FCC / ISED & Test Report

FOR:

Telular Corporation

Model Name:

GXT5002C

Product Description:

The GXT5002C is a solar powered GPS asset management solution that provides enhanced asset utilization and cargo visibility.

Applied Rules and Standards:

47 CFR Parts 22, 24, and 27
RSS: 132 Issue 3, 133 Issue 6, 139 Issue 3

FCC ID: MTFGXT5002C
IC ID: 2175D-GXT5002C

REPORT #: EMC_TELUL_070_17001_FCC_22_24_27

DATE: 2018-03-16

A2LA Accredited

IC recognized #
3462B-2

***CETECOM* Inc.**
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CETECOM Inc. is a Delaware Corporation with Corporation number: 2905571

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1 Assessment

The following device as further described in section 3 of this report was evaluated against the applicable criteria specified in the Code of Federal Regulations Title 47 parts 22 and 24, 27 and Industry Canada Standards RSS-GEN issue 3, RSS-132 issue 3, RSS-133 issue 6 and RSS-139 issue 3.

No deviations were ascertained.

Company Name	Product Description	Model #
Telular/Falcon	The GXT5002C is a solar powered GPS asset management solution that provides enhanced asset utilization and cargo visibility.	GXT5002C

Responsible for Testing Laboratory:

Date	Section	Name	Signature
2018-03-16	Compliance	James Donnellan (EMC Compliance Manager)	James Donnellan

Responsible for the Report:

Date	Section	Name	Signature
2018-03-16	Compliance	Chaman Bhardwaj (Sr. EMC Engineer)	Chaman Bhardwaj Digitally signed by: Chaman Bhardwaj DN: CN = Chaman Bhardwaj email = chaman.bhardwaj@cetecom.com C = US O = CETECOM Inc. OU = EMC Date: 2018.03.16 14:57:52 -08'00'

2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Street Address:	411 Dixon Landing Road
City/Zip Code	Milpitas, CA 95035
Country	USA
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Compliance Manager:	James Donnellan
Responsible Project Leader:	Chaman Bhardwaj

2.2 Identification of the Client

Applicant's Name:	Telular Corporation.
Street Address:	3225 Cumberland Blvd. Suite 300
City/Zip Code	Atlanta, GA 30339
Country	USA
Contact Person:	Leslie Mishrell
Phone No.	1 + (678) 264-2007
e-mail:	lmishrell@telular.com

2.3 Identification of the Manufacturer

Manufacturer's Name:	Same as above
Manufacturers Address:	----------
City/Zip Code	----------
Country	----------

3 Equipment Under Test (EUT)

3.1 EUT Specifications

Model No	GXT5002C
HW Version	01
SW Version	RHL7688.A.2.10.4
FCC-ID	MTFGXT5002C
IC-ID:	2175D-GXT5002C
HVIN:	GXT5002C
PMN:	Falcon GXT5002C
Product Description	The GXT5002C is a solar powered GPS asset management solution that provides enhanced asset utilization and cargo visibility.
Transceiver Technology / Type(s) of Modulation	Sierra HL7688; HW Rev 1.0, SW Rev. T1.0.3.2 FCC ID: N7NMC7688; IC ID: 2175D-GXT5002C •850/900/1700/1800/1900MHz GSM/GPRS/EDGE; GSM&GPRS&EDGE(MCS-1-4): GMSK; EDGE(MCS-5-8): 8PSK; •850/900/1700/1900/2100 MHz WCDMA / HSPA+; HSDPA Category 14 data rate - 21 Mbps; HSUPA Category 6 data rate - 5.76 Mbps; modulation: all QPSK (no QAM in uplink for given data rates) GPS
Frequency Range	GSM 850: 824.2-848.8; 125 channels; PCS 1900: 1850.2-1909.8; 300 channels; FDD V: 826.4 - 846.6; 278 channels; FDD II: 1852.4 – 1907.6; 103 channels;
Max. declared antenna gain	Ethertronics P822601, peak gain: 3.9dBi nom. ISM antenna Gain:0.8dBi
Power Supply/ Rated Operating Voltage Range	17 VDC max, nominal 12 VDC, Low 6.2 VDC
Other Radios	ISM, GPS
Operating Temperature Range	- 30 C to +70C
Sample Revision	☐ Prototype ■ Production ☐Pre-Production

3.2 EUT Sample details

EUT #	Serial Number	HW Version	SW Version	Comments
1	EUT #1, UNIT A Marking on the PCB, PCC4416-13, #3007LF#	Rev B	RM.00.06.5013	Radiated Emissions
2	EUT#2, UNIT B Marking 15046701 Rev . C	Rev B	RM.00.06.5013	Radiated Emissions
3	GXL7CSPD172174331	Rev B.	RM.00.06.5013	Conducted RF

3.3 Accessory Equipment (AE) details

AE #	Type	Model	Manufacturer	Serial Number
1	Lap Top PC	Latitude E5430	DELL	BRW1VY1

3.4 Test Sample Configuration

Set-up #	EUT / AE used for set-up	Comments
1	EUT#1 or EUT #2	Radiated RF measurements were performed with these units configured via customer provided SW and instructions, so that ISM can be operated with all required Cellular bands
2	EUT #3	Conducted RF Measurements was performed with this unit

4 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus, with 95% confidence interval (in dB delta to result), based on a coverage factor k=1.

Radiated measurement

9 kHz to 30MHz	±2.5 dB (Magnetic Loop Antenna)
30 MHz to 1000 MHz	±2.0 dB (Biconilog Antenna)
1 GHz to 40 GHz	±2.3 dB (Horn Antenna)

Conducted measurement

150 kHz to 30 MHz	±0.7 dB (LISN)

RF conducted measurement	±0.5 dB

4.1 Environmental Conditions during Testing:

The following environmental conditions were maintained during the course of testing:

- Ambient Temperature: 20-25°C
- Relative humidity: 40-60%

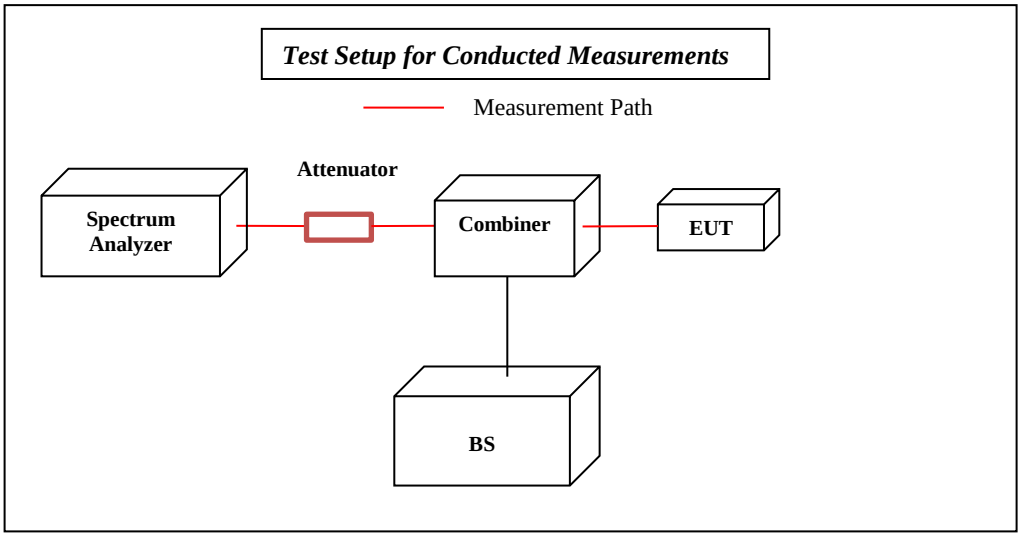
Deviating test conditions are indicated at individual test description where applicable.

4.2 Dates of Testing:

Jan 05, to Mar 08, 2018

5 Measurement Procedures

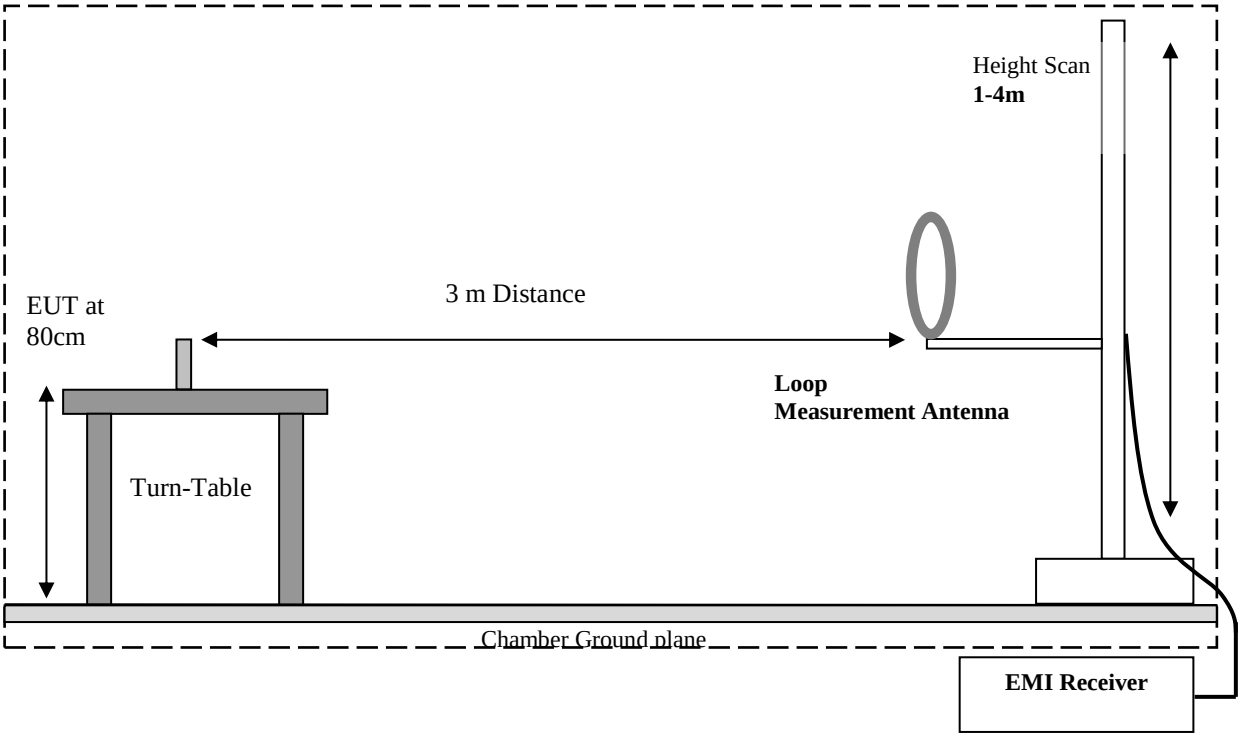
American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services, ANSI C63.26-2015



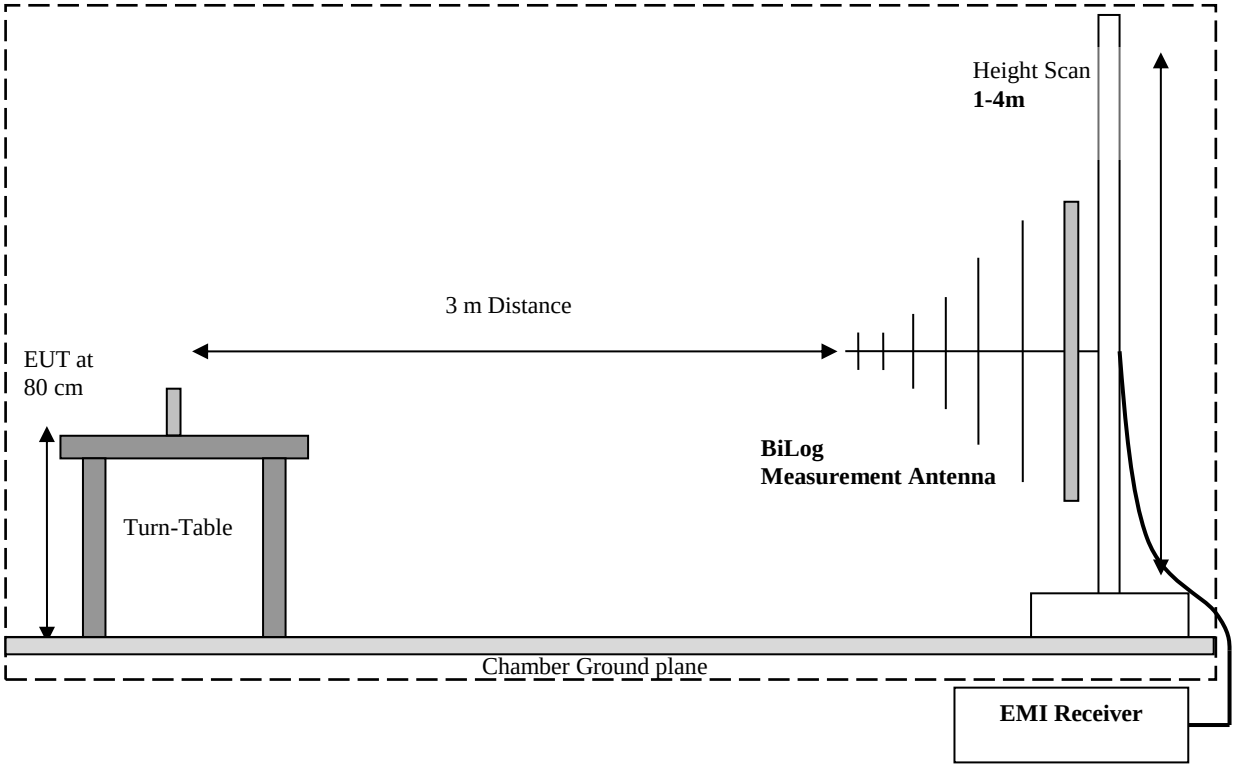
5.1 Radiated Measurement

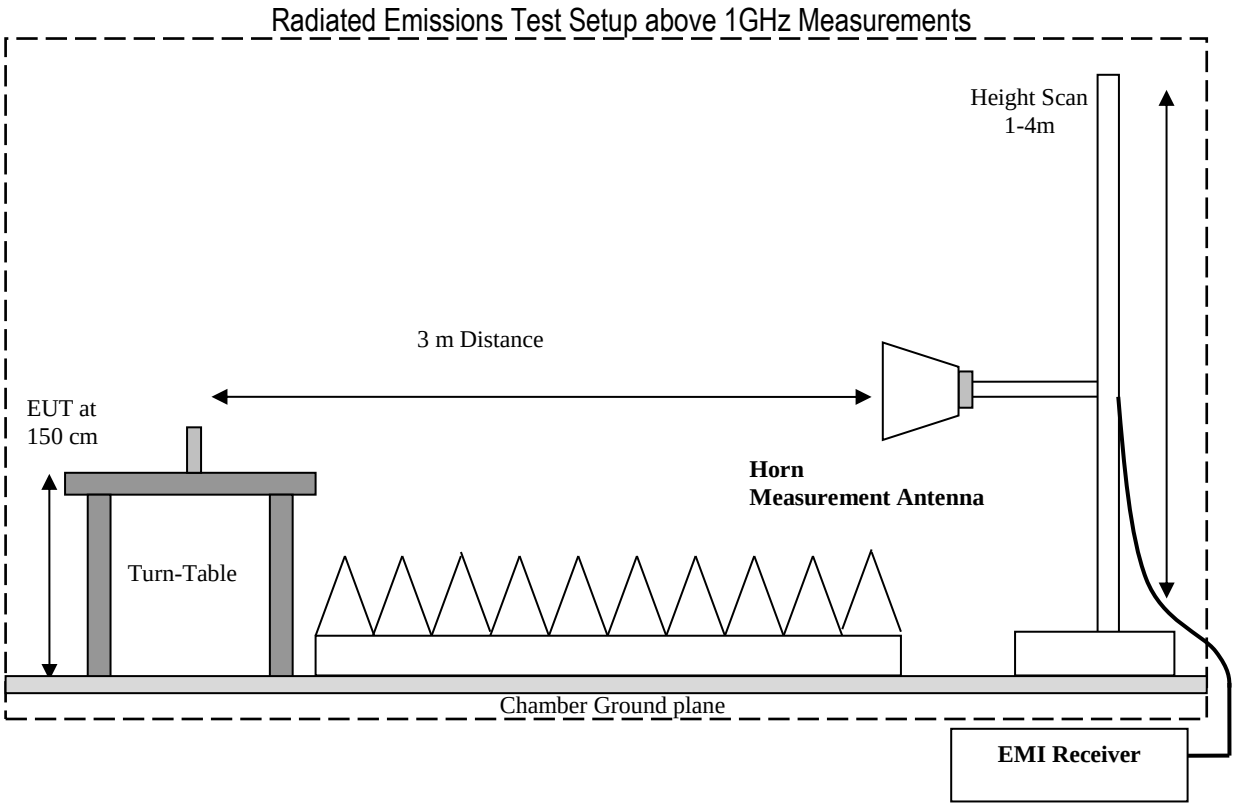
- The exploratory measurement is accomplished by running a matrix of 16 sweeps over the required frequency range with R&S Test-SW EMC32 for 4 positions of the turntable, two orthogonal positions of the EUT and both antenna polarizations. This procedure exceeds the requirement of the above standards to cover the 3 orthogonal axis of the EUT. A max peak detector is utilized during the exploratory measurement. The Test-SW creates an overall maximum trace for all 12 sweeps and saves the settings for each point of this trace. The maximum trace is part of the test report.
- The 10 highest emissions are selected with an automatic algorithm of EMC32 searching for peaks in the noise floor and ensuring that broadband signals are not selected multiple times.
- The maxima are then put through the final measurement and again maximized in a 90deg range of the turntable, fine search in frequency domain and height scan between 1m and 4m.
- The above procedure is repeated for all possible ways of power supply to EUT and for all supported modulations.
- In case there are no emissions above noise floor level only the maximum trace is reported as described above.
- The results are split up into up to 4 frequency ranges due to antenna bandwidth restrictions. A magnetic loop is used from 9 kHz to 30 MHz, a Biconilog antenna is used from 30 MHz to 1 GHz, and two different horn antennas are used to cover frequencies up to 40 GHz.

Radiated Emissions Test Setup below 30MHz Measurements



Radiated Emissions Test Setup 30MHz-1GHz Measurements





5.2 Sample Calculations for Field Strength Measurements

Field Strength is calculated from the Spectrum Analyzer/ Receiver readings, taking into account the following parameters:

- Measured reading in dBµV
- Cable Loss between the receiving antenna and SA in dB and
- Antenna Factor in dB/m

All radiated measurement plots in this report are taken from a test SW that calculates the Field Strength based on the following equation:

FS (dBµV/m) = Measured Value on SA (dBµV)+ Cable Loss (dB)+ Antenna Factor (dB/m)

Example:

Frequency (MHz)	Measured SA (dBµV)	Cable Loss (dB)	Antenna Factor Correction (dB)	Field Strength Result (dBµV/m)
1000	80.5	3.5	14	98.0

6 Radiated Spurious Emissions

6.1 Methodologies used

American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services, ANSI C63.26-2015

Spectrum Receiver Settings for FCC 22

Frequency Range	9kHz-30MHz	30MHz – 1 GHz	1 – 3GHz	3– 9GHz
Resolution Bandwidth	9kHz	120 kHz	1 MHz	1 MHz
Video Bandwidth	30kHz	300 kHz	1 MHz	1 MHz
Detector	Quasi Peak	Quasi Peak	Avg/Peak	Avg/Peak
Trace Mode	Max Hold	Max Hold	Max Hold	Max Hold
Sweep Time	Auto	Auto	Auto	Auto

Spectrum Receiver Settings for FCC 24

Frequency Range	9kHz-30MHz	30MHz – 1 GHz	1 – 3GHz	3 – 18 or 26GHz
Resolution Bandwidth	9kHz	120 kHz	1 MHz	1 MHz
Video Bandwidth	30kHz	300 kHz	1 MHz	1 MHz
Detector	Quasi Peak	Quasi Peak	Avg/ Peak	Avg/ Peak
Trace Mode	Max Hold	Max Hold	Max Hold	Max Hold
Sweep Time	Auto	Auto	Auto	Auto

Spectrum Receiver Settings for FCC 27

Frequency Range	9kHz-30MHz	30MHz – 1 GHz	1 – 3GHz	3 – 18 or 26GHz
Resolution Bandwidth	9kHz	120 kHz	1 MHz	1 MHz
Video Bandwidth	30kHz	300 kHz	1 MHz	1 MHz
Detector	Quasi Peak	Quasi Peak	Avg/ Peak	Avg/ Peak
Trace Mode	Max Hold	Max Hold	Max Hold	Max Hold
Sweep Time	Auto	Auto	Auto	Auto

6.1.1 Limits:

6.1.1.1 FCC Part 22.917 (a); FCC Part 24.238 (a); FCC Part 27.53 (h)

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.

6.1.1.2 RSS-132 Part 5.5; RSS-133 Part 6.5; RSS-139 Part 6.6 Transmitter Unwanted Emissions

Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

i.In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10Log_{10} P(watts).

ii.After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 120 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least 43 + 10 $\log_{10}$ P (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

Note: The limit calculation result is a constant of -13 dBm.

7 Measurement Results Summary

7.1 Part 22 / RSS-132

Test Specification	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§2.1051; §22.917	RF Output Power	Nominal	UMTS V / LTE B5	■	☐	☐	☐	Note 2
§2.1053; §22.917	Frequency Tolerance	Nominal	UMTS V / LTE B5	☐	☐	☐	■	Complies
§2.1046; §22.913 (a)	Occupied Bandwidth	Nominal	UMTS V / LTE B5	■	☐	☐	☐	Complies
§2.1055; §22.355	Band Edge Compliance	Extreme Temperature and Voltage	UMTS V / LTE B5	■	☐	☐	☐	Complies
§2.1049; §22.917	Conducted Spurious Emissions	Nominal	UMTS V / LTE B5	☐	☐	☐	■	Complies
§2.1051; §22.917	Radiated Spurious Emissions	Nominal	UMTS V / LTE B5	■	☐	☐	☐	Complies

Note 1: NA= Not Applicable; NP= Not Performed.
Note 2: Spurious emissions were evaluated with radiated measurement.

7.2 Part 24 / RSS-133

Test Specification	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§2.1046; §24.232 (a)	RF Output Power	Nominal	UTMS II / LTE B2	■	☐	☐	☐	Complies
§2.1055; §24.235	Frequency Stability	Extreme Temperature and Voltage	UTMS II / LTE B2	☐	☐	☐	■	Complies
§2.1049; §24.238	Occupied Bandwidth	Nominal	UTMS II / LTE B2	■	☐	☐	☐	Complies
§2.1051; §24.238	Band Edge Compliance	Nominal	UTMS II / LTE B2	■	☐	☐	☐	Complies
§2.1051; §24.238	Conducted Spurious Emissions	Nominal	UTMS II / LTE B2	☐	☐	☐	■	Note 2
§2.1053; §24.238	Radiated Spurious Emissions	Nominal	UTMS II / LTE B2	■	☐	☐	☐	Complies

Note 1: NA= Not Applicable; NP= Not Performed.
Note 2: Spurious emissions were evaluated with radiated measurement.

7.3 FCC 27 / RSS-139

Test Specification	Test Case	Temperature and Voltage Conditions	Mode	Pass	Fail	NA	NP	Result
§2.1046; §27.50	RF Output Power	Nominal	LTE B4 /B17	■	☐	☐	☐	Complies
§2.1055; §27.54	Frequency Stability	Extreme Temperature and Voltage	LTE B4 /B17	■	☐	☐	☐	Complies
§2.1049; §27.53	Occupied Bandwidth	Nominal	LTE B4 /B17	■	☐	☐	☐	Complies
§2.1051; §27.53	Band Edge Compliance	Nominal	LTE B4 /B17	■	☐	☐	☐	Complies
§2.1051; §27.53	Conducted Spurious Emissions	Nominal	LTE B4 /B17	☐	☐	☐	■	Note 2
§2.1053; §27.53	Radiated Spurious Emissions	Nominal	LTE B4 /B17	■	☐	☐	☐	Complies

Note 1: NA= Not Applicable; NP= Not Performed.
Note 2: Spurious emissions were evaluated with radiated measurement.

