

TEST REPORT

of

FCC Part 15 Subpart C §15.247
IC RSS-247 Issue 3 and RSS-Gen Issue 5

FCC ID: BEJTFBMEIBN3EU
IC Certification: 2703H-TFBMEIBN3EU

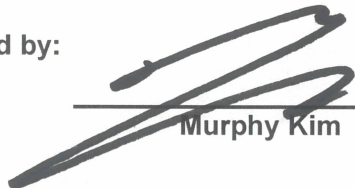
Equipment Under Test : Telematics
Model Name : TFBMEIBN3EU
Variant Model Name(s) : Refer to page 3
Applicant : FCC: LG Electronics USA, Inc.
: IC: LG ELECTRONICS INC.
Manufacturer : LG Electronics Co., Ltd.
Date of Receipt : 2023.12.13
Date of Test(s) : 2024.03.04 ~ 2024.08.29
Date of Issue : 2024.08.29

In the configuration tested, the EUT complied with the standards specified above.
This test report does not assure KOLAS accreditation.

- 1) The results of this test report are effective only to the items tested.
- 2) The SGS Korea is not responsible for the sampling, the results of this test report apply to the sample as received.
- 3) This test report cannot be reproduced, except in full, without prior written permission of the Company.
- 4) The data marked ※ in this report was provided by the customer and may affect the validity of the test results.


We are responsible for all the information of this test report except for the data(※) provided by the customer

Tested by:



Murphy Kim

Technical
Manager:



Jinhyoung Cho

SGS Korea Co., Ltd. Gunpo Laboratory

INDEX

Table of Contents

1. General Information -----	3
2. Transmitter Radiated Spurious Emissions and Conducted Spurious Emissions -----	11
3. 6 dB Bandwidth and 99 % Bandwidth -----	68
4. Maximum Peak Conducted Output Power -----	79
5. Power Spectral Density -----	82
6. Antenna Requirement -----	88

1. General Information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)
 - 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
 - 4, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807
 - Designation number: KR0150

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>.

Phone No. : +82 31 688 0901
 Fax No. : +82 31 688 0921

1.2. Details of Applicant

FCC Applicant : LG Electronics USA, Inc.
 FCC Address : 111 Sylvan Avenue, North Building, Englewood Cliffs, New Jersey, United States, 07632
 IC Applicant : LG ELECTRONICS INC.
 IC Address : 222, LG-ro, Jinwi-myeon, Pyeongtaek-si, Gyeonggi-do, Korea (Republic of), 451-713
 Contact Person : Kim, David
 Phone No. : +1 201 470 2696

1.3. Details of Manufacturer

Company : LG Electronics Inc.
 Address : 128, Yeoui-daero, Yeongdeungpo-gu, Seoul, Republic of Korea, 07336

1.4. Description of EUT

Kind of Product	Telematics			
Model Name	TFBMEIBN3EU			
Approved Module	FCC ID: BEJTM16FNNABM0 IC Certification: 2703H-TM16FNNABM0			
Variant Model Names	TFBMNINN0EN, TFBMEIBN3FR			
Serial Number	Conducted: #1 Radiated: #2			
Power Supply	DC 12 V			
Frequency Range	2 412 MHz ~ 2 462 MHz (11b/11g/11n_HT20/11ac_VHT20) 2 422 MHz ~ 2 452 MHz (11n_HT40/11ac_VHT40)			
Modulation Technique	DSSS, OFDM			
Number of Channels	11 channels (11b/11g/11n_HT20/11ac_VHT20) 7 channels (11n_HT40/11ac_VHT40)			
Antenna Type	Ant. 1: Pattern	Ant. 2: Pattern	Ant. 3: Chip	Ant. 4: Pattern
Antenna Gain *	Ant. 1	Ant. 2	Ant. 3	Ant. 4
	5.06 dB i	4.96 dB i	1.40 dB i	2.90 dB i
H/W Version	Rev. C3			
S/W Version	v010.038.045			
FVIN	N/A			

1.5. Test Equipment List

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due
Signal Generator	R&S	SMA100B	106887	Oct. 06, 2023	Annual	Oct. 06, 2024
Spectrum Analyzer	R&S	FSV30	103453	Oct. 31, 2023	Annual	Oct. 31, 2024
Spectrum Analyzer	Agilent	N9020A	MY53421758	Sep. 01, 2023	Annual	Sep. 01, 2024
Attenuator	AEROFLEX / INMET	40AH2W-10	40G-1	Jun. 19, 2024	Annual	Jun. 19, 2025
High Pass Filter	Wainwright Instrument GmbH	WHKX3.0/18G-10SS	21	Jun. 07, 2024	Annual	Jun. 07, 2025
High Pass Filter	Wainwright Instrument GmbH	WHNX7.5/26.5G-6SS	15	Jun. 07, 2024	Annual	Jun. 07, 2025
Low Pass Filter	Mini-Circuits	NLP-1200+	V 8979400903-2	Feb. 07, 2024	Annual	Feb. 07, 2025
Power Sensor	R&S	NRP-Z81	100669	May 17, 2024	Annual	May 17, 2025
DC Power Supply	R&S	HMP2020	022802107	Oct. 31, 2023	Annual	Oct. 31, 2024
Preamplifier	H.P.	8447F	2944A03909	Aug. 09, 2024	Annual	Aug. 09, 2025
Signal Conditioning Unit	R&S	SCU-18F	101058	Dec. 07, 2023	Annual	Dec. 07, 2024
Preamplifier	TESTEK	JS44-18004000-35-8P	1546891	Oct. 06, 2023	Annual	Oct. 06, 2024
Loop Antenna	Schwarzbeck Mess-Elektronik	FMZB 1519	1519-039	Aug. 21, 2023	Biennial	Aug. 21, 2025
Bilog Antenna	Schwarzbeck Mess-Elektronik	VULB 9163	9163-396	Apr. 02, 2024	Biennial	Apr. 02, 2026
Horn Antenna	R&S	HF906	100326	Feb. 19, 2024	Annual	Feb. 19, 2025
Horn Antenna	Schwarzbeck Mess-Elektronik	BBHA 9170	BBHA9170223	Oct. 10, 2023	Annual	Oct. 10, 2024
Test Receiver	R&S	ESU26	100109	Jan. 16, 2024	Annual	Jan. 16, 2025
Turn Table	Innco systems GmbH	DS 1200 S	N/A	N.C.R.	N/A	N.C.R.
Controller	Innco systems GmbH	CONTROLLER CO3000-4P	CO3000/963/383 30516/L	N.C.R.	N/A	N.C.R.
Antenna Mast	Innco systems GmbH	MA4640-XP-ET	MA4640/536/383 30516/L	N.C.R.	N/A	N.C.R.
Anechoic Chamber	SY Corporation	L × W × H (9.6 m × 6.4 m × 6.6 m)	N/A	N.C.R.	N/A	N.C.R.
Coaxial Cable	RFONE	NMST-13A26-NMST-5 m	TPC2402190004	Apr. 03, 2024	Semi-Annual	Oct. 03, 2024
Coaxial Cable	Qualwave Inc.	NMST-13A26-NMST-10 m	TPC2402190001	Apr. 03, 2024	Semi-Annual	Oct. 03, 2024
Coaxial Cable	RFONE	PL360P-292M292M-1.5M-A	20200324002	Apr. 12, 2024	Semi-Annual	Oct. 12, 2024

Note;

For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

1.6. Declaration by the Manufacturer

- The EUT has four ports (Port1, Port 2, Port 3, Port 4).
- WLAN 2.4G transmits both SISO and MIMO mode.

