

# FCC BT LE REPORT

## Certification

<b>Applicant Name:</b> SAMSUNG Electronics Co., Ltd.	<b>Date of Issue:</b> December 11, 2020
<b>Address:</b> 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea	<b>Test Site/Location:</b> 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 KOREA
	<b>Report No.:</b> HCT-RF-2012-FC008

<b>FCC ID:</b>	<b>A3LSMA326B</b>
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<b>APPLICANT:</b>	<b>SAMSUNG Electronics Co., Ltd.</b>
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<b>Model:</b>	SM-A326B/DS
<b>Additional Model:</b>	SM-A326B
<b>EUT Type:</b>	Mobile Phone
<b>Average Output Power:</b>	5.68 dBm (3.70 mW)
<b>Frequency Range:</b>	2 402 MHz ~ 2 480 MHz
<b>Modulation type</b>	GFSK
<b>FCC Classification:</b>	Digital Transmission System(DTS)
<b>FCC Rule Part(s):</b>	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.

Report No.: HCT-RF-2012-FC008

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REVIEWED BY



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Report prepared by : Jeong Ho Kim  
Engineer of Telecommunication Testing Center

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Report approved by : Kwon Jeong  
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)

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

## Version

TEST REPORT NO.	DATE	DESCRIPTION
HCT-RF-2012-FC008	December 11, 2020	- First Approval Report

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**1. EUT DESCRIPTION**

<b>Model</b>	SM-A326B/DS	
<b>Additional Model</b>	SM-A326B	
<b>EUT Type</b>	Mobile Phone	
<b>Power Supply</b>	DC 3.86 V	
<b>Frequency Range</b>	2 402 MHz ~ 2 480 MHz	
<b>Max. RF Output Power</b>	Peak (For information only)	125k Bit/s : 5.818 dBm (3.82 mW) 500k Bit/s : 5.840 dBm (3.84 mW) 1M Bit/s : 5.826 dBm (3.82 mW) 2M Bit/s : 6.054 dBm (4.03 mW)
	Average	125k Bit/s : 5.54 dBm (3.58 mW) 500k Bit/s : 5.57 dBm (3.61 mW) 1M Bit/s : 5.57 dBm (3.61 mW) 2M Bit/s : 5.68 dBm (3.70 mW)
<b>Modulation Type</b>	GFSK	
<b>Bluetooth Version</b>	5.0	
<b>Number of Channels</b>	40 Channels	
<b>Antenna Specification</b>	Antenna type: LDS Peak Gain: -3.37 dBi	
<b>Date(s) of Tests</b>	November 04, 2020 ~ December 08, 2020	

## **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 30MHz 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 1GHz. Above 1GHz with 1.5m 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  $U_{\text{CISPR}}$  measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

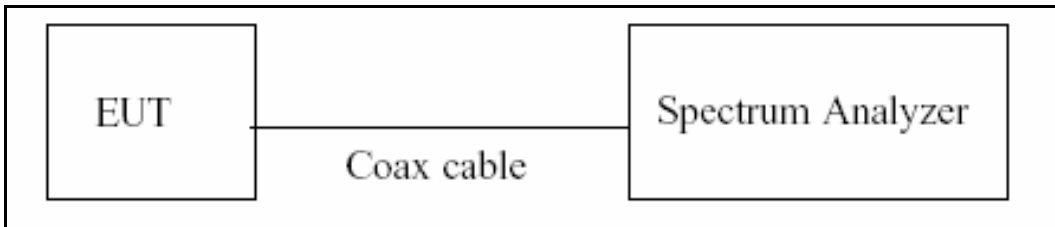
Parameter	Expanded Uncertainty (dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.82
Radiated Disturbance (9 kHz ~ 30 MHz)	3.40
Radiated Disturbance (30 MHz ~ 1 GHz)	4.80
Radiated Disturbance (1 GHz ~ 18 GHz)	5.70
Radiated Disturbance (18 GHz ~ 40 GHz)	5.05



## 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  $T \leq 6.25$  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  $> 50/T$ .

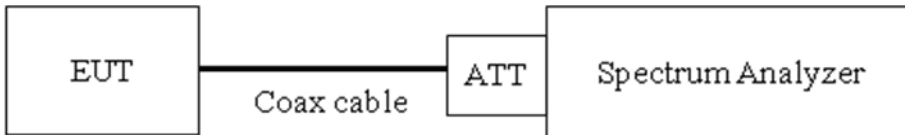
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz ( $\geq$  RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep  $> 100$
6. Trace mode = Clear write
7. Measure  $T_{total}$  and  $T_{on}$
8. Calculate Duty Cycle =  $T_{on} / T_{total}$  and Duty Cycle Factor =  $10\log(1/\text{Duty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

## 7.2. 6dB 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  $\geq 3 \times$  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.

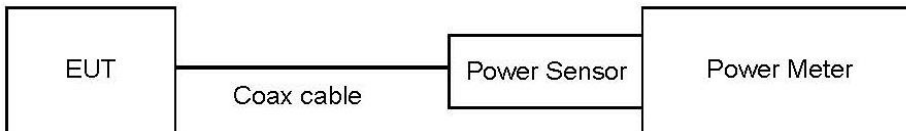
Note : We tested OBW using the automatic bandwidth measurement capability of a spectrum analyzer.

### 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

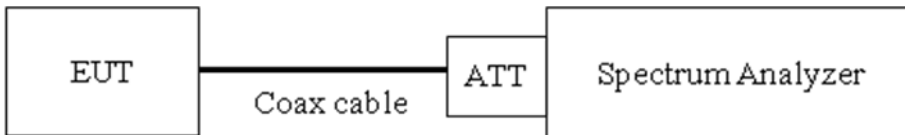
- Conducted Output Power(Peak) = Reading Value + ATT loss + Cable loss
- Conducted Output Power(Average) = Reading Value + ATT loss + Cable loss + Duty Cycle Factor

## 7.4. Power Spectral Density

### Limit

The transmitter power density average over 1-second interval shall not be greater than 8dBm 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)  $RBW = 3 \text{ kHz} \leq RBW \leq 100 \text{ kHz}$ .
- 4)  $VBW \geq 3 \times RBW$ .
- 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  $\geq [2 \times \text{span} / RBW]$ .
- 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 = Reading Value + ATT loss + Cable loss

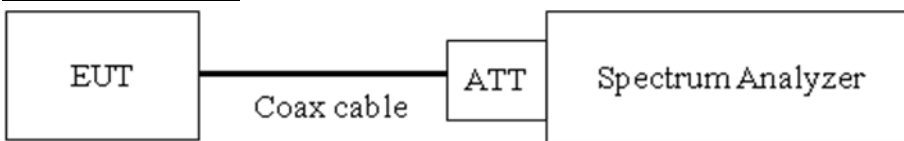
## 7.5. Conducted Band Edge(Out of Band Emissions) & Conducted Spurious Emissions

### 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  $\geq 3 \times$  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  $\geq 2 \times$  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	10.45
100	10.48
200	10.53
300	10.58
400	10.61
500	10.62
600	10.62
700	10.64
800	10.65
900	10.67
1000	10.68
2000	10.82
2400	10.86
2480	10.88
2500	10.88
3000	10.93
4000	11.01
5000	11.12
5150	11.12
5850	11.14
6000	11.14
7000	11.21
8000	11.26
9000	11.32
10000	11.38
11000	11.43
12000	11.51
13000	11.60
14000	11.57
15000	11.62
16000	11.63
17000	11.66
18000	11.71
19000	11.73
20000	11.77
21000	11.89
22000	11.96
23000	11.96
24000	12.00
25000	12.09
26000	12.10

Note : 1. 2 400 ~ 2 500 MHz is fundamental frequency range.

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

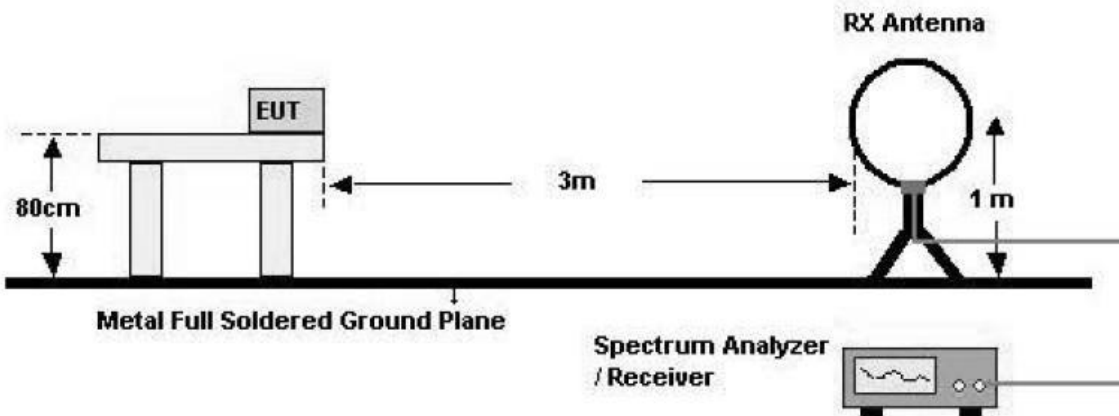
**7.6. Radiated Test**

**Limit**

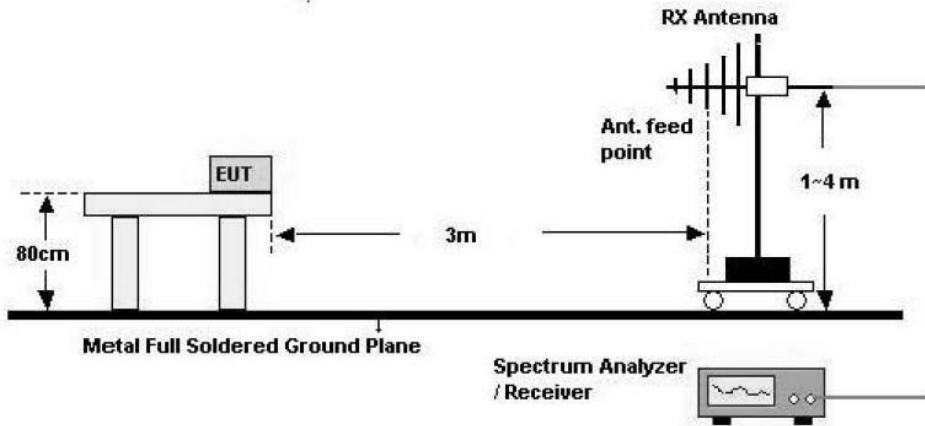
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

**Test Configuration**

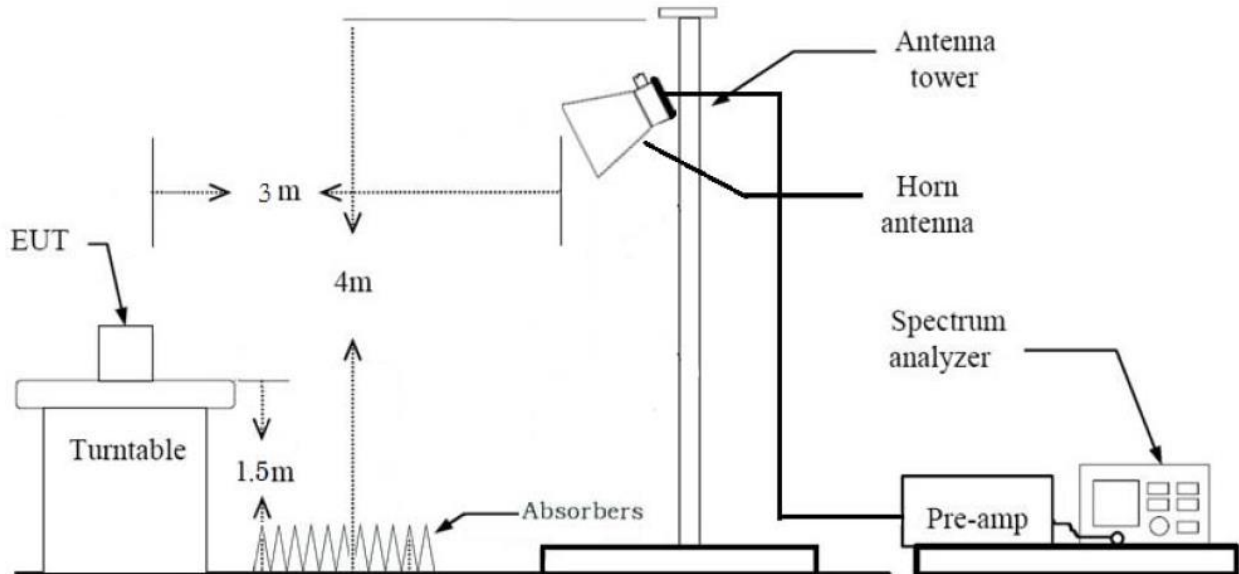
Below 30 MHz



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 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 Setting
  - Frequency Range = 9 kHz ~ 30 MHz
  - Detector = Peak
  - Trace = Maxhold
  - RBW = 9 kHz
  - VBW  $\geq 3 \times$  RBW
9. Total = Reading 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 1GHz)**

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 Setting

(1) Measurement Type(Peak):

- Measured Frequency Range : 30 MHz – 1 GHz
- Detector = Peak
- Trace = Maxhold
- RBW = 100 kHz
- VBW  $\geq$  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 = Reading 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 1m to 4m 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  $\geq$  3 x RBW

(2) Measurement Type(Average):

- Duty cycle < 98%, duty cycle variations are less than  $\pm 2\%$
  - Measured Frequency Range : 1 GHz – 25 GHz
  - Detector = RMS
  - Averaging type = power (*i.e.*, RMS)
  - RBW = 1 MHz
  - VBW  $\geq$  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 =  $20\log(\text{test distance} / \text{specific distance})$  (dB)
  11. Total (Measurement Type : Peak)  
= Peak Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(G) + Distance Factor(D.F)

Total (Measurement Type : Average)

- = Average Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) - Amp Gain(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 1m to 4m 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  $\geq$  3 x RBW
  - (2) Measurement Type(Average):
    - Duty cycle < 98%, duty cycle variations are less than  $\pm 2\%$
    - Measured Frequency Range : 2310 MHz ~ 2390 MHz/ 2483.5 MHz ~ 2500 MHz
    - Detector = RMS
    - Averaging type = power (*i.e.*, RMS)
    - RBW = 1 MHz
    - VBW  $\geq$  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 =  $20\log(\text{test distance} / \text{specific distance})$  (dB)
11. Total(Measurement Type : Peak)
  - = Peak Reading Value + Antenna Factor(A.F) + Cable Loss(C.L) + Distance Factor(D.F)

Total(Measurement Type : Average)

= Average Reading 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  $\mu$ H/50 ohms line impedance stabilization network (LISN).

Frequency Range (MHz)	Limits (dB $\mu$ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56 <sup>(a)</sup>	56 to 46 <sup>(a)</sup>
0.50 to 5	56	46
5 to 30	60	50

<sup>(a)</sup>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) = Reading 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, etc)
  - Worstcase : Stand alone
2. EUT Axis:
  - Radiated Spurious Emissions : Y
  - Radiated Restricted Band Edge : X
3. All packet length of operation were investigated and the test results are worst case in lowest packet length.  
(Worst case : 37 Byte)
4. 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
5. SM-A326B/DS, SM-A326B were tested and the worst case results are reported.  
(Worst case : SM-A326B/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(Earphone, etc)+Travel Adapter  
Stand alone + Travel Adapter
  - Worstcase : Stand alone + Travel Adapter
2. SM-A326B/DS, SM-A326B were tested and the worst case results are reported.  
(Worst case : SM-A326B/DS)

### **Conducted test**

1. The EUT was configured with packet length of highest power.
  - ALL Mode Test
  - B.E & C.S.E (Worst case : 37 Byte)
2. SM-A326B/DS, SM-A326B were tested and the worst case results are reported.  
(Worst case : SM-A326B/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



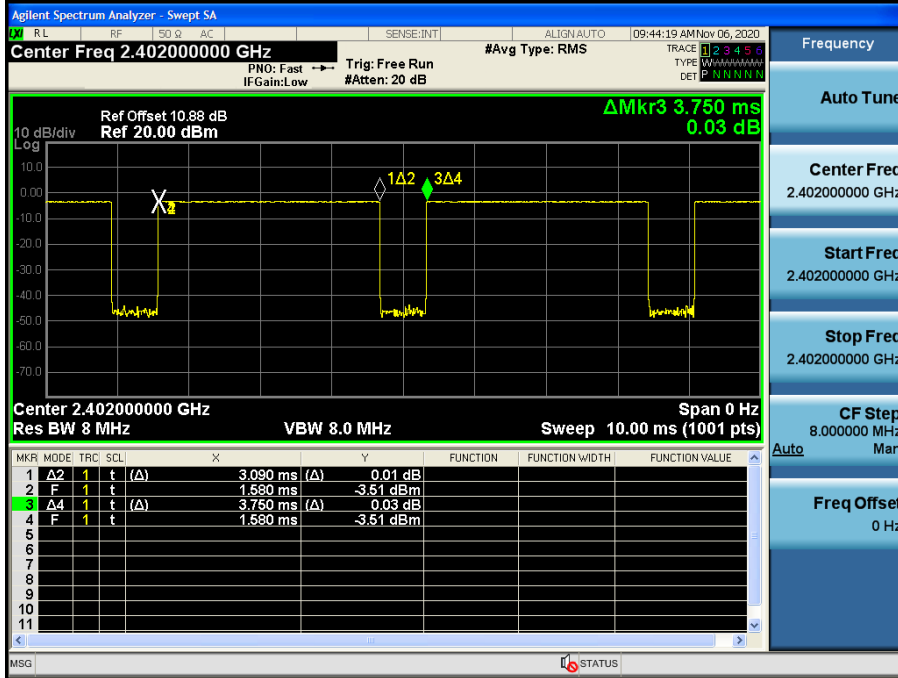
## 9. TEST RESULT

### 9.1 DUTY CYCLE

Data rate (Bit/s)	Packet length (Byte)	T <sub>on</sub> (ms)	T <sub>total</sub> (ms)	Duty Cycle	Duty Cycle Factor (dB)
125k	37	3.090	3.750	0.8240	0.84
	255	17.050	17.500	0.9743	0.11
500k	37	1.055	1.875	0.5627	2.50
	255	4.545	5.010	0.9072	0.42
1M	37	0.377	0.626	0.6029	2.20
	255	2.120	2.500	0.8480	0.72
2M	37	0.194	0.625	0.3104	5.08
	255	1.065	1.875	0.5680	2.46

