FCC / ISED Test Report

For:
Telular Corporation

Model Name:
ST100

Product Description:
Telematic Gateway for Communicating Measurement Data

FCC ID: MFTST1002
ISED: 2175D-ST1001

Applied Rules and Standards:
47 CFR Part 15.247 (DTS)
RSS-247 Issue 4 (DTS) & RSS-Gen Issue 5

REPORT #: EMC_TELUL_232_25001_ISM

DATE: 2025-10-30

IC recognized # 3462B

CETECOM **Inc.**
411 Dixon Landing Road ◆ Milpitas, CA 95035 ◆ U.S.A.
Phone: + 1 (408) 586 6200 ◆ Fax: + 1 (408) 586 6299 ◆ E-mail: contact@cetecom.com ◆ http://www.cetecom.com
CETECOM Inc. is a Delaware Corporation with Corporation number: 2905571

TABLE OF CONTENTS

1 Assessment

The following device was evaluated against the applicable criteria specified in FCC rules Parts 15.247 of Title 47 of the Code of Federal Regulations and the relevant ISED Canada standard RSS-247.

There were no additions, deviations, or exclusions made from the test method.

Company Name	Product Description	Model No.
Telular Corporation	Telematic Gateway for Communicating Measurement Data	ST100

Report Authorized by:

Responsible for testing Laboratory:

Date	Section	Name	Signature
2025-10-30	Compliance	Alvin, Ilarina (Director of EMC Services)	Alvin ILARINA Digitally signed by Alvin ILARINA Date: 2025.11.04 14:05:13 -08'00'

Responsible for the Report:

Date	Section	Name	Signature
2025-10-30	Compliance	Art Thammanavarat (Lead Engineer)	Art Thammanavarat Digitally signed by: Art Thammanavarat DN: CN = Art Thammanavarat email = art.thammanavarat@cetecom.com C = AD Date: 2025.10.30 16:53:37 -07'00'

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
EMC Lab Manager:	Alvin, Ilarina
Responsible Project Leader:	Jayalakshmi, Sekar

2.2 Identification of the Client

Client's Name:	Telular Corporation
Street Address:	3225 Cumberland Blvd., Suite 300
City/Zip Code	Atlanta, GA 30339
Country	USA

2.3 Identification of the Manufacturer

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

3 Equipment Under Test (EUT)

3.1 EUT Specifications

Model No	ST100
HW Version	B
SW Version	v2.60
FCC-ID	MFTST1002
ISED:	2175D-ST1001
HVIN:	ST1002
PMN:	SkyTank
Frequency Range / number of channels:	ISM900: 8 channels - 905MHz, 907.2MHz, 909.7999MHz, 913.7998MHz, 916.7999MHz, 919.4999MHz, 921.9999MHz, 924.4999MHz
Radios included in device	**ISM900 Chipset** **Model Name** : Tellular Corporation • **Model Number :** CC1200
Other Radios included in the device:	Cellular, BLE
Antenna Information as declared:	ISM900 (WLAN) (KAVX 1001011): 868-928MHz (1.0 dBi)
Power Supply/ Rated Operating Voltage Range:	4VDC to 7.4VDC (internal battery; 4 Energizer L91 cell is 4S1P configuration)
Operating Temperature Range	-20C to +70C
Sample Revision	☐Production Unit; ■Pre-Production
EUT Dimensions	190 mm x 130 mm x 45 mm
EUT Diameter	☒< 60 cm ☐ Other _____
Note: The information of the EUT specifications in the table above is provided by the client.	

3.2 EUT Power setting

Channel Number	902 – 928 MHz	
	4GFSK	500KHz
Low	W23	N/A
Mid	W24	N/A
High	W25	N/A

3.3 EUT Sample details

EUT #	Part Number	Serial Number	HW Version	SW Version	Comments
1	384-12500 Rev X1	141A-01020	B	v2.60	Radiated Emission Sample
2	384-12500 Rev X1	141A-01018	B	v2.60	Conducted Sample

3.4 Accessory Equipment (AE) details

AE #	Type	Model	Manufacturer	Serial Number	Comments
1	Laptop	P135G	Dell	12243628947	Support laptop provided by Cetecom to exercise device.
2	Pre-Production	ST131	Telular Corporation	001	
3	TTL-232RG-VIP Cable	-	-	-	Debug

3.5 Test Sample Configuration

EUT Set-up #	Combination of AE used for test set up	Comments
1	EUT#1 + AE #1 ,2 ,3	The internal antenna of the EUT was connected.
2	EUT#2+ AE #1 ,2 ,3	The measurement equipment was connected to the 50-ohm RF port of the EUT.

3.6 Mode of Operation details

Operating Mode	Description of Operating modes	Additional Information
Op. 1	ISM TX	ISM900 was tested on Low, Mid and High Channel at the maximum power. The client provides a TTL-232RG-VIP USB cable to communicate with the device and send commands for configuring the Cellular into a specific test mode. This test mode configuration, designed for worst-case scenarios, is not intended for end-user application and is outlined as follows: • EUT power by 6Vdc battery • The EUT connected to support laptop using TTL-232RG-VIP USB Cable provided by customer to exercise device. • Radiated RF measurements were performed with EUT configured via TerraTerm and customer provided instructions

Note: The radios within EUT do not operate simultaneously.

3.7 Justification for Worst Case Mode of Operation

During the testing process, the EUT was tested with transmitter sets on low, mid and high channels, and maximum possible duty cycle.

For radiated measurements, all data in this report shows the worst case between horizontal and vertical antenna polarizations and for all orientations of the EUT.

4 Subject of Investigation

The objective of the measurements done by CETECOM Inc. was to assess the performance of the EUT according to the relevant requirements specified in FCC rules Part 15.247 of Title 47 of the Code of Federal Regulations and Radio Standard Specification RSS-247 Issue 4 of ISED Canada.

This test report is to support a request for new equipment authorization under the:

- FCC ID: MFTST1002
- ISED: 2175D-ST1001

5 Measurement Results Summary

Summary of the worst-case results

Test Specification	Test Case	Measurement	Limited	Result
§15.247(a) RSS-247 5.2(a)	Emission Bandwidth	0.689 MHz	>500kHz	PASS
§15.247(e) RSS-247 5.2(b)	Power Spectral Density	5.58 dBm / 3kHz	8dBm / 3kHz	PASS
§15.247(b) RSS-247 5.4(d)	Maximum Conducted Output Power	Peak: 11.30 dBm Peak: 0.013 Watts	1 Watt (30 dBm)	PASS
	Maximum Conducted Output Power (EIRP)	EIRP: 12.30 dBm EIRP: 0.017 Watts	4 Watt (36 dBm)	PASS
§15.247(d) RSS-247 5.5	Band edge compliance Unrestricted Band Edges	-28.15 dBm	Peak <20dBc	PASS
§15.247; 15.209; 15.205 RSS-Gen 8.9; 8.10	Band edge compliance Restricted Band Edges	QuasiPeak:23.46 dBµV/m	*PEAK LIMIT= 74 dBµV/m @3m =-21.23 dBm *AVG. LIMIT= 54 dBµV/m @3m =-41.23 dBm	PASS
'Test Specification	**Test Case**	**Lowest Margin Emission**		**Result**
§15.247(d); §15.209 RSS-Gen 6.13	TX Spurious Emissions-Radiated	45.02 dBµV/m		PASS
§15.207(a) RSS Gen 8.8	AC Conducted Emissions	N/A		See Note 1

Note: Pass=Complies, NA=Not Applicable, NP=Not Performed
Note 1: The EUT does not draw power from AC public mains; therefore, this test case is not applicable.

6 Measurements

6.1 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=2.

Radiated measurement

Measurement System		EMC Lab 1	EMC Lab 2
Conducted emissions (mains port)	150 kHz – 30 MHz	2.47 dB	N/A
Radiated emissions	9 kHz – 30 MHz	2.68 dB	2.53 dB
	30 – 100 MHz	4.39 dB	3.85 dB
	100 MHz – 1 GHz	5.65 dB	5.24 dB
	1 – 6 GHz	5.0 dB	4.88 dB
	6 – 18 GHz	4.76 dB	4.58 dB
	18 – 40 GHz	4.65 dB	4.61 dB

RF conducted measurement ±0.5 dB

According to TR 102 273 a multiplicative propagation of error is assumed for RF measurement systems. For this reason the RMS method is applied to dB values and not to linear values as appropriate for additive propagation of error. Also used: http://physics.nist.gov/cuu/Uncertainty/typeb.html. The above calculated uncertainties apply to direct application of the Substitution method. The Substitution method is always used when the EUT comes closer than 3dB to the limit.

6.2 Environmental Conditions During Testing:

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

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

6.3 Dates of Testing:

2025-10-03 – 2025-10-10

6.4 Decision Rule:

Cetecom Inc follows ILAC G8:09/2019 chapter 4.2.1 (Simple Acceptance Rule).

Only the measured values related to their corresponding limits will be used to decide whether the equipment under test meets the requirements of the test standards listed in chapter 3. The measurement uncertainty is mentioned in this test report, See chapter 9, but is not taken into account – neither to the limits nor to the measurement results. Measurement results with a smaller margin to the corresponding limits than the measurement uncertainty have a potential risk of more than 5% that the decision might be wrong.

