



FCC PART 15C TEST REPORT

No. 24T04Z100077-006

for

TCL Communication Ltd.

GSM/UMTS/LTE Mobile phone

Model Name: T433E

FCC ID: 2ACCJB218

with

Hardware Version: 05

Software Version: BM35

Issued Date: 2024-3-5

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

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REPORT HISTORY

| Report Number | Revision | Description | Issue Date |
|----------------------|-----------------|-------------------------|-------------------|
| 24T04Z100077-006 | Rev.0 | 1 st edition | 2024-3-5 |

Note: the latest revision of the test report supersedes all previous version.

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1. Test Laboratory

1.1. Introduction & Accreditation

Telecommunication Technology Labs, CAICT is an ISO/IEC 17025:2017 accredited test laboratory under American Association for Laboratory Accreditation (A2LA) with lab code 7049.01, and is also an FCC accredited test laboratory (CN1349), and ISED accredited test laboratory (CAB identifier:CN0066). The detail accreditation scope can be found on A2LA website

1.2. Testing Location

Conducted testing Location: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China100191

Radiated testing Location: CTTL(huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing,
P. R. China100191

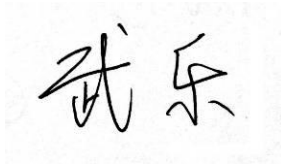
1.3. Testing Environment

Normal Temperature: 20-27°C
Relative Humidity: 20-50%

1.4. Project data

Testing Start Date: 2024-1-22
Testing End Date: 2024-3-5

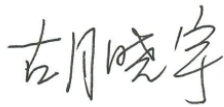
1.5. Signature



Wu Le
(Prepared this test report)



Sun Zhenyu
(Reviewed this test report)



Hu Xiaoyu
(Approved this test report)



2. Client Information

2.1. Applicant Information

Company Name: TCL Communication Ltd.
Address /Post: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science
Park, Shatin, NT, Hong Kong
City: Hong Kong
Postal Code: /
Country: China
Telephone: +86 755 3661 1621
Fax: +86 755 3661 2000-81722

2.2. Manufacturer Information

Company Name: TCL Communication Ltd.
Address /Post: 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science
Park, Shatin, NT, Hong Kong
City: Hong Kong
Postal Code: /
Country: China
Telephone: +86 755 3661 1621
Fax: +86 755 3661 2000-81722

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

| | |
|--------------------|---------------------------|
| Description | GSM/UMTS/LTE Mobile phone |
| Model Name | T433E |
| FCC ID | 2ACCJB218 |
| Frequency Band | ISM 2400MHz~2483.5MHz |
| Type of Modulation | GFSK/π/4 DQPSK/8DPSK |
| Number of Channels | 79 |
| Power Supply | 3.85V DC by Battery |
| Antenna gain | -0.69dBi |

3.2. Internal Identification of EUT

| EUT ID* | SN or IMEI | HW Version | SW Version | Date of receipt |
|----------------|-------------------------------------|-------------------|-------------------|------------------------|
| UT14a | 355518370201958/ 355518370201966 | 05 | BM35 | 2024-1-31 |
| UT05a | 355518370000079/ 355518370000087 | 05 | BM35 | 2024-1-22 |

*EUT ID: is used to identify the test sample in the lab internally.

UT05a is used for Conduction test, UT14a is used for Radiation test.

3.3. Internal Identification of AE

| AE ID* | Description | Note | Manufacturer |
|---------------|--------------------|-------------------|---|
| AE1-1 | Battery | TLi028C9 | Fenhua New EnergyCo.,Ltd |
| AE1-2 | Battery | TLi028CB | Shenzhen Aerospace Electronic Co., Ltd. |
| AE2-5 | Charger | UT-681E-5100UY | Shenzhen Baijunda Electronic Co.,Ltd |
| AE2-6 | Charger | UT-681A-5100UY | Shenzhen Baijunda Electronic Co.,Ltd |
| AE2-7 | Charger | UT-681B-5100UY | Shenzhen Baijunda Electronic Co.,Ltd |
| AE2-8 | Charger | UT-580S-5100UY | Shenzhen Baijunda Electronic Co.,Ltd |
| AE3 | USB cable | HE1501-000354-000 | Shenzhen Xinchengyuteng Co.,Ltd |
| AE4 | Headset | HE0501-000316-000 | Shenzhen Xinchengyuteng Co.,Ltd |

*AE ID: is used to identify the test sample in the lab internally.

3.4. Normal Accessory setting

Fully charged battery should be used during the test.

3.5. General Description

The Equipment Under Test (EUT) is a model of GSM/UMTS/LTE Mobile phone with integrated antenna. It consists of normal options: lithium battery, charger. Manual and specifications of the EUT were provided to fulfill the test. Samples undergoing test were selected by the Client.

4. Reference Documents

4.1. Documents supplied by applicant

EUT parameters, referring to Annex A for detailed information, is supplied by the client or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

| Reference | Title | Version |
|-------------|---|-----------|
| FCC Part15 | FCC CFR 47, Part 15, Subpart C: 15.205 Restricted bands of operation; 15.209 Radiated emission limits, general requirements; 15.247 Operation within the bands 902–928MHz, 2400– 2483.5 MHz, and 5725–5850 MHz. | 2023 |
| ANSI C63.10 | American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices | June,2013 |

5. Test Results

5.1. Summary of Test Results

Abbreviations used in this clause:

P Pass, The EUT complies with the essential requirements in the standard.