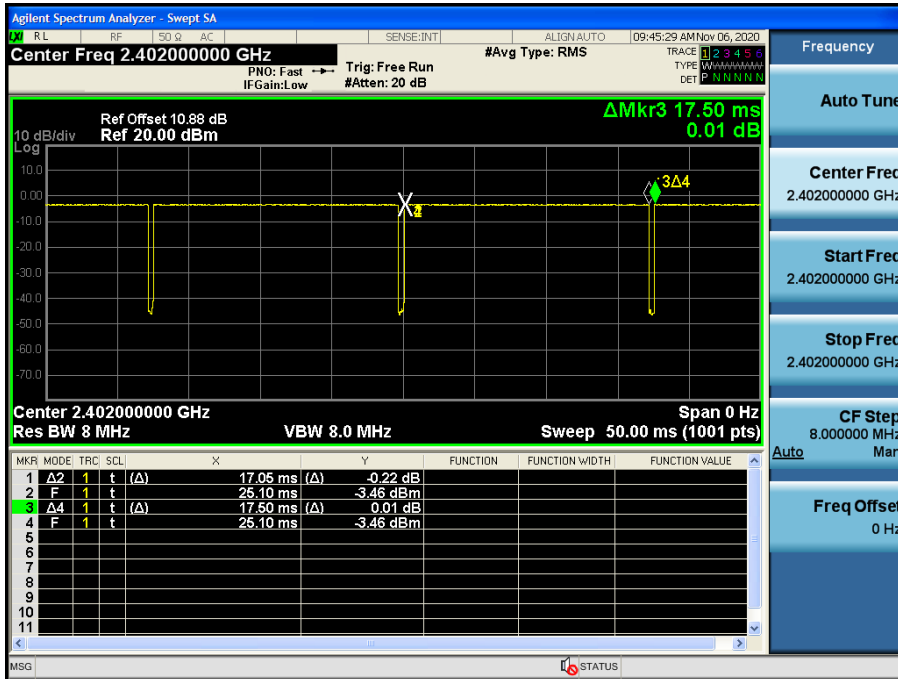
125k Bit/s(37 Byte) Test Plots

Duty Cycle (Low-CH 0)



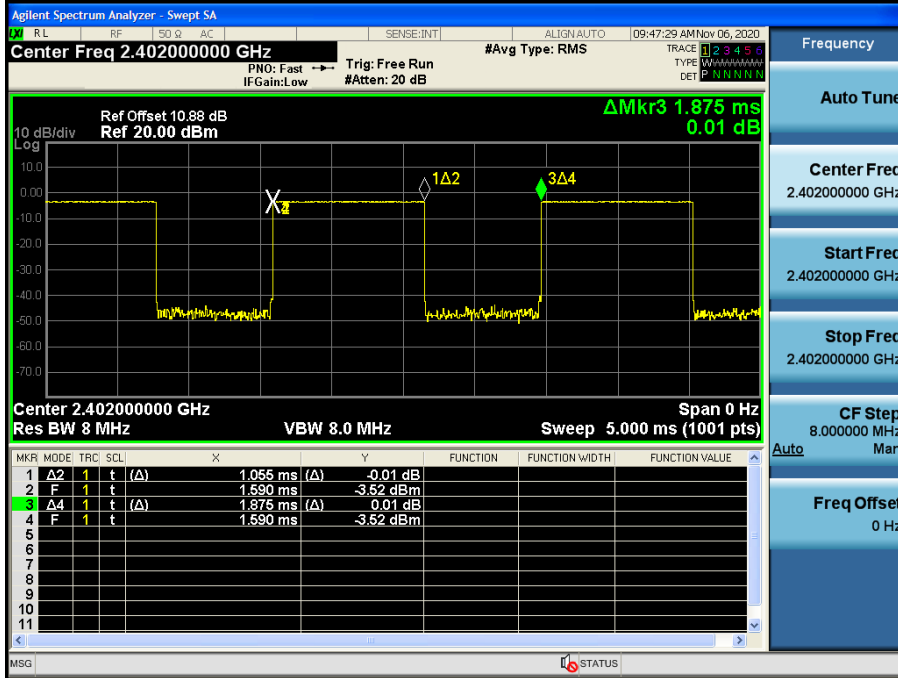
125k Bit/s(255 Byte) Test Plots

Duty Cycle (Low-CH 0)



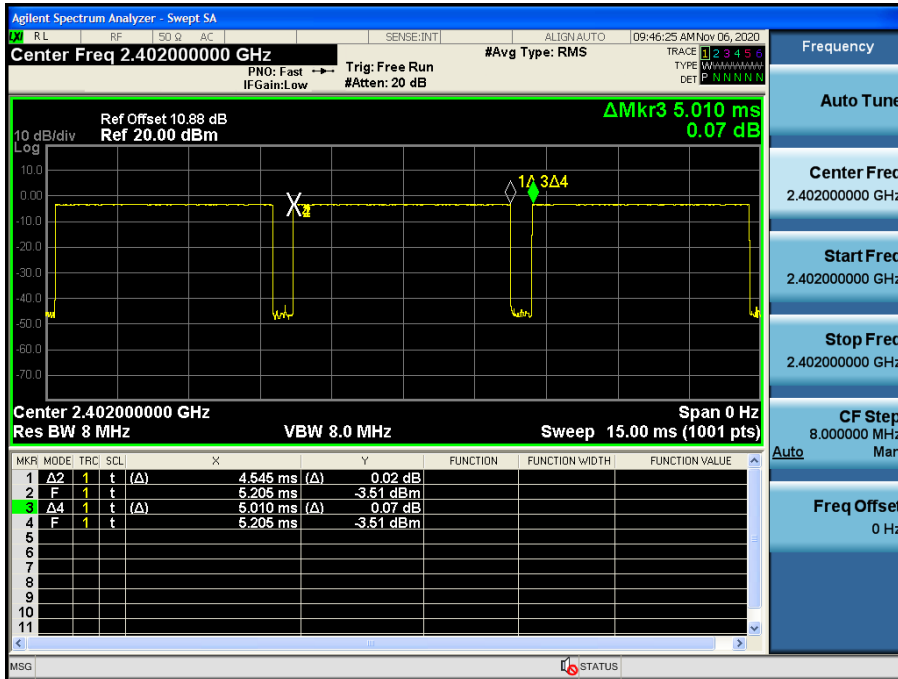
500k Bit/s(37 Byte) Test Plots

Duty Cycle (Low-CH 0)



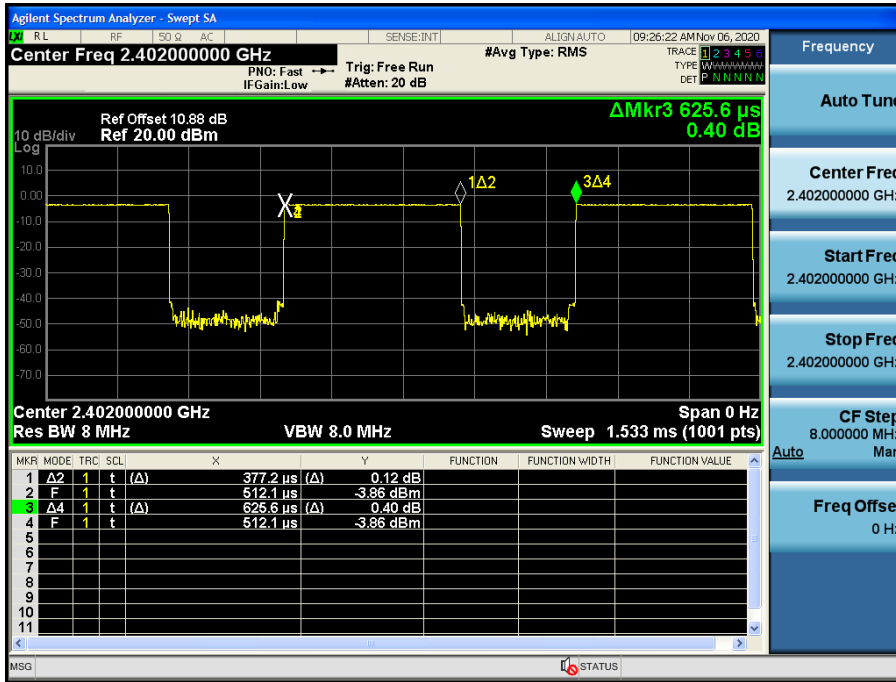
500k Bit/s(255 Byte) Test Plots

Duty Cycle (Low-CH 0)



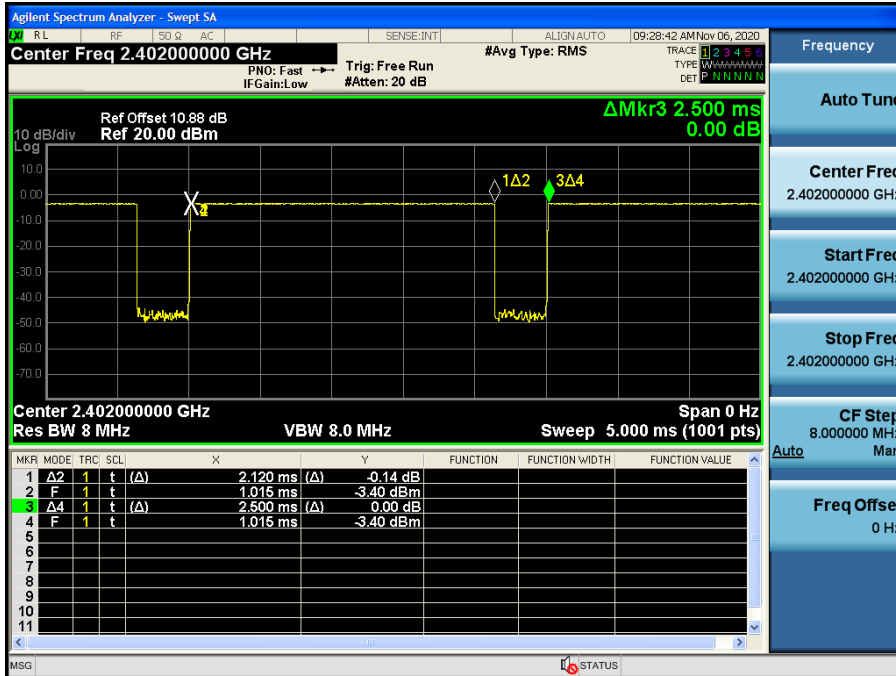
1M Bit/s (37 Byte) Test Plots

Duty Cycle (Low-CH 0)



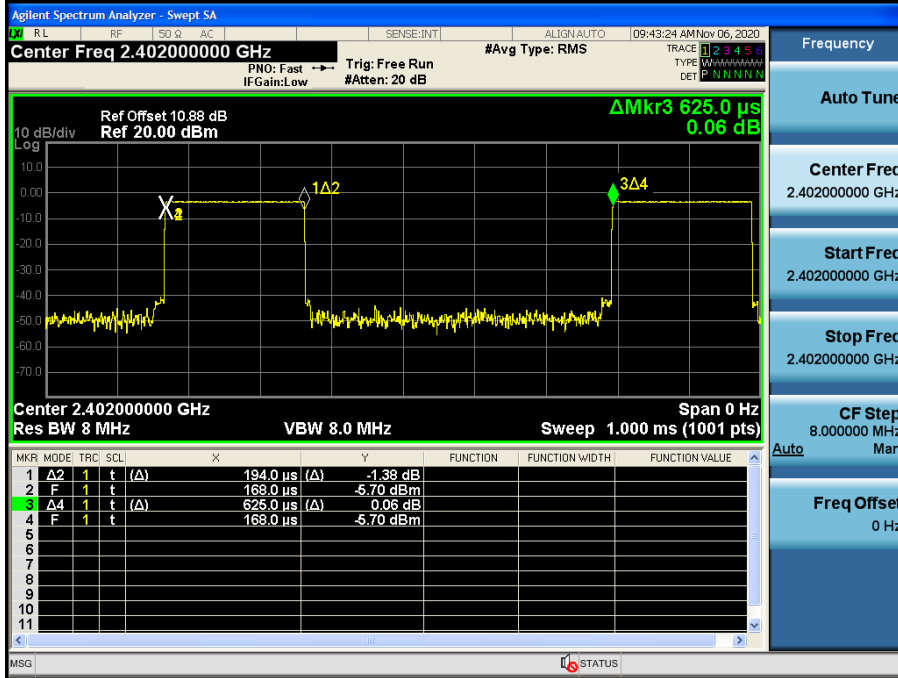
1M Bit/s (255 Byte) Test Plots

Duty Cycle (Low-CH 0)



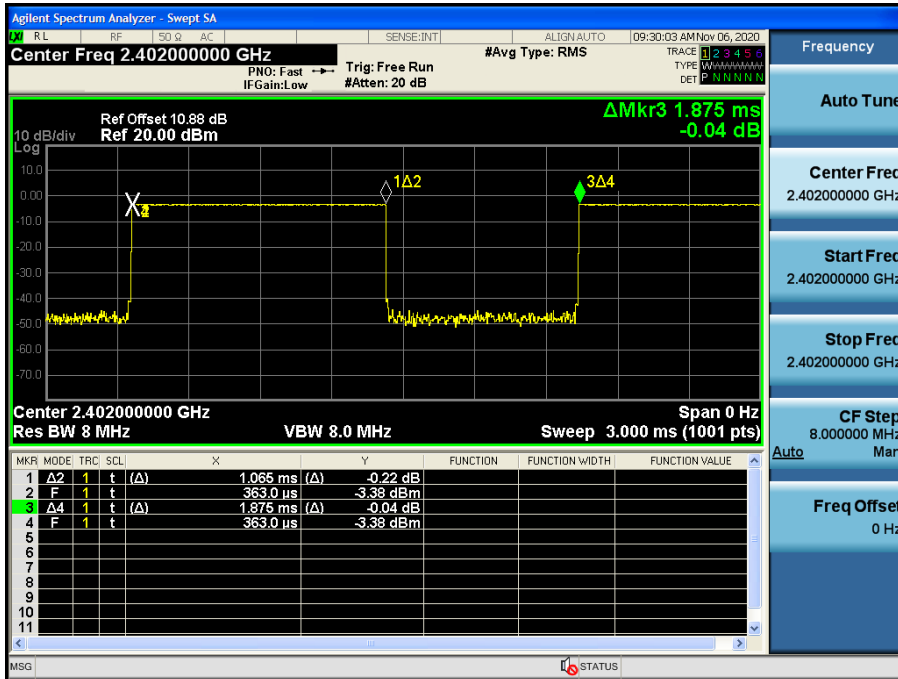
2M Bit/s (37 Byte) Test Plots

Duty Cycle (Low-CH 0)



2M Bit/s (255 Byte) Test Plots

Duty Cycle (Low-CH 0)



**9.2 6dB BANDWIDTH**

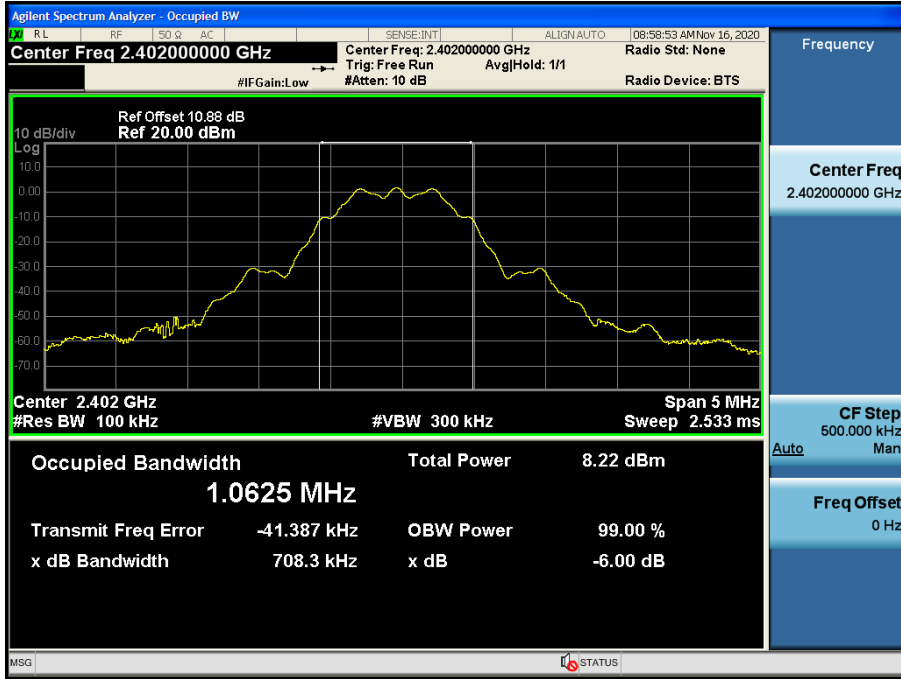
Mode (Bit/s)	Channel	6 dB Bandwidth (kHz)	Limit (kHz)
125k(37)	0	708.5	> 500
	19	703.8	
	39	704.3	
125k(255)	0	708.3	> 500
	19	699.7	
	39	695.6	
500k(37)	0	667.0	> 500
	19	670.6	
	39	667.2	
500k(255)	0	686.6	> 500
	19	668.8	
	39	677.2	
1M(37)	0	716.6	> 500
	19	723.5	
	39	716.5	
1M(255)	0	669.7	> 500
	19	670.1	
	39	671.0	
2M(37)	0	1227	> 500
	19	1240	
	39	1243	
2M(255)	0	1238	> 500
	19	1244	
	39	1247	

**Note :**

- Worst case test Plot Only : 125k Bit/s (255 Byte)  
500k Bit/s (37 Byte)  
1M Bit/s (255 Byte)  
2M Bit/s (37 Byte)

▣ 125k Bit/s(255 Byte) Test Plots

6 dB Bandwidth plot (Low-CH 0)



6 dB Bandwidth plot (Mid-CH 19)



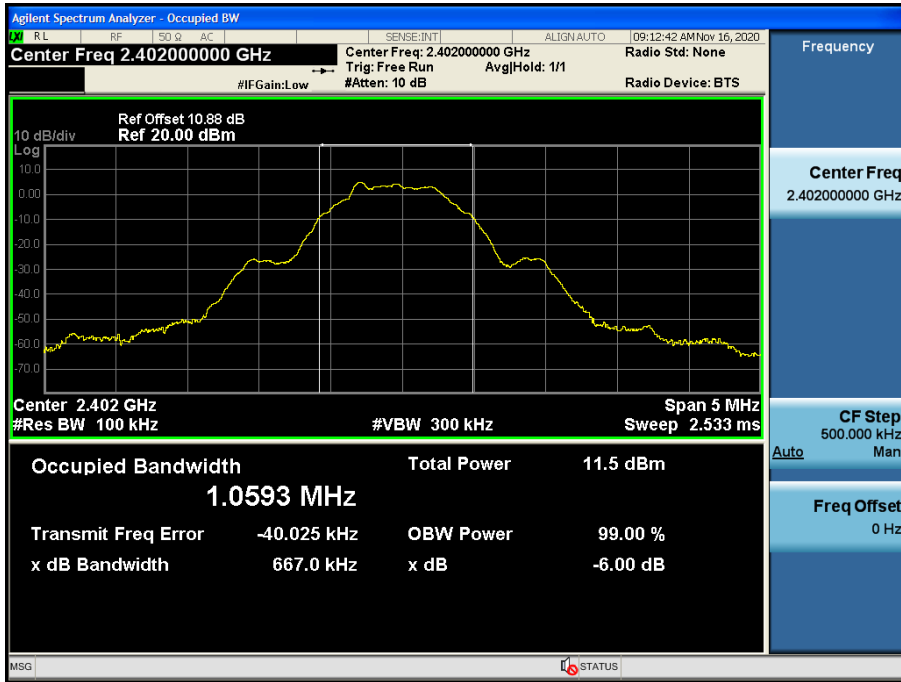
6 dB Bandwidth plot (High-CH 39)





