FCC RADIO TEST REPORT

FCC ID	:	**N7NEM92**
Equipment	:	**Wireless Module**
Brand Name	:	**Sierra Wireless**
Model Name	:	**EM9293**
Applicant	:	**Sierra Wireless, ULC** **13811 Wireless Way, Richmond, BC, Canada V6A 3A4**
Manufacturer	:	**Sierra Wireless, ULC** **13811 Wireless Way, Richmond, BC, Canada V6A 3A4**
Standard	:	**FCC 47 CFR Part 2, 27**

The product was received on Nov. 22, 2024 and testing was performed from Dec. 04, 2024 to Dec. 07, 2024. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. EMC & Wireless Communications Laboratory
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)

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History of this test report

Report No.	Version	Description	Issue Date
FG4N2211	01	Initial issue of report	Dec. 13, 2024

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.2	§2.1046	Conducted Output Power	Reporting only	-
3.3	§2.1051 §27.1507 (d)	Peak-to-Average Ratio	Reporting only	-
3.4	§2.1049 §27.1506	Occupied Bandwidth	Reporting only	-
3.5	§2.1051 §27.1509 (a)	Conducted Band Edge Measurement	Pass	-
3.6	§2.1051 §27.1509 (a)	Conducted Spurious Emission	Pass	-
3.7	§2.1055	Frequency Stability Temperature & Voltage	Pass	-
4.1	§2.1053 §27.1509 (a)	Radiated Spurious Emission	Pass	27.84 dB under the limit at 2696.00 MHz

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”.

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Danny Lee

Report Producer: Michelle Chen

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
General Specs WCDMA/LTE/5G NR, and GNSS. **Antenna Type** WWAN: Dipole Antenna GPS / Glonass / Galileo / BeiDou : Dipole antenna	
Antenna Gain	**Band 106:** 10.5 dBi

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to Disclaimer in report summary.
2. Maximum allow antenna Gain: refer MPE Report FA4N2211.

1.2 Modification of EUT

No modifications are made to the EUT during all test items.

1.3 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No.**
	TH03-HY
Test Engineer	Wei Shun
Temperature (℃)	22.6~24.1
Relative Humidity (%)	53.2~55.4

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	**Sporton Site No.**
	03CH12-HY (TAF Code: 3786)
Test Engineer	Jack Cheng, Tim Lee and Wilson Wu
Temperature (℃)	20~25
Relative Humidity (%)	50~60
Remark	The Radiated Spurious Emission test item subcontracted to Sporton International Inc. Wensan Laboratory.

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC Designation No.: TW1190 and TW3786

1.4 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC 47 CFR Part 2, 27
- ANSI C63.26-2015
- FCC KDB 971168 D01 Power Meas. License Digital Systems v03r01
- FCC KDB 412172 D01 Determining ERP and EIRP v01r01
- FCC KDB 414788 D01 Radiated Test Site v01r01

Remark:

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

Antenna port conducted and radiated test items listed below are performed according to KDB 971168 D01 Power Meas. License Digital Systems v03r01 with maximum output power.

For radiated measurement, the measured emission level of the EUT was maximized by rotating the EUT on a turntable, adjusting the orientation of the EUT and EUT antenna in two config (Ant. Horizontal and Ant. Vertical), and adjusting the measurement antenna orientation, following C63.26 exploratory test procedures and only the worst case emissions were reported in this report..

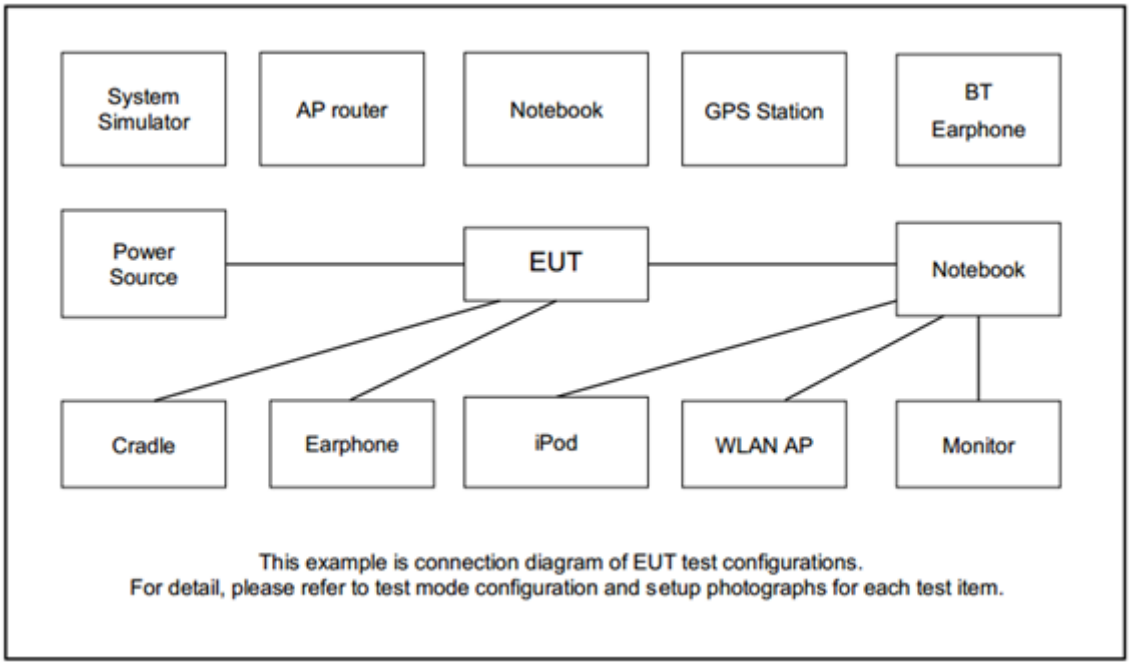
Modulation Type	Modulation
A	QPSK
B	16QAM
C	64QAM
D	256QAM

Test Item	Modulation Type	Bandwidth	RB Size	Channel
Conducted Power	A, B, C, D	All	1, Half, Full	L, M, H
EIRP	A, B, C, D	All	1, Half, Full	L, M, H
PAR	A, B, C, D	3 MHz	Full	M
Bandwidth	A, B, C, D	All	Full	M
CBE	A, B, C, D	All	1RB, Full	L, H
CSE	A	All	1RB	L, M, H
Frequency Stability	A	1.4 MHz	Full	M
RSE	A	1.4 MHz	1RB	L, M, H

Remark:

1. Evaluated all the transmitter signal and reporting worst-case configuration among all modulation types.
2. The device is investigated from 30MHz to 10 times of fundamental signal for radiated spurious emission test under different RB size/offset and modulations in exploratory test. Subsequently, only the worst-case emissions are reported.

2.2 Connection Diagram of Test System



2.3 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	Anritsu	MT8821C	N/A	N/A	Unshielded, 1.8 m

2.4 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Example :

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

2.5 Frequency List of Low/Middle/High Channels

Band 106 Channel and Frequency List				
BW [MHz]	**Channel/Frequency(MHz)**	**Lowest**	**Middle**	**Highest**
3	Channel	-	134322	-
	Frequency	-	899	-
1.4	Channel	134314	134322	134330
	Frequency	898.2	899	899.8

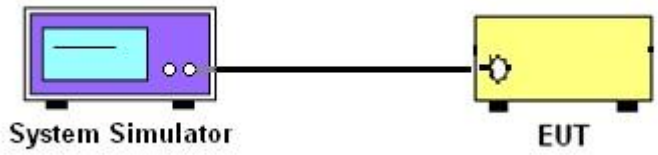
3 Conducted Test Items

3.1 Measuring Instruments

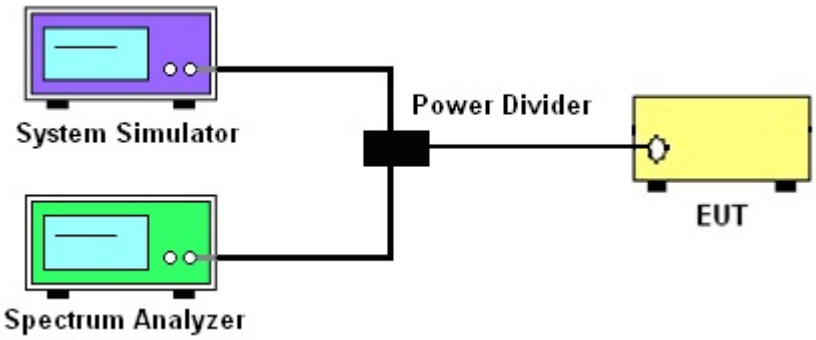
See list of measuring instruments of this test report.

3.1.1 Test Setup

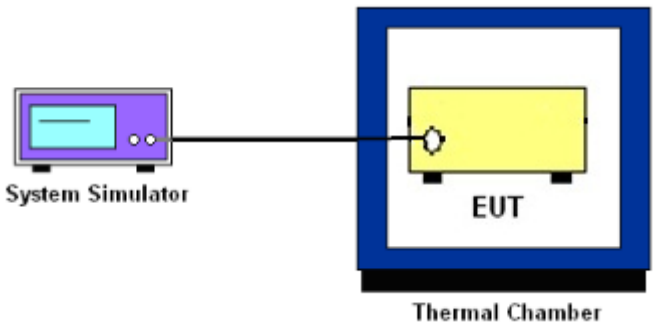
3.1.2 Conducted Output Power



3.1.3 Peak-to-Average Ratio, Occupied Bandwidth ,Conducted Band-Edge and Conducted Spurious Emission



3.1.4 Frequency Stability



3.1.5 Test Result of Conducted Test

Please refer to Appendix A.

3.2 Conducted Output Power and

3.2.1 Description of the Conducted Output Power Measurement and Measurement

A system simulator was used to establish communication with the EUT. Its parameters were set to force the EUT transmitting at maximum output power. The measured power in the radio frequency on the transmitter output terminals shall be reported.

The ERP of portable stations. Portable stations must not exceed 3 watts ERP.

According to KDB 412172 D01 Power Approach,

EIRP = P_T + G_T – L_C, ERP = EIRP -2.15, where

P_T = transmitter output power in dBm

G_T = gain of the transmitting antenna in dBi

L_C = signal attenuation in the connecting cable between the transmitter and antenna in dB

3.2.2 Test Procedures

1. The transmitter output port was connected to the system simulator.
2. Set EUT at maximum power through the system simulator.
3. Select lowest, middle, and highest channels for each band and different modulation.
4. Measure and record the power level from the system simulator.

3.3 Peak-to-Average Ratio

3.3.1 Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

3.3.2 Test Procedures

1. The EUT was connected to spectrum and system simulator via a power divider.
2. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
3. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
4. Record the deviation as Peak to Average Ratio.

3.4 Occupied Bandwidth

3.4.1 Description of Occupied Bandwidth Measurement

The occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

3.4.2 Test Procedures

The testing follows ANSI C63.26-2015 Section 5.4.3 (26dB) and Section 5.4.4 (99OB)

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
3. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
4. Set the detection mode to peak, and the trace mode to max hold.
5. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace. (this is the reference value)
6. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
7. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “–X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
8. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

3.5 Conducted Band Edge

3.5.1 Description of Conducted Band Edge Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

3.5.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured.
3. Set RBW >= 1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
4. Beyond the 1 MHz band from the band edge, RBW=1MHz was used.
5. Set spectrum analyzer with RMS detector.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
7. Checked that all the results comply with the emission limit line.

3.6 Conducted Spurious Emission

3.6.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10^{th} harmonic.

3.6.2 Test Procedures

The testing follows FCC KDB 971168 D01 v03r01 Section 6.1.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. Make the measurement with the spectrum analyzer's RBW = 100 kHz if the authorized frequency band/block is at or below 1 GHz and 1 MHz if the authorized frequency band/block is above 1 GH, VBW = 3 * RBW.
6. Set spectrum analyzer with RMS detector.
7. Taking the record of maximum spurious emission.
8. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
9. The limit line is derived from 43 + 10log(P)dB below the transmitter power P(Watts)

3.7 Frequency Stability

3.7.1 Description of Frequency Stability Measurement

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

3.7.2 Test Procedures for Temperature Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

1. The EUT was set up in the thermal chamber and connected with the system simulator.
2. With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

3.7.3 Test Procedures for Voltage Variation

The testing follows FCC KDB 971168 D01 v03r01 Section 9.0.

4. The EUT was placed in a temperature chamber at 20±5° C and connected with the system simulator.
5. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
6. The variation in frequency was measured for the worst case.

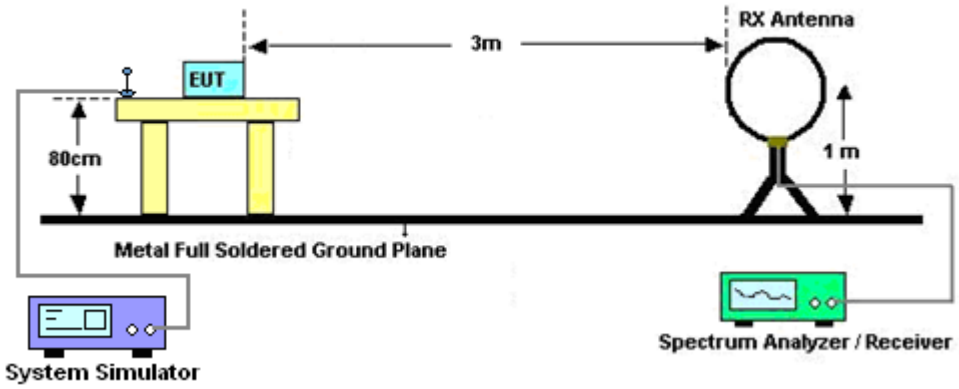
4 Radiated Test Items

4.1 Measuring Instruments

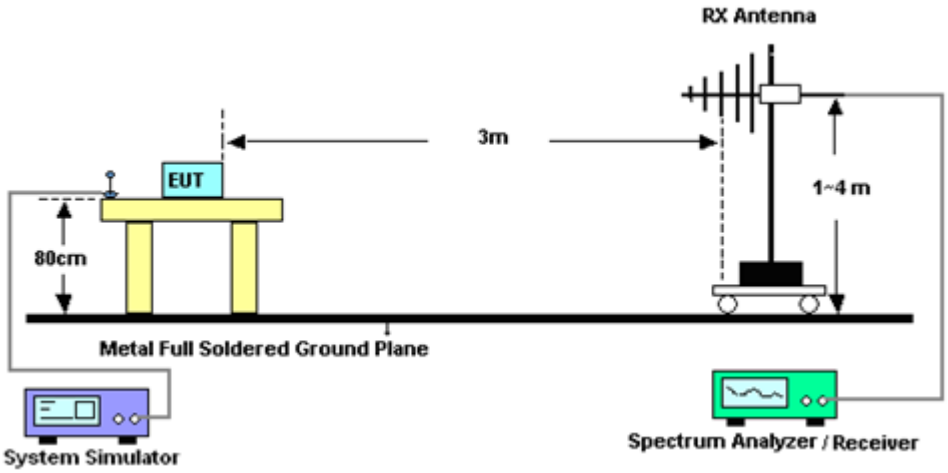
See list of measuring instruments of this test report.

