

Annex 1: Measurement diagrams to Test Report 20-1-0001601T01a-A1

Number of pages:	56	Date of Report:	2020-Nov-12
Testing company:	CETECOM GmbH Im Teelbruch 116 45219 Essen Germany Tel. + 49 (0) 20 54 / 95 19-0 Fax: + 49 (0) 20 54 / 95 19-150	Applicant:	WITTE – Velbert GmbH & Co. KG
Test Object / Tested Device(s):	BTLE enabled secure vehicle access box, Flinkey Box		
FCC ID:	V2TFB24	IC:	7575A-FB24
Testing has been carried out in accordance with:	Title 47 CFR, Chapter I FCC Regulations, Subchapter A §15.247 (DTS) ISED-Regulations RSS-Gen, Issue 5 RSS 247, Issue 2 Deviations, modifications or clarifications (if any) to above mentioned documents are written in each section under "Test method and limit".		



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1 Measurement diagrams

1.1 AC-Power Lines Conducted Emissions

1.01 BLE

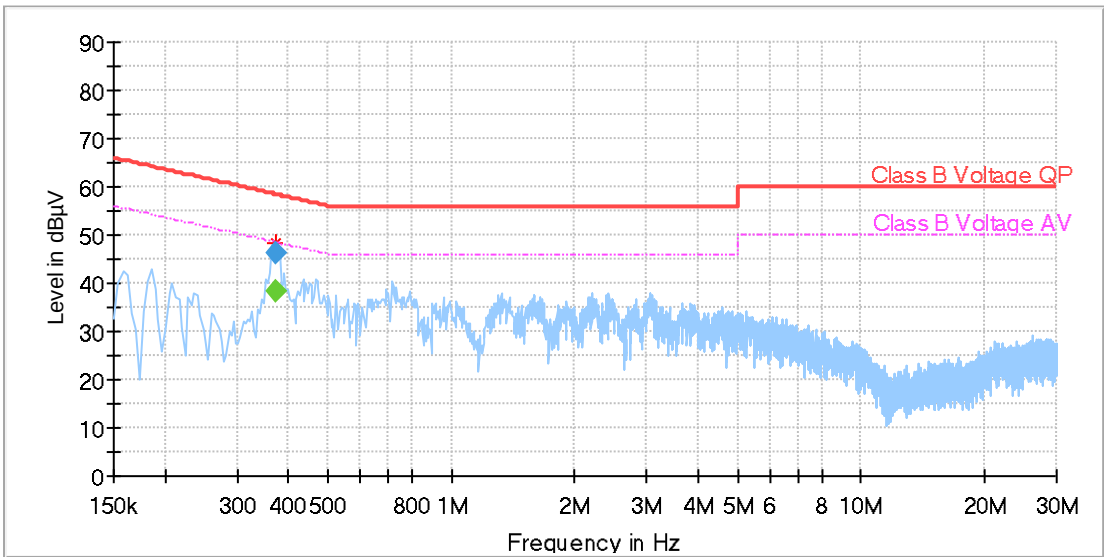
Common Information

Test Description:	Conducted Voltage Measurement Class B
Test Site Location:	Conducted Emission, CETECOM GmbH Essen
Test Software:	R&S EMC32 v9.15
Test Standard:	FCC 15.107, FCC 15.207
Operating Mode:	USB + AC Adapter
Measured on line:	N
Diagram details:	Shows the peak values as a sum of measured ports in maxhold mode
Comments:	--
Verdict:	Passed

EUT Information

PMT number:	20-1-00016S15_C01
Date received:	--

Full Spectrum



Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	PE	Corr. (dB)
0.375156	---	38.34	48.39	10.05	1000.0	9.000	N	GND	0.1
0.375156	46.05	---	58.39	12.34	1000.0	9.000	N	GND	0.1

