FCC/IC Test Report

FOR:

Intel Corporation

Model Number: EP110

Product Description: Smartphone with GSM/GPRS/EDGE, UMTS/HSPA+, LTE, Wi-Fi, BT, and GPS Radios

FCC ID: O2Z-EP110
IC ID: 1000W – EP110

47 CFR Part 2, 22, 24, 27, 90 for LTE bands

RSS-GEN Issue 4, RSS-132 Issue 3, RSS-133 Issue 6, RSS-139 Issue 2, RSS-130 Issue 1, RSS-199 Issue 2

TEST REPORT #: EMC_INTEL_054_14001_FCC22_24_27_LTE_WWAN_rev2_Part2
DATE: 2014-12-16

FCC:
A2LA Accredited

IC recognized #
3462E-1

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1. Assessment

The following device was evaluated against the applicable criteria specified in FCC rules parts 2, 22, 24 and 27 of Title 47 of the Code of Federal Regulations and in Industry Canada Standards RSS-Gen, RSS-132, RSS-133, RSS -139, RSS-199.
No deviations were ascertained during the course of the tests performed.

Company	Description	Model #
Intel Corp	Intel 4.7-inch Smartphone with GSM,GPRS,EDGE,UMTS,HSPA+,LTE, Wi-Fi, BT and GPS	EP110

Responsible for Testing Laboratory:

Date	Section	Name	Signature
2014-12-16	Compliance	Milton Deleon (Test Lab Manager)	Milton Ponce de Leon Digitally signed by Milton Ponce de Leon DN: cn=Milton Ponce de Leon, c=US, o=Cetecom Inc., ou=OTA, email=milton.deleon@cetecom.com Date: 2014.12.16 16:33:41 -08'00'

Responsible for the Report:

Date	Section	Name	Signature
2014-12-16	Compliance	Muhammad Umair Anees (EMC Engineer)	Muhammad Umair Anees Digitally signed by Muhammad Umair Anees DN: cn=Muhammad Umair Anees, c=US, o=EMC, ou=Compliance, email=Muhammad.Anees@cetecom.com Date: 2014.12.16 16:28:33 -08'00'

The test results of this test report relate exclusively to the test item specified in Section3.
CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

6.6 Band Edge (Conducted) / Transmitter Unwanted Emissions

6.6.1 References

FCC: CFR Part 2.1053, CFR Part 22.917 (a) (b), CFR Part 24.238 (a) (b), CFR Part 27.53 (g), CFR Part 27.53 (f), CFR Part 27.53 (l), CFR Part 90.691(a)
IC: RSS-132 Section 4.5.1.1, RSS 133 Section 6.5, RSS 133 Section 6.5, RSS-199 Section 4.6

6.6.2 Limits

Note: The text below is taken from the FCC rules. For all bands the FCC rules are equally or more stringent then the IC rules and are thus be considered as a worst case for both.

6.6.2.1 LTE Band 5

(a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.
(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed

6.6.2.2 LTE Band 2, 25

Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.
(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed

6.6.2.3 LTE Band 4

(g) AWS emission limits—(1) General protection levels. Except as otherwise specified below, for operations in the 1710-1755 MHz, 2110-2155 MHz, 2000-2020 MHz, 2180-2200 MHz, 1915-1920 MHz, and 1995-2000 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 + 10 log10(P) dB.
(3) Measurement procedure. (i) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

6.6.2.4 LTE Band 7

(4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees

(6) *Measurement procedure.* Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495-2496 MHz). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and

one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

6.6.2.5 LTE Band 17

(f) For operations in the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

6.6.2.6 LTE Band 13

(c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measuredin watts, in accordance with the following: (2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least 43 + 10 log (P) dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

6.6.2.7 LTE Band 26

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 $Log_{10}(f/6.1)$ decibels or 50 + 10 $Log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + $10Log_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

6.6.3 Measurement Procedure:

Measurements are made according to FCC KDB 971168 D01 v02r02 section 6.

Frequency and marker: lower or upper band edge frequency
Span: 10MHz
RBW: 100kHz below 1GHz, 1MHz above 1GHz
VBW: 3x RBW
Detector: RMS (because the Power and PSD has been measured in RMS)
Trace: AVG over at least 100 sweeps
Sweeptime: AUTO

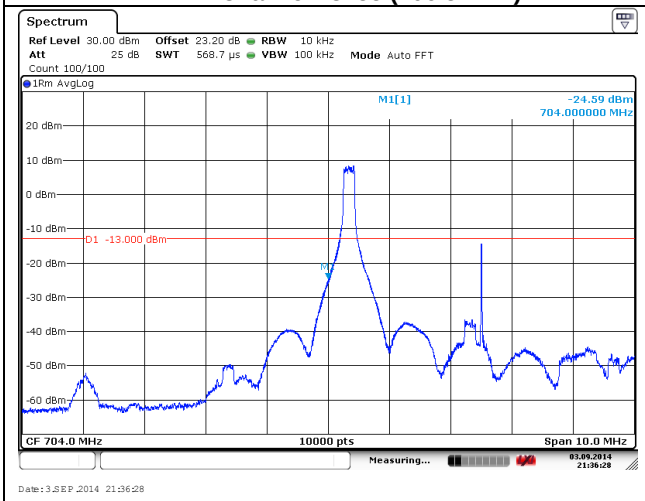
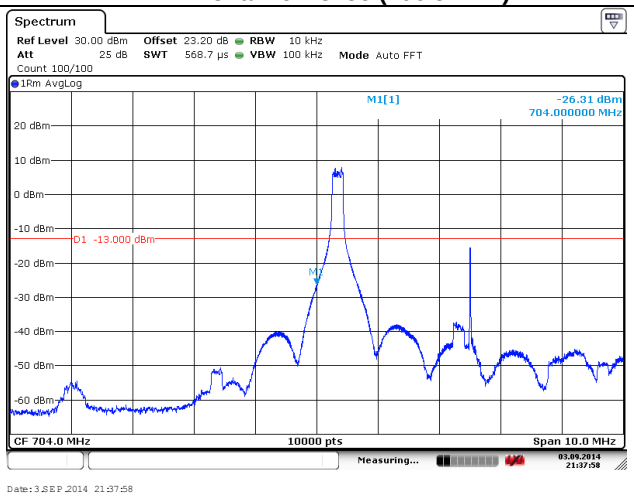
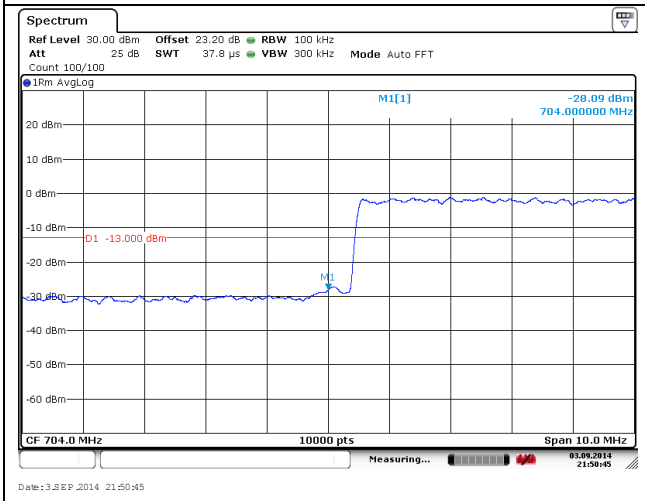
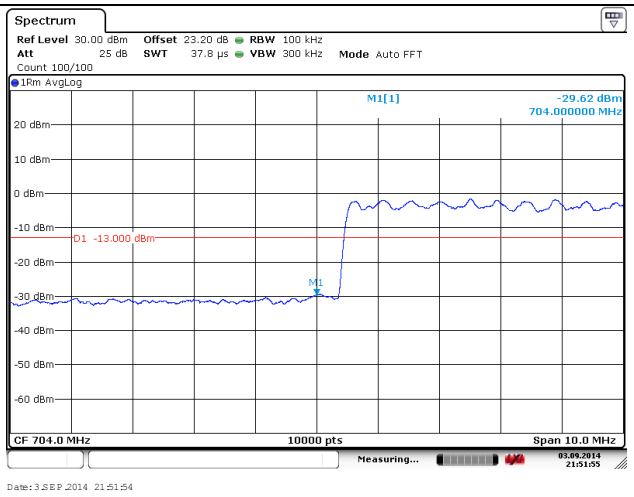
Note 1: For bands 2,4,5,25 and 26, in case the result should be above the limit, choose RBW to 1% of the emission bandwidth as measured above and repeat the measurement.

Note 2: For bands 13 and 17 the minimum allowed RBW at the band edges is 30kHz. Since the measurements were done with RBW=10kHz the readings in the related plots are corrected by a factor of +10lg(30/10)dB = +4.77dB for comparison to the limit. See notes in related plots.

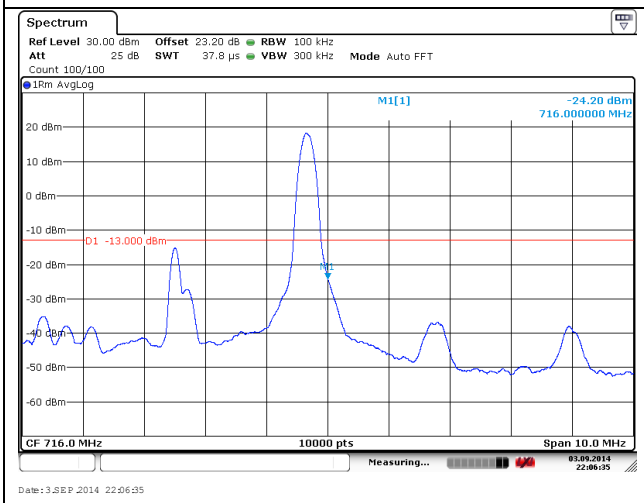
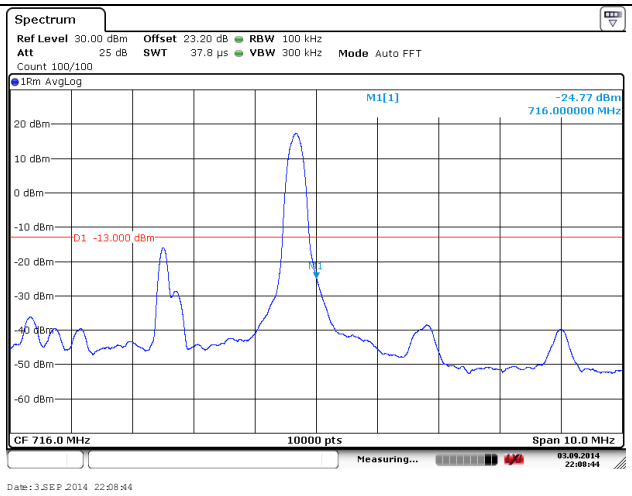
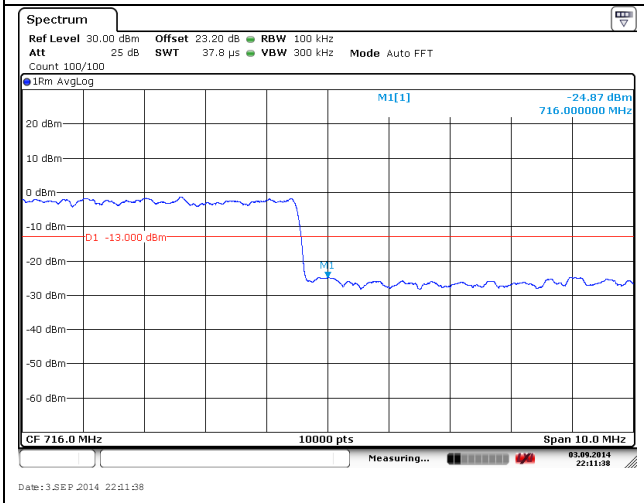
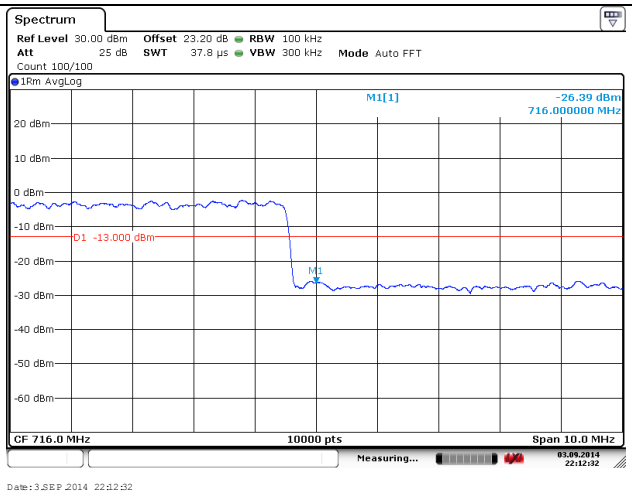
6.6.4 Test Results / Plots

6.6.4.1 LTE Band 17 (704 MHz – 716 MHz)

Lower BE (LTE Band 17)

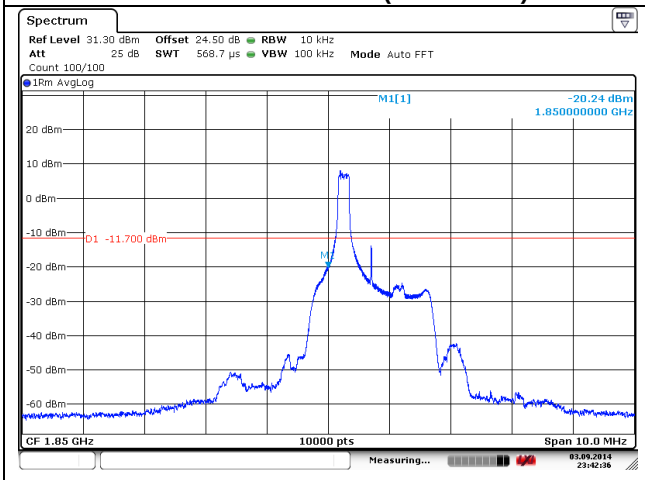
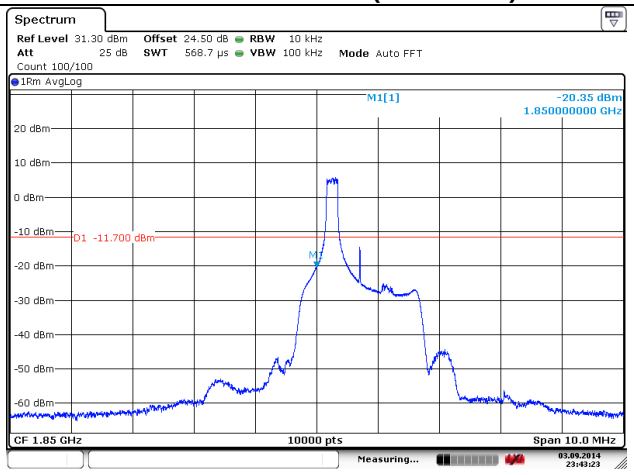
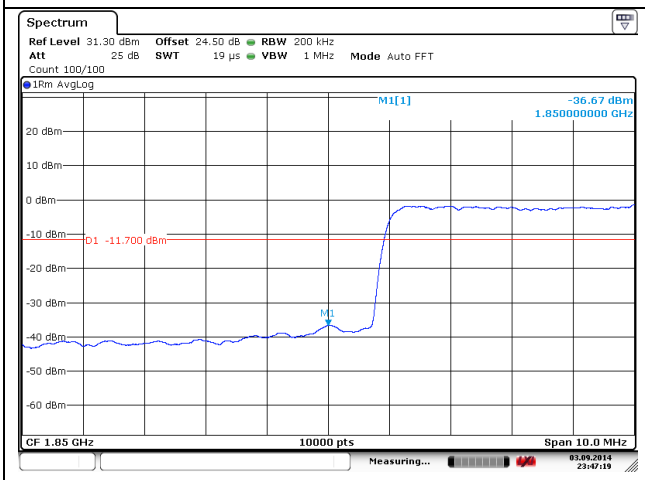
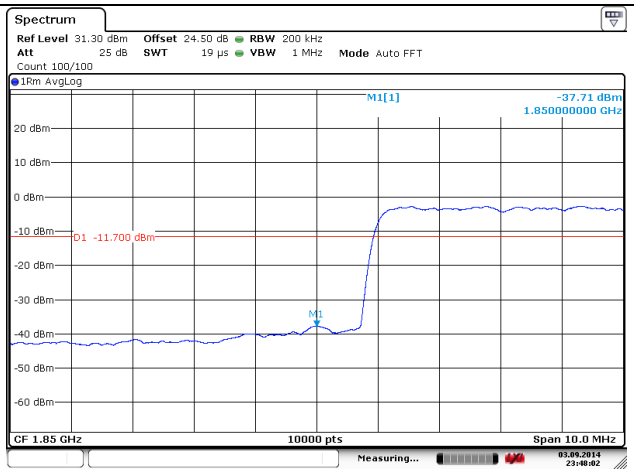
RB Size = **1** ; RB Offset = 0; BW = **5 MHz**; Modulation = **QPSK** Channel **23755 (706.5 MHz)**	RB Size = **1** ; RB Offset = 0; BW = **5 MHz**; Modulation = **16 QAM** Channel **23755 (706.5 MHz)**
	
*Per Note 2 of section 6.6.3, correction factor of 4.77 is added to the measurement above. Reading=-24.5+4.7= -19.8dBm	*Per Note 2 of section 6.6.3, correction factor of 4.77 is added to the measurement above. Reading=-26.3+4.7= -21.6dBm
RB Size = **50**; BW = **10 MHz**; Modulation = **QPSK** Channel **23780 (709 MHz)**	RB Size = **50**; BW =**10 MHz**; Modulation = **16QAM** Channel **23780 (709 MHz)**
	

Upper BE (LTE Band 17)

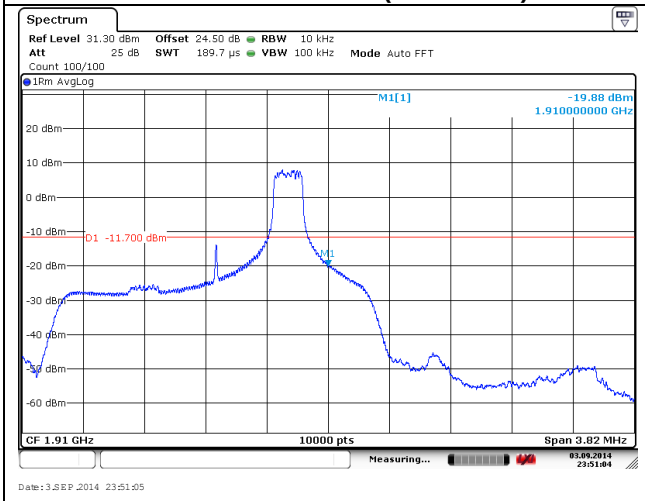
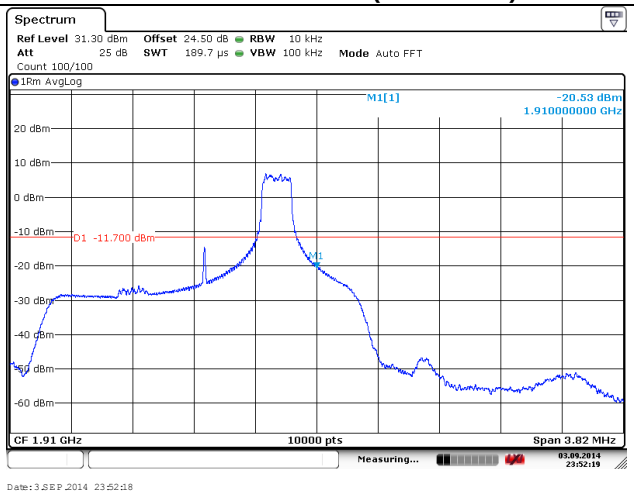
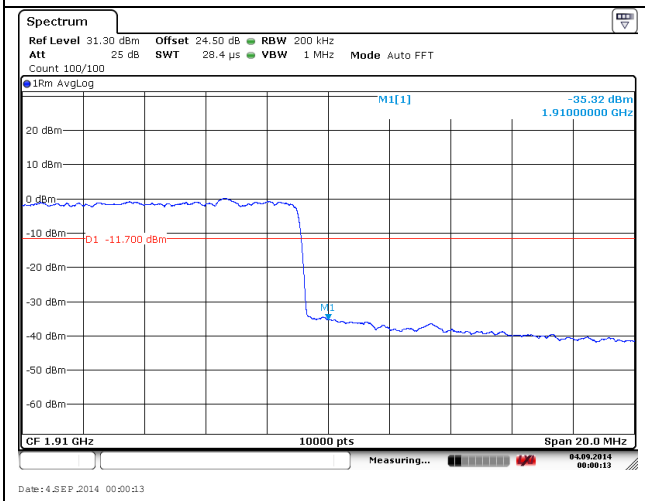
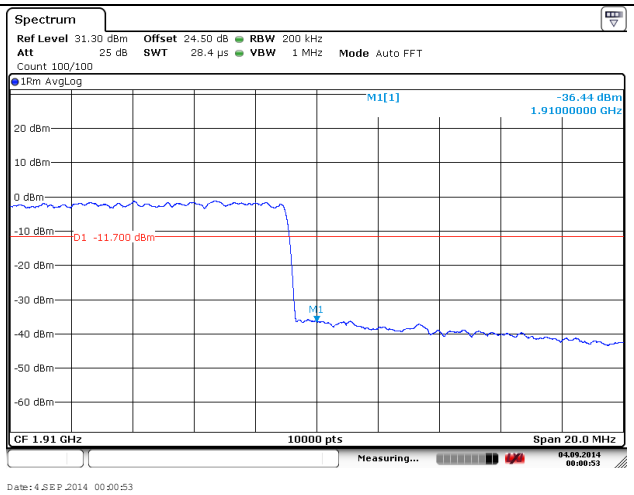
RB Size = **1** ; RB Offset = 24; BW = **5 MHz**; Modulation = **QPSK** Channel **23825 (713.5 MHz)**	RB Size = **1** ; RB Offset = 24; BW = **5 MHz**; Modulation = **16 QAM** Channel **23825 (713.5 MHz)**
	
*Per Note 2 of section 6.6.3, correction factor of 4.77 is added to the measurement above. Reading=-24.2+4.7= -19.5dBm	*Per Note 2 of section 6.6.3, correction factor of 4.77 is added to the measurement above. Reading=-24.5+4.7= -20dBm
RB Size = **50** ; BW = **10 MHz**; Modulation = **QPSK** Channel **23800 (711 MHz)**	RB Size = **50** ; BW =**10 MHz**; Modulation = **16QAM** Channel **23800 (711 MHz)**
	

6.6.4.2 LTE Band 2 (1850 MHz – 1910 MHz)

Lower BE (LTE Band 2)

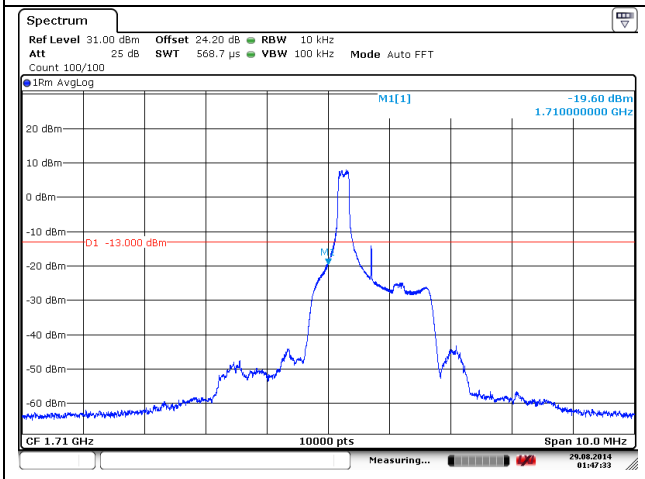
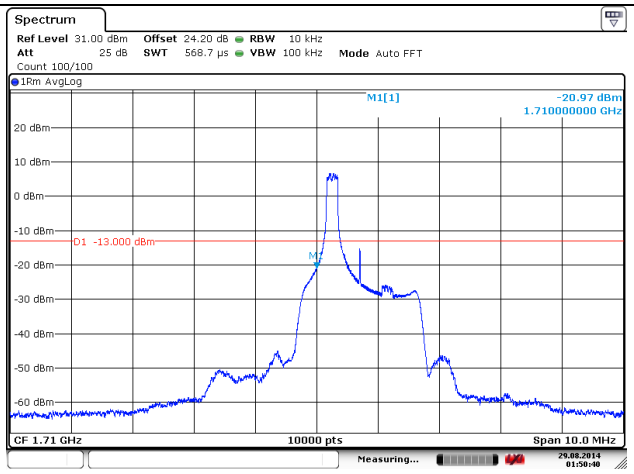
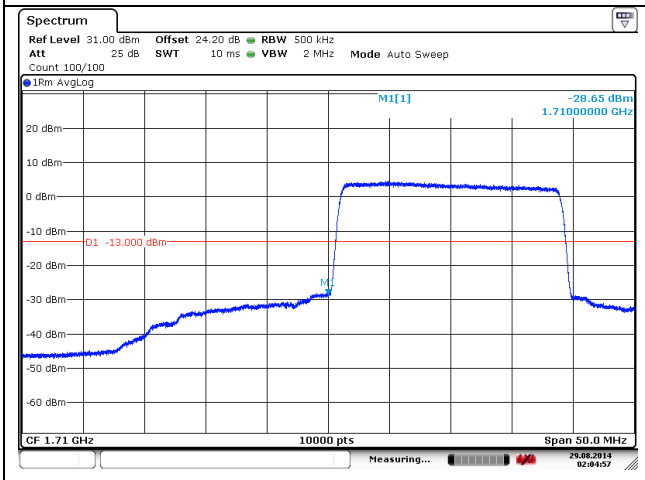
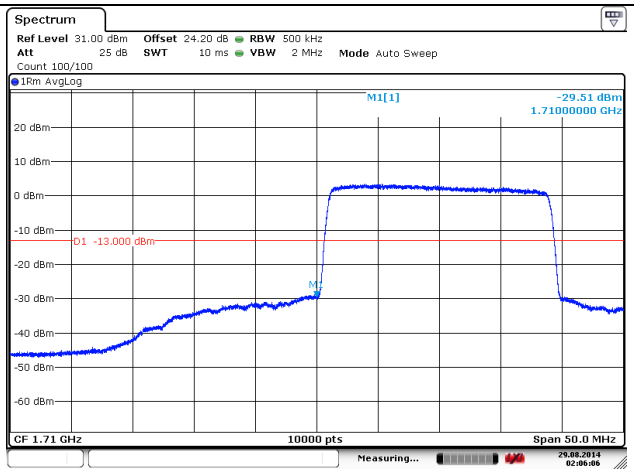
RB Size = **1** ; RB Offset = 0; BW = **1.4 MHz**; Modulation = **QPSK** Channel **18607 (1850.7 MHz)**	RB Size = **1** ; RB Offset = 0; BW = **1.4 MHz**; Modulation = **16QAM** Channel **18607 (1850.7 MHz)**
	
RB Size = **100** ;BW = **20 MHz**; Modulation =**QPSK** Channel **18700 (1860 MHz)**	RB Size = **100** ; BW =**20 MHz**; Modulation =**16QAM** Channel **18700 (1860 MHz)**
	

Upper BE (LTE Band 2)

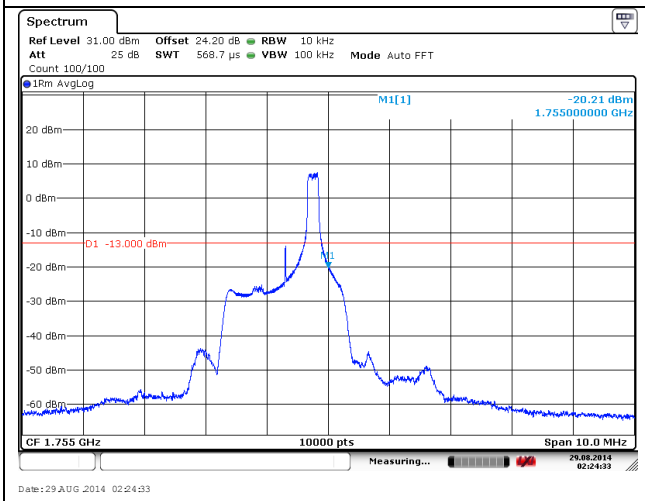
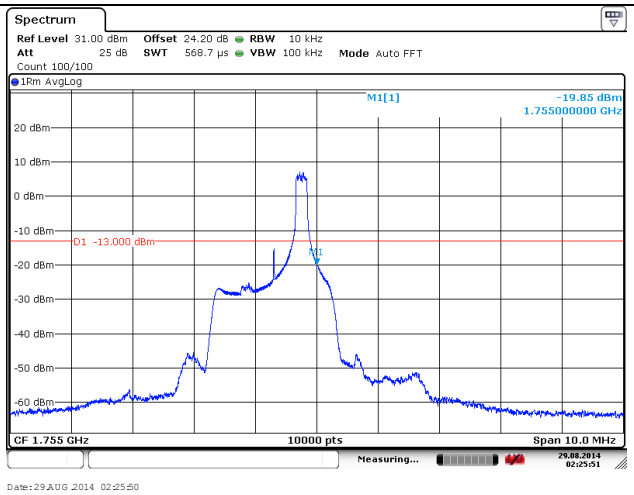
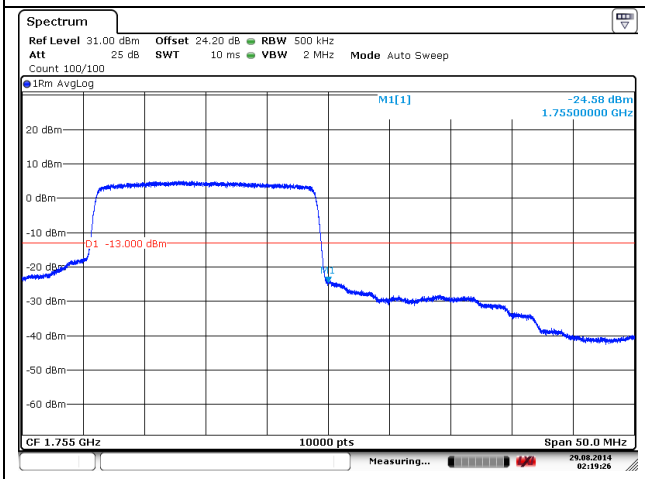
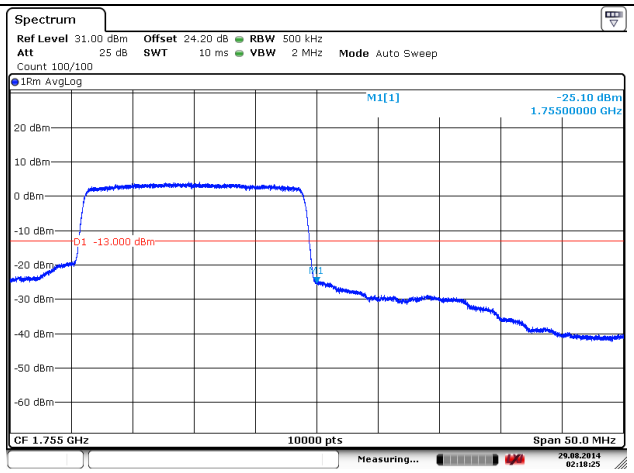
RB Size = **1** ; RB Offset = 5; BW = **1.4 MHz**; Modulation = **QPSK** Channel **19193 (1909.3 MHz)**	RB Size = **1** ; RB Offset = 5; BW = **1.4 MHz**; Modulation = **16QAM** Channel **19193 (1909.3 MHz)**
	
RB Size = **100** ;BW = **20 MHz**; Modulation =**QPSK** Channel **19100 (1900 MHz)**	RB Size = **100**; BW =**20 MHz**; Modulation =**16QAM** Channel **19100 (1900 MHz)**
	

6.6.4.3 LTE Band 4 (1710 MHz – 1755 MHz)

Lower BE (LTE Band 4)

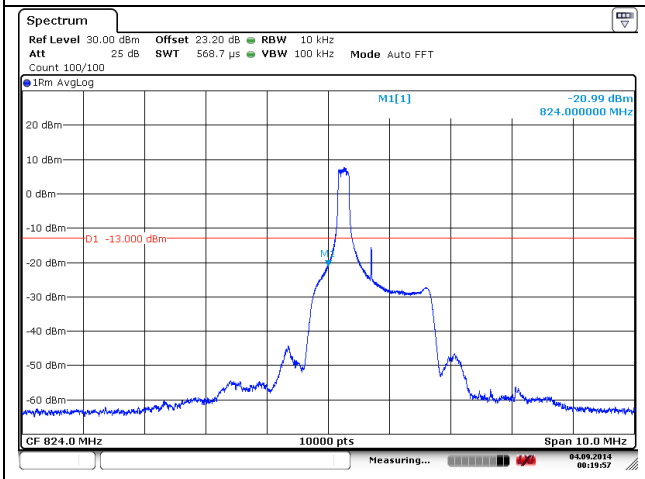
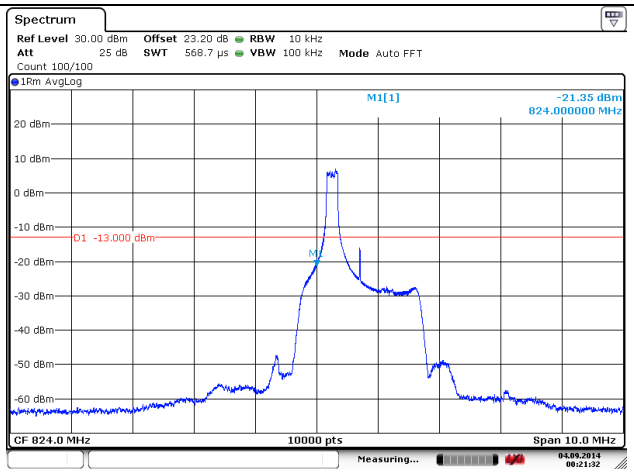
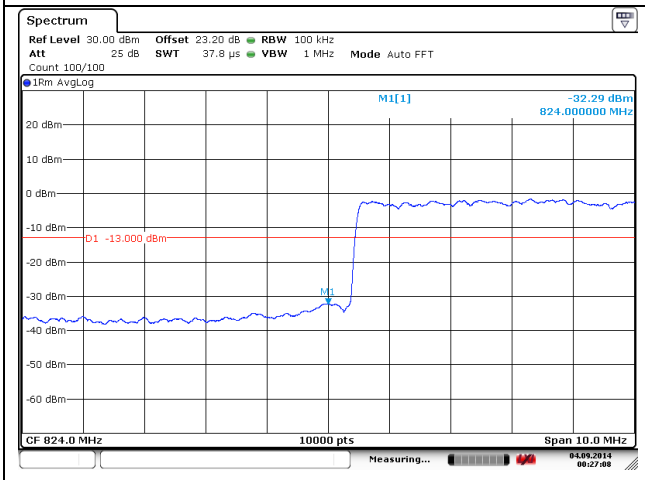
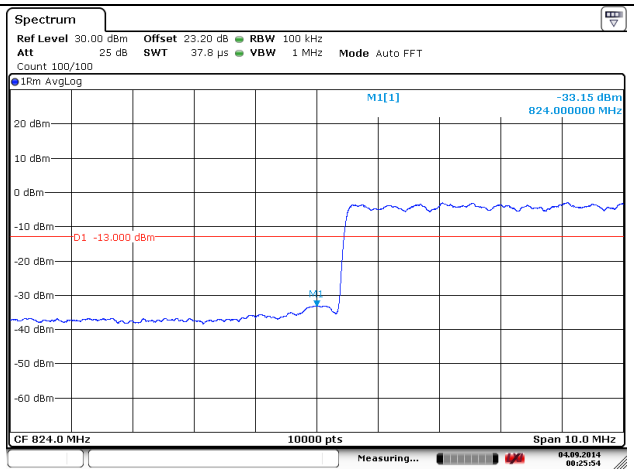
RB Size = **1** ; RB Offset = 0; BW = **1.4 MHz**; Modulation = **QPSK** Channel **19957 (1710.7 MHz)**	RB Size = **1** ; RB Offset = 0; BW = **1.4 MHz**; Modulation = **16QAM** Channel **19957 (1710.7 MHz)**
	
RB Size = **100** ; BW = **20 MHz**; Modulation =**QPSK** Channel **20050 (1720 MHz)**	RB Size = **100** ; BW =**20 MHz**; Modulation =**16QAM** Channel **20050 (1720 MHz)**
	

Upper BE (LTE Band 4)

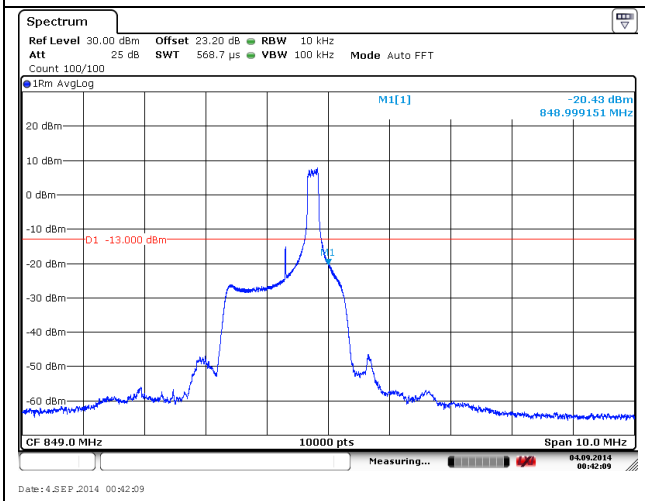
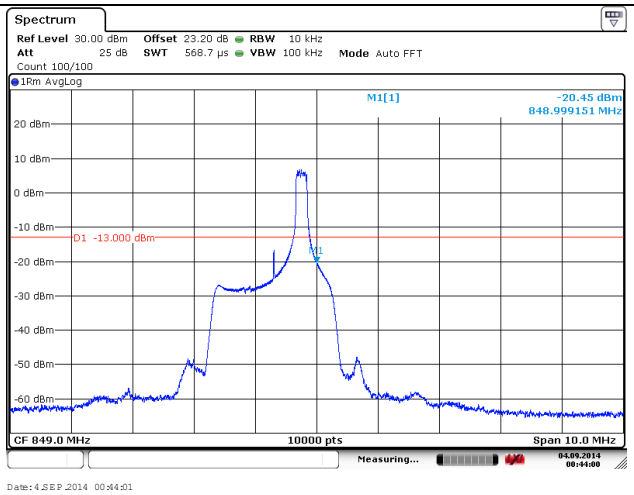
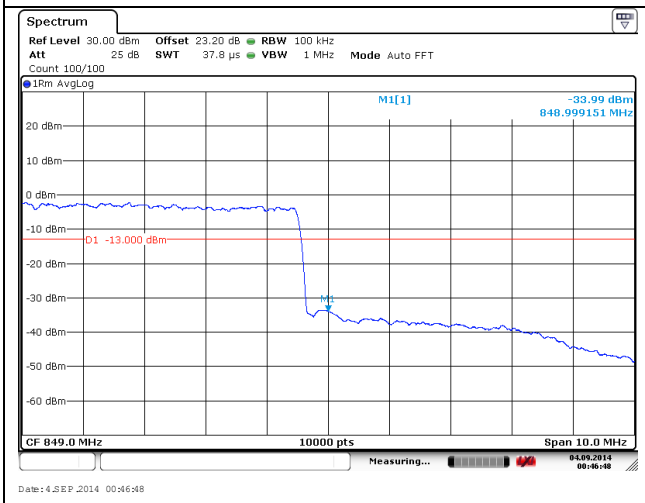
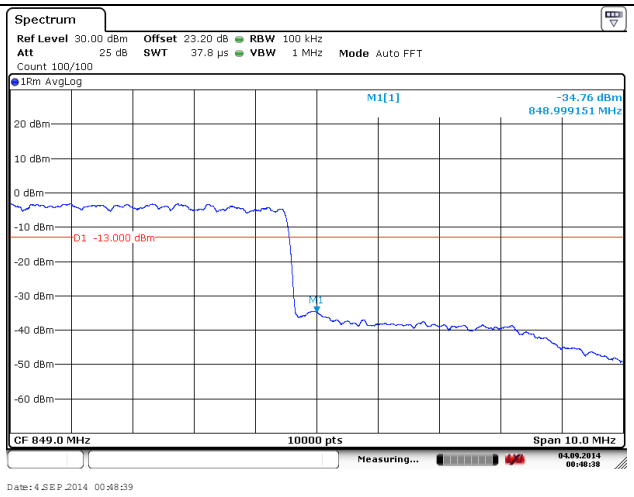
RB Size = **1** ; RB Offset = 5; BW = **1.4 MHz**; Modulation = **QPSK** Channel **20393 (1754.3 MHz)**	RB Size = **1** ; RB Offset = 5; BW = **1.4 MHz**; Modulation = **16QAM** Channel **20393 (1754.3 MHz)**
	
RB Size = **100** ; BW = **20 MHz**; Modulation =**QPSK** Channel **20300 (1745 MHz)**	RB Size = **100** ; BW =**20 MHz**; Modulation =**16QAM** Channel **20300 (1745 MHz)**
	

6.6.4.4 LTE Band 5 (824 MHz – 849 MHz)

Lower BE (LTE Band 5)

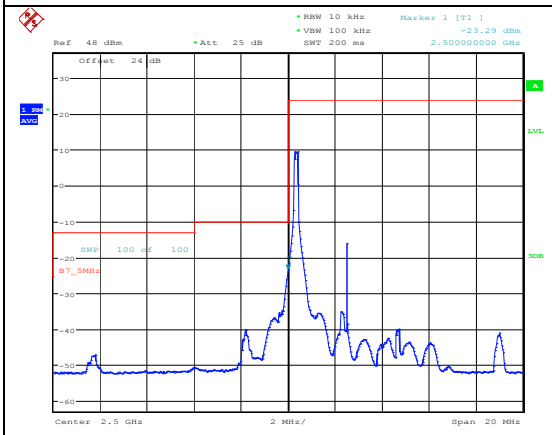
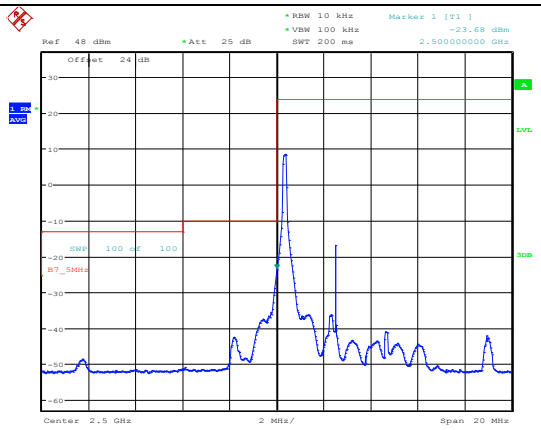
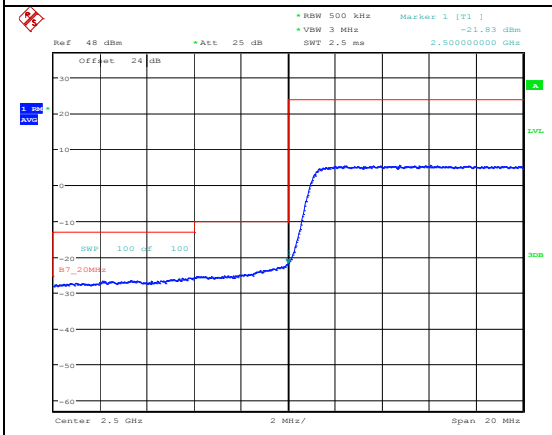
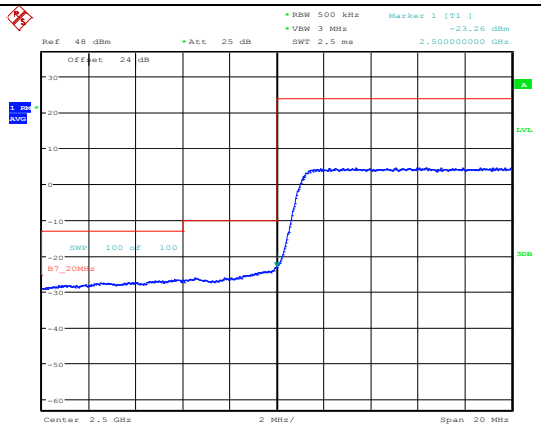
RB Size = **1** ; RB Offset = 0; BW = **1.4 MHz**; Modulation = **QPSK** Channel **20407 (824.7 MHz)**	RB Size = **1** ; RB Offset = 0; BW = **1.4 MHz**; Modulation = **16QAM** Channel **20407 (824.7 MHz)**
	
RB Size = **50** ;BW = **10 MHz**; Modulation =**QPSK** Channel **20450 (829 MHz)**	RB Size = **50** ; BW =**10 MHz**; Modulation =**16QAM** Chanel **20450 (829 MHz)**
	

Upper BE (LTE Band 5)

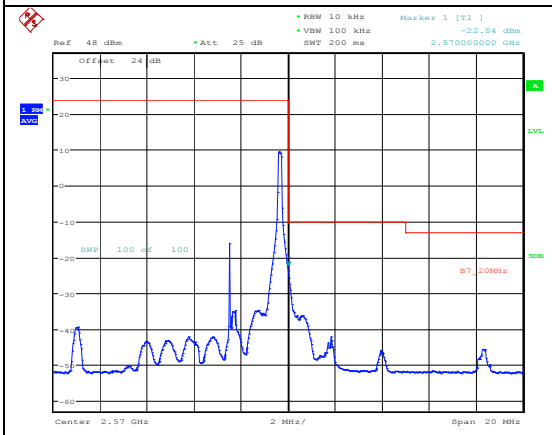
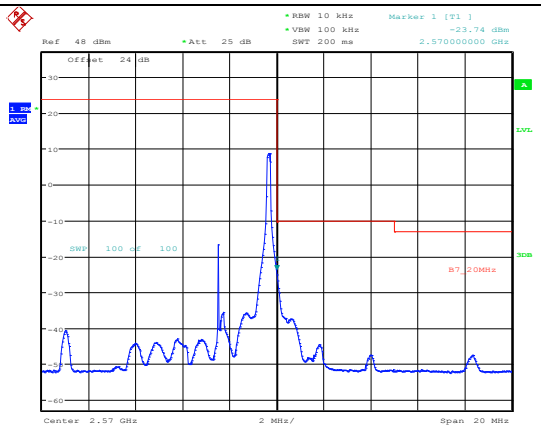
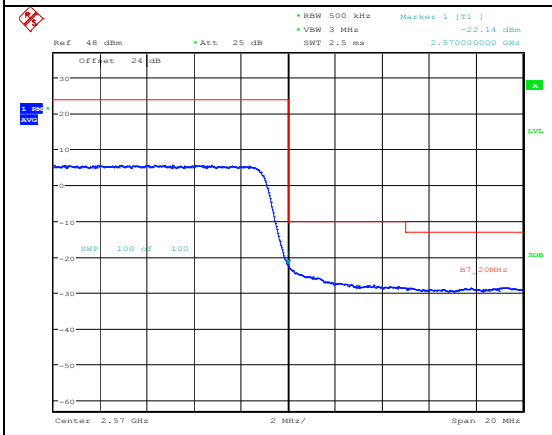
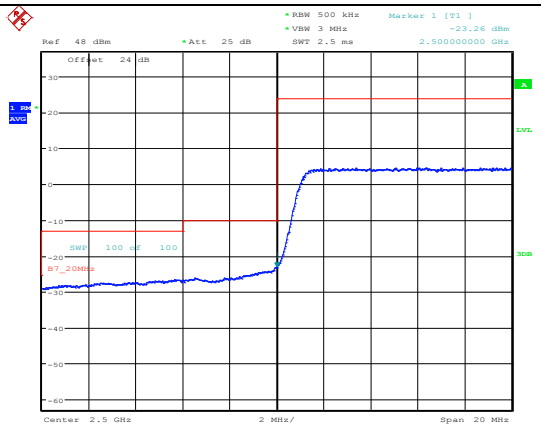
RB Size = **1** ; RB Offset = 5; BW = **1.4 MHz**; Modulation = **QPSK** Channel **20643 (848.3 MHz)**	RB Size = **1** ; RB Offset = 5; BW = **1.4 MHz**; Modulation = **16QAM** Channel **20643 (848.3 MHz)**
	
RB Size = **50** ; BW = **10 MHz**; Modulation =**QPSK** Channel **20600 (844 MHz)**	RB Size = **50** ; BW =**10 MHz**; Modulation =**16QAM** Channel **20600 (844 MHz)**
	

6.6.4.5 LTE Band 7 (2500 MHz – 2570 MHz)

Lower BE (LTE Band 7)

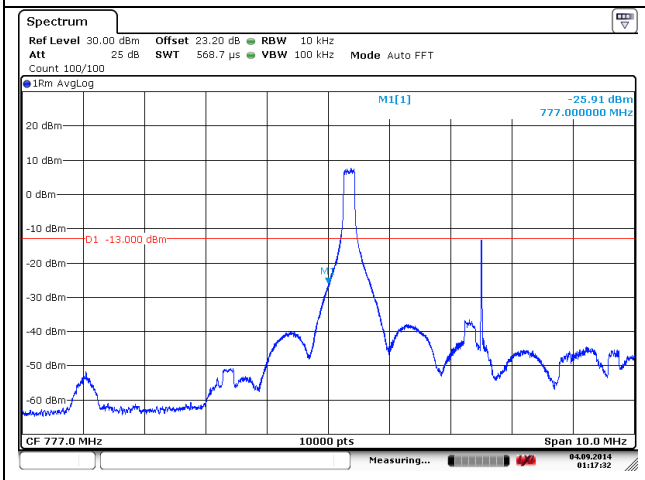
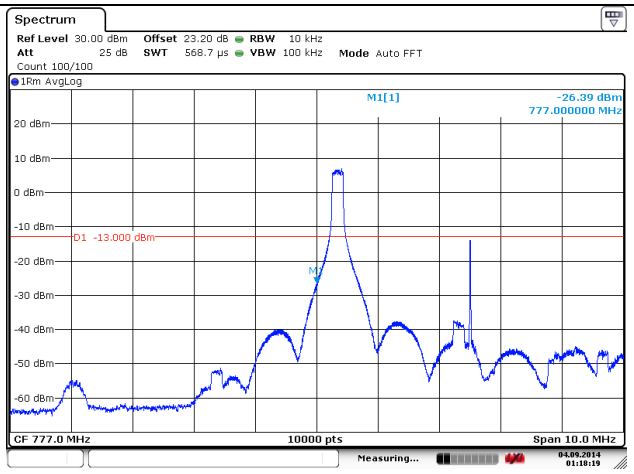
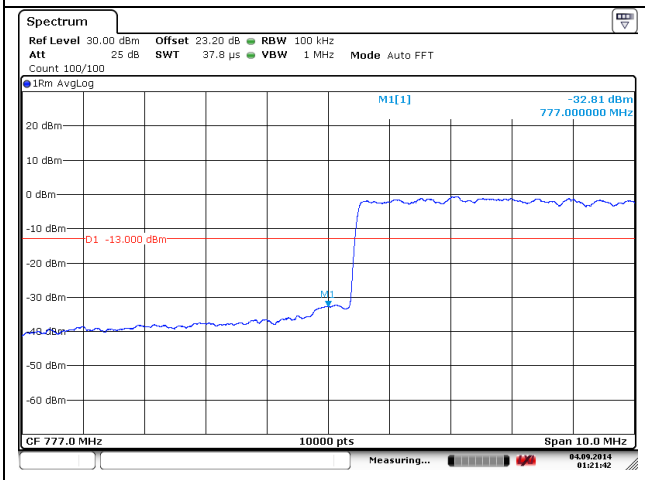
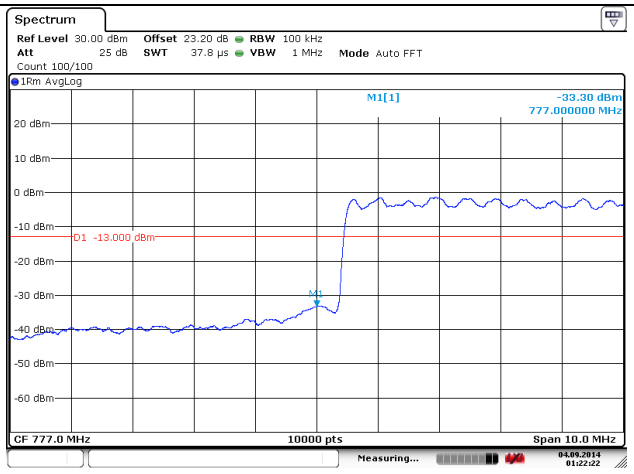
RB Size = **1** ; RB Offset = 0; BW = **5 MHz**; Modulation = **QPSK** Channel **20775 (2502.5 MHz)**	RB Size = **1** ; RB Offset = 0; BW = **5 MHz**; Modulation = **16QAM** Channel **20775 (2502.5 MHz)**
	
RB Size = **100** ; BW = **20 MHz**; Modulation =**QPSK** Channel **20850 (2510 MHz)**	RB Size = **100** ; BW =**20 MHz**; Modulation =**16QAM** Channel **20850 (2510 MHz)**
	

Upper BE (LTE Band 7)

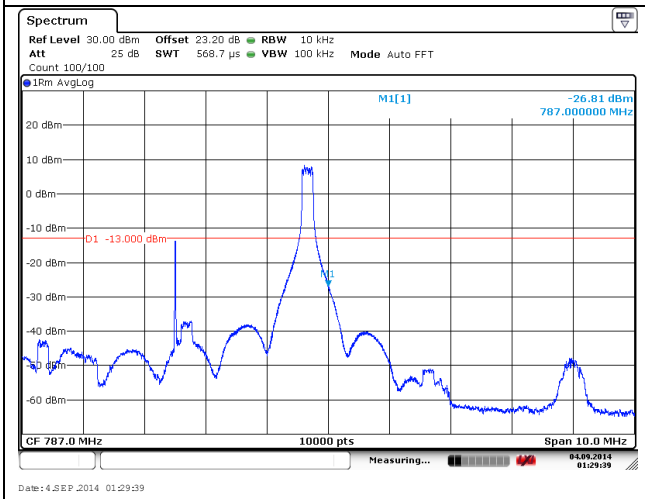
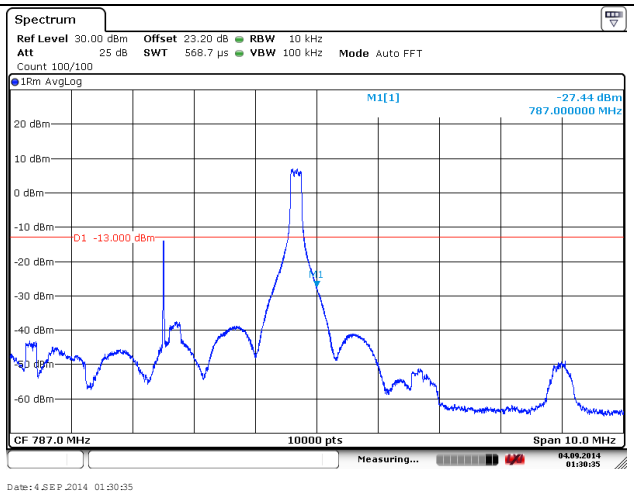
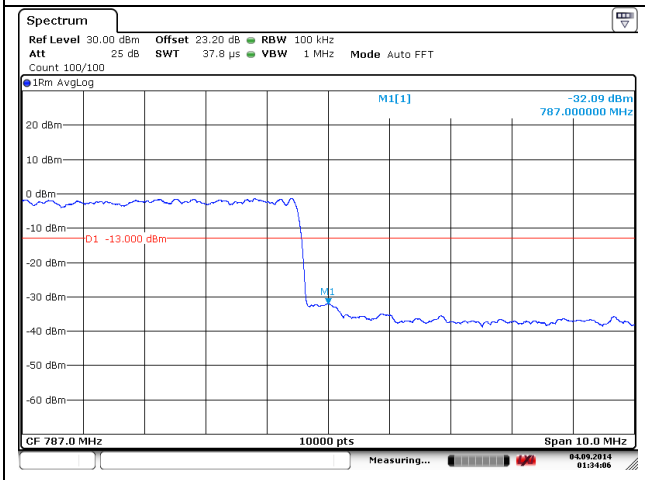
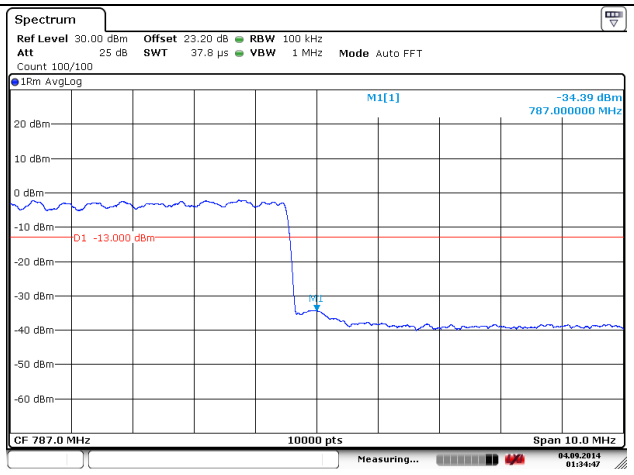
RB Size = **1** ; RB Offset = 5; BW = **5 MHz**; Modulation = **QPSK** Channel **21425 (2567.5 MHz)**	RB Size = **1** ; RB Offset = 5; BW = **5 MHz**; Modulation = **16QAM** Channel **21425 (2567.5 MHz)**
	
RB Size = **100** ; BW = **20 MHz**; Modulation =**QPSK** Channel **21350 (2560 MHz)**	RB Size = **100** ; BW =**20 MHz**; Modulation =**16QAM** Channel **21350 (2560 MHz)**
	

6.6.4.6 LTE Band 13 (777 MHz – 787 MHz)

Lower BE (LTE Band 13)

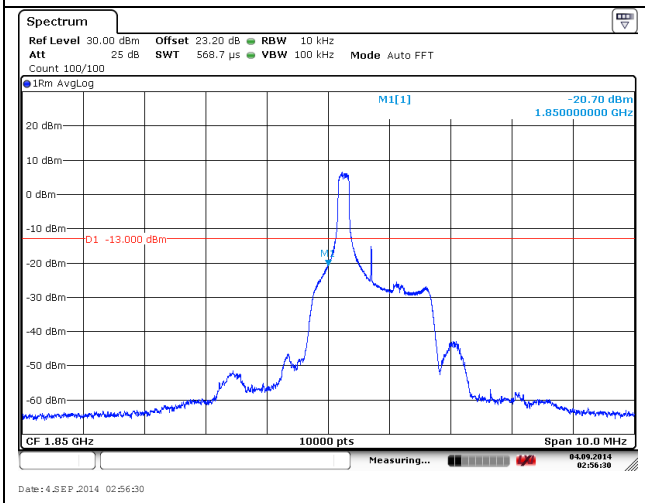
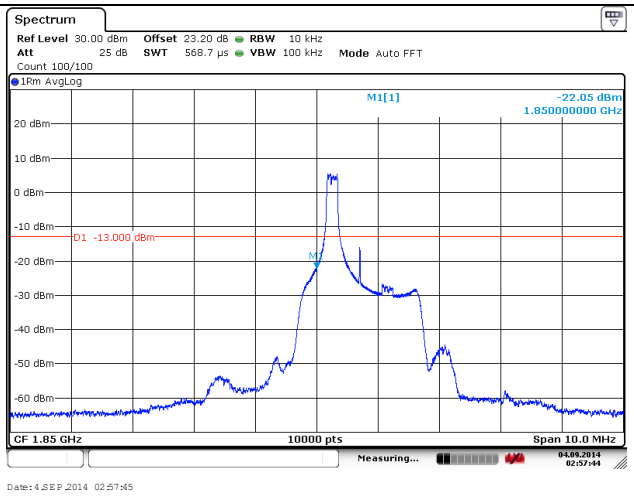
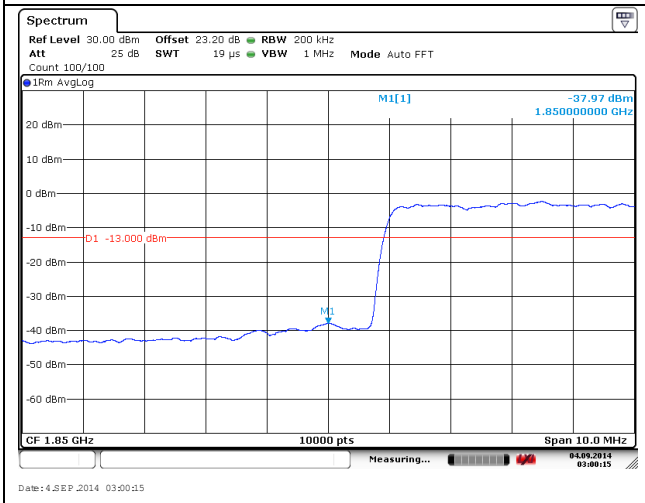
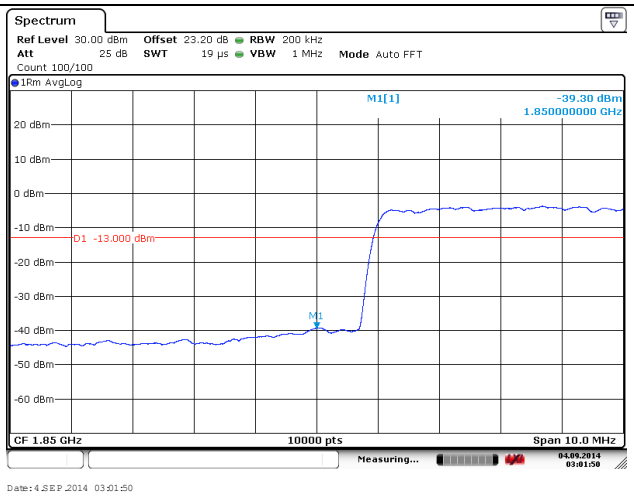
RB Size = **1** ; RB Offset = 0; BW = **5 MHz**; Modulation = **QPSK** Channel **23205 (779.5 MHz)**	RB Size = **1** ; RB Offset = 0; BW = **5 MHz**; Modulation = **16QAM** Channel **23205 (779.5 MHz)**
	
*Per Note 2 of section 6.6.3, correction factor of 4.77 is added to the measurement above. Reading=-25.9+4.7= -21.2dBm	*Per Note 2 of section 6.6.3, correction factor of 4.77 is added to the measurement above. Reading=-26.3+4.7= -21.6dBm
RB Size = **50** ; BW = **10 MHz**; Modulation =**QPSK** Channel **23230 (782 MHz)**	RB Size = **50** ; BW =**10 MHz**; Modulation =**16QAM** Channel **23230 (782 MHz)**
	

