

TEST REPORT

FCC BT Test for SM-A276B/DS
Certification

APPLICANT
SAMSUNG Electronics Co., Ltd.

REPORT NO.
HCT-RF-2604-FC055

DATE OF ISSUE
April 27, 2026

Tested by
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TEST REPORT

REPORT NO.

HCT-RF-2604-FC055

DATE OF ISSUE

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Additional Model

SM-A276B

Applicant

SAMSUNG Electronics Co., Ltd.

129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea

Product Name

Mobile Phone

Model Name

SM-A276B/DS

FCC ID

A3LSMA276B

Date of Test

March 18, 2026 ~ April 27, 2026

Test Results

PASS

FCC Classification

FCC Part 15 Spread Spectrum Transmitter(DSS)

Test Standard Used

FCC Rule Part(s): Part 15 subpart C 15.247

Location of Test

☒ Permanent Testing Lab ☐ On Site Testing Lab

(Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea)

REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	April 27, 2026	Initial Release

Notice

Content

Engineering Statement:

The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules under normal use and maintenance.

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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1. GENERAL INFORMATION

EUT DESCRIPTION

Model	SM-A276B/DS
Additional Model	SM-A276B
EUT Type	Mobile Phone
Power Supply	DC 3.88 V
Frequency Range	2 402 MHz - 2 480 MHz
Max. RF Output Power	13.154 dBm (20.67 mW)
BT Operating Mode	Normal, EDR, AFH
Modulation Type	GFSK(Normal), π /4DQPSK and 8DPSK(EDR)
Modulation Technique	FHSS
Number of Channels	79 Channels, Minimum 20 Channels(AFH)
Antenna Information	Please refer to the Antenna Specification document.
Serial number	Conducted : R37L300SGYF Radiated : R37L300SH3Y

ANTENNA CONFIGURATIONS

1. Below Tables are the possible configurations.

Configurations	SISO		Dual BT
	Ant1	Ant2	Ant1 & Ant2
Bluetooth	O	X	X

Note:

- 1) O = Support, X = Not Support
- 2) SISO = Single Input Single Output

2. Requirements for Bluetooth transmitter(15.247)

This Bluetooth module has been tested by a Bluetooth Qualification Lab, and we confirm the following:

- 1) This system is hopping pseudo-randomly.
- 2) Each frequency is used equally on the average by each transmitter.
- 3) The receiver input bandwidths that match the hopping channel bandwidths of their corresponding transmitters
- 4) The receiver shifts frequencies in synchronization with the transmitted signals.
 - 15.247(g): The system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this Section 15.247 should the transmitter be presented with a continuous data (or information) stream.
 - 15.247(h): The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

3. TEST METHODOLOGY

Unlicensed Wireless Devices were tested using the following measurement procedure.

[1] KDB 558074 D01 15.247 Meas Guidance v05v02

[2] ANSI C63.10-2020 + Cor. 1-2023

Note : Here in after, ANSI C63.10-2020 + Cor. 1-2023 will be referred to as ANSI C63.10-2020

EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

EUT EXERCISE

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10-2020. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

According to the requirements in Section 6.3 ~ Section 6.6 of ANSI C63.10-2020,

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1 GHz. Above 1 GHz with 1.5 m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes. To record the final measurements, the analyzer detector function was set to CISPR quasi-peak mode and the bandwidth of the spectrum analyzer was set to 120 kHz for frequencies below 1 GHz or 1 MHz for frequencies above 1 GHz. For average measurements above 1 GHz, the analyzer was set to peak detector and add the DCCF calculations.

DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

4. 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's, which is traceable to recognized national standards.

Especially, all antenna for measurement is calibrated in accordance with the requirements of ANSI C63.5- 2017.

5. FACILITIES AND ACCREDITATIONS

FACILITIES

The SAC(Semi-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, 17383, Rep. of KOREA. The site is constructed in conformance with the requirements of ANSI C63.4-2014 and CISPR Publication 22.

Detailed description of test facility was submitted to the Commission and accepted dated February 26, 2026 (Registration Number: KR0032).

EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to ANSI/USEMCSC C63.2-2023, "American National Standard for Specifications of Electromagnetic Interference and Field Strength Measuring Instrumentation in the Frequency Range 9 kHz to 40 GHz".

6. ANTENNA REQUIREMENTS

According to FCC 47 CFR § 15.203:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

7. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2020.

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 ($\pm$ kHz)
X dB, 99% Bandwidth	95 (Confidence level about 95 %, $k=2$)
Frequency stability	28 (Confidence level about 95 %, $k=2$)
Carrier Frequency Separation Number of Hopping Frequencies Time of Occupancy	104 (Confidence level about 95 %, $k=2$)

Parameter	Expanded Uncertainty ($\pm$ dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.96 (Confidence level about 95 %, $k=2$)
Conducted Output Power(Signal Analyzer)	0.73 (Confidence level about 95 %, $k=2$)
Power Spectral Density	0.98 (Confidence level about 95 %, $k=2$)
Conducted Spurious Emissions	1.11 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.54 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.74 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.80 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.86 (Confidence level about 95 %, $k=2$)
Radiated Disturbance (Above 40 GHz)	5.44 (Confidence level about 95 %, $k=2$)

8. DESCRIPTION OF TESTS

Test Item	Test Procedure
20 dB Bandwidth	- ANSI C63.10-2020 - Section 6.9.2
Occupied Bandwidth	- ANSI C63.10-2020 - Section 6.9.3
Conducted Maximum Peak Output Power	- ANSI C63.10-2020 - Section 7.8.5
Carrier Frequency Separation	- ANSI C63.10-2020 - Section 7.8.2
Number of Hopping Frequencies	- ANSI C63.10-2020 - Section 7.8.3
Time of Occupancy	- ANSI C63.10-2020 - Section 7.8.4
Conducted Spurious Emissions & Conducted Band Edge	- ANSI C63.10-2020 - Section 7.8.7
Radiated Test	- ANSI C63.10-2020 - Section 6.4 (Below 30 MHz) - ANSI C63.10-2020 - Section 6.5 (30 MHz to 1000 MHz) - ANSI C63.10-2020 - Section 6.6 & 7.8.8 (1 GHz to 40 GHz) - ANSI C63.10-2020 - Section 6.10 & 7.8.8 (Restricted-Band band-edge)
AC Power line Conducted Emissions	- ANSI C63.10-2020 - Section 6.2

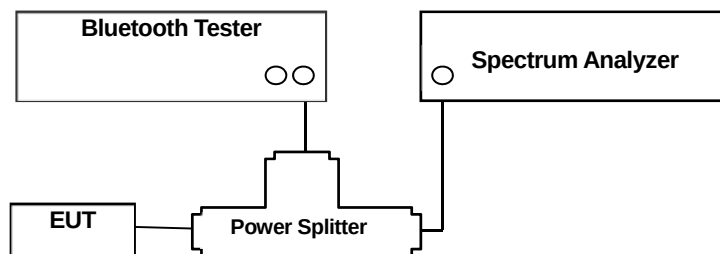
8.1. Conducted Maximum Peak Output Power

Limit

The maximum peak output power of the intentional radiator shall not exceed the following:

1. For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725–5850 MHz band: 1 W. For all other frequency hopping systems in the 2400–2483.5 MHz band: 0.125 W.
2. The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi.

Test Configuration



Test Procedure

The EUT was tested with hopping disabled.

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to

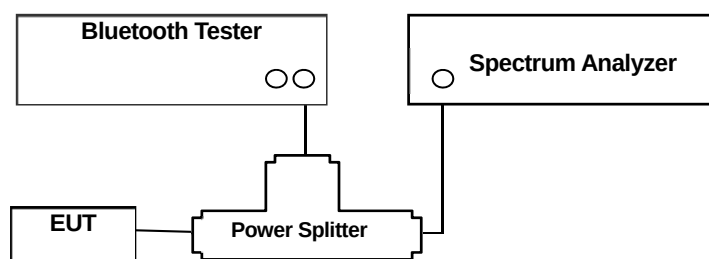
- 1) Span: approximately 5 times the 20 dB bandwidth, centered on a hopping channel
- 2) RBW > the 20 dB bandwidth of the emission being measured
- 3) VBW $\geq$ RBW
- 4) Sweep = No faster than coupled (auto) time
- 5) Detector = Peak
- 6) Trace = Max hold
- 7) Allow trace to stabilize.
- 8) Use the marker-to-peak function to set the marker to the peak of the emission.

8.2. Conducted Band Edge(Out of Band Emissions)

Limit

According to § 15.247(d), in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

Test Configuration



Test Procedure

The EUT was tested with hopping enabled and hopping disabled.

