

## Appendix B: Test Results of General 2.4GHz

|                                                                                   |           |
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## Appendix B.1: Measurement Equipment List

Note: Testing was carried out within frequency range 9kHz to the tenth harmonics.

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| Old ID | Equip.  | Description                 | Model                | Manufacturer       | Inte.<br>(mon) | Due Date<br>DD . MM . YYYY |
|--------|---------|-----------------------------|----------------------|--------------------|----------------|----------------------------|
| 1.807  | 1813832 | EMI Test Receiver           | ESCI                 | Rohde & Schwarz    | 12             | 14.03.2020                 |
| 1.805  | 1813829 | FSP30 Spectrum Analyzer     | FSP30                | Rohde & Schwarz    | 12             | 22.08.2019                 |
| 1.921B | 1814142 | Trilog Broadband Antenna    | VULB9168(6dB)        | SCHWARZBECK        | 24             | 20.09.2019                 |
| 1.822  | 1813850 | Loop Antenna                | HFH2-Z2              | Rohde & Schwarz    | 24             | 15.03.2021                 |
| 1.819C | 1814068 | Pre-Amplifier               | A44-00101800-25-10P- | MITEQ              | 12             | 08.05.2020                 |
| 1.819A | 1813846 | Band Reject Filter          | BRM50702             | Micro-Tronics      | 24             | 04.07.2020                 |
| 1.848  | 1813884 | Highpass Filter             | HPM50115-03          | Micro-Tronics      | 24             | 15.03.2021                 |
| 1.808  | 1813833 | Horn Antenna                | 3160-09              | EMCO               | 60             | 19.01.2024                 |
| 1.808A | 1813834 | Pre-Amplifier               | A33-18002650-30-8P-4 | MITEQ              | 24             | 20.07.2019                 |
| 1.666  | 1813697 | SAC                         | N/A                  | Albatross Project  | 36             | 27.11.2021                 |
| 3.647  | 1822646 | Stable Power Supply         | APS-11010GG          | APS                | 12             | 21.07.2019                 |
| 1.844  | 1813877 | Automatic Voltage Regulator | AFR-345              | Allpower           | 12             | 26.04.2020                 |
| 3.648  | 1822647 | Frequency Invertor          | CIF-5000A            | IDRC               | 12             | 21.07.2019                 |
| 1.886  | 1813943 | Two-Line V-Network          | ENV216               | Rohde & Schwarz    | 12             | 11.06.2019                 |
| 1.887  | 1813944 | EMI Test Receiver           | ESCI                 | Rohde & Schwarz    | 12             | 15.03.2020                 |
| 1.913  | 1814012 | Shielding Room              | 9x4x3.4              | Changzhou Yuanping | 60             | 06.12.2020                 |
| 3.769  | 1814017 | Regulated power supply      | APS-33045TT          | APS                | 12             | 21.07.2019                 |
| 3.765  | 1814004 | Frequency Invertor          | APW-1100N            | APE                | 12             | 21.07.2019                 |
| 3.770  | 1814018 | Regulated power supply      | APS-11020            | APS                | 12             | 21.07.2019                 |

## Appendix B.2: Fundamental & Harmonics Radiated Emission

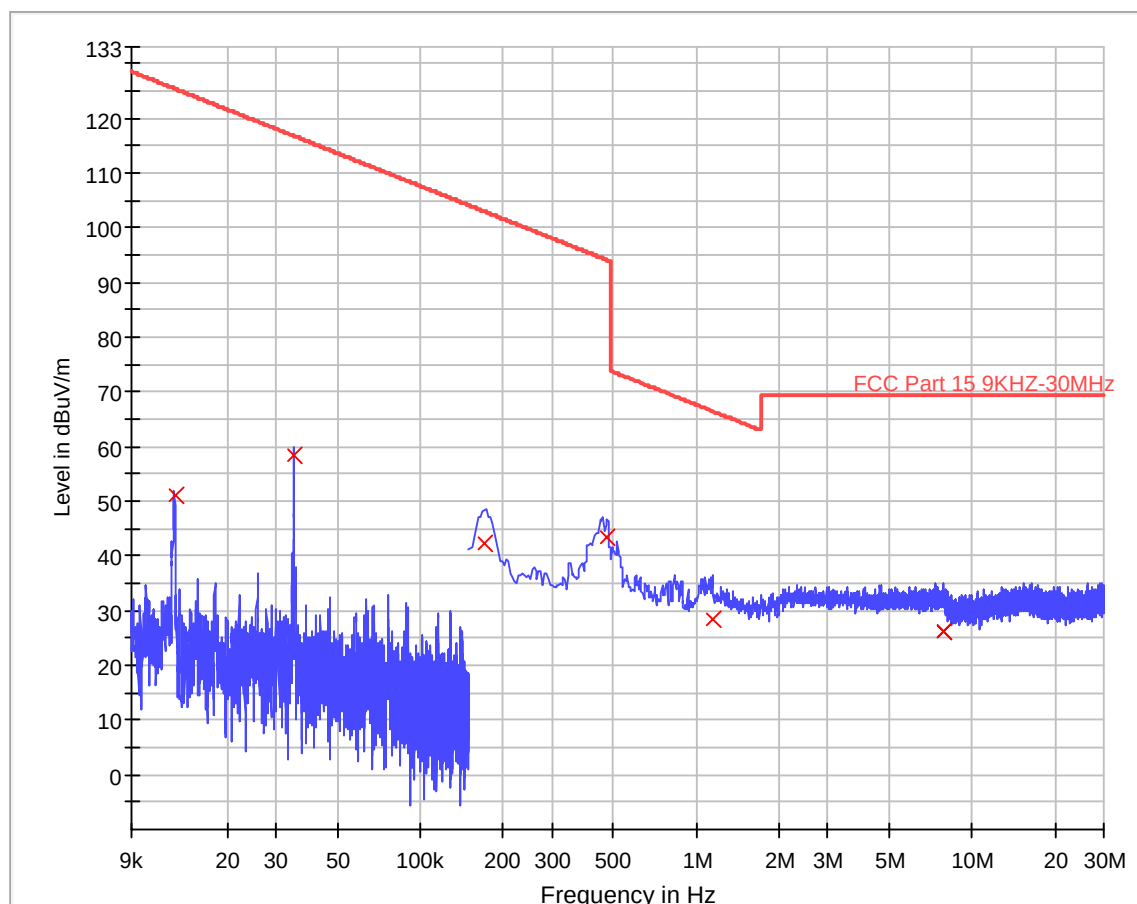
9kHz - 30MHz

# EMC Test Record (Emission)

### Common Information

|                     |                       |
|---------------------|-----------------------|
| Manufacturer:       | Knectek Labs Inc.     |
| Test Item:          | CubiTag Card          |
| Identification:     | CTAG0302              |
| Test Standard:      | FCC Part 15           |
| Test Detail:        | Radiated Emission     |
| Operation Mode:     | Transmitting(BLE-Mid) |
| Climate Condition:  | 20 °C, 50 %, 100 k Pa |
| Test Voltage/ Freq: | DC 3V                 |
| Result:             | Pass                  |
| Comment:            | Test distance is 3m   |

|                  |          |
|------------------|----------|
| Subrange 1       |          |
| Frequency range: | 9K-30MHz |
| Receiver:        | ESCI 3   |
| Transducer:      | HFH2-Z2  |



### Limit and Margin QP

| Frequency (MHz) | QuasiPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Corr. (dB/m) | Margin - QPK (dB) | Limit - QPK (dBuV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|--------------|-------------------|----------------------|---------|
| 1.146000        | 28.5               | 1000.0          | 9.000           | 21.3         | 38.0              | 66.4                 |         |
| 7.848000        | 26.2               | 1000.0          | 9.000           | 21.5         | 43.3              | 69.5                 |         |
| 7.848000        | 26.2               | 1000.0          | 9.000           | 21.5         | 43.3              | 69.5                 |         |

### Limit and Margin AV

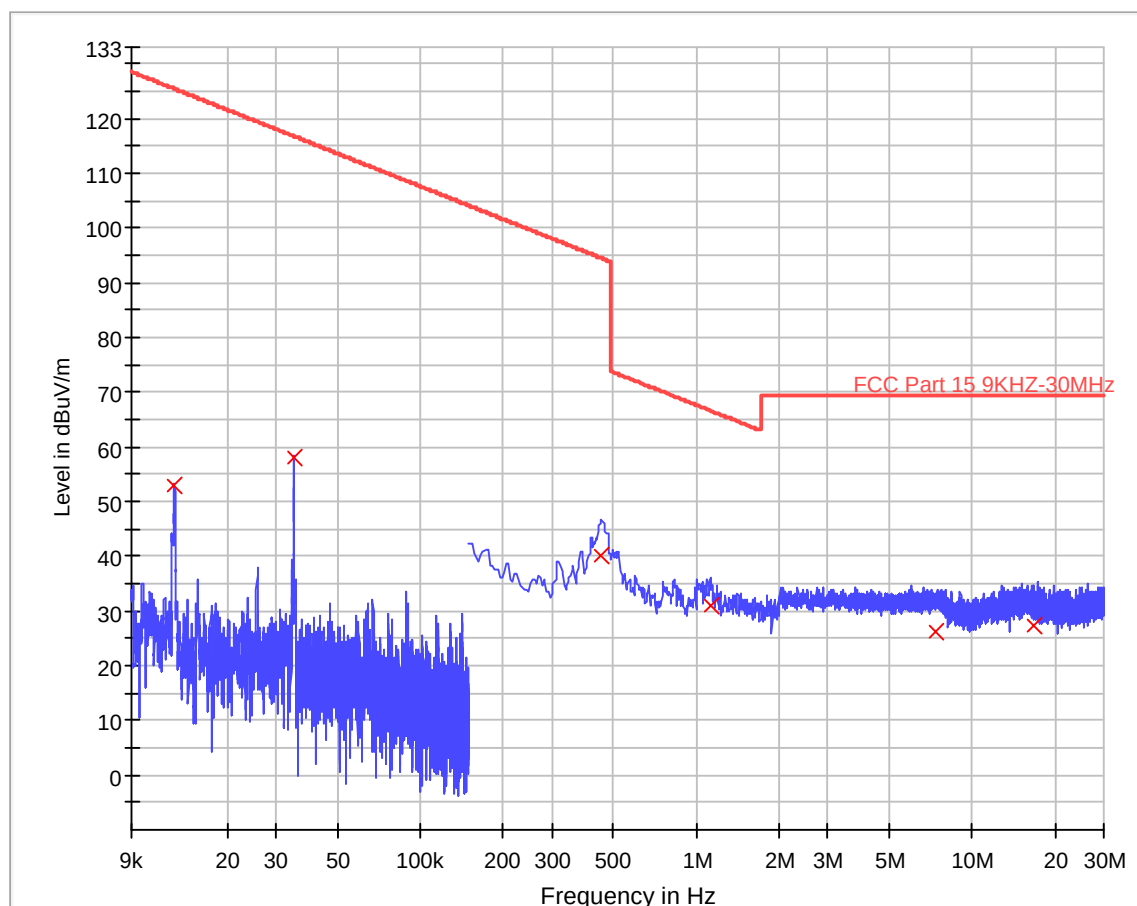
| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) | Comment |
|-----------------|------------------|-----------------|-----------------|--------------|-------------------|----------------------|---------|
| 0.012900        | 51.1             | 1000.0          | 0.200           | 22.5         | 74.3              | 125.4                |         |
| 0.034800        | 58.3             | 1000.0          | 0.200           | 22.6         | 58.5              | 116.8                |         |
| 0.172000        | 42.2             | 1000.0          | 9.000           | 20.9         | 60.6              | 102.9                |         |
| 0.475000        | 43.3             | 1000.0          | 9.000           | 20.4         | 50.8              | 94.1                 |         |

## EMC Test Record (Emission)

### Common Information

|                     |                       |
|---------------------|-----------------------|
| Manufacturer:       | Knectek Labs Inc.     |
| Test Item:          | CubiTag Card          |
| Identification:     | CTAG0302              |
| Test Standard:      | FCC Part 15           |
| Test Detail:        | Radiated Emission     |
| Operation Mode:     | Receiver (BLE-Mid)    |
| Climate Condition:  | 20 °C, 50 %, 100 k Pa |
| Test Voltage/ Freq: | DC 3V                 |
| Result:             | Pass                  |
| Comment:            | Test distance is 3m   |

|                  |          |
|------------------|----------|
| Subrange 1       |          |
| Frequency range: | 9K-30MHz |
| Receiver:        | ESCI 3   |
| Transducer:      | HFH2-Z2  |



### Limit and Margin QP

| Frequency (MHz) | QuasiPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Corr. (dB/m) | Margin - QPK (dB) | Limit - QPK (dBuV/m) | Comment |
|-----------------|--------------------|-----------------|-----------------|--------------|-------------------|----------------------|---------|
| 1.124000        | 31.0               | 1000.0          | 9.000           | 21.3         | 35.6              | 66.6                 |         |
| 7.344000        | 26.1               | 1000.0          | 9.000           | 21.5         | 43.4              | 69.5                 |         |
| 16.765000       | 27.1               | 1000.0          | 9.000           | 22.3         | 42.4              | 69.5                 |         |

### Limit and Margin AV

| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) | Comment |
|-----------------|------------------|-----------------|-----------------|--------------|-------------------|----------------------|---------|
| 0.012800        | 52.8             | 1000.0          | 0.200           | 22.5         | 72.6              | 125.4                |         |
| 0.034800        | 58.1             | 1000.0          | 0.200           | 22.6         | 58.6              | 116.8                |         |
| 0.452000        | 40.3             | 1000.0          | 9.000           | 20.4         | 54.2              | 94.5                 |         |

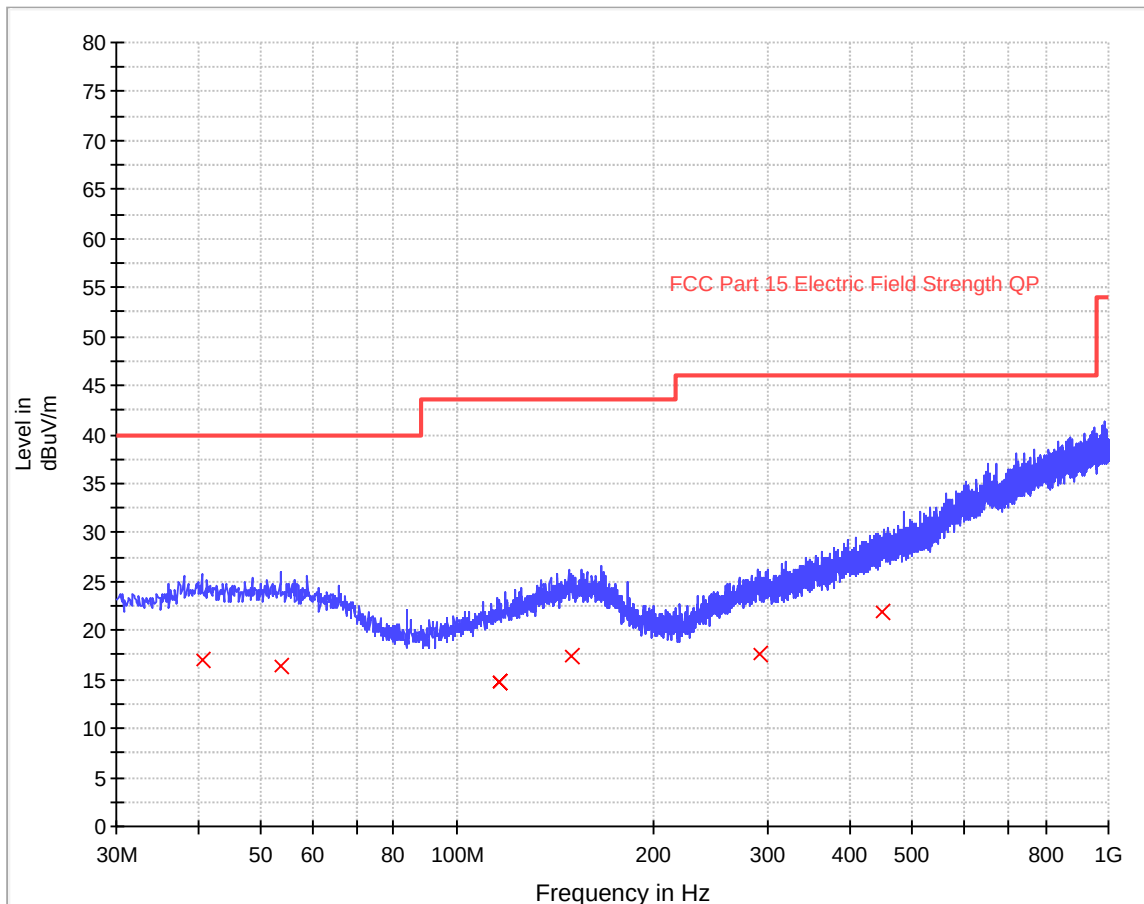
30MHz - 1GHz

## EMC Test Record (Emission)

### Common Information

|                     |                                 |
|---------------------|---------------------------------|
| Manufacturer:       | Knectek Labs Inc.               |
| Test Item:          | CubiTag Card                    |
| Identification:     | CTAG0302                        |
| Test Standard:      | FCC Part 15                     |
| Test Detail:        | Radiated Emission               |
| Operation Mode:     | Transmitting(BLE-Mid)           |
| Climate Condition:  | 20 °C, 50 %, 100 k Pa           |
| Test Voltage/ Freq: | DC 3V                           |
| Result:             | Pass                            |
| Comment:            | Test distance is 3m; Horizontal |

|                  |            |
|------------------|------------|
| Subrange 1       |            |
| Frequency range: | 30-1000MHz |
| Receiver:        | ESCI 3     |
| Transducer:      | VULB9168   |



