#### 7.6. Band-Edges Measurement / Out of Band Emissions

#### **Applied standards**

- -e-CFR Title 47 Chapter I Subchapter A Part 15 Subpart C §15.247 (d)
- -RSS-247 issue 2 Section 5.5

#### Limit

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 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Attenuation below the general limits specified in § 15.209 and RSS-Gen Table 5 is not required. Emissions which fall in the restricted bands, as defined in §15.205 Restricted Bands of operation as well as in restricted bands of the RSS-Gen Issue 5 (see Section 8.10 Restricted Frequency Bands) and must also comply with the radiated emission limits specified in §15.209 Radiated emission limits as well as the limits specified in RSS-Gen Table 5.

#### Test equipment and test set up

Test equipment used for Band Edge measurements as given in clause Test equipment of this report. Test setup used for Band Edge measurements as given in clause Test setups of this report.

#### **Description**

The band edge is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency.

#### **Detector function selection and bandwidth**

For the measurement, an EMI test receiver that have CISPR peak detector was used.

Frequency range:	Bandwidth	
See measurement graph	RBW:	100 kHz
	VBW:	300 kHz

#### Measurement

The Measurement was performed on: 25.06.2020

#### Higher Band Edge - GFSK CH. 78 - radiated



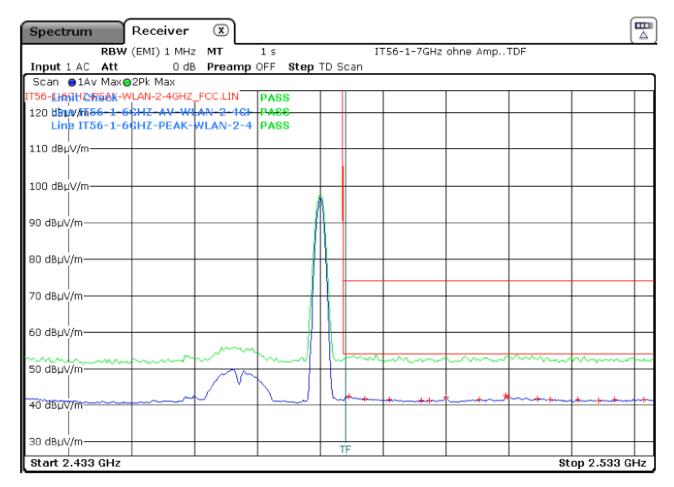
# FCC 3 Band edge emission



according to FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0029

Operation mode: BT CH.78; GFSK; High Edge



				Polaris	ation: V					
		Detector Average			Detector Peak					
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	
2,4845	42,41	-11,59	54,00	pass	all e	all emissions are 20dB below limit				
2,4870	41,55	-12,45	54,00	pass						
2,4910	41,39	-12,61	54,00	pass						
2,4960	41,11	-12,89	54,00	pass						
2,4973	41,26	-12,74	54,00	pass						
2,5000	42,01	-11,99	54,00	pass						



## FCC 3

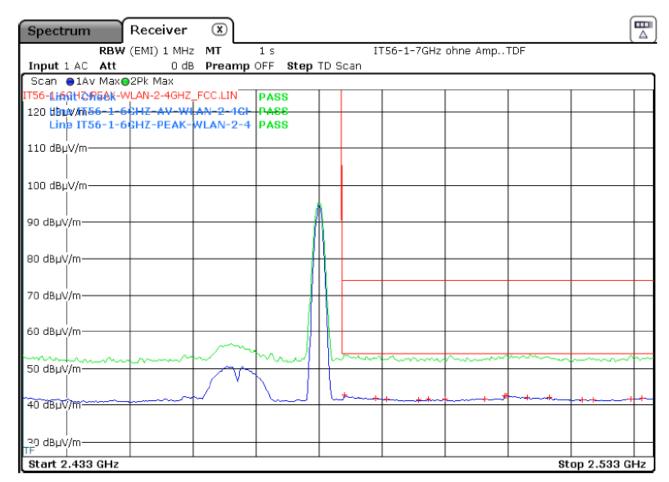


## Band edge emission according to

FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0029

Operation mode: BT CH.78; GFSK; High Edge



				Polarisati	on: H				
		Detector Average					Detector Peak		
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
2,4840	42,47	-11,53	54,00	pass	all emissions are 20dB below limit				pass
2,4890	41,63	-12,37	54,00	pass					
2,4908	41,46	-12,54	54,00	pass					
2,4958	41,12	-12,88	54,00	pass					
2,4973	41,39	-12,61	54,00	pass					
2.5000	41.47	-12.53	54.00	pass					

#### Lower Band Edge - GFSK CH. 0 - radiated



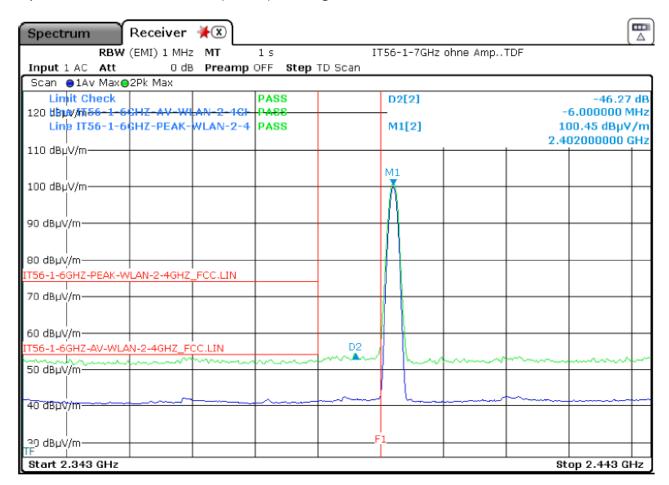
# FCC 3 Band edge emission



according to FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0029

Operation mode: BT CH.0; GFSK; Low Edge



				Polaris	ation: V					
		Detector Average								
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	
all	emissions are	10dB below	limit	pass	all emissions are 10dB below limit					
•										



## FCC 3

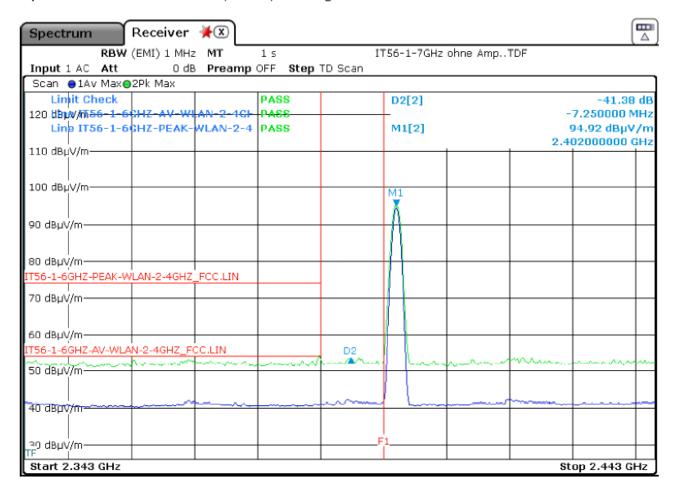


## Band edge emission according to

FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0029

Operation mode: BT CH.0; GFSK; Low Edge



				Polarisati	on: H					
		Detector Average			Detector Peak					
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	
al	all emissions are 10dB below limit				all emissions are 10dB below limit P					

