

**FCC 15.247
2.4 GHz Report**

for

Elitegroup Computer Systems Co., Ltd.

No. 239, Sec. 2, TiDing Blvd,
Taipei, Taiwan 11493

Brand : ECS
Product Name : 12" Multi Function Pad
Model Name : mPAD-12.....
(The "." in the model name can be 0 to 9, A to Z,
a to z, "-", "_", "\", "/" or blank for marketing
use only)
FCC ID : WL6TC12A-W

Prepared by: : AUDIX Technology Corporation,
EMC Department



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APPENDIX A TEST PLOTS

APPENDIX B TEST PHOTOGRAPHS

TEST REPORT CERTIFICATION

Applicant : Elitegroup Computer Systems Co., Ltd.
Product Name : 12" Multi Function Pad
Model No. : mPAD-12.....
(The "." in the model name can be 0 to 9, A to Z, a to z, "-", "_", "\",
"/" or blank for marketing use only)
Serial No. : N/A
Brand : ECS

Applicable Standards:

47 CFR FCC Part 15 Subpart C:2015
ANSI C63.10:2013
FCC Public Notice DA 00-705

AUDIX Technology Corp. tested the equipment mentioned in accordance with the requirements set forth in the above standards. Test results indicate that the equipment tested is capable of demonstrating compliance with the requirements as documented within this report. **AUDIX Technology Corp.** does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens and samples.

Date of Test: 2016. 05. 20 ~ 06. 06

Date of Report: 2016. 06. 17

Producer: Annie Yu
(Annie Yu/Administrator)

Signatory: Jarwei Wang
(Jarwei Wang/Section Manager)

1. REPORT HISTORY

| Revision | Date | Revision Summary | Report Number |
|----------|--------------|------------------|---------------|
| 0 | 2016. 06. 17 | Original Report. | EM-F160346 |

2. SUMMARY OF TEST RESULTS

| Rule | Description | Results |
|-------------------|---|-------------|
| 15.207 | Conducted Emission | PASS |
| 15.247(d)/15.205 | Radiated Band Edge and Radiated Spurious Emission | PASS |
| 15.247(a)(1) | 20dB Bandwidth | PASS |
| 15.247(a)(1) | Carrier Frequency Separation | PASS |
| 15.247(a)(1)(iii) | Time of Occupancy | PASS |
| 15.247(a)(1)(iii) | Number of Hopping Channels | PASS |
| 15.247(b)(1) | Maximum Peak Output Power | PASS |
| 15.247(d) | Conducted Band Edges and Conducted Spurious Emission | PASS |
| 15.203 | Antenna Requirement | PASS |

3. GENERAL INFORMATION

3.1. Description of EUT

| | |
|---------------------------|---|
| Product | 12" Multi Function Pad |
| Model Number | mPAD-12..... (The "." in the model name can be 0 to 9, A to Z, a to z, "-", "_", "\", "/" or blank for marketing use only) |
| Test Model | mPAD-12-CHT4-I |
| Serial Number | N/A |
| Brand Name | ECS |
| Applicant | Elitegroup Computer Systems Co., Ltd. No. 239, Sec. 2., TiDing Blvd., Taipei, Taiwan 11493 |
| RF Features | WLAN:802.11a/b/g/n/ac Bluetooth: BT and BLE NFC |
| Date of Receipt of Sample | 2016. 05. 19 |

3.2. Description of Key Component Lists

| Item | Supplier | Model / Type | Character |
|--------------------------------|---|---------------------------|---|
| Main Board | ECS | TC71A | --- |
| CPU (Socket: BGA1380) | Intel | Z8550 | 1.44GHz, up to 2.4GHz |
| Memory (On Board) | SK hynix | H9CCNNNBPTBL | LPDDR3 1600MHz 4GB |
| 12" LCD Panel | Starry | 20811220560001 | ZC-122A-0776AT |
| Touch Module | TOPGROUP EETI | ZC-122A-0776AT EXC3102 | Support 10-points multi-touch(Capacitive) |
| Storage | SandDisk | SDIN9DW4-32G | 32GB |
| Front Camera | KINGCOME | O6P2-TC12A-WFHQ | Front Camera : 2.0M |
| Rear Camera | KINGCOME | O9B8-TC12A-WBHQ | Rear Camera: 8.0M |
| Wi-Fi +BT Module | Qualcomm (Azurewave) | QCNFA324 (AW-CM217NF) | Wi-Fi 802.11 a/b/g/n/ac + BT 4.0 |
| GPS | Boradcam | BCM4752 | GPS&GLONASS |
| NFC | NXP | NPC100 | --- |
| BATTREY | SUNWODA | TC12A-W | 3.7Vdc, 12600mAh / 46.62Wh |
| AC Adapter (Wall-mount, 2C) | Asian Power Devices Inc. | WA-36A12R | I/P: AC 100-240V, 50-60Hz, 0.9A Max. O/P: DC 12V, 3A |
| | DC Power Cord: Unshielded, Undetachable, 1.8m With one ferrite core | | |
| mPad Module (Option) | ECS | Barcode Scanner mPAD | Barcode Scanner |
| | ECS | SCR mPAD | Smart Card Reader (SCR) |
| | ECS | MSR mPAD | Magnetic Stripe Reader (MSR) |
| | ECS | USB Ethernet mPAD | Giga LAN Port |
| 12" Pad Docking (Option) | ECS | DOCKING mPAD-12 | Docking |

Remark: For more detailed features description, please refer to the manufacturer's specifications or the user manual.

3.3. EUT Specifications Assessed in Current Report

| Mode | Fundamental Range (MHz) | Channel Number | Modulation | Data Rate (Mbps) |
|-----------|-------------------------|----------------|--------------------------------|------------------|
| Bluetooth | 2402-2480 | 79 | FHSS (GFSK, 1/4 DQPSK, 8-DPSK) | 1/2/3 |

| Channel List | | | | | |
|----------------|-----------------|----------------|-----------------|----------------|-----------------|
| Channel Number | Frequency (MHz) | Channel Number | Frequency (MHz) | Channel Number | Frequency (MHz) |
| 00 | 2402 | 27 | 2429 | 54 | 2456 |
| 01 | 2403 | 28 | 2430 | 55 | 2457 |
| 02 | 2404 | 29 | 2431 | 56 | 2458 |
| 03 | 2405 | 30 | 2432 | 57 | 2459 |
| 04 | 2406 | 31 | 2433 | 58 | 2460 |
| 05 | 2407 | 32 | 2434 | 59 | 2461 |
| 06 | 2408 | 33 | 2435 | 60 | 2462 |
| 07 | 2409 | 34 | 2436 | 61 | 2463 |
| 08 | 2410 | 35 | 2437 | 62 | 2464 |
| 09 | 2411 | 36 | 2438 | 63 | 2465 |
| 10 | 2412 | 37 | 2439 | 64 | 2466 |
| 11 | 2413 | 38 | 2440 | 65 | 2467 |
| 12 | 2414 | 39 | 2441 | 66 | 2468 |
| 13 | 2415 | 40 | 2442 | 67 | 2469 |
| 14 | 2416 | 41 | 2443 | 68 | 2470 |
| 15 | 2417 | 42 | 2444 | 69 | 2471 |
| 16 | 2418 | 43 | 2445 | 70 | 2472 |
| 17 | 2419 | 44 | 2446 | 71 | 2473 |
| 18 | 2420 | 45 | 2447 | 72 | 2474 |
| 19 | 2421 | 46 | 2448 | 73 | 2475 |
| 20 | 2422 | 47 | 2449 | 74 | 2476 |
| 21 | 2423 | 48 | 2450 | 75 | 2477 |
| 22 | 2424 | 49 | 2451 | 76 | 2478 |
| 23 | 2425 | 50 | 2452 | 77 | 2479 |
| 24 | 2426 | 51 | 2453 | 78 | 2480 |
| 25 | 2427 | 52 | 2454 | | |
| 26 | 2428 | 53 | 2455 | | |

3.4. Antenna Information

| GPS Antenna | | | | | |
|-------------|---------------------|-------------|--------------|-----------------|----------------|
| No. | Antenna Part Number | Manufacture | Antenna Type | Frequency (MHz) | Max Gain (dBi) |
| 1 | TC12 | JEM | PCB | 1510 to 1602 | 0.84 |

| 2.4G Antenna | | | | | | |
|---|-------------------------|-----------------------------------|--------------|-----------------|----------------|------------------------|
| No. | Antenna Part Number | Manufacture | Antenna Type | Frequency (MHz) | Max Gain (dBi) | Directional Gain (dBi) |
| 1 | IAH150100 (Tx1 Antenna) | Joinsoon Electronics MFG. CO.,LTD | PIFA | 2400 to 2500 | 0.41 | 2.82 ^{Note1} |
| 2 | IAH150101 (Tx2 Antenna) | Joinsoon Electronics MFG. CO.,LTD | PIFA | 2400 to 2500 | -0.83 | |
| Note 1. Directional gain = 10 log[(10 ^{0.41/20} + 10 ^{-0.83/20}) ² / 2]=2.82dBi | | | | | | |

| 5G Antenna | | | | | | |
|--|----------------------------|--------------------------------------|--------------|-----------------|----------------|-------------------------------|
| No. | Antenna Part Number | Manufacture | Antenna Type | Frequency (MHz) | Max Gain (dBi) | Directional Gain (dBi) |
| 1 | IAH150100 (Tx1 Antenna) | Joinsoon Electronics MFG. CO.,LTD | PIFA | 5150 to 5350 | -3.18 | 2.046 ^{Note1} |
| 2 | | | | 5470 to 5725 | 1.58 | 3.91 ^{Note2} |
| 3 | | | | 5725 to 5850 | 1.58 | 3.90 ^{Note2} |
| 4 | IAH150101 (Tx2 Antenna) | Joinsoon Electronics MFG. CO.,LTD | PIFA | 5150 to 5350 | 0.84 | 2.046 ^{Note1} |
| 5 | | | | 5470 to 5725 | 0.18 | 3.91 ^{Note2} |
| 6 | | | | 5725 to 5850 | 0.15 | 3.90 ^{Note2} |
| Note 1. Directional gain = $10 \log[(10^{-3.18/20} + 10^{0.84/20})^2 / 2]$ =2.046dBi | | | | | | |
| Note 2. Directional gain = $10 \log[(10^{1.58/20} + 10^{0.18/20})^2 / 2]$ =3.91dBi | | | | | | |
| Note 3. Directional gain = $10 \log[(10^{1.58/20} + 10^{0.15/20})^2 / 2]$ =3.90 dBi | | | | | | |

