Annex 1: Measurement diagrams to
T E S T R E P O R T
No.: 18-1-0020401T07a-C2

According to:

FCC Regulations
Part 15.205
Part 15.209
Part 15.247

ISED-Regulations
RSS-247, Issue 2
RSS-Gen, Issue 5

for
SRM GmbH

EXAKT Pedal PowerMeter

FCC ID: WCS - EXAKT
ISED: 7761A - EXAKT

HVIN: EXAKT
PMN: EXAKT

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
Wi Fi ALLIANCE AUTHORIZED RF LABORATORY / ctia Authorized Test Lab Lab Code: 20011130-00
accredited according to DIN EN ISO/IEC 17025

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TABLE OF CONTENTS:

1. Radiated Field Strength Measurements

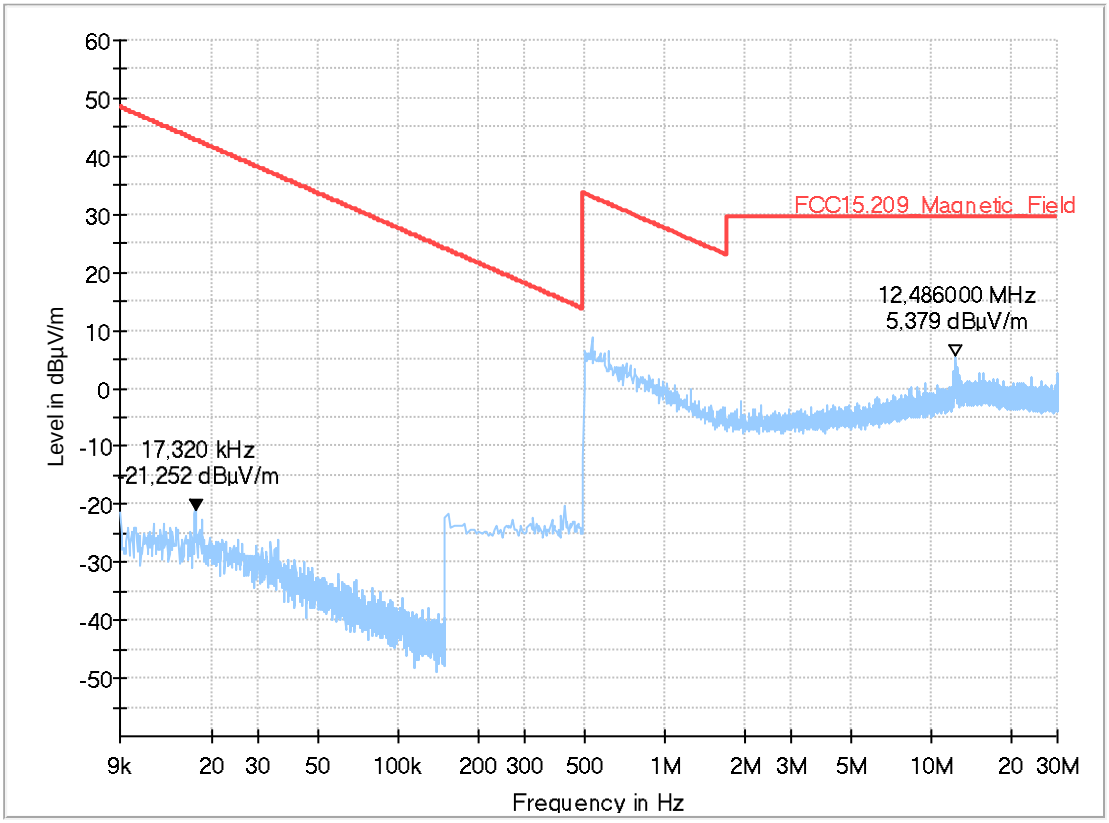
1.1. Radiated Field Strength Emissions – 9 kHz to 30 MHz

2.01a_BT-LEMODE_low_laying

Date: 16.04.2018 Page 1 of 3

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:	MBe
Operating conditions:	TX-BT-LEMODE_low_laying
Power during tests:	charging
Comment 1:	Channel low
Comment 2:	DUT Laying

Full Spectrum

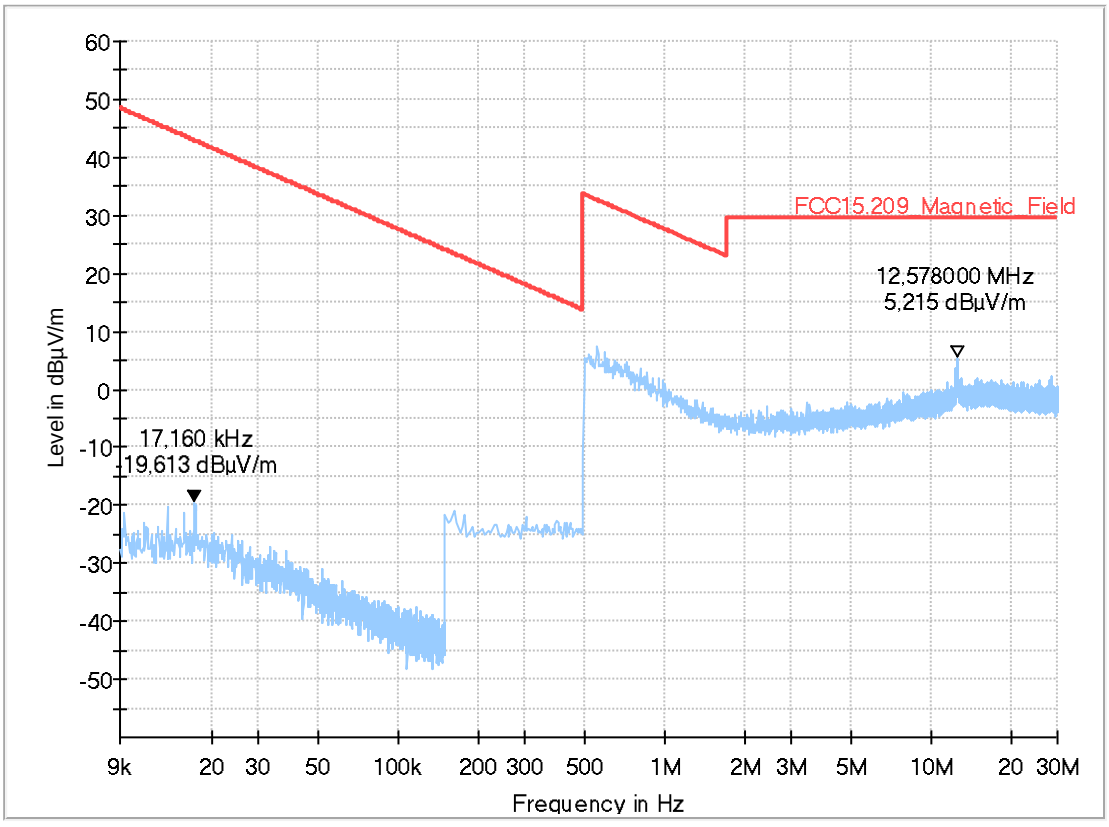


2.01b_BT-LEMODE_low_standing

Date: 16.04.2018 Page 1 of 2

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 conditions:	TX-BT-LEMODE_low_standing
Power during tests:	charging
Comment 1:	Channel low
Comment 2:	DUT Standing

Full Spectrum

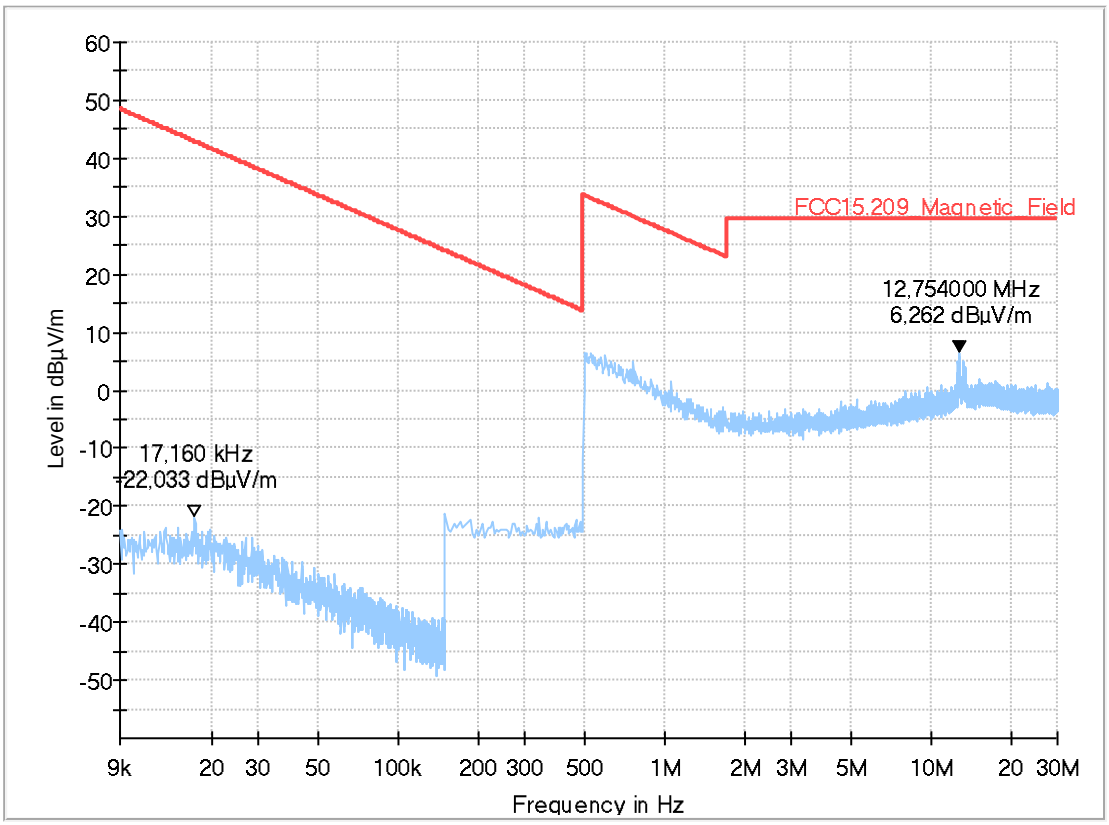


2.02a_BT-LEmid_laying

Date: 16.04.2018 Page 1 of 2

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 conditions:	TX-BT-LEmid_laying
Power during tests:	charging
Comment 1:	Channel mid
Comment 2:	DUT Laying

Full Spectrum

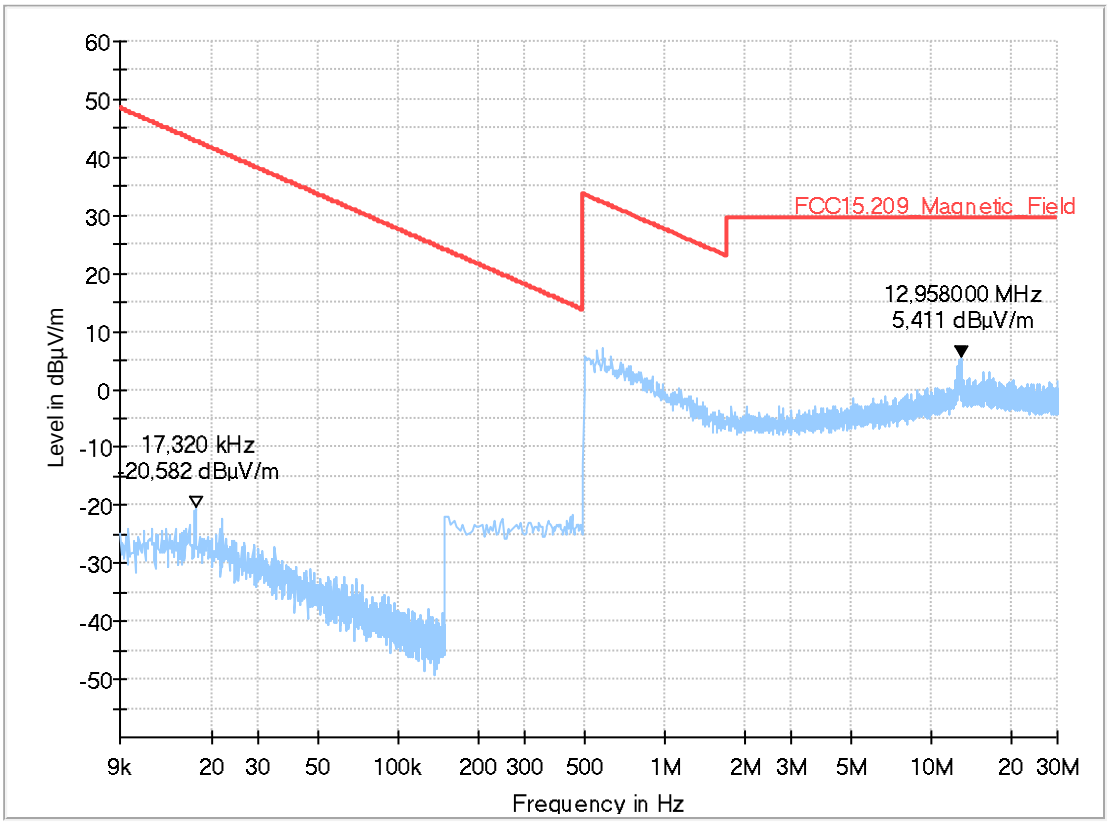


2.02b_BT-LEmid_standing

Date: 16.04.2018 Page 1 of 2

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 conditions:	TX-BT-LEmid_standing
Power during tests:	charging
Comment 1:	Channel mid
Comment 2:	DUT Standing

