO	05:07:24 AM	4Nov 12, 2015	
			PNO: Fast IFGain:Low	→→ Trig: Free	Run		ype: Log-Pwr old: 200/200	TRACI	E 123456 E MWWWWWW F P P N N N N	Frequency
dB/div	Ref 11	6.99 dBµV					Mkr1	2.388 8 37.85	16 GHz 1 dBµV	Auto Tu
<b>Pg</b> 107 7.0 7.0										Center Fr 2.357500000 G
7.0 7.0 7.0								. 12		Start F 2.310000000 (
7.0 7.0	<u> </u>		∧					<u></u>		<b>Stop F</b> 2.405000000
Res BW	000 GHz 1.0 MHz		#VI	3W 1.0 kHz			Sweep	Stop 2.40 74.3 ms (:	5000 pts)	CF S 9.500000 M
(r mode t 1 N <sup>4</sup> 2 N <sup>4</sup>	f	× 2.38 2.39	8 816 GHz 0 000 GHz	Y <u>37.851 dB</u> 37.946 dB	μV	NCTION	FUNCTION WIDTH	FUNCTIO	N VALUE	<u>Auto</u> N
3 4 5 6										<b>Freq Off</b> ن
ő – – –										

# Detector Mode : PK

**Detector Mode : AV** 



# GFSK & Highest & Z & Hor

Agilent Spectrum Analyzer - Swept SA					
<b>LXI</b> RF 50Ω AC	SENS	SE:INT	ALIGNAUTO	06:36:49 AM Nov 12, 2015	Frequency
	BNO: Fact the Trig: Free I		e:Log-Pwr	TRACE 123456 TYPE MW////////	Trequency
	PNO: Fast +++ Trig: Free IFGain:Low Atten: 20 c		200/200	DET P P N N N N	
	IFGam:Low Atten: 200				Auto Tune
			Mkr1 2	.483 742 GHz	Autorune
10 dB/div Ref 116.99 dBµV				49.995 dBµV	
Log					
107					Center Freq
97.0					
					2.489000000 GHz
87.0					
77.0					
67.0					Start Freq
					2.478000000 GHz
57.0					
47.0	An a standard with the second and reading the second second	مناحب أرحار ولجوا معاد استبادها	alti interest and a straight of the	والتأو بيبتهم والعلو وألاحه والمتحولة	
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27.0		na el 1 marcell letet lla	and the desired		2.500000000 GHz
				<u> </u>	
Start 2.47800 GHz				top 2.50000 GHz	05.04.0
#Res BW 1.0 MHz	#VBW 3.0 MHz		Sweep 1.	33 ms (5000 pts)	CF Step 2.200000 MHz
MKR MODE TRC SCL X	Y	FUNCTION FU	NCTION WIDTH	FUNCTION VALUE	Auto Man
	3 742 GHz 49.995 dBµ		NCTION WIDTH	FONCTION VALUE	Auto
	3 500 GHz 47.406 dBu	IV III			
3					Freq Offset
4					
5					0 Hz
7					
8					
9					
10					
12					
MSG			STATUS		

# Detector Mode : AV

# GFSK & Highest & Z & Hor

A <mark>gilent Spectrum Analyzer - Swept SA</mark> RF 50 Ω AC		VSE:INT		:39:33 AMNov 12, 2015	Frequency
	PNO: Fast +++ Trig: Free IFGain:Low Atten: 20	Run Avg Hold	e: Log-Pwr : 200/200	TRACE 123456 TYPE MWWWWW DET PPNNNN	
10 dB/div <b>Ref 116.99 dBµV</b> Log			Mkr1 2.4 3	83 689 GHz 8.220 dBµV	Auto Tune
107 97.0 87.0					<b>Center Fred</b> 2.489000000 GHz
77.0					<b>Start Fred</b> 2.478000000 GHz
47.0 37.0 27.0					<b>Stop Free</b> 2.500000000 GH
Start 2.47800 GHz #Res BW 1.0 MHz	#VBW 1.0 kHz	FUNCTION		p 2.50000 GHz ms (5000 pts)	CF Step 2.200000 MH Auto Ma
1 N 1 f 2.483	3 689 GHz 38.220 dB 3 500 GHz 38.462 dB				
4 5 6					Freq Offse 0 H
7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9					
ISG			STATUS		