▣ 500k Bit/s(37 Byte) Test Plots

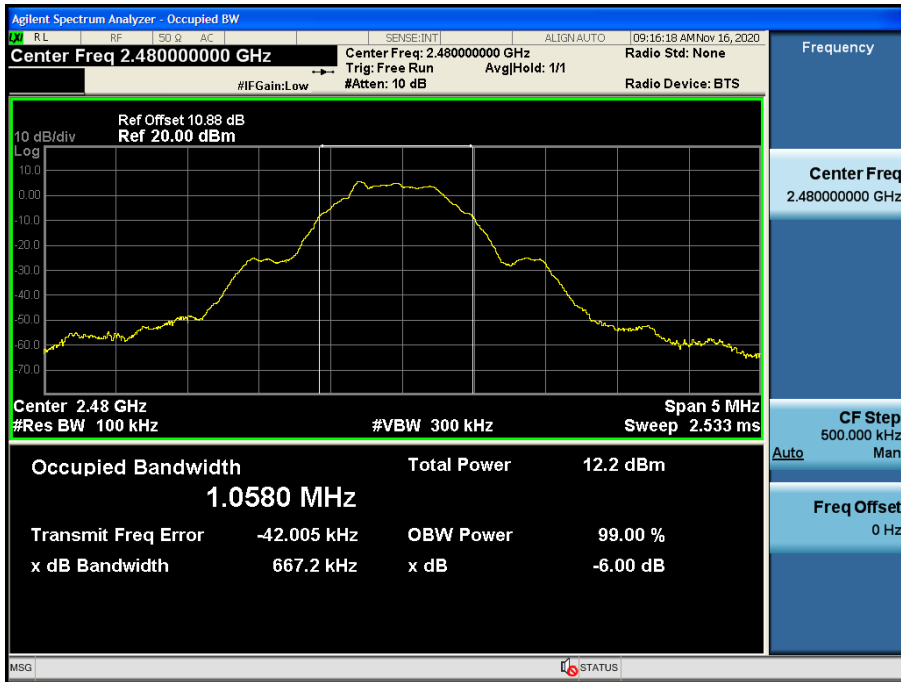
6 dB Bandwidth plot (Low-CH 0)



6 dB Bandwidth plot (Mid-CH 19)

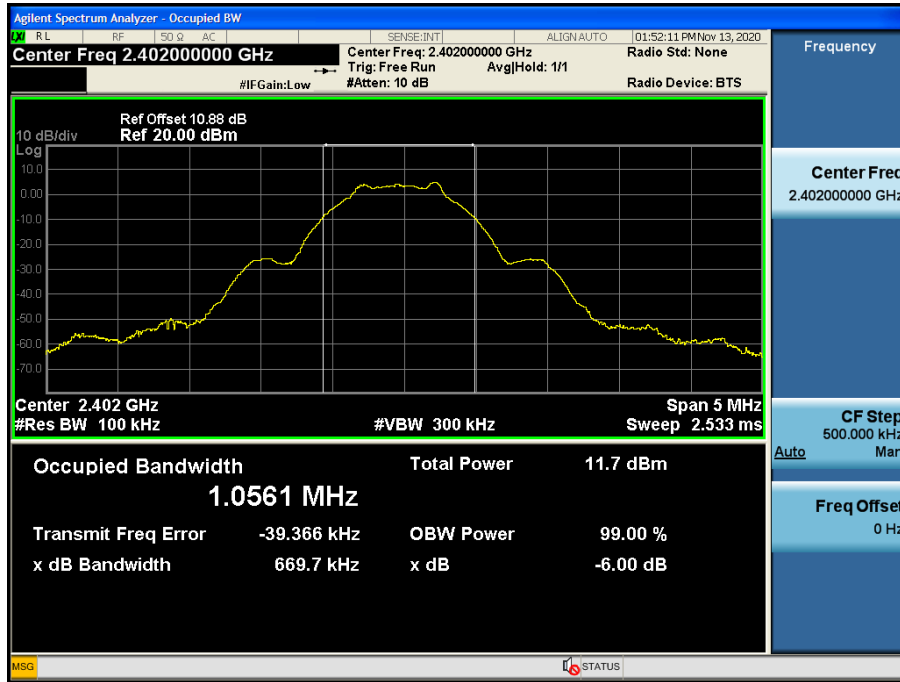


6 dB Bandwidth plot (High-CH 39)

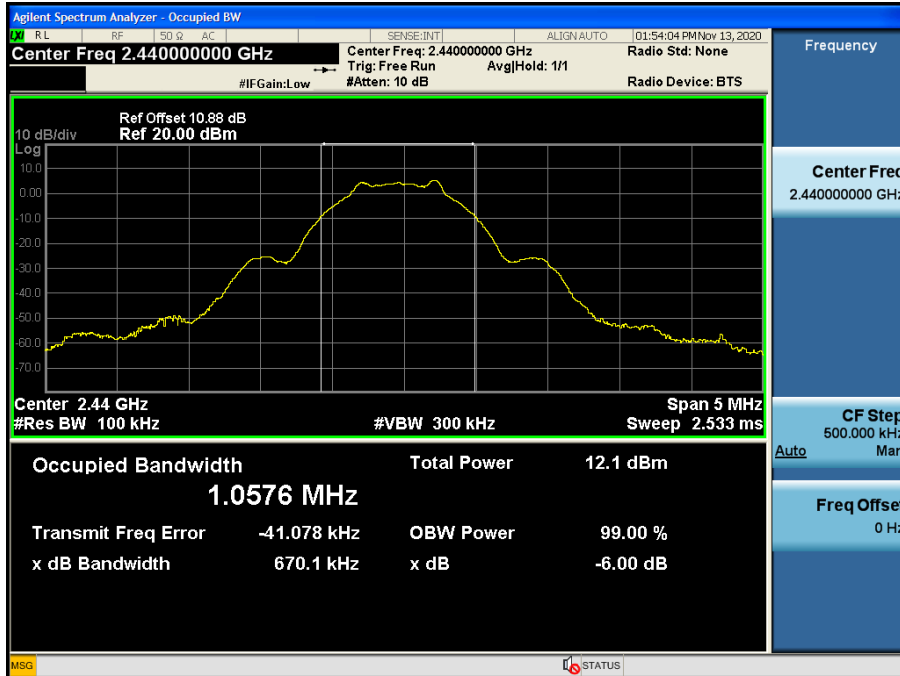


▣ 1M Bit/s (255 Byte) Test Plots

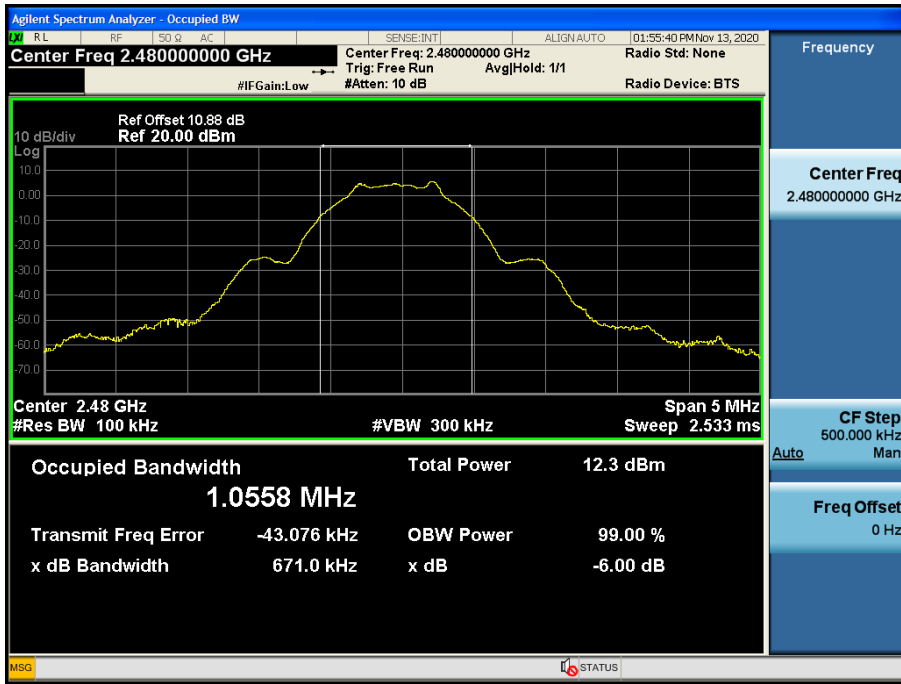
6 dB Bandwidth plot (Low-CH 0)



6 dB Bandwidth plot (Mid-CH 19)

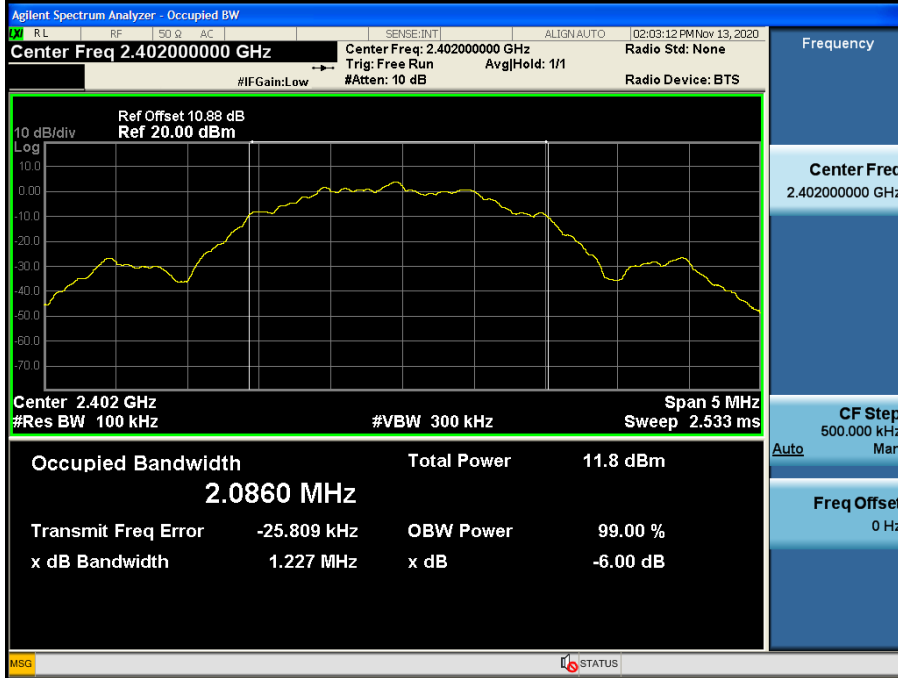


6 dB Bandwidth plot (High-CH 39)

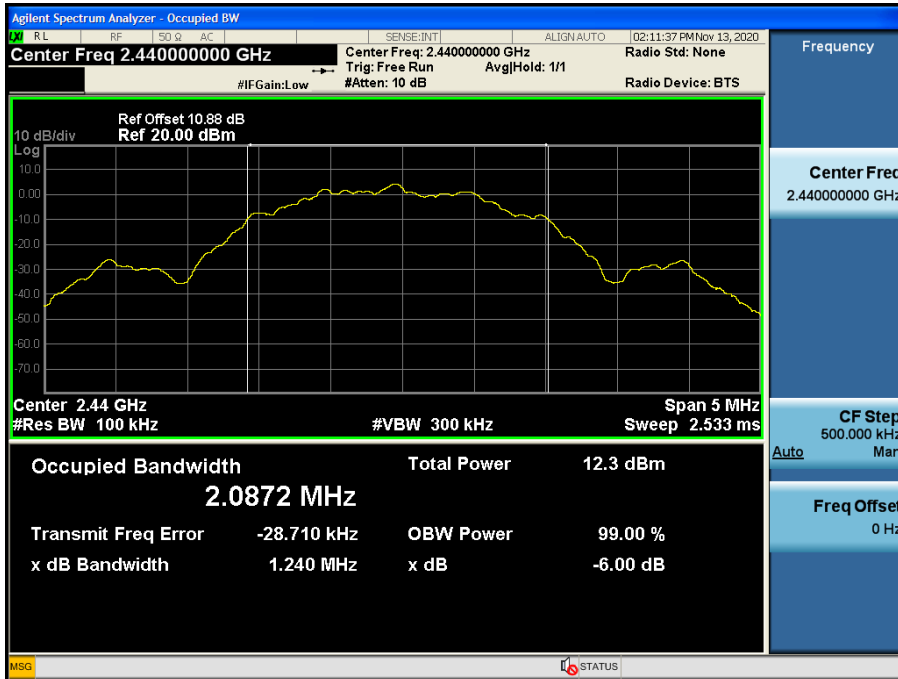


▣ 2M Bit/s (37 Byte) Test Plots

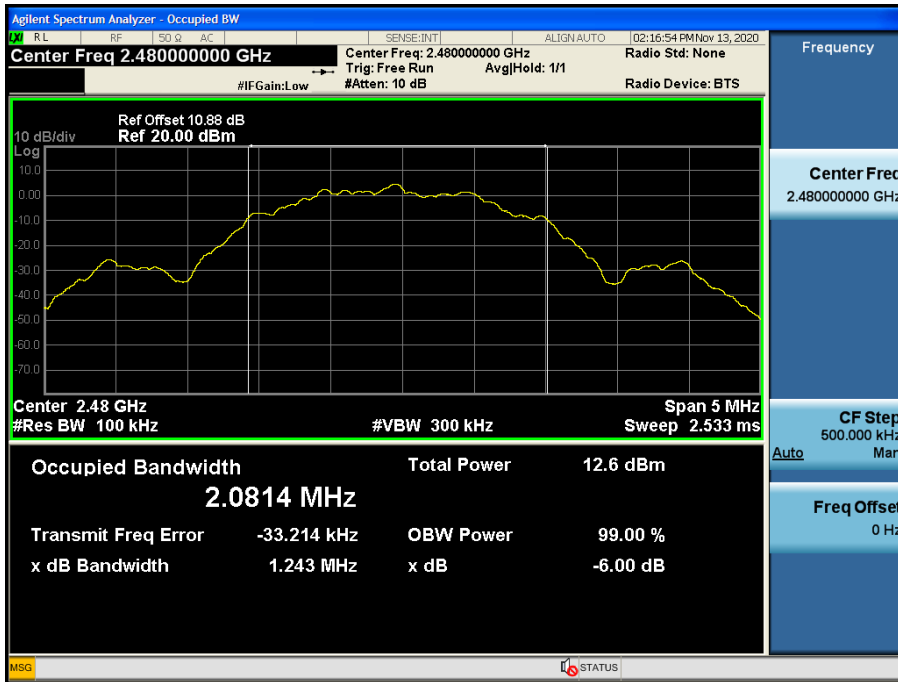
6 dB Bandwidth plot (Low-CH 0)



6 dB Bandwidth plot (Mid-CH 19)



6 dB Bandwidth plot (High-CH 39)



### 9.3 OUTPUT POWER

#### Peak Power

Data rate (Bit/s)	Packet length (Byte)	LE Mode		Measured Power(dBm)	Limit (dBm)
		Frequency [MHz]	Channel		
125k	37	2402	0	5.103	30
		2440	19	5.484	
		2480	39	5.818	
	255	2402	0	5.063	
		2440	19	5.429	
		2480	39	5.734	
500k	37	2402	0	5.101	
		2440	19	5.516	
		2480	39	5.840	
	255	2402	0	5.100	
		2440	19	5.467	
		2480	39	5.777	
1M	37	2402	0	5.099	
		2440	19	5.511	
		2480	39	5.826	
	255	2402	0	5.071	
		2440	19	5.472	
		2480	39	5.748	
2M	37	2402	0	5.231	
		2440	19	5.666	
		2480	39	6.054	
	255	2402	0	5.222	
		2440	19	5.632	
		2480	39	5.985	

Average Power

Data rate (Bit/s)	Packet length (Byte)	LE Mode		Measured Power (dBm)	Duty Cycle Factor (dB)	Result (dBm)	Limit (dBm)
		Frequency [MHz]	Channel				
125k	37	2402	0	4.09	0.84	4.93	30
		2440	19	4.45	0.84	5.29	
		2480	39	4.70	0.84	5.54	
	255	2402	0	4.78	0.11	4.90	
		2440	19	5.14	0.11	5.26	
		2480	39	5.38	0.11	5.50	
500k	37	2402	0	2.41	2.50	4.90	
		2440	19	2.81	2.50	5.31	
		2480	39	3.07	2.50	5.57	
	255	2402	0	4.48	0.42	4.90	
		2440	19	4.91	0.42	5.34	
		2480	39	5.10	0.42	5.52	
1M	37	2402	0	2.70	2.20	4.89	
		2440	19	3.13	2.20	5.33	
		2480	39	3.37	2.20	5.57	
	255	2402	0	4.09	0.72	4.81	
		2440	19	4.47	0.72	5.19	
		2480	39	4.81	0.72	5.53	
2M	37	2402	0	-0.26	5.08	4.82	
		2440	19	0.27	5.08	5.35	
		2480	39	0.60	5.08	5.68	
	255	2402	0	2.49	2.46	4.95	
		2440	19	2.88	2.46	5.34	
		2480	39	3.12	2.46	5.58	

Note :

1. Power meter offset = Attenuator loss + Cable loss
2. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB.  
So, 10.88 dB is offset for 2.4 GHz Band.



