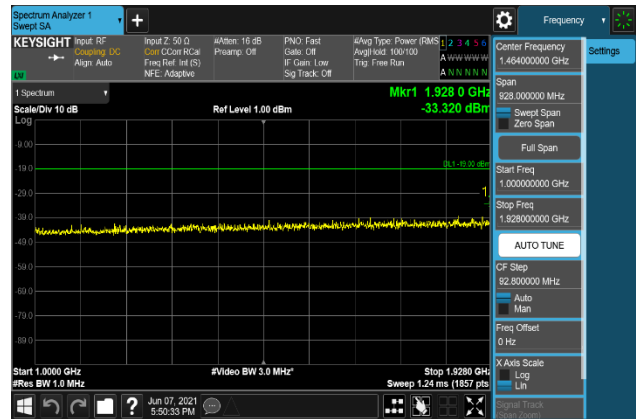
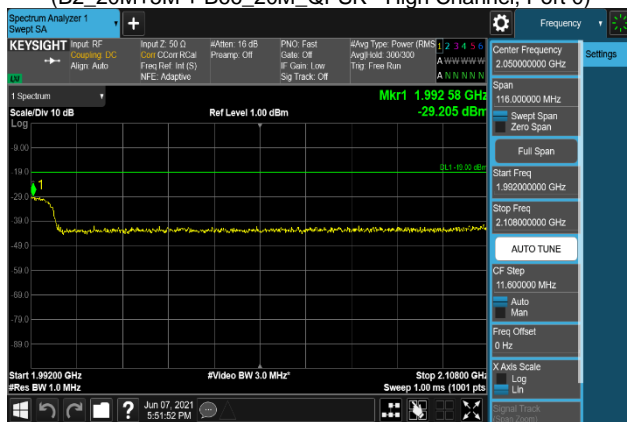


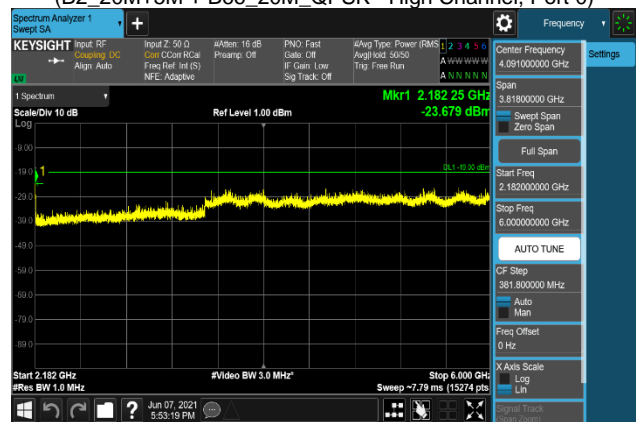
Plot 7-2599. Conducted Spurious Emission Plot
30 MHz to 1 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 0)



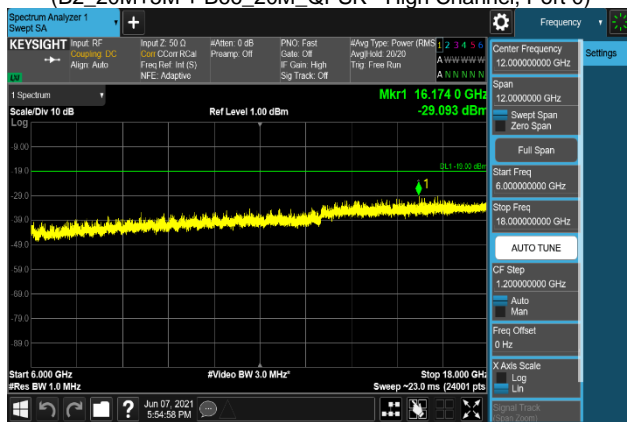
Plot 7-2600. Conducted Spurious Emission Plot
1 GHz to 1.928 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 0)



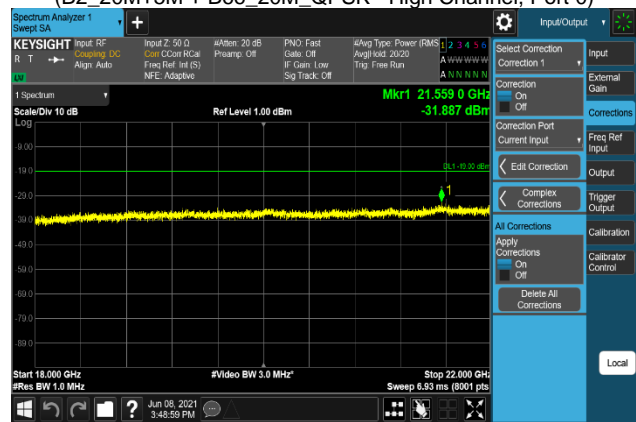
Plot 7-2601. Conducted Spurious Emission Plot
1.992 GHz to 2.108 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 0)



Plot 7-2602. Conducted Spurious Emission Plot
2.182 GHz to 6 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 0)



Plot 7-2603. Conducted Spurious Emission Plot
6 GHz to 18 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 0)



Plot 7-2604. Conducted Spurious Emission Plot
18 GHz to 22 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 0)

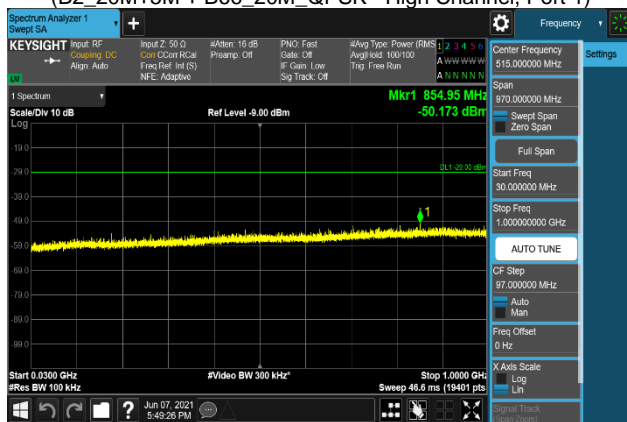
FCC ID: A3LRF4402D-D1A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
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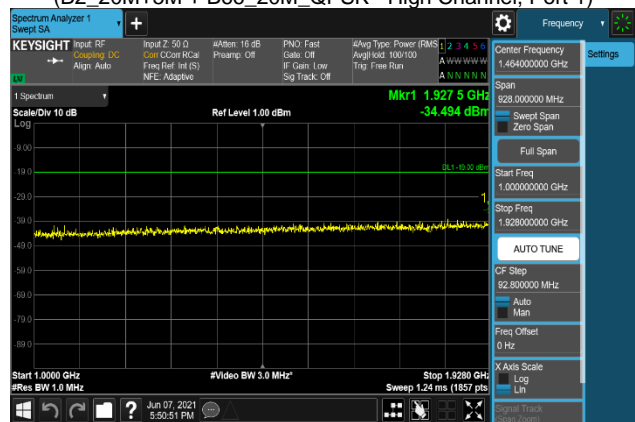
Plot 7-2605. Conducted Spurious Emission Plot
9 kHz to 150 kHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 1)



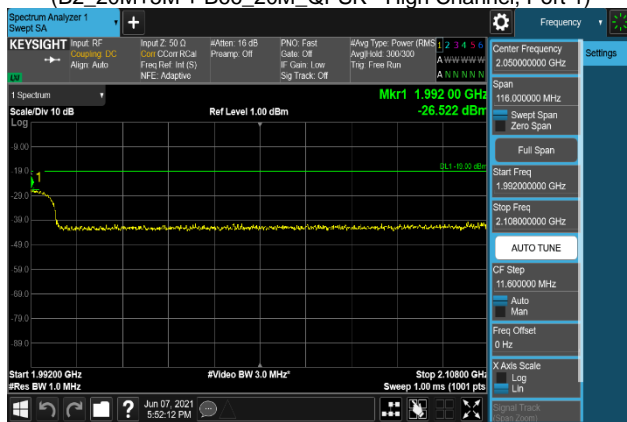
Plot 7-2606. Conducted Spurious Emission Plot
150 kHz to 30 MHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 1)



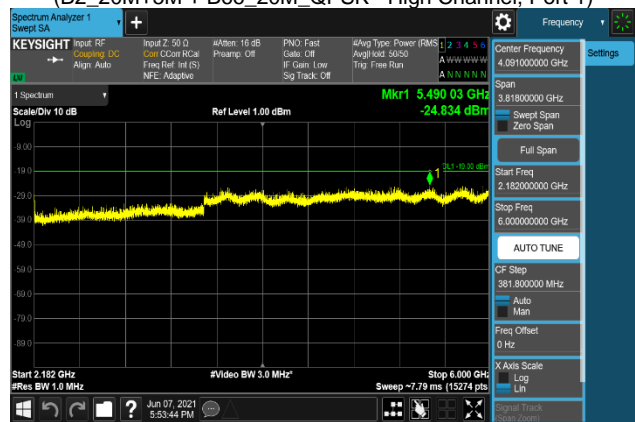
Plot 7-2607. Conducted Spurious Emission Plot
30 MHz to 1 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 1)



Plot 7-2608. Conducted Spurious Emission Plot
1 GHz to 1.928 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 1)

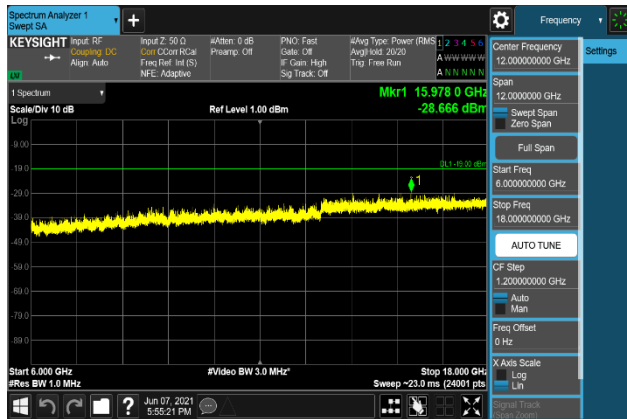


Plot 7-2609. Conducted Spurious Emission Plot
1.992 GHz to 2.108 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 1)

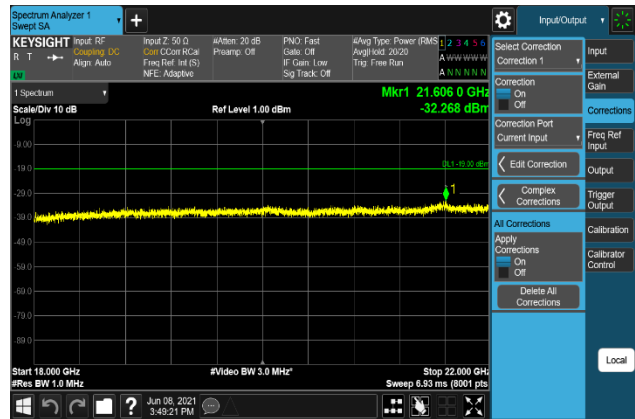


Plot 7-2610. Conducted Spurious Emission Plot
2.182 GHz to 6 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 1)

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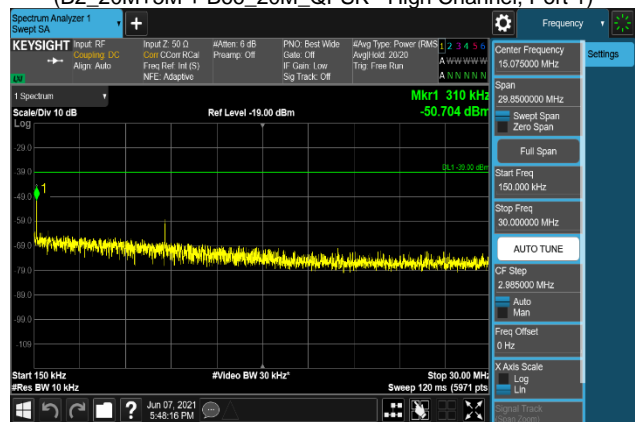
Plot 7-2611. Conducted Spurious Emission Plot
6 GHz to 18 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 1)



