# *Bluetooth*® X-Series Measurement App, Multi-Touch UI

N/E/W9081EM0E

- Measure *Bluetooth* RF transmitter performance, compliant to *Bluetooth* RF test specifications 2.1+EDR/3.0/3.0+HS, *Bluetooth* 4.0/4.2 (Low Energy), *Bluetooth* 5/5.1/5.3 (higher bandwidth or longer range, AoA/AoD, LE Audio), *Bluetooth* 6.0 (Channel Sounding, High Data Throughput)

- Support Qualcomm® *Bluetooth* High Speed Link (QBHSL) format with N9081SP1E license

- Perform one-button tests with pass/fail limits per *Bluetooth* RF test specifications

- Multi-touch user interface, SCPI remote user interface, show SCPI command, and SCPI recorder

- Built-in context sensitive help

- Flexible licensing provides the option of using perpetual or time-based licenses with one or multiple signal analyzers

- Keysight supports tiered application models with N9081EM0E for UXA/PXA, E9081EM0E for MXA/EXA/VXT, and W9081EM0E for CXA. The higher tiered application models can run at the lower platforms, which means N9081EM0E can run on all platforms, E9081EM0E can run on MXA/EXA/VXT and CXA, and W9081EM0E can only run on CXA
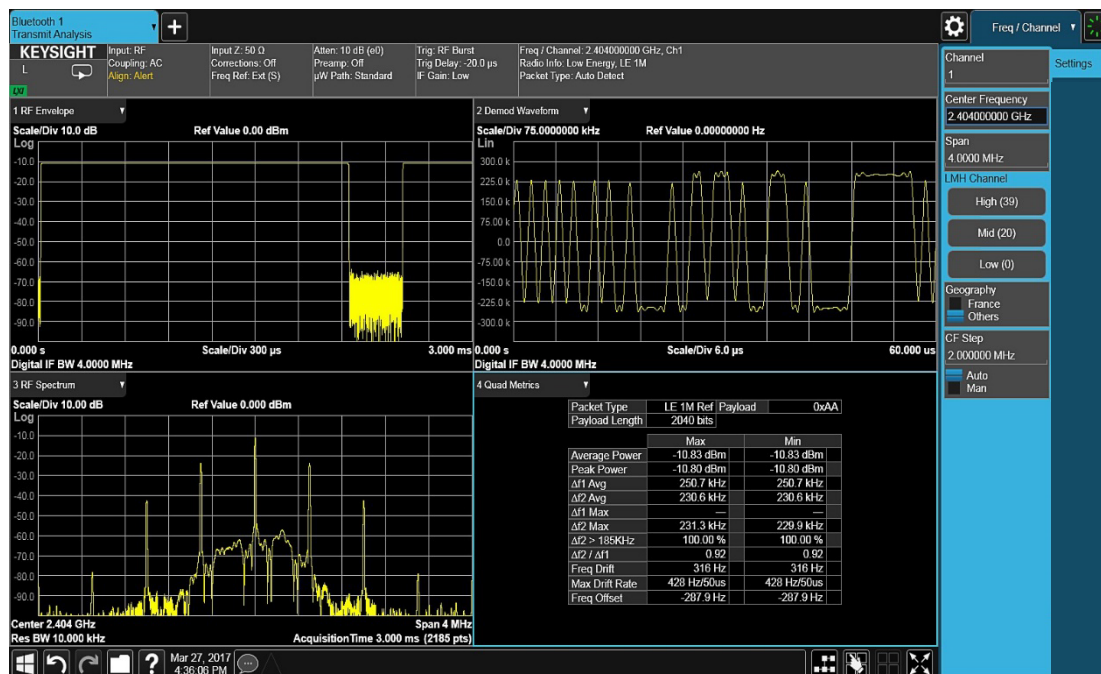
Bluetooth Measurement Application

The *Bluetooth* measurement application transforms the X-Series signal analyzers into standard-based *Bluetooth* RF transmitter testers by adding fast, one-button RF conformance measurements to help you design, evaluate, and manufacture your *Bluetooth* devices. The measurement application is standard-compliant to the *Bluetooth* Core Specification to verify your *Bluetooth* design with confidence and support manufacturing with a single application covering Basic Rate (BR), EDR (Enhanced Data Rate), Low Energy (LE) technologies (*Bluetooth* 4.0/4.2), higher bandwidth or long range (*Bluetooth* 5.0), AoA/AoD (*Bluetooth* 5.1), LE Audio (*Bluetooth* 5.3), Channel Sounding and High Data Throughput (*Bluetooth* 6.0).

