



XMH 2020.12.30.0

# FREQUENCY STABILITY

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

## TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Thermometer	Omega Engineering, Inc.	HH311	DUI	2021-02-02	2024-02-02
Meter - Multimeter	Fluke	77 IV	MLT	2020-10-15	2023-10-15
Spectrum Analyzer	Keysight	N9020A	R316	2021-08-19	2023-08-19
Chamber - Temperature/Humidity	Cincinnati Sub Zero (CSZ)	ZPH-8-2-SCT/AC	TBH	NCR	NCR

## TEST DESCRIPTION

The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT.

Measurements were made on the single transmit frequency as called out on the data sheets. Testing was done while the EUT was continuously operating.

The primary supply voltage was varied from 85 % to 115% of the nominal voltage while at ambient temperature. Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range of -30 ° to +50° C and at 10°C intervals.

FCC Part 27.54 defines the frequency deviation limit as follows: "The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation."

FCC Part 24.235 defines the frequency deviation limit as follows: "The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block"

RSS 133 6.3 frequency stability requirement for base stations is 1.0 ppm. In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the emission bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS Gen.

RSS-139 6.4 and RSS-170 5.2 defines frequency stability as follows: "The frequency stability shall be sufficient to ensure that the occupied/emission bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen".

Results with a frequency error of less than 1000 Hz will show the carrier to be operating within the band. The frequency stability/accuracy radio design is the same for all radio technologies and modulation types. The radio was configured for 4G LTE to show compliance.

# FREQUENCY STABILITY



XMIT 2020.12.30.0

EUT: AHFII Remote Radio Head		Work Order: NOKI0037
Serial Number: YK214000036		Date: 18-Mar-22
Customer: Nokia Solutions and Networks		Temperature: 22.6 °C
Attendees: David Le, John Rattanavong		Humidity: 23.7% RH
Project: None		Barometric Pres.: 1026 mbar
Tested by: Marty Martin	Power: 48 VDC	Job Site: TX05
TEST SPECIFICATIONS		
FCC 24E:2022		Test Method
RSS-133 Issue 6:2013+A1:2018		ANSI C63.26:2015
		RSS-133 Issue 6:2013+A1:2018
COMMENTS		
All measurement path losses were accounted for in the reference level offset including any attenuators, filters and DC blocks. The EUT temperature was stabilized at each temperature step (for a minimum of 30 minutes) prior to measurements.		
DEVIATIONS FROM TEST STANDARD		
None		
Configuration #	6	Signature <i>Marty Martin</i>
		Absolute Value Frequency Δ (Hz)
		Limit Δ (Hz)
		Result
band 25, 1930 MHz - 1995 MHz, LTE Single Carrier		
Port 1, 5 MHz Bandwidth, QPSK Modulation		
48 VDC Nominal Voltage Conditions		
-30°C Temperature Conditions		
	Mid Channel 1962.5 MHz	4.85
		1000
		Pass
-20°C Temperature Conditions		
	Mid Channel 1962.5 MHz	5.78
		1000
		Pass
-10°C Temperature Conditions		
	Mid Channel 1962.5 MHz	4.23
		1000
		Pass
0° C Temperature Conditions		
	Mid Channel 1962.5 MHz	4.30
		1000
		Pass
10° C Temperature Conditions		
	Mid Channel 1962.5 MHz	6.39
		1000
		Pass
20° C Temperature Conditions		
	Mid Channel 1962.5 MHz	3.95
		1000
		Pass
30° C Temperature Conditions		
	Mid Channel 1962.5 MHz	6.89
		1000
		Pass
40° C Temperature Conditions		
	Mid Channel 1962.5 MHz	4.12
		1000
		Pass
50° C Temperature Conditions		
	Mid Channel 1962.5 MHz	4.93
		1000
		Pass
40.8 VDC Extreme Low Voltage Conditions		
20° C Temperature Conditions		
	Mid Channel 1962.5 MHz	3.68
		1000
		Pass
55.2 VDC Extreme High Voltage Conditions		
20° C Temperature Conditions		
	Mid Channel 1962.5 MHz	3.97
		1000
		Pass

# FREQUENCY STABILITY



XMIT 2020.12.30.0

1930 MHz - 1995 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, -30°C Temperature Conditions, Mid Channel 196			
	Absolute Value	Limit	
	Frequency $\Delta$ (Hz)	$\Delta$ (Hz)	Result
	4.85	1000	Pass

**Carrier Ref Freq 1.962500000 GHz**

Carrier Ref Freq: 1.962500000 GHz  
 Trig: External1 Avg|Hold: 100 %  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB

Direction: Downlink  
 Num CC(s): 1

**Ch1 Error Summary (CC0)**

EVM	= 1.4934	%rms	at EVMWindow End
EVM Pk	= 7.9595	%	at sym 10, subcar -150
Data EVM	= 1.4881	%rms	
- 3GPP-defined QPSK EVM	= 1.4971	%rms	
- 3GPP-defined 16QAM EVM	= ---		
- 3GPP-defined 64QAM EVM	= ---		
RS EVM	= 1.7349	%rms	
Channel Power	= 39.23	dBm	
RS Tx. Power (Avg)	= 14.485	dBm	
OFDM Sym. Tx. Power	= 39.273	dBm	
RS Rx. Power (Avg)	= 14.485	dBm	
RSSI	= 39.244	dBm	
RS Rx. Quality	= -10.777	dB	
Freq Err	= 4.8542	Hz	
SyncCorr	= 99.839	%	using P-SS
Common Tracking Error	= 6.9492	%rms	
SymClk Err	= 0.01705	ppm	
Time Offset	= 86.000	usec	
IQ Offset	= -62.955	dB	
IQ Gain Imbalance	= 0.001	dB	
IQ Quad. Error	= 15.768	mdeg	
IQ Timing Skew	= 99.667	fsec	
CP Length Mode	= Normal(auto)		
Cell ID	= 5	(auto)	
Cell ID Group/Sector	= 1/2	(auto)	

