



DESIGN ASSURANCE ENGINEERING
Radiated Emissions Test Report



FCC ID: A94423376 IC: 3232A-423376

Test Type: Emissions Immunity

Product Type: Wireless Headphones

Product Name/Number: *Model Number: 423376*
FCC ID: A94423376
IC: 3232A-423376

Prepared For: *Design Assurance Engineering Department,*
Bose Corporation

Test Results: Pass Fail

Applicable Standards: Unintentional Radiated Interference referenced in:
FCC CFR 47 Part 15 Subpart C
Industry Canada RSS-247 Issue 2
Industry Canada RSS-GEN Issue 4

Report Number: *EMC.423376.18.68.1*

General Comments/Special Test Conditions:

This report relates only to the items tested. This report covers EMC marking requirements for
Enter product and any special modifications or test conditions.

| | Print Name | Signature | Date |
|------------------------------------|--------------|-----------|----------------|
| Prepared By: | Brent DeWitt | | March 9, 2018 |
| Electrical Engineer Review* By: | Chad Bell | | March 29, 2018 |

* Since every test result is separately reviewed after its completion, the electrical engineer review indicated above represents a higher level review to ensure this report lists and contains all applicable and appropriate requirements.

If the report carries the "accredited" logo, the reviewer must verify all the tests in this report are covered under the current ISO17025 accreditation. The A2LA-accredited logo must be removed if any of the tests in the report are not performed under the current scope of accreditation. It is the responsibility of the reviewer to ensure the A2LA advertising policy is followed.



RF Radiated Emissions 30MHz -1GHz

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| Change History..... | Error! Bookmark not defined. |

Test Information:

| | | |
|--|------------------------|-----------------------------|
| Project code name: | Marketing name: | Model number: 423376 |
| Build Phase: DP1 | | |
| Project number (Integrity): 423376 | | |
| EUT Serial number: 0053AE | | |
| Software installed: 0.1.0 | | |
| Tested by: B. DeWitt | | |
| Date: 21 July | | |
| Requirements Standard(s): FCC Part15B, CISPR32 | | |
| Referenced Standard(s): | | |
| EUT powered with: 120 VAC and 230 VAC | | |
| Temp / Humidity: 25C/43% | | |
| EUT Modifications: None | | |
| Test equipment used TN's: 644 | | |
| Test location: Maxwell House | | |
| Comments: USB wall charger Bose Model PSA05F-050QBT1 powering EUT | | |

Objective/Summary/Conclusion:

- No emissions less than 10dB below the limit were found between 30 MHz and 1 GHz.



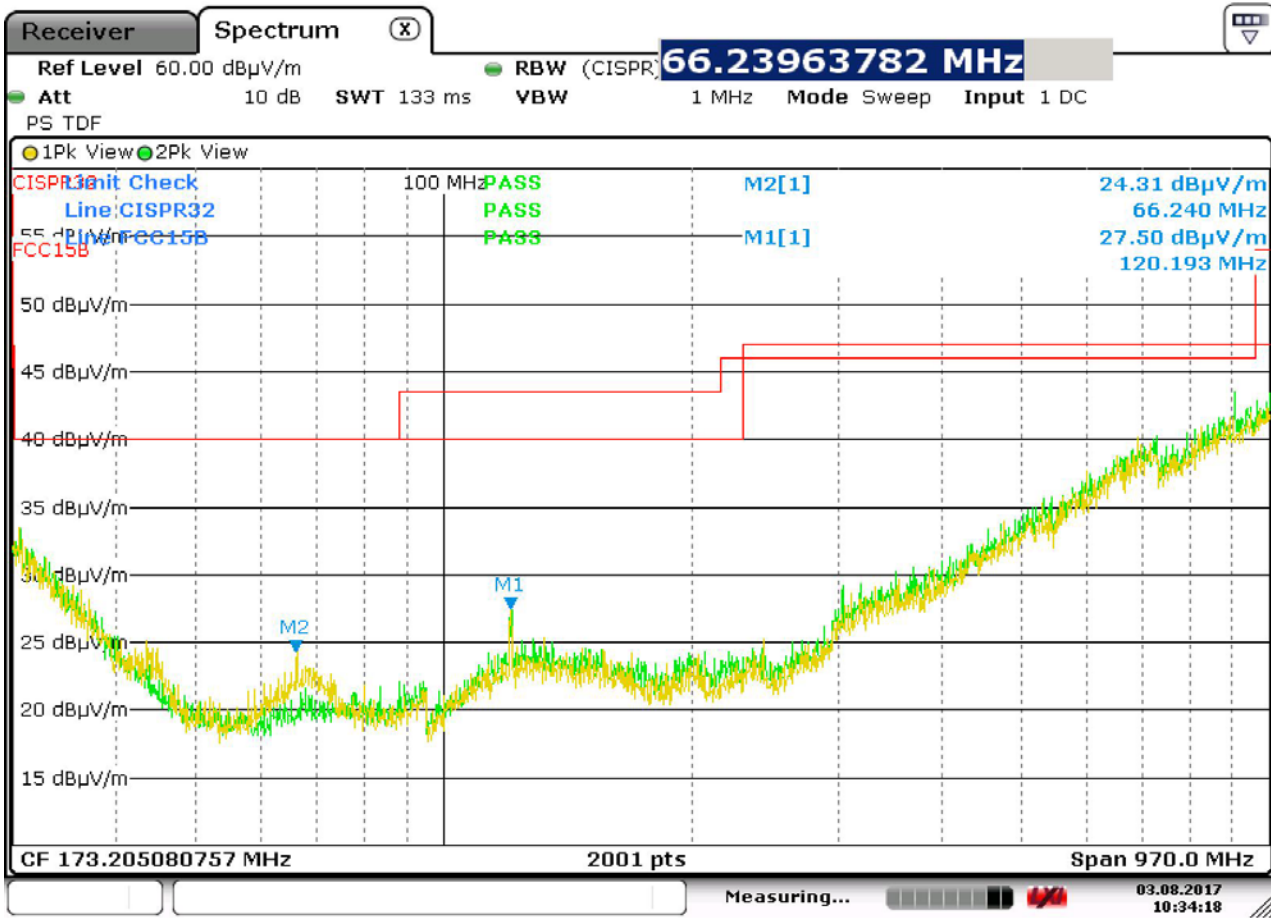
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Data Collection:



Date: 3.AUG.2017 10:34:18

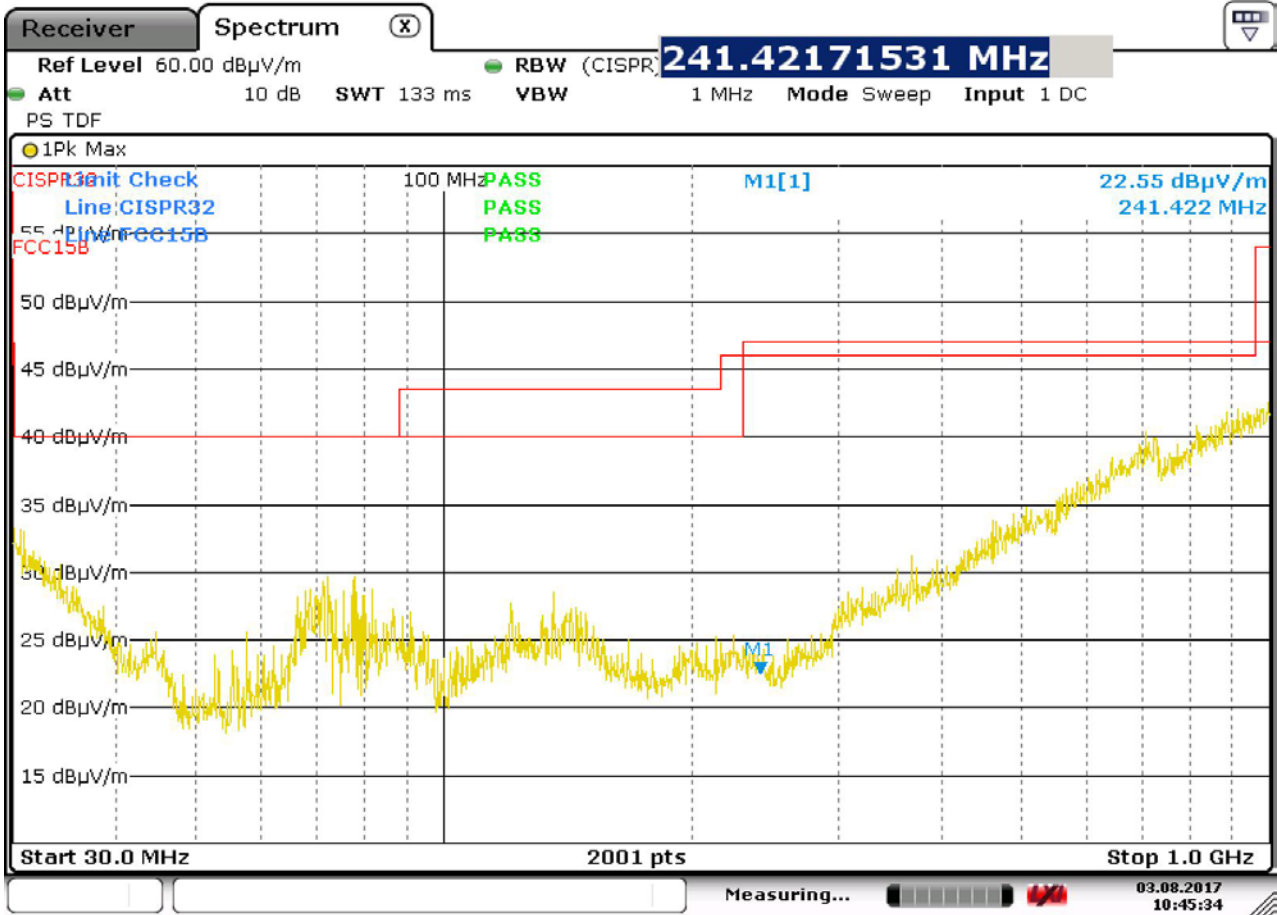
M1 is an ambient narrow band signal. Green trace is ambient, Yellow trace is BB2 plus power supply charging. LED panel solid red.



