

FCC C2PC Test Report

FCC ID : Z64-2564N
Equipment : CC2564 Bluetooth HCI Module
Model No. : CC2564MODA
Brand Name : Texas Instruments
Applicant : Texas Instruments Inc
Address : 12500 TI Blvd, Dallas USA 75243
Standard : 47 CFR FCC Part 15.247
Received Date : Jul. 01, 2015
Tested Date : Jul. 01 ~ Jul. 06, 2015

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Approved & Reviewed by:



Gary Chang / Manager



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Release Record

| Report No. | Version | Description | Issued Date |
|---------------|---------|---------------|---------------|
| FR3D0402-02AD | Rev. 01 | Initial issue | Aug. 14, 2015 |

Summary of Test Results

| FCC Rules | Test Items | Measured | Result |
|---------------------|---------------------|--|--------|
| 15.207 | Conducted Emissions | [dBuV]: 0.482MHz 30.65 (Margin -15.65dB) - AV | Pass |
| 15.247(d) 15.209 | Radiated Emissions | [dBuV/m at 3m]: 697.36MHz 42.58 (Margin -3.42dB) - PK | Pass |

1 General Description

1.1 Information

This report is prepared for FCC class II change.

This report is issued as a supplementary report to original ICC report no. FR3D0402AD. The modification is concerned with adding new antenna and model name. In this report, conducted emission and radiated emission tests had been re-tested and only its data was presented in the following sections.

1.1.1 Product Details

The following models are provided to this EUT.

| Model | Antenna type | Gain (dBi) | Remark |
|------------|--------------|------------|----------|
| CC2564MODN | Chip | -1.38 | Original |
| CC2564MODA | Chip | 1.69 | C2PC |

1.1.2 Specification of the Equipment under Test (EUT)

| RF General Information | | | | |
|------------------------|----------------|---------------------|----------------|-----------|
| Frequency Range (MHz) | Bluetooth Mode | Ch. Frequency (MHz) | Channel Number | Data Rate |
| 2400-2483.5 | BR V2.1 | 2402-2480 | 0-78 [79] | 1 Mbps |
| 2400-2483.5 | EDR V2.1 | 2402-2480 | 0-78 [79] | 2 Mbps |
| 2400-2483.5 | EDR V2.1 | 2402-2480 | 0-78 [79] | 3 Mbps |

Note 1: RF output power specifies that Maximum Peak Conducted Output Power.
 Note 2: Bluetooth BR uses a GFSK.
 Note 3: Bluetooth EDR uses a combination of $\pi/4$ -DQPSK and 8DPSK.

1.1.3 Antenna Details

| Ant. No. | Type | Connector | Gain (dBi) | Remarks |
|----------|------|-----------|------------|---------|
| 1 | Chip | 1.69 | N/A | --- |

1.1.4 Power Supply Type of Equipment under Test (EUT)

| | |
|-------------------|------------------|
| Power Supply Type | 3.3Vdc from host |
|-------------------|------------------|

1.1.5 Accessories

N/A

1.1.6 Channel List

| Frequency band (MHz) | | | | 2400~2483.5 | | | |
|----------------------|-----------------|---------|-----------------|-------------|-----------------|---------|-----------------|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 0 | 2402 | 20 | 2422 | 40 | 2442 | 60 | 2462 |
| 1 | 2403 | 21 | 2423 | 41 | 2443 | 61 | 2463 |
| 2 | 2404 | 22 | 2424 | 42 | 2444 | 62 | 2464 |
| 3 | 2405 | 23 | 2425 | 43 | 2445 | 63 | 2465 |
| 4 | 2406 | 24 | 2426 | 44 | 2446 | 64 | 2466 |
| 5 | 2407 | 25 | 2427 | 45 | 2447 | 65 | 2467 |
| 6 | 2408 | 26 | 2428 | 46 | 2448 | 66 | 2468 |
| 7 | 2409 | 27 | 2429 | 47 | 2449 | 67 | 2469 |
| 8 | 2410 | 28 | 2430 | 48 | 2450 | 68 | 2470 |
| 9 | 2411 | 29 | 2431 | 49 | 2451 | 69 | 2471 |
| 10 | 2412 | 30 | 2432 | 50 | 2452 | 70 | 2472 |
| 11 | 2413 | 31 | 2433 | 51 | 2453 | 71 | 2473 |
| 12 | 2414 | 32 | 2434 | 52 | 2454 | 72 | 2474 |
| 13 | 2415 | 33 | 2435 | 53 | 2455 | 73 | 2475 |
| 14 | 2416 | 34 | 2436 | 54 | 2456 | 74 | 2476 |
| 15 | 2417 | 35 | 2437 | 55 | 2457 | 75 | 2477 |
| 16 | 2418 | 36 | 2438 | 56 | 2458 | 76 | 2478 |
| 17 | 2419 | 37 | 2439 | 57 | 2459 | 77 | 2479 |
| 18 | 2420 | 38 | 2440 | 58 | 2460 | 78 | 2480 |
| 19 | 2421 | 39 | 2441 | 59 | 2461 | --- | --- |

1.1.7 Test Tool

| | |
|-----------|----------------------|
| Test Tool | HCI Tester V3.0.0.24 |
|-----------|----------------------|

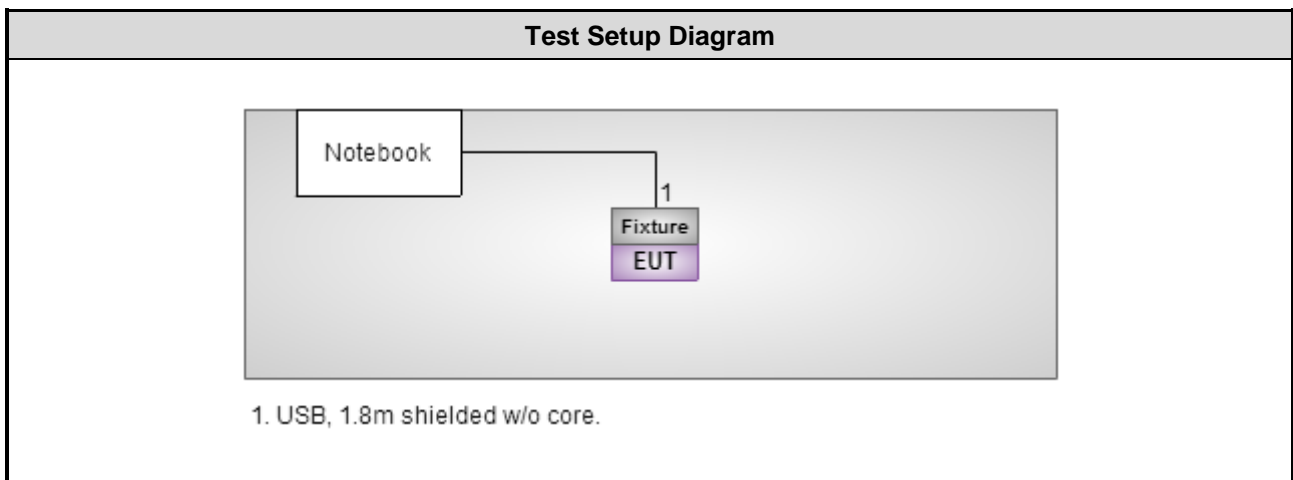
1.1.8 Power Setting

| Modulation Mode | Test Frequency (MHz) | | |
|-----------------|----------------------|------|------|
| | 2402 | 2441 | 2480 |
| GFSK/1Mbps | 0x18 | 0x18 | 0x19 |
| 8DPSK/3Mbps | 0x19 | 0x19 | 0x19 |

1.2 Local Support Equipment List

| Support Equipment List | | | | | |
|------------------------|-----------|-------|------------------------|--------|---------------------------|
| No. | Equipment | Brand | Model | FCC ID | Signal cable / Length (m) |
| 1 | Notebook | DELL | E5420 | DoC | USB, 1.8m non-shielded. |
| 2 | Fixture | Ampak | WSDT-700XX_ EVB_V00 | --- | --- |

