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FCC BT LE REPORT

Certification

Applicant Name:
SAMSUNG Electronics Co., Ltd.

Address:
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Date of Issue:
February 15, 2022

Test Site/Location:
74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 KOREA

Report No.: HCT-RF-2202-FC025

FCC ID:	**A3LSMA736B**
APPLICANT:	**SAMSUNG Electronics Co., Ltd.**

Model:	SM-A736B/DS
Additional Model:	SM-A736B
EUT Type:	Mobile phone
Average Output Power:	Normal : 8.49 dBm (7.06 mW), High Power : 13.75 dBm (23.71 mW)
Frequency Range:	2402 MHz ~ 2480 MHz
Modulation type	GFSK
FCC Classification:	Digital Transmission System(DTS)
FCC Rule Part(s):	Part 15.247

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.

REVIEWED BY

Report prepared by : Chang Hee Hwang
Engineer of Telecommunication Testing Center

Report approved by : Jong Seok Lee
Manager of Telecommunication Testing Center

This test results were applied only to the test methods required by the standard.

This laboratory is not accredited for the test results marked *.
The above Test Report is the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA. (HCT Accreditation No.: KT197)

Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2202-FC025	February 15, 2022	- First Approval Report

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1. EUT DESCRIPTION

Model	SM-A736B/DS	
Additional Model	SM-A736B	
EUT Type	Mobile phone	
Power Supply	DC 3.86 V	
Frequency Range	2 402 MHz ~ 2 480 MHz	
Max. RF Output Power (Normal)	Peak (For information only)	1 M Bit/s : 8.687 dBm (7.39 mW) 2 M Bit/s : 8.955 dBm (7.86 mW) 125 k Bit/s : 8.558 dBm (7.17 mW) 500 k Bit/s : 8.695 dBm (7.40 mW)
	Average	1M Bit/s : 8.49 dBm (7.06 mW) 2M Bit/s : 8.44 dBm (6.98 mW) 125 k Bit/s : 8.45 dBm (7.00 mW) 500 k Bit/s : 8.47 dBm (7.03 mW)
Max. RF Output Power (High Power)	Peak (For information only)	1 M Bit/s : 14.649 dBm (29.17 mW) 2 M Bit/s : 14.353 dBm (27.25 mW) 125 k Bit/s : 14.327 dBm (27.08 mW) 500 k Bit/s : 14.517 dBm (28.29 mW)
	Average	1M Bit/s : 13.53 dBm (22.54 mW) 2M Bit/s : 13.75 dBm (23.71 mW) 125 k Bit/s : 13.24 dBm (21.09 mW) 500 k Bit/s : 13.50 dBm (22.37 mW)
Modulation Type	GFSK	
Bluetooth Version	5.0	
Number of Channels	40 Channels	
Date(s) of Tests	December 13, 2021~ February 15, 2022	
Serial number	Radiated: 5c887a1540287ece Conducted: 5c887a1537287ece	

2. TEST METHODOLOGY

FCC KDB 558074 D01 15.247 Meas Guidance v05r02 dated April 02, 2019 entitled “guidance for compliance measurements on digital transmission system, frequency hopping spread spectrum system, and hybrid system devices and the measurement procedure described in ANSI C63.10(Version : 2013) ‘the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices’.

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. (Version :2013) 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

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 according to the requirements in Section 6.6.5 of ANSI C63.10. (Version: 2013)

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.

3. 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 C63.5 (Version : 2017).

4. 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. (Version :2014) and CISPR Publication 22.

Detailed description of test facility was submitted to the Commission and accepted dated April 02, 2018 (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 CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

5. 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."

(1) The antennas of this E.U.T are permanently attached.

(2) The E.U.T Complies with the requirement of §15.203

6. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2013.

All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence.

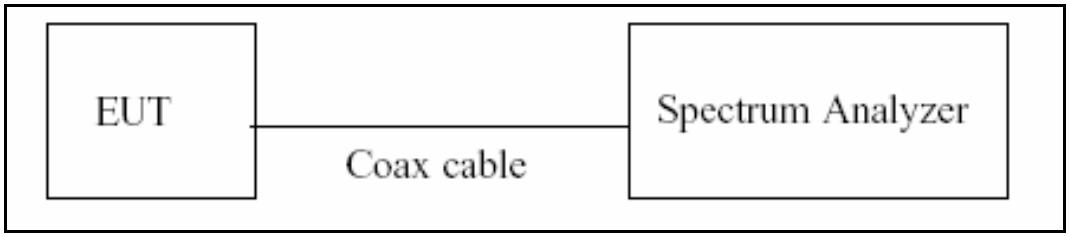
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82 (Confidence level about 95 %, k=2)
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40 (Confidence level about 95 %, k=2)
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80 (Confidence level about 95 %, k=2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70 (Confidence level about 95 %, k=2)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.05 (Confidence level about 95 %, k=2)

7. DESCRIPTION OF TESTS

7.1. Duty Cycle

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

We tested according to the zero-span measurement method, 6.0)b) in KDB 558074 v05r02.

The largest available value of RBW is 8 MHz and VBW is 50 MHz.

The zero-span method of measuring duty cycle shall not be used if T ≤ 6.25 microseconds. (50/6.25 = 8)

The zero-span method was used because all measured T data are > 6.25 microseconds and both RBW and VBW are > 50/*T*.

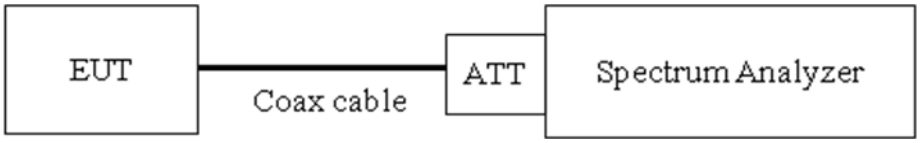
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz (≥ RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on}/ T_{total} and Duty Cycle Factor = 10log(1/Duty Cycle)

7.2. 6 dB Bandwidth

Limit

The minimum permissible 6 dB bandwidth is 500 kHz.

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

The Spectrum Analyzer is set to

(Procedure 8.2 in KDB 558074 v05r02, Procedure 11.8.1 in ANSI 63.10-2013)

1) RBW = 100 kHz
2) VBW ≥ 3 x RBW
3) Detector = Peak
4) Trace mode = max hold
5) Sweep = auto couple
6) Allow the trace to stabilize
7) We tested 6 dB bandwidth using the automatic bandwidth measurement capability of a spectrum analyzer. X dB is set 6 dB.

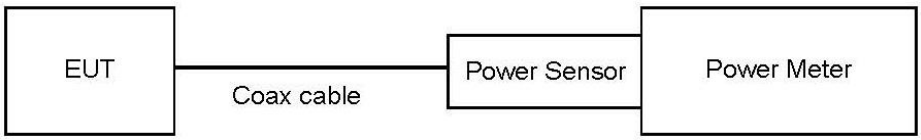
Note : We tested OBW using the automatic bandwidth measurement capability of a spectrum analyzer.

7.3. Output Power

Limit

The maximum permissible conducted output power is 1 Watt.

Test Configuration



Test Procedure

The transmitter output is connected to the Power Meter.

▪ Peak Power (Procedure 11.9.1.3 in ANSI 63.10-2013)

: Measure the peak power of the transmitter.

▪ Average Power (Procedure 8.3.2.3 in KDB 558074 v05r02, Procedure 11.9.2.3 in ANSI 63.10-2013)

1) Measure the duty cycle.
2) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
3) Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

Sample Calculation

▪ Conducted Output Power(Peak) = Measured Value + ATT loss + Cable loss

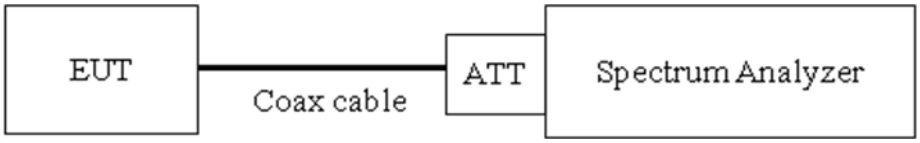
▪ Conducted Output Power(Average) = Measured Value + ATT loss + Cable loss + Duty Cycle Factor

7.4. Power Spectral Density

Limit

The transmitter power density average over 1-second interval shall not be greater than 8 dBm in any 3 kHz BW.

Test Configuration



Test Procedure

The transmitter output is connected to the Spectrum Analyzer.

We tested according to Procedure 8.4 in KDB 558074 v05r02, Procedure 11.10 in ANSI 63.10-2013.

The spectrum analyzer is set to :

1) Set analyzer center frequency to DTS channel center frequency.
2) Set span to at least 1.5 times the OBW.
3) RBW = 3 kHz ≤ RBW ≤ 100 kHz.
4) VBW ≥ 3 x RBW.
5) Sweep = auto couple
6) Detector = power averaging (rms) or sample detector (when rms not available).
7) Ensure that the number of measurement points in the sweep ≥ [2 ×span / RBW].
8) Employ trace averaging (rms) mode over a minimum of 100 traces
9) Use the peak marker function to determine the maximum amplitude level.
10) Use the peak marker function to determine the maximum amplitude level within the RBW.
    If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
11) if then duty factor shall be added to adjust the result if the duty cycle is less than 98 %

Sample Calculation

▪ Power Spectral Density = Measured Value + ATT loss + Cable loss

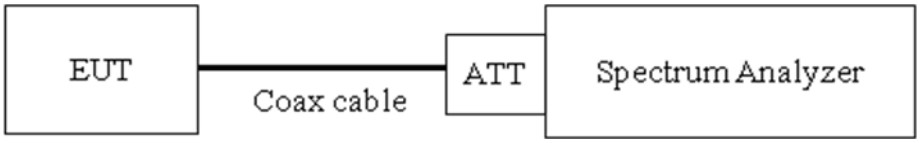
7.5. Conducted Band Edge(Out of Band Emissions) & Conducted Spurious Emissions

Limit

The maximum conducted (average) output power was used to demonstrate compliance, then the peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz.

[Conducted > 30 dBc]

Test Configuration



Test Procedure

The transmitter output is connected to the spectrum analyzer.

(Procedure 8.5 in KDB 558074 v05r02, Procedure 11.11 in ANSI 63.10-2013)

1) RBW = 100 kHz
2) VBW ≥ 3 x RBW
3) Set span to encompass the spectrum to be examined
4) Detector = Peak
5) Trace Mode = max hold
6) Sweep time = auto couple
7) Ensure that the number of measurement points ≥ 2 x Span/VBW
8) Allow trace to fully stabilize.
9) Use peak marker function to determine the maximum amplitude level.

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	10.04
100	10.07
200	10.12
300	10.17
400	10.20
500	10.21
600	10.21
700	10.23
800	10.24
900	10.26
1000	10.27
2000	10.40
2400	10.43
2500	10.45
3000	10.52
4000	10.60
5000	10.71
6000	10.80
7000	10.85
8000	10.85
9000	10.91
10000	10.97
11000	11.02
12000	11.10
13000	11.19
14000	11.16
15000	11.21
16000	11.22
17000	11.25
18000	11.30
19000	11.32
20000	11.36
21000	11.48
22000	11.55
23000	11.55
24000	11.59
25000	11.68

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

2. Factor = Attenuator loss(10 dB) + Cable loss(1ea)

3. EUT Cable Loss : 0.35 dB

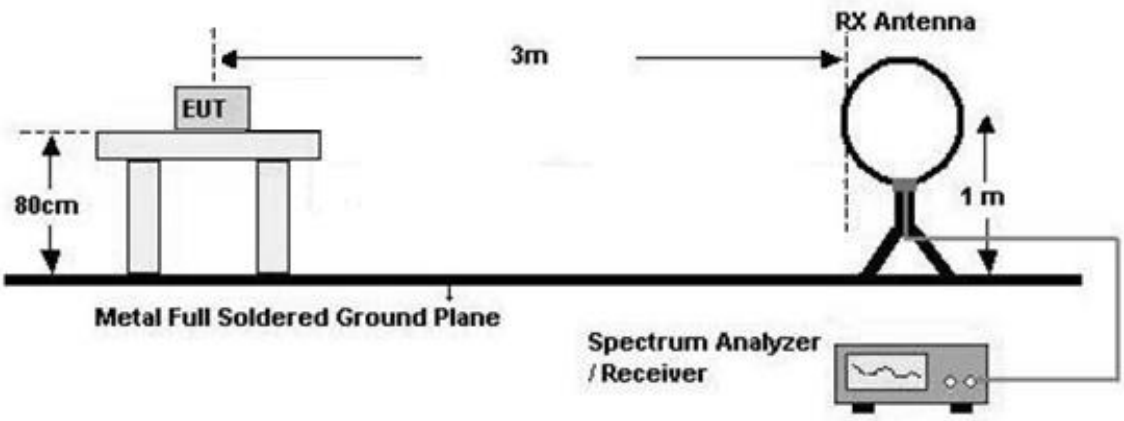
7.6. Radiated Test

Limit

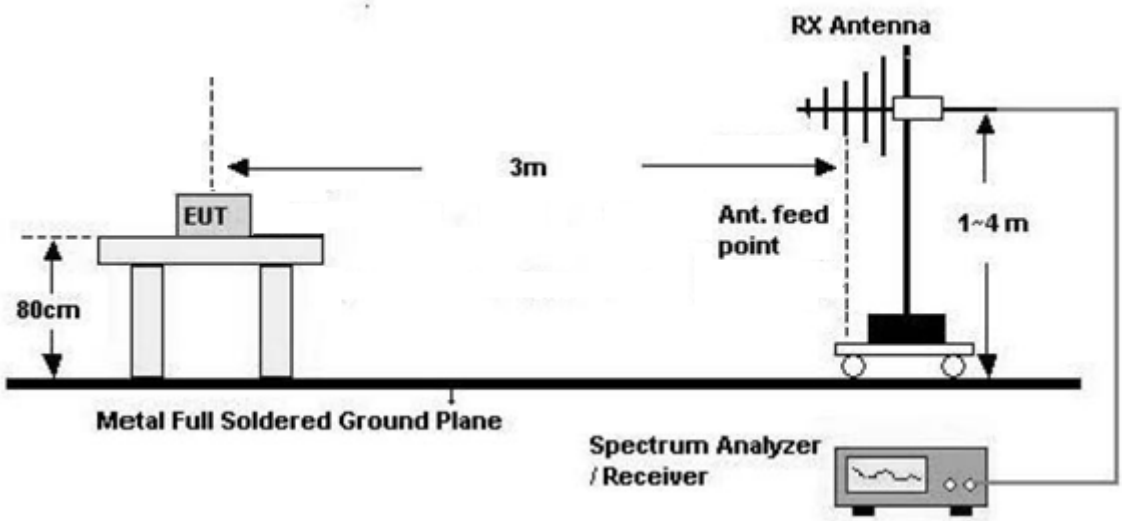
Frequency (MHz)	Field Strength (μV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

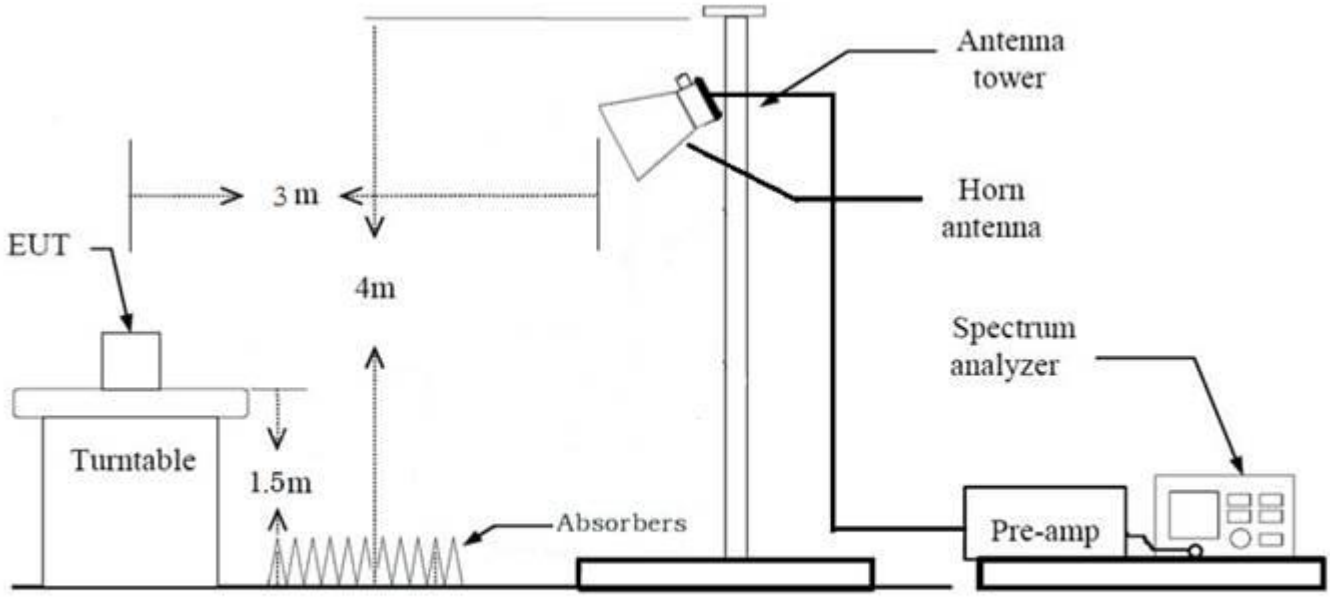
Below 30 MHz



30 MHz - 1 GHz



Above 1 GHz



Test Procedure of Radiated spurious emissions(Below 30 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 3 m from the EUT
3. The EUT is placed on a turntable, which is 0.8 m 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) = 40log(3 m/300 m) = - 80 dB
   Measurement Distance : 3 m
7. Distance Correction Factor(0.490 MHz – 30 MHz) = 40log(3 m/30 m) = - 40 dB
   Measurement Distance : 3 m
8. Spectrum Setting
   - Frequency Range = 9 kHz ~ 30 MHz
   - Detector = Peak
   - Trace = Maxhold
   - RBW = 9 kHz
   - VBW ≥ 3 x 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 0.8 m above ground plane.
3. The Hybrid antenna was placed at a location 3 m from the EUT, which is varied from 1m to 4 m 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 Setting
   (1) Measurement Type(Peak):
      - Measured Frequency Range : 30 MHz – 1 GHz
      - Detector = Peak
      - Trace = Maxhold
      - RBW = 100 kHz
      - VBW ≥ 3 x 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. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. Spectrum Setting (Method 8.6 in KDB 558074 v05r02, Procedure 11.12 in ANSI 63.10-2013)
   (1) Measurement Type(Peak):
   - Measured Frequency Range : 1 GHz – 25 GHz
   - Detector = Peak
   - Trace = Max hold
   - RBW = 1 MHz
   - VBW ≥ 3 x RBW

   (2) Measurement Type(Average):
   - Duty cycle < 98 %, duty cycle variations are less than ±2 %
   - Measured Frequency Range : 1 GHz – 25 GHz
   - Detector = RMS
   - Averaging type = power (*i.e.*, RMS)
   - RBW = 1 MHz
   - VBW ≥ 3 x RBW
   - Sweep time = auto.
   - Trace mode = average (at least 100 traces).
   - Correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle.

