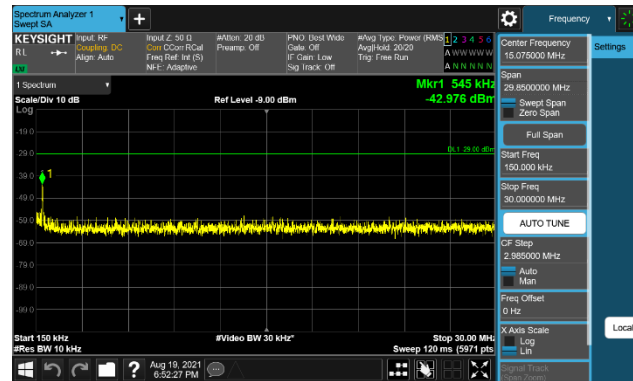
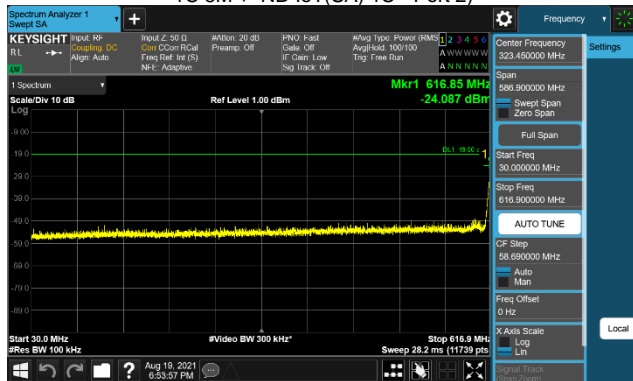


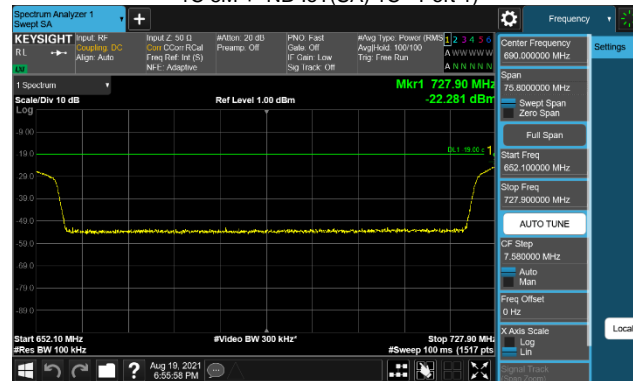
Plot 7-294. Conducted Spurious Emission Plot (9kHz to 150kHz)
(Dual Band_71-85 B71 LTE 2C 10M+10M & B85 NB-IoT(SA) 1C + LTE 1C 5M + NB-IoT(SA) 1C - Port 2)



Plot 7-295. Conducted Spurious Emission Plot (150kHz to 30MHz)
(Dual Band_71-85 B71 LTE 2C 10M+10M & B85 NB-IoT(SA) 1C + LTE 1C 5M + NB-IoT(SA) 1C - Port 1)



Plot 7-296. Conducted Spurious Emission Plot (30MHz to 616.9MHz)
(Dual Band_71-85 B71 LTE 2C 10M+10M & B85 NB-IoT(SA) 1C + LTE 1C 5M + NB-IoT(SA) 1C - Port 2)

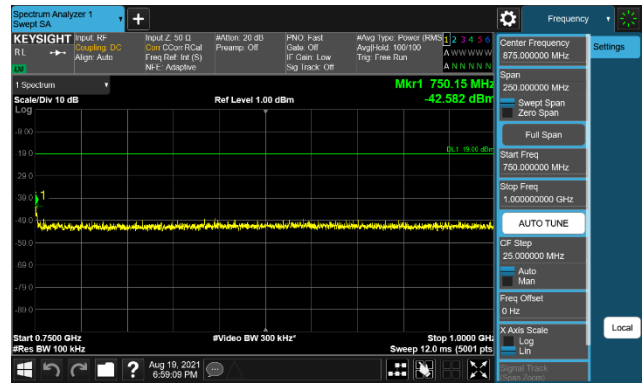


Plot 7-297. Conducted Spurious Emission Plot (652.1MHz to 727.9MHz)
(Dual Band_71-85 B71 LTE 2C 10M+10M & B85 NB-IoT(SA) 1C + LTE 1C 5M + NB-IoT(SA) 1C - Port 3)

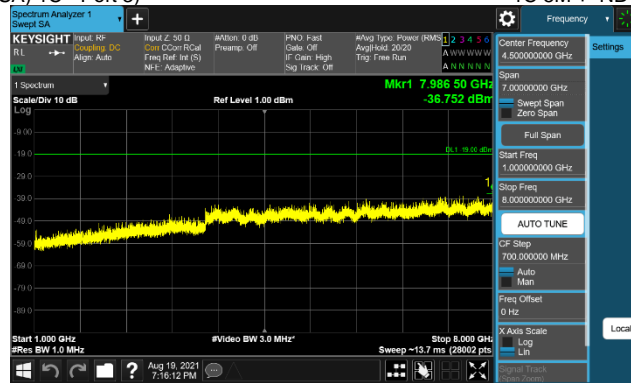
| | | | | |
|------------------------------------|--|---------------------------------------|--|-----------------------------------|
| FCC ID: A3LRF4435D-71A | | MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | | Page 139 of 166 |





Plot 7-298. Conducted Spurious Emission Plot (746.1MHz to 750MHz)
(Dual Band_71-85 B71 LTE 2C 10M+10M & B85 NB-IoT(SA) 1C + LTE
1C 5M + NB-IoT(SA) 1C - Port 3)



Plot 7-299. Conducted Spurious Emission Plot (750MHz to 1GHz)
(Dual Band_71-85 B71 LTE 2C 10M+10M & B85 NB-IoT(SA) 1C + LTE
1C 5M + NB-IoT(SA) 1C - Port 3)





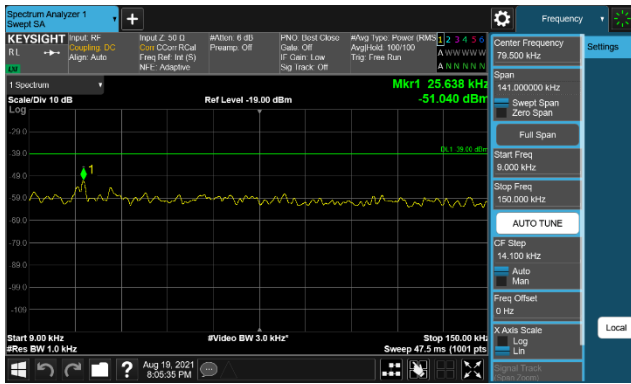
Plot 7-300. Conducted Spurious Emission Plot (1GHz to 8GHz)
(Dual Band_71-85 B71 LTE 2C 10M+10M & B85 NB-IoT(SA) 1C + LTE 1C 5M + NB-IoT(SA) 1C - Port 0)

| | | | | |
|---|---|---|---|--|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | Page 140 of 166 | |

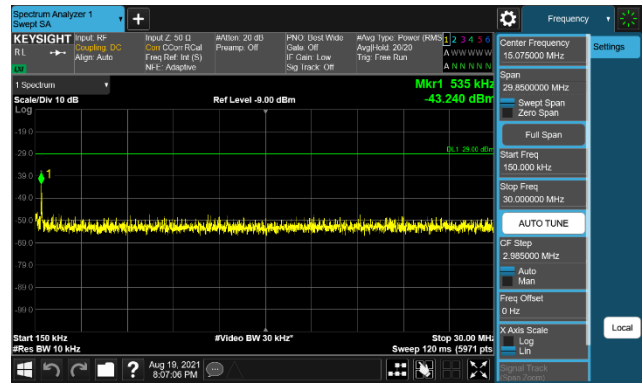
| Port # | Measurement Range | Level (dBm) | Limit (dBm) |
|--------|------------------------|---------------|-------------|
| 0 | 9 kHz to 150 kHz | -52.06 | -39.0 |
| | 150 kHz to 30 MHz | -44.55 | -29.0 |
| | 30 MHz to 616.9 MHz | -24.72 | -19.0 |
| | 652.1 MHz to 727.9 MHz | -22.80 | -19.0 |
| | 746.1 MHz to 750 MHz | -23.09 | -19.0 |
| | 750 MHz to 1 GHz | -42.12 | -19.0 |
| | 1 GHz to 8 GHz | -37.41 | -19.0 |
| 1 | 9 kHz to 150 kHz | -51.96 | -39.0 |
| | 150 kHz to 30 MHz | -45.64 | -29.0 |
| | 30 MHz to 616.9 MHz | -23.91 | -19.0 |
| | 652.1 MHz to 727.9 MHz | -23.02 | -19.0 |
| | 746.1 MHz to 750 MHz | -23.15 | -19.0 |
| | 750 MHz to 1 GHz | -41.46 | -19.0 |
| | 1 GHz to 8 GHz | -39.69 | -19.0 |
| 2 | 9 kHz to 150 kHz | -51.04 | -39.0 |
| | 150 kHz to 30 MHz | -46.82 | -29.0 |
| | 30 MHz to 616.9 MHz | -23.10 | -19.0 |
| | 652.1 MHz to 727.9 MHz | -22.51 | -19.0 |
| | 746.1 MHz to 750 MHz | -22.69 | -19.0 |
| | 750 MHz to 1 GHz | -41.75 | -19.0 |
| | 1 GHz to 8 GHz | -36.70 | -19.0 |
| 3 | 9 kHz to 150 kHz | -52.07 | -39.0 |
| | 150 kHz to 30 MHz | -43.24 | -29.0 |
| | 30 MHz to 616.9 MHz | -24.20 | -19.0 |
| | 652.1 MHz to 727.9 MHz | -21.72 | -19.0 |
| | 746.1 MHz to 750 MHz | -21.68 | -19.0 |
| | 750 MHz to 1 GHz | -41.44 | -19.0 |
| | 1 GHz to 8 GHz | -37.82 | -19.0 |

**Table 7-56. Conducted Spurious Emission Summary Data
(Dual Band_71-85 B71 LTE 2C 15M+20M & B85 NB-IoT(SA) 1C + LTE 1C 5M + NB-IoT(SA) 1C)**

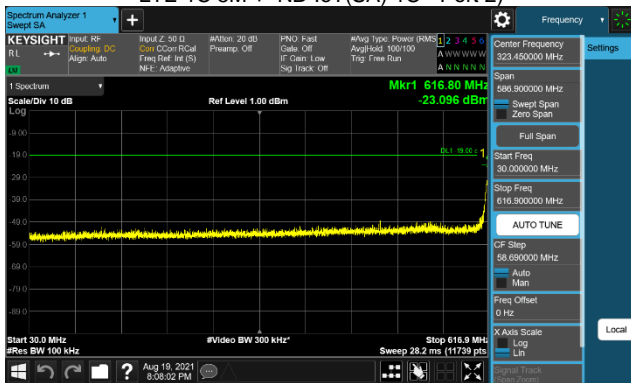
| | | | | |
|---|---|---|---|--|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | Page 141 of 166 | |



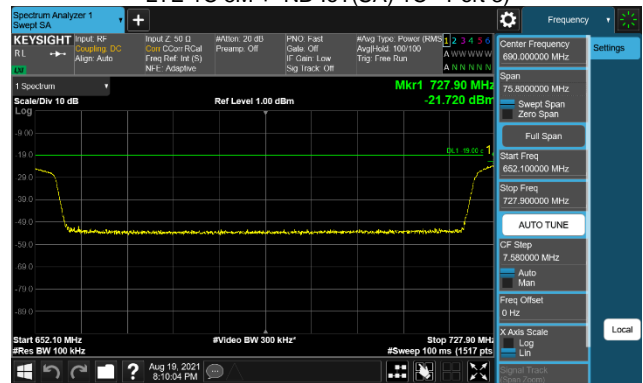
Plot 7-301. Conducted Spurious Emission Plot (9kHz to 150kHz)
(Dual Band_71-85 B71 LTE 2C 15M+20M & B85 NB-IoT(SA) 1C +
LTE 1C 5M + NB-IoT(SA) 1C - Port 2)



Plot 7-302. Conducted Spurious Emission Plot (150kHz to 30MHz)
(Dual Band_71-85 B71 LTE 2C 15M+20M & B85 NB-IoT(SA) 1C +
LTE 1C 5M + NB-IoT(SA) 1C - Port 3)



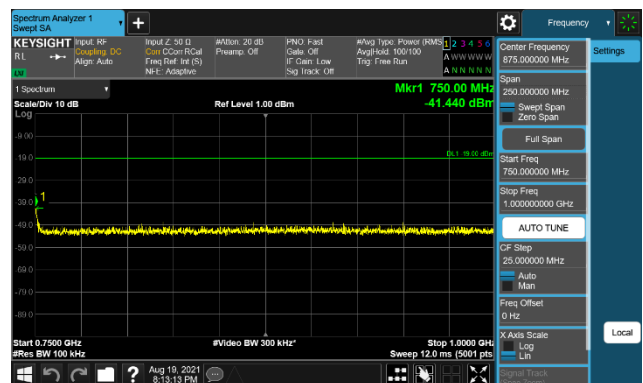
Plot 7-303. Conducted Spurious Emission Plot (30MHz to
616.9MHz)
(Dual Band_71-85 B71 LTE 2C 15M+20M & B85 NB-IoT(SA) 1C +
LTE 1C 5M + NB-IoT(SA) 1C - Port 2)



Plot 7-304. Conducted Spurious Emission Plot (652.1MHz to 727.9MHz)
(Dual Band_71-85 B71 LTE 2C 15M+20M & B85 NB-IoT(SA) 1C +
LTE 1C 5M + NB-IoT(SA) 1C - Port 3)

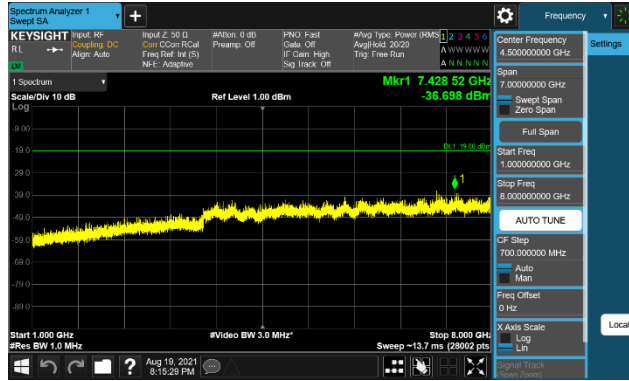


Plot 7-305. Conducted Spurious Emission Plot (746.1MHz to 750MHz)
(Dual Band_71-85 B71 LTE 2C 15M+20M & B85 NB-IoT(SA) 1C +
LTE 1C 5M + NB-IoT(SA) 1C - Port 3)





Plot 7-306. Conducted Spurious Emission Plot (750MHz to 1GHz)
(Dual Band_71-85 B71 LTE 2C 15M+20M & B85 NB-IoT(SA) 1C +
LTE 1C 5M + NB-IoT(SA) 1C - Port 3)

| | | | | |
|------------------------------------|--|---|--|--|
| FCC ID: A3LRF4435D-71A | | MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | | Page 142 of 166 |



Plot 7-307. Conducted Spurious Emission Plot (1GHz to 8GHz)
 (Dual Band_71-85 B71 LTE 2C 15M+20M & B85 NB-IoT(SA) 1C + LTE 1C 5M + NB-IoT(SA) 1C - Port 2)

| | | | |
|---|---|---|--|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | Page 143 of 166 |

7.7 Radiated spurious emission

§ 2.1051, § 27.53(g)

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 trilob 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 x RBW
4. No. of sweep points \geq 2 x span / RBW
5. Detector = Peak for the prescan, (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.