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Date: 3.AUG.2017 10:45:35

Peak Hold scan with Bluetooth playing max volume and "rainbow" LED pattern.



Limits:

| Standard | Freq Range (MHz) | Limits (dBuV QP ¹) | | | Comments |
|----------------------------------|--------------------|--------------------------------|------------------|---------|--|
| | | Class A | | Class B | |
| | | 10 m | 3 m ² | 3 m | |
| FCC 15B | 30-88 | 39 | 49 | 40 | Measurements above 1 GHz are made using average and peak detectors. Mains cables draped to floor, not bundled. *For measurements above 1 GHz, peak limits must also be met that are 20 dB higher than average limits. |
| | 88-216 | 43.5 | 53.5 | 43.5 | |
| | 216-960 | 46.5 | 56.5 | 46 | |
| | >960 | 49.5* | 59.5* | 54* | |
| CISPR 32 FM Local Oscillator | Fundamental | N/A | N/A | 60 | |
| | Harmonics 30-300 | N/A | N/A | 52 | |
| | Harmonics 300-1000 | N/A | N/A | 56 | |
| CISPR 32 | | | Class A | Class B | Mains cables bundled not draped to floor. *For measurements above 1 GHz, peak limits must also be met that are 20 dB higher than average limits. |
| | | | 3 m | 3 m | |
| | 30-230 | | 50 | 40 | |
| | 230-1000 | | 57 | 47 | |
| | Freq Range (GHz) | | | | |
| | 1-3 | | 56* | 50* | |
| | 3-6 | | 60* | 54* | |
| Bandwidth and Detector Settings: | | | | | |
| Freq. Range (MHz) | RBW (kHz) | VBW (kHz) | Detector | | |
| 30 – 1000 | 120 | >300 | QP | | |
| > 1000 | 1000 | >1000 | Pk and AVG | | |



Equipment Used:

| TN | Description | Model | S/N | Manufacturer | Most Recent Calibration | Calibration Due Date | Most Recent Verification | Verification Due Date |
|------|--------------------------|---------|----------|---------------------|-------------------------|----------------------|--------------------------|-----------------------|
| 2319 | EMI Test Receiver | ESR26 | 101276 | Rohde & Schwarz | 06-Apr-2017 | 06-Apr-2018 | | |
| 1375 | System Controller | SC99V | 050905-1 | Sunol Sciences Corp | | | | |
| 1541 | Antenna 30MHz - 6GHz | JB6 | A050807 | Sunol Sciences Corp | 29-Nov-2017 | 29-Nov-2018 | | |
| 2077 | PreAmplifier | N/A | N/A | Bose Corporation | | | 28-Jul-2017 | 28-Jul-2018 |
| 1692 | Flexible Microwave Cable | HFE160D | 200001 | Rohde & Schwarz | | | 28-Jul-2017 | 28-Jul-2018 |



Uncertainty:

| Uncertainty Budget | | | | |
|--|------------------------------------|--------------|---------|-----------------------|
| | | | | |
| Title: | Radiated RF Emissions (30MHz-1GHz) | | | |
| | | | | |
| Source of Uncertainty | Value units:± dB | Distribution | Divisor | Uncertainty (± dB) |
| Receiver - absolute level | 0.3 | Rect. | 1.73 | 0.17 |
| Receiver - frequency response | 0.8 | Rect. | 1.73 | 0.46 |
| Receiver - attenuator switching | 0.2 | Rect. | 1.73 | 0.12 |
| Receiver - bandwidth switching | 0.2 | Rect. | 1.73 | 0.12 |
| Receiver - display | 0.5 | Rect. | 1.73 | 0.29 |
| Antenna factor | 0.8 | Norm. | 2.00 | 0.38 |
| Antenna directivity | 1.0 | Norm. | 2.00 | 0.50 |
| Preamp correction factor | 0.5 | Norm. | 2.00 | 0.25 |
| Cable correction factor | 0.5 | Norm. | 2.00 | 0.25 |
| Site imperfection - NSA | 4.0 | Triang. | 2.45 | 1.63 |
| Test table impact | 1.1 | Rect. | 1.73 | 0.64 |
| Combined uncertainty (RSS): | | | | 1.98 |
| Coverage factor (2 sigma): | | | | 2.00 |
| Extended uncertainty (95% confidence): | | | | 3.97 |



Radiated RF Emissions 1-40GHz

| | |
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| Change History..... | Error! Bookmark not defined. |

Test information:

| | | |
|---------------------------|------------------------|-----------------------------|
| Project code name: | Marketing name: | Model number: 423376 |
|---------------------------|------------------------|-----------------------------|

EUT Serial number: 0176AE
Software installed: 0.2.1
Tested by: B. DeWitt
Date: 16 January 2018
Requirements Standard(s): FCC Part 15B, CISPR32
Referenced Standard(s):
EUT powered with: Battery
Temp / Humidity: 22C/27%
EUT Modifications: None
Test equipment used TN's: 2385
Test location: Marconi Manor
Comments:

Objective/Summary/Conclusion:

- Wireless Headset Model 423376 passes harmonic and spurious radiated emissions by 4.9 dB at 4804 MHz
- High Restricted Band-Edge passes in worst case Bluetooth DH5 mode by 4.9 dB at 2583.5 MHz.
- No non-harmonic spurious emissions were found.
- No emissions were found above 13 GHz.



Test setup details:

The EUT was set into DFU mode using the Bose "PolyComm" utility then set to The previously determined worst-case mode of 8 dBm maximum power, DH5 modulation with a maximum payload/duty cycle of 339 packets.

The EUT was supported 1.5 meters above the chamber floor and positioned in each of three orthogonal orientations.

Measurements from 18 to 26 GHz were made at 1 meter distance, hand manipulated positioning.

Specific harmonic measurements were made at each of the low, mid and high frequencies (2402, 2441 and 2480 MHz) with frequency hopping disabled.



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Data Collection: Harmonic and Spurious

| FCC 15B Class B Product (Residential) @ 3 Meters | | | | | | | | | | |
|--|---------------------------------|----------------------------------|--------------------|---------------------|-----------------|------------------|-----------------------------------|-------------------|-----------------|------------------|
| Bluetooth DH5 (worst case) | | | | | | | | | | |
| Emission Frequency (MHz) | Measured Amplitude (dBµV/m) AVG | Measured Amplitude (dBµV/m) Peak | FCC 15B | | | | Table Azimuth (0° closest to ant) | Receiving Antenna | | Notes / Mode |
| | | | Limit (dBµV/m) AVG | Limit (dBµV/m) Peak | Margin (dB) AVG | Margin (dB) Peak | | Pol (H/V) | Height (Meters) | |
| | | | | | | | | | | Headset Vertical |
| 2402.00 | 39.3 | 46.1 | 54.0 | 74.0 | 14.7 | 27.9 | 240 | V | 1.5 | Notch filtered |
| 4804.00 | 49.10 | 54.50 | 54.0 | 74.0 | 4.9 | 19.5 | 226 | H | 1.5 | |
| 7206.00 | 40.80 | 51.80 | 54.0 | 74.0 | 13.2 | 22.2 | 91 | H | 1.7 | |
| 9608.00 | 37.70 | 50.70 | 54.0 | 74.0 | 16.3 | 23.3 | 360 | H | 1.5 | noise floor |
| 12010.00 | 39.50 | 52.90 | 54.0 | 74.0 | 14.5 | 21.1 | 0 | H | 1.5 | noise floor |
| | | | | | | | | | | |
| 2441.00 | 43.70 | 49.00 | 54.0 | 74.0 | 10.3 | 25.0 | 0 | V | 1.5 | Notch filtered |
| 4882.00 | 48.20 | 54.30 | 54.0 | 74.0 | 5.8 | 19.7 | 233 | H | 1.5 | |
| 7323.00 | 39.80 | 51.10 | 54.0 | 74.0 | 14.2 | 22.9 | 92 | H | 1.8 | |
| 9764.00 | 0.00 | 0.00 | 54.0 | 74.0 | 54.0 | 74.0 | 0 | V | 1.5 | noise floor |
| 12205.00 | 0.00 | 0.00 | 54.0 | 74.0 | 54.0 | 74.0 | 0 | V | 1.5 | noise floor |
| | | | | | | | | | | |
| 2480.00 | 45.30 | 50.20 | 54.0 | 74.0 | 8.7 | 23.8 | 0 | V | 1.5 | Notch filtered |
| 4960.00 | 33.40 | 46.60 | 54.0 | 74.0 | 20.6 | 27.4 | 226 | H | 1.5 | |
| 7440.00 | 40.80 | 52.10 | 54.0 | 74.0 | 13.2 | 21.9 | 89 | H | 1.7 | |
| 9920.00 | 41.10 | 54.50 | 54.0 | 74.0 | 12.9 | 19.5 | 25 | H | 1.7 | |
| 12400.00 | 39.80 | 53.60 | 54.0 | 74.0 | 14.2 | 20.4 | 0 | V | 1.7 | noise floor |
| | | | | | | | | | | |
| | | | | | | | | | | Headset Flat |
| 2402.00 | 40.00 | 46.00 | 54.0 | 74.0 | 14.0 | 28.0 | 329 | V | 1.5 | Notch filtered |
| 4804.00 | 45.60 | 52.60 | 54.0 | 74.0 | 8.4 | 21.4 | 298 | V | 1.5 | |
| 7206.00 | 40.00 | 51.50 | 54.0 | 74.0 | 14.0 | 22.5 | 94 | V | 1.2 | |
| 9608.00 | 37.70 | 50.80 | 54.0 | 74.0 | 16.3 | 23.2 | 0 | H | 1.5 | noise floor |
| 12010.00 | 39.60 | 53.00 | 54.0 | 74.0 | 14.4 | 21.0 | 36 | V | 1.5 | noise floor |
| | | | | | | | | | | |
| 2441.00 | 42.30 | 47.80 | 54.0 | 74.0 | 11.7 | 26.2 | 4 | V | 1.5 | Notch filtered |
| 4882.00 | 45.70 | 52.60 | 54.0 | 74.0 | 8.3 | 21.4 | 98 | V | 1.5 | |
| 7323.00 | 39.30 | 50.80 | 54.0 | 74.0 | 14.7 | 23.2 | 106 | V | 1.5 | |
| 9764.00 | 38.50 | 52.10 | 54.0 | 74.0 | 15.5 | 21.9 | 289 | V | 1.6 | |
| 12205.00 | 40.40 | 53.70 | 54.0 | 74.0 | 13.6 | 20.3 | 362 | V | 1.5 | noise floor |
| | | | | | | | | | | |
| 2480.00 | 42.00 | 47.70 | 54.0 | 74.0 | 12.0 | 26.3 | 0 | V | 1.7 | Notch filtered |
| 4960.00 | 33.30 | 47.40 | 54.0 | 74.0 | 20.7 | 26.6 | 181 | V | 1.6 | |
| 7440.00 | 41.60 | 52.00 | 54.0 | 74.0 | 12.4 | 22.0 | 106 | V | 1.3 | |
| 9920.00 | 40.70 | 53.80 | 54.0 | 74.0 | 13.3 | 20.2 | 106 | V | 1.4 | |
| 12400.00 | 0.00 | 0.00 | 54.0 | 74.0 | 54.0 | 74.0 | 4 | V | 1.5 | noise floor |
| | | | | | | | | | | |
| | | | | | | | | | | Headset Edge |