1.2 Radiated measurements

2.01a_BT_LE_low

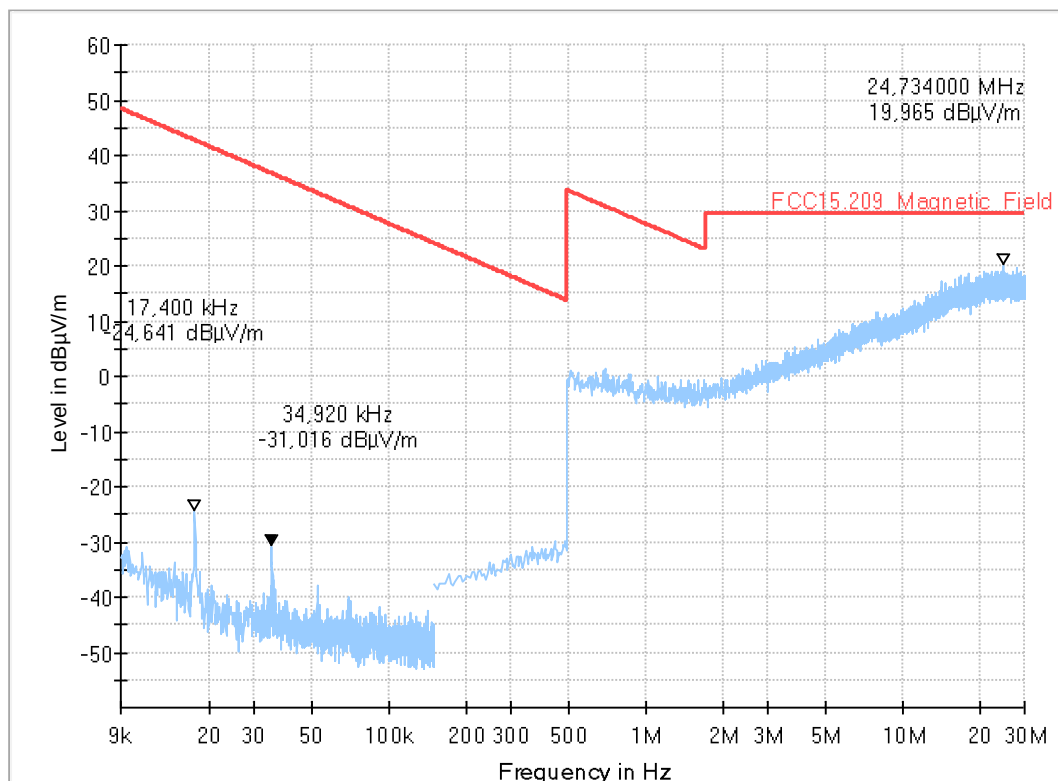
Common Information

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 4

Operator:	TFa
Operating Mode:	BLE TX 2402 MHz
Power during tests:	12V DC, full loaded batteries
Comment 1:	Channel low
Comment 2:	--
Environmental Conditions:	Humidity : 62% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed
Comment:	Laying

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH
	Full Spectrum



2.01b_BT_LE_low

Common Information

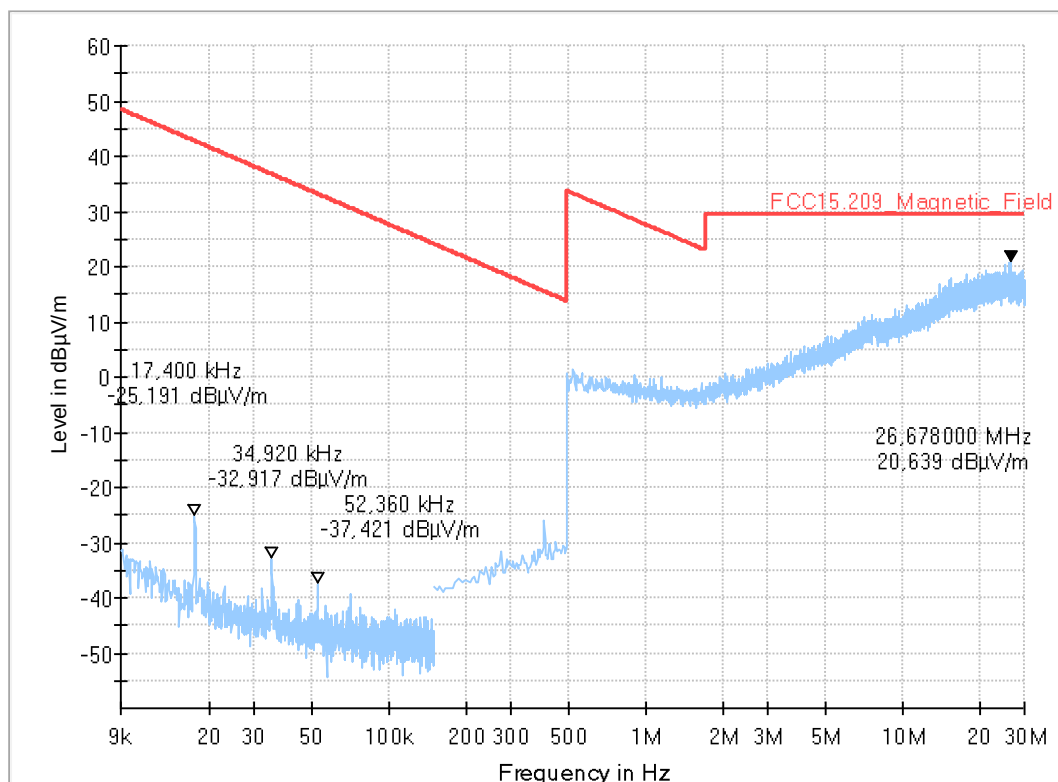
Test Description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see 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 4

Operator:	TFa
Operating Mode:	BLE TX 2402 MHz
Power during tests:	12V DC, full loaded batteries
Comment 1:	Channel low
Comment 2:	--
Environmental Conditions::	Humidity : 62% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed
Comment:	Standing