1.7. Summary of Test Results

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part15 Subpart C, IC RSS-247 Issue 3 and RSS-Gen Issue 5			
Section in FCC	Section in IC	Test Item(s)	Result
15.205(a) 15.209 15.247(d)	RSS-247 Issue 3 5.5 RSS-Gen Issue 5 8.9	Transmitter Radiated Spurious Emissions and Conducted Spurious Emission	Complied
15.247(a)(2)	RSS-247 Issue 3 5.2(a) RSS-Gen Issue 5 6.7	6 dB Bandwidth & 99 % Bandwidth	Complied
15.247(b)(3)	RSS-247 Issue 3 5.4(d)	Maximum Peak Conducted Output Power	Complied
15.247(e)	RSS-247 Issue 3 5.2(b)	Power Spectral Density	Complied
15.207	RSS-Gen Issue 5 8.8	AC Power Line Conducted Emission	N/A ¹⁾

Note;

- 1) The AC power line test was not performed because the EUT use battery power for operation and which do not operate from the AC power lines.

1.8. Test Procedure(s)

The measurement procedures described in the American National Standard of Procedure for Compliance Testing of unlicensed Wireless Devices (ANSI C63.10-2013) and the guidance provided in KDB 558074 D01 15.247 Meas Guidance v05r02 were used in the measurement of the DUT.

1.9. Sample Calculation

Where relevant, the following sample calculation is provided:

1.9.1. Conducted Test

$$\text{Offset value (dB)} = \text{Attenuator (dB)} + \text{Cable loss (dB)}$$

1.9.2. Radiation Test

$$\begin{aligned} &\text{Field strength level (dB}\mu\text{V/m)} \\ &= \text{Measured level (dB}\mu\text{V)} + \text{Antenna factor (dB/m)} + \text{Cable loss (dB)} - \text{Amplifier gain (dB)} + \text{Duty factor (dB)} \end{aligned}$$

1.10. Information of software for test

- Using the software of MobaXterm v23.6 to test for the WLAN.

1.11. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty	
Maximum Peak Conducted Output Power	0.34 dB	
Power Spectral Density	0.64 dB	
99 % Bandwidth	0.02 MHz	
6 dB Bandwidth	0.07 MHz	
Conducted Spurious Emission	0.80 dB	
Radiated Emission, 9 kHz to 30 MHz	H	3.60 dB
	V	3.60 dB
Radiated Emission, below 1 GHz	H	4.60 dB
	V	4.90 dB
Radiated Emission, above 1 GHz	H	3.90 dB
	V	3.80 dB

All measurement uncertainty values are shown with a coverage factor $k = 2$ to indicate a 95 % level of confidence.

1.12. Test Report Revision

Revision	Report Number	Date of Issue	Description
0	F690501-RF-RTL005379	2024.08.29	Initial

1.13. Information of Variant Models

Model Names	*Installation capability on PCB	GNSS	WiFi / BLE	Backup Battery	Model Remark
TFBMEIBN3EU	O	O	O	O	Basic Model
TFBMNINNOEN	X	O	O	X	Variant Model
TFBMEIBN3FR	O	O	O	O	

*Cellular Antennas are mounted on TFBMEIBN3EU, TFBMNINNOEN, TFBMEIBN3FR

O: Popped

X: De-Popped

Note;

All test items performed with basic model

1.14. Device Capabilities

Mode	SISO				CDD/MIMO		
	Port 1	Port 2	Port 3	Port 4	Port 1 + 2	Port 1 + 3	Port 1 + 4
Bluetooth Low Energy	O	X	X	X	X	X	X
WLAN 2 GHz	X	X	O	O	O	O	O
WLAN 5 GHz	X	X	O	O	O	O	O
WLAN 6 GHz	X	X	O	X	O	O	X

Note;

The EUT has four ports and all ports transmit by one WLAN module.

11b mode is transmit only SISO in Port 3 and Port 4.

The Port 1 passes directly through the module and Port 2, Port 3 and Port 4 are distributed through the switch end.

All the conducted test for SISO and MIMO mode were performed at the point of before the switch as the worst case.

Mode	Measurement point			
	Highest Output Power (dBm)			
	Before switch	End of Port 2	End of Port 3	End of Port 4
11g	<u>10.96</u>	8.85	4.80	9.21
11n_HT20/11ac_VHT20	<u>10.68</u>	7.35	1.12	7.58
11n_HT40/11ac_VHT40	<u>10.97</u>	10.75	5.01	10.51

1.15. Worst-Case Configuration and Test Mode

Mode	Highest Output Power (dBm)			
	SISO		MIMO	
	Average	Peak	Average	Peak
11g	6.39	13.15	<u>6.75</u>	<u>13.54</u>
11n_HT20	5.99	13.08	<u>6.36</u>	<u>13.21</u>
11ac_VHT20	5.92	13.05	<u>6.34</u>	<u>13.20</u>
11n_HT40	5.93	12.40	<u>6.95</u>	<u>13.48</u>
11ac_VHT40	6.87	12.07	<u>6.94</u>	<u>13.46</u>

Antenna	Mode	Frequency (MHz)	Highest Output Power (dBm)
MIMO	11n_HT20	2 462	<u>13.21</u>
	11ac_VHT20		13.20
	11n_HT40	2 422	<u>13.48</u>
	11ac_VHT40		13.46

Mode	Bandwidth (MHz)	Data rate with highest output power
11b	20	1 Mbps
11g	20	6 Mbps
11n_HT20	20	MCS0
11n_HT40	40	MCS0

*For duplicate test items among 11n_HT20, HT40, 11ac_VHT20 and VHT40 mode, the test mode with the highest power level was tested.

MIMO mode conducted output power is higher than SISO mode. Therefore, all the tests (Conducted and Radiated) were performed with MIMO mode.

Radiated emission below 1 GHz was performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

Radiated emission above 1 GHz was performed with the EUT set to transmit Low/Middle/High Channels.

Conducted tests were performed with the EUT set to transmit Low/Middle/High channels with highest output power.

1.16. Duty Cycle of EUT

Regarding to KDB 558074 D01 15.247 Meas Guidance v05r02, 6, the maximum duty cycles of all modes were investigated and set the spectrum analyzer as below;
 Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100.

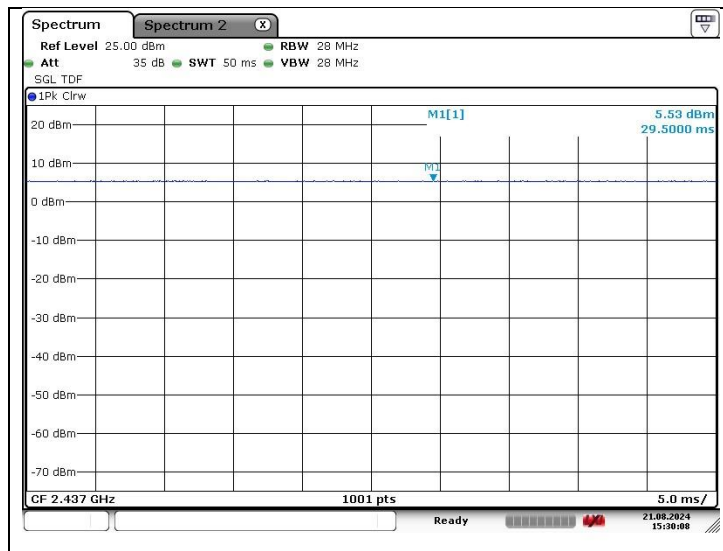
Mode	Data Rate	Duty Cycle (%)	Correction Factor (dB)
11b	1 Mbps	100	-
11g	6 Mbps	98.35	-
11n_HT20	MCS0	99.39	-
11n_HT40	MCS0	99.63	-

Remark;

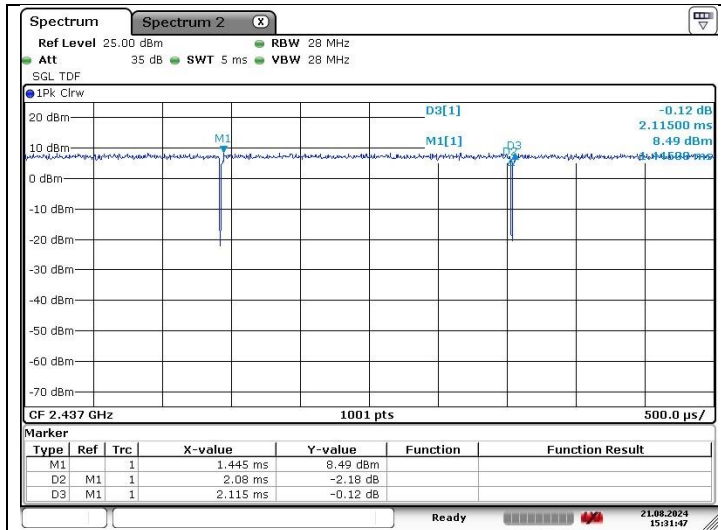
- As measured duty cycles of EUT, all of mode and data rate keeps constant period and are converted to log scale (power averaging) to compensate correction factor to result of average test items.
- Duty Cycle (%) = (Tx on time / Tx on + off time) x 100
- Correction Factor (dB) = 10 log (1 / Duty Cycle)

