

TEST REPORT

FCC LTE Test for GCM6201NA Certification

APPLICANT GCT SEMICONDUCTOR, INC

REPORT NO. HCT-RF-2409-FC014-R1

DATE OF ISSUE December 12, 2024

> **Tested by** Jae Ryang Do

Technical Manager Jong Seok Lee



F-TP22-03(Rev.06)

1/218

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T E S T R E P O R T	REPORT NO. HCT-RF-2409-FC014-R1 DATE OF ISSUE December 12, 2024
Applicant	GCT SEMICONDUCTOR, INC 11F Construction Financial Building 15, Boramae-ro 5-gil, Dongjak-gu, Seoul, 07071, South Korea
Product Name Model Name	LTE Module GCM6201NA
Date of Test	August 19, 2024 ~ September 27, 2024 December 04, 2024 ~ December 10, 2024
Location of Test	■ Permanent Testing Lab □ On Site Testing (Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi- do, Republic of Korea)
FCC ID	2ALIY-GCM6201NA
FCC Classification	Licensed Non-Broadcast Station Transmitter (TNB)
Test Standard Used	FCC Rule Part(s): §25
Test Results	PASS





REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	September 30, 2024	Initial Release
1	December 12, 2024	Retested the all requirements

Notice

Content

The measurements shown in this report were made in accordance with the procedures specified in CFR47 section § 2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)

The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated.

The test results have only been applied with the test methods required by the standard(s).

The laboratory is not accredited for the test results marked *.

Information provided by the applicant is marked **.

Test results provided by external providers are marked ***.

When confirmation of authenticity of this test report is required, please contact www.hct.co.kr

The test results in this test report are not associated with the ((KS Q) ISO/IEC 17025) accreditation by KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation) that are under the ILAC (International Laboratory Accreditation Cooperation) Mutual Recognition Agreement (MRA).



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MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	GCT SEMICONDUCTOR, INC
Address	11F Construction Financial Building 15, Boramae-ro 5-gil, Dongjak-gu,
Address:	Seoul, 07071, South Korea
FCC ID:	2ALIY-GCM6201NA
Application Type:	Certification
FCC Classification:	Licensed Non-Broadcast Station Transmitter (TNB)
FCC Rule Part(s):	§ 25
EUT Type:	LTE Module
Model(s):	GCM6201NA
Additional Model(s):	-
Peak Antenna gain:	4.0 dBi
Power Supply:	3.3 V
Modulation:	QPSK, 16QAM
Bandwidth:	5MHz, 10MHz
	1. Lower:
Frequency Pange	1627.5 MHz – 1637.5 MHz
Frequency Range.	2. Upper:
	1646.5 MHz – 1656.5 MHz
	1. Lower:
	LTE Band 24 (5 MHz): 1630.0 MHz, 1632.5 MHz, 1635.0 MHz
T 4 F	LTE Band 24 (10 MHz): 1632.5 MHz
Test Frequency:	2. Upper:
	LTE Band 24 (5 MHz): 1649.0 MHz, 1651.5 MHz, 1654.0 MHz
	LTE Band 24 (10 MHz): 1651.5 MHz
Date(s) of Tests:	August 19, 2024 ~ September 27, 2024
	December 04, 2024 ~ December 10, 2024
Serial number:	351951100003507
Note	This device belongs to the category of Mobile Earth Stations (MES) and
	does not support voice communication.



PMN	COMEDOINA
(Product Marketing Number)	GEMOZUINA
HVIN	
(Hardware Version	V1.0
Identification Number)	
FVIN	
(Firmware Version	V1.0
Identification Number)	



1.1. MAXIMUM OUTPUT POWER

Lower

Mada		-		Conducted Output Power	
Mode (MHz)	(MHz)	Designator	Modulation	Max. Power (W)	Max. Power (dBm)
LTE – Band24 (5)	1630.0 - 1635.0	4M49G7D	QPSK	0.061	17.84
		4M47W7D	16QAM	0.060	17.81
LTE – Band24 (10)	1632.5	8M87G7D	QPSK	0.055	17.43
		8M90W7D	16QAM	0.055	17.41

Upper

Mada	T F	-		Conducted Output Power	
(MHz)	(MHz)	Designator	Modulation	Max. Power (W)	Max. Power (dBm)
LTE – Band24 (5)	1649.0 – 1654.0	4M50G7D	QPSK	0.067	18.27
		4M48W7D	16QAM	0.067	18.26
LTE – Band24 (10)	1651.5	8M91G7D	QPSK	0.061	17.86
		8M92W7D	16QAM	0.061	17.84





2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a LTE module.

2.2. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.3. TEST FACILITY

The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the **74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea**





3. DESCRIPTION OF TESTS

3.1 TEST PROCEDURE

Test Description	Test Procedure Used
Occupied Bandwidth	- KDB 971168 D01 v03r01 – Section 4.3 - ANSI C63.26-2015 – Section 5.4.4
Conducted Emission Mask	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Spurious and Harmonic Emissions at Antenna Terminal	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
Emission limits for protection of aeronautical service	- KDB 971168 D01 v03r01 – Section 6.0 - ANSI C63.26-2015 – Section 5.7
RF Output Power	- KDB 971168 D01 v03r01 - Section 5.2.4 - ANSI C63.26-2015 - Section 5.2.1 & 5.2.4.2
Frequency stability	- ANSI C63.26-2015 – Section 5.6
Radiated Spurious and Harmonic Emissions	- KDB 971168 D01 v03r01 – Section 6.2 - ANSI/TIA-603-E-2016 – Section 2.2.12

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3.2 RF OUTPUT POWER



Test setup

Test Overview

According to ANSI C63.26-2015 Section 5.2.1 when measuring the maximum RF output power from such devices, control over the EUT must be provided either through special test software (provided by manufacturer specifically for compliance testing, but not accessible by an end user) or through use of a base station emulator, communications test set, call box, or similar instrumentation that is capable of establishing a communications link with the EUT to enable control over variable parameters (e.g., output power, OBW, etc.).

In some cases, these instruments also include basic digital spectrum analyzer and/or power meter capabilities that can be utilized to measure the RF output power if the specified detectors and requirements can be realized and the measurement functions have been calibrated.

Test Procedure

- 1. The RF port of the EUT was connected to the Communication Tester via an RF cable.
- 2. Conducted average power was measured using a calibrated Radio Communication Tester.
- 3. EIRP (dBm) = Conducted Power (dBm) + antenna gain (dBi)



3.3 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA-603-E-2016.

Test Settings

- 1. RBW = 100 kHz for emissions below 1 GHz and 1 MHz for emissions above 1 GHz
- 2. VBW \geq 3 x RBW
- 3. Span = 1.5 times the OBW
- 4. No. of sweep points > 2 x span / RBW
- 5. Detector = Peak
- 6. Trace mode = Max Hold
- 7. The trace was allowed to stabilize
- 8. Test channel : Low/ Middle/ High
- 9. Frequency range : We are performed all frequency to 10th harmonics from 9 kHz.

Test Note

- 1. Measurements value show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
- 2. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.

The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the test data

3. For spurious emissions above 1 GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.

The spurious emissions is calculated by the following formula;

Result (dBm) = Pg (dBm) - cable loss (dB) + antenna gain (dBi)

Where: P_g is the generator output power into the substitution antenna.

If the fundamental frequency is below 1 GHz, RF output power has been converted to EIRP.

EIRP (dBm) = ERP (dBm) + 2.15



3.4 CONDUCTED EMISSION MASK



Test setup

Test Procedure

The conducted emission mask was connected to a calibrated Splitter and Communication Test equipment, the other end of which was connected to a spectrum analyzer.

The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

The mean power of the emissions shall be attenuated below the mean output power.

Test Settings

- 1. RBW \geq 4 kHz
- 2. VBW \geq 3 x RBW
- 3. Detector = Peak
- 4. Trace mode = Max hold
- 5. Sweep time = auto couple
- 6. The trace was allowed to stabilize

Test Note

Mean output power = Conducted Power

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3.5 OCCUPIED BANDWIDTH.



Test setup

Test Overview

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 power of a given emission.

The EUT makes a call to the communication simulator.

The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth

Test Settings

- 1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99 % occupied bandwidth and the 26 dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = 1 5% of the expected OBW
- 3. VBW \geq 3 x RBW
- 4. Detector = Peak
- 5. Trace mode = Max hold
- 6. Sweep time = auto couple
- 7. The trace was allowed to stabilize



3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL



Test setup

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Settings

- 1. RBW = 1 MHz
- 2. VBW \geq 3 MHz
- 3. Detector = Peak
- 4. Trace Mode = Max Hold
- 5. Sweep time = auto couple



3.7 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE



Test setup

Test Overview

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015. The frequency stability of the transmitter is measured by:

- 1. Temperature: The temperature is varied from -30 °C to +50 °C in 10 °C increments using an environmental chamber.
- 2. Primary Supply Voltage:
 - .- Unless otherwise specified, vary primary supply voltage from 85 % to 115 % of the nominal value for other than hand carried battery equipment.
 - .- For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.

Test Settings

- 1. The carrier frequency of the transmitter is measured at room temperature (20 °C to provide a reference).
- 2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter.

Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.

3. Frequency measurements are made at 10 °C intervals ranging from -30 °C to +50 °C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

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3.8 EMISSION LIMITS FOR PROTECTION OF AERONAUTICAL SERVICE



Test setup

Test Overview

Additional Limits on emissions from mobile earth stations for protection of aeronautical radionavigationsatellite service and Special requirements for ancillary terrestrial components operating in the 1626.5-1660.5 MHz band.

Test Procedure

The testing follows ANSI C63.26 section 5.7

The conducted emission mask was connected to a calibrated Splitter and Communication Test equipment, the other end of which was connected to a spectrum analyzer.

The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

Test Settings

- 1. RBW = 1MHz (Narrow Band: 10kHz)
- 2. VBW \geq 3 MHz
- 3. Detector = RMS
- 4. Trace Mode = Trace average
- 5. Number of sweep points $\geq 2 \times \text{Span/RBW}$



Test Note

- 1. Narrow Band should be measured with an RBW=700Hz, but for testing convenience, it was measured with 10kHz.
- 2. Carrier-off state = Idle mode (0 RB)
- 3. Ref. offset of spectrum analyzer (dB) = Path loss (dB) + Peak.antenna gain (dBi)
- 4. Result (dBm) = Ref. Offset (dB) + Measured value (dBm)



3.9 OUT-OF-CHANNEL EMISSIONS(Ligado's ATC networks)



Test setup

Test Overview

The EIRP for Ligado's ATC mobile terminal out-of- channel emissions.

Test Settings

- 1. RBW = 4kHz or 1MHz
- 2. VBW \geq 3 MHz
- 3. Detector = RMS
- 4. Trace Mode = Trace average
- 5. Number of sweep points $\geq 2 \times \text{Span/RBW}$

Test Note

- 1. Ref. offset of spectrum analyzer (dB) = Path loss (dB) + Peak.antenna gain (dBi)
- 2. Result $_{(dBm)}$ = Ref. Offset $_{(dB)}$ + Measured value $_{(dBm)}$



3.10 DISCRETE EMISSIONS(Ligado's ATC networks)



Test setup

Test Overview

The EIRP for Ligado's ATC mobile terminal discrete emissions.

Test Settings

- 1. RBW = 2kHz or 10kHz
- 2. VBW \geq 3 MHz
- 3. Detector = RMS
- 4. Trace Mode = Trace average
- 5. Number of sweep points $\geq 2 \times \text{Span/RBW}$

Test Note

- 1. Narrow Band should be measured with an RBW=700Hz, but for testing convenience,
- it was measured with 10kHz.
- 2. Ref. offset of spectrum analyzer (dB) = Path loss (dB) + Peak.antenna gain (dBi)
- 3. Result (dBm) = Ref. Offset (dB) + Measured value (dBm)



3.11 WORST CASE(RADIATED TEST)

- The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.

- All modes of operation were investigated and the worst case configuration results are reported.

- JIG was used to test the EUT. (EUT + JIG)

- The worst case is reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the test data.

- Please refer to the table below.

Test Description	Modulation	Bandwidth	RB size	RB offset	Axis	
Radiated Spurious and Harmonic Emissions	QPSK	5MHz	1	0	Z	

[Worst case]



3.12 WORST CASE(CONDUCTED TEST)

- All modes of operation were investigated and the worst case configuration results are reported.

[Worst case]						
Test Description	Modulation	Bandwidth (MHz)	Frequency	RB size	RB offset	
Occupied Bandwidth	QPSK, 16QAM	5, 10	Mid	Full RB	0	
		-	Low	1	0	
		5	High	1	24	
Emission Mask	ODSK	10	Low	1	0	
	QF3N	10	High	1	49	
		5, 10	Low, High	Full RB	0	
Emission limits for protection of	0000	5, 10	Low, High	1	0	
Emission limits for protection of aeronautical service (1559 MHz – 1610 MHz) Emission limits for protection of aeronautical service (Carrier-off state)	QPSK	5, 10	Low, High	Full RB	0	
Emission limits for protection of aeronautical service (Carrier-off state)	QPSK	5, 10	Low, Mid, High	0	-	
Spurious and Harmonic Emissions at Antenna Terminal	QPSK	5, 10	Low, Mid, High	1	0	
			1	1	0	
			LOW	Full RB	0	
Out of channel emissions (Ligado's ATC networks)	QPSK	5, 10		1	24	
(High	1	49	
				Full RB	0	
Discrete emissions	QPSK	5, 10	Low	1	0	
(Ligado SAIC networks)				Full RB	0	
Frequency stability	QPSK	5, 10	Low, Mid, High	1	0	

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4. LIST OF TEST EQUIPMENT

Equipment	Model	Manufacture	Serial No.	Due to Calibration	Calibration Interval
RF Switching System	Switch box(1.2 G HPF+LNA)	HCT CO., LTD.,	F1L1	11/11/2025	Annual
RF Switching System	Switch box(3.3 G HPF+LNA)	HCT CO., LTD.,	F1L2	11/11/2025	Annual
RF Switching System	Switch box(LNA)	HCT CO., LTD.,	F1L4	11/11/2025	Annual
RF Switching System	Switch box(6 G HPF+LNA)	HCT CO., LTD.,	F1L7	11/11/2025	Annual
Power Splitter(DC ~ 26.5 GHz)	11667B	Hewlett Packard	5001	04/17/2025	Annual
DC Power Supply	E3632A	Agilent	MY40010147	08/06/2025	Annual
Dipole Antenna	UHAP	Schwarzbeck	01274	03/10/2026	Biennial
Dipole Antenna	UHAP	Schwarzbeck	01288	08/07/2026	Biennial
Chamber	SU-642	ESPEC	93008124	02/19/2025	Annual
Horn Antenna(1 ~ 18 GHz)	BBHA 9120D	Schwarzbeck	147	08/17/2025	Biennial
Horn Antenna(1 ~ 18 GHz)	BBHA 9120D	Schwarzbeck	9120D-1298	09/11/2025	Biennial
Signal Analyzer(10 Hz ~ 26.5 GHz)	N9020A	Agilent	MY52090906	04/19/2025	Annual
ATTENUATOR(20 dB)	8493C	Hewlett Packard	17280	04/17/2025	Annual
ATTENUATOR(3 dB)	8493B	Agilent	MY39260298	08/20/2025	Annual
Spectrum Analyzer(10 Hz ~ 40 GHz)	FSV40	REOHDE & SCHWARZ	100931	08/06/2025	Annual
Loop Antenna(9 kHz ~ 30 MHz)	FMZB1513	Schwarzbeck	1513-333	03/07/2026	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	895	08/28/2026	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	1135	08/19/2026	Biennial
Wideband Radio Communication Tester	MT8821C	Anritsu Corp.	6262094331	11/13/2025	Annual
Wideband Radio Communication Tester	MT8820C	Anritsu Corp.	6201026545	11/20/2025	Annual
SIGNAL GENERATOR (100 kHz ~ 40 GHz)	SMB100A	REOHDE & SCHWARZ	177633	07/26/2025	Annual
Signal Analyzer(5 Hz ~ 40.0 GHz)	N9030B	KEYSIGHT	MY55480167	05/17/2025	Annual
FCC LTE Mobile Conducted RF Automation Test Software	-	HCT CO., LTD.,	-	-	-

Note:

- 1. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.
- 2. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).

3. Model : 8493B

- Use date of 8493B : December 04, 2024 ~ December 10, 2024





5. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4:2014.

