

**Test Report No. 7191120912-EEC15/01**  
**dated 30 Dec 2015**



PSB Singapore

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**Choose certainty.  
Add value.**

FORMAL REPORT ON TESTING IN ACCORDANCE WITH  
47 CFR FCC Part 90  
OF A  
**HANDHELD RADIO**  
[ Model : AAH56UCN9RB1AN ]  
[ FCC ID : AZ489FT7067 ]  
[ IC : 109U-89FT7067 ]

**TEST FACILITY** TÜV SÜD PSB Pte Ltd  
Electrical & Electronics Centre (EEC), Product Services,  
No. 1 Science Park Drive, Singapore 118221

**FCC REG. NO.** 99142 (3m and 10m Semi-Anechoic Chamber, Science Park)

**IND. CANADA REG. NO.** 2932I-1 (3m and 10m Semi-Anechoic Chamber, Science Park)

**PREPARED FOR** Motorola Solutions Malaysia Sdn Bhd  
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**QUOTATION NUMBER** 2191024456

**JOB NUMBER** 7191120912

**TEST PERIOD** 23 Sep 2015 - 01 Oct 2015

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**APPROVED BY**

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Assistant Vice President



LA-2007-0380-A  
LA-2007-0381-F  
LA-2007-0382-B  
LA-2007-0383-G

LA-2007-0384-G  
LA-2007-0385-E  
LA-2007-0386-C  
LA-2010-0464-D

The results reported herein have been performed in accordance with the laboratory's terms of accreditation under the Singapore Accreditation Council - Singapore Laboratory Accreditation Scheme. Tests/Calibrations marked "Not SAC-SINGLAS Accredited" in this Report are not included in the SAC-SINGLAS Accreditation Schedule for our laboratory.

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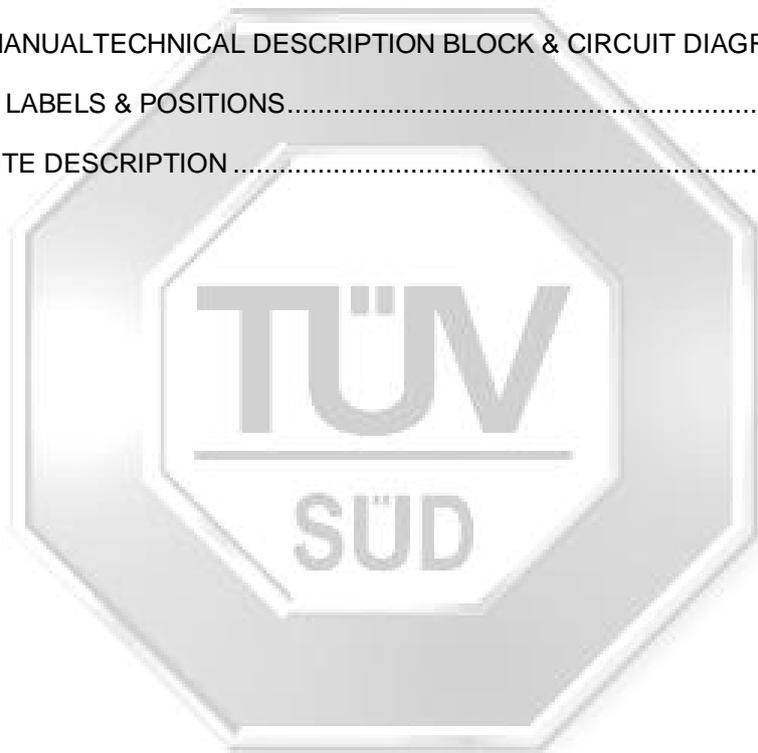
Regional Head Office:  
TÜV SÜD Asia Pacific Pte. Ltd.  
1 Science Park Drive, #02-01  
Singapore 118221  
**TUV®**



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**TEST SUMMARY**

The product was tested in accordance with the customer's specifications.

**Test Results Summary**

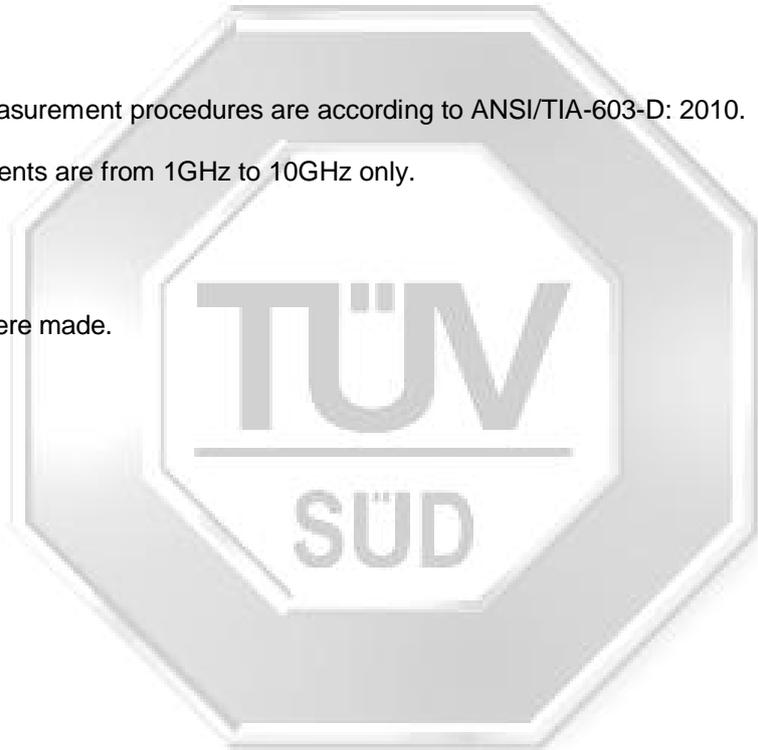
| Test Standard      | Description                            | Pass / Fail |
|--------------------|--|-------------|
| 47 CFR FCC Part 90 |  |             |
| 90.210             | Radiated Transmitter Unwanted Emission | Pass        |

**Notes**

1. All test measurement procedures are according to ANSI/TIA-603-D: 2010.
2. Measurements are from 1GHz to 10GHz only.

**Modifications**

No modifications were made.





**PRODUCT DESCRIPTION**

|                                    |   |
|------------------------------------|---|
| Description                        | : The Equipment Under Test (EUT) is a <b>HANDHELD RADIO.</b>  |
| Applicant                          | : Motorola Solutions Malaysia Sdn Bhd<br>Plot 2, Technoplex Industrial Park Mukim 12 Swd,<br>Medan Bayan Lepas, Bayan Lepas Industrial Park, 11900 Bayan Lepas,<br>Pulau Penang,<br>Malaysia  |
| Manufacturer                       | : Motorola Solutions Malaysia Sdn Bhd<br>Plot 2, Technoplex Industrial Park Mukim 12 Swd,<br>Medan Bayan Lepas, Bayan Lepas Industrial Park, 11900 Bayan Lepas,<br>Pulau Penang,<br>Malaysia  |
| Factory (ies)                      | : Motorola Solutions Malaysia Sdn Bhd<br>Plot 2, Technoplex Industrial Park Mukim 12 Swd,<br>Medan Bayan Lepas, Bayan Lepas Industrial Park, 11900 Bayan Lepas,<br>Pulau Penang,<br>Malaysia  |
| Model Number                       | : AAH56UCN9RB1AN  |
| Regulatory ID                      | : FCC: AZ489FT7067<br>IC: 109U-89FT7067   |
| Serial Number                      | : 126TRV0122  |
| Microprocessor                     | : Ti OMAPL138BZCEA3R  |
| Operating / Transmitting Frequency | : <u>Bluetooth / Bluetooth LE</u><br>2.402GHz (lower channel) to 2.480GHz (upper channel)<br>79 channels (Bluetooth), 40 channels (Bluetooth LE)<br><br><u>WiFi</u><br>2.412GHz (lower channel) to 2.462GHz (upper channel)<br>11 channels<br><br><u>Land Mobile</u><br>806MHz – 824MHz, 851MHz – 869MHz, 896MHz – 902MHz, 935MHz – 941MHz / Channel Spacing 12.5kHz/25kHz. |
| Clock / Oscillator Frequency       | : Reference Clock: 38.4MHz , LO: 1612MHz - 1650MHz, 1702MHz - 1740MHz, 1792MHz - 1804MHz, 1870MHz - 1882MHz   |
| Modulation                         | : <u>Bluetooth</u><br>Gaussian Frequency Shift Keying (GFSK)<br>( $\pi/4$ ) DQPSK<br>8DPSK<br><br><u>Land Mobile</u><br>Frequency Modulation (FM)   |
| Antenna Gain                       | : 1.0 dBi   |



---

**PRODUCT DESCRIPTION**

Port / Connectors : Refer to manufacturer's user manual / operating manual

Rated Input Power : 7.4Vdc 20.7Wh 2800mAh Lithium ION battery

Accessories : Refer to manufacturer's user manual / operating manual





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**SUPPORTING EQUIPMENT DESCRIPTION**

The EUT was tested as a stand-alone unit without any supporting equipment.





**EUT OPERATING CONDITIONS**

**47 CFR FCC Part 90**

**1. Radiated Unwanted Emissions**

The EUT was exercised by operating in maximum continuous transmission in the test mode.





**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Test Instrumentation**

| Instrument                          | Model  | S/No       | Cal Due Date | Cal Interval |
|-------------------------------------|--------|------------|--------------|--------------|
| Agilent EMC Analyzer (9kHz-26.5GHz) | E7405A | US40240195 | 19 Mar 2016  | 1 year       |
| R&S Preamplifier (1GHz -18GHz)      | SCU18  | 102191     | 13 Mar 2016  | 1 year       |
| EMCO Horn Antenna(1GHz-18GHz)       | 3115   | 0003-6088  | 20 Apr 2016  | 1 year       |





## RADIATED TRANSMITTER UNWANTED EMISSION TEST

### 47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Test Setup

1. The EUT and supporting equipment were set up as shown in the test setup photo. The test was conducted in an anechoic chamber under the normal test condition.
2. The EUT was connected to an appropriate power source while all other supporting equipment were powered separately from another power source.
3. The resolution bandwidth (RBW) and the video bandwidth (VBW) of the spectrum analyser were set accordingly as per in the test requirement.
4. All other supporting equipment were powered separately from another filtered mains.

### 47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Test Method

1. The EUT was set to transmit at the maximum power at the lower operating frequency with the modulation on at normal test condition.
2. The receiving antenna (test antenna) was set at vertical polarization with the height of 1m.
3. With the spectrum analyser was set to max hold enabled (peak detector mode), the emissions outside the operating frequency range (spurious emissions) that exceeded the allowable limits or come to within 6dB below the limit were searched and recorded.
4. For each spurious emission found, the test antenna was raised or lowered through the specified range of heights (1m – 4m) until a maximum signal level was detected on the test receiver.
5. The EUT was then rotated through 360° in the horizontal plane until the maximum signal was received. The maximum received signal level was recorded as A (in dBm).
6. The EUT was replaced with the substitution antenna with the antenna input was connected to the signal generator via a 10dB attenuator (if required).
7. The signal generator was set to the found spurious frequency. The output level of the signal generator was adjusted until the test receiver was at least 20dB above the level when the signal generator was switched off.
8. The test antenna was raised and lowered through the specified range of heights (1m – 4m) until the maximum signal level was received on the test receiver.
9. The substitution antenna was rotated until the maximum level was detected on the test receiver.
10. The output level of the signal generator was adjusted until the received signal level at the test receiver was equal to the level recorded in step 6 (A dBm). The signal generator output level was recorded as B (in dBm).
11. The spurious emission level, P (e.r.p / e.i.r.p) was computed as followed:  
$$P(e.i.r.p) = B - C - D + E$$
$$P(e.r.p) = P(e.i.r.p) - 2.15$$

|       |   |   |  |
|-------|---|---|--|
| where | C | = | cable loss between the signal generator and the substitution |
|       | D | = | attenuation level if attenuator is used                      |
|       | E | = | substitution antenna gain                                    |
12. The steps 2 to 11 were repeated with the receiving antenna was set to horizontal polarization.
13. Comparison was made on both measured results with vertical and horizontal polarizations. The highest value out of vertical and horizontal polarizations was recorded.
14. The steps 2 to 13 were repeated until all the spurious emissions were measured.
15. The steps 1 to 14 were repeated with the EUT was set to operate at the upper operating frequency.