Full Spectrum

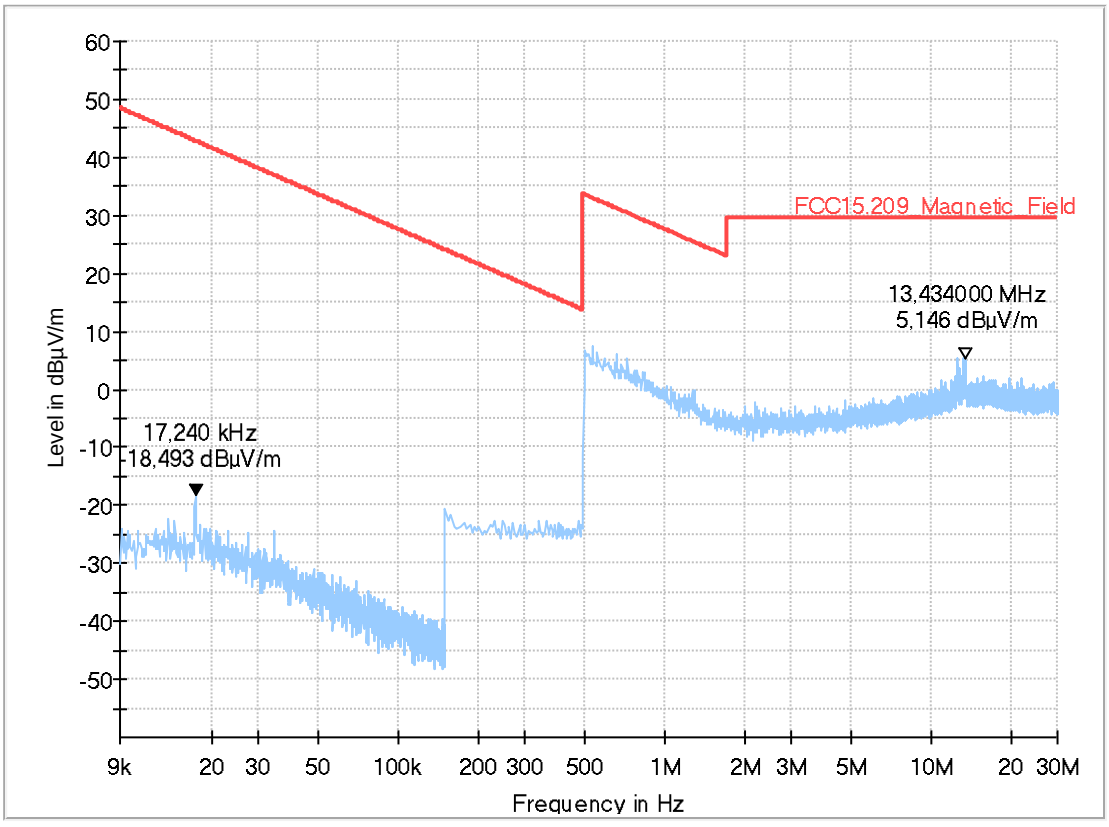


2.03a_BT-LEhigh_laying

Date: 16.04.2018 Page 1 of 2

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 conditions:	TX-BT-LEhigh_laying
Power during tests:	charging
Comment 1:	Channel high
Comment 2:	DUT Laying

Full Spectrum

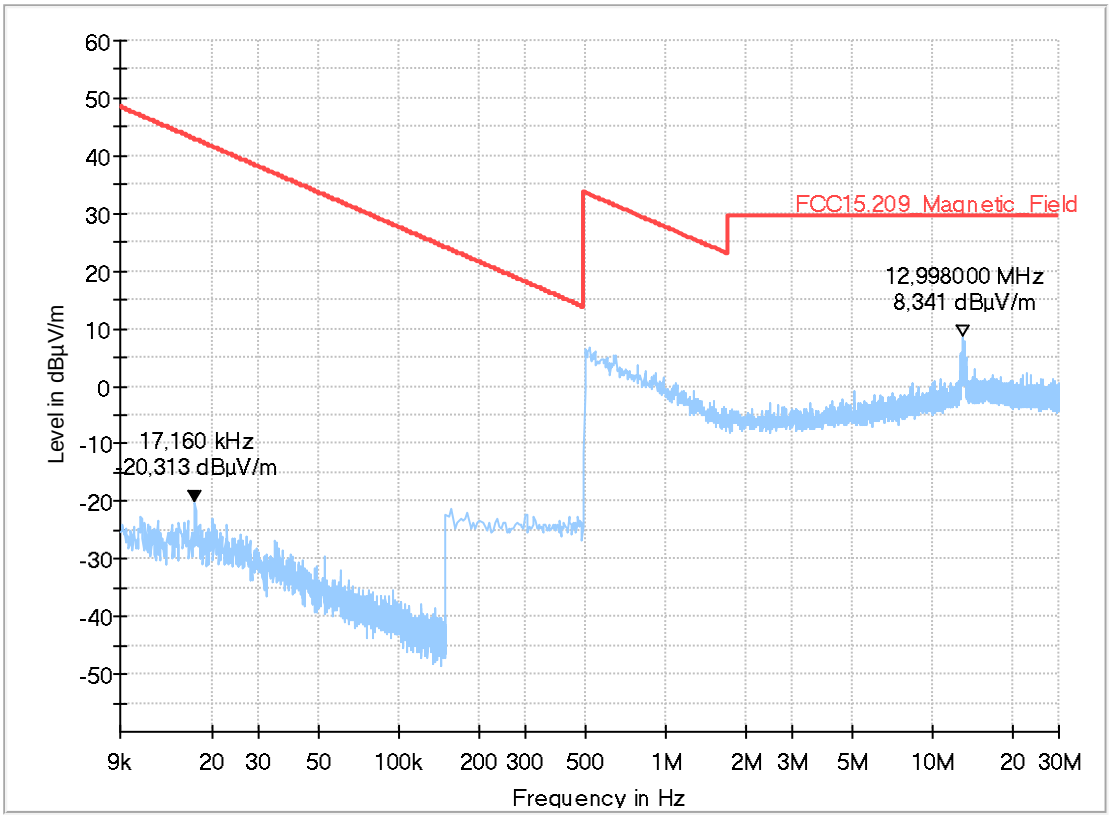


2.03b_BT-LEhigh_standing

Date: 17.04.2018 Page 1 of 2

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 conditions:	TX-BT-LEhigh_standing
Power during tests:	charging
Comment 1:	Channel high
Comment 2:	DUT Standing

Full Spectrum



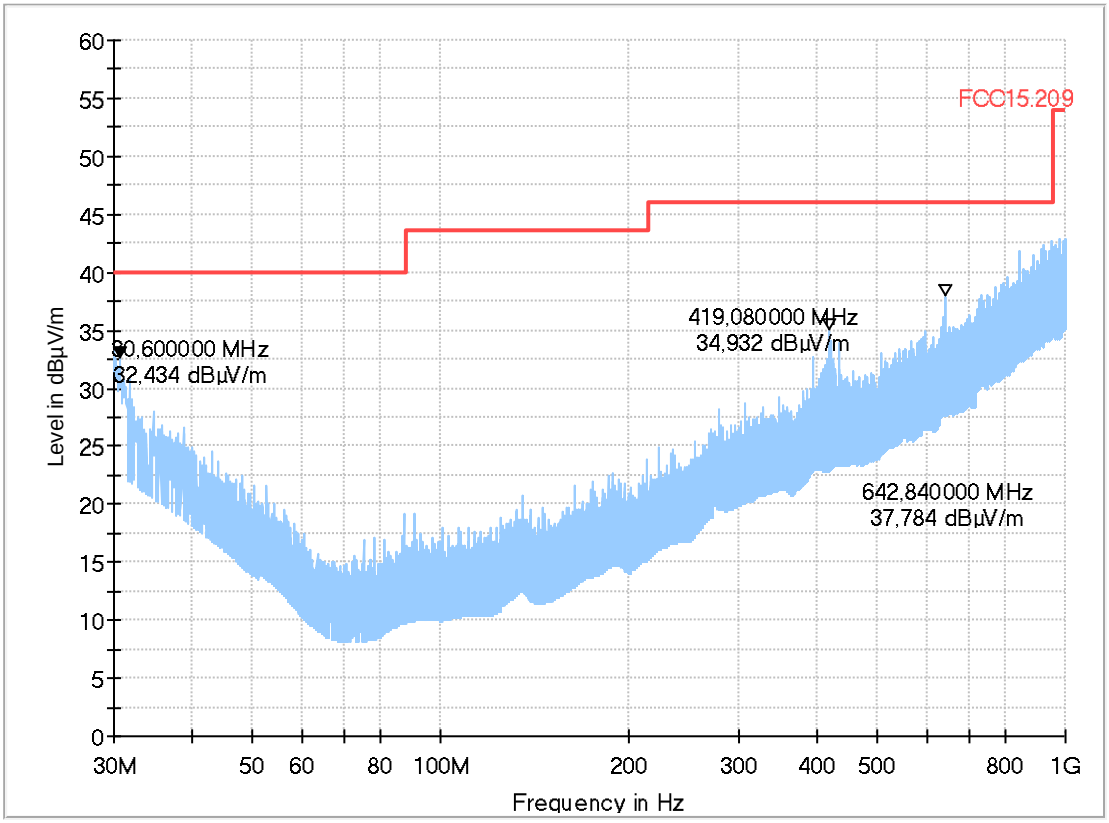
1.2. Radiated Field Strength Emissions – 30 MHz to 1 GHz

3.01a_BT-LElow_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:	RIs
Operating conditions:	Low channel
Power during tests:	full loaded batteries
Comment 1:	

Full Spectrum

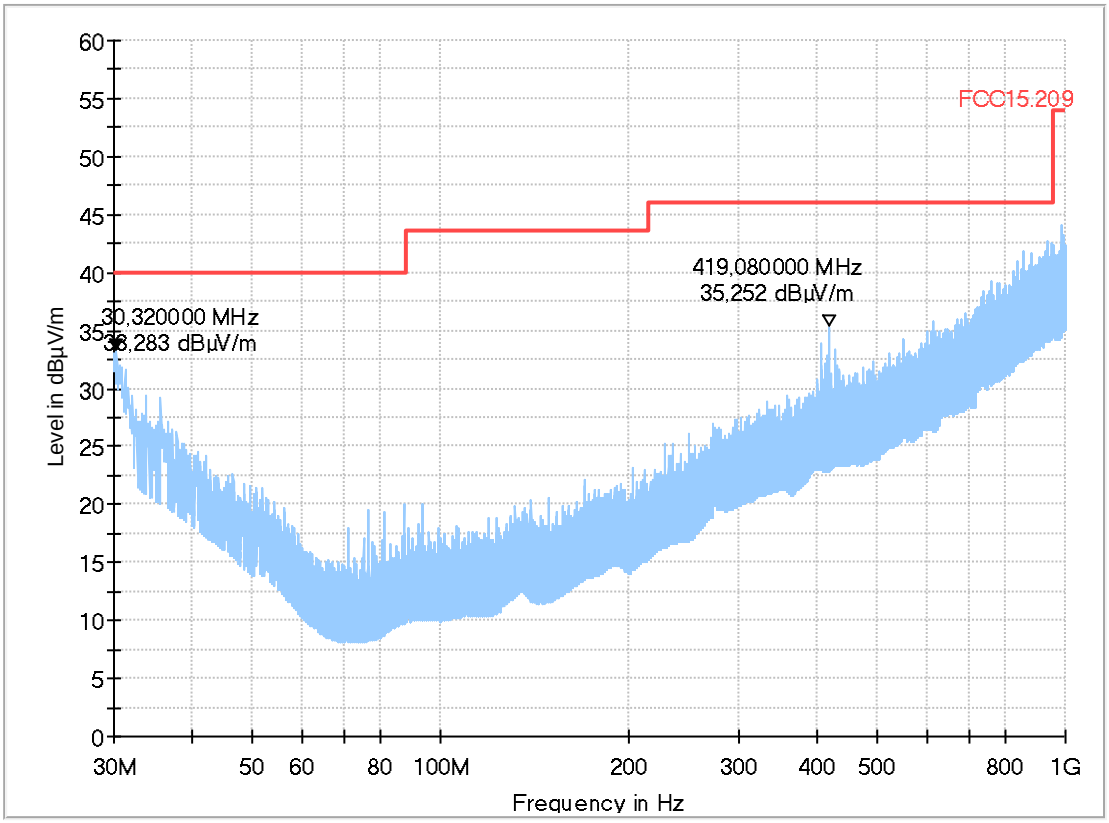


3.01b_BT-LElow_standing

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:	RIs
Operating conditions:	Low channel
Power during tests:	full loaded batteries
Comment 1:	

Full Spectrum

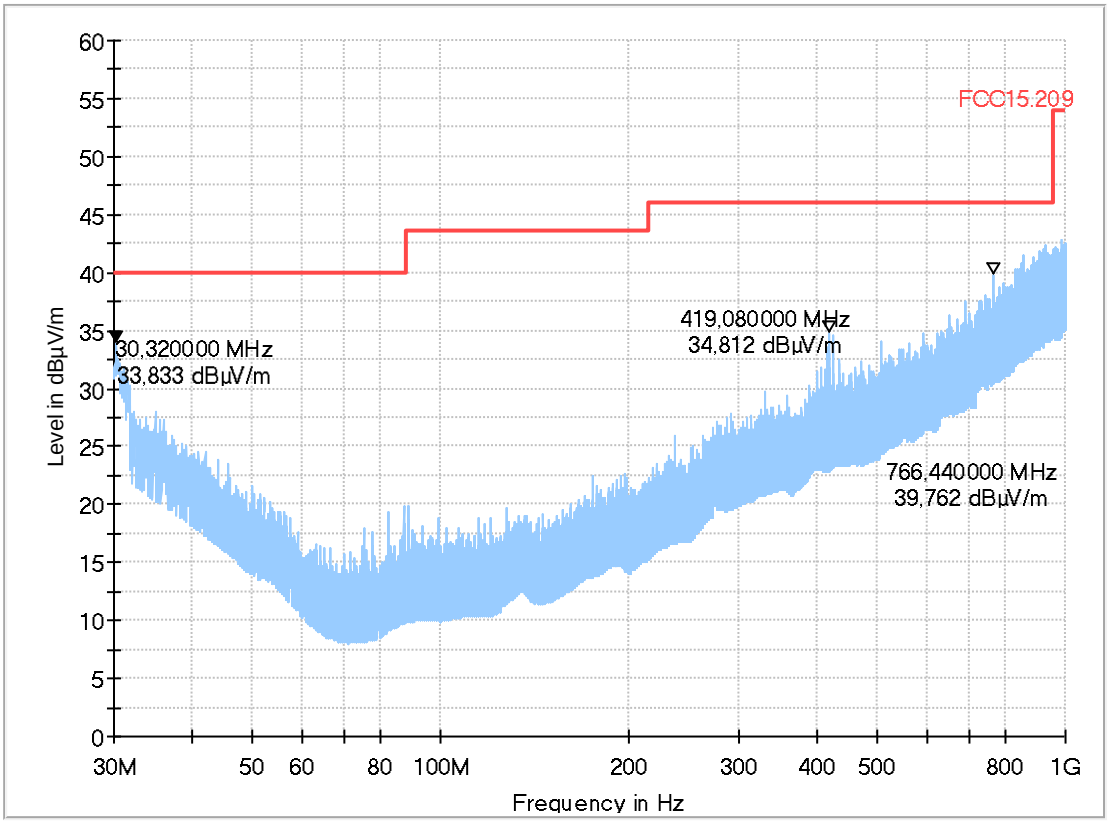


3.02a_BT-LEMid_laying

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:	RIs
Operating conditions:	Mid channel
Power during tests:	full loaded batteries
Comment 1:	

