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TEST REPORT

FCC BT LE Test for SC300i
Certification

APPLICANT
VC Inc.

REPORT NO.
HCT-RF-2010-FC001

DATE OF ISSUE
October 14, 2020

Tested by
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Additional Model
-

Applicant	**VC Inc.** 3F-4F, Hwawon Building, 417, Nonhyeon-ro, Gangnam-gu, Seoul, Republic of Korea
Eut Type Model Name	Swing Caddie SC300i
FCC ID	2ABTKSC300I
Max. RF Output Power	-4.529 dBm (0.352 mW)
Modulation type	GFSK
FCC Classification	Digital Transmission System(DTS)
FCC Rule Part(s)	Part 15.247

The result shown in this test report refer only to the sample(s) tested unless otherwise stated.
This test results were applied only to the test methods required by the standard.

REVISION HISTORY

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

Revision No.	Date of Issue	Description
0	October 14, 2020	Initial Release

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.

CONTENTS

1. EUT DESCRIPTION

Model	SC300i	
Additional Model	-	
EUT Type	Swing Caddie	
Power Supply	DC 3.70 V	
AC Adapter Information	Model : ETA-U90KBK Serial Number: RT6F709pS/B-E Manufacture: RF Tech Electronics Co.,Ltd	
Frequency Range	2402 MHz - 2480 MHz	
Max. RF Output Power	Peak	250k Bit/s : -4.549 dBm (0.351 mW) 1M Bit/s : -4.543 dBm (0.351 mW) 2M Bit/s : -4.529 dBm (0.352 mW)
	Average	250k Bit/s : -4.94 dBm (0.321 mW) 1M Bit/s : -4.97 dBm (0.318 mW) 2M Bit/s : -4.72 dBm (0.337 mW)
Modulation Type	GFSK	
Bluetooth Version	5.0	
Number of Channels	40 Channels	
Antenna type	Dielectric Chip Antenna	
Antenna Peak Gain	1.8 dBi	
Date(s) of Tests	September 03, 2020 ~ October 14, 2020	
EUT serial numbers	SC300B2002955	

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 purpse 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.

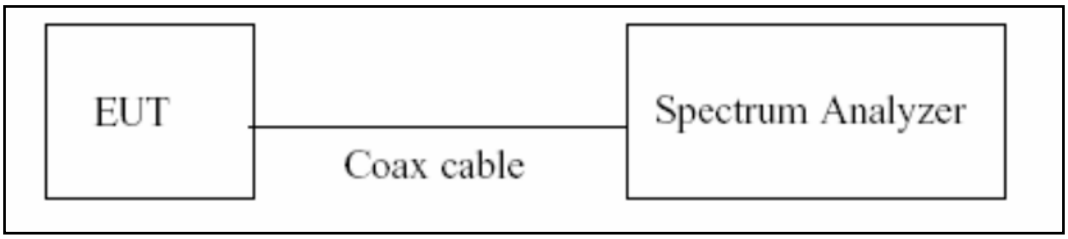
The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

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 ≤ 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*.

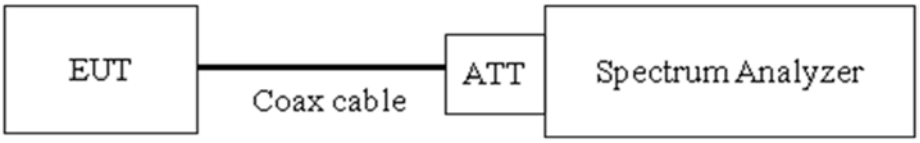
1. RBW = 8 MHz (the largest available value)
2. VBW = 8 MHz (≥ RBW)
3. SPAN = 0 Hz
4. Detector = Peak
5. Number of points in sweep > 100
6. Trace mode = Clear write
7. Measure T_{total} and T_{on}
8. Calculate Duty Cycle = T_{on}/ T_{total} and Duty Cycle Factor = 10log(1/Duty Cycle)

7.2. 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 ≥ 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.

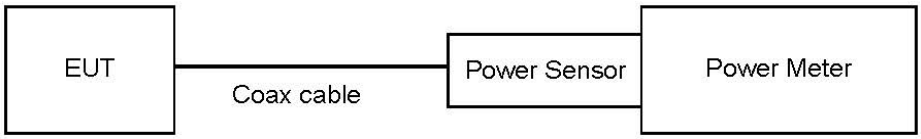
Note : We tested OBW using the automatic bandwidth measurement capability of a spectrum analyzer.

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

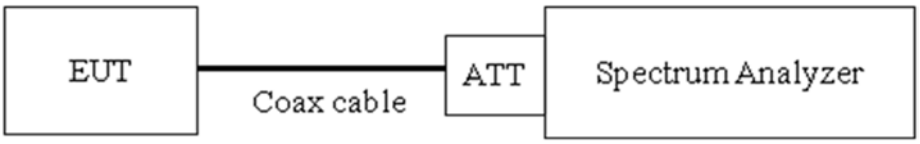
- Conducted Output Power(Peak) = Reading Value + ATT loss + Cable loss + EUT Cable loss
- Conducted Output Power(Average) = Reading Value + ATT loss + Cable loss + EUT Cable loss + Duty Cycle Factor

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 kHz ≤ RBW ≤ 100 kHz.
4) VBW ≥ 3 x RBW.
5) Sweep = auto couple
6) Detector = Peak
7) Trace mode = max hold
8) Allow trace to fully stabilize.
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.

Sample Calculation

- Power Spectral Density = Reading Value + ATT loss + Cable loss + EUT Cable loss

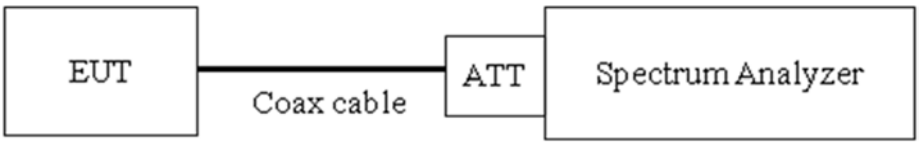
7.5. Conducted Band Edge(Out of Band Emissions) & Conducted Spurious Emissions

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 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

[Conducted > 20 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	11.04
100	11.09
200	11.13
300	11.19
400	11.22
500	11.23
600	11.23
700	11.25
800	11.27
900	11.29
1000	11.31
2000	11.46
2400	11.52
2480	11.52
2500	11.52
3000	11.57
4000	11.67
5000	11.75
6000	11.82
7000	11.91
8000	11.98
9000	12.05
10000	12.12
11000	12.16
12000	12.24
13000	12.32
14000	12.30
15000	12.32
16000	12.37
17000	12.41
18000	12.47
19000	12.50
20000	12.56
21000	12.77
22000	12.74
23000	12.94
24000	12.77
25000	12.80
26000	12.80

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

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

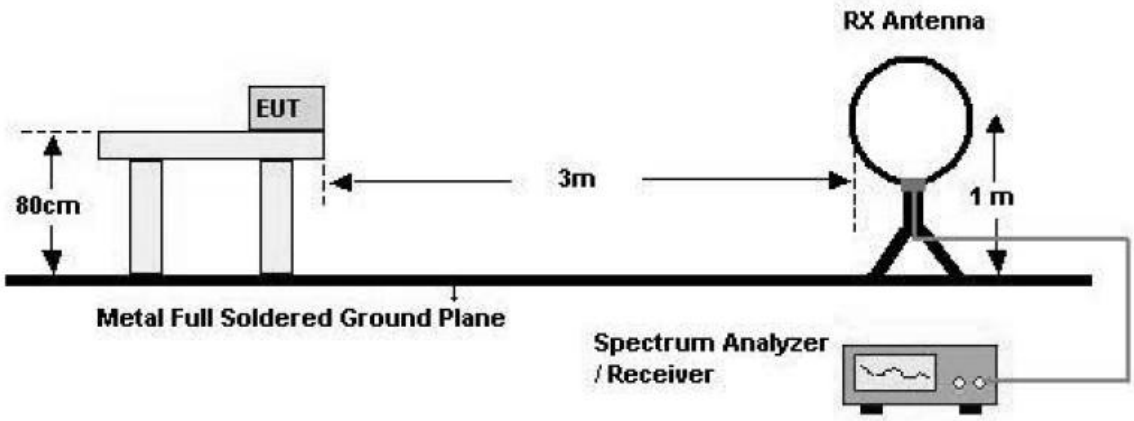
7.6. Radiated Test

FCC LImit

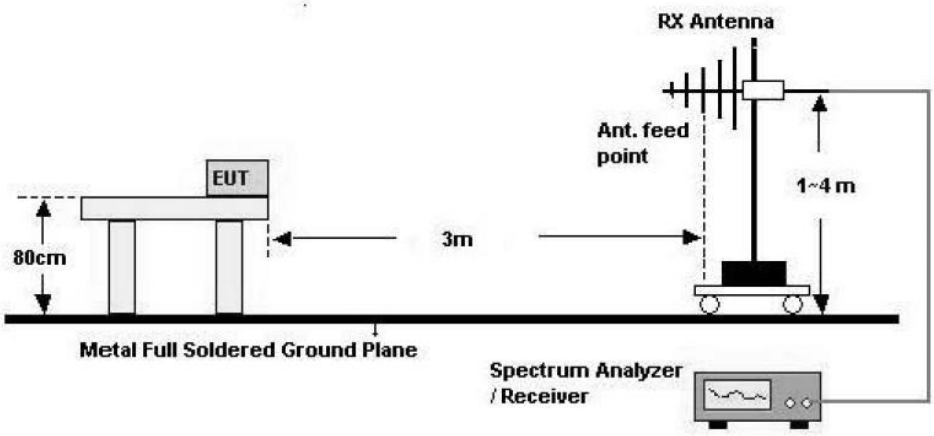
Frequency (MHz)	Field Strength (uV/m)	Measurement Distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Configuration

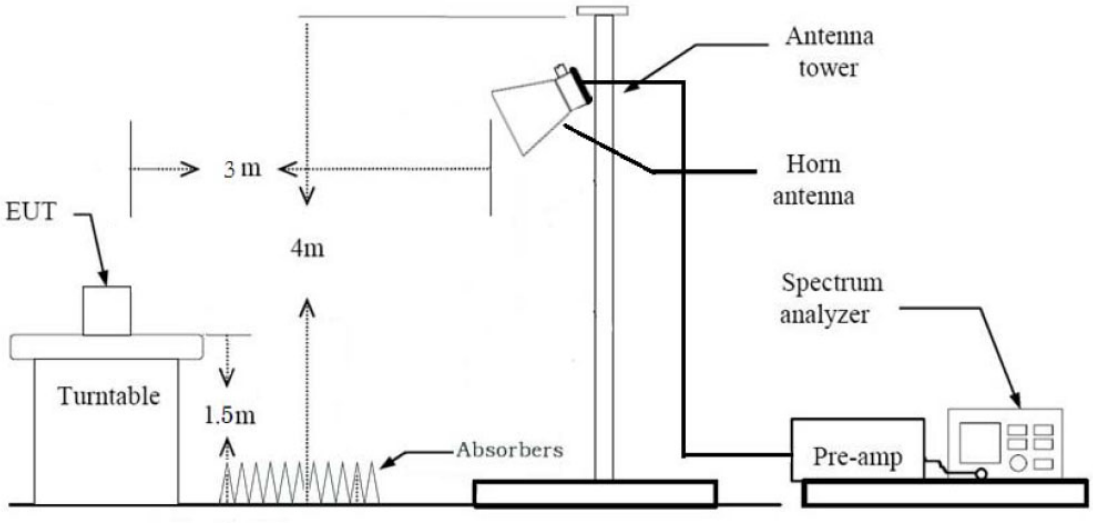
Below 30 MHz



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) = 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 = 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 ≥ 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 DC Power supply.
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 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 DC Power supply.
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 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 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) = 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
   - Worstcase : Stand alone
2. EUT Axis:
   - Radiated Spurious Emissions : X
   - Radiated Restricted Band Edge : Y
3. All packet length of operation were investigated and the test results are worst case in lowest packet length.
   (Worst case : 1M 37Bytes)
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

AC Power line Conducted Emissions

1. All modes of operation were investigated and the worst case configuration results are reported.
   - Mode : Stand alone + Notebook
   - Worstcase : Stand alone + Notebook

Conducted test

1. The EUT was configured with packet length of highest power.
   (Worst case : 1M 37Bytes)

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 > 20 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

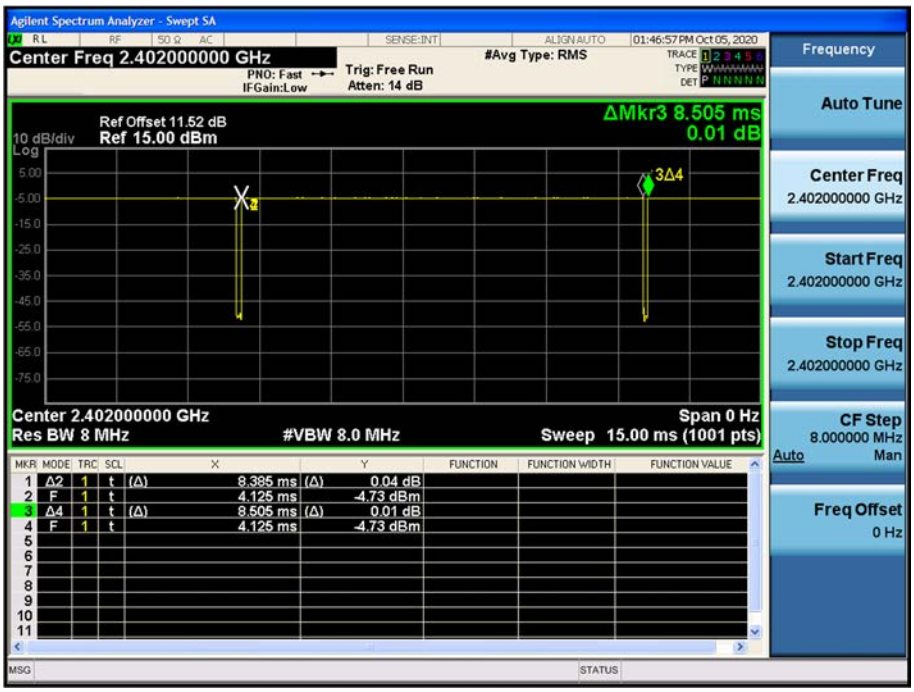
Data rate (Bit/s)	Packet length (Byte)	T_{on} (ms)	T_{total} (ms)	Duty Cycle	Duty Cycle Factor (dB)
250k	37	1.4060	1.5225	0.9235	0.35
	255	8.3850	8.5050	0.9859	0.06
1M	37	0.3610	0.4790	0.7537	1.23
	255	2.1050	2.2250	0.9461	0.24
2M	37	0.1875	0.3056	0.6135	2.12
	255	1.0615	1.1780	0.9011	0.45

▣ 250k Bit/s(37 Byte) Test Plots

Duty Cycle (Low-CH 0)

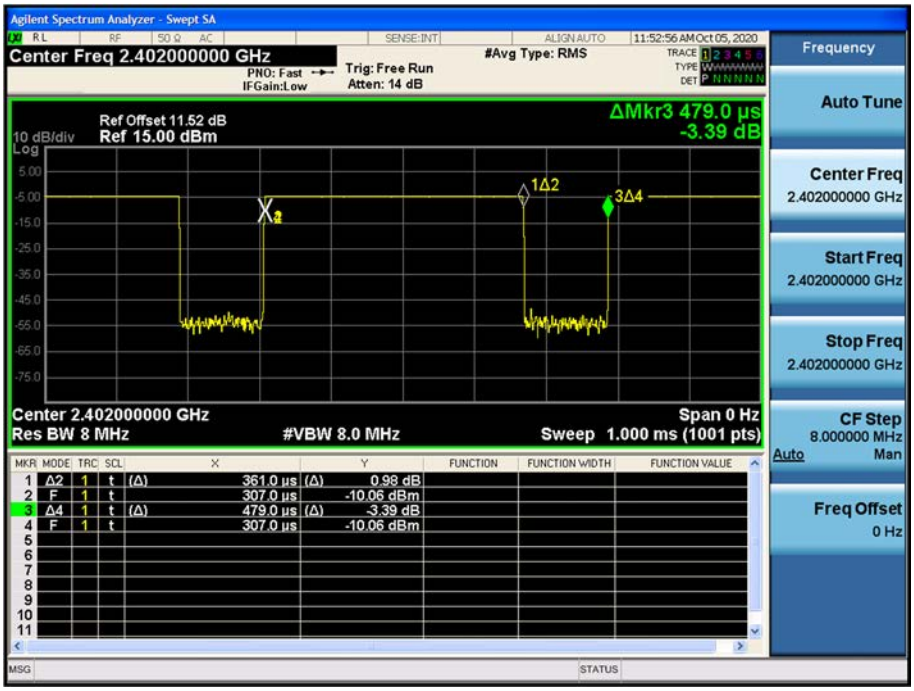
▣ 250k Bit/s(255 Byte) Test Plots

Duty Cycle (Low-CH 0)



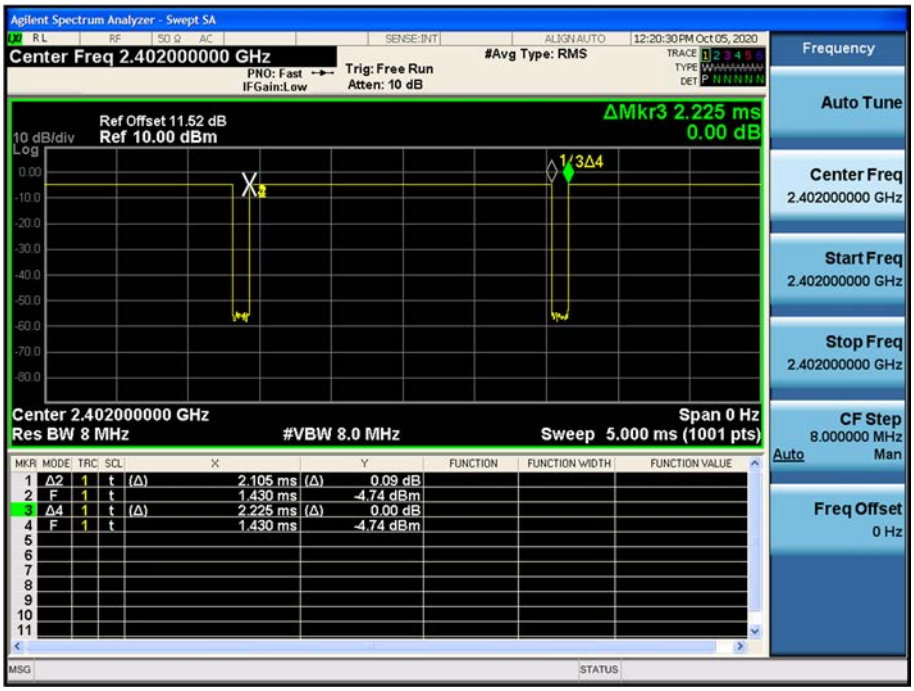
▣ 1M Bit/s (37 Byte) Test Plots

Duty Cycle (Low-CH 0)