MSG: Already in Single, press Restart to initiate a new sweep or sequence

1930 MHz - 1995 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, -20°C Temperature Conditions, Mid Channel 196			
	Absolute Value	Limit	
	Frequency $\Delta$ (Hz)	$\Delta$ (Hz)	Result
	5.78	1000	Pass

**Carrier Ref Freq 1.962500000 GHz**

Carrier Ref Freq: 1.962500000 GHz  
 Trig: External1 Avg|Hold: 100 %  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB

Direction: Downlink  
 Num CC(s): 1

**Ch1 Error Summary (CC0)**

EVM	= 1.4725	%rms	at EVMWindow End
EVM Pk	= 7.7584	%	at sym 10, subcar -150
Data EVM	= 1.4739	%rms	
- 3GPP-defined QPSK EVM	= 1.4821	%rms	
- 3GPP-defined 16QAM EVM	= ---		
- 3GPP-defined 64QAM EVM	= ---		
RS EVM	= 1.7177	%rms	
Channel Power	= 39.394	dBm	
RS Tx. Power (Avg)	= 14.649	dBm	
OFDM Sym. Tx. Power	= 39.438	dBm	
RS Rx. Power (Avg)	= 14.649	dBm	
RSSI	= 39.408	dBm	
RS Rx. Quality	= -10.777	dB	
Freq Err	= 5.7743	Hz	
SyncCorr	= 99.833	%	using P-SS
Common Tracking Error	= 4.9533	%rms	
SymClk Err	= 0.01058	ppm	
Time Offset	= 86.000	usec	
IQ Offset	= -62.978	dB	
IQ Gain Imbalance	= 0.001	dB	
IQ Quad. Error	= 16.963	mdeg	
IQ Timing Skew	= -11.370	psec	
CP Length Mode	= Normal(auto)		
Cell ID	= 5	(auto)	
Cell ID Group/Sector	= 1/2	(auto)	

MSG: Already in Single, press Restart to initiate a new sweep or sequence

# FREQUENCY STABILITY



XMIT 2020.12.30.0

1930 MHz - 1995 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, -10°C Temperature Conditions, Mid Channel 196			
	Absolute Value	Limit	Result
	Frequency $\Delta$ (Hz)	$\Delta$ (Hz)	
	4.23	1000	Pass

Carrier Ref Freq: 1.962500000 GHz  
 Carrier Ref Freq: 1.962500000 GHz  
 Trig: External1 AvgHold: 100 %  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB Direction: Downlink  
 Num CC(s): 1

Ch1 Error Summary (CC0)

EVM	= 1.4750	%rms	at EVMWindow End
EVM Pk	= 7.9622	%	at sym 10, subcar -150
Data EVM	= 1.4754	%rms	
- 3GPP-defined QPSK EVM	= 1.4820	%rms	
- 3GPP-defined 16QAM EVM	= ---		
- 3GPP-defined 64QAM EVM	= ---		
RS EVM	= 1.7268	%rms	
Channel Power	= 39.387	dBm	
RS Tx. Power (Avg)	= 14.644	dBm	
OFDM Sym. Tx. Power	= 39.43	dBm	
RS Rx. Power (Avg)	= 14.644	dBm	
RSSI	= 39.403	dBm	
RS Rx. Quality	= -10.775	dB	
Freq Err	= 4.2293	Hz	
SyncCorr	= 99.791	%	using P-SS
Common Tracking Error	= 4.8737	%rms	
SymClk Err	= 0.01478	ppm	
Time Offset	= 86.000	usec	
IQ Offset	= -62.979	dB	
IQ Gain Imbalance	= 0.001	dB	
IQ Quad. Error	= 14.417	mdeg	
IQ Timing Skew	= -7.3148	psec	
CP Length Mode	= Normal(auto)		
Cell ID	= 5	(auto)	
Cell ID Group/Sector	= 1/2	(auto)	

MSG: Already in Single, press Restart to initiate a new sweep or sequence

1930 MHz - 1995 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, 0° C Temperature Conditions, Mid Channel 196			
	Absolute Value	Limit	Result
	Frequency $\Delta$ (Hz)	$\Delta$ (Hz)	
	4.3	1000	Pass

Carrier Ref Freq: 1.962500000 GHz  
 Carrier Ref Freq: 1.962500000 GHz  
 Trig: External1 AvgHold: 100 %  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB Direction: Downlink  
 Num CC(s): 1

Ch1 Error Summary (CC0)

EVM	= 1.4750	%rms	at EVMWindow End
EVM Pk	= 7.8319	%	at sym 10, subcar -150
Data EVM	= 1.4786	%rms	
- 3GPP-defined QPSK EVM	= 1.4863	%rms	
- 3GPP-defined 16QAM EVM	= ---		
- 3GPP-defined 64QAM EVM	= ---		
RS EVM	= 1.7116	%rms	
Channel Power	= 39.323	dBm	
RS Tx. Power (Avg)	= 14.58	dBm	
OFDM Sym. Tx. Power	= 39.364	dBm	
RS Rx. Power (Avg)	= 14.58	dBm	
RSSI	= 39.337	dBm	
RS Rx. Quality	= -10.777	dB	
Freq Err	= 4.2992	Hz	
SyncCorr	= 99.795	%	using P-SS
Common Tracking Error	= 5.2841	%rms	
SymClk Err	= 0.01527	ppm	
Time Offset	= 86.000	usec	
IQ Offset	= -63.143	dB	
IQ Gain Imbalance	= 0.001	dB	
IQ Quad. Error	= 11.119	mdeg	
IQ Timing Skew	= -12.075	psec	
CP Length Mode	= Normal(auto)		
Cell ID	= 5	(auto)	
Cell ID Group/Sector	= 1/2	(auto)	

MSG: Already in Single, press Restart to initiate a new sweep or sequence

# FREQUENCY STABILITY



XMIT 2020.12.30.0

1930 MHz - 1995 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, 10° C Temperature Conditions, Mid Channel 196						
		Absolute Value	Limit			
		Frequency Δ (Hz)	Δ (Hz)	Result		
		6.39	1000	Pass		