Full Spectrum

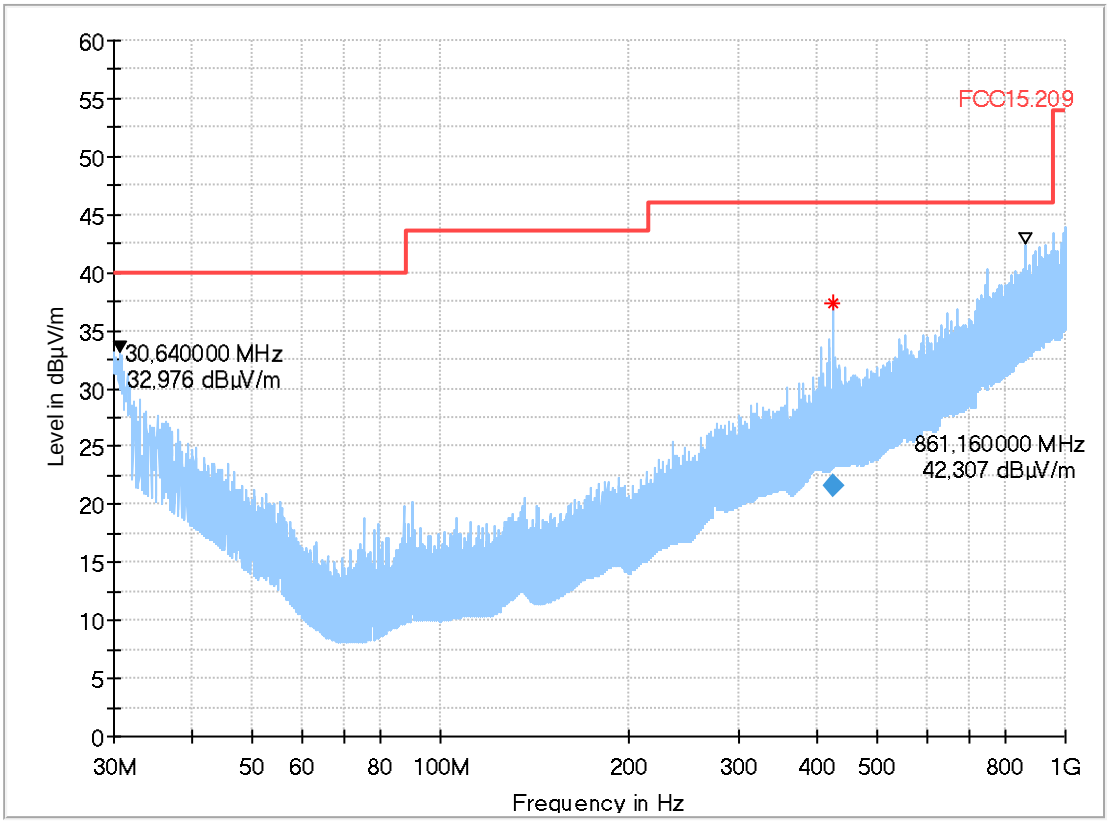


3.02b_BT-LEMid_Standing

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:	RIs
Operating conditions:	Mid channel
Power during tests:	full loaded batteries
Comment 1:	

Full Spectrum

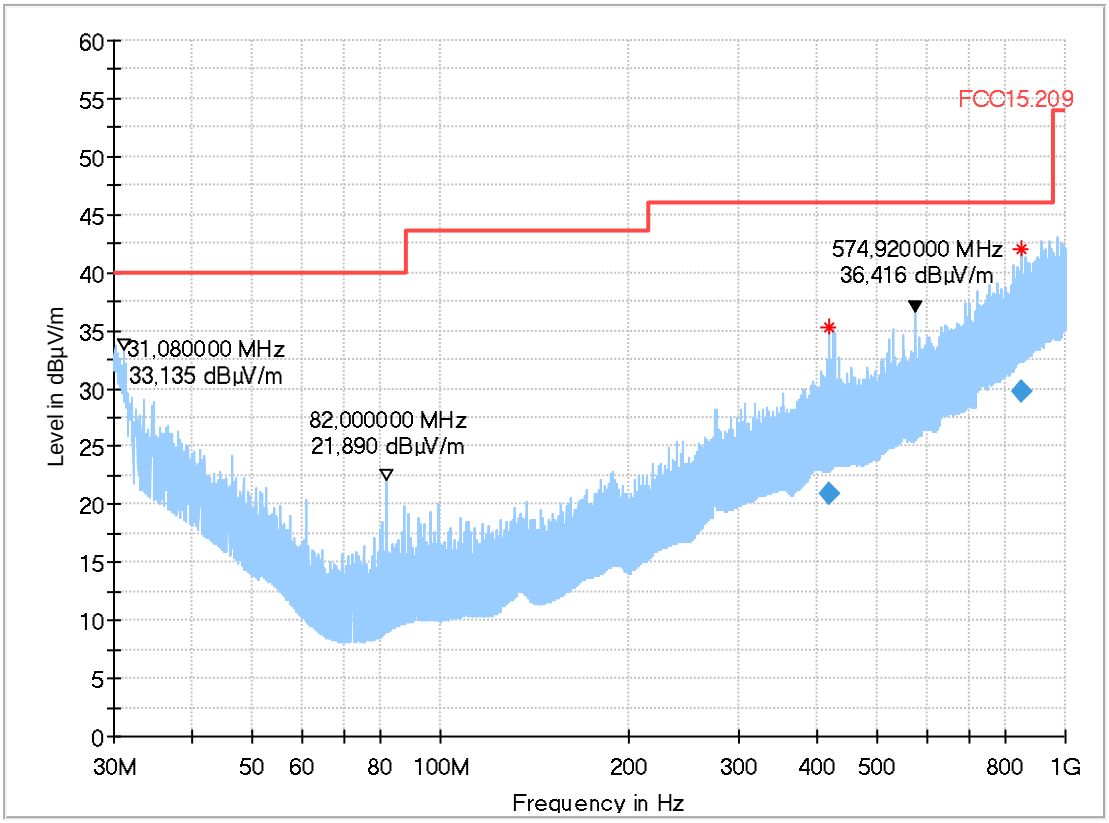


3.03a_BT-LEhigh_laying

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:	RIs
Operating conditions:	High channel
Power during tests:	full loaded batteries
Comment 1:	

Full Spectrum



Final_Result

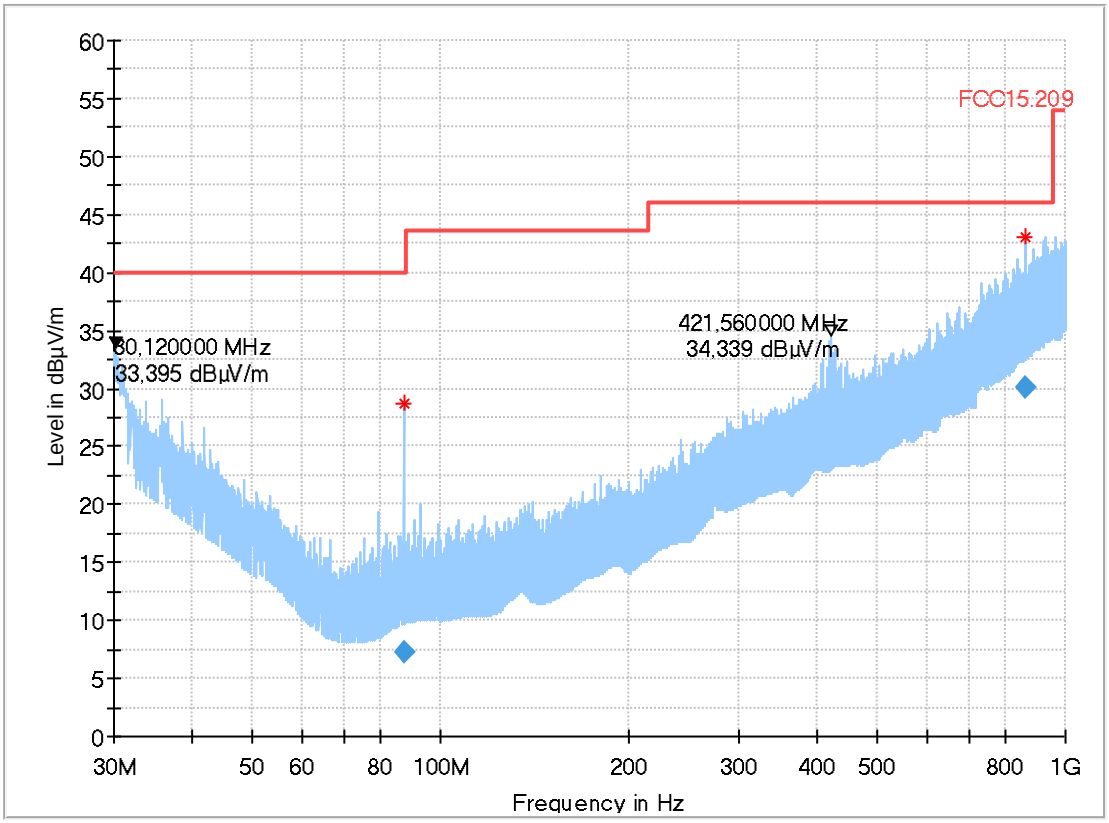
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
419.100000	20.85	46.00	25.15	1000.0	120.000	360.0	V	24.0	18.8
850.892000	29.81	46.00	16.19	1000.0	120.000	283.0	H	99.0	25.7

3.03b_BT-LEhigh_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:	RIs
Operating conditions:	High channel
Power during tests:	full loaded batteries
Comment 1:	

Full Spectrum



Final_Result

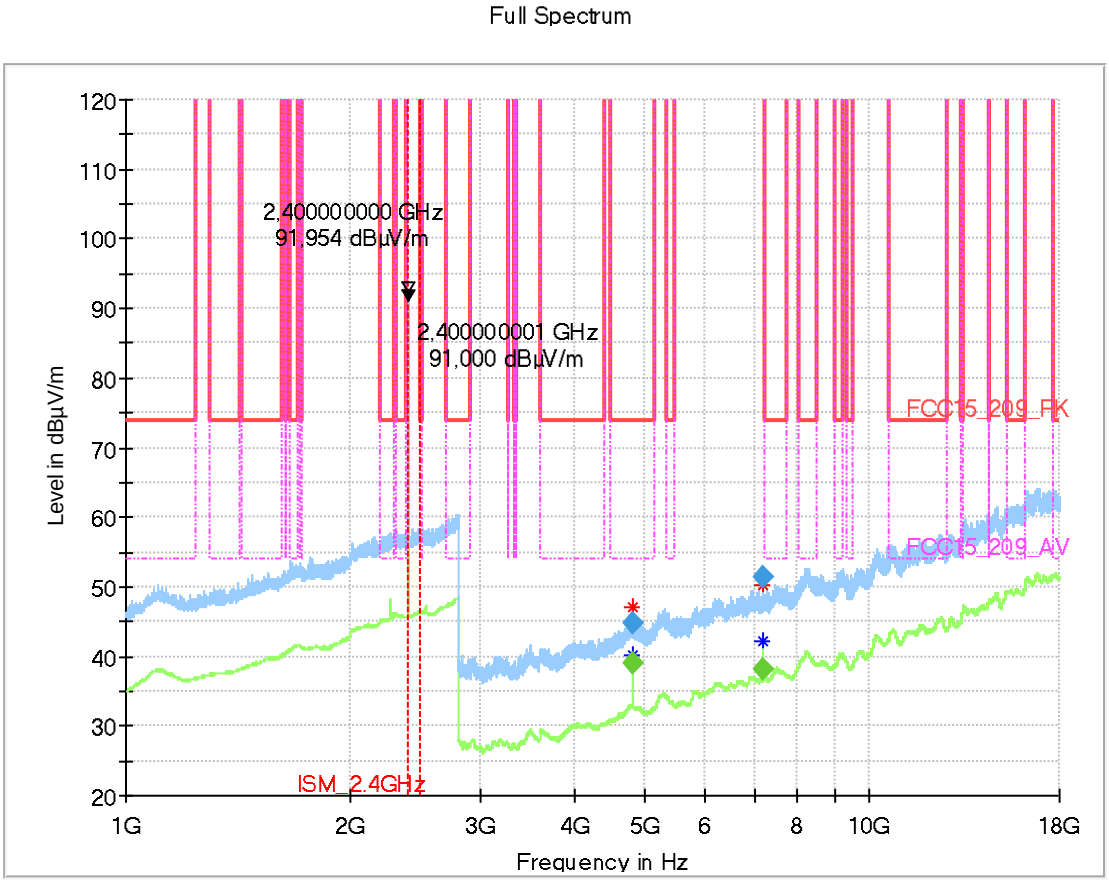
Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
87.252000	7.26	40.00	32.74	1000.0	120.000	360.0	V	86.0	8.0
865.744000	30.09	46.00	15.91	1000.0	120.000	225.0	V	27.0	26.0

1.3. Radiated Field Strength Emissions – 1 GHz to 18 GHz

4.01_BT-LElow

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
Operation mode:	TX, continuous
Operator Name:	RIs
Comment:	Channel no. low



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
4800.000000	---	38.95	54.00	15.05	100.0	1000.000	155.0	V	89.0	0.0
4800.000000	44.81	---	74.00	29.19	100.0	1000.000	155.0	V	62.0	0.0
7199.600000	51.46	---	150.00	98.54	100.0	1000.000	155.0	H	-4.0	0.0
7200.000000	---	38.05	150.00	111.95	100.0	1000.000	155.0	V	-41.0	0.0

(continuation of the "Final_Result" table from column 16 ...)