3.5. Test Configuration

| AC Conduction | |
|---------------|------------------|
| Test Case | Normal operation |

| Item | | Modulation | Data Rate | Test Channel |
|--------------------------------------|---|------------|-----------|--------------|
| Radiated Test Case | Radiated Band Edge ^{Note1} | GFSK | 1Mbps | 00/78 |
| | | 8-DPSK | 3Mbps | 00/78 |
| | Radiated Spurious Emission ^{Note1} | GFSK | 1Mbps | 00/39/78 |
| Conducted Test Case ^{Note2} | 20dB Bandwidth | GFSK | 1Mbps | 00/39/78 |
| | | 8-DPSK | 3Mbps | 00/39/78 |
| | Carrier Frequency Separation | GFSK | 1Mbps | 00/39/78 |
| | | 8-DPSK | 3Mbps | 00/39/78 |
| | Time of Occupancy | GFSK | 1Mbps | 00/39/78 |
| | | 8-DPSK | 3Mbps | 00/39/78 |
| | Number of Hopping Channels | GFSK | 1Mbps | 39 |
| | | 8-DPSK | 3Mbps | 39 |
| | Maximum Peak Output Power | GFSK | 1Mbps | 00/39/78 |
| | | 8-DPSK | 3Mbps | 00/39/78 |
| | Band Edges | GFSK | 1Mbps | 00/78 |
| | | 8-DPSK | 3Mbps | 00/78 |
| | Spurious Emission | GFSK | 1Mbps | 00/39/78 |
| | | 8-DPSK | 3Mbps | 00/39/78 |

Note 1:

Mobile Device: Device was pre-assessed with docking and portable (3 axis), the worst case is tested with docking.

Portable Device, and 3 axis were assessed.

Lie

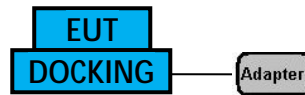
Side

Stand

Note 2: We performed testing of the highest and lowest data rate.

3.6. Setup Configuration

3.6.1. EUT Configuration for Power Line and Radiated Emission



3.6.2. EUT Configuration for Conducted Test Items



3.7. Operating Condition of EUT

Test program “QCA Radio Control Toolkit” is used for enabling EUT RF function under continues transmitting and choosing data rate / channel.

3.8. Description of Test Facility

| | | |
|--------------------------|---|--|
| Test Firm Name | : | AUDIX Technology Corporation EMC Department No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan |
| Test Location & Facility | : | No. 8 Shielded Room No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan Semi-Anechoic Chamber No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan Fully Anechoic Chamber No. 53-11, Dingfu, Linkou Dist., New Taipei City 244, Taiwan IC Test Site Registration No.: 5183B-4 Renewal on August 31, 2015 |
| NVLAP Lab. Code | : | 200077-0 |
| TAF Accreditation No | : | 1724 |
| FCC OET Designation | : | TW1004 & TW1090 |

3.9. Measurement Uncertainty

| Test Item | Frequency Range | Uncertainty |
|----------------------------------|-----------------|-------------|
| Conduction Test | 150kHz~30MHz | ±3.5dB |
| Radiation Test (Distance: 3m) | 30MHz~1000MHz | ± 3.68dB |
| | Above 1GHz | ± 5.82dB |

Remark : Uncertainty = $ku_c(y)$

| Test Item | Uncertainty |
|--------------------------------|-------------|
| 20dB Bandwidth | ±0.2kHz |
| Carrier Frequency Separation | ±0.2kHz |
| Time of Occupancy | ±0.03sec |
| Maximum peak Output power | ± 0.52dB |
| Conducted Emission Limitations | ± 0.13dB |

4. MEASUREMENT EQUIPMENT LIST

4.1. Conducted Emission Measurement

| Item | Type | Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Due |
|------|---------------|--------------|-----------|------------|--------------|--------------|
| 1. | Test Receiver | R&S | ESR3 | 101774 | 2016. 02. 04 | 2017. 02. 03 |
| 2. | A.M.N. | R&S | ENV4200 | 100169 | 2015. 11. 17 | 2016. 11. 16 |
| 3. | L.I.S.N. | Kyoritsu | KNW-407 | 8-855-9 | 2015. 12. 23 | 2016. 12. 22 |
| 4. | Pulse Limiter | R&S | ESH3-Z2 | 100354 | 2016. 01. 17 | 2017. 01. 16 |
| 5. | Test Software | Audix | e3 | V.6.120424 | N.C.R. | N.C.R. |

4.2. Radiated Emission Measurement

4.2.1. Frequency Range 9kHz~1000MHz (Semi Anechoic Chamber)

| Item | Type | Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Due |
|------|-------------------|--------------|------------|------------|--------------|--------------|
| 1. | Spectrum Analyzer | Agilent | N9010A-526 | MY53400071 | 2015. 09. 14 | 2016. 09. 13 |
| 2. | Test Receiver | R & S | ESCS30 | 100338 | 2015. 06. 24 | 2016. 06. 23 |
| 3. | Amplifier | HP | 8447D | 2944A06305 | 2016. 02. 23 | 2017. 02. 22 |
| 4. | Bilog Antenna | CHASE | CBL6112D | 33821 | 2016. 01. 30 | 2017. 01. 29 |
| 5. | Loop Antenna | R&S | HFH2-Z2 | 891847/27 | 2015. 12. 24 | 2016. 12. 23 |
| 6. | Test Software | Audix | e3 | V.6.110601 | N.C.R. | N.C.R. |

4.2.2. Frequency Range Above 1000MHz (Fully Anechoic Chamber)

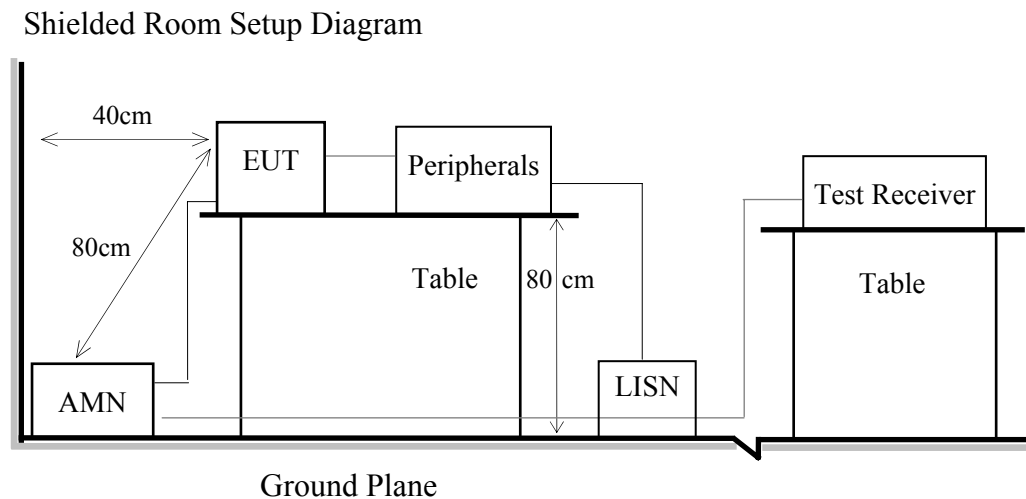
| Item | Type | Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Due |
|------|---------------------|--------------|----------------------------|------------|--------------|--------------|
| 1. | Spectrum Analyzer | Agilent | E4446A | US44300366 | 2015. 08. 20 | 2016. 08. 19 |
| 2. | Amplifier | Sonoma | 310N | 187161 | 2015. 06. 17 | 2016. 06. 16 |
| 3. | 2.4GHz Notch Filter | K&L | 7NSL10-244 1.5E130.5-00 | 1 | 2015. 07. 28 | 2016. 07. 27 |
| 4. | Horn Antenna | ETS-Lindgren | 3117 | 00135902 | 2016. 03. 05 | 2017. 03. 04 |
| 5. | Loop Antenna | R&S | HFH2-Z2 | 891847/27 | 2015. 12. 24 | 2016. 12. 23 |
| 6. | Test Software | Audix | e3 | V.6.110601 | N.C.R. | N.C.R. |

4.3. RF Conducted Measurement

| Item | Type | Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Due |
|------|-------------------|--------------|------------|------------|--------------|--------------|
| 1. | Spectrum Analyzer | Agilent | N9010A-507 | MY52220264 | 2015. 08. 20 | 2016. 08. 19 |

5. CONDUCTED EMISSION MEASUREMENT

5.1. Block Diagram of Test Setup



5.2. Power Line Conducted Emission Limit

| Frequency | Conducted Limit | |
|-----------------|--------------------|--------------------|
| | Quasi-Peak Level | Average Level |
| 150kHz ~ 500kHz | 66 ~ 56 dB μ V | 56 ~ 46 dB μ V |
| 500kHz ~ 5MHz | 56 dB μ V | 46 dB μ V |
| 5MHz ~ 30MHz | 60 dB μ V | 50 dB μ V |

Remark 1.: If the average limit is met when using a Quasi-Peak detector, the measurement using the average detector is not required.

2.: The lower limit applies to the band edges.

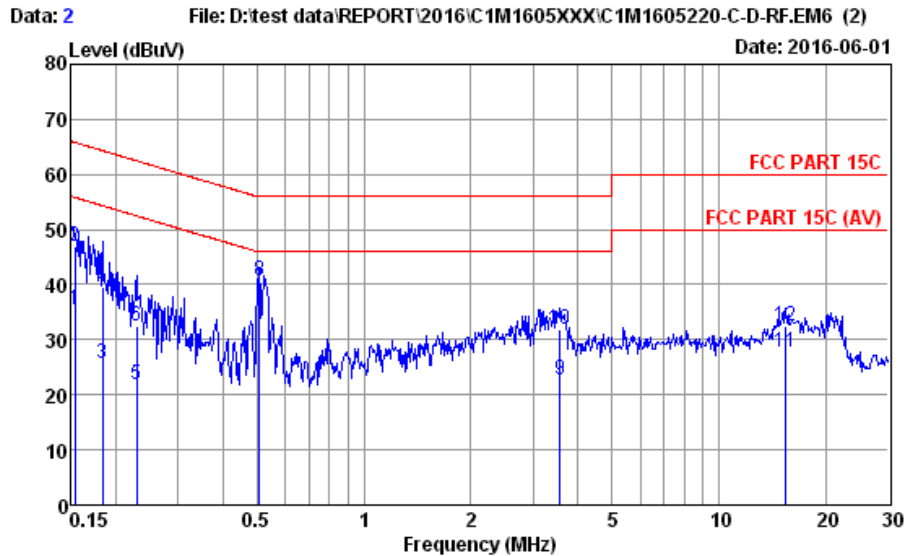
5.3. Test Procedure

- 5.3.1. To set up the EUT as indicated in ANSI C 63.10. The EUT was placed on the table which has 80 cm height to the ground and 40 cm distance to the conducting wall.
- 5.3.2. Power supplier of the EUT was connected to the AC mains through an Artificial Mains Network (A.M.N.).
- 5.3.3. The AC power supplies to all peripheral devices must be provided through line impedance stabilization network (L.I.S.N.)
- 5.3.4. Checking frequency range from 150 kHz to 30 MHz and record the emission which does not have 20 dB below limit.