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH

Full Spectrum



2.02a_BT_LE_mid

Common Information

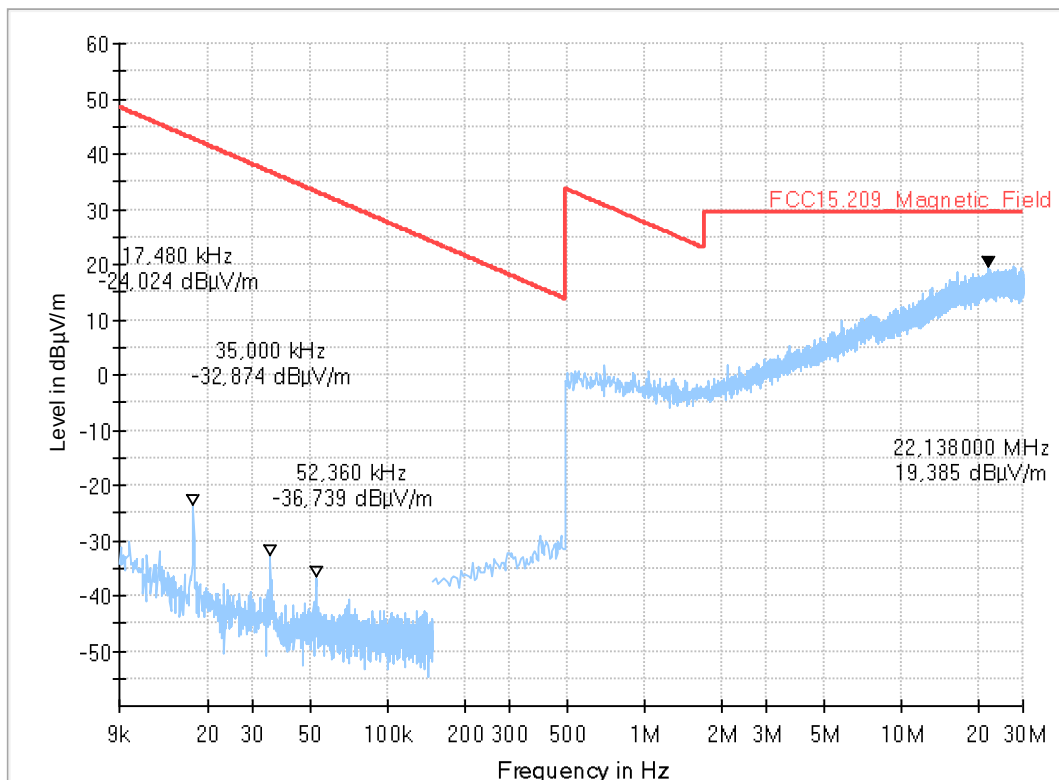
Test Description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see 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 4

Operator:	TFa
Operating Mode:	BLE TX 2442 MHz
Power during tests:	12V DC, full loaded batteries
Comment 1:	Channel middle
Comment 2:	--
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed
Comment:	Laying

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH

Full Spectrum



2.02b_BT_LE_mid

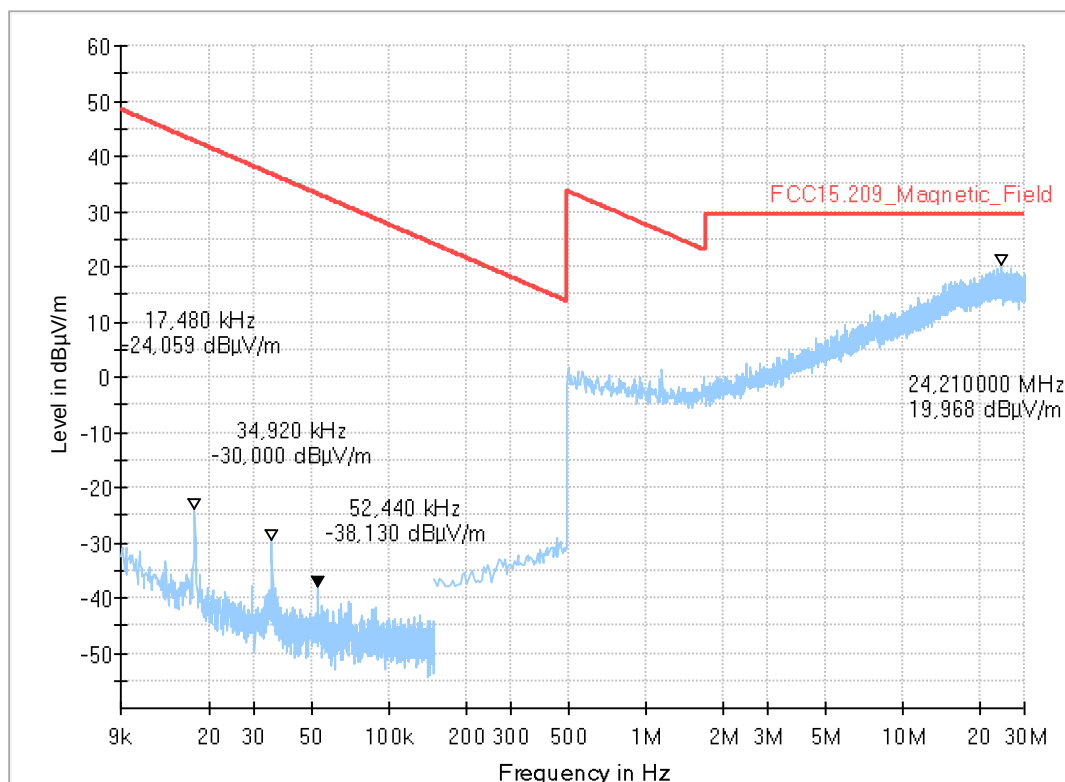
Common Information

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 4

Operator:	TFa
Operating Mode:	BLE TX 2442 MHz
Power during tests:	12V DC, full loaded batteries
Comment 1:	Channel middle
Comment 2:	--
Environmental Conditions::	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed
Comment:	Standing