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

Agilent Spectrum Analyzer - Swept SA							
LXI RF 50 Ω AC		SENSE:IN		ALIGN AUTO		4Nov 12, 2015	Frequency
		T-1		/pe: Log-Pwr	TRACE	123456 MW	riequency
	PNO: Fast ↔	Trig: Free Run Atten: 20 dB	AVGIHO	ld: 200/200	DF	PPNNNN	
	IFGain:Low	Atten: 20 dB					Auto Tune
				Mkr1	2.389 5	25 GHz	Auto Tune
10 dB/div Ref 116.99 dBµV					49.76	5 dBµV	
Log							
107							O antan Enan
							Center Freq
97.0							2.357500000 GHz
87.0						<u>// 1</u>	
77.0							
11.0						1 1	Start Freq
67.0						<mark>!   </mark>	2.310000000 GHz
57.0					<u></u> 1	<u>/ N</u>	2.31000000 GHz
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27.0	a, ta ka wa na tu tu t	nd in de la barralla		MANNA (M. 1984)		ן אריקיי,	2.405000000 GHz
27.0	والمتقاربة والمت	ويتبارك والمتعاد	11				
Start 2.31000 GHz					Stop 2.40	500 CH-	
#Res BW 1.0 MHz	40 (D) M	3.0 MHz		0			CF Step
#Res BW 1.0 MHz	#VBW	3.U IVIMZ		Sweep	1.33 ms (:	oooo pis)	9.500000 MHz
MKR MODE TRC SCL X		Y	FUNCTION	FUNCTION WIDTH	FUNCTIO	N VALUE	<u>Auto</u> Man
1 N 1 f 2.389	525 GHz	49.765 dBµV					
2 N 1 f 2.390	000 GHz	49.579 dBµV					
3							Freq Offset
5							0 Hz
6							0 112
7							
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9							
10							
12							
MSG				STATUS			

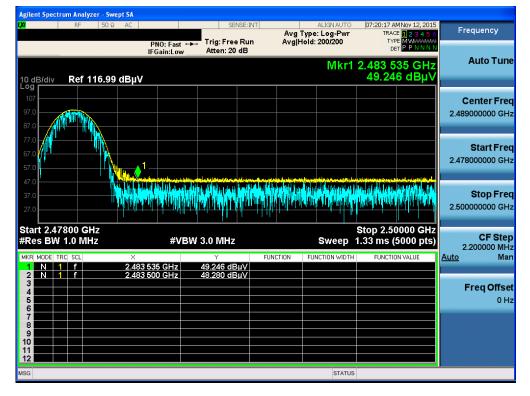
# **Detector Mode : AV**

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

Agilent Spectrum Ana			SEN	SE:INT	ALIGNAUTO	07:01:24 65	1Nov 12, 2015	
ru-	20 32 4		Total Francis	Avg	Type: Log-Pwr Hold:>200/200	TRACE	123456	Frequency
		PNO: Fast IFGain:Low	Atten: 20 d		11010.2007200	DET		
					Mkr1	2.389 6	77 GHz	Auto Tune
10 dB/div Ref	116.99 di	ΒμV				37.84	1 dBµV	
107								Center Fred
97.0							$\wedge$	2.357500000 GH
87.0							-+	
67.0								Start Free
57.0								2.310000000 GH
47.0						1		
37.0	<u> </u>	<u> </u>	<u></u>	<u> </u>		<b></b>		Stop Free
27.0								2.405000000 GH:
Start 2.31000	GH7					Stop 2.40	500 GHz	
#Res BW 1.0 N		#VE	3W 1.0 kHz			74.3 ms (5		CF Step 9.500000 MH
MKR MODE TRC SCL		Х	Y	FUNCTION	FUNCTION WIDTH	FUNCTIO	N VALUE	Auto Mar
1 N 1 f 2 N 1 f		2.389 677 GHz 2.390 000 GHz	37.841 dBµ 37.833 dBµ	IV IV				
3								Freq Offse
5								0 H:
7								
9								
11 12								
MSG					STATUS			



#### $\pi$ /4DQPSK & Highest & Z & Hor



## **Detector Mode : AV**

#### $\pi$ /4DQPSK & Highest & Z & Hor

gilent Spectrum A R		AC		SEN	SE:INT		ALIGN AUTO		MNov 12, 2015	Frequency	
			PNO: Fast ←	Trig: Free	Run		pe:Log-Pwr d:200/200	TYP	E 1 2 3 4 5 6 E MWAMAAAA	Frequency	
			IFGain:Low	Atten: 20				DE			
							Mkr1	2.483 6	01 GHz	Auto Ti	un
0 dB/div Re	ef 116.99	dBµV						38.23	0 dBµV		
.og										Center F	
97.0										2.489000000 (	
87.0										2.489000000	GII
77.0											
67.0										Start F	
57.0										2.478000000	GH
47.0	$ \rightarrow $		1								
37.0	V Y									Stop F	re
27.0										2.500000000	
Start 2.47800 Res BW 1.0			#\/B	W 1.0 kHz			Curson	Stop 2.50	0000 GHz	CF S	te
			#VD						5000 pts)	2.200000	MH
MKR MODE TRC SC		× 2.483	601 GHz	Y 38.230 dB		NCTION F	UNCTION WIDTH	FUNCTIO	IN VALUE	Auto I	Ma
2 N 1 f			500 GHz	38.056 dB							
3										Freq Off	
5										C	0 H
7											
9											
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12											
SG							STATUS				