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| | | | | | | | | | | |
|----------|--------|--------|------|------|-------|-------|-------|---|-----|------------------|
| 2402.00 | 38.50 | 45.3 | 54.0 | 74.0 | 15.5 | 28.7 | 360.0 | H | 1.5 | Notch filtered |
| 4804.00 | 48.30 | 54.50 | 54.0 | 74.0 | 5.7 | 19.5 | 239 | H | 1.7 | |
| 7206.00 | 37.40 | 50.20 | 54.0 | 74.0 | 16.6 | 23.8 | 221 | V | 1.9 | noise floor |
| 9608.00 | 37.70 | 51.40 | 54.0 | 74.0 | 16.3 | 22.6 | 360 | V | 1.5 | noise floor |
| 12010.00 | 39.60 | 53.10 | 54.0 | 74.0 | 14.4 | 20.9 | 289 | V | 1.6 | noise floor |
| | | | | | | | | | | |
| 2441.00 | 44.30 | 49.20 | 54.0 | 74.0 | 9.7 | 24.8 | 289 | H | 1.6 | Notch filtered |
| 4882.00 | 45.90 | 52.70 | 54.0 | 74.0 | 8.1 | 21.3 | 198 | H | 1.6 | |
| 7323.00 | 35.90 | 48.90 | 54.0 | 74.0 | 18.1 | 25.1 | 101 | V | 1.3 | |
| 9764.00 | 38.50 | 52.10 | 54.0 | 74.0 | 15.5 | 21.9 | 0 | H | 1.5 | noise floor |
| 12205.00 | 40.30 | 53.90 | 54.0 | 74.0 | 13.7 | 20.1 | 360 | V | 1.5 | noise floor |
| | | | | | | | | | | |
| 2480.00 | 44.10 | 49.20 | 54.0 | 74.0 | 9.9 | 24.8 | 360 | H | 1.5 | Notch filtered |
| 4960.00 | 33.50 | 46.90 | 54.0 | 74.0 | 20.5 | 27.1 | 60 | H | 1.6 | |
| 7440.00 | 37.00 | 49.80 | 54.0 | 74.0 | 17.0 | 24.2 | 0 | H | 1.5 | |
| 9920.00 | 39.10 | 52.10 | 54.0 | 74.0 | 14.9 | 21.9 | 0 | V | 1.5 | noise floor |
| 12400.00 | 39.80 | 53.40 | 54.0 | 74.0 | 14.2 | 20.6 | 15 | V | 1.5 | noise floor |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | Upper band edge |
| 2483.50 | 47.70 | 59.60 | 54.0 | 74.0 | 6.3 | 14.4 | 41 | V | 1.8 | Headset Vertical |
| 2483.50 | 49.10 | 61.00 | 54.0 | 74.0 | 4.9 | 13.0 | 174 | V | 1.7 | Headset Flat |
| 2483.50 | 48.60 | 60.30 | 54.0 | 74.0 | 5.4 | 13.7 | 195 | H | 1.5 | Headset Edge |
| 2480.00 | 103.20 | 105.80 | 54.0 | 74.0 | -49.2 | -31.8 | 195 | H | 1.5 | Headset Edge |
| 2480.00 | 100.90 | 103.50 | 54.0 | 74.0 | -46.9 | -29.5 | 174 | V | 1.7 | Headset Flat |
| 2480.00 | 102.20 | 104.80 | 54.0 | 74.0 | -48.2 | -30.8 | 56 | V | 1.9 | Headset Vertical |

DH5 Radiated Band Edge Worst case



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FCC ID: A94423376 IC: 3232A-423376



BTLE

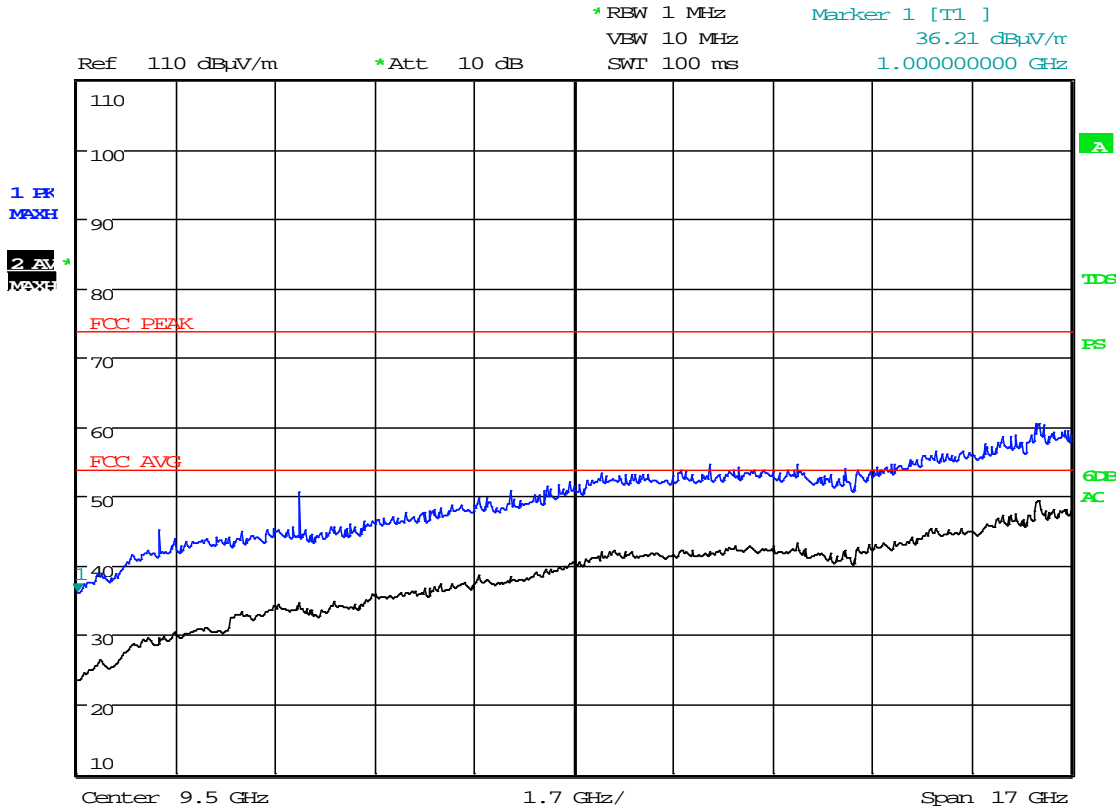
| Emission Frequency (MHz) | Measured Amplitude (dBµV/m) AVG | Measured Amplitude (dBµV/m) Peak | FCC 15B | | | | Table Azimuth (0° closest to) | Receiving Antenna | | Notes / Mode |
|-----------------------------|---------------------------------|----------------------------------|--------------------|---------------------|-----------------|------------------|-------------------------------|-------------------|-----------------|--------------|
| | | | Limit (dBµV/m) AVG | Limit (dBµV/m) Peak | Margin (dB) AVG | Margin (dB) Peak | | Pol (H/V) | Height (Meters) | |
| BTLE | | | | | | | | | | |
| Channel 0 (2402MHz) | | | | | | | | | | |
| 4804.000 | 45.10 | 55.00 | 54.0 | 74.0 | 8.9 | 19.0 | 231 | H | 1.6 | |
| 7206.000 | 37.00 | 51.00 | 54.0 | 74.0 | 17.0 | 23.0 | 0 | H | 1.0 | Noise Floor |
| 9608.000 | 39.00 | 53.00 | 54.0 | 74.0 | 15.0 | 21.0 | 0 | H | 1.0 | Noise Floor |
| 12010.000 | 42.80 | 56.00 | 54.0 | 74.0 | 11.2 | 18.0 | 0 | H | 1.0 | Noise Floor |
| 14412.000 | 43.60 | 56.60 | 54.0 | 74.0 | 10.4 | 17.4 | 0 | H | 1.0 | Noise Floor |
| 16814.000 | 48.00 | 61.00 | 54.0 | 74.0 | 6.0 | 13.0 | 0 | H | 1.0 | Noise Floor |
| Channel 20 (2442MHz) | | | | | | | | | | |
| 4884.000 | 46.10 | 55.70 | 54.0 | 74.0 | 7.9 | 18.3 | 233 | H | 1.0 | |
| 7326.000 | 37.30 | 51.90 | 54.0 | 74.0 | 16.7 | 22.1 | 0 | H | 1.0 | Noise Floor |
| 9768.000 | 38.40 | 51.70 | 54.0 | 74.0 | 15.6 | 22.3 | 0 | H | 1.0 | Noise Floor |
| 12210.000 | 43.40 | 56.40 | 54.0 | 74.0 | 10.6 | 17.6 | 0 | H | 1.0 | Noise Floor |
| 14652.000 | 43.80 | 56.80 | 54.0 | 74.0 | 10.2 | 17.2 | 0 | H | 1.0 | Noise Floor |
| 17094.000 | 47.20 | 61.30 | 54.0 | 74.0 | 6.8 | 12.7 | 0 | H | 1.0 | Noise Floor |
| Channel 20 (2480MHz) | | | | | | | | | | |
| 4960.000 | 41.70 | 52.40 | 54.0 | 74.0 | 12.3 | 21.6 | 231 | H | 1.0 | |
| 7440.000 | 37.60 | 52.20 | 54.0 | 74.0 | 16.4 | 21.8 | 360 | H | 1.0 | Noise Floor |
| 9920.000 | 38.40 | 52.20 | 54.0 | 74.0 | 15.6 | 21.8 | 0 | H | 1.0 | Noise Floor |
| 12400.000 | 41.20 | 55.10 | 54.0 | 74.0 | 12.8 | 18.9 | 0 | H | 1.0 | Noise Floor |
| 14880.000 | 44.10 | 57.60 | 54.0 | 74.0 | 9.9 | 16.4 | 0 | H | 1.0 | Noise Floor |
| 17360.000 | 47.10 | 61.00 | 54.0 | 74.0 | 6.9 | 13.0 | 0 | H | 1.0 | Noise Floor |