F Fail, The EUT does not comply with the essential requirements in the standard

NA Not Applicable, The test was not applicable

NP Not Performed, The test was not performed by CTTL

| SUMMARY OF MEASUREMENT RESULTS | Sub-clause | Verdict |
|---|------------------------|----------------|
| Peak Output Power | 15.247 (b)(1) | P |
| Frequency Band Edges- Conducted | 15.247 (d) | P |
| Transmitter Spurious Emission - Conducted | 15.247 (d) | P |
| Radiated Unwanted Emission | 15.247, 15.205, 15.209 | P |
| Time of Occupancy (Dwell Time) | 15.247 (a) (1)(iii) | P |
| 20dB Bandwidth | 15.247 (a)(1) | NA |
| Carrier Frequency Separation | 15.247 (a)(1) | P |
| Number of hopping channels | 15.247 (a)(iii) | P |
| AC Powerline Conducted Emission | 15.107, 15.207 | P |
| Antenna Requirement | 15.203 | P |

Please refer to **ANNEX A** for detail.

The measurement is made according to ANSI C63.10.

5.2. Statements

CTTL has evaluated the test cases requested by the applicant /manufacturer as listed in section 5.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.2

6. Test Facilities Utilized

Conducted test system

| No. | Equipment | Model | Serial Number | Manufacturer | Calibration Period | Calibration Due date |
|-----|------------------------|--------|---------------|--------------|--------------------|----------------------|
| 1 | Vector Signal Analyzer | FSQ26 | 100024 | R&S | 1 year | 2024-03-09 |
| 2 | Bluetooth Tester | CBT | 100315 | R&S | 1 year | 2024-03-08 |
| 3 | LISN | ENV216 | 101200 | R&S | 1 Year | 2024-06-04 |
| 4 | Test Receiver | ESCI | 100344 | R&S | 2 years | 2025-02-20 |
| 5 | Shielding Room | S81 | / | ETS-Lindgren | / | / |

Radiated emission test system

| No. | Equipment | Model | Serial Number | Manufacturer | Calibration Period | Calibration Due date |
|-----|------------------|--------------|---------------|-----------------|--------------------|----------------------|
| 1 | Test Receiver | ESW44 | 103144 | R&S | 1 year | 2024-11-26 |
| 2 | EMI Antenna | VULB 9163 | 01222 | SCHWARZBECK | 2 years | 2025-01-28 |
| 3 | EMI Antenna | 3115 | 6914 | ETS-Lindgren | 1 year | 2024-05-07 |
| 4 | Bluetooth Tester | CBT | 101042 | Rohde & Schwarz | 1 year | 2024-03-08 |

| Test Item | Software | Manufacturer |
|--------------------|-----------------|--------------|
| Conducted emission | EMC32 V8.53.0 | R&S |
| Radiated emission | EMC32 V11.50.00 | R&S |

7. Measurement Uncertainty

7.1. Peak Output Power - Conducted

Measurement Uncertainty:

| | |
|-------------------------------|--------|
| Measurement Uncertainty (k=2) | 0.66dB |
|-------------------------------|--------|

7.2. Frequency Band Edges - Conducted

Measurement Uncertainty:

| | |
|-------------------------------|--------|
| Measurement Uncertainty (k=2) | 0.66dB |
|-------------------------------|--------|

7.3. Transmitter Spurious Emission - Conducted

Measurement Uncertainty:

| Frequency Range | Uncertainty (k=2) |
|-------------------|-------------------|
| 30 MHz ~ 8 GHz | 1.22dB |
| 8 GHz ~ 12.75 GHz | 1.51dB |
| 12.7GHz ~ 26 GHz | 1.51dB |

7.4. Transmitter Spurious Emission - Radiated

Measurement Uncertainty:

| Frequency Range | Uncertainty(dBm) (k=2) |
|---|------------------------|
| 9kHz-30MHz | 4.92 |
| $30\text{MHz} \leq f \leq 1\text{GHz}$ | 4.72 |
| $1\text{GHz} \leq f \leq 18\text{GHz}$ | 4.84 |
| $18\text{GHz} \leq f \leq 40\text{GHz}$ | 5.12 |

7.5. Time of Occupancy (Dwell Time)

Measurement Uncertainty:

| | |
|-------------------------------|--------|
| Measurement Uncertainty (k=2) | 0.88ms |
|-------------------------------|--------|

7.6. 20dB Bandwidth

Measurement Uncertainty:

| | |
|-------------------------------|----------|
| Measurement Uncertainty (k=2) | 61.936Hz |
|-------------------------------|----------|



7.7. Carrier Frequency Separation

Measurement Uncertainty:

| | |
|-------------------------------|----------|
| Measurement Uncertainty (k=2) | 61.936Hz |
|-------------------------------|----------|

7.8. AC Powerline Conducted Emission

Measurement Uncertainty:

| | |
|-------------------------------|--------|
| Measurement Uncertainty (k=2) | 3.08dB |
|-------------------------------|--------|



ANNEX A: EUT parameters

Disclaimer: The antenna gain provided by the client may affect the validity of the measurement results in this report, and the client shall bear the impact and consequences arising therefrom.