**9.4 POWER SPECTRAL DENSITY**

Frequency (MHz)	Channel No.	Mode	Test Result			Limit (dBm)
			Measured Power(dBm)	Duty Cycle Factor(dB)	Measured Power(dBm) + Duty Cycle Factor(dB)	
2402	0	125k Bit/s 37 Byte	-1.700	0.84	-0.859	8
2440	19		-1.508	0.84	-0.667	
2480	39		-1.206	0.84	-0.365	
2402	0	125k Bit/s 255 Byte	-1.118	0.11	-1.005	
2440	19		-0.702	0.11	-0.589	
2480	39		-0.471	0.11	-0.358	
2402	0	500k Bit/s 37 Byte	-4.069	2.50	-1.572	
2440	19		-4.294	2.50	-1.797	
2480	39		-3.868	2.50	-1.371	
2402	0	500k Bit/s 255 Byte	-2.122	0.42	-1.699	
2440	19		-1.806	0.42	-1.383	
2480	39		-1.348	0.42	-0.925	
2402	0	1M Bit/s 37 Byte	-3.437	2.20	-1.240	
2440	19		-2.573	2.20	-0.376	
2480	39		-2.723	2.20	-0.526	
2402	0	1M Bit/s 255 Byte	-2.264	0.72	-1.548	
2440	19		-2.011	0.72	-1.295	
2480	39		-1.938	0.72	-1.222	
2402	0	2M Bit/s 37 Byte	-7.607	5.08	-2.526	
2440	19		-7.186	5.08	-2.105	
2480	39		-7.327	5.08	-2.246	
2402	0	2M Bit/s 255 Byte	-6.947	2.46	-4.490	
2440	19		-6.032	2.46	-3.575	
2480	39		-6.073	2.46	-3.616	

**Note :**

1. Spectrum reading values are 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 + Cable loss

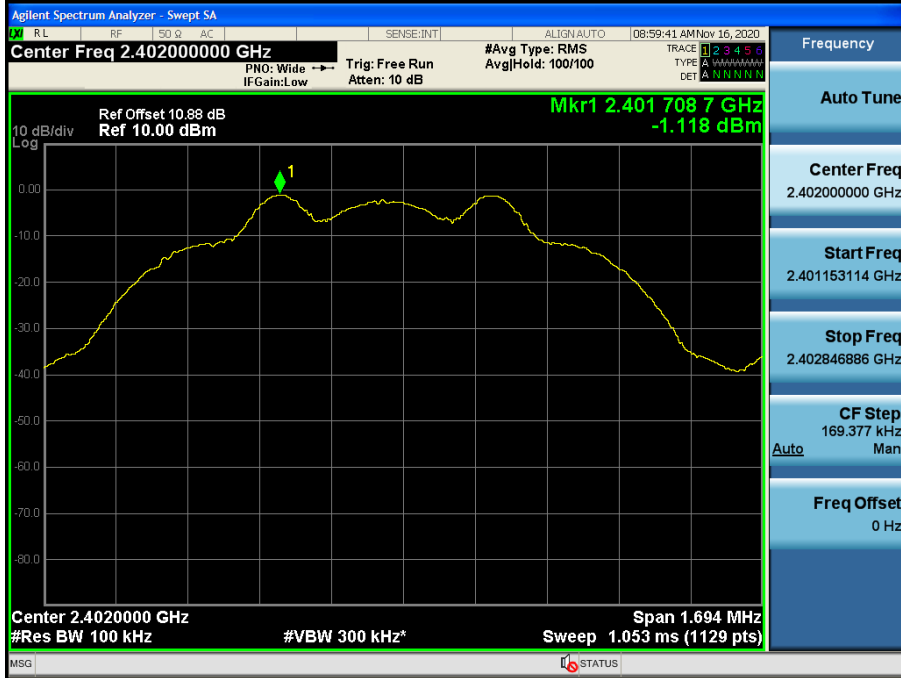
3. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB.

So, 10.88 dB is offset for 2.4 GHz Band.

4. Worst case test Plot Only : 125k Bit/s (255 Byte)

▣ 125k Bit/s (255 Byte) Test Plots

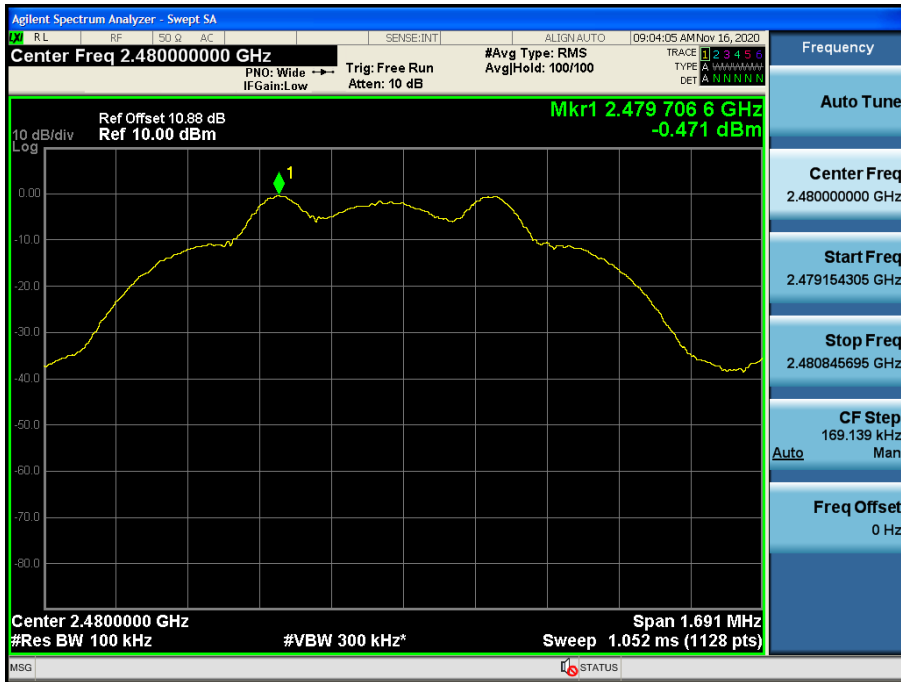
Power Spectral Density (Low-CH 0)



Power Spectral Density (Mid-CH 19)



Power Spectral Density (High-CH 39)



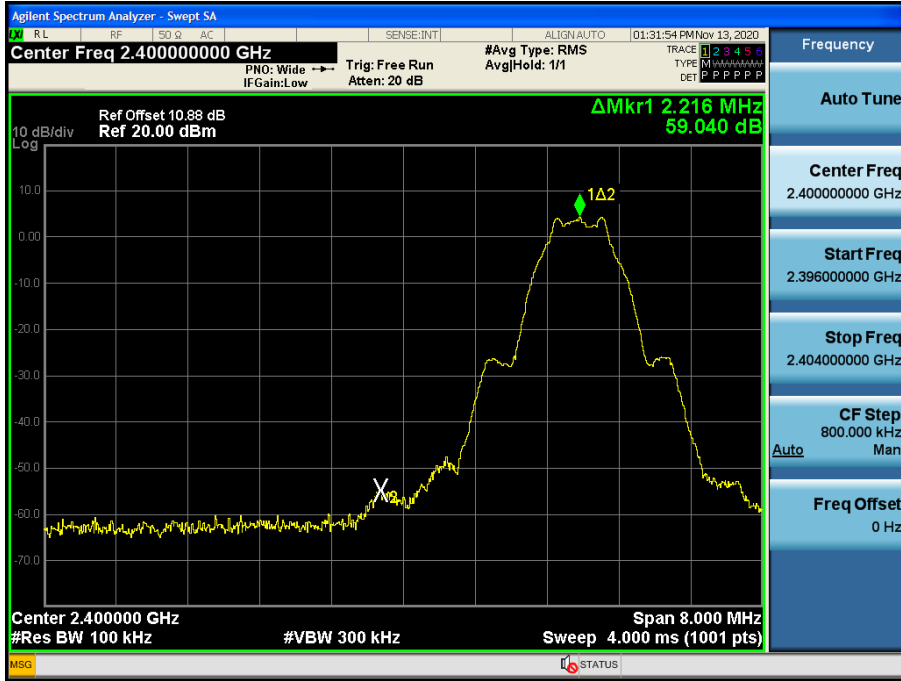
## 9.5 BAND EDGE/ CONDUCTED SPURIOUS EMISSIONS

Test Result : please refer to the plot below.

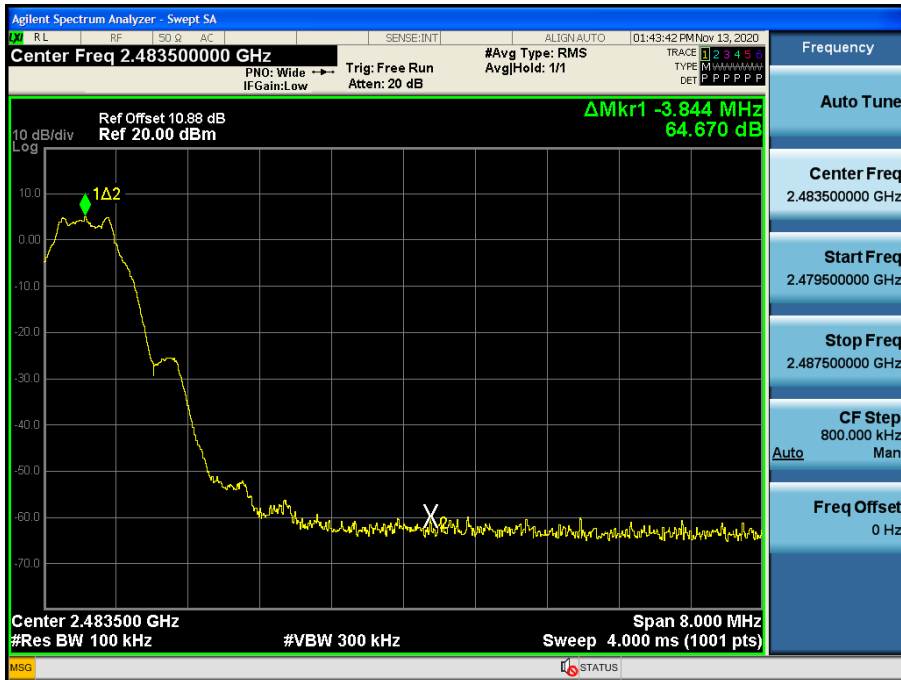
In order to simplify the report, attached plots were only the worst case channel and data rate.

▣ 1M Bit/s (37 Byte) Test Plots -BandEdge

Low-CH 0



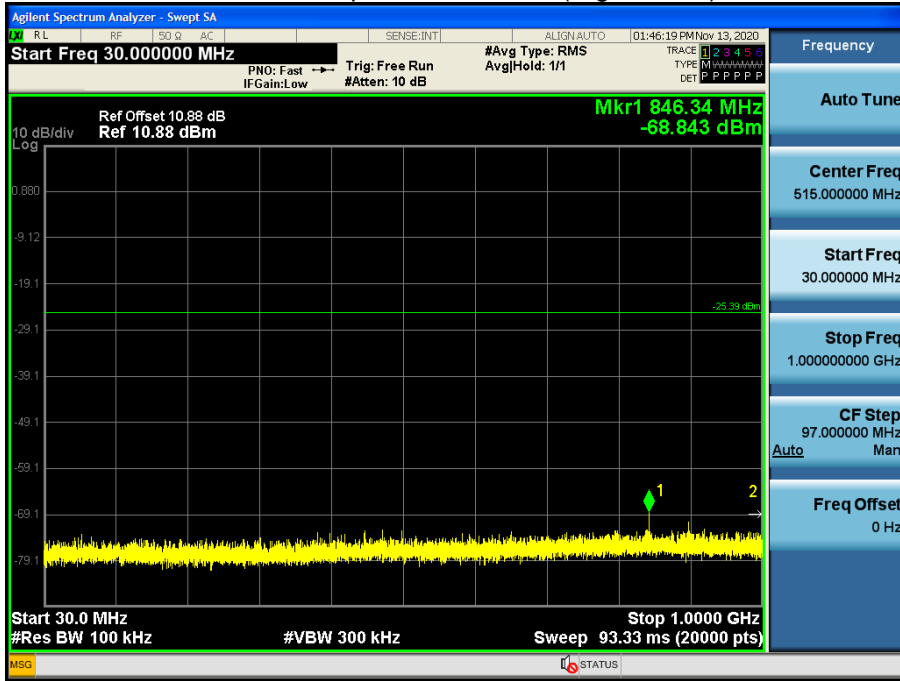
High-CH 39



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

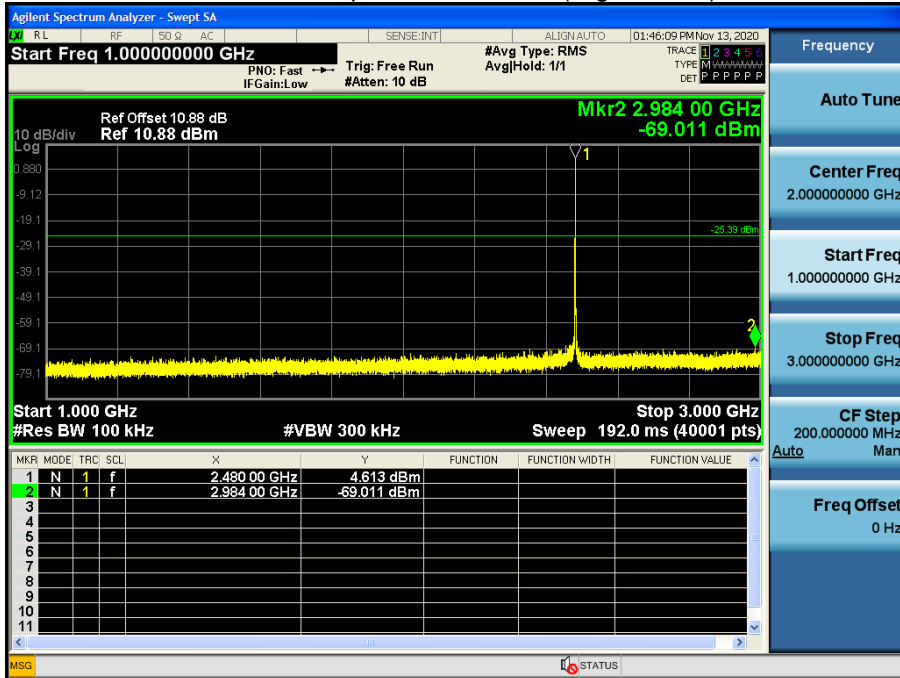
30 MHz ~ 1 GHz

Conducted Spurious Emission (High-CH 39)



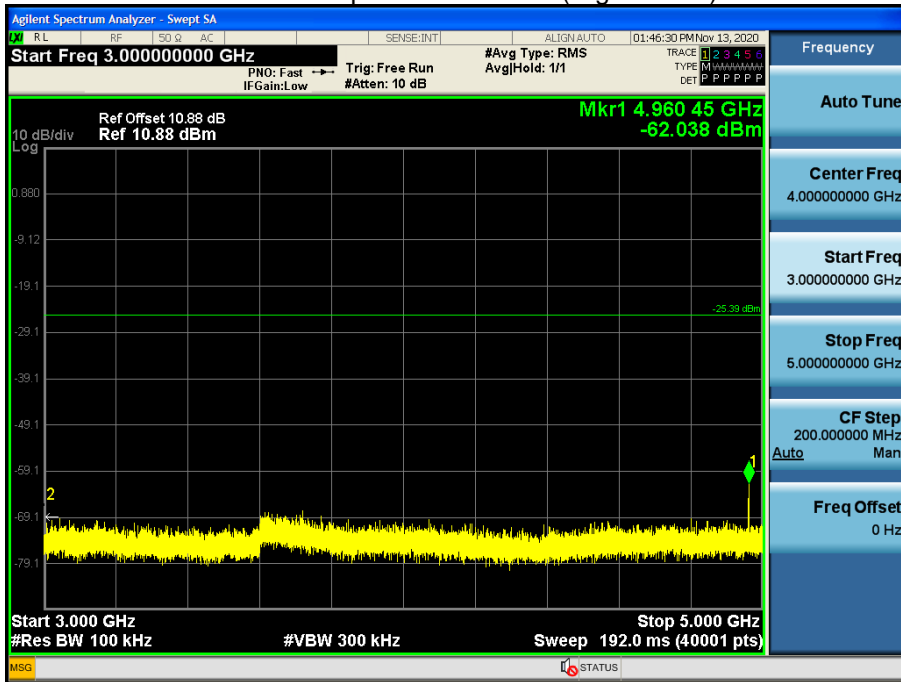
1 GHz ~ 3 GHz

Conducted Spurious Emission (High-CH 39)



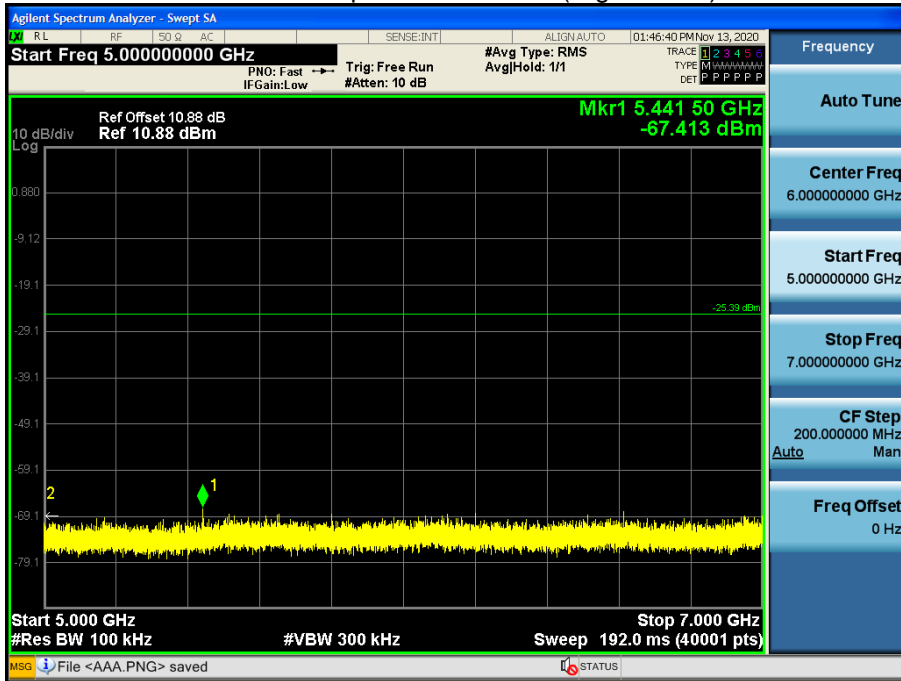
3 GHz ~ 5 GHz

Conducted Spurious Emission (High-CH 39)



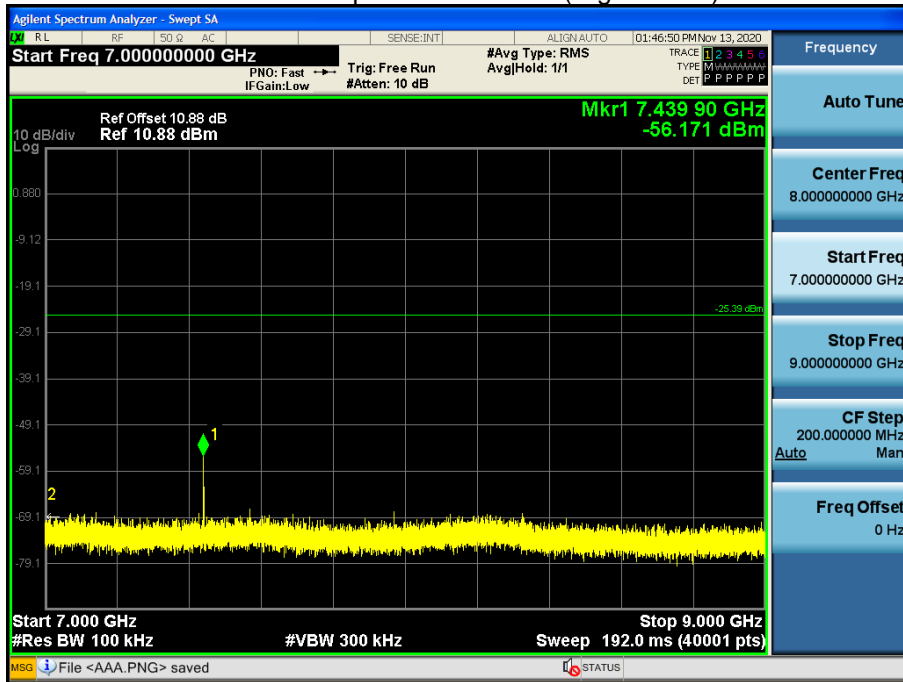
5 GHz ~ 7 GHz

Conducted Spurious Emission (High-CH 39)