4.1.1 Test Setup

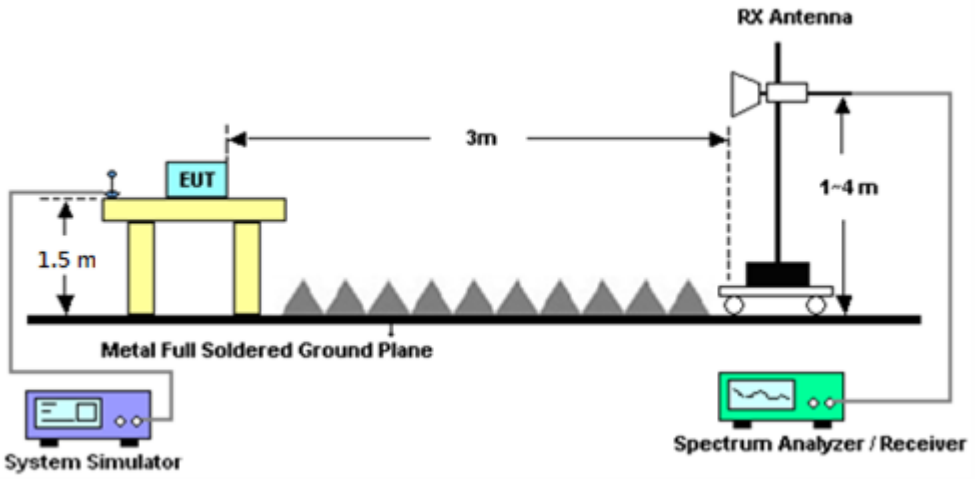
For radiated test below 30MHz



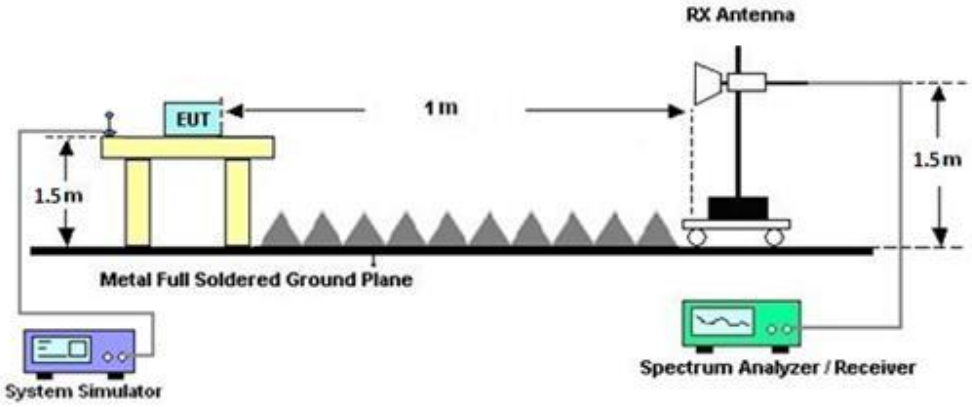
For radiated test from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



4.1.2 Test Result of Radiated Test

Please refer to Appendix B.

Note:

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.

5 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Loop Antenna	Rohde & Schwarz	HFH2-Z2	100315	9 kHz~30 MHz	Feb. 23, 2024	Dec. 04, 2024~ Dec. 05, 2024	Feb. 22, 2025	Radiation (03CH12-HY)
Bilog Antenna	TESEQ	CBL 6111D & 00800N1D01N -06	37059 & 01	30MHz~1GHz	Nov. 27, 2024	Dec. 04, 2024~ Dec. 05, 2024	Nov. 26, 2025	Radiation (03CH12-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-0211 4	1GHz~18GHz	Jul. 11, 2024	Dec. 04, 2024~ Dec. 05, 2024	Jul. 10, 2025	Radiation (03CH12-HY)
Preamplifier	E-INSTRUMENT TECH LTD.	ERA-100M-18 G-56-01-A70	EC1900249	1GHz-18GHz	Dec. 20, 2023	Dec. 04, 2024~ Dec. 05, 2024	Dec. 19, 2024	Radiation (03CH12-HY)
Spectrum Analyzer	Agilent	N9010A	MY53470118	10Hz~44GHz	Aug. 09, 2024	Dec. 04, 2024~ Dec. 05, 2024	Aug. 08, 2025	Radiation (03CH12-HY)
EMI Test Receiver	Agilent	N9038A(MXE)	MY53290053	20Hz~26.5GHz	Sep. 09, 2024	Dec. 04, 2024~ Dec. 05, 2024	Sep. 08, 2025	Radiation (03CH12-HY)
Notch Filter	Wainwright	WHKX12-900-1000-15000-60 SS	SN11	1GHz High Pass Filter	Mar. 13, 2024	Dec. 04, 2024~ Dec. 05, 2024	Mar. 12, 2025	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9kHz~30MHz	Mar. 06, 2024	Dec. 04, 2024~ Dec. 05, 2024	Mar. 05, 2025	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 126E	0058/126E	30MHz~18GHz	Dec. 18, 2023	Dec. 04, 2024~ Dec. 05, 2024	Dec. 17, 2024	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	505134/2	30MHz~40GHz	Dec. 18, 2023	Dec. 04, 2024~ Dec. 05, 2024	Dec. 17, 2024	Radiation (03CH12-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803953/2	30MHz~40GHz	Dec. 18, 2023	Dec. 04, 2024~ Dec. 05, 2024	Dec. 17, 2024	Radiation (03CH12-HY)
Hygrometer	TECPEL	DTM-303B	TP210090	N/A	Aug. 29, 2024	Dec. 04, 2024~ Dec. 05, 2024	Aug. 28, 2025	Radiation (03CH12-HY)
Controller	EMEC	EM1000	N/A	Control Turn table & Ant Mast	N/A	Dec. 04, 2024~ Dec. 05, 2024	N/A	Radiation (03CH12-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1m~4m	N/A	Dec. 04, 2024~ Dec. 05, 2024	N/A	Radiation (03CH12-HY)
Turn Table	EMEC	TT2000	N/A	0~360 Degree	N/A	Dec. 04, 2024~ Dec. 05, 2024	N/A	Radiation (03CH12-HY)
Software	Audix	E3 6.2009-8-24	RK-000989	N/A	N/A	Dec. 04, 2024~ Dec. 05, 2024	N/A	Radiation (03CH12-HY)
Radio Communication Analyzer	Anritsu	MT8821C	6262025353	LTE FDD/TDD LTE-2CC DLCA/ULCA	Oct. 01, 2024	Dec. 04, 2024~ Dec. 07, 2024	Sep. 30, 2025	Conducted (TH03-HY)
Thermal Chamber	ESPEC	SH-641	92013720	-40℃ ~90℃	Sep. 06, 2024	Dec. 04, 2024~ Dec. 07, 2024	Sep. 05, 2025	Conducted (TH03-HY)
DC Power Supply	GW Instek	GPP-2323	GES906037	0V~64V ; 0A~6A	Nov. 27, 2024	Dec. 04, 2024~ Dec. 07, 2024	Nov. 26, 2025	Conducted (TH03-HY)
Coupler+10dB+ RFcable	Warison + WoKen + E-Instument	20dB 25W SMA Directional Coupler+ 10dB 18GHz_5W+S FL405_1.5M	#A+#1+#1+#7	1-18GHz	Jan. 02, 2024	Dec. 04, 2024~ Dec. 07, 2024	Jan. 01, 2025	Conducted (TH03-HY)
Power divider	Anritsu	K241C	2143398	9KHz~40GHz	Jun. 13, 2024	Dec. 04, 2024~ Dec. 07, 2024	Jun. 12, 2025	Conducted (TH03-HY)
Spectrum Analyzer	Rohde & Schwarz	FSV40	101905	10Hz~40GHz	Jul. 11, 2024	Dec. 04, 2024~ Dec. 07, 2024	Jul. 10, 2025	Conducted (TH03-HY)
Software	Sporton	LTE Conducted Test Tools	N/A	Conducted Test Item	N/A	Dec. 04, 2024~ Dec. 07, 2024	N/A	Conducted (TH03-HY)
Hygrometer	TECPEL	DTM-303B	TP210073	-10 ~ 50°C / 20 ~ 95%RH	Jun. 05, 2024	Dec. 04, 2024~ Dec. 07, 2024	Jun. 04, 2025	Conducted (TH03-HY)

6 Measurement Uncertainty

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.291 dB**

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.073 dB**

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.082 dB**

Appendix A. Test Results of Conducted Test

Conducted Output Power(Average power & ERP/EIRP)

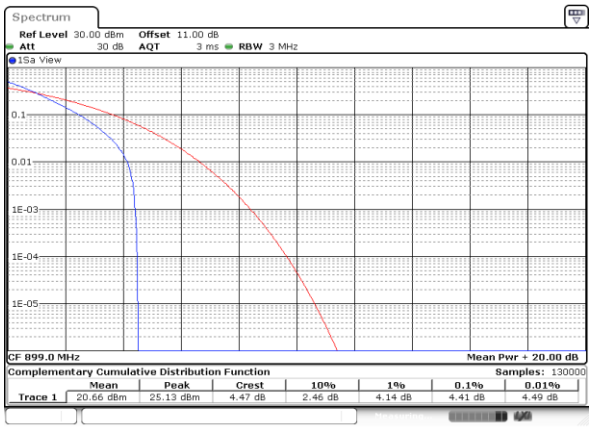
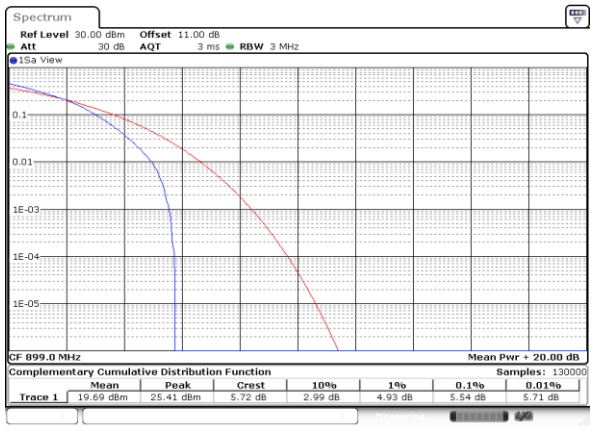
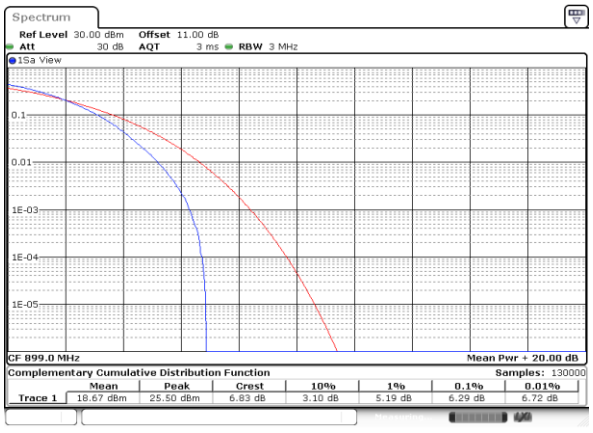
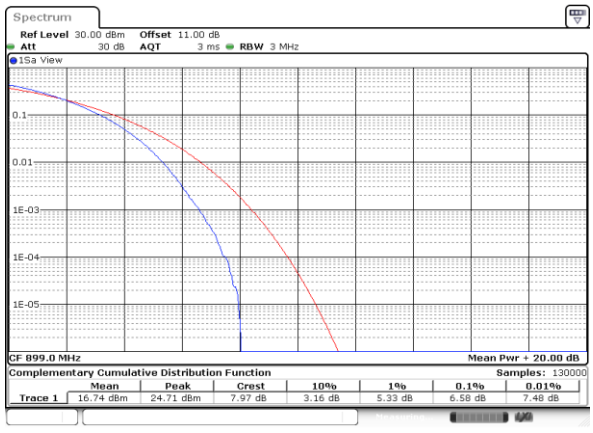
Part 27P LTE Band 106 Maximum Average Power [dBm] (GT - LC = 10.5 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
3	1	0	QPSK	-	22.66	-	31.17	1.3092
3	1	8		-	22.82	-		
3	1	14		-	22.64	-		
3	8	0		-	21.82	-		
3	8	4		-	21.83	-		
3	8	7		-	21.74	-		
3	15	0		-	21.74	-		
3	1	0	16-QAM	-	21.95	-	30.46	1.1117
3	1	8		-	22.11	-		
3	1	14		-	22.02	-		
3	8	0		-	20.85	-		
3	8	4		-	20.88	-		
3	8	7		-	20.80	-		
3	15	0		-	20.82	-		
3	1	0	64-QAM	-	20.98	-	29.33	0.8570
3	1	8		-	20.93	-		
3	1	14		-	20.90	-		
3	8	0		-	19.85	-		
3	8	4		-	19.90	-		
3	8	7		-	19.77	-		
3	15	0		-	19.86	-		
3	1	0	256-QAM	-	17.91	-	26.39	0.4355
3	1	8		-	18.04	-		
3	1	14		-	17.93	-		
3	8	0		-	17.87	-		
3	8	4		-	17.88	-		
3	8	7		-	17.91	-		
3	15	0		-	17.89	-		
Limit	ERP < 3W			Result			Pass	

