Annex 1: Measurement results for
T E S T R E P O R T
No.: 19-1-0107601T08a-C1

According to:
Title 47 CFR, Chapter I
FCC Regulations, Subchapter A
§15.247 (DTS)

ISED-Regulations
RSS-Gen, Issue 5
RSS 247 Issue 2
(DTS)

for

Continental Advanced Antenna GmbH

DDAECE02
BT-Transceiver

FCC ID: 2ACC7DDAECE02
ISED: 11980A-DDAECE02

Laboratory Accreditation and Listings
ilac-MRA DAkkS Deutsche Akkreditierungsstelle D-PL-12047-01-01 D-PL-12047-01-03 D-PL-12047-01-04 Accredited EMC-Test Laboratory
accredited according to DIN EN ISO/IEC 17025

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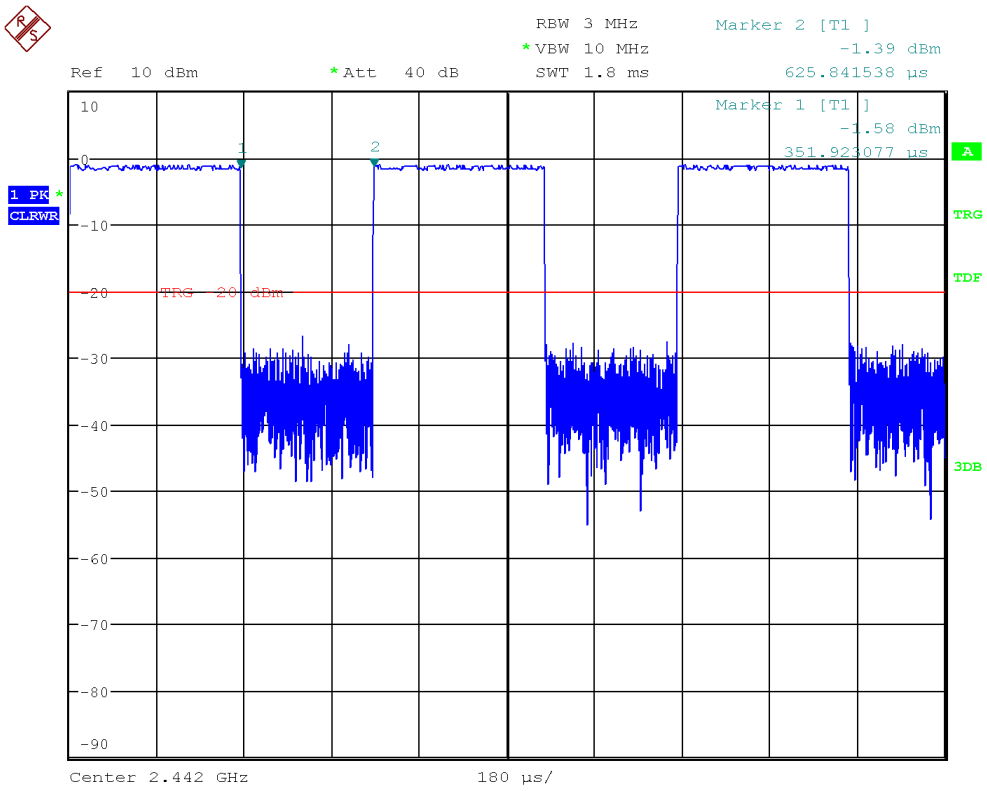
1. Conducted measurements at RF-antenna port

1.1. Duty Cycle

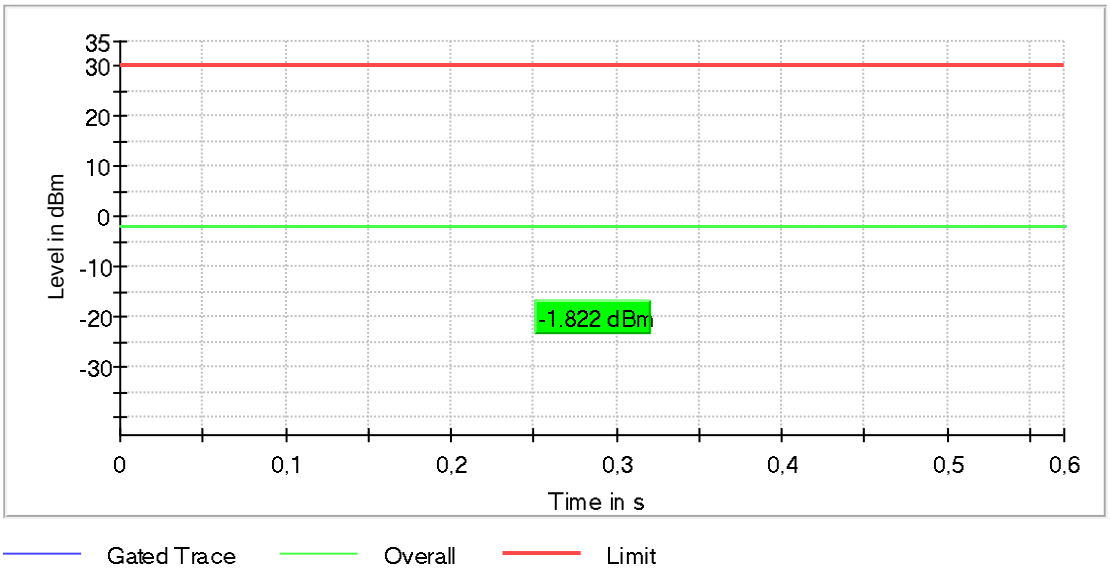


1.2. Maximum Conducted Output Power (Average)

RF output power (2402 MHz; 10,000 dBm; 1 MHz)

Result

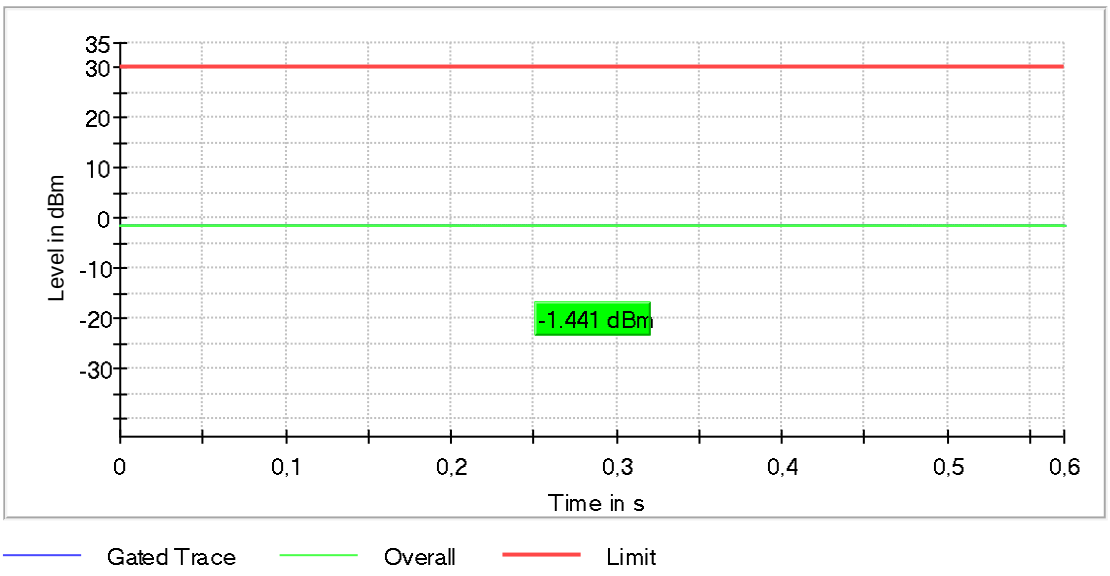
DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2402.000000	-1.8	30.0	-1.8	56.941	PASS



RF output power (2442 MHz; 10,000 dBm; 1 MHz)

Result

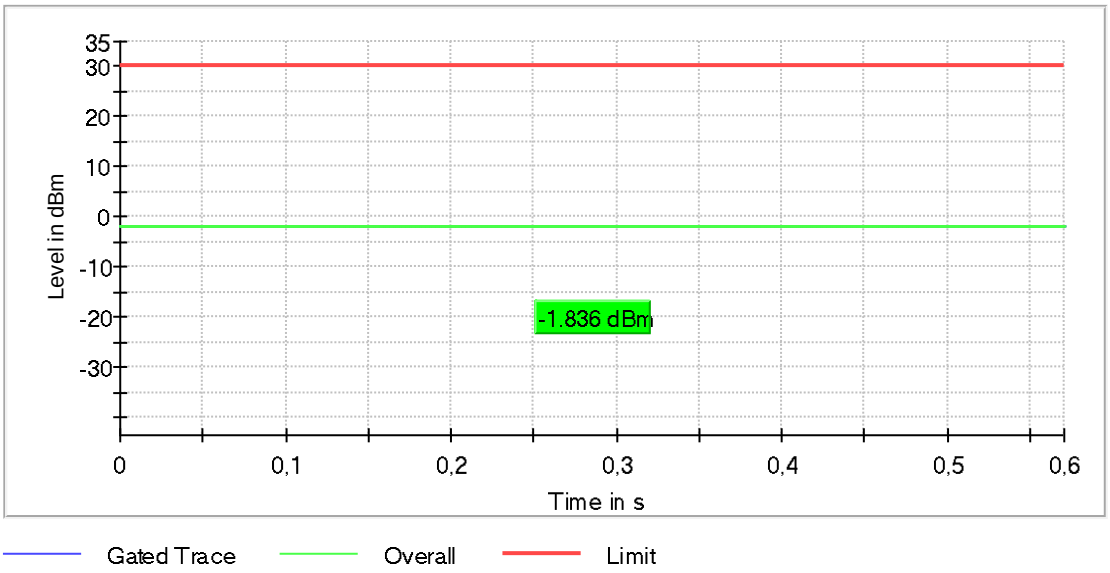
DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2442.000000	-1.4	30.0	-1.4	56.941	PASS



RF output power (2480 MHz; 10,000 dBm; 1 MHz)

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2480.000000	-1.8	30.0	-1.8	56.945	PASS

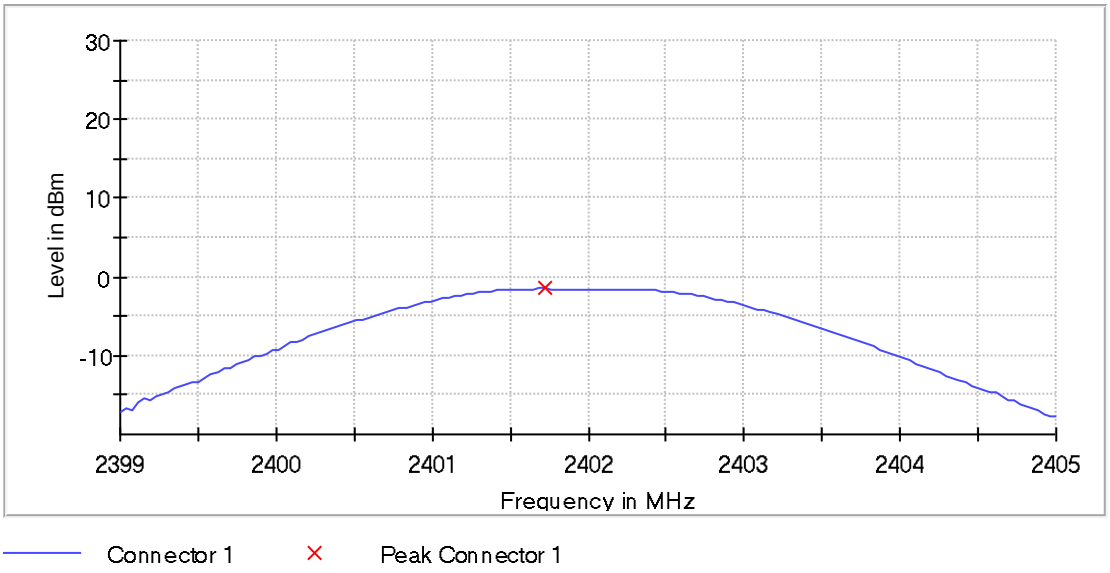


1.3. Maximum Conducted Output Power (Peak)

Peak output power (Sweep) (2402 MHz; 10,000 dBm; 1 MHz)

Result

DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2402.000000	-1.5	30.0	PASS



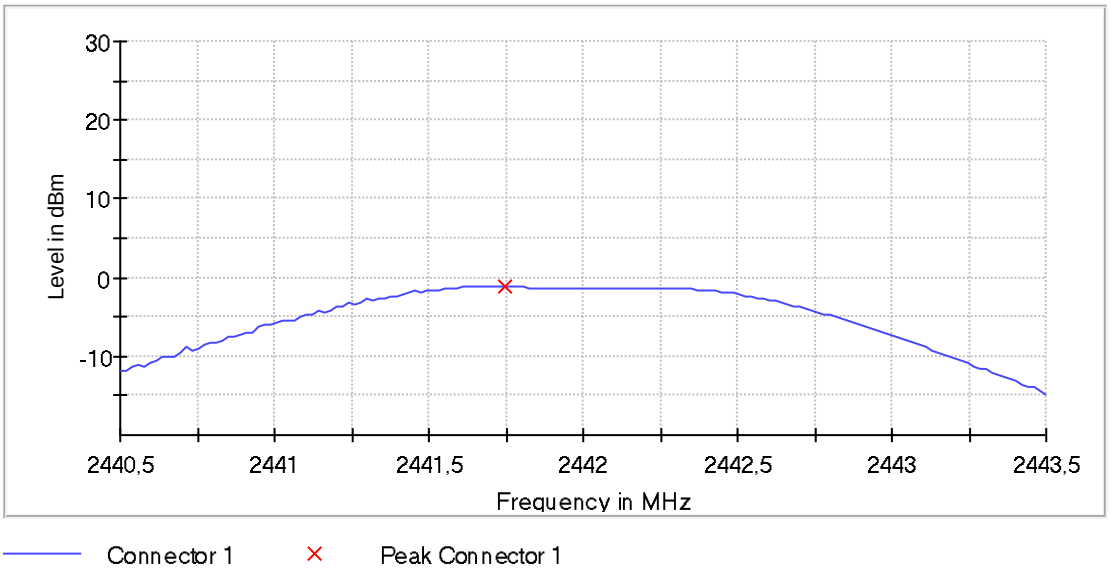
Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.39900 GHz	2.39900 GHz
Stop Frequency	2.40500 GHz	2.40500 GHz
Span	6.000 MHz	6.000 MHz
RBW	2.000 MHz	>= 1.000 MHz
VBW	10.000 MHz	>= 6.000 MHz
SweepPoints	155	~ 101
Sweeptime	2.500 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	35.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.19 dB	0.50 dB

Peak output power (Sweep) (2442 MHz; 10,000 dBm; 1 MHz)