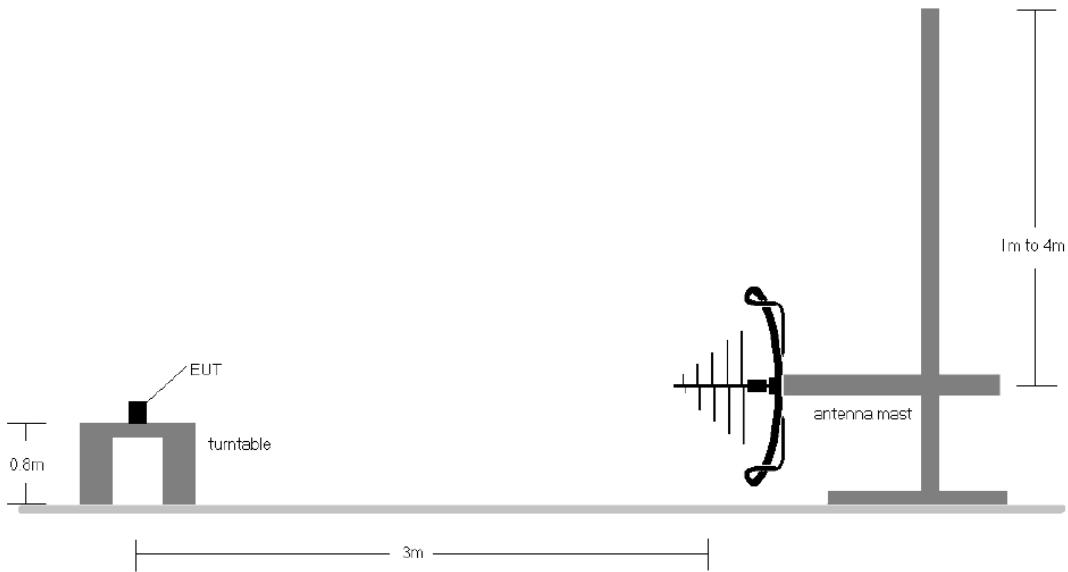


Figure 7-7. Test Instrument & Measurement Setup < 1GHz

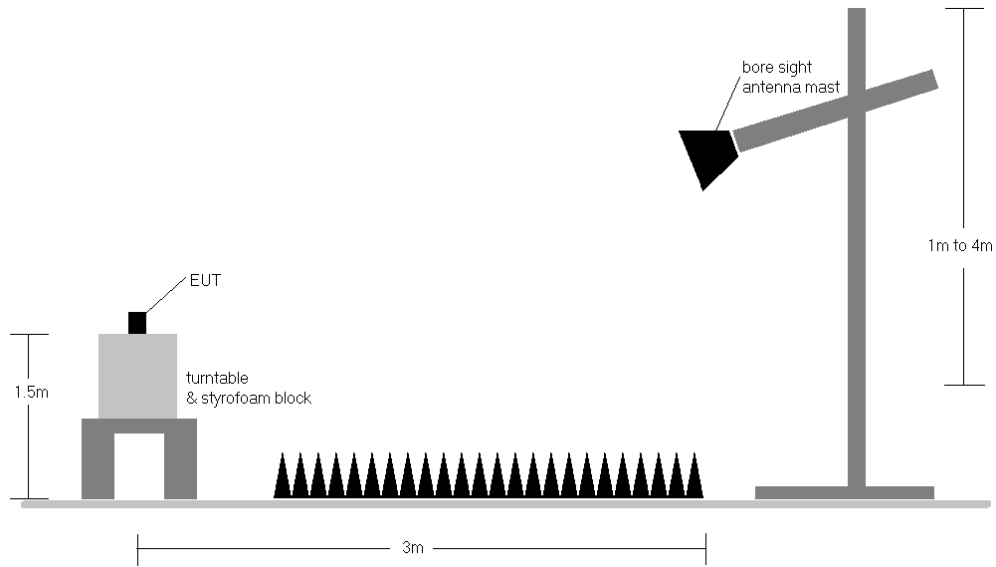




Figure 7-8. Test Instrument & Measurement Setup > 1GHz

| | | | |
|---|---|---|--|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  Approved by: Technical Manager |
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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

Field Strength [dB μ V/m] = Measured Value [dBm] + AFCL [dB/m] (Antenna Factor + Cable Loss) + 107

$$= -66.99 \text{ dBm} + (21.50 \text{ dBm} + 2.30 \text{ dBm}) + 107 = 63.8 \text{ dB}\mu\text{V/m}$$

$$= 10^{(63.8/20)/1000000} = 0.001551 \text{ V/m}$$

e.i.r.p. [dBm] = $10 \cdot \log((E\text{-Field} \cdot D_m)^2/30) + 30 \text{ dB}$

$$= 10 \cdot \log((0.001551 \text{ V/m} \cdot 3 \text{ m})^2/30) + 30 \text{ dB}$$



$$= \mathbf{-31.42 \text{ dBm e.i.r.p.}}$$

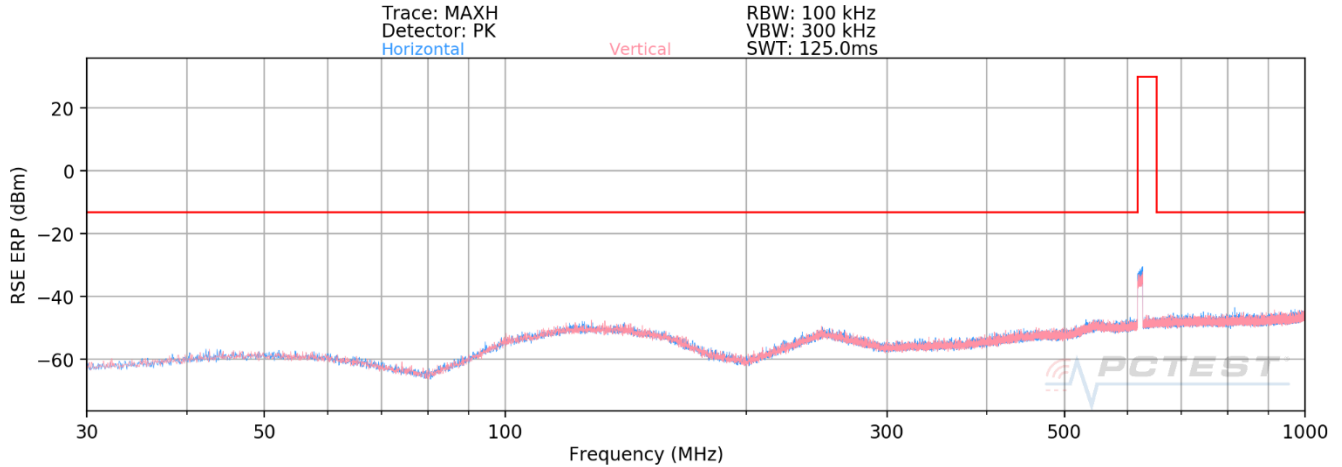
*AFCL (dB/m) contains measurement antenna factor(dB/m) and cable loss(dB) as below:

| Frequency [MHz] | Antenna Factor (dB/m) | Cable loss [dB] | AFCL (dB/m) |
|-----------------|-----------------------|-----------------|-------------|
| 745.77 | 21.50 | 2.30 | 23.80 |
| 5898.25 | 34.10 | -19.75 | 14.35 |

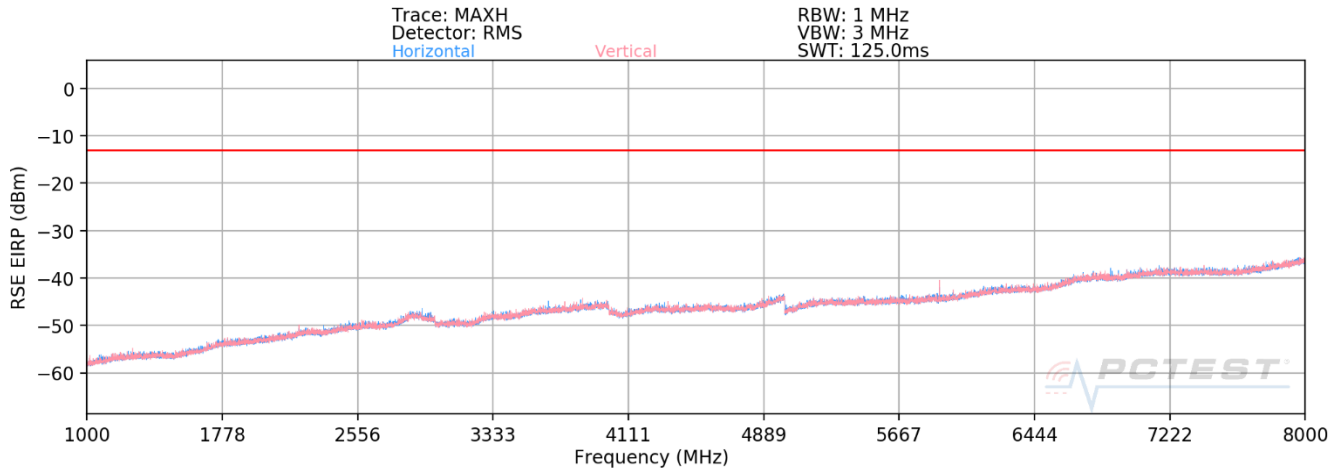
Table 7-57. Adopted AFCL value in the calculation

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.

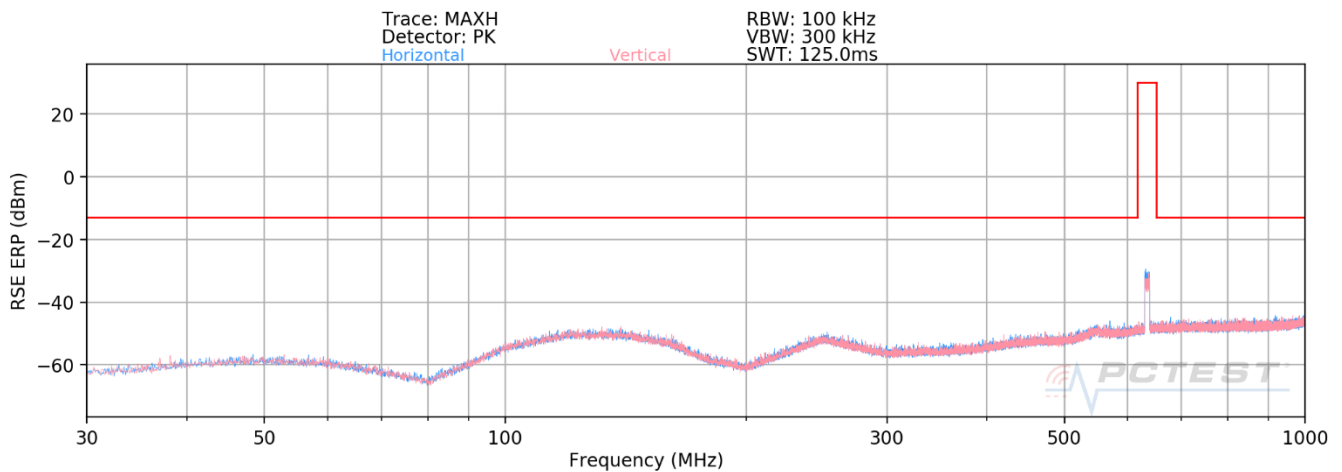
| | | | | |
|------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | | Page 146 of 166 |




Plot 7-308. Radiated spurious emission Plot_30 MHz to 1000 MHz (B71 LTE 1C 10M - Low Channel)

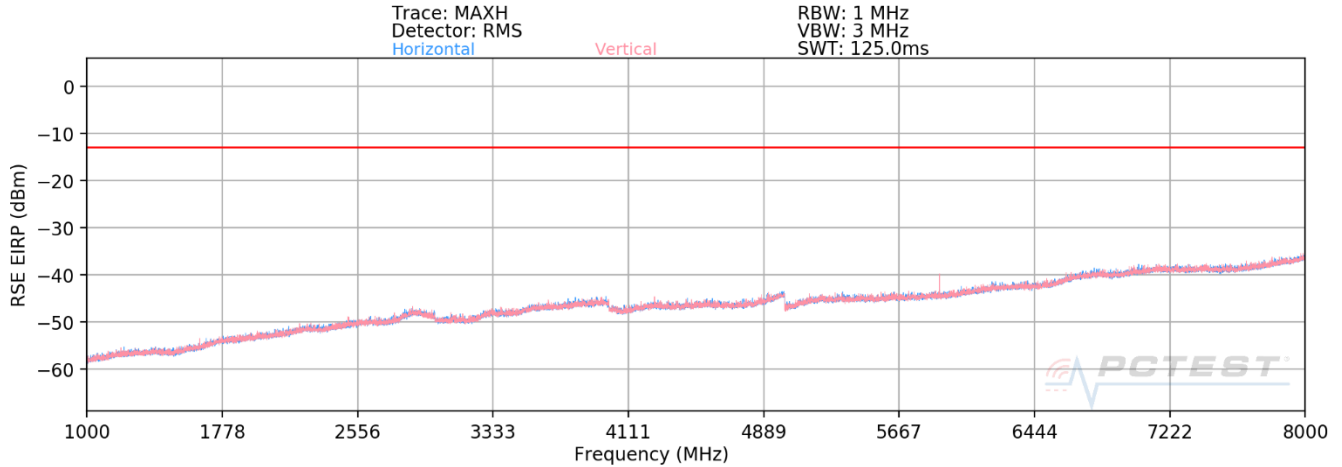


Plot 7-309. Radiated spurious emission Plot_1 GHz to 8 GHz (B71 LTE 1C 10M - Low Channel)