Carrier Ref Freq: 1.962500000 GHz  
 Trig: External1 Avg/Hold: 100 % Direction: Downlink  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB Num CC(s): 1

Ch1 Error Summary (CC0)

EVM	= 1.5040	%rms	at EVMWindow End
EVM Pk	= 7.6522	%	at sym 10, subcar -150
Data EVM	= 1.4977	%rms	
- 3GPP-defined QPSK EVM	= 1.5058	%rms	
- 3GPP-defined 16QAM EVM	= --		
- 3GPP-defined 64QAM EVM	= --		
RS EVM	= 1.7169	%rms	
Channel Power	= 39.38	dBm	
RS Tx. Power (Avg)	= 14.635	dBm	
OFDM Sym. Tx. Power	= 39.422	dBm	
RS Rx. Power (Avg)	= 14.635	dBm	
RSSI	= 39.394	dBm	
RS Rx. Quality	= -10.775	dB	
Freq Err	= 6.3945	Hz	
SyncCorr	= 99.789	%	using P-SS
Common Tracking Error	= 5.7007	%rms	
SymClk Err	= 0.01485	ppm	
Time Offset	= 86.000	usec	
IQ Offset	= -63.051	dB	
IQ Gain Imbalance	= 0.001	dB	
IQ Quad. Error	= 13.027	mdeg	
IQ Timing Skew	= -13.046	psec	
CP Length Mode	= Normal(auto)		
Cell ID	= 5	(auto)	
Cell ID Group/Sector	= 1/2	(auto)	

MSG [i] Already in Single, press Restart to initiate a new sweep or sequence STATUS

1930 MHz - 1995 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, 20° C Temperature Conditions, Mid Channel 196						
		Absolute Value	Limit			
		Frequency Δ (Hz)	Δ (Hz)	Result		
		3.95	1000	Pass		

Carrier Ref Freq: 1.962500000 GHz  
 Trig: External1 Avg/Hold: 100 % Direction: Downlink  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB Num CC(s): 1

Ch1 Error Summary (CC0)

EVM	= 1.4539	%rms	at EVMWindow End
EVM Pk	= 7.9847	%	at sym 15, subcar 150
Data EVM	= 1.4536	%rms	
- 3GPP-defined QPSK EVM	= 1.4604	%rms	
- 3GPP-defined 16QAM EVM	= --		
- 3GPP-defined 64QAM EVM	= --		
RS EVM	= 1.6881	%rms	
Channel Power	= 39.417	dBm	
RS Tx. Power (Avg)	= 14.671	dBm	
OFDM Sym. Tx. Power	= 39.455	dBm	
RS Rx. Power (Avg)	= 14.671	dBm	
RSSI	= 39.43	dBm	
RS Rx. Quality	= -10.776	dB	
Freq Err	= 3.9515	Hz	
SyncCorr	= 99.872	%	using P-SS
Common Tracking Error	= 4.9842	%rms	
SymClk Err	= 0.01914	ppm	
Time Offset	= 85.999	usec	
IQ Offset	= -63.031	dB	
IQ Gain Imbalance	= 0.001	dB	
IQ Quad. Error	= 17.934	mdeg	
IQ Timing Skew	= -4.6255	psec	
CP Length Mode	= Normal(auto)		
Cell ID	= 5	(auto)	
Cell ID Group/Sector	= 1/2	(auto)	

MSG [i] Already in Single, press Restart to initiate a new sweep or sequence STATUS

# FREQUENCY STABILITY



XMIT 2020.12.30.0

1930 MHz - 1995 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, 30° C Temperature Conditions, Mid Channel 196						
		Absolute Value	Limit			
		Frequency Δ (Hz)	Δ (Hz)	Result		
		6.89	1000	Pass		

Carrier Ref Freq: 1.962500000 GHz  
 Trig: External1 AvgHold: 100 % Direction: Downlink  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB Num CC(s): 1

Ch1 Error Summary (CC0)

EVM	= 1.5300	%rms	at EVMWindow End
EVM Pk	= 7.6797	%	at sym 10, subcar -150
Data EVM	= 1.5163	%rms	
- 3GPP-defined QPSK EVM	= 1.5225	%rms	
- 3GPP-defined 16QAM EVM	= ---		
- 3GPP-defined 64QAM EVM	= ---		
RS EVM	= 1.7598	%rms	
Channel Power	= 39.312	dBm	
RS Tx. Power (Avg)	= 14.571	dBm	
OFDM Sym. Tx. Power	= 39.352	dBm	
RS Rx. Power (Avg)	= 14.571	dBm	
RSSI	= 39.329	dBm	
RS Rx. Quality	= -10.776	dB	
Freq Err	= 6.8875	Hz	
SyncCorr	= 99.834	%	using P-SS
Common Tracking Error	= 8.9350	%rms	
SymClk Err	= 0.01402	ppm	
Time Offset	= 86.000	usec	
IQ Offset	= -63.077	dB	
IQ Gain Imbalance	= 0.001	dB	
IQ Quad. Error	= 11.277	mdeg	
IQ Timing Skew	= -12.506	psec	
CP Length Mode	= Normal(auto)		
Cell ID	= 5	(auto)	
Cell ID Group/Sector	= 1/2	(auto)	

MSG: Already in Single, press Restart to initiate a new sweep or sequence

1930 MHz - 1995 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, 40° C Temperature Conditions, Mid Channel 196						
		Absolute Value	Limit			
		Frequency Δ (Hz)	Δ (Hz)	Result		
		4.12	1000	Pass		

Carrier Ref Freq: 1.962500000 GHz  
 Trig: External1 AvgHold: 100 % Direction: Downlink  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB Num CC(s): 1

Ch1 Error Summary (CC0)

