

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

## PARTIAL REPORT

OF

**Applicant:** Microsoft Corporation  
One Microsoft Way, Redmond, WA 98052-6399 USA  
**Product Name:** Portable Computing Device  
**Brand Name:** Microsoft  
**Model No.:** 1927  
**Contains Wi-Fi Module Model No.:** 1956  
**FCC ID:** C3K1927  
**Contains FCC ID:** C3K1956  
**Report Number:** E2/2019/90049  
**FCC Rule Part:** §15.407, Cat: NII, §15.247, Cat: DSS, DTS, §15.225  
2, 22H & 24E & 27B, C & L & 90S  
**Issue Date:** Mar. 19, 2020  
**Date of Test:** Sep. 30, 2019 ~ Dec. 30, 2019  
**Date of EUT Received:** Sep. 30, 2019  
**We hereby certify that:**

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

The test results of this report relate only to the tested sample identified in this report.

Approved By:

Jazz Huang

Jazz Huang / Asst. Supervisor



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## Revision History

| Report Number | Revision | Description | Issue Date    | Remark                |
|---------------|----------|-------------|---------------|-----------------------|
| E2/2019/90049 | Rev.00   | Original.   | Mar. 19, 2020 | Revised By: Yuri Tsai |

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# 1 GENERAL INFORMATION

## 1.1 Product Description

General:

|                                  |                                                                                 |                                       |
|----------------------------------|---------------------------------------------------------------------------------|---------------------------------------|
| Product Name:                    | Portable Computing Device                                                       |                                       |
| Brand Name:                      | Microsoft                                                                       |                                       |
| Model No.:                       | 1927                                                                            |                                       |
| Contains Wi-Fi Module Model No.: | 1956                                                                            |                                       |
| HW Version (Product ):           | EV2                                                                             |                                       |
| SW Version (Product ):           | Windows 10 Pro                                                                  |                                       |
| HW Version (Radio ):             | EV2                                                                             |                                       |
| SW Version (Radio ):             | 19.43.4.4/99.0.49.7/21.60.1.1                                                   |                                       |
| Radio Test Tool & Version:       | DRTU 11.1941.0-10270                                                            |                                       |
| Firmware Version (Chip):         | 1943-95cfa2-c8-00004.05                                                         |                                       |
| Power Supply:                    | 7.66Vdc from Rechargeable Lithium-Ion Polymer Battery or 15V from AC/DC Adapter |                                       |
|                                  | Battery:                                                                        | Model No.: DYNU01, Supplier: DYNAPACK |
|                                  | Adapter:                                                                        | Model No.: 1735, Supplier: LITEON     |

Note:

This report is for host FCC ID: C3K1927 which contains the module FCC ID: C3K1956.

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## 1.2 Test Methodology of Applied Standards

FCC Part 15, Subpart C §15.225

FCC Part 15, Subpart E §15.407

FCC Part 15, Subpart C §15.247

FCC KDB 558074 D01 DTS Meas. Guidance v05r02

KDB 558074 D01 v05 DSS Meas. Guidance

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

FCC KDB 789033 D02 General UNII Test Procedures New Rules

ANSI C63.10:2013

CC 47 CFR Part 2, 22H, 24E, 27C, Part 90S.

ANSI C63.26-2015

KDB971168 D01 Power Meas license Digital System v03r01

KDB941225 D01 SAR test for 3G devices v03r01 (SAR Measurement Procedures for 3G Devices, WCDMA / HSPA) was used for EUT and Base station setting.

Note: All test items have been performed and record as per the above standards.

## 1.3 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333. (TAF code 0513)

FCC Registration Numbers are: TW0002

## 1.4 Special Accessories

AC Adapter is used while the test is conducted and there is no other accessory attached. This is the worst case condition.

## 1.5 Equipment Modifications

There was no modification incorporated into the EUT.

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## 2 SYSTEM TEST CONFIGURATION

### 2.1 EUT Configuration

The EUT is configured to operate in a continuous transmission mode. EUT placement and various angles were checked to find worst mode where the emission characteristics are maximized.

### 2.2 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

### 2.3 Test Procedure

#### 2.3.1 Radiated Emissions (Simultaneous case)

The EUT is placed on a turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

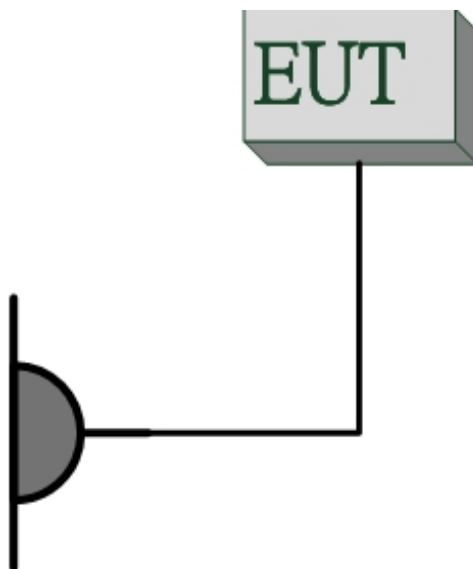
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## 2.4 Configuration of Tested System

**Fig. 2-1 Radiated Emission Configuration**



**Table 2-1 Equipment Used in Tested System**

| Item | Equipment               | Mfr/Brand | Model/Type No. | Series No. | Data Cable | Power Cord |
|------|-------------------------|-----------|----------------|------------|------------|------------|
| 1    | WLAN Test Software      | N/A       | N/A            | N/A        | N/A        | N/A        |
| 2    | Bluetooth Test Software | N/A       | N/A            | N/A        | N/A        | N/A        |
| 3    | NFC Test Software       | N/A       | N/A            | N/A        | N/A        | N/A        |

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### 3 SUMMARY OF TEST RESULT

| FCC Rules                                                                                                                                 | Description Of Test                        | Result    |
|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------|
| §2.1053 §22.917(a)<br>§24.238(a)<br>§27.53(c)(2),(4)<br>§27.50(c)(5) §27.53(f)<br>§27.53(g) §27.53(h)<br>§27.53(m)(4)<br>§90.691(a)(1)(2) | Field Strength<br>of<br>Spurious Radiation | Compliant |
| §15.407(b)                                                                                                                                | Undesirable Radiated Emissions             | Compliant |
| §15.205<br>§15.209<br>§15.247(d)                                                                                                          | Spurious Emission                          | Compliant |
| §15.205<br>§15.209<br>§15.247(d)                                                                                                          | Spurious Emission                          | Compliant |
| §15.225 (a)-(d)                                                                                                                           | Radiated Emission                          | Compliant |

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## 4 DESCRIPTION OF TEST MODES

### 4.1 Operated in U-NII Bands

13 channels are provided for 802.11b, 802.11g and 802.11n\_HT20 / ax\_HE20

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 1       | 2412 MHz  | 8       | 2447 MHz  |
| 2       | 2417 MHz  | 9       | 2452 MHz  |
| 3       | 2422 MHz  | 10      | 2457 MHz  |
| 4       | 2427 MHz  | 11      | 2462 MHz  |
| 5       | 2432 MHz  | 12      | 2467 MHz  |
| 6       | 2437 MHz  | 13      | 2472 MHz  |
| 7       | 2442 MHz  |         |           |

9 channels are provided for 802.11n\_HT40 / ax\_HE40

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 3       | 2422 MHz  | 8       | 2447 MHz  |
| 4       | 2427 MHz  | 9       | 2452 MHz  |
| 5       | 2432 MHz  | 10      | 2457 MHz  |
| 6       | 2437 MHz  | 11      | 2462 MHz  |
| 7       | 2442 MHz  |         |           |

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## 4.2 Operated in 2400 ~ 2483.5MHz Band

79 channels are provided for Bluetooth

| CH | FREQUENCY | CH | FREQUENCY | CH | FREQUENCY | CH | FREQUENCY |
|----|-----------|----|-----------|----|-----------|----|-----------|
| 0  | 2402 MHz  | 20 | 2422 MHz  | 40 | 2442 MHz  | 70 | 2462 MHz  |
| 1  | 2403 MHz  | 21 | 2423 MHz  | 41 | 2443 MHz  | 71 | 2463 MHz  |
| 2  | 2404 MHz  | 22 | 2424 MHz  | 42 | 2444 MHz  | 72 | 2464 MHz  |
| 3  | 2405 MHz  | 23 | 2425 MHz  | 43 | 2445 MHz  | 73 | 2465 MHz  |
| 4  | 2406 MHz  | 24 | 2426 MHz  | 44 | 2446 MHz  | 74 | 2466 MHz  |
| 5  | 2407 MHz  | 25 | 2427 MHz  | 45 | 2447 MHz  | 75 | 2467 MHz  |
| 6  | 2408 MHz  | 26 | 2428 MHz  | 46 | 2448 MHz  | 76 | 2468 MHz  |
| 7  | 2409 MHz  | 27 | 2429 MHz  | 47 | 2449 MHz  | 77 | 2469 MHz  |
| 8  | 2410 MHz  | 28 | 2430 MHz  | 48 | 2450 MHz  | 78 | 2470 MHz  |
| 9  | 2411 MHz  | 29 | 2431 MHz  | 49 | 2451 MHz  | 79 | 2471 MHz  |
| 10 | 2412 MHz  | 30 | 2432 MHz  | 50 | 2452 MHz  | 70 | 2472 MHz  |
| 11 | 2413 MHz  | 31 | 2433 MHz  | 51 | 2453 MHz  | 71 | 2473 MHz  |
| 12 | 2414 MHz  | 32 | 2434 MHz  | 52 | 2454 MHz  | 72 | 2474 MHz  |
| 13 | 2415 MHz  | 33 | 2435 MHz  | 53 | 2455 MHz  | 73 | 2475 MHz  |
| 14 | 2416 MHz  | 34 | 2436 MHz  | 54 | 2456 MHz  | 74 | 2476 MHz  |
| 15 | 2417 MHz  | 35 | 2437 MHz  | 55 | 2457 MHz  | 75 | 2477 MHz  |
| 16 | 2418 MHz  | 36 | 2438 MHz  | 56 | 2458 MHz  | 76 | 2478 MHz  |
| 17 | 2419 MHz  | 37 | 2439 MHz  | 57 | 2459 MHz  | 77 | 2479 MHz  |
| 18 | 2420 MHz  | 38 | 2440 MHz  | 58 | 2460 MHz  | 78 | 2480 MHz  |
| 19 | 2421 MHz  | 39 | 2441 MHz  | 59 | 2461 MHz  |    |           |

## 4.3 Operated in 13.56 MHz Band

1. The frequency 13.56 MHz is the default channel to test, where it is the only manipulative channel as this application supports.
2. Only one configuration is supported/applicable as follows.

| MODE | AVAILABLE CHANNEL | TESTED CHANNEL |
|------|-------------------|----------------|
| NFC  | 1                 | 1              |

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#### 4.4 Operated in U-NII Bands

Operated band in 5150 MHz ~5250 MHz:

4 channels are provided for 802.11a, 802.11n\_HT20, 802.11ac\_VHT20 / ax\_HE20

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 36      | 5180 MHz  | 44      | 5220 MHz  |
| 40      | 5200 MHz  | 48      | 5240 MHz  |

2 channels are provided for 802.11n\_HT40, 802.11ac\_VHT40 / ax\_HE40

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 38      | 5190 MHz  | 46      | 5230 MHz  |

1 channel is provided for 802.11ac\_VHT80 / ax\_HE80

| CHANNEL | FREQUENCY |
|---------|-----------|
| 42      | 5210 MHz  |

1 channel is provided for 802.11ac\_VHT160 / ax\_HE160

| CHANNEL | FREQUENCY |
|---------|-----------|
| 50      | 5250 MHz  |

Operated band in 5250 MHz ~5350 MHz:

4 channels are provided for 802.11a, 802.11n\_HT20, 802.11ac\_VHT20 / ax\_HE20

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 52      | 5260 MHz  | 60      | 5300 MHz  |
| 56      | 5280 MHz  | 64      | 5320 MHz  |

2 channels are provided for 802.11n\_HT40, 802.11ac\_VHT40 / ax\_HE40

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 54      | 5270 MHz  | 62      | 5310 MHz  |

1 channel is provided for 802.11ac\_VHT80 / ax\_HE80

| CHANNEL | FREQUENCY |
|---------|-----------|
| 58      | 5290 MHz  |

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Operated band in 5470 MHz ~5725 MHz:

11 channels are provided for 802.11a, 802.11n\_HT20, 802.11ac\_VHT20 / ax\_HE20

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 100     | 5500 MHz  | 124     | 5620 MHz  |
| 104     | 5520 MHz  | 128     | 5640 MHz  |
| 108     | 5540 MHz  | 132     | 5660 MHz  |
| 112     | 5560 MHz  | 136     | 5680 MHz  |
| 116     | 5580 MHz  | 140     | 5700 MHz  |
| 120     | 5600 MHz  | 144     | 5720 MHz  |

5 channels are provided for 802.11n\_HT40, 802.11ac\_VHT40 / ax\_HE40

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 102     | 5510 MHz  | 126     | 5630 MHz  |
| 110     | 5550 MHz  | 134     | 5670 MHz  |
| 118     | 5590 MHz  | 142     | 5710 MHz  |

3 channels are provided for 802.11ac\_VHT80 / ax\_HE80

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 106     | 5530 MHz  | 138     | 5690 MHz  |
| 122     | 5610 MHz  |         |           |

1 channel is provided for 802.11ac\_VHT160 / ax\_HE160

| CHANNEL | FREQUENCY |
|---------|-----------|
| 114     | 5570 MHz  |

Operated band in 5725 MHz ~5850 MHz:

5 channels are provided for 802.11a, 802.11n\_HT20, 802.11ac\_VHT20 / ax\_HE20

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 149     | 5745 MHz  | 161     | 5805 MHz  |
| 153     | 5765 MHz  | 165     | 5825 MHz  |
| 157     | 5785 MHz  |         |           |

2 channels are provided for 802.11n\_HT40, 802.11ac\_VHT40 / ax\_HE40

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 151     | 5755 MHz  | 159     | 5795 MHz  |

1 channel is provided for 802.11ac\_VHT80 / ax\_HE80

| CHANNEL | FREQUENCY |
|---------|-----------|
| 155     | 5775 MHz  |

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#### 4.5 The Worst Test Modes and Channel Details

1. The EUT has been tested under operating condition.
2. Test program used to control the EUT for staying in continuous transmitting mode is programmed.
3. Investigation has been done on all the possible configurations for searching the worst case.
4. For 802.11n HT and VHT modes, the HT emission testing was considered as a worst case scenario and was performed at power levels, per transmit chain, greater than or equal to the maximum power in any HT mode.
5. For MIMO modes, the 2TX emission testing was considered as a worst case scenario and was performed at power levels, per transmit chain, greater than or equal to the maximum power in any 1TX mode.
6. . The EUT is supporting LTE, BT, BLE, 802.11 a/b/g/n/ac/ax and NFC mode, pre-scanned on simultaneous radiated emission on above available combinations, the worst case was reported on this report.

The field strength of radiation emission was measured as EUT stand-up position (H, E1 mode) and lie down position (E2 mode), the worst case E2 position was reported.

#### 4.6 Simultaneous Radiated Emission Test Mode:

**Mode 1:** BT BR + WLAN 5G

**Mode 2:** BLE + WLAN 5G

**Mode 3:** NFC + WLAN 2.4G

**Mode 4:** NFC + WLAN 5G

**Mode 5:** LTE + WLAN 2.4G

**Mode 6:** LTE + WLAN 5G

**Mode 7:** LTE + WLAN 5G + NFC

**Mode 8:** LTE + BT

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## 5 MEASUREMENT UNCERTAINTY

| Test Items                              | Uncertainty                |
|-----------------------------------------|----------------------------|
| AC Power Line Conducted Emission        | +/- 2.586 dB               |
| 26dB & 6dB Emission Bandwidth           | +/- 123.36 Hz              |
| The Maximum Output Power Measurement    | +/- 0.96 dB                |
| Peak Power Spectral Density Measurement | +/- 1.67 dB                |
| Frequency Stability                     | +/- 123.36 Hz              |
| Temperature                             | +/- 0.65 °C                |
| Humidity                                | +/- 4.6 %                  |
| DC / AC Power Source                    | DC= +/- 0.13%, AC=+/- 0.2% |

### Radiated Spurious Emission:

|                                                              |                            |
|--------------------------------------------------------------|----------------------------|
| Measurement uncertainty<br>(Polarization : <b>Vertical</b> ) | 9kHz-30MHz: +/-2.87dB      |
|                                                              | 30MHz - 180MHz: +/- 3.37dB |
|                                                              | 180MHz -417MHz: +/- 3.19dB |
|                                                              | 0.417GHz-1GHz: +/- 3.19dB  |
|                                                              | 1GHz - 18GHz: +/- 4.04dB   |
|                                                              | 18GHz - 40GHz: +/- 4.04dB  |

|                                                                |                            |
|----------------------------------------------------------------|----------------------------|
| Measurement uncertainty<br>(Polarization : <b>Horizontal</b> ) | 9kHz-30MHz: +/-2.87dB      |
|                                                                | 30MHz - 167MHz: +/- 4.22dB |
|                                                                | 167MHz -500MHz: +/- 3.44dB |
|                                                                | 0.5GHz-1GHz: +/- 3.39dB    |
|                                                                | 1GHz - 18GHz: +/- 4.08dB   |
|                                                                | 18GHz - 40GHz: +/- 4.08dB  |

### Note:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.
2. The conformity assessment statement in this report is based solely on the test results, measurement uncertainty is excluded.

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## 6 RADIATED EMISSION MEASUREMENT

### 6.1 Standard Applicable

#### For NII

The maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

1. For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
2. For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

| APPLICABLE TO                                                                                                                                                                                                                                                                                                                      | LIMIT                                                                                   |                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| FCC KDB 789033 D02 General<br>UNII Test Procedures New Rules                                                                                                                                                                                                                                                                       | FIELD STRENGTH AT 3m                                                                    |                                                                                             |
|                                                                                                                                                                                                                                                                                                                                    | PK: 74 (dBμV/m)                                                                         | AV 54 (dBμV/m)                                                                              |
| APPLICABLE TO                                                                                                                                                                                                                                                                                                                      | EIRP LIMIT                                                                              | FIELD STRENGTH AT 3m                                                                        |
| 15.407(b)(1)<br>RSS-247 6.2.1.2                                                                                                                                                                                                                                                                                                    | PK: -27 (dBm/MHz)                                                                       | PK: 68.3 (dBμV/m)                                                                           |
| 15.407(b)(2)<br>RSS-247 6.2.2.2                                                                                                                                                                                                                                                                                                    |                                                                                         |                                                                                             |
| 15.407(b)(3)<br>RSS-247 6.2.3.2                                                                                                                                                                                                                                                                                                    |                                                                                         |                                                                                             |
| 15.407(b)(4)(i)<br>RSS-247 6.2.4.2                                                                                                                                                                                                                                                                                                 | PK:-27 (dBm/MHz) *1<br>PK:10 (dBm/MHz) *2<br>PK:15.6 (dBm/MHz) *3<br>PK:27 (dBm/MHz) *4 | PK: 68.2(dBμV/m) *1<br>PK:105.2 (dBμV/m) *2<br>PK: 110.8(dBμV/m) *3<br>PK:122.2 (dBμV/m) *4 |
| *1 beyond 75 MHz or more above of the bandedge.<br>*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.<br>*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.<br>*4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. |                                                                                         |                                                                                             |

$EIRP = (E \cdot d)^2 / 30$ , where E is the field in V/m, d is the measurement distance (3m), EIRP is the equivalent isotropically radiated power in Watts.

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Unwanted spurious emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table:

| Frequency (MHz) | Field strength (microvolts/meter) | Distance (meters) |
|-----------------|-----------------------------------|-------------------|
| 0.009-0.490     | 2400/F(KHz)                       | 300               |
| 0.490-1.705     | 24000/F(KHz)                      | 30                |
| 1.705-30        | 30                                | 30                |
| 30-88           | 100                               | 3                 |
| 88-216          | 150                               | 3                 |
| 216-960         | 200                               | 3                 |
| Above 960       | 500                               | 3                 |

**Note:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBμV/m) = 20 log Emission level ( μV/m)

**For DTS & DSS,**

In any 100 kHz 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 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands must also comply with the §15.209 limit as below.

