

Annex 1: Measurement diagrams 22-1-0057101T027a-A1-C01

Number of pages:	78	Date of Report:	2024-Jun-13
Testing company:	cetecom advanced GmbH Untertuerkheimer Str. 6-10 66117 Saarbruecken GERMANY	Applicant:	ZIGPOS GmbH
Product: Model:	RTLS mobile CorivaTag Plus		
FCC ID:	2AHHJ-ZP-OXTAG1	IC:	IC: 32087-ZPOXTAG1
Testing has been carried out in accordance with:	FCC Regulations Title 47 CFR, Chapter I Subpart C Intentional Radiators § 15.247 Operation within the bands 2400-2483.5 MHz ISED-Regulations Radio Standards Specification RSS-Gen, Issue 5 General Requirements for Compliance of Radio Apparatus RSS-247, Issue 3 Digital Transmission Systems (DTSs)		

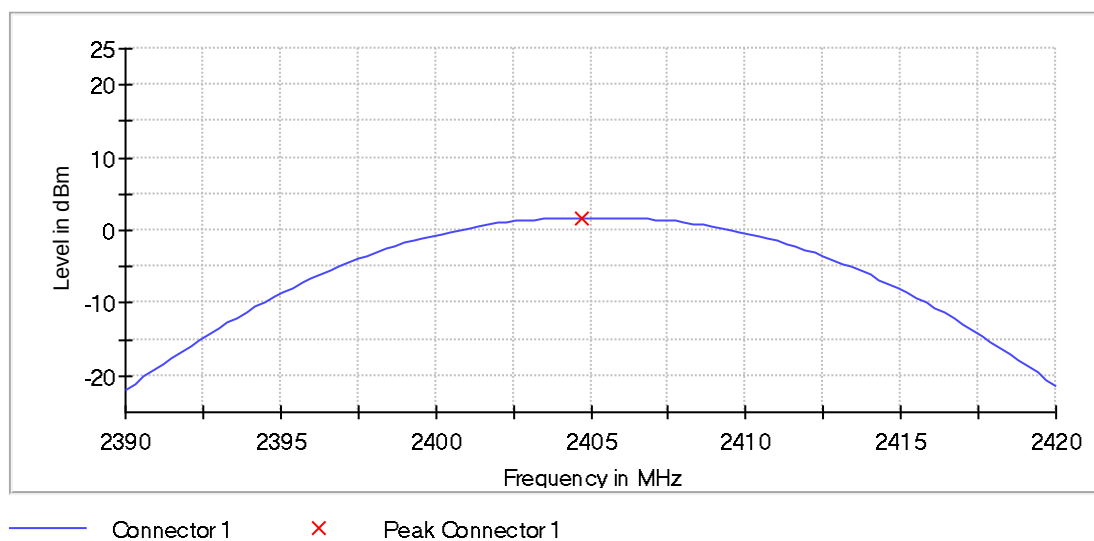
Peak output power (Sweep) (2405 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

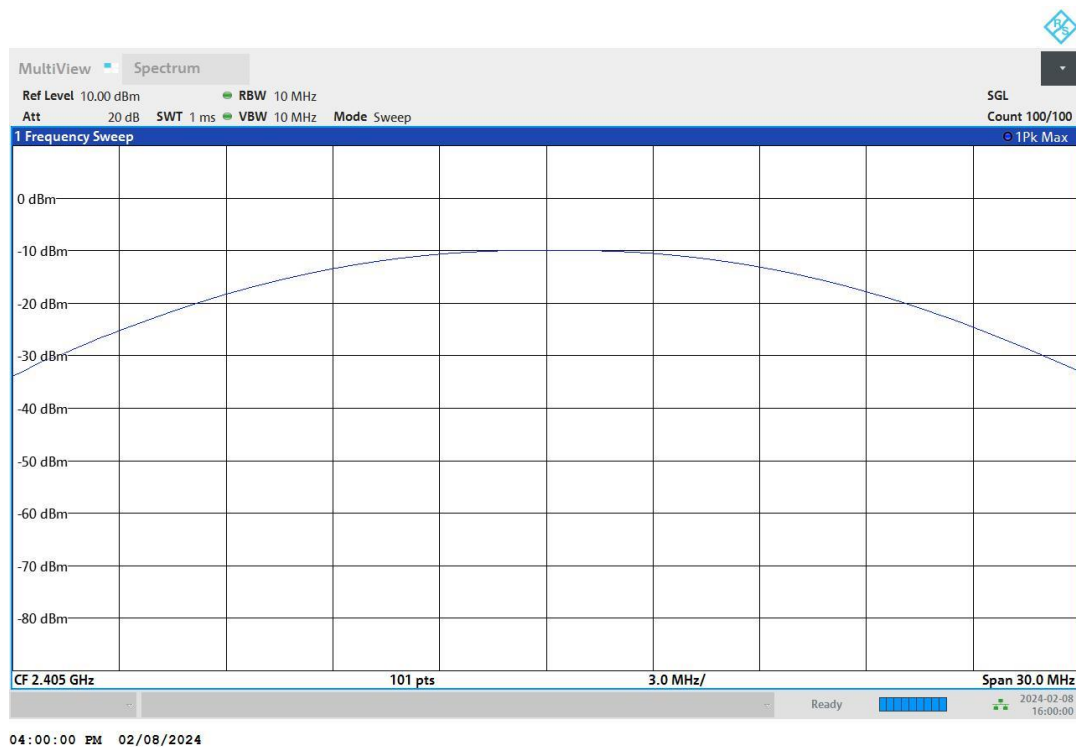
Test according to FCC title 47 part 15 §15.247(b), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

Result

DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2405.000000	1.7	30.0	PASS

Peak Power





Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.39000 GHz	2.39000 GHz
Stop Frequency	2.42000 GHz	2.42000 GHz
Span	30.000 MHz	30.000 MHz
RBW	10.000 MHz	>= 5.000 MHz
VBW	10.000 MHz	>= 30.000 MHz
SweepPoints	101	~ 101
Sweeptime	1.000 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	20.000 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	0.04 dB	0.50 dB

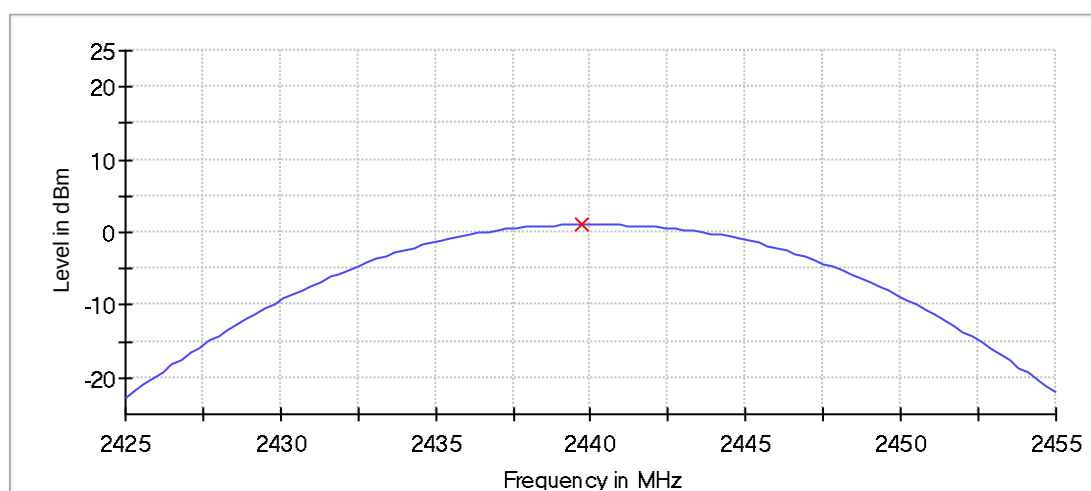
Peak output power (Sweep) (2440 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

Test according to FCC title 47 part 15 §15.247(b), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

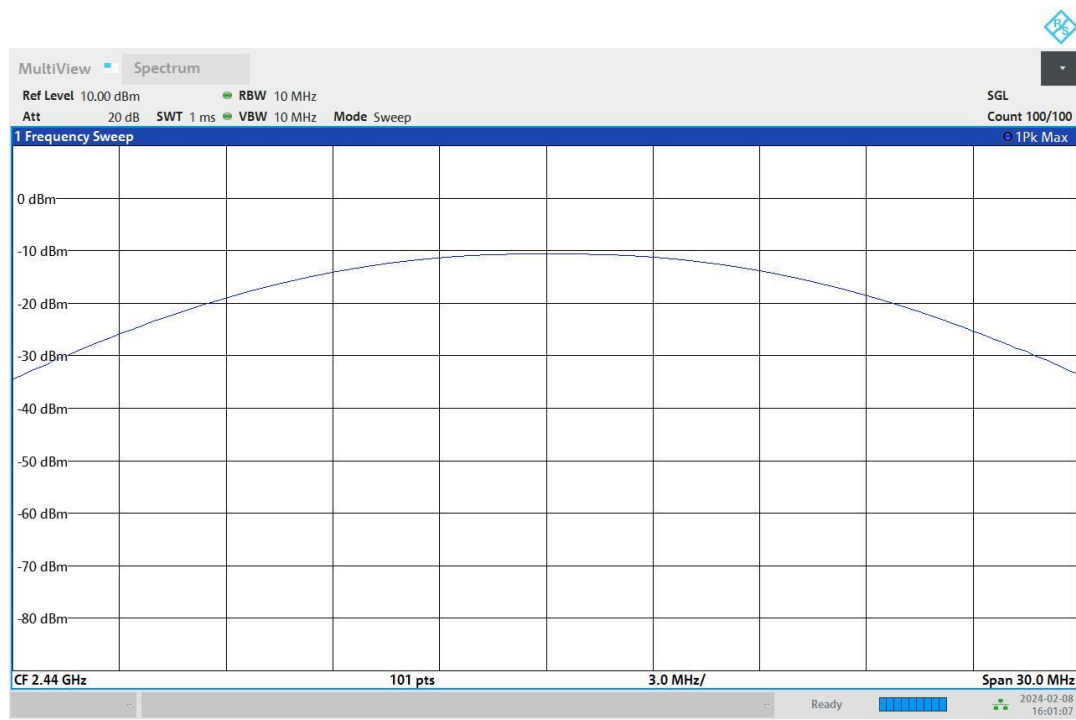
Result

DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2440.000000	1.0	30.0	PASS

Peak Power



— Connector 1 × Peak Connector 1



04:01:08 PM 02/08/2024

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.42500 GHz	2.42500 GHz
Stop Frequency	2.45500 GHz	2.45500 GHz
Span	30.000 MHz	30.000 MHz
RBW	10.000 MHz	>= 5.000 MHz
VBW	10.000 MHz	>= 30.000 MHz
SweepPoints	101	~ 101
Sweeptime	1.000 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	20.000 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	0.02 dB	0.50 dB

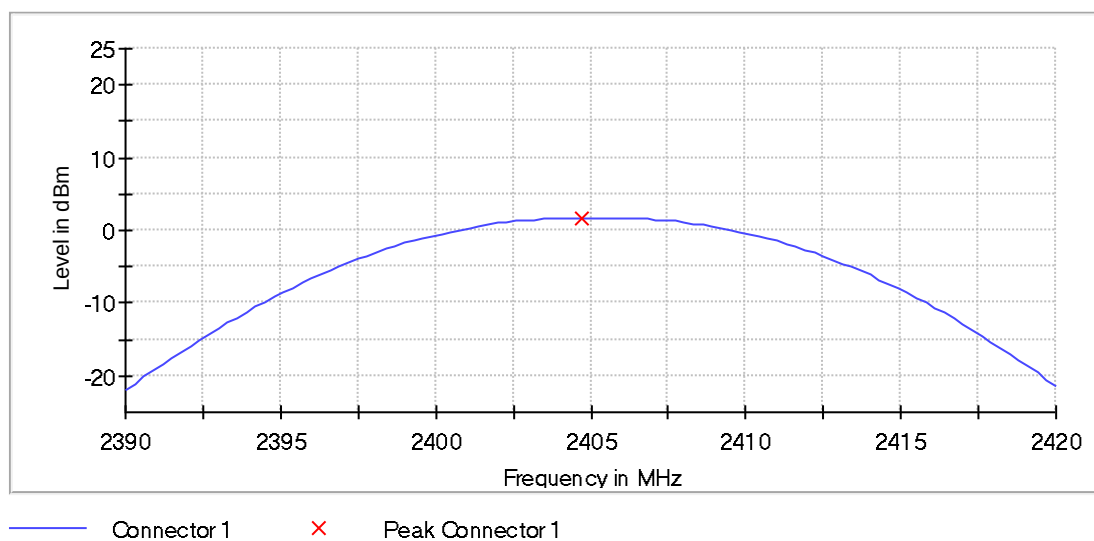
Peak output power (Sweep) (2480 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

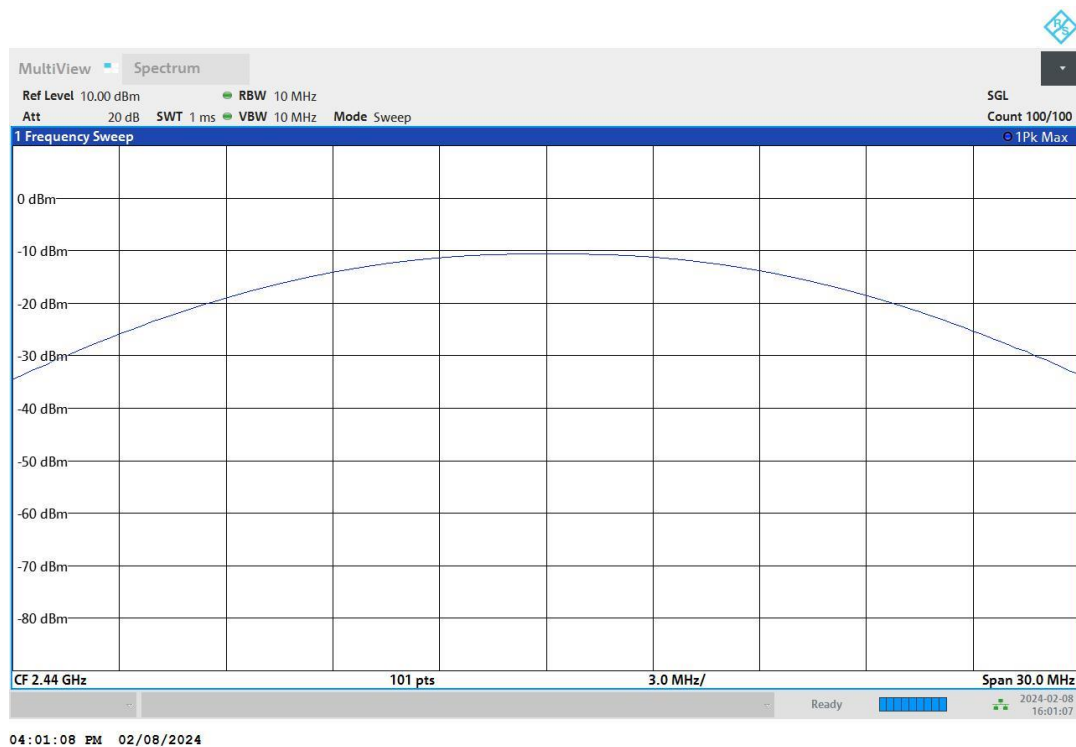
Test according to FCC title 47 part 15 §15.247(b), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

Result

DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2480.000000	1.2	30.0	PASS

Peak Power





Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.46500 GHz	2.46500 GHz
Stop Frequency	2.49500 GHz	2.49500 GHz
Span	30.000 MHz	30.000 MHz
RBW	10.000 MHz	>= 5.000 MHz
VBW	10.000 MHz	>= 30.000 MHz
SweepPoints	101	~ 101
SweepTime	1.000 ms	AUTO
Reference Level	10.000 dBm	10.000 dBm
Attenuation	20.000 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

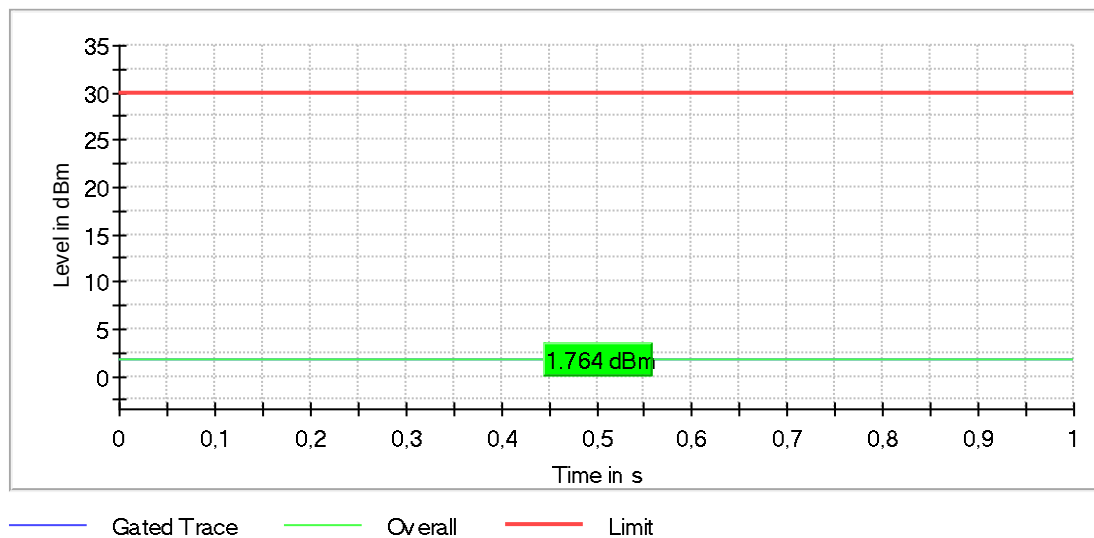
RF output power (2405 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

Test according to FCC title 47 part 15 §15.247(b), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2405.000000	1.8	30.0	1.8	100.000	PASS

Gated Trace



OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000 µs	1.000 µs

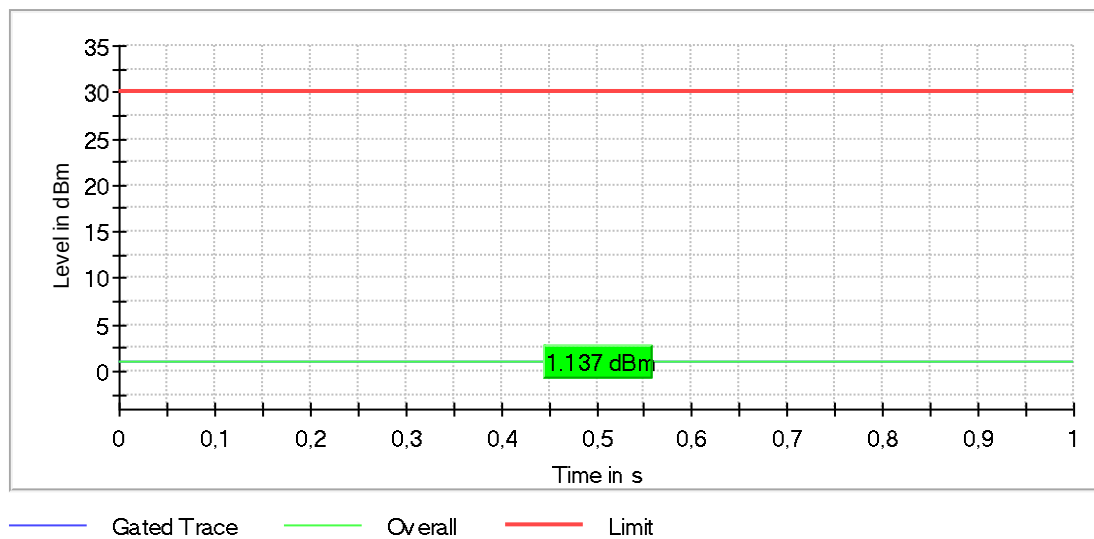
RF output power (2440 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

Test according to FCC title 47 part 15 §15.247(b), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2440.000000	1.1	30.0	1.1	100.000	PASS

Gated Trace



OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000 µs	1.000 µs

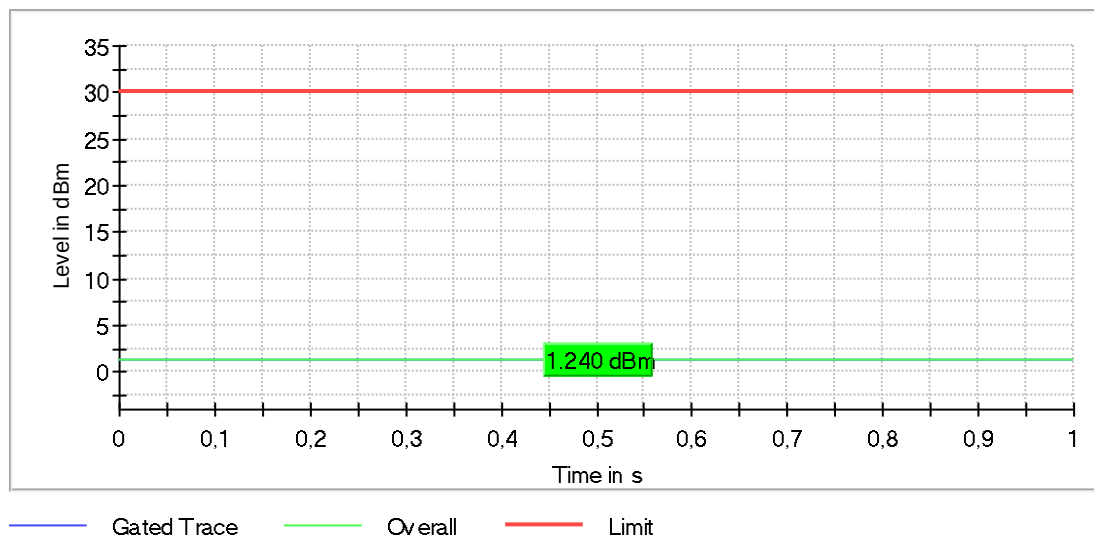
RF output power (2480 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

Test according to FCC title 47 part 15 §15.247(b), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2480.000000	1.2	30.0	1.2	100.000	PASS

Gated Trace



OSP PowerMeter settings

Setting	Instrument Value	Target Value
Measurement Time	1.000 s	1.000 s
Points	1000000	1000000
Time resolution	1.000 µs	1.000 µs

Power spectral density

Power Spectral Density (2405 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

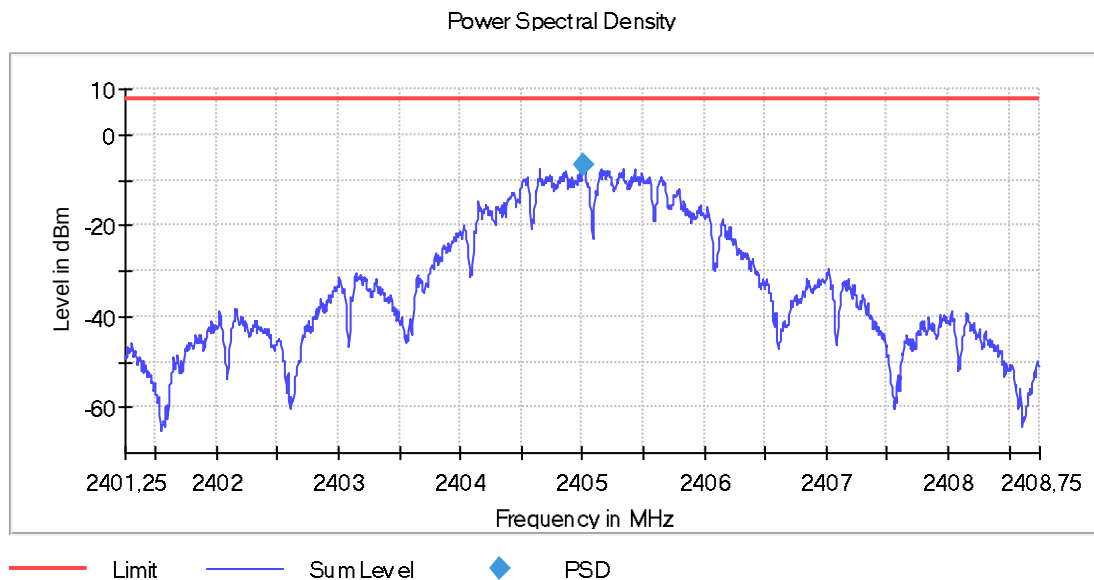
Test according to FCC title 47 part 15 §15.247(a),(e), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