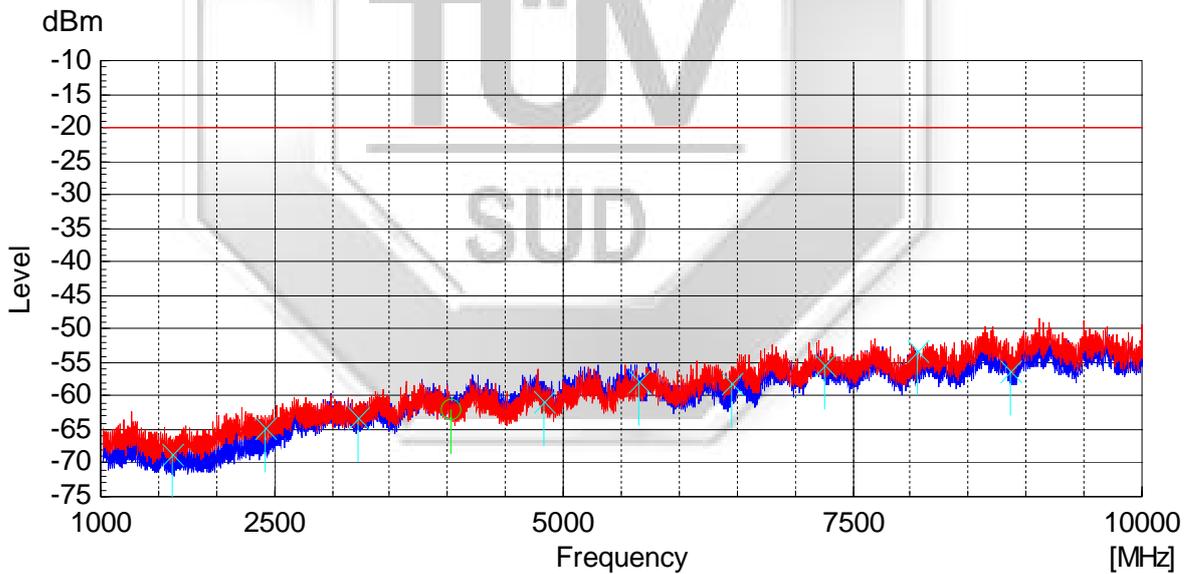
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                           |                      |             |
|------------------|---------------------------|----------------------|-------------|
| Operating Mode   | Transmit                  | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                    | Relative Humidity    | 60%         |
| Test Distance    | 3m                        | Atmospheric Pressure | 1030mbar    |
| Modulation       | Digital 12.5kHz Max Power | Tested By            | Lim Kay Tak |

**806.0125MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 4836.2980       | -60.8           | -20.0       |
| 5642.4250       | -57.9           | -20.0       |
| 6448.2300       | -58.1           | -20.0       |
| 7254.6520       | -55.2           | -20.0       |
| 8060.4570       | -53.2           | -20.0       |
| 8866.2620       | -56.4           | -20.0       |



**806.0125MHz (Digital) 1GHz – 10GHz**



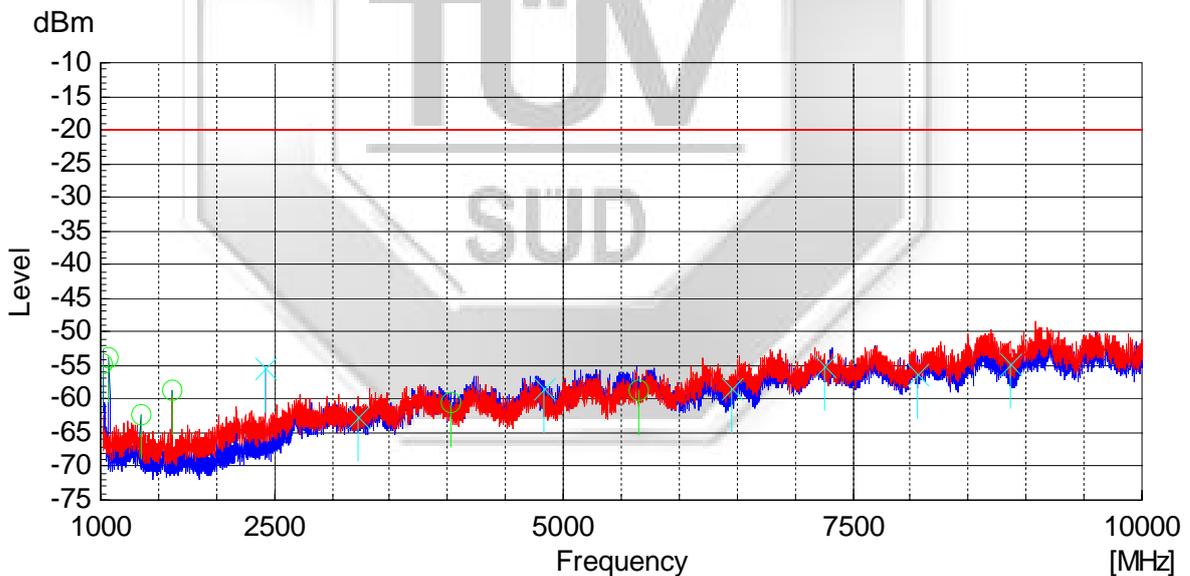
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                        |                      |             |
|------------------|------------------------|----------------------|-------------|
| Operating Mode   | Transmit               | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                 | Relative Humidity    | 60%         |
| Test Distance    | 3m                     | Atmospheric Pressure | 1030mbar    |
| Modulation       | Analog 25kHz Max Power | Tested By            | Lim Kay Tak |

**806.0125MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1016.7700       | -54.7           | -13.0       |
| 1074.4770       | -53.8           | -13.0       |
| 2418.0200       | -55.3           | -13.0       |
| 7254.0350       | -55.1           | -13.0       |
| 8060.4570       | -56.3           | -13.0       |
| 8866.2620       | -54.9           | -13.0       |



**806.0125MHz (Analog) 1GHz – 10GHz**



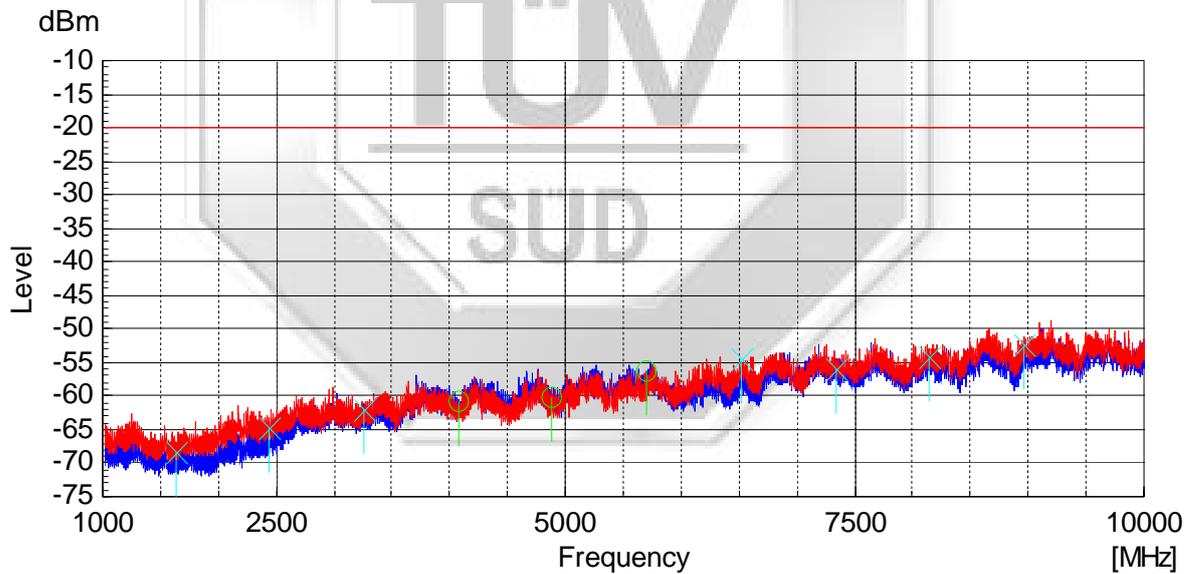
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                           |                      |             |
|------------------|---------------------------|----------------------|-------------|
| Operating Mode   | Transmit                  | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                    | Relative Humidity    | 60%         |
| Test Distance    | 3m                        | Atmospheric Pressure | 1030mbar    |
| Modulation       | Digital 12.5kHz Max Power | Tested By            | Lim Kay Tak |

**814.9875MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 4889.0730       | -60.3           | -20.0       |
| 5704.0780       | -56.3           | -20.0       |
| 6519.1310       | -54.5           | -20.0       |
| 7334.8000       | -55.8           | -20.0       |
| 8149.8540       | -54.1           | -20.0       |
| 8964.2900       | -52.3           | -20.0       |



**814.9875MHz (Digital) 1GHz – 10GHz**



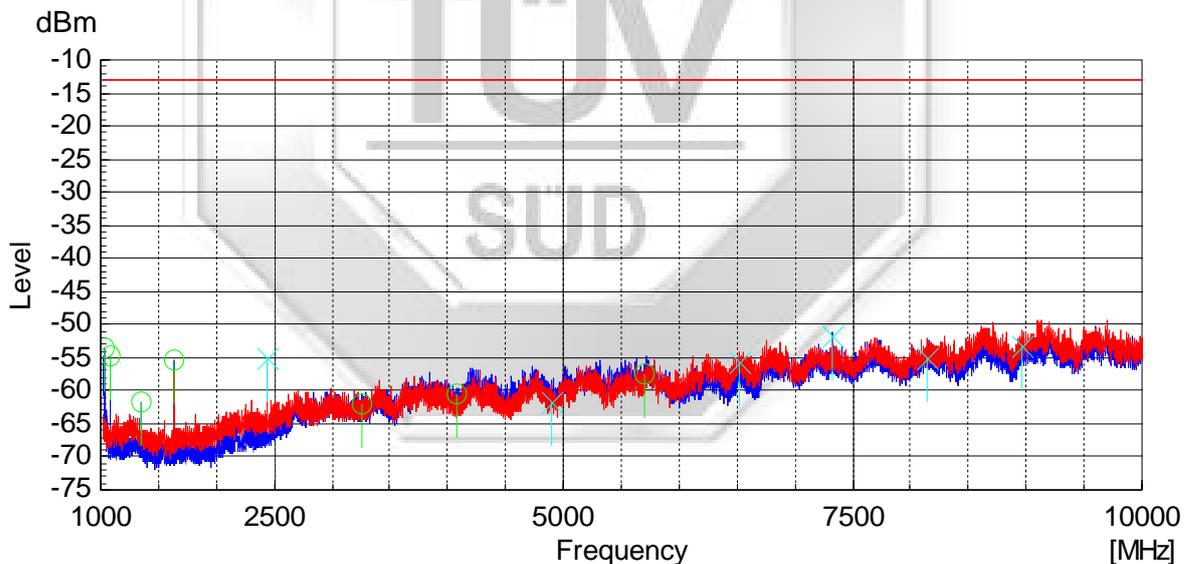
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                        |                      |             |
|------------------|------------------------|----------------------|-------------|
| Operating Mode   | Transmit               | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                 | Relative Humidity    | 60%         |
| Test Distance    | 3m                     | Atmospheric Pressure | 1030mbar    |
| Modulation       | Analog 25kHz Max Power | Tested By            | Lim Kay Tak |