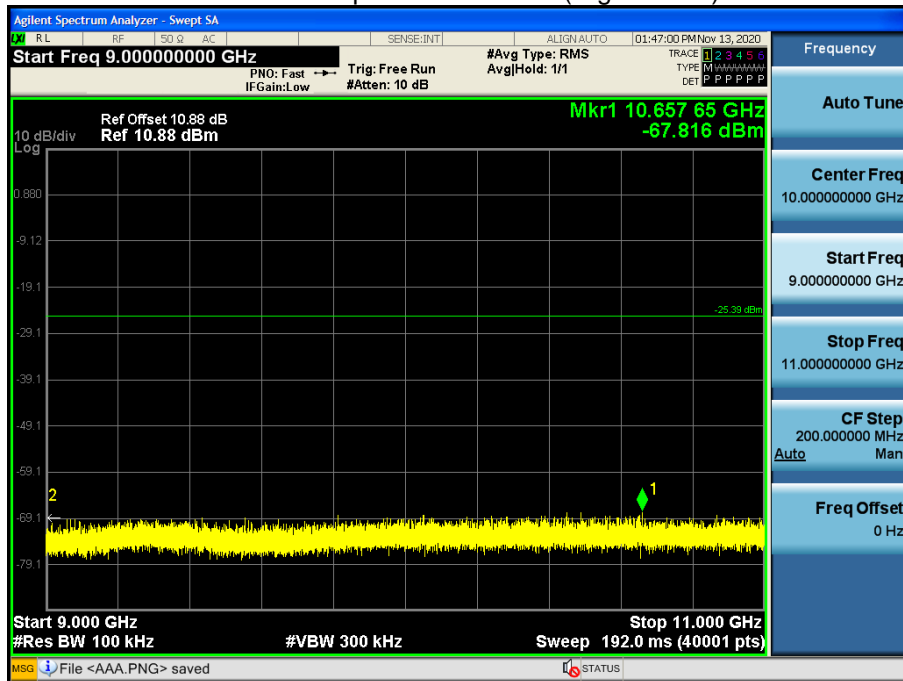
7 GHz ~ 9 GHz

Conducted Spurious Emission (High-CH 39)



9 GHz ~ 11 GHz

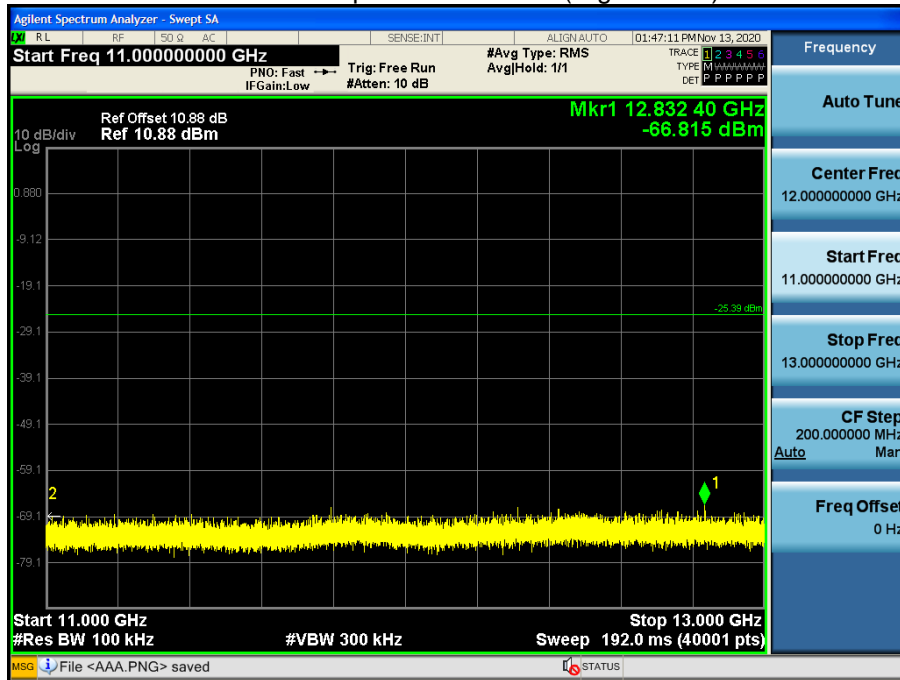
Conducted Spurious Emission (High-CH 39)





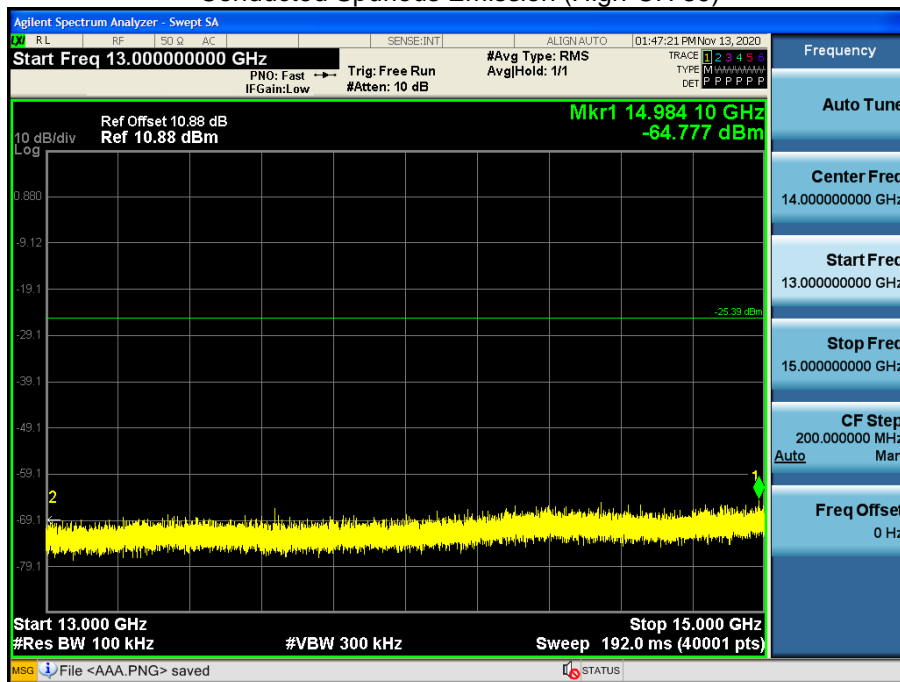
11 GHz ~ 13 GHz

Conducted Spurious Emission (High-CH 39)



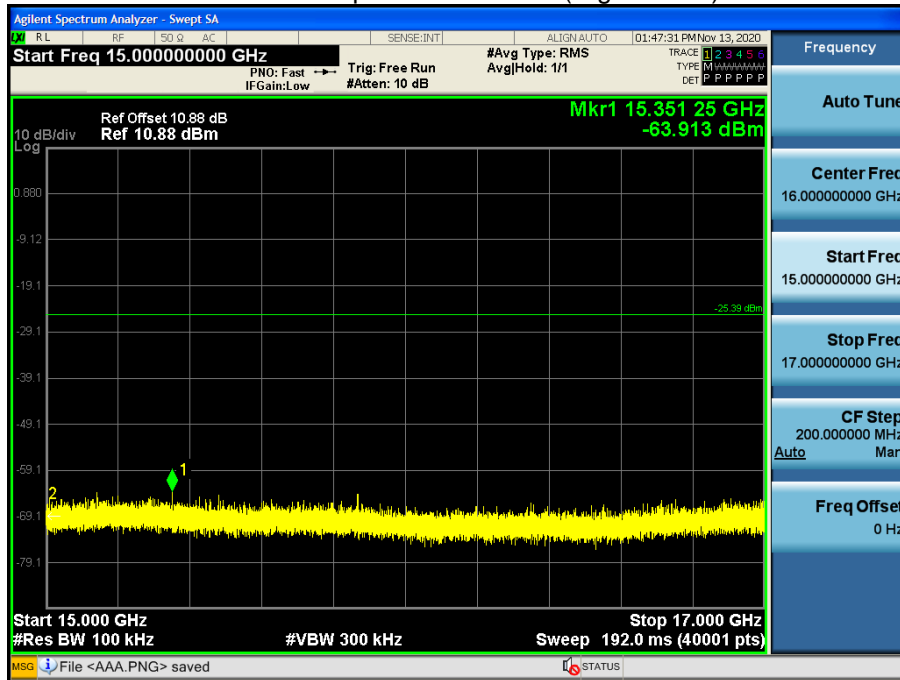
13 GHz ~ 15 GHz

Conducted Spurious Emission (High-CH 39)



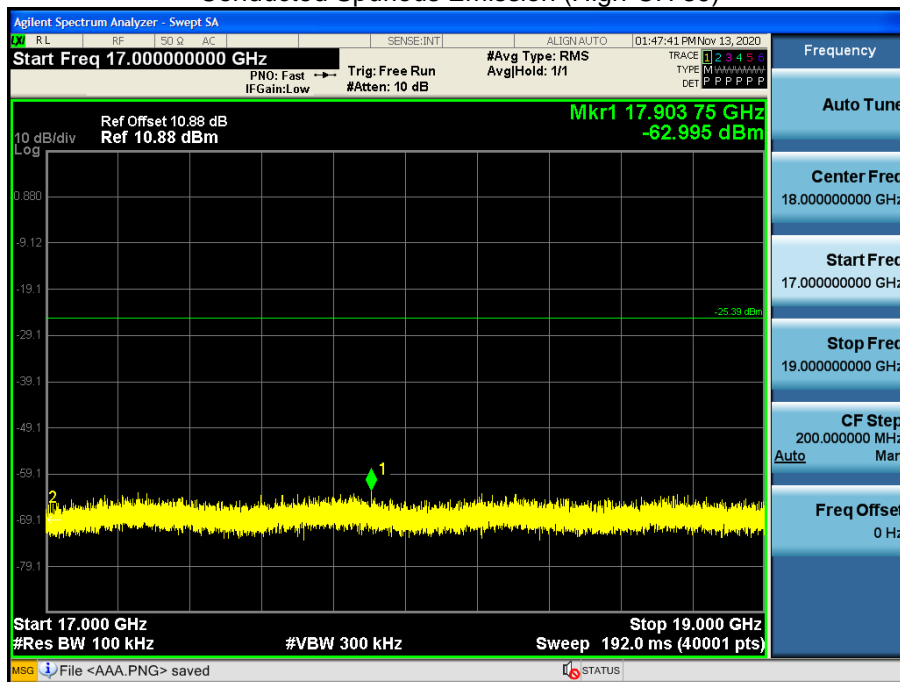
15 GHz ~ 17 GHz

Conducted Spurious Emission (High-CH 39)



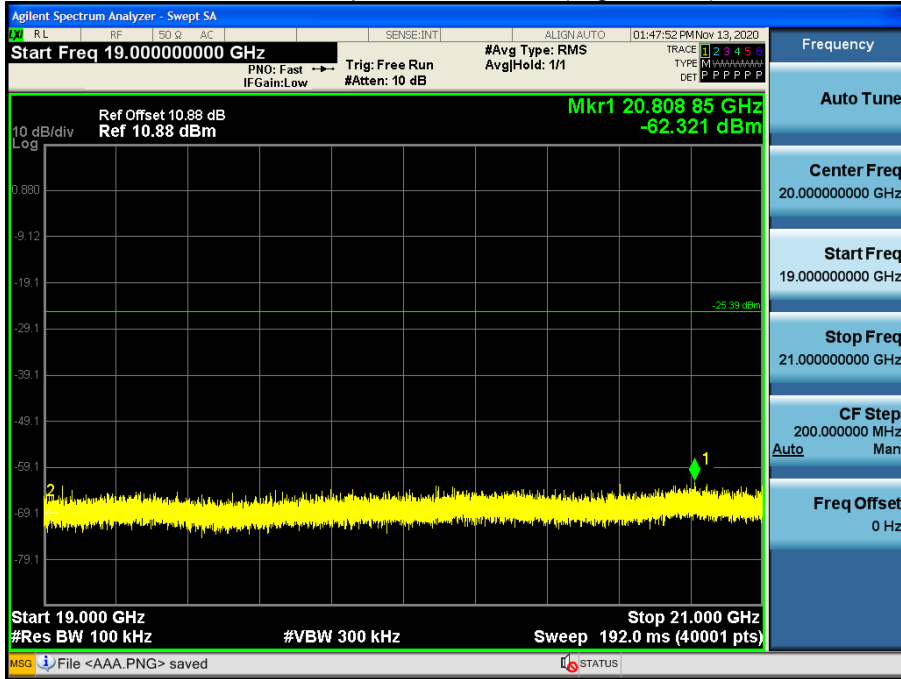
17 GHz ~ 19 GHz

Conducted Spurious Emission (High-CH 39)



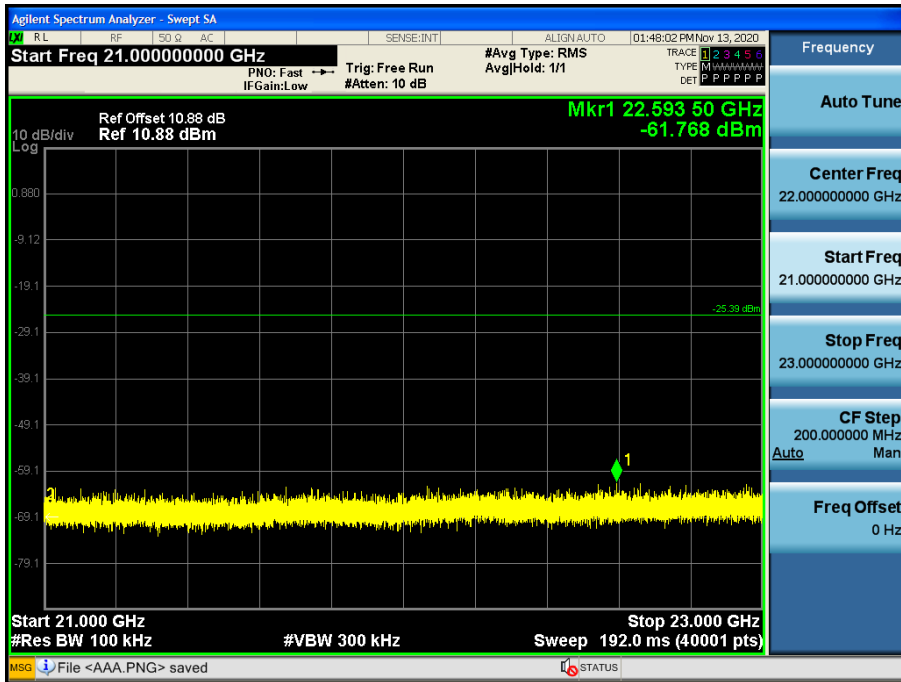
19 GHz ~ 21 GHz

Conducted Spurious Emission (High-CH 39)



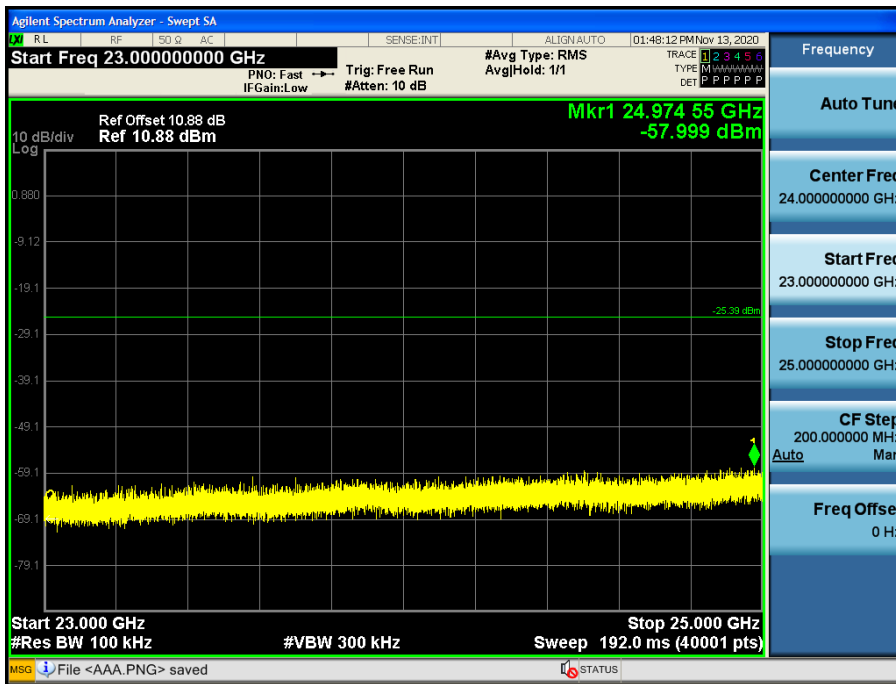
21 GHz ~ 23 GHz

Conducted Spurious Emission (High-CH 39)



23 GHz ~ 25 GHz

Conducted Spurious Emission (High-CH 39)