Part 27P LTE Band 106 Maximum Average Power [dBm] (GT - LC = 10.5 dB)								
BW [MHz]	RB Size	RB Offset	Mod	Lowest	Middle	Highest	ERP (dBm)	ERP (W)
1.4	1	0	QPSK	22.58	22.61	22.57	31.14	1.3002
1.4	1	3		22.78	22.79	22.73		
1.4	1	5		22.58	22.55	22.61		
1.4	3	0		21.77	21.73	21.79		
1.4	3	1		21.73	21.80	21.81		
1.4	3	3		21.68	21.69	21.64		
1.4	6	0		21.64	21.67	21.72		
1.4	1	0	16-QAM	21.94	21.87	21.87	30.45	1.1092
1.4	1	3		22.10	22.04	22.01		
1.4	1	5		21.96	21.92	22.01		
1.4	3	0		20.82	20.76	20.79		
1.4	3	1		20.84	20.79	20.82		
1.4	3	3		20.75	20.77	20.75		
1.4	6	0		20.80	20.80	20.77		
1.4	1	0	64-QAM	20.93	20.95	20.96	29.31	0.8531
1.4	1	3		20.84	20.89	20.87		
1.4	1	5		20.81	20.88	20.89		
1.4	3	0		19.81	19.83	19.83		
1.4	3	1		19.87	19.88	19.88		
1.4	3	3		19.75	19.69	19.76		
1.4	6	0		19.84	19.84	19.78		
1.4	1	0	256-QAM	17.94	17.83	17.84	26.39	0.4355
1.4	1	3		18.04	17.94	17.92		
1.4	1	5		17.91	17.86	17.79		
1.4	3	0		17.89	17.89	17.79		
1.4	3	1		17.88	17.88	17.85		
1.4	3	3		17.86	17.74	17.86		
1.4	6	0		17.82	17.73	17.70		
Limit	ERP < 3W			Result			Pass	

LTE Band 106

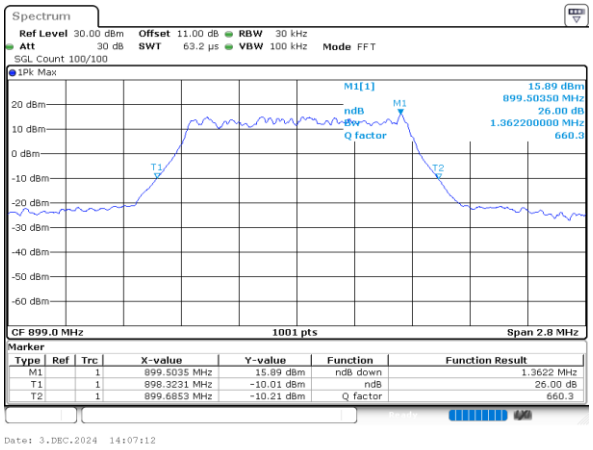
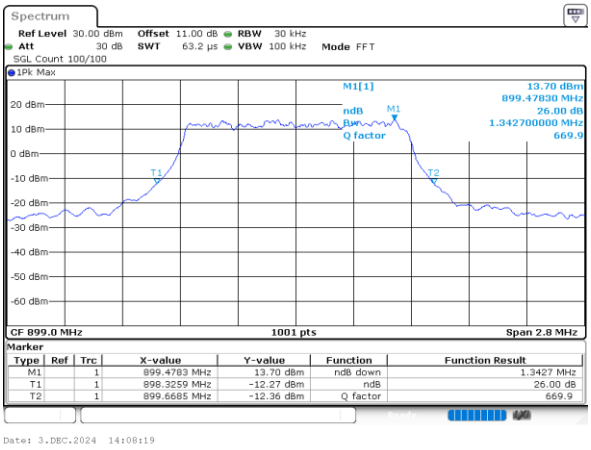
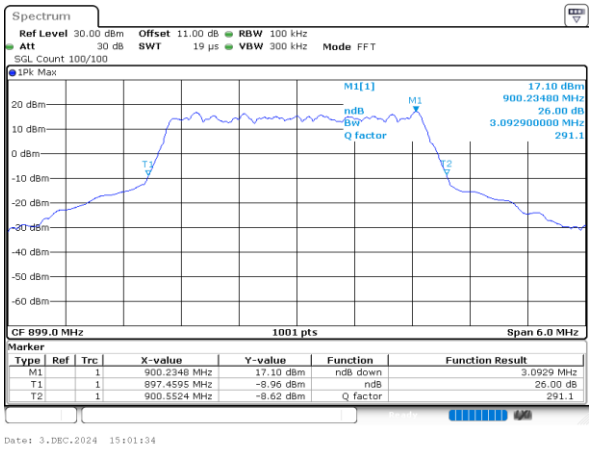
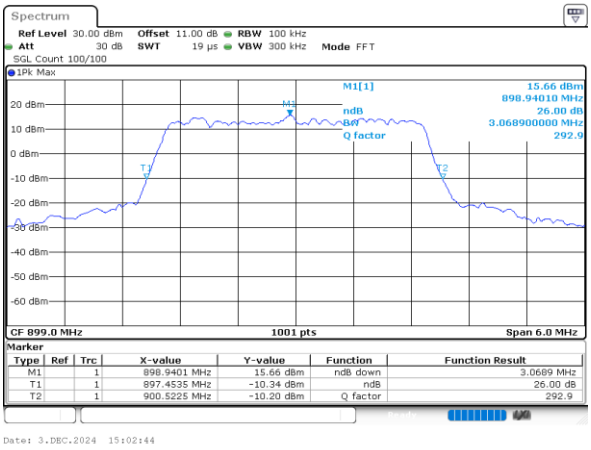
Peak-to-Average Ratio

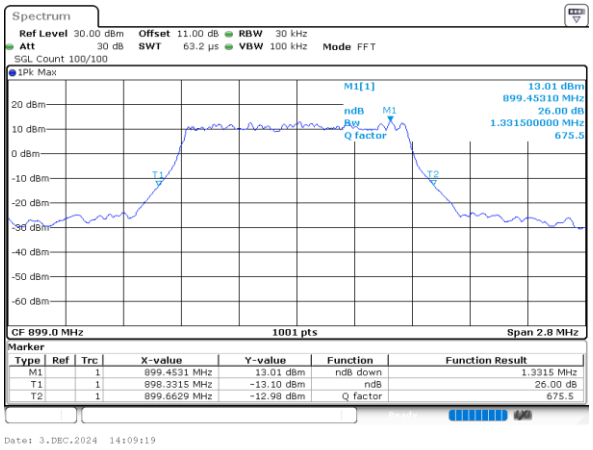
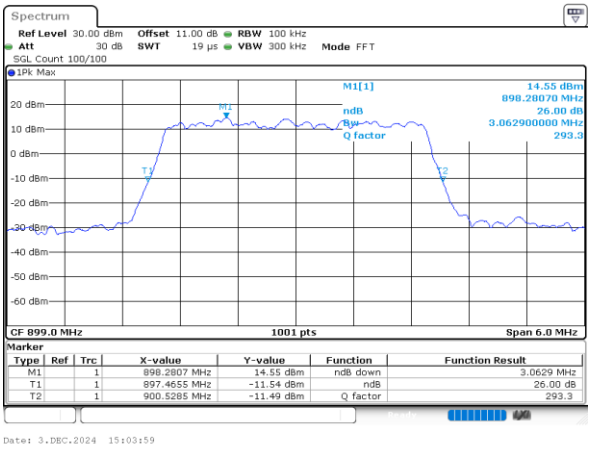
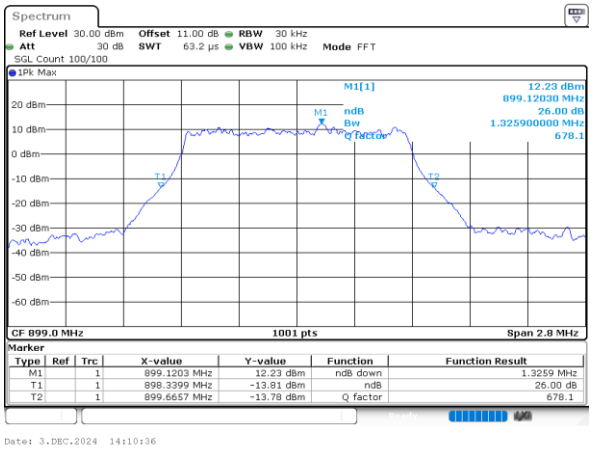
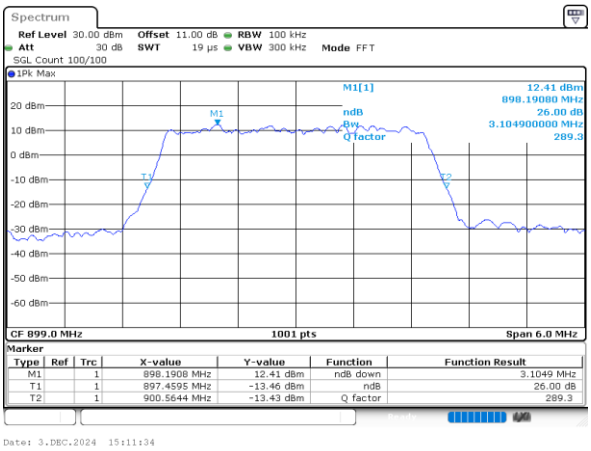
Mode	LTE Band 106 / 3MHz				
Mod.	QPSK	16QAM	64QAM	256QAM	Limit: 13dB
RB Size	Full RB	Full RB	Full RB	Full RB	Result
Middle CH	4.41	5.54	6.29	6.58	PASS

LTE Band 106 / 3MHz / QPSK	LTE Band 106 / 3MHz / 16QAM
Middle Channel / Full RB	Middle Channel / Full RB
	
LTE Band 106 / 3MHz / 64QAM	LTE Band 106 / 3MHz / 256QAM
Middle Channel / Full RB	Middle Channel / Full RB
	

26dB Bandwidth

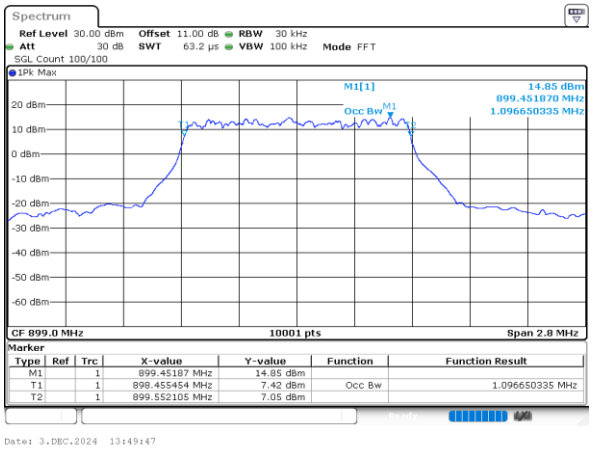
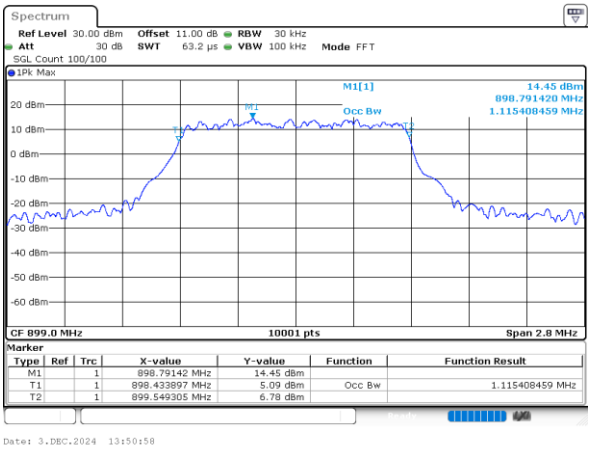
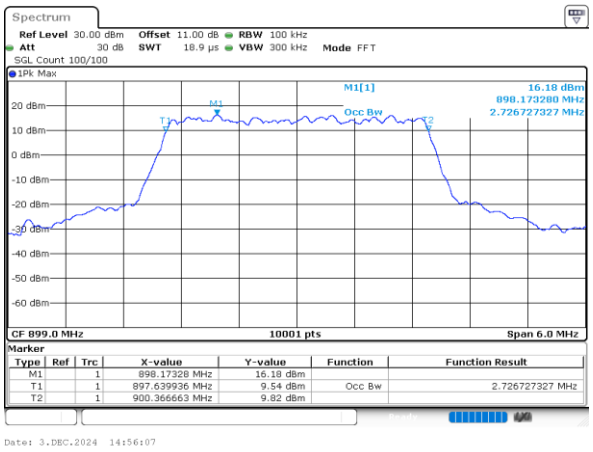
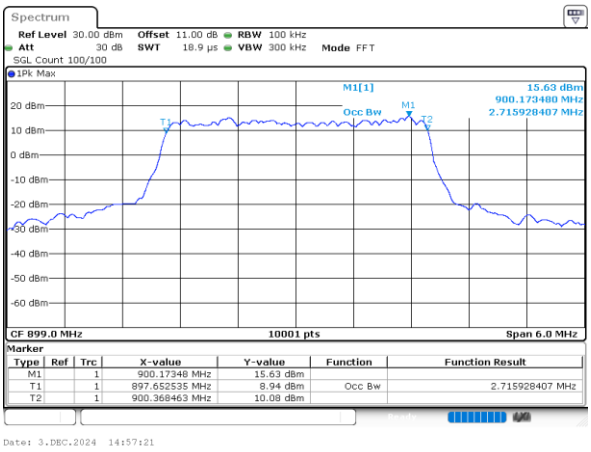
Mode	LTE Band 106 : 26dB BW(MHz)			
BW	1.4MHz		3MHz	
Mod.	QPSK	16QAM	QPSK	16QAM
Middle CH	1.36	1.34	3.09	3.06
Mode	LTE Band 106 : 26dB BW(MHz)			
BW	1.4MHz		3MHz	
Mod.	64QAM	256QAM	64QAM	256QAM
Middle CH	1.33	1.32	3.06	3.10