Upper BE (LTE Band 13)

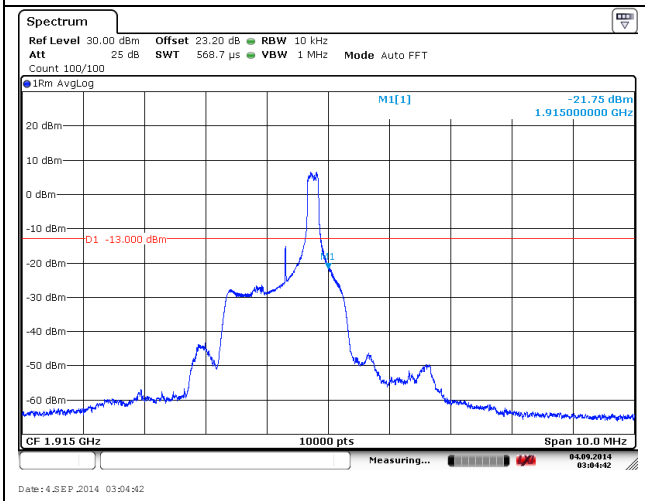
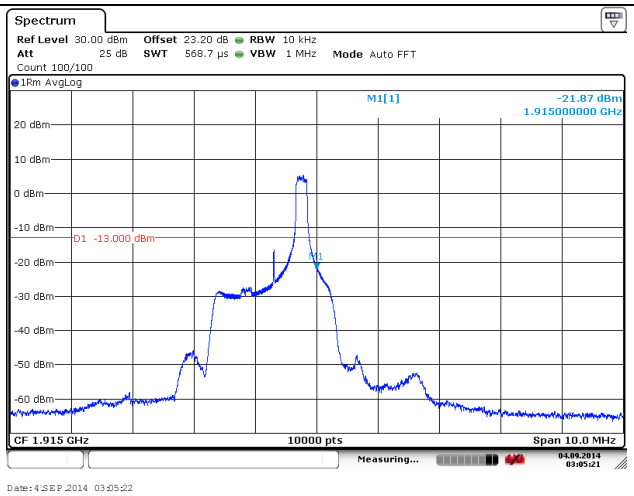
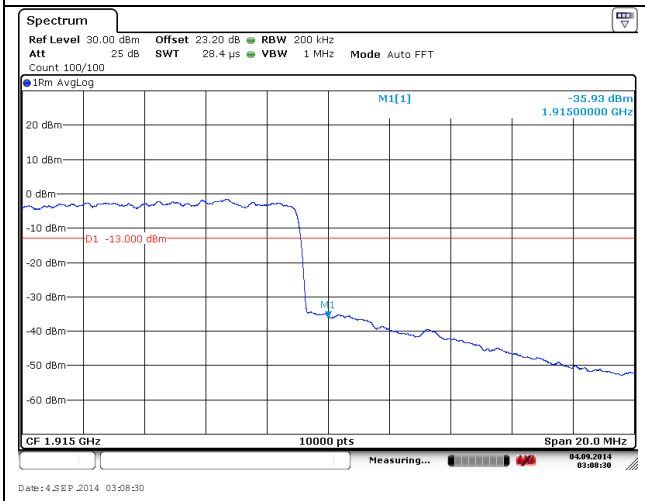
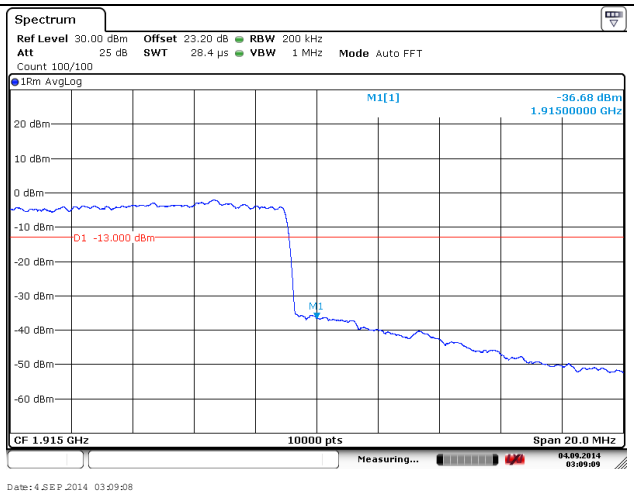
RB Size = **1** ; RB Offset = 5; BW = **1.4 MHz**; Modulation = **QPSK** Channel **23255 (784.5 MHz)**	RB Size = **1** ; RB Offset = 5; BW = **1.4 MHz**; Modulation = **16QAM** Channel **23255 (784.5 MHz)**
	
*Per Note 2 of section 6.6.3, correction factor of 4.77 is added to the measurement above. Reading=-26.8+4.7= -22.1dBm	*Per Note 2 of section 6.6.3, correction factor of 4.77 is added to the measurement above. Reading=-27.4+4.7= -22.7dBm
RB Size = **50** ; BW = **10 MHz**; Modulation =**QPSK** Channel **23230 (782 MHz)**	RB Size = **50** ; BW =**10 MHz**; Modulation =**16QAM** Channel **23230 (782 MHz)**
	

6.6.4.7 LTE Band 25 (1850 MHz – 1915 MHz)

Lower BE (LTE Band 25)

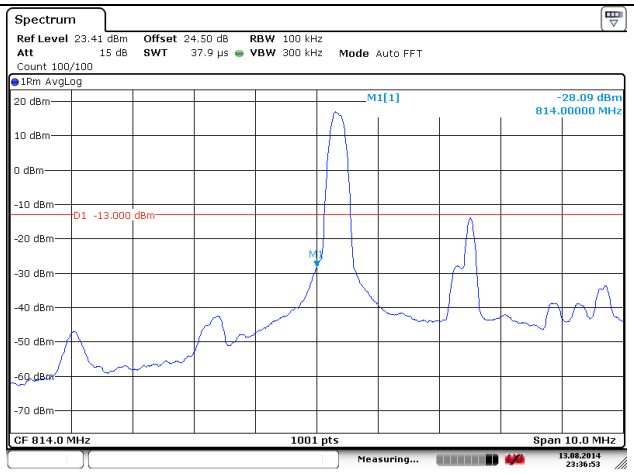
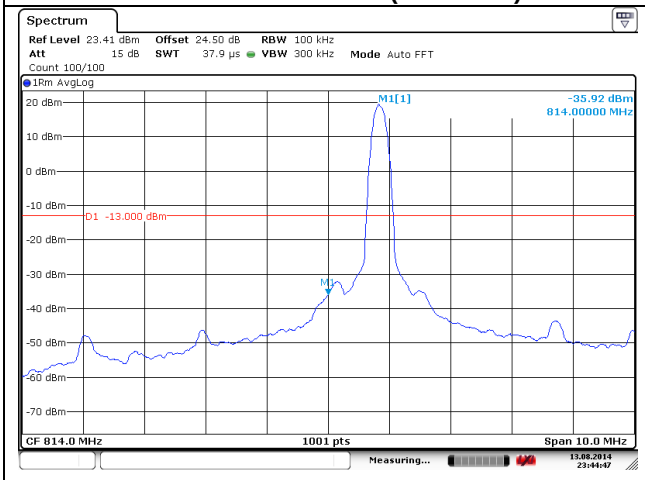
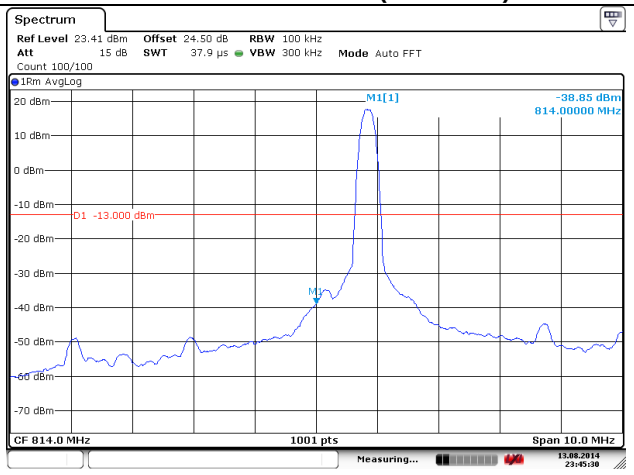
RB Size = **1** ; RB Offset = 0; BW = **1.4 MHz**; Modulation = **QPSK** Channel **26047 (1850.7 MHz)**	RB Size = **1** ; RB Offset = 0; BW = **1.4 MHz**; Modulation = **16QAM** Channel **26047 (1850.7 MHz)**
	
RB Size = **100** ; BW = **20 MHz**; Modulation =**QPSK** Channel **26140 (1860 MHz)**	RB Size = **100** ; BW =**20 MHz**; Modulation =**16QAM** Channel **26140 (1860 MHz)**
	

Upper BE (LTE Band 25)

RB Size = **1** ; RB Offset = 5; BW = **1.4 MHz**; Modulation = **QPSK** Channel **26683 (1914.3 MHz)**	RB Size = **1** ; RB Offset = 5; BW = **1.4 MHz**; Modulation = **16QAM** Channel **26683 (1914.3 MHz)**
	
RB Size = **50** ; BW = **10 MHz**; Modulation =**QPSK** Channel **26590 (1905 MHz)**	RB Size = **50** ; BW =**10 MHz**; Modulation =**16QAM** Channel **26590 (1905 MHz)**
	

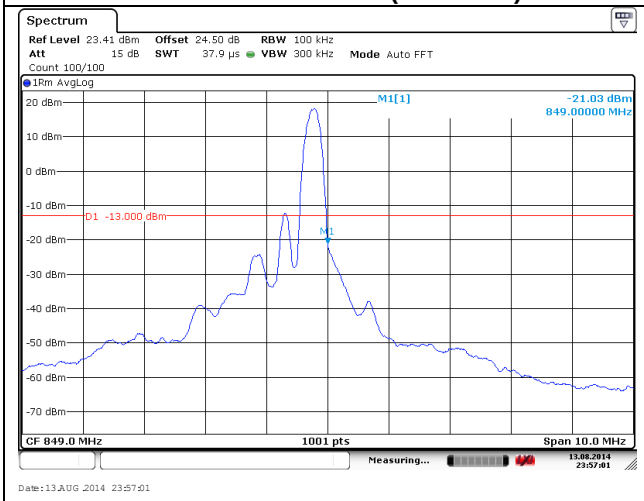
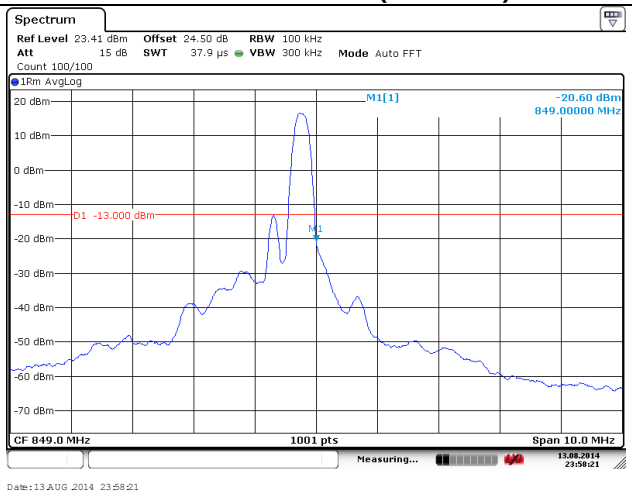
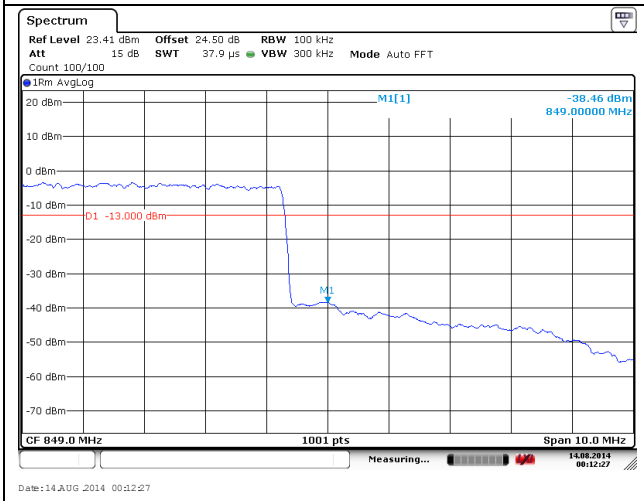
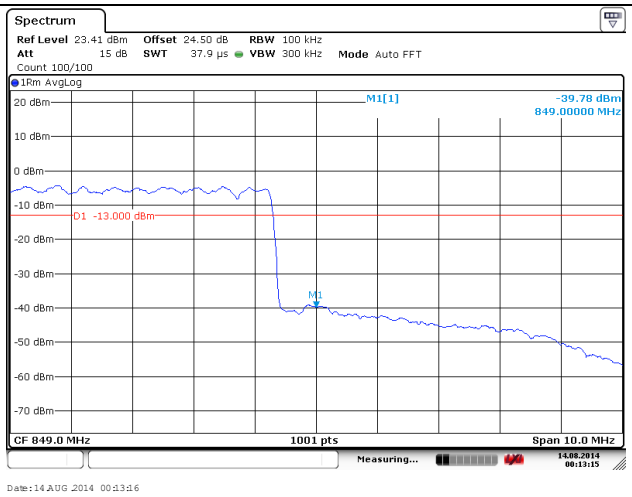
6.6.4.8 LTE Band 26 (814 MHz – 849 MHz)

Lower BE (LTE Band 26)

RB Size = **1** ; RB Offset = 0; BW = **1.4 MHz**; Modulation = **QPSK** Channel **26697 (814.7 MHz)**	RB Size = **1** ; RB Offset = 0; BW = **1.4 MHz**; Modulation = **16QAM** Channel **26697 (814.7 MHz)**
	
RB Size = **75** ; BW = **15 MHz**; Modulation =**QPSK** Channel **26765 (821.5 MHz)**	RB Size = **75** ; BW =**15 MHz**; Modulation =**16QAM** Channel **26765 (821.5 MHz)**
	

Note:
The above plots show that the tighter limit of -20dBm is passed between the band edge up to 37.5kHz away from the band edge. The relaxed limits of -13dBm are passed further away from band edge.

Upper BE (LTE Band 26)

RB Size = **1** ; RB Offset = 5; BW = **1.4 MHz**; Modulation = **QPSK** Channel **27033 (848.3 MHz)**	RB Size = **1** ; RB Offset = 5; BW = **1.4 MHz**; Modulation = **16QAM** Channel **27033 (848.3 MHz)**
	
RB Size = **75** ; BW = **15 MHz**; Modulation =**QPSK** Channel **26965 (841.5 MHz)**	RB Size = **75** ; BW =**15 MHz**; Modulation =**16QAM** Channel **26965 (841.5 MHz)**
	

Note:
The above plots show that the tighter limit of -20dBm is passed between the band edge up to 37.5kHz away from the band edge. The relaxed limits of -13dBm are passed further away from band edge.

6.7 TX Radiated Spurious Emissions

6.7.1 References

See chapter with Band Edge measurements

6.7.2 Limits

See chapter with Band Edge measurements

6.7.3 Measurement requirements:

6.7.3.1 FCC §2.1057 Frequency spectrum to be investigated.

(a) In all of the measurements set forth in §§2.1051 and 2.1053, the spectrum shall be investigated from the lowest radio frequency signal generated in the equipment, without going below 9 kHz, up to at least the frequency shown below:
(1) If the equipment operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
(2) If the equipment operates at or above 10 GHz and below 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.
(3) If the equipment operates at or above 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 200 GHz, whichever is lower.
(b) Particular attention should be paid to harmonics and subharmonics of the carrier frequency as well as to those frequencies removed from the carrier by multiples of the oscillator frequency. Radiation at the frequencies of multiplier stages should also be checked.
(c) The amplitude of spurious emissions which are attenuated more than 20 dB below the permissible value need not be reported.
(d) Unless otherwise specified, measurements above 40 GHz shall be performed using a minimum resolution bandwidth of 1 MHz.

6.7.3.2 FCC 2.1053: Field strength of spurious radiation.

Measurements shall be made to detect spurious emissions that may be radiated directly from the cabinet, control circuits, power leads or intermediate circuit elements under normal conditions of installation and operation. Curves or equivalent data shall be supplied showing the magnitude of each harmonic and other spurious emission.

RSS-Gen 6.13: Transmitter unwanted spurious emissions

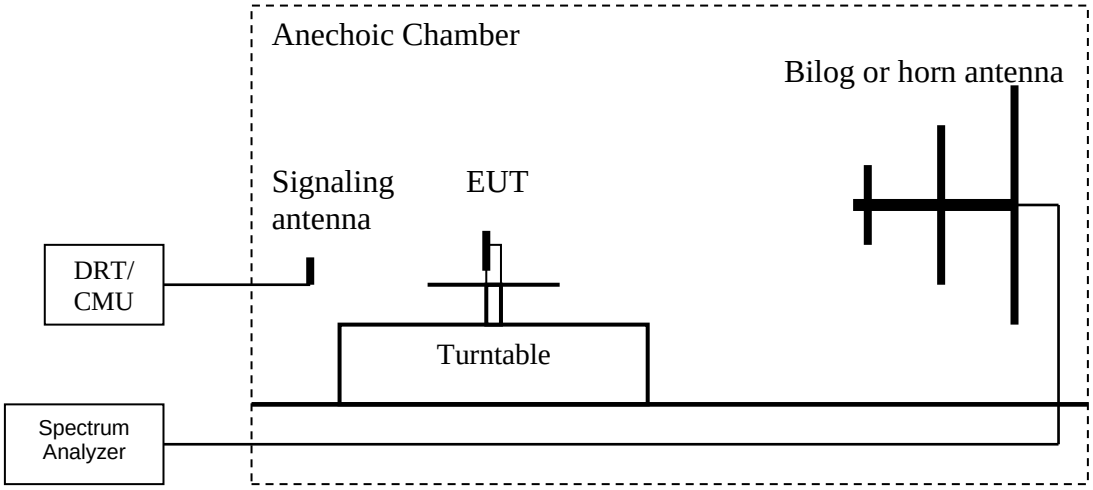
The measurement method shall be described in the test report. When the applicable unwanted emissions limits are defined in relative terms, the same parameter, peak power or average power, used for the transmitter's output power measurement shall also be used for the unwanted emission measurements.

In measuring unwanted emissions, the spectrum shall be investigated from 30 MHz or the lowest radio frequency signal generated in the equipment, whichever is lower, without going below 9 kHz, up to at least the frequency given below:

(a) If the equipment operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.
(b) If the equipment operates at or above 10 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.

6.7.4 Radiated out of band measurement procedure:

Ref: TIA-603C 2004- 2.2.12 Unwanted emissions: Radiated Spurious



Connect the equipment as shown in the above diagram with the EUT's antenna in a horizontal orientation.

Adjust the settings of the Digital Radio Communication Tester (DRT) to set the EUT to its maximum power at the required channel.

Set the spectrum analyzer to measure peak hold with the required settings.

Place the measurement antenna in a horizontal orientation. Rotate the EUT 360°. Raise the measurement antenna up to 4 meters in 0.5 meters increments and rotate the EUT 360° at each height to maximize all emissions. Measure and record all spurious emissions (**LVL**) up to the tenth harmonic of the carrier frequency.

Replace the EUT with a horizontally polarized half wave dipole or known gain antenna. The center of the antenna should be at the same location as the center of the EUT's antenna.

Connect the antenna to a signal generator with known output power and record the path loss in dB (**LOSS)**. **LOSS** = Generator Output Power (dBm) – Analyzer reading (dBm).

Determine the level of spurious emissions using the following equation:

Spurious (dBm) = **LVL** (dBm) + **LOSS** (dB):

Repeat steps 4, 5 and 6 with all antennas vertically polarized.

Determine the level of spurious emissions using the following equation:

Spurious (dBm) = **LVL** (dBm) + **LOSS** (dB):

Measurements are to be performed with the EUT set to the low, middle and high channel of each frequency band.

(N**ote:** Steps 5 and 6 above are performed prior to testing and **LOSS** is recorded by test software. Steps 3, 4 and 7 above are performed with test software.)

6.7.5 Sample Calculations for Radiated Measurements

6.7.5.1 Power Measurements using Substitution Procedure:

The measurement on the Spectrum Analyzer is used as a basis for the Substitution procedure.
The EUT is replaced with a Signal Generator and an antenna. The setting on the Signal Generator is varied until the Spectrum Analyzer displays the original reading. EIRP is calculated as-

EIRP (dBm)= Signal Generator setting (dBm)- Cable Loss (dB)+ Antenna Gain (dBi)

Example:

Frequency (MHz)	Measured SA (dBµV)	Signal Generator setting (dBm)	Antenna Gain (dBi)	Dipole Gain (dBd)	Cable Loss (dB)	EIRP (dBm)
1000	95.5	24.5	6.5	0	3.5	27.5

6.7.6 Measurement Survey:

The site is constructed in accordance with ANSI C63.4 requirements and is recognized by the FCC to be in compliance for a 3m site. The spectrum is scanned from 9kHz to the 10th harmonic of the highest frequency generated by the EUT.

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of all supported LTE bands.

The configuration with 1 Resource Block has been chosen as a worst case configuration because 1RB represents the highest power density and thus the highest peak powers of all supported bandwidth configurations. Additionally, configuration with full resource block for each band is also being tested as worst case since greater the physical bandwidth results in larger modulation spectrum residuals. Both QPSK and 16QAM modulations have been tested but only mid channel plots of 16QAM are shown in the report for brevity purposes. It's been observed that both modulations show near identical results.

For low channel the lowest resource block has been chosen and for high channel the highest to represent the worst case in terms of band edge proximity.

For 9kHz-30MHz and 18GHz-26GHz(if applicable) measurement ranges, only mid channel with QPSK modulation is tested. This is because at these extreme frequency ranges, there is a very low probability to have spurious emissions from TX signal, so mid channel is good enough representation to comply at these ranges.

For radiated measurements, all data in this report shows the worst case emissions data between H/V antenna polarizations and for all 3 orthogonal orientations of the EUT.

Unless mentioned otherwise, the emission signals above the limit line in the plots are from the carrier.

6.7.7 Test Conditions:

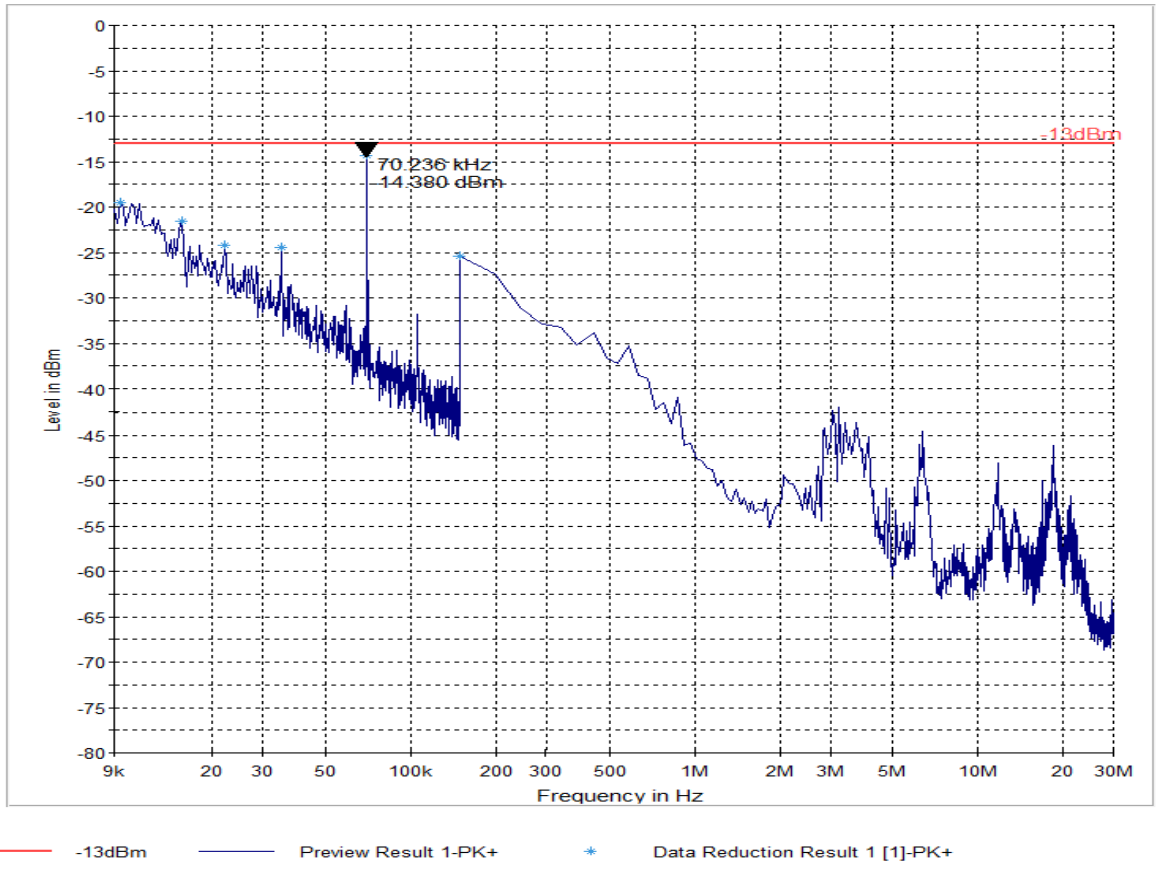
Tnom: 20^{o}C; Vnom: 3.6 V

6.7.8 Test Results:

6.7.8.1 Spurious Emission LTE FDD 2:

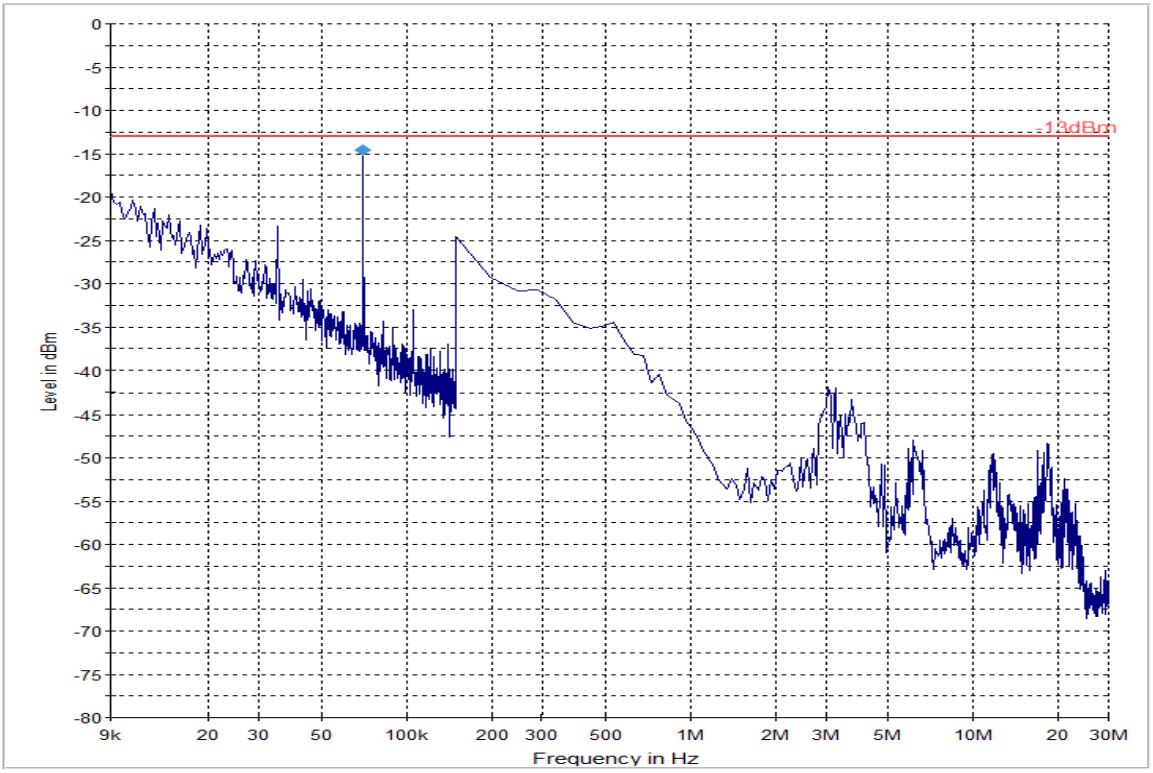
6.7.8.1.1 QPSK/ 1.4MHz/ Low Channel/ 9kHz to 30MHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: QPSK		
Measurement results – 9 kHz – 30MHz -Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



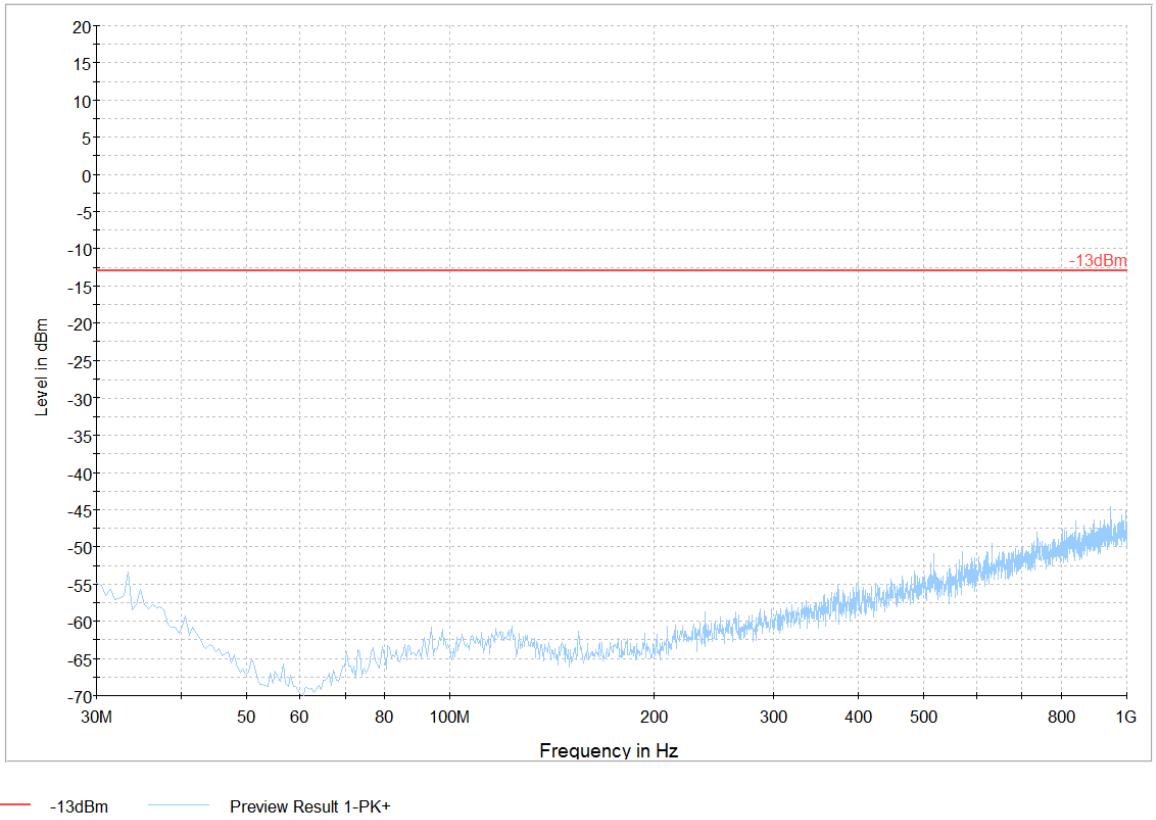
6.7.8.1.2 QPSK/ 20MHz/ Low Channel/ 9kHz to 30MHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: QPSK		
Measurement results – 9 kHz – 30MHz -Mid Channel		
RB Size = Full	**RB Offset** = 0	**BW (MHz)** = 20



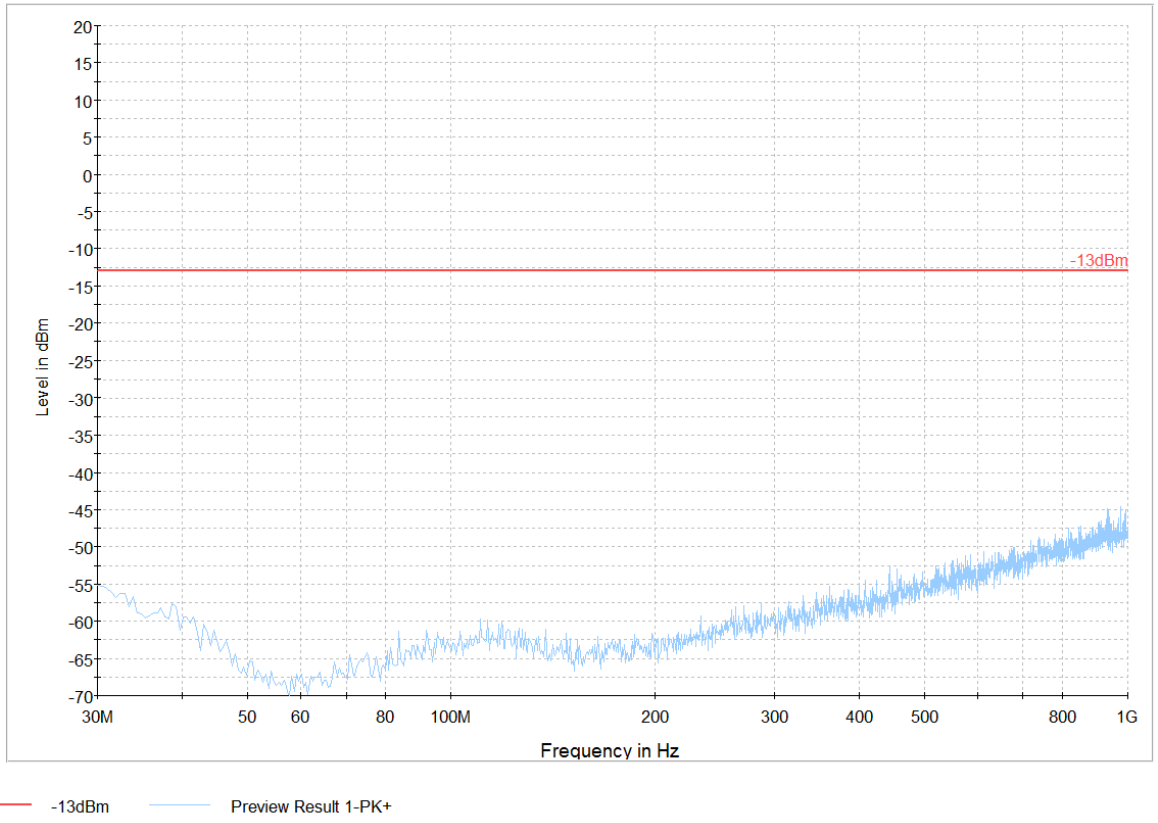
6.7.8.1.3 QPSK/ 1.4MHz/ Low Channel/ 30MHz to 1GHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz -Low Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



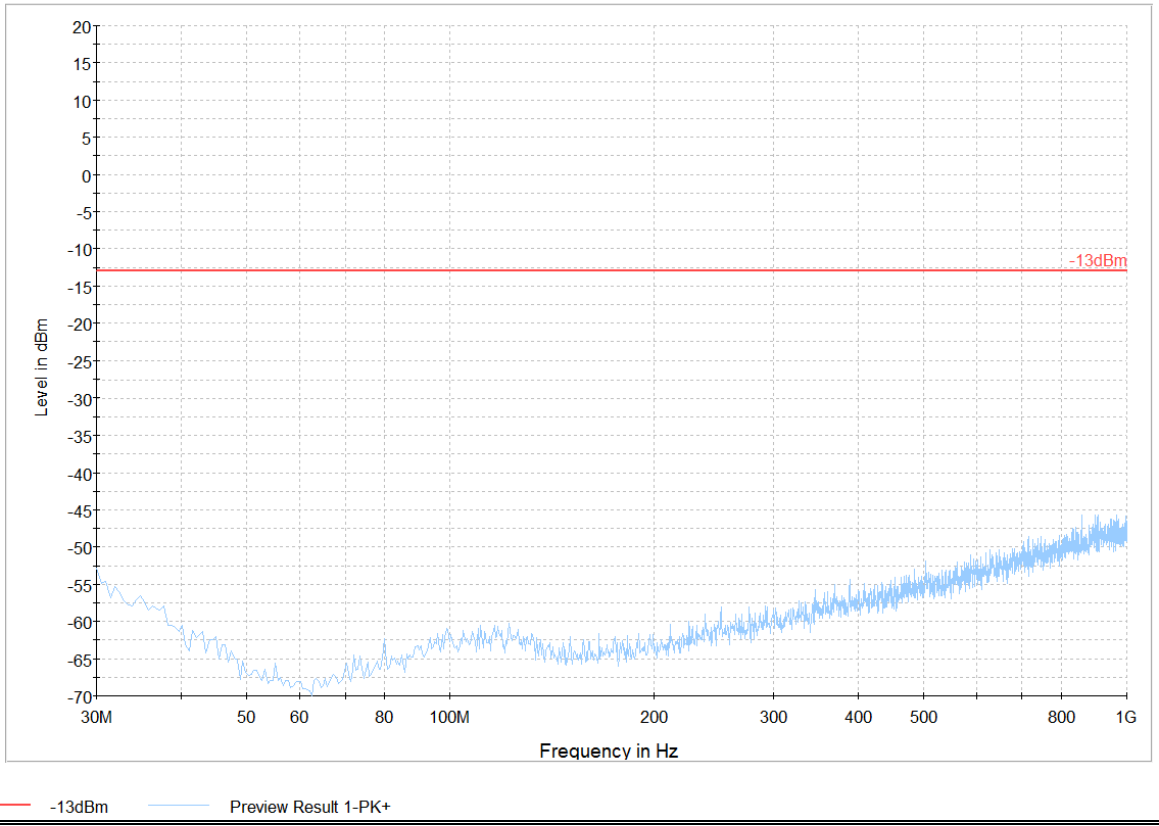
6.7.8.1.4 QPSK/ 1.4MHz/ Mid Channel/ 30MHz to 1GHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz -Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



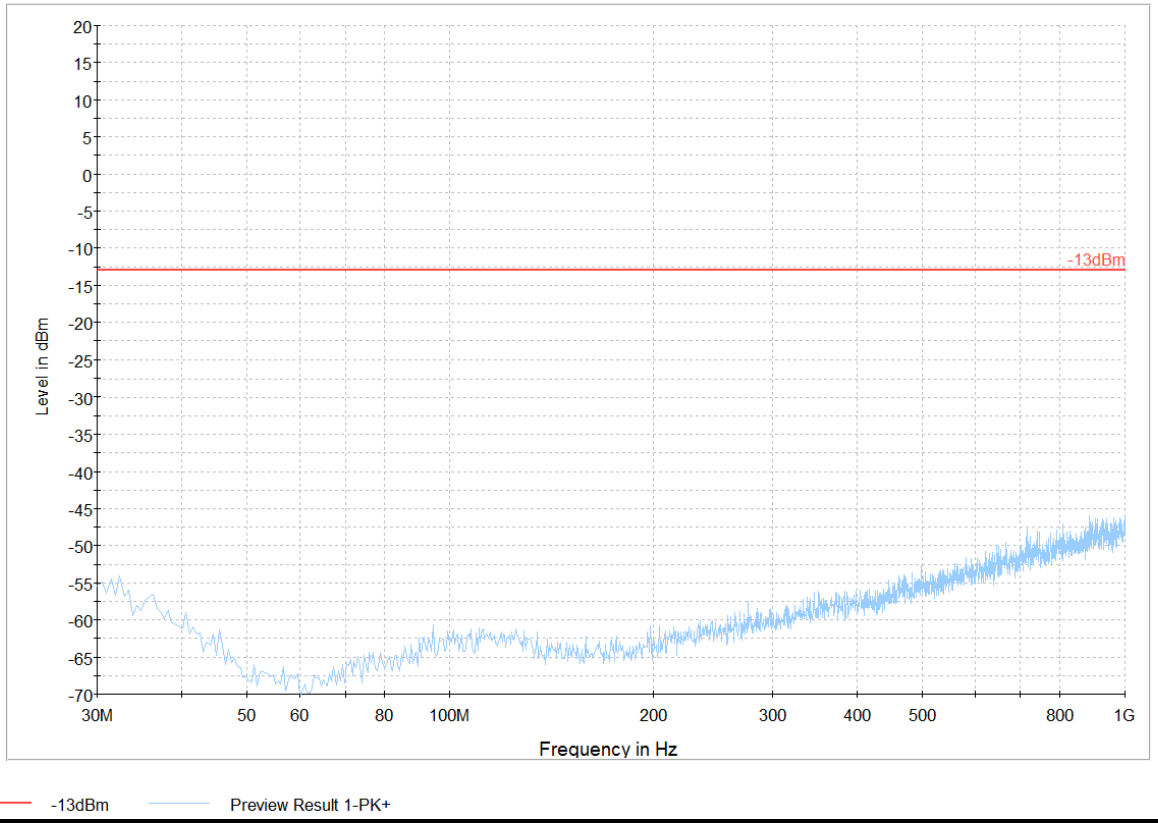
6.7.8.1.5 16QAM/ 1.4MHz/ Mid Channel/ 30MHz to 1GHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: 16QAM		
Measurement results - 30 MHz – 1GHz -Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



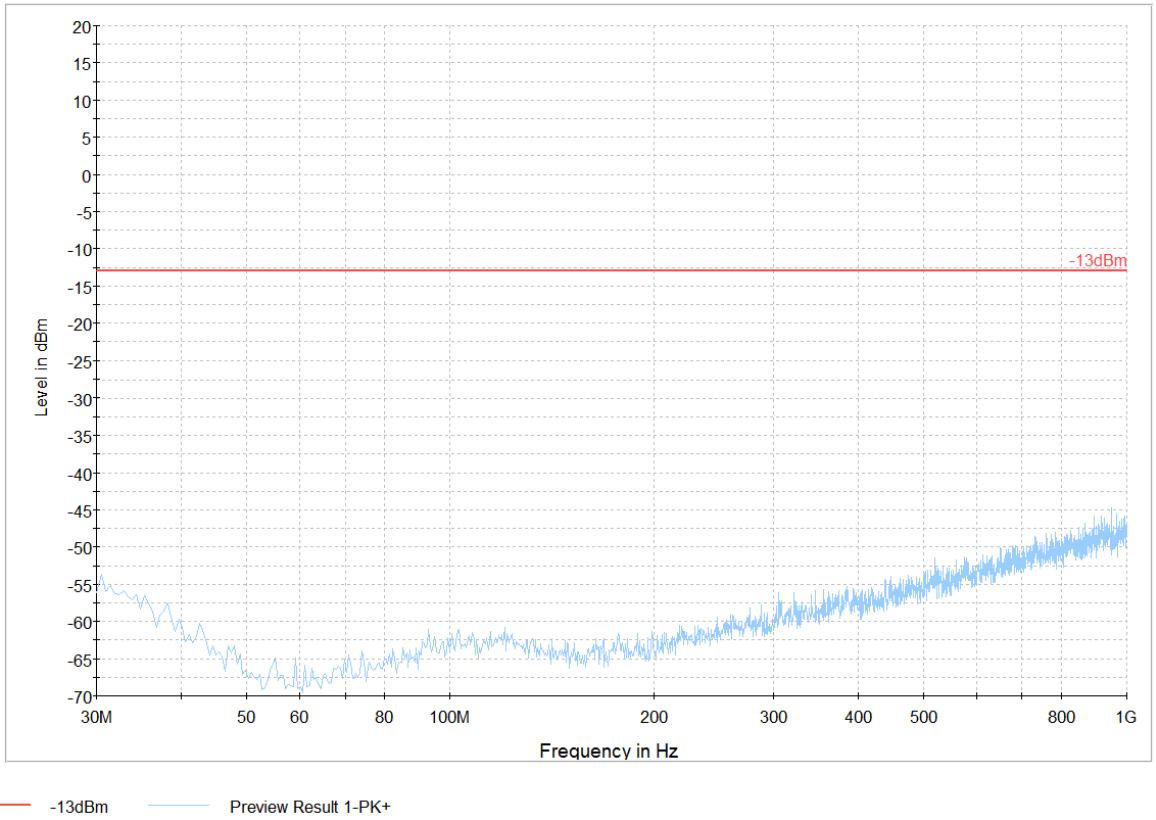
6.7.8.1.6 QPSK/ 1.4MHz/ High Channel/ 30MHz to 1GHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz -High Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



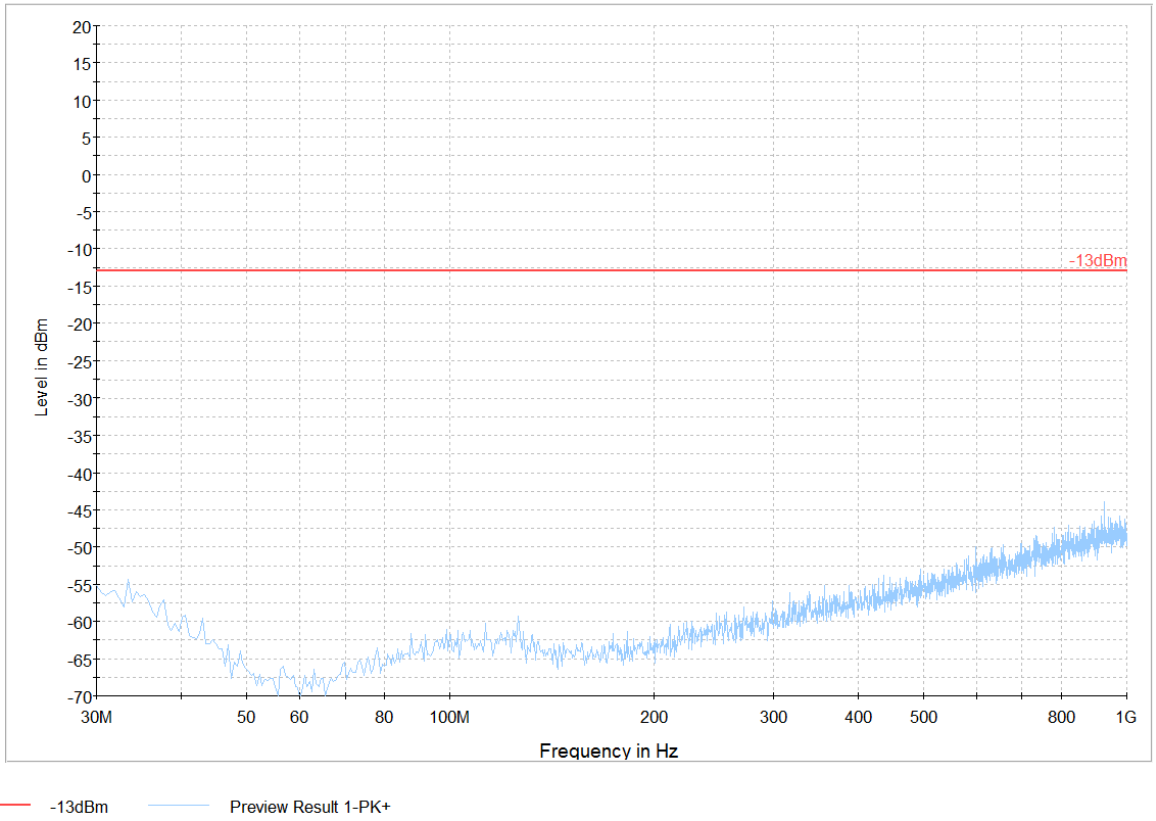
6.7.8.1.7 QPSK/ 20MHz/ Low Channel/ 30MHz to 1GHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1 GHz –Low Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



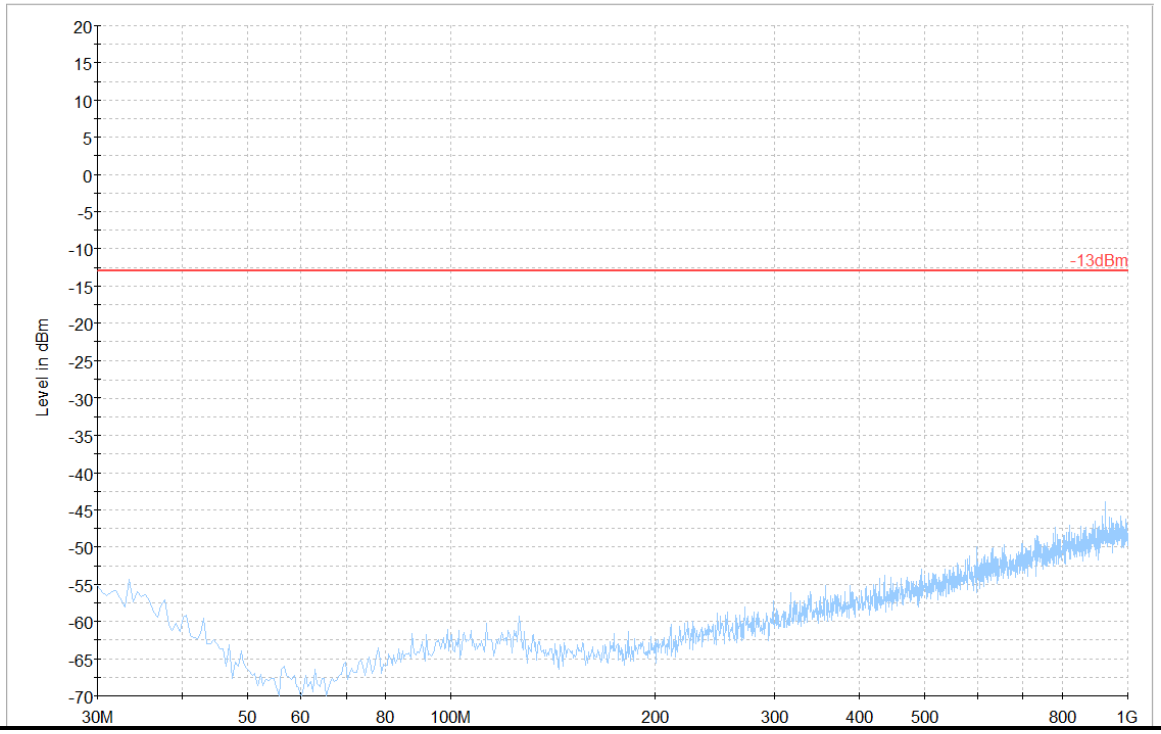
6.7.8.1.8 QPSK/ 20MHz/ Mid Channel/ 30MHz to 1GHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz -Mid Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



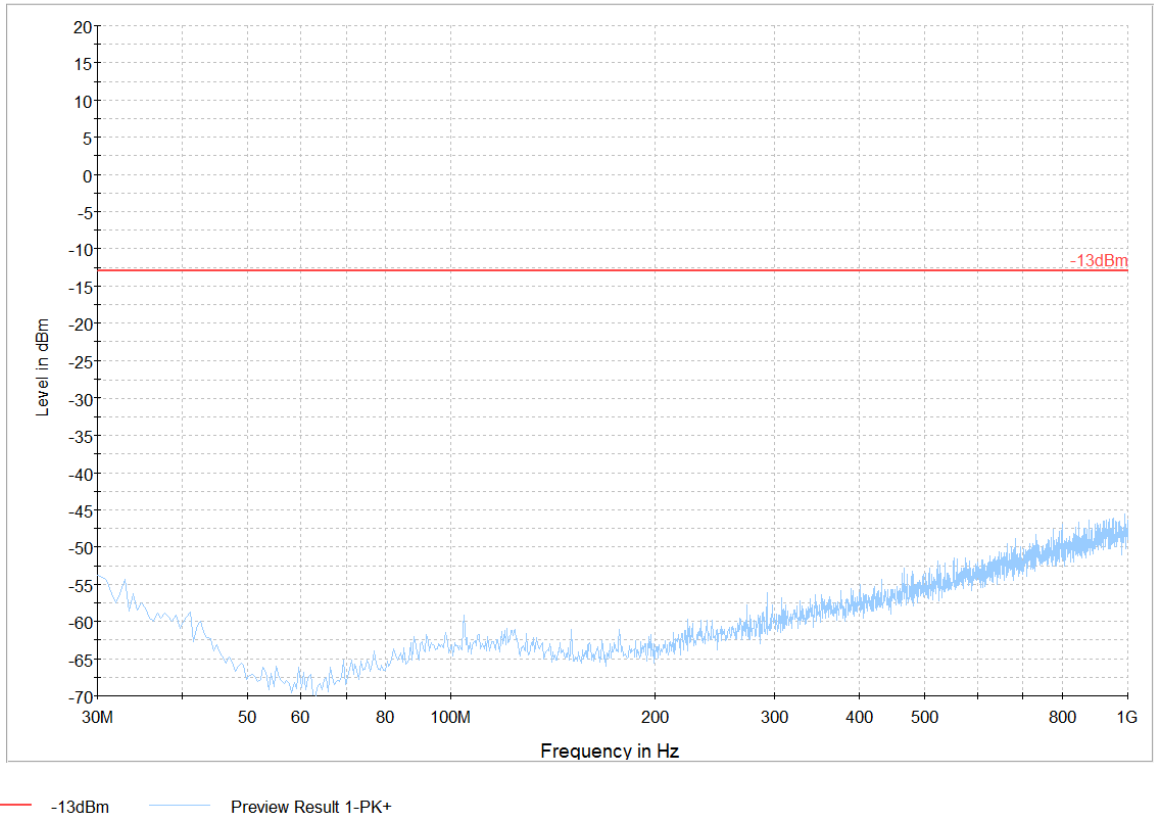
6.7.8.1.9 16 QAM/ 20MHz/ Mid Channel/ 30MHz to 1GHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: 16 QAM		
Measurement results - 30 MHz – 1GHz -Mid Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



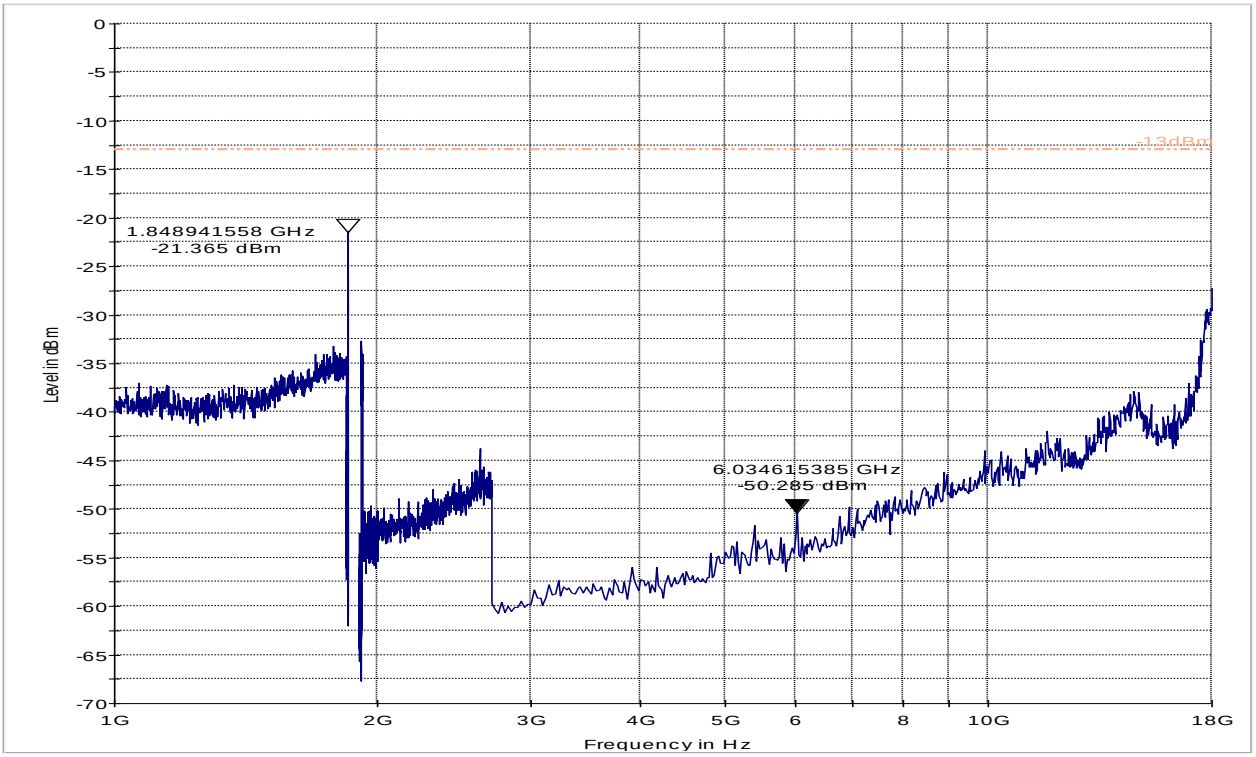
6.7.8.1.10 QPSK/ 20MHz/ High Channel/ 30MHz to 1GHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz -High Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



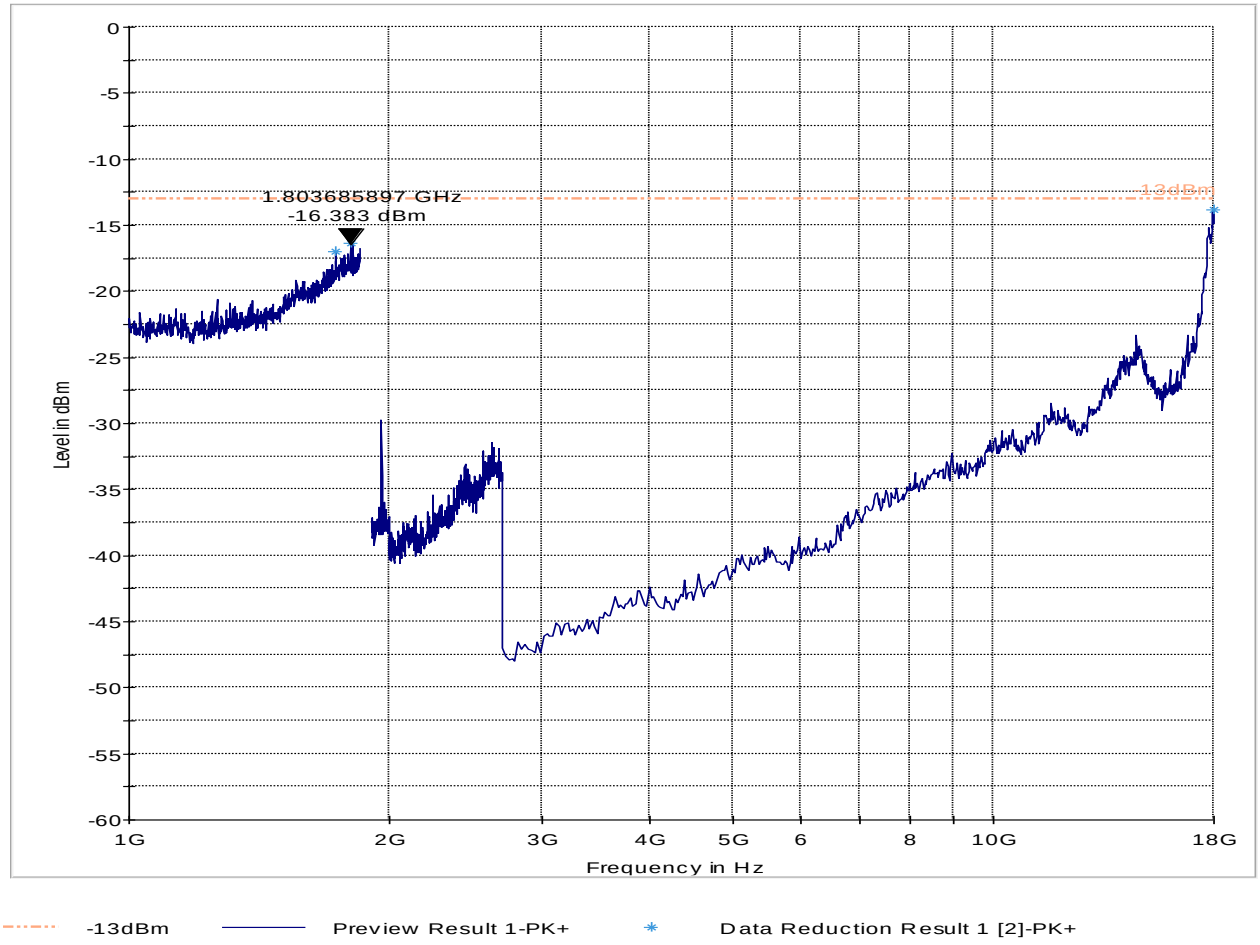
6.7.8.1.11 QPSK/ 1.4MHz/ Low Channel/ 1GHz to 18GHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 18 GHz -Low Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



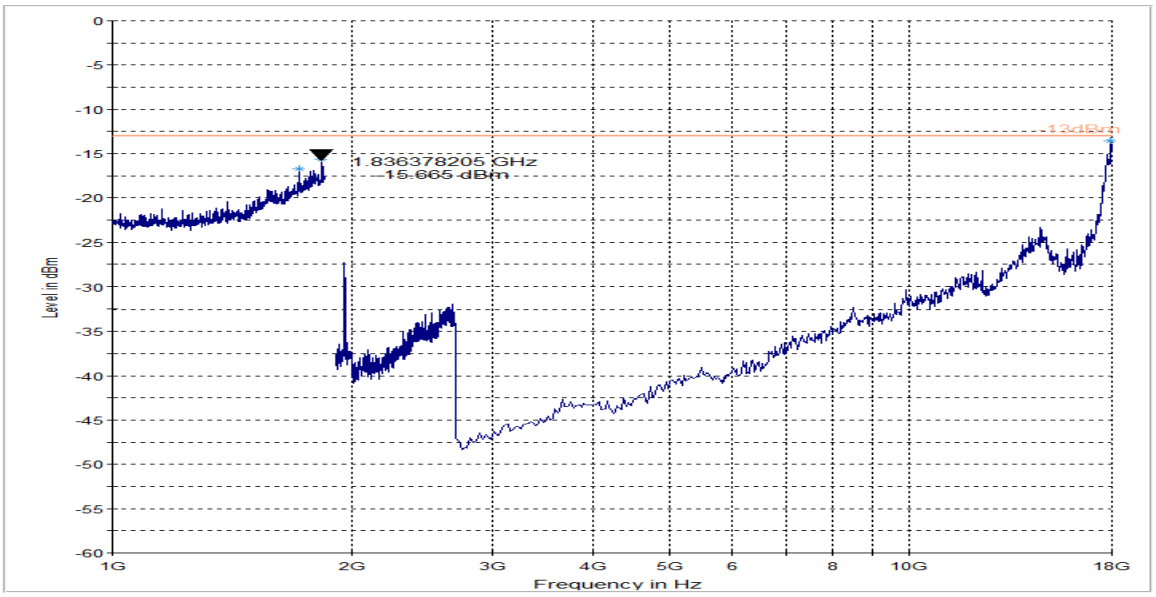
6.7.8.1.12 QPSK/ 1.4MHz/ Mid Channel/ 1GHz to 18GHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 18 GHz -Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