7.3.1 Test conditions and setup:

Ambient Temperature (˚C)	EUT Set-Up #	EUT operating mode	Power Input (VDC)
22	EUT # 1, UNIT A	Table 1, Table 2,Table 3	17 VDC max, nominal 12 VDC, Low 6.2 VDC

Table 1- EUT OPERATIONAL MODES

FCC 22 LTE B5; Low=1850MHz Mid=1880MHz, High= 1910MHz		
Channel	**Operating mode**	**Scan Frequency**
Low	FDD V + ISM Mid	30 MHz – 18 GHz
Mid	FDD V + ISM Mid	9 kHz – 26 GHz
High	FDD V + ISM Mid	30 MHz – 18 GHz
Low	LTE B5 + ISM Mid	30 MHz – 18 GHz
Mid	LTE B5 + ISM Mid	9 kHz – 26 GHz
High	LTE B5 + ISM Mid	30 MHz – 18 GHz

Table 2- EUT Operational Modes

FCC 24 LTE B2; Low=1850MHz Mid=1880MHz, High= 1910MHz		
Channel	**Operating mode**	**Scan Frequency**
Low	FDD II + ISM Mid	30 MHz – 18 GHz
Mid	FDD II + ISM Mid	9 kHz – 26 GHz
High	FDD II + ISM Mid	30 MHz – 18 GHz
Low	LTE B2 + ISM Mid	30 MHz – 18 GHz
Mid	LTE B2 + ISM Mid	9 kHz – 26 GHz
High	LTE B2 + ISM Mid	30 MHz – 18 GHz

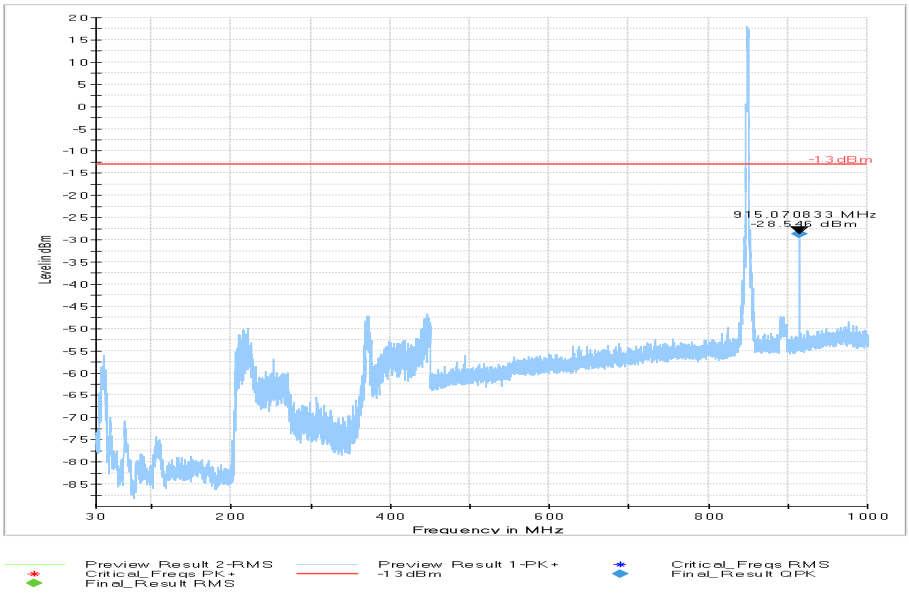
Table 3- EUT Operational Modes

FCC 27 LTE B4; Low=1850MHz Mid=1880MHz, High= 1910MHz		
Channel	**Operating mode**	**Scan Frequency**
Low	LTE B4 + ISM Mid	30 MHz – 18 GHz
Mid	LTE B4 + ISM Mid	9 kHz – 26 GHz
High	LTE B4 + ISM Mid	30 MHz – 18 GHz
Low	LTE B17 + ISM Mid	30 MHz – 9 GHz
Mid	LTE B17 + ISM Mid	9 kHz – 9 GHz
High	LTE B17 + ISM Mid	30 MHz – 9 GHz

Plot #1

FCC22_30 MHz-1000MHz-LTE_Band 5_High_ISM_MID

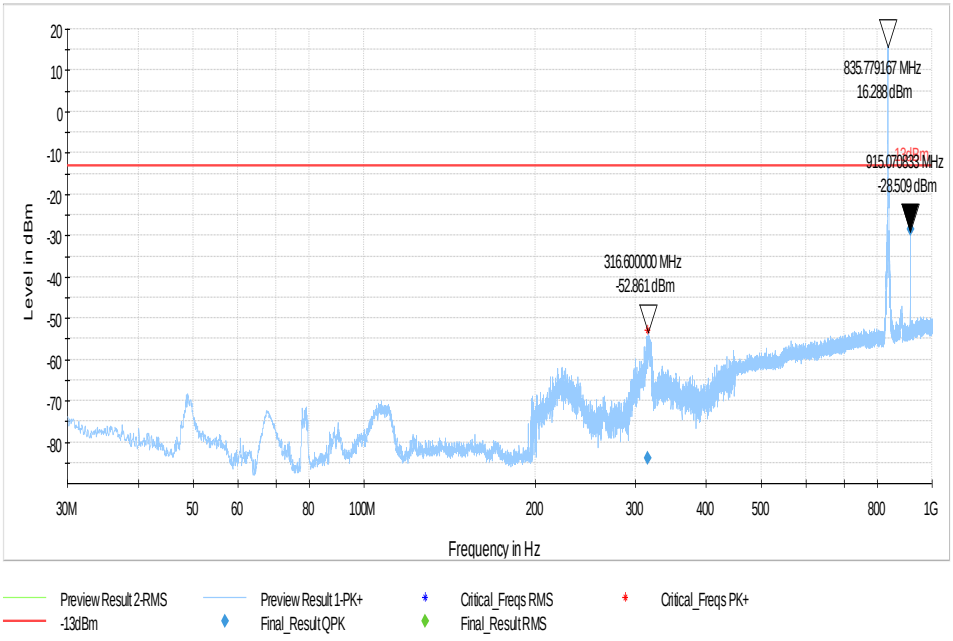
Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
914.955833	-28.65	-13.00	15.65	500.0	100.000	100.0	H	278.0	-68.4



Plot #2

FCC22_30 MHz to 1 GHz_LTEB5_MID_CH_ISM_MID

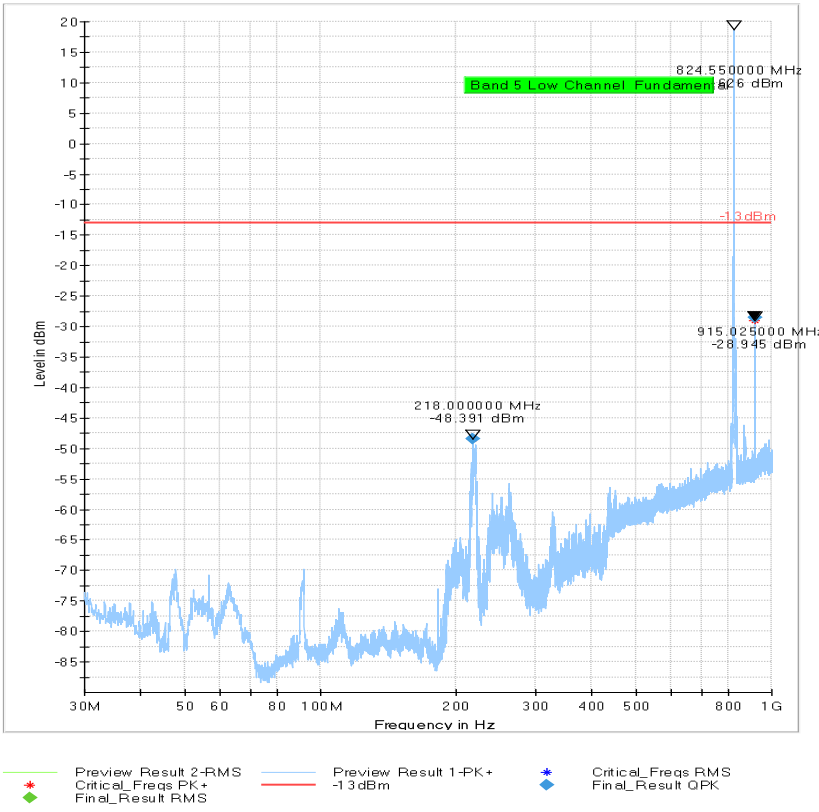
Frequency (MHz)	Quasi Peak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
315.968095	-83.89	-13.00	70.89	500.0	100.000	136.0	H	34.0	-112.5
915.047166	-28.55	-13.00	15.55	500.0	100.000	100.0	H	281.0	-68.4



Plot #3

FCC22_30 MHz to 1 GHz_LTEB5_LOW_CH_ISM_MID

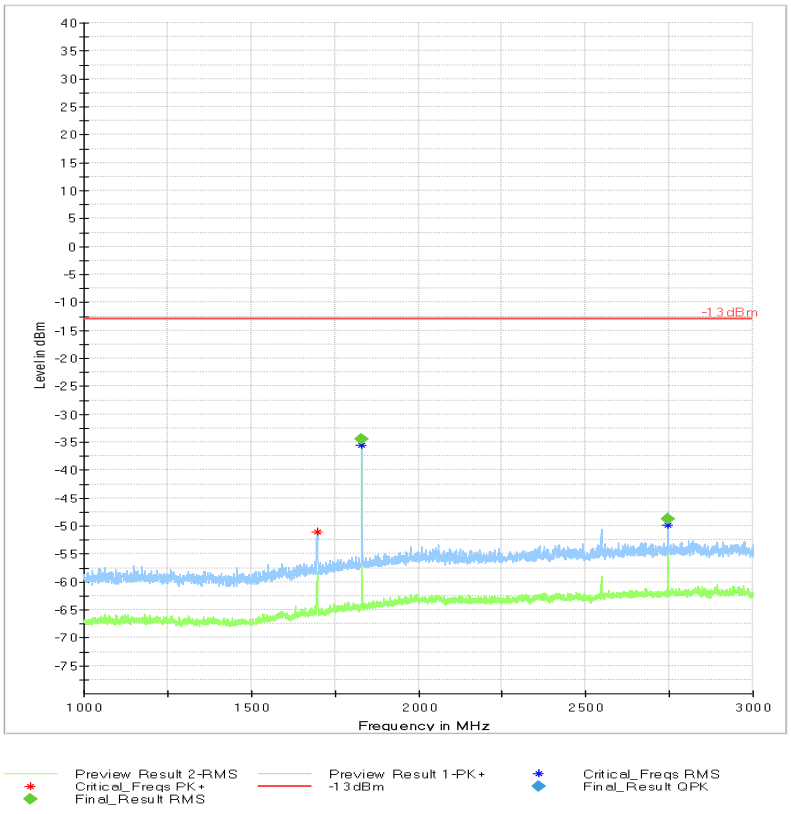
Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
217.939762	-48.50	-13.00	35.50	500.0	100.000	142.0	H	210.0	-113.8
914.945667	-28.55	-13.00	15.55	500.0	100.000	100.0	H	281.0	-68.4



Plot #4

FCC22_1-3 GHz_LTE B5_HIGH_CH_ ISM_MID

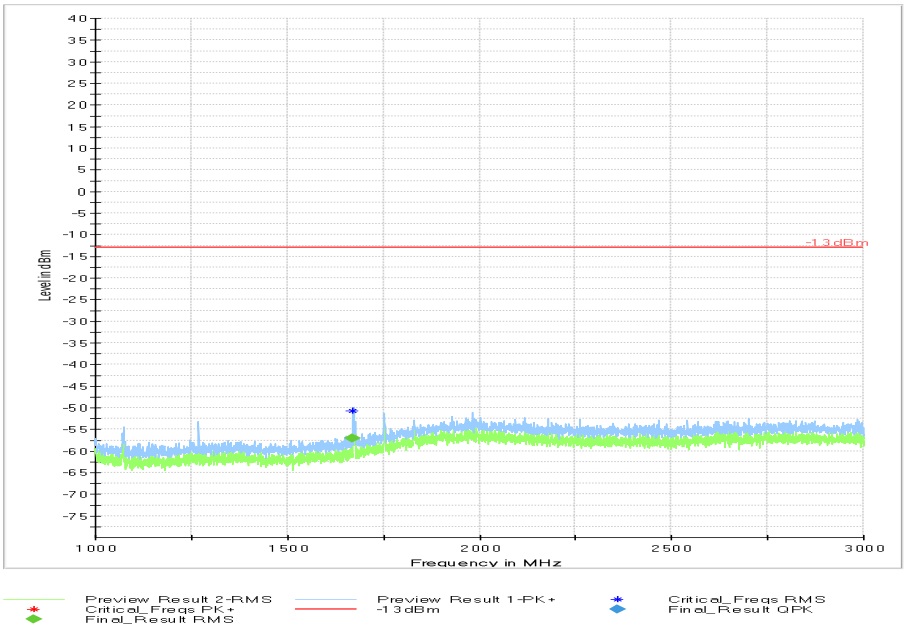
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1829.915000	-34.41	-13	21.41	500.0	1000.000	108.0	H	332.0
2744.825000	-48.69	-13	35.61	500.0	1000.000	228.0	H	135.0



Plot #5

FCC22_1-3 GHz_LTE B5_MID CH_ISM_MID

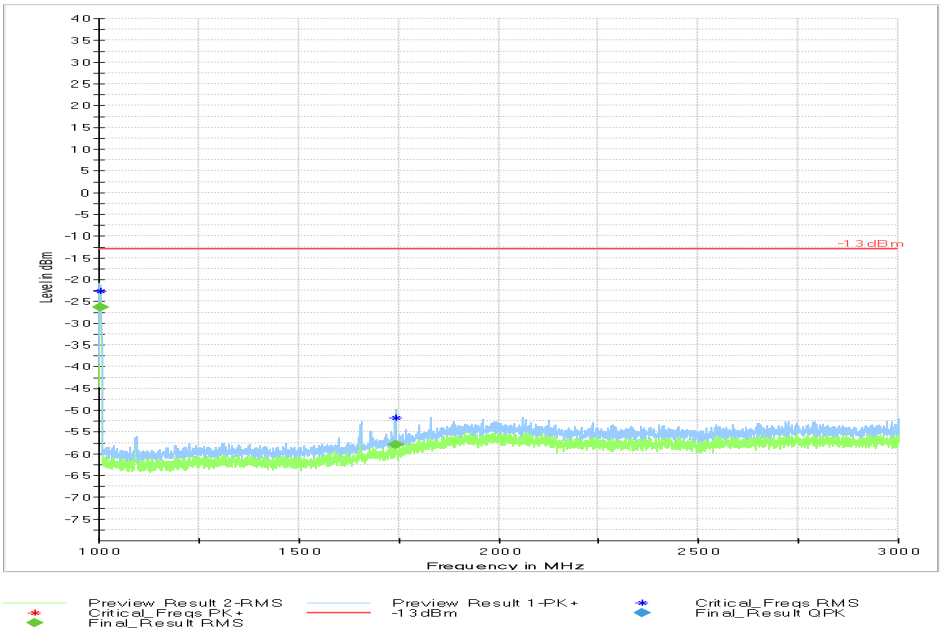
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1670.610000	-57.11	-13.0	44.11	500.0	1000.000	121.0	H	102.0



Plot #6

FCC22_1-3 GHz_LTE B5_LOW CH_ ISM_MID

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1002.121000	-26.38	-13.0	13.38	500.0	1000.000	210.0	H	275.0
1742.105000	-57.97	-13.0	44.97	500.0	1000.000	142.0	H	338.0



Plot #7

FCC_22_LTE_B5_HIGH_ISM_MID_CH_3GHz_18GHz_ISM_MID

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
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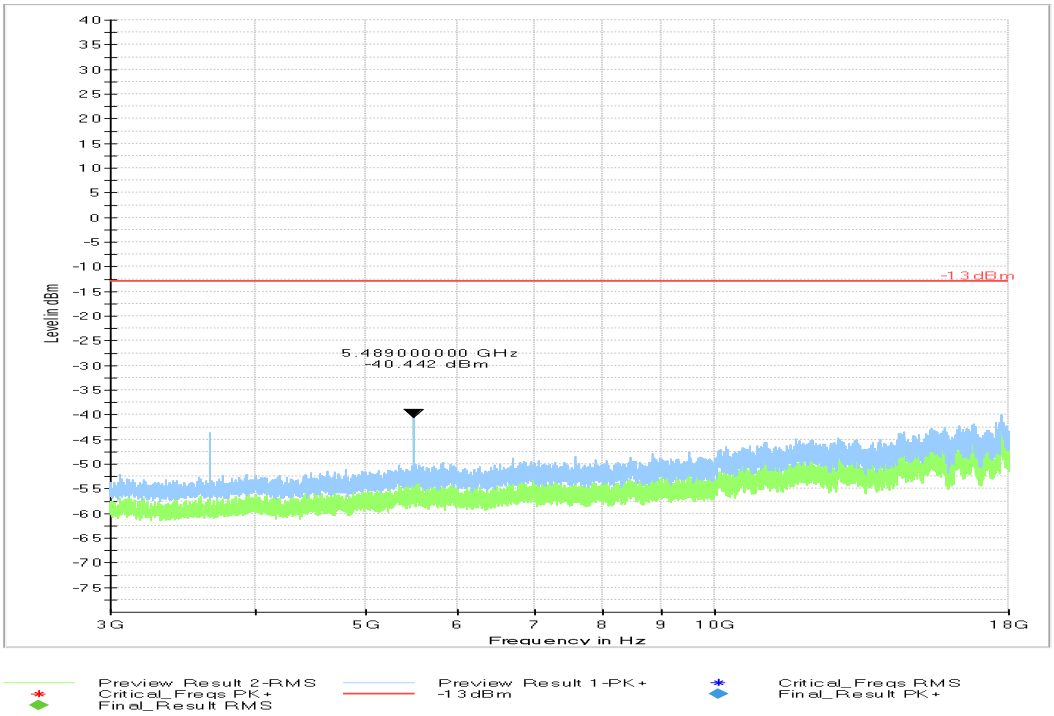

Plot #8

FCC_22_LTE_B5_MID_ISM_MID_CH_3GHz_18GHz_ISM_MID

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
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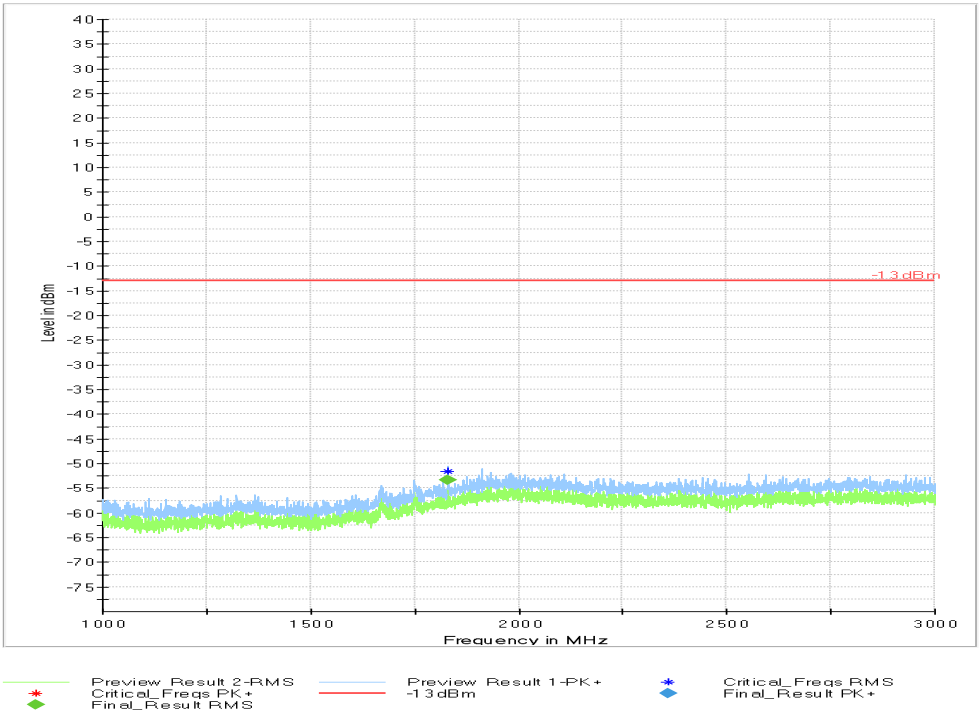
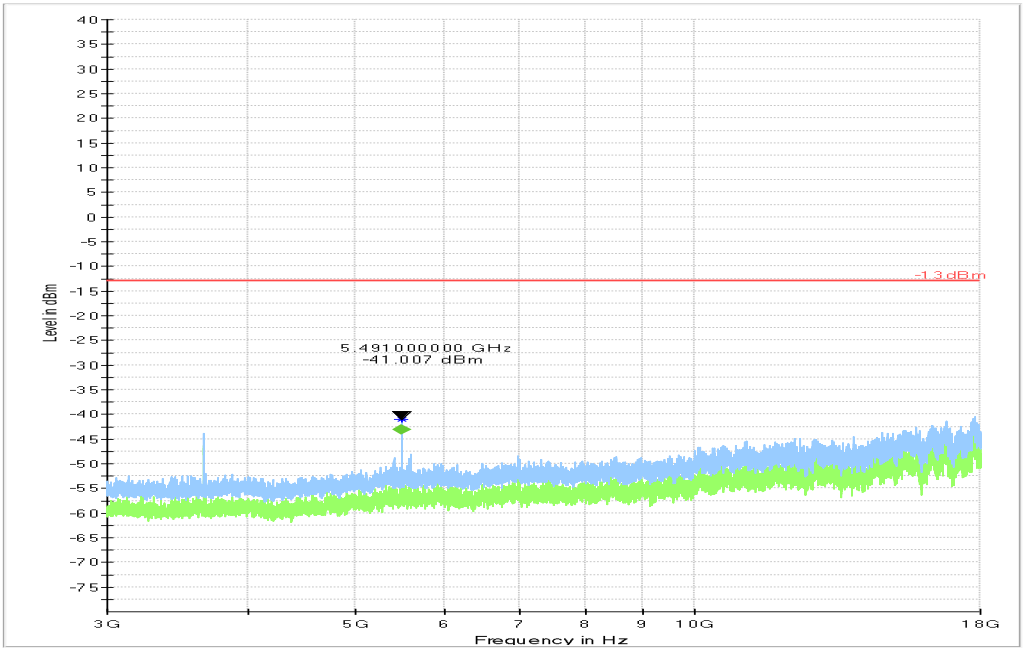


Plot #9

FCC_22_LTE_B5_LOW_ISM_MID_CH_3GHz_18GHz_ISM_MID

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
5488.890667	-43.14	-13.00	30.14	500.0	1000.000	154.0	V	-2.0	-125.1