All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (\pm dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.98 (Confidence level about 95 %, <i>k</i> =2)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.36 (Confidence level about 95 %, <i>k</i> =2)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.70 (Confidence level about 95 %, <i>k</i> =2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.52 (Confidence level about 95 %, <i>k</i> =2)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.66 (Confidence level about 95 %, <i>k</i> =2)
Radiated Disturbance (Above 40 GHz)	5.58 (Confidence level about 95 %, <i>k</i> =2)



6. SUMMARY OF TEST RESULTS

6.1 Test Condition

Test Description	FCC Part Section(s)	Test Limit	Test Result
Occupied Bandwidth	§ 2.1049	N/A	PASS
Emissions Mask	§ 25.202(f)	Note 1	PASS
Conducted Output Power	§ 2.1046	N/A	PASS
Emission limits for protection of aeronautical service (1559 MHz – 1610 MHz)	§ 25.216(c)(h)	<u>Note 2, 3</u>	PASS
Emission limits for protection of aeronautical service (Carrier-off state)	§ 25.216(i)	e.i.r.p. density < -80 dBW/MHz(= -50 dBm)	PASS
Conducted Spurious Emissions	§ 25.202(f)(3)	<43 + 10 log (P) dB (= -13dBm)	PASS
Frequency stability / variation of ambient temperature	§ 25.202(d)	0.001 % or 10 ppm	PASS
Equivalent Isotropic Radiated Power	§ 25.204 (a)	Note 4	PASS
Radiated Spurious and Harmonic Emissions	§ 25.202(f)(3)	< 43 + 10 log (P) dB (= -13dBm)	PASS



Note

- 1. (1) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: 25 dB
 - (2) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: 35 dB;
 - (3) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: An amount equal to 43 dB plus 10 times the logarithm (to the base 10) of the transmitter power in watts;
- 2. Wide Band(e.i.r.p. density): Linear interpolation from -70 dBW/MHz(= -40dBm/MHz) at 1605 MHz to -46dBW/MHz(= -16 dBm/MHz) at 1610 MHz.
- 3. NarrowBand(e.i.r.p.): Linear interpolation from -80 dBW(=-50 dBm) at 1605 MHz to -56 dBW(= -26 dBm) at 1610 MHz.
- 4. + 40 dBW in any 4 kHz band for $\theta~{\leq}0^\circ$
 - + 40 + 30 dBW in any 4 kHz band for 0° $\,{<}\theta\,{\leq}5^\circ$



6.2 Test Condition

Test Description	FCC 20-48	Test Limit	Test Result
Conducted Power	No. 135	-7 dBW(=23dBm) in the 1627.5-1637.5 MHz and the 1646.5-1656.5 MHz uplink bands	PASS
Equivalent Isotropic Radiated Power	No. 135	Note 1	PASS
Out of channel emissions (EIRP)	No. 139	Note 2	PASS
Discrete emissions (EIRP)	No. 140	Note 3	PASS

Note

1. 1627.5-1632.5 MHz will ramp up from -31 dBW(= -1dBm) at 1627.5 MHz to -7 dBW(= 23dBm) at

1632.5 MHz before becoming subject to the -7 dBW(= 23dBm) limit for the entire segment.

2.

(i) -67 dBW/4kHz(= -37dBm/4kHz) at 1627.5 MHz.

(ii) linear interpolation from -67 dBW/4kHz(= -37dBm/4kHz) at 1627.5 MHz to

-100 dBW/MHz(= -70dBm/MHz) at 1610 MHz.

(iii) linear interpolation from -100 dBW/MHz(= -70dBm/MHz) at 1610 MHz to

-105 dBW/MHz(= -75dBm/MHz) at 1608 MHz.