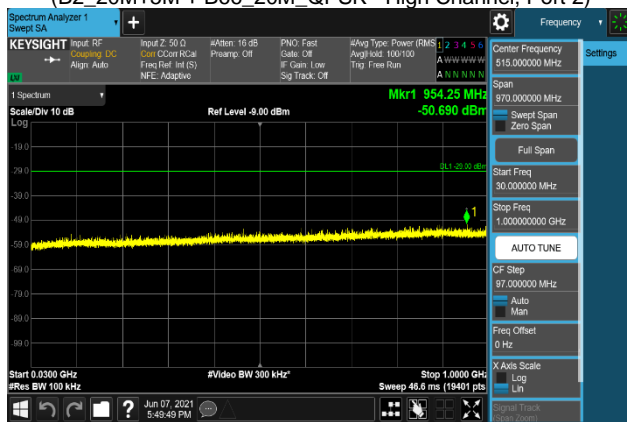
Plot 7-2612. Conducted Spurious Emission Plot
18 GHz to 22 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 1)



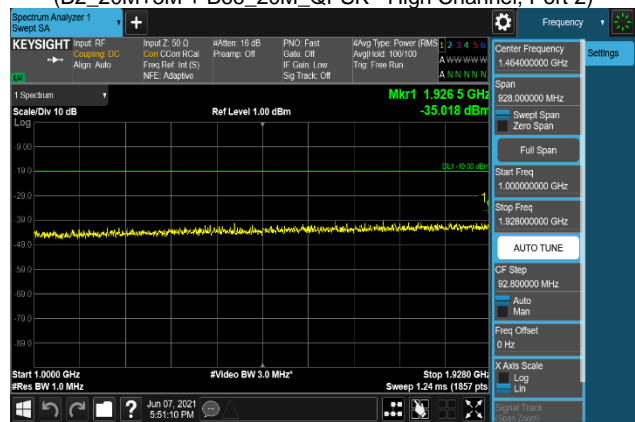
Plot 7-2613. Conducted Spurious Emission Plot
9 kHz to 150 kHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 2)



Plot 7-2614. Conducted Spurious Emission Plot
150 kHz to 30 MHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 2)

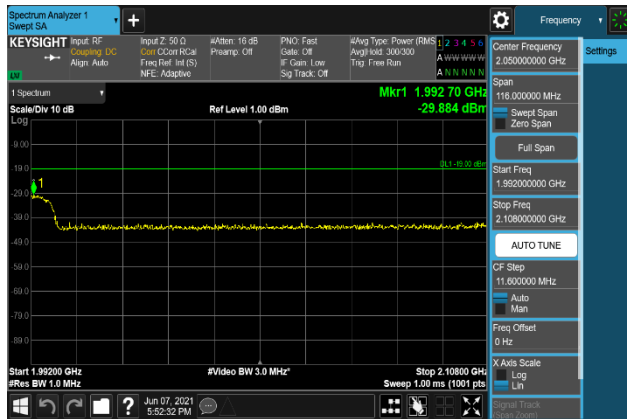


Plot 7-2615. Conducted Spurious Emission Plot
30 MHz to 1 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 2)

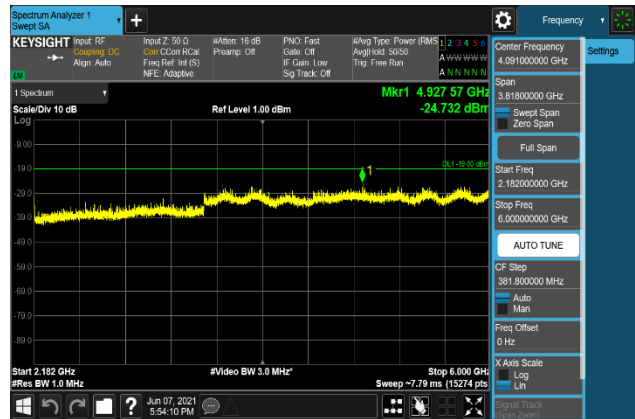


Plot 7-2616. Conducted Spurious Emission Plot
1 GHz to 1.928 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 2)

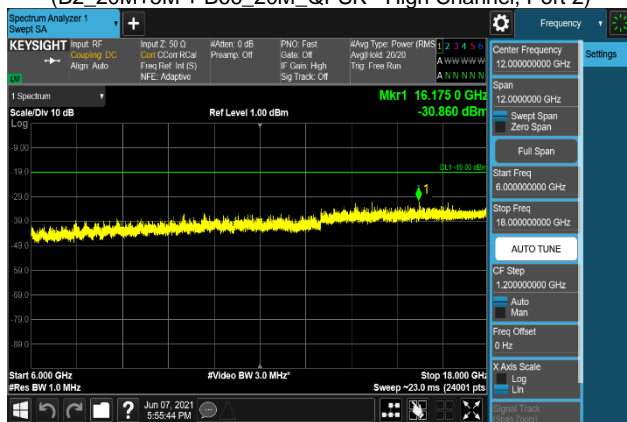
FCC ID: A3LRF4402D-D1A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
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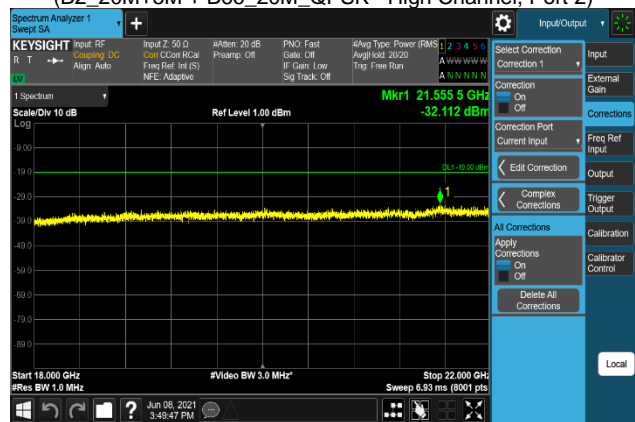
Plot 7-2617. Conducted Spurious Emission Plot
1.992 GHz to 2.108 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 2)



Plot 7-2618. Conducted Spurious Emission Plot
2.182 GHz to 6 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 2)



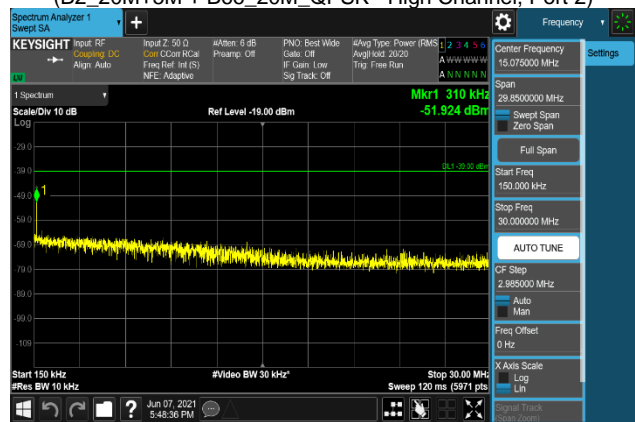
Plot 7-2619. Conducted Spurious Emission Plot
6 GHz to 18 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 2)





Plot 7-2620. Conducted Spurious Emission Plot
18 GHz to 22 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 2)



Plot 7-2621. Conducted Spurious Emission Plot
9 kHz to 150 kHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 3)

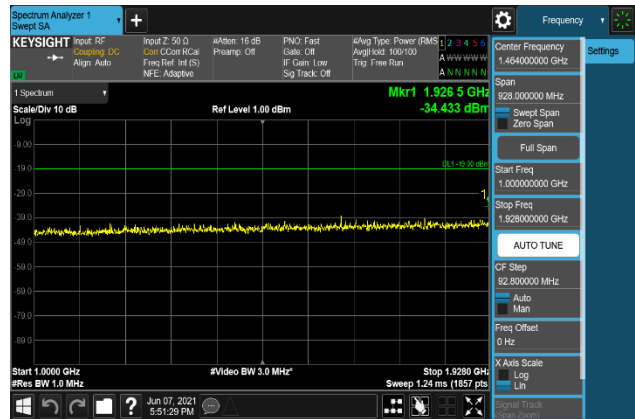


Plot 7-2622. Conducted Spurious Emission Plot
150 kHz to 30 MHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 3)

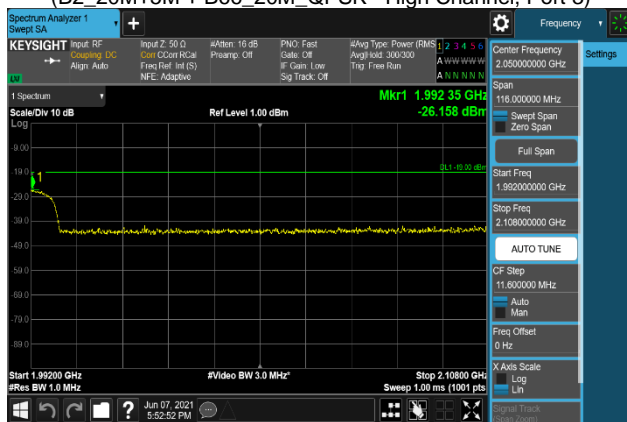
FCC ID: A3LRF4402D-D1A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
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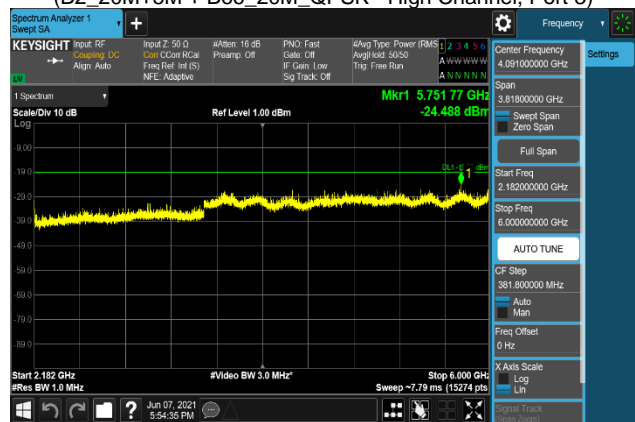
Plot 7-2623. Conducted Spurious Emission Plot
30 MHz to 1 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 3)



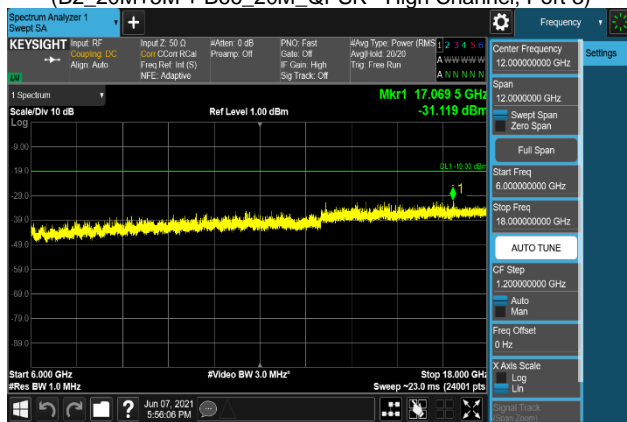
Plot 7-2624. Conducted Spurious Emission Plot
1 GHz to 1.928 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 3)



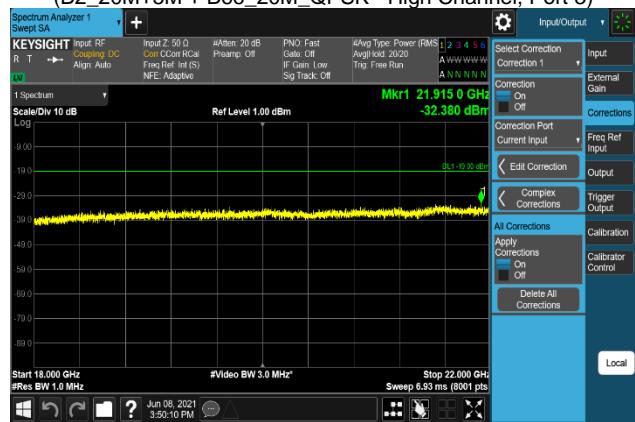
Plot 7-2625. Conducted Spurious Emission Plot
1.992 GHz to 2.108 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 3)



Plot 7-2626. Conducted Spurious Emission Plot
2.182 GHz to 6 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 3)



Plot 7-2627. Conducted Spurious Emission Plot
6 GHz to 18 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 3)



Plot 7-2628. Conducted Spurious Emission Plot
18 GHz to 22 GHz
(B2_20M+5M + B66_20M_QPSK - High Channel, Port 3)

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7.8 Radiated spurious emission

Test Overview

Radiated spurious emissions measurements are performed using the field strength method described in ANSI C63.26-2015 with the EUT transmitting into an integral antenna. Measurements on signals operating below 1GHz are performed using vertically and horizontally polarized broadband tri-log antennas. Measurements on signals operating above 1GHz are performed using vertically and horizontally polarized broadband horn antennas.