EVM	= 1.4845	%rms	at EVMWindow End
EVM Pk	= 7.9857	%	at sym 10, subcar -150
Data EVM	= 1.4807	%rms	
- 3GPP-defined QPSK EVM	= 1.4888	%rms	
- 3GPP-defined 16QAM EVM	= ---		
- 3GPP-defined 64QAM EVM	= ---		
RS EVM	= 1.7300	%rms	
Channel Power	= 39.236	dBm	
RS Tx. Power (Avg)	= 14.496	dBm	
OFDM Sym. Tx. Power	= 39.282	dBm	
RS Rx. Power (Avg)	= 14.496	dBm	
RSSI	= 39.254	dBm	
RS Rx. Quality	= -10.777	dB	
Freq Err	= 4.1247	Hz	
SyncCorr	= 99.831	%	using P-SS
Common Tracking Error	= 4.7840	%rms	
SymClk Err	= 0.01589	ppm	
Time Offset	= 86.000	usec	
IQ Offset	= -62.96	dB	
IQ Gain Imbalance	= 0.001	dB	
IQ Quad. Error	= 15.181	mdeg	
IQ Timing Skew	= -9.9831	psec	
CP Length Mode	= Normal(auto)		
Cell ID	= 5	(auto)	
Cell ID Group/Sector	= 1/2	(auto)	

MSG: Already in Single, press Restart to initiate a new sweep or sequence

# FREQUENCY STABILITY



XMIT 2020.12.30.0

1930 MHz - 1995 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, 50° C Temperature Conditions, Mid Channel 196			
	Absolute Value	Limit	
	Frequency $\Delta$ (Hz)	$\Delta$ (Hz)	Result
	4.93	1000	Pass

Carrier Ref Freq: 1.962500000 GHz  
 Trig: External1 AvgJHold: 100 %  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB Direction: Downlink  
 Num CC(s): 1

Ch1 Error Summary (CC0)

EVM	= 1.4995	%rms	at EVMWindow End
EVM Pk	= 7.8791	%	at sym 10, subcar -150
Data EVM	= 1.4950	%rms	
- 3GPP-defined QPSK EVM	= 1.4984	%rms	
- 3GPP-defined 16QAM EVM	= ---		
- 3GPP-defined 64QAM EVM	= ---		
RS EVM	= 1.7383	%rms	
Channel Power	= 39.301	dBm	
RS Tx. Power (Avg)	= 14.557	dBm	
OFDM Sym. Tx. Power	= 39.342	dBm	
RS Rx. Power (Avg)	= 14.557	dBm	
RSSI	= 39.315	dBm	
RS Rx. Quality	= -10.776	dB	
Freq Err	= 4.9323	Hz	
SyncCorr	= 99.833	%	using P-SS
Common Tracking Error	= 5.9226	%rms	
SymClk Err	= 0.02546	ppm	
Time Offset	= 86.000	usec	
IQ Offset	= -62.994	dB	
IQ Gain Imbalance	= 0.001	dB	
IQ Quad. Error	= 16.740	mdeg	
IQ Timing Skew	= -9.5274	psec	
CP Length Mode	= Normal(auto)		
Cell ID	= 5	(auto)	
Cell ID Group/Sector	= 1/2	(auto)	

MSG: Already in Single, press Restart to initiate a new sweep or sequence

30 MHz - 1995 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 40.8 VDC Extreme Low Voltage Conditions, 20° C Temperature Conditions, Mid Channel			
	Absolute Value	Limit	
	Frequency $\Delta$ (Hz)	$\Delta$ (Hz)	Result
	3.68	1000	Pass

Carrier Ref Freq: 1.962500000 GHz  
 Trig: External1 AvgJHold: 100 %  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB Direction: Downlink  
 Num CC(s): 1

Ch1 Error Summary (CC0)

EVM	= 1.4702	%rms	at EVMWindow End
EVM Pk	= 7.7525	%	at sym 15, subcar 150
Data EVM	= 1.4684	%rms	
- 3GPP-defined QPSK EVM	= 1.4726	%rms	
- 3GPP-defined 16QAM EVM	= ---		
- 3GPP-defined 64QAM EVM	= ---		
RS EVM	= 1.6915	%rms	
Channel Power	= 39.418	dBm	
RS Tx. Power (Avg)	= 14.682	dBm	
OFDM Sym. Tx. Power	= 39.468	dBm	
RS Rx. Power (Avg)	= 14.682	dBm	
RSSI	= 39.441	dBm	
RS Rx. Quality	= -10.775	dB	
Freq Err	= 3.6789	Hz	
SyncCorr	= 99.873	%	using P-SS
Common Tracking Error	= 4.4768	%rms	
SymClk Err	= 0.01410	ppm	
Time Offset	= 85.999	usec	
IQ Offset	= -63.018	dB	
IQ Gain Imbalance	= 0.001	dB	
IQ Quad. Error	= 14.663	mdeg	
IQ Timing Skew	= -9.0442	psec	
CP Length Mode	= Normal(auto)		
Cell ID	= 5	(auto)	
Cell ID Group/Sector	= 1/2	(auto)	

MSG: Already in Single, press Restart to initiate a new sweep or sequence

# FREQUENCY STABILITY



XMIT 2020.12.30.0

30 MHz - 1995 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 55.2 VDC Extreme High Voltage Conditions, 20° C Temperature Conditions, Mid Channel

	Absolute Value	Limit	Result
	Frequency $\Delta$ (Hz)	$\Delta$ (Hz)	
	3.97	1000	Pass

Keysight LTE & LTE-A FDD - Modulation Analysis

Carrier Ref Freq: 1.962500000 GHz

Carrier Ref Freq: 1.962500000 GHz  
 Trig: External1  
 #Atten: 32 dB (Elec 16)

Avg/Hold: 100 %  
 Ext Gain: -41.60 dB

Direction: Downlink  
 Num CC(s): 1

03:20:13 AM Mar 18, 2022

Ch1 Error Summary (CC0)