5.4. Conducted Emission Measurement Results

PASSED.

| | | | |
|--------------|---------------|------------|---------|
| Test Date | 2016/06/01 | Temp./Hum. | 25 /60% |
| Test Voltage | AC 120V, 60Hz | | |



Site no. : No.8 Shielded Room Data no. : 2
Condition : ENV4200 100169 Phase : NEUTRAL
Limit : FCC PART 15C
Env. / Ins. : 25°C / 60% ESR3 (1774) Engineer : Tim
EUT : mPAD-12-CHT4-I
Power Rating : 120Vac/60Hz
Test Mode : Operating

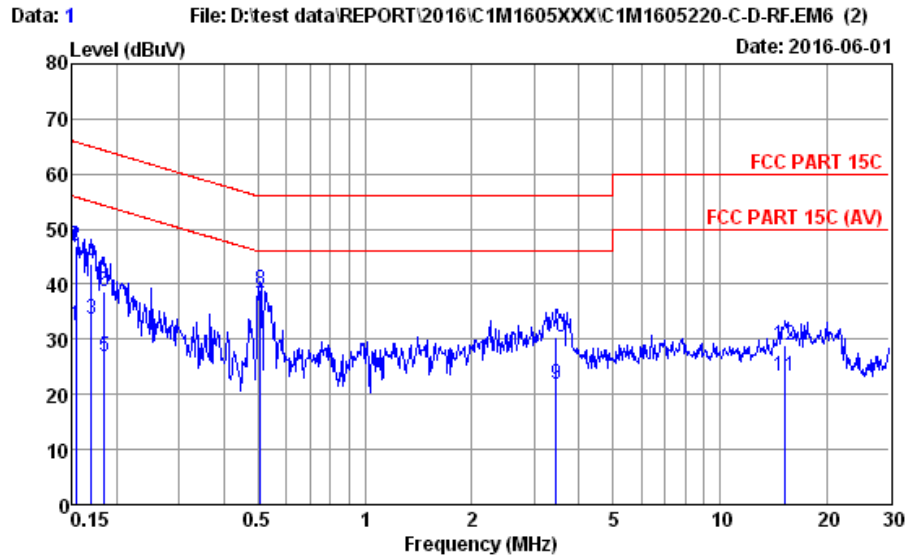
| | Freq. (MHz) | AMN Factor (dB) | Cable Loss (dB) | Pulse Att. (dB) | Reading (dBμV) | Emission Level (dBμV) | Limits (dBμV) | Margin (dB) | Remark |
|----|----------------|-----------------------|-----------------------|-----------------------|-------------------|-----------------------------|------------------|----------------|---------|
| 1 | 0.153 | 11.43 | 0.03 | 9.86 | 13.97 | 35.29 | 55.82 | 20.53 | Average |
| 2 | 0.153 | 11.43 | 0.03 | 9.86 | 25.63 | 46.95 | 65.82 | 18.87 | QP |
| 3 | 0.183 | 11.31 | 0.03 | 9.86 | 4.36 | 25.56 | 54.33 | 28.77 | Average |
| 4 | 0.183 | 11.31 | 0.03 | 9.86 | 18.32 | 39.52 | 64.33 | 24.81 | QP |
| 5 | 0.229 | 11.20 | 0.03 | 9.86 | 0.89 | 21.98 | 52.48 | 30.50 | Average |
| 6 | 0.229 | 11.20 | 0.03 | 9.86 | 11.30 | 32.39 | 62.48 | 30.09 | QP |
| 7 | 0.507 | 10.99 | 0.04 | 9.86 | 18.45 | 39.34 | 46.00 | 6.66 | Average |
| 8 | 0.507 | 10.99 | 0.04 | 9.86 | 19.95 | 40.84 | 56.00 | 15.16 | QP |
| 9 | 3.565 | 11.14 | 0.12 | 9.87 | 1.58 | 22.71 | 46.00 | 23.29 | Average |
| 10 | 3.565 | 11.14 | 0.12 | 9.87 | 10.71 | 31.84 | 56.00 | 24.16 | QP |
| 11 | 15.388 | 13.41 | 0.25 | 9.90 | 4.15 | 27.71 | 50.00 | 22.29 | Average |
| 12 | 15.388 | 13.41 | 0.25 | 9.90 | 8.93 | 32.49 | 60.00 | 27.51 | QP |

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.

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No. 53-11, Dingfu, Linkou, Dist.,
New Taipei City 244, Taiwan

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Fax: +886 2 26099303

| | | | |
|--------------|---------------|------------|---------|
| Test Date | 2016/06/01 | Temp./Hum. | 25 /60% |
| Test Voltage | AC 120V, 60Hz | | |



Site no. : No.8 Shielded Room Data no. : 1
Condition : ENV4200 100169 Phase : LINE
Limit : FCC PART 15C
Env. / Ins. : 25°C / 60% ESR3 (1774) Engineer : Tim
EUT : mPAD-12-CHT4-I
Power Rating : 120Vac/60Hz
Test Mode : Operating

| | Freq. (MHz) | AMN Factor (dB) | Cable Loss (dB) | Pulse Att. (dB) | Reading (dBμV) | Emission Level (dBμV) | Limits (dBμV) | Margin (dB) | Remark |
|----|----------------|-----------------------|-----------------------|-----------------------|-------------------|-----------------------------|------------------|----------------|---------|
| 1 | 0.153 | 10.75 | 0.03 | 9.86 | 11.80 | 32.44 | 55.82 | 23.38 | Average |
| 2 | 0.153 | 10.75 | 0.03 | 9.86 | 26.19 | 46.83 | 65.82 | 18.99 | QP |
| 3 | 0.169 | 10.73 | 0.03 | 9.86 | 12.97 | 33.59 | 54.99 | 21.40 | Average |
| 4 | 0.169 | 10.73 | 0.03 | 9.86 | 23.09 | 43.71 | 64.99 | 21.28 | QP |
| 5 | 0.184 | 10.70 | 0.03 | 9.86 | 6.35 | 26.94 | 54.28 | 27.34 | Average |
| 6 | 0.184 | 10.70 | 0.03 | 9.86 | 18.05 | 38.64 | 64.28 | 25.64 | QP |
| 7 | 0.507 | 10.55 | 0.04 | 9.86 | 15.50 | 35.95 | 46.00 | 10.05 | Average |
| 8 | 0.507 | 10.55 | 0.04 | 9.86 | 18.42 | 38.87 | 56.00 | 17.13 | QP |
| 9 | 3.454 | 10.63 | 0.12 | 9.87 | 1.37 | 21.99 | 46.00 | 24.01 | Average |
| 10 | 3.454 | 10.63 | 0.12 | 9.87 | 9.71 | 30.33 | 56.00 | 25.67 | QP |
| 11 | 15.226 | 12.36 | 0.25 | 9.90 | 0.94 | 23.45 | 50.00 | 26.55 | Average |
| 12 | 15.226 | 12.36 | 0.25 | 9.90 | 6.36 | 28.87 | 60.00 | 31.13 | QP |

Remarks: 1. Emission Level= AMN Factor + Cable Loss + Pulse Att. + Reading.