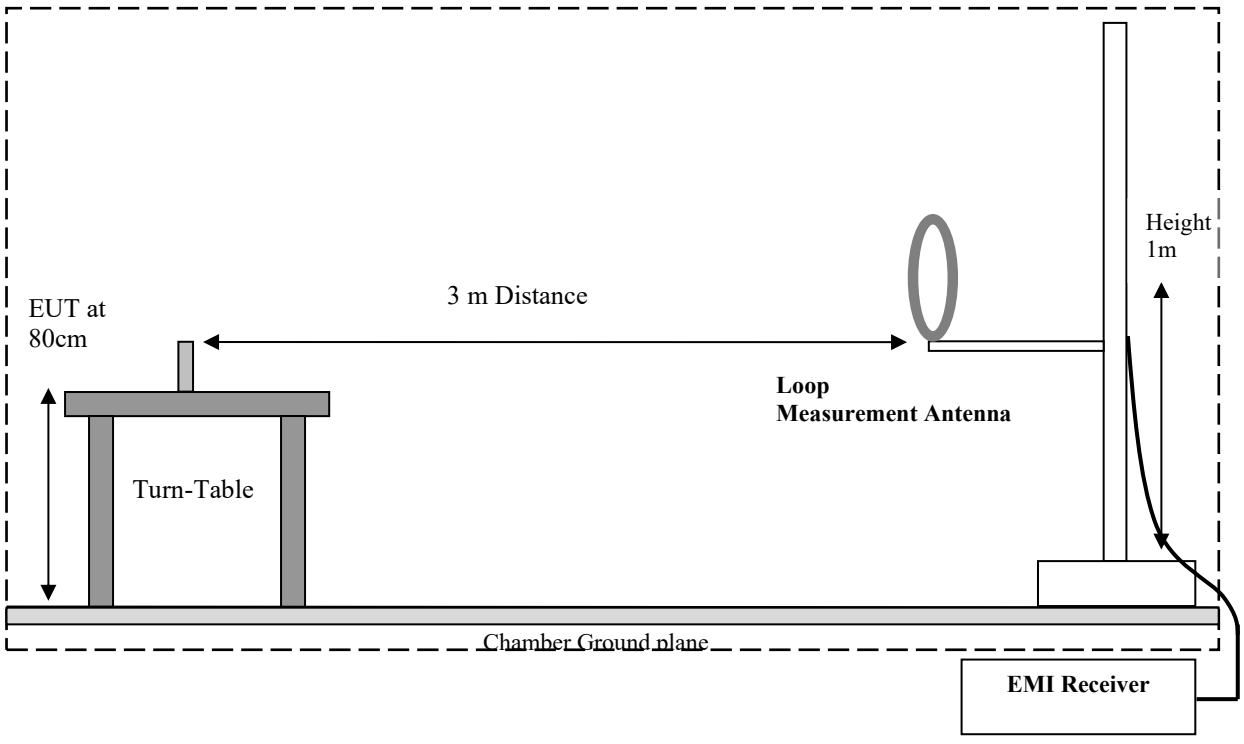
7 Measurement Procedures

7.1 Radiated Measurement

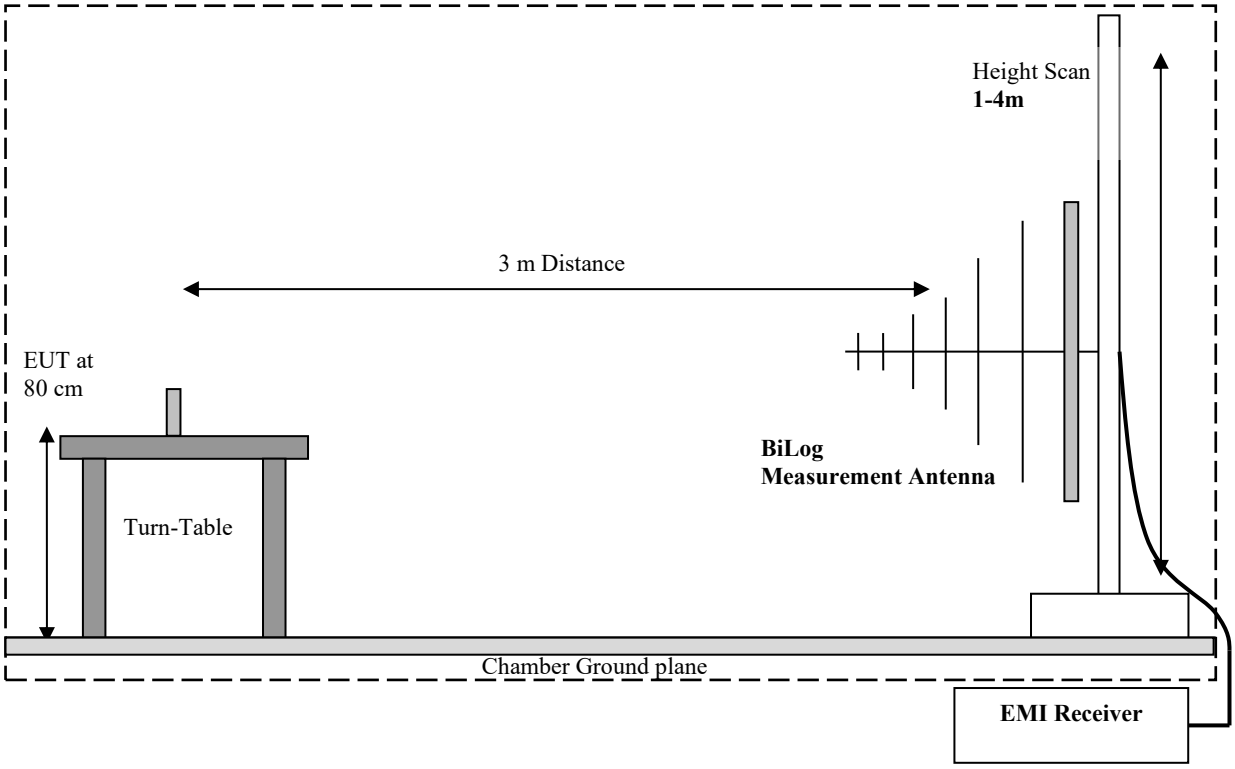
The radiated measurement is performed according to ANSI C63.10 (2020)

- 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.

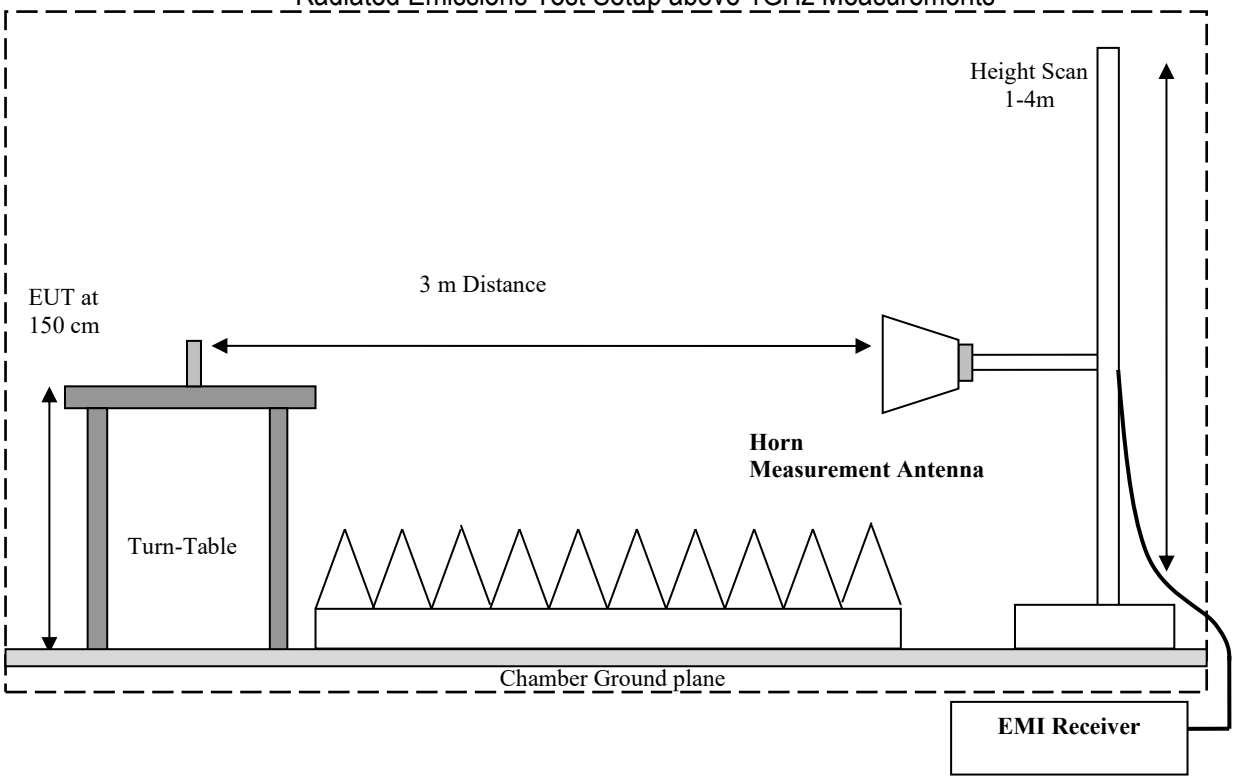
Radiated Emissions Test Setup below 30MHz Measurements



Radiated Emissions Test Setup 30MHz-1GHz Measurements



Radiated Emissions Test Setup above 1GHz Measurements



7.2 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

8 Test Result Data

8.1 Maximum Peak Conducted Output Power

8.1.1 Measurement according to FCC 558074 D01 15.247 Meas Guidance v05r02 and ANSI C63.11.9

Spectrum Analyzer settings:

- RBW ≥ DTS bandwidth
- VBW ≥ 3 x RBW
- Span ≥ 3 x RBW
- Sweep = Auto couple
- Detector function = Peak
- Trace = Max hold
- Use peak marker function to determine the peak amplitude level

8.1.2 Limits:

Maximum Peak Output Power:

- FCC §15.247 (b)(1): 1 W
- IC RSS-247: 1 W

8.1.3 Test conditions and setup:

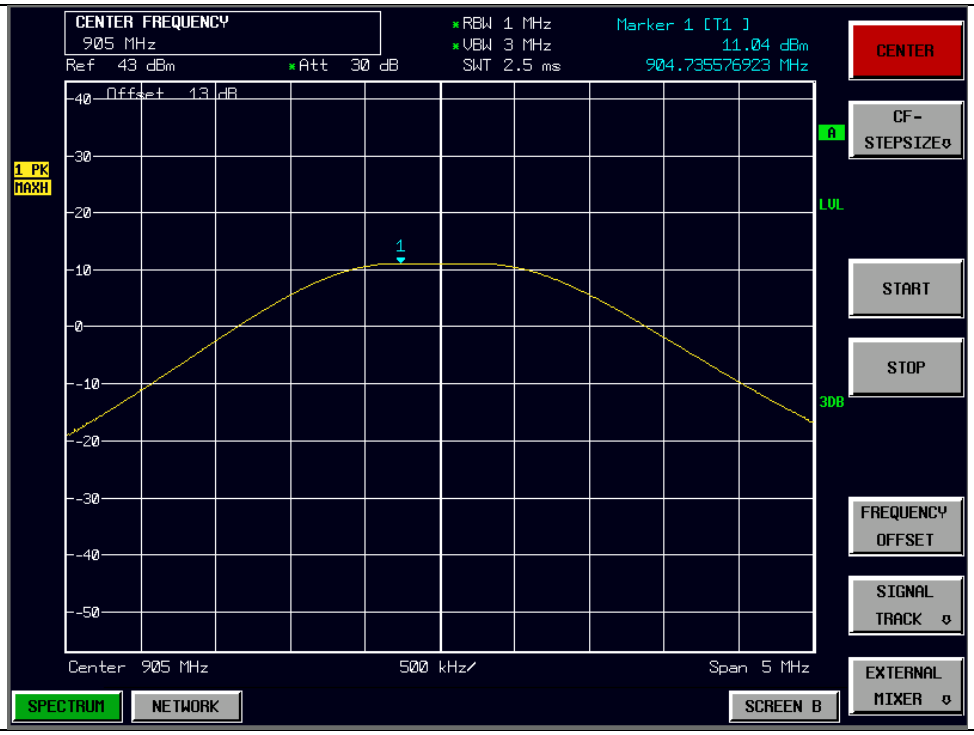
Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input	Antenna Gain
22.0° C	2	Op.1	6 VDC	1 dBi

8.1.4 Measurement result:

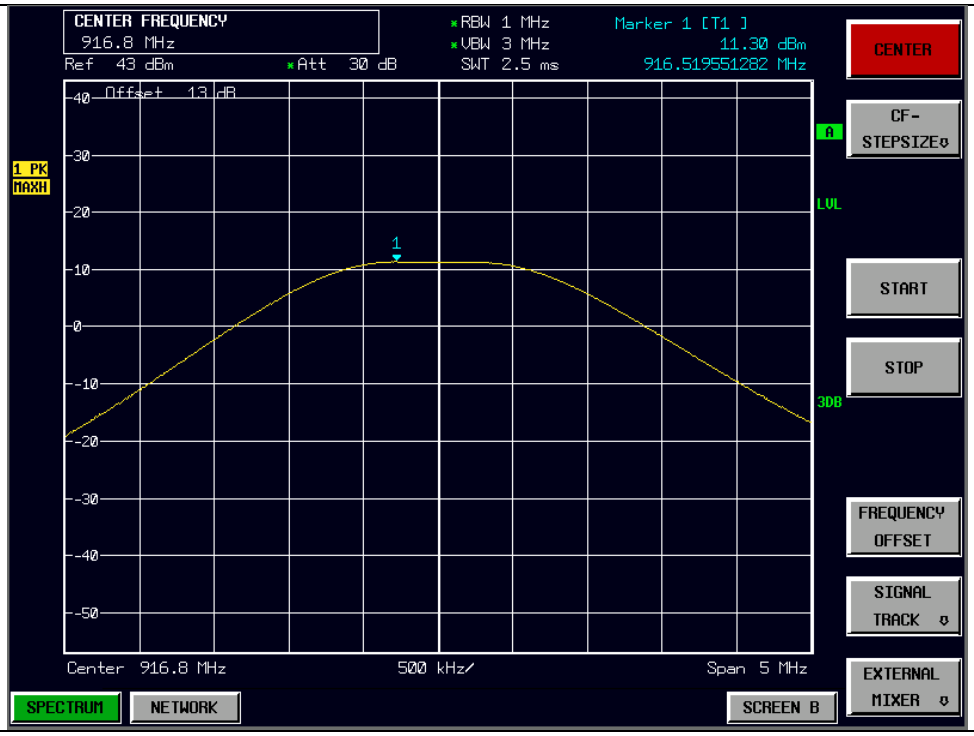
Plot #	Frequency (MHz)	EUT operating mode	Maximum Peak Conducted Output Power (dBm)	EIRP (dBm)	Limit (dBm)	Result
1	905.0	4GFSK	11.04	12.04	24(Pk) / 30(EIRP)	Pass
2	916.8	4GFSK	11.30	12.30	24(Pk) / 30(EIRP)	Pass
3	924.5	4GFSK	10.48	11.48	24(Pk) / 30(EIRP)	Pass