- Duty Cycle Factor (dB) : Please refer to the please refer to section 9.1

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 = 20log (test distance / specific distance) (dB)
11. Total (Measurement Type : Peak)
    = Peak Measured Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(A.G) + Distance Factor(D.F)

Total (Measurement Type : Average)

= Average Measured Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(A.G) + Distance Factor(D.F) + Duty Cycle Factor

Test Procedure of Radiated Restricted Band Edge

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. The unit was tested with its standard battery.
8. Spectrum Setting
   (1) Measurement Type(Peak):
   - Measured Frequency Range : 2310 MHz ~ 2390 MHz / 2483.5 MHz ~ 2500 MHz
   - Detector = Peak
   - Trace = Max hold
   - RBW = 1 MHz
   - VBW ≥ 3 x RBW

   (2) Measurement Type(Average):
   - Duty cycle < 98 %, duty cycle variations are less than ±2 %
   - Measured Frequency Range : 2310 MHz ~ 2390 MHz / 2483.5 MHz ~ 2500 MHz
   - Detector = RMS
   - Averaging type = power (*i.e.*, RMS)
   - RBW = 1 MHz
   - VBW ≥ 3 x RBW
   - Sweep time = auto.
   - Trace mode = average (at least 100 traces).
   - Correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle.
   - Duty Cycle Factor (dB) : Please refer to the please refer to section 9.1.
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 = 20log (test distance / specific distance) (dB)
11. Total(Measurement Type : Peak)

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

Total(Measurement Type : Average)

= Average Measured Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)
+ Duty Cycle Factor

7.7. 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 μH/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dBμV)	
	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.

Sample Calculation

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

7.8. Worst case configuration and mode

Radiated Test

1. All modes of operation were investigated and the worst case configuration results are reported.
   - Mode : Stand alone, Stand alone + External accessories(Earphone, Keyboard etc)
   - Worstcase : Stand alone
2. EUT Axis:
   - Radiated Spurious Emissions : X, Y, Z
   - Radiated Restricted Band Edge : Z
3. All packet length of operation were investigated and the test results are worst case in lowest packet length.
   (Worst case :1M Bit/s 37 Byte_High Power, 2M Bit/s 37 Byte_High Power)
   (125k, 500k, 1M Bit/s all have the same 1MHz Band width and only Worst result is attached.)
4. All datarate of operation were investigated and the worst case configuration results are reported.
   - Worst case : 1 M, 2 M
5. All position 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

. SM-A736B/DS, SM-A736B were tested and the worst case results are reported.
   - Worst case : SM-A736B/DS

Radiated test(RSDB)

The following tables show the worst case configurations determined during testing.

Description	Bluetooth Emission	5 GHz Emission
Antenna	WIFI/BT	WIFI/BT
Channel	78	138
Data Rate	1 Mbps	MCS 0
Mode	GFSK : DH5	802.11ax (HE80)

Note : Please refer to the SM-A736B/DS [UNII ax] & [BT] Test Report.

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(Earphone, etc) + Travel Adapter,
     Stand alone + Travel Adapter
   - Worstcase : Stand alone + Travel Adapter
2. SM-A736B/DS, SM-A736B were tested and the worst case results are reported.
   - Worstcase : SM-A736B/DS

Conducted test

1. The EUT was configured with packet length of highest power.
   - Worst case :1M Bit/s 37 Byte, 2M Bit/s 37 Byte
2. SM-A736B/DS, SM-A736B were tested and the worst case results are reported.
   - Worstcase : SM-A736B/DS

8. SUMMARY TEST OF RESULTS

Test Description	FCC Part Section(s)	Test Limit	Test Condition	Test Result
6 dB Bandwidth	§15.247(a)(2)	> 500 kHz	Conducted	PASS
Conducted Maximum Output Power	§15.247(b)(3)	< 1 Watt		PASS
Power Spectral Density	§15.247(e)	< 8 dBm / 3 kHz Band		PASS
Band Edge (Out of Band Emissions)	§15.247(d)	Conducted > 30 dBc		PASS
AC Power line Conducted Emissions	§15.207	cf. Section 7.7		PASS
Radiated Spurious Emissions	§15.247(d), 15.205, 15.209	cf. Section 7.6	Radiated	PASS
Radiated Restricted Band Edge	§15.247(d), 15.205, 15.209	cf. Section 7.6		PASS

9. TEST RESULT

9.1 DUTY CYCLE

[Normal Power]

Data rate (Bit/s)	Packet length (Byte)	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
1M	37	0.391	0.626	0.6255	2.04
	255	2.135	2.500	0.8540	0.69
2M	37	0.208	0.624	0.3327	4.78
	255	1.082	1.877	0.5762	2.39
125k	37	3.100	3.747	0.8274	0.82
	255	17.067	17.500	0.9752	0.11
500k	37	1.071	1.874	0.5714	2.43
	255	4.560	5.000	0.9120	0.40

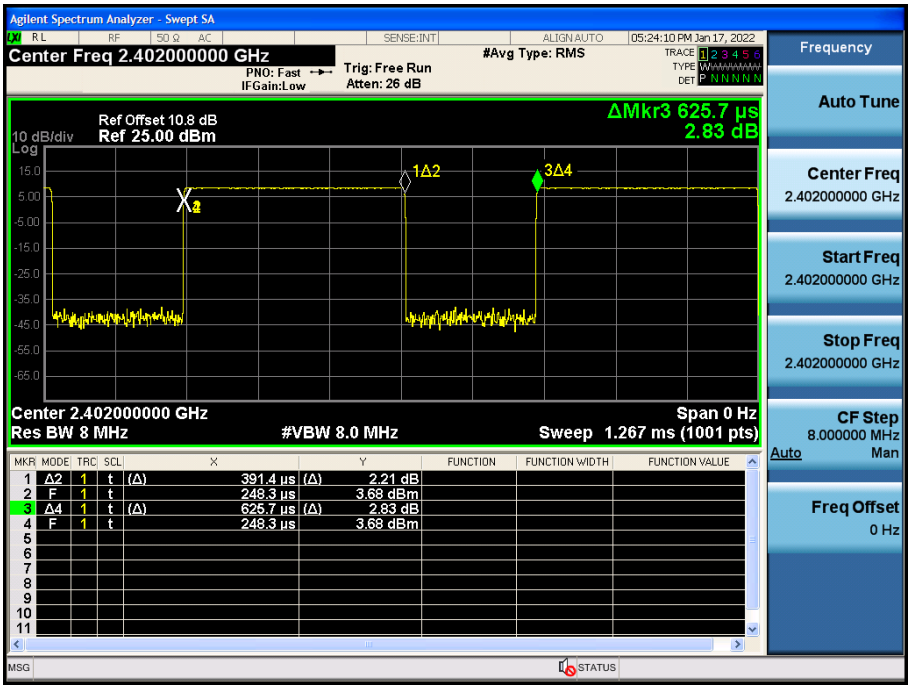
[High Power]

Data rate (Bit/s)	Packet length (Byte)	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
1M	37	0.391	0.624	0.6268	2.03
	255	2.135	2.500	0.8540	0.69
2M	37	0.208	0.626	0.3320	4.79
	255	1.078	1.874	0.5753	2.40
125k	37	3.107	3.753	0.8277	0.82
	255	17.067	17.500	0.9752	0.11
500k	37	1.068	1.876	0.5693	2.45
	255	4.560	5.000	0.9120	0.40

[Normal Power]

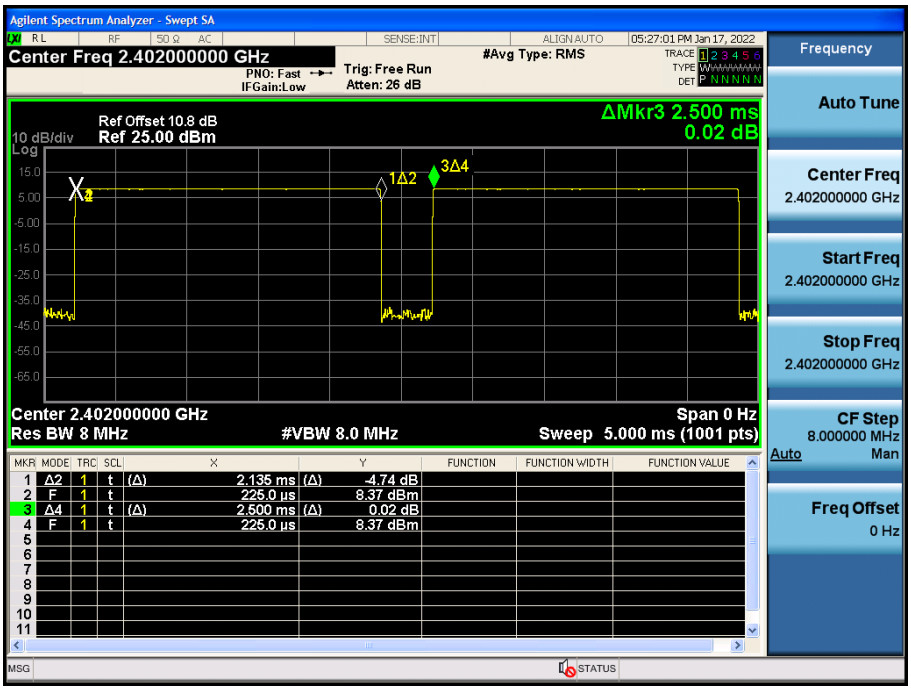
▣ 1 M Bit/s (37 Byte) Test Plots

Duty Cycle (Low-CH 0)



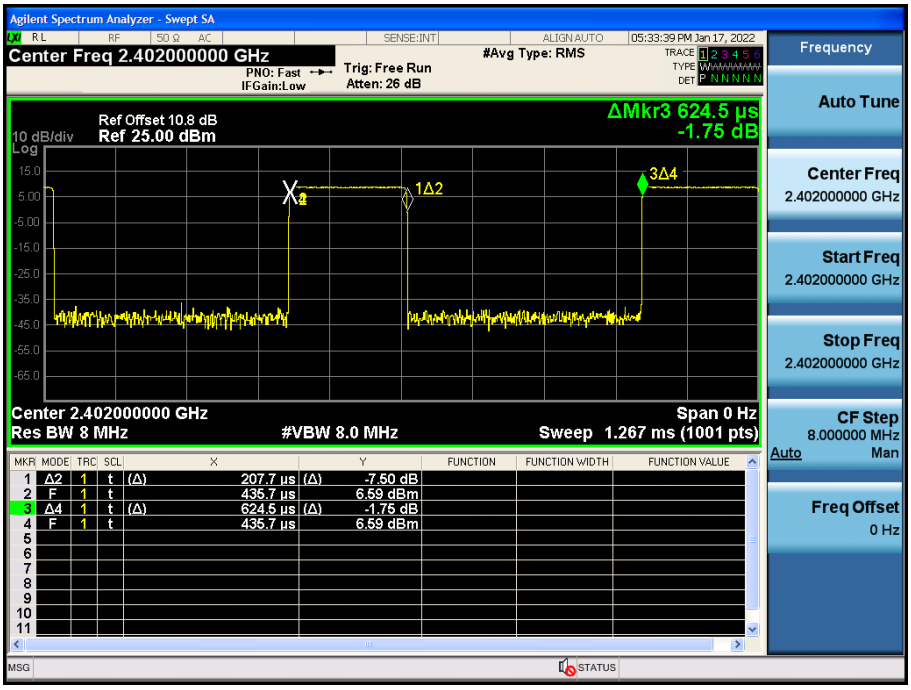
▣ 1 M Bit/s (255 Byte) Test Plots

Duty Cycle (Low-CH 0)



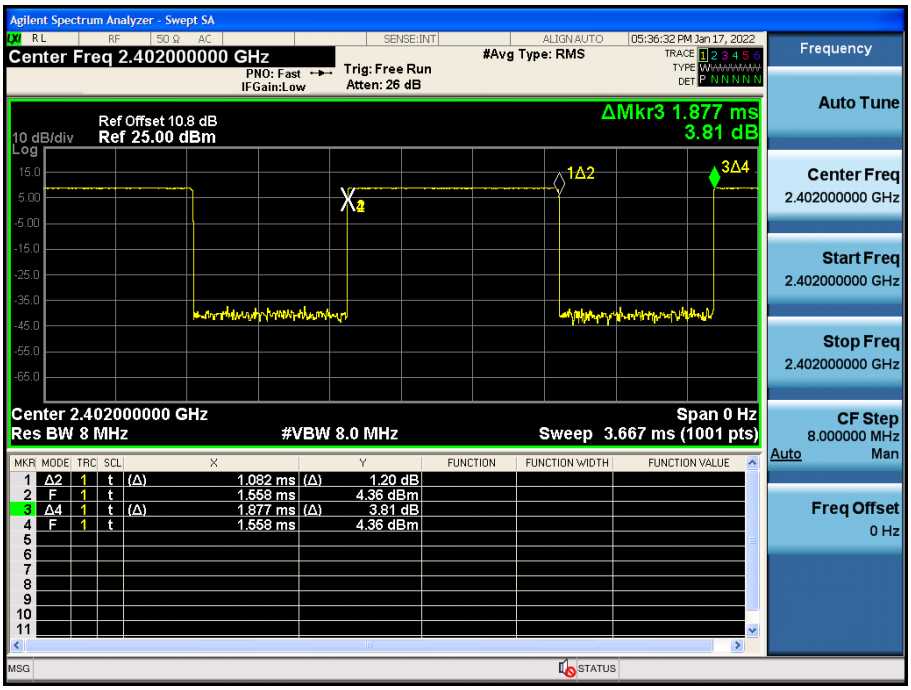
▣ 2 M Bit/s (37 Byte) Test Plots

Duty Cycle (Low-CH 0)



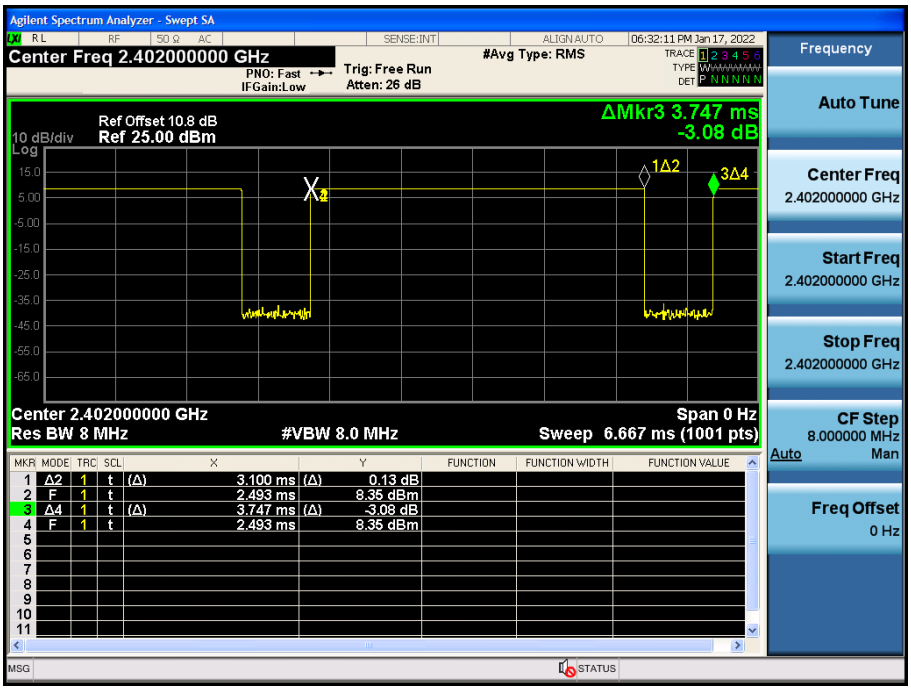
▣ 2 M Bit/s (255 Byte) Test Plots

Duty Cycle (Low-CH 0)



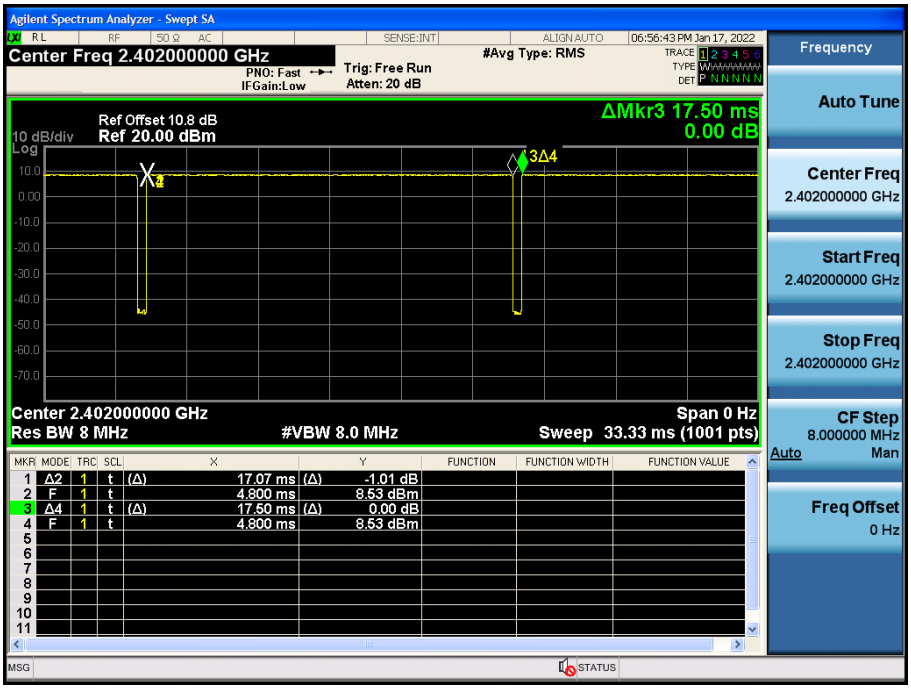
▣ 125 k Bit/s(37 Byte) Test Plots

Duty Cycle (Low-CH 0)



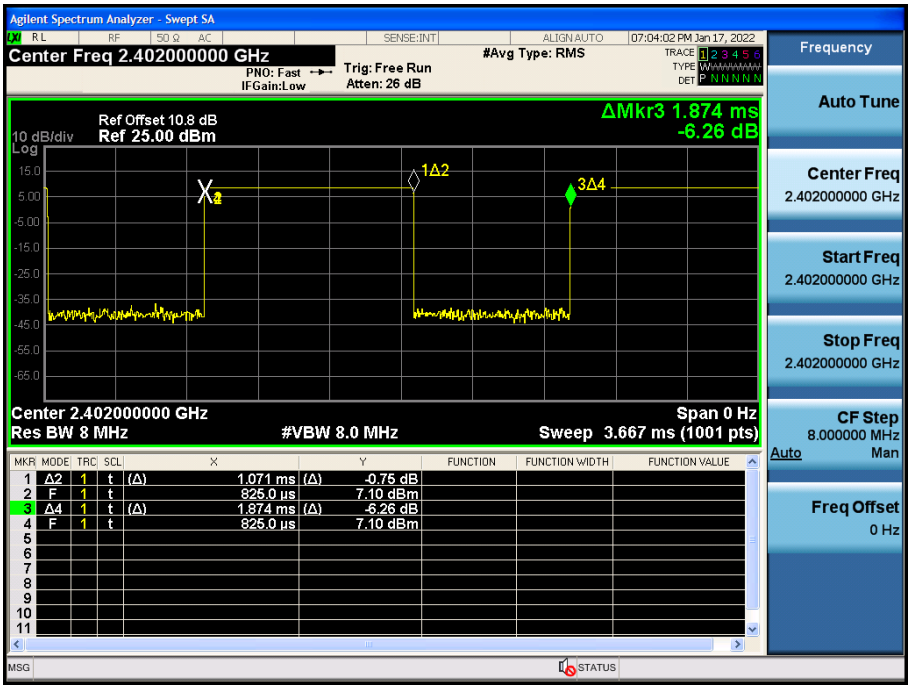
▣ 125 k Bit/s(255 Byte) Test Plots

Duty Cycle (Low-CH 0)