Result

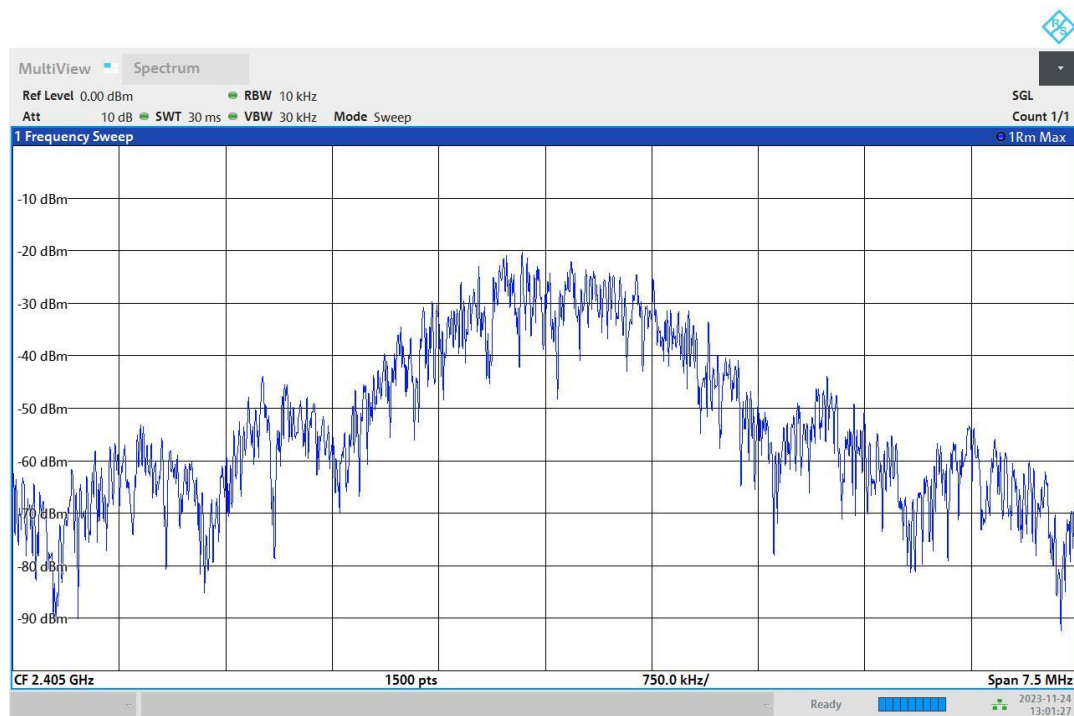
DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2405.000000	2405.012508	-6.510	8.0	PASS

Ports

Port	State
1	used



PSD Connector 1



01:01:28 PM 11/24/2023

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40125 GHz	2.40125 GHz
Stop Frequency	2.40875 GHz	2.40875 GHz
Span	7.500 MHz	7.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	1500	~ 1500
SweepTime	30.000 ms	30.000 ms
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 dB	AUTO
Detector	RMS	RMS
SweepCount	1	1
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	129 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

Power Spectral Density (2440 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

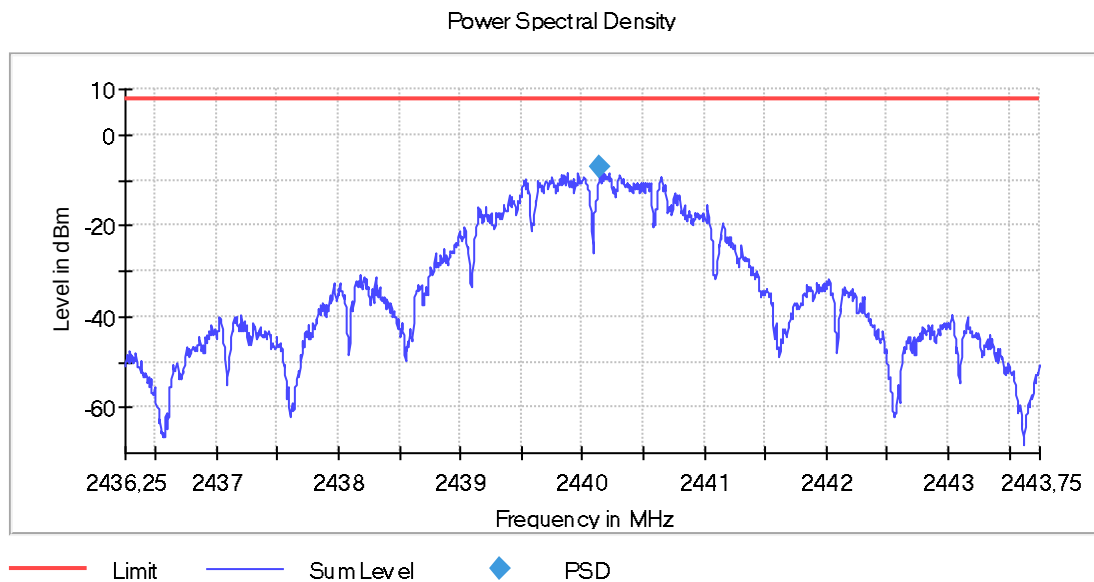
Test according to FCC title 47 part 15 §15.247(a),(e), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

Result

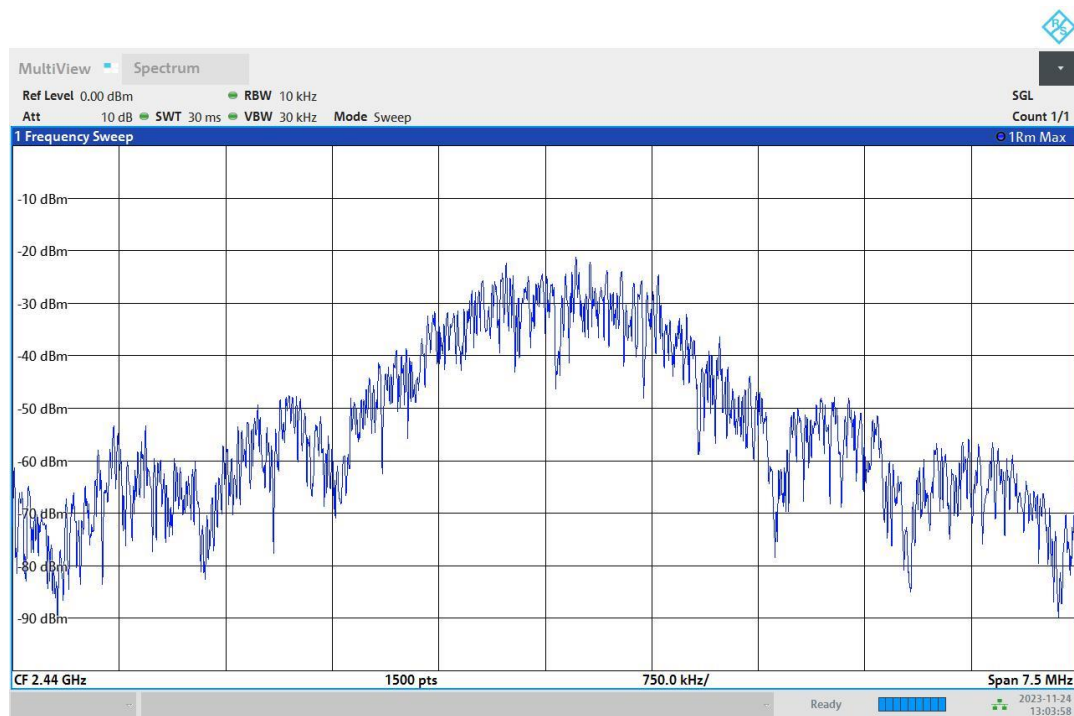
DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2440.000000	2440.142595	-7.293	8.0	PASS

Ports

Port	State
1	used



PSD Connector 1



01:03:58 PM 11/24/2023

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43625 GHz	2.43625 GHz
Stop Frequency	2.44375 GHz	2.44375 GHz
Span	7.500 MHz	7.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	1500	~ 1500
SweepTime	30.000 ms	30.000 ms
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 dB	AUTO
Detector	RMS	RMS
SweepCount	1	1
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	98 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

Power Spectral Density (2480 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

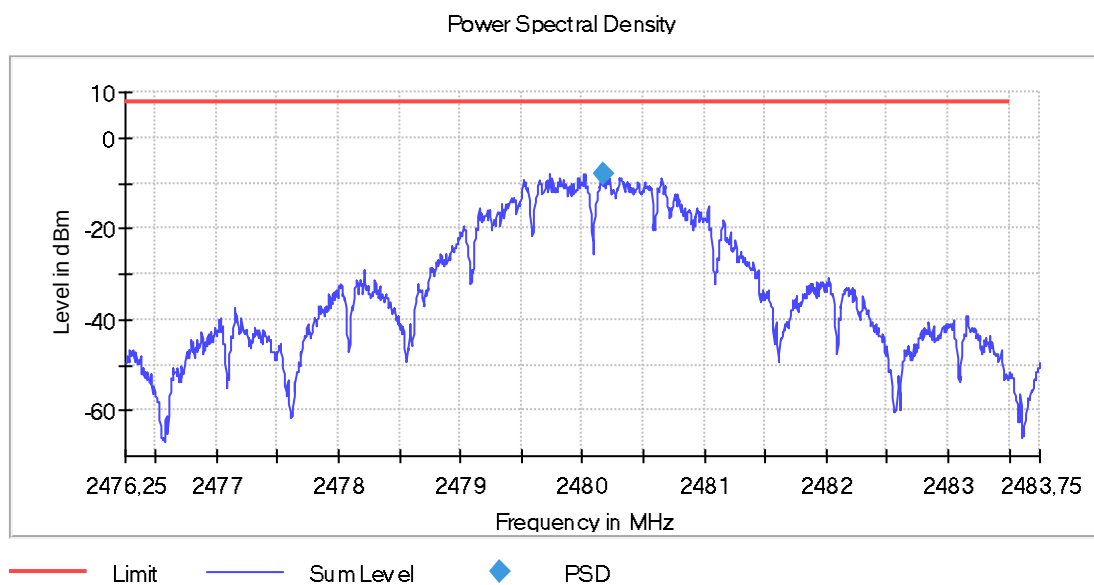
Test according to FCC title 47 part 15 §15.247(a),(e), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

Result

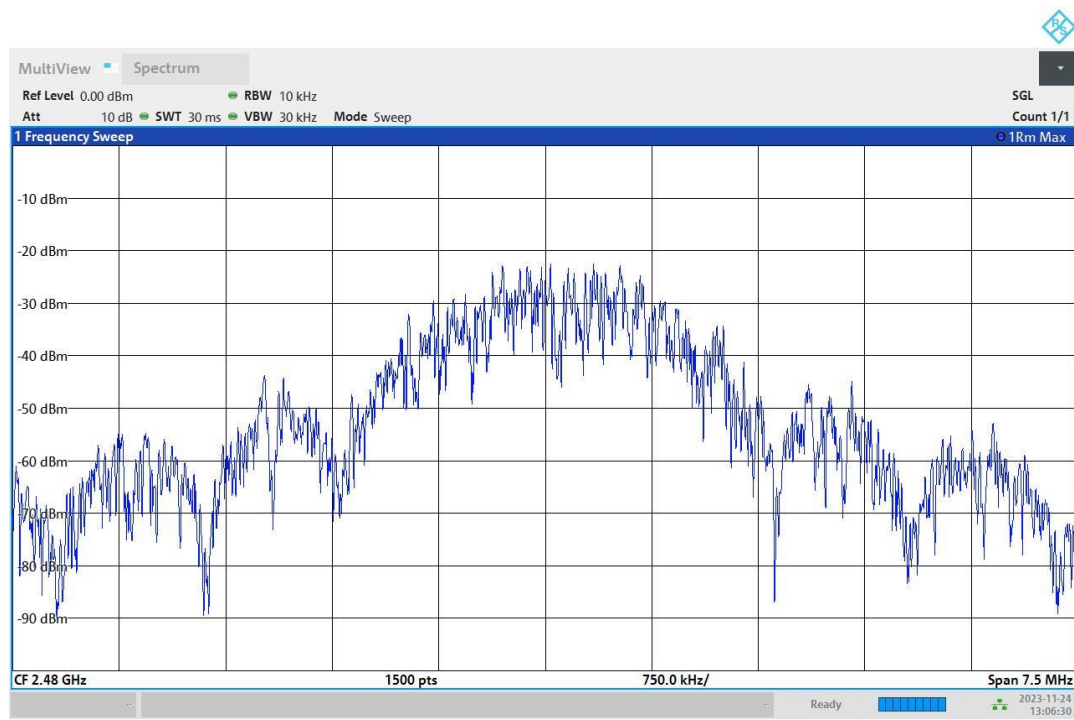
DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2480.000000	2480.177618	-7.832	8.0	PASS

Ports

Port	State
1	used



PSD Connector 1



01:06:31 PM 11/24/2023

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47625 GHz	2.47625 GHz
Stop Frequency	2.48375 GHz	2.48375 GHz
Span	7.500 MHz	7.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	1500	~ 1500
SweepTime	30.000 ms	30.000 ms
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 dB	AUTO
Detector	RMS	RMS
SweepCount	1	1
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	78 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.47 dB	0.50 dB

Minimum Emission Bandwidth 6 dB

Minimum Emission Bandwidth 6 dB (2405 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

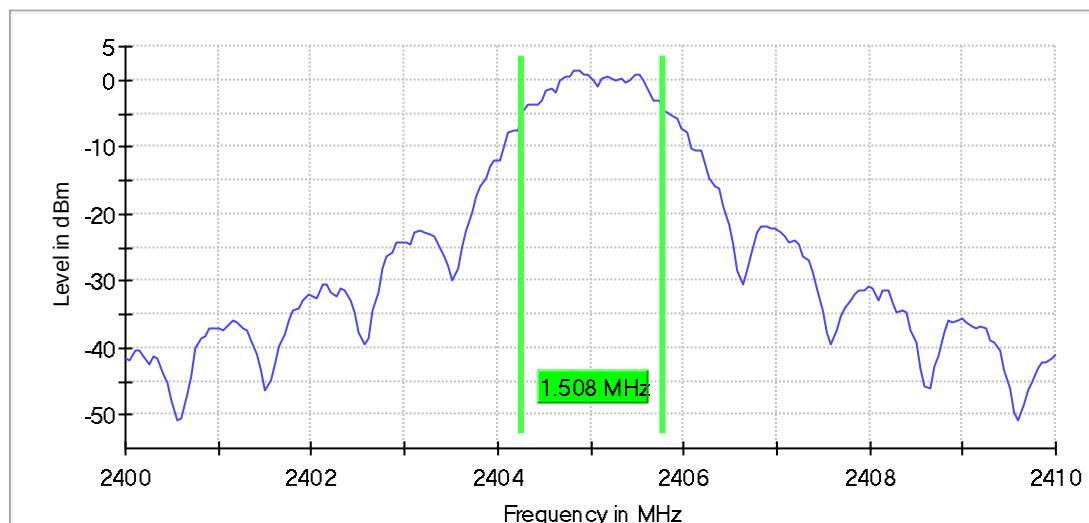
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2405.000000	1.507537	0.500000	---	2404.271357	2405.778894

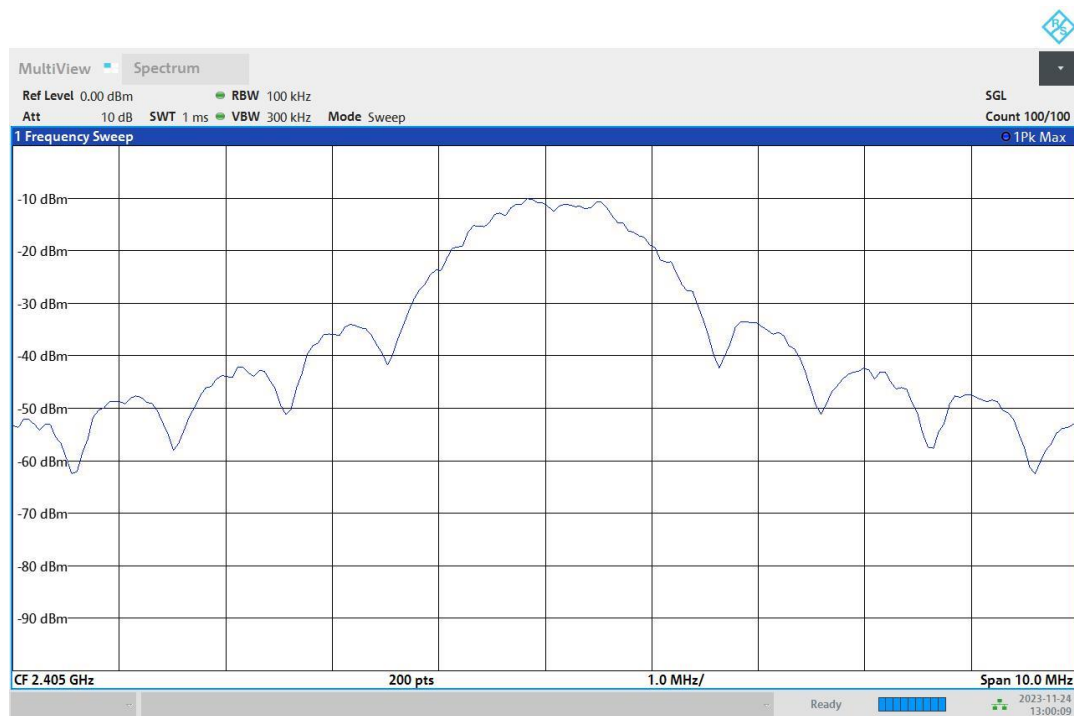
(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2405.000000	1.5	PASS

6 dB Bandwidth



Bandwidth



01:00:09 PM 11/24/2023

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.41000 GHz	2.41000 GHz
Span	10.000 MHz	10.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	200	~ 200
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 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	14 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.22 dB	0.50 dB

Minimum Emission Bandwidth 6 dB (2440 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

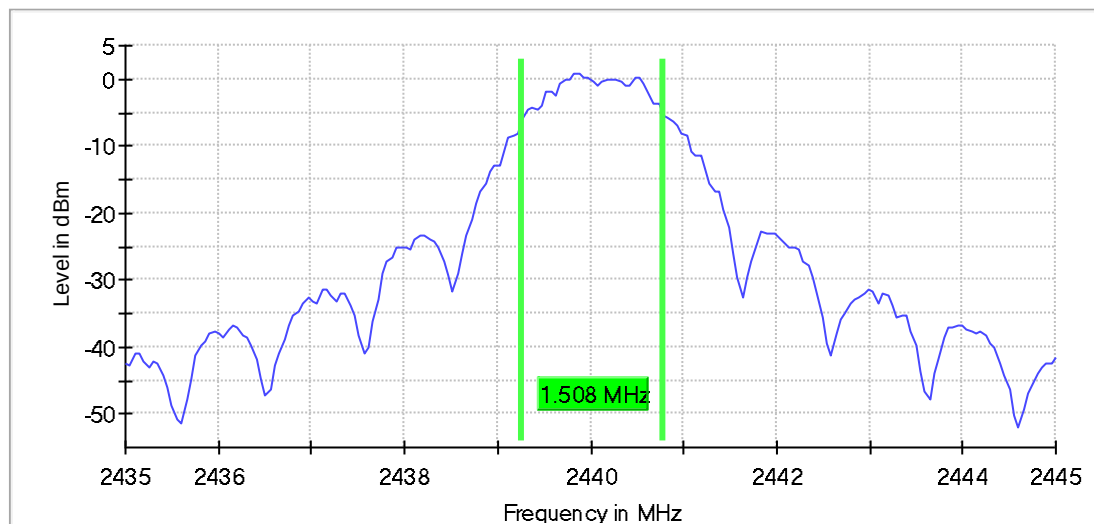
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	1.507537	0.500000	---	2439.271357	2440.778894

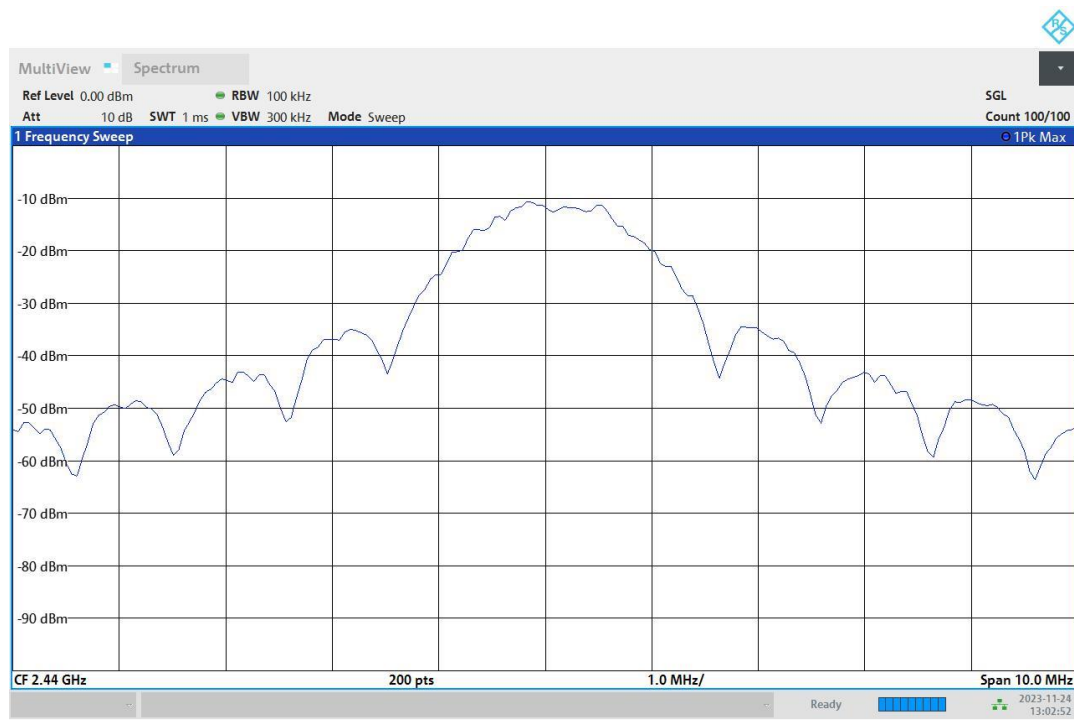
(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2440.000000	0.9	PASS

6 dB Bandwidth



Bandwidth



01:02:52 PM 11/24/2023

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43500 GHz	2.43500 GHz
Stop Frequency	2.44500 GHz	2.44500 GHz
Span	10.000 MHz	10.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	200	~ 200
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 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	15 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.18 dB	0.50 dB

Minimum Emission Bandwidth 6 dB (2480 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

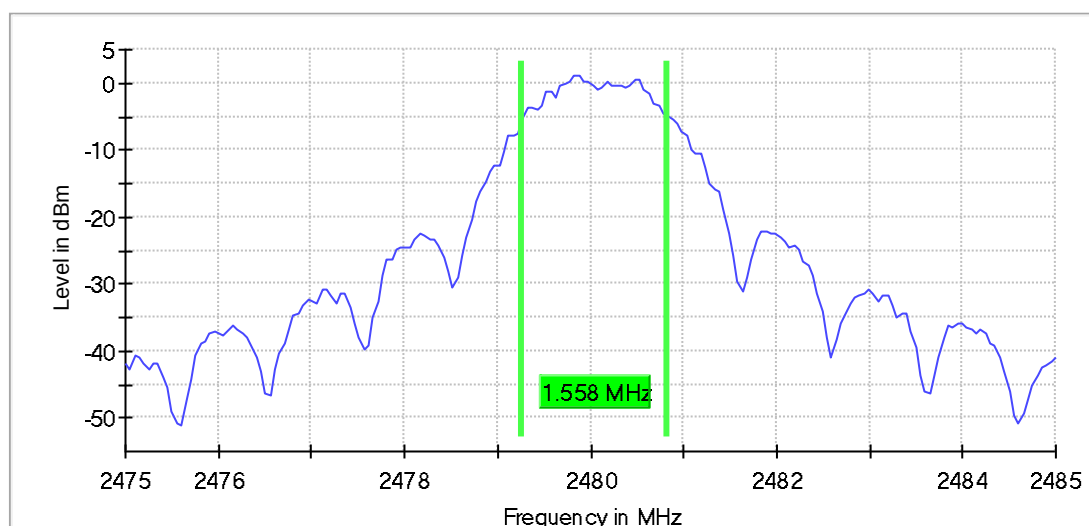
6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	1.557789	0.500000	---	2479.271357	2480.829146

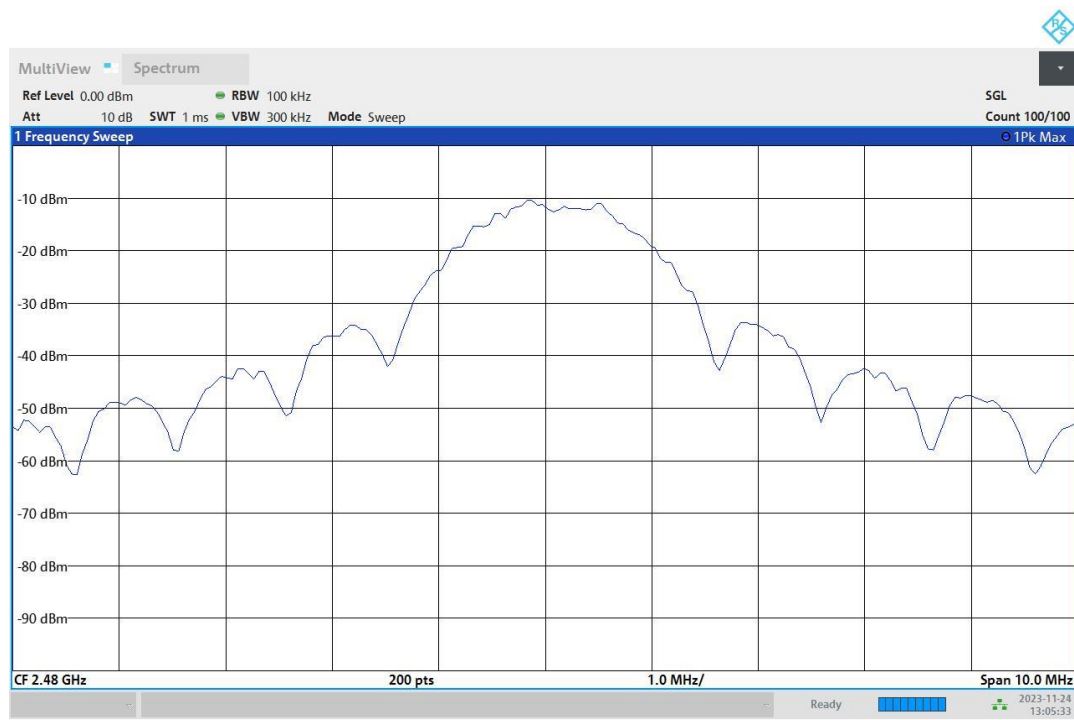
(continuation of the "6 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2480.000000	1.2	PASS