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to

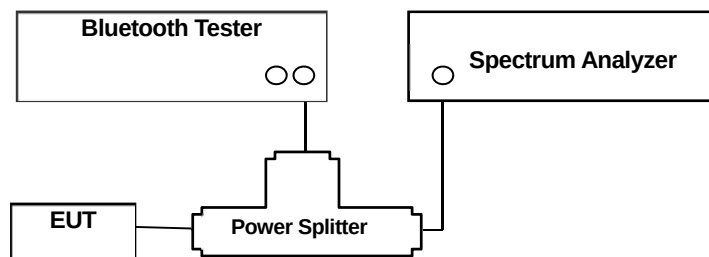
- 1) Span: Wide enough to capture the peak level of the emission operating on the channel closest to the band edge, as well as any modulation products which fall outside of the authorized band of operation
- 2) Reference level: As required to keep the signal from exceeding the maximum instrument input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than $[10 \log (OBW/RBW)]$ below the reference level.
- 3) Attenuation: Auto (at least 10 dB preferred).
- 4) Sweep time: No faster than coupled (auto) time.
- 5) RBW: 100 kHz
- 6) VBW: 300 kHz
- 7) Detector: Peak
- 8) Trace: Max hold

8.3. Frequency Separation & 20 dB Bandwidth & 99% Occupied Bandwidth

Limit

According to § 15.247(a)(1), Frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

Test Configuration



Test Procedure(Frequency Separation)

The EUT was tested with hopping enabled.

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to

- 1) Span: Wide enough to capture the peaks of two adjacent channels
 - 2) RBW: Start with the RBW set to approximately 30 % of the channel spacing; adjust as necessary to best identify the center of each individual channel.
 - 3) VBW $\geq$ RBW
 - 4) Sweep: No faster than coupled (auto) time
 - 5) Detector: Peak
 - 6) Trace: Max hold
 - 7) All the trace to stabilize
 - 8) Use the marker-delta function to determine the separation between the peaks of the adjacent channels.
- Compliance of an EUT with the appropriate regulatory limit shall be determined. A plot of the data shall be included in the test report.

Test Procedure (20 dB Bandwidth)

The EUT was tested with hopping disabled.

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to

- 1) Span: Set between two times and five times the OBW
- 2) RBW: 1 % to 5 % of the OBW.
- 3) VBW $\geq 3 \times$ RBW
- 4) Sweep: Auto
- 5) Detector: Peak
- 6) Trace: Max hold
- 7) All the trace to stabilize
- 8) We tested 20 dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer. X dB is set to 20 dB.

Test Procedure (99% Occupied Bandwidth)

The EUT was tested with hopping disabled.

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to

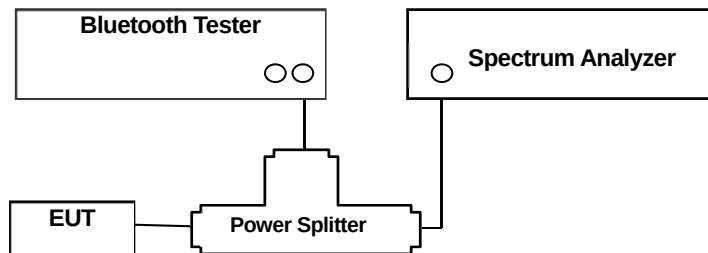
- 1) Span: Set between 1.5 times and 5.0 times the OBW
- 2) RBW: 1 % to 5 % of the OBW.
- 3) VBW $\geq 3 \times$ RBW
- 4) Sweep: Auto
- 5) Detector: Peak
- 6) Trace: Max hold
- 7) All the trace to stabilize
- 8) Use the 99% power bandwidth function of the instrument

8.4. Number of Hopping Frequencies

Limit

According to § 15.247(a)(1)(iii), Frequency hopping systems operating in the 2400 MHz ~ 2483.5 MHz bands shall use at least 15 hopping channels.

Test Configuration



Test Procedure

The EUT was tested with hopping enabled.

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to

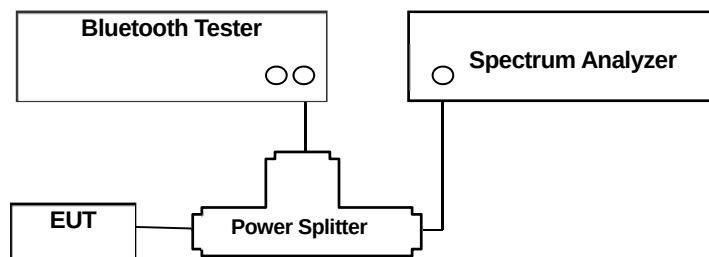
- 1) Span: The frequency band of operation
- 2) RBW: To identify clearly the individual channels, set the RBW to less than 30 % of the channel spacing or the 20 dB bandwidth, whichever is smaller.
- 3) VBW $\geq$ RBW
- 4) Sweep: No faster than coupled (auto) time
- 5) Detector: Peak
- 6) Trace: Max hold
- 7) Allow the trace to stabilize.

8.5. Time of Occupancy

Limit

According to § 15.247(a)(1)(iii), Frequency hopping systems operating in the 2400 MHz ~ 2483.5 MHz bands, the average time of occupancy on any channels shall not greater than 0.4 s within a period 0.4 s multiplied by the number of hopping channels employed.

Test Configuration



Test Procedure

The EUT was tested with hopping enabled.

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to

- 1) Span: Zero span, centered on a hopping channel
 - 2) RBW shall be $\leq$ channel spacing and where possible RBW should be set $\gg 1/T$, where T is the expected transmission time per hop.
 - 3) Sweep time: Set so that the start of the first transmission and end of the last transmission for the hop are clearly captured. (To be slightly longer than the hopping period per channel)
 - 4) The video trigger is set with trigger delay, and the trigger level is adjusted as needed to clearly capture the start of transmission and reduce false triggers caused by adjacent channels.
 - 5) Detector: Peak
 - 6) Trace: Clear-write, single sweep.
 - 7) Place markers at the start of the first transmission on the channel and at the end of the last transmission.
- The dwell time per hop is the time between these two markers.

Sample Calculation

The following calculation process is not relevant to our measurement results. It is just an example.

(1) Non-AFH Mode

- DH 5 (GFSK) : $2.890 \times (1600/6)/79 \times 31.6 = 308.27$ (ms)
- 2-DH 5 ($\pi/4$ DQPSK) : $2.890 \times (1600/6)/79 \times 31.6 = 308.27$ (ms)
- 3-DH 5 (8DPSK) : $2.890 \times (1600/6)/79 \times 31.6 = 308.27$ (ms)

(2) AFH Mode

- DH 5 (GFSK) : $2.890 \times (800/6)/20 \times 8.0 = 154.13$ (ms)
- 2-DH 5 ($\pi/4$ DQPSK) : $2.890 \times (800/6)/20 \times 8.0 = 154.13$ (ms)
- 3-DH 5 (8DPSK) : $2.890 \times (800/6)/20 \times 8.0 = 154.13$ (ms)

Note :

DH5 Packet needs 5 time slots for transmitting and 1 time slot for receiving. In the worst case, the system performs 1600/6 hops per second with 79 channels. Consequently, each channel is used 3.3755 times per second, resulting in 106.667 occurrences over 31.6 seconds.

Each tx-time per appearance of DH5 is 2.890 ms.

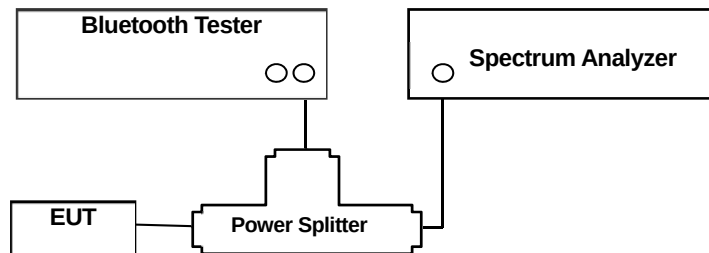
Dwell time = Tx-time $\times$ 106.667 = 308.27 (ms)

8.6. Conducted Spurious Emissions

Limit

Conducted > 20 dBc

Test Configuration



Test Procedure

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The EUT was tested with hopping disabled.

The transmitter output is connected to the spectrum analyzer.

The Spectrum Analyzer is set to

- 1) Span: 30 MHz to 10 times the operating frequency in GHz.
- 2) RBW: 100 kHz
- 3) VBW: 300 kHz
- 4) Sweep time : Coupled
- 5) Detector: Peak

Measurements are made over the 30 MHz to 25 GHz range with the transmitter set to the lowest, middle, and highest channels.

Factors for frequency

Freq(MHz)	Factor(dB)
30	6.19
100	6.22
200	6.30
300	6.36
400	6.39
500	6.52
600	6.49
700	6.56
800	6.58
900	6.60
1000	6.60
2000	7.04
2400	7.20
2500	7.20
3000	7.24
4000	7.34
5000	7.60
6000	7.80
7000	7.80
8000	7.88
9000	8.09
10000	8.28
11000	8.35
12000	8.43
13000	8.55
14000	8.71
15000	8.89
16000	8.98
17000	9.06
18000	9.15
19000	9.25
20000	9.36
21000	9.42
22000	9.59
23000	9.64
24000	9.86
25000	9.90
26000	9.97

Note : 1. 2400 ~ 2500 MHz is fundamental frequency range.