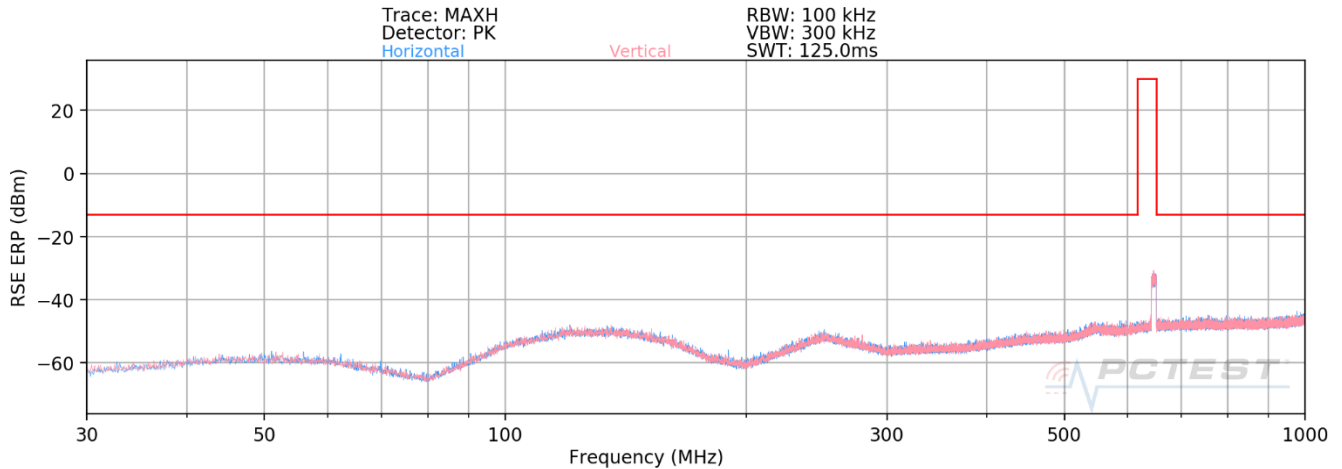


Plot 7-310. Radiated spurious emission Plot_30 MHz to 1000 MHz (B71 LTE 1C 10M - Middle Channel)

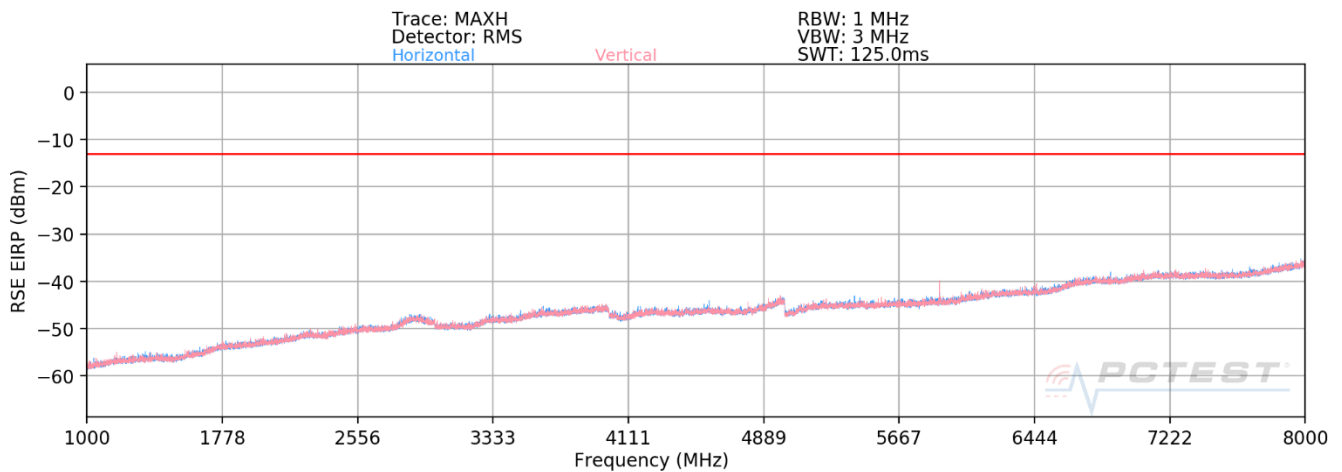
| | | | | |
|------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | | Page 147 of 166 |





**Plot 7-311. Radiated spurious emission Plot_1 GHz to 8 GHz
(B71 LTE 1C 10M - Middle Channel)**

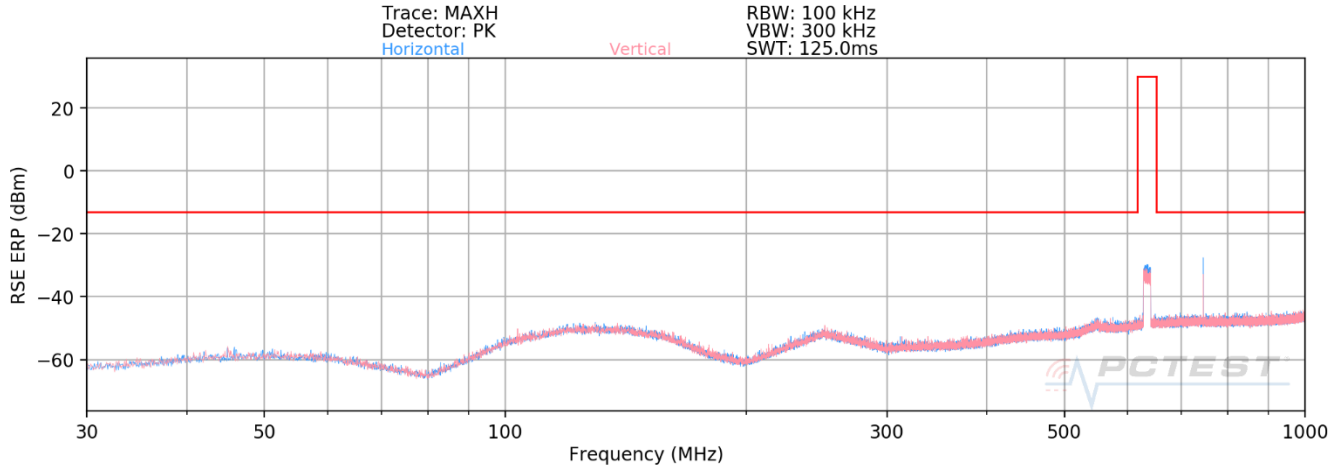


**Plot 7-312. Radiated spurious emission Plot_30 MHz to 1000 MHz
(B71 LTE 1C 10M - High Channel)**



**Plot 7-313. Radiated spurious emission Plot_1 GHz to 8 GHz
(B71 LTE 1C 10M - High Channel)**

| | | | | |
|------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | | Page 148 of 166 |

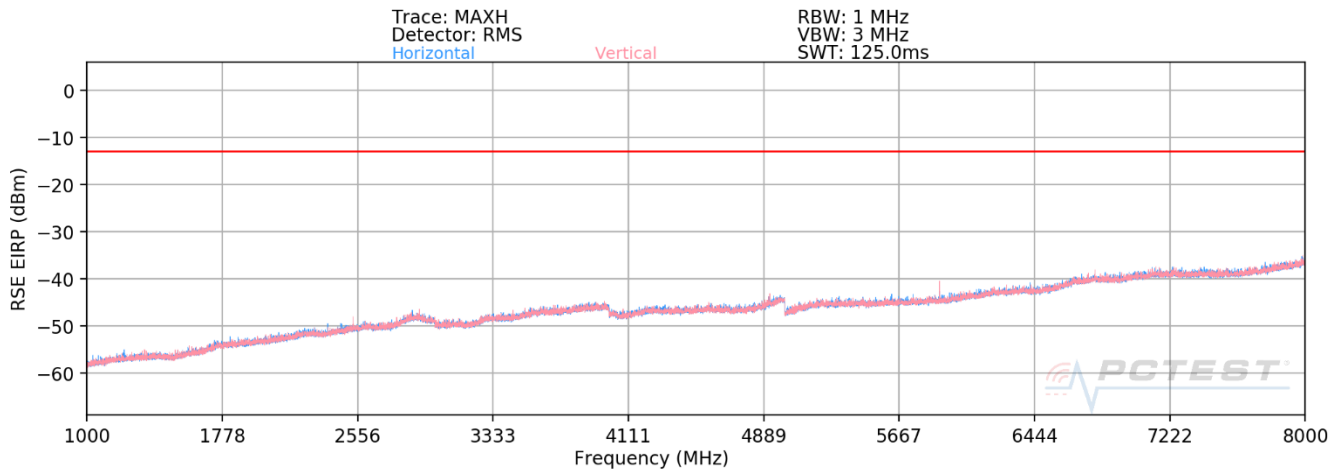


Plot 7-314. Radiated spurious emission Plot 30 MHz to 1000 MHz (B71 LTE 1C 15M - Middle Channel)



| | |
|--------------------|----------------|
| Mode: | B71 LTE 1C 15M |
| Bandwidth (MHz): | 15 |
| Frequency (MHz): | 634.5 |
| Modulation Signal: | QPSK |

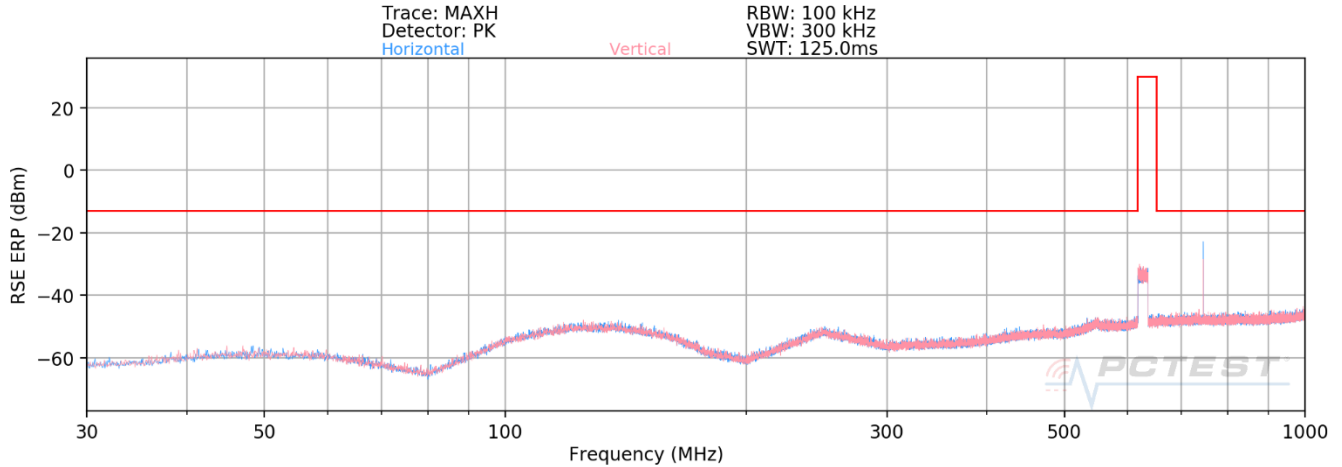
| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dBm] | Field Strength [dBμV/m] | Spurious Emission Level [dBm] | Limit [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------|------------|-------------------------|-------------------------------|-------------|-------------|
| 745.77 | H | 140 | 310 | -66.99 | 23.80 | 63.8 | -31.42 | -13.00 | -18.4 |
| 745.77 | V | 170 | 165 | -72.99 | 23.80 | 57.8 | -37.42 | -13.00 | -24.4 |

Table 7-58. Radiated spurious emission Table (B71 LTE 1C 15M)

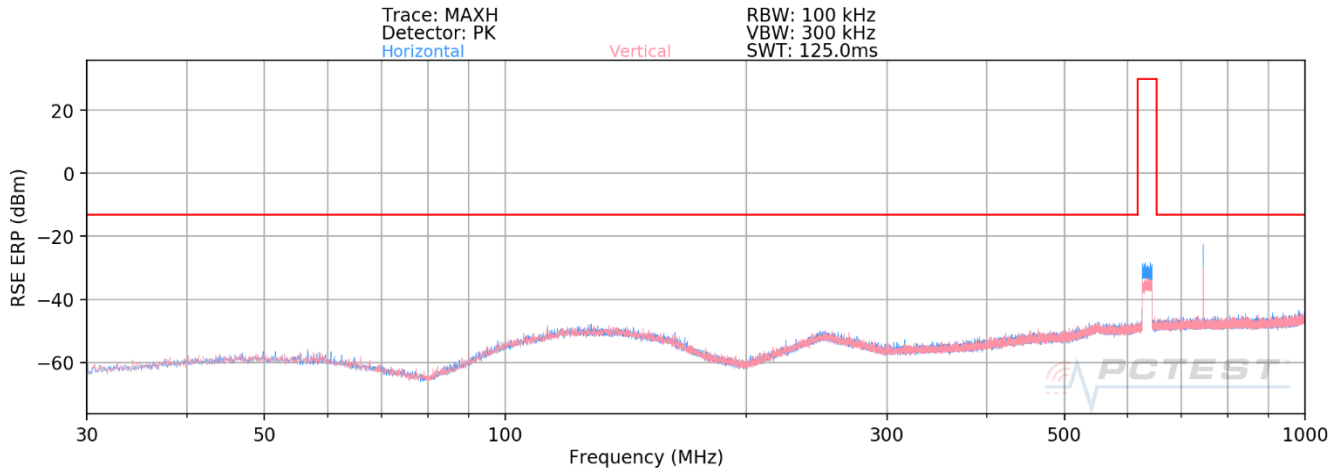


Plot 7-315. Radiated spurious emission Plot 1 GHz to 8 GHz (B71 LTE 1C 15M - Middle Channel)

| | | | | |
|------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | | Page 149 of 166 |