Produkte  
Products

## Limit and Margin QP

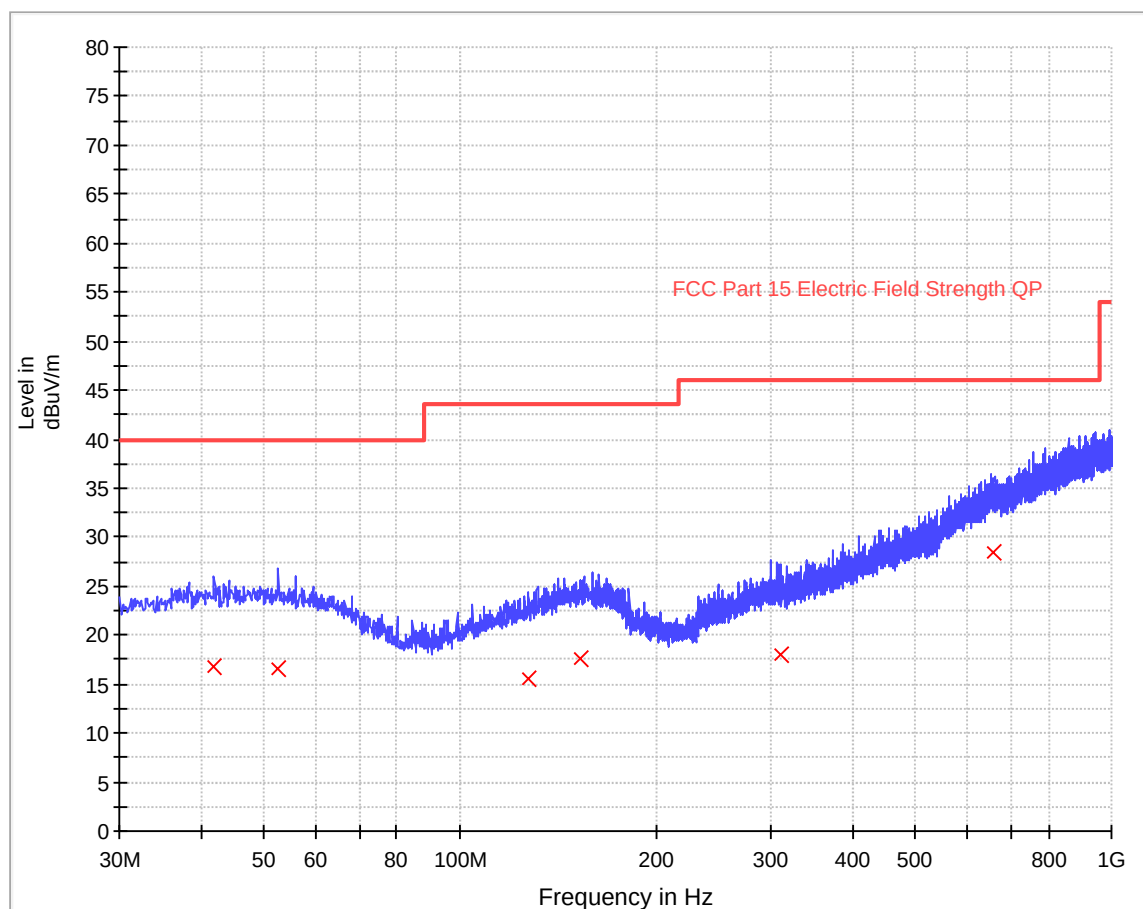
| Frequency<br>(MHz) | QuasiPeak<br>(dBuV/m) | Meas. Time<br>(ms) | Bandwidth<br>(kHz) | Pol | Corr.<br>(dB/m) | Margin<br>- QPK<br>(dB) | Limit -<br>QPK<br>(dBuV/m) | Comment |
|--------------------|-----------------------|--------------------|--------------------|-----|-----------------|-------------------------|----------------------------|---------|
| 40.560000          | 17.0                  | 1000.0             | 120.000            | H   | 20.6            | 23.0                    | 40.0                       |         |
| 53.640000          | 16.5                  | 1000.0             | 120.000            | H   | 20.4            | 23.6                    | 40.0                       |         |
| 115.960000         | 14.7                  | 1000.0             | 120.000            | H   | 18.7            | 28.8                    | 43.5                       |         |
| 115.960000         | 14.7                  | 1000.0             | 120.000            | H   | 18.7            | 28.8                    | 43.5                       |         |
| 149.680000         | 17.4                  | 1000.0             | 120.000            | H   | 21.1            | 26.1                    | 43.5                       |         |
| 292.280000         | 17.6                  | 1000.0             | 120.000            | H   | 21.5            | 28.4                    | 46.0                       |         |
| 447.720000         | 22.0                  | 1000.0             | 120.000            | H   | 25.9            | 24.0                    | 46.0                       |         |

## EMC Test Record (Emission)

### Common Information

|                     |                               |
|---------------------|-------------------------------|
| Manufacturer:       | Knectek Labs Inc.             |
| Test Item:          | CubiTag Card                  |
| Identification:     | CTAG0302                      |
| Test Standard:      | FCC Part 15                   |
| Test Detail:        | Radiated Emission             |
| Operation Mode:     | Transmitting(BLE-Mid)         |
| Climate Condition:  | 20 °C, 50 %, 100 k Pa         |
| Test Voltage/ Freq: | DC 3V                         |
| Result:             | Pass                          |
| Comment:            | Test distance is 3m; Vertical |

|                  |            |
|------------------|------------|
| Subrange 1       |            |
| Frequency range: | 30-1000MHz |
| Receiver:        | ESCI 3     |
| Transducer:      | VULB9168   |



**Limit and Margin QP**

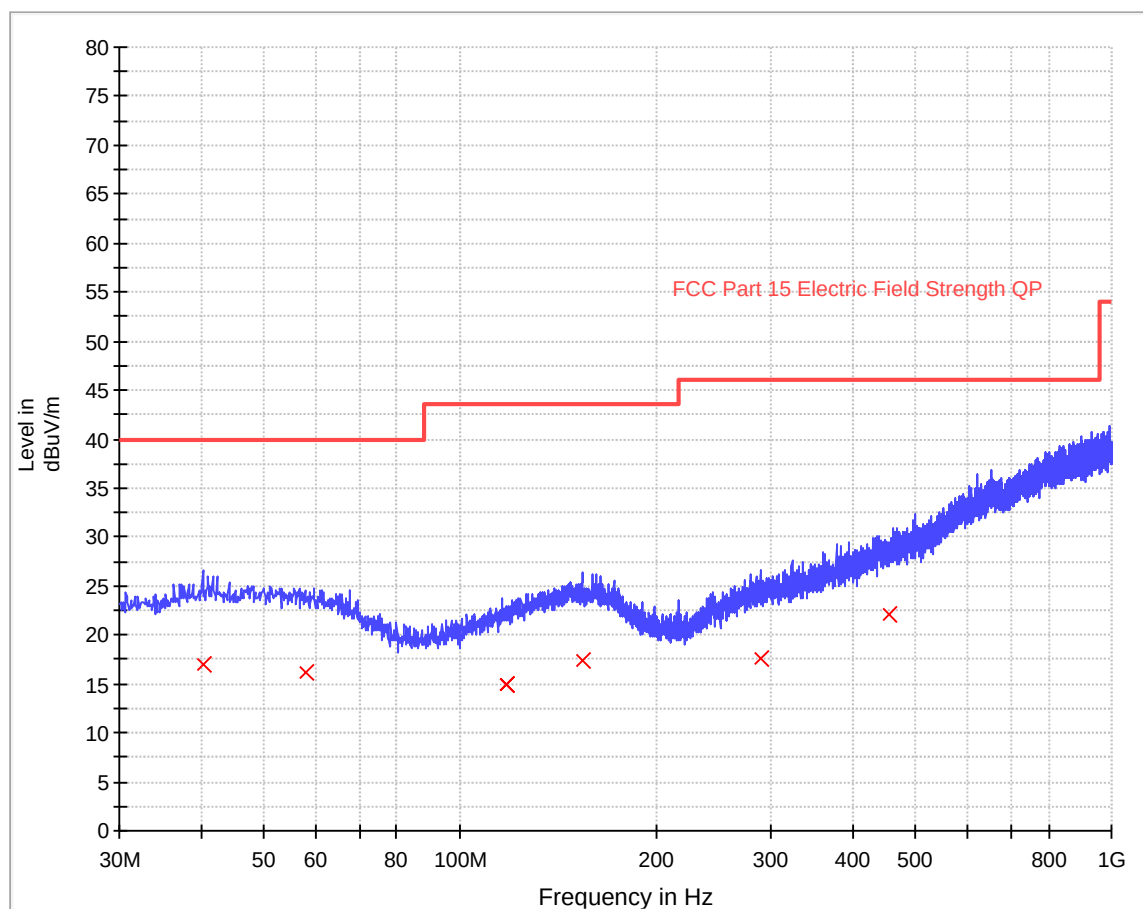
| Frequency<br>(MHz) | QuasiPeak<br>(dBuV/m) | Meas. Time<br>(ms) | Bandwidth<br>(kHz) | Pol | Corr.<br>(dB/m) | Margin<br>- QPK<br>(dB) | Limit -<br>QPK<br>(dBuV/m) | Comment |
|--------------------|-----------------------|--------------------|--------------------|-----|-----------------|-------------------------|----------------------------|---------|
| 41.880000          | 16.7                  | 1000.0             | 120.000            | V   | 20.6            | 23.3                    | 40.0                       |         |
| 52.680000          | 16.6                  | 1000.0             | 120.000            | V   | 20.4            | 23.4                    | 40.0                       |         |
| 127.600000         | 15.6                  | 1000.0             | 120.000            | V   | 19.7            | 27.9                    | 43.5                       |         |
| 153.320000         | 17.5                  | 1000.0             | 120.000            | V   | 21.2            | 26.0                    | 43.5                       |         |
| 311.680000         | 18.0                  | 1000.0             | 120.000            | V   | 21.9            | 28.1                    | 46.0                       |         |
| 656.360000         | 28.4                  | 1000.0             | 120.000            | V   | 31.5            | 17.6                    | 46.0                       |         |

## EMC Test Record (Emission)

### Common Information

|                     |                                 |
|---------------------|---------------------------------|
| Manufacturer:       | Knectek Labs Inc.               |
| Test Item:          | CubiTag Card                    |
| Identification:     | CTAG0302                        |
| Test Standard:      | FCC Part 15                     |
| Test Detail:        | Radiated Emission               |
| Operation Mode:     | Receiver (BLE-Mid)              |
| Climate Condition:  | 20 °C, 50 %, 100 k Pa           |
| Test Voltage/ Freq: | DC 3V                           |
| Result:             | Pass                            |
| Comment:            | Test distance is 3m; Horizontal |

|                  |            |
|------------------|------------|
| Subrange 1       |            |
| Frequency range: | 30-1000MHz |
| Receiver:        | ESCI 3     |
| Transducer:      | VULB9168   |



## Limit and Margin QP

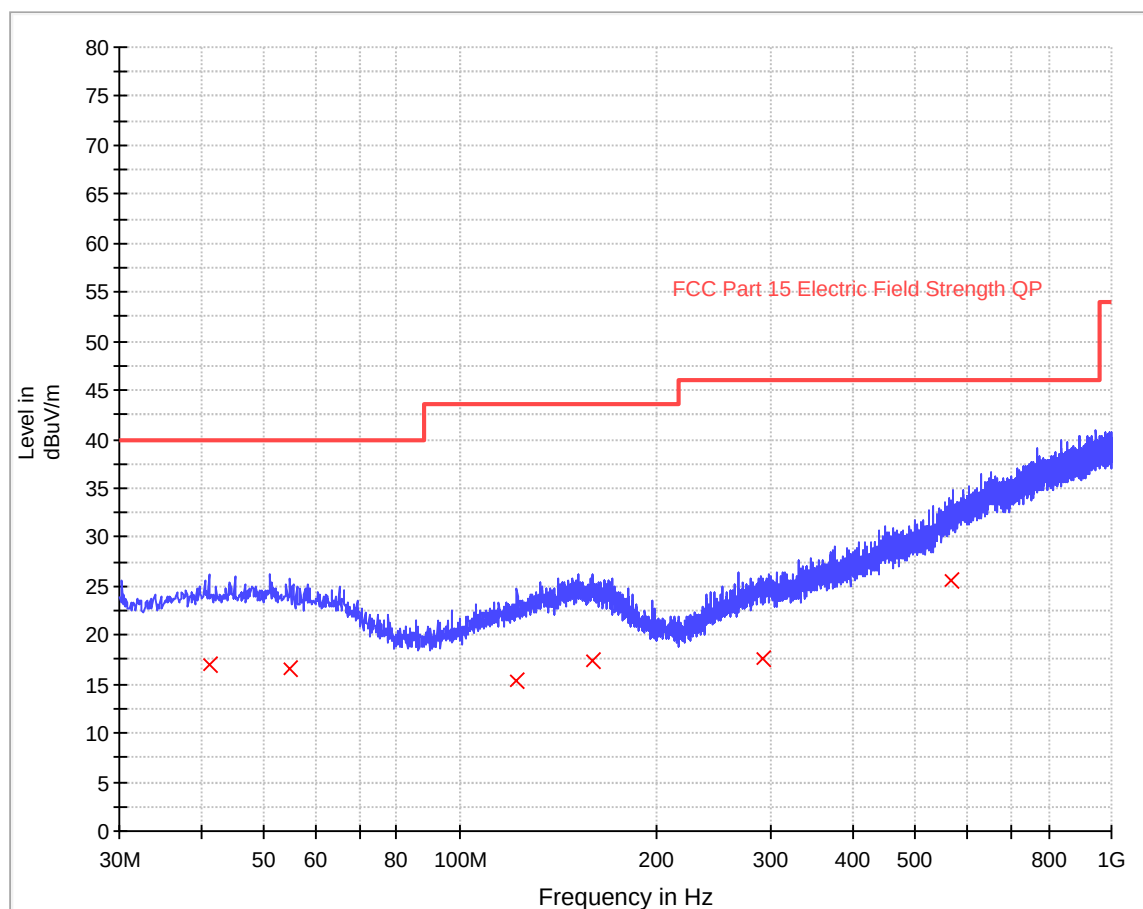
| Frequency<br>(MHz) | QuasiPeak<br>(dBuV/m) | Meas. Time<br>(ms) | Bandwidth<br>(kHz) | Pol | Corr.<br>(dB/m) | Margin<br>- QPK<br>(dB) | Limit -<br>QPK<br>(dBuV/m) | Comment |
|--------------------|-----------------------|--------------------|--------------------|-----|-----------------|-------------------------|----------------------------|---------|
| 40.320000          | 17.0                  | 1000.0             | 120.000            | H   | 20.6            | 23.0                    | 40.0                       |         |
| 57.880000          | 16.3                  | 1000.0             | 120.000            | H   | 20.0            | 23.8                    | 40.0                       |         |
| 117.920000         | 14.9                  | 1000.0             | 120.000            | H   | 18.9            | 28.6                    | 43.5                       |         |
| 117.920000         | 14.9                  | 1000.0             | 120.000            | H   | 18.9            | 28.6                    | 43.5                       |         |
| 153.680000         | 17.5                  | 1000.0             | 120.000            | H   | 21.3            | 26.0                    | 43.5                       |         |
| 288.640000         | 17.5                  | 1000.0             | 120.000            | H   | 21.4            | 28.5                    | 46.0                       |         |
| 454.360000         | 22.1                  | 1000.0             | 120.000            | H   | 26.0            | 23.9                    | 46.0                       |         |

## EMC Test Record (Emission)

### Common Information

|                     |                               |
|---------------------|-------------------------------|
| Manufacturer:       | Knectek Labs Inc.             |
| Test Item:          | CubiTag Card                  |
| Identification:     | CTAG0302                      |
| Test Standard:      | FCC Part 15                   |
| Test Detail:        | Radiated Emission             |
| Operation Mode:     | Receiver (BLE-Mid)            |
| Climate Condition:  | 20 °C, 50 %, 100 k Pa         |
| Test Voltage/ Freq: | DC 3V                         |
| Result:             | Pass                          |
| Comment:            | Test distance is 3m; Vertical |

|                  |            |
|------------------|------------|
| Subrange 1       |            |
| Frequency range: | 30-1000MHz |
| Receiver:        | ESCI 3     |
| Transducer:      | VULB9168   |



**Limit and Margin QP**

| Frequency<br>(MHz) | QuasiPeak<br>(dBuV/m) | Meas. Time<br>(ms) | Bandwidth<br>(kHz) | Pol | Corr.<br>(dB/m) | Margin<br>- QPK<br>(dB) | Limit -<br>QPK<br>(dBuV/m) | Comment |
|--------------------|-----------------------|--------------------|--------------------|-----|-----------------|-------------------------|----------------------------|---------|
| 41.160000          | 16.9                  | 1000.0             | 120.000            | V   | 20.6            | 23.1                    | 40.0                       |         |
| 54.840000          | 16.6                  | 1000.0             | 120.000            | V   | 20.3            | 23.4                    | 40.0                       |         |
| 122.400000         | 15.4                  | 1000.0             | 120.000            | V   | 19.3            | 28.1                    | 43.5                       |         |
| 159.360000         | 17.4                  | 1000.0             | 120.000            | V   | 21.3            | 26.1                    | 43.5                       |         |
| 291.160000         | 17.6                  | 1000.0             | 120.000            | V   | 21.5            | 28.4                    | 46.0                       |         |
| 568.960000         | 25.6                  | 1000.0             | 120.000            | V   | 28.9            | 20.4                    | 46.0                       |         |