1.3 Test Setup Chart



1.4 The Equipment List

| Test Item | Conducted Emission | | | | |
|-----------------------------------|-------------------------------|------------------|---------------|------------------|-------------------|
| Test Site | Conduction room 1 / (CO01-WS) | | | | |
| Instrument | Manufacturer | Model No. | Serial No. | Calibration Date | Calibration Until |
| EMC Receiver | R&S | ESCS 30 | 100169 | Oct. 17, 2014 | Oct. 16, 2015 |
| LISN | SCHWARZBECK | Schwarzbeck 8127 | 8127-667 | Nov. 17, 2014 | Nov. 16, 2015 |
| LISN (Support Unit) | SCHWARZBECK | Schwarzbeck 8127 | 8127-666 | Nov. 26, 2014 | Nov. 25, 2015 |
| RF Cable-CON | Woken | CFD200-NL | CFD200-NL-001 | Dec. 31, 2014 | Dec. 30, 2015 |
| 50 ohm terminal (Support Unit) | NA | 50 | 04 | Apr. 15, 2015 | Apr. 14, 2016 |
| Measurement Software | AUDIX | e3 | 6.120210k | NA | NA |

Note: Calibration Interval of instruments listed above is one year.

| Test Item | Radiated Emission | | | | |
|-------------------------|-----------------------------|-------------|------------------|------------------|-------------------|
| Test Site | 966 chamber 2 / (03CH02-WS) | | | | |
| Instrument | Manufacturer | Model No. | Serial No. | Calibration Date | Calibration Until |
| Spectrum Analyzer | R&S | FSV40 | 101499 | Dec. 31, 2014 | Dec. 30, 2015 |
| Receiver | R&S | ESR3 | 101657 | Jan. 15, 2015 | Jan. 14, 2016 |
| Bilog Antenna | SCHWARZBECK | VULB9168 | VULB9168-524 | Oct. 16, 2014 | Oct. 15, 2015 |
| Horn Antenna 1G-18G | SCHWARZBECK | BBHA 9120 D | BBHA 9120 D 1095 | Oct. 14, 2014 | Oct. 13, 2015 |
| Horn Antenna 18G-40G | SCHWARZBECK | BBHA 9170 | BBHA 9170517 | Nov. 10, 2014 | Nov. 09, 2015 |
| Loop Antenna | R&S | HFH2-Z2 | 11900 | Nov. 10, 2014 | Nov. 09, 2015 |
| Preamplifier | Burgeon | BPA-530 | 100218 | Nov. 10, 2014 | Nov. 09, 2015 |
| Preamplifier | Agilent | 83017A | MY39501309 | Sep. 29, 2014 | Sep. 28, 2015 |
| Preamplifier | EMC | EMC184045B | 980192 | Aug. 26, 2014 | Aug. 25, 2015 |
| RF Cable | HUBER+SUHNER | SUCOFLEX104 | MY16140/4 | Dec. 16, 2014 | Dec. 15, 2015 |
| RF Cable | HUBER+SUHNER | SUCOFLEX104 | MY16018/4 | Dec. 16, 2014 | Dec. 15, 2015 |
| RF Cable | HUBER+SUHNER | SUCOFLEX104 | MY16015/4 | Dec. 16, 2014 | Dec. 15, 2015 |
| LF cable 3M | Woken | CFD400NL-LW | CFD400NL-003 | Dec. 16, 2014 | Dec. 15, 2015 |
| LF cable 10M | Woken | CFD400NL-LW | CFD400NL-004 | Dec. 16, 2014 | Dec. 15, 2015 |
| Measurement Software | AUDIX | e3 | 6.120210g | NA | NA |

Note: Calibration Interval of instruments listed above is one year.

1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards and KDB documents.

47 CFR FCC Part 15.247

FCC Public notice DA 00-705

ANSI C63.10-2013

1.6 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor ($k=2$))

| Measurement Uncertainty | |
|--------------------------------|-----------------|
| Parameters | Uncertainty |
| Bandwidth | ± 34.134 Hz |
| Conducted power | ± 0.808 dB |
| Power density | ± 0.463 dB |
| Conducted emission | ± 2.670 dB |
| AC conducted emission | ± 2.92 dB |
| Radiated emission ≤ 1 GHz | ± 3.62 dB |
| Radiated emission > 1 GHz | ± 5.6 dB |

2 Test Configuration

2.1 Testing Condition

| Test Item | Test Site | Ambient Condition | Tested By |
|--------------------|-----------|-------------------|-------------------------|
| AC Conduction | CO01-WS | 22°C / 68% | Kevin Ma |
| Radiated Emissions | 03CH02-WS | 22-26°C / 61-63% | Mark Liao Felix Sung |

- FCC site registration No.: 657002
- IC site registration No.: 10807A-2

2.2 The Worst Test Modes and Channel Details

| Test item | Mode | Test Frequency (MHz) | Data Rate (Mbps) | Test Configuration |
|---------------------------|---------------|--------------------------------------|------------------|--------------------|
| Conducted Emissions | GFSK | 2480 | 1Mbps | --- |
| Radiated Emissions ≤ 1GHz | GFSK | 2480 | 1Mbps | --- |
| Radiated Emissions > 1GHz | GFSK 8DPSK | 2402, 2441, 2480 2402, 2441, 2480 | 1Mbps 3Mbps | --- |

NOTE:

1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The **Z-plane** results were found as the worst case and were shown in this report.

3 Transmitter Test Results

3.1 Conducted Emissions

3.1.1 Limit of Conducted Emissions

| Conducted Emissions Limit | | |
|---------------------------|------------|-----------|
| Frequency Emission (MHz) | Quasi-Peak | Average |
| 0.15-0.5 | 66 - 56 * | 56 - 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

Note 1: * Decreases with the logarithm of the frequency.

3.1.2 Test Procedures

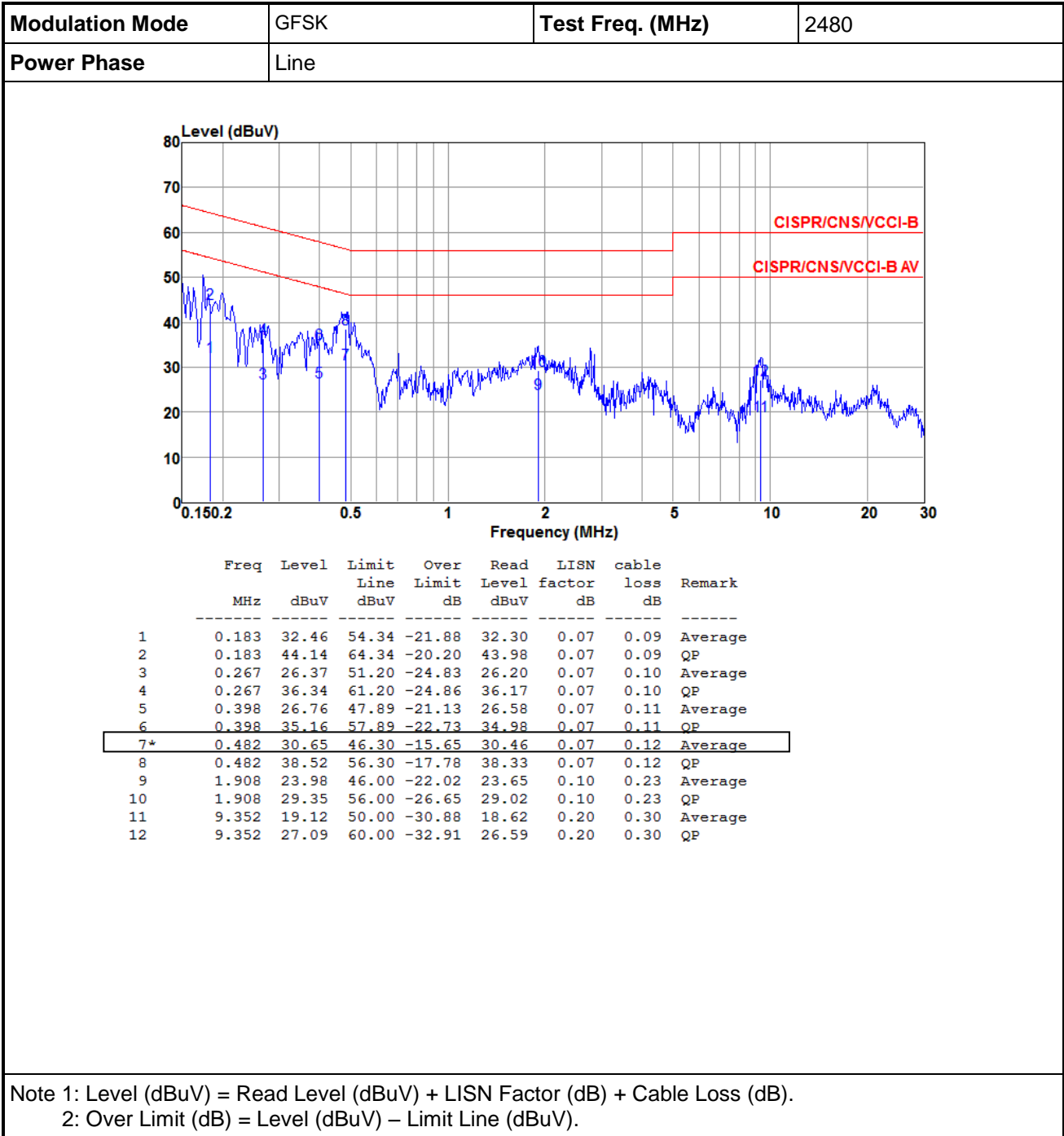
1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V/60Hz

