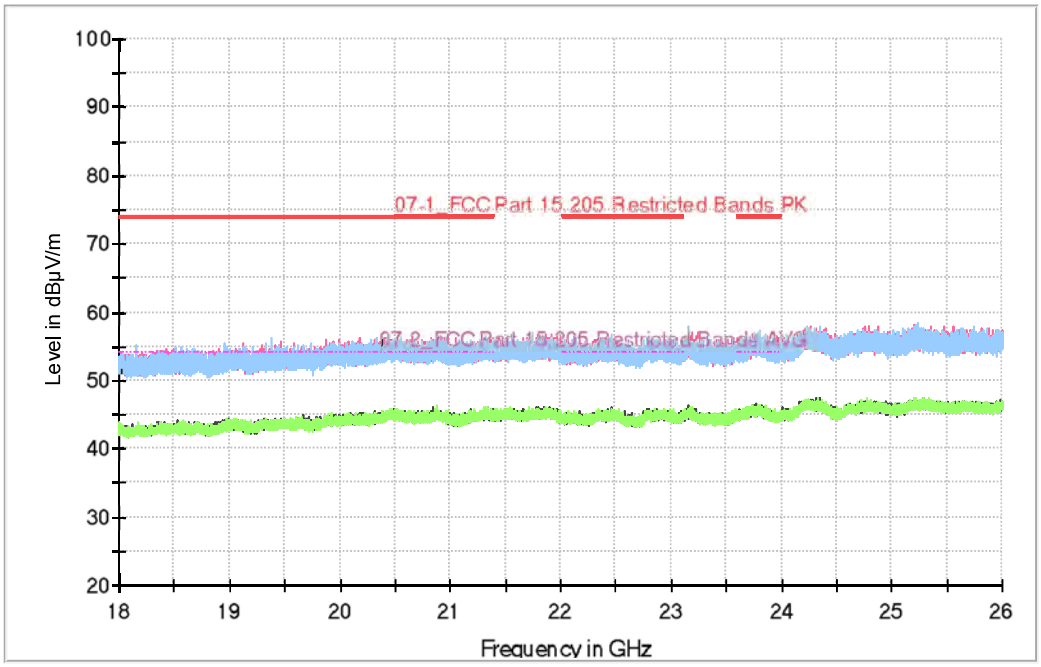
FREQUENCY RANGE 18 – 26 GHz:

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 2 / TX All Channels		

Common Information

EUT/Sample # / OM# : TLF20 4160 3.6 RWLB 277-400V WC3 QB SP
Voltage/Frequency : 277-400 Vac
Port/Terminal under test : Enclosure
Remark/Comment : EUT ON. ZigBee All channels



Preview Result 2V-AVG
Preview Result 2H-AVG
Critical_Freqs AVG
07-1_FCC Part 15.205 Restricted Bands PK
Final_Result PK+
Preview Result 1V-PK+
Preview Result 1H-PK+
Critical_Freqs PK+
07-2_FCC Part 15.205 Restricted Bands AVG
Final_Result AVG

No significant values were measured.

Supplementary information:
- The "Azimuth/Pol/Height" indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The "Margin" is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

5.5.2 TLF20 5000 3.6 RWLB 400V WC2 QB MP

Performed measurements

The following configuration(s) and parameter(s) was/were used for testing:

Port under test	Enclosure (with cabling)		
Test method	X	Semi Anechoic Chamber	
		Open Area Test Site (OATS)	
		In-Situ (at user/manufacturer premises)	
		GTEM cell	
		Other:	---
Test set-up	X	Equipment on a table of 80 cm height	
		Equipment on the floor (insulated from the reference ground plane)	
		Other:	The EUT is installed on a support of 1.5 m above the ground plane.