2. Factor = Cable loss(2 EA) + Splitter loss(6 dB)

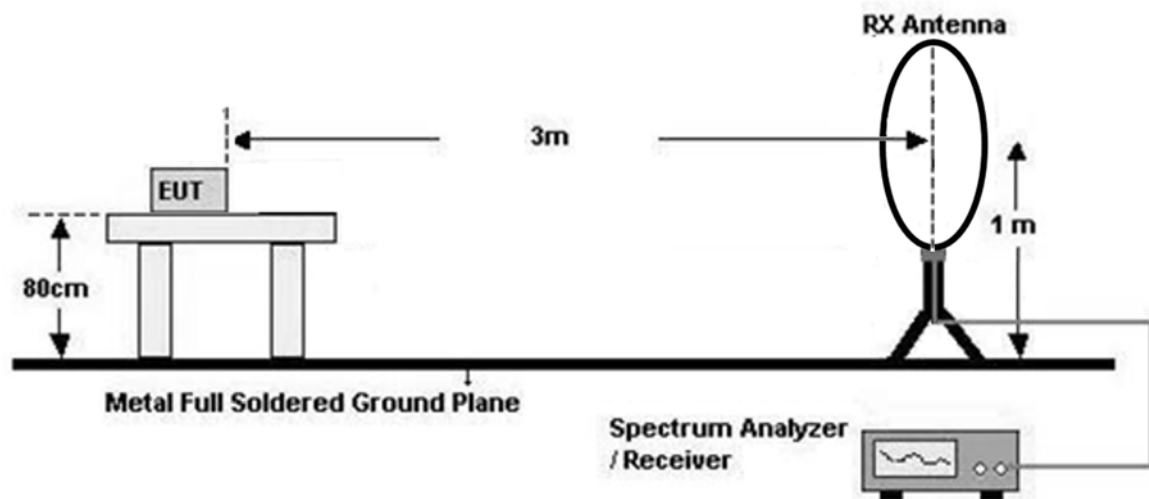
8.7. Radiated Test

Limit

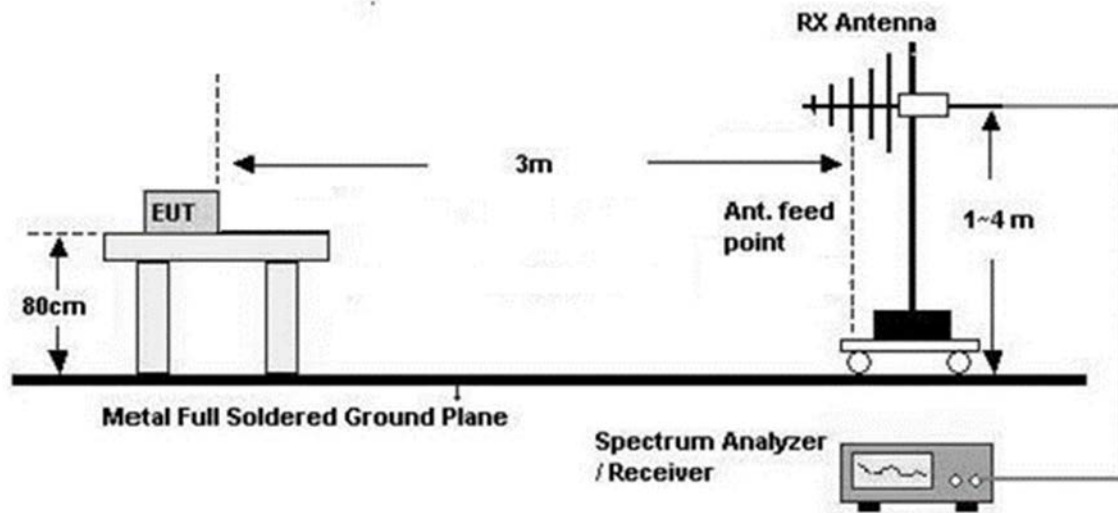
Frequency (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 – 0.490	$2400/F(\text{kHz})$	300
0.490 – 1.705	$24000/F(\text{kHz})$	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

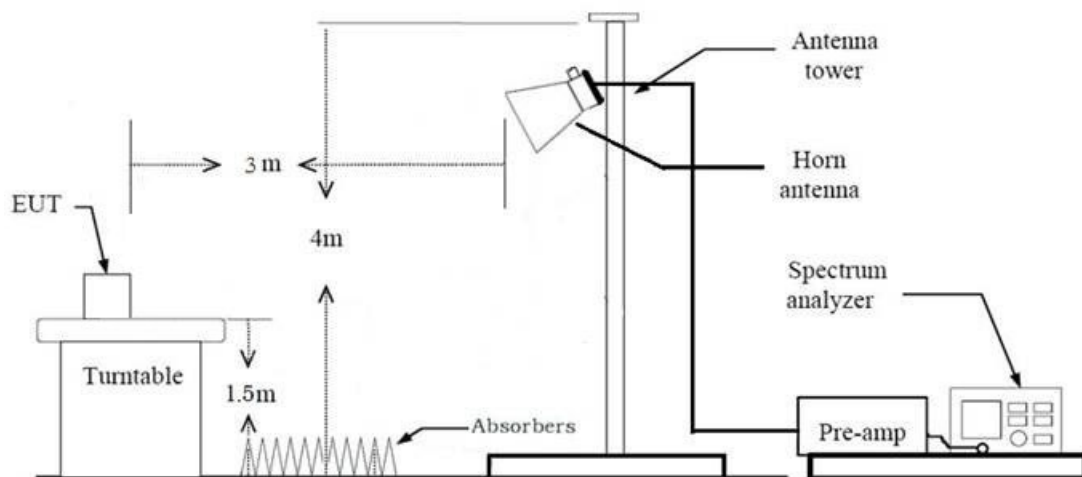
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



Test Procedure of Radiated spurious emissions(Below30 MHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3m from the EUT
3. The EUT is placed on a turntable, which is 0.8m above ground plane.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization and Parallel to the ground plane in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Distance Correction Factor(0.009 MHz – 0.490 MHz) = $40\log(3\text{ m}/300\text{ m}) = -80\text{ dB}$
Measurement Distance : 3 m
7. Distance Correction Factor(0.490 MHz – 30 MHz) = $40\log(3\text{ m}/30\text{ m}) = -40\text{ dB}$
Measurement Distance : 3 m

8. Spectrum Analyzer Setting

- Frequency Range = 9 kHz ~ 30 MHz
- Detector = Peak
- Trace = Max hold
- RBW = 9 kHz
- VBW $\geq 3 \times$ RBW

9. Total = Measured Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)

10. Measurement value only up to 6 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.

KDB 414788 OFS and Chamber Correlation Justification

Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

OFS and chamber correlation testing had been performed and chamber measured test result is the worst case test result.

Test Procedure of Radiated spurious emissions(Below 1 GHz)

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The EUT is placed on a turntable, which is 0.8m above ground plane.
3. The Hybrid antenna was placed at a location 3m from the EUT, which is varied from 1m to 4m to find out the highest emissions.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Spectrum Analyzer Setting

(1) Measurement Type(Peak):

- Measured Frequency Range : 30 MHz – 1 GHz
- Detector = Peak
- Trace = Max hold
- RBW = 100 kHz
- VBW $\geq 3 \times$ RBW

(2) Measurement Type(Quasi-peak):

- Measured Frequency Range : 30 MHz – 1 GHz
- Detector = Quasi-Peak
- RBW = 120 kHz

※In general, (1) is used mainly

7. Total = Measured Value + Antenna Factor(A.F) + Cable Loss(C.L)

8. Measurement value only up to 6 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.

Test Procedure of Radiated spurious emissions (Above 1 GHz)

1. Radiated test is performed with hopping disabled.
2. The EUT is placed on a turntable, which is 1.5 m above ground plane.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
5. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
6. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
7. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

8. Spectrum Analyzer Setting

(1) Measurement Type(Peak):

- Measured Frequency Range : 1 GHz – 25 GHz
- Detector = Peak
- Trace = Max hold
- RBW = 1 MHz
- VBW $\geq 3 \times$ RBW

(2) Measurement Type(Average):

- Average value of pulsed emissions
- From the peak value of the emission : The measured peak value in dBuV/m is corrected by $20\log(\text{maximum dwell time in 100 ms} / 100)$.

◆ $DH5 = 20\log(\text{Maximum dwell time} / 100\text{ms}) \text{ dB} = -24.731 \text{ dB}$

◆ $2-DH5, 3-DH5 = 20\log(\text{Maximum dwell time} / 100\text{ms}) \text{ dB} = -18.711 \text{ dB}$

9. Measurement value only up to 6 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.

10. Distance extrapolation factor = $20\log(\text{test distance} / \text{specific distance}) \text{ (dB)}$

11. Total(Measurement Type : Peak)

$$= \text{Measured Value(Peak)} + \text{Antenna Factor(A.F)} + \text{Cable Loss(C.L)} + \text{Distance Factor(D.F)} - \text{Amp Gain(A.G)}$$

$$\text{Total(Measurement Type : Average)}$$

$$= \text{Measured Value(Peak)} + \text{Antenna Factor(A.F)} + \text{Cable Loss(C.L)} + \text{Distance Factor(D.F)} - \text{Amp Gain(A.G)} + D.C.C.F(AFH)$$

12. Duty Cycle Correction Factor (79 channel hopping)

- a. Time to cycle through all channels = $\Delta t = \tau [\text{ms}] \times 79 \text{ channels} = 229.100 \text{ ms}$, where τ = pulse width
- b. $100 \text{ ms} / \Delta t [\text{ms}] = H \rightarrow$ Round up to next highest integer, $H' = 1$