#### Higher Band Edge - $\pi/4$ -DQPSK CH. 78 – radiated



# FCC 3 Band edge emission

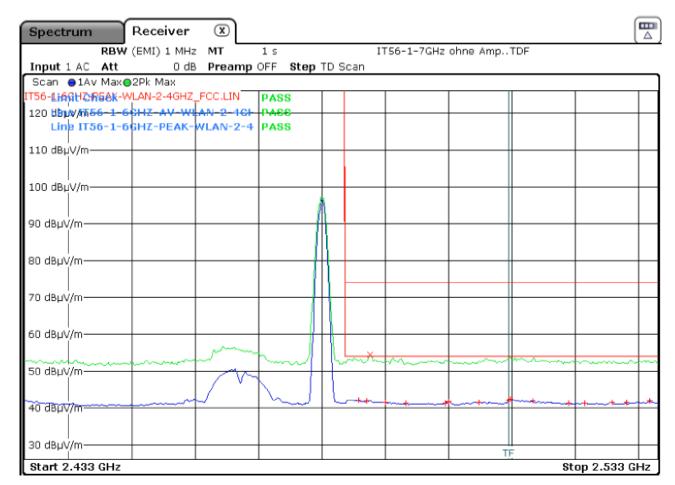


according to

FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0029

Operation mode: BT CH.78;  $\pi/4$  DQPSK; High Edge



				Polarisati	on: V				
		Detector Average					Detector Peak		
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
2,4858	42,13	-11,87	54,00	pass	2,4875	54,42	-19,58	74,00	pass
2,4870	41,89	-12,11	54,00	pass					
2,4900	41,50	-12,50	54,00	pass					
2,4933	41,16	-12,84	54,00	pass					
2,4995	41,30	-12,70	54,00	pass					
2.5000	41,70	-12.30	54,00	pass					



## FCC 3

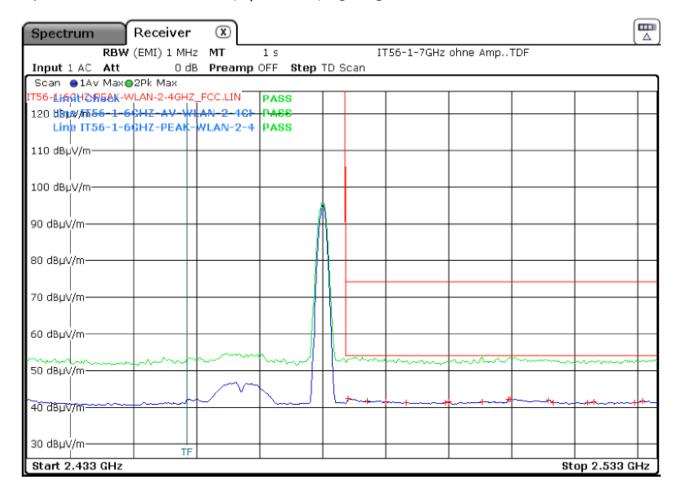
## Band edge emission



according to FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0029

Operation mode: BT CH.78;  $\pi/4$  DQPSK; High Edge



				Polarisati	on: H				
		Detector Average							
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
2,4840	42,24	-11,76	54,00	pass	all	emissions are	20dB belov	w limit	pass
2,4870	41,68	-12,32	54,00	pass					
2,4900	41,44	-12,56	54,00	pass					
2,4933	41,20	-12,80	54,00	pass					
2,4995	41,31	-12,69	54,00	pass					
2,5000	41,46	-12,54	54,00	pass					

Lower Band Edge -  $\pi/4$ -DQPSK CH. 0 – radiated



## FCC 3 Band edge emission

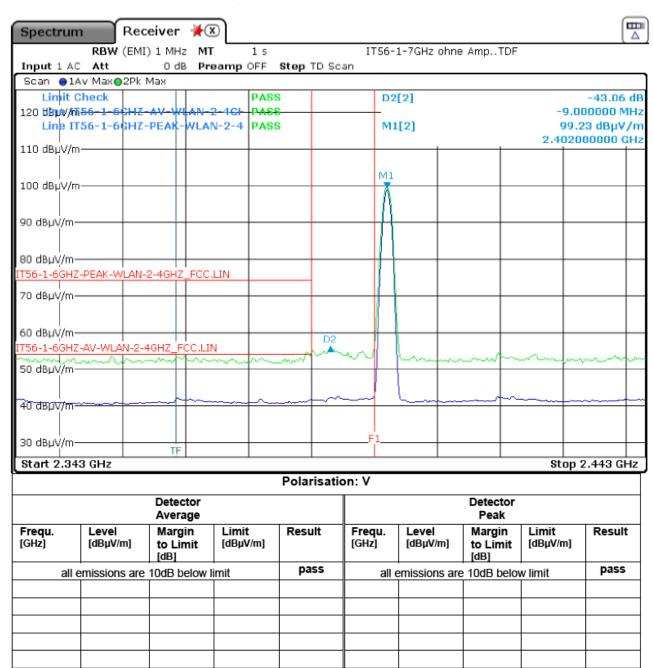


according to

FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0029

Operation mode: BT CH.0;  $\pi/4$  DQPSK; Low Edge





## FCC 3

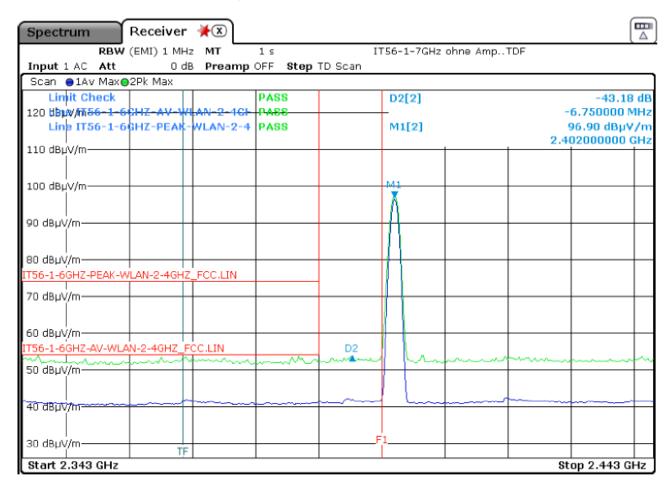


FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Band edge emission according to

Ref.-No.: 20/01-0029

BT CH.0; π/4 DQPSK; Low Edge Operation mode:



				Polarisat	on: H				
		Detector Average			Detector Peak				
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
all	all emissions are 10dB below limit			pass	all emissions are 10dB below limit P				