- Test plots

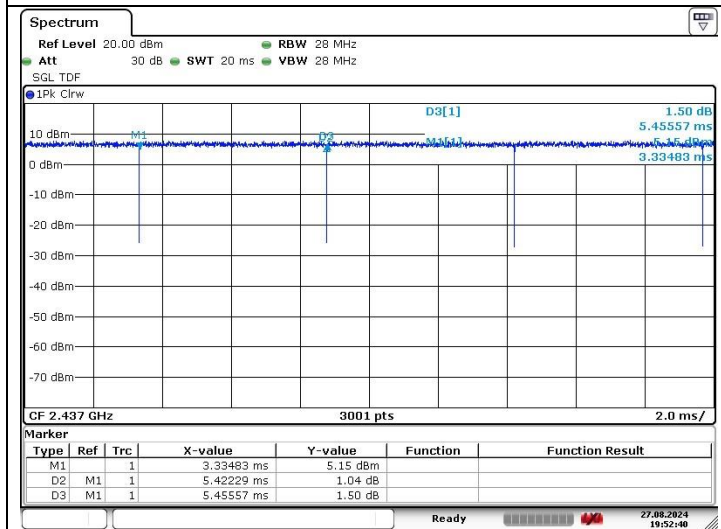
11b



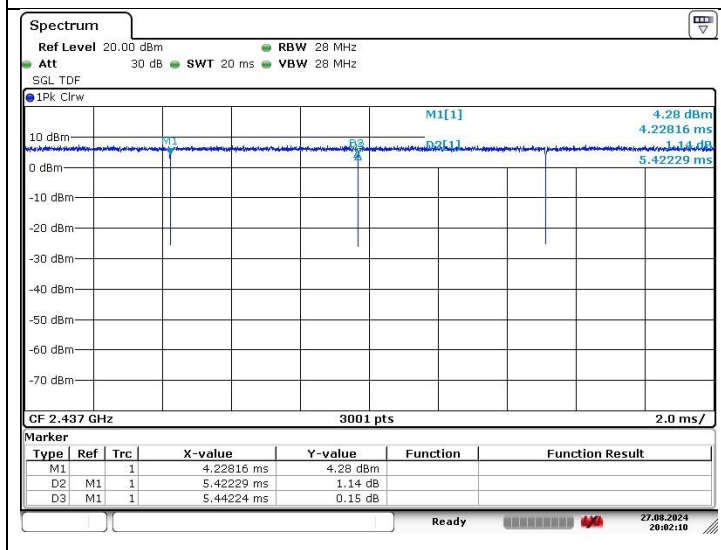
11g



11n_HT20



11n_HT40

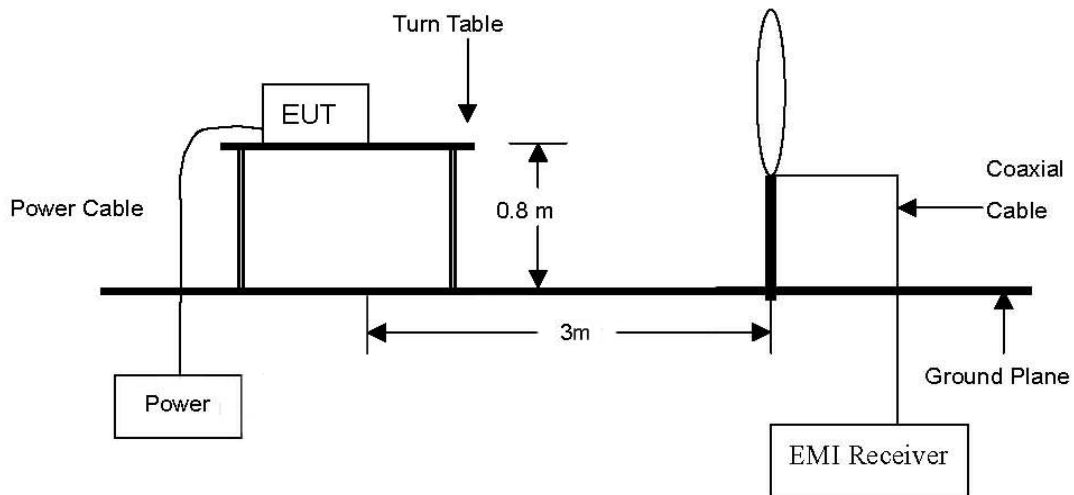


2. Transmitter Radiated Spurious Emissions and Conducted Spurious Emissions

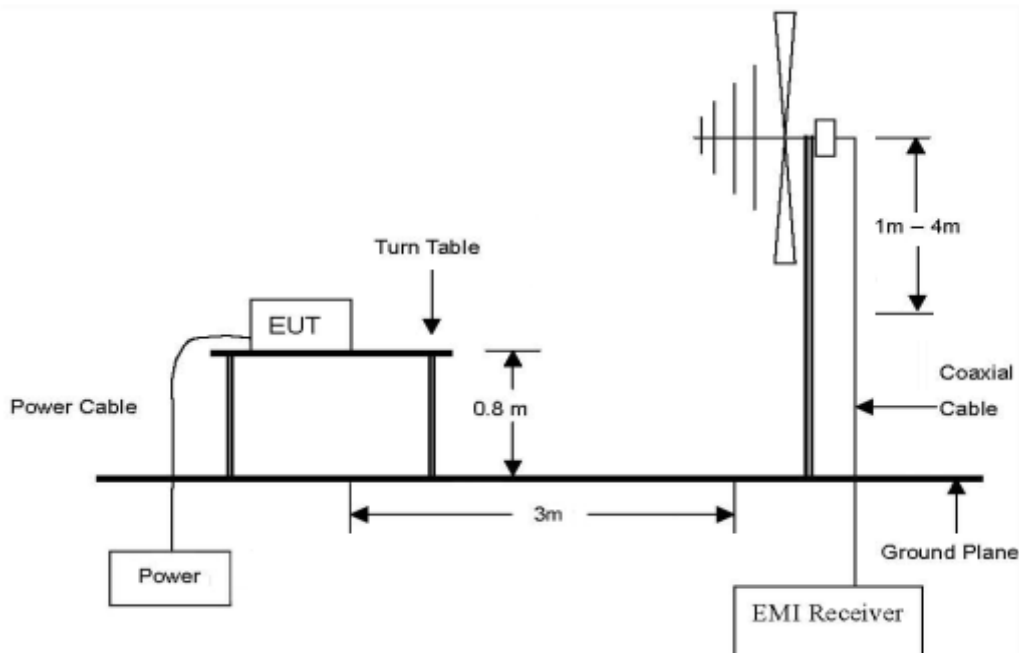
2.1. Test Setup

2.1.1. Transmitter Radiated Spurious Emissions

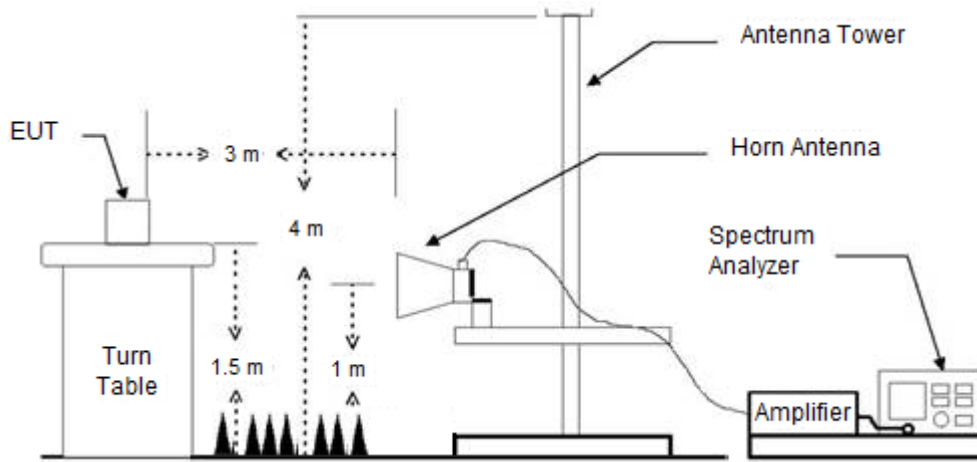
The diagram below shows the test setup that is utilized to make the measurements for emission from 9 kHz to 30 MHz emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission from 30 MHz to 1 GHz emissions.