Plot 7-316. Radiated spurious emission Plot 30 MHz to 1000 MHz (B71 LTE 1C 20M - Low Channel)




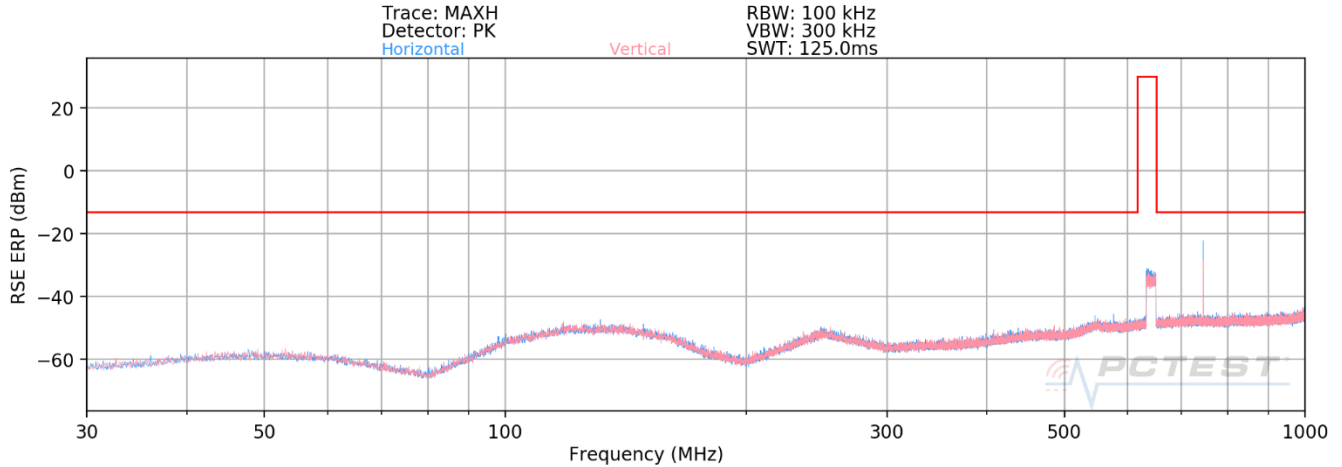
Plot 7-317. Radiated spurious emission Plot 30 MHz to 1000 MHz (B71 LTE 1C 20M - Middle Channel)

| | |
|--------------------|----------------|
| Mode: | B71 LTE 1C 20M |
| Bandwidth (MHz): | 20 |
| Frequency (MHz): | 634.5 |
| Modulation Signal: | QPSK |

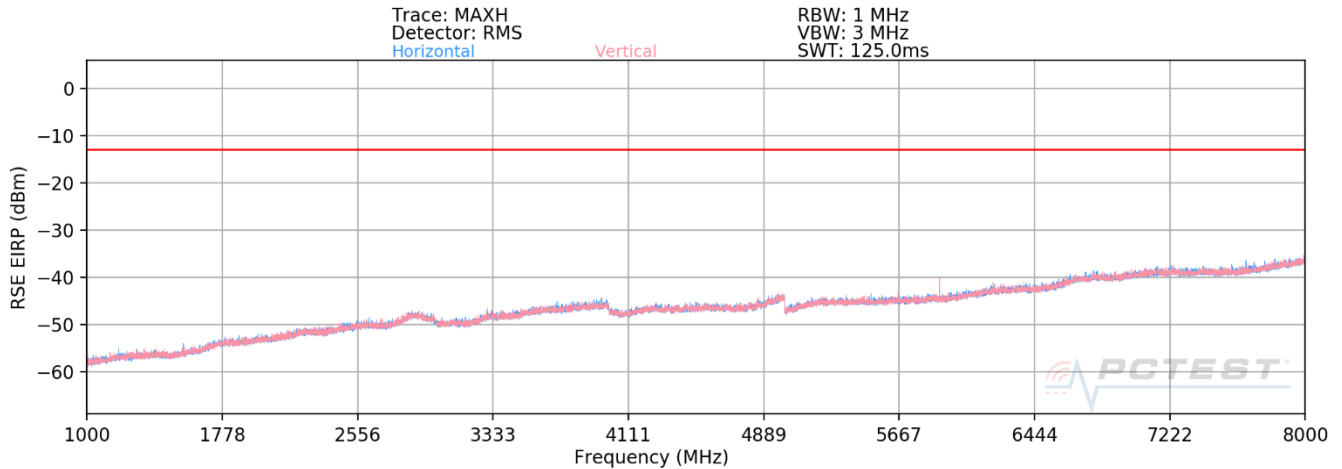
| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dBm] | Field Strength [dBμV/m] | Spurious Emission Level [dBm] | Limit [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------|------------|-------------------------|-------------------------------|-------------|-------------|
| 745.76 | H | 150 | 310 | -62.00 | 23.80 | 68.8 | -26.43 | -13.00 | -13.4 |
| 745.77 | V | 140 | 180 | -69.24 | 23.80 | 61.6 | -33.67 | -13.00 | -20.7 |

Table 7-59. Radiated spurious emission Table (B71 LTE 1C 20M)

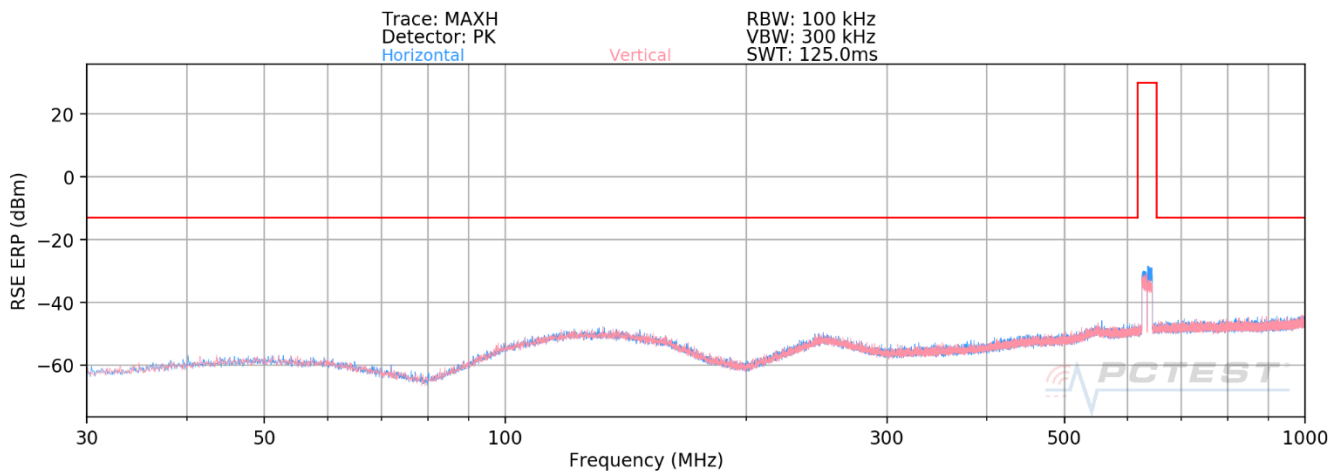
| | | | | |
|------------------------------------|---|------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | | Page 150 of 166 |





Plot 7-318. Radiated spurious emission Plot_30 MHz to 1000 MHz (B71 LTE 1C 20M - High Channel)

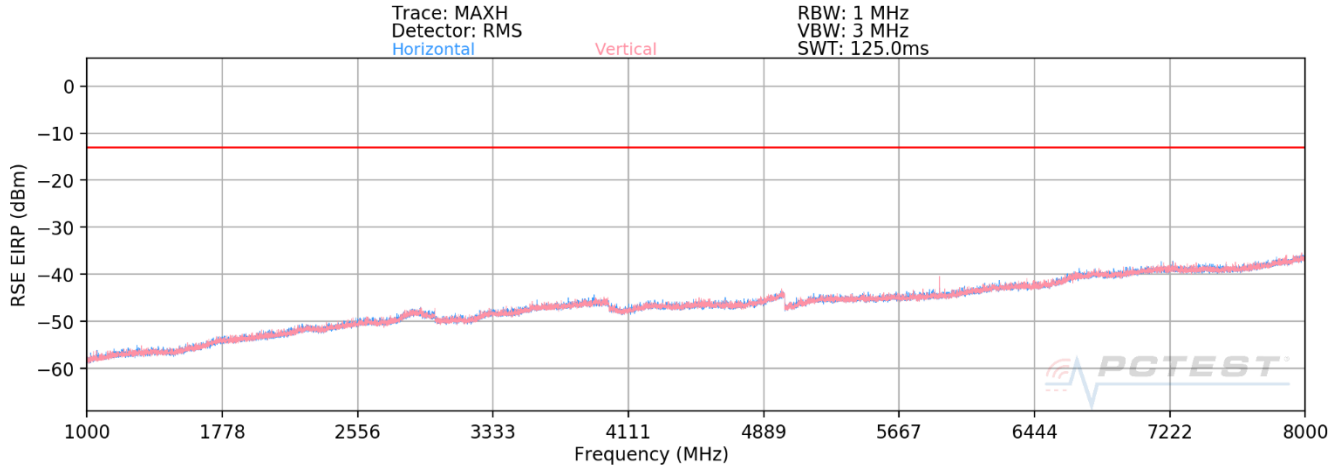


Plot 7-319. Radiated spurious emission Plot_1 GHz to 8 GHz (B71 LTE 1C 20M - Middle Channel)



Plot 7-320. Radiated spurious emission Plot_30 MHz to 1000 MHz (B71 LTE 2C 10M+10M Conti - Middle Channel)

| | | | | |
|------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | | Page 151 of 166 |

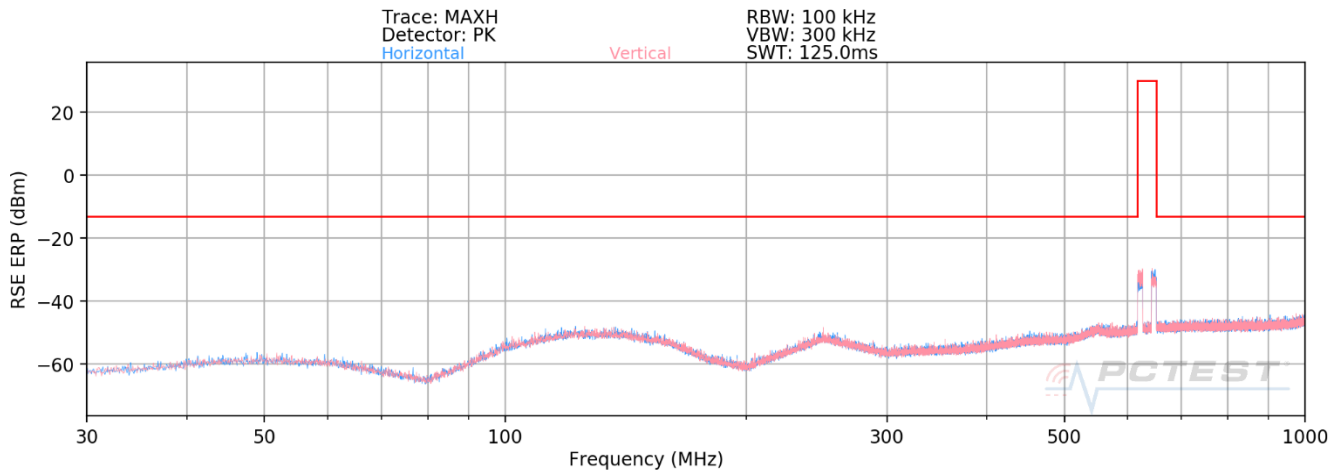


**Plot 7-321. Radiated spurious emission Plot_1 GHz to 8 GHz
(B71 LTE 2C 10M+10M Conti - Middle Channel)**



| | |
|--------------------|--------------------------|
| Mode: | B71 LTE 2C 10M+10M Conti |
| Bandwidth (MHz): | 10M+10M |
| Frequency (MHz): | 634.5 |
| Modulation Signal: | QPSK |

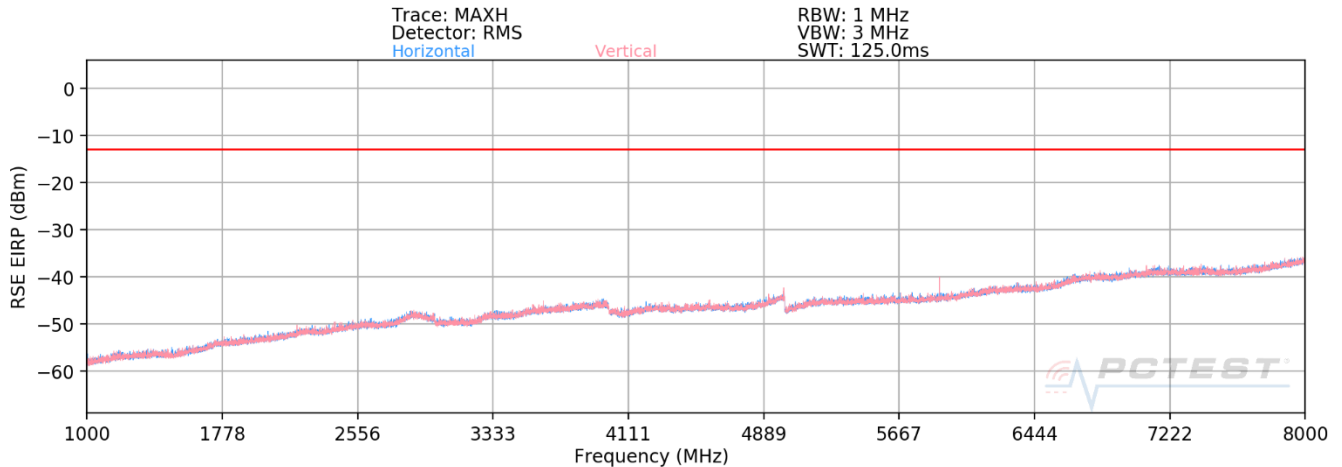
| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dBm] | Field Strength [dBμV/m] | Spurious Emission Level [dBm] | Limit [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------|------------|-------------------------|-------------------------------|-------------|-------------|
| 5898.25 | V | 150 | 160 | -67.53 | 14.35 | 53.8 | -41.41 | -13.00 | -28.4 |