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH
	Full Spectrum



2.03a_BT_LE_high

Common Information

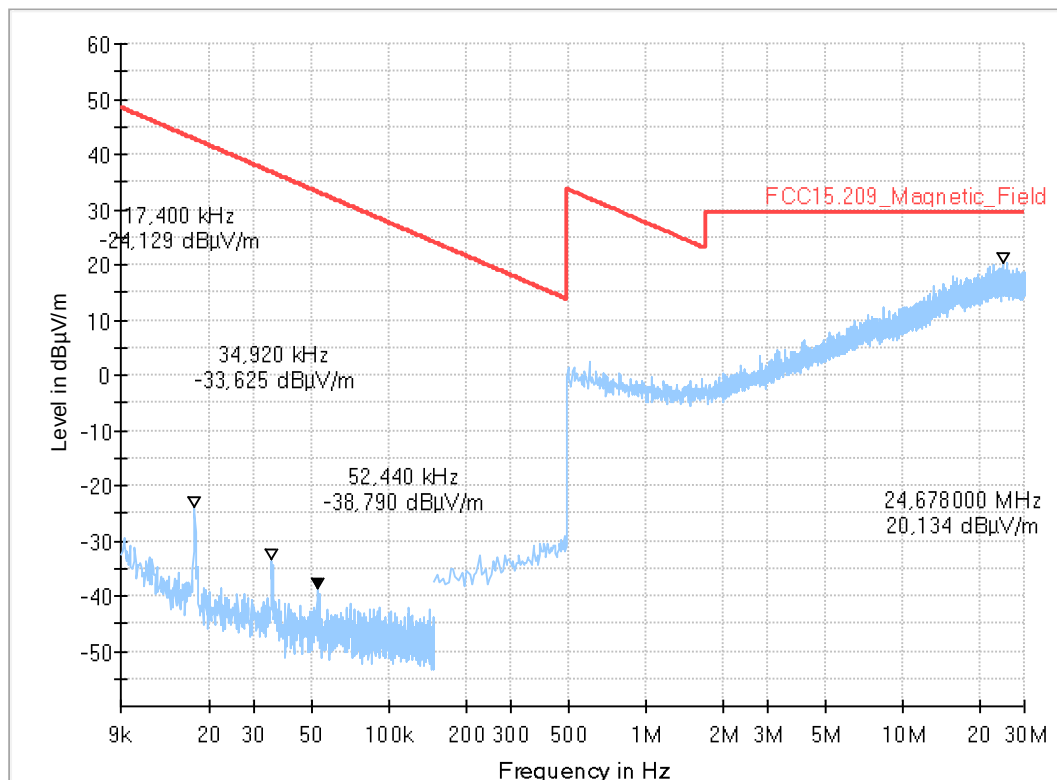
Test Description:	Magnetic Field Strength Measurement related to 30/300 m distance
Test Site Location:	Ref.-Nr. 441 Semi Anechoic Chamber (SAC1) with 3 m measurement distance
Version of Testsoftware:	EMC32 V10.50.0
Distance correction:	used accord. table, pls. see test report
Technical Data:	Please see 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 4

Operator:	TFa
Operating Mode:	BLE TX 2480 MHz
Power during tests:	12V DC, 110V/60Hz, full loaded batteries
Comment 1:	Channel high
Comment 2:	--
Environmental Conditions::	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed
Comment:	Laying

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH

Full Spectrum



2.03b_BT_LE_high

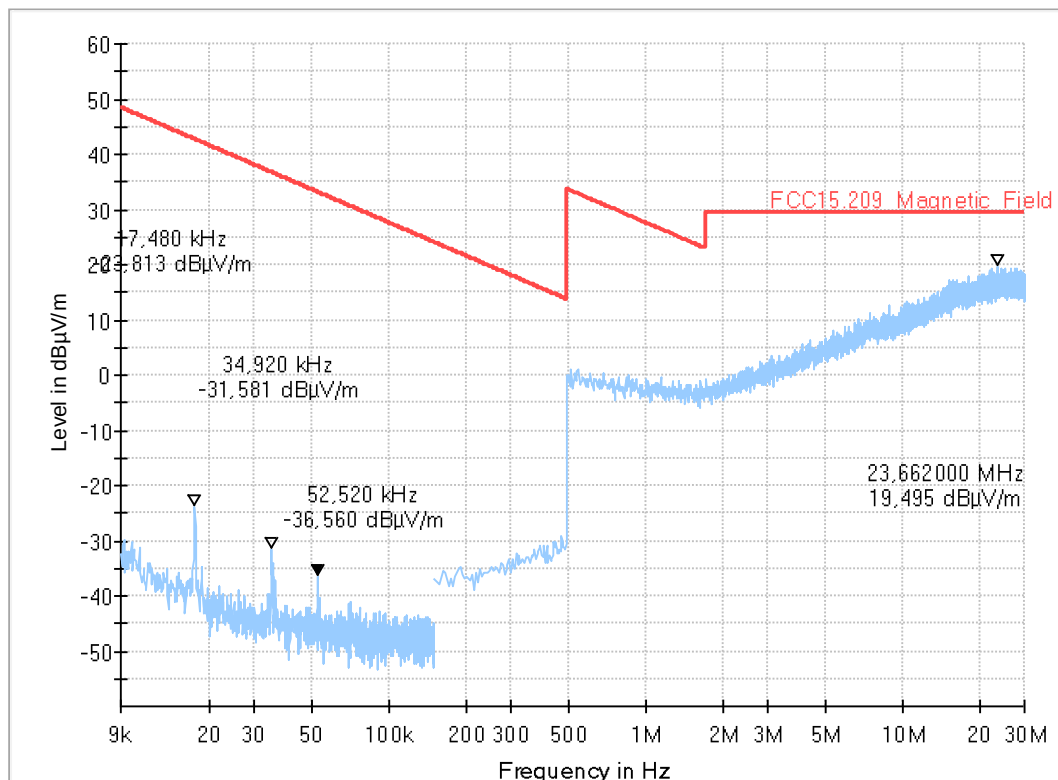
Common Information

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 4
Operator:	TFa
Operating Mode:	BLE TX 2480 MHz
Power during tests:	12V DC, full loaded batteries
Comment 1:	Channel high
Comment 2:	
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed
Comment:	Standing