The diagram below shows the test setup that is utilized to make the measurements for emission. The spurious emissions were investigated from 1 GHz to the 10th harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.



2.1.2. Conducted Spurious Emissions



2.2. Limit

2.2.1. FCC

According to §15.247(d), 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emission which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

According to §15.209(a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$)	Measurement Distance (Meters)
0.009-0.490	$2\ 400/F(\text{kHz})$	300
0.490-1.705	$24\ 000/F(\text{kHz})$	30
1.705-30.0	30	30
30-88	100**	3
88-216	150**	3
216-960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§15.231 and 15.241.

2.2.2. IC

According to RSS-247 Issue 3, 5.5, in any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced 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 that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under section 5.4(d), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

According to RSS-Gen Issue 5, 8.9, except where otherwise indicated in the applicable RSS, radiated emissions shall comply with the field strength limits shown in table 5 and table 6. Additionally, the level of any transmitter unwanted emission shall not exceed the level of the transmitter’s fundamental emission.

Table 5 – General Field Strength Limits at frequencies above 30 MHz

Frequency (MHz)	Field Strength ($\mu\text{V}/\text{m}$ at 3 m)
30-88	100
88-216	150
216-960	200
Above 960	500

Table 6 – General Field Strength Limits at frequencies below 30 MHz

Frequency	Magnetic Field Strength (H-Field) ($\mu\text{A}/\text{m}$)	Measurement Distance (meters)
9-490 kHz ¹	6.37/F (F in kHz)	300
490-1 705 kHz	63.7/F (F in kHz)	30
1.705-30 MHz	0.08	30

Note¹: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.

2.3. Test Procedures

Radiated emissions from the EUT were measured according to the dictates in section 11.11 & 11.12 of ANSI C63.10-2013.

2.3.1. Test Procedures for emission below 30 MHz

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
2. Then antenna is a loop antenna is fixed at one meter above the ground to determine the maximum value of the field strength. Both parallel and perpendicular of the antenna are set to make the measurement.
3. For each suspected emission, the EUT was arranged to its worst case and then the table was turned from 0 degrees to 360 degrees to find the maximum reading.
4. The test-receiver system was set to average or quasi peak detect function and Specified Bandwidth with Maximum Hold Mode.

2.3.2. Test Procedures for emission from above 30 MHz

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site below 1 GHz and 1.5 meters above the ground at a 3 meter anechoic chamber test site above 1 GHz. The table was rotated 360 degrees to determine the position of the highest radiation.
2. During performing radiated emission below 1 GHz, the EUT was set 3 meters away from the interference receiving antenna, which was mounted on the top of a variable-height antenna tower. During performing radiated emission above 1 GHz, the EUT was set 3 meter away from the interference-receiving antenna.
3. The antenna is a bi-log antenna, a horn antenna and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. For measurements below 1 GHz resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.
6. For measurements Above 1 GHz resolution bandwidth is set to 1 MHz, the video bandwidth is set to 3 MHz for peak measurements and as applicable for average measurements.

1. Unwanted Emissions into Non-Restricted Frequency Bands

- The Reference Level Measurement refer to section 11.11.2

Set analyzer center frequency to DTS channel center frequency, SPAN ≥ 1.5 times the DTS bandwidth, the RBW = 100 kHz and VBW $\geq 3 \times$ RBW, Detector = Peak, Sweep time = Auto couple, Trace = Max hold.

- Unwanted Emissions Level Measurement refer to section 11.11.3

Set the center frequency and span to encompass frequency range to be measured, the RBW = 100 kHz and VBW $\geq 3 \times$ RBW, Detector = Peak, Sweep time = Auto couple, Trace = Max hold.

2. Unwanted Emissions into Restricted Frequency Bands

- Peak Power measurement procedure refer to section 11.12.2.4

Set RBW = as specified in Table 9, VBW $\geq 3 \times$ RBW, Detector = Peak, Sweep time = auto, Trace = Max hold.

Table 9 – RBW as a function of frequency

Frequency	RBW
9 kHz to 150 kHz	200 Hz to 300 Hz
0.15 MHz to 30 MHz	9 kHz to 10 kHz
30 MHz to 1 000 MHz	100 kHz to 120 kHz
> 1 000 MHz	1 MHz

If the peak – detected amplitude can be shown to comply with the average limit, then it is not necessary to perform a separate average measurement.

- Average Power measurements procedure refer to section 11.12.2.5.2

The EUT shall be configured to operate at the maximum achievable duty cycle.

Measure the duty cycle D of the transmitter output signal as described in section 11.6.

Set RBW = 1 MHz, VBW $\geq 3 \times$ RBW, Detector = RMS, if span / (# of points in sweep) \leq (RBW/2).

Satisfying this condition may require increasing the number of points in the sweep or reducing the span. If this condition cannot be satisfied then the detector mode shall be set to peak.

Averaging type = power (i.e., RMS).

As an alternative the detector and averaging type may be set for linear voltage averaging.

Some instruments require linear display mode in order to use linear voltage averaging. Log or dB averaging shall not be used. Sweep time = auto, Perform a trace average of at least 100 traces.

A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:

- 1) If power averaging (rms) mode was used in step f), then the applicable correction factor is $[10 \log (1 / D)]$, where D is the duty cycle.
- 2) If a specific emission is demonstrated to be continuous (D \geq 98%) rather than turning ON and OFF with the transmit cycle, then no duty cycled correction is required for that emission.

3. Definition of DUT Axis.

The radiation test of the EUT was investigated in three orthogonal orientations X, Y, and Z described in the test setup photo. All radiated testing of EUT was performed with worst case axis.

2.3.3. Test Procedures for Conducted Spurious Emissions

Per the guidance of ANSI C63.10-2013, section 11.11.1 & 11.11.2 & 11.11.3, the reference level for out of band emissions is established from the plots of this section since the band edge emissions are measured with a RBW of 100 kHz. This reference level is then used as the limit in subsequent plots for out of band spurious emissions shown in section 2.4.3. The limit for out of band spurious emission at the band edge is 20 dB below the fundamental emission level measured in a 100 kHz bandwidth.

1. Conducted Emissions at Band Edge

- The Measurement refer to section 11.11.3

Set the center frequency and span to encompass frequency range to be measured, the RBW = 100 kHz and VBW $\geq 3 \times$ RBW, Detector = Peak, Sweep time = Auto couple, Trace mode = Max hold, The trace was allowed to stabilize.

2. Conducted Spurious Emissions

- The Measurement refer to section 11.11.3

Start frequency was set to 9 kHz and stop frequency was set to 25 GHz (separated into two plots per channel), RBW = 1 MHz, VBW $\geq 3 \times$ RBW, Detector = Peak, Sweep time = Auto couple, Trace = Max hold, The trace was allowed to stabilize.

3. TDF function

- For plots showing conducted spurious emissions from 9 kHz to 25 GHz, all path loss of wide frequency range was investigated and compensated to spectrum analyzer as TDF function.
So, the reading values shown in plots were final result.