Table 7-60. Radiated spurious emission Table (B71 LTE 2C 10M+10M Conti)

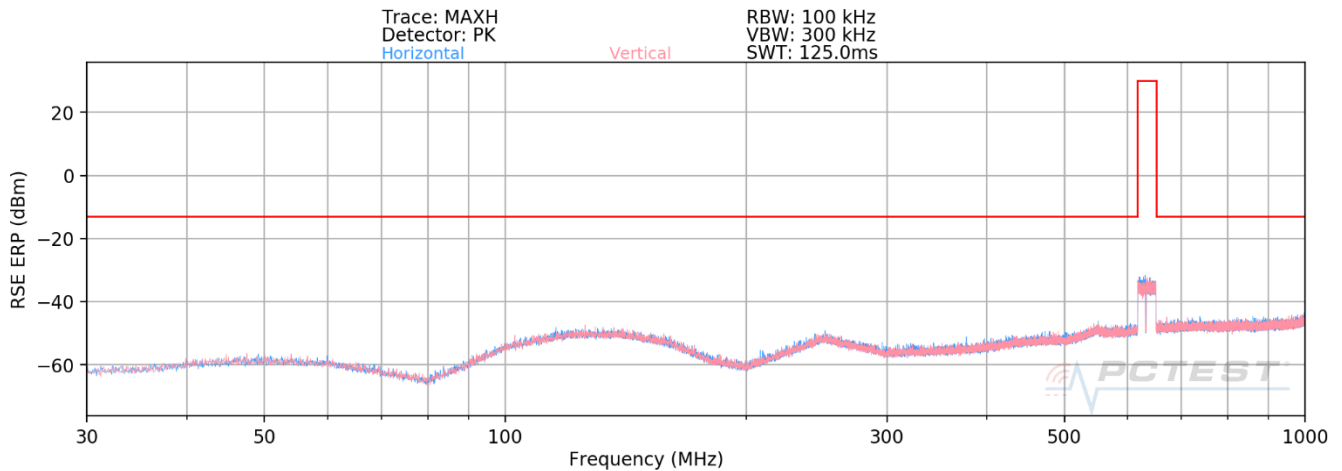


**Plot 7-322. Radiated spurious emission Plot_30 MHz to 1000 MHz
(B71 LTE 2C 10M+10M Non-conti)**

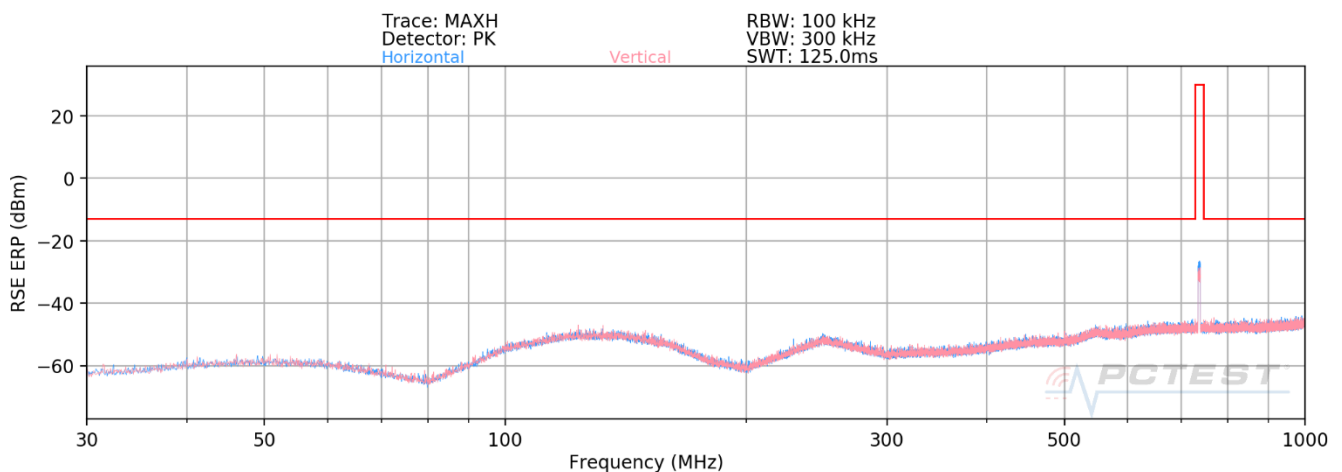
| | | | | |
|------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | | Page 152 of 166 |





**Plot 7-323. Radiated spurious emission Plot_1 GHz to 8 GHz
(B71 LTE 2C 10M+10M Non-conti)**

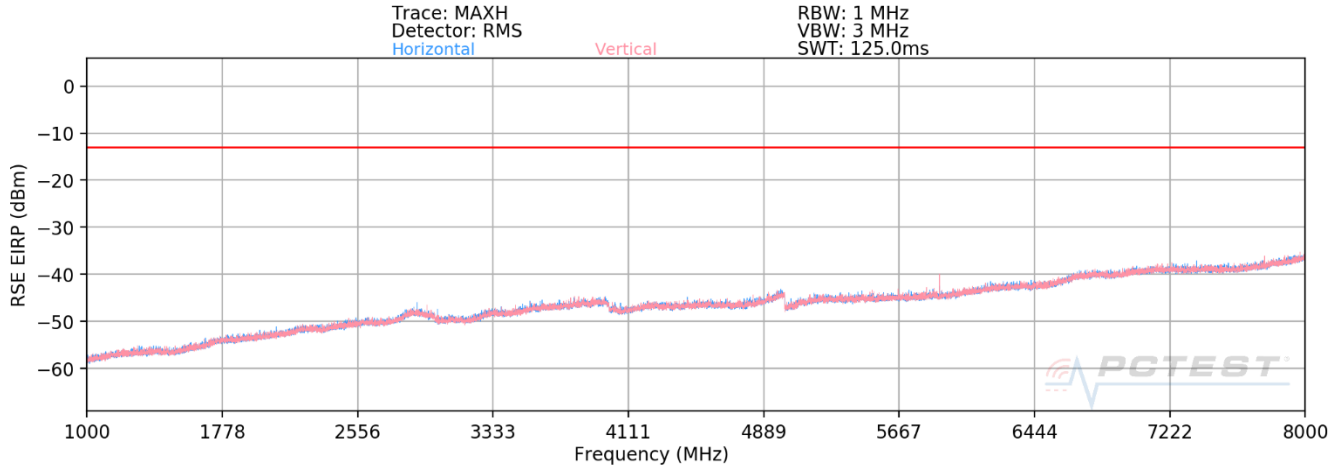


**Plot 7-324. Radiated spurious emission Plot_30 MHz to 1000 MHz
(B71 LTE 2C 15M+20M Conti - Middle Channel)**

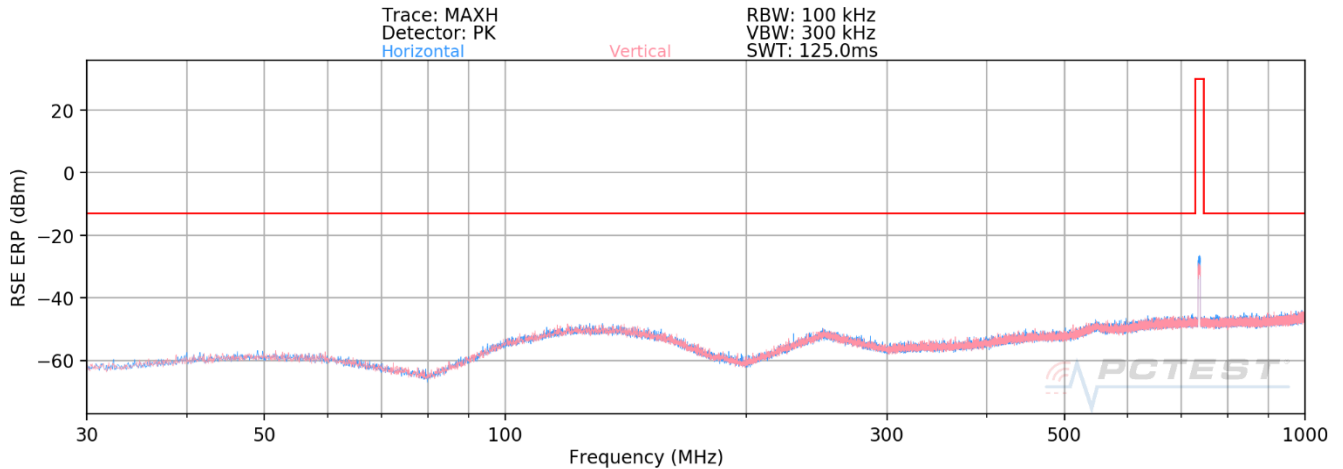


**Plot 7-325. Radiated spurious emission Plot_30 MHz to 1000 MHz
(B85 LTE 1C 5M - Low Channel)**

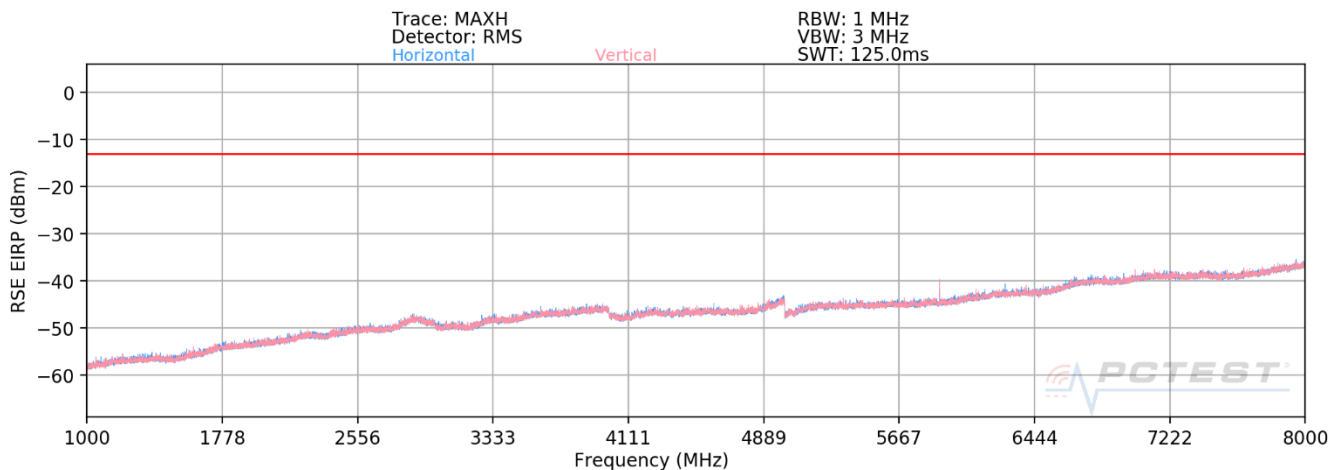
| | | | | |
|------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | | Page 153 of 166 |