#### Higher Band Edge - 8DPSK CH. 78 - radiated



# FCC 3 Band edge emission

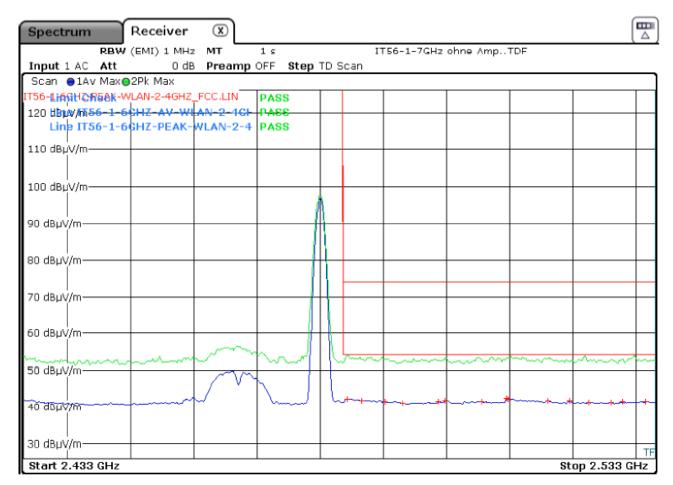


according to

FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0029

Operation mode: BT CH.78; 8DPSK; High Edge



				Polarisation	on: V				
		Detector Average					Detector Peak		
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
2,4843					all e	pass			
2,4865	41,74	-12,26	54,00	pass					
2,4903	41,46	-12,54	54,00	pass					
2,4930	41,05	-12,95	54,00	pass					
2,4988	41,35	-12,65	54,00	pass					
2,4998	41,74	-12,26	54,00	pass					





# FCC 3 Band edge emission

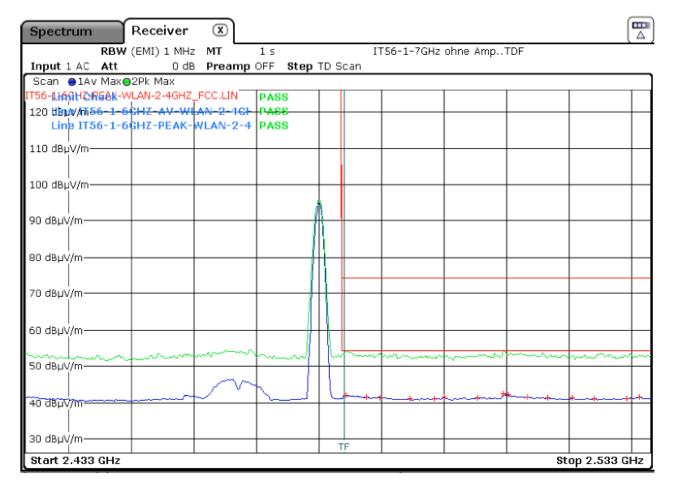


## according to

FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0029

Operation mode: BT CH.78; 8DPSK; High Edge



				Polarisation	on: H				
		Detector Average					Detector Peak		
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
2,4843	42,05	-11,95	54,00	pass	all e	emissions are	20dB belov	w limit	pass
2,4875	41,59	-12,41	54,00	pass					
2,4898	41,51	-12,49	54,00	pass					
2,4945	41,16	-12,84	54,00	pass					
2,4985	41,29	-12,71	54,00	pass					
2,5000	41,57	-12,43	54,00	pass					

#### Lower Band Edge - 8DPSK CH. 0 - radiated



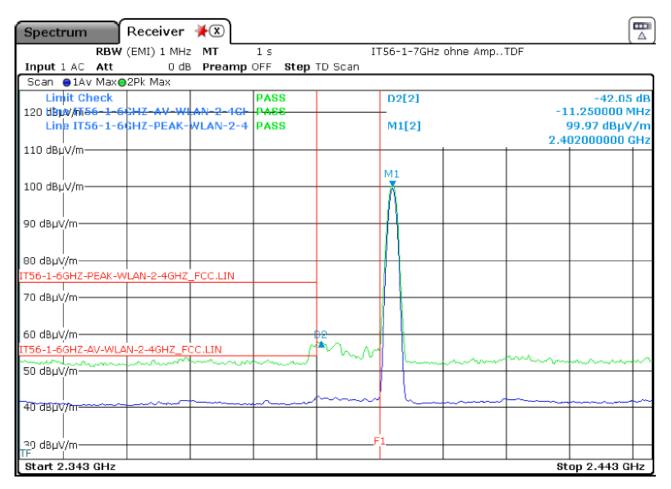
# FCC 3 Band edge emission



according to FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0029

Operation mode: BT CH.0; 8DPSK; Low Edge



				Polarisat	ion: V					
		Detector Average			Detector Peak					
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	
all	all emissions are 10dB below limit				all emissions are 10dB below limit					



## FCC 3

## Band edge emission

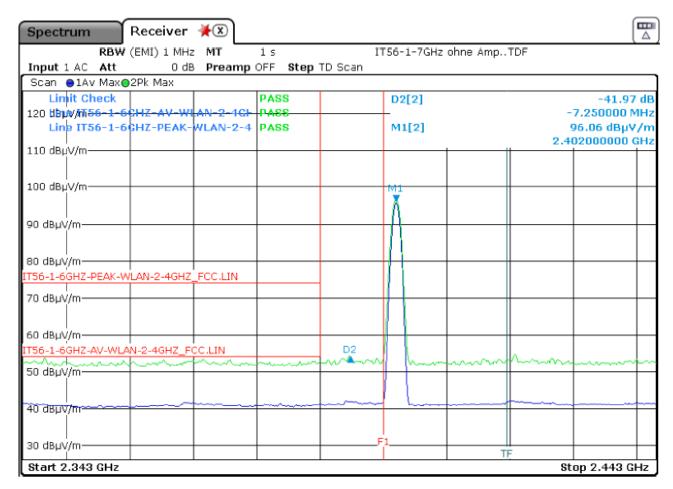


FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

阻STC

Ref.-No.: 20/01-0029

Operation mode: BT CH.0; 8DPSK; Low Edge



				Polarisati	on: H					
		Detector Average	Detector Peak							
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	
al	l emissions are	10dB below	limit	pass	all emissions are 10dB below limit					



#### Hopping mode

Band Edge Measurement were also performed in Hopping mode.

For hopping mode the 8DPSK mode was found as worst case and documented in this report.