4. Multiple outputs of a transmitter or form multiple transmitters

- According to KDB 662911 D01 Multiple Transmitter Output v02r01, when testing out-of-band and spurious emissions against relative emission limits, test may be performed on each output individually without summing or adding $10 \log(N_{ANT})$ if the measurements are made relative to the in-band emissions on the individual outputs.

2.4. Test Results

Ambient temperature : (23 ± 1) °C
 Relative humidity : 47 % R.H.

2.4.1. Radiated Spurious Emission below 1 000 MHz

The frequency spectrum from 9 MHz to 1 000 MHz was investigated. All reading values are peak values.

- SISO

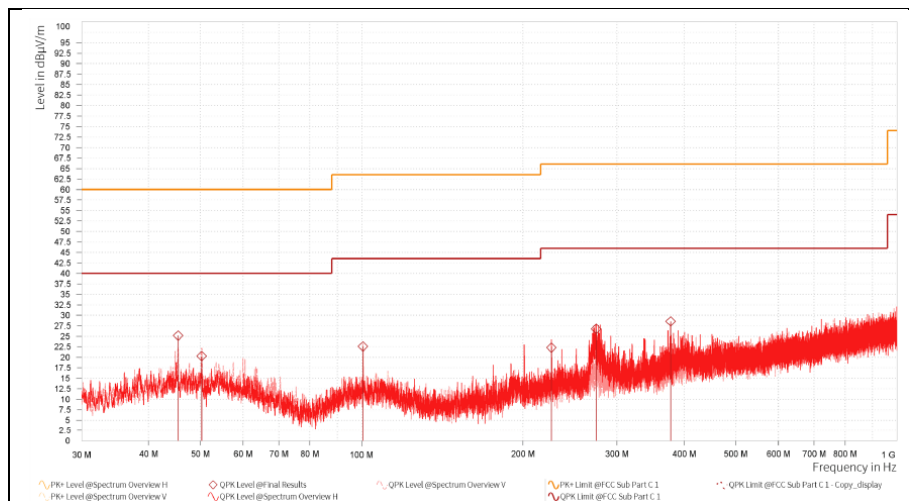
Ant. 3

Radiated Emissions			Ant Pol.	Correction (dB/m)	Total Actual (dBμV/m)	Limit	
Frequency (MHz)	Reading (dBμV)	Detect Mode				Limit (dBμV/m)	Margin (dB)
45.39	32.52	Quasi Peak	V	-7.35	25.17	40.00	14.83
50.27	27.49	Quasi Peak	V	-7.25	20.24	40.00	19.76
273.99	33.60	Quasi Peak	H	-6.85	26.75	46.00	19.25
377.68	33.12	Quasi Peak	H	-4.61	28.51	46.00	17.49
Above 400.00	Not detected	-	-	-	-	-	-

Remark;

- Spurious emissions for all channels and modes were investigated and almost the same below 1 GHz.
- Test from 30 MHz to 1 000 MHz was performed using the software of ELEKTRA(V5.02) from Rohde & Schwarz GmbH & Co. KG.
- Reported spurious emissions are in **11b / 1 Mbps / Low channel** as worst case among other modes.
- Radiated spurious emission measurement as below.
(Actual = Reading + Correction)
(Correction = Antenna Factor + AMP Factor + Cable Loss)
- According to §15.31(o), emission levels are not report much lower than the limits by over 20 dB.

- Test plot



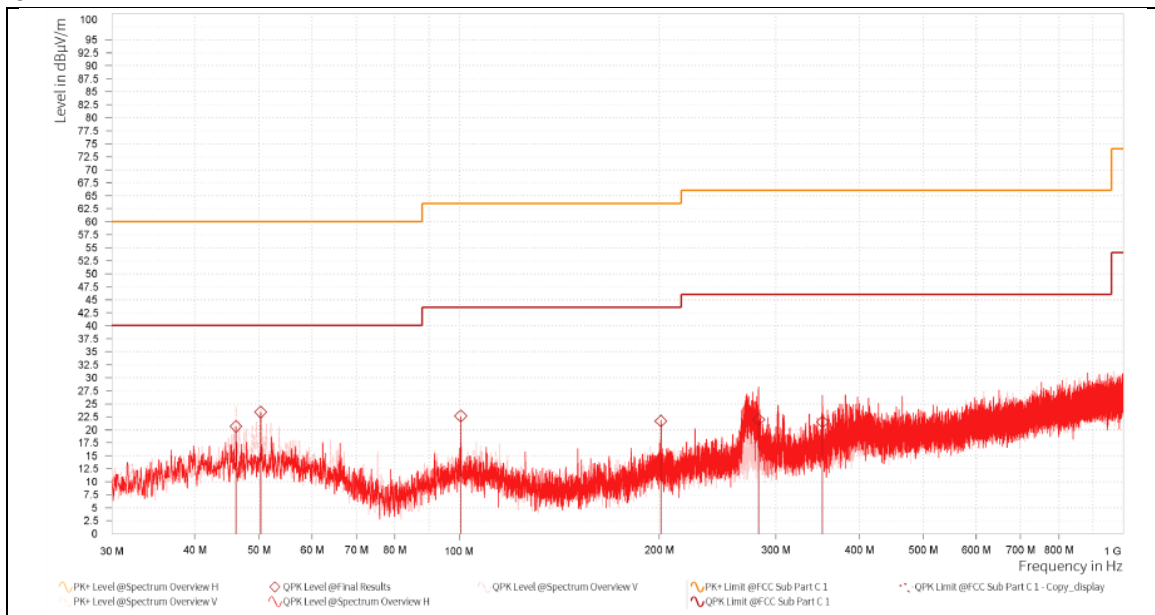
Ant. 4

Radiated Emissions			Ant	Correction (dB/m)	Total	Limit	
Frequency (MHz)	Reading (dBμV)	Detect Mode	Pol.		Actual (dBμV/m)	Limit (dBμV/m)	Margin (dB)
46.13	27.87	Quasi Peak	V	-7.27	20.60	40.00	19.40
50.27	30.60	Quasi Peak	V	-7.25	23.35	40.00	16.65
Above 100.00	Not detected	-	-	-	-	-	-

Remark;

1. Spurious emissions for all channels and modes were investigated and almost the same below 1 GHz.
2. Test from 30 MHz to 1 000 MHz was performed using the software of ELEKTRA(V5.02) from Rohde & Schwarz GmbH & Co. KG.
3. Reported spurious emissions are in **11b / 1 Mbps / Low channel** as worst case among other modes.
4. Radiated spurious emission measurement as below.
(Actual = Reading + Correction)
(Correction = Antenna Factor + AMP Factor + Cable Loss)
5. According to §15.31(o), emission levels are not report much lower than the limits by over 20 dB.

- Test plot



- MIMO(CDD)