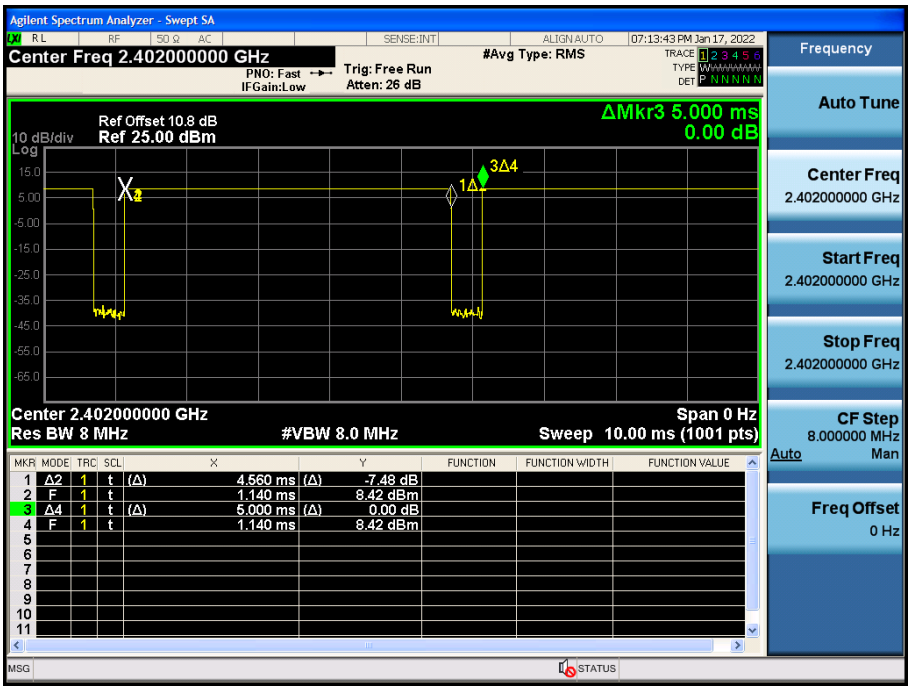
▣ 500 k Bit/s(37 Byte) Test Plots

Duty Cycle (Low-CH 0)



▣ 500 k Bit/s(255 Byte) Test Plots

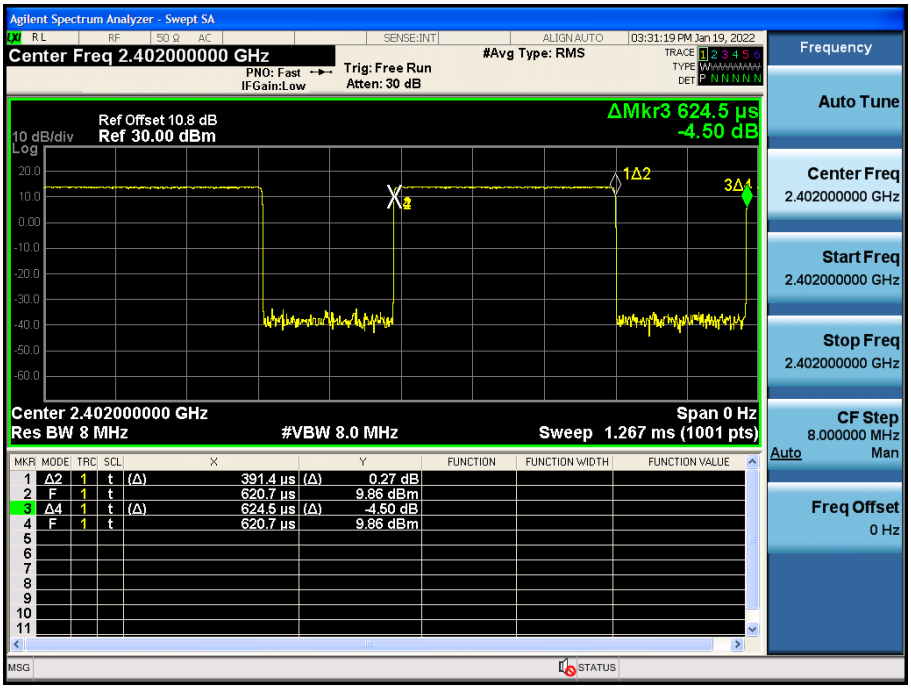
Duty Cycle (Low-CH 0)



[**High Power**]

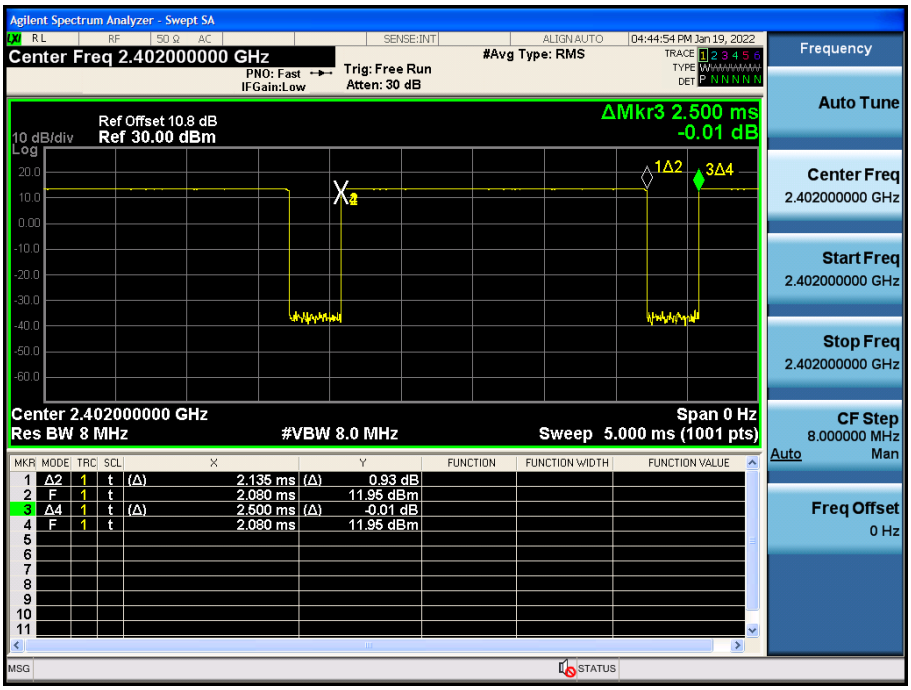
▣ 1 M Bit/s (37 Byte) Test Plots

Duty Cycle (Low-CH 0)



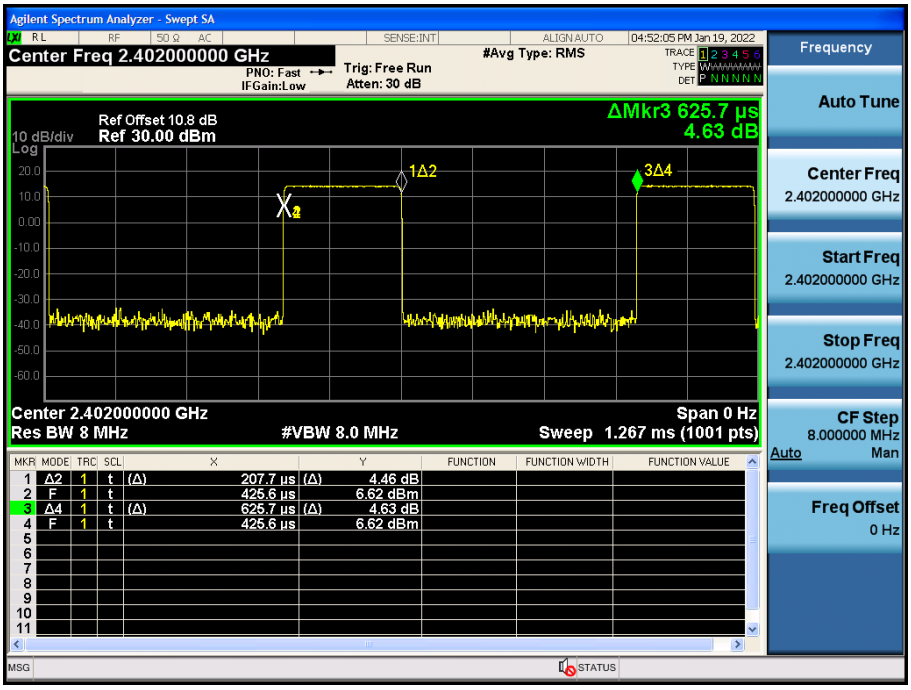
▣ 1 M Bit/s (255 Byte) Test Plots

Duty Cycle (Low-CH 0)



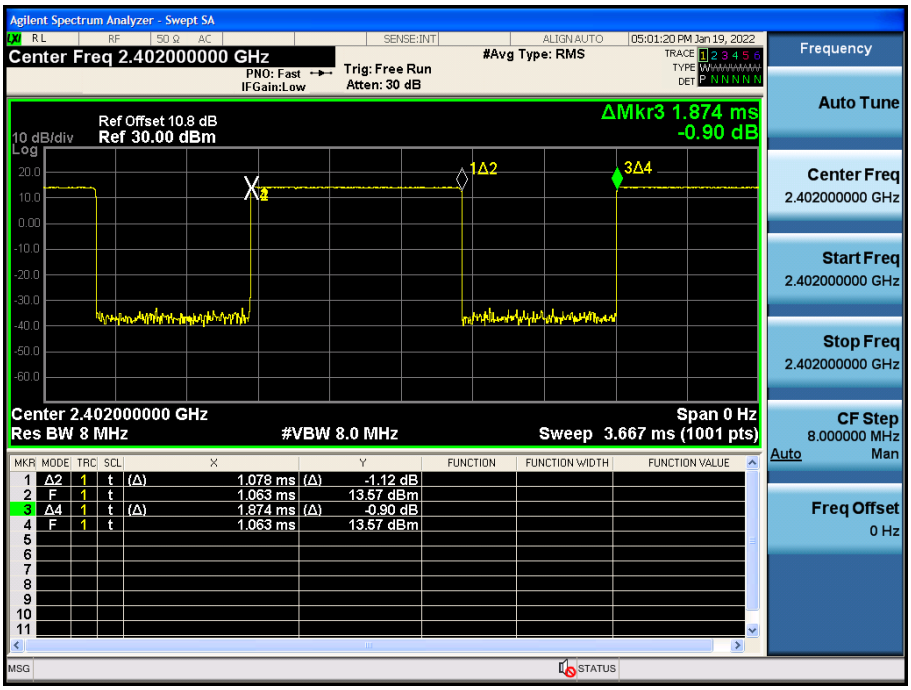
▣ 2 M Bit/s (37 Byte) Test Plots

Duty Cycle (Low-CH 0)



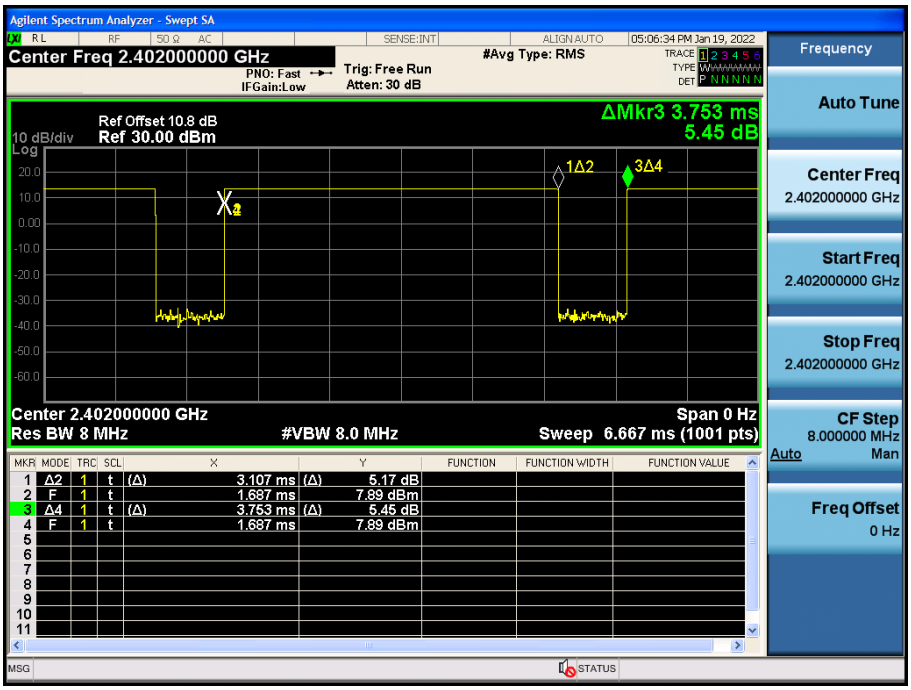
▣ 2 M Bit/s (255 Byte) Test Plots

Duty Cycle (Low-CH 0)



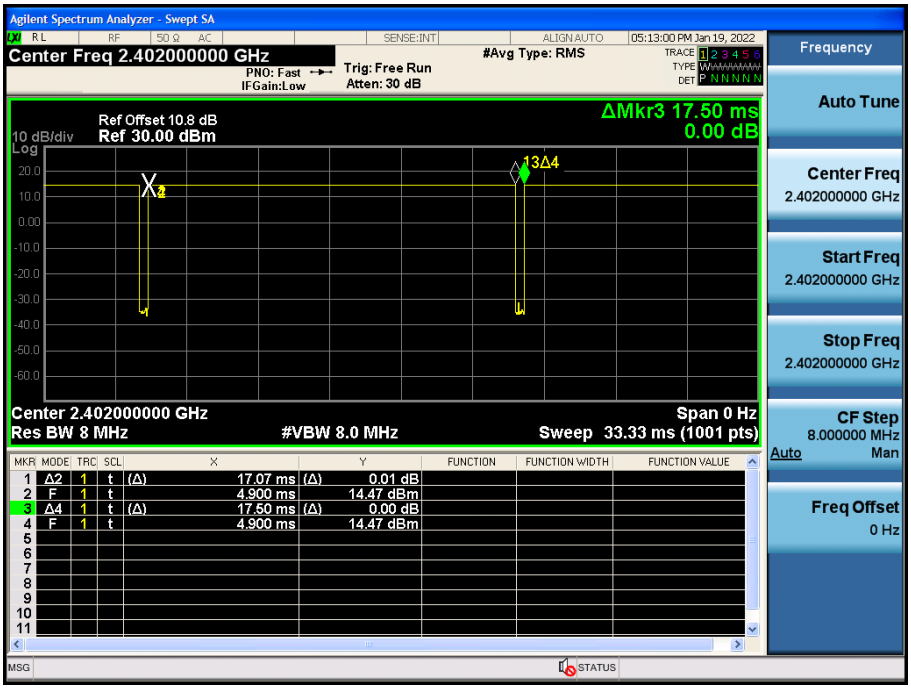
▣ 125 k Bit/s(37 Byte) Test Plots

Duty Cycle (Low-CH 0)



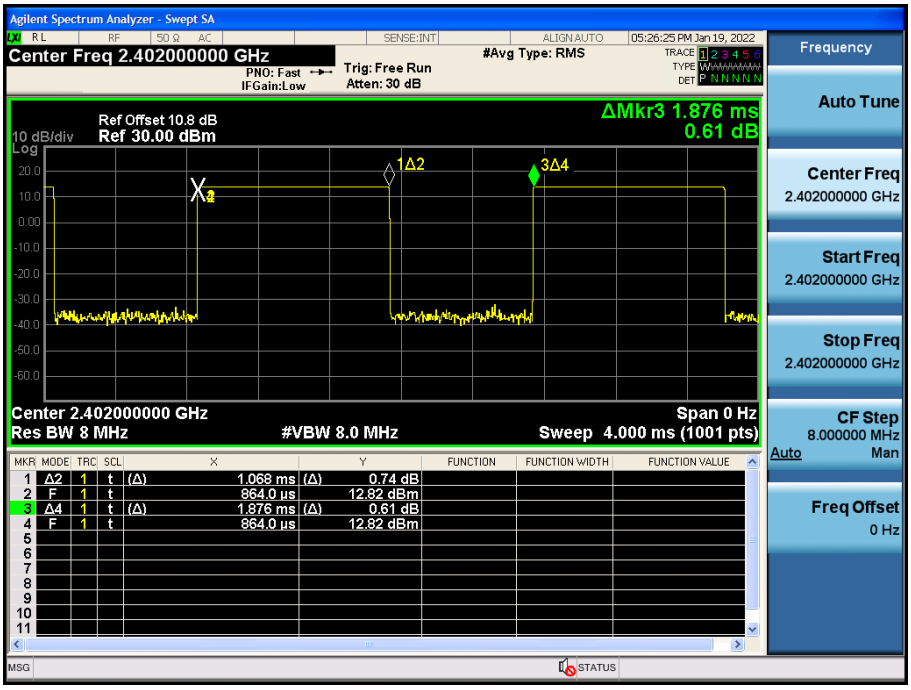
▣ 125 k Bit/s(255 Byte) Test Plots

Duty Cycle (Low-CH 0)



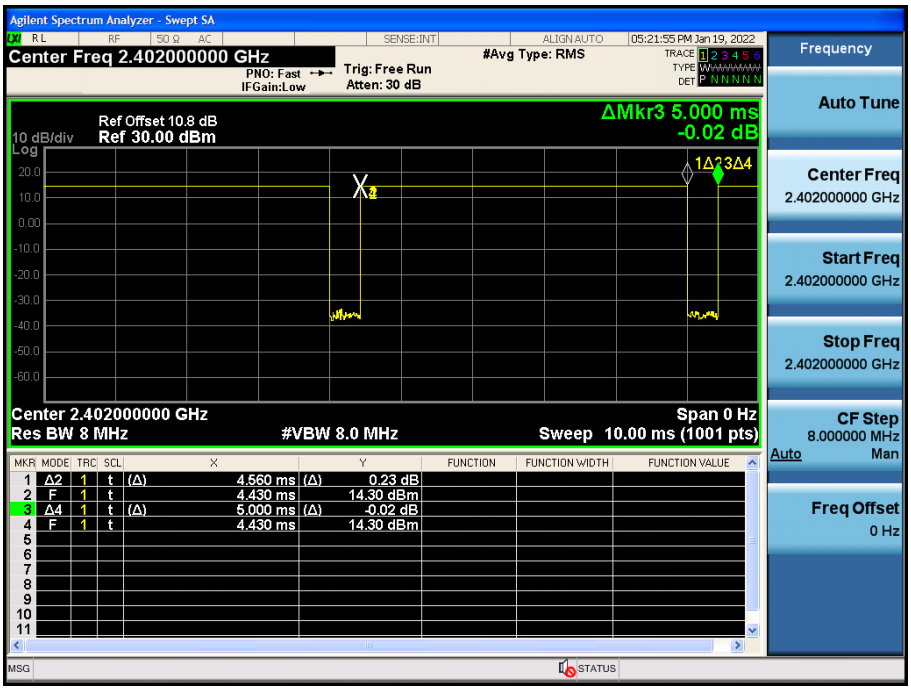
▣ 500 k Bit/s(37 Byte) Test Plots

Duty Cycle (Low-CH 0)



▣ 500 k Bit/s(255 Byte) Test Plots

Duty Cycle (Low-CH 0)



9.2 6 dB BANDWIDTH

[Normal Power]

Mode (Bit/s)	Channel	6 dB Bandwidth (kHz)	Limit (kHz)
1 M(37 Bytes)	0	669.6	> 500
	19	667.0	
	39	667.5	
1 M(255 Bytes)	0	668.3	> 500
	19	666.1	
	39	669.0	
2 M(37 Bytes)	0	1133	> 500
	19	1128	
	39	1132	
2 M(255 Bytes)	0	1143	> 500
	19	1143	
	39	1137	
125 k(37 Bytes)	0	627.9	> 500
	19	627.7	
	39	627.6	
125 k(255 Bytes)	0	628.5	> 500
	19	626.8	
	39	627.1	
500 k(37 Bytes)	0	663.3	> 500
	19	666.5	
	39	660.9	
500 k(255 Bytes)	0	666.6	> 500
	19	667.8	
	39	662.8	

[High Power]

Mode (Bit/s)	Channel	6 dB Bandwidth (kHz)	Limit (kHz)
1 M(37 Bytes)	0	664.9	> 500
	19	665.7	
	39	663.7	
1 M(255 Bytes)	0	657.6	> 500
	19	665.1	
	39	668.2	
2 M(37 Bytes)	0	1133	> 500
	19	1126	
	39	1132	
2 M(255 Bytes)	0	1138	> 500
	19	1143	
	39	1158	
125 k(37 Bytes)	0	628.7	> 500
	19	625.6	
	39	625.2	
125 k(255 Bytes)	0	623.6	> 500
	19	629.2	
	39	628.1	
500 k(37 Bytes)	0	662.7	> 500
	19	661.1	
	39	659.8	
500 k(255 Bytes)	0	671.5	> 500
	19	667.7	
	39	671.3	

Note:

Plot of worst case are only reported.