**814.9875MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1026.6340       | -53.5           | -13.0       |
| 1086.8080       | -54.9           | -13.0       |
| 2445.1470       | -55.1           | -13.0       |
| 7331.7180       | -51.6           | -13.0       |
| 8149.8540       | -55.1           | -13.0       |
| 8964.9060       | -53.3           | -13.0       |



**814.9875MHz (Analog) 1GHz – 10GHz**



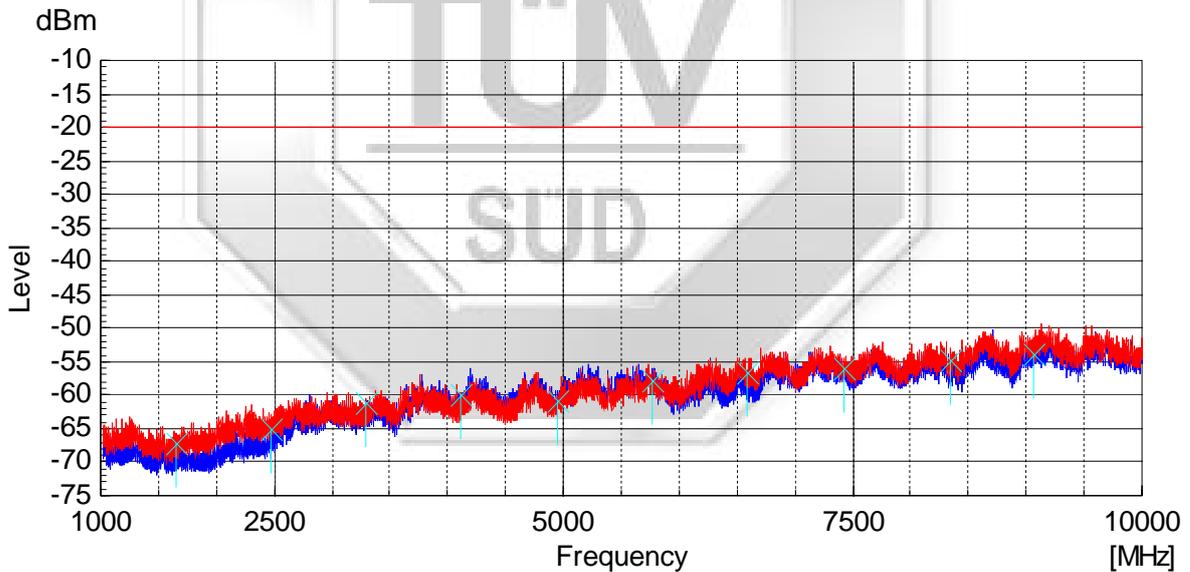
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                           |                      |             |
|------------------|---------------------------|----------------------|-------------|
| Operating Mode   | Transmit                  | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                    | Relative Humidity    | 60%         |
| Test Distance    | 3m                        | Atmospheric Pressure | 1030mbar    |
| Modulation       | Digital 12.5kHz Max Power | Tested By            | Lim Kay Tak |

**823.9875MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1647.1100       | -67.0           | -20.0       |
| 2471.2880       | -65.0           | -20.0       |
| 3295.4660       | -61.0           | -20.0       |
| 4119.6440       | -59.8           | -20.0       |
| 4943.8210       | -60.9           | -20.0       |
| 5767.5800       | -57.7           | -20.0       |



**823.9875MHz (Digital) 1GHz – 10GHz**



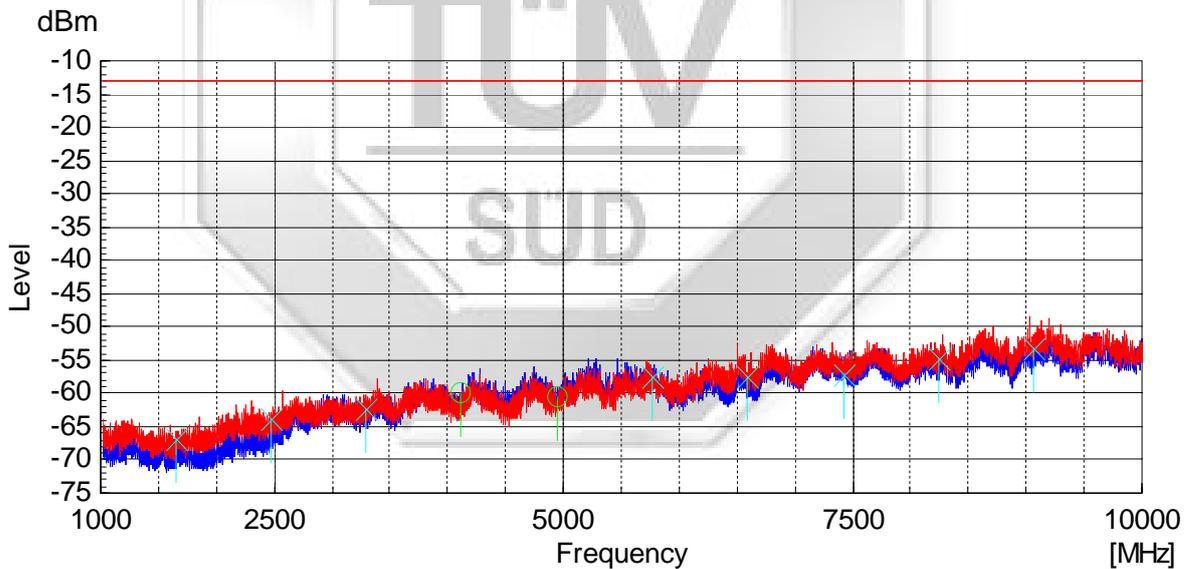
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                        |                      |                            |
|------------------|------------------------|----------------------|----------------------------|
| Operating Mode   | Transmit               | Temperature          | 24°C                       |
| Test Input Power | 7.4Vdc                 | Relative Humidity    | 60%                        |
| Test Distance    | 3m                     | Atmospheric Pressure | 1030mbar                   |
| Modulation       | Analog 25kHz Max Power | Tested By            | Lim Kay Tak,<br>Li Chelmin |

**823.9875MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 4119.6440       | -60.0           | -13.0       |
| 5767.5800       | -57.5           | -13.0       |
| 6591.2650       | -57.6           | -13.0       |
| 7415.5660       | -57.0           | -13.0       |
| 8239.8670       | -54.7           | -13.0       |
| 9063.5520       | -53.3           | -13.0       |



**823.9875MHz (Analog) 1GHz – 10GHz**



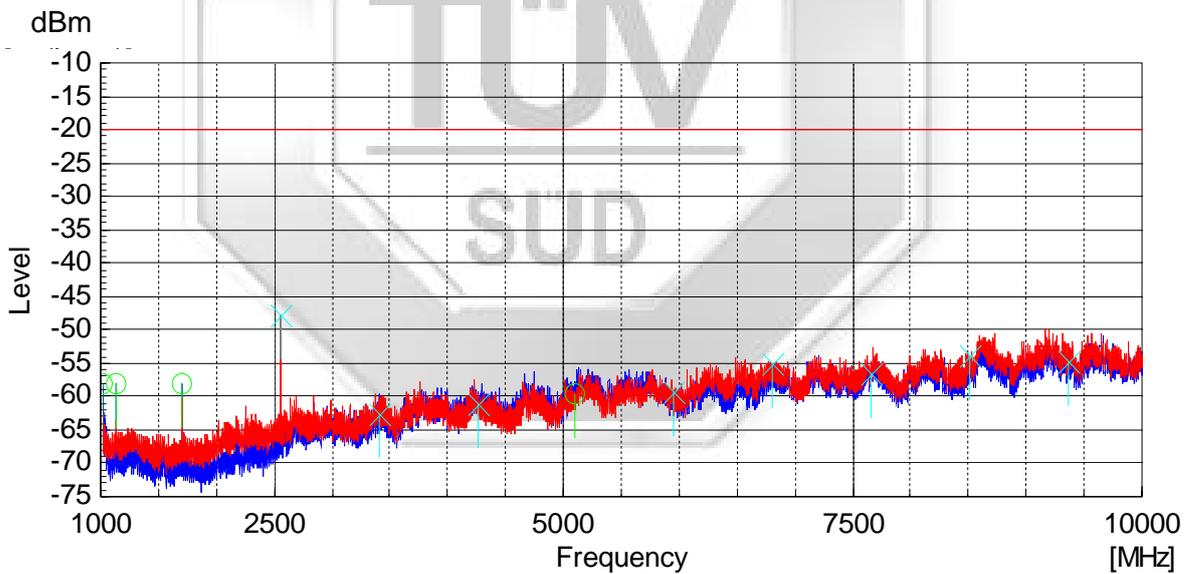
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                           |                      |             |
|------------------|---------------------------|----------------------|-------------|
| Operating Mode   | Transmit                  | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                    | Relative Humidity    | 60%         |
| Test Distance    | 3m                        | Atmospheric Pressure | 1030mbar    |
| Modulation       | Digital 12.5kHz Max Power | Tested By            | Lim Kay Tak |

**851.0125MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1023.6750       | -57.9           | -20.0       |
| 2553.1630       | -47.9           | -20.0       |
| 6808.2840       | -55.0           | -20.0       |
| 7659.0950       | -56.7           | -20.0       |
| 8510.5240       | -53.9           | -20.0       |
| 9361.3360       | -54.8           | -20.0       |



**851.0125MHz (Digital) 1GHz – 10GHz**



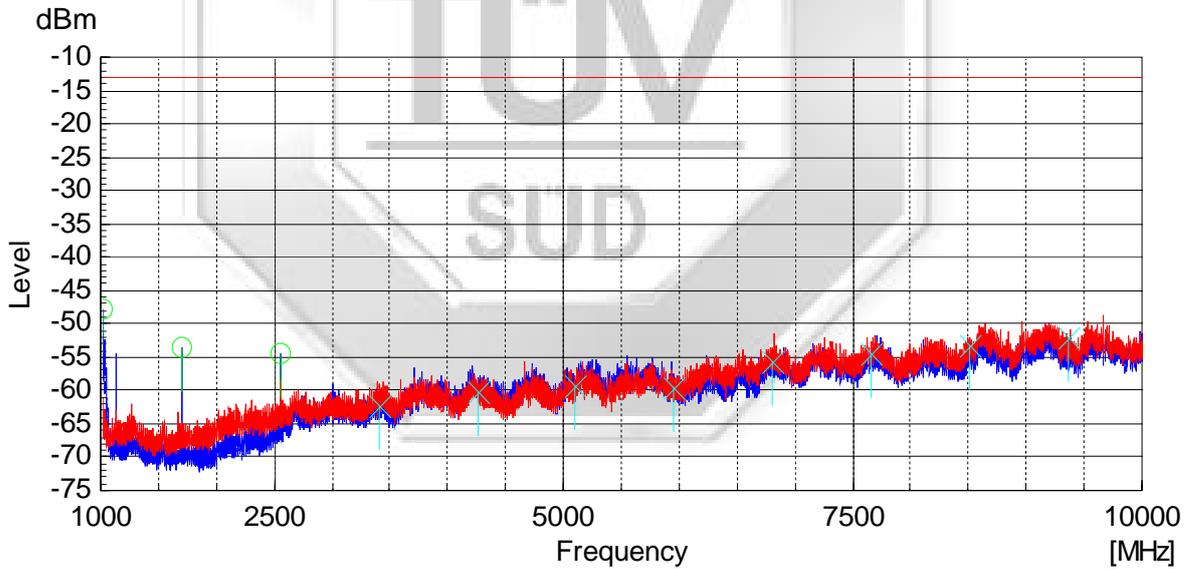
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                        |                      |             |
|------------------|------------------------|----------------------|-------------|
| Operating Mode   | Transmit               | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                 | Relative Humidity    | 60%         |
| Test Distance    | 3m                     | Atmospheric Pressure | 1030mbar    |
| Modulation       | Analog 25kHz Max Power | Tested By            | Lim Kay Tak |