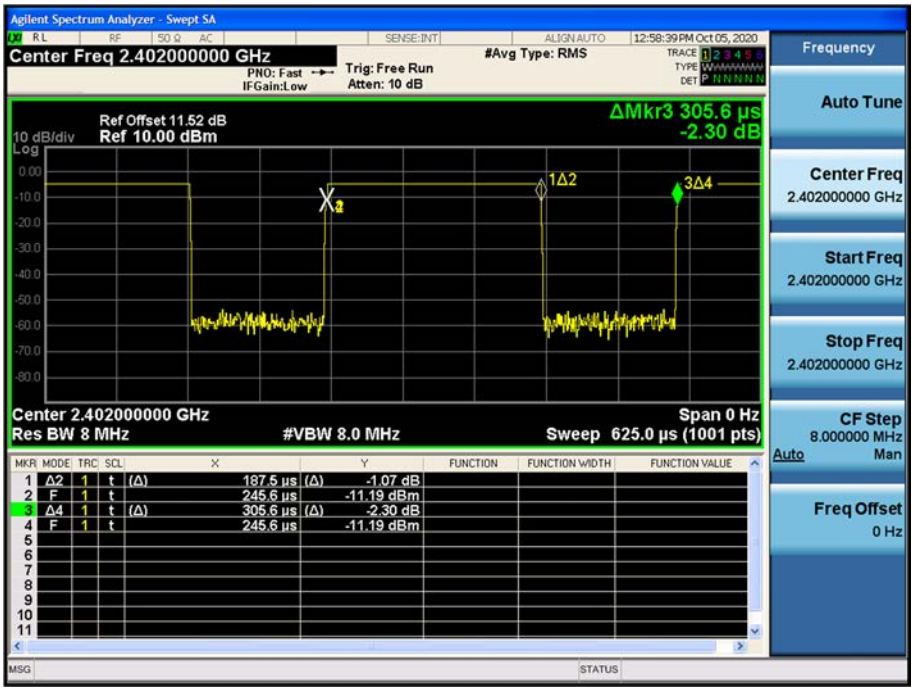
▣ 1M Bit/s (255 Byte) Test Plots

Duty Cycle (Low-CH 0)



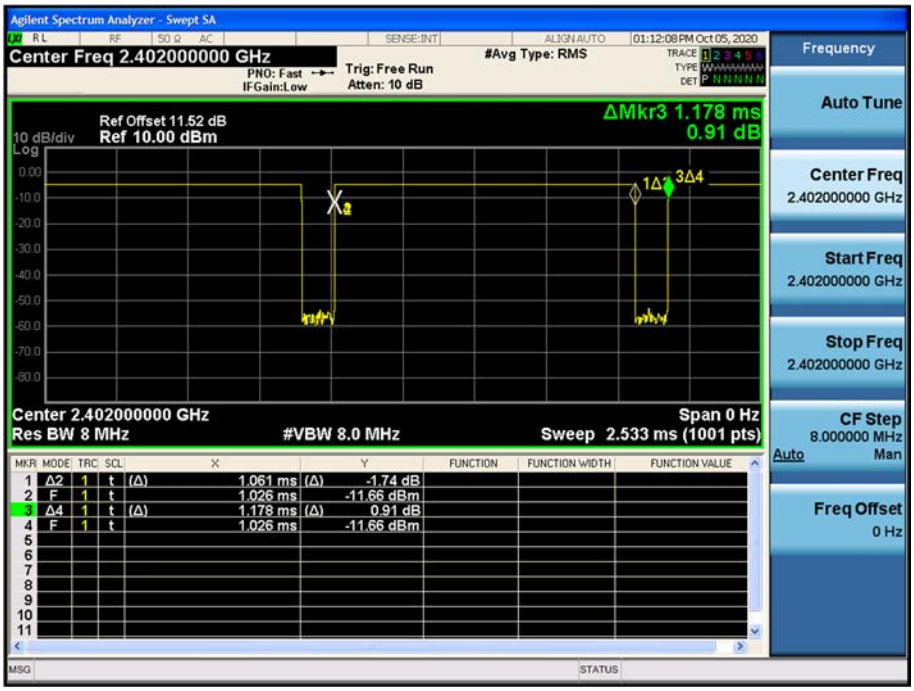
▣ 2M Bit/s (37 Byte) Test Plots

Duty Cycle (Low-CH 0)



▣ 2M Bit/s (255 Byte) Test Plots

Duty Cycle (Low-CH 0)



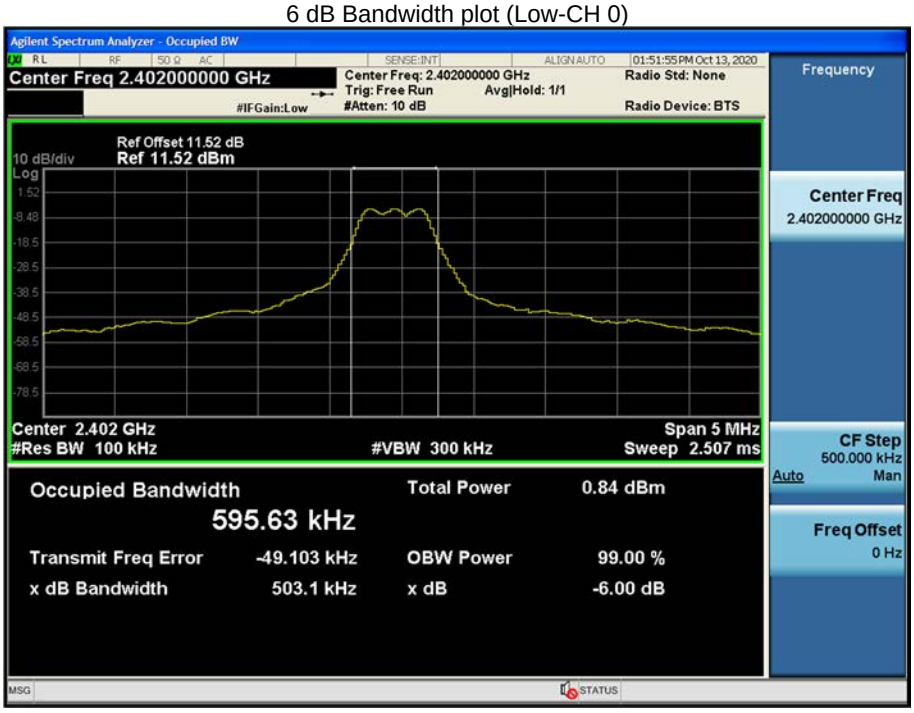
9.2 6dB BANDWIDTH

FCC(6dB BANDWIDTH)

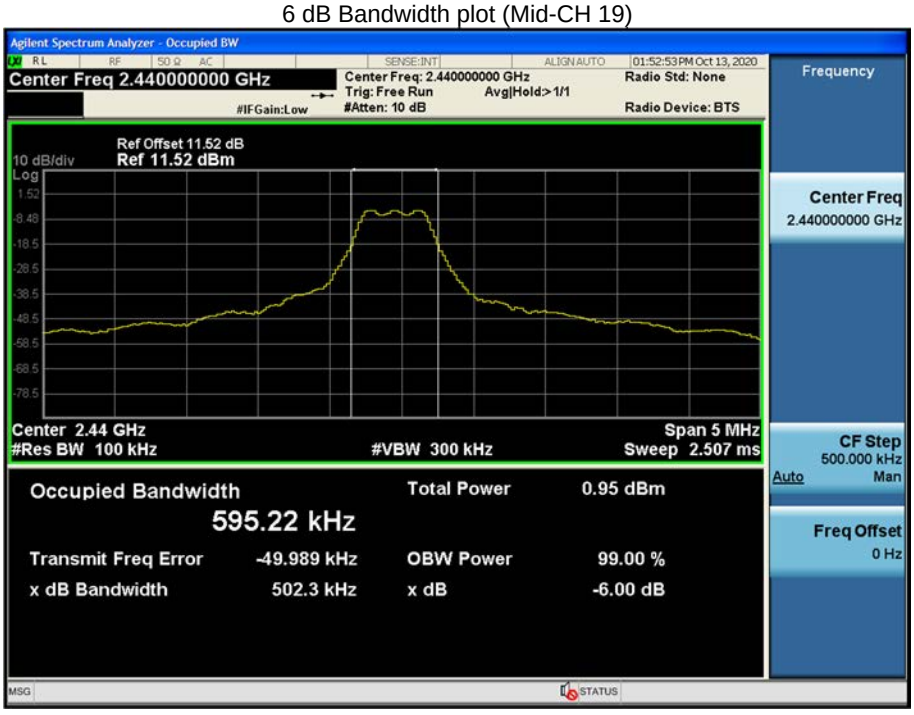
Mode (Bit/s)	Channel	6 dB Bandwidth (kHz)	Limit (kHz)
250k	0	503.1	> 500
	19	502.3	
	39	501.4	
1M	0	503.1	> 500
	19	500.6	
	39	508.0	
2M	0	826.1	> 500
	19	765.1	
	39	787.2	

▣ 250k Bit/s Test Plots

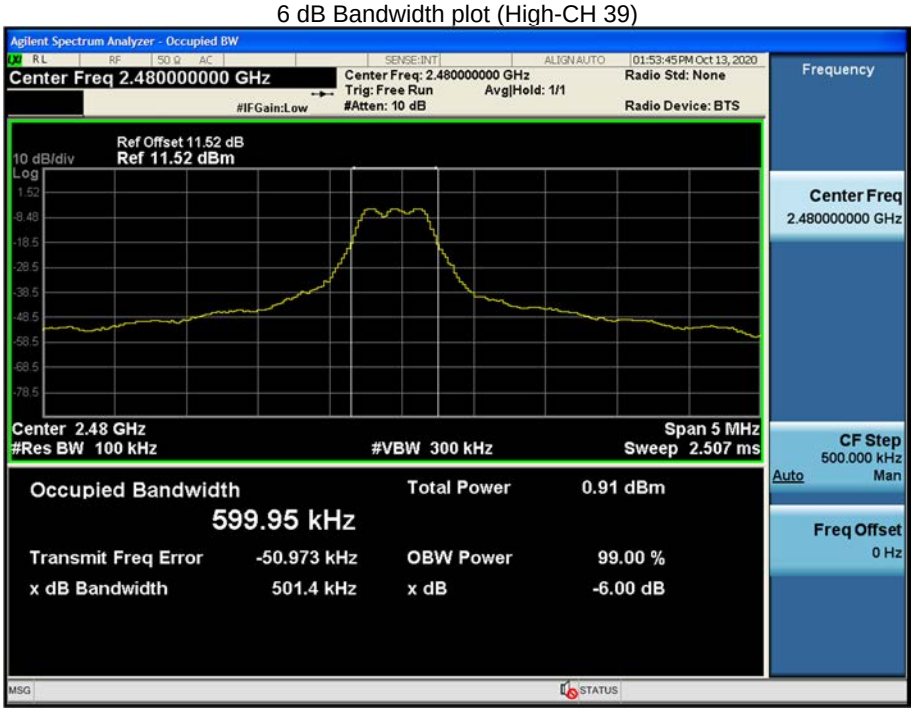
6 dB Bandwidth plot (Low-CH 0)



6 dB Bandwidth plot (Mid-CH 19)

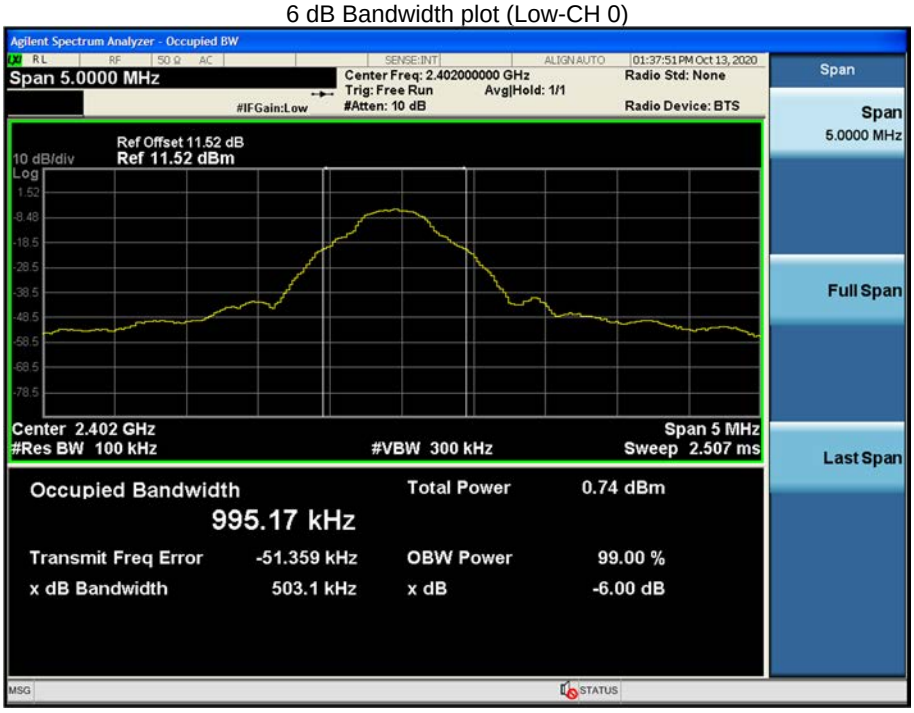


6 dB Bandwidth plot (High-CH 39)

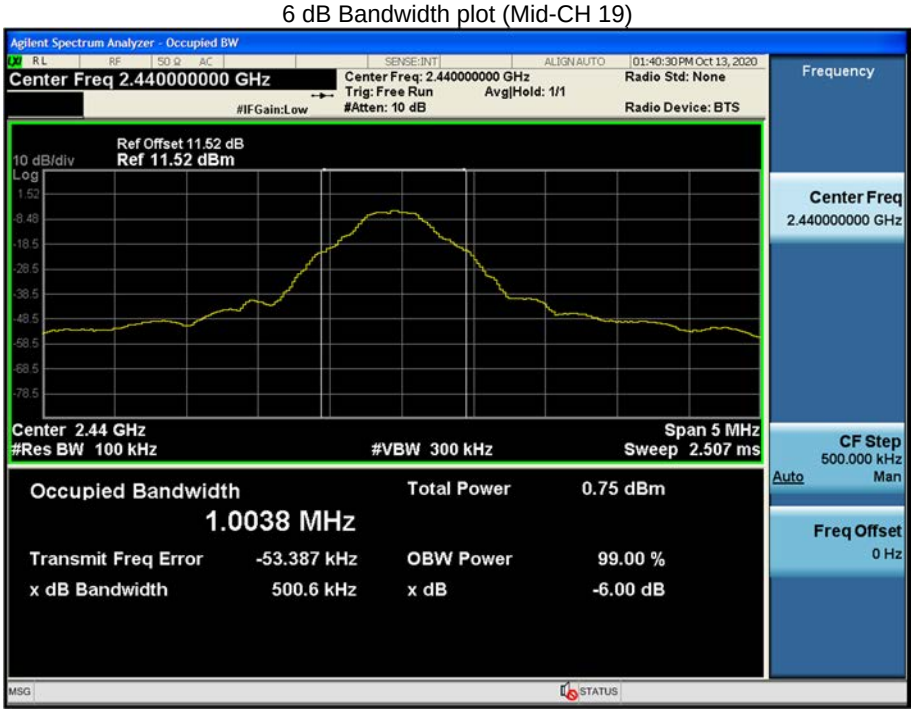


▣ 1M Bit/s Test Plots

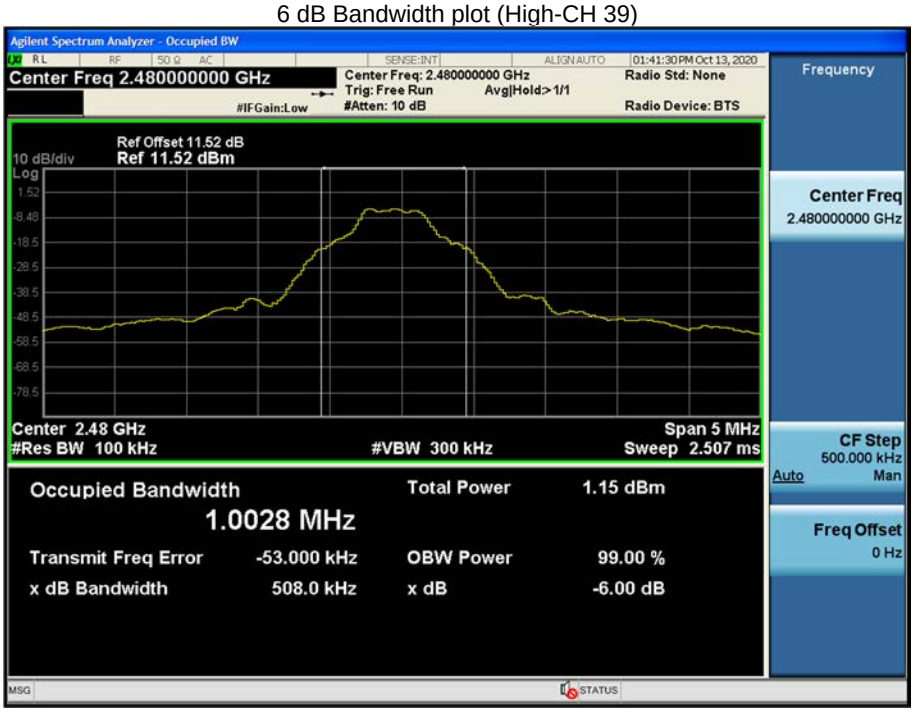
6 dB Bandwidth plot (Low-CH 0)



6 dB Bandwidth plot (Mid-CH 19)



6 dB Bandwidth plot (High-CH 39)



▣ 2M Bit/s 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		
250k	37	2402	0	-4.733	30
		2440	19	-4.570	
		2480	39	-4.549	
	255	2402	0	-4.731	
		2440	19	-4.573	
		2480	39	-4.549	
1M	37	2402	0	-4.656	
		2440	19	-4.554	
		2480	39	-4.543	
	255	2402	0	-4.759	
		2440	19	-4.596	
		2480	39	-4.571	
2M	37	2402	0	-4.754	
		2440	19	-4.626	
		2480	39	-4.529	
	255	2402	0	-4.732	
		2440	19	-4.601	
		2480	39	-4.578	

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				
250k	37	2402	0	-5.46	0.35	-5.12	30
		2440	19	-5.37	0.35	-5.03	
		2480	39	-5.29	0.35	-4.94	
	255	2402	0	-5.16	0.06	-5.09	
		2440	19	-5.08	0.06	-5.02	
		2480	39	-5.04	0.06	-4.98	
1M	37	2402	0	-6.35	1.23	-5.12	
		2440	19	-6.26	1.23	-5.03	
		2480	39	-6.19	1.23	-4.97	
	255	2402	0	-5.29	0.24	-5.05	
		2440	19	-5.27	0.24	-5.03	
		2480	39	-5.22	0.24	-4.98	
2M	37	2402	0	-7.03	2.12	-4.91	
		2440	19	-6.88	2.12	-4.76	
		2480	39	-6.86	2.12	-4.74	
	255	2402	0	-5.31	0.45	-4.86	
		2440	19	-5.19	0.45	-4.74	
		2480	39	-5.17	0.45	-4.72	

Note :

1. Power meter offset = Attenuator loss + Cable loss + EUT Cable loss
2. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB.
   So, 11.52 dB is offset for 2.4 GHz Band.