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH

Full Spectrum



3.01a_BT_LE_low

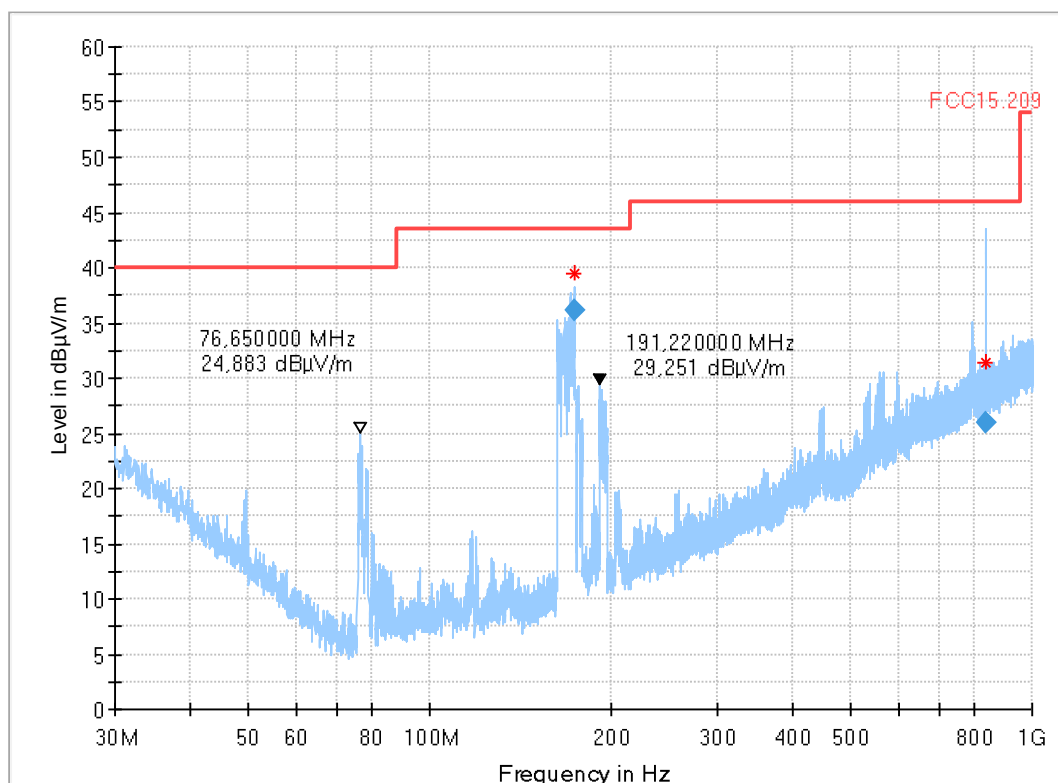
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 RSS Gen Issue 5 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operating Mode:	BLE TX 2402 MHz
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
Operator:	TFa
Verdict:	Passed

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
173.256000	36.06	43.50	7.44	1000.0	120.000	109.0	V	329.0	10.4
837.672000	25.99	46.00	20.01	1000.0	120.000	324.0	H	16.0	25.9

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

Frequency (MHz)	Comment
173.256000	20:24:09 - 30.09.2020
837.672000	20:19:34 - 30.09.2020

3.01b_BT_LE_low

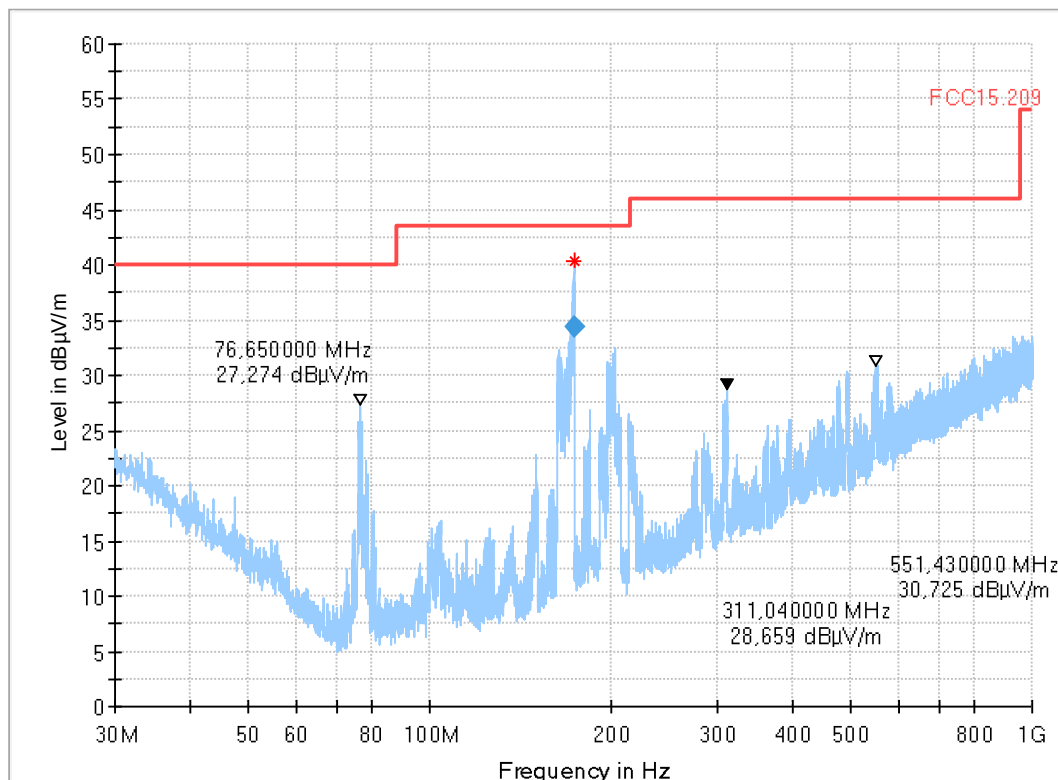
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 RSS Gen Issue 5 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operating Mode:	BLE TX 2402 MHz
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
Operator:	TFa
Verdict:	Passed