Plot #10

FCC22_9kHz to 30MHz_LTE_B5_MID_CH_ISM_MID

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
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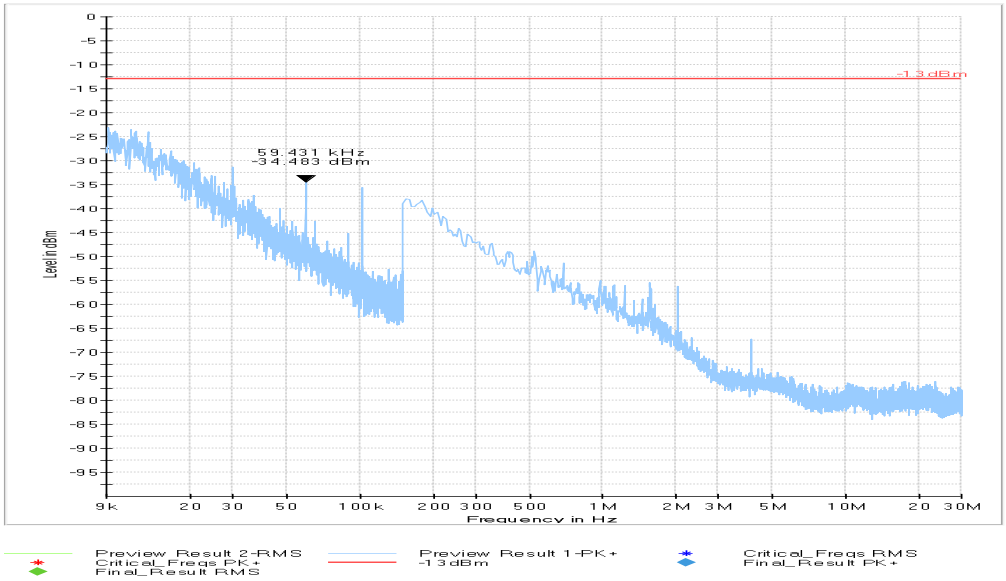

Plot #11

FCC22_9kHz to 30MHz_FDD_BV_MID_CH_ISM_MID

Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
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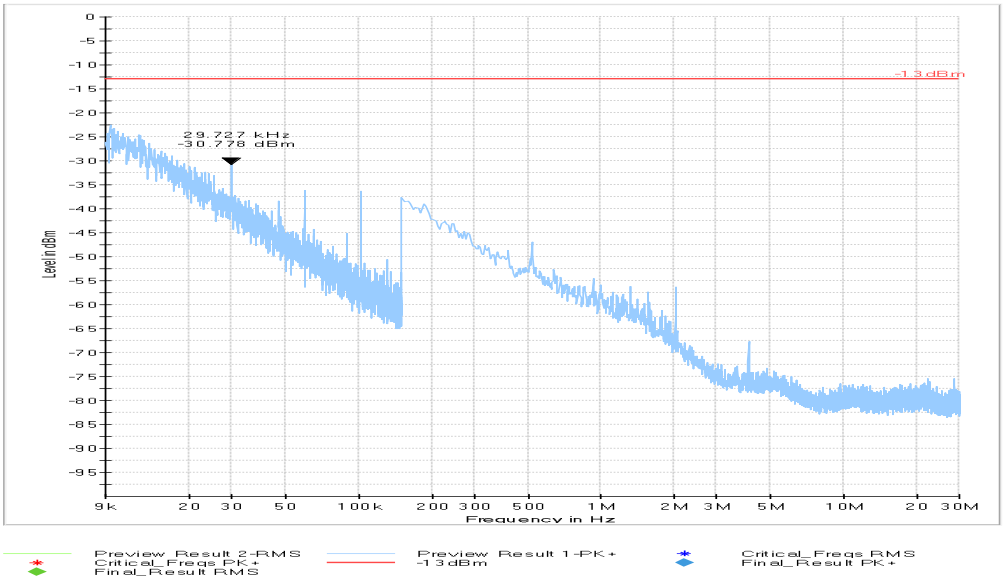
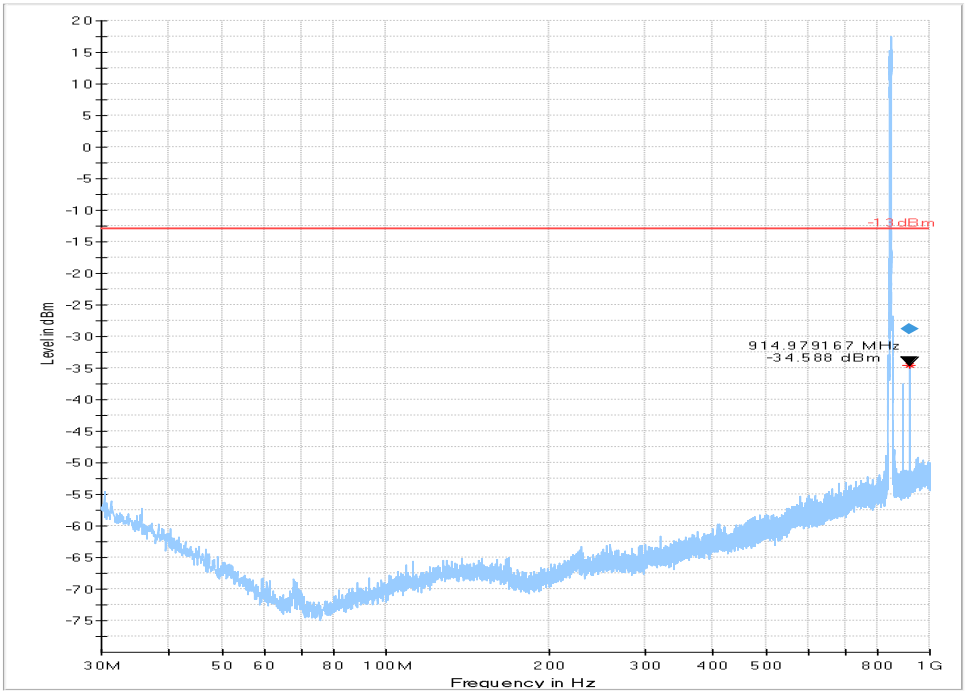


Plot #12

FCC22_30MHz to 1GHz_FDD_BV_HIGH_CH_ISM_MID

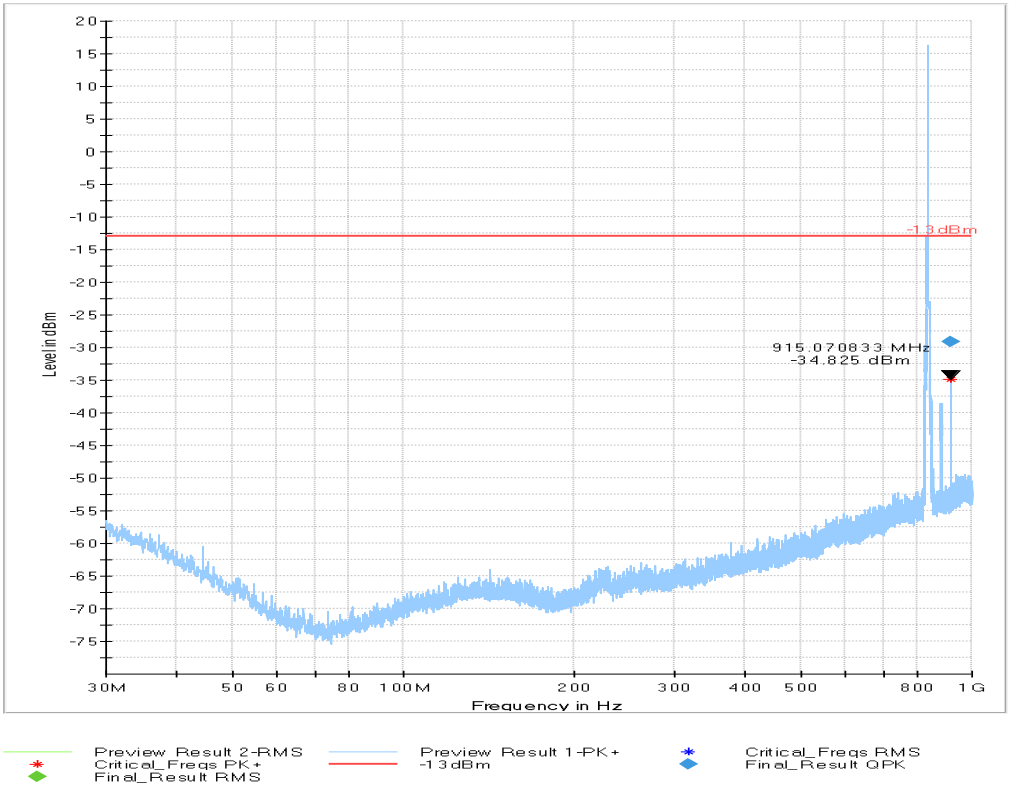
Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
915.041334	-28.82	-13.00	15.82	500.0	100.000	142.0	H	48.0	-68.4



Plot #13

FCC22_30 MHz to 1 GHz_FDD_BV_MID_CH_ISM_MID

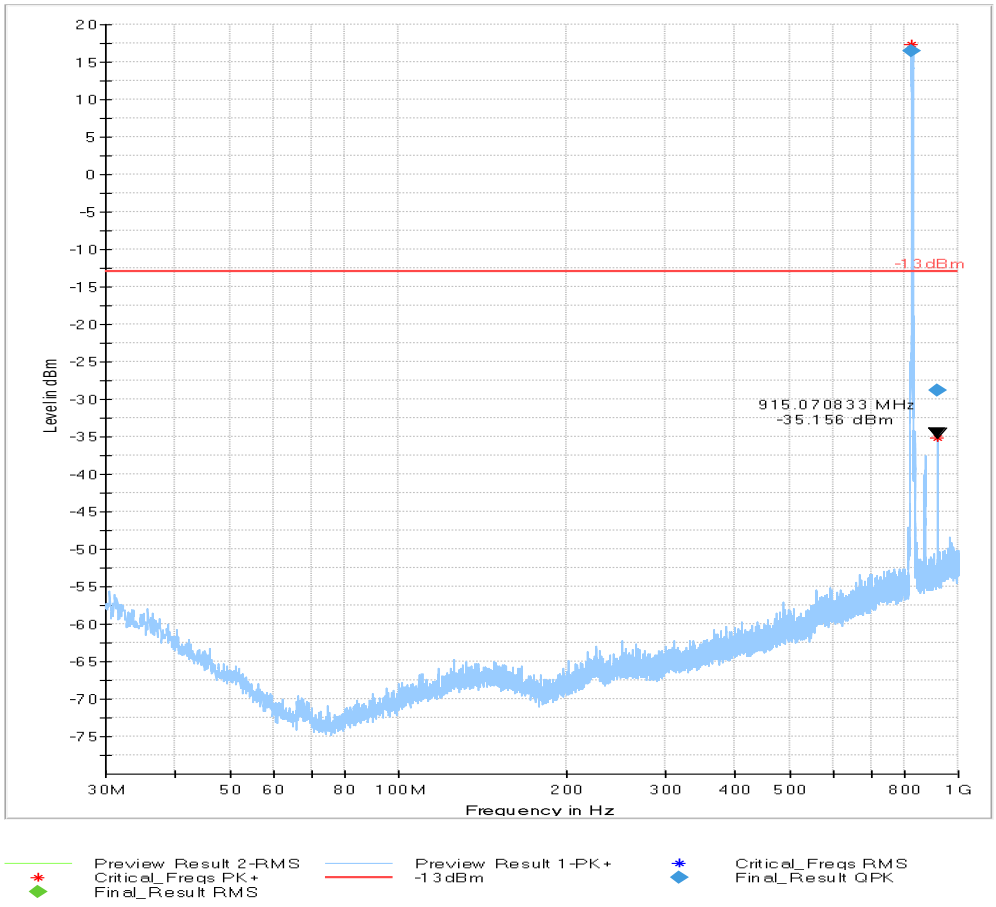
Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
915.054166	-29.06	-13.00	16.06	500.0	100.000	175.0	H	136.0	-68.4



Plot #14

FCC22_30MHz to 1GHz_FDD_BV_LOW_CH_ISM_MID

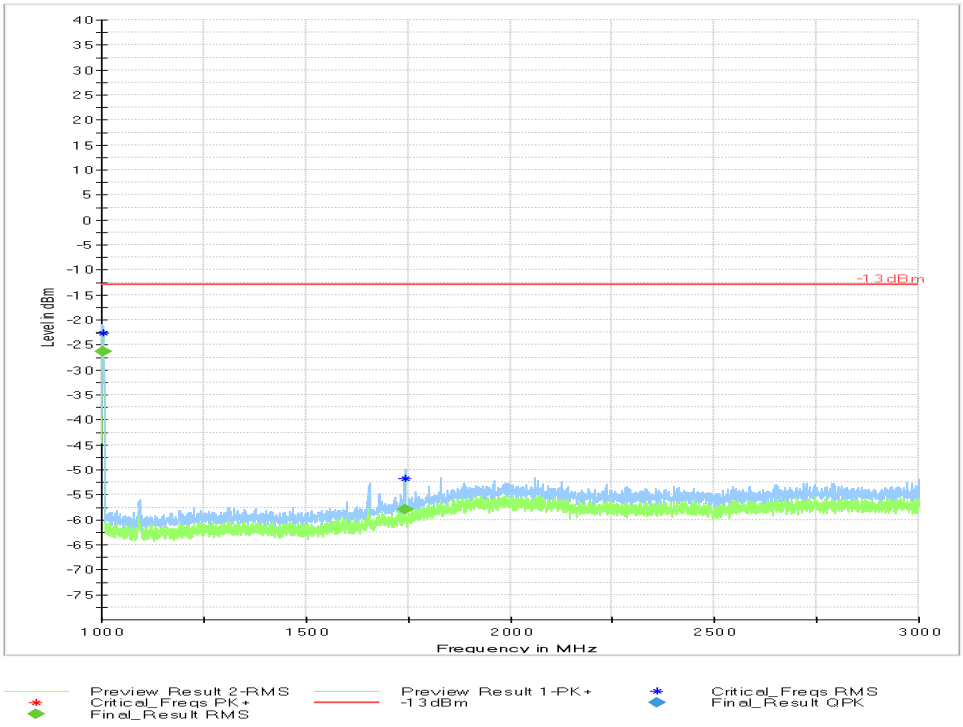
Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
827.650334	16.44	-13.00	-29.44	500.0	100.000	100.0	H	327.0	-69.7
915.045833	-28.76	-13.00	15.76	500.0	100.000	143.0	H	48.0	-68.4



Plot #15

FCC22_1 GHz to 3 GHz_FDD_BV_LOW_CH_ISM_MID

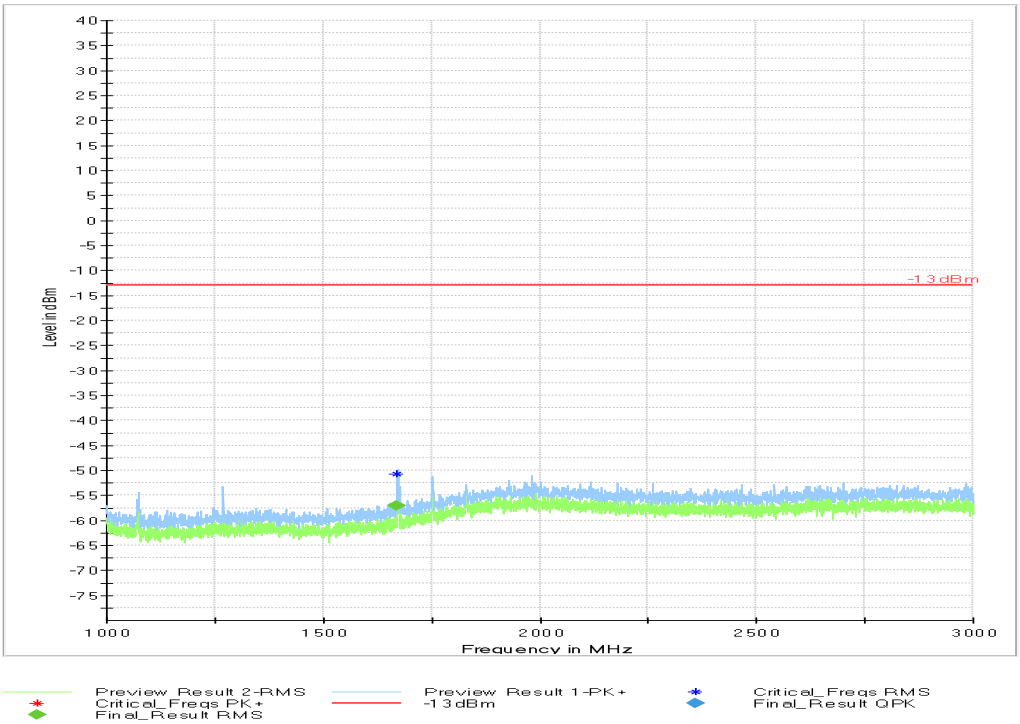
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1002.121000	-26.38	-13.0	13.38	500.0	1000.000	210.0	H	275.0
1742.105000	-57.97	-13.0	44.97	500.0	1000.000	142.0	H	338.0



Plot #16

FCC22_1 GHz to 3 GHz_FDD_BV_MID_CH_ISM_MID

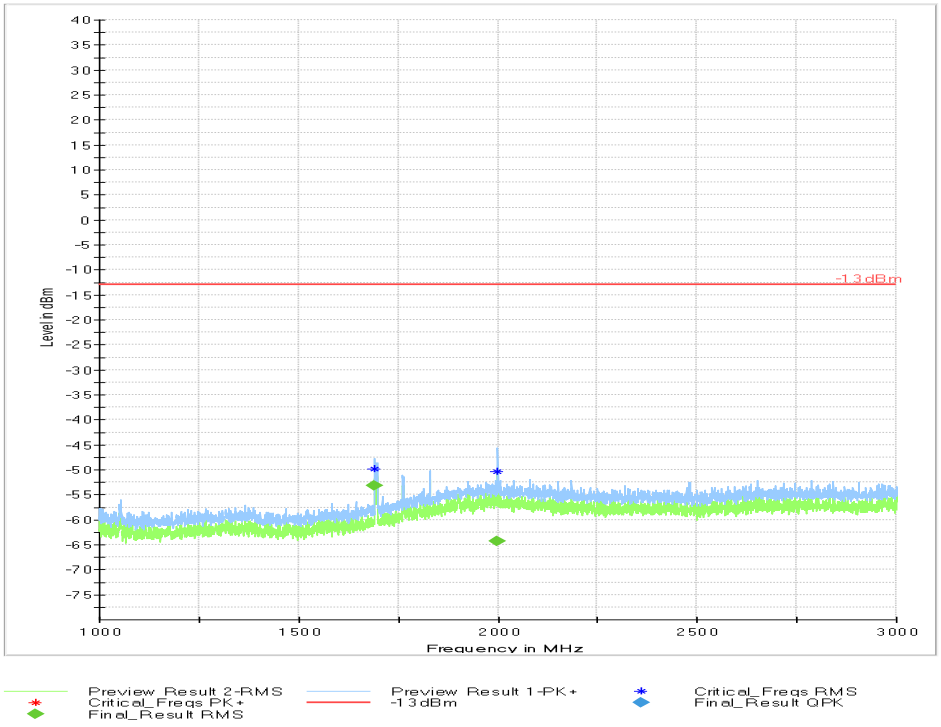
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1670.610000	-57.11	-13.0	44.11	500.0	1000.000	121.0	H	102.0



Plot #17

FCC22_1 GHz to 3 GHz_FDD_BV_HIGH_CH_ ISM_MID

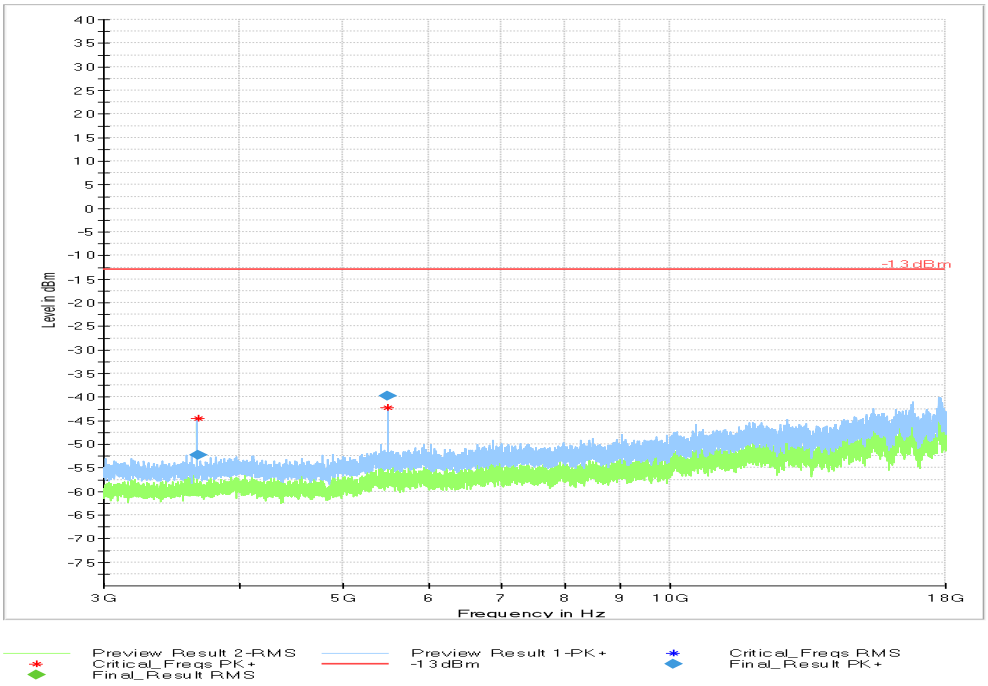
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1691.895000	-53.17	-13.0	44.17	500.0	1000.000	143.0	H	295.0
1996.670000	-64.33	-13.0	51.33	500.0	1000.000	331.0	V	76.0



Plot #18

FCC22_3 GHz-18 GHz_FDD_Band_V_High_CH_ISM_MID

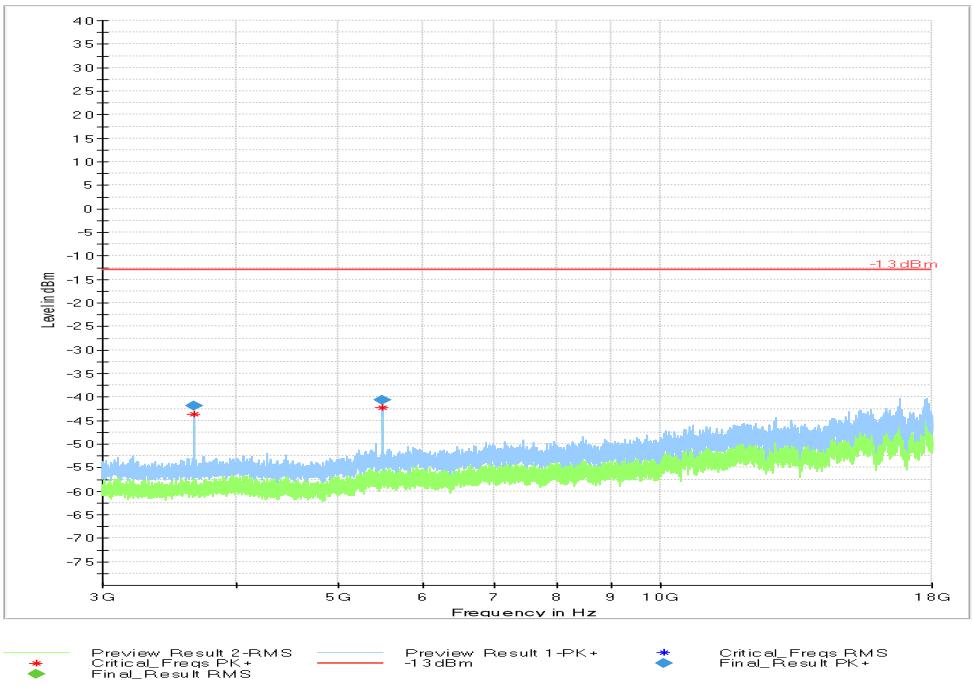
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3666.772667	-52.21	-13.00	39.21	500.0	1000.000	132.0	V	187.0	-129.5
5488.947333	-39.70	-13.00	26.70	500.0	1000.000	132.0	V	29.0	-125.1