# 8DPSK & Lowest & X & Hor

Agile	nt Spe	ctrur	m Ani	alyzer -	Swept SA											
LXI			RF	5	OΩ AC			SEN	ISE:INT		-	ALIGN AUTO		AMNov 12, 2015		Frequency
						PNO: Fa		Trig: Free	Run			: Log-Pwr 200/200	Т	ACE 123456 YPE MWAMAAA		, requestory
						IFGain:Lo	su	Atten: 20						DET PPNNN		
												Mkr1	2 389	419 GHz		Auto Tune
10 4	IB/div		Dof	116	99 dBj	N.								08 dBµV		
Log		-	KG	i iiv.	<u>aa up</u>											
10	7															<b>Center Freq</b>
97.0														▲	2.	357500000 GHz
87.0																
77.0														1 1		
67.0																Start Freq
															2.	310000000 GHz
57.0	° <b>├</b> ─												<u>†</u> 1−			
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	Ľ	<u> </u>				<u> </u>					<u> </u>		11			
				GHz								_		0500 GHz		CF Step
#Re	es B	W 1	.0 P	VIHZ		#	VBW	3.0 MHz				Sweep	1.33 ms	(5000 pts)		9.500000 MHz
MKR	MODE				×			Y		FUNCTION	FU	NCTION WIDTH	FUNCT	ION VALUE	Auto	<u>o</u> Man
1 2	N	1	f			89 419 GHz 90 000 GHz		47.208 dB 46.205 dB								
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4																Freq Offset
5 6																0 Hz
7																
8 9																
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11 12																
												074-5				
MSG												STATUS				

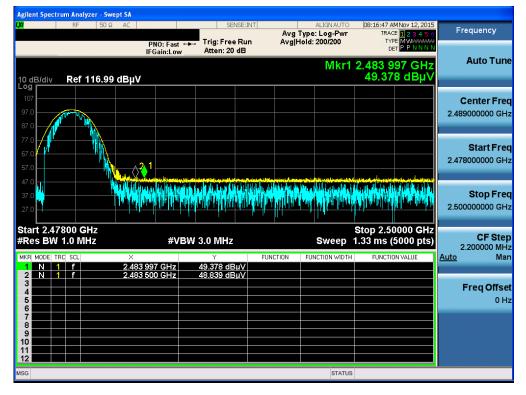
# **Detector Mode : AV**

#### 8DPSK & Lowest & X & Hor

Agilent Spectrur												
LXI	RF	50 Ω	AC			ENSE:INT		ALIGNAUTO Type: Log-Pwr	TRA	AMNov 12, 2015 CE 123456	Frequency	У
				PNO: Fast + IFGain:Low	Trig: Fre Atten: 20		Avgir	lold: 200/200	[			
								Mkr1	2.389	191 GHz	Auto T	une
10 dB/div Log	Ref 110	6.99 c	lBμV						37.81	I7 dBµV		
107											Center	Freq
97.0										$- \wedge$	2.357500000	GHz
87.0										+		
77.0 67.0											Start	Freq
57.0											2.310000000	GHz
47.0									1!			
37.0	<u></u>				<u> </u>						Stop I	
27.0											2.405000000	GHz
Start 2.310										0500 GHz	05.0	<b>0</b> 4 - m
#Res BW 1				#VB	W 1.0 kHz			Sweep		(5000 pts)	CF \$ 9.500000	
MKR MODE TRC	SCL f		× 2 389	191 GHz	۲ 37.817 dl		JNCTION	FUNCTION WIDTH	FUNCT	ION VALUE	<u>Auto</u>	Man
2 N 1 3	f			000 GHz	37.683 di	BμV					_	
4											Freq O	ffset 0 Hz
6												0112
8												
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12												
MSG								STATUS				