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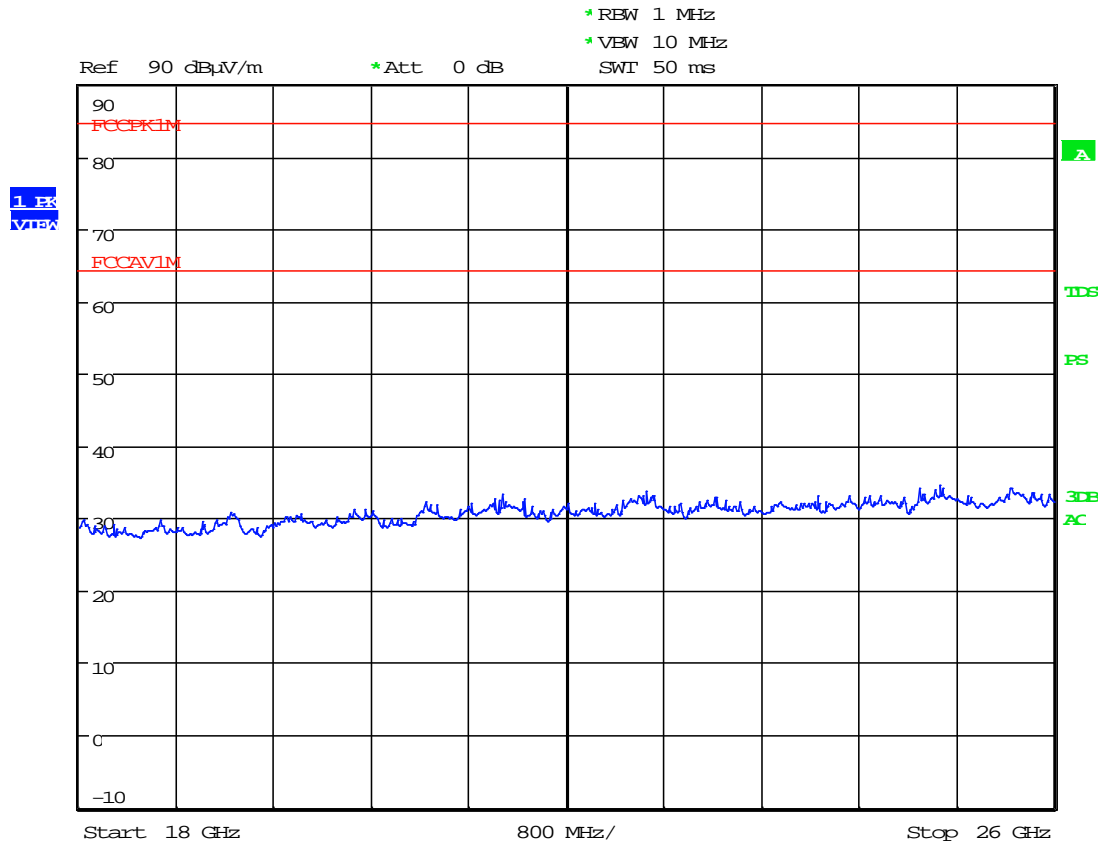
FCC ID: A94423376 IC: 3232A-423376



Max hold V/H 2402 MHz DH5
Date: 18.JAN.2018 13:15:08

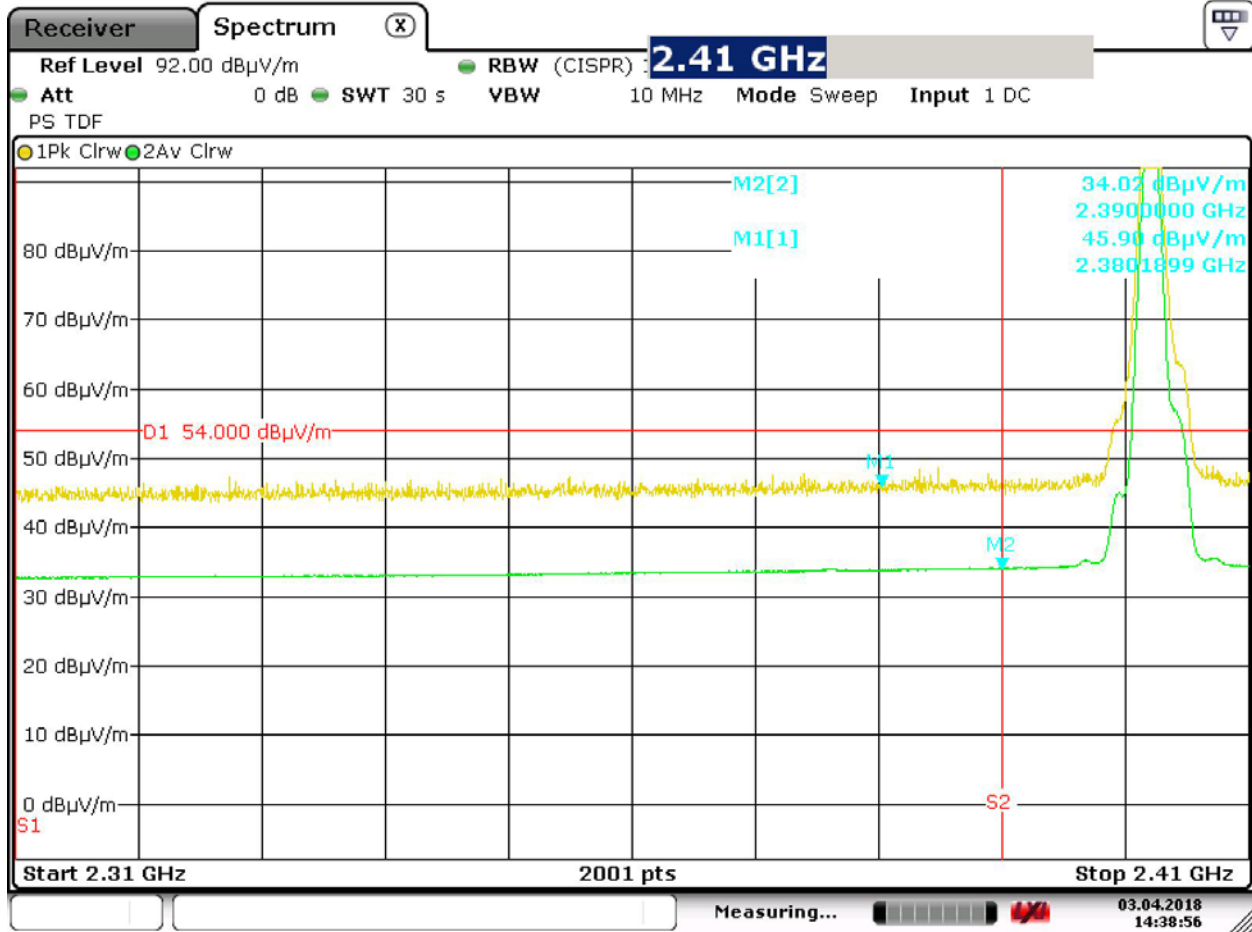


Noise floor 18-26 GHz





Data Collection: Restricted Band Edge



Date: 3.APR.2018 14:38:57

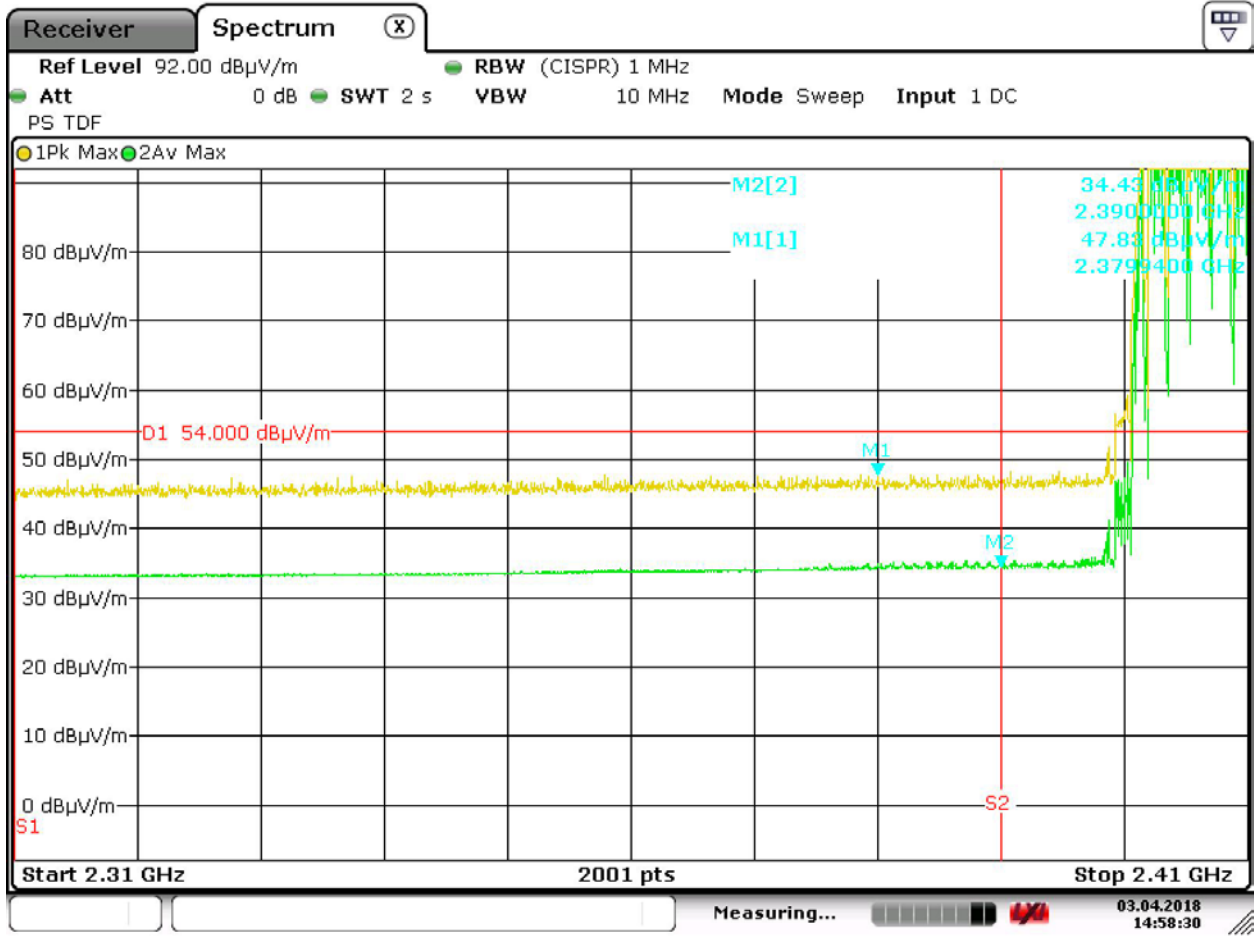
DH5, No Hop. 2310 MHz – 2390 MHz. Highest Average reading 34.07 dBμV/m