9.4 POWER SPECTRAL DENSITY

Frequency (MHz)	Channel No.	Mode (Bit/s)	Test Result	
			Measured Power(dBm)	Limit (dBm)
2402	0	250k 37 Byte	-14.430	8
2440	19		-13.811	
2480	39		-13.679	
2402	0	1M 37 Byte	-17.217	
2440	19		-17.247	
2480	39		-16.547	
2402	0	2M 37 Byte	-19.638	
2440	19		-20.129	
2480	39		-19.527	

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 + EUT Cable loss
3. We apply to the offset in the 2.4 GHz range that was rounded off to the closest tenth dB.
   So, 11.52 dB is offset for 2.4 GHz Band.
4. The plot included is the worst mode(250k Bit/s (37 Byte))

▣ 250k Bit/s (37 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.

▣ 250k Bit/s (37 Byte) Test Plots -BandEdge

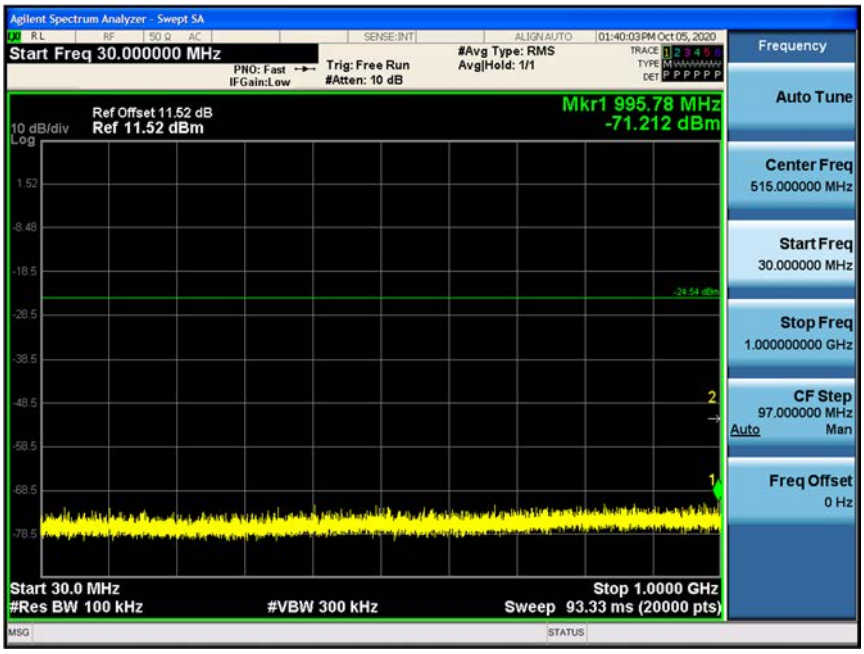
Low-CH 0

High-CH 39

▣ 250k Bit/s (37 Byte) Test Plots -Conducted Spurious Emission

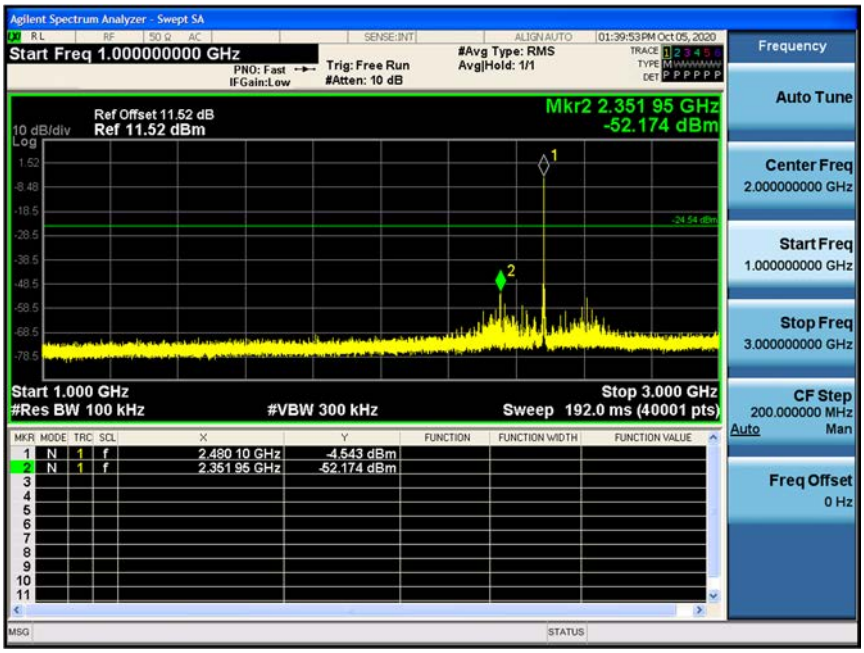
30 MHz ~ 1 GHz

Conducted Spurious Emission (High-CH 39)



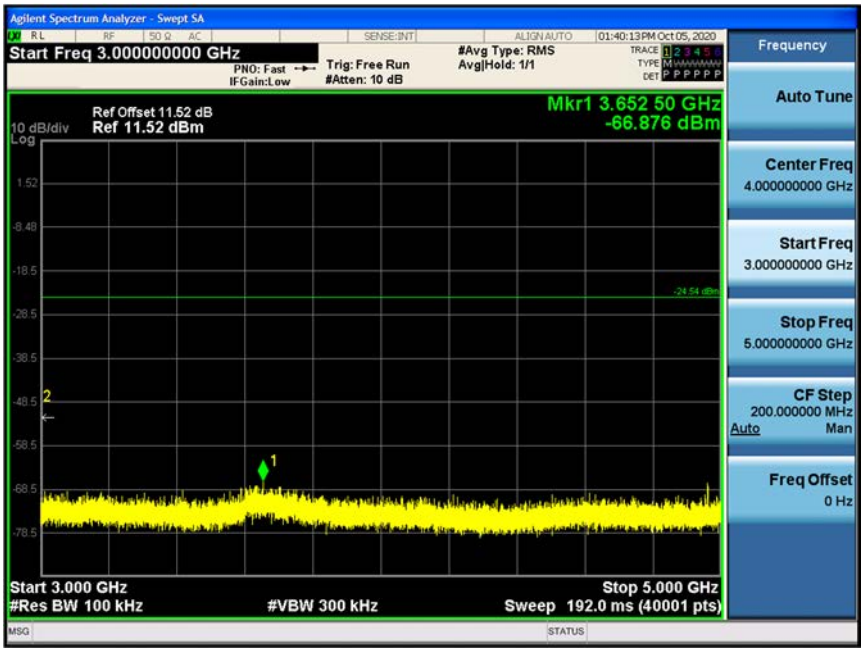
1 GHz ~ 3 GHz

Conducted Spurious Emission (High-CH 39)



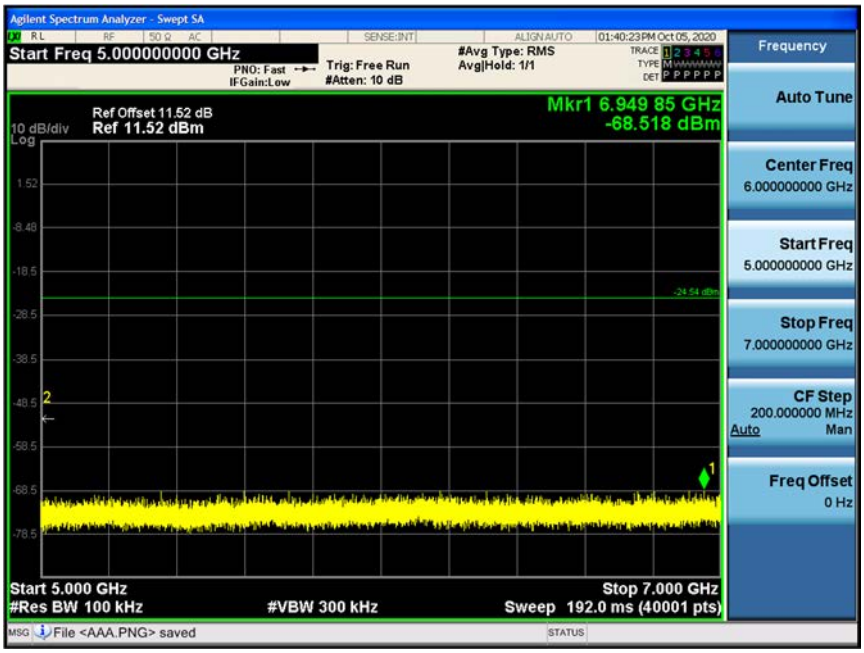
3 GHz ~ 5 GHz

Conducted Spurious Emission (High-CH 39)



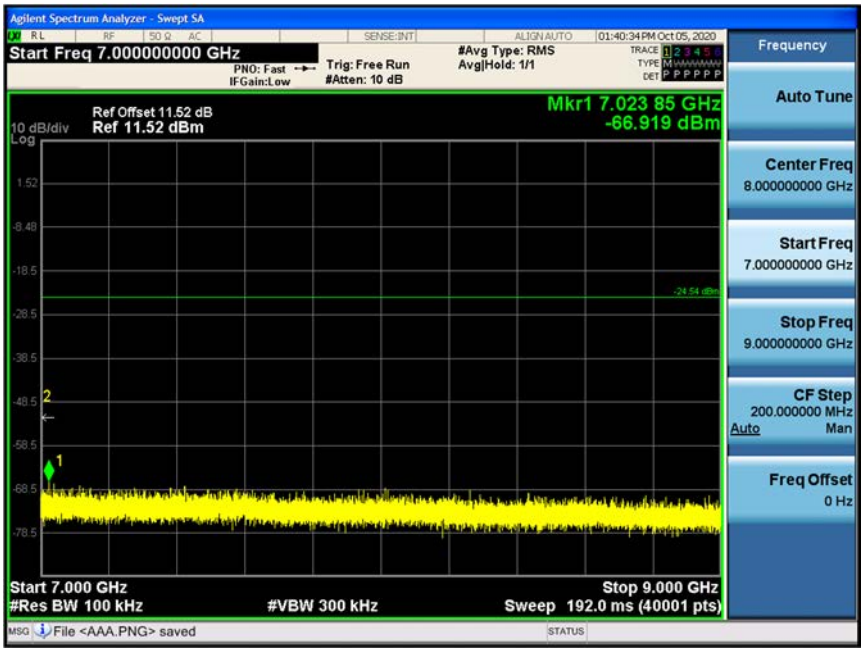
5 GHz ~ 7 GHz

Conducted Spurious Emission (High-CH 39)



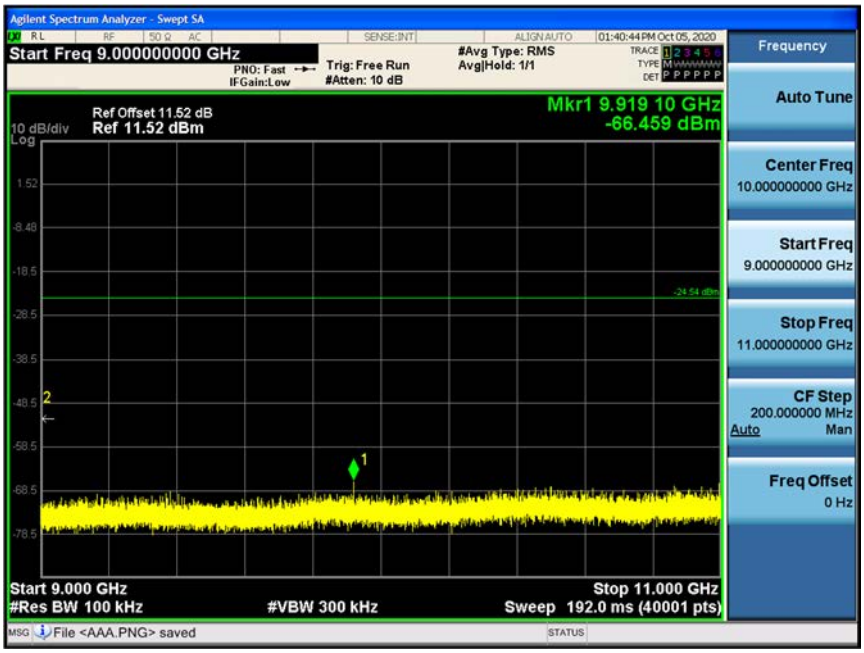
7 GHz ~ 9 GHz

Conducted Spurious Emission (High-CH 39)



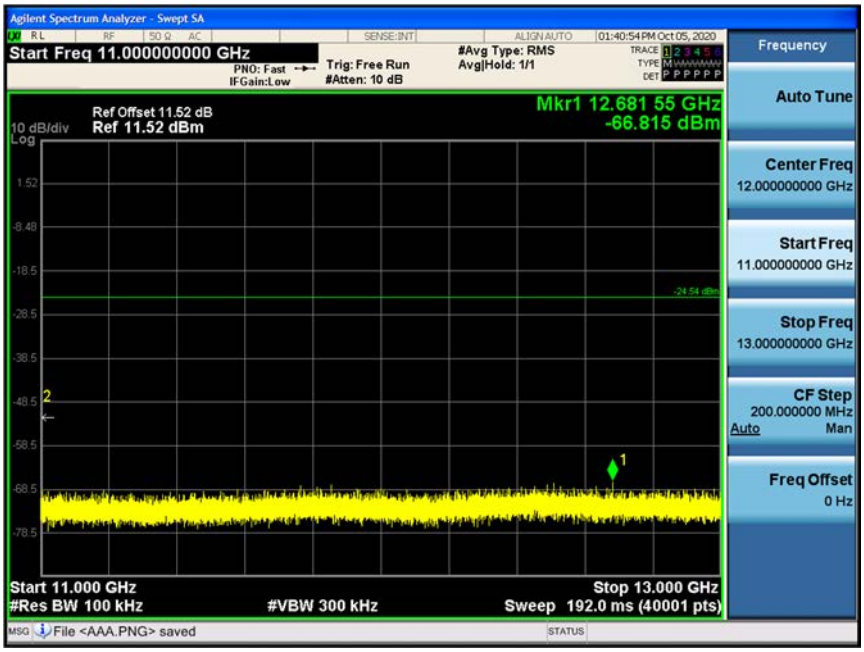
9 GHz ~ 11 GHz

Conducted Spurious Emission (High-CH 39)



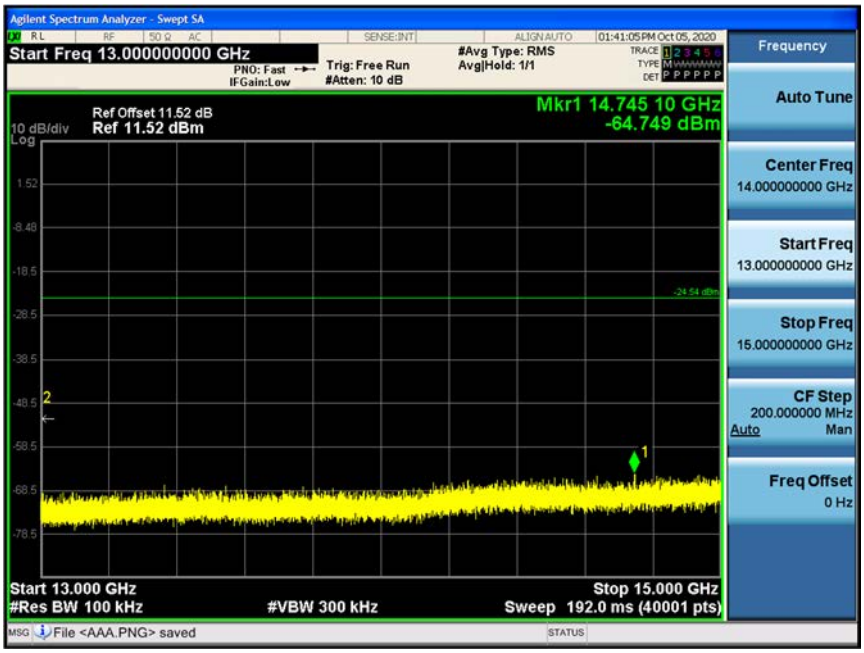
11 GHz ~ 13 GHz

Conducted Spurious Emission (High-CH 39)



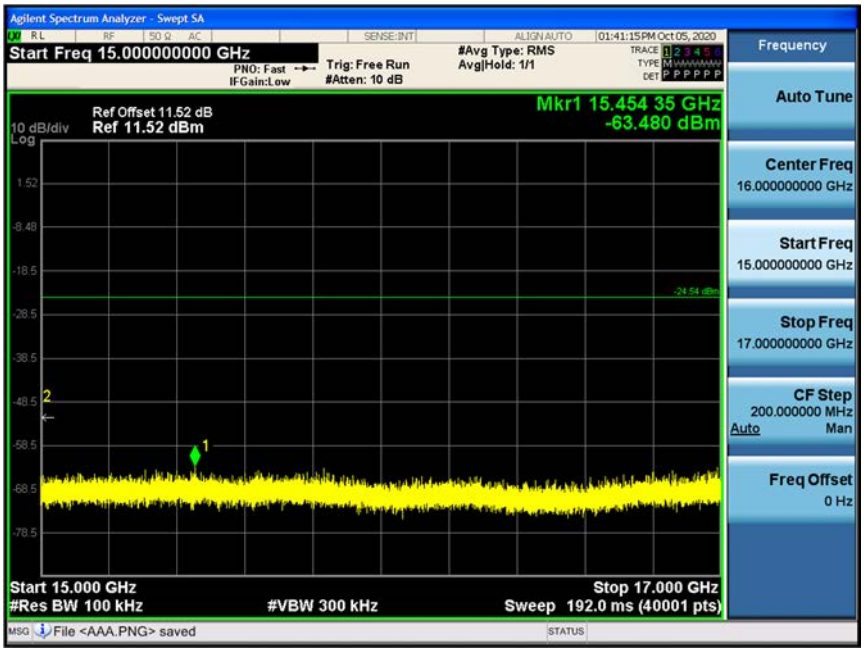
13 GHz ~ 15 GHz

Conducted Spurious Emission (High-CH 39)