#### 8DPSK & Highest & Z & Hor



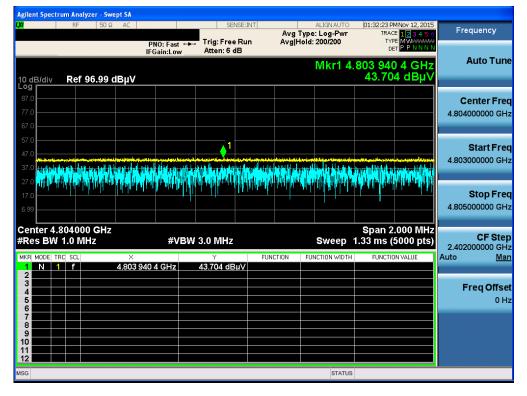
## **Detector Mode : AV**

#### 8DPSK & Highest & Z & Hor

RF 50 \$	2 AC	SENSE:IN		ALIGN AUTO	08:17:35 AM Nov 12, 2015	
	PNO: Fa	Trig: Free Run		Type: Log-Pwr Hold: 200/200	TRACE 123456 TYPE MWWWWWW DET P P N N N N	
	IFGain:Lo				DET PPNNN	
				Mkr1	2.483 839 GHz	Auto Tune
0 dB/div Ref 116.9	9 dBµV				38.137 dBµV	
og						
107						Center Fre
97.0						2.489000000 GH
37.0						
77.0						Start Free
57.0						2.478000000 GH
57.0						2.478000000 GH
47.0	1					
37.0			<u>_</u>			Stop Free
27.0						2.500000000 GH
tart 2.47800 GHz					Stop 2.50000 GHz	
Res BW 1.0 MHz	#	VBW 1.0 kHz		Sweep	17.3 ms (5000 pts)	2.200000 MH
KR MODE TRC SCL	× 2.483 839 GHz	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Ma
2 N 1 f	2.483 839 GHz 2.483 500 GHz					
3						Freq Offse
5						он
6						
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1						
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#### GFSK & Lowest & X & Hor



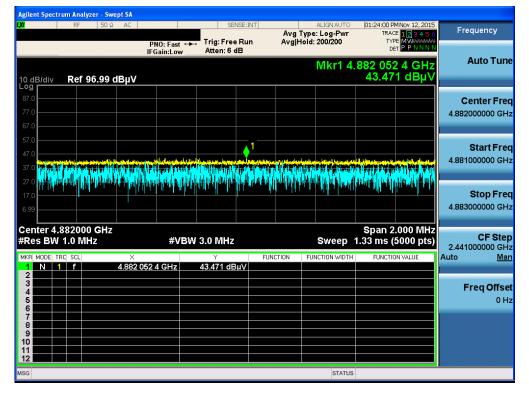
## **Detector Mode : AV**

#### GFSK & Lowest & X & Hor

	RF	50 Ω AC		SEI	ISE:INT		ALIGN AUTO		MNov 12, 2015	_
			PNO: Fast • IFGain:Low	Trig: Free Atten: 6 d		Avg Typ Avg Hold	e: Log-Pwr : 200/200	TRAC TYP DE	E 123456 E MWWWWW T P P N N N N	Frequency
) dB/div	Ref 96.	99 dBµ		naciii o c			Mkr1 4.	803 948 31.42	3 8 GHz 6 dBµV	Auto Tun
og 17.0 17.0										<b>Center Fre</b> 4.804000000 GH
57.0 17.0 17.0				<b>1</b>						<b>Start Fre</b> 4.803000000 GF
7.0 7.0 6.99										<b>Stop Fre</b> 4.805000000 GF
Res BW	804000 G 1.0 MHz	iHz	#VB	W 1.0 kHz			Sweep	1.67 ms (:	.000 MHz 5000 pts)	CF Ste 2.402000000 GF
KR MODE TH			× 03 948 8 GHz	ү 31.426 dB		CTION FL	INCTION WIDTH	FUNCTIO	IN VALUE	Auto <u>Ma</u>
3 4 5 6										<b>Freq Offs</b> 0 F
0										
7 8 9 0										