[Worst Case]

1M Bit/s : 255 Bytes (High Power)

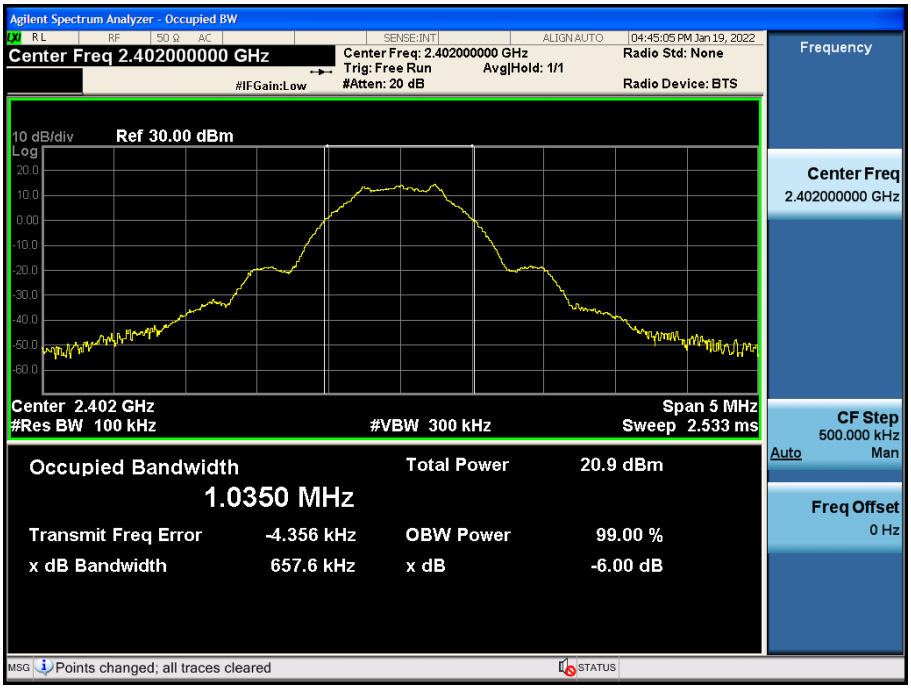
2M Bit/s : 37 Bytes (High Power)

125k Bit/s : 255 Bytes (High Power)

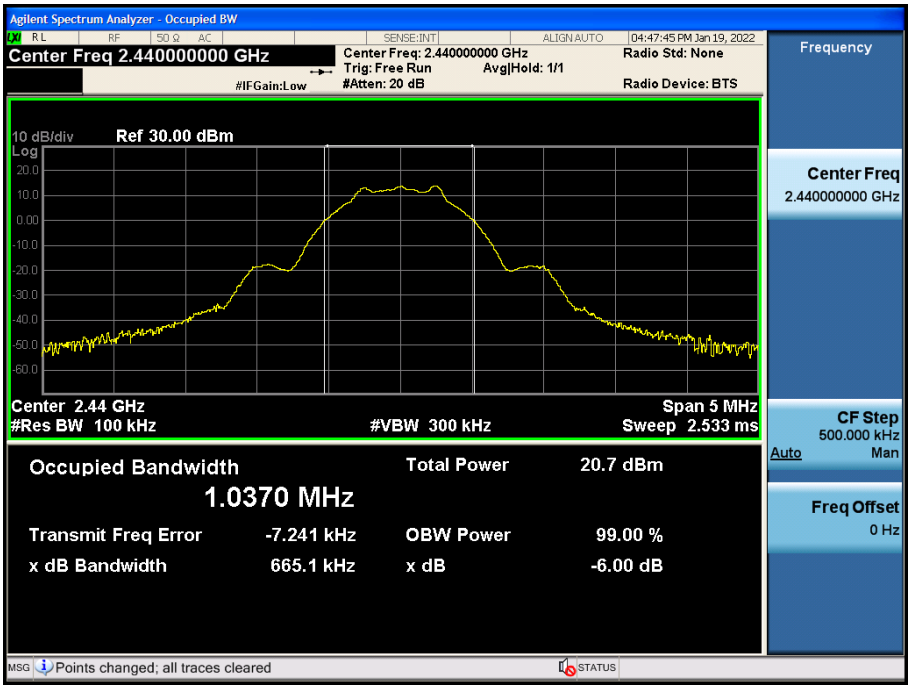
500k Bit/s : 37 Bytes (High Power)

▣ 1 M Bit/s (255 Byte) Test Plots_High Power

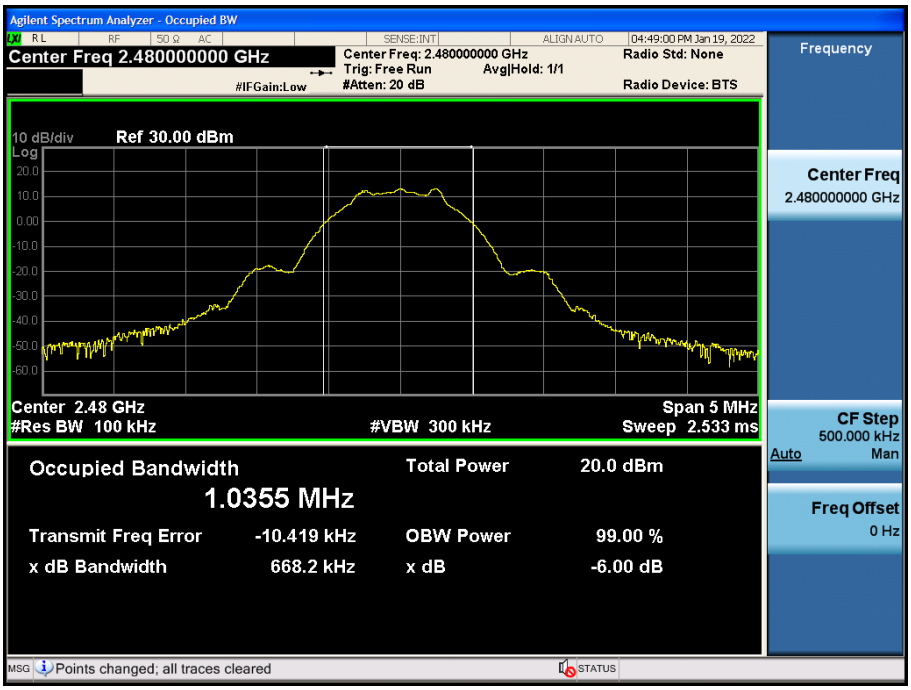
6 dB Bandwidth plot (Low-CH 0)



6 dB Bandwidth plot (Mid-CH 19)

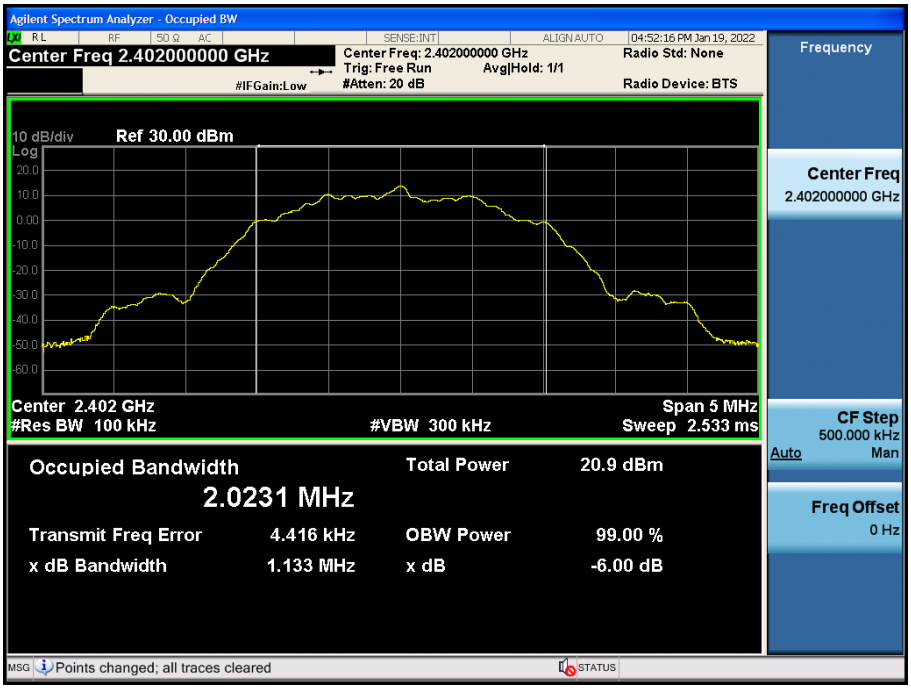


6 dB Bandwidth plot (High-CH 39)

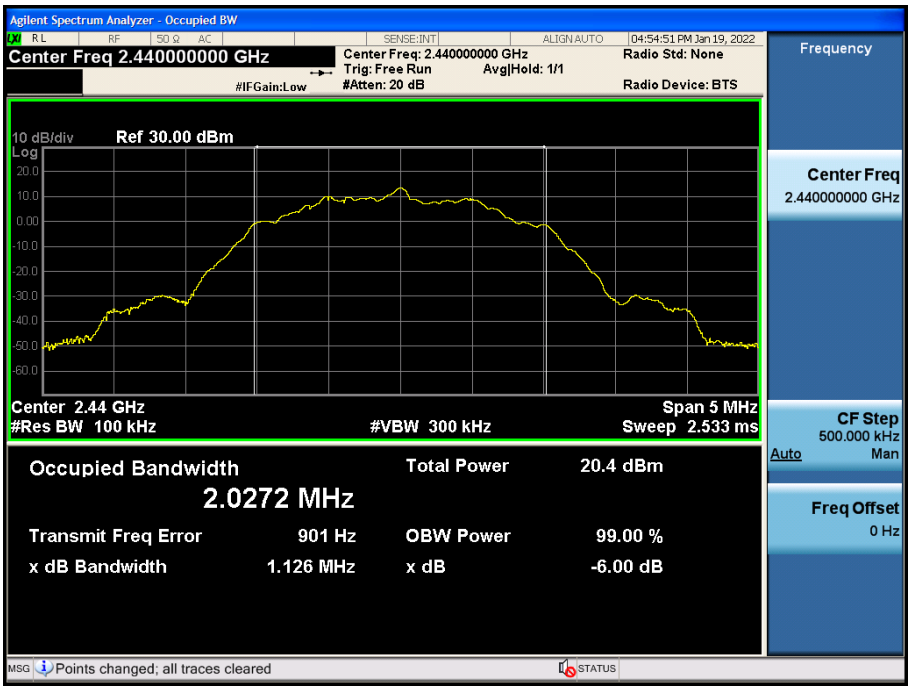


▣ 2 M Bit/s (37 Byte) Test Plots_High Power

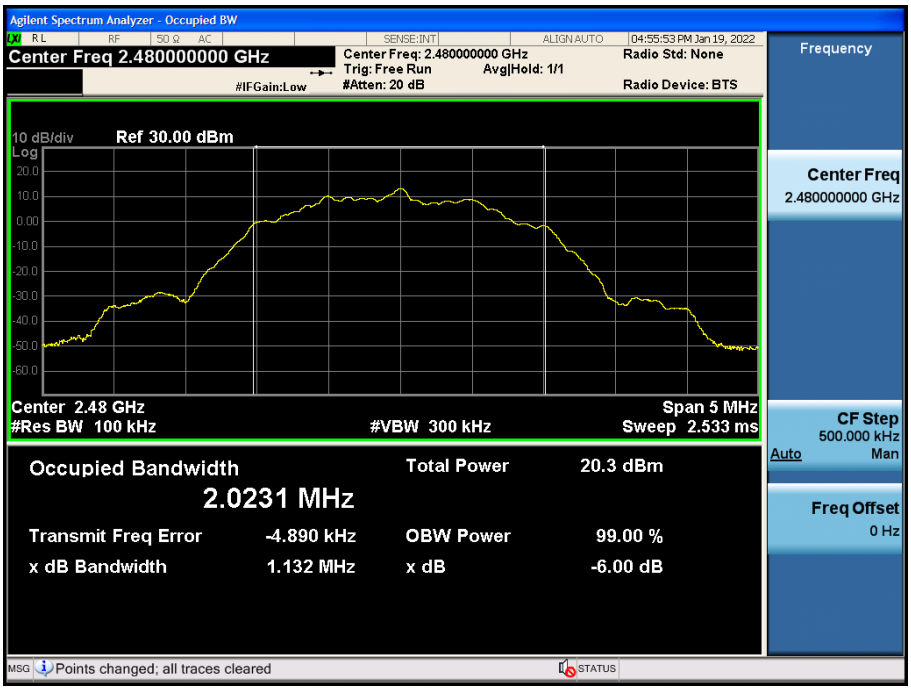
6 dB Bandwidth plot (Low-CH 0)



6 dB Bandwidth plot (Mid-CH 19)

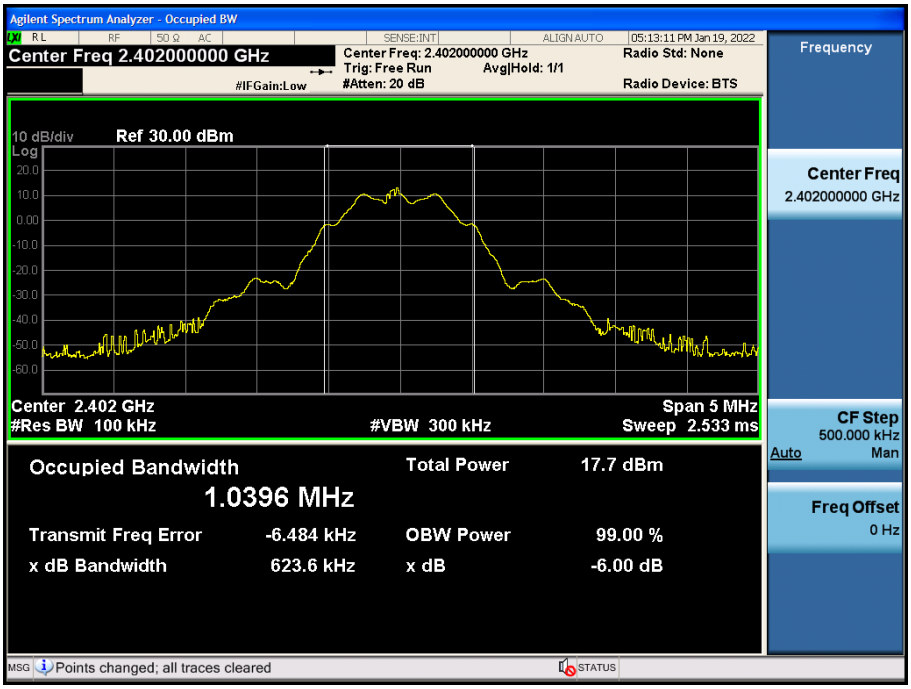


6 dB Bandwidth plot (High-CH 39)