- (iv) -105 dBW/MHz(= -75dBm/MHz) in the 1541-1608 MHz.
- (v) -58 dBW/4 kHz(= -28dBm/4kHz) at a 1 megahertz offset beyond the edges of the authorized and internationally coordinated MSS frequency assignment at 1646.5-1656.5 MHz.

```
3.
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(i) linear interpolation from -44 dBW/700Hz(= -14dBm/700Hz) at 1625 MHz to

-110 dBW/700Hz(= -80dBm/700Hz) at 1610 MHz.

(ii) linear interpolation from -110 dBW/700Hz(= -80dBm/700Hz) at 1610 MHz to

-115 dBW/700Hz(= -85dBm/700Hz) at 1608 MHz.

- (iii) -115 dBW/700Hz(= -85dBm/700Hz) in the 1608-1559 MHz.
- (iv) -132 dBW/2kHz(= -102dBm/2kHz) in the 1559-1541 MHz.



7. SAMPLE CALCULATION

7.1 ERP Sample Calculation

Ch.	/ Freq.	Measured	Substitute	Ant. Gain			EF	RP
channel	Freq.(MHz)	Level (dBm)	Level (dBm)	(dBd)	C.L	Pol.	W	dBm
128	824.20	-21.37	38.40	-10.61	0.95	Н	0.483	26.84

ERP = Substitute LEVEL(dBm) + Ant. Gain – CL(Cable Loss)

1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.

2) During the test, the turn table is rotated until the maximum signal is found.

3) Record the field strength meter's level.

- 4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
- 5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
- 6) The signal generator output level with Ant. Gain and cable loss are the rating of effective radiated power.

7.2 EIRP Sample Calculation

Ch.	/ Freq.	Measured	Substitute	Ant. Gain			EI	RP
channel	Freq.(MHz)	Level (dBm)	Level (dBm)	(dBi)	C.L	Pol.	w	dBm
20175	1,732.50	-15.75	18.45	9.90	1.76	Н	0.456	26.59

EIRP = Substitute LEVEL(dBm) + Ant. Gain – CL(Cable Loss)

1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.

2) During the test, the turn table is rotated until the maximum signal is found.

- 3) Record the field strength meter's level.
- 4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
- 5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
- 6) The signal generator output level with Ant. Gain and cable loss are the rating of equivalent isotropic radiated power.



7.3. Emission Designator

GSM Emission Designator

Emission Designator = 249KGXW GSM BW = 249 kHz G = Phase Modulation X = Cases not otherwise covered W = Combination (Audio/Data)

EDGE Emission Designator

Emission Designator = 249KG7W GSM BW = 249 kHz G = Phase Modulation 7 = Quantized/Digital Info W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M17F9W WCDMA BW = 4.17 MHz F = Frequency Modulation 9 = Composite Digital Info W = Combination (Audio/Data)

QPSK Modulation

Emission Designator = 4M48G7D LTE BW = 4.48 MHz G = Phase Modulation 7 = Quantized/Digital Info D = Data transmission; telemetry; telecommand

<u>QAM Modulation</u> Emission Designator = 4M48W7D LTE BW = 4.48 MHz W = Amplitude/Angle Modulated 7 = Quantized/Digital Info D = Data transmission; telemetry; telecommand



8. TEST DATA(Lower)

8.1 CONDUCTED OUTPUT POWER

Donduiidth				Max.Average Power (dBm)			
Bandwidth	Modulation	RD SIZE	RD Oliset	25735	25760	25785	
				1630.0 MHz	1632.5 MHz	1635.0 MHz	
		1	0	3.59	16.32	17.68	
		1	12	3.96	17.03	17.36	
		1	24	5.33	17.69	17.00	
	QPSK	12	0	4.05	16.81	17.72	
		12	6	4.39	17.35	17.50	
		12	11	4.93	17.84	17.29	
		25	0	4.83	17.54	17.79	
		1	0	3.57	16.31	17.67	
		1	12	3.95	17.02	17.35	
		1	24	<i>5.32</i>	17.68	17.00	
	16QAM	12	0	3.88	16.80	17.71	
		12	6	4.28	17.35	17.49	
		12	11	4.77	17.81	17.26	
		25	0	4.69	17.53	17.75	



				Max.Average Power (dBm)
Bandwidth	Modulation	RB Size	RB Offset	25760
				1632.5 MHz
		1	0	15.21
		1	24	16.75
		1	49	16.46
	QPSK	25	0	16.31
		25	12	17.03
		25	24	17.43
10 MH -		50	0	16.95
		1	0	15.14
		1	24	16.74
		1	49	16.45
	16QAM	25	0	16.26
		25	12	17.00
		25	24	17.41
		50	0	16.92

Test Note

1. Conducted Power Limit:

(i) FCC 20-48 No. 135: -7 dBW(=23dBm) in the 1627.5-1637.5 MHz and the 1646.5-1656.5 MHz uplink bands

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8.2 Effective Isotropic Radiated Power

		Max.Ave	rage Powe	er (dBm)	ANT	E.I.R.P (dBm)			
Bandwidth	Modulation	25735	25760	25785	Gain	25735	25760	25785	
		1630.0	1632.5	1635.0	(dBi)	1630.0	1632.5	1635.0	
		MHz	MHz	MHz		MHz	MHz	MHz	
5 MHz	QPSK	5.33	17.84	17.29	1 00	9.33	21.84	21.29	
	16QAM	5.32	17.81	17.75	4.00	9.32	21.81	21.75	

Bandwidth	Max.Average Power (dBm)		ANT Gain	E.I.R.P (dBm)	
	Modulation	25760	(dBi)	25760	
		1632.5 MHz		1632.5 MHz	
10 MHz	QPSK	17.43		21.43	
	16QAM	17.41	4.00	21.41	

Test Note

1. EIRP $_{(dBm)}$ = Max. Conducted Power $_{(dBm)}$ + antenna gain $_{(dBi)}$

2. EIRP Limit:

(i) FCC Part 25.204 (a): <40 dBW(= 70 dBm)

(ii) FCC 20-48 No. 135:

- 1627.5-1632.5 MHz will ramp up from -31 dBW(= -1dBm) at 1627.5 MHz to -7 dBW(= 23dBm) at 1632.5 MHz before becoming subject to the -7 dBW(= 23dBm) limit for the entire segment.

- 1630.0MHz: < 11dBm

- 1632.5MHz: < 23dBm

- 1635.0MHz: < 23dBm



8.3 RADIATED SPURIOUS EMISSIONS

MODE:	LTE B24
MODULATION SIGNAL:	5 MHz QPSK
DISTANCE:	3 meters
LIMIT:	-13 dBm

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)
	3 260.00	-30.98	11.86	-44.25	2.96	Н	-35.35
25735 (1630.0)	4 890.00	-29.57	12.70	-35.79	3.67	V	-26.76
(1050.0)	6 520.00	-48.05	11.80	-48.94	4.26	V	-41.40
	3 265.00	-29.85	11.89	-43.22	2.96	V	-34.28
25760 (1632.5)	4 897.50	-34.18	12.70	-6.85	3.65	Н	-31.98
(1052.5)	6 530.00	-45.42	11.80	-0.68	4.24	Н	-38.54
	3 270.00	-30.96	11.92	-44.43	2.95	V	-35.46
25785 (1635.0)	4 905.00	-27.89	12.70	-34.60	3.64	Н	-25.53
(1000.07	6 540.00	-44.03	11.80	-44.35	4.21	V	-36.76



8.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)	
5 MHz 24 10 MHz			QPSK	C		4.4933	
	1022 5	16-QAM	6	0	4.4742		
		10 141	1632.5	QPSK	15	0	8.8696
	TO MHZ	VIHZ	16-QAM	15	CL		8.8986

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page $57 \sim 60$.



8.5 CONDUCTED SPURIOUS EMISSIONS

Band	Band Width (MHz)	Frequency (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)	Limit (dBm)
25	5	1630.0	3.15061	27.976	-70.268	-42.292	-13.00
		1632.5	3.59926	27.976	-68.627	-40.651	
		1635.0	2.65211	27.976	-70.680	-42.704	
	10	1632.5	3.64911	27.976	-70.011	-42.035	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 61 ~ 68.

2. Duty Cycle factor already applied on the factor.

- Factor(dB) = Cable Loss + Ext. Attenuator + Power Splitter

- Result(dBm) = Reading + Factor

Frequency Range (GHz)	Factor [dB]	
0.03 - 1	25.270	
1 - 5	27.976	
5 - 10	28.591	
10 - 15	29.116	
15 – 20	29.489	
Above 20	30.131	





8.6 Emission Mask

- Plots of the EUT's Emission Mask are shown Page 69 ~ 80.


8.7 Emission limits for protection of aeronautical service

Wide Band

BW (MHz)	Test. Frequncy (MHz)	Modulation	RB Size	RB Offset	Mea. Frequency (MHz)	Result (dBm)	Limit (dBm/MHz)
			1	0	1559 — 1605	-64.756	-40
F	1620.0	ODCK	T	0	1605 - 1610	-64.698	-40 ~ -16
5	5 1630.0 QPSK	25	0	1559 — 1605	-64.754	-40	
			25	0	1605 - 1610	-64.676	-40 ~ -16
			1	0	1559 — 1605	-64.771	-40
	1622 5		T	0	1605 - 1610	-64.718	-40 ~ -16
10	1032.5	QPSK	50	0	1559 — 1605	-64.760	-40
			50	U	1605 - 1610	-64.693	-40 ~ -16

Note:

1. Plots of the EUT's Emission limits for protection of aeronautical service(Wide Band) are shown Page 81 ~ 88.

Narrow Band

BW (MHz)	Test. Frequncy (MHz)	Modulation	RB Size	RB Offset	Mea. Frequency (MHz)	Result (dBm)	Limit (dBm)	
			1	0	1559 — 1605	-80.462	-50	
F	1620.0	ODEK	1	T	U	1605 - 1610	-80.863	-50 ~ -26
5	5 1630.0 QPSK	25	0	1559 — 1605	-80.819	-50		
			25	U	1605 - 1610	-80.445	-50 ~ -26	
			1	0	1559 — 1605	-80.588	-50	
10	1622 5	ODEK	L	0	1605 - 1610	-80.518	-50 ~ -26	
TO	10 1632.5 QPSK	0	1559 — 1605	-80.274	-50			
			50	U	1605 - 1610	-80.141	-50 ~ -26	

Note:

1. Plots of the EUT's Emission limits for protection of aeronautical service(Narrow Band) are shown Page 89 ~ 96.



BW (MHz)	Modulation	Mea. Frequency (MHz)	Test. Frequncy (MHz)	Result (dBm)	Limit (dBm/MHz)
			1630.0	-75.525	-50
5	Carrier-off	1559 - 1610	1632.5	-75.397	-50
			1635.0	-75.389	-50
10	Carrier-off	1559 - 1610	1632.5	-75.418	-50

8.8 Emission limits for protection of aeronautical service - Carrier-off state

Note:

1. Plots of the EUT's Emission limits for protection of aeronautical service - Carrier-off state are shown Page 97 ~ 100.



BW (MHz)	Test. Frequncy (MHz)	Modulation	RB Size	RB Offset	Mea. Frequency (MHz)	Result (dBm)	Limit (dBm)
					1627.5	-41.846	-37
			1	0	1610 — 1627.5	-43.027	-70 ~ -37
			T	0 -	1608 - 1610	-95.534	-75 ~ -70
F	1020.0	ODCK			1541 - 1608	-95.573	-75
5 16.	1630.0	QPSK			1627.5	-50.221	-37
			25	5 0	1610 - 1627.5	-52.471	-70 ~ -37
					1608 - 1610	-95.514	-75 ~ -70
					1541 — 1608	-95.530	-75
					1627.5	-44.459	-37
			1		1610 - 1627.5	-37.998	-70 ~ -37
					1608 - 1610	-95.425	-75 ~ -70
10	1022 5	ODCK			1541 - 1608	-95.475	-75
10	1032.5	QPSK			1627.5	-44.459	-37
			50	0	1610 — 1627.5	-46.881	-70 ~ -37
					1608 - 1610	-95.366	-75 ~ -70
					1541 - 1608	-95.402	-75

8.9 Out of channel emissions (Ligado's ATC networks)

Note:

1. Plots of the EUT' Out of channel emissions (Ligado ATC networks) are shown Page 101 ~ 116.



BW (MHz)	Test. Frequncy (MHz)	Modulation	RB Size	RB Offset	Mea. Frequency (MHz)	Result (dBm)	Limit (dBm)
					1610 - 1625	-71.620	-80 ~ -14
			1	0	1608 - 1610	-92.708	-85 ~ -80
			T	0	1559 — 1608	-87.785	-85
F	1620.0	ODSK			1541 — 1559	-107.538	-102
5	1630.0	1630.0 QPSK		0	1610 - 1625	-59.014	-80 ~ -14
			25		1608 - 1610	-91.817	-85 ~ -80
					1559 — 1608	-88.253	-85
					1541 — 1559	-107.570	-102
				0	1610 - 1625	-51.072	-80 ~ -14
					1608 - 1610	-92.267	-85 ~ -80
			T		1559 — 1608	-87.405	-85
10	1622 5	ODSK			1541 — 1559	-107.281	-102
10	1052.5	QPSK			1610 - 1625	-54.378	-80 ~ -14
			50	0	1608 - 1610	-91.180	-85 ~ -80
					1559 - 1608	-87.294	-85
					1541 - 1559	-107.362	-102

8.10 Discrete emissions (Ligado's ATC networks)

Note:

1. Plots of the EUT' Discrete emissions (Ligado ATC networks) are shown Page 117 ~ 132.



8.11 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

MODE:	LTE 24
BandWidth:	<u>5 MHz</u>
Voltage(100 %):	3.300 VDC
Batt. Endpoint:	2.800 VDC
Limit:	$\pm~$ 0.001 % or 10 ppm

Test. Frequncy (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
	100 %	+20(Ref)	1629 999 994	0.0	0.000 000	0.000
	100 %	-30	1629 999 998	4.2	0.000 000	0.003
	100 %	-20	1629 999 991	-3.1	0.000 000	-0.002
	100 %	-10	1629 999 991	-3.0	0.000 000	-0.002
1620.0	100 %	0	1629 999 997	3.4	0.000 000	0.002
1630.0	100 %	+10	1629 999 999	5.6	0.000 000	0.003
	100 %	+30	1629 999 989	-5.2	0.000 000	-0.003
	100 %	+40	1629 999 992	-2.2	0.000 000	-0.001
	100 %	+50	1629 999 999	4.9	0.000 000	0.003
	Batt. Endpoint	+20	1629 999 990	-3.5	0.000 000	-0.002
	100 %	+20(Ref)	1632 499 998	0.0	0.000 000	0.000
	100 %	-30	1632 499 994	-4.3	0.000 000	-0.003
	100 %	-20	1632 499 994	-4.3	0.000 000	-0.003
	100 %	-10	1632 499 995	-2.8	0.000 000	-0.002
1022 5	100 %	0	1632 499 993	-4.6	0.000 000	-0.003
1632.5	100 %	+10	1632 499 993	-4.6	0.000 000	-0.003
	100 %	+30	1632 499 995	-3.1	0.000 000	-0.002
	100 %	+40	1632 500 002	4.3	0.000 000	0.003
	100 %	+50	1632 499 994	-3.5	0.000 000	-0.002
	Batt. Endpoint	+20	1632 499 996	-2.3	0.000 000	-0.001
	100 %	+20(Ref)	1635 000 002	0.0	0.000 000	0.000
	100 %	-30	1635 000 010	7.3	0.000 000	0.004
	100 %	-20	1634 999 998	-3.9	0.000 000	-0.002
	100 %	-10	1635 000 008	5.9	0.000 000	0.004
1025.0	100 %	0	1634 999 999	-3.2	0.000 000	-0.002
1635.0	100 %	+10	1635 000 005	2.7	0.000 000	0.002
	100 %	+30	1635 000 006	4.1	0.000 000	0.003
	100 %	+40	1635 000 006	3.3	0.000 000	0.002
	100 %	+50	1635 000 006	3.4	0.000 000	0.002
	Batt. Endpoint	+20	1635 000 006	3.7	0.000 000	0.002



LTE 24
<u>10 MHz</u>
3.300 VDC
2.800 VDC
\pm 0.001 % or 10 ppm

Test. Frequncy (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
	100 %	+20(Ref)	1632 500 004	0.0	0.000 000	0.000
	100 %	-30	1632 500 002	-2.1	0.000 000	-0.001
	100 %	-20	1632 499 999	-5.4	0.000 000	-0.003
	100 %	-10	1632 499 998	-5.9	0.000 000	-0.004
1022 F	100 %	0	1632 500 007	2.9	0.000 000	0.002
1632.5	100 %	+10	1632 499 999	-5.1	0.000 000	-0.003
	100 %	+30	1632 500 002	-2.4	0.000 000	-0.001
	100 %	+40	1632 500 000	-4.0	0.000 000	-0.002
	100 %	+50	1632 500 000	-3.9	0.000 000	-0.002
	Batt. Endpoint	+20	1632 500 001	-2.8	0.000 000	-0.002

The report shall not be (partly) reproduced except in full without approval of the laboratory.



9. TEST DATA(Upper)

9.1 CONDUCTED OUTPUT POWER

Danduuidah	Modulation			Max.Average Power (dBm)			
Bandwidth		ND SIZE	KD Oliset	25925	25950	25975	
				1649.0 MHz	1651.5 MHz	1654.0 MHz	
		1	0	17.23	17.65	18.10	
		1	12	16.98	17.76	17.11	
		1	24	18.02	17.56	17.02	
	QPSK	12	0	17.11 17.94		17.88	
		12	6	17.39 <i>18.27</i>		17.40	
		12	11	17.73	18.23	17.06	
		25	0	17.83	18.27	17.67	
		1	0	17.22	17.63	18.09	
		1	12	16.97	17.73	17.06	
		1	24	18.01	17.55	16.87	
	16QAM	12	0	17.15	17.91	17.99	
		12	6	17.39	18.21	17.37	
		12	11	17.72	18.05	17.04	
		25	0	17.81	18.26	17.56	



5 1 1 10				Max.Average Power (dBm)
Bandwidth	Modulation	RB Size	RB Unset	25950
				1651.5 MHz
		1	0	16.86
		1	24	17.69
		1	49	16.18
	QPSK	25	0	17.59
		25	12	17.86
		25	24	17.39
10 MU -		50	0	17.67
