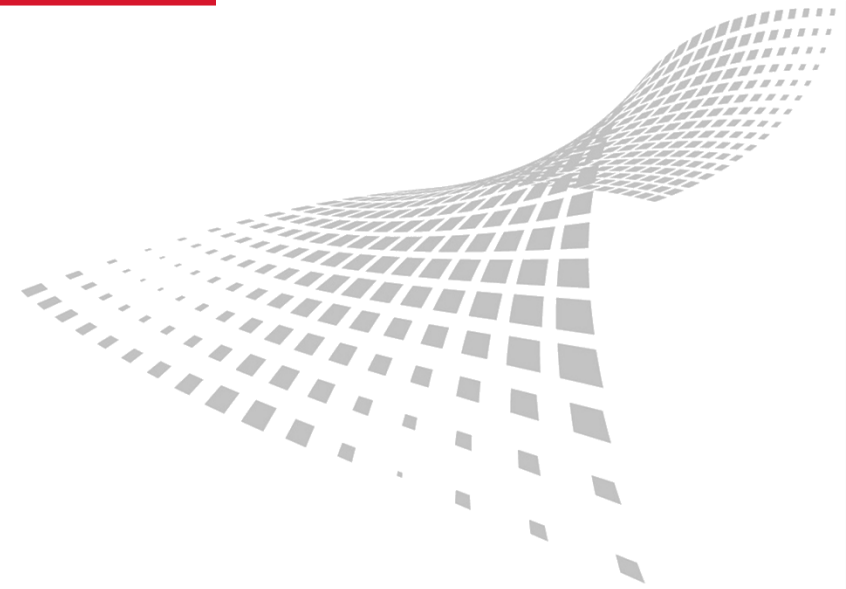


Models ready for System Integration

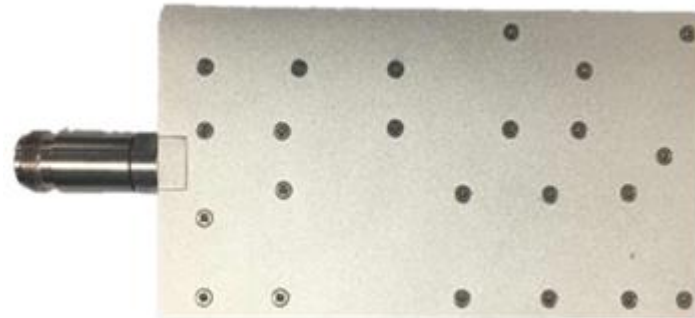
G6M VSG Module and A6M VSA Module

Transcom Instruments





- G6M vector signal generator module is a high performance vector signal generator. It supports arbitrary wave signal, continuous wave signal, common vector signal, simulation and digital modulation, standard wireless vector signal, standard radio signal and customized signal.
- G6M is ready for system integration, with provided API library, system integrators can easily do system integration development
- G6M can satisfy most of the signal simulation practices and provided user continues customization services.



Product Features



- Frequency range: 10MHz to 6GHz(up to 9GHz supported in the near future)
- Power coverage: -110 to +10dBm
- Full range of common digital modulation: BPSK, QPSK, OQPSK, 8PSK, 16QAM, 32QAM, 64QAM, MSK, FSK, output linearity, log scan and multiple modulation mode
- Variety of common signal generating including GSM/ EDGE/CDMA/TD-SCDMA/WCDMA/CDMA2000/TD-LTE/FDDLTE/ NB-IoT/LoRa. Users can modify channels under different configuration
- Pulse modulation function
- Fixable integration interface, customized data can be input into module to generate customized signal
- Simple control via USB port. Provide API for second-time development

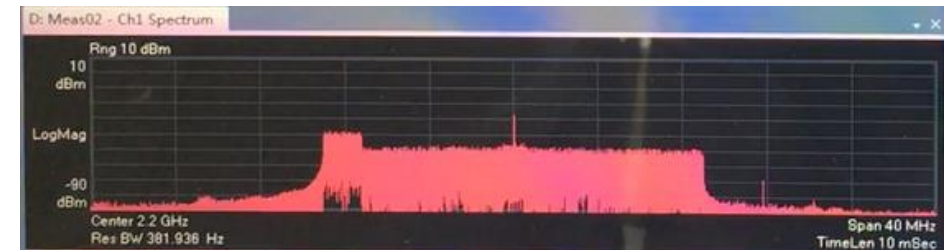
H: Meas02 - Ch1 Frame Summary

Channel	EVM(%rms)	Power(dB)	Mod.Fmt	Num.RB
P-SS	0.57950	0.52574	Z-Chu	12
S-SS	0.58134	0.51872	BPSK	12
PBCH	0.72157	0.49681	QPSK	6
PCFICH	1.0888	0.01710	QPSK	18
PHICH	0.92023	-0.18182	BPSK (CDM)	36
PDCCH	0.74171	0.05310	QPSK	28
C-RS	0.78544	0	QPSK	600
PDSCH_QPSK	0.71637	-0.08013	QPSK	60