Plot #19

FCC22_3 GHz-18 GHz_FDD_Band_V_MID_CH_ISM_MID

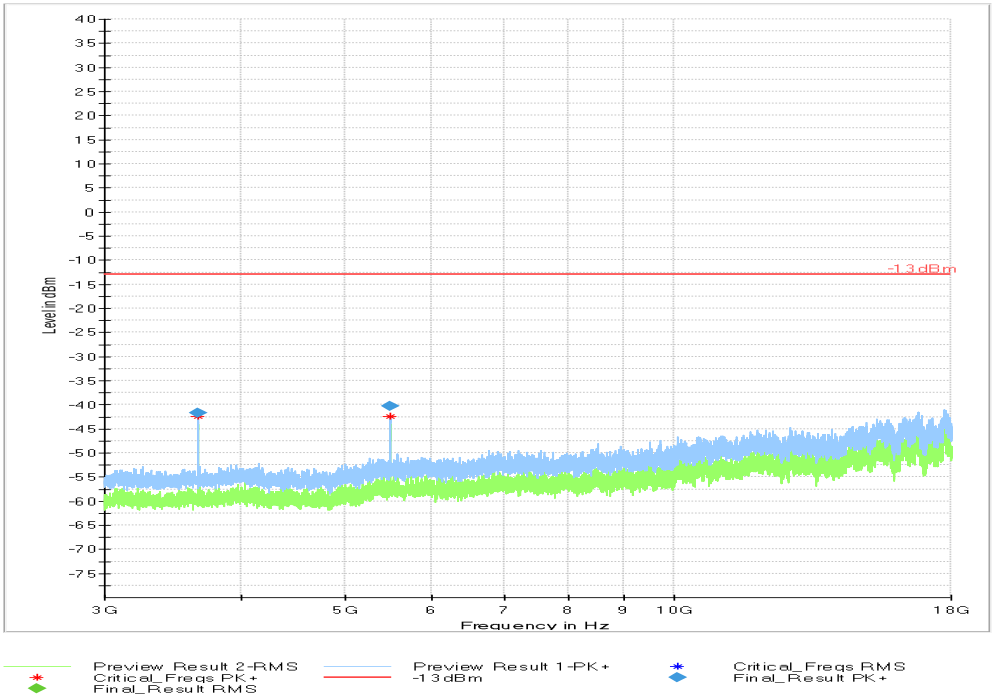
Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3660.807333	-41.85	-13.00	28.85	500.0	1000.000	166.0	V	316.0	-129.5
5491.062000	-40.56	-13.00	27.57	500.0	1000.000	143.0	V	40.0	-125.1



Plot #20

FCC22_3 GHz-18 GHz_FDD_Band_V_LOW_CH_ISM_MID

Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3659.104667	-41.62	-13.00	28.62	500.0	1000.000	142.0	V	307.0	-129.5
5491.180667	-40.37	-13.00	27.37	500.0	1000.000	143.0	V	40.0	-125.1



7.3.2 FCC Part 24/ RSS-133 Test Data:

Plot #21

FCC24_9kHz to 30MHz_LTEB2_MID_CH_ ISM_MID

Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
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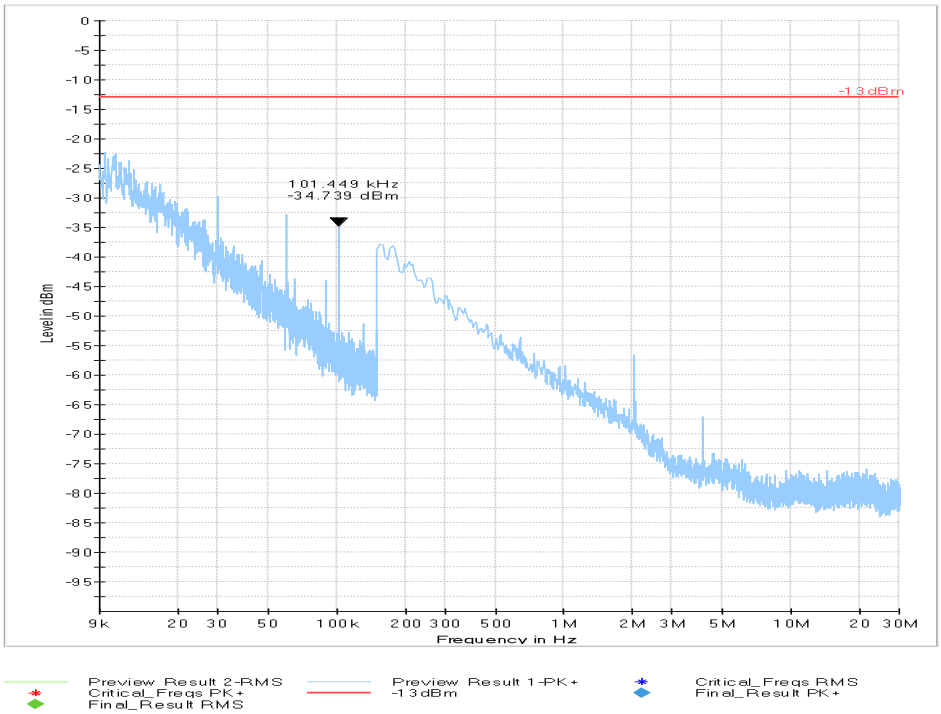
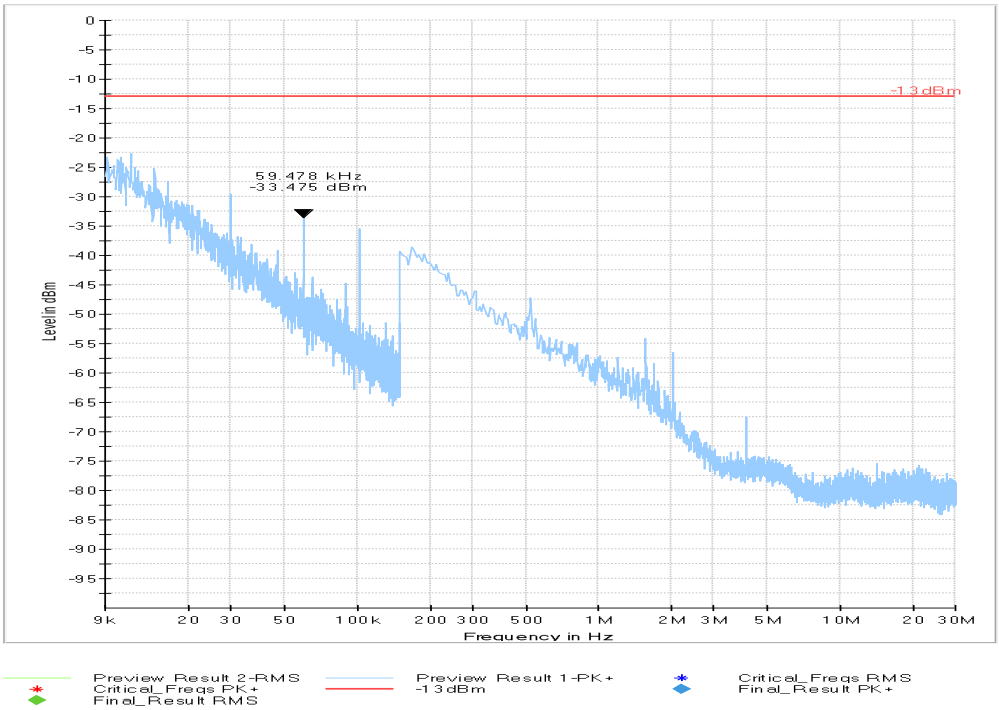


Plot #22

FCC24_9kHz to 30MHz_FDD II_MID_CH_ ISM_MID

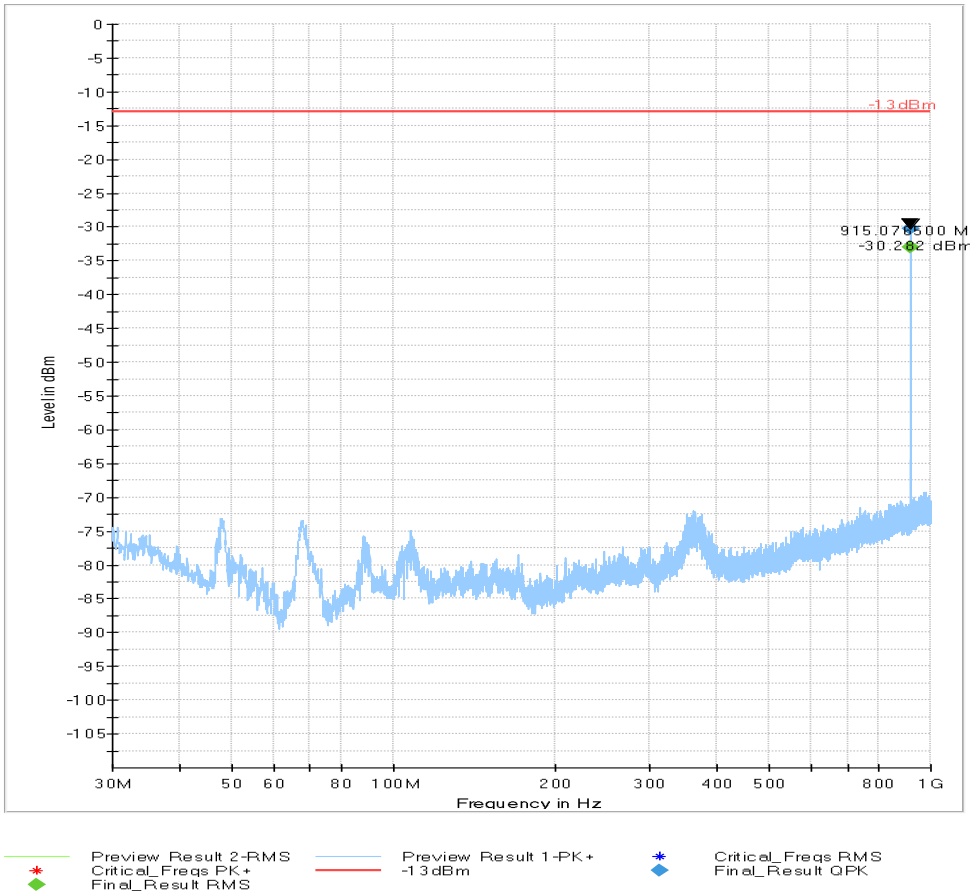
Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
---	---	---	---	---	---	---	---	---	---



Plot #23

FCC24_30 MHz to 1GHz_LTEB2_HIGH_CH_ ISM_MID

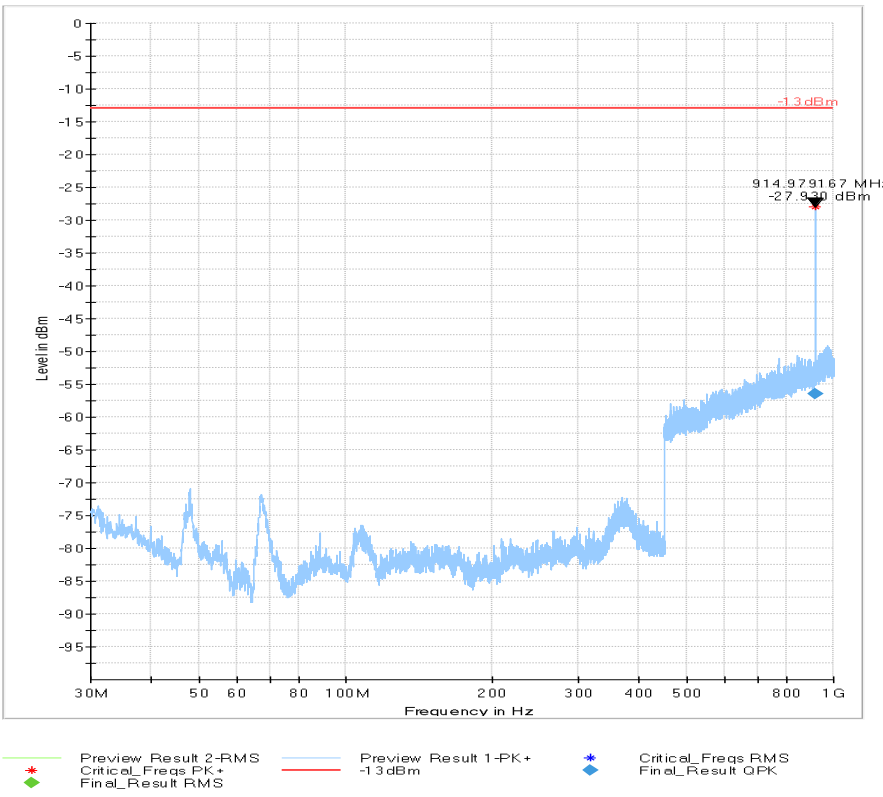
Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
915.041100	-30.30	-13.00	17.30	200.0	100.000	117.0	H	177.0	-101.0



Plot #24

FCC24_30 MHz to 1 GHz_LTEB2_MID_CH_ISM_MID

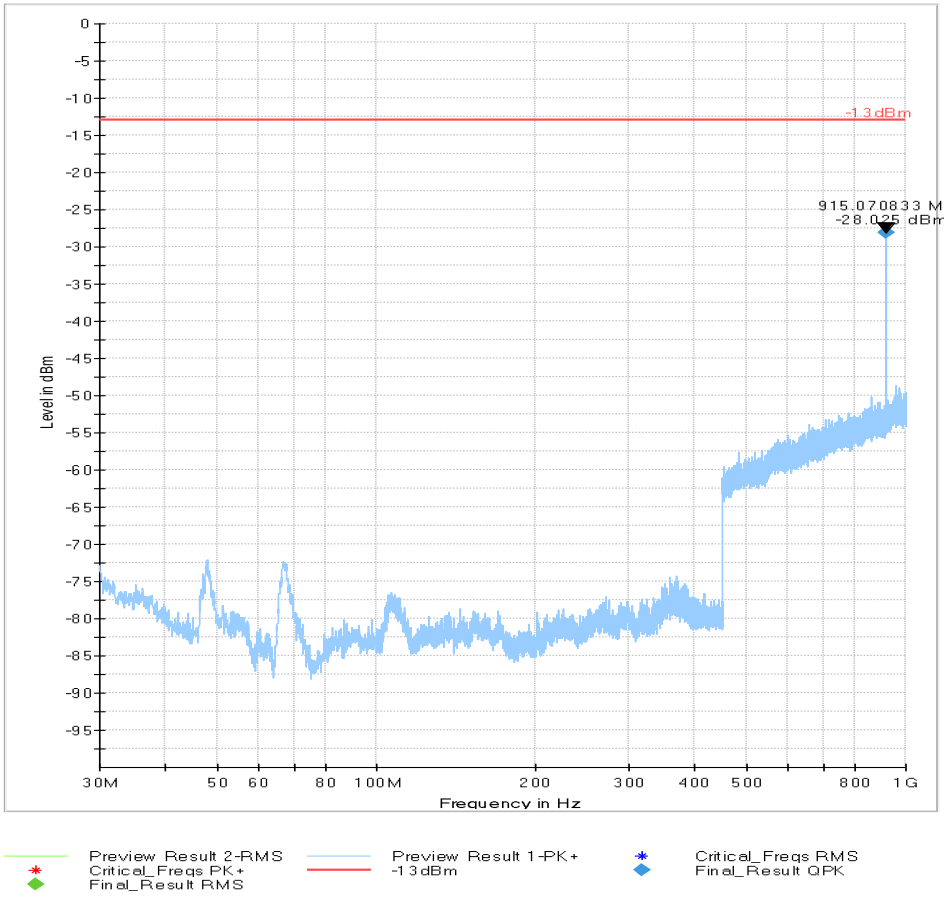
Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
914.944667	-56.47	-13.00	43.47	500.0	100.000	108.0	H	128.0	-68.4



Plot #25

FCC24_30 MHz to 1 GHz_LTEB2_LOW_CH_ISM_MID

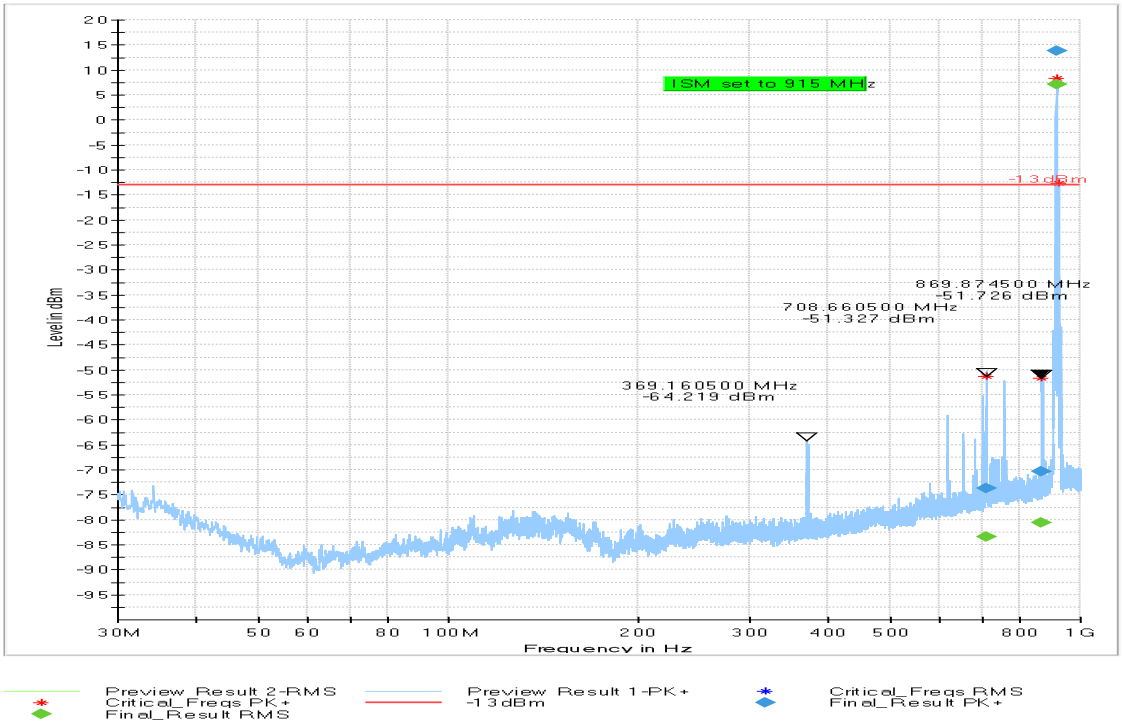
Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
915.045000	-28.12	-13.00	15.12	500.0	100.000	100.0	H	277.0	-68.4



Plot #26

FCC24_30MHz to 1GHz_FDD II_LOW_CH_ISM_MID

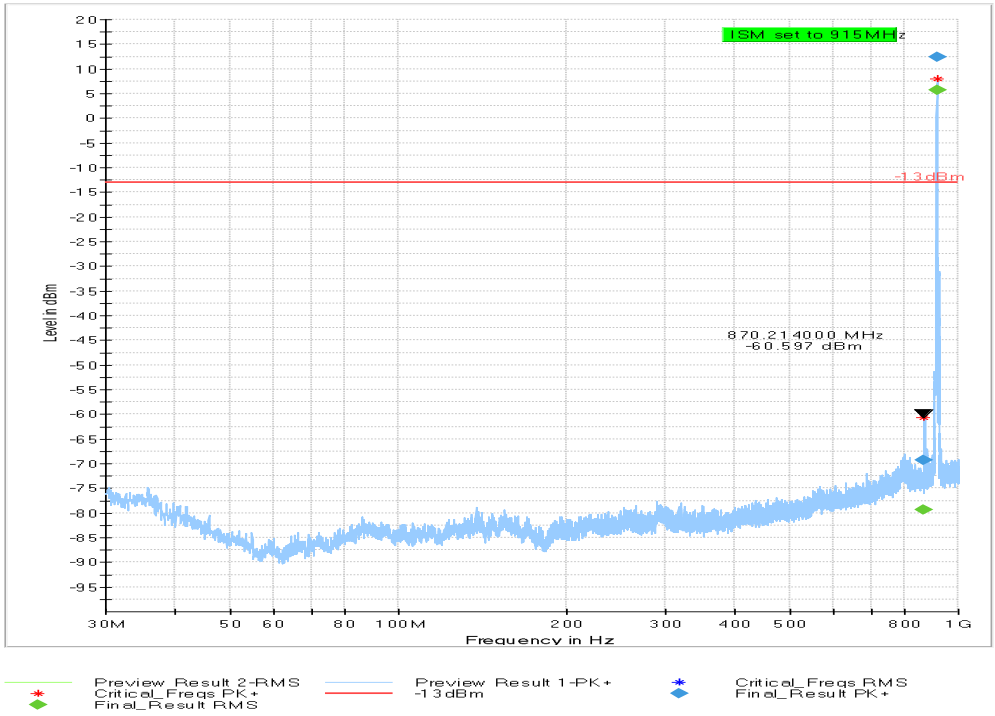
Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
708.223300	-73.73	-13.00	60.73	200.0	100.000	117.0	H	317.0	-103.6
869.134200	-70.34	-13.00	57.34	200.0	100.000	108.0	H	39.0	-101.1
915.183900	13.83	-13.00	-26.83	200.0	100.000	133.0	H	-63.0	-101.0



Plot #27

FCC24_30 MHz to 1 GHz_FDD II_MID_CH_ISM_MID

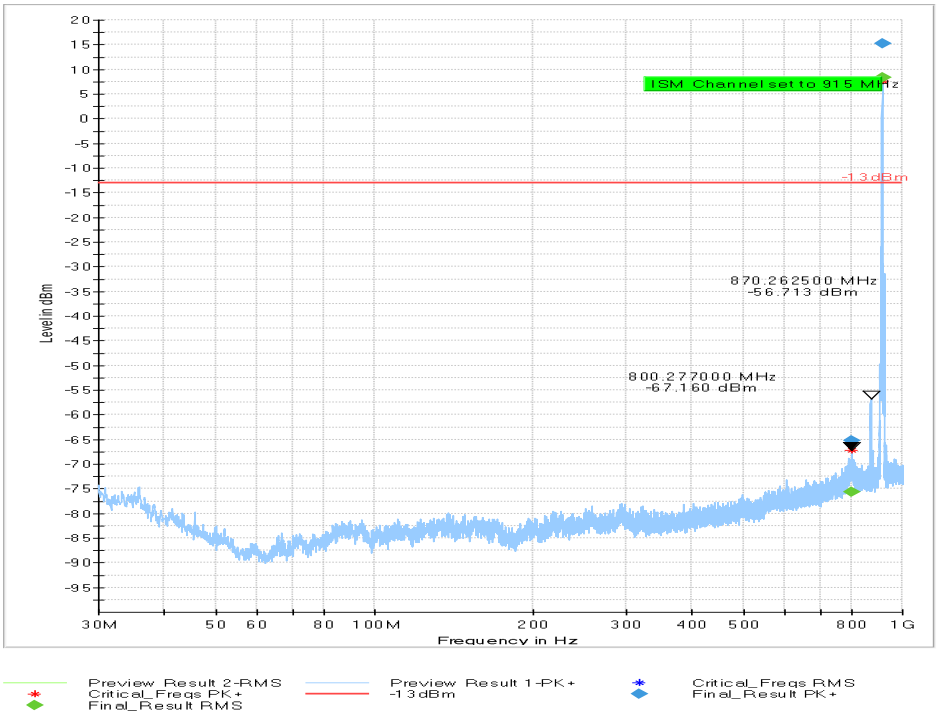
Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
869.481600	-69.24	-	56.24	200.0	100.000	140.0	H	21.0	-101.1
915.181100	12.50	-	-25.50	200.0	100.000	100.0	H	33.0	-101.0