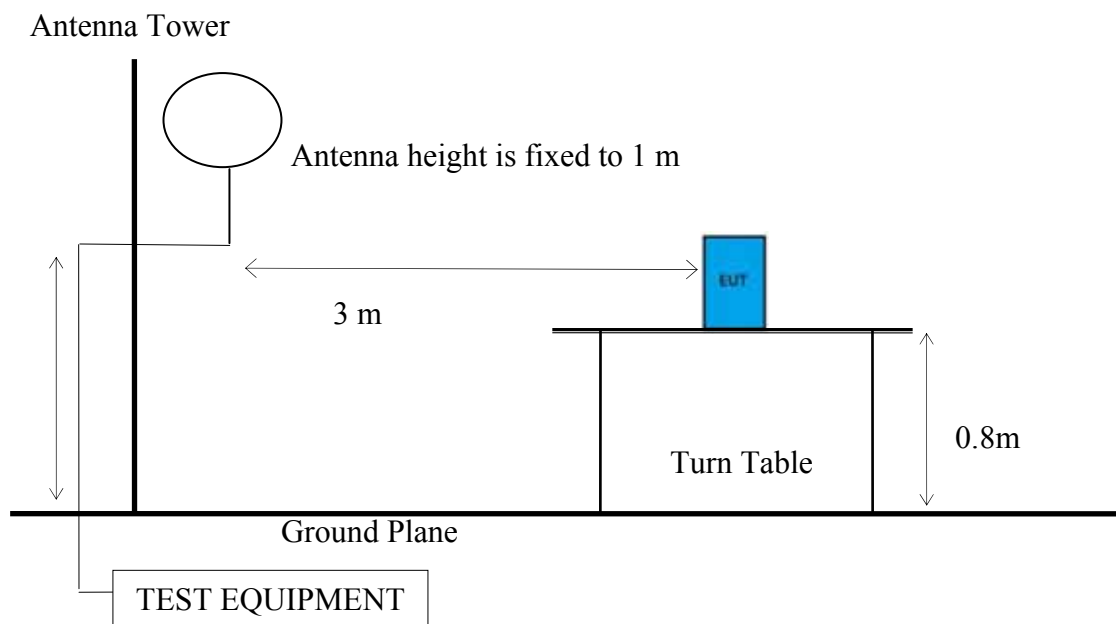
6. RADIATED EMISSION MEASUREMENT

6.1. Block Diagram of Test Setup

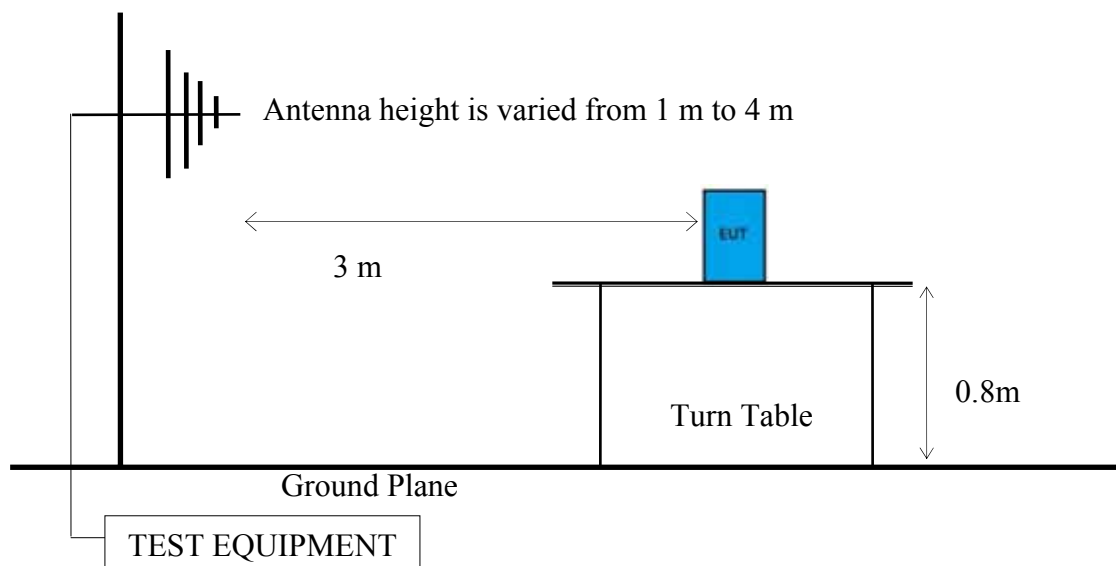
6.1.1. Block Diagram of EUT

Indicated as section 3.7

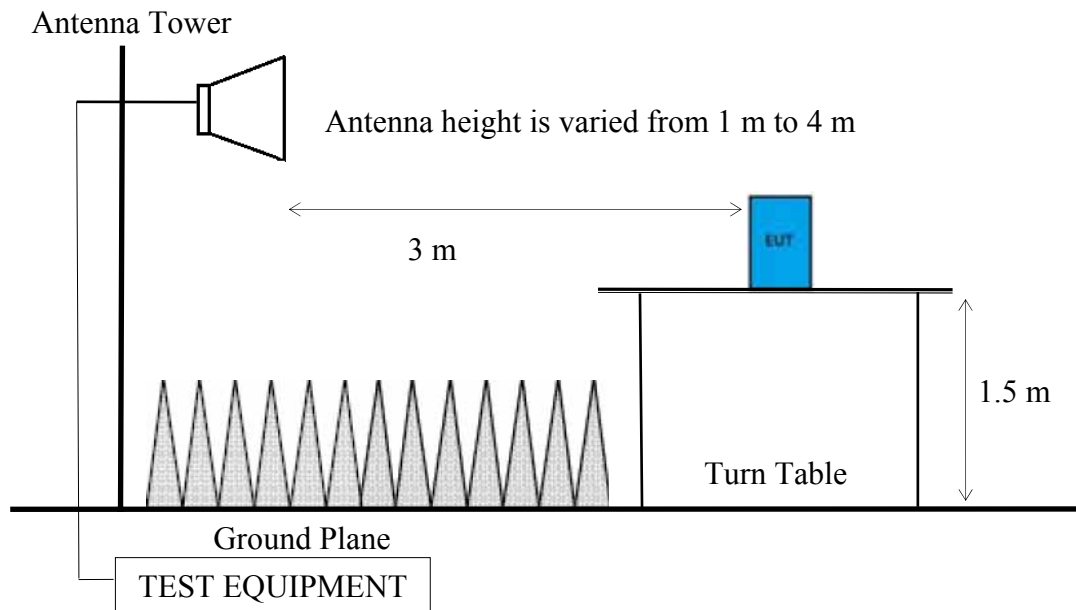
6.1.2. Semi Anechoic Chamber (3m) Setup Diagram for 9kHz-30MHz



6.1.3. Semi Anechoic Chamber (3m) Setup Diagram for 30-1000 MHz



6.1.4. Fully Anechoic Chamber (3m) Setup Diagram for above 1GHz



6.2. Radiated Emission Limits

In any 100kHz bandwidth outside the frequency band, the radio frequency power produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205, must also comply with the radiated emission limits specified as below.

| Frequency (MHz) | Distance (m) | Field Strengths Limits | |
|-----------------|--------------|---|--------------------------|
| | | $\mu\text{V/m}$ | $\text{dB}\mu\text{V/m}$ |
| 0.009 - 0.490 | 300 | 67.6 | 2400/kHz |
| 0.490 - 1.705 | 30 | 87.6 | 24000/kHz |
| 1.705 - 30 | 30 | 29.5 | 30 |
| 30 ~ 88 | 3 | 100 | 40.0 |
| 88 ~ 216 | 3 | 150 | 43.5 |
| 216 ~ 960 | 3 | 200 | 46.0 |
| Above 960 | 3 | 500 | 54.0 |
| Above 1000 | 3 | 74.0 $\text{dB}\mu\text{V/m}$ (Peak) 54.0 $\text{dB}\mu\text{V/m}$ (Average) | |

Remark : (1) $\text{dB}\mu\text{V/m} = 20 \log (\mu\text{V/m})$

- (2) The tighter limit applies to the edge between two frequency bands.
- (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
- (4) Fundamental and emission fall within operation band are exempted from this section.
- (5) Pursuant to ANSI C63.10: 6.6.4.3, if the maximized peak measured value complies with the average limit, then it is unnecessary to perform an average measurement.

6.3. Test Procedure

Frequency Range 9kHz~30MHz:

The EUT setup on the turn table which has 0.8 m height to the ground. The turn table rotated 360 degrees and antenna fixed to 1 m to find the maximum emission level. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

- (1) RBW = 9kHz with peak and average detector.
- (2) Detector: average and peak (9kHz-490kHz)
Q.P. (490kHz-30MHz)

Frequency Range 30MHz ~ 40GHz:

The EUT setup on the turn table which has 1.5m height to the ground. The turn table rotated 360 degrees and antenna varied from 1 m to 4 m to find the maximum emission level. Both horizontal and vertical polarization are required. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10-2013 regulation.

Frequency below 1 GHz:

Spectrum Analyzer is used for pre-testing with following setting:

- (1) RBW = 120KHz
- (2) VBW $\geq 3 \times$ RBW.
- (3) Detector = Peak.
- (4) Sweep time = auto.
- (5) Trace mode = max hold.
- (6) Allow sweeps to continue until the trace stabilizes.
- (7) When peak-detected value is lower than limit that the measurement using the Q.P. detector is not required. Otherwise using Q.P. for finally measurement.

Frequency above 1GHz to 10th harmonic:

Peak Detector:

- (1) RBW = 120KHz
- (2) VBW $\geq 3 \times$ RBW.
- (3) Detector = Peak.
- (4) Sweep time = auto.
- (5) Trace mode = max hold.
- (6) Allow sweeps to continue until the trace stabilizes.
- (7) When peak-detected value is lower than limit that the measurement using the average detector is not required. Otherwise using average for finally measurement.

Average Measurement:**Option 1:**

- (1) RBW = 1 MHz
- (2) VBW = 1/T
- (3) Detector = Peak.
- (4) Sweep time = auto.
- (5) Trace mode = max hold.
- (6) Allow sweeps to continue until the trace stabilizes.

Option 2:

Average Emission Level = Peak Emission Level + D.C.C.F.

6.4. Measurement Result Explanation

Peak Emission Level = Antenna Factor + Cable Loss + Meter Reading

Average Emission Level = Antenna Factor + Cable Loss + Meter Reading

Average Emission Level = Peak Emission Level + DCCF

Duty Cycle Correction Factor (DCCF) = $20\log(TX_{on}/100ms)$ presented in section 3.5

ERP = Peak Emission Level - 95.2dB - 2.14dB

6.5. Test Results

PASSED.

| | | | |
|--------------|---------------|------------|----------|
| Test Date | 2016/06/03 | Temp./Hum. | 22 / 58% |
| Test Voltage | AC 120V, 60Hz | | |

6.5.1. Emissions within Restricted Frequency Bands

6.5.1.1. Frequency 9kHz~30MHz

The emissions (9kHz~30MHz) not reported for there is no emission be found.

6.5.1.2. Frequency Below 1 GHz

| | | | |
|------------|--------|-----------|------------|
| Modulation | 8-DPSK | Frequency | TX 2480MHz |
|------------|--------|-----------|------------|

Antenna at Horizontal Polarization

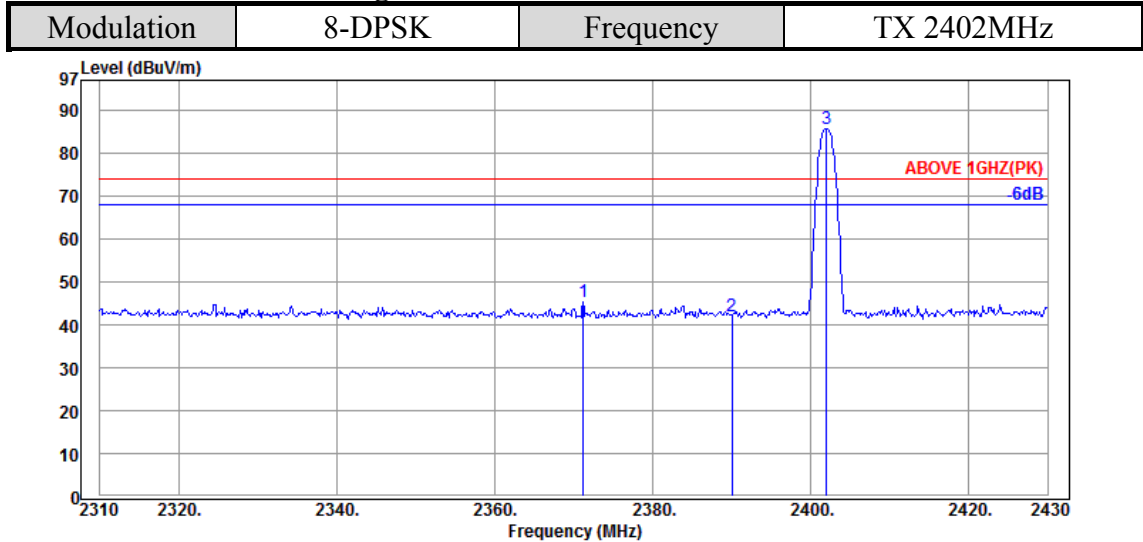
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------------|-----------------------------|-----------------------|----------------------------|-------------------------------|--------------------|----------------|----------|
| 308.39 | 13.37 | 4.76 | 19.15 | 37.28 | 46.00 | 8.72 | Peak |
| 385.02 | 15.23 | 5.53 | 17.63 | 38.39 | 46.00 | 7.61 | Peak |
| 461.65 | 16.46 | 6.17 | 14.80 | 37.43 | 46.00 | 8.57 | Peak |
| 924.34 | 20.72 | 7.69 | 8.93 | 37.34 | 46.00 | 8.66 | Peak |