X-Series measurement applications

X-Series measurement applications increase the capability and functionality of Keysight Technologies, Inc. signal analyzers to speed time to insight. They provide essential measurements for specific tasks in general-purpose, cellular communications, wireless connectivity applications, covering established standards or modulation types. Applications are supported on both benchtop and modular, with the only difference being the level of performance achieved by the hardware you select.

X-Series measurement applications can help you:

- Gain more insight into device performance with intuitive display and graphs for your application. Select from our library of over 25 different measurement applications.
- Ensure that your design meets the latest standard. Updates are made to the X-Series measurement applications as standards evolve.
- Apply the same measurement science across multiple hardware platforms for consistent measurement results over your design cycle from R&D to production.
- Choose the license structure that meets your business needs. We provide a range of license types (node-locked, transportable, floating or USB portable) and license terms (perpetual or time-based).

RF Transmitter Test

With the X-Series signal analyzers and the *Bluetooth* measurement application, you can perform the RF layer test procedure and specification (TSS/TP 4).

Standard-based RF transmitter tests

The *Bluetooth* specifications are developed and licensed by the *Bluetooth* Special Interest Group (SIG). The *Bluetooth* Test Specification document contains the Test Suite Structure (TSS) and Test Purpose (TP) to test the *Bluetooth* RF layer including Basic Rate (BR), Enhanced Data Rate (EDR), Low Energy (LE), *Bluetooth* 5, 5.1, 5.3, and 6.0 (HDT). This specification is a basis for conformance tests of *Bluetooth* devices, giving a high probability of air interface inter-operability between different manufacturer's *Bluetooth* devices.

The Keysight X-Series *Bluetooth* measurement application refers to the following *Bluetooth* RF test specifications:

- *Bluetooth* Test Specification 1.2/2.0/2.0+EDR/2.1/2.1+EDR/3.0/3.0+HS
- *Bluetooth* Low Energy RF Test Specifications: RF-PHY.TS/4.0/4.2
- *Bluetooth* 5 (higher bandwidth or longer range), 5.1 (AoA/AoD), and 5.3 (LE Audio)
- *Bluetooth* 6 (Channel Sounding, High Data Throughput)

Table 1 provides a list of tests with their test purpose identifiers and corresponding measurement applications for transmitter tests only.

Table 1. *Bluetooth* RF transmitter measurements and the corresponding measurements in N9081EM0E.