8.1.5 Measurement Plots:

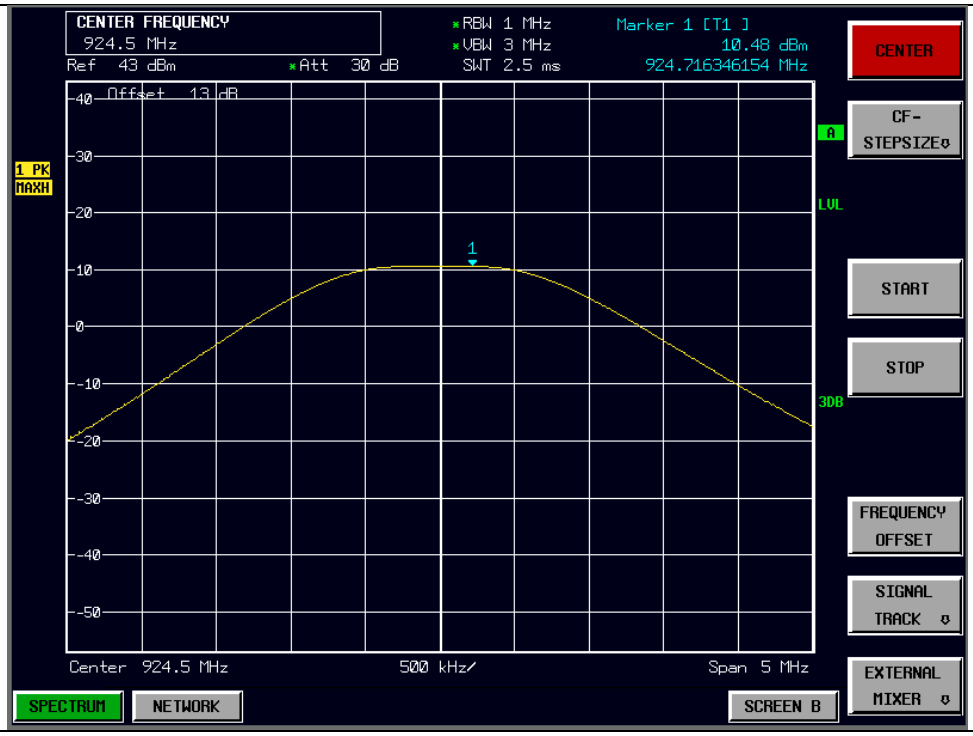
Plot # 1



Plot # 2



Plot # 3


CENTER FREQUENCY
924.5 MHz
RBW 1 MHz
VBW 3 MHz
SWT 2.5 ms
Marker 1 [T1]
10.48 dBm
924.716346154 MHz
Ref 43 dBm
Att 30 dB
Offset 13 dB
1 PK
MAXH
40
30
20
10
0
-10
-20
-30
-40
-50
Center 924.5 MHz
500 kHz/
Span 5 MHz
CENTER
CF-
STEPSIZE
A
LVL
START
STOP
3DB
FREQUENCY
OFFSET
SIGNAL
TRACK
EXTERNAL
MIXER
SPECTRUM
NETWORK
SCREEN B

8.2 Power Spectral Density

8.2.1 Measurement according to FCC 558074 D01 15.247 Meas Guidance v05r02

Spectrum Analyzer settings for Peak PSD method:

- Set analyzer center frequency to DTS channel center frequency
- Set the span to 1.5 x DTS bandwidth
- Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz
- Set the VBW ≥ 3 x RBW
- Detector = Peak
- Sweep time = Auto couple
- Trace mode = Max hold
- Allow trace to fully stabilize
- Use the peak marker function to determine the maximum amplitude level within the RBW
- If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat

8.2.2 Limits:

FCC§15.247(e) & RSS-247 5.2(b)

- For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

8.2.3 Test conditions and setup:

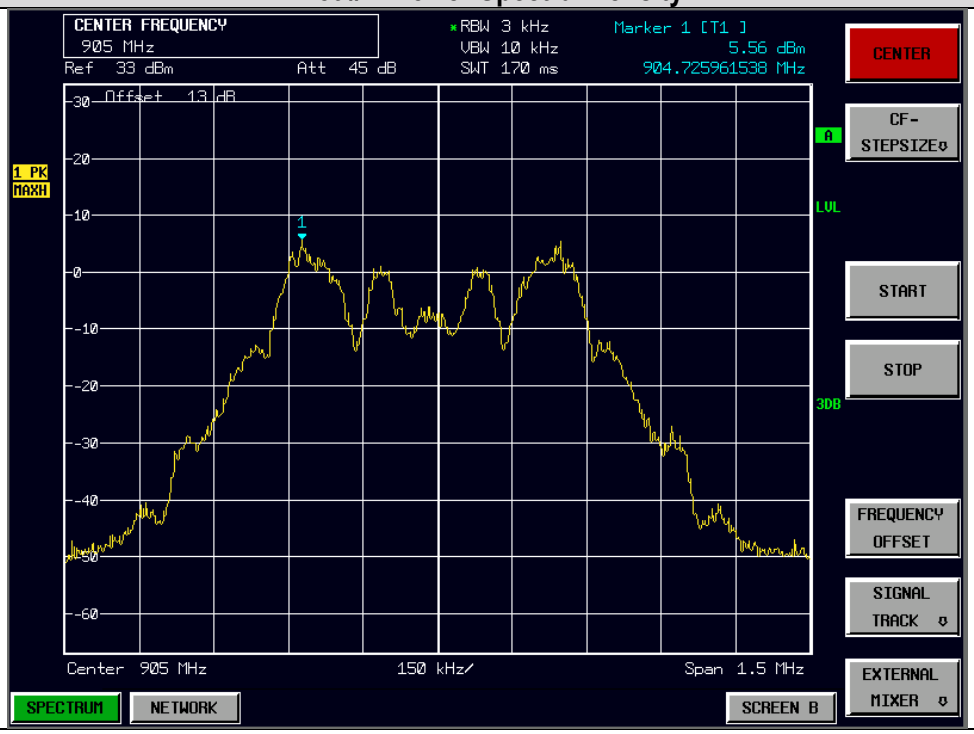
Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input	Antenna Gain
22° C	2	Op. 1	6VDC	1 dBi

8.2.4 Measurement result:

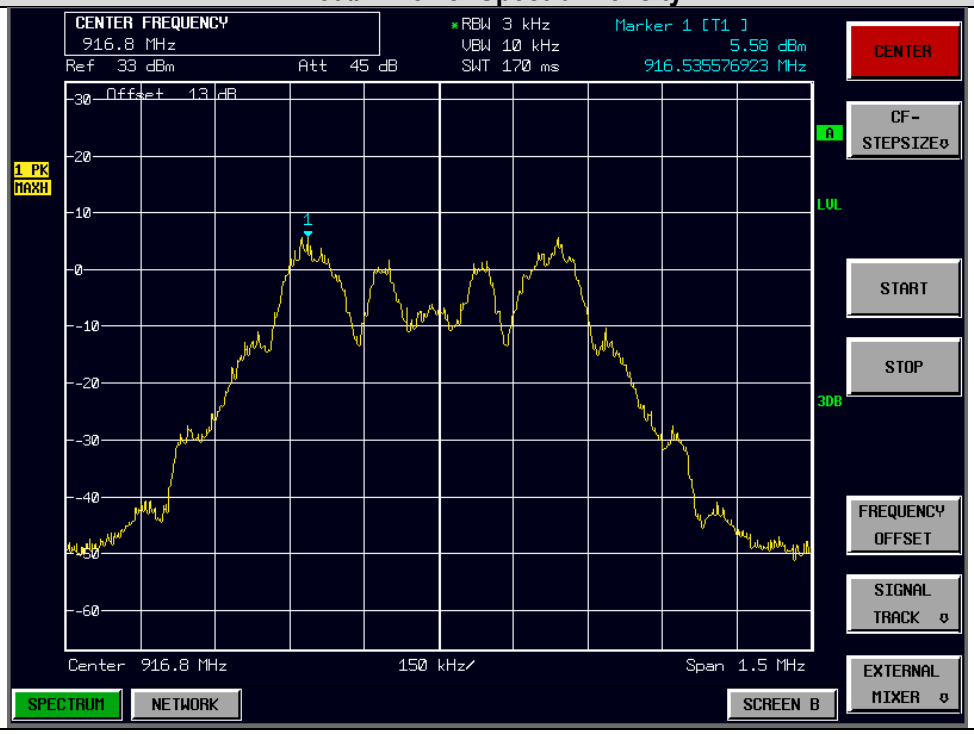
Plot #	Channel	Maximum Power Spectral Density (dBm/3 kHz)	Limit (dBm / 3 kHz)	Result
1	Low	5.56	8	Pass
2	Mid	5.58	8	Pass
3	High	2.80	8	Pass

8.2.5 Measurement Plots:

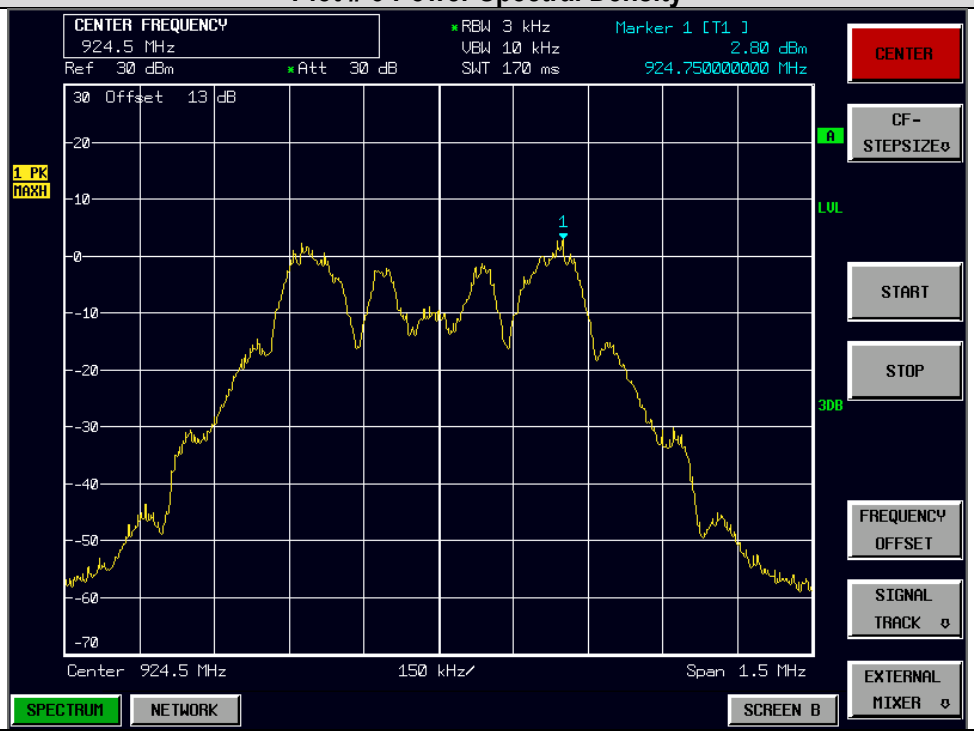
Plot # 1 Power Spectral Density



Plot # 2 Power Spectral Density



Plot # 3 Power Spectral Density



8.3 Band Edge Compliance

8.3.1 Measurement according to FCC 558074 D01 15.247 Meas Guidance v05r02

Spectrum Analyzer settings for band edge:

- Set the center frequency and span to encompass frequency range to be measured
- RBW = 100 kHz
- VBW ≥ 3 x RBW
- Sweep Time: Auto couple
- Detector = Peak
- Trace = Max hold
- Allow trace to fully stabilize
- Use the peak marker function to determine the maximum amplitude level
- Set the marker on the emission at the band edge, or on the highest modulation product outside of the band, if this level is greater than that at the band edge

8.3.2 Limits non restricted band:

FCC§15.247 (d)

- In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

RSS-247 5/5

- In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30dB instead of 20dB.

Spectrum Analyzer settings for restricted band:

- Peak measurements are made using a peak detector and RBW=1 MHz

8.3.3 Limits restricted band §15.247/15.209/15.205 and RSS-Gen 8.9/8.10

- *PEAK LIMIT= 74 dBµV/m @3m =-21.23 dBm
- *AVG. LIMIT= 54 dBµV/m @3m =-41.23 dBm
- Start frequency & stop frequency according to frequency range specified in the restricted band table in FCC section 15.205 & RSS-Gen 8.10
- Measurements with a peak detector were used to show compliance to average limits, thus showing compliance to both peak and average limits.