Antenna at Vertical Polarization

| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------------|-----------------------------|-----------------------|----------------------------|-------------------------------|--------------------|----------------|----------|
| 40.67 | 12.98 | 2.52 | 17.40 | 32.90 | 40.00 | 7.10 | Peak |
| 385.02 | 15.23 | 5.53 | 21.11 | 41.87 | 46.00 | 4.13 | Peak |
| 461.65 | 16.46 | 6.17 | 22.32 | 44.95 | 46.00 | 1.05 | Peak |
| 539.25 | 17.53 | 6.47 | 16.39 | 40.39 | 46.00 | 5.61 | Peak |

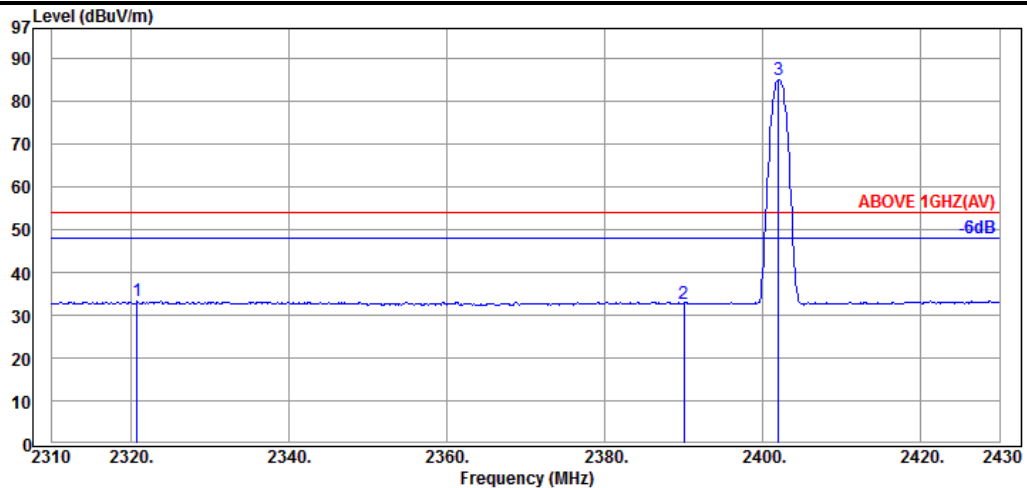
6.5.1.3. Frequency Above 1 GHz to 10th harmonics

Band Edge:



Antenna at Horizontal Polarization

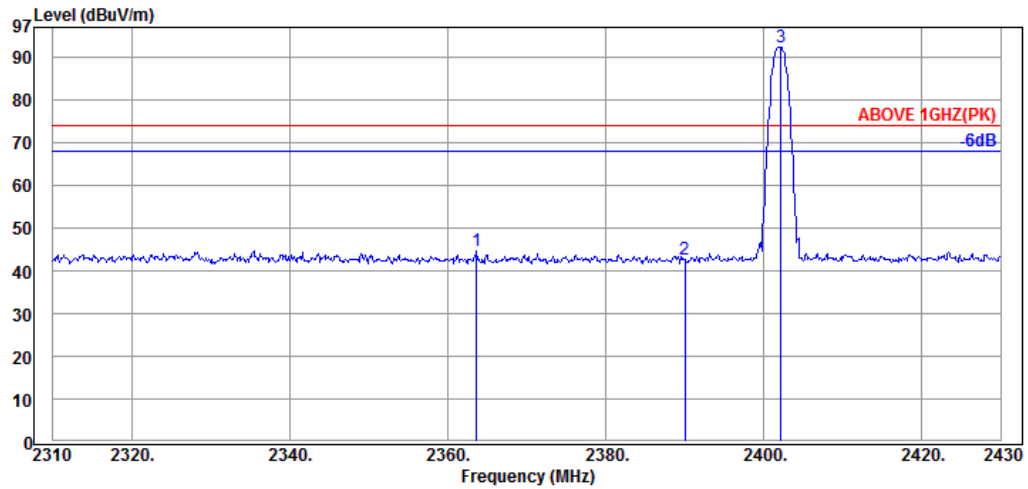
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2371.20 | 32.13 | 5.71 | 7.43 | 45.27 | 74.00 | 28.73 | Peak |
| 2390.04 | 32.16 | 5.72 | 4.16 | 42.04 | 74.00 | 31.96 | Peak |
| 2402.04 | 32.16 | 5.72 | 47.85 | 85.73 | --- | --- | Peak |



Antenna at Horizontal Polarization

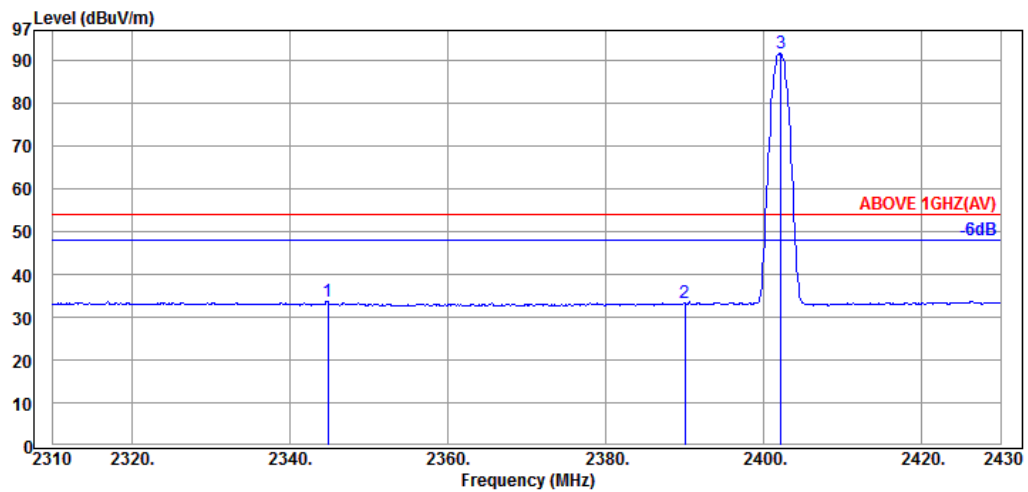
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2320.80 | 32.06 | 5.67 | -4.50 | 33.23 | 54.00 | 20.77 | Average |
| 2390.04 | 32.16 | 5.72 | -5.06 | 32.82 | 54.00 | 21.18 | Average |
| 2402.04 | 32.16 | 5.72 | 47.23 | 85.11 | --- | --- | Average |

| | | | |
|------------|--------|-----------|------------|
| Modulation | 8-DPSK | Frequency | TX 2402MHz |
|------------|--------|-----------|------------|



Antenna at Vertical Polarization

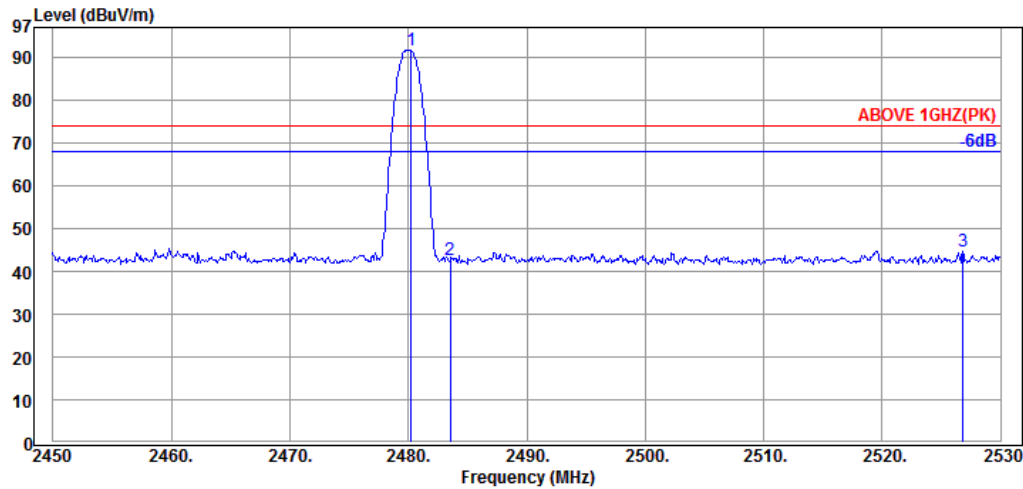
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2363.64 | 32.11 | 5.69 | 6.82 | 44.62 | 74.00 | 29.38 | Peak |
| 2390.04 | 32.16 | 5.72 | 4.66 | 42.54 | 74.00 | 31.46 | Peak |
| 2402.16 | 32.16 | 5.72 | 54.56 | 92.44 | --- | --- | Peak |