Bluetooth transmitter tests	Identifier[2]	N9081EM0E X-Series measurement application
Basic rate		
Output power	TRM/CA/01/C	Transmit analysis
Tx output spectrum –20 dB bandwidth	TRM/CA/05/C	Output spectrum bandwidth
Tx output spectrum – adjacent channel power	TRM/CA/06/C	Adjacent channel power
Modulation characteristics	TRM/CA/07/C	Transmit analysis
Initial carrier frequency tolerance	TRM/CA/08/C	Transmit analysis
Carrier frequency drift	TRM/CA/09/C	Transmit analysis
Enhanced Data Rate (EDR)		
EDR relative transmit power	TRM/CA/10/C	Transmit analysis
EDR carrier frequency stability and modulation accuracy	TRM/CA/11/C	Transmit analysis
EDR differential phase encoding	TRM/CA/12/C	Transmit analysis
EDR in-band spurious emissions	TRM/CA/13/C	EDR in-band spurious emissions
Low Energy (LE) or Ultra Low Power (ULP)		
Output power	TRM/BV-01-C	Transmit analysis
In-band emission, uncoded data at 1 Ms/s	TRM/BV-03-C	LE in-band emission
Modulation characteristics, uncoded data at 1 Ms/s	TRM/BV-05-C	Transmit analysis
Carrier frequency offset and drift, uncoded data at 1 Ms/s	TRM/BV-06-C	Transmit analysis
In-band emission at 2 Ms/s	TRM/BV-08-C	LE in-band emission
Stable modulation characteristics, uncoded data at 1 Ms/s	TRM/BV-09-C	Transmit analysis
Modulation characteristics at 2 Ms/s	TRM/BV-10-C	Transmit analysis
Stable modulation characteristics at 2 Ms/s	TRM/BV-11-C	Transmit analysis
Carrier frequency offset and drift at 2 Ms/s	TRM/BV-12-C	Transmit analysis
Modulation characteristics, LE Coded (S=8)	TRM/BV-13-C	Transmit analysis
Carrier frequency offset and drift, LE Coded (S=8)	TRM/BV-14-C	Transmit analysis
Output power, With Constant Tone Extension	TRM/BV-15-C	Transmit analysis (Channel Sounding Results)
Carrier frequency offset and drift, uncoded data at 1 Ms/s, Constant Tone Extension	TRM/BV-16-C	Transmit analysis (Channel Sounding Results)
Carrier frequency offset and drift at 2 Ms/s, Constant Tone Extension	TRM/BV-17-C	Transmit analysis (Channel Sounding Results)
Tx Power Stability, AoD transmitter at 1 Ms/s with 2 us switching slot	TRM/PS/BV-01-C	Spectrum analyzer/Swept SA
Tx Power Stability, AoD transmitter at 1 Ms/s with 1 us switching slot	TRM/PS/BV-02-C	Spectrum analyzer/Swept SA
Tx Power Stability, AoD transmitter at 2 Ms/s with 2 us switching slot	TRM/PS/BV-03-C	Spectrum analyzer/Swept SA
Tx Power Stability, AoD transmitter at 1 Ms/s with 1 us switching slot	TRM/PS/BV-04-C	Spectrum analyzer/Swept SA
Antenna switching integrity, AoD transmitter at 1 Ms/s with 2 us switching slot	TRM/ASI/BV-05-C	Spectrum analyzer/Swept SA
Antenna switching integrity, AoD transmitter at 1 Ms/s with 1 us switching slot	TRM/ASI/BV-06-C	Spectrum analyzer/Swept SA
Antenna switching integrity, AoD transmitter at 2 Ms/s with 2 us switching slot	TRM/ASI/BV-07-C	Spectrum analyzer/Swept SA
Antenna switching integrity, AoD transmitter at 1 Ms/s with 1 us switching slot	TRM/ASI/BV-08-C	Spectrum analyzer/Swept SA

1. Radio frequency Test Suite Structure (TSS) and Test Purposes (TP) system specifications
2. Identifier format is: (Test)/CA/NN/C, in which
    TRM = Transmitter test
    CA = Capability test (defines the type of testing)
    NN = Test purpose number
    C = Conformance test performed on dedicated *Bluetooth* test system
3. Reference to Bluetooth Radio Frequency Physical Layer (RF PHY) Test Suite with Revision RF-PHY.TS.5.1.1

Measurement details

All of the *Bluetooth* RF transmitter measurements as defined for basic, EDR, low energy or channel sounding in the test specifications, as well as a wide range of additional measurements and analysis tools, are available with a press of a button (Table 2). These measurements are fully remote controllable via the IEC/IEEE bus or LAN, using SCPI commands.
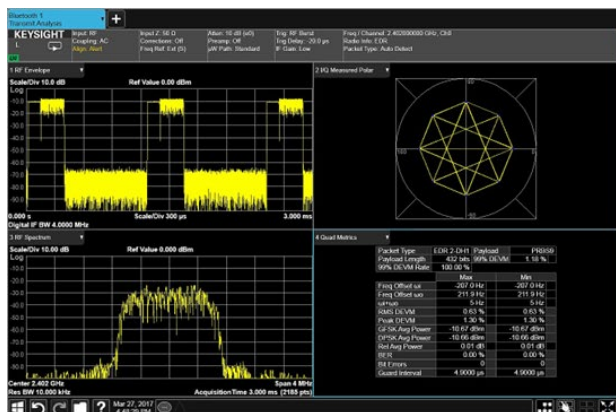