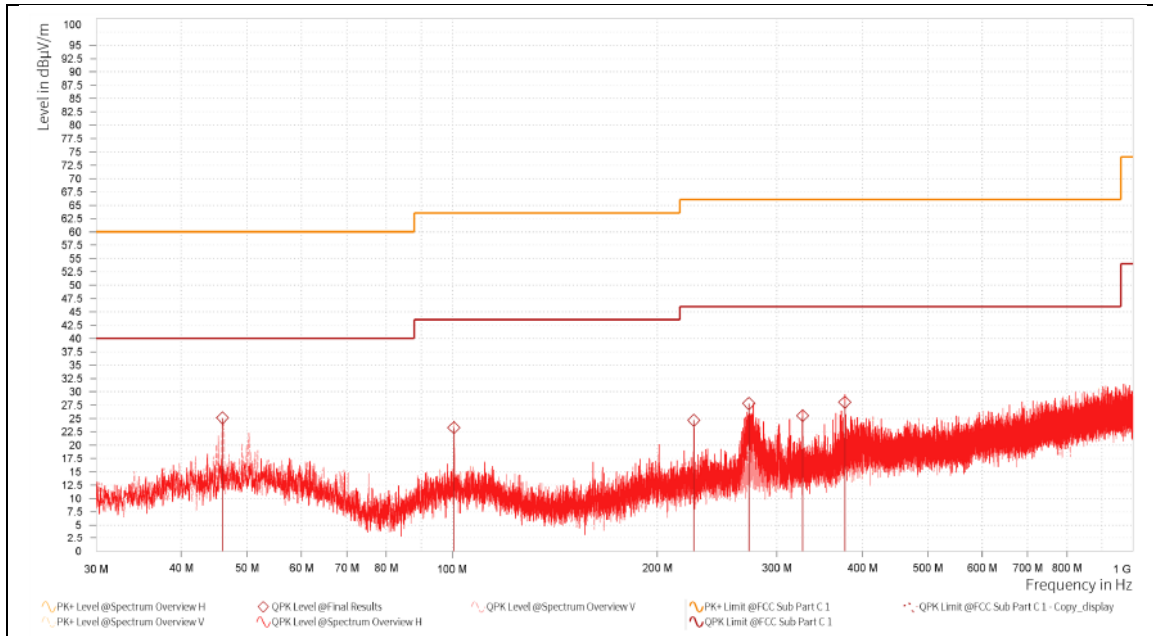
Ant. 1 + Ant. 2

Radiated Emissions			Ant	Correction (dB/m)	Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.		Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
45.97	32.37	Quasi Peak	V	-7.29	25.08	40.00	14.92
272.66	34.70	Quasi Peak	H	-6.93	27.77	46.00	18.23
377.29	32.66	Quasi Peak	H	-4.63	28.03	46.00	17.97
Above 400.00	Not detected	-	-	-	-	-	-

Remark;

1. Spurious emissions for all channels and modes were investigated and almost the same below 1 GHz.
2. Test from 30 MHz to 1 000 MHz was performed using the software of ELEKTRA(V5.02) from Rohde & Schwarz GmbH & Co. KG.
3. Reported spurious emissions are in **11g / 6 Mbps / High channel** as worst case among other modes.
4. Radiated spurious emission measurement as below.
 (Actual = Reading + Correction)
 (Correction = Antenna Factor + AMP Factor + Cable Loss)
5. According to §15.31(o), emission levels are not report much lower than the limits by over 20 dB.

- Test plot



Ant. 1 + Ant. 3

Radiated Emissions			Ant	Correction (dB/m)	Total	Limit	
Frequency (MHz)	Reading (dBμV)	Detect Mode	Pol.		Actual (dBμV/m)	Limit (dBμV/m)	Margin (dB)
46.13	30.29	Quasi Peak	V	-7.27	23.02	40.00	16.98
100.58	32.65	Quasi Peak	V	-9.04	23.61	43.50	19.89
276.80	36.70	Quasi Peak	H	-6.73	29.97	46.00	16.03
Above 300.00	Not detected	-	-	-	-	-	-

Remark;

1. Spurious emissions for all channels and modes were investigated and almost the same below 1 GHz.
2. Test from 30 MHz to 1 000 MHz was performed using the software of ELEKTRA(V5.02) from Rohde & Schwarz GmbH & Co. KG.
3. Reported spurious emissions are in **11g / 6 Mbps / High channel** as worst case among other modes.
4. Radiated spurious emission measurement as below.
(Actual = Reading + Correction)
(Correction = Antenna Factor + AMP Factor + Cable Loss)
5. According to §15.31(o), emission levels are not report much lower than the limits by over 20 dB.

- Test plot



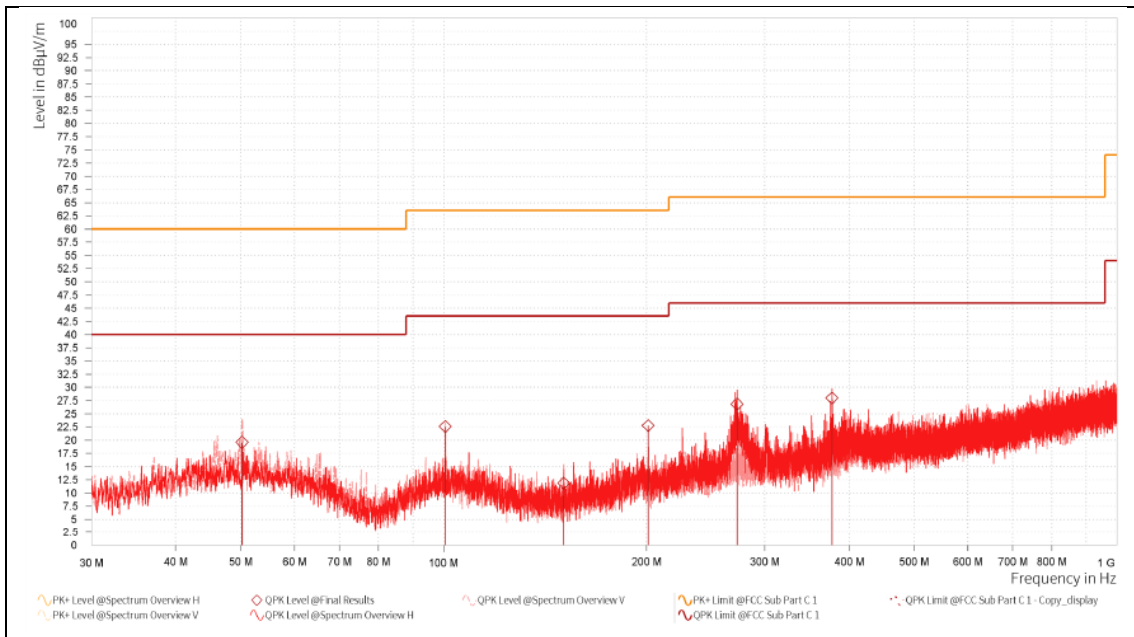
Ant. 1 + Ant. 4

Radiated Emissions			Ant Pol.	Correction (dB/m)	Total Actual (dB μ V/m)	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode				Limit (dB μ V/m)	Margin (dB)
272.76	33.74	Quasi Peak	H	-6.92	26.82	46.00	19.18
377.39	32.57	Quasi Peak	H	-4.63	27.94	46.00	18.06
Above 400.00	Not detected	-	-	-	-	-	-

Remark;

- Spurious emissions for all channels and modes were investigated and almost the same below 1 GHz.
- Test from 30 MHz to 1 000 MHz was performed using the software of ELEKTRA(V5.02) from Rohde & Schwarz GmbH & Co. KG.
- Reported spurious emissions are in **11g / 6 Mbps / High channel** as worst case among other modes.
- Radiated spurious emission measurement as below.
(Actual = Reading + Correction)
(Correction = Antenna Factor + AMP Factor + Cable Loss)
- According to §15.31(o), emission levels are not report much lower than the limits by over 20 dB.

- Test plot



2.4.2. Radiated Spurious Emission above 1 000 MHz

The frequency spectrum above 1 000 MHz was investigated. All reading values are peak and average values.