Test Procedure Used

ANSI C63.26 - Section 5.5.3.2



Test Setting

1. Start frequency was set to 30 MHz and stop frequency was set to at least 10 * the fundamental frequency
2. RBW = 100 kHz for emissions below 1 GHz and 1 MHz for emissions above 1GHz
3. VBW $\geq 3 \times$ RBW
4. No. of sweep points $\geq 2 \times$ span / RBW
5. Detector = Peak for the pre-scan, (In cases where the level is within 2 dB of the limit, the final measurement is taken using RMS detector.)
6. Trace mode = Max Hold (In cases where the level is within 2 dB of the limit, the final measurement is taken using triggering/gating and trace averaging.)
7. The trace was allowed to stabilize.

Limit

The minimum permissible attenuation level of any spurious emission is $43 + \log_{10}(P_{\text{[Watts]}})$, where P is the transmitter power in Watts.

The power of any emission outside of the authorized operating frequency range cannot exceed -13 dBm.

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Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

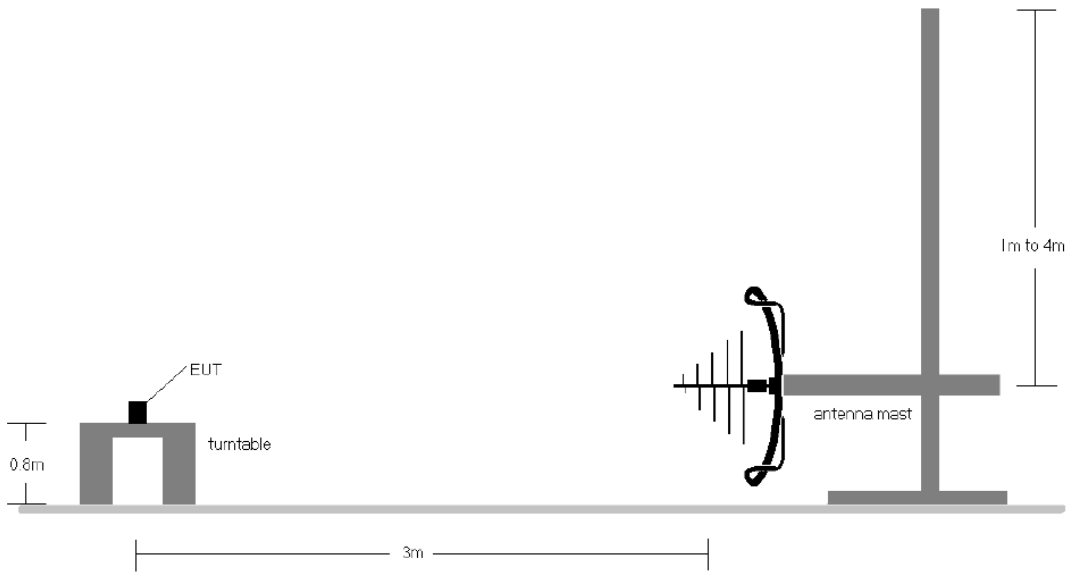


Figure 7-7. Test Instrument & Measurement Setup < 1 GHz

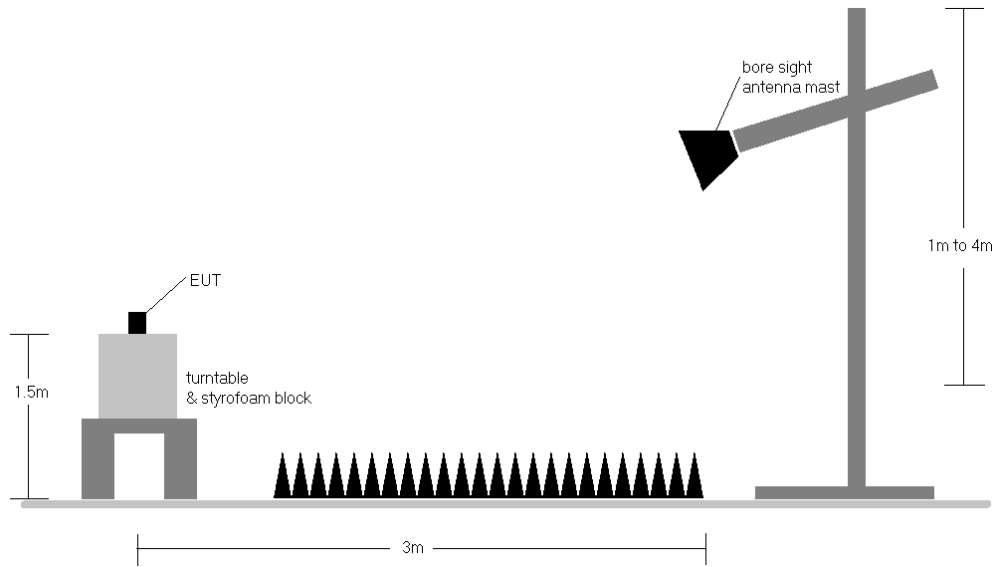




Figure 7-8. Test Instrument & Measurement Setup > 1 GHz

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Test Notes

1. The average EIRP reported below is calculated per 5.2.7 of ANSI C63.26-2015 which states:

The measured e.i.r.p is converted to E-field in V/m. Then the distance correction is applied before converted back to calculated e.i.r.p.as explained in KDB 971168 D01 D01 v03r01.

Effective Isotropic Radiated Power Sample Calculation

$$\begin{aligned} \text{Field Strength [dB}\mu\text{V/m]} &= \text{Measured Value [dBm]} + \text{AFCL [dB/m]} + 107 \\ &= -80.41 \text{ dBm} + (18.37 \text{ dBm} + 1.92 \text{ dBm}) + 107 = 46.88 \text{ dB}\mu\text{V/m} \\ &= 10^{(46.88/20)/1000000} = 0.0002208 \text{ V/m} \end{aligned}$$



$$\begin{aligned} \text{e.i.r.p. [dBm]} &= E[\text{dB } \mu\text{V/m}] + 20 \log_{10}(d[\text{m}]) + 104.8 \\ &= 46.88 + (20 * \log(3)) - 104.8 \\ &= -48.38 \text{ dBm e.i.r.p.} \end{aligned}$$

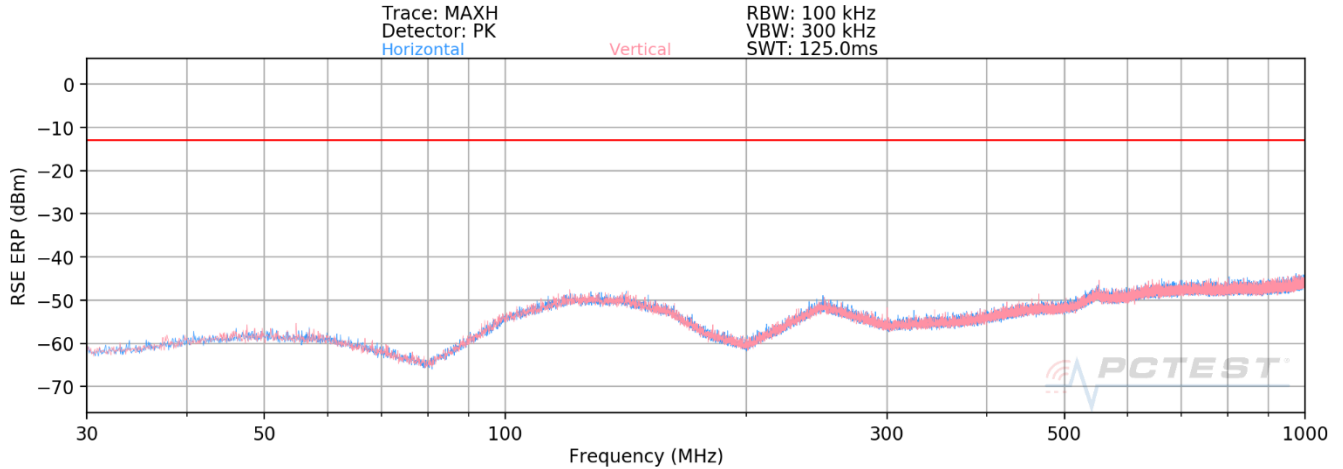
*AFCL (dB/m) contains measurement antenna factor(dB/m) and cable loss(dB) as below:

Frequency [MHz]	Antenna Factor (dB/m)	Cable loss [dB]	AFCL (dB/m)
127.82	21.78	0.92	22.70
911.68	22.62	2.57	25.19
12165.06	39.42	-23.85	15.58
17980.75	47.73	-21.84	25.89

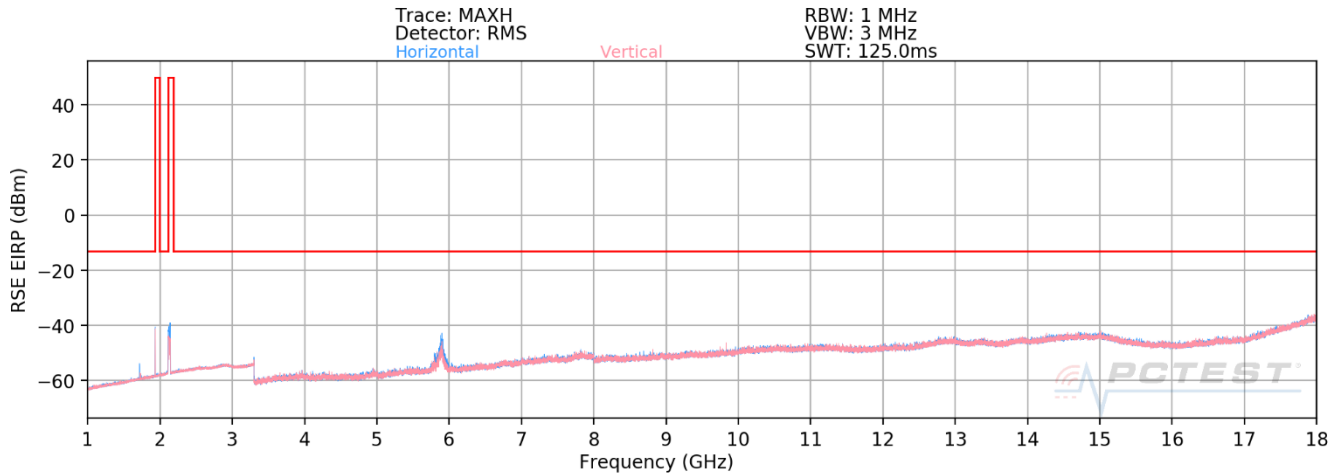
Table 7-45. Adopted AFCL value in the calculation

2. The EUT was tested in both horizontal and vertical antenna polarizations and in all possible test configurations and positioning. The worst case emissions are reported with the EUT positioning, modulations, channel bandwidth configurations shown in the tables below.
3. The spectrum is measured from 9 kHz to the 10th harmonic of the fundamental frequency of the transmitter. The worst-case emissions are reported.
4. Emissions below 18 GHz were measured at a 3 meter test distance while emissions above 18 GHz were measured at a 1 meter test distance with the application of a distance correction factor.
5. Spurious emissions were measured with all EUT antennas transmitting simultaneously.
6. The "-" shown in the following RSE tables are used to denote a noise floor measurement.