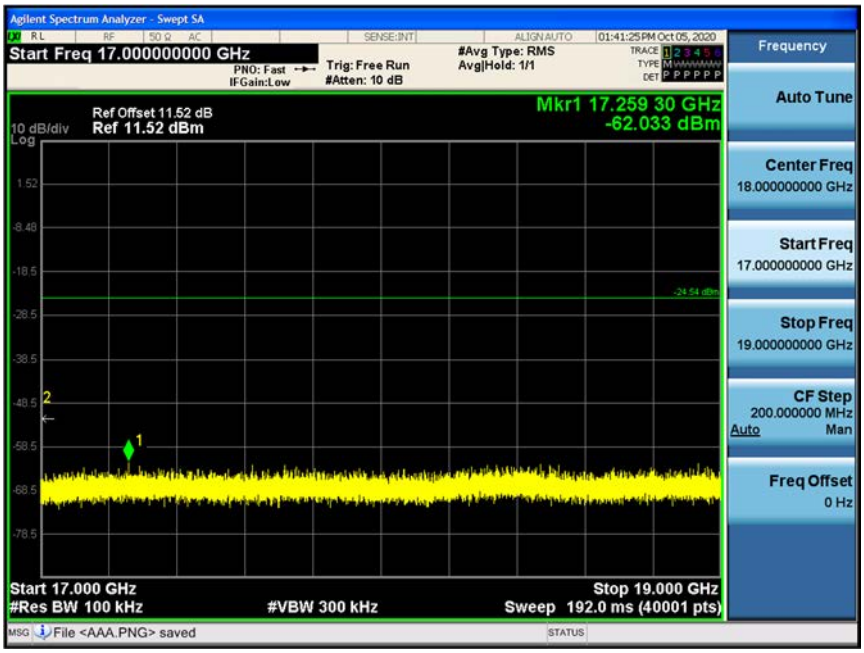
15 GHz ~ 17 GHz

Conducted Spurious Emission (High-CH 39)



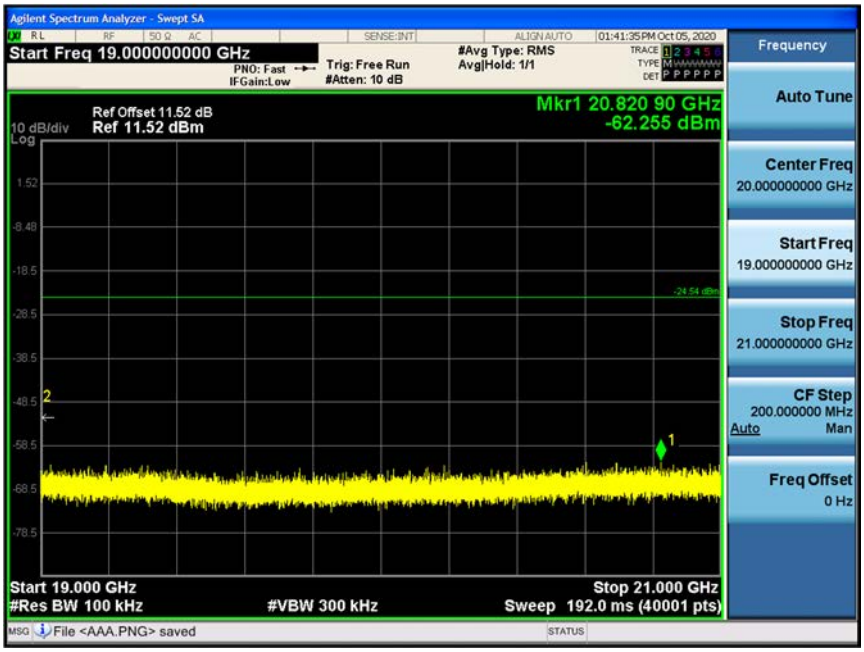
17 GHz ~ 19 GHz

Conducted Spurious Emission (High-CH 39)



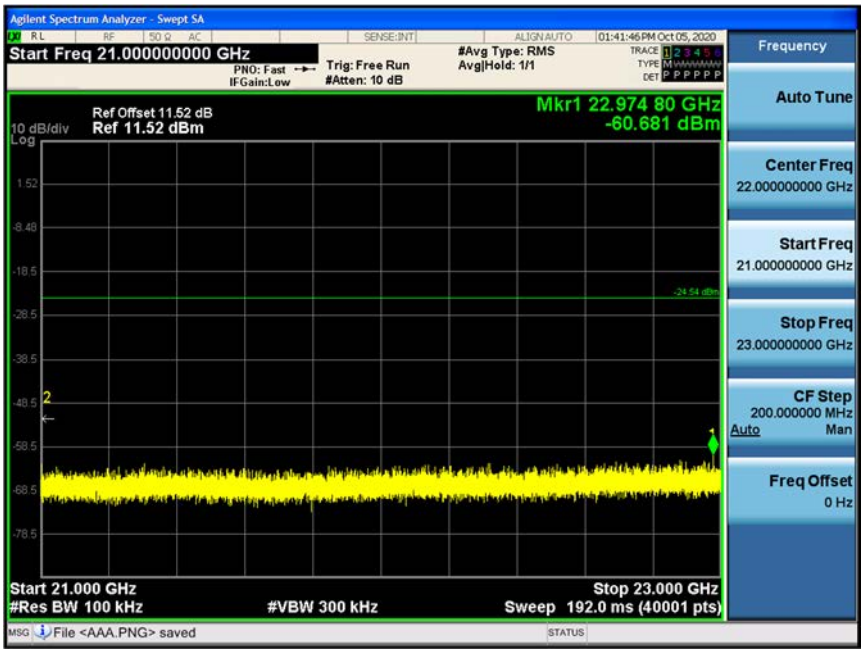
19 GHz ~ 21 GHz

Conducted Spurious Emission (High-CH 39)



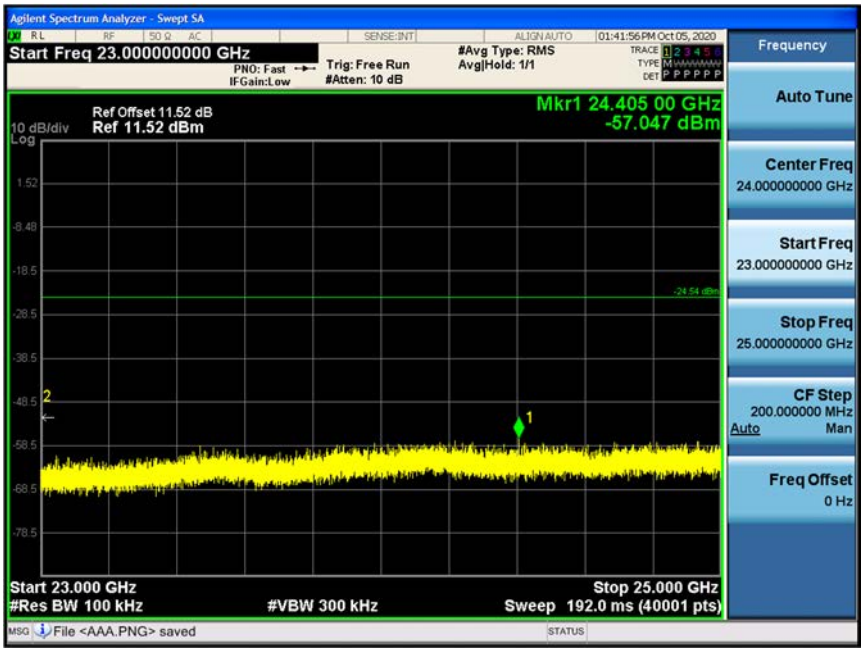
21 GHz ~ 23 GHz

Conducted Spurious Emission (High-CH 39)



23 GHz ~ 25 GHz

Conducted Spurious Emission (High-CH 39)



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

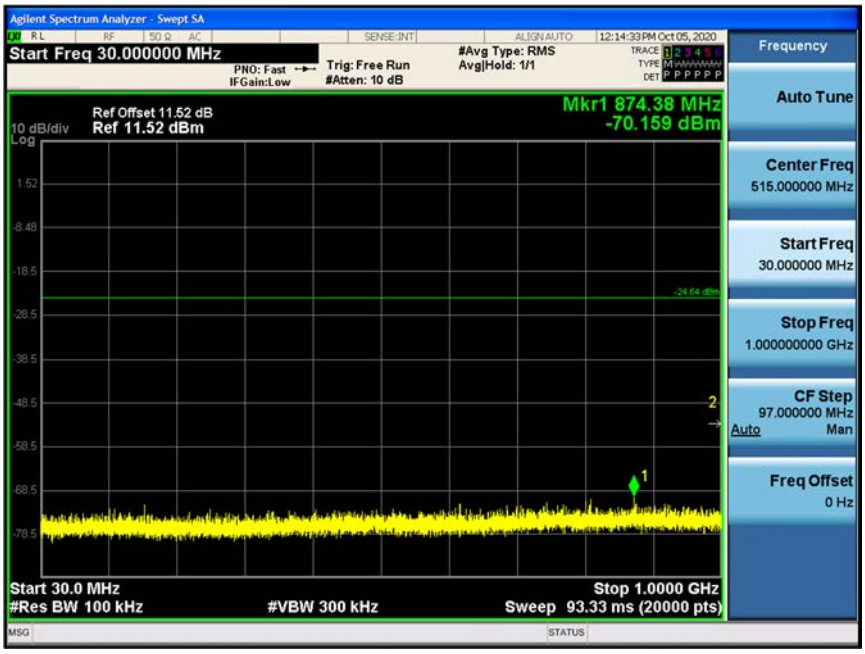
Low-CH 0

High-CH 39

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

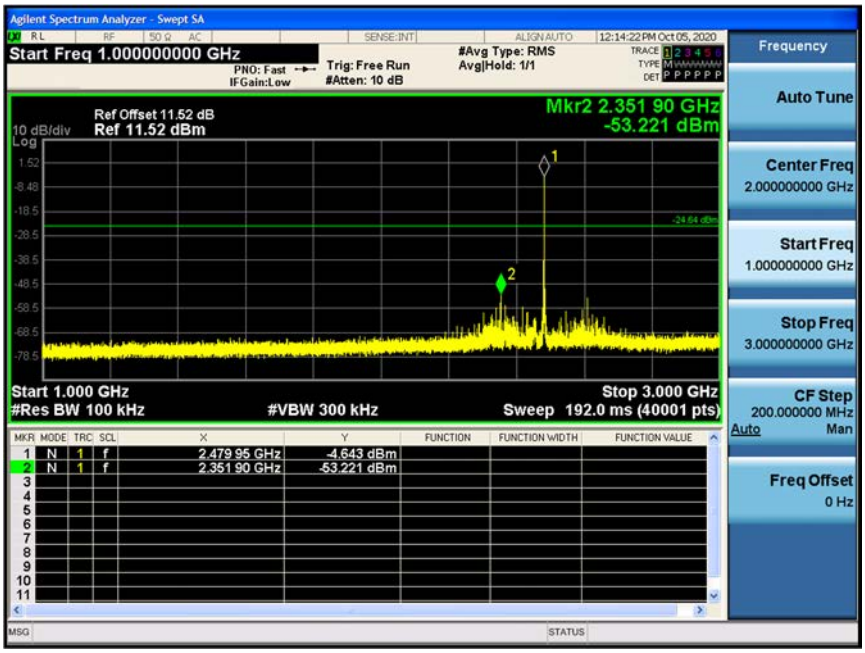
30 MHz ~ 1 GHz

Conducted Spurious Emission (High-CH 39)



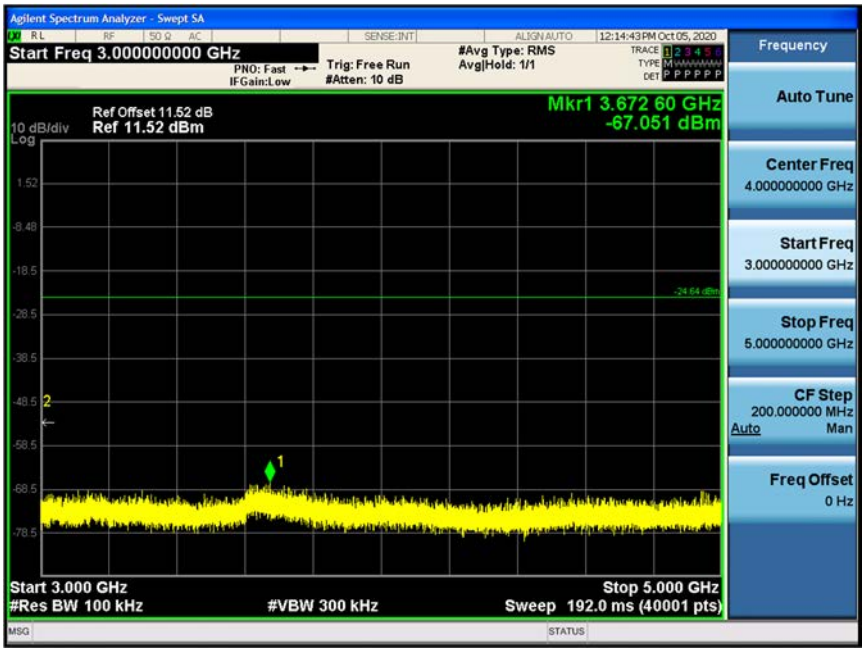
1 GHz ~ 3 GHz

Conducted Spurious Emission (High-CH 39)



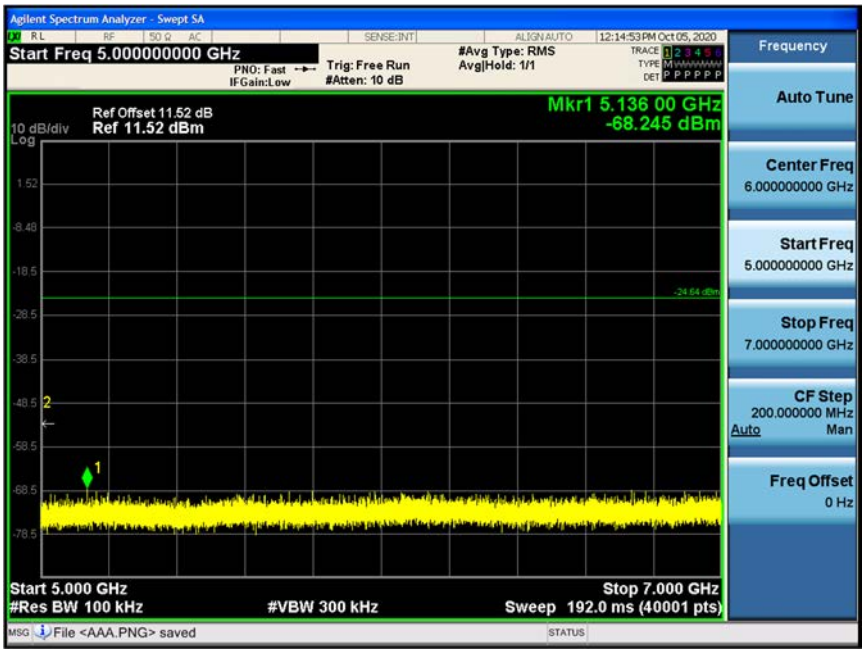
3 GHz ~ 5 GHz

Conducted Spurious Emission (High-CH 39)



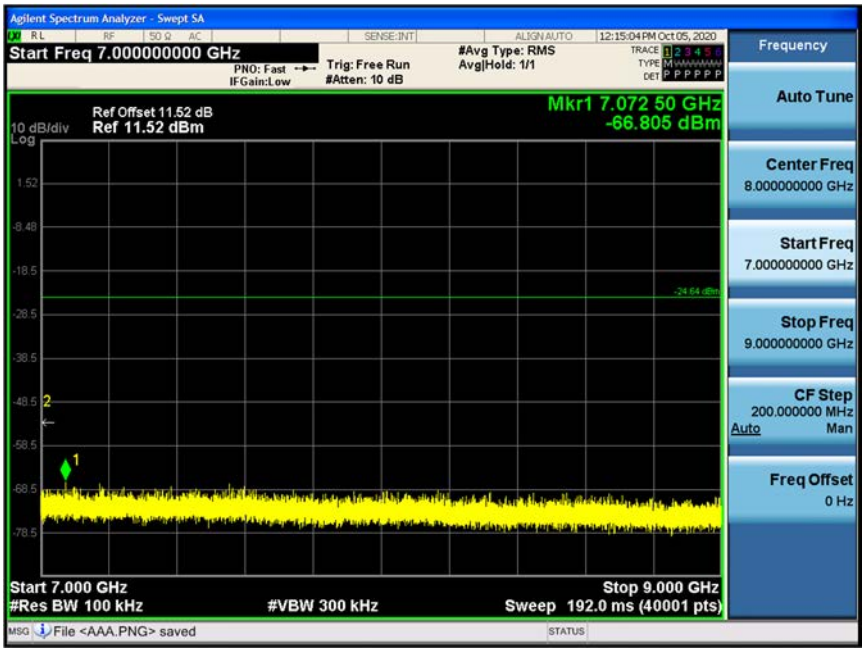
5 GHz ~ 7 GHz

Conducted Spurious Emission (High-CH 39)



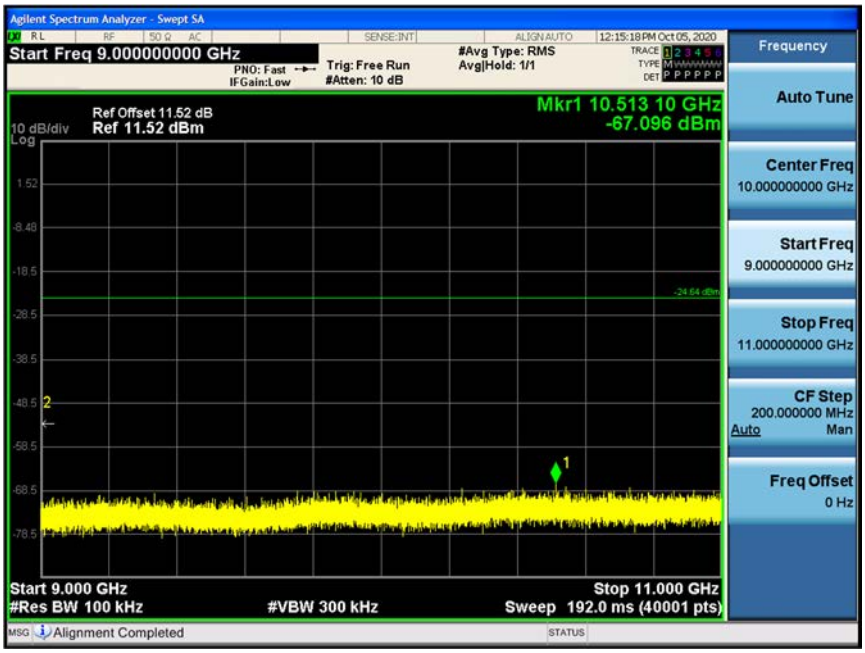
7 GHz ~ 9 GHz

Conducted Spurious Emission (High-CH 39)