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

8.3.4 Test conditions and setup:

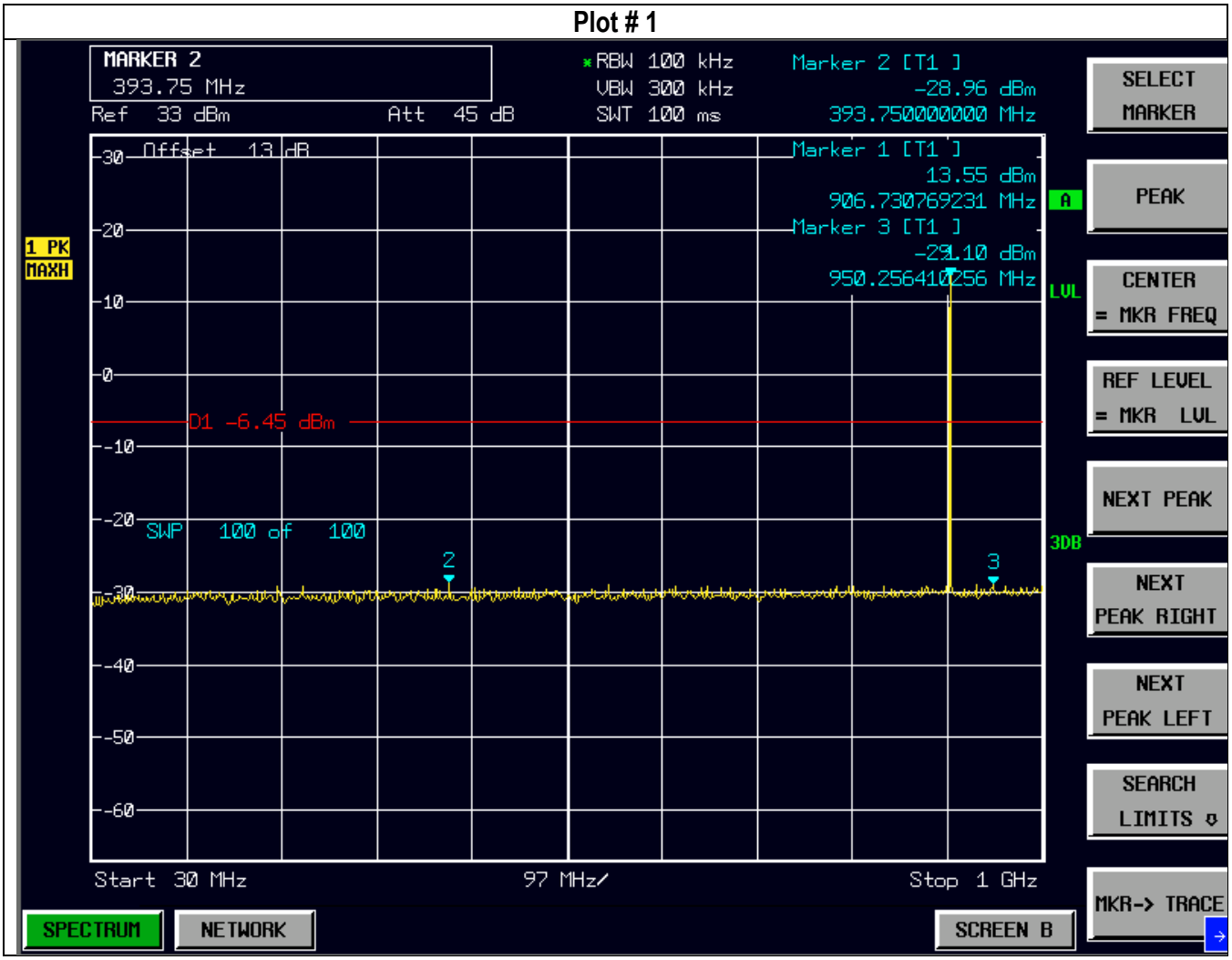
Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input	Antenna Gain
22° C	2	Op. 1	6VDC	1 dBi

8.3.5 Measurement result:

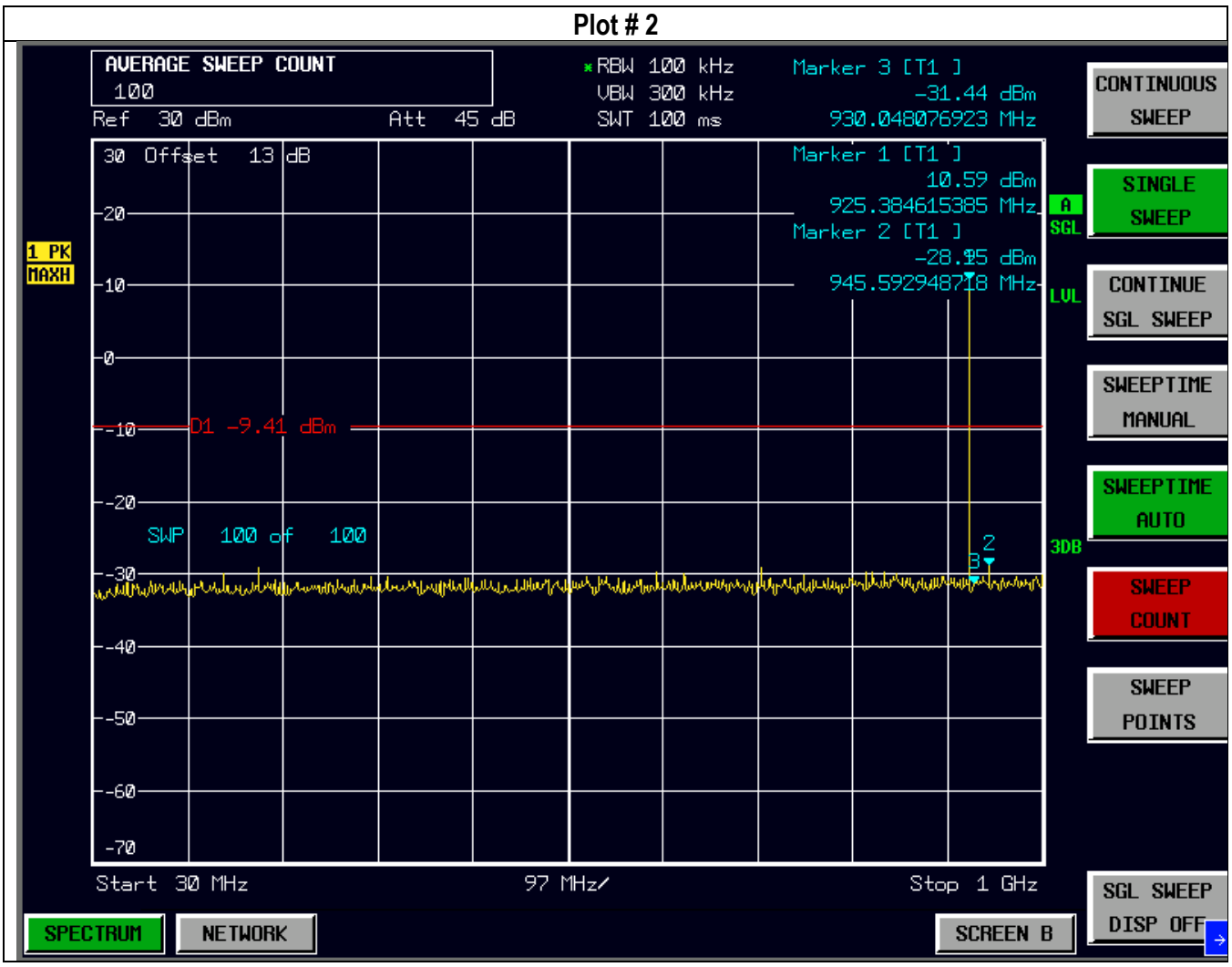
Plot #	Frequency	Inband Peak Level	Level	Margin	Limit	Result
	MHz	dBm	dBm	dB	dBm	
1	905.0	13.55	-28.96	-22.51	-6.45	Pass
2	924.5	10.59	-28.15	-18.74	-9.41	Pass

8.3.6 Measurement Plots:

Plot # 1



Plot # 2


AVERAGE SWEEP COUNT
100
Ref 30 dBm
Att 45 dB
RBW 100 kHz
VBW 300 kHz
SWT 100 ms
Marker 3 [T1]
-31.44 dBm
930.048076923 MHz
30 Offset 13 dB
Marker 1 [T1]
10.59 dBm
925.384615385 MHz
Marker 2 [T1]
-28.25 dBm
945.592948718 MHz
1 PK
MAXH
D1 -9.41 dBm
SWP 100 of 100
Start 30 MHz
97 MHz/
Stop 1 GHz
CONTINUOUS SWEEP
SINGLE SWEEP
A SGL
CONTINUE SGL SWEEP
LVL
SWEEPTIME MANUAL
SWEEPTIME AUTO
3DB
SWEEP COUNT
SWEEP POINTS
SGL SWEEP DISP OFF
SPECTRUM
NETWORK
SCREEN B

8.4 Emission Bandwidth 6dB and 99% Occupied Bandwidth

8.4.1 Measurement according to FCC 558074 D01 15.247 Meas Guidance v05r02

Spectrum Analyzer settings:

6dB (DTS) Bandwidth:

- Set RBW = 100 kHz
- Set the video bandwidth (VBW) ≥ 3 x RBW
- Detector = Peak
- Trace mode = Max hold
- Sweep = Auto couple
- Allow the trace to stabilize
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

99% Occupied Bandwidth:

- Set frequency = nominal EUT channel center frequency
- Set Span = 1.5 x to 5.0 x OBW
- Set RBW = 1% to 5% of OBW
- Set the video bandwidth (VBW) ≈ 3 x RBW
- Detector = Peak
- Trace mode = Max hold
- Sweep = Auto couple
- Allow the trace to stabilize
- Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth
- If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

8.4.2 Limits:

FCC §15.247(a)(2) and RSS-247 5.2(a)

- Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

8.4.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input
22° C	2	Op. 1	6VDC

8.4.4 Measurement result:

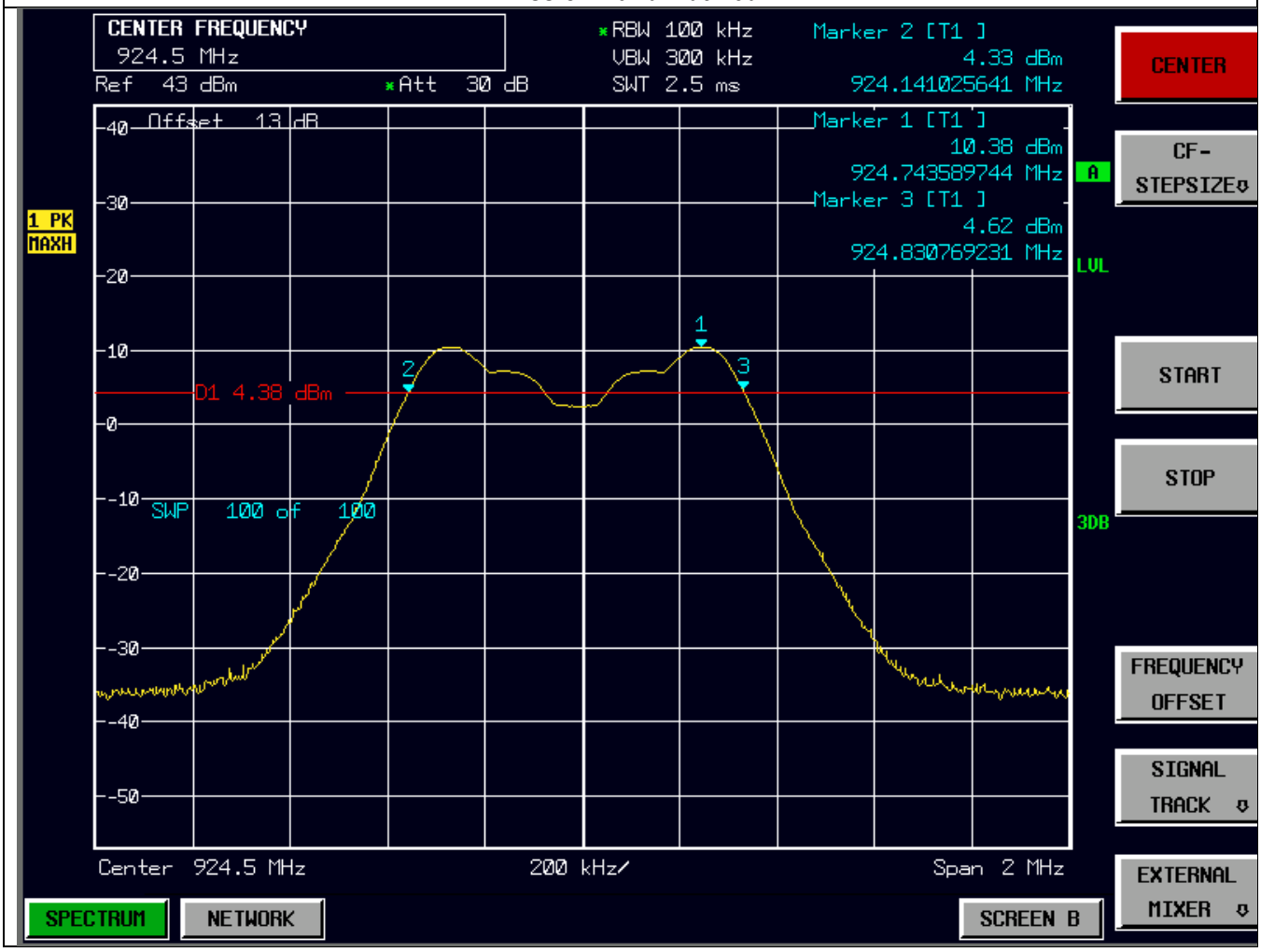
Plot #	Channel	6dB Emissions Bandwidth (MHz)	Limit (MHz)	Result
1	Low	0.682	> 0.5	Pass
2	Mid	0.687	> 0.5	Pass
3	High	0.689	> 0.5	Pass