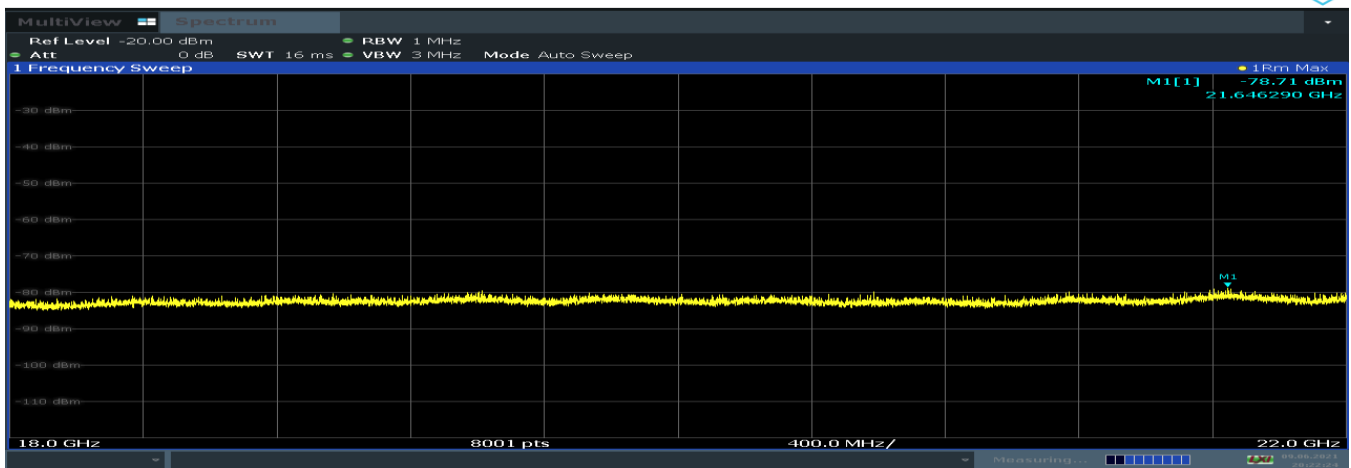
FCC ID: A3LRF4402D-D1A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
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Plot 7-2629. Radiated spurious emission_30 MHz to 1000 MHz (B2_5M + B66_15M+10M+10M_Contiguous - Low Channel)

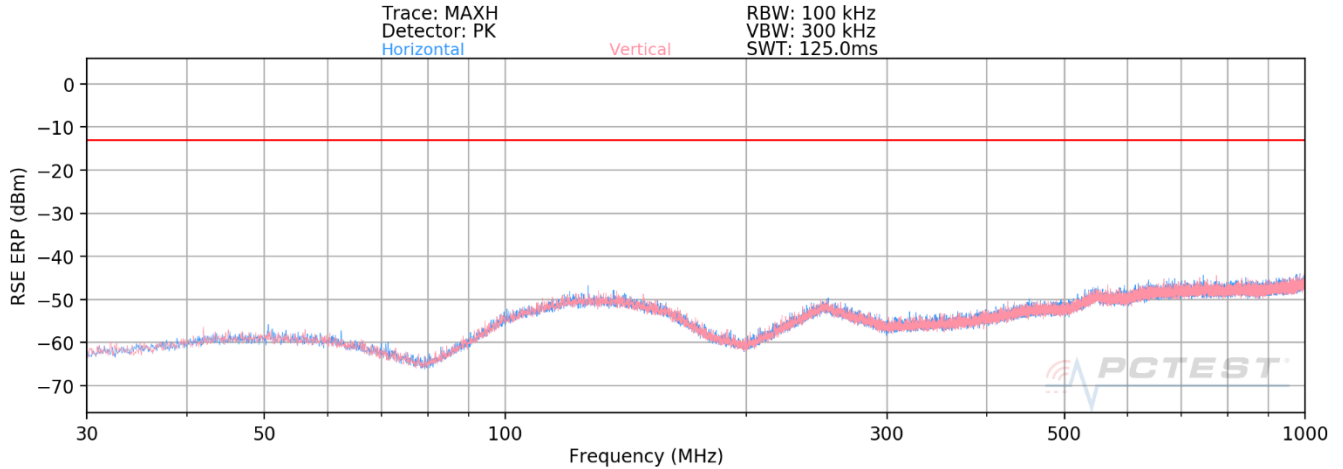


Plot 7-2630. Radiated spurious emission_1 GHz to 18 GHz (B2_5M + B66_15M+10M+10M_Contiguous - Low Channel)

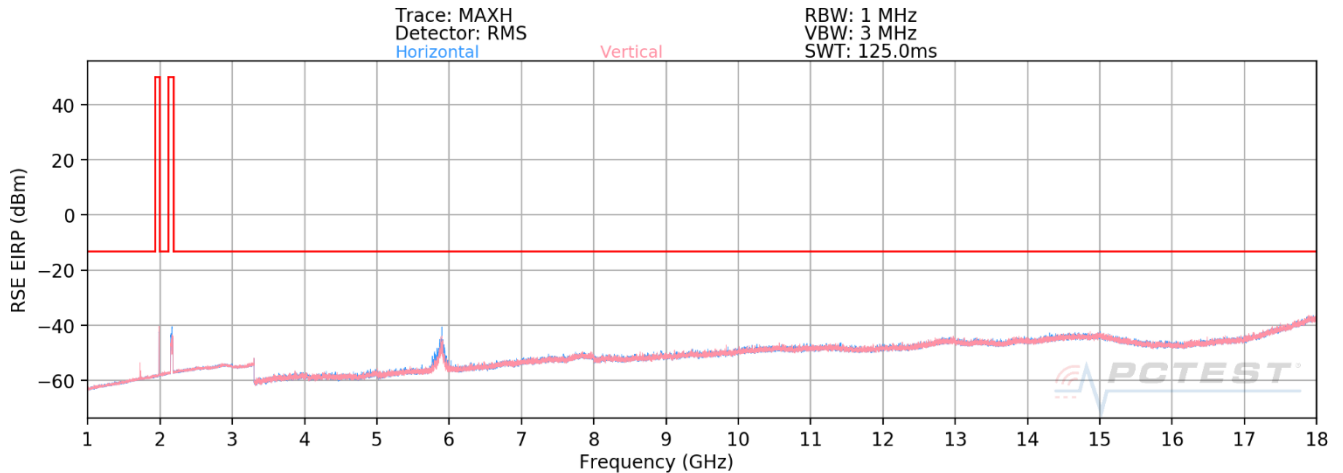


Plot 7-2631. Radiated spurious emission_18 GHz to 22 GHz (B2_5M + B66_15M+10M+10M_Contiguous - Low Channel)

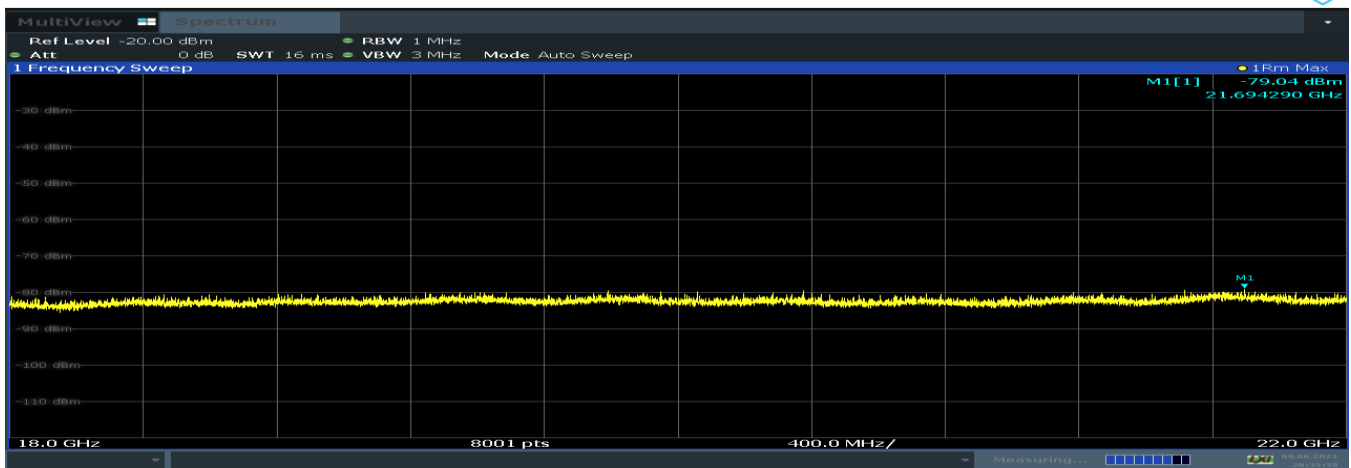
FCC ID: A3LRF4402D-D1A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
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**Plot 7-2632. Radiated spurious emission_30 MHz to 1000 MHz
(B2_5M + B66_15M+10M+10M_Contiguous - High Channel)**