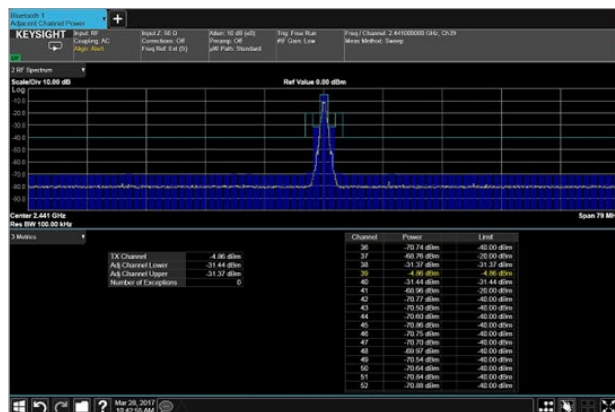**Figure 1.** Transmit analysis for EDR signal

Figure 2. Adjacent channel power for basic rate *Bluetooth* signal
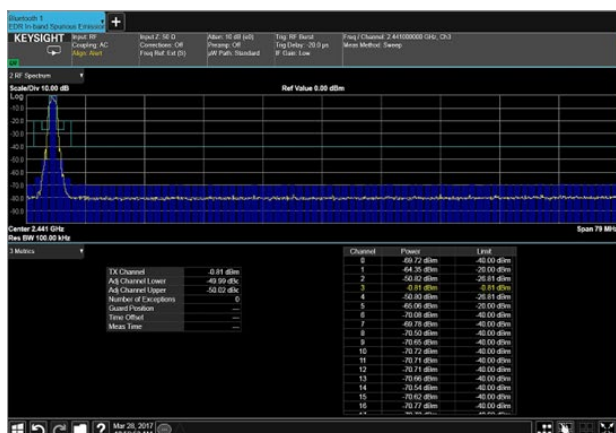

Figure 3. EDR in-band emission

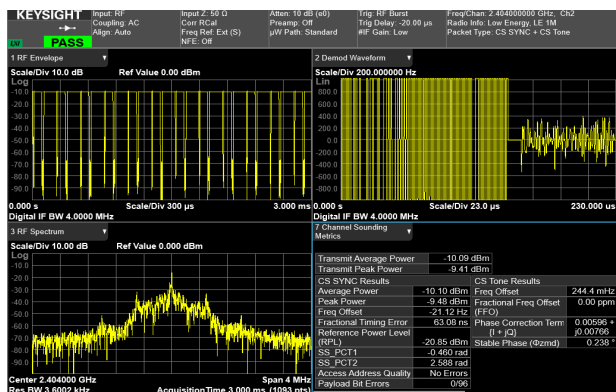**Figure 4.** Transmit analysis for Low Energy (LE) signal

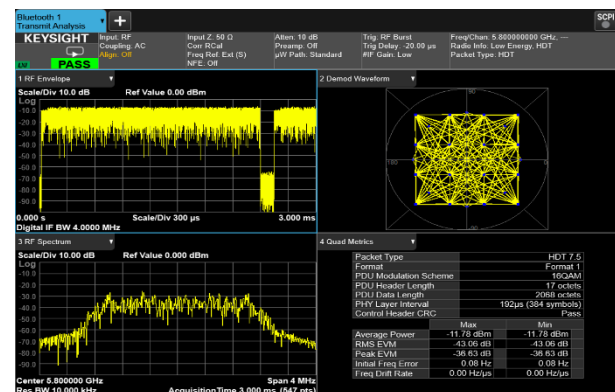**Figure 5.** Transmit analysis for BT 6.0 Channel Sounding