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH

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/m)
173.262000	34.41	43.50	9.09	1000.0	120.000	206.0	H	6.0	10.4

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

Frequency (MHz)	Comment
173.262000	20:41:58 - 30.09.2020

3.02a_BT_LE_mid

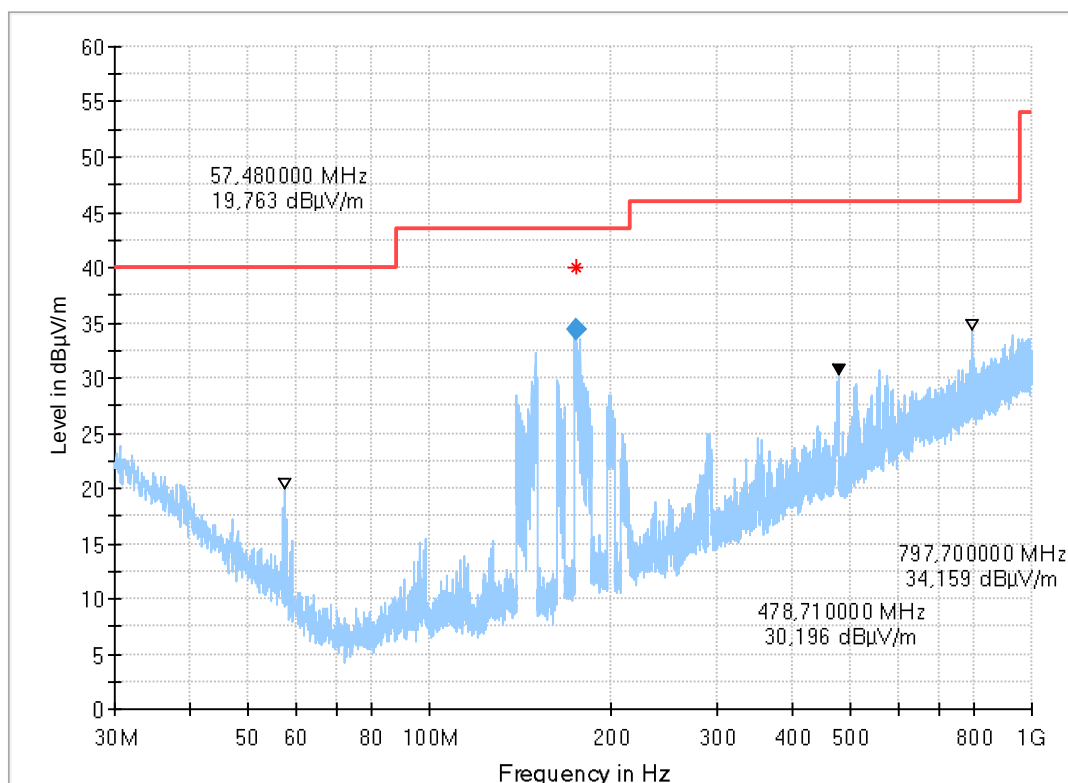
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 RSS Gen Issue 5 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operating Mode:	BLE TX 2442 MHz
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
Operator:	TFa
Verdict:	Passed

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH

Full Spectrum



Remark: The peak at 797 MHz is known external disturbance and does not come from EUT

Final_Result

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
175.312000	34.31	43.50	9.19	1000.0	120.000	148.0	H	316.0	10.4