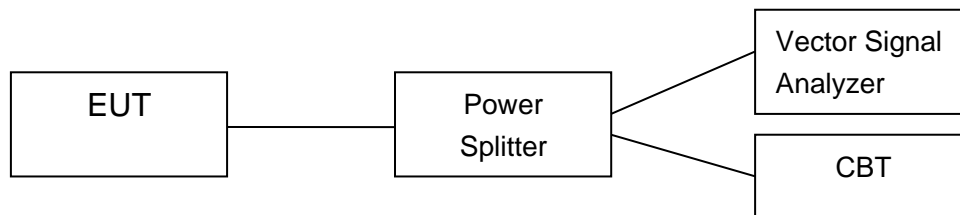
ANNEX B: Detailed Test Results

B.1. Measurement Method

B.1.1. Conducted Measurements

The measurement is made according to ANSI C63.10.

- 1). Connect the EUT to the test system correctly.
- 2). Set the EUT to the required work mode (Transmitter, receiver or transmitter & receiver).
- 3). Set the EUT to the required channel.
- 4). Set the EUT hopping mode (hopping or hopping off).
- 5). Set the spectrum analyzer to start measurement.
- 6). Record the values. Vector Signal Analyzer



B.1.2. Radiated Emission Measurements

The measurement is made according to ANSI C63.10

The radiated emission test is performed in semi-anechoic chamber. The EUT was placed on a non-conductive table with 80cm above the ground plane for measurement below 1GHz and 1.5m above the ground plane for measurement above 1GHz. The measurement antenna was placed at a distance of 3 meters from the EUT. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated from 0° to 360° and the measurement antenna is moved from 1m to 4m to get the maximization result. The maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

B.2. Peak Output Power

B.2.1. Peak Output Power – Conducted

Method of Measurement: See ANSI C63.10-clause 7.8.5

a) Use the following spectrum analyzer settings:

- Span: 6MHz
- RBW: 3MHz
- VBW: 3MHz
- Sweep time: 2.5ms
- Detector function: peak
- Trace: max hold

b) Allow trace to stabilize.

c) Use the marker-to-peak function to set the marker to the peak of the emission.

d) The indicated level is the peak output power.

Measurement Limit:

| Standard | Limits | |
|--------------------|------------------------|-----------------------|
| | FCC Part 15.247 (b)(1) | Bandwidth \leq 1MHz |
| Bandwidth $>$ 1MHz | | 21dBm (125mW) |

Measurement Results:

For GFSK

| Channel | Ch 0 2402 MHz | Ch 39 2441 MHz | Ch 78 2480 MHz | Conclusion |
|-----------------------------------|------------------|-------------------|-------------------|------------|
| Peak Conducted Output Power (dBm) | 10.14 | 9.32 | 11.09 | P |

For $\pi/4$ DQPSK

| Channel | Ch 0 2402 MHz | Ch 39 2441 MHz | Ch 78 2480 MHz | Conclusion |
|-----------------------------------|------------------|-------------------|-------------------|------------|
| Peak Conducted Output Power (dBm) | 10.26 | 9.36 | 10.71 | P |

For 8DPSK

| Channel | Ch 0 2402 MHz | Ch 39 2441 MHz | Ch 78 2480 MHz | Conclusion |
|-----------------------------------|------------------|-------------------|-------------------|------------|
| Peak Conducted Output Power (dBm) | 10.32 | 9.30 | 10.66 | P |

Conclusion: PASS

B.2.2. E.I.R.P.

The radiated E.I.R.P. is listed below:

Antenna gain = -0.69dBi

For GFSK

| Channel | Ch 0 2402 MHz | Ch 39 2441 MHz | Ch 78 2480 MHz | Conclusion |
|---------------|------------------|-------------------|-------------------|------------|
| E.I.R.P (dBm) | 9.45 | 8.63 | 10.40 | P |

For $\pi/4$ DQPSK

| Channel | Ch 0 2402 MHz | Ch 39 2441 MHz | Ch 78 2480 MHz | Conclusion |
|---------------|------------------|-------------------|-------------------|------------|
| E.I.R.P (dBm) | 9.57 | 8.67 | 10.02 | P |

For 8DPSK

| Channel | Ch 0 2402 MHz | Ch 39 2441 MHz | Ch 78 2480 MHz | Conclusion |
|---------------|------------------|-------------------|-------------------|------------|
| E.I.R.P (dBm) | 9.63 | 8.61 | 9.97 | P |

Note: E.I.R.P. are calculated with the antenna gain.

Conclusion: PASS

B.3. Frequency Band Edges – Conducted

Method of Measurement: See ANSI C63.10-clause 7.8.6

Connect the spectrum analyzer to the EUT using an appropriate RF cable connected to the EUT output. Configure the spectrum analyzer settings as described below (be sure to enter all losses between the unlicensed wireless device output and the spectrum analyzer).

- Span: 10 MHz
- Resolution Bandwidth: 100 kHz
- Video Bandwidth: 300 kHz
- Sweep Time:Auto
- Detector: Peak
- Trace: max hold

Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel.

Observe the stored trace and measure the amplitude delta between the peak of the fundamental and the peak of the band-edge emission. This is not an absolute field strength measurement; it is only a relative measurement to determine the amount by which the emission drops at the band edge relative to the highest fundamental emission level.