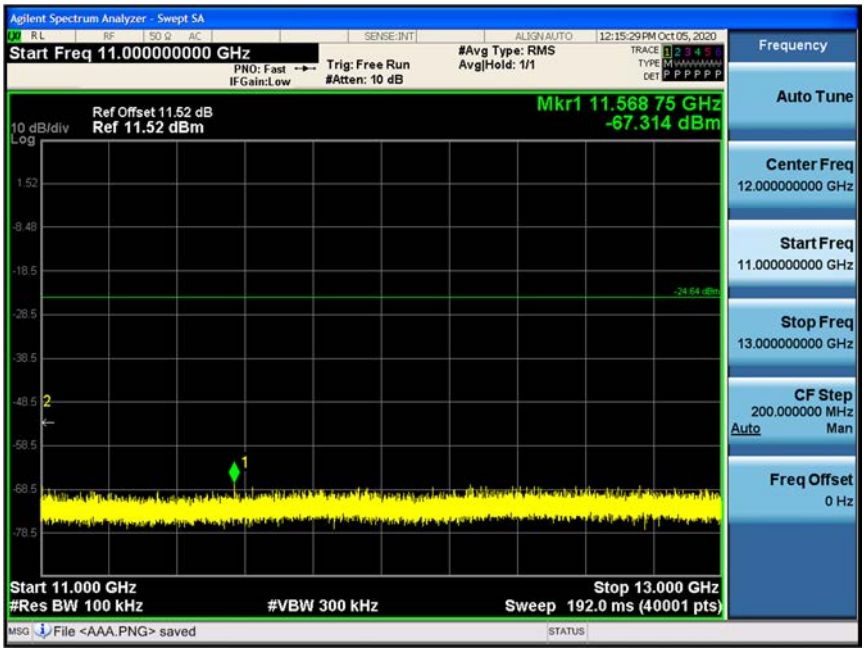
9 GHz ~ 11 GHz

Conducted Spurious Emission (High-CH 39)



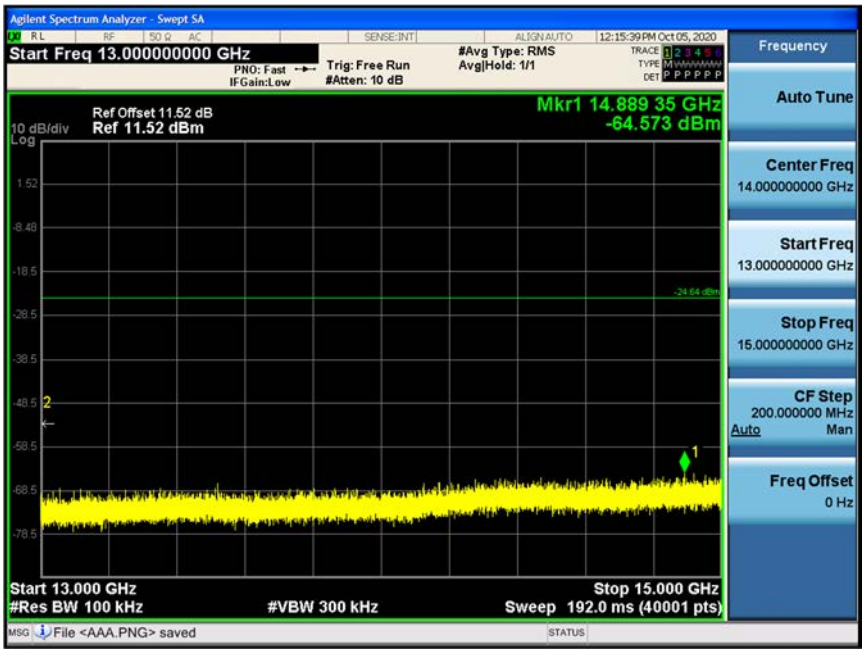
11 GHz ~ 13 GHz

Conducted Spurious Emission (High-CH 39)



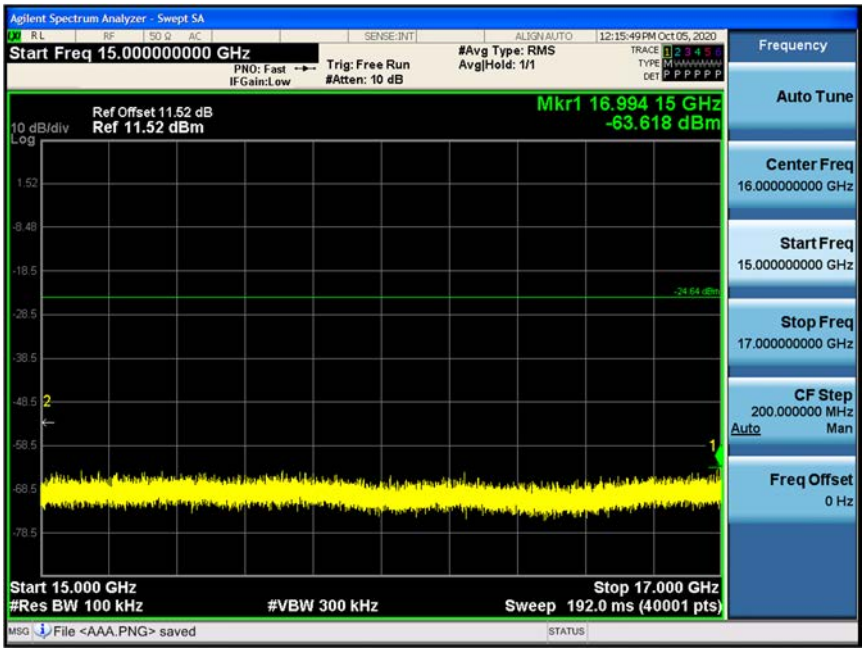
13 GHz ~ 15 GHz

Conducted Spurious Emission (High-CH 39)



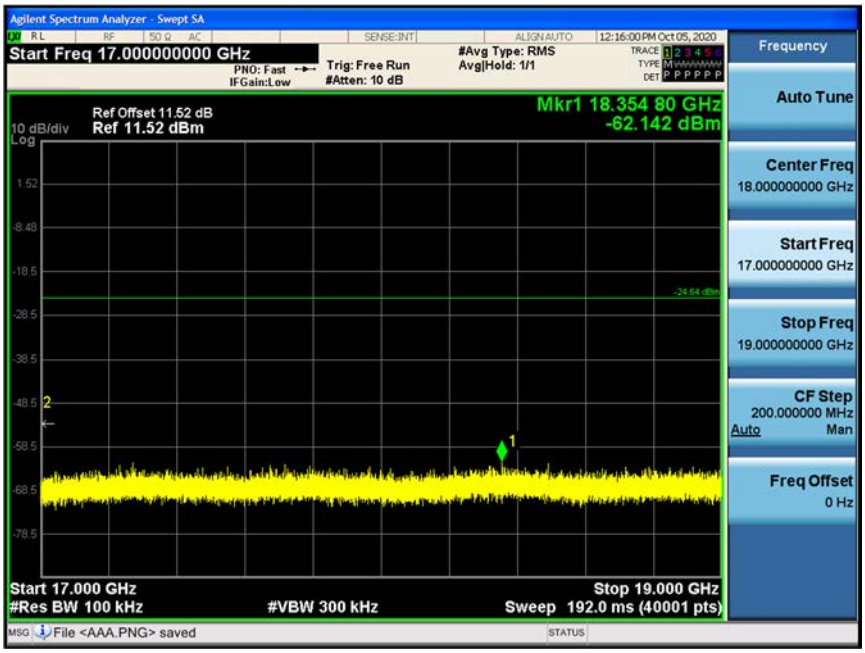
15 GHz ~ 17 GHz

Conducted Spurious Emission (High-CH 39)



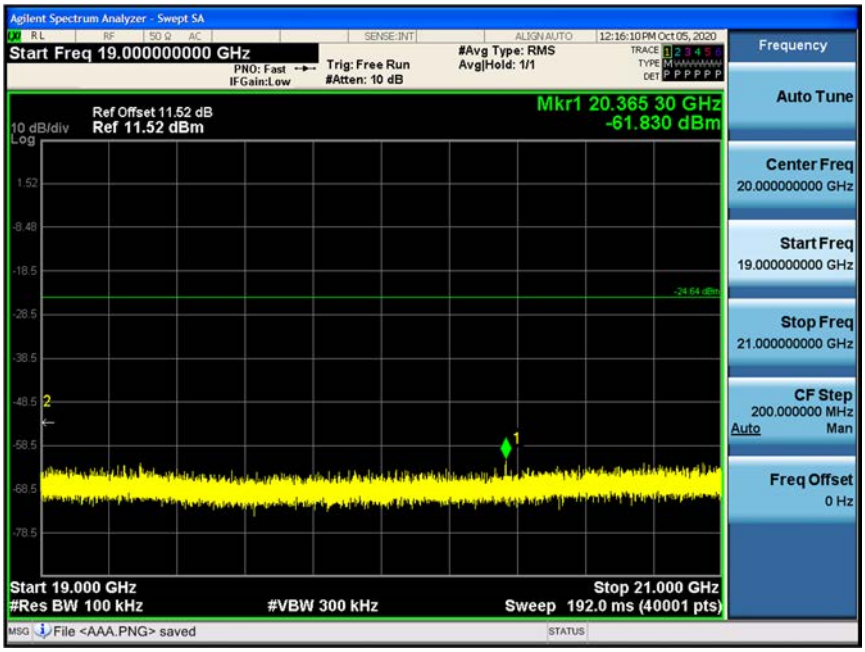
17 GHz ~ 19 GHz

Conducted Spurious Emission (High-CH 39)



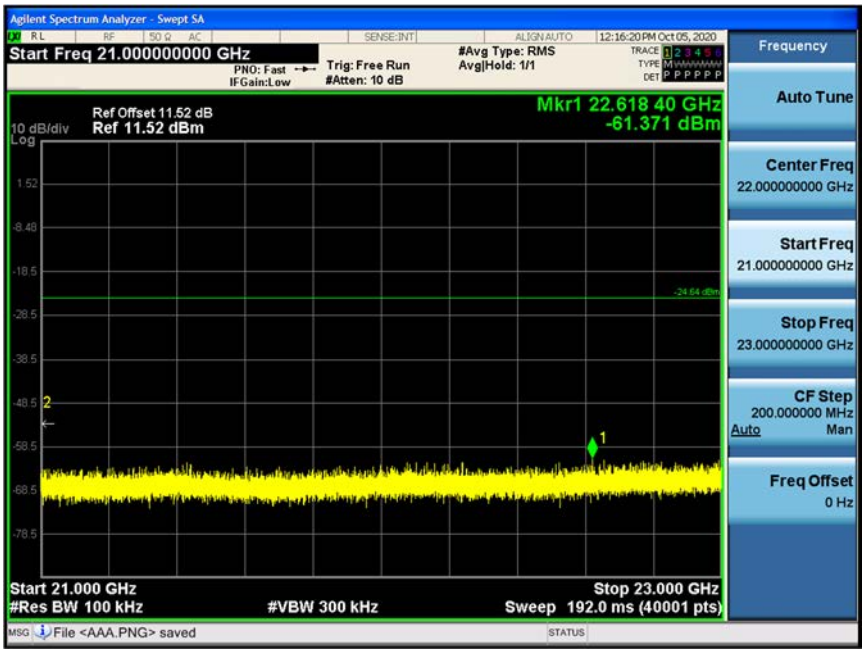
19 GHz ~ 21 GHz

Conducted Spurious Emission (High-CH 39)



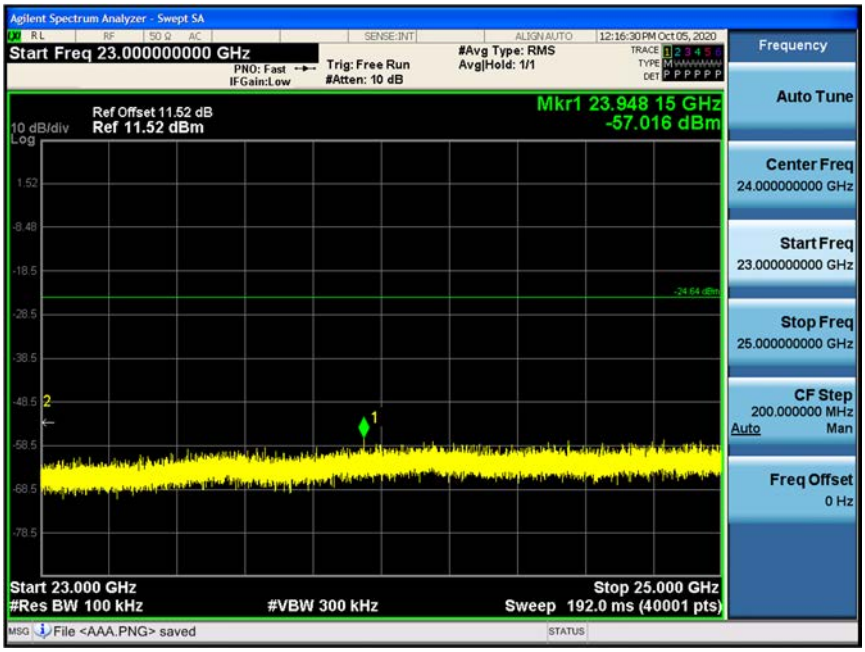
21 GHz ~ 23 GHz

Conducted Spurious Emission (High-CH 39)



23 GHz ~ 25 GHz

Conducted Spurious Emission (High-CH 39)



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

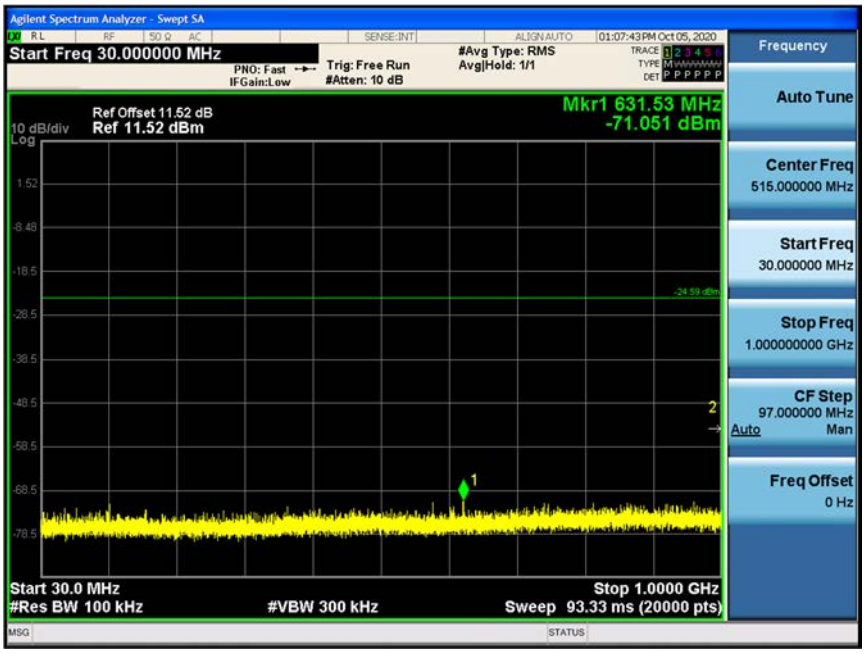
Low-CH 0

High-CH 39

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

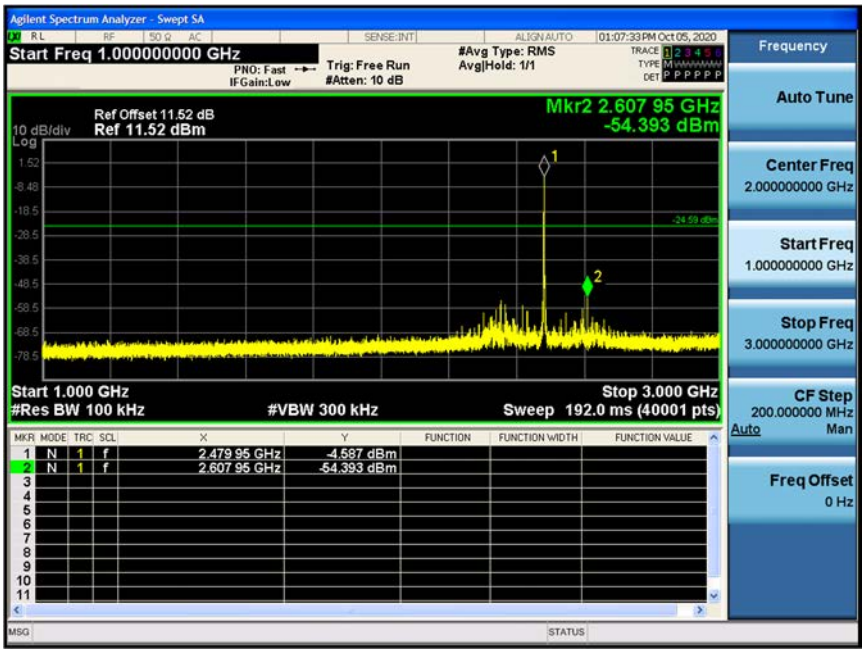
30 MHz ~ 1 GHz

Conducted Spurious Emission (High-CH 39)