		1	0	16.85
		1	24	17.68
		1	49	16.18
	16QAM	25	0	17.53
		25	12	17.84
		25	24	17.35
		50	0	17.65

Test Note

1. Conducted Power Limit:

(i) FCC 20-48 No. 135: -7 dBW(=23dBm) in the 1627.5-1637.5 MHz and the 1646.5-1656.5 MHz uplink bands



9.2 Effective Isotropic Radiated Power

		Max.Average Power (dBm)			ANT	E.I.R.P (dBm)		
Bandwidth	Modulation	25925	25950	25975	Gain	25925	25950	25975
		1649.0	1651.5	1654.0	(dBi)	1649.0	1651.5	1654.0
		MHz	MHz	MHz		MHz	MHz	MHz
5 MU7	QPSK	18.02	18.27	18.10	1 00	22.02	22.27	22.10
	16QAM	18.01	18.26	18.09	4.00	22.01	22.26	22.09

		Max.Average Power (dBm)	ANT Gain	E.I.R.P (dBm)	
Bandwidth	Modulation	25950	(dBi)	25950	
		1651.5 MHz		1651.5 MHz	
10 MU-	QPSK	17.86	4.00	21.86	
10 MHZ	16QAM	17.84	4.00	21.84	

Test Note

1. EIRP $_{(dBm)}$ = Max. Conducted Power $_{(dBm)}$ + antenna gain $_{(dBi)}$

2. EIRP Limit:

(i) FCC Part 25.204 (a): <40 dBW(= 70 dBm)

(ii) FCC 20-48 No. 135:

- 1627.5-1632.5 MHz will ramp up from -31 dBW(= -1dBm) at 1627.5 MHz to -7 dBW(= 23dBm) at 1632.5 MHz before becoming subject to the -7 dBW(= 23dBm) limit for the entire segment.

- 1649.0MHz: < 23dBm
- 1651.5MHz: < 23dBm
- 1654.0MHz: < 23dBm



9.3 RADIATED SPURIOUS EMISSIONS

MODE:	LTE B24
MODULATION SIGNAL:	5 MHz QPSK
DISTANCE:	<u>3 meters</u>
LIMIT:	-13 dBm

Ch	Freq (MHz)	Measured Level (dBm)	Ant. Gain (dBi)	Substitute Level (dBm)	C.L	Pol	Result (dBm)
	3 298.00	-27.22	12.10	-41.06	2.96	V	-31.92
25925 (1649.0)	4 947.00	-31.69	12.70	-39.39	3.69	Н	-30.38
(1013.0)	6 596.00	-43.23	11.70	-43.39	4.30	Н	-35.99
	3 303.00	-43.23	12.10	-57.07	2.96	V	-47.93
25950 (1651.5)	4 954.50	-24.56	12.69	-31.57	3.69	V	-22.57
(100100)	6 606.00	-32.29	11.71	-32.69	4.29	V	-25.26
	3 308.00	-28.82	12.16	-42.46	2.98	Н	-33.28
25975	4 962.00	-25.83	12.68	-33.25	3.69	Н	-24.26
(100 110)	6 616.00	-45.23	11.73	-45.48	4.28	V	-38.03



9.4 OCCUPIED BANDWIDTH

Band	Band Width	Frequency (MHz)	Modulation	Resource Block Size	Resource Block Offset	Data (dB)
5 MHz 24 10 MHz	E MI -		QPSK	6		4.5018
	5 MHZ	1051 5	16-QAM		0	4.4825
	10 MU-	1051.5	QPSK	15	0	8.9079
	TO MHZ		16-QAM	15		8.9149

Note:

1. Plots of the EUT's Occupied Bandwidth are shown Page 134 ~ 137.



9.5 CONDUCTED SPURIOUS EMISSIONS

Band	Band Width (MHz)	Frequency (MHz)	Frequency of Maximum Harmonic (GHz)	Factor (dB)	Measurement Maximum Data (dBm)	Result (dBm)	Limit (dBm)
		1649.0	3.28022	27.976	-70.666	-42.690	
25	5	1651.5	5.49356	28.591	-70.362	-41.771	12.00
25		1654.0	7.45765	28.591	-69.586	-40.995	-13.00
	10	1651.5	7.03891	28.591	-70.135	-41.544	

Note:

1. Plots of the EUT's Conducted Spurious Emissions are shown Page 138 ~ 145.

2. Duty Cycle factor already applied on the factor.

- Factor(dB) = Cable Loss + Ext. Attenuator + Power Splitter

- Result(dBm) = Reading + Factor

Frequency Range (GHz)	Factor [dB]
0.03 - 1	25.270
1 - 5	27.976
5 - 10	28.591
10 - 15	29.116
15 - 20	29.489
Above 20	30.131





9.6 Emission Mask

- Plots of the Emission Mask are shown Page 146 ~ 157.



9.7 Emission limits for protection of aeronautical service

Wide Band

BW (MHz)	Test. Frequncy (MHz)	Modulation	RB Size	RB Offset	Mea. Frequency (MHz)	Result (dBm)	Limit (dBm/MHz)
				0	1559 — 1605	-64.747	-40
F	1640.0	ODCK	T	0	1605 - 1610	-64.696	-40 ~ -16
5	1649.0	QPSK	05	0	1559 — 1605	-64.736	-40
			25	0	1605 - 1610	-64.687	-40 ~ -16
			1	0	1559 — 1605	-64.708	-40
10	1651 5		T	0	1605 - 1610	-64.668	-40 ~ -16
10	1031.5	QPSK	FO	0	1559 — 1605	-64.692	-40
			50	U	1605 - 1610	-64.643	-40 ~ -16

Note:

1. Plots of the EUT's Emission limits for protection of aeronautical service(Wide Band) are shown Page 158 ~ 165.

Narrow Band

BW (MHz)	Test. Frequncy (MHz)	Modulation	RB Size	RB Offset	Mea. Frequency (MHz)	Result (dBm)	Limit (dBm)
			1	0	1559 — 1605	-80.625	-50
5	1640.0	ODSK	T	0	1605 — 1610	-81.047	-50 ~ -26
5	1049.0	QPSK	25	0	1559 — 1605	-80.740	-50
			25	0	1605 - 1610	-80.342	-50 ~ -26
			1	0	1559 — 1605	-80.542	-50
10	1651 5	0.001/	T	0	1605 - 1610	-80.234	-50 ~ -26
10	1031.5	QP3N	50	0	1559 — 1605	-80.451	-50
			50	U	1605 - 1610	-80.420	-50 ~ -26

Note:

1. Plots of the EUT's Emission limits for protection of aeronautical service(Narrow Band) are shown Page 166 ~ 173.



BW (MHz)	Modulation	Mea. Frequency (MHz)	Test. Frequncy (MHz)	Result (dBm)	Limit (dBm/MHz)
			1649.0	-75.338	-50
5	Carrier-off	1559 — 1610	1651.5	-75.329	-50
			1654.0	-75.322	-50
10	Carrier-off	1559 - 1610	1651.5	-75.338	-50

9.8 Emission limits for protection of aeronautical service - Carrier-off state

Note:

1. Plots of the EUT's Emission limits for protection of aeronautical service - Carrier-off state are shown Page 174 ~ 177.



BW (MHz)	Test. Frequncy (MHz)	Modulation	RB Size	RB Offset	Mea. Frequency (MHz)	Result (dBm)	Limit (dBm)
					1627.5	-70.807	-37
					1610 - 1627.5	-71.973	-70 ~ -37
			1	0	1608 - 1610	-95.342	-75 ~ -70
					1541 - 1608	-95.349	-75
	1640.0				1645.5 - 1646.5	-29.715	-28
5	1049.0	QFSN			1627.5	-71.220	-37
5					1610 - 1627.5	-72.795	-70 ~ -37
			25	0	1608 - 1610	-95.332	-75 ~ -70
					1541 - 1608	-95.344	-75
					1645.5 - 1646.5	-38.960	-28
	1654.0	QPSK	1	24	1656.5 - 1657.5	-29.564	-28
	1054.0		25	0	1656.5 - 1657.5	-37.968	-28
					1627.5	-70.933	-37
					1610 - 1627.5	-71.867	-70 ~ -37
			1	0	1608 - 1610	-95.328	-75 ~ -70
					1541 - 1608	-95.351	-75
	16515				1645.5 - 1646.5	-33.239	-28
10	1051.5	Qrsn			1627.5	-67.129	-37
10					1610 - 1627.5	-67.506	-70 ~ -37
			50	0	1608 - 1610	-95.270	-75 ~ -70
					1541 - 1608	-95.312	-75
					1645.5 - 1646.5	-45.019	-28
	16515		1	49	1656.5 - 1657.5	-34.062	-28
	1651.5	QPSK	50	0	1656.5 - 1657.5	-43.863	-28

9.9 Out of channel emissions (Ligado's ATC networks)

Note:

1. Plots of the EUT' Out of channel emissions (Ligado ATC networks) are shown Page 178 ~ 201.



BW (MHz)	Test. Frequncy (MHz)	Modulation	RB Size	RB Offset	Mea. Frequency (MHz)	Result (dBm)	Limit (dBm)
					1610 - 1625	-72.527	-80 ~ -14
			1	0	1608 - 1610	-92.105	-85 ~ -80
			T	0	1559 — 1608	-87.073	-85
F	1640.0	ODEK			1541 — 1559	-106.736	-102
5	1649.0	QPSK			1610 - 1625	-74.613	-80 ~ -14
			25	0	1608 - 1610	-91.416	-85 ~ -80
					1559 — 1608	-87.015	-85
					1541 — 1559	-106.757	-102
			1	0	1610 - 1625	-72.503	-80 ~ -14
					1608 - 1610	-91.412	-85 ~ -80
					1559 — 1608	-87.633	-85
10	1651 5	ODCK			1541 — 1559	-107.236	-102
10	1051.5	QPSK			1610 - 1625	-66.434	-80 ~ -14
			50	0	1608 - 1610	-91.055	-85 ~ -80
					1559 - 1608	-86.455	-85
					1541 — 1559	-107.314	-102

9.10 Discrete emissions (Ligado's ATC networks)

Note:

1. Plots of the EUT' Discrete emissions (Ligado ATC networks) are shown Page 202 ~ 217..



9.11 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE

MODE:	LTE 24
BandWidth:	<u>5 MHz</u>
Voltage(100 %):	3.300 VDC
Batt. Endpoint:	2.800 VDC
Limit:	$\pm~$ 0.001 % or 10 ppm

Test. Frequncy (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
	100 %	+20(Ref)	1649 000 003	0.0	0.000 000	0.000
	100 %	-30	1648 999 996	-7.3	0.000 000	-0.004
	100 %	-20	1649 000 007	4.2	0.000 000	0.003
	100 %	-10	1649 000 008	4.4	0.000 000	0.003
1640.0	100 %	0	1648 999 997	-6.0	0.000 000	-0.004
1649.0	100 %	+10	1648 999 998	-5.2	0.000 000	-0.003
	100 %	+30	1649 000 000	-3.4	0.000 000	-0.002
	100 %	+40	1648 999 999	-4.0	0.000 000	-0.002
	100 %	+50	1648 999 997	-6.6	0.000 000	-0.004
	Batt. Endpoint	+20	1648 999 999	-4.7	0.000 000	-0.003
	100 %	+20(Ref)	1651 500 004	0.0	0.000 000	0.000
	100 %	-30	1651 500 007	2.6	0.000 000	0.002
	100 %	-20	1651 500 000	-3.7	0.000 000	-0.002
	100 %	-10	1651 500 010	5.8	0.000 000	0.004
1051 5	100 %	0	1651 500 011	7.3	0.000 000	0.004
1651.5	100 %	+10	1651 500 000	-4.1	0.000 000	-0.002
	100 %	+30	1651 499 999	-5.2	0.000 000	-0.003
	100 %	+40	1651 500 008	3.8	0.000 000	0.002
	100 %	+50	1651 500 000	-4.0	0.000 000	-0.002
	Batt. Endpoint	+20	1651 500 000	-3.5	0.000 000	-0.002
	100 %	+20(Ref)	1653 999 984	0.0	0.000 000	0.000
	100 %	-30	1653 999 997	12.3	0.000 001	0.007
	100 %	-20	1653 999 965	-19.0	-0.000 001	-0.011
	100 %	-10	1653 999 995	10.8	0.000 001	0.007
1654.0	100 %	0	1653 999 977	-7.4	0.000 000	-0.004
1654.0	100 %	+10	1653 999 978	-6.0	0.000 000	-0.004
	100 %	+30	1654 000 001	16.4	0.000 001	0.010
	100 %	+40	1653 999 995	11.0	0.000 001	0.007
	100 %	+50	1653 999 997	12.3	0.000 001	0.007
	Batt. Endpoint	+20	1653 999 976	-8.0	0.000 000	-0.005



MODE:	LTE 24
BandWidth:	<u>10 MHz</u>
Voltage(100 %):	3.300 VDC
Batt. Endpoint:	2.800 VDC
Limit:	\pm 0.001 % or 10 ppm

Test. Frequncy (MHz)	Voltage (%)	Temp. (°C)	Frequency (Hz)	Frequency Error (Hz)	Deviation (%)	ppm
	100 %	+20(Ref)	1651 500 003	0.0	0.000 000	0.000
	100 %	-30	1651 500 006	3.0	0.000 000	0.002
	100 %	-20	1651 500 008	4.7	0.000 000	0.003
	100 %	-10	1651 500 006	2.9	0.000 000	0.002
1051 5	100 %	0	1651 500 000	-2.9	0.000 000	-0.002
1051.5	100 %	+10	1651 500 000	-2.8	0.000 000	-0.002
	100 %	+30	1651 500 000	-3.7	0.000 000	-0.002
	100 %	+40	1651 500 012	8.9	0.000 001	0.005
	100 %	+50	1651 500 006	2.8	0.000 000	0.002
	Batt. Endpoint	+20	1651 500 009	5.9	0.000 000	0.004

The report shall not be (partly) reproduced except in full without approval of the laboratory.





10. TEST PLOTS(LOWER)



Agitent Spectrum Analyze	er - Occupied B	W	SENSE-INT	11	ALIGNALITO	01:44:56.6	M Dec 07, 2024	
Center Freg 1.6	32500000	GHz	Center Freq: 1.63	2500000 GHz	ALIGNMOTO	Radio Std	: None	Frequency
PASS	NFE	-+-	Trig: Free Run	Avg Hold	1: 700/700	De die Des	de la DTC	
- A00		#IFGain:Low	#Atten: 10 dB			Radio Dev	lice: BIS	
Ref	Offset 27.5 dl	в						
10 dB/div Ref	40.00 dBn	n						
Log								
30.0								Center Freq
20.0								1.632500000 GHz
10.0		mapromono	un annon	mannation	in			
0.00		A						
-10.0		\$			1			
-20.0	Ş							
30.0					N.	1 wit		
wow onent	Margan					- manual and	and has grown	
-40.0								
-50.0								
Center 1 633 CH	7					Sna	n 10 MHz	
#Res BW 100 kH	17		#VBW 390) kHz		Swe	ep 5 ms	CF Step
			<i>"</i> •• - ••••••••••••••••••••••••••••••••••				sop onto	1.000000 MHz
Occupied B	andwidt	h	Total	Power	26.9	dBm		Auto Man
	A	4022 MAL	l					
	4.	4933 1015	12					Freq Offset
Transmit Free	a Error	17.673 k	Hz OBW	Power	90	0.00 %		0 Hz
	4 =							
x dB Bandwid	dth	5.023 M	Hz xdB		-26.	00 dB		
MSG					STATU	8		
inou i					STATUS			

LTE B24_5 M_OBW_Mid_QPSK_FullRB



Center Freq 1.632500		SENSE:INT Center Freq: 1.632	AL1	GN AUTO	01:45:28 AM Radio Std:	1 Dec 07, 2024 None	Frequency
PASS	FE #IFGain:Low	#Atten: 10 dB	Avg[Hold: 70	00/700 F	Radio Dev	ice: BTS	
10 dB/div Ref 40.00	dBm						
20.0							Center Freq 1.632500000 GHz
0.00		wayne warden and	man				
-10.0				ho ho ho			
-30.0 -40.0					and for the second of	and a second	
Center 1.633 GHz #Res BW 100 kHz		#VBW 390	kHz		Spai Swe	n 10 MHz ep 5 ms	CF Step
Occupied Bandw	vidth	Total	Power	27.1 c	dBm		Auto Man
Transmit Freg Erro	4.4/42 IVII or 9.855 I	HZ OBW	Power	99.0	00 %		Freq Offset 0 Hz
x dB Bandwidth	4.986 N	AHz x dB		-26.00) dB		
MSG				STATUS			

LTE B24_5 M_OBW_Mid_16QAM_FullRB



Agriefit Spectrum Analyzer - Occup	AC AC	CENCEITNE	175	ALICN ALITO	02:20:51 44	4Dec 07, 2024	
Center Freg 1.6325000	000 GHz	Center Freq: 1.632	500000 GHz	ALIGNAOTO	Radio Std:	None	Frequency
PASS NF	E ↔	Trig: Free Run	Avg Hold	: 700/700			
FA35	#IFGain:Low	#Atten: 10 dB			Radio Dev	ICE: BTS	
Ref Offset 27	.5 dB						
10 dB/div Ref 40.00 d	dBm						
2000							Contor From
20.0							Center Freq
20.0							1.632500000 GHZ
10.0	monorman	- Aller and	Contraction and the second	nd			
0.00							
-10.0				- <u>}</u>			
-20.0	<i>f</i>						
-38.0	/			ha			
40.0 mannethan	· · · · · · · · · · · · · · · · · · ·				munah	mound	
-50.0							
Center 1.633 GHz					Spa	n 20 MHz	CE Stop
#Res BW 200 kHz		#VBW 820	kHz		Swe	ep 1 ms	2.000000 MHz
	: -141-	Total	Power	26.2	dBm		Auto Man
Occupied Bandw	lath	TULA	rower	20.3	o ubili		
	8.8696 MH	lz					Eren Offset
	00.1751			~			nequise
Transmit Freq Error	28.175	HZ OBW	Power	95	9.00 %		UHZ
x dB Bandwidth	9.831 N	lHz xdB		-26.	00 dB		
MSG				STATUS	3		

LTE B24_10 M_OBW_Mid_QPSK_FullRB



Agilent Spectrum Analyzer - C	Occupied BW						
RL RF 50	AC AC	Conto	SENSE:INT	ALIGNAUTO	D2:29:18 AM	Dec 07, 2024	Frequency
Center Freq 1.632	NEF	Trig: F	ree Run A	g Hold: 700/700	Raulo Sta.	None	
PASS	#IFGair	:Low #Atten	: 10 dB		Radio Devi	ice: BTS	
10 dB/div Ref 40	00 dBm						
Log							
30.0							Center Freq
20.0							1.632500000 GHz
10.0		mannen	montant	harmon			
0.00	Jun			<u>h</u>			
10.0				L L			
-10.0	1			N.			
-20.0	1						
·30.0	would			~	monory	minnon	
-40.0 marrie							
-50.0			_				
Center 1.633 GHz			VBW 020 KH-		Spar	1 20 MHz	CF Step
#Res BW 200 KHZ		#			Swe	ep 1 ms	2.000000 MHz
Occupied Ban	dwidth		Total Pow	er 26.	5 dBm		<u>Auto</u> Man
Cocupied Dail	0.000						
	8.898	6 IVIHZ					Freq Offset
Transmit Fred F	rror 15	144 kHz	OBW Pow	er Q	0 0 %		0 Hz
		A-1-1-1 KI12	OBNIION		3.00 /0		
x dB Bandwidth	9	.804 MHz	x dB	-26.	00 dB		
MSG				STATU	8		
				STATO			

LTE B24_10 M_OBW_Mid_16QAM_FullRB



Agilen	t Spec	ctrun	n Ana	lyzer	- Swe	pt SA																							