- c. Worst Case Dwell Time = τ [ms] x $H' = 2.9$ ms
- d. Channel separation correction = 1 (DH5, 2-DH5, 3-DH5)
- e. Overlapping channel correction
 - (1) DH5 : = 0
 - (2) 2-DH5, 3-DH5 = 1
- f. Maximum dwell time
 - (1) DH5 = $2.9\text{ms} \times (1 + 0) = 2.9$ ms
 - (2) 2-DH5, 3-DH5 = $2.9\text{ms} \times (1 + 1) = 5.8$ ms
- g. Duty Cycle Correction
 - (1) DH5 = $20\log(\text{Maximum dwell time} / 100\text{ms})$ dB = -30.752 dB
 - (2) 2-DH5, 3-DH5 = $20\log(\text{Maximum dwell time} / 100\text{ms})$ dB = -24.731 dB
- 13. Duty Cycle Correction Factor(AFH mode – minimum channel number case - 20 channels)
 - a. Time to cycle through all channels= $\Delta t = \tau$ [ms] x 20 channels = 58.00 ms, where τ = pulse width
 - b. $100 \text{ ms} / \Delta t$ [ms] = $H \rightarrow$ Round up to next highest integer, $H' = 2$
 - c. Worst Case Dwell Time = τ [ms] x $H' = 5.8$ ms
 - d. Channel separation correction = 1 (DH5, 2DH5, 3DH5)
 - e. Overlapping channel correction
 - (1) DH5 : = 0
 - (2) 2DH5, 3DH5 = 1
 - f. Maximum dwell time
 - (1) DH5 = $5.8 \text{ ms} \times (1 + 0) = 5.8$ ms
 - (2) 2-DH5, 3-DH5 = $5.8 \text{ ms} \times (1 + 1) = 11.6$ ms
 - g. Duty Cycle Correction
 - (1) DH5 = $20\log(\text{Maximum dwell time} / 100\text{ms})$ dB = -24.731 dB
 - (2) 2-DH5, 3-DH5 = $20\log(\text{Maximum dwell time} / 100\text{ms})$ dB = -18.711 dB

Test Procedure of Radiated Restricted Band Edge

1. Radiated test is performed with hopping disabled.
2. The EUT is placed on a turntable, which is 1.5 m above ground plane.
3. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
4. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
5. EUT is set 3 m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. Spectrum Analyzer Setting
 - (1) Measurement Type(Peak):
 - Detector = Peak

- Trace = Max hold

- RBW = 1 MHz

- VBW $\geq 3 \times$ RBW

(2) Measurement Type(Average):

- Average value of pulsed emissions

- From the peak value of the emission: The measured peak value in dBuV/m is corrected by $20\log(\text{maximum dwell time in 100 ms} / 100)$.

◆ DH5 = $20\log(\text{Maximum dwell time} / 100\text{ms})$ dB = -24.731 dB

◆ 2-DH5, 3-DH5 = $20\log(\text{Maximum dwell time} / 100\text{ms})$ dB = -18.711 dB

8. Measurement value only up to 6 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.

9. Distance extrapolation factor = $20\log(\text{test distance} / \text{specific distance})$ (dB)

10.Total(Measurement Type : Peak) = Measured Value(Peak)

Total(Measurement Type : Average) = Measured Value(Peak) + D.C.C.F(AFH)

- We apply to the offset in range 1 GHz - 18 GHz

- The offset = Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)

11. Duty Cycle Correction Factor (79 channel hopping)

a. Time to cycle through all channels= $\Delta t = \tau$ [ms] x 79 channels = 229.100 ms, where τ = pulse width

b. $100 \text{ ms} / \Delta t$ [ms] = H $\rightarrow$ Round up to next highest integer, H' =1

c. Worst Case Dwell Time = τ [ms] x H' = 2.9 ms

d. Channel separation correction = 1 (DH5, 2DH5, 3DH5)

e. Overlapping channel correction

(1) DH5 : = 0

(2) 2-DH5, 3-DH5 = 1

f. Maximum dwell time

(1) DH5 = $2.9\text{ms} \times (1 + 0) = 2.9 \text{ ms}$

(2) 2-DH5, 3-DH5 = $2.9\text{ms} \times (1 + 1) = 5.8 \text{ ms}$

g. Duty Cycle Correction

(1) DH5 = $20\log(\text{Maximum dwell time} / 100\text{ms})$ dB = -30.752 dB

(2) 2-DH5, 3-DH5 = $20\log(\text{Maximum dwell time} / 100\text{ms})$ dB = -24.731 dB

12. Duty Cycle Correction Factor(AFH mode – minimum channel number case - 20 channels)

a. Time to cycle through all channels= $\Delta t = \tau$ [ms] x 20 channels = 58.00 ms, where τ = pulse width

b. $100 \text{ ms} / \Delta t$ [ms] = H $\rightarrow$ Round up to next highest integer, H' = 2

c. Worst Case Dwell Time = τ [ms] x H' = 5.8 ms

d. Channel separation correction = 1 (DH5, 2DH5, 3DH5)

e. Overlapping channel correction

(1) DH5 : = 0

(2) 2-DH5, 3-DH5 = 1

f. Maximum dwell time

(1) DH5 = 5.8 ms X (1 + 0) = 5.8 ms

(2) 2-DH5, 3-DH5 = 5.8 ms X (1 + 1) = 11.6 ms

g. Duty Cycle Correction

(1) DH5 = $20\log(\text{Maximum dwell time} / 100\text{ms})$ dB = -24.731 dB

(2) 2-DH5, 3-DH5 = $20\log(\text{Maximum dwell time} / 100\text{ms})$ dB = -18.711 dB

8.8. AC Power line Conducted Emissions

Limit

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56 ^(a)	56 to 46 ^(a)
0.50 to 5	56	46
5 to 30	60	50

^(a)Decreases with the logarithm of the frequency.

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

Test Configuration

See test photographs attached in Annex A for the actual connections between EUT and support equipment.

Test Procedure

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Detectors : Quasi Peak and Average Detector.
5. The EUT is the device operating below 30MHz.
 - For unterminated the Antenna, the AC line conducted tests are performed with the antenna connected
 - For terminated the Antenna, the AC line conducted tests are performed with a dummy load connected to the EUT antenna output terminal.

Sample Calculation

Quasi-peak(Final Result) = Measured Value + Correction Factor

8.9. Worst case configuration and mode

Conducted test

1. The EUT was configured with data rate of highest power.
 - GFSK : DH5
 - π /4DQPSK : 2-DH5
 - 8DPSK : 3-DH5
2. AFH & Non-AFH were tested and the worst case results are reported.
(Worst case : Non-AFH)
3. SM-A276B/DS, SM-A276B were tested and the worst case results are reported.
(Worst case: SM-A276B/DS)

Radiated test

1. All modes of operation were investigated and the worst case configuration results are reported.
 - Mode : Stand alone, Stand alone + External accessories
 - Worstcase : Stand alone
2. EUT Axis
 - Radiated Spurious Emissions : Z
 - Radiated Restricted Band Edge : X
3. All data rates of operation were investigated and the test results are worst case in highest datarate of each mode.
 - GFSK : DH5
 - π /4DQPSK : 2-DH5
 - 8DPSK : 3-DH5
4. All positions of loop antenna were investigated and the test result is a no critical peak found at all positions.
 - Position : Horizontal, Vertical, Parallel to the ground plane
5. Radiated Spurious Emission
 - All modes of operation were investigated and the worst case results are reported.
 - GFSK : DH5
 - π /4DQPSK : 2-DH5
 - 8DPSK : 3-DH5
6. SM-A276B/DS, SM-A276B were tested and the worst case results are reported.
(Worst case: SM-A276B/DS)

AC Power line Conducted Emissions

1. All modes of operation were investigated and the worst case configuration results are reported.
 - Mode : Stand alone + External accessories + Travel Adapter, Stand alone + Travel Adapter
 - Worstcase : Stand alone + Travel Adapter
2. SM-A276B/DS, SM-A276B were tested and the worst case results are reported.
(Worst case: SM-A276B/DS)

9. SUMMARY OF TEST RESULTS

Test Item	FCC Part Section(s)	Test Limit	Test Condition	Test Result
20 dB Bandwidth	§ 15.247(a)(1)	N/A	Conducted	PASS
Occupied Bandwidth	N/A	N/A		PASS
Conducted Maximum Peak Output Power	§ 15.247(b)(1)	<0.125 W		PASS
Carrier Frequency Separation	§ 15.247(a)(1)	>25 kHz or >2/3 of the 20 dB BW		PASS
Number of Hopping Frequencies	§ 15.247(a)(1)(iii)	≥ 15		PASS
Time of Occupancy	§ 15.247(a)(1)(iii)	<400 ms		PASS
Conducted Spurious Emissions	§ 15.247(d)	> 20 dB for all out-of band emissions		PASS
Conducted Band Edge (Out of Band Emissions)	§ 15.247(d)	> 20 dB for all out-of band emissions		PASS
AC Power line Conducted Emissions	§ 15.207(a)	cf. Section 8.8		PASS
Radiated Spurious Emissions	§ 15.247(d), 15.205, 15.209	cf. Section 8.7	Radiated	PASS
Radiated Restricted Band Edge	§ 15.247(d), 15.205, 15.209	cf. Section 8.7		PASS

Note:

1. The decision rule applies 'simple acceptance'

10. TEST RESULT

10.1 PEAK POWER

Mode	Channel	Frequency [MHz]	Peak Power		Limit [mW]
			[dBm]	[mW]	
GFSK	0	2402	12.560	18.03	125
	39	2441	13.154	20.67	
	78	2480	12.879	19.40	
$\pi/4$ DQPSK	0	2402	12.049	16.03	
	39	2441	12.709	18.66	
	78	2480	12.482	17.71	
8DPSK	0	2402	12.348	17.17	
	39	2441	12.972	19.82	
	78	2480	12.752	18.85	

TEST PLOTS(Peak Power)

Note :

In order to simplify the report, attached plots were only the worst case channel.