- SISO

Ant. 3

11b

Low Channel (2 412 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 310.00	20.17	Peak	H	27.96	6.01	54.14	74.00	19.86
*2 310.00	9.82	Average	H	27.96	6.01	43.79	54.00	10.21
*2 388.82	22.28	Peak	H	28.12	6.12	56.52	74.00	17.48
*2 388.94	11.01	Average	H	28.12	6.12	45.25	54.00	8.75
*2 390.00	21.22	Peak	H	28.12	6.12	55.46	74.00	18.54
*2 390.00	10.33	Average	H	28.12	6.12	44.57	54.00	9.43

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

Middle Channel (2 437 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

High Channel (2 462 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 483.50	20.67	Peak	H	28.33	6.24	55.24	74.00	18.76
*2 483.50	10.75	Average	H	28.33	6.24	45.32	54.00	8.68
*2 489.87	22.22	Peak	H	28.36	6.24	56.82	74.00	17.18
*2 492.37	11.03	Average	H	28.37	6.25	45.65	54.00	8.35
*2 500.00	20.49	Peak	H	28.40	6.26	55.15	74.00	18.85
*2 500.00	10.78	Average	H	28.40	6.26	45.44	54.00	8.56

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

Ant. 4

11b

Low Channel (2 412 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 310.00	21.75	Peak	H	27.96	6.01	55.72	74.00	18.28
*2 310.00	9.92	Average	H	27.96	6.01	43.89	54.00	10.11
*2 344.16	22.54	Peak	H	28.16	6.06	56.76	74.00	17.24
*2 356.97	11.16	Average	H	28.19	6.07	45.42	54.00	8.58
*2 390.00	20.32	Peak	H	28.12	6.12	54.56	74.00	19.44
*2 390.00	10.18	Average	H	28.12	6.12	44.42	54.00	9.58

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

Middle Channel (2 437 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

High Channel (2 462 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 483.50	20.59	Peak	H	28.33	6.24	55.16	74.00	18.84
*2 483.50	10.69	Average	H	28.33	6.24	45.26	54.00	8.74
*2 497.86	22.77	Peak	H	28.39	6.26	57.42	74.00	16.58
*2 489.97	10.98	Average	H	28.36	6.25	45.59	54.00	8.41
*2 500.00	21.10	Peak	H	28.40	6.26	55.76	74.00	18.24
*2 500.00	10.65	Average	H	28.40	6.26	45.31	54.00	8.69

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

MIMO(CDD)

Ant. 1 + Ant. 2

11g

Low Channel (2 412 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 310.00	17.17	Peak	H	27.96	6.01	51.14	74.00	22.86
*2 310.00	3.70	Average	H	27.96	6.01	37.67	54.00	16.33
*2 380.16	20.49	Peak	H	28.14	6.10	54.73	74.00	19.27
*2 387.00	4.94	Average	H	28.13	6.11	39.18	54.00	14.82
*2 390.00	17.01	Peak	H	28.12	6.12	51.25	74.00	22.75
*2 390.00	4.51	Average	H	28.12	6.12	38.75	54.00	15.25

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

Middle Channel (2 437 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

High Channel (2 462 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 483.50	18.36	Peak	H	28.33	6.24	52.93	74.00	21.07
*2 483.50	8.72	Average	H	28.33	6.24	43.29	54.00	10.71
*2 490.48	20.61	Peak	H	28.36	6.25	55.22	74.00	18.78
*2 483.98	9.01	Average	H	28.34	6.24	43.59	54.00	10.41
*2 500.00	17.97	Peak	H	28.40	6.26	52.63	74.00	21.37
*2 500.00	8.21	Average	H	28.40	6.26	42.87	54.00	11.13

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

11n_HT20

Low Channel (2 412 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 310.00	16.85	Peak	H	27.96	6.01	50.82	74.00	23.18
*2 310.00	7.78	Average	H	27.96	6.01	41.75	54.00	12.25
*2 388.48	19.53	Peak	H	28.12	6.12	53.77	74.00	20.23
*2 387.70	8.86	Average	H	28.12	6.11	43.09	54.00	10.91
*2 390.00	18.70	Peak	H	28.12	6.12	52.94	74.00	21.06
*2 390.00	8.71	Average	H	28.12	6.12	42.95	54.00	11.05

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

Middle Channel (2 437 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

High Channel (2 462 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 483.50	18.34	Peak	H	28.33	6.24	52.91	74.00	21.09
*2 483.50	8.26	Average	H	28.33	6.24	42.83	54.00	11.17
*2 485.96	20.03	Peak	H	28.34	6.24	54.61	74.00	19.39
*2 485.26	8.97	Average	H	28.34	6.24	43.55	54.00	10.45
*2 500.00	18.62	Peak	H	28.40	6.26	53.28	74.00	20.72
*2 500.00	8.13	Average	H	28.40	6.26	42.79	54.00	11.21

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

11n_HT40

Low Channel (2 422 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 310.00	17.20	Peak	H	27.96	6.01	51.17	74.00	22.83
*2 310.00	7.73	Average	H	27.96	6.01	41.70	54.00	12.30
*2 389.15	19.61	Peak	H	28.12	6.12	53.85	74.00	20.15
*2 389.44	9.17	Average	H	28.12	6.12	43.41	54.00	10.59
*2 390.00	18.32	Peak	H	28.12	6.12	52.56	74.00	21.44
*2 390.00	8.55	Average	H	28.12	6.12	42.79	54.00	11.21

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

Middle Channel (2 437 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

High Channel (2 452 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 483.50	18.28	Peak	H	28.33	6.24	52.85	74.00	21.15
*2 483.50	9.00	Average	H	28.33	6.24	43.57	54.00	10.43
*2 497.04	20.19	Peak	H	28.39	6.25	54.83	74.00	19.17
*2 485.42	9.32	Average	H	28.34	6.24	<u>43.90</u>	54.00	10.10
*2 500.00	17.81	Peak	H	28.40	6.26	52.47	74.00	21.53
*2 500.00	8.61	Average	H	28.40	6.26	43.27	54.00	10.73

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

Ant. 1 + Ant. 3

11g

Low Channel (2 412 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 310.00	18.16	Peak	H	27.96	6.01	52.13	74.00	21.87
*2 310.00	8.03	Average	H	27.96	6.01	42.00	54.00	12.00
*2 365.64	19.88	Peak	H	28.17	6.08	54.13	74.00	19.87
*2 366.12	8.70	Average	H	28.17	6.08	42.95	54.00	11.05
*2 390.00	17.88	Peak	H	28.12	6.12	52.12	74.00	21.88
*2 390.00	8.12	Average	H	28.12	6.12	42.36	54.00	11.64

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

Middle Channel (2 437 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

High Channel (2 462 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 483.50	17.77	Peak	H	28.33	6.24	52.34	74.00	21.66
*2 483.50	8.69	Average	H	28.33	6.24	43.26	54.00	10.74
*2 492.39	20.58	Peak	H	28.37	6.25	55.20	74.00	18.80
*2 486.00	9.00	Average	H	28.34	6.24	43.58	54.00	10.42
*2 500.00	19.42	Peak	H	28.40	6.26	54.08	74.00	19.92
*2 500.00	8.62	Average	H	28.40	6.26	43.28	54.00	10.72

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

11n_HT20

Low Channel (2 412 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 310.00	17.12	Peak	H	27.96	6.01	51.09	74.00	22.91
*2 310.00	7.89	Average	H	27.96	6.01	41.86	54.00	12.14
*2 378.57	19.89	Peak	H	28.14	6.10	54.13	74.00	19.87
*2 383.69	8.79	Average	H	28.13	6.11	43.03	54.00	10.97
*2 390.00	18.04	Peak	H	28.12	6.12	52.28	74.00	21.72
*2 390.00	8.14	Average	H	28.12	6.12	42.38	54.00	11.62

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

Middle Channel (2 437 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

High Channel (2 462 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 483.50	17.53	Peak	H	28.33	6.24	52.10	74.00	21.90
*2 483.50	7.60	Average	H	28.33	6.24	42.17	54.00	11.83
*2 485.18	20.21	Peak	H	28.34	6.24	54.79	74.00	19.21
*2 492.05	9.03	Average	H	28.37	6.25	43.65	54.00	10.35
*2 500.00	18.53	Peak	H	28.40	6.26	53.19	74.00	20.81
*2 500.00	8.49	Average	H	28.40	6.26	43.15	54.00	10.85

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

11n_HT40

Low Channel (2 422 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 310.00	17.53	Peak	H	27.96	6.01	51.50	74.00	22.50
*2 310.00	7.30	Average	H	27.96	6.01	41.27	54.00	12.73
*2 386.11	20.03	Peak	H	28.13	6.11	54.27	74.00	19.73
*2 385.82	8.69	Average	H	28.13	6.11	42.93	54.00	11.07
*2 390.00	17.86	Peak	H	28.12	6.12	52.10	74.00	21.90
*2 390.00	8.26	Average	H	28.12	6.12	42.50	54.00	11.50