EVM	= 1.4506	%rms	at EVMWindow End
EVM Pk	= 7.8812	%	at sym 15, subcar 150
Data EVM	= 1.4496	%rms	
- 3GPP-defined QPSK EVM	= 1.4584	%rms	
- 3GPP-defined 16QAM EVM	= ---		
- 3GPP-defined 64QAM EVM	= ---		
RS EVM	= 1.6917	%rms	
Channel Power	= 39.472	dBm	
RS Tx. Power (Avg)	= 14.728	dBm	
OFDM Sym. Tx. Power	= 39.513	dBm	
RS Rx. Power (Avg)	= 14.728	dBm	
RSSI	= 39.488	dBm	
RS Rx. Quality	= -10.776	dB	
Freq Err	= 3.9660	Hz	
SyncCorr	= 99.872	%	using P-SS
Common Tracking Error	= 4.7413	%rms	
SymClk Err	= 0.01713	ppm	
Time Offset	= 85.999	usec	
IQ Offset	= -63.03	dB	
IQ Gain Imbalance	= 0.001	dB	
IQ Quad. Error	= 15.595	mdeg	
IQ Timing Skew	= -13.492	psec	
CP Length Mode	= Normal(auto)		
Cell ID	= 5	(auto)	
Cell ID Group/Sector	= 1/2	(auto)	

MSG: Already in Single, press Restart to initiate a new sweep or sequence

STATUS



# FREQUENCY STABILITY



XMIT 2020.12.30.0

EUT: AHFII Remote Radio Head		Work Order: NOKI0037		
Serial Number: YK214000036		Date: 18-Mar-22		
Customer: Nokia Solutions and Networks		Temperature: 22.6 °C		
Attendees: David Le, John Rattanavong		Humidity: 23.7% RH		
Project: None		Barometric Pres.: 1026 mbar		
Tested by: Marty Martin		Power: 48 VDC		
Job Site: TX05		Test Method		
TEST SPECIFICATIONS		FCC 27:2022		
RSS-139 Issue 3:2015		ANSI C63.26:2015		
RSS-170 Issue 3:2015		RSS-139 Issue 3:2015		
RSS-170 Issue 3:2015		RSS-170 Issue 3:2015		
COMMENTS				
All measurement path losses were accounted for in the reference level offset including any attenuators, filters and DC blocks. The EUT temperature was stabilized at each temperature step (for a minimum of 30 minutes) prior to measurements.				
DEVIATIONS FROM TEST STANDARD				
None				
Configuration #	6	Signature <i>Marty Martin</i>		
		Absolute Value Frequency Δ (Hz)	Limit Δ (Hz)	Result
Band 66, 2110 MHz - 2200 MHz, LTE Single Carrier				
Port 1, 5 MHz Bandwidth, QPSK Modulation				
48 VDC Nominal Voltage Conditions				
-30°C Temperature Conditions				
	Mid CHannel 2155 MHz	5.62	1000	Pass
-20°C Temperature Conditions				
	Mid CHannel 2155 MHz	6.55	1000	Pass
-10°C Temperature Conditions				
	Mid CHannel 2155 MHz	5.83	1000	Pass
0° C Temperature Conditions				
	Mid CHannel 2155 MHz	5.68	1000	Pass
10° C Temperature Conditions				
	Mid CHannel 2155 MHz	6.05	1000	Pass
20° C Temperature Conditions				
	Mid CHannel 2155 MHz	5.80	1000	Pass
30° C Temperature Conditions				
	Mid CHannel 2155 MHz	5.33	1000	Pass
40° C Temperature Conditions				
	Mid CHannel 2155 MHz	5.33	1000	Pass
50° C Temperature Conditions				
	Mid CHannel 2155 MHz	5.64	1000	Pass
40.8 VDC Extreme Low Voltage Conditions				
20° C Temperature Conditions				
	Mid CHannel 2155 MHz	5.08	1000	Pass
55.2 VDC Extreme High Voltage Conditions				
20° C Temperature Conditions				
	Mid CHannel 2155 MHz	3.70	1000	Pass

# FREQUENCY STABILITY



MM 2023.12.20.5

Band 66, 2110 MHz - 2200 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, -30°C Temperature Conditions, Mid Channel 2155 MHz			
	Absolute Value	Limit	Result
	Frequency Δ (Hz)	Δ (Hz)	
	5.62	1000	Pass

Carrier Ref Freq: 2.155000000 GHz  
 Trig: External1 AvgHold: 100 % Direction: Downlink  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB Num CC(s): 1

**Ch1 Error Summary (CC0)**

EVM	= 1.6036	%rms	at EVMWindow End
EVM Pk	= 8.1003	%	at sym 25, subcar -85
Data EVM	= 1.6190	%rms	
- 3GPP-defined QPSK EVM	= 1.6349	%rms	
- 3GPP-defined 16QAM EVM	= ---		
- 3GPP-defined 64QAM EVM	= ---		
RS EVM	= 1.5561	%rms	
Channel Power	= 39.262	dBm	
RS Tx. Power (Avg)	= 14.506	dBm	
OFDM Sym. Tx. Power	= 39.287	dBm	
RS Rx. Power (Avg)	= 14.506	dBm	
RSSI	= 39.265	dBm	
RS Rx. Quality	= -10.772	dB	
Freq Err	= 5.6199	Hz	
SyncCorr	= 99.914	%	using P-SS
Common Tracking Error	= 9.6291	%rms	
SymClk Err	= 0.01124	ppm	
Time Offset	= 86.012	usec	
IQ Offset	= -62.345	dB	
IQ Gain Imbalance	= -0.007	dB	
IQ Quad. Error	= 31.473	mdeg	
IQ Timing Skew	= 31.758	psec	
CP Length Mode	= Normal(auto)		
Cell ID	= 6	(auto)	
Cell ID Group/Sector	= 2/1	(auto)	

MSG: Already in Single, press Restart to initiate a new sweep or sequence

Band 66, 2110 MHz - 2200 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, -20°C Temperature Conditions, Mid Channel 2155 MHz			
	Absolute Value	Limit	Result
	Frequency Δ (Hz)	Δ (Hz)	
	6.55	1000	Pass

Carrier Ref Freq: 2.155000000 GHz  
 Trig: External1 AvgHold: 100 % Direction: Downlink  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB Num CC(s): 1