GFSK : Peak Power (Ch. 39)



$\pi/4$ DQPSK : Peak Power (Ch. 39)



8DPSK : Peak Power (Ch. 39)



10.2 BAND EDGES

Without hopping

Mode	Channel	Frequency [MHz]	Position	Band Edge [dB]	Limit [dBc]
GFSK	0	2402	Lower	56.299	20
	78	2480	Upper	67.009	
$\pi/4$ DQPSK	0	2402	Lower	56.355	
	78	2480	Upper	65.067	
8DPSK	0	2402	Lower	57.342	
	78	2480	Upper	64.912	

With hopping

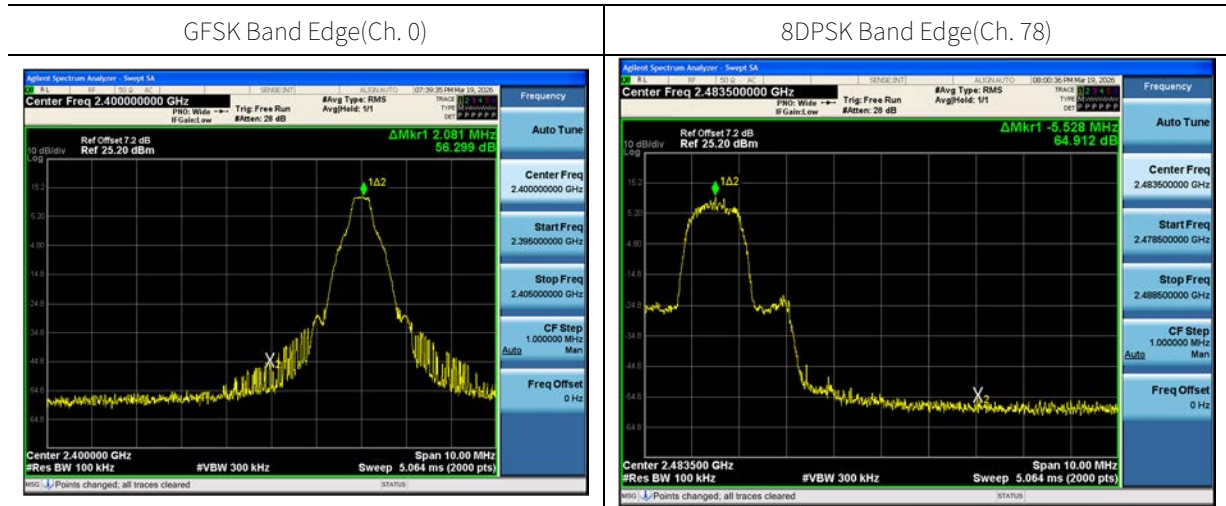
Mode	Channel	Frequency [MHz]	Position	Band Edge [dB]	Limit [dBc]
GFSK	0	2402	Lower	60.276	20
	78	2480	Upper	67.579	
$\pi/4$ DQPSK	0	2402	Lower	60.046	
	78	2480	Upper	65.012	
8DPSK	0	2402	Lower	62.873	
	78	2480	Upper	65.431	

■ TEST PLOTS(BAND EDGES)

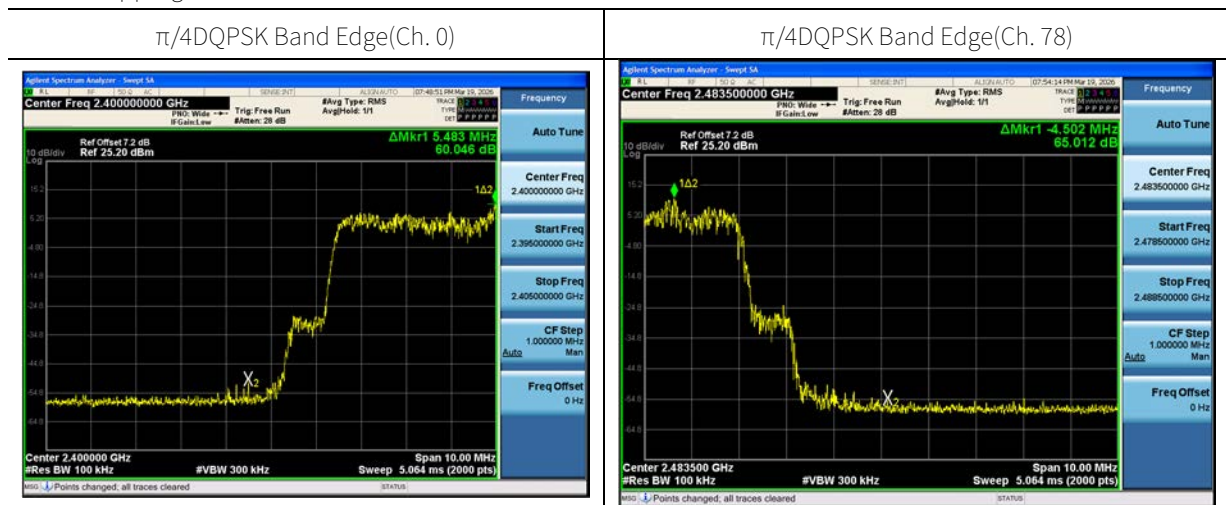
Note :

In order to simplify the report, attached plots were only the worst case mode.

-Without hopping



-With hopping



10.3 FREQUENCY SEPARATION / 20dB & 99% OCCUPIED BANDWIDTH

Mode	Channel	Frequency [MHz]	20dB BW [kHz]	99% BW [kHz]	Channel Separation [kHz]	Channel Separation Limit [kHz]
GFSK	0	2402	939.6	825.19	1000.0	626.4
	39	2441	937.8	823.57	1000.0	625.2
	78	2480	935.8	827.45	1000.0	623.9
$\pi/4$ DQPSK	0	2402	1288	1176.3	1000.0	858.7
	39	2441	1308	1176.9	1000.0	871.8
	78	2480	1322	1178.2	1000.0	881.6
8DPSK	0	2402	1303	1181.1	1000.0	868.6
	39	2441	1304	1188.0	1000.0	869.5
	78	2480	1300	1189.5	1000.0	867.0

■ TEST PLOTS(20 dB Bandwidth & 99% OBW)

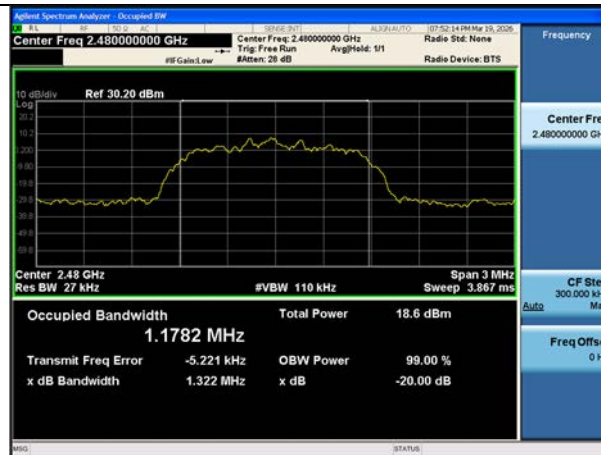
Note:

In order to simplify the report, attached plots were only the widest 20 dB BW channel.