# FCC 3 Band edge emission



according to

FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0029

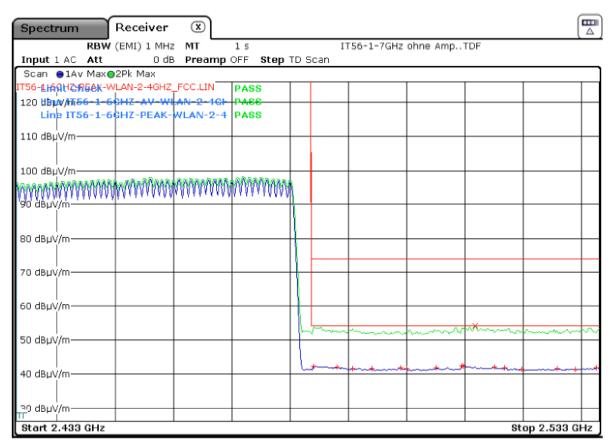
Product: Transmitting/Receiving System

Sample: 01

Date: 25.06.2020

Operator: TM pass fail Remarks: Result:  $\square$ 

Operation mode: BT; Hopping 8DPSK; High Edge



	Polarisation: V									
Detector Average				Detector Peak						
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	
2,4840	42,13	-11,87	54,00	pass	2,5118	54,04	-19,96	74,00	pass	
2,4880	41,91	-12,09	54,00	pass						
2,4908	41,46	-12,54	54,00	pass						
2,4940	41,37	-12,63	54,00	pass						
2,4990	41,72	-12,28	54,00	pass						
2,5000	41,36	-12,64	54,00	pass						





### FCC 3

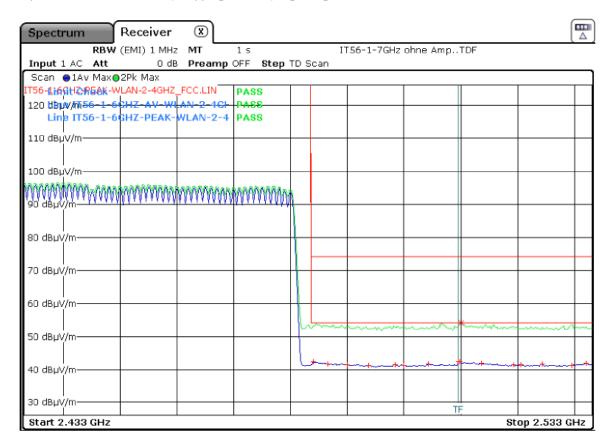
### Band edge emission



according to FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0029

Operation mode: BT; Hopping 8DPSK; High Edge



	Polarisation: H									
Detector Average							Detector Peak			
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	
2,4840	42,22	-11,78	54,00	pass	2,5100	54,08	-19,92	74,00	pass	
2,4865	41,72	-12,28	54,00	pass						
2,4900	41,47	-12,53	54,00	pass						
2,4938	41,26	-12,74	54,00	pass						
2,4985	41,41	-12,59	54,00	pass						
2,5000	41,26	-12,74	54,00	pass						





# FCC 3 Band edge emission



according to FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0029

Operation mode: BT; Hopping 8DPSK; Low Edge



Polarisation: V									
		Detector Average	Detector Peak						
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
all	emissions are	10dB below	imit	pass	all emissions are 10dB below limit		pass		





## FCC 3

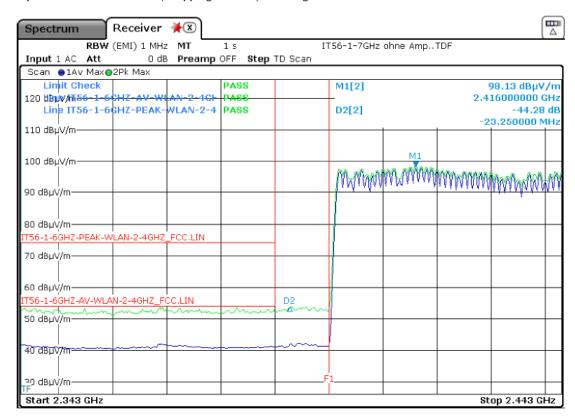
## Band edge emission



according to FCC §15.247, RSS-247, FCC §15.209 RSS-Gen

Ref.-No.: 20/01-0029

Operation mode: BT; Hopping 8DPSK; Low Edge



	Polarisation: H								
Detector Average				Detector Peak					
Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result	Frequ. [GHz]	Level [dBµV/m]	Margin to Limit [dB]	Limit [dBµV/m]	Result
al	l emissions are	10dB below	limit	pass	all	emissions are	10dB below	w limit	pass

#### Results

From the measurement data obtained, the tested sample was considered to have **COMPLIED** with the requirements for the **Band Edges / Out of Band Emission**.

#### 7.7. Occupancy Time

#### **Applied standards**

- -e-CFR Title 47 Chapter I Subchapter A Part 15 Subpart C §15.247 (a) (1) (iii)
- -RSS-247 issue 2 Section 5.1 (d)

#### **Test Requirements**

The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channel employed.

No requirements for Digital Transmission System.

#### Discription

[Test time period] = [Limit] x [Channels] = 0.4 s x 79 = 31.6 s

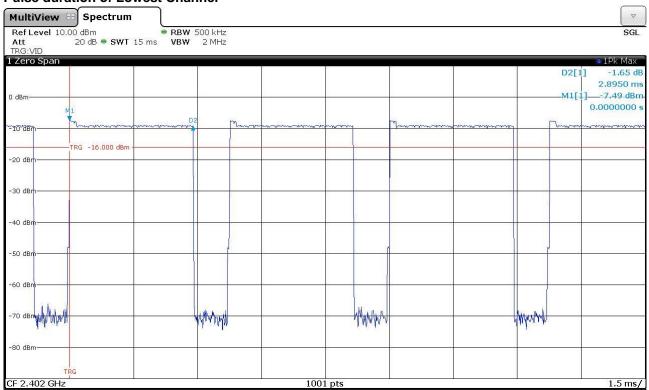
#### Measurement

The Measurement was performed on: 18.02.2020

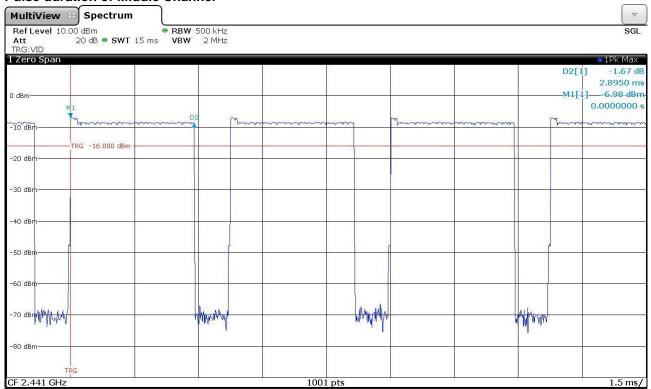
#### DH5 / 3-DH5 Packet

DH5 Packet permit maximum 1600/79/6 = 3.37 hops per second in each channel (5 time slots RX, 1 time slot TX). The Dwell time is the time duration of the pulse times 3.37 hops/sec. x 31.6 sec. = 106.6 hops within 31.6 seconds

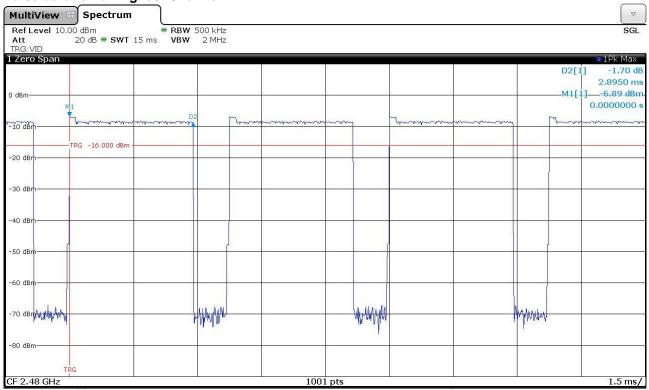
#### **Pulse duration of Lowest Channel**