**Ch1 Error Summary (CC0)**

EVM	= 1.5873	%rms	at EVMWindow End
EVM Pk	= 7.6145	%	at sym 33, subcar 149
Data EVM	= 1.6087	%rms	
- 3GPP-defined QPSK EVM	= 1.6224	%rms	
- 3GPP-defined 16QAM EVM	= ---		
- 3GPP-defined 64QAM EVM	= ---		
RS EVM	= 1.5369	%rms	
Channel Power	= 39.392	dBm	
RS Tx. Power (Avg)	= 14.639	dBm	
OFDM Sym. Tx. Power	= 39.413	dBm	
RS Rx. Power (Avg)	= 14.639	dBm	
RSSI	= 39.395	dBm	
RS Rx. Quality	= -10.775	dB	
Freq Err	= 6.5539	Hz	
SyncCorr	= 99.908	%	using P-SS
Common Tracking Error	= 5.9885	%rms	
SymClk Err	= 0.01090	ppm	
Time Offset	= 86.012	usec	
IQ Offset	= -62.445	dB	
IQ Gain Imbalance	= -0.007	dB	
IQ Quad. Error	= 31.439	mdeg	
IQ Timing Skew	= 26.390	psec	
CP Length Mode	= Normal(auto)		
Cell ID	= 6	(auto)	
Cell ID Group/Sector	= 2/1	(auto)	

MSG: Already in Single, press Restart to initiate a new sweep or sequence

# FREQUENCY STABILITY



XM 2021.12.30.8

Band 66, 2110 MHz - 2200 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, -10°C Temperature Conditions, Mid Channel 2155 MHz		
Absolute Value	Limit	Result
Frequency Δ (Hz)	Δ (Hz)	
5.83	1000	Pass

Carrier Ref Freq: 2.155000000 GHz  
 Trig: External1 AvgHold: 100 % Direction: Downlink  
 #Aver: 32 dB (Elec 16) Ext Gain: -41.69 dB Num CC(s): 1

Ch1 Error Summary (CC0)

EVM	= 1.6155	%rms	at EVMWindow End
EVM Pk	= 7.9762	%	at sym 33, subcar 149
Data EVM	= 1.6337	%rms	
- 3GPP-defined QPSK EVM	= 1.6504	%rms	
- 3GPP-defined 16QAM EVM	= ---		
- 3GPP-defined 64QAM EVM	= ---		
RS EVM	= 1.5564	%rms	
Channel Power	= 39.461	dBm	
RS Tx. Power (Avg)	= 14.705	dBm	
OFDM Sym. Tx. Power	= 39.481	dBm	
RS Rx. Power (Avg)	= 14.705	dBm	
RSSI	= -39.461	dBm	
RS Rx. Quality	= -10.775	dB	
Freq Err	= 5.8275	Hz	
SyncCorr	= 99.889	%	using P-SS
Common Tracking Error	= 7.1246	%rms	
SymClk Err	= 0.01070	ppm	
Time Offset	= 86.012	usec	
IQ Offset	= -82.405	dB	
IQ Gain Imbalance	= -0.007	dB	
IQ Quad. Error	= 28.917	mdeg	
IQ Timing Skew	= 31.847	psec	
CP Length Mode	= Normal(auto)		
Cell ID	= 6	(auto)	
Cell ID Group/Sector	= 2/0	(auto)	

msd: Already in Single, press Restart to initiate a new sweep or sequence. STATUS:

Band 66, 2110 MHz - 2200 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, 0° C Temperature Conditions, Mid Channel 2155 MHz		
Absolute Value	Limit	Result
Frequency Δ (Hz)	Δ (Hz)	
5.68	1000	Pass

Carrier Ref Freq: 2.155000000 GHz  
 Trig: External1 AvgHold: 100 % Direction: Downlink  
 #Aver: 32 dB (Elec 16) Ext Gain: -41.69 dB Num CC(s): 1

Ch1 Error Summary (CC0)

EVM	= 1.6124	%rms	at EVMWindow End
EVM Pk	= 7.8715	%	at sym 25, subcar 46
Data EVM	= 1.6308	%rms	
- 3GPP-defined QPSK EVM	= 1.6481	%rms	
- 3GPP-defined 16QAM EVM	= ---		
- 3GPP-defined 64QAM EVM	= ---		
RS EVM	= 1.5400	%rms	
Channel Power	= 39.444	dBm	
RS Tx. Power (Avg)	= 14.692	dBm	
OFDM Sym. Tx. Power	= 39.467	dBm	
RS Rx. Power (Avg)	= 14.692	dBm	
RSSI	= 39.447	dBm	
RS Rx. Quality	= -10.773	dB	
Freq Err	= 5.6822	Hz	
SyncCorr	= 99.885	%	using P-SS
Common Tracking Error	= 7.8426	%rms	
SymClk Err	= 0.01226	ppm	
Time Offset	= 86.012	usec	
IQ Offset	= -82.381	dB	
IQ Gain Imbalance	= -0.007	dB	
IQ Quad. Error	= 39.757	mdeg	
IQ Timing Skew	= 41.932	psec	
CP Length Mode	= Normal(auto)		
Cell ID	= 6	(auto)	
Cell ID Group/Sector	= 2/0	(auto)	

msd: Already in Single, press Restart to initiate a new sweep or sequence. STATUS:

# FREQUENCY STABILITY



NM 2020 12 20 6

Band 66, 2110 MHz - 2200 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, 10° C Temperature Conditions, Mid Channel 2155 MHz		
Absolute Value	Limit	Result
Frequency Δ (Hz)	Δ (Hz)	
6.05	1000	Pass

**Carrier Ref Freq 2.155000000 GHz**

Carrier Ref Freq: 2.155000000 GHz  
 Trig: External1 AvgHold: 100 % Direction: Downlink  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB Num CC(s): 1