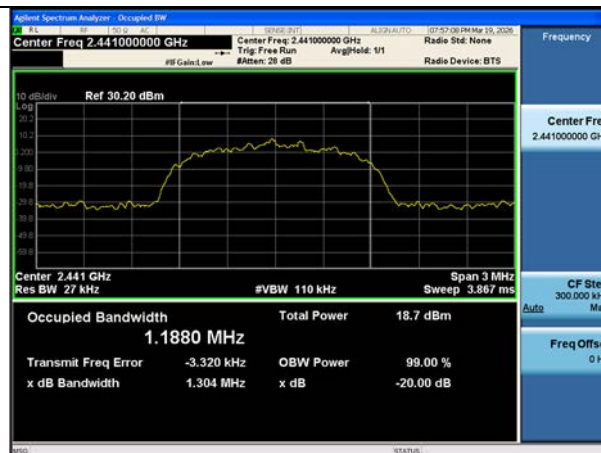
GFSK 20 dB BW & 99% OBW (Ch. 0)



$\pi/4$ DQPSK 20 dB BW & 99% OBW (Ch. 78)



8DPSK 20 dB BW & 99% OBW (Ch. 39)



TEST PLOTS(Channel Separation)

GFSK : Channel Separation



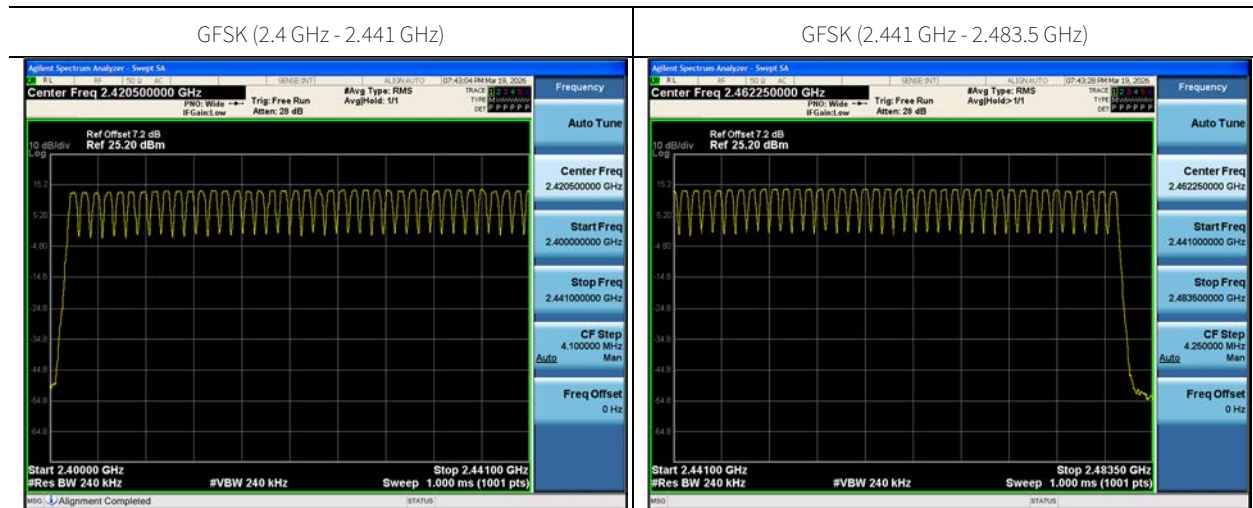
10.4 NUMBER OF HOPPING FREQUENCY

Mode	Number of hopping Frequency	Limit
GFSK	79	> 15
$\pi/4$ DQPSK	79	
8DPSK	79	

Note :

In case of AFH mode, minimum number of hopping channels is 20.

■ TEST PLOTS(NUMBER OF HOPPING FREQUENCY)



10.5 TIME OF OCCUPANCY (DWELL TIME)

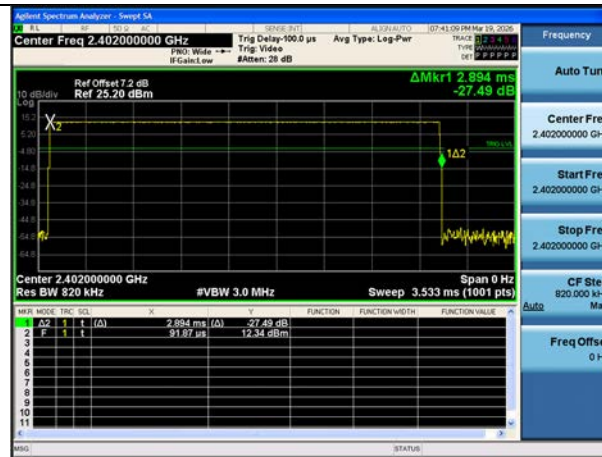
Mode	Channel	Frequency [MHz]	Dwell Time [ms]	Time Occupancy [ms]	Time Occupancy with AFH [ms]	Limit [ms]
GFSK	0	2402	2.894	308.67	154.34	400
	39	2441	2.890	308.30	154.15	
	78	2480	2.894	308.67	154.34	
$\pi/4$ DQPSK	0	2402	2.894	308.67	154.34	
	39	2441	2.894	308.67	154.34	
	78	2480	2.894	308.67	154.34	
8DPSK	0	2402	2.894	308.67	154.34	
	39	2441	2.894	308.67	154.34	
	78	2480	2.897	309.05	154.52	

TEST PLOTS(Dwell Time)

Note:

In order to simplify the report, attached plots were only the lowest channel.

GFSK : Dwell Time(Ch. 0)



10.6 SPURIOUS EMISSIONS

10.6.1 CONDUCTED SPURIOUS EMISSIONS

In order to simplify the report, attached plots were only the worst case channel and data rate.

■ TEST PLOTS(CONDUCTED SPURIOUS EMISSIONS)

Spurious Emissions (30 MHz - 26.50 GHz) 8DPSK Ch. 78



Note

1. Limit (dBm): -13.491

10.6.2 RADIATED SPURIOUS EMISSIONS

Frequency Range : 9 kHz – 30 MHz

Frequency	Measured Value	A.F+C.L+D.F	POL	Total	Limit	Margin
[MHz]	[dB μ V]	[dB/m]	[H/V]	[dB μ V/m]	[dB μ V/m]	[dB]

No Critical peaks found

Note:

1. The Measured of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
2. Distance extrapolation factor = $40\log(\text{specific distance} / \text{test distance})$ (dB)
3. Limit line = specific Limits (dB μ V) + Distance extrapolation factor
4. Radiated test is performed with hopping disabled.

Frequency Range : Below 1 GHz

Frequency	Measured Value	A.F+C.L	POL	Total	Limit	Margin
[MHz]	[dB μ V]	[dB/m]	[H/V]	[dB μ V/m]	[dB μ V/m]	[dB]

No Critical peaks found

Note:

1. Radiated emissions measured in frequency range from 30 MHz to 1000 MHz were made with an instrument using Quasi peak detector mode.
2. Radiated test is performed with hopping disabled.

Frequency Range : Above 1 GHz

CH 0	2402	MHz	Mode :			Normal(GFSK)		
Frequency	Measured value	A.F+C.L-A.G+D.F	ANT. POL	Duty Cycle Correction	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB/m]	[H/V]	[dB]	[dBμV/m]	[dBμV/m]	[dB]	
4804	42.78	4.53	V	0.00	47.31	73.98	26.67	PK
4804	42.78	4.53	V	-24.73	22.58	53.98	31.40	AV
7206	38.94	12.20	V	0.00	51.14	73.98	22.84	PK
7206	38.94	12.20	V	-24.73	26.41	53.98	27.57	AV
4804	43.53	4.53	H	0.00	48.06	73.98	25.92	PK
4804	43.53	4.53	H	-24.73	23.33	53.98	30.65	AV
7206	39.26	12.20	H	0.00	51.46	73.98	22.52	PK
7206	39.26	12.20	H	-24.73	26.73	53.98	27.25	AV

CH 39	2441	MHz	Mode :			Normal(GFSK)		
Frequency	Measured value	A.F+C.L-A.G+D.F	ANT. POL	Duty Cycle Correction	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB/m]	[H/V]	[dB]	[dBμV/m]	[dBμV/m]	[dB]	
4882	42.54	4.93	V	0.00	47.47	73.98	26.51	PK
4882	42.54	4.93	V	-24.73	22.74	53.98	31.24	AV
7323	38.90	12.29	V	0.00	51.19	73.98	22.79	PK
7323	38.90	12.29	V	-24.73	26.45	53.98	27.53	AV
4882	43.25	4.93	H	0.00	48.18	73.98	25.80	PK
4882	43.25	4.93	H	-24.73	23.45	53.98	30.53	AV
7323	39.28	12.29	H	0.00	51.57	73.98	22.41	PK
7323	39.28	12.29	H	-24.73	26.83	53.98	27.15	AV

CH 78	2480	MHz	Mode :			Normal(GFSK)		
Frequency	Measured value	A.F+C.L-A.G+D.F	ANT. POL	Duty Cycle Correction	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB/m]	[H/V]	[dB]	[dBμV/m]	[dBμV/m]	[dB]	
4960	42.28	5.53	V	0.00	47.81	73.98	26.17	PK
4960	42.28	5.53	V	-24.73	23.08	53.98	30.90	AV
7440	39.06	12.15	V	0.00	51.21	73.98	22.77	PK
7440	39.06	12.15	V	-24.73	26.47	53.98	27.51	AV
4960	42.52	5.53	H	0.00	48.05	73.98	25.93	PK
4960	42.52	5.53	H	-24.73	23.32	53.98	30.66	AV
7440	39.39	12.15	H	0.00	51.54	73.98	22.44	PK
7440	39.39	12.15	H	-24.73	26.80	53.98	27.18	AV

CH 0	2402	MHz	Mode :			EDR ($\pi/4$ DQPSK)		
Frequency	Measured value	A.F+C.L-A.G+D.F	ANT. POL	Duty Cycle Correction	Total	Limit	Margin	Measurement Type
[MHz]	[dB μ V]	[dB/m]	[H/V]	[dB]	[dB μ V/m]	[dB μ V/m]	[dB]	
4804	42.07	4.53	V	0.00	46.60	73.98	27.38	PK
4804	42.07	4.53	V	-18.71	27.89	53.98	26.09	AV
7206	38.89	12.20	V	0.00	51.09	73.98	22.89	PK
7206	38.89	12.20	V	-18.71	32.38	53.98	21.60	AV
4804	42.58	4.53	H	0.00	47.11	73.98	26.87	PK
4804	42.58	4.53	H	-18.71	28.40	53.98	25.58	AV
7206	38.92	12.20	H	0.00	51.12	73.98	22.86	PK
7206	38.92	12.20	H	-18.71	32.41	53.98	21.57	AV