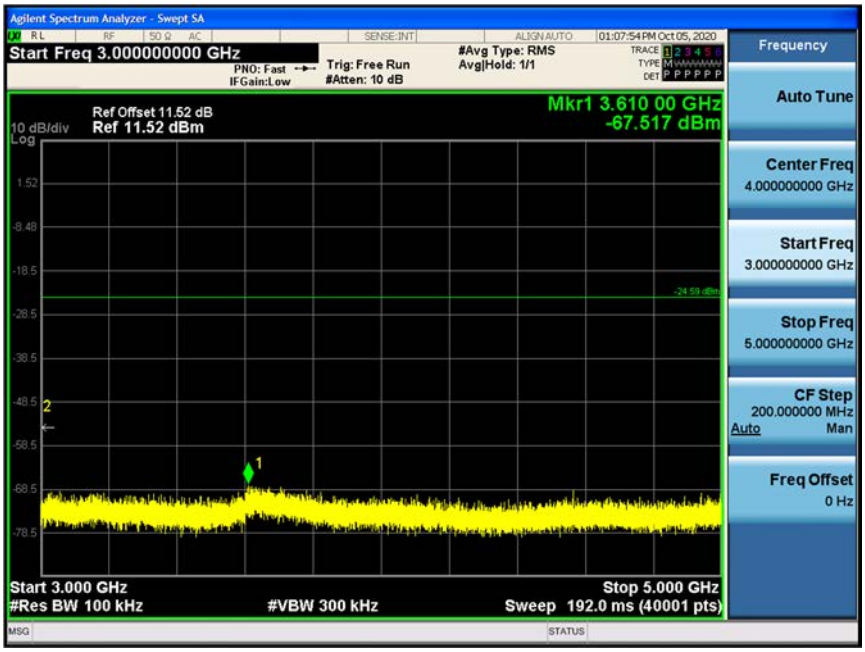
1 GHz ~ 3 GHz

Conducted Spurious Emission (High-CH 39)



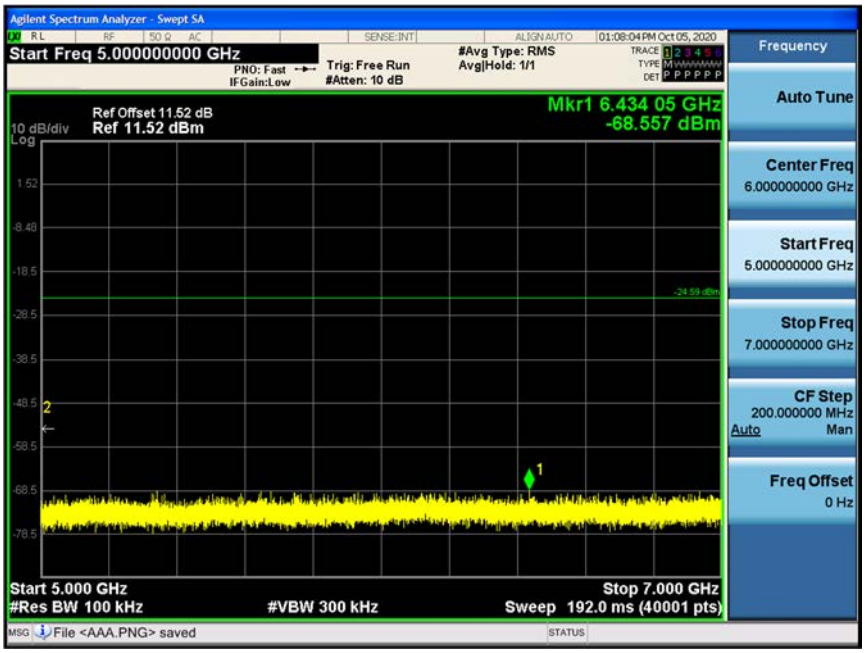
3 GHz ~ 5 GHz

Conducted Spurious Emission (High-CH 39)



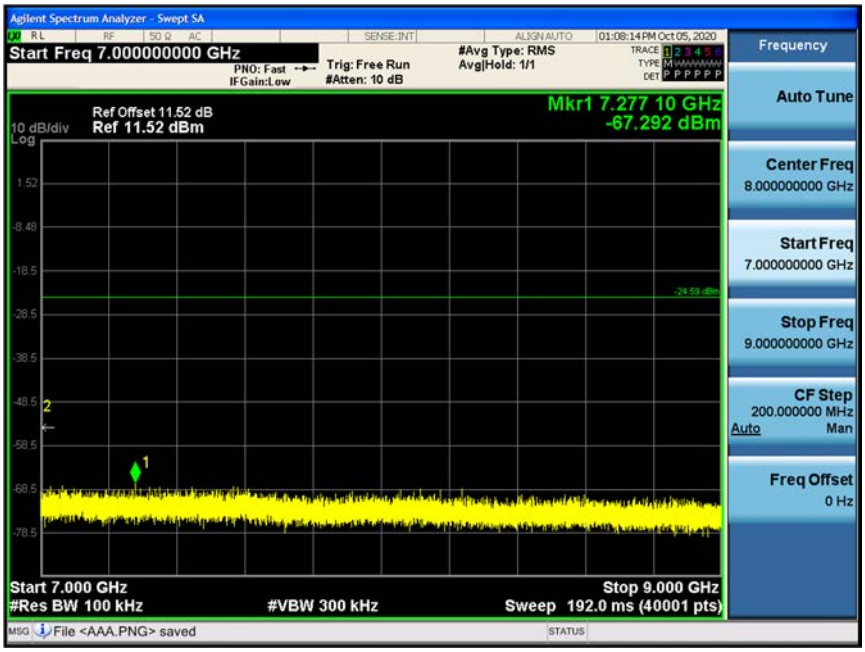
5 GHz ~ 7 GHz

Conducted Spurious Emission (High-CH 39)



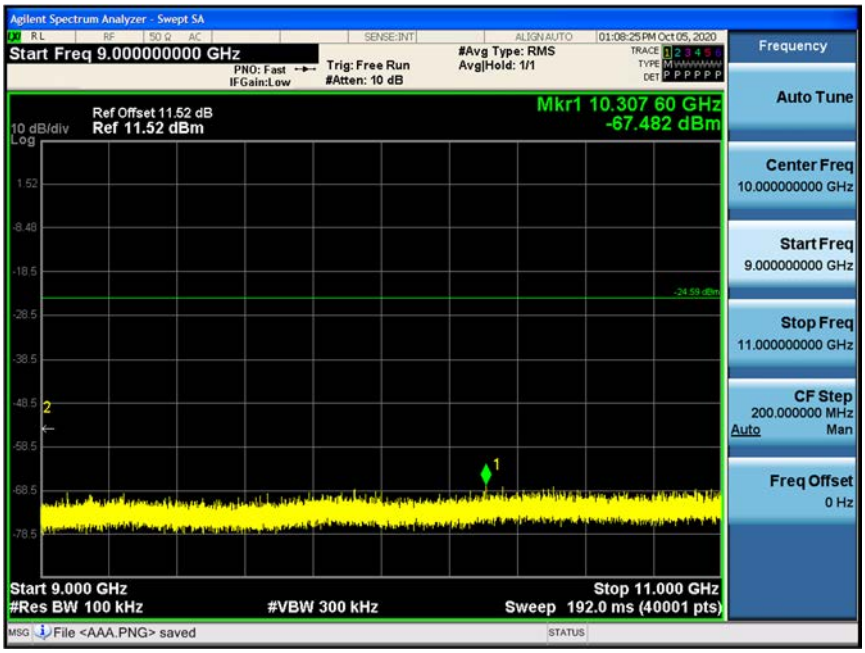
7 GHz ~ 9 GHz

Conducted Spurious Emission (High-CH 39)



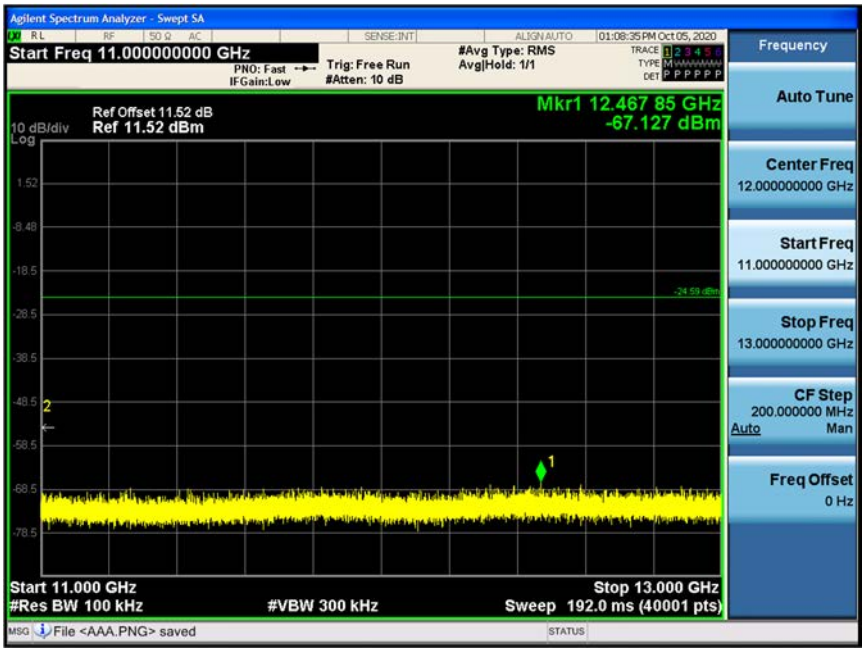
9 GHz ~ 11 GHz

Conducted Spurious Emission (High-CH 39)



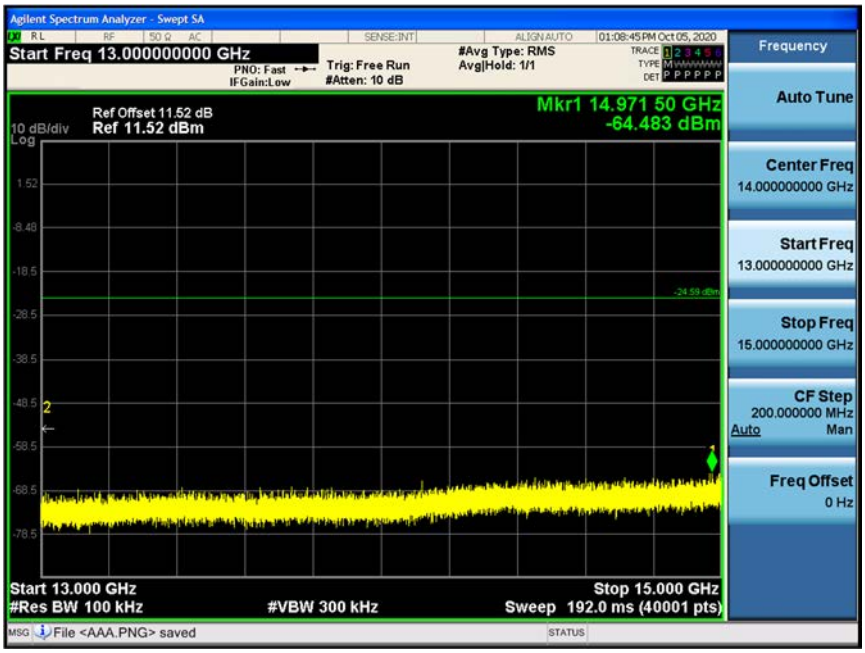
11 GHz ~ 13 GHz

Conducted Spurious Emission (High-CH 39)



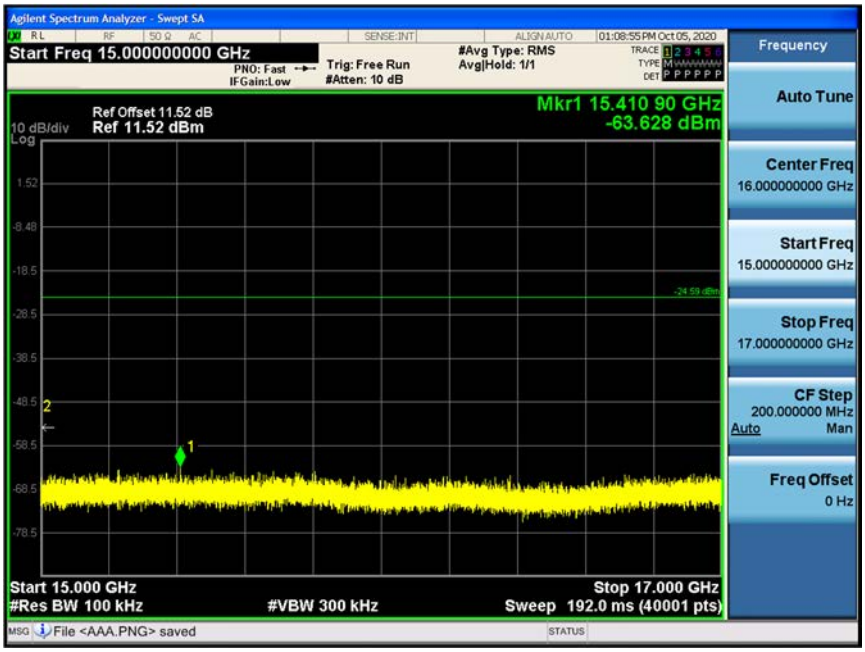
13 GHz ~ 15 GHz

Conducted Spurious Emission (High-CH 39)



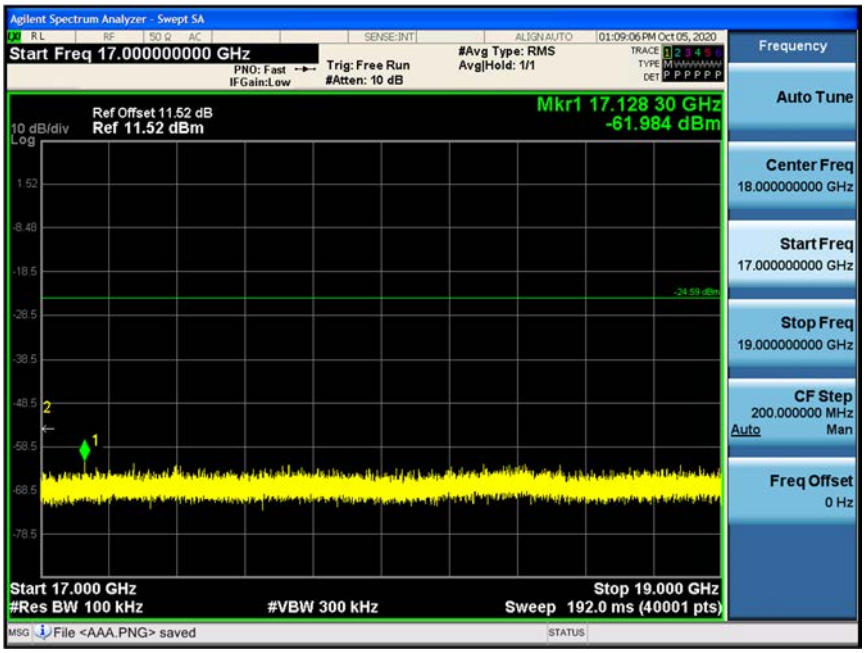
15 GHz ~ 17 GHz

Conducted Spurious Emission (High-CH 39)



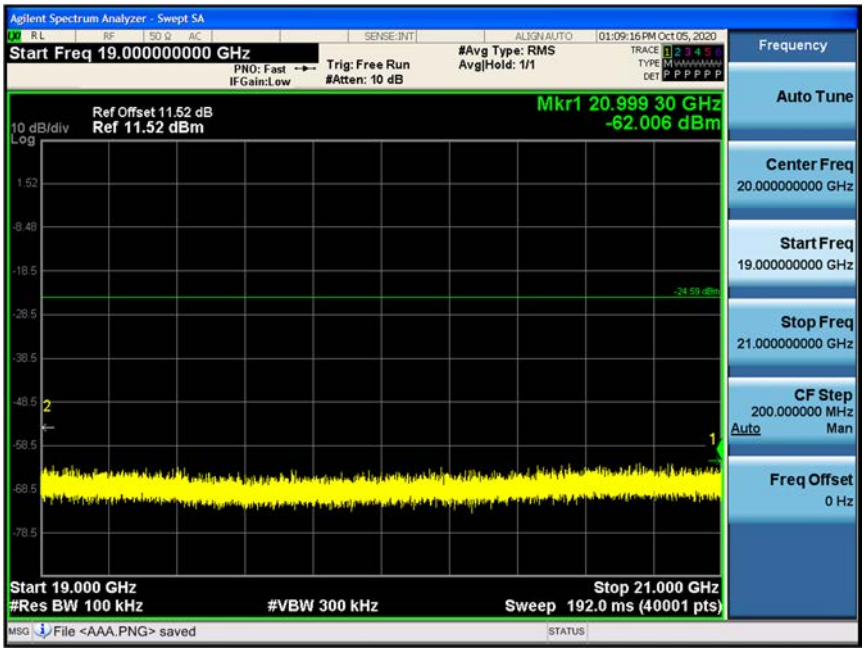
17 GHz ~ 19 GHz

Conducted Spurious Emission (High-CH 39)



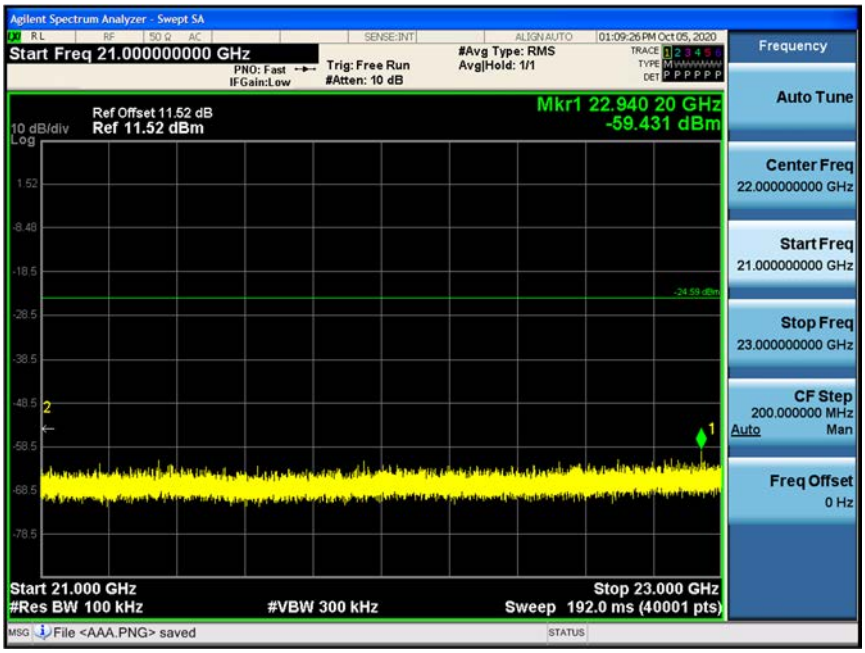
19 GHz ~ 21 GHz

Conducted Spurious Emission (High-CH 39)