LXI RL			RF		50 Q	AC							SEN	ISE:IN	T			A	LIGN A	UTO	0	1:43:3	IS AM	Dec 07	2024		Frage	Innew	
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LTE B24_5 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



gitent Spectr	um Analy	zer - Swep	it SA	-	arts per a	our la			01.10.07.1		
Center Fr	reg 5	015000	NOOD GHZ		SENSE:		#Avg Typ	e: RMS	U1:48:37 A	M Dec 07, 2024	Frequency
	cq o.	N	FE PNO: F	ast 🔸 Tr	rig: Free Ru	n	• //		TY		
_			IFGain:I	_ow ##	Atten: 10 dE						
								Mki	r1 3.599	26 GHz	Auto Tune
10 dB/div	Ref (0.00 dB	m						-68.6	27 abm	
10.0		Y2									Contor From
20.0											5 01500000 CH
20.0											5.01500000 GH2
30.0											
40.0											Start Freq
50.0											30.000000 MHz
50.0				1							
0.0				Y						PEAK	
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itart 30 N	۱Hz								Stop 10	.000 GHz	CF Step
Res BW	1.0 M	Hz	;	#VBW 3.0) MHz			Sweep	16.67 ms (1001 pts)	997.000000 MHz
IKR MODE TR	IC SCL		×		Y	FUNCTI	ON FUN	ICTION WIDTH	FUNCTI	JN VALUE	Auto Man
1 N 1	f		3.599 26 GH	IZ -68	.627 dBm						
3			1.055 17 GF	12 -0	.044 00111						Freq Offset
4											0 Hz
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7											
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10											
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sg	_							STATU	IS		

LTE B24_5 M_Conducted Spurious(30 M-10 G)_Mid_QPSK_1RB



gilent Spectr	um Analyz	er - Swept S	SA							
RL	RF	50 Q A		SE	ISE:INT	#Aug Tup	ALIGN AUTO	01:52:30 A	M Dec 07, 2024	Frequency
enter Fi	eq 5.0	150000 NEF	PNO: East	Trig: Free	Run	#Avg typ	e. ANIS	TY	PE M WANANA	
			IFGain:Lov	v #Atten: 10	dB			D	ET PPPPP	
							Mkr	1 2.652	11 GHz	Auto Tune
0 dB/div	Ref 0.	00 dBm						-70.6	80 dBm	
og 🔽		X2								
10.0										Center Freq
20.0										5.015000000 GHz
30.0		_								
40.0										
50.0										Start Freq
50.0										30.000000 MHz
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90.0										10.00000000 GH2
tart 30 N	1HZ		-43				O	Stop 10	.000 GHz	CF Step
Res BW	1.0 IVIH	Z	#1	BW 3.0 MHZ			sweep 1	0.07 ms (1001 pts)	997.000000 MHz
KR MODE TF	C SCL		×	Y	FUN	CTION FU	NCTION WIDTH	FUNCTI	ON VALUE	Auto Main
2 N 1	f		1.635 17 GHz	-70.680 di	sm 3m					
3										Freq Offset
5									10	0 Hz
6										
8	+									
9										
10	+				_				~	
				and a second					>	
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	_									

LTE B24_5 M_Conducted Spurious(30 M-10 G)_High_QPSK_1RB



Agilent Spectrum Analyzer - Swept SA				
RL RF 50Ω AC	SENSE:IN	T ALIGN AUTO	02:32:24 AM Dec 07, 2024	Frequency
Center Freq 5.015000000	GHZ Trig: Eree Bun	#Avg Type: RMS	TYPE MIALAAAAAAA	Trequency
NFE	IEGain: I ow #Atten: 10 dB		DETPPPPP	
	in outlineout	8.41		Auto Tune
		IVIKI	1 3.649 11 GHZ	
10 dB/div Ref 0.00 dBm			-70.011 dBm	
Log Y2				225 234
-10.0				Center Freq
-20.0				5.015000000 GHz
-30.0				
-40.0				Start Freq
-50.0				30.000000 MHz
-60.0	1			
70.0				
-70.0	When bud have the server the	www.monorelington. all all and a fallent	When with when would	Stop Fred
-80.0 Whywill white and a state state	altable Van Athen on	And the second second second	LAN MURAL ALARY	10 00000000 CH-
-90.0				10.00000000 GH2
Start 30 MHz			Stop 10.000 GHz	CF Step
#Res BW 1.0 MHz	#VBW 3.0 MHz	Sweep 1	6.67 ms (1001 pts)	997.000000 MHz
MKR MODE TRC SOL X	Ŷ			Auto Man
1 N 1 f 3.64	9 11 GHz -70.011 dBm	Tonenon monenon morn	TONCHON MALOC	
2 N 1 f 1.62	5 20 GHz -6.607 dBm			
3				Freq Offset
4				0 Hz
6				
7				
8				
10				
11			~	
<	- and -		>	
MSG		STATUS		

LTE B24_10 M_Conducted Spurious(30 M-10 G)_Low_QPSK_1RB



Agilent Spec	trum Analyzer - Sv	vept SA								
Center	RF 50 s	2 AC 000000 G	Hz	SEN		#Avg Typ	ALIGN AUTO e: RMS	01:43:46 AJ TRAC TYI	A Dec 07, 2024	Frequency
10 dB/div	Ref -20.00	dBm	Gain:High	#Atten: 0	dB		٢	™ Mkr1 18. -76.0	77 GHz 26 dBm	Auto Tune
-30.0										Center Freq 15.00000000 GHz
-40.0										Start Freq 10.000000000 GHz
-60.0								1		Stop Freq 20.000000000 GHz
-80.0 -90.0	analahahahan na	aybliother her	ylyddirydanwfm	alwallishippell's	anthi kyrodwyr	(landly), dyn	alayon (Alaya	all the second second	14-millionalate	CF Step 1.00000000 GHz <u>Auto</u> Man
-100										Freq Offset 0 Hz
-110	000 GHz							Stop 20	000 GHz	
#Res BW	1.0 MHz		#VBW	3.0 MHz			Sweep 2	25.00 ms (1001 pts)	
MSG							STATUS	s		

LTE B24_5 M_Conducted Spurious(Above 10 G)_Low_QPSK_1RB



Agilen	t Spectru	n Analyzer - Sv	wept SA								
Cen	ter Fre	RF 50 s	R AC	GHz	SEN	VSE:INT	#Avg Type	ALIGN AUTO e: RMS	01:48:47 Al TRAC	M Dec 07, 2024	Frequency
10 dE	3/div	Ref -20.00	NFE dBm	PNO: Fast IFGain:High	#Atten: 0	e Run dB		N	/kr1 19. -75.8	21 GHz 90 dBm	Auto Tune
-30.0											Center Freq 15.00000000 GHz
-40.0 -50.0											Start Freq 10.00000000 GHz
-60.0 -70.0										1	Stop Freq 20.00000000 GHz
-80.0 -90.0	NAMANA	NoraAnyourk	mpunutul	Valanterfrankri	q hib hilput	ala olymphala	volledentilled	ally and the	Werner Harris	ki kuralitu	CF Step 1.00000000 GHz Auto Man
-100											Freq Offset 0 Hz
-110 Start	t 10.00	0 GHz		#\/B\\	2.0 MU-			Swoon 2	Stop 20	.000 GHz	
MSG	5 6 7 7	.0 10112		#VDW	5.0 WHZ			status	5.00 ms (ioo i pis)	
								011100	10		

LTE B24_5 M_Conducted Spurious(Above 10 G)_Mid_QPSK_1RB



Agilent S	pectrum /	Analyzer - Sw	ept SA								
Cente	r Frec	RF 50 Ω	AC 000000 (GHz	SEN		#Avg Type	ALIGN AUTO e: RMS	01:52:40 AM TRAC	M Dec 07, 2024	Frequency
10 dB/d	liv R	ef -20.00	dem	PNO: Fast Gain:High	#Atten: 0	dB		1	Vkr1 17. -75.1	21 GHz 78 dBm	Auto Tune
-30.0											Center Freq 15.00000000 GHz
-40.0											Start Freq 10.00000000 GHz
-60.0 — -70.0 —								↓ 1			Stop Freq 20.00000000 GHz
-80.0	hillyddyd	layalayyarya	l _{ener} ni-Med	hy first produce	howithin	, the second second	hippilonesiste	ut the second	W ^{att} lini ^d inini	ALAN ALANA A	CF Step 1.00000000 GHz <u>Auto</u> Man
-100											Freq Offset 0 Hz
Start 1	0.000	GHz		40 (514					Stop 20	.000 GHz	
#Res E	599 1.0	WIFIZ		#VBW	3.0 WIHZ			sweep 2	25.00 ms (1001 pts)	
1130								STATU	5		

LTE B24_5 M_Conducted Spurious(Above 10 G)_High_QPSK_1RB



Agilen	t Spectru	n Analyzer -	Swept SA								
LXI RI		RF 5	OΩ AC		SE	VSE:INT		ALIGN AUTO	02:32:35 AI	4 Dec 07, 2024	Frequency
Cen	ter Fre	eq 15.00	0000000	0 GHz	Tria: Ero	Dun	#Avg Type	: RMS	TRAC		riequency
			NFE	PNO: Fast ++	#Atten: 0	dB			D	PPPPP	
				. Juningi				_	11/24 40	04 CUL	Auto Tune
									75-0		
10 dE	3/div	Ref -20.0	00 dBm						-/0.0	оо авт	
LUG											
											Center Freq
-30.0	-										15.00000000 GHz
-40.0	-			_							
											Start Freq
-50.0											10.00000000 GHz
+30.0											
-60.0											Stop Freq
											20 00000000 GHz
-70.0	-										LU.OUUUUUUUUUUUUUU
									•	PFAM	
.90.0						ike he		4.1.1.1	1 de dista	they al	CF Step
100.0		11	Sec. all.	ulti a altra	alleman	ANW WANNA	all all all the	2个1466月14	What he dark	AL. MICHAN	1.00000000 GHz
	Winnin	Mar Mark	1990 APRIL 19	and the second sec	ALL AND A	. n	a shi	1 14 1			<u>Auto</u> Man
-90.0	the she			1. HILITI							
											Eron Offert
-100											Frequitset
											0 Hz
-110											
110											
Star	t 10.00	0 GHz							Stop 20	000 GHz	
#Res	S BW 1	.0 MHz		#VBW	3.0 MHz			Sweep 2	5.00 ms	1001 pts)	
MSG								STATUS			
DOW								STATUS			

LTE B24_10 M_Conducted Spurious(Above 10 G)_Low_QPSK_1RB





Agilent Spectrum Analyzer - Swe	ac		SEN	ISE:INT	1	ALIGN ALITO	01:33:10.4	M Dec 07, 2024	
Center Freq 1.63000	00000 GI	Hz			#Avg Typ	e: RMS	TRA	CE 123456	Frequency
PASS	NFE P	NO: Wide 🔸 Gain:Low	#Atten: 10	dB			D	ETPPPPPP	
Paf Offeat 27	5 dB								Auto Tune
10 dB/div Ref 5.83 dE	3m								
Trace 1 Pass									Contor From
-4.17					_				1 63000000 GHz
									1.00000000000
-14.2			. 1.	- whether					
			- publication	FBYF 7					Start Freq
-24.2									1.615000000 GHZ
2(2)									
-34.2									Stop Freq
-44.2									1.645000000 GHz
-54.2			, ^p		Mark Market				CF Step
		all the state of the state			1.121-121	e have			Auto Man
-64.2	p ^r	4				Mathyper	lan .		
	AMARINA IN					1. 1	T ANAL ALL	undat ta	Freg Offset
							· M		0 Hz
-842								*	
							0		
#Res BW 4.3 kHz		#VBW	13 kHz			#Sweep	5pan 3	(1001 pts)	
MSG						STATUS			

LTE24_5 M_Mask_Low_QPSK_FullRB



Agilent Spectrum Ana	lyzer - Swept SA							
Center Freq 1	50 Q AC	Hz	SENSE:INT	#Avg Typ	ALIGNAUTO e: RMS	01:46:31 AM De TRACE	2 3 4 5 6	Frequency
PASS 10 dB/div Ref	NFE Offset 27.5 dB 18.53 dBm	PNO: Wide Trig IFGain:Low #Att	ten: 10 dB			DET	PPPPP	Auto Tune
8.53	ISS							Center Freq 1.632500000 GHz
-1.47		/^^	neghnometric				Linit 1	Start Freq 1.617500000 GHz
-21.5								Stop Freq 1.647500000 GHz
-41.5		the second state		AN WIN WWW HAVEN				CF Step 3.000000 MHz <u>Auto</u> Man
-61.5	warman and	Milling and a			ninu Najnatrav	West in the Ball in the	PEAK	Freq Offset 0 Hz
Center 1.63250 #Res BW 4.3 k) GHz Hz	#VBW 13 H	(Hz		#Sweep	Span 30.0 4.000 s (10	00 MHz 101 pts)	
MSG					STATUS			

LTE24_5 M_Mask_Mid_QPSK_FullRB



Agilent Spect	rum Analyzer - Sv	rept SA								
Center F	RF 50 G	AC 00000 G	Hz	SE	VSE:INT	#Avg Typ	ALIGNAUTO	01:50:26 A	M Dec 07, 2024	Frequency
PASS		NFE	PNO: Wide ++ FGain:Low	#Atten: 10	e Run D dB			TY D	ET P P P P P P	Auto Tune
10 dB/div	Ref Offset 27 Ref 18.75	7.5 dB d Bm								
8.75 Trac	e 1 Pass									Center Freq 1.635000000 GHz
-1.25				lotrenan	havinetapp				Lint 1	Start Freq 1.620000000 GHz
-21.3										Stop Freq 1.650000000 GHz
-41.3				ļ		A Jaway Martial				CF Step 3.000000 MHz Auto Man
-61.3	wanablahartan and	Monteringer	np ter				allan Lalladeter	shliboy _{burshl} i	PEAK HTJUNNANH(N)	Freq Offset 0 Hz
Center 1. #Res BW	63500 GHz 4.3 kHz		#VBW	13 kHz			#Sweep	Span 3 4.000 s (0.00 MHz (1001 pts)	
MSG							STATUS			

LTE24_5 M_Mask_High_QPSK_FullRB



Agilent Spectrum Analyzer - Swept SA				
Center Freq 1.630000000	GHz	ISE:INT ALIG #Avg Type: R	SN AUTO 01:43:24 AM Deci RMS TRACE	07, 2024 2 3 4 5 6 Frequency
PASS NFE Ref Offset 27.5 dB	PNO: Wide Trig: Free IFGain:Low #Atten: 10	o dB	DET P	Auto Tune
-5.41				Center Freq 1.630000000 GHz
-15.4				Start Freq 1.615000000 GHz
-35.4		www		Stop Freq 1.645000000 GHz
-65.4		- And		CF Step 3.000000 MHz <u>Auto</u> Man
-75.4 44494474974444744444744444474444444	ht the bay of	" with	nanyuu aariy baaliyy dayahayad	Freq Offset 0 Hz
Center 1.63000 GHz #Res BW 4.3 kHz	#VBW 13 kHz	#\$	Span 30.00 Sweep 4.000 s (100	0 MHz 11 pts)
MSG			STATUS	

LTE24_5 M_Mask(1)_Low_QPSK_1RB


Agilent Spectrum Analyzer - Swept	SA			
Center Freq 1.6325000	NC SEN	ALIGNA #Avg Type: RM:	UTO 01:48:26 AM Dec 07, 2024 TRACE 2 3 4 5 6	Frequency
PASS NFI Ref Offset 27.5 c 10 dB/div Ref 17.32 dB/	E PNO:Wide Irig:Free IFGain:Low #Atten:10) dB	DET PPPPP	Auto Tune
7.32	Л			Center Freq 1.632500000 GHz
-12.7			Linit 1	Start Freq 1.617500000 GHz
-22.7		mound		Stop Freq 1.647500000 GHz
-42.7	A N			CF Step 3.000000 MHz <u>Auto</u> Man
-62.7	withhere wontered for	wither by	Munghanda Harden Janet may af	Freq Offset 0 Hz
Center 1.63250 GHz #Res BW 4.3 kHz	#VBW 13 kHz	#Sw	Span 30.00 MHz reep 4.000 s (100 <u>1</u> pts)	
MSG			STATUS	

LTE24_5 M_Mask(1)_Mid_QPSK_1RB



Magilent Spectrum Analyzer - Swept SA					
Center Freq 1.635000000	GHz	#Avg Type	ALIGN AUTO 02 e: RMS	2:24:44 PM Dec 10, 2024 TRACE 2 3 4 5 6	Frequency
PASS Ref Offset 27.5 dB Ref 18.00 dBm	PNO: Fast Trig: Free IFGain:Low #Atten: 10	e Run 0 dB		DET PPPPP	Auto Tune
8.00 Trace 1 Pass					Center Freq 1.635000000 GHz
-2.00					Start Freq 1.62000000 GHz
-22.0					Stop Freq 1.650000000 GHz
-42.0	A	Automation of the Automation	A		CF Step 3.000000 MHz <u>Auto</u> Man
-62.0	A SAMANA AND	the hard work	/ Withkingdowen	runnaluistatustaansa	Freq Offset 0 Hz
Center 1.63500 GHz #Res BW 4.3 kHz	#VBW 13 kHz		Sl #Sweep 4.0	pan 30.00 MHz 00 s (1001 pts)	
MSG			STATUS		

LTE24_5 M_Mask(1)_High_QPSK_1RB





Agilent Spectrum Analyzer - Swept SA					
Center Freg 1.630000000 G	SENSE	EINT #Avg Type	LIGNAUTO 01:34:08	AM Dec 07, 2024 ACE 1 2 3 4 5 6	Frequency
PASS NFE P	NO: Wide Trig: Free R Gain:Low #Atten: 10 d	Run IB	T		Auto Tune
10 dB/div Ref 6.33 dBm					
-3.67					Center Freq 1.63000000 GHz
-13.7					Start Freq 1.615000000 GHz
-33.7					Stop Freq 1.645000000 GHz
-53.7	Asympt				CF Step 3.000000 MHz <u>Auto</u> Man
-73.7	all and the angle	and the second sec	Annananan	tir timpte	Freq Offset 0 Hz
Center 1.63000 GHz	#VBM 13 kHz		Span #Sween 4 000 s	30.00 MHz (1001 pts)	
MSG			STATUS	(noo r pts)	

LTE24_5 M_Mask(2)_Low_QPSK_1RB



Agilent Spectrum Analyzer - Swept SA					
Center Freq 1.632500000 G	SENS	E:INT AVG Type	ALIGNAUTO 01: RMS	47:29 AM Dec 07, 2024 TRACE 2 3 4 5 6	Frequency
PASS NFE Ref Offset 27.5 dB Ref 18.69 dBm	PNO: Wide Trig: Free IFGain:Low #Atten: 10	kun dB		DET PPPPP	Auto Tune
8.69		h			Center Freq 1.632500000 GHz
-1.3				Linit 1	Start Freq 1.617500000 GHz
.21.3	A	A			Stop Freq 1.647500000 GHz
-41.3		1	4		CF Step 3.000000 MHz <u>Auto</u> Man
-61.3	A A A A A A A A A A A A A A A A A A A	Mart Hart	hly and stars	м	Freq Offset 0 Hz
Center 1.63250 GHz #Res BW 4.3 kHz	#VBW 13 kHz		SI #Sweep 4.0	pan 30.00 MHz 00 s (1001 <u>pts)</u>	
MSG			STATUS		