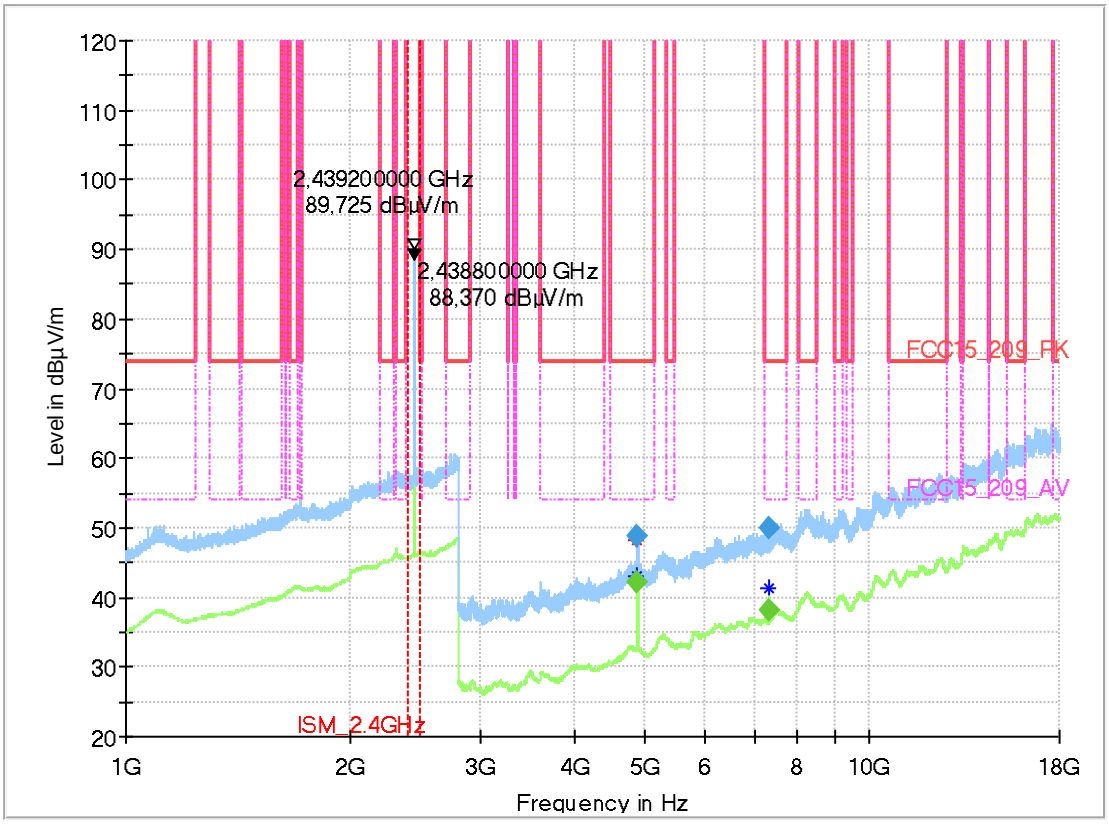
Frequency (MHz)	Corr.	Comment
4800.000000	4.9	01:07:02 - 19.04.2018
4800.000000	4.9	01:03:19 - 19.04.2018
7199.600000	10.5	01:01:15 - 19.04.2018
7200.000000	10.5	01:05:17 - 19.04.2018

4.02_BT-LEmid

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
Operation mode:	TX, continuous
Operator Name:	RIs
Comment:	Channel no.middle

Full Spectrum



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
4877.600000	48.69	---	74.00	25.31	100.0	1000.000	155.0	H	270.0	0.0
4878.000000	---	42.20	54.00	11.80	100.0	1000.000	155.0	H	271.0	0.0
7316.400000	49.93	---	74.00	24.07	100.0	1000.000	155.0	H	56.0	0.0
7317.200000	---	38.23	54.00	15.77	100.0	1000.000	155.0	H	216.0	0.0

(continuation of the "Final_Result" table from column 16 ...)

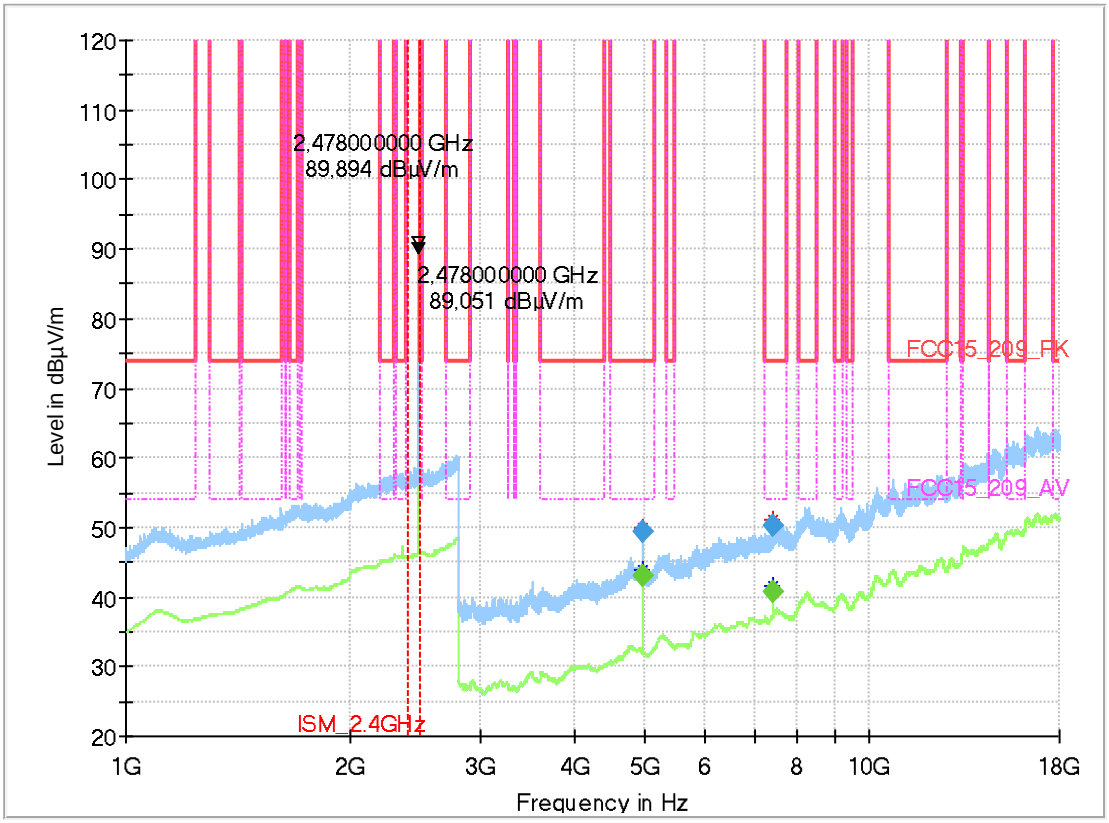
Frequency (MHz)	Corr.	Comment
4877.600000	4.7	02:36:35 - 19.04.2018
4878.000000	4.7	02:40:00 - 19.04.2018
7316.400000	10.6	02:34:35 - 19.04.2018
7317.200000	10.6	02:38:27 - 19.04.2018

4.03_BT-LEhigh

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
Operation mode:	TX, continuous
Operator Name:	RIs
Comment:	Channel no.high

Full Spectrum



Final_Result

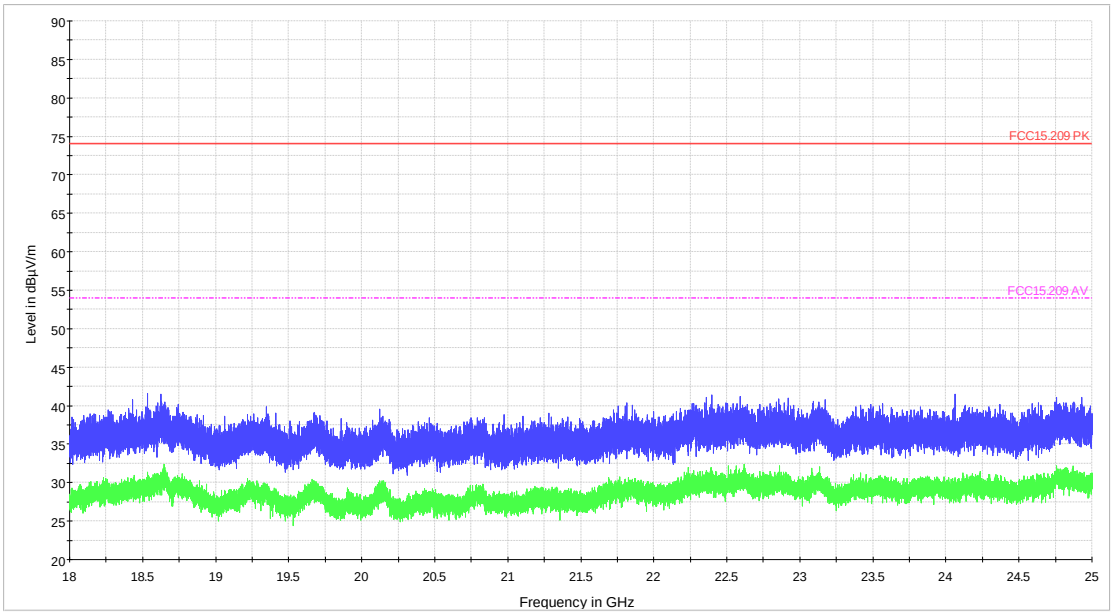
Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
4955.600000	49.39	---	74.00	24.61	100.0	1000.000	155.0	H	271.0	0.0
4956.000000	---	43.20	54.00	10.80	100.0	1000.000	155.0	H	269.0	0.0
7433.600000	---	40.65	54.00	13.35	100.0	1000.000	155.0	H	61.0	0.0
7434.400000	50.16	---	74.00	23.84	100.0	1000.000	155.0	H	29.0	0.0

(continuation of the "Final_Result" table from column 16 ...)

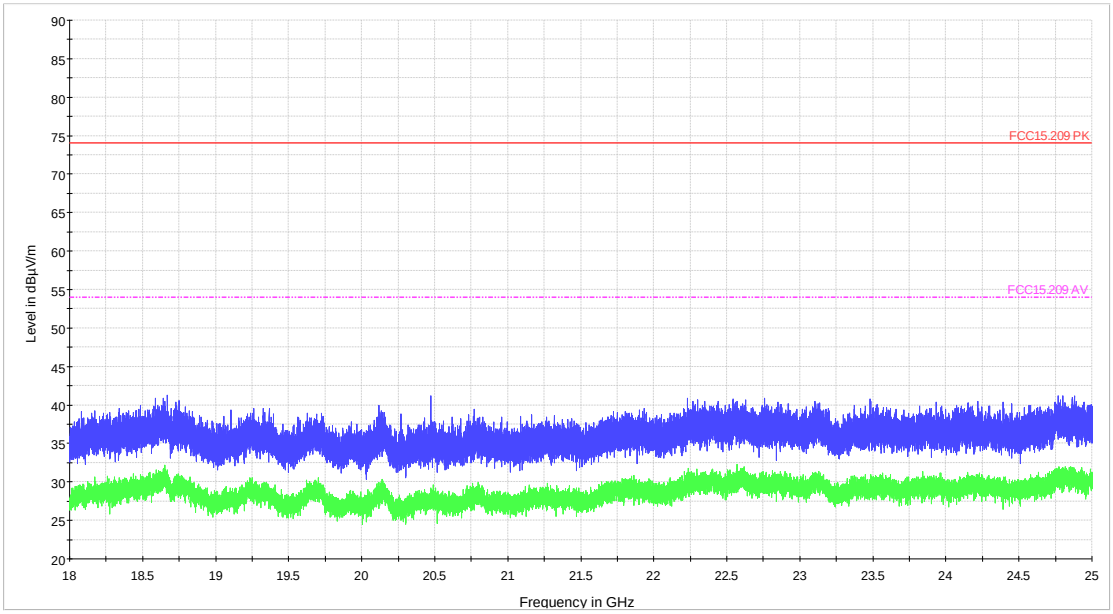
Frequency (MHz)	Corr.	Comment
4955.600000	4.3	04:09:27 - 19.04.2018
4956.000000	4.3	04:13:45 - 19.04.2018
7433.600000	11.6	04:11:42 - 19.04.2018
7434.400000	11.6	04:07:22 - 19.04.2018

1.4. Radiated Field Strength Emissions – 18 GHz to 25 GHz

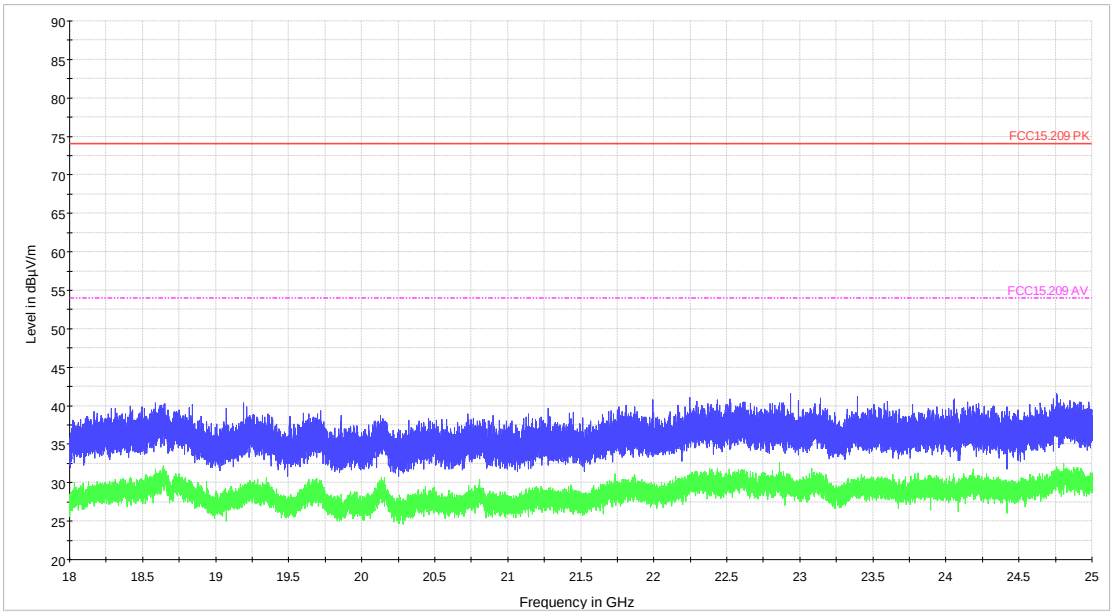
Low channel:



Middle channel:



High channel:



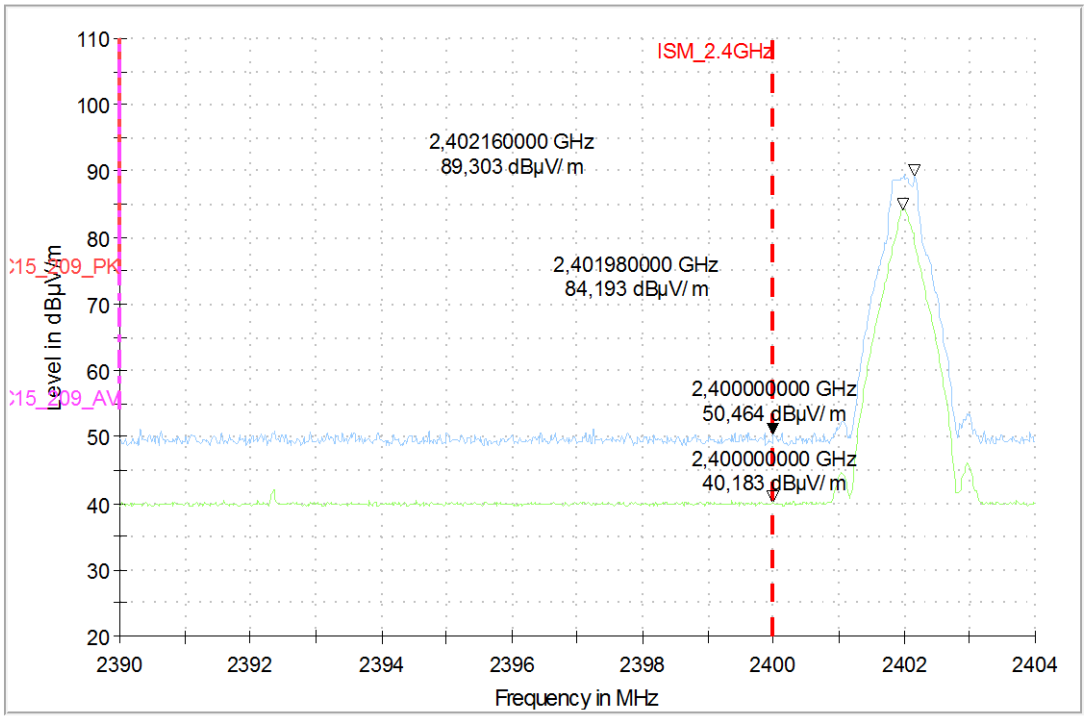
2. Radiated Band-Edge Measurements

2.1. Custom Mode-GFSK-Low Channel 2402 MHz (2.4 GHz ISM: left band edge)

9.01_BE_BT-LElow

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
Operation mode:	TX, continuous
Operator Name:	RIs
Comment:	Channel no. low



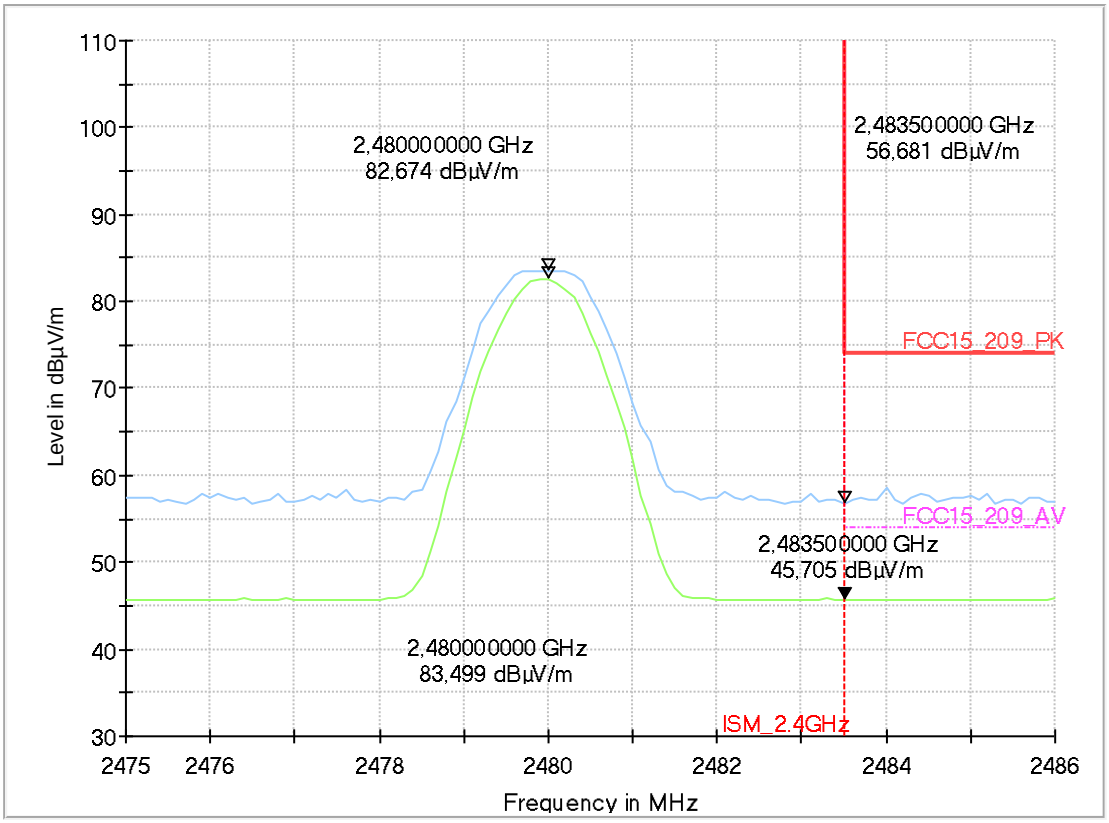
2.2. Custom Mode-GFSK-High Channel 2480 MHz (2.4 GHz ISM: right band edge)

9.02_BE_BT-LEhigh

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
Operation mode:	TX, continuous
Operator Name:	RIs
Comment:	Channel no.high

Full Spectrum



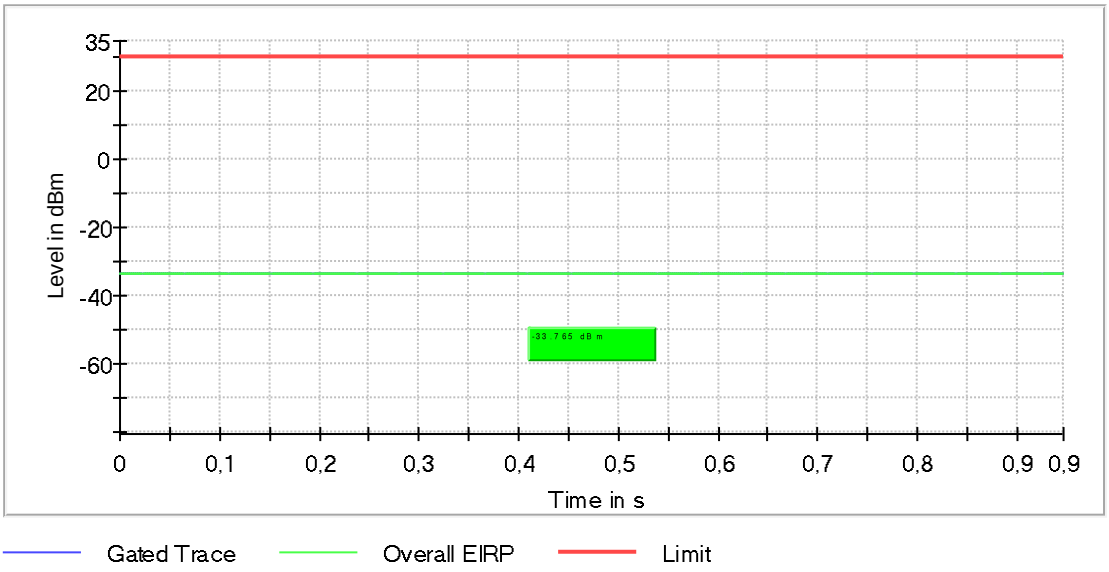
3. Conducted Measurements

3.1. RF output power measurements

RF output power (2402 MHz; 4,000 dBm; 2 MHz)

Result

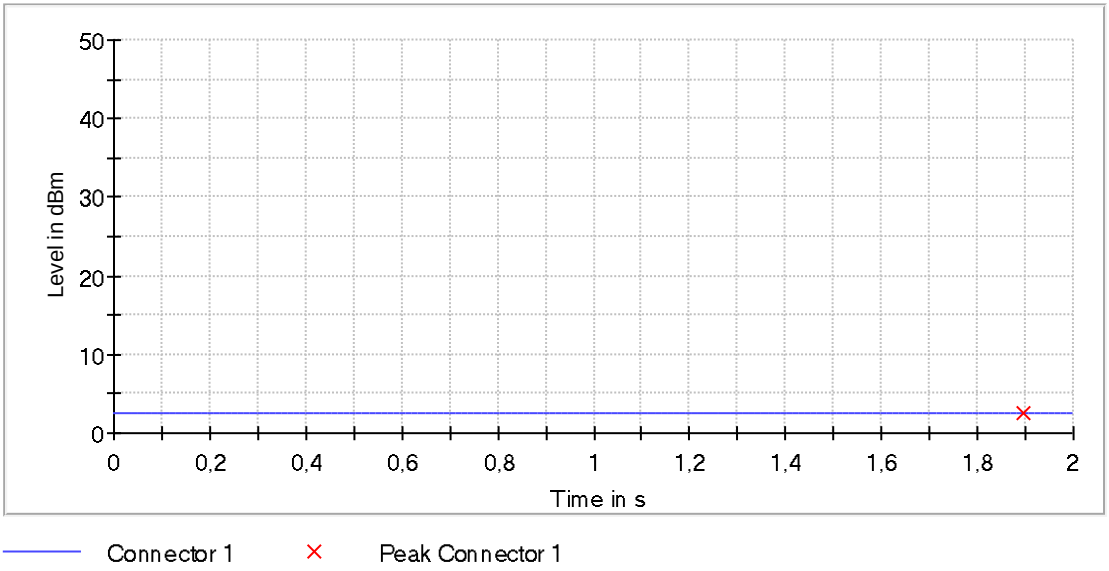
DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2402.000000	2.5	30.0	-33.8	94.805	PASS



Peak output power (2402 MHz; 4,000 dBm; 2 MHz)

Result

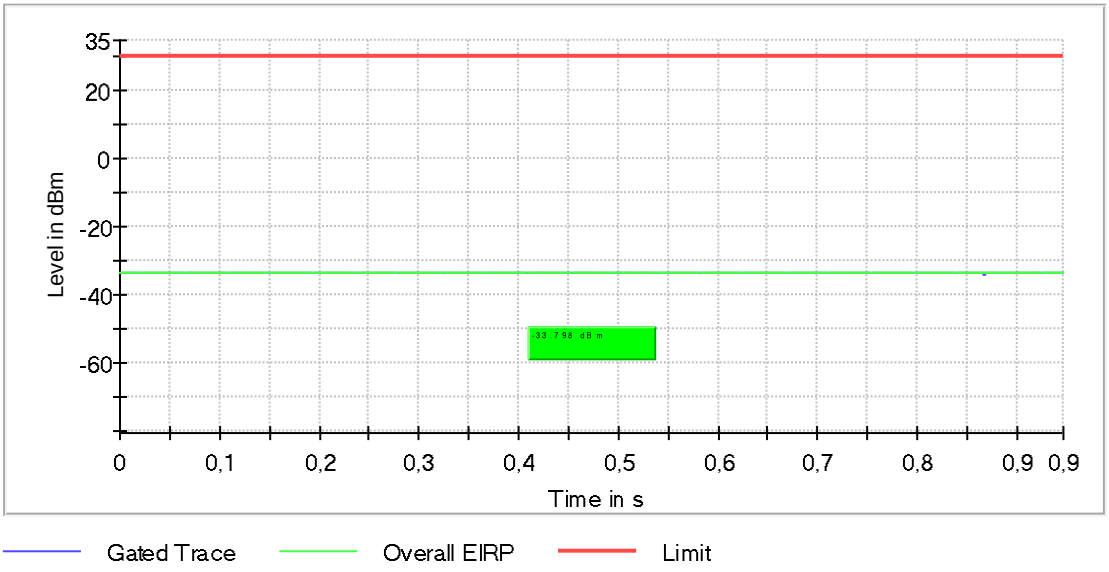
DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2402.000000	2.6	30.0	PASS



RF output power (2442 MHz; 4,000 dBm; 2 MHz)

Result

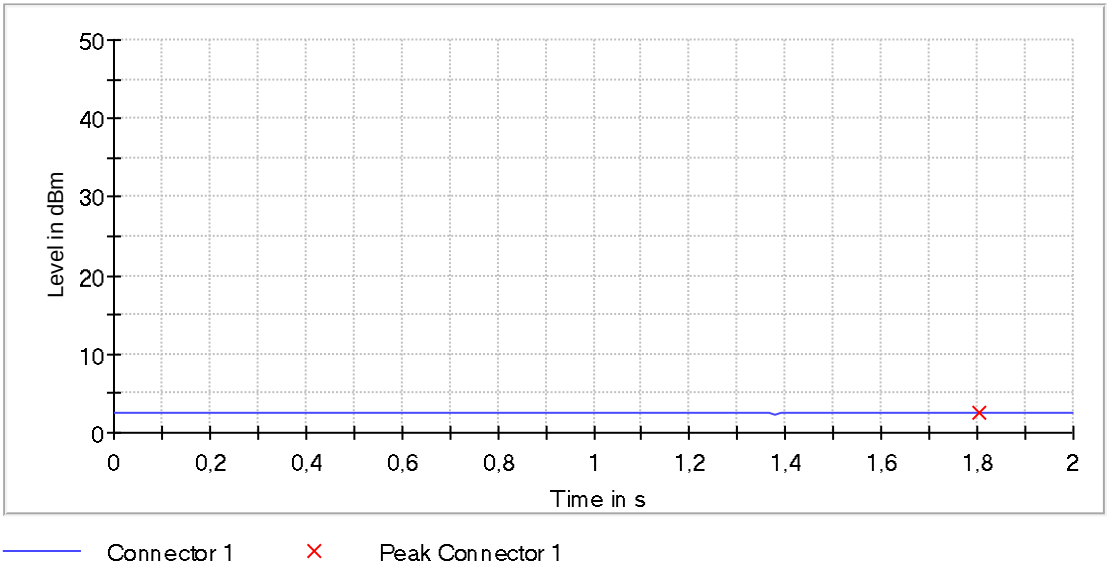
DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2442.000000	2.5	30.0	-33.8	94.804	PASS



Peak output power (2442 MHz; 4,000 dBm; 2 MHz)