**851.0125MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1023.6750       | 34.7            | -13.0       |
| 1701.8580       | 40.5            | -13.0       |
| 2553.1630       | 41.5            | -13.0       |
| 7659.0950       | 41.4            | -13.0       |
| 8510.5240       | 40.2            | -13.0       |
| 9361.9520       | 39.0            | -13.0       |



**851.0125MHz (Analog) 1GHz – 10GHz**



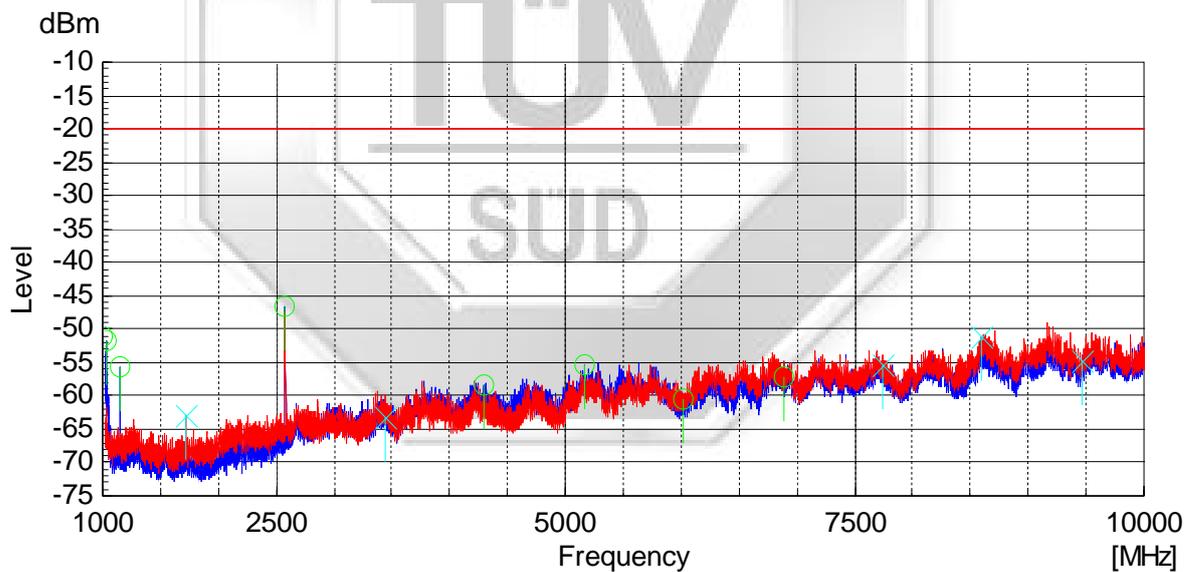
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                           |                      |             |
|------------------|---------------------------|----------------------|-------------|
| Operating Mode   | Transmit                  | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                    | Relative Humidity    | 60%         |
| Test Distance    | 3m                        | Atmospheric Pressure | 1030mbar    |
| Modulation       | Digital 12.5kHz Max Power | Tested By            | Lim Kay Tak |

**860.0125MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1003.9460       | -51.1           | -20.0       |
| 1032.5530       | -51.8           | -20.0       |
| 2580.2910       | -46.6           | -20.0       |
| 5160.9150       | -55.4           | -20.0       |
| 8601.7700       | -51.2           | -20.0       |
| 9460.5970       | -54.6           | -20.0       |



**860.0125MHz (Digital) 1GHz - 10GHz**



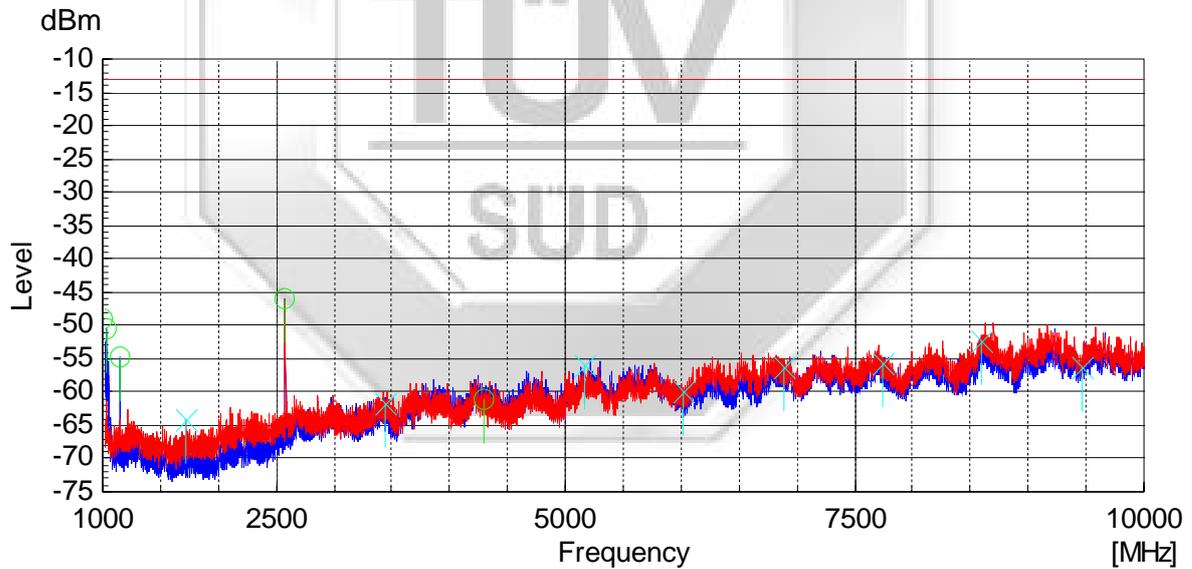
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                        |                      |             |
|------------------|------------------------|----------------------|-------------|
| Operating Mode   | Transmit               | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                 | Relative Humidity    | 60%         |
| Test Distance    | 3m                     | Atmospheric Pressure | 1030mbar    |
| Modulation       | Analog 25kHz Max Power | Tested By            | Lim Kay Tak |

**860.0125MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1003.9460       | -48.9           | -13.0       |
| 1033.0460       | -50.5           | -13.0       |
| 1146.9810       | -54.7           | -13.0       |
| 1720.1080       | -64.2           | -13.0       |
| 2580.2910       | -45.9           | -13.0       |
| 3440.4740       | -61.8           | -13.0       |



**860.0125MHz (Analog) 1GHz – 10GHz**



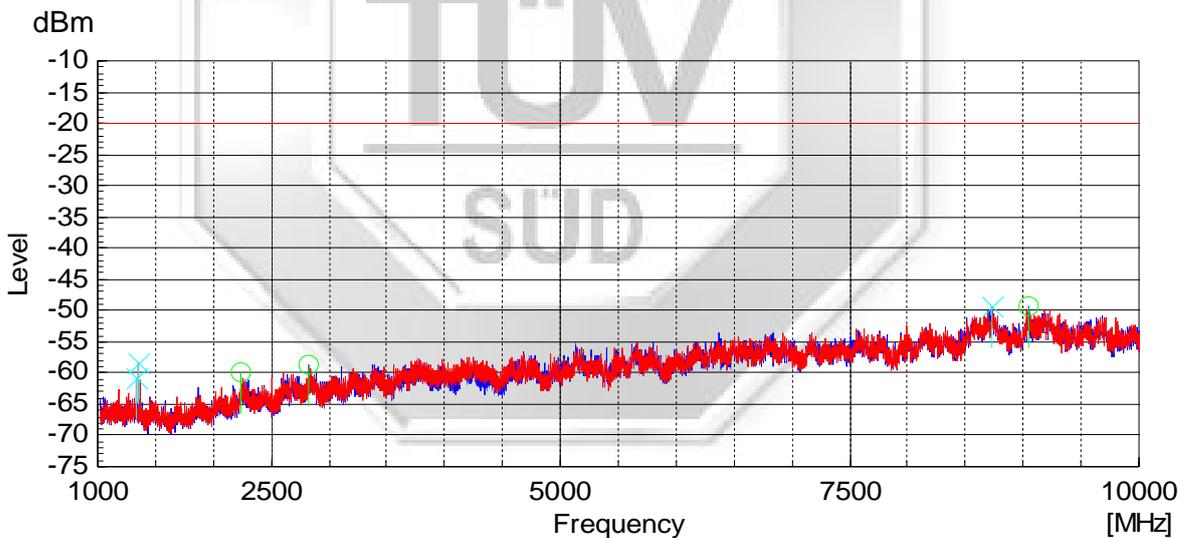
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                           |                      |                            |
|------------------|---------------------------|----------------------|----------------------------|
| Operating Mode   | Transmit                  | Temperature          | 24°C                       |
| Test Input Power | 7.4Vdc                    | Relative Humidity    | 60%                        |
| Test Distance    | 3m                        | Atmospheric Pressure | 1030mbar                   |
| Modulation       | Digital 12.5kHz Max Power | Tested By            | Lim Kay Tak,<br>Li Chelmin |

**868.8875MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1330.4600       | -60.7           | -20.0       |
| 1346.7370       | -58.4           | -20.0       |
| 2236.5130       | -60.0           | -20.0       |
| 2828.3830       | -58.7           | -20.0       |
| 8721.9940       | -49.3           | -20.0       |
| 9054.3040       | -49.2           | -20.0       |



**868.8875MHz (Digital) 1GHz - 10GHz**



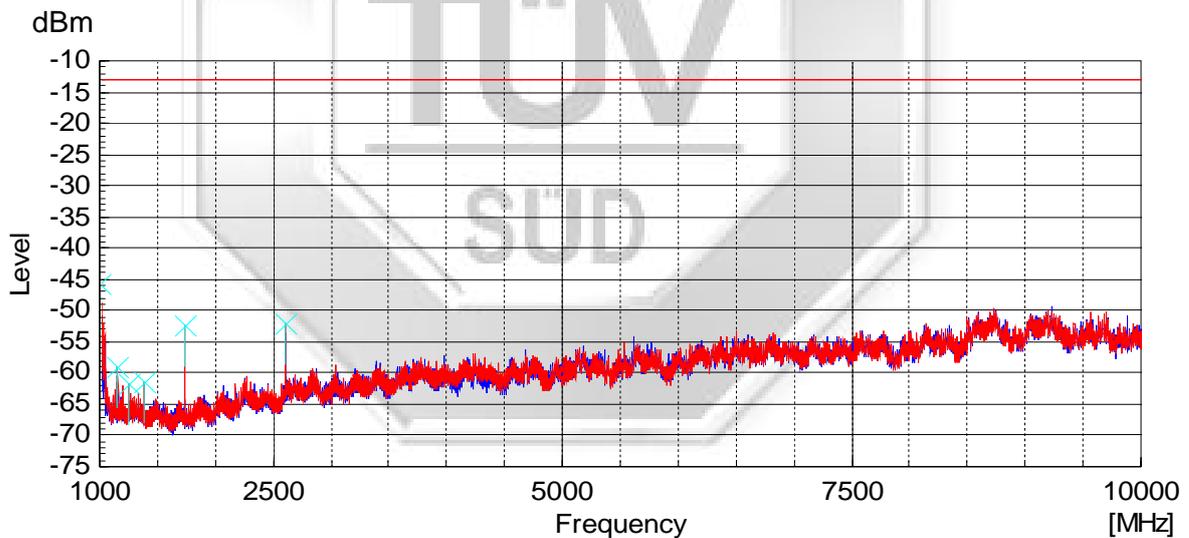
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                        |                      |                            |
|------------------|------------------------|----------------------|----------------------------|
| Operating Mode   | Transmit               | Temperature          | 24°C                       |
| Test Input Power | 7.4Vdc                 | Relative Humidity    | 60%                        |
| Test Distance    | 3m                     | Atmospheric Pressure | 1030mbar                   |
| Modulation       | Analog 25kHz Max Power | Tested By            | Lim Kay Tak,<br>Li Chelmin |