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FCC ID: A94423376 IC: 3232A-423376



Date: 3.APR.2018 14:58:30

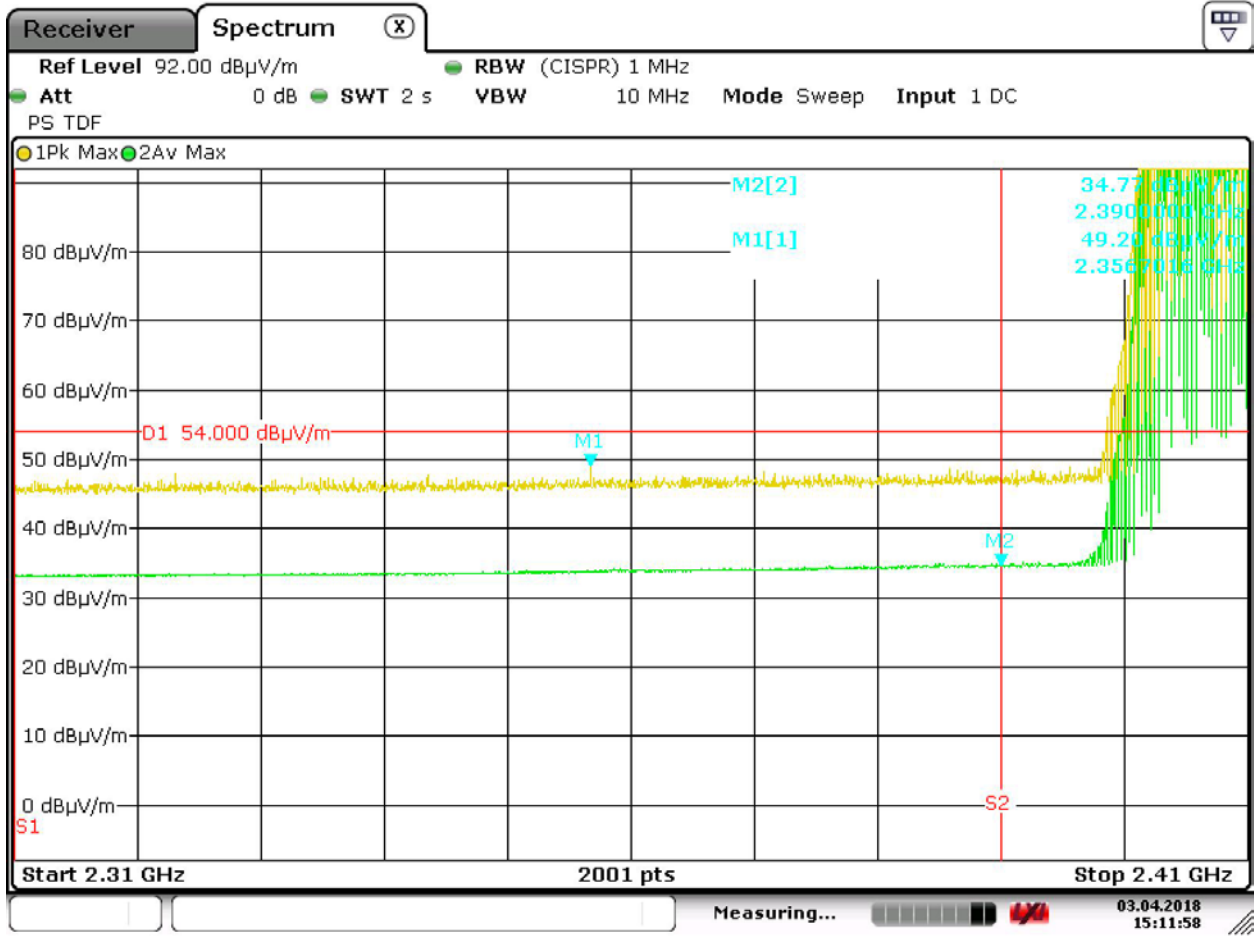
DH5, Hopping. 2310 MHz – 2390 MHz. Highest Average reading in the restricted band: 35.14 dBµV/m



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DESIGN ASSURANCE ENGINEERING Radiated Emissions Test Report

FCC ID: A94423376 IC: 3232A-423376



Date: 3.APR.2018 15:11:58

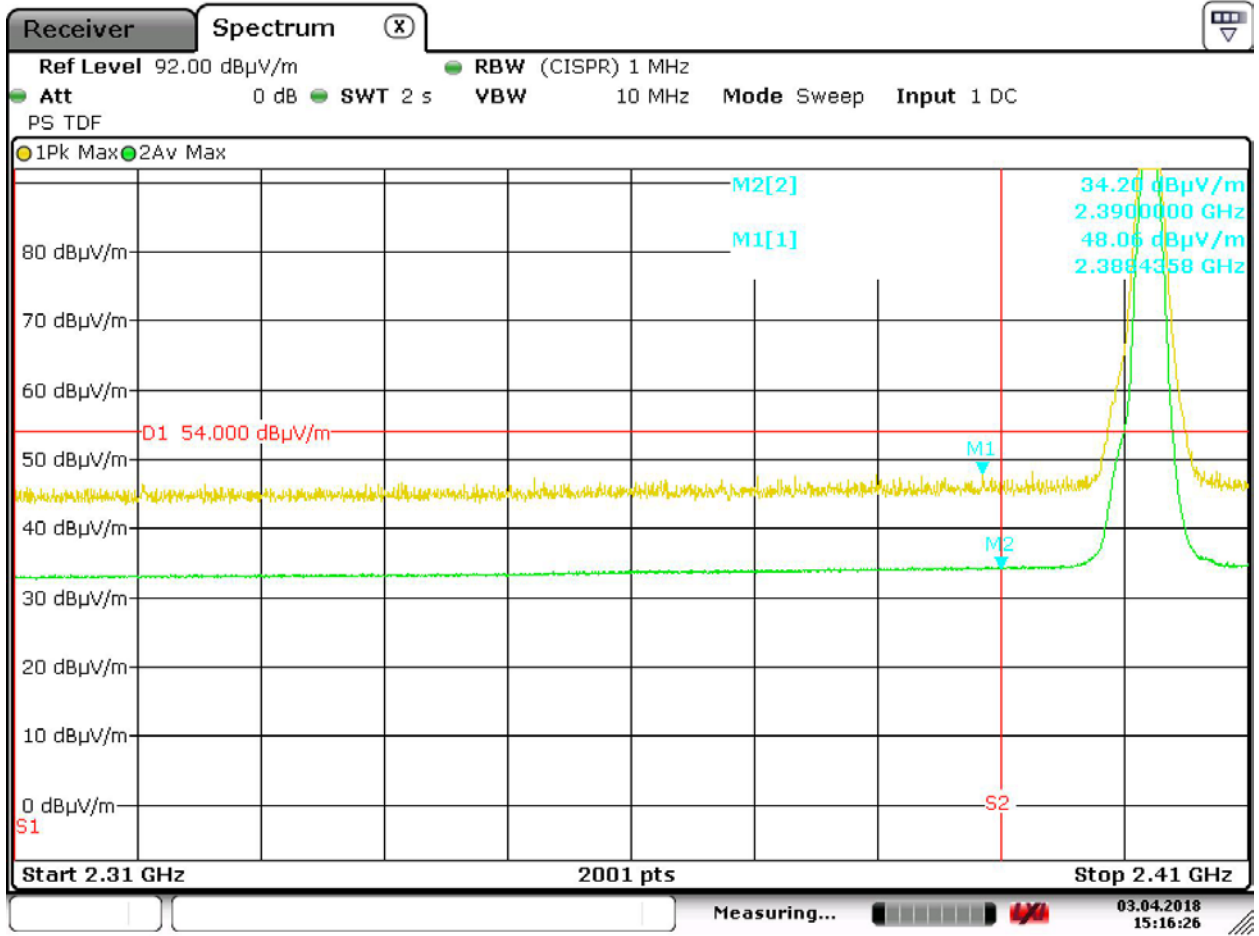
3-DH5, Hopping. 2310 MHz – 2390 MHz. Highest Average reading in the restricted band: 34.77 dBµV/m



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FCC ID: A94423376 IC: 3232A-423376