**Plot 7-326. Radiated spurious emission Plot_1 GHz to 8 GHz
(B85 LTE 1C 5M - Low Channel)**

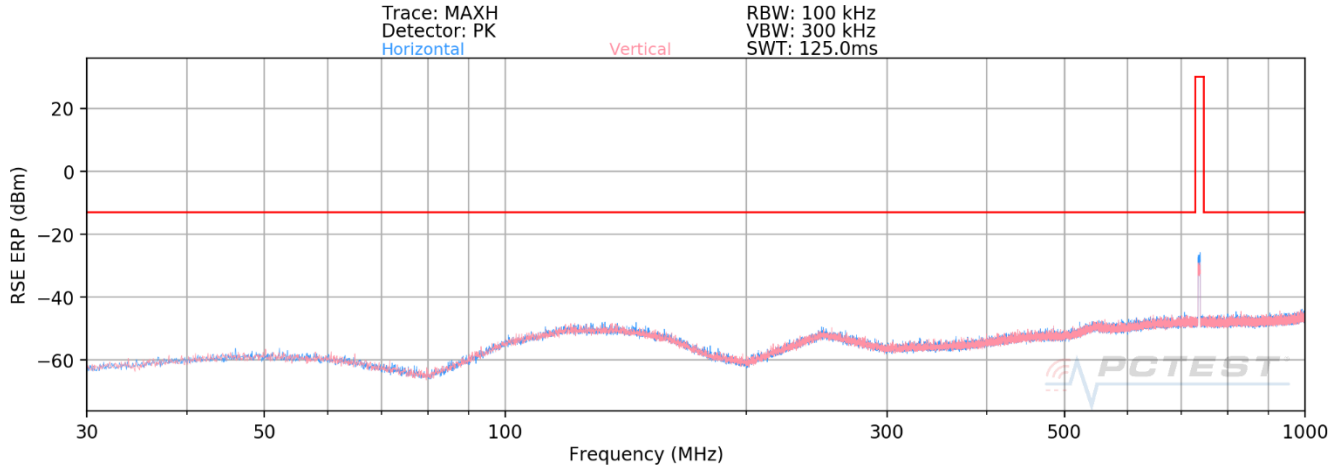


**Plot 7-327. Radiated spurious emission Plot_30 MHz to 1000 MHz
(B85 LTE 1C 5M - Middle Channel)**

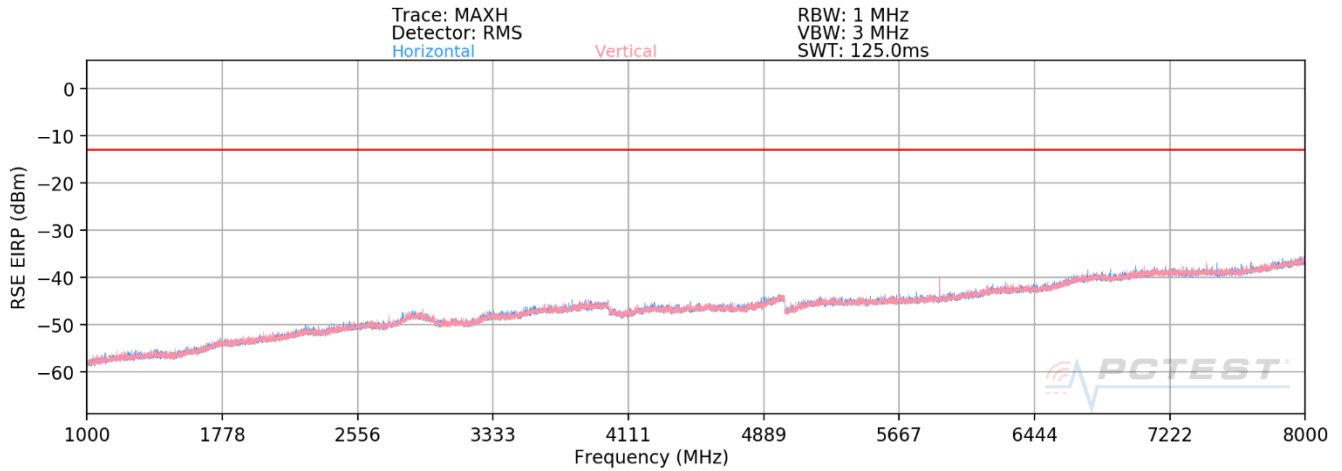


**Plot 7-328. Radiated spurious emission Plot_1 GHz to 8 GHz
(B85 LTE 1C 5M - Middle Channel)**

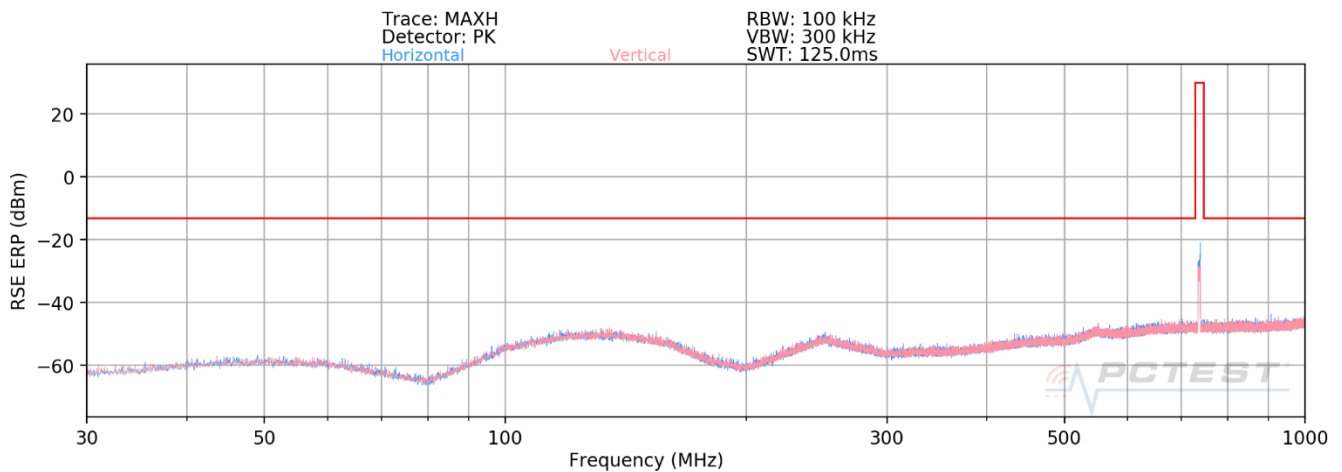
| | | | | |
|------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | | Page 154 of 166 |



**Plot 7-329. Radiated spurious emission Plot_30 MHz to 1000 MHz
(B85 LTE 1C 5M - High Channel)**

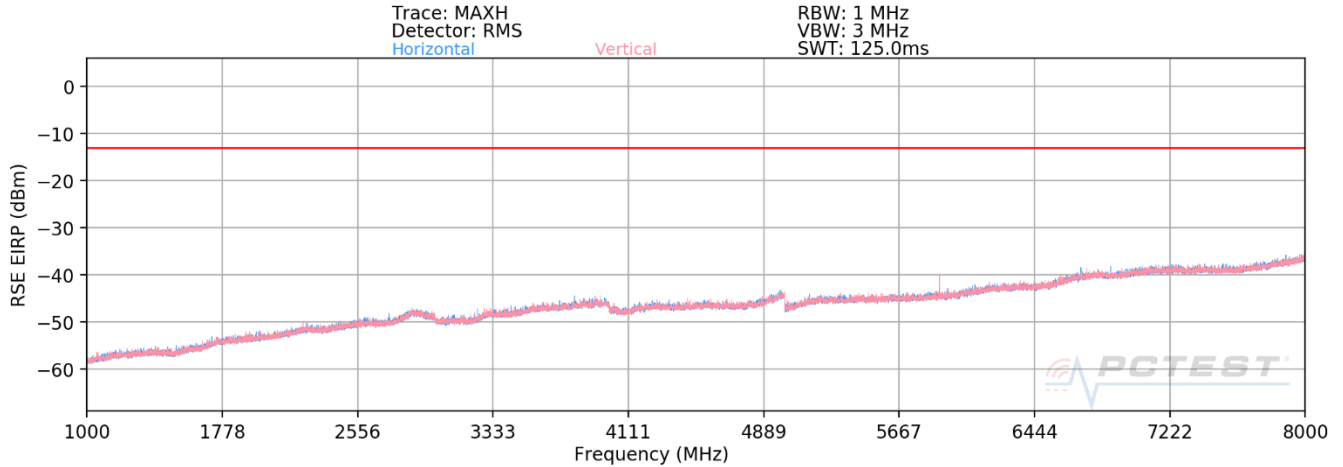


**Plot 7-330. Radiated spurious emission Plot_1 GHz to 8 GHz
(B85 LTE 1C 5M - High Channel)**

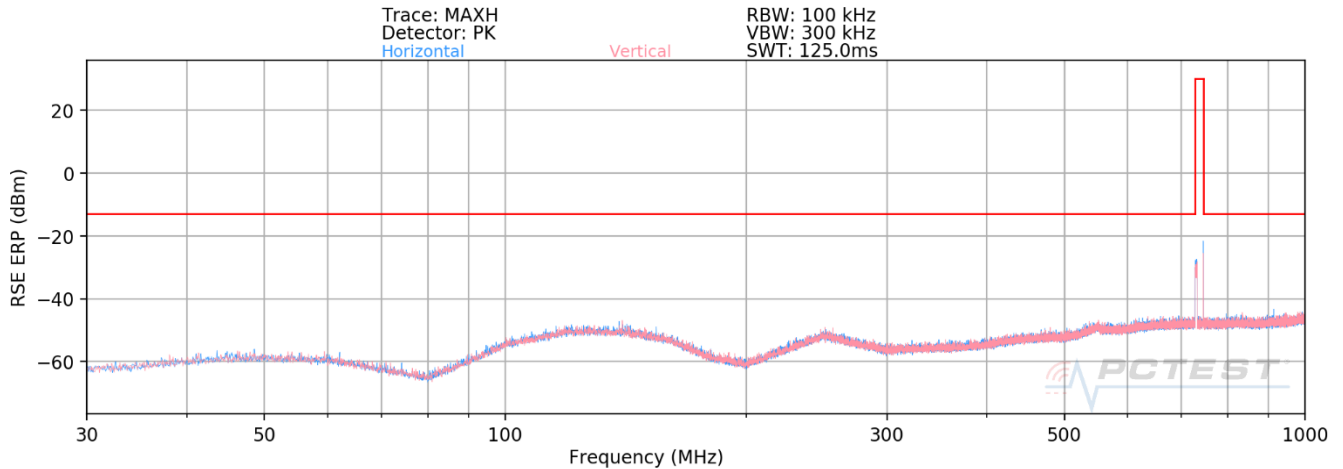


**Plot 7-331. Radiated spurious emission Plot_30 MHz to 1000 MHz
(B85 LTE 1C 5M + NB-IoT(SA) 1C Conti - Middle Channel)**

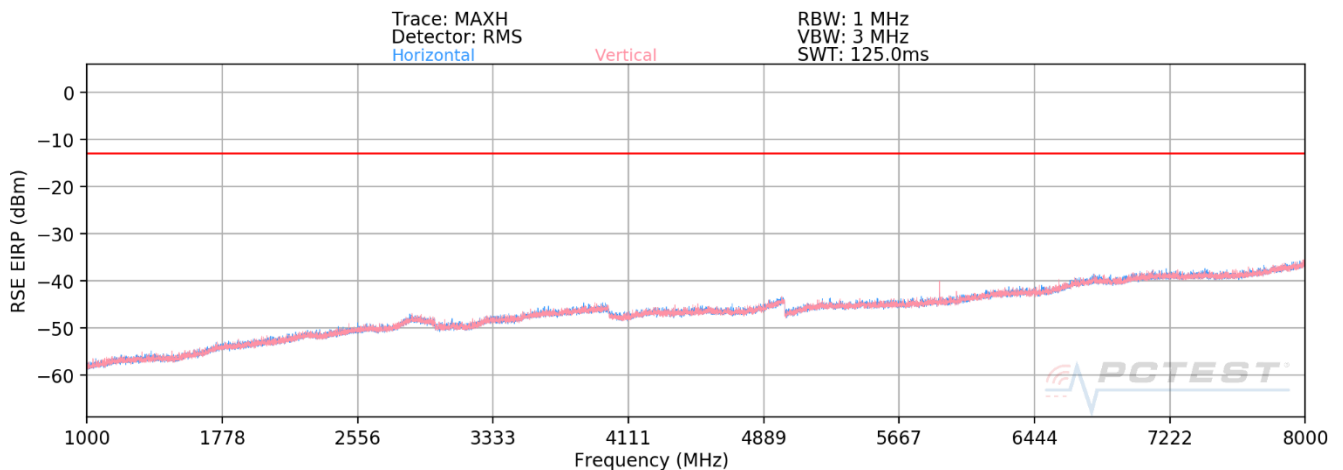
| | | | | |
|------------------------------------|--|---------------------------------------|--|-----------------------------------|
| FCC ID: A3LRF4435D-71A | | MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | | Page 155 of 166 |



**Plot 7-332. Radiated spurious emission Plot_1 GHz to 8 GHz
(B85 LTE 1C 5M + NB-IoT(SA) 1C Conti - Middle Channel)**

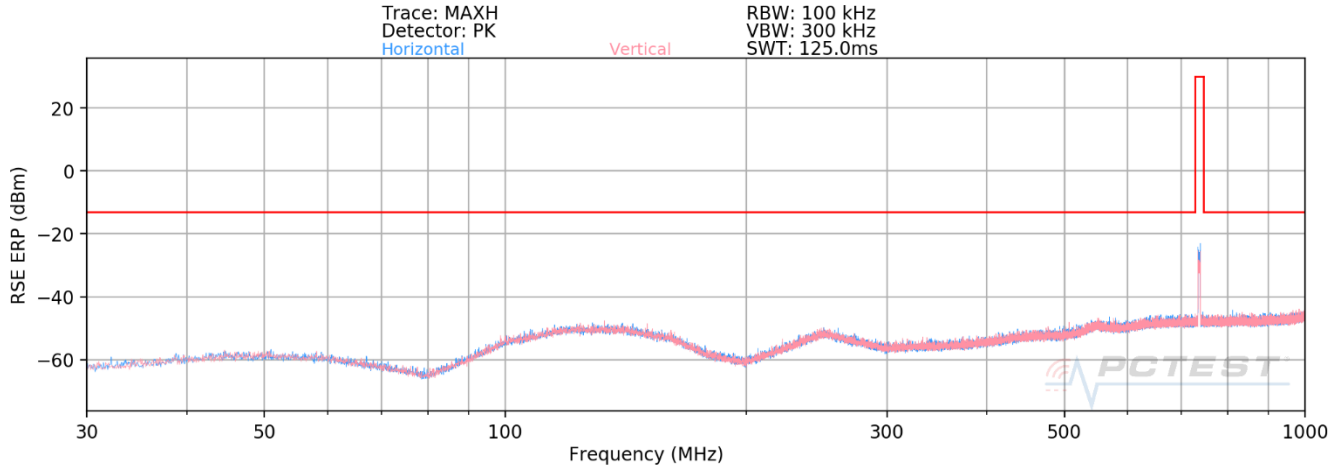


**Plot 7-333. Radiated spurious emission Plot_30 MHz to 1000 MHz
(B85 LTE 1C 5M + NB-IoT(SA) 1C Non-conti - Middle Channel)**

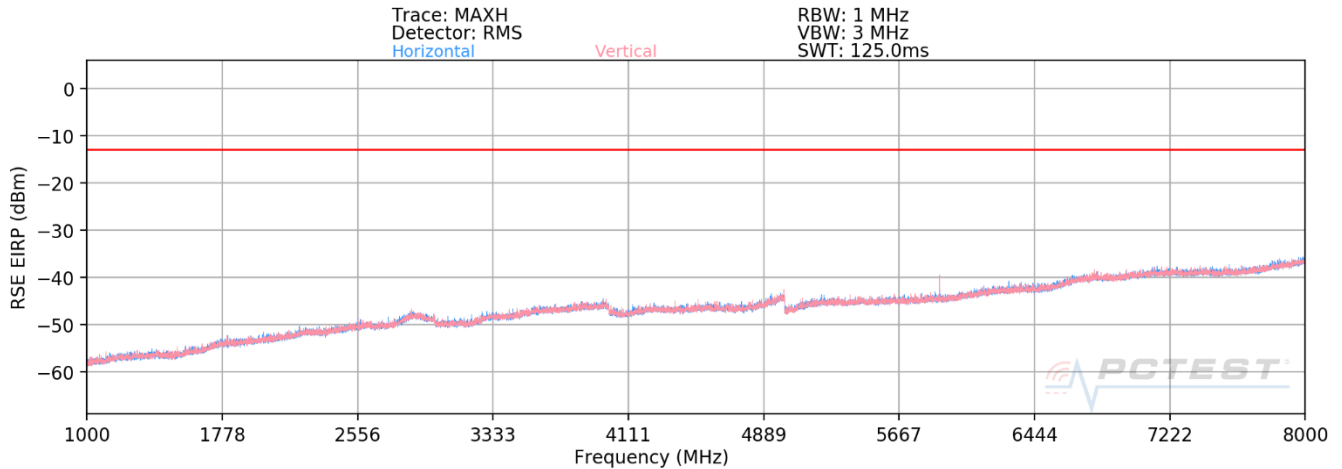


**Plot 7-334. Radiated spurious emission Plot_1 GHz to 8 GHz
(B85 LTE 1C 5M + NB-IoT(SA) 1C Non-conti - Middle Channel)**

| | | | | |
|------------------------------------|--|---------------------------------------|--|-----------------------------------|
| FCC ID: A3LRF4435D-71A | | MEASUREMENT REPORT (CERTIFICATION) | | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | | Page 156 of 166 |