LTE24_5 M_Mask(2)_Mid_QPSK_1RB



Agilent Spectru	ım Analyzer - Swept SA							
Center Fr	RF 50 Ω AC eq 1.635000000	GHz	SENSE:INT	#Avg Type	ALIGN AUTO E: RMS	01:51:23 AM Dec TRACE	07,2024 2 3 4 5 6	Frequency
PASS	NFE	IFGain:Low #/	Atten: 10 dB			DET P	PPPPP	Auto Tune
10 dB/div	Ref Offset 27.5 dB Ref 18.00 dBm							
8.00 Trace	1 Pass							Center Freq 1.635000000 GHz
-2.00							Linit 1	Start Freq 1.620000000 GHz
-22.0								Stop Freq 1.650000000 GHz
-42.0		-			h			CF Step 3.000000 MHz <u>Auto</u> Man
-62.0		when here		Whank	Tribydiana	nyayan ^{jul} an fiyaadi	PEAK	Freq Offset 0 Hz
Center 1.6 #Res BW	3500 GHz 4.3 kHz	#VBW 13	kHz		#Sweep	Span 30.0 4.000 s (100	0 MHz 1 pts)	
MSG					STATUS	3		

LTE24_5 M_Mask(2)_High_QPSK_1RB



Agilent Spectrum Analyzer - Swept S	iA			
Center Freq 1.6325000	C SEN	ALIGN AUTO	02:30:19 AM Dec 07, 2024 TRACE 2 3 4 5 6	Frequency
PASS	PNO: Fast Trig: Free IFGain:Low #Atten: 10	a Run)dB	DET PPPPP	Auto Tune
Ref Offset 27.5 d 10 dB/div Ref 17.95 dBn	B n			
7.95				Center Freq 1.632500000 GHz
-2.05		hind particular	Lint 1	Start Freq 1.602500000 GHz
-22.1				Stop Freq 1.662500000 GHz
-42.1				CF Step 6.000000 MHz Auto Man
-62.1	allyndrawydraw		North Marin Contraction of the	Freq Offset 0 Hz
	WW			
#Res BW 4.3 kHz	#VBW 13 kHz	#Sweep	4.000 s (1001 pts)	
MSG		STATUS	3	

LTE24_10 M_Mask_Low_QPSK_FullRB



Agilent Spectrum Analyzer - Swept SA				
Center Freg 1.632500000	GHz	E:INT ALIGN #Avg Type: RM	AUTO 02:32:14 AM Dec 07, 2024 IS TRACE 123456	Frequency
PASS	PNO: Fast Trig: Free I IFGain:Low #Atten: 10	Run dB	TYPE M WANNAMAN DET PPPPP	Auto Tune
Ref Offset 27.5 dB 10 dB/div Ref 16.21 dBm				Auto Tune
6.21				Center Freq 1.632500000 GHz
-13.8			Linit 1	Start Freq 1.602500000 GHz
-23.8				Stop Freq 1.662500000 GHz
-43.8				CF Step 6.000000 MHz Auto Man
-63.8	August war	www.wyw.r.v	A horight the start of the star	Freq Offset 0 Hz
Center 1.63250 GHz #Res BW 4.3 kHz	#VBW 13 kHz	#Sv	Span 60.00 MHz weep 4.000 s (1001 pts)	
MSG			STATUS	

LTE24_10 M_Mask(1)_Low_QPSK_1RB



Agilent Spectr	um Analyzer - Swept SA							
Center Fr	RF 50 Ω AC req 1.632500000) GHz		#Avg Type	ALIGN AUTO	02:31:16 AJ	M Dec 07, 2024	Frequency
PASS	NFE	PNO: Fast +++ Trig: Fre IFGain:Low #Atten: 1) dB			D	PPPPP	Auto Tuno
10 dB/div	Ref Offset 27.5 dB Ref 17.46 dBm							Auto Tune
7.46	e 1 Pass							Center Freq 1.632500000 GHz
-2.54							Limit 1	Start Freq 1.602500000 GHz
-22.5								Stop Freq 1.662500000 GHz
-42.5			a a da a		Å			CF Step 6.000000 MHz Auto Man
-62.5		All and a second		Net all all and all all all all all all all all all al	W havelit	which you by	PEAK	Freq Offset 0 Hz
Center 1.6	3250 GHz					Span 6	0.00 MHz	
#Res BW	4.3 KHz	#VBW 13 kHz			#Sweep	4.000 s (1001 pts)	

LTE24_10 M_Mask(2)_Low_QPSK_1RB



Agilent Spectr	um Analyzer - Swe	ept SA								
LXI RL	RF 50 Ω	AC		SEN	SE:INT		ALIGN AUTO	01:34:45 A	M Dec 07, 2024	Frequency
Center Fr	eq 1.58200	0000	GHz	Tria: Free	Run	#Avg Type	: RMS	T	PE A WAAWAAAA	ricqueriey
		NFE	IFGain:Low	#Atten: 10	dB			C	AAAAAA	1. The second
							Mkr1	1.602	884 GHz	Auto Tune
10 dB/div	Ref Offset 31.	5 dB dBm						-64.7	56 dBm	
	1101-20.00									-4
										Center Freq
-30.0										1.582000000 GHz
-40.0									-40.00 dBm	8
										Start Freq
-50.0										1.559000000 GHz
-60.0									.1	
00.0										Stop Freq
70.0										1.605000000 GHz
-70.0										
00.0										CF Step
-60.0										4.600000 MHz
										<u>Auto</u> Man
-90.0										
										Freg Offset
-100										0 Hz
-110		-								
Start 1 55	000 CH2							Stop 1.6	0500 CH7	
#Res BW	1.0 MHz		#VBW	3.0 MHz			#Sweep	2.000 s	(1001 pts)	
MSG							STATUS	5		
		_			_		en not			

LTE24_5 M_Protection_Wide(1)_Low_QPSK_1RB



Agilent Spect	rum Analyzer - Sw	ept SA								
Center F	req 1.60750	AC	GHz	SENSE:IN	T] #4	Avg Type	LIGN AUTO	01:35:14 A TRA	M Dec 07, 2024	Frequency
PASS		NFE	PNO: Wide ++ IFGain:Low	#Atten: 10 dB				D	ET A N N N N N	Auto Tuno
10 dB/div	Ref Offset 31 Ref -10.00	.5 dB dBm					Mkr1	1.609 (005 GHz 98 dBm	Auto Tune
-20.0 Trac	e 1 Pass									Center Freq 1.607500000 GHz
-30.0										Start Freq 1.605000000 GHz
-50.0								1		Stop Freq 1.610000000 GHz
-70.0										CF Step 500.000 kHz Auto Man
-90.0										Freq Offset 0 Hz
-100										
Start 1.60 #Res BW	5000 GHz 1.0 MHz		#VBW	3.0 MHz			Sweep	top 1.61 2.000 s	0000 GHz (1001 pts)	
MSG							STATUS			

LTE24_5 M_Protection_Wide(2)_Low_QPSK_1RB



Agilent Spectrum Analyz	er - Swept SA							
Center Freq 1.5	50 Q AC	GHz SEN	SE:INT	#Avg Type	RMS	01:23:54 A	M Dec 07, 2024	Frequency
	NFE	PNO: Fast Trig: Free IFGain:Low #Atten: 10	dB			D	ET A A A A A A	Auto Tune
Ref Off 10 dB/div Ref -2	set 31.5 dB 20.00 dBm				MKr1	1.603 1 -64.7	14 GHz 54 dBm	
-30.0								Center Freq 1.582000000 GHz
-40.0							-40.00 dBm	Start Freq 1.559000000 GHz
-60.0							∳ ¹ -	Stop Freq 1.60500000 GHz
.80.0								CF Step 4.600000 MHz Auto Man
-100								Freq Offset 0 Hz
-110								
Start 1.55900 GH #Res BW 1.0 MH	z z	#VBW 3.0 MHz		;	#Sweep	Stop 1.6 2.000 s (0500 GHz (1001 pts)	
MSG					STATUS			

LTE24_5 M_Protection_Wide(1)_Low_QPSK_FullRB



Agilent Spe	ctrum Analyzer - Swept	SA				
Contor	RF 50 Ω		SENSE:INT	ALIGN AUTO	01:24:23 AM Dec 07, 2024	Frequency
PASS	Freq 1.607500	E PNO: Wide +++ IFGain:Low	Trig: Free Run #Atten: 10 dB	warg type. Amo	TYPE A WWWWWW DET A N N N N N	
10 dB/div	Ref Offset 31.5 Ref -10.00 dE	dB 3m		Mkr	1 1.606 975 GHz -64.676 dBm	Auto Tune
-20.0	ace 1 Pass					Center Freq 1.607500000 GHz
-30.0						Start Freq 1.605000000 GHz
-50.0						Stop Freq 1.61000000 GHz
-70.0						CF Step 500.000 kHz Auto Man
-90.0						Freq Offset 0 Hz
-100 Start 1.0	605000 GHz				Stop 1.610000 GHz	
#Res Bl	N 1.0 MHz	#VBW	3.0 MHz	#Sweep	2.000 s (1001 pts)	
MSG				STATU	JS	

LTE24_5 M_Protection_Wide(2)_Low_QPSK_FullRB



UNI RL	RF 50 Ω	AC	cu ₂	SENSE:	INT			02:18:47 A	M Dec 07, 2024	Frequency
Cente	er Fred 1.58200	NFE	PNO: Fast +++ IFGain:Low	Trig: Free Ru #Atten: 10 dE	un B	ANY I YPE.	RMS	TY		
10 dB/	Ref Offset 31 div Ref -20.00	.5 dB dBm					Mkr1	1.602 (-64.7	54 GHz 71 dBm	Auto Tune
-30.0										Center Freq 1.582000000 GHz
-40.0 -50.0 —									-40.00 dBm	Start Freq 1.559000000 GHz
-60.0									↓1 RMS	Stop Freq 1.605000000 GHz
-80.0										CF Step 4.600000 MHz <u>Auto</u> Man
-100 —										Freq Offset 0 Hz
Start	1.55900 GHz							Stop 1.6	0500 GHz	
#Res	BW 1.0 MHz		#VBW	3.0 MHz		-	Sweep STATUS	2.000 s	(1001 pts)	

LTE24_10 M_Protection_Wide(1)_Low_QPSK_1RB



Agilent Spe	ctrum Analyzer - Sw	rept SA								
Center	RF 50 G	AC	GHz	SENSE:II	NT	#Avg Type	LIGN AUTO	02:19:15 AI TRAC	M Dec 07, 2024	Frequency
PASS	Ref Offset 37	NFE	PNO: Wide	#Atten: 10 dB			Mkr1	1.609 4 -64.7	45 GHz 18 dBm	Auto Tune
-20.0	ace 1 Pass								Linit 1	Center Freq 1.607500000 GHz
-30.0										Start Freq 1.605000000 GHz
-50.0									1 RMS	Stop Freq 1.61000000 GHz
-70.0										CF Step 500.000 kHz Auto Man
-90.0										Freq Offset 0 Hz
-100										
Start 1.6 #Res Bl	505000 GHz № 1.0 MHz		#VBW	3.0 MHz			S Sweep	top 1.61 2.000 s (0000 GHz 1001 pts)	
MSG							STATUS			

LTE24_10 M_Protection_Wide(2)_Low_QPSK_1RB



Agilent Spectrum Analyzer - Sw	wept SA				
Center Freq 1.5820	α AC 1000000 GHz	SENSE:INT	ALIGN AUTO #Avg Type: RMS	02:08:36 AM Dec 07, 2024 TRACE 2 3 4 5 6	Frequency
	NFE PNO: Fast ++ IFGain:Low	#Atten: 10 dB	Allend		Auto Tune
Ref Offset 31 10 dB/div Ref -20.00	1.5 dB) dBm		IVIKET	-64.760 dBm	
-30.0					Center Freq 1.582000000 GHz
-40.0				-40.00 dBm	Start Freq
-50.0					1.559000000 GHz
-60.0				1- AMS	Stop Freq 1.60500000 GHz
-70.0					CESten
-90.0					4.600000 MHz Auto Man
-100					Freq Offset 0 Hz
-110					
Start 1.55900 GHz #Res BW 1.0 MHz	#VBW	3.0 MHz	#Sweep	Stop 1.60500 GHz 2.000 s (1001 pts)	
MSG			STATUS	3	

LTE24_10 M_Protection_Wide(1)_Low_QPSK_FullRB



Agilent	Spectru	m Analyzer - Sw	ept SA							
Cent	er Fr	RF 50 9	AC	GHz	SENSE:INT	#Avg Type	ALIGNAUTO	02:09:05 A	M Dec 07, 2024	Frequency
PAS	S		NFE	PNO: Wide +++ IFGain:Low	Trig: Free Run #Atten: 10 dB			TY D		
10 dBi	/div	Ref Offset 31 Ref -10.00	.5 dB dBm				Mkr1	1.609 8 -64.6	80 GHz 93 dBm	Auto Tune
-20.0 -	Trace	1 Pass							Linit 1	Center Freq 1.607500000 GHz
-30.0 - -40.0 -										Start Freq 1.605000000 GHz
-50.0 - -60.0 -									1	Stop Freq 1.610000000 GHz
-70.0 -										CF Step 500.000 kHz Auto Man
-90.0										Freq Offset 0 Hz
-100 -	1 604							top 1 64		
start #Res	BW 1	1.0 MHz		#VBW	3.0 MHz		*Sweep	2.000 s	1000 GH2 (1001 pts)	
MSG							STATUS	1		

LTE24_10 M_Protection_Wide(2)_Low_QPSK_FullRB



Agilent Spectrum Analyzer - Sw	vept SA				
Cepter Freq 1 5820		SENSE:INT	ALIGN AUTO #Avg Type: RMS	01:35:43 AM Dec 07, 2024 TRACE 2 3 4 5 6	Frequency
Ref Offset 31	NFE PNO: Fast	Trig: Free Run #Atten: 10 dB	Mkr1	1.561 070 GHz -80.462 dBm	Auto Tune
-40.0					Center Freq 1.582000000 GHz
-60.0				-50.00 dBm	Start Freq 1.559000000 GHz
-70.0	. where we are a state of the second state of the second state of the second state of the second state of the s	a, he . s. It.a. bite anticulture	sectors, subfact, atlante, d	at staltants - a datalle	Stop Freq 1.605000000 GHz
-100	nd, and keine a define ta define de la define de	ar Andra Martin Mathalana an Andra Martin Marana an Andra Martin Mathalana an Andra Martin Martin Martin Marana An Andra Martin Mathalana an Andra Martin	A 1974 A L APANGAN A TANA ILA ANALA	yana ana ana ana ana ana ana ana ana ana	CF Step 4.600000 MHz Auto Man
-110					Freq Offset 0 Hz
Start 1.55900 GHz #Res BW 10 kHz	#\/BW	30 kHz	#Sween	Stop 1.60500 GHz	
MSG			STATUS		

LTE24_5 M_Protection_Narrow(1)_Low_QPSK_1RB



Agilent	Spectru	ım Analyzer - Sv	vept SA								
Cont		RF 50 \$	AC AC	CH-	SE	ISE:INT	#Ava Type	ALIGN AUTO	01:36:11 AJ	M Dec 07, 2024	Frequency
PAS	S	eq 1.0075	NFE	PNO: Wide +++ IFGain:Low	Trig: Free #Atten: 10	e Run 0 dB			TY		
10 dB	/div	Ref Offset 3 ⁴ Ref -10.00	1.5 dB dBm					Mkr1	1.609 4 -80.8	45 GHz 63 dBm	Auto Tune
-20.0 -	Trace	1 Pass									Center Freq 1.607500000 GHz
-30.0 -											Start Freq 1.605000000 GHz
-50.0 -											Stop Freq 1.61000000 GHz
-70.0 -			1							1	CF Step 500.000 kHz <u>Auto</u> Man
-90.0 -	vi dan d	NH JANGHI KAHAN	ediction of the	den Der Können Mehren	Yabalo ^{ne} ikili Miki	h-lo-to-Mattor	Out Markanda	h-lusatiklashya	ali () () () () () () () () () (hollondara.	Freq Offset 0 Hz
-100 - Start	1.60	5000 GHz						5	Stop 1.61	0000 GHz	
#Res	BW	10 kHz		#VBW	30 kHz			#Sweep	2.000 s (1001 pts)	
MSG								STATUS	5		

LTE24_5 M_Protection_Narrow(2)_Low_QPSK_1RB



Agilent	t Spectr	um Analyzer - Sv	wept SA								
IXI RL	-	RF 50 \$	Ω AC		SET	VSE:INT	#Aug Tur	ALIGN AUTO	01:24:52 Al	M Dec 07, 2024	Frequency
Cen	ter Fi	req 1.5820	NEF	GHZ	Trig: Free	e Run	#Avg Typ	e. KINIS	TY		
			MPL	IFGain:Low	#Atten: 10	D dB			D	AAAAA	
		Dof Offect 3	15 40					Mkr1	1.577 1	24 GHz	Auto Tune
10 dE	3/div	Ref -30.00	dBm						-80.8	19 dBm	
Log								Í.			
											Center Freq
-40.0											1.582000000 GHz
-50.0										-50.00 dBm	
											StartFreq
-60.0											1.559000000 GHz
-70.0											Stop Freq
					1						1 605000000 GHz
-80.0						1 1					I.COCCOUCT OT IL
	UNUM H	MAHAMMAN MAL	di andredad	worker the Woodel	and the second	with material	almulational	letter when when	roradionalitation	Asher and a state of the state	
-90.0				_							CF Step
											4.600000 MHZ
-100			_								- div
-110											Freq Offset
											0 Hz
-120			-								
Star	t 1.55	900 GHz							Stop 1.6	0500 GHz	
#Res	s BW	10 KHz		#VBW	30 KHz			#Sweep	2.000 s (1001 pts)	
MSG								STATU	S		

LTE24_5 M_Protection_Narrow(1)_Low_QPSK_FullRB



Agilent	Spectrum Analyzer - Sv	rept SA								
Cent	er Freq 1.6075	AC	GHz	SENSE	:INT	#Avg Type	RMS	01:25:21 A	M Dec 07, 2024	Frequency
PAS	S	NFE	PNO: Wide ++ IFGain:Low	#Atten: 10 d	un B			D	ET A A A A A A	Energing.
10 dB	Ref Offset 37 Idiv Ref -10.00	l.5 dB dBm					Mkr1	1.609 t -80.4	65 GHz 45 dBm	Auto Tune
-20.0	Trace 1 Pass									Center Freq 1.607500000 GHz
-30.0 -40.0										Start Freq 1.605000000 GHz
-50.0 -60.0										Stop Freq 1.610000000 GHz
-70.0						1			∮ ¹	CF Step 500.000 kHz Auto Man
-90.0	lourstwijsslind feelalkeerste	antritutionent	linuario conditicolito	uahdraubili	uddellerfdalaet	htesteheest	thadministras	hersterite	daliharrahihar	Freq Offset 0 Hz
Start	1.605000 GHz						S	Stop 1.61	0000 GHz	
#Res	BW 10 kHz		#VBW 3	30 kHz			#Sweep	2.000 s	(1001 pts)	
MSG							STATUS			

LTE24_5 M_Protection_Narrow(2)_Low_QPSK_FullRB



Agilen	t Spectru	n Analyzer - Si	wept SA								
COR	tor Fr	RF 50	Ω AC	CH2	SEN	VSE:INT	#Ava Tvo	e: RMS	02:19:44 Al	M Dec 07, 2024	Frequency
Cen		94 1.5620	NFE	PNO: Fast	Trig: Free	Run	and a ryp		TY	PE A WWWWW	1040 - 04
_				IFGain:Low	#Atten: 10) dB			D		Auto Tuno
		Ref Offset 3	1.5 dB					Mkr1	1.572 9	38 GHz	Auto Tune
10 dE	3/div	Ref -30.00) dBm						-80.5	88 dBm	
10.0											Center Freq
-4U.U											1.582000000 GHz
70 0										-50.00 dBm	
-50.0											Start Freq
											1,559000000 GHz
-60.U											
70.0											
-70.0											Stop Freq