#### GFSK & Middle & X & Hor



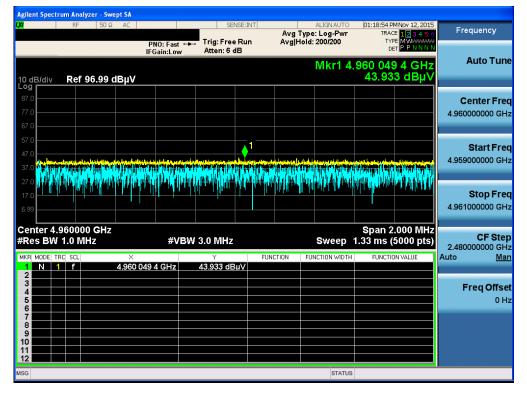
## **Detector Mode : AV**

#### GFSK & Middle & X & Hor

	RF	50 Ω AC		SEM	VSE:INT		ALIGN AUTO		MNov 12, 2015	<b>F</b>
				📕 Trig: Free	Dum	Avg Typ Avg Hold	e: Log-Pwr	TRAC	E 123456 E MW////////////////////////////////////	Frequency
			PNO: Fast + IFGain:Low	Atten:6 d		Avginoid	. 200/200	DE	TPPNNNN	
							Mkr1 A	992 054	56GHz	Auto Tun
o	Dof 06	00 48.37					WIKI 1 44.	31 70	1 dBµV	
0 dB/div .og	Rel 90.	99 dBµV						01.10		
87.0				_						Center Fre
77.0										4.882000000 GH
67.0										4.00200000 01
57.0										
										Start Fre
47.0					<u>, 1</u>					4.881000000 GH
37.0								_		
27.0										
17.0										Stop Fre
6.99				_						4.883000000 GH
	882000 G	Hz	-40 (5)				•	Span 2	.000 MHz	CF Ste
	1.0 MHZ		#VB	W 1.0 kHz			Sweep	1.07 ms (	5000 pts)	2.441000000 GH
Res BW										
IKR MODE TF		×		Y		NCTION FL	INCTION WIDTH	FUNCTIO	IN VALUE	Auto <u>Ma</u>
			055 6 GHz	۲ 31.701 dB		NCTION FL	INCTION WIDTH	FUNCTIO	IN VALUE	Auto <u>Ma</u>
IKR MODE TR 1 N 1 2 3			055 6 GHz			NCTION FU	INCTION WIDTH	FUNCTIO	ON VALUE	
IKR MODE TF 1 N 1 2 3 4			055 6 GHz			NCTION FL	UNCTION WIDTH	FUNCTIO	ON VALUE	Freq Offs
IKR MODE TR 1 N 1 2 3			055 6 GHz			NCTION FU	UNCTION WIDTH	FUNCTIO	DN VALUE	Freq Offs
IKR     MODE     TF       1     N     1       2     3     -       3     -     -       4     -     -       5     -     -       6     -     -       7     -     -			055 6 GHz			NCTION FU	UNCTION WIDTH	FUNCTIO	ON VALUE	Auto <u>Ma</u> Freq Offse 0 H
KR     MODE     TF       1     N     1       2     3     -       3     -     -       4     -     -       5     -     -       6     -     -       7     -     -       8     -     -       9     -     -			055 6 GHz			NCTION FI	UNCTION WIDTH	FUNCTIO	ON VALUE	Freq Offs
IKR     MDDE     TF       1     N     1       2     3     3       4     5     5       5     6     7       8     9     9       10     10     10			055 6 GHz			NCTION FU	INCTION WIDTH	FUNCTIO	IN VALUE	Freq Offs
KR     MODE     TF       1     N     1       2     3     -       3     -     -       4     -     -       5     -     -       6     -     -       7     -     -       8     -     -       9     -     -			055 6 GHz			NCTION FU	INCTION WIDTH	FUNCTIO	N VALUE	Freq Offs



### GFSK & Highest & Z & Hor



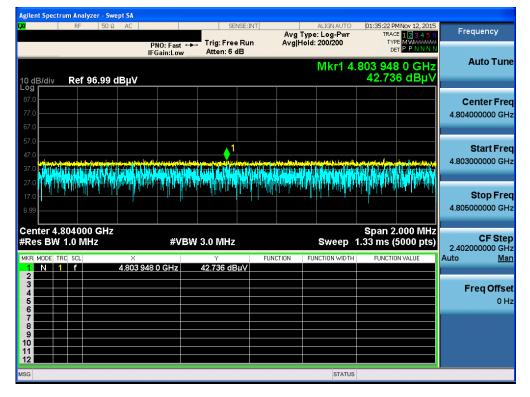
## **Detector Mode : AV**

#### GFSK & Highest & Z & Hor

RF 50	DΩ AC		SEN	SE:INT		ALIGN AUTO		4Nov 12, 2015	England
		PNO: Fast ←	► Trig: Free	Run	Avg Type Avg Hold	e: Log-Pwr : 200/200	TRAC TYP	E 123456	Frequency
		IFGain:Low	Atten: 6 dl				DE	T P P N N N N	
						Mkr1 4.	960 024	6 GHz	Auto Tun
dB/div Ref 96.9	9 dBµV						31.57	8 dBµV	
og									
7.0									Center Fre
									4.96000000 GH
7.0									
57.0									Start Fre
7.0				<u>، 1</u>					4.959000000 GH
				<u>,                                     </u>					
27.0									
7.0									Stop Fre
5.99									4.961000000 GH
enter 4.960000 GH	z						Span 2	.000 MHz	
Res BW 1.0 MHz		#VB	W 1.0 kHz			Sweep 7	1.67 ms (	5000 pts)	2.48000000 GH
KR MODE TRC SCL	×		Y	FUN	CTION FU	INCTION WIDTH	FUNCTIO	N VALUE	Auto Ma
1 N 1 f	4.960 0	24 6 GHz	31.578 dBj	١V					
2									Erog Offe
4									Freq Offs 0 H
6									01
7									
7									
9									