Result

DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2442.000000	-1.1	30.0	PASS



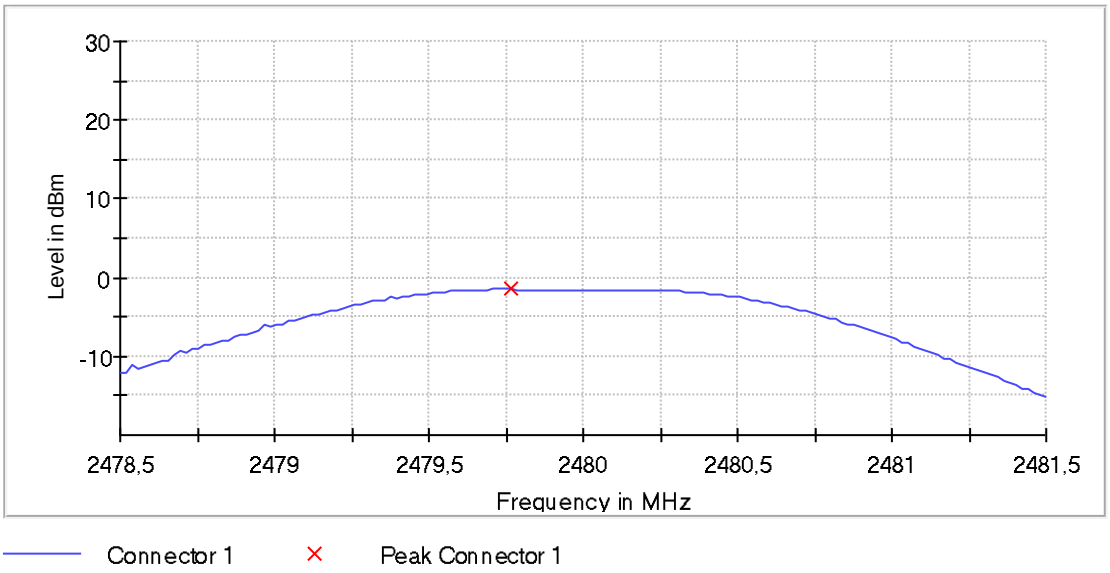
Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44050 GHz	2.44050 GHz
Stop Frequency	2.44350 GHz	2.44350 GHz
Span	3.000 MHz	3.000 MHz
RBW	1.000 MHz	>= 701.299 kHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	155	~ 101
Sweeptime	2.500 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	35.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

Peak output power (Sweep) (2480 MHz; 10,000 dBm; 1 MHz)

Result

DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2480.000000	-1.5	30.0	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47850 GHz	2.47850 GHz
Stop Frequency	2.48150 GHz	2.48150 GHz
Span	3.000 MHz	3.000 MHz
RBW	1.000 MHz	>= 701.299 kHz
VBW	3.000 MHz	>= 3.000 MHz
SweepPoints	155	~ 101
Sweeptime	2.500 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	35.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

1.4. Minimum Emission Bandwidth 6dB

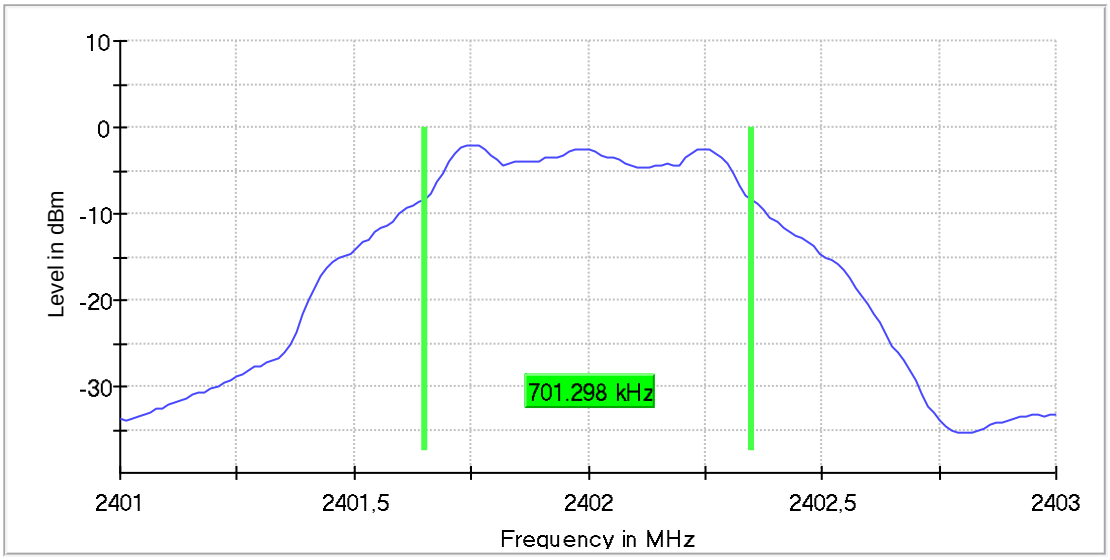
Minimum Emission Bandwidth 6 dB (2402 MHz; 10,000 dBm; 1 MHz)

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	0.701298	0.500000	---	2401.649351	2402.350649

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2402.000000	-2.0	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	155	~ 40
Sweeptime	2.500 ms	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	15.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	8 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.06 dB	0.50 dB

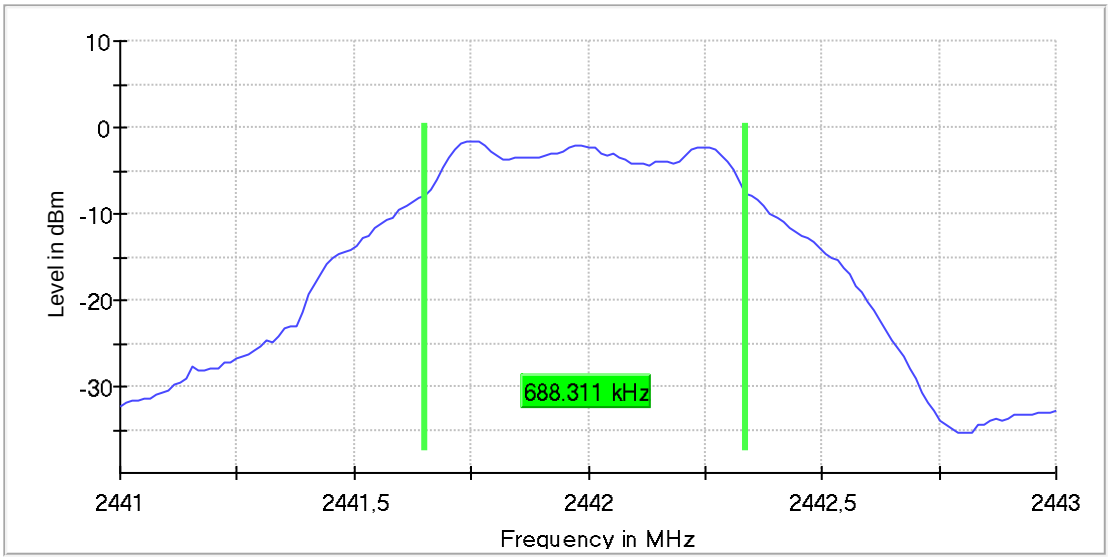
Minimum Emission Bandwidth 6 dB (2442 MHz; 10,000 dBm; 1 MHz)

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2442.000000	0.688311	0.500000	---	2441.649351	2442.337662

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2442.000000	-1.6	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44100 GHz	2.44100 GHz
Stop Frequency	2.44300 GHz	2.44300 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	155	~ 40
Sweeptime	2.500 ms	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	15.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	7 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.15 dB	0.50 dB

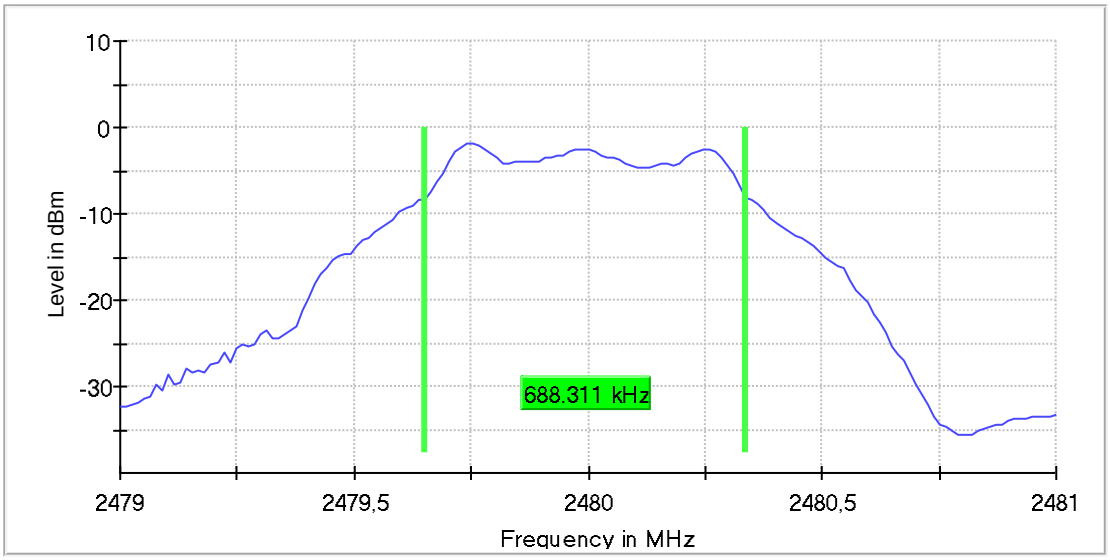
Minimum Emission Bandwidth 6 dB (2480 MHz; 10,000 dBm; 1 MHz)

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	0.688311	0.500000	---	2479.649351	2480.337662

(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2480.000000	-1.9	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	155	~ 40
Sweeptime	2.500 ms	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	15.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	7 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.12 dB	0.50 dB

1.5. Occupied Channel Bandwidth 99%

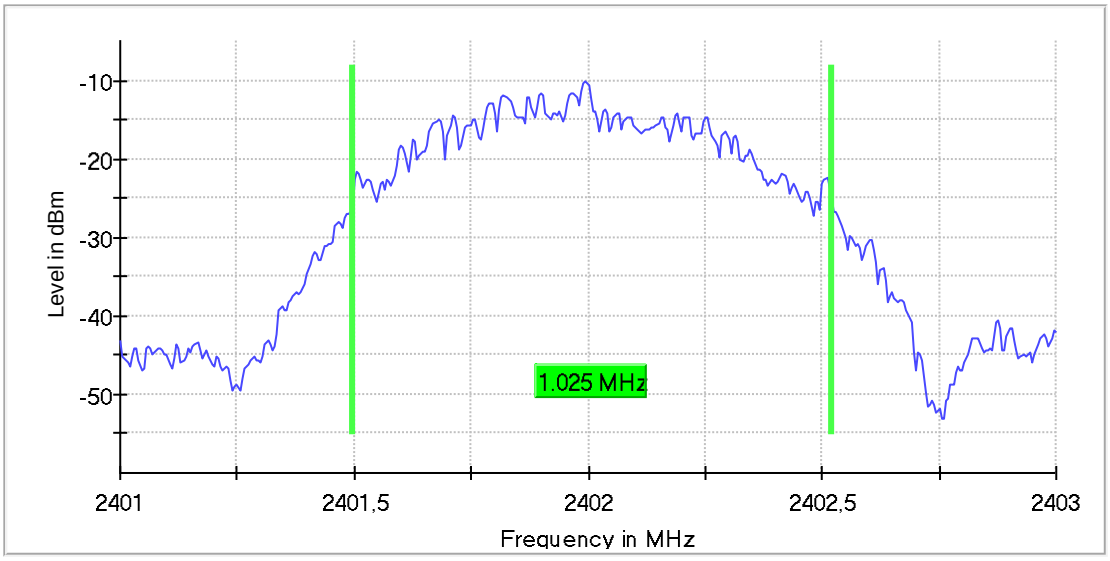
Occupied Channel Bandwidth 99% (2402 MHz; 10,000 dBm; 1 MHz)

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	1.025000	---	---	2401.495000	2402.520000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2402.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40100 GHz	2.40100 GHz
Stop Frequency	2.40300 GHz	2.40300 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	401	~ 400
Sweeptime	80.000 ms	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	15.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.18 dB	0.30 dB

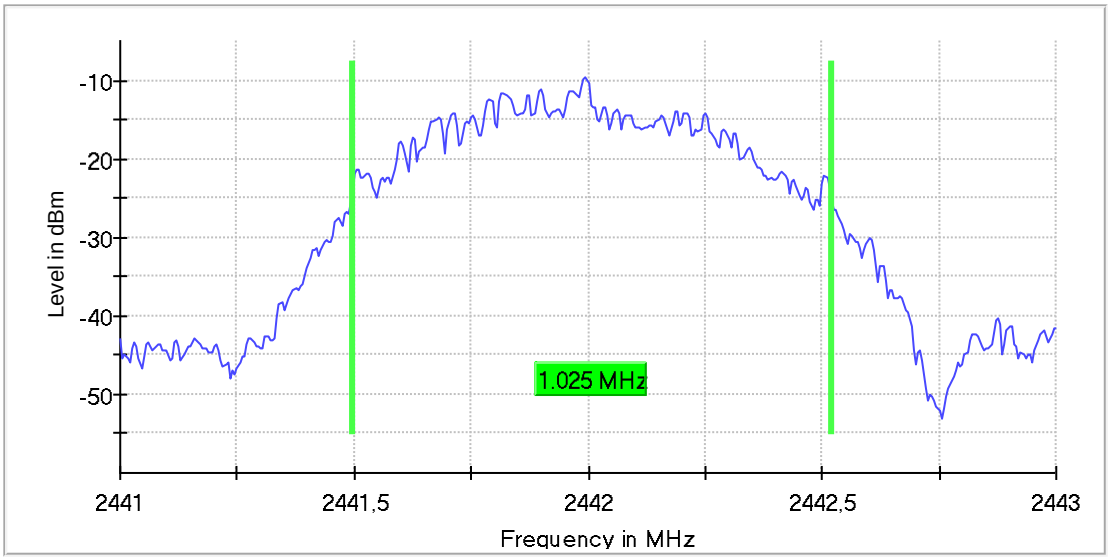
Occupied Channel Bandwidth 99% (2442 MHz; 10,000 dBm; 1 MHz)

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2442.000000	1.025000	---	---	2441.495000	2442.520000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2442.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44100 GHz	2.44100 GHz
Stop Frequency	2.44300 GHz	2.44300 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	401	~ 400
Sweeptime	80.000 ms	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	15.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	4 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.18 dB	0.30 dB

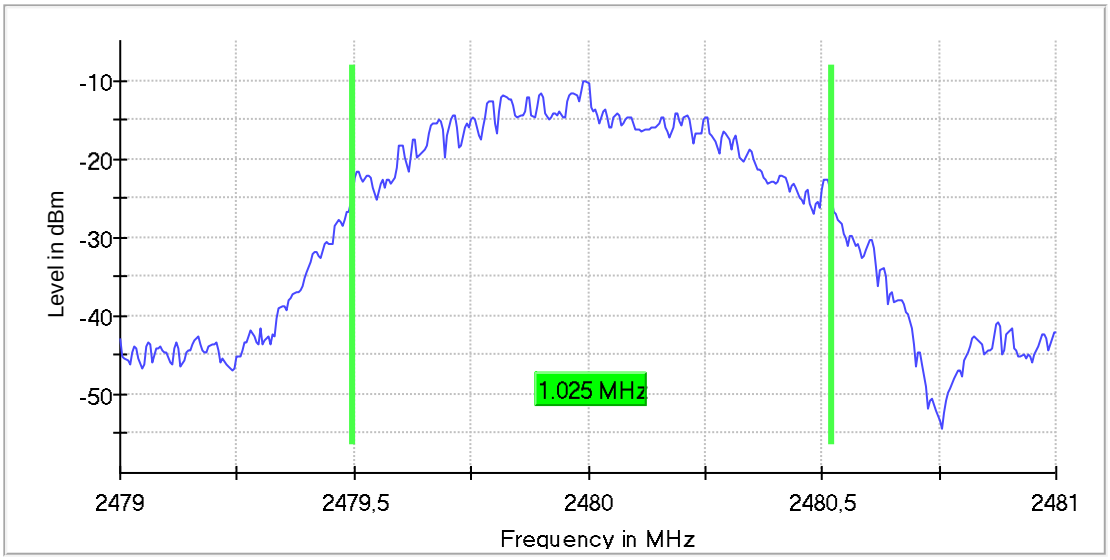
Occupied Channel Bandwidth 99% (2480 MHz; 10,000 dBm; 1 MHz)