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

Frequency (MHz)	Comment
175.312000	20:03:15 - 30.09.2020

3.02b_BT_LE_mid

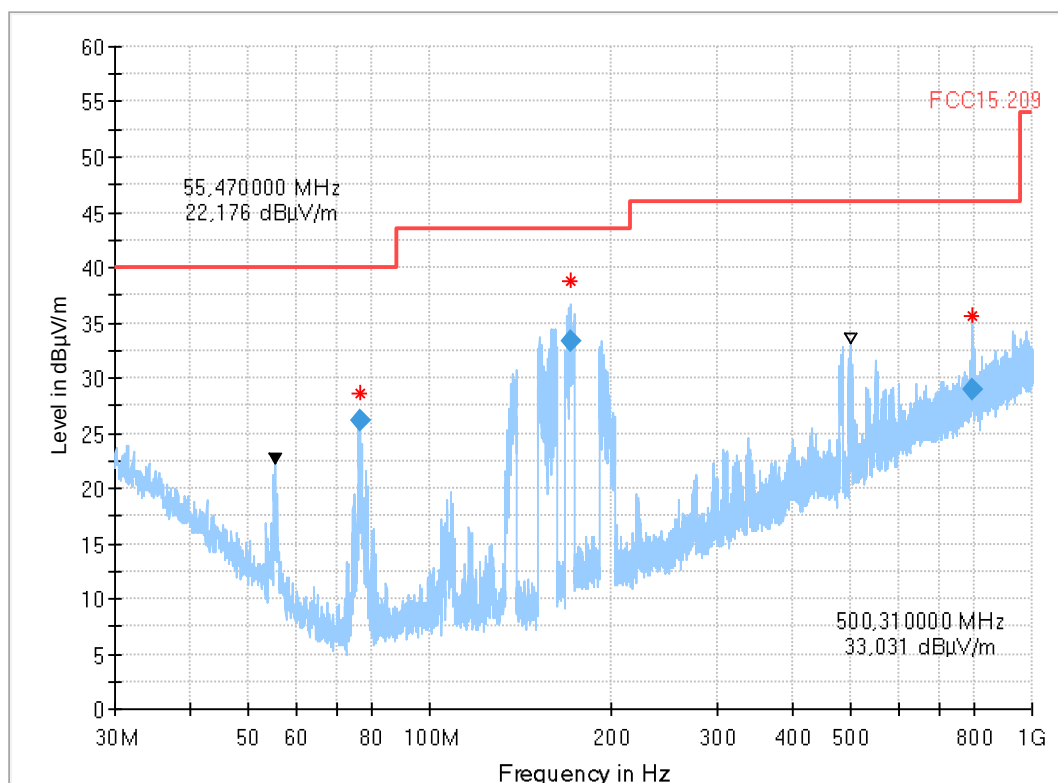
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 RSS Gen Issue 5 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operating Mode:	BLE TX 2442 MHz
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
Operator:	TFa
Verdict:	Passed

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
76.670000	26.13	40.00	13.87	1000.0	120.000	130.0	V	319.0	6.7
171.274000	33.31	43.50	10.19	1000.0	120.000	121.0	V	294.0	10.3
797.150000	29.00	46.00	17.00	1000.0	120.000	166.0	V	162.0	25.3

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

Frequency (MHz)	Comment
76.670000	19:46:09 - 30.09.2020
171.274000	19:41:10 - 30.09.2020
797.150000	19:36:27 - 30.09.2020

3.03a_BT_LE_high

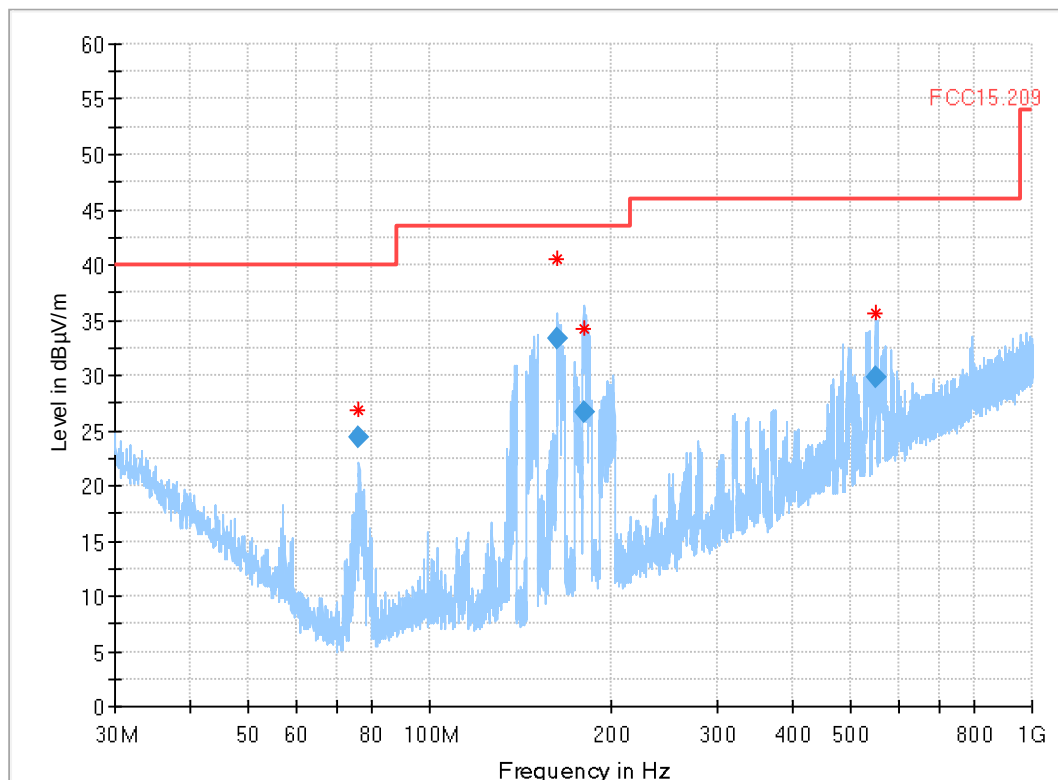
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 RSS Gen Issue 5 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operating Mode:	BLE TX 2480 MHz
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
Operator:	TFa
Verdict:	Passed