Figure 6. Transmit analysis for BT 6.0 HDT

Measurement details

Bluetooth technology	Basic Data Rate (BR)	Enhanced Data Rate (EDR)	Low Energy (LE)
Transmit analysis			**(Bluetooth 4.0/4.2/5/5.1/5.3/6.0)**
Output power (in time domain)			
– Peak power	●		●
– Average power	●		●
Payload (Packet Type, Payload Length, Payload)	●	●	●
Modulation characteristics	●		
– Δf1 avg (11110000)	●		●
– Δf2 avg (10101010)	●		●
– Max Δf1/ Max Δf2	●		●
– Δf2 > 115 kHz (185 kHz for BT LE)	●		●
– Δf2/Δf1 ratio	●		●
Initial carrier frequency tolerance (ICFT)	●		
Frequency offset			●
Carrier frequency drift	●		●
– Frequency drift	●		●
– Max drift rate	●[1]		●
Relative transmit power		●	
– GFSK average power		●	
– DPSK average power		●	
– Relative average power		●	
Frequency stability and modulation accuracy			
– Freq offset ωi/ω0, ωi+ω0		●	
– RMS DEVM (differential DVM)		●	
– Peak DEVM		●	
Differential phase decoding		●	
– BER/Bit Errors		●	
– 99% DEVM/99% DEVM Rate		●[1]	
EDR in-band spurious emissions			
Adjacent channel power	●		●
LE in-band emissions			●[1]
Output Spectrum BW (OBW) (– 20 dB bandwidth)	●	●	●
Channel Sounding (Transmit Average Power, Transmit Peak Power)			●[2]
Channel Sounding SYNC (Avg/Pk Power, Freq Offset, RPL, SS_PCT1, SS_PCT2, Fractional Timing Error, Access Address Quality, Payload Bit Errors)			●[2]
Channel Sounding Tone (Freq Offset, FFO, PCT, Stable Phase.)			●[2]
Bluetooth 6.0 HDT (Format, PDU Modulation Scheme, PDU Length, Control Header CRC)			●[3]
Bluetooth 6.0 HDT (Average Power, RMS EVM, Peak EVM, Initial Freq Error, Frequency Drift Rate)			●[3]

1. This measurement can support the NFE (Noise Floor Extension) function but requires the firmware above A.27.0x and N9081EM0E license version date must be above 2020.0701.
2. This measurement is based on the BT6.0 draft standard which requires the firmware above A.37.0x and N9081EM0E license version date must be above 2023.1201.
3. This measurement is based on the BT6.0 standard which requires the firmware above A.40.0x and N9081EM0E license version date must be above 2025.0101.

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Key Specifications

Definitions

- Specifications describe the performance of parameters covered by the product warranty.

- 95th percentile values indicate the breadth of the population (≈2σ) of performance tolerances expected to be met in 95% of cases with a 95% confidence. These values are not covered by the product warranty.

- Typical values are designated with the abbreviation "typ." These are performance beyond specification that 80% of the units exhibit with a 95% confidence. These values are not covered by the product warranty.

- Nominal values are designated with the abbreviation "nom." These values indicate expected performance or describe product performance that is useful in the application of the product but is not covered by the product warranty.

Note: Data subject to change

Supported devices and standard version

Device type	*Bluetooth* devices
Standard version	*Bluetooth* radio frequency system specification 1.2/2.0/2.0+EDR/2.1/2.1+EDR revision 2.1.E.0 – basic rate – enhanced data rate *Bluetooth* Low Energy RF PHY test specification (LE RF-PHY.TS/4.0/4.2) *Bluetooth* RF PHY test specification (*Bluetooth* 5, 5.1 and 5.3) *Bluetooth* Channel Sounding and Hight Data Throughput (*Bluetooth* 6.0)
Power classes	Class 1, class 2 and class 3
Radio band	*Bluetooth* basic rate and EDR system: 2.400 to 2.4835 GHz (f = 2402 +k MHz, k = 0, …, 78) *Bluetooth* low energy system: 2.400 to 2.4835 GHz (f = 2402 +kx2 MHz, k = 0, …, 39)

For a complete list of specifications refer to the appropriate specifications guide.