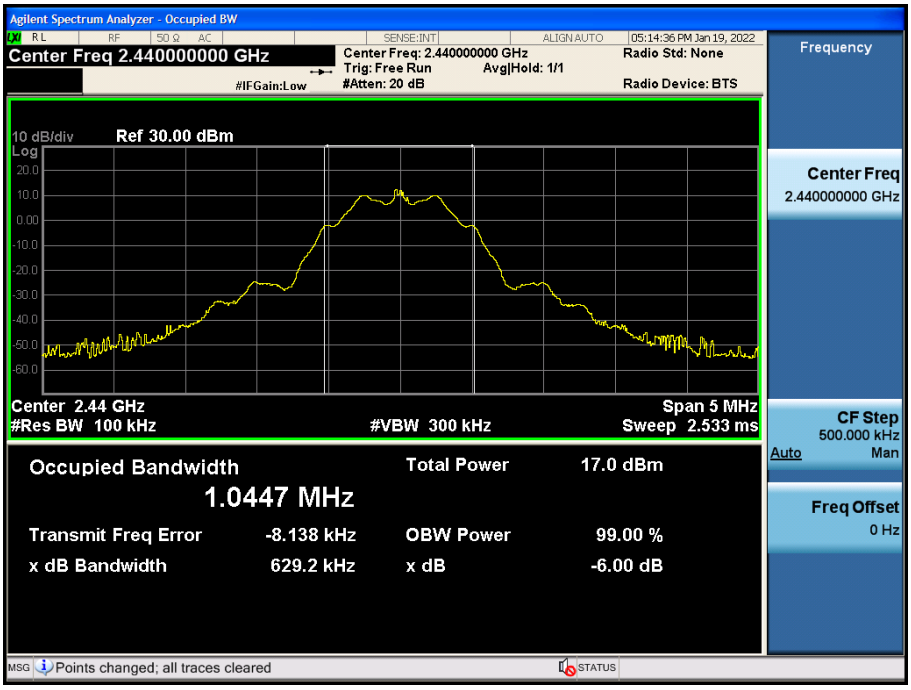


▣ 125 k Bit/s(255 Byte) Test Plots_High Power

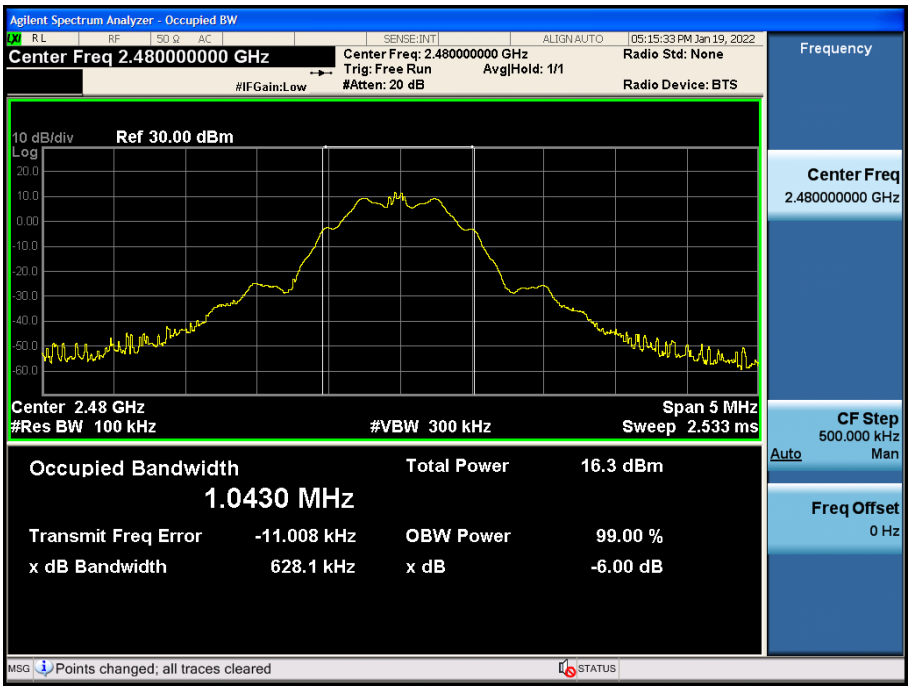
6 dB Bandwidth plot (Low-CH 0)



6 dB Bandwidth plot (Mid-CH 19)

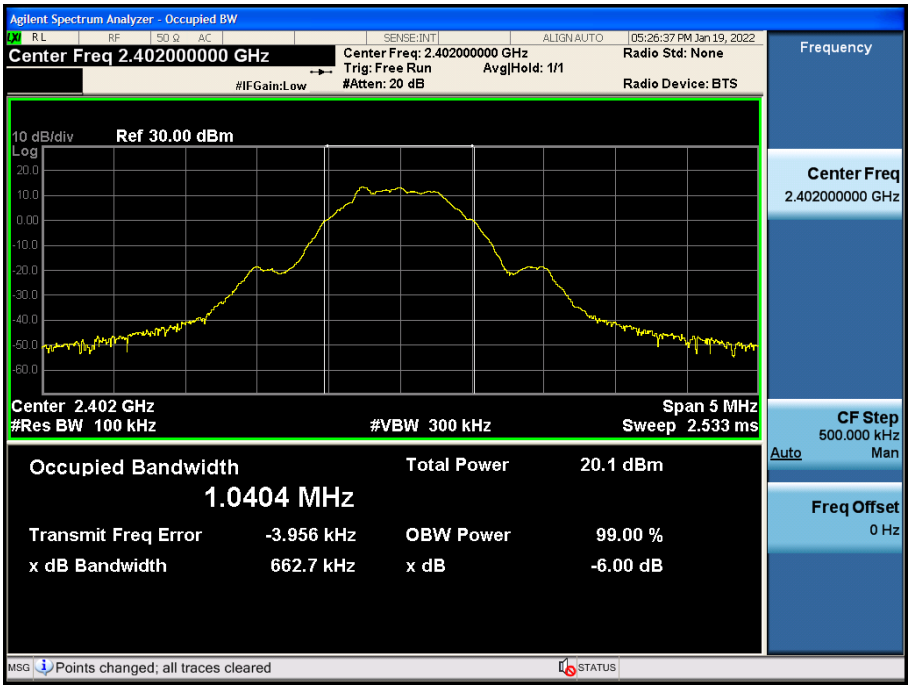


6 dB Bandwidth plot (High-CH 39)

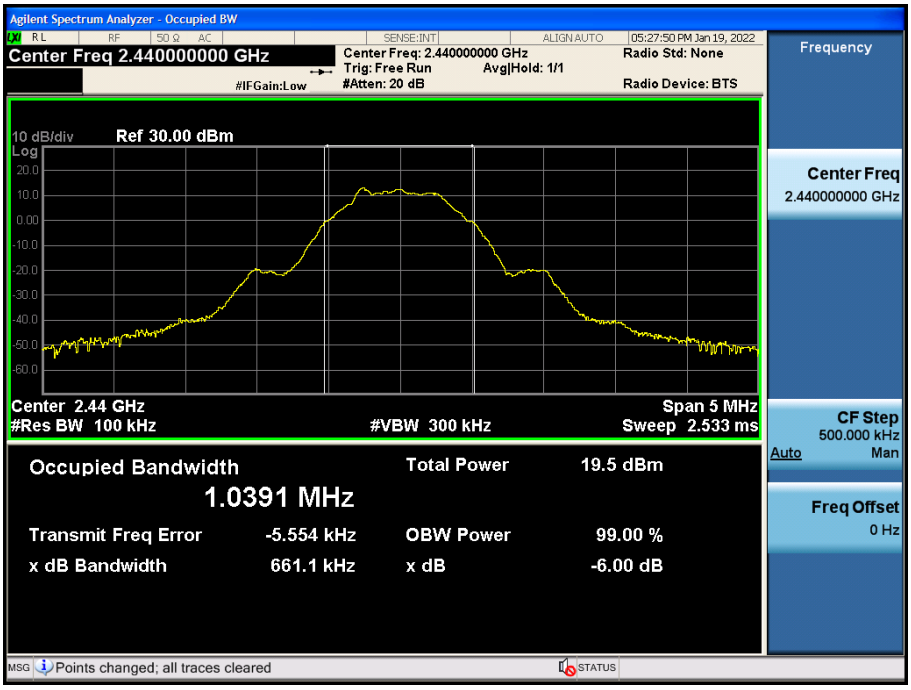


▣ 500 k Bit/s(37 Byte) Test Plots_High Power

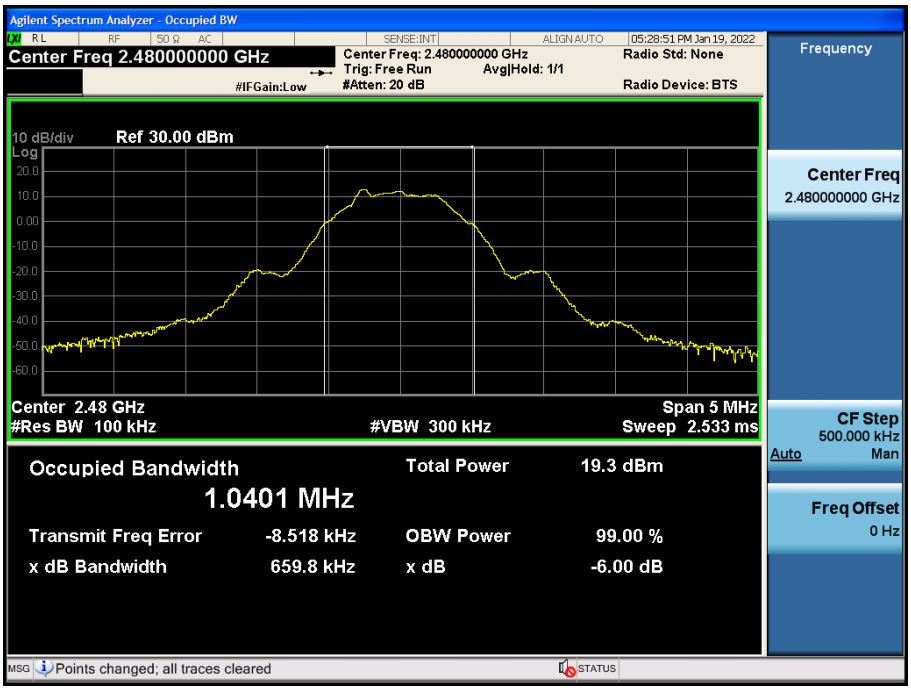
6 dB Bandwidth plot (Low-CH 0)



6 dB Bandwidth plot (Mid-CH 19)



6 dB Bandwidth plot (High-CH 39)



9.3 OUTPUT POWER

Peak Power (Normal Power)

Data rate (Bit/s)	Packet length (Byte)	LE Mode		Measured Power(dBm)	Limit (dBm)
		Frequency [MHz]	Channel		
1M	37	2402	0	8.687	30
		2440	19	8.441	
		2480	39	8.520	
	255	2402	0	8.678	
		2440	19	8.380	
		2480	39	8.416	
2M	37	2402	0	8.955	
		2440	19	8.730	
		2480	39	8.822	
	255	2402	0	8.886	
		2440	19	8.653	
		2480	39	8.712	
125k	37	2402	0	8.558	
		2440	19	8.303	
		2480	39	8.382	
	255	2402	0	8.541	
		2440	19	8.249	
		2480	39	8.292	
500k	37	2402	0	8.695	
		2440	19	8.442	
		2480	39	8.548	
	255	2402	0	8.619	
		2440	19	8.355	
		2480	39	8.388	

Note :

1. Power meter offset = Attenuator loss(10 dB) + Cable loss(1ea) + EUT Cable
2. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB.
   So, 10.80 dB is offset for 2.4 GHz Band.

Peak Power (High Power)

Data rate (Bit/s)	Packet length (Byte)	LE Mode		Measured Power(dBm)	Limit (dBm)
		Frequency [MHz]	Channel		
1M	37	2402	0	13.832	30
		2440	19	13.286	
		2480	39	12.979	
	255	2402	0	14.649	
		2440	19	14.131	
		2480	39	13.508	
2M	37	2402	0	14.353	
		2440	19	13.928	
		2480	39	13.762	
	255	2402	0	14.114	
		2440	19	13.584	
		2480	39	13.293	
125k	37	2402	0	13.501	
		2440	19	14.216	
		2480	39	13.584	
	255	2402	0	14.327	
		2440	19	13.847	
		2480	39	13.170	
500k	37	2402	0	13.857	
		2440	19	13.311	
		2480	39	13.020	
	255	2402	0	14.517	
		2440	19	14.014	
		2480	39	13.344	

Note :

1. Power meter offset = Attenuator loss(10 dB) + Cable loss(1ea) + EUT Cable
2. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB.
   So, 10.80 dB is offset for 2.4 GHz Band.

Average Power (Normal Power)

Data rate	Packet length	LE Mode		Measured Power (dBm)	Duty Cycle Factor	Result	Limit (dBm)
(Bit/s)	(Byte)	Frequency [MHz]	Channel		(dB)	(dBm)	
1M	37	2402	0	6.45	2.04	8.49	30
		2440	19	6.13	2.04	8.17	
		2480	39	6.30	2.04	8.34	
	255	2402	0	7.71	0.69	8.40	
		2440	19	7.44	0.69	8.13	
		2480	39	7.48	0.69	8.17	
2M	37	2402	0	3.66	4.78	8.44	
		2440	19	3.28	4.78	8.06	
		2480	39	3.49	4.78	8.27	
	255	2402	0	6.03	2.39	8.42	
		2440	19	5.73	2.39	8.12	
		2480	39	5.78	2.39	8.17	
125k	37	2402	0	7.63	0.82	8.45	
		2440	19	7.32	0.82	8.14	
		2480	39	7.30	0.82	8.12	
	255	2402	0	8.20	0.11	8.31	
		2440	19	7.96	0.11	8.07	
		2480	39	7.92	0.11	8.03	
500k	37	2402	0	6.04	2.43	8.47	
		2440	19	5.71	2.43	8.14	
		2480	39	5.78	2.43	8.21	
	255	2402	0	7.94	0.40	8.34	
		2440	19	7.66	0.40	8.06	
		2480	39	7.72	0.40	8.12	

Note :

1. Power meter offset = Attenuator loss(10 dB) + Cable loss(1ea) + EUT Cable
2. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB.
   So, 10.80 dB is offset for 2.4 GHz Band.

Average Power (High Power)

Data rate	Packet length	LE Mode		Measured Power (dBm)	Duty Cycle Factor	Result	Limit (dBm)
(Bit/s)	(Byte)	Frequency [MHz]	Channel		(dB)	(dBm)	
1M	37	2402	0	11.50	2.03	13.53	30
		2440	19	10.90	2.03	12.93	
		2480	39	10.56	2.03	12.59	
	255	2402	0	12.35	0.69	13.04	
		2440	19	11.71	0.69	12.40	
		2480	39	11.47	0.69	12.16	
2M	37	2402	0	8.96	4.79	13.75	
		2440	19	8.61	4.79	13.40	
		2480	39	8.35	4.79	13.14	
	255	2402	0	11.12	2.40	13.52	
		2440	19	10.35	2.40	12.75	
		2480	39	10.15	2.40	12.55	
125k	37	2402	0	12.42	0.82	13.24	
		2440	19	11.95	0.82	12.77	
		2480	39	12.38	0.82	13.20	
	255	2402	0	12.89	0.11	13.00	
		2440	19	12.35	0.11	12.46	
		2480	39	12.03	0.11	12.14	
500k	37	2402	0	11.05	2.45	13.50	
		2440	19	10.60	2.45	13.05	
		2480	39	10.30	2.45	12.75	
	255	2402	0	12.76	0.40	13.16	
		2440	19	12.11	0.40	12.51	
		2480	39	11.80	0.40	12.20	

Note :

1. Power meter offset = Attenuator loss(10 dB) + Cable loss(1ea) + EUT Cable
2. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB.
   So, 10.80 dB is offset for 2.4 GHz Band.

9.4 POWER SPECTRAL DENSITY

[Normal Power]

Frequency (MHz)	Channel No.	Mode (Bit/s)	Test Result			
			Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
2402	0	1 M 37 Bytes	-3.958	2.04	-1.920	8 dBm / 3 kHz
2440	19		-4.540	2.04	-2.502	
2480	39		-4.445	2.04	-2.407	
2402	0	1 M 255 Bytes	-4.304	0.69	-3.619	
2440	19		-4.582	0.69	-3.897	
2480	39		-4.145	0.69	-3.460	
2402	0	2 M 37 Bytes	-8.189	4.78	-3.409	
2440	19		-8.370	4.78	-3.590	
2480	39		-7.411	4.78	-2.631	
2402	0	2 M 255 Bytes	-7.754	2.39	-5.360	
2440	19		-8.180	2.39	-5.786	
2480	39		-7.598	2.39	-5.204	
2402	0	125 k 37 Bytes	1.438	0.82	2.261	
2440	19		1.229	0.82	2.052	
2480	39		1.045	0.82	1.868	
2402	0	125 k 255 Bytes	1.989	0.11	2.098	
2440	19		1.815	0.11	1.924	
2480	39		1.756	0.11	1.865	
2402	0	500 k 37 Bytes	-2.865	2.43	-0.435	
2440	19		-3.128	2.43	-0.698	
2480	39		-3.365	2.43	-0.935	
2402	0	500 k 255 Bytes	-4.108	0.40	-3.708	
2440	19		-3.438	0.40	-3.038	
2480	39		-4.333	0.40	-3.933	

[High Power]

Frequency (MHz)	Channel No.	Mode (Bit/s)	Test Result			
			Measured Power (dBm)	Duty Cycle Factor (dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	Limit (dBm)
2402	0	1 M 37 Bytes	1.042	2.03	3.071	8 dBm / 3 kHz
2440	19		0.583	2.03	2.612	
2480	39		0.227	2.03	2.256	
2402	0	1 M 255 Bytes	2.265	0.69	2.950	
2440	19		1.724	0.69	2.409	
2480	39		0.644	0.69	1.329	
2402	0	2 M 37 Bytes	-2.336	4.79	2.453	
2440	19		-3.764	4.79	1.025	
2480	39		-3.395	4.79	1.394	
2402	0	2 M 255 Bytes	-2.708	2.40	-0.307	
2440	19		-2.245	2.40	0.156	
2480	39		-3.879	2.40	-1.478	
2402	0	125 k 37 Bytes	6.364	0.82	7.185	
2440	19		5.656	0.82	6.477	
2480	39		6.325	0.82	7.146	
2402	0	125 k 255 Bytes	6.720	0.11	6.829	
2440	19		7.375	0.11	7.484	
2480	39		6.674	0.11	6.783	
2402	0	500 k 37 Bytes	0.497	2.45	2.944	
2440	19		1.647	2.45	4.094	
2480	39		1.895	2.45	4.342	
2402	0	500 k 255 Bytes	2.045	0.40	2.445	
2440	19		1.717	0.40	2.117	
2480	39		0.785	0.40	1.185	

Note :

1. Spectrum measured Value not plot data.
   The PSD results in plot is already including the actual values of loss for the attenuator and cable combination.
2. Spectrum offset = Attenuator loss(10 dB) + Cable loss(1ea) + EUT Cable
3. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB.
   So, 10.80 dB is offset for 2.4 GHz Band.
4. Plot of worst case are only reported.
   [Worst Case] : 125 k Bit/s (255 Byte) High Power

▣ 125k Bit/s (255 Byte) Test Plots_High Power

Power Spectral Density (Low-CH 0)

Power Spectral Density (Mid-CH 19)

Power Spectral Density (High-CH 39)

9.5 BAND EDGE/ CONDUCTED SPURIOUS EMISSIONS

Test Result : please refer to the plot below.
In order to simplify the report, attached plots were only the worst case channel and data rate.