▣ 2M Bit/s (37 Byte) Test Plots -BandEdge

Low-CH 0



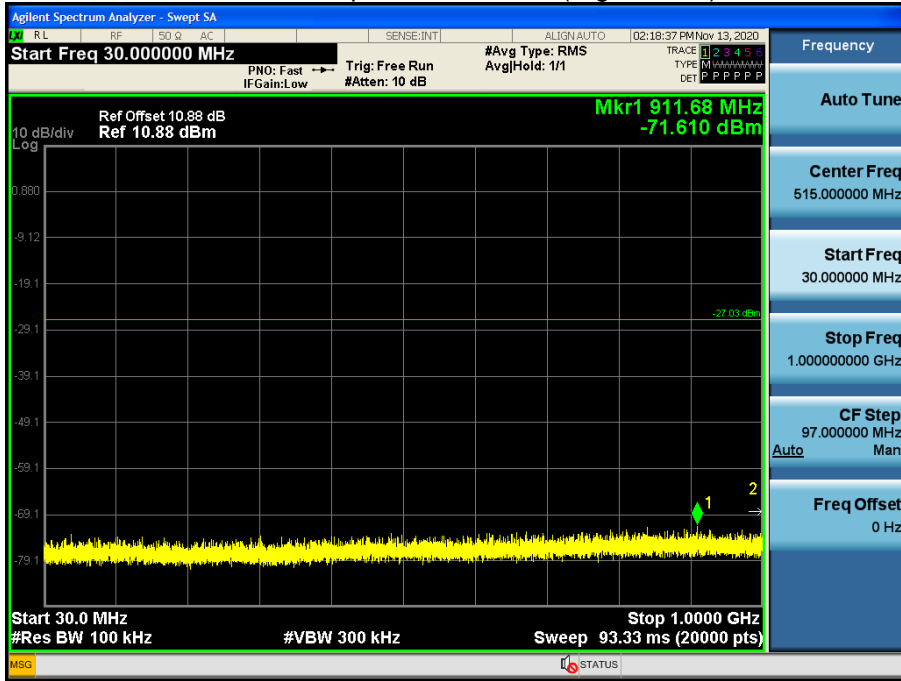
High-CH 39



2M Bit/s (37 Byte) Test Plots -Conducted Spurious Emission

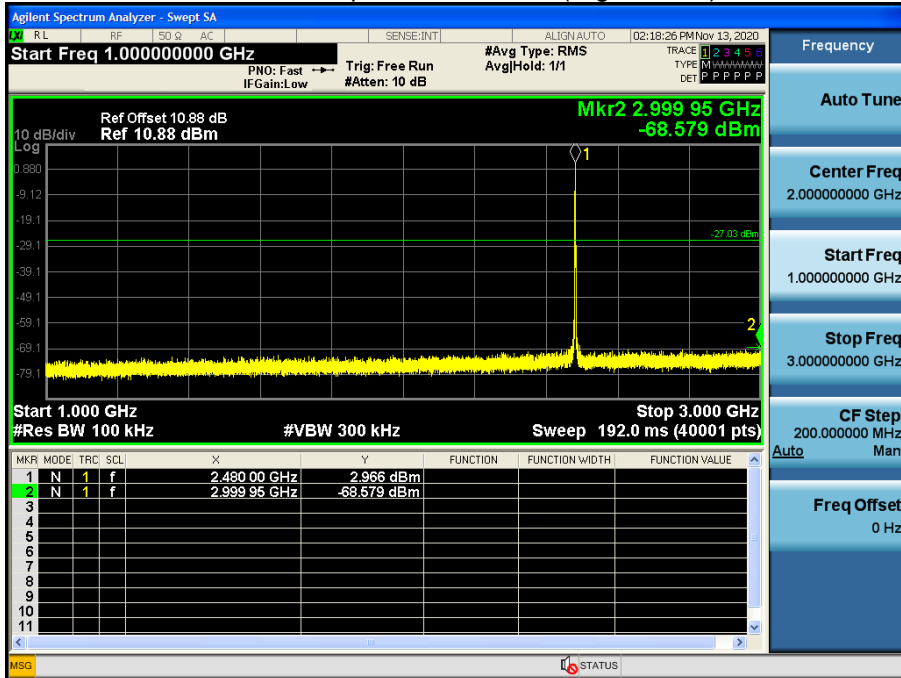
30 MHz ~ 1 GHz

Conducted Spurious Emission (High-CH 39)



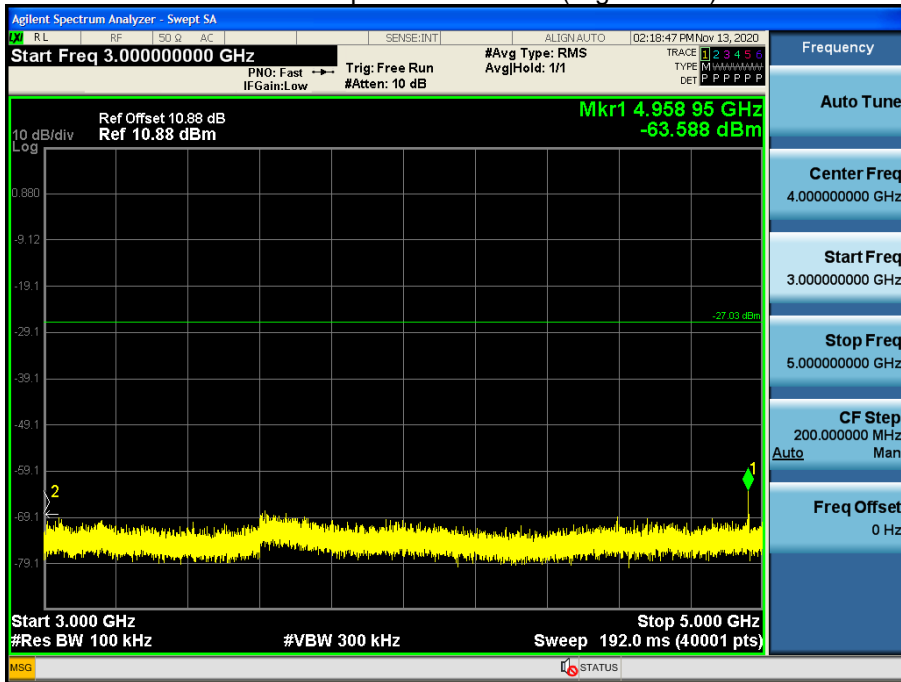
1 GHz ~ 3 GHz

Conducted Spurious Emission (High-CH 39)



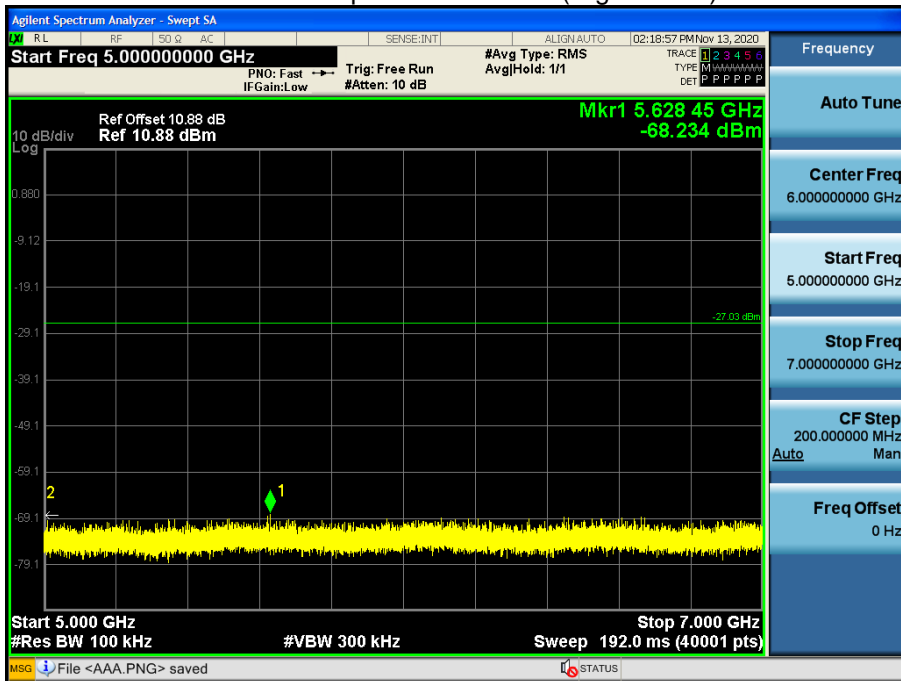
3 GHz ~ 5 GHz

Conducted Spurious Emission (High-CH 39)



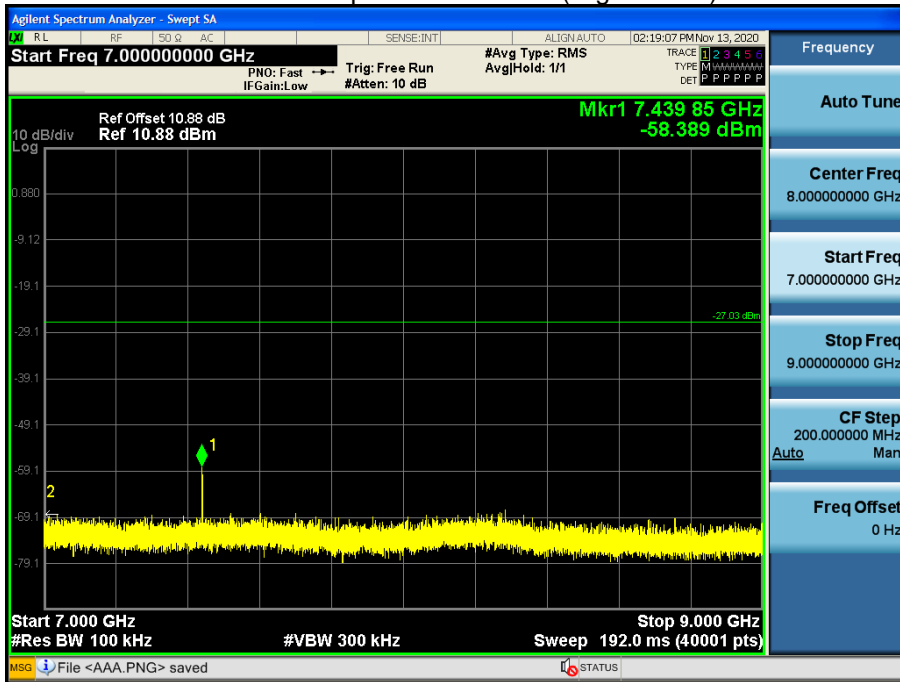
5 GHz ~ 7 GHz

Conducted Spurious Emission (High-CH 39)



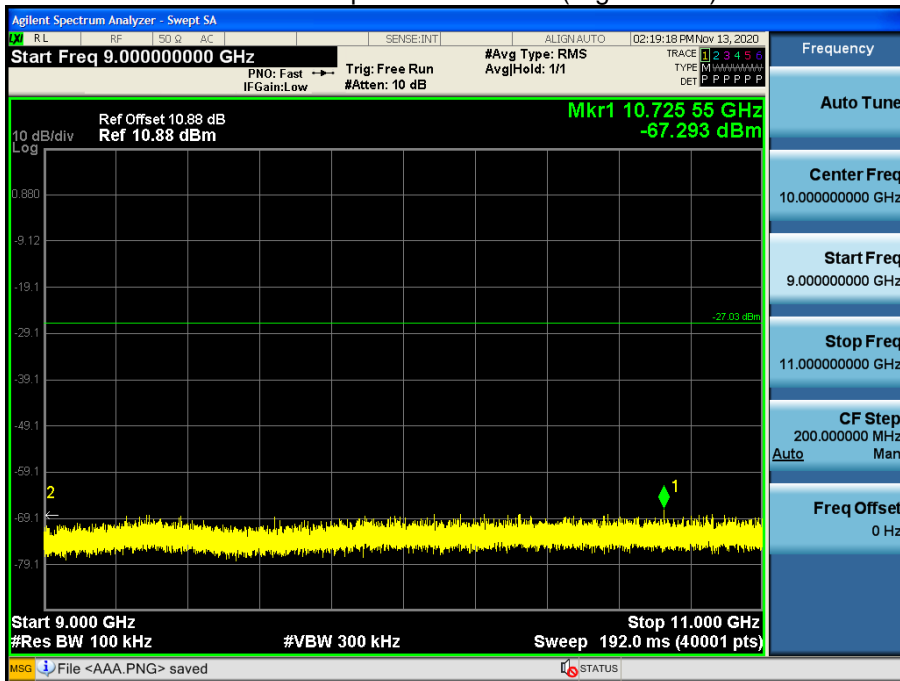
7 GHz ~ 9 GHz

Conducted Spurious Emission (High-CH 39)



9 GHz ~ 11 GHz

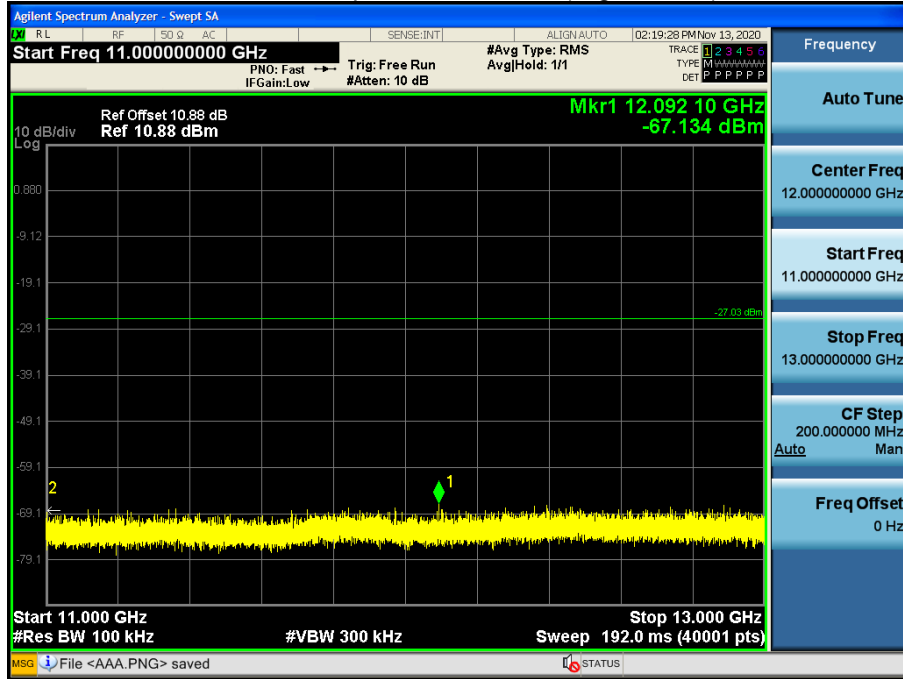
Conducted Spurious Emission (High-CH 39)





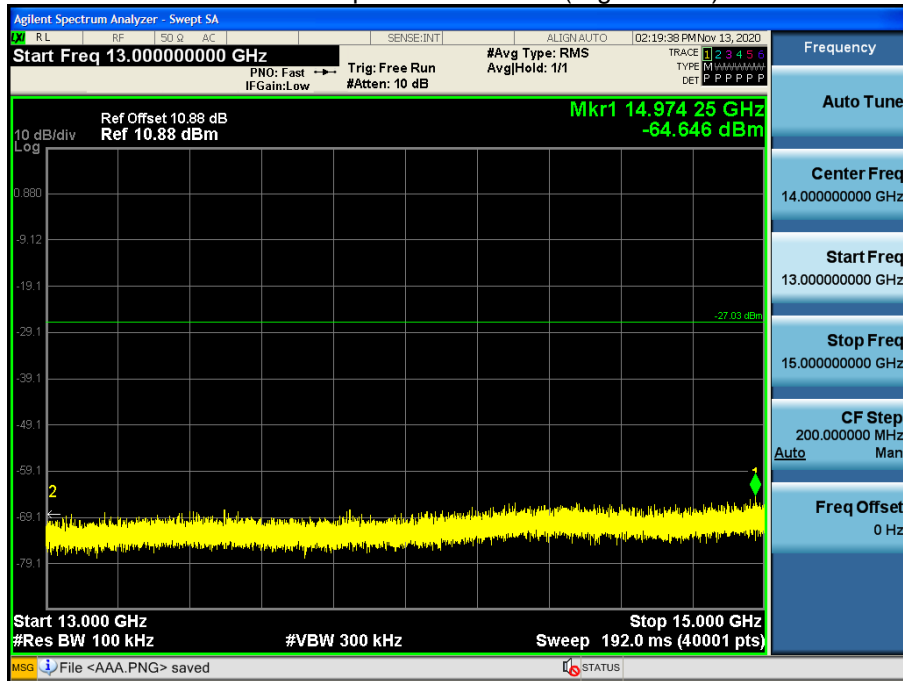
11 GHz ~ 13 GHz

Conducted Spurious Emission (High-CH 39)



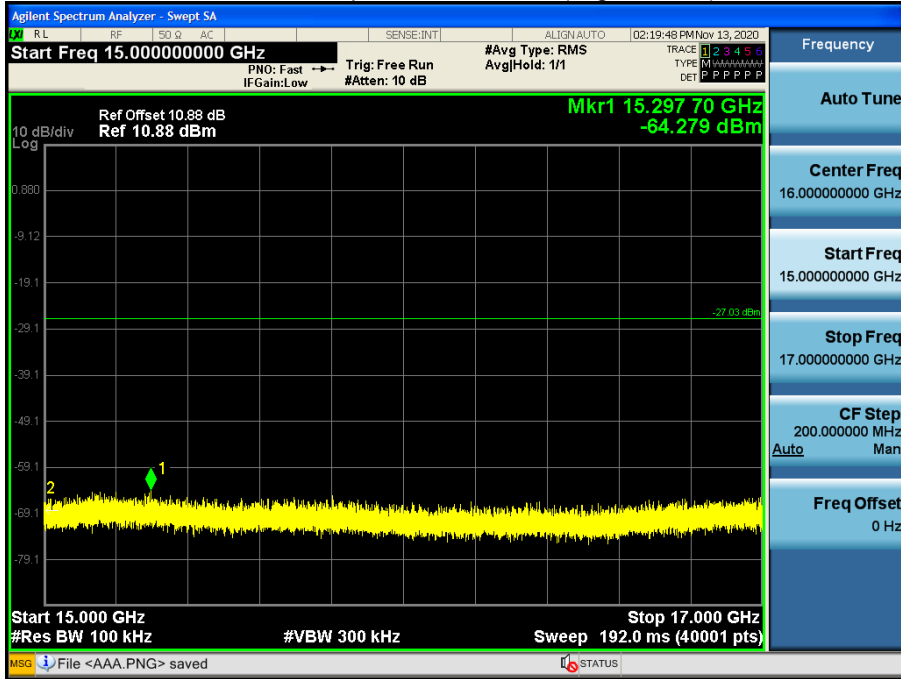
13 GHz ~ 15 GHz

Conducted Spurious Emission (High-CH 39)



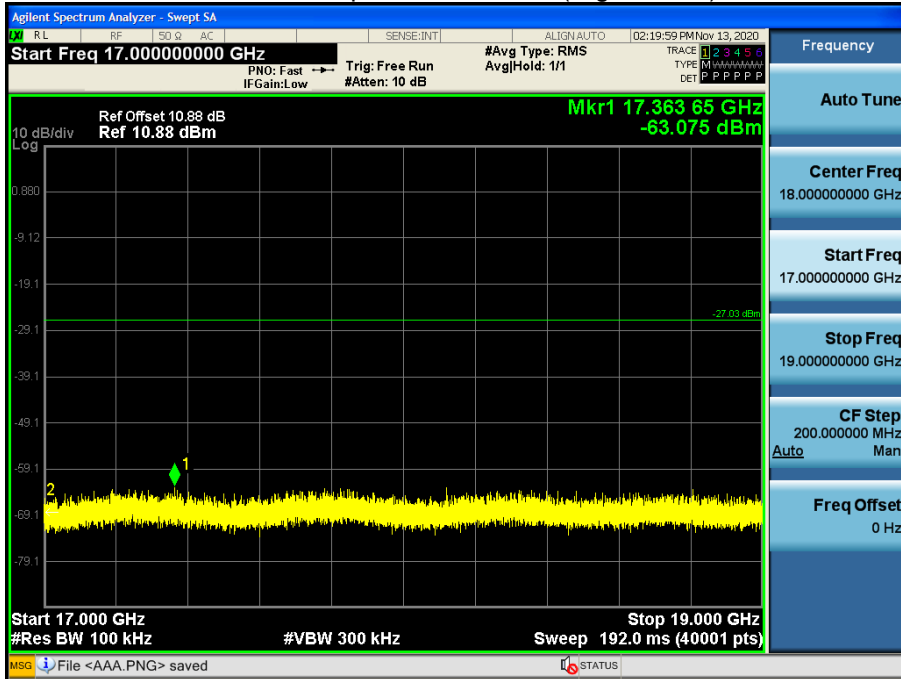
15 GHz ~ 17 GHz

Conducted Spurious Emission (High-CH 39)