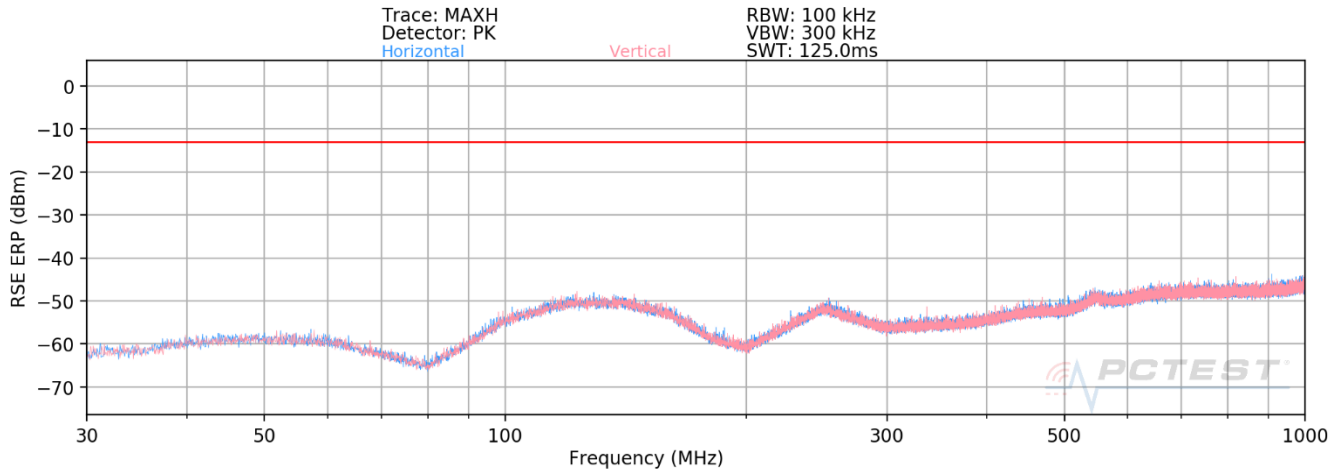


**Plot 7-2633. Radiated spurious emission Plot_1 GHz to 18 GHz
(B2_5M + B66_15M+10M+10M_Contiguous - High Channel)**

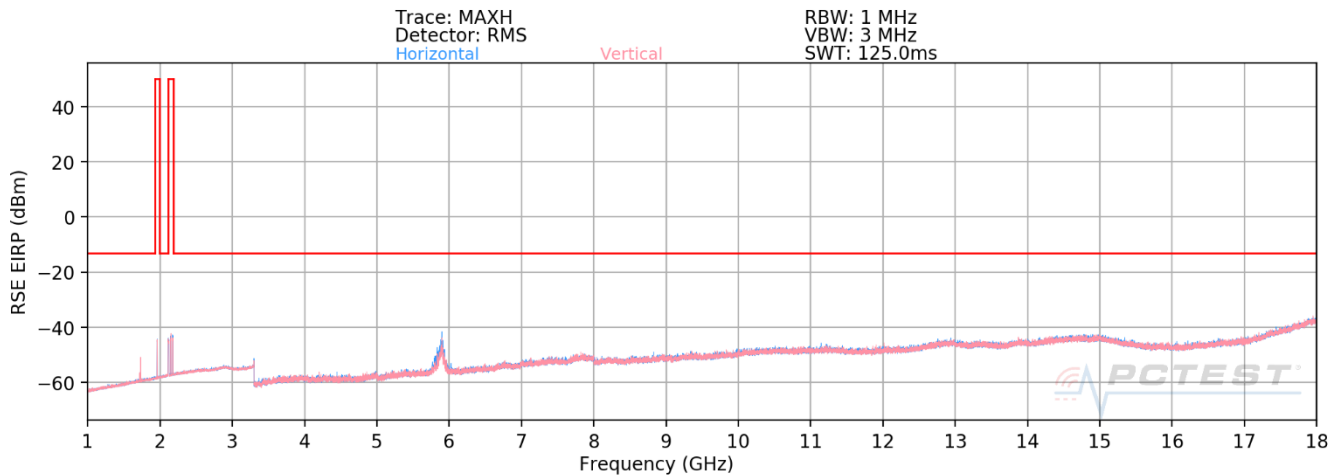


**Plot 7-2634. Radiated spurious emission Plot_18 GHz to 22 GHz
(B2_5M + B66_15M+10M+10M_Contiguous - High Channel)**

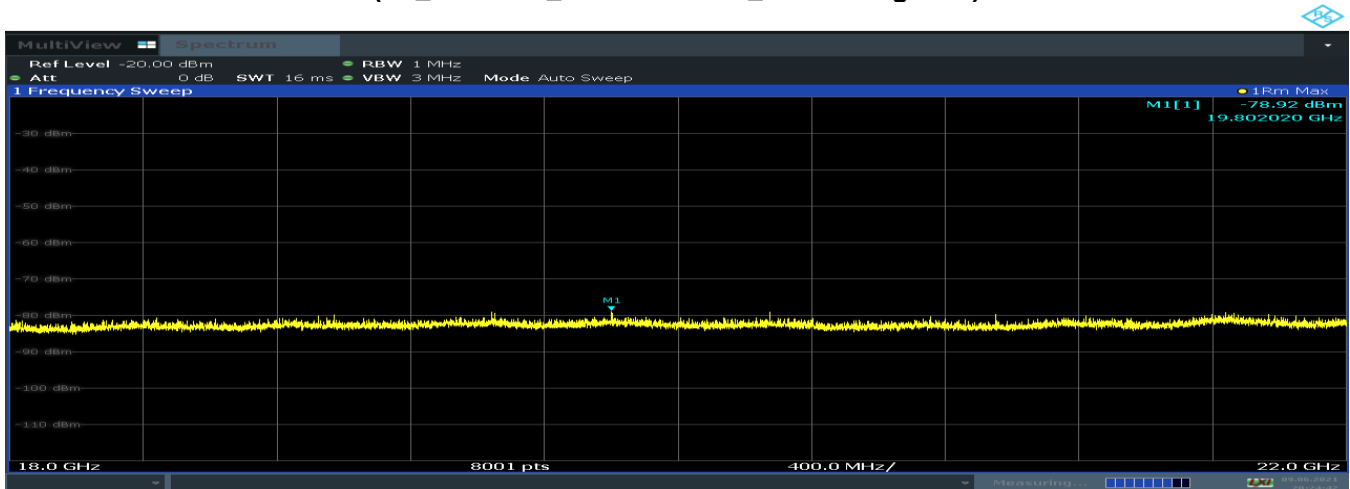
FCC ID: A3LRF4402D-D1A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
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**Plot 7-2635. Radiated spurious emission_30 MHz to 1000 MHz
(B2_5M + B66_15M+10M+10M_Non-Contiguous)**

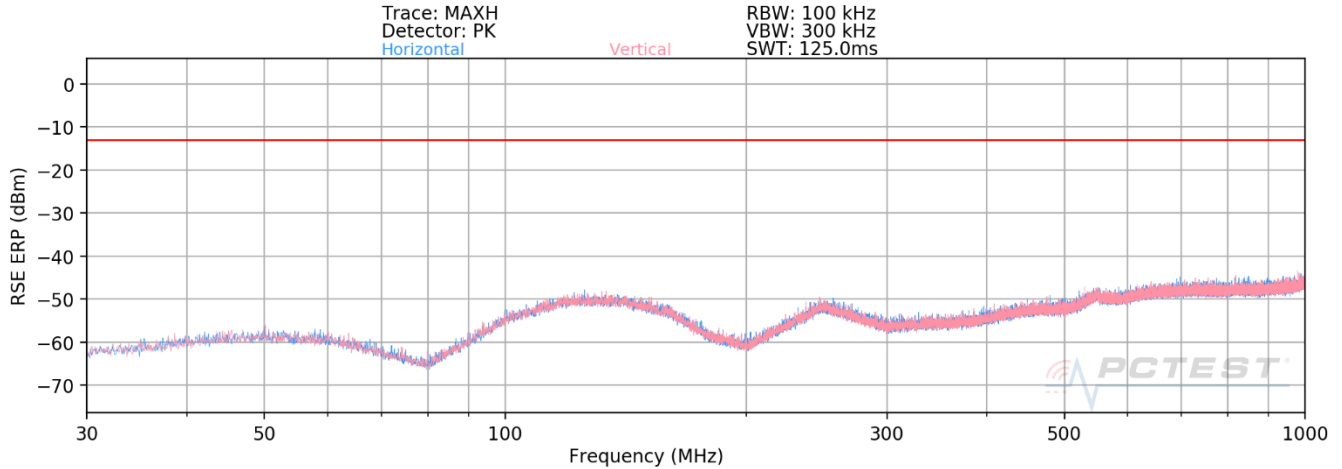


**Plot 7-2636. Radiated spurious emission_1 GHz to 18 GHz
(B2_5M + B66_15M+10M+10M_Non-Contiguous)**

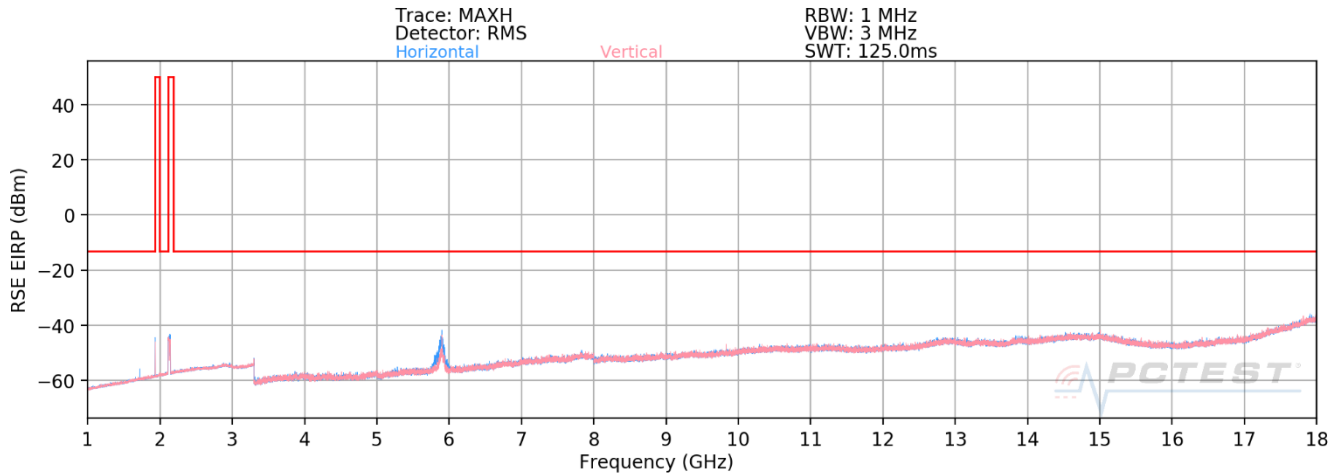


**Plot 7-2637. Radiated spurious emission_18 GHz to 22 GHz
(B2_5M + B66_15M+10M+10M_Non-Contiguous)**

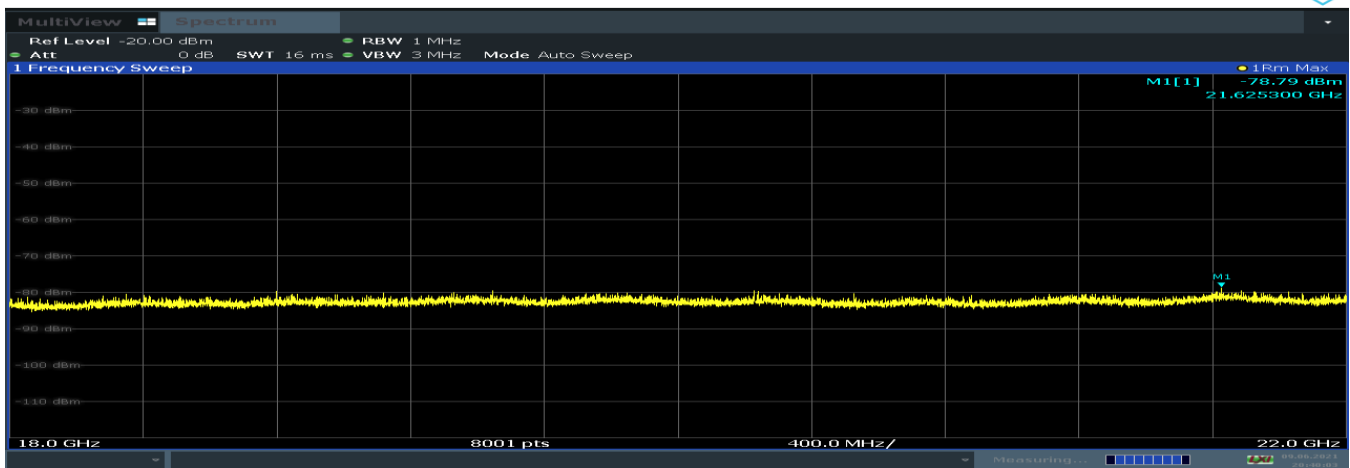
FCC ID: A3LRF4402D-D1A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
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**Plot 7-2638. Radiated spurious emission_30 MHz to 1000 MHz
(B2_5M + B66_20M+5M+10M_Contiguous - Low Channel)**