1GHz - 18GHz

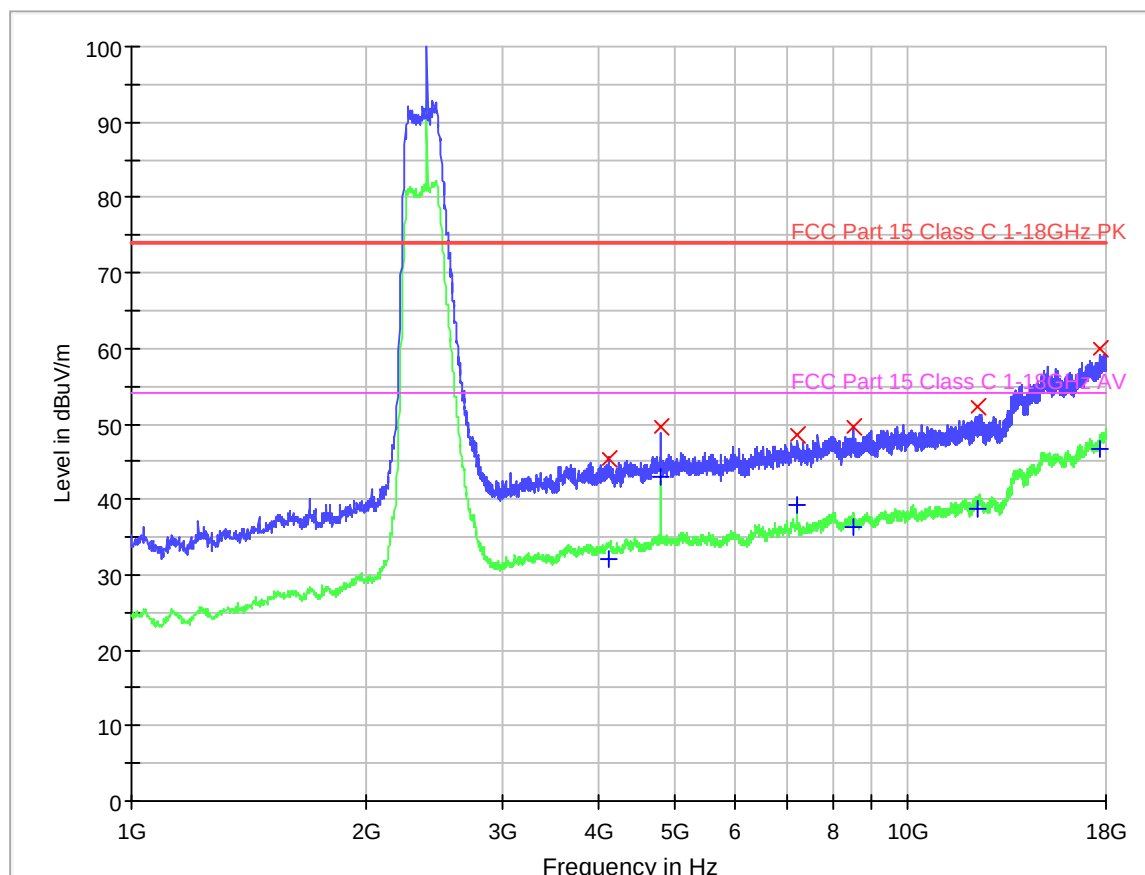
## EMC Test Record (Emission)

### Common Information

|                     |                        |
|---------------------|------------------------|
| Manufacturer:       | Knectek Labs Inc.      |
| Test Item:          | CubiTag Card           |
| Identification:     | CTAG0302               |
| Test Standard:      | FCC Part 15            |
| Test Detail:        | Radiated Emission      |
| Operation Mode:     | Transmitting (BLE-Low) |
| Climate Condition:  | 22 °C, 56 %, 100 kPa   |
| Test Voltage/ Freq: | DC 3.7V                |
| Receipt No:         |                        |
| Report No:          | /                      |
| Result:             | Pass                   |
| Comment:            | Horizontal             |

|                  |                                        |
|------------------|----------------------------------------|
| Subrange 1       |                                        |
| Frequency Range: | 1GHz-18GHz                             |
| Receiver:        | TUV FSP30                              |
| Transducer:      | TUV SAC HF907/ TUV FSP30-TUV SAC HF907 |

EMCTT\_EREFO11-A02-07\_1GHz-18GHz\_With PreAMP EXT& Notch filter



Limit and Margin PK

| Frequency (MHz) | MaxPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - PK+ (dB) | Limit - PK+ (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 4126.000000     | 45.3             | 1000.0          | 1000.000        | H   | -6.2         | 28.7              | 74.0                 |
| 4804.000000     | 49.7             | 1000.0          | 1000.000        | H   | -4.7         | 24.3              | 74.0                 |
| 7205.000000     | 48.7             | 1000.0          | 1000.000        | H   | -1.1         | 25.3              | 74.0                 |
| 8488.000000     | 49.6             | 1000.0          | 1000.000        | H   | 1.9          | 24.4              | 74.0                 |
| 12311.000000    | 52.2             | 1000.0          | 1000.000        | H   | 5.2          | 21.8              | 74.0                 |
| 17677.000000    | 60.0             | 1000.0          | 1000.000        | H   | 11.4         | 14.0              | 74.0                 |

## Limit and Margin AV

| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 4126.000000     | 32.1             | 1000.0          | 1000.000        | H   | -6.2         | 21.9              | 54.0                 |
| 4804.000000     | 42.9             | 1000.0          | 1000.000        | H   | -4.7         | 11.1              | 54.0                 |
| 7205.000000     | 39.3             | 1000.0          | 1000.000        | H   | -1.1         | 14.7              | 54.0                 |
| 8488.000000     | 36.4             | 1000.0          | 1000.000        | H   | 1.9          | 17.7              | 54.0                 |
| 12311.000000    | 38.7             | 1000.0          | 1000.000        | H   | 5.2          | 15.3              | 54.0                 |
| 17677.000000    | 46.8             | 1000.0          | 1000.000        | H   | 11.4         | 7.2               | 54.0                 |

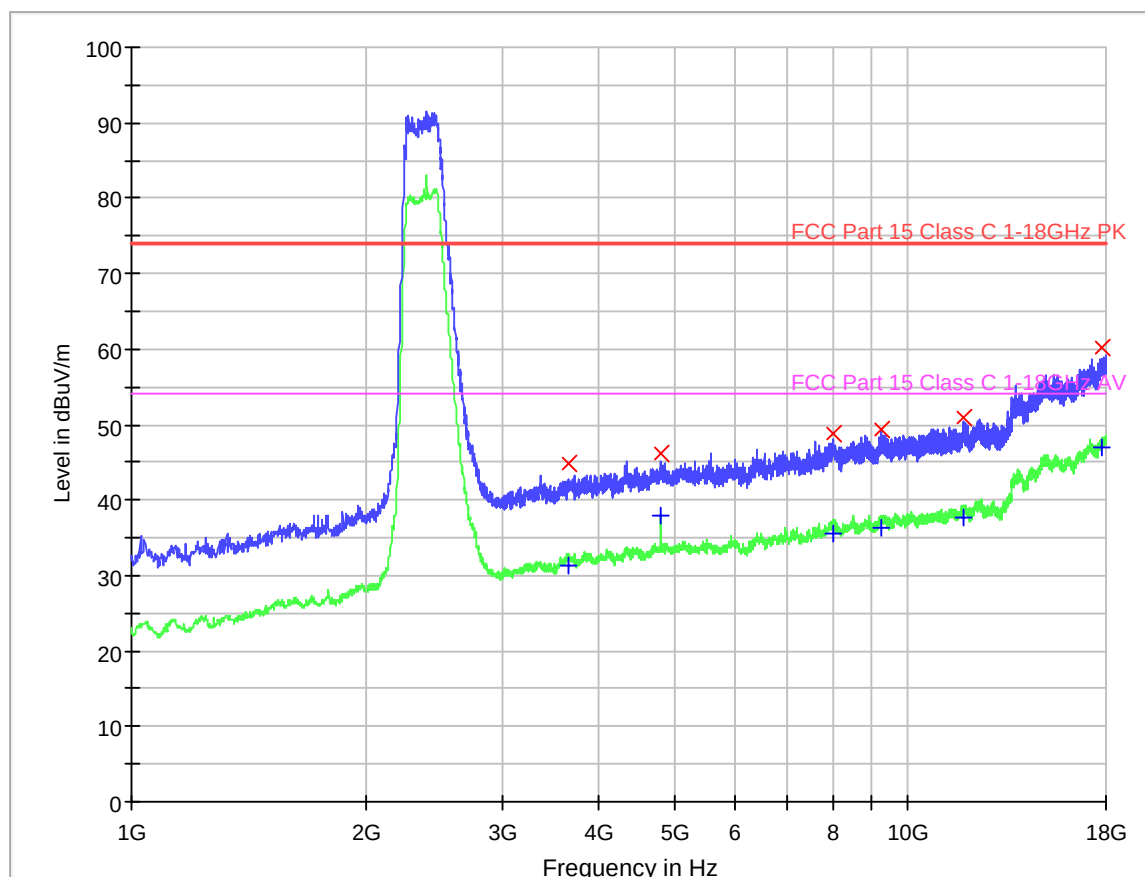
## EMC Test Record (Emission)

### Common Information

|                     |                        |
|---------------------|------------------------|
| Manufacturer:       | Knectek Labs Inc.      |
| Test Item:          | CubiTag Card           |
| Identification:     | CTAG0302               |
| Test Standard:      | FCC Part 15            |
| Test Detail:        | Radiated Emission      |
| Operation Mode:     | Transmitting (BLE-Low) |
| Climate Condition:  | 22 °C, 56 %, 100 kPa   |
| Test Voltage/ Freq: | DC 3.7V                |
| Receipt No:         |                        |
| Report No:          | /                      |
| Result:             | Pass                   |
| Comment:            | Vertical               |

|                  |                                        |
|------------------|----------------------------------------|
| Subrange 1       |                                        |
| Frequency Range: | 1GHz-18GHz                             |
| Receiver:        | TUV FSP30                              |
| Transducer:      | TUV SAC HF907/ TUV FSP30-TUV SAC HF907 |

EMCTT\_EREFO11-A02-07\_1GHz-18GHz\_With PreAMP EXT& Notch filter



Limit and Margin PK

| Frequency (MHz) | MaxPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - PK+ (dB) | Limit - PK+ (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 3654.000000     | 44.7             | 1000.0          | 1000.000        | V   | -7.0         | 29.3              | 74.0                 |
| 4804.000000     | 46.1             | 1000.0          | 1000.000        | V   | -4.7         | 27.9              | 74.0                 |
| 8006.000000     | 48.9             | 1000.0          | 1000.000        | V   | 0.4          | 25.1              | 74.0                 |
| 9247.000000     | 49.4             | 1000.0          | 1000.000        | V   | 2.2          | 24.6              | 74.0                 |
| 11831.000000    | 50.9             | 1000.0          | 1000.000        | V   | 5.0          | 23.2              | 74.0                 |
| 17817.000000    | 60.1             | 1000.0          | 1000.000        | V   | 11.4         | 13.9              | 74.0                 |

### Limit and Margin AV

| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 3654.000000     | 31.3             | 1000.0          | 1000.000        | V   | -7.0         | 22.7              | 54.0                 |
| 4804.000000     | 37.8             | 1000.0          | 1000.000        | V   | -4.7         | 16.2              | 54.0                 |
| 8006.000000     | 35.6             | 1000.0          | 1000.000        | V   | 0.4          | 18.4              | 54.0                 |
| 9247.000000     | 36.3             | 1000.0          | 1000.000        | V   | 2.2          | 17.7              | 54.0                 |
| 11831.000000    | 37.6             | 1000.0          | 1000.000        | V   | 5.0          | 16.5              | 54.0                 |
| 17817.000000    | 46.9             | 1000.0          | 1000.000        | V   | 11.4         | 7.1               | 54.0                 |

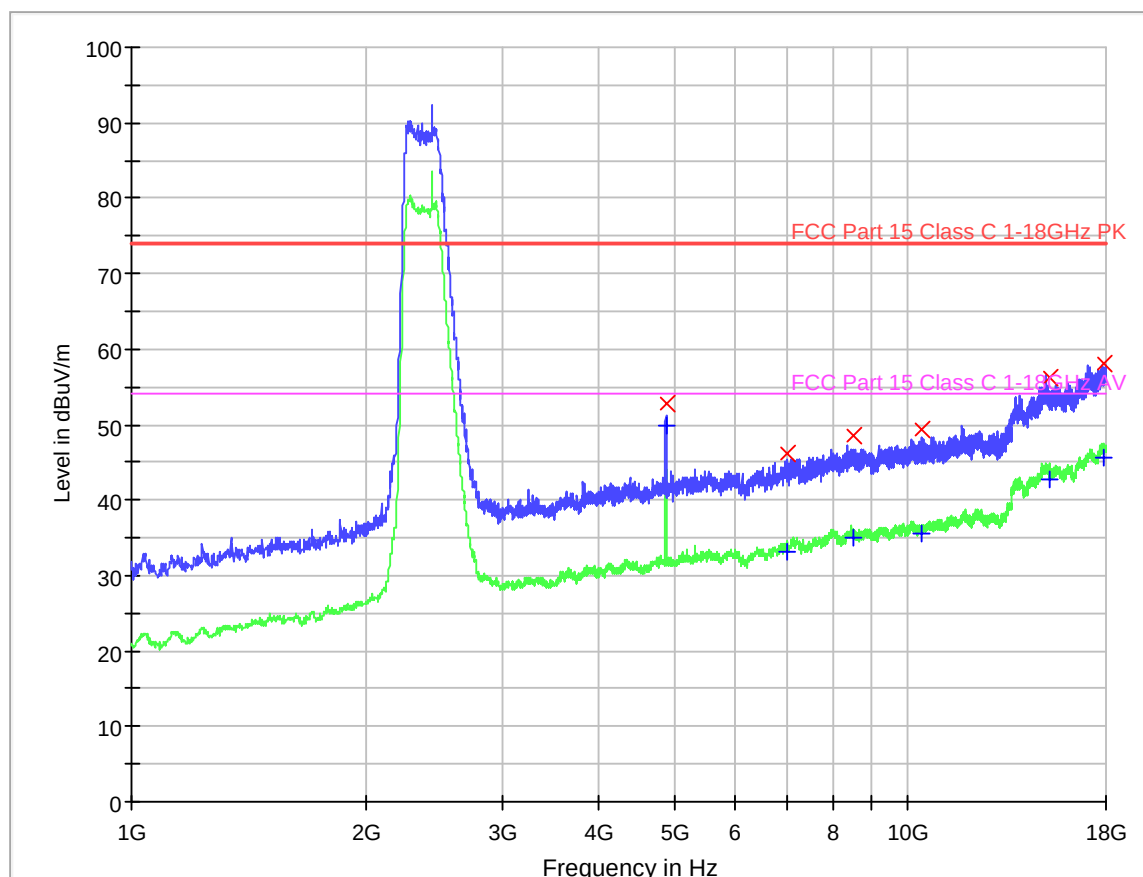
## EMC Test Record (Emission)

### Common Information

|                     |                        |
|---------------------|------------------------|
| Manufacturer:       | Knectek Labs Inc.      |
| Test Item:          | CubiTag Card           |
| Identification:     | CTAG0302               |
| Test Standard:      | FCC Part 15            |
| Test Detail:        | Radiated Emission      |
| Operation Mode:     | Transmitting (BLE-Mid) |
| Climate Condition:  | 22 °C, 56 %, 100 kPa   |
| Test Voltage/ Freq: | DC 3V                  |
| Receipt No:         |                        |
| Report No:          | /                      |
| Result:             | Pass                   |
| Comment:            | Horizontal             |

|                  |                                        |
|------------------|----------------------------------------|
| Subrange 1       |                                        |
| Frequency Range: | 1GHz-18GHz                             |
| Receiver:        | TUV FSP30                              |
| Transducer:      | TUV SAC HF907/ TUV FSP30-TUV SAC HF907 |

EMCTT\_EREFO11-A02-07\_1GHz-18GHz\_With PreAMP EXT& Notch filter



### Limit and Margin PK

| Frequency (MHz) | MaxPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - PK+ (dB) | Limit - PK+ (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 4880.000000     | 52.8             | 1000.0          | 1000.000        | H   | -4.4         | 21.2              | 74.0                 |
| 6978.000000     | 46.2             | 1000.0          | 1000.000        | H   | -1.5         | 27.9              | 74.0                 |
| 8501.000000     | 48.5             | 1000.0          | 1000.000        | H   | 1.8          | 25.5              | 74.0                 |
| 10416.000000    | 49.3             | 1000.0          | 1000.000        | H   | 3.4          | 24.7              | 74.0                 |
| 15216.000000    | 56.3             | 1000.0          | 1000.000        | H   | 7.2          | 17.7              | 74.0                 |
| 17862.000000    | 58.2             | 1000.0          | 1000.000        | H   | 11.3         | 15.8              | 74.0                 |