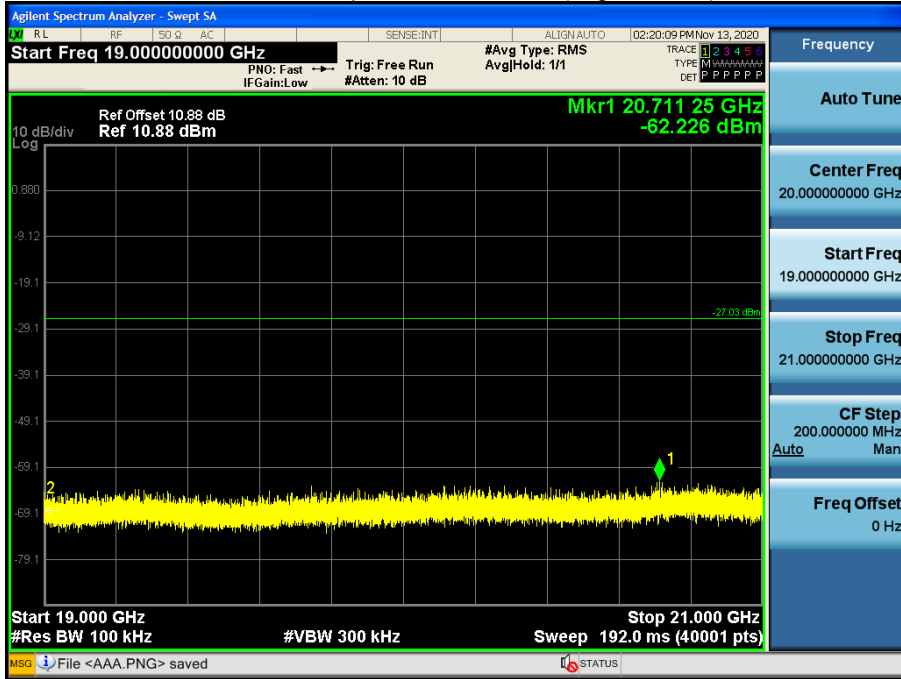
17 GHz ~ 19 GHz

Conducted Spurious Emission (High-CH 39)



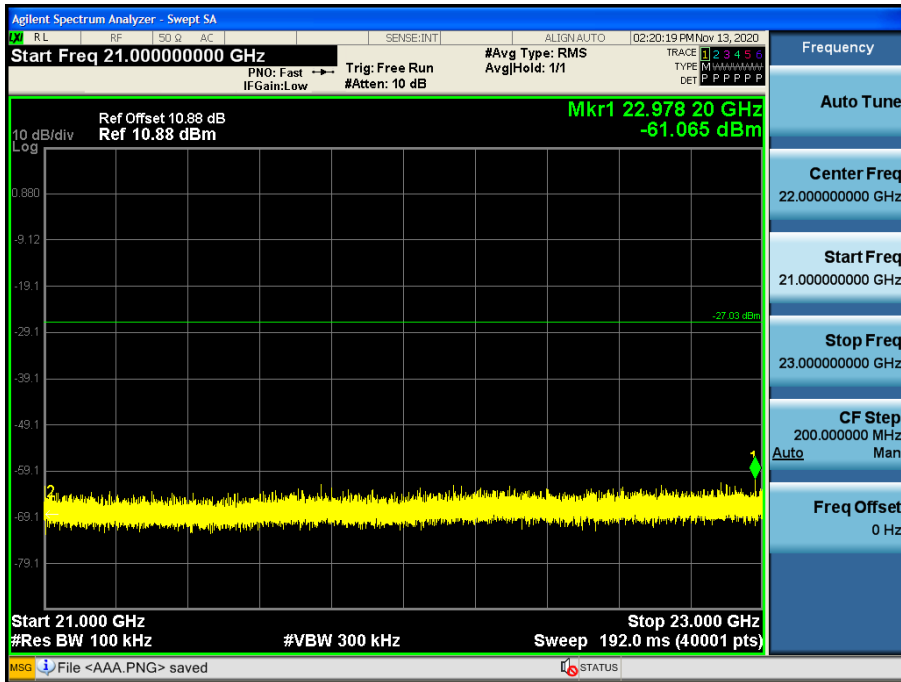
19 GHz ~ 21 GHz

Conducted Spurious Emission (High-CH 39)



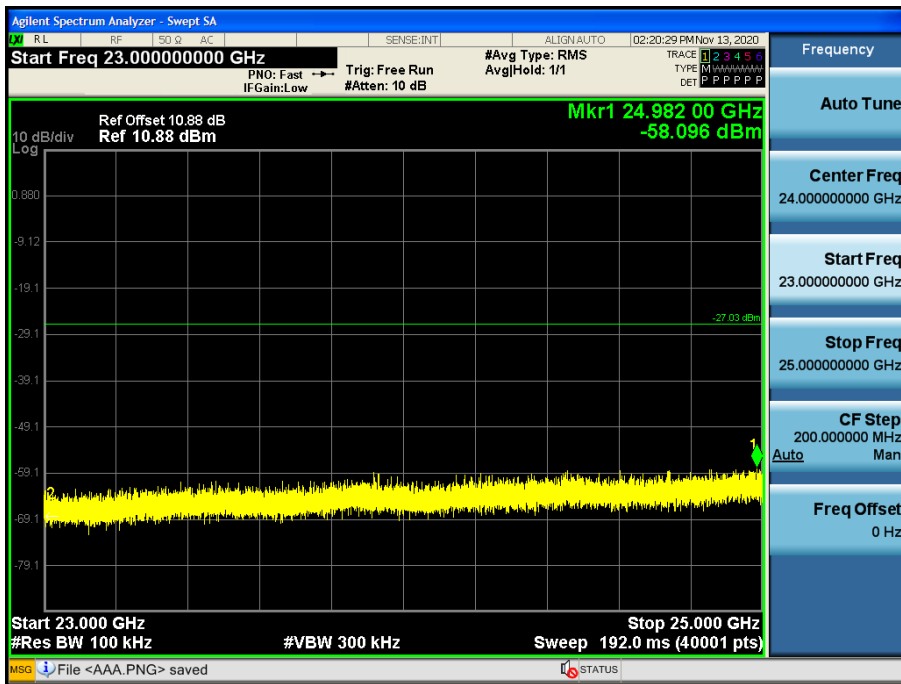
21 GHz ~ 23 GHz

Conducted Spurious Emission (High-CH 39)



23 GHz ~ 25 GHz

Conducted Spurious Emission (High-CH 39)



**9.6 RADIATED SPURIOUS EMISSIONS**

**Frequency Range : 9 kHz – 30MHz**

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBuV/m	dBm/m	dBm	(H/V)	dBuV/m	dBuV/m	dB
No Critical peaks found							

**Note:**

1. The reading 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 (dBuV) + Distance extrapolation factor
4. Radiated test is performed with hopping off.

**Frequency Range : Below 1 GHz**

Frequency	Reading	Ant. factor	Cable loss	Ant. POL	Total	Limit	Margin
MHz	dBuV/m	dBm/m	dBm	(H/V)	dBuV/m	dBuV/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 : 1M Bit/s (37 Byte)**

Operation Mode: CH Low

Frequency [MHz]	Reading [dBuV]	Duty Cycle Correction [dB]	A.F + C.L - A.G + D.F [dB]	Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4804	41.99	0.00	2.98	V	44.97	73.98	29.01	PK
4804	29.91	2.20	2.98	V	35.09	53.98	18.89	AV
7206	43.35	0.00	9.57	V	52.92	73.98	21.06	PK
7206	33.91	2.20	9.57	V	45.68	53.98	8.30	AV
4804	42.33	0.00	2.98	H	45.31	73.98	28.67	PK
4804	30.20	2.20	2.98	H	35.38	53.98	18.60	AV
7206	46.13	0.00	9.57	H	55.70	73.98	18.28	PK
7206	37.72	2.20	9.57	H	49.49	53.98	4.49	AV

Operation Mode: CH Mid

Frequency [MHz]	Reading [dBuV]	Duty Cycle Correction [dB]	A.F + C.L - A.G + D.F [dB]	Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4880	39.52	0.00	3.33	V	42.85	73.98	31.13	PK
4880	28.33	2.20	3.33	V	33.86	53.98	20.12	AV
7320	43.97	0.00	10.20	V	54.17	73.98	19.81	PK
7320	34.54	2.20	10.20	V	46.94	53.98	7.04	AV
4880	40.80	0.00	3.33	H	44.13	73.98	29.85	PK
4880	29.10	2.20	3.33	H	34.63	53.98	19.35	AV
7320	44.78	0.00	10.20	H	54.98	73.98	19.00	PK
7320	35.36	2.20	10.20	H	47.76	53.98	6.22	AV

Operation Mode: CH High

Frequency [MHz]	Reading [dBuV]	Duty Cycle Correction [dB]	A.F + C.L - A.G [dB]	Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4960	40.81	0.00	2.36	V	43.17	73.98	30.81	PK
4960	28.94	2.20	2.36	V	33.50	53.98	20.48	AV
7440	40.65	0.00	10.72	V	51.37	73.98	22.61	PK
7440	29.78	2.20	10.72	V	42.70	53.98	11.28	AV
4960	40.65	0.00	2.36	H	43.01	73.98	30.97	PK
4960	29.16	2.20	2.36	H	33.72	53.98	20.26	AV
7440	41.50	0.00	10.72	H	52.22	73.98	21.76	PK
7440	31.40	2.20	10.72	H	44.32	53.98	9.66	AV

**Mode : 2M Bit/s (37 Byte)**

Operation Mode: CH Low

Frequency [MHz]	Reading [dBuV]	Duty Cycle Correction [dB]	A.F + C.L - A.G + D.F [dB]	Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4804	41.13	0.00	2.98	V	44.11	73.98	29.87	PK
4804	29.50	5.08	2.98	V	37.56	53.98	16.42	AV
7206	44.62	0.00	9.57	V	54.19	73.98	19.79	PK
7206	32.87	5.08	9.57	V	47.52	53.98	6.46	AV
4804	41.65	0.00	2.98	H	44.63	73.98	29.35	PK
4804	29.82	5.08	2.98	H	37.88	53.98	16.10	AV
7206	45.08	0.00	9.57	H	54.65	73.98	19.33	PK
7206	33.46	5.08	9.57	H	48.11	53.98	5.87	AV

Operation Mode: CH Mid

Frequency [MHz]	Reading [dBuV]	Duty Cycle Correction [dB]	A.F + C.L - A.G + D.F [dB]	Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4880	40.68	0.00	3.33	V	44.01	73.98	29.97	PK
4880	27.59	5.08	3.33	V	36.00	53.98	17.98	AV
7320	43.71	0.00	10.20	V	53.91	73.98	20.07	PK
7320	31.34	5.08	10.20	V	46.62	53.98	7.36	AV
4880	41.52	0.00	3.33	H	44.85	73.98	29.13	PK
4880	28.61	5.08	3.33	H	37.02	53.98	16.96	AV
7320	44.07	0.00	10.20	H	54.27	73.98	19.71	PK
7320	31.83	5.08	10.20	H	47.11	53.98	6.87	AV

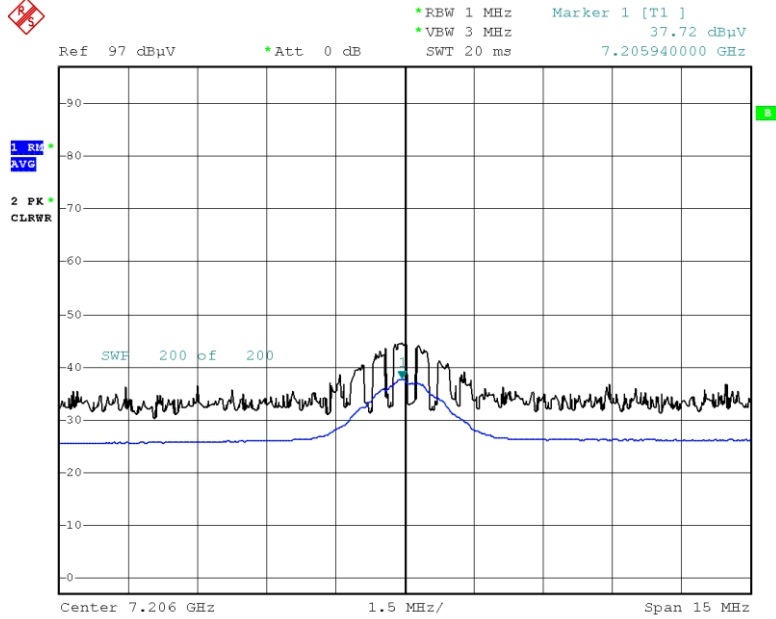


Operation Mode: CH High

Frequency [MHz]	Reading [dBuV]	Duty Cycle Correction [dB]	A.F + C.L - A.G + D.F [dB]	Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4960	40.55	0.00	2.36	V	42.91	73.98	31.07	PK
4960	28.49	5.08	2.36	V	35.93	53.98	18.05	AV
7440	40.35	0.00	10.72	V	51.07	73.98	22.91	PK
7440	27.92	5.08	10.72	V	43.72	53.98	10.26	AV
4960	40.71	0.00	2.36	H	43.07	73.98	30.91	PK
4960	28.54	5.08	2.36	H	35.98	53.98	18.00	AV
7440	41.02	0.00	10.72	H	51.74	73.98	22.24	PK
7440	29.03	5.08	10.72	H	44.83	53.98	9.15	AV

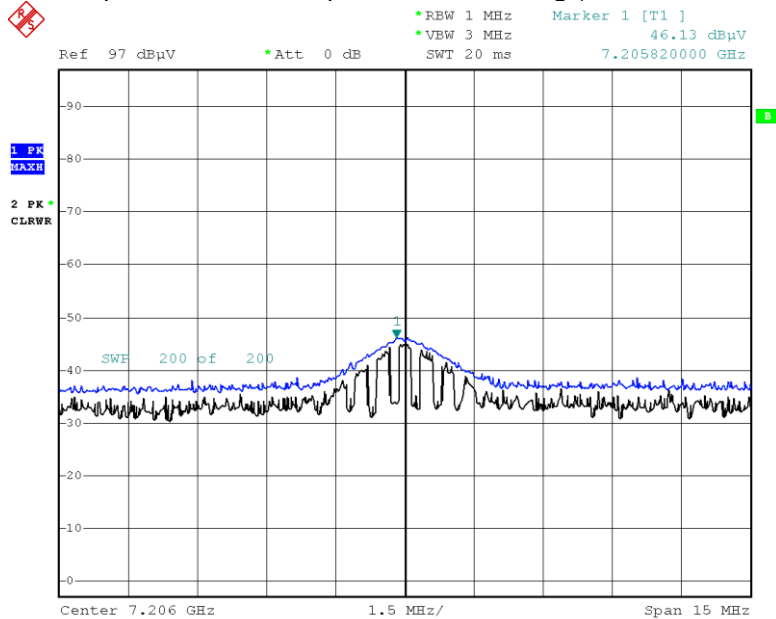
▣ 1M Bit/s 37 Byte Test Plots (Worst case : X-H)

Radiated Spurious Emissions plot – Average Reading (Ch.0 3rd Harmonic)



Date: 7.DEC.2020 02:38:20

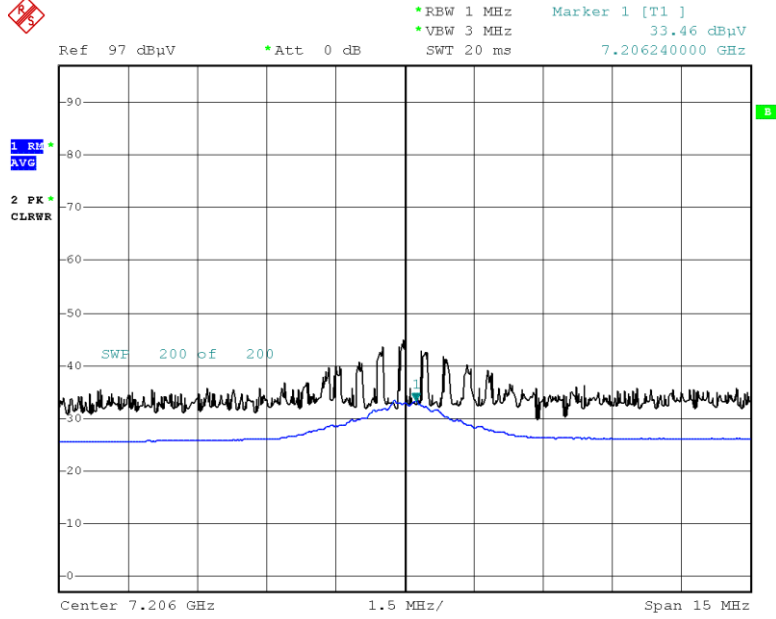
Radiated Spurious Emissions plot – Peak Reading (Ch.0 3rd Harmonic)



Date: 7.DEC.2020 02:36:27

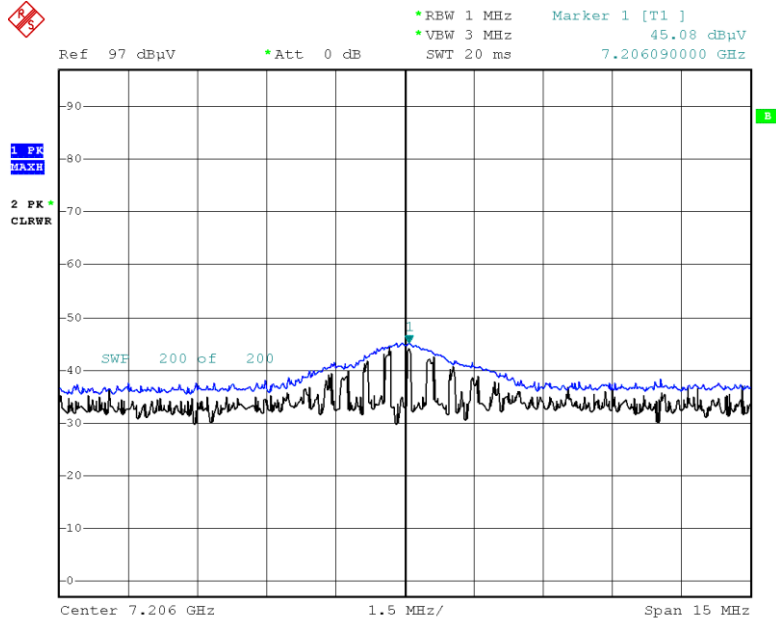
▣ 2M Bit/s 37 Byte Test Plots (Worst case : X-H)

Radiated Spurious Emissions plot – Average Reading (Ch.0 3rd Harmonic)



Date: 7.DEC.2020 02:46:40

Radiated Spurious Emissions plot – Peak Reading (Ch.0 3rd Harmonic)



Date: 7.DEC.2020 02:45:53

**Note:**

Plot of worst case are only reported.