Digital Modulation

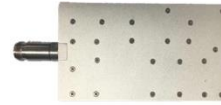


NB-IoT signal Modulation



LTE signal Modulation

Comparison



Manufacturer	Transcom G6M	Keisight N5182A
Frequency Range	10MHz to 6GHz	100 kHz to 6GHz
Amplitude Range	-110 to +10dBm	-110 to +13dBm
Harmonic	$\leq -30\text{dBc}$	$< -30\text{ dBc}$
SSB Phase Noise	$\leq -100\text{dBc/Hz}@10\text{kHz}(6\text{GHz})$	$\leq -104\text{dBc/Hz}@20\text{kHz}(6\text{GHz})$
Modulation bandwidth	60MHz	200MHz (RF) 100MHz (Baseband)
EVM	$\leq 2\%$	$< 0.8\%$

Comparison

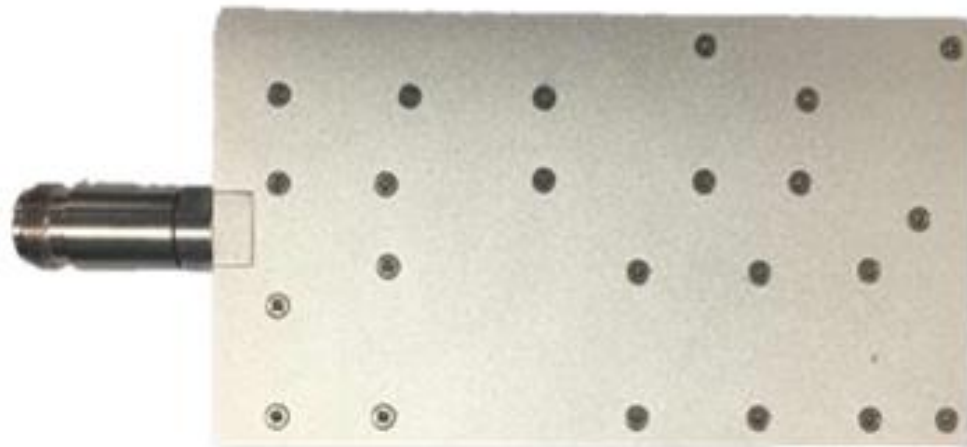


Manufacturer	Transcom G6M	Keisight N5182A
Mobile communication standard	GSM/EDGE/CDMA/TD-SCDMA/WCDMA/CDMA2k/TD-LTE/FDD-LTE/NB-IoT/LoRa	GSM/EDGE,cdmaOne, CDMA2000®, 1X EV-DO, WCDMA 802.11a/g, 802.16e WiMAX, WLAN
Universal digital modulation type	BPSK, QPSK, OQPSK $\pi/2$ DBPSK, $\pi/4$ DQPSK, $\pi/8$ D8PSK, $\pi/4$ QPSK, 8PSK, 8PSKEDGE , 16QAM, 32QAM, 64QAM, 256QAM, 10_4QAM ; MSK, 2FSK, 4FSK	BPSK, QPSK, OQPSK, $\pi/4$ DQPSK, 8PSK, 16PSK, D8PSK;QAM4, 16, 32, 64, 128, 256;FSK, MSK, ASK



System integration

G6M is ready for system integration, with provided .step file, system integrator can easily do structural design, and with provided API library, system integrators can do secondary development easily.



Specifications



G6M Vector Signal Generator	
Technical	
Frequency Range	10MHz to 6GHz
Frequency Solution	1Hz
Frequency-temperature Stability	± 1 ppm
Initial Frequency Accuracy	± 0.5 ppm
Amplitude Range	-110 to +10dBm
Amplitude Solution	0.1dB
Amplitude Accuracy	± 0.5 dB
Harmonic	≤ -30 dBc
Spurious	≤ -55 dBc
SSB Phase Noise	≤ -100 dBc/Hz@10kHz(6GHz)
Modulation Bandwidth	20MHz (can scale to 40MHz)
Modulation Type	Analog, Vector, Pulse
Pulse modulation parameters	Pulse width: 100ns to 1s, repetition rate: 1Hz to 5MHz
Universal digital modulation type	BPSK, QPSK, OQPSK, 8PSK, MSK, FSK, 16QAM, 32 QAM, 64QAM