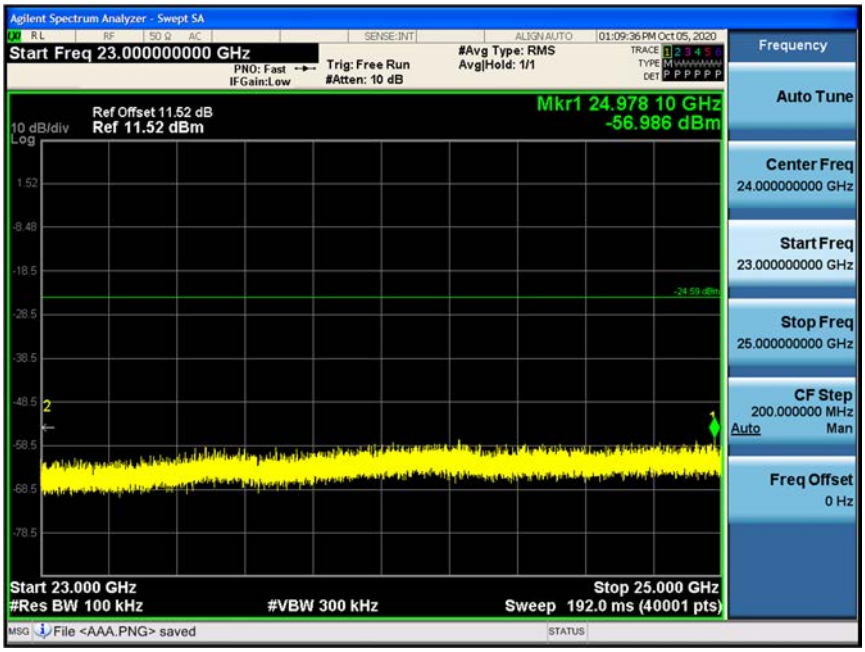
21 GHz ~ 23 GHz

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 = 40log (specific distance / 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 : 250k 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	47.82	0.00	4.21	V	52.03	73.98	21.95	PK
4804	42.19	0.35	4.21	V	46.75	53.98	7.23	AV
7206	42.24	0.00	12.24	V	54.48	73.98	19.50	PK
7206	34.19	0.35	12.24	V	46.78	53.98	7.20	AV
4804	48.29	0.00	4.21	H	52.50	73.98	21.48	PK
4804	43.34	0.35	4.21	H	47.90	53.98	6.08	AV
7206	41.95	0.00	12.24	H	54.19	73.98	19.79	PK
7206	33.86	0.35	12.24	H	46.45	53.98	7.53	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	46.74	0.00	4.43	V	51.17	73.98	22.81	PK
4880	41.09	0.35	4.43	V	45.87	53.98	8.11	AV
7320	42.20	0.00	12.46	V	54.66	73.98	19.32	PK
7320	34.01	0.35	12.46	V	46.82	53.98	7.16	AV
4880	47.51	0.00	4.43	H	51.94	73.98	22.04	PK
4880	42.02	0.35	4.43	H	46.80	53.98	7.18	AV
7320	40.89	0.00	12.46	H	53.35	73.98	20.63	PK
7320	33.25	0.35	12.46	H	46.06	53.98	7.92	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	45.61	0.00	4.83	V	50.44	73.98	23.54	PK
4960	38.21	0.35	4.83	V	43.39	53.98	10.59	AV
7440	42.00	0.00	12.63	V	54.63	73.98	19.35	PK
7440	32.92	0.35	12.63	V	45.90	53.98	8.08	AV
4960	46.06	0.00	4.83	H	50.89	73.98	23.09	PK
4960	39.52	0.35	4.83	H	44.70	53.98	9.28	AV
7440	41.00	0.00	12.63	H	53.63	73.98	20.35	PK
7440	31.05	0.35	12.63	H	44.03	53.98	9.95	AV

Mode : 250k Bit/s (225 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	47.51	0.00	4.21	V	51.72	73.98	22.26	PK
4804	40.92	0.06	4.21	V	45.19	53.98	8.79	AV
7206	43.35	0.00	12.24	V	55.59	73.98	18.39	PK
7206	35.94	0.06	12.24	V	48.24	53.98	5.74	AV
4804	48.06	0.00	4.21	H	52.27	73.98	21.71	PK
4804	42.87	0.06	4.21	H	47.14	53.98	6.84	AV
7206	41.24	0.00	12.24	H	53.48	73.98	20.50	PK
7206	34.05	0.06	12.24	H	46.35	53.98	7.63	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	46.75	0.00	4.43	V	51.18	73.98	22.80	PK
4880	40.13	0.06	4.43	V	44.62	53.98	9.36	AV
7320	42.28	0.00	12.46	V	54.74	73.98	19.24	PK
7320	34.09	0.06	12.46	V	46.61	53.98	7.37	AV
4880	47.20	0.00	4.43	H	51.63	73.98	22.35	PK
4880	42.12	0.06	4.43	H	46.61	53.98	7.37	AV
7320	41.66	0.00	12.46	H	54.12	73.98	19.86	PK
7320	33.14	0.06	12.46	H	45.66	53.98	8.32	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	45.24	0.00	4.83	V	50.07	73.98	23.91	PK
4960	38.41	0.06	4.83	V	43.30	53.98	10.68	AV
7440	41.60	0.00	12.63	V	54.23	73.98	19.75	PK
7440	33.18	0.06	12.63	V	45.87	53.98	8.11	AV
4960	46.16	0.00	4.83	H	50.99	73.98	22.99	PK
4960	39.57	0.06	4.83	H	44.46	53.98	9.52	AV
7440	40.57	0.00	12.63	H	53.20	73.98	20.78	PK
7440	32.03	0.06	12.63	H	44.72	53.98	9.26	AV

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	46.49	0.00	4.21	V	50.70	73.98	23.28	PK
4804	41.46	1.23	4.21	V	46.90	53.98	7.08	AV
7206	41.53	0.00	12.24	V	53.77	73.98	20.21	PK
7206	33.76	1.23	12.24	V	47.23	53.98	6.75	AV
4804	48.54	0.00	4.21	H	52.75	73.98	21.23	PK
4804	43.98	1.23	4.21	H	49.42	53.98	4.56	AV
7206	40.78	0.00	12.24	H	53.02	73.98	20.96	PK
7206	32.19	1.23	12.24	H	45.66	53.98	8.32	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	47.04	0.00	4.43	V	51.47	73.98	22.51	PK
4880	41.31	1.23	4.43	V	46.97	53.98	7.01	AV
7320	41.26	0.00	12.46	V	53.72	73.98	20.26	PK
7320	32.62	1.23	12.46	V	46.31	53.98	7.67	AV
4880	46.51	0.00	4.43	H	50.94	73.98	23.04	PK
4880	40.02	1.23	4.43	H	45.68	53.98	8.30	AV
7320	40.33	0.00	12.46	H	52.79	73.98	21.19	PK
7320	31.44	1.23	12.46	H	45.13	53.98	8.85	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	45.76	0.00	4.83	V	50.59	73.98	23.39	PK
4960	38.43	1.23	4.83	V	44.49	53.98	9.49	AV
7440	41.69	0.00	12.63	V	54.32	73.98	19.66	PK
7440	32.97	1.23	12.63	V	46.83	53.98	7.15	AV
4960	44.81	0.00	4.83	H	49.64	73.98	24.34	PK
4960	37.91	1.23	4.83	H	43.97	53.98	10.01	AV
7440	40.66	0.00	12.63	H	53.29	73.98	20.69	PK
7440	31.05	1.23	12.63	H	44.91	53.98	9.07	AV

Mode : 1M Bit/s (255 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	46.18	0.00	4.21	V	50.39	73.98	23.59	PK
4804	41.65	0.24	4.21	V	46.10	53.98	7.88	AV
7206	42.03	0.00	12.24	V	54.27	73.98	19.71	PK
7206	34.46	0.24	12.24	V	46.94	53.98	7.04	AV
4804	49.13	0.00	4.21	H	53.34	73.98	20.64	PK
4804	44.25	0.24	4.21	H	48.70	53.98	5.28	AV
7206	41.05	0.00	12.24	H	53.29	73.98	20.69	PK
7206	33.48	0.24	12.24	H	45.96	53.98	8.02	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	47.01	0.00	4.43	V	51.44	73.98	22.54	PK
4880	41.55	0.24	4.43	V	46.22	53.98	7.76	AV
7320	41.17	0.00	12.46	V	53.63	73.98	20.35	PK
7320	33.16	0.24	12.46	V	45.86	53.98	8.12	AV
4880	46.19	0.00	4.43	H	50.62	73.98	23.36	PK
4880	40.19	0.24	4.43	H	44.86	53.98	9.12	AV
7320	40.19	0.00	12.46	H	52.65	73.98	21.33	PK
7320	32.08	0.24	12.46	H	44.78	53.98	9.20	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	45.21	0.00	4.83	V	50.04	73.98	23.94	PK
4960	38.05	0.24	4.83	V	43.12	53.98	10.86	AV
7440	42.62	0.00	12.63	V	55.25	73.98	18.73	PK
7440	33.91	0.24	12.63	V	46.78	53.98	7.20	AV
4960	44.05	0.00	4.83	H	48.88	73.98	25.10	PK
4960	37.04	0.24	4.83	H	42.11	53.98	11.87	AV
7440	41.65	0.00	12.63	H	54.28	73.98	19.70	PK
7440	32.04	0.24	12.63	H	44.91	53.98	9.07	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	47.96	0.00	4.21	V	52.17	73.98	21.81	PK
4804	41.51	2.12	4.21	V	47.84	53.98	6.14	AV
7206	41.75	0.00	12.24	V	53.99	73.98	19.99	PK
7206	30.71	2.12	12.24	V	45.07	53.98	8.91	AV
4804	48.53	0.00	4.21	H	52.74	73.98	21.24	PK
4804	42.38	2.12	4.21	H	48.71	53.98	5.27	AV
7206	40.42	0.00	12.24	H	52.66	73.98	21.32	PK
7206	29.62	2.12	12.24	H	43.98	53.98	10.00	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	45.72	0.00	4.43	V	50.15	73.98	23.83	PK
4880	38.02	2.12	4.43	V	44.57	53.98	9.41	AV
7320	41.51	0.00	12.46	V	53.97	73.98	20.01	PK
7320	30.93	2.12	12.46	V	45.51	53.98	8.47	AV
4880	46.18	0.00	4.43	H	50.61	73.98	23.37	PK
4880	39.39	2.12	4.43	H	45.94	53.98	8.04	AV
7320	40.26	0.00	12.46	H	52.72	73.98	21.26	PK
7320	30.05	2.12	12.46	H	44.63	53.98	9.35	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	45.11	0.00	4.83	V	49.94	73.98	24.04	PK
4960	37.87	2.12	4.83	V	44.82	53.98	9.16	AV
7440	41.26	0.00	12.63	V	53.89	73.98	20.09	PK
7440	30.06	2.12	12.63	V	44.81	53.98	9.17	AV
4960	45.56	0.00	4.83	H	50.39	73.98	23.59	PK
4960	38.43	2.12	4.83	H	45.38	53.98	8.60	AV
7440	40.21	0.00	12.63	H	52.84	73.98	21.14	PK
7440	29.45	2.12	12.63	H	44.20	53.98	9.78	AV

Mode : 2M Bit/s (255 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	47.52	0.00	4.21	V	51.73	73.98	22.25	PK
4804	41.24	0.45	4.21	V	45.90	53.98	8.08	AV
7206	41.60	0.00	12.24	V	53.84	73.98	20.14	PK
7206	31.73	0.45	12.24	V	44.42	53.98	9.56	AV
4804	48.75	0.00	4.21	H	52.96	73.98	21.02	PK
4804	42.25	0.45	4.21	H	46.91	53.98	7.07	AV
7206	40.45	0.00	12.24	H	52.69	73.98	21.29	PK
7206	30.11	0.45	12.24	H	42.80	53.98	11.18	AV

Operation Mode: CH Mid

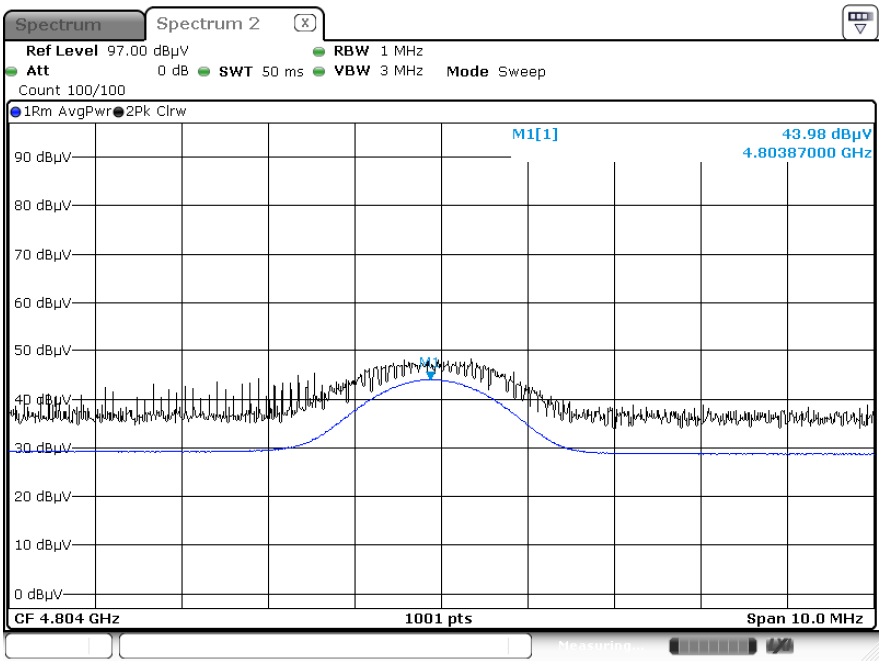
Frequency [MHz]	Reading [dBuV]	Duty Cycle Correction [dB]	A.F+C.L-A.G+D.F [dB]	Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4880	43.67	0.00	4.43	V	48.10	73.98	25.88	PK
4880	37.11	0.45	4.43	V	41.99	53.98	11.99	AV
7320	42.09	0.00	12.46	V	54.55	73.98	19.43	PK
7320	31.65	0.45	12.46	V	44.56	53.98	9.42	AV
4880	45.74	0.00	4.43	H	50.17	73.98	23.81	PK
4880	39.19	0.45	4.43	H	44.07	53.98	9.91	AV
7320	40.83	0.00	12.46	H	53.29	73.98	20.69	PK
7320	30.83	0.45	12.46	H	43.74	53.98	10.24	AV

Operation Mode: CH High

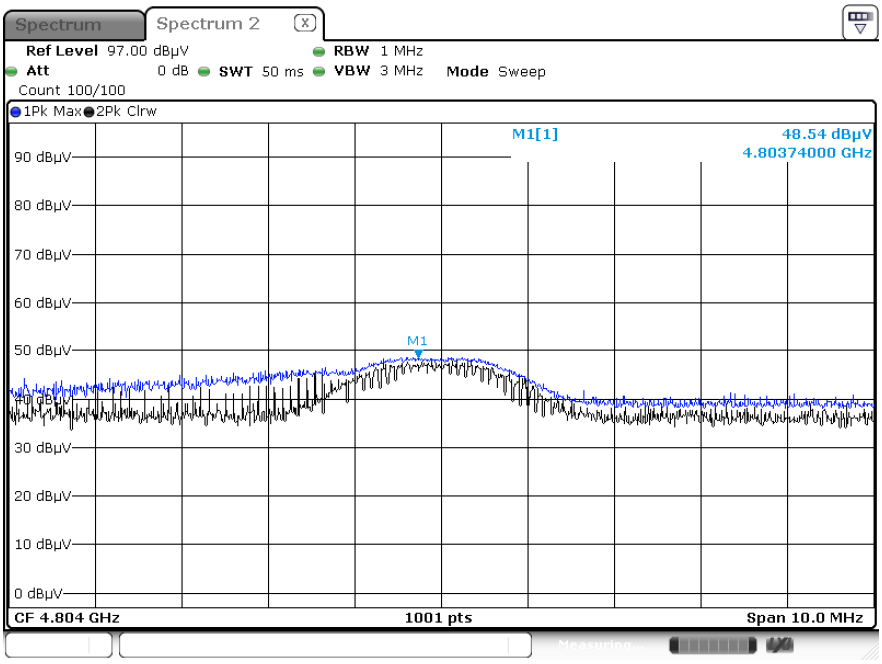
Frequency [MHz]	Reading [dBuV]	Duty Cycle Correction [dB]	A.F+C.L-A.G+D.F [dB]	Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
4960	45.01	0.00	4.83	V	49.84	73.98	24.14	PK
4960	37.21	0.45	4.83	V	42.49	53.98	11.49	AV
7440	41.79	0.00	12.63	V	54.42	73.98	19.56	PK
7440	31.26	0.45	12.63	V	44.34	53.98	9.64	AV
4960	45.53	0.00	4.83	H	50.36	73.98	23.62	PK
4960	38.52	0.45	4.83	H	43.80	53.98	10.18	AV
7440	40.12	0.00	12.63	H	52.75	73.98	21.23	PK
7440	30.04	0.45	12.63	H	43.12	53.98	10.86	AV

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

Radiated Spurious Emissions plot – Average Reading (Ch.0 2rd Harmonic)



Radiated Spurious Emissions plot – Peak Reading (Ch.0 2rd Harmonic)



Note:

Plot of worst case are only reported.