Plot #28

FCC24_30 MHz to 1 GHz_FDD II_HIGH_CH_ISM_MID

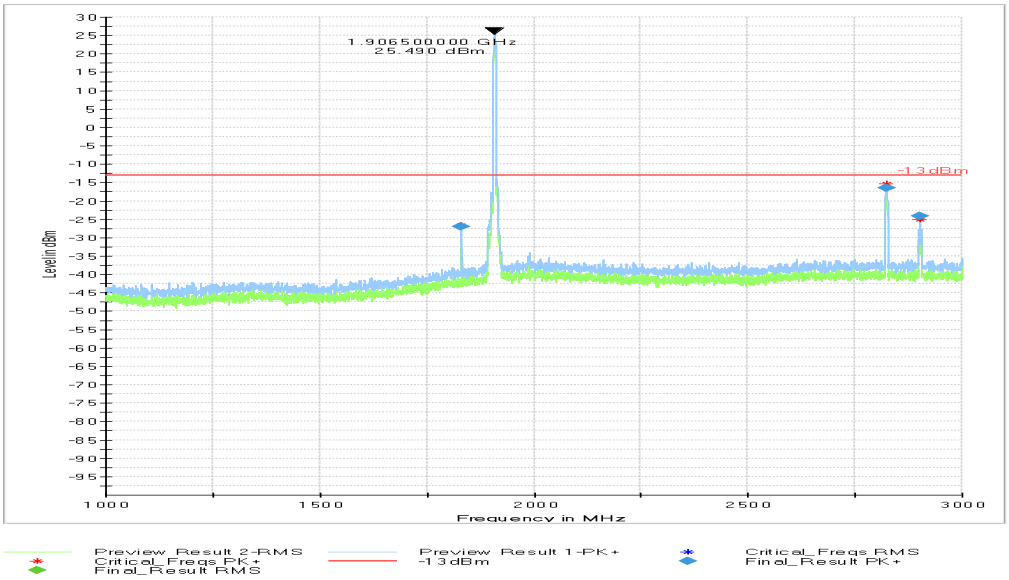
Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
799.772800	-65.29	-13.00	52.29	200.0	100.000	108.0	H	39.0	-101.9
915.176600	15.25	-13.00	-28.25	200.0	100.000	141.0	H	304.0	-101.0
915.176600	---	-13.00	-21.41	200.0	100.000	141.0	H	304.0	-101.0



Plot #29

FCC24_1-3 GHz_FDD II_HIGH CH_ISM_MID

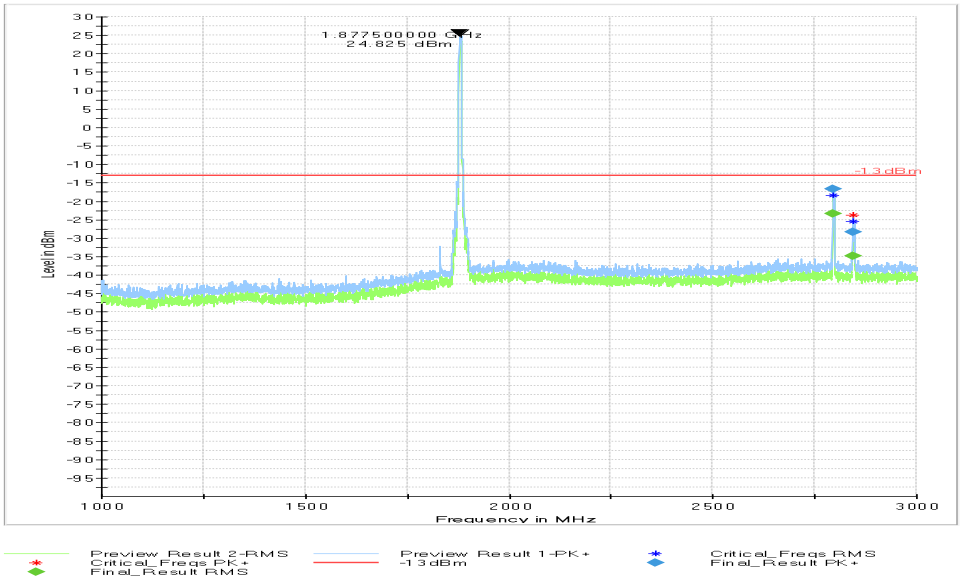
Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1830.388250	-26.96	-13.00	13.96	200.0	1000.000	137.0	H	111.0	-92.8
2823.558000	-16.55	-13.00	3.55	200.0	1000.000	100.0	H	280.0	-91.6
2902.651500	-24.18	-13.00	11.18	200.0	1000.000	100.0	H	322.0	-91.6



Plot #30

FCC24_1-3 GHz_ISM MID_FDDII MID_CH_ISM_MID

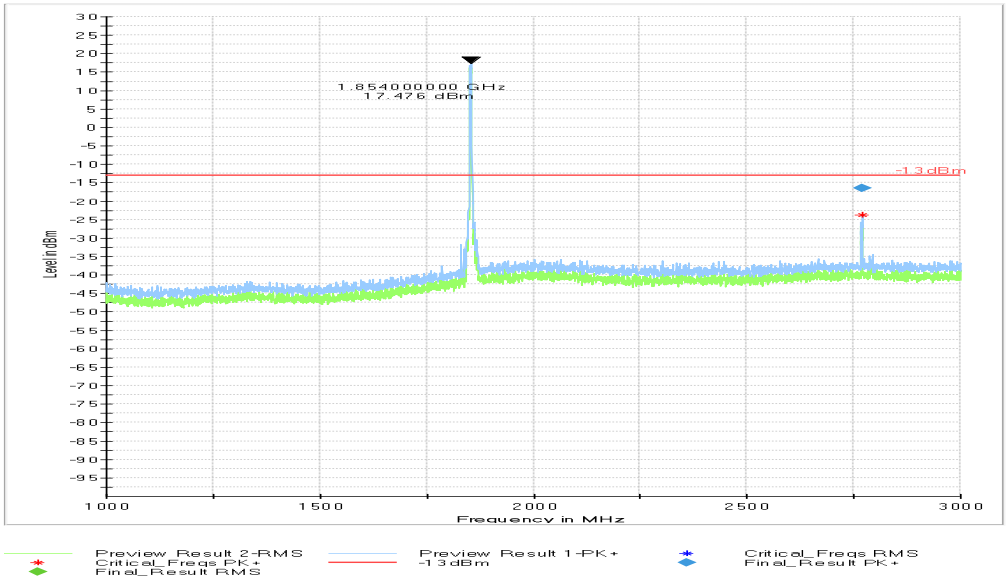
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2796.048250	-23.25	-13.0	10.25	200.0	1000.000	100.0	H	286.0	-91.7
2843.686750	-34.79	-13.0	21.90	200.0	1000.000	100.0	H	266.0	-91.6



Plot #31

FCC24_1-3 GHz_ISM MID_FDDII LOW CH_ISM_MID

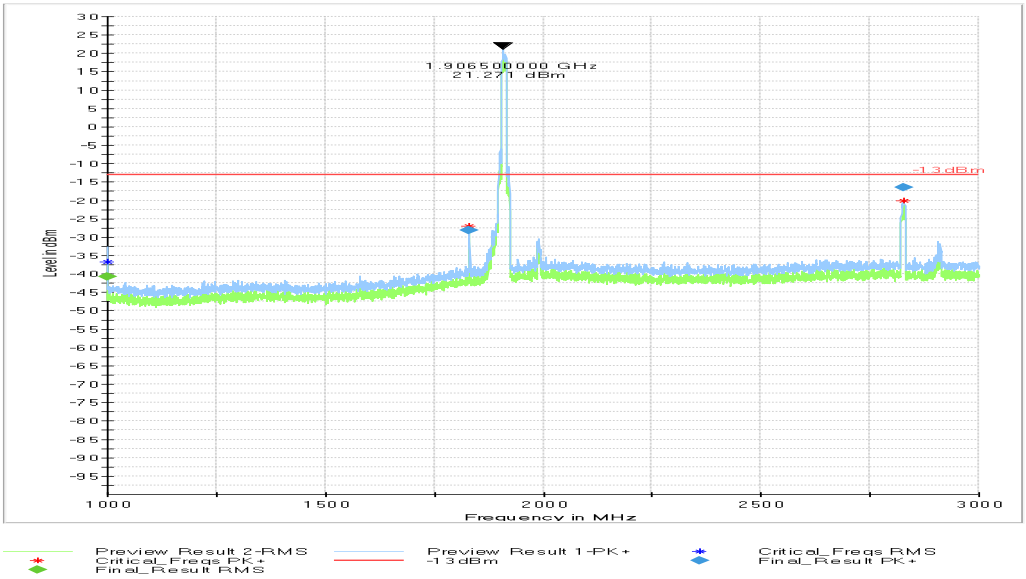
Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
2769.120250	-16.37	-13.00	3.37	200.0	1000.000	117.0	H	-89.0	-91.8



Plot #32

FCC24_1-3 GHz_ISM MID_LTE B2 HIGH CH

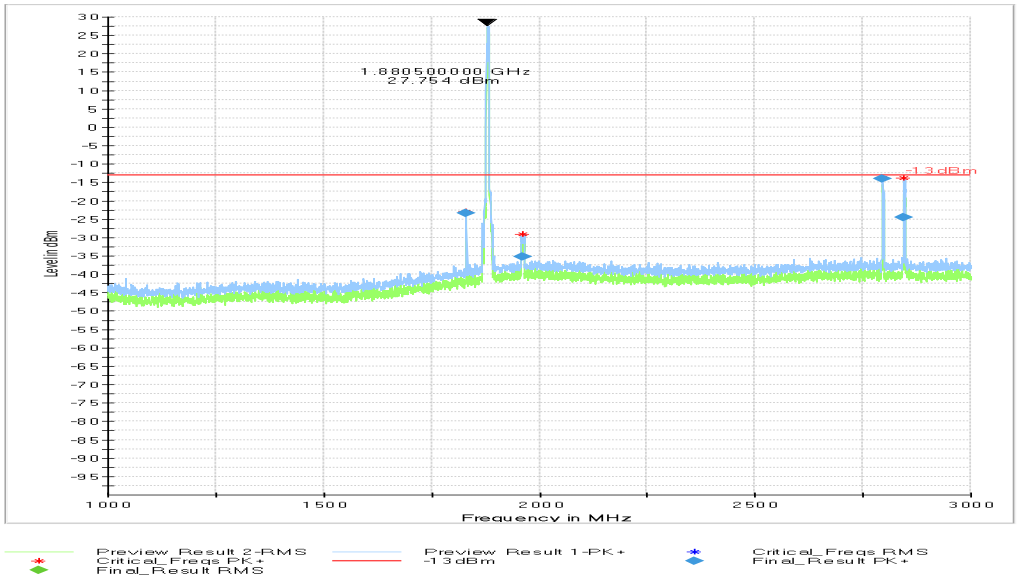
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1000.095875	-40.78	-13.00	27.78	200.0	1000.000	100.0	H	324.0	-97.0
1830.282500	-28.09	-13.00	15.09	200.0	1000.000	100.0	H	57.0	-92.8
2827.371000	-16.39	-13.00	3.39	200.0	1000.000	100.0	H	323.0	-91.6



Plot #33

FCC24_1-3GHz_ISM MID_LTE B2 MID CH

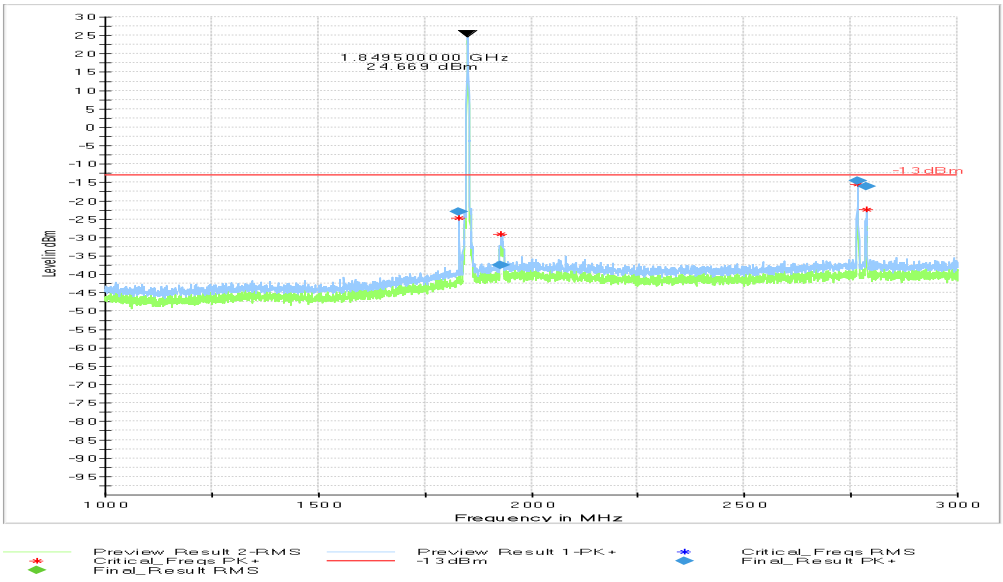
Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1830.359000	-23.29	-13.00	10.29	200.0	1000.000	100.0	H	51.0	-92.8
1961.488750	-35.19	-13.00	22.19	200.0	1000.000	282.0	H	221.0	-91.3
2794.745000	-14.00	-13.00	1.00	200.0	1000.000	100.0	H	52.0	-91.7
2845.532250	-24.54	-13.00	11.54	200.0	1000.000	100.0	H	294.0	-91.6



Plot #34

FCC24_1-3GHz_ISM MID_LTE B2 LOW CH

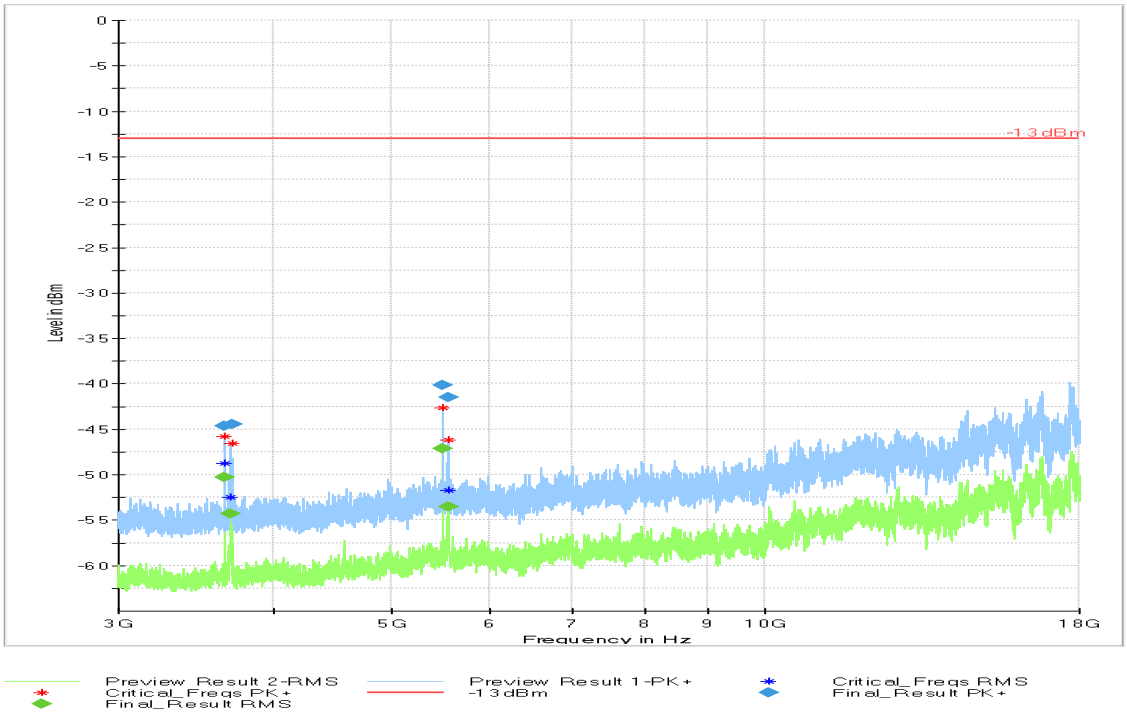
Frequency (MHz)	MaxPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
1830.352500	-22.91	-13.00	9.91	200.0	1000.000	100.0	H	54.0	-92.8
1927.115250	-37.45	-13.00	24.45	200.0	1000.000	231.0	H	135.0	-91.4
2765.446750	-14.47	-13.00	1.47	200.0	1000.000	100.0	H	55.0	-91.8
2785.468500	-16.00	-13.00	3.00	200.0	1000.000	100.0	H	317.0	-91.7



Plot #35

FCC24_3-18GHz_ ISM_MID_LTE B2_LOW CH

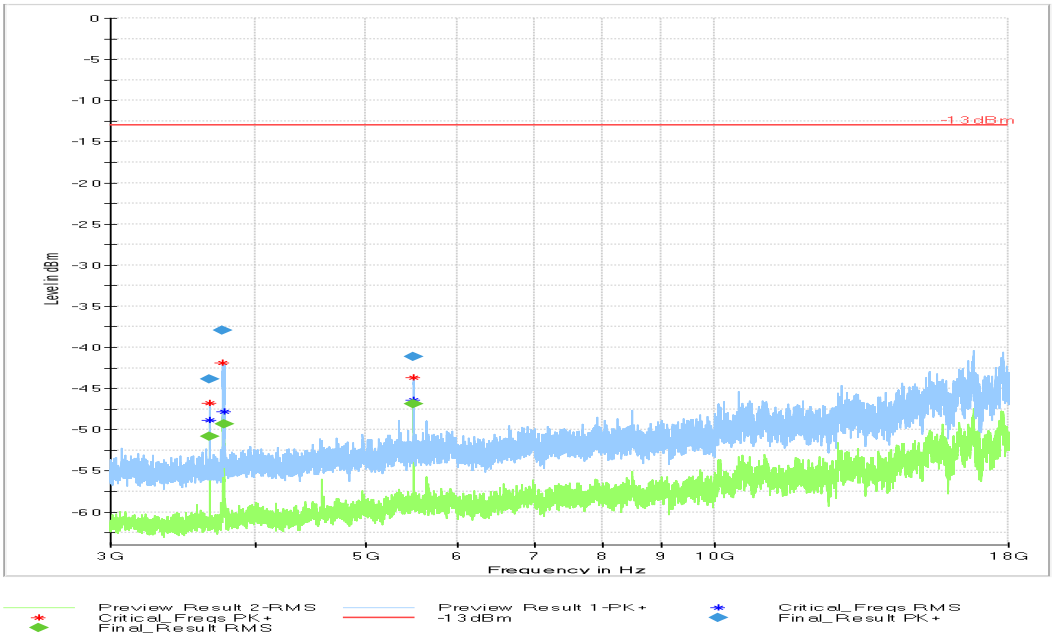
Frequency (MHz)	MaxPeak (dBm)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3659.418000	---	-50.24	---	---	200.0	1000.000	244.0	V	40.0	-129.5
3660.674667	-44.68	---	-13.00	31.68	200.0	1000.000	190.0	V	-2.0	-129.5
3699.932667	---	-54.25	---	---	200.0	1000.000	100.0	H	186.0	-129.5
3707.601333	-44.42	---	-13.00	31.42	200.0	1000.000	133.0	H	181.0	-129.5
5488.905333	-40.13	---	-13.00	27.13	200.0	1000.000	260.0	V	232.0	-125.1
5488.995333	---	-47.14	---	---	200.0	1000.000	262.0	V	217.0	-125.1
5549.603333	---	-53.57	---	---	200.0	1000.000	132.0	H	133.0	-125.3
5550.126000	-41.46	---	-13.00	28.46	200.0	1000.000	100.0	H	133.0	-125.3



Plot #36

FCC24_3-18GHz_ISM MID_LTE_B2 MID CH

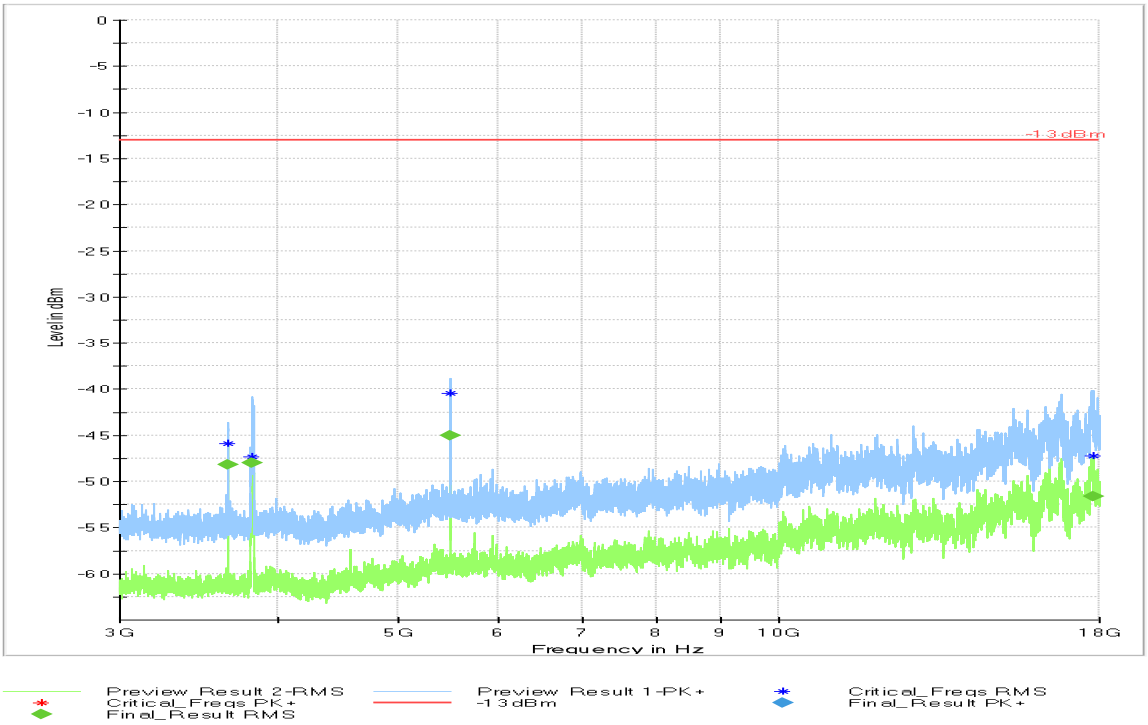
Frequency (MHz)	MaxPeak (dBm)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3659.112000	-43.83	---	-13.00	30.83	200.0	1000.000	218.0	V	34.0	-129.5
3659.318000	---	-50.79	---	---	200.0	1000.000	176.0	V	37.0	-129.5
3752.839333	-37.95	---	-13.00	24.95	200.0	1000.000	134.0	H	196.0	-129.2
3759.985333	---	-49.34	---	---	200.0	1000.000	126.0	H	196.0	-129.1
5488.795333	---	-46.91	---	---	200.0	1000.000	233.0	V	228.0	-125.1
5488.828000	-41.12	---	-13.00	28.12	200.0	1000.000	190.0	V	230.0	-125.1



Plot #37

FCC24_3-18GHz_ISM MID_LTE_B2 HIGH CH

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3660.736000	-48.16	-13.0	47.16	200.0	1000.000	182.0	V	348.0	-129.5
3827.347333	-47.99	-13.0	34.99	200.0	1000.000	153.0	H	182.0	-129.0
5489.051333	-45.04	-13.0	32.04	200.0	1000.000	222.0	V	78.0	-125.1
17778.223333	-51.57	-13.0	38.57	200.0	1000.000	221.0	H	-50.0	-104.7