6 dB Bandwidth



Bandwidth



01:05:33 PM 11/24/2023

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47500 GHz	2.47500 GHz
Stop Frequency	2.48500 GHz	2.48500 GHz
Span	10.000 MHz	10.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	200	~ 200
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 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	10 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.29 dB	0.50 dB

Emission Bandwidth 20 dB

Emission Bandwidth 20 dB (2405 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

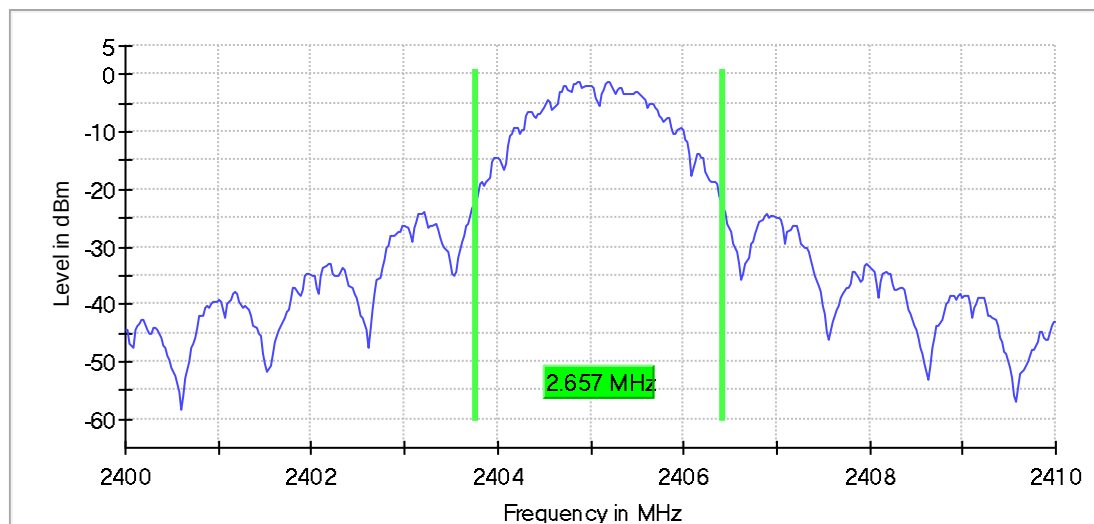
20 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2405.000000	2.656642	---	---	2403.759398	2406.416040

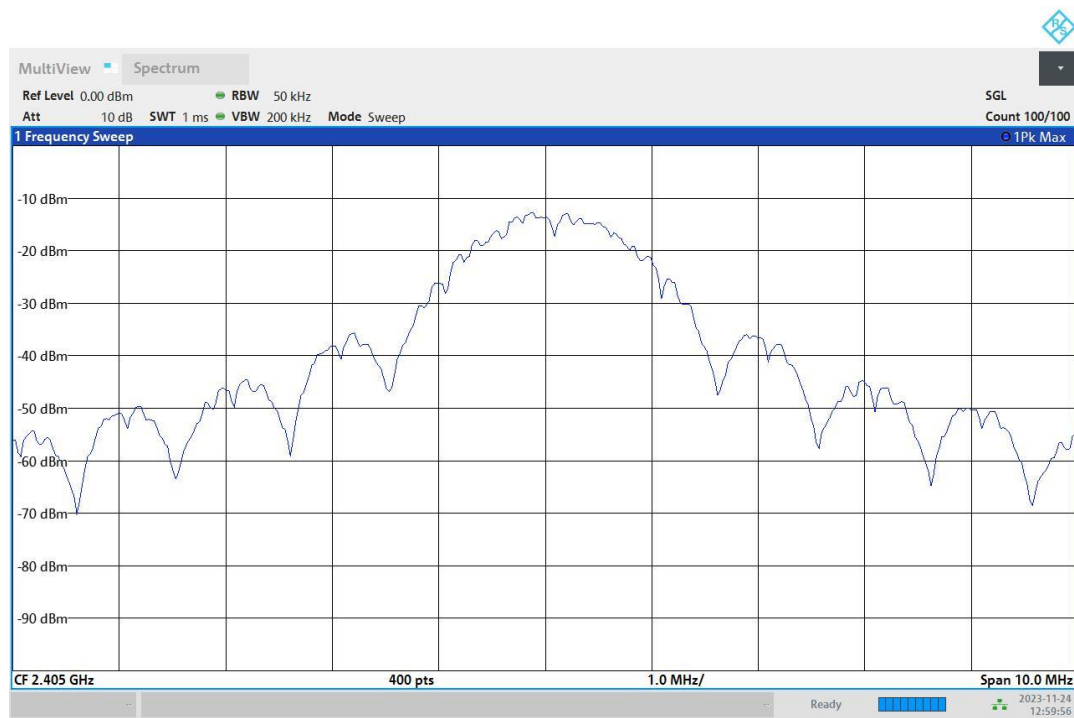
(continuation of the "20 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2405.000000	-1.1	PASS

20 dB Bandwidth



Bandwidth



12:59:57 PM 11/24/2023

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.41000 GHz	2.41000 GHz
Span	10.000 MHz	10.000 MHz
RBW	50.000 kHz	>= 50.000 kHz
VBW	200.000 kHz	>= 150.000 kHz
SweepPoints	400	~ 400
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 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	14 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.39 dB	0.50 dB

Emission Bandwidth 20 dB (2440 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

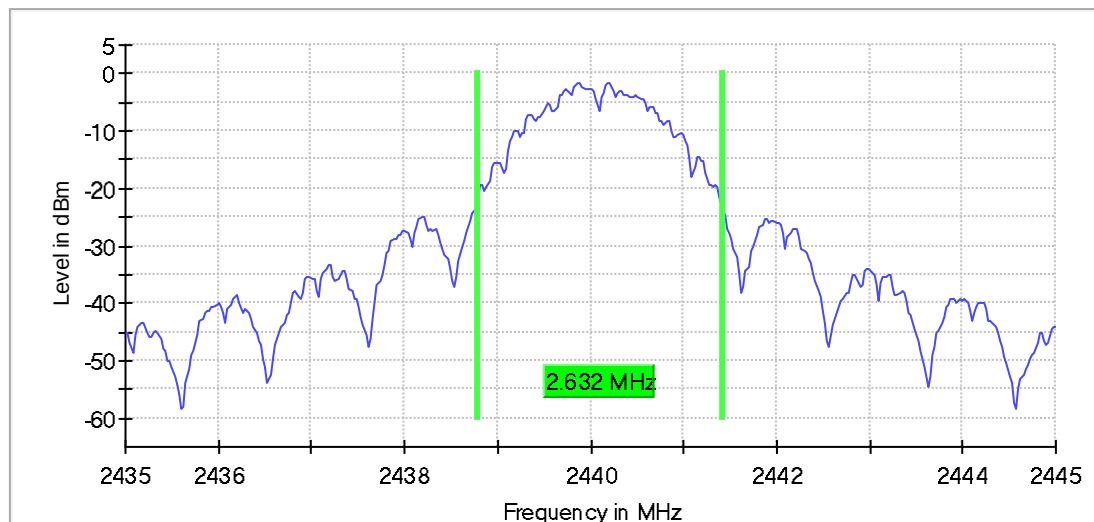
20 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	2.631579	---	---	2438.784461	2441.416040

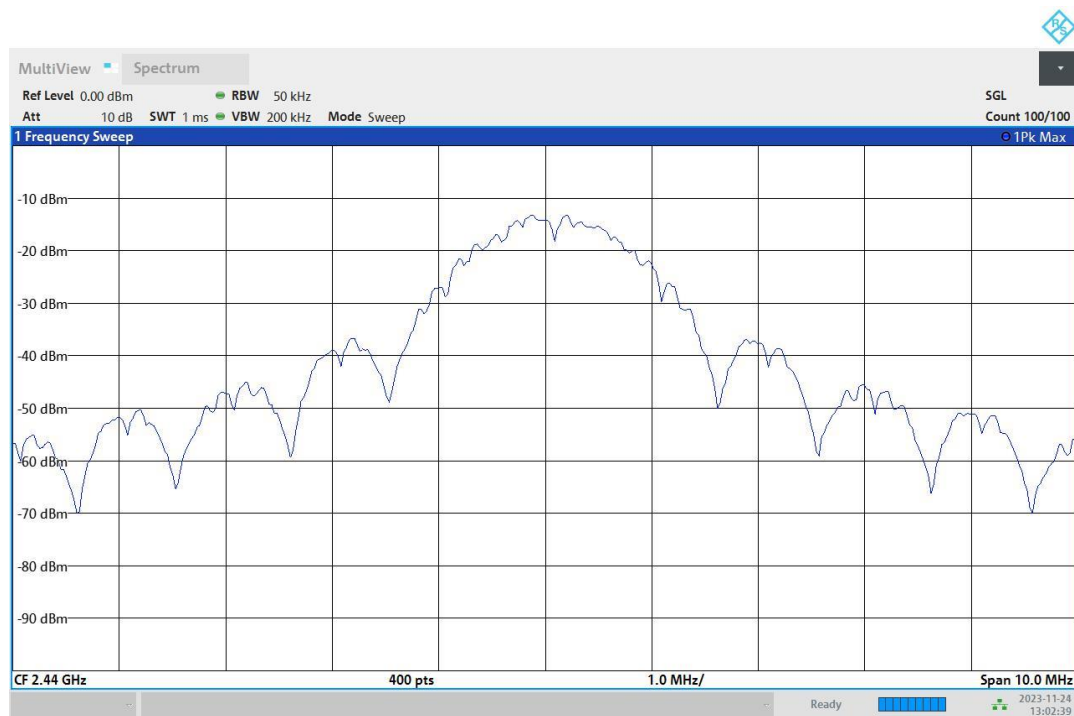
(continuation of the "20 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2440.000000	-1.6	PASS

20 dB Bandwidth



Bandwidth



01:02:40 PM 11/24/2023

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43500 GHz	2.43500 GHz
Stop Frequency	2.44500 GHz	2.44500 GHz
Span	10.000 MHz	10.000 MHz
RBW	50.000 kHz	>= 50.000 kHz
VBW	200.000 kHz	>= 150.000 kHz
SweepPoints	400	~ 400
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 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	20 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.08 dB	0.50 dB

Emission Bandwidth 20 dB (2480 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

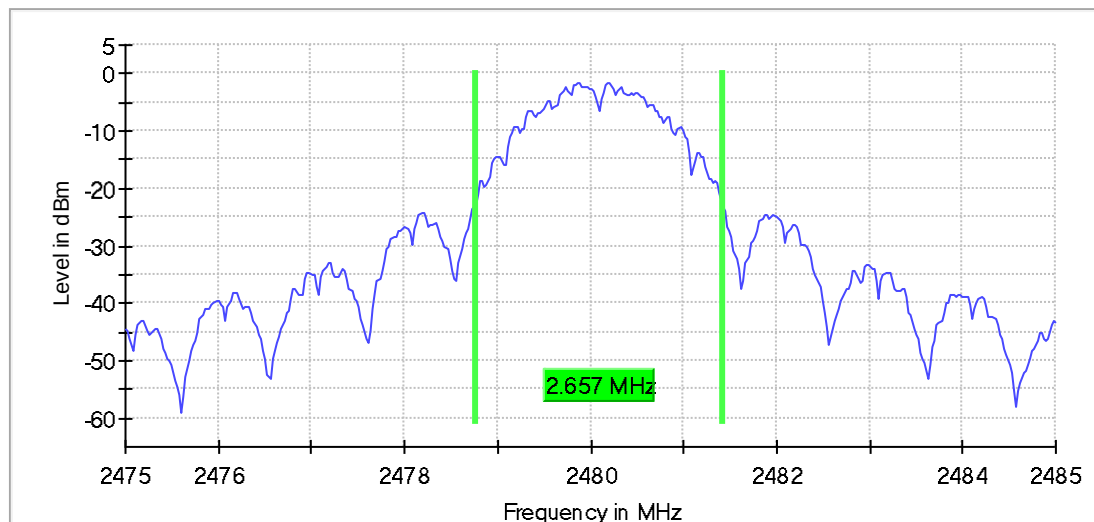
20 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	2.656642	---	---	2478.759398	2481.416040

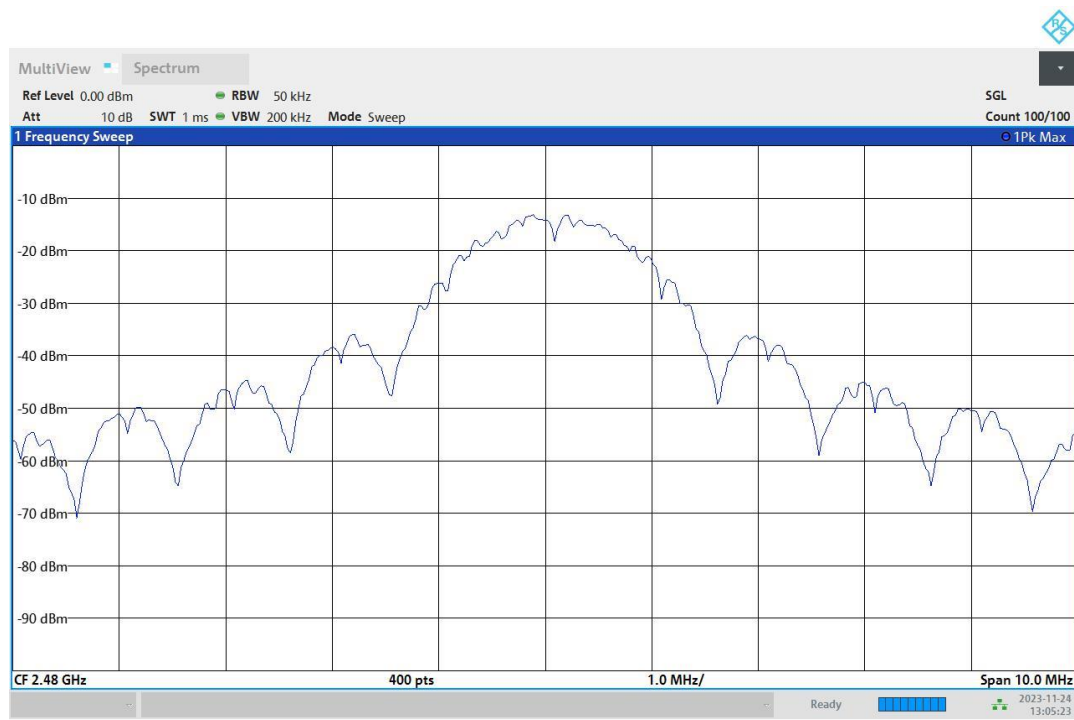
(continuation of the "20 dB Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Max Level (dBm)	Result
2480.000000	-1.5	PASS

20 dB Bandwidth



Bandwidth



01:05:23 PM 11/24/2023

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47500 GHz	2.47500 GHz
Stop Frequency	2.48500 GHz	2.48500 GHz
Span	10.000 MHz	10.000 MHz
RBW	50.000 kHz	>= 50.000 kHz
VBW	200.000 kHz	>= 150.000 kHz
SweepPoints	400	~ 400
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 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	10 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.07 dB	0.50 dB

Occupied Channel Bandwidth 99%

Occupied Channel Bandwidth 99% (2405 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

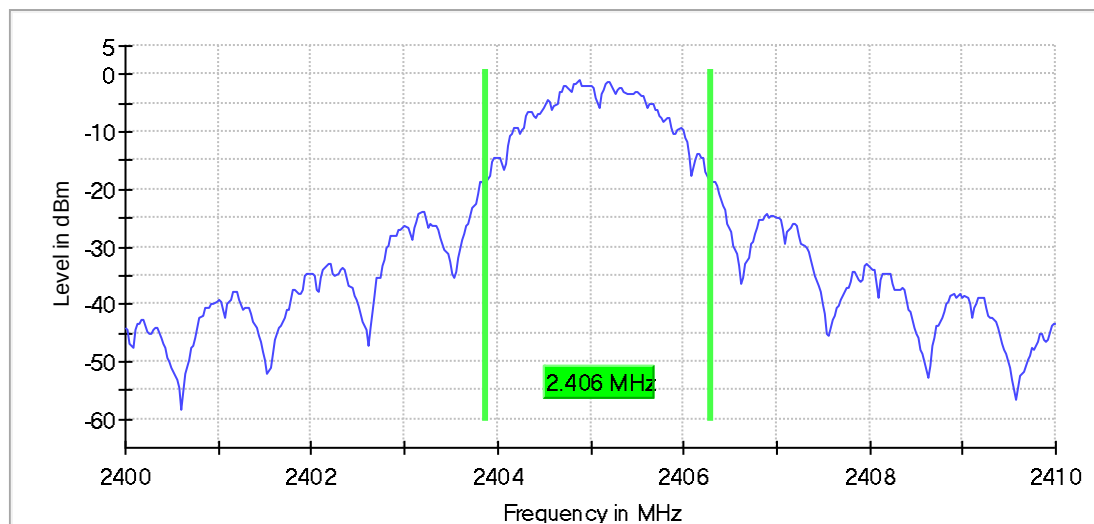
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2405.000000	2.406015	---	---	2403.884712	2406.290727

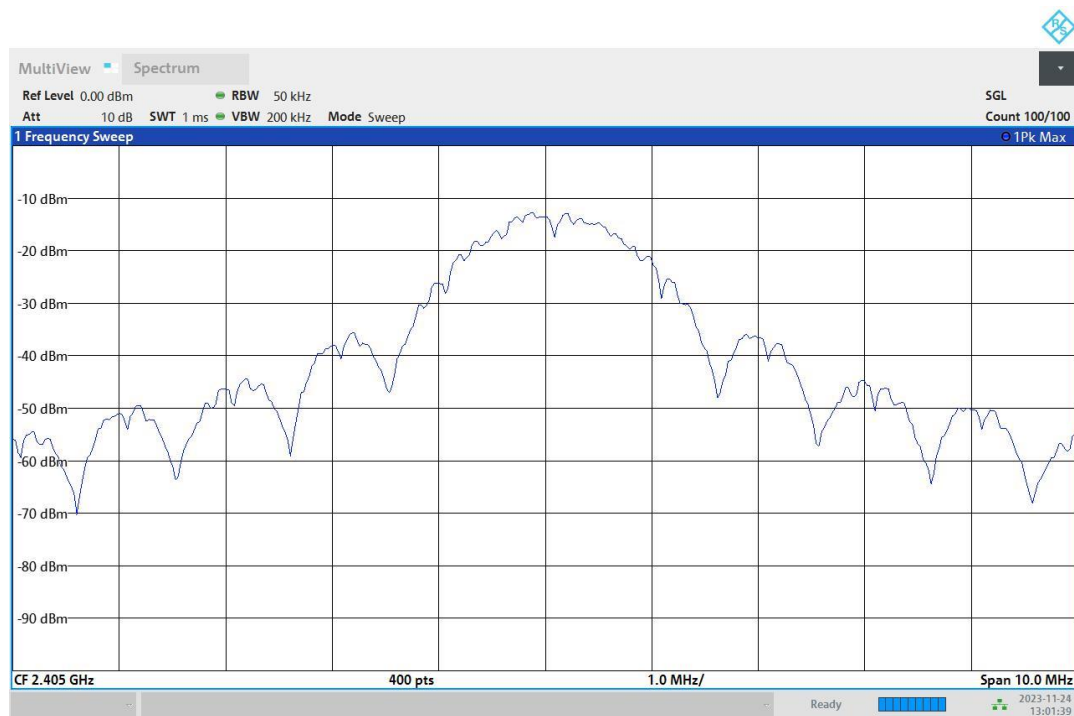
(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2405.000000	PASS

99 %Bandwidth



Bandwidth



01:01:40 PM 11/24/2023

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.40000 GHz	2.40000 GHz
Stop Frequency	2.41000 GHz	2.41000 GHz
Span	10.000 MHz	10.000 MHz
RBW	50.000 kHz	>= 50.000 kHz
VBW	200.000 kHz	>= 150.000 kHz
SweepPoints	400	~ 400
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	13 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.06 dB	0.30 dB

Occupied Channel Bandwidth 99% (2440 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

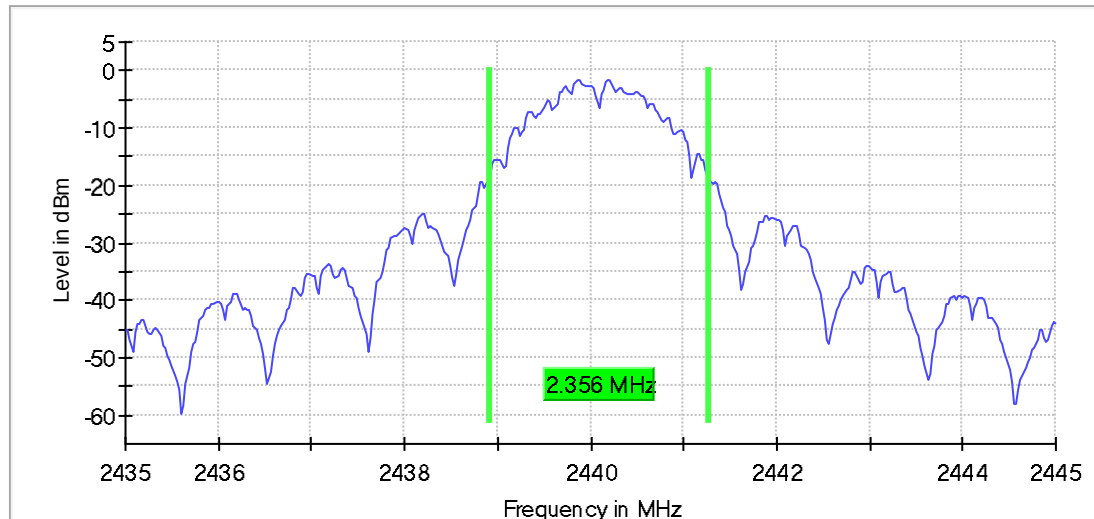
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	2.355890	---	---	2438.909774	2441.265664

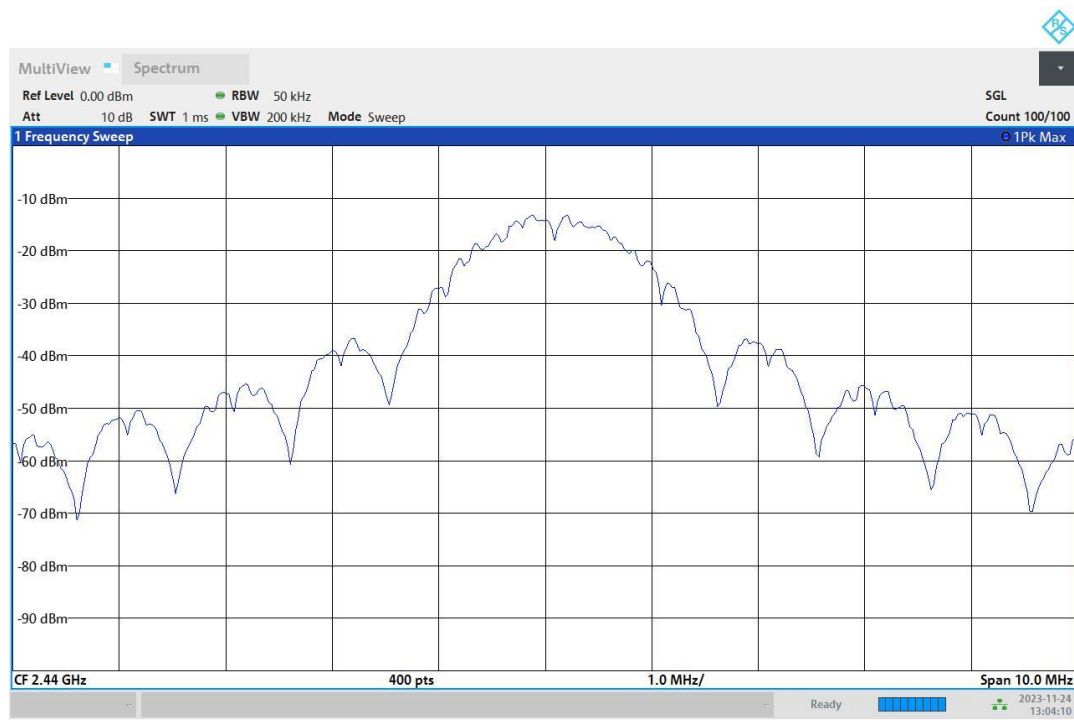
(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2440.000000	PASS

99 %Bandwidth



Bandwidth



01:04:10 PM 11/24/2023

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43500 GHz	2.43500 GHz
Stop Frequency	2.44500 GHz	2.44500 GHz
Span	10.000 MHz	10.000 MHz
RBW	50.000 kHz	>= 50.000 kHz
VBW	200.000 kHz	>= 150.000 kHz
SweepPoints	400	~ 400
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 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	11 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.21 dB	0.30 dB

Occupied Channel Bandwidth 99% (2480 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

Test according to FCC title 47 part 15 §15.247(a), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

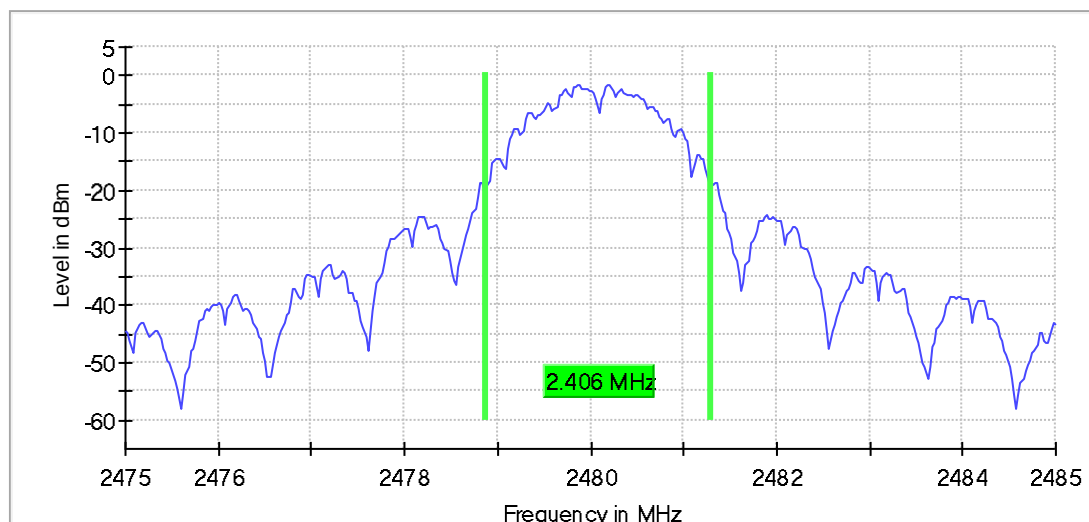
99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	2.406015	---	---	2478.884712	2481.290727

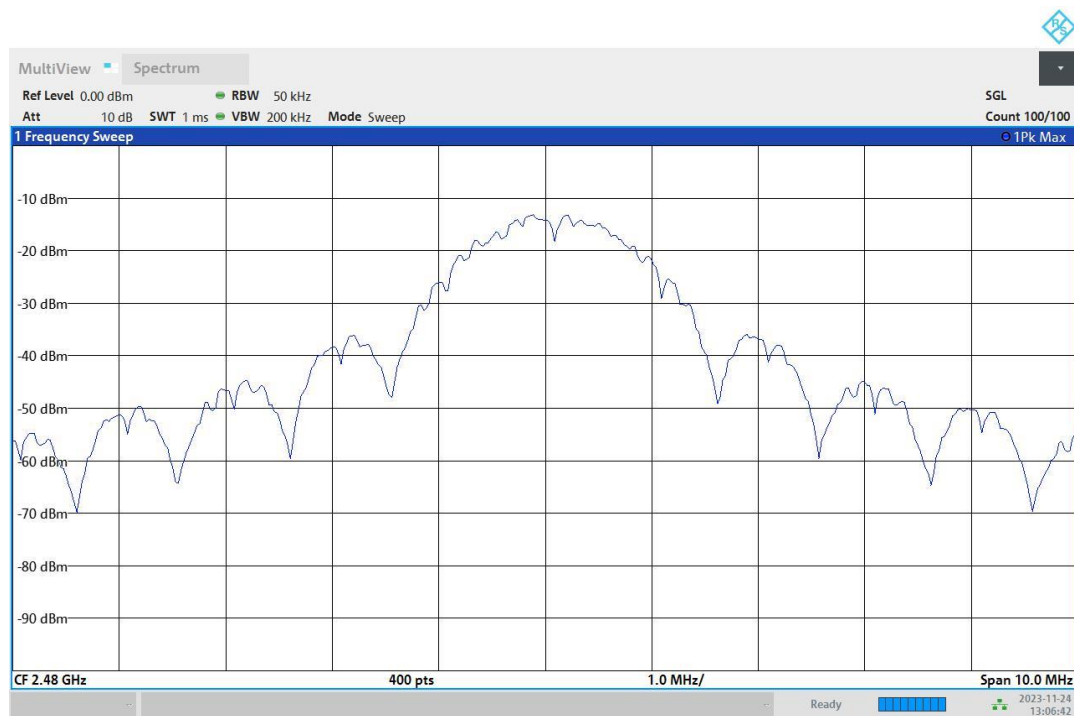
(continuation of the "99 % Bandwidth" table from column 6 ...)