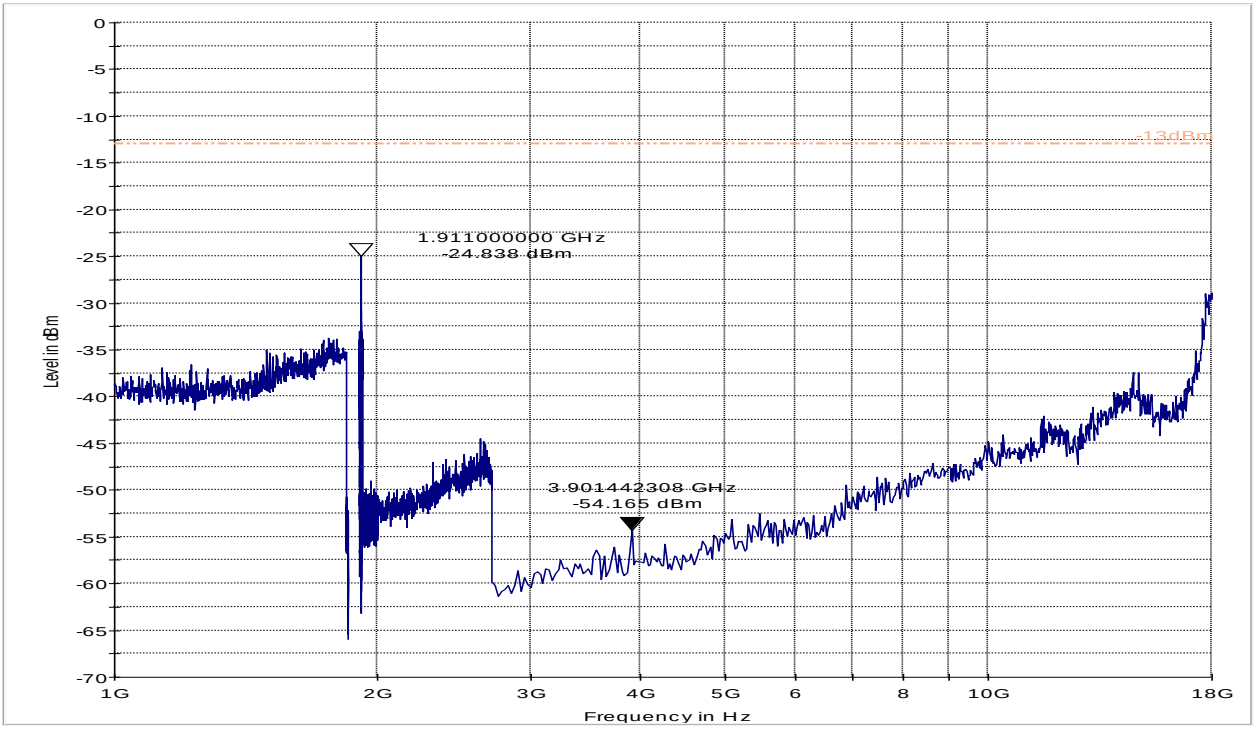
6.7.8.1.13 16QAM/ 1RB Mid/ Mid Channel/ 1GHz to 18GHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: 16QAM		
Measurement results - 1 GHz – 18 GHz –Mid Channel		
RB Size = 1	**RB Offset** = Mid	**BW (MHz)** = 1.4



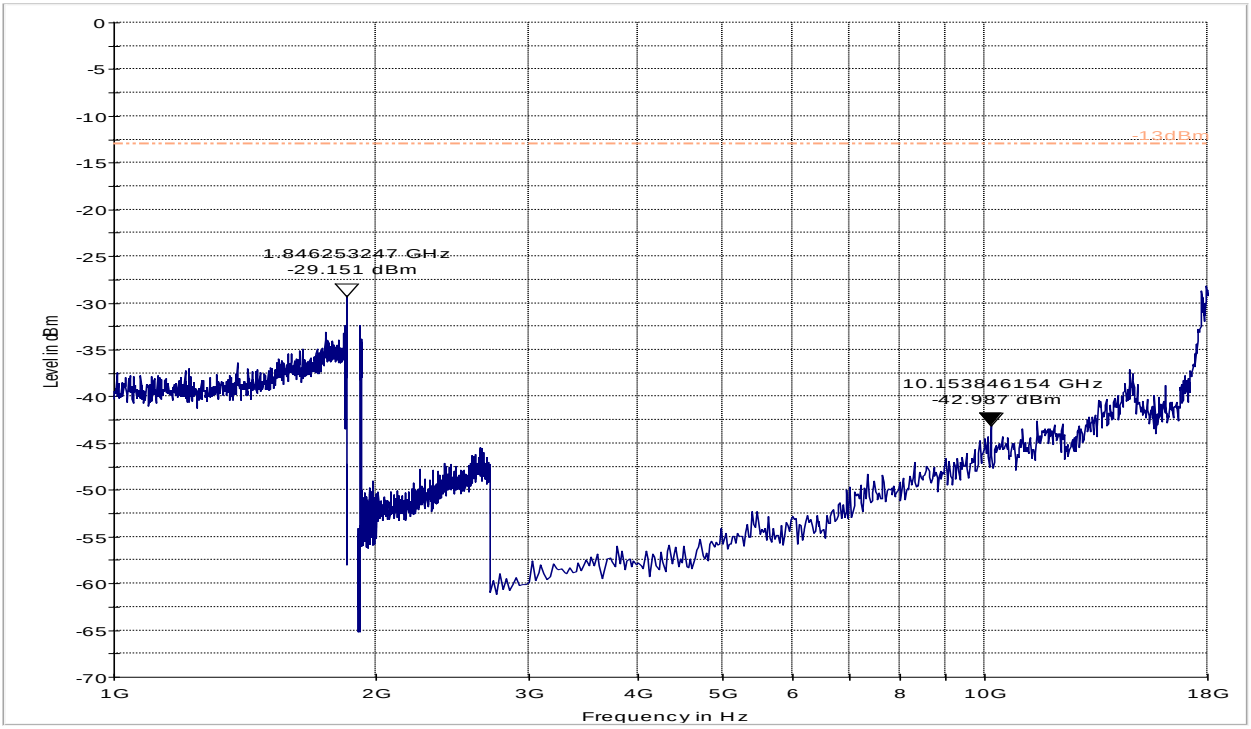
6.7.8.1.14 QPSK/ 1.4MHz/ High Channel/ 1GHz to 18GHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 18 GHz -High Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



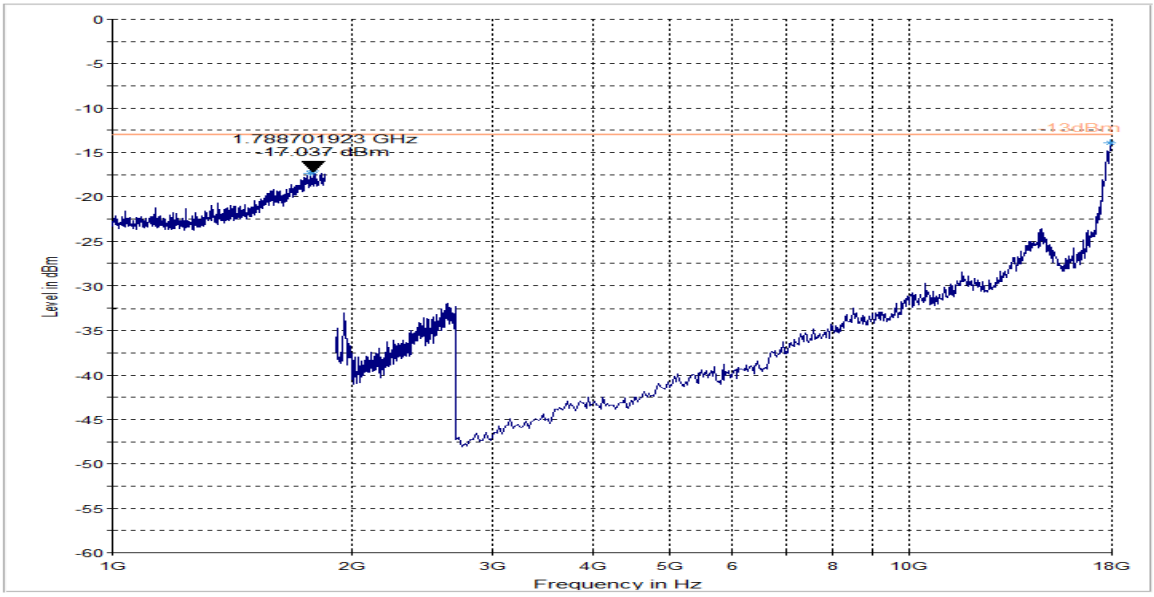
6.7.8.1.15 QPSK/ 20MHz/ Low Channel/ 1GHz to 18GHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 18 GHz -Low Channel		
RB Size =100	**RB Offset** = 0	**BW (MHz)** = 20



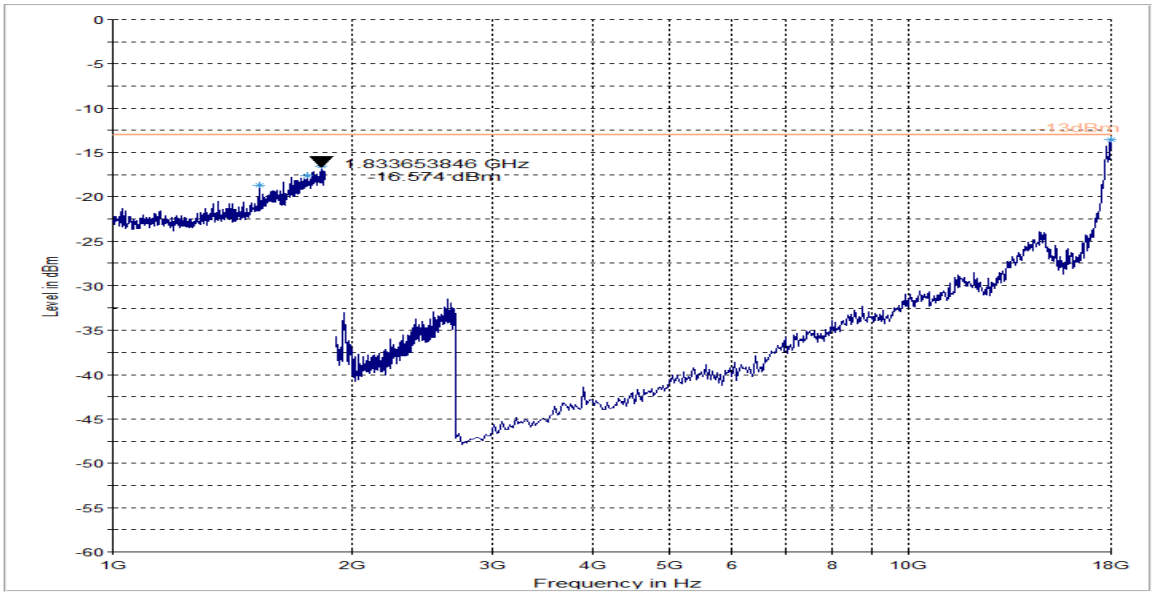
6.7.8.1.16 QPSK/ 20MHz/ Mid Channel/ 1GHz to 18GHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 18 GHz -Mid Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



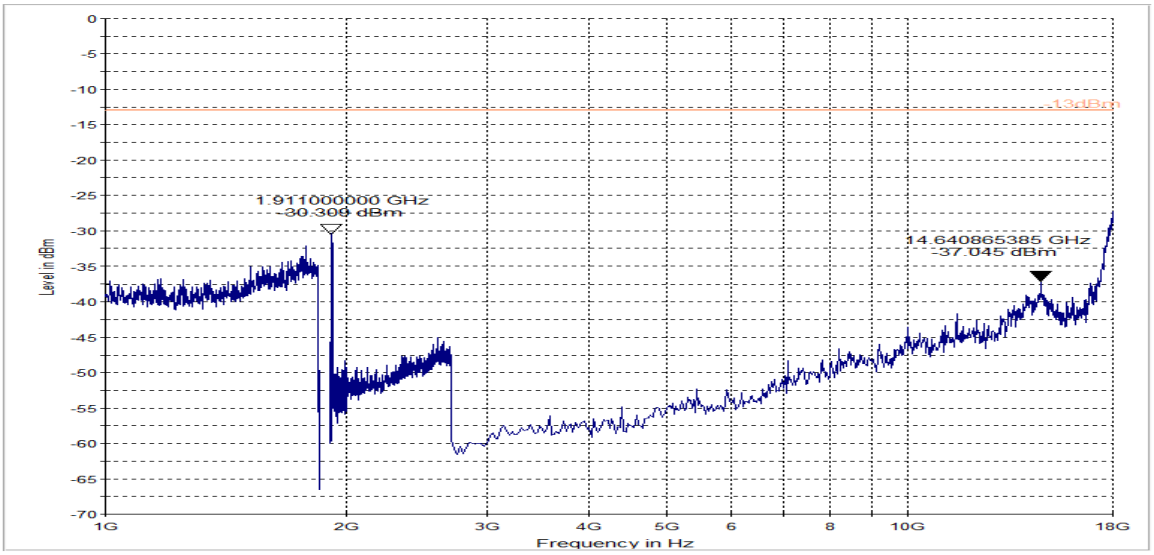
6.7.8.1.17 16QAM/ Full RB Mid/ Mid Channel/ 1GHz to 18GHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: 16QAM		
Measurement results - 1 GHz – 18 GHz –Mid Channel		
RB Size = 100	**RB Offset** = Mid	**BW (MHz)** = 20



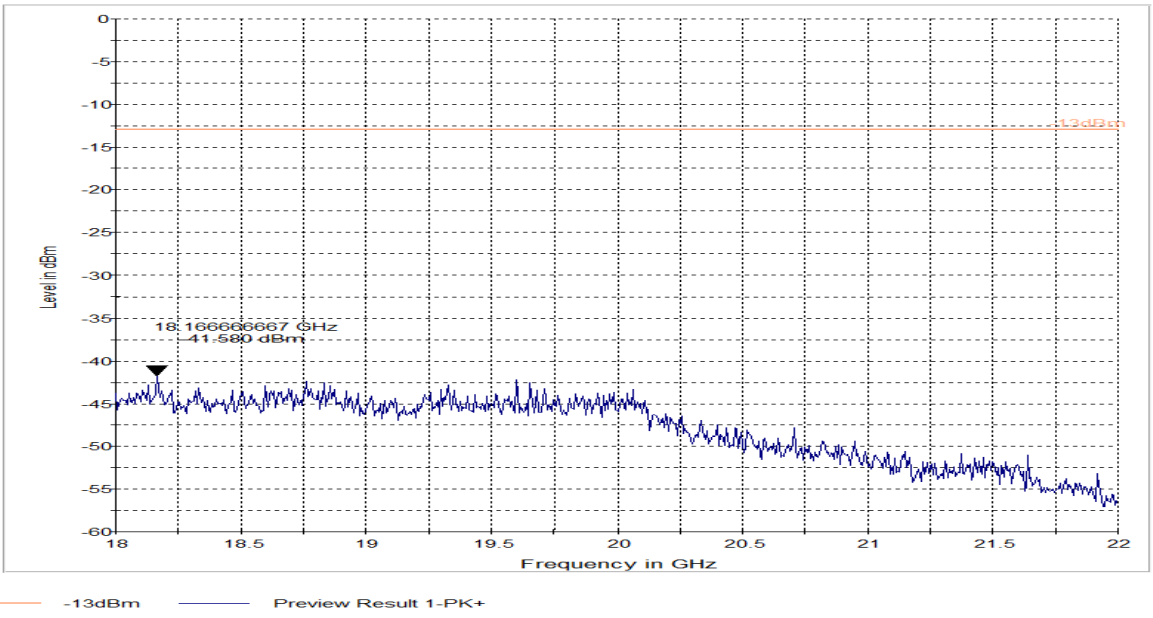
6.7.8.1.18 QPSK/ 20MHz/ High Channel/ 1GHz to 18GHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 18 GHz -High Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



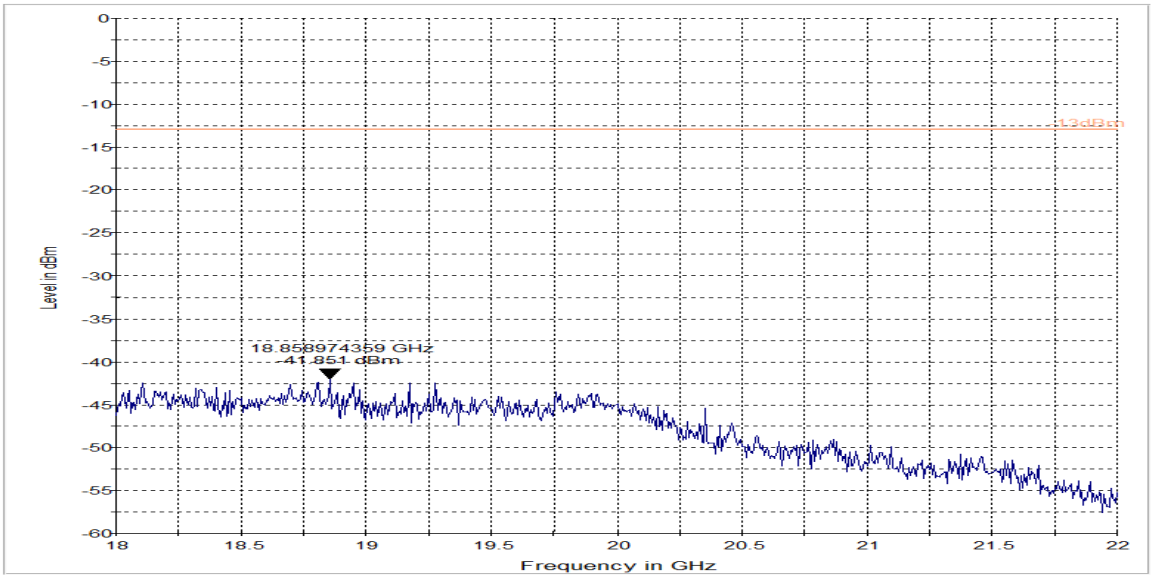
6.7.8.1.19 QPSK/ 1RB Mid/ Mid Channel/ 18GHz to 19.1GHz:

LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: QPSK		
Measurement results - 18 GHz – 22 GHz –Mid Channel		
RB Size = 1	**RB Offset** = Mid	**BW (MHz)** = 1.4



6.7.8.1.20 QPSK/ Full RB Mid/ Mid Channel/ 18GHz to 19.1GHz:

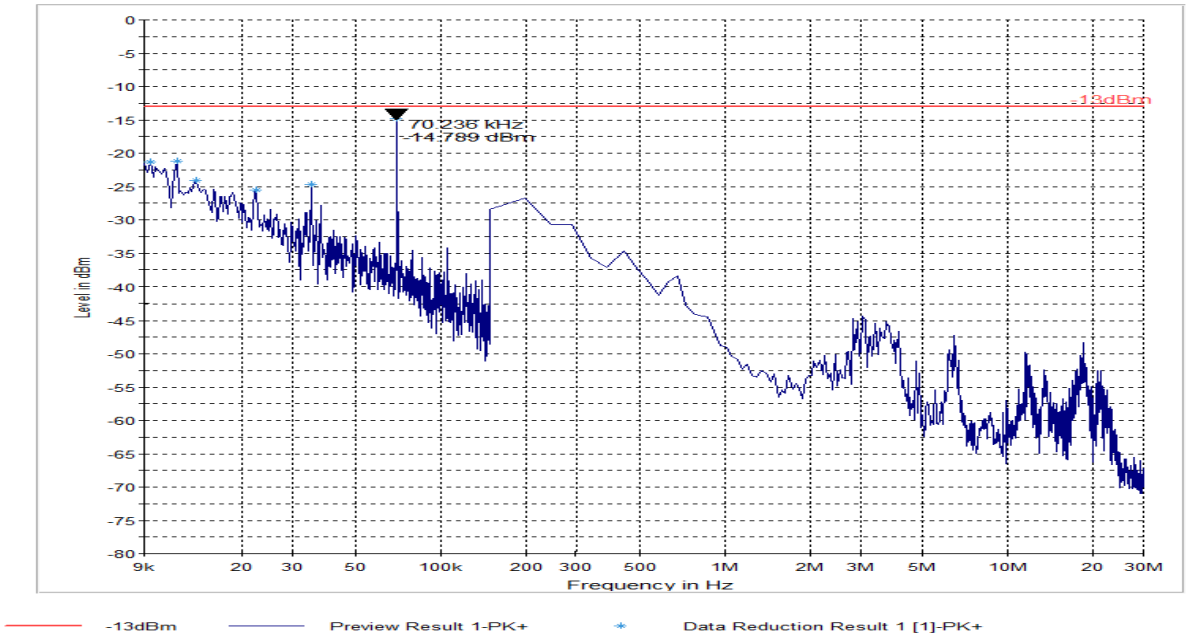
LTE Band 2 (1850 MHz – 1910 MHz) -Modulation: QPSK		
Measurement results - 18 GHz – 22 GHz –Mid Channel		
RB Size = Full	**RB Offset** = Mid	**BW (MHz)** = 20



6.7.8.2 Spurious Emission LTE FDD 4:

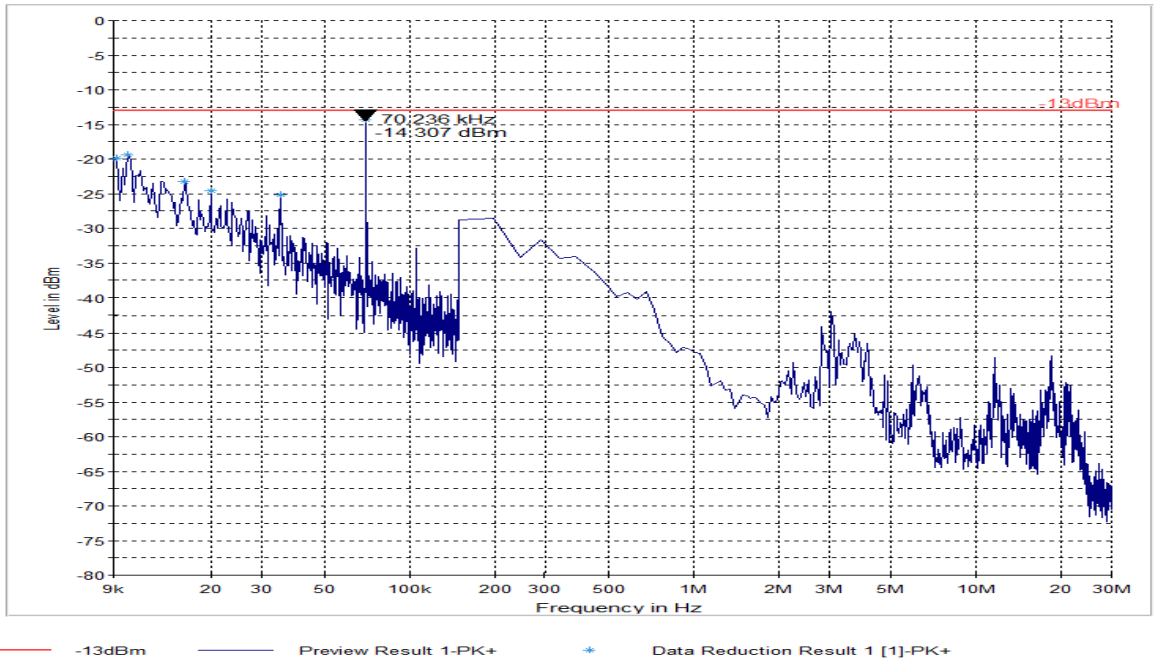
6.7.8.2.1 QPSK/ 1.4MHz/ Mid Channel/ 9kHz to 30MHz

LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: QPSK		
Measurement results – 9 kHz – 30 MHz -Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



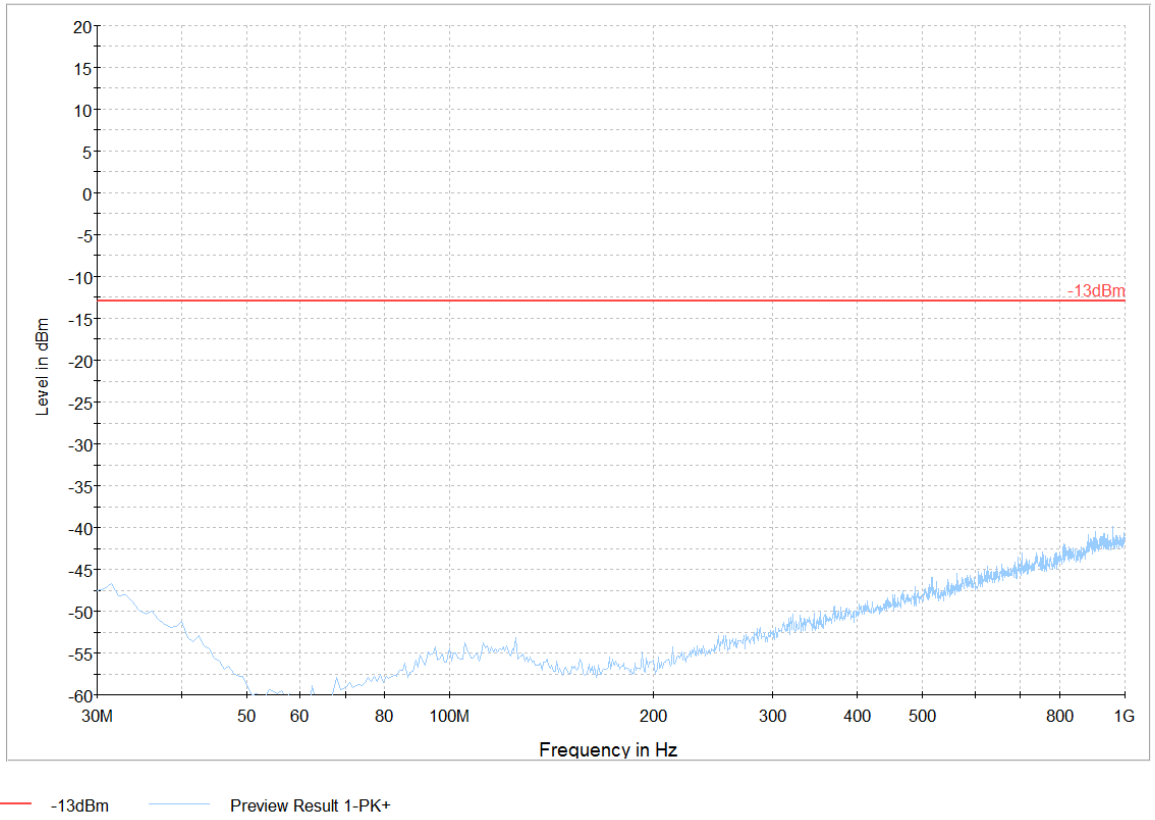
6.7.8.2.2 QPSK/ 20MHz/ Mid Channel/ 9kHz to 30MHz

LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz -Mid Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



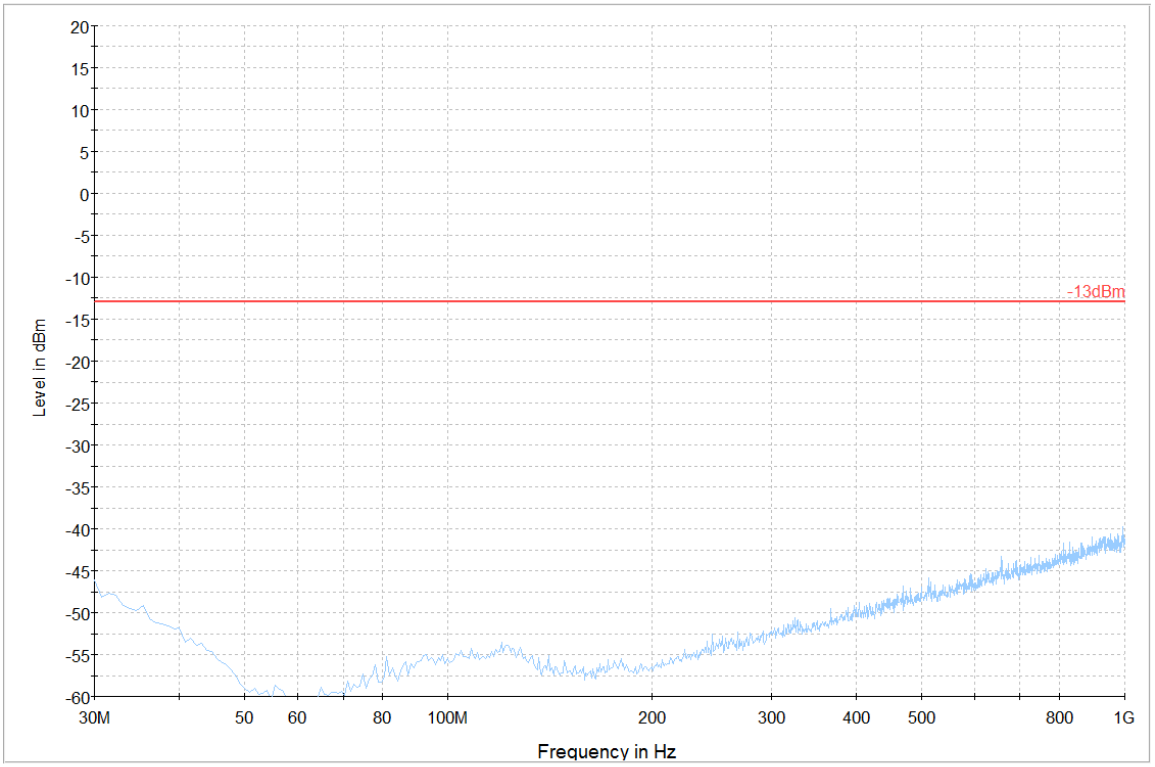
6.7.8.2.3 QPSK/ 1.4MHz/ Low Channel/ 30MHz to 1GHz

LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz -Low Channel		
RB Size = 1	**RB Offset** = Low	**BW (MHz)** = 1.4



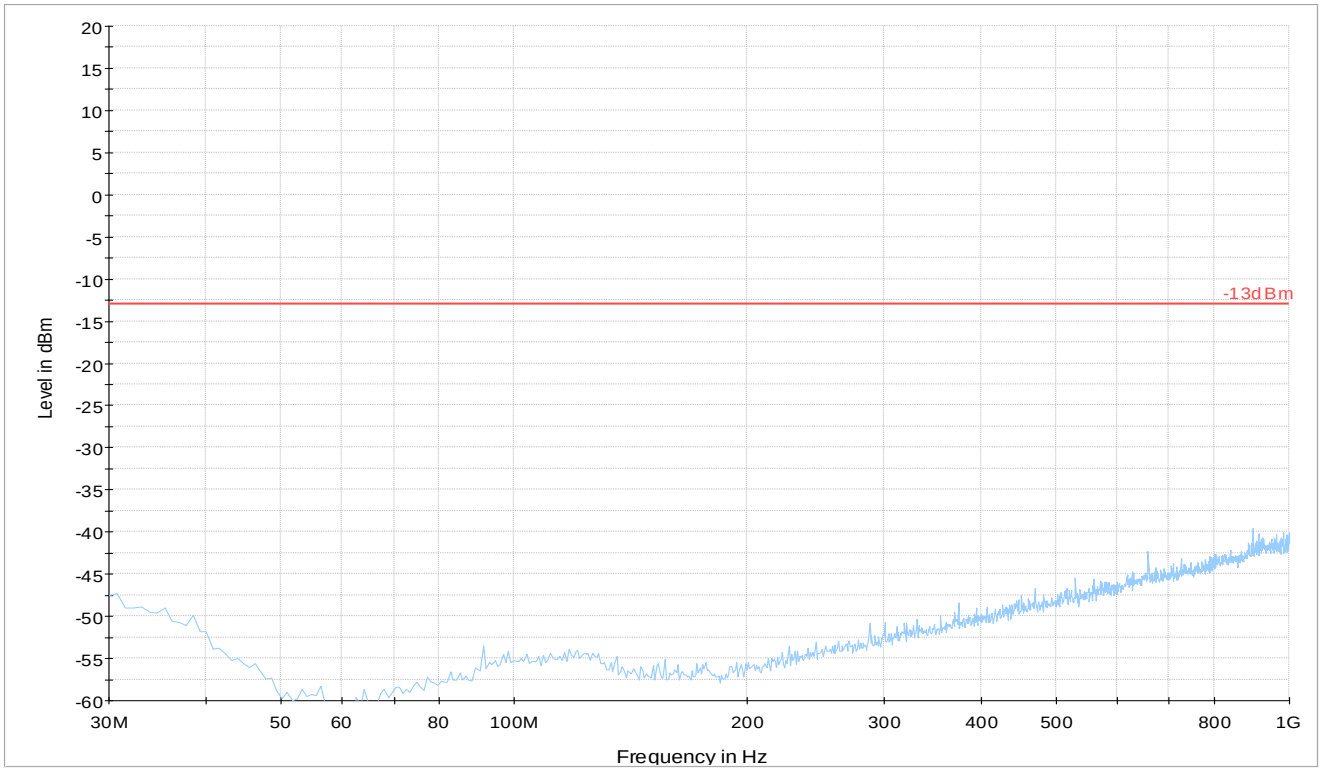
6.7.8.2.4 QPSK/ 1.4MHz/ Mid Channel/ 30MHz to 1GHz

LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz -Mid Channel		
RB Size = 1	**RB Offset** = Mid	**BW (MHz)** = 1.4



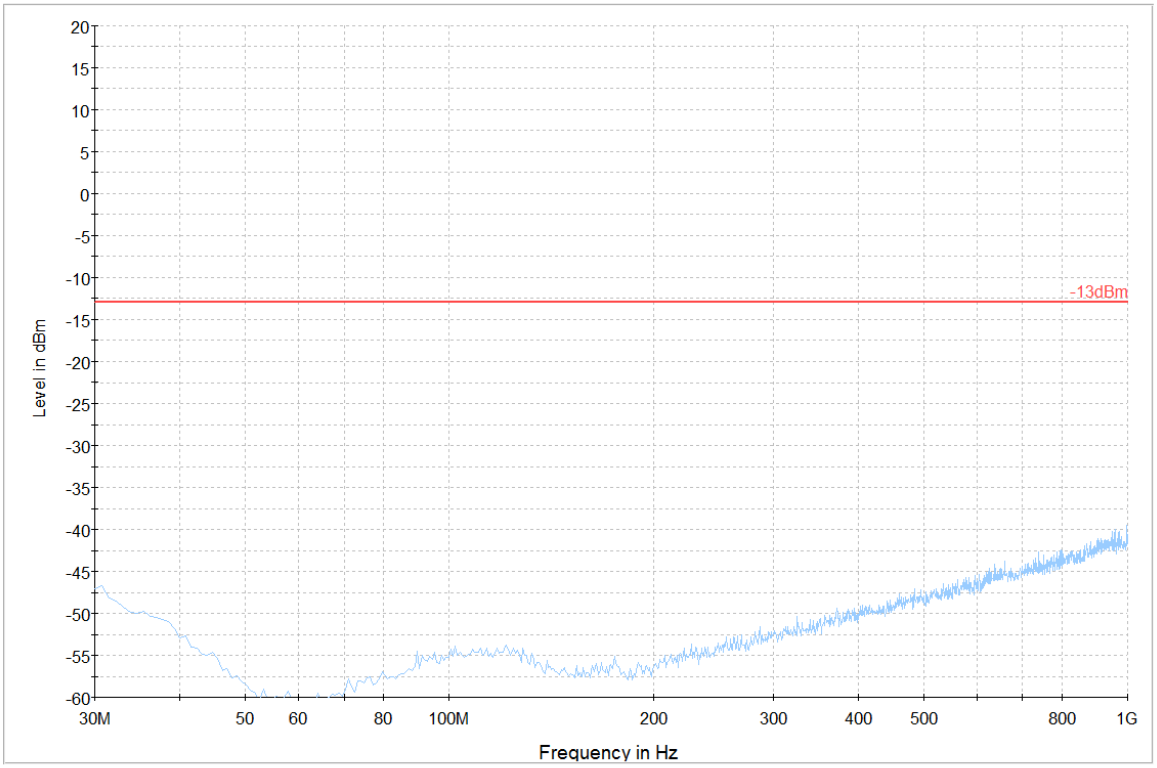
6.7.8.2.5 16QAM/ 1.4MHz/ Mid Channel/ 30MHz to 1GHz

LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: 16QAM		
Measurement results - 30 MHz – 1GHz -Mid Channel		
RB Size = 1	**RB Offset** = Mid	**BW (MHz)** = 1.4



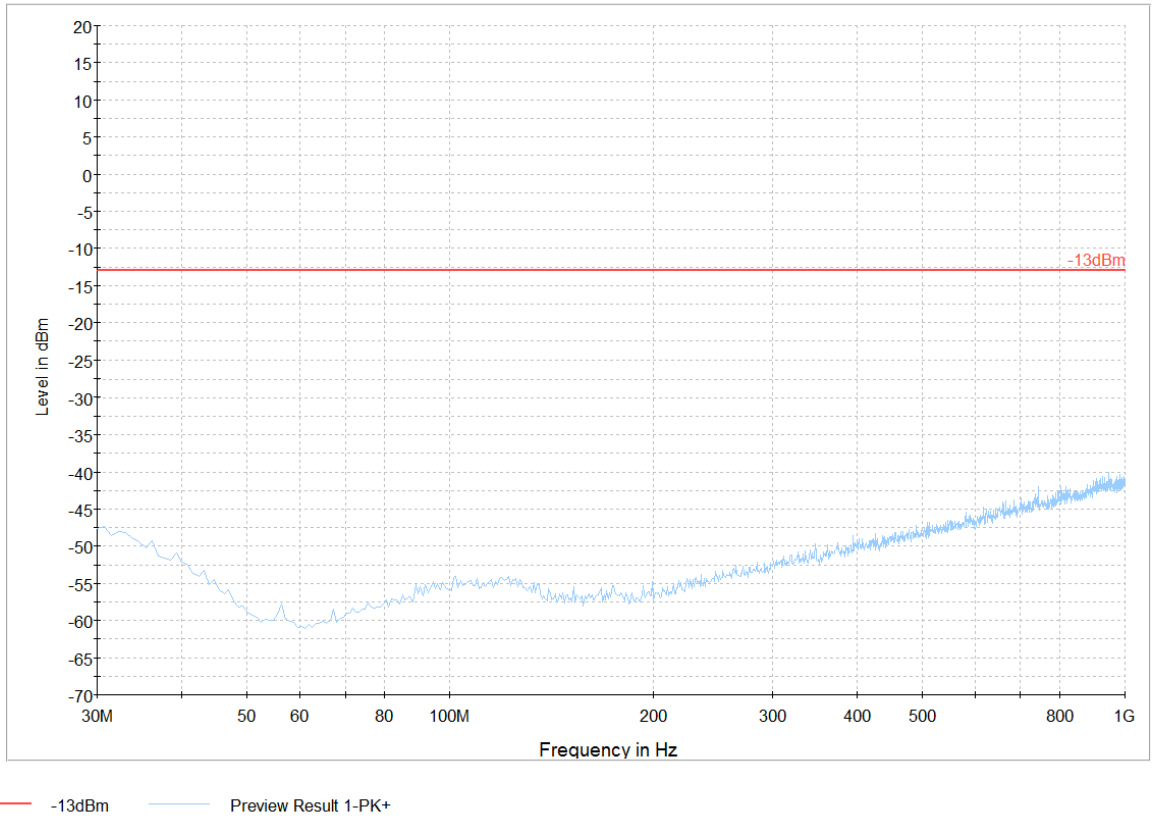
6.7.8.2.6 QPSK/ 1.4MHz/ High Channel/ 30MHz to 1GHz

LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz -High Channel		
RB Size = 1	**RB Offset** = High	**BW (MHz)** = 1.4



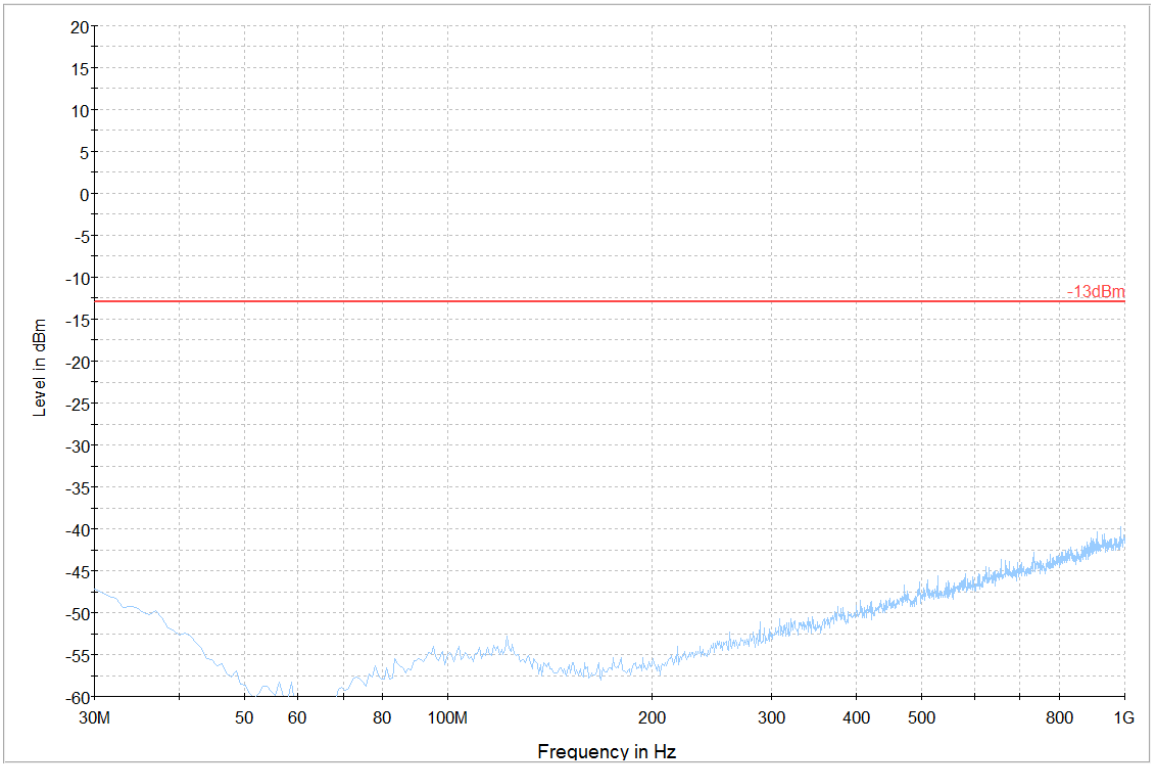
6.7.8.2.7 QPSK/ 20MHz/ Low Channel/ 30MHz to 1GHz

LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz -Low Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



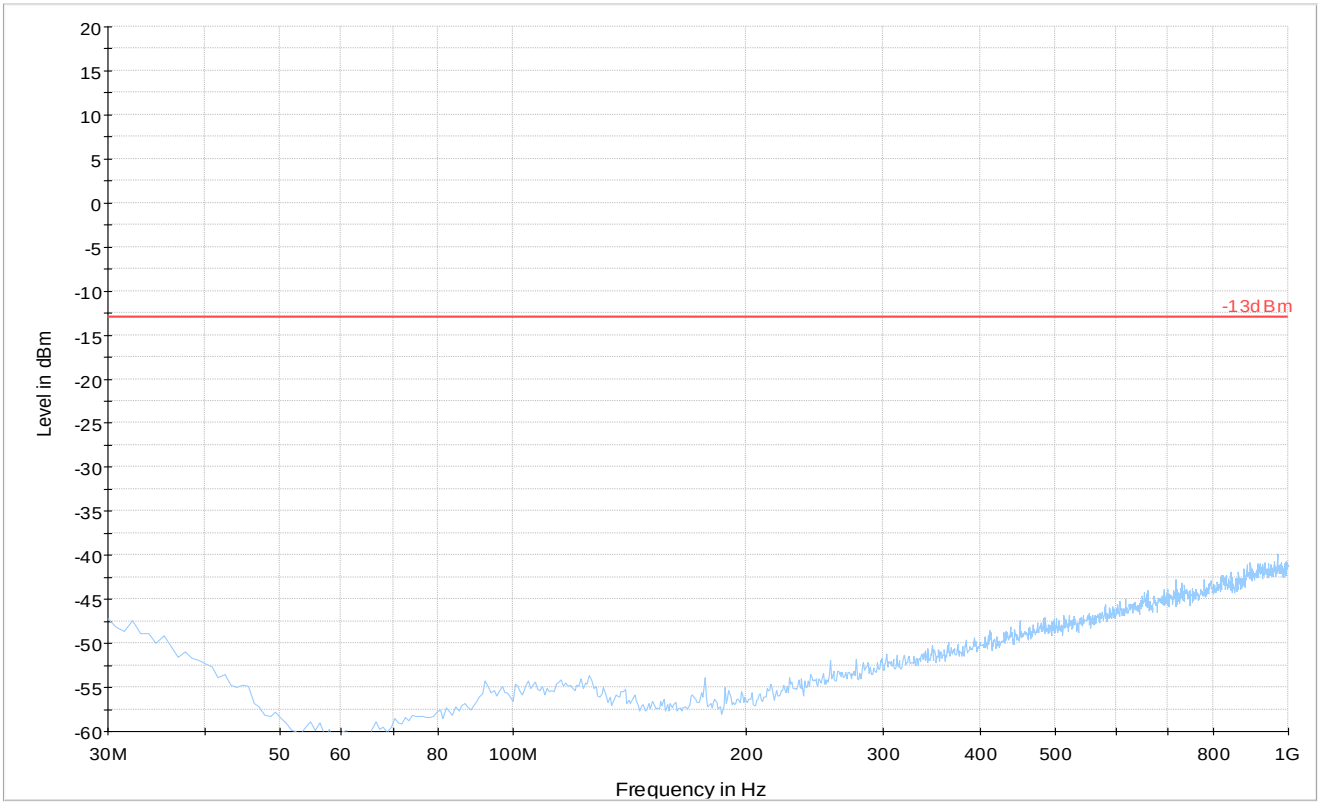
6.7.8.2.8 QPSK/ 20MHz/ Mid Channel/ 30MHz to 1GHz

LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz –Mid Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



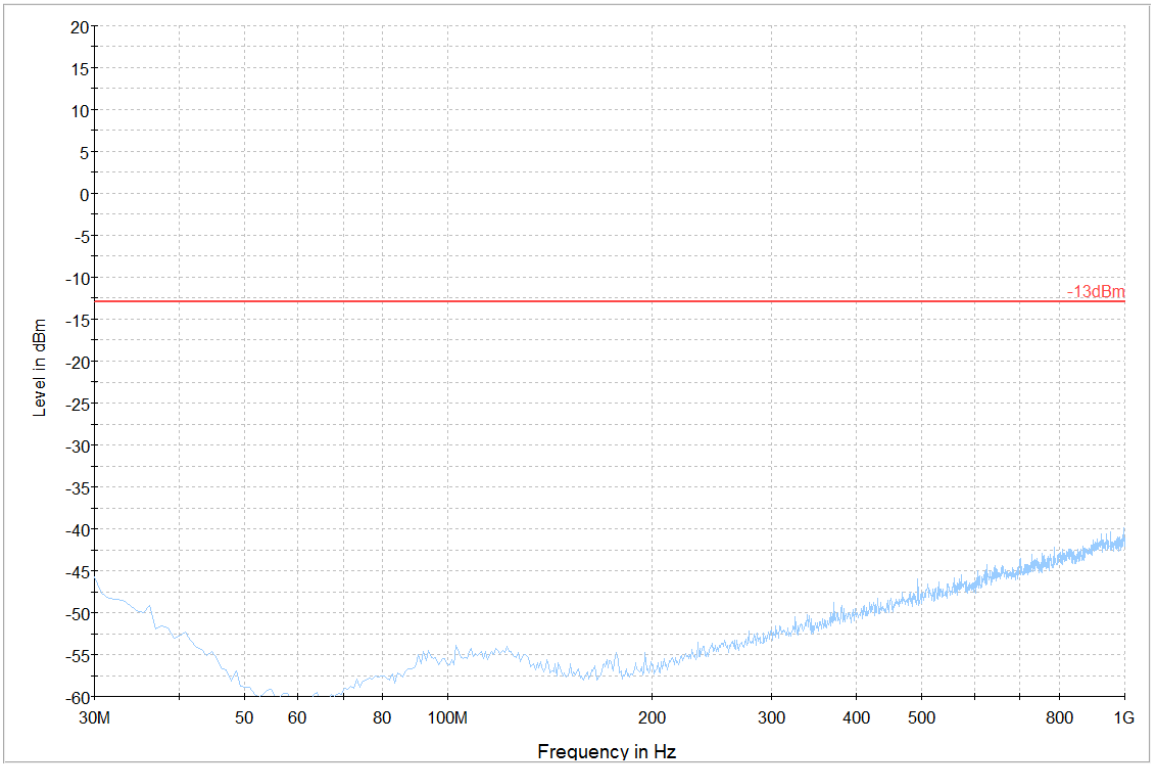
6.7.8.2.9 16QAM/ 20MHz/ Mid Channel/ 30MHz to 1GHz

LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: 16QAM		
Measurement results - 30 MHz – 1GHz –Mid Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



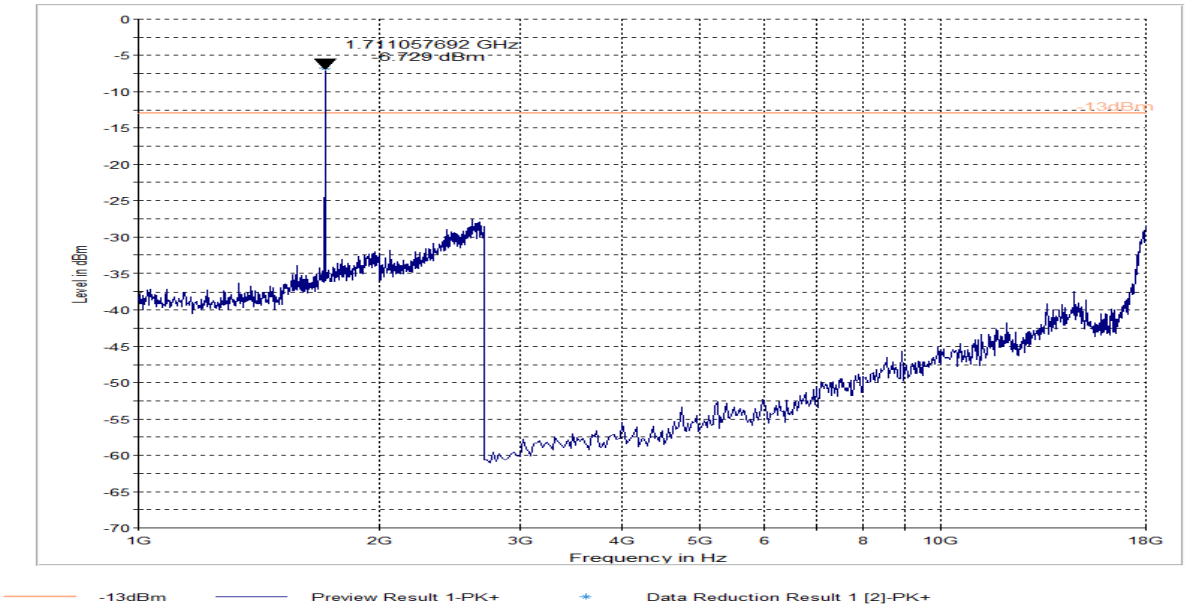
6.7.8.2.10 QPSK/ 20MHz/ High Channel/ 30MHz to 1GHz

LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz -High Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



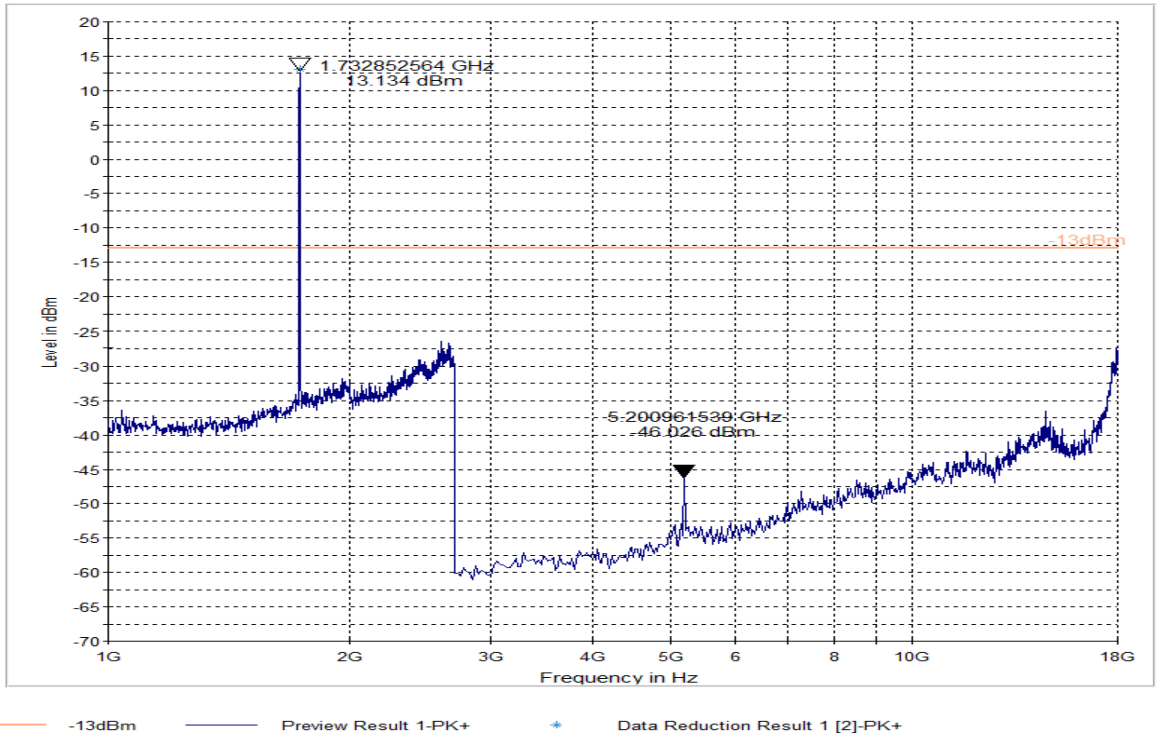
6.7.8.2.11 QPSK/ 1.4MHz/ Low Channel/ 1GHz to 18GHz

LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 18 GHz -Low Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



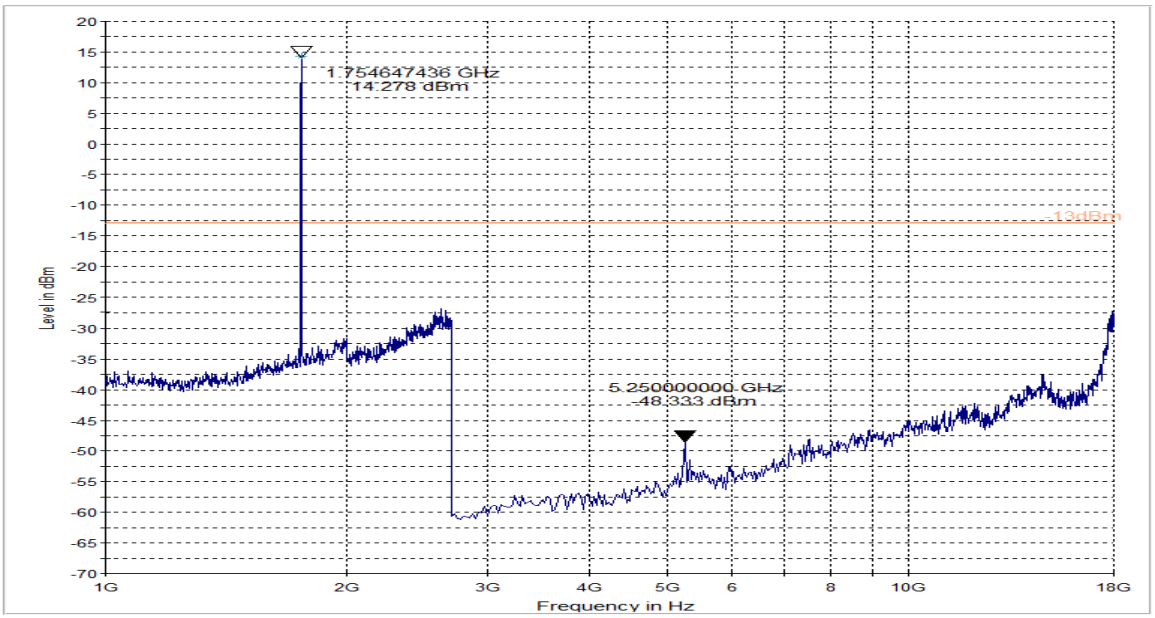
6.7.8.2.12 QPSK/ 1.4MHz/ Mid Channel/ 1GHz to 18GHz

LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 18 GHz -Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



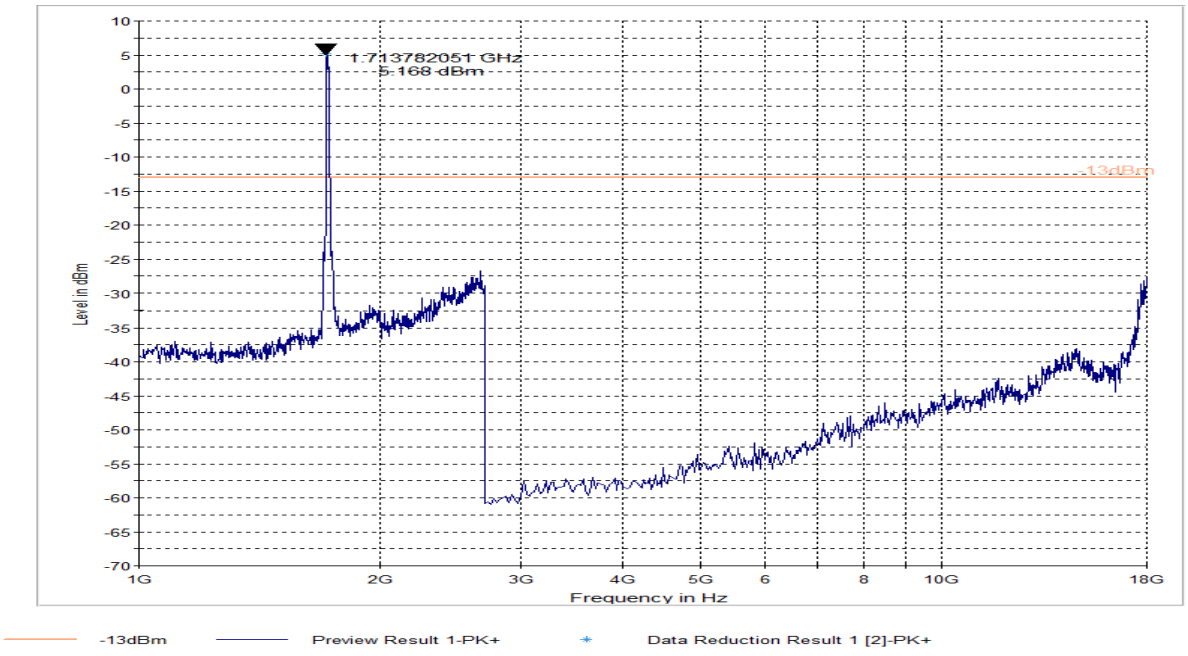
6.7.8.2.13 QPSK/ 1.4MHz/ High Channel/ 1GHz to 18GHz

LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 18 GHz -High Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



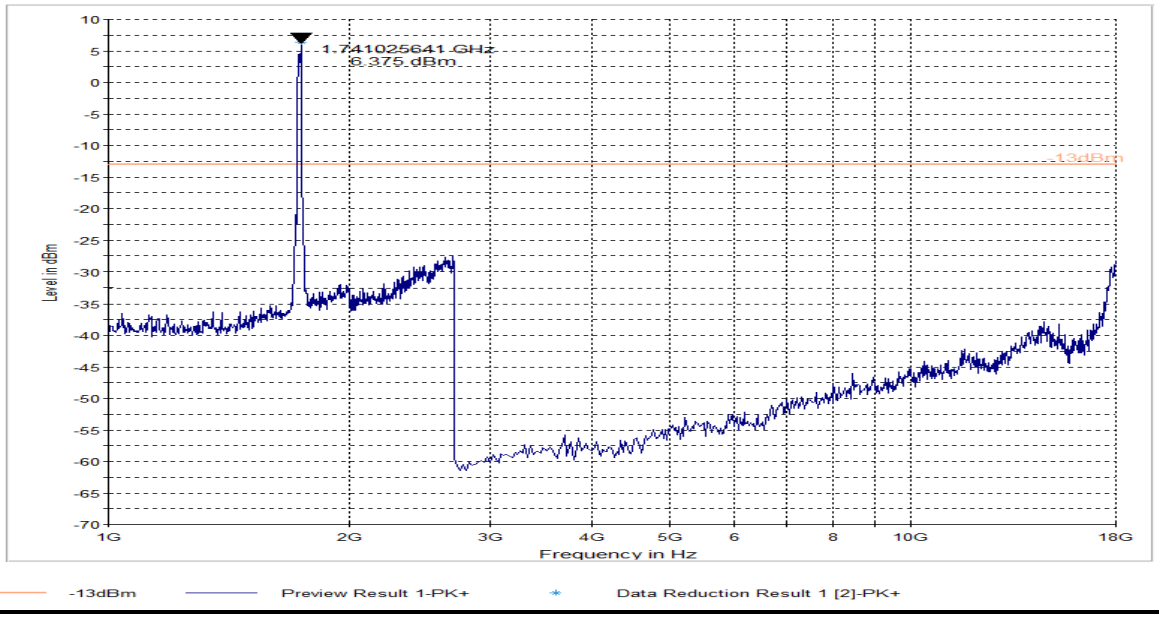
6.7.8.2.14 QPSK/ 20MHz/ Low Channel/ 1GHz to 18GHz

LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 18 GHz -Low Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



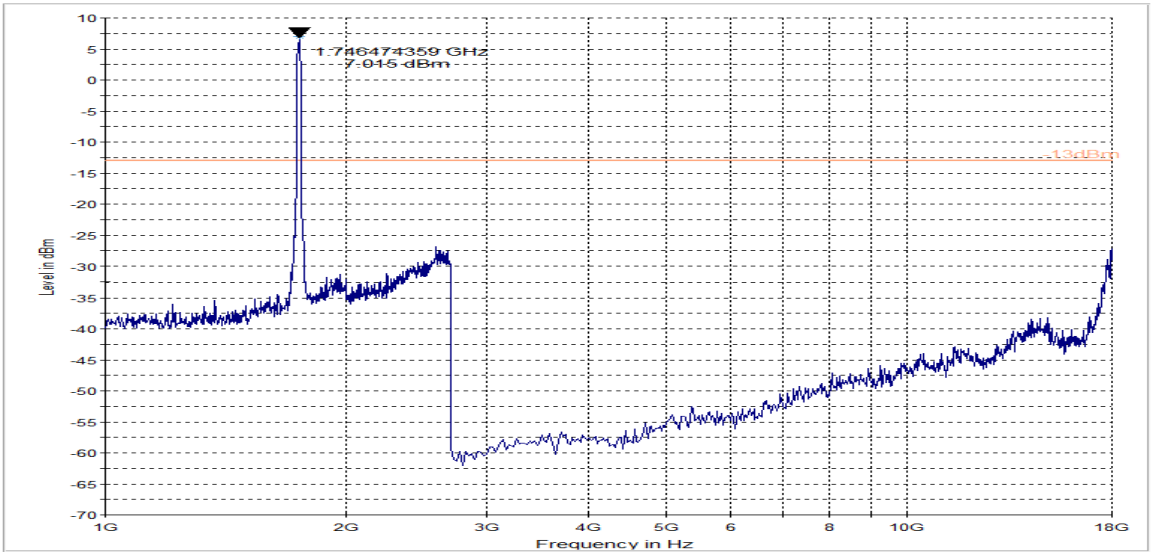
6.7.8.2.15 QPSK/ 20MHz/ Mid Channel/ 1GHz to 18GHz

LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 18 GHz -Mid Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



6.7.8.2.16 QPSK/ 20MHz/ High Channel/ 1GHz to 18GHz

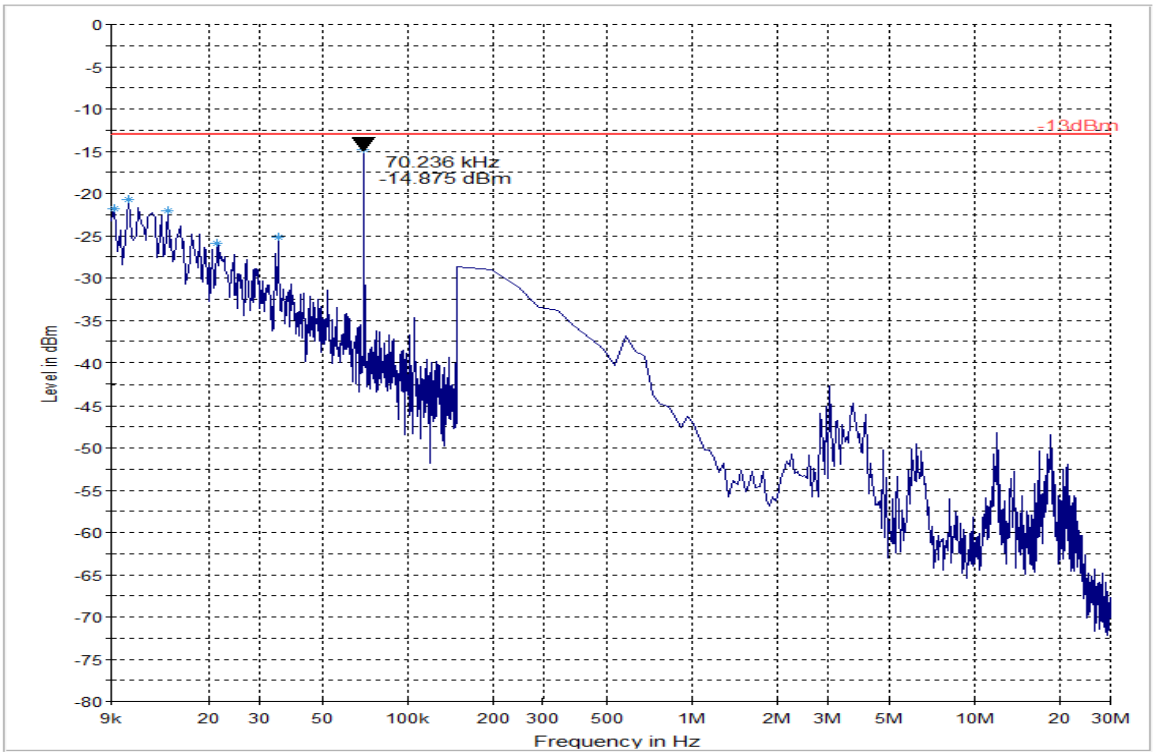
LTE Band 4 (1710 MHz – 1755 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 18 GHz -High Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



6.7.8.3 Spurious Emission LTE FDD 5:

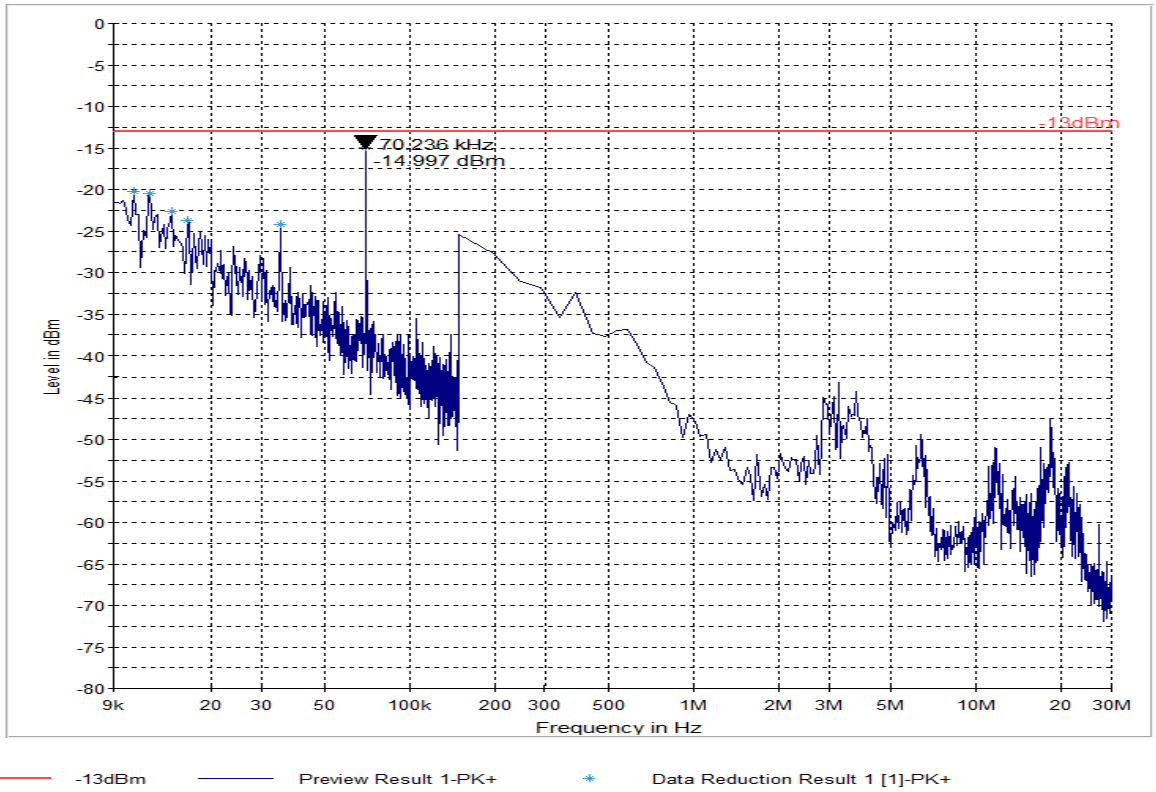
6.7.8.3.1 QPSK/ 1.4MHz/ Low Channel/ 9kHz to 30MHz

LTE Band 5 (824 MHz – 849 MHz) -Modulation: QPSK		
Measurement results – 9 kHz – 30 MHz -Low Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



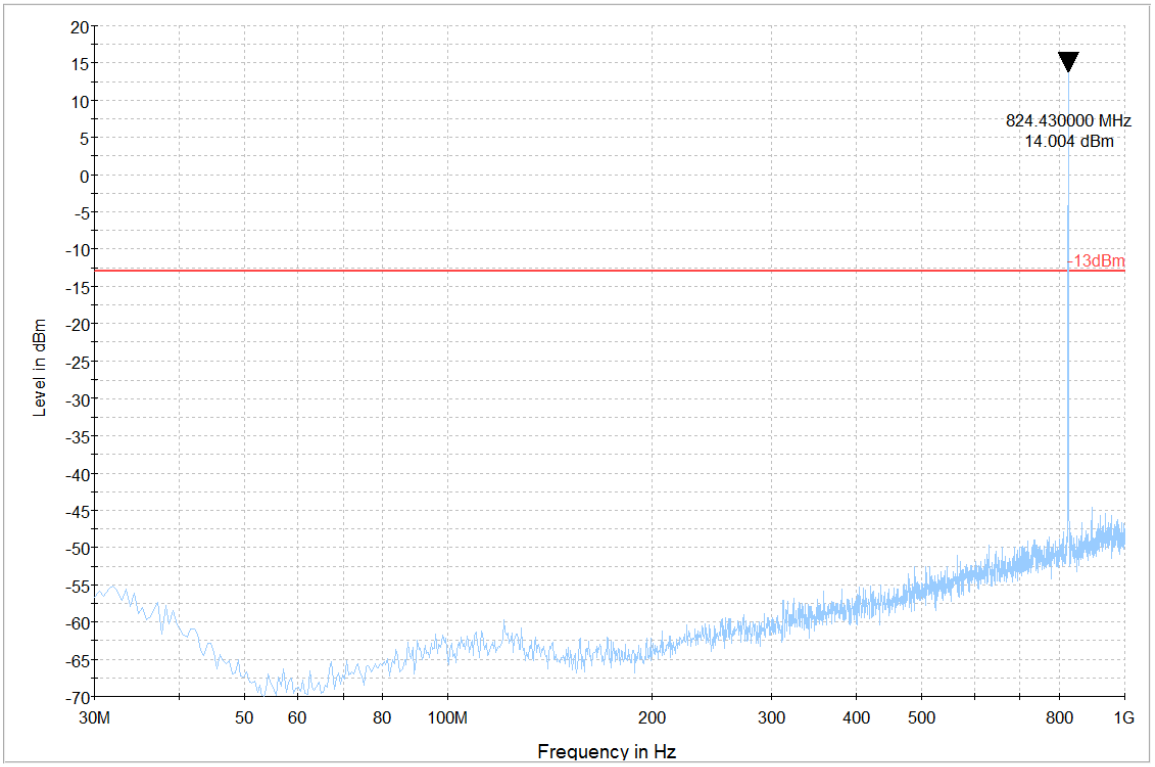
6.7.8.3.2 QPSK/ 10MHz/ Low Channel/ 9kHz to 30MHz

LTE Band 5 (824 MHz – 849 MHz) -Modulation: QPSK		
Measurement results – 9 kHz – 30 MHz -Low Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



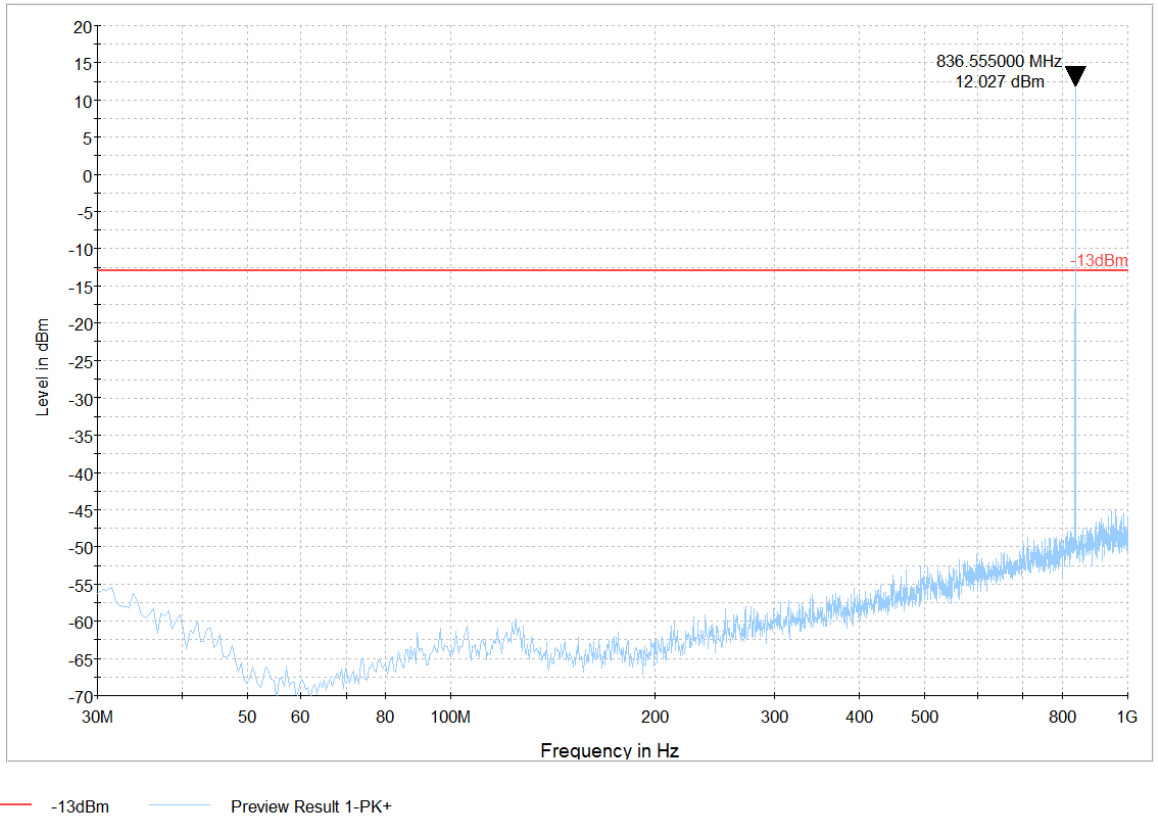
6.7.8.3.3 QPSK/ 1.4MHz/ Low Channel/ 30MHz to 1GHz

LTE Band 5 (824 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz -Low Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



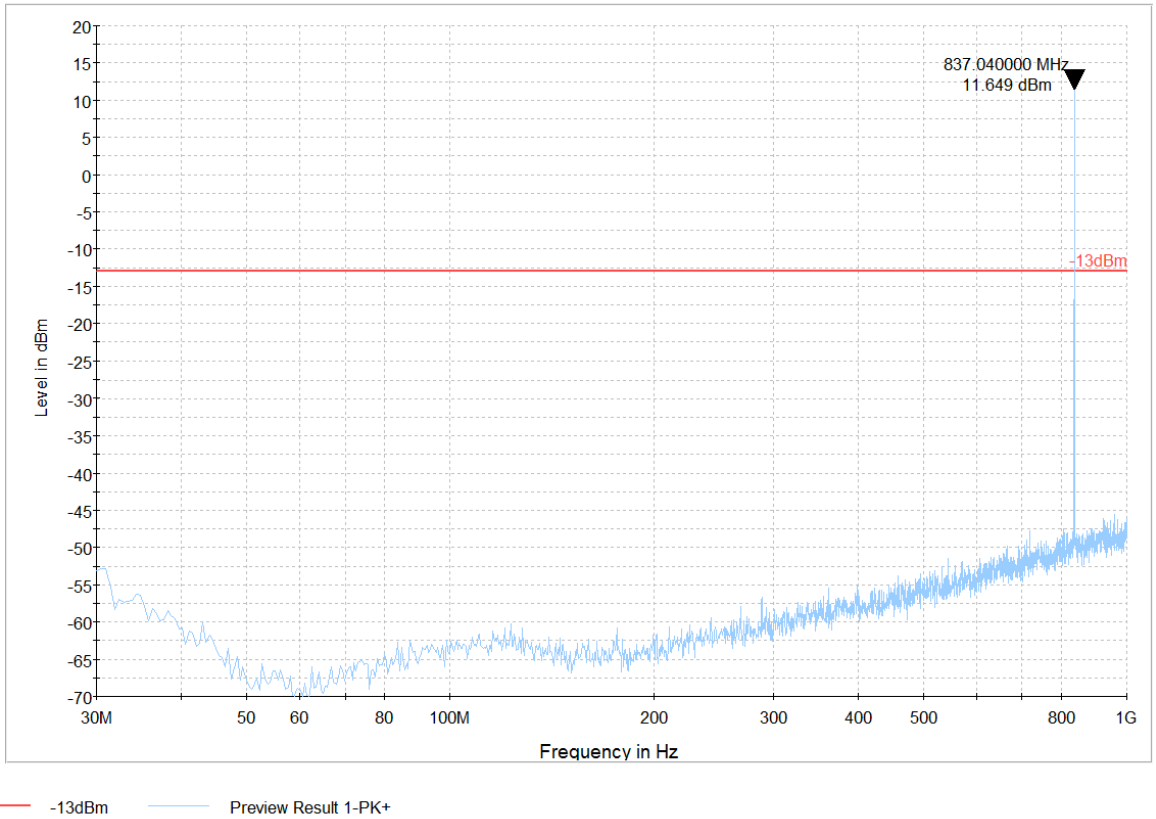
6.7.8.3.4 QPSK/ 1.4MHz/ Mid Channel/ 30MHz to 1GHz

LTE Band 5 (824 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz -Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



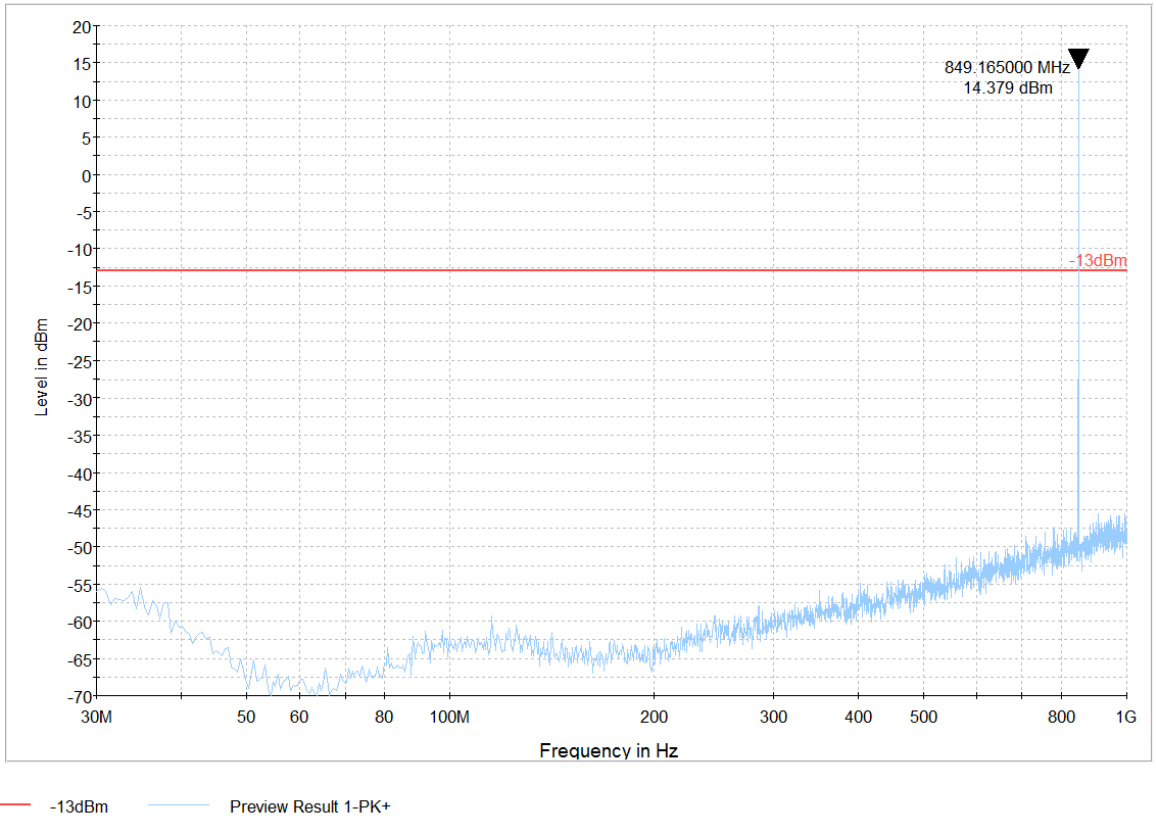
6.7.8.3.5 16 QAM/ 1.4MHz/ Mid Channel/ 30MHz to 1GHz

LTE Band 5 (824 MHz – 849 MHz) -Modulation: 16 QAM		
Measurement results – 30 MHz – 1GHz -Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



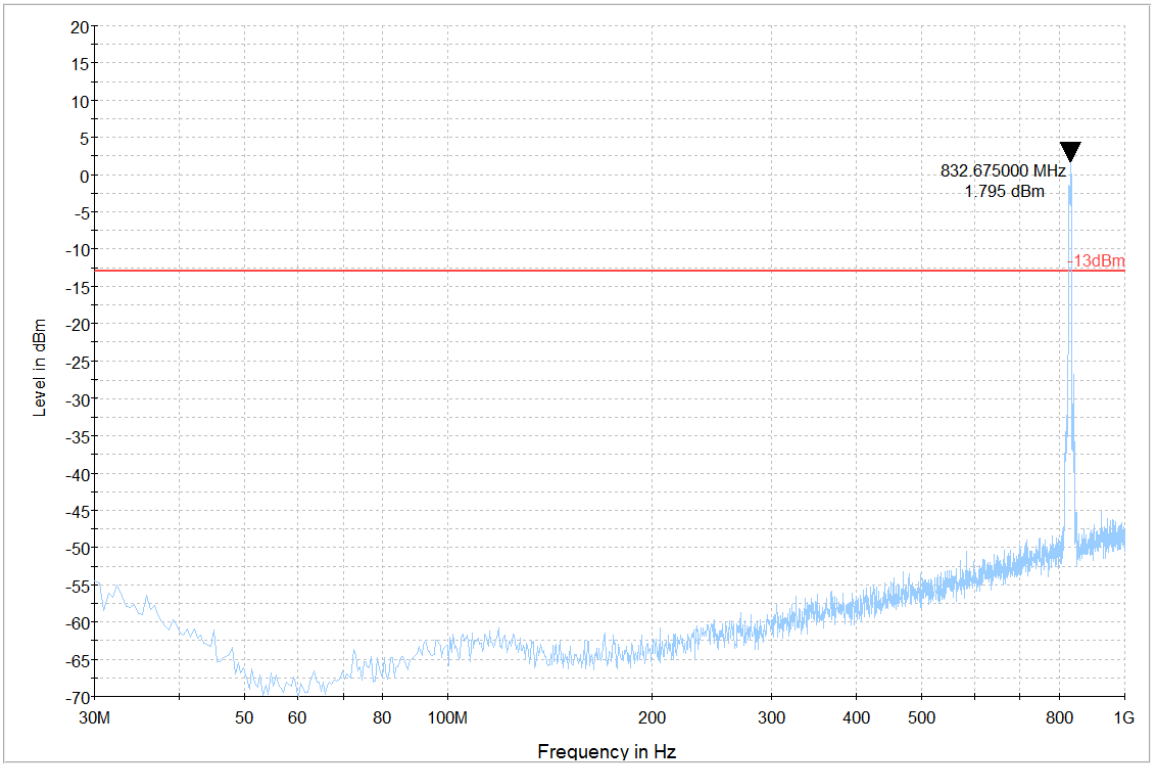
6.7.8.3.6 QPSK/ 1.4MHz/ High Channel/ 30MHz to 1GHz

LTE Band 5 (824 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz -High Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



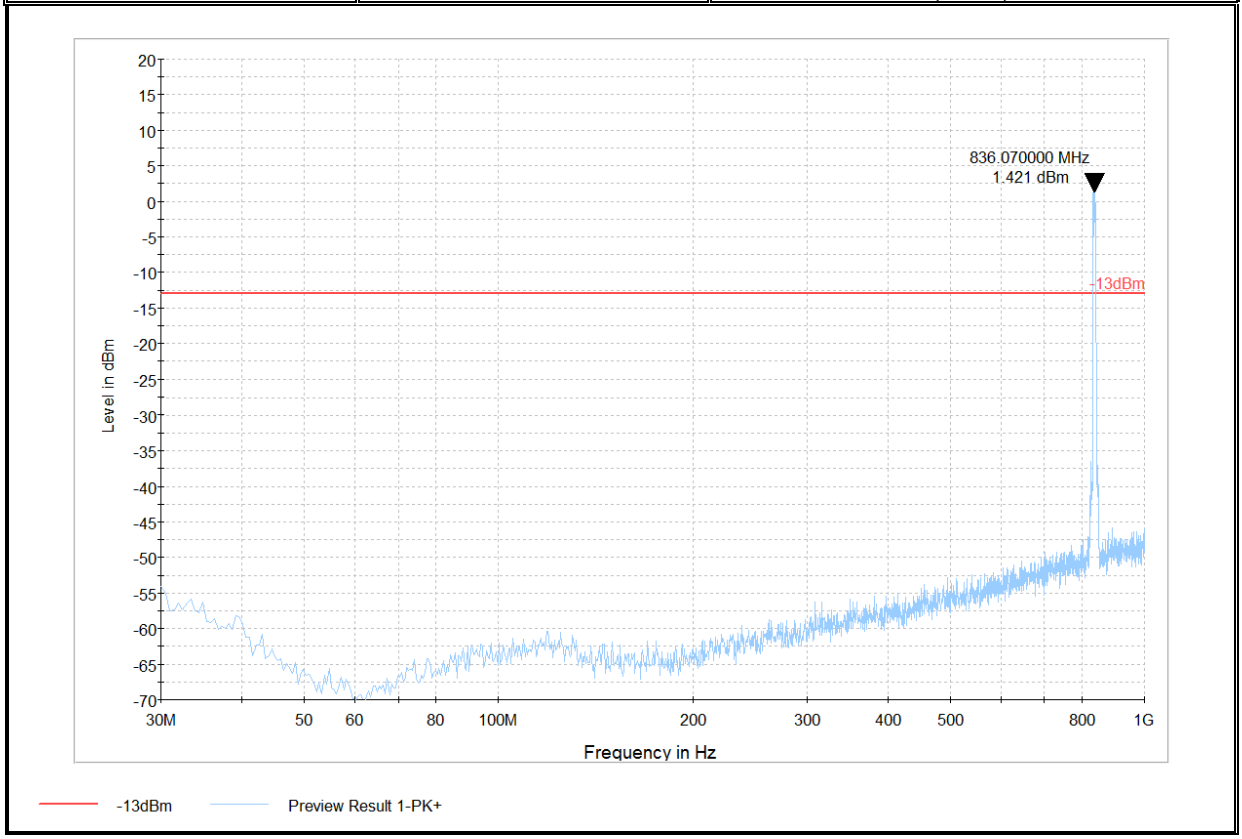
6.7.8.3.7 QPSK/ 10MHz/ Low Channel/ 30MHz to 1GHz

LTE Band 5 (824 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz -Low Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



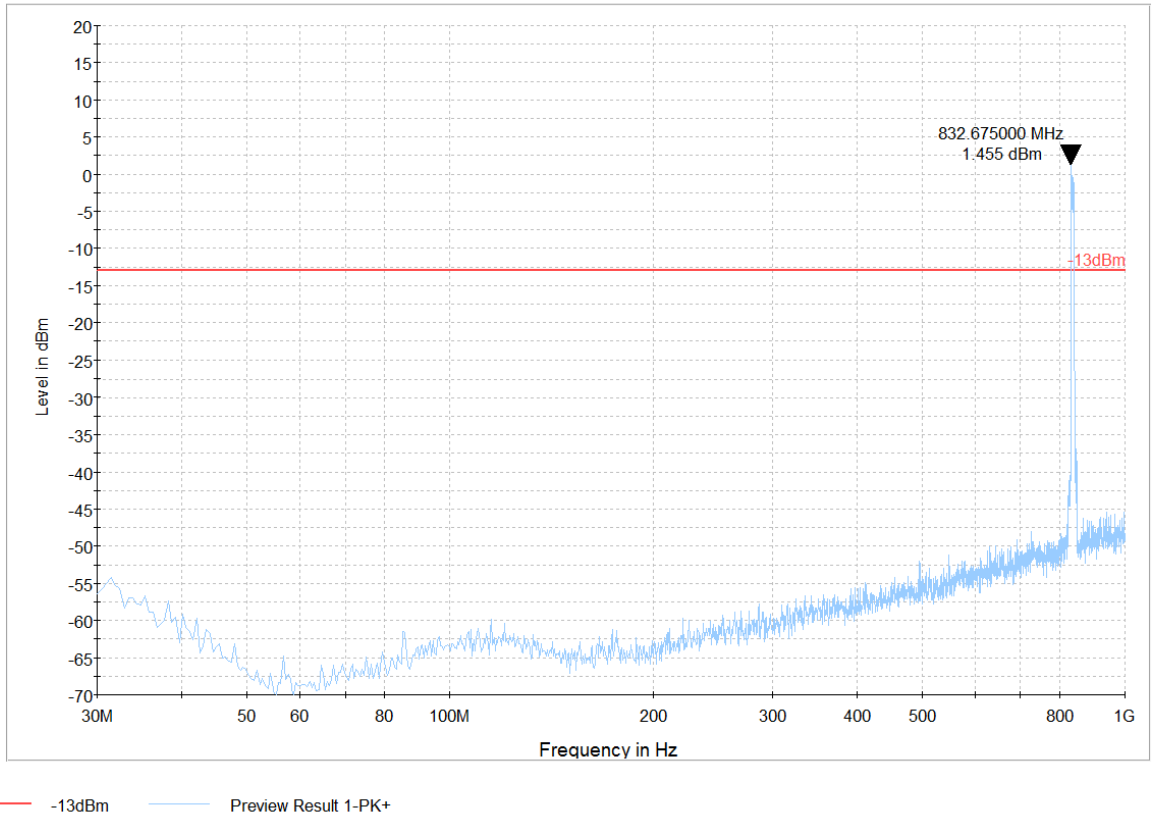
6.7.8.3.8 QPSK/ 10MHz/ Mid Channel/ 30MHz to 1GHz

LTE Band 5 (824 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz -Mid Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



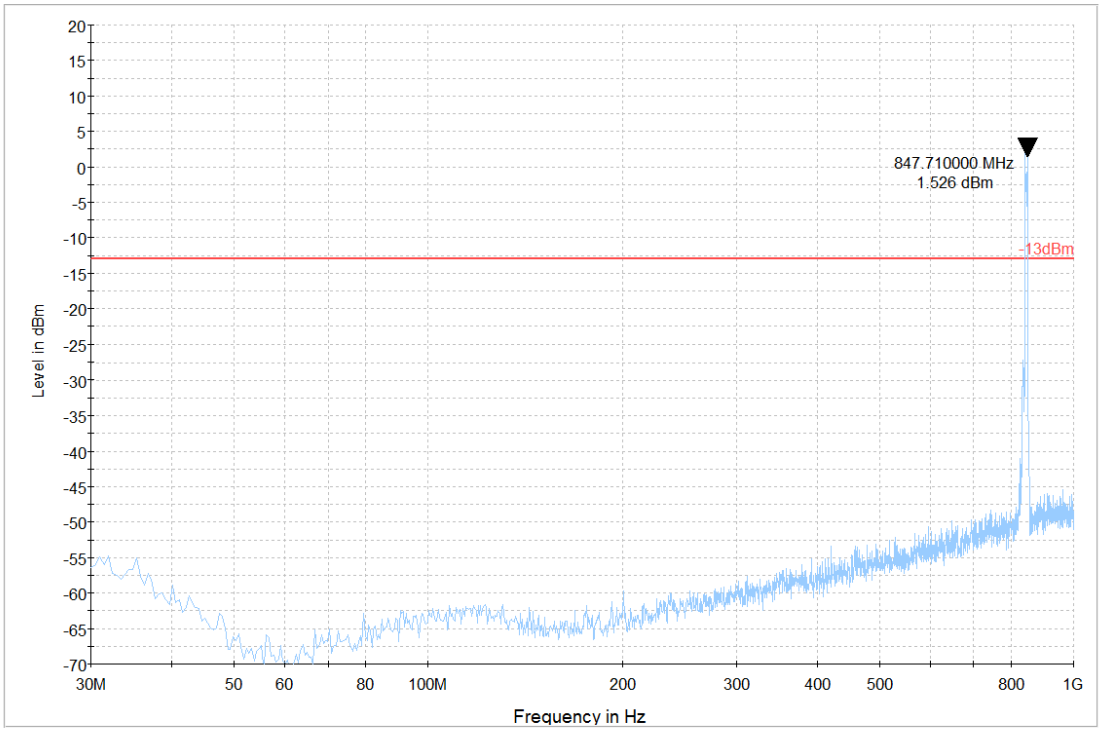
6.7.8.3.9 16 QAM/ 10MHz/ Mid Channel/ 30MHz to 1GHz

LTE Band 5 (824 MHz – 849 MHz) -Modulation: 16 QAM		
Measurement results – 30 MHz – 1 GHz -Mid Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



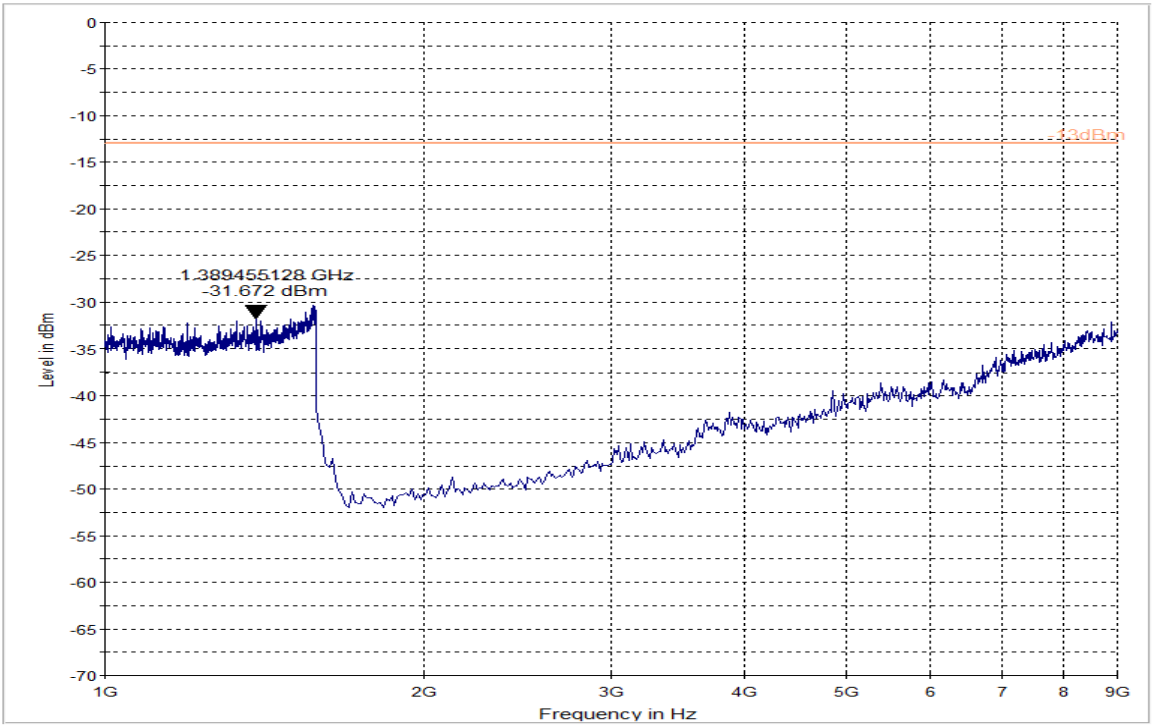
6.7.8.3.10 QPSK/ 10MHz/ High Channel/ 30MHz to 1GHz

LTE Band 5 (824 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1GHz -High Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



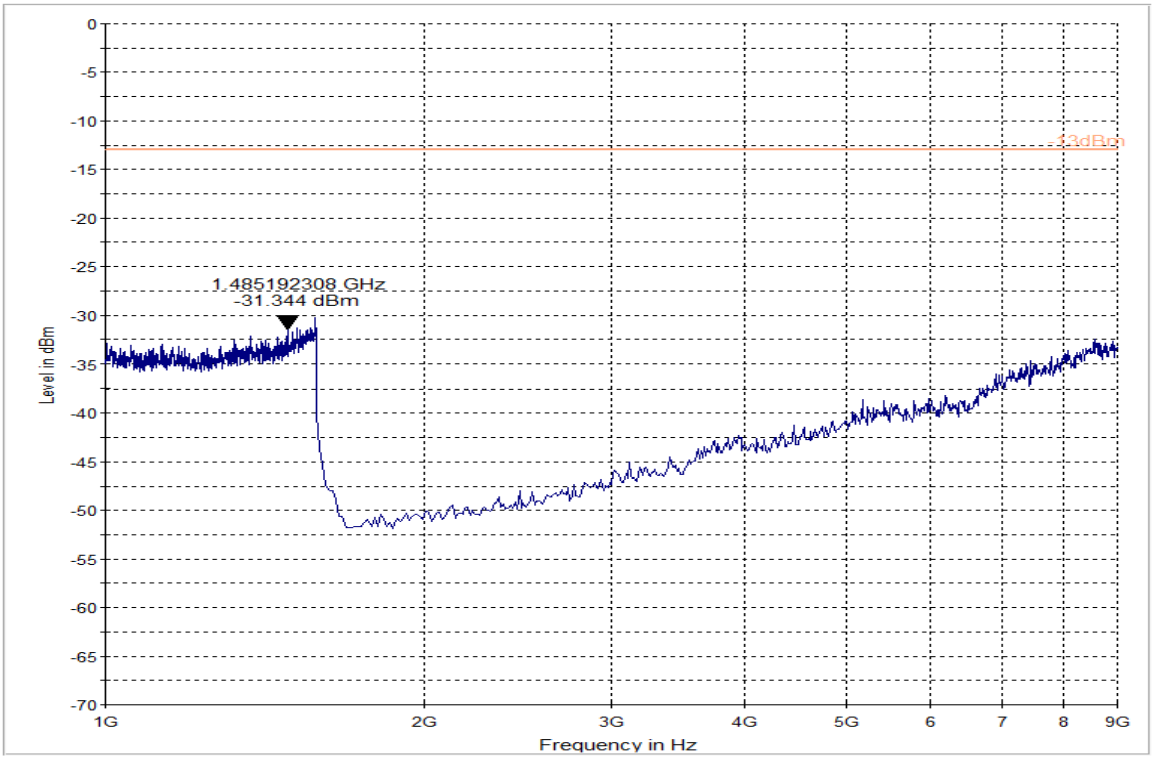
6.7.8.3.11 QPSK/ 1.4MHz/ Low Channel/ 1GHz to 9GHz

LTE Band 5 (824 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 9 GHz -Low Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



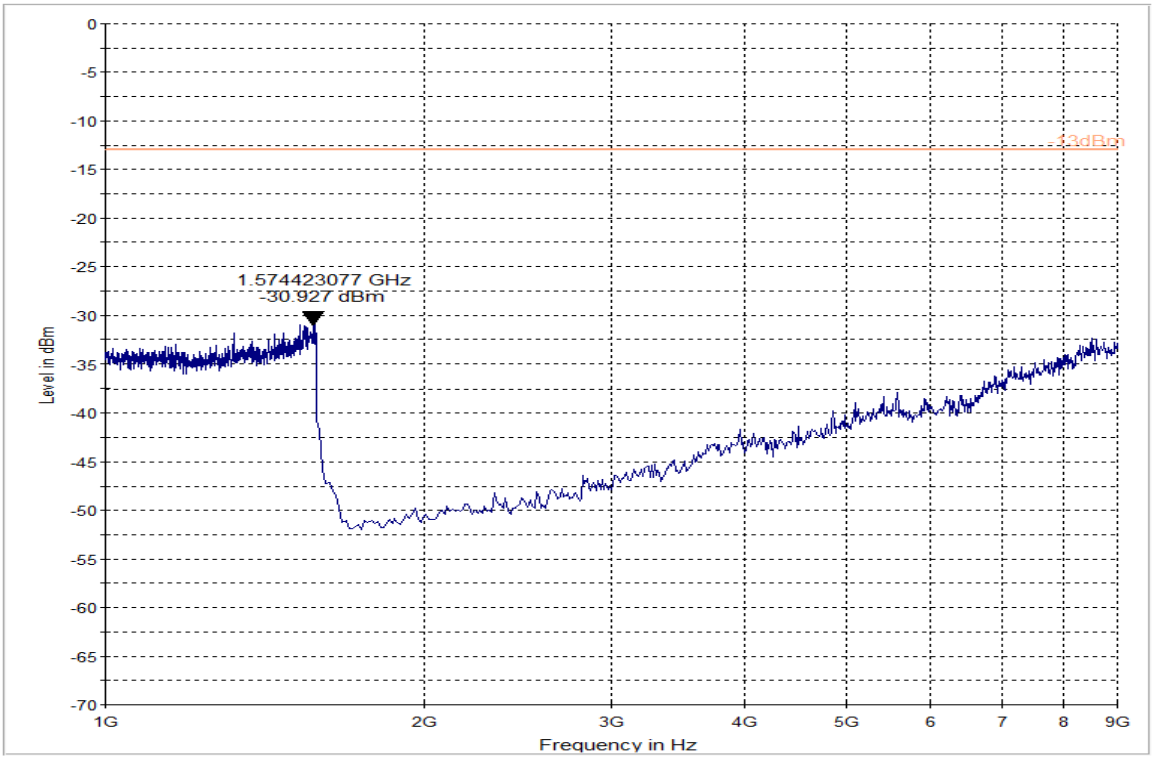
6.7.8.3.12 QPSK/ 1.4MHz/ Mid Channel/ 1GHz to 9GHz

LTE Band 5 (824 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 9 GHz -Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



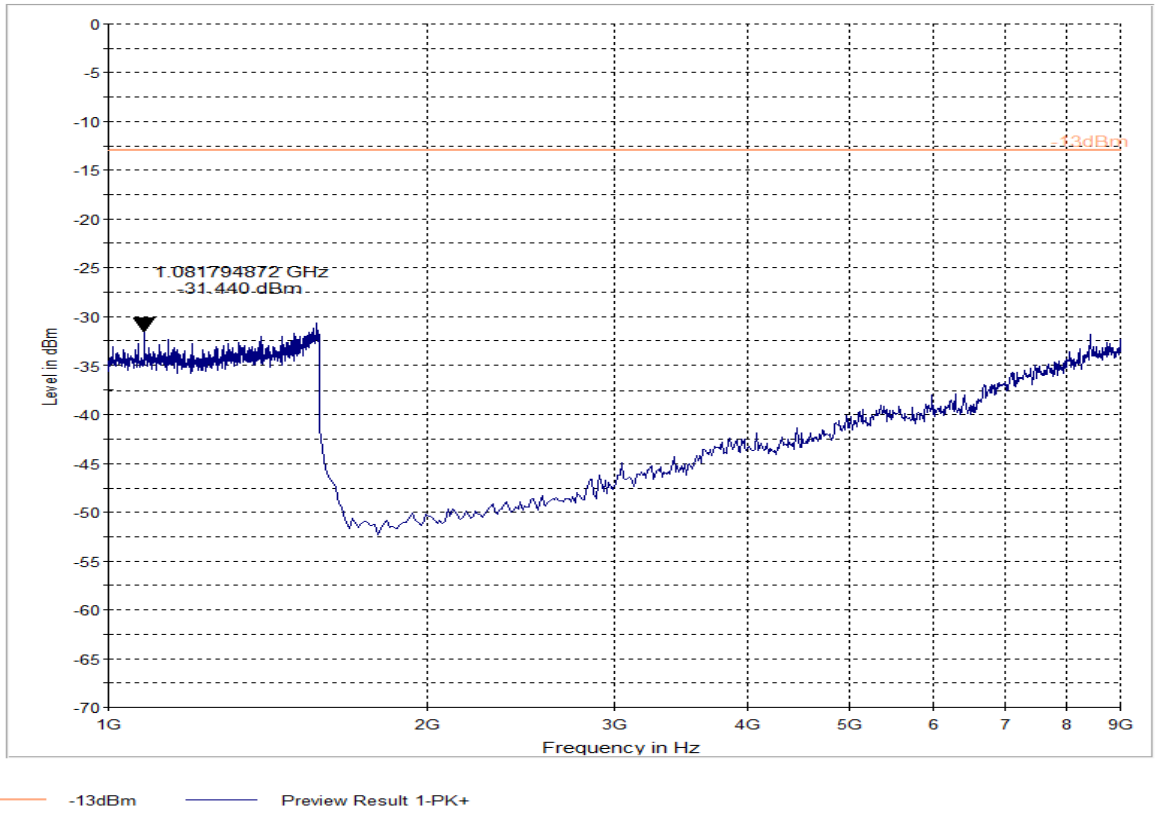
6.7.8.3.13 16 QAM/ 1.4MHz/ Mid Channel/ 1GHz to 9GHz

LTE Band 5 (824 MHz – 849 MHz) -Modulation: 16 QAM		
Measurement results – 1 GHz – 9 GHz -Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



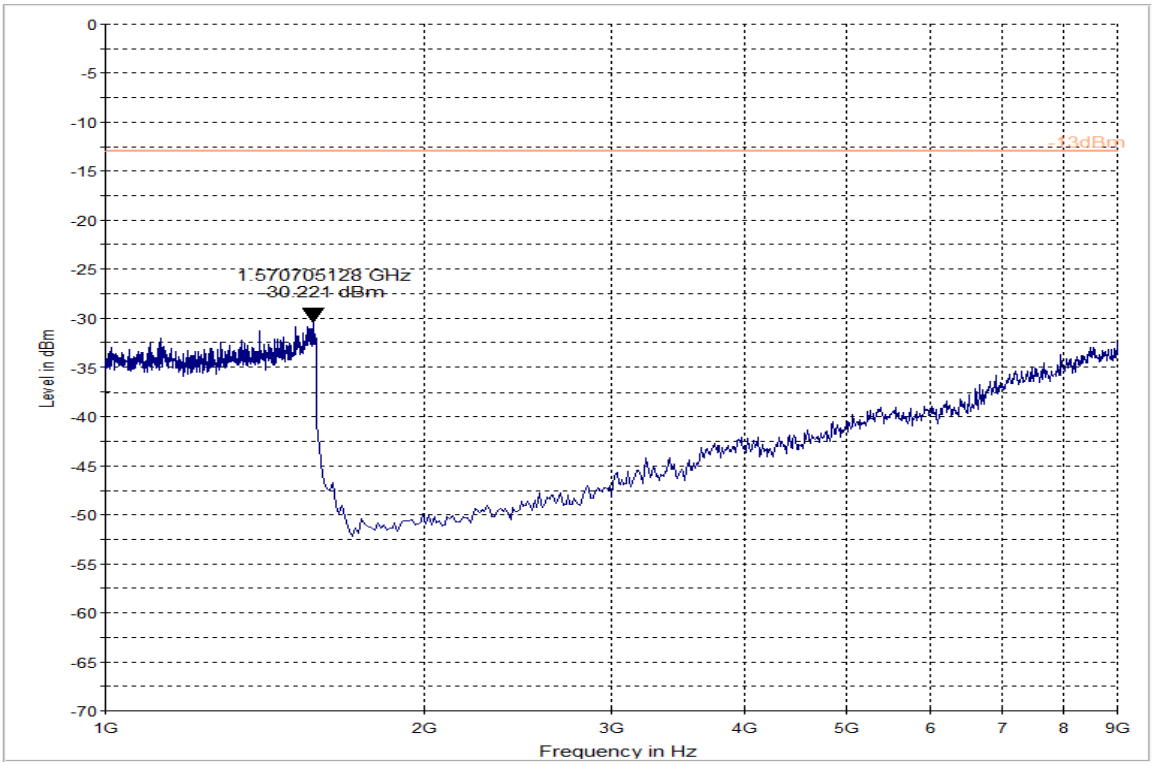
6.7.8.3.14 QPSK/ 1.4MHz/ High Channel/ 1GHz to 9GHz

LTE Band 5 (824 MHz – 849 MHz) -Modulation: QPSK		
Measurement results – 1 GHz – 9 GHz -High Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



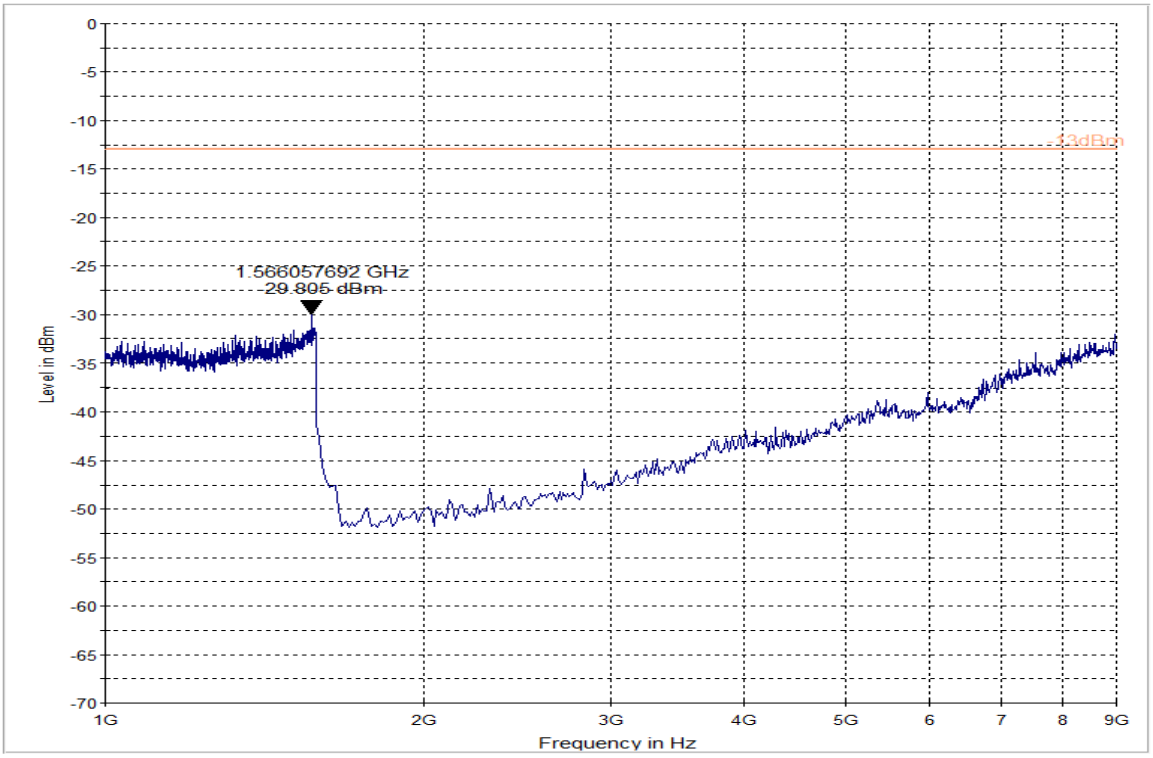
6.7.8.3.15 QPSK/ 10MHz/ Low Channel/ 1GHz to 9GHz

LTE Band 5 (824 MHz – 849 MHz) -Modulation: QPSK		
Measurement results – 1 GHz – 9 GHz -Low Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



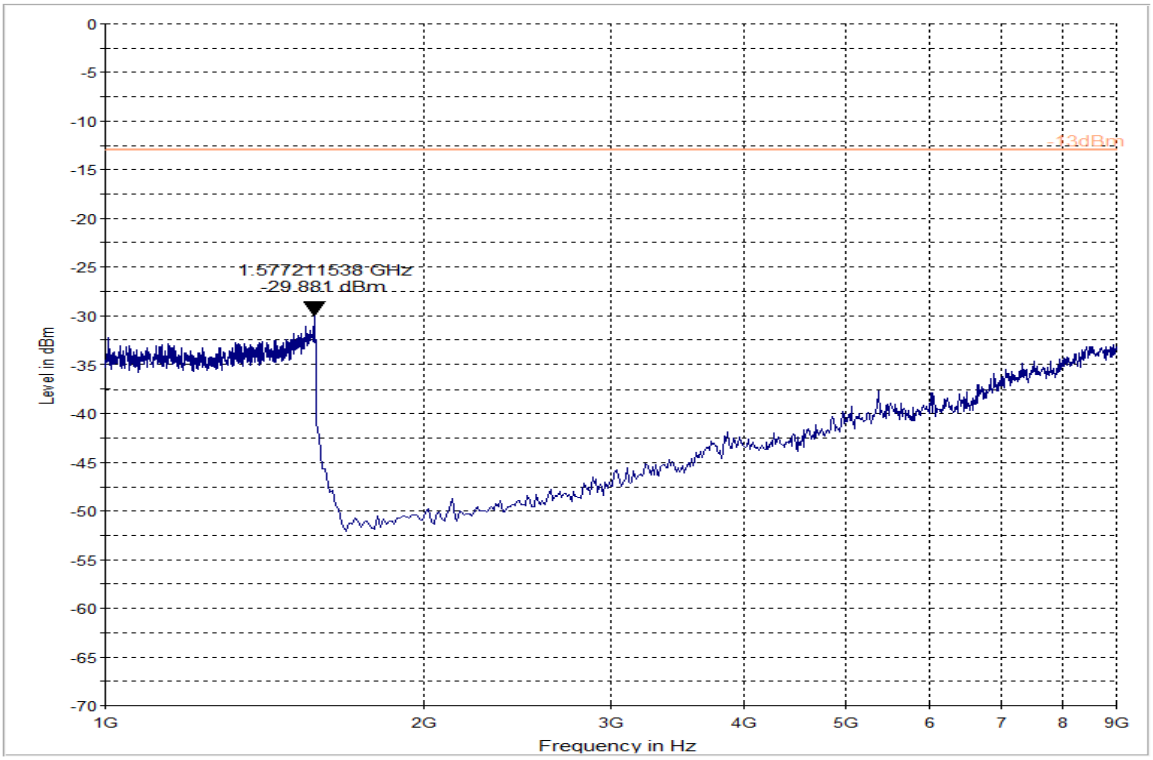
6.7.8.3.16 QPSK/ 10MHz/ Mid Channel/ 1GHz to 9GHz

LTE Band 5 (824 MHz – 849 MHz) -Modulation: QPSK		
Measurement results – 1 GHz – 9 GHz -Mid Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



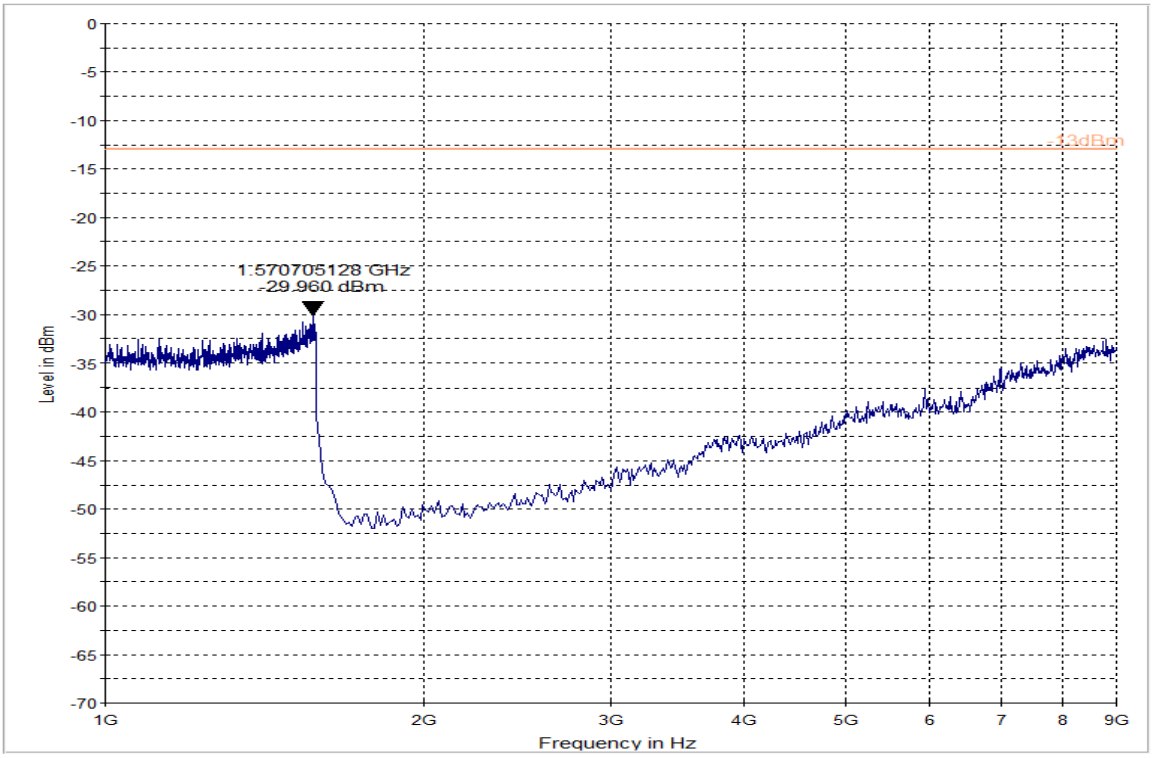
6.7.8.3.17 16 QAM/ 10MHz/ Mid Channel/ 1GHz to 9GHz

LTE Band 5 (824 MHz – 849 MHz) -Modulation: 16 QAM		
Measurement results – 1 GHz – 9 GHz -Mid Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



6.7.8.3.18 QPSK/ 10MHz/ High Channel/ 1GHz to 9GHz

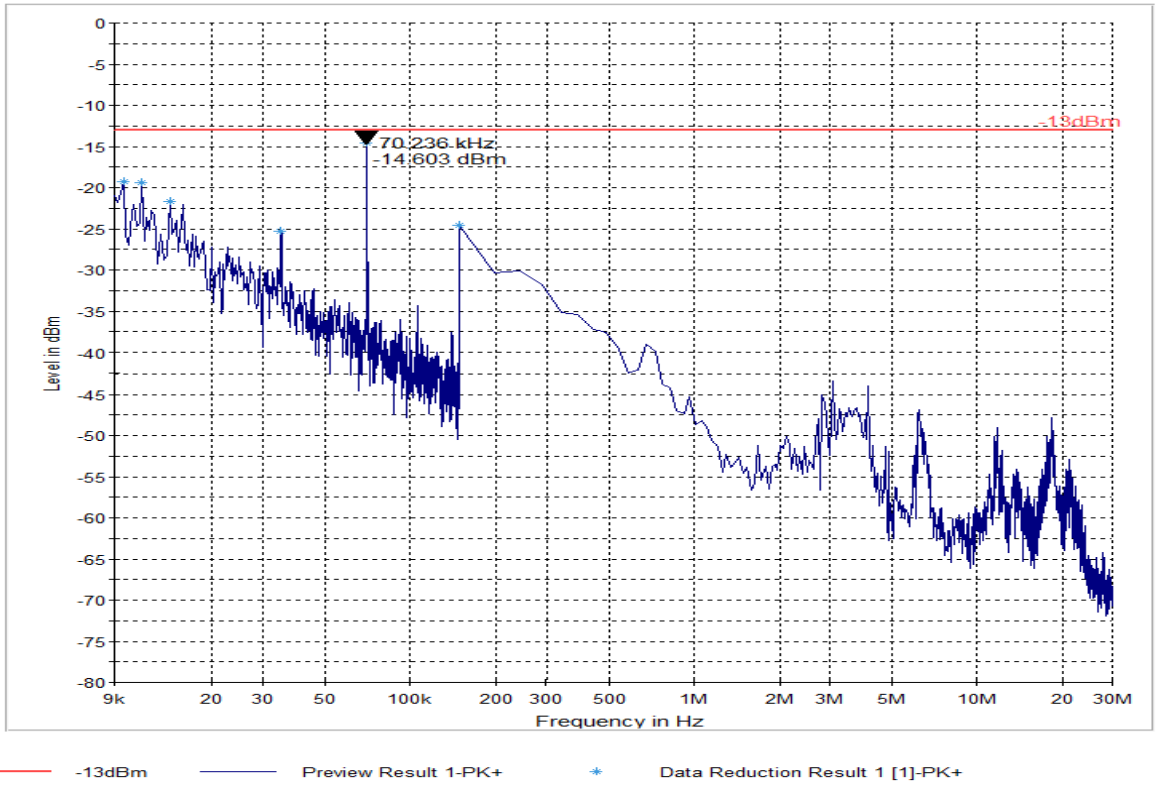
LTE Band 5 (824 MHz – 849 MHz) -Modulation: QPSK		
Measurement results – 1 GHz – 9 GHz -High Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