Technology	Sample	Mode / Modulation	Channel / Freq.	Frequency range	Antenna Polar. / axis	P/F	Sup. Info / Remark
ZigBee	03	OM#02	18 / 2440 MHz	30 – 1000 MHz	H/V	P	(1)

Suplementary information / Remark:

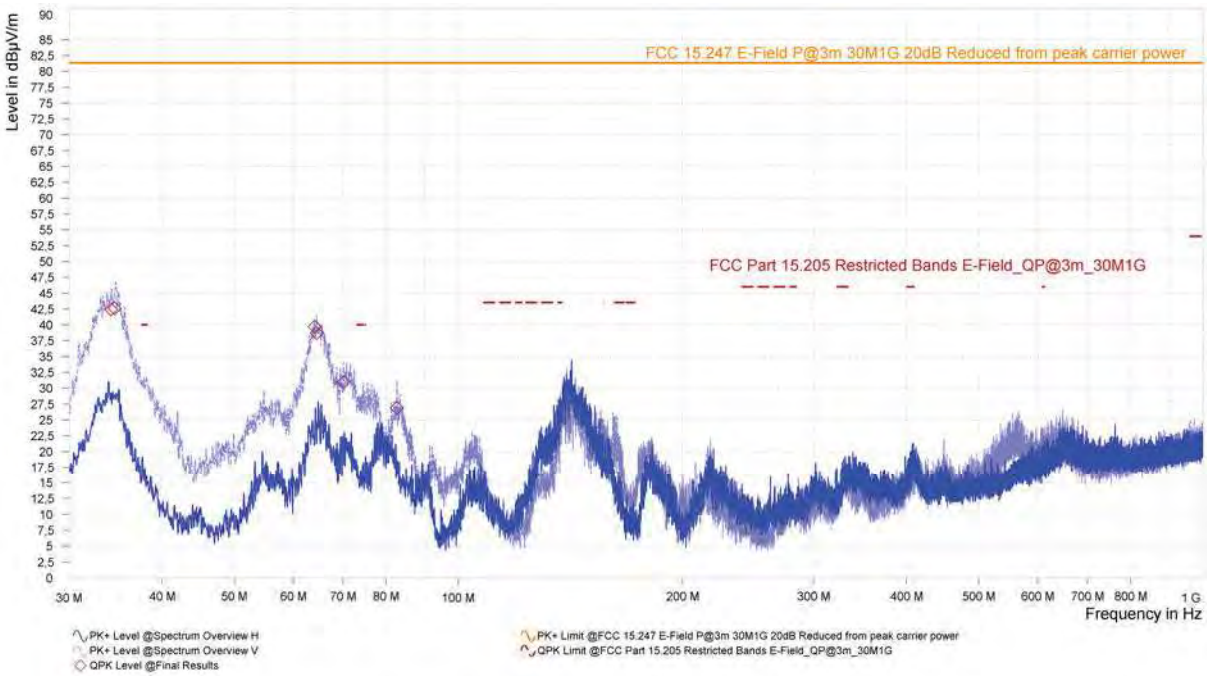
1) The spurious frequencies do not depend on the operating channel.

FREQUENCY RANGE 30 MHz – 1 GHz:

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 2 / TX All Channels		

Common Information

EUT/Sample # / OM# : TLF2.0 5000 3.6 RWLB 400V WC2 QB MP
Voltage/Frequency : 400 Vac
Port/Terminal under test : Enclosure
Remark/Comment : EUT ON. ZigBee Middle CH (2440 MHz)



Final Results

Frequency (MHz)	MaxPeak (dBµV/m)	Height (cm)	Pol
34.163	47.85	1.03	V
34.526	47.84	0.99	V
64.153	44.55	1.43	V
64.526	43.87	1.77	V
70.159	36.70	1.23	V
82.696	32.70	1.63	V

NOTE: As the spurious frequencies are outside the restricted bands as defined in § 15.205 (a), the maximum peak radiated carrier power was measured at 3 m to be 101.34 dBµV/m, and a new limit line of 20 dB below that value was applied, as stated in § 15.247 (d).

Supplementary information:
- The "Azimuth/Pol/Height" indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The "Margin" is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

Performed measurements

The following configuration(s) and parameter(s) was/were used for testing:

Port under test	Enclosure (with cabling)		
Test method	X	Semi Anechoic Chamber	
		Open Area Test Site (OATS)	
		In-Situ (at user/manufacturer premises)	
		GTEM cell	
		Other:	---
Test set-up		Equipment on a table of 80 cm height	
		Equipment on the floor (insulated from the reference ground plane)	
	X	Other:	The EUT is installed on a support of 1.5 m above the ground plane.