3.1.3 Test Setup

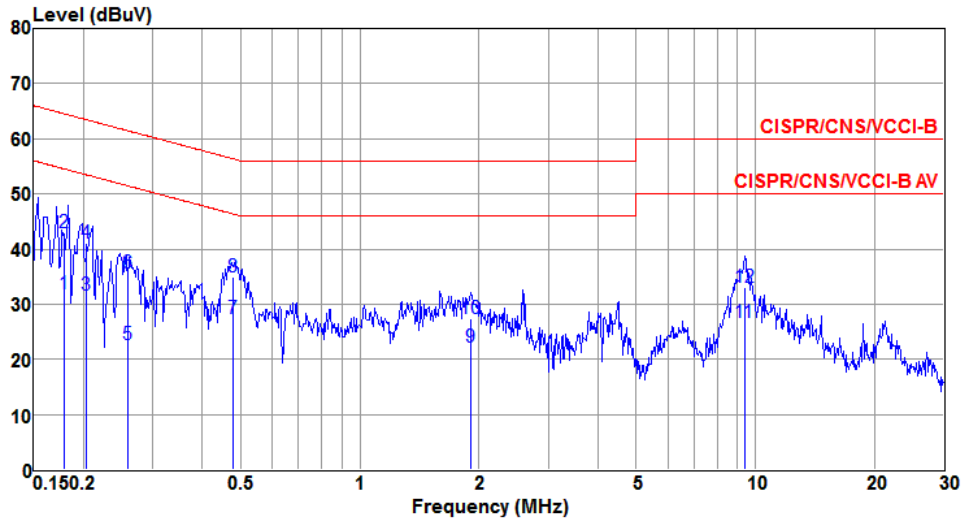


- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 Test Result of Conducted Emissions



| | | | |
|------------------------|---------|-------------------------|------|
| Modulation Mode | GFSK | Test Freq. (MHz) | 2480 |
| Power Phase | Neutral | | |



| | Freq MHz | Level dBUV | Limit Line dBUV | Over Limit dB | Read Level dBUV | LISN factor dB | cable loss dB | Remark |
|----|-------------|---------------|-----------------------|---------------------|-----------------------|----------------------|---------------------|---------|
| 1 | 0.178 | 31.84 | 54.56 | -22.72 | 31.68 | 0.07 | 0.09 | Average |
| 2 | 0.178 | 42.99 | 64.56 | -21.57 | 42.83 | 0.07 | 0.09 | QP |
| 3 | 0.203 | 31.54 | 53.49 | -21.95 | 31.38 | 0.07 | 0.09 | Average |
| 4 | 0.203 | 41.14 | 63.49 | -22.35 | 40.98 | 0.07 | 0.09 | QP |
| 5 | 0.259 | 22.66 | 51.47 | -28.81 | 22.49 | 0.07 | 0.10 | Average |
| 6 | 0.259 | 35.65 | 61.47 | -25.82 | 35.48 | 0.07 | 0.10 | QP |
| 7* | 0.479 | 27.34 | 46.36 | -19.02 | 27.15 | 0.07 | 0.12 | Average |
| 8 | 0.479 | 34.92 | 56.36 | -21.44 | 34.73 | 0.07 | 0.12 | QP |
| 9 | 1.908 | 22.30 | 46.00 | -23.70 | 21.97 | 0.10 | 0.23 | Average |
| 10 | 1.908 | 27.36 | 56.00 | -28.64 | 27.03 | 0.10 | 0.23 | QP |
| 11 | 9.401 | 26.71 | 50.00 | -23.29 | 26.19 | 0.22 | 0.30 | Average |
| 12 | 9.401 | 33.00 | 60.00 | -27.00 | 32.48 | 0.22 | 0.30 | QP |

Note 1: Level (dBUV) = Read Level (dBUV) + LISN Factor (dB) + Cable Loss (dB).
 2: Over Limit (dB) = Level (dBUV) – Limit Line (dBUV).

3.2 Unwanted Emissions into Restricted Frequency Bands

3.2.1 Limit of Unwanted Emissions into Restricted Frequency Bands

| Restricted Band Emissions Limit | | | |
|---------------------------------|-----------------------|-------------------------|----------------------|
| Frequency Range (MHz) | Field Strength (uV/m) | Field Strength (dBuV/m) | Measure Distance (m) |
| 0.009~0.490 | 2400/F(kHz) | 48.5 - 13.8 | 300 |
| 0.490~1.705 | 24000/F(kHz) | 33.8 - 23 | 30 |
| 1.705~30.0 | 30 | 29 | 30 |
| 30~88 | 100 | 40 | 3 |
| 88~216 | 150 | 43.5 | 3 |
| 216~960 | 200 | 46 | 3 |
| Above 960 | 500 | 54 | 3 |

Note 1:
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit

Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

3.2.2 Test Procedures

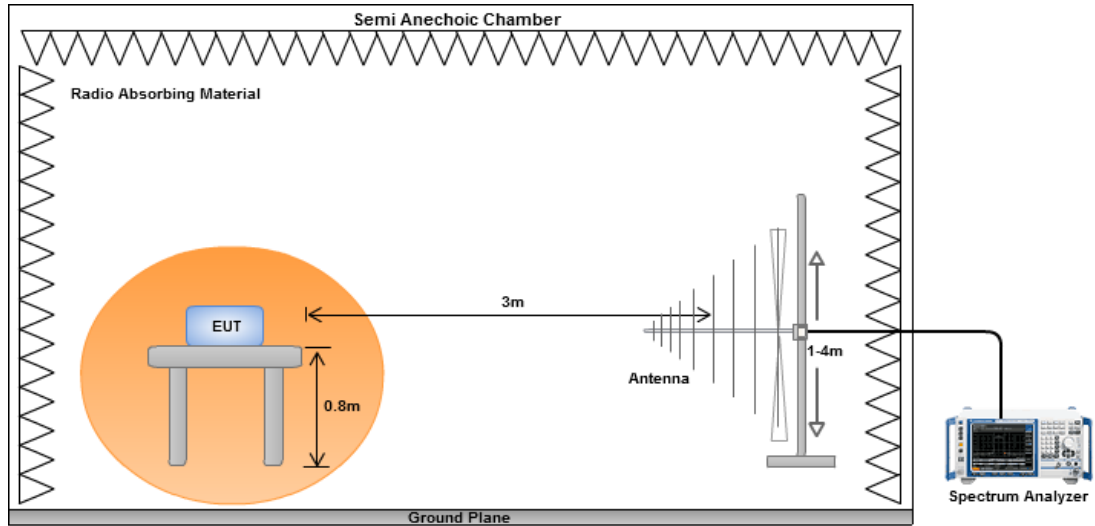
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