## 9.7 RADIATED RESTRICTED BAND EDGES

### Mode : 1M Bit/s (37 Byte)

Operating Frequency 2402 MHz, 2480 MHz

Channel No. 0 CH, 39 CH

Frequency [MHz]	Reading [dBuV/m]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F [dB]	Ant. Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	20.89	0.00	35.16	H	56.05	73.98	17.93	PK
2390.0	9.26	2.20	35.16	H	46.61	53.98	7.37	AV
2390.0	20.62	0.00	35.16	V	55.78	73.98	18.20	PK
2390.0	9.17	2.20	35.16	V	46.53	53.98	7.45	AV
2483.5	21.53	0.00	35.36	H	56.89	73.98	17.09	PK
2483.5	9.39	2.20	35.36	H	46.95	53.98	7.03	AV
2483.5	21.09	0.00	35.36	V	56.45	73.98	17.53	PK
2483.5	9.31	2.20	35.36	V	46.87	53.98	7.11	AV

### Mode : 2M Bit/s (37 Byte)

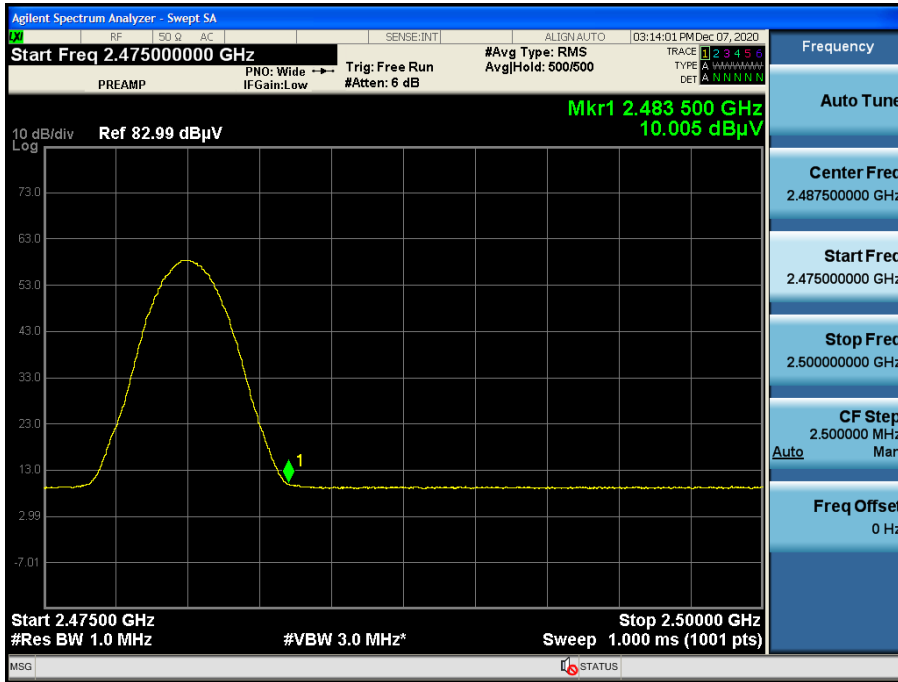
Operating Frequency 2402 MHz, 2480 MHz

Channel No. 0 CH, 39 CH

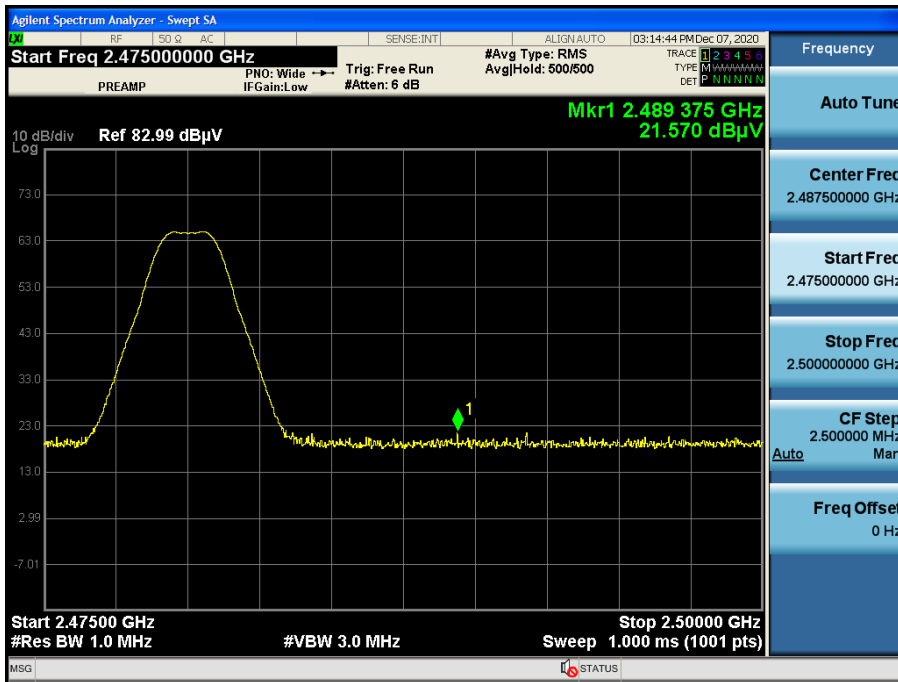
Frequency [MHz]	Reading [dBuV/m]	Duty Cycle Factor [dB]	A.F.+C.L.+D.F [dB]	Ant. Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	20.92	0.00	35.16	H	56.08	73.98	17.90	PK
2390.0	9.28	5.08	35.16	H	49.51	53.98	4.47	AV
2390.0	20.56	0.00	35.16	V	55.72	73.98	18.26	PK
2390.0	9.14	5.08	35.16	V	49.38	53.98	4.60	AV
2483.5	21.57	0.00	35.36	H	56.93	73.98	17.05	PK
2483.5	10.01	5.08	35.36	H	50.44	53.98	3.54	AV
2483.5	21.23	0.00	35.36	V	56.59	73.98	17.39	PK
2483.5	9.85	5.08	35.36	V	50.28	53.98	3.70	AV

Mode : 2M Bit/s (37 Byte) Test Plots (Worst case : X-H)

Radiated Restricted Band Edges plot – Average Reading (Ch.39)



Radiated Restricted Band Edges plot – Peak Reading (Ch.39)



**Note:**

Plot of worst case are only reported.

**9.8 POWERLINE CONDUCTED EMISSIONS**

**Conducted Emissions (Line 1)**

Test

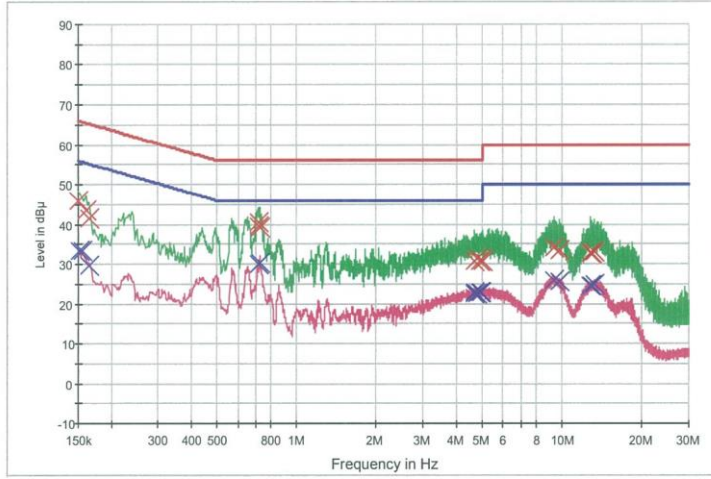
1 / 2

**HCT TEST Report**

**Common Information**

EUT: SM-A326B/DS  
 Manufacturer: SAMSUNG  
 Test Site: SHIELD ROOM  
 Operating Conditions: BTLE MODE\_L1

FCC CLASS B\_Exten Cable



— FCC CLASS B\_QP      — FCC CLASS B\_AV      — Preview Result 1-PK+  
 — Preview Result 2-AVG      × Final Result 1-QPK      × Final Result 2-CAV

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	45.9	9.000	Off	L1	9.8	20.1	66.0
0.160000	43.5	9.000	Off	L1	9.8	22.0	65.5
0.164000	41.6	9.000	Off	L1	9.8	23.7	65.3
0.716000	40.4	9.000	Off	L1	9.8	15.6	56.0
0.722000	39.6	9.000	Off	L1	9.8	16.4	56.0
0.726000	39.2	9.000	Off	L1	9.8	16.8	56.0
4.654000	30.6	9.000	Off	L1	10.0	25.4	56.0
4.666000	30.6	9.000	Off	L1	10.0	25.4	56.0
4.798000	31.2	9.000	Off	L1	10.0	24.8	56.0
4.904000	30.7	9.000	Off	L1	10.0	25.3	56.0
4.928000	31.1	9.000	Off	L1	10.0	24.9	56.0
5.040000	30.8	9.000	Off	L1	10.0	29.2	60.0
9.300000	34.2	9.000	Off	L1	10.2	25.8	60.0
9.324000	33.9	9.000	Off	L1	10.2	26.1	60.0
9.734000	33.4	9.000	Off	L1	10.2	26.6	60.0
12.806000	32.8	9.000	Off	L1	10.3	27.2	60.0
12.862000	32.8	9.000	Off	L1	10.3	27.2	60.0
13.234000	33.2	9.000	Off	L1	10.3	26.8	60.0

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Test

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**Final Result 2**

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.152000	33.4	9.000	Off	L1	9.8	22.5	55.9
0.156000	33.3	9.000	Off	L1	9.8	22.4	55.7
0.164000	29.7	9.000	Off	L1	9.8	25.5	55.3
0.716000	29.9	9.000	Off	L1	9.8	16.1	46.0
0.722000	30.1	9.000	Off	L1	9.8	15.9	46.0
0.726000	30.2	9.000	Off	L1	9.8	15.8	46.0
4.654000	22.8	9.000	Off	L1	10.0	23.2	46.0
4.666000	22.6	9.000	Off	L1	10.0	23.4	46.0
4.798000	22.7	9.000	Off	L1	10.0	23.3	46.0
4.884000	22.9	9.000	Off	L1	10.0	23.1	46.0
4.904000	22.8	9.000	Off	L1	10.0	23.2	46.0
4.928000	22.9	9.000	Off	L1	10.0	23.1	46.0
9.300000	25.8	9.000	Off	L1	10.2	24.2	50.0
9.364000	26.1	9.000	Off	L1	10.2	23.9	50.0
9.734000	25.5	9.000	Off	L1	10.2	24.5	50.0
12.806000	24.6	9.000	Off	L1	10.3	25.4	50.0
12.862000	24.7	9.000	Off	L1	10.3	25.3	50.0
13.234000	25.0	9.000	Off	L1	10.3	25.0	50.0

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**Conducted Emissions (Line 2)**

Test

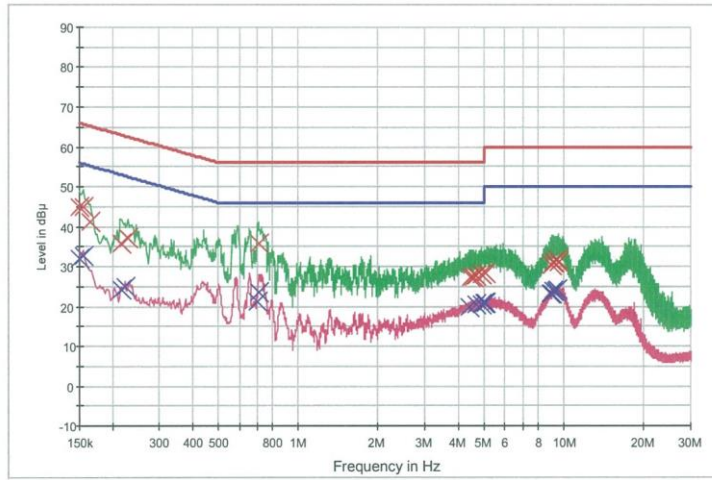
1 / 2

**HCT TEST Report**

**Common Information**

EUT: SM-A326B/DS  
 Manufacturer: SAMSUNG  
 Test Site: SHIELD ROOM  
 Operating Conditions: BTLE MODE\_N

FCC CLASS B\_Exten Cable



— FCC CLASS B\_QP      — FCC CLASS B\_AV      — Preview Result 1-PK+  
 — Preview Result 2-AVG      × Final Result 1-QPK      × Final Result 2-CAV

**Final Result 1**

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	44.8	9.000	Off	N	9.8	21.2	66.0
0.156000	44.8	9.000	Off	N	9.8	20.9	65.7
0.164000	41.2	9.000	Off	N	9.8	24.1	65.3
0.216000	35.9	9.000	Off	N	9.8	27.1	63.0
0.228000	37.2	9.000	Off	N	9.8	25.4	62.5
0.710000	35.8	9.000	Off	N	9.8	20.2	56.0
4.442000	27.2	9.000	Off	N	10.0	28.8	56.0
4.590000	27.4	9.000	Off	N	10.0	28.6	56.0
4.676000	27.7	9.000	Off	N	10.0	28.3	56.0
4.912000	28.1	9.000	Off	N	10.0	27.9	56.0
5.060000	28.2	9.000	Off	N	10.0	31.8	60.0
5.078000	28.4	9.000	Off	N	10.0	31.6	60.0
8.978000	30.5	9.000	Off	N	10.2	29.5	60.0
9.090000	31.0	9.000	Off	N	10.2	29.0	60.0
9.104000	30.9	9.000	Off	N	10.2	29.1	60.0
9.224000	31.0	9.000	Off	N	10.2	29.0	60.0
9.434000	31.6	9.000	Off	N	10.2	28.4	60.0
9.576000	31.1	9.000	Off	N	10.2	28.9	60.0

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Test

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**Final Result 2**

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	32.0	9.000	Off	N	9.8	24.0	56.0
0.156000	32.8	9.000	Off	N	9.8	22.8	55.7
0.216000	24.1	9.000	Off	N	9.8	28.8	53.0
0.222000	25.0	9.000	Off	N	9.8	27.7	52.7
0.700000	21.1	9.000	Off	N	9.8	24.9	46.0
0.710000	23.7	9.000	Off	N	9.8	22.3	46.0
4.388000	19.8	9.000	Off	N	10.0	26.2	46.0
4.646000	20.3	9.000	Off	N	10.0	25.7	46.0
4.676000	20.5	9.000	Off	N	10.0	25.5	46.0
4.914000	20.6	9.000	Off	N	10.0	25.4	46.0
5.034000	20.7	9.000	Off	N	10.0	29.3	50.0
5.078000	20.9	9.000	Off	N	10.0	29.1	50.0
8.866000	23.1	9.000	Off	N	10.2	26.9	50.0
8.978000	23.3	9.000	Off	N	10.2	26.7	50.0
9.090000	23.8	9.000	Off	N	10.2	26.2	50.0
9.104000	23.8	9.000	Off	N	10.2	26.2	50.0
9.280000	24.0	9.000	Off	N	10.2	26.0	50.0
9.376000	24.1	9.000	Off	N	10.2	25.9	50.0

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**10. LIST OF TEST EQUIPMENT**

**Conducted Test**

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Rohde & Schwarz	ENV216 / LISN	09/04/2020	Annual	102245
Rohde & Schwarz	ESCI / Test Receiver	06/10/2020	Annual	100584
ESPEC	SU-642 / Temperature Chamber	07/30/2020	Annual	0093000718
Agilent	N9020A / Signal Analyzer	05/11/2020	Annual	MY51110085
Agilent	N9030A / Signal Analyzer	03/23/2020	Annual	MY49432108
Agilent	N1911A / Power Meter	04/07/2020	Annual	MY45100523
Agilent	N1921A / Power Sensor	06/08/2020	Annual	MY57820067
Agilent	87300B / Directional Coupler	11/10/2020	Annual	3116A03621
Hewlett Packard	11667B / Power Splitter	02/14/2020	Annual	10545
HP	E3632A / DC Power Supply	09/16/2020	Annual	MY40004427
HP	8493C / Attenuator(10 dB)(DC-26.5 GHz)	06/26/2020	Annual	07560
HP	8493C / Attenuator(10 dB)(DC-26.5 GHz)	07/03/2020	Annual	08285
Rohde & Schwarz	18N-20dB / Attenuator(20 dB)	03/23/2020	Annual	8
Rohde & Schwarz	EMC32 / Software	N/A	N/A	N/A
HCT CO., LTD.	FCC WLAN&BT&BLE Conducted Test Software v3.0	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**

Manufacturer	Model / Equipment	Calibration Date	Calibration Interval	Serial No.
Innco system	CO3000 / Controller(Antenna mast)	N/A	N/A	CO3000-4p
Innco system	MA4640/800-XP-EP / Antenna Position Tower	N/A	N/A	N/A
Emco	2090 / Controller	N/A	N/A	060520
Ets	Turn Table	N/A	N/A	N/A
Rohde & Schwarz	Loop Antenna	05/18/2020	Biennial	1513-175
Schwarzbeck	VULB 9160 / Hybrid Antenna	08/19/2020	Biennial	9160-3368
Schwarzbeck	VULB 9168 / Hybrid Antenna	09/04/2020	Biennial	9168-0895
Schwarzbeck	BBHA 9120D / Horn Antenna	11/18/2019	Biennial	9120D-1191
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	11/29/2019	Biennial	BBHA9170541
Rohde & Schwarz	FSP(9 kHz ~ 30 GHz) / Spectrum Analyzer	09/14/2020	Annual	836650/016
Rohde & Schwarz	FSV40-N / Spectrum Analyzer	09/22/2020	Annual	101068-SZ
Wainwright Instruments	WRCJV2400/2483.5-2370/2520-60/12SS / Band Reject Filter	01/21/2020	Annual	2
Wainwright Instruments	WRCJV5100/5850-40/50-8EEK / Band Reject Filter	02/10/2020	Annual	1
CERNEX WEINSCHL	CBLU1183540B-01/Broadband Bench Top LNA 56-10 / Attenuator(10 dB)	12/24/2019	Annual	N/A
CERNEX Api tech.	CBL06185030 / Broadband Low Noise Amplifier 18B-03 / Attenuator (3 dB)	12/24/2019	Annual	N/A
Wainwright Instruments	WHKX10-2700-3000-18000-40SS / High Pass Filter	12/24/2019	Annual	N/A
Wainwright Instruments	WHKX8-6090-7000-18000-40SS / High Pass Filter	12/24/2019	Annual	N/A
T&M SYSTEM	COAXIAL ATTENUATOR / Thru	12/24/2019	Annual	N/A
CERNEX	CBL18265035 / Power Amplifier	12/26/2019	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	03/23/2020	Annual	25956
TESCOM	TC-3000C / Bluetooth Tester	03/18/2020	Annual	3000C000276

**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;

<b>No.</b>	<b>Description</b>
1	HCT-RF-2012-FC008-P