UXA: www.keysight.com/find/uxa_specifications

PXA: www.keysight.com/find/pxa_specifications

MXA: www.keysight.com/find/mxa_specifications

EXA: www.keysight.com/find/exa_specifications

CXA: www.keysight.com/find/cxa_specifications

Key Specifications

Supported standards	*Bluetooth* devices
Bluetooth basic rate	Revision 2.1.E.0
Bluetooth Enhanced Data Rate	Revision 2.1.E.0/3.0/3.0+HS
Bluetooth Low Energy	LE. RF-PHY.TS/4.0/4.2/5/5.1/5.3/6.0

Description	PXA	MXA	EXA	CXA
Basic rate or Low energy measurements				
Output power				
Packet type	DH1, DH3, DH5, HV3			
Payload	PRBS9, BS00, BSFF, BS0F, BS55			
Synchronization	RF Burst or Preamble			
Trigger	External, RF Burst, Periodic Timer, Free Run, Video			
Supported measurements	Average power, peak power			
Range	+30 dBm to –70 dBm			
Absolute power accuracy	± 0.20 dB (95%)	± 0.25 dB (95%)	± 0.29 dB (95%)	± 0.61 dB (95%)
Measurement floor	–70 dBm (nom)			
Modulation characteristics				
Packet type	DH1, DH3, DH5, HV3 (for Basic), Reference packet (for LE)			
Payload	BS0F, BS55			
Synchronization	Preamble			
Trigger	External, RF Burst, Periodic Timer, Free Run, Video			
Supported measurements	Min/max $\Delta f1avg$, min $\Delta f2max$ (kHz), total $\Delta f2max > \Delta f2max$ lower limit (%), min of min $\Delta f2avg$/max $\Delta f1avg$, pseudo frequency deviation ($\Delta f1$ and $\Delta f2$)			
RF input level range	+30 dBm to –70 dBm			
Deviation range	± 250 kHz (nom)			
Deviation resolution	100 Hz (nom)			
Measurement accuracy	± 100 Hz + tfa1 (nom)			
Initial carrier frequency tolerance				
Packet type	DH1, DH3, DH5, HV3 (for Basic), Reference packet (for LE)			
Payload	PRBS9, BS00, BSFF, BS0F, BS55			
Synchronization	Preamble			
Trigger	External, RF Burst, Periodic Timer, Free Run, Video			
RF input level range	+30 dBm to –70 dBm			
Measurement range	Nominal channel freq ± 100 kHz (nom)			
Measurement accuracy	± 100 Hz + tfa1 (nom)			
Carrier frequency drift				
Packet type	DH1, DH3, DH5, HV3 (for Basic), Reference packet (for LE)			
Payload	PRBS9, BS00, BSFF, BS0F, BS55			
Synchronization	Preamble			
Trigger	External, RF Burst, Periodic Timer, Free Run, Video			
RF input level range	+30 dBm to –70 dBm			
Measurement range	± 100 kHz (nom)			
Measurement accuracy	± 100 Hz + tfa1 (nom)			

Description	PXA	MXA	EXA	CXA
Basic rate or Low energy measurements				
Adjacent channel power[2] (Basic Rate)				
Packet type	DH1, DH3, DH5, HV3			
Payload	PRBS9, BS00, BSFF, BS0F, BS55			
Synchronization	None			
Trigger	External, RF Burst, Periodic Timer, Free Run, Video			
Absolute power accuracy	Dominated by the variance of measurements[4]			
Adjacent channel power (Low Power)				
Packet type	Reference packet			
Payload	PRBS9, BS00, BSFF, BS0F, BS55			
Packet length	Up to 255 octets (*Bluetooth* 4.2)			
Trigger	External, RF Burst, Periodic Timer, Free Run, Video			
Absolute power accuracy	Dominated by the variance of measurements[4]			
Packet type	+30 dBm to –70 dBm			
Payload	± 250 kHz (nom)			
Packet length	100 Hz (nom)			
Enhanced data rate (EDR) measurements				
EDR relative transmit power				
Packet type	2-DH1, 2-DH3, 2-DH5, 3-DH1, 3-DH3, 3-DH5			
Payload	PRBS9, BS00, BSFF, BS0F, BS55			
Synchronization	DPSK synchronization sequence			
Trigger	External, RF Burst, Periodic Timer, Free Run, Video			
Supported measurements	Power in GFSK header, power in PSK payload, relative power between GFSK header and PSK payload			
RF input level range	+30 dBm to –70 dBm			
Absolute power accuracy	± 0.20 dB (95%)	± 0.25 dB (95%)	± 0.29 dB (95%)	± 0.61 dB (95%)
Measurement floor	–70 dBm (nom)			
EDR modulation accuracy				
Packet type	2-DH1, 2-DH3, 2-DH5, 3-DH1, 3-DH3, 3-DH5			
Payload	PRBS9, BS00, BSFF, BS55			
Synchronization	DPSK synchronization sequence			
Trigger	External, RF Burst, Periodic Timer, Free Run, Video			
Supported measurements	rms DEVM, peak DEVM, 99% DEVM			
RF input level range	+30 dBm to –70 dBm			
Range (rms DEVM)		0 to 12%		0 to 12% (nom)
Floor		1.5%		1.6% (nom)
Accuracy	± 1.2%[5]			
EDR carrier frequency stability				
Packet type	2-DH1, 2-DH3, 2-DH5, 3-DH1, 3-DH3, 3-DH5			
Payload	PRBS9, BS00, BSFF, BS55			
Synchronization	DPSK synchronization sequence			
Trigger	External, RF Burst, Periodic Timer, Free Run, Video			
Supported measurements	Worst case initial frequency error(ωi) for all packets (carrier frequency stability), Worst case frequency error for all blocks (ωo),(ωo + ωi) for all blocks			
RF input level range	+30 dBm to –70 dBm			
Carrier frequency stability and frequency	± 100 Hz + tfa[1] (nom)			