Plot #	Channel	99% Occupied Bandwidth (MHz)	Limit (MHz)	Result
4	Low	0.772	NA	Pass
5	Mid	0.766	NA	Pass
6	High	0.766	NA	Pass

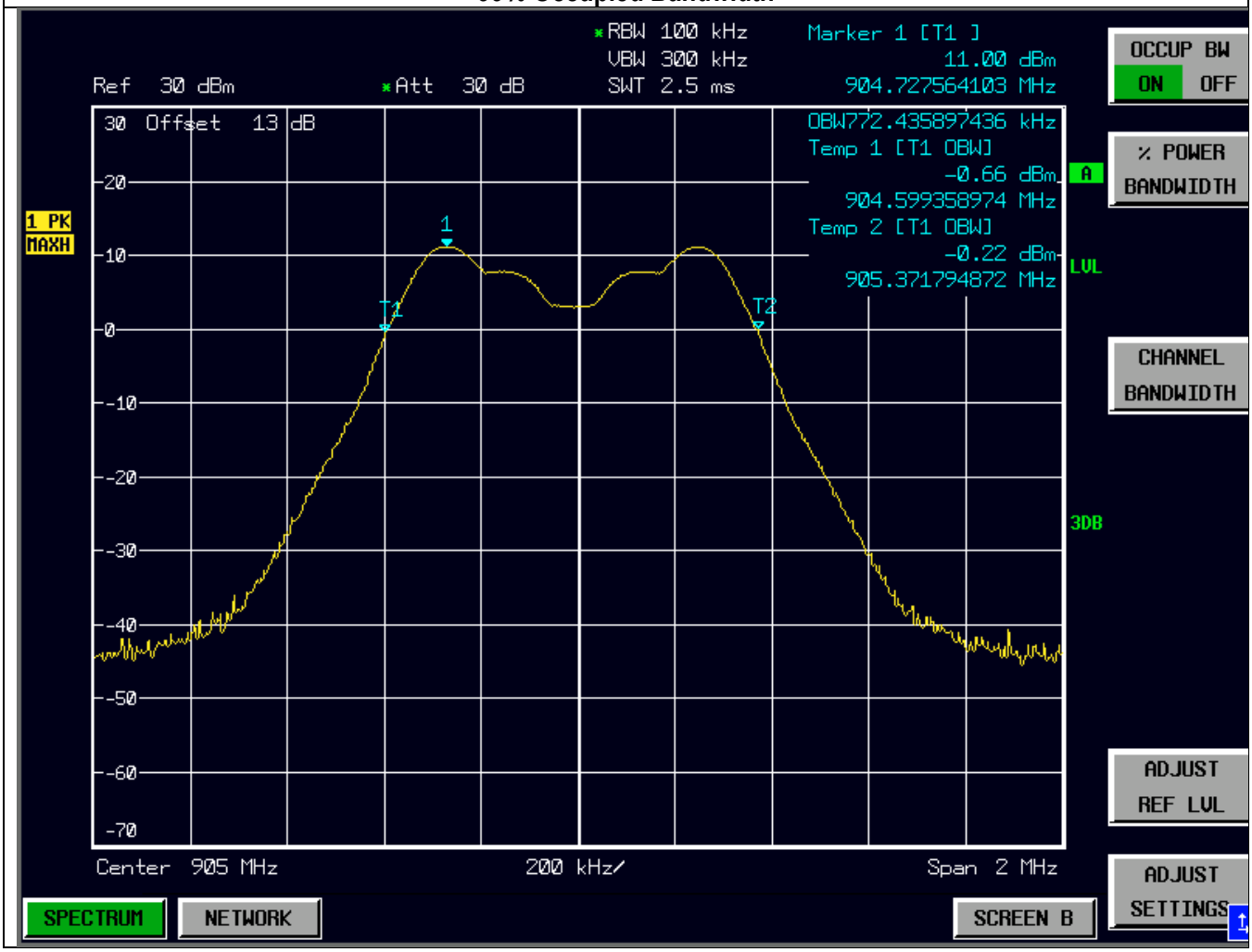
Note: The plots presented in the section below represent the worst-case results from the measurements.

8.4.5 Measurement Plots:

Emission Bandwidth 6dB



99% Occupied Bandwidth



8.5 Transmitter Spurious Emissions and Restricted Bands

8.5.1 Measurement according to ANSI C63.10

Analyzer Settings:

- Frequency = 9 KHz – 30 MHz
- RBW = 9 KHz
- Detector = Peak

- Frequency = 30 MHz – 1 GHz
- Detector = Peak / Quasi-Peak
- RBW = 120 KHz (<1 GHz)

- Frequency > 1 GHz
- Detector = Peak / Average
- RBW = 1MHz

- Radiated spurious emissions shall be measured for the transmit frequencies, transmit power, and data rate for the lowest, middle and highest channel in each frequency band of operation and for the highest gain antenna for each antenna type, and using the appropriate parameters and test requirements.
- The highest (or worst-case) data rate shall be recorded for each measurement.
- For testing frequencies below 30 MHz at distance other than the specified in the standard, the limit conversion is calculated by using the FCC materials for the ANSI 63 committee issued on January, 27 1991.

8.5.2 Limits: FCC 15.247(d)/15.209(a) /RSS-Gen 6.13

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
[1]0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	Above 38.6
13.36-13.41			

- Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
- PEAK LIMIT= 74dB µV/m
- AVG. LIMIT= 54dB µV/m

- Except as shown in CFR 47 Part 15.205 paragraph (d), only spurious emissions are permitted in any of the frequency bands listed below

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

8.5.3 Test conditions and setup:

Ambient Temperature	EUT Set-Up #	EUT operating mode	Power Input	Antenna Gain
23.8° C	1	Op.1	6 VDC	1 dBi

8.5.4 Measurement result:

Plot #	Channel #	Scan Frequency	Limit	Result
1-4	Low	9 kHz – 18 GHz	See section 8.5.2	Pass
5-8	Mid	9 kHz – 18 GHz	See section 8.5.2	Pass
9-12	High	9 kHz – 18 GHz	See section 8.5.2	Pass
13	High	Upper Restricted Band Edge	See section 8.5.2	Pass

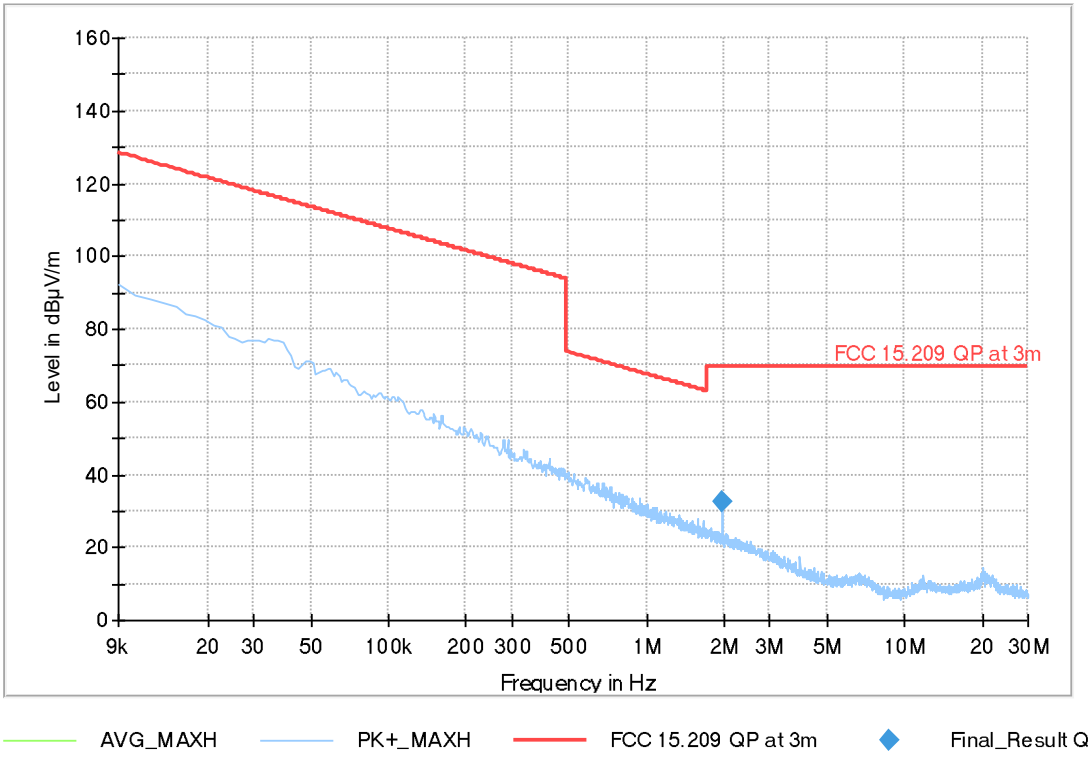
8.5.5 Measurement Plots:

Plot # 1 Radiated Emissions: 9 KHz – 30 MHz

Tx Frequency: 905.0 MHz	Modulation: GFSK

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBµV)
1.967	32.519	69.50	36.98	500.0	9.0	100.0	V	-29.0	12.9	0.3	-28.7	41.4	19.6

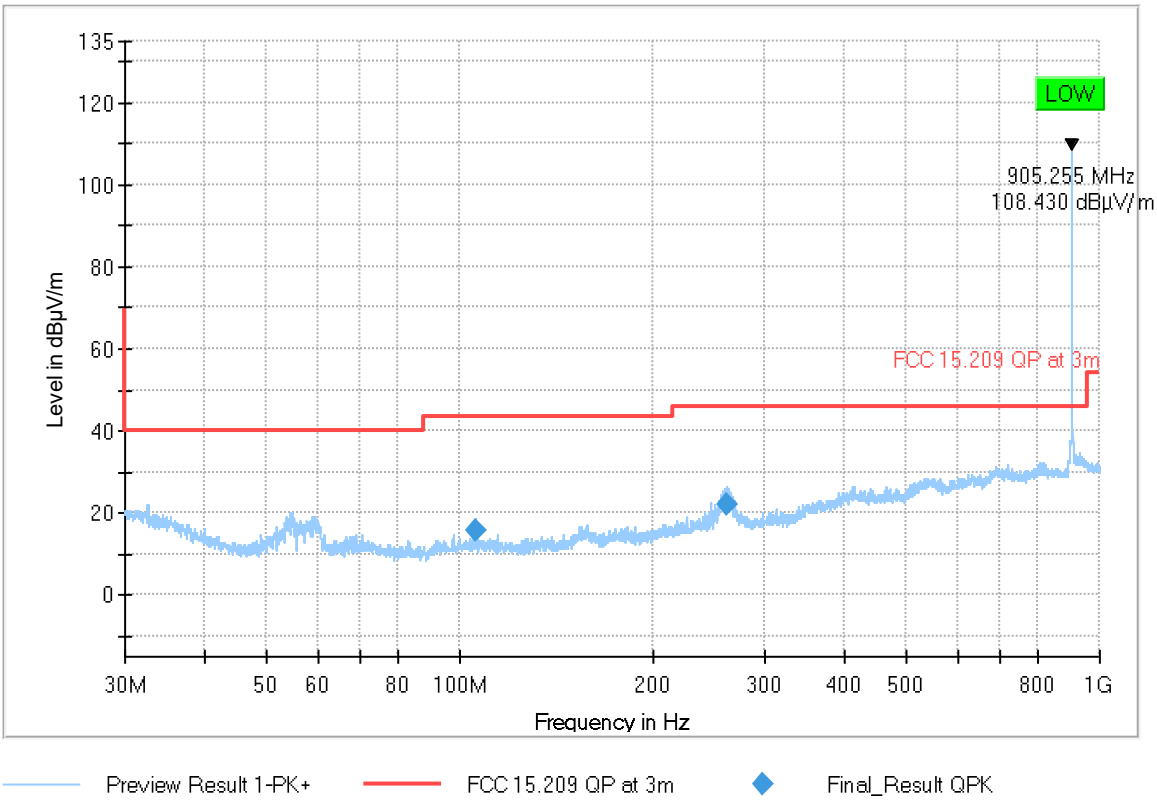


Plot # 2 Radiated Emissions: 30 – 1000MHz

Tx Frequency: 905.0 MHz | **Modulation: GFSK**

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
105.66	15.47513499	43.50	28.02	500.0	120.0	243.0	V	91.0	-19.6	
262.02	21.83601310	46.02	24.18	500.0	120.0	133.0	H	45.0	-13.8	