				1						PMC	1.605000000 GHz
-80.0	a kathu.	Marchieland	Lan Ant	a level in the bird and	L. Male Joh	ala Barred IN	and aloughter	As A a Midue	A number of the	July to a subury	
	94741404E30	of a few free statistics and	C.C.C.Maria Social	seatter of the seatter of the ball	ABALA I. N. INA BALL	Contraction of the second	volje stran og en stander van	AM LIT AND . M	a bid decreations?	COM Desilents	CF Step
-90.0											4.600000 MHz
100											<u>Auto</u> Man
-100											
110											Freq Offset
-110											0 Hz
-120											
Star	t 1.559	00 GHz							Stop 1.6	0500 GHz	
#Res	SBW 1	0 kHz		#VBW	30 kHz			#Sweep	2.000 s	1001 pts)	
MSG								STATU	5		
	_							1000	10		

LTE24_10 M_Protection_Narrow(1)_Low_QPSK_1RB



Agilent S	pectrum Analyzer - Sv	rept SA								
Cente	r Freq 1.6075	AC 00000 G	Hz	SEN	VSE:INT	#Avg Type	ALIGN AUTO e: RMS	02:20:13 AJ	4 Dec 07, 2024 E 1 2 3 4 5 6	Frequency
PASS	Ref Offset 37	NFE 1.5 dB dBm	PNO: Wide +++ FGain:Low	#Atten: 10	dB		Mkr1	1.609 7 -80.5	40 GHz 18 dBm	Auto Tune
-20.0 —	race 1 Pass								Linit 1	Center Freq 1.607500000 GHz
-30.0										Start Freq 1.605000000 GHz
-50.0										Stop Freq 1.61000000 GHz
-70.0			n					4. 1		CF Step 500.000 kHz <u>Auto</u> Man
44 -90.0	unali mhaimhainn an a	the limit to be	hullennetsen lein	a. Augustus tert	adotti falorriisi li	entere.Merlina	Artul water	lla indudit	WARAM.CUMI)	Freq Offset 0 Hz
Start 1	.605000 GHz		#\/D\/	20 112			#Swoon	Stop 1.610	0000 GHz	
MSG			#VDW	50 KH2			STATUS	2.000 S (roo r pts)	
								-		

LTE24_10 M_Protection_Narrow(2)_Low_QPSK_1RB



IXI RL		RF	50 Q	AC		1	SEN	SE:INT		ALIGN AUTO	02:09:34/	M Dec 07, 2024	Frequency
Cent	ter Fr	eq 1.	58200	00000	GHz	st the Tr	ia: Free	Run	#Avg Typ	e: RMS	TRA	CE 1 2 3 4 5 6	Frequency
_				NFC	IFGain:L	ow #A	tten: 10	dB			t	DET A A A A A A	
		Ref O	ffset 31	.5 dB						Mkr1	1.560	426 GHz	Auto Tune
10 dB	ldiv	Ref -	30.00	dBm							-80.2	274 dBm	
													Center Fred
-40.0													1 582000000 GHz
-50.0												-50.00 dBm	
													Start Freq
-60.0													1.559000000 GHz
-70.0													Stop Freq
	↓ ¹											DMC	1.605000000 GHz
-00.0	halisten	derdolum	outedhan	Whends	Homenun	in how while the	(hardel)	Mumoule	Manhahana	whether hand	washingth	n Manual mark	
-90.0													CF Step
													4.600000 MHz
-100		_											Auto Main
													Ener Offert
-110													FreqOnset
													0112
-120									+		+		
Start	1.559	900 G	Hz								Stop 1.6	0500 GHz	
#Res	BW 1	10 KH	Z		#	VBW 30	kHz			#Sweep	2.000 s	(1001 pts)	
MSG										STATU	S		

LTE24_10 M_Protection_Narrow(1)_Low_QPSK_FullRB



Agilent Spe	ectrum Analyzer - Swe	ept SA						
Center	RF 50 Ω Freq 1.60750	AC GHZ	SEI	VSE:INT	ALIGN #Avg Type: RM	AUTO 02:10:03 AJ	M Dec 07, 2024	Frequency
PASS	Ref Offset 31.	NFE PNO: Wi IFGain:L 5 dB	de 🔶 Trig: Free bw #Atten: 10	e Run) dB	N	7Y D /lkr1 1.609 1	25 GHz	Auto Tune
10 dB/di Log Tr -20.0	v Ref -10.00 (ace 1 Pass	dBm				-60.1	Linit 1	Center Freq 1.607500000 GHz
-30.0								Start Freq 1.605000000 GHz
-50.0								Stop Freq 1.610000000 GHz
-70.0	dana na sana na	1	ut i a tall i mar at	a katta ar na		↓1 	RMS	CF Step 500.000 kHz <u>Auto</u> Man
-90.0	WARAN WARANTAWA, I	ndaran karang	NRUNIH UMALITAKI	ere y (e der viele er en er	uliin on the second	lpalitur (floatist, pijderste	ha maya mundiki ku	Freq Offset 0 Hz
Start 1. #Res B	605000 GHz W 10 KHz	#	VBW 30 kHz		#Sv	Stop 1.61	0000 GHz 1001 pts)	
MSG						STATUS		

LTE24_10 M_Protection_Narrow(2)_Low_QPSK_FullRB



Agilent Spectrum Analyzer - Sw	wept SA				
Center Freq 1.5845	Ω AC 000000 GHz	SENSE:INT	ALIGNAUTO ALIGNAUTO	01:44:28 AM Dec 07, 2024 TRACE 1 2 3 4 5 6 TYPE A UNANIANA	Frequency
Ref Offset 3' 10 dB/div Ref -30.00	NFE PNO: Fast IFGain:High 1.5 dB) dBm	#Atten: 0 dB	Mkr1	1.604 900 GHz -75.525 dBm	Auto Tune
-40.0					Center Freq 1.584500000 GHz
-50.0				-50.00 dBm	Start Freq 1.559000000 GHz
-70.0				¹	Stop Freq 1.610000000 GHz
-90.0					CF Step 5.100000 MHz <u>Auto</u> Man
-110					Freq Offset 0 Hz
Start 1.55900 GHz				Stop 1.61000 GHz	
#Res BW 1.0 MHz	#VBW	3.U MHZ	#Sweep status	2.000 s (1001 pts)	

LTE24_5 M_Protection_CarrierOff_Low_QPSK_1RB



Agilent Spe	ctrum Analyzer - Sw	vept SA							
Center	RF 50 9	2 AC 00000 GI	lz se	NSE:INT	#Avg Type	RMS	01:49:30 Al TRAC	M Dec 07, 2024 2E 1 2 3 4 5 6	Frequency
		NFE P	NO: Fast 🔸 Trig: Fre Gain:High #Atten: 0	e Run dB			D		
10 dB/div	Ref Offset 31 Ref -30.00	1.5 dB dBm				Mkr1	1.609 0 -75.3	97 dBm	Auto I une
-40.0									Center Freq 1.584500000 GHz
-50.0								-50.00 dBm	Start Freq 1.559000000 GHz
-70.0								<u> </u>	Stop Freq 1.61000000 GHz
-90.0									CF Step 5.100000 MHz Auto Man
-110									Freq Offset 0 Hz
-120									
Start 1.5 #Res BV	55900 GHz V 1.0 MHz		#VBW 3.0 MHz			#Sweep	Stop 1.6 2.000 s (1000 GHz 1001 pts)	
MSG						STATUS	5		

LTE24_5 M_Protection_CarrierOff_Mid_QPSK_1RB



Agilent S	Spectrum Analyzer - Sw	rept SA							
CAL RL	RF 50 Ω	AC		SENSE:INT	#Aug Tur	ALIGN AUTO	01:53:23 AI	M Dec 07, 2024	Frequency
Cente	er Fred 1.58450	NFE	PNO: Fast +++ Tri IFGain:High #At	g: Free Run ten: 0 dB	#Avg Typ	e. RIVIS	TYI		
10 dB/c	Ref Offset 31 div Ref -30.00	.5 dB dBm				Mkr1	1.609 4 -75.3	90 GHz 89 dBm	Auto Tune
-40.0 —									Center Freq 1.584500000 GHz
-50.0 — -60.0 —								-50.00 dBm	Start Freq 1.559000000 GHz
-70.0								RI	Stop Freq 1.610000000 GHz
-90.0									CF Step 5.100000 MHz Auto Man
-110 —									Freq Offset 0 Hz
-120							Stop 1.6		
#Res	BW 1.0 MHz		#VBW 3.0	MHz		#Sweep	2.000 s (1000 GH2	
MSG						STATU	5		

LTE24_5 M_Protection_CarrierOff_High_QPSK_1RB



Agilent Spectrum Analyzer - Sw	vept SA				
LXU RL RF 50Ω	2 AC	SENSE:INT	ALIGNAUTO	02:33:18 AM Dec 07, 2024	Frequency
Center Freq 1.58450	00000 GHZ NFE PNO: Fast ← IFGain:High	Trig: Free Run #Atten: 0 dB	#Avg Type: RMS	TYPE A WARAAAAA DET A A A A A A	- requerey
Ref Offset 31 10 dB/div Ref -30.00	1.5 dB dBm		Mkr1	1.609 898 GHz -75.418 dBm	Auto Tune
-40.0					Center Freq 1.584500000 GHz
-50.0				-50.00 dem	Start Freq 1.559000000 GHz
-70.0					Stop Freq 1.610000000 GHz
-90.0					CF Step 5.100000 MHz Auto Man
-110					Freq Offset 0 Hz
-120				Stop 1 61000 CH2	
#Res BW 1.0 MHz	#VB	W 3.0 MHz	#Sweep	2.000 s (1001 pts)	
MSG			STATU	S	

LTE24_10 M_Protection_CarrierOff_Low_QPSK_1RB



Agitent Spectrum Analyzer - Sv	wept SA			and the second se						
Center Freq 1.6275			Trig: Free R	un	#Avg Type	e: RMS	U1:36:50 AM TRACI TYP	E 1 2 3 4 5 6 E A WWWWW	Frequency	
Ref Offset 3 10 dB/div Ref -20.00	1.5 dB dBm	IFGain:Low	#Atten: 10 d	В			Mkr1 -41.84	8.712 s 46 dBm	Auto Tu	ine
-30.0							1	-37.00 dBm	Center Fr 1.627500000 G	req Hz
-40.0 -50.0			din an inclusion of the	the style of the style					Start Fr 1.627500000 G	req sHz
-60.0									Stop Fr 1.627500000 G	eq Hz
-80.0									CF St 4.300 k Auto N	ep (Hz Ian
-100									Freq Offs 0	set Hz
Center 1.627500000 Res BW 4.3 kHz	GHz	#VBW	13 kHz			Sweep	S 10.00 <u>s (</u>	pan 0 Hz 9000 pt <u>s)</u>		
MSG						STATUS				

LTE24_5 M_ Ligado_Out of channel emissions_1627.5 MHz_Low_QPSK_1RB



Agilen	t Spectru	m Analyzer - Si	wept SA								
Cen	ter Fr	RF 50	α AC 50000 G	Hz	SE!	NSE:INT	#Avg Typ	ALIGN AUTO e: RMS	01:37:29 A	M Dec 07, 2024	Frequency
PAS	S 3/div	Ref Offset 3 Ref -20.00	1.5 dB dBm	PNO: Wide 🔸 FGain:Low	#Atten: 10	0 dB		Mkr1 1	.627 49 -43.0	8 1 GHz 27 dBm	Auto Tune
-30.0	Trace	1 Pass									Center Freq 1.618750000 GHz
-40.0 -50.0											Start Freq 1.610000000 GHz
-60.0 -70.0											Stop Freq 1.627500000 GHz
-80.0 -90.0	and an all	and the providence of the prov	in the Print	ne vy fiptie tilg		الغرار والمراجع المراجع الم					CF Step 1.750000 MHz <u>Auto</u> Man
-100											Freq Offset 0 Hz
-110 Star	t 1.610	000 GHz						s	Stop 1.62	7500 GHz	
#Re:	s BW 4	.3 kHz		#VBW	13 kHz			#Sweep	10.00 s	(9000 pts)	
MSG								STATUS	5		

LTE24_5 M_ Ligado_Out of channel emissions_1610 - 1627.5 MHz_Low_QPSK_1RB



Agilent Spect	trum Analyzer - Sv	wept SA								
	RF 50 S	AC	GHz	SENSE	INT	#Avg Type	RMS	01:38:12 A	M Dec 07, 2024	Frequency
PASS		NFE	PNO: Wide +++ IFGain:High	Trig: Free F #Atten: 0 dE	tun B			TY D		
10 dB/div	Ref Offset 1 Ref -50.00	1.5 dB 0 dBm					Mkr1	1.609 2 -95.5	248 GHz 34 dBm	Auto Tune
-60.0	ce 1 Pass									Center Freq 1.609000000 GHz
-70.0										Start Freq 1.608000000 GHz
-90.0						● ¹				Stop Freq 1.610000000 GHz
-110										CF Step 200.000 kHz <u>Auto</u> Man
-130										Freq Offset 0 Hz
-140										
Start 1.6 #Res BW	08000 GHz 1.0 MHz		#VBW	3.0 MHz			S Sweep#	top 1.61 2.000 s	0000 GHz (1001 pts)	
MSG							STATUS			

LTE24_5 M_ Ligado_Out of channel emissions_1608 – 1610 MHz_Low_QPSK_1RB



Agilent Spectrun	n Analyzer - Swept SA						
Center Fre	RF 50 Q AC) GHz	SE:INT #Avg	ALIGN AUTO	01:38:41 AM	E 2 3 4 5 6	Frequency
	NFE	PNO: Fast ++ Thg. Free IFGain:High #Atten: 0 o	dB		DE	AAAAA	
10 dB/div	Ref Offset 11.5 dB Ref -50.00 dBm			Mkr1	1.606 6	60 GHz 73 dBm	Auto Tune
-60.0							Center Freq 1.574500000 GHz
-70.0						-75.00 dBm	Start Freq 1.541000000 GHz
-90.0						4	Stop Freq 1.608000000 GHz
-110							CF Step 6.700000 MHz <u>Auto</u> Man
-130							Freq Offset 0 Hz
-140							
Start 1.541 #Res BW 1	00 GHz .0 MHz	#VBW 3.0 MHz		#Sweep	Stop 1.60 2.000 s (9800 GHz 1001 pts)	
MSG				STATUS	3		

LTE24_5 M_ Ligado_Out of channel emissions_1541 – 1608 MHz_Low_QPSK_1RB



Agilent Spectrum Analyzer - Sv	wept SA							
Center Freq 1.6275	R AC	GHz	SENSE:INT	#Avg Type	RMS	01:26:00 AM TRACI	Dec 07, 2024	Frequency
Ref Offset 3	1.5 dB	IFGain:Low	Atten: 10 dB			DE Mkr1	9.907 s	Auto Tune
10 dB/div Ref -20.00	dBm					-50.22	21 dBm	
-30.0							-37.00 dBm	Center Fred 1.627500000 GHz
-40.0							Ì	Start Fred 1.627500000 GHz
-60.0								Stop Fred 1.627500000 GHz
-80.0								CF Step 4.300 kHz Auto Mar
-100								Freq Offset 0 Hz
Center 1.627500000	GHz					S	pan 0 Hz	
Res BW 4.3 kHz		#VBW 1	3 kHz		Sweep	10.00 s (0000 pts)	
MSG					STATUS			

LTE24_5 M_ Ligado_Out of channel emissions_1627.5 MHz _Low_QPSK_ FullRB



Agilent Spectrum Analyzer - Swept SA				
IN RL RF 50Ω AC	SENSE:INT	ALIGN AUTO	01:26:39 AM Dec 07, 2024	Frequency
Center Freq 1.518/50000 GHZ	Trig: Free Run	#Avg Type. KWS	TYPE A WANNAM	
PASS IFGain:Low	#Atten: 10 dB		DET A A A A A A	C. La Constanti de la Constanti
		Mkr1 1	.627 484 4 GHz	Auto Tune
10 dB/div Ref -20.00 dBm			-52.471 dBm	
Log Trace 1 Pass				
				Center Freq
-30.0				1.618750000 GHz
-40.0				
			1	StartFreq
-50.0				1.61000000 GHz
-60.0			in the first first here is the first	Stop Fred
		100	a later better bester better	1 627500000 GHz
-70.0		Leis and	ALM	1.027000000 GH2
		1		
-80.0 a to b time to addit to the section of a late to the section of the section	المراجع ويربط المرجوب المراجع	Allow Particular		CF Step
CONTRACTOR AND	Made of the second second	and a statistical states of the		1.750000 MHz
-90.0 states and states and the bart of subman and the sustained at the	and a contact of the state of the			Auto
-100				Freq Offset
				0 Hz
.110				
110				
Start 1.610000 GHz		S	top 1.627500 GHz	
#Res BW 4.3 kHz #VBW	13 kHz	#Sweep	10.00 s (9000 pts)	
MSG		STATUS		

LTE24_5 M_ Ligado_Out of channel emissions_1610 - 1627.5 MHz _Low_QPSK_ FullRB



Agilen	t Spectrum Analyzer - Sv	vept SA					
Cent	ter Freq 1.6090	00000 C	GHz Tria: From	Run	ALIGNAUTO	U1:27:22 AM Dec 07, 2024 TRACE 1 2 3 4 5 6 TYPE A MARKAN	Frequency
PAS	S	NFE	IFGain:High #Atten: 0	dB		DET A A A A A A	
10 dE	Ref Offset 1 8/div Ref -50.00	1.5 dB d Bm			Mkr1	1.608 468 GHz -95.514 dBm	Auto Tune
-60.0	Trace 1 Pass						Center Freq 1.609000000 GHz
-70.0 -80.0							Start Freq 1.608000000 GHz
-90.0 -100		↓ ¹					Stop Freq 1.610000000 GHz
-110 -120							CF Step 200.000 kHz Auto Man
-130							Freq Offset 0 Hz
-140 Star	t 1.608000 GHz					Stop 1.610000 GHz	
#Res	8 BW 1.0 MHz		#VBW 3.0 MHz		#Sweep	2.000 s (1001 pts)	
Dow					STATU	3	

LTE24_5 M_ Ligado_Out of channel emissions_1608 – 1610 MHz _Low_QPSK_ FullRB



Agilent Spectru	m Analyzer - Sw	ept SA								
Center Fre	RF 50 Ω eq 1.57450	AC	GHz	SEN	SE:INT	#Avg Type	ALIGN AUTO	01:27:50 A	M Dec 07, 2024 CE 123456	Frequency
		NFE	PNO: Fast	#Atten: 0	dB			D	ET A A A A A A	Auto Tuno
10 dB/div	Ref Offset 11 Ref -50.00	.5 dB dBm					Mkr1	1.607 1 -95.5	29 GHz 30 dBm	Auto Tune
-60.0										Center Freq 1.574500000 GHz
-70.0									-75.00 dBm	Start Freq 1.541000000 GHz
-90.0									•	Stop Freq 1.608000000 GHz
-110										CF Step 6.700000 MHz Auto Man
-130										Freq Offset 0 Hz
-140								Dtop 1.6		
#Res BW 1	.0 MHz		#VBW	3.0 MHz			#Sweep	2.000 s	(1001 pts)	
MSG							STATUS	5		

LTE24_5 M_ Ligado_Out of channel emissions_1541 – 1608 MHz _Low_QPSK_ FullRB


Agrient Spectr	um Analyzer - Sv	wept SA						
Center E	RF 50 1	Ω AC	GH7	SENSE:INT	#Ava Tvr	ALIGNAUTO	U2:10:42 AM Dec 07, 20 TRACE	Frequency
Genter F	1eq 1.0275	NFE	PNO: Close	Trig: Free Run			TYPE A WWWWW	***
			IFGain:Low	#Atten: 10 dB			DET A A A A A	
	Ref Offset 3	15 dB					Mkr1 2.227	S Auto Tu
10 dB/div	Ref -20.00) dBm					-44.459 dBi	m .
								Center Fr