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	1.025000	---	---	2479.495000	2480.520000

(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2480.000000	PASS



Measurement

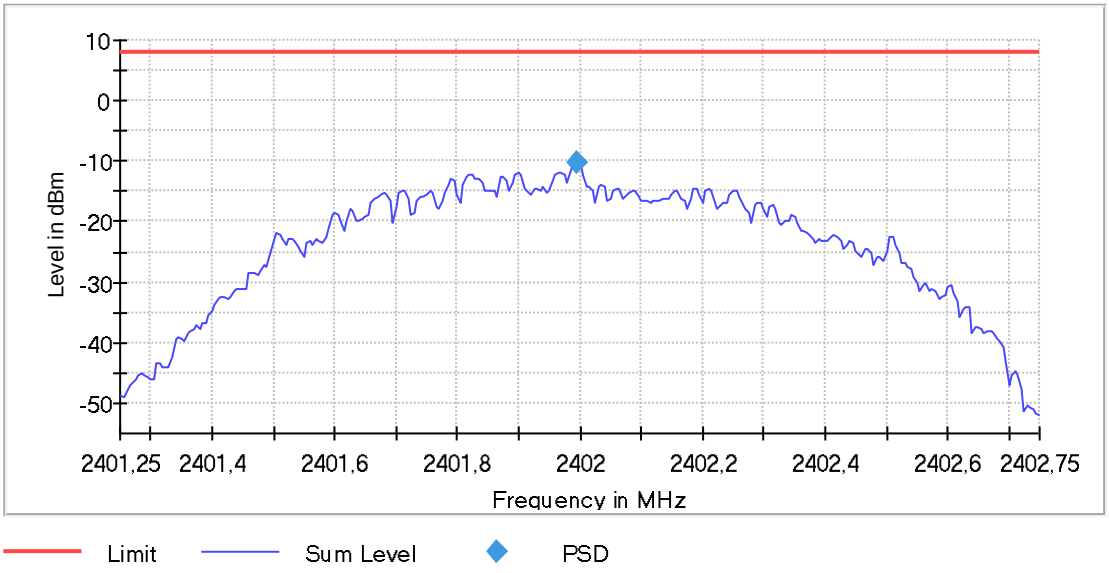
Setting	Instrument Value	Target Value
Start Frequency	2.47900 GHz	2.47900 GHz
Stop Frequency	2.48100 GHz	2.48100 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	401	~ 400
Sweeptime	80.000 ms	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	15.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	5 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.12 dB	0.30 dB

1.6. Power Spectral Density

Peak Power Spectral Density (2402 MHz; 10,000 dBm; 1 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2402.000000	2401.995000	-10.266	8.0	PASS



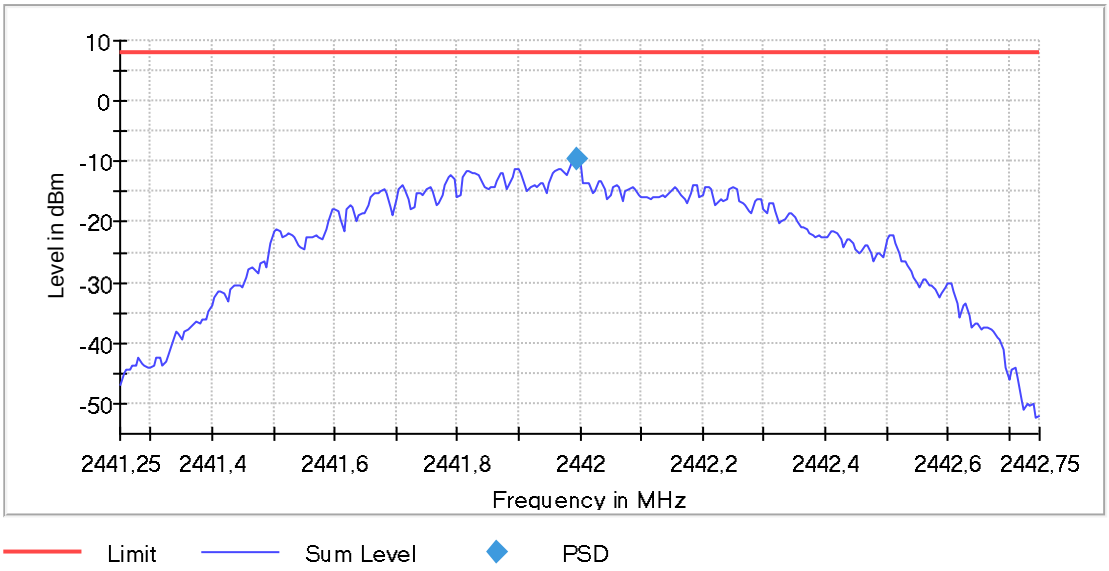
Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40125 GHz	2.40125 GHz
Stop Frequency	2.40275 GHz	2.40275 GHz
Span	1.500 MHz	1.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	301	~ 300
Sweeptime	60.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	25.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	3 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.14 dB	0.50 dB

Peak Power Spectral Density (2442 MHz; 10,000 dBm; 1 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2442.000000	2441.995000	-9.615	8.0	PASS



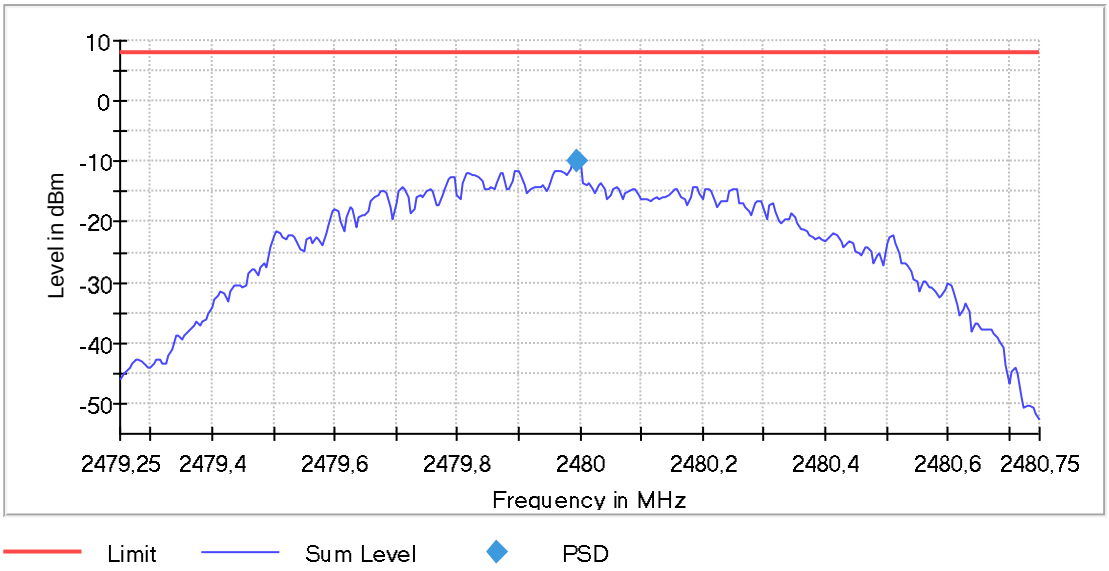
Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.44125 GHz	2.44125 GHz
Stop Frequency	2.44275 GHz	2.44275 GHz
Span	1.500 MHz	1.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	301	~ 300
Sweeptime	60.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	25.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	3 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.24 dB	0.50 dB

Peak Power Spectral Density (2480 MHz; 10,000 dBm; 1 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2480.000000	2479.995000	-9.900	8.0	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47925 GHz	2.47925 GHz
Stop Frequency	2.48075 GHz	2.48075 GHz
Span	1.500 MHz	1.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	301	~ 300
Sweeptime	60.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	25.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	Sweep
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	4 / max. 150	max. 150
Stable	2 / 2	2
Max Stable Difference	0.12 dB	0.50 dB

1.7. 20dBc Emissions

1.7.1. Channel 01 (Low)

1.7.1.1. Reference within the band

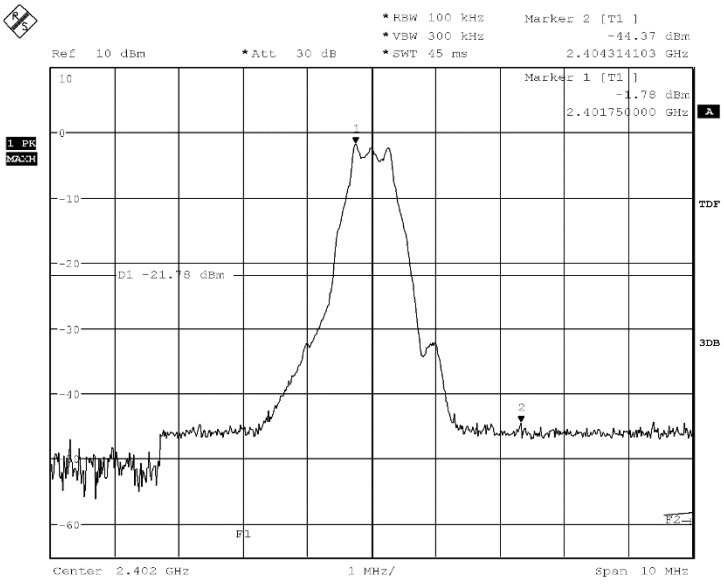


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Diagram 1: 20dBc requierement

1.7.1.2. Sweep 1: 150kHz to 30MHz

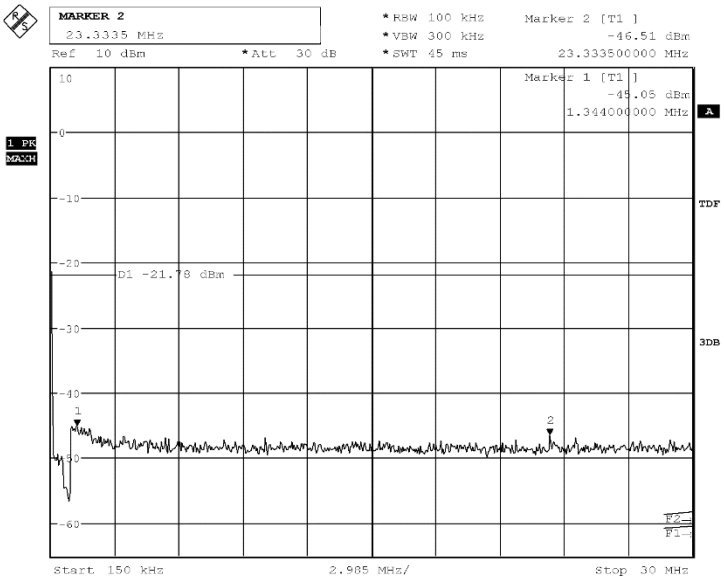

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Diagram 2: 20dBc requierement

1.7.1.3. Sweep 2: 30MHz to 2.8GHz

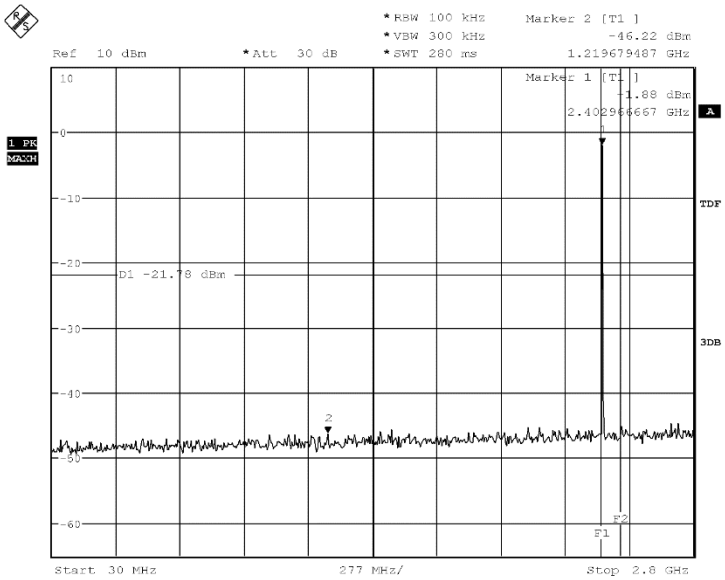

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Diagram 3: 20dBc requierement

1.7.1.4. Sweep 2: 2.8GHz to 25GHz

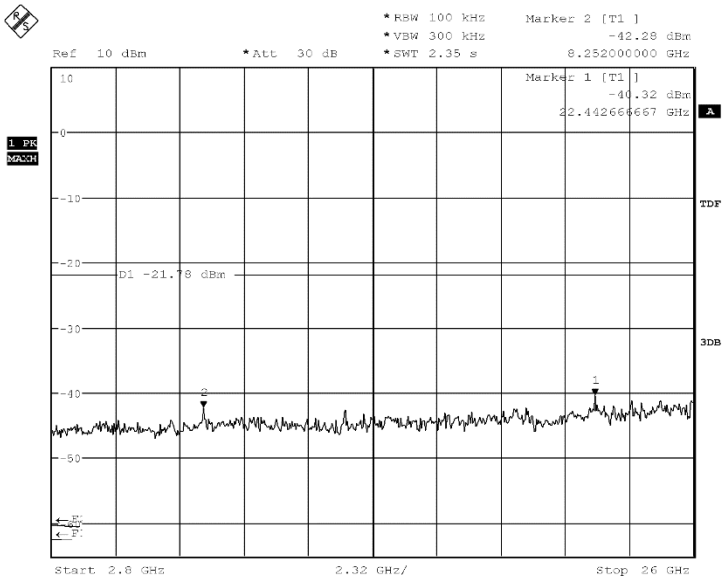

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Diagram 4: 20dBc requierement