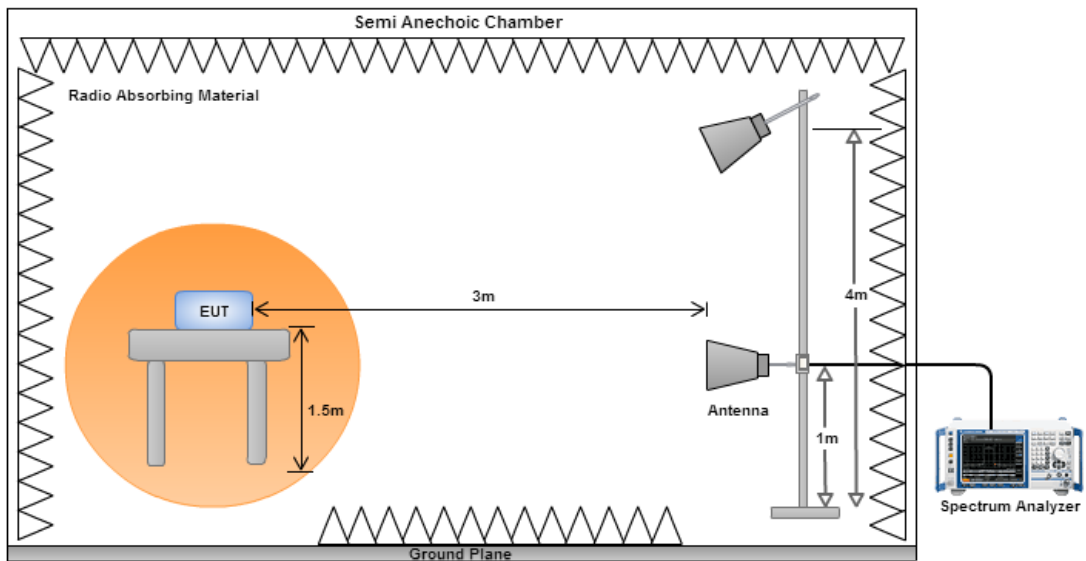
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. Radiated emission above 1GHz / Peak value
RBW=1MHz, VBW=3MHz and Peak detector
Radiated emission above 1GHz / Average value for harmonics
The average value is: Average = Peak value + 20log(Duty cycle) Where the duty factor is calculated from following formula for DH5 packet type which has worst duty factor:
3.
$$20\log (\text{Duty cycle}) = 20\log \frac{1\text{s} / 1600 * 5}{100 \text{ ms}} = -30.1\text{dB}$$
4. Radiated emission above 1GHz / Average value for other emissions
RBW=1MHz, VBW=1/T and Peak detector

3.2.3 Test Setup

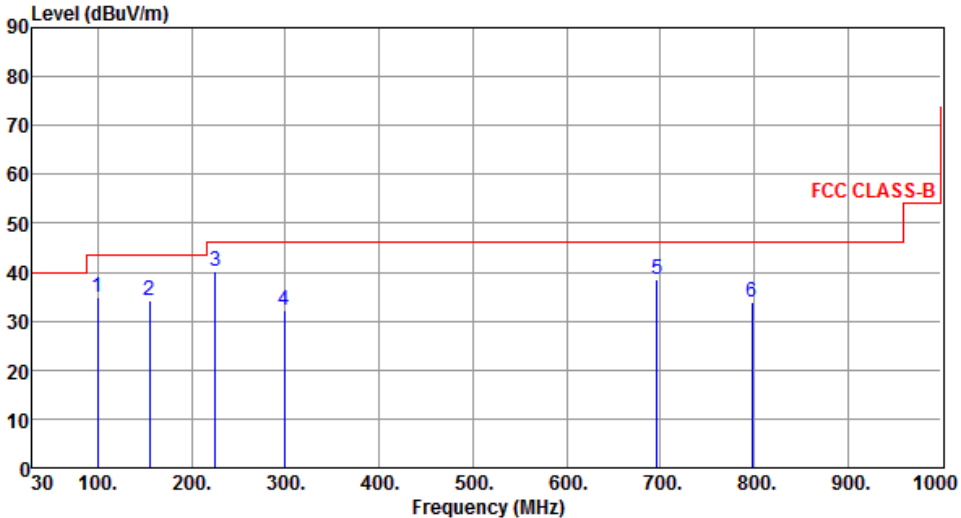
Radiated Emissions below 1 GHz



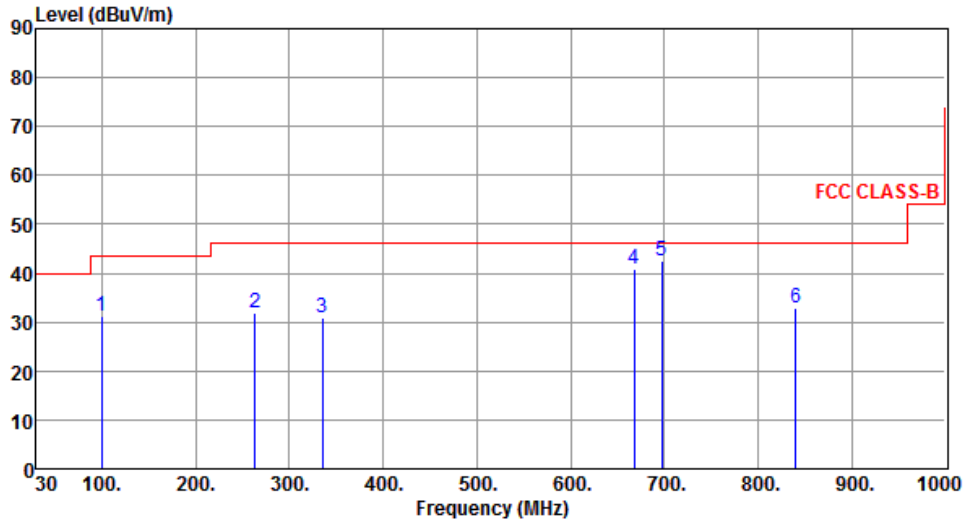
Radiated Emissions above 1 GHz



3.2.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

| Modulation | GFSK | Test Freq. (MHz) | 2480 | | | | | | |
|--|------------|------------------|--------|--------|------------|--------|--------|----------|------------|
| Polarization | Horizontal | | | | | | | | |
|  | | | | | | | | | |
| | Freq. | Emission level | Limit | Margin | SA reading | Factor | Remark | ANT High | Turn Table |
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | | cm | deg |
| 1 | 99.84 | 34.89 | 43.50 | -8.61 | 56.83 | -21.94 | Peak | --- | --- |
| 2 | 155.13 | 34.15 | 43.50 | -9.35 | 51.06 | -16.91 | Peak | --- | --- |
| 3 | 224.97 | 40.34 | 46.00 | -5.66 | 59.35 | -19.01 | Peak | --- | --- |
| 4 | 298.69 | 32.35 | 46.00 | -13.65 | 48.46 | -16.11 | Peak | --- | --- |
| 5 | 696.39 | 38.61 | 46.00 | -7.39 | 46.90 | -8.29 | Peak | --- | --- |
| 6 | 798.24 | 33.82 | 46.00 | -12.18 | 40.75 | -6.93 | Peak | --- | --- |
| <p>Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB) *Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m). Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.</p> | | | | | | | | | |

| | | | |
|---------------------|----------|-------------------------|------|
| Modulation | GFSK | Test Freq. (MHz) | 2480 |
| Polarization | Vertical | | |



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|--------------|-----------------------------|-----------------|--------------|-----------------------|--------------|--------|-------------------|----------------------|
| 1 | 99.84 | 31.31 | 43.50 | -12.19 | 53.25 | -21.94 | Peak | --- | --- |
| 2 | 263.77 | 31.86 | 46.00 | -14.14 | 49.26 | -17.40 | Peak | --- | --- |
| 3 | 335.55 | 30.79 | 46.00 | -15.21 | 46.09 | -15.30 | Peak | --- | --- |
| 4 | 668.26 | 40.78 | 46.00 | -5.22 | 49.52 | -8.74 | Peak | --- | --- |
| 5 | 697.36 | 42.58 | 46.00 | -3.42 | 50.86 | -8.28 | Peak | --- | --- |
| 6 | 839.95 | 32.79 | 46.00 | -13.21 | 39.00 | -6.21 | Peak | --- | --- |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