[BAND EDGE]

[Normal Power]

Frequency (MHz)	Mode	Channel No.	Position	Test Result	
				Measured Level (dB)	Limit (dBc)
2402	1M Bit/s 37 Byte	0	Lower	57.221	30
2480		39	Upper	62.833	30
2402	1M Bit/s 255 Byte	0	Lower	58.604	30
2480		39	Upper	61.764	30
2402	2M Bit/s 37 Byte	0	Lower	48.405	30
2480		39	Upper	63.142	30
2402	2M Bit/s 255 Byte	0	Lower	47.855	30
2480		39	Upper	61.794	30
2402	125k Bit/s 37 Byte	0	Lower	57.980	30
2480		39	Upper	67.070	30
2402	125k Bit/s 255 Byte	0	Lower	60.603	30
2480		39	Upper	65.822	30
2402	500k Bit/s 37 Byte	0	Lower	59.934	30
2480		39	Upper	61.685	30
2402	500k Bit/s 255 Byte	0	Lower	60.371	30
2480		39	Upper	62.374	30

[High Power]

Frequency (MHz)	Mode	Channel No.	Position	Test Result	
				Measured Level (dB)	Limit (dBc)
2402	1M Bit/s 37 Byte	0	Lower	59.184	30
2480		39	Upper	63.103	30
2402	1M Bit/s 255 Byte	0	Lower	59.604	30
2480		39	Upper	63.850	30
2402	2M Bit/s 37 Byte	0	Lower	48.548	30
2480		39	Upper	63.437	30
2402	2M Bit/s 255 Byte	0	Lower	48.420	30
2480		39	Upper	62.859	30
2402	125k Bit/s 37 Byte	0	Lower	59.727	30
2480		39	Upper	62.690	30
2402	125k Bit/s 255 Byte	0	Lower	61.394	30
2480		39	Upper	60.376	30
2402	500k Bit/s 37 Byte	0	Lower	59.639	30
2480		39	Upper	63.267	30
2402	500k Bit/s 255 Byte	0	Lower	59.703	30
2480		39	Upper	63.018	30

Note :

1. Worst case test Plot
   (1) Lower 2M Bit/s (255 Byte)_Normal Power
   (2) Upper 2M Bit/s (255 Byte)_Normal Power

[CONDUCTED SPURIOUS EMISSIONS]

Note :

1. Worst case test Plot
   (1) 1M Bit/s (37 Byte)_High Power

▣ 2 M Bit/s (255 Byte) Test Plots –BandEdge(Normal Power)

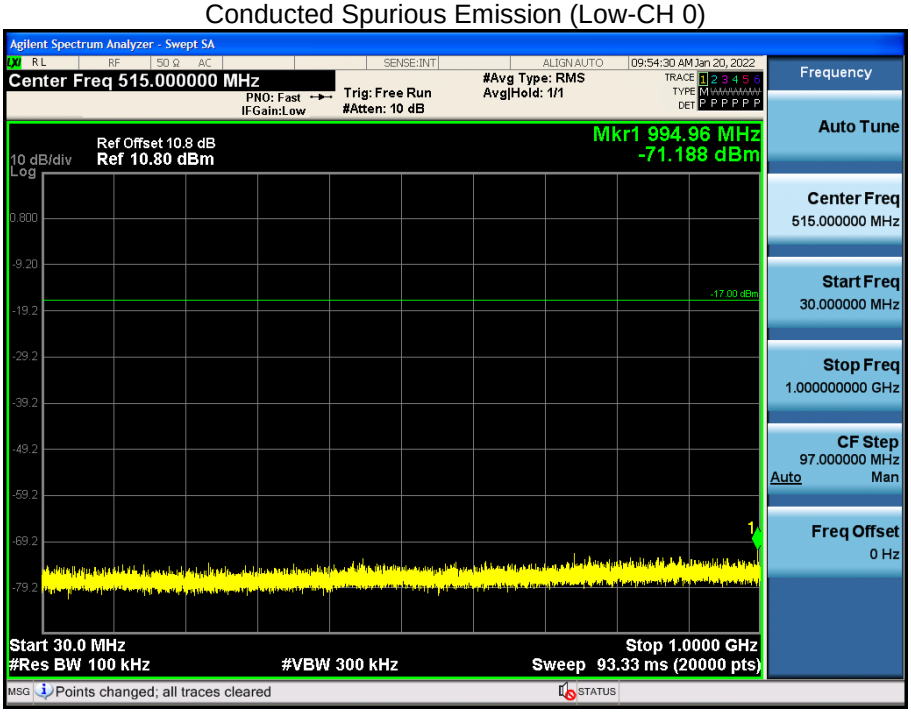
Low-CH 0

High-CH 39

▣ 1 M Bit/s (37 Byte) Test Plots -Conducted Spurious Emission(High Power)

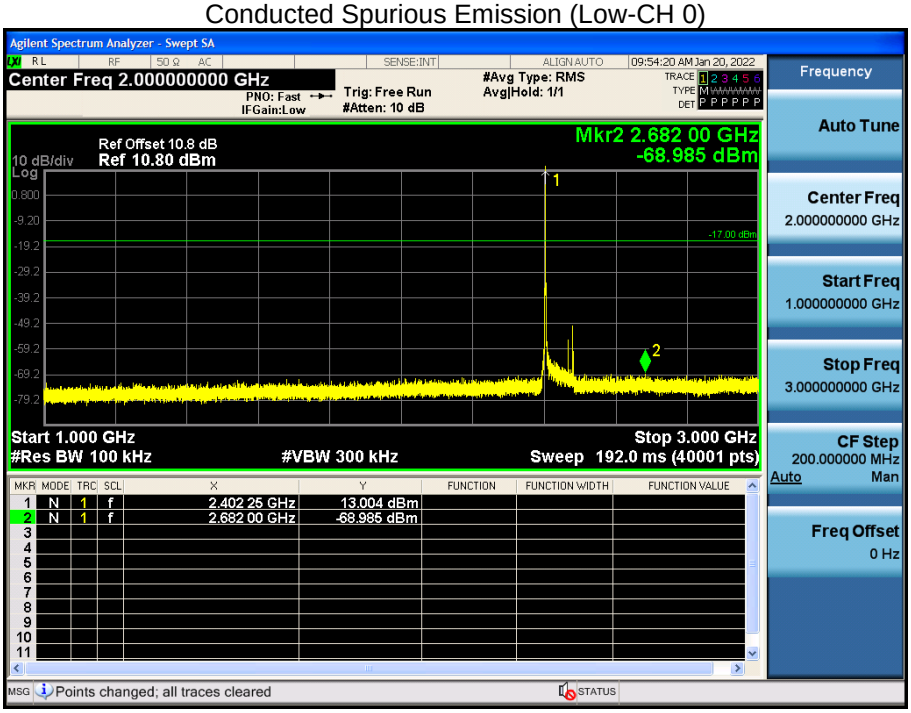
30 MHz ~ 1 GHz

Conducted Spurious Emission (Low-CH 0)



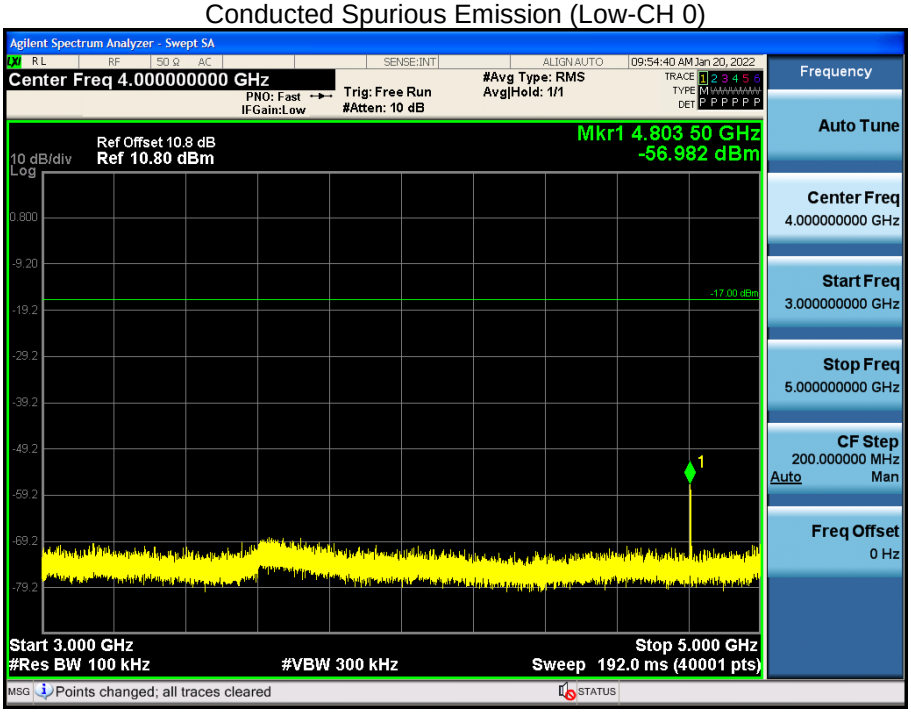
1 GHz ~ 3 GHz

Conducted Spurious Emission (Low-CH 0)



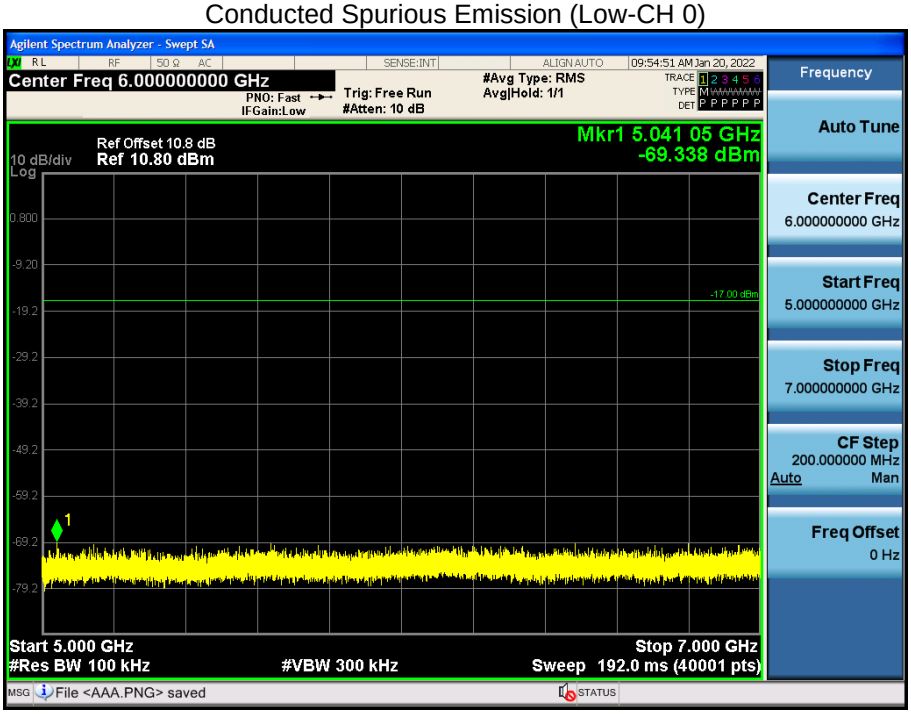
3 GHz ~ 5 GHz

Conducted Spurious Emission (Low-CH 0)



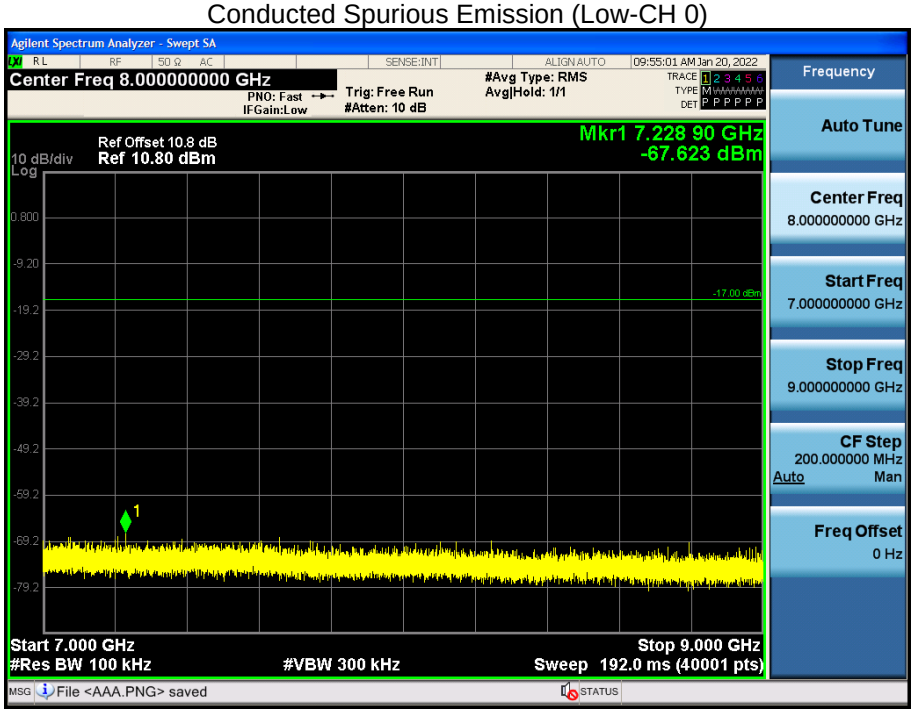
5 GHz ~ 7 GHz

Conducted Spurious Emission (Low-CH 0)



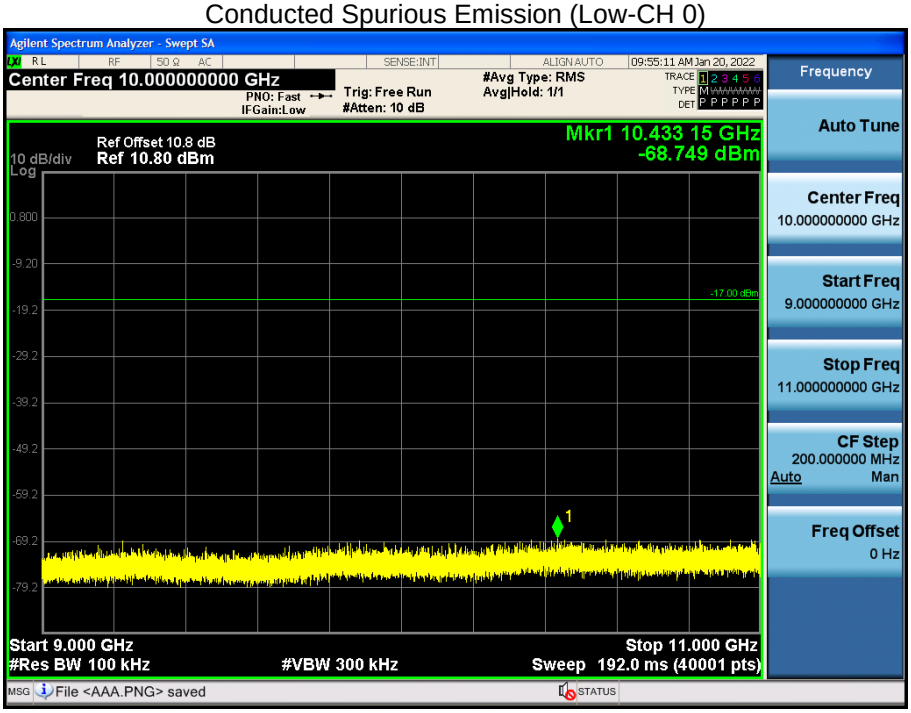
7 GHz ~ 9 GHz

Conducted Spurious Emission (Low-CH 0)



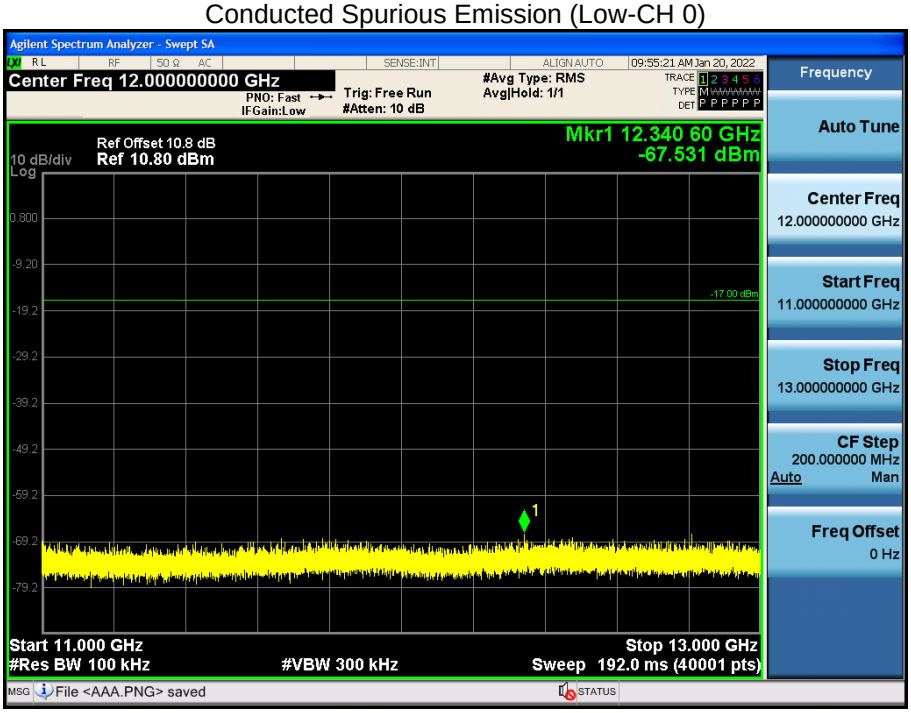
9 GHz ~ 11 GHz

Conducted Spurious Emission (Low-CH 0)



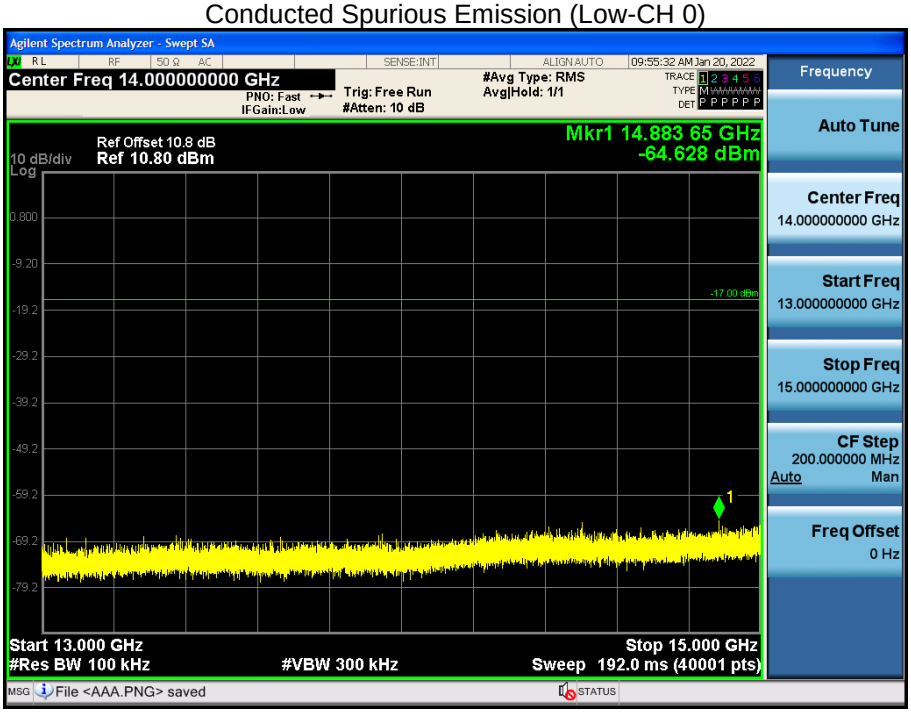
11 GHz ~ 13 GHz

Conducted Spurious Emission (Low-CH 0)