Measurement Limit:

| Standard | Limit (dBc) |
|----------------------------|-------------|
| FCC 47 CFR Part 15.247 (d) | < -20 |

Measurement Result:

For GFSK

| Channel | Hopping | Band Edge Power (dBc) | | Conclusion |
|---------|-------------|------------------------|--------|------------|
| 0 | Hopping OFF | Fig.1 | -62.06 | P |
| | Hopping ON | Fig.2 | -67.35 | P |
| 78 | Hopping OFF | Fig.3 | -66.72 | P |
| | Hopping ON | Fig.4 | -66.32 | P |

For $\pi/4$ DQPSK

| Channel | Hopping | Band Edge Power (dBc) | | Conclusion |
|---------|-------------|------------------------|--------|------------|
| 0 | Hopping OFF | Fig.5 | -55.77 | P |
| | Hopping ON | Fig.6 | -60.03 | P |
| 78 | Hopping OFF | Fig.7 | -65.20 | P |
| | Hopping ON | Fig.8 | -65.27 | P |

For 8DPSK

| Channel | Hopping | Band Edge Power (dBc) | | Conclusion |
|---------|-------------|------------------------|--------|------------|
| 0 | Hopping OFF | Fig.9 | -55.84 | P |
| | Hopping ON | Fig.10 | -60.08 | P |
| 78 | Hopping OFF | Fig.11 | -65.82 | P |

| | | | | |
|--|------------|--------|--------|---|
| | Hopping ON | Fig.12 | -62.86 | P |
|--|------------|--------|--------|---|