### Limit and Margin AV

| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 4880.000000     | 49.8             | 1000.0          | 1000.000        | H   | -4.4         | 4.2               | 54.0                 |
| 6978.000000     | 33.1             | 1000.0          | 1000.000        | H   | -1.5         | 20.9              | 54.0                 |
| 8501.000000     | 35.0             | 1000.0          | 1000.000        | H   | 1.8          | 19.1              | 54.0                 |
| 10416.000000    | 35.6             | 1000.0          | 1000.000        | H   | 3.4          | 18.4              | 54.0                 |
| 15216.000000    | 42.8             | 1000.0          | 1000.000        | H   | 7.2          | 11.2              | 54.0                 |
| 17862.000000    | 45.5             | 1000.0          | 1000.000        | H   | 11.3         | 8.5               | 54.0                 |

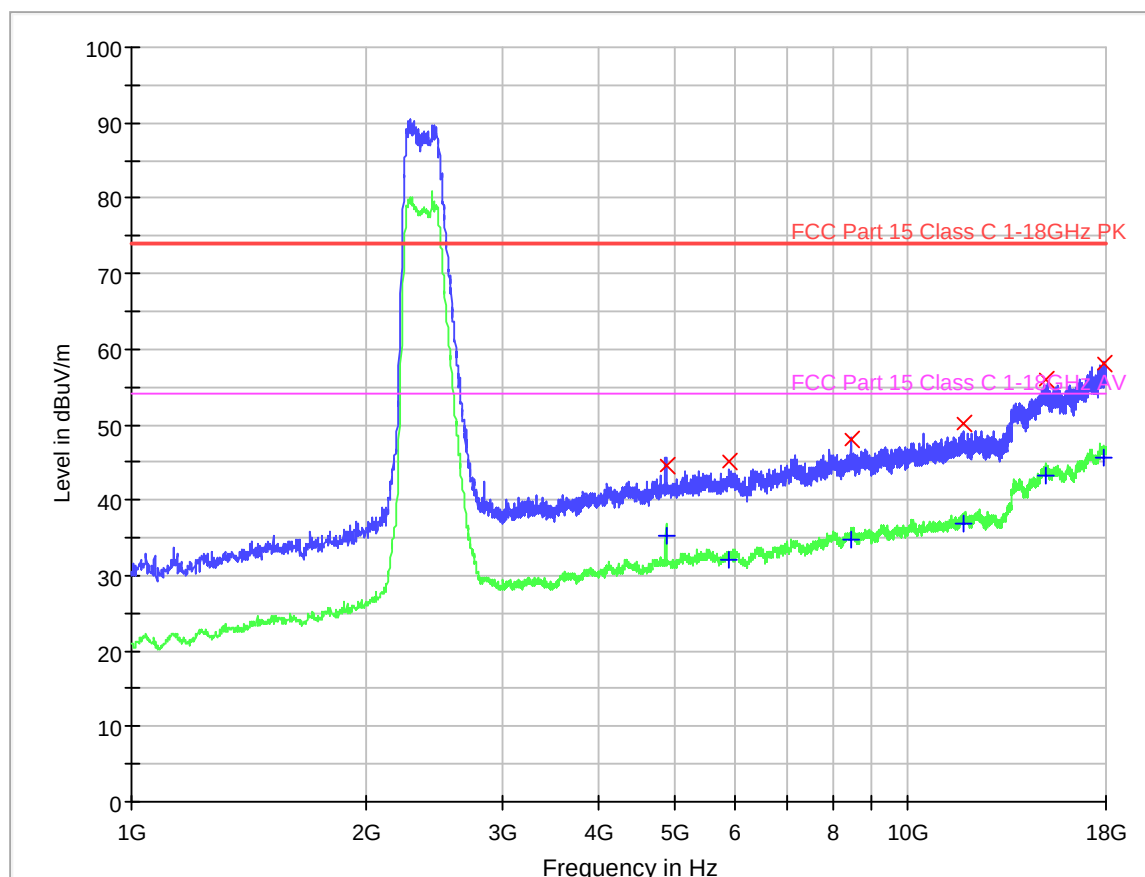
## EMC Test Record (Emission)

### Common Information

|                     |                        |
|---------------------|------------------------|
| Manufacturer:       | Knectek Labs Inc.      |
| Test Item:          | CubiTag Card           |
| Identification:     | CTAG0302               |
| Test Standard:      | FCC Part 15            |
| Test Detail:        | Radiated Emission      |
| Operation Mode:     | Transmitting (BLE-Mid) |
| Climate Condition:  | 22 °C, 56 %, 100 kPa   |
| Test Voltage/ Freq: | DC 3V                  |
| Receipt No:         |                        |
| Report No:          | /                      |
| Result:             | Pass                   |
| Comment:            | Vertical               |

|                  |                                        |
|------------------|----------------------------------------|
| Subrange 1       |                                        |
| Frequency Range: | 1GHz-18GHz                             |
| Receiver:        | TUV FSP30                              |
| Transducer:      | TUV SAC HF907/ TUV FSP30-TUV SAC HF907 |

EMCTT\_EREFO11-A02-07\_1GHz-18GHz\_With PreAMP EXT& Notch filter



## Limit and Margin PK

| Frequency (MHz) | MaxPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - PK+ (dB) | Limit - PK+ (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 4880.000000     | 44.5             | 1000.0          | 1000.000        | V   | -4.4         | 29.5              | 74.0                 |
| 5890.000000     | 45.2             | 1000.0          | 1000.000        | V   | -3.6         | 28.8              | 74.0                 |
| 8457.000000     | 47.9             | 1000.0          | 1000.000        | V   | 1.7          | 26.1              | 74.0                 |
| 11789.000000    | 50.2             | 1000.0          | 1000.000        | V   | 5.2          | 23.8              | 74.0                 |
| 15050.000000    | 56.1             | 1000.0          | 1000.000        | V   | 7.6          | 17.9              | 74.0                 |
| 17906.000000    | 58.1             | 1000.0          | 1000.000        | V   | 11.2         | 15.9              | 74.0                 |

## Limit and Margin AV

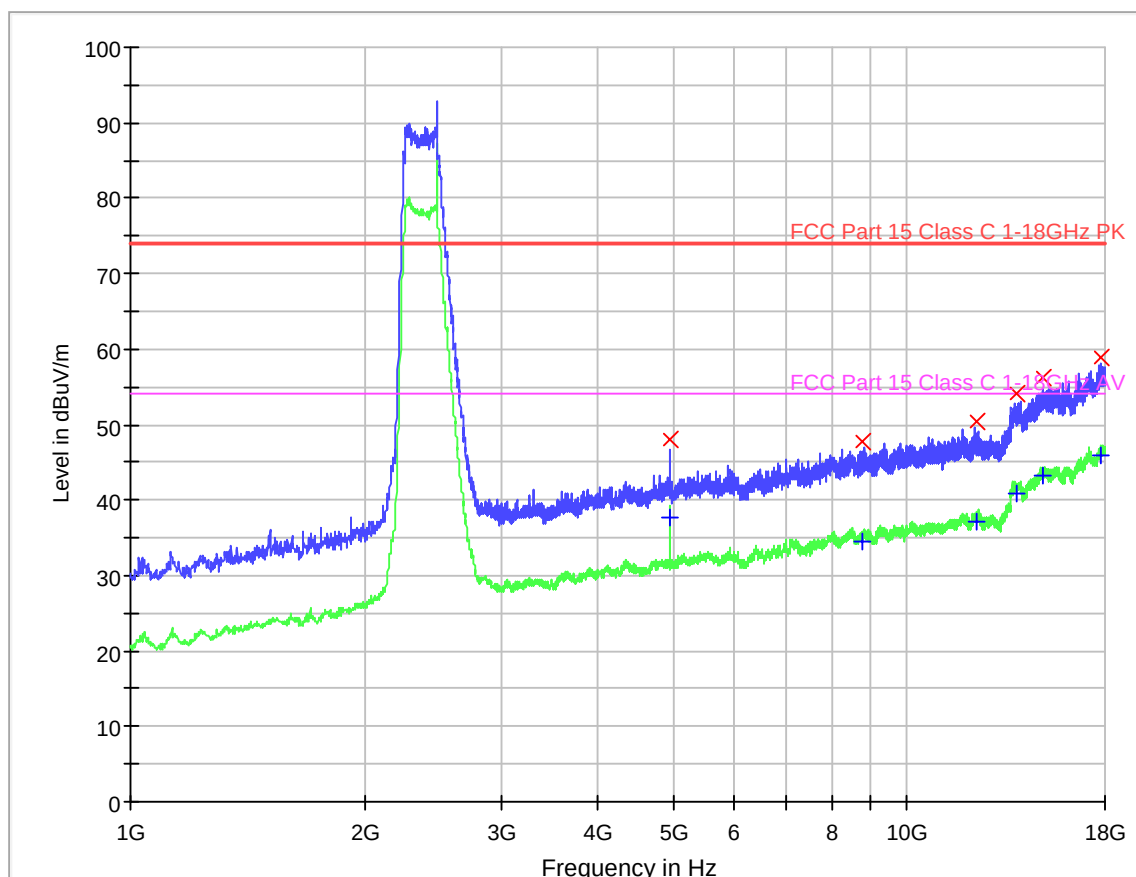
| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 4880.000000     | 35.3             | 1000.0          | 1000.000        | V   | -4.4         | 18.7              | 54.0                 |
| 5890.000000     | 32.0             | 1000.0          | 1000.000        | V   | -3.6         | 22.0              | 54.0                 |
| 8457.000000     | 34.8             | 1000.0          | 1000.000        | V   | 1.7          | 19.2              | 54.0                 |
| 11789.000000    | 36.9             | 1000.0          | 1000.000        | V   | 5.2          | 17.1              | 54.0                 |
| 15050.000000    | 43.2             | 1000.0          | 1000.000        | V   | 7.6          | 10.8              | 54.0                 |
| 17906.000000    | 45.7             | 1000.0          | 1000.000        | V   | 11.2         | 8.4               | 54.0                 |

## EMC Test Record (Emission)

### Common Information

|                     |                                        |
|---------------------|----------------------------------------|
| Manufacturer:       | Knectek Labs Inc.                      |
| Test Item:          | CubiTag Card                           |
| Identification:     | CTAG0302                               |
| Test Standard:      | FCC Part 15                            |
| Test Detail:        | Radiated Emission                      |
| Operation Mode:     | Transmitting (BLE-High)                |
| Climate Condition:  | 22 °C, 56 %, 100 kPa                   |
| Test Voltage/ Freq: | DC 3V                                  |
| Receipt No:         |                                        |
| Report No:          | /                                      |
| Result:             | Pass                                   |
| Comment:            | Horizontal                             |
| Subrange 1          |                                        |
| Frequency Range:    | 1GHz-18GHz                             |
| Receiver:           | TUV FSP30                              |
| Transducer:         | TUV SAC HF907/ TUV FSP30-TUV SAC HF907 |

EMCTT\_EREFO11-A02-07\_1GHz-18GHz\_With PreAMP EXT& Notch filter



### Limit and Margin PK

| Frequency (MHz) | MaxPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - PK+ (dB) | Limit - PK+ (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 4959.000000     | 48.1             | 1000.0          | 1000.000        | H   | -4.7         | 25.9              | 74.0                 |
| 8767.000000     | 47.7             | 1000.0          | 1000.000        | H   | 1.6          | 26.3              | 74.0                 |
| 12296.000000    | 50.5             | 1000.0          | 1000.000        | H   | 5.2          | 23.5              | 74.0                 |
| 13852.000000    | 54.2             | 1000.0          | 1000.000        | H   | 5.3          | 19.8              | 74.0                 |
| 15002.000000    | 56.3             | 1000.0          | 1000.000        | H   | 7.6          | 17.7              | 74.0                 |
| 17819.000000    | 58.8             | 1000.0          | 1000.000        | H   | 11.4         | 15.2              | 74.0                 |

### Limit and Margin AV

| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 4959.000000     | 37.7             | 1000.0          | 1000.000        | H   | -4.7         | 16.3              | 54.0                 |
| 8767.000000     | 34.6             | 1000.0          | 1000.000        | H   | 1.6          | 19.4              | 54.0                 |
| 12296.000000    | 37.2             | 1000.0          | 1000.000        | H   | 5.2          | 16.8              | 54.0                 |
| 13852.000000    | 40.9             | 1000.0          | 1000.000        | H   | 5.3          | 13.1              | 54.0                 |
| 15002.000000    | 43.2             | 1000.0          | 1000.000        | H   | 7.6          | 10.8              | 54.0                 |
| 17819.000000    | 45.8             | 1000.0          | 1000.000        | H   | 11.4         | 8.2               | 54.0                 |

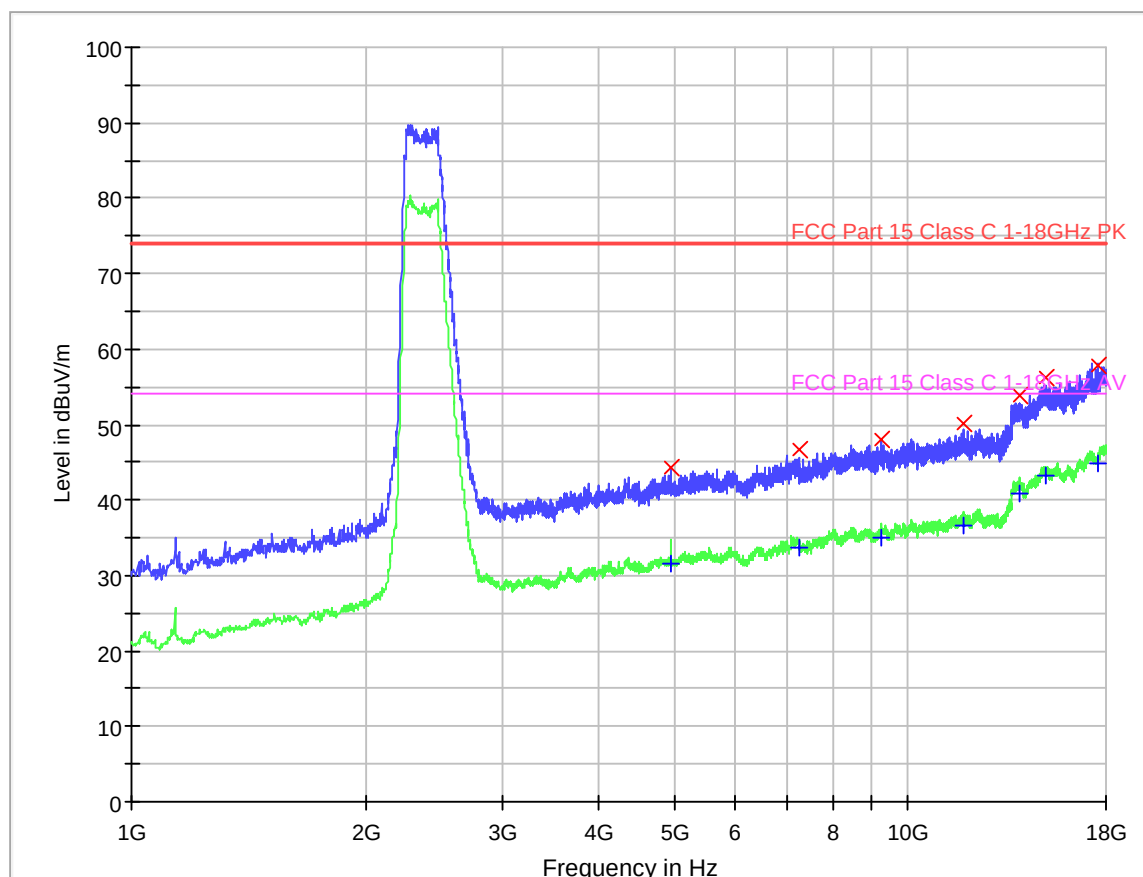
## EMC Test Record (Emission)

### Common Information

|                     |                         |
|---------------------|-------------------------|
| Manufacturer:       | Knectek Labs Inc.       |
| Test Item:          | CubiTag Card            |
| Identification:     | CTAG0302                |
| Test Standard:      | FCC Part 15             |
| Test Detail:        | Radiated Emission       |
| Operation Mode:     | Transmitting (BLE-High) |
| Climate Condition:  | 22 °C, 56 %, 100 kPa    |
| Test Voltage/ Freq: | DC 3V                   |
| Receipt No:         |                         |
| Report No:          | /                       |
| Result:             | Pass                    |
| Comment:            | Vertical                |

|                  |                                        |
|------------------|----------------------------------------|
| Subrange 1       |                                        |
| Frequency Range: | 1GHz-18GHz                             |
| Receiver:        | TUV FSP30                              |
| Transducer:      | TUV SAC HF907/ TUV FSP30-TUV SAC HF907 |

EMCTT\_EREFO11-A02-07\_1GHz-18GHz\_With PreAMP EXT& Notch filter



## Limit and Margin PK

| Frequency (MHz) | MaxPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - PK+ (dB) | Limit - PK+ (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 4959.000000     | 44.2             | 1000.0          | 1000.000        | V   | -4.7         | 29.8              | 74.0                 |
| 7226.000000     | 46.7             | 1000.0          | 1000.000        | V   | -1.1         | 27.4              | 74.0                 |
| 9258.000000     | 48.0             | 1000.0          | 1000.000        | V   | 2.2          | 26.0              | 74.0                 |
| 11801.000000    | 50.0             | 1000.0          | 1000.000        | V   | 5.2          | 24.0              | 74.0                 |
| 13933.000000    | 53.9             | 1000.0          | 1000.000        | V   | 5.8          | 20.1              | 74.0                 |
| 15046.000000    | 56.4             | 1000.0          | 1000.000        | V   | 7.6          | 17.7              | 74.0                 |
| 17577.000000    | 57.9             | 1000.0          | 1000.000        | V   | 11.2         | 16.1              | 74.0                 |