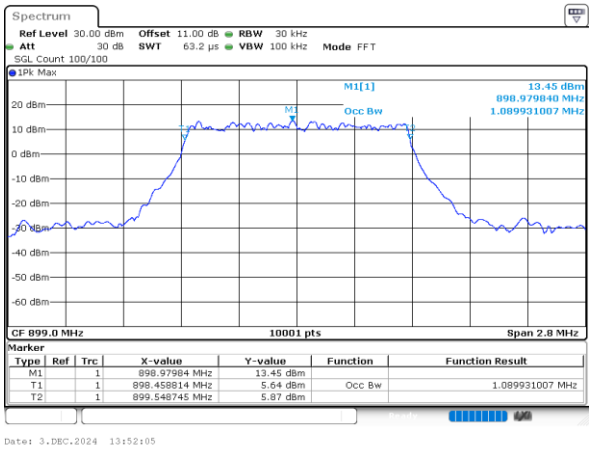
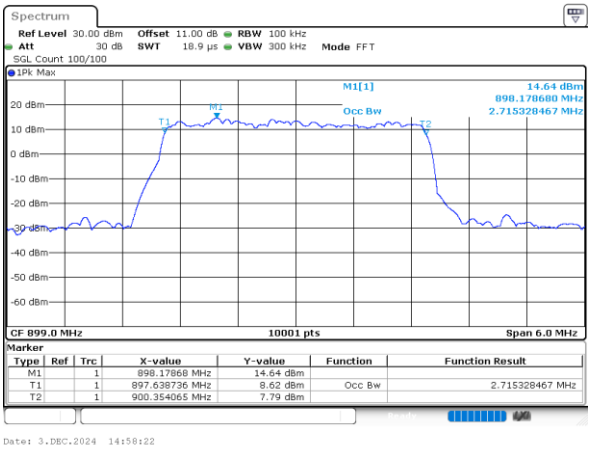
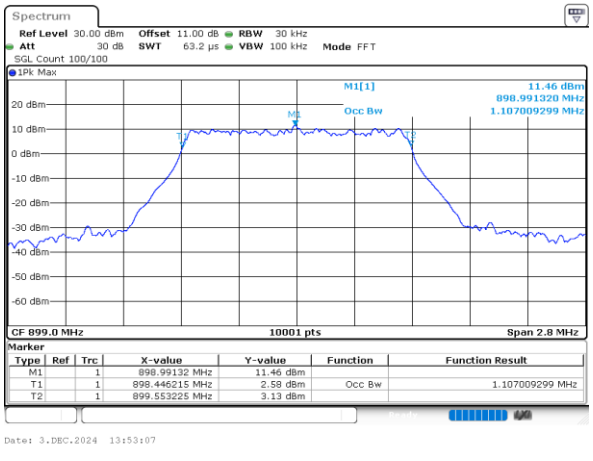
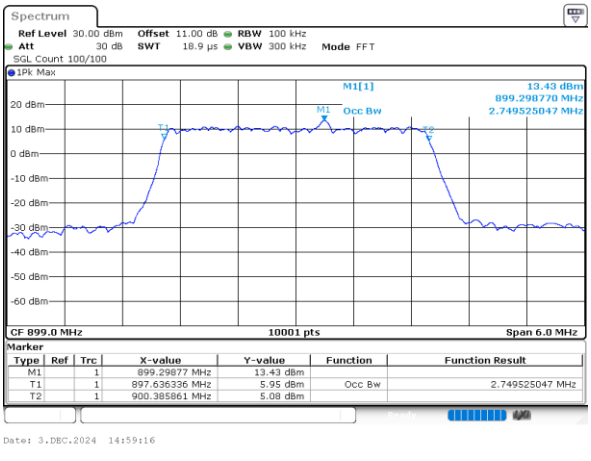
LTE Band 106	
Middle Channel / 1.4MHz / QPSK	**Middle Channel / 1.4MHz / 16QAM**
	
Middle Channel / 3MHz / QPSK	**Middle Channel / 3MHz / 16QAM**
	

LTE Band 106	
Middle Channel / 1.4MHz / 64QAM	**Middle Channel / 3MHz / 64QAM**
	
LTE Band 106	
Middle Channel / 1.4MHz / 256QAM	**Middle Channel / 3MHz / 256QAM**
	

Occupied Bandwidth

Mode	LTE Band 106 : 99%OBW(MHz)			
BW	1.4MHz		3MHz	
Mod.	QPSK	16QAM	QPSK	16QAM
Middle CH	1.09	1.11	2.72	2.71
Mode	LTE Band 106 : 99%OBW(MHz)			
BW	1.4MHz		3MHz	
Mod.	64QAM	256QAM	64QAM	256QAM
Middle CH	1.08	1.10	2.71	2.74

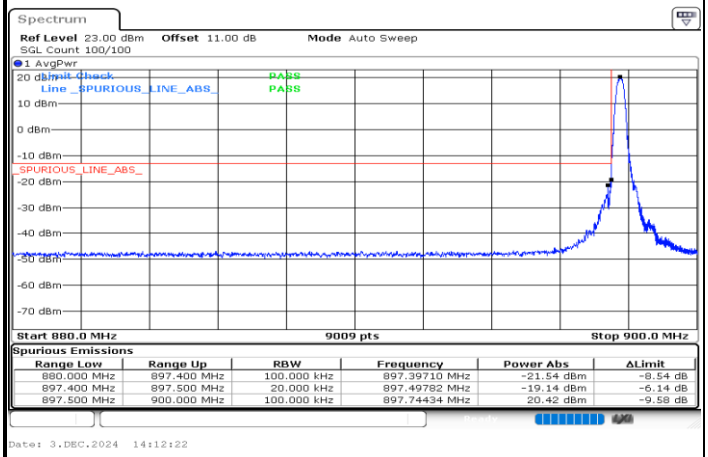
LTE Band 106	
Middle Channel / 1.4MHz / QPSK	**Middle Channel / 1.4MHz / 16QAM**
	
Middle Channel / 3MHz / QPSK	**Middle Channel / 3MHz / 16QAM**
	

LTE Band 106	
Middle Channel / 1.4MHz / 64QAM	**Middle Channel / 3MHz / 64QAM**
	
Middle Channel / 1.4MHz / 256QAM	**Middle Channel / 3MHz / 256QAM**
	

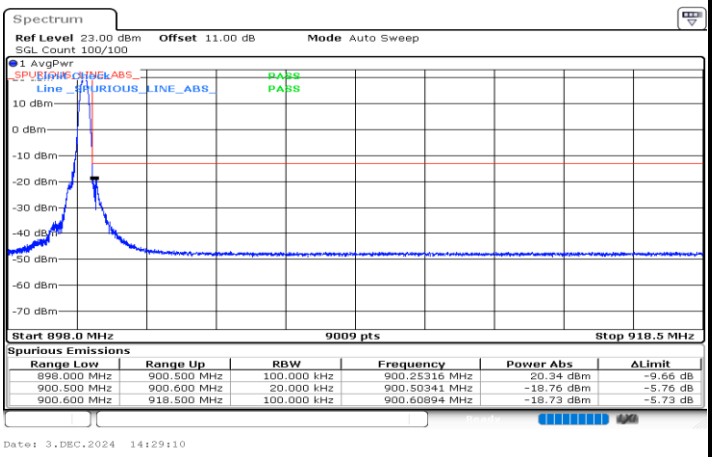
Conducted Band Edge

LTE Band 106 / 1.4MHz / QPSK

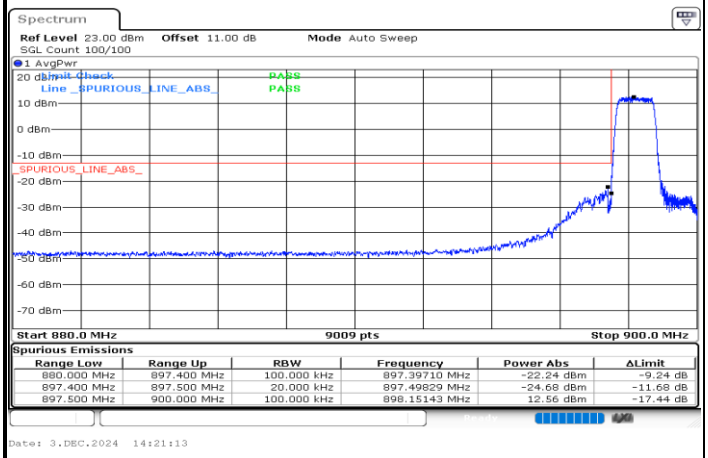
Lowest Band Edge / 1RB



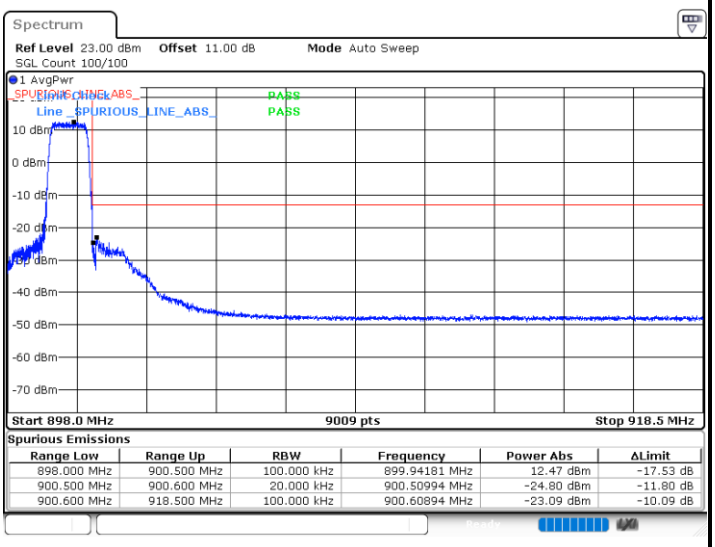
Highest Band Edge / 1RB



Lowest Band Edge / Full RB

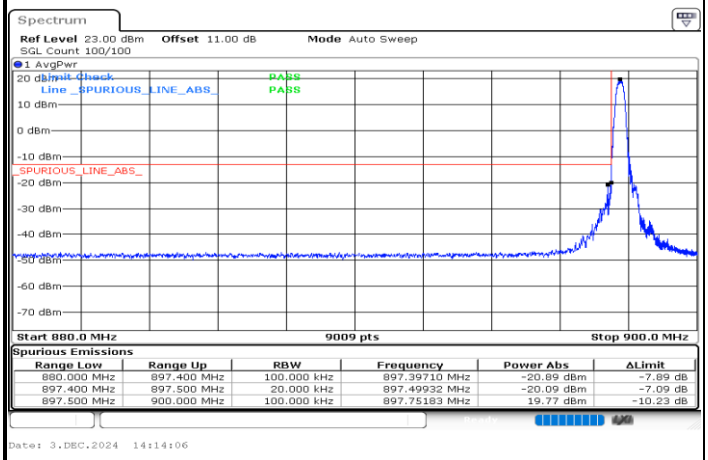


Highest Band Edge / Full RB

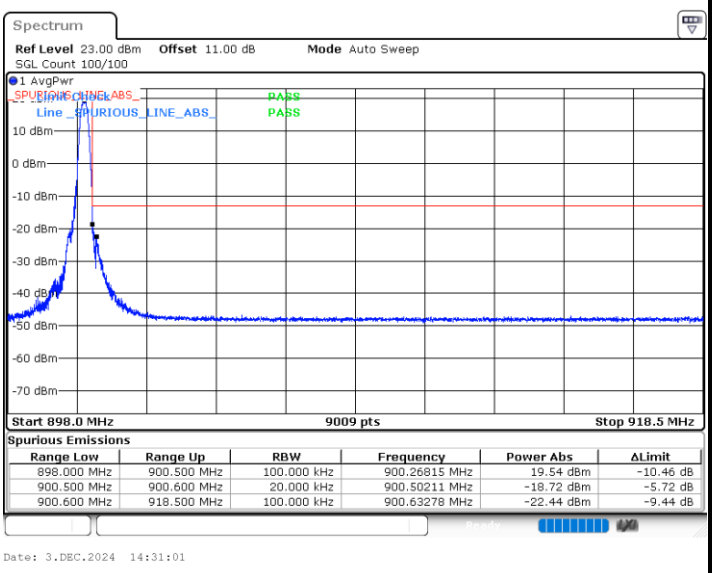


LTE Band 106 / 1.4MHz / 16QAM

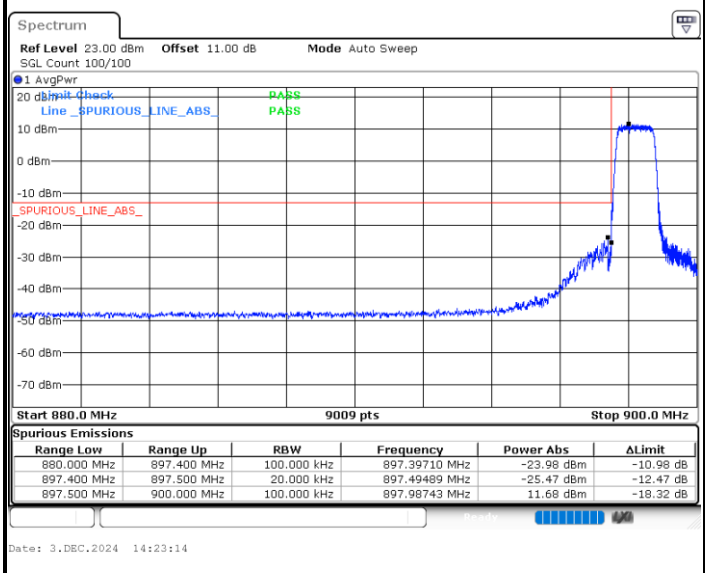
Lowest Band Edge / 1 RB



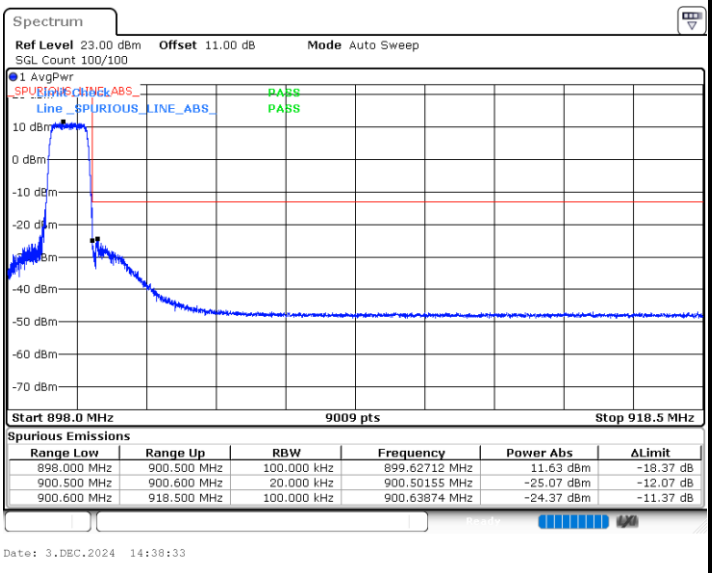
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB

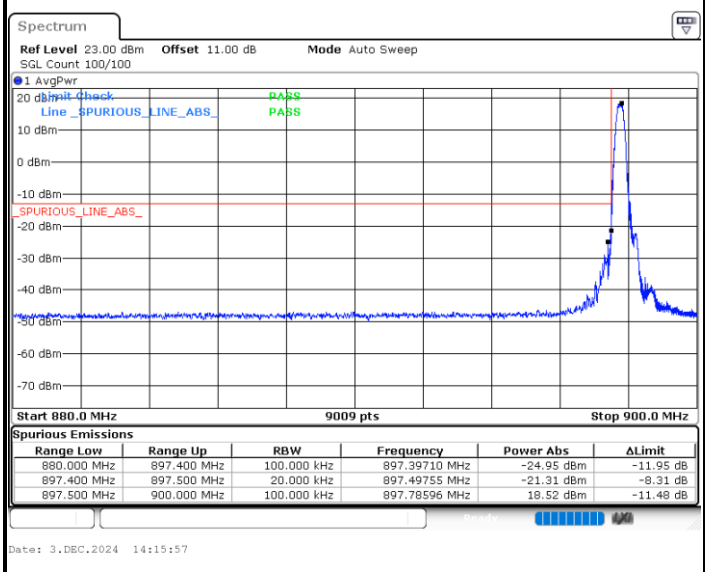


Highest Band Edge / Full RB

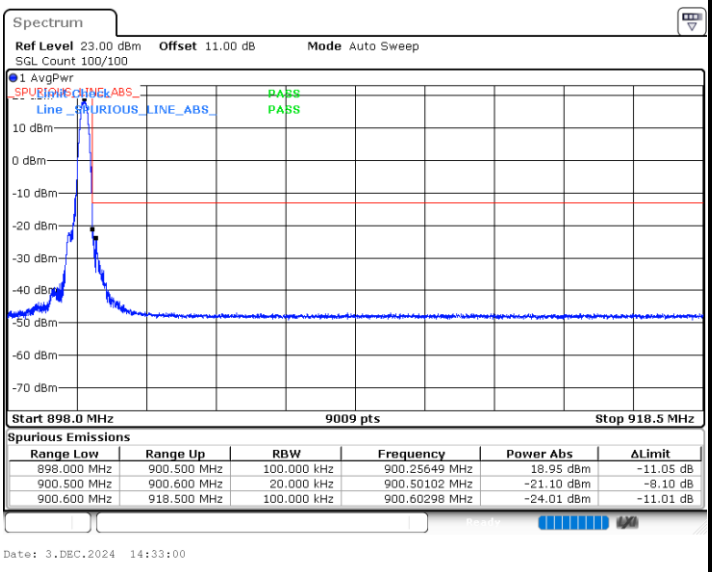


LTE Band 106 / 1.4MHz / 64QAM

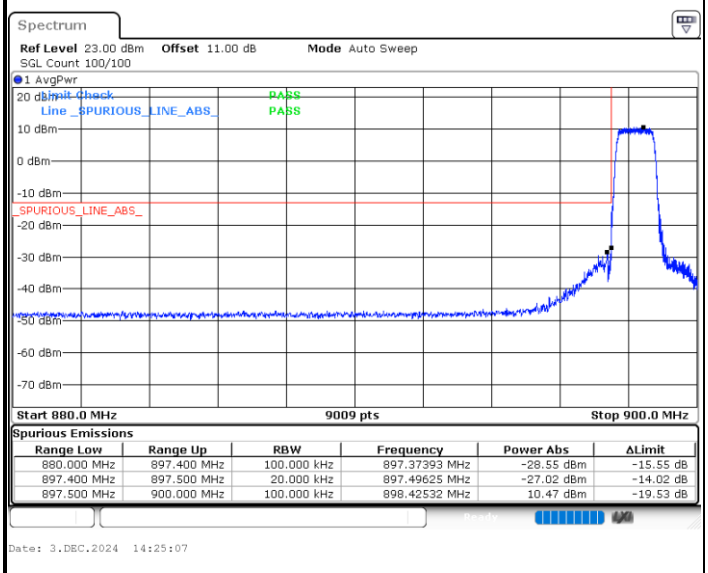
Lowest Band Edge / 1 RB



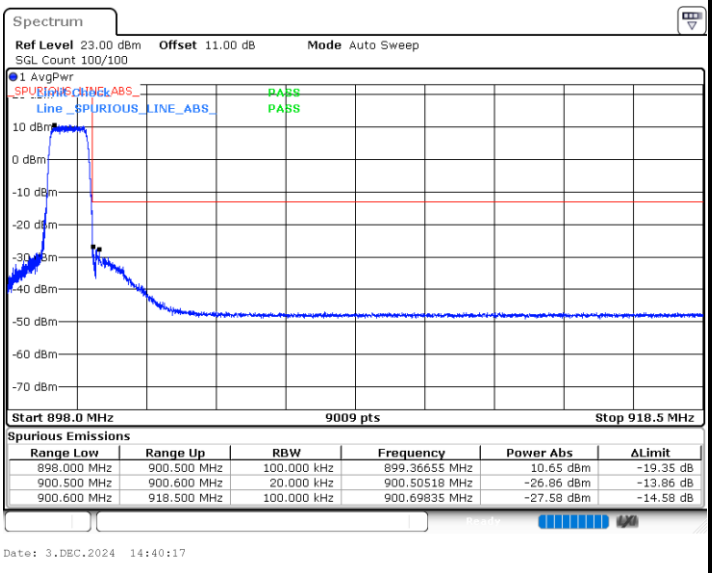
Highest Band Edge / 1 RB



Lowest Band Edge / Full RB

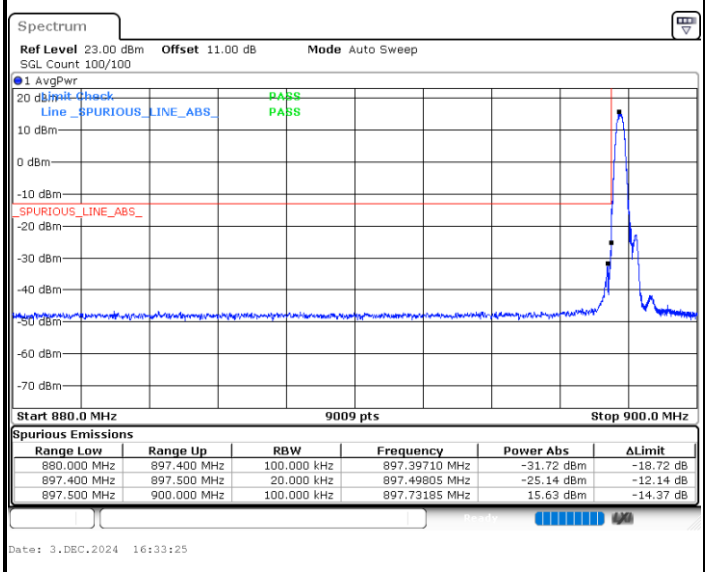


Highest Band Edge / Full RB



LTE Band 106 / 1.4MHz / 256QAM

Lowest Band Edge / 1 RB

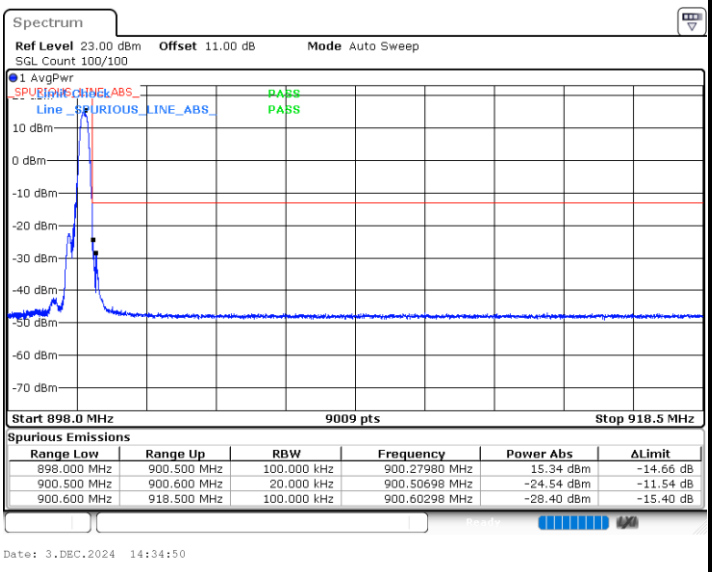


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
880.000 MHz	897.400 MHz	100.000 kHz	897.39710 MHz	-31.72 dBm	-18.72 dB
897.400 MHz	897.500 MHz	20.000 kHz	897.49805 MHz	-25.14 dBm	-12.14 dB
897.500 MHz	900.000 MHz	100.000 kHz	897.73185 MHz	15.63 dBm	-14.37 dB

Date: 3.DEC.2024 16:33:25

Highest Band Edge / 1 RB

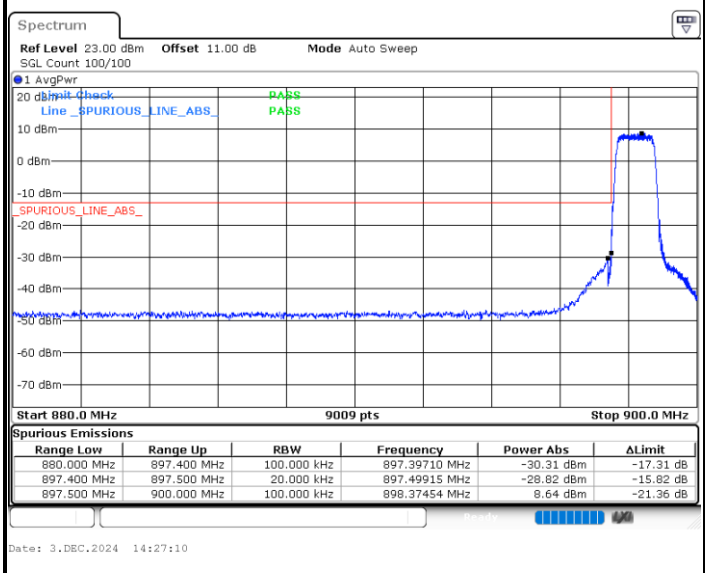


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
898.000 MHz	900.500 MHz	100.000 kHz	900.27980 MHz	15.34 dBm	-14.66 dB
900.500 MHz	900.600 MHz	20.000 kHz	900.50698 MHz	-24.54 dBm	-11.54 dB
900.600 MHz	918.500 MHz	100.000 kHz	900.60298 MHz	-28.40 dBm	-15.40 dB

Date: 3.DEC.2024 14:34:50

Lowest Band Edge / Full RB

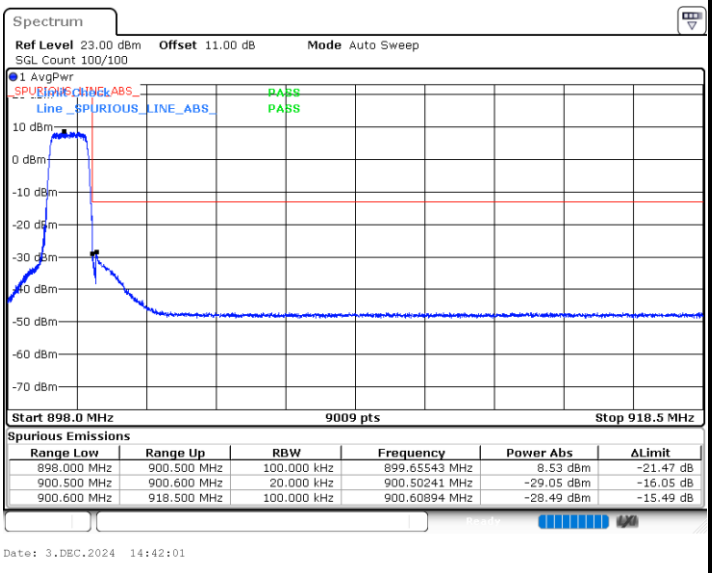


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
880.000 MHz	897.400 MHz	100.000 kHz	897.39710 MHz	-30.31 dBm	-17.31 dB
897.400 MHz	897.500 MHz	20.000 kHz	897.49915 MHz	-28.82 dBm	-15.82 dB
897.500 MHz	900.000 MHz	100.000 kHz	898.37454 MHz	8.64 dBm	-21.36 dB

Date: 3.DEC.2024 14:27:10

Highest Band Edge / Full RB



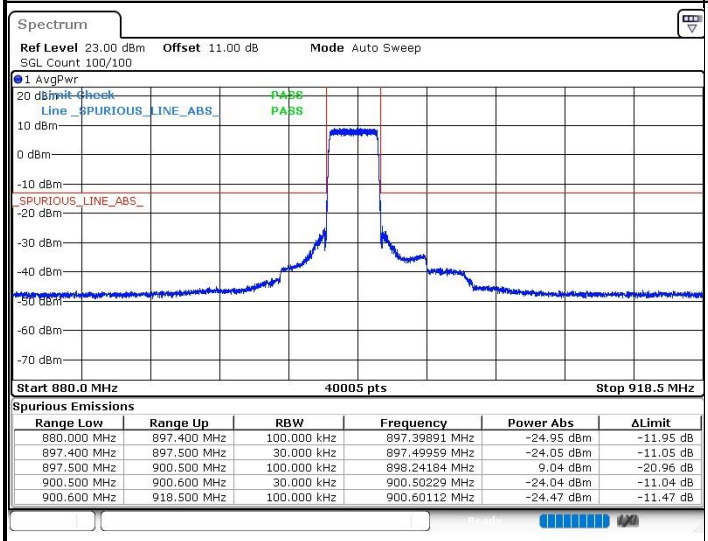
Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
898.000 MHz	900.500 MHz	100.000 kHz	899.65543 MHz	8.53 dBm	-21.47 dB
900.500 MHz	900.600 MHz	20.000 kHz	900.50241 MHz	-29.05 dBm	-16.05 dB
900.600 MHz	918.500 MHz	100.000 kHz	900.60894 MHz	-28.49 dBm	-15.49 dB