#### **Pulse duration of Highest Channel**

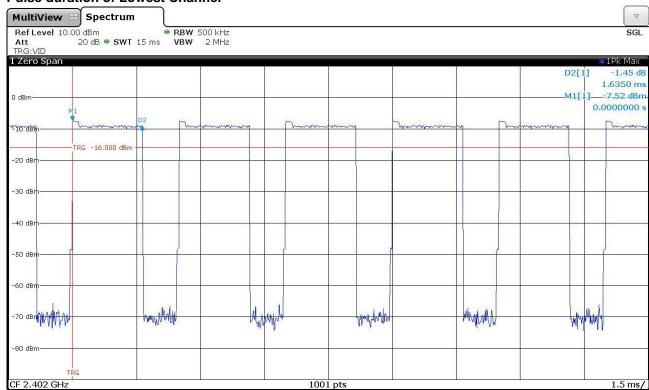




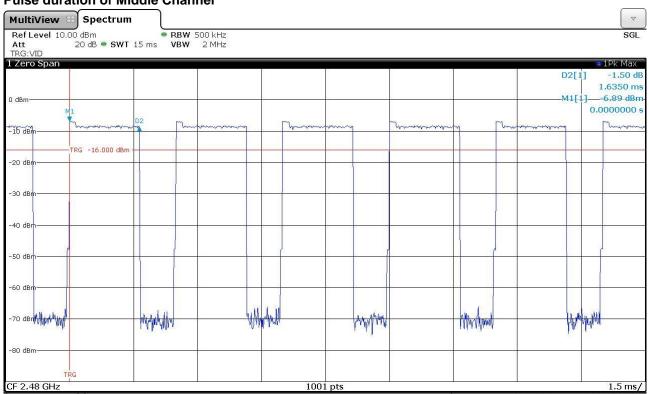
#### DH3 / 3-DH3 Packet:

DH3 Packet permit maximum 1600/79/4 = 5.06 hops per second in each channel (3 time slots RX, 1 time slot TX). The Dwell time is the time duration of the pulse times 5.06 hops/sec. x 31.6 sec. = 160 hops within 31.6 seconds

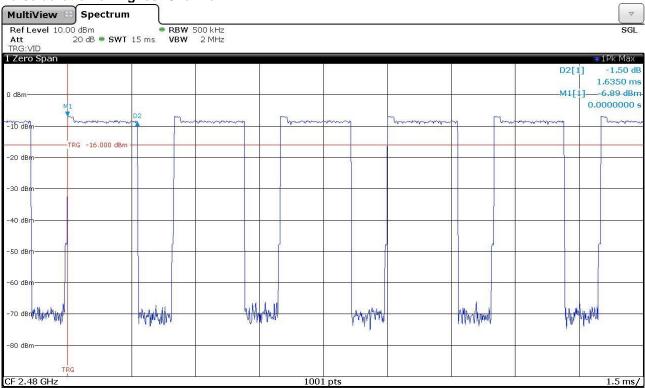




#### **Pulse duration of Middle Channel**



#### **Pulse duration of Highest Channel**





#### DH1 /2-DH1 Packet:

DH1 Packet permit maximum 1600/79/2 = 10.12 hops per second in each channel (1 time slots RX, 1 time slot TX). The Dwell time is the time duration of the pulse times 10.12 hops/sec. x 31.6 sec. = 320 hops within 31.6 seconds

## **Pulse duration of Lowest Channel**

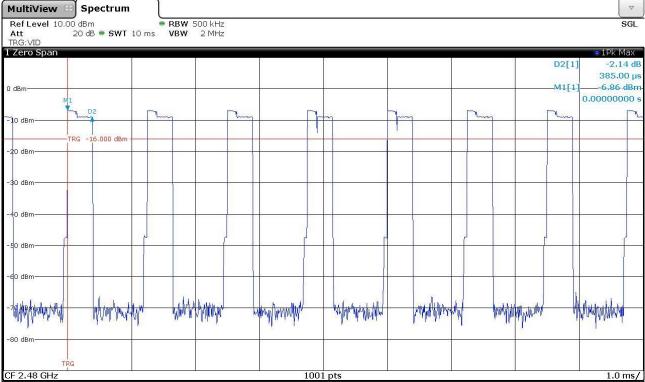


#### **Pulse duration of Middle Channel**



Pulse duration of Highest Channel

MultiView 
Spectrum



Time of occupancy (Dwell Time):							
Data Packet	Frequency [MHz]	Hops in Test time period	Pulse Duration [ms]	Dwell Time [s]	Limit [s]	Result	
DH5/3-DH5	2402	106.6	2.895	0.309	0.400	PASS	
DH5/3-DH5	2441	106.6	2.895	0.309	0.400	PASS	
DH5/3-DH5	2480	106.6	2.895	0.309	0.400	PASS	
DH3/3-DH3	2402	160	1.635	0.262	0.400	PASS	
DH3/3-DH3	2441	160	1.635	0.262	0.400	PASS	
DH3/3-DH3	2480	160	1.635	0.262	0.400	PASS	
DH1/2-DH1	2402	320	0.385	0.123	0.400	PASS	
DH1/2-DH1	2441	320	0.385	0.123	0.400	PASS	
DH1/2-DH1	2480	320	0.385	0.123	0.400	PASS	

Formula: [Dwell time] = [Hops in Test time period.] x [Pulse Duration]

#### Results

From the measurement data obtained, the tested sample was considered to have **COMPLIED** with the requirements for the **Time of occupancy (dwell time).** 

#### 7.8. 99% Power Bandwidth

#### **Applied standards**

-RSS-Gen issue 5 Section 6.7

#### Test equipment and test set up

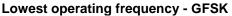
Test equipment used for conducted measurements as given in clause Test equipment of this report. Test setup used for conducted measurements as given in clause Test setups of this report.

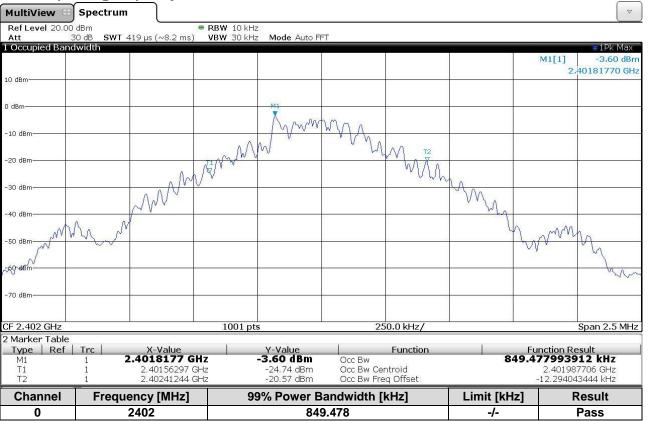
#### Description

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. The 99% power bandwidth function of the instrument was used for the measurement.