DUT Frequency (MHz)	Result
2480.000000	PASS

99 %Bandwidth



Bandwidth



01:06:43 PM 11/24/2023

Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.47500 GHz	2.47500 GHz
Stop Frequency	2.48500 GHz	2.48500 GHz
Span	10.000 MHz	10.000 MHz
RBW	50.000 kHz	>= 50.000 kHz
VBW	200.000 kHz	>= 150.000 kHz
SweepPoints	400	~ 400
SweepTime	1.000 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 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	12 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.13 dB	0.30 dB

Emissions in non-restricted frequency bands

Tx Spurious Emission (2405 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

Result

DUT Frequency (MHz)	Result
2405.000000	PASS

Inband Peak

Frequency (MHz)	Level (dBm)
2405.010000	-0.4

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

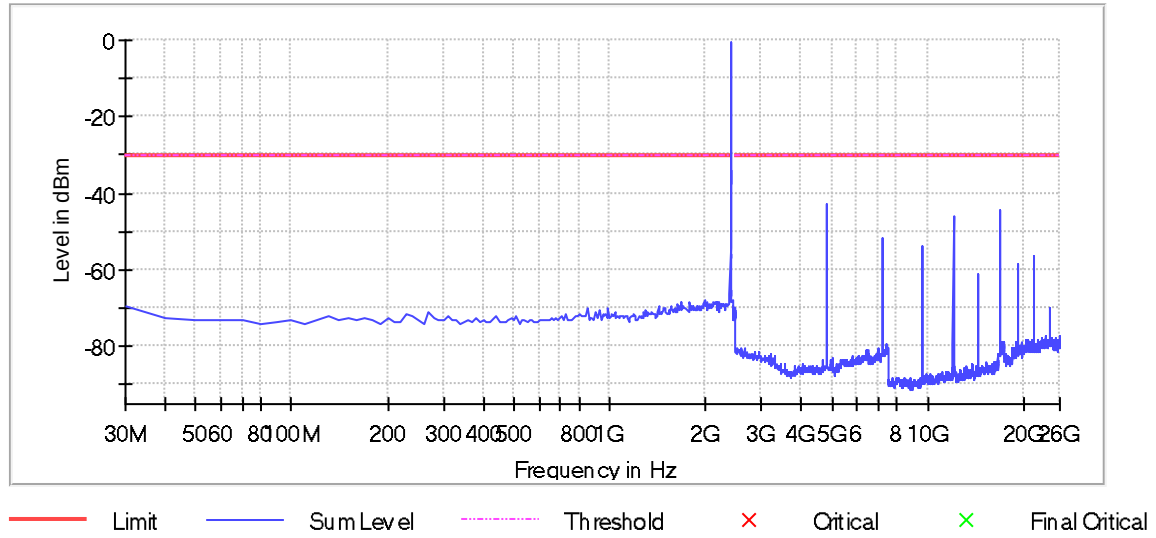
Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4803.154762	-42.6	12.2	-30.4
16831.364583	-44.2	13.8	-30.4
16841.363095	-45.1	14.7	-30.4
12022.080357	-45.8	15.3	-30.4
12032.078869	-48.8	18.4	-30.4
7212.796131	-51.8	21.4	-30.4
9612.438988	-53.7	23.2	-30.4
9622.437500	-54.0	23.6	-30.4
2390.000000	-54.4	23.9	-30.4
21640.648810	-56.5	26.1	-30.4
21650.647321	-56.7	26.3	-30.4
19251.004464	-58.2	27.8	-30.4
19241.005952	-59.4	29.0	-30.4
4813.153274	-60.4	30.0	-30.4
14431.721726	-61.1	30.7	-30.4

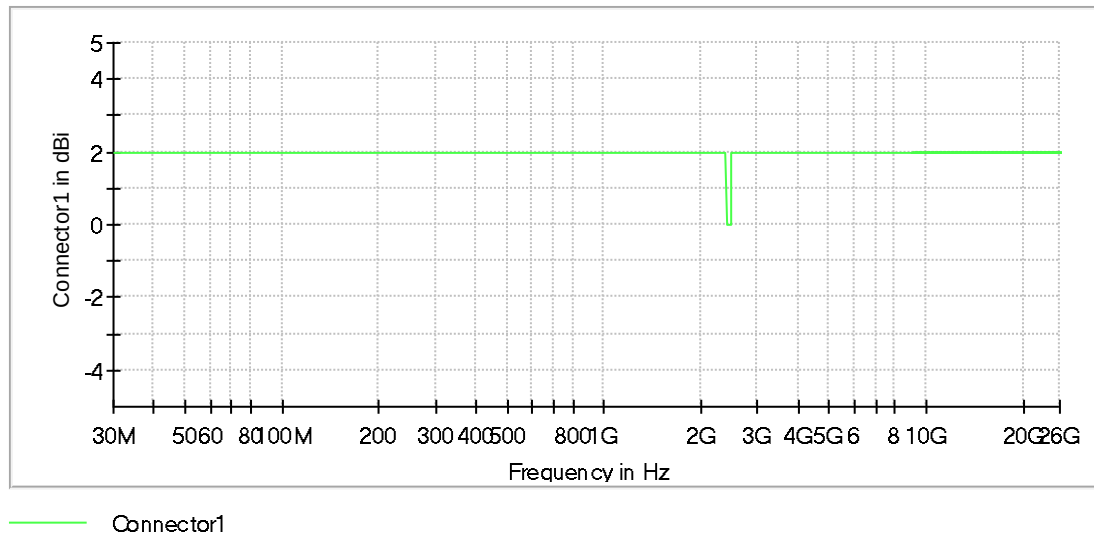
Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	2400.000000	1	1
2400.000000	2483.500000	1	1
2483.500000	26000.000000	1	1

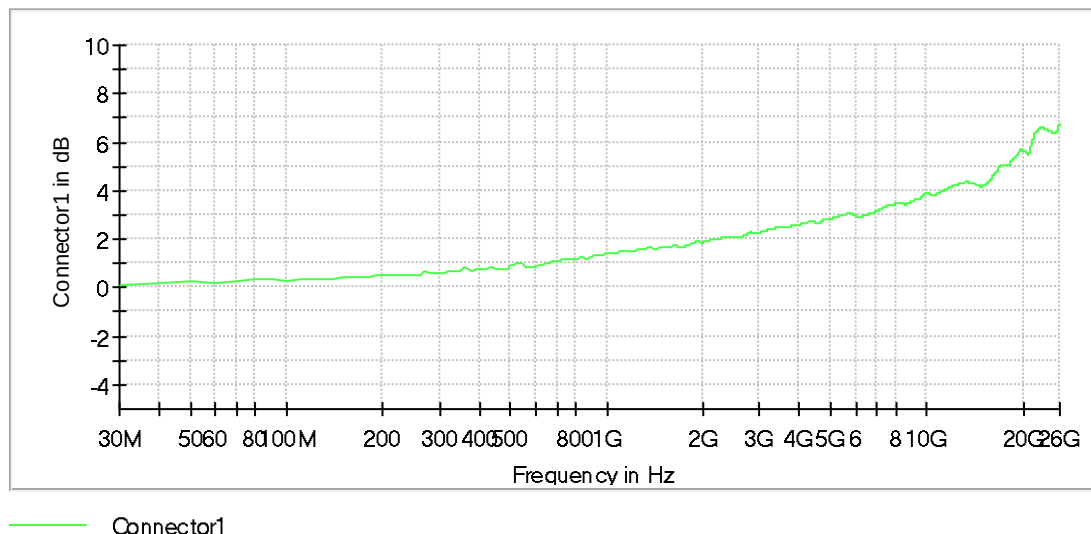
Spurious



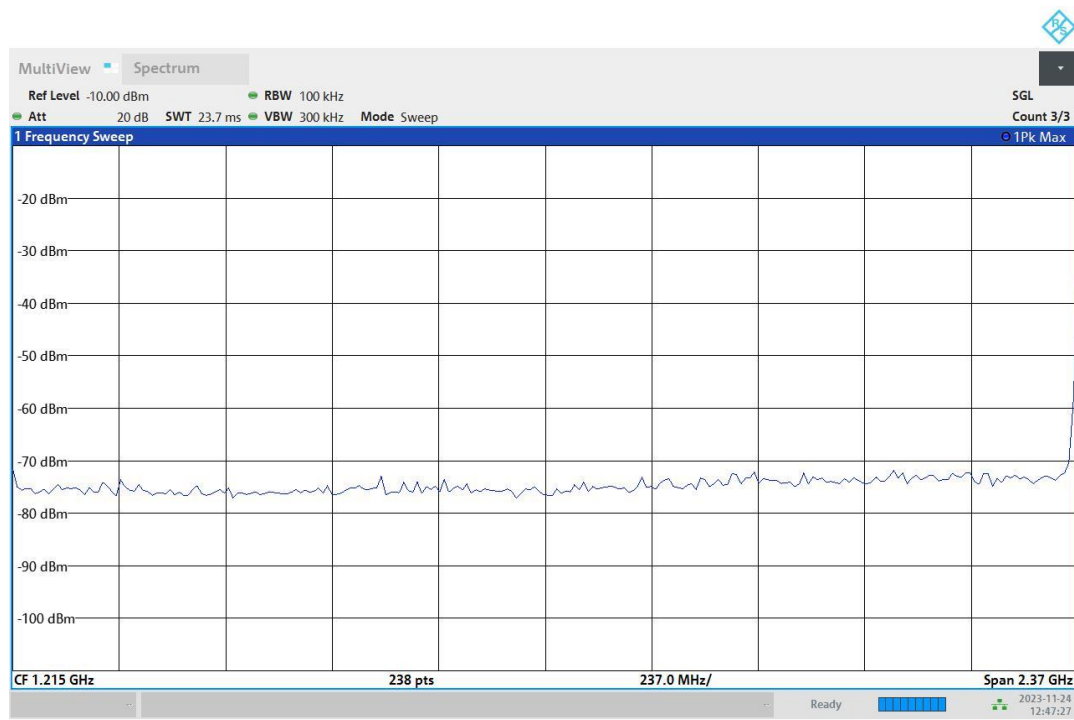
Gain



Attenuation

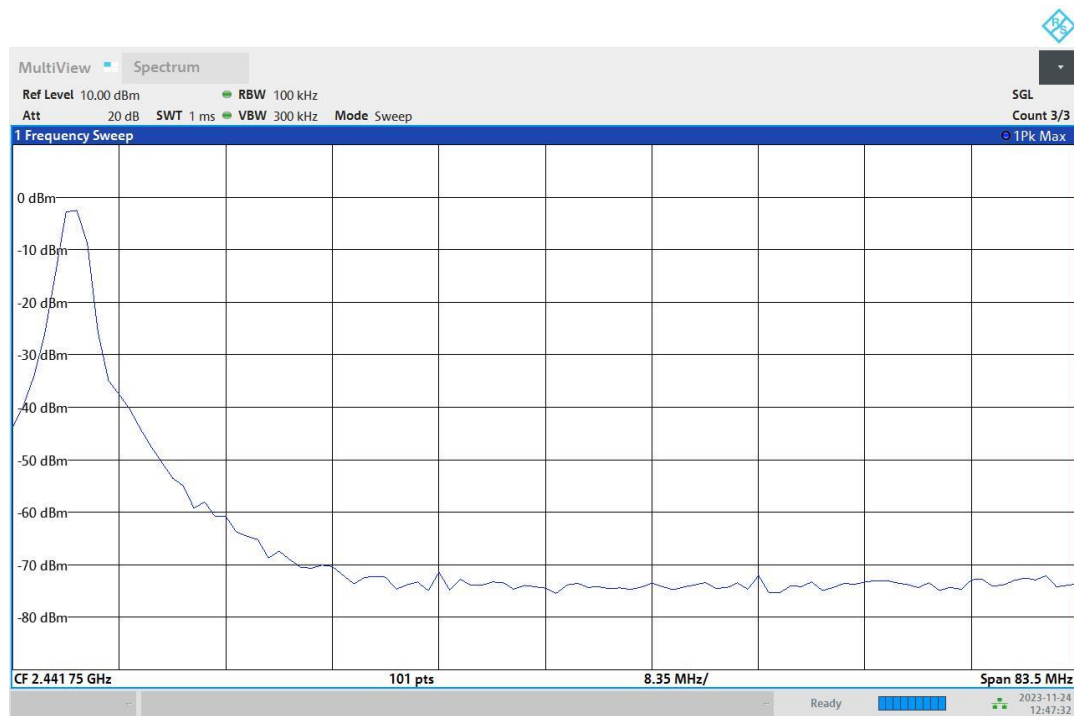


Spurious Connector 1_0



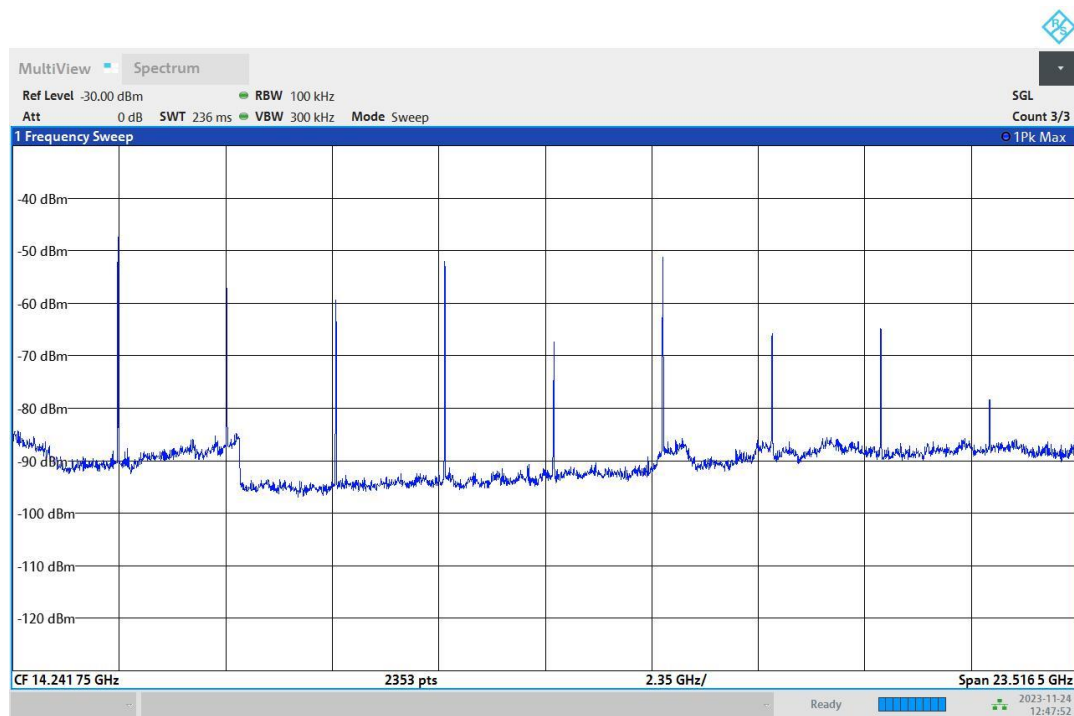
12:47:27 PM 11/24/2023

Spurious Connector 1_1



12:47:33 PM 11/24/2023

Spurious Connector 1_2



12:47:52 PM 11/24/2023

Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	238	~ 238
SweepTime	23.700 ms	AUTO
Reference Level	-10.000 dBm	-30.000 dBm
Attenuation	20.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	3	3
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	5 / max. 40	max. 40
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

Tx Spurious Emission (2440 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

Result

DUT Frequency (MHz)	Result
2440.000000	PASS

Inband Peak

Frequency (MHz)	Level (dBm)
2440.080000	0.1

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

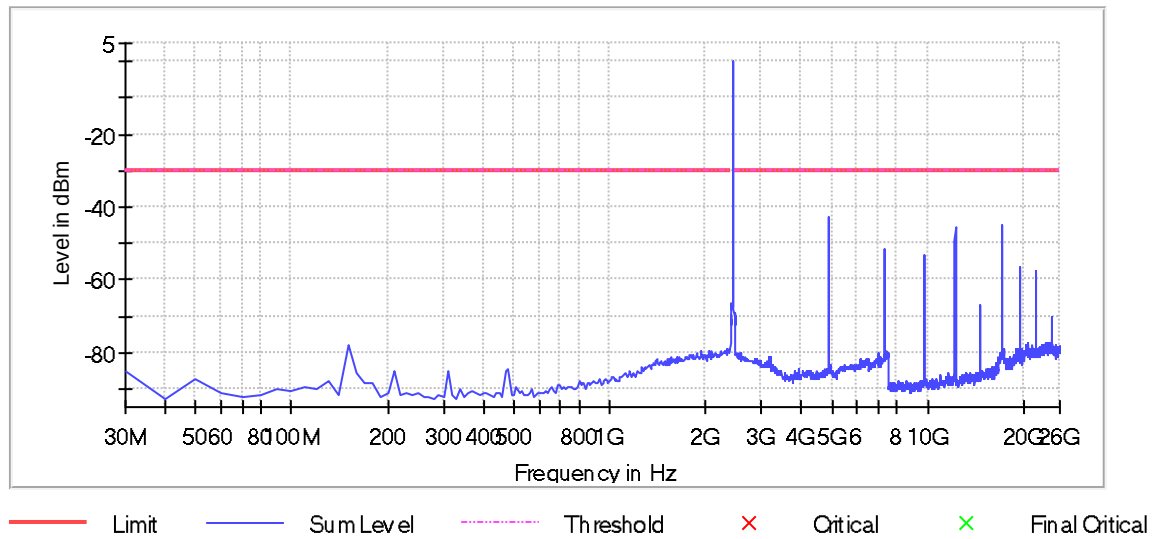
Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4873.144345	-43.0	13.1	-29.9
17081.327381	-45.0	15.1	-29.9
12202.053571	-45.7	15.8	-29.9
12192.055060	-49.4	19.5	-29.9
7322.779762	-51.4	21.5	-29.9
7312.781250	-51.7	21.8	-29.9
9752.418155	-53.5	23.6	-29.9
9762.416667	-54.9	25.0	-29.9
19530.962798	-56.4	26.5	-29.9
21960.601190	-57.7	27.8	-29.9
21970.599702	-57.9	28.0	-29.9
19520.964286	-58.2	28.3	-29.9
4883.142857	-59.8	29.9	-29.9
17091.325893	-61.0	31.1	-29.9
14641.690476	-66.7	36.8	-29.9

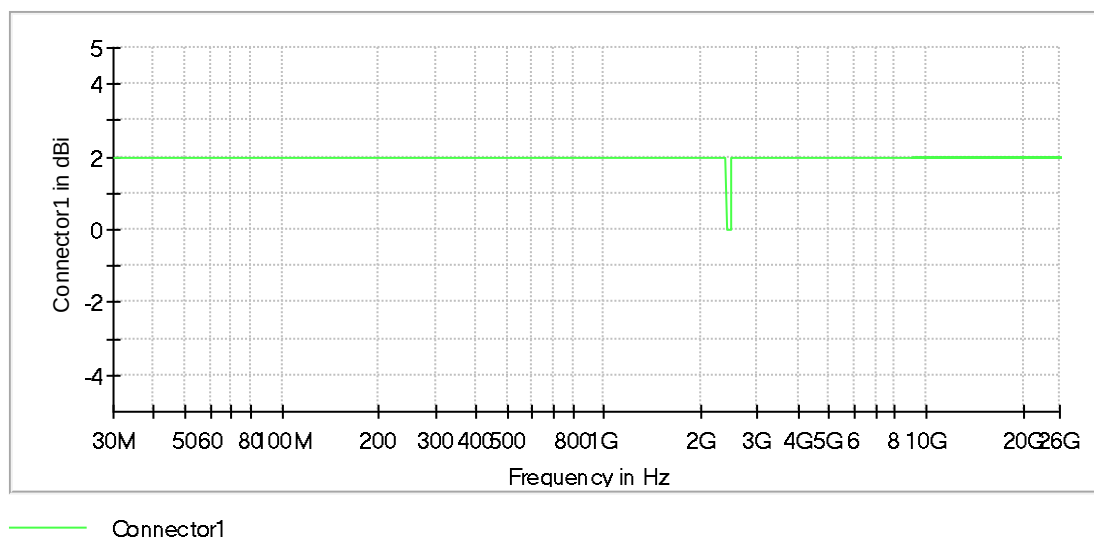
Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	2400.000000	1	1
2400.000000	2483.500000	1	1
2483.500000	26000.000000	1	1