Date: 3.DEC.2024 14:42:01

LTE Band 106 / 3MHz

Middle Band Edge / Full RB / QPSK

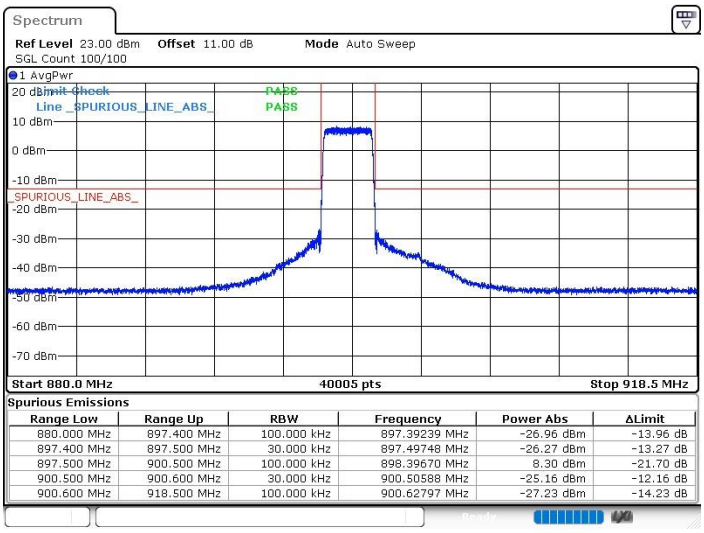


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
880.000 MHz	897.400 MHz	100.000 kHz	897.39891 MHz	-24.95 dBm	-11.95 dB
897.400 MHz	897.500 MHz	30.000 kHz	897.49959 MHz	-24.05 dBm	-11.05 dB
897.500 MHz	900.500 MHz	100.000 kHz	898.24184 MHz	9.04 dBm	-20.96 dB
900.500 MHz	900.600 MHz	30.000 kHz	900.50229 MHz	-24.04 dBm	-11.04 dB
900.600 MHz	918.500 MHz	100.000 kHz	900.60112 MHz	-24.47 dBm	-11.47 dB

Date: 7.DEC.2024 07:57:06

Middle Band Edge / Full RB / 16QAM

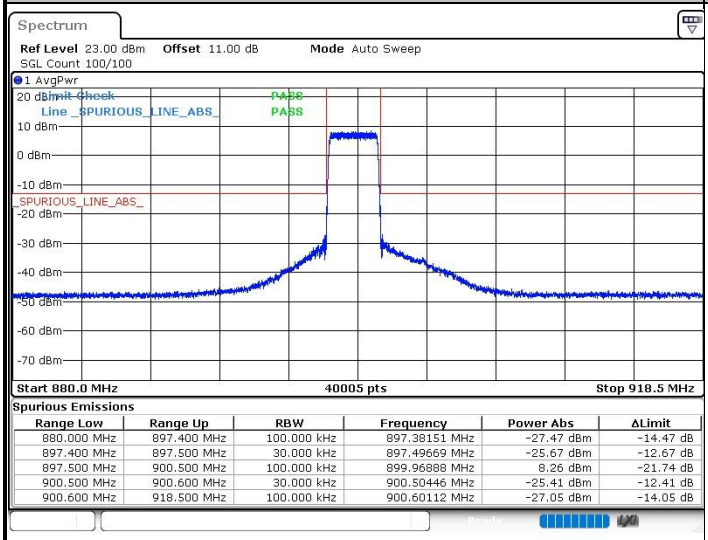


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
880.000 MHz	897.400 MHz	100.000 kHz	897.39239 MHz	-26.96 dBm	-13.96 dB
897.400 MHz	897.500 MHz	30.000 kHz	897.49748 MHz	-26.27 dBm	-13.27 dB
897.500 MHz	900.500 MHz	100.000 kHz	898.39670 MHz	8.30 dBm	-21.70 dB
900.500 MHz	900.600 MHz	30.000 kHz	900.50588 MHz	-25.16 dBm	-12.16 dB
900.600 MHz	918.500 MHz	100.000 kHz	900.62797 MHz	-27.23 dBm	-14.23 dB

Date: 7.DEC.2024 07:59:03

Middle Band Edge / Full RB / 64QAM

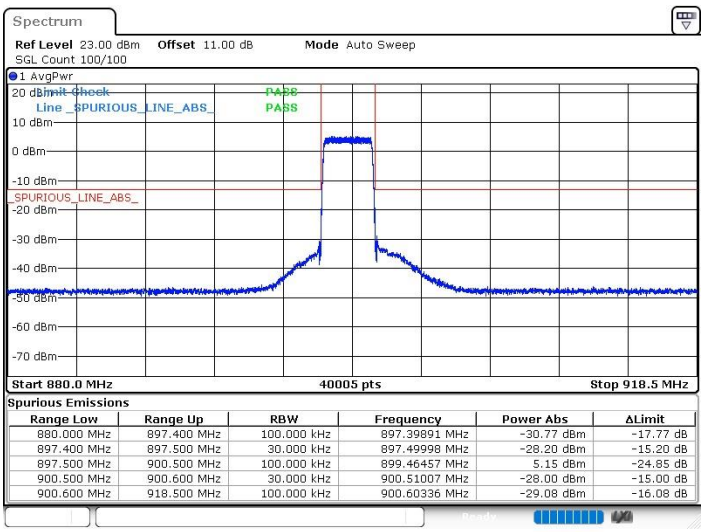


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
880.000 MHz	897.400 MHz	100.000 kHz	897.38151 MHz	-27.47 dBm	-14.47 dB
897.400 MHz	897.500 MHz	30.000 kHz	897.49669 MHz	-25.67 dBm	-12.67 dB
897.500 MHz	900.500 MHz	100.000 kHz	899.96888 MHz	8.26 dBm	-21.74 dB
900.500 MHz	900.600 MHz	30.000 kHz	900.50446 MHz	-25.41 dBm	-12.41 dB
900.600 MHz	918.500 MHz	100.000 kHz	900.60112 MHz	-27.05 dBm	-14.05 dB

Date: 7.DEC.2024 08:00:53

Middle Band Edge / Full RB / 256QANM



Spurious Emissions

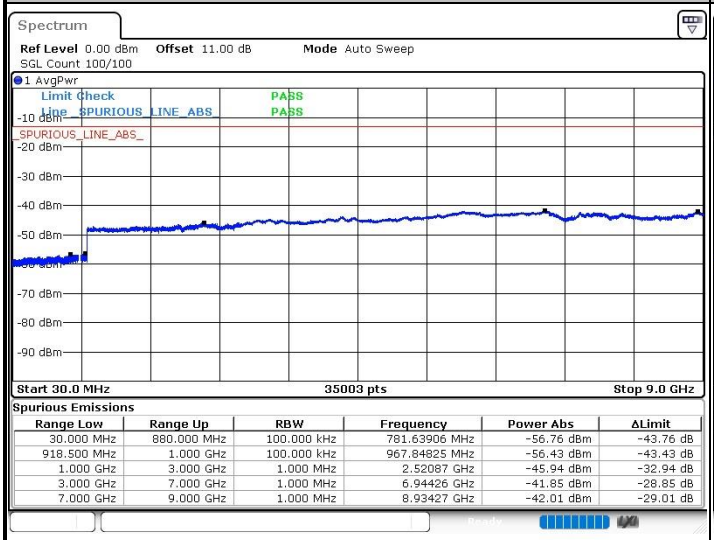
Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
880.000 MHz	897.400 MHz	100.000 kHz	897.39891 MHz	-30.77 dBm	-17.77 dB
897.400 MHz	897.500 MHz	30.000 kHz	897.49998 MHz	-28.20 dBm	-15.20 dB
897.500 MHz	900.500 MHz	100.000 kHz	899.46457 MHz	5.15 dBm	-24.85 dB
900.500 MHz	900.600 MHz	30.000 kHz	900.51007 MHz	-28.00 dBm	-15.00 dB
900.600 MHz	918.500 MHz	100.000 kHz	900.60336 MHz	-29.08 dBm	-16.08 dB

Date: 7.DEC.2024 08:03:00

Conducted Spurious Emission

LTE Band 106 / 1.4MHz

Lowest Channel / QPSK

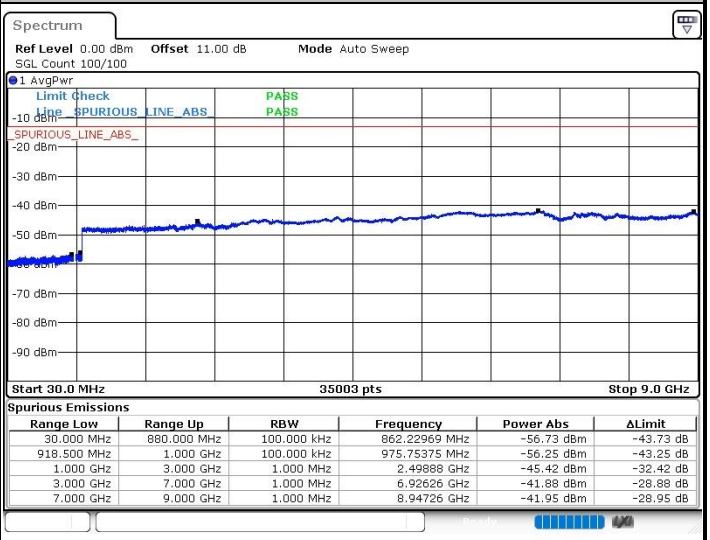


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	880.000 MHz	100.000 kHz	781.63906 MHz	-56.76 dBm	-43.76 dB
918.500 MHz	1.000 GHz	100.000 kHz	967.84825 MHz	-56.43 dBm	-43.43 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.52087 GHz	-45.94 dBm	-32.94 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.94426 GHz	-41.85 dBm	-28.85 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.93427 GHz	-42.01 dBm	-29.01 dB

Date: 3.DEC.2024 12:56:43

Middle Channel / QPSK

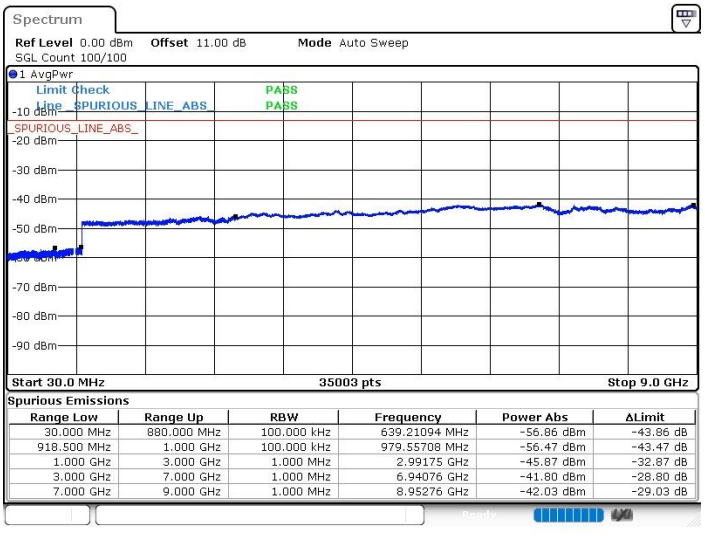


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	880.000 MHz	100.000 kHz	862.22969 MHz	-56.73 dBm	-43.73 dB
918.500 MHz	1.000 GHz	100.000 kHz	975.75375 MHz	-56.25 dBm	-43.25 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.49888 GHz	-45.42 dBm	-32.42 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.92626 GHz	-41.88 dBm	-28.88 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.94726 GHz	-41.95 dBm	-28.95 dB

Date: 3.DEC.2024 12:58:53

Highest Channel / QPSK

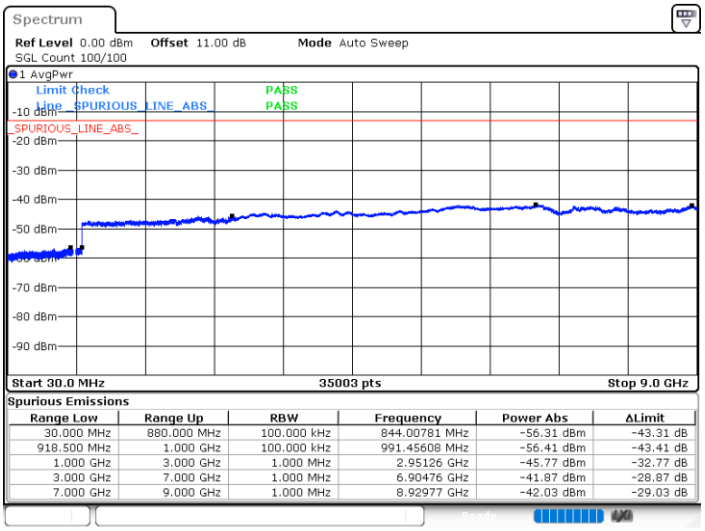


Spurious Emissions

Range Low	Range Up	RBW	Frequency	Power Abs	ΔLimit
30.000 MHz	880.000 MHz	100.000 kHz	639.21094 MHz	-56.86 dBm	-43.86 dB
918.500 MHz	1.000 GHz	100.000 kHz	979.55708 MHz	-56.47 dBm	-43.47 dB
1.000 GHz	3.000 GHz	1.000 MHz	2.99175 GHz	-45.87 dBm	-32.87 dB
3.000 GHz	7.000 GHz	1.000 MHz	6.94076 GHz	-41.80 dBm	-28.80 dB
7.000 GHz	9.000 GHz	1.000 MHz	8.95276 GHz	-42.03 dBm	-29.03 dB

Date: 3.DEC.2024 13:01:03

LTE Band 106 / 3MHz
Middle Channel / QPSK



Frequency Stability

Test Conditions		LTE Band 106 (QPSK) / Middle Channel	Limit
Temperature (°C)	Voltage (Volt)	BW 1.4MHz	Note 2.
		Deviation (ppm)	Result
50	Normal Voltage	0.0016	PASS
40	Normal Voltage	0.0026	
30	Normal Voltage	0.0010	
20(Ref.)	Normal Voltage	0.0000	
10	Normal Voltage	0.0020	
0	Normal Voltage	0.0043	
-10	Normal Voltage	0.0024	
-20	Normal Voltage	0.0014	
-30	Normal Voltage	0.0006	
20	Maximum Voltage	0.0048	
20	Normal Voltage	0.0000	
20	Minimum Voltage	0.0027	

Note:

1. Normal Voltage = 3.3 V.；Minimum Voltage = 3.135 V.；Maximum Voltage = 4.4 V.
2. The frequency fundamental emissions stay within the authorized frequency block.