Antenna at Vertical Polarization

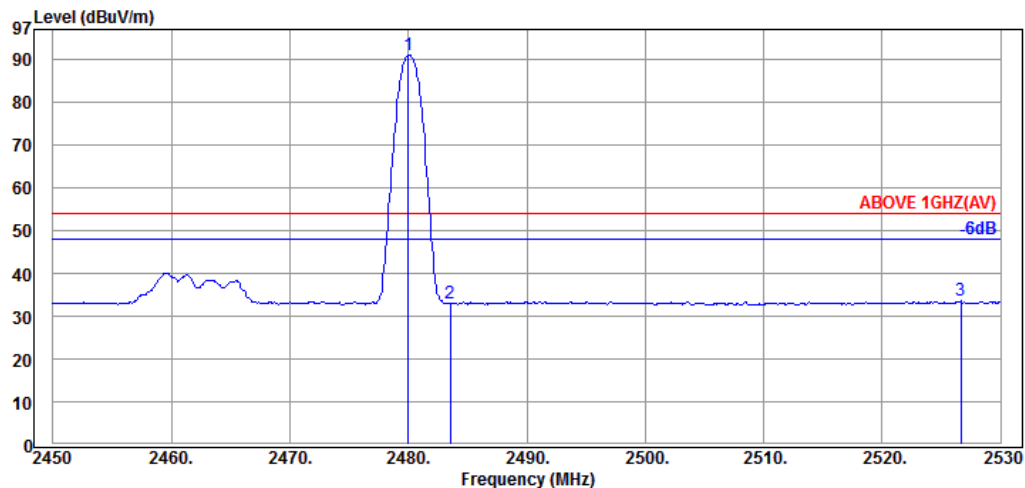
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2344.80 | 32.08 | 5.68 | -4.16 | 33.60 | 54.00 | 20.40 | Average |
| 2390.04 | 32.16 | 5.72 | -4.54 | 33.34 | 54.00 | 20.66 | Average |
| 2402.16 | 32.16 | 5.72 | 53.80 | 91.68 | --- | --- | Average |

| | | | |
|------------|--------|-----------|------------|
| Modulation | 8-DPSK | Frequency | TX 2480MHz |
|------------|--------|-----------|------------|



Antenna at Horizontal Polarization

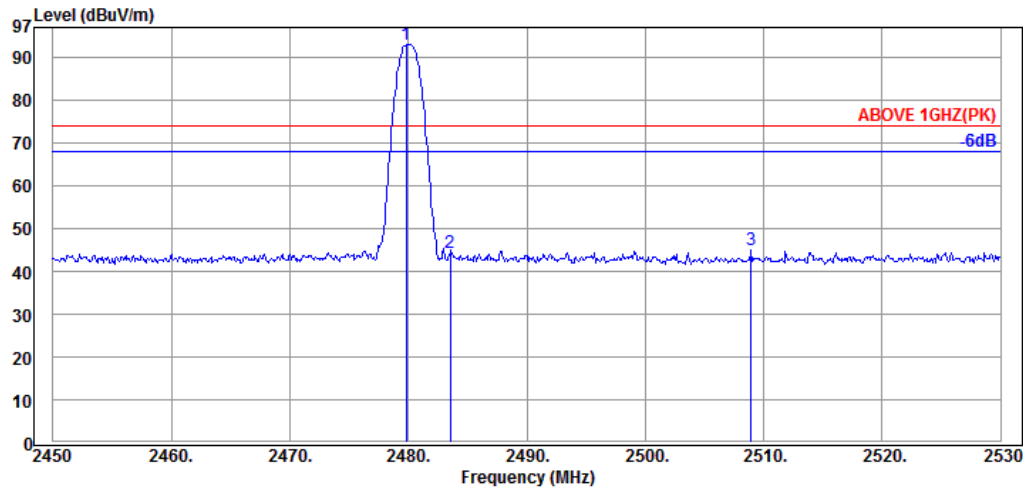
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2480.24 | 32.28 | 5.82 | 53.62 | 91.72 | --- | --- | Peak |
| 2483.52 | 32.28 | 5.82 | 4.70 | 42.80 | 74.00 | 31.20 | Peak |
| 2526.80 | 32.34 | 5.89 | 6.57 | 44.80 | 74.00 | 29.20 | Peak |



Antenna at Horizontal Polarization

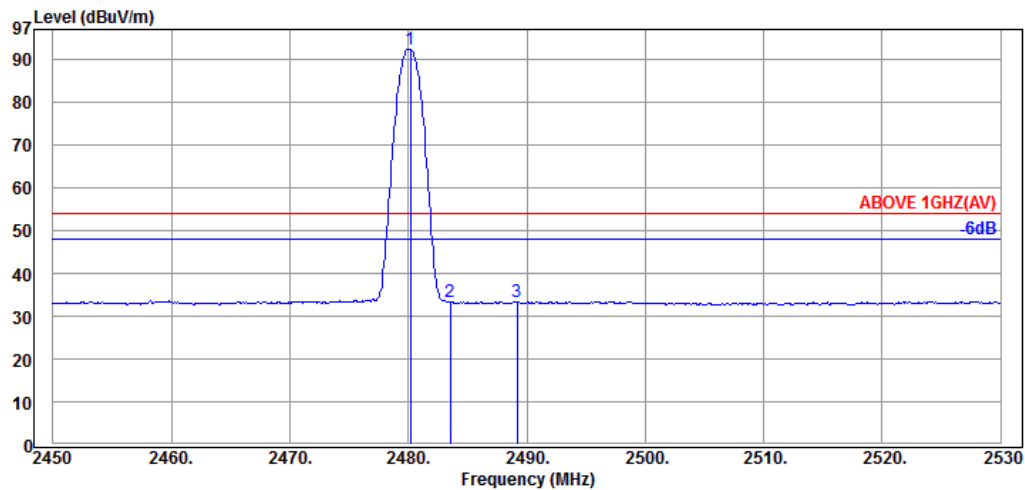
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2480.00 | 32.28 | 5.82 | 52.96 | 91.06 | --- | --- | Average |
| 2483.52 | 32.28 | 5.82 | -5.20 | 32.90 | 54.00 | 21.10 | Average |
| 2526.64 | 32.34 | 5.89 | -4.69 | 33.54 | 54.00 | 20.46 | Average |

| | | | |
|------------|--------|-----------|------------|
| Modulation | 8-DPSK | Frequency | TX 2480MHz |
|------------|--------|-----------|------------|



Antenna at Vertical Polarization

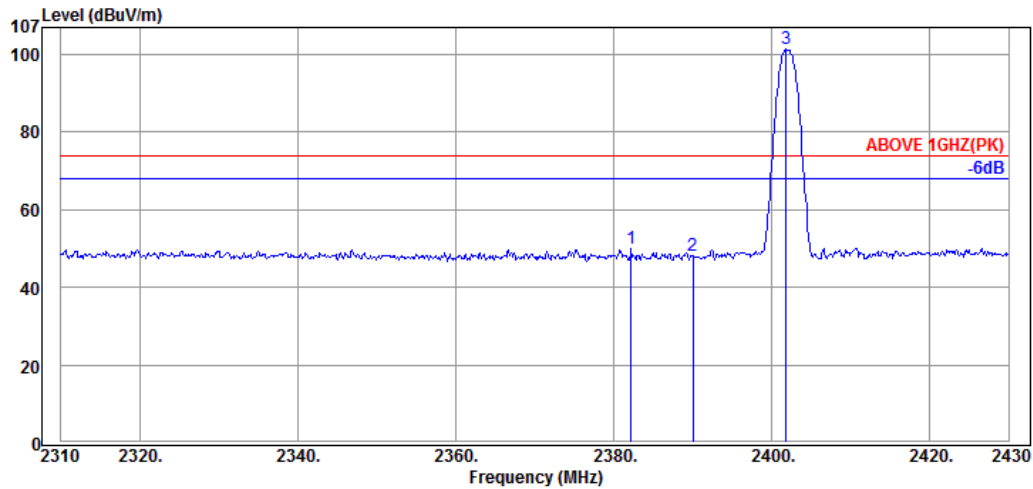
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2479.84 | 32.28 | 5.82 | 54.96 | 93.06 | --- | --- | Peak |
| 2483.52 | 32.28 | 5.82 | 6.28 | 44.38 | 74.00 | 29.62 | Peak |
| 2508.96 | 32.32 | 5.87 | 6.77 | 44.96 | 74.00 | 29.04 | Peak |



Antenna at Vertical Polarization

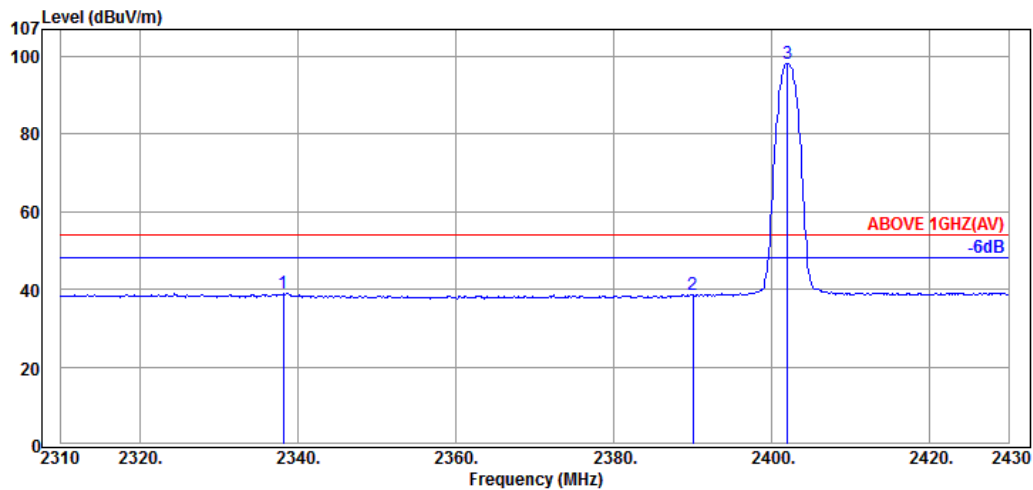
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2480.16 | 32.28 | 5.82 | 54.27 | 92.37 | --- | --- | Average |
| 2483.52 | 32.28 | 5.82 | -4.88 | 33.22 | 54.00 | 20.78 | Average |
| 2489.20 | 32.30 | 5.84 | -4.72 | 33.42 | 54.00 | 20.58 | Average |

| | | | |
|------------|------|-----------|------------|
| Modulation | GFSK | Frequency | TX 2402MHz |
|------------|------|-----------|------------|