And according to §15.33(a) (1) for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

| Frequency (MHz) | Field strength (microvolts/meter) | Distance (meters) |
|-----------------|-----------------------------------|-------------------|
| 0.009-0.490     | 2400/F(kHz)                       | 300               |
| 0.490-1.705     | 24000/F(kHz)                      | 30                |
| 1.705-30        | 30                                | 30                |
| 30-88           | 100                               | 3                 |
| 88-216          | 150                               | 3                 |
| 216-960         | 200                               | 3                 |
| Above 960       | 500                               | 3                 |

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**Note:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBμV/m) = 20 log Emission level (μV/m)

**For DXX,**

The field strength of any emission which appear outside of 13.553~13.567MHz Band shall not exceed the general radiated emissions limits.

| Frequency (MHz) | Field strength (μV/m) | Distance (meters) |
|-----------------|-----------------------|-------------------|
| 0.009~0.490     | 2400/F(kHz)           | 300               |
| 0.490~1.705     | 24000/F(kHz)          | 30                |
| 1.705-30        | 30                    | 30                |
| 30-88           | 100                   | 3                 |
| 88-216          | 150                   | 3                 |
| 216-960         | 200                   | 3                 |
| Above 960       | 500                   | 3                 |

**Note:**

1. Emission level in dBμV/m=20 log (μV/m)
2. Distance extrapolation factor = 40 log (required distance/ test distance) (dB)
3. The lower limit shall apply at the transition frequencies.
4. The measurement was undertaken in closer distance at 3m, where extrapolation factor is offset to convert the limit of the measurement.

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## For PCB

According to FCC §2.1053,

FCC §22.917(a) , §24.238(a) , §27.53 (h) , the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/ or alignment procedure, shall not be less than  $43 + 10 \log$  (mean output power in watts) dBc below the mean power output outside a license's frequency block (-13dBm).

§27.53 (c)

(2) On any frequency outside the 776– 788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log$  (P) dB (-13dBm)

(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than  $65 + 10 \log$  (P) dB in a 6.25 kHz band segment, for mobile and portable stations;

§27.53 (f) For operations in the 746-758 MHz, 775-788 MHz, and 805-806 MHz bands, emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

FCC §27.53(c) (5) & FCC §27.53(g)

Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

FCC §27.53(h) (3)

Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

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## FCC §27.53(m) (4) (6)

For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than  $43 + 10 \log (P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log (P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.

Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495-2496 MHz). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

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## 6.2 Measurement Equipment Used

| SGS SAC-III                  |                 |              |               |                  |                 |
|------------------------------|-----------------|--------------|---------------|------------------|-----------------|
| Name of Equipment            | Manufacturer    | Model        | Serial Number | Calibration Date | Calibration Due |
| Broadband Antenna            | TESEQ           | CBL 6112D    | 35240         | 09/09/2019       | 09/08/2020      |
| Horn Antenna                 | Schwarzbeck     | BBHA9170     | 185           | 08/07/2019       | 08/06/2020      |
| Horn Antenna                 | Schwarzbeck     | BBHA9120D    | 1187          | 01/09/2019       | 01/08/2020      |
| Loop Antenna                 | ETS.LINDGREN    | 6502         | 143303        | 04/25/2019       | 04/24/2020      |
| EMI Test Receiver            | R&S             | ESU 40       | 100363        | 04/15/2019       | 04/14/2020      |
| Radio Communication Analyser | Anritsu         | MT8820C      | 6201107337    | 07/17/2019       | 07/16/2020      |
| Pre-Amplifier                | EMC Instruments | EMC330       | 980096        | 12/25/2018       | 12/24/2019      |
| Pre-Amplifier                | EMC Instruments | EMC0011830   | 980199        | 12/25/2018       | 12/24/2019      |
| Pre-Amplifier                | EMC Instruments | EMC184045B   | 980135        | 12/25/2018       | 12/24/2019      |
| Highpass Filter              | Micro Tronics   | BRM50701-01  | G008          | 12/25/2018       | 12/24/2019      |
| Band Rejection Filter        | Micro-Tronics   | G015         | RF100         | 12/25/2018       | 12/24/2019      |
| Band Rejection Filter        | Micro-Tronics   | G016         | RF101         | 12/25/2018       | 12/24/2019      |
| Notch Filter                 | Woken           | EWT-54-0037  | RF54          | 12/25/2018       | 12/24/2019      |
| Notch Filter                 | Woken           | EWT-54-0038  | RF55          | 12/25/2018       | 12/24/2019      |
| Band Rejection Filter        | Micro-Tronics   | G021         | RF102         | 12/25/2018       | 12/24/2019      |
| Coaxial Cable                | Huber Suhner    | SUCOFLEX 104 | MY17388/4     | 12/25/2018       | 12/24/2019      |
| Coaxial Cable                | Huber Suhner    | RG 214/U     | W22.03        | 12/25/2018       | 12/24/2019      |

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| EQUIPMENT TYPE        | MFR             | MODEL NUMBER | SERIAL NUMBER | LAST CAL.  | CAL DUE.   |
|-----------------------|-----------------|--------------|---------------|------------|------------|
| Pre-Amplifier         | EMC Instruments | EMC330       | 980096        | 11/20/2019 | 11/19/2020 |
| Pre-Amplifier         | EMC Instruments | EMC0011830   | 980199        | 11/20/2019 | 11/19/2020 |
| Pre-Amplifier         | EMC Instruments | EMC184045B   | 980135        | 11/20/2019 | 11/19/2020 |
| Highpass Filter       | Micro Tronics   | BRM50701-01  | G008          | 11/20/2019 | 11/19/2020 |
| Band Rejection Filter | Micro-Tronics   | G015         | RF100         | 11/20/2019 | 11/19/2020 |
| Band Rejection Filter | Micro-Tronics   | G016         | RF101         | 11/20/2019 | 11/19/2020 |
| Notch Filter          | Woken           | EWT-54-0037  | RF54          | 11/20/2019 | 11/19/2020 |
| Notch Filter          | Woken           | EWT-54-0038  | RF55          | 11/20/2019 | 11/19/2020 |
| Band Rejection Filter | Micro-Tronics   | G021         | RF102         | 11/20/2019 | 11/19/2020 |
| Coaxial Cable         | Huber Suhner    | SUCOFLEX 104 | MY17388/4     | 11/20/2019 | 11/19/2020 |
| Coaxial Cable         | Huber Suhner    | RG 214/U     | W22.03        | 11/20/2019 | 11/19/2020 |

*Note: The measurement was taken place with the long duration of the time, and additional equipment list as shown above indicate those equipment of which has been subject to undertake the calibration in intermediate period of time of the measurement.*

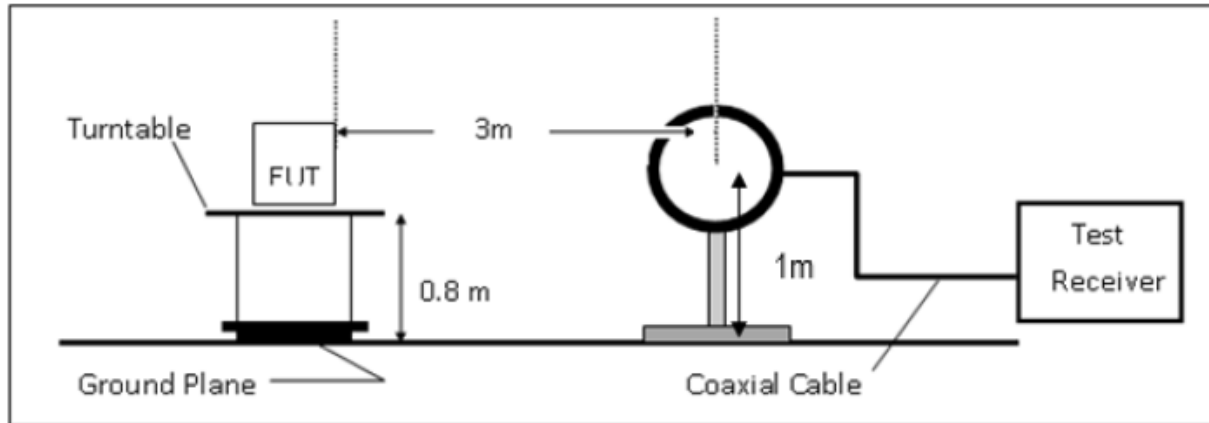
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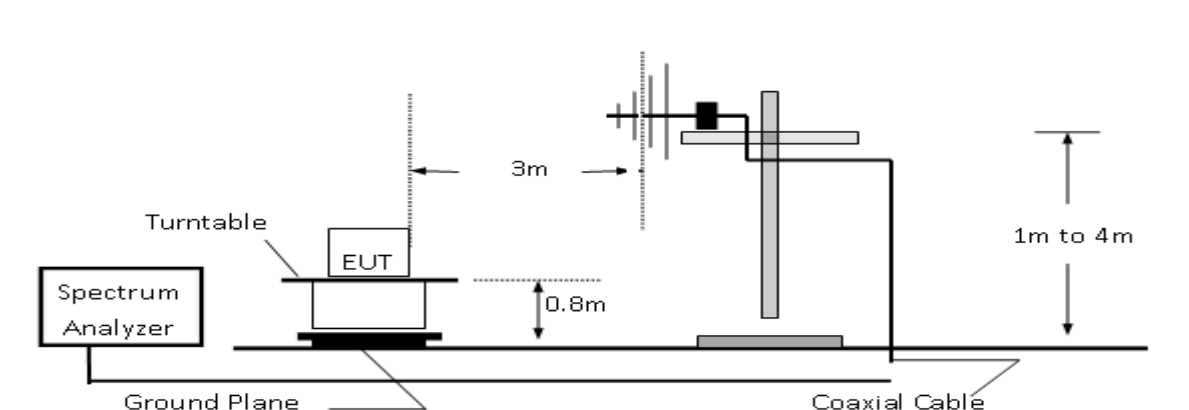
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### 6.3 Test SET-UP

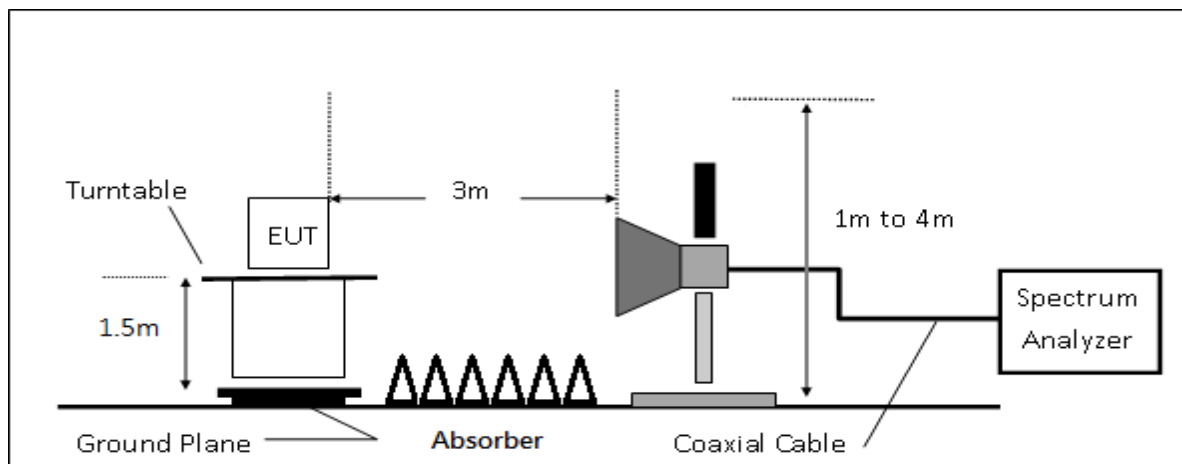
#### (A) Radiated Emission Test Set-UP Frequency Below 30MHz.



#### (B) Radiated Emission Test Set-UP, Frequency form 30MHz to 1000MHz



#### (C) Radiated Emission Test Set-UP Frequency Over 1 GHz



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#### 6.4 Measurement Procedure (Simultaneous case)

1. The testing follows the Measurement Procedure of ANSI C63.10:2013.
2. The EUT was placed on a turn table with 0.8m for frequency < 1GHz and 1.5m for frequency > 1GHz above ground plan.
3. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
4. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
5. Set the spectrum analyzer as RBW=120 kHz and VBW=300 kHz for Peak Detector (PK) and Quasi-peak (QP) at frequency below 1 GHz.
6. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Peak Detector at frequency above 1 GHz.
7. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
8. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna.
9. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
10. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. On spectrum, change spectrum mode in linear display mode, and reduce VBW = 10Hz if average reading is measured.
11. Repeat above procedures until all default test channel measured were complete.

#### 6.5 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

**Where** *FS* = Field Strength

*CL* = Cable Attenuation Factor (Cable Loss)

*RA* = Reading Amplitude

*AG* = Amplifier Gain

*AF* = Antenna Factor

*The limit of the emission level is expressed in dBuV/m, which converts  $20 \cdot \log(\mu V/m)$*

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$Actual\ FS(dB\mu V/m) = SPA.\ Reading\ level(dB\mu V) + Factor(dB)$

$Factor(dB) = Antenna\ Factor(dB\mu V/m) + Cable\ Loss(dB) - Pre\_Amplifier\ Gain(dB)$

## 6.6 Test Results of Radiated Spurious Emissions form 9 kHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

## 6.7 Measurement Result

Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

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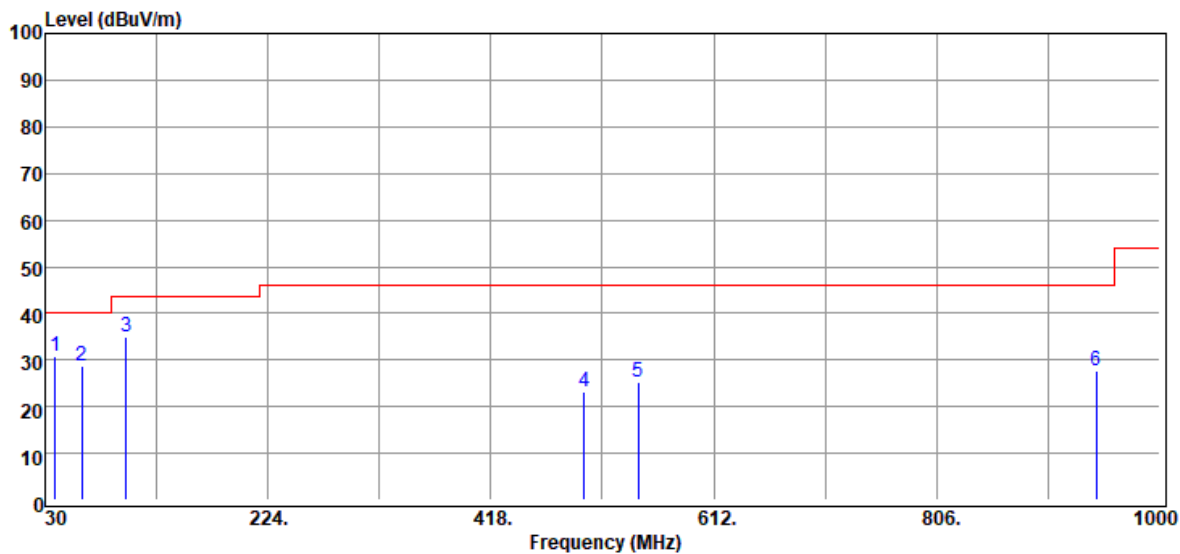
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## Radiated Spurious Emission Measurement Result

### WIFI+BT

|                |                      |              |             |
|----------------|----------------------|--------------|-------------|
| Report Number  | :E2/2019/90049       | Test Date    | :2019-12-30 |
| Operation Mode | :802.11a + BTBR      | Temp./Humi.  | :22.9/52    |
| Test Channel   | :5220 MHz + 2480 MHz | Antenna Pol. | :VERTICAL   |
| Test Mode      | :TX                  | Engineer     | :Ashton     |
| EUT Pol        | :E2 Plan             |              |             |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dB $\mu$ V | Factor<br>dB | Actual<br>FS<br>dB $\mu$ V/m | Limit<br>@3m<br>dB $\mu$ V/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------------|--------------|------------------------------|------------------------------|--------------|
| 38.73        | QP                           | 39.68                                   | -9.04        | 30.64                        | 40.00                        | -9.36        |
| 62.01        | Peak                         | 50.32                                   | -21.43       | 28.89                        | 40.00                        | -11.11       |
| 100.81       | Peak                         | 51.96                                   | -17.06       | 34.90                        | 43.50                        | -8.60        |
| 499.48       | Peak                         | 31.65                                   | -8.44        | 23.21                        | 46.00                        | -22.79       |
| 546.04       | Peak                         | 31.93                                   | -6.74        | 25.19                        | 46.00                        | -20.81       |
| 944.71       | Peak                         | 31.57                                   | -3.73        | 27.84                        | 46.00                        | -18.16       |

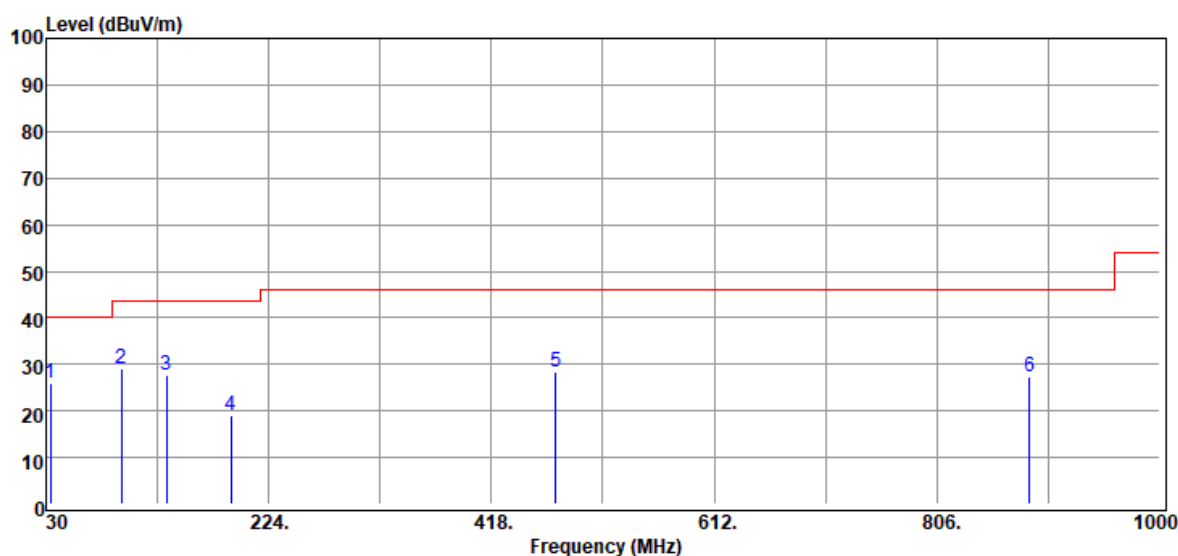
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Report Number :E2/2019/90049  
 Operation Mode :802.11a + BTBR  
 Test Channel :5220 MHz + 2480 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2019-11-14  
 Temp./Humi. :22.9/52  
 Antenna Pol. :HORIZONTAL  
 Engineer :Ashton



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 33.88        | Peak                         | 31.92                             | -6.05        | 25.87                  | 40.00                  | -14.13       |
| 95.96        | Peak                         | 46.99                             | -18.04       | 28.95                  | 43.50                  | -14.55       |
| 134.76       | Peak                         | 42.00                             | -14.48       | 27.52                  | 43.50                  | -15.98       |
| 191.02       | Peak                         | 37.12                             | -18.01       | 19.11                  | 43.50                  | -24.39       |
| 474.26       | Peak                         | 37.26                             | -8.72        | 28.54                  | 46.00                  | -17.46       |
| 886.51       | Peak                         | 32.33                             | -4.84        | 27.49                  | 46.00                  | -18.51       |

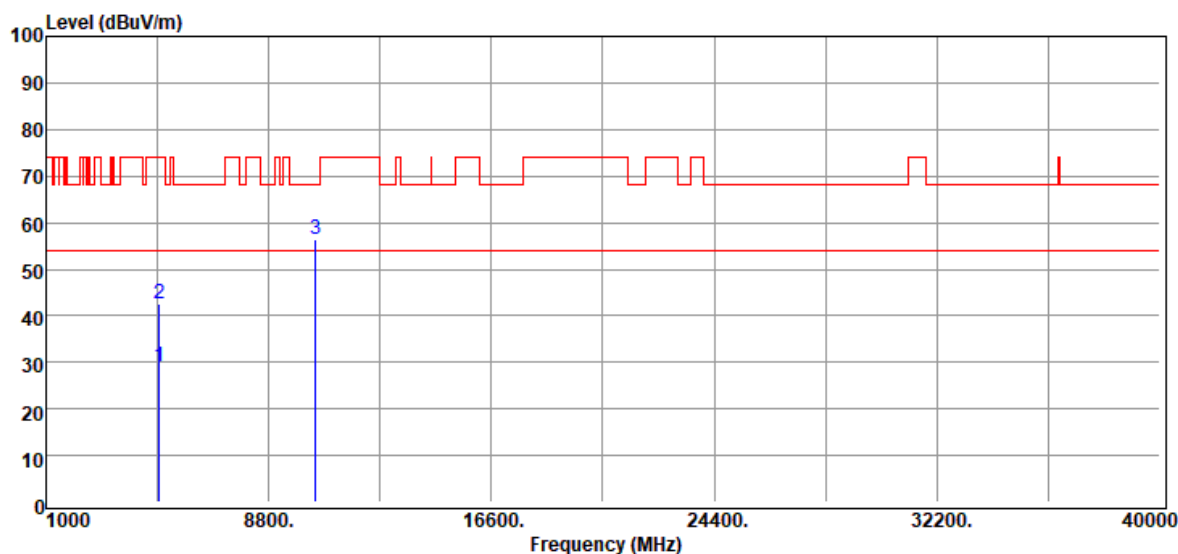
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Report Number :E2/2019/90049  
Operation Mode :802.11a + BTBR  
Test Channel :5220 MHz + 2480 MHz  
Test Mode :TX  
EUT Pol :E2 Plan

Test Date :2019-11-13  
Temp./Humi. :22.1/64  
Antenna Pol. :VERTICAL  
Engineer :Ashton



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 4960.00      | Average                      | 17.59                             | 11.31        | 28.90                  | 54.00                  | -25.10       |
| 4960.00      | Peak                         | 31.27                             | 11.31        | 42.58                  | 74.00                  | -31.42       |
| 10440.00     | Peak                         | 31.30                             | 25.08        | 56.38                  | 68.20                  | -11.82       |

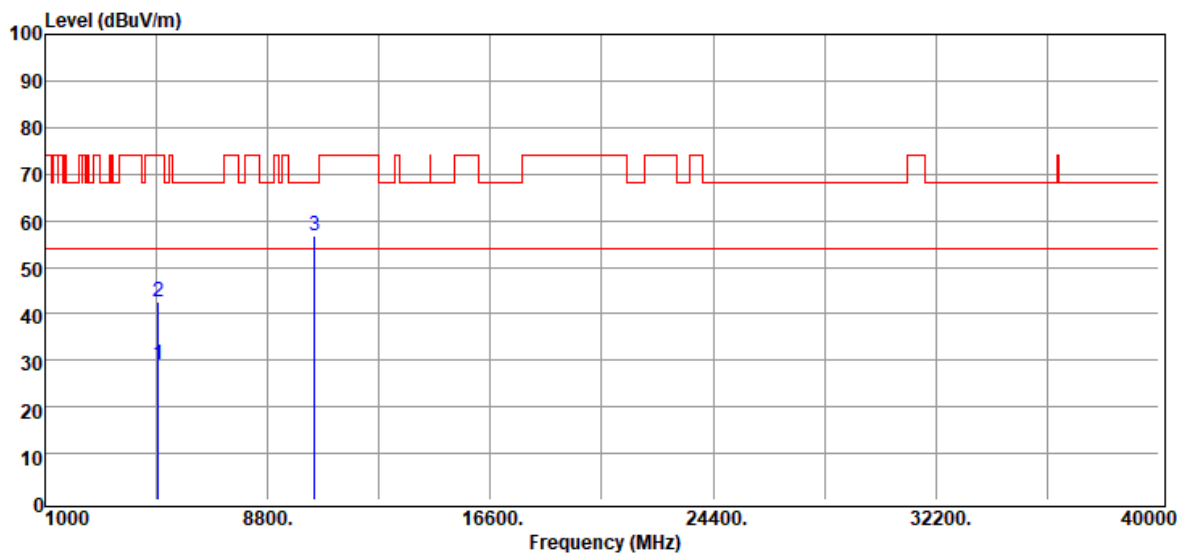
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Operation Mode :802.11a + BTBR  
Test Channel :5220 MHz + 2480 MHz  
Test Mode :TX  
EUT Pol :E2 Plan

Test Date :2019-11-13  
Temp./Humi. :22.1/64  
Antenna Pol. :HORIZONTAL  
Engineer :Ashton



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 4960.00      | Average                      | 17.69                             | 11.31        | 29.00                  | 54.00                  | -25.00       |
| 4960.00      | Peak                         | 31.25                             | 11.31        | 42.56                  | 74.00                  | -31.44       |
| 10440.00     | Peak                         | 31.57                             | 25.08        | 56.65                  | 68.20                  | -11.55       |

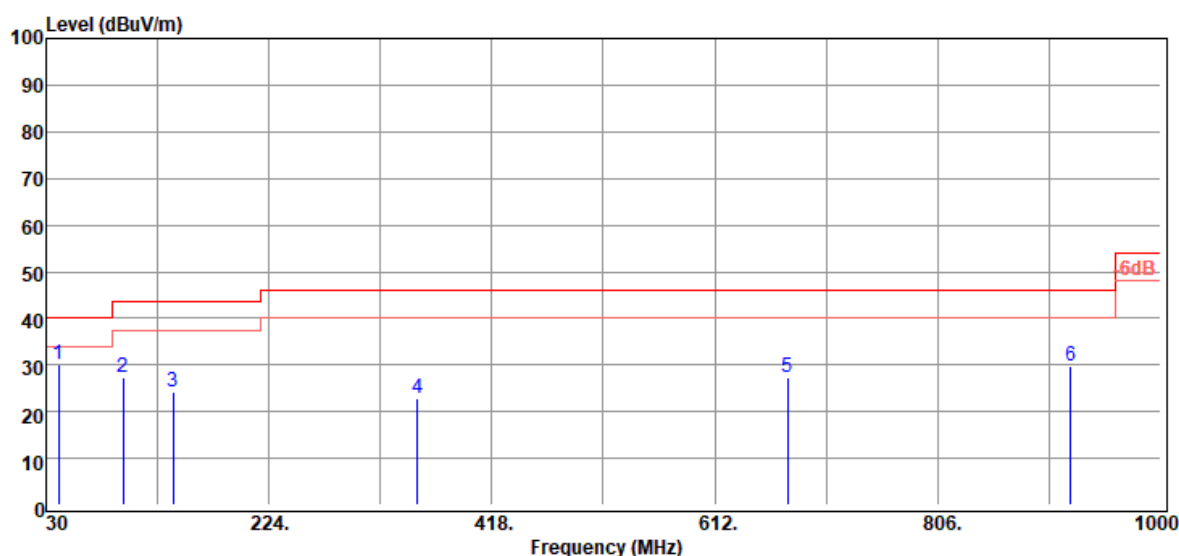
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Report Number :E2/2019/90049  
 Operation Mode :802.11n20/B1 + BT BR  
 Test Channel :5180 MHz + 2480 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2020-01-17  
 Temp./Humi. :22.4/58  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 40.67        | Peak                         | 39.50                             | -9.33        | 30.17                  | 40.00                  | -9.83        |
| 96.93        | Peak                         | 43.45                             | -16.13       | 27.32                  | 43.50                  | -16.18       |
| 140.58       | Peak                         | 37.52                             | -13.18       | 24.34                  | 43.50                  | -19.16       |
| 353.01       | Peak                         | 31.87                             | -9.13        | 22.74                  | 46.00                  | -23.26       |
| 675.05       | Peak                         | 29.38                             | -2.20        | 27.18                  | 46.00                  | -18.82       |
| 921.43       | Peak                         | 28.53                             | 1.27         | 29.80                  | 46.00                  | -16.20       |

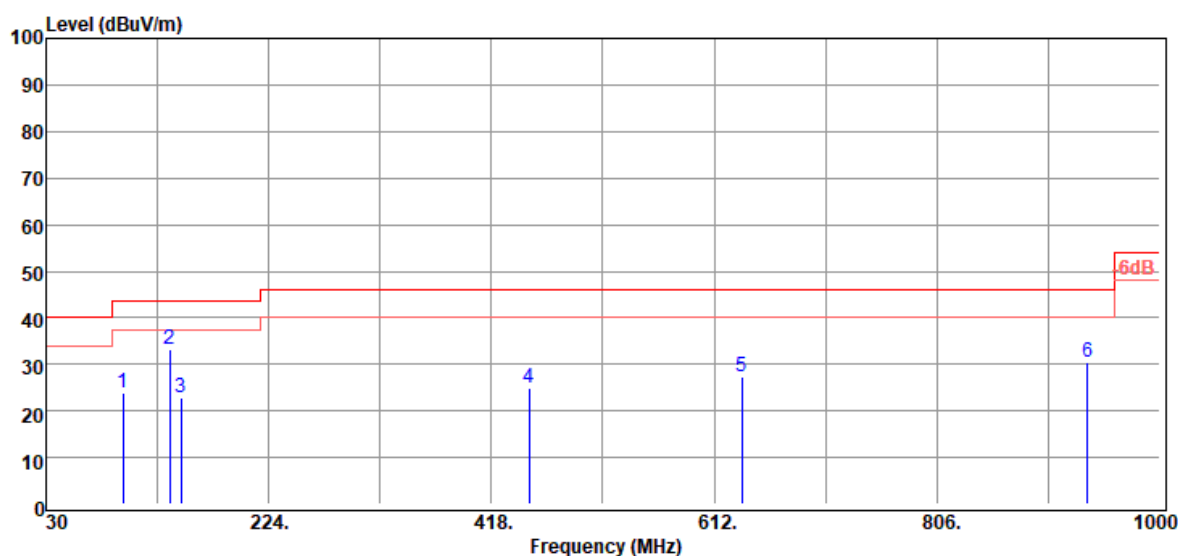
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 Test Channel :5180 MHz + 2480 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2020-01-17  
 Temp./Humi. :22.4/58  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 96.93        | Peak                         | 39.83                             | -16.13       | 23.70                  | 43.50                  | -19.80       |
| 137.67       | Peak                         | 46.28                             | -13.11       | 33.17                  | 43.50                  | -10.33       |
| 147.37       | Peak                         | 36.36                             | -13.56       | 22.80                  | 43.50                  | -20.70       |
| 450.98       | Peak                         | 30.81                             | -5.88        | 24.93                  | 46.00                  | -21.07       |
| 636.25       | Peak                         | 29.33                             | -1.90        | 27.43                  | 46.00                  | -18.57       |
| 936.95       | Peak                         | 29.21                             | 1.35         | 30.56                  | 46.00                  | -15.44       |

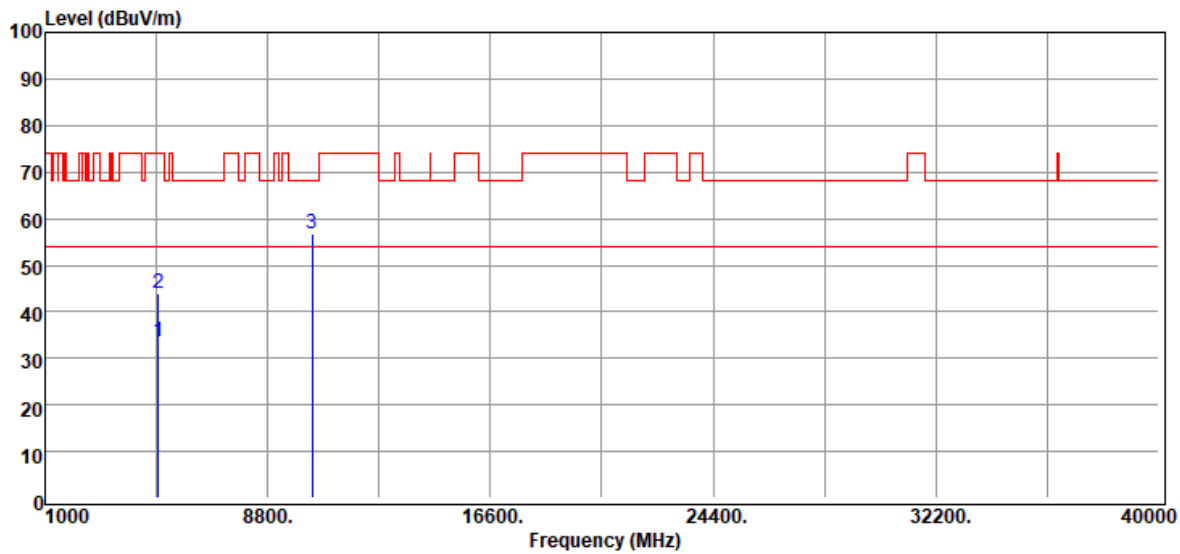
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Report Number :E2/2019/90049  
 Operation Mode :802.11n20/B1 + BT BR  
 Test Channel :5180 MHz + 2480 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2020-01-17  
 Temp./Humi. :22.4/58  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 4960.00      | Average                      | 19.36                             | 14.13        | 33.49                  | 54.00                  | -20.51       |
| 4960.00      | Peak                         | 29.95                             | 14.13        | 44.08                  | 74.00                  | -29.92       |
| 10360.00     | Peak                         | 30.60                             | 26.15        | 56.75                  | 68.20                  | -11.45       |

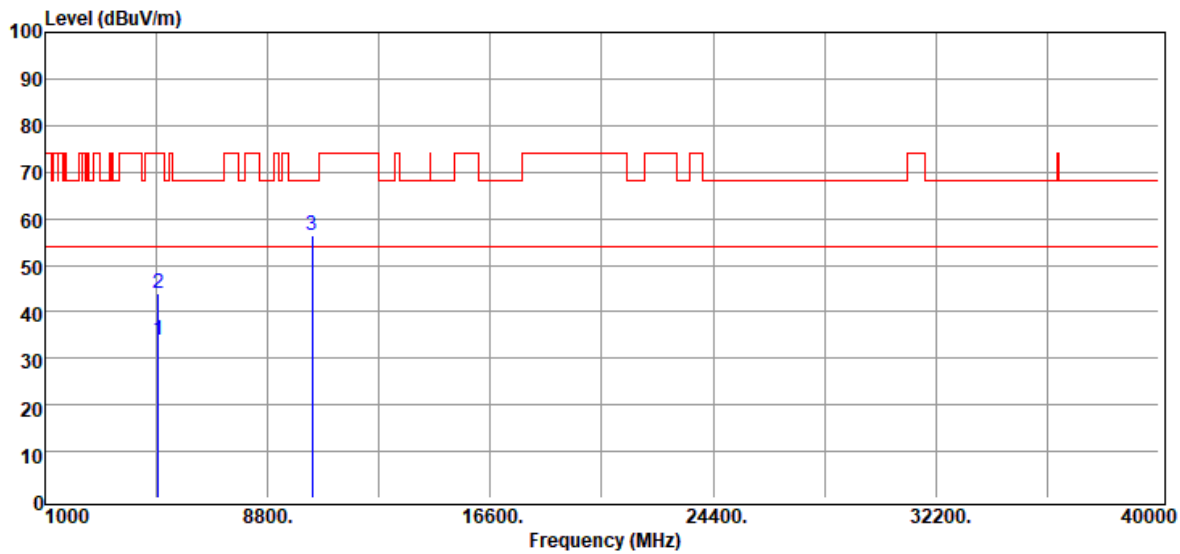
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Report Number :E2/2019/90049  
Operation Mode :802.11n20/B1 + BT BR  
Test Channel :5180 MHz + 2480 MHz  
Test Mode :TX  
EUT Pol :E2 Plan

Test Date :2020-01-17  
Temp./Humi. :22.4/58  
Antenna Pol. :HORIZONTAL  
Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 4960.00      | Average                      | 19.83                             | 14.13        | 33.96                  | 54.00                  | -20.04       |
| 4960.00      | Peak                         | 29.72                             | 14.13        | 43.85                  | 74.00                  | -30.15       |
| 10360.00     | Peak                         | 30.18                             | 26.15        | 56.33                  | 68.20                  | -11.87       |

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## WIFI+BLE

Report Number :E2/2019/90046

Test Date :2020-01-06

Operation Mode :802.11a + BLE 1M

Temp./Humi. :21.4/67

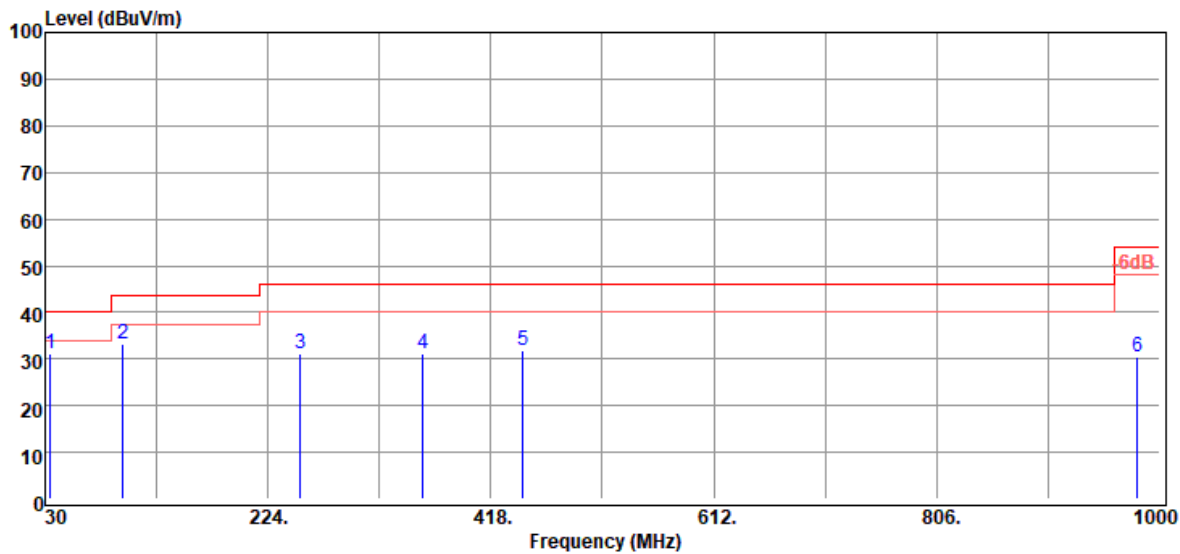
Test Channel :5220 MHz + 2442 MHz

Antenna Pol. :VERTICAL

Test Mode :TX

Engineer :Enzo

EUT Pol :E2 Plan



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 34.85        | Peak                         | 36.59                             | -5.52        | 31.07                  | 40.00                  | -8.93        |
| 97.90        | Peak                         | 49.18                             | -15.99       | 33.19                  | 43.50                  | -10.31       |
| 252.13       | Peak                         | 42.52                             | -11.26       | 31.26                  | 46.00                  | -14.74       |
| 358.83       | Peak                         | 40.05                             | -8.87        | 31.18                  | 46.00                  | -14.82       |
| 446.13       | Peak                         | 38.02                             | -6.04        | 31.98                  | 46.00                  | -14.02       |
| 980.60       | Peak                         | 28.75                             | 1.87         | 30.62                  | 54.00                  | -23.38       |

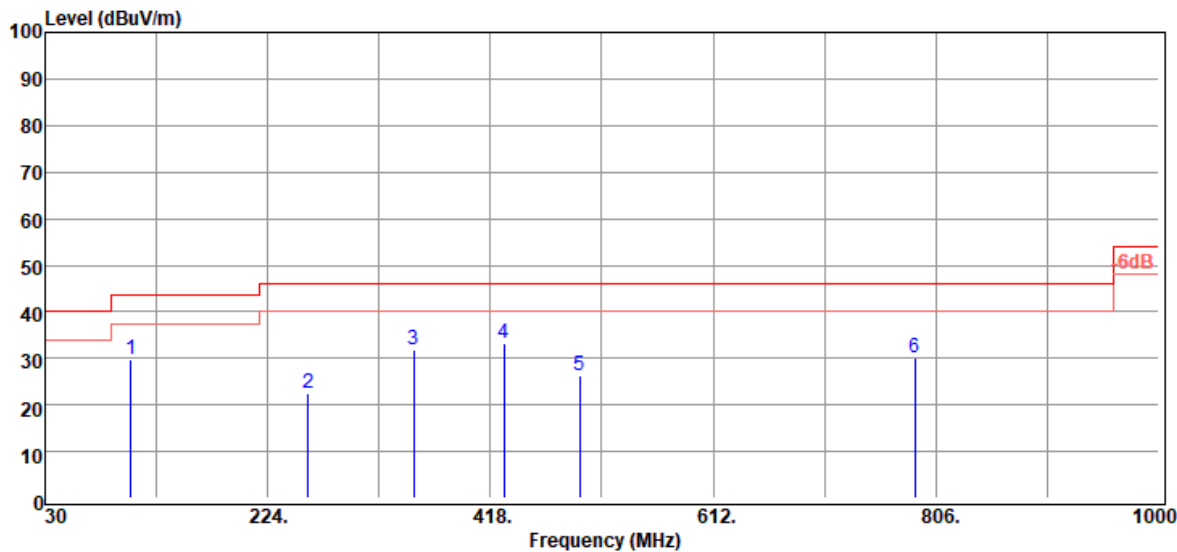
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Report Number :E2/2019/90049  
 Operation Mode :802.11a + BLE 1M  
 Test Channel :5220 MHz + 2442 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2020-01-06  
 Temp./Humi. :21.4/67  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 104.69       | Peak                         | 44.44                             | -14.81       | 29.63                  | 43.50                  | -13.87       |
| 258.92       | Peak                         | 32.83                             | -10.49       | 22.34                  | 46.00                  | -23.66       |
| 351.07       | Peak                         | 41.31                             | -9.30        | 32.01                  | 46.00                  | -13.99       |
| 429.64       | Peak                         | 39.08                             | -5.99        | 33.09                  | 46.00                  | -12.91       |
| 495.60       | Peak                         | 31.21                             | -5.05        | 26.16                  | 46.00                  | -19.84       |
| 787.57       | Peak                         | 29.74                             | 0.23         | 29.97                  | 46.00                  | -16.03       |

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Report Number :E2/2019/90049

Test Date :2020-01-06

Operation Mode :802.11a + BLE 1M

Temp./Humi. :21.2/70

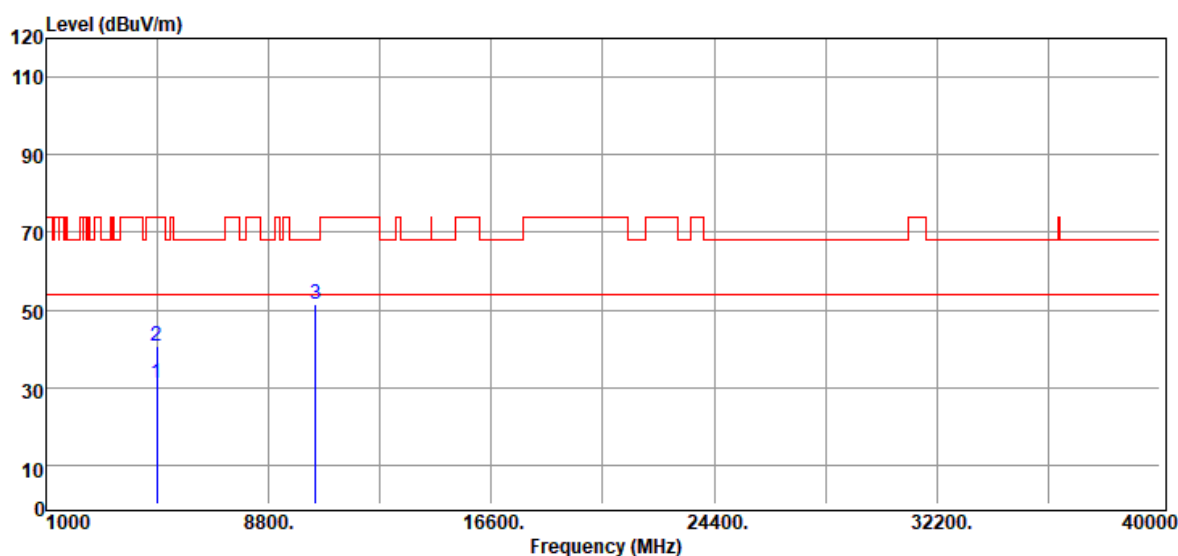
Test Channel :5220 MHz + 2442 MHz

Antenna Pol. :VERTICAL

Test Mode :TX

Engineer :Enzo

EUT Pol :E2 Plan



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 4884.00      | Average                      | 17.41                             | 13.75        | 31.16                  | 54.00                  | -22.84       |
| 4884.00      | Peak                         | 27.11                             | 13.75        | 40.86                  | 74.00                  | -33.14       |
| 10440.00     | Peak                         | 24.82                             | 26.68        | 51.50                  | 68.20                  | -16.70       |

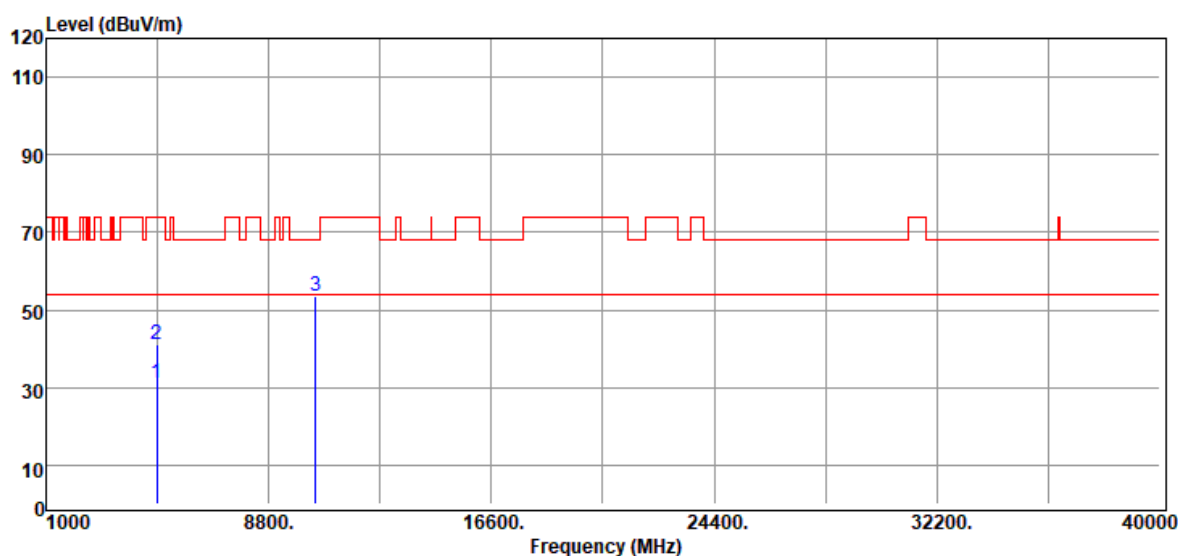
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Report Number :E2/2019/90049  
 Operation Mode :802.11a + BLE 1M  
 Test Channel :5220 MHz + 2442 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2020-01-06  
 Temp./Humi. :21.2/70  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 4884.00      | Average                      | 17.59                             | 13.75        | 31.34                  | 54.00                  | -22.66       |
| 4884.00      | Peak                         | 27.21                             | 13.75        | 40.96                  | 74.00                  | -33.04       |
| 10440.00     | Peak                         | 26.80                             | 26.68        | 53.48                  | 68.20                  | -14.72       |

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## WIFI+NFC

Report Number :E2/2019/90049

Test Date :2019-11-14

Operation Mode :802.11b + NFC

Temp./Humi. :23.6/52

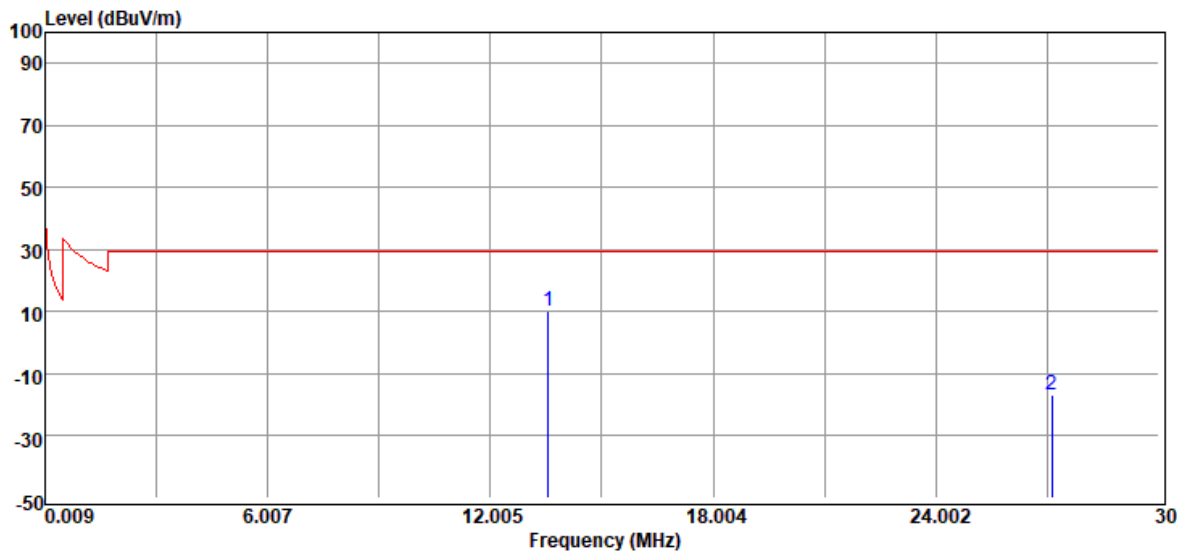
Test Channel :2412 MHz + 13.56 MHz

Antenna Pol. : Ground Parallel

Test Mode :TX

Engineer :Ashton

EUT Pol :E2 Plan



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@300m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|--------------------------|--------------|
| 13.56        | Peak                         | 38.48                             | -28.02       | 10.46                  | 29.54                    | -19.08       |
| 27.12        | Peak                         | 12.73                             | -29.58       | -16.85                 | 29.54                    | -46.39       |

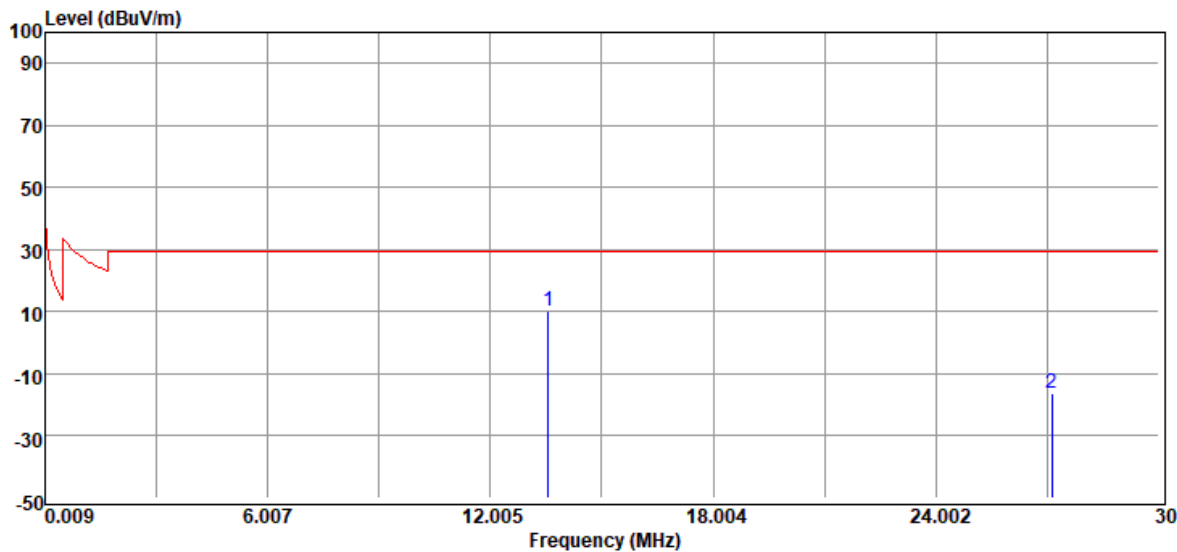
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Report Number :E2/2019/90049  
Operation Mode :802.11b + NFC  
Test Channel :2412 MHz + 13.56 MHz  
Test Mode :TX  
EUT Pol :E2 Plan

Test Date :2019-11-14  
Temp./Humi. :23.6/52  
Antenna Pol. : Parallel  
Engineer :Ashton



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@300m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|--------------------------|--------------|
| 13.56        | Peak                         | 38.44                             | -28.02       | 10.42                  | 29.54                    | -19.12       |
| 27.12        | Peak                         | 13.11                             | -29.58       | -16.47                 | 29.54                    | -46.01       |

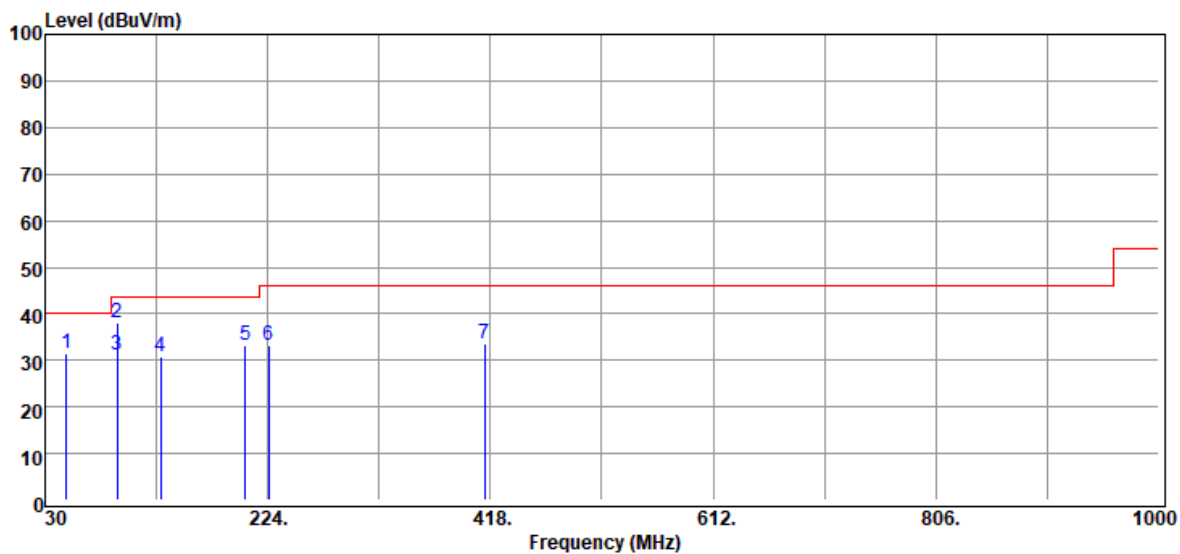
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Report Number :E2/2019/90049  
 Operation Mode :802.11b + NFC  
 Test Channel :2412 MHz + 13.56 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2019-11-14  
 Temp./Humi. :23.6/52  
 Antenna Pol. :VERTICAL  
 Engineer :Ashton



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dB $\mu$ V | Factor<br>dB | Actual<br>FS<br>dB $\mu$ V/m | Limit<br>@3m<br>dB $\mu$ V/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------------|--------------|------------------------------|------------------------------|--------------|
| 48.43        | Peak                         | 47.79                                   | -16.22       | 31.57                        | 40.00                        | -8.43        |
| 93.05        | Peak                         | 54.93                                   | -16.79       | 38.14                        | 43.50                        | -5.36        |
| 93.05        | QP                           | 49.26                                   | -18.28       | 30.98                        | 43.50                        | -12.52       |
| 130.88       | Peak                         | 45.33                                   | -14.47       | 30.86                        | 43.50                        | -12.64       |
| 204.60       | Peak                         | 50.52                                   | -17.27       | 33.25                        | 43.50                        | -10.25       |
| 224.97       | Peak                         | 50.04                                   | -16.89       | 33.15                        | 46.00                        | -12.85       |
| 413.15       | Peak                         | 43.11                                   | -9.61        | 33.50                        | 46.00                        | -12.50       |

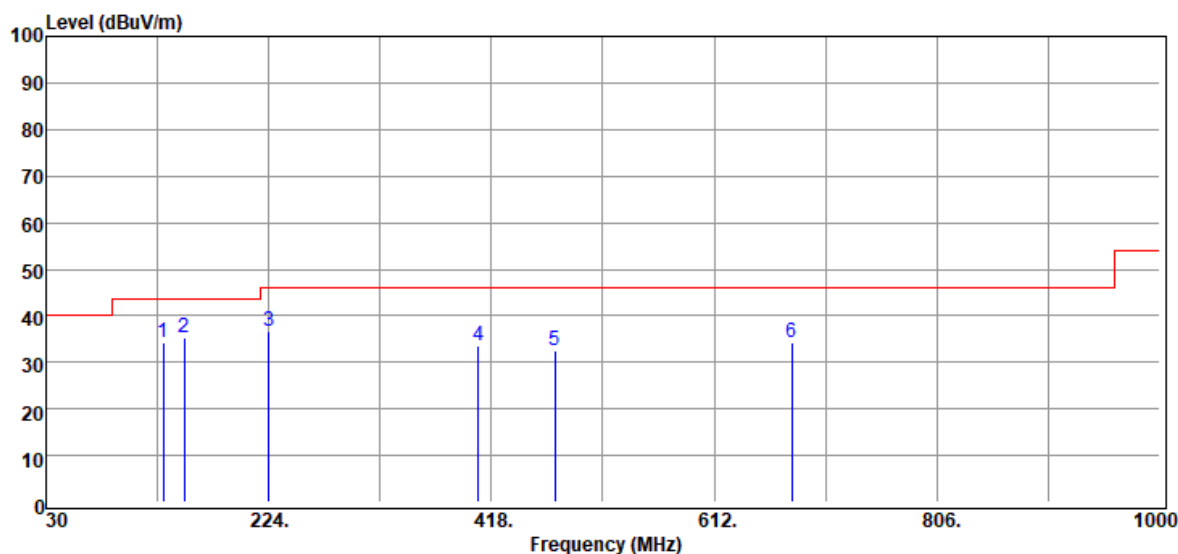
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Report Number :E2/2019/90049  
Operation Mode :802.11b + NFC  
Test Channel :2412 MHz + 13.56 MHz  
Test Mode :TX  
EUT Pol :E2 Plan

Test Date :2019-11-14  
Temp./Humi. :23.6/52  
Antenna Pol. :HORIZONTAL  
Engineer :Ashton



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 131.85       | Peak                         | 48.61                             | -14.45       | 34.16                  | 43.50                  | -9.34        |
| 150.28       | Peak                         | 50.90                             | -15.72       | 35.18                  | 43.50                  | -8.32        |
| 224.00       | Peak                         | 53.51                             | -16.97       | 36.54                  | 46.00                  | -9.46        |
| 406.36       | Peak                         | 43.45                             | -9.80        | 33.65                  | 46.00                  | -12.35       |
| 473.29       | Peak                         | 41.38                             | -8.79        | 32.59                  | 46.00                  | -13.41       |
| 679.90       | Peak                         | 40.68                             | -6.53        | 34.15                  | 46.00                  | -11.85       |

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Report Number :E2/2019/90049

Test Date :2020-01-06

Operation Mode :802.11a + NFC

Temp./Humi. :21.4/67

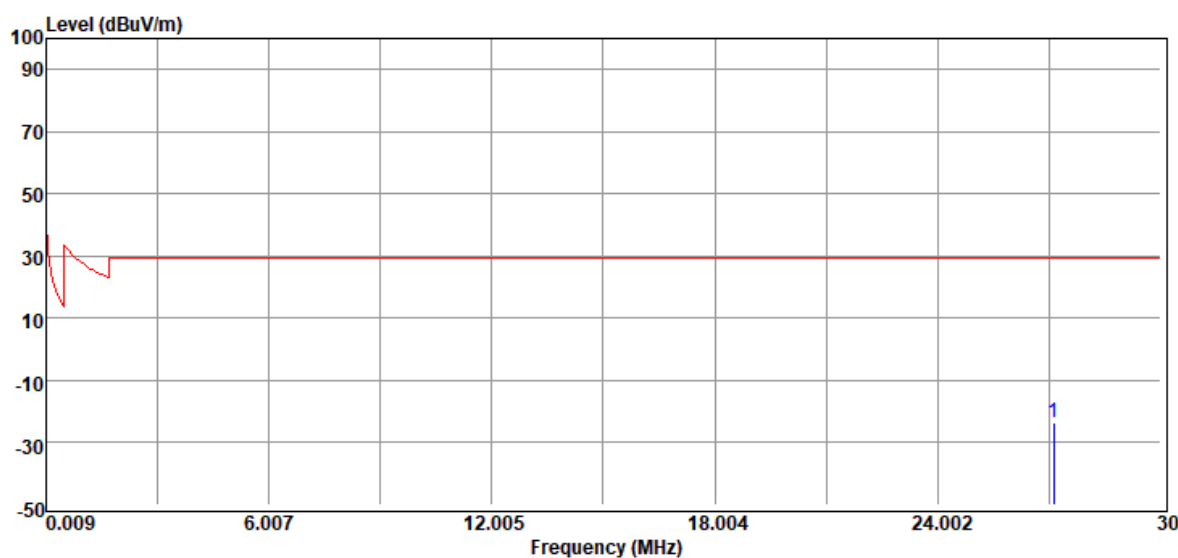
Test Channel :5220 MHz + 13.56 MHz

Antenna Pol. :Parallel

Test Mode :TX

Engineer :Enzo

EUT Pol :E2 Plan



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@300m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|--------------------------|--------------|
| 27.12        | Peak                         | 6.39                              | -30.16       | -23.77                 | 29.54                    | -53.31       |

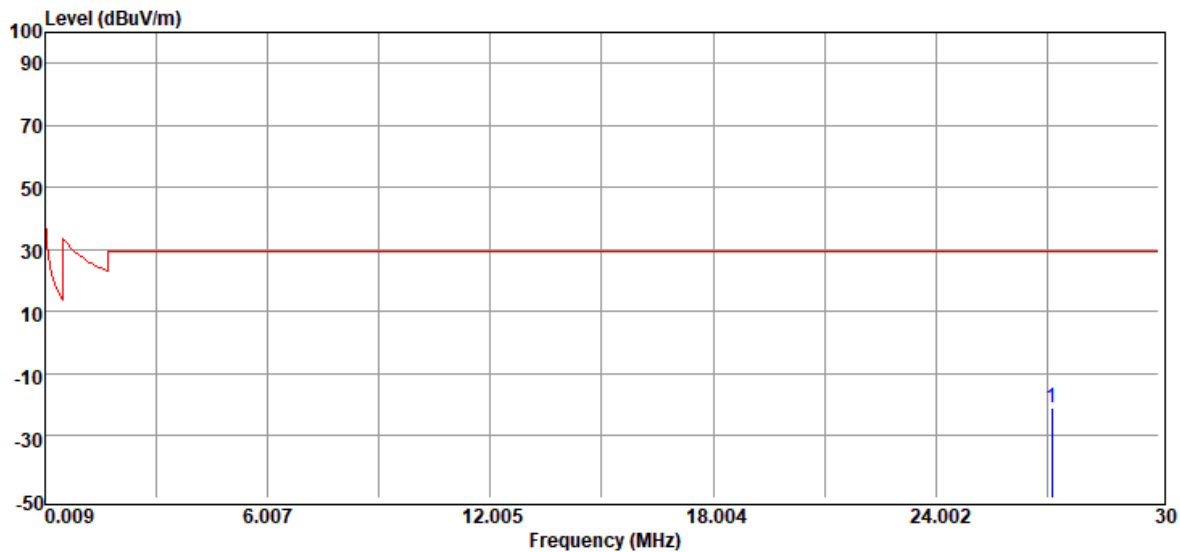
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Report Number :E2/2019/90049  
Operation Mode :802.11a + NFC  
Test Channel :5220 MHz + 13.56 MHz  
Test Mode :TX  
EUT Pol :E2 Plan

Test Date :2020-01-06  
Temp./Humi. :21.4/67  
Antenna Pol. :Ground Parallel  
Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@300m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|--------------------------|--------------|
| 27.12        | Peak                         | 9.16                              | -30.16       | -21.00                 | 29.54                    | -50.54       |

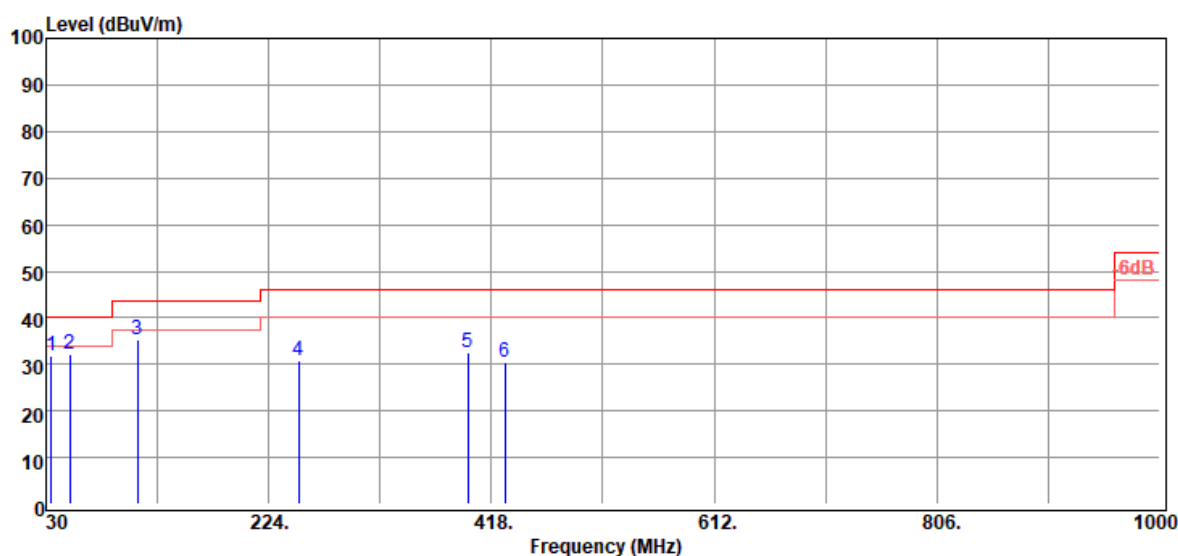
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Report Number :E2/2019/90049  
Operation Mode :802.11a + NFC  
Test Channel :5220 MHz + 13.56 MHz  
Test Mode :TX  
EUT Pol :E2 Plan

Test Date :2020-01-06  
Temp./Humi. :21.4/67  
Antenna Pol. :VERTICAL  
Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 34.85        | Peak                         | 37.48                             | -5.52        | 31.96                  | 40.00                  | -8.04        |
| 50.37        | Peak                         | 48.75                             | -16.61       | 32.14                  | 40.00                  | -7.86        |
| 109.54       | Peak                         | 49.33                             | -14.15       | 35.18                  | 43.50                  | -8.32        |
| 250.19       | Peak                         | 42.47                             | -11.51       | 30.96                  | 46.00                  | -15.04       |
| 397.63       | Peak                         | 40.07                             | -7.62        | 32.45                  | 46.00                  | -13.55       |
| 429.64       | Peak                         | 36.57                             | -5.99        | 30.58                  | 46.00                  | -15.42       |

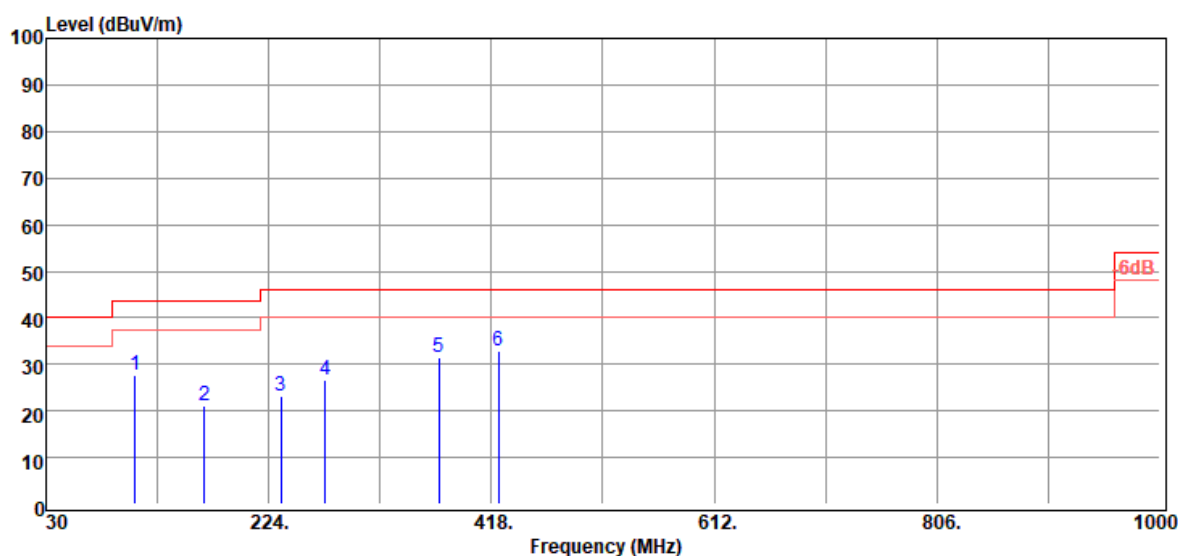
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Report Number :E2/2019/90049  
 Operation Mode :802.11a + NFC  
 Test Channel :5220 MHz + 13.56 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2020-01-06  
 Temp./Humi. :21.4/67  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 107.60       | Peak                         | 42.18                             | -14.46       | 27.72                  | 43.50                  | -15.78       |
| 167.74       | Peak                         | 36.38                             | -15.22       | 21.16                  | 43.50                  | -22.34       |
| 234.67       | Peak                         | 36.85                             | -13.59       | 23.26                  | 46.00                  | -22.74       |
| 273.47       | Peak                         | 37.67                             | -11.10       | 26.57                  | 46.00                  | -19.43       |
| 372.41       | Peak                         | 39.99                             | -8.38        | 31.61                  | 46.00                  | -14.39       |
| 423.82       | Peak                         | 39.13                             | -6.22        | 32.91                  | 46.00                  | -13.09       |

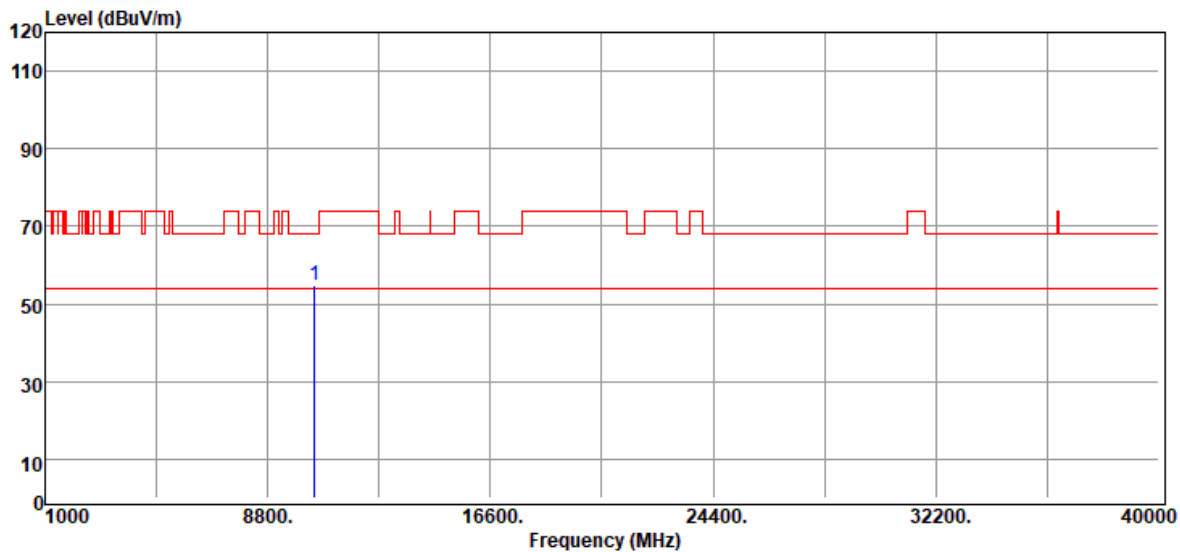
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Report Number :E2/2019/90049  
Operation Mode :802.11a + NFC  
Test Channel :5220 MHz + 13.56 MHz  
Test Mode :TX  
EUT Pol :E2 Plan

Test Date :2020-01-06  
Temp./Humi. :21.4/67  
Antenna Pol. :VERTICAL  
Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10440.00     | Peak                         | 28.32                             | 26.68        | 55.00                  | 68.20                  | -13.20       |

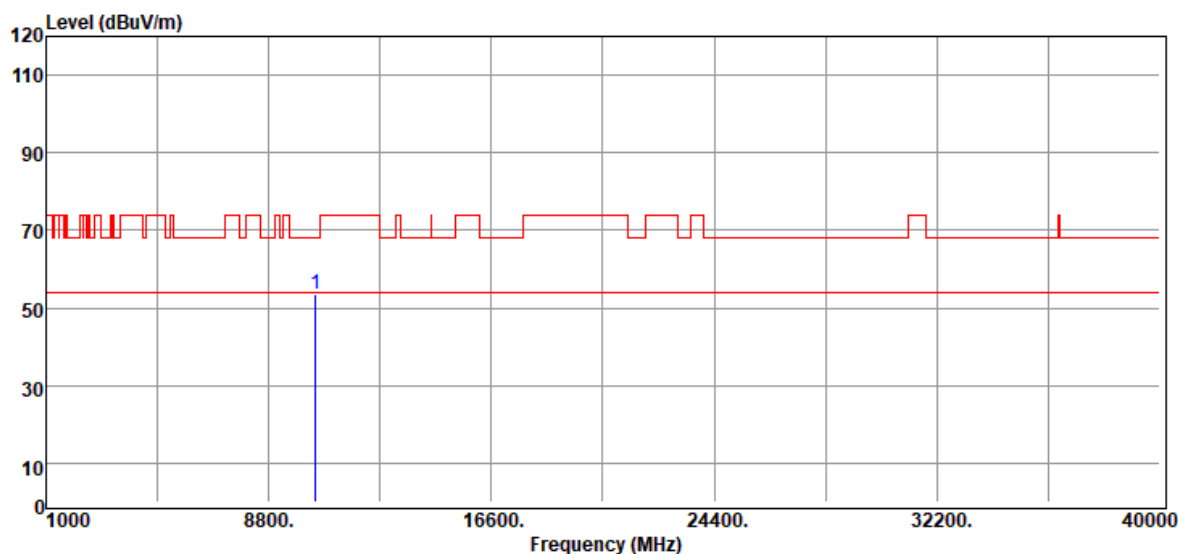
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Report Number :E2/2019/90049  
Operation Mode :802.11a + NFC  
Test Channel :5220 MHz + 13.56 MHz  
Test Mode :TX  
EUT Pol :E2 Plan

Test Date :2020-01-06  
Temp./Humi. :21.4/67  
Antenna Pol. :HORIZONTAL  
Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10440.00     | Peak                         | 26.95                             | 26.68        | 53.63                  | 68.20                  | -14.57       |

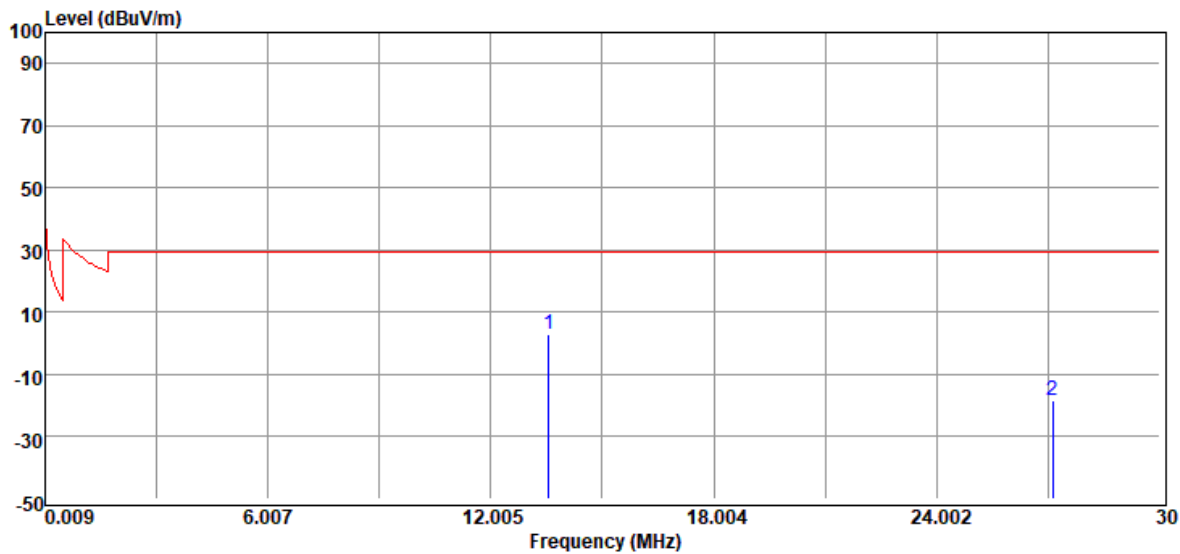
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Report Number :E2/2019/90049  
Operation Mode :802.11n20/B1 + NFC  
Test Channel :5180 MHz + 13.56 MHz  
Test Mode :TX  
EUT Pol :E2 Plan

Test Date :2020-01-17  
Temp./Humi. :22.4/58  
Antenna Pol. :VERTICAL  
Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@300m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|--------------------------|--------------|
| 13.56        | Peak                         | 31.23                             | -28.16       | 3.07                   | 29.54                    | -26.47       |
| 27.12        | Peak                         | 11.90                             | -30.16       | -18.26                 | 29.54                    | -47.80       |

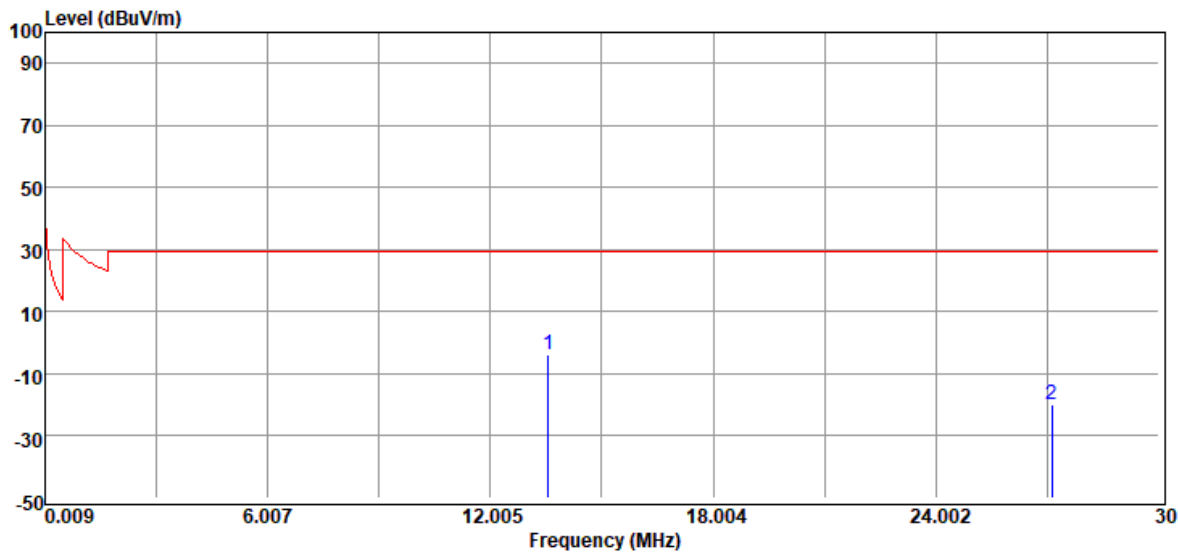
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Report Number :E2/2019/90049  
Operation Mode :802.11n20/B1 + NFC  
Test Channel :5180 MHz + 13.56 MHz  
Test Mode :TX  
EUT Pol :E2 Plan

Test Date :2020-01-17  
Temp./Humi. :22.4/58  
Antenna Pol. :HORIZONTAL  
Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@300m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|--------------------------|--------------|
| 13.56        | Peak                         | 24.31                             | -28.16       | -3.85                  | 29.54                    | -33.39       |
| 27.12        | Peak                         | 10.41                             | -30.16       | -19.75                 | 29.54                    | -49.29       |

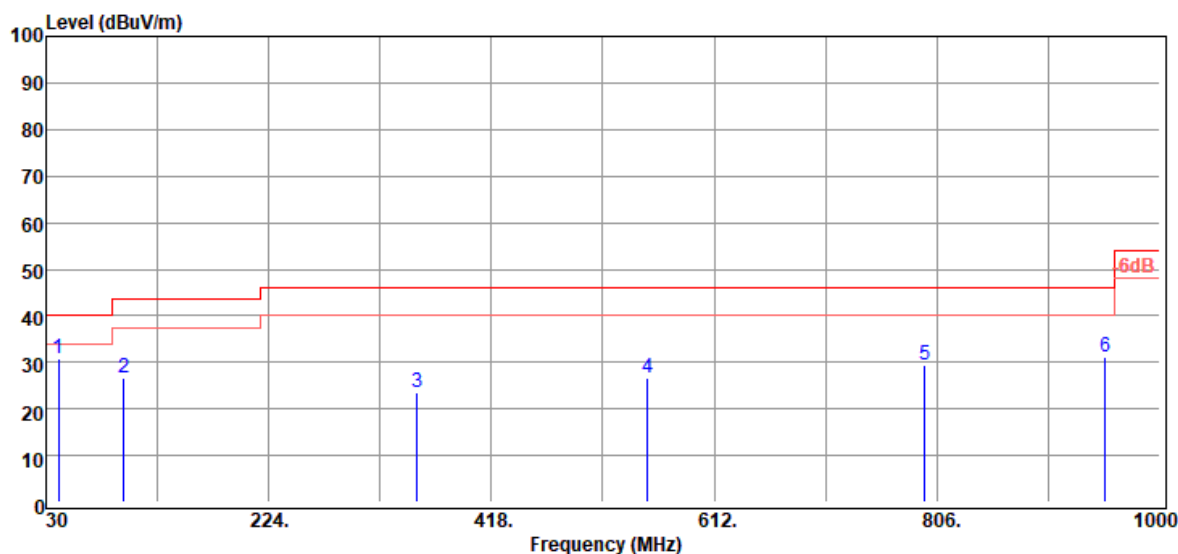
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Operation Mode :802.11n20/B1 + NFC  
Test Channel :5180 MHz + 13.56 MHz  
Test Mode :TX  
EUT Pol :E2 Plan

Test Date :2020-01-17  
Temp./Humi. :22.4/58  
Antenna Pol. :VERTICAL  
Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 40.67        | Peak                         | 40.00                             | -9.33        | 30.67                  | 40.00                  | -9.33        |
| 97.90        | Peak                         | 42.59                             | -15.99       | 26.60                  | 43.50                  | -16.90       |
| 353.01       | Peak                         | 32.62                             | -9.13        | 23.49                  | 46.00                  | -22.51       |
| 553.80       | Peak                         | 30.06                             | -3.31        | 26.75                  | 46.00                  | -19.25       |
| 795.33       | Peak                         | 29.34                             | 0.22         | 29.56                  | 46.00                  | -16.44       |
| 952.47       | Peak                         | 29.88                             | 1.37         | 31.25                  | 46.00                  | -14.75       |

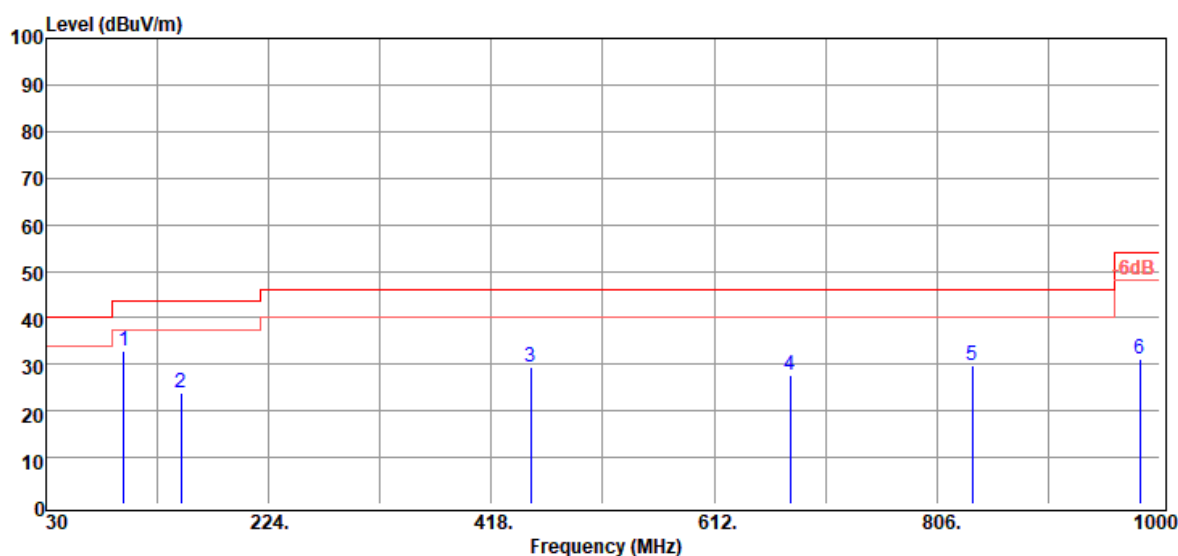
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 Operation Mode :802.11n20/B1 + NFC  
 Test Channel :5180 MHz + 13.56 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2020-01-17  
 Temp./Humi. :22.4/58  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 97.90        | Peak                         | 48.90                             | -15.99       | 32.91                  | 43.50                  | -10.59       |
| 147.37       | Peak                         | 37.35                             | -13.56       | 23.79                  | 43.50                  | -19.71       |
| 451.95       | Peak                         | 35.14                             | -5.87        | 29.27                  | 46.00                  | -16.73       |
| 677.96       | Peak                         | 29.81                             | -2.04        | 27.77                  | 46.00                  | -18.23       |
| 837.04       | Peak                         | 29.68                             | 0.10         | 29.78                  | 46.00                  | -16.22       |
| 982.54       | Peak                         | 29.27                             | 1.82         | 31.09                  | 54.00                  | -22.91       |

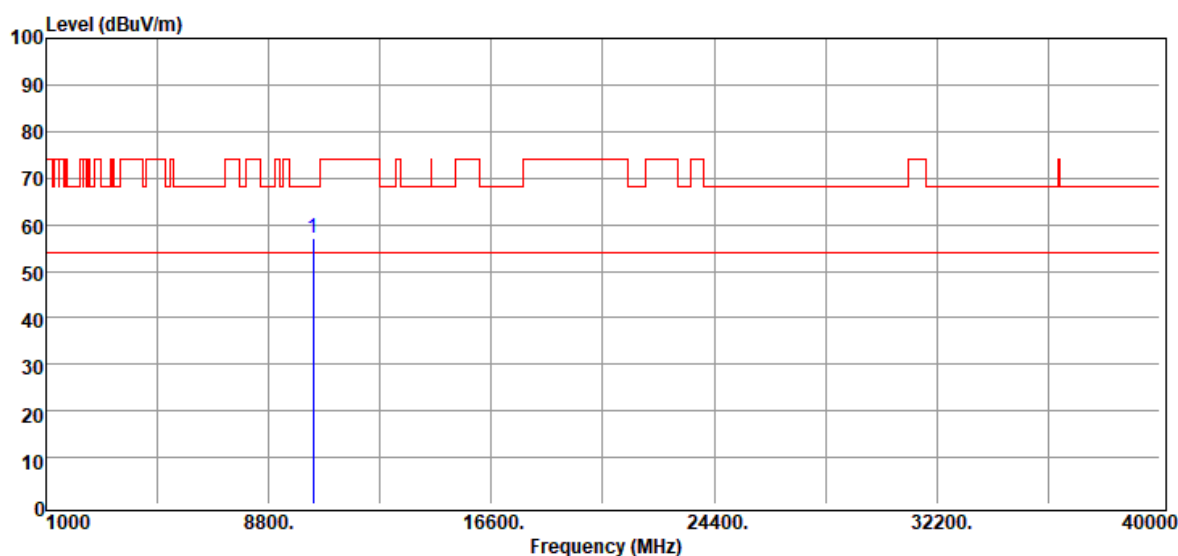
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Report Number :E2/2019/90049  
 Operation Mode :802.11n20/B1 + NFC  
 Test Channel :5180 MHz + 13.56 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2020-01-17  
 Temp./Humi. :22.4/58  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10360.00     | Peak                         | 31.08                             | 26.15        | 57.23                  | 68.20                  | -10.97       |

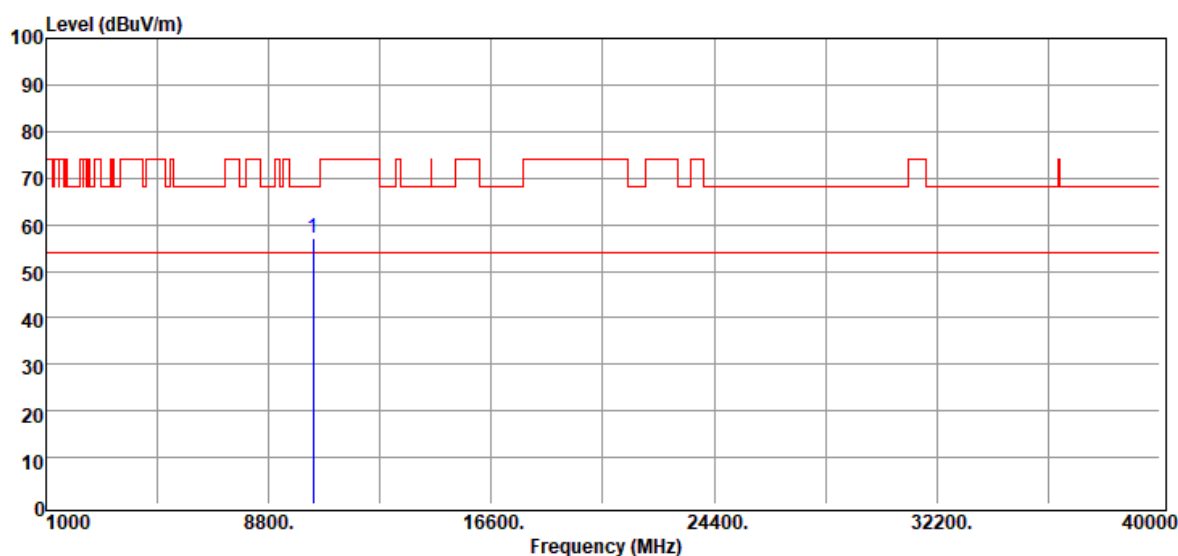
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Report Number :E2/2019/90049  
 Operation Mode :802.11n20/B1 + NFC  
 Test Channel :5180 MHz + 13.56 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2020-01-17  
 Temp./Humi. :22.4/58  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10360.00     | Peak                         | 31.05                             | 26.15        | 57.20                  | 68.20                  | -11.00       |

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## WIFI+LTE

Report Number :E2/2019/90049

Test Date :2019-11-14

Operation Mode :802.11b + LTE B30

Temp./Humi. :22.1/56

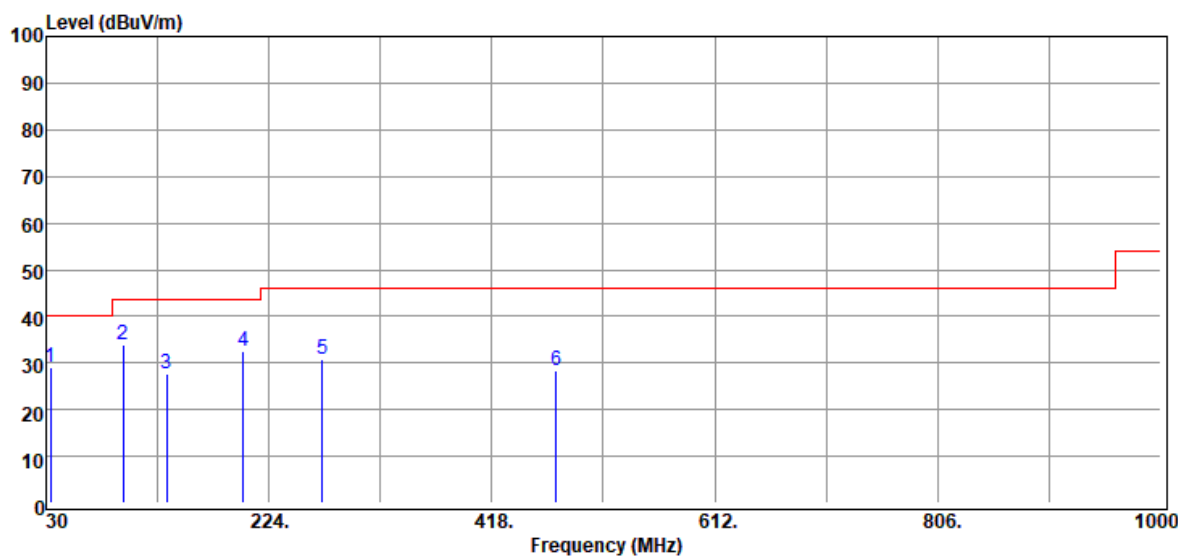
Test Channel :2412 MHz + 2310 MHz

Antenna Pol. :VERTICAL

Test Mode :TX

Engineer :Ashton

EUT Pol :E2 Plan



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 33.88        | Peak                         | 35.01                             | -6.05        | 28.96                  | 40.00                  | -11.04       |
| 96.93        | Peak                         | 51.64                             | -17.66       | 33.98                  | 43.50                  | -9.52        |
| 134.76       | Peak                         | 42.00                             | -14.48       | 27.52                  | 43.50                  | -15.98       |
| 201.69       | Peak                         | 49.96                             | -17.41       | 32.55                  | 43.50                  | -10.95       |
| 270.56       | Peak                         | 44.64                             | -13.68       | 30.96                  | 46.00                  | -15.04       |
| 474.26       | Peak                         | 37.26                             | -8.72        | 28.54                  | 46.00                  | -17.46       |

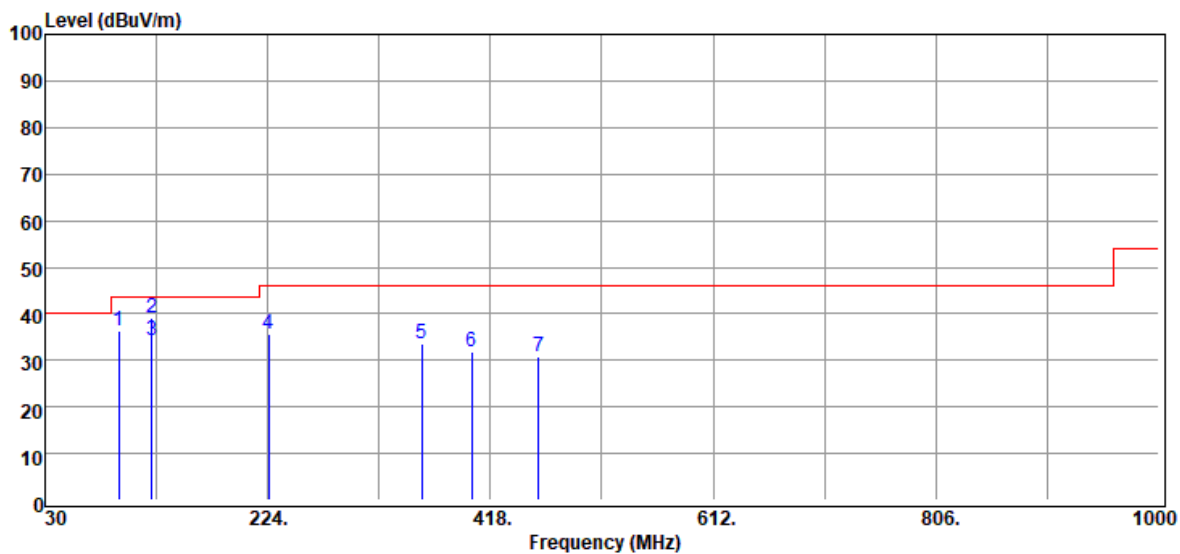
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Report Number :E2/2019/90049  
 Operation Mode :802.11b + LTE B30  
 Test Channel :2412 MHz + 2310 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2019-12-30  
 Temp./Humi. :22.1/56  
 Antenna Pol. :HORIZONTAL  
 Engineer :Ashton



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 94.02        | Peak                         | 54.65                             | -18.16       | 36.49                  | 43.50                  | -7.01        |
| 123.12       | Peak                         | 52.08                             | -12.84       | 39.24                  | 43.50                  | -4.26        |
| 123.12       | QP                           | 48.97                             | -14.73       | 34.24                  | 43.50                  | -9.26        |
| 224.97       | Peak                         | 52.60                             | -16.89       | 35.71                  | 46.00                  | -10.29       |
| 357.86       | Peak                         | 45.58                             | -12.07       | 33.51                  | 46.00                  | -12.49       |
| 401.51       | Peak                         | 41.81                             | -10.02       | 31.79                  | 46.00                  | -14.21       |
| 459.71       | Peak                         | 40.36                             | -9.60        | 30.76                  | 46.00                  | -15.24       |

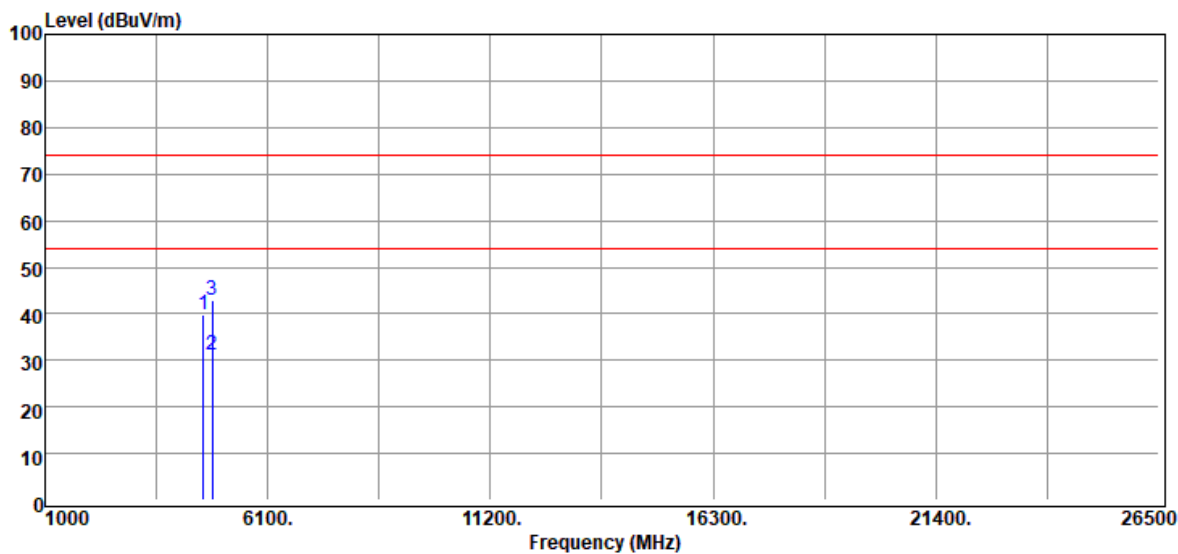
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Report Number :E2/2019/90049  
 Operation Mode :802.11b + LTE B30  
 Test Channel :2412 MHz + 2310 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2019-11-14  
 Temp./Humi. :23.1/57  
 Antenna Pol. :VERTICAL  
 Engineer :Ashton



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 4620.00      | Peak                         | 28.80                             | 10.90        | 39.70                  | 74.00                  | -34.30       |
| 4824.00      | Average                      | 20.10                             | 11.01        | 31.11                  | 54.00                  | -22.89       |
| 4824.00      | Peak                         | 31.80                             | 11.01        | 42.81                  | 74.00                  | -31.19       |

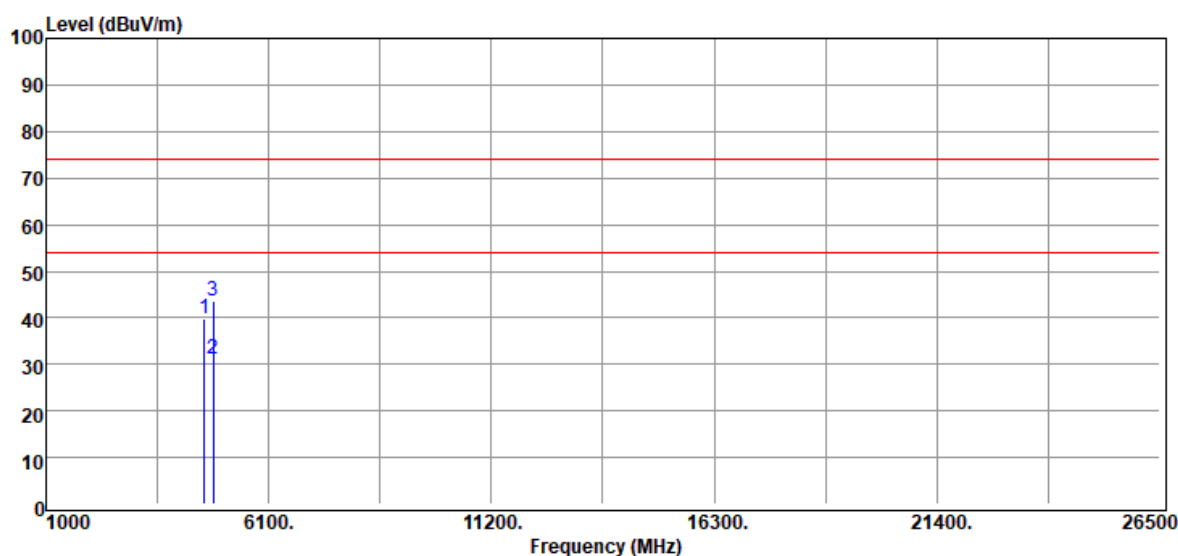
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Report Number :E2/2019/90049  
 Operation Mode :802.11b + LTE B30  
 Test Channel :2412 MHz + 2310 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2019-11-14  
 Temp./Humi. :23.1/57  
 Antenna Pol. :HORIZONTAL  
 Engineer :Ashton