**868.8875MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1002.9590       | -45.7           | -13.0       |
| 1158.3250       | -59.1           | -13.0       |
| 1251.5440       | -61.8           | -13.0       |
| 1379.2900       | -61.3           | -13.0       |
| 1737.8640       | -52.2           | -13.0       |
| 2606.9250       | -52.0           | -13.0       |



**868.8875MHz (Analog) 1GHz – 10GHz**



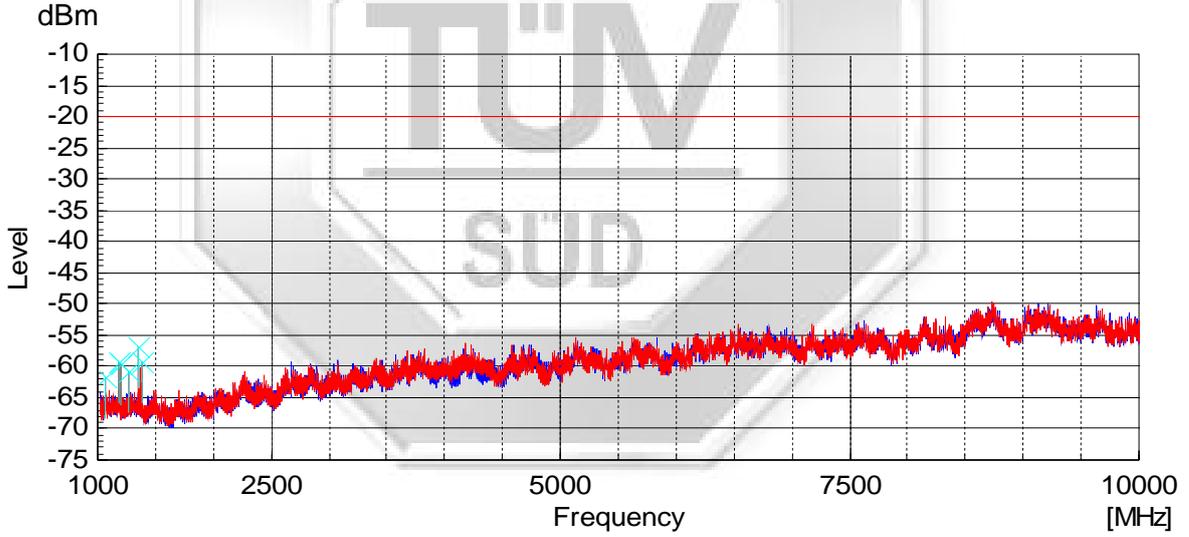
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                           |                      |           |
|------------------|---------------------------|----------------------|-----------|
| Operating Mode   | Transmit                  | Temperature          | 24°C      |
| Test Input Power | 7.4Vdc                    | Relative Humidity    | 60%       |
| Test Distance    | 3m                        | Atmospheric Pressure | 1030mbar  |
| Modulation       | Digital 12.5kHz Max Power | Tested By            | Dylan Lin |

**896.0125MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1067.0790       | -61.6           | -20.0       |
| 1191.8640       | -59.3           | -20.0       |
| 1200.2490       | -59.6           | -20.0       |
| 1264.3680       | -60.9           | -20.0       |
| 1344.2710       | -56.7           | -20.0       |
| 1380.7690       | -59.2           | -20.0       |



**896.0125MHz (Digital) 1GHz - 10GHz**



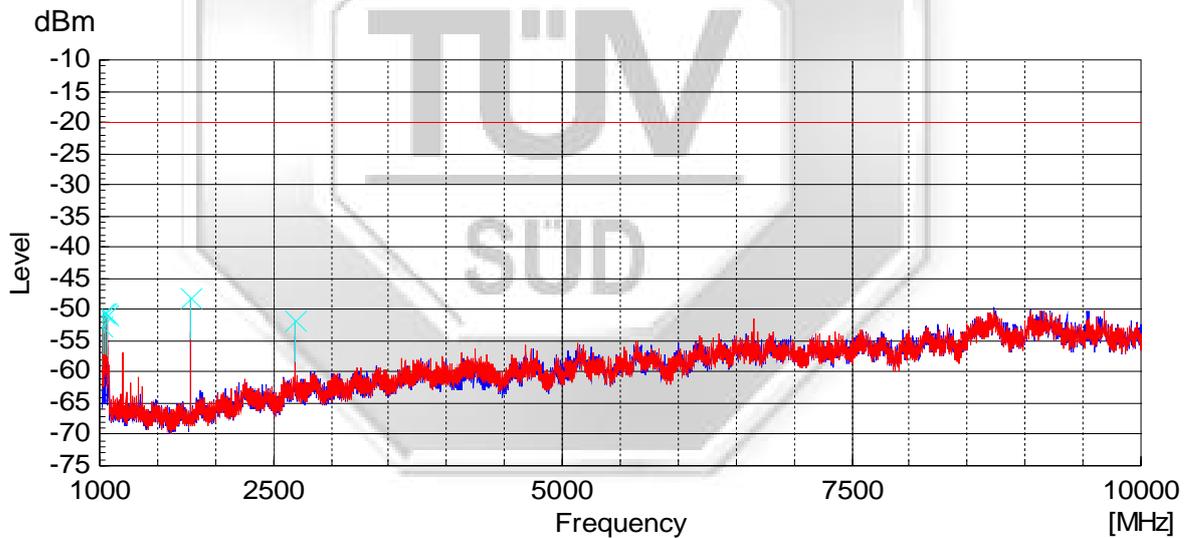
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                          |                      |           |
|------------------|--------------------------|----------------------|-----------|
| Operating Mode   | Transmit                 | Temperature          | 24°C      |
| Test Input Power | 7.4Vdc                   | Relative Humidity    | 60%       |
| Test Distance    | 3m                       | Atmospheric Pressure | 1030mbar  |
| Modulation       | Analog 12.5kHz Max Power | Tested By            | Dylan Lin |

**896.0125MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1011.3440       | -52.6           | -20.0       |
| 1030.5800       | -50.7           | -20.0       |
| 1049.8160       | -50.4           | -20.0       |
| 1069.0510       | -50.7           | -20.0       |
| 1792.1180       | -48.1           | -20.0       |
| 2688.3070       | -51.8           | -20.0       |



**896.0125MHz (Analog) 1GHz - 10GHz**



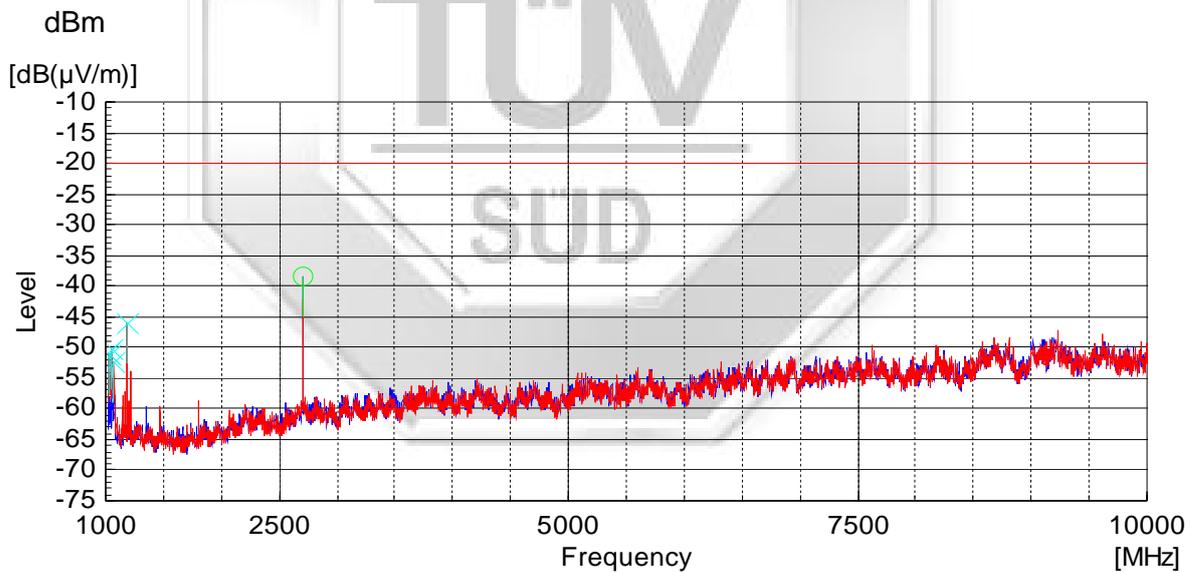
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                           |                      |             |
|------------------|---------------------------|----------------------|-------------|
| Operating Mode   | Transmit                  | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                    | Relative Humidity    | 60%         |
| Test Distance    | 3m                        | Atmospheric Pressure | 1030mbar    |
| Modulation       | Digital 12.5kHz Max Power | Tested By            | Lim Kay Tak |

**900.9875MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1016.6460       | -50.7           | -20.0       |
| 1035.5120       | -51.1           | -20.0       |
| 1054.3780       | -50.3           | -20.0       |
| 1074.3540       | -52.2           | -20.0       |
| 1178.6710       | -45.9           | -20.0       |
| 2703.4740       | -38.3           | -20.0       |



**900.9875MHz (Digital) 1GHz – 10GHz**



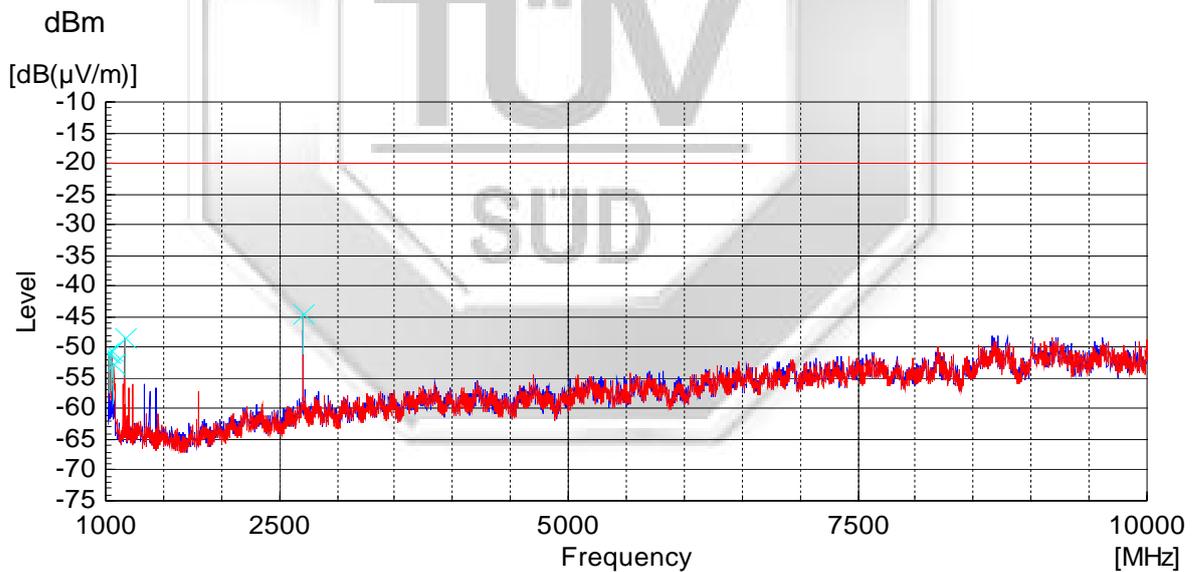
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                          |                      |             |
|------------------|--------------------------|----------------------|-------------|
| Operating Mode   | Transmit                 | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                   | Relative Humidity    | 60%         |
| Test Distance    | 3m                       | Atmospheric Pressure | 1030mbar    |
| Modulation       | Analog 12.5kHz Max Power | Tested By            | Lim Kay Tak |