Antenna at Horizontal Polarization

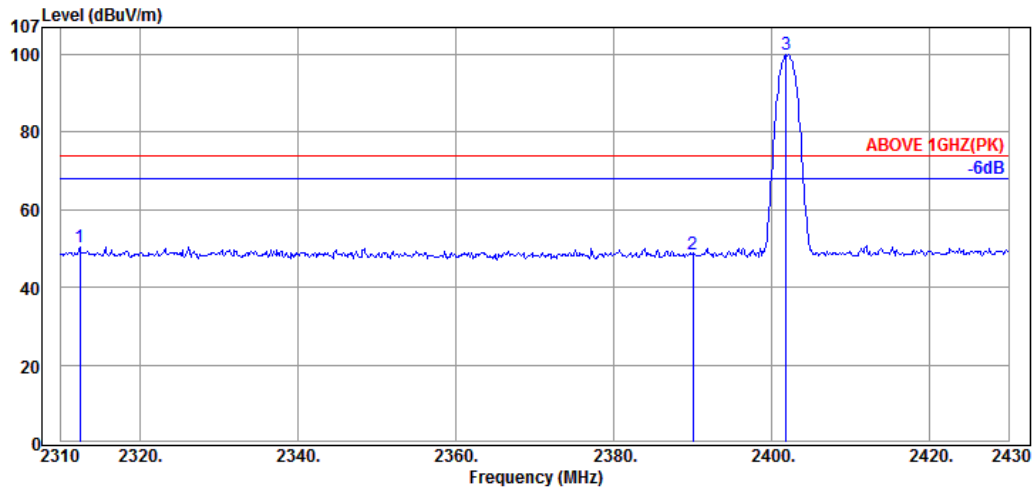
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2382.24 | 32.13 | 5.71 | 12.33 | 50.17 | 74.00 | 23.83 | Peak |
| 2390.04 | 32.16 | 5.72 | 10.21 | 48.09 | 74.00 | 25.91 | Peak |
| 2401.80 | 32.16 | 5.72 | 63.49 | 101.37 | --- | --- | Peak |



Antenna at Horizontal Polarization

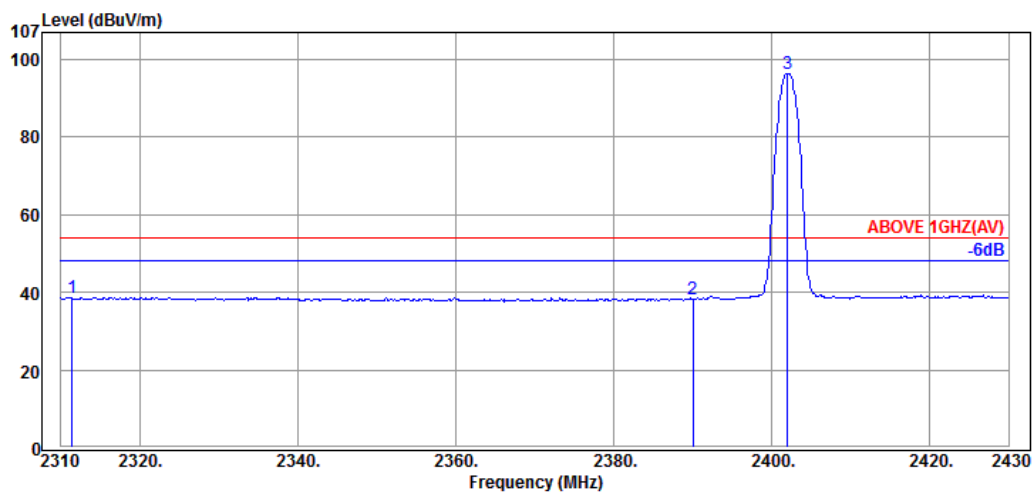
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2338.20 | 32.08 | 5.68 | 1.15 | 38.91 | 54.00 | 15.09 | Average |
| 2390.04 | 32.16 | 5.72 | 0.56 | 38.44 | 54.00 | 15.56 | Average |
| 2402.04 | 32.16 | 5.72 | 60.36 | 98.24 | --- | --- | Average |

| | | | |
|------------|------|-----------|------------|
| Modulation | GFSK | Frequency | TX 2402MHz |
|------------|------|-----------|------------|



Antenna at Vertical Polarization

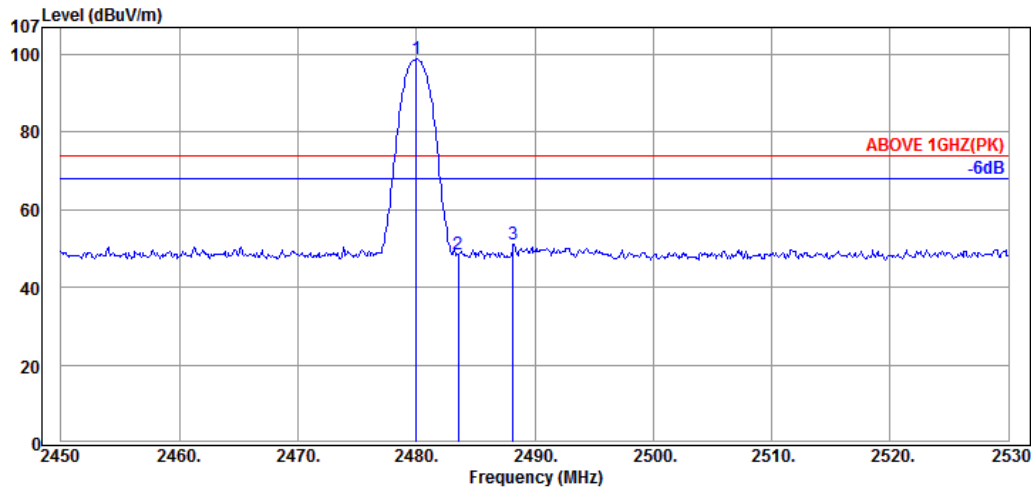
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2312.40 | 32.03 | 5.65 | 12.84 | 50.52 | 74.00 | 23.48 | Peak |
| 2390.04 | 32.16 | 5.72 | 10.74 | 48.62 | 74.00 | 25.38 | Peak |
| 2401.80 | 32.16 | 5.72 | 62.21 | 100.09 | --- | --- | Peak |



Antenna at Vertical Polarization

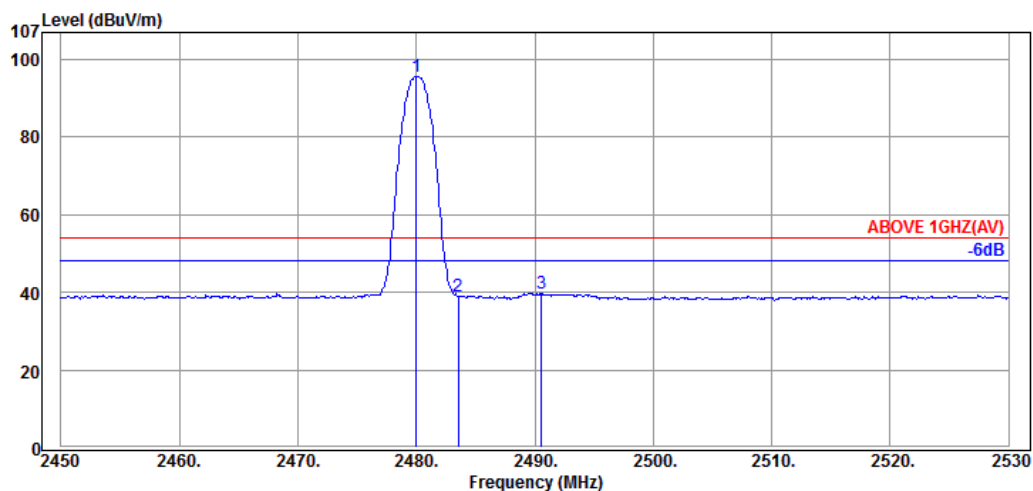
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2311.44 | 32.03 | 5.65 | 1.09 | 38.77 | 54.00 | 15.23 | Average |
| 2390.04 | 32.16 | 5.72 | 0.29 | 38.17 | 54.00 | 15.83 | Average |
| 2402.04 | 32.16 | 5.72 | 58.59 | 96.47 | --- | --- | Average |

| | | | |
|------------|------|-----------|------------|
| Modulation | GFSK | Frequency | TX 2480MHz |
|------------|------|-----------|------------|



Antenna at Horizontal Polarization

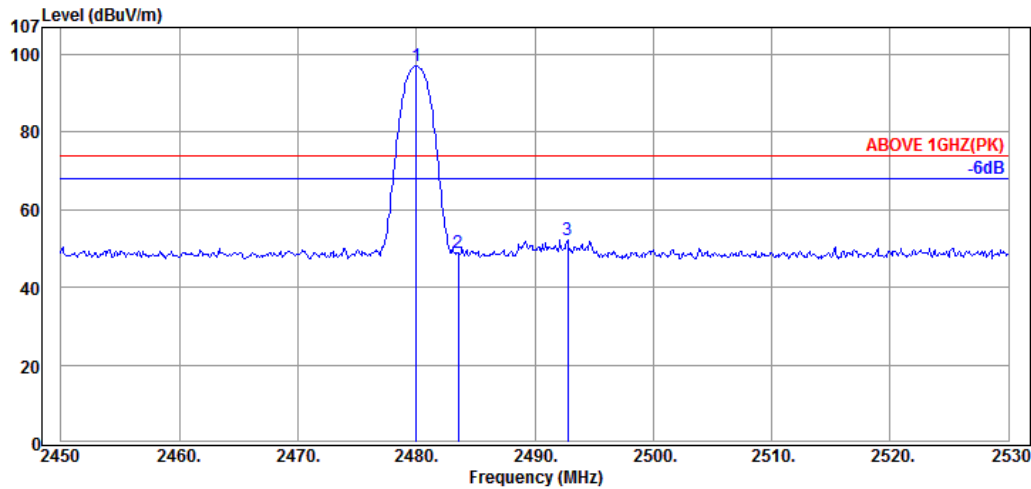
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2480.00 | 32.28 | 5.82 | 60.71 | 98.81 | --- | --- | Peak |
| 2483.52 | 32.28 | 5.82 | 10.43 | 48.53 | 74.00 | 25.47 | Peak |
| 2488.16 | 32.30 | 5.84 | 13.00 | 51.14 | 74.00 | 22.86 | Peak |