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 4620.00      | Peak                         | 28.85                             | 10.90        | 39.75                  | 74.00                  | -34.25       |
| 4824.00      | Average                      | 20.05                             | 11.01        | 31.06                  | 54.00                  | -22.94       |
| 4824.00      | Peak                         | 32.45                             | 11.01        | 43.46                  | 74.00                  | -30.54       |

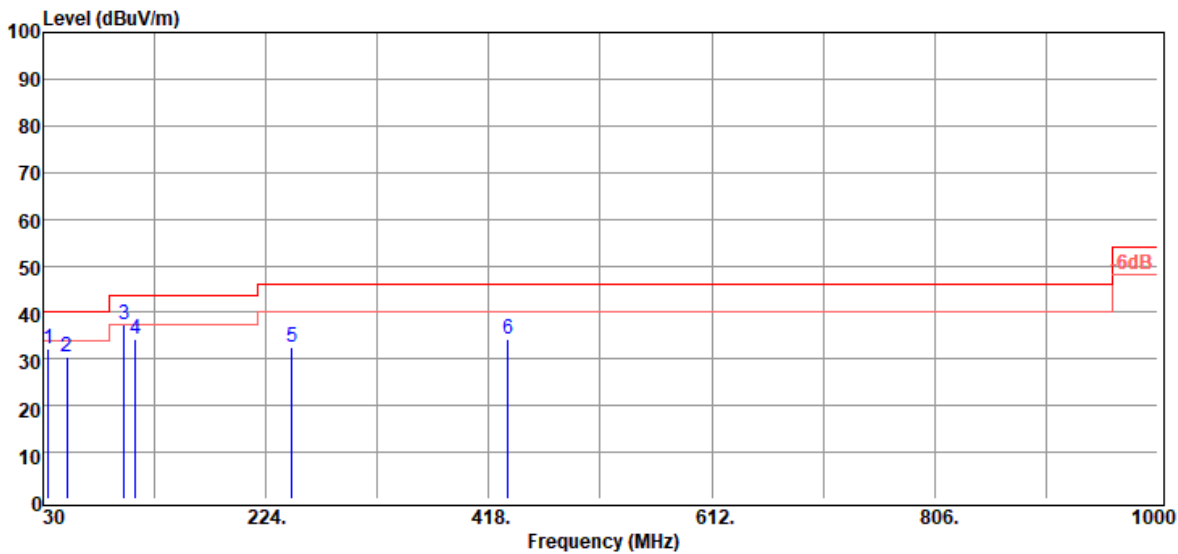
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Report Number :E2/2019/90049  
 Operation Mode :802.11a + LTE B30  
 Test Channel :5220 MHz + 2310 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2020-01-06  
 Temp./Humi. :21.4/67  
 Antenna Pol. :VERTICAL  
 Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 34.85        | Peak                         | 37.64                             | -5.52        | 32.12                  | 40.00                  | -7.88        |
| 50.37        | Peak                         | 46.95                             | -16.61       | 30.34                  | 40.00                  | -9.66        |
| 100.81       | Peak                         | 52.91                             | -15.47       | 37.44                  | 43.50                  | -6.06        |
| 110.51       | Peak                         | 48.17                             | -14.05       | 34.12                  | 43.50                  | -9.38        |
| 246.31       | Peak                         | 44.59                             | -12.05       | 32.54                  | 46.00                  | -13.46       |
| 434.49       | Peak                         | 40.44                             | -6.03        | 34.41                  | 46.00                  | -11.59       |

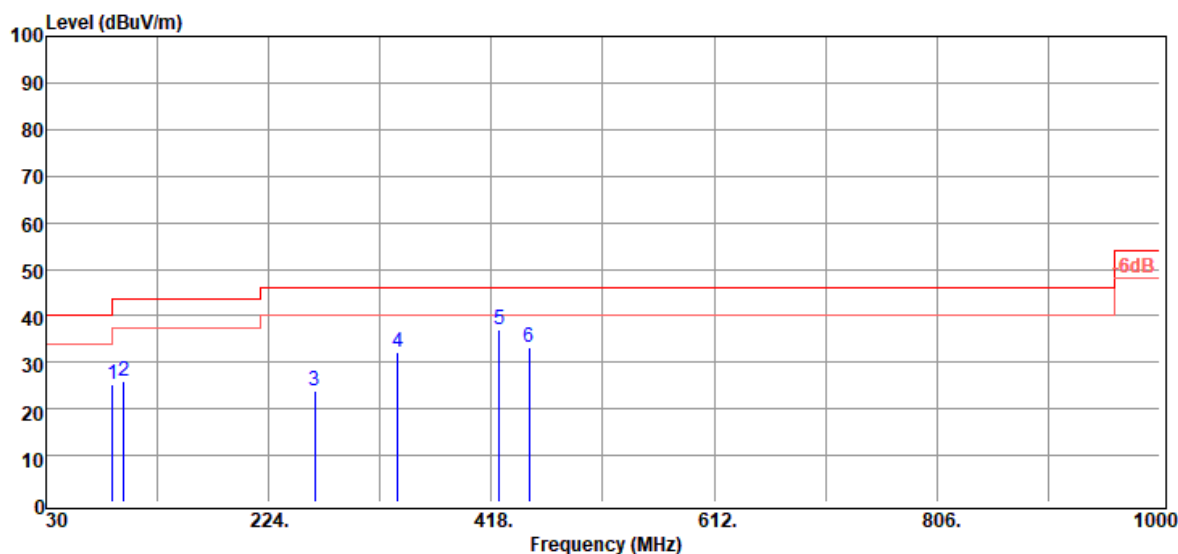
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Report Number :E2/2019/90049  
 Operation Mode :802.11a + LTE B30  
 Test Channel :5220 MHz + 2310 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2020-01-06  
 Temp./Humi. :21.4/67  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



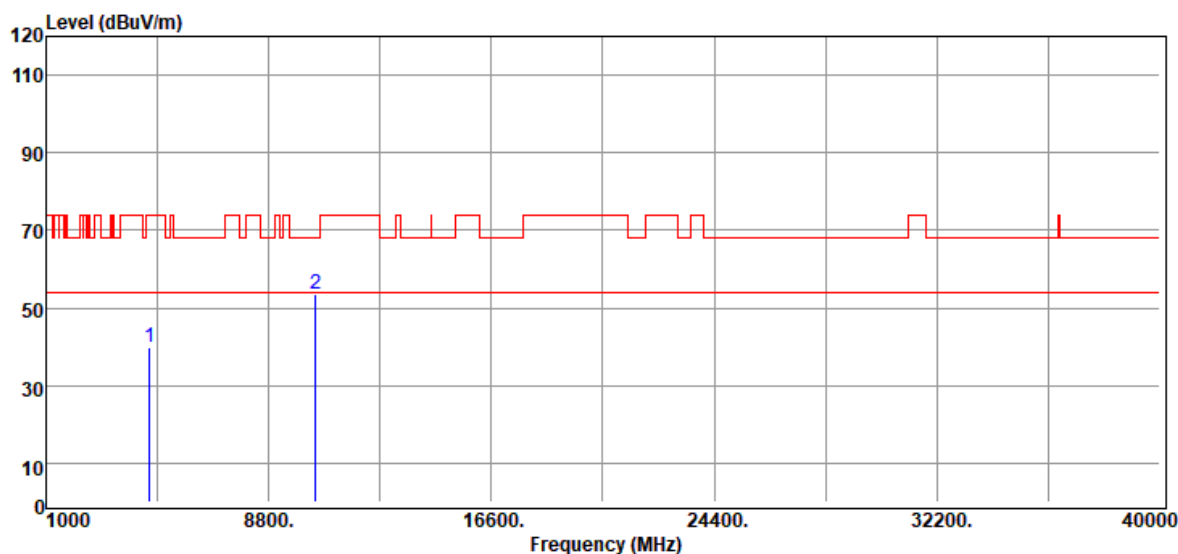
| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 88.20        | Peak                         | 42.82                             | -17.45       | 25.37                  | 43.50                  | -18.13       |
| 97.90        | Peak                         | 42.00                             | -15.99       | 26.01                  | 43.50                  | -17.49       |
| 263.77       | Peak                         | 34.40                             | -10.67       | 23.73                  | 46.00                  | -22.27       |
| 336.52       | Peak                         | 41.69                             | -9.50        | 32.19                  | 46.00                  | -13.81       |
| 424.79       | Peak                         | 43.06                             | -6.20        | 36.86                  | 46.00                  | -9.14        |
| 450.98       | Peak                         | 39.05                             | -5.88        | 33.17                  | 46.00                  | -12.83       |

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|                |                      |              |             |
|----------------|----------------------|--------------|-------------|
| Report Number  | :E2/2019/90049       | Test Date    | :2020-01-06 |
| Operation Mode | :802.11a + LTE B30   | Temp./Humi.  | :21.1/71    |
| Test Channel   | :5220 MHz + 2310 MHz | Antenna Pol. | :VERTICAL   |
| Test Mode      | :TX                  | Engineer     | :Enzo       |
| EUT Pol        | :E2 Plan             |              |             |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 4620.00      | Peak                         | 26.35                             | 13.38        | 39.73                  | 74.00                  | -34.27       |
| 10440.00     | Peak                         | 27.09                             | 26.68        | 53.77                  | 68.20                  | -14.43       |

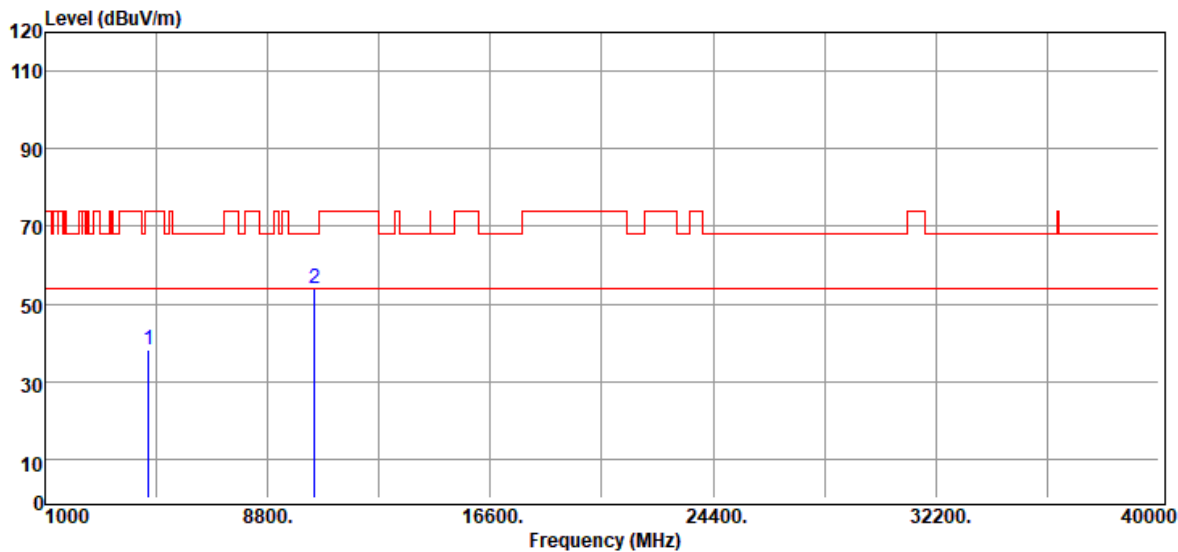
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Report Number :E2/2019/90049  
Operation Mode :802.11a + LTE B30  
Test Channel :5220 MHz + 2310 MHz  
Test Mode :TX  
EUT Pol :E2 Plan

Test Date :2020-01-06  
Temp./Humi. :21.1/71  
Antenna Pol. :HORIZONTAL  
Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 4620.00      | Peak                         | 24.88                             | 13.38        | 38.26                  | 74.00                  | -35.74       |
| 10440.00     | Peak                         | 27.31                             | 26.68        | 53.99                  | 68.20                  | -14.21       |

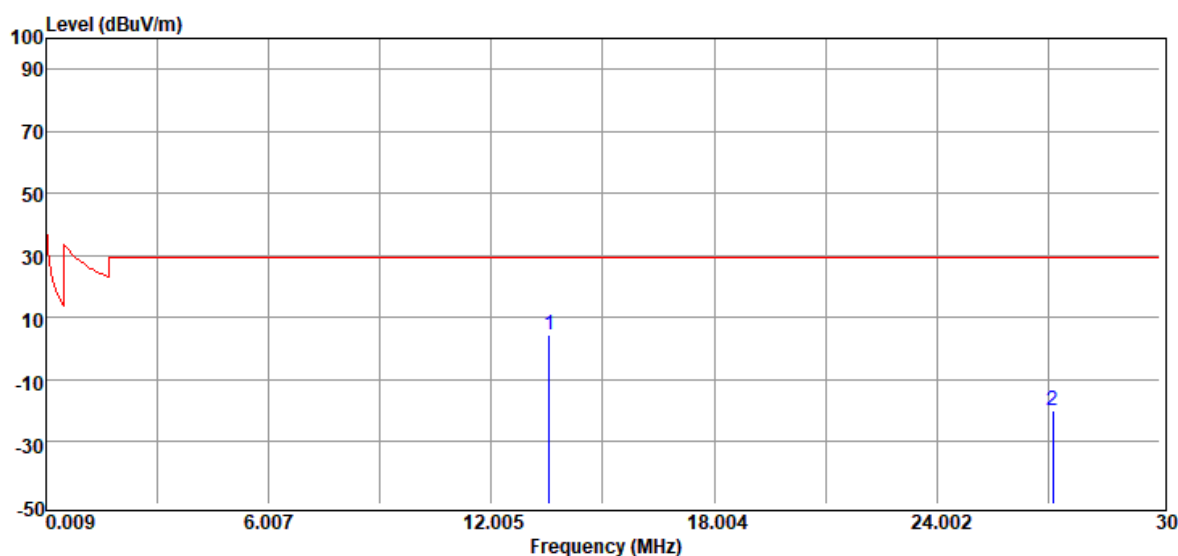
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## WIFI+LTE+NFC

|                |                                  |              |             |
|----------------|----------------------------------|--------------|-------------|
| Report Number  | :E2/2019/90049                   | Test Date    | :2020-01-17 |
| Operation Mode | :802.11n20/B1 + LTE B30 + NFC    | Temp./Humi.  | :22.4/58    |
| Test Channel   | :5180 MHz + 2310 MHz + 13.56 MHz | Antenna Pol. | :VERTICAL   |
| Test Mode      | :TX                              | Engineer     | :Enzo       |
| EUT Pol        | :E2 Plan                         |              |             |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@300m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|--------------------------|--------------|
| 13.56        | Peak                         | 32.45                             | -28.16       | 4.29                   | 29.54                    | -25.25       |
| 27.12        | Peak                         | 10.01                             | -30.16       | -20.15                 | 29.54                    | -49.69       |

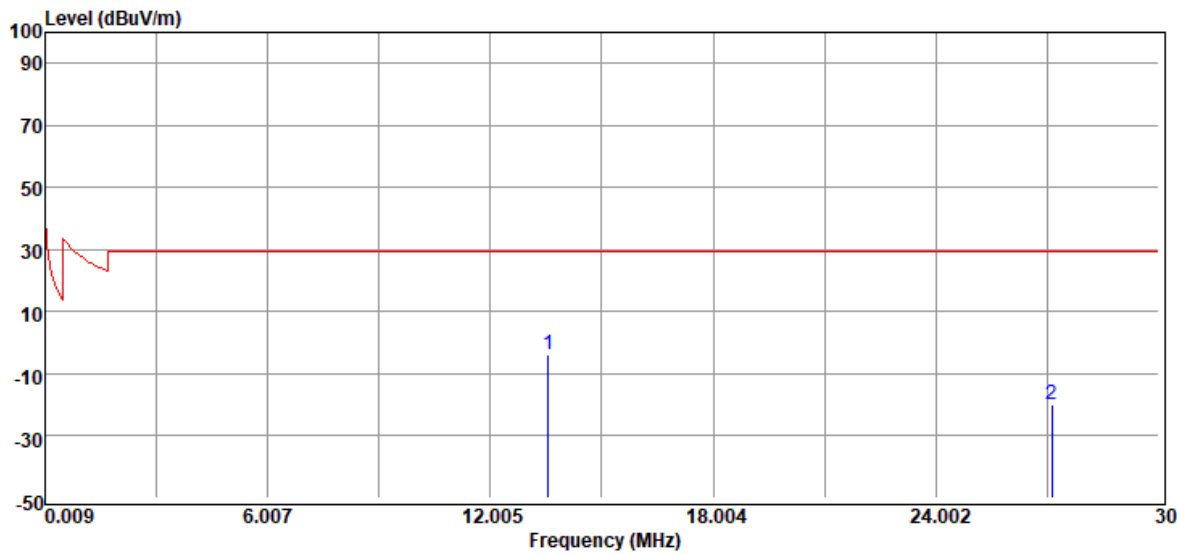
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Report Number :E2/2019/90049  
 Operation Mode :802.11n20/B1 + LTE B30 + NFC  
 Test Channel :5180 MHz + 2310 MHz + 13.56 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2020-01-17  
 Temp./Humi. :22.4/58  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@300m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|--------------------------|--------------|
| 13.56        | Peak                         | 24.47                             | -28.16       | -3.69                  | 29.54                    | -33.23       |
| 27.12        | Peak                         | 10.47                             | -30.16       | -19.69                 | 29.54                    | -49.23       |

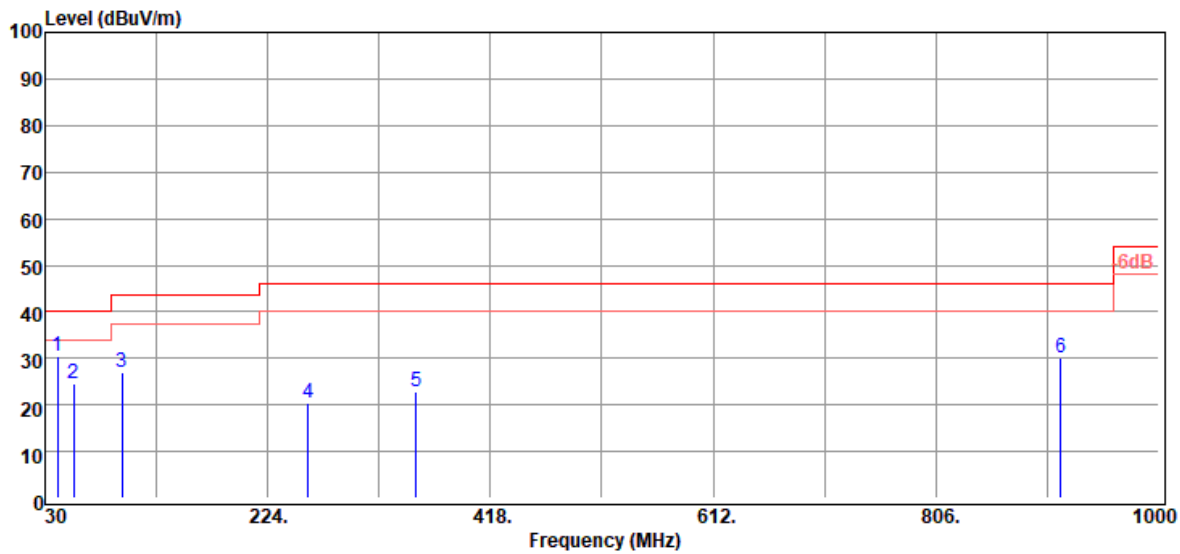
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Report Number :E2/2019/90049  
Operation Mode :802.11n20/B1 + LTE B30 + NFC  
Test Channel :5180 MHz + 2310 MHz + 13.56 MHz  
Test Mode :TX  
EUT Pol :E2 Plan

Test Date :2020-01-17  
Temp./Humi. :22.4/58  
Antenna Pol. :VERTICAL  
Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 40.67        | Peak                         | 39.75                             | -9.33        | 30.42                  | 40.00                  | -9.58        |
| 55.22        | Peak                         | 44.28                             | -19.82       | 24.46                  | 40.00                  | -15.54       |
| 96.93        | Peak                         | 43.01                             | -16.13       | 26.88                  | 43.50                  | -16.62       |
| 258.92       | Peak                         | 30.80                             | -10.49       | 20.31                  | 46.00                  | -25.69       |
| 353.01       | Peak                         | 32.08                             | -9.13        | 22.95                  | 46.00                  | -23.05       |
| 914.64       | Peak                         | 29.11                             | 1.10         | 30.21                  | 46.00                  | -15.79       |