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

Middle Channel (2 437 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

High Channel (2 452 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 483.50	18.42	Peak	H	28.33	6.24	52.99	74.00	21.01
*2 483.50	8.69	Average	H	28.33	6.24	43.26	54.00	10.74
*2 494.25	20.16	Peak	H	28.38	6.25	54.79	74.00	19.21
*2 484.04	9.09	Average	H	28.34	6.24	43.67	54.00	10.33
*2 500.00	17.67	Peak	H	28.40	6.26	52.33	74.00	21.67
*2 500.00	8.29	Average	H	28.40	6.26	42.95	54.00	11.05

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

Ant. 1 + Ant. 4

11g

Low Channel (2 412 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 310.00	17.46	Peak	H	27.96	6.01	51.43	74.00	22.57
*2 310.00	7.81	Average	H	27.96	6.01	41.78	54.00	12.22
*2 344.16	20.07	Peak	H	28.16	6.06	54.29	74.00	19.71
*2 376.98	8.70	Average	H	28.15	6.10	42.95	54.00	11.05
*2 390.00	17.97	Peak	H	28.12	6.12	52.21	74.00	21.79
*2 390.00	8.08	Average	H	28.12	6.12	42.32	54.00	11.68

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

Middle Channel (2 437 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

High Channel (2 462 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 483.50	18.23	Peak	H	28.33	6.24	52.80	74.00	21.20
*2 483.50	8.45	Average	H	28.33	6.24	43.02	54.00	10.98
*2 497.83	20.41	Peak	H	28.39	6.26	55.06	74.00	18.94
*2 484.37	8.99	Average	H	28.34	6.24	43.57	54.00	10.43
*2 500.00	18.58	Peak	H	28.40	6.26	53.24	74.00	20.76
*2 500.00	8.08	Average	H	28.40	6.26	42.74	54.00	11.26

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

11n_HT20

Low Channel (2 412 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 310.00	17.75	Peak	H	27.96	6.01	51.72	74.00	22.28
*2 310.00	7.53	Average	H	27.96	6.01	41.50	54.00	12.50
*2 386.86	20.31	Peak	H	28.13	6.11	54.55	74.00	19.45
*2 384.91	8.71	Average	H	28.13	6.11	42.95	54.00	11.05
*2 390.00	18.41	Peak	H	28.12	6.12	52.65	74.00	21.35
*2 390.00	8.54	Average	H	28.12	6.12	42.78	54.00	11.22

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

Middle Channel (2 437 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

High Channel (2 462 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 483.50	18.61	Peak	H	28.33	6.24	53.18	74.00	20.82
*2 483.50	8.58	Average	H	28.33	6.24	43.15	54.00	10.85
*2 490.15	19.68	Peak	H	28.36	6.25	54.29	74.00	19.71
*2 494.50	9.10	Average	H	28.38	6.25	43.73	54.00	10.27
*2 500.00	18.37	Peak	H	28.40	6.26	53.03	74.00	20.97
*2 500.00	8.67	Average	H	28.40	6.26	43.33	54.00	10.67

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

11n_HT40

Low Channel (2 422 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 310.00	17.94	Peak	H	27.96	6.01	51.91	74.00	22.09
*2 310.00	7.40	Average	H	27.96	6.01	41.37	54.00	12.63
*2 378.52	19.84	Peak	H	28.14	6.10	54.08	74.00	19.92
*2 383.63	8.63	Average	H	28.13	6.11	42.87	54.00	11.13
*2 390.00	18.58	Peak	H	28.12	6.12	52.82	74.00	21.18
*2 390.00	8.40	Average	H	28.12	6.12	42.64	54.00	11.36

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

Middle Channel (2 437 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

High Channel (2 452 MHz)

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
*2 483.50	19.20	Peak	H	28.33	6.24	53.77	74.00	20.23
*2 483.50	8.56	Average	H	28.33	6.24	43.13	54.00	10.87
*2 491.68	20.03	Peak	H	28.37	6.25	54.65	74.00	19.35
*2 495.91	9.03	Average	H	28.38	6.25	43.66	54.00	10.34
*2 500.00	18.27	Peak	H	28.40	6.26	52.93	74.00	21.07
*2 500.00	8.18	Average	H	28.40	6.26	42.84	54.00	11.16

Radiated Emissions			Ant.	Correction Factors		Total	Limit	
Frequency (MHz)	Reading (dB μ V)	Detect Mode	Pol.	AF (dB/m)	AMP+CL (dB)	Actual (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
Above 1 000.00	Not detected	-	-	-	-	-	-	-

Remarks;

1. "*" means the restricted band.
2. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
3. Radiated emissions measured in frequency above 1 000 MHz were made with an instrument using peak/average detector mode.
4. Actual = Reading + AF + CL or Reading + AF + AMP + CL.
5. According to § 15.31(o), emission levels are not reported much lower than the limits by over 20 dB.
6. The maximized peak measured value complies with the average limit, to perform an average measurement is unnecessary.

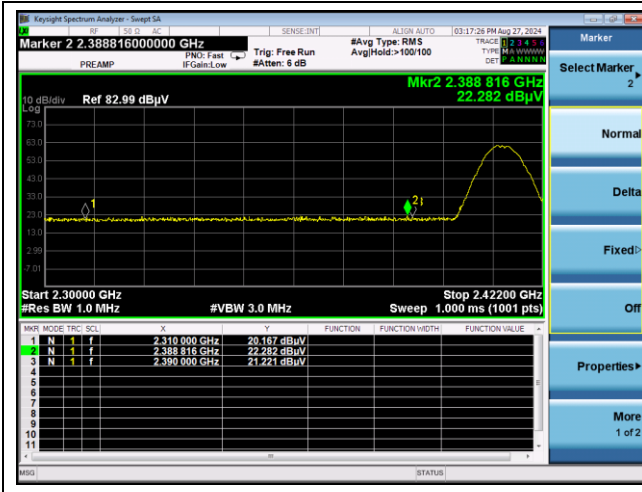
- Test plots

- SISO

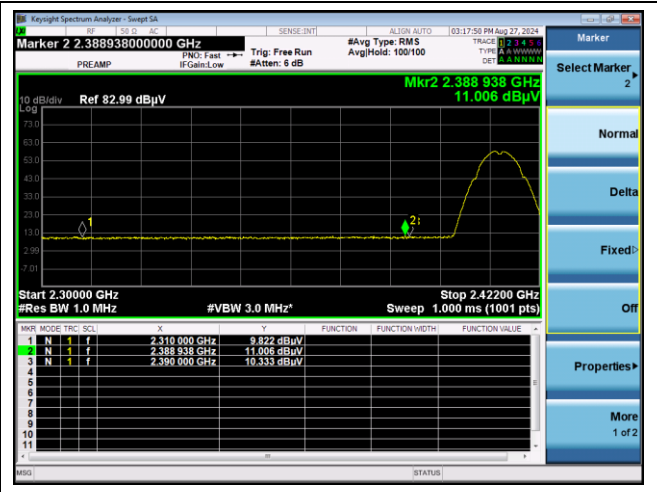
Ant. 3

11b

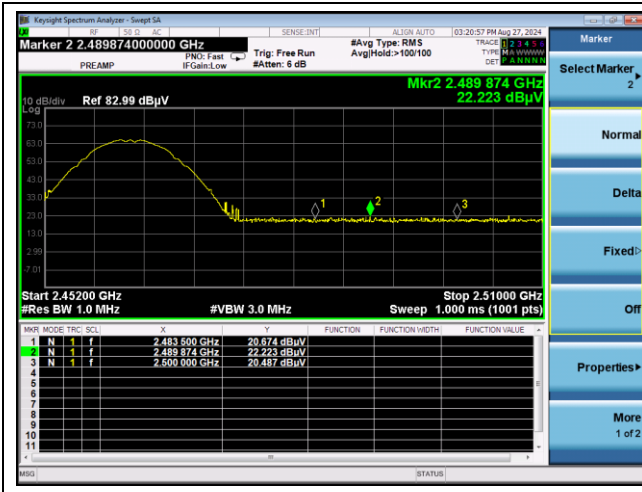
Low channel band edge (Peak)



Low channel band edge (Average)



High channel band edge (Peak)



High channel band edge (Average)