Conclusion: PASS

Test graphs as below

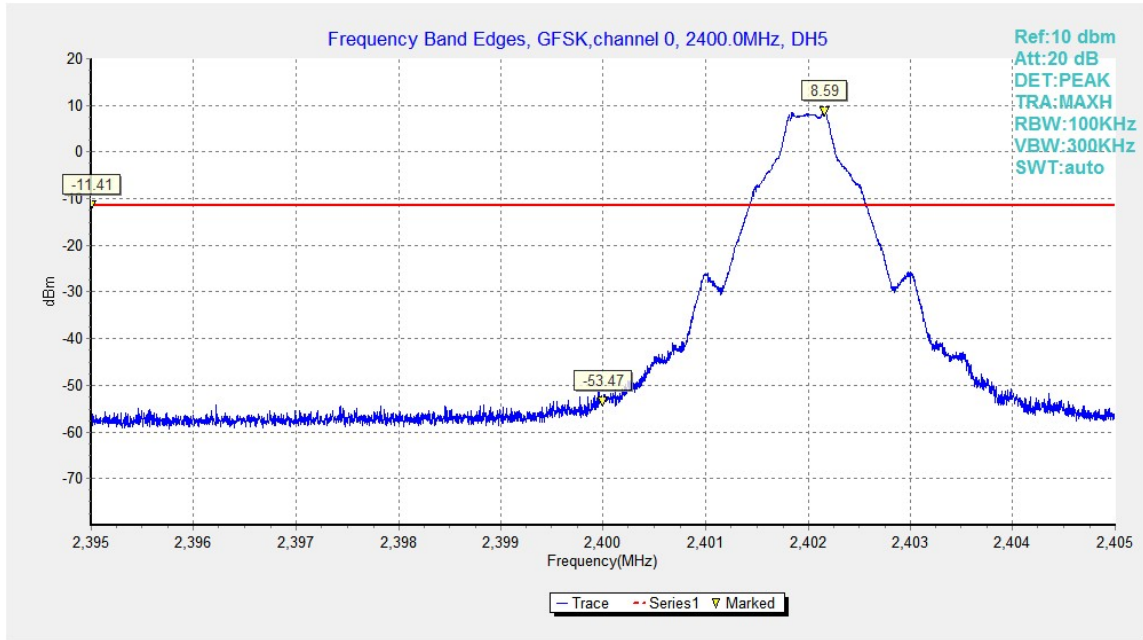


Fig.1. Frequency Band Edges: GFSK, Channel 0, Hopping Off

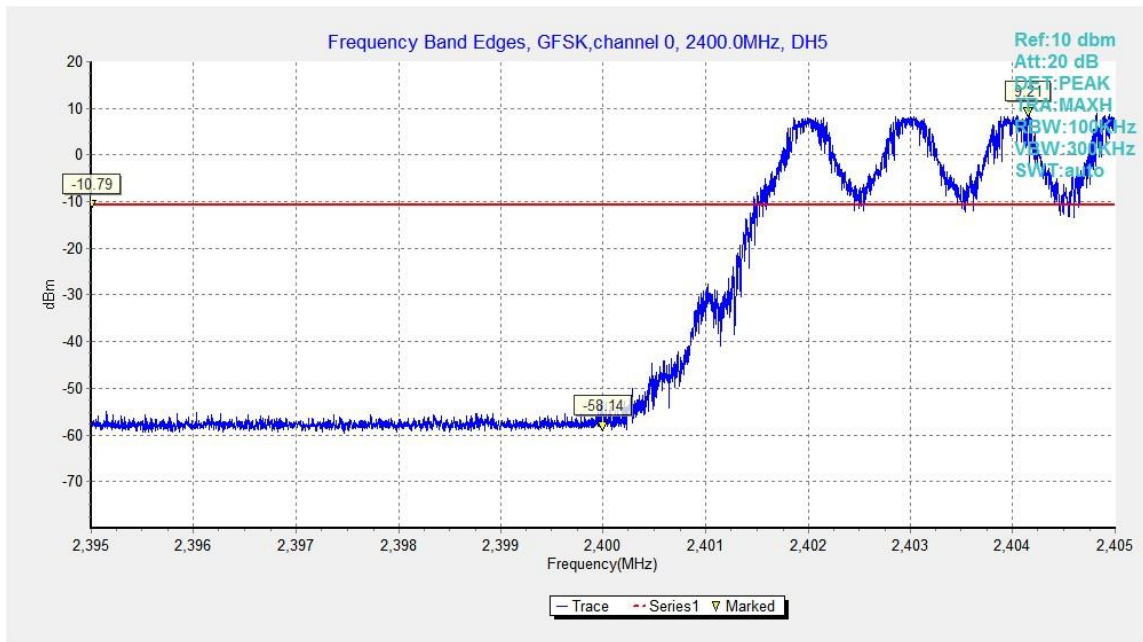


Fig.2. Frequency Band Edges: GFSK, Channel 0, Hopping On

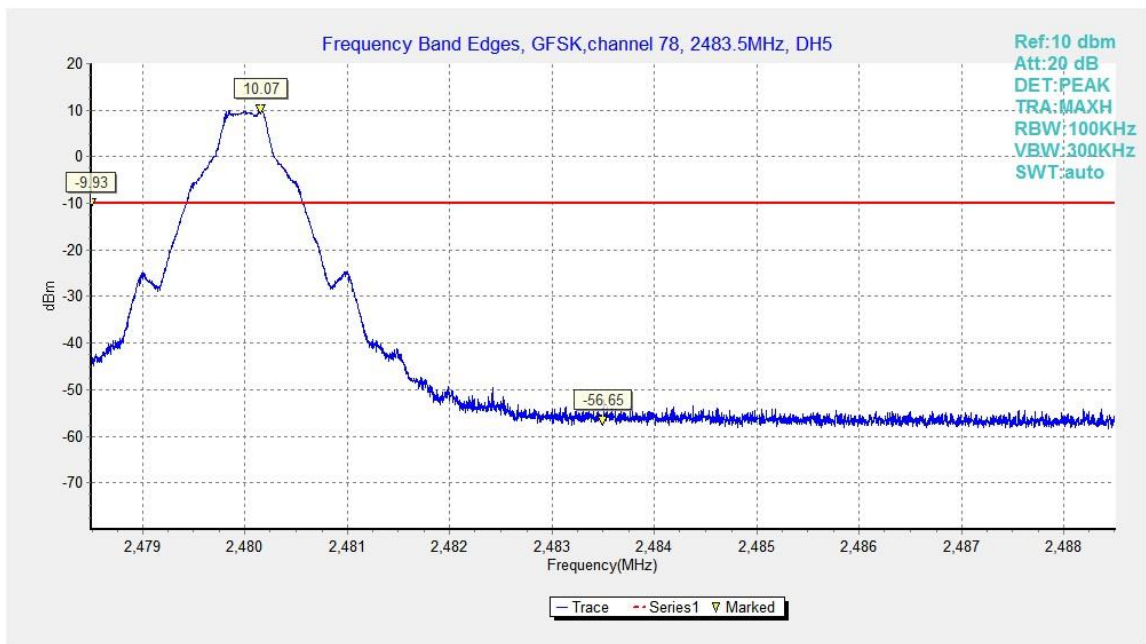