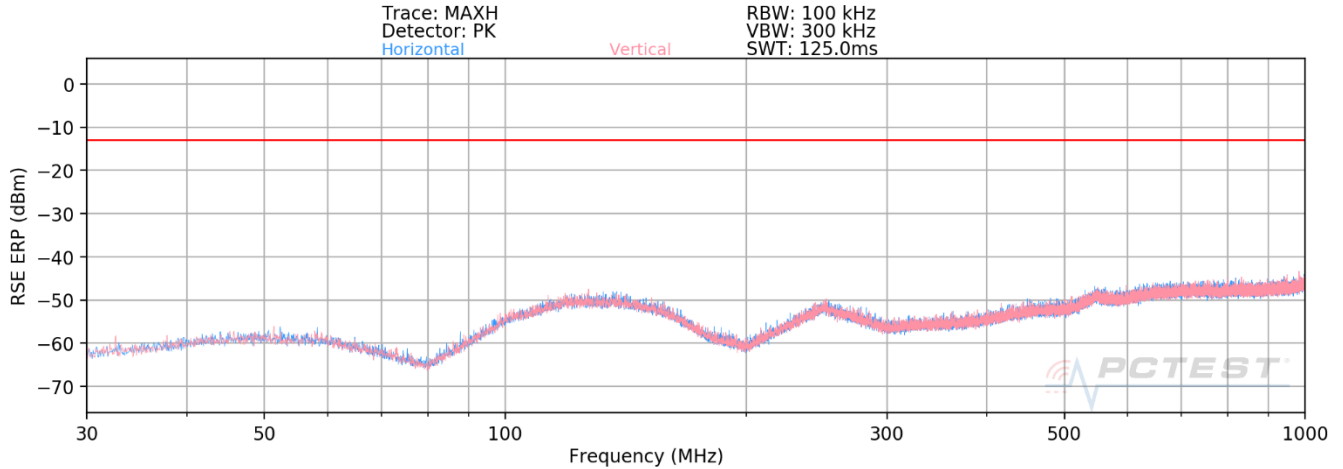


**Plot 7-2639. Radiated spurious emission_1 GHz to 18 GHz
(B2_5M + B66_20M+5M+10M_Contiguous - Low Channel)**

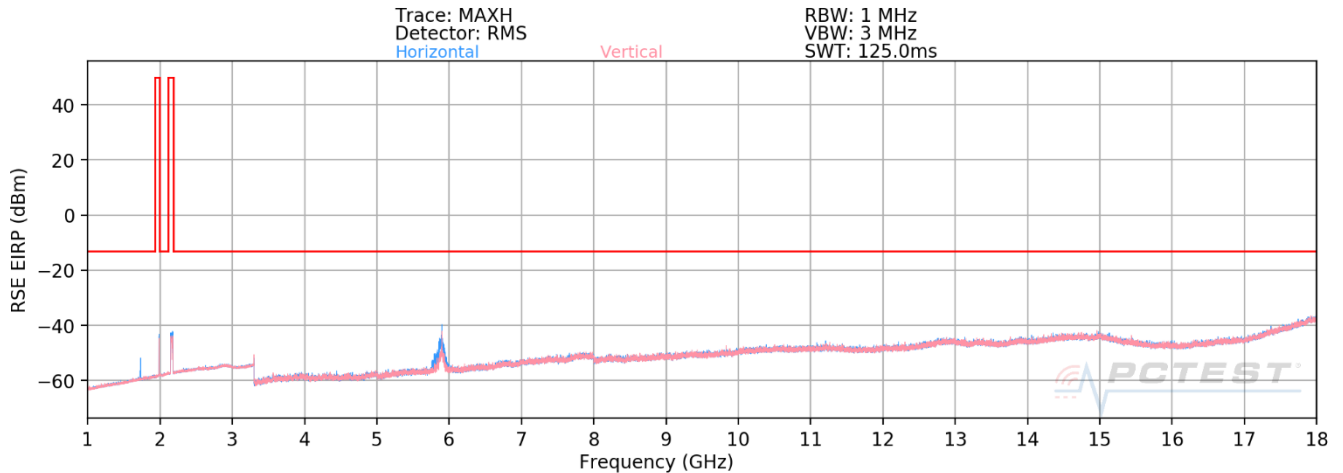


**Plot 7-2640. Radiated spurious emission_18 GHz to 22 GHz
(B2_5M + B66_20M+5M+10M_Contiguous - Low Channel)**

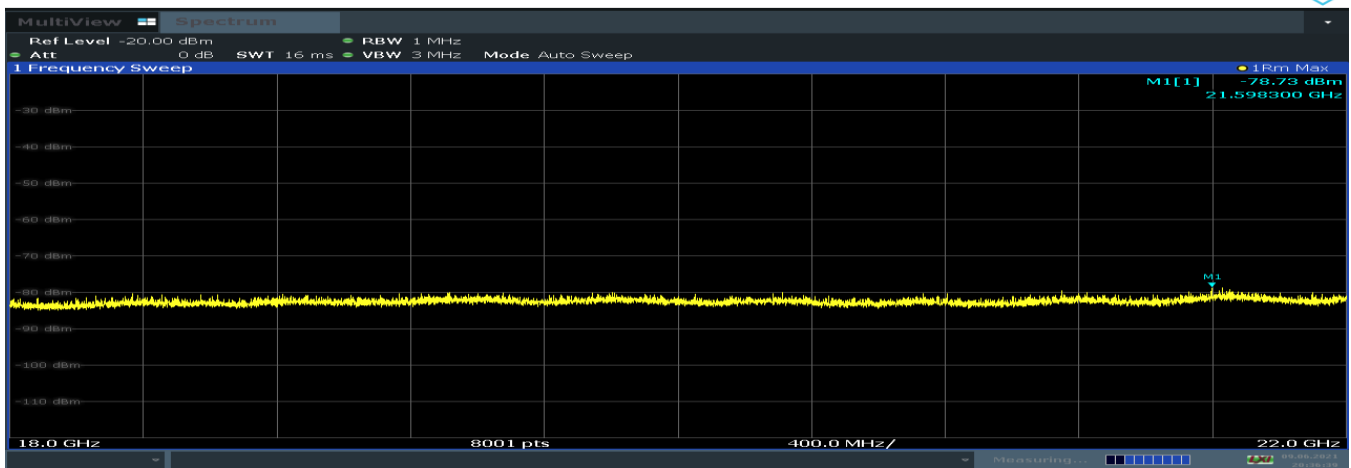
FCC ID: A3LRF4402D-D1A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
Test Report S/N: 8K21053101R1.A3L	Test Dates: 06/01/2021-06/15/2021	EUT Type: RRU(RF4402d)		Page 508 of 515



**Plot 7-2641. Radiated spurious emission_30 MHz to 1000 MHz
(B2_5M + B66_20M+5M+10M_Contiguous - High Channel)**

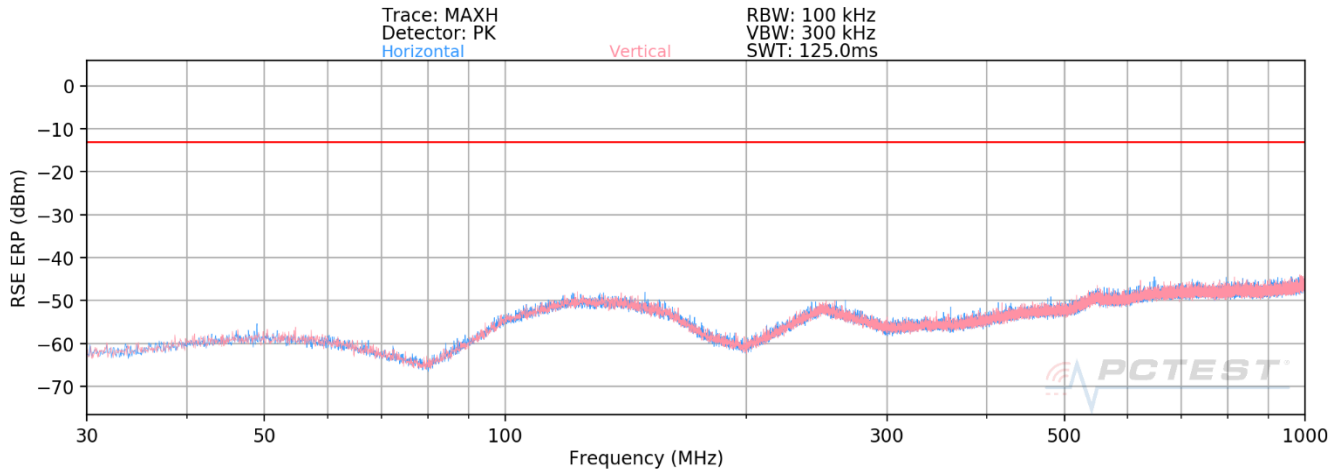


**Plot 7-2642. Radiated spurious emission Plot_1 GHz to 18 GHz
(B2_5M + B66_20M+5M+10M_Contiguous - High Channel)**

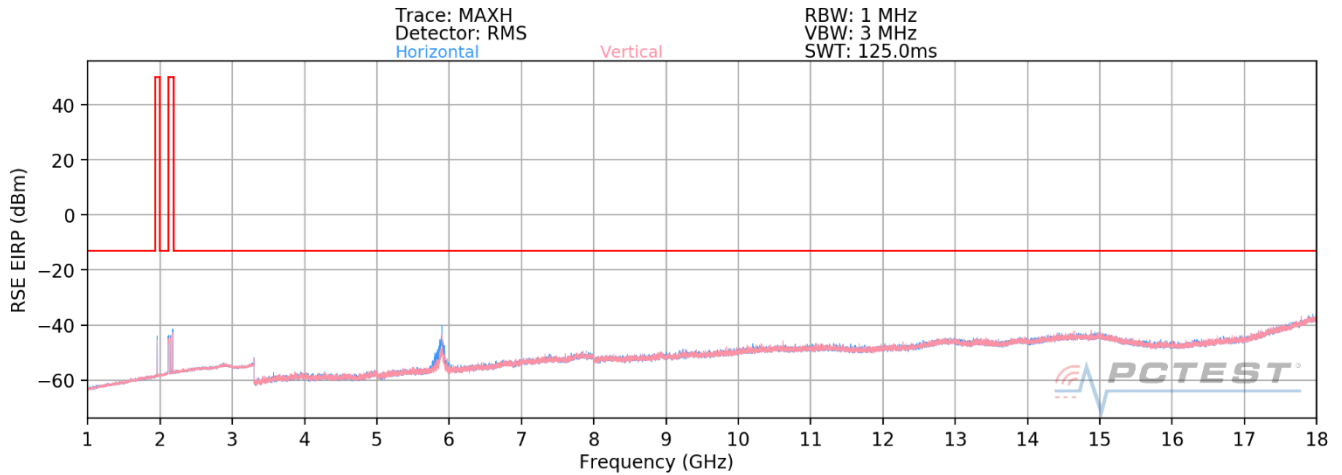


**Plot 7-2643. Radiated spurious emission Plot_18 GHz to 22 GHz
(B2_5M + B66_20M+5M+10M_Contiguous - High Channel)**

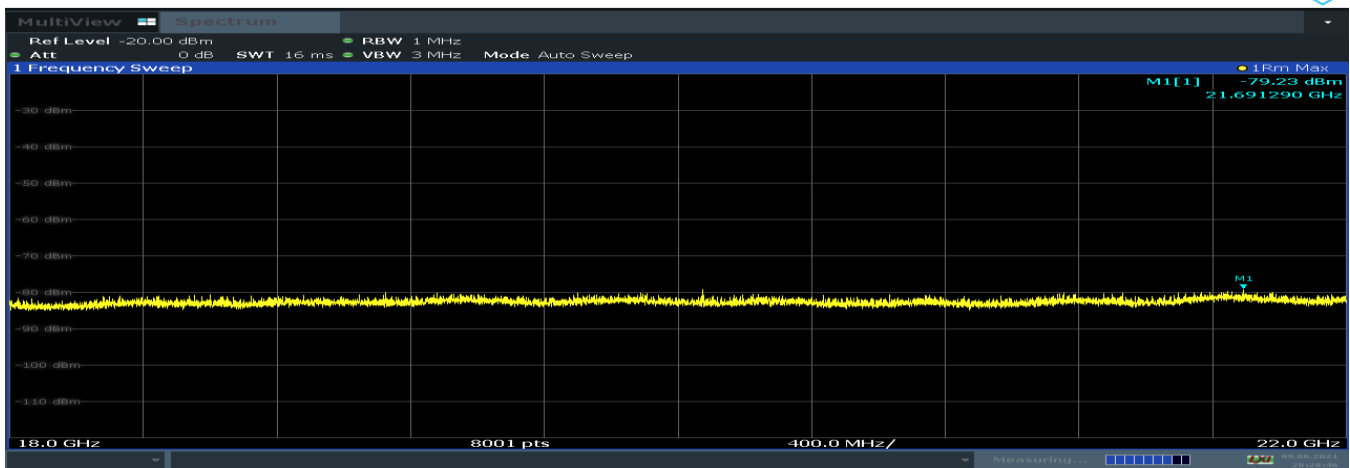
FCC ID: A3LRF4402D-D1A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
Test Report S/N: 8K21053101R1.A3L	Test Dates: 06/01/2021-06/15/2021	EUT Type: RRU(RF4402d)		Page 509 of 515