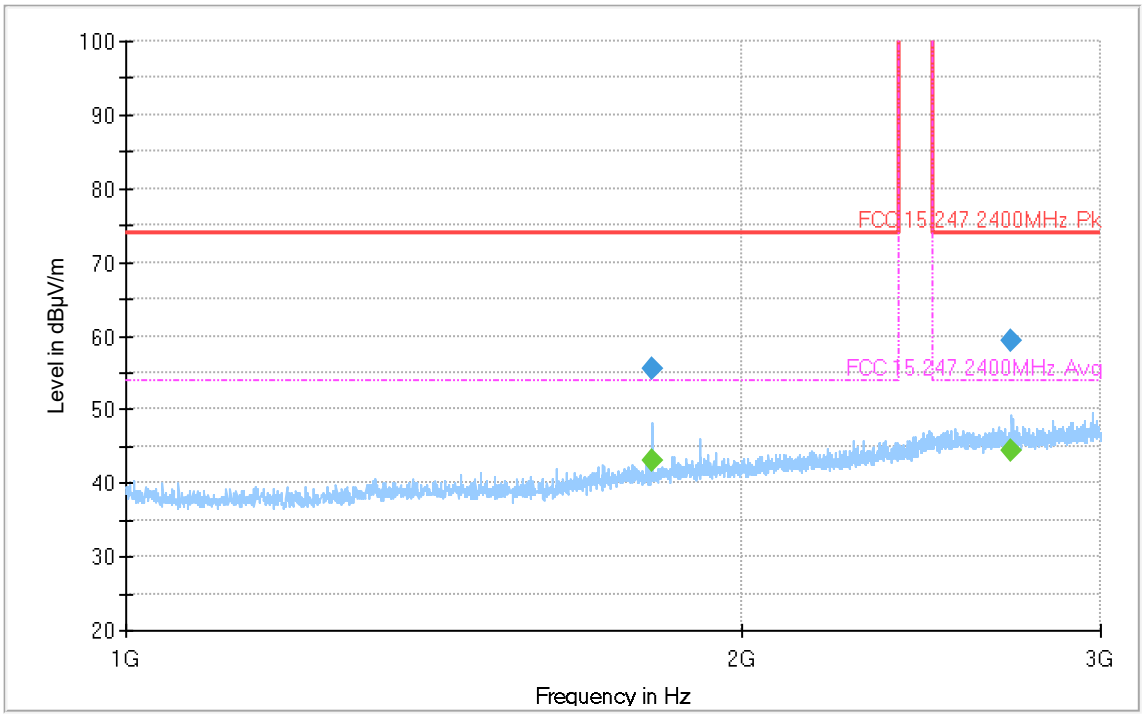


Plot # 3 Radiated Emissions: 1 – 3 GHz

Tx Frequency: 905.0 MHz | **Modulation: GFSK**

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
1810.50	55.6556111	---	74.00	18.34	500.0	1000.0	216.0	V	241.0	31.5	
1810.50	---	43.0333271	54.00	10.97	500.0	1000.0	216.0	V	241.0	31.5	
2714.50	59.3301605	---	74.00	14.67	500.0	1000.0	170.0	V	113.0	35.0	
2714.50	---	44.3886703	54.00	9.61	500.0	1000.0	170.0	V	113.0	35.0	



Plot # 4 Radiated Emissions: 3 - 18 GHz

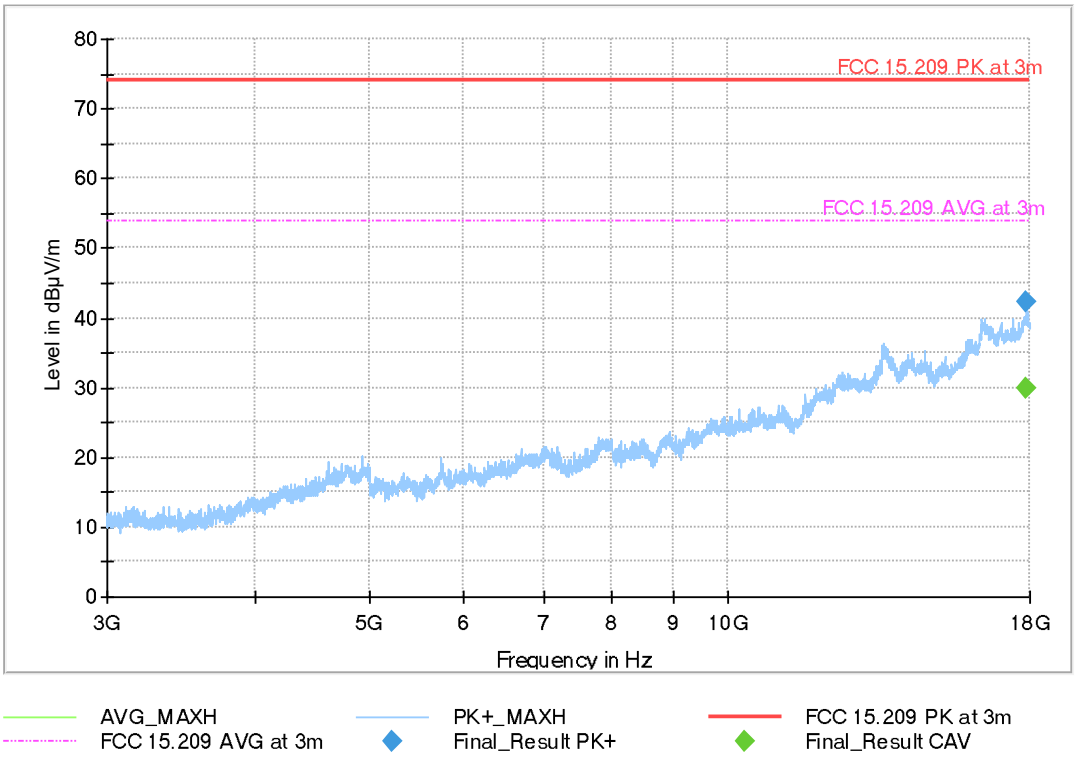
Tx Frequency: 905.0 MHz	Tx Frequency: 905.0 MHz

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)
17900.000	---	29.935	53.98	24.04	500.0	1000.0	133.0	V	73.0	14.8	15.5	-42.3	41.6
17900.000	42.369	---	73.98	31.61	500.0	1000.0	133.0	V	73.0	14.8	15.5	-42.3	41.6

(continuation of the "Final_Result" table from column 19 ...)

Frequency (MHz)	Raw Rec (dBµV)
17900.000	15.2
17900.000	27.6

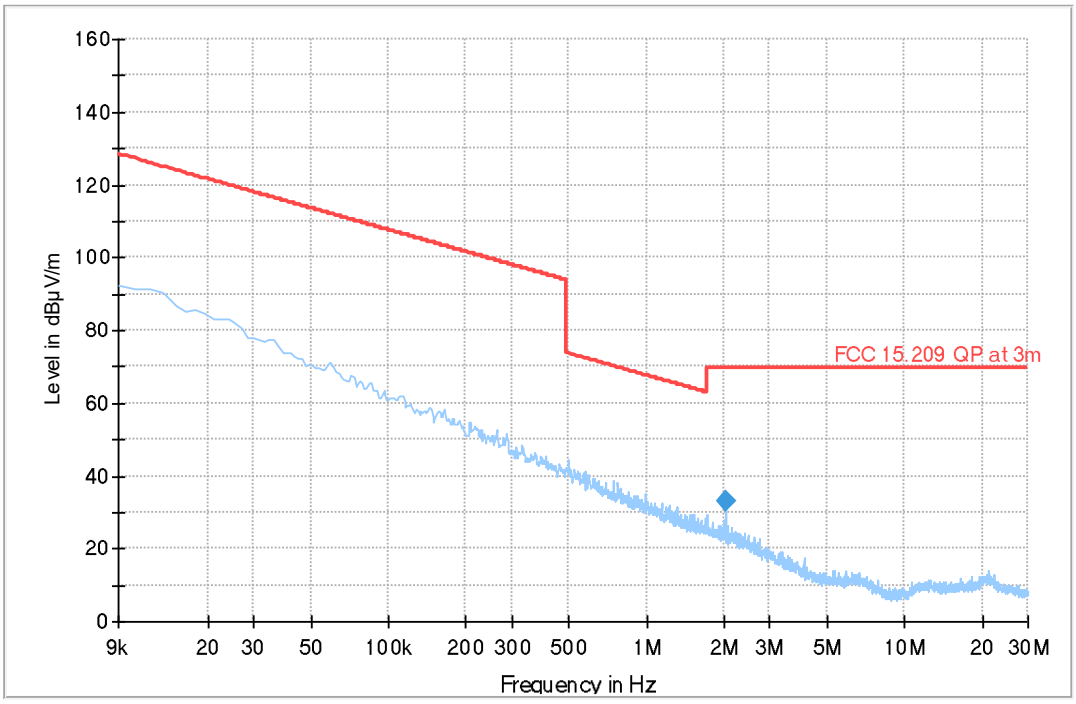


Plot # 5 Radiated Emissions: 9 KHz – 30 MHz

Tx Frequency: 916.8 MHz | **Modulation: GFSK**

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBµV)
2.036	33.125	69.50	36.38	500.0	9.0	100.0	H	-36.0	12.6	0.3	-28.7	41.1	20.5