Antenna at Horizontal Polarization

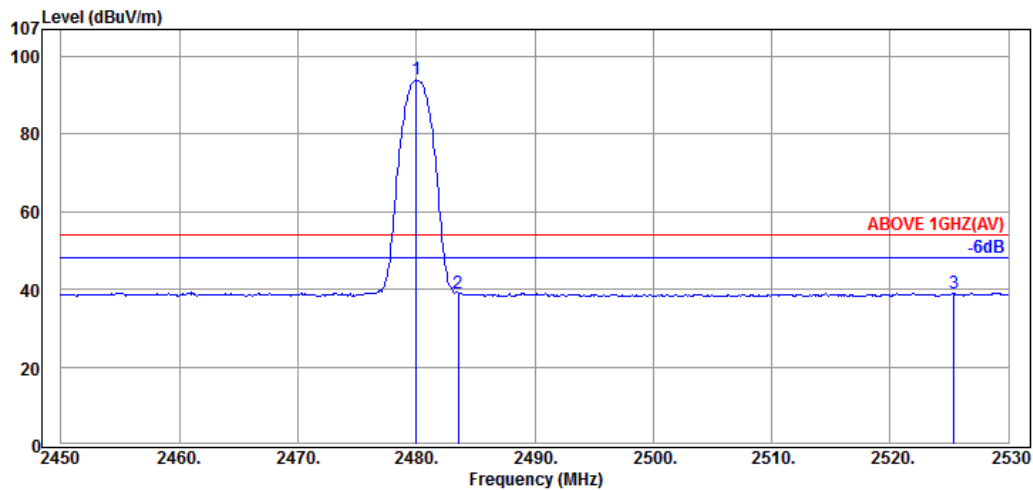
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2480.00 | 32.28 | 5.82 | 57.63 | 95.73 | --- | --- | Average |
| 2483.52 | 32.28 | 5.82 | 0.88 | 38.98 | 54.00 | 15.02 | Average |
| 2490.56 | 32.30 | 5.84 | 1.60 | 39.74 | 54.00 | 14.26 | Average |

| | | | |
|------------|------|-----------|------------|
| Modulation | GFSK | Frequency | TX 2480MHz |
|------------|------|-----------|------------|



Antenna at Vertical Polarization

| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2480.00 | 32.28 | 5.82 | 58.90 | 97.00 | --- | --- | Peak |
| 2483.52 | 32.28 | 5.82 | 10.67 | 48.77 | 74.00 | 25.23 | Peak |
| 2492.80 | 32.30 | 5.84 | 14.12 | 52.26 | 74.00 | 21.74 | Peak |



Antenna at Vertical Polarization

| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------|-----------------------|-----------------|----------------------|-------------------------|-----------------|-------------|----------|
| 2480.00 | 32.28 | 5.82 | 55.86 | 93.96 | --- | --- | Average |
| 2483.52 | 32.28 | 5.82 | 1.01 | 39.11 | 54.00 | 14.89 | Average |
| 2525.36 | 32.34 | 5.89 | 0.78 | 39.01 | 54.00 | 14.99 | Average |

6.5.2. Emissions outside the frequency band:

The emissions (up to 25GHz) not reported for there is no emission be found.

| | | | |
|------------|--------|-----------|------------|
| Modulation | 8-DPSK | Frequency | TX 2402MHz |
|------------|--------|-----------|------------|

Antenna at Horizontal Polarization

| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------------|-----------------------------|-----------------------|----------------------------|-------------------------------|--------------------|----------------|----------|
| 4805.00 | 34.22 | 7.86 | 0.45 | 42.53 | 54.00 | 11.47 | Peak |

Antenna at Vertical Polarization

| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------------|-----------------------------|-----------------------|----------------------------|-------------------------------|--------------------|----------------|----------|
| 4805.00 | 34.22 | 7.86 | 0.41 | 42.49 | 54.00 | 11.51 | Peak |

| | | | |
|------------|--------|-----------|------------|
| Modulation | 8-DPSK | Frequency | TX 2441MHz |
|------------|--------|-----------|------------|

Antenna at Horizontal Polarization

| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------------|-----------------------------|-----------------------|----------------------------|-------------------------------|--------------------|----------------|----------|
| 4880.00 | 34.25 | 8.35 | 0.21 | 42.81 | 54.00 | 11.19 | Peak |

Antenna at Vertical Polarization

| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dBμV) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Detector |
|--------------------------------|-----------------------------|-----------------------|----------------------------|-------------------------------|--------------------|----------------|----------|
| 4880.00 | 34.25 | 8.35 | 0.54 | 43.14 | 54.00 | 10.86 | Peak |

| | | | |
|------------|--------|-----------|------------|
| Modulation | 8-DPSK | Frequency | TX 2480MHz |
|------------|--------|-----------|------------|

Antenna at Horizontal Polarization

| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dB μ V) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector |
|--------------------------------|-----------------------------|-----------------------|----------------------------------|-------------------------------------|--------------------------|----------------|----------|
| 4960.00 | 34.29 | 8.68 | 0.13 | 43.10 | 54.00 | 10.90 | Peak |

Antenna at Vertical Polarization

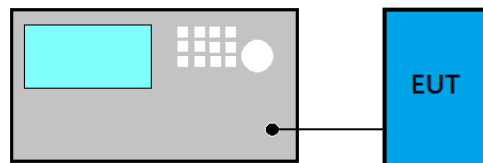
| Emission Frequency (MHz) | Antenna Factor (dB/m) | Cable Loss (dB) | Meter Reading (dB μ V) | Emission Level (dB μ V/m) | Limits (dB μ V/m) | Margin (dB) | Detector |
|--------------------------------|-----------------------------|-----------------------|----------------------------------|-------------------------------------|--------------------------|----------------|----------|
| 4960.00 | 34.29 | 8.68 | -0.17 | 42.80 | 54.00 | 11.20 | Peak |

6.5.3. Emissions in Non-restricted Frequency Bands

All emission levels below the 15.209 general radiated emissions limits is not required.

7. 20dB BANDWIDTH MEASUREMENT

7.1. Block Diagram of Test Setup



7.2. Specification Limits

Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater.

7.3. Test Procedure

Following measurement procedure is reference to DA00-705:

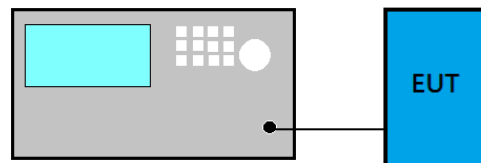
- (1) Set RBW close to 1% of OBW.
- (2) Set $VBW \geq RBW$.
- (3) Detector = Peak.
- (4) Trace mode = max hold.
- (5) Sweep = auto couple.
- (6) Allow the trace to stabilize.
- (7) Setting channel bandwidth function x dB to -20 dB to record the final bandwidth.

7.4. Test Results

Please refer to Appendix A

8. CARRIER FREQUENCY SEPARATION MEASUREMENT

8.1. Block Diagram of Test Setup



8.2. Specification Limits

Alternatively, frequency hopping systems operating in the 2400-2483.5MHz band may have hopping channel carrier frequencies that are separated by 25kHz or two-thirds of the 20dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output no greater than 125mW.

8.3. Test Procedure

Following measurement procedure is reference to DA00-705:

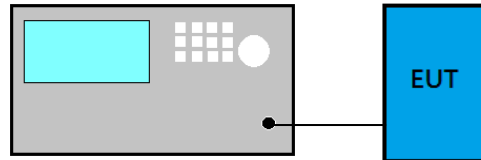
- (1) Span = wide enough to capture the peaks of two adjacent channels
- (2) RBW \geq 1% of the span
- (3) VBW \geq RBW
- (4) Sweep = auto
- (5) Detector function = peak
- (6) Trace = max hold

8.4. Test Results

Please refer to Appendix A

9. TIME OF OCCUPANCY MEASUREMENT

9.1. Block Diagram of Test Setup



9.2. Specification Limits

Frequency hopping systems in the 2400-2483.5MHz shall use at least 15 non-overlapping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by number of hopping channels employed.

9.3. Test Procedure

Following measurement procedure is reference to DA00-705:

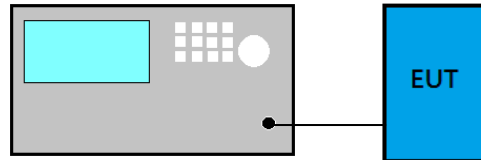
- (1) Span = zero span, centered on a hopping channel
- (2) RBW = 1 MHz
- (3) VBW \geq RBW
- (4) Sweep = as necessary to capture the entire dwell time per hopping channel
- (5) Detector function = peak
- (6) Trace = max hold

9.4. Test Results

Please refer to Appendix A

10. NUMBER OF HOPPING CHANNELS MEASUREMENT

10.1. Block Diagram of Test Setup



10.2. Specification Limits

Frequency hopping systems which use fewer than 20 hopping frequencies may employ intelligent hopping techniques to avoid interference to other transmissions. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 non-overlapping channels.

10.3. Test Procedure

Following measurement procedure is reference to DA00-705:

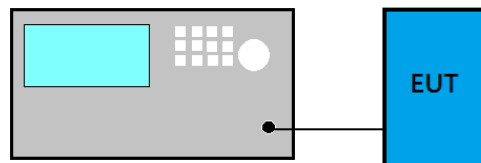
- (1) Span = the frequency band of operation
- (2) RBW \geq 1% of the span
- (3) VBW \geq RBW
- (4) Sweep = auto
- (5) Detector function = peak
- (6) Trace = max hold

10.4. Test Results

Please refer to Appendix A

11. MAXIMUM PEAK OUTPUT POWER MEASUREMENT

11.1. Block Diagram of Test Setup



11.2. Specification Limits

The Limits of maximum Peak Output Power for frequency hopping systems in 2400-2483.5MHz is: 0.125Watt. (21dBm)

11.3. Test Procedure

Following measurement procedure is reference to DA00-705:

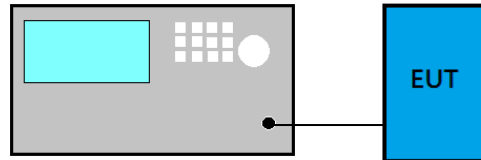
- (1) Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
- (2) RBW \geq 1% of the span
- (3) VBW \geq RBW
- (4) Sweep = auto
- (5) Detector function = peak
- (6) Trace = max hold

11.4. Test Results

Please refer to Appendix A

12. EMISSION LIMITATIONS MEASUREMENT

12.1. Block Diagram of Test Setup



12.2. Specification Limits

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, that the required attenuation shall be 30 dB instead of 20 dB.

Attenuation below the general limits specified in Section 15.209(a)/RSS-Gen Section 8.9 table 4

is not required. In addition, radiated emissions which fall in restricted bands, as defined in Section 15.205(a)/RSS-Gen Section 8.10 table 6, must also comply with the radiated emission limits specified in Section 15.209(a)/RSS-Gen Section 8.9 table 4 (See Section 15.205(c)).

12.3. Test Procedure

Following measurement procedure is reference to DA00-705:

- (1) Set span wide enough to capture the peak level of the in-band emission and all spurious emissions; up to 10th harmonic.
- (2) RBW = 100 kHz
- (3) VBW ≥ RBW
- (4) Sweep = auto
- (5) Detector function = peak
- (6) Trace = max hold

12.4. Test Results

Please refer to Appendix A

13.DEVIATION TO TEST SPECIFICATIONS

【NONE】