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



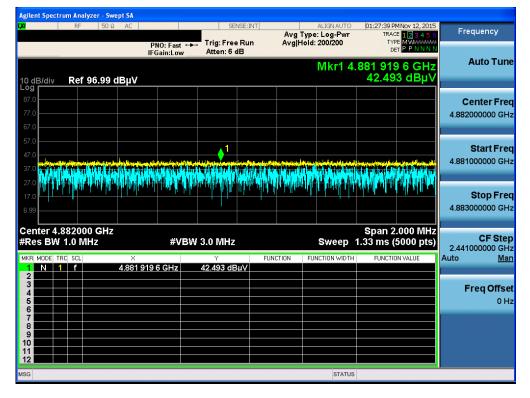
### **Detector Mode : AV**

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

	RF	50 Ω AC		SEN	SE:INT	ALIGNAUTO g Type: Log-Pwr	01:34:22 PMI TRACE		Frequency
			PNO: Fast +	→ Trig: Free Atten: 6 d	Run Av	g Hold: 200/200	TYPE	123456 MWWWWWW PPNNNN	
			IFGain:Low	Atten: 6 d	8	Mkr1 4	.803 935		Auto Tun
I0 dB/div	Ref 96.	99 dBµV					31.397	dBµV	
.0g 87.0									Center Fre
77.0									4.804000000 GH
67.0									
47.0									Start Fre
37.0				1					4.803000000 GH
27.0									
17.0									Stop Fre
6.99									4.805000000 GH
	804000 G	Hz	<i>#</i> \/D			0	Span 2.0	000 MHz	CF Ste
MKR MODE TH	1.0 MHz	×	#VD	W 1.0 kHz	FUNCTION	FUNCTION WIDTH	1.67 ms (5)		2.402000000 GH Auto Ma
1 N 1			35 2 GHz	31.397 dB		FONCTION WIDTE	PONCTION	VALUE	
2									Freq Offse
3									
4 5									0 H
4 5 6 7									0 H
4 5 6 7 8 9									0 H
4 5 6 7 8									0 F



#### $\pi/4DQPSK$ & Middle & X & Hor



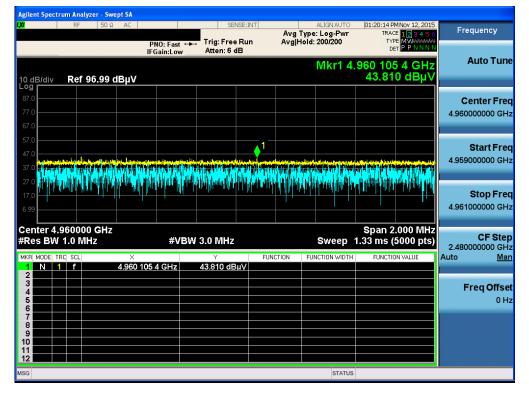
## **Detector Mode : AV**

#### $\pi$ /4DQPSK & Middle & X & Hor

	RF 50 \$	AC AC		9	SENSE:INT		ALIGN AUTO		MNov 12, 2015	Frequency
			PNO: Fast +	📕 Trig: Fre	ee Run		e: Log-Pwr d: 200/200	TRAC TYP	2E 123456 PE M <del>WANAAA</del> ET P P N N N N	Frequency
			IFGain:Low	Atten: 6	dB					Auto Tun
0 dB/div	Ref 96.99	dBµV					Mkr1 4.	882 050 31.46	04 GHz 0 dBµV	Auto Tun
og 37.0										Center Fre
7.0										4.882000000 GH
7.0										
7.0										Start Fre
7.0					<b>1</b>					4.881000000 GH
27.0										Stop Fre
17.0 6.99										4.883000000 GH
enter 4 81	82000 GHz							Snan 2	.000 MHz	
							Curson	Spanz	.000 191112	
	.0 MHz		#VB	W 1.0 kHz			Sweep	1.67 ms (:	5000 pts)	
Res BW 1	SCL	×		Y	F	UNCTION F	UNCTION WIDTH	· · · ·		CF Ste 2.441000000 GH Auto <u>Ma</u>
Res BW 1	SCL		#VB		F	UNCTION F		· · · ·		2.441000000 GH Auto <u>Ma</u>
Res BW 1       KR MODE     TRC       1     N     1       2     -     -       3     -     -       4     -     -	SCL			Y	F	UNCTION F		· · · ·		2.441000000 GH Auto <u>Ma</u> Freq Offse
Res BW 1	SCL			Y	F	UNCTION F		· · · ·		2.441000000 GH Auto <u>Ma</u> Freq Offso
Res BW 1       MKR MODE TRC       1     N       2       3       4       5	SCL			Y	F	UNCTION F		· · · ·		2.441000000 GH
Res BW 1       KR MODE     TRC       1     N     1       2     3     -       3     -     -       4     -     -       5     -     -       6     -     -       7     -     -       8     -     -	SCL			Y	F	UNCTION F		· · · ·		2.441000000 GH Auto <u>Ma</u> Freq Offso



## $\pi$ /4DQPSK & Highest & Z & Hor



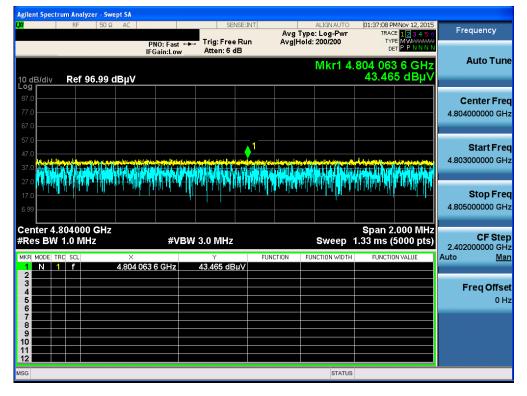
### **Detector Mode : AV**

## $\pi$ /4DQPSK & Highest & Z & Hor

	RF 50 :	Ω AC		SE	INSE:INT	0	ALIGN AUTO		4Nov 12, 2015	Frequency
			PNO: Fast +	Trig: Fre			old: 200/200	TYP		
			IFGain:Low	Atten: 6	dB		Milend 4			Auto Tun
0 dB/div	Ref 96.99	dBµV					Mkr1 4.	31.52	odBµV	
<b>7</b> .0										Center Fre
7.0										4.960000000 GH
7.0										
7.0										Start Fre
7.0					1					4.959000000 GH
/.0					<b></b>					
7.0										Stop Fre
.99										4.961000000 GH
enter 4.96	0000 GHz	z						Span 2	.000 MHz	
Res BW 1.	0 MHz		#VB	W 1.0 kHz			Sweep	1.67 ms (	5000 pts)	CF Ste 2.48000000 GH
KR MODE TRC		X 4 960 4	08 6 GHz	۲ 31,520 df		ICTION	FUNCTION WIDTH	FUNCTIO	IN VALUE	Auto <u>Ma</u>
2		4.500	00000112	01.020 01	544					
4										Freq Offs ۱۰
6										01
8										
0										
1										



### 8DPSK & Lowest & X & Hor



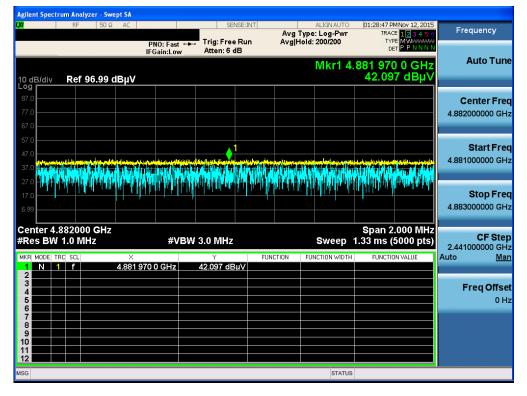
### **Detector Mode : AV**

#### 8DPSK & Lowest & X & Hor

	RF	50 Ω AC		S	ENSE:INT		ALIGN AUTO		1Nov 12, 2015	Frequency
				Trig: Fre	e Run		pe:Log-Pwr d:200/200	TRACI TYP	123456 M WAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	Frequency
			PNO: Fast IFGain:Low	Atten: 6		Craling	4. 200/200	DE	PPNNN	
							Mkr1 4	804 069	2 GHz	Auto Tun
dB/div	Dof 06	.99 dBµV						31.62	5 dBµV	
	Kei so	.55 abµv								
7.0										Center Fre
'.0 <u> </u>										4.804000000 GH
7.0										Start Fre
					<b>▲</b> 1					4.803000000 GH
7.0										
7.0										
7.0										Stop Fre
99										4.805000000 GH
									000 5411	
amer 4. i	804000 (		#\/E	3W 1.0 kHz			Swoon	Span 2. 1.67 ms (:	000 MHz	CF Ste
	1 0 MU-			999 I.V KIIZ			oweep	1.07 IIIS (s	ooo pisj	
Res BW										
Res BW	RC  SCL	×		Y 24.605 d		INCTION	UNCTION WIDTH	FUNCTIO	N VALUE	2.402000000 GH Auto <u>Ma</u>
Res BW	RC  SCL	×	069 2 GHz	ү 31.625 d		INCTION	UNCTION WIDTH	FUNCTIO	N VALUE	
Res BW	RC  SCL	×				INCTION	UNCTION WIDTH	FUNCTIO	N VALUE	Auto <u>Ma</u>
Res BW	RC  SCL	×				INCTION	FUNCTION WIDTH	FUNCTIO	N VALUE	Auto <u>Ma</u> Freq Offs
Res BW       R     MODE     TF       1     N     1       2     -     -       3     -     -       4     -     -       5     -     -       6     -     -	RC  SCL	×				INCTION	UNCTION WIDTH	FUNCTIO	N VALUE	Auto <u>Ma</u> Freq Offs
Res BW	RC  SCL	×					UNCTION WIDTH	FUNCTIO	N VALUE	Auto <u>Ma</u> Freq Offs
Res     BW       (R)     MODE     TH       1     N     1       2	RC  SCL	×				INCTION	UNCTION WIDTH	FUNCTIO	N VALUE	Auto <u>Ma</u> Freq Offs
Res     BW       (R)     MODE     TF       1     N     1       2	RC  SCL	×					UNCTION WIDTH	FUNCTIO	N VALUE	Auto <u>Ma</u> Freq Offs
Res BW	RC  SCL	×					UNCTION WIDTH	FUNCTIO	N VALUE	



# 8DPSK & Middle & X & Hor



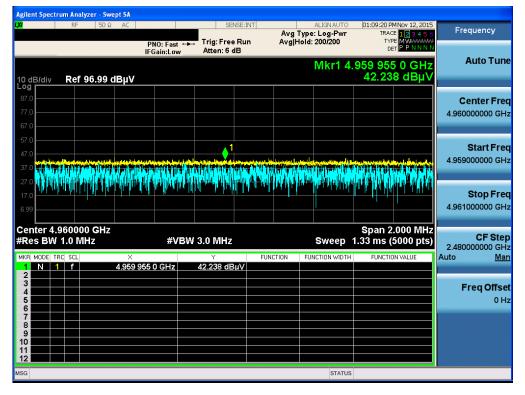
## **Detector Mode : AV**

#### 8DPSK & Middle & X & Hor

50 Ω AC		SENSE:IN		ALIGN AUTO	01:29:35 PMNov 12, 2015	
		Trig: Free Bun		Type: Log-Pwr Iold: 200/200	TRACE 12345 ( TYPE MWWWWW	Frequency
	PNU: Fast ← IFGain:Low	Atten: 6 dB		1014. 2001200	DET P P N N N	
				Mkr1 4.	881 966 8 GHz	Auto Tun
96.99 dBµV					31.449 dBµ∖	1
						Center Fre
						4.882000000 GH
						Start Fre
		1				4.881000000 GH
		· · · · · · · · · · · · · · · · · · ·				
						Stop Fre
						4.883000000 GH
						4.88300000 GP
0 GHz					Span 2.000 MHz	
Hz	#VB	W 1.0 kHz		Sweep	1.67 ms (5000 pts)	CF Ste 2.441000000 GH
Х		Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Auto <u>Ma</u>
4.881	966 8 GHz	31.449 dBµV				
						Freq Offs
						0+
	0 GHz Hz	96.99 dBµV 96.99 dBµV 96.90 dBµV	96.99 dBµV 96.99 dBµV 97.90	Atten: 6 dB	Atten: 6 dB Mkr1 4. 96.99 dBµV 96.99 dB	If Gain:Low Atten: 6 dB Det PPNNM   96.99 dBµV 31.449 dBµV   96.91 dBµV 31.449 dBµV   96.92 dBµV 1   96.93 dBµV 1   96.94 dBµV 1   96.95 dBµV 1   97 1   98.95 dBµV 1   99.95 dPµV



# 8DPSK & Highest & Z & Hor



# Detector Mode : AV

#### 8DPSK & Highest & Z & Hor

Agilent Spectrum Analyzer -								
RF 5	ΟΩ AC	PNO: Fast ↔	SENSE	Avg	ALIGN AUTO Type: Log-Pwr Hold: 200/200	TRACE	1Nov 12, 2015	Frequency
		IFGain:Low	Atten: 6 dB				PPNNNN	Auto Tune
10 dB/div Ref 96.9	9 dBµV				MKr1 4.	959 956 31.398	i6 GHz 3 dBµV	
87.0								Center Fred
67.0								4.960000000 GH:
57.0								
47.0								Start Free 4.959000000 GH:
27.0								
17.0								Stop Free 4.961000000 GH
6.99								4.961000000 GH2
Center 4.960000 Gł #Res BW 1.0 MHz	lz	#VB۱	№ 1.0 kHz		Sweep	.2 Span 1.67 ms (5	000 MHz 6000 pts)	CF Step 2.48000000 GH
MKR MODE TRC SCL	× 4 959 9	56 6 GHz	۲ 31.398 dBu\	FUNCTION	FUNCTION WIDTH	FUNCTIO	N VALUE	Auto <u>Mar</u>
2 2 2	4.303 3	30 0 GHZ	31.330 dBµ1					Erog Offer
4 5								Freq Offset 0 Hz
6 7 8								
9								
11 12								
ISG					STATUS			