CH 39	2441	MHz	Mode :			EDR ($\pi/4$ DQPSK)		
Frequency	Measured value	A.F+C.L-A.G+D.F	ANT. POL	Duty Cycle Correction	Total	Limit	Margin	Measurement Type
[MHz]	[dB μ V]	[dB/m]	[H/V]	[dB]	[dB μ V/m]	[dB μ V/m]	[dB]	
4882	41.76	4.93	V	0.00	46.69	73.98	27.29	PK
4882	41.76	4.93	V	-18.71	27.98	53.98	26.00	AV
7323	38.87	12.29	V	0.00	51.16	73.98	22.82	PK
7323	38.87	12.29	V	-18.71	32.44	53.98	21.54	AV
4882	41.83	4.93	H	0.00	46.76	73.98	27.22	PK
4882	41.83	4.93	H	-18.71	28.05	53.98	25.93	AV
7323	39.05	12.29	H	0.00	51.34	73.98	22.64	PK
7323	39.05	12.29	H	-18.71	32.62	53.98	21.36	AV

CH 78	2480	MHz	Mode :			EDR ($\pi/4$ DQPSK)		
Frequency	Measured value	A.F+C.L-A.G+D.F	ANT. POL	Duty Cycle Correction	Total	Limit	Margin	Measurement Type
[MHz]	[dB μ V]	[dB/m]	[H/V]	[dB]	[dB μ V/m]	[dB μ V/m]	[dB]	
4960	41.81	5.53	V	0.00	47.34	73.98	26.64	PK
4960	41.81	5.53	V	-18.71	28.63	53.98	25.35	AV
7440	39.16	12.15	V	0.00	51.31	73.98	22.67	PK
7440	39.16	12.15	V	-18.71	32.60	53.98	21.38	AV
4960	42.07	5.53	H	0.00	47.60	73.98	26.38	PK
4960	42.07	5.53	H	-18.71	28.89	53.98	25.09	AV
7440	39.43	12.15	H	0.00	51.58	73.98	22.40	PK
7440	39.43	12.15	H	-18.71	32.87	53.98	21.11	AV

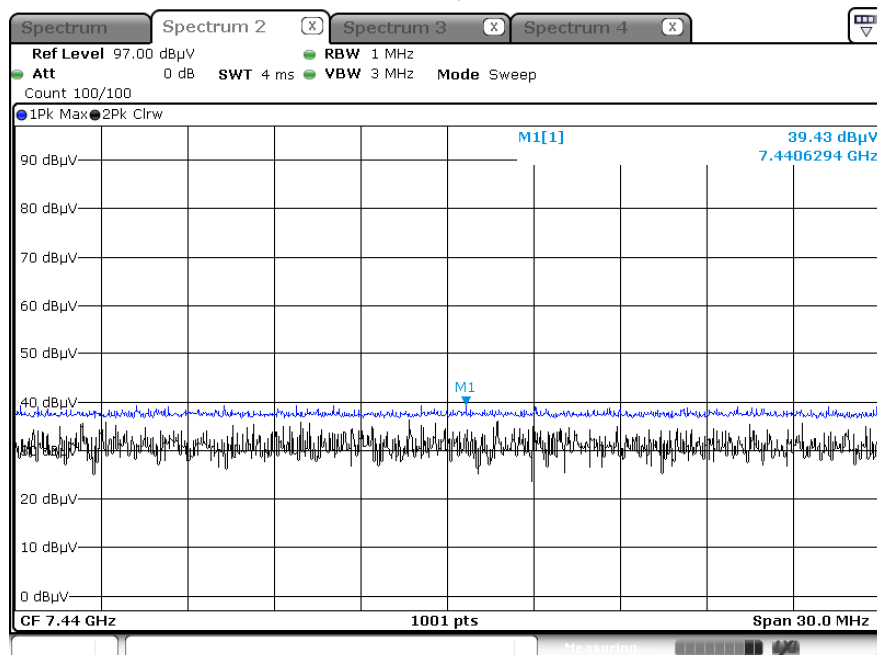
CH 0	2402	MHz	Mode :			EDR (8DPSK)		
Frequency	Measured value	A.F+C.L-A.G+D.F	ANT. POL	Duty Cycle Correction	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB/m]	[H/V]	[dB]	[dBμV/m]	[dBμV/m]	[dB]	
4804	42.04	4.53	V	0.00	46.57	73.98	27.41	PK
4804	42.04	4.53	V	-18.71	27.86	53.98	26.12	AV
7206	38.76	12.20	V	0.00	50.96	73.98	23.02	PK
7206	38.76	12.20	V	-18.71	32.25	53.98	21.73	AV
4804	42.41	4.53	H	0.00	46.94	73.98	27.04	PK
4804	42.41	4.53	H	-18.71	28.23	53.98	25.75	AV
7206	39.25	12.20	H	0.00	51.45	73.98	22.53	PK
7206	39.25	12.20	H	-18.71	32.74	53.98	21.24	AV

CH 39	2441	MHz	Mode :			EDR (8DPSK)		
Frequency	Measured value	A.F+C.L-A.G+D.F	ANT. POL	Duty Cycle Correction	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB/m]	[H/V]	[dB]	[dBμV/m]	[dBμV/m]	[dB]	
4882	41.66	4.93	V	0.00	46.59	73.98	27.39	PK
4882	41.66	4.93	V	-18.71	27.88	53.98	26.10	AV
7323	39.05	12.29	V	0.00	51.34	73.98	22.64	PK
7323	39.05	12.29	V	-18.71	32.62	53.98	21.36	AV
4882	41.97	4.93	H	0.00	46.90	73.98	27.08	PK
4882	41.97	4.93	H	-18.71	28.19	53.98	25.79	AV
7323	39.12	12.29	H	0.00	51.41	73.98	22.57	PK
7323	39.12	12.29	H	-18.71	32.69	53.98	21.29	AV

CH 78	2480	MHz	Mode :			EDR (8DPSK)		
Frequency	Measured value	A.F+C.L-A.G+D.F	ANT. POL	Duty Cycle Correction	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[dB/m]	[H/V]	[dB]	[dBμV/m]	[dBμV/m]	[dB]	
4960	41.83	5.53	V	0.00	47.36	73.98	26.62	PK
4960	41.83	5.53	V	-18.71	28.65	53.98	25.33	AV
7440	39.12	12.15	V	0.00	51.27	73.98	22.71	PK
7440	39.12	12.15	V	-18.71	32.56	53.98	21.42	AV
4960	42.45	5.53	H	0.00	47.98	73.98	26.00	PK
4960	42.45	5.53	H	-18.71	29.27	53.98	24.71	AV
7440	39.37	12.15	H	0.00	51.52	73.98	22.46	PK
7440	39.37	12.15	H	-18.71	32.81	53.98	21.17	AV

Test Plots

Radiated Spurious Emissions plot – Peak & Average Result ($\pi/4$ DQPSK, Ch. 78 3rd Harmonic, Z-H)



Note: Plots of worst case are only reported.

10.6.3 RADIATED RESTRICTED BAND EDGES

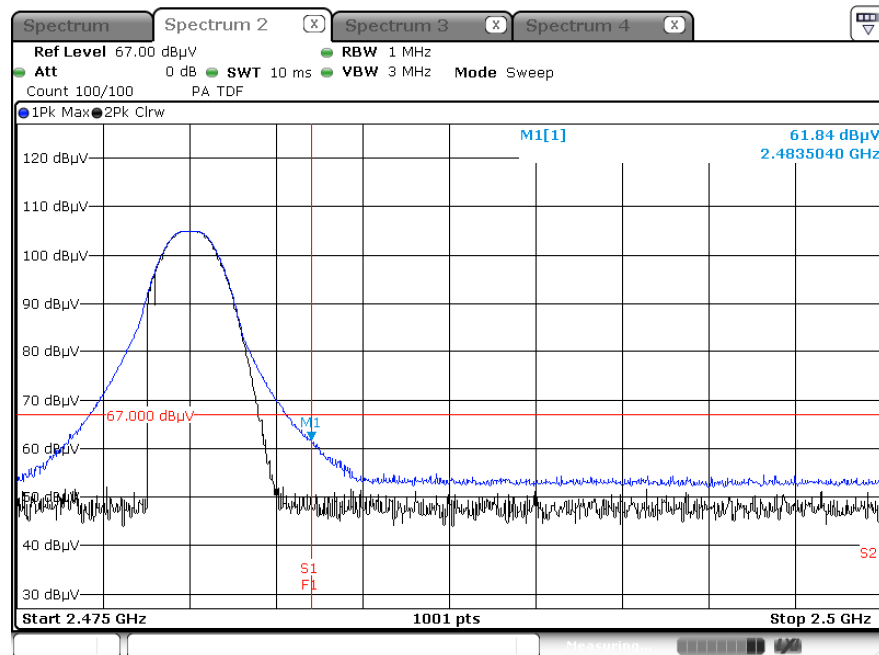
Normal(GFSK)	Channel	CH. 0, CH. 78	Channel Frequency		2402 MHz, 2480 MHz		
Frequency	Measured Value	ANT. POL	Duty Cycle Correction	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[H/V]	[dB]	[dBμV/m]	[dBμV/m]	[dB]	
2390.0	53.51	H	0	53.51	73.98	20.47	PK
2390.0	53.51	H	-24.73	28.78	53.98	25.20	AV
2483.5	61.84	H	0	61.84	73.98	12.14	PK
2483.5	61.84	H	-24.73	37.11	53.98	16.87	AV