1.7.2. Channel middle (Ch20)

1.7.2.1. Reference

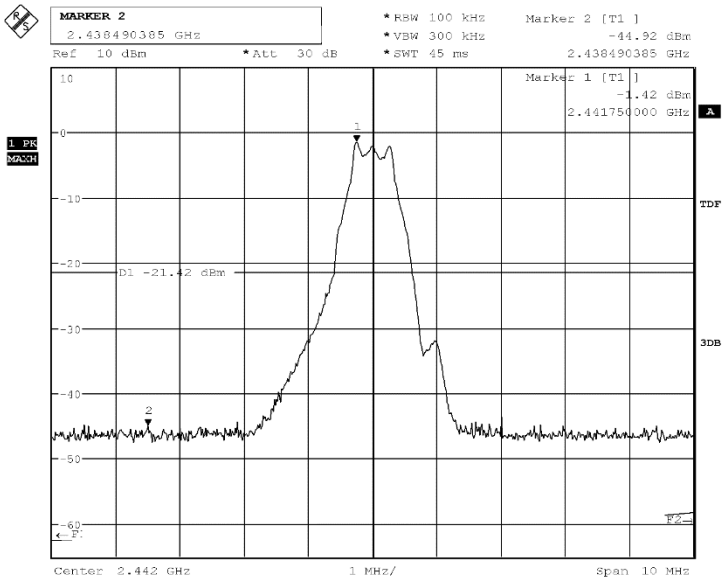


Diagram 5: 20dBc requierement

1.7.2.2. Sweep 1: 150kHz to 30MHz

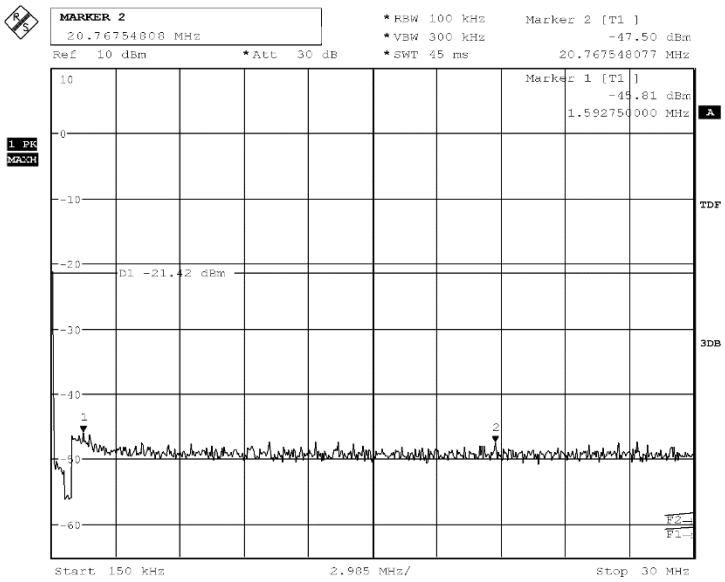
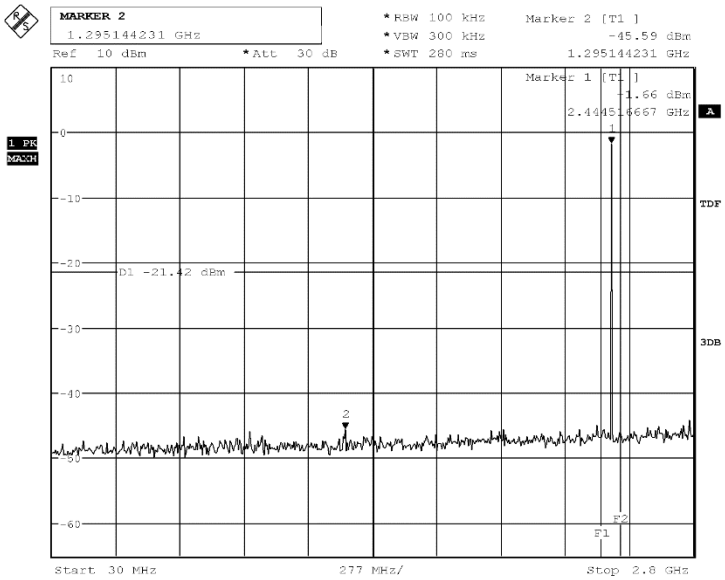


Diagram 6: 20dBc requierement

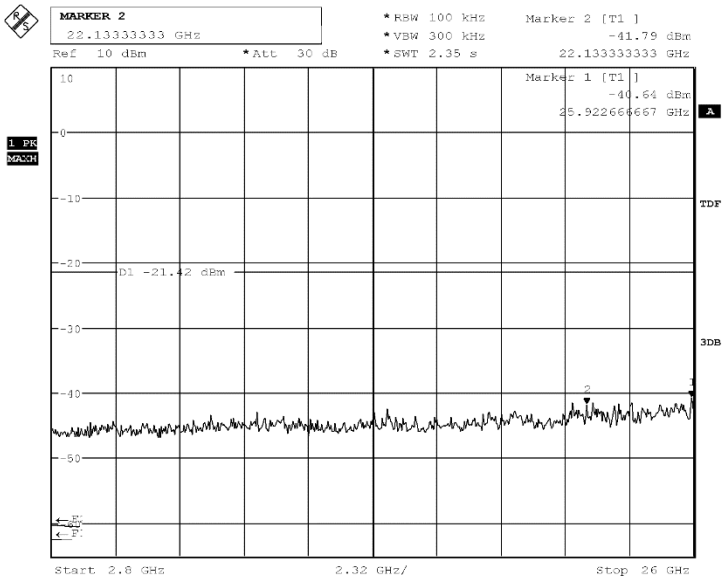
1.7.2.3. Sweep 2: 30MGHz to 2.8GHz



Date: 21.AUG.2019 14:07:15

Diagram 7: 20dBc requierement

1.7.2.4. Sweep 3: 2.8GHz to 26GHz



Date: 21.AUG.2019 14:06:20

Diagram 8: 20dBc requierement

1.7.3. Channel 39 (high)

1.7.3.1. Reference

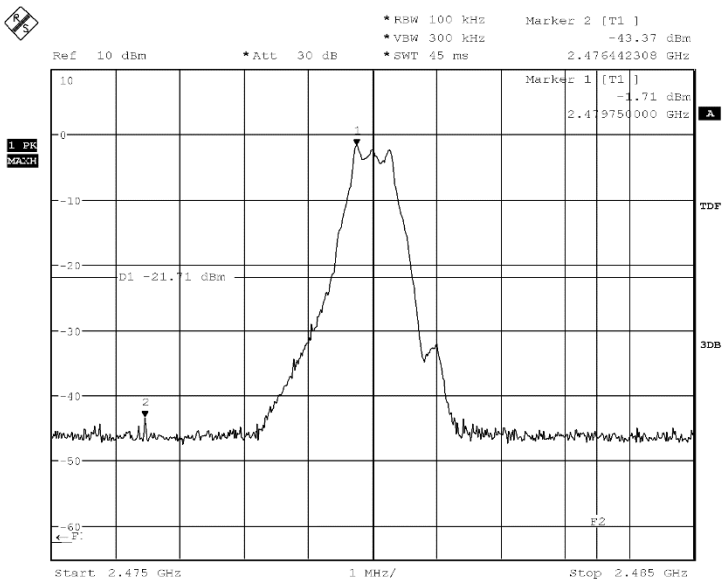


Diagram 9: 20dBc requierement

1.7.3.2. Sweep 1: 150kHz to 30MHz

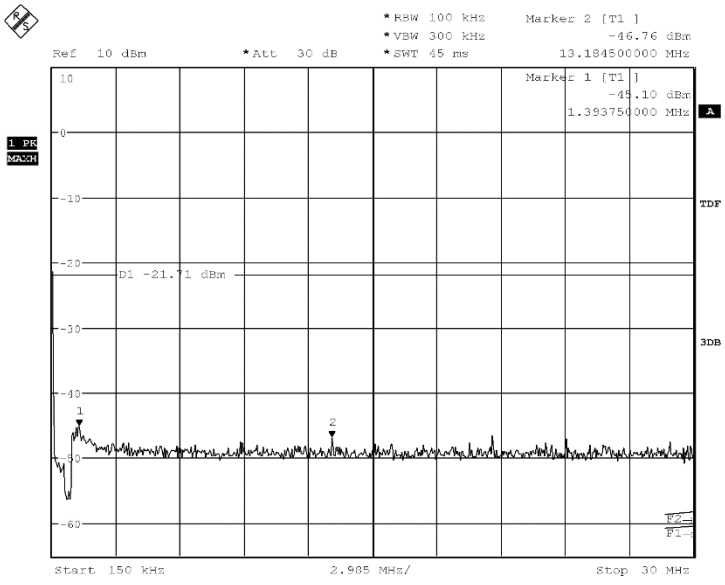
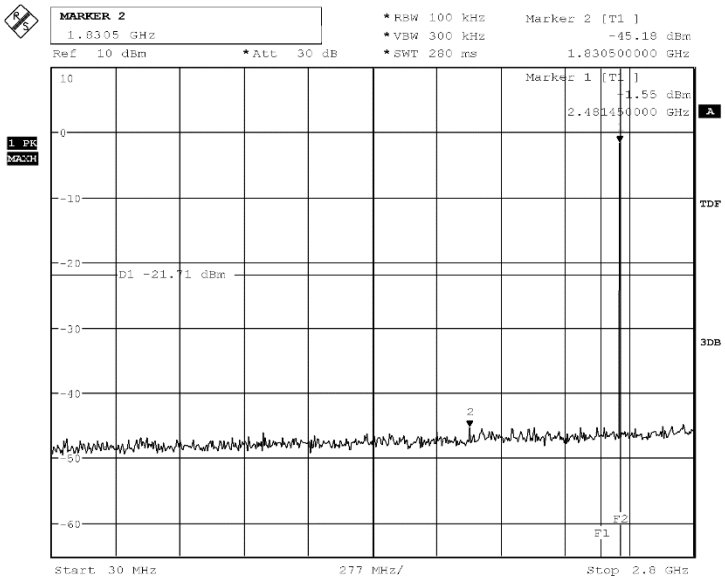


Diagram 10: 20dBc requierement

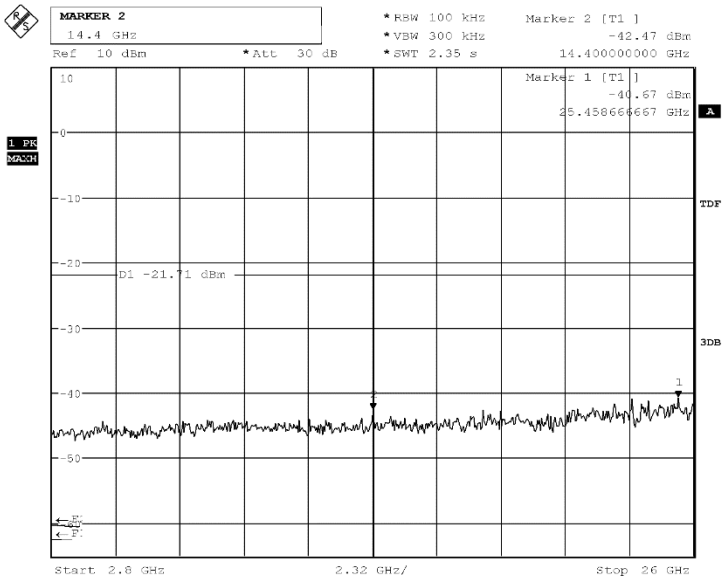
1.7.3.3. Sweep 2: 30MHz to 2.8GHz



Date: 21.AUG.2019 13:57:05

Diagram 11: 20dBc requierement

1.7.3.4. Sweep 3: 2.8GHz to 26GHz



Date: 21.AUG.2019 13:58:24

Diagram 12: 20dBc requierement

2. Radiated field strength measurements accord. §15.209&15.205

2.1. Magnetic field measurements f<30MHz

2.01a_BT_LE_low_standing

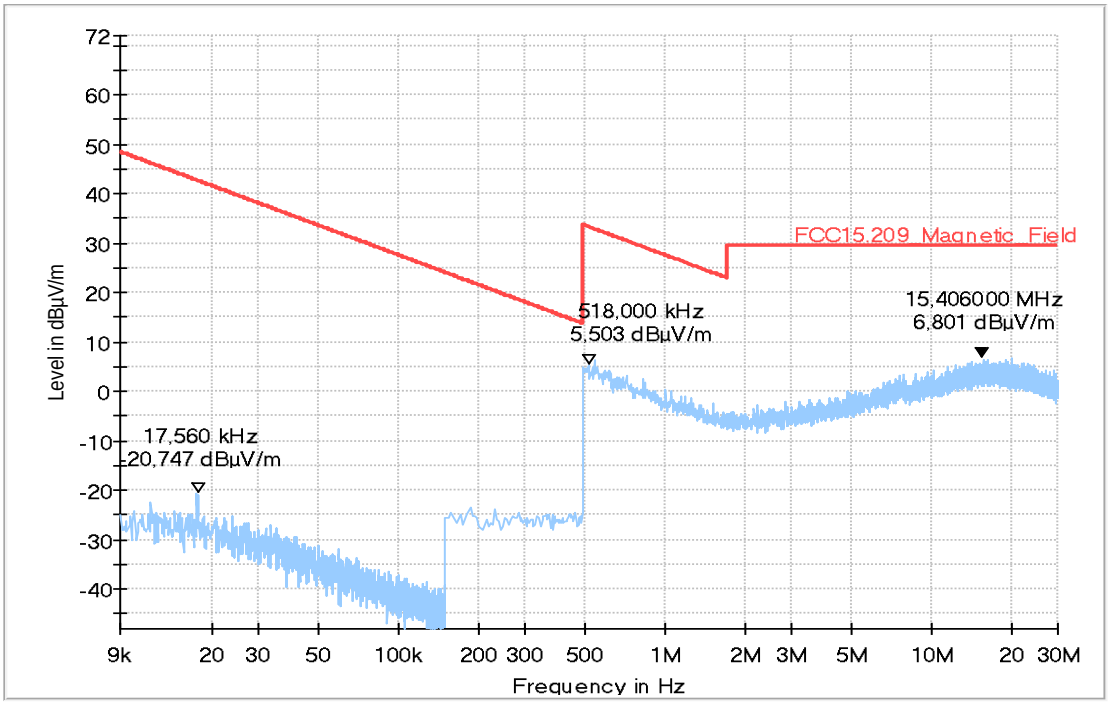
Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Used filter:	bypass
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	MKh
Operating Mode:	Bluetooth LE - Low Channel-2402 MHz
Power during tests:	12V DC
Environmental Conditions::	Humidity : 56%rH; Temperature: 21°C
EUT Setup:	Standing
Verdict:	Passed

EUT Information

Manufacturer:	Continental Advanced Antenna GmbH
Product:	DDAECE02
Model:	BT-Transceiver
HW version:	01S
SW version:	BT-Stack: 01.03.05
Serial number:	52512491
Connected Interfaces:	CAN
Power Supply:	12V DC
Comments:	19-1-01076S04