**Ch1 Error Summary (CC0)**

- EVM = 1.5823 %rms at EVMWindow End
- EVM Pk = 7.7306 % at sym 25, subcar 77
- Data EVM = 1.5967 %rms
- 3GPP-defined QPSK EVM = 1.6136 %rms
- 3GPP-defined 16QAM EVM = ---
- 3GPP-defined 64QAM EVM = ---
- RS EVM = 1.5389 %rms
- Channel Power = 39.517 dBm
- RS Tx Power (Avg) = 14.784 dBm
- OFDM Sym Tx Power = 39.537 dBm
- RS Rx Power (Avg) = 14.784 dBm
- RSSI = 39.62 dBm
- RS Rx Quality = -10.774 dB
- Freq Err = 6.0531 Hz
- SyncCorr = 99.888 % using P-SS
- Common Tracking Error = 6.7405 %rms
- SymClk Err = 0.01132 ppm
- Time Offset = 88.012 usec
- IQ Offset = -82.454 dB
- IQ Gain Imbalance = -0.007 dB
- IQ Quad Error = 26.689 mdeg
- IQ Timing Skew = 29.721 psec
- CP Length Mode = Normal(auto)
- Cell ID = 6 (auto)
- Cell ID Group/Sector = 2/0 (auto)

Already in Single, press Restart to initiate a new sweep or sequence

Band 66, 2110 MHz - 2200 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, 20° C Temperature Conditions, Mid Channel 2155 MHz		
Absolute Value	Limit	Result
Frequency Δ (Hz)	Δ (Hz)	
5.8	1000	Pass

**Carrier Ref Freq 2.155000000 GHz**

Carrier Ref Freq: 2.155000000 GHz  
 Trig: External1 AvgHold: 100 % Direction: Downlink  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB Num CC(s): 1

**Ch1 Error Summary (CC0)**

- EVM = 1.5753 %rms at EVMWindow End
- EVM Pk = 7.6928 % at sym 33, subcar 149
- Data EVM = 1.5935 %rms
- 3GPP-defined QPSK EVM = 1.6099 %rms
- 3GPP-defined 16QAM EVM = ---
- 3GPP-defined 64QAM EVM = ---
- RS EVM = 1.4977 %rms
- Channel Power = 39.543 dBm
- RS Tx Power (Avg) = 14.787 dBm
- OFDM Sym Tx Power = 39.582 dBm
- RS Rx Power (Avg) = 14.797 dBm
- RSSI = 39.542 dBm
- RS Rx Quality = -10.774 dB
- Freq Err = 5.7979 Hz
- SyncCorr = 99.923 % using P-SS
- Common Tracking Error = 5.9758 %rms
- SymClk Err = 0.00847 ppm
- Time Offset = 89.011 usec
- IQ Offset = -82.542 dB
- IQ Gain Imbalance = -0.007 dB
- IQ Quad Error = 31.737 mdeg
- IQ Timing Skew = 27.985 psec
- CP Length Mode = Normal(auto)
- Cell ID = 6 (auto)
- Cell ID Group/Sector = 2/0 (auto)

Already in Single, press Restart to initiate a new sweep or sequence

# FREQUENCY STABILITY



XMM 2020.12.30.6

Band 66, 2110 MHz - 2200 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, 30° C Temperature Conditions, Mid Channel 2155 MHz		
Absolute Value	Limit	Result
Frequency $\Delta$ (Hz)	$\Delta$ (Hz)	
5.33	1000	Pass

Carrier Ref Freq: 2.155000000 GHz  
 Trig: External1 AvgHold: 100 % Direction: Downlink  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB Num CC(s): 1

Ch1 Error Summary (CC0)

- EVM = 1.5825 %rms at EVMWindow End
- EVM Pk = 7.8854 % at sym 25, subcar -85
- Data EVM = 1.5972 %rms
- 3GPP-defined QPSK EVM = 1.6123 %rms
- 3GPP-defined 16QAM EVM = ---
- 3GPP-defined 64QAM EVM = ---
- RS EVM = 1.5473 %rms
- Channel Power = 39.403 dBm
- RS Tx. Power (Avg) = 14.644 dBm
- OFDM Sym. Tx. Power = 39.422 dBm
- RS Rx. Power (Avg) = 14.644 dBm
- RSSI = -39.401 dBm
- RS Rx. Quality = -10.774 dB
- Freq Err = 5.3312 Hz
- SyncCorr = 99.907 % using P-SS
- Common Tracking Error = 7.0590 %rms
- SymClk Err = 0.01476 ppm
- Time Offset = 86.012 usec
- IQ Offset = -62.443 dB
- IQ Gain Imbalance = -0.007 dB
- IQ Quad. Error = 32.011 mdeg
- IQ Timing Skew = 29.800 psec
- CP Length Mode = Normal(auto)
- Cell ID = 6 (auto)
- Cell ID Group/Sector = 2/0 (auto)

Already in Single, press Restart to initiate a new sweep or sequence.

Band 66, 2110 MHz - 2200 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, 40° C Temperature Conditions, Mid Channel 2155 MHz		
Absolute Value	Limit	Result
Frequency $\Delta$ (Hz)	$\Delta$ (Hz)	
5.33	1000	Pass

Carrier Ref Freq: 2.155000000 GHz  
 Trig: External1 AvgHold: 100 % Direction: Downlink  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB Num CC(s): 1

Ch1 Error Summary (CC0)

- EVM = 1.5825 %rms at EVMWindow End
- EVM Pk = 7.8854 % at sym 25, subcar -85
- Data EVM = 1.5972 %rms
- 3GPP-defined QPSK EVM = 1.6123 %rms
- 3GPP-defined 16QAM EVM = ---
- 3GPP-defined 64QAM EVM = ---
- RS EVM = 1.5473 %rms
- Channel Power = 39.403 dBm
- RS Tx. Power (Avg) = 14.644 dBm
- OFDM Sym. Tx. Power = 39.422 dBm
- RS Rx. Power (Avg) = 14.644 dBm
- RSSI = -39.401 dBm
- RS Rx. Quality = -10.774 dB
- Freq Err = 5.3312 Hz
- SyncCorr = 99.907 % using P-SS
- Common Tracking Error = 7.0590 %rms
- SymClk Err = 0.01476 ppm
- Time Offset = 86.012 usec
- IQ Offset = -62.443 dB
- IQ Gain Imbalance = -0.007 dB
- IQ Quad. Error = 32.011 mdeg
- IQ Timing Skew = 29.800 psec
- CP Length Mode = Normal(auto)
- Cell ID = 6 (auto)
- Cell ID Group/Sector = 2/0 (auto)

Already in Single, press Restart to initiate a new sweep or sequence.