Result

DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2442.000000	2.5	30.0	PASS



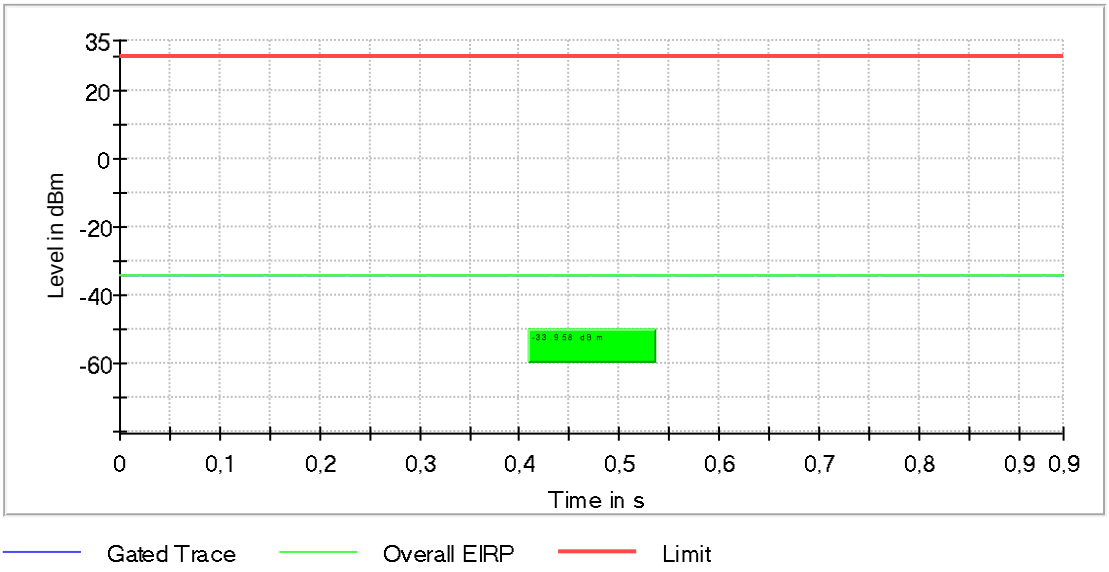
Measurement

Setting	Instrument Value	Target Value
Center Frequency	2.44200 GHz	2.44200 GHz
Span	ZeroSpan	ZeroSpan
RBW	2.000 MHz	>= 1.060 MHz
VBW	2.000 MHz	>= 2.000 MHz
SweepPoints	155	~ 101
Sweeptime	2.000 s	2.000 s
Reference Level	10.000 dBm	10.000 dBm
Attenuation	35.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	1	1
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
Sweeptype	Sweep	AUTO
Preamp	off	off

RF output power (2480 MHz; 4,000 dBm; 2 MHz)

Result

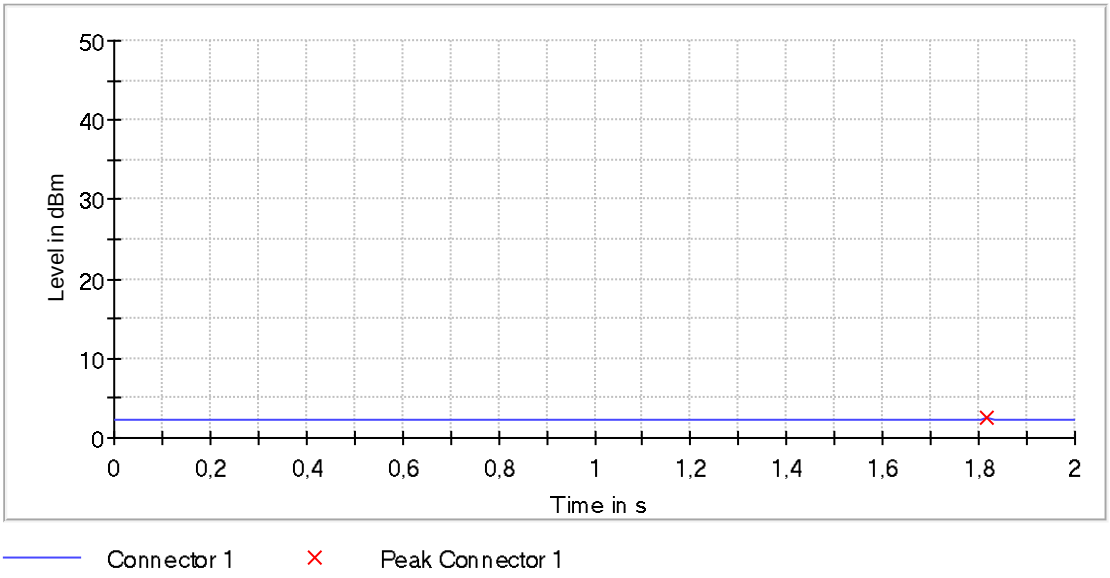
DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2480.000000	2.3	30.0	-34.0	94.803	PASS



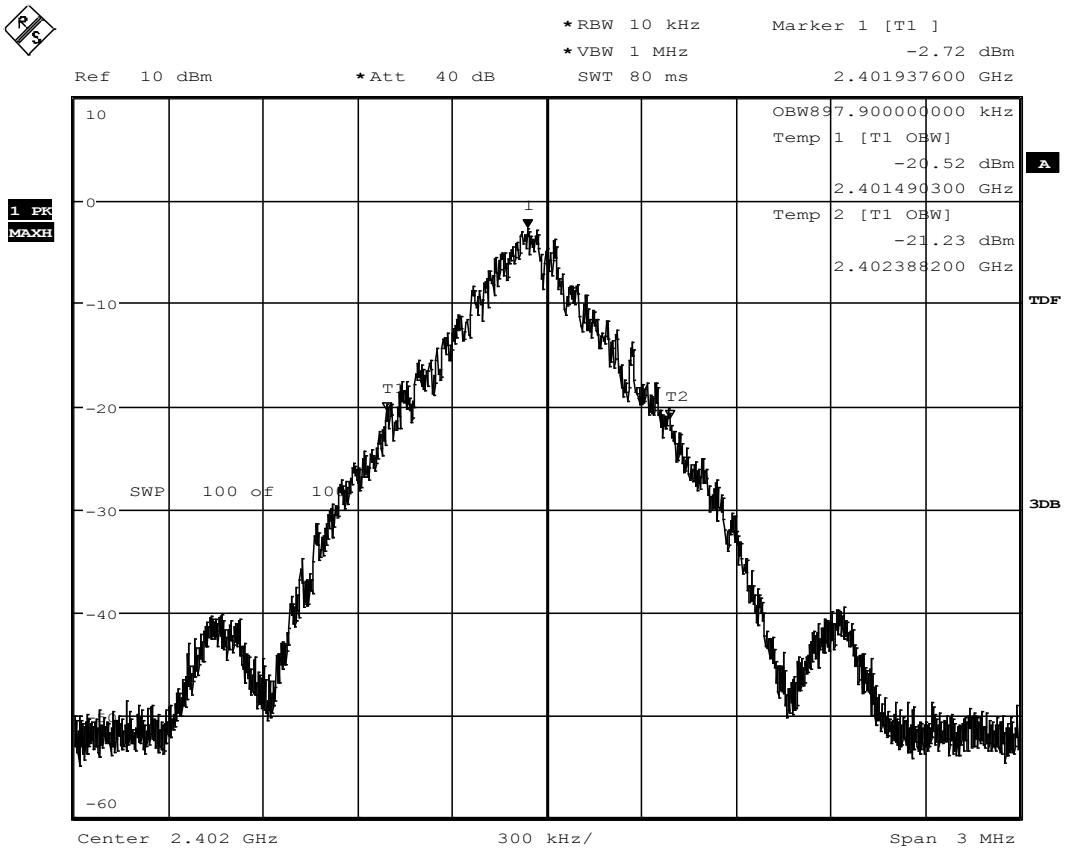
Peak output power (2480 MHz; 4,000 dBm; 2 MHz)

Result

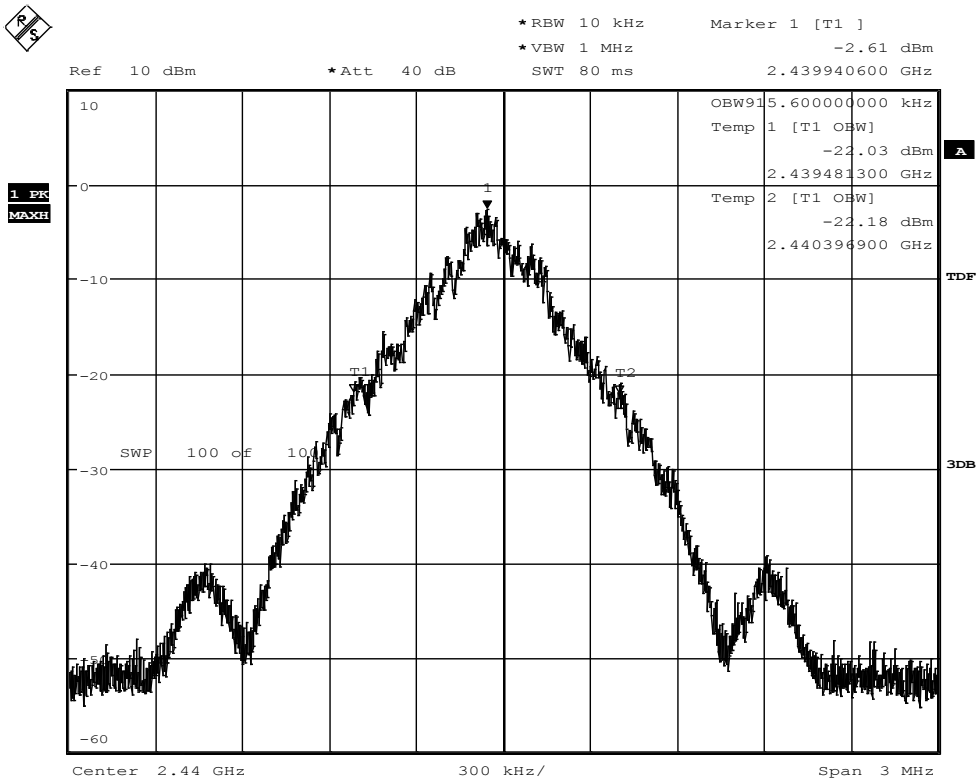
DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2480.000000	2.4	30.0	PASS



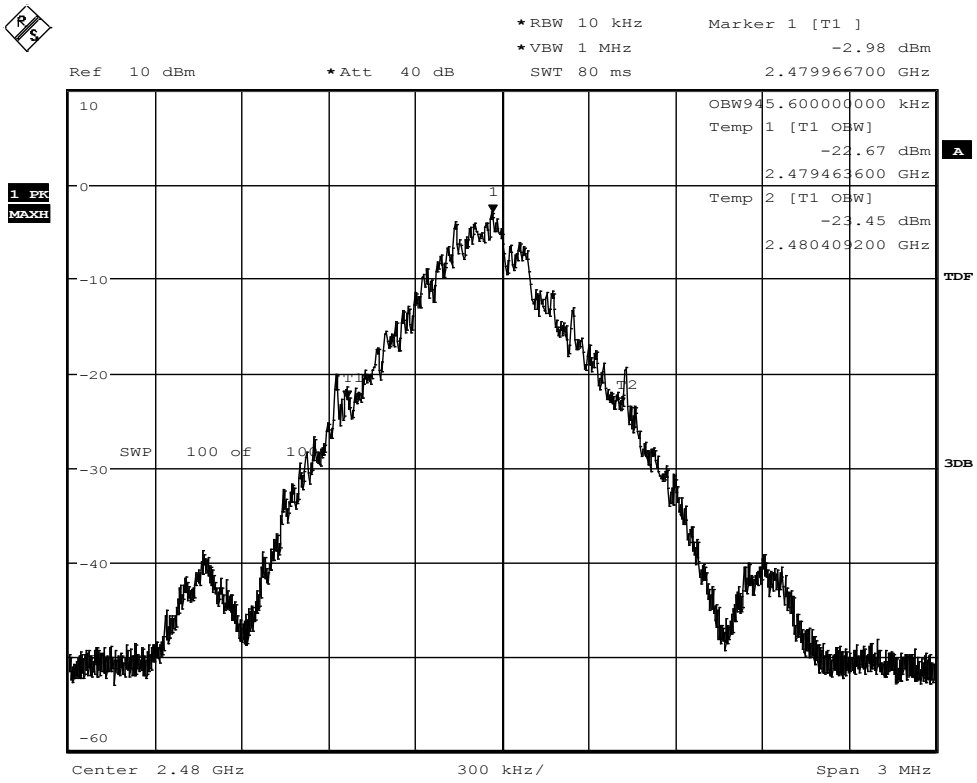
3.2. Occupied Bandwidth



Occupied Channel Bandwidth Plot: 2402 MHz



Occupied Channel Bandwidth Plot: 2440 MHz



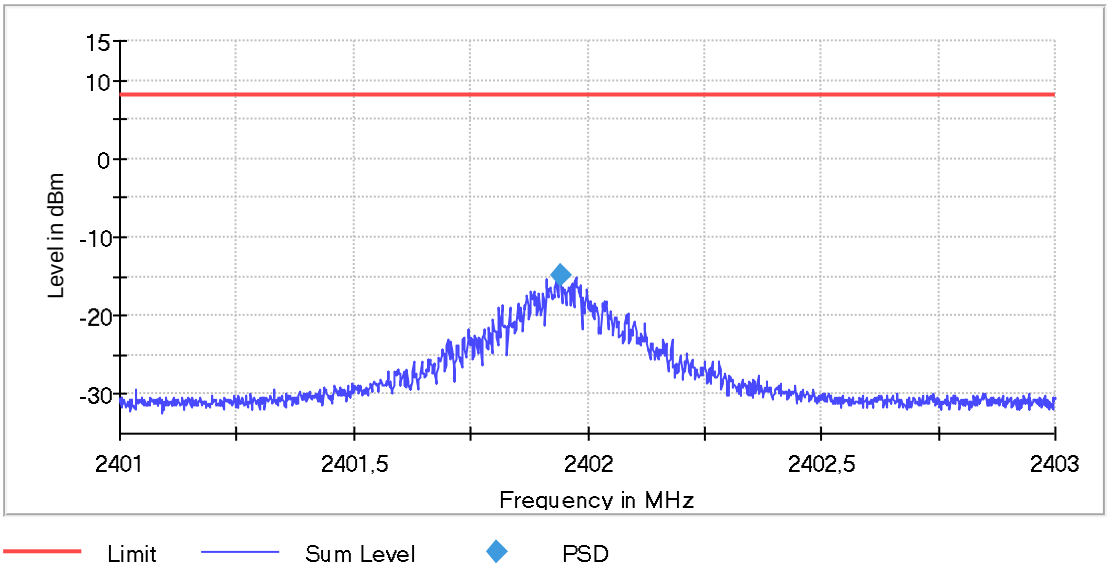
Occupied Channel Bandwidth Plot: 2480 MHz

3.3. Power Spectral Density

Power Spectral Density (2402 MHz; 4,000 dBm; 2 MHz)