6.7.8.4 Spurious Emissions LTE FDD 17:

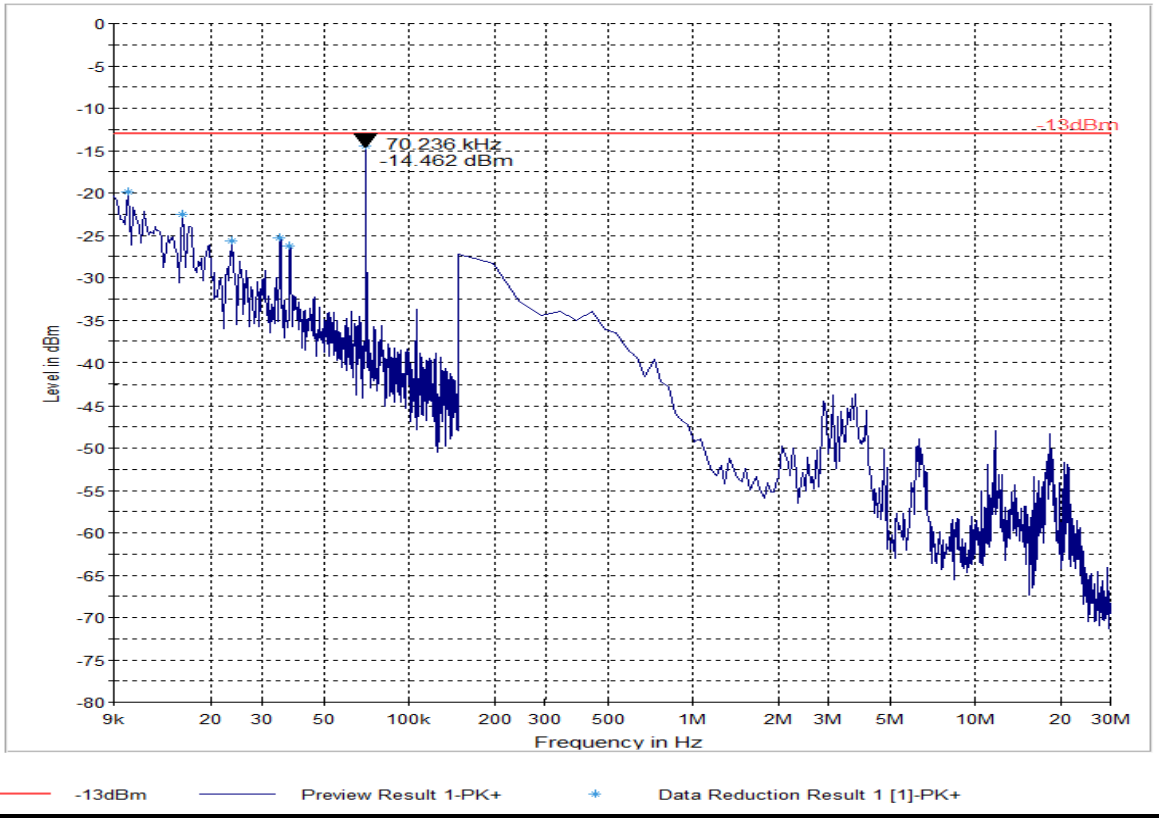
6.7.8.4.1 QPSK/ 5 MHz/ Mid Channel/ 9kHz to 30MHz:

LTE Band 17 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results – 9 kHz – 30 MHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



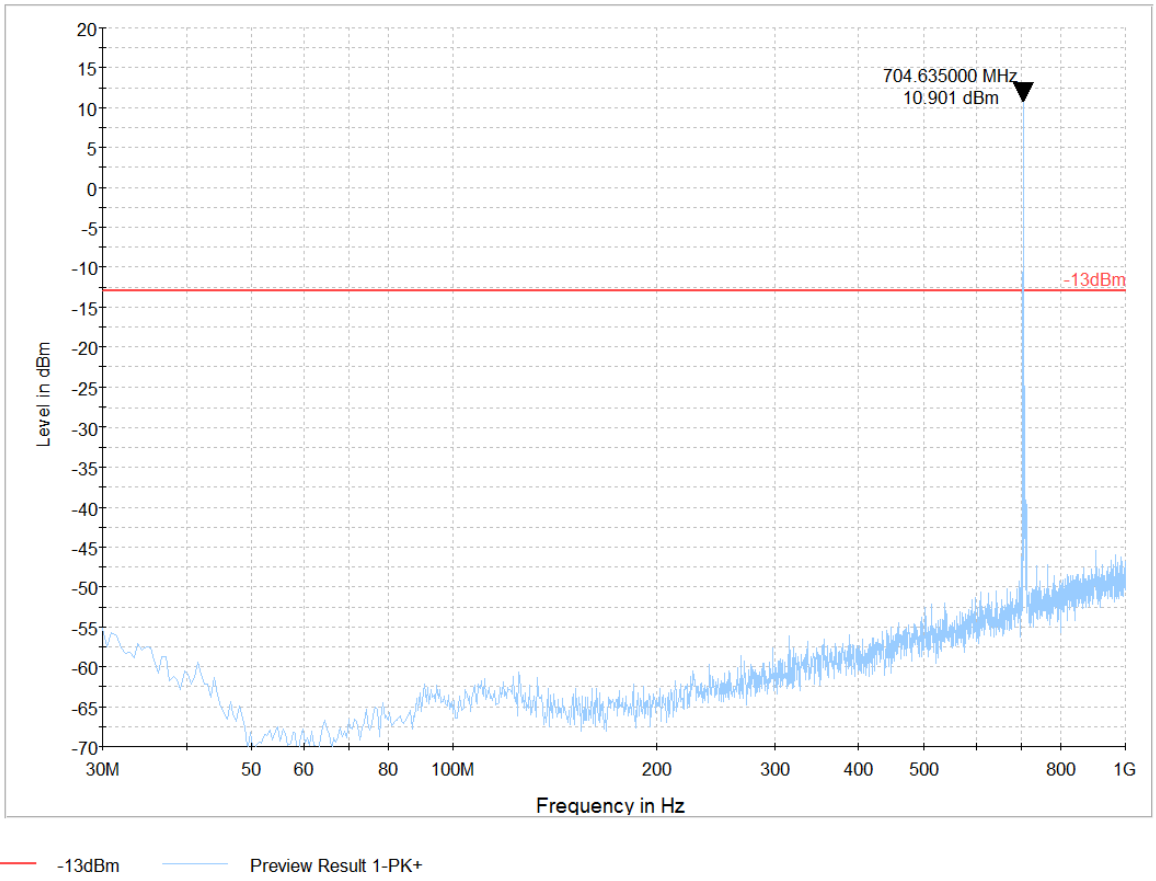
6.7.8.4.2 QPSK/ 10 MHz/ Mid Channel/ 9kHz to 30MHz:

LTE Band 17 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results – 9 kHz – 30 MHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 10



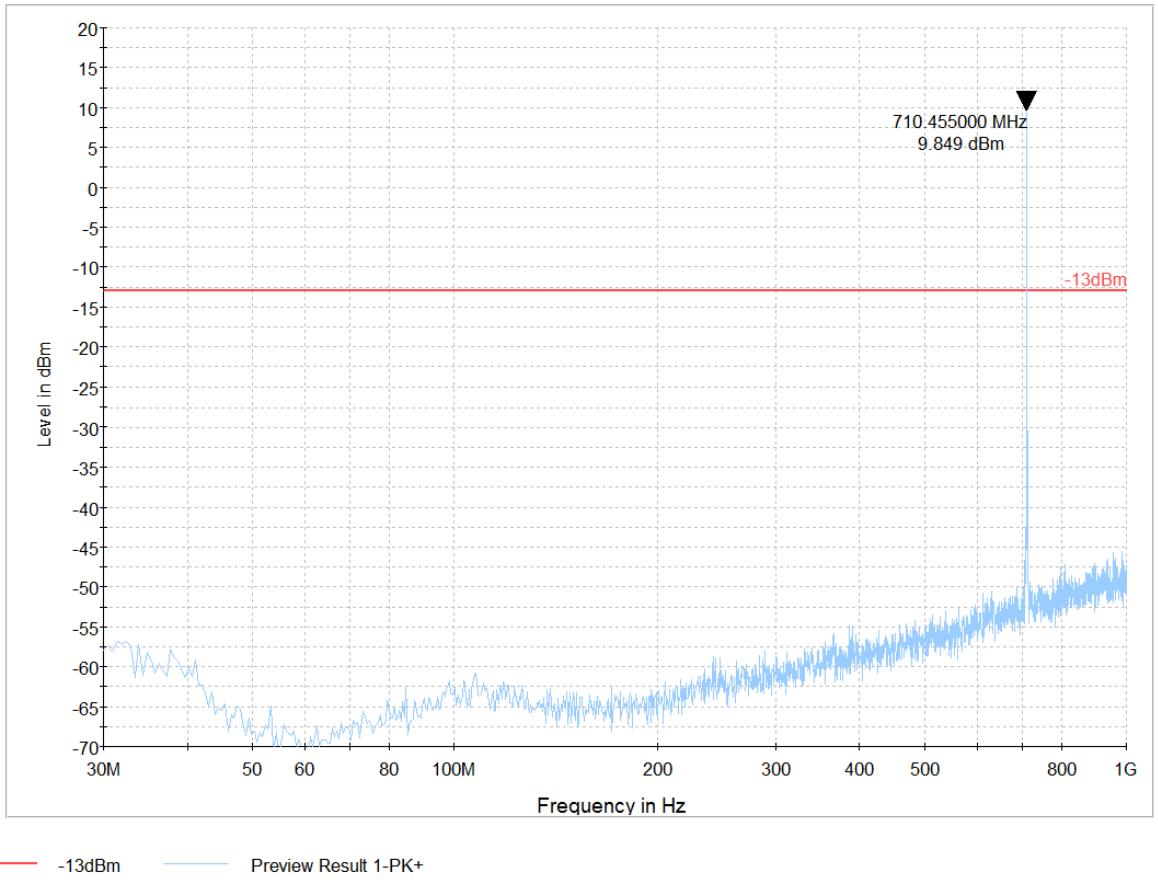
6.7.8.4.3 QPSK/ 5 MHz/ Low Channel/ 30MHz to 1GHz:

LTE Band 17 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1 GHz – Low Channel 23755		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



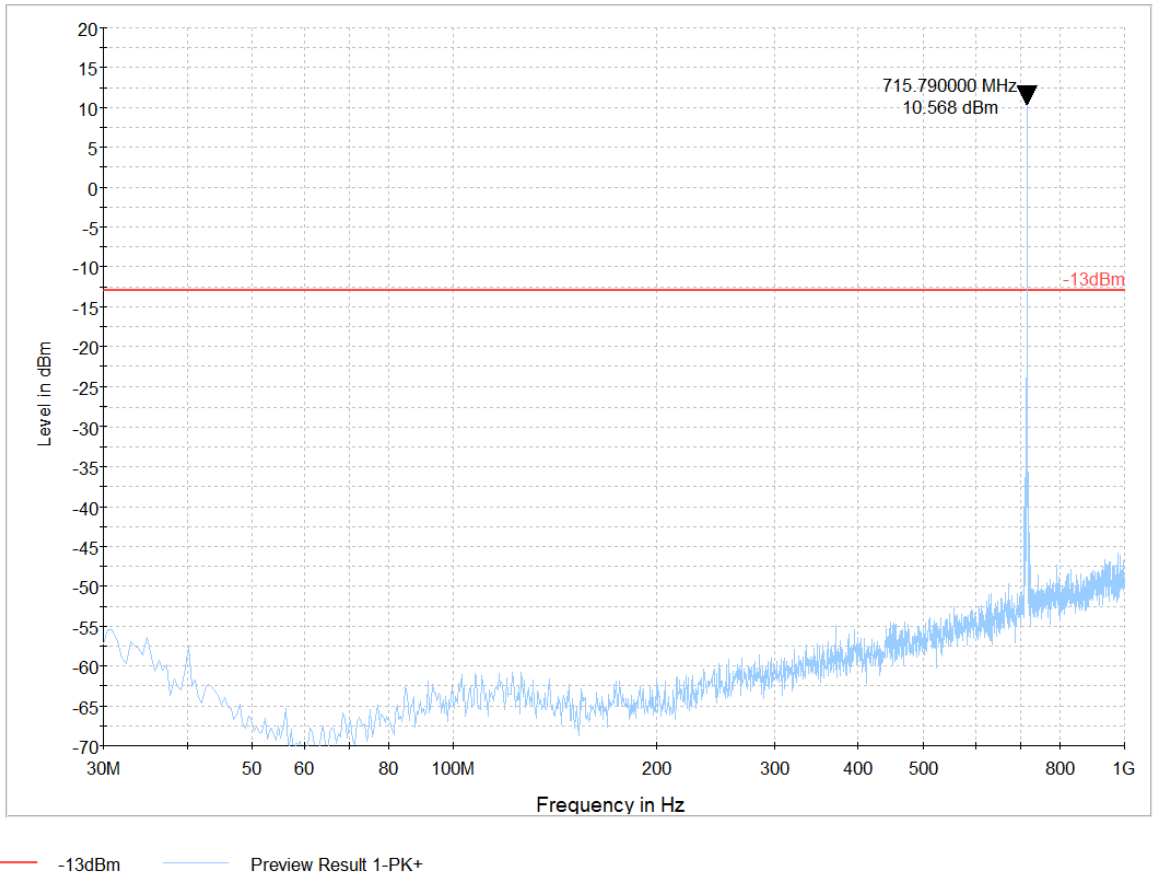
6.7.8.4.4 QPSK/ 5 MHz/ Mid Channel/ 30MHz to 1GHz:

LTE Band 17 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1 GHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



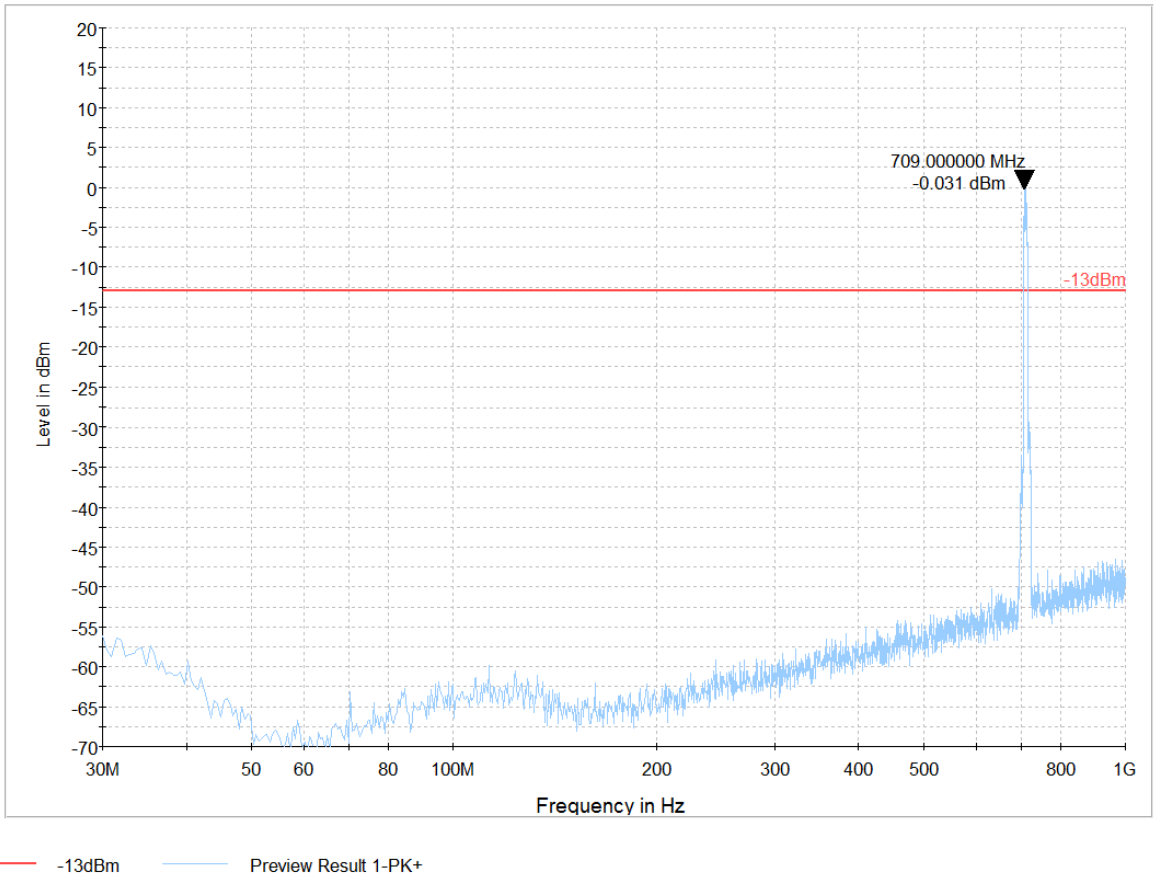
6.7.8.4.5 QPSK/ 5MHz/ High Channel/ 30MHz to 1GHz:

LTE Band 17 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1 GHz – High Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



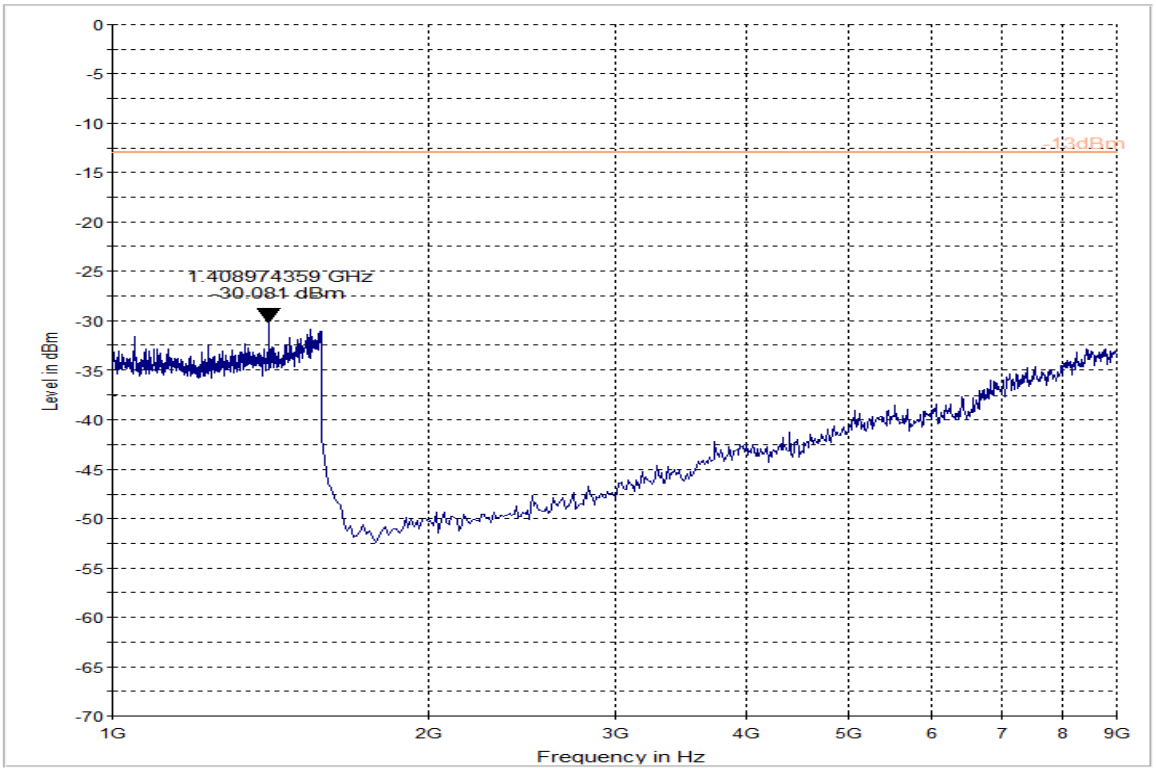
6.7.8.4.6 QPSK/10 MHz/ Mid Channel/ 30MHz to 1GHz:

LTE Band 17 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1 GHz – Mid Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



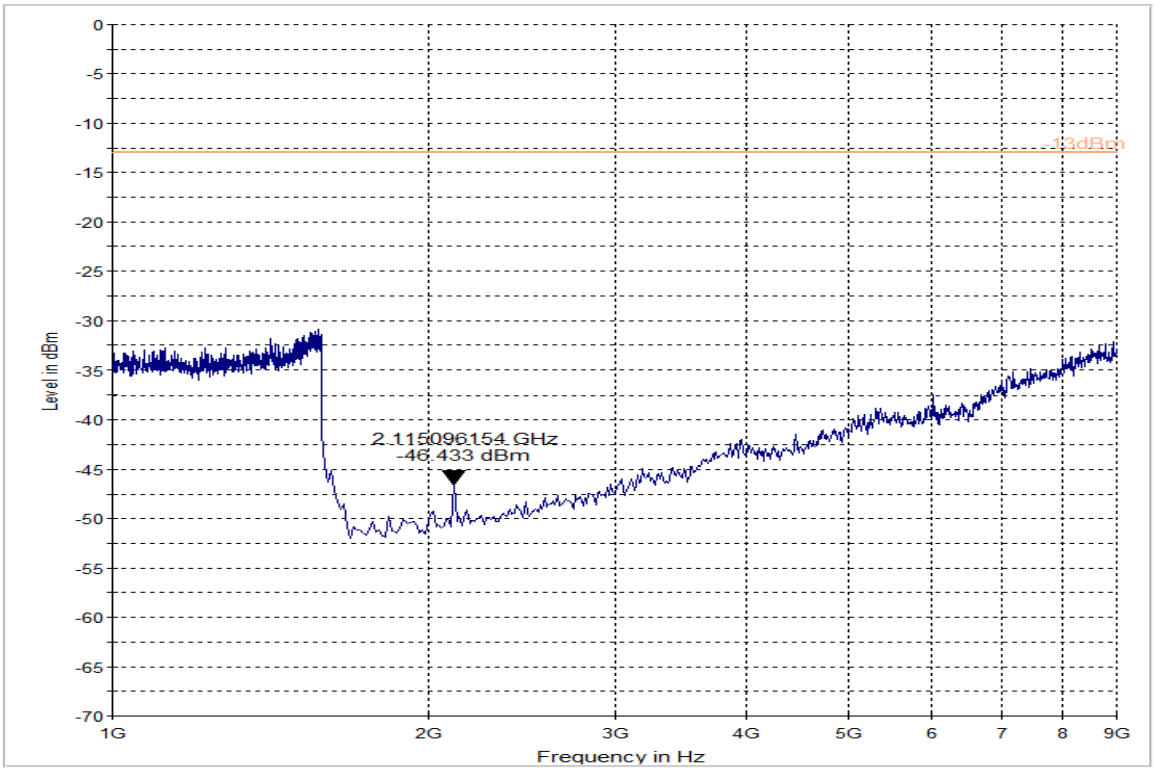
6.7.8.4.7 QPSK/ 5MHz/ Low Channel/ 1GHz to 9GHz:

LTE Band 17 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 9 GHz – Low Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



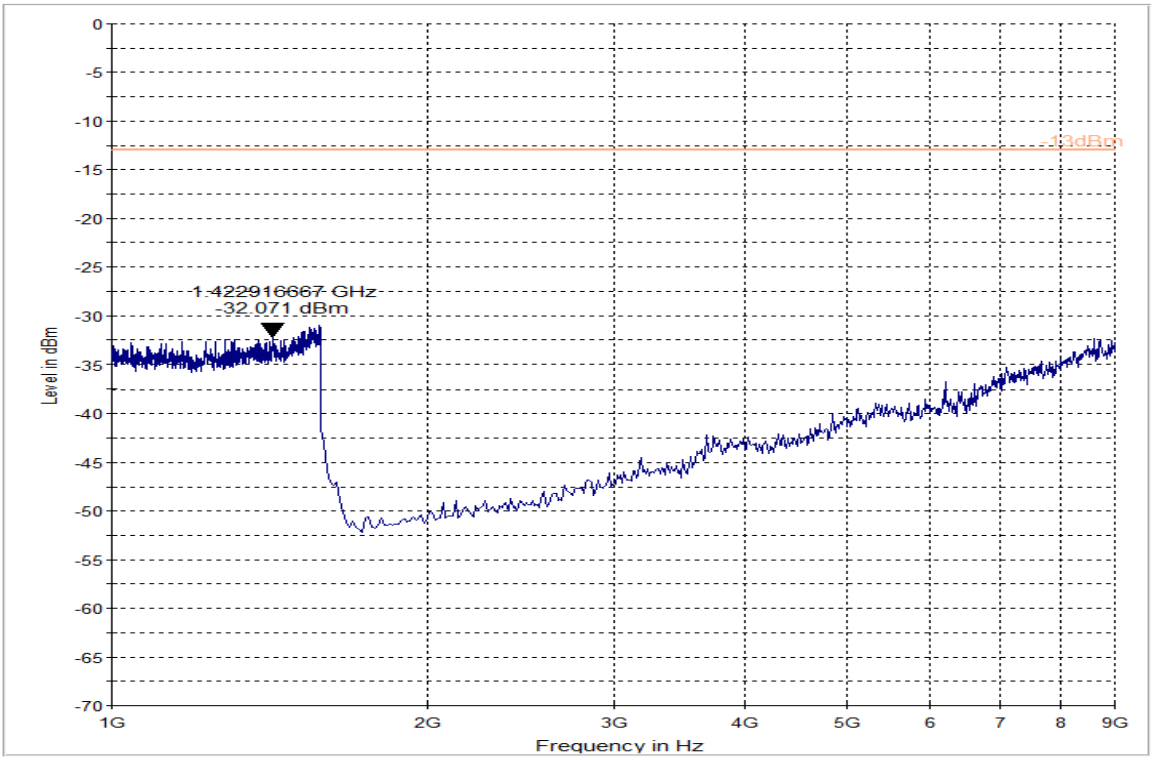
6.7.8.4.8 QPSK/ 5 MHz/ Mid Channel/ 1GHz to 9GHz:

LTE Band 17 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 9 GHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



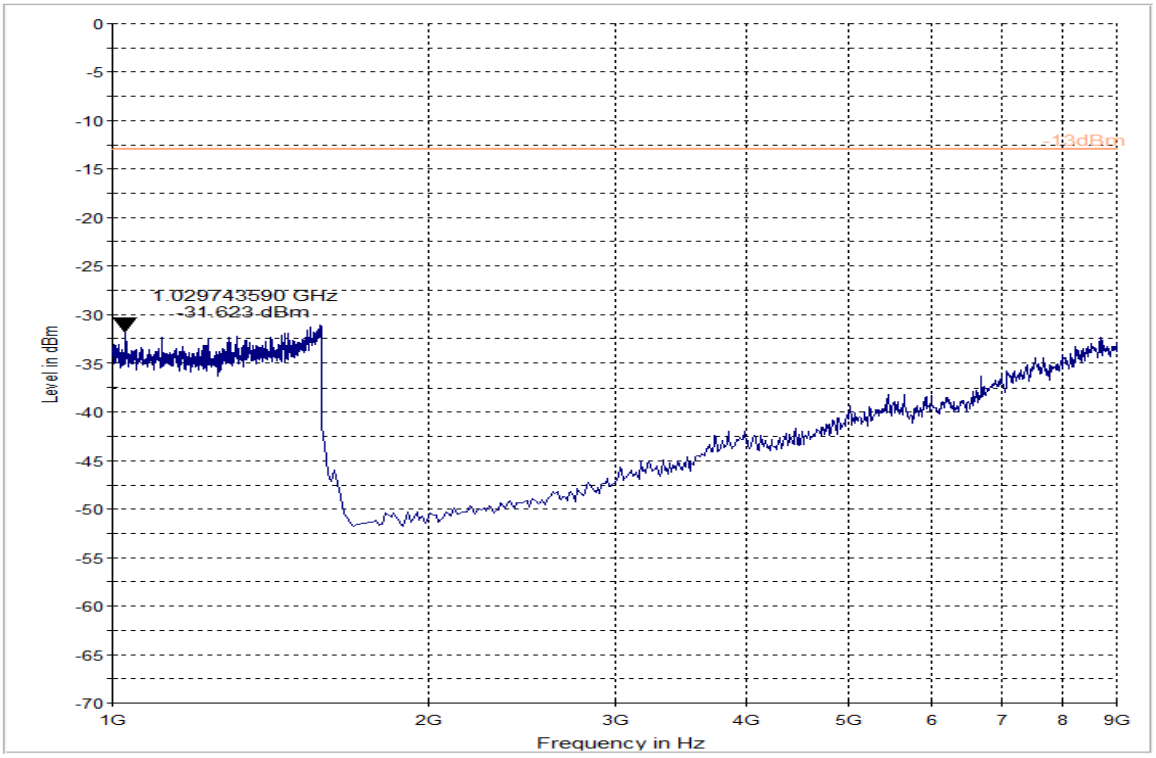
6.7.8.4.9 QPSK/ 5MHz/ High Channel/ 1GHz to 9GHz:

LTE Band 17 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 9 GHz – High Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



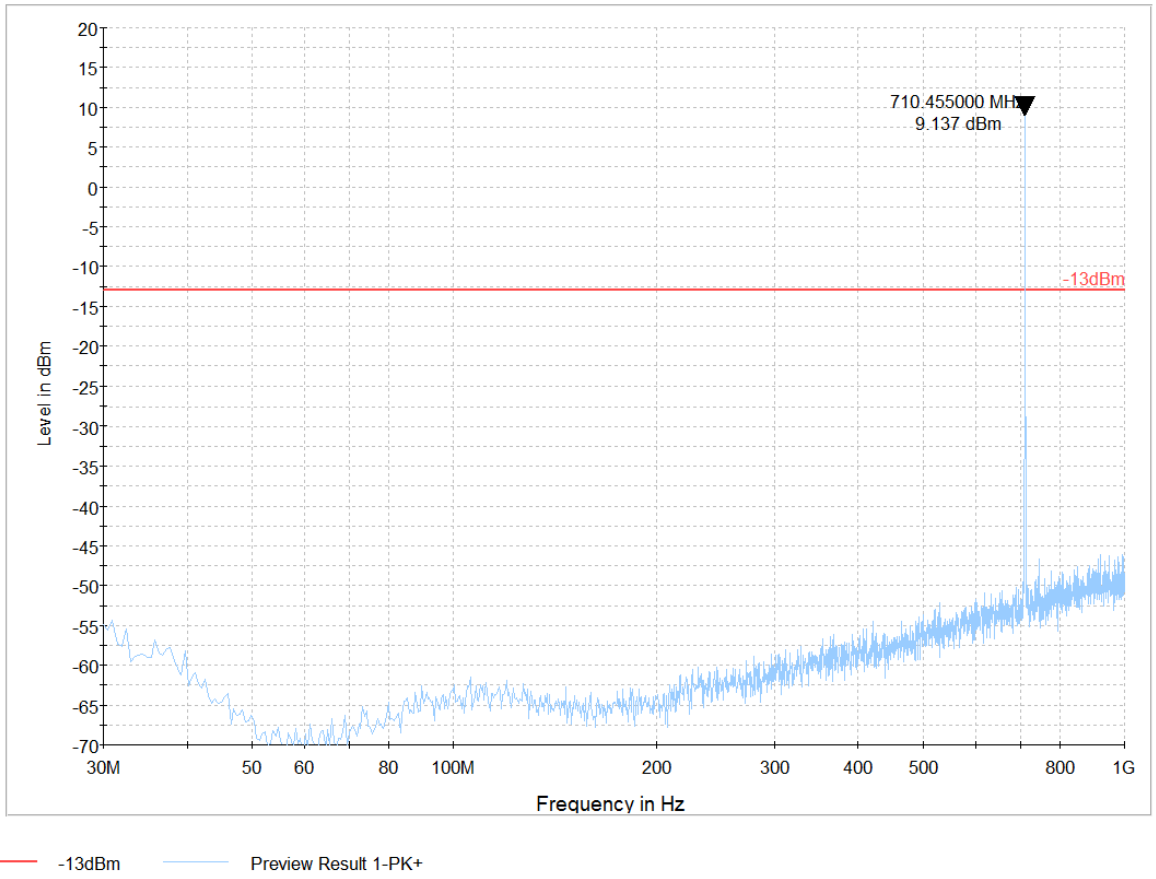
6.7.8.4.10 QPSK/10 MHz/ Mid Channel/ 1GHz to 9GHz:

LTE Band 17 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results – 1 GHz – 9 GHz – Mid Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



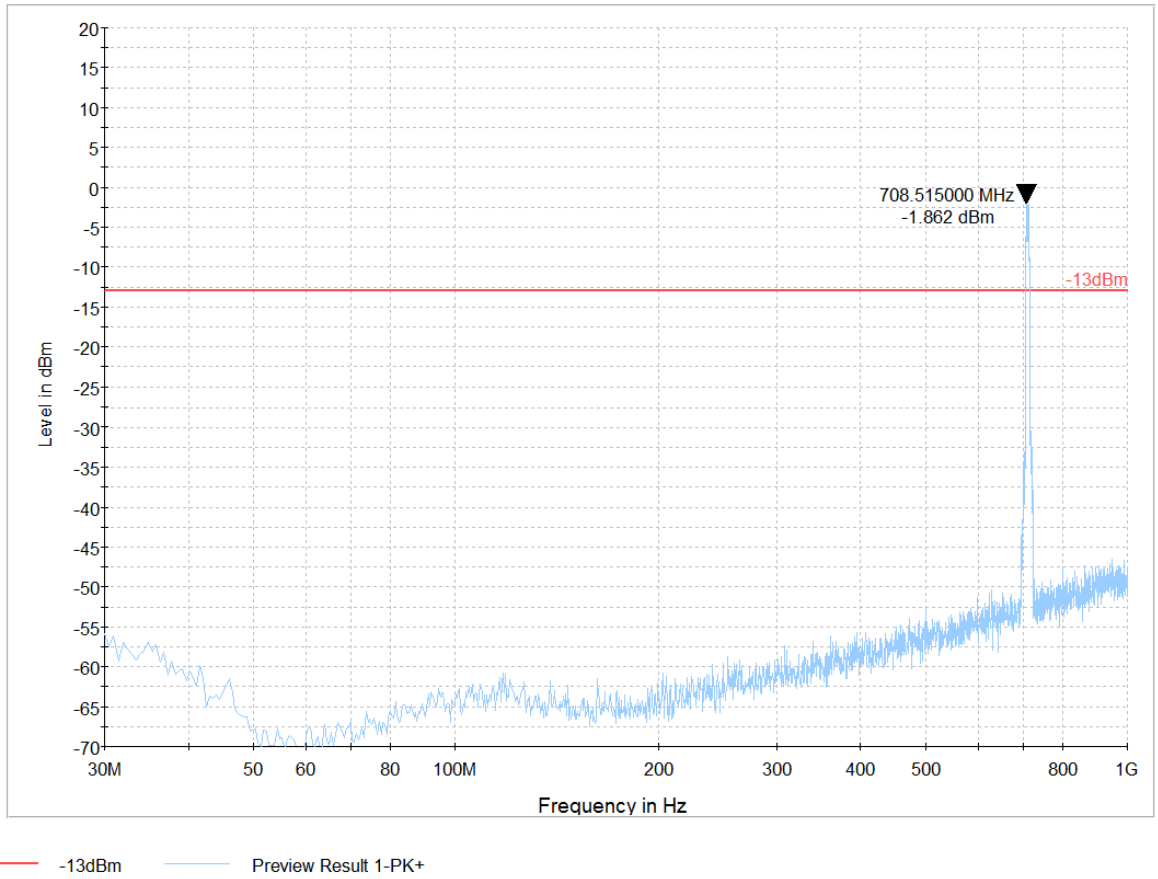
6.7.8.4.11 16 QAM/ 5MHz/ Mid Channel/ 30MHz to 1GHz:

LTE Band 17 (704 MHz – 716 MHz) -Modulation: 16 QAM		
Measurement results - 30 MHz – 1 GHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



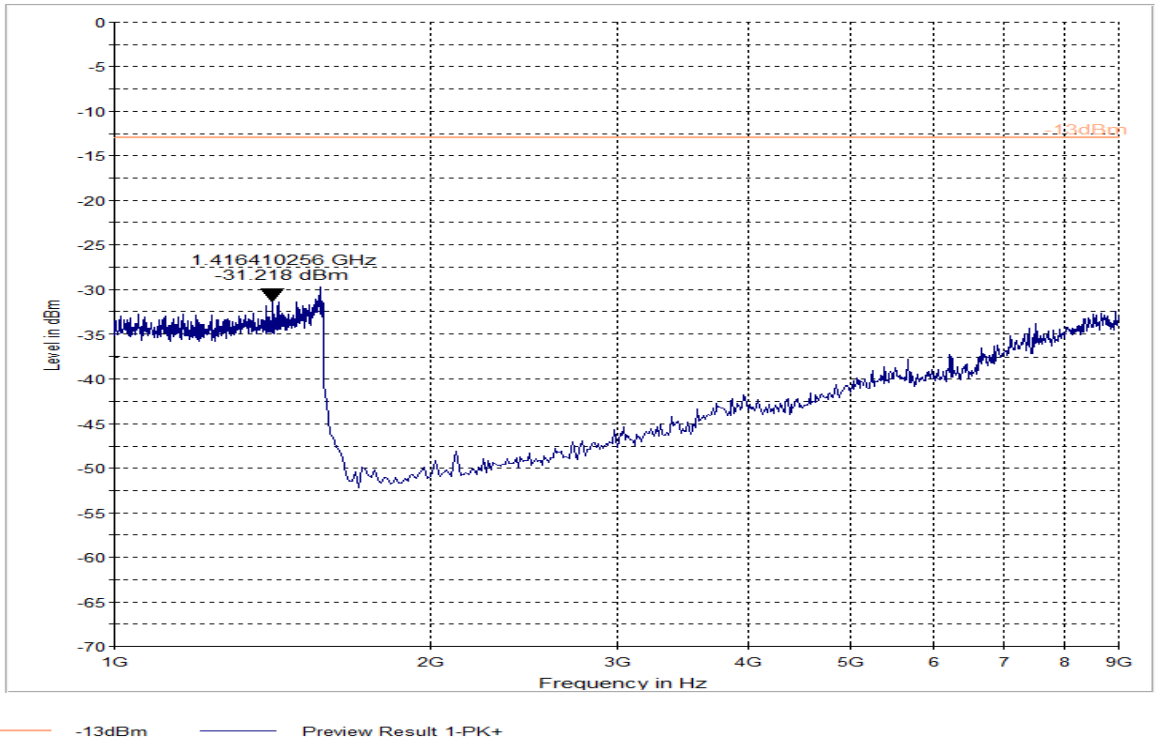
6.7.8.4.12 16 QAM/ 10MHz/ Mid Channel/ 30MHz to 1GHz:

LTE Band 17 (704 MHz – 716 MHz) -Modulation: 16 QAM		
Test results - 30 MHz – 1GHz -Mid Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



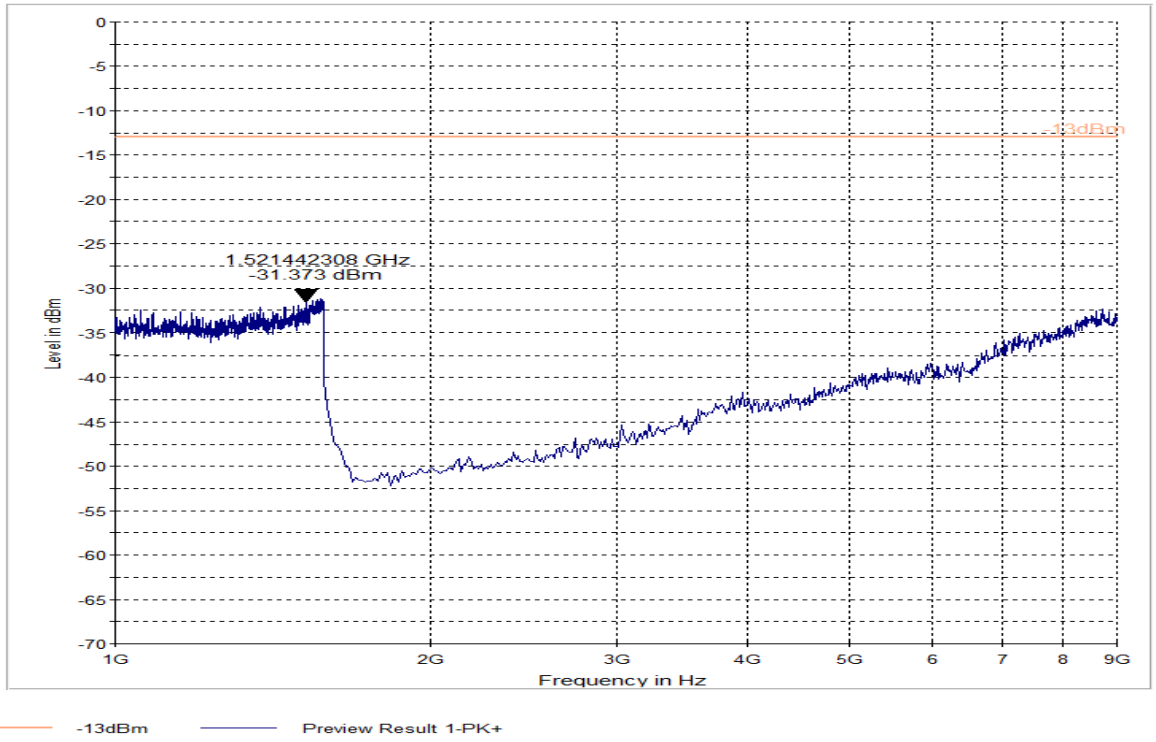
6.7.8.4.13 16 QAM/ 5MHz/ Mid Channel/ 1GHz to 9GHz:

LTE Band 17 (704 MHz – 716 MHz) -Modulation: 16 QAM		
Measurement results - 1 GHz – 9 GHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



6.7.8.4.14 16 QAM/ 10MHz/ Mid Channel/ 1GHz to 9GHz:

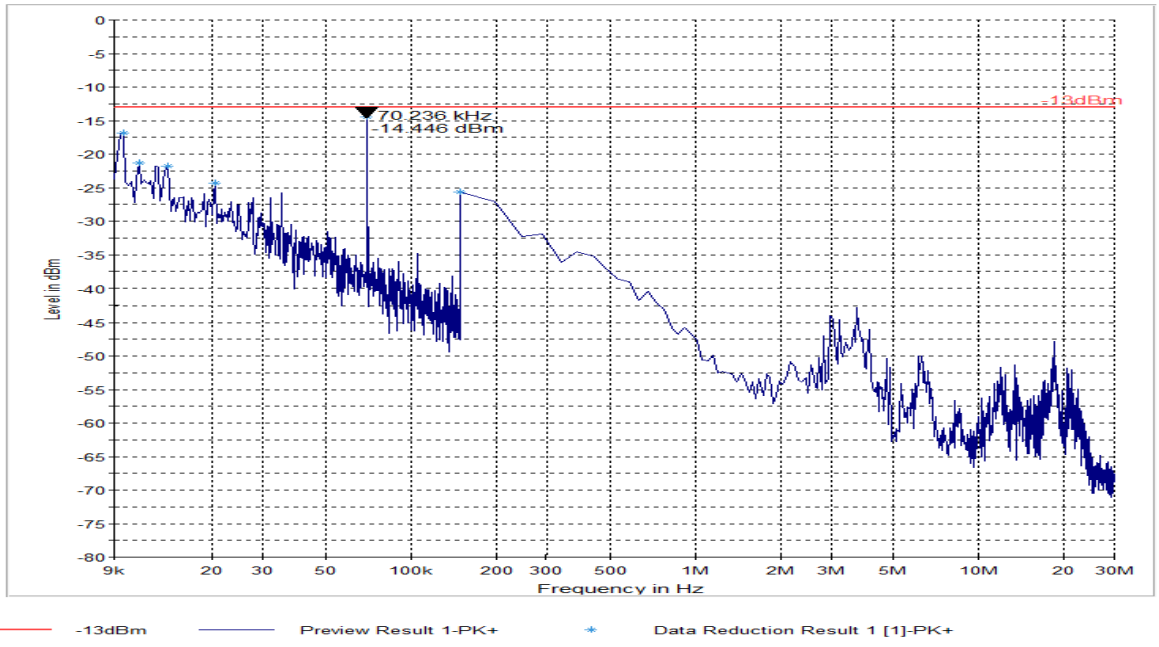
LTE Band 17 (704 MHz – 716 MHz) -Modulation: 16 QAM		
Measurement results - 1 GHz – 9 GHz – Low Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



6.7.8.5 Spurious Emissions LTE FDD 7:

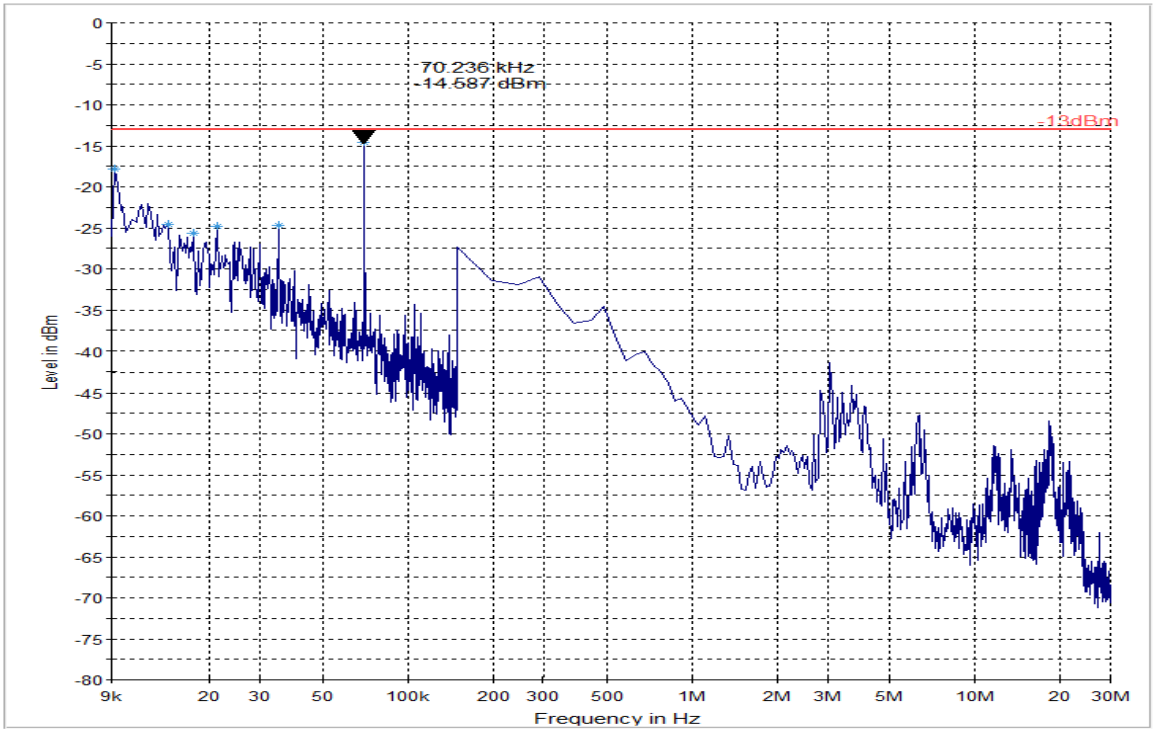
6.7.8.5.1 QPSK/ 5 MHz / Low Channel/ 9kHz to 30MHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: QPSK		
Measurement results – 9 kHz – 30 MHz – Low Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



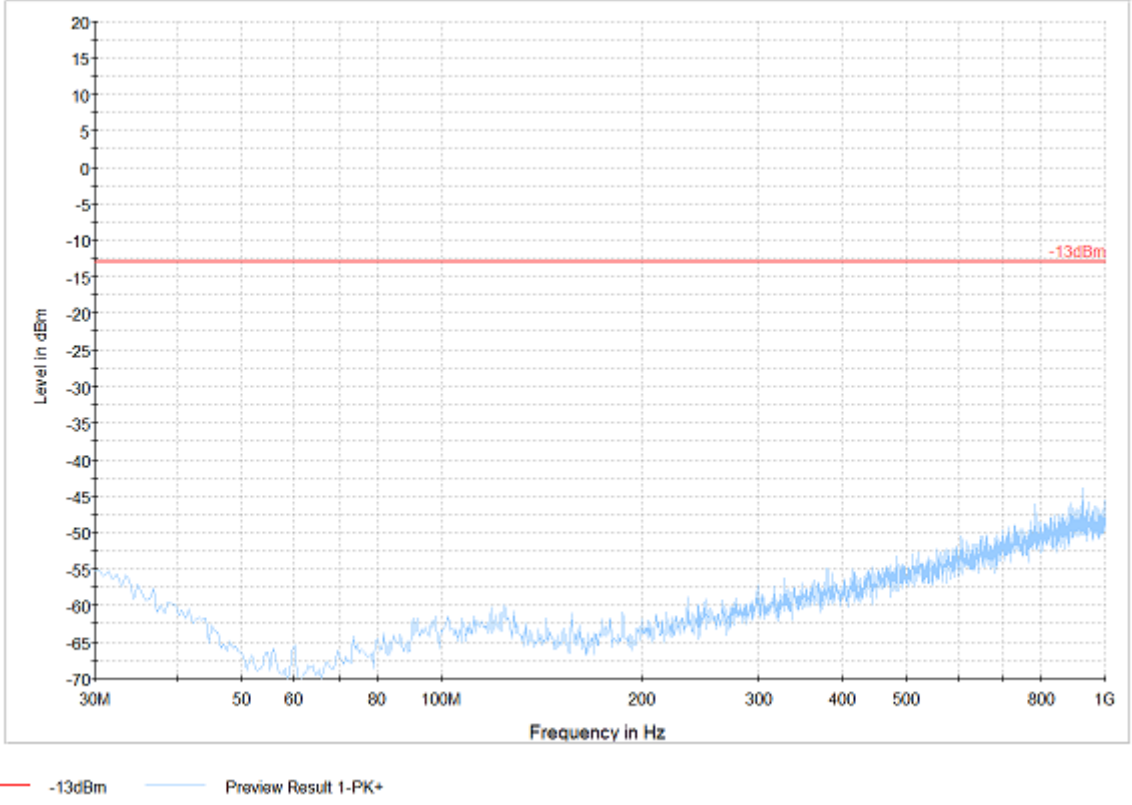
6.7.8.5.2 QPSK/ 20 MHz / Low Channel/ 9kHz to 30MHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: QPSK		
Measurement results – 9kHz – 30 MHz – Low Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



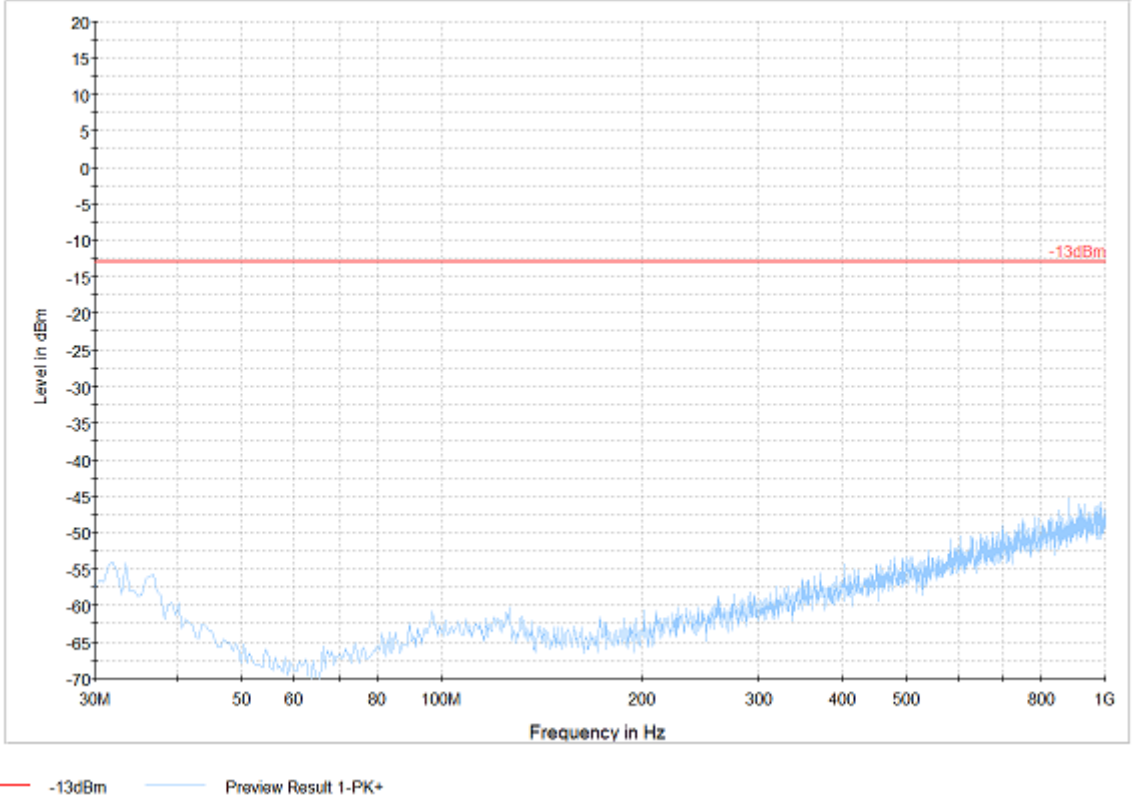
6.7.8.5.3 QPSK/ 5 MHz / Low Channel/ 30MHz to 1GHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: QPSK		
Measurement results – 30MHz – 1GHz – Low Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



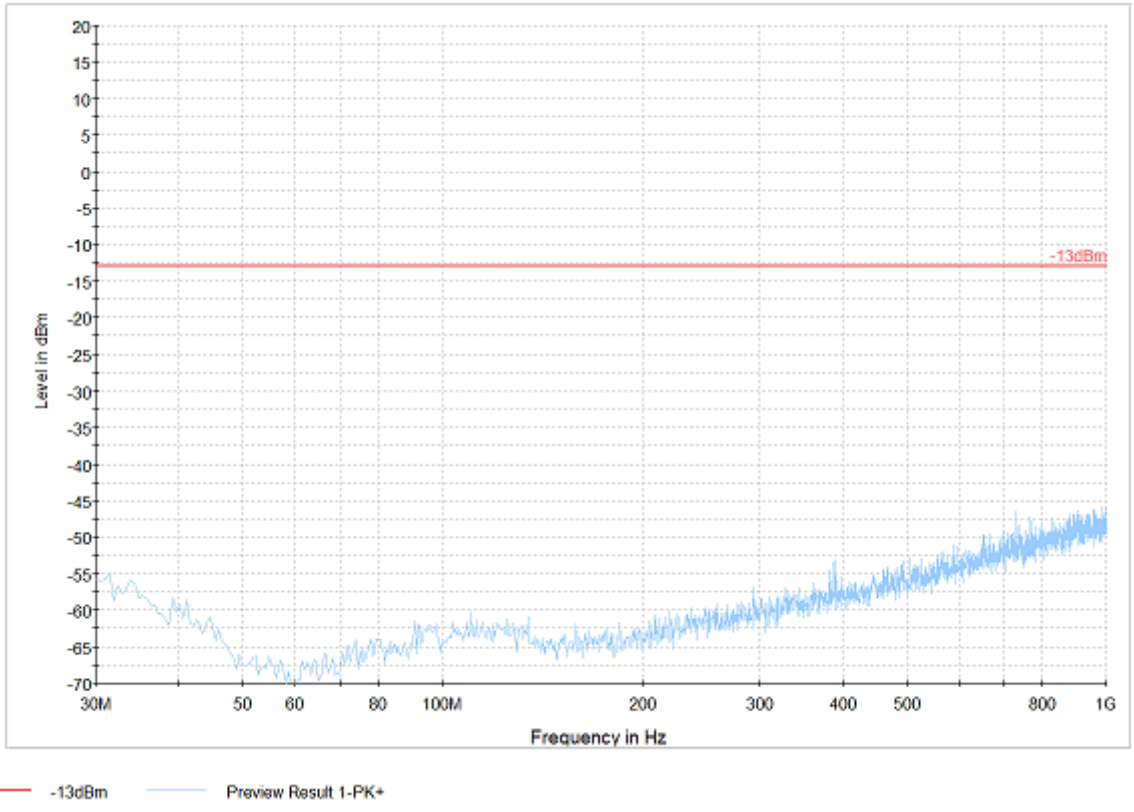
6.7.8.5.4 QPSK/ 5MHz/ Mid Channel/ 30MHz to 1GHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: QPSK		
Measurement results – 30MHz – 1GHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW(MHz) = 5**



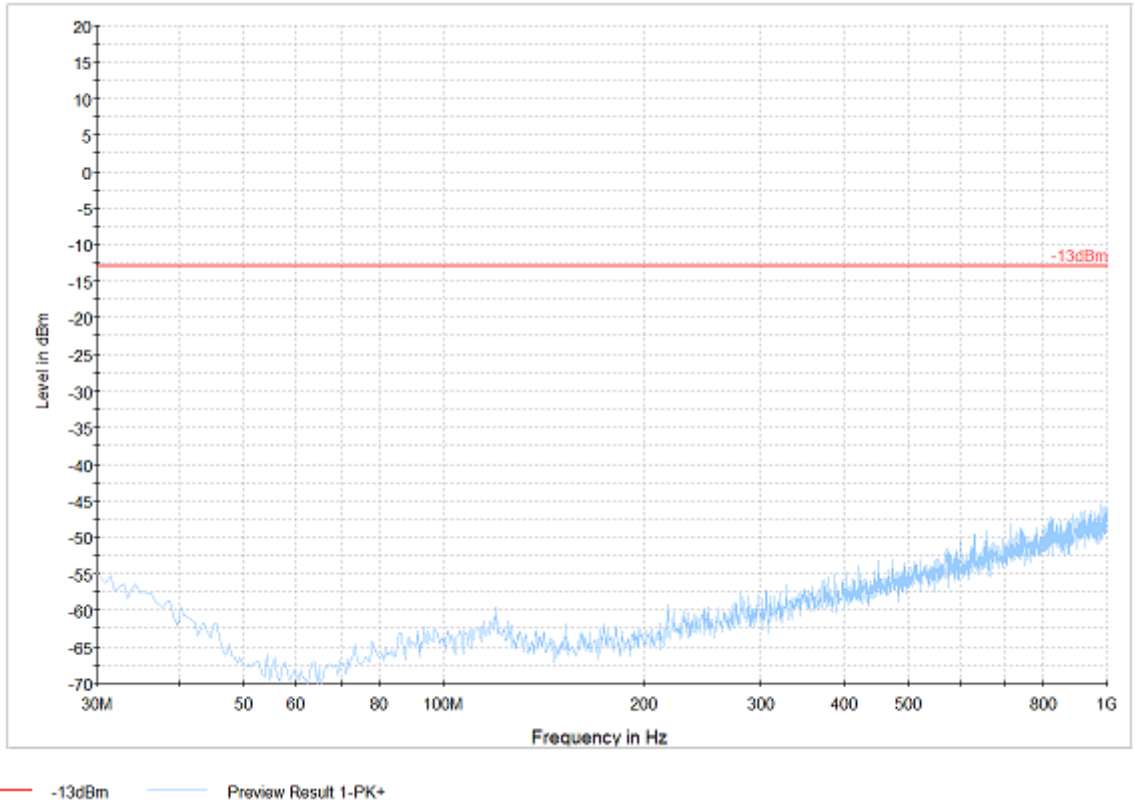
6.7.8.5.5 QPSK/ 5MHz/ High Channel/ 30MHz to 1GHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: QPSK		
Measurement results – 30MHz – 1GHz – High Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz) = 5**



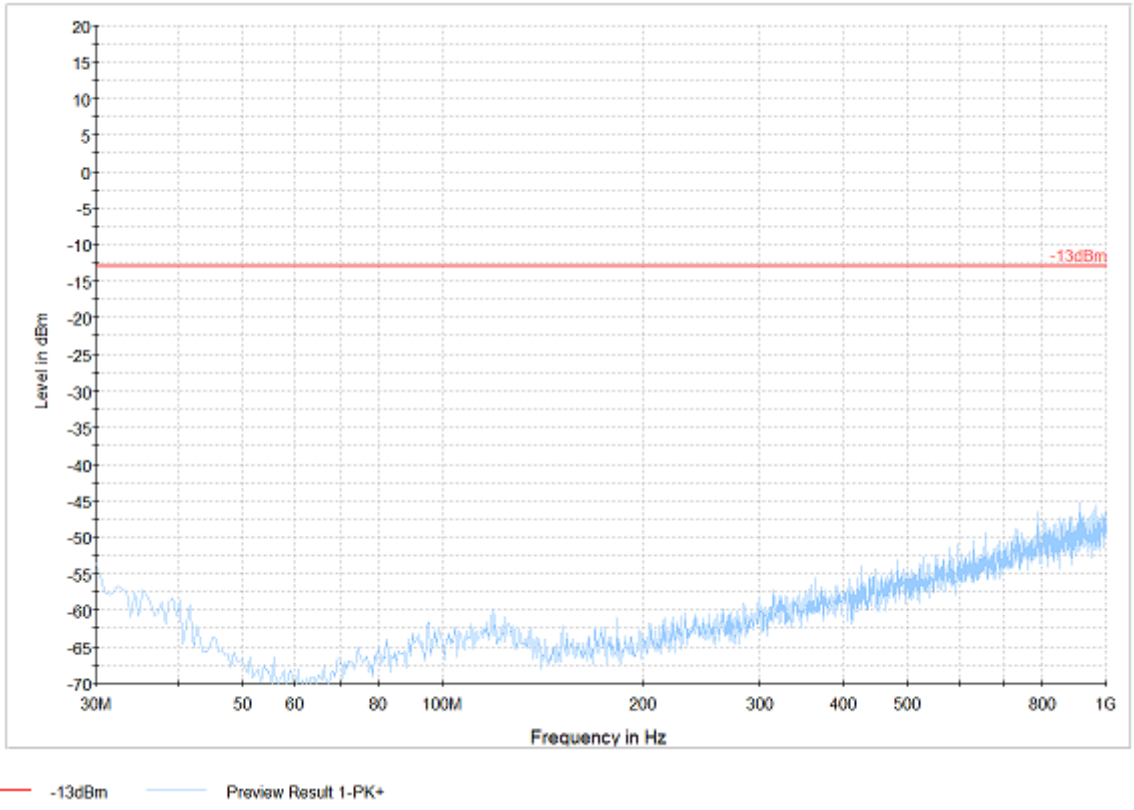
6.7.8.5.6 QPSK/ 20MHz / Low Channel/ 30MHz to 1GHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: QPSK		
Measurement results – 30MHz – 1GHz – Low Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