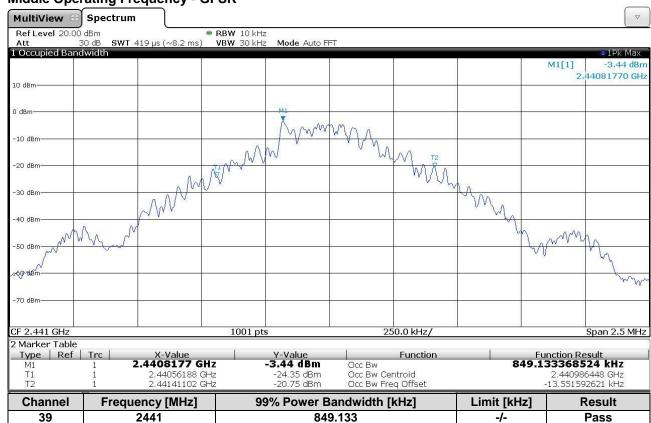
#### Measurement

The Measurement was performed on: 18.02.2020





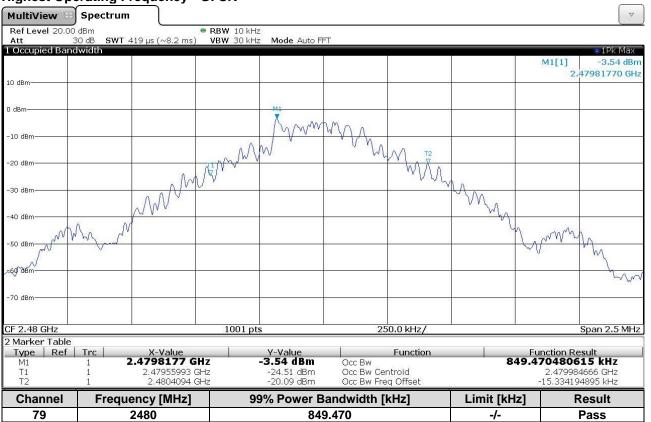
### Middle Operating Frequency - GFSK



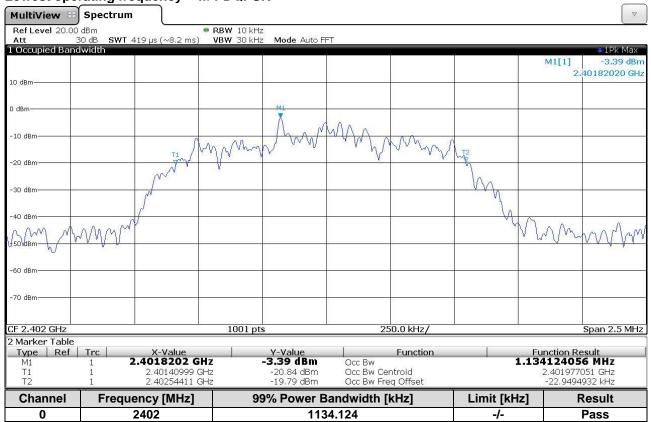


20/01-0029





#### Lowest operating frequency – π/4-DQPSK



Function Result 1.138242253 MHz

Result

Pass

Limit [kHz]

-/-

2 Marker Table Type | Ref |

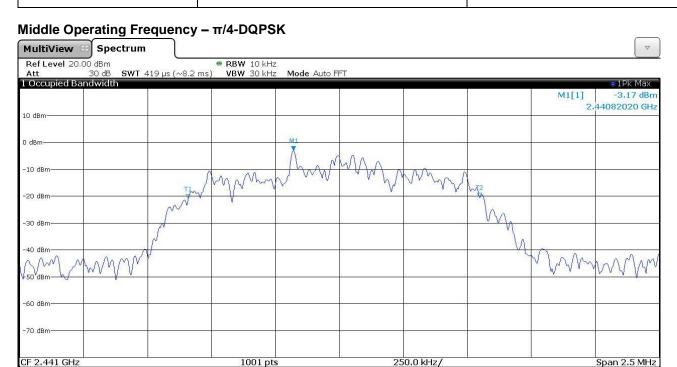
X-Value 2.4408202 GHz

Highest Operating Frequency – π/4-DQPSK

Frequency [MHz]

2480

Channel 79





Occ Bw

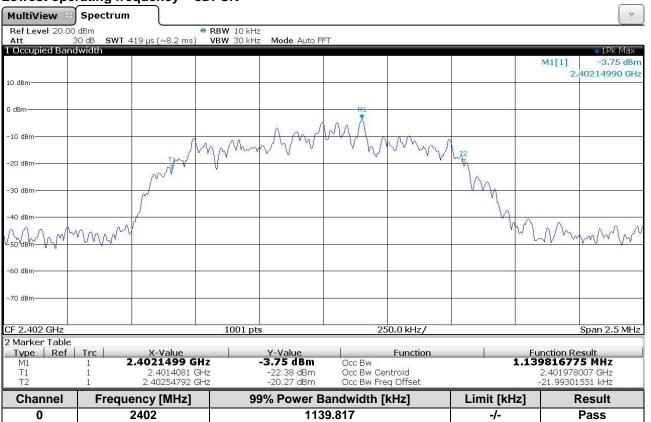
Y-Value -3.17 dBm

MultiView 8 Spectrum  $\nabla$ Ref Level 20.00 dBm Att 30 dB RBW 10 kHz
 VBW 30 kHz SWT 419 µs (~8.2 ms) Mode Auto FFT -3.31 dBm 2.47981770 GHz 10 dBm -10 dBm -20 dBm -30 dBm 50 dBm -70 dBm 1001 pts Span 2.5 MHz CF 2.48 GHz 250.0 kHz/ 2 Marker Table Type Ref Y-Value -3.31 dBm Function Function Result 1.139647536 MHz X-Value 2.4798177 GHz Occ Bw Occ Bw Centroid Occ Bw Freq Offset M1 T1 2.47940554 GHz 2.48054518 GHz -22.20 dBm -20.27 dBm 2.479975359 GHz -24.640505778 kHz

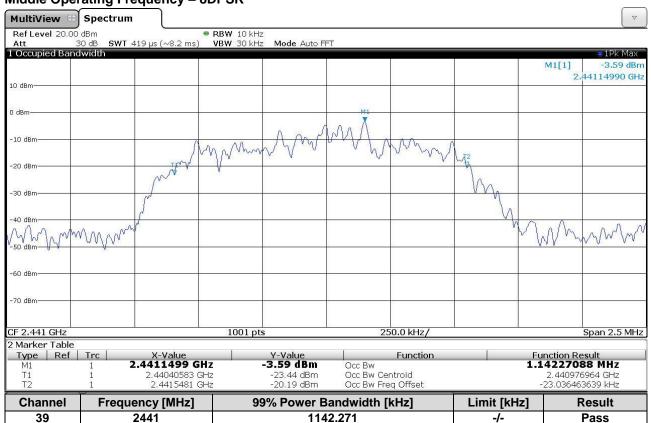
99% Power Bandwidth [kHz]