## Limit and Margin AV

| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 4959.000000     | 31.5             | 1000.0          | 1000.000        | V   | -4.7         | 22.5              | 54.0                 |
| 7226.000000     | 33.6             | 1000.0          | 1000.000        | V   | -1.1         | 20.4              | 54.0                 |
| 9258.000000     | 35.1             | 1000.0          | 1000.000        | V   | 2.2          | 18.9              | 54.0                 |
| 11801.000000    | 36.7             | 1000.0          | 1000.000        | V   | 5.2          | 17.3              | 54.0                 |
| 13933.000000    | 41.0             | 1000.0          | 1000.000        | V   | 5.8          | 13.0              | 54.0                 |
| 15046.000000    | 43.1             | 1000.0          | 1000.000        | V   | 7.6          | 10.9              | 54.0                 |
| 17577.000000    | 44.8             | 1000.0          | 1000.000        | V   | 11.2         | 9.2               | 54.0                 |

18GHz - 26GHz

## EMC Test Record (Emission)

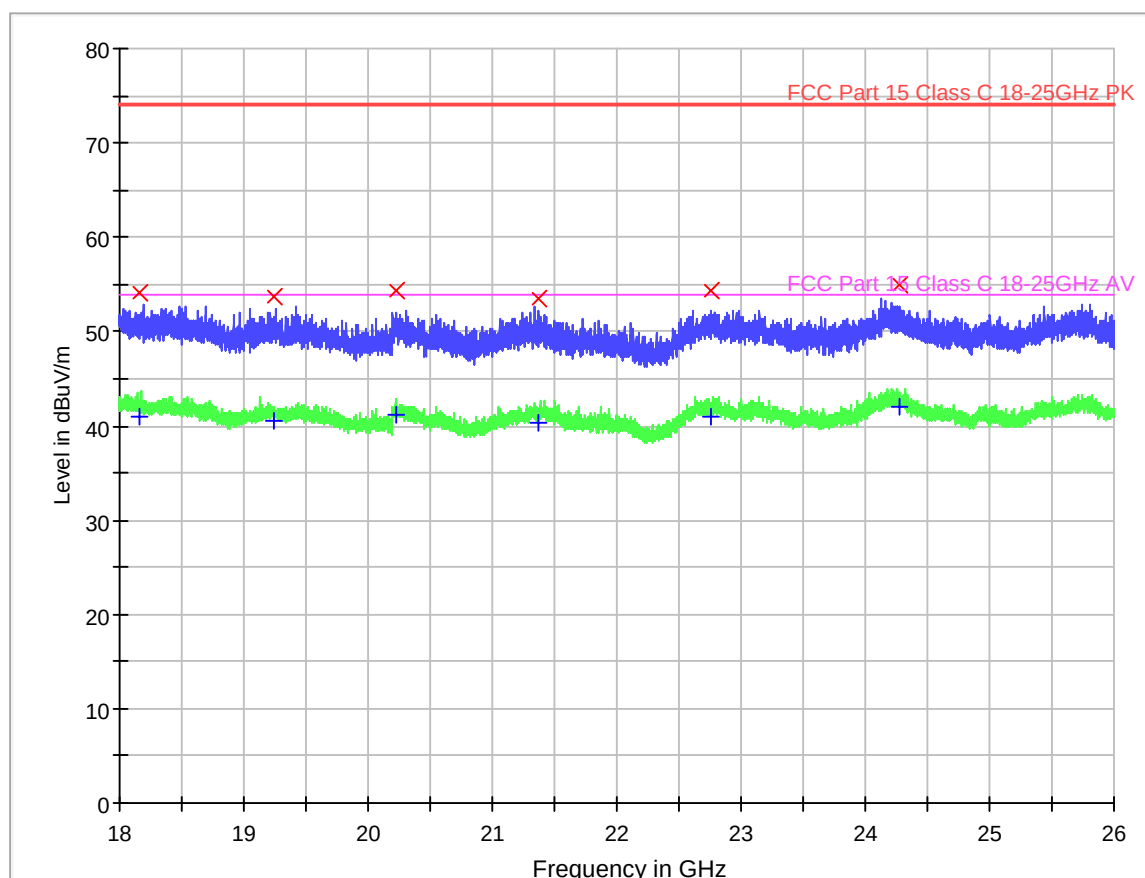
### Common Information

|                     |                                 |
|---------------------|---------------------------------|
| Manufacturer:       | Knectek Labs Inc.               |
| Test Item:          | CubiTag Card                    |
| Identification:     | CTAG0302                        |
| Test Standard:      | FCC Part 15                     |
| Test Detail:        | Radiated Emission               |
| Operation Mode:     | Transmitting(BLE-Low)           |
| Climate Condition:  | 20 °C, 50 %, 100 k Pa           |
| Test Voltage/ Freq: | DC 3V                           |
| Result:             | Pass                            |
| Comment:            | Test distance is 3m; Horizontal |

|                  |                                        |
|------------------|----------------------------------------|
| Subrange 1       |                                        |
| Frequency Range: | 18GHz-26GHz                            |
| Receiver:        | TUV FSP30                              |
| Transducer:      | TUV SAC HF907/ TUV FSP30-TUV SAC HF907 |

EMCTT\_EREFO11-A02-08\_18GHz-25GHz\_With PreAMP EXT



## Limit and Margin PK

| Frequency (MHz) | MaxPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - PK+ (dB) | Limit - PK+ (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 18163.000000    | 54.1             | 1000.0          | 1000.000        | H   | 8.0          | 20.0              | 74.0                 |
| 19238.000000    | 53.6             | 1000.0          | 1000.000        | H   | 7.9          | 20.4              | 74.0                 |
| 20225.000000    | 54.2             | 1000.0          | 1000.000        | H   | 7.7          | 19.8              | 74.0                 |
| 21373.000000    | 53.6             | 1000.0          | 1000.000        | H   | 7.2          | 20.4              | 74.0                 |
| 22762.000000    | 54.3             | 1000.0          | 1000.000        | H   | 7.4          | 19.7              | 74.0                 |
| 24267.000000    | 54.9             | 1000.0          | 1000.000        | H   | 7.7          | 19.1              | 74.0                 |

## Limit and Margin AV

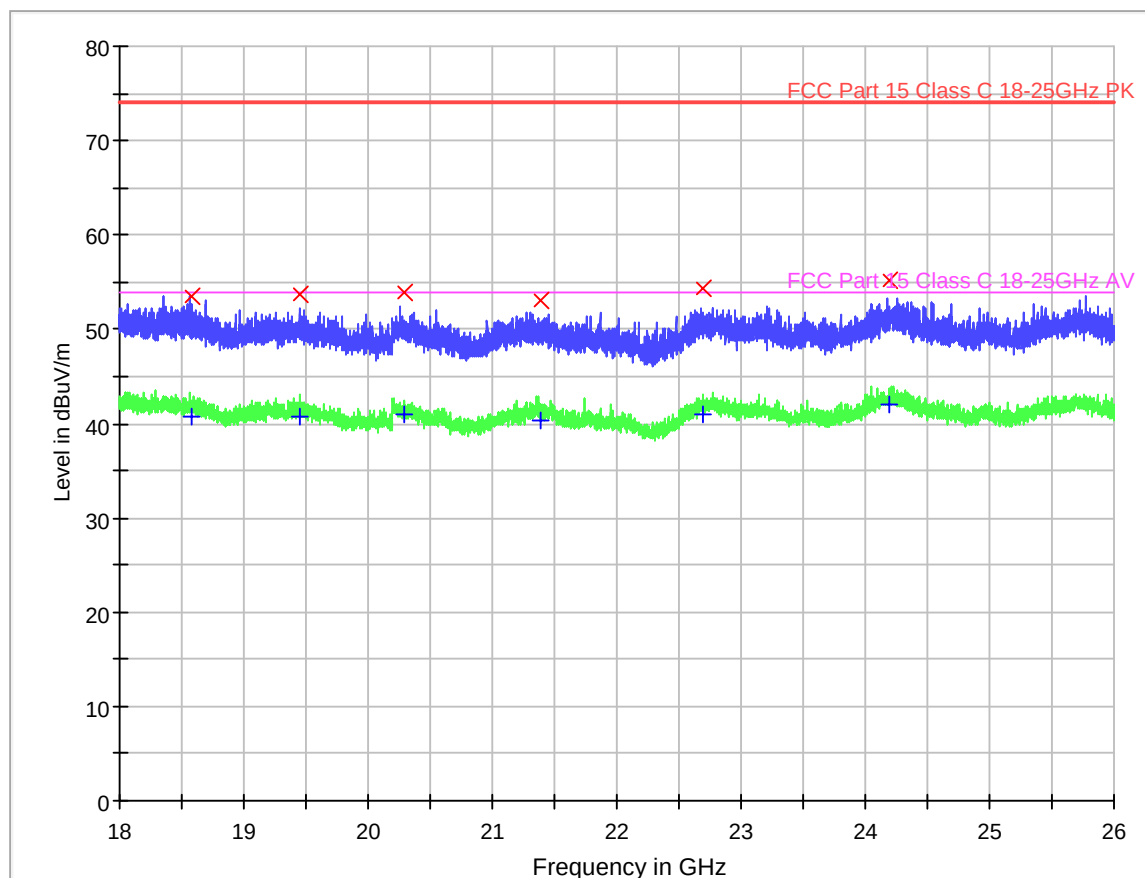
| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 18163.000000    | 41.0             | 1000.0          | 1000.000        | H   | 8.0          | 13.0              | 54.0                 |
| 19238.000000    | 40.6             | 1000.0          | 1000.000        | H   | 7.9          | 13.4              | 54.0                 |
| 20225.000000    | 41.1             | 1000.0          | 1000.000        | H   | 7.7          | 12.9              | 54.0                 |
| 21373.000000    | 40.4             | 1000.0          | 1000.000        | H   | 7.2          | 13.6              | 54.0                 |
| 22762.000000    | 40.9             | 1000.0          | 1000.000        | H   | 7.4          | 13.1              | 54.0                 |
| 24267.000000    | 42.0             | 1000.0          | 1000.000        | H   | 7.7          | 12.1              | 54.0                 |

## EMC Test Record (Emission)

### Common Information

|                     |                                        |
|---------------------|----------------------------------------|
| Manufacturer:       | Knectek Labs Inc.                      |
| Test Item:          | CubiTag Card                           |
| Identification:     | CTAG0302                               |
| Test Standard:      | FCC Part 15                            |
| Test Detail:        | Radiated Emission                      |
| Operation Mode:     | Transmitting(BLE-Low)                  |
| Climate Condition:  | 20 °C, 50 %, 100 k Pa                  |
| Test Voltage/ Freq: | DC 3V                                  |
| Result:             | Pass                                   |
| Comment:            | Test distance is 3m; Vertical          |
| Subrange 1          |                                        |
| Frequency Range:    | 18GHz-26GHz                            |
| Receiver:           | TUV FSP30                              |
| Transducer:         | TUV SAC HF907/ TUV FSP30-TUV SAC HF907 |

EMCTT\_EREFO11-A02-08\_18GHz-25GHz\_With PreAMP EXT



## Limit and Margin PK

| Frequency (MHz) | MaxPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - PK+ (dB) | Limit - PK+ (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 18583.000000    | 53.4             | 1000.0          | 1000.000        | V   | 8.1          | 20.6              | 74.0                 |
| 19450.000000    | 53.6             | 1000.0          | 1000.000        | V   | 7.9          | 20.4              | 74.0                 |
| 20289.000000    | 54.0             | 1000.0          | 1000.000        | V   | 7.6          | 20.0              | 74.0                 |
| 21383.000000    | 53.0             | 1000.0          | 1000.000        | V   | 7.2          | 21.0              | 74.0                 |
| 22688.000000    | 54.3             | 1000.0          | 1000.000        | V   | 7.4          | 19.7              | 74.0                 |
| 24192.000000    | 55.2             | 1000.0          | 1000.000        | V   | 7.7          | 18.8              | 74.0                 |

## Limit and Margin AV

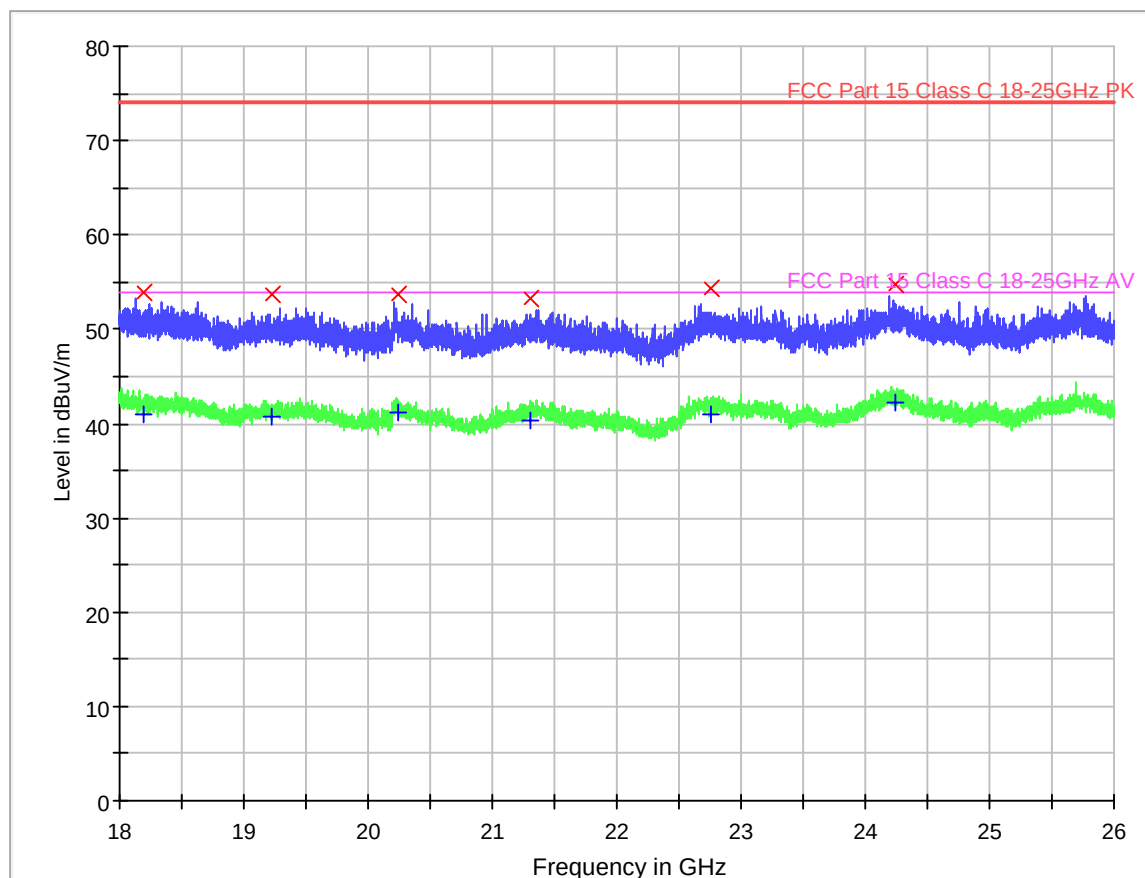
| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 18583.000000    | 40.7             | 1000.0          | 1000.000        | V   | 8.1          | 13.3              | 54.0                 |
| 19450.000000    | 40.7             | 1000.0          | 1000.000        | V   | 7.9          | 13.3              | 54.0                 |
| 20289.000000    | 40.9             | 1000.0          | 1000.000        | V   | 7.6          | 13.1              | 54.0                 |
| 21383.000000    | 40.3             | 1000.0          | 1000.000        | V   | 7.2          | 13.7              | 54.0                 |
| 22688.000000    | 41.1             | 1000.0          | 1000.000        | V   | 7.4          | 12.9              | 54.0                 |
| 24192.000000    | 42.0             | 1000.0          | 1000.000        | V   | 7.7          | 12.0              | 54.0                 |

## EMC Test Record (Emission)

### Common Information

|                     |                                        |
|---------------------|----------------------------------------|
| Manufacturer:       | Knectek Labs Inc.                      |
| Test Item:          | CubiTag Card                           |
| Identification:     | CTAG0302                               |
| Test Standard:      | FCC Part 15                            |
| Test Detail:        | Radiated Emission                      |
| Operation Mode:     | Transmitting(BLE-Mid)                  |
| Climate Condition:  | 20 °C, 50 %, 100 k Pa                  |
| Test Voltage/ Freq: | DC 3V                                  |
| Result:             | Pass                                   |
| Comment:            | Test distance is 3m; Horizontal        |
| Subrange 1          |                                        |
| Frequency Range:    | 18GHz-26GHz                            |
| Receiver:           | TUV FSP30                              |
| Transducer:         | TUV SAC HF907/ TUV FSP30-TUV SAC HF907 |