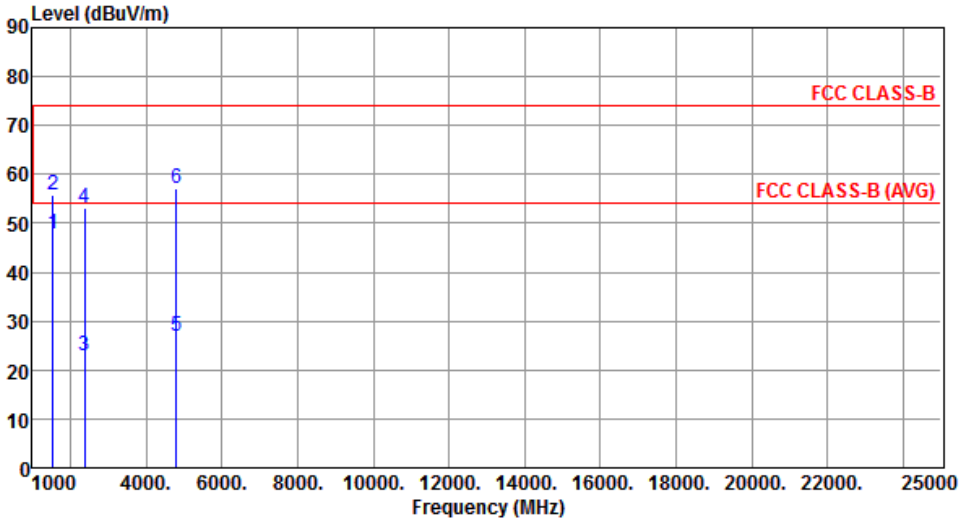
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

3.2.5 Transmitter Radiated Unwanted Emissions (Above 1GHz) for GFSK

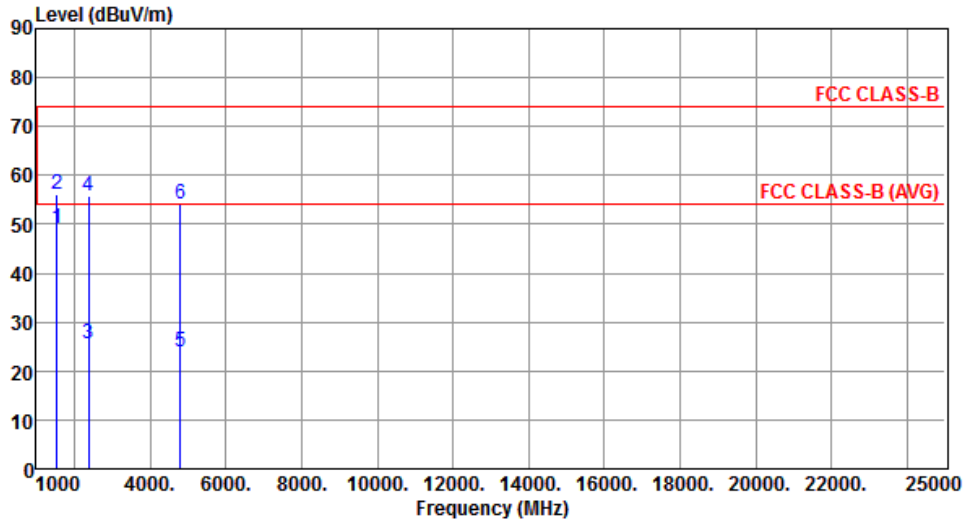
| | | | |
|---------------------|------------|-------------------------|------|
| Modulation | GFSK | Test Freq. (MHz) | 2402 |
| Polarization | Horizontal | | |



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|--------------|-----------------------------|-----------------|--------------|-----------------------|--------------|---------|-------------------|----------------------|
| 1 | 1534.00 | 47.68 | 54.00 | -6.32 | 53.18 | -5.50 | Average | --- | --- |
| 2 | 1534.00 | 55.83 | 74.00 | -18.17 | 61.33 | -5.50 | Peak | --- | --- |
| 3 | 2390.00 | 22.98 | 54.00 | -31.02 | 25.63 | -2.65 | Average | --- | --- |
| 4 | 2390.00 | 53.09 | 74.00 | -20.91 | 55.74 | -2.65 | Peak | --- | --- |
| 5 | 4804.00 | 26.88 | 54.00 | -27.12 | 21.95 | 4.93 | Average | --- | --- |
| 6 | 4804.00 | 56.98 | 74.00 | -17.02 | 52.05 | 4.93 | Peak | --- | --- |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| | | | |
|---------------------|----------|-------------------------|------|
| Modulation | GFSK | Test Freq. (MHz) | 2402 |
| Polarization | Vertical | | |



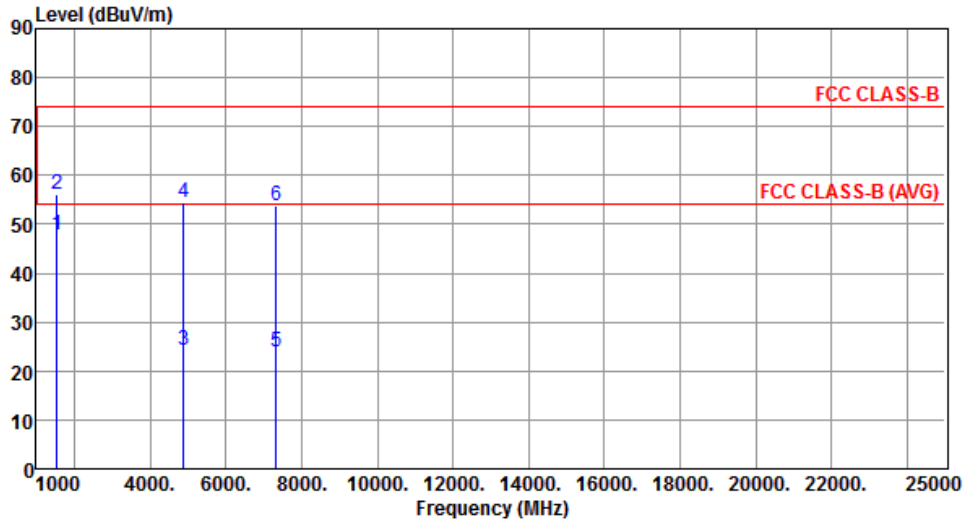
| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|--------------|-----------------------------|-----------------|--------------|-----------------------|--------------|---------|-------------------|----------------------|
| 1 | 1534.00 | 49.23 | 54.00 | -4.77 | 54.73 | -5.50 | Average | --- | --- |
| 2 | 1534.00 | 56.13 | 74.00 | -17.87 | 61.63 | -5.50 | Peak | --- | --- |
| 3 | 2390.00 | 25.67 | 54.00 | -28.33 | 28.32 | -2.65 | Average | --- | --- |
| 4 | 2390.00 | 55.78 | 74.00 | -18.22 | 58.43 | -2.65 | Peak | --- | --- |
| 5 | 4804.00 | 23.88 | 54.00 | -30.12 | 18.95 | 4.93 | Average | --- | --- |
| 6 | 4804.00 | 53.98 | 74.00 | -20.02 | 49.05 | 4.93 | Peak | --- | --- |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| | | | |
|---------------------|------------|-------------------------|------|
| Modulation | GFSK | Test Freq. (MHz) | 2441 |
| Polarization | Horizontal | | |