Plot #38

FCC24_3-18GHz_ISM MID_FDD II HIGH CH

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
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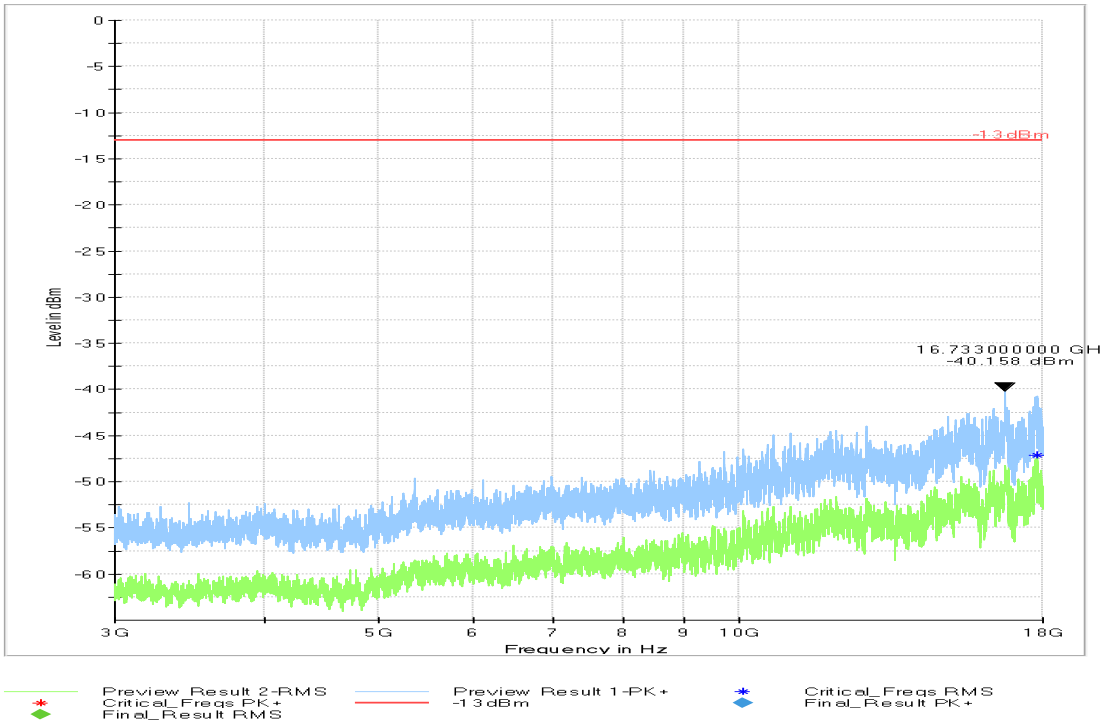
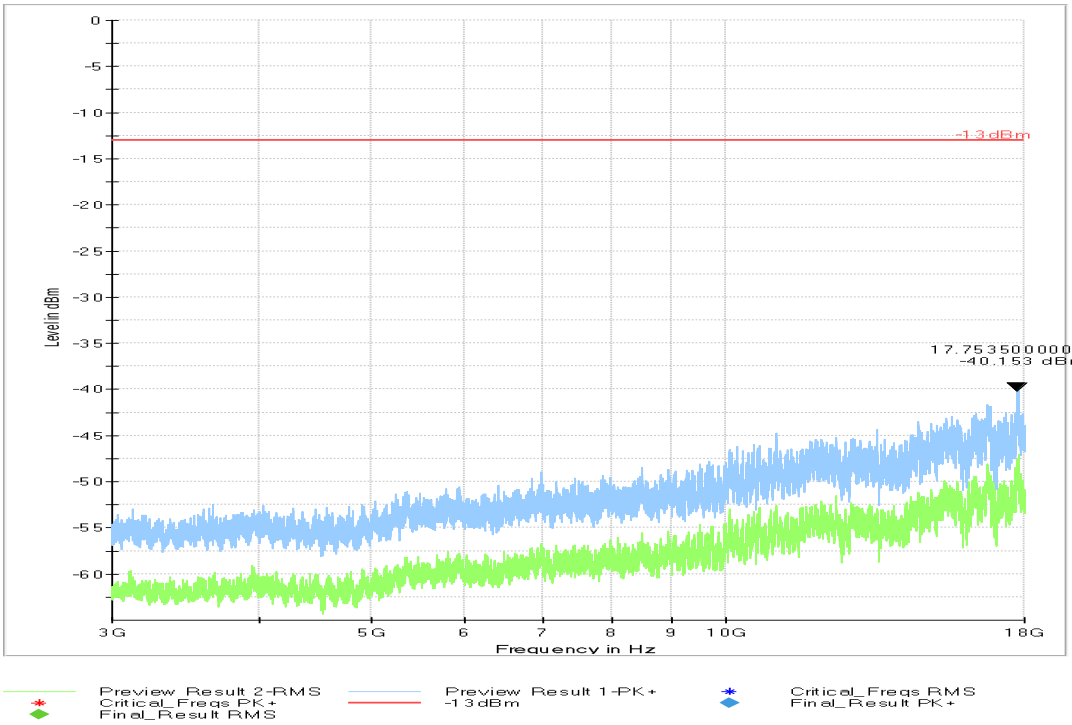


Plot #39

FCC24_3-18GHz_ISM MID_FDD II LOW CH

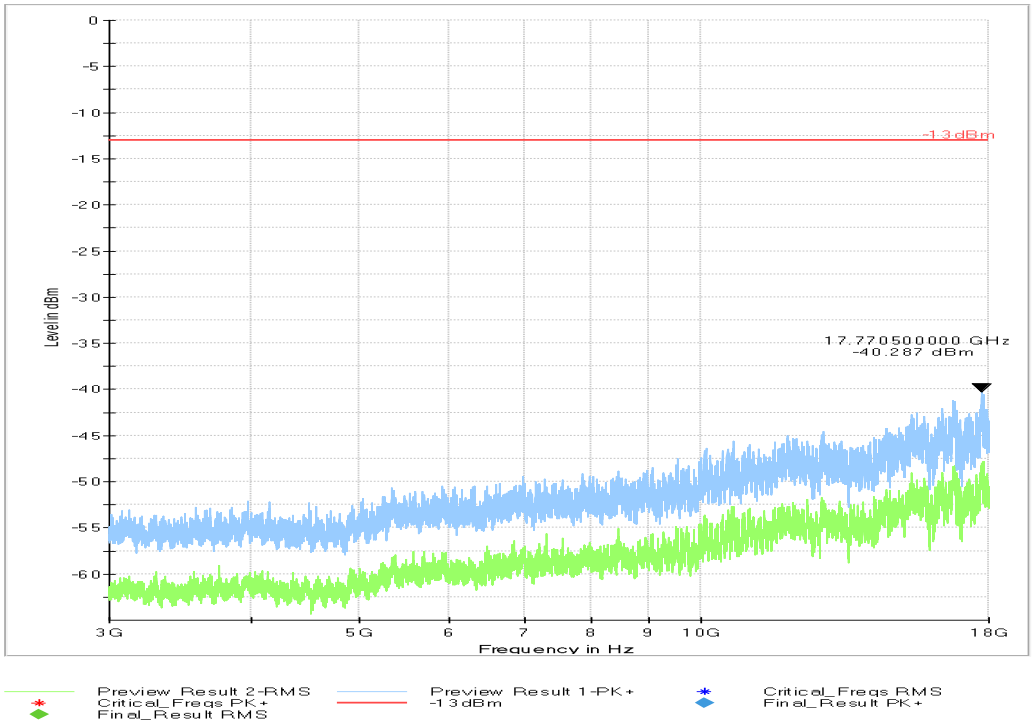
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
---	---	---	---	---	---	---		---	---



Plot #40

FCC24_3-18GHz_ISM MID_FDD II MID CH

Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
---	---	---	---	---	---	---		---	---



7.3.3 FCC Part 27/ RSS-139 Test Data:

Plot #41

FCC27_9kHz-30MHz_LTE B4_MID_CH_ISM_MID

Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
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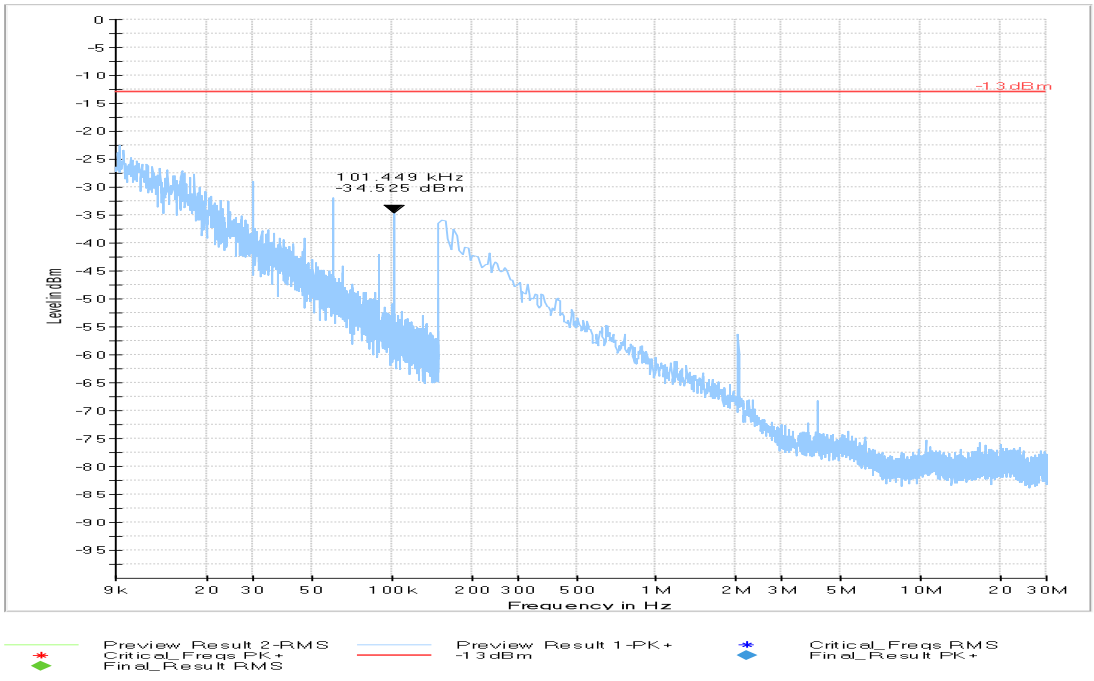

Plot #42

FCC27_9kHz-30MHz_LTE B17_MID_CH_ISM_MID

Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
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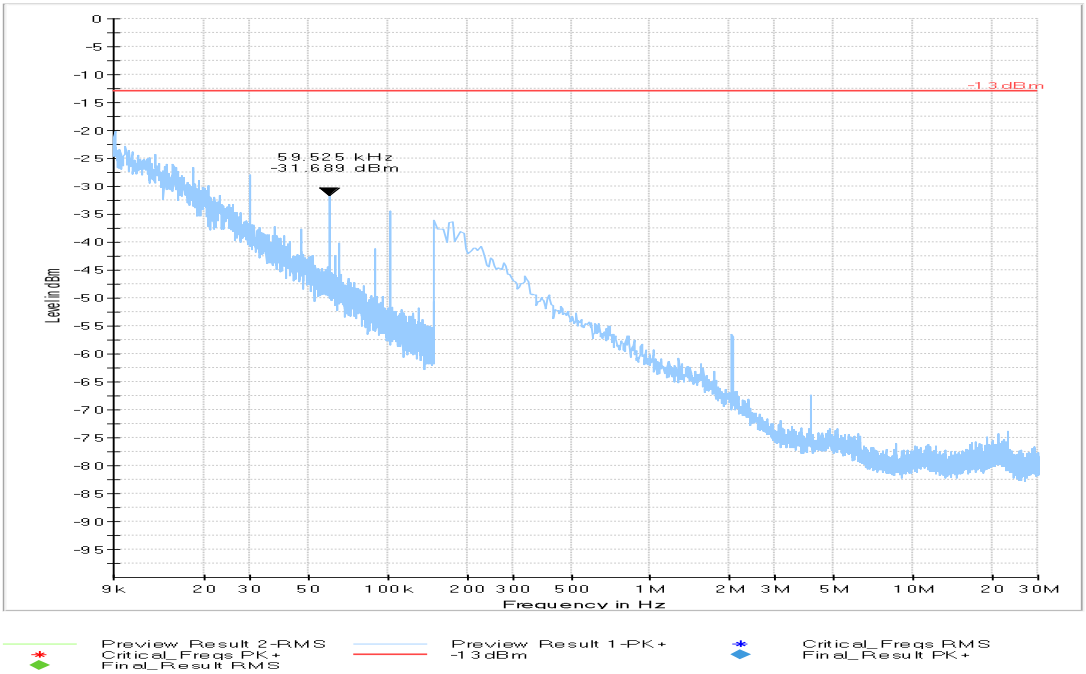
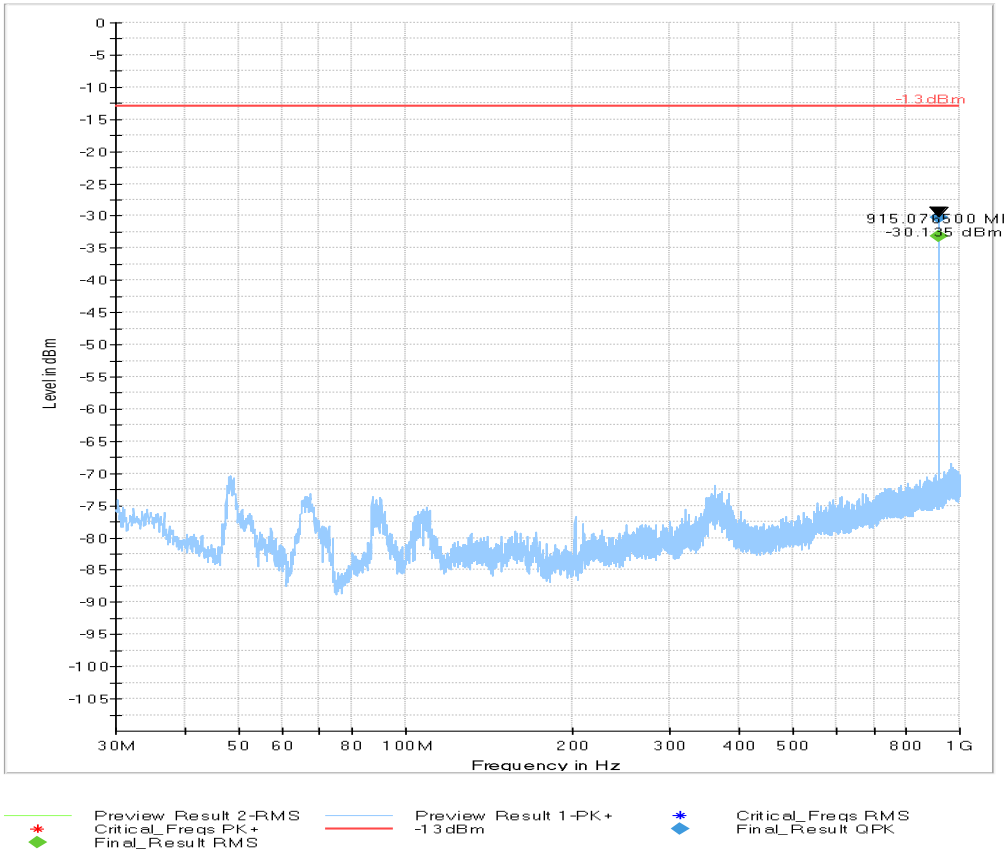


Plot #43

FCC27_30 MHz-1000 MHz_LTE B4_HIGH_CH_ISM_MID

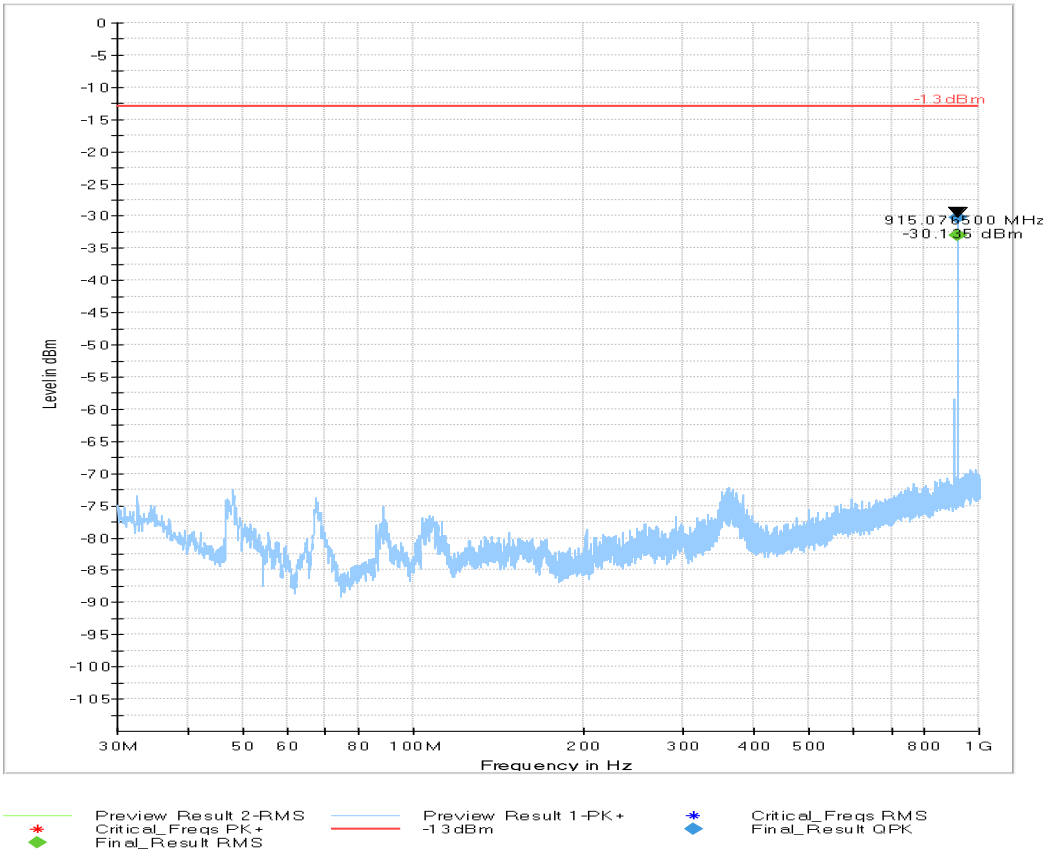
Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
915.044900	-30.29	-13.00	17.29	200.0	100.000	117.0	H	180.0	-101.0



Plot #44

FCC27_30 MHz-1000 MHz_LTE B4_MID_CH_ISM_MID

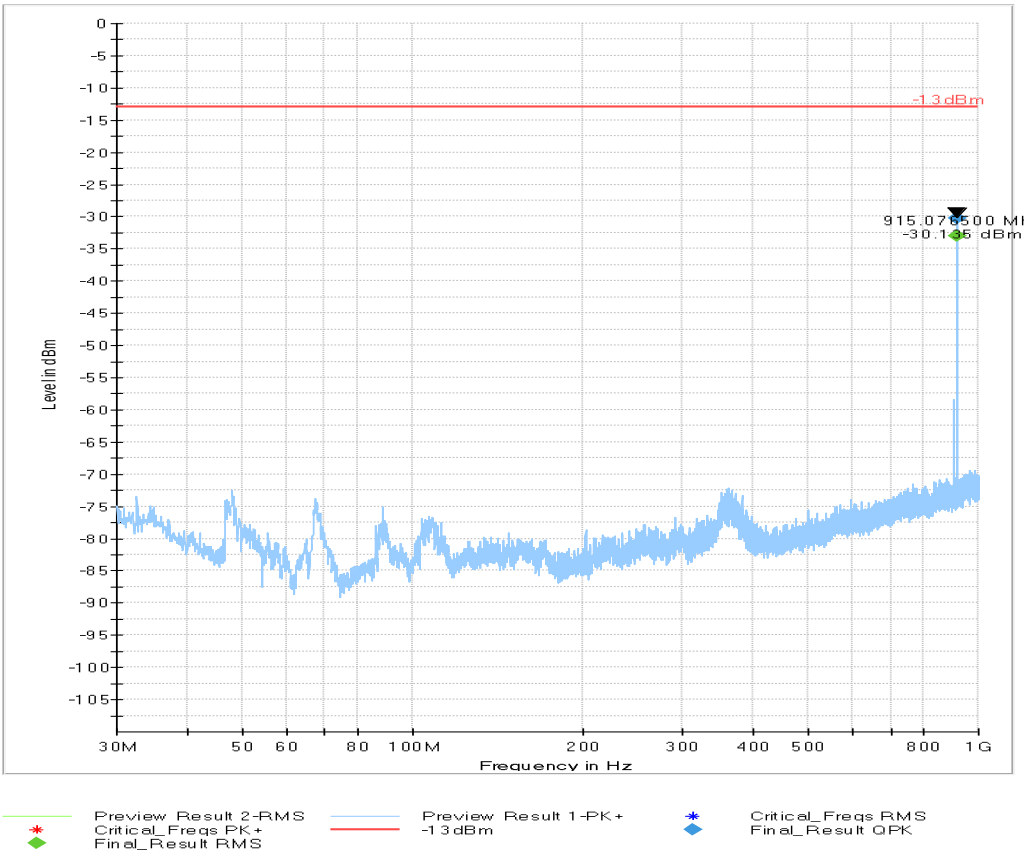
Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
-----	-----	------	------	------	-------	------		-------	------



Plot #45

FCC_27_30 MHz-1000 MHz_LTE B4_LOW_CH_ISM_MID

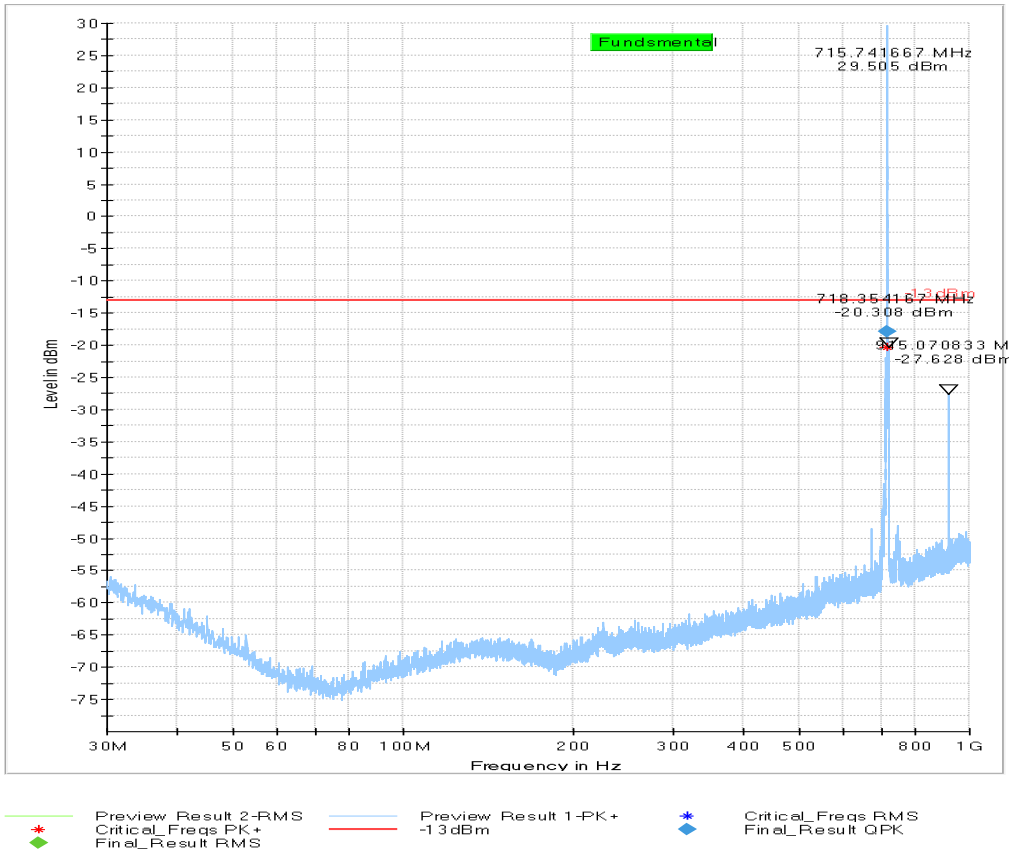
Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
914.947900	-30.25	-13.00	17.25	200.0	100.000	117.0	H	178.0	-101.0