EMCTT\_EREFO11-A02-08\_18GHz-25GHz\_With PreAMP EXT



### Limit and Margin PK

| Frequency (MHz) | MaxPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - PK+ (dB) | Limit - PK+ (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 18201.000000    | 53.9             | 1000.0          | 1000.000        | H   | 8.0          | 20.2              | 74.0                 |
| 19221.000000    | 53.7             | 1000.0          | 1000.000        | H   | 7.9          | 20.3              | 74.0                 |
| 20235.000000    | 53.7             | 1000.0          | 1000.000        | H   | 7.7          | 20.3              | 74.0                 |
| 21314.000000    | 53.3             | 1000.0          | 1000.000        | H   | 7.2          | 20.7              | 74.0                 |
| 22757.000000    | 54.3             | 1000.0          | 1000.000        | H   | 7.4          | 19.7              | 74.0                 |
| 24247.000000    | 54.8             | 1000.0          | 1000.000        | H   | 7.7          | 19.2              | 74.0                 |

### Limit and Margin AV

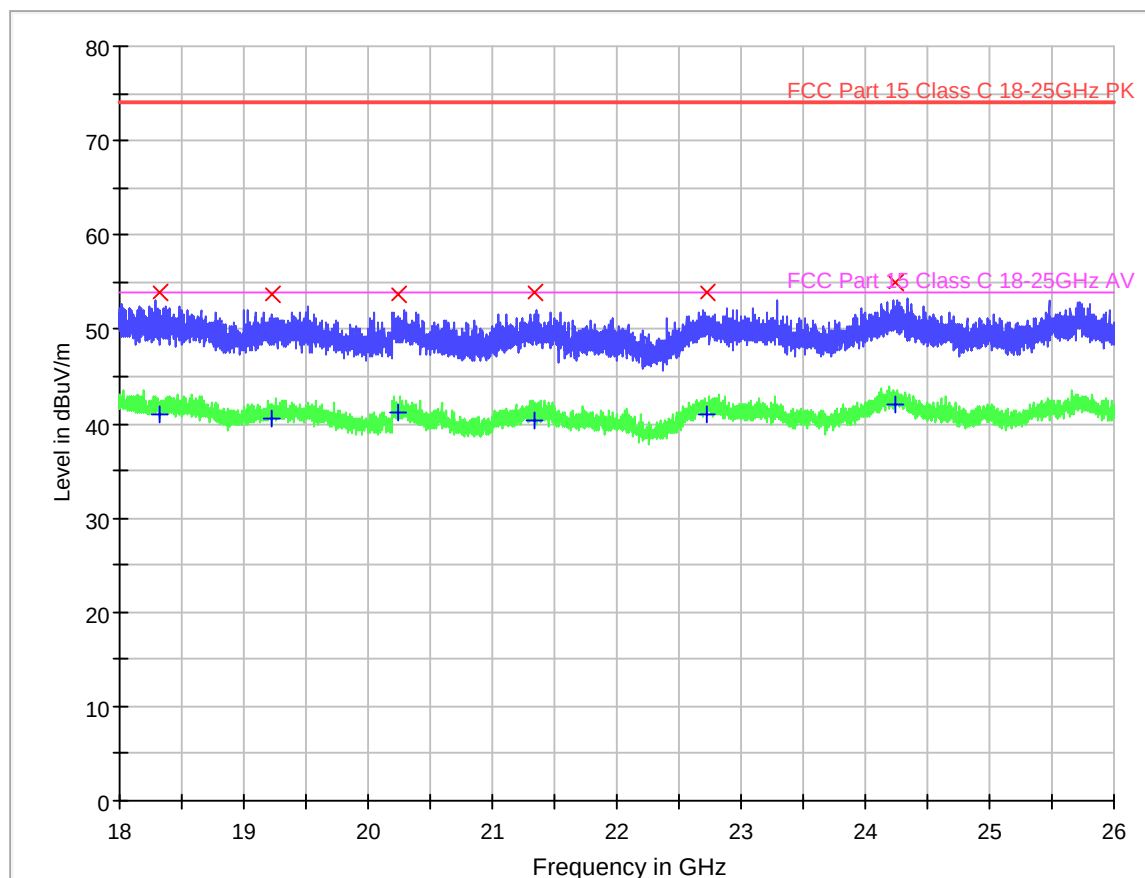
| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 18201.000000    | 40.9             | 1000.0          | 1000.000        | H   | 8.0          | 13.1              | 54.0                 |
| 19221.000000    | 40.7             | 1000.0          | 1000.000        | H   | 7.9          | 13.3              | 54.0                 |
| 20235.000000    | 41.1             | 1000.0          | 1000.000        | H   | 7.7          | 12.9              | 54.0                 |
| 21314.000000    | 40.4             | 1000.0          | 1000.000        | H   | 7.2          | 13.6              | 54.0                 |
| 22757.000000    | 40.9             | 1000.0          | 1000.000        | H   | 7.4          | 13.1              | 54.0                 |
| 24247.000000    | 42.1             | 1000.0          | 1000.000        | H   | 7.7          | 11.9              | 54.0                 |

## EMC Test Record (Emission)

### Common Information

|                     |                                        |
|---------------------|----------------------------------------|
| Manufacturer:       | Knectek Labs Inc.                      |
| Test Item:          | CubiTag Card                           |
| Identification:     | CTAG0302                               |
| Test Standard:      | FCC Part 15                            |
| Test Detail:        | Radiated Emission                      |
| Operation Mode:     | Transmitting(BLE-Mid)                  |
| Climate Condition:  | 20 °C, 50 %, 100 k Pa                  |
| Test Voltage/ Freq: | DC 3V                                  |
| Result:             | Pass                                   |
| Comment:            | Test distance is 3m; Vertical          |
| Subrange 1          |                                        |
| Frequency Range:    | 18GHz-26GHz                            |
| Receiver:           | TUV FSP30                              |
| Transducer:         | TUV SAC HF907/ TUV FSP30-TUV SAC HF907 |

EMCTT\_EREFO11-A02-08\_18GHz-25GHz\_With PreAMP EXT



## Limit and Margin PK

| Frequency (MHz) | MaxPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - PK+ (dB) | Limit - PK+ (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 18326.000000    | 54.0             | 1000.0          | 1000.000        | V   | 8.0          | 20.0              | 74.0                 |
| 19232.000000    | 53.8             | 1000.0          | 1000.000        | V   | 7.9          | 20.3              | 74.0                 |
| 20243.000000    | 53.7             | 1000.0          | 1000.000        | V   | 7.6          | 20.3              | 74.0                 |
| 21339.000000    | 54.0             | 1000.0          | 1000.000        | V   | 7.2          | 20.0              | 74.0                 |
| 22719.000000    | 53.9             | 1000.0          | 1000.000        | V   | 7.4          | 20.1              | 74.0                 |
| 24245.000000    | 54.9             | 1000.0          | 1000.000        | V   | 7.7          | 19.1              | 74.0                 |

## Limit and Margin AV

| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 18326.000000    | 40.9             | 1000.0          | 1000.000        | V   | 8.0          | 13.1              | 54.0                 |
| 19232.000000    | 40.6             | 1000.0          | 1000.000        | V   | 7.9          | 13.4              | 54.0                 |
| 20243.000000    | 41.1             | 1000.0          | 1000.000        | V   | 7.6          | 12.9              | 54.0                 |
| 21339.000000    | 40.4             | 1000.0          | 1000.000        | V   | 7.2          | 13.6              | 54.0                 |
| 22719.000000    | 40.9             | 1000.0          | 1000.000        | V   | 7.4          | 13.1              | 54.0                 |
| 24245.000000    | 42.1             | 1000.0          | 1000.000        | V   | 7.7          | 11.9              | 54.0                 |

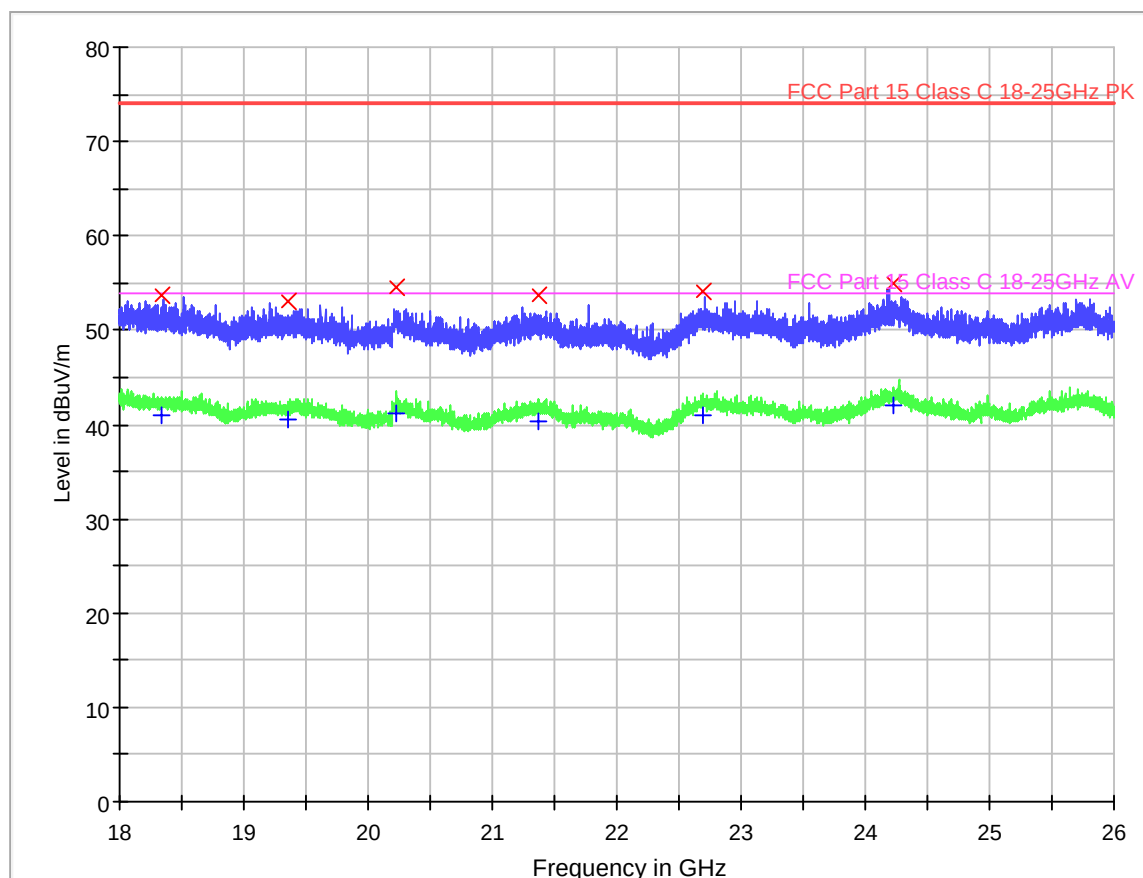
## EMC Test Record (Emission)

### Common Information

Manufacturer: Knectek Labs Inc.  
Test Item: CubiTag Card  
Identification: CTAG0302  
Test Standard: FCC Part 15  
Test Detail: Radiated Emission  
Operation Mode: Transmitting(BLE-High)  
Climate Condition: 20 °C, 50 %, 100 k Pa  
Test Voltage/ Freq: DC 3V  
Result: Pass  
Comment: Test distance is 3m; Horizontal

Subrange 1  
Frequency Range: 18GHz-26GHz  
Receiver: TUV FSP30  
Transducer: TUV SAC HF907/ TUV FSP30-

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## Limit and Margin PK

| Frequency (MHz) | MaxPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - PK+ (dB) | Limit - PK+ (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 18338.000000    | 53.6             | 1000.0          | 1000.000        | H   | 8.1          | 20.4              | 74.0                 |
| 19362.000000    | 53.0             | 1000.0          | 1000.000        | H   | 7.9          | 21.0              | 74.0                 |
| 20222.000000    | 54.6             | 1000.0          | 1000.000        | H   | 7.7          | 19.5              | 74.0                 |
| 21370.000000    | 53.6             | 1000.0          | 1000.000        | H   | 7.2          | 20.4              | 74.0                 |
| 22692.000000    | 54.1             | 1000.0          | 1000.000        | H   | 7.4          | 19.9              | 74.0                 |
| 24230.000000    | 55.0             | 1000.0          | 1000.000        | H   | 7.7          | 19.0              | 74.0                 |

## Limit and Margin AV

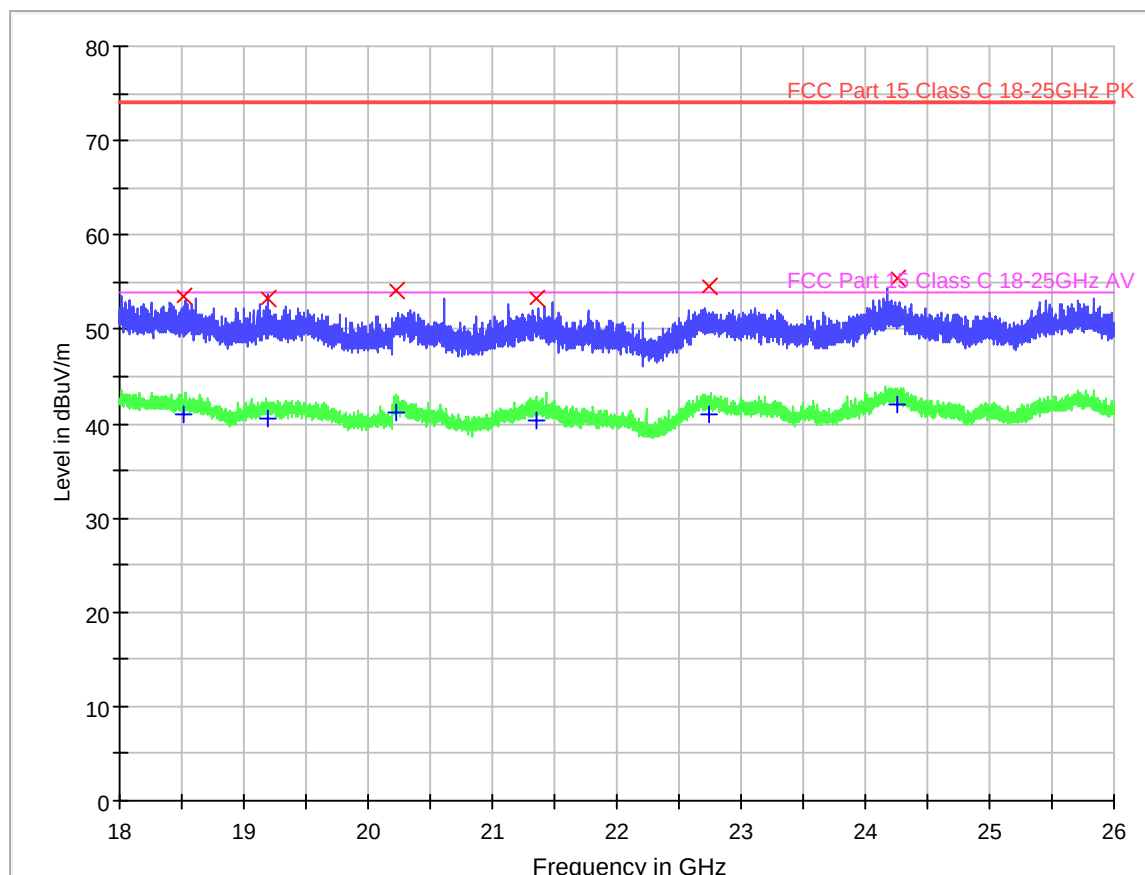
| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 18338.000000    | 41.0             | 1000.0          | 1000.000        | H   | 8.1          | 13.0              | 54.0                 |
| 19362.000000    | 40.5             | 1000.0          | 1000.000        | H   | 7.9          | 13.5              | 54.0                 |
| 20222.000000    | 41.1             | 1000.0          | 1000.000        | H   | 7.7          | 12.9              | 54.0                 |
| 21370.000000    | 40.4             | 1000.0          | 1000.000        | H   | 7.2          | 13.7              | 54.0                 |
| 22692.000000    | 41.0             | 1000.0          | 1000.000        | H   | 7.4          | 13.0              | 54.0                 |
| 24230.000000    | 42.0             | 1000.0          | 1000.000        | H   | 7.7          | 12.0              | 54.0                 |

## EMC Test Record (Emission)

### Common Information

|                     |                                        |
|---------------------|----------------------------------------|
| Manufacturer:       | Knectek Labs Inc.                      |
| Test Item:          | CubiTag Card                           |
| Identification:     | CTAG0302                               |
| Test Standard:      | FCC Part 15                            |
| Test Detail:        | Radiated Emission                      |
| Operation Mode:     | Transmitting(BLE-High)                 |
| Climate Condition:  | 20 °C, 50 %, 100 k Pa                  |
| Test Voltage/ Freq: | DC 3V                                  |
| Result:             | Pass                                   |
| Comment:            | Test distance is 3m; Vertical          |
| Subrange 1          |                                        |
| Frequency Range:    | 18GHz-26GHz                            |
| Receiver:           | TUV FSP30                              |
| Transducer:         | TUV SAC HF907/ TUV FSP30-TUV SAC HF907 |