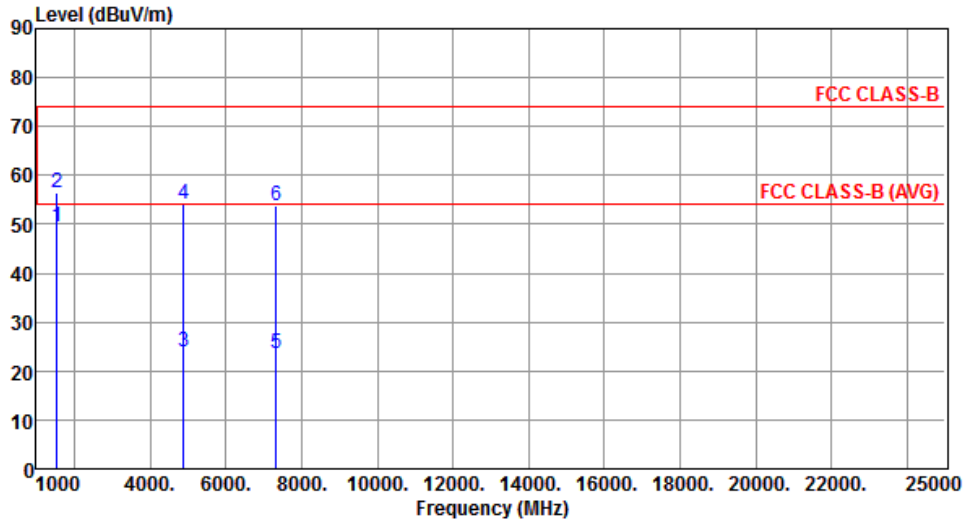
| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|--------------|-----------------------------|-----------------|--------------|-----------------------|--------------|---------|-------------------|----------------------|
| 1 | 1534.00 | 47.75 | 54.00 | -6.25 | 53.25 | -5.50 | Average | --- | --- |
| 2 | 1534.00 | 55.98 | 74.00 | -18.02 | 61.48 | -5.50 | Peak | --- | --- |
| 3 | 4882.00 | 24.21 | 54.00 | -29.79 | 19.10 | 5.11 | Average | --- | --- |
| 4 | 4882.00 | 54.31 | 74.00 | -19.69 | 49.20 | 5.11 | Peak | --- | --- |
| 5 | 7323.00 | 23.76 | 54.00 | -30.24 | 13.62 | 10.14 | Average | --- | --- |
| 6 | 7323.00 | 53.86 | 74.00 | -20.14 | 43.72 | 10.14 | Peak | --- | --- |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| | | | |
|---------------------|----------|-------------------------|------|
| Modulation | GFSK | Test Freq. (MHz) | 2441 |
| Polarization | Vertical | | |



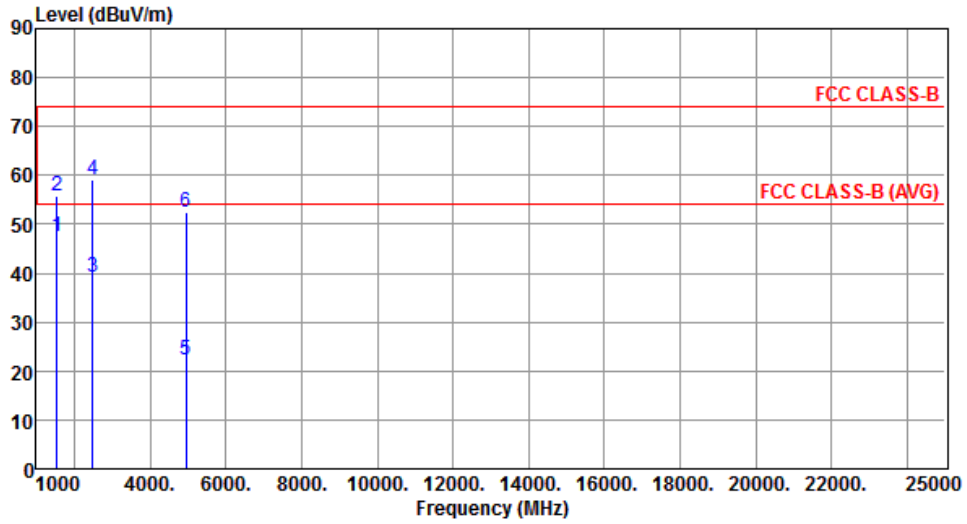
| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|--------------|-----------------------------|-----------------|--------------|-----------------------|--------------|---------|-------------------|----------------------|
| 1 | 1534.00 | 49.33 | 54.00 | -4.67 | 54.83 | -5.50 | Average | --- | --- |
| 2 | 1534.00 | 56.45 | 74.00 | -17.55 | 61.95 | -5.50 | Peak | --- | --- |
| 3 | 4882.00 | 23.89 | 54.00 | -30.11 | 18.78 | 5.11 | Average | --- | --- |
| 4 | 4882.00 | 53.99 | 74.00 | -20.01 | 48.88 | 5.11 | Peak | --- | --- |
| 5 | 7323.00 | 23.72 | 54.00 | -30.28 | 13.58 | 10.14 | Average | --- | --- |
| 6 | 7323.00 | 53.82 | 74.00 | -20.18 | 43.68 | 10.14 | Peak | --- | --- |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| | | | |
|---------------------|------------|-------------------------|------|
| Modulation | GFSK | Test Freq. (MHz) | 2480 |
| Polarization | Horizontal | | |



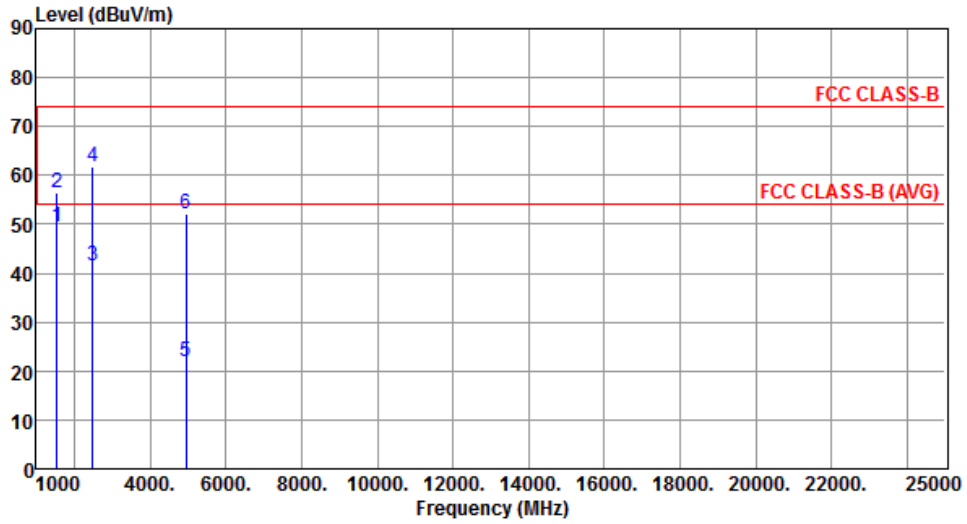
| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|--------------|-----------------------------|-----------------|--------------|-----------------------|--------------|---------|-------------------|----------------------|
| 1 | 1534.00 | 47.55 | 54.00 | -6.45 | 53.05 | -5.50 | Average | --- | --- |
| 2 | 1534.00 | 55.76 | 74.00 | -18.24 | 61.26 | -5.50 | Peak | --- | --- |
| 3 | 2483.50 | 39.05 | 54.00 | -14.95 | 41.39 | -2.34 | Average | --- | --- |
| 4 | 2483.50 | 59.15 | 74.00 | -14.85 | 61.49 | -2.34 | Peak | --- | --- |
| 5 | 4960.00 | 22.33 | 54.00 | -31.67 | 17.05 | 5.28 | Average | --- | --- |
| 6 | 4960.00 | 52.43 | 74.00 | -21.57 | 47.15 | 5.28 | Peak | --- | --- |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| | | | |
|---------------------|----------|-------------------------|------|
| Modulation | GFSK | Test Freq. (MHz) | 2480 |
| Polarization | Vertical | | |