Fig.3. Frequency Band Edges: GFSK, Channel 78, Hopping Off

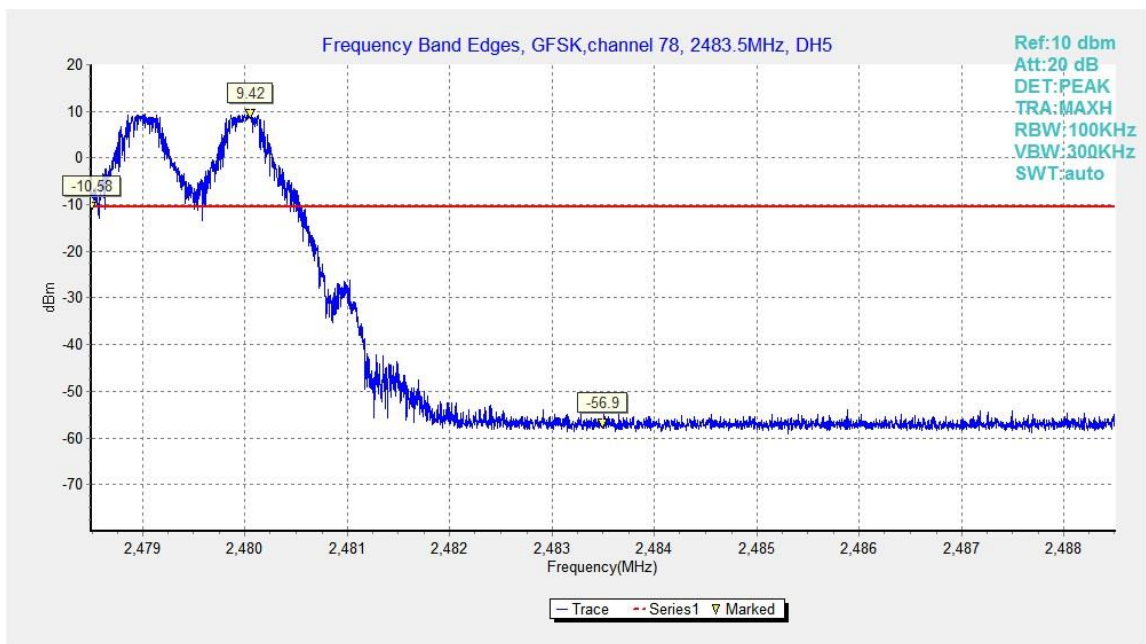


Fig.4. Frequency Band Edges: GFSK, Channel 78, Hopping On

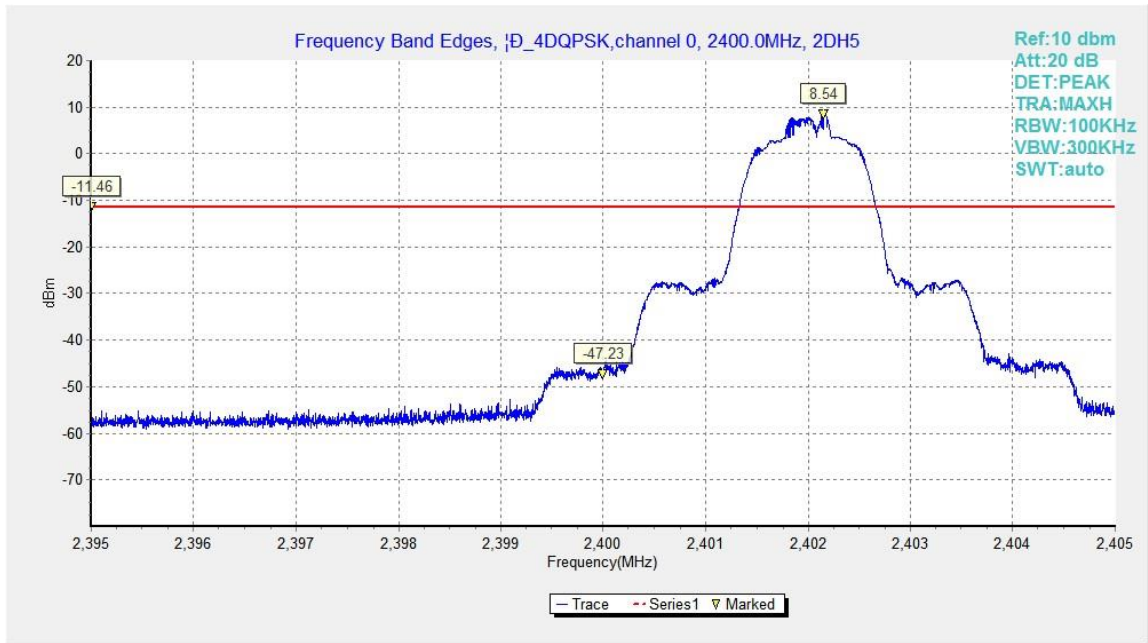


Fig.5. Frequency Band Edges: $\pi/4$ DQPSK, Channel 0, Hopping Off