**900.9875MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1016.6460       | -50.7           | -20.0       |
| 1035.5120       | -50.7           | -20.0       |
| 1048.8290       | -50.6           | -20.0       |
| 1074.3540       | -52.7           | -20.0       |
| 1159.8050       | -48.3           | -20.0       |
| 2703.4740       | -44.4           | -20.0       |



**900.9875MHz (Analog) 1GHz – 10GHz**



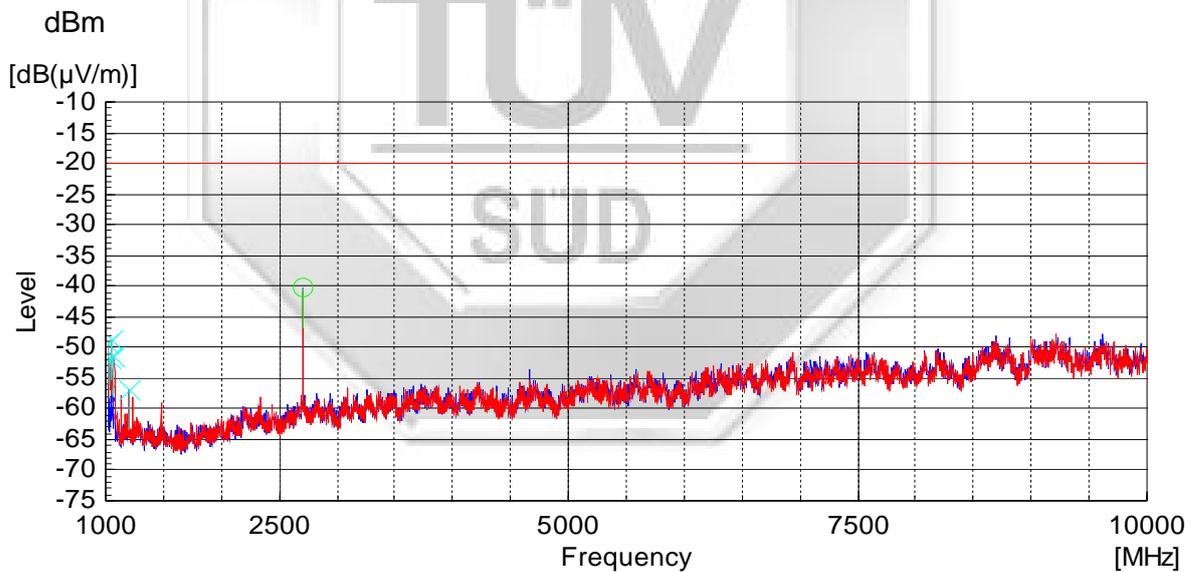
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                           |                      |             |
|------------------|---------------------------|----------------------|-------------|
| Operating Mode   | Transmit                  | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                    | Relative Humidity    | 60%         |
| Test Distance    | 3m                        | Atmospheric Pressure | 1030mbar    |
| Modulation       | Digital 12.5kHz Max Power | Tested By            | Lim Kay Tak |

**901.5MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1016.6460       | -49.3           | -20.0       |
| 1036.6220       | -51.8           | -20.0       |
| 1055.4880       | -48.8           | -20.0       |
| 1074.3540       | -51.4           | -20.0       |
| 1201.9750       | -57.0           | -20.0       |
| 2704.5830       | -40.3           | -20.0       |



**901.5MHz (Digital) 1GHz - 10GHz**



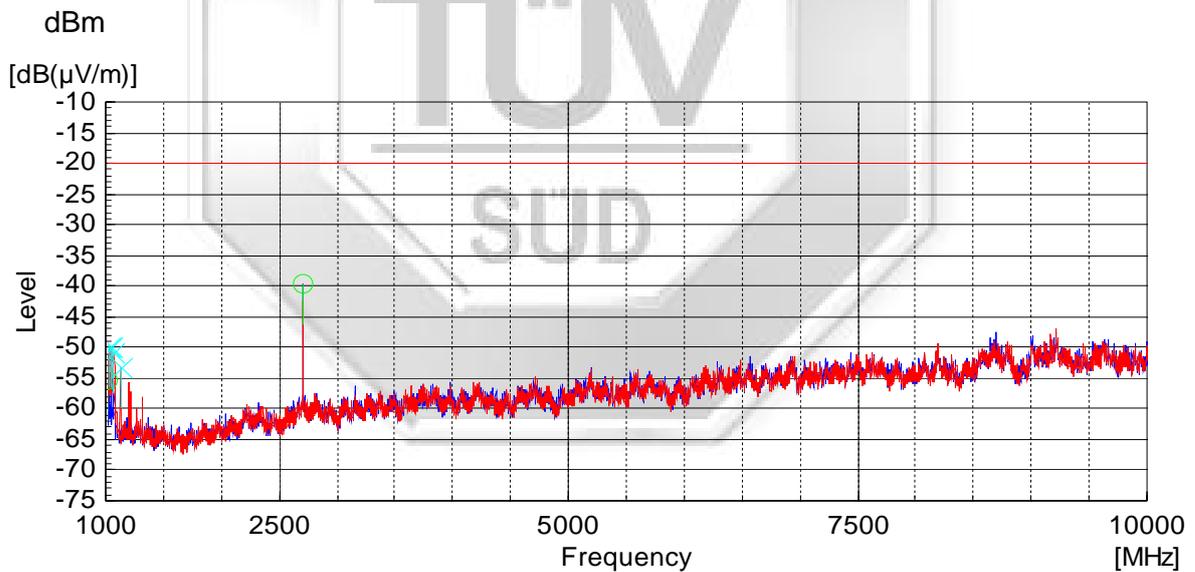
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                          |                      |             |
|------------------|--------------------------|----------------------|-------------|
| Operating Mode   | Transmit                 | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                   | Relative Humidity    | 60%         |
| Test Distance    | 3m                       | Atmospheric Pressure | 1030mbar    |
| Modulation       | Analog 12.5kHz Max Power | Tested By            | Lim Kay Tak |

**901.5MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1016.6460       | -55.4           | -20.0       |
| 1035.5120       | -50.0           | -20.0       |
| 1055.4880       | -49.9           | -20.0       |
| 1074.3540       | -50.8           | -20.0       |
| 1126.5120       | -53.1           | -20.0       |
| 2704.5830       | -39.7           | -20.0       |



**901.5MHz (Analog) 1GHz - 10GHz**



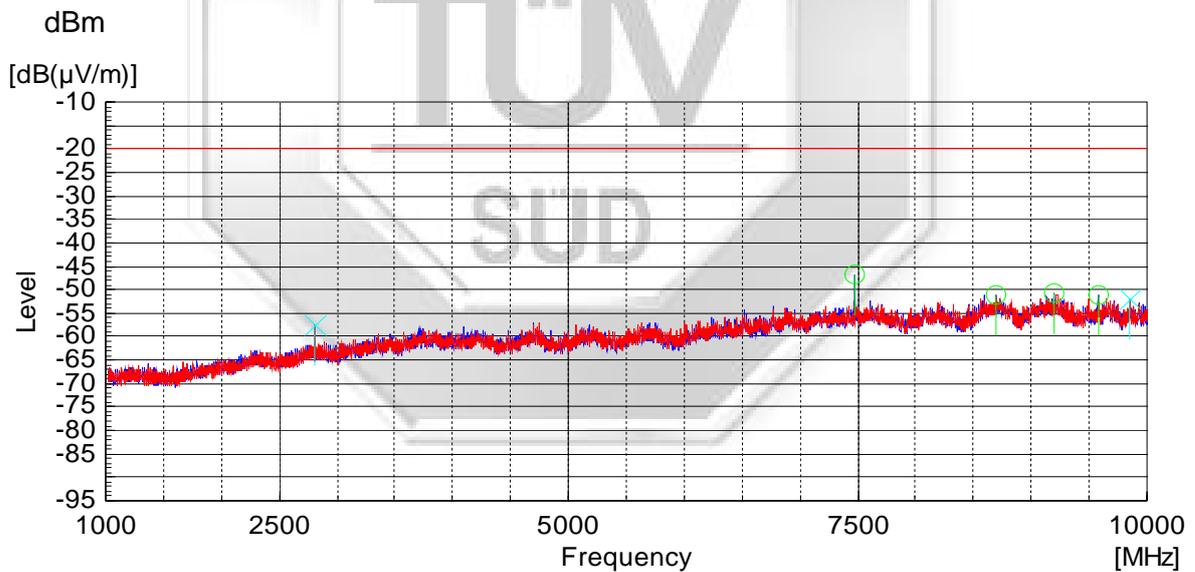
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                           |                      |             |
|------------------|---------------------------|----------------------|-------------|
| Operating Mode   | Transmit                  | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                    | Relative Humidity    | 60%         |
| Test Distance    | 3m                        | Atmospheric Pressure | 1030mbar    |
| Modulation       | Digital 12.5kHz Max Power | Tested By            | Lim Kay Tak |

**935.0125MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 2805.571        | -57.3           | -20.0       |
| 7479.857        | -46.8           | -20.0       |
| 8700.587        | -50.9           | -20.0       |
| 9196.648        | -50.9           | -20.0       |
| 9573.964        | -51.2           | -20.0       |
| 9846.964        | -51.8           | -20.0       |



**935.0125MHz (Digital) 1GHz – 10GHz**



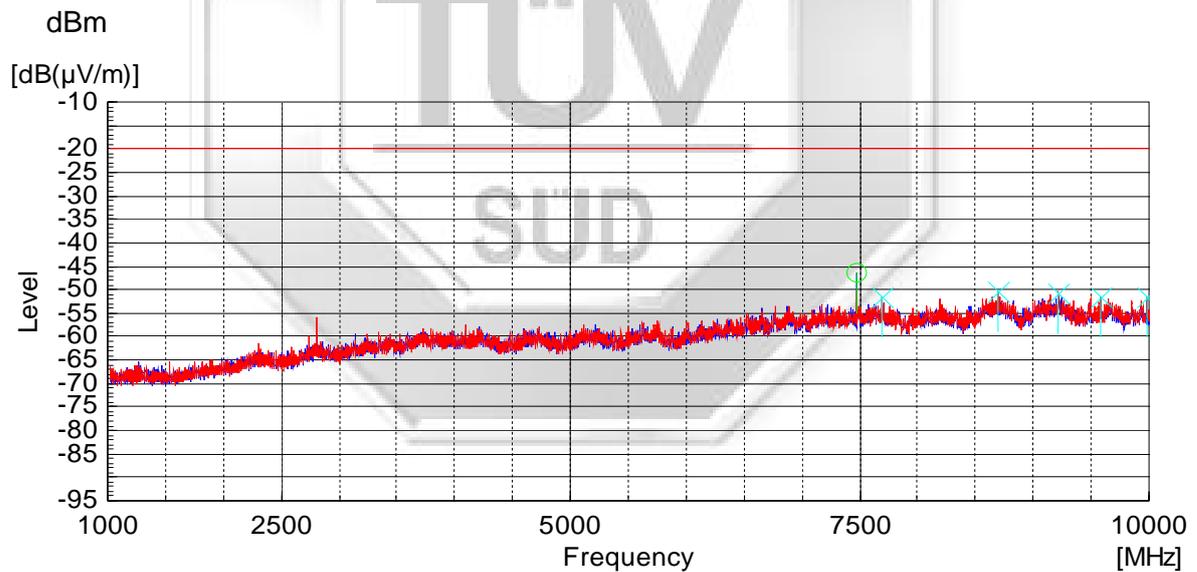
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                          |                      |             |
|------------------|--------------------------|----------------------|-------------|
| Operating Mode   | Transmit                 | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                   | Relative Humidity    | 60%         |
| Test Distance    | 3m                       | Atmospheric Pressure | 1030mbar    |
| Modulation       | Analog 12.5kHz Max Power | Tested By            | Lim Kay Tak |