**Plot 7-2644. Radiated spurious emission_30 MHz to 1000 MHz
(B2_5M + B66_20M+5M+10M_Non-Contiguous)**

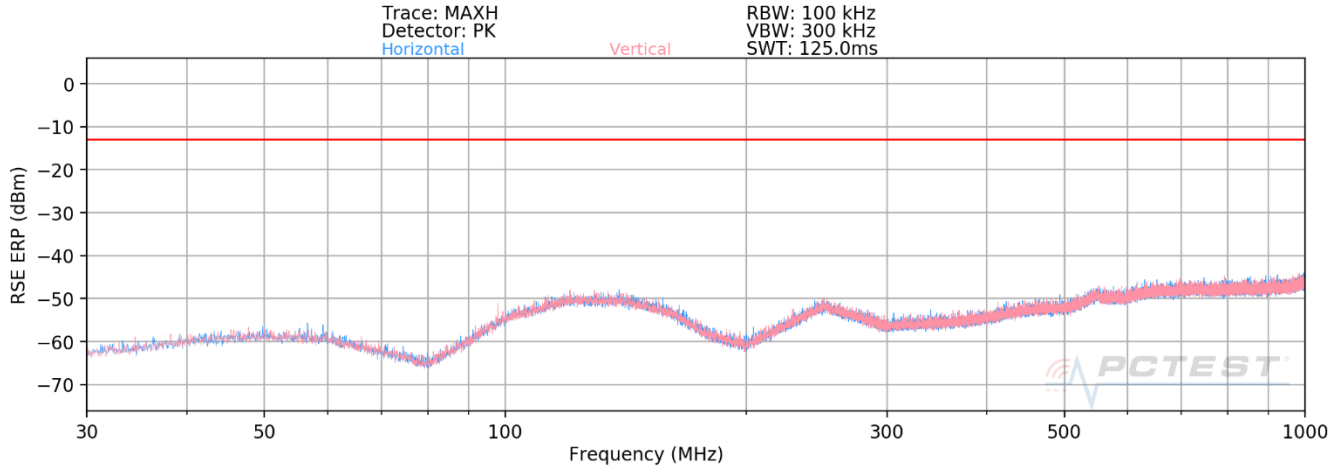


**Plot 7-2645. Radiated spurious emission_1 GHz to 18 GHz
(B2_5M + B66_20M+5M+10M_Non-Contiguous)**

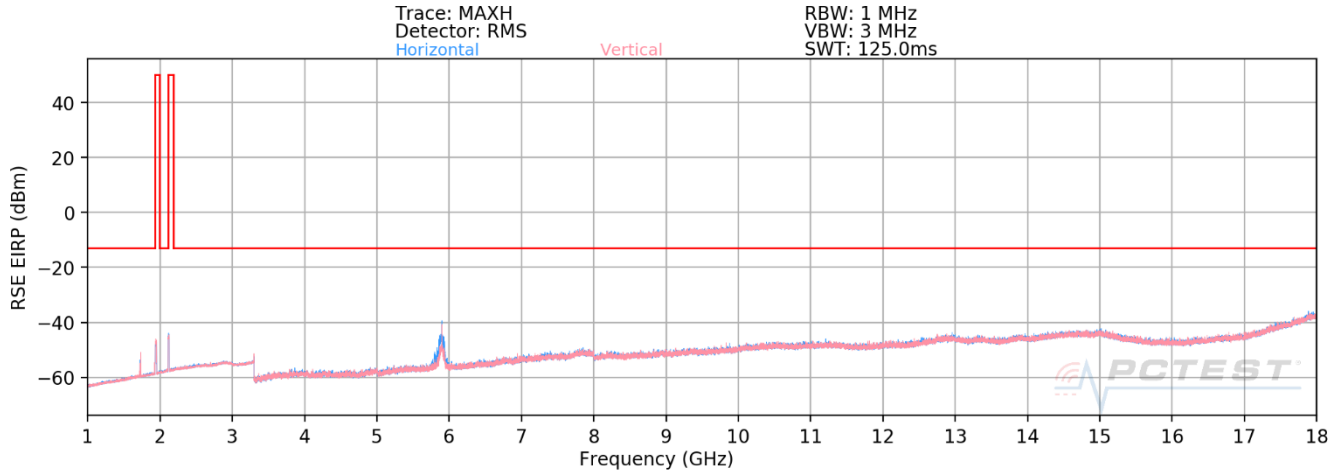


**Plot 7-2646. Radiated spurious emission_18 GHz to 22 GHz
(B2_5M + B66_20M+5M+10M_Non-Contiguous)**

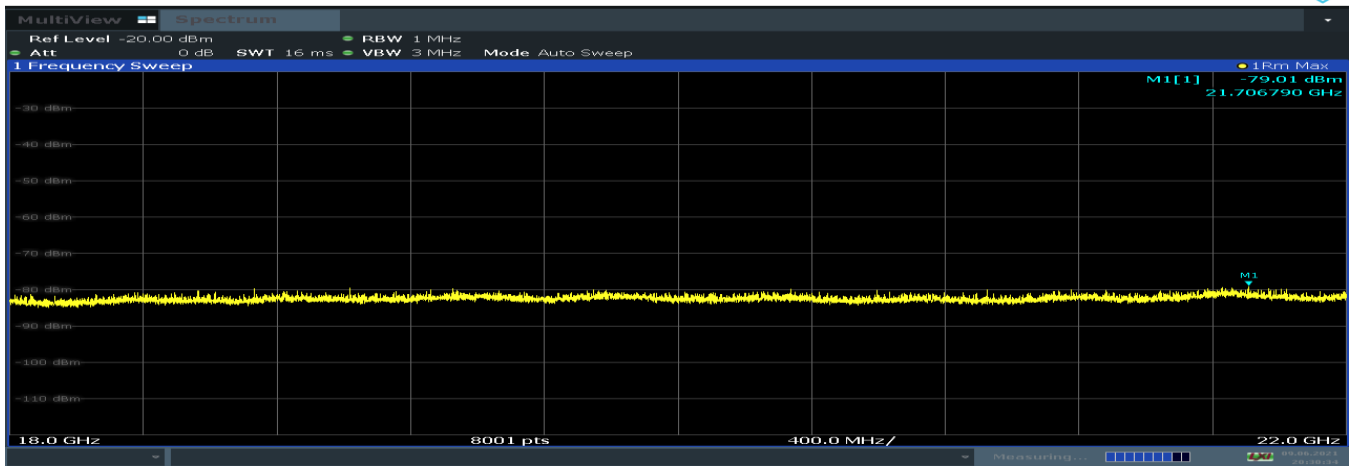
FCC ID: A3LRF4402D-D1A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
Test Report S/N: 8K21053101R1.A3L	Test Dates: 06/01/2021-06/15/2021	EUT Type: RRU(RF4402d)		Page 510 of 515