9.7 RADIATED RESTRICTED BAND EDGES

Mode : 250k Bit/s (37 Byte)

Operating Frequency 2402 MHz & 2480 MHz

Channel No. 0 & 39

Frequency [MHz]	Reading [dBuV/m]	Duty Cycle Factor [dB]	※ A.F+C.L+ Att-A.G+D.F [dB]	Ant. Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	48.17	0.00	2.61	H	50.78	73.98	23.20	PK
2390.0	36.75	0.35	2.61	H	39.71	53.98	14.27	AV
2390.0	47.89	0.00	2.61	V	50.50	73.98	23.48	PK
2390.0	36.02	0.35	2.61	V	38.98	53.98	15.00	AV
2483.5	51.11	0.00	3.13	H	54.24	73.98	19.74	PK
2483.5	35.97	0.35	3.13	H	39.45	53.98	14.53	AV
2483.5	48.52	0.00	3.13	V	51.65	73.98	22.33	PK
2483.5	34.93	0.35	3.13	V	38.41	53.98	15.57	AV

Mode : 250k Bit/s (255 Byte)

Operating Frequency 2402 MHz & 2480 MHz

Channel No. 0 & 39

Frequency [MHz]	Reading [dBuV/m]	Duty Cycle Factor [dB]	※ A.F+C.L+ Att-A.G+D.F [dB]	Ant. Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	48.05	0.00	2.61	H	50.66	73.98	23.32	PK
2390.0	36.74	0.06	2.61	H	39.41	53.98	14.57	AV
2390.0	47.55	0.00	2.61	V	50.16	73.98	23.82	PK
2390.0	36.12	0.06	2.61	V	38.79	53.98	15.19	AV
2483.5	50.42	0.00	3.13	H	53.55	73.98	20.43	PK
2483.5	35.86	0.06	3.13	H	39.05	53.98	14.93	AV
2483.5	47.09	0.00	3.13	V	50.22	73.98	23.76	PK
2483.5	34.72	0.06	3.13	V	37.91	53.98	16.07	AV

Mode : 1M Bit/s (37 Byte)

Operating Frequency 2402 MHz & 2480 MHz

Channel No. 0 & 39

Frequency [MHz]	Reading [dBuV/m]	Duty Cycle Factor [dB]	※ A.F+C.L+ Att-A.G+D.F [dB]	Ant. Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	48.26	0.00	2.61	H	50.87	73.98	23.11	PK
2390.0	36.64	1.23	2.61	H	40.48	53.98	13.50	AV
2390.0	47.30	0.00	2.61	V	49.91	73.98	24.07	PK
2390.0	35.42	1.23	2.61	V	39.26	53.98	14.72	AV
2483.5	52.86	0.00	3.13	H	55.99	73.98	17.99	PK
2483.5	35.82	1.23	3.13	H	40.18	53.98	13.80	AV
2483.5	49.56	0.00	3.13	V	52.69	73.98	21.29	PK
2483.5	34.81	1.23	3.13	V	39.17	53.98	14.81	AV

Mode : 1M Bit/s (255 Byte)

Operating Frequency 2402 MHz & 2480 MHz

Channel No. 0 & 39

Frequency [MHz]	Reading [dBuV/m]	Duty Cycle Factor [dB]	※ A.F+C.L+ Att-A.G+D.F [dB]	Ant. Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	47.68	0.00	2.61	H	50.29	73.98	23.69	PK
2390.0	37.16	0.24	2.61	H	40.01	53.98	13.97	AV
2390.0	46.31	0.00	2.61	V	48.92	73.98	25.06	PK
2390.0	36.18	0.24	2.61	V	39.03	53.98	14.95	AV
2483.5	52.02	0.00	3.13	H	55.15	73.98	18.83	PK
2483.5	35.84	0.24	3.13	H	39.21	53.98	14.77	AV
2483.5	47.36	0.00	3.13	V	50.49	73.98	23.49	PK
2483.5	34.68	0.24	3.13	V	38.05	53.98	15.93	AV

Mode : 2M Bit/s (37 Byte)

Operating Frequency 2402 MHz & 2480 MHz

Channel No. 0 & 39

Frequency [MHz]	Reading [dBuV/m]	Duty Cycle Factor [dB]	※ A.F+C.L+ Att-A.G+D.F [dB]	Ant. Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	47.30	0.00	2.61	H	49.91	73.98	24.07	PK
2390.0	36.76	2.12	2.61	H	41.49	53.98	12.49	AV
2390.0	46.05	0.00	2.61	V	48.66	73.98	25.32	PK
2390.0	35.40	2.12	2.61	V	40.13	53.98	13.85	AV
2483.5	51.51	0.00	3.13	H	54.64	73.98	19.34	PK
2483.5	36.64	2.12	3.13	H	41.89	53.98	12.09	AV
2483.5	48.42	0.00	3.13	V	51.55	73.98	22.43	PK
2483.5	35.34	2.12	3.13	V	40.59	53.98	13.39	AV

Mode : 2M Bit/s (255 Byte)

Operating Frequency 2402 MHz & 2480 MHz

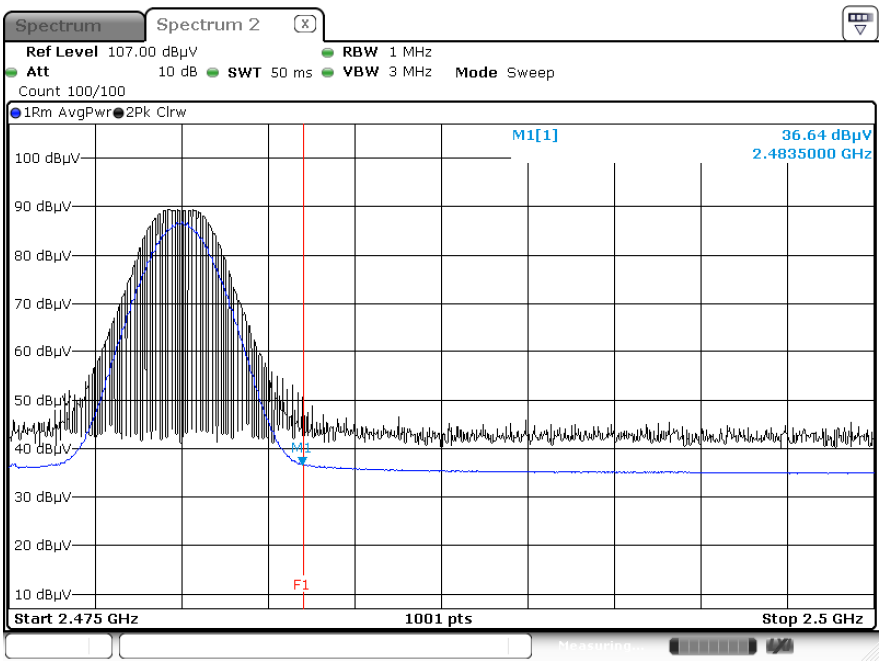
Channel No. 0 & 39

Frequency [MHz]	Reading [dBuV/m]	Duty Cycle Factor [dB]	※ A.F+C.L+ Att-A.G+D.F [dB]	Ant. Pol. [H/V]	Total [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Measurement Type
2390.0	47.57	0.00	2.61	H	50.18	73.98	23.80	PK
2390.0	36.72	0.45	2.61	H	39.78	53.98	14.20	AV
2390.0	47.07	0.00	2.61	V	49.68	73.98	24.30	PK
2390.0	35.19	0.45	2.61	V	38.25	53.98	15.73	AV
2483.5	51.85	0.00	3.13	H	54.98	73.98	19.00	PK
2483.5	37.13	0.45	3.13	H	40.71	53.98	13.27	AV
2483.5	47.87	0.00	3.13	V	51.00	73.98	22.98	PK
2483.5	35.25	0.45	3.13	V	38.83	53.98	15.15	AV

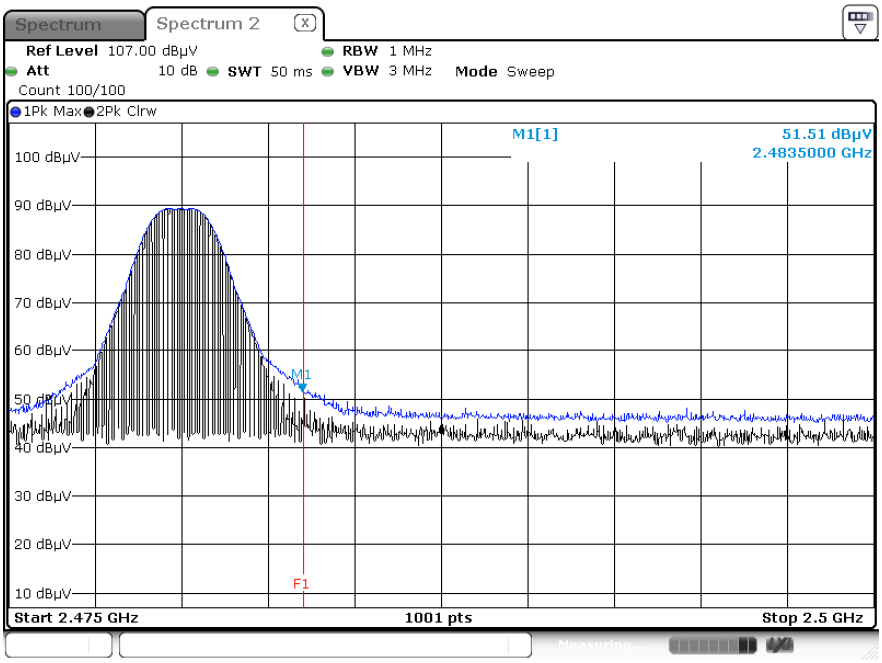
Note: All data Worst case Duty Cycle Correction Factor applied.

▣ Mode : 2M Bit/s (37 Byte) Test Plots

Radiated Restricted Band Edges plot – Average Reading (Ch.39, X-H)



Radiated Restricted Band Edges plot – Peak Reading (Ch.39, X-H)



Note:

Plot of worst case are only reported.

9.8 POWERLINE CONDUCTED EMISSIONS

Conducted Emissions (Line 1)

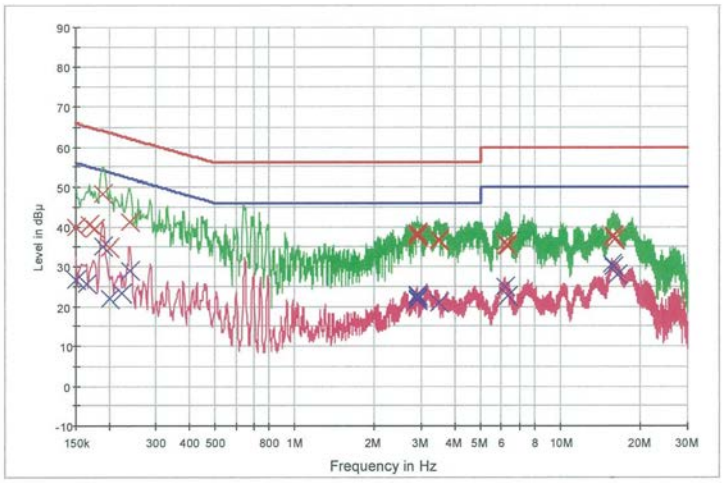
Test 1 / 2

HCT TEST Report

Common Information

EUT:	SC300i
Manufacturer:	VC Inc.
Test Site:	SHIELD ROOM
Operating Conditions:	BTLE MODE_N

FCC CLASS B_Exten Cable



Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	39.8	9.000	Off	N	9.8	26.2	66.0
0.168000	40.6	9.000	Off	N	9.8	24.5	65.1
0.176000	39.5	9.000	Off	N	9.8	25.1	64.7
0.190000	48.1	9.000	Off	N	9.8	15.9	64.0
0.202000	34.7	9.000	Off	N	9.8	28.8	63.5
0.240000	41.3	9.000	Off	N	9.8	20.8	62.1
2.878000	37.5	9.000	Off	N	9.9	18.5	56.0
2.890000	38.3	9.000	Off	N	9.9	17.7	56.0
2.894000	38.3	9.000	Off	N	9.9	17.7	56.0
2.898000	37.9	9.000	Off	N	9.9	18.1	56.0
3.480000	36.7	9.000	Off	N	9.9	19.3	56.0
3.496000	36.6	9.000	Off	N	9.9	19.4	56.0
6.152000	36.1	9.000	Off	N	10.1	23.9	60.0
6.246000	35.5	9.000	Off	N	10.1	24.5	60.0
6.310000	35.2	9.000	Off	N	10.1	24.8	60.0
15.722000	37.9	9.000	Off	N	10.5	22.1	60.0
15.776000	37.3	9.000	Off	N	10.5	22.7	60.0
16.034000	36.7	9.000	Off	N	10.5	23.3	60.0

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Test 2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.150000	26.5	9.000	Off	N	9.8	29.5	56.0
0.164000	25.5	9.000	Off	N	9.8	29.8	55.3
0.190000	35.1	9.000	Off	N	9.8	18.9	54.0
0.202000	22.0	9.000	Off	N	9.8	31.6	53.5
0.224000	23.2	9.000	Off	N	9.8	29.5	52.7
0.240000	29.1	9.000	Off	N	9.8	23.0	52.1
2.878000	21.9	9.000	Off	N	9.9	24.1	46.0
2.890000	23.0	9.000	Off	N	9.9	23.0	46.0
2.894000	22.5	9.000	Off	N	9.9	23.5	46.0
2.898000	21.6	9.000	Off	N	9.9	24.4	46.0
2.902000	21.5	9.000	Off	N	9.9	24.5	46.0
3.480000	20.9	9.000	Off	N	9.9	25.1	46.0
6.152000	24.8	9.000	Off	N	10.1	25.2	50.0
6.168000	25.0	9.000	Off	N	10.1	25.0	50.0
6.310000	22.5	9.000	Off	N	10.1	27.5	50.0
15.556000	30.6	9.000	Off	N	10.5	19.4	50.0
15.776000	30.1	9.000	Off	N	10.5	19.9	50.0
16.360000	28.1	9.000	Off	N	10.5	21.9	50.0

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Conducted Emissions (Line 2)

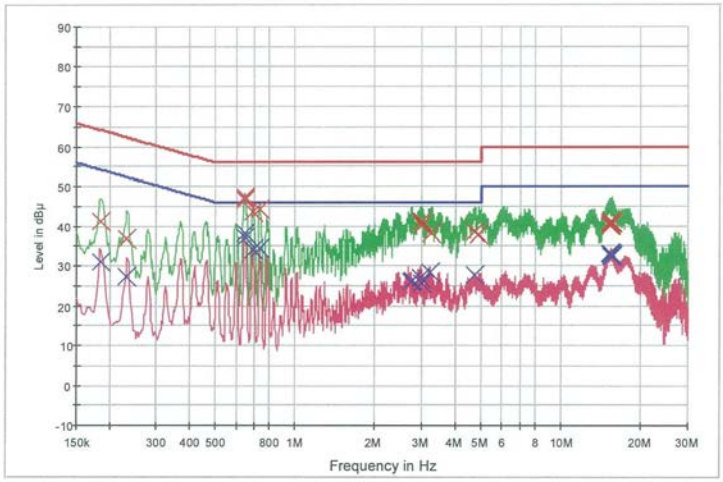
Test 1 / 2

HCT TEST Report

Common Information

EUT:	SC300i
Manufacturer:	VC Inc.
Test Site:	SHIELD ROOM
Operating Conditions:	BTLE MODE_L1

FCC CLASS B_Exten Cable



Final Result 1

Frequency (MHz)	QuasiPeak (dBuV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBuV)
0.186000	41.2	9.000	Off	L1	9.8	23.0	64.2
0.232000	36.9	9.000	Off	L1	9.8	25.5	62.4
0.644000	46.7	9.000	Off	L1	9.8	9.3	56.0
0.650000	47.4	9.000	Off	L1	9.8	8.6	56.0
0.696000	43.5	9.000	Off	L1	9.8	12.5	56.0
0.734000	44.1	9.000	Off	L1	9.8	11.9	56.0
2.958000	40.7	9.000	Off	L1	9.9	15.3	56.0
2.982000	40.3	9.000	Off	L1	9.9	15.7	56.0
3.002000	41.1	9.000	Off	L1	9.9	14.9	56.0
3.240000	38.0	9.000	Off	L1	9.9	18.0	56.0
4.750000	38.4	9.000	Off	L1	10.0	17.6	56.0
4.882000	37.8	9.000	Off	L1	10.0	18.2	56.0
15.198000	40.8	9.000	Off	L1	10.4	19.2	60.0
15.308000	40.3	9.000	Off	L1	10.4	19.7	60.0
15.418000	40.1	9.000	Off	L1	10.4	19.9	60.0
15.446000	40.8	9.000	Off	L1	10.4	19.2	60.0
15.556000	40.7	9.000	Off	L1	10.4	19.3	60.0
15.562000	40.7	9.000	Off	L1	10.4	19.3	60.0

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Test 2 / 2

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.186000	30.9	9.000	Off	L1	9.8	23.3	54.2
0.232000	27.4	9.000	Off	L1	9.8	25.0	52.4
0.644000	37.0	9.000	Off	L1	9.8	9.0	46.0
0.650000	38.0	9.000	Off	L1	9.8	8.0	46.0
0.692000	34.0	9.000	Off	L1	9.8	12.0	46.0
0.736000	34.3	9.000	Off	L1	9.8	11.7	46.0
2.732000	25.9	9.000	Off	L1	9.9	20.1	46.0
2.770000	26.2	9.000	Off	L1	9.9	19.8	46.0
2.952000	26.9	9.000	Off	L1	9.9	19.1	46.0
3.012000	25.6	9.000	Off	L1	9.9	20.4	46.0
3.224000	28.3	9.000	Off	L1	9.9	17.7	46.0
4.736000	27.6	9.000	Off	L1	10.0	18.4	46.0
15.308000	32.9	9.000	Off	L1	10.4	17.1	50.0
15.362000	33.0	9.000	Off	L1	10.4	17.0	50.0
15.418000	32.4	9.000	Off	L1	10.4	17.6	50.0
15.446000	32.7	9.000	Off	L1	10.4	17.3	50.0
15.556000	32.6	9.000	Off	L1	10.4	17.4	50.0
15.562000	32.5	9.000	Off	L1	10.4	17.5	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	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	11/11/2019	Annual	3116A03621
Hewlett Packard	11667B / Power Splitter	02/14/2020	Annual	10545
HP	E3632A / DC Power Supply	04/27/2020	Annual	KR75303243
HP	8493C / Attenuator(10 dB)(DC-26.5 GHz)	06/26/2020	Annual	07560
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
Rohde & Schwarz	CBT / Bluetooth Tester	03/02/2020	Annual	100808

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
Audix	EM1000 / Controller	N/A	N/A	060520
Audix	Turn Table	N/A	N/A	N/A
TNM system	FBSM-01B / Amp & Filter Bank Switch Controller	N/A	N/A	N/A
Schwarzbeck	Loop Antenna	05/18/2020	Biennial	1513-175
Schwarzbeck	VULB 9168 / Hybrid Antenna	08/02/2019	Biennial	01039
Schwarzbeck	BBHA 9120D / Horn Antenna	06/28/2019	Biennial	1300
Schwarzbeck	BBHA9170 / Horn Antenna(15 GHz ~ 40 GHz)	04/29/2019	Biennial	BBHA9170342
Rohde & Schwarz	FSP(10 Hz ~ 40 GHz) / Spectrum Analyzer	05/13/2020	Annual	101055
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	CBL18265035 / Power Amplifier	12/26/2019	Annual	22966
CERNEX	CBL26405040 / Power Amplifier	03/23/2020	Annual	25956
TNM system	FBSM-05B / HPF(3~18GHz) + LNA1(1~18GHz)	01/21/2020	Annual	F6
TNM system	FBSM-05B / ATT(10dB) + LNA1(1~18GHz)	01/21/2020	Annual	None
TNM system	FBSM-05B / ATT(3dB) + LNA1(1~18GHz)	01/21/2020	Annual	None
TNM system	FBSM-05B / LNA1(1~18GHz)	01/21/2020	Annual	25540
TNM system	FBSM-05B / HPF(7~18GHz) + LNA2(6~18GHz)	01/21/2020	Annual	28550
TNM system	FBSM-05B / Thru(30MHz ~ 18GHz)	01/21/2020	Annual	None

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-2010-FC001-P