Full Spectrum



➔ no relevant peaks visible only noise floor

2.01b_BT_LE_low_laying

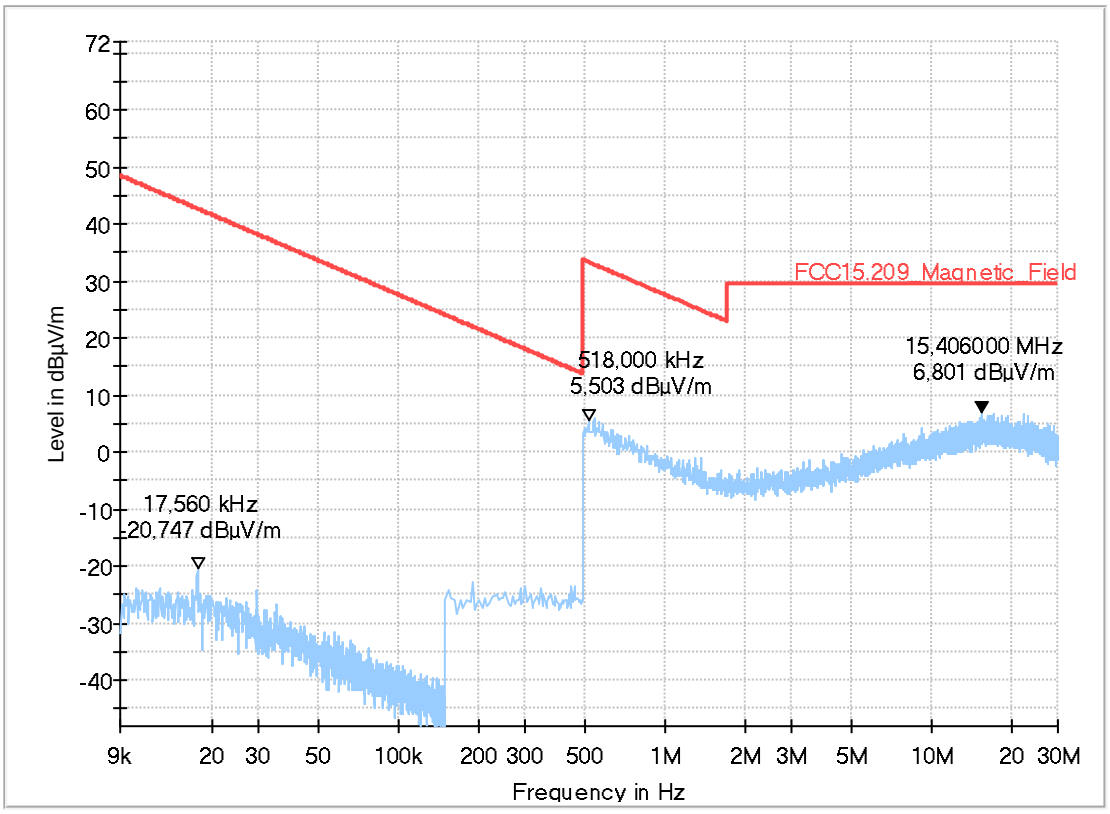
Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Used filter:	bypass
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	TFA
Operating Mode:	Bluetooth LE - low Channel
Power during tests:	12V DC
Environmental Conditions::	Humidity : 56%rH; Temperature: 22,0°C
EUT Setup:	Laying
Verdict:	Passed

EUT Information

Manufacturer:	Continental Advanced Antenna GmbH
Product:	DDAECE02
Model:	BT-Transceiver
HW version:	01S
SW version:	BT-Stack: 01.03.05
Serial number:	52512491
Connected Interfaces:	CAN
Power Supply:	12V DC
Comments:	19-1-01076S04

Full Spectrum



2.02a_BT_LE_mid_standing

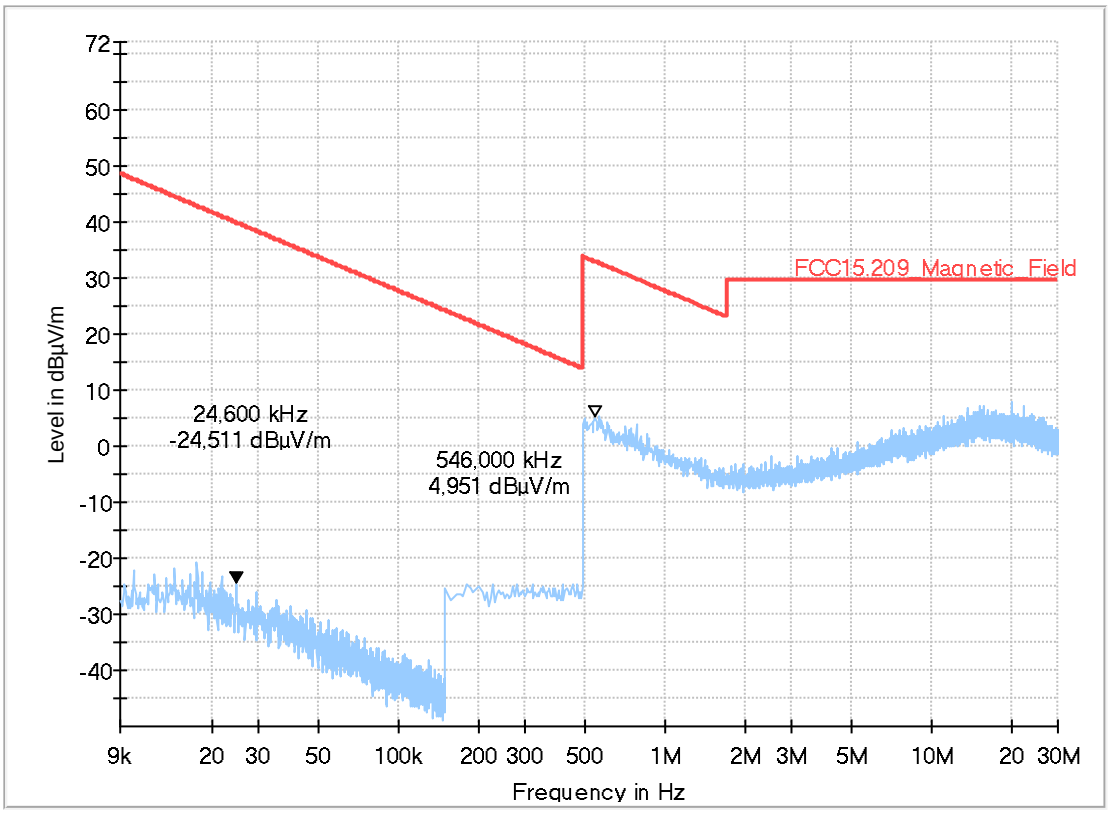
Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Used filter:	bypass
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	TFra/MKh
Operating Mode:	Bluetooth LE - Mid Channel-2442 MHz
Power during tests:	12V DC
Environmental Conditions::	Humidity : 49,7%rH; Temperature: 22,2°C
EUT Setup:	Standing
Verdict:	Passed

EUT Information

Manufacturer:	Continental Advanced Antenna GmbH
Product:	DDAECE02
Model:	BT-Transceiver
HW version:	01S
SW version:	BT-Stack: 01.03.05
Serial number:	52512491
Connected Interfaces:	CAN
Power Supply:	12V DC
Comments:	19-1-01076S04

Full Spectrum



2.02b_BT_LE_mid_laying

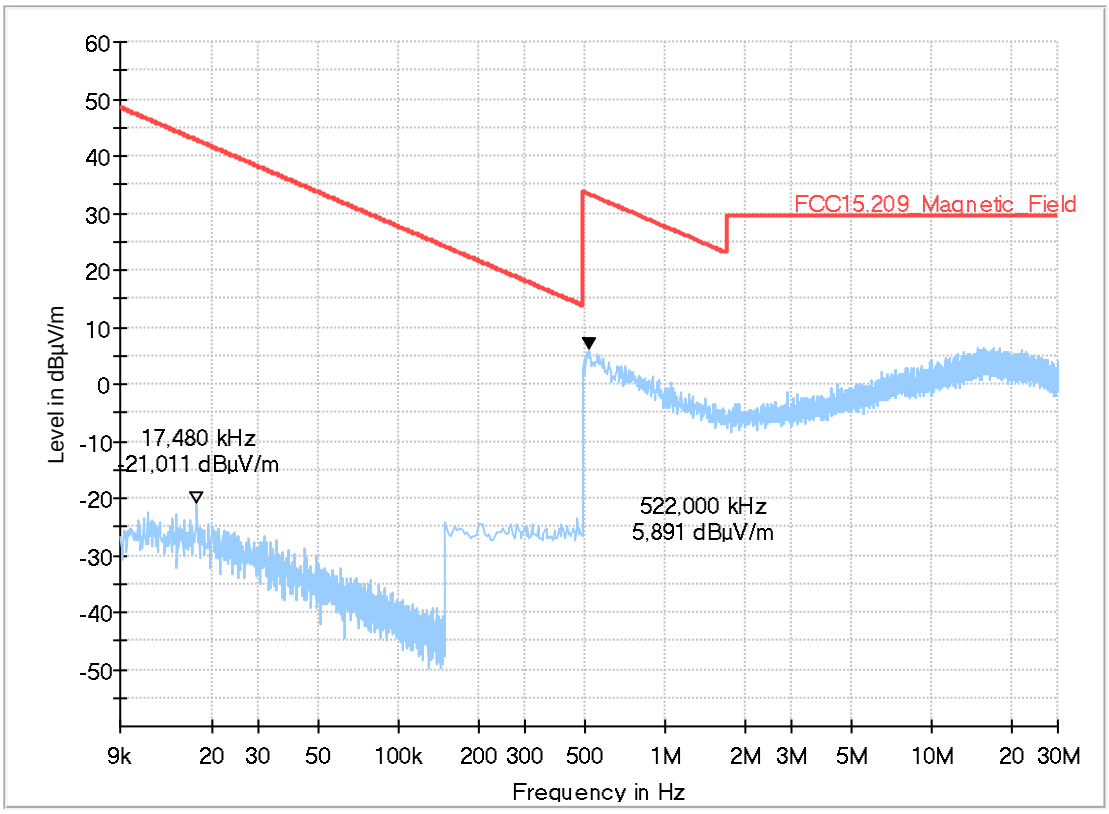
Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Used filter:	bypass
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	TFra
Operating Mode:	Bluetooth LE - Mid Channel-2442 MHz
Power during tests:	12V DC
Environmental Conditions::	Humidity : 48,9%rH; Temperature: 22,3°C
EUT Setup:	Laying
Verdict:	Passed

EUT Information

Manufacturer:	Continental Advanced Antenna GmbH
Product:	DDAECE02
Model:	BT-Transceiver
HW version:	01S
SW version:	BT-Stack: 01.03.05
Serial number:	52512491
Connected Interfaces:	CAN
Power Supply:	12V DC
Comments:	19-1-01076S04

Full Spectrum



2.03a_BT_LE_high_standing

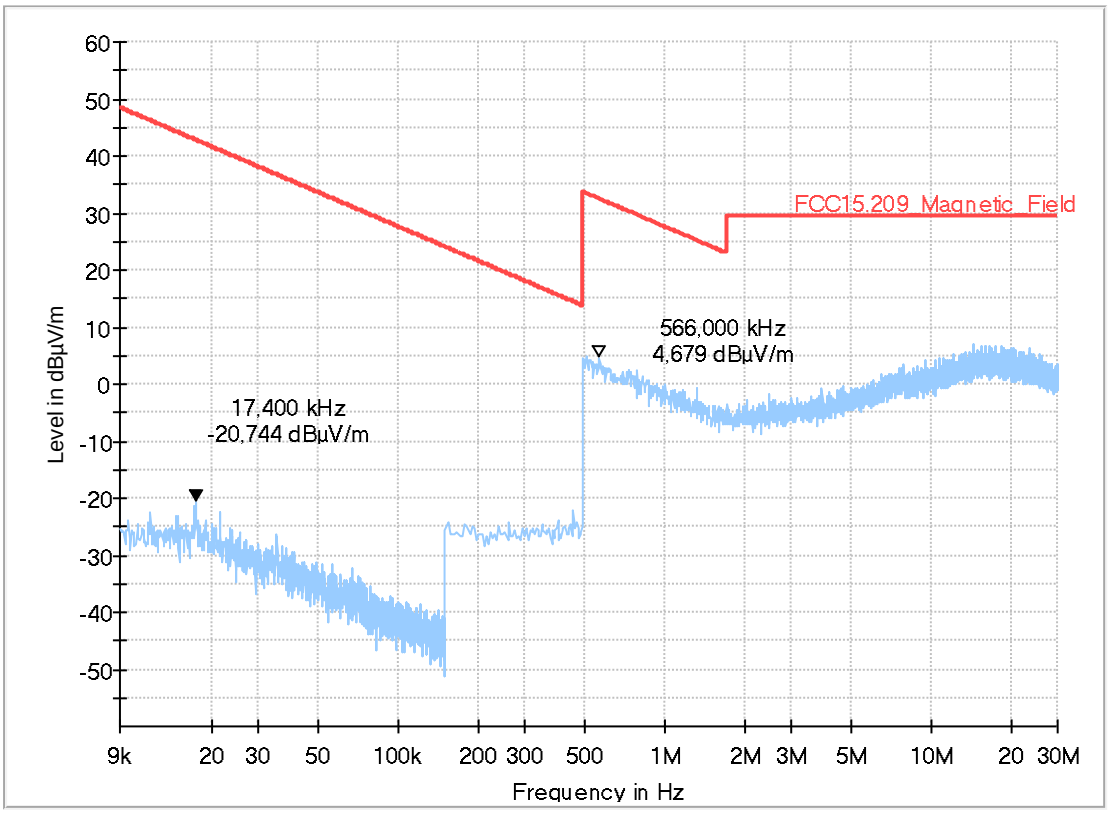
Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Used filter:	bypass
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	TFra
Operating Mode:	Bluetooth LE - High Channel-2480 MHz
Power during tests:	12V DC
Environmental Conditions::	Humidity : 48,6%rH; Temperature: 22,5°C
EUT Setup:	Standing
Verdict:	Passed

EUT Information

Manufacturer:	Continental Advanced Antenna GmbH
Product:	DDAECE02
Model:	BT-Transceiver
HW version:	01S
SW version:	BT-Stack: 01.03.05
Serial number:	52512491
Connected Interfaces:	CAN
Power Supply:	12V DC
Comments:	19-1-01076S04

Full Spectrum



2.03b_BT_LE_high_laying

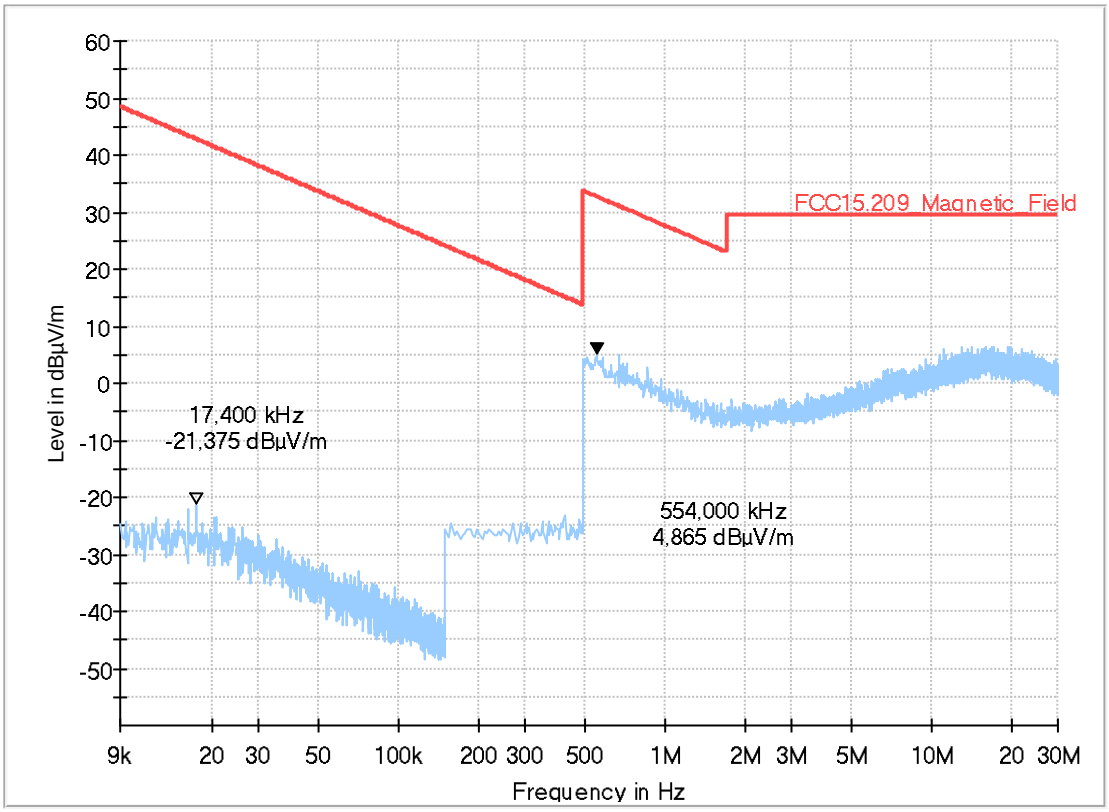
Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see page 2 for detailed data of measurement setup
Rec. antenna (pre-scan):	height 1.00 m, parallel and 90° to EUT polarisation
Used filter:	bypass
Test specification:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	TFra
Operating Mode:	Bluetooth LE - High Channel-2480 MHz
Power during tests:	12V DC
Environmental Conditions::	Humidity : 48,7%rH; Temperature: 22,4°C
EUT Setup:	Laying
Verdict:	Passed