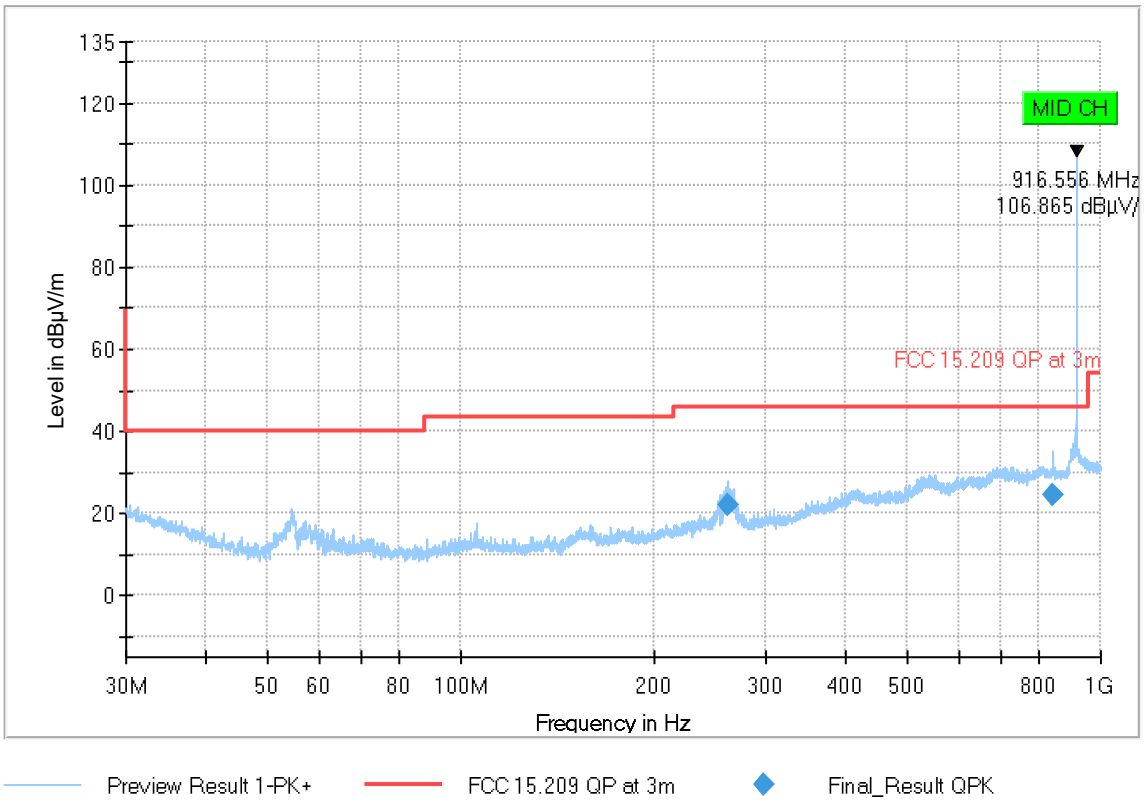


Plot # 6 Radiated Emissions: 30 – 1000MHz

Tx Frequency: 916.8 MHz | **Modulation: GFSK**

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
261.32	22.17099103	46.02	23.85	500.0	120.0	100.0	H	42.0	-13.9	
844.07	24.27610522	46.02	21.74	500.0	120.0	117.0	V	264.0	-2.8	

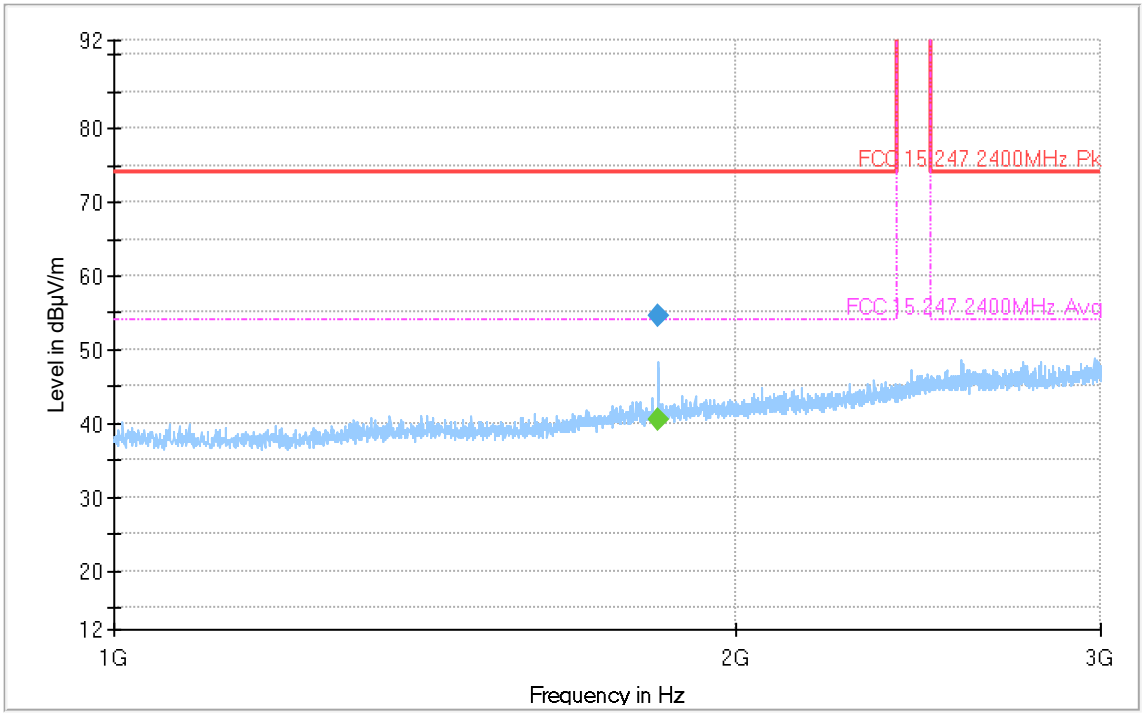


Plot # 7 Radiated Emissions: 1 – 3 GHz

Tx Frequency: 916.8 MHz	Modulation: GFSK

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
1833.00	---	40.43064549	54.00	13.57	500.0	1000.0	143.0	V	170.0	31.7	
1833.00	54.65053227	---	74.00	19.35	500.0	1000.0	143.0	V	170.0	31.7	



Plot # 8 Radiated Emissions: 3 - 18 GHz

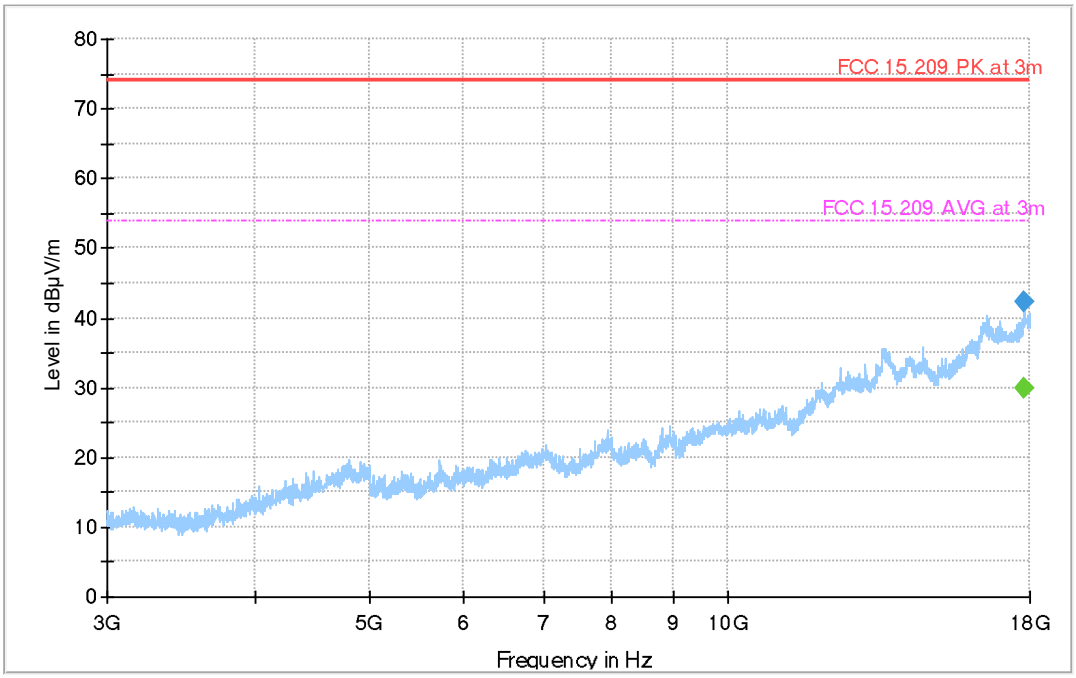
Tx Frequency: 916.8 MHz | **Modulation: GFSK**

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)
17830.000	---	29.789	53.98	24.19	500.0	1000.0	201.0	V	13.0	14.6	15.5	-42.5	41.6
17830.000	42.394	---	73.98	31.58	500.0	1000.0	201.0	V	13.0	14.6	15.5	-42.5	41.6

(continuation of the "Final_Result" table from column 19 ...)

Frequency (MHz)	Raw Rec (dBµV)
17830.000	15.2
17830.000	27.8

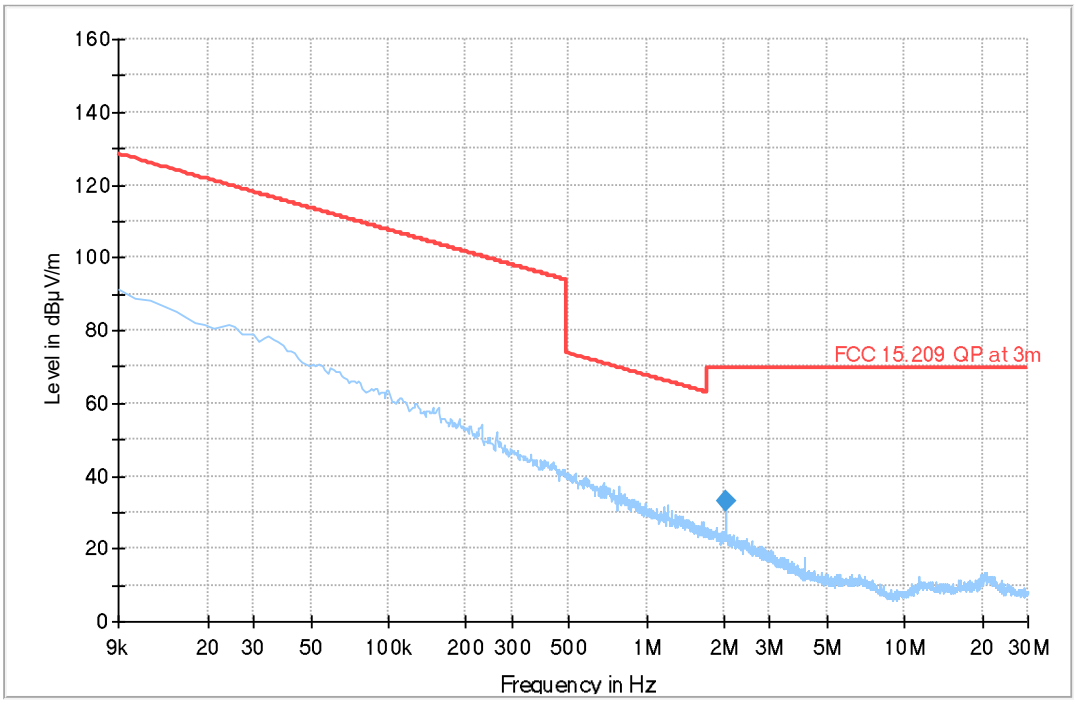


Plot # 9 Radiated Emissions: 9 KHz – 30 MHz

Tx Frequency: 924.5 MHz | **Modulation: GFSK**

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)	Raw Rec (dBµV)
2.042	33.190	69.50	36.31	500.0	9.0	100.0	H	169.0	12.6	0.3	-28.7	41.1	20.6

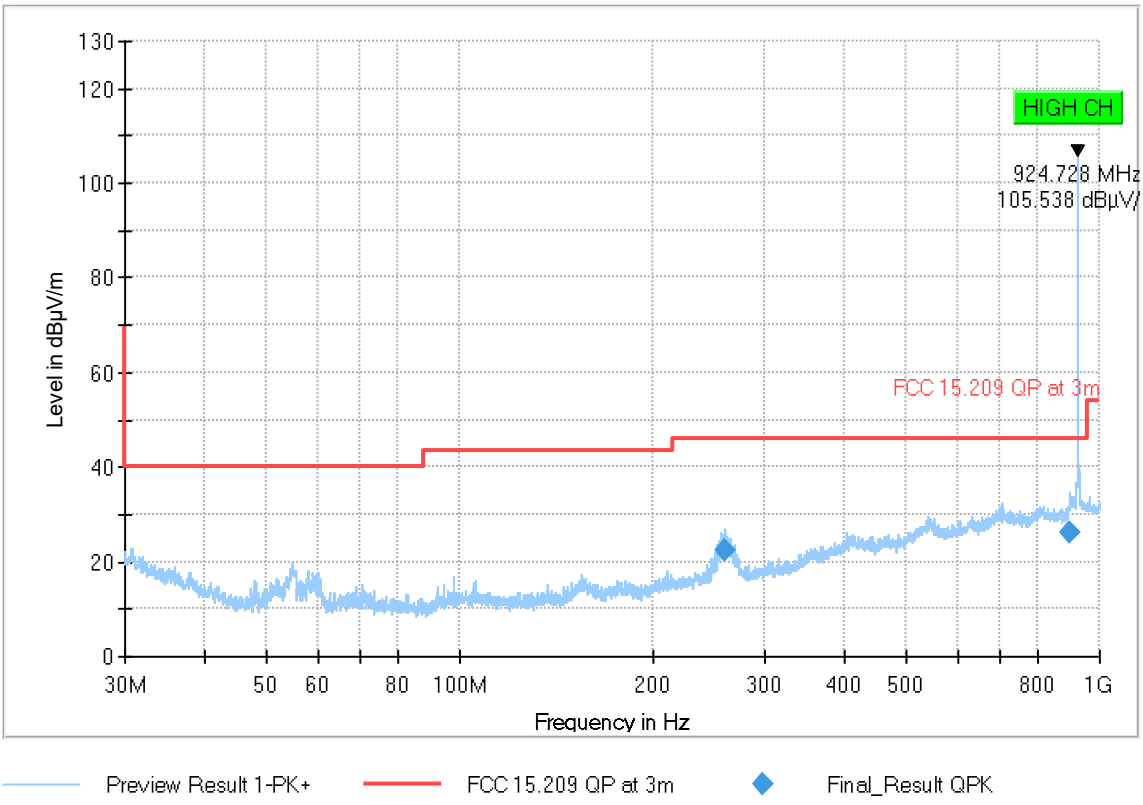


Plot # 10 Radiated Emissions: 30 – 1000MHz

Tx Frequency: 924.5 MHz | **Modulation: GFSK**

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
260.40	22.35359240	46.02	23.67	500.0	120.0	116.0	H	53.0	-14.0	
898.00	26.15956354	46.02	19.86	500.0	120.0	199.0	H	85.0	-2.4	