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Limit and Margin PK

**Produkte**  
*Products*

| Frequency<br>(MHz) | MaxPeak<br>(dBuV/m) | Meas. Time<br>(ms) | Bandwidth<br>(kHz) | Pol | Corr.<br>(dB/m) | Margin<br>- PK+<br>(dB) | Limit -<br>PK+<br>(dBuV/m) |
|--------------------|---------------------|--------------------|--------------------|-----|-----------------|-------------------------|----------------------------|
| 18522.000000       | 53.5                | 1000.0             | 1000.000           | V   | 8.1             | 20.5                    | 74.0                       |
| 19192.000000       | 53.3                | 1000.0             | 1000.000           | V   | 7.9             | 20.7                    | 74.0                       |
| 20227.000000       | 54.1                | 1000.0             | 1000.000           | V   | 7.7             | 19.9                    | 74.0                       |
| 21352.000000       | 53.2                | 1000.0             | 1000.000           | V   | 7.2             | 20.8                    | 74.0                       |
| 22739.000000       | 54.6                | 1000.0             | 1000.000           | V   | 7.4             | 19.4                    | 74.0                       |
| 24260.000000       | 55.4                | 1000.0             | 1000.000           | V   | 7.7             | 18.7                    | 74.0                       |

### Limit and Margin AV

| Frequency<br>(MHz) | Average<br>(dBuV/m) | Meas. Time<br>(ms) | Bandwidth<br>(kHz) | Pol | Corr.<br>(dB/m) | Margin<br>- AVG<br>(dB) | Limit -<br>AVG<br>(dBuV/m) |
|--------------------|---------------------|--------------------|--------------------|-----|-----------------|-------------------------|----------------------------|
| 18522.000000       | 40.9                | 1000.0             | 1000.000           | V   | 8.1             | 13.2                    | 54.0                       |
| 19192.000000       | 40.6                | 1000.0             | 1000.000           | V   | 7.9             | 13.4                    | 54.0                       |
| 20227.000000       | 41.1                | 1000.0             | 1000.000           | V   | 7.7             | 12.9                    | 54.0                       |
| 21352.000000       | 40.4                | 1000.0             | 1000.000           | V   | 7.2             | 13.6                    | 54.0                       |
| 22739.000000       | 40.9                | 1000.0             | 1000.000           | V   | 7.4             | 13.1                    | 54.0                       |
| 24260.000000       | 41.9                | 1000.0             | 1000.000           | V   | 7.7             | 12.1                    | 54.0                       |

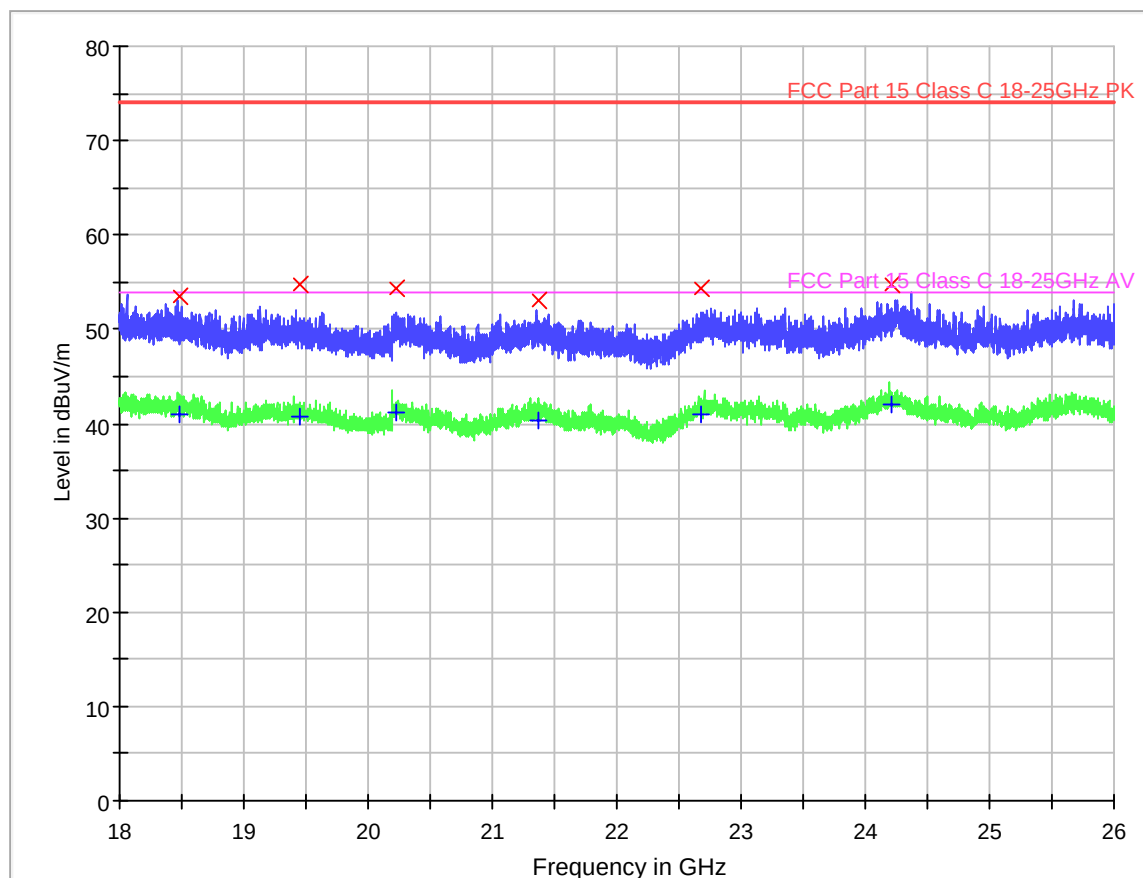
## EMC Test Record (Emission)

### Common Information

Manufacturer: Knectek Labs Inc.  
Test Item: CubiTag Card  
Identification: CTAG0302  
Test Standard: FCC Part 15  
Test Detail: Radiated Emission  
Operation Mode: Receiver (BLE-Mid)  
Climate Condition: 20 °C, 50 %, 100 k Pa  
Test Voltage/ Freq: DC 3V  
Result: Pass  
Comment: Test distance is 3m; Horizontal

Subrange 1  
Frequency Range: 18GHz-26GHz  
Receiver: TUV FSP30  
Transducer: TUV SAC HF907/ TUV FSP30-TUV SAC HF907

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## Limit and Margin PK

| Frequency (MHz) | MaxPeak (dBuV/m) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - PK+ (dB) | Limit - PK+ (dBuV/m) |
|-----------------|------------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 18490.000000    | 53.4             | 40.9             | 1000.0          | 1000.000        | H   | 8.1          | 20.6              | 74.0                 |
| 19449.000000    | 54.7             | 40.7             | 1000.0          | 1000.000        | H   | 7.9          | 19.3              | 74.0                 |
| 20231.000000    | 54.3             | 41.1             | 1000.0          | 1000.000        | H   | 7.7          | 19.7              | 74.0                 |
| 21376.000000    | 53.1             | 40.4             | 1000.0          | 1000.000        | H   | 7.2          | 20.9              | 74.0                 |
| 22670.000000    | 54.3             | 41.0             | 1000.0          | 1000.000        | H   | 7.3          | 19.7              | 74.0                 |
| 24205.000000    | 54.8             | 42.0             | 1000.0          | 1000.000        | H   | 7.7          | 19.2              | 74.0                 |

## Limit and Margin AV

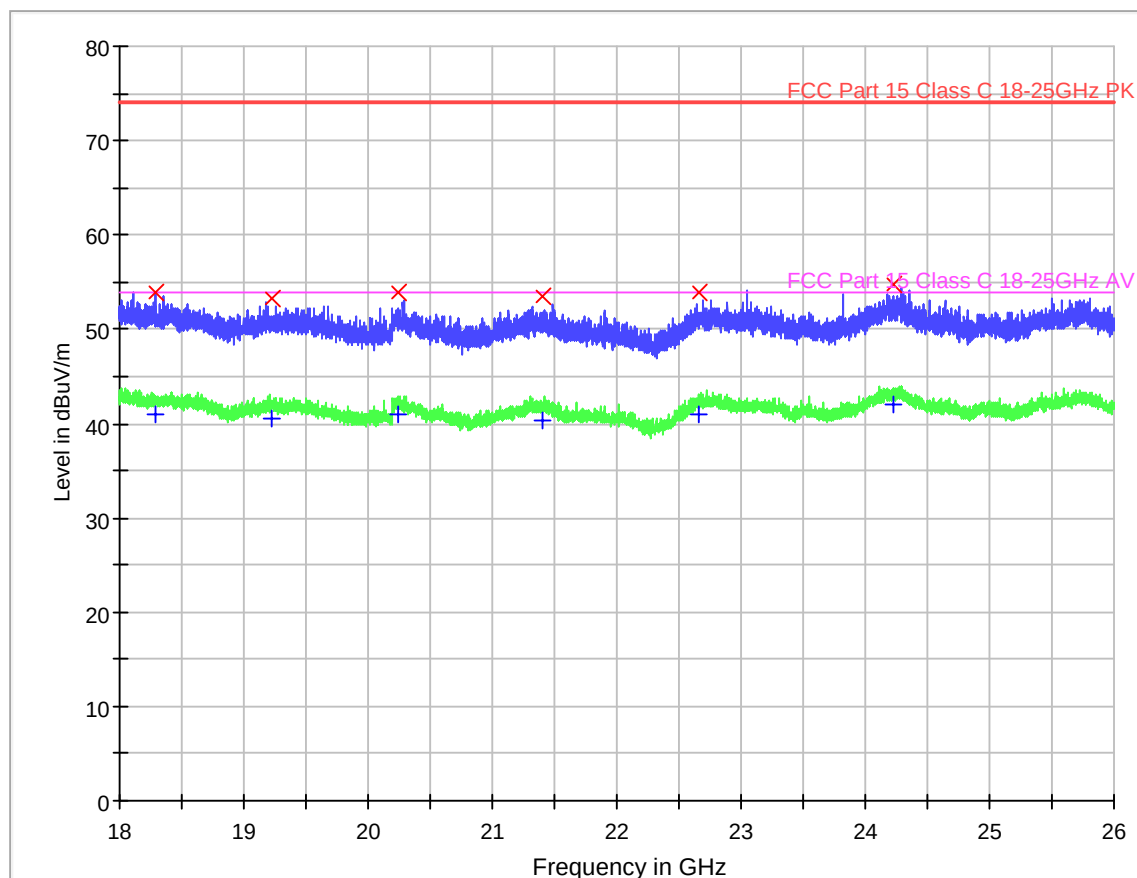
| Frequency (MHz) | MaxPeak (dBuV/m) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) |
|-----------------|------------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 18490.000000    | 53.4             | 40.9             | 1000.0          | 1000.000        | H   | 8.1          | 13.1              | 54.0                 |
| 19449.000000    | 54.7             | 40.7             | 1000.0          | 1000.000        | H   | 7.9          | 13.3              | 54.0                 |
| 20231.000000    | 54.3             | 41.1             | 1000.0          | 1000.000        | H   | 7.7          | 12.9              | 54.0                 |
| 21376.000000    | 53.1             | 40.4             | 1000.0          | 1000.000        | H   | 7.2          | 13.6              | 54.0                 |
| 22670.000000    | 54.3             | 41.0             | 1000.0          | 1000.000        | H   | 7.3          | 13.0              | 54.0                 |
| 24205.000000    | 54.8             | 42.0             | 1000.0          | 1000.000        | H   | 7.7          | 12.0              | 54.0                 |

## EMC Test Record (Emission)

### Common Information

|                     |                                        |
|---------------------|----------------------------------------|
| Manufacturer:       | Knectek Labs Inc.                      |
| Test Item:          | CubiTag Card                           |
| Identification:     | CTAG0302                               |
| Test Standard:      | FCC Part 15                            |
| Test Detail:        | Radiated Emission                      |
| Operation Mode:     | Receiver (BLE-Mid)                     |
| Climate Condition:  | 20 °C, 50 %, 100 k Pa                  |
| Test Voltage/ Freq: | DC 3V                                  |
| Result:             | Pass                                   |
| Comment:            | Test distance is 3m; Vertical          |
| Subrange 1          |                                        |
| Frequency Range:    | 18GHz-26GHz                            |
| Receiver:           | TUV FSP30                              |
| Transducer:         | TUV SAC HF907/ TUV FSP30-TUV SAC HF907 |

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## Limit and Margin PK

| Frequency (MHz) | MaxPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - PK+ (dB) | Limit - PK+ (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 18292.000000    | 53.9             | 1000.0          | 1000.000        | V   | 8.0          | 20.1              | 74.0                 |
| 19224.000000    | 53.3             | 1000.0          | 1000.000        | V   | 7.9          | 20.7              | 74.0                 |
| 20246.000000    | 53.9             | 1000.0          | 1000.000        | V   | 7.6          | 20.1              | 74.0                 |
| 21404.000000    | 53.5             | 1000.0          | 1000.000        | V   | 7.2          | 20.5              | 74.0                 |
| 22665.000000    | 53.9             | 1000.0          | 1000.000        | V   | 7.3          | 20.1              | 74.0                 |
| 24227.000000    | 54.8             | 1000.0          | 1000.000        | V   | 7.7          | 19.2              | 74.0                 |

## Limit and Margin AV

| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 18292.000000    | 40.9             | 1000.0          | 1000.000        | V   | 8.0          | 13.1              | 54.0                 |
| 19224.000000    | 40.6             | 1000.0          | 1000.000        | V   | 7.9          | 13.4              | 54.0                 |
| 20246.000000    | 41.0             | 1000.0          | 1000.000        | V   | 7.6          | 13.0              | 54.0                 |
| 21404.000000    | 40.3             | 1000.0          | 1000.000        | V   | 7.2          | 13.7              | 54.0                 |
| 22665.000000    | 41.0             | 1000.0          | 1000.000        | V   | 7.3          | 13.0              | 54.0                 |
| 24227.000000    | 42.0             | 1000.0          | 1000.000        | V   | 7.7          | 12.0              | 54.0                 |

## Appendix B.3: Test Results of Radiated Emissions in Restricted Bands

Low channel

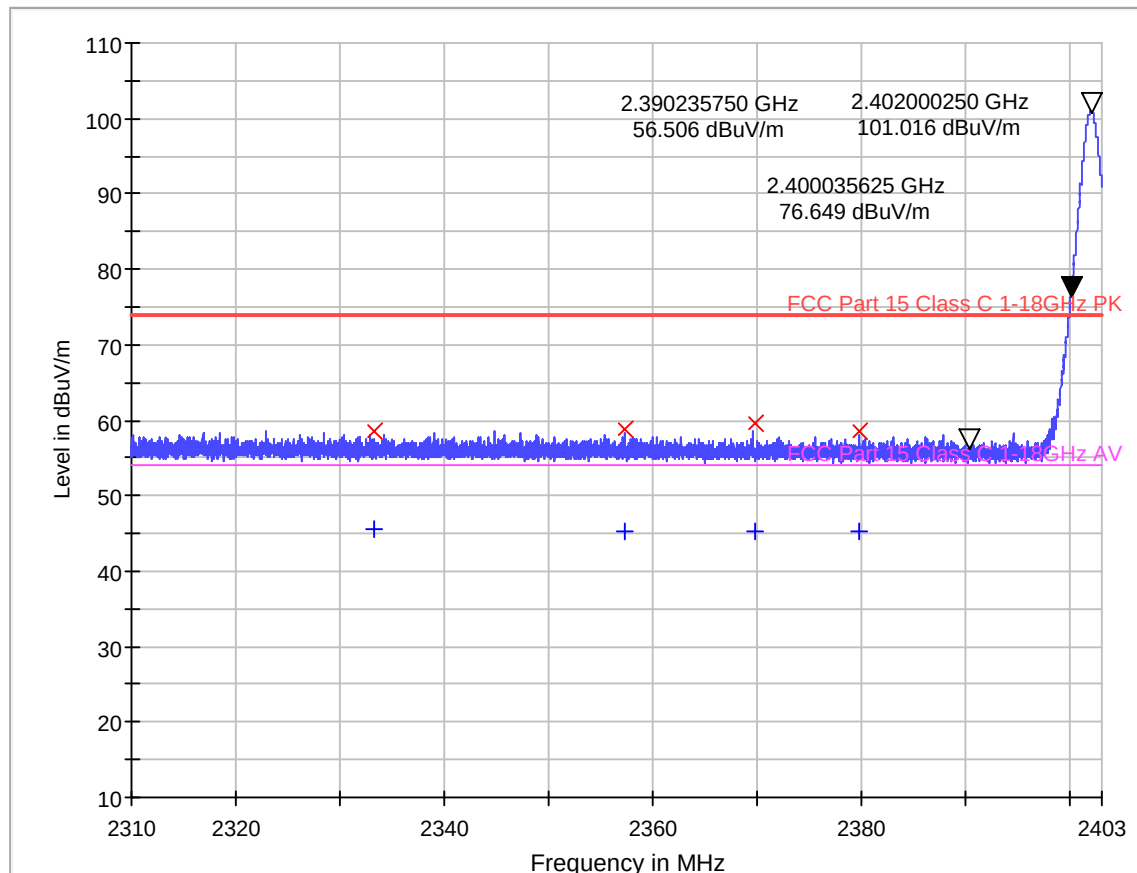
# EMC Test Record (Emission)

## Common Information

|                     |                        |
|---------------------|------------------------|
| Manufacturer:       | Knectek Labs Inc.      |
| Test Item:          | CubiTag Card           |
| Identification:     | CTAG0302               |
| Test Standard:      | FCC Part 15            |
| Test Detail:        | Band edge              |
| Operation Mode:     | Transmitting (BLE-Low) |
| Climate Condition:  | 22 °C, 56 %, 100 kPa   |
| Test Voltage/ Freq: | DC 3V                  |
| Result:             | Pass                   |
| Comment:            | Horizontal             |

|                  |                                        |
|------------------|----------------------------------------|
| Subrange 1       |                                        |
| Frequency Range: | 1GHz-18GHz                             |
| Receiver:        | TUV FSP30                              |
| Transducer:      | TUV SAC HF907/ TUV FSP30-TUV SAC HF907 |