# FREQUENCY STABILITY



MM 2021.12.20.0

Band 66, 2110 MHz - 2200 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 48 VDC Nominal Voltage Conditions, 50° C Temperature Conditions, Mid Channel 2155 MHz		
Absolute Value	Limit	Result
Frequency Δ (Hz)	Δ (Hz)	
5.64	1000	Pass

Carrier Ref Freq: 2.155000000 GHz

Trig: External1 Avg/Hold: 100 % Direction: Downlink  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB Num CC(s): 1

Ch1 Error Summary (CC0)

EVM	= 1.5772	%rms at EVMWindow End
EVM Pk	= 8.0586	% at sym 25, subcar -05
Data EVM	= 1.5844	%rms
- 3GPP-defined QPSK EVM	= 1.6110	%rms
- 3GPP-defined 16QAM EVM	= ---	
- 3GPP-defined 64QAM EVM	= ---	
RS EVM	= 1.5257	%rms
Channel Power	= 39.48	dBm
RS Tx. Power (Avg)	= 14.725	dBm
OFDM Sym. Tx. Power	= 39.5	dBm
RS Rx. Power (Avg)	= 14.725	dBm
RSSI	= 39.48	dBm
RS Rx. Quality	= -10.774	dB
Freq Err	= 5.6394	Hz
SyncCorr	= 99.911	% using P-SS
Common Tracking Error	= 7.8583	%rms
SymClk Err	= 0.01300	ppm
Time Offset	= 86.012	usec
IQ Offset	= -62.493	dB
IQ Gain Imbalance	= -0.007	dB
IQ Quad. Error	= 34.803	mdeg
IQ Timing Skew	= 35.856	psec
CP Length Mode	= Normal(auto)	
Cell ID	= 6	(auto)
Cell ID Group/Sector	= 2/0	(auto)

MSO: Already in Single, press Restart to initiate a new sweep or sequence. STATUS

Band 66, 2110 MHz - 2200 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 40.8 VDC Extreme Low Voltage Conditions, 20° C Temperature Conditions, Mid Channel 2155 MHz		
Absolute Value	Limit	Result
Frequency Δ (Hz)	Δ (Hz)	
5.08	1000	Pass

Carrier Ref Freq: 2.155000000 GHz

Trig: External1 Avg/Hold: 100 % Direction: Downlink  
 #Atten: 32 dB (Elec 16) Ext Gain: -41.60 dB Num CC(s): 1

Ch1 Error Summary (CC0)

EVM	= 1.5657	%rms at EVMWindow End
EVM Pk	= 8.1057	% at sym 25, subcar 46
Data EVM	= 1.5786	%rms
- 3GPP-defined QPSK EVM	= 1.5986	%rms
- 3GPP-defined 16QAM EVM	= ---	
- 3GPP-defined 64QAM EVM	= ---	
RS EVM	= 1.5078	%rms
Channel Power	= 39.823	dBm
RS Tx. Power (Avg)	= 14.876	dBm
OFDM Sym. Tx. Power	= 39.649	dBm
RS Rx. Power (Avg)	= 14.876	dBm
RSSI	= 39.634	dBm
RS Rx. Quality	= -10.775	dB
Freq Err	= 5.0773	Hz
SyncCorr	= 99.925	% using P-SS
Common Tracking Error	= 8.4553	%rms
SymClk Err	= 0.01255	ppm
Time Offset	= 86.011	usec
IQ Offset	= -62.602	dB
IQ Gain Imbalance	= -0.007	dB
IQ Quad. Error	= 35.226	mdeg
IQ Timing Skew	= 30.953	psec
CP Length Mode	= Normal(auto)	
Cell ID	= 6	(auto)
Cell ID Group/Sector	= 2/0	(auto)

MSO: STATUS

# FREQUENCY STABILITY



MM 2020.12.20.0

Band 66, 2110 MHz - 2200 MHz, LTE Single Carrier, Port 1, 5 MHz Bandwidth, QPSK Modulation, 55.2 VDC Extreme High Voltage Conditions, 20° C Temperature Conditions, Mid Channel 2155 MHz		
Absolute Value	Limit	Result
Frequency Δ (Hz)	Δ (Hz)	
3.7	1000	Pass

Keyight LTE & LTE-A Pro - Modulation Analysis

Carrier Ref Freq: 2.155000000 GHz

Carrier Ref Freq: 2.155000000 GHz  
 Trig: External1 AvgHold: 100 %  
 #Atten: 32 dB (Eles 16) Ext Gain: -41.50 dB

03:21:06 AM Mar 18, 2022

Ch1 Error Summary (CC0)

EVM	= 1.5682	%rms	at EVMWindow End
EVM Pk	= 7.8846	%	at sym 25, subcar -85
Data EVM	= 1.5875	%rms	
- 3GPP-defined QPSK EVM	= 1.6053	%rms	
- 3GPP-defined 16QAM EVM	= --		
- 3GPP-defined 64QAM EVM	= --		
RS EVM	= 1.5082	%rms	
Channel Power	= 39.565	dBm	
RS Tx. Power (Avg)	= 14.813	dBm	
OFDM Sym. Tx. Power	= 39.585	dBm	
RS Rx. Power (Avg)	= 14.813	dBm	
RSSI	= 39.568	dBm	
RS Rx. Quality	= -10.774	dB	
Freq Err	= 3.7035	Hz	
SyncCorr	= 99.922	%	using P-SS
Common Tracking Error	= 4.7624	%rms	
SymClk Err	= 0.01177	ppm	
Time Offset	= 86.011	usec	
IQ Offset	= -62.568	dB	
IQ Gain Imbalance	= -0.006	dB	
IQ Quad. Error	= 28.636	mdeg	
IQ Timing Skew	= 32.145	psec	
CP Length Mode	= Normal(auto)		
Cell ID	= 6	(auto)	
Cell ID Group/Sector	= 20	(auto)	

Already in Single, press Restart to initiate a new sweep or sequence. STATUS