EUT Information

Manufacturer:	Continental Advanced Antenna GmbH
Product:	DDAECE02
Model:	BT-Transceiver
HW version:	01S
SW version:	BT-Stack: 01.03.05
Serial number:	52512491
Connected Interfaces:	CAN
Power Supply:	12V DC
Comments:	19-1-01076S04

Full Spectrum

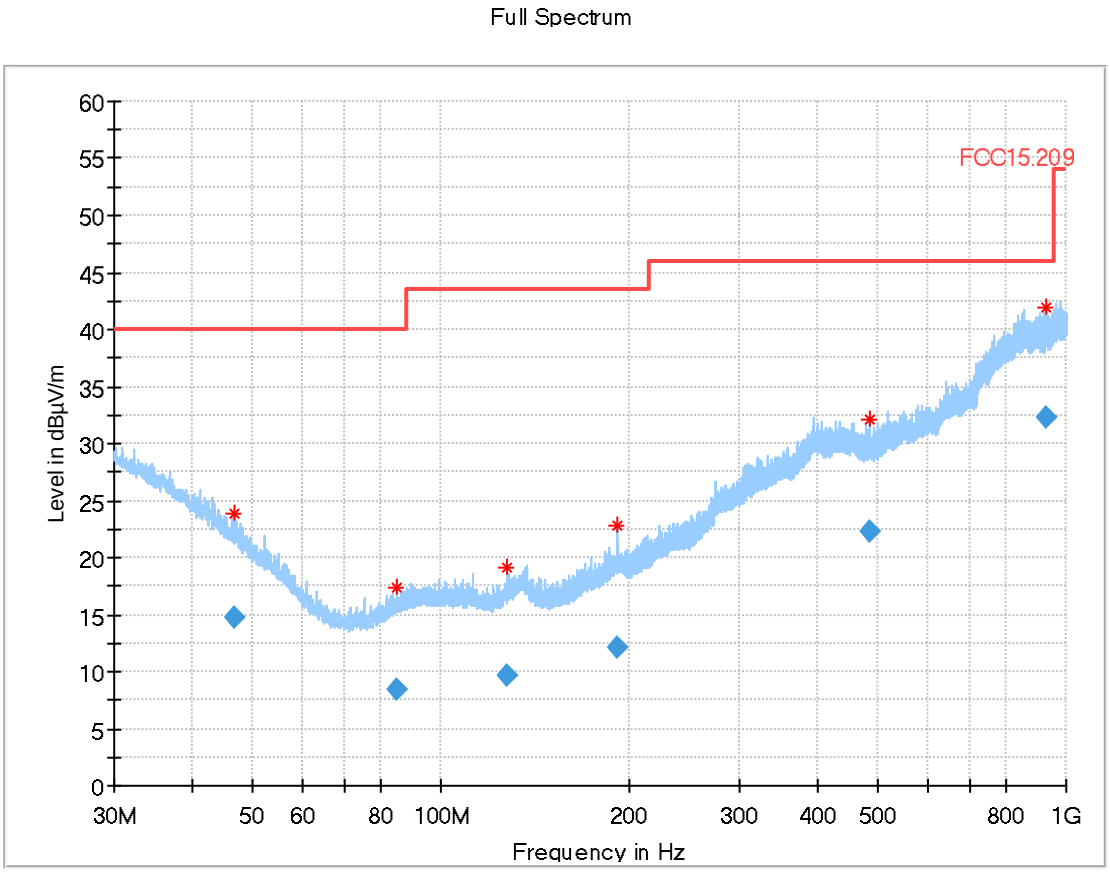


2.2. Field strength measurements f < 1GHz

3.00_Reference_Measurement_30MHz-1GHz

Common Information

Test Description:	Electric Field Strength Measurement
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.0
Distance correction:	not used
Used Filter:	not used
Technical Data:	please see page 2 for detailed data of measurement setup
Test Standard.:	FCC 15.209; RSS-Gen: Issue 5
Operator:	MKh
Operating Mode:	Leer Messung/ Reference measurement
Environmental Conditions::	Humidity : 52%rH; Temperature: 20°C
Verdict:	Passed



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
46.676000	14.76	40.00	25.24	120.000	294.0	V	98.0	14.4
84.664000	8.50	40.00	31.50	120.000	200.0	H	240.0	7.7
127.356000	9.63	43.50	33.87	120.000	352.0	V	211.0	8.6
191.036000	12.04	43.50	31.46	120.000	134.0	H	70.0	11.5
485.828000	22.30	46.00	23.70	120.000	175.0	H	0.0	19.5
927.688000	32.21	46.00	13.79	120.000	223.0	V	244.0	27.0

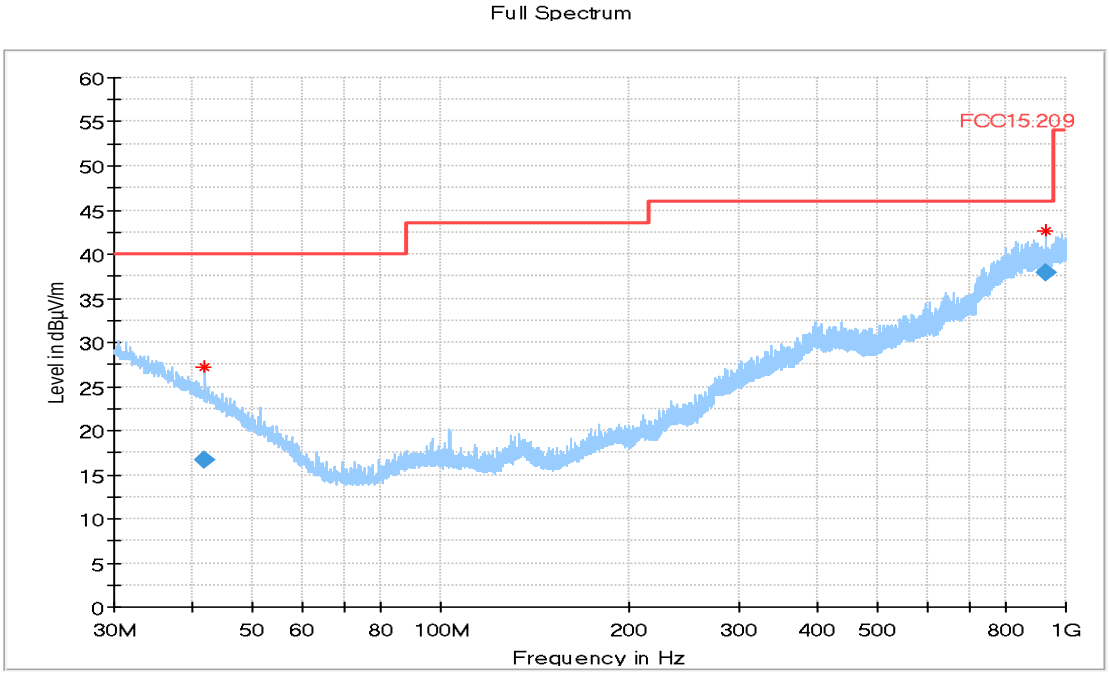
3.01a_BT_LE_low_standing

Common Information

Test description:	Electric Field Strength Measurement
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.0
Distance correction:	not used
Used filter:	not used
Technical Data:	please see page 2 for detailed data of measurement setup
Test specification.:	FCC 15.209; RSS-Gen: Issue 5
Operator:	TFra
Operating Mode:	Bluetooth LE - Low Channel-2402 MHz
Power during tests:	12V DC
Environmental Conditions::	Humidity : 48,5%rH; Temperature: 22,5°C
EUT Setup:	Standing
Verdict:	Passed

EUT Information

Manufacturer:	Continental Advanced Antenna GmbH
Product:	DDAECE02
Model:	BT-Transceiver
HW version:	01S
SW version:	BT-Stack: 01.03.05
Serial number:	52512491
Connected Interfaces:	CAN
Power Supply:	12V DC
Comments:	19-1-01076S04



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
41.880000	16.66	40.00	23.34	120.000	173.0	V	167.0	16.3
928.460000	37.86	46.00	8.14	120.000	147.0	V	118.0	27.0

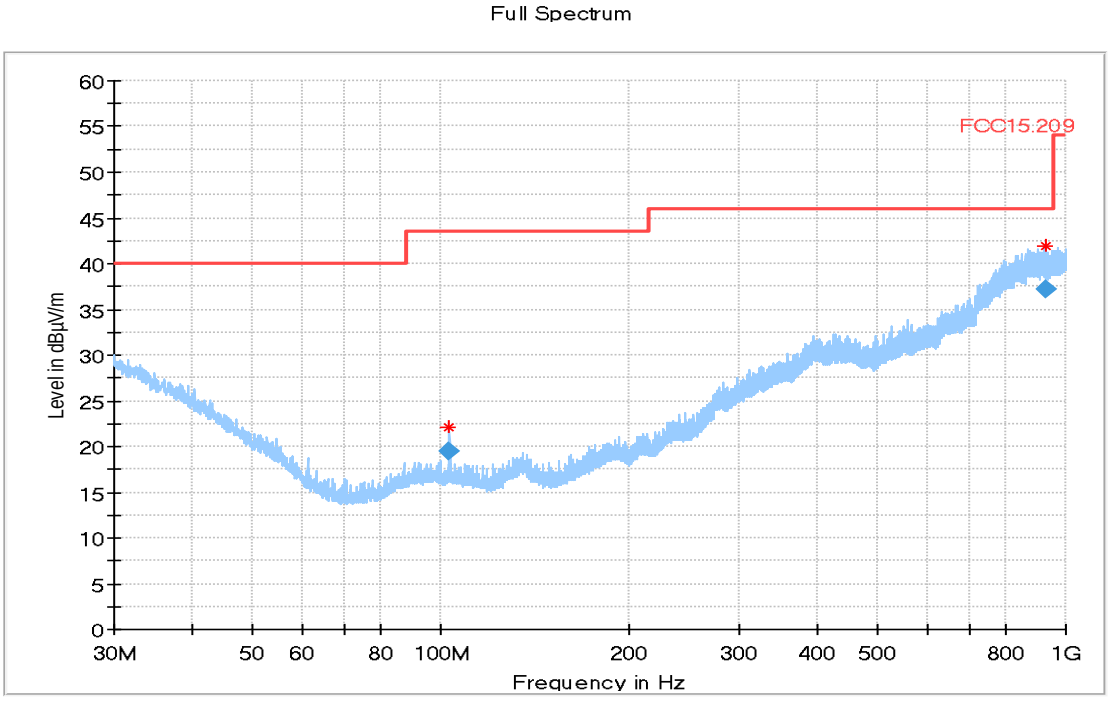
3.01b_BT_LE_low_laying

Common Information

Test description:	Electric Field Strength Measurement
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.0
Distance correction:	not used
Used filter:	not used
Technical Data:	please see page 2 for detailed data of measurement setup
Test specification.:	FCC 15.209; RSS-Gen: Issue 5
Operator:	TFra
Operating Mode:	Bluetooth LE - Low Channel-2402 MHz
Power during tests:	12V DC
Environmental Conditions::	Humidity : 49,2%rH; Temperature: 22,5°C
EUT Setup:	Laying
Verdict:	Passed

EUT Information

Manufacturer:	Continental Advanced Antenna GmbH
Product:	DDAECE02
Model:	BT-Transceiver
HW version:	01S
SW version:	BT-Stack: 01.03.05
Serial number:	52512491
Connected Interfaces:	CAN
Power Supply:	12V DC
Comments:	19-1-01076S04



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
103.308000	19.44	43.50	24.06	120.000	136.0	V	170.0	8.1
928.400000	37.15	46.00	8.85	120.000	338.0	V	178.0	27.0

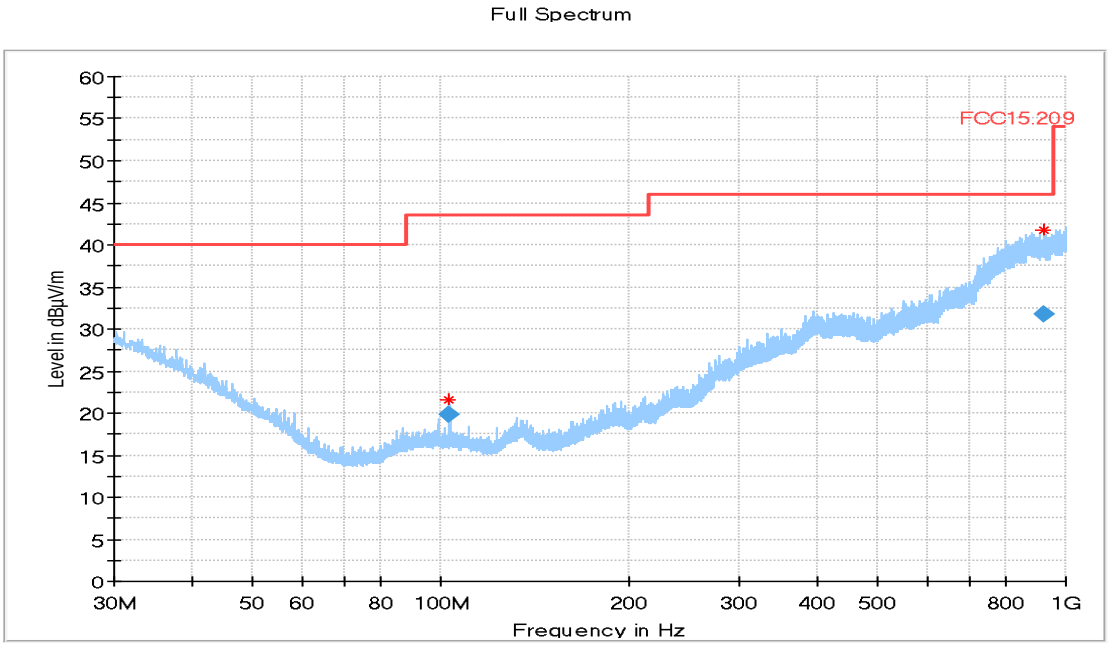
3.02a_BT_LE_mid_standing

Common Information

Test description:	Electric Field Strength Measurement
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.0
Distance correction:	not used
Used filter:	not used
Technical Data:	please see page 2 for detailed data of measurement setup
Test specification.:	FCC 15.209; RSS-Gen: Issue 5
Operator:	TFra
Operating Mode:	Bluetooth LE - Mid Channel-2442 MHz
Power during tests:	12V DC
Environmental Conditions::	Humidity : 51,6%rH; Temperature: 22,3°C
EUT Setup:	Standing
Verdict:	Passed