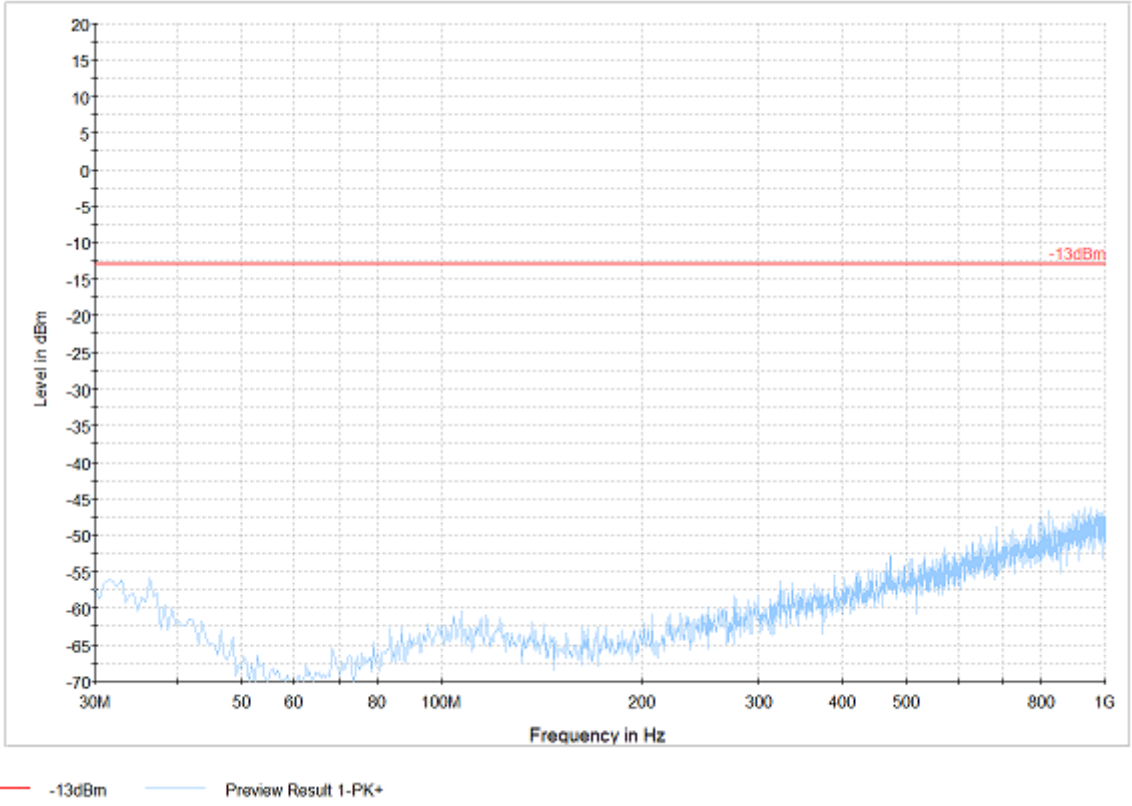
6.7.8.5.7 QPSK/ 20MHz/ Mid Channel/ 30MHz to 1GHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: QPSK		
Measurement results – 30MHz – 1GHz – Mid Channel		
RB Size = 100	**RB Offset** = 0	**BW(MHz) = 20**



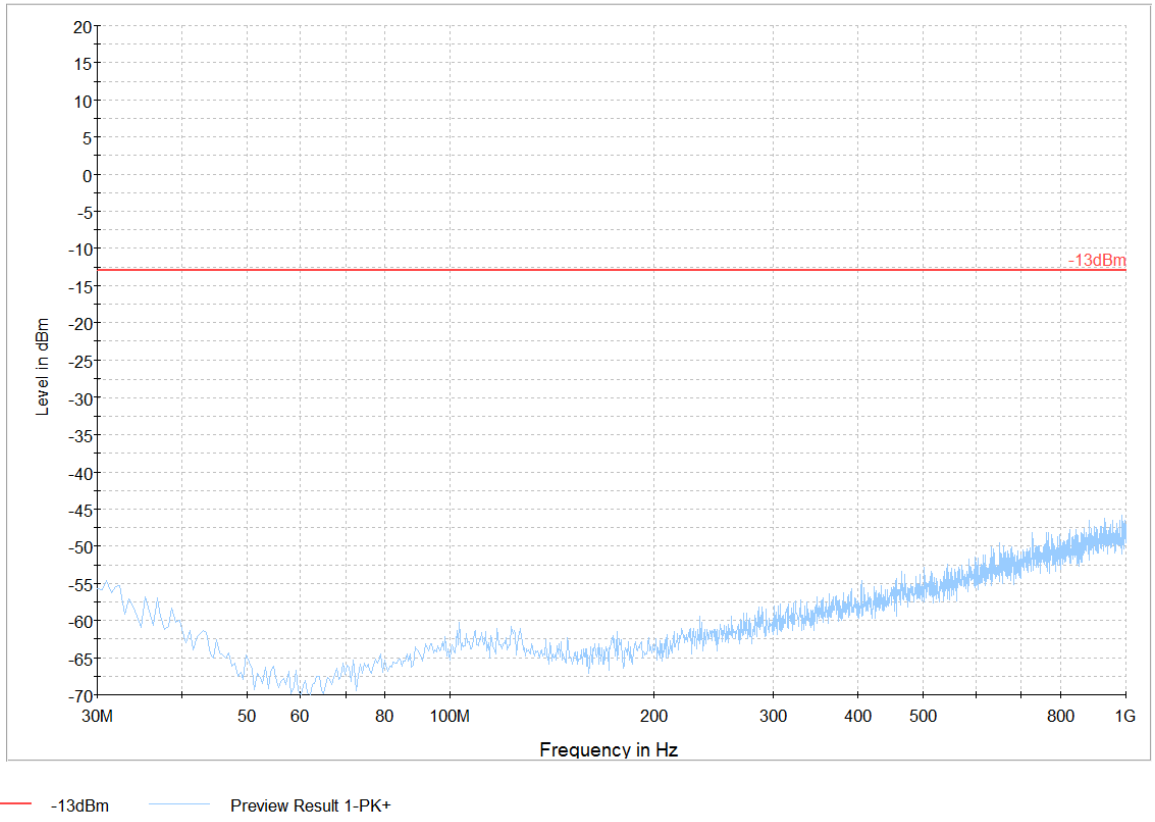
6.7.8.5.8 QPSK/ 20MHz/ High Channel/ 30MHz to 1GHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: QPSK		
Measurement results – 30MHz – 1GHz – High Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz) = 20**



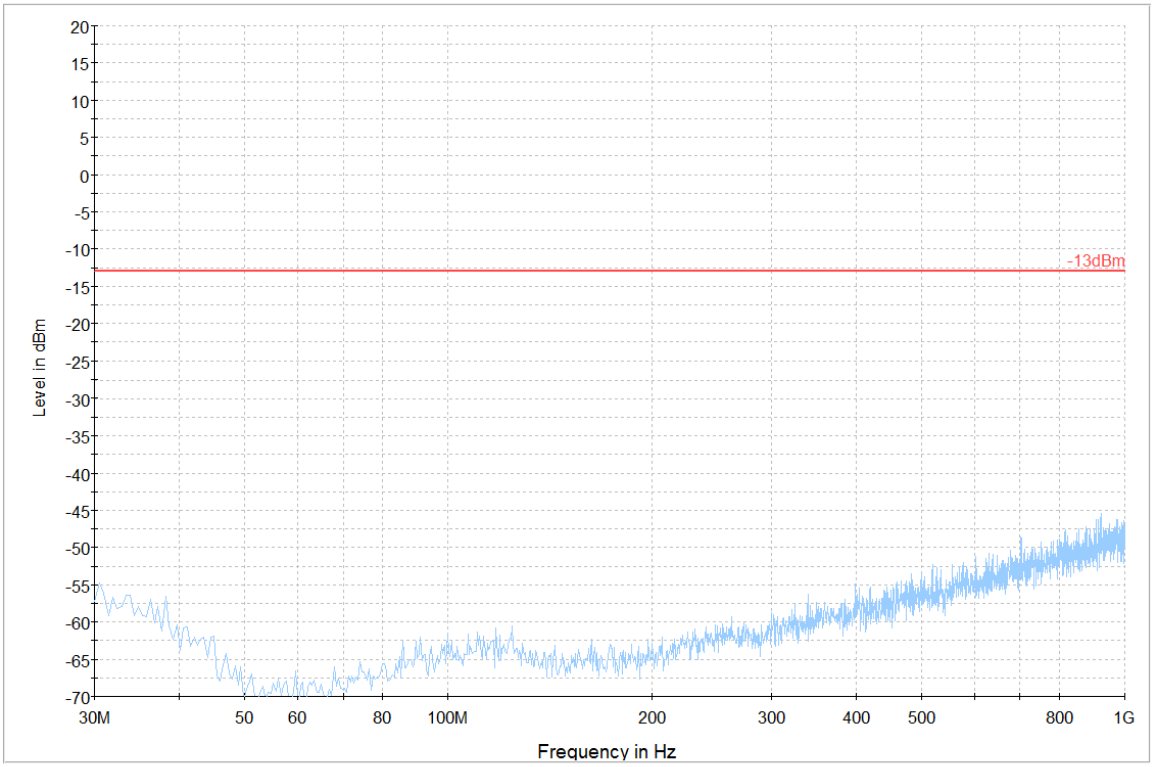
6.7.8.5.9 16QAM / 5MHz/ Mid Channel/ 30MHz to 1GHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: 16QAM		
Measurement results – 30MHz – 1GHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW(MHz) = 5**



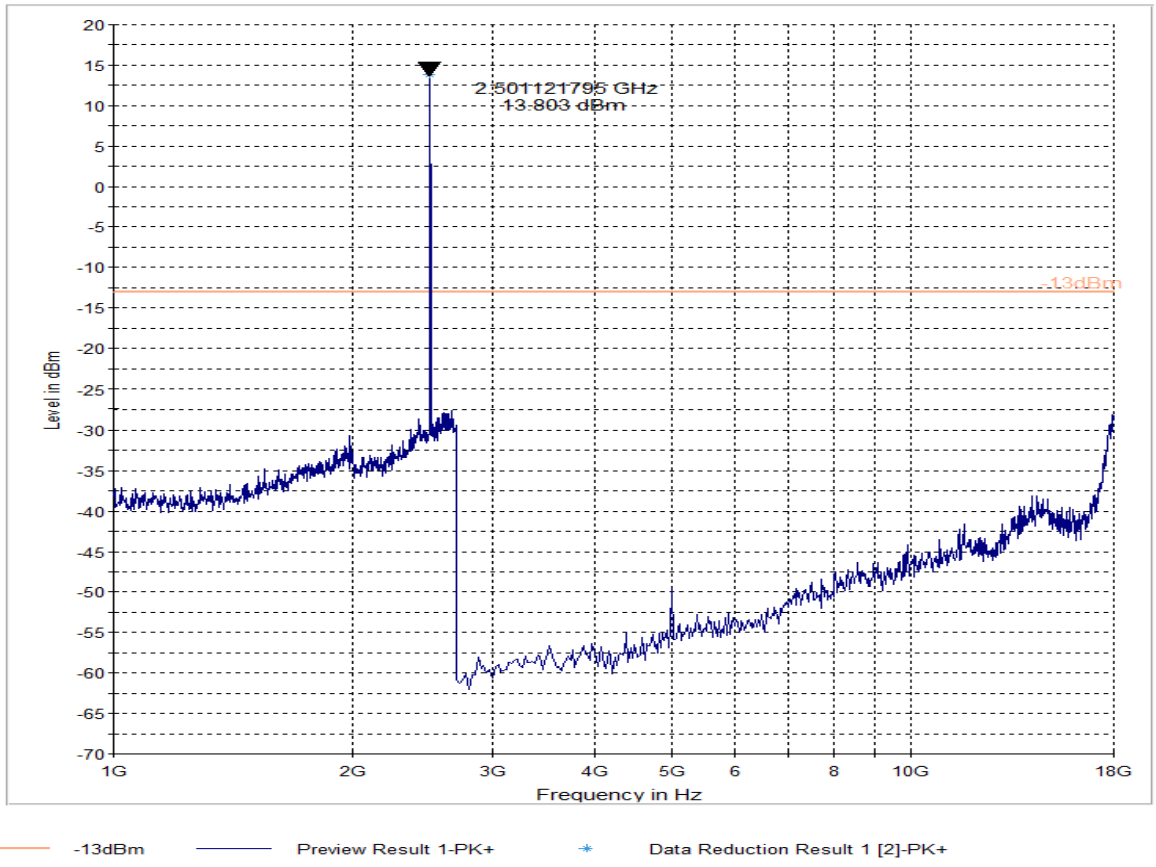
6.7.8.5.10 16QAM / 20MHz/ Mid Channel/ 30MHz to 1GHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: 16QAM		
Measurement results – 30MHz – 1GHz – Mid Channel		
RB Size = 100	**RB Offset** = 0	**BW(MHz) = 20**



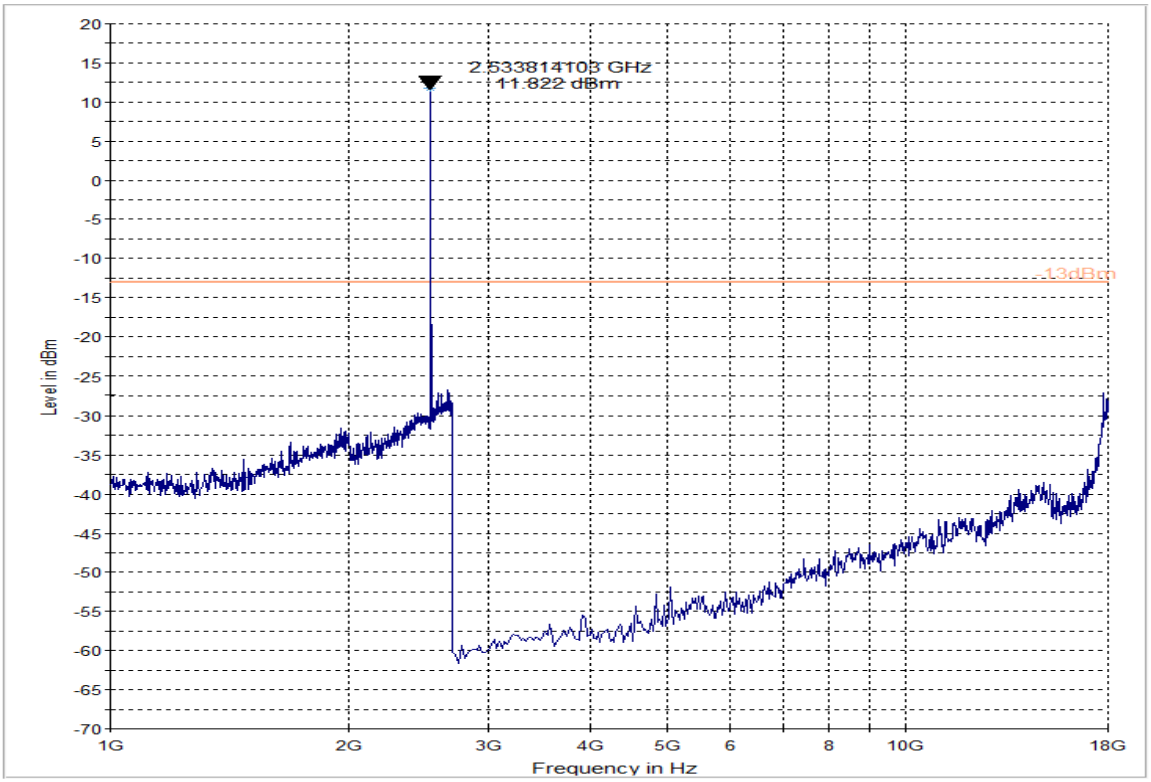
6.7.8.5.11 QPSK/ 5MHz/ Low Channel/ 1GHz to 18GHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: QPSK		
Measurement results 1GHz – 18GHz – Low Channel		
RB Size =1	**RB Offset** = 0	**BW (MHz) = 5**



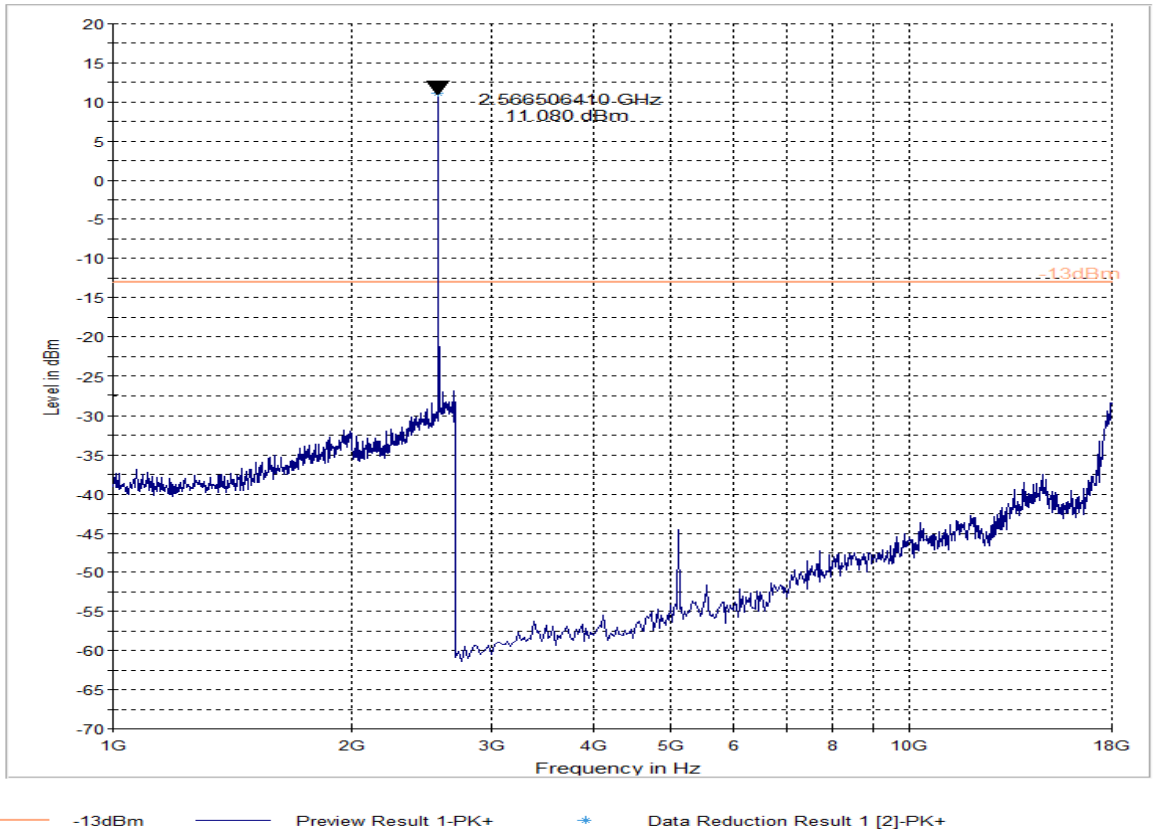
6.7.8.5.12 QPSK/ 5MHz/ Mid Channel/ 1GHz to 18GHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: QPSK		
Measurement results 1GHz – 18GHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz) = 5**



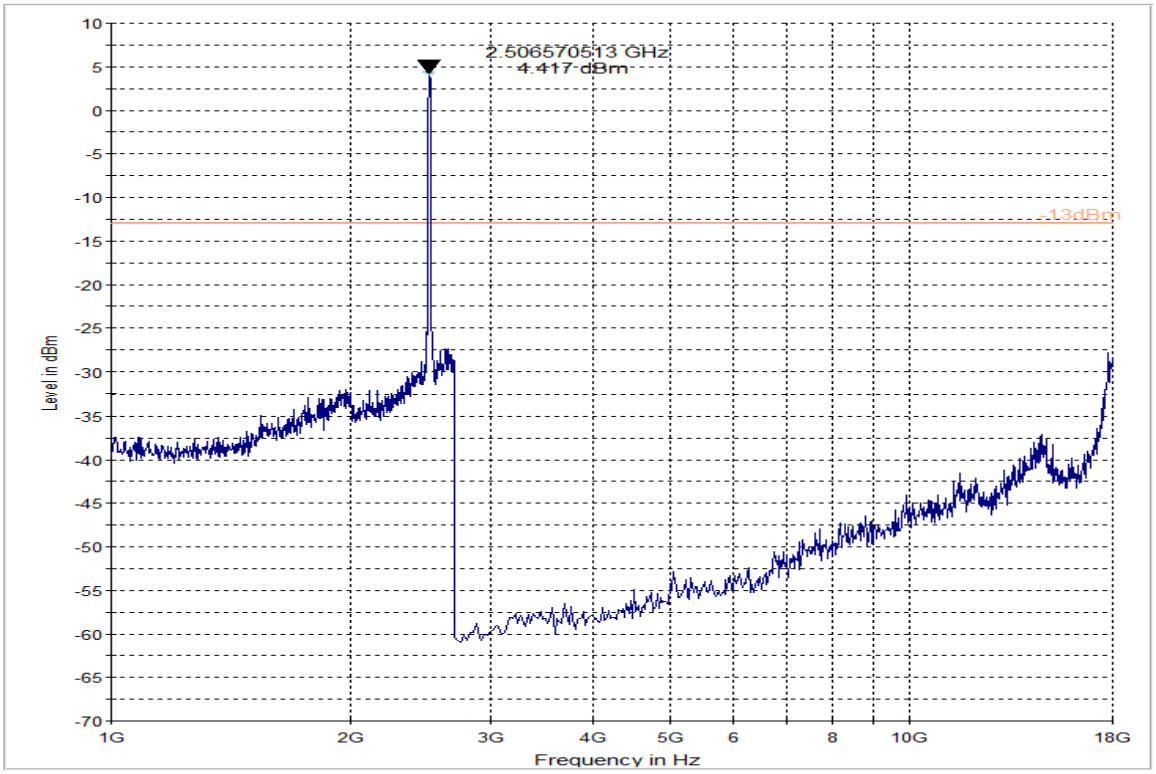
6.7.8.5.13 QPSK/ 5MHz/ High Channel/ 1GHz to 18GHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: QPSK		
Measurement results 1GHz – 18GHz – High Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz) = 5**



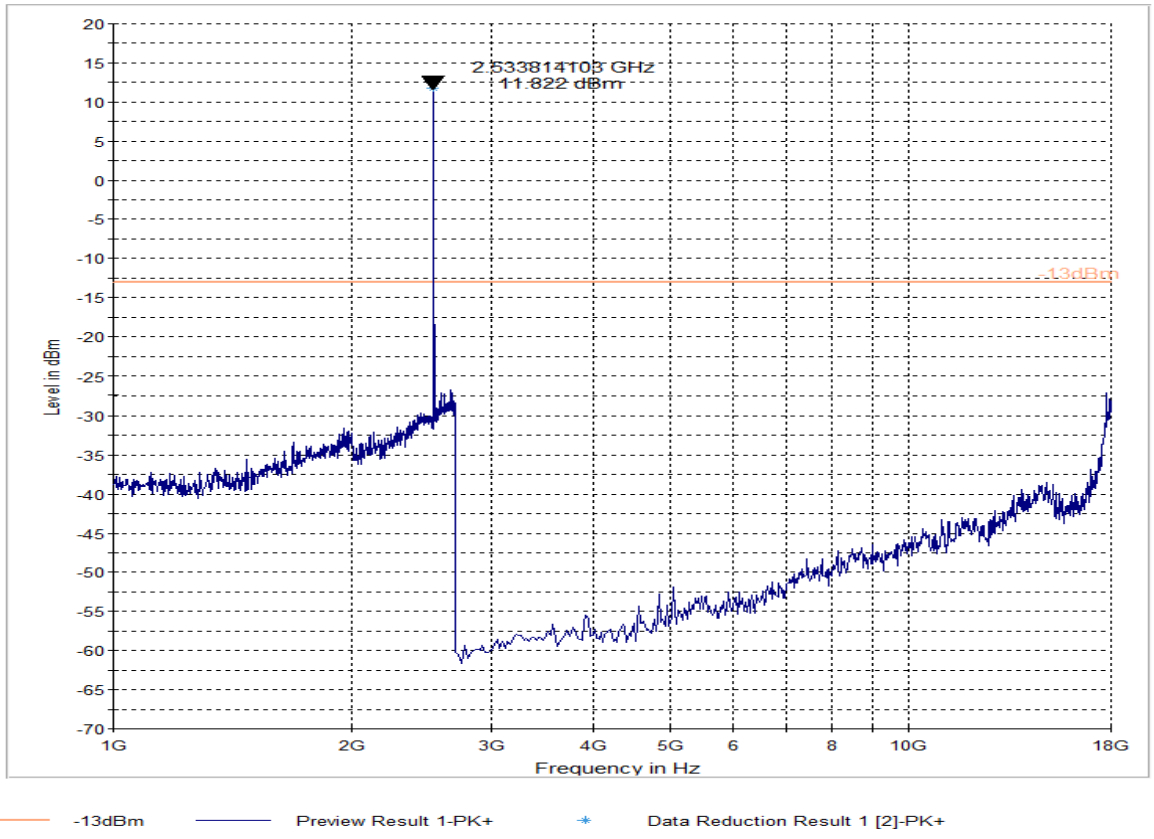
6.7.8.5.14 QPSK/ 20MHz/ Low Channel/ 1GHz to 18GHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: QPSK		
Measurement results 1GHz – 18GHz – Low Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz) = 20**



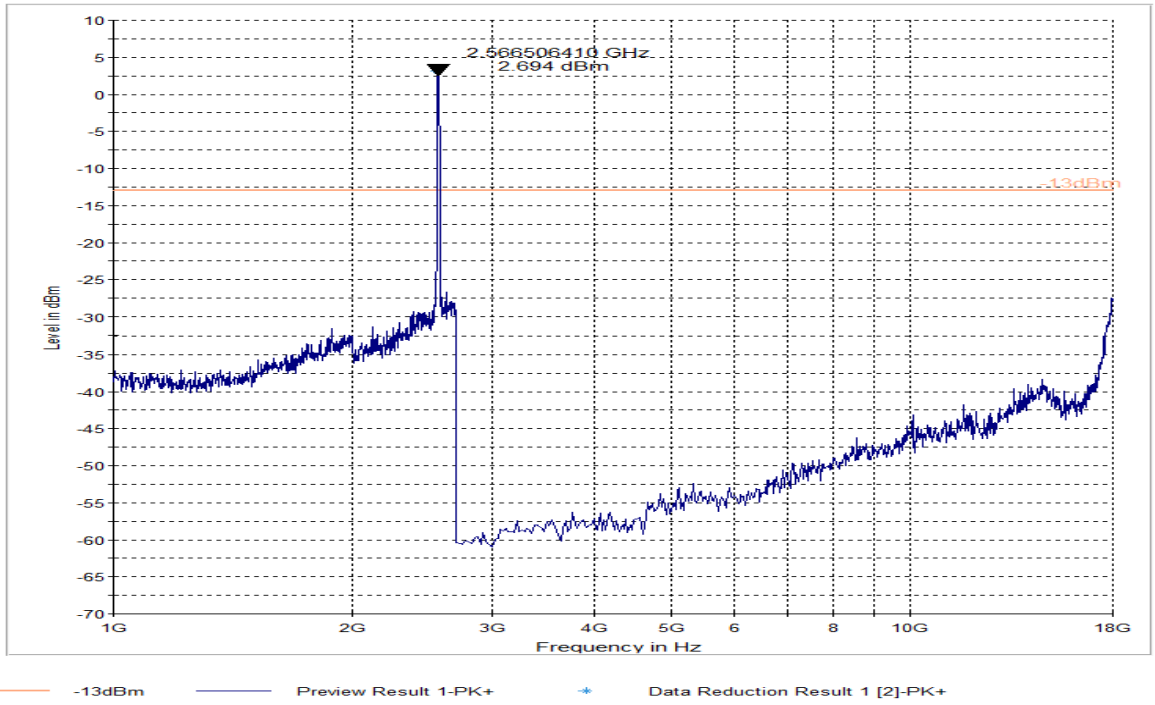
6.7.8.5.15 QPSK/ 20MHz/ Mid Channel/ 1GHz to 18GHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: QPSK		
Measurement results 1GHz – 18GHz – Mid Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz) = 20**



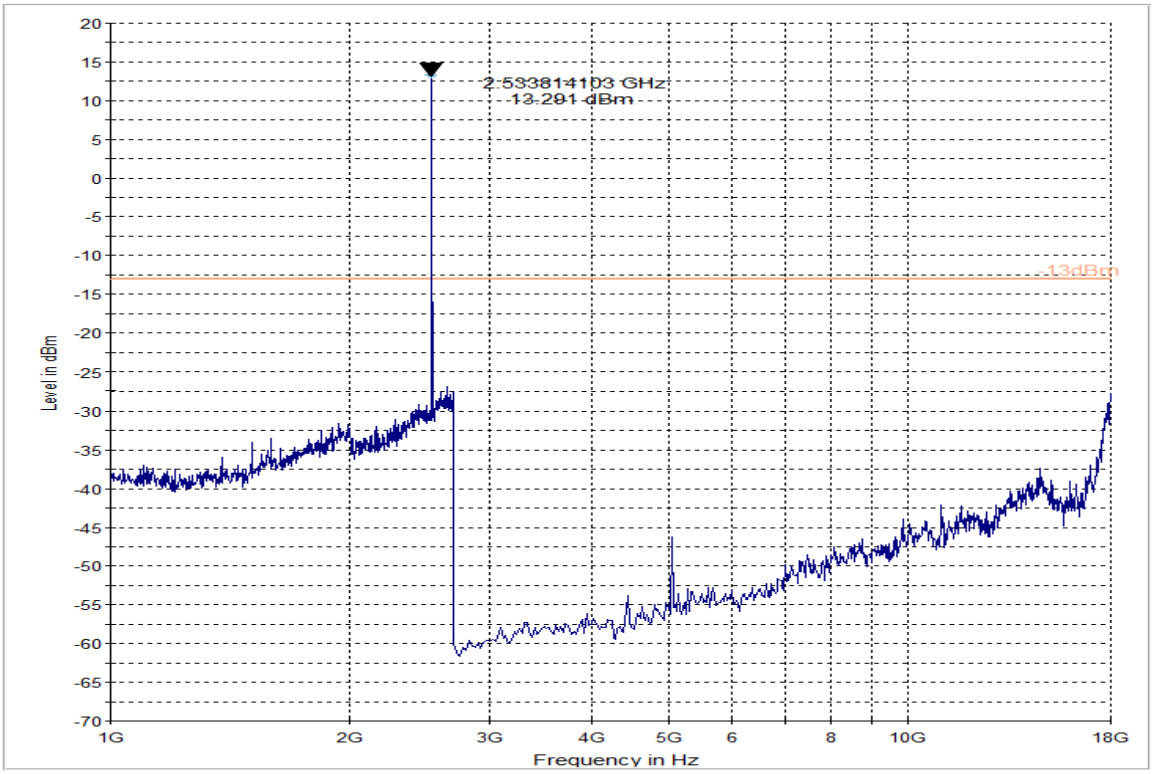
6.7.8.5.16 QPSK/ 20MHz/ High Channel/ 1GHz to 18GHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: QPSK		
Measurement results 1GHz – 18GHz – High Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz) = 20**



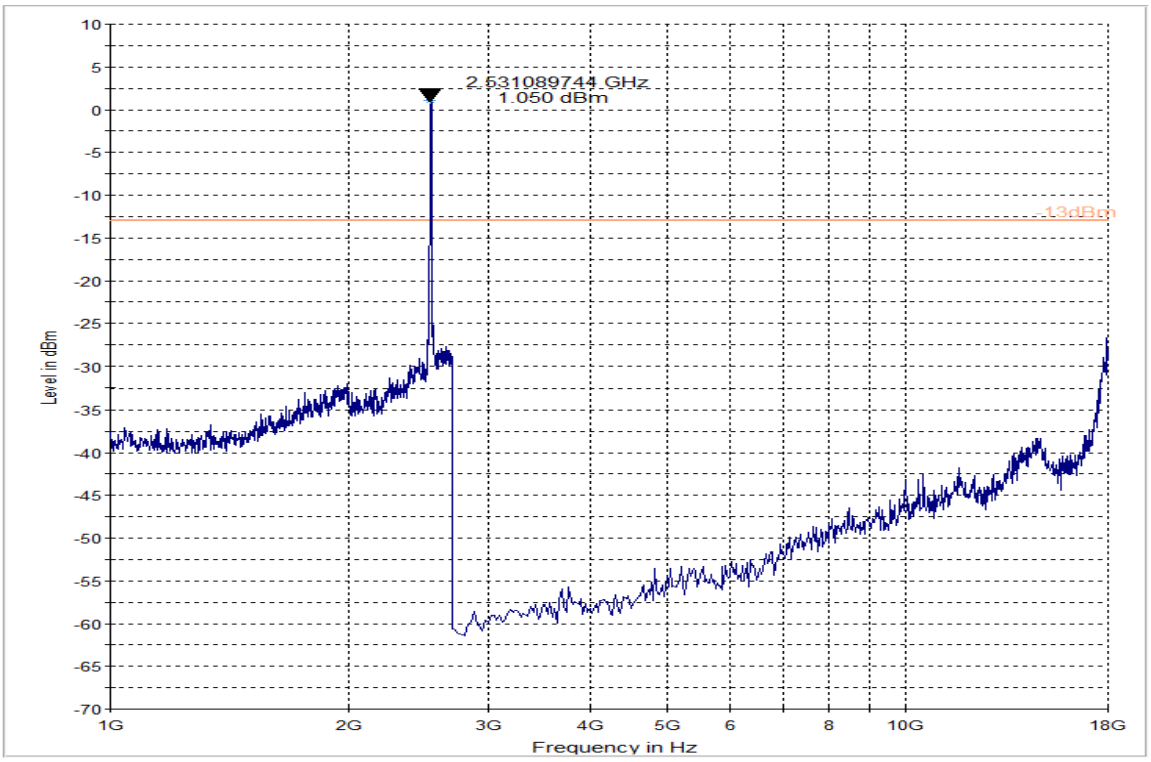
6.7.8.5.17 16QAM/ 5MHz/ Mid Channel/ 1GHz to 18GHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: 16QAM		
Measurement results 1GHz – 18GHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz) = 5**



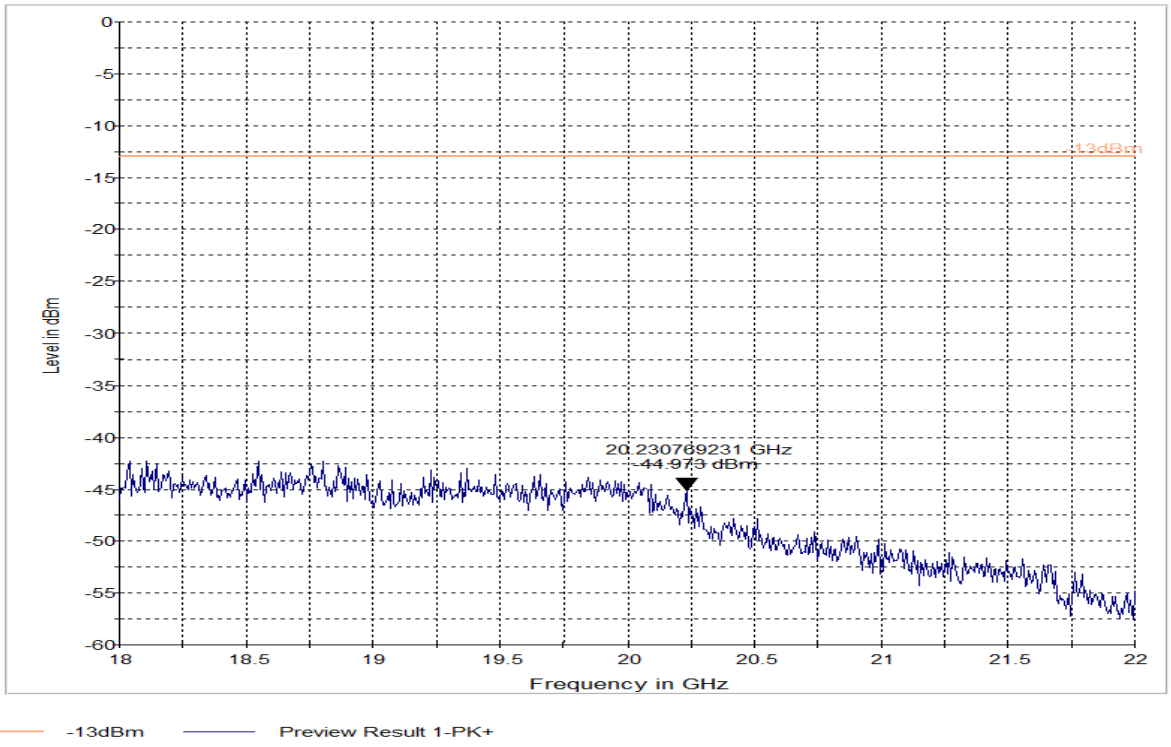
6.7.8.5.18 16QAM/ 20MHz/ Mid Channel/ 1GHz to 18GHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: QPSK		
Measurement results 1GHz – 18GHz – Mid Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz) = 20**



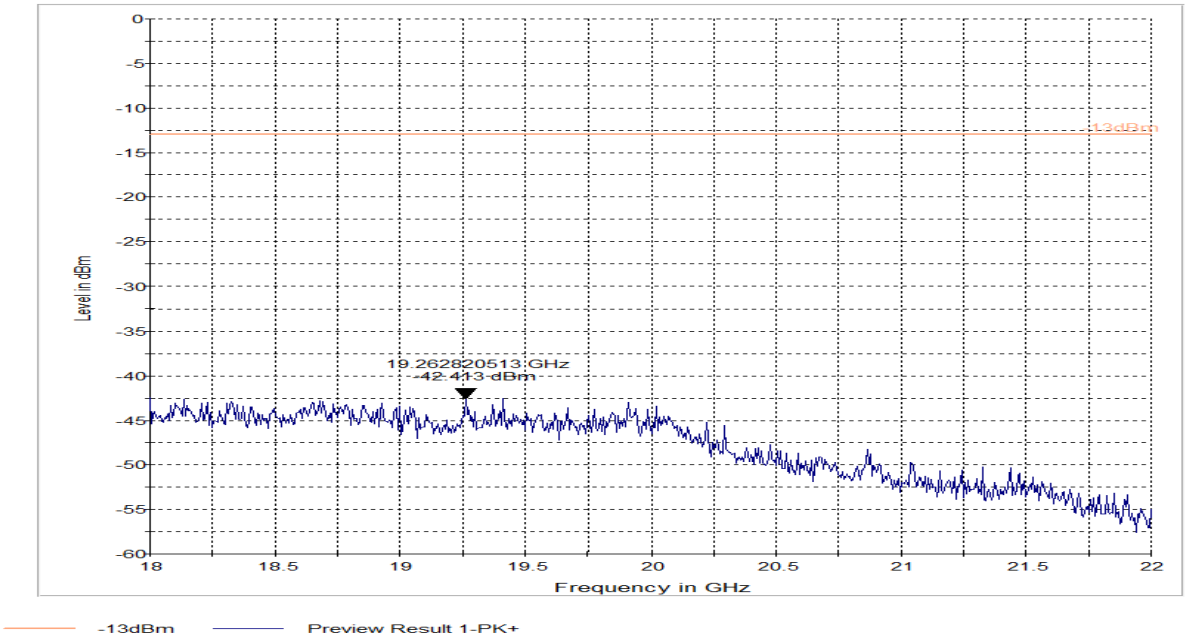
6.7.8.5.19 QPSK/5MHz/ Mid Channel/ 18GHz to 22GHz

LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: QPSK		
Measurement results 18GHz – 40GHz – Mid Channel		
RB Size = 1	**RB Offset** = Mid	**BW (Mhz) = 5**



6.7.8.5.20 QPSK/20MHz/ Mid Channel/ 18GHz to 22GHz

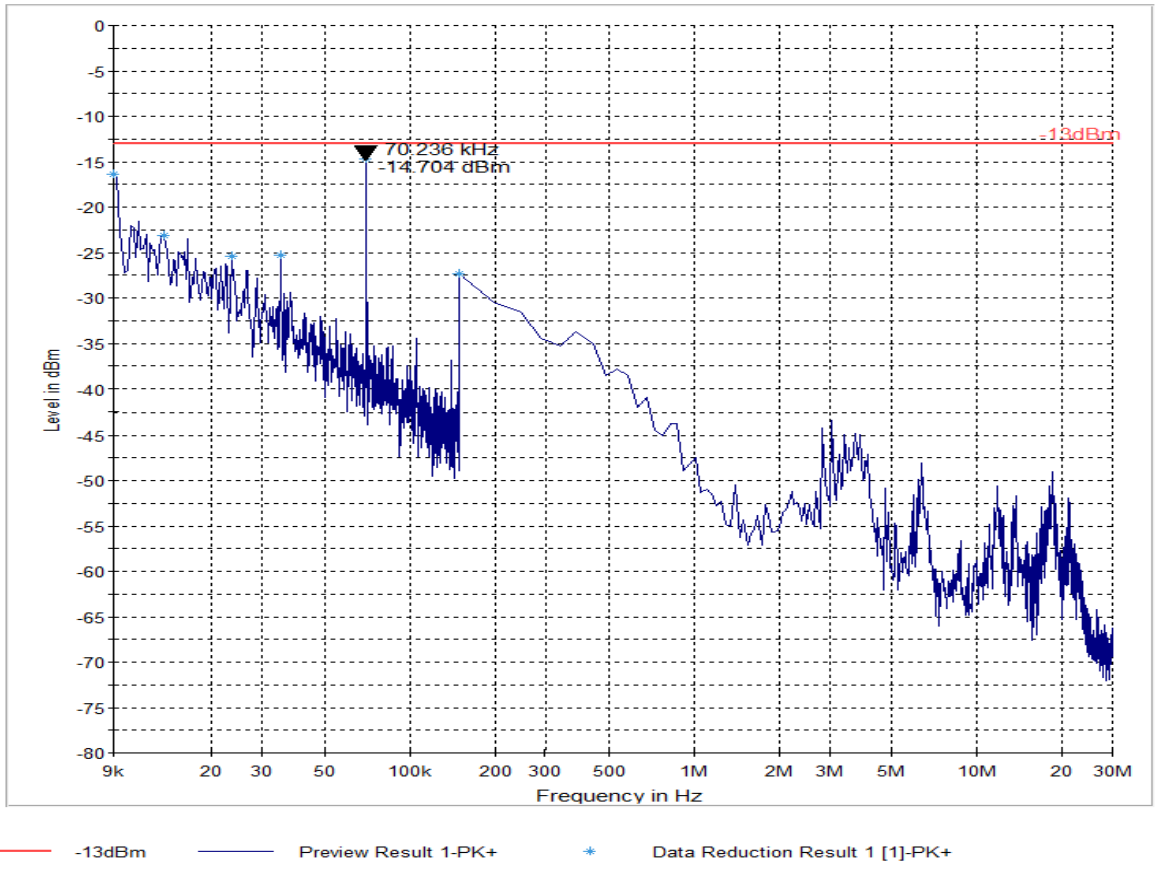
LTE Band 7 (2500 MHz – 2570 MHz) -Modulation: QPSK		
Measurement results 18GHz – 40GHz – Mid Channel		
RB Size = 100	**RB Offset** = High	**BW (MHz) = 20**



6.7.8.6 Spurious Emissions LTE FDD 13:

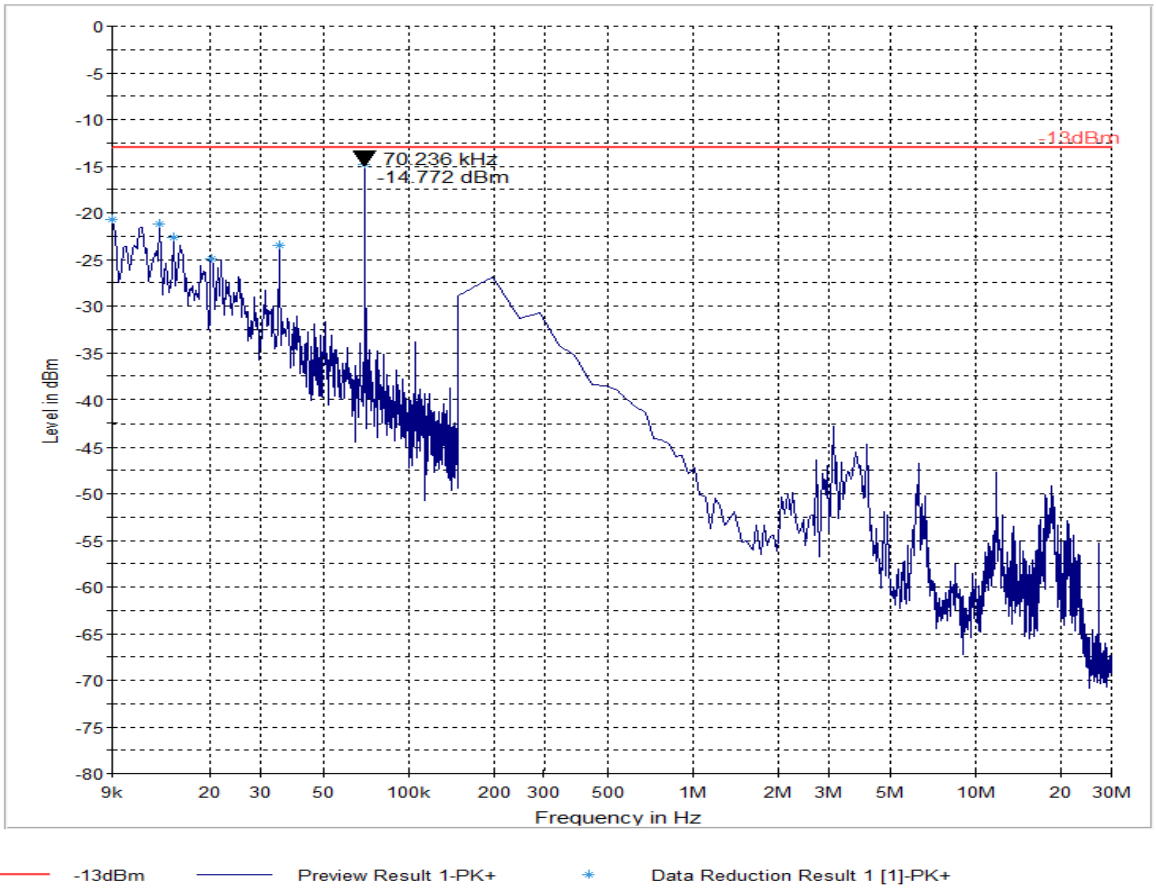
6.7.8.6.1 QPSK/ 5 MHz/ Mid Channel/ 9kHz to 30MHz:

LTE Band 13 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results – 9 kHz – 30 MHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



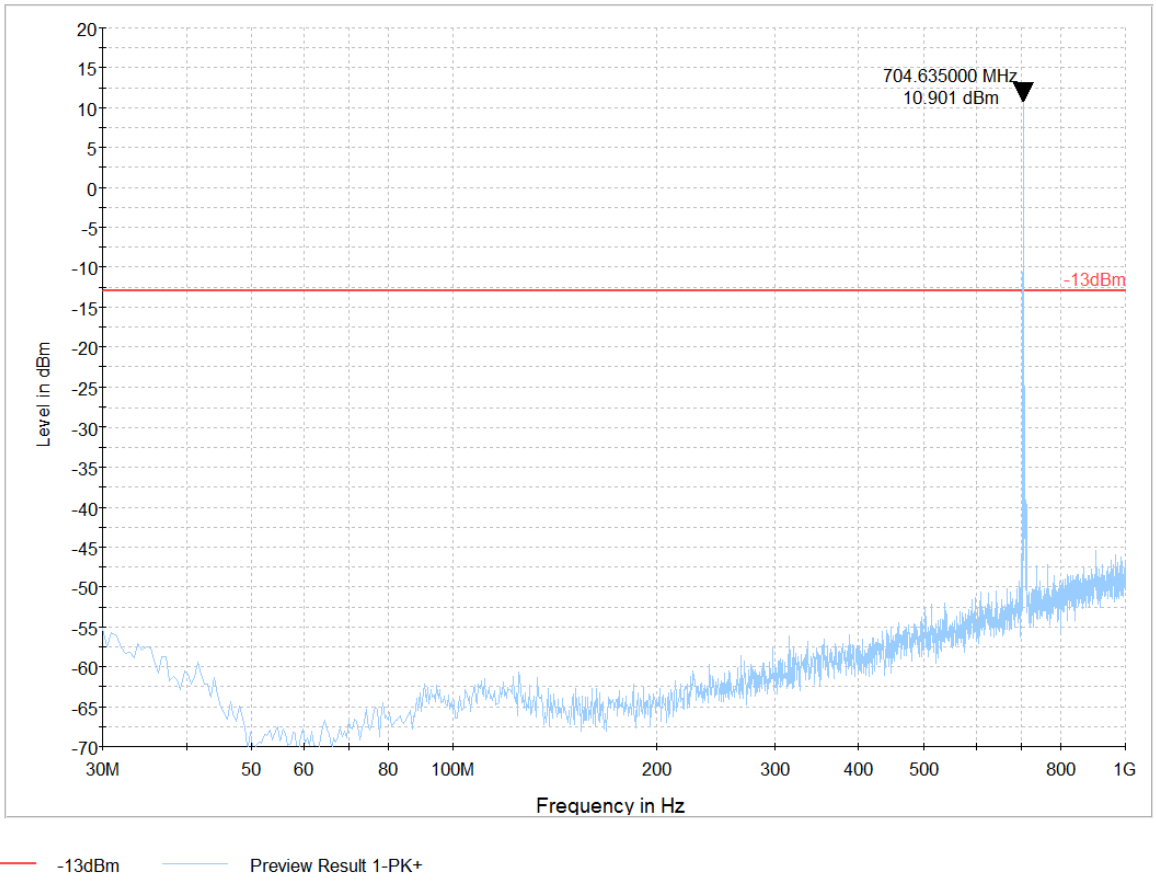
6.7.8.6.2 QPSK/ 10 MHz/ Mid Channel/ 9kHz to 30MHz:

LTE Band 13 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results – 9 kHz – 30 MHz – Mid Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



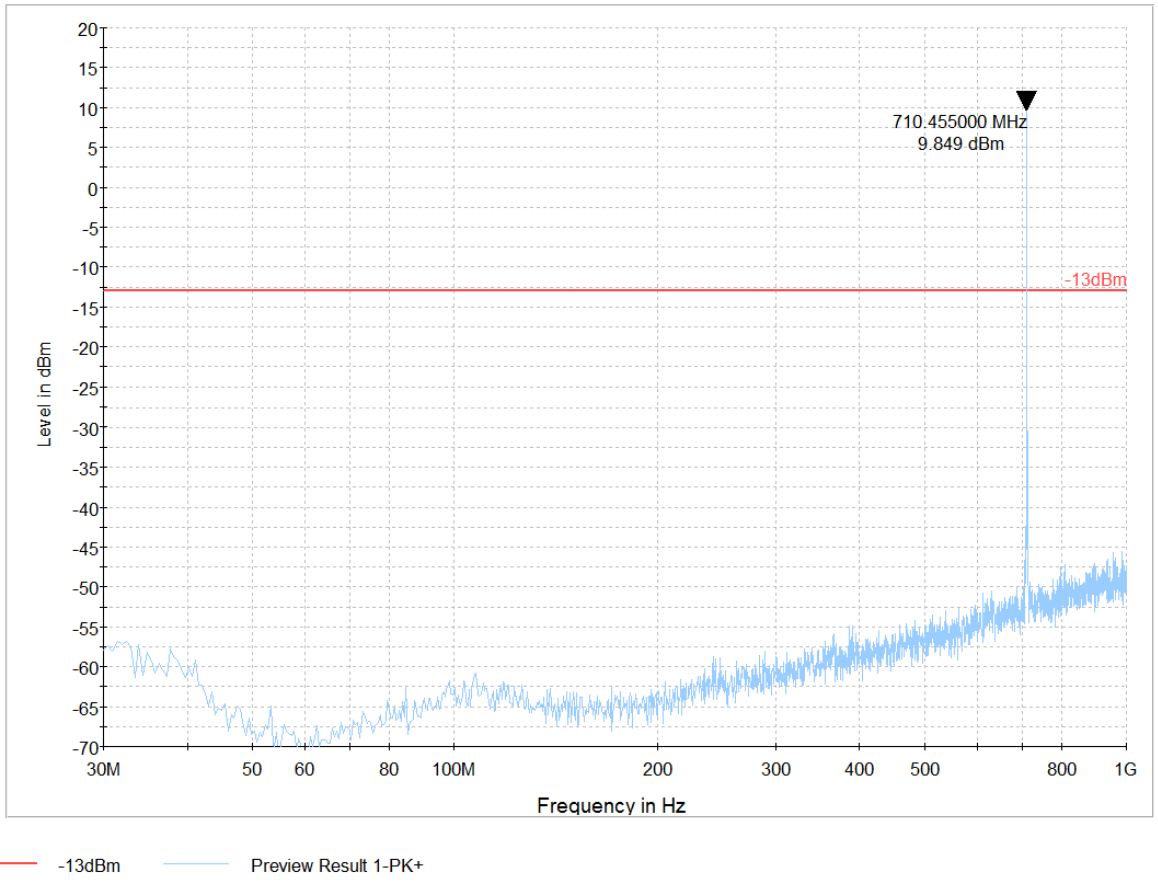
6.7.8.6.3 QPSK/ 5 MHz/ Low Channel/ 30MHz to 1GHz:

LTE Band 13 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1 GHz – Low Channel 23755		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



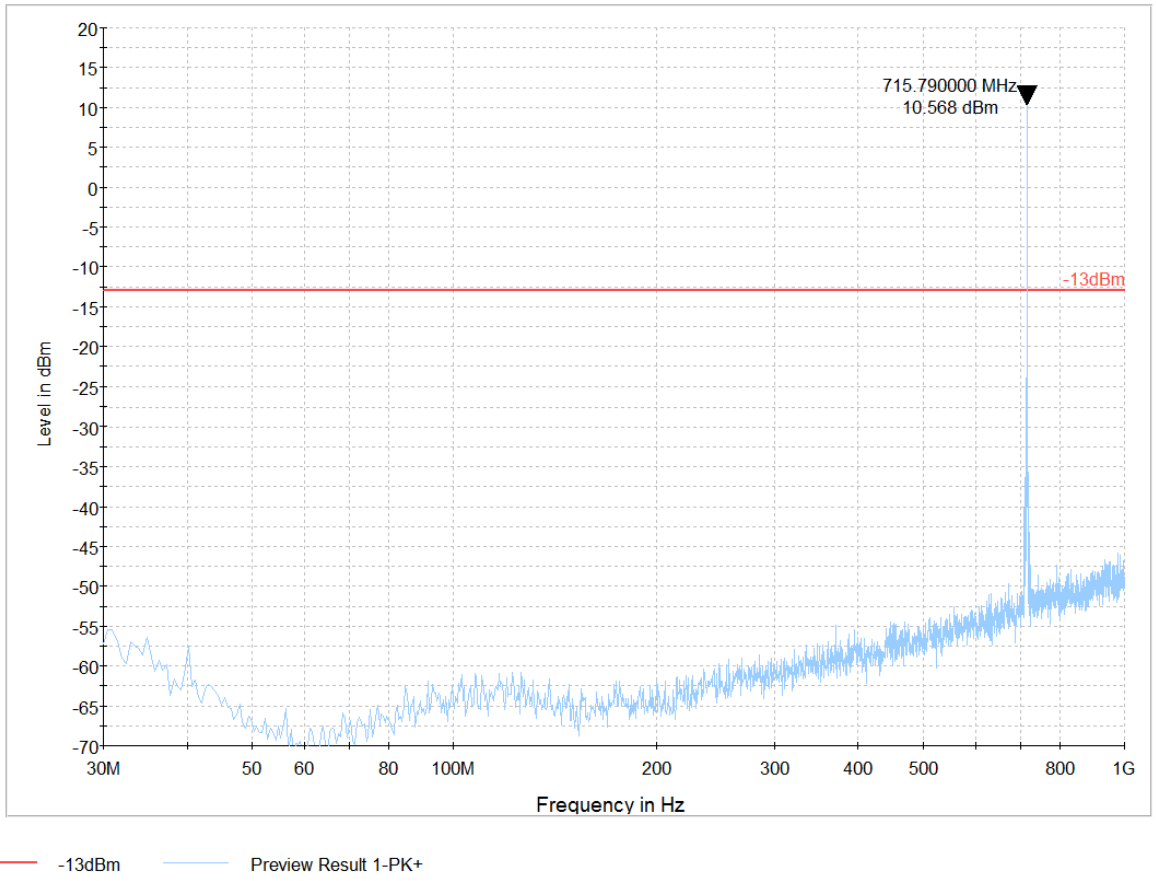
6.7.8.6.4 QPSK/ 5 MHz/ Mid Channel/ 30MHz to 1GHz:

LTE Band 13 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1 GHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



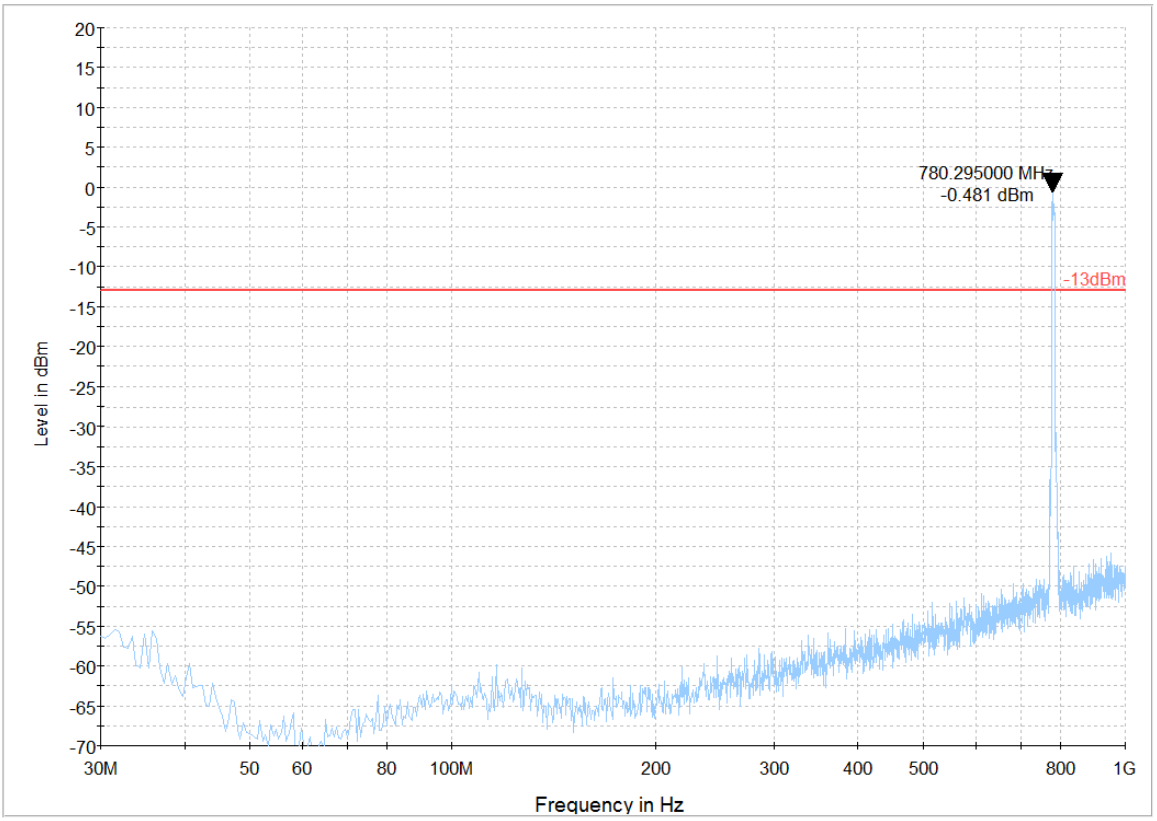
6.7.8.6.5 QPSK/ 5MHz/ High Channel/ 30MHz to 1GHz:

LTE Band 13 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1 GHz – High Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



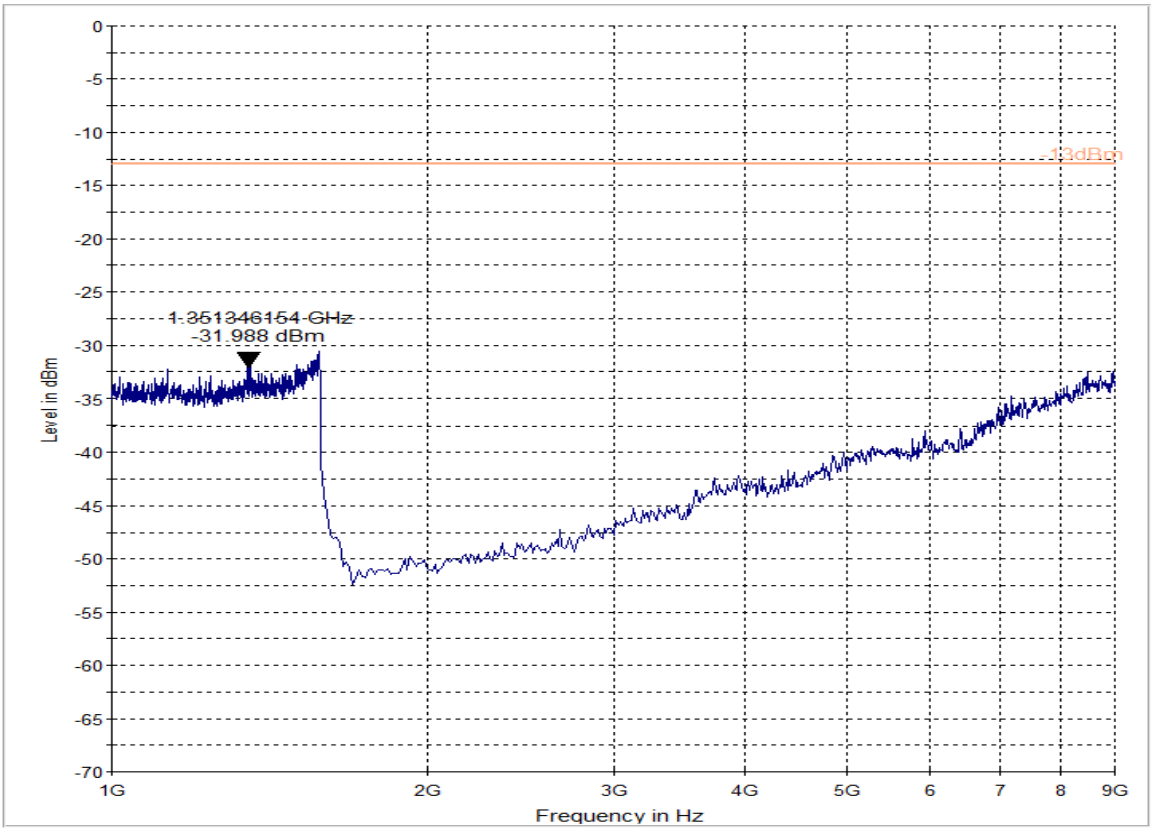
6.7.8.6.6 QPSK/10 MHz/ Mid Channel/ 30MHz to 1GHz:

LTE Band 13 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1 GHz – Mid Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