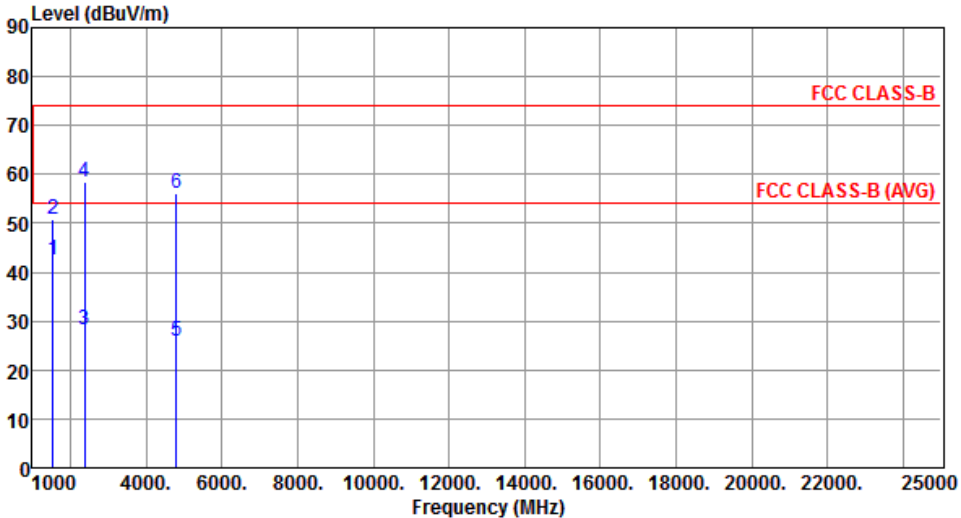
| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|--------------|-----------------------------|-----------------|--------------|-----------------------|--------------|---------|-------------------|----------------------|
| 1 | 1534.00 | 49.63 | 54.00 | -4.37 | 55.13 | -5.50 | Average | --- | --- |
| 2 | 1534.00 | 56.44 | 74.00 | -17.56 | 61.94 | -5.50 | Peak | --- | --- |
| 3 | 2483.50 | 41.57 | 54.00 | -12.43 | 43.91 | -2.34 | Average | --- | --- |
| 4 | 2483.50 | 61.67 | 74.00 | -12.33 | 64.01 | -2.34 | Peak | --- | --- |
| 5 | 4960.00 | 21.88 | 54.00 | -32.12 | 16.60 | 5.28 | Average | --- | --- |
| 6 | 4960.00 | 51.98 | 74.00 | -22.02 | 46.70 | 5.28 | Peak | --- | --- |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

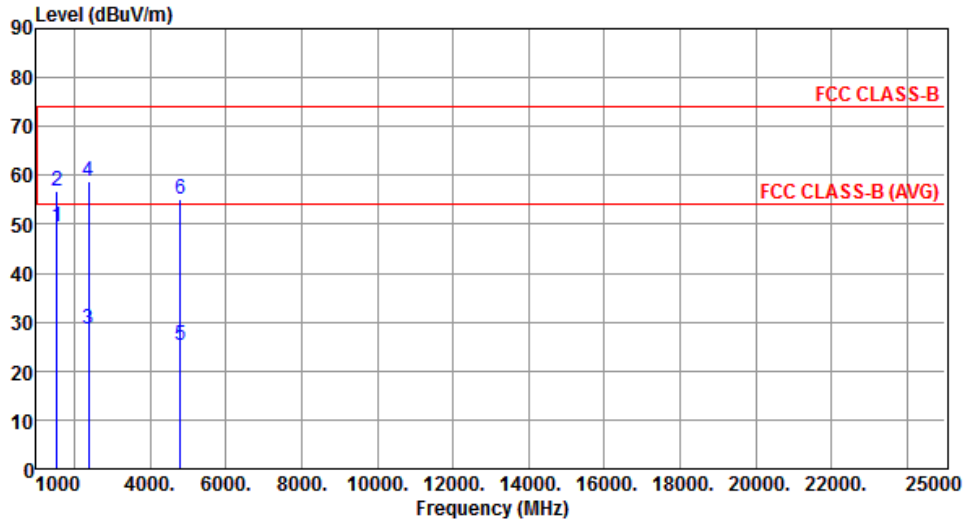
*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

3.2.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 8DPSK

| Modulation | 8DPSK | Test Freq. (MHz) | 2402 | | | | | | |
|---|------------|------------------|--------|--------|------------|--------|---------|----------|------------|
| Polarization | Horizontal | | | | | | | | |
|  | | | | | | | | | |
| | Freq. | Emission level | Limit | Margin | SA reading | Factor | Remark | ANT High | Turn Table |
| | MHz | dBuV/m | dBuV/m | dB | dBuV | dB | | cm | deg |
| 1 | 1534.00 | 42.46 | 54.00 | -11.54 | 47.96 | -5.50 | Average | --- | --- |
| 2 | 1534.00 | 50.69 | 74.00 | -23.31 | 56.19 | -5.50 | Peak | --- | --- |
| 3 | 2390.00 | 28.34 | 54.00 | -25.66 | 30.99 | -2.65 | Average | --- | --- |
| 4 | 2390.00 | 58.44 | 74.00 | -15.56 | 61.09 | -2.65 | Peak | --- | --- |
| 5 | 4804.00 | 26.01 | 54.00 | -27.99 | 21.08 | 4.93 | Average | --- | --- |
| 6 | 4804.00 | 56.11 | 74.00 | -17.89 | 51.18 | 4.93 | Peak | --- | --- |
| <p>Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB) *Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).</p> | | | | | | | | | |

| | | | |
|---------------------|----------|-------------------------|------|
| Modulation | 8DPSK | Test Freq. (MHz) | 2402 |
| Polarization | Vertical | | |



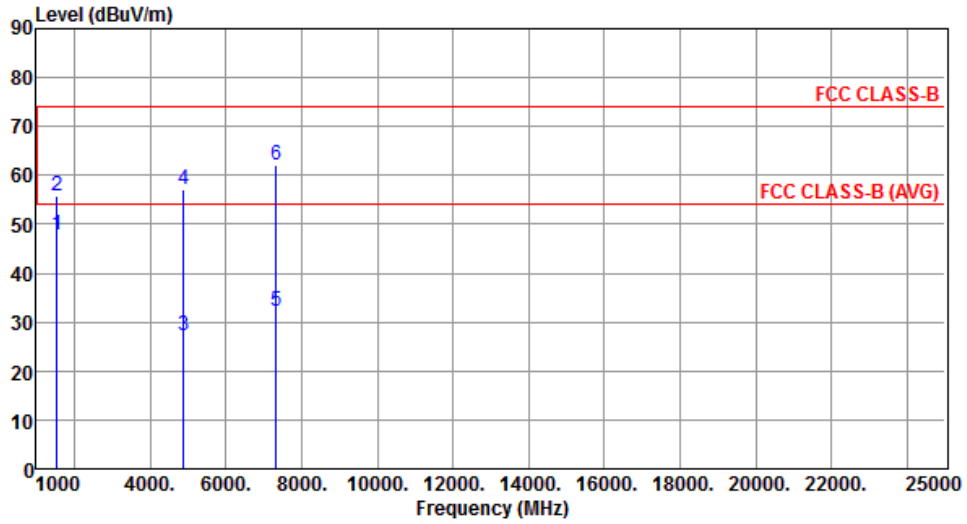
| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|--------------|-----------------------------|-----------------|--------------|-----------------------|--------------|---------|-------------------|----------------------|
| 1 | 1534.00 | 49.44 | 54.00 | -4.56 | 54.94 | -5.50 | Average | --- | --- |
| 2 | 1534.00 | 56.78 | 74.00 | -17.22 | 62.28 | -5.50 | Peak | --- | --- |
| 3 | 2390.00 | 28.53 | 54.00 | -25.47 | 31.18 | -2.65 | Average | --- | --- |
| 4 | 2390.00 | 58.63 | 74.00 | -15.37 | 61.28 | -2.65 | Peak | --- | --- |
| 5 | 4804.00 | 25.19 | 54.00 | -28.81 | 20.26 | 4.93 | Average | --- | --- |
| 6 | 4804.00 | 55.29 | 74.00 | -18.71 | 50.36 | 4.93 | Peak | --- | --- |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| | | | |
|---------------------|------------|-------------------------|------|
| Modulation | 8DPSK | Test Freq. (MHz) | 2441 |
| Polarization | Horizontal | | |