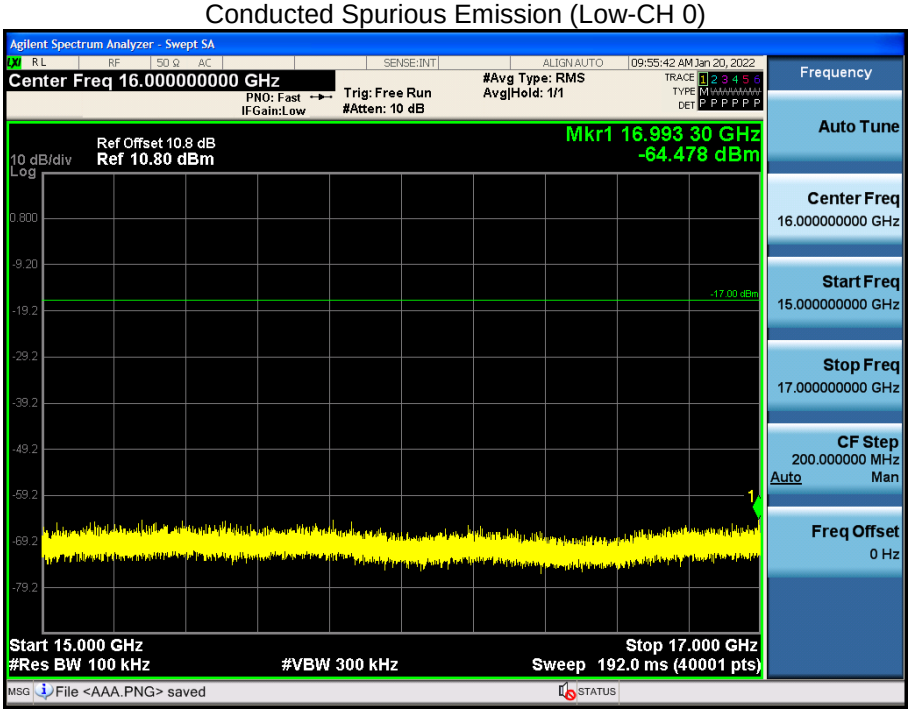
13 GHz ~ 15 GHz

Conducted Spurious Emission (Low-CH 0)



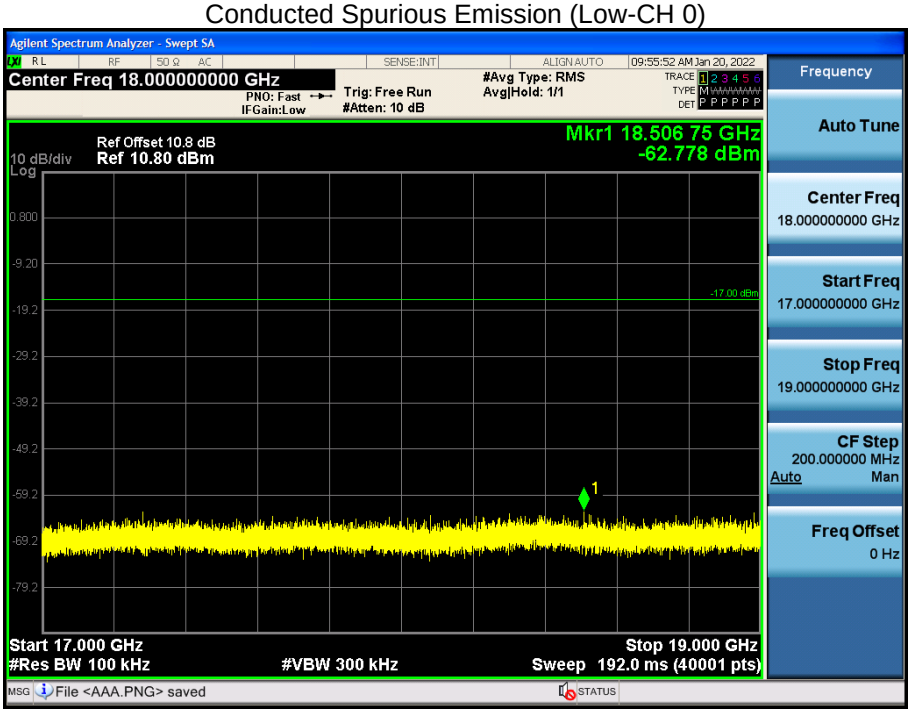
15 GHz ~ 17 GHz

Conducted Spurious Emission (Low-CH 0)



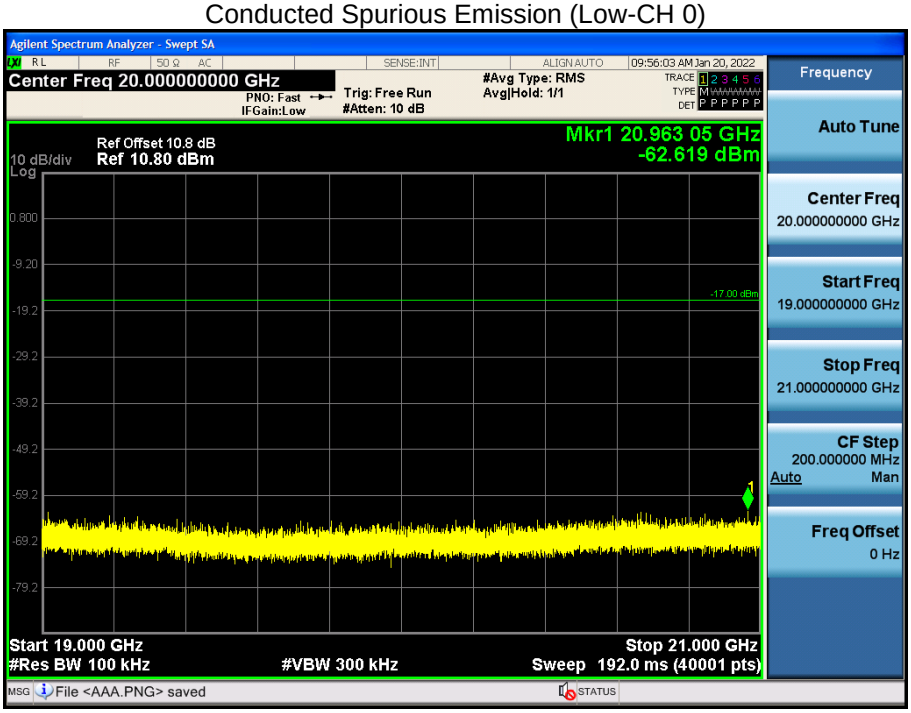
17 GHz ~ 19 GHz

Conducted Spurious Emission (Low-CH 0)



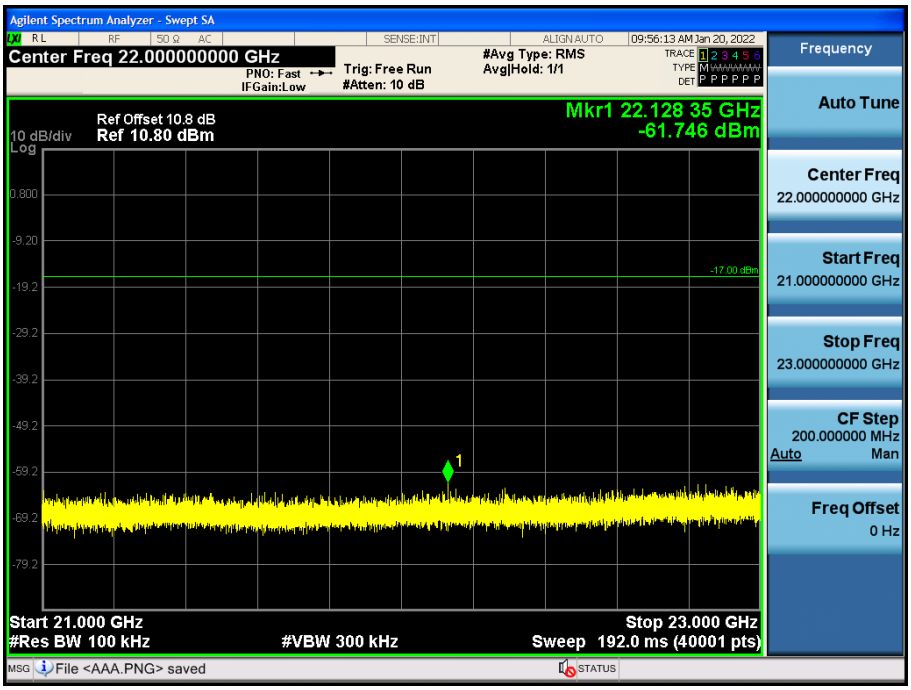
19 GHz ~ 21 GHz

Conducted Spurious Emission (Low-CH 0)



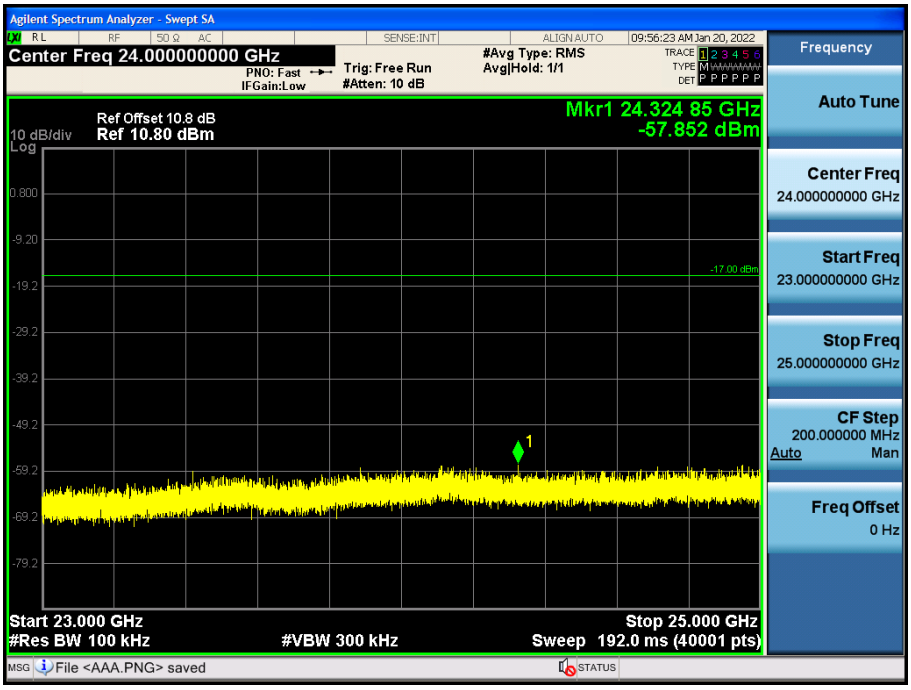
21 GHz ~ 23 GHz

Conducted Spurious Emission (Low-CH 0)



23 GHz ~ 25 GHz

Conducted Spurious Emission (Low-CH 0)



9.6 RADIATED SPURIOUS EMISSIONS

Frequency Range : 9 kHz – 30 MHz

Frequency	Measured Value	A.F+C.L+D.F	POL	Total	Limit	Margin
[MHz]	[dBμV]	[dB/m]	[H/V]	[dBμV/m]	[dBμV/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 = 40log (specific distance / test distance) (dB)
3. Limit line = specific Limits (dBμV) + Distance extrapolation factor

Frequency Range : Below 1 GHz

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

Frequency Range : Above 1 GHz

Mode : 1 M Bit/s (37 Bytes)_High Power

Operation Mode: CH Low

Frequency [MHz]	Measured Value [dBµV]	Duty Cycle Factor [dB]	A.F + C.L - A.G + D.F [dB/m]	Pol. [H/V]	Total [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Measurement Type
4804	43.11	0.00	3.75	V	46.86	73.98	27.12	PK
4804	32.12	2.03	3.75	V	37.90	53.98	16.08	AV
7206	40.07	0.00	12.70	V	52.77	73.98	21.21	PK
7206	27.67	2.03	12.70	V	42.40	53.98	11.58	AV
4804	43.25	0.00	3.75	H	47.00	73.98	26.98	PK
4804	32.35	2.03	3.75	H	38.13	53.98	15.85	AV
7206	40.25	0.00	12.70	H	52.95	73.98	21.03	PK
7206	27.75	2.03	12.70	H	42.48	53.98	11.50	AV

Operation Mode: CH Mid

Frequency [MHz]	Measured Value [dBµV]	Duty Cycle Factor [dB]	A.F + C.L - A.G + D.F [dB/m]	Pol. [H/V]	Total [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Measurement Type
4880	42.35	0.00	3.71	V	46.06	73.98	27.92	PK
4880	30.58	2.03	3.71	V	36.32	53.98	17.66	AV
7320	39.55	0.00	11.70	V	51.25	73.98	22.73	PK
7320	27.64	2.03	11.70	V	41.37	53.98	12.61	AV
4880	42.62	0.00	3.71	H	46.33	73.98	27.65	PK
4880	30.66	2.03	3.71	H	36.40	53.98	17.58	AV
7320	39.68	0.00	11.70	H	51.38	73.98	22.60	PK
7320	27.75	2.03	11.70	H	41.48	53.98	12.50	AV

Operation Mode: CH High

Frequency [MHz]	Measured Value [dBµV]	Duty Cycle Factor [dB]	A.F + C.L - A.G + D.F [dB/m]	Pol. [H/V]	Total [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Measurement Type
4960	44.41	0.00	4.49	V	48.90	73.98	25.08	PK
4960	33.27	2.03	4.49	V	39.79	53.98	14.19	AV
7440	41.68	0.00	12.08	V	53.76	73.98	20.22	PK
7440	29.87	2.03	12.08	V	43.98	53.98	10.00	AV
4960	44.54	0.00	4.49	H	49.03	73.98	24.95	PK
4960	33.35	2.03	4.49	H	39.87	53.98	14.11	AV
7440	41.87	0.00	12.08	H	53.95	73.98	20.03	PK
7440	29.98	2.03	12.08	H	44.09	53.98	9.89	AV

Mode : 2 M Bit/s (37 Bytes)_ High Power

Operation Mode: CH Low

Frequency [MHz]	Measured Value [dBµV]	Duty Cycle Factor [dB]	A.F + C.L - A.G + D.F [dB/m]	Pol. [H/V]	Total [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Measurement Type
4804	43.25	0.00	3.75	V	47.00	73.98	26.98	PK
4804	30.87	4.79	3.75	V	39.41	53.98	14.57	AV
7206	39.39	0.00	12.70	V	52.09	73.98	21.89	PK
7206	27.32	4.79	12.70	V	44.81	53.98	9.17	AV
4804	43.44	0.00	3.75	H	47.19	73.98	26.79	PK
4804	30.95	4.79	3.75	H	39.49	53.98	14.49	AV
7206	39.48	0.00	12.70	H	52.18	73.98	21.80	PK
7206	27.45	4.79	12.70	H	44.94	53.98	9.04	AV

Operation Mode: CH Mid

Frequency [MHz]	Measured Value [dBµV]	Duty Cycle Factor [dB]	A.F + C.L - A.G + D.F [dB/m]	Pol. [H/V]	Total [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Measurement Type
4880	42.15	0.00	3.71	V	45.86	73.98	28.12	PK
4880	30.45	4.79	3.71	V	38.95	53.98	15.03	AV
7320	39.23	0.00	11.70	V	50.93	73.98	23.05	PK
7320	27.65	4.79	11.70	V	44.14	53.98	9.84	AV
4880	42.42	0.00	3.71	H	46.13	73.98	27.85	PK
4880	30.56	4.79	3.71	H	39.06	53.98	14.92	AV
7320	39.45	0.00	11.70	H	51.15	73.98	22.83	PK
7320	27.82	4.79	11.70	H	44.31	53.98	9.67	AV

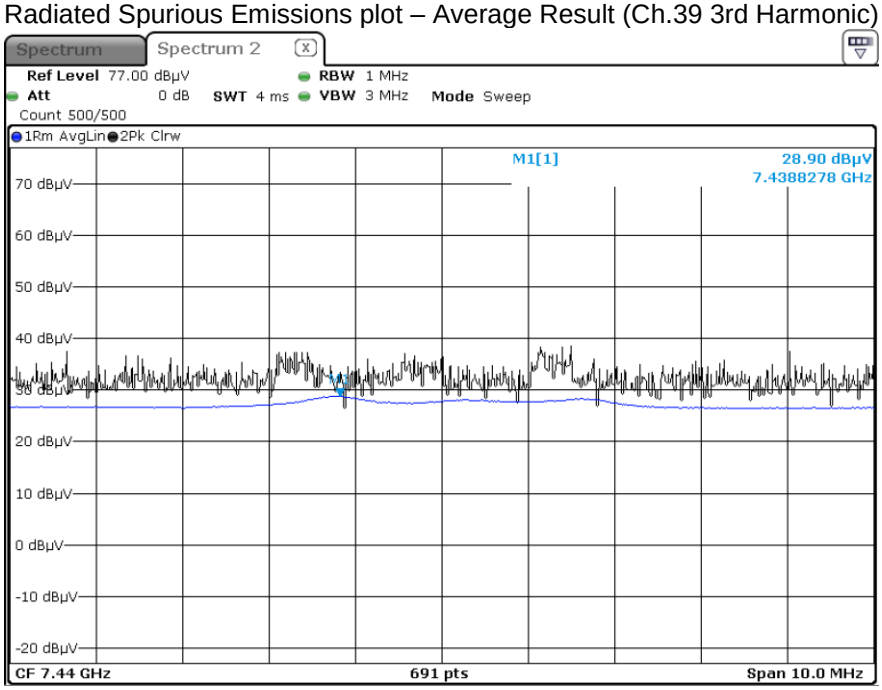
Operation Mode: CH High

Frequency [MHz]	Measured Value [dBµV]	Duty Cycle Factor [dB]	A.F + C.L - A.G + D.F [dB/m]	Pol. [H/V]	Total [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Measurement Type
4960	43.64	0.00	4.49	V	48.13	73.98	25.85	PK
4960	31.25	4.79	4.49	V	40.53	53.98	13.45	AV
7440	41.97	0.00	12.08	V	54.05	73.98	19.93	PK
7440	28.78	4.79	12.08	V	45.65	53.98	8.33	AV
4960	43.79	0.00	4.49	H	48.28	73.98	25.70	PK
4960	31.41	4.79	4.49	H	40.69	53.98	13.29	AV
7440	42.03	0.00	12.08	H	54.11	73.98	19.87	PK
7440	28.90	4.79	12.08	H	45.77	53.98	8.21	AV

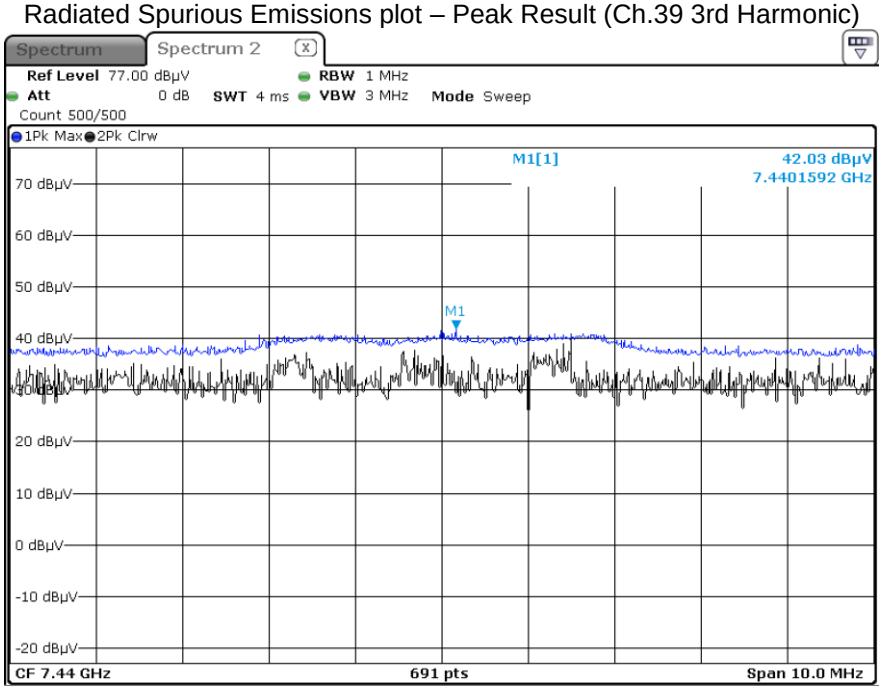
Operation Mode: CH High

▣ 2 M Bit/s 37 Bytes Test Plots (Worst case : Y-H)_High Power

Radiated Spurious Emissions plot – Average Result (Ch.39 3rd Harmonic)



Radiated Spurious Emissions plot – Peak Result (Ch.39 3rd Harmonic)



Note:

Plot of worst case are only reported.