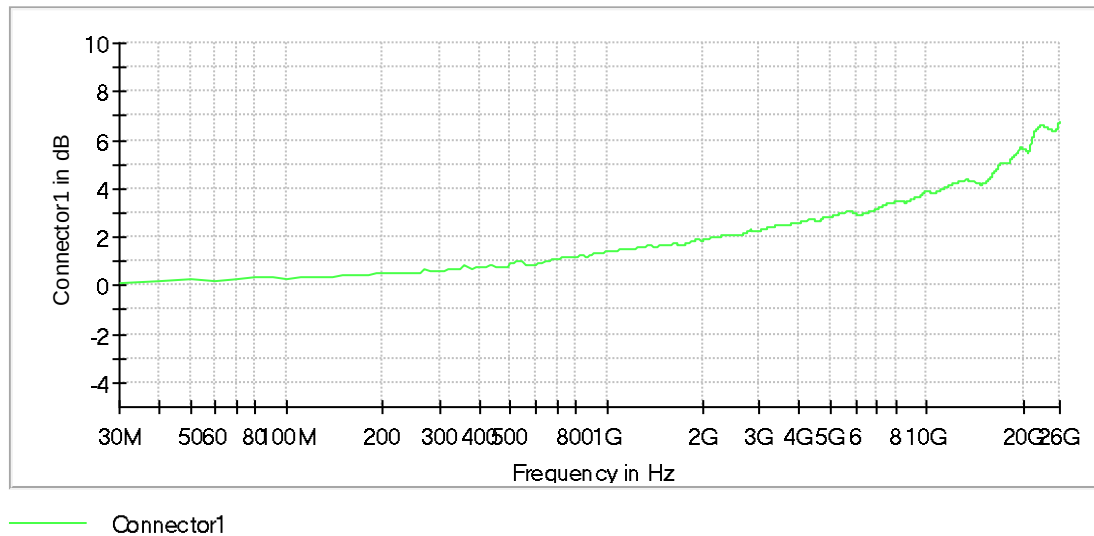
Spurious



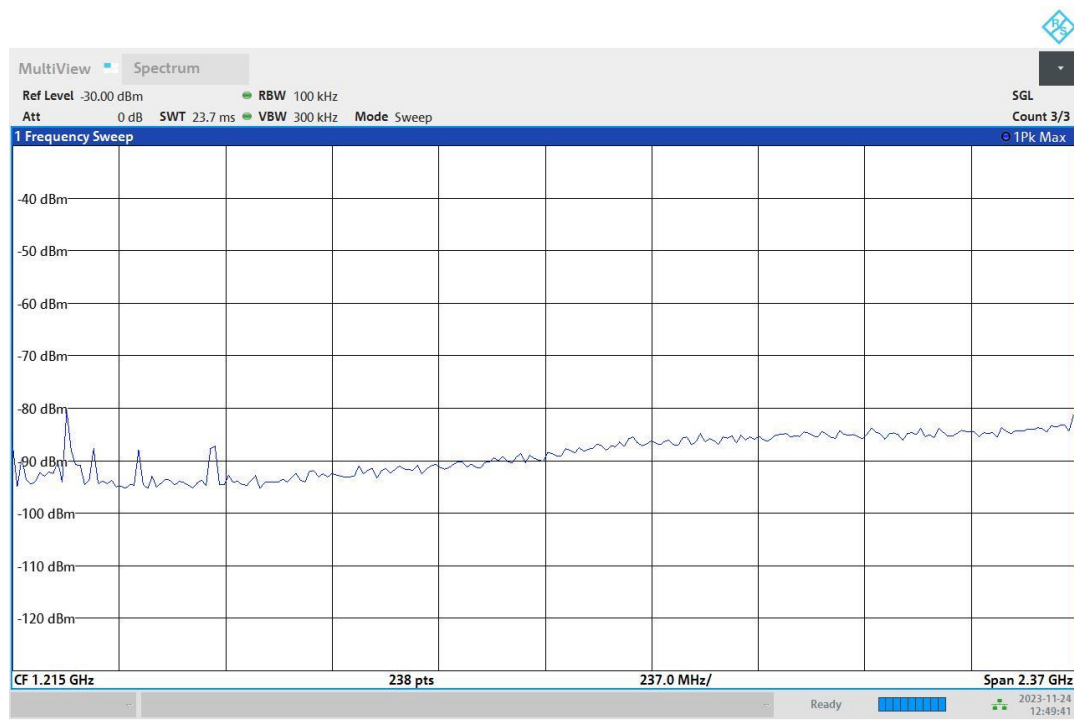
Gain



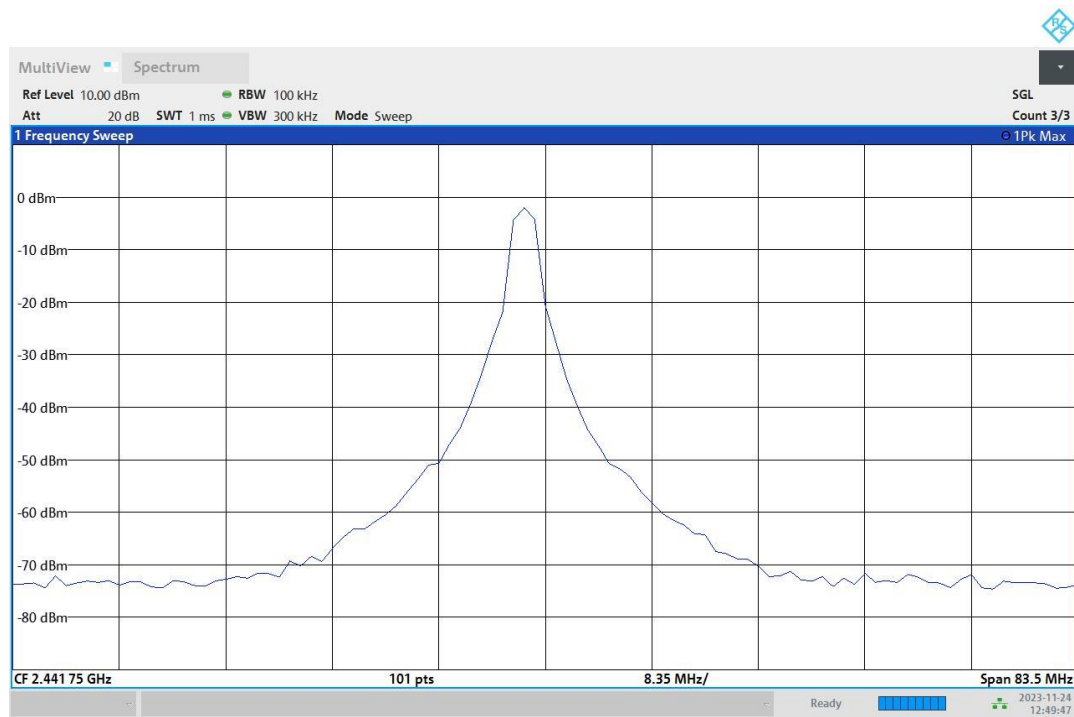
Attenuation



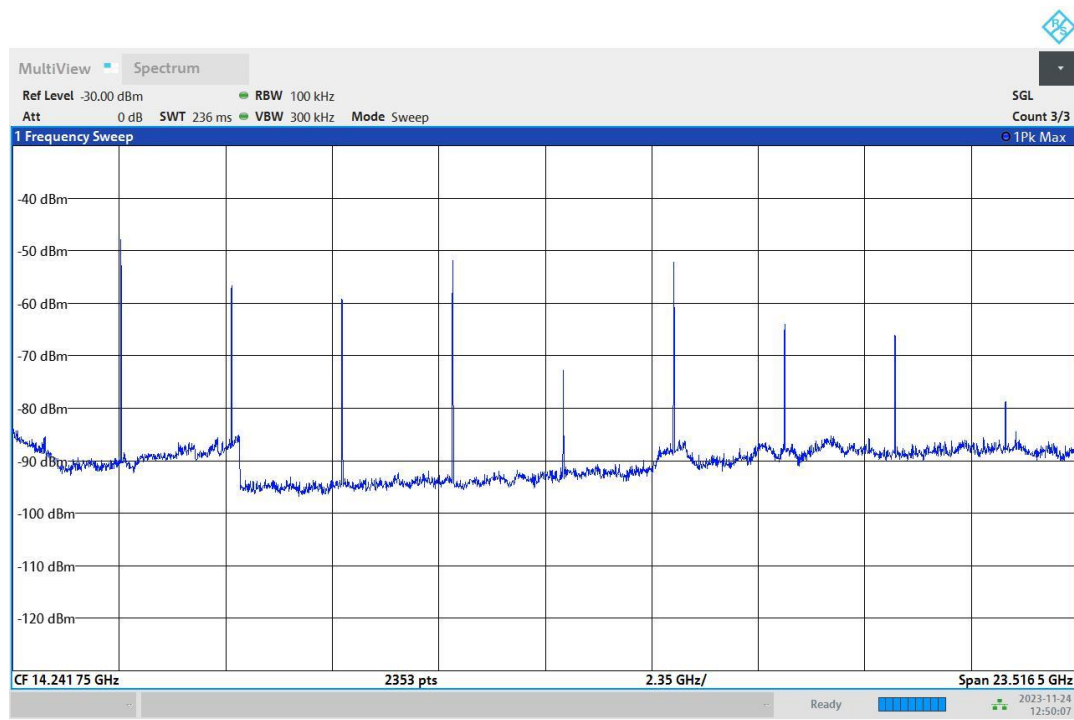
Spurious Connector 1_0



Spurious Connector 1_1



Spurious Connector 1_2



12:50:08 PM 11/24/2023

Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	≤ 100.000 kHz
VBW	300.000 kHz	≥ 300.000 kHz
SweepPoints	238	~ 238
Sweeptime	23.700 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	3	3
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	32 / max. 40	max. 40
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

Tx Spurious Emission (2480 MHz; DSSS [250kbps] (10 dBm); 5 MHz)

Test according to FCC title 47 part 15 §15.247(d), KDB 558074 D01 DTS Meas Guidance v03r05 and ANSI C63.10-2013

Result

DUT Frequency (MHz)	Result
2480.000000	PASS

Inband Peak

Frequency (MHz)	Level (dBm)
2480.995000	0.2

Final measurements

Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

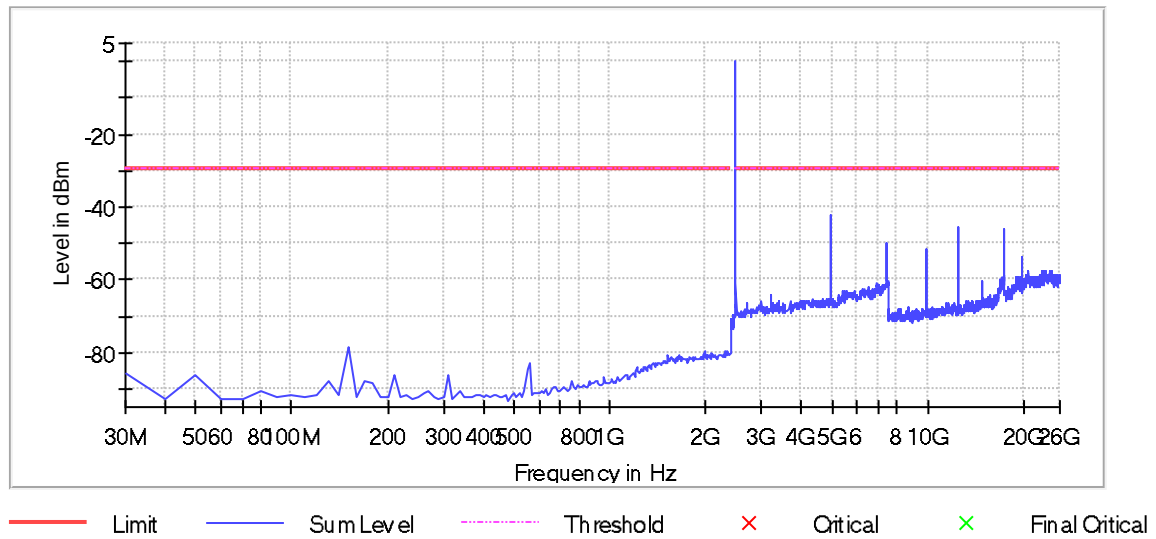
Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
4953.132440	-42.3	12.5	-29.8
12402.023810	-45.7	15.8	-29.8
17361.285714	-46.2	16.3	-29.8
7442.761905	-50.0	20.2	-29.8
12392.025298	-50.5	20.6	-29.8
7432.763393	-50.5	20.7	-29.8
9922.392857	-51.5	21.7	-29.8
9912.394345	-51.8	22.0	-29.8
19840.916667	-53.6	23.7	-29.8
19850.915179	-53.7	23.9	-29.8
17371.284226	-55.8	25.9	-29.8
22910.459821	-57.5	27.6	-29.8
24680.196429	-57.5	27.6	-29.8
20620.800595	-57.7	27.9	-29.8
23430.382440	-57.8	28.0	-29.8

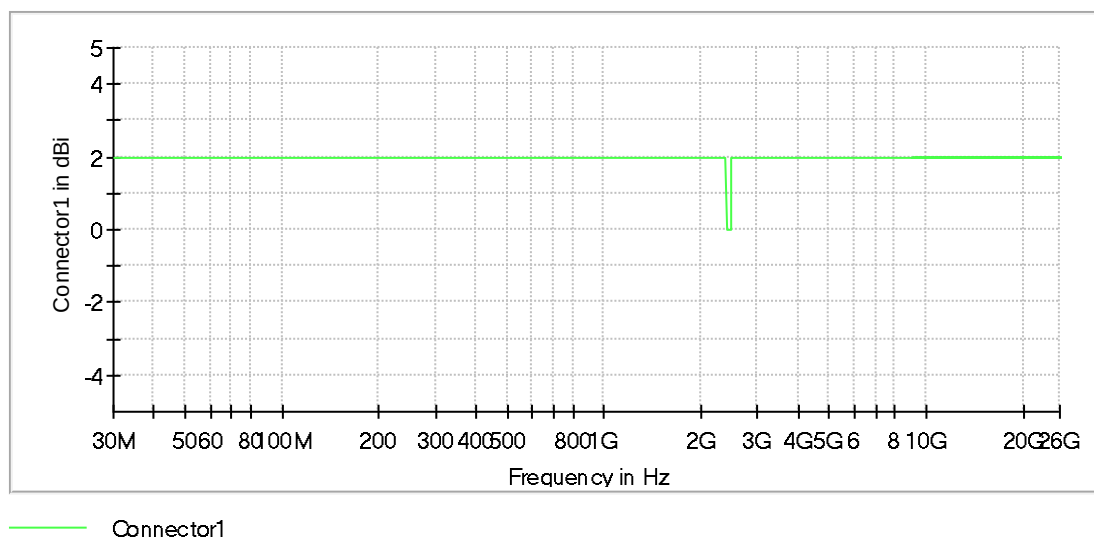
Measurement Settings

Start Frequency (MHz)	Stop Frequency (MHz)	Pre Measurement	Final Measurement
30.000000	2400.000000	1	1
2400.000000	2483.500000	1	1
2483.500000	26000.000000	1	1

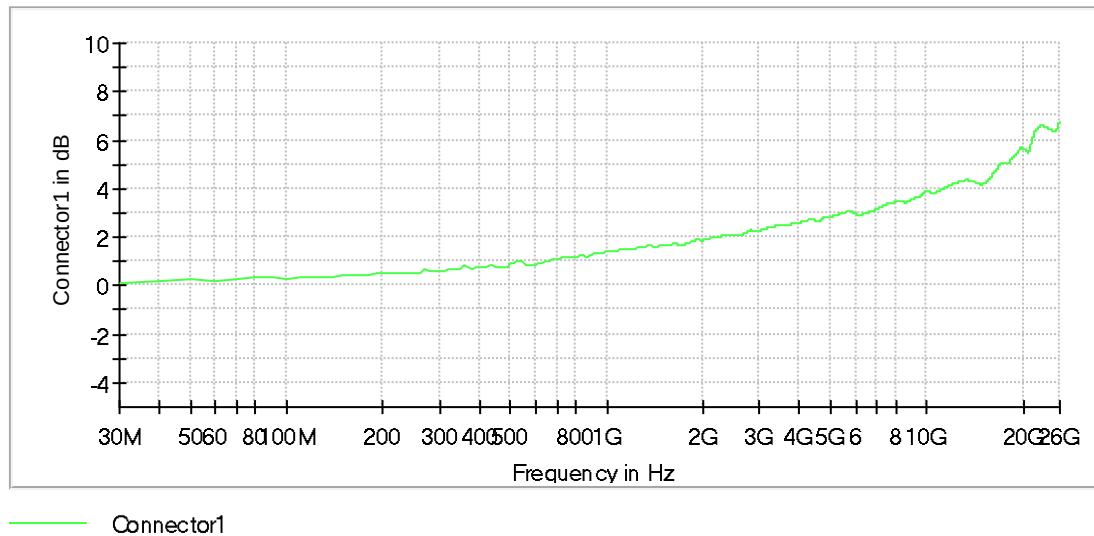
Spurious



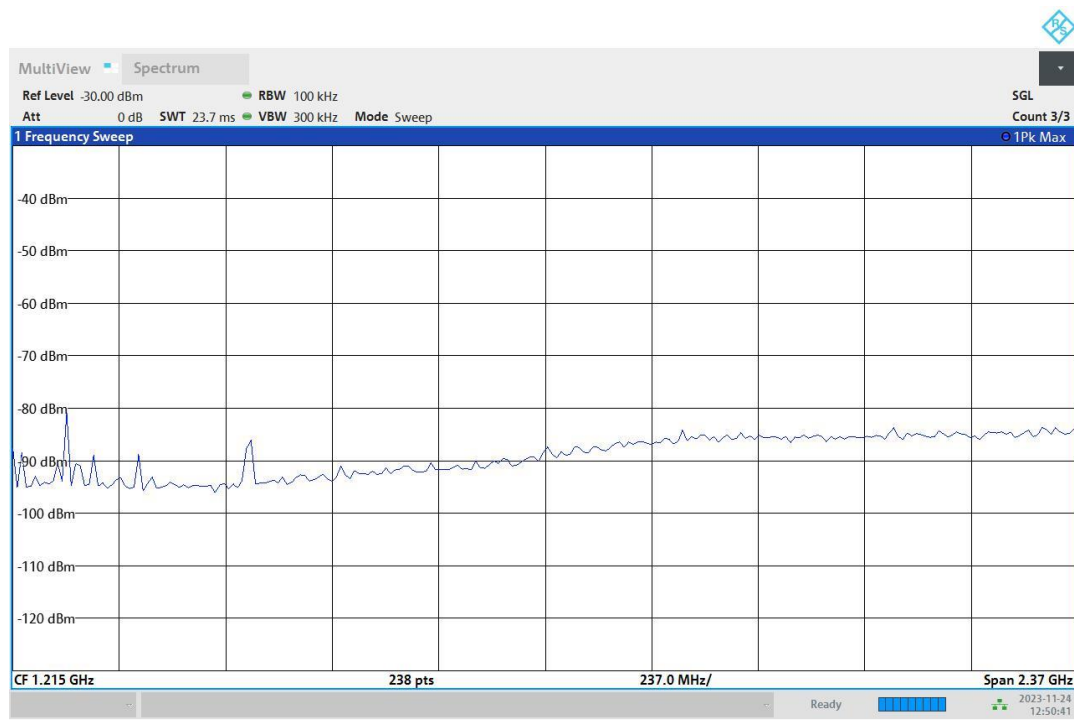
Gain



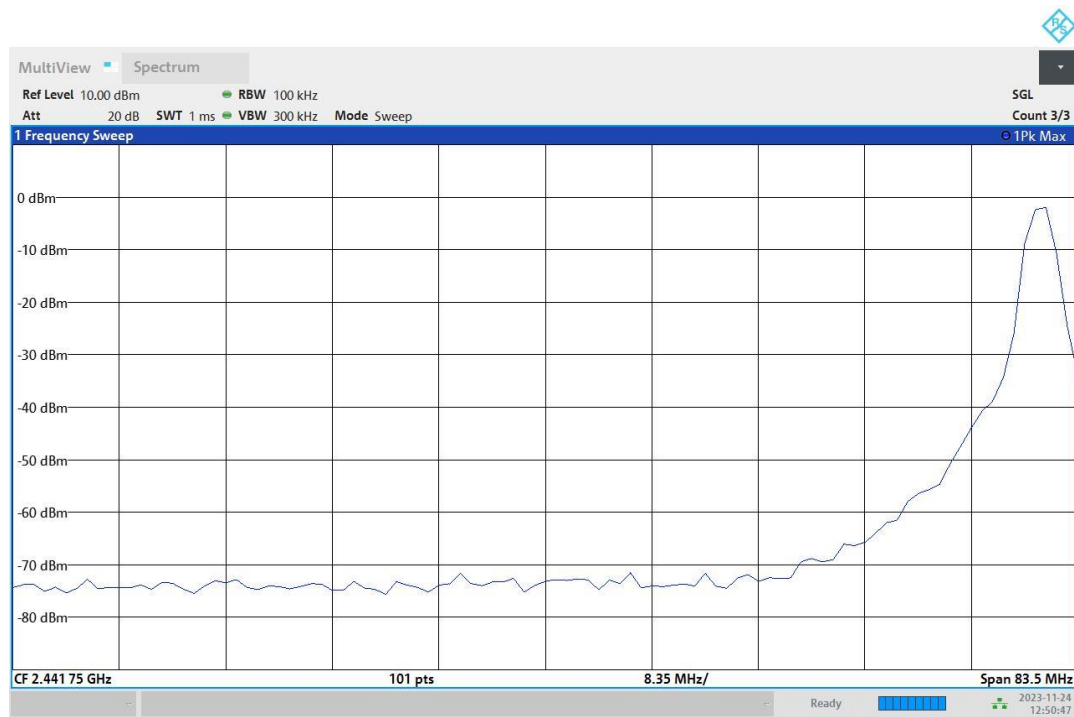
Attenuation



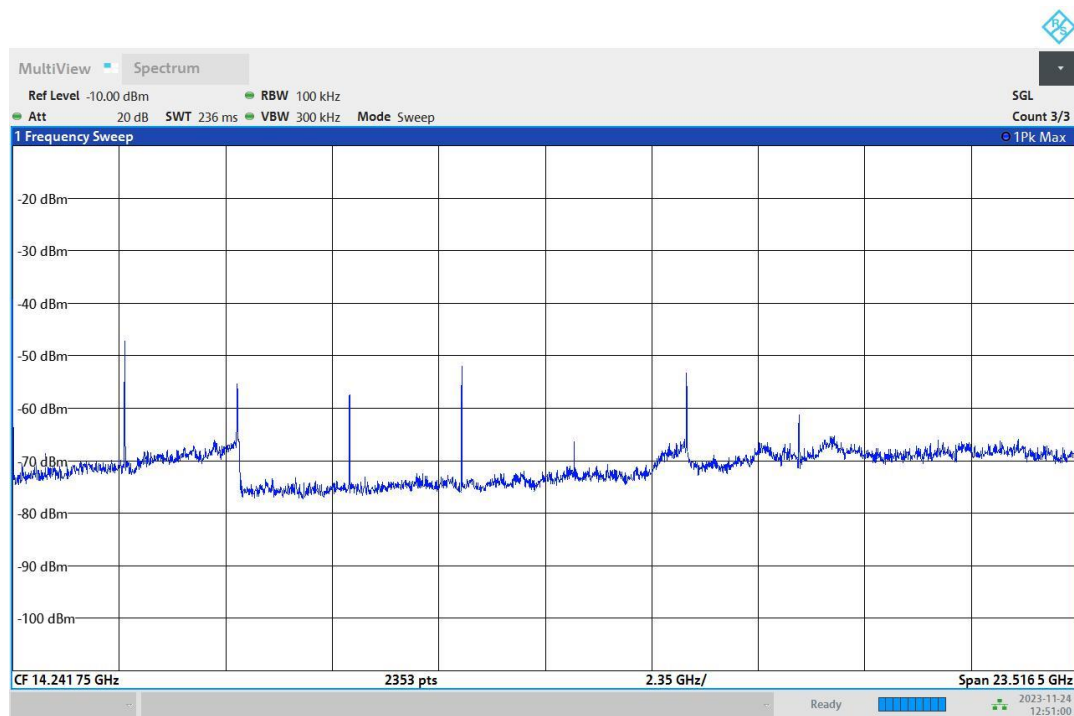
Spurious Connector 1_0



Spurious Connector 1_1



Spurious Connector 1_2



12:51:00 PM 11/24/2023

Pre Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	<= 100.000 kHz
VBW	300.000 kHz	>= 300.000 kHz
SweepPoints	238	~ 238
SweepTime	23.700 ms	AUTO
Reference Level	-30.000 dBm	-30.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	3	3
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	18 / max. 40	max. 40
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

Measurement diagrams radiated measurements

2.01a_802.15.4_low_standing

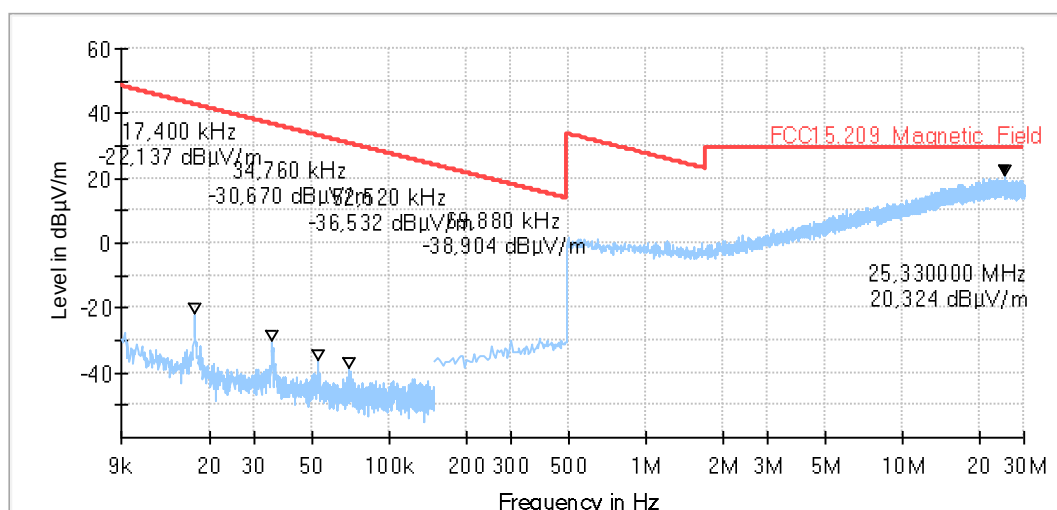
Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
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 Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	SOz / PSt
Operating Mode:	TX 802.15.4 Channel 11; Pwr 3
Power during tests:	Battery internal
Comment 1:	Channel low
Comment 2:	
Environmental Conditions:	Humidity: 50 % rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	22-1-00571S33_C01
Power:	internal battery