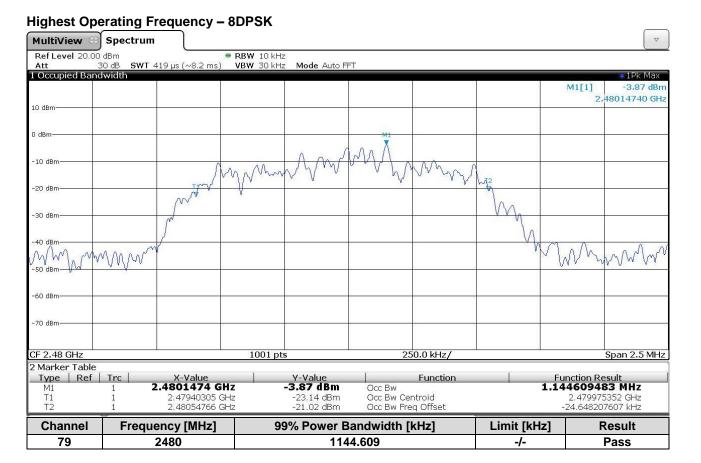
1139.648





#### Middle Operating Frequency – 8DPSK





#### Results

From the measurement data obtained, the tested sample was considered to have **COMPLIED** with the requirements for the **99% Power Bandwidth**.



## 8. Test equipment

## **Test equipment used for Conducted Mains emissions:**

Kind of equipment	Manufacturer	Туре	Ident no.	Serial no.	Calibrated on (y-m)	Calibration interval
Test-Receiver	Rohde & Schwarz	ESHS30	10571	842053/008	2019 – Mar.	3 years
Software	PKM	PKM U5/6	-/-	V1.01.03	-/-	-/-
Line impedance stabilisation network (LISN)	Rohde & Schwarz	ESH2-Z5	10139	879675/028	2019 – Jan.	3 years
Shielded room	Siemens	(6,2 x 4,7 x 3,3) m (I x w x h) DC – 10 GHz	10113	1	-/-	-/-

## **Test equipment used for radiated Measurements:**

Kind of equipment	Manufacturer	Туре	Ident no.	Serial no.	Calibrated on (y-m)	Calibration interval
Signal Spectrum Analyzer 2Hz – 26.5 GHz	Rohde & Schwarz	FSW 26 Instrument FW 2.60	11571	102047	2019-Jan.	3 years
ESR7 EMI Testreceiver 7GHz	Rohde & Schwarz	ESR7	11676	101694	2018-March	3 years
Test-Receiver	Rohde & Schwarz	ESVS30	10572	833825/010	2017-March 2020-April	3 years 3 years
Antenna 9 kHz – 30 MHz	EMCO	6502	10546	2018	2017-Nov.	3 years
Antenna 30 MHz – 1 GHz	Chase	CBL6111C	10022	1064	2019-Dec.	3 years
Antenna 1GHz – 18 GHz	Electro Metric	RGA50/60	10273	2753	2017-Nov.	3 years
Broadband- Hornantenne 15 - 26,5 (40) GHz	Schwarzbeck	BBHA 9170	11580	BBHA91706 21	2019-Dec.	3 years
Broadband- Preamplifier 1 - 18 GHz	Schwarzbeck	BBV9718	11231	9718-002	2017-Okt.	3 years
Preamplifier 18 - 40 GHz	CERNEX	CBM18403523	11679	29711	2019 - July	3 years
Cable	el-spec GmbH	FlexCore-SMA11- SMA11-8000-ARM	11625	-/-	2017-Dec.	3 years
Shielded room/Chamber	Frankonia	SAC3 "SEMI- ANECHOIC- CHAMBER"	11609	004/16	2019-March	3 years
Band Reject Filter	Telemeter	BRF-2450-150- 7-N (0441)	11243	-/-	-/-	-/-



#### **Test equipment used for Band Edge Measurements:**

Kind of equipment	Manufacturer	Туре	Ident no.	Serial no.	Calibrated on (y-m)	Calibration interval
ESR7 EMI Testreceiver 7GHz	Rohde & Schwarz	ESR7	11676	101694	2018-March	3 years
Antenna 1GHz – 18 GHz	Electro Metric	RGA50/60	10273	2753	2017-Nov.	3 years
Cable	el-spec GmbH	FlexCore-SMA11- SMA11-8000-ARM	11625	-/-	2017-Dec.	3 years
Shielded room/Chamber	Frankonia	SAC3 "SEMI- ANECHOIC- CHAMBER"	11609	004/16	2019-March	3 years

#### Test equipment used for conducted measurements:

Kind of equipment	Manufacturer	Туре	Ident no.	Serial no.	Calibrated on (y-m)	Calibration interval
Signal Spectrum Analyzer 2Hz – 26.5 GHz	Rohde & Schwarz	FSW 26 Instrument FW 2.60	11571	102047	2019 - Jan.	3 years
EMI-Test-Receiver	Rohde & Schwarz	ESR7 Instrument FW 3.36	11505	101103	2017 - Nov.	3 years
Automatisation unit RF switch and power meter	Rohde & Schwarz	OSP120 and OSP B157	11573	101282	2017 - Dec.	3 years
Cable	el-spec GmbH	FlexCore-SMA11- SMA11-8000-ARM	11625	-/-	2017 - Dec.	3 years

All measurements were made with measuring instruments, including any accessories that may affect test results, calibrated according to the requests of ISO/IEC 17025 according to which the test site is accredited from DAkkS. Measurement of conducted mains emissions was made with instruments conforming to American National Standard Specification, ANSI C63.4-2014.

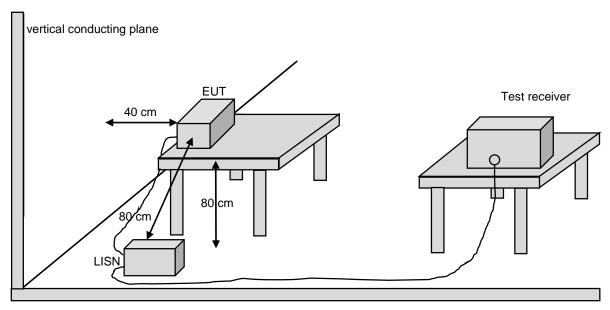
#### **Test equipment to support EUT functions:**

Kind of equipment	Manufacturer	Туре	Ident no.
Laptop	DELL	Inspiron	11488
AC-Adaptor [Laptop/EUT]	DELL	DA130PE1-00	Part of 11488
Test Adaptor Board	Vestel (Client)	17TEST02	Client
Software	Provided by Vestel (Client)	CyBluetool	-/-