Plot #46

FCC_27_30 MHz-1000 MHz_LTE B17_HIGH_ CH_ISM_MID

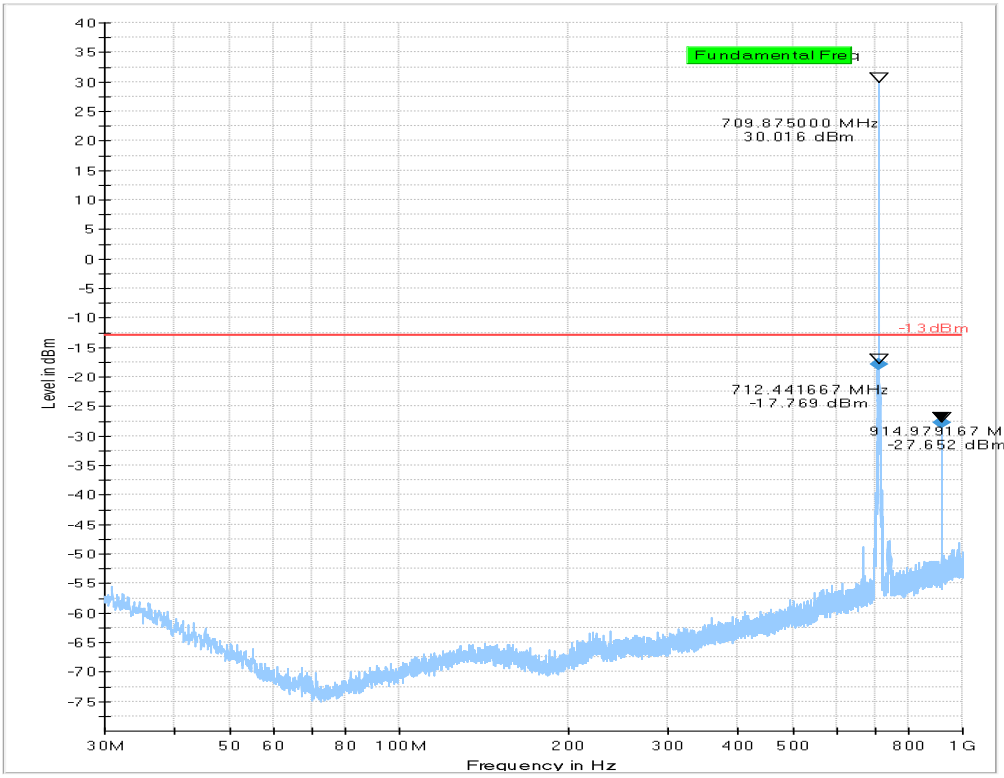
Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
717.363834	-17.80	-13.00	4.80	500.0	100.000	187.0	H	20.0	-70.6



Plot #47

FCC_27_30 MHz-1000 MHz_LTE B17_MID_ CH_ISM_MID

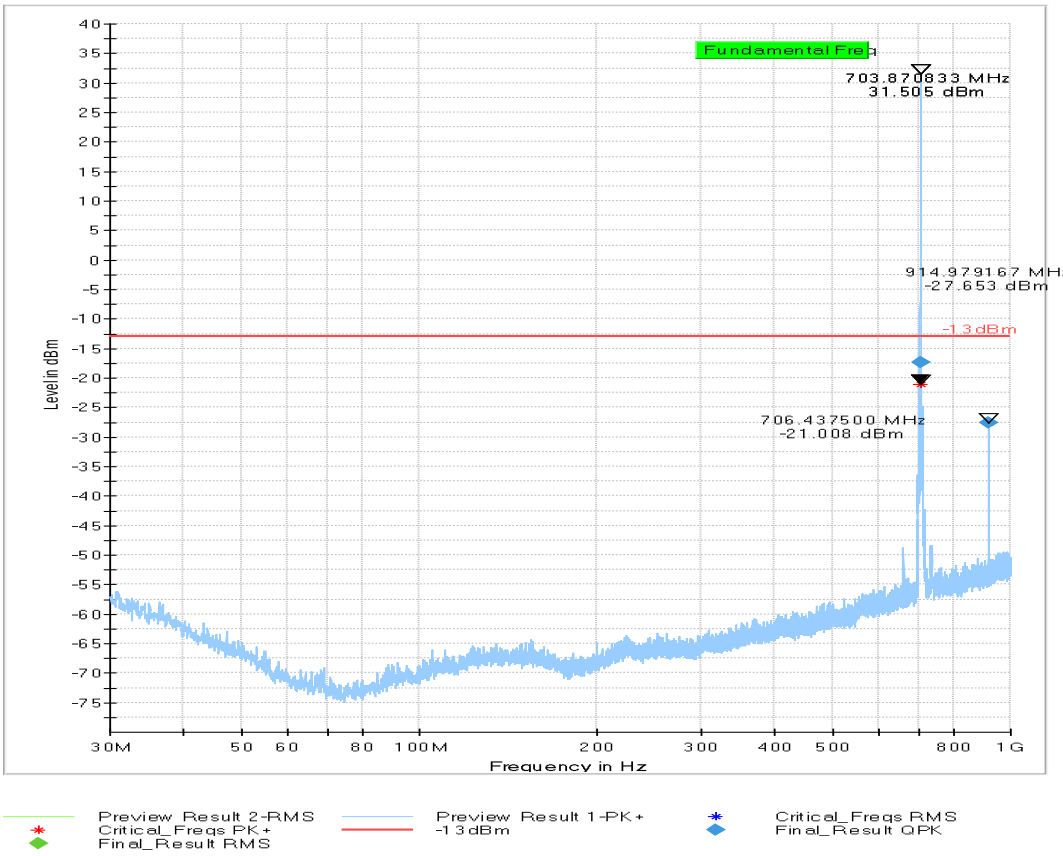
Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
711.474334	-17.96	-13.00	4.96	500.0	100.000	100.0	H	18.0	-70.8
914.941000	-27.72	-13.00	14.72	500.0	100.000	100.0	H	95.0	-68.4



Plot #48

FCC_27_30 MHz-1000 MHz_LTE B17_LOW_ CH_ISM_MID

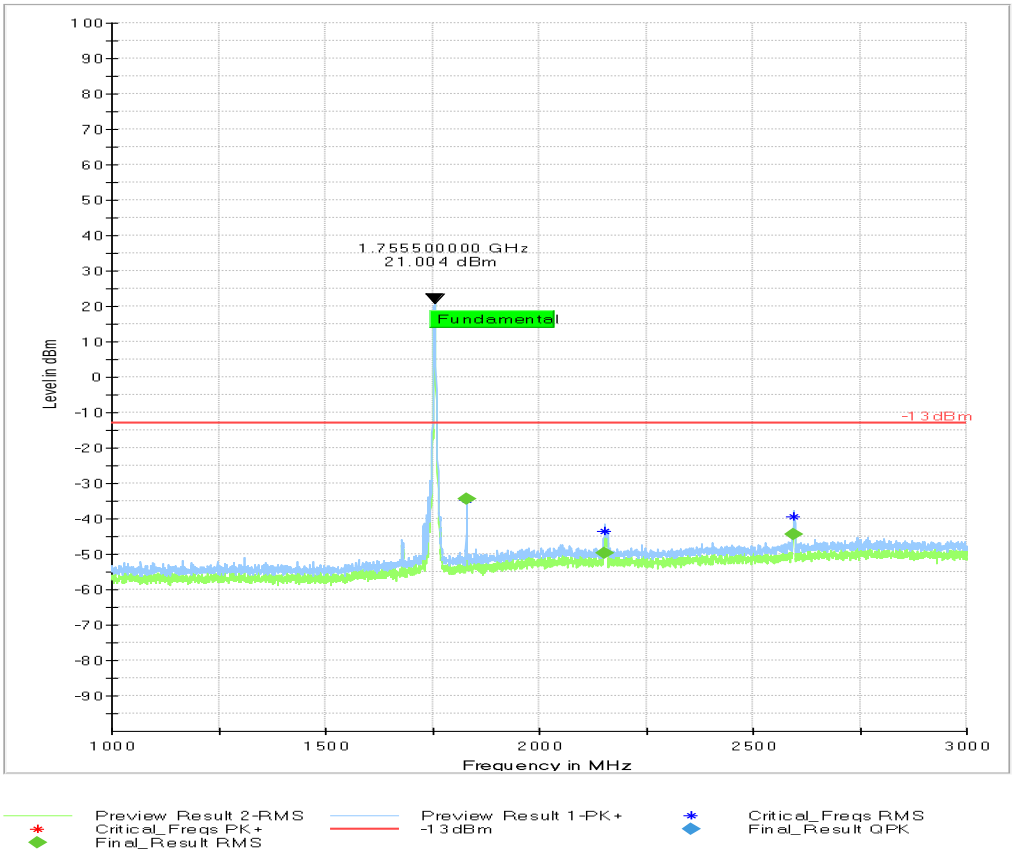
Frequency (MHz)	QuasiPeak (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
705.444333	-17.35	-13.00	4.35	500.0	100.000	100.0	H	20.0	-70.9
914.945834	-27.58	-13.00	14.58	500.0	100.000	100.0	H	96.0	-68.4



Plot #49

FCC_27_1-3 GHz_LTE B4_HIGH CH_ISM_LOW

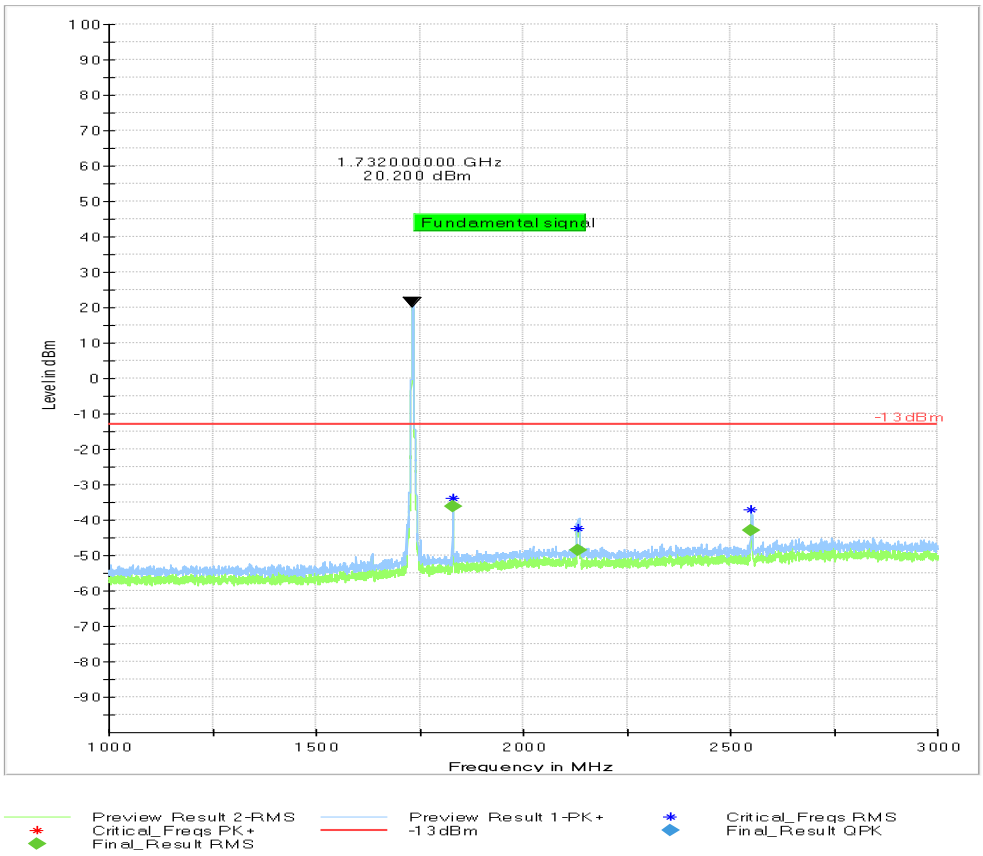
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1830.100000	-34.38	-13	21.38	200.0	1000.000	156.0	H	99.0
2153.420000	-49.60	-13	36.00	200.0	1000.000	100.0	V	69.0
2595.985000	-44.44	-13	31.44	200.0	1000.000	100.0	V	317.0



Plot #50

FCC_27_1-3 GHz_LTE B4_MID CH

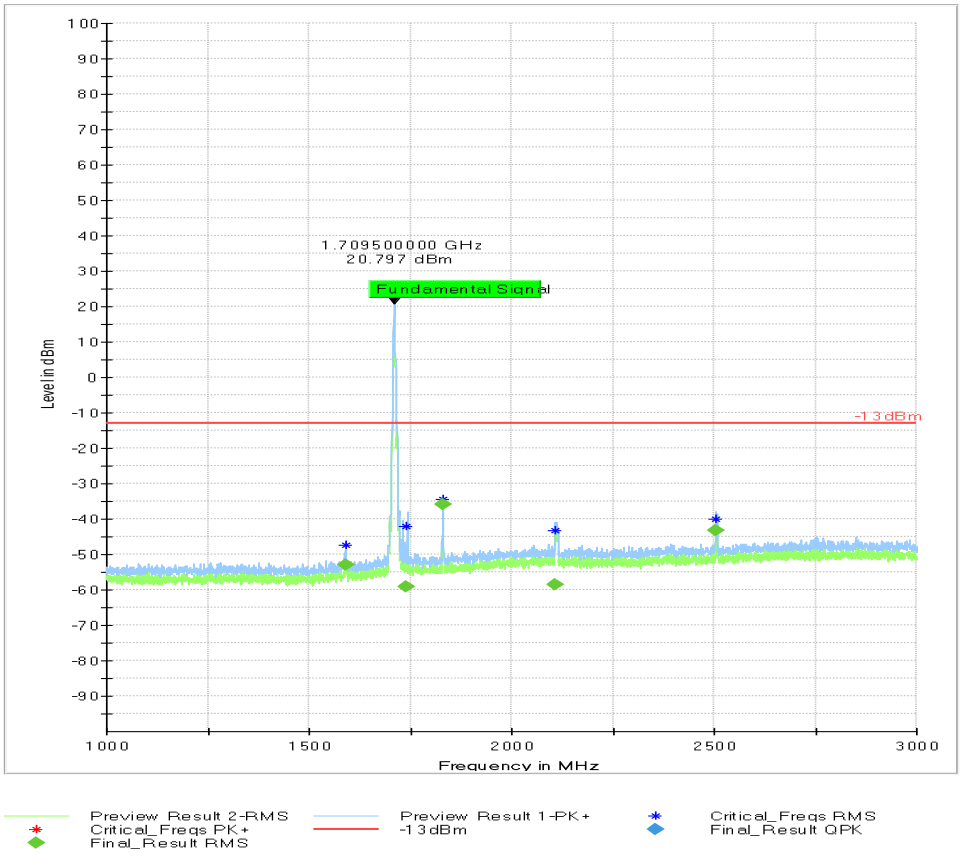
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1830.080000	-36.15	-13.00	23.15	200.0	1000.000	147.0	H	-79.0
2131.595000	-48.40	-13.00	35.40	200.0	1000.000	100.0	H	142.0
2550.280000	-43.03	-13.00	30.03	200.0	1000.000	100.0	V	317.0



Plot #51

FCC_27_1-3 GHz_LTE B4_LOW CH_ISM_MID

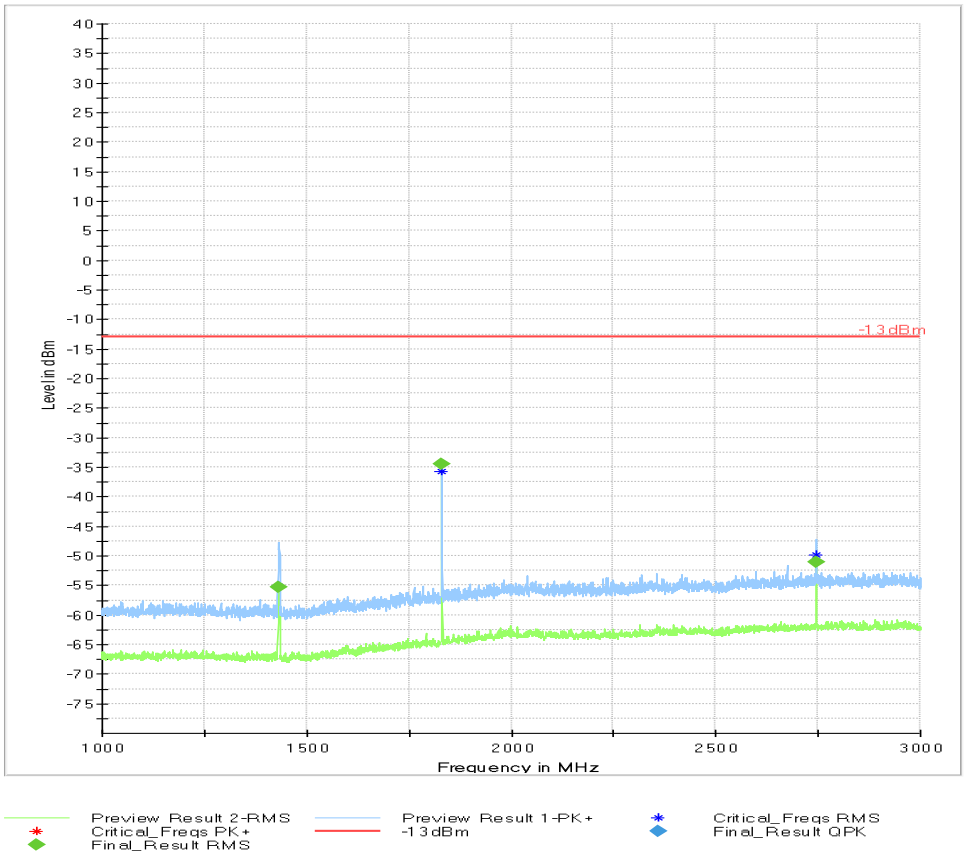
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1589.260000	-52.80	-13.00	39.80	200.0	1000.000	100.0	V	292.0
1738.660000	-59.07	-13.00	46.07	200.0	1000.000	100.0	V	265.0
1829.980000	-35.77	-13.00	22.77	200.0	1000.000	100.0	V	300.0
2109.275000	-58.64	-13.00	45.64	200.0	1000.000	117.0	H	256.0
2505.205000	-43.09	-13.00	30.00	200.0	1000.000	100.0	V	315.0



Plot #52

FCC_27_1-3 GHz_LTE B17_HIGH CH_ISM_MID

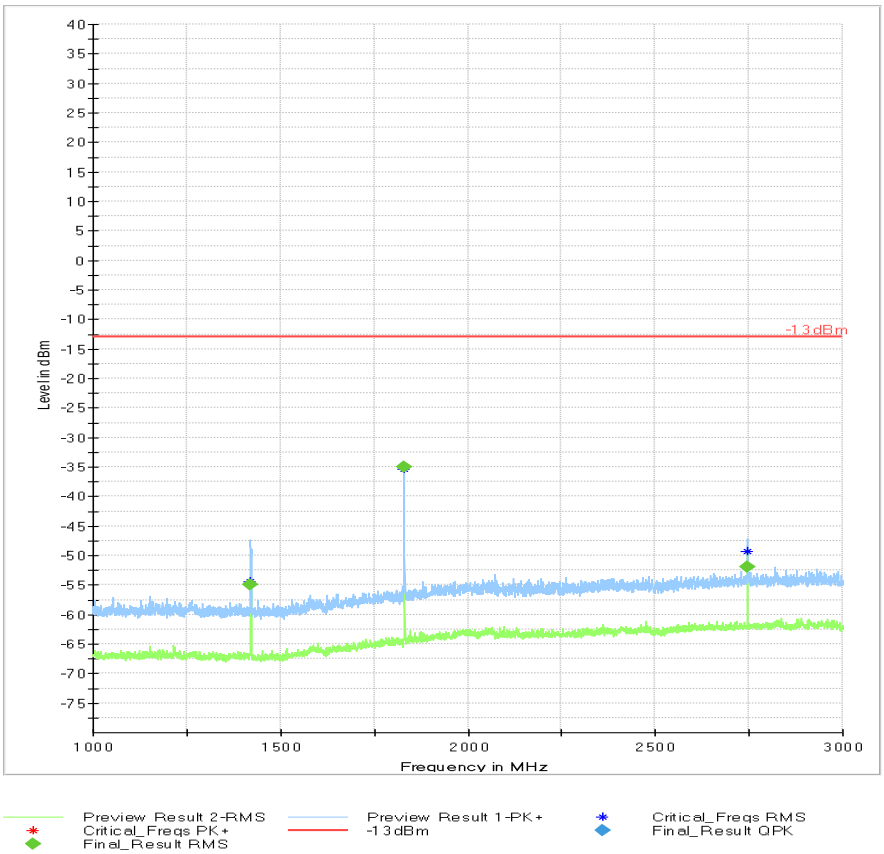
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1432.975000	-55.32	-13.00	42.32	500.0	1000.000	177.0	V	200.0
1829.905000	-34.47	-13.00	21.47	500.0	1000.000	175.0	V	138.0
2744.930000	-51.12	-13.00	38.12	500.0	1000.000	219.0	H	177.0



Plot #53

FCC_27_1-3 GHz_LTE B17_MID CH_ISM_MID

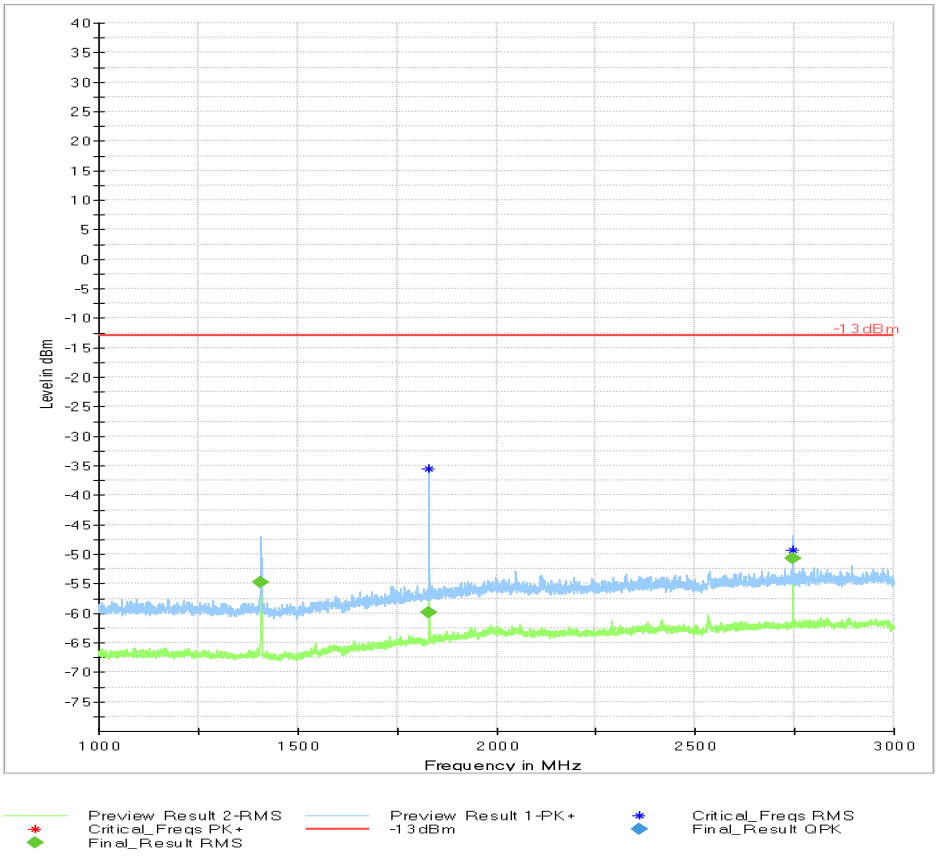
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1420.480000	-54.91	-13.00	41.91	500.0	1000.000	165.0	V	203.0
1829.910000	-34.92	-13.00	21.92	500.0	1000.000	175.0	V	137.0
2744.780000	-51.98	-13.00	38.98	500.0	1000.000	131.0	H	170.0