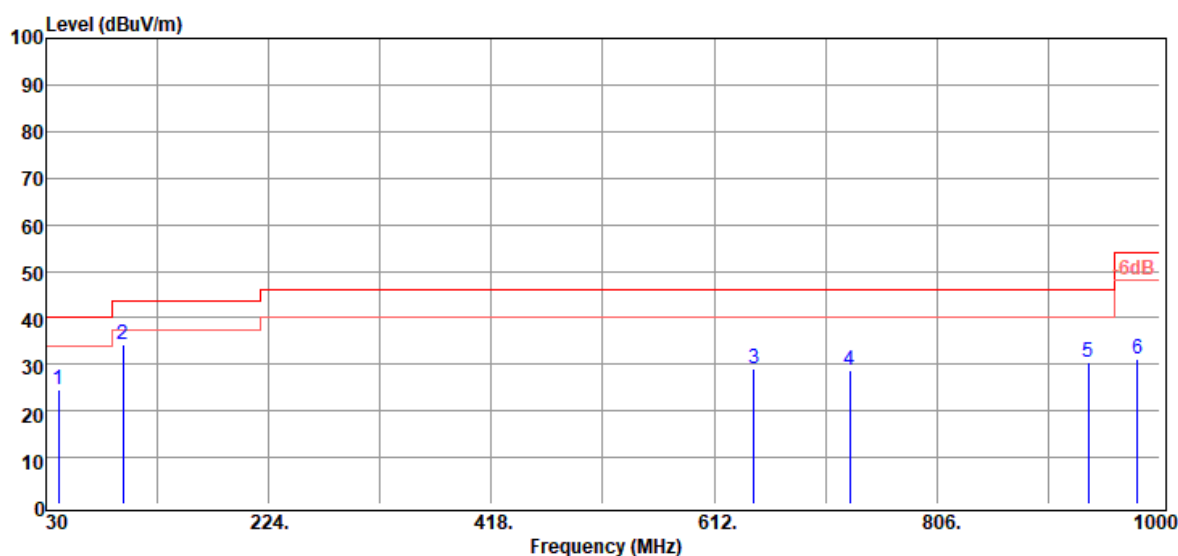
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Report Number :E2/2019/90049  
Operation Mode :802.11n20/B1 + LTE B30 + NFC  
Test Channel :5180 MHz + 2310 MHz + 13.56 MHz  
Test Mode :TX  
EUT Pol :E2 Plan

Test Date :2020-01-17  
Temp./Humi. :22.4/58  
Antenna Pol. :HORIZONTAL  
Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 40.67        | Peak                         | 34.05                             | -9.33        | 24.72                  | 40.00                  | -15.28       |
| 96.93        | Peak                         | 50.28                             | -16.13       | 34.15                  | 43.50                  | -9.35        |
| 646.92       | Peak                         | 31.11                             | -2.10        | 29.01                  | 46.00                  | -16.99       |
| 730.34       | Peak                         | 30.73                             | -2.05        | 28.68                  | 46.00                  | -17.32       |
| 937.92       | Peak                         | 28.93                             | 1.36         | 30.29                  | 46.00                  | -15.71       |
| 980.60       | Peak                         | 29.13                             | 1.87         | 31.00                  | 54.00                  | -23.00       |

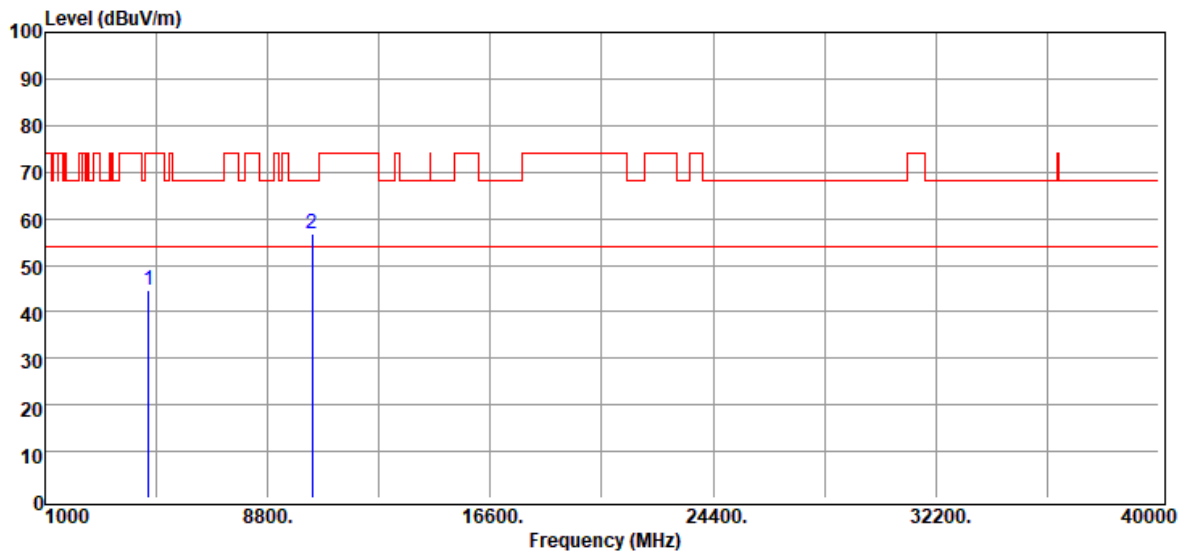
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Report Number :E2/2019/90049  
Operation Mode :802.11n20/B1 + LTE B30 + NFC  
Test Channel :5180 MHz + 2310 MHz + 13.56 MHz  
Test Mode :TX  
EUT Pol :E2 Plan

Test Date :2020-01-17  
Temp./Humi. :22.4/58  
Antenna Pol. :VERTICAL  
Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 4620.00      | Peak                         | 31.13                             | 13.58        | 44.71                  | 74.00                  | -29.29       |
| 10360.00     | Peak                         | 30.52                             | 26.15        | 56.67                  | 68.20                  | -11.53       |

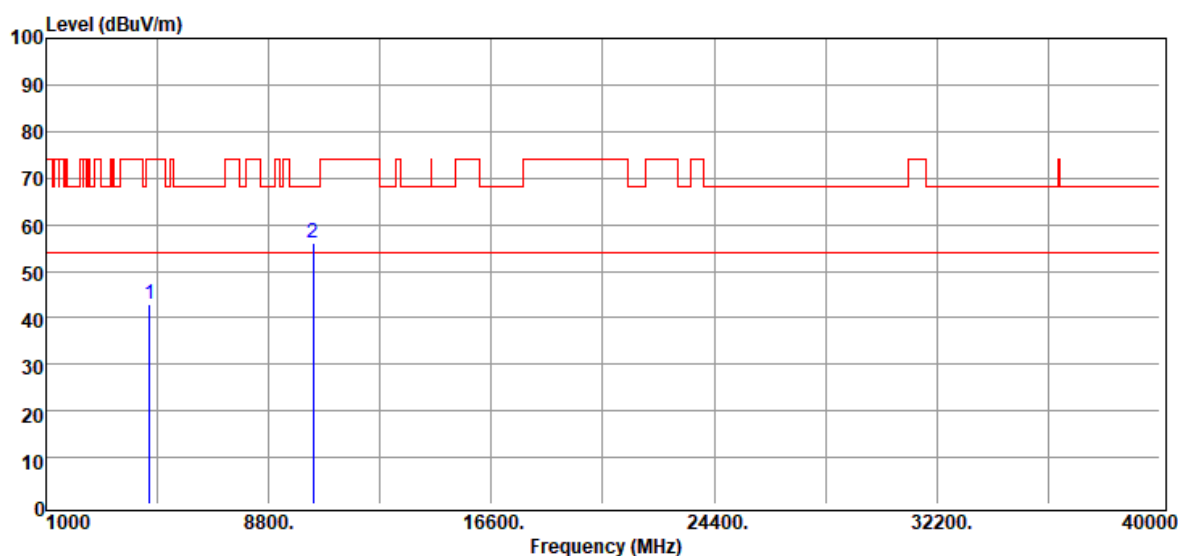
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Report Number :E2/2019/90049  
 Operation Mode :802.11n20/B1 + LTE B30 + NFC  
 Test Channel :5180 MHz + 2310 MHz + 13.56 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2020-01-17  
 Temp./Humi. :22.4/58  
 Antenna Pol. :HORIZONTAL  
 Engineer :Enzo



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 4620.00      | Peak                         | 29.32                             | 13.58        | 42.90                  | 74.00                  | -31.10       |
| 10360.00     | Peak                         | 29.87                             | 26.15        | 56.02                  | 68.20                  | -12.18       |

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# BT+LTE

Report Number :E2/2019/90049

Test Date :2020-01-10

Operation Mode :LTE+ BTBR

Temp./Humi. :22.8/58

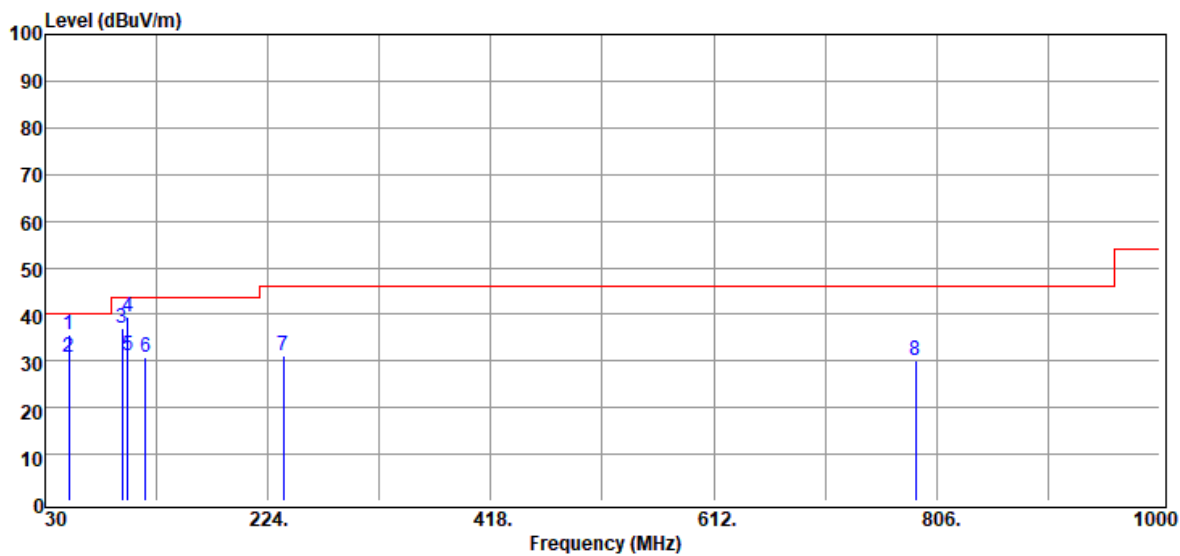
Test Channel :2310 MHz + 2441 MHz

Antenna Pol. :VERTICAL

Test Mode :TX

Engineer :Ashton

EUT Pol :E2 Plan



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 50.37        | Peak                         | 52.35                             | -16.61       | 35.74                  | 40.00                  | -4.26        |
| 50.37        | QP                           | 47.50                             | -16.61       | 30.89                  | 40.00                  | -9.11        |
| 96.93        | Peak                         | 53.17                             | -16.13       | 37.04                  | 43.50                  | -6.46        |
| 101.78       | Peak                         | 54.68                             | -15.21       | 39.47                  | 43.50                  | -4.03        |
| 101.78       | QP                           | 46.33                             | -15.21       | 31.12                  | 43.50                  | -12.38       |
| 117.30       | Peak                         | 43.92                             | -13.17       | 30.75                  | 43.50                  | -12.75       |
| 237.58       | Peak                         | 44.24                             | -13.24       | 31.00                  | 46.00                  | -15.00       |
| 787.57       | Peak                         | 29.91                             | 0.23         | 30.14                  | 46.00                  | -15.86       |

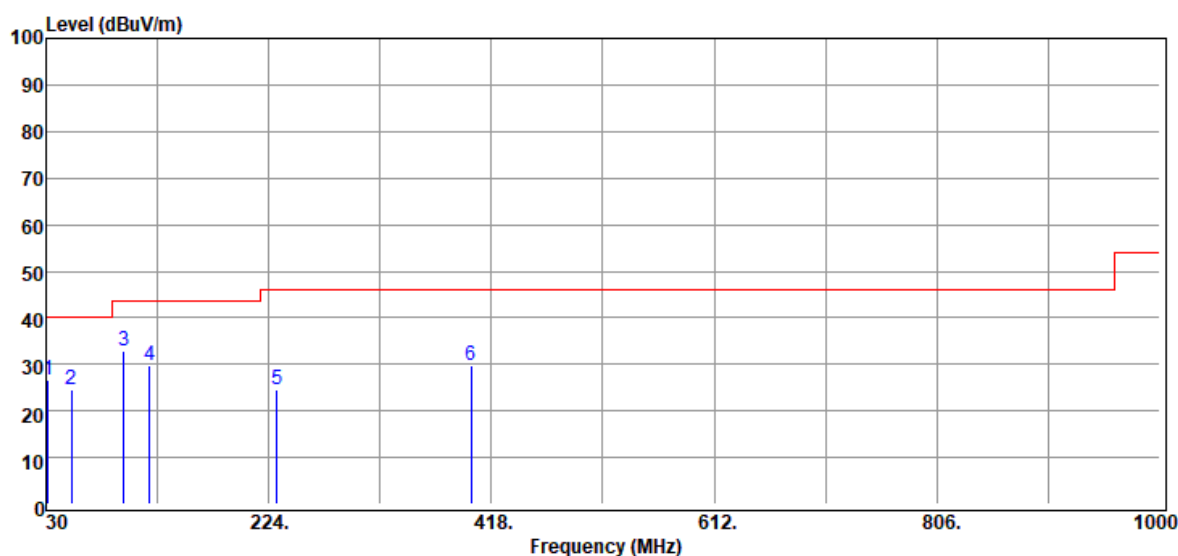
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Report Number :E2/2019/90049  
 Operation Mode :LTE+ BTBR  
 Test Channel :2310 MHz + 2441 MHz  
 Test Mode :TX  
 EUT Pol :E2 Plan

Test Date :2020-01-10  
 Temp./Humi. :22.8/58  
 Antenna Pol. :HORIZONTAL  
 Engineer :Ashton



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 31.94        | Peak                         | 31.07                             | -4.26        | 26.81                  | 40.00                  | -13.19       |
| 52.31        | Peak                         | 42.53                             | -18.12       | 24.41                  | 40.00                  | -15.59       |
| 97.90        | Peak                         | 48.70                             | -15.99       | 32.71                  | 43.50                  | -10.79       |
| 120.21       | Peak                         | 42.63                             | -12.92       | 29.71                  | 43.50                  | -13.79       |
| 230.79       | Peak                         | 38.49                             | -14.01       | 24.48                  | 46.00                  | -21.52       |
| 400.54       | Peak                         | 37.31                             | -7.49        | 29.82                  | 46.00                  | -16.18       |

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Report Number :E2/2019/90049

Operation Mode :LTE+ BTBR

Test Channel :2310 MHz + 2441 MHz

Test Mode :TX

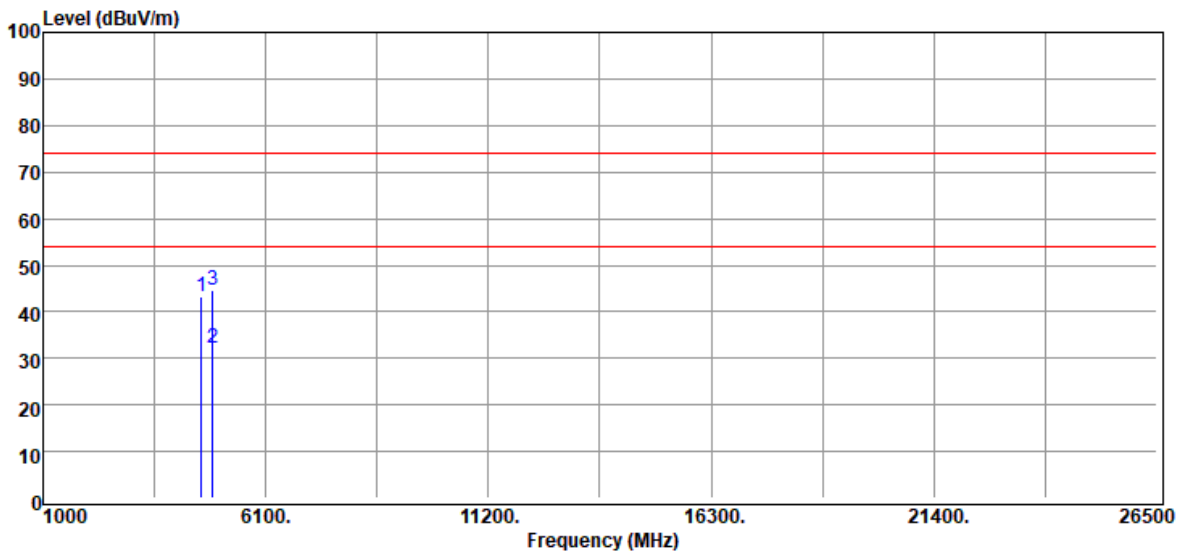
EUT Pol :E2 Plan

Test Date :2020-01-10

Temp./Humi. :22.4/60

Antenna Pol. :VERTICAL

Engineer :Ashton



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 4620.00      | Peak                         | 29.71                             | 13.38        | 43.09                  | 74.00                  | -30.91       |
| 4882.00      | Average                      | 18.36                             | 13.76        | 32.12                  | 54.00                  | -21.88       |
| 4882.00      | Peak                         | 30.74                             | 13.76        | 44.50                  | 74.00                  | -29.50       |

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Report Number :E2/2019/90049

Operation Mode :LTE+ BTBR

Test Channel :2310 MHz + 2441 MHz

Test Mode :TX

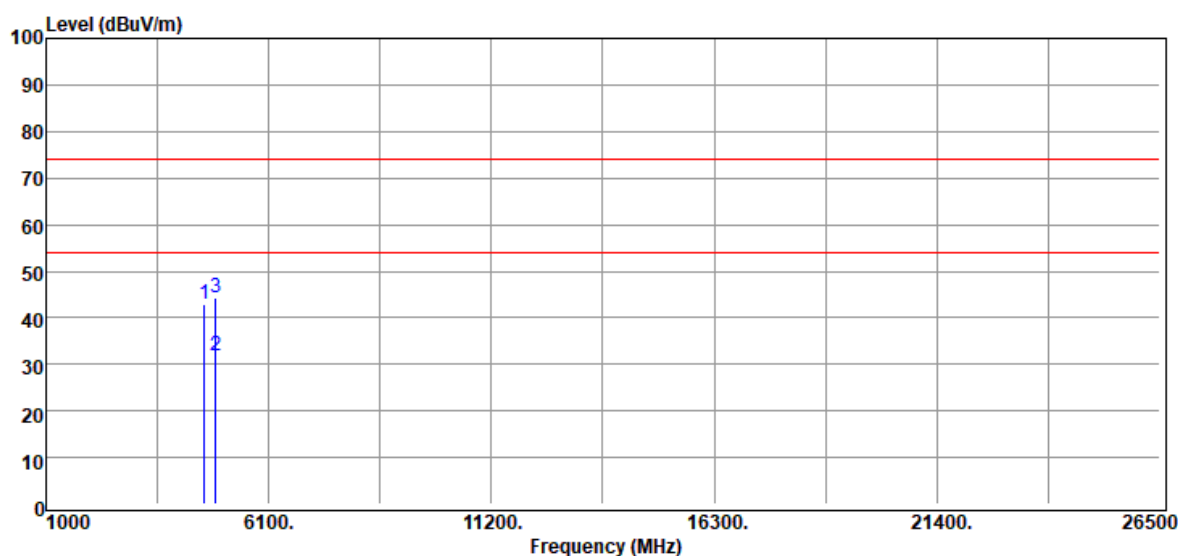
EUT Pol :E2 Plan

Test Date :2020-01-10

Temp./Humi. :22.4/60

Antenna Pol. :HORIZONTAL

Engineer :Ashton



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 4620.00      | Peak                         | 29.60                             | 13.38        | 42.98                  | 74.00                  | -31.02       |
| 4882.00      | Average                      | 18.05                             | 13.76        | 31.81                  | 54.00                  | -22.19       |
| 4882.00      | Peak                         | 30.66                             | 13.76        | 44.42                  | 74.00                  | -29.58       |

~ End of Report ~

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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