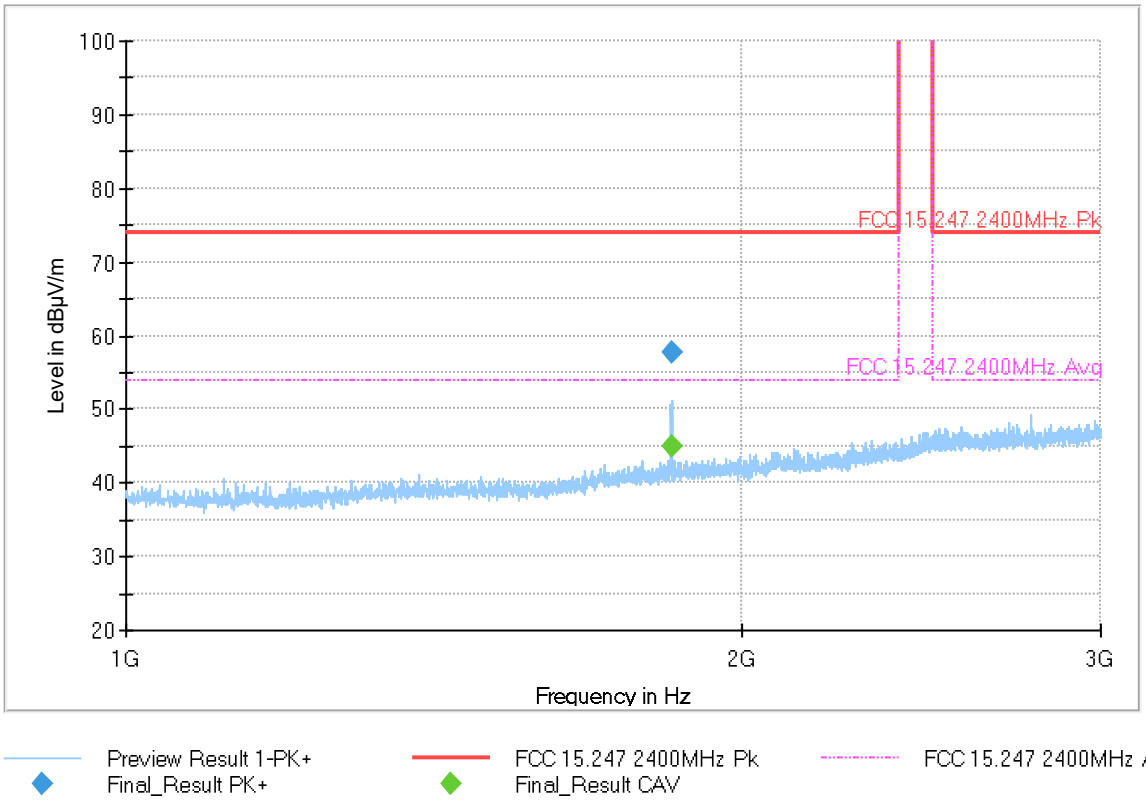


Plot # 11 Radiated Emissions: 1 – 3 GHz

Tx Frequency: 924.5 MHz | **Modulation: GFSK**

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
1849.50	---	45.01971490	54.00	8.98	500.0	1000.0	242.0	V	261.0	31.9	
1849.50	57.72051293	---	74.00	16.28	500.0	1000.0	242.0	V	261.0	31.9	



Plot # 12 Radiated Emissions: 3 - 18 GHz

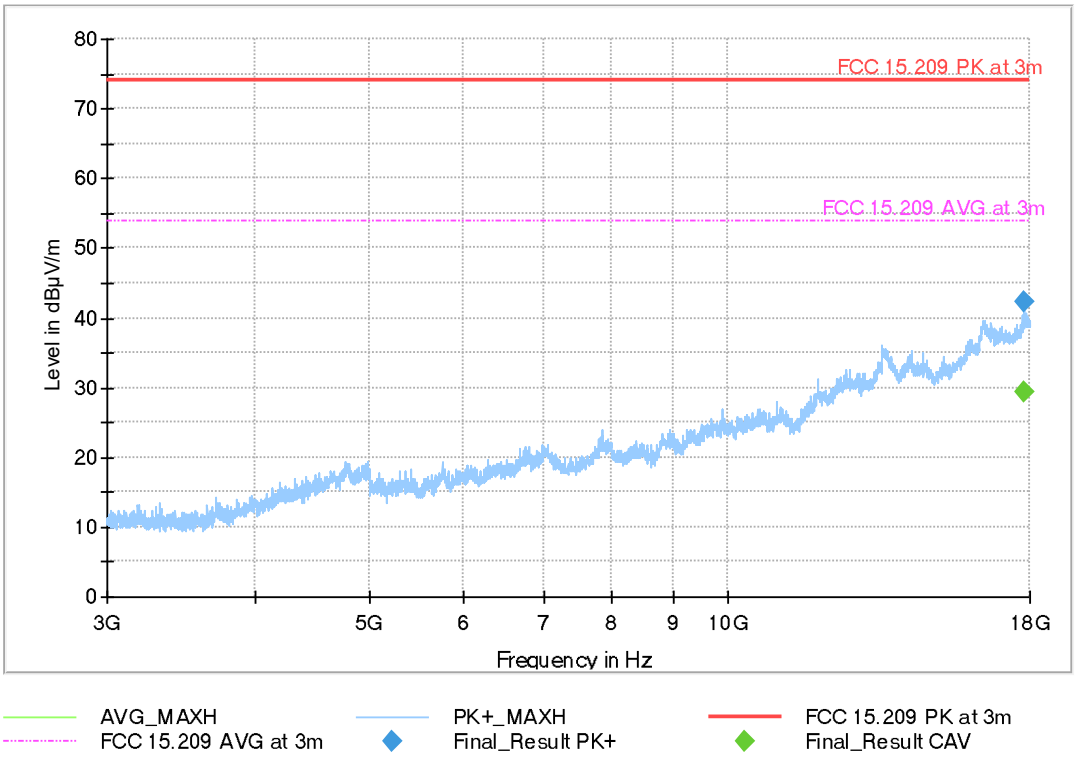
Tx Frequency: 924.5 MHz | **Modulation: GFSK**

Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/	Sig Path (dB)	Preamp (dB)	Trd Corr. (dB/m)
17797.798	---	29.446	53.98	24.53	500.0	1000.0	125.0	H	118.0	14.5	15.5	-42.6	41.6
17797.798	42.192	---	73.98	31.79	500.0	1000.0	125.0	H	118.0	14.5	15.5	-42.6	41.6

(continuation of the "Final_Result" table from column 19 ...)

Frequency (MHz)	Raw Rec (dBµV)
17797.798	15.0
17797.798	27.7

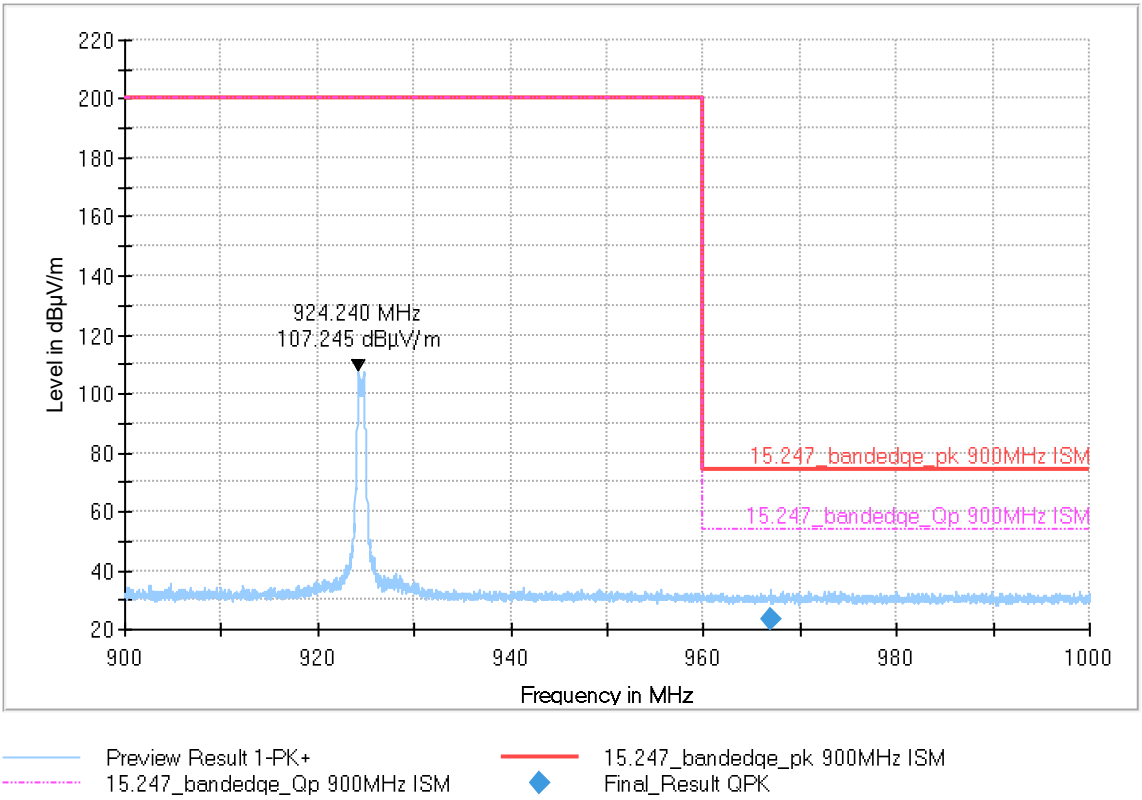


Plot # 13

Tx Frequency: 924.5 MHz	Modulation: GFSK

Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)	Comment
966.90	23.45972842	74.00	50.54	500.0	120.0	117.0	V	2.0	-1.0	



9 Test setup photos

Setup photos are included in supporting file name: “EMC_TELUL_232_25001_FCC_Setup_Photos”

10 Test Equipment And Ancillaries Used For Testing

EMC Lab 2

Equipment Type	Manufacturer	Model	Serial #	Calibration Cycle	Last Calibration Date
PASSIVE LOOP ANTENNA	ETS LINDGREN	6512	000164698	3 Years	09/05/2025
BILOG ANTENNA	A.H. SYSTEMS	BiLA2G	569	3 Years	09/08/2025
HORN ANTENNA	EMCO	3115	00035111	3 Years	09/04/2025
HORN ANTENNA	ETS LINDGREN	3117-PA	00167061	3 Years	09/04/2025
ESW.EMI TEST RECEIVER	ROHDE & SCHWARZ	ESW44	101715	3 Years	04/17/2024
DIGITAL THERMOMETER	Control Company	4410,90080-03	230712972	3 Years	10/18/2023
Multimeter	Fluke	115	56090717MV	3 Years	09/25/2025
Software	EMC32	Version 10.50.40	-	-	-

Note: 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.

11 Revision History

Date	Report Name	Changes to report	Prepared by
2025-10-30	EMC_TELUL_232_25001_ISM	Initial Version	Art Thammanavarat

<<< The End >>>