Appendix B. Test Results of Radiated Test

B1. Summary of each worse mode

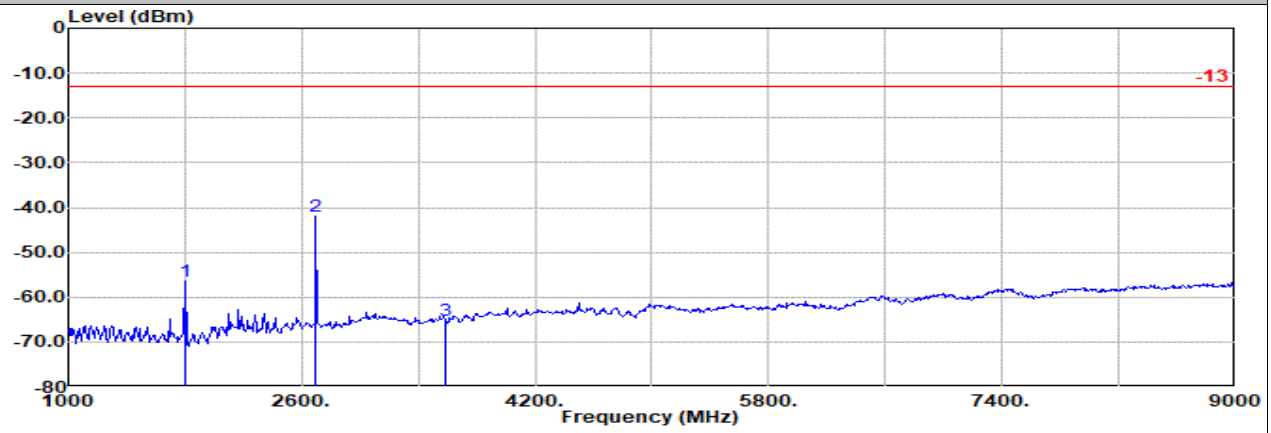
Mode	Part	Band	Ch	Freq (MHz)	Level (dBm)	Det	Ant Factor (dB)	Amp\Cbl (dB)	Filter (dB)	EIRPCF (dB)	Reading (dBuV)	Limit (dBm)	Margin (dB)	Pol	Ant
1	Part 27P	LTE B106	M	2696	-40.84	RMS	28.50	-59.45	0.44	-95.23	84.90	-13.00	-27.84	H	TX0

TX0

Part 27P Mode 1

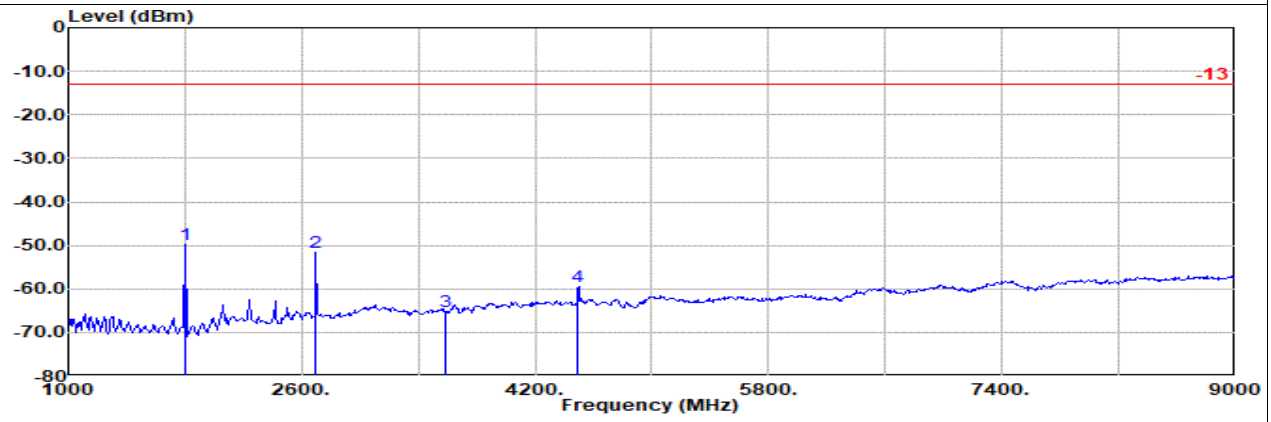
LTE B106 4M Ch134314 1RB0 QPSK

L



Site : 03CH12-HY
Condition: -13 3m 9120D-02114-240711 Horizontal
: LTE Band 106 1.4M Ch134314 1RB0 QPSK

	Freq	Level	Detector	Ant Factor	Amp\Cb l	Filter	EIRPCF	Readin g	Limit	Margin	Pol
	MHz	dBm		dB/m	dB	dB	dB	dBuV	dBm	dB	
1	1796.00	-56.51	RMS	25.20	-61.54	0.66	-95.23	74.40	-13.00	-43.51	Horizontal
2	2693.00	-41.95	RMS	28.50	-59.46	0.44	-95.23	83.80	-13.00	-28.95	Horizontal
3	3591.00	-65.09	RMS	29.60	-58.38	0.45	-95.23	58.47	-13.00	-52.09	Horizontal

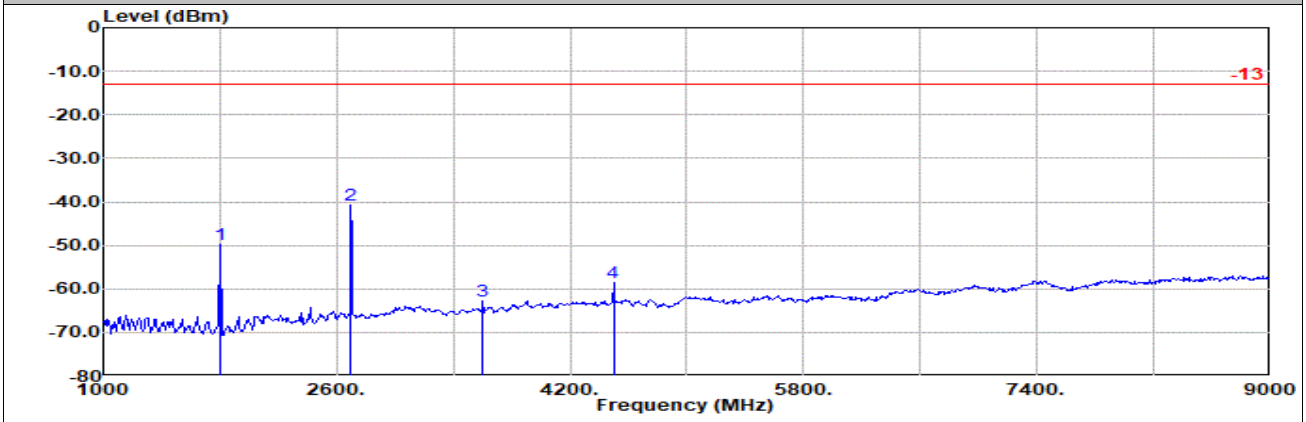


Site : 03CH12-HY
Condition: -13 3m 9120D-02114-240711 Vertical
: LTE Band 106 1.4M Ch134314 1RB0 QPSK

	Freq	Level	Detector	Ant Factor	Amp\Cb l	Filter	EIRPCF	Readin g	Limit	Margin	Pol
	MHz	dBm		dB/m	dB	dB	dB	dBuV	dBm	dB	
1	1796.00	-49.77	RMS	25.20	-61.54	0.66	-95.23	81.14	-13.00	-36.77	Vertical
2	2693.00	-51.76	RMS	28.50	-59.46	0.44	-95.23	73.99	-13.00	-38.76	Vertical
3	3591.00	-65.21	RMS	29.60	-58.38	0.45	-95.23	58.35	-13.00	-52.21	Vertical
4	4489.00	-59.33	RMS	31.72	-57.59	0.39	-95.23	61.38	-13.00	-46.33	Vertical

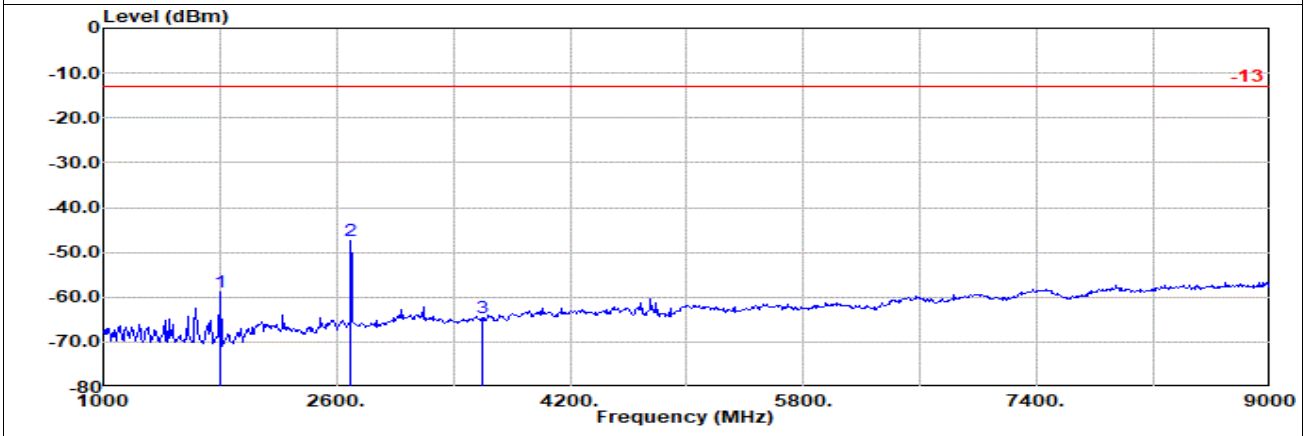
TX0

Part 27P Mode 1
LTE B106 4M Ch134322 1RB0 QPSK
M



Site : 03CH12-HY
Condition: -13 3m 9120D-02114-240711 Horizontal
: LTE Band 106 1.4M Ch134322 1RB0 QPSK

	Freq	Level	Detector	Ant Factor	Amp\Cbl	Filter	EIRPCF	Reading	Limit	Margin	Pol
	MHz	dBm		dB/m	dB	dB	dB	dBuV	dBm	dB	
1	1797.00	-49.73	RMS	25.20	-61.54	0.66	-95.23	81.18	-13.00	-36.73	Horizontal
2	2696.00	-40.84	RMS	28.50	-59.45	0.44	-95.23	84.90	-13.00	-27.84	Horizontal
3	3594.00	-62.70	RMS	29.60	-58.38	0.45	-95.23	60.86	-13.00	-49.70	Horizontal
4	4496.00	-58.60	RMS	31.71	-57.58	0.39	-95.23	62.11	-13.00	-45.60	Horizontal



Site : 03CH12-HY
Condition: -13 3m 9120D-02114-240711 Vertical
: LTE Band 106 1.4M Ch134322 1RB0 QPSK

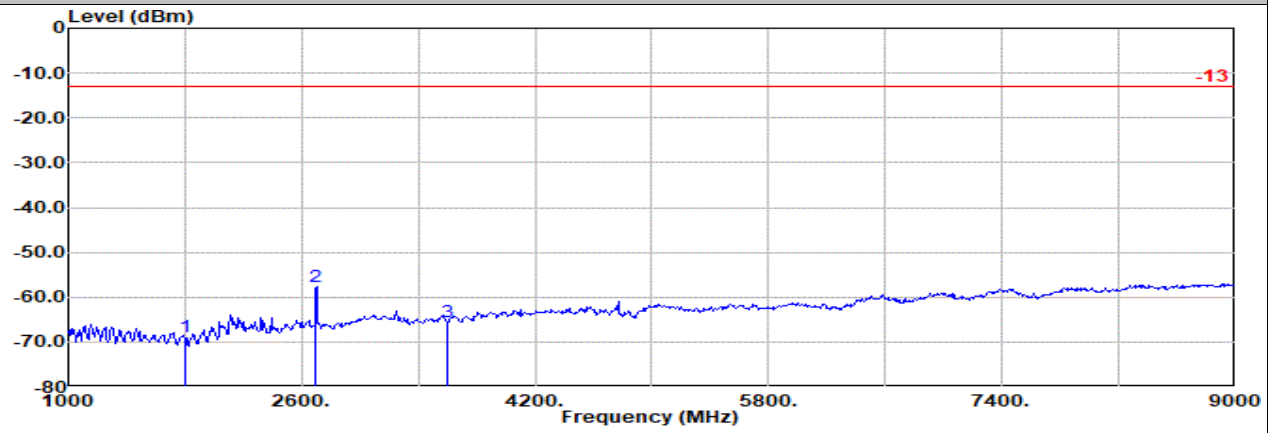
	Freq	Level	Detector	Ant Factor	Amp\Cbl	Filter	EIRPCF	Reading	Limit	Margin	Pol
	MHz	dBm		dB/m	dB	dB	dB	dBuV	dBm	dB	
1	1797.00	-58.96	RMS	25.20	-61.54	0.66	-95.23	71.95	-13.00	-45.96	Vertical
2	2696.00	-47.36	RMS	28.50	-59.45	0.44	-95.23	78.38	-13.00	-34.36	Vertical
3	3594.00	-64.47	RMS	29.60	-58.38	0.45	-95.23	59.09	-13.00	-51.47	Vertical