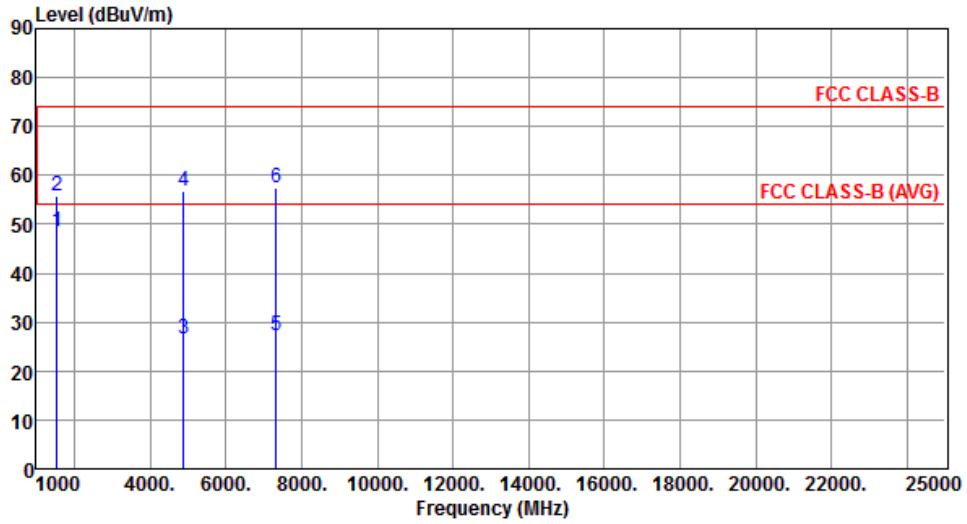
| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|--------------|-----------------------------|-----------------|--------------|-----------------------|--------------|---------|-------------------|----------------------|
| 1 | 1534.00 | 47.83 | 54.00 | -6.17 | 53.33 | -5.50 | Average | --- | --- |
| 2 | 1534.00 | 55.83 | 74.00 | -18.17 | 61.33 | -5.50 | Peak | --- | --- |
| 3 | 4882.00 | 27.08 | 54.00 | -26.92 | 21.97 | 5.11 | Average | --- | --- |
| 4 | 4882.00 | 57.18 | 74.00 | -16.82 | 52.07 | 5.11 | Peak | --- | --- |
| 5 | 7323.00 | 32.10 | 54.00 | -21.90 | 21.96 | 10.14 | Average | --- | --- |
| 6 | 7323.00 | 62.20 | 74.00 | -11.80 | 52.06 | 10.14 | Peak | --- | --- |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| | | | |
|---------------------|----------|-------------------------|------|
| Modulation | 8DPSK | Test Freq. (MHz) | 2441 |
| Polarization | Vertical | | |



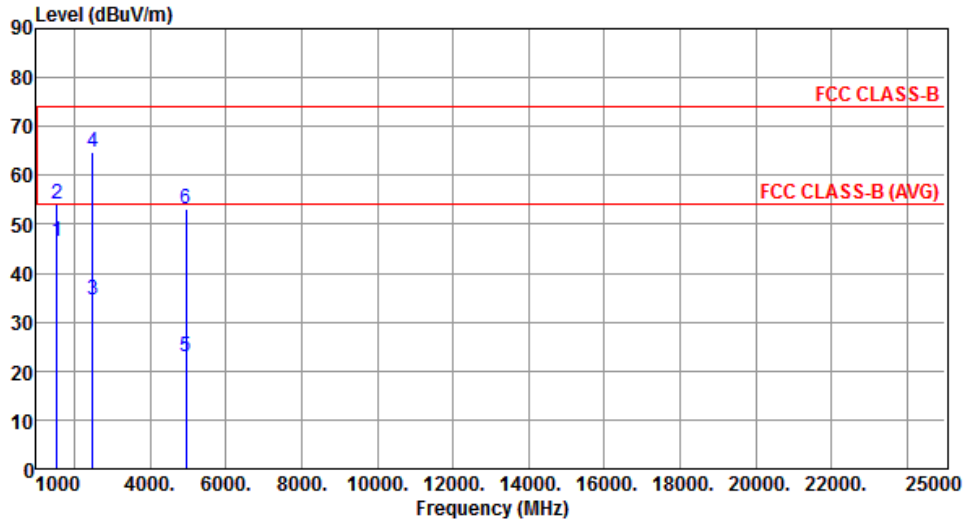
| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|--------------|-----------------------------|-----------------|--------------|-----------------------|--------------|---------|-------------------|----------------------|
| 1 | 1534.00 | 48.59 | 54.00 | -5.41 | 54.09 | -5.50 | Average | --- | --- |
| 2 | 1534.00 | 55.79 | 74.00 | -18.21 | 61.29 | -5.50 | Peak | --- | --- |
| 3 | 4882.00 | 26.67 | 54.00 | -27.33 | 21.56 | 5.11 | Average | --- | --- |
| 4 | 4882.00 | 56.77 | 74.00 | -17.23 | 51.66 | 5.11 | Peak | --- | --- |
| 5 | 7323.00 | 27.20 | 54.00 | -26.80 | 17.06 | 10.14 | Average | --- | --- |
| 6 | 7323.00 | 57.30 | 74.00 | -16.70 | 47.16 | 10.14 | Peak | --- | --- |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| | | | |
|---------------------|------------|-------------------------|------|
| Modulation | 8DPSK | Test Freq. (MHz) | 2480 |
| Polarization | Horizontal | | |



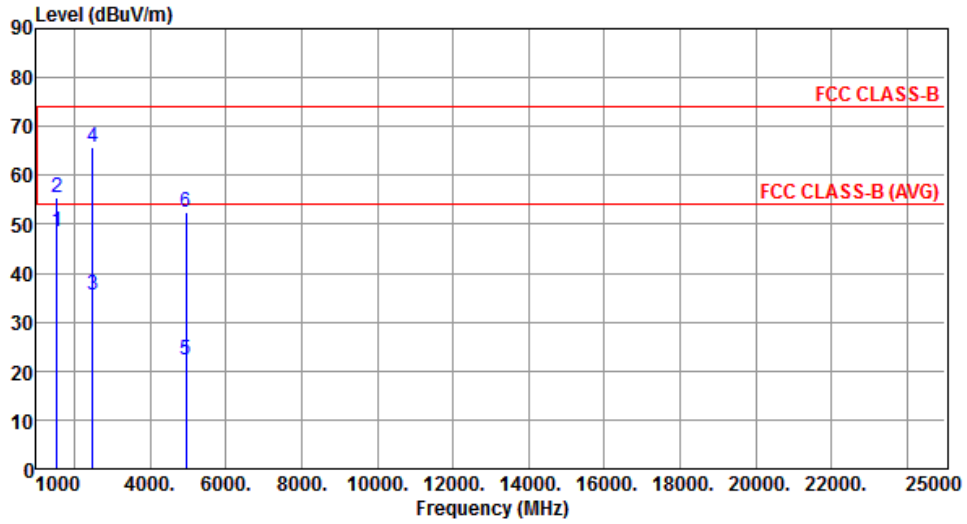
| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|--------------|-----------------------------|-----------------|--------------|-----------------------|--------------|---------|-------------------|----------------------|
| 1 | 1534.00 | 46.61 | 54.00 | -7.39 | 52.11 | -5.50 | Average | --- | --- |
| 2 | 1534.00 | 54.18 | 74.00 | -19.82 | 59.68 | -5.50 | Peak | --- | --- |
| 3 | 2483.50 | 34.67 | 54.00 | -19.33 | 37.01 | -2.34 | Average | --- | --- |
| 4 | 2483.50 | 64.77 | 74.00 | -9.23 | 67.11 | -2.34 | Peak | --- | --- |
| 5 | 4960.00 | 23.06 | 54.00 | -30.94 | 17.78 | 5.28 | Average | --- | --- |
| 6 | 4960.00 | 53.16 | 74.00 | -20.84 | 47.88 | 5.28 | Peak | --- | --- |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

| | | | |
|---------------------|----------|-------------------------|------|
| Modulation | 8DPSK | Test Freq. (MHz) | 2480 |
| Polarization | Vertical | | |



| | Freq. MHz | Emission level dBuV/m | Limit dBuV/m | Margin dB | SA reading dBuV | Factor dB | Remark | ANT High cm | Turn Table deg |
|---|--------------|-----------------------------|-----------------|--------------|-----------------------|--------------|---------|-------------------|----------------------|
| 1 | 1534.00 | 48.50 | 54.00 | -5.50 | 54.00 | -5.50 | Average | --- | --- |
| 2 | 1534.00 | 55.53 | 74.00 | -18.47 | 61.03 | -5.50 | Peak | --- | --- |
| 3 | 2483.50 | 35.68 | 54.00 | -18.32 | 38.02 | -2.34 | Average | --- | --- |
| 4 | 2483.50 | 65.78 | 74.00 | -8.22 | 68.12 | -2.34 | Peak | --- | --- |
| 5 | 4960.00 | 22.36 | 54.00 | -31.64 | 17.08 | 5.28 | Average | --- | --- |
| 6 | 4960.00 | 52.46 | 74.00 | -21.54 | 47.18 | 5.28 | Peak | --- | --- |

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor , cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

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==END==