Result

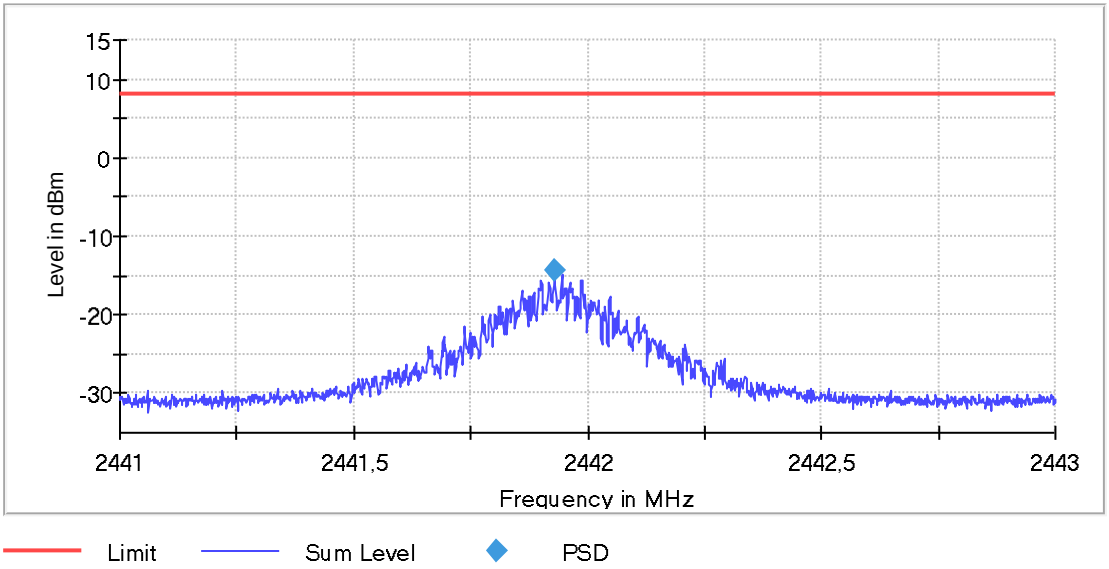
DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2402.000000	2401.941538	-14.837	8.0	PASS



Power Spectral Density (2442 MHz; 4,000 dBm; 2 MHz)

Result

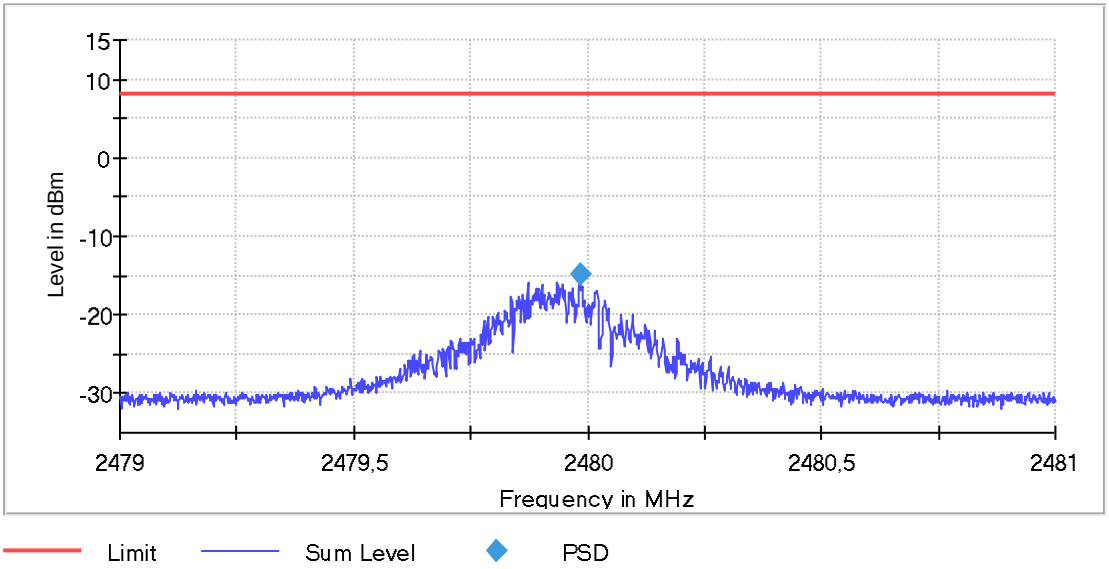
DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2442.000000	2441.929231	-14.436	8.0	PASS



Power Spectral Density (2480 MHz; 4,000 dBm; 2 MHz)

Result

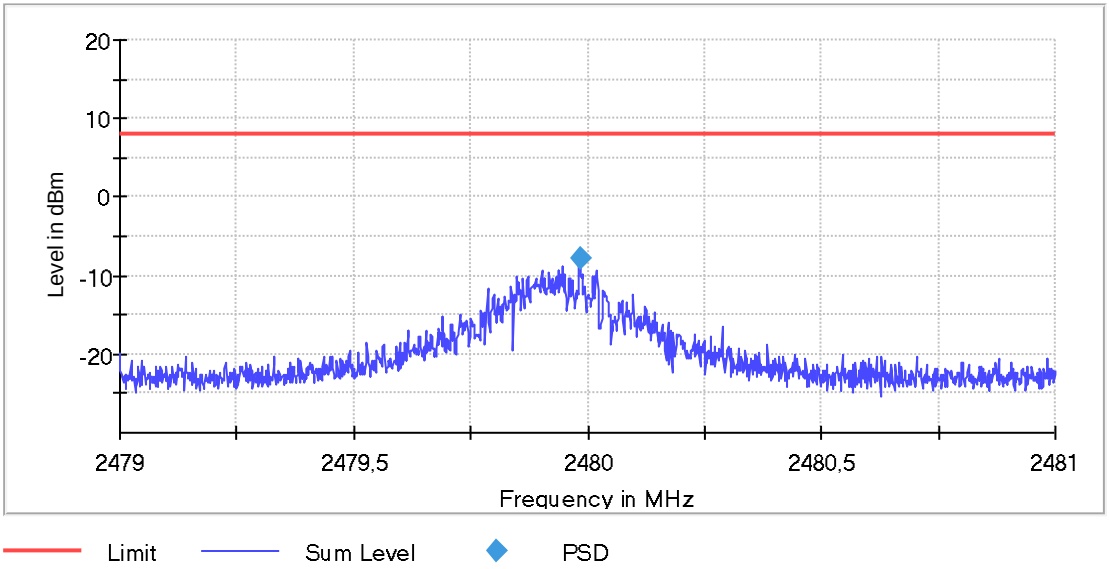
DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2480.000000	2479.983077	-14.897	8.0	PASS



Peak Power Spectral Density (2480 MHz; 4,000 dBm; 2 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2480.000000	2479.983077	-7.877	8.0	PASS



3.4. 6dB Emission bandwidth

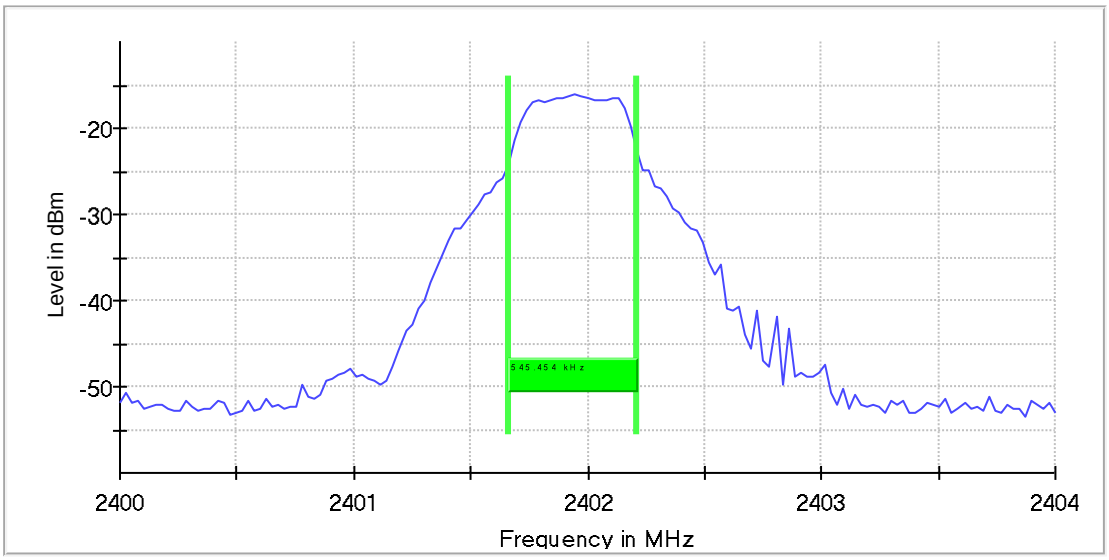
Minimum Emission Bandwidth 6 dB (2402 MHz; 4,000 dBm; 2 MHz)

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)
2402.000000	0.545454	0.500000	---	2401.662338	2402.207792	-16.0

(continuation of the "6 dB Bandwidth" table from column 7 ...)

DUT Frequency (MHz)	Result
2402.000000	PASS



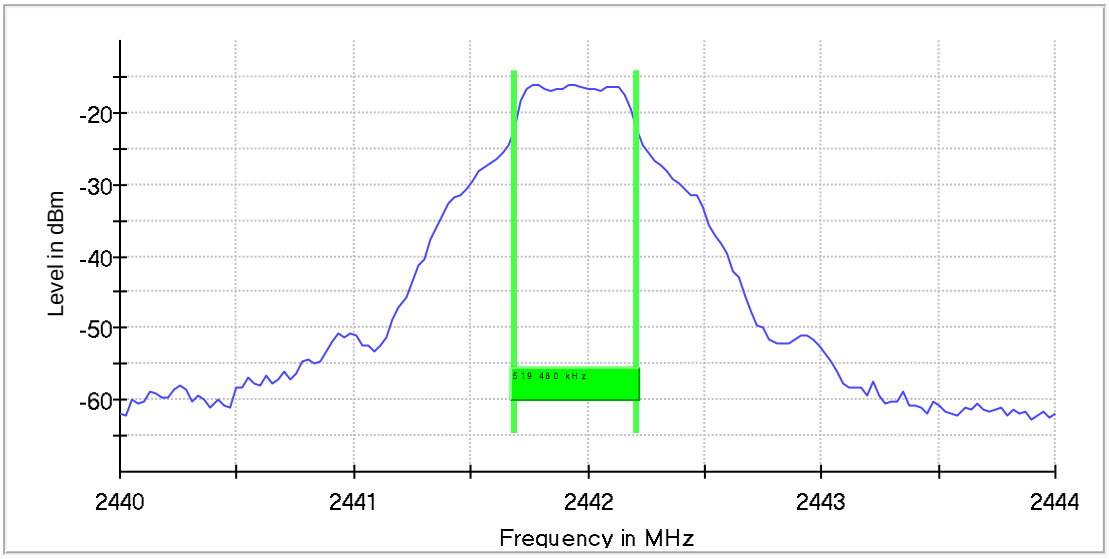
Minimum Emission Bandwidth 6 dB (2442 MHz; 4,000 dBm; 2 MHz)

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)
2442.000000	0.519480	0.500000	---	2441.688312	2442.207792	-16.1

(continuation of the "6 dB Bandwidth" table from column 7 ...)

DUT Frequency (MHz)	Result
2442.000000	PASS



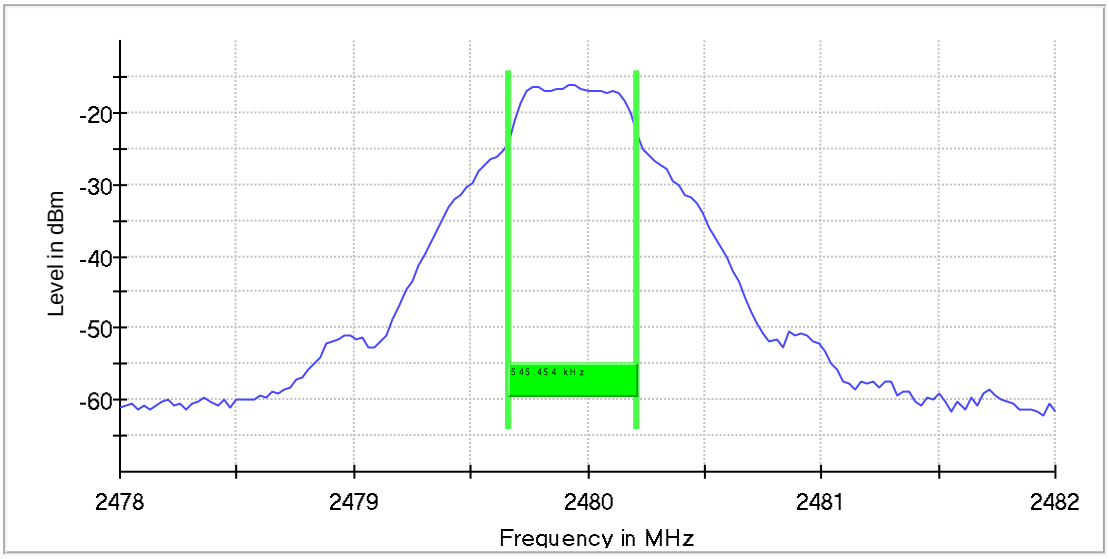
Minimum Emission Bandwidth 6 dB (2480 MHz; 4,000 dBm; 2 MHz)

6 dB Bandwidth

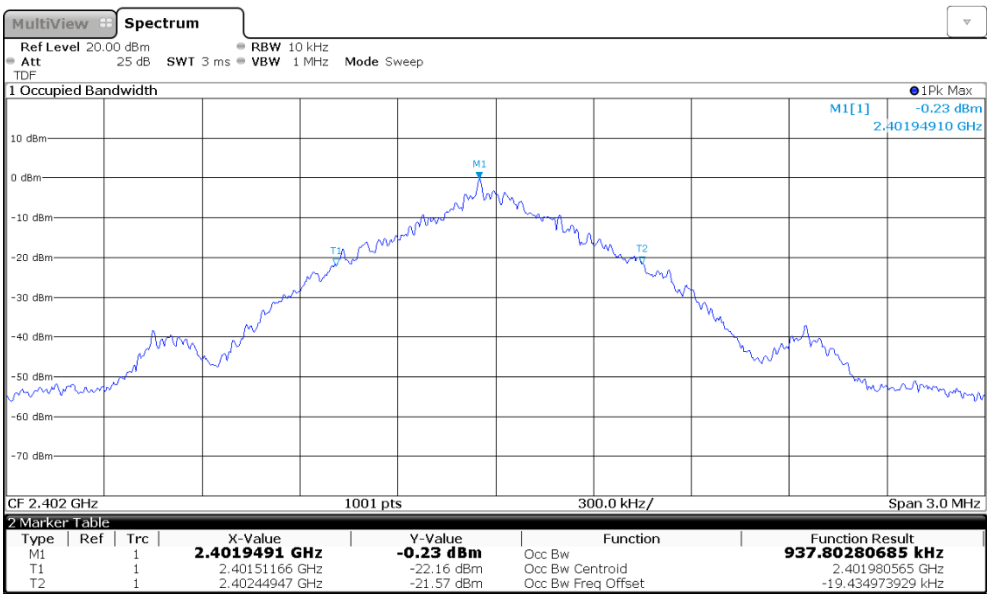
DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)	Max Level (dBm)
2480.000000	0.545454	0.500000	---	2479.662338	2480.207792	-16.2

(continuation of the "6 dB Bandwidth" table from column 7 ...)