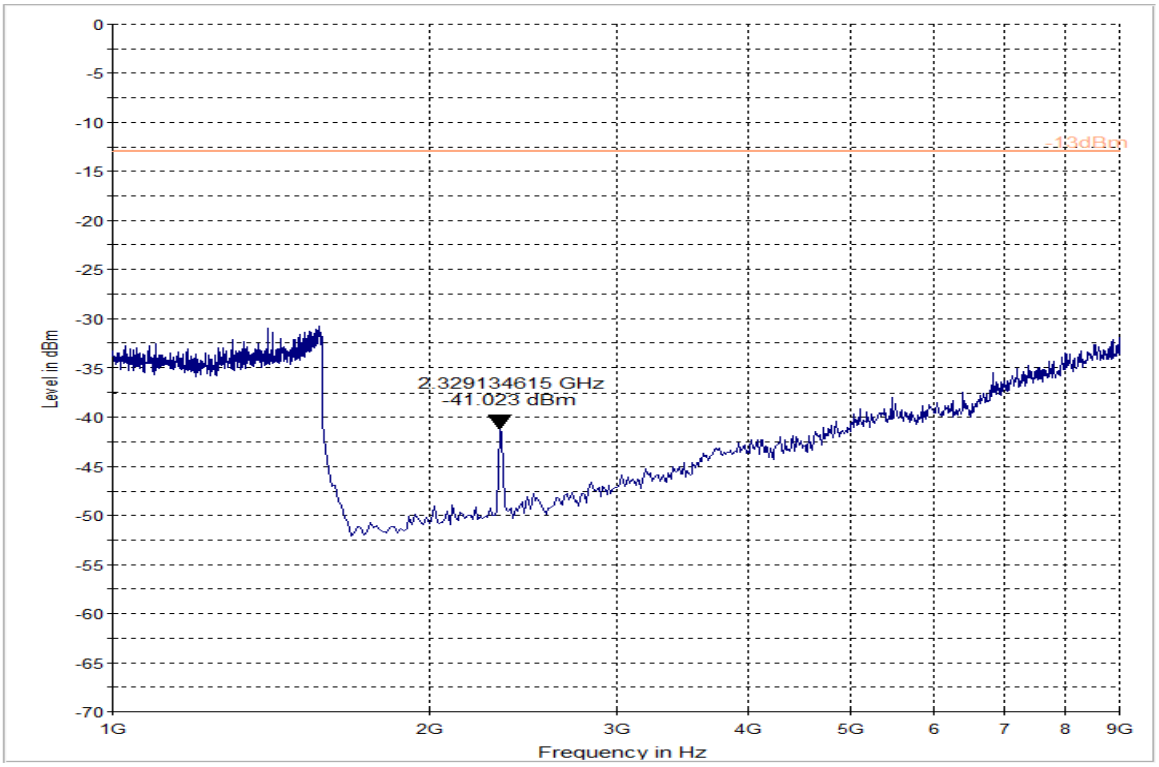
6.7.8.6.7 QPSK/ 5MHz/ Low Channel/ 1GHz to 9GHz:

LTE Band 13 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 9 GHz – Low Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



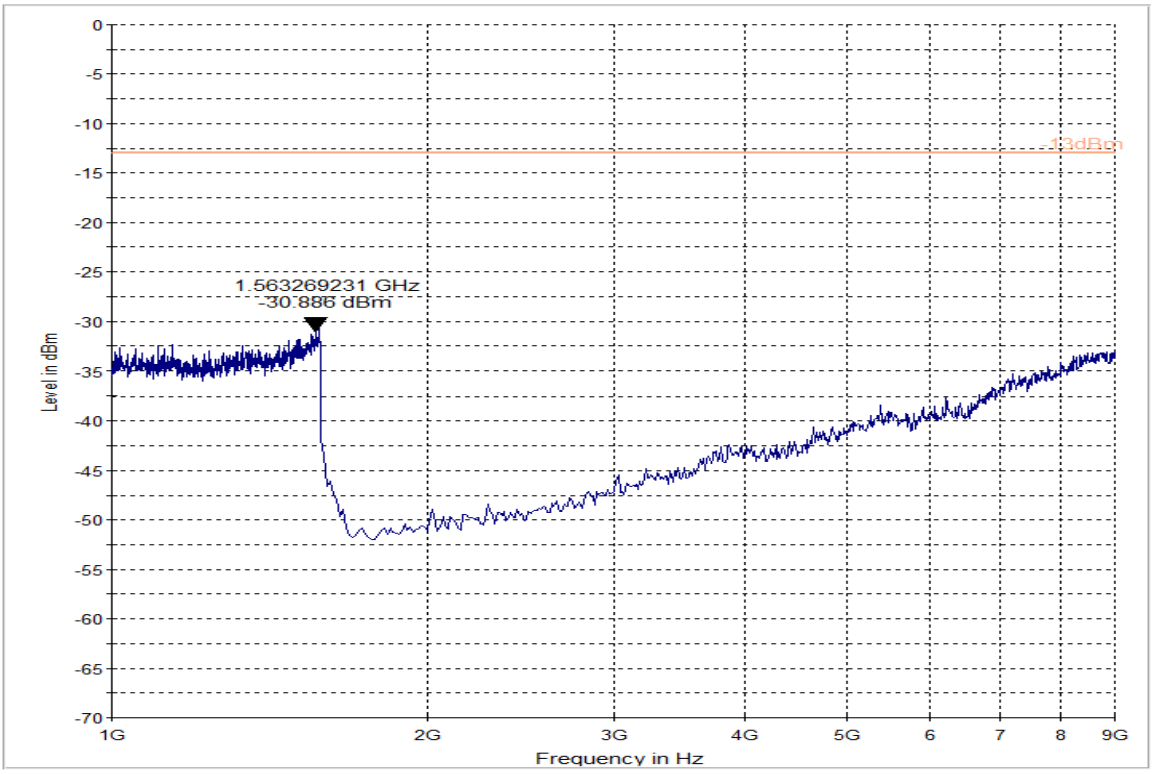
6.7.8.6.8 QPSK/ 5 MHz/ Mid Channel/ 1GHz to 9GHz:

LTE Band 13 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 9 GHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



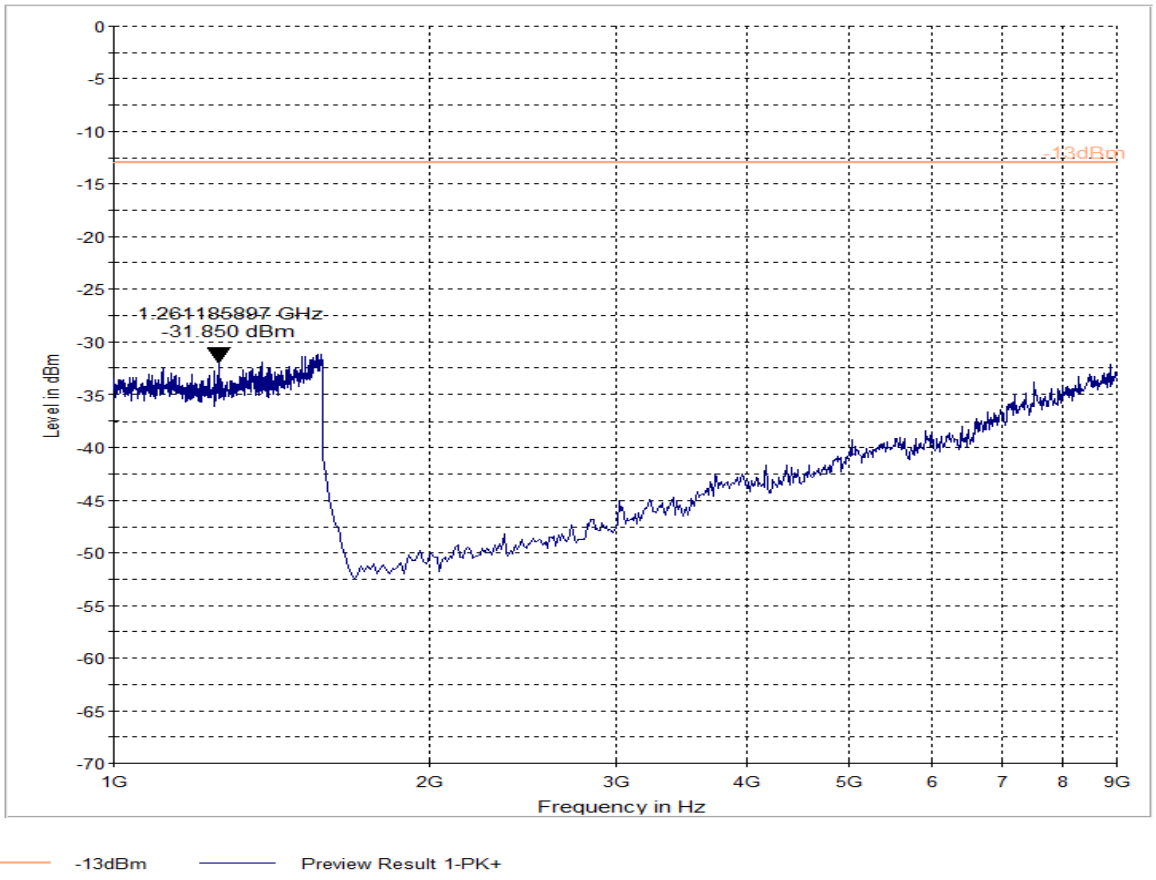
6.7.8.6.9 QPSK/ 5MHz/ High Channel/ 1GHz to 9GHz:

LTE Band 13 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 9 GHz – High Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



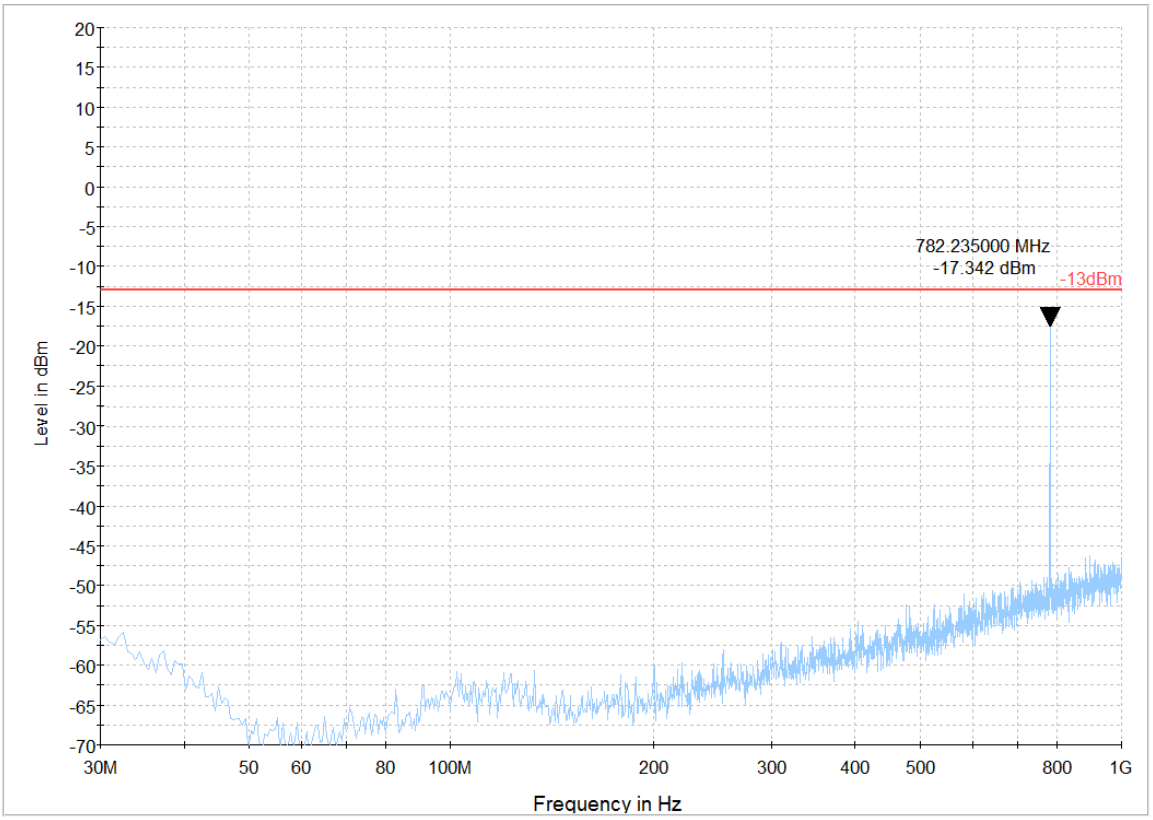
6.7.8.6.10 QPSK/10 MHz/ Mid Channel/ 1GHz to 9GHz:

LTE Band 13 (704 MHz – 716 MHz) -Modulation: QPSK		
Measurement results – 1 GHz – 9 GHz – Mid Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



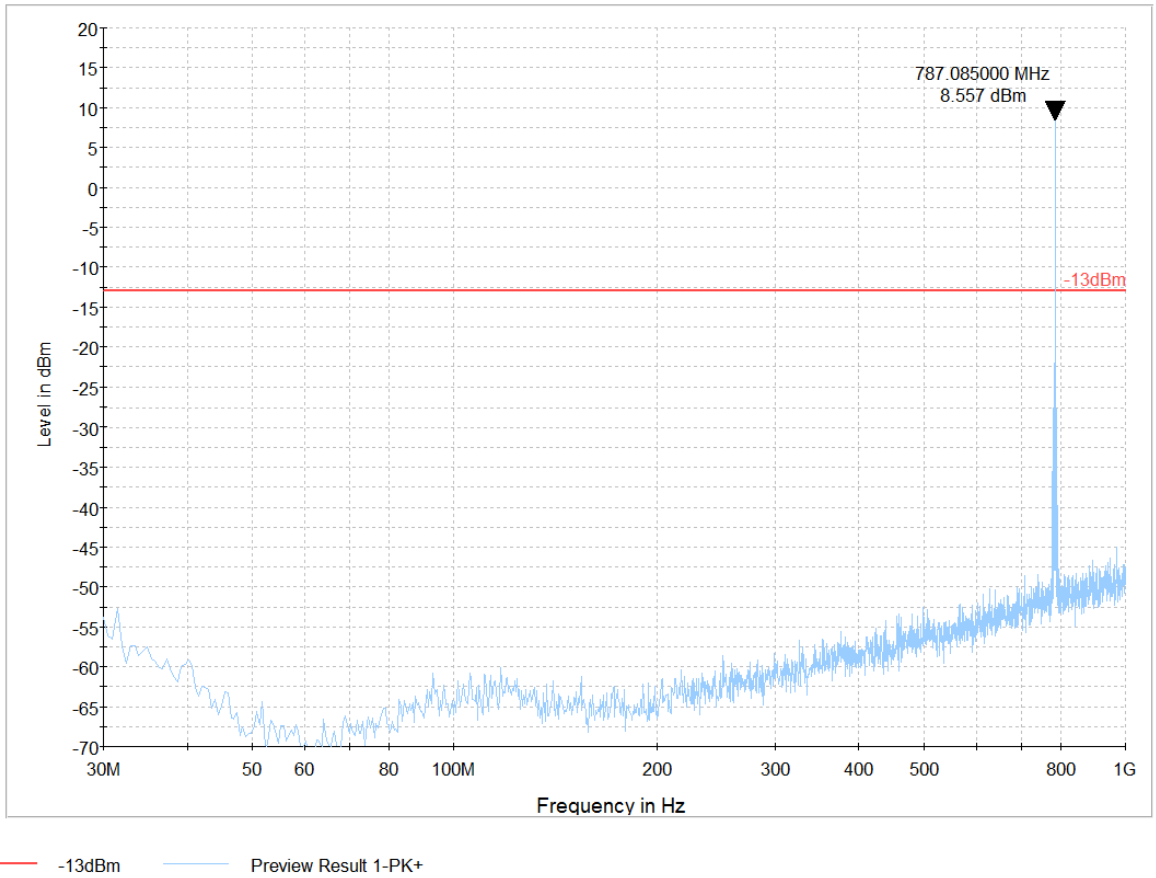
6.7.8.6.11 16 QAM/ 5MHz/ Mid Channel/ 30MHz to 1GHz:

LTE Band 13 (704 MHz – 716 MHz) -Modulation: 16 QAM		
Measurement results - 30 MHz – 1 GHz – Mid Channel		
RB Size = 25	**RB Offset** = 0	**BW (MHz)** = 5



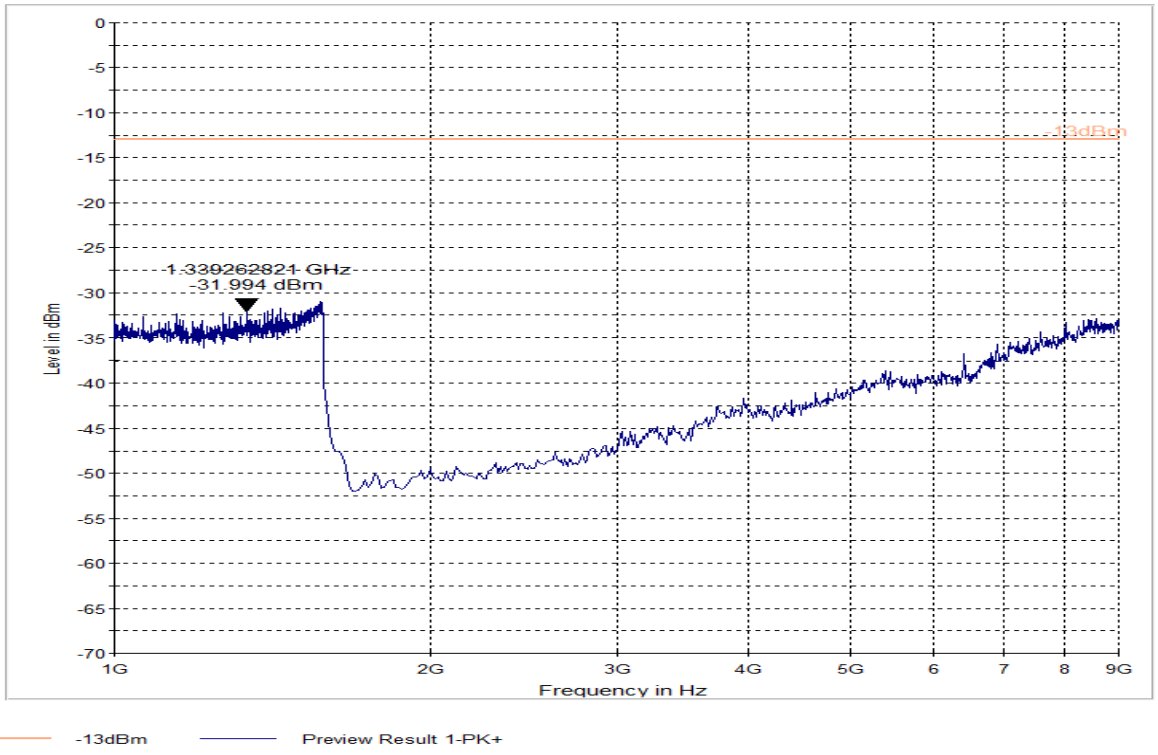
16 QAM/ 10MHz/ Mid Channel/ 30MHz to 1GHz:

LTE Band 13 (704 MHz – 716 MHz) -Modulation: 16 QAM		
Test results - 30 MHz – 1GHz -Mid Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



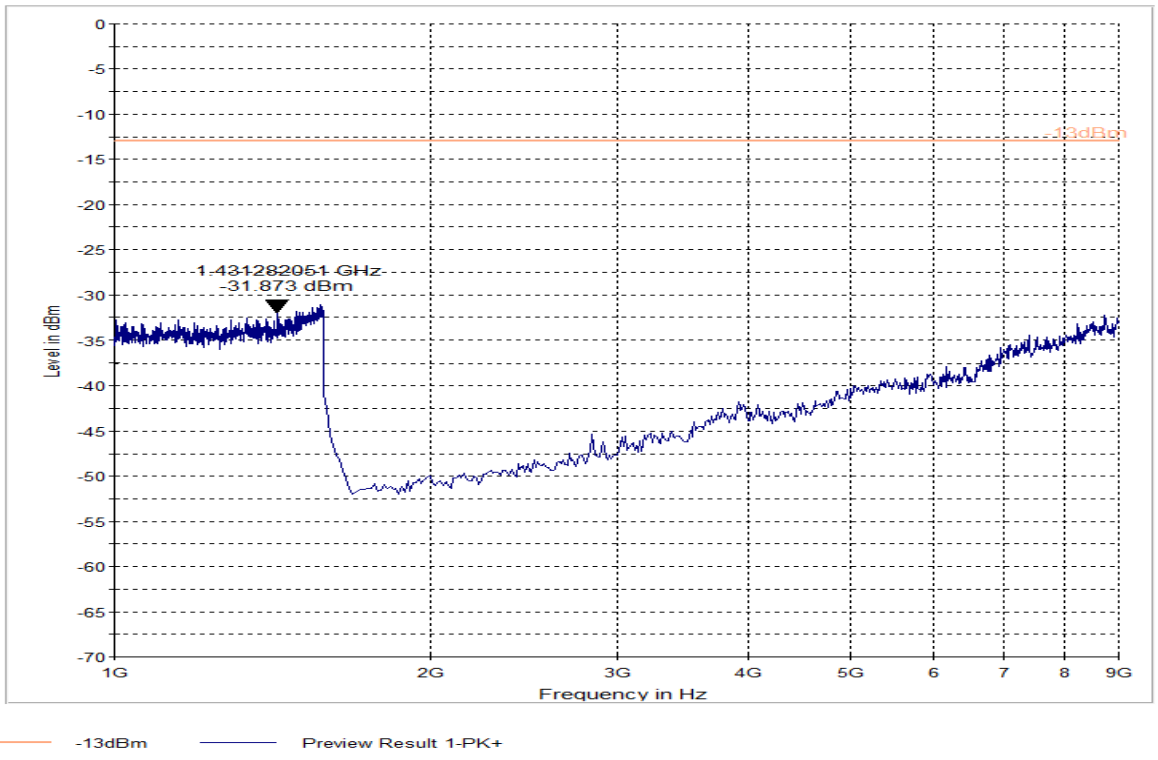
6.7.8.6.12 16 QAM/ 5MHz/ Mid Channel/ 1GHz to 9GHz:

LTE Band 13 (704 MHz – 716 MHz) -Modulation: 16 QAM		
Measurement results - 1 GHz – 9 GHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 5



6.7.8.6.13 16 QAM/ 10MHz/ Mid Channel/ 1GHz to 9GHz:

LTE Band 13 (704 MHz – 716 MHz) -Modulation: 16 QAM		
Measurement results - 1 GHz – 9 GHz – Mid Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



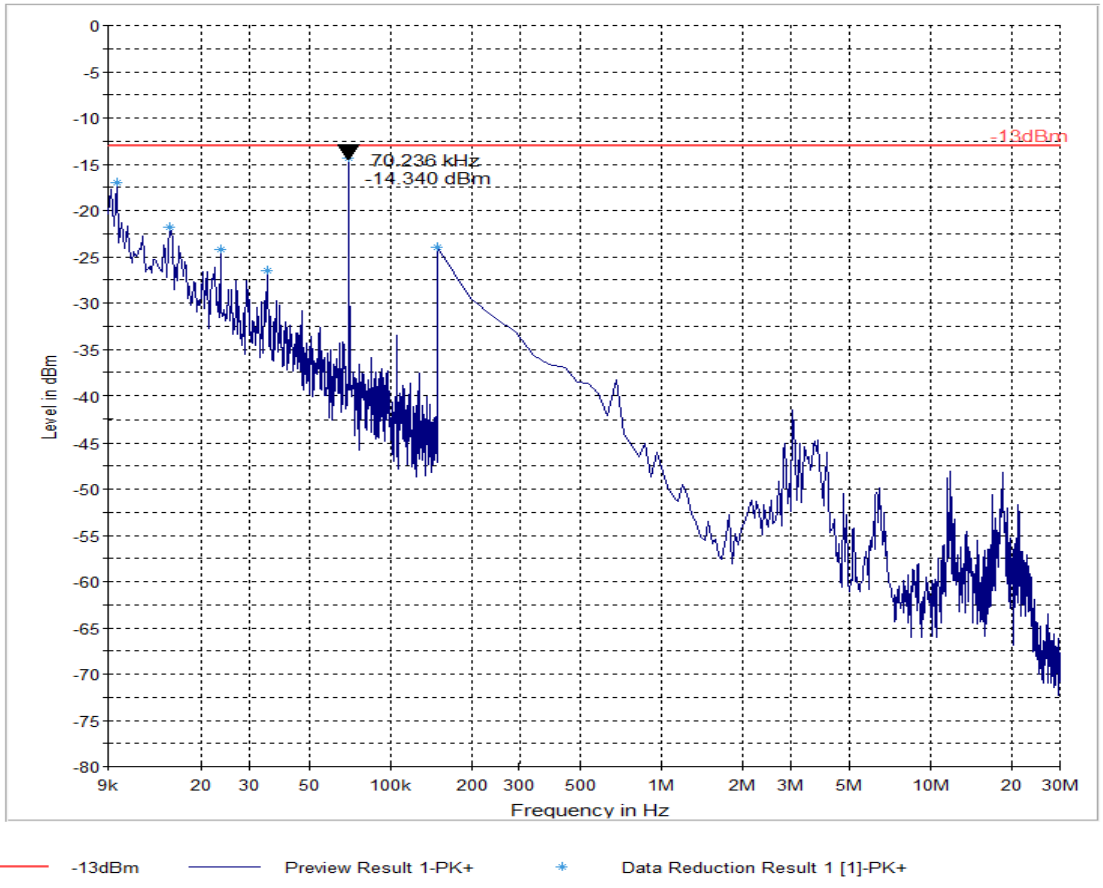
6.7.8.7 Spurious Emissions LTE FDD 25:

Testing Notes:

Band 25 of LTE shares the same frequency range in the mid and low bands as Band 2. Therefore only high band channels are measured and reported. Low and mid bands are covered in Band 2 plots.

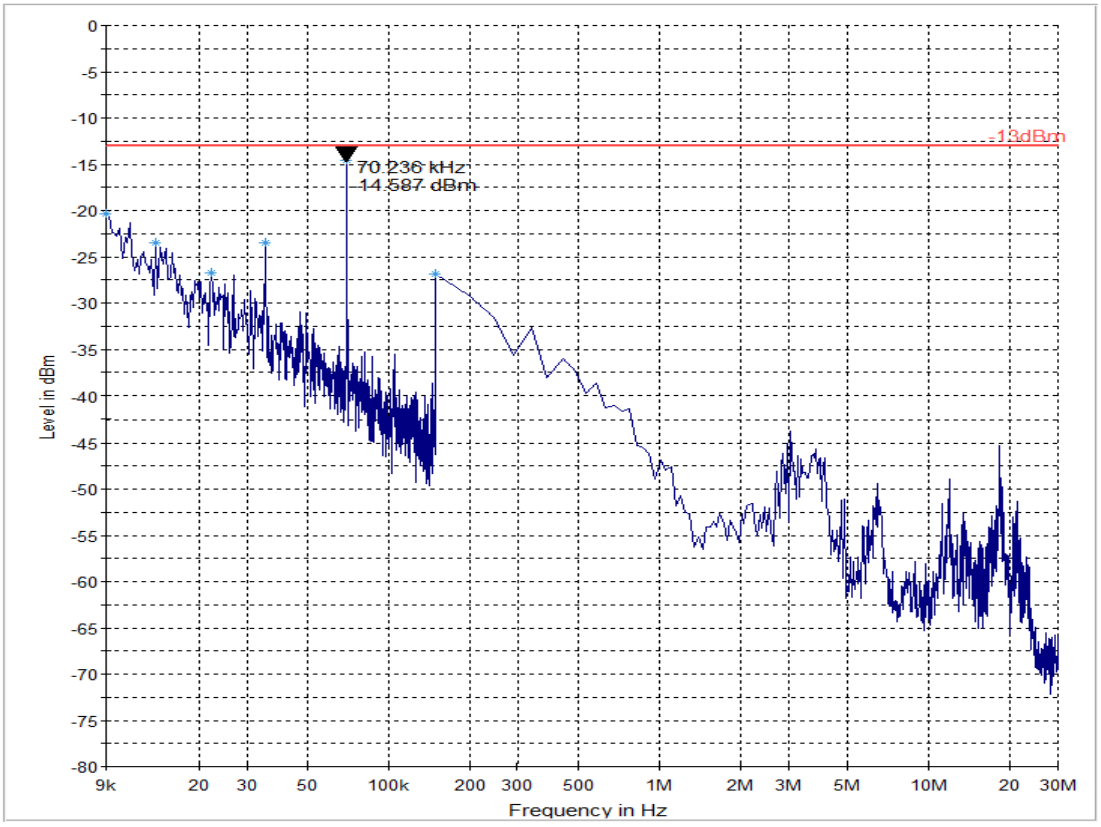
6.7.8.7.1 QPSK/ 1.4 MHz/ High Channel/ 9kHz to 30MHz:

LTE Band 25 (1850 MHz – 1915 MHz) -Modulation: QPSK		
Measurement results – 9 kHz – 30 MHz – High Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



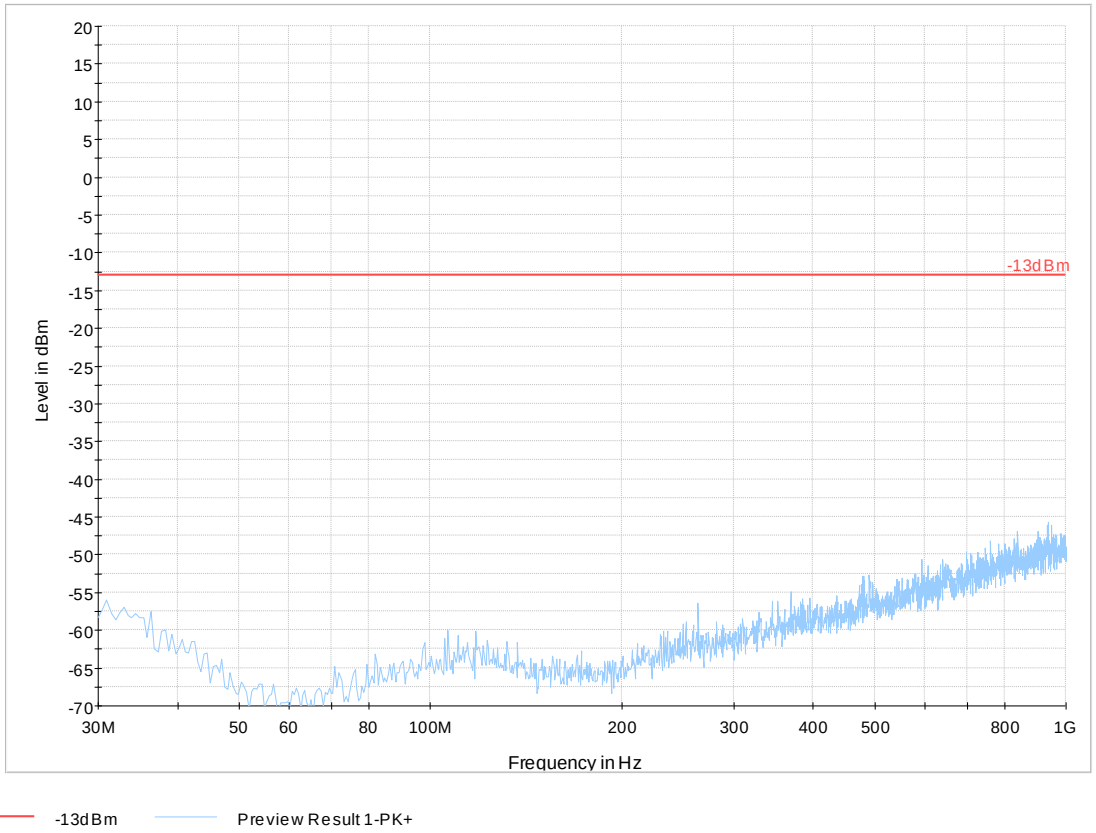
6.7.8.7.2 QPSK/ 20 MHz/ High Channel/ 9kHz to 30MHz:

LTE Band 25 (1850 MHz – 1915 MHz) -Modulation: QPSK		
Measurement results – 9 kHz – 30 MHz – High Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



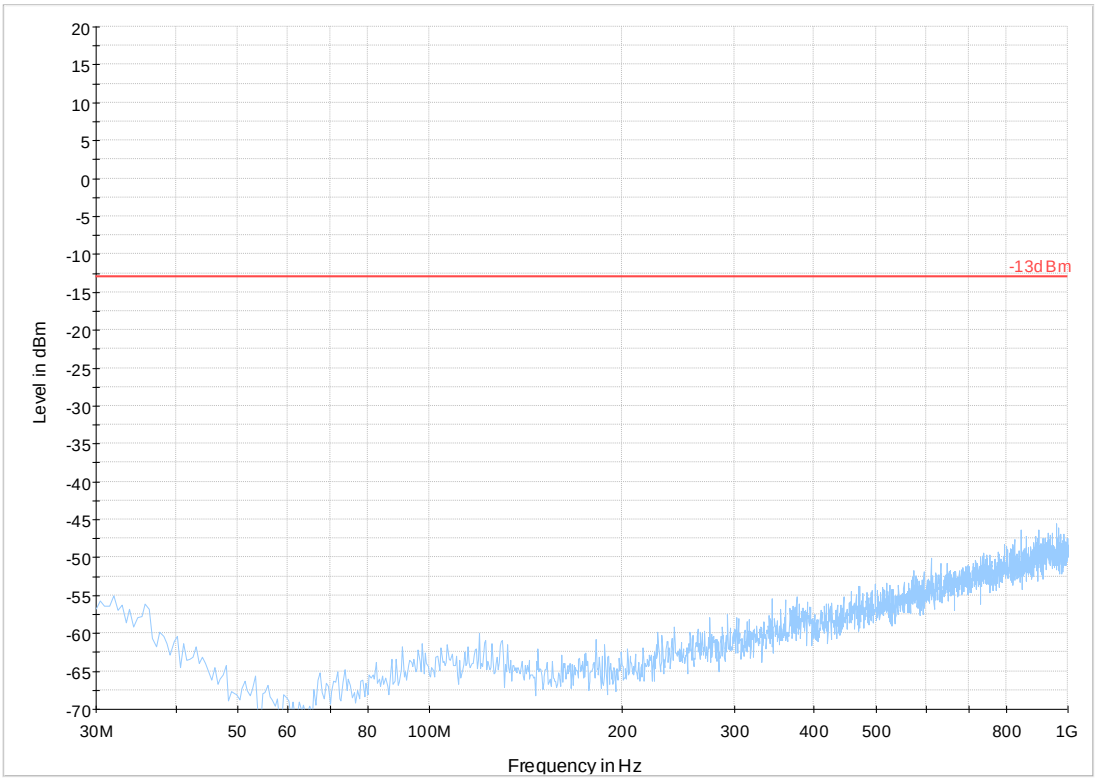
6.7.8.7.3 QPSK/1.4 MHz/ High Channel/ 30MHz to 1GHz:

LTE Band 25 (1850 MHz – 1915 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1 GHz – Low Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



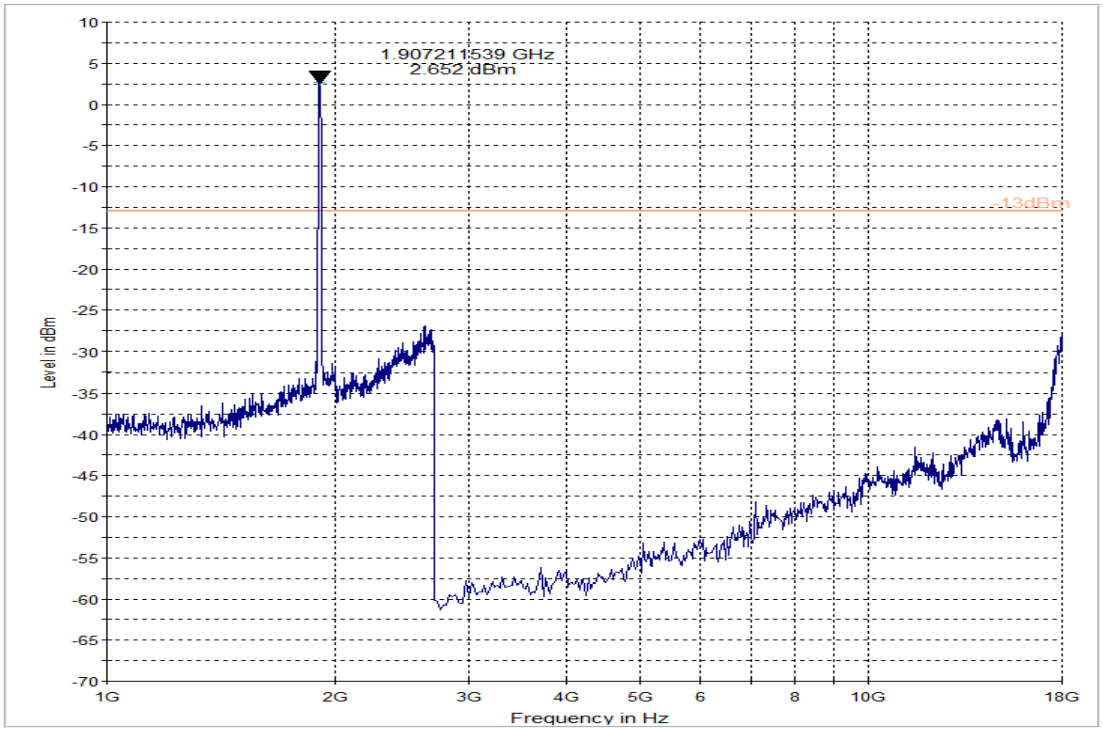
6.7.8.7.4 QPSK/20 MHz/ High Channel/ 30MHz to 1GHz:

LTE Band 25 (1850 MHz – 1915 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1 GHz – Low Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



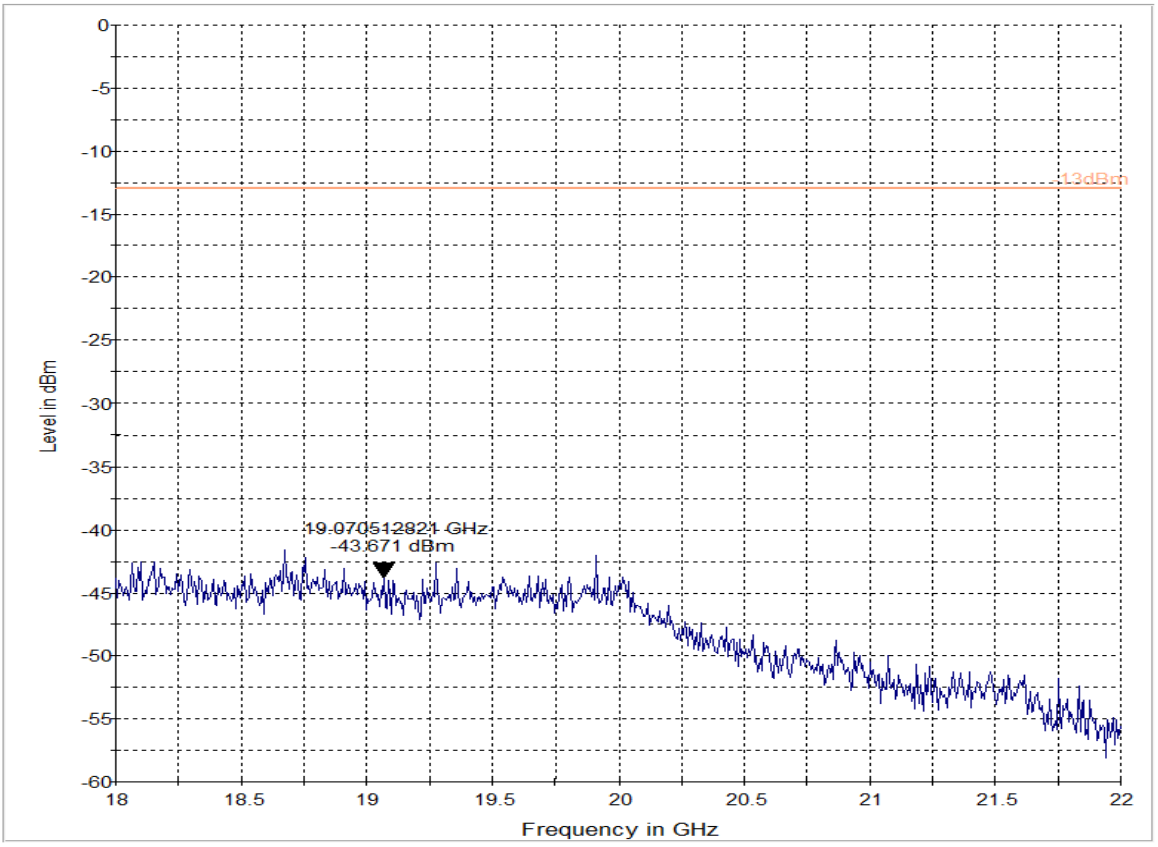
6.7.8.7.5 QPSK/ 20 MHz/ High Channel/ 1GHz to 18GHz:

LTE Band 25 (1850 MHz – 1915 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 18 GHz – High Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



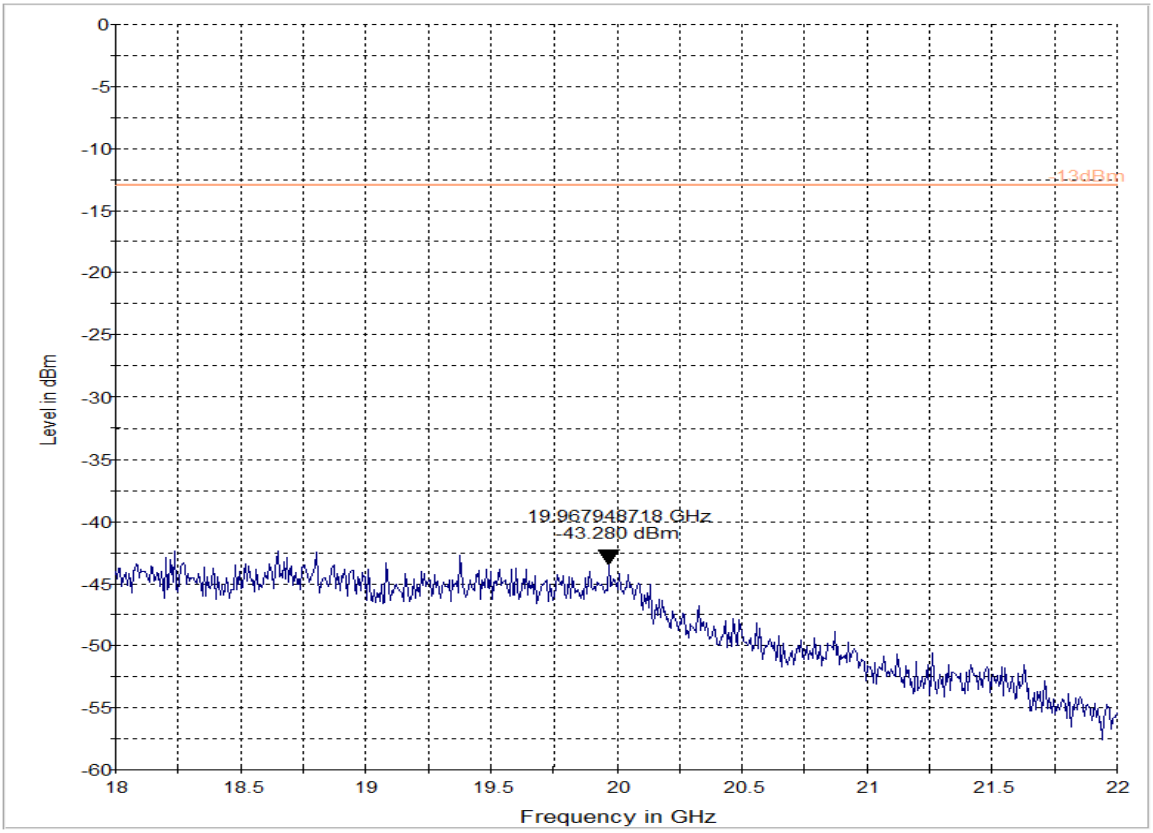
6.7.8.7.6 QPSK/ 1.4MHz/ High Channel/ 18GHz to 22GHz:

LTE Band 25 (1850 MHz – 1915 MHz) -Modulation: QPSK		
Measurement results - 18 GHz – 22 GHz – High Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



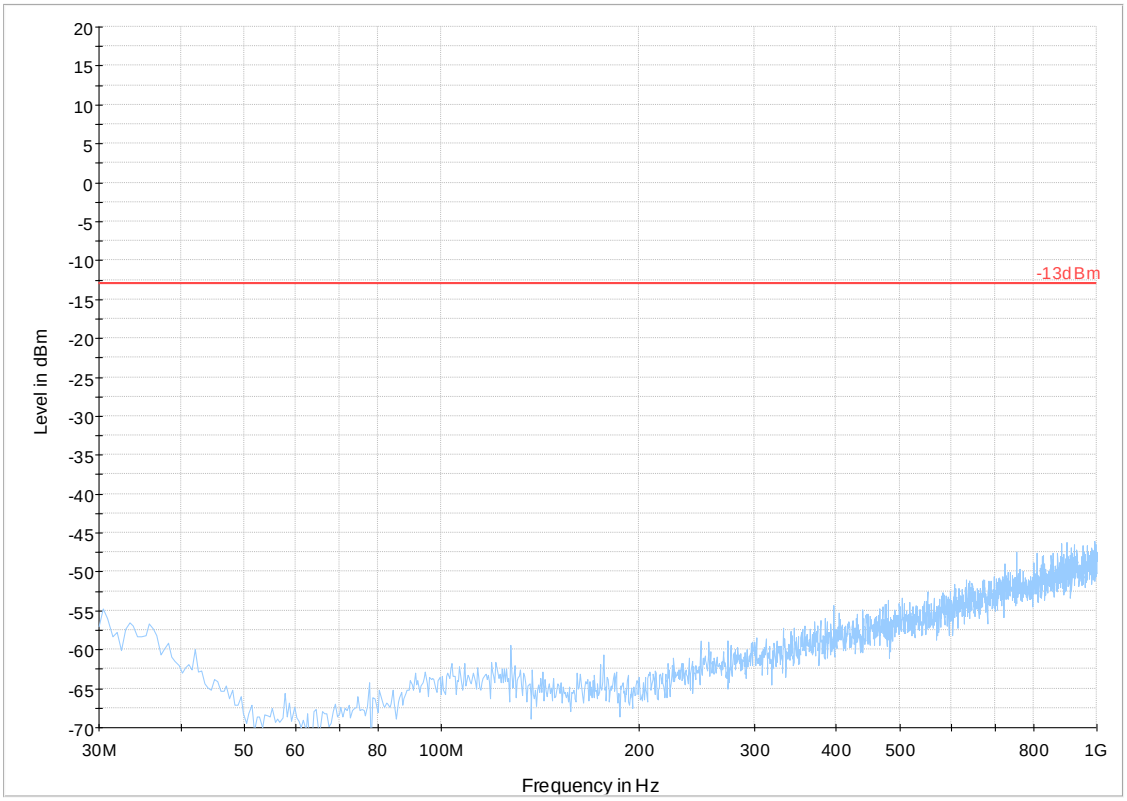
6.7.8.7.7 QPSK/20 MHz/ High Channel/ 18GHz to 22GHz:

LTE Band 25 (1850 MHz – 1915 MHz) -Modulation: QPSK		
Measurement results – 18 GHz – 22 GHz – High Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



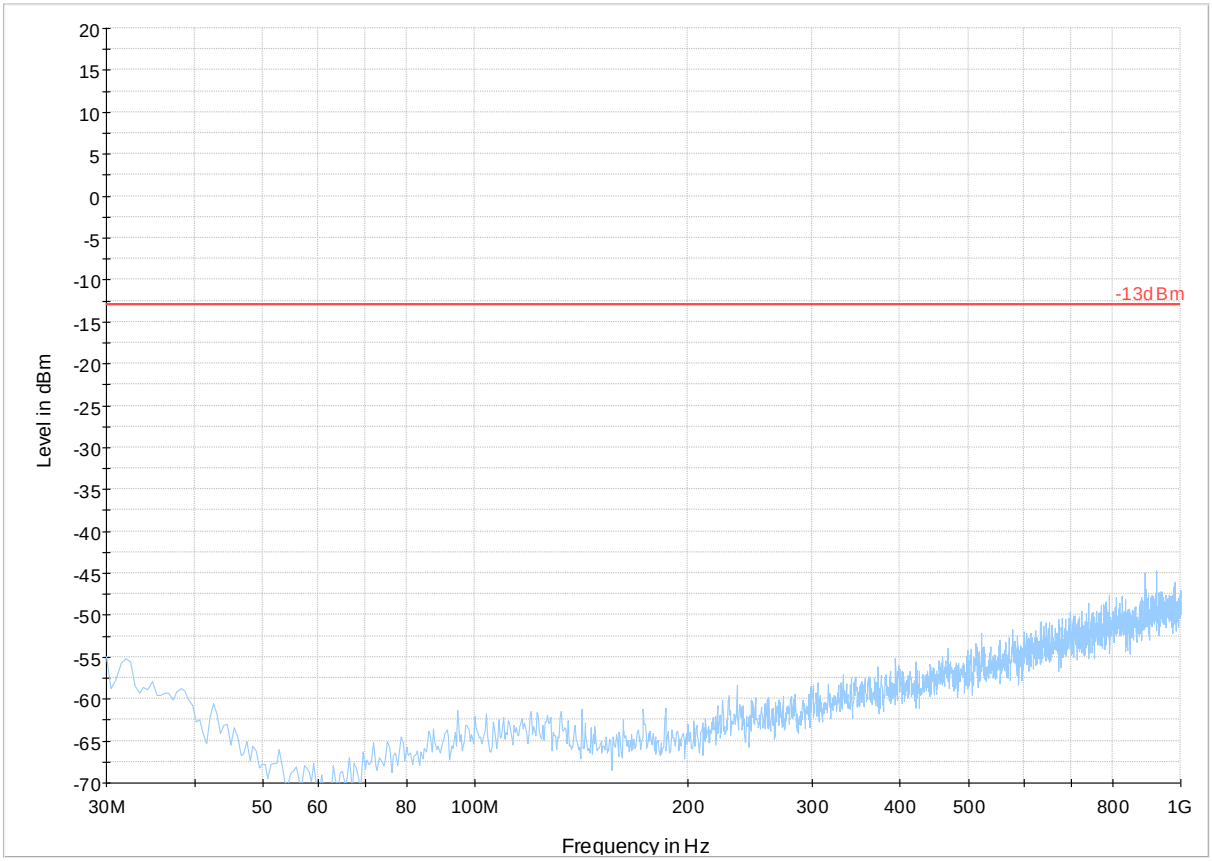
6.7.8.7.8 16 QAM/ 1.4MHz/ High Channel/ 30MHz to 1GHz:

LTE Band 25 (1850 MHz – 1915 MHz) -Modulation: 16 QAM		
Measurement results - 30 MHz – 1 GHz – HighChannel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



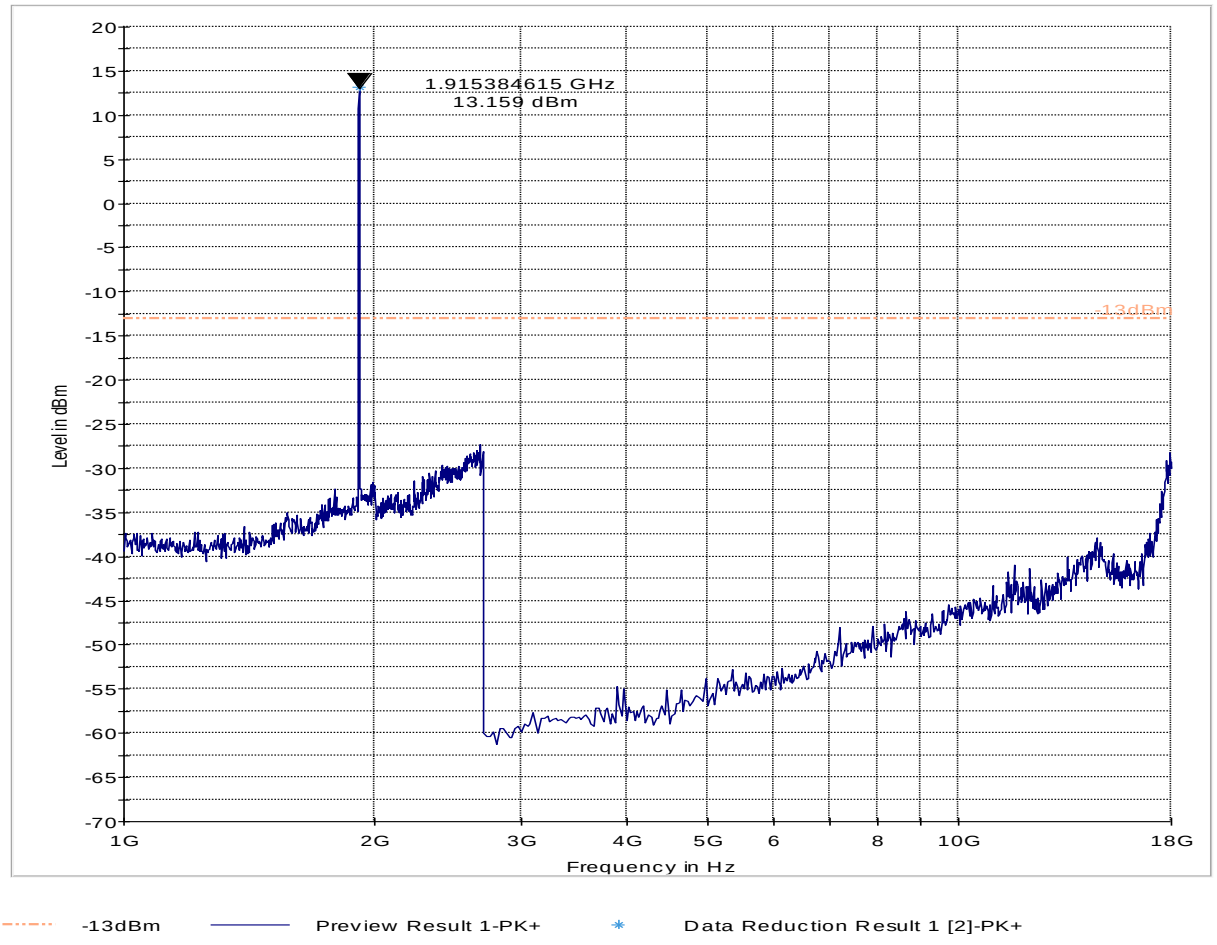
6.7.8.7.9 16 QAM/ 20MHz/ High Channel/ 30MHz to 1GHz:

LTE Band 25 (1850 MHz – 1915 MHz) -Modulation: 16 QAM		
Measurement results - 30 MHz – 1 GHz – High Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20



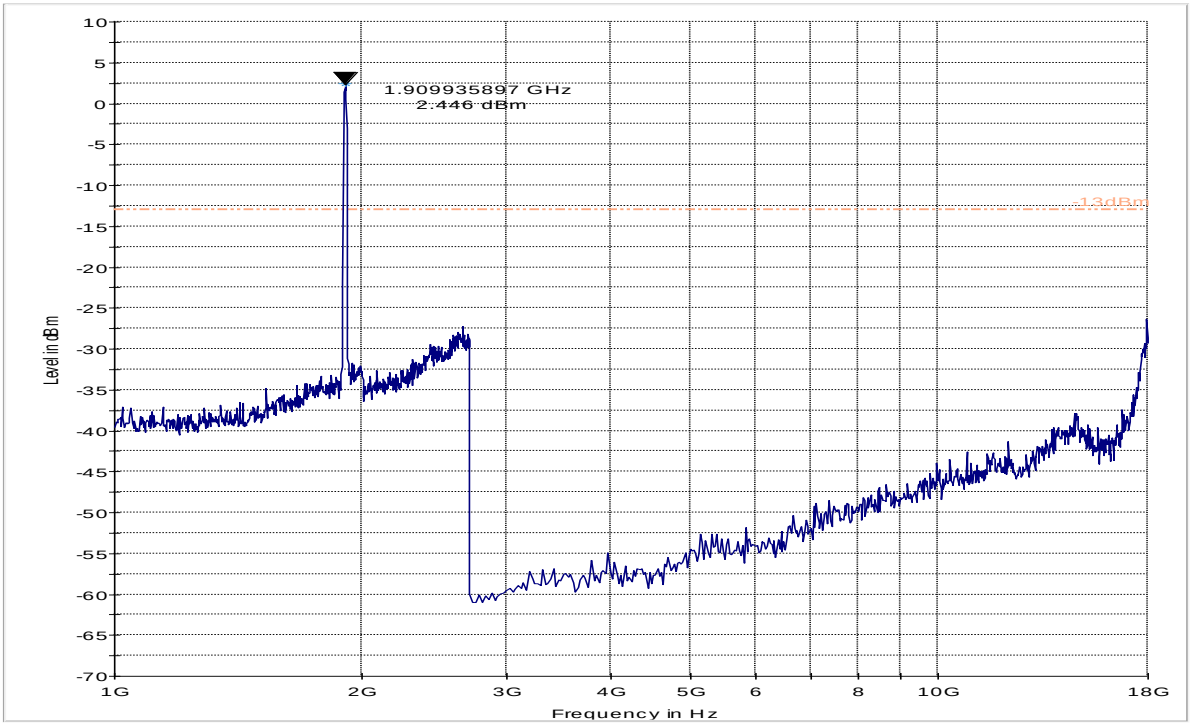
6.7.8.7.10 16 QAM/ 1.4MHz/ High Channel/ 1GHz to 18GHz:

LTE Band 25 (1850 MHz – 1915 MHz) -Modulation: 16 QAM		
Measurement results - 1 GHz – 18 GHz – High Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



6.7.8.7.11 16 QAM/ 20MHz/ High Channel/ 1GHz to 18GHz:

LTE Band 25 (1850 MHz – 1915 MHz) -Modulation: 16 QAM		
Measurement results - 1 GHz – 18 GHz – High Channel		
RB Size = 100	**RB Offset** = 0	**BW (MHz)** = 20

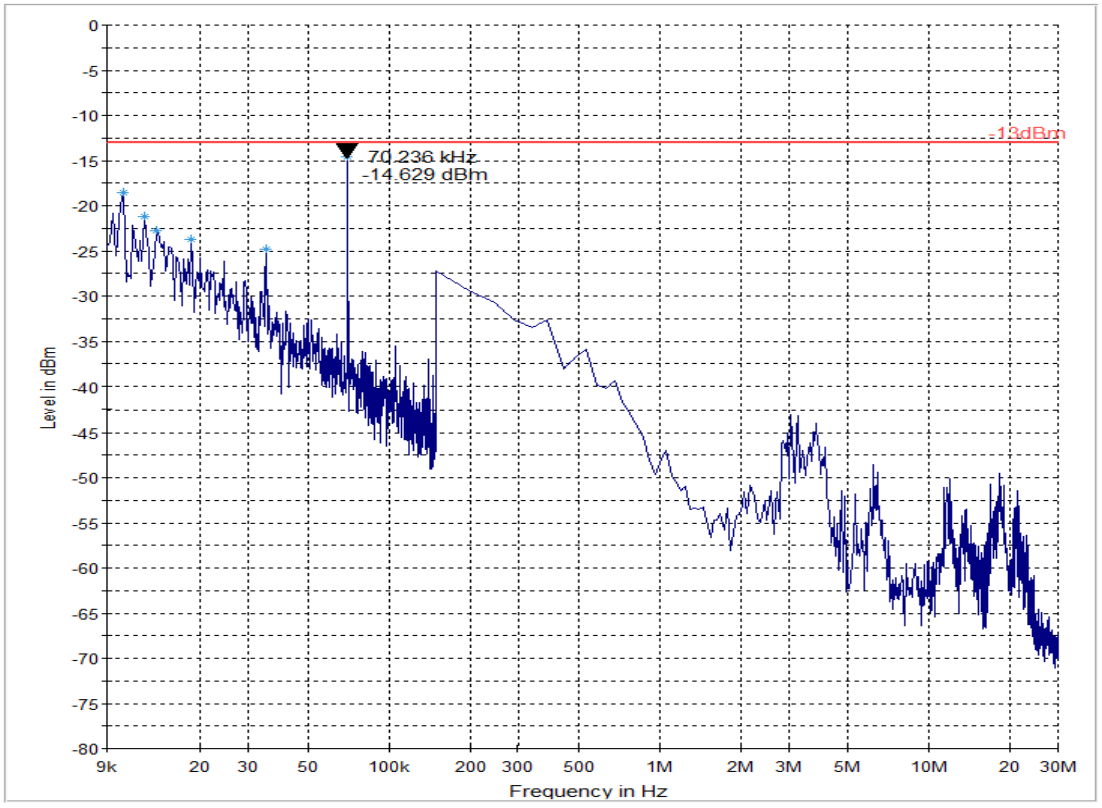


6.7.8.8 Spurious Emissions LTE FDD 26:

6.7.8.8.1 LTE FDD 26 Summary Tables

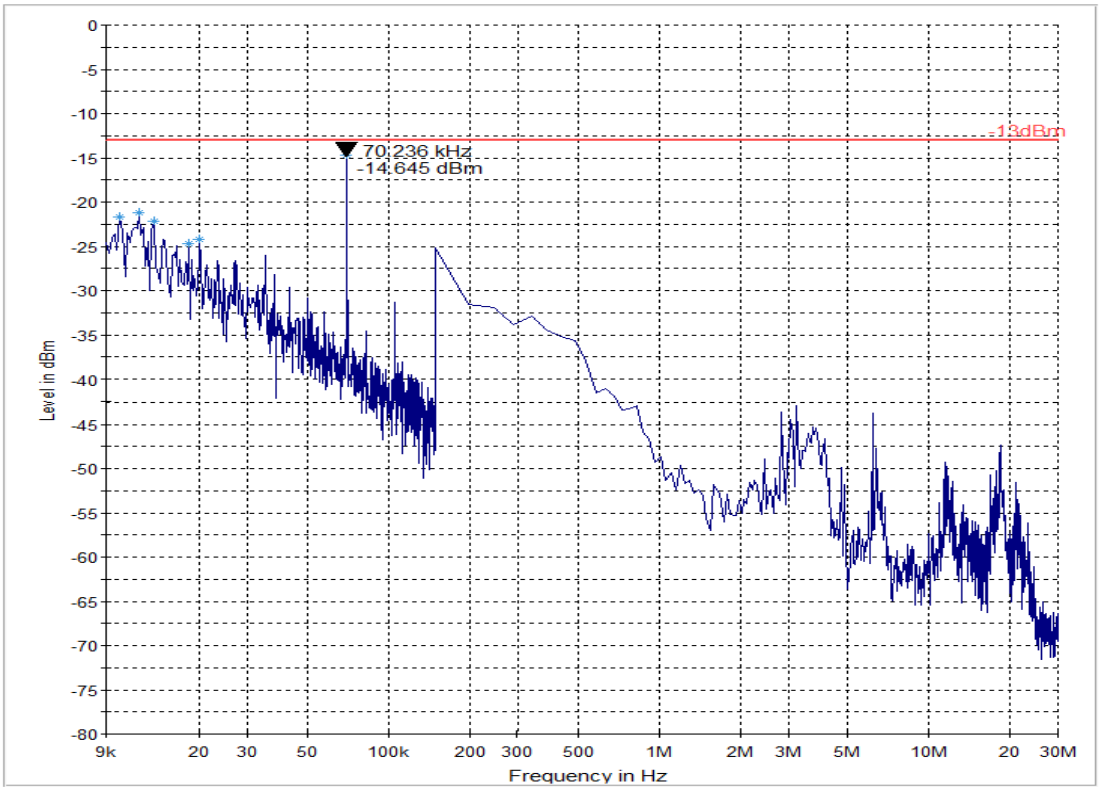
6.7.8.8.2 QPSK/ 1.4 MHz/ Mid Channel/ 9kHz to 30MHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: QPSK		
Measurement results – 9 kHz – 30 MHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