Technology	Sample	Mode / Modulation	Channel / Freq.	Frequency range	Antenna Polar. / axis	P/F	Sup. Info / Remark
ZigBee	03	OM#02	18 / 2440 MHz	1 – 3 GHz	H/V	P	---
ZigBee	03	OM#02	18 / 2440 MHz	3 – 18 GHz	H/V	P	---
ZigBee	03	OM#02	18 / 2440 MHz	18 – 26 GHz	H/V	P	(1)

Suplementary information / Remark:

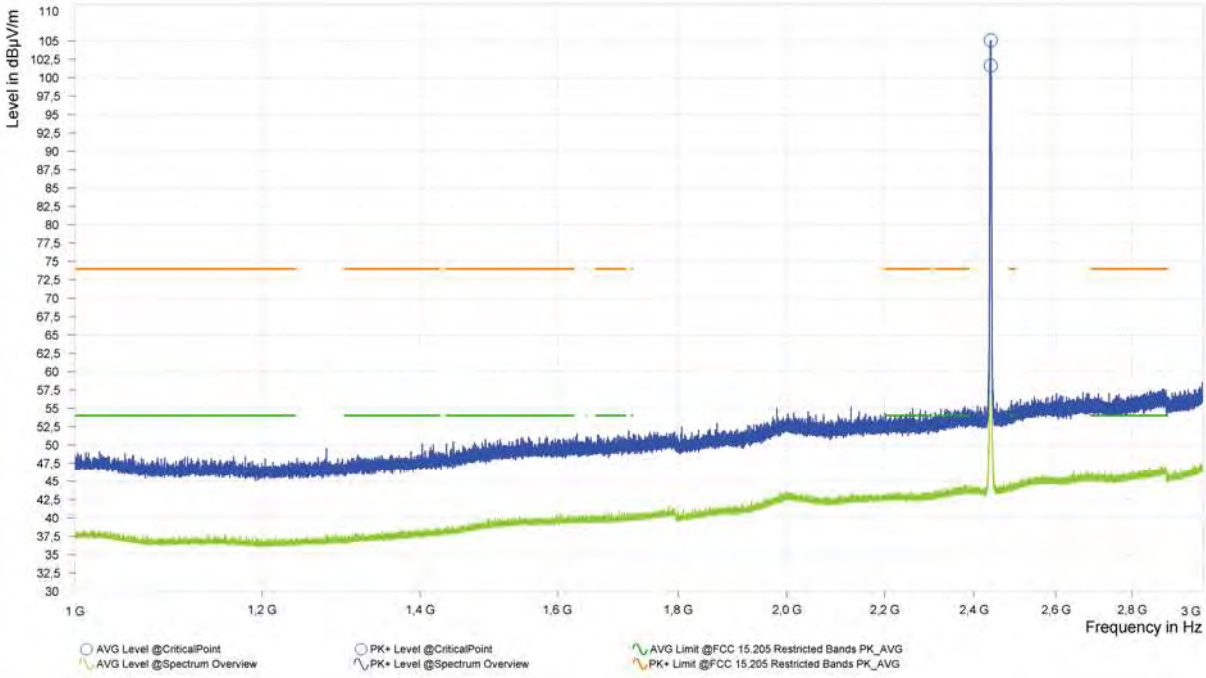
1) The spurious frequencies do not depend on the operating channel.

FREQUENCY RANGE 1 – 3 GHz:

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 2 / TX Channel Middle 2440 MHz		

Common Information

EUT/Sample # / OM# : TLF2.0 5000 3.6 RWLB 400V WC2 QB MP
Voltage/Frequency : 400 Vac
Port/Terminal under test : Enclosure
Remark/Comment : EUT ON. ZigBee Middle CH (2440 MHz)



No significant values were measured.