EUT Information

Manufacturer:	Continental Advanced Antenna GmbH
Product:	DDAECE02
Model:	BT-Transceiver
HW version:	01S
SW version:	BT-Stack: 01.03.05
Serial number:	52512491
Connected Interfaces:	CAN
Power Supply:	12V DC
Comments:	19-1-01076S04



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
103.300000	19.86	43.50	23.64	120.000	117.0	V	132.0	8.1
925.160000	31.70	46.00	14.30	120.000	252.0	V	288.0	27.0

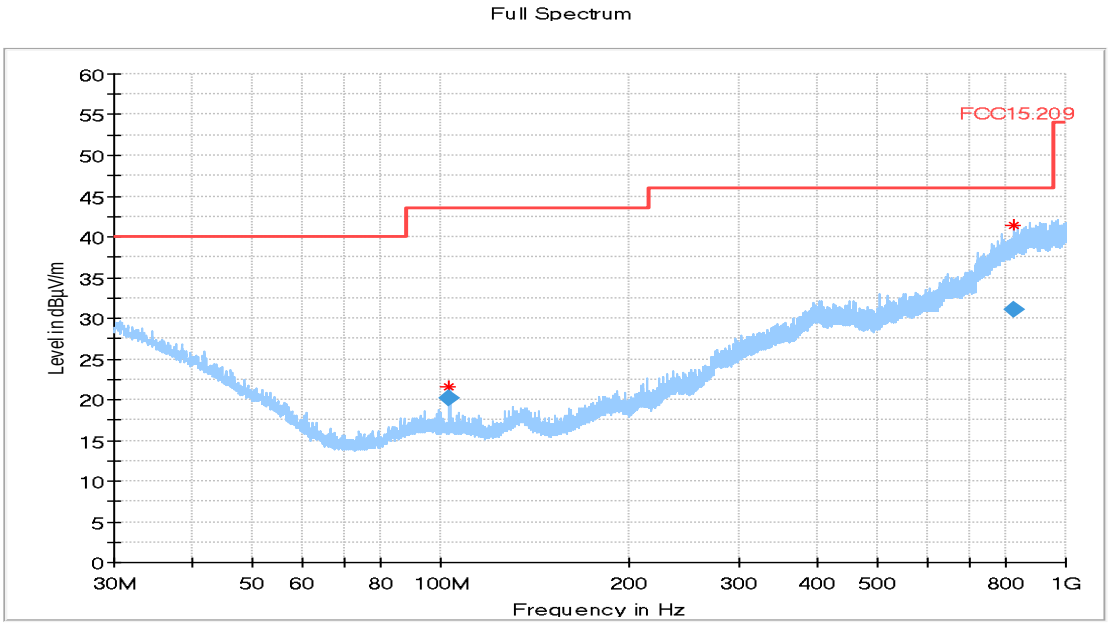
3.02b_BT_LE_mid_laying

Common Information

Test description:	Electric Field Strength Measurement
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.0
Distance correction:	not used
Used filter:	not used
Technical Data:	please see page 2 for detailed data of measurement setup
Test specification.:	FCC 15.209; RSS-Gen: Issue 5
Operator:	TFra
Operating Mode:	Bluetooth LE - Mid Channel-2442 MHz
Power during tests:	12V DC
Environmental Conditions::	Humidity : 50,5%rH; Temperature: 22,4°C
EUT Setup:	Laying
Verdict:	Passed

EUT Information

Manufacturer:	Continental Advanced Antenna GmbH
Product:	DDAECE02
Model:	BT-Transceiver
HW version:	01S
SW version:	BT-Stack: 01.03.05
Serial number:	52512491
Connected Interfaces:	CAN
Power Supply:	12V DC
Comments:	19-1-01076S04



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
103.300000	20.20	43.50	23.30	120.000	117.0	V	171.0	8.1
827.164000	31.09	46.00	14.91	120.000	255.0	H	280.0	25.5

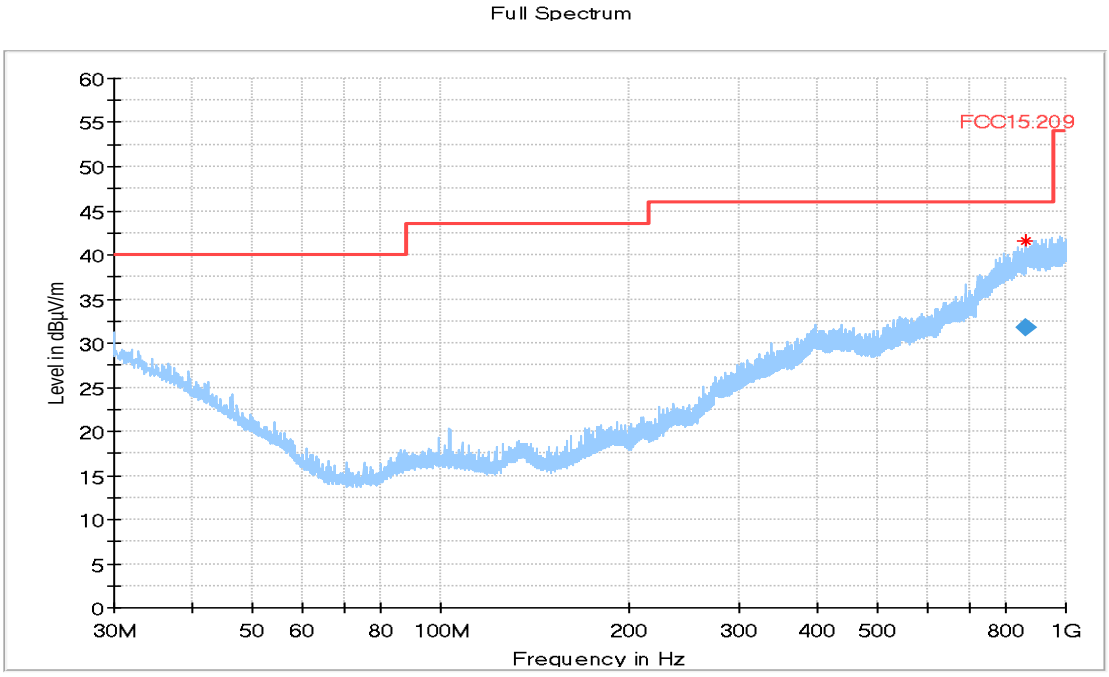
3.03a_BT_LE_high_standing

Common Information

Test description:	Electric Field Strength Measurement
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.0
Distance correction:	not used
Used filter:	not used
Technical Data:	please see page 2 for detailed data of measurement setup
Test specification.:	FCC 15.209; RSS-Gen: Issue 5
Operator:	TFra
Operating Mode:	Bluetooth LE - High Channel-2480 MHz
Power during tests:	12V DC
Environmental Conditions::	Humidity : 53,0%rH; Temperature: 22,2°C
EUT Setup:	Standing
Verdict:	Passed

EUT Information

Manufacturer:	Continental Advanced Antenna GmbH
Product:	DDAECE02
Model:	BT-Transceiver
HW version:	01S
SW version:	BT-Stack: 01.03.05
Serial number:	52512491
Connected Interfaces:	CAN
Power Supply:	12V DC
Comments:	19-1-01076S04



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
862.984000	31.82	46.00	14.18	120.000	233.0	H	27.0	26.6

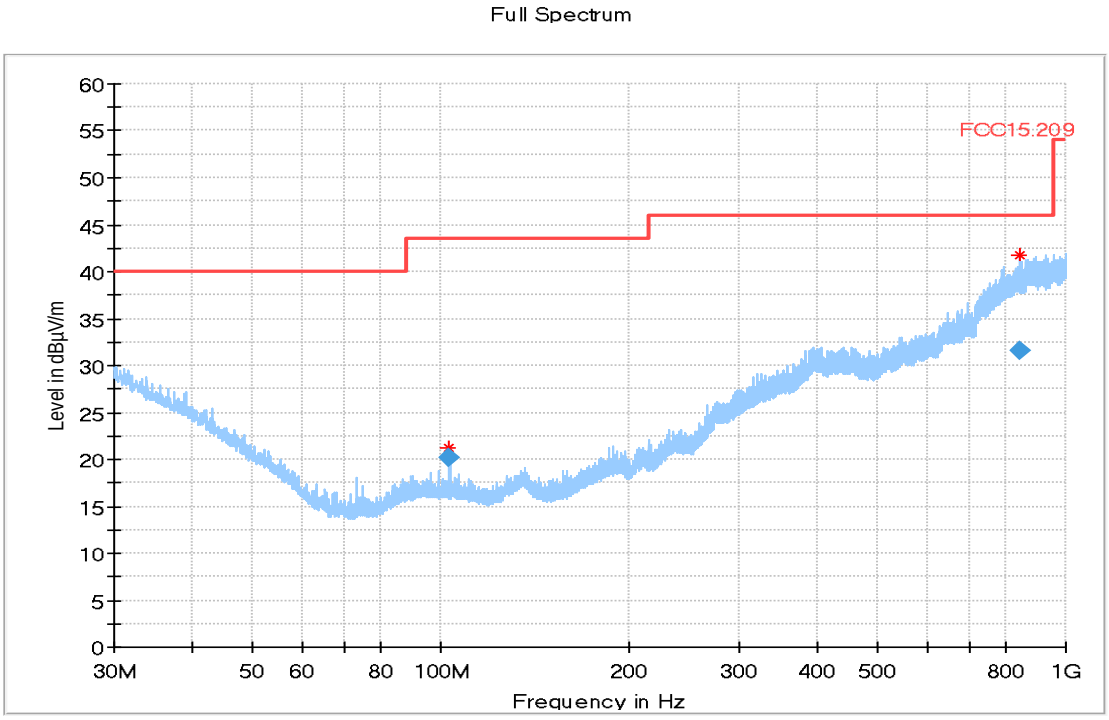
3.03b_BT_LE_high_laying

Common Information

Test description:	Electric Field Strength Measurement
Test site and distance:	Ref.-Nr. 441 Semi Anechoic Room (SAR) with 3 m measurement distance
Version of Testsoftware:	EMC32 V9.25.0
Distance correction:	not used
Used filter:	not used
Technical Data:	please see page 2 for detailed data of measurement setup
Test specification.:	FCC 15.209; RSS-Gen: Issue 5
Operator:	TFra
Operating Mode:	Bluetooth LE - High Channel-2480 MHz
Power during tests:	12V DC
Environmental Conditions::	Humidity : 53,1%rH; Temperature: 22,1°C
EUT Setup:	Laying
Verdict:	Passed

EUT Information

Manufacturer:	Continental Advanced Antenna GmbH
Product:	DDAECE02
Model:	BT-Transceiver
HW version:	01S
SW version:	BT-Stack: 01.03.05
Serial number:	52512491
Connected Interfaces:	CAN
Power Supply:	12V DC
Comments:	19-1-01076S04



Final_Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
103.304000	20.14	43.50	23.36	120.000	112.0	V	129.0	8.1
841.356000	31.57	46.00	14.43	120.000	190.0	H	193.0	26.1

2.3. Field strength measurements f < 18GHz

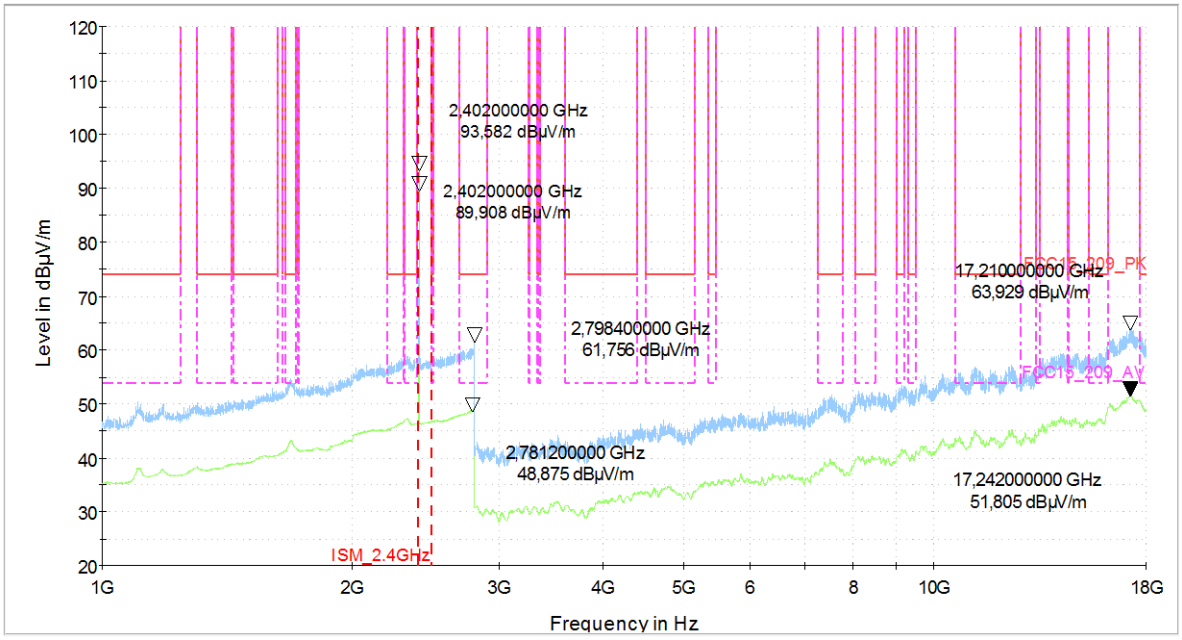
4.01a_BT_LE_low

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	BLE_TX_low (2402MHz | ch low)
Operator:	HEI
EUT Setup:	1
Verdict:	Passed

EUT Information

Manufacturer:	Continental Advanced Antenna GmbH
Product:	DDAECE02
Model:	BT-Transceiver
HW version:	01S
SW version:	BT-Stack: 01.03.05
Serial number:	52512491
Connected Interfaces:	CAN
Power Supply:	12V DC
Comments:	19-1-01076S04