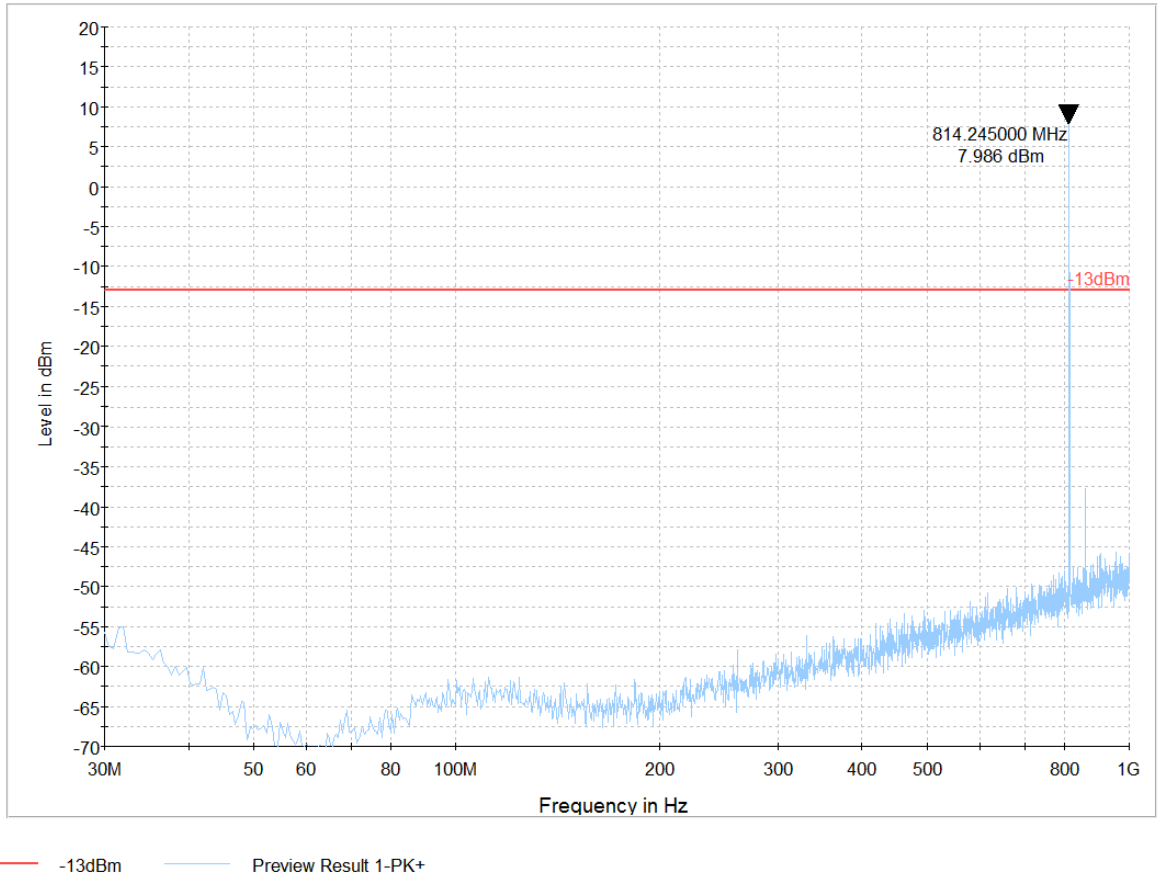
6.7.8.8.3 QPSK/ 20 MHz/ Mid Channel/ 9kHz to 30MHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: QPSK		
Measurement results – 9 kHz – 30 MHz – Mid Channel		
RB Size = 50	**RB Offset** = 0	**BW (MHz)** = 10



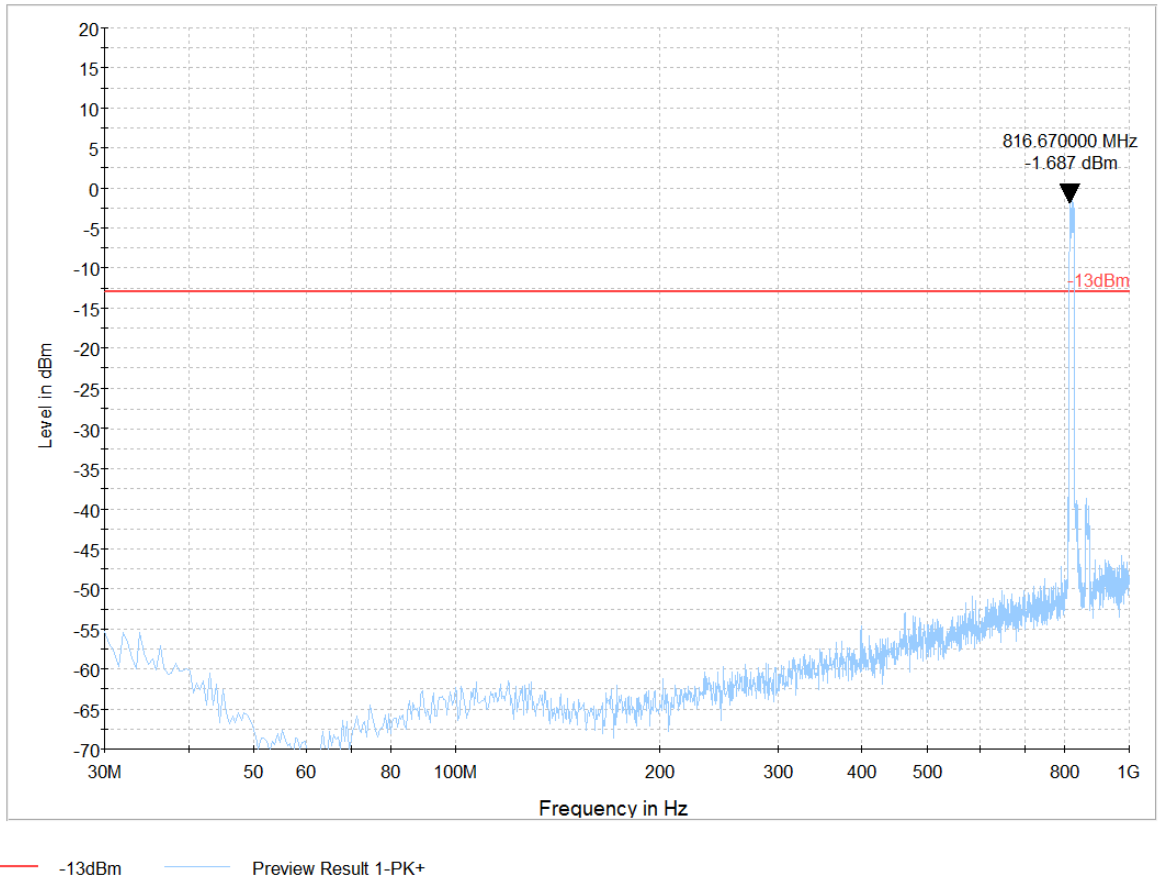
6.7.8.8.4 QPSK/ 1.4MHz/ Low Channel/ 30MHz to 1GHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1 GHz – Low Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



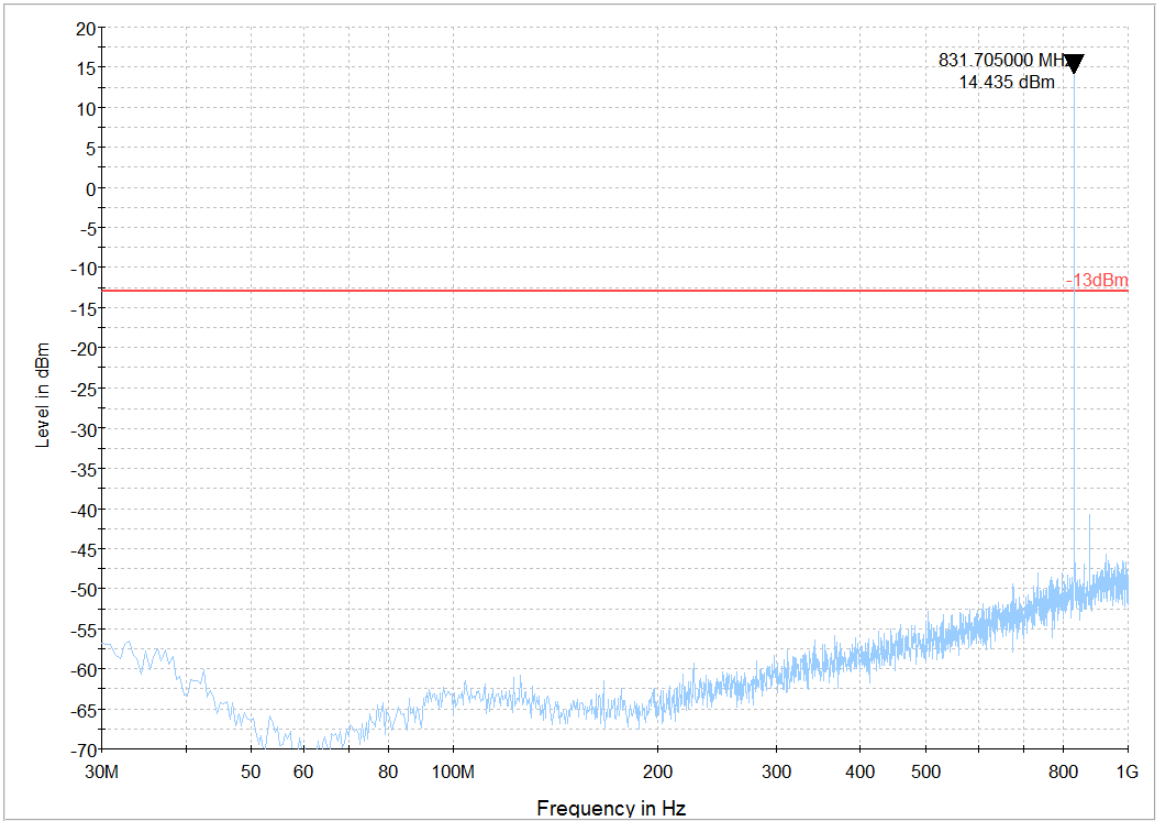
6.7.8.8.5 QPSK/15 MHz/ Low Channel/ 30MHz to 1GHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1 GHz – Low Channel		
RB Size = 75	**RB Offset** = 0	**BW (MHz)** = 15



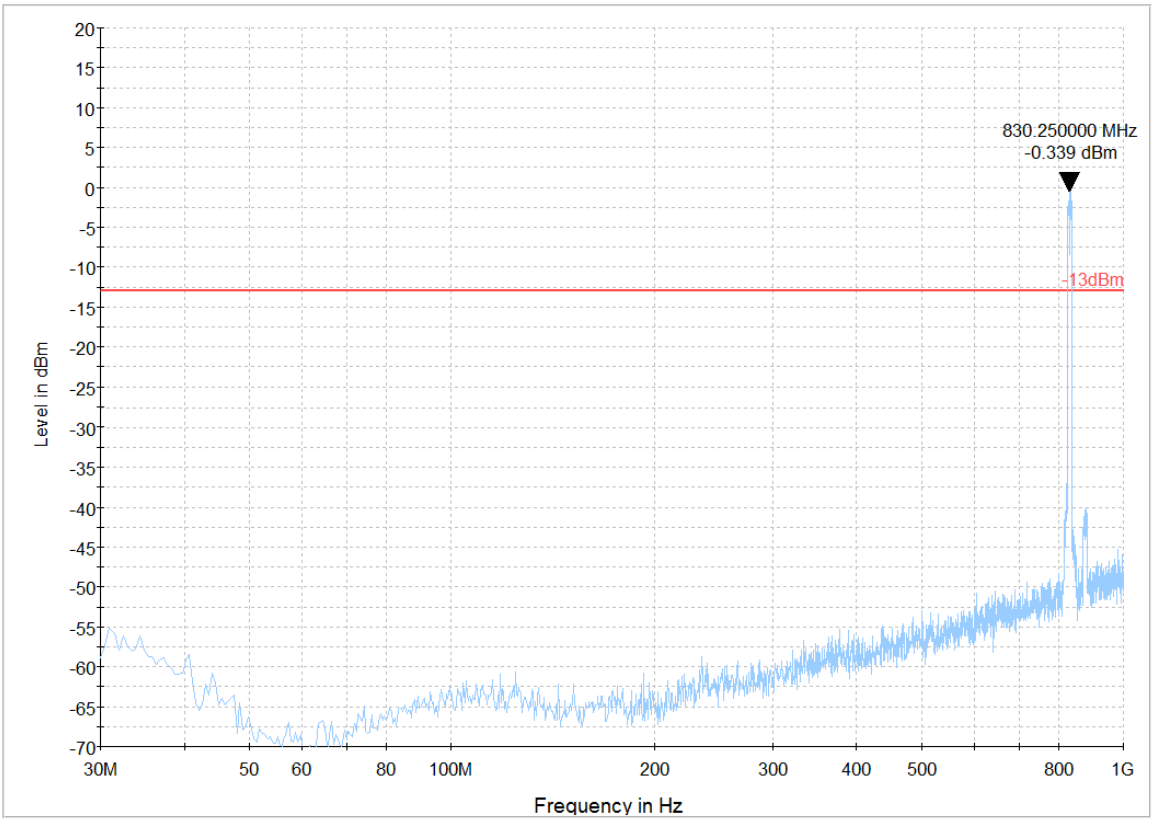
6.7.8.8.6 QPSK/ 1.4MHz/ Mid Channel/ 30MHz to 1GHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1 GHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



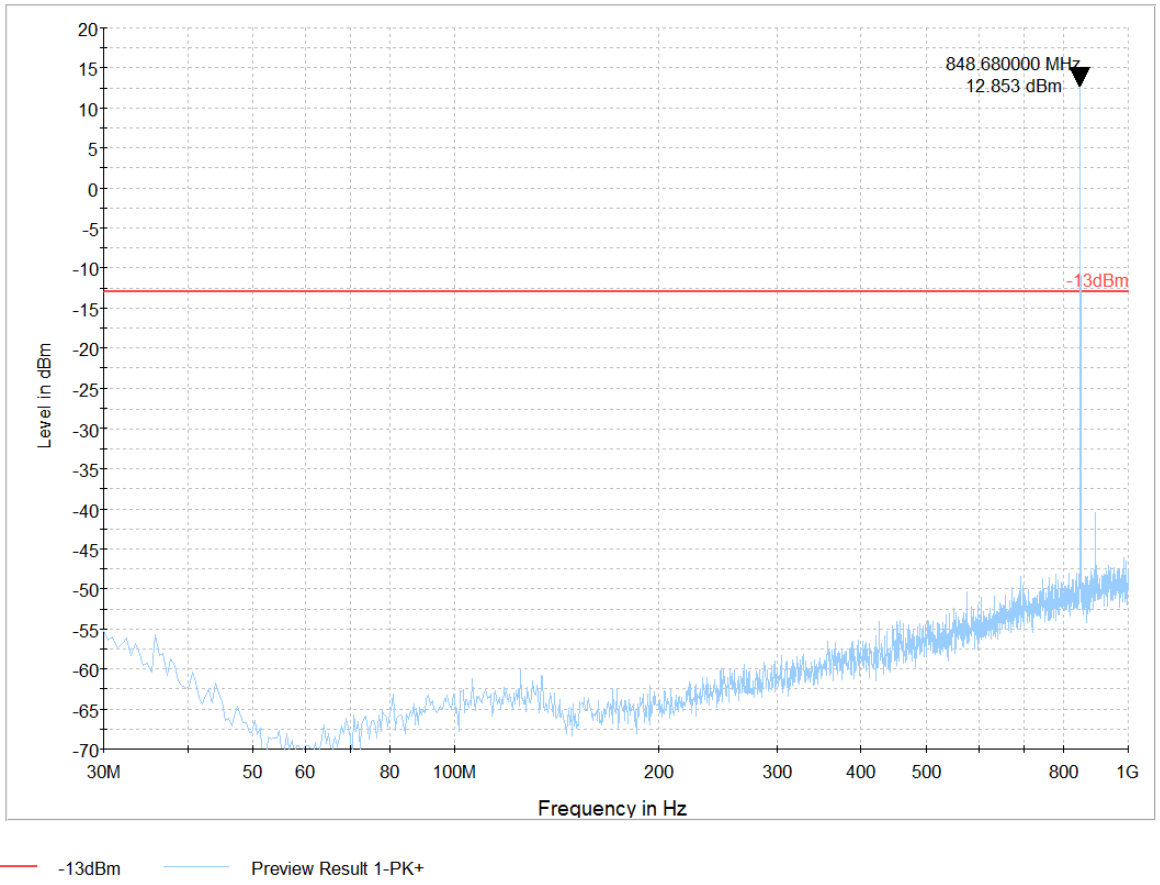
6.7.8.8.7 QPSK/15 MHz/ Mid Channel/ 30MHz to 1GHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1 GHz – Mid Channel		
RB Size = 75	**RB Offset** = 0	**BW (MHz)** = 15



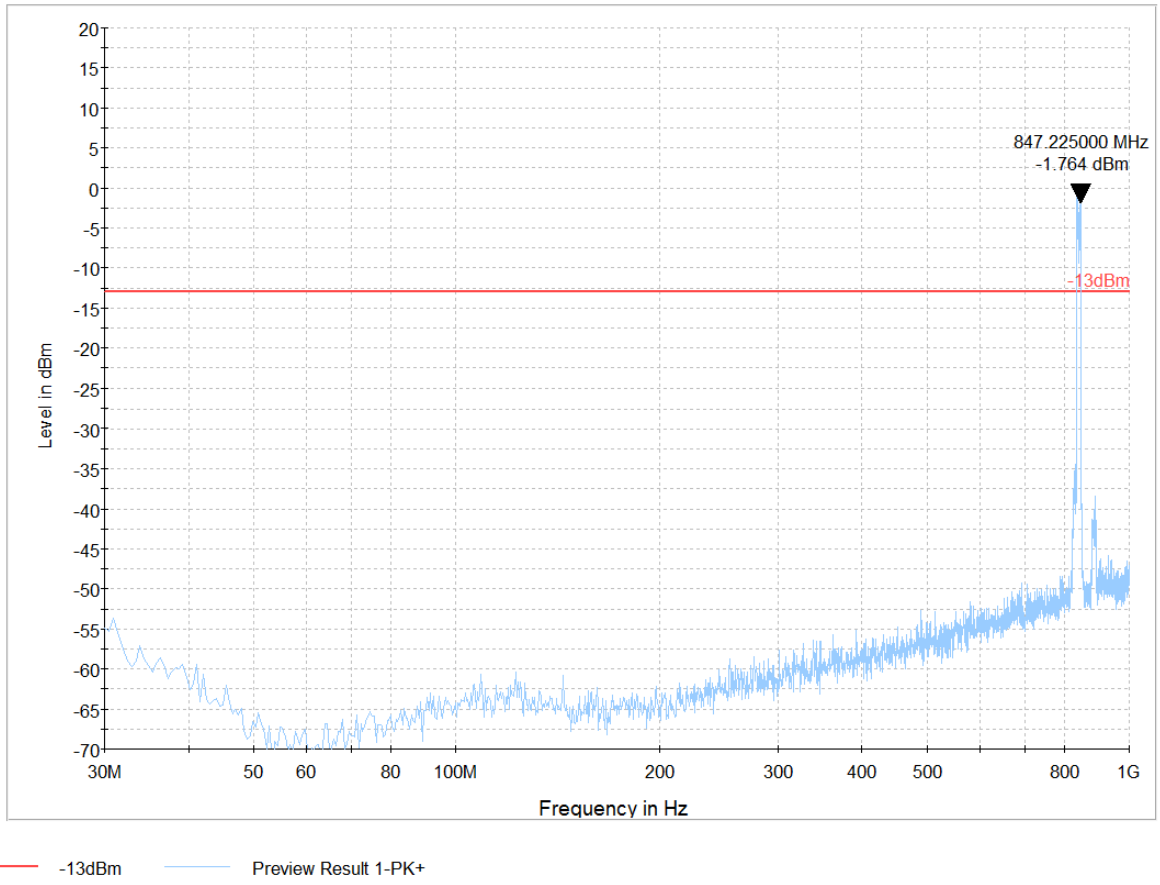
6.7.8.8.8 QPSK/1.4 MHz/ High Channel/ 30MHz to 1GHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1 GHz – High Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



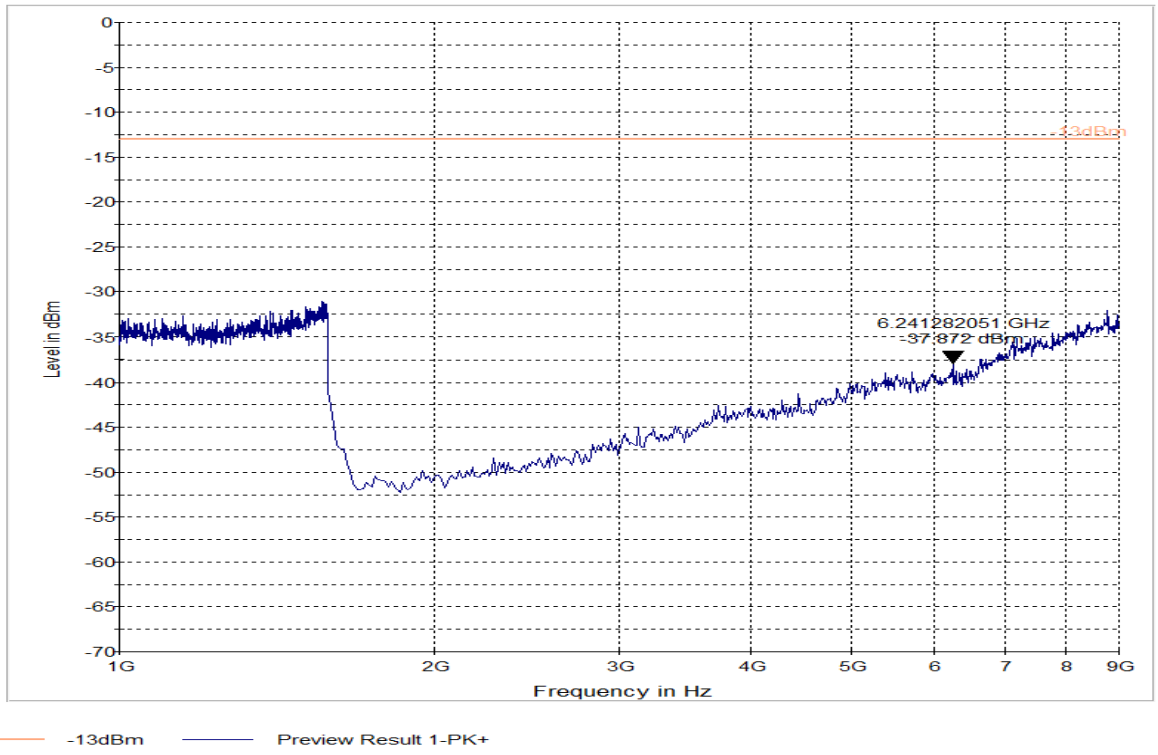
6.7.8.8.9 QPSK/15 MHz/ High Channel/ 30MHz to 1GHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 30 MHz – 1 GHz – High Channel		
RB Size = 75	**RB Offset** = 0	**BW (MHz)** = 15



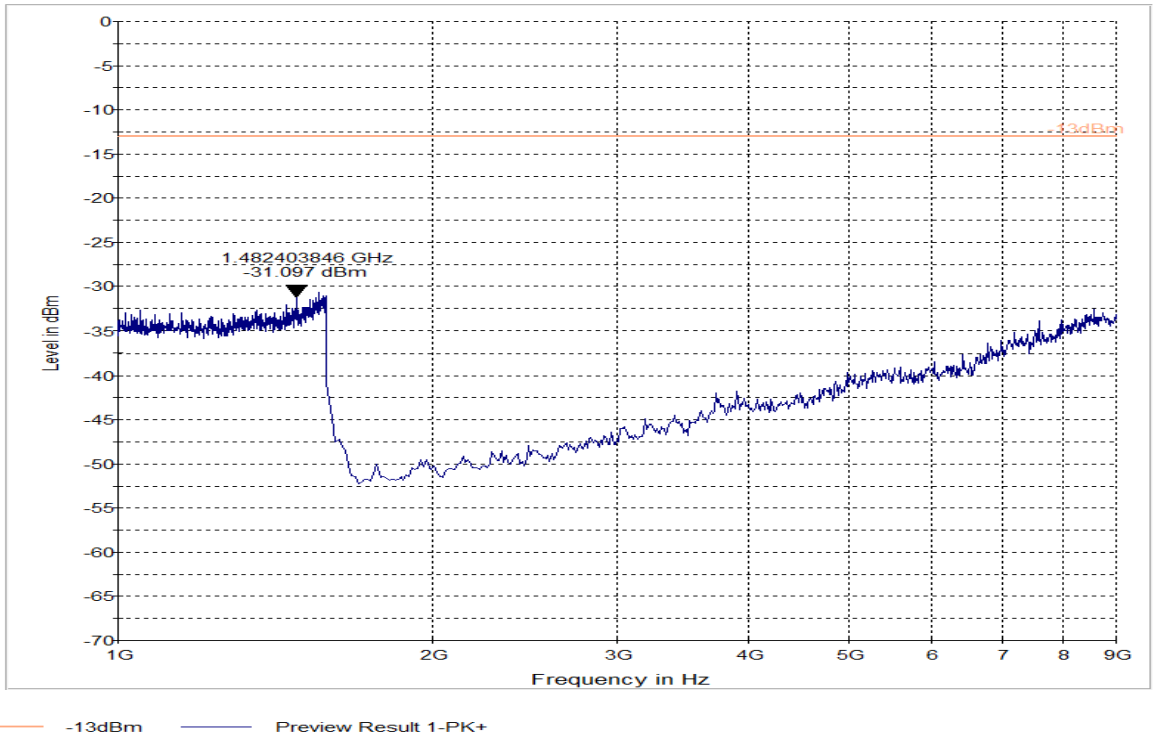
6.7.8.8.10 QPSK/ 1.4MHz/ Low Channel/ 1GHz to 9GHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 9 GHz – Low Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



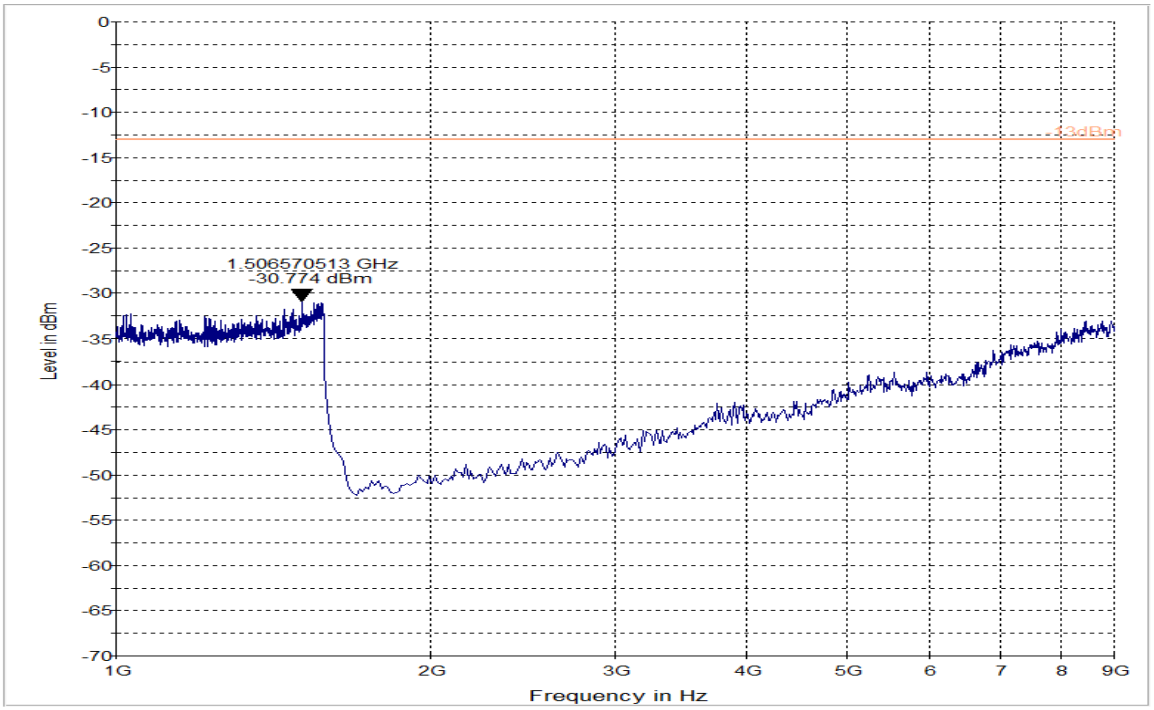
6.7.8.8.11 QPSK / 15MHz/ Low Channel/ 1GHz to 9GHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 9 GHz – Low Channel		
RB Size = 75	**RB Offset** = 0	**BW (MHz)** = 15



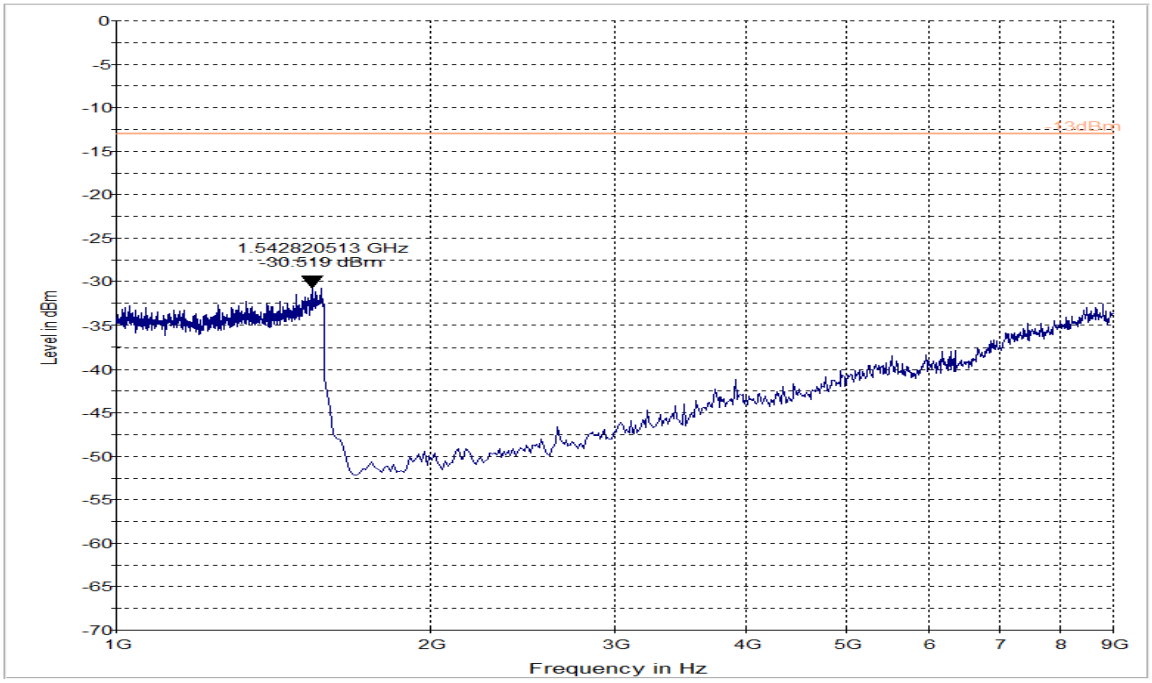
6.7.8.8.12 QPSK/ 1.4MHz/ Mid Channel/ 1GHz to 9GHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 9 GHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



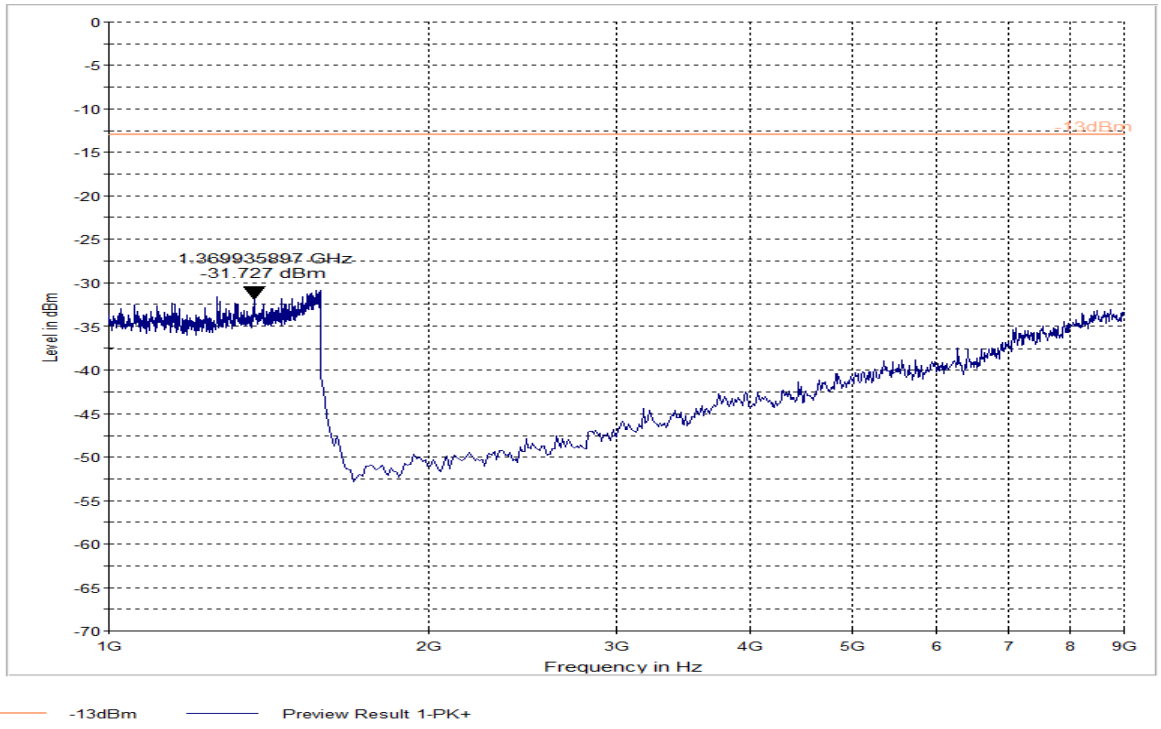
6.7.8.8.13 QPSK/ 15MHz/ Mid Channel/ 1GHz to 9GHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 9 GHz – Mid Channel		
RB Size = 75	**RB Offset** = 0	**BW (MHz)** = 15



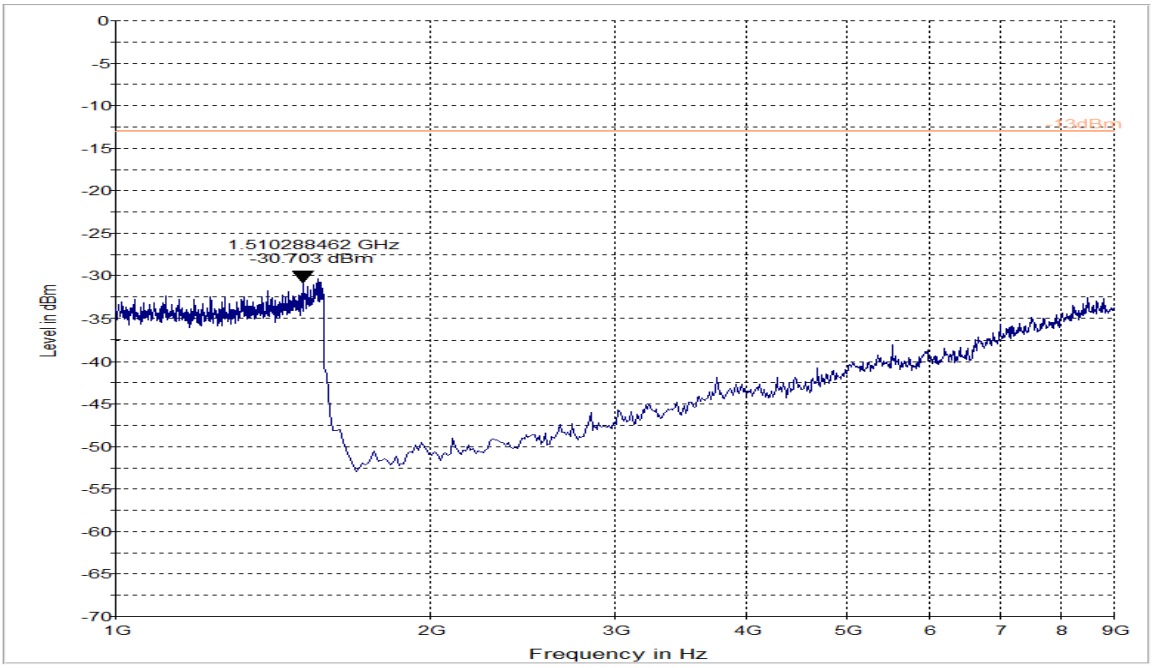
6.7.8.8.14 QPSK / 1.4MHz/ HIgh Channel/ 1GHz to 9GHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 9 GHz – High Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



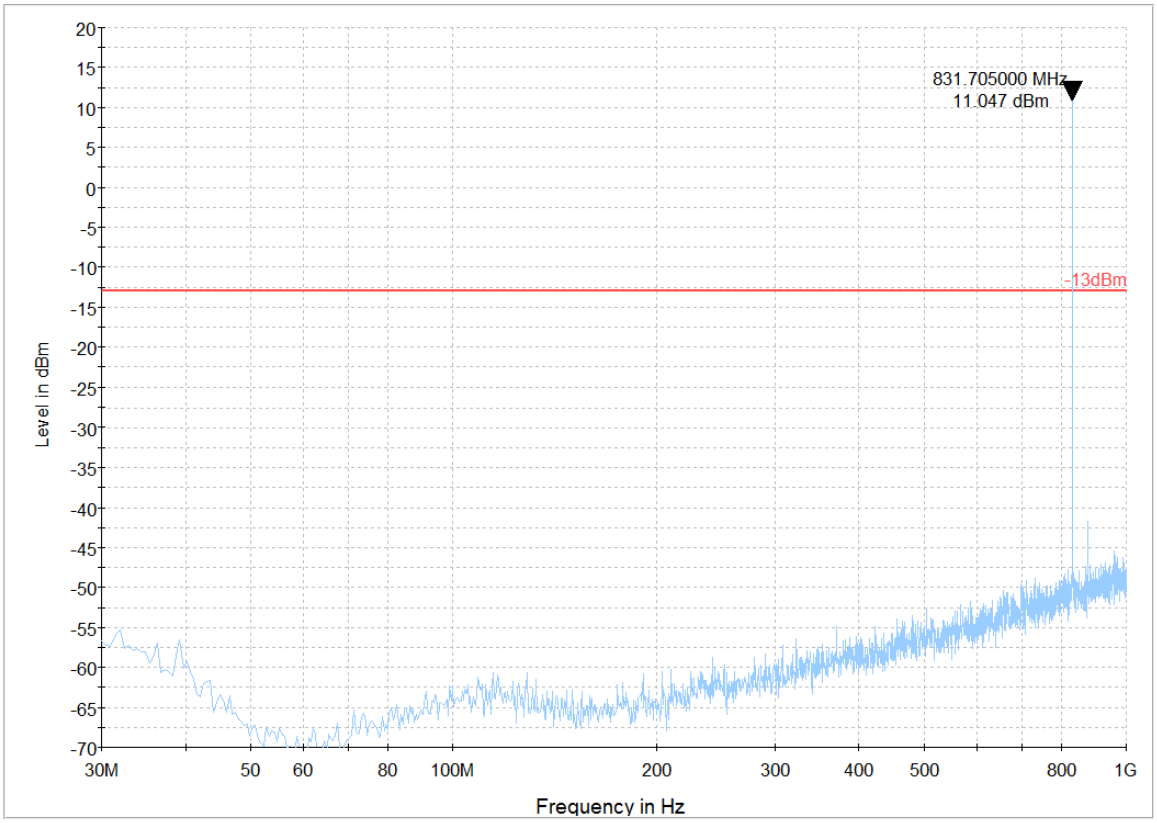
6.7.8.8.15 QPSK / 15MHz/ HIgh Channel/ 1GHz to 9GHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: QPSK		
Measurement results - 1 GHz – 9 GHz – High Channel		
RB Size = 75	**RB Offset** = 0	**BW (MHz)** = 15



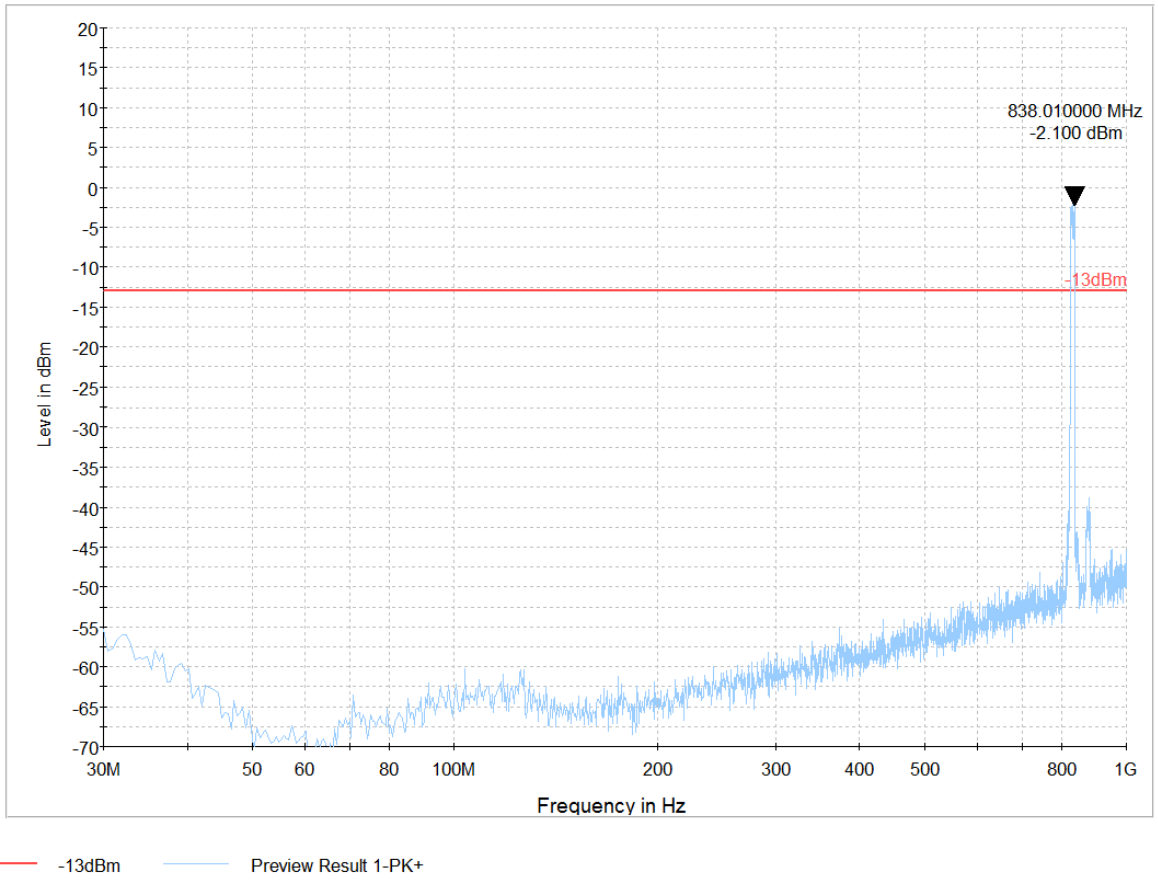
6.7.8.8.16 16QAM/ 1.4MHz/ Mid Channel/ 30MHz to 1GHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: 16QAM		
Measurement results - 30 MHz – 1 GHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



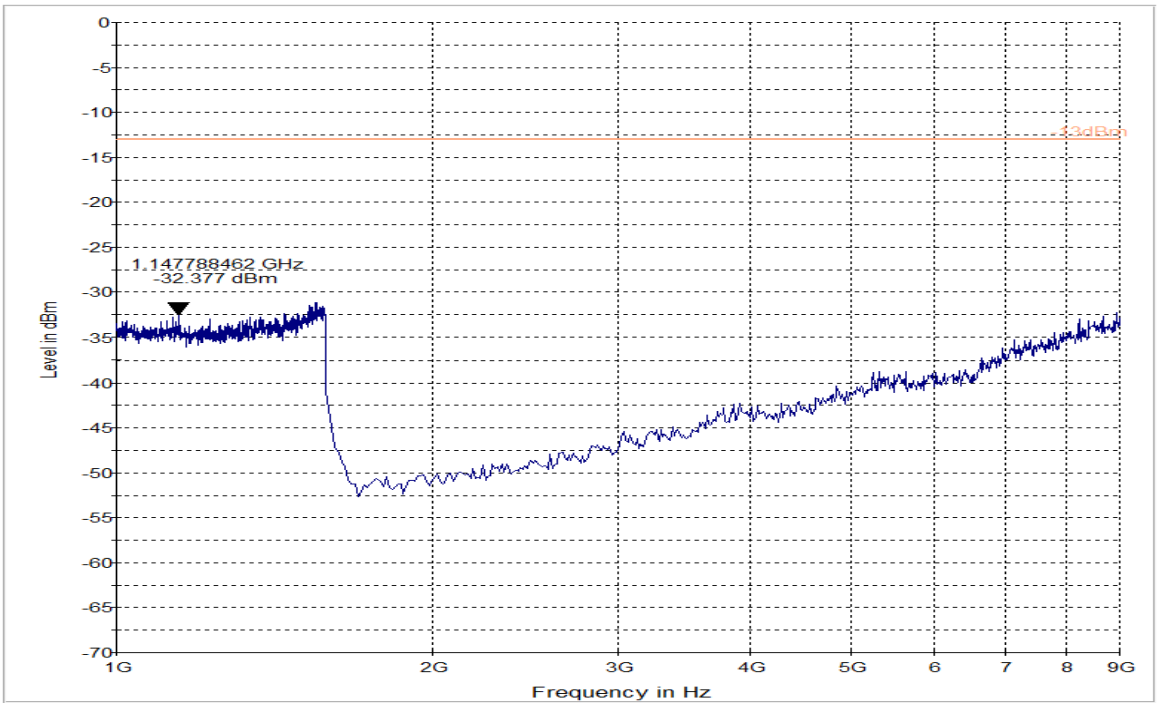
6.7.8.8.17 16QAM/15 MHz/ Mid Channel/ 30MHz to 1GHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: 16QAM		
Measurement results - 30 MHz – 1 GHz – Mid Channel		
RB Size = 75	**RB Offset** = 0	**BW (MHz)** = 15



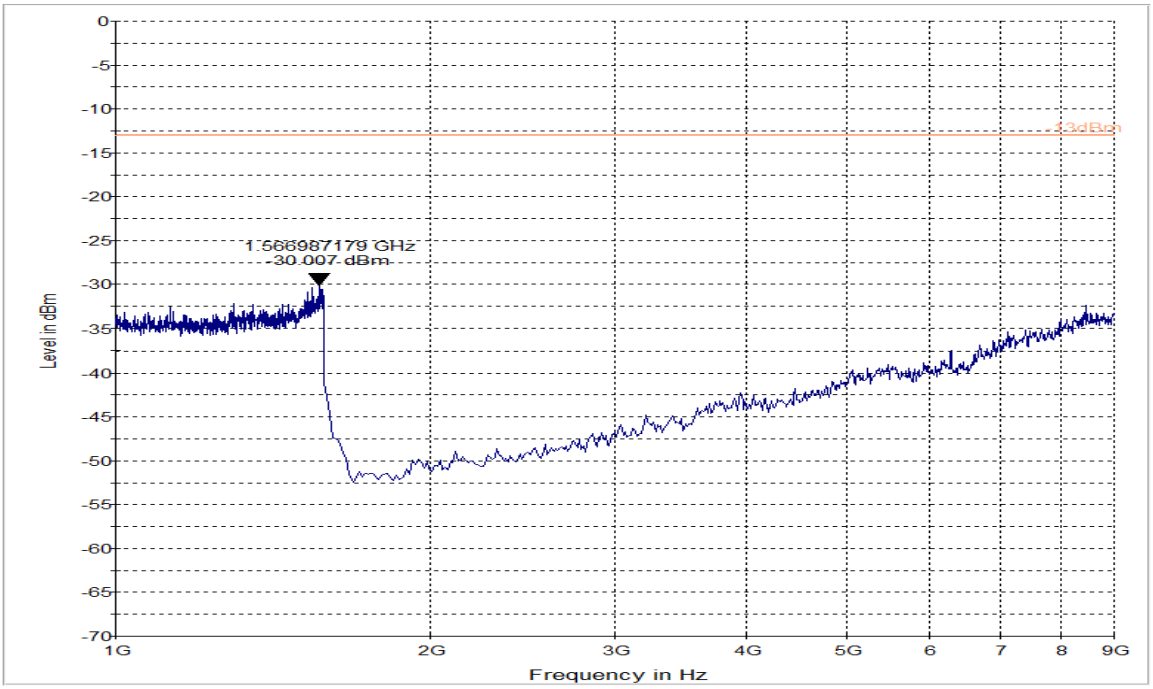
6.7.8.8.18 16 QAM/ 1.4MHz/ Mid Channel/ 1GHz to 9GHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: 16 QAM		
Measurement results - 1 GHz – 9 GHz – Mid Channel		
RB Size = 1	**RB Offset** = 0	**BW (MHz)** = 1.4



6.7.8.8.19 16 QAM/ 15MHz/ Mid Channel/ 1GHz to 9GHz:

LTE Band 26 (814 MHz – 849 MHz) -Modulation: 16 QAM		
Measurement results - 1 GHz – 9 GHz – Mid Channel		
RB Size = 75	**RB Offset** = 0	**BW (MHz)** = 15



7 Test Equipment and Ancillaries used for tests

7.6.1 Milpitas EMC Lab

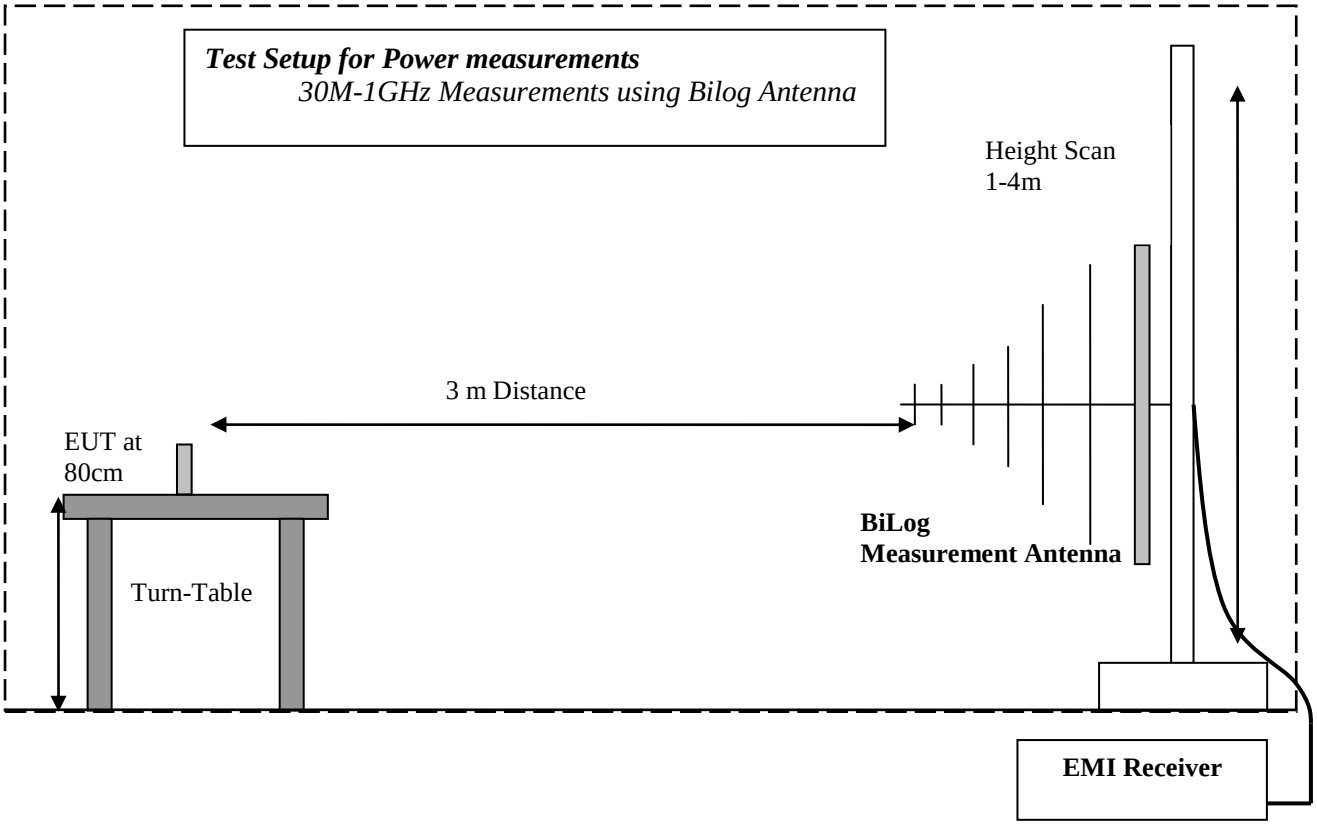
Equipment Name	Manufacturer	Type/Model	Serial No.	Cal Date	Cal Interval	Next cal date
3m Semi- Anechoic Chamber:						
Spectrum Analyzer	Rohde und Schwarz	FSU 26	200302	6/2013	2 years	6/2015
EMI Receiver/Analyzer	Rohde&Schwarz	ESU 40	100251	9/2013	2 Year	9/2015
LISN	Rohde und Schwarz	ESV 216	101129	1/2013	2 years	1/2015
Radiocommunication Tester	Rohde and Schwarz	CMU 200	121672	2/2012	2 years	2/2014
Horn Antenna	EMCO	3115	35114	3/2012	3 Years	3/2015
Binconilog Antenna	EMCO	3141	0005-1186	4/2012	3 Years	4/2015
Ultralog Antenna	Rohde and Schwarz	HL 562	100495	2/2012	2 year	2/2014
Open Switch Control Unit	Rohde and Schwarz	OPS 130	10085	n/a		
Extention Unit Open Switch Control Unit	Rohde and Schwarz	OSP 150	10086	n/a		
Signal Generator	Rohde and Schwarz	SMF 100A	101833	2/2012	2 years	2/2014
Turn Table TT	Maturo	1.5 SI	TT 1.5SI/204/6070910	n/a		
Compact antenna Mast	Maturo	CAM 4.0-P	CAM4.0-P/067/6000910	n/a		
Multiple Control Unit	Maturo	MCU	2140910	n/a		
Pre-Amplifier	Rohde and Schwarz	TS-PR 18	100072	Part of the system calibration		
High Pass Filter	Mini-Circuits	SHP-1200+	RUU11201224	Part of the system calibration		
High Pass Filter	Wainwright Instr.	WHKX 3.0/18	109	Part of the system calibration		
Ancillary equipment:						
Multimeter	Fluke	115 True RMS	21752138	3/2013	2 years	3/2015
DC Power Supply	GW Instek	GPS-1850D	EM845907	n/a		
Temperature Chamber	Test Equity	107	0700533	n/a		
Temperatuer Chamber	Test Equity	115	150300	n/a		
Thermometer	Fluke	5411B	17560031	12/2012	2 years	12/2014
Antenna	TECT Electronics	FPA3-0.8-6.0R/1329	408213-0001	n/a		

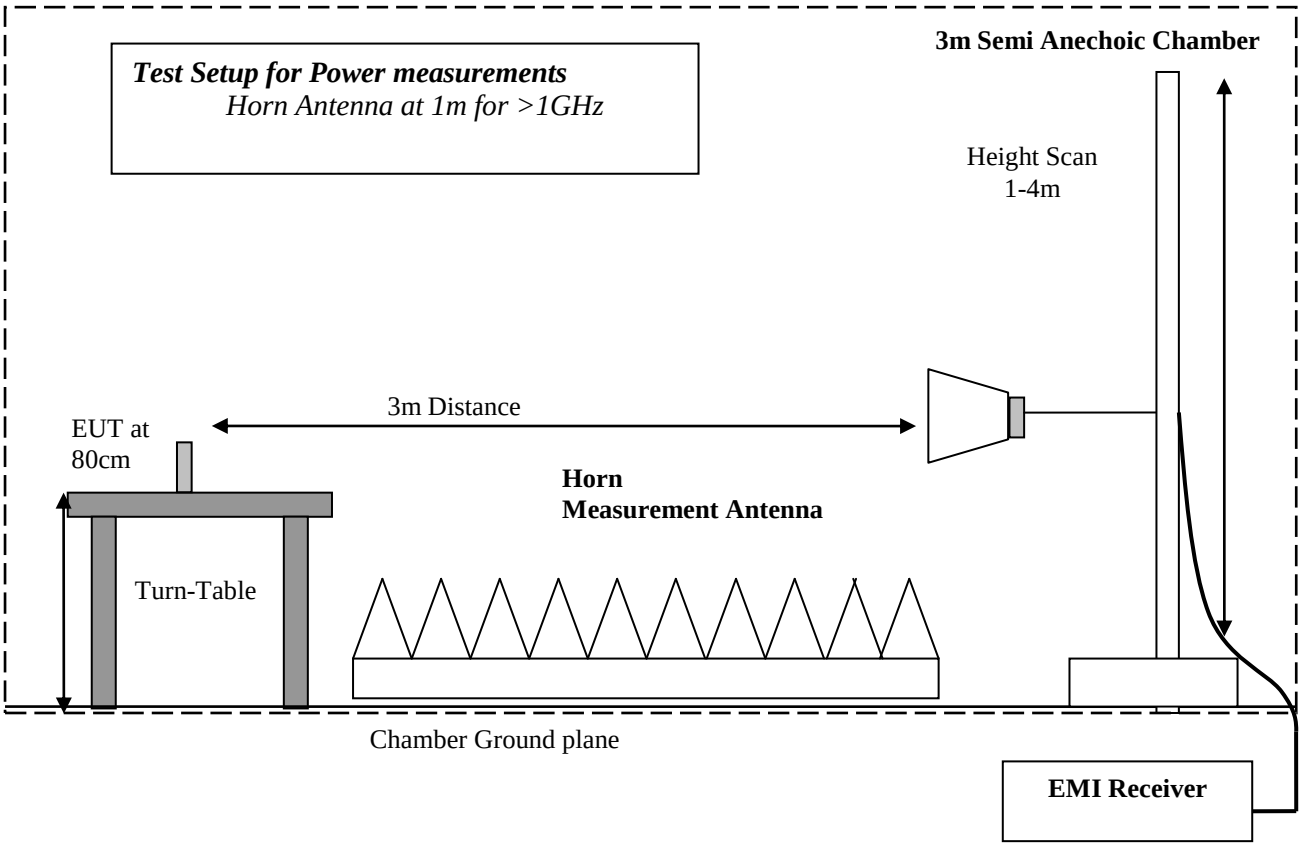
7.6.2 San Diego EMC Lab

Equipment Name	Manufacturer	Type/Model	Serial No.	Cal Date	Cal Interval	Next cal date
3m Semi- Anechoic Chamber:						
Spectrum Analyzer	Rohde und Schwarz	FSU 26	200302	6/2013	2 years	6/2015
Receiver	Rohde und Schwarz	ESR3	101663	2/2013	2 years	2/2015
LISN	Rohde und Schwarz	ESV 216	101129	1/2013	2 years	1/2015
Radiocommunication Tester	Rohde and Schwarz	CMU 200	121672	7/2013	2 years	7/2015
Log Periodic Antenna	Rohde and Schwarz	HL 050	100515	4/2013	3 year	4/2016
Ultralog Antenna	Rohde and Schwarz	HL 562	100495	2/2012	3 year	2/2015
Open Switch Control Unit	Rohde and Schwarz	OPS 130	10085	n/a		
Extention Unit Open Switch Control Unit	Rohde and Schwarz	OSP 150	10086	n/a		
Turn Table TT	Maturo	1.5 SI	TT 1.5SI/204/60709 10	n/a		
Compact antenna Mast	Maturo	CAM 4.0-P	CAM4.0-P/067/6000910	n/a		
Multiple Control Unit	Maturo	MCU	2140910	n/a		
Pre-Amplifier	Rohde and Schwarz	TS-PR 18	100072	Part of the system calibration		
High Pass Filter	Mini-Circuits	SHP-1200+	RUU11201224			
High Pass Filter	Wainwright Instr.	WHKX 3.0/18	109			

Calibration status valid at the time of testing.
Equipment used meets the measurement uncertainty requirements as required per applicable standards for 95% confidence levels.
Calibration due dates, unless defined specifically, falls on the last day of the month.
Items indicated "N/A" for cal status either do not specifically require calibration or is internally characterized before use.

8 Test Setup Diagrams





9 Revision History

Date	Report Name	Changes to report	Report prepared by
2014-10-26	EMC_INTEL_INTEL_054_14001_FCC22_24_27_LTE_WWAN	First Version	M.Umair Anees
2014-11-13	EMC_INTEL_INTEL_054_14001_FCC22_24_27_LTE_WWAN_rev1	Formatting, revising references.	M.Umair Anees
2014-11-26	EMC_INTEL_INTEL_054_14001_FCC22_24_27_LTE_WWAN_rev2	Modifying band 7 band edge measurements to comply with RSS-199 new issue 4	M.Umair Anees