Date: 3.APR.2018 15:16:27

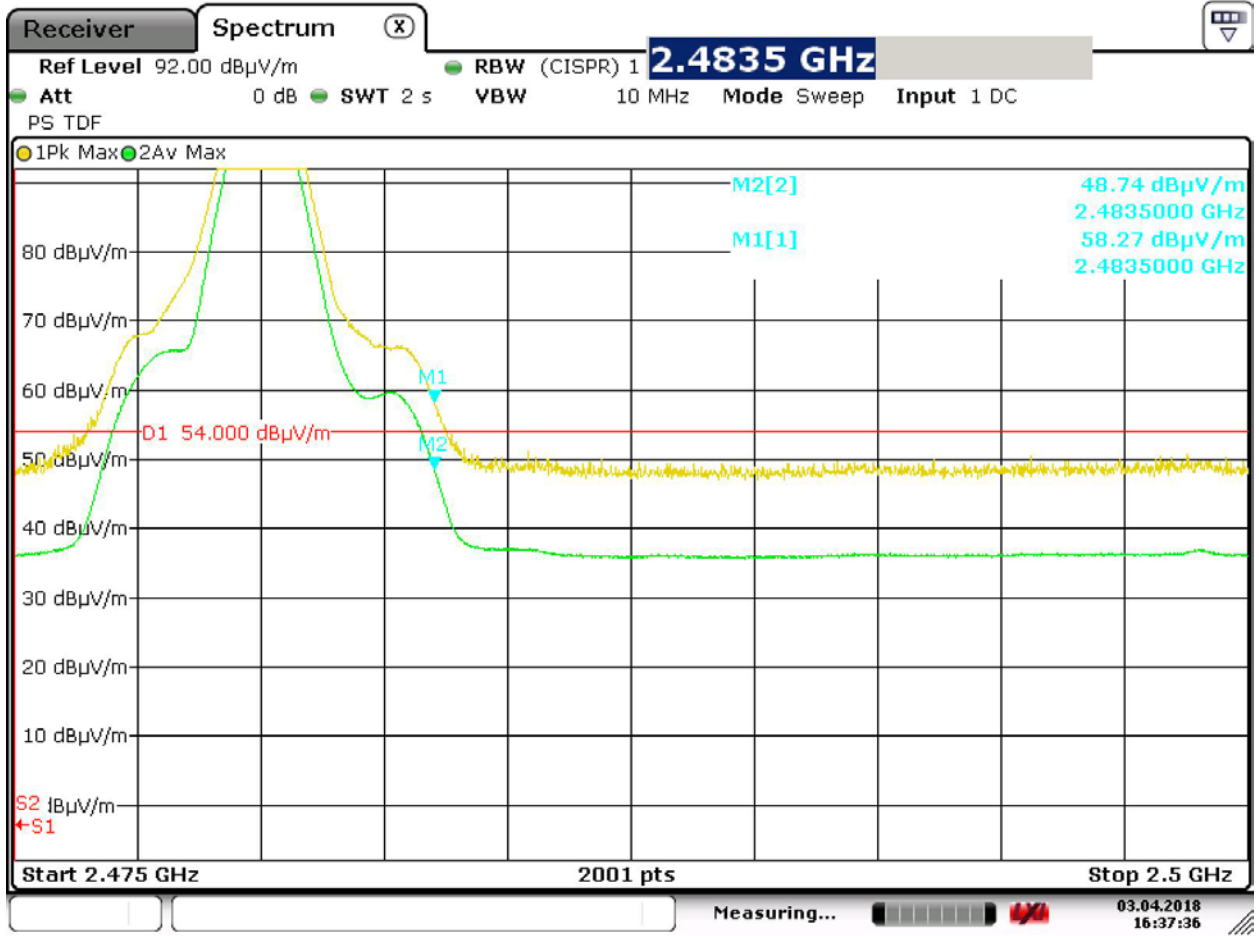
3-DH5, No Hopping. 2310 MHz–2390 MHz. Highest Average reading in the restricted band: 34.35 dBμV/m



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FCC ID: A94423376 IC: 3232A-423376



Date: 3.APR.2018 16:37:36

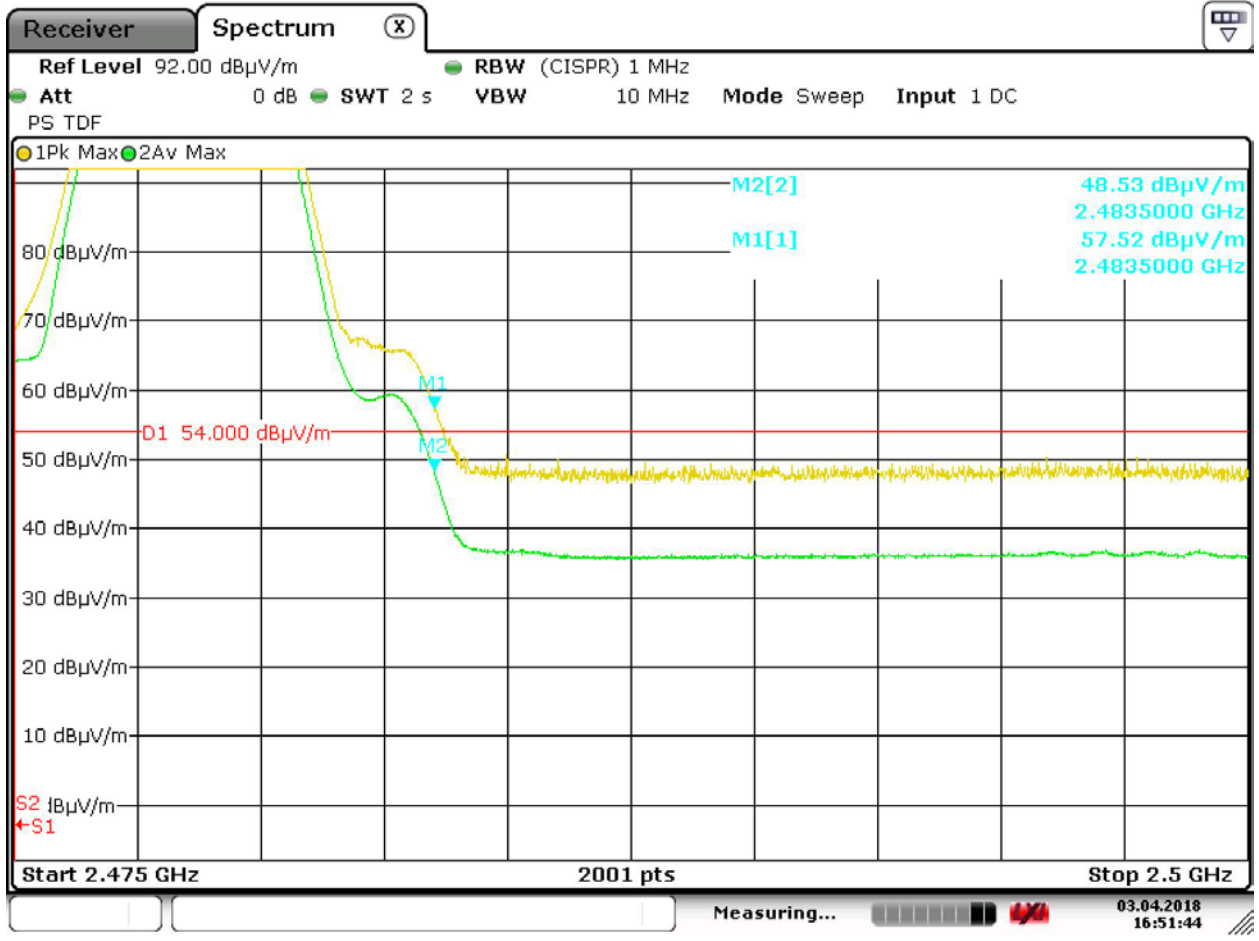
DH5, No Hop. 2483.5 MHz – 2500 MHz. Highest Average reading in the restricted band: 48.74 dBµV/m



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FCC ID: A94423376 IC: 3232A-423376



Date: 3.APR.2018 16:51:44

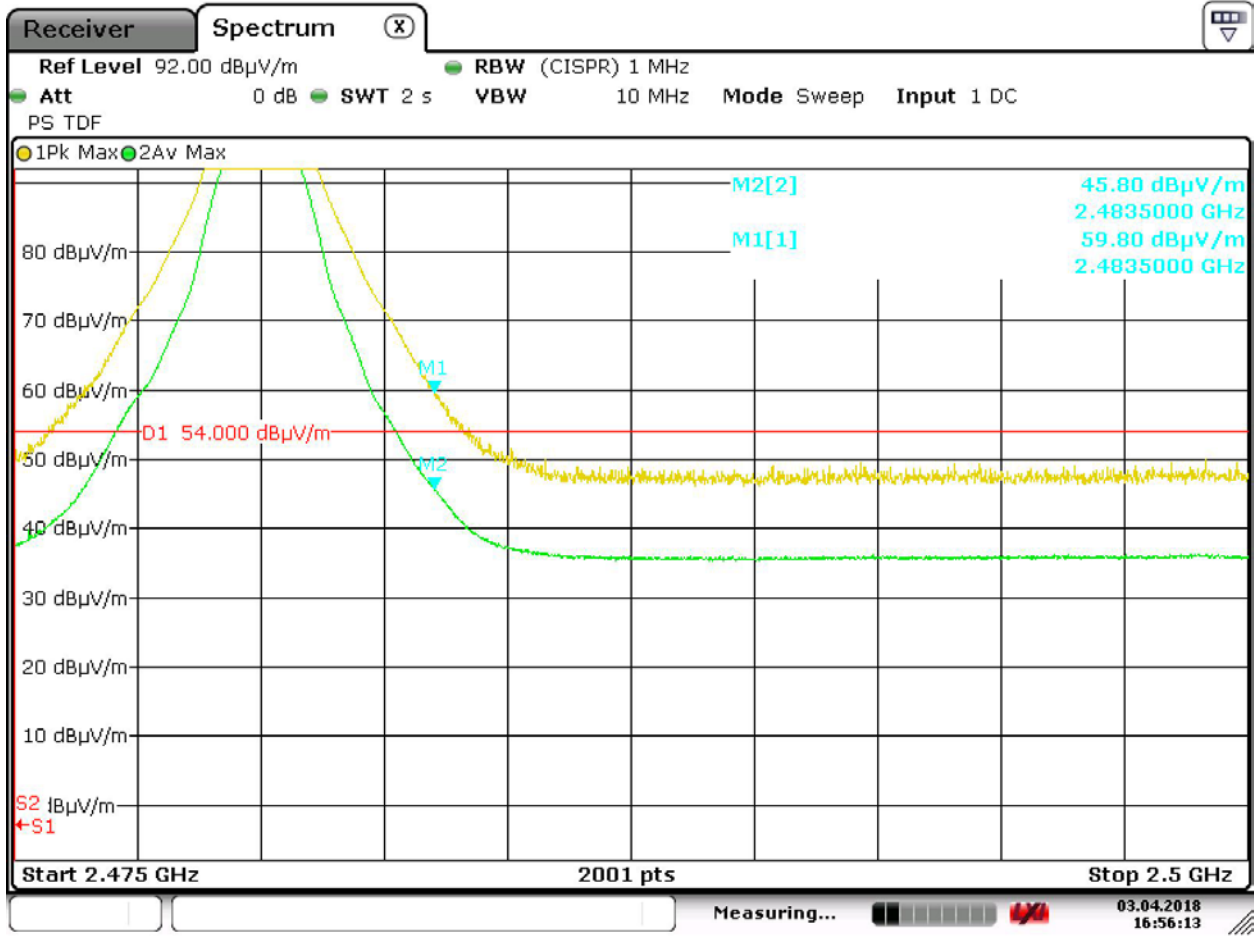
DH5, Hopping. 2483.5 MHz – 2500 MHz. Highest Average reading in the restricted band: 48.53 dBµV/m