TX0

Part 27P Mode 1

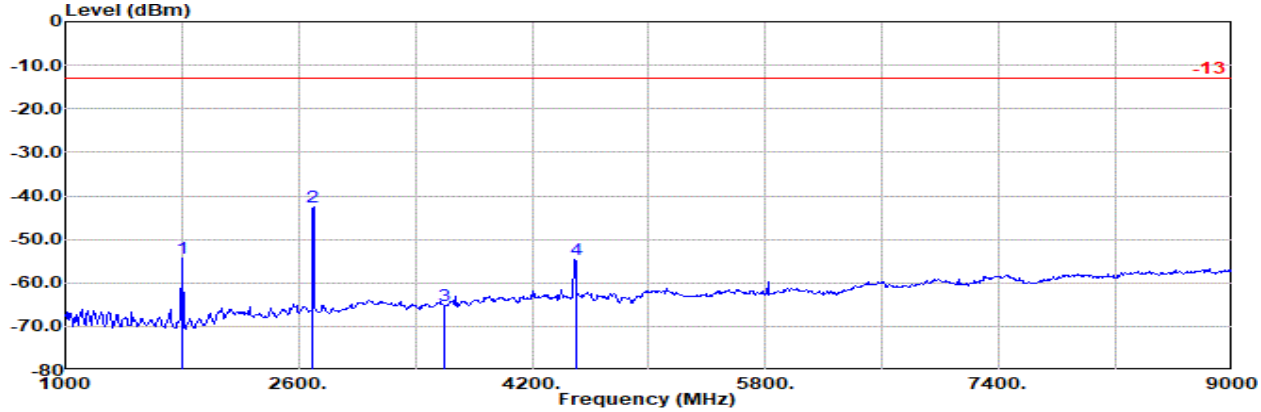
LTE B106 4M Ch134330 1RB0 QPSK

H



Site : 03CH12-HY
Condition: -13 3m 9120D-02114-240711 Horizontal
: LTE Band 106 1.4M Ch134330 1RB0 QPSK

	Freq	Level	Detector	Ant Factor	Amp\Cb l	Filter	EIRPCF	Readin g	Limit	Margin	Pol
	MHz	dBm		dB/m	dB	dB	dB	dBuV	dBm	dB	
1	1799.00	-68.68	RMS	25.20	-61.54	0.66	-95.23	62.23	-13.00	-55.68	Horizontal
2	2698.00	-57.58	RMS	28.50	-59.44	0.44	-95.23	68.15	-13.00	-44.58	Horizontal
3	3597.00	-65.38	RMS	29.60	-58.38	0.45	-95.23	58.18	-13.00	-52.38	Horizontal

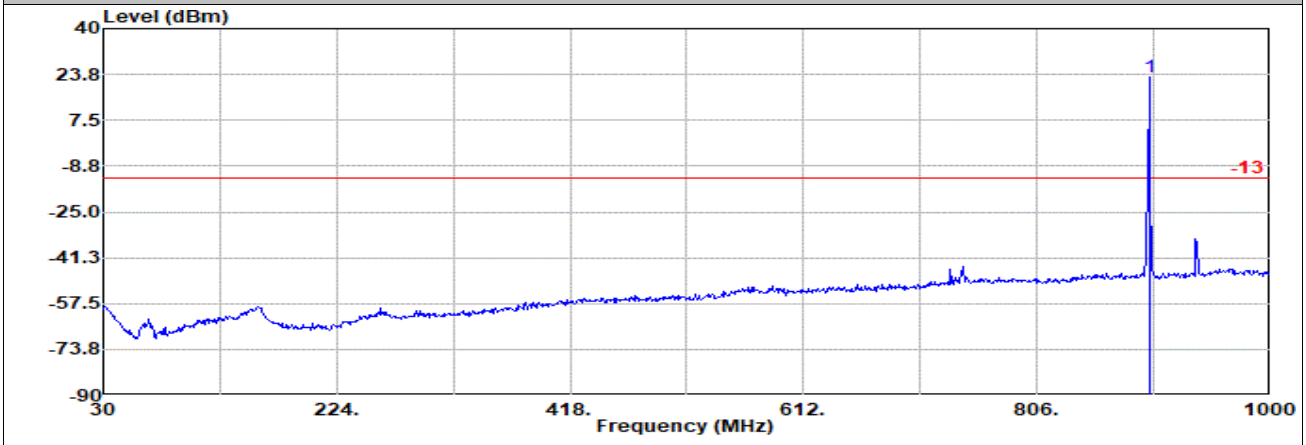


Site : 03CH12-HY
Condition: -13 3m 9120D-02114-240711 Vertical
: LTE Band 106 1.4M Ch134330 1RB0 QPSK

	Freq	Level	Detector	Ant Factor	Amp\Cb l	Filter	EIRPCF	Readin g	Limit	Margin	Pol
	MHz	dBm		dB/m	dB	dB	dB	dBuV	dBm	dB	
1	1799.00	-54.24	RMS	25.20	-61.54	0.66	-95.23	76.67	-13.00	-41.24	Vertical
2	2698.00	-42.70	RMS	28.50	-59.44	0.44	-95.23	83.03	-13.00	-29.70	Vertical
3	3597.00	-65.18	RMS	29.60	-58.38	0.45	-95.23	58.38	-13.00	-52.18	Vertical
4	4497.00	-54.51	RMS	31.71	-57.58	0.39	-95.23	66.20	-13.00	-41.51	Vertical

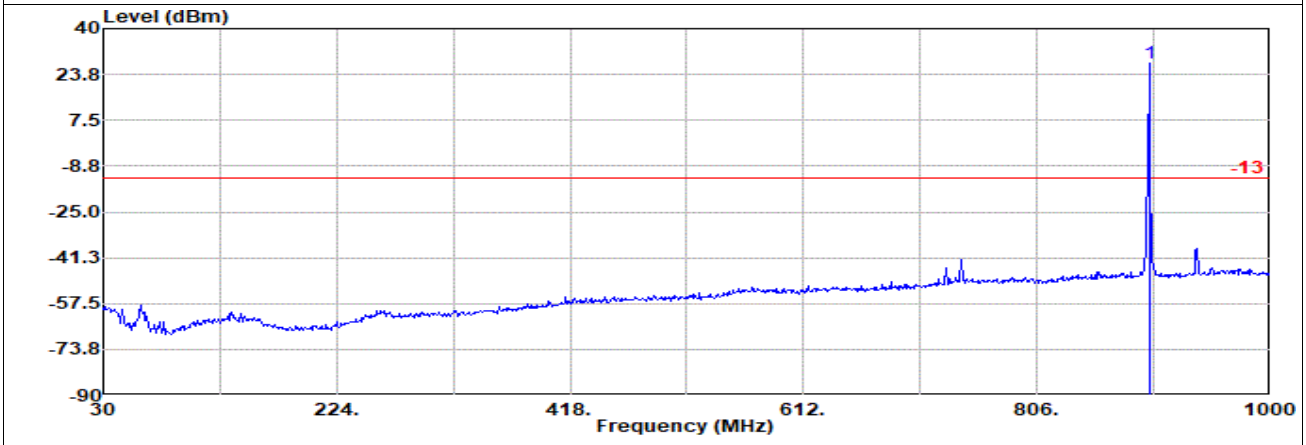
TX0

Part 27P Mode 1
LTE B106 4M Ch134322 1RB0 QPSK
M



Site : 03CH12-HY
Condition: -13 3m Bilog_37059_20241127 Horizontal
: LTE Band 106 1.4M Ch134322 1RB0 QPSK
: #1 is fundamental signal which can be ignored.

	Freq	Level	Detector	Ant Factor	Amp\Cbl	Filter	EIRPCF	Reading	Limit	Margin	Pol
	MHz	dBm		dB/m	dB	dB	dB	dBuV	dBm	dB	
1	899.12	22.82	RMS	29.23	4.06	0.00	-95.23	84.76	-13.00	35.82	Horizontal



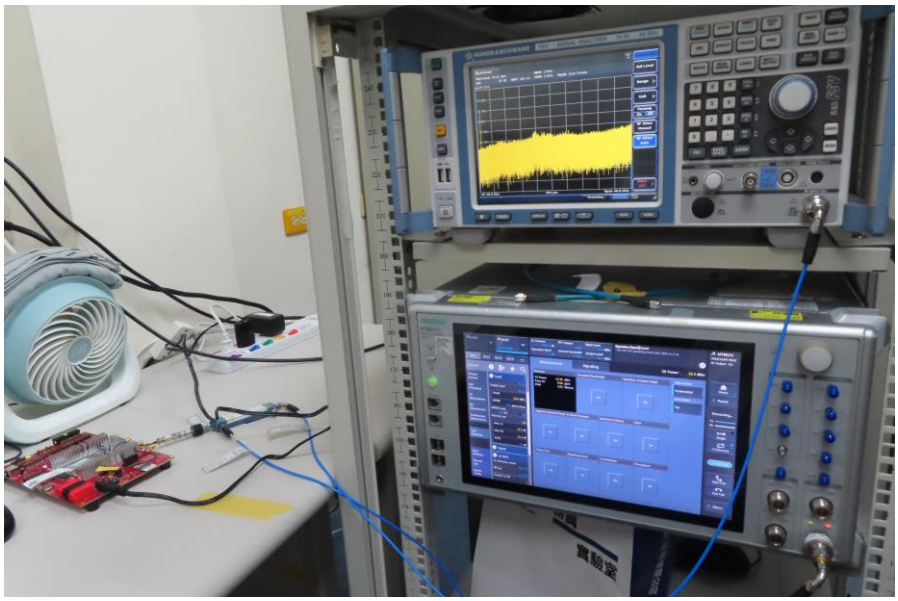
Site : 03CH12-HY
Condition: -13 3m Bilog_37059_20241127 Vertical
: LTE Band 106 1.4M Ch134322 1RB0 QPSK
: #1 is fundamental signal which can be ignored.

	Freq	Level	Detector	Ant Factor	Amp\Cbl	Filter	EIRPCF	Reading	Limit	Margin	Pol
	MHz	dBm		dB/m	dB	dB	dB	dBuV	dBm	dB	
1	899.12	27.58	RMS	29.23	4.06	0.00	-95.23	89.52	-13.00	40.58	Vertical

Remark: #1 is fundamental signal which can be ignored.

Appendix C. Setup Photographs

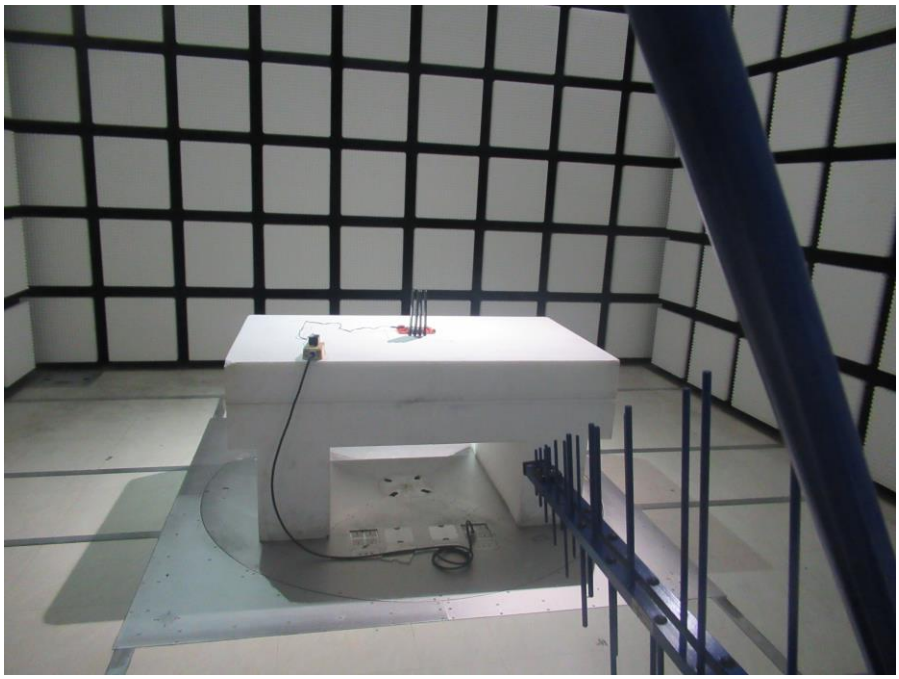
<Conducted>



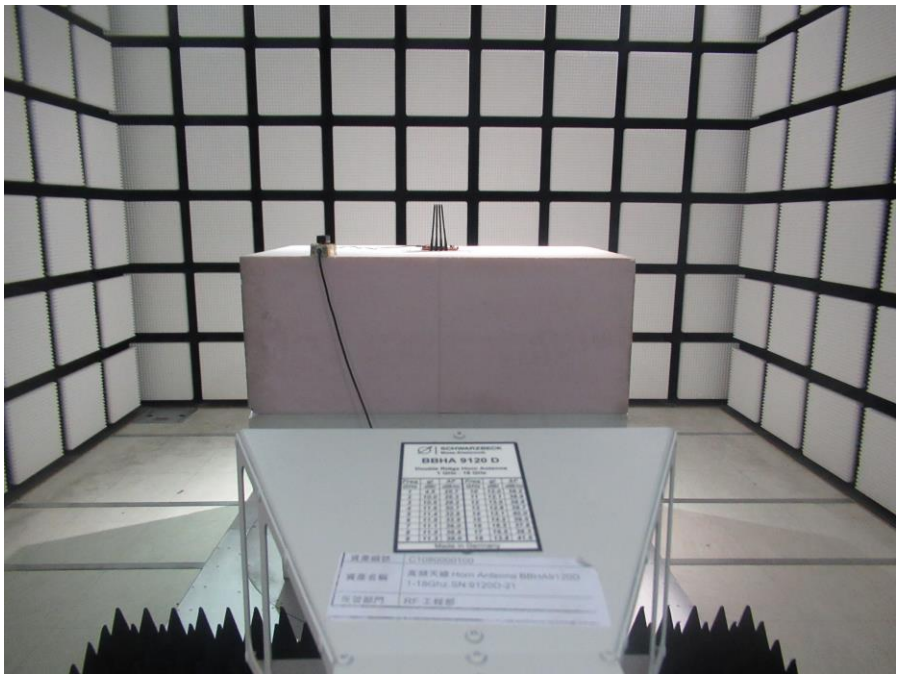
<Radiated Emission>

Ant. Veritical

LF



HF



THE END