**Plot 7-335. Radiated spurious emission Plot 30 MHz to 1000 MHz
(B85 NB-IoT(SA) 1C + LTE 1C 5M + NB-IoT(SA) 1C Conti - Middle Channel)**



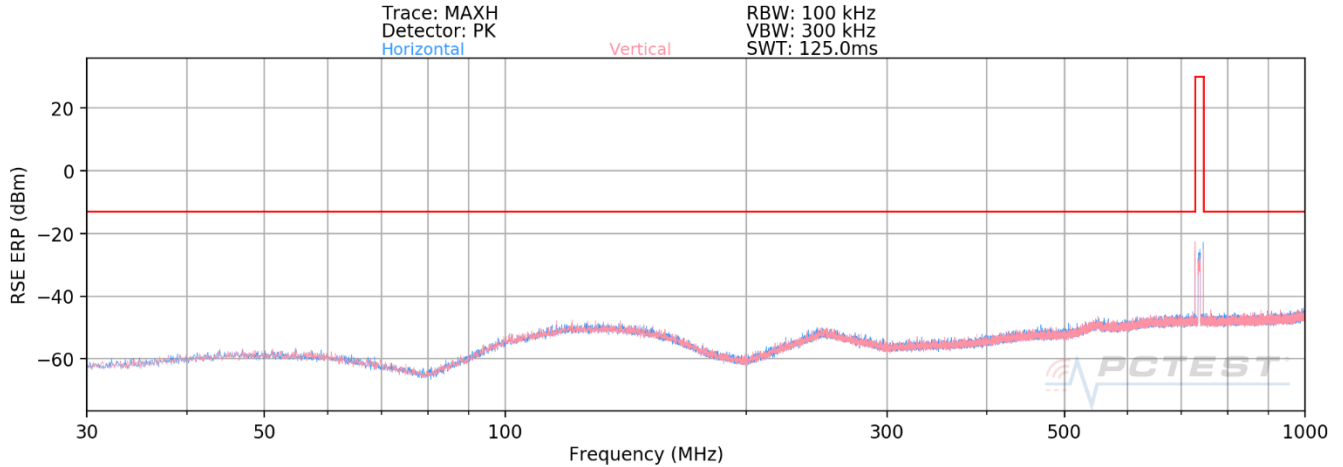
**Plot 7-336. Radiated spurious emission Plot 1 GHz to 8 GHz
(B85 NB-IoT(SA) 1C + LTE 1C 5M + NB-IoT(SA) 1C Conti - Middle Channel)**

| | |
|--------------------|---|
| Mode: | B85 NB-IoT(SA) 1C + LTE 1C 5M + NB-IoT(SA) 1C Conti |
| Bandwidth (MHz): | 0.2 + 5 + 0.2 |
| Frequency (MHz): | 734.4 + 737.0 + 739.6 |
| Modulation Signal: | QPSK |

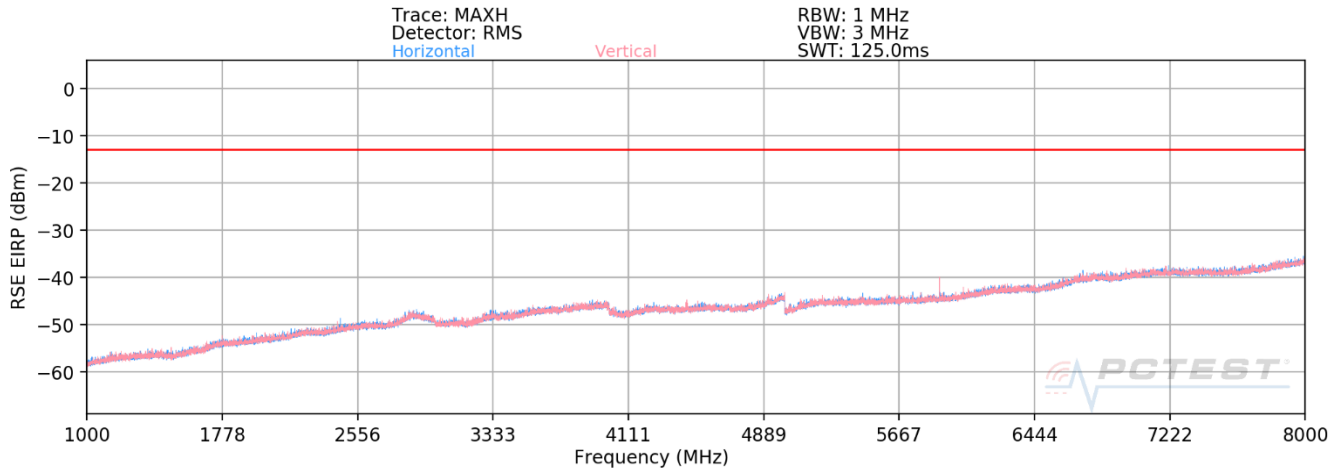
| Frequency [MHz] | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dBm] | Field Strength [dBμV/m] | Spurious Emission Level [dBm] | Limit [dBm] | Margin [dB] |
|-----------------|-----------------|---------------------|----------------------------|----------------------|------------|-------------------------|-------------------------------|-------------|-------------|
| 5898.26 | V | 150 | 160 | -67.58 | 14.35 | 53.8 | -41.46 | -13.00 | -28.5 |

Table 7-61. Radiated spurious emission Table (B85 NB-IoT(SA) 1C + LTE 1C 5M + NB-IoT(SA) 1C Conti)



| | | | | |
|------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | | Page 157 of 166 |

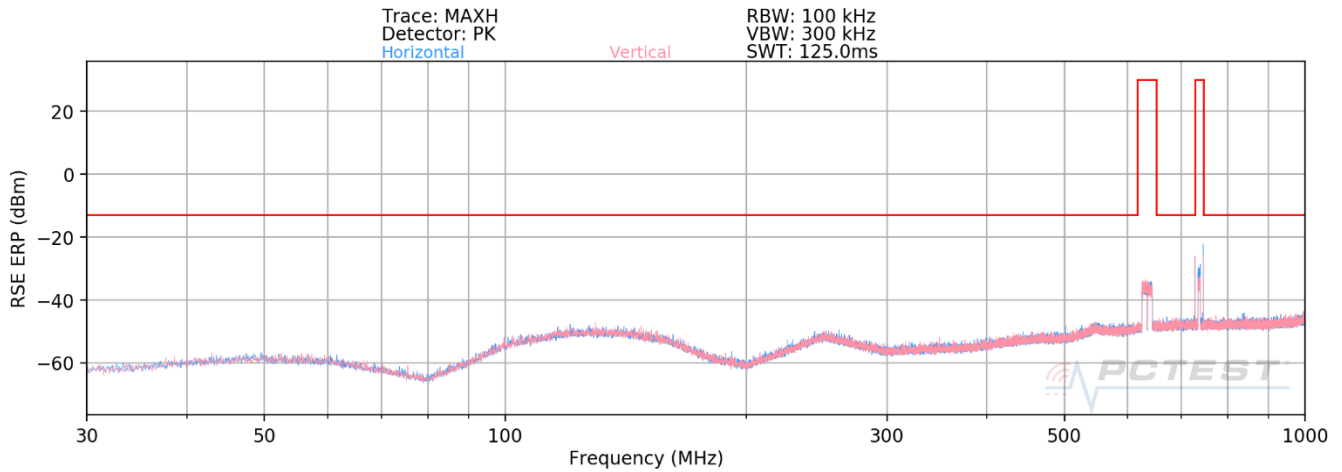


**Plot 7-337. Radiated spurious emission Plot_30 MHz to 1000 MHz
(B85 NB-IoT(SA) 1C + LTE 1C 5M + NB-IoT(SA) 1C Non-conti)**

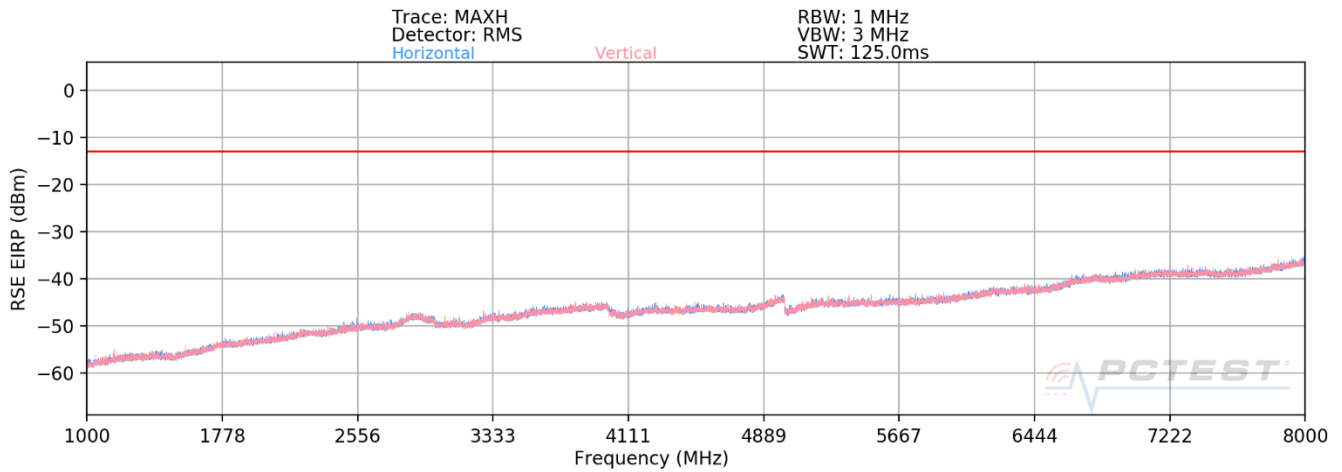


**Plot 7-338. Radiated spurious emission Plot_1 GHz to 8 GHz
(B85 NB-IoT(SA) 1C + LTE 1C 5M + NB-IoT(SA) 1C Non-conti)**



| | | | | |
|---|---|---|---|--|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | Page 158 of 166 | |

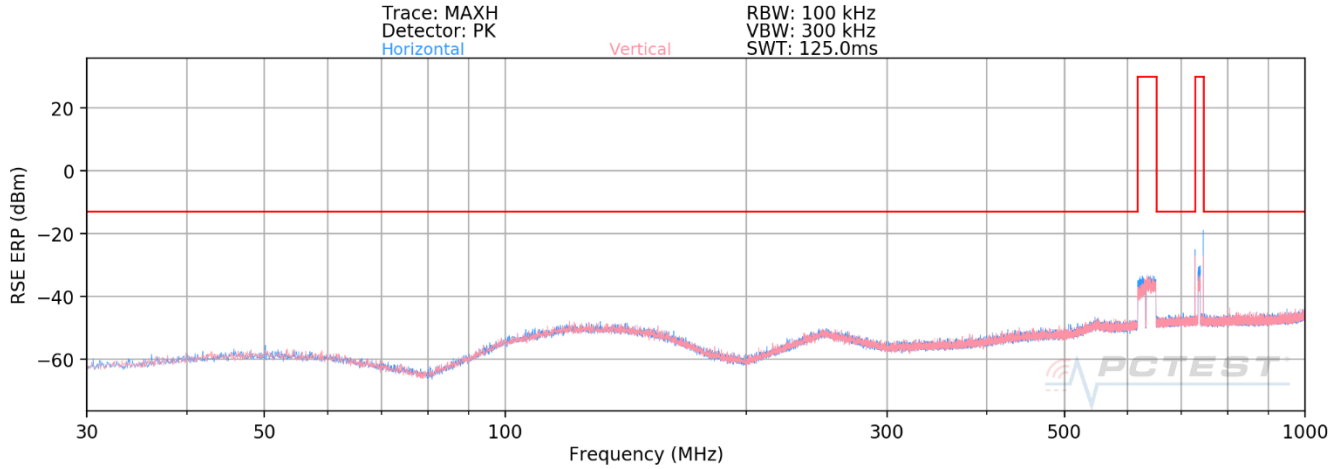


Plot 7-339. Radiated spurious emission Plot_30 MHz to 1000 MHz
(Dual Band_71-85 B71 LTE 2C 10M+10M & B85 NB-IoT(SA) 1C + LTE 1C 5M + NB-IoT(SA) 1C)

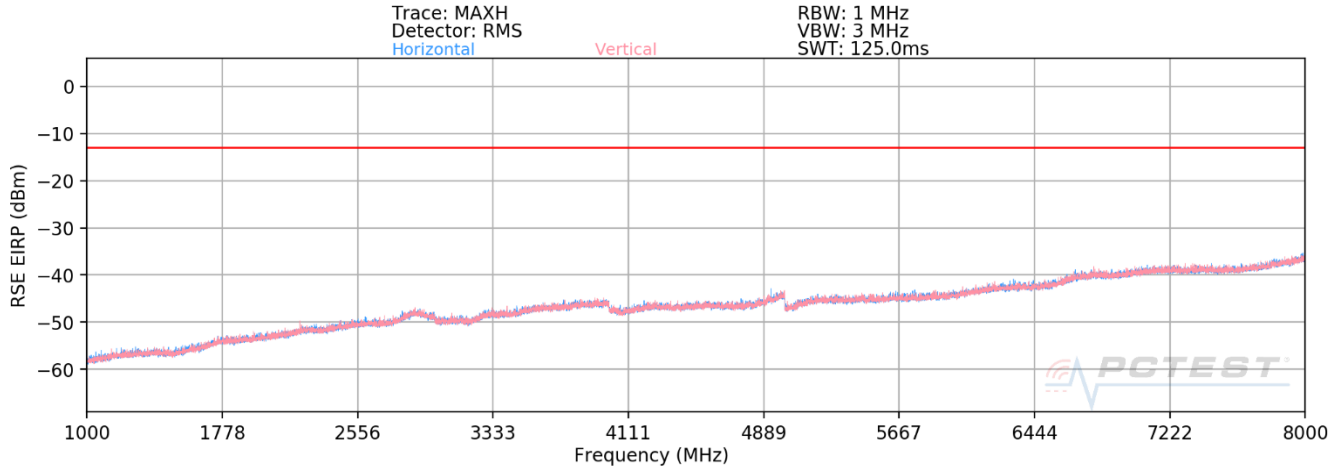


Plot 7-340. Radiated spurious emission Plot_1 GHz to 8 GHz
(Dual Band_71-85 B71 LTE 2C 10M+10M & B85 NB-IoT(SA) 1C + LTE 1C 5M + NB-IoT(SA) 1C)



| | | | | |
|------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | | Page 159 of 166 |



**Plot 7-341. Radiated spurious emission Plot 30 MHz to 1000 MHz
(Dual Band_71-85 B71 LTE 2C 15M+20M & B85 NB-IoT(SA) 1C + LTE 1C 5M + NB-IoT(SA) 1C)**



**Plot 7-342. Radiated spurious emission Plot 1 GHz to 8 GHz
(Dual Band_71-85 B71 LTE 2C 15M+20M & B85 NB-IoT(SA) 1C + LTE 1C 5M + NB-IoT(SA) 1C)**

| | | | | |
|------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | | Page 160 of 166 |

7.8 Frequency Stability / Temperature Variation

§ 2.1055

Test Overview and Limit

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015. The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C, +20°C and +50°C using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for DC powered equipment.