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DESIGN ASSURANCE ENGINEERING Radiated Emissions Test Report

FCC ID: A94423376 IC: 3232A-423376



Date: 3.APR.2018 16:56:13

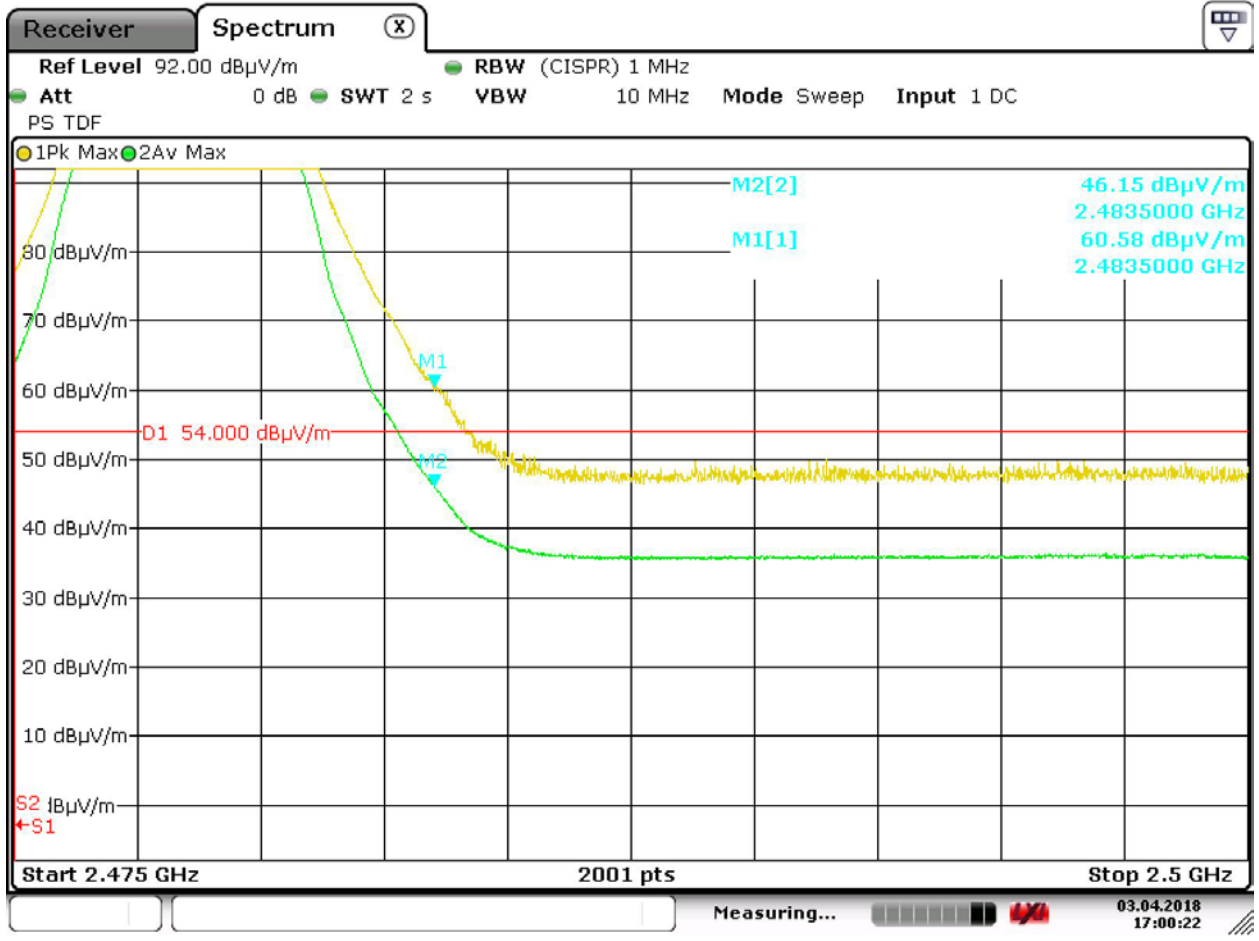
3-DH5, No Hop. 2483.5 MHz – 2500 MHz. Highest Average reading in the restricted band: 45.87 dBµV/m



Certificate # 1514.1

DESIGN ASSURANCE ENGINEERING Radiated Emissions Test Report

FCC ID: A94423376 IC: 3232A-423376



Date: 3.APR.2018 17:00:23

3-DH5, Hopping. 2483.5 MHz – 2500 MHz. Highest Average reading in the restricted band: 46.17 dBµV/m



Limits:

| Standard | Freq Range (MHz) | Limits (dBuV QP ¹) | | | Comments |
|----------------------------------|--------------------|--------------------------------|------------|---------|--|
| | | Class A | | Class B | |
| | | 10 m | 3 m | 3 m | |
| FCC 15B | 30-88 | 39 | 49 | 40 | Measurements above 1 GHz are made using average and peak detectors. Mains cables draped to floor, not bundled. *For measurements above 1 GHz, peak limits must also be met that are 20 dB higher than average limits. |
| | 88-216 | 43.5 | 53.5 | 43.5 | |
| | 216-960 | 46.5 | 56.5 | 46 | |
| | >960 | 49.5* | 59.5* | 54* | |
| CISPR 32 FM Local Oscillator | Fundamental | N/A | N/A | 60 | |
| | Harmonics 30-300 | N/A | N/A | 52 | |
| | Harmonics 300-1000 | N/A | N/A | 56 | |
| CISPR 32 | | | Class A | Class B | Mains cables bundled not draped to floor. *For measurements above 1 GHz, peak limits must also be met that are 20 dB higher than average limits. |
| | | | 3 m | 3 m | |
| | 30-230 | | 50 | 40 | |
| | 230-1000 | | 57 | 47 | |
| | Freq Range (GHz) | | | | |
| | 1-3 | | 56* | 50* | |
| 3-6 | | 60* | 54* | | |
| Bandwidth and Detector Settings: | | | | | |
| Freq. Range (MHz) | RBW (kHz) | VBW (kHz) | Detector | | |
| 30 – 1000 | 120 | >300 | QP | | |
| > 1000 | 1000 | >1000 | Pk and AVG | | |



Equipment Used:

| TN | Description | Model | S/N | Manufacturer | Most Recent Calibration | Calibration Due Date | Most Recent Verification | Verification Due Date |
|------|---|-------------------------------|--------------|-----------------------|-------------------------|----------------------|--------------------------|-----------------------|
| 1620 | Comb Generator 1GHz - 10GHz | CGO-5100 | 281571 | Com-Power Corporation | | | | |
| 1663 | EMI Test Receiver | ESU40 | 100098 | Rohde & Schwarz | 05-Apr-2017 | 05-Apr-2018 | | |
| 1757 | 18GHz-40GHz Preamp | JS4018004000-30-8P-A1 | 1406279 | Miteq | | | 24-Jan-2017 | 24-Jan-2018 |
| 2342 | 2.4GHz Band Reject Filter | BRM50702-07 | 001 | Micro-Tronics | 11-Aug-2014 | | 07-Mar-2018 | 07-Mar-2019 |
| 2357 | RF Cable 30MHz-18GHz | TRU-300 | TRU-12707-03 | TRU Corporation | | | 26-Jan-2018 | 26-Jan-2019 |
| 2373 | RF Cable 30MHz-18GHz - 25 feet "N" | TRU-300 | N/A | TRU Corporation | | | 12-Nov-2014 | |
| 2385 | Marconi Manor | 3 Meter Semi Anechoic Chamber | N/A | AP Americas | | | 15-Feb-2017 | |
| 2478 | RF cable 30MHz-18GHz | 257-257-3052640 | N/A | SRC Haverhill | | | 26-Jan-2018 | |
| 2349 | Double Ridge Waveguide Horn Antenna 1-18GHz | 3117 | 00152406 | ETS Lindgren | 27-Dec-2017 | 27-Dec-2018 | | |
| 2602 | Miteq pre-amp 1-18GHz 35dB | AFS42-01001800-28-10P-42 | N/A | Miteq | | | 09-Feb-2018 | 09-Feb-2019 |
| 1307 | Standard Gain Horn Antenna 18GHz - 26.5GHz | 3160-09 | 00029792 | Emco | 29-Mar-2017 | 28-Mar-2020 | | |



Uncertainty:

| Uncertainty Budget | | | | |
|--|--------------------------|--------------|---------|-----------------------|
| Title: | Radiated Emissions | | | |
| Source of Uncertainty | Value units:+/- dB | Distribution | Divisor | Uncertainty (± dB) |
| RF spec anal-level-Ref. | 0.6 | Rect. | 1.73 | 0.35 |
| RF spec anal-level-Freq resp. | 1.0 | Rect. | 1.73 | 0.58 |
| RF spec anal-level-Display | 0.3 | Rect. | 1.73 | 0.17 |
| RF spec anal-level-QP det. | 1.0 | Rect. | 1.73 | 0.58 |
| Antenna factor | 0.9 | Norm. | 2.00 | 0.45 |
| Preamp corr. Factor | 0.5 | Rect. | 1.73 | 0.29 |
| Cable corr. Factor | 0.5 | Rect. | 1.73 | 0.29 |
| Combined uncertainty (RSS): | | | | 1.09 |
| Coverage factor (2 sigma): | | | | 2.00 |
| Extended uncertainty (95% confidence): | | | | 2.18 |



Test setup verification check(s):

CISPR32 and FCC 1-6GHz Emissions Verification Check

Date: 11/14/2014

EQUIPMENT:

Marconi Manor: TN2385

Cables: TN2373, 2383, 2367 (3_Cables)

Pre-amp (MITEQ) TN1672

Horn antenna (3117) TN2348

Comb Generator TN1620

SETUP:

Receiving antenna vertical polarization, 1 meter height, 3Meter distance.