Full Spectrum



2.01b_802.15.4_low_laying

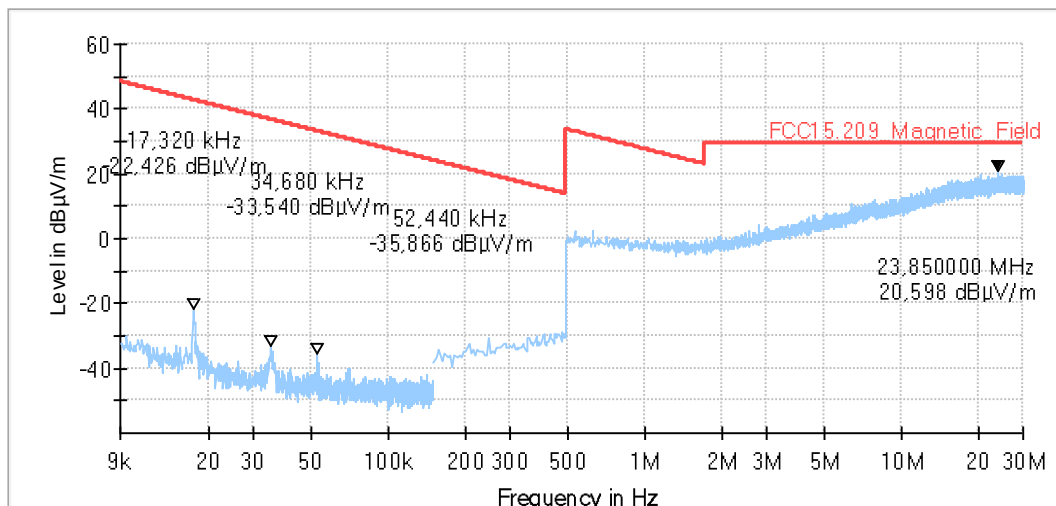
Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
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 Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	SOz / PSt
Operating Mode:	TX 802.15.4 Channel 11; Pwr 3
Power during tests:	Battery internal
Comment 1:	Channel low
Comment 2:	
Environmental Conditions:	Humidity: 50 % rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	22-1-00571S33_C01
Power:	internal battery

Full Spectrum



2.02a_802.15.4_mid_standing

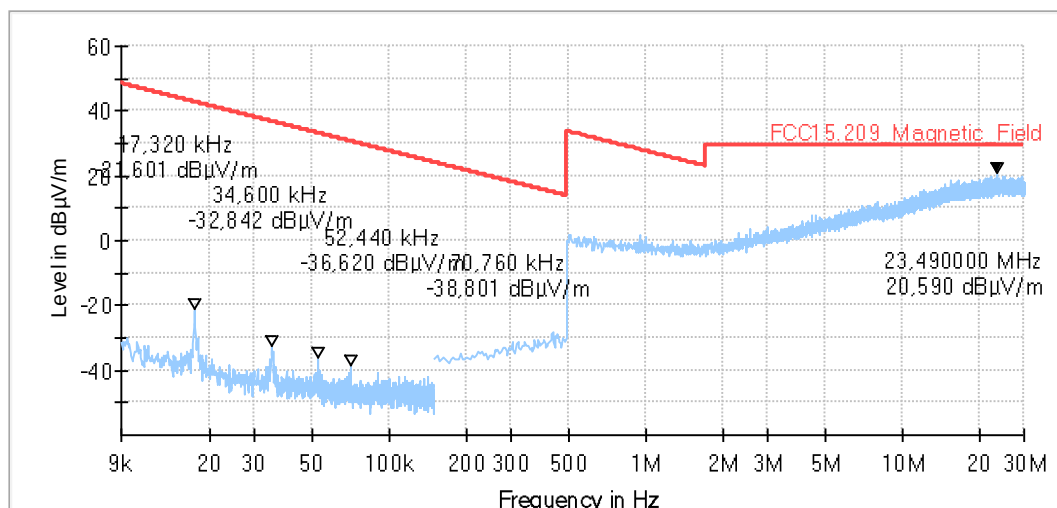
Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
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 Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	SOz / PSt
Operating Mode:	TX 802.15.4 Channel 18; Pwr 3
Power during tests:	Battery internal
Comment 1:	Channel mid
Comment 2:	
Environmental Conditions:	Humidity: 50 % rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	22-1-00571S33_C01
Power:	internal battery

Full Spectrum



2.02b_802.15.4_mid_laying

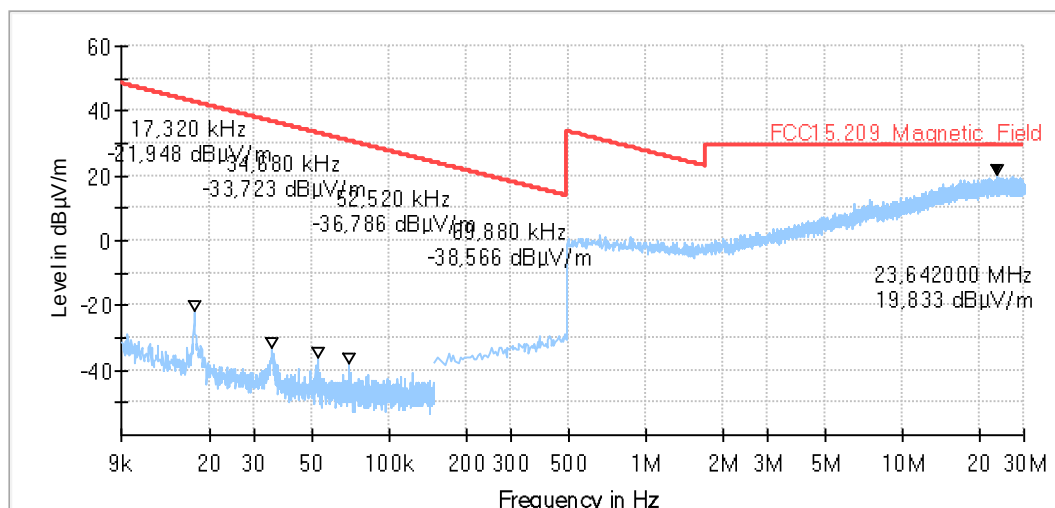
Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
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 Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	SOz / PSt
Operating Mode:	TX 802.15.4 Channel 18; Pwr 3
Power during tests:	Battery internal
Comment 1:	Channel mid
Comment 2:	
Environmental Conditions:	Humidity: 50 % rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	22-1-00571S33_C01
Power:	internal battery

Full Spectrum



2.03a_802.15.4_high_standing

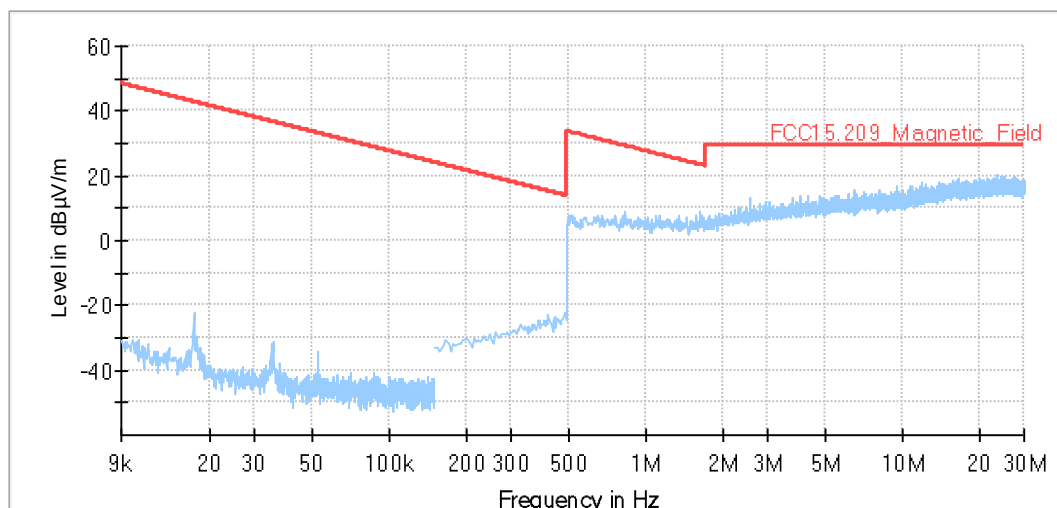
Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
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 Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	SOz / PSt
Operating Mode:	TX802.15.4 Channel 26; Pwr 3
Power during tests:	Battery internal
Comment 1:	Channel high
Comment 2:	
Environmental Conditions:	Humidity: 50 % rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	22-1-00571S33_C01
Power:	internal battery

Full Spectrum



2.03b_802.15.4_high_laying

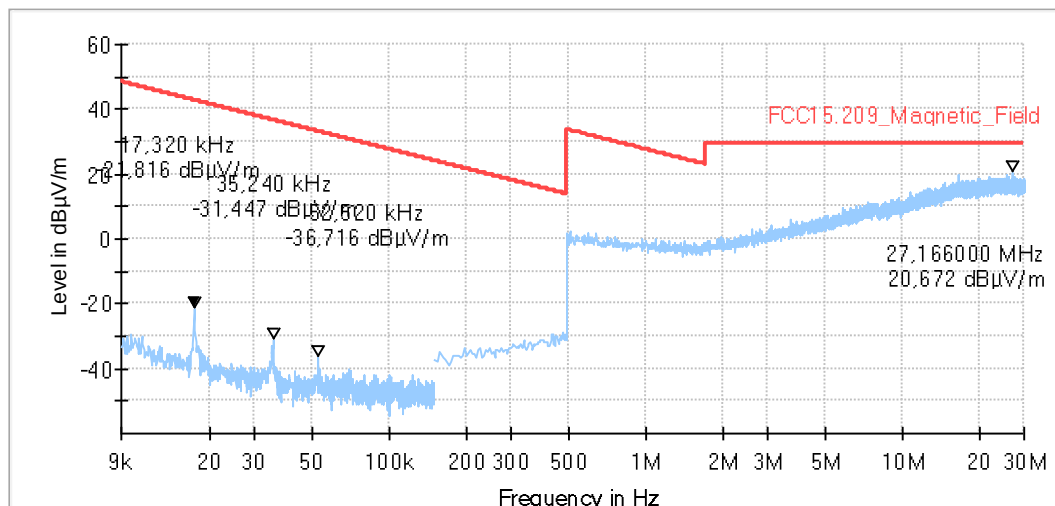
Common Information

Test description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
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 Standard:	FCC 15.205 § 15.209; RSS-Gen: Issue 5
Operator:	SOz / PSt
Operating Mode:	TX 802.15.4 Channel 26; Pwr 3
Power during tests:	Battery internal
Comment 1:	Channel high
Environmental Conditions:	Humidity: 50 % rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	22-1-00571S33_C01
Power:	internal battery

Full Spectrum



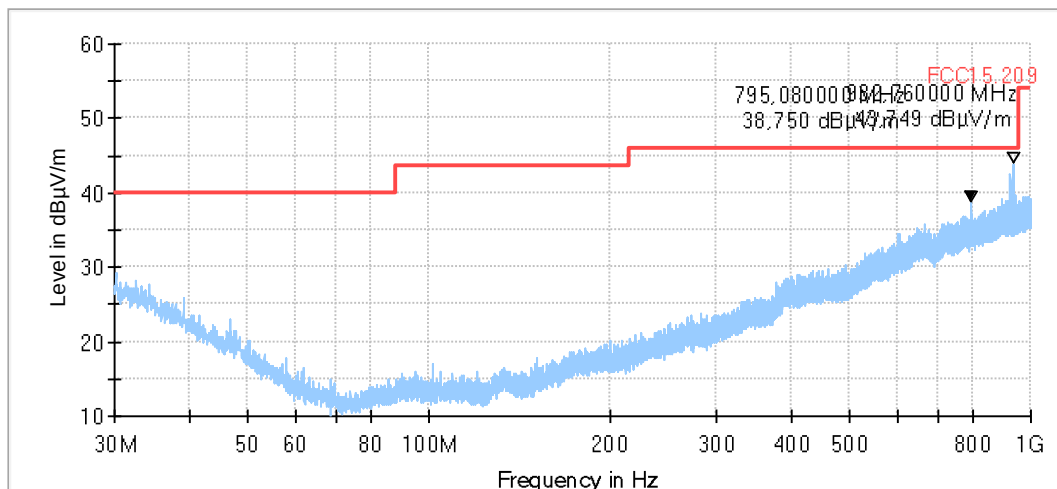
3.01a_802.15.4_low_standing

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	cetekom advanced GmbH
Test Standard:	FCC 15.205&15.209 & RSS Gen. Issue 5
Antenna polarisation:	horizontal/vertical
Environmental Conditions:	Humidity: 50%rH; Temperature: 20C
Operator Name:	SOz / PSt
EUT:	
Operating Mode:	TX 802.15.4 Channel 11; Pwr 3
Power supply:	battery internal
Comment:	Channel low
Verdict:	Passed

EUT Information

PMT number:	22-1-00571S33_C01
Power:	internal battery



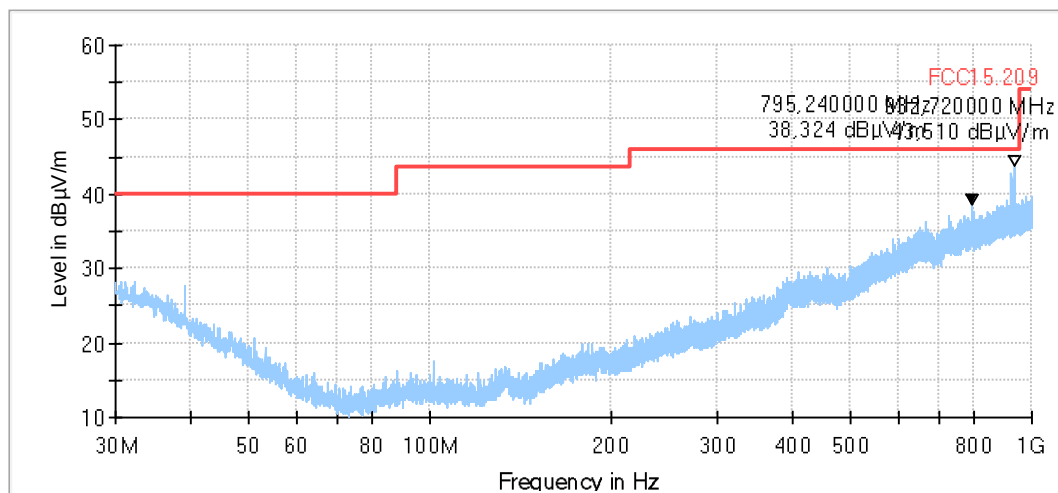
3.01b_802.15.4_low_laying

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	cetekom advanced GmbH
Test Standard:	FCC 15.205&15.209 & RSS Gen. Issue 5
Antenna polarisation:	horizontal/vertical
Environmental Conditions:	Humidity: 50 % rH; Temperature: 20 °C
Operator Name:	SOz / PSt
Operating Mode:	TX802.15.4 Channel 11; Pwr 3
Power supply:	battery internal
Comment:	Channel low
Verdict:	Passed

EUT Information

PMT number:	22-1-00571S33_C01
Power:	internal battery



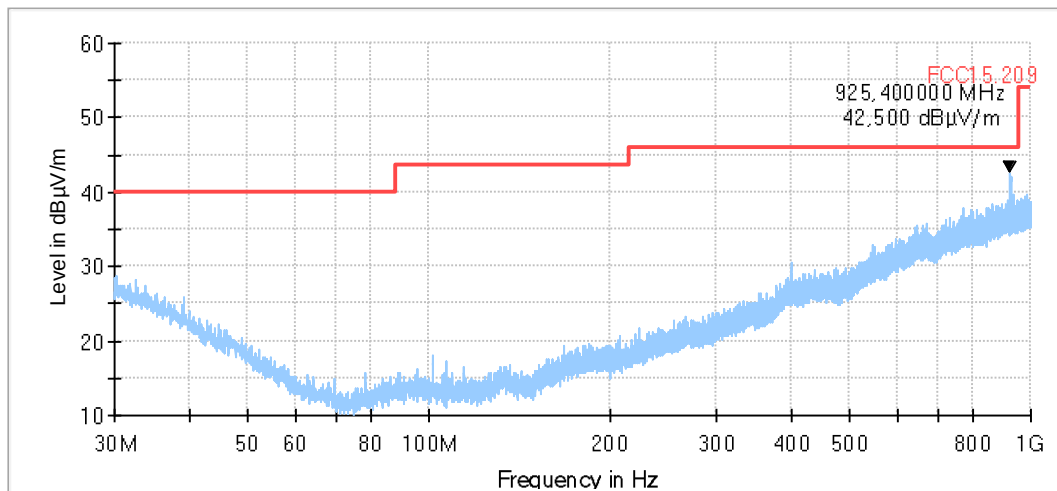
3.02a_802.15.4_mid_standing

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	cetekom advanced GmbH
Test Standard:	FCC 15.205&15.209 & RSS Gen. Issue 5
Antenna polarisation:	horizontal/vertical
Environmental Conditions:	Humidity: 50 % rH; Temperature: 20 °C
Operator Name:	SOz / PSt
Operating Mode:	TX 802.15.4 Channel 18; Pwr 3
Power supply:	battery internal
Comment:	Channel mid
Verdict:	Passed

EUT Information

PMT number:	22-1-00571S33_C01
Power:	internal battery



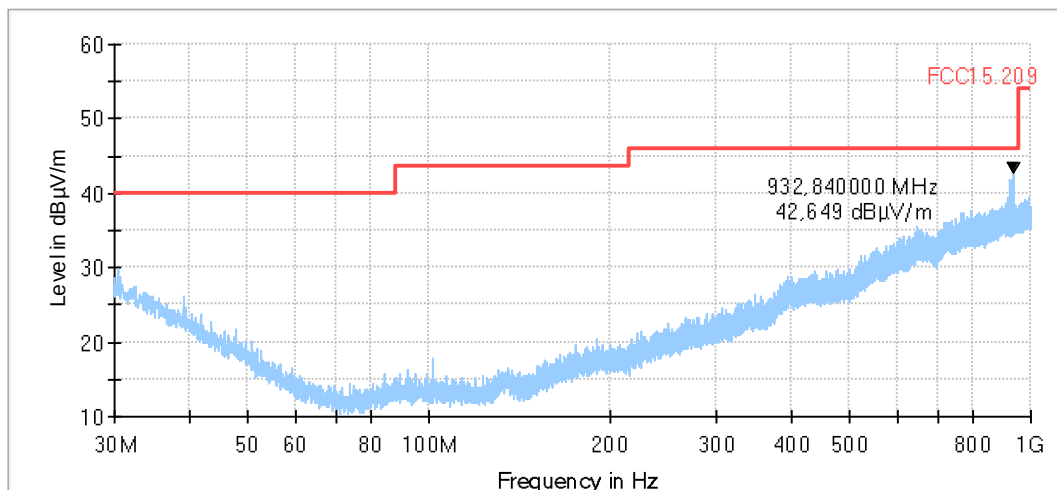
3.02b_802.15.4_mid_laying

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	cetekom advanced GmbH
Test Standard:	FCC 15.205&15.209 & RSS Gen. Issue 5
Antenna polarisation:	horizontal/vertical
Environmental Conditions:	Humidity: 50 % rH; Temperature: 20 °C
Operator Name:	SOz / PSt
Operating Mode:	TX 802.15.4 Channel 18; Pwr 3
Power supply:	battery internal
Comment:	Channel mid
Verdict:	Passed

EUT Information

PMT number:	22-1-00571S33_C01
Power:	internal battery



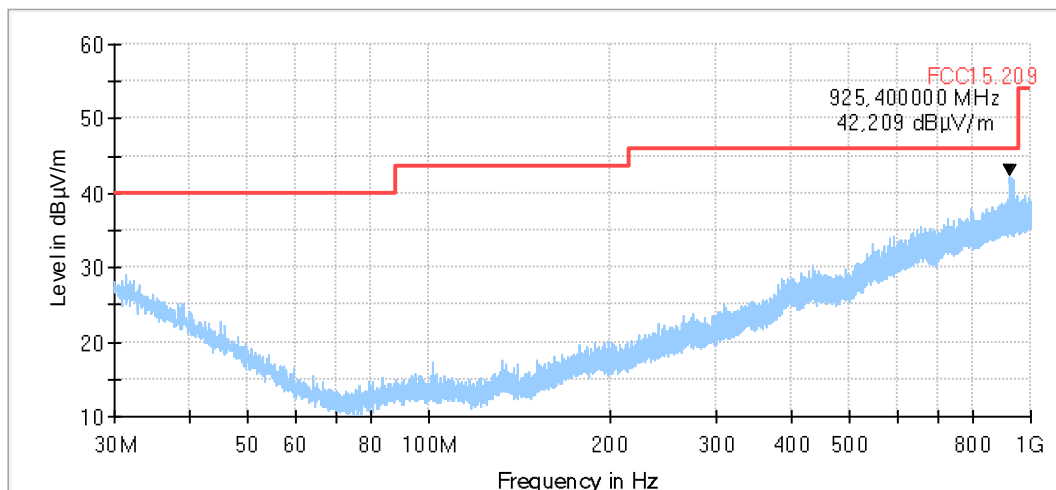
3.03a_802.15.4_high_standing

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	cetecom advanced GmbH
Test Standard:	FCC 15.205&15.209 & RSS Gen. Issue 5
Antenna polarisation:	horizontal/vertical
Environmental Conditions:	Humidity: 50 % rH; Temperature: 20 °C
Operator Name:	SOz / PSt
Operating Mode:	TX 802.15.4 Channel 26; Pwr 3
Power supply:	battery internal
Comment:	Channel high
Verdict:	Passed

EUT Information

PMT number:	22-1-00571S33_C01
Power:	internal battery



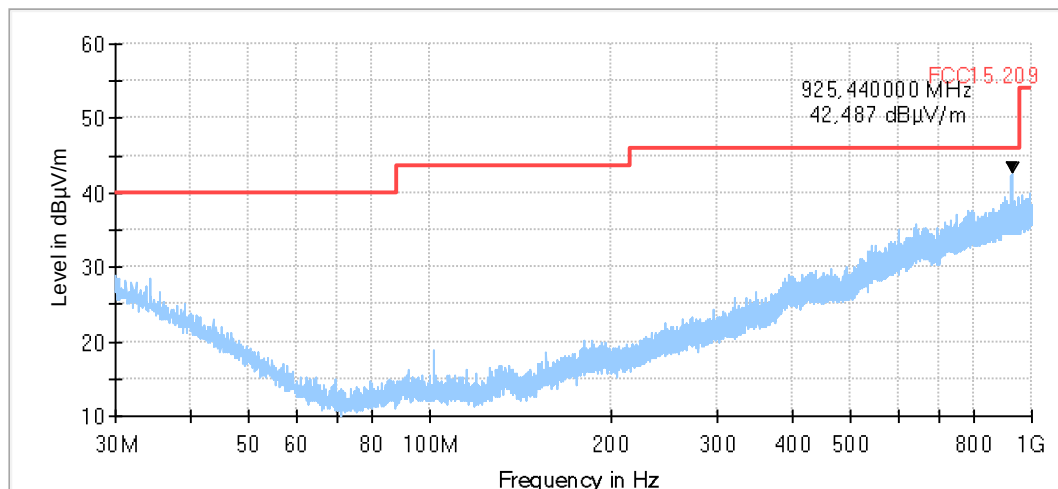
3.03b_802.15.4_high_laying

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	cetekom advanced GmbH
Test Standard:	FCC 15.205&15.209 & RSS Gen. Issue 5
Antenna polarisation:	horizontal/vertical
Environmental Conditions:	Humidity: 50 % rH; Temperature: 20 °C
Operator Name:	SOz/PSt
EUT:	
Operating Mode:	TX 802.15.4 Channel 26; Pwr 3
Power supply:	battery internal
Comment:	Channel high
Verdict:	Passed

EUT Information

PMT number:	22-1-00571S33_C01
Power:	internal battery



4.01a_802.15.4_low

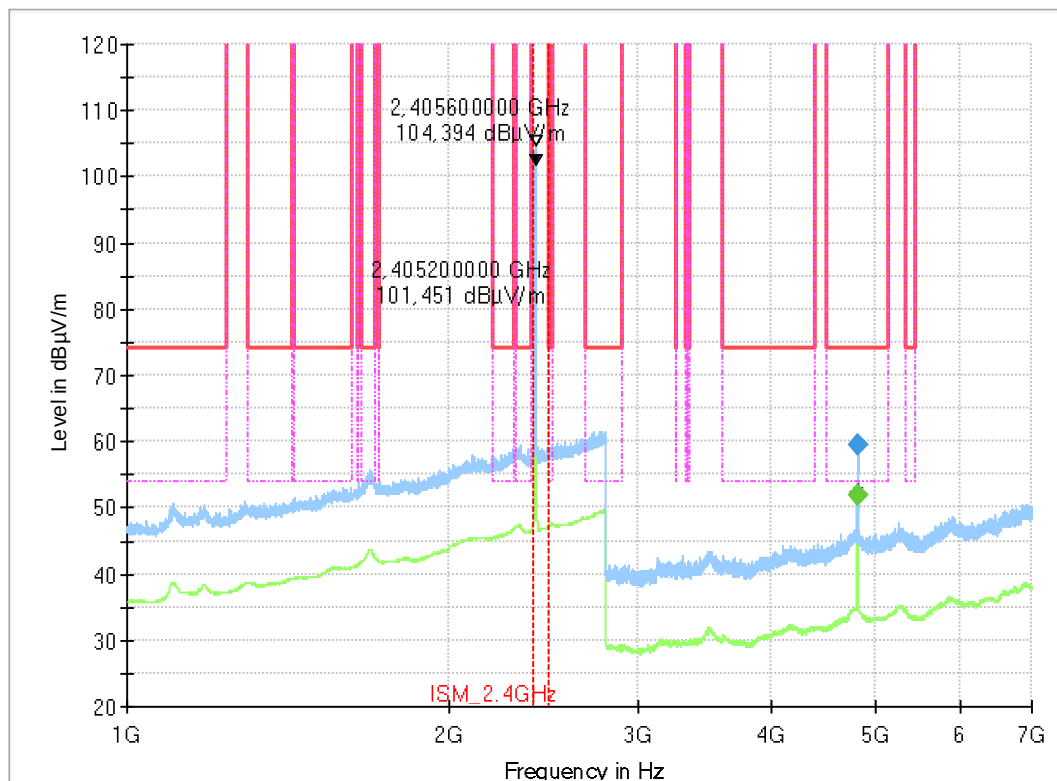
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	802.15.4_low
Operator:	ASa / PSt
Comment:	Channel no. low
Environmental Conditions:	Humidity : 52 % rH; Temperature: 21 °C
Verdict:	Passed