Specifications

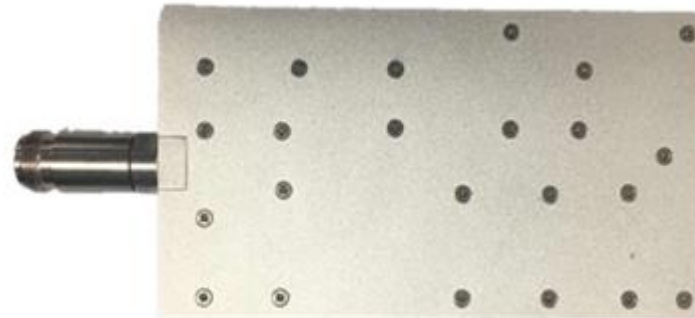


G6M Vector Signal Generator	
Mobile Communication Standard	GSM/EDGE/CDMA/TD-SCDMA/WCDMA/CDMA 2k/TD-LTE/FDD-LTE/NB-IoT/LoRa
Supported Channel(LTE)	PSS, SSS, PSS, SSS, CSRS, PBCH, PCFICH, PHICH, PDCCH, PDSCH, PUSCH, PUCCH, PRACH and SRS
EVM	≤2%rms
Frequency Error	Better than ±10Hz
Phase Error	Better than ±3°
Waveform Quality ρ	>0.9999
Others	
Power Supply Voltage	12V (DC)
Power Supply Current	1.5A (MAX)
Communication Interface	USB 3.1 type-C
Provide API Support second-time development	





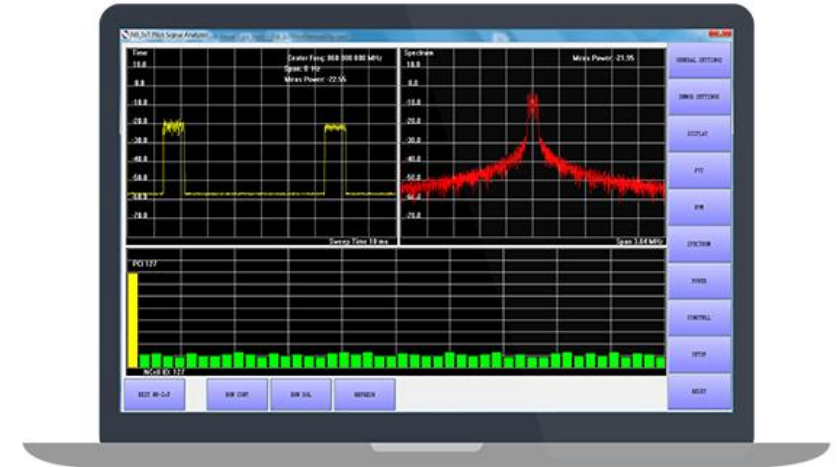
- A6M vector signal analyzer module is a high performance vector signal generator. It supports arbitrary wave signal, continuous wave signal, common vector signal, simulation and digital modulation, standard wireless vector signal, standard radio signal and customized signal.
- A6M is ready for system integration, with provided API library, system integrators can easily do software development
- A6M can work as spectrum analyzer model, IQ data recorder module and signal analyzer module, it can do signal demodulation for LTE signal, WCDMA signal, GSM signal and NB-IoT signal.



Product Features



- Frequency range: 10MHz to 6000MHz (10MHz to 4200MHz)
- Signal demodulation: FM, AM, GSM, WCDMA, LTE and NB-IoT signal
- DANL: -168 dBm @1GHz (Sensitivity set to High, normalized to 1Hz)
- Resolution bandwidth: 10Hz to 5MHz
- Signal storage depth of 1Gbit for signal capture and analysis
- API library is provided for secondary development