0 deg on comb gen. facing receiving antenna.

CISPR16 anechoic tiles and cones in place.

Analyzer settings

Transducer set > 1-6GHz

Set manually start/stop freq, RBW 1MHz, attention 0dB, Ref level 80dBuV/m, detectors

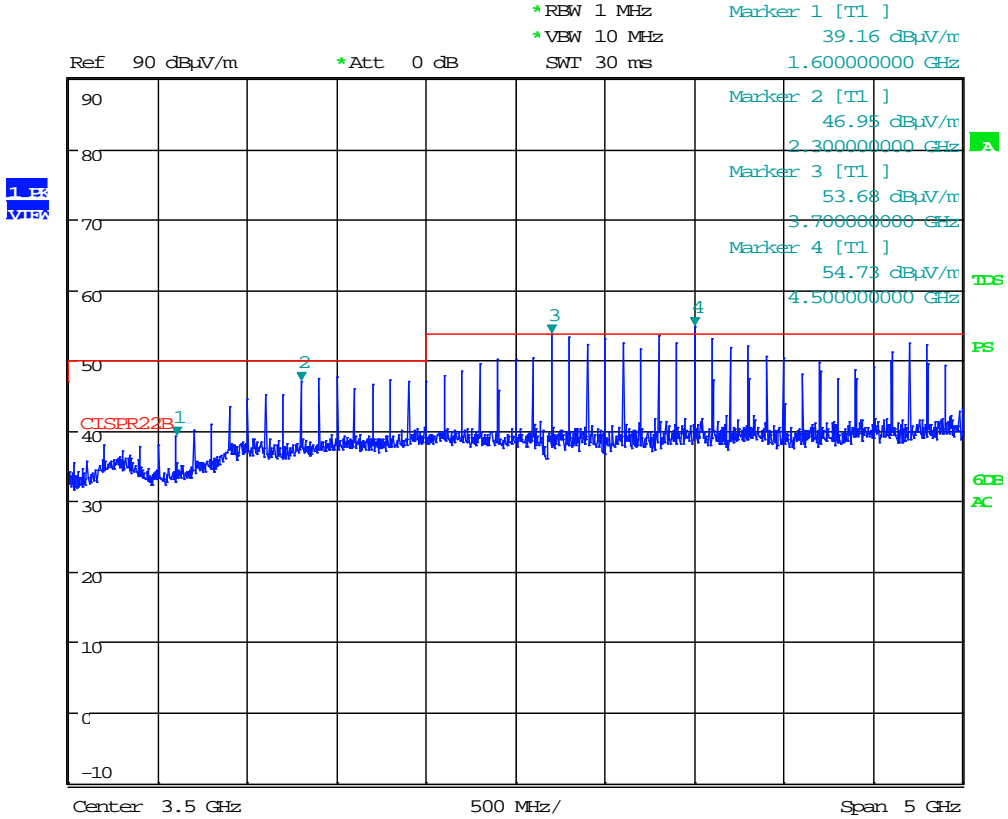
File recall 1-6GHz in ESU



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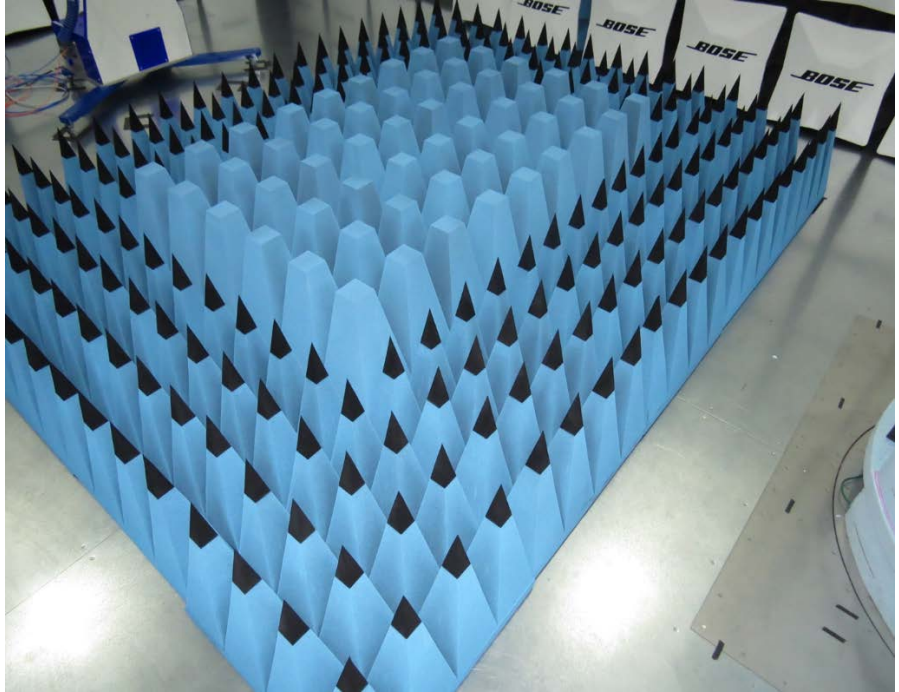
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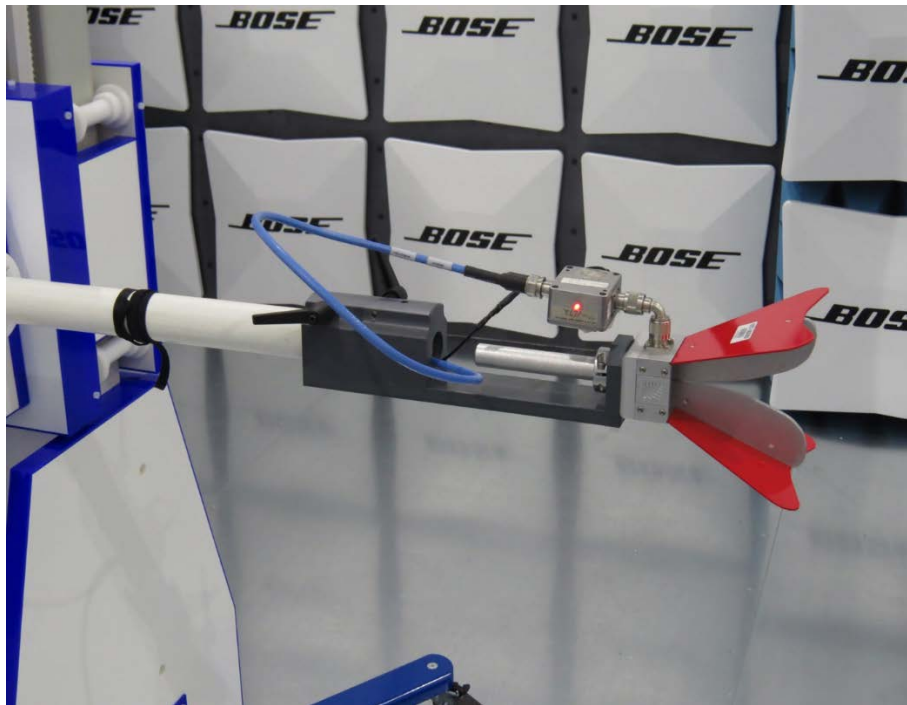


3DH3 Pulse Width

Date: 19.DEC.2014 14:49:53



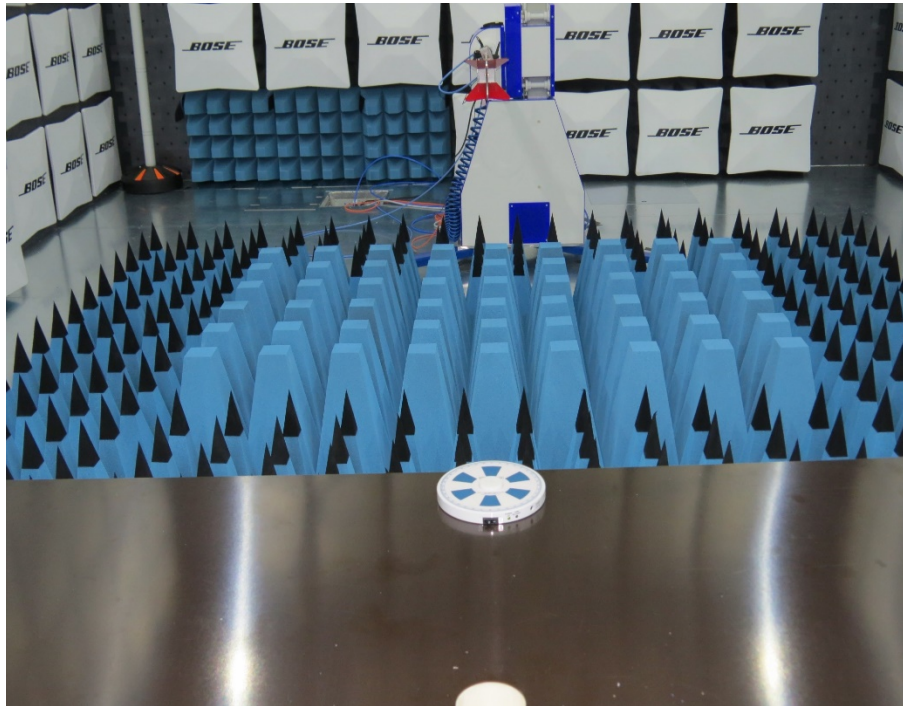
Absorber configuration.



Antenna and pre-amp setup.



Table and Site source placement.



Site source placement.