EUT Information

PMT Sample Nr:	22-1-00571S33_C01
Power Supply:	Battery

Full Spectrum



Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
4809.200000	59.50	---	74.00	14.50	100.0	1000.000	155.0	V	22.0	90.0
4809.200000	---	51.92	54.00	2.08	100.0	1000.000	155.0	V	23.0	90.0

4.01b_802.15.4_low

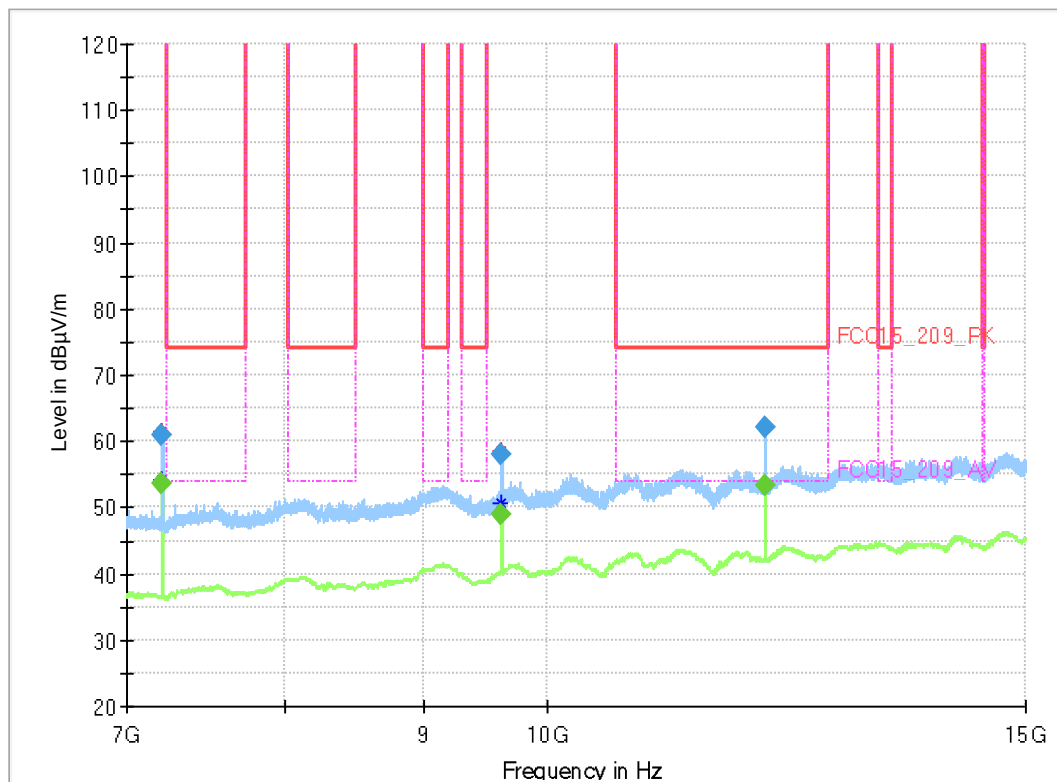
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	802.15.4_low
Operator:	ASa
Comment:	Channel no. low
Environmental Conditions:	Humidity : 52 % rH; Temperature: 21 °C
Verdict:	Passed

EUT Information

PMT Sample Nr:	22-1-00571S33_C01
Power Supply:	Battery

Full Spectrum



Final Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
7214.000000	60.86	---	150.00	89.14	100.0	1000.000	155.0	V	62.0	90.0
7214.000000	---	53.67	150.00	96.33	100.0	1000.000	155.0	V	61.0	90.0
9618.400000	---	49.08	150.00	100.92	100.0	1000.000	155.0	V	-18.0	90.0
9618.800000	57.92	---	150.00	92.08	100.0	1000.000	155.0	V	-19.0	90.0
12023.200000	62.03	---	74.00	11.97	100.0	1000.000	155.0	V	62.0	90.0
12027.600000	---	53.27	54.00	0.73	100.0	1000.000	155.0	V	62.0	90.0

4.02a_802.15.4_mid_3dBm

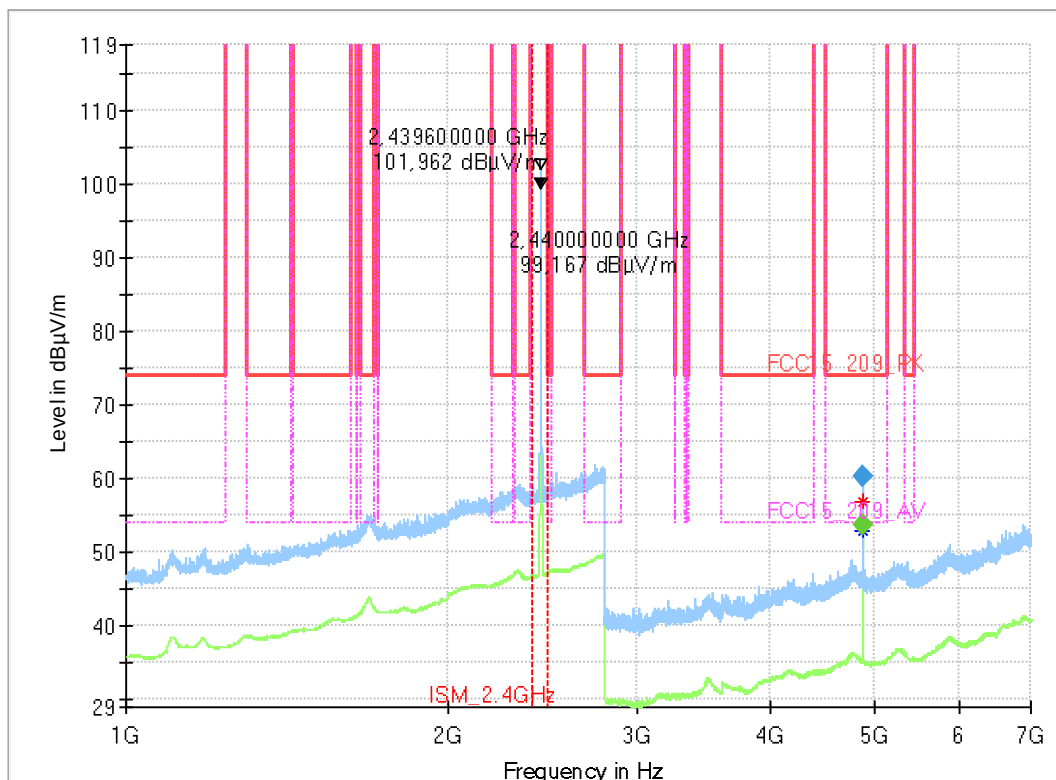
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	802.15.4_mid
Set-up no.	01
Operator:	SOz
Comment:	power 3 dBm
Environmental Conditions:	Humidity : 52 % rH; Temperature: 21 °C
Verdict:	Passed

EUT Information

Sample:	23-1-00571S65_C01
Power Supply:	internal battery

Full Spectrum



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
4879.170000	---	53.80	54.00	0.20	100.0	1000.000	155.0	V	-4.0	90.0
4879.170000	60.23	---	74.00	13.77	100.0	1000.000	155.0	V	-3.0	90.0

4.02b_802.15.4_mid

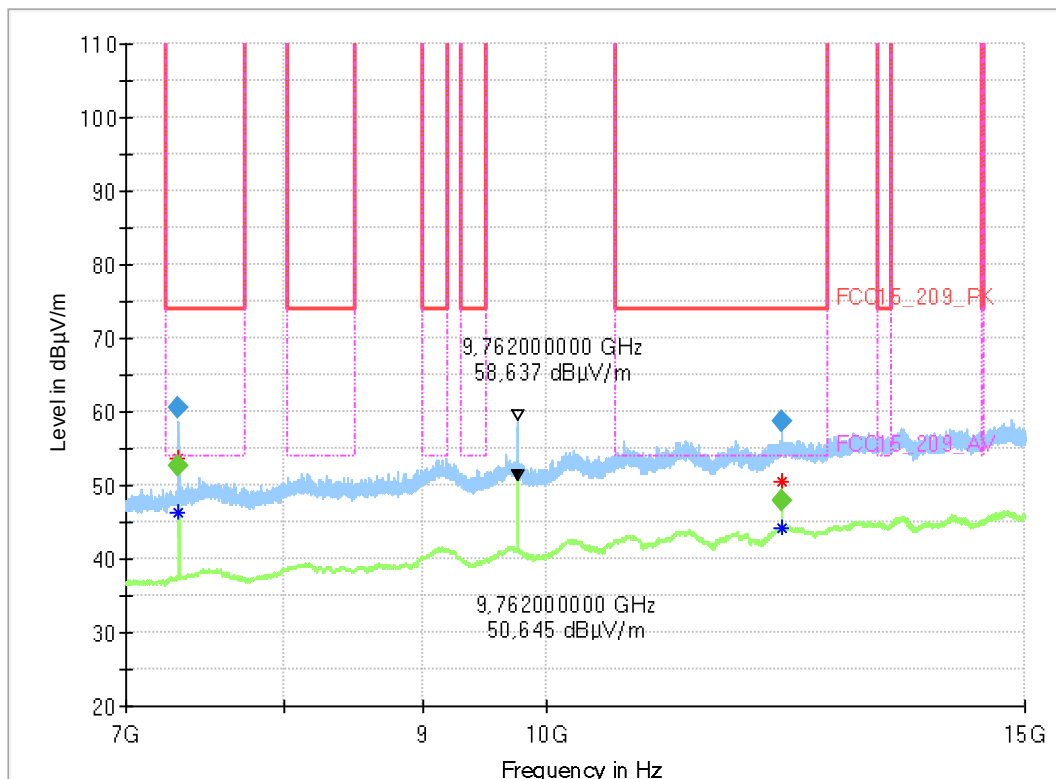
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	802.15.4_mid
Set-up no.	01
Operator:	SOz / ASa
Comment:	Power 3 dBm
Environmental Conditions:	Humidity: 60 % rH; Temperature: 20 °C
Verdict:	Passed

EUT Information

Sample:	23-1-00571S65_C01
Power Supply:	internal battery

Full Spectrum



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
7321.490000	---	52.55	54.00	1.45	100.0	1000.000	155.0	H	60.0	0.0
7321.490000	60.43	---	74.00	13.57	100.0	1000.000	155.0	H	60.0	0.0
12202.530000	---	47.93	54.00	6.07	100.0	1000.000	155.0	V	-36.0	90.0
12202.650000	58.59	---	74.00	15.41	100.0	1000.000	155.0	V	132.0	90.0

4.03a_802.15.4_high

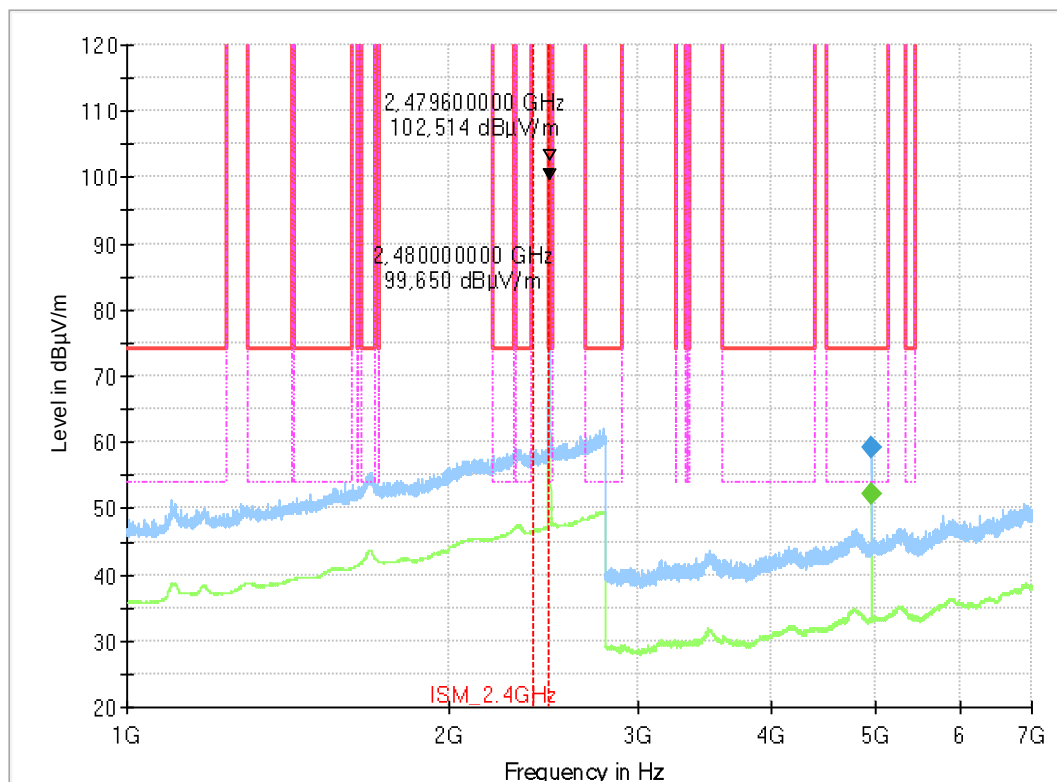
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	802.15.4_high
Operator:	ASa
Comment:	Channel no. high
Environmental Conditions:	Humidity : 52 % rH; Temperature: 21 °C
Verdict:	Passed

EUT Information

PMT Sample Nr:	22-1-00571S33_C01
Power Supply:	Battery

Full Spectrum



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
4959.200000	59.18	---	74.00	14.82	100.0	1000.000	155.0	H	99.0	0.0
4959.200000	---	52.07	54.00	1.93	100.0	1000.000	155.0	H	99.0	0.0

4.03b_802.15.4_high

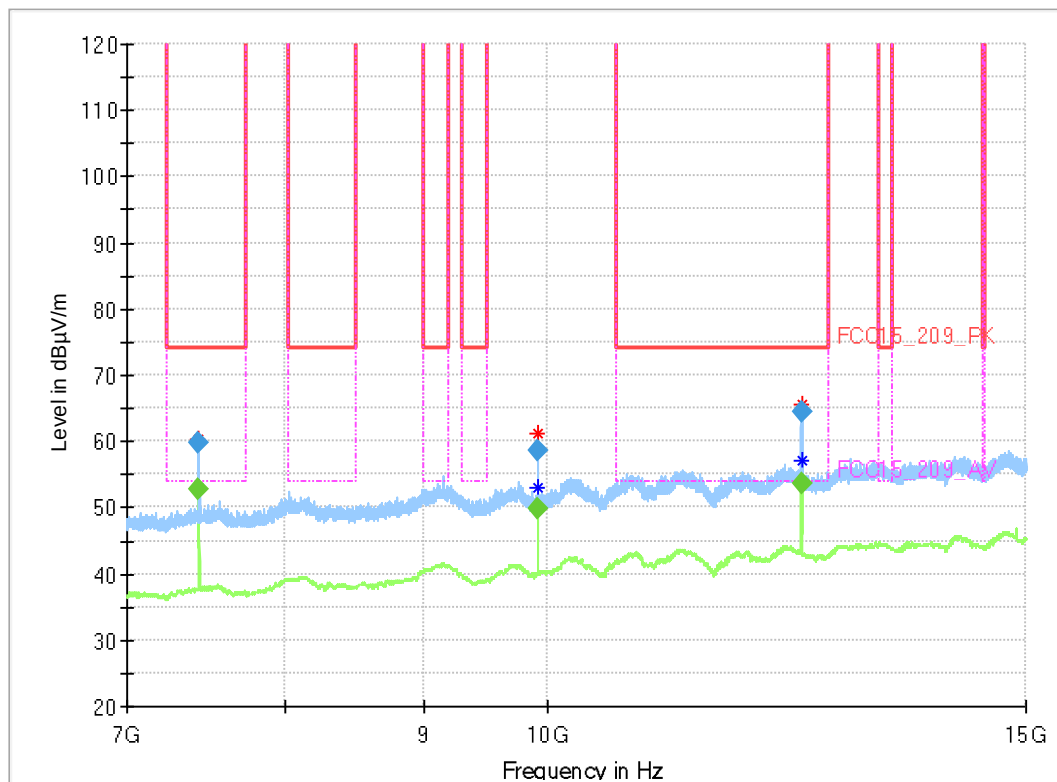
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	802.15.4_high
Operator:	ASa
Comment:	Channel no.high
Environmental Conditions:	Humidity: 52 % rH; Temperature: 21 °C
Verdict:	Passed

EUT Information

PMT Sample Nr:	22-1-00571S33_C01
Power Supply:	Battery

Full Spectrum



Final_Result

Frequency (MHz)	MaxPeak (dBµV/m)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
7441.600000	---	52.76	54.00	1.24	100.0	1000.000	155.0	H	63.0	0.0
7441.600000	59.82	---	74.00	14.18	100.0	1000.000	155.0	H	64.0	0.0
9918.400000	---	49.88	150.00	100.12	100.0	1000.000	155.0	V	333.0	90.0
9918.400000	58.73	---	150.00	91.27	100.0	1000.000	155.0	V	333.0	90.0
12398.000000	---	53.77	54.00	0.23	100.0	1000.000	155.0	V	326.0	90.0
12398.000000	64.45	---	74.00	9.55	100.0	1000.000	155.0	V	336.0	90.0

4.04_802.15.4_low

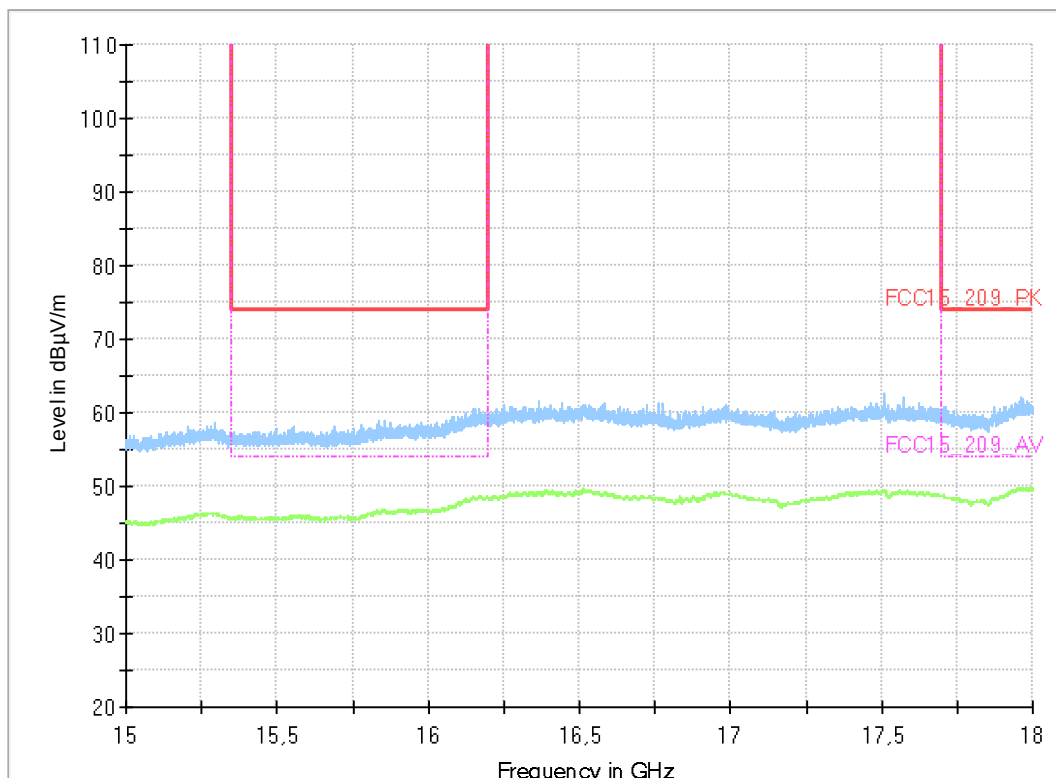
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	802.15.4_low
Set-up no.	1
Operator:	SO z/ ASa
Comment:	Power 3 dBm
Environmental Conditions:	Humidity: 60 % rH; Temperature: 20 °C
Verdict:	Passed

EUT Information

Sample:	23-1-00571S65_C01
Power Supply:	internal battery

Full Spectrum



4.05_802.15.4_mid

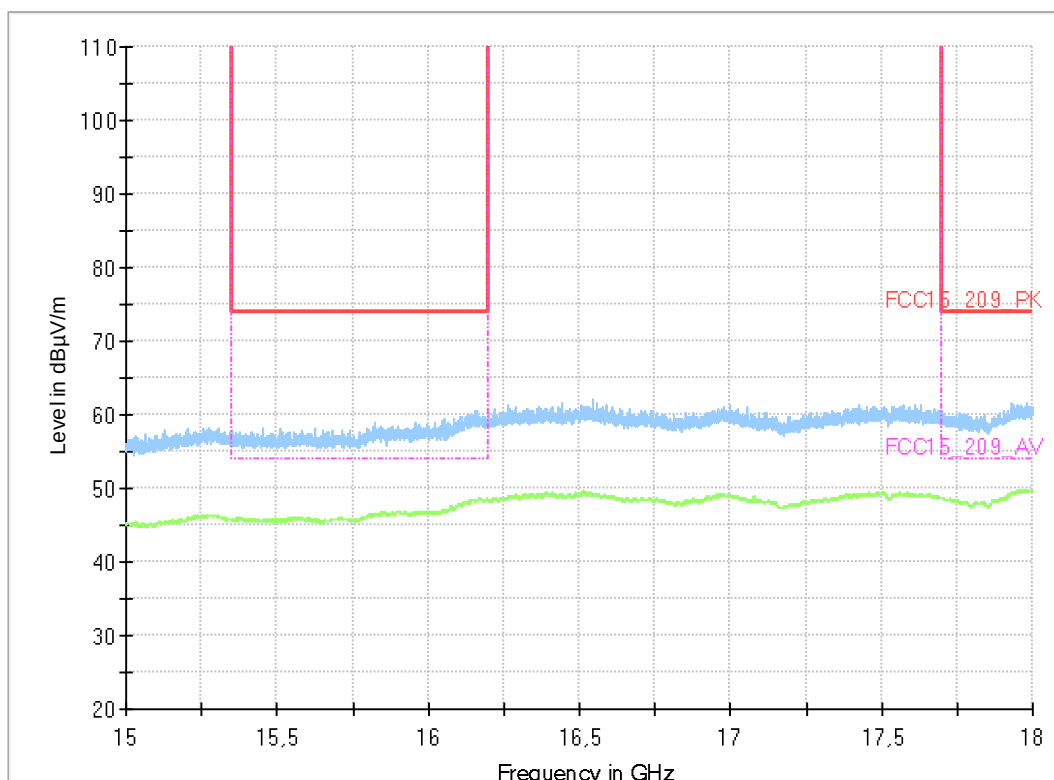
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	TX, continuous
Set-up no.	1
Operator:	SOz / ASa
Comment:	Power 3 dBm
Environmental Conditions:	Humidity: 60 % rH; Temperature: 20 °C
Verdict:	Passed

EUT Information

Sample:	23-1-00571S65_C01
Power Supply:	internal battery

Full Spectrum



4.06_802.15.4_high

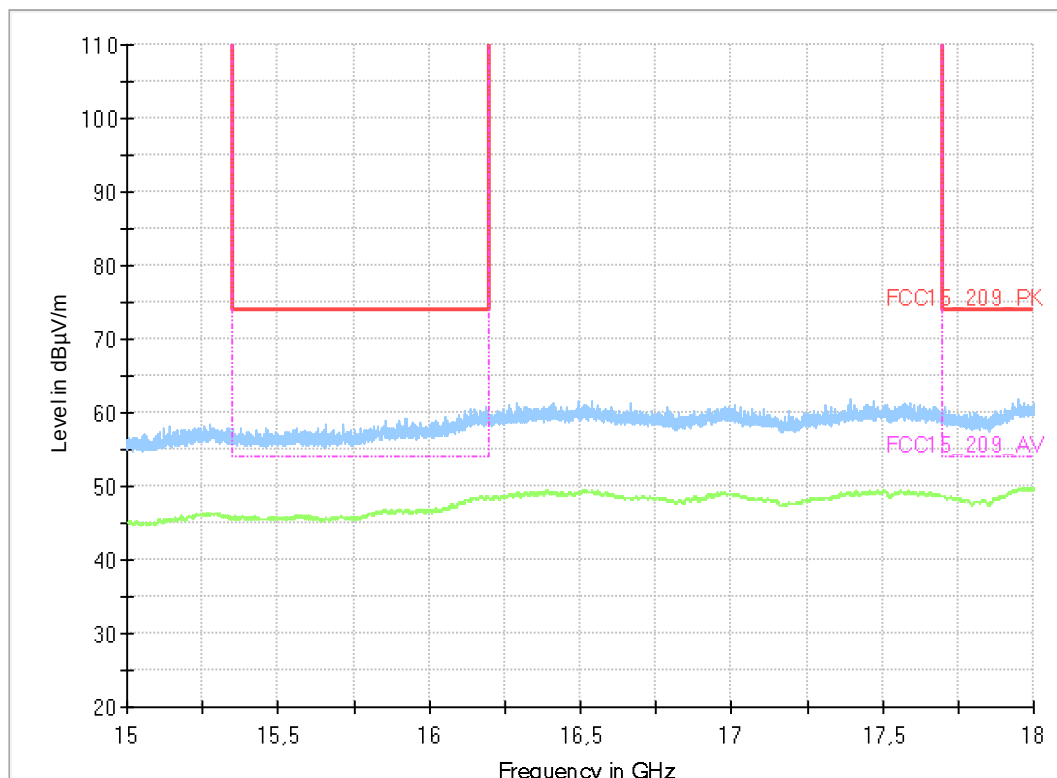
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	802.15.4_high
Set-up no.	1
Operator:	SOz / ASa
Comment:	Power 3 dBm
Environmental Conditions:	Humidity: 60 % rH; Temperature: 20 °C
Verdict:	Passed