Description	PXA	MXA	EXA	CXA
EDR in-band spurious emissions				
Packet type	2-DH1, 2-DH3, 2-DH5, 3-DH1, 3-DH3, 3-DH5			
Payload	PRBS9, BS00, BSFF, BS55			
Synchronization	DPSK synchronization sequence			
Trigger	External, RF Burst, Periodic Timer, Free Run, Video			
Measurement accuracy				
Offset freq = 1 MHz to 1.5 MHz	Dominated by the ambiguity of the measurement standards[6]			
Offset freq = other offset (2 MHz to 78 MHz)	Dominated by the variance of measurements[4]			

1. tfa = transmitter frequency × frequency reference accuracy.
2. The accuracy is for absolute power measured at 2.0 MHz offset and other offsets (offset = K MHz, K= 3,…,78).
3. The accuracy is for absolute power measured at 2.0 MHz offset and other offsets (offset = 2 MHz * K, K = 2,…,39).
4. The measurement at these offsets is usually the measurement of noise-like signals and therefore has considerable variance. For example, with 100 ms sweeping time, the standard deviation of the measurement is about 0.5 dB. In comparison, the computed uncertainties of the measurement for the case with CW interference is only ± 0.20 dB (PXA), ± 0.25 dB (MXA), ± 0.29 dB (EXA), ± 0.61 dB (CXA) (95th percentile).
5. The accuracy specification applies when the EVM to be measured is well above the measurement floor. Please refer to *Bluetooth* specification guide for N9081EM0E for more detail explanation.
6. The measurement standards call for averaging the signal across 3.5 µs apertures and reporting the highest result. For common impulsive power at these offsets, this gives a variation of result with the time location of that interference that is 0.8 dB peak-to-peak and changes with a scallop shape with a 3.5 µs period. Uncertainties in the accuracy of measuring CW-like relative power at these offsets are nominally only ± 0.03 dB (PXA), ± 0.07 dB (MXA), ± 0.09 dB (EXA), ± 0.11 dB (CXA), but observed variations of the measurement algorithm used with impulsive interference are similar to the scalloping error.

Ordering Information

Flexible licensing and configuration

Flexible licensing options enable you to balance your project's requirements. Your application software may require consistent software operation over a full program lifecycle or may require frequent updates to keep pace with fast-moving, leading-edge applications. Keysight licensing has flexible license terms and types to address your application needs. KeysightCare provides selectable software support subscription as well.