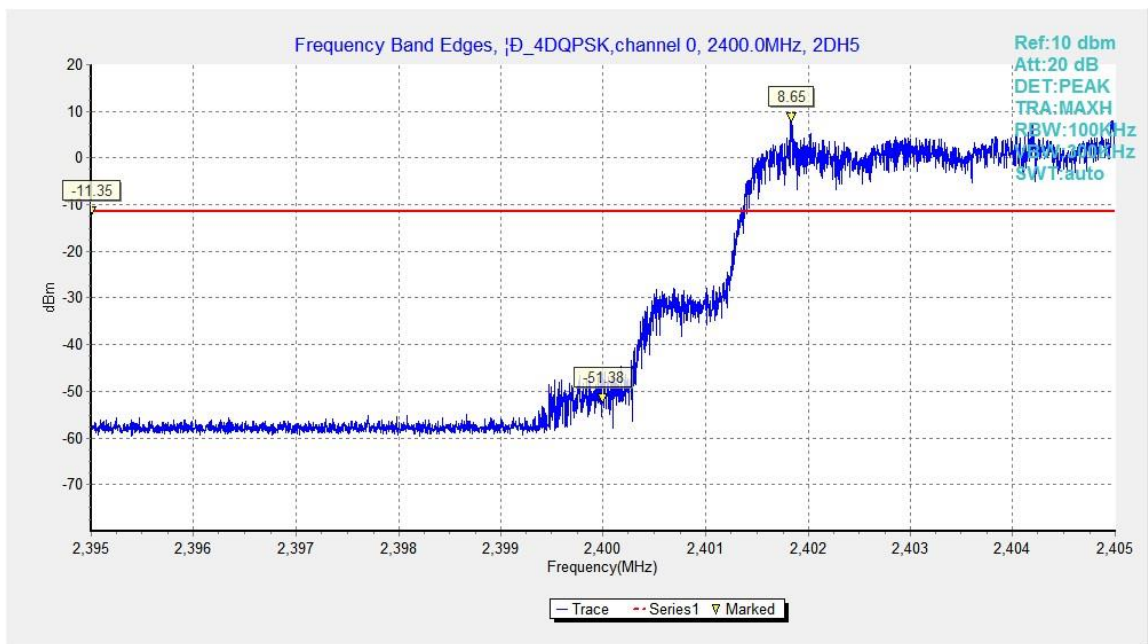


Fig.6. Frequency Band Edges: $\pi/4$ DQPSK, Channel 0, Hopping On

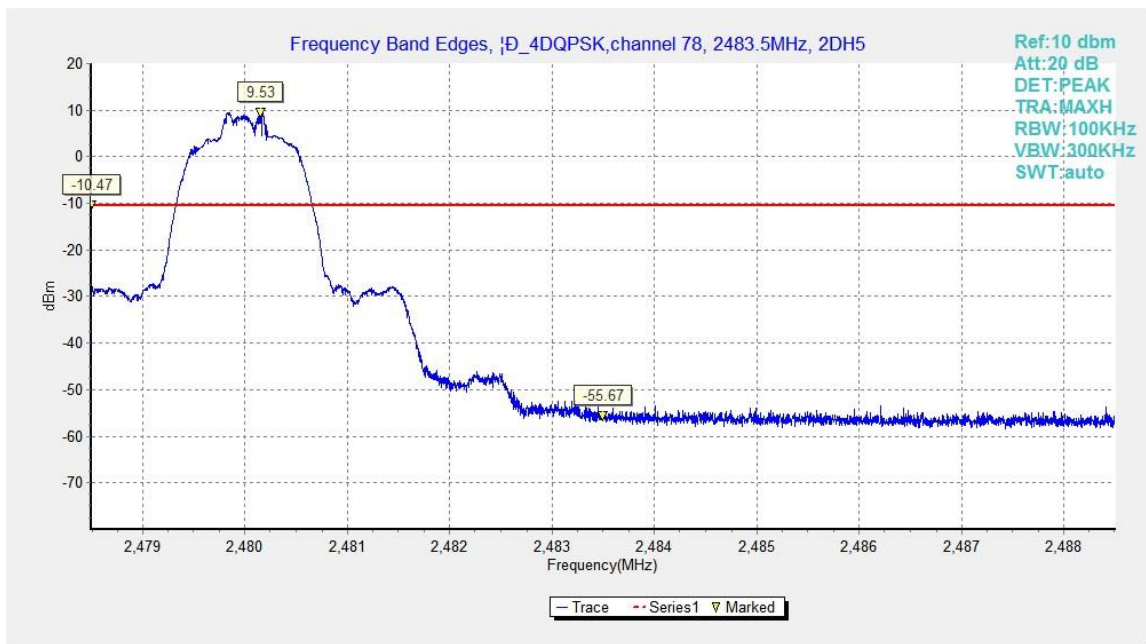


Fig.7. Frequency Band Edges: $\pi/4$ DQPSK, Channel 78, Hopping Off

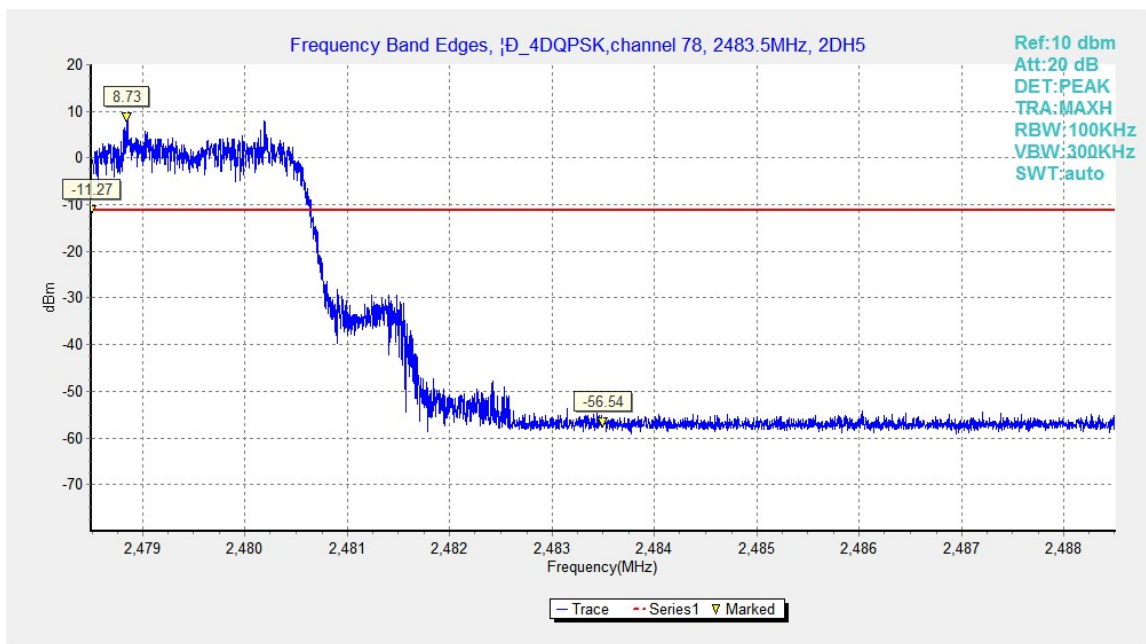