➔ no relevant peaks visible only noise floor

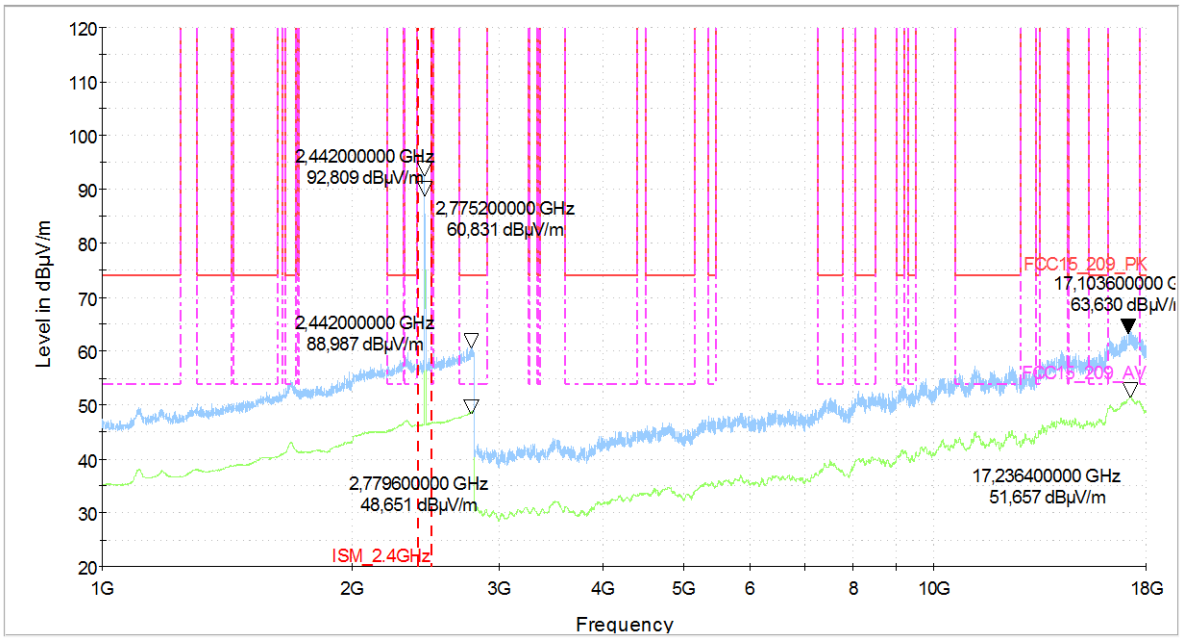
4.02a_BT_LE_mid

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	BLE_TX_mid
Operator:	npe
Comment:	Channel no. 20
Comment2:	PRBS9 sequence
EUT Setup:	1
Verdict:	Passed

EUT Information

Manufacturer:	Continental Advanced Antenna GmbH
Product:	DDAECE02
Model:	BT-Transceiver
HW version:	01S
SW version:	BT-Stack: 01.03.05
Serial number:	52512491
Connected Interfaces:	CAN
Power Supply:	12V DC
Comments:	19-1-01076S04



➔ no relevant peaks visible only noise floor

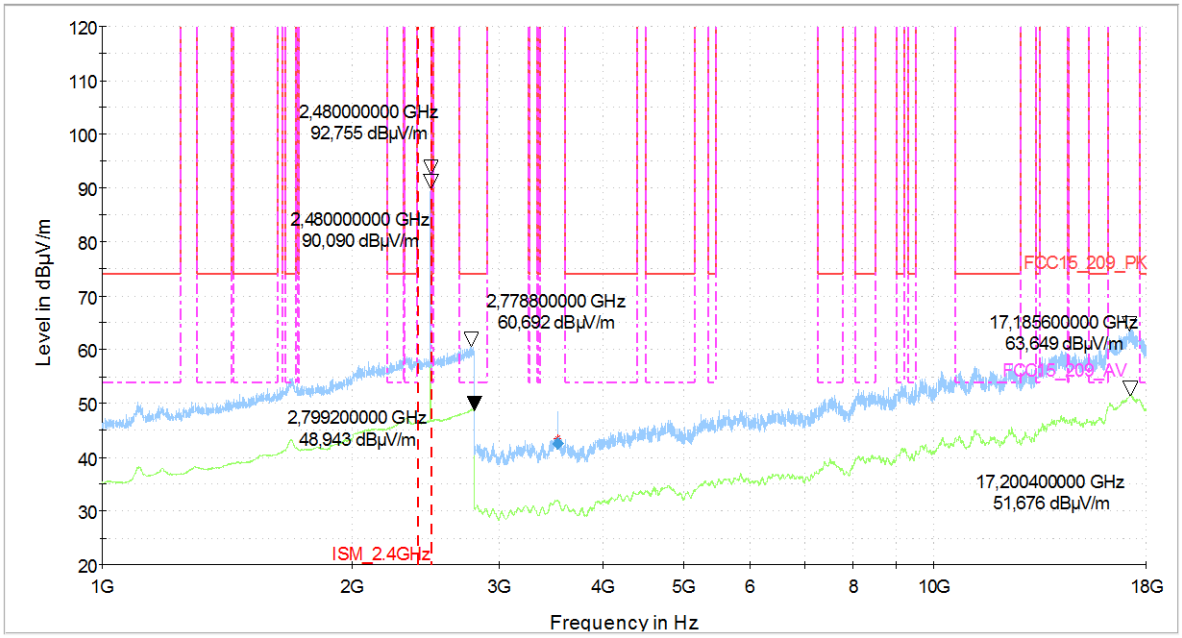
4.03a_BT_LE_high

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	High (2480MHz | ch high)
Operator:	HEI
EUT Setup:	1
Verdict:	Passed

EUT Information

Manufacturer:	Continental Advanced Antenna GmbH
Product:	DDAECE02
Model:	BT-Transceiver
HW version:	01S
SW version:	BT-Stack: 01.03.05
Serial number:	52512491
Connected Interfaces:	CAN
Power Supply:	12V DC
Comments:	19-1-01076S04

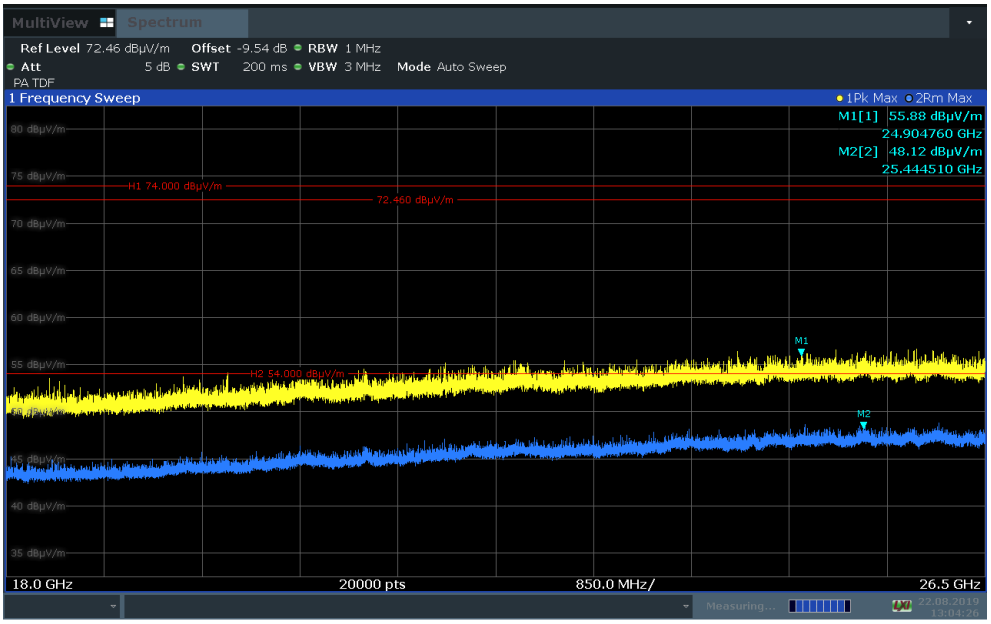


Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)
3525.600000	42.49	150.00	107.51	100.0	1000.000	155.0	V	235.0	0.0	3

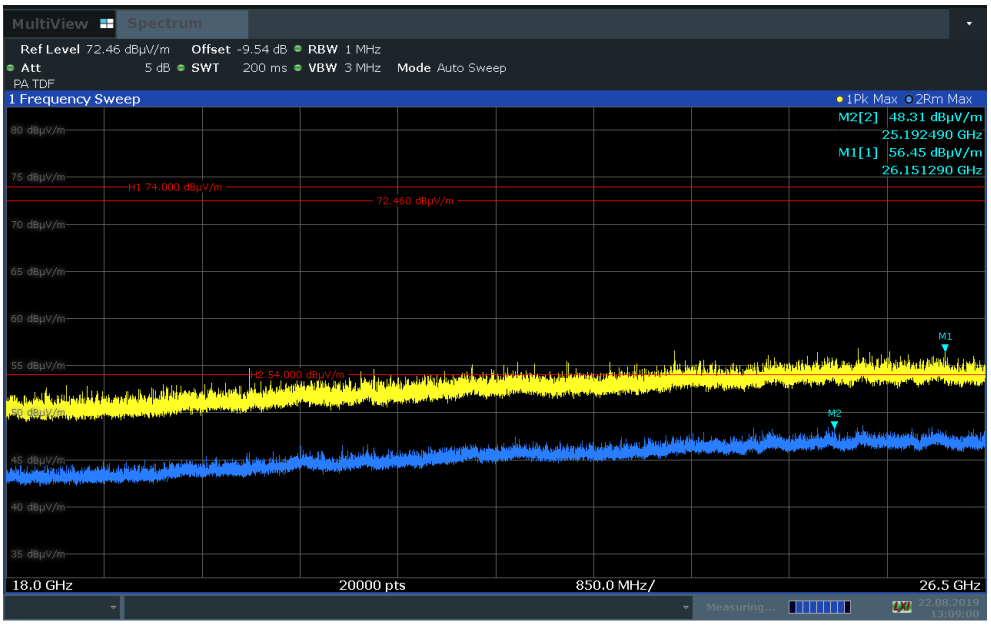
➔ Peak at 3525.60 MHz
➔ other frequencies, no relevant peaks visible only noise floor

2.4. Field strength measurements 18 < f < 26GHz



13:04:27 22.08.2019

Diagram 4.01b: Channel low (37)



13:09:00 22.08.2019

Diagram 4.02b: Channel middle (Ch38)

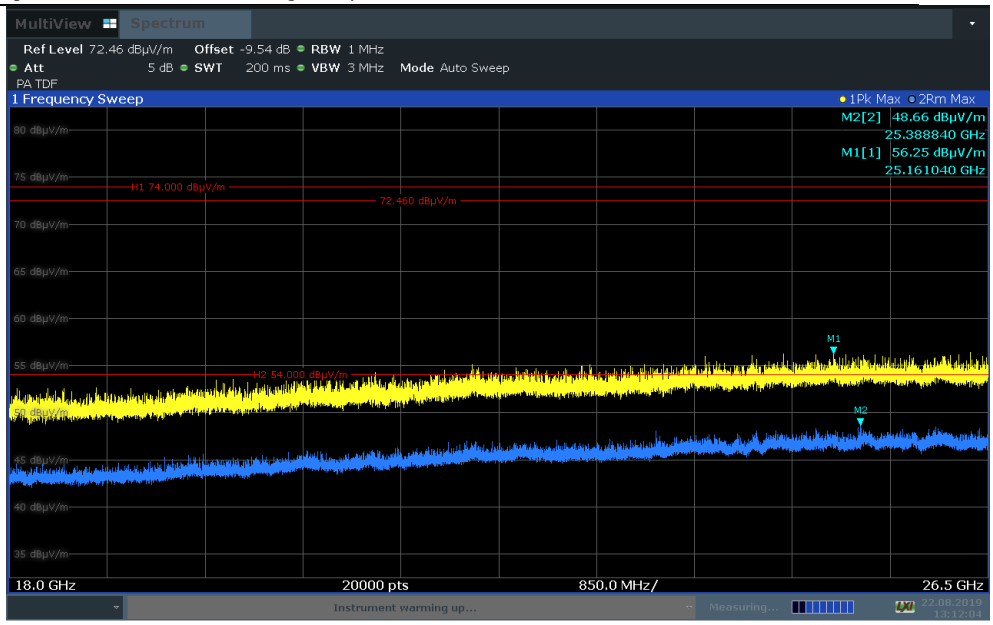


Diagram 4.03b: Channel high (Ch 39)

3. Radiated band-edge measurements accord. §15.209 & §15.205 (§15.247)

3.1. Channel low (Ch37) (left band edge)

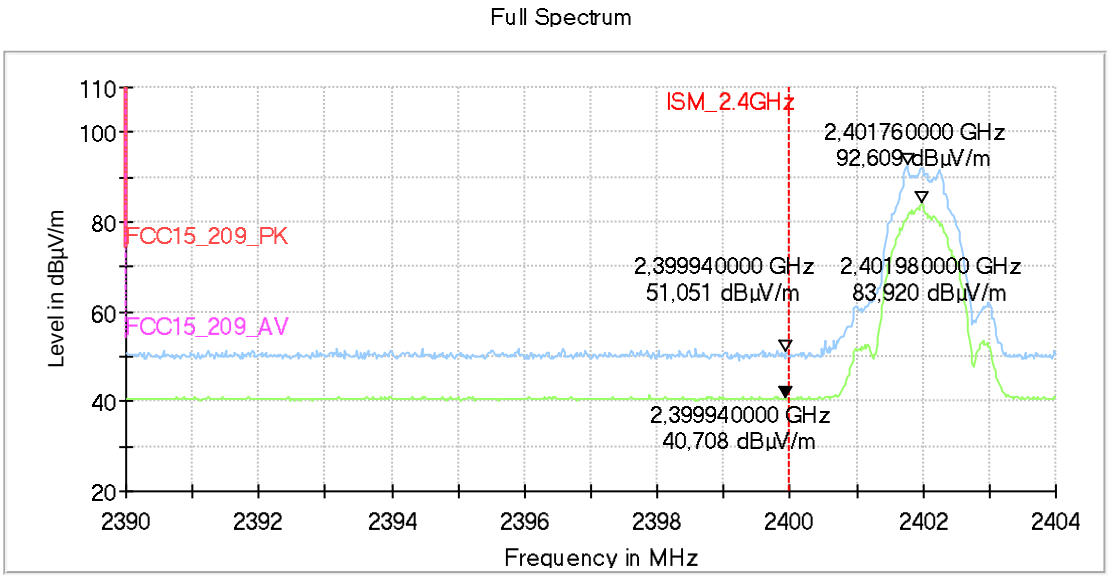
9.01_BE_BT_LE_low

Common Information

Test Description:	Band-Edge: Radiated Field Strength Emissions Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	low (2402MHz | ch low)
Operator:	npe
Comment:	Channel 0
Comment2:	PRBS9 sequence
EUT Setup:	1
Verdict:	Passed

EUT Information

Manufacturer:	Continental Advanced Antenna GmbH
Product:	DDAECE02
Model:	BT-Transceiver
HW version:	01S
SW version:	BT-Stack: 01.03.05
Serial number:	52512491
Connected Interfaces:	CAN
Power Supply:	12V DC
Comments:	19-1-01076S04



3.2. Channel low (Ch39) (high band edge)

9.02_BE_BT_LE_high

Common Information

Test Description:	Band-Edge: Radiated Field Strength Emissions Emissions in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	high (2480MHz)
Operator:	npe
Comment:	Channel 39
Comment2:	PRBS9 sequence
EUT Setup:	1
Verdict:	Passed

EUT Information

Manufacturer:	Continental Advanced Antenna GmbH
Product:	DDAECE02
Model:	BT-Transceiver
HW version:	01S
SW version:	BT-Stack: 01.03.05
Serial number:	52512491
Connected Interfaces:	CAN
Power Supply:	12V DC
Comments:	19-1-01076S04

Full Spectrum