EDR(π /4DQPSK)	Channel	CH. 0, CH. 78	Channel Frequency		2402 MHz, 2480 MHz		
Frequency	Measured Value	ANT. POL	Duty Cycle Correction	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[H/V]	[dB]	[dBμV/m]	[dBμV/m]	[dB]	
2390.0	53.22	H	0	53.22	73.98	20.76	PK
2390.0	53.22	H	-18.71	34.51	53.98	19.47	AV
2483.5	59.57	H	0	59.57	73.98	14.41	PK
2483.5	59.57	H	-18.71	40.86	53.98	13.12	AV

EDR(8DPSK)	Channel	CH. 0, CH. 78	Channel Frequency		2402 MHz, 2480 MHz		
Frequency	Measured Value	ANT. POL	Duty Cycle Correction	Total	Limit	Margin	Measurement Type
[MHz]	[dBμV]	[H/V]	[dB]	[dBμV/m]	[dBμV/m]	[dB]	
2390.0	53.75	H	0	53.75	73.98	20.23	PK
2390.0	53.75	H	-18.71	35.04	53.98	18.94	AV
2483.5	59.56	H	0	59.56	73.98	14.42	PK
2483.5	59.56	H	-18.71	40.85	53.98	13.13	AV

Test Plots

Radiated Restricted Band Edges plot – Average & Peak Result (GFSK, Ch. 78, X-H)



Note:

Plots of worst case are only reported.

10.7 POWERLINE CONDUCTED EMISSIONS

Conducted Emissions

Test

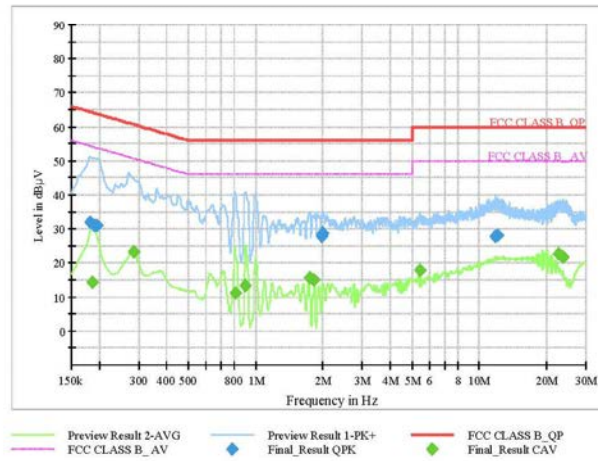
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Test Report

Common Information

EUT : SM-A276B/DS
Operating Conditions : BT Mode
Comment :

Full Spectrum



Final Result QPK

Frequency (MHz)	Quasi Peak (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1815	32.00	64.42	32.41	9.000	N	9.7
0.1905	31.17	64.02	32.84	9.000	N	9.7
0.1950	30.87	63.82	32.95	9.000	N	9.7
1.9693	27.81	56.00	28.19	9.000	N	9.8
1.9760	28.30	56.00	27.70	9.000	N	9.8
1.9850	28.79	56.00	27.21	9.000	N	9.8
11.8243	27.88	60.00	32.12	9.000	L1	10.2
12.0335	28.08	60.00	31.92	9.000	L1	10.2
12.0650	28.14	60.00	31.86	9.000	L1	10.2

Final Result CAV

Frequency (MHz)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.1860	14.28	54.21	39.93	9.000	L1	9.8
0.2850	23.42	50.67	27.25	9.000	L1	9.8
0.8083	11.22	46.00	34.78	9.000	L1	9.8
0.9005	13.48	46.00	32.52	9.000	L1	9.8
1.7375	15.69	46.00	30.31	9.000	N	9.8
1.8320	14.93	46.00	31.07	9.000	N	9.8
5.4073	17.95	50.00	32.05	9.000	N	9.9
22.5995	22.80	50.00	27.20	9.000	L1	10.6
23.7628	21.61	50.00	28.39	9.000	L1	10.6

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11. LIST OF TEST EQUIPMENT

Conducted Test

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
LISN	ENV216	Rohde & Schwarz	102245	07/15/2026	Annual
EMI Test Receiver	ESR7	Rohde & Schwarz	101910	08/20/2026	Annual
Chamber	SU-642	ESPEC	93008124	02/04/2027	Annual
PXA Signal Analyzer	N9030A	Agilent	MY49431210	11/28/2026	Annual
Open Switch and Control Platform	OSP 120	Rohde & Schwarz	100935	07/24/2026	Annual
Power Meter	N1911A	Agilent	MY45100523	02/13/2027	Annual
WIDEBAND POWER SENSOR	N1921A	Keysight	MY57820067	01/26/2027	Annual
Directional Coupler	87300B	Agilent	3116A03621	10/14/2026	Annual
Power Splitter	11667B	Hewlett Packard	10545	01/15/2027	Annual
DC Power Supply	E3632A	Hewlett Packard	KR75303243	04/13/2027	Annual
Attenuator	8493C-010	Keysight	07560	05/27/2026	Annual
Software	EMC32	Rohde & Schwarz	N/A	N/A	N/A
Bluetooth Tester	CBT	Rohde & Schwarz	100752	12/22/2026	Annual
Automation Software	FCC WLAN Conducted	HCT CO., LTD	N/A	N/A	N/A
Automation Software	FCC Bluetooth Conducted	HCT CO., LTD	N/A	N/A	N/A

Note:

1. Equipment whose calibration due date was updated during the test period was not used between the previous due date and the update.
2. Especially, all antenna for measurement is calibrated in accordance with the requirements of ANSI C63.5-2017.

Radiated Test

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
Antenna Mast Controller	CO3000	Innco systems GmbH	CO3000/1032/41190717/P	N/A	N/A
Antenna Mast	MA4640/800-XP-EP	Innco systems GmbH	S1AM	07/25/2026	Annual
Turn Table	DS2000-S-1t	Innco systems GmbH	DS2000/572/54610422/P	N/A	N/A
Amp & Filter Bank Switch Controller	FBSM-01B	T&M system	TM19050002	N/A	N/A
Loop Antenna	FMZB 1513	Schwarzbeck Mess-Elektronik OHG	1513-175	06/24/2027	Biennial
Hybrid Antenna	VULB 9168	Schwarzbeck Mess-Elektronik OHG	9168-0895	08/28/2026	Biennial
Horn Antenna	BBHA 9120 D	Schwarzbeck Mess-Elektronik OHG	9120D-1300	12/22/2027	Biennial
Horn Antenna	BBHA 9120 D	Schwarzbeck Mess-Elektronik OHG	9120D-2296	05/16/2026	Biennial
Horn Antenna	BBHA 9170	Schwarzbeck Mess-Elektronik OHG	BBHA9170342	09/20/2026	Biennial
Signal Analyzer	FSV40	Rohde & Schwarz	101055	05/07/2026	Annual
Band Reject Filter	WRCJV2400/2483.5-2370/2520-60/12SS	Wainwright Instruments GmbH	2	12/11/2026	Annual
Band Reject Filter	WRCJV12-4900-5100-5900-6100-50SS	Wainwright Instruments GmbH	5	05/27/2026	Annual
Band Reject Filter	WRCJV12-4900-5100-5900-6100-50SS	Wainwright Instruments GmbH	6	05/27/2026	Annual
High Pass Filter	WHKX10-7150-8000-18000-50SS	Wainwright Instruments GmbH	1	02/09/2027	Annual
Broadband LNA	CBL18265035	CERNEX	22966	10/21/2026	Annual
Broadband LNA	CBL26405040	CERNEX	25956	02/09/2027	Annual
Bluetooth Tester	TC-3000C	TESCOM	3000C000175	03/03/2027	Annual
RF Switching System	FMSR-05B (3G HPF+LNA)	T&M system	S1L1	12/08/2026	Annual
RF Switching System	FMSR-05B (10dB ATT+LNA)	T&M system	S1L2	12/08/2026	Annual
RF Switching System	FMSR-05B (3dB ATT+LNA)	T&M system	S1L3	12/08/2026	Annual
RF Switching System	FMSR-05B (LNA)	T&M system	S1L4	12/08/2026	Annual
RF Switching System	FMSR-05B (7G HPF+LNA)	T&M system	S1L5	12/08/2026	Annual
RF Switching System	FMSR-05B (Thru)	T&M system	S1L6	12/08/2026	Annual
Automation Software	FCC WLAN Radiated	HCT CO., LTD	N/A	N/A	N/A
Attenuator	18B-03	API Technologies	1	04/13/2027	Annual

Note:

- Equipment whose calibration due date was updated during the test period was not used between the previous due date and the update.
All reported measurements were performed using equipment within valid calibration.
- Especially, all antenna for measurement is calibrated in accordance with the requirements of ANSI C63.5-2017.

12. ANNEX A_ TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-RF-2604-FC055-P