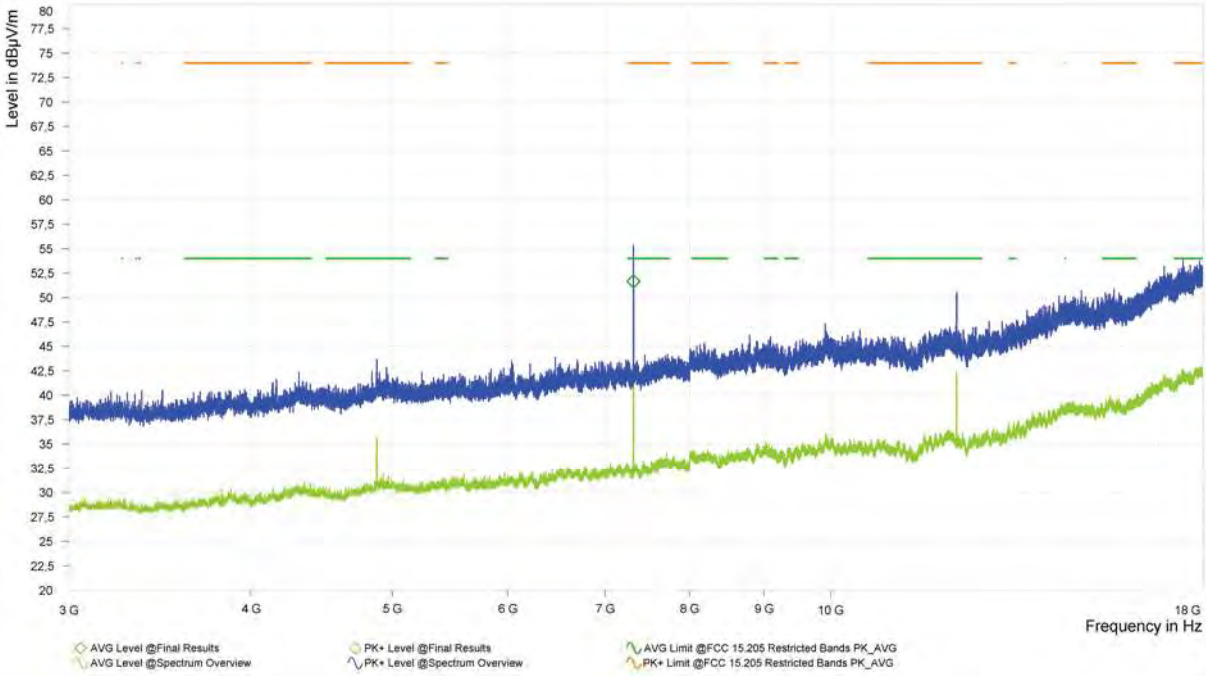
Supplementary information:
- The "Azimuth/Pol/Height" indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The "Margin" is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

FREQUENCY RANGE 3 – 18 GHz:

Measurement data	☒	Horizontal	☒	Vertical
Operating mode / Info		Mode 2 / TX Channel Middle 2440 MHz		

Common Information

EUT/Sample # / OM# : TLF2.0 5000 3.6 RWLB 400V WC2 QB MP
Voltage/Frequency : 400 Vac
Port/Terminal under test : Enclosure
Remark/Comment : EUT ON. ZigBee Middle CH (2440 MHz)



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol
4879.000	43.69	35.81	74.00	54.00	30.31	18.19	1000.00	1.50	V
7321.529	55.19	51.72	74.00	54.00	18.81	2.28	1000.00	2.48	V
12197.000	50.30	41.97	74.00	54.00	23.70	12.03	1000.00	1.50	V

Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

FREQUENCY RANGE 18 – 26 GHz:

Measurement data	☒	**Horizontal**	☒	**Vertical**
Operating mode / Info		Mode 2 / TX All Channels		

Common Information

Test Description: : TLF2.0 5000 3.6 RWLB 400V WC2 QB MP
Operating Conditions: : 400 Vac
Operator Name: : Enclosure
Comment: : EUT ON. ZigBee Middle CH (2440 MHz)

No significant values were measured.

Supplementary information:
- The “Azimuth/Pol/Height” indicates the turn-table azimuth, the antenna polarization and the antenna height where the maximum emissions level was measured.
- The “Margin” is with reference to the emissions limit. A positive number indicates that the emission measurement is below the limit. A negative number indicates that the emission measurement exceeds the limit.

6 ANNEX 1 - MEASUREMENT UNCERTAINTIES

The table(s) below show(s) measurment uncertainties of the EMC test set-ups. The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

Radiated Emission tests	**Uncertainty**
Radiated emissions; 30 MHz – 180 MHz (Horz./Vert)	3.82 dB
Radiated emissions; 180 MHz – 1000 MHz (Horz./Vert)	2.61 dB
Radiated emissions; 1000 MHz – 18000 MHz (Horz./Vert)	2.92 dB
Radiated emissions; 18000 MHz – 26000 MHz (Horz./Vert)	2.15 dB
Conducted Emission tests	**Uncertainty**
Occupied Bandwidth	2.08 %
6 dB Bandwidth	2.08 %
Maximum Output Power and Antenna Gain	0.99 dB
Band-edge emissions compliance	0.89 dB
Power Spectral Density	0.99 dB

7 ANNEX 2: USED EQUIPMENT

Test equipment used - Radiated Spurious Emissions (30 MHz – 1 GHz)				
Equipment	Manufacturer	Model	Dekra ID	Cal. Due
EMI Test Receiver	Rohde & Schwarz	ESU26	126351	2024-52
Anechoic Chamber	Comtest	SAC-5m	129683	2025-13
Coaxial cable (10m)	Huber & Suhner	SUCOFLEX 126EA	134187	2025-51
Antenna	Rohde & Schwarz	HL562E	135981	2025-13
Test-Control Software	Rohde & Schwarz	EMC32 V10.60.20	500005	---
Anechoic Chamber	ETS	SAC-L3m	135615	2026-27
Test-Control Software	Rohde & Schwarz	ELEKTRA 5.01.0	500159	---

Test equipment used - Radiated Spurious Emissions (1 – 18 GHz)				
Equipment	Manufacturer	Model	Dekra ID	Cal. Due
EMI Test Receiver	Rohde & Schwarz	ESU26	126351	2024-52
Anechoic Chamber	Comtest	SAC-5m	129683	2025-13
Coaxial cable (10m)	Huber & Suhner	SUCOFLEX 126EA	134187	2025-51
Double Horn Ridge antenna	Rohde & Schwarz	HF 907	134927	2025-27
Pre-Amplifier (1 - 18 GHz)	BONN	BLMA 1-18-5G	134808	2025-40
Highpass filter	Wainwright Instruments	WHKX10-2700-3000-18000-40SS	132561	2026-10
Coaxial cable (1m)	Huber & Suhner	SUCOFLEX 126EA	134185	2025-40
Test-Control Software	Rohde & Schwarz	EMC32 V10.60.20	500005	---
Anechoic Chamber	ETS	SAC-L3m	135615	2026-27
Test-Control Software	Rohde & Schwarz	ELEKTRA 5.01.0	500159	---

Test equipment used - Radiated Spurious Emissions (18 – 26 GHz)				
Equipment	Manufacturer	Model	Dekra ID	Cal. Due
EMI Test Receiver	Rohde & Schwarz	ESU26	126351	2024-52
Anechoic Chamber	Comtest	SAC-5m	129683	2025-13
Coaxial cable (2m)	Huber & Suhner	SUCOFLEX 102EA	132536	2025-40
Coaxial cable (5m)	Huber & Suhner	SUCOFLEX 102EA	134189	2025-51
Horn antenna	ETS Lindgren	3116C	132585	2026-44
Pre-Amplifier (18 - 40 GHz)	BONN	BLMA 1840-5G	134807	2025-40
Test-Control Software	Rohde & Schwarz	EMC32 V10.60.20	500005	---
Anechoic Chamber	ETS	SAC-L3m	135615	2026-27
Test-Control Software	Rohde & Schwarz	ELEKTRA 5.01.0	500159	---

Test equipment used – Conducted measurements				
Equipment	Manufacturer	Model	Dekra ID	Cal. Due
Shielded Chamber	ETS Lindgren	RFD-100	135657	--
Coaxial cable	Huber & Suhner	Sucoflex 126 E	132532	2025-40
EMI Test Receiver	Rohde & Schwarz	ESR7	132186	2025-35