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## Limit and Margin PK

| Frequency (MHz) | MaxPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - PK+ (dB) | Limit - PK+ (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 2333.320000     | 58.4             | 1000.0          | 1000.000        | H   | 32.9         | 15.6              | 74.0                 |
| 2357.320000     | 58.8             | 1000.0          | 1000.000        | H   | 33.0         | 15.2              | 74.0                 |
| 2369.680000     | 59.6             | 1000.0          | 1000.000        | H   | 33.0         | 14.5              | 74.0                 |
| 2379.760000     | 58.6             | 1000.0          | 1000.000        | H   | 33.0         | 15.4              | 74.0                 |

## Limit and Margin AV

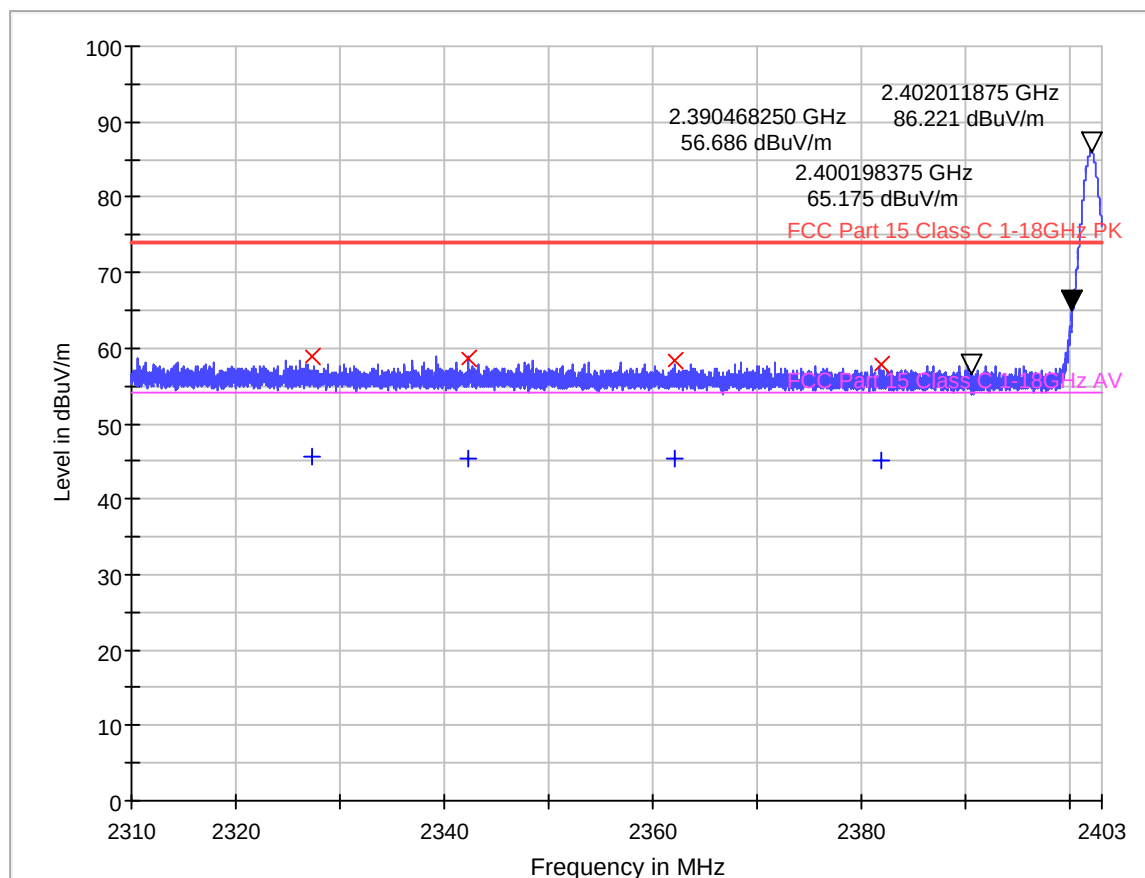
| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 2333.320000     | 45.5             | 1000.0          | 1000.000        | H   | 32.9         | 8.6               | 54.0                 |
| 2357.320000     | 45.3             | 1000.0          | 1000.000        | H   | 33.0         | 8.7               | 54.0                 |
| 2369.680000     | 45.3             | 1000.0          | 1000.000        | H   | 33.0         | 8.7               | 54.0                 |
| 2379.760000     | 45.2             | 1000.0          | 1000.000        | H   | 33.0         | 8.8               | 54.0                 |

## EMC Test Record (Emission)

### Common Information

|                     |                                        |
|---------------------|----------------------------------------|
| Manufacturer:       | Knectek Labs Inc.                      |
| Test Item:          | CubiTag Card                           |
| Identification:     | CTAG0302                               |
| Test Standard:      | FCC Part 15                            |
| Test Detail:        | Band edge                              |
| Operation Mode:     | Transmitting (BLE-Low)                 |
| Climate Condition:  | 22 °C, 56 %, 100 kPa                   |
| Test Voltage/ Freq: | DC 3V                                  |
| Result:             | Pass                                   |
| Comment:            | Vertical                               |
| Subrange 1          |                                        |
| Frequency Range:    | 1GHz-18GHz                             |
| Receiver:           | TUV FSP30                              |
| Transducer:         | TUV SAC HF907/ TUV FSP30-TUV SAC HF907 |

EMCTT\_EREFO11-A02-04\_1GHz-18GHz



### Limit and Margin PK

| Frequency (MHz) | MaxPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - PK+ (dB) | Limit - PK+ (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 2327.200000     | 59.0             | 1000.0          | 1000.000        | V   | 32.9         | 15.1              | 74.0                 |
| 2342.320000     | 58.5             | 1000.0          | 1000.000        | V   | 32.9         | 15.5              | 74.0                 |
| 2362.120000     | 58.3             | 1000.0          | 1000.000        | V   | 33.0         | 15.7              | 74.0                 |
| 2381.800000     | 57.8             | 1000.0          | 1000.000        | V   | 33.0         | 16.2              | 74.0                 |

### Limit and Margin AV

| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 2327.200000     | 45.5             | 1000.0          | 1000.000        | V   | 32.9         | 8.5               | 54.0                 |
| 2342.320000     | 45.4             | 1000.0          | 1000.000        | V   | 32.9         | 8.6               | 54.0                 |
| 2362.120000     | 45.3             | 1000.0          | 1000.000        | V   | 33.0         | 8.7               | 54.0                 |
| 2381.800000     | 45.1             | 1000.0          | 1000.000        | V   | 33.0         | 8.9               | 54.0                 |

High channel

## EMC Test Record (Emission)

### Common Information

|                     |                         |
|---------------------|-------------------------|
| Manufacturer:       | Knectek Labs Inc.       |
| Test Item:          | CubiTag Card            |
| Identification:     | CTAG0302                |
| Test Standard:      | FCC Part 15             |
| Test Detail:        | Band edge               |
| Operation Mode:     | Transmitting (BLE-High) |
| Climate Condition:  | 22 °C, 56 %, 100 kPa    |
| Test Voltage/ Freq: | DC 3V                   |
| Result:             | Pass                    |
| Comment:            | Horizontal              |

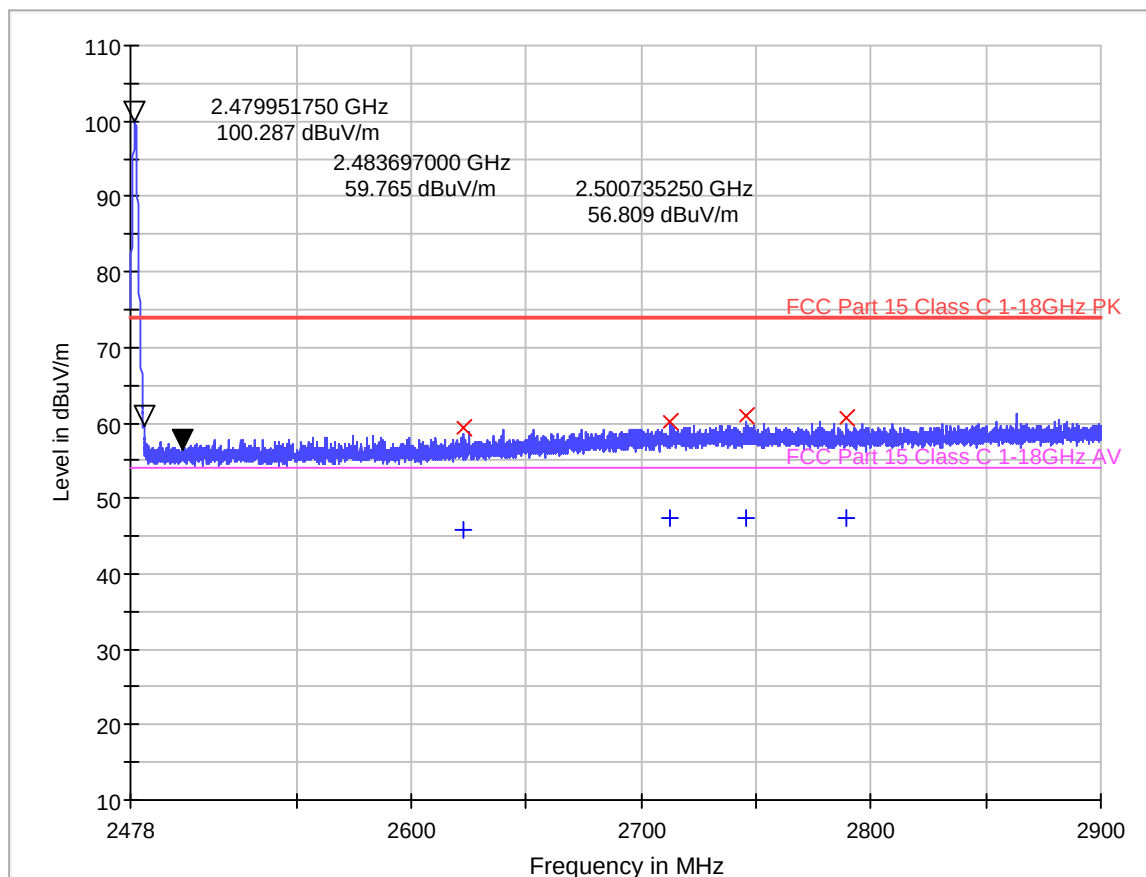
Subrange 1

Frequency Range: 1GHz-18GHz

Receiver: TUV FSP30

Transducer: TUV SAC HF907/ TUV FSP30-TUV SAC HF907

EMCTT\_EREFO11-A02-04\_1GHz-18GHz



## Limit and Margin PK

| Frequency (MHz) | MaxPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - PK+ (dB) | Limit - PK+ (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 2622.520000     | 59.4             | 1000.0          | 1000.000        | H   | 33.7         | 14.6              | 74.0                 |
| 2712.160000     | 60.1             | 1000.0          | 1000.000        | H   | 34.1         | 13.9              | 74.0                 |
| 2745.640000     | 60.9             | 1000.0          | 1000.000        | H   | 34.2         | 13.1              | 74.0                 |
| 2789.320000     | 60.5             | 1000.0          | 1000.000        | H   | 34.4         | 13.5              | 74.0                 |

## Limit and Margin AV

| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 2622.520000     | 45.8             | 1000.0          | 1000.000        | H   | 33.7         | 8.2               | 54.0                 |
| 2712.160000     | 47.3             | 1000.0          | 1000.000        | H   | 34.1         | 6.7               | 54.0                 |
| 2745.640000     | 47.4             | 1000.0          | 1000.000        | H   | 34.2         | 6.6               | 54.0                 |
| 2789.320000     | 47.4             | 1000.0          | 1000.000        | H   | 34.4         | 6.6               | 54.0                 |

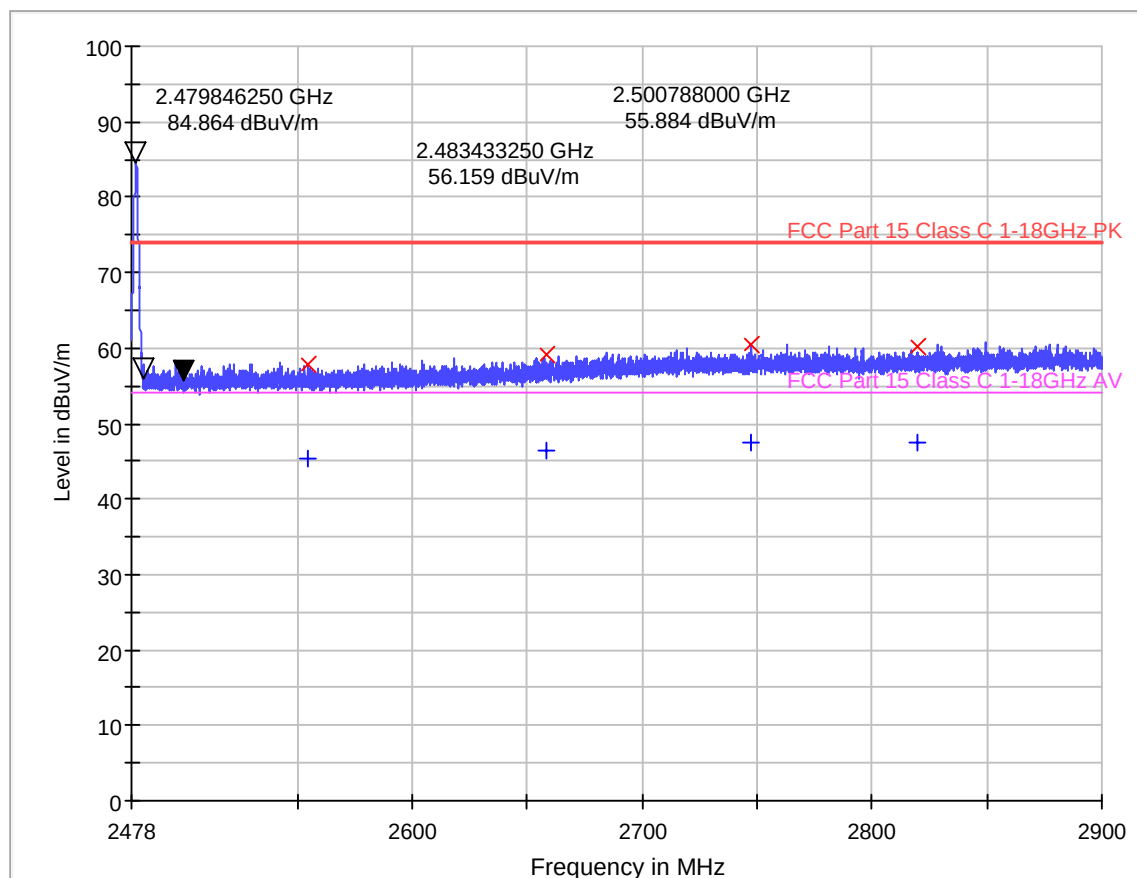
## EMC Test Record (Emission)

### Common Information

|                     |                         |
|---------------------|-------------------------|
| Manufacturer:       | Knectek Labs Inc.       |
| Test Item:          | CubiTag Card            |
| Identification:     | CTAG0302                |
| Test Standard:      | FCC Part 15             |
| Test Detail:        | Band edge               |
| Operation Mode:     | Transmitting (BLE-High) |
| Climate Condition:  | 22 °C, 56 %, 100 kPa    |
| Test Voltage/ Freq: | DC 3V                   |
| Result:             | Pass                    |
| Comment:            | Vertical                |

|                  |                                        |
|------------------|----------------------------------------|
| Subrange 1       |                                        |
| Frequency Range: | 1GHz-18GHz                             |
| Receiver:        | TUV FSP30                              |
| Transducer:      | TUV SAC HF907/ TUV FSP30-TUV SAC HF907 |

EMCTT\_EREFO11-A02-04\_1GHz-18GHz



### Limit and Margin PK

| Frequency (MHz) | MaxPeak (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - PK+ (dB) | Limit - PK+ (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 2554.698500     | 57.8             | 1000.0          | 1000.000        | V   | 33.4         | 16.2              | 74.0                 |
| 2658.405000     | 59.2             | 1000.0          | 1000.000        | V   | 33.9         | 14.8              | 74.0                 |
| 2747.816250     | 60.4             | 1000.0          | 1000.000        | V   | 34.3         | 13.6              | 74.0                 |
| 2819.661750     | 60.1             | 1000.0          | 1000.000        | V   | 34.5         | 13.9              | 74.0                 |

### Limit and Margin AV

| Frequency (MHz) | Average (dBuV/m) | Meas. Time (ms) | Bandwidth (kHz) | Pol | Corr. (dB/m) | Margin - AVG (dB) | Limit - AVG (dBuV/m) |
|-----------------|------------------|-----------------|-----------------|-----|--------------|-------------------|----------------------|
| 2554.698500     | 45.3             | 1000.0          | 1000.000        | V   | 33.4         | 8.7               | 54.0                 |
| 2658.405000     | 46.4             | 1000.0          | 1000.000        | V   | 33.9         | 7.6               | 54.0                 |
| 2747.816250     | 47.4             | 1000.0          | 1000.000        | V   | 34.3         | 6.6               | 54.0                 |
| 2819.661750     | 47.5             | 1000.0          | 1000.000        | V   | 34.5         | 6.5               | 54.0                 |