Fig.8. Frequency Band Edges: $\pi/4$ DQPSK, Channel 78, Hopping On

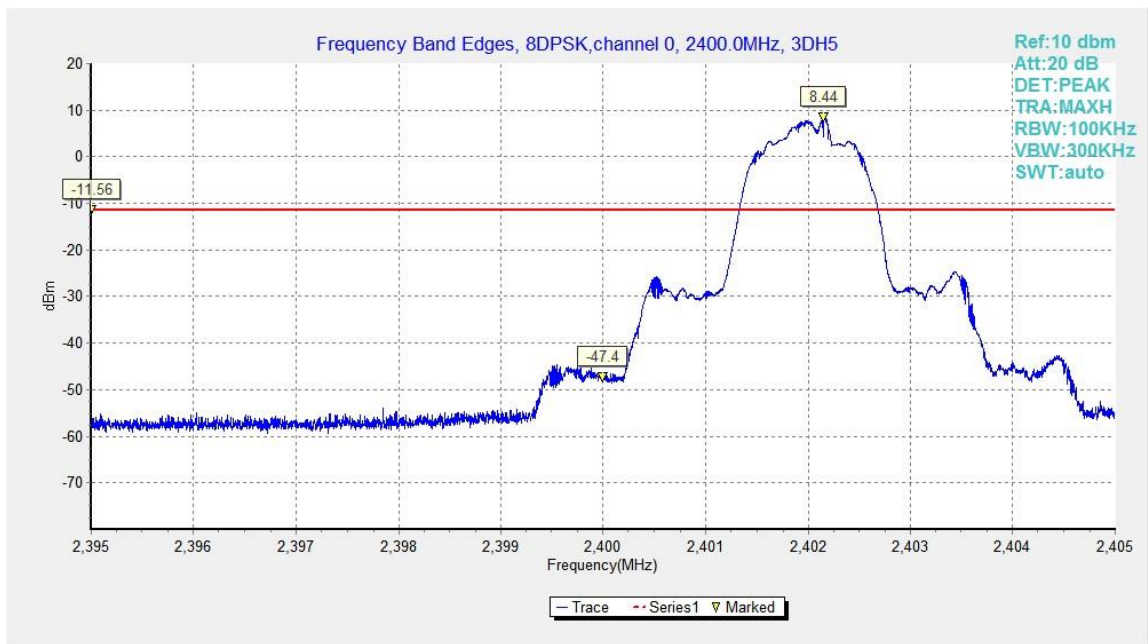


Fig.9. Frequency Band Edges: 8DPSK, Channel 0, Hopping Off

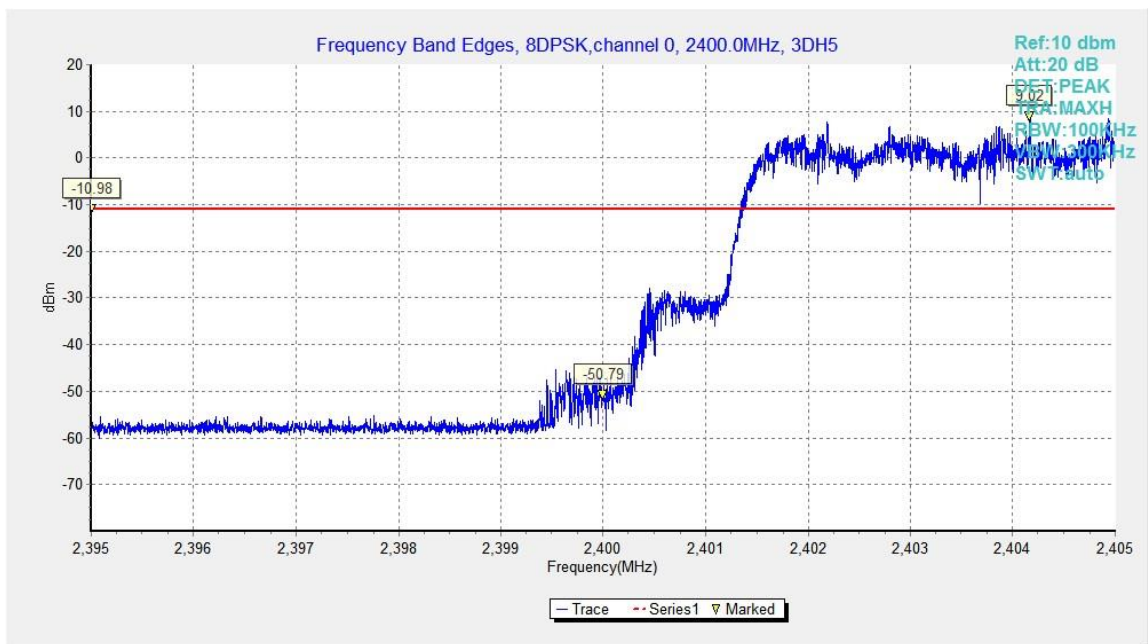


Fig.10. Frequency Band Edges: 8DPSK, Channel 0, Hopping On