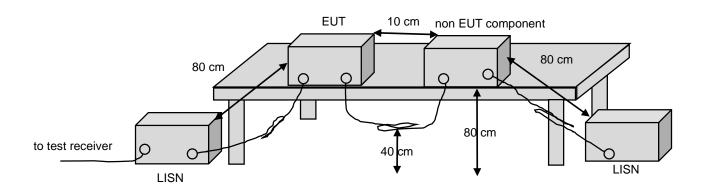


## 9. Test Setups

### **Block diagram Conducted Mains emissions**

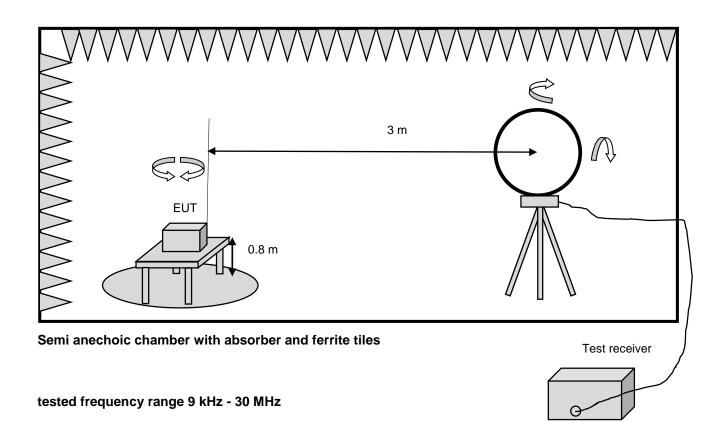


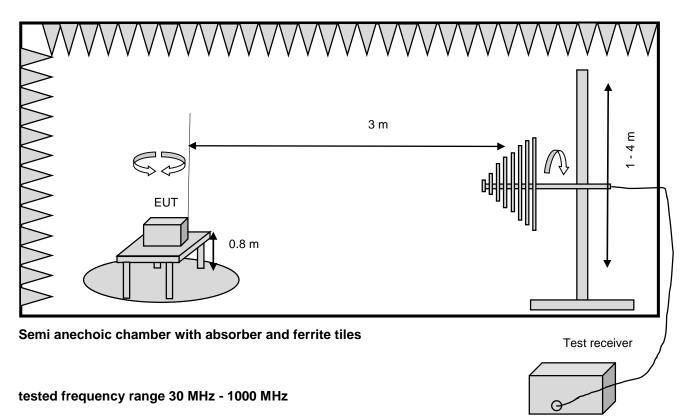
Groundplane



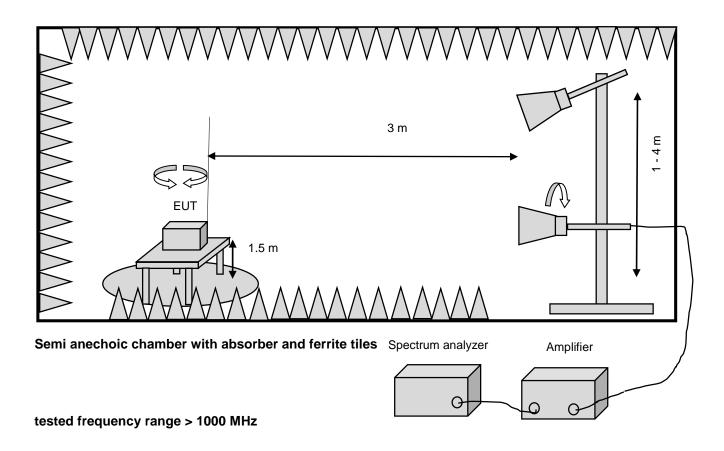


### **Block diagram Radiated emissions**

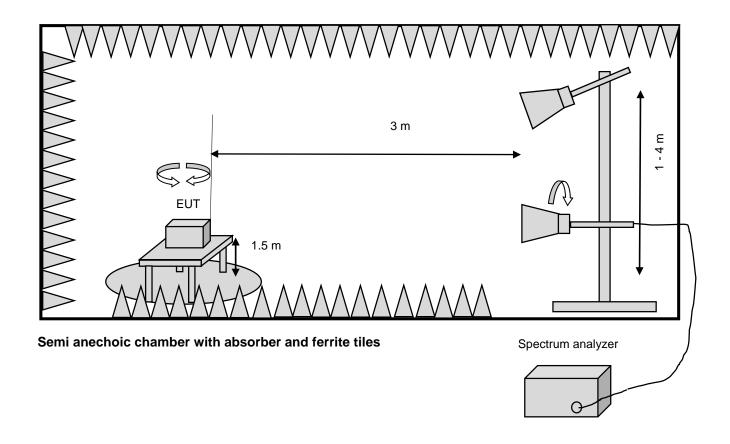




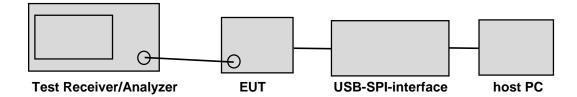




### **Block diagram Band Edge emisions**



### **Block diagram for conducted measurements**



### 10. Measurement uncertainty

according to CISPR 16-4-2 Edition 2.0 2011-06

Measurement	calculated uncertainty U <sub>lab</sub>	Specified CISPR uncertainty according CISPR 16-4-2 Edition 2.0 2011-06, table 1 UCISPR
Conducted disturbance at mains		
port using AMN	3.6 dB	3.8 dB
9 kHz – 150 kHz		
Conducted disturbance at mains port using AMN	3.2 dB	3.4 dB
150 kHz – 30 MHz	3.2 UD	3.4 db
Magn. fieldstrength 9kHz - 30MHz	3.4 dB	-/-
Radiated disturbance (electric field strength in the SAC) 30 MHz to 1 000 MHz	4.7 dB	6.3 dB
Radiated disturbance (electric field strength in the SAC) 1 GHz to 26.5 GHz	4.1 dB	-/-

Measurement	calculated uncertainty U <sub>lab</sub>	Maximum measurement uncertainty
Channel Bandwidth	±1.17 %	±5 %
RF output power, conducted	±1.36 dB	±1.5 dB
Power Spectral Density, conducted	±1.99 dB	±3 dB
Unwanted Emissions, conducted	±1.71 dB	±3 dB
All emissions, radiated	±4.8 dB	±6 dB
Temperature	±0.72 °C	±3 °C
	±0.76 % (DC up to 40V)	
Supply voltages		±3 %
	±1.74 % (AC 50Hz up to 400V)	
Time	±0.012 %	±5 %

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT in the above mentioned way.

The measurements uncertainty was calculated in accordance with CISPR 16-4-2 Edition 2.0 2011-06.

The measurement uncertainty was given with a confidence of 95 % (k = 2).

## 11. Photos setup

Refer to "0029-fcc-ised-photos test setup.pdf" file

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#### 12. Conclusions

From the measurement data obtained, the tested sample was considered to have **COMPLIED** with the requirements for the relevant §15.247 Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

From the measurement data obtained, the tested sample was considered to have **COMPLIED** with the requirements for the relevant RSS-247 issue 02 Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices.

Following specific modifications and/or special attributes are necessary to pass the above mentioned requirements:

none

28.09.2020

Erstellt am/prepared on

M. Beindl, Laboratory Engineer

(Name/name / Stellung/position)

(Unterschrift/signature)

28.09.2020

A. Tropmann, Head of Laboratory

Freigabe am/released on (Name/name / Stellung/position)

(Unterschrift/signature)

## 13. Photos of tested sample

Refer to "0029-fcc-ised-ext-photos.pdf" file

## **End of test report**