License term	Description
Perpetual	Software license can be used in perpetuity
Subscription (time-based)	Software license is time limited to a defined period, such as 12 months, 24 months or 36 months. KeysightCare Software Support is included through the license term.
Software support subscription	Allows the perpetual license holder access to Keysight technical support and all software upgrades

License type	Description
Node locked	Allows you to use the licenses on one specified instrument/computer
Transportable	Allows you to use the license on one instrument/computer at a time. You can transfer the license to another instrument/computer using the online tool, Keysight Software Manager (internet connection required)
USB portable	Allows you to use a USB portable license on one instrument/computer at a time. You can transfer the license to another instrument using a certified USB dongle (available for additional purchase, Keysight part number E8900-D10)
Floating	Networked instruments/computers can access a license from a server, one at a time. You need purchase multiple licenses for concurrent usage. Three types of floating license are available: Single Site: 1-mile radius from the server; Single Region [1]: Americas; Europe; Asia; Worldwide: export restriction identified in End User License Agreement (EULA)

1. Americas (North, Central, and South America, Canada); Europe (European Continent, Middle Eastern Europe, Africa, India); Asia (North and South Asia Pacific Countries, China, Taiwan, Japan)

Bluetooth **measurement application (N9081EM0E/E9081EM0E/W9081EM0E)**

	Software license type	Software license	KeysightCare subscription
Perpetual	Node-locked	SW1000-LIC-01	SW1000-SUP-01
	Transportable		
Time-based	Node-locked	SW1000-SUB-01	Included
	Transportable		

Try before you buy

Evaluate a full-featured version of our X-Series measurement application with our FREE trial. Redeem one 30-day trial license of each measurement application online at:
www.keysight.com/find/X-Series_apps_trial

Hardware configuration

For optimizing measurements on *Bluetooth* signals with the *Bluetooth* measurement application, Keysight recommends a minimum level of X-Series multi-touch instrument hardware functionality at each instrument performance point. Supported instruments include:

Benchtop:

UXA	N9041B[1]
UXA	N9040B/42B
PXA	N9030B
MXA	N9020B
EXA	N9010B
CXA	N9000B

PXIe:

VSA up to 6 GHz M9391A
VSA up to 50 GHz M9393A
VXT M9410A or M9411A
VXT M9415A or M9416A

Capability	Instrument option	Benefit
Analysis bandwidth	25 MHz minimum (-B25) or wider	Required: Up to full aggregated bandwidth for multiple carrier capture for LTE-Advanced TDD transmit on/off power measurement
Precision Frequency Reference	PFR	Recommended: For enhanced frequency accuracy and repeatability for lower measurement uncertainty
Electronic Attenuator	EA3	Recommended: Fast and reliable attenuation changes ideal for manufacturing without the wear associated with mechanical attenuators up to 3.6 GHz in 1 dB steps
Pre-amplifier	3.6 GHz (-P03) or higher	Recommended: For maximizing the measurement sensitivity
Fine Resolution Step attenuator	FSA	Recommended: Useful for maximizing useable dynamic range to see signals
Analog baseband I/Q inputs	BBA on PXA and MXA only	Optional: To extend measurements at baseband if required by device under test

1. Currently pulse analysis measurement application has only been qualified for UXA N9041B Input 1 Port.

Related Literature

N9081A & W9081A Bluetooth, Self-Guide Demonstration,
Literature Number 5990-6161EN

Bluetooth Measurement Fundamentals, Application Note,
Literature Number 5988-3760EN

Verifying Bluetooth Baseband Signals using Mixed Signal Oscilloscopes, Application Note AN 1333-3,
Literature Number 5988-2181EN

Keysight E4438C Signal Studio for Bluetooth, Application Note 1421,
Literature Number 5988-5417EN

Keysight Innovative Solution for Testing Bluetooth Enhanced Data Rate Products, Product Overview,
Literature Number 5989-3055EN

User's and Programmer's Reference Guide is available in the library section of the N9081EM0E product pages.

Web

Bluetooth X-Series measurement app, multi-touch UI product webpage:
www.keysight.com/find/N9081E

Hardware configurations:
www.keysight.com/find/X-Series_apps_platform

Software models and options:
www.keysight.com/find/X-Series_apps_model

X-Series measurement applications:
www.keysight.com/find/X-Series_Apps

X-Series signal analyzers:
www.keysight.com/find/X-Series

Application pages:
www.keysight.com/find/N9081EM0E

Industry pages:
www.keysight.com/find/IoT

Try before you buy!

Evaluate a full-featured version of our X-Series measurement application with our FREE trial. Redeem one 30-day trial license of each measurement application online at: www.keysight.com/find/X-Series_apps_trial

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