NB-IoT signal demodulation

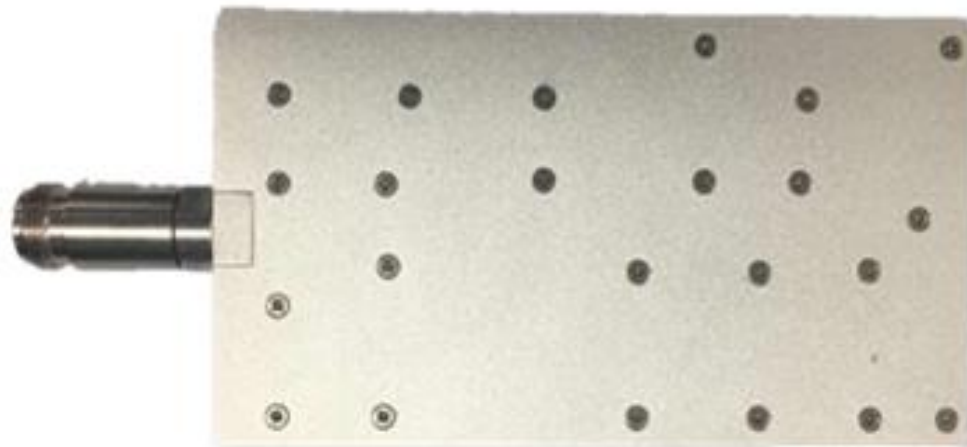


LTE signal demodulation



System integration

A6M is ready for system integration, with provided .step file, system integrator can easily do structural design, and with provided API library, system integrators can do secondary development easily.



Specifications



	Function
Measurement	ACPR,CH Power, OBW, N dB Down, Phase Noise
Trace	3 Traces, TraceA, TraceB, TraceC
Sweep	Trace Operation: Clear/ Write, Maxhold, Minhold, Average, View, Hide
Trigger	Continuous/Single
Marker	Free Video(Zero Span)
Span	8 maximum, support 1 reference with 7 Delta Markers
Scale	Peak Search, Marker Delta, Marker+, Marker-
Unit	0Hz,10MHz to 6.0GHz
Sensitivity	Freq Slip, Span Zoom(1-2-5-10Sequence,4GHz,6GHz)
Detector	Log/Lin
Ref Level Offset	Log : 0.1 to 1 0.1 step, 1 to 10 1 step
Multi-screen	dBm, dBuV ,dBV ,W, mW, uW, pW, V, mV, uV
Frequency Range	Low, Medium, High
Frequency Reference	Positive, Negative, Sample, Average, RMS
Frequency readout accuracy	-50dB to 50dB
Frequency Span Accuracy	4 Maximum
Sweep Time	Frequency
	10MHz to 6.0GHz
	Aging:±1ppm
	$\pm (\text{readout frequency} + 1\text{GHz}) \times \text{Frequency Reference} + \text{Frequency Span Accuracy} \times \text{Span}$
	±1%
	1.2ms to 1600s
	3.99ms to 1600s Zero Span

Specifications



Resolution Bandwidth		
RBW Range	10Hz to 5MHz, (1-2-3-5-10Sequence)	
RBW Accuracy	RBW ≥ 1MHz , ±10% RBW < 1MHz, ±2%	
Amplitude		
Measurement Range	DANL to +20dBm	
Input Attenuator Range	0 to 30dB, 1dB step	
Max Safe input level	Sensitivity: Low	+30dBm
	Sensitivity: Medium	0dBm
	Sensitivity: High	-20dBm
Reference Level range	-140 dBm to +20dBm -190dBm to +70dBm (Ref Level Offset :ON)	
Amplitude Accuracy	ATT set to 0 dB , input signal -5 to -30 dBm, Detector set to Positive ,Sensitivity set to Low, RBW auto-coupled, all other settings auto-coupled, 23±5°C . Half hour warm-up required.	
RBW Swiching uncertainty	±1.5dB	
Input Attenuator uncertainty	±0.3dB	
Reference Level Accuracy	±0.6dB	
	RL ≥ -60dBm , ±0.8dB	

Specifications



Input terminated, Detector set to Positive, Trace Average set to 1000, Span set to 50kHz, Reference level of -100 dBm, , all other settings auto-coupled, 23±5°C, normalized to 1 Hz RBW

Display Average Noise Level(DANL)

Sensitivity : LOW
1GHz , -129dBm/Hz (typical -132dBm/Hz)

Sensitivity : Medium
1GHz , -149dBm/Hz (typical -152dBm/Hz)

Sensitivity : High
1GHz , -166dBm/Hz (typical -168dBm/Hz)

Residual Responses

-75dBm

Input Related Responses

10M to 1.1G	<-70dBc
1.1G to 1.85G, 2.9 to 2.97	<-41dBc
1.85G to 2.9G, 2.97G to 3.11G, 3.7G to 5.6G	<-50dBc
5.6G to 5.8G	<-45dBc
3.11G to 3.70G, 5.6G-6.0G	<-39dBc

Second harmonic distortion

1.6GHz -70dBc

Third-Order Intercept (TOI)

-10dBm tones , 1MHz apart, Sensitivity LOW, Reference Level -10 dBm +15dBm

P1dB

+5dBm Norminal

Phase Noise

1GHz	-95dBc/Hz, @10kHz (typical 97dBc/Hz)	-
	-115dBc/Hz, @1MHz (typical 116dBc/Hz)	-



Preparing Today for 5G of Tomorrow



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