Plot #54

FCC_27_1-3 GHz_LTE B17_LOW CH_ISM_MID

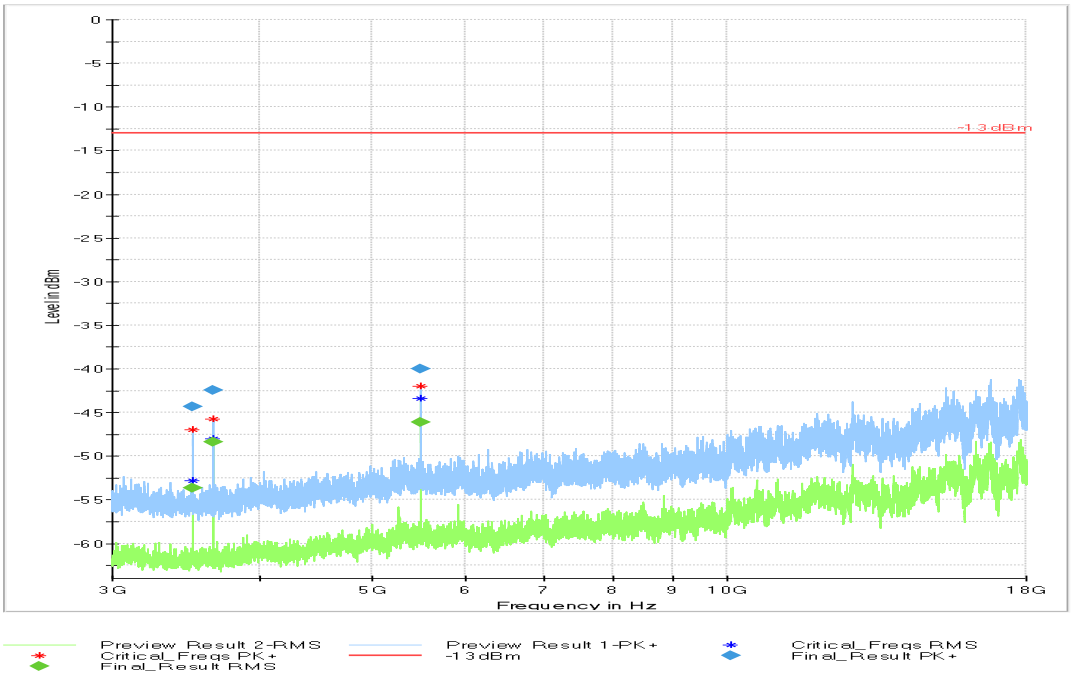
Frequency (MHz)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
1407.180000	-54.78	-13.00	41.78	500.0	1000.000	230.0	V	235.0
1829.900000	-59.89	-13.00	46.89	500.0	1000.000	166.0	V	137.0
2745.000000	-50.67	-13.00	37.67	500.0	1000.000	165.0	H	177.0



Plot #55

FCC_27_3-18 GHz_LTE B4_HIGH CH_ISM_MID

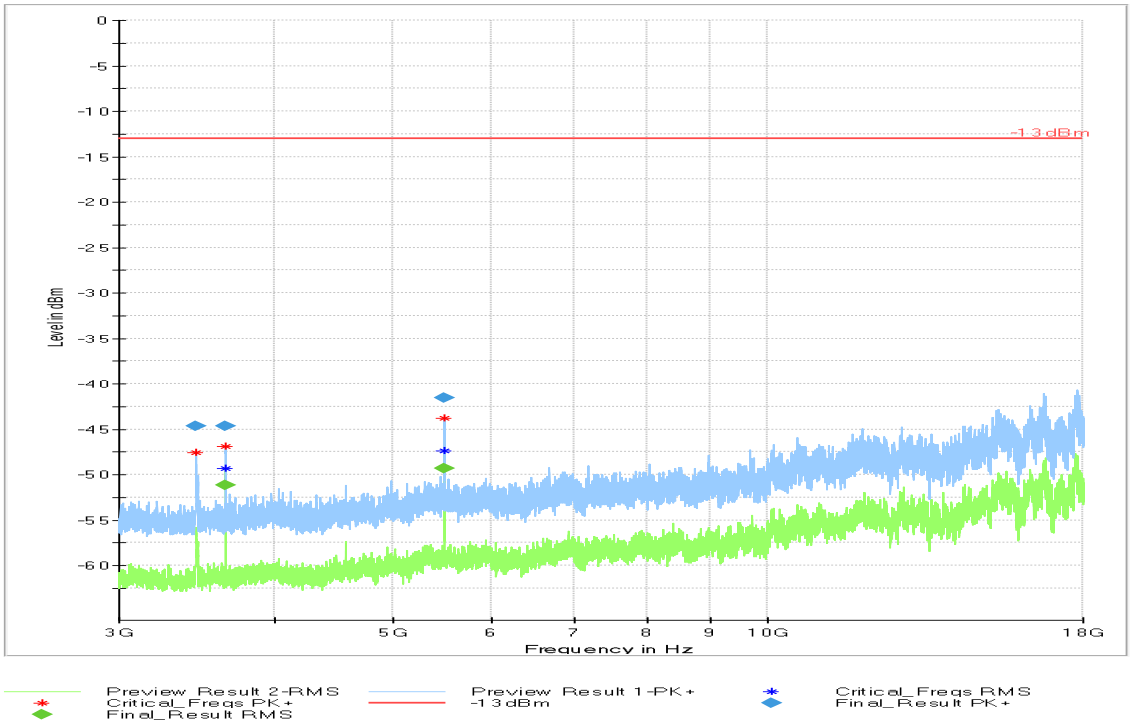
Frequency (MHz)	MaxPeak (dBm)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3509.166667	---	-53.67	---	---	200.0	1000.000	135.0	H	193.0	-130.0
3510.932667	-44.30	---	-13.00	31.30	200.0	1000.000	124.0	H	184.0	-130.0
3659.260667	-42.48	---	-13.00	29.48	200.0	1000.000	184.0	V	-4.0	-129.5
3660.592667	---	-48.41	---	---	200.0	1000.000	165.0	V	357.0	-129.5
5488.941333	---	-46.12	---	---	200.0	1000.000	275.0	V	38.0	-125.1
5488.976667	-39.96	---	-13.00	26.96	200.0	1000.000	275.0	V	38.0	-125.1



Plot #56

FCC_27_3-18 GHz_LTE B4_MID CH_ISM_MID

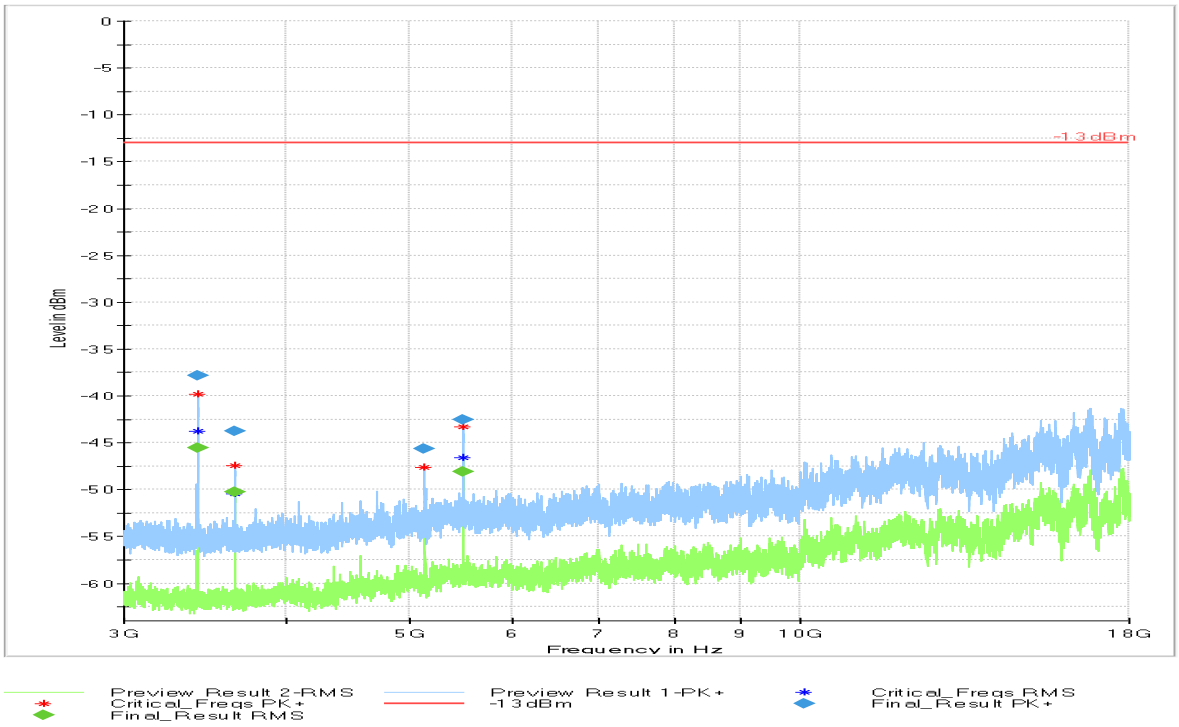
Frequency (MHz)	MaxPeak (dBm)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3418.861333	---	-45.56	---	---	200.0	1000.000	100.0	H	196.0	-130.5
3420.086000	-37.81	---	-13.00	24.81	200.0	1000.000	100.0	H	195.0	-130.5
3659.320667	-43.76	---	-13.00	30.76	200.0	1000.000	265.0	V	30.0	-129.5
3659.386667	---	-50.24	---	---	200.0	1000.000	204.0	V	47.0	-129.5
5130.158667	-45.67	---	-13.00	32.67	200.0	1000.000	275.0	H	124.0	-126.8
5488.853333	-42.54	---	-13.00	29.54	200.0	1000.000	255.0	V	32.0	-125.1
5489.067333	---	-48.11	---	---	200.0	1000.000	258.0	V	34.0	-125.1



Plot #57

FCC_27_3-18 GHz_LTE B4_LOW CH_ISM_MID

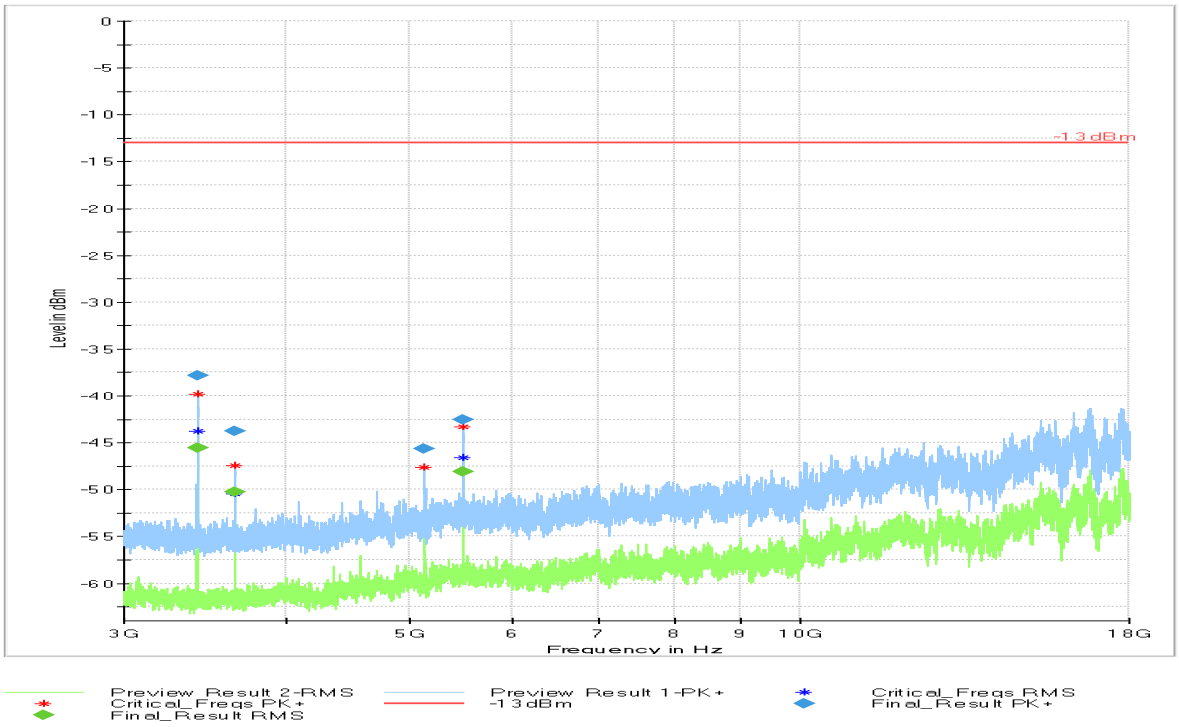
Frequency (MHz)	MaxPeak (dBm)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3460.806667	-44.68	---	-13.00	31.68	200.0	1000.000	134.0	H	203.0	-130.4
3659.399333	---	-51.18	---	---	200.0	1000.000	141.0	V	41.0	-129.5
3659.867333	-44.66	---	-13.00	31.66	200.0	1000.000	275.0	V	31.0	-129.5
5488.826000	---	-49.31	---	---	200.0	1000.000	126.0	V	88.0	-125.1
5488.869333	-41.50	---	-13.00	28.50	200.0	1000.000	108.0	V	87.0	-125.1



Plot #58

FCC_27_3-9GHz_LTE B17_HIGH CH_ISM_MID

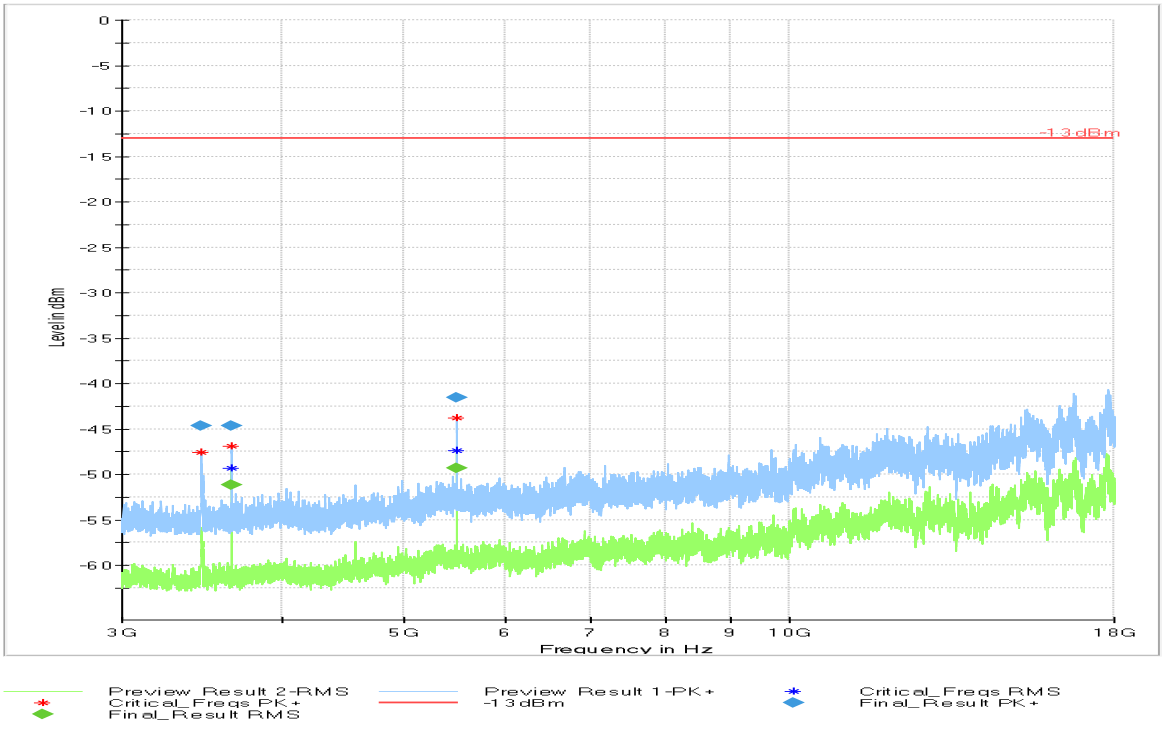
Frequency (MHz)	MaxPeak (dBm)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3460.806667	-44.68	---	-13.00	31.68	200.0	1000.000	134.0	H	203.0	-130.4
3659.399333	---	-51.18	---	---	200.0	1000.000	141.0	V	41.0	-129.5
3659.867333	-44.66	---	-13.00	31.66	200.0	1000.000	275.0	V	31.0	-129.5
5488.826000	---	-49.31	---	---	200.0	1000.000	126.0	V	88.0	-125.1
5488.869333	-41.50	---	-13.00	28.50	200.0	1000.000	108.0	V	87.0	-125.1



Plot #59

FCC_27_3-9GHz_LTE B17_MID CH_ISM_MID

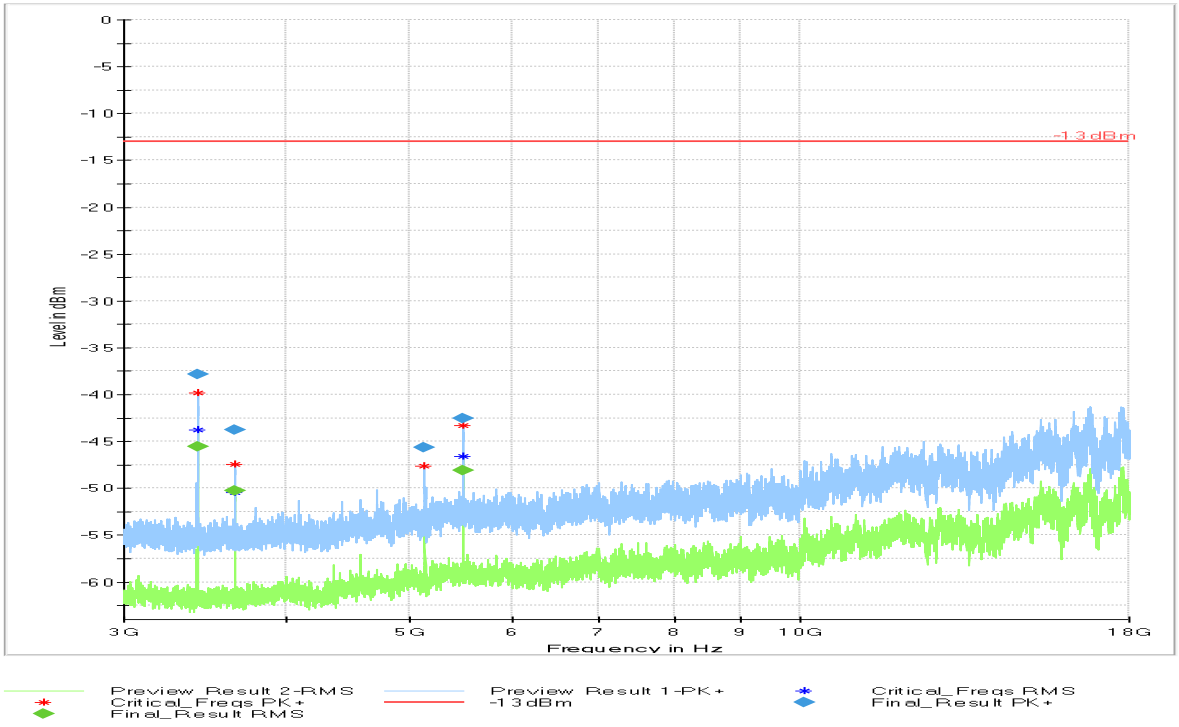
Frequency (MHz)	MaxPeak (dBm)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3460.806667	-44.68	---	-13.00	31.68	200.0	1000.000	134.0	H	203.0	-130.4
3659.399333	---	-51.18	---	---	200.0	1000.000	141.0	V	41.0	-129.5
3659.867333	-44.66	---	-13.00	31.66	200.0	1000.000	275.0	V	31.0	-129.5
5488.826000	---	-49.31	---	---	200.0	1000.000	126.0	V	88.0	-125.1
5488.869333	-41.50	---	-13.00	28.50	200.0	1000.000	108.0	V	87.0	-125.1



Plot #60

FCC_27_3-9GHz_LTE B17_LOW CH_ISM_MID

Frequency (MHz)	MaxPeak (dBm)	RMS (dBm)	Limit (dBm)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
3460.806667	-44.68	---	-13.00	31.68	200.0	1000.000	134.0	H	203.0	-130.4
3659.399333	---	-51.18	---	---	200.0	1000.000	141.0	V	41.0	-129.5
3659.867333	-44.66	---	-13.00	31.66	200.0	1000.000	275.0	V	31.0	-129.5
5488.826000	---	-49.31	---	---	200.0	1000.000	126.0	V	88.0	-125.1
5488.869333	-41.50	---	-13.00	28.50	200.0	1000.000	108.0	V	87.0	-125.1



8 Test setup photos

A few Test Setup photos are included in supporting file name: "EMC_TELUL_070_17001_FCC_22_24_27.pdf"

9 Test Equipment And Ancillaries Used For Testing

Item Name	Equipment Type	Manufacturer	Model	Serial #	Calibration Cycle	Last Calibration Date
Antenna Biconilog 3142E	Biconlog Antenna	EMCO	3142E	166067	3 years	6/27/2017
Antenna Loop 6512	Loop Antenna	ETS Lindgren	6512	49838	3 years	7/28/2017
Antenna Horn 3115 SN 35111	Horn Antenna	EMCO	3115	35111	3 years	7/24/2015
Antenna Horn 3116	Horn Antenna	ETS Lindgren	3116	70497	3 years	10/31/2017
Digital Barometer	Compact Digital Barometer	Control Company	35519-055	91119547	2 Years	6/8/2017
CMU 200	Digital Radio Comm. Tester	R&S	CMU 200	101821	3 Years	7/6/2017
CMW500	Digital Radio Comm. Tester	R&S	CMW500	109879	3 Years	7/1/2017
FSU26	Spectrum Analyzer	R&S	FSU26	200065	3 years	7/3/2017
ESU40	Spectrum Analyzer	R&S	ESU40	100251	3 years	7/10/2017
Thermometer Humidity TM320	Thermometer Humidity	Dickson	TM320	5280063	1 Year	11/2/2017
Temperature/Humidity Chamber	Thermal Chamber	Testequity	I23H	N/A	N/A	N/A

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.

10 Revision History

Date	Report Name	Changes to report	Report prepared by
2018-03-16	EMC_ Project Number _FCC_22_24_27	Initial Version	Chaman Bhardwaj