Test Procedure Used

ANSI C63.26-2015 – Section 5.6

Test Setting

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made -30°C, +20°C and +50°C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Limit

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Setup

The EUT was connected via an RF cable to a spectrum analyzer with the EUT placed inside an environmental chamber.

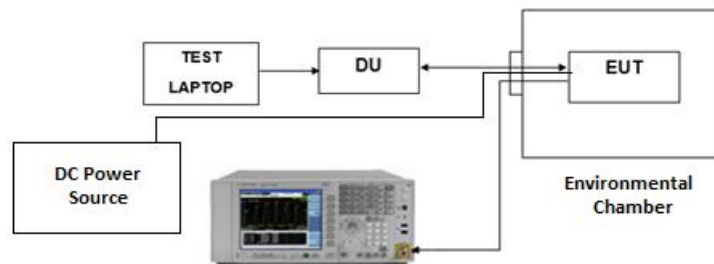



Figure 7-9. Test Instrument & Measurement Setup

Test Notes

N/A

| | | | | |
|------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
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Band 71 Frequency Stability Measurements



OPERATING FREQUENCY: 634,500,000 Hz
 REFERENCE VOLTAGE: -48.00 VDC

| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|-------------|-------------|------------|----------------|-----------------|---------------|
| 100 % | -48.00 | + 20 (Ref) | 634,504,504 | 0 | 0.0000000 |
| 100 % | | - 30 | 634,503,019 | -1,485.44 | -0.0002341 |
| 100 % | | - 20 | 634,503,019 | -1,485.44 | -0.0002341 |
| 100 % | | - 10 | 634,504,786 | 281.54 | 0.0000444 |
| 100 % | | 0 | 634,505,920 | 1,415.11 | 0.0002230 |
| 100 % | | + 10 | 634,506,104 | 1,600.08 | 0.0002522 |
| 100 % | | + 20 | 634,505,497 | 992.49 | 0.0001564 |
| 100 % | | + 30 | 634,505,095 | 590.45 | 0.0000931 |
| 100 % | | + 40 | 634,503,663 | -840.95 | -0.0001325 |
| 100 % | | + 50 | 634,502,831 | -1,673.18 | -0.0002637 |
| 85 % | | -40.80 | + 20 | 634,502,923 | -1,581.49 |
| 115 % | -55.20 | + 20 | 634,504,357 | -147.26 | -0.0000232 |

Table 7-62. Frequency Stability Data – Band 71_Mid Channel

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

| | | | | |
|------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | | Page 162 of 166 |

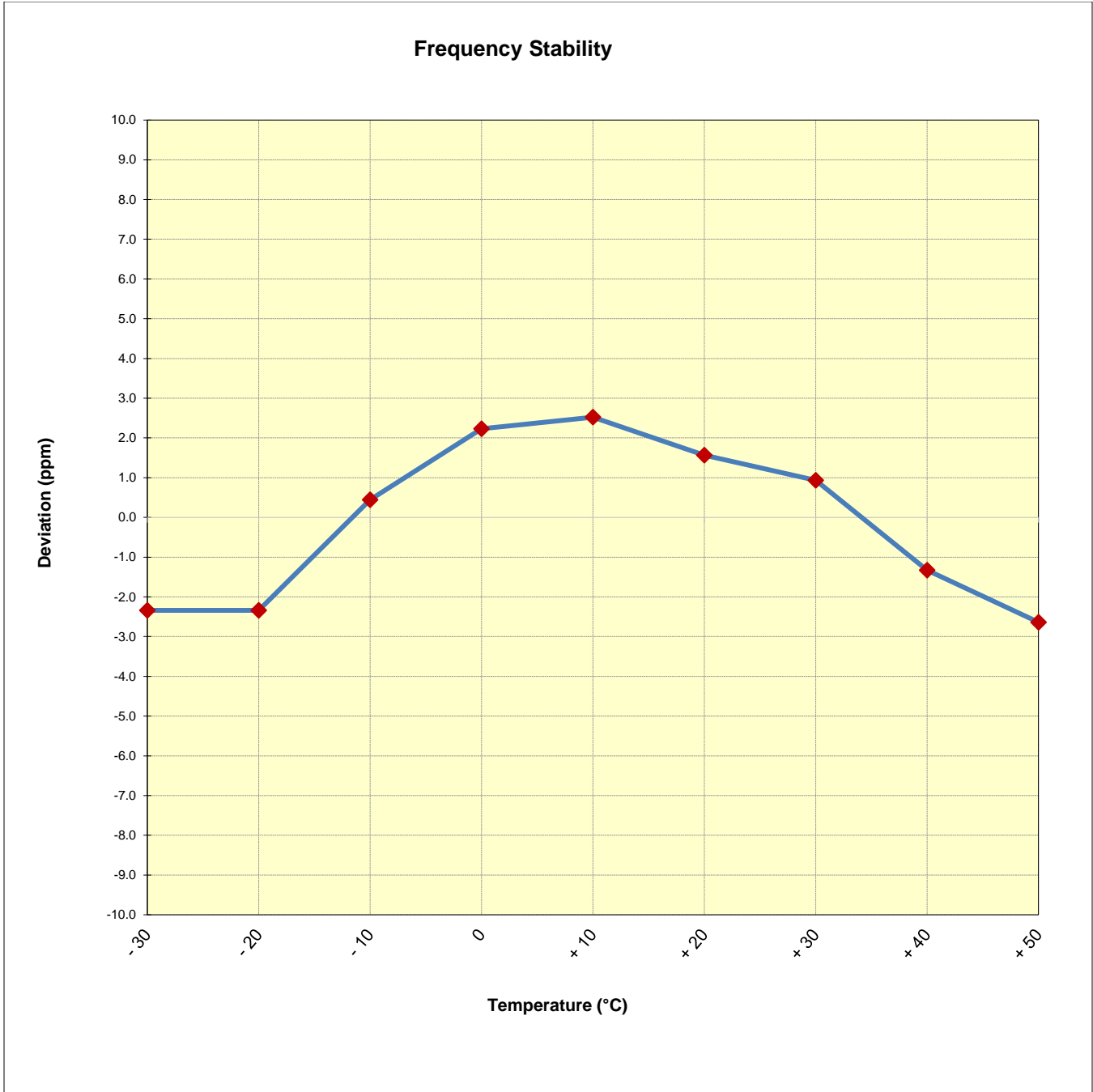




Figure 7-10. Frequency Stability Graph – Band 71_Mid Channel

| | | | | |
|---|---|---|---|--|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
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Band 85 Frequency Stability Measurements

OPERATING FREQUENCY: 737,000,000 Hz



REFERENCE VOLTAGE: -48.00 VDC

| VOLTAGE (%) | POWER (VDC) | TEMP (°C) | FREQUENCY (Hz) | Freq. Dev. (Hz) | Deviation (%) |
|-------------|-------------|------------|----------------|-----------------|---------------|
| 100 % | -48.00 | + 20 (Ref) | 737,003,850 | 0 | 0.0000000 |
| 100 % | | - 30 | 737,002,327 | -1,522.86 | -0.0002066 |
| 100 % | | - 20 | 737,004,347 | 497.01 | 0.0000674 |
| 100 % | | - 10 | 737,005,664 | 1,814.23 | 0.0002462 |
| 100 % | | 0 | 737,005,878 | 2,028.17 | 0.0002752 |
| 100 % | | + 10 | 737,005,175 | 1,324.56 | 0.0001797 |
| 100 % | | + 20 | 737,004,606 | 755.49 | 0.0001025 |
| 100 % | | + 30 | 737,003,067 | -782.70 | -0.0001062 |
| 100 % | | + 40 | 737,002,050 | -1,800.52 | -0.0002443 |
| 100 % | | + 50 | 737,002,177 | -1,672.85 | -0.0002270 |
| 85 % | | -40.80 | + 20 | 737,003,848 | -1.63 |
| 115 % | -55.20 | + 20 | 737,003,849 | -1.28 | -0.0000002 |

Table 7-63. Frequency Stability Data – Band 85_Mid Channel

Note:

Based on the results of the frequency stability test at the center channel the frequency deviation results measured are very small. As such it is determined that the channels at the band edge would remain in-band when the maximum measured frequency deviation noted during the frequency stability tests is applied. Therefore the device is determined to remain operating in band over the temperature and voltage range as tested.

| | | | | |
|------------------------------------|---|---------------------------------------|---|-----------------------------------|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | Page 164 of 166 | |

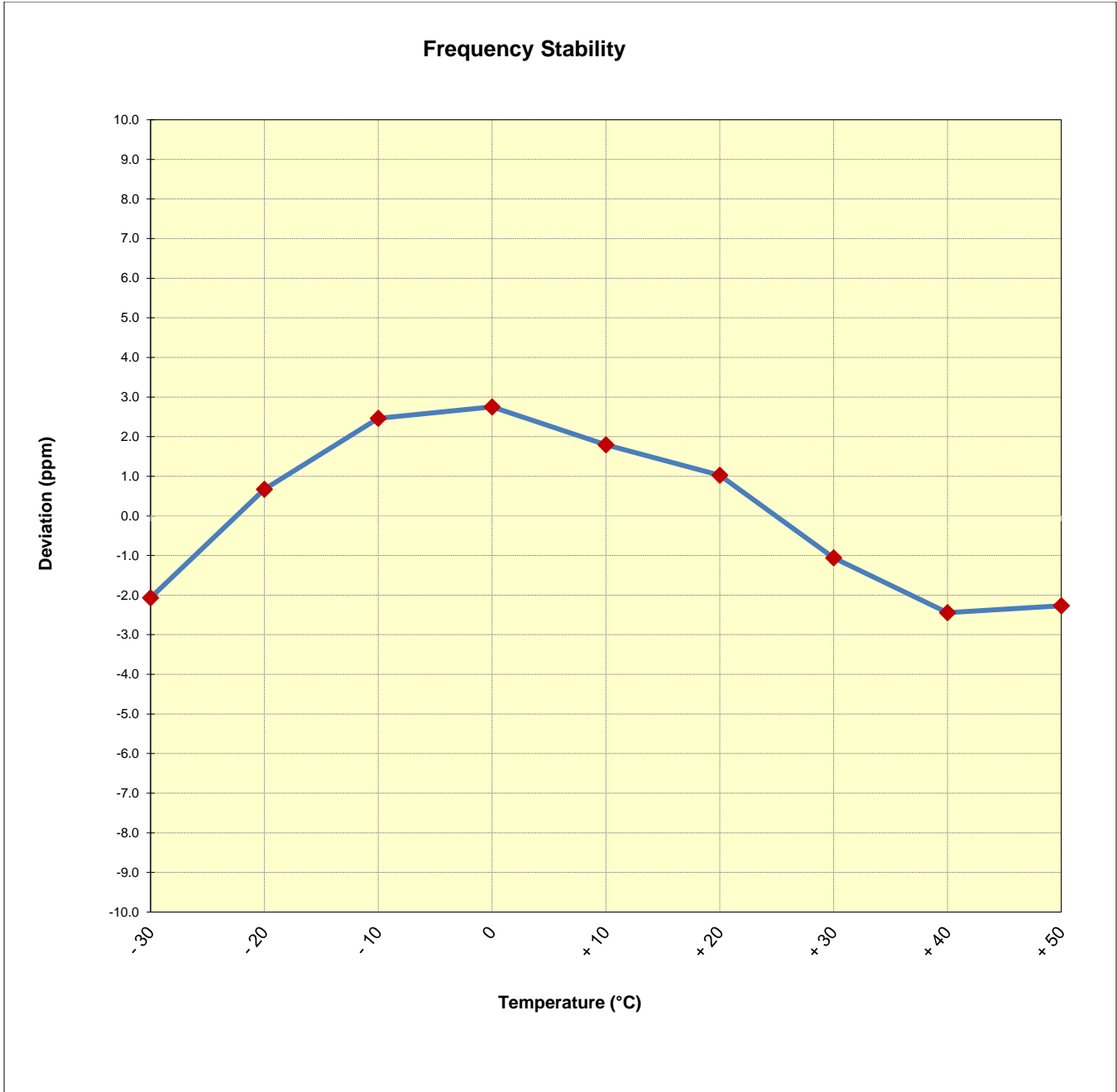




Figure 7-11. Frequency Stability Graph – Band 85_Mid Channel

| | | | | |
|---|---|---|---|--|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | Page 165 of 166 | |

8.0 CONCLUSION

The data collected relate only to the item(s) tested and show that the **Samsung RRU (RF4435d) FCC ID: A3LRF4435D-71A** complies with all of the requirements of Part 27 FCC Rules.

| | | | | |
|---|---|---|---|--|
| FCC ID: A3LRF4435D-71A |  | MEASUREMENT REPORT (CERTIFICATION) |  | Approved by: Technical Manager |
| Test Report S/N: 8K21061101.A3L | Test Dates: 08/04/2021 - 08/24/2021 | EUT Type: RRU (RF4435d) | Page 166 of 166 | |