**935.0125MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 7479.8570       | -46.5           | -20.0       |
| 7696.2600       | -51.6           | -20.0       |
| 8698.3680       | -50.3           | -20.0       |
| 9221.0620       | -50.8           | -20.0       |
| 9575.0740       | -51.6           | -20.0       |
| 9985.6830       | -51.5           | -20.0       |



**935.0125MHz (Analog) 1GHz – 10GHz**



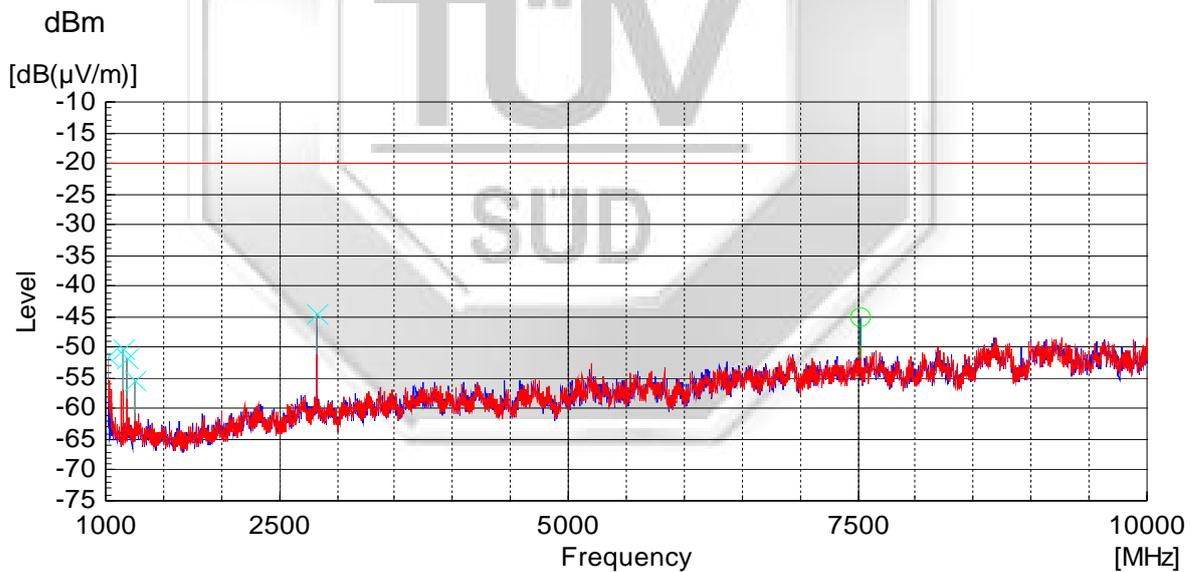
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                           |                      |             |
|------------------|---------------------------|----------------------|-------------|
| Operating Mode   | Transmit                  | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                    | Relative Humidity    | 60%         |
| Test Distance    | 3m                        | Atmospheric Pressure | 1030mbar    |
| Modulation       | Digital 12.5kHz Max Power | Tested By            | Lim Kay Tak |

**939.9875MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1016.6460       | -51.5           | -20.0       |
| 1152.0360       | -50.2           | -20.0       |
| 1178.6710       | -51.6           | -20.0       |
| 1247.4750       | -55.5           | -20.0       |
| 2819.9980       | -44.4           | -20.0       |
| 7519.8090       | -45.1           | -20.0       |



**939.9875MHz (Digital) 1GHz – 10GHz**



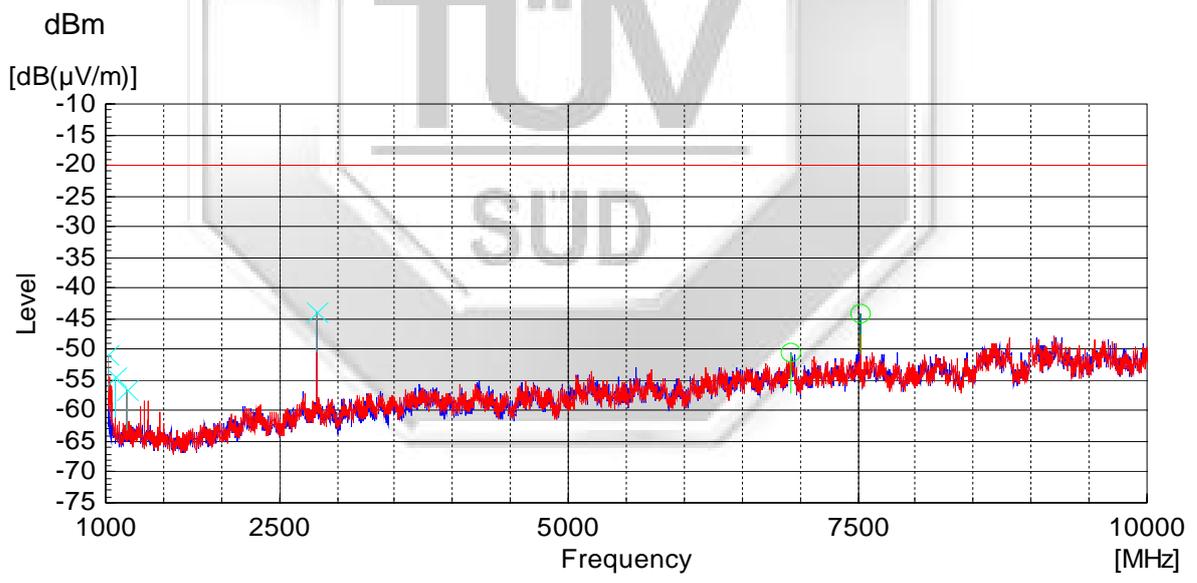
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                          |                      |             |
|------------------|--------------------------|----------------------|-------------|
| Operating Mode   | Transmit                 | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                   | Relative Humidity    | 60%         |
| Test Distance    | 3m                       | Atmospheric Pressure | 1030mbar    |
| Modulation       | Analog 12.5kHz Max Power | Tested By            | Lim Kay Tak |

**939.9875MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1016.646        | -50.8           | -20.0       |
| 1079.902        | -54.5           | -20.0       |
| 1187.549        | -56.5           | -20.0       |
| 2819.998        | -43.9           | -20.0       |
| 6920.541        | -50.5           | -20.0       |
| 7519.809        | -44.3           | -20.0       |



**939.9875MHz (Analog) 1GHz – 10GHz**



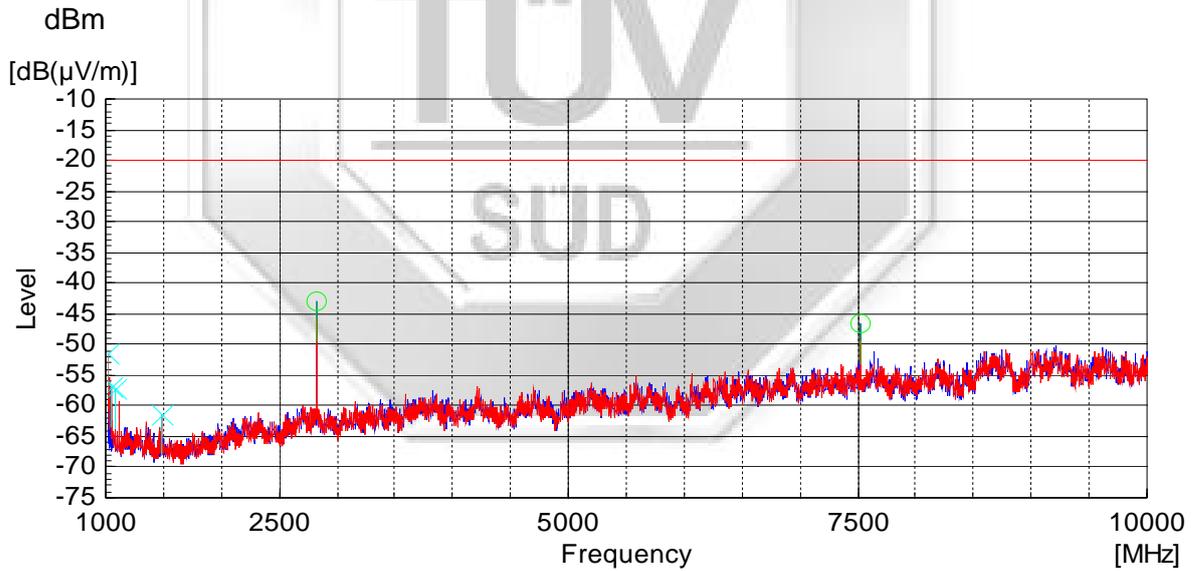
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                           |                      |             |
|------------------|---------------------------|----------------------|-------------|
| Operating Mode   | Transmit                  | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                    | Relative Humidity    | 60%         |
| Test Distance    | 3m                        | Atmospheric Pressure | 1030mbar    |
| Modulation       | Digital 12.5kHz Max Power | Tested By            | Lim Kay Tak |

**940.5MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1017.7560       | -51.3           | -20.0       |
| 1055.4880       | -57.0           | -20.0       |
| 1081.0120       | -57.0           | -20.0       |
| 1482.7430       | -61.5           | -20.0       |
| 2821.1080       | -42.9           | -20.0       |
| 7524.2480       | -46.7           | -20.0       |



**940.5MHz (Digital) 1GHz - 10GHz**



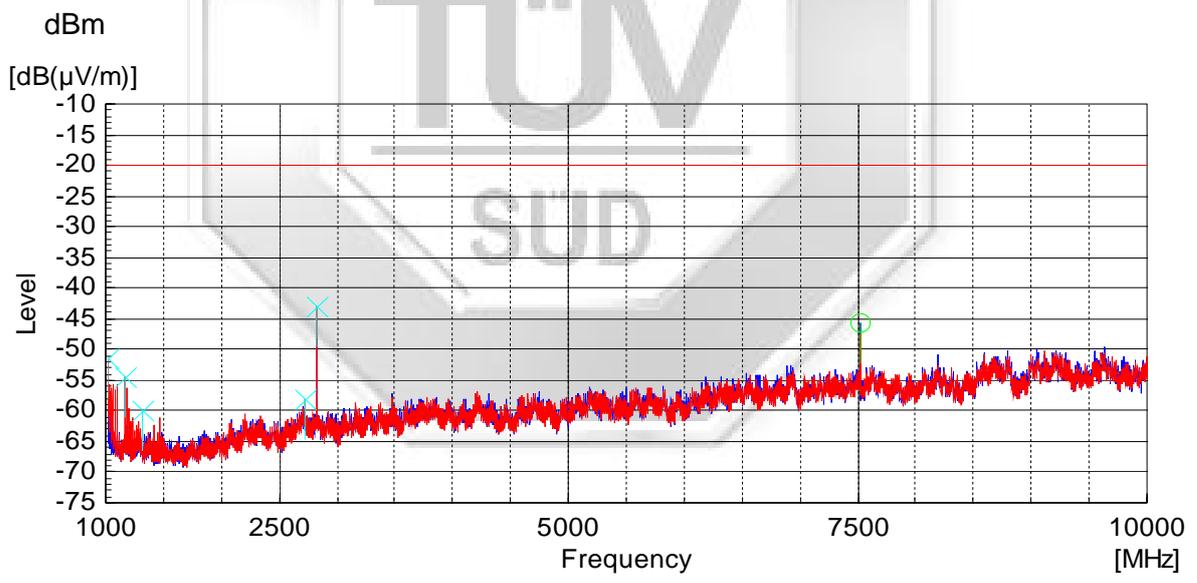
**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