EUT Information

Sample:	23-1-00571S65_C01
Power Supply:	internal battery

Full Spectrum

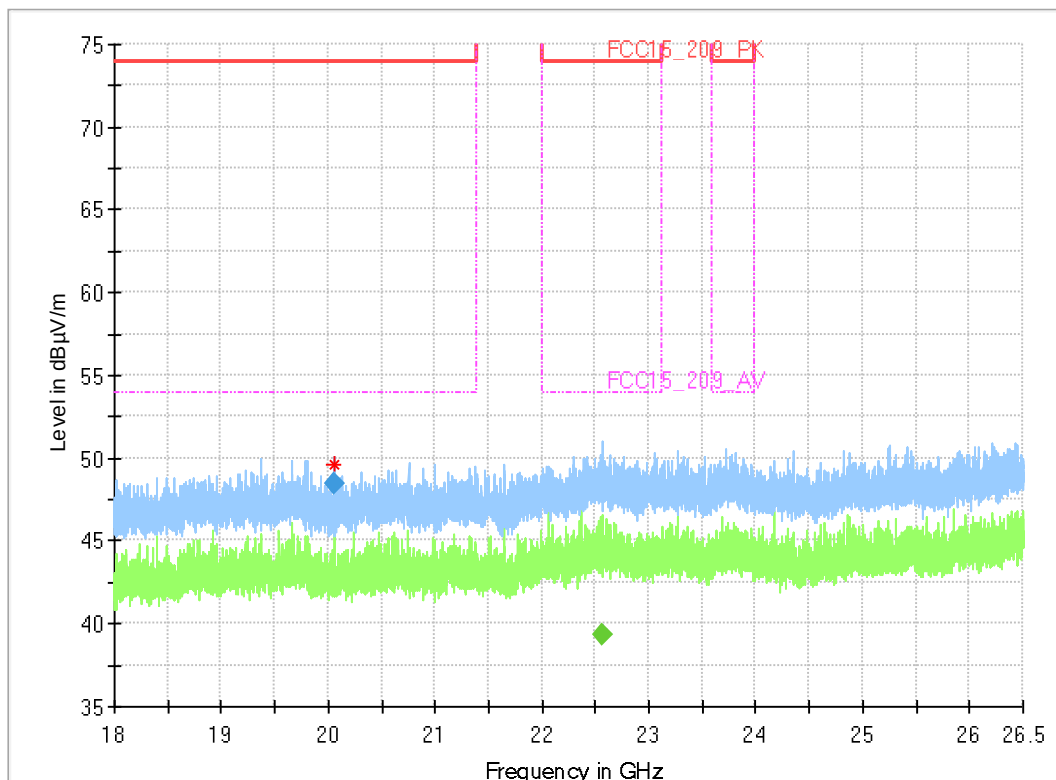


4.07_802.15.4_low_V

Common Information

Test Description:	Radiated Field Strength Emission@3m distance
Test Site Location:	cetecom advanced GmbH
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC 15.209 & RSS-Gen, Issue 5
Operating Mode:	802.15.4, Channel low
Environmental Conditions:	Humidity: 43 % rH; Temperature: 21.9 °C
SW-Version:	EMC32 V10.60.20
Operator:	Lor
Sample/Set-up:	S65_C01
Verdict:	Passed

Full Spectrum



Final_Result_PK+

Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Sig Path (dB)
20057.080350	48.44	74.00	25.56	1000.000	V	220.0	0.0	33.2	2.4

Final_Result_RMS

Frequency (MHz)	RMS (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Bandwidth (kHz)	Pol	Azimuth (deg)	Elevation (deg)	Corr. (dB/m)	Sig Path (dB)
22568.397950	39.35	54.00	14.65	1000.000	V	170.0	90.0	34.4	2.5

4.08_802.15.4_low_H

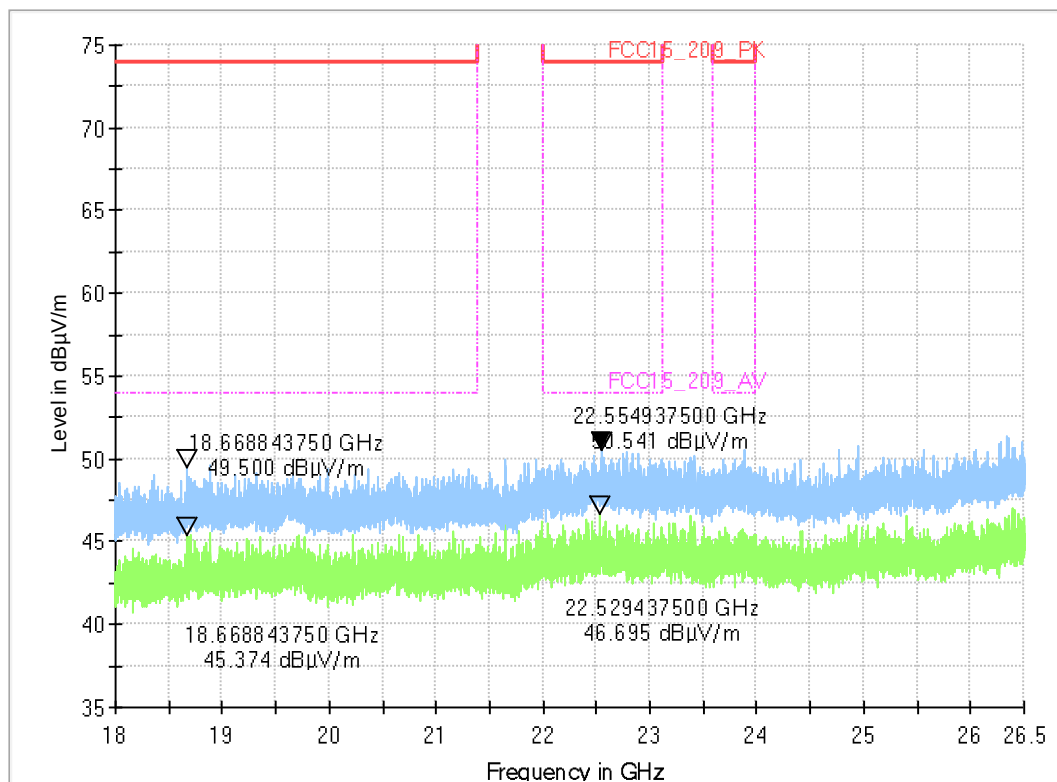
Common Information

Test Description:	Radiated Field Strength Emission@3m distance
Test Site Location:	cetecom advanced Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC 15.209 & RSS-Gen, Issue 5
Operating Mode:	802.15.4, Channel low
Environmental Conditions:	Humidity: 43 % rH; Temperature: 21.9 °C
SW-Version:	EMC32 V10.60.20
Operator:	SOz
Verdict:	Passed

EUT Information

PMT Sample Nr.	22-1-00571S65_C01
power:	Battery inside

Full Spectrum



4.09_802.15.4_mid_V

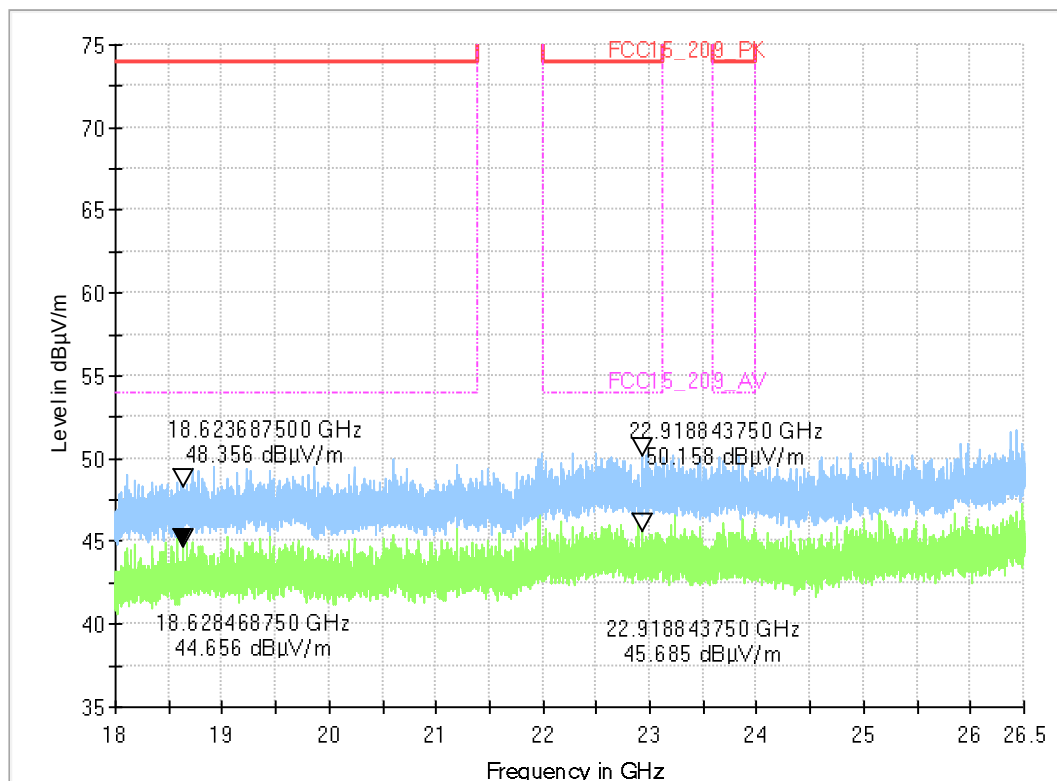
Common Information

Test Description:	Radiated Field Strength Emission@3m distance
Test Site Location:	cetekom advanced Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC 15.209 & RSS-Gen, Issue 5
Operating Mode:	802.15.4, Channel mid
Environmental Conditions:	Humidity: 43 % rH; Temperature: 21.9 °C
SW-Version:	EMC32 V10.60.20
Operator:	SOz
Verdict:	Passed

EUT Information

PMT Sample Nr.	22-1-00571S65_C01
power:	Battery inside

Full Spectrum



4.10_802.15.4_mid_H

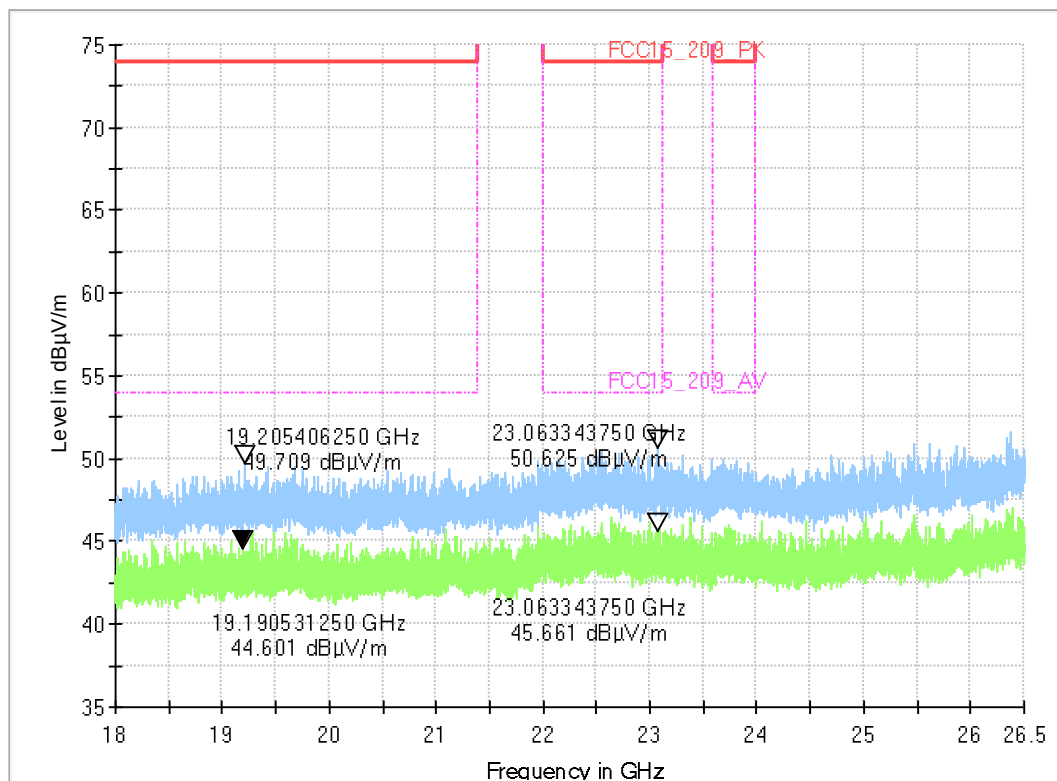
Common Information

Test Description:	Radiated Field Strength Emission@3m distance
Test Site Location:	cetekom advanced Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC 15.209 & RSS-Gen, Issue 5
Operating Mode:	802.15.4, Channel mid
Environmental Conditions:	Humidity: 43 % rH; Temperature: 21.9 °C
SW-Version:	EMC32 V10.60.20
Operator:	SOz
Verdict:	Passed

EUT Information

PMT Sample Nr.	22-1-00571S65_C01
power:	Battery inside

Full Spectrum



4.11_802.15.4_high_V

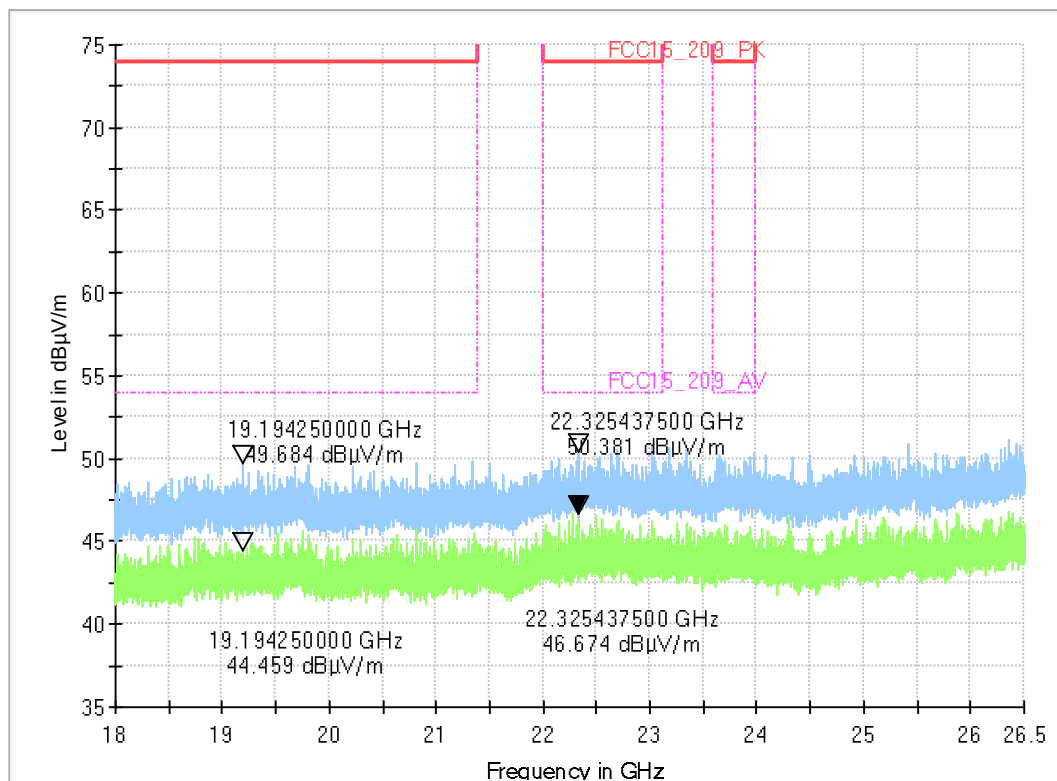
Common Information

Test Description:	Radiated Field Strength Emission@3m distance
Test Site Location:	cetecom advanced Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC 15.209 & RSS-Gen, Issue 5
Operating Mode:	802.15.4, Channel high
Environmental Conditions:	Humidity: 43 % rH; Temperature: 21.9 °C
SW-Version:	EMC32 V10.60.20
Operator:	SOz
Verdict:	Passed

EUT Information

PMT Sample Nr.	22-1-00571S65_C01
power:	Battery inside

Full Spectrum



4.12_802.15.4_high_H

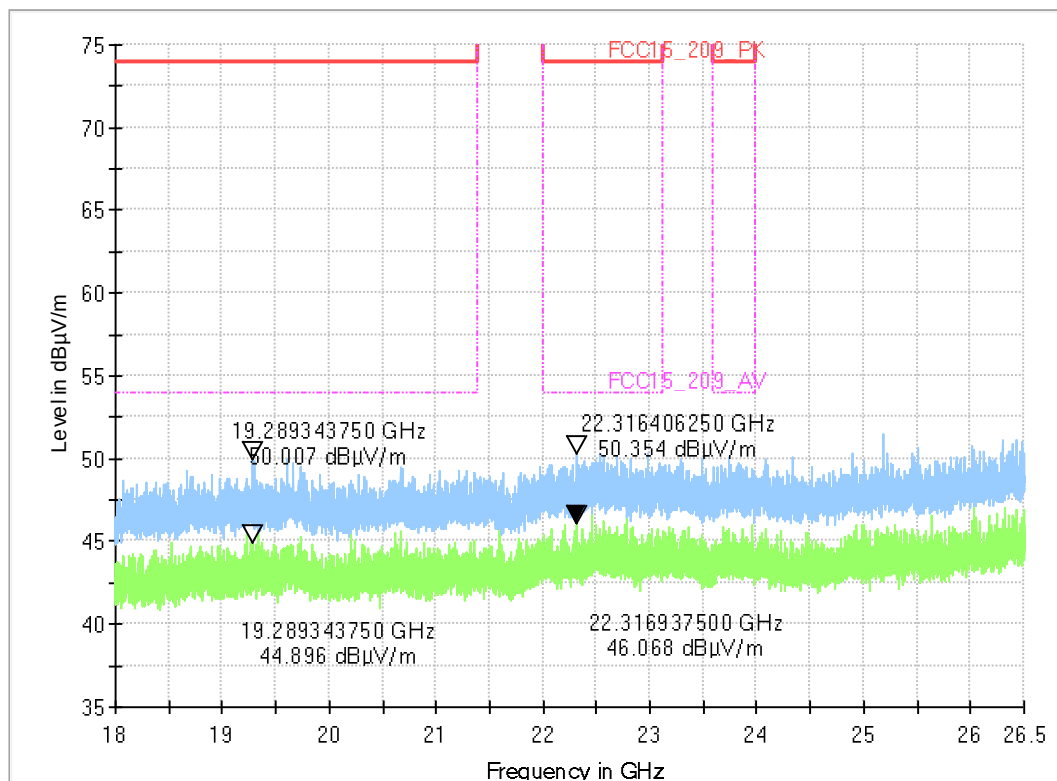
Common Information

Test Description:	Radiated Field Strength Emission@3m distance
Test Site Location:	cetekom advanced Essen
Test Site:	Fully Anechoic Room (FAR2)
Test Standard:	FCC 15.209 & RSS-Gen, Issue 5
Operating Mode:	802.15.4, Channel high
Environmental Conditions:	Humidity: 43 % rH; Temperature: 21.9 °C
SW-Version:	EMC32 V10.60.20
Operator:	SOz
Verdict:	Passed

EUT Information

PMT Sample Nr.	22-1-00571S65_C01
power:	Battery inside

Full Spectrum



9.01_802.15.4_low

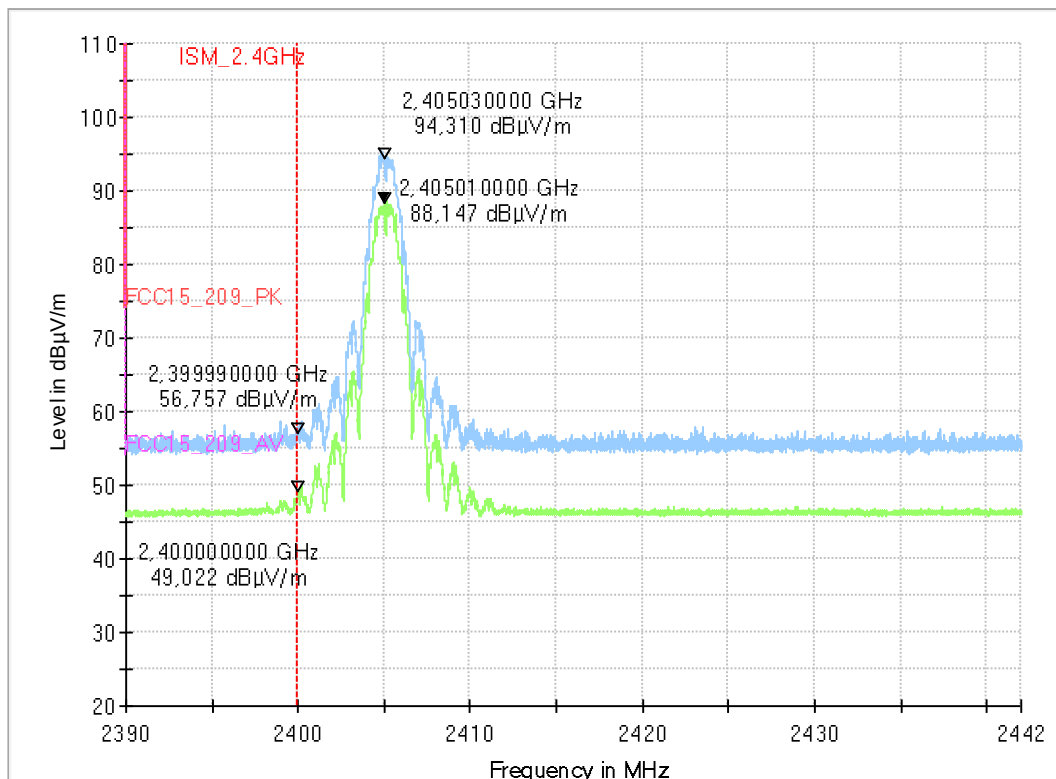
Common Information

Test Description:	Band-Edge: Radiated Field Strength Emissions Emissions in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	TX, continuous
Operator:	SOz
Comment:	Channel no. low
Comment2:	Pwr 3dBm
EUT Setup:	2
Verdict:	Passed

EUT Information

Sample:	22-1-00571S65_C01
Power Supply:	internal battery

Full Spectrum



9.02_802.15.4_high

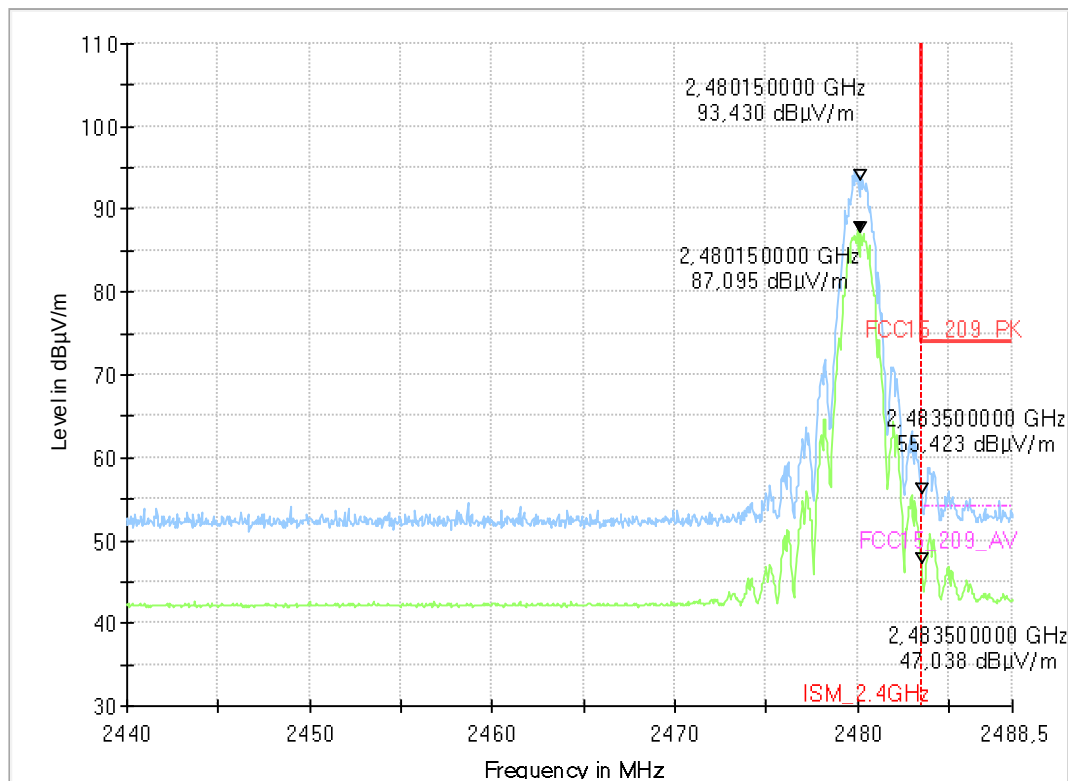
Common Information

Test Description:	Band-Edge: Radiated Field Strength Emissions Emissions in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.60.20
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 5
Antenna polarisation:	horizontal/vertical
Operating Mode:	TX, continuous
Operator:	SOz
Comment:	Channel no. high
Comment2:	Pwr 3dBm
EUT Setup:	02
Verdict:	Passed

EUT Information

Sample:	22-1-00571S65_C01
Power Supply:	internal battery

Full Spectrum



End Of Annex 1