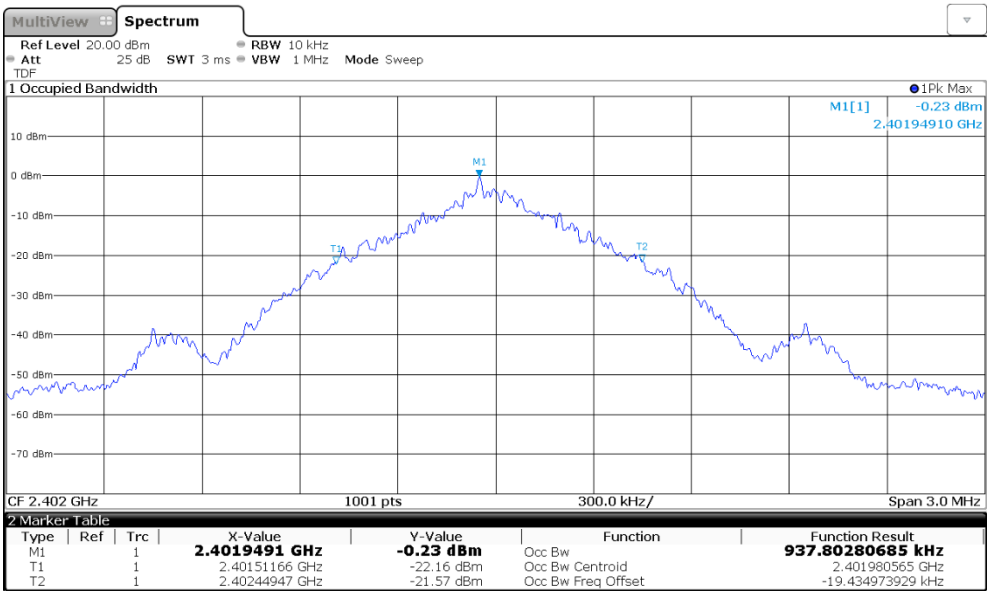
DUT Frequency (MHz)	Result
2480.000000	PASS



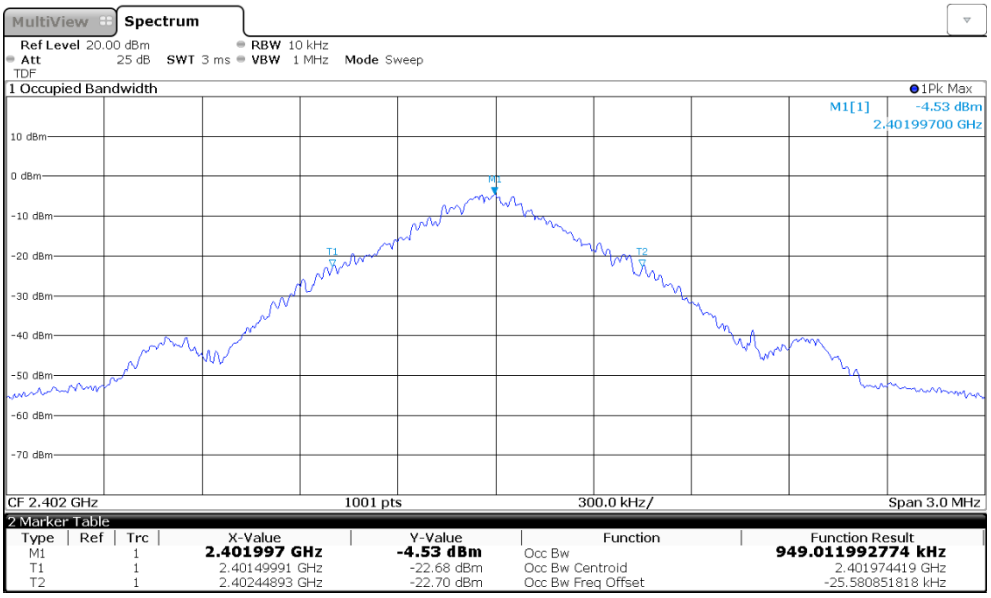
3.5. Frequency stability



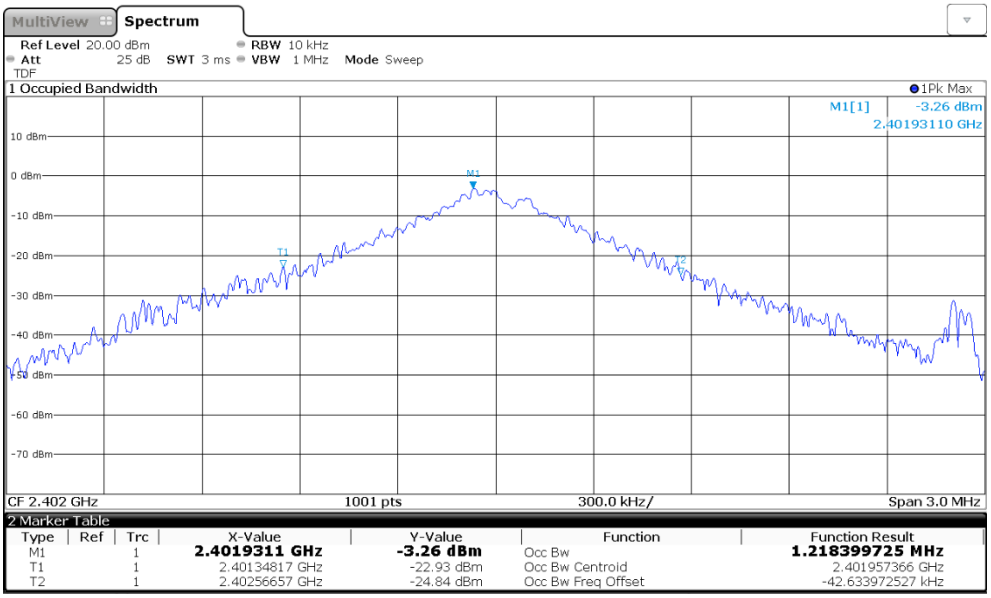
Frequency Stability Plot: Tnom | Vnom | 2402 MHz



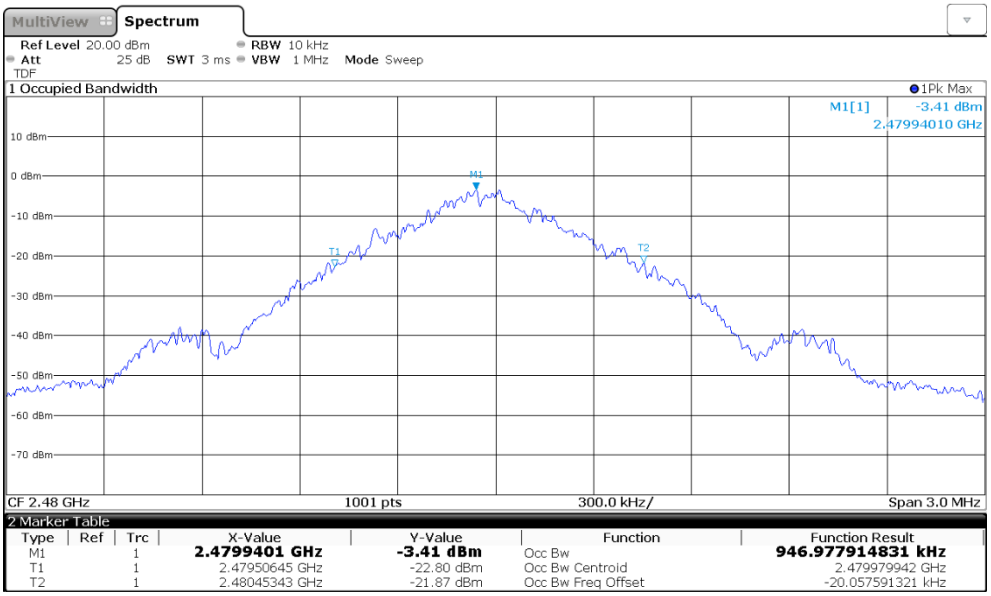
Frequency Stability Plot: Tnom | Vmin | 2402 MHz



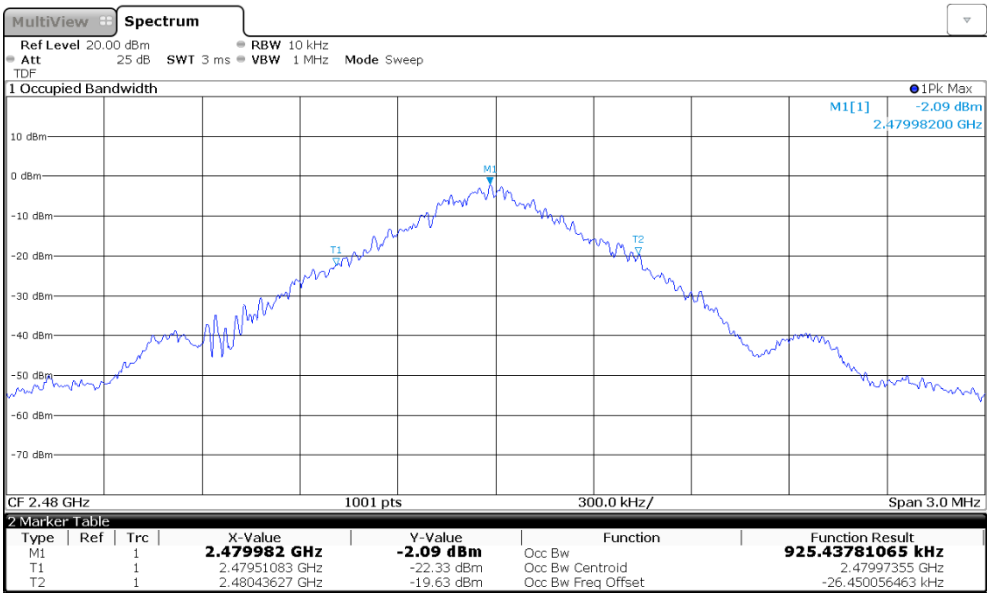
Frequency Stability Plot: Tmax | Vnom | 2402 MHz



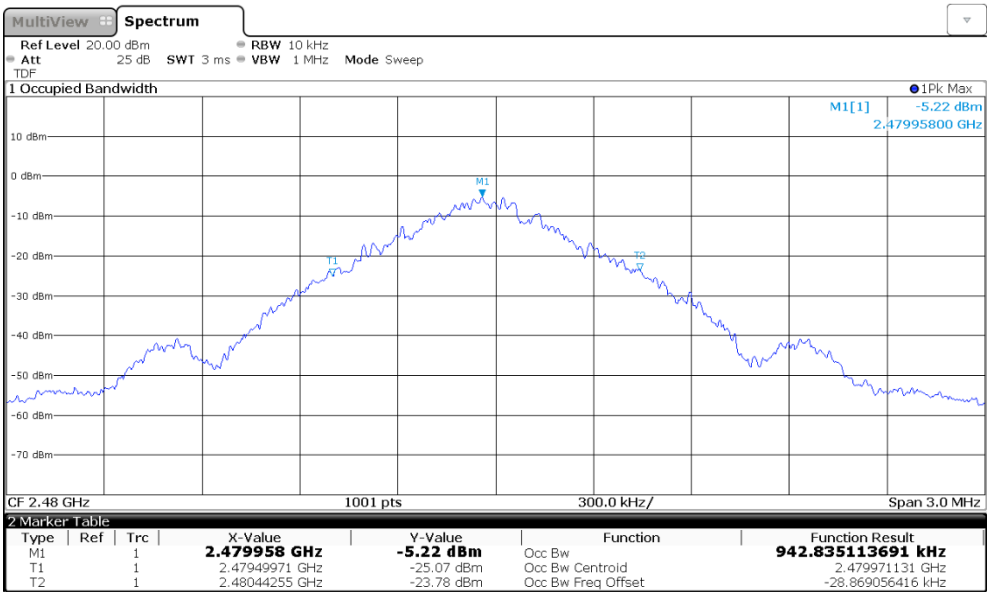
Frequency Stability Plot: Tmin | Vmin | 2402 MHz



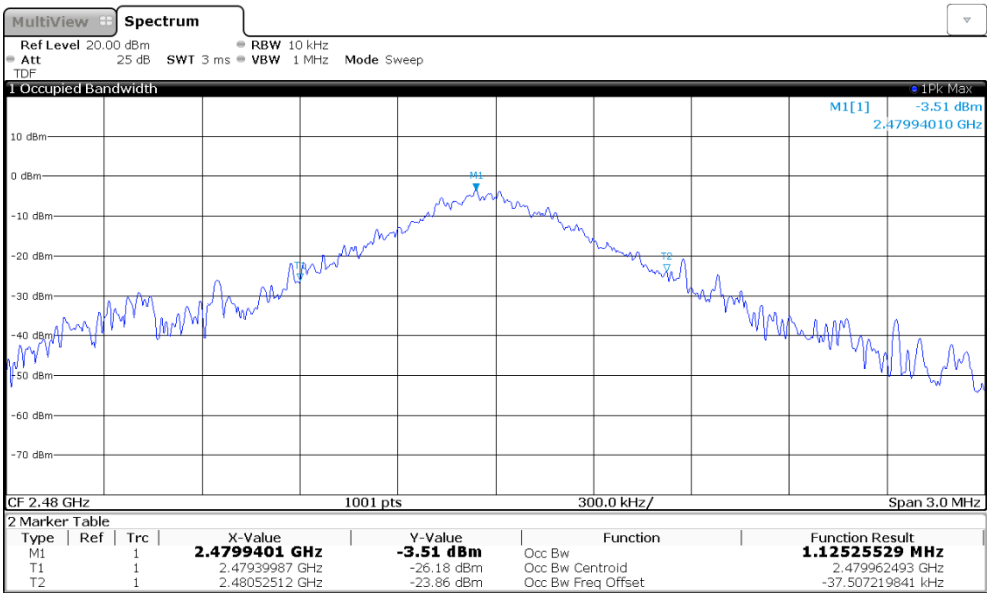
Frequency Stability Plot: Tnom | Vnom | 2480 MHz



Frequency Stability Plot: Tnom | Vmin | 2480 MHz



Frequency Stability Plot: Tmax | Vnom | 2480 MHz



Frequency Stability Plot: Tmin | Vmin | 2480 MHz