**Plot 7-2647. Radiated spurious emission_30 MHz to 1000 MHz
(B2_20M+5M + B66_20M_Contiguous - Low Channel)**

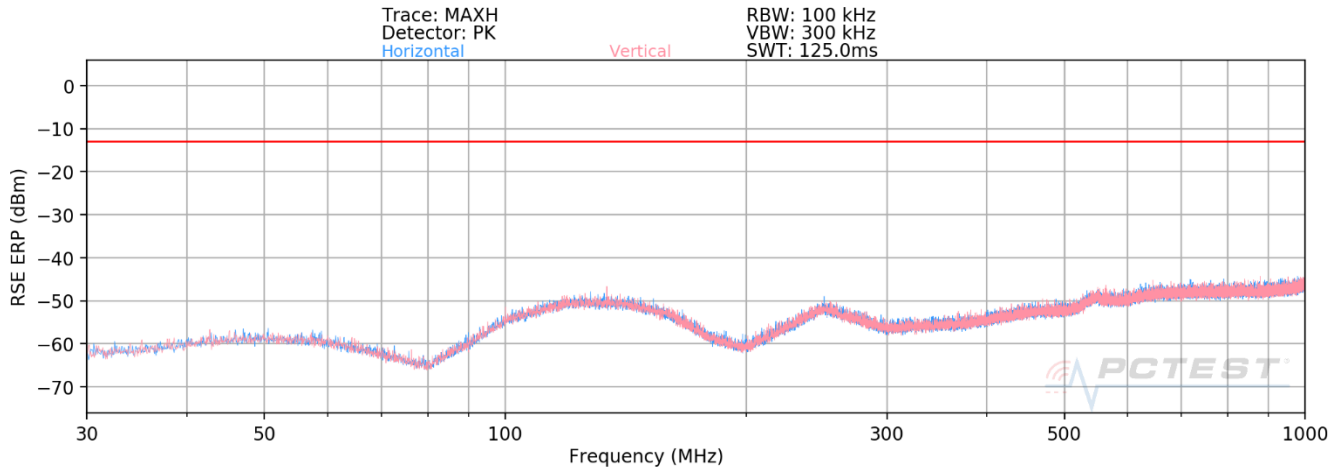


**Plot 7-2648. Radiated spurious emission_1 GHz to 18 GHz
(B2_20M+5M + B66_20M_Contiguous - Low Channel)**

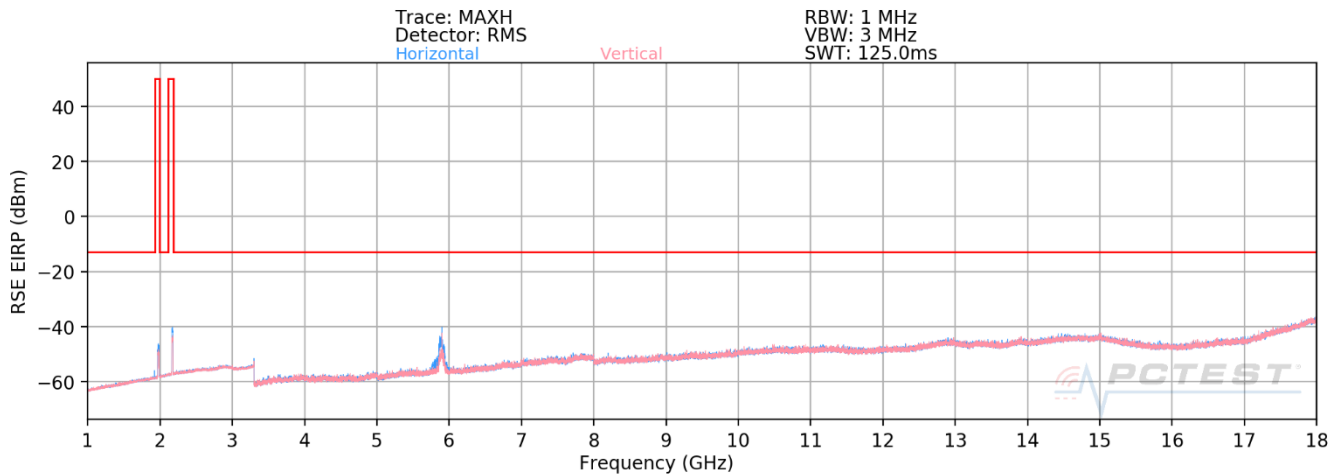


**Plot 7-2649. Radiated spurious emission_18 GHz to 22 GHz
(B2_20M+5M + B66_20M_Contiguous - Low Channel)**

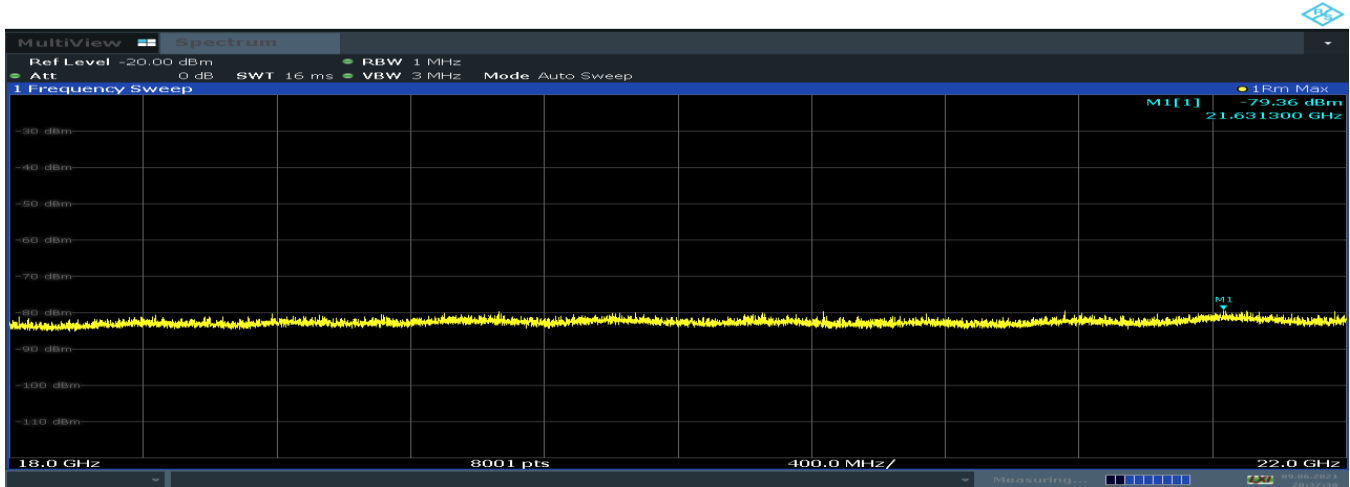
FCC ID: A3LRF4402D-D1A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)	SAMSUNG	Approved by: Technical Manager
Test Report S/N: 8K21053101R1.A3L	Test Dates: 06/01/2021-06/15/2021	EUT Type: RRU(RF4402d)		Page 511 of 515



**Plot 7-2650. Radiated spurious emission 30 MHz to 1000 MHz
(B2_20M+5M + B66_20M_Contiguous - High Channel)**

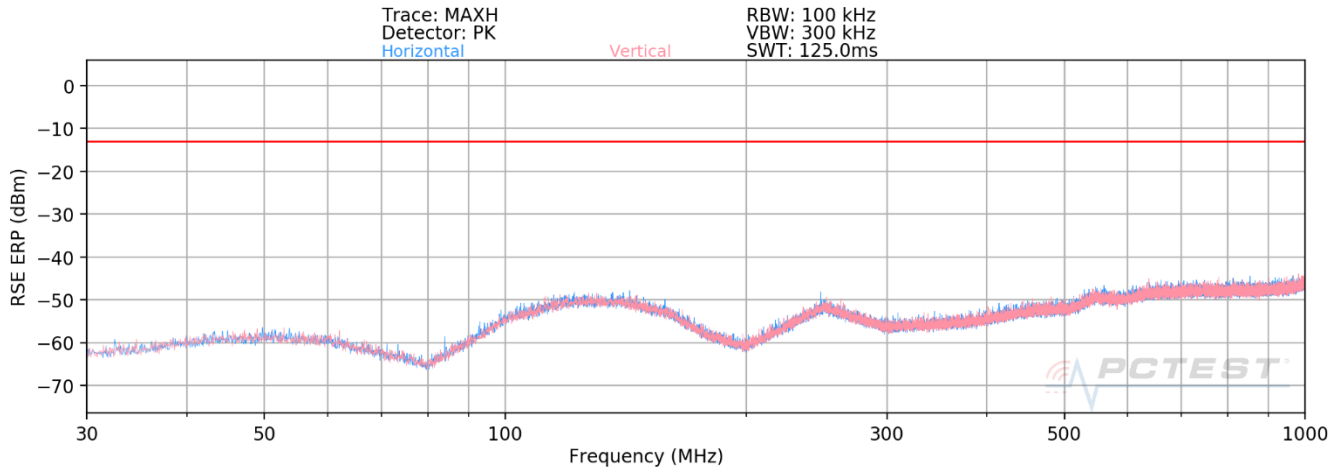


**Plot 7-2651. Radiated spurious emission Plot_1 GHz to 18 GHz
(B2_20M+5M + B66_20M_Contiguous - High Channel)**

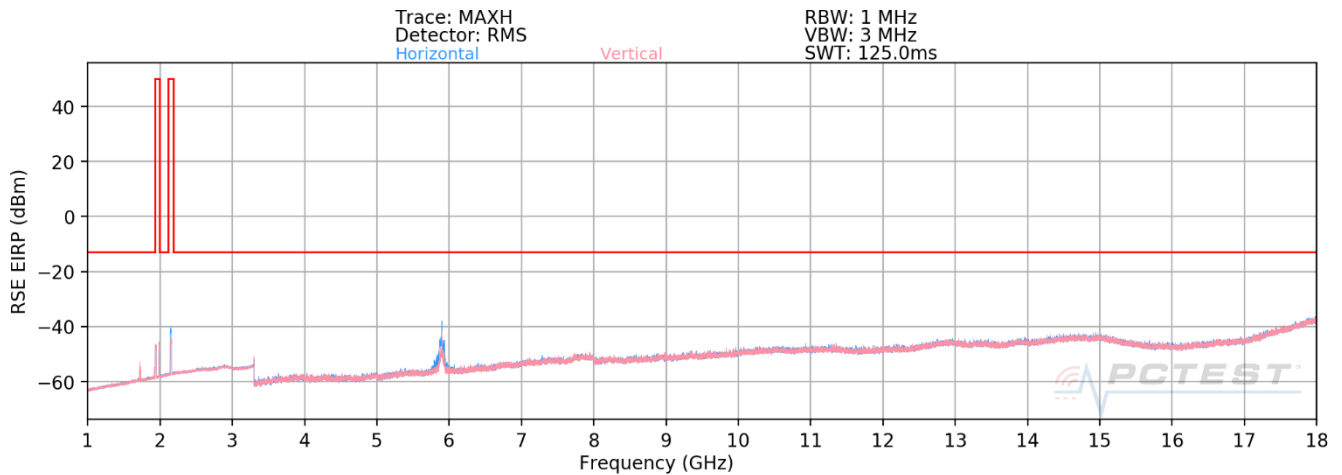


**Plot 7-2652. Radiated spurious emission Plot_18 GHz to 22 GHz
(B2_20M+5M + B66_20M_Contiguous - High Channel)**

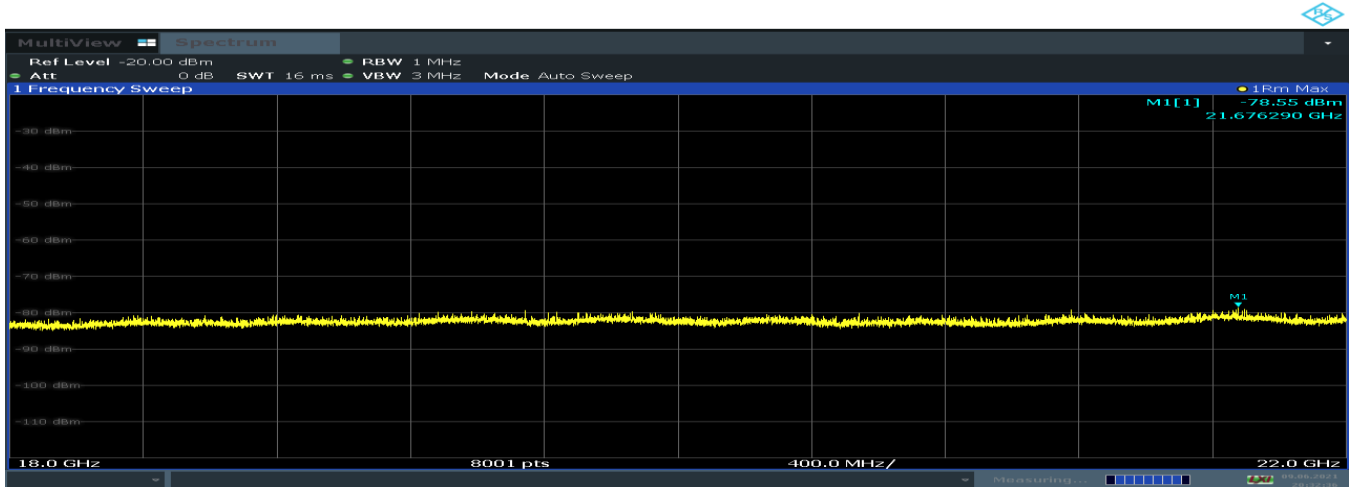
FCC ID: A3LRF4402D-D1A	PCTEST ENGINEERING LABORATORY, INC.	MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
Test Report S/N: 8K21053101R1.A3L	Test Dates: 06/01/2021-06/15/2021	EUT Type: RRU(RF4402d)		Page 512 of 515



**Plot 7-2653. Radiated spurious emission_30 MHz to 1000 MHz
(B2_20M+5M + B66_20M_Non-Contiguous)**



**Plot 7-2654. Radiated spurious emission_1 GHz to 18 GHz
(B2_20M+5M + B66_20M_Non-Contiguous)**





**Plot 7-2655. Radiated spurious emission_18 GHz to 22 GHz
(B2_20M+5M + B66_20M_Non-Contiguous)**

FCC ID: A3LRF4402D-D1A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
Test Report S/N: 8K21053101R1.A3L	Test Dates: 06/01/2021-06/15/2021	EUT Type: RRU(RF4402d)		Page 513 of 515

Mode:	Inter-band Carrier Aggregation
Band / Bandwidth (MHz):	B2:20M+5M & B66:20M (Non-Contiguous)
Carrier configuration:	B2: 1940MHz+1987.5MHz & B66: 2150MHz
Modulation Signal:	16QAM



Frequency [MHz]	Ant. Pol. [H/V]	Antenna Heigh [cm]	Turntable azimuth [degree]	Analyzer Level [dBm]	AFCL [dBm]	Field Stength [dB μ V/m]	RSE EIRP [dBm]	Limit [dBm]	Margin [dB]
542.35	H	100	0	-80.41	20.29	46.88	-48.38	-13.00	-35.38
1730.93	V	150	236	-75.68	1.96	33.50	-61.77	-13.00	-48.77
3300.45	H	150	153	-74.46	7.96	40.50	-54.76	-13.00	-41.76

Table 7-46. Radiated spurious emission Table

FCC ID: A3LRF4402D-D1A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
Test Report S/N: 8K21053101R1.A3L	Test Dates: 06/01/2021-06/15/2021	EUT Type: RRU(RF4402d)	Page 514 of 515	

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung RRU(RF4402d) FCC ID: A3LRF4202D-D1A** complies with all of the requirements of Part 24, and 27 FCC Rules.

FCC ID: A3LRF4402D-D1A		MEASUREMENT REPORT (Class II Permissive Change)		Approved by: Technical Manager
Test Report S/N: 8K21053101R1.A3L	Test Dates: 06/01/2021-06/15/2021	EUT Type: RRU(RF4402d)	Page 515 of 515	