9.7 RADIATED RESTRICTED BAND EDGES

High Power

Mode : 1 M Bit/s (37 Bytes)

Operating Frequency 2402 MHz, 2480 MHz

Channel No. 0 CH, 39 CH

Frequency [MHz]	Measured Value [dBµV]	Duty Cycle Factor [dB]	A.F+C.L+D.F [dB/m]	Ant. Pol. [H/V]	Total [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Measurement Type
2390.0	19.125	0.00	34.04	H	53.17	73.98	20.82	PK
2390.0	7.211	2.03	34.04	H	43.28	53.98	10.70	AV
2390.0	19.375	0.00	34.04	V	53.42	73.98	20.57	PK
2390.0	7.352	2.03	34.04	V	43.42	53.98	10.56	AV
2483.5	23.005	0.00	35.00	H	58.01	73.98	15.98	PK
2483.5	8.021	2.03	35.00	H	45.05	53.98	8.93	AV
2483.5	23.233	0.00	35.00	V	58.23	73.98	15.75	PK
2483.5	8.190	2.03	35.00	V	45.22	53.98	8.76	AV

Mode : 2 M Bit/s (37 Bytes)

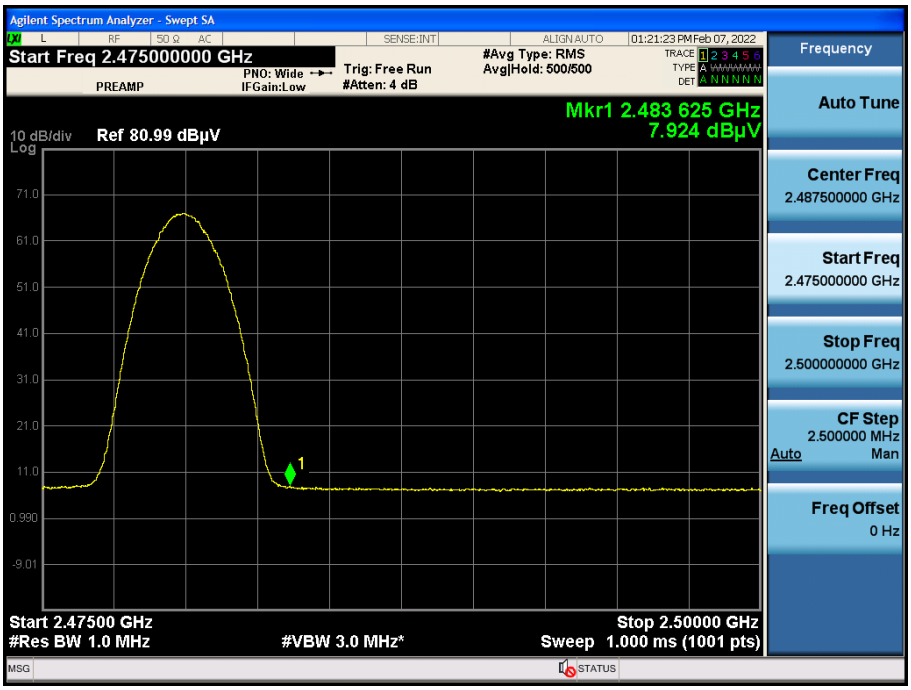
Operating Frequency 2402 MHz, 2480 MHz

Channel No. 0 CH, 39 CH

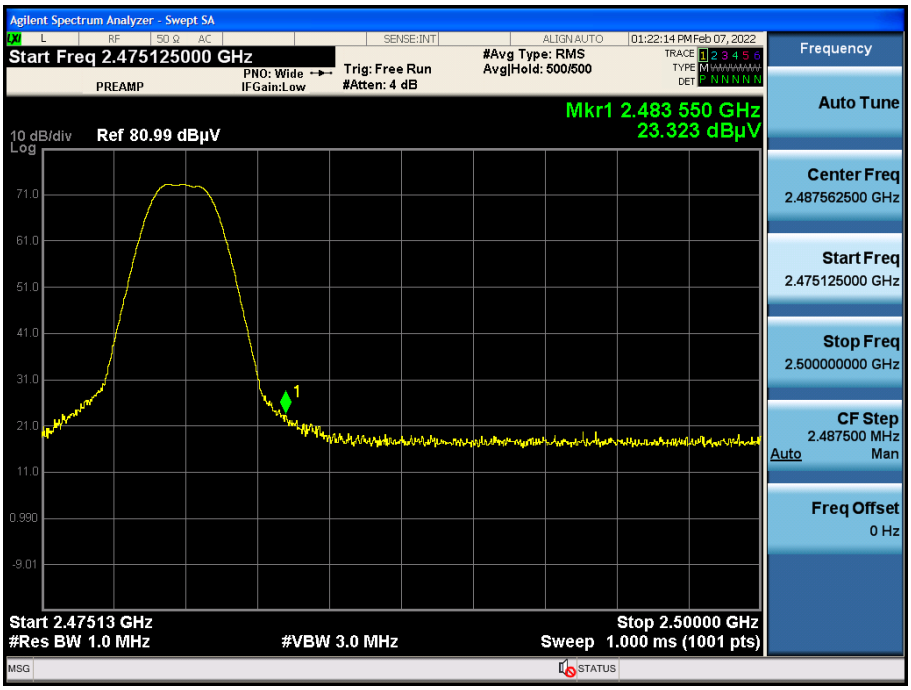
Frequency [MHz]	Measured Value [dBµV]	Duty Cycle Factor [dB]	A.F+C.L+D.F [dB/m]	Ant. Pol. [H/V]	Total [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Measurement Type
2390.0	19.001	0.00	34.04	H	53.04	73.98	20.94	PK
2390.0	7.125	4.79	34.04	H	45.96	53.98	8.03	AV
2390.0	19.125	0.00	34.04	V	53.17	73.98	20.82	PK
2390.0	7.365	4.79	34.04	V	46.20	53.98	7.79	AV
2483.5	23.111	0.00	35.00	H	58.11	73.98	15.87	PK
2483.5	7.802	4.79	35.00	H	47.59	53.98	6.39	AV
2483.5	23.323	0.00	35.00	V	58.32	73.98	15.66	PK
2483.5	7.924	4.79	35.00	V	47.71	53.98	6.27	AV

▣ Mode : 2 M Bit/s (37 Bytes) Test Plots _High Power

Radiated Restricted Band Edges plot – Average Result (Ch.39, Z-V)



Radiated Restricted Band Edges plot – Peak Result (Ch.39, Z-V)



Note:

Plot of worst case are only reported.

9.8 POWERLINE CONDUCTED EMISSIONS

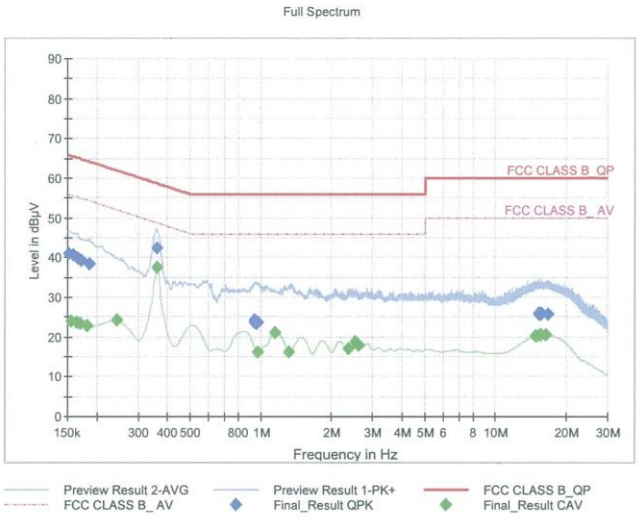
Conducted Emissions (Line 1)

BLE L1 1 / 2

Test Report

Common Information

EUT :	SM-A736B/DS
Manufacturer :	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions :	BLE L1
Operator Name:	
Comment:	



Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1523	40.90	65.88	24.98	9.000	L1	OFF	9.6
0.1590	40.62	65.52	24.89	9.000	L1	OFF	9.6
0.1658	39.82	65.17	25.35	9.000	L1	OFF	9.6
0.1725	39.28	64.84	25.56	9.000	L1	OFF	9.6
0.1860	38.30	64.21	25.92	9.000	L1	OFF	9.6
0.3593	42.53	58.75	16.22	9.000	L1	OFF	9.6
0.9343	23.77	56.00	32.23	9.000	L1	OFF	9.7
0.9433	24.25	56.00	31.75	9.000	L1	OFF	9.7
0.9500	23.73	56.00	32.27	9.000	L1	OFF	9.7
0.9568	23.35	56.00	32.65	9.000	L1	OFF	9.7
0.9613	23.77	56.00	32.23	9.000	L1	OFF	9.7
0.9680	23.58	56.00	32.42	9.000	L1	OFF	9.7
15.2308	25.79	60.00	34.21	9.000	L1	OFF	10.2
15.2533	25.93	60.00	34.07	9.000	L1	OFF	10.2
15.6313	25.74	60.00	34.26	9.000	L1	OFF	10.2
15.6538	25.82	60.00	34.18	9.000	L1	OFF	10.2
15.6763	25.87	60.00	34.13	9.000	L1	OFF	10.2
16.7630	25.79	60.00	34.21	9.000	L1	OFF	10.3

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BLE L1 2 / 2

Final_Result_CAV

Frequency (MHz)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1545	24.01	55.75	31.74	9.000	L1	OFF	9.6
0.1635	23.63	55.28	31.66	9.000	L1	OFF	9.6
0.1703	23.32	54.95	31.63	9.000	L1	OFF	9.6
0.1815	22.83	54.42	31.58	9.000	L1	OFF	9.6
0.2445	24.09	51.94	27.85	9.000	L1	OFF	9.6
0.3615	37.58	48.69	11.11	9.000	L1	OFF	9.6
0.9725	16.24	46.00	29.76	9.000	L1	OFF	9.7
1.1548	20.95	46.00	25.05	9.000	L1	OFF	9.7
1.3145	16.13	46.00	29.87	9.000	L1	OFF	9.7
2.3518	16.99	46.00	29.01	9.000	L1	OFF	9.8
2.5318	18.81	46.00	27.19	9.000	L1	OFF	9.8
2.6015	17.80	46.00	28.20	9.000	L1	OFF	9.8
14.6863	20.30	50.00	29.70	9.000	L1	OFF	10.2
14.9135	20.30	50.00	29.70	9.000	L1	OFF	10.2
15.4715	20.57	50.00	29.43	9.000	L1	OFF	10.2
15.6088	20.51	50.00	29.49	9.000	L1	OFF	10.2
15.6763	20.50	50.00	29.50	9.000	L1	OFF	10.2
16.4278	20.54	50.00	29.46	9.000	L1	OFF	10.3

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Conducted Emissions (Line 2)

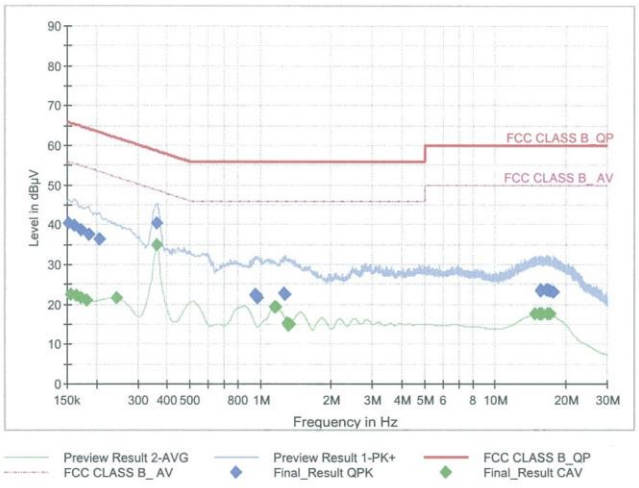
BLE N 1 / 2

Test Report

Common Information

EUT :	SM-A736B/DS
Manufacturer :	SAMSUNG
Test Site:	SHIELD ROOM
Operating Conditions :	BLE N
Operator Name:	
Comment:	

Full Spectrum



Final_Result_QPK

Frequency (MHz)	QuasiPeak (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1523	40.37	65.88	25.51	9.000	N	OFF	9.6
0.1613	39.68	65.40	25.72	9.000	N	OFF	9.6
0.1725	38.67	64.84	26.17	9.000	N	OFF	9.6
0.1860	37.57	64.21	26.65	9.000	N	OFF	9.6
0.2063	36.24	63.36	27.11	9.000	N	OFF	9.6
0.3593	40.45	58.75	18.30	9.000	N	OFF	9.6
0.9455	22.37	56.00	33.63	9.000	N	OFF	9.7
0.9500	22.31	56.00	33.69	9.000	N	OFF	9.7
0.9545	22.16	56.00	33.84	9.000	N	OFF	9.7
0.9680	21.62	56.00	34.38	9.000	N	OFF	9.7
1.2583	22.67	56.00	33.34	9.000	N	OFF	9.7
1.2785	22.41	56.00	33.59	9.000	N	OFF	9.7
15.6313	23.52	60.00	36.48	9.000	N	OFF	10.3
15.6718	23.45	60.00	36.55	9.000	N	OFF	10.3
16.5965	23.51	60.00	36.49	9.000	N	OFF	10.3
16.6415	23.57	60.00	36.43	9.000	N	OFF	10.3
17.0555	23.28	60.00	36.72	9.000	N	OFF	10.3
17.7733	23.01	60.00	36.99	9.000	N	OFF	10.4

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BLE N 2 / 2

Final_Result_CAV

Frequency (MHz)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.1545	22.64	55.75	33.11	9.000	N	OFF	9.6
0.1635	22.21	55.28	33.07	9.000	N	OFF	9.6
0.1725	21.52	54.84	33.32	9.000	N	OFF	9.6
0.1815	21.12	54.42	33.30	9.000	N	OFF	9.6
0.2445	21.67	51.94	30.27	9.000	N	OFF	9.6
0.3615	35.03	48.69	13.67	9.000	N	OFF	9.6
1.1525	19.37	46.00	26.63	9.000	N	OFF	9.7
1.1615	19.33	46.00	26.67	9.000	N	OFF	9.7
1.1660	19.25	46.00	26.75	9.000	N	OFF	9.7
1.3010	15.19	46.00	30.81	9.000	N	OFF	9.7
1.3145	14.77	46.00	31.23	9.000	N	OFF	9.7
1.3280	14.94	46.00	31.06	9.000	N	OFF	9.7
14.7763	17.62	50.00	32.38	9.000	N	OFF	10.3
15.4715	17.73	50.00	32.27	9.000	N	OFF	10.3
15.6718	17.66	50.00	32.34	9.000	N	OFF	10.3
15.8608	17.67	50.00	32.33	9.000	N	OFF	10.3
16.7990	17.49	50.00	32.51	9.000	N	OFF	10.3
17.0578	17.47	50.00	32.53	9.000	N	OFF	10.3

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10. LIST OF TEST EQUIPMENT

Conducted Test

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
LISN	ENV216	Rohde & Schwarz	102245	08/23/2022	Annual
EMI Test Receiver	ESR	Rohde & Schwarz	101910	06/17/2022	Annual
Temperature Chamber	SU-642	ESPAC	0093008124	03/15/2022	Annual
Signal Analyzer	N9030A	Agilent	MY49431210	01/11/2023	Annual
Power Measurement Set	OSP 120	Rohde & Schwarz	101231	07/02/2022	Annual
Power Meter	N1911A	Agilent	MY45100523	04/08/2022	Annual
Power Sensor	N1921A	Keysight	MY57820067	04/08/2022	Annual
Directional Coupler	87300B	Agilent	3116A03621	11/02/2022	Annual
Power Splitter	11667B	Hewlett Packard	05001	05/20/2022	Annual
DC Power Supply	E3632A	Hewlett Packard	MY50360067	02/16/2022	Annual
Attenuator(10 dB)	8493C	Hewlett Packard	07560	06/18/2022	Annual
Software	EMC32	Rohde & Schwarz	N/A	N/A	N/A
FCC WLAN&BT&BLE Conducted Test Software v3.0	N/A	HCT CO., LTD.	N/A	N/A	N/A

Note:

1. Equipment listed above that calibrated during the testing period was set for test after the calibration.
2. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

Radiated Test

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibration Interval
Controller(Antenna mast)	CO3000	Innco system	CO3000-4p	N/A	N/A
Antenna Position Tower	MA4640/800-XP-EP	Innco system	N/A	N/A	N/A
Controller	EM1000	Audix	060520	N/A	N/A
Turn Table	N/A	Audix	N/A	N/A	N/A
Loop Antenna	FMZB 1513	Rohde & Schwarz	1513-333	03/19/2022	Biennial
Hybrid Antenna	VULB 9168	Schwarzbeck	760	02/22/2023	Biennial
Horn Antenna	BBHA 9120D	Schwarzbeck	02299	05/19/2022	Biennial
Horn Antenna(15 GHz ~ 40 GHz)	BBHA9170	Schwarzbeck	BBHA9170541	11/16/2023	Biennial
Spectrum Analyzer	FSV40-N	Rohde & Schwarz	102168	07/05/2022	Annual
Signal Analyzer	N9030A	Agilent	MY49431210	01/11/2023	Annual
Band Reject Filter	WRCJV12-4900-5100-5900-6100-50SS	Wainwright Instruments	5	06/24/2022	Annual
Band Reject Filter	WRCJV12-4900-5100-5900-6100-50SS	Wainwright Instruments	6	06/24/2022	Annual
Band Reject Filter	WRCJV2400/2483.5-2370/2520-60/12SS	Wainwright Instruments	2	01/06/2023	Annual
Band Reject Filter	WRCJV5100/5850-40/50-8EEK	Wainwright Instruments	1	02/07/2023	Annual
High Pass Filter	WHK3.0/18G-10EF	Wainwright Instruments	8	01/21/2023	Annual
High Pass Filter	WHKX8-6090-7000-18000-40SS	Wainwright Instruments	25	01/21/2023	Annual
Attenuator (3 dB)	18B-03	Api tech.	1	01/21/2023	Annual
Attenuator(10 dB)	8493C-10	Agilent	08285	01/21/2023	Annual
Power Amplifier	CBLU1183540	CERNEX	22964	01/21/2023	Annual
Power Amplifier	CBL06185030	CERNEX	22965	01/21/2023	Annual
Power Amplifier	CBL18265035	CERNEX	22966	12/02/2022	Annual
Power Amplifier	CBL26405040	CERNEX	25956	03/23/2022	Annual

Note:

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

11. ANNEX A_ TEST SETUP PHOTO

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

No.	Description
1	HCT-RF-2202-FC025-P