**47 CFR FCC Part 90.210 Radiated Transmitter Unwanted Emission Results**

|                  |                          |                      |             |
|------------------|--------------------------|----------------------|-------------|
| Operating Mode   | Transmit                 | Temperature          | 24°C        |
| Test Input Power | 7.4Vdc                   | Relative Humidity    | 60%         |
| Test Distance    | 3m                       | Atmospheric Pressure | 1030mbar    |
| Modulation       | Analog 12.5kHz Max Power | Tested By            | Lim Kay Tak |

**940.5MHz**

| Frequency (MHz) | Amplitude (dBm) | Limit (dBm) |
|-----------------|-----------------|-------------|
| 1017.756        | -51.4           | -20.0       |
| 1167.696        | -54.5           | -20.0       |
| 1322.569        | -60.0           | -20.0       |
| 2720.366        | -58.0           | -20.0       |
| 2821.477        | -42.9           | -20.0       |
| 7524.075        | -45.7           | -20.0       |



**940.5MHz (Analog) 1GHz - 10GHz**



**RADIATED TRANSMITTER UNWANTED EMISSION TEST**

Notes

1. All possible modes of operation were investigated. Only the worst case emissions measured were reported. All other emissions were relatively insignificant.
2. The transmitting antenna was found to be in the worst case condition when it was orientated in a vertical position.
3. A "positive" margin indicates a PASS as it refers to the margin present below the limit line at the particular frequency. Conversely, a "negative" margin indicates a FAIL.
4. EMI receiver Resolution Bandwidth (RBW) and Video Bandwidth (VBW) settings:  
>1GHz  
RBW: 1MHz                      VBW: 1MHz
5. Radiated Transmitter Unwanted Emissions Test Measurement Uncertainty  
All test measurements carried out are traceable to national standards. The uncertainty of the measurement at a confidence level of 95%, with a coverage factor of 2 is  $\pm 4.0\text{dB}$ .





Please note that this Report is issued under the following terms :

1. This report applies to the sample of the specific product/equipment given at the time of its testing/calibration. The results are not used to indicate or imply that they are applicable to other similar items. In addition, such results must not be used to indicate or imply that TÜV SÜD PSB approves, recommends or endorses the manufacturer, supplier or user of such product/equipment, or that TÜV SÜD PSB in any way "guarantees" the later performance of the product/equipment. Unless otherwise stated in this report, no tests were conducted to determine long term effects of using the specific product/equipment.
2. The sample/s mentioned in this report is/are submitted/supplied/manufactured by the Client. TÜV SÜD PSB therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture, consignment or any information supplied.
3. Nothing in this report shall be interpreted to mean that TÜV SÜD PSB has verified or ascertained any endorsement or marks from any other testing authority or bodies that may be found on that sample.
4. This report shall not be reproduced wholly or in parts and no reference shall be made by the Client to TÜV SÜD PSB or to the report or results furnished by TÜV SÜD PSB in any advertisements or sales promotion.
5. Unless otherwise stated, the tests were carried out in TÜV SÜD PSB Pte Ltd, No.1 Science Park Drive Singapore 118221.

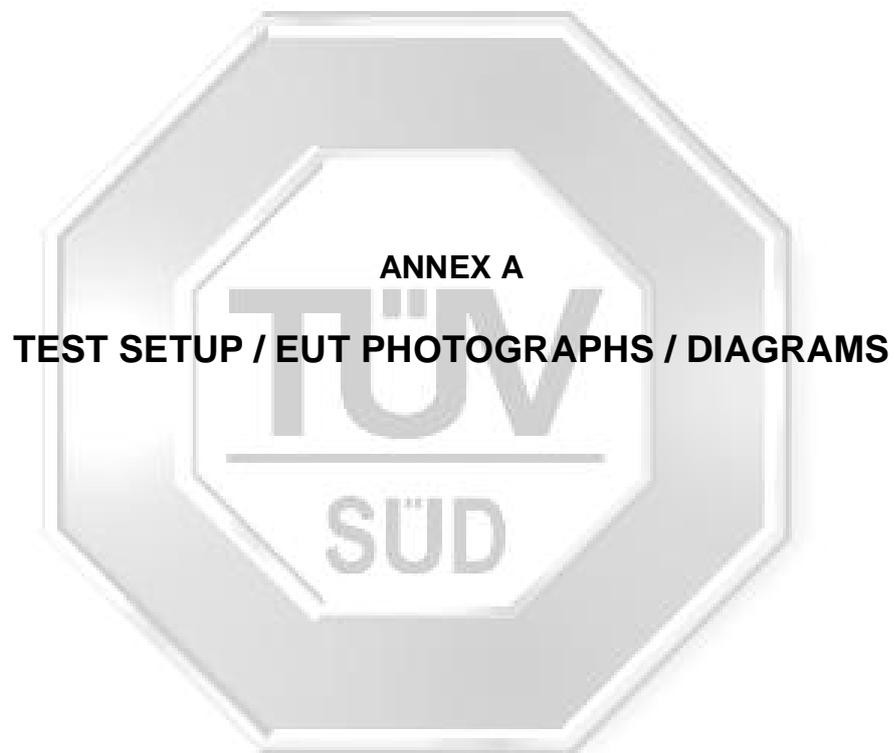
July 2011





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**ANNEX A TEST SETUP / EUT PHOTOGRAPHS / DIAGRAMS**



**ANNEX A TEST SETUP / EUT PHOTOGRAPHS / DIAGRAMS**

**TEST SETUP**



**Transmitter Spurious Emissions (Radiated) Test Setup (Front View)**



**Transmitter Spurious Emissions (Radiated) Test Setup (Rear View)**

ANNEX A TEST SETUP / EUT PHOTOGRAPHS / DIAGRAMS

EUT PHOTOGRAPHS



7191120912

Front View



7191120912

Rear View



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**ANNEX B USER MANUAL TECHNICAL DESCRIPTION BLOCK & CIRCUIT DIAGRAMS**





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**ANNEX C FCC, IC LABELS & POSITIONS**





**ANNEX D TEST SITE DESCRIPTION**

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**ANNEX D TEST SITE DESCRIPTION**

Radiated Emission Test Site Description

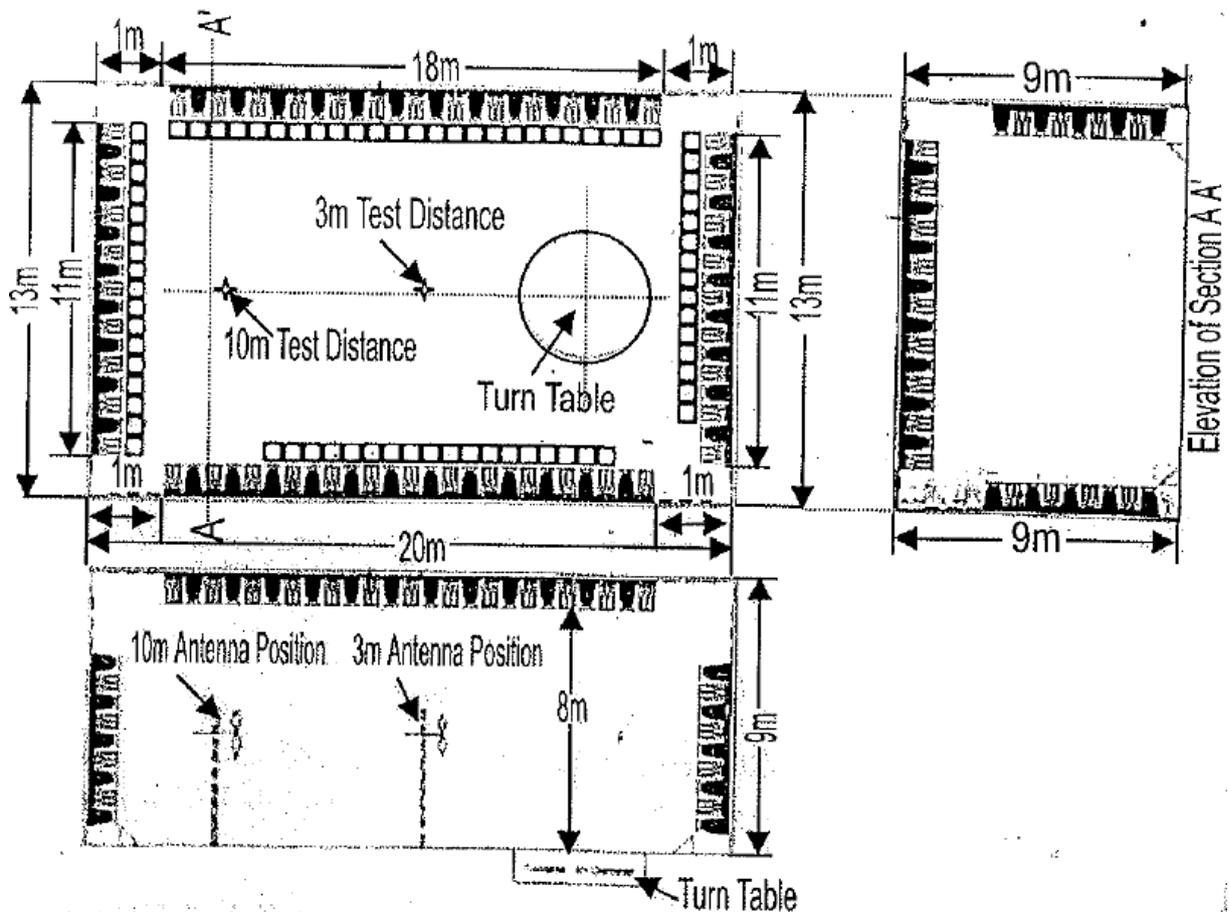
The Radiated Emission test facility consists of a RF-shielded enclosure (Model: 04" x 07") manufactured by Lindgren whose dimensions are shown below. The exterior of the chamber is made of rigid steel panels while the interior is covered with RF absorbing panels on the 4 walls and ceiling. The steel-clad ground plane is covered with vinyl flooring.

The Turntable is mounted flushed with the chamber floor and is driven by a pneumatic motor, which is capable of supporting 4,000 kg.

The Boresight Antenna mast is driven by a pneumatic motor with heights variation from 1m- 4m for both vertical and horizontal polarity and with tilt capability.

Both turntable and antenna mast in the chamber are controlled by the System Controller stationed outside the chamber.

The physical layout of the chamber is show below:



**ANNEX D TEST SITE DESCRIPTION**

Conducted Emission Test Site Description

The Conducted Emission facility consists of an RF-shielded enclosure measuring 4.3m x 3.7m x 2.45m manufactured by Universal Shielding Corporation. The Conducted Emission data were taken using two LISNs.

The physical layout of the test site is show below:

