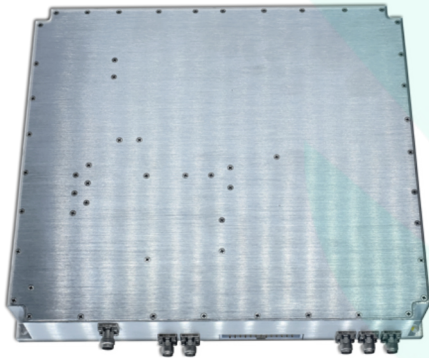


Ultra Wideband Signal Generators Module



Description:

Corech Microwave's Ultra-Wideband Signal Generators Module operates from 9kHz to 20GHz/40GHz, featured with ultra wideband, CW/Pulse mode, ultra low noise of $-105\text{dBc}/\text{Hz}@10\text{kHz}$, low spurious and low consumption. They are very rugged and stable to be integrated in various systems.

PN:

PN	Description	Option
MSG9K20G		
MSG9K20G-P	Pulse Modulation, Inter Pulse Generator	Option 1
MSG9K20G-S	Sweep	Option 2
MSG9K20G-PS	Pulse Modulation, Inter Pulse Generator, Sweep	Option 1, 2

Key Specifications:

- Frequency Range: 9kHz to 20GHz
- Frequency Steps: 0.001Hz
- Output Power: $-15\text{dBm} \sim +15\text{dBm}$
- Setting Time: 300us
- Spurious: 60dBc
- Phase Noise: $-105\text{dBc}/\text{Hz}@10\text{kHz}$ at 20GHz
- External Reference: 10MHz
- Internal Reference: 100MHz
- RF Output Waveform: Sine wave / pulse modulation
- External Pulse Input: LVTTTL

• Electrical Specifications

External Reference (50Ω)

Parameter	Min.	Typ.	Max.	Note
Input Frequency		10MHz		
Input Power	0dBm		+5dBm	
Phase Noise			-150dBc/Hz@1kHz	

Internal Reference (50Ω)

Parameter	Min.	Typ.	Max.	Note
Frequency		100MHz		
Frequency stability		0.1ppm		
Temperature stability		0.1ppm		
Phase Noise			-155dBc/Hz@1kHz	

Reference Output

Parameter	Min.	Typ.	Max.	Note
Output Frequency		10MHz, 100MHz		
Output Power	0dBm			10MHz
	0dBm			100MHz
Phase Noise			-140dBc/Hz@1kHz	10MHz
			-145dBc/Hz@1kHz	100MHz

● Electrical Specifications

Parameter	Min.	Typ.	Max.	Note
Frequency Range	9kHz		20GHz	
Frequency Steps		0.001Hz		
Output Power	-15dBm		+15dBm	25°C
Power Steps			0.5dB	
Output Power Resolution			±2dB	
Setting Time		300us	500us	#1
Harmonics				
1GHz	-50dBc	-40dBc	-20dBc	
10GHz	-55dBc	-40dBc	-20dBc	
20GHz	-45dBc	-40dBc	-20dBc	
1/2 Harmonics				
1GHz	-90dBc	-80dBc	-60dBc	
10GHz	-90dBc	-80dBc	-60dBc	
20GHz	-85dBc	-80dBc	-60dBc	
Spurious (Frequency Offser ≥5kHz)				
1GHz	-85dBc	-80dBc	-60dBc	
10GHz	-80dBc	-75dBc	-60dBc	
20GHz	-74dBc	-70dBc	-60dBc	

#1, Setting Time: 500ns (Excluding communication time)

- **Electrical Specifications**

SSB Phase Noise (Type)

Parameters	100Hz	1kHz	10kHz	100kHz	1MHz
dBc/Hz@1GHz	-104	-126	-130	-130	-131
dBc/Hz@10GHz	-85	-106	-110	-110	-111
dBc/Hz@20GHz	-79	-100	-104	-104	-105

- **Option 1 (Pulse Generator and Modulation)**

Pulse Modulation

Parameters	Min.	Typ.	Max.
On/ Off Ratio		-65dBc	
Min. Pulse Width		100ns	
Min. Period		110ns	

External Pulse Input

LVTTTL		+3.3V	
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Internal Pulse Generator

Square Wave Speed Rate	0.1Hz		10MHz
Period	110ns		100s
Pulse Width	100ns		99.999999s
Rise Time / Fall Time		25ns / 25ns	>100MHz
		150ns / 150ns	≤100MHz
Resolution		100ns	
Delay	20ns		100s

- **Option 2 (Sweep)**

Sweep

Parameters	Min.	Typ.	Max.
Operating Mode	Step Sweep		
Sweep Range	9kHz		20GHz
Dwell Time	10ms		10s
Time Resolution		1us	
Switching Speed	300us typ. @ Internal Source		

- **General Specifications**

Parameters	Min.	Typ.	Max.
Supply Current (Vcc=+24V)			2A
Communication	RS422, Baud Rate: 1Mbps *		
RF Out Connector	2.92mm-Female		
Reference Input/Output	SMA-Female		
Synchronization Signal	SMA-Female		
Power and Control Interface	J30J-15ZP		
Operating Temperature	-20 ~ +40 °C		
Storage Temperature	-40 ~ +70 °C		

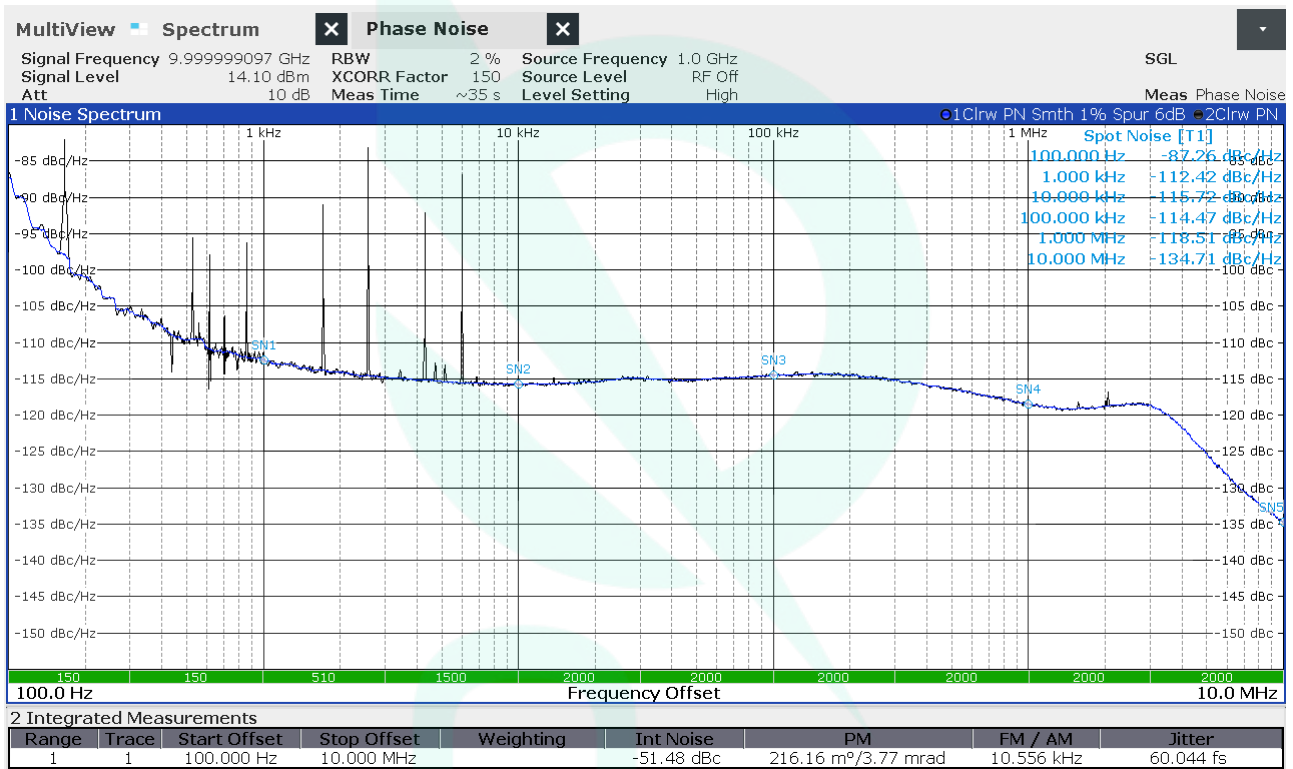
* Communication protocol will be discussed and agreed upon subsequently

Dimensions:

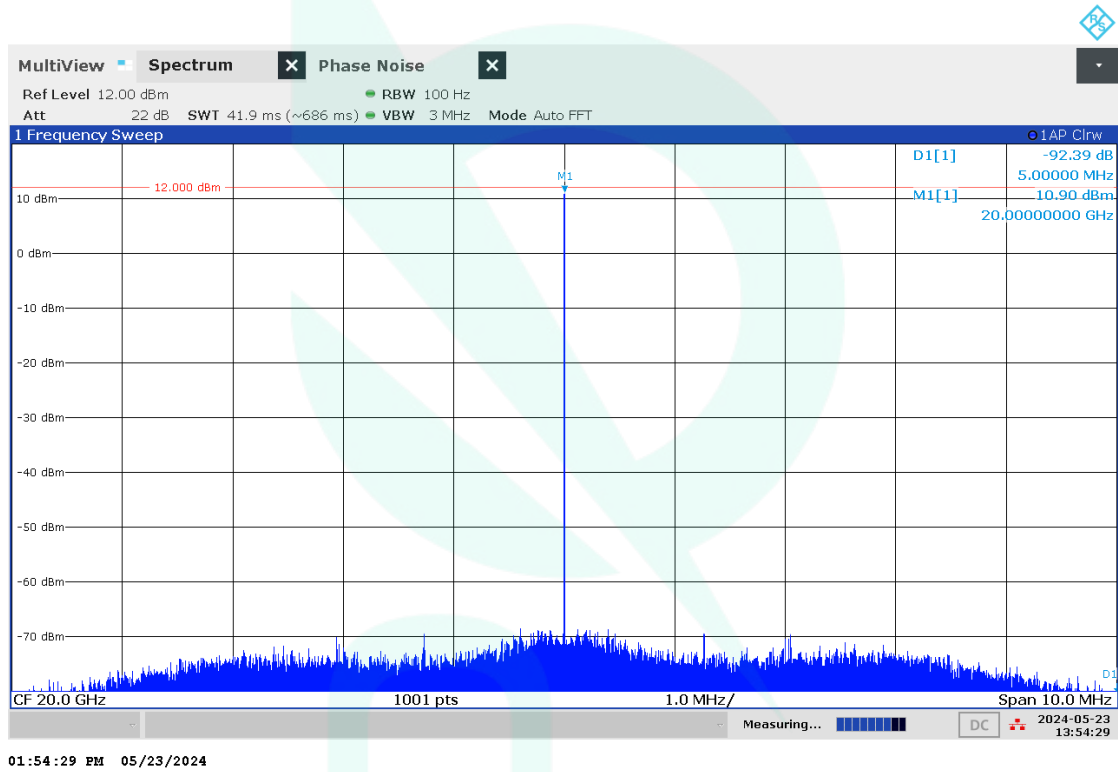
Table 1: J30J-15ZKP Interface Definition

J30J Pin	Definition	J30J Pin	Definition
1	+24V	9	T+
2	+24V	10	T-
3	+24V	11	R+
4	+24V	12	R-
5	GND	13	NC
6	GND	14	NC
7	GND	15	NC
8	GND		

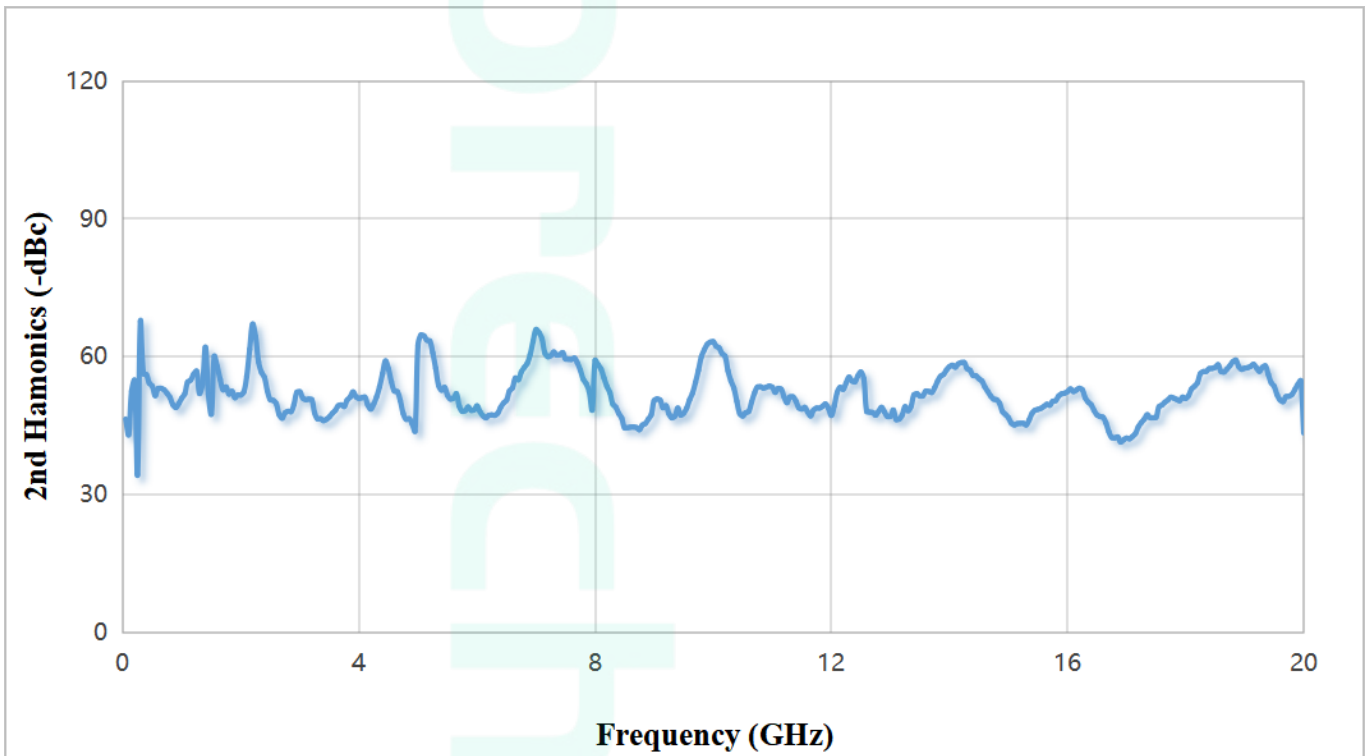
SSB Phase Noise (Typ.)



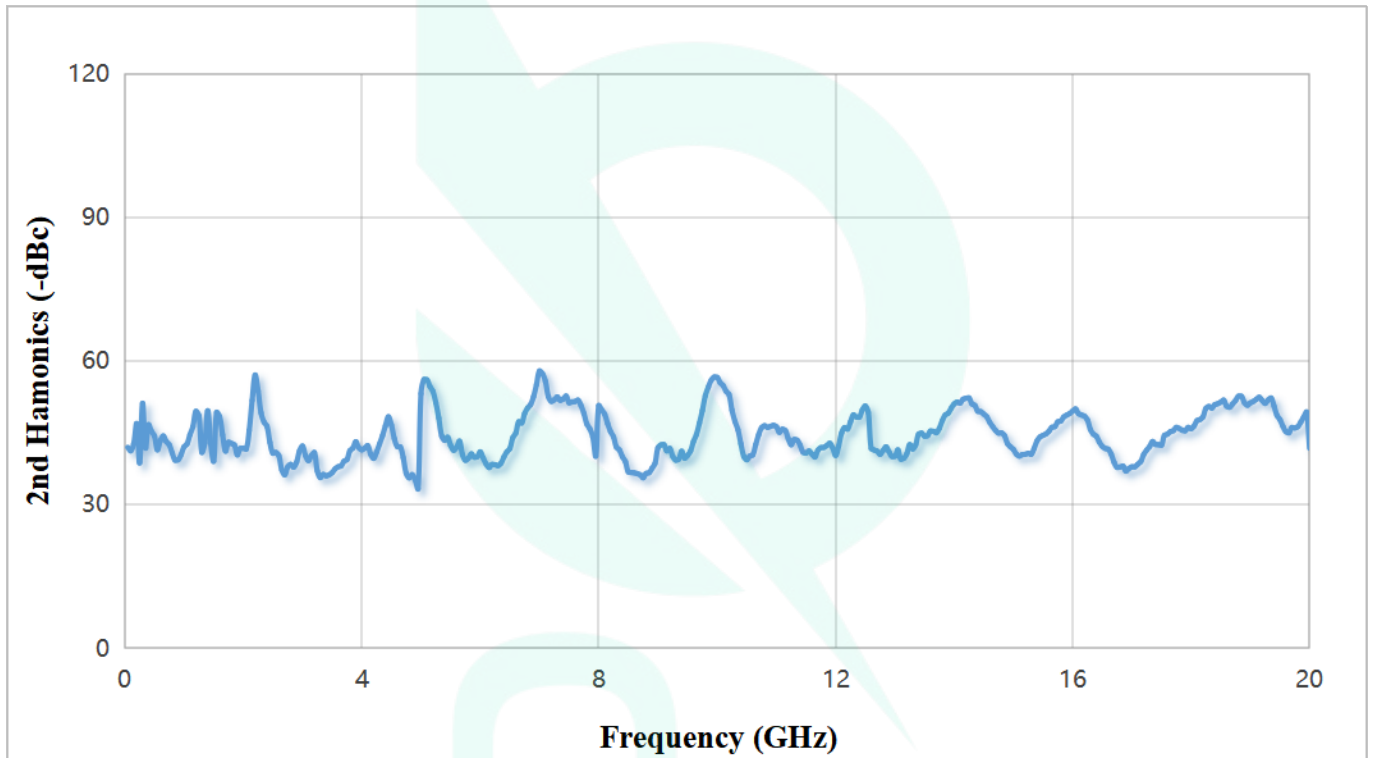
Spurious (Typ.)



Harmonics (Typ.)



Harmonics (Typ.)



1/2 Harmonics (Typ.)