-30.0								1.627500000 G
							-37.00 d	8m <mark>.</mark>
-40.0								
				Column and an address of the second	and the second second second second second			Start Fr
-50.0	A	all and a different of			and a state of the Local diversion of the local diversion of the local diversion of the local diversion of the	La milla séas à série de se		1.627500000 G
-60.0								Stop Er
								510PF1
-70.0								1.627500000 G
-80.0								CF St
								4.300 k
.90.0								Auto M
-00.0.								
100								Freq Offs
100								0
-110								
Center 1.0	627500000	GHz					Span 0 H	IZ
Res BW 4	.3 kHz		#VBW	13 kHz		Sweep	10.00 s (9000 pt	s)
MSG						STATUS		
						en troc		

LTE24_10 M_Ligado_Out of channel emissions_1627.5 MHz_Low_QPSK_1RB



Agilent Spectr	rum Analyzer - Swept SA					
Center E	RF 50 Q AC	CH7	SENSE:INT	#Avg Type: RMS	02:21:31 AM Dec 07, 2024 TRACE 1 2 3 4 5 6	Frequency
Center P	NFE	PNO: Wide	Trig: Free Run		TYPE A WANNAMA	
FAIL		IFGain:Low	#Atten: 10 dB		Del prototototo	Auto Tuno
	Ref Offset 31.5 dB			Mkr1 1	.627 484 4 GHz	Auto Tune
10 dB/div	Ref -20.00 dBm				-36.933 dBm	
Trac	e 1 Fail					
						Center Freq
-30.0						1.618750000 GHz
					Lifte	
-40.0						Ctart Eron
						StartFreq
-50.0					/	1.61000000 GHZ
					1	
-60.0					and the second s	Stop Freq
					and the second second	1 627500000 GHz
-70.0						
			- 4			
-80.0	water and the destruction	Strong town Life and	Alexandration of the life to	tonital top 1971 1		CF Step
-1	t i distriction contractad at	needs of reactions of	at all collitions of all and	Contraction (1981)		Auto Man
90.0 PUIPeng	ويعترجه ومرجا بتقط يول وم	وفيناوب والتجمع الارتباطية	A STATE OF THE REAL PROPERTY AND A STATE OF THE REAL PROPERTY AND A STATE OF THE REAL PROPERTY AND A STATE OF T	Winter Brand Balling and Balling		LING
						2
-100						Freq Offset
						0 Hz
-110						
Start 1.61	0000 GHz		10 1-11-	#0	top 1.627500 GHz	
#Res BW	4.3 KHZ	#VBW	13 KHZ	#Sweep	10.00 s (9000 pts)	
MSG				STATUS		
Agilent Spect	rum Analyzer - Swept SA					100
Agilent Spect	rum Analyzer - Swept SA RF 50 Ω AC		SENSE:INT	ALIGNAUTO	05:20:42 AM Dec 07, 2024	Frequency
Agilent Spects	rum Analyzer - Swept SA RF 50 Ω AC cq 1.627300000 (NFF		SENSE:INT	ALIGNAUTO #Avg Type: RMS	05:20:42 AM Dec 07, 2024 TRACE 2 2 3 4 5 0 TYPE & WWWWW	Frequency
Agilent Spectr	rum Analyzer - Swept SA RF 50 g AC cq 1.627300000 C NFE	GHz PNO: Close ↔ IFGain:Low	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS	05:20:42 AM Dec 07, 2024 TRACE 1 2 3 4 5 4 TYPE A WWWWWW DET A A A A A A	Frequency
Agilent Spectr	rum Analyzer - Swept SA RF SOQ AC rq 1.627300000 (NFE Ref Offset 31 5 dB	SHz PNO: Close ↔ IFGain:Low	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS Mkr1 1	05:20:42 AM Dec 07, 2024 TRACE 2 2 4 5 TYPE A WAAAAA DET A A A A A A	Frequency Auto Tune
Agilent Spectr Start Fre PASS	rum Analyzer - Swept SA RF 50 2 AC rg 1.627300000 (NFE Ref Offset 31.5 dB Ref -20.00 dBm	GHz PNO: Close ↔ IFGain:Low	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS Mkr1 1	05:20:42 AM Dec 07, 2024 TRACE 12 3 4 5 TYPE A A A A A A OET A A A A A A 627 498 4 GHz -37.998 dBm	Frequency Auto Tune
Agilent Spectr (X) T Start Fre PASS	rum Analyzer - Swept SA RF SO 2 ACM q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	SHz PNO: Close IFGain:Low	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS Mkr1 1	05:20:42 AM Dec 07, 2024 TRACE 12:3 4 5 TYPE F AMANA A A OET A 98 4 GHz -37.998 dBm	Frequency Auto Tune
Agilent Spectr Start Fre PASS 10 dB/div Log Trac	rum Analyzer - Swept SA RF 150 2 ACM q 1.627300000 0 NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	GHZ PNO: Close IFGain:Low	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS Mkr1 1	05:20:42 AM Dec 07, 2024 TRACE 12 3 4 5 0 TYPE A A A A A A 627 498 4 GHz -37.998 dBm	Frequency Auto Tune Center Freq
Agilent Spect Start Fre PASS 10 dB/div Log Trac	rum Analyzer - Swept SA RF 150 2 ACM q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	GHZ PNO: Close IFGain:Low	SBVSE:INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS Mkr1 1	05:20:42 AM Dec 07, 2024 TRACE 12 3 4 5 TYPE A A A A A A 627 498 4 GHz -37.998 dBm	Frequency Auto Tune Center Freq 1.627400000 GHz
Agilent Spect Start Fre PASS 10 dB/div Log Trac	rum Analyzer - Swept SA RF 50 Q AC Q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	SHz PNO: Close → IFGain:Low	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS Mkr1 1	05:20:42 AM Dec 07, 2024	Frequency Auto Tune Center Freq 1.627400000 GHz
Agilent Spectr Start Fre PASS 10 dB/div Log Trac -30.0	rum Analyzer - Swept SA RF 50 Q AC q 1.6273000000 (NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	3Hz PN0: Close → IFGain:Low	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS Mkr1 1	105:20:42 AM Dec 07, 2024 TRACE 0 2 3 4 5 TYPE 0 WWWWW Cert A A A A A A 627 498 4 GHz -37.998 dBm	Frequency Auto Tune Center Freq 1.627400000 GHz
Agilent Spectr Start Fre PASS 10 dB/div Log Trac -40.0	rum Analyzer - Swept SA RF S0.9. AC og 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	3Hz PN0: Close → IFGain:Low	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS Mkr1 1	105:20:42 AM Dec 07, 2024 TRACE D 2 8 4 5 TYPE A MANAN Cer A A A A A A .627 498 4 GHz -37.998 dBm	Frequency Auto Tune Center Freq 1.627400000 GHz Start Freq
Aglent Spectra Start Fre PASS 10 dB/div Log Trac -30.0 -40.0	rum Analyzer - Swept SA RF S0.9. AC q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	SHz PN0: Close IFGain:Low	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS Mkr1 1	105:20:42 AM Dec 07, 2024 TRACE D 2 8 4 5 TYPE A MANAN CET A 3 A A A A -37.998 dBm	Frequency Auto Tune Center Freq 1.627400000 GHz Start Freq 1.627300000 GHz
Aglent Spectra Start Fre PASS 10 dB/div Log Trac -30.0 -40.0	rum Analyzer - Swept SA RF S0.9 AC q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	GHz PNO: Close IFGain:Low	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS Mkr1 1	105:20:42 AM Dec 07, 2024 TRACE D 2 8 4 5 TYPE 1 WWWW CET AAAAAA .627 498 4 GHz -37.998 dBm	Frequency Auto Tune Center Freq 1.627400000 GHz Start Freq 1.627300000 GHz
Aglent Spect Start Fre PASS 10 dB/div Log Trac -30.0 -40.0 -60.0	rum Analyzer - Swept SA RF S0.9 AC q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	GHz PNO: Close IFGain:Low	SENSE:INT	ALIGNAUTO #Avg Type: RMS Mkr1 1	105:20:42 AM Dec 07, 2024 TRACE 10 2 8 4 8 1 TYPE AMANAAA 627 498 4 GHz -37.998 dBm	Frequency Auto Tune Center Freq 1.627400000 GHz Start Freq 1.627300000 GHz Stop Freq
Aglent Spect Start Fre PASS 10 dB/div Log Trac -30.0 -60.0	rum Analyzer - Swept SA RF S0 Q ACS q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	GHz PNO: Close IFGain:Low	SENSE:INT	ALIGNAUTO #Avg Type: RMS Mkr1 1	105:20:42 AM Dec 07, 2024 TRACE 0 2 8 4 8 6 TYPE A A A A A A 6027 498 4 GHz -37.998 dBm	Frequency Auto Tune Center Freq 1.627400000 GHz Start Freq 1.627300000 GHz Stop Freq 1.627500000 GHz
Aglent Spect Start Fre PASS 10 dB/div Trac -30.0 -40.0 -50.0 -60.0 -70.0	rum Analyzer - Swept SA RF S0 Q ACS q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	GHz PNO: Close IFGain:Low	SENSE:INT	ALIGNAUTO #Avg Type: RMS Mkr1 1	105:20:42 AM Dec 07, 2024 TRACE 0 2 4 5 5 TYPE A A A A A 6027 498 4 GHz -37.998 dBm	Frequency Auto Tune Center Freq 1.627400000 GHz Start Freq 1.627300000 GHz Stop Freq 1.627500000 GHz
Aglient Spectr Start Fre PASS 10 dB/div Trac -30.0 -40.0 -50.0 -60.0 -70.0	rum Analyzer - Swept SA RF S0 Q ACS q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	SHz PN0: Close → IFGein:Low	SENSE INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS	05:20:42 AM Dec 07, 2024	Frequency Auto Tune Center Freq 1.627400000 GHz Start Freq 1.627500000 GHz
Aglent Spect X T Start Fre PASS 10 dB/div Log Trac -30.0 -40.0 -50.0 -60.0 -70.0 -80.0	rum Analyzer - Swept SA RF 50 Q AC rq 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	SHz PN0: Close → IFGein:Low	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS	105:20:42 AM Dec 07, 2024	Frequency Auto Tune Center Freq 1.627400000 GHz Start Freq 1.627500000 GHz Stop Freq 1.627500000 GHz
Aglient Spectr Start Fre PASS 10 dB/div Log Trac -30.0 -40.0 -50.0 -60.0 -70.0 -80.0	rum Analyzer - Swept SA RF 50 Q AC q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	SHz PN0: Close → IFGain:Low	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS	105:20:42 AM Dec 07, 2024	Frequency Auto Tune Center Freq 1.627400000 GHz Start Freq 1.627500000 GHz Stop Freq 1.627500000 GHz CF Step 20.000 kHz Auto Man
Aglent Spect X T Start Fre PASS 10 dB/div Log Trac -30.0 -40.0 -50.0 -60.0 -70.0 -80.0 -80.0	rum Analyzer - Swept SA RF 50 9 AC q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	3Hz PN0: Close → IFGain:Low	SENSE:BNT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS	105:20:42 AM Dec 07, 2024	Frequency Auto Tune Center Freq 1.627400000 GHz Start Freq 1.627300000 GHz Stop Freq 1.627500000 GHz CF Step 20.000 kHz Auto Man
Aglient Spectr Start Fre PASS 10 dB/div Log Trac -30.0 -40.0 -50.0 -60.0 -70.0 -80.0	rum Analyzer - Swept SA RF 50 9 AC q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	3Hz PN0: Close → IFGain:Low	SENSE:BNT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS	105:20:42 AM Dec 07, 2024	Frequency Auto Tune Center Freq 1.627400000 GHz Start Freq 1.627300000 GHz 1.627500000 GHz 20.000 KHz 20.000 KHz Auto Man
Aglent Spect X T Start Fre PASS 10 dB/div Cog Trac -30.0 -40.0 -60.0 -60.0 -70.0 -80.0 -70.0 -70.0 -70.0 -70.0 -70.0 -70.0 -70.0 -70.0	rum Analyzer - Swept SA RF SO 2 AC q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	3Hz PN0: Close → IFGain:Low	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS	105:20:42 AM Dec 07, 2024	Frequency Auto Tune Center Freq 1.627400000 GHz Start Freq 1.627300000 GHz Stop Freq 1.527500000 GHz 20.000 kHz Auto Man Freq Offset
Aglent Spect Start Fre PASS 10 dB/div Log Trac -30.0 -40.0 -50.0 -60.0 -70.0 -80.0 -70.0 -70.0 -70.0 -70.0 -100	rum Analyzer - Swept SA RF SO Q AC Q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	SHz PN0: Close → IFGain:Low	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS	105:20:42 AM Dec 07, 2024	Frequency Auto Tune Center Freq 1.627400000 GHz Start Freq 1.627300000 GHz 1.627500000 GHz 20.000 kHz Auto Man Freq Offset 0 Hz
Aglient Spector Start Fre PASS 10 dB/div Log Trac -30.0 -40.0 -50.0 -60.0 -70.0 -70.0 -70.0 -70.0 -70.0 -100 -110	rum Analyzer - Swept SA RF SO Q AC q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	SHz PN0: Close → IFGain:Low	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS	105:20:42 AM Dec 07, 2024	Frequency Auto Tune Center Freq 1.627400000 GHz Start Freq 1.627500000 GHz 1.627500000 GHz 20.000 kHz Auto Man Freq Offset 0 Hz
Aglient Spector Start Fre PASS 10 dB/div Log Trac -30.0 -40.0 -60.0 -70.0 -70.0 -70.0 -70.0 -100 -110	rum Analyzer - Swept SA RF SO Q AC Q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass	SHz PN0: Close	SENSE:INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS	105:20:42 AM Dec 07, 2024 TRACE D 2 8 4 5 TYPE A MANA A 627 498 4 GHz -37.998 dBm	Frequency Auto Tune Center Freq 1.627400000 GHz Start Freq 1.627500000 GHz 1.627500000 GHz 20.000 kHz Auto Man Freq Offset 0 Hz
Aglient Spect Start Fre PASS 10 dB/div Log Trac -30.0 -40.0 -60.0 -70.0 -70.0 -70.0 -100 -100 -110 Start 1 62	rum Analyzer - Swept SA RF SO Q AC Q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass 0 0 0 0 0 0 0 0 0 0 0 0 0	SHz PN0: Close	SEVSE:NT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS	105:20:42 AM Dec 07, 2024	Frequency Auto Tune Center Freq 1.627400000 GHz Start Freq 1.627500000 GHz 1.627500000 GHz 20.000 kHz Auto Man Freq Offset 0 Hz
Aglient Spect Start Fre PASS 10 dB/div Log Trac -30.0 -40.0 -60.0 -60.0 -70.0 -80.0 -100 -110 Start 1.62 #Res BW	rum Analyzer - Swept SA RF SO Q ACS q 1.627300000 C NFE Ref Offset 31.5 dB Ref -20.00 dBm e 1 Pass 0 0 0 0 0 0 0 0 0 0 0 0 0	SHz PNO: Close → IFGein:Low	SENSE INT Trig: Free Run #Atten: 10 dB	ALIGNAUTO #Avg Type: RMS Mkr1 1	05:20:42 AM Dec 07, 2024	Frequency Auto Tune Center Freq 1.627400000 GHz Start Freq 1.627500000 GHz Stop Freq 1.627500000 GHz Auto CF Step 20.000 kHz Man Freq Offset 0 Hz

LTE24_10 M_ Ligado_Out of channel emissions_1610 - 1627.5 MHz_Low_QPSK_1RB(0)



Agilent Spect	rum Analyzer - Swo	ept SA								
Center F	RF 50 Ω req 1.60900	AC 00000 G	Hz	SENSE:	NT #	Avg Type:	IGN AUTO RMS	02:22:14 AM	4 Dec 07, 2024	Frequency
PASS		NFE	PNO: Wide +++ FGain:High	#Atten: 0 dB				De	AAAAAA	
10 dB/div	Ref Offset 11 Ref -50.00	.5 dB dBm					Mkr1	1.608 7	78 GHz 25 dBm	Auto Tune
-60.0	e 1 Pass									Center Freq 1.60900000 GHz
-70.0									Linit 1	Start Freq 1.608000000 GHz
-90.0			• •						RMS	Stop Freq 1.61000000 GHz
-110										CF Step 200.000 kHz <u>Auto</u> Man
-130										Freq Offset 0 Hz
Start 1.60	08000 GHz		#VBW	3.0 MHz		#	S Sweep	top 1.610 2.000 <u>s (</u>	0000 GHz 1001 pt <u>s)</u>	
MSG							STATUS			

LTE24_10 M_ Ligado_Out of channel emissions_1608 – 1610 MHz_Low_QPSK_1RB