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH

Full Spectrum



3.03b_BT_LE_high

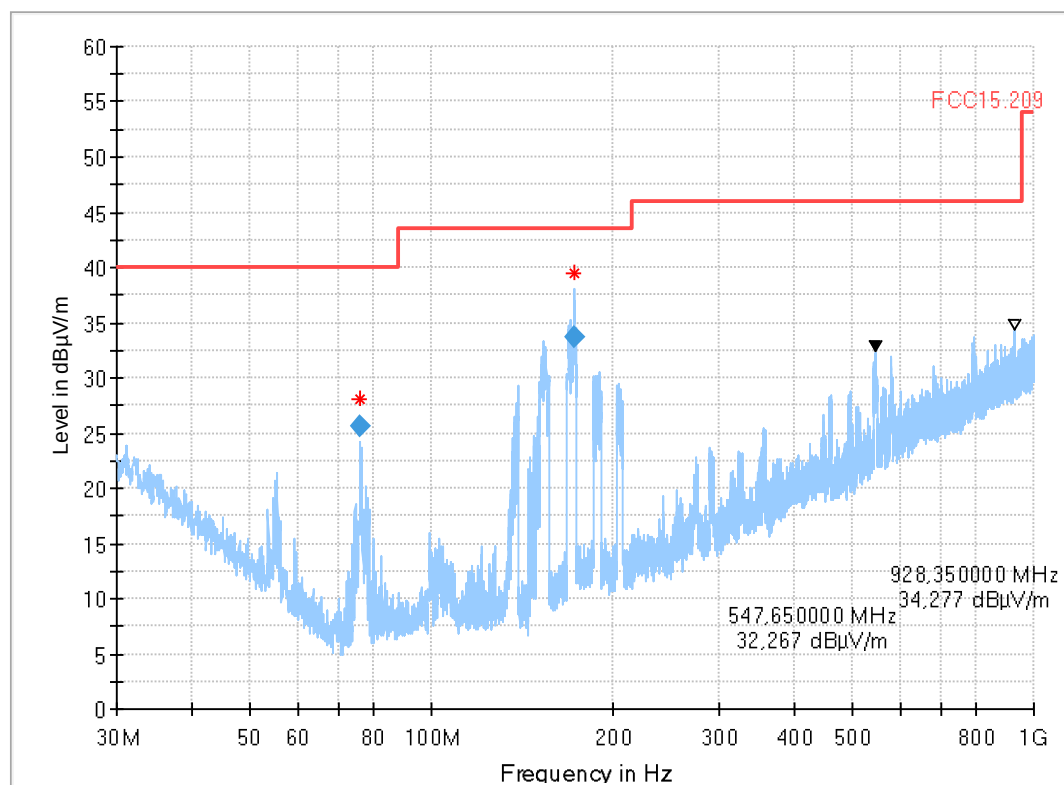
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	CETECOM GmbH Essen
Test Standard:	FCC 15.205&15.209 RSS Gen Issue 5 Intentional Radiator
Antenna polarisation:	horizontal/vertical
Operating Mode:	BLE TX 2480 MHz
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
Operator:	TFa
Verdict:	Passed

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH

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/m)
76.262000	25.53	40.00	14.47	1000.0	120.000	109.0	V	313.0	6.7
172.948000	33.72	43.50	9.78	1000.0	120.000	185.0	V	55.0	10.4

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

Frequency (MHz)	Comment
76.262000	19:18:47 - 30.09.2020
172.948000	19:13:53 - 30.09.2020

4.01a_BT_LE_low

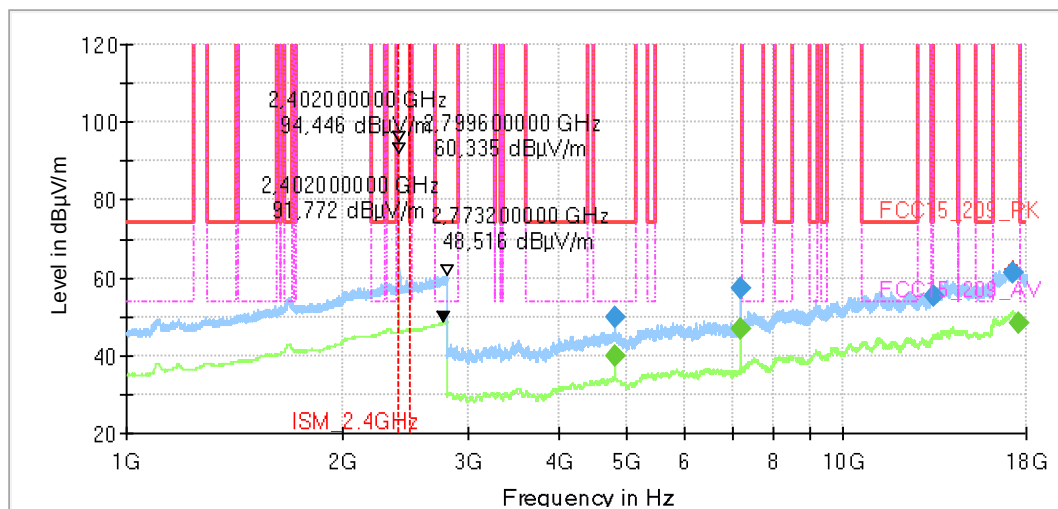
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 4
Antenna polarisation:	horizontal/vertical
Operating Mode:	BT-LE PRBS9 Channel low 37 bytes
Operator:	Mah
Comment:	Channel no. middle
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH

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)
4804.000000	---	39.81	54.00	14.19	100.0	1000.000	155.0	H	-21.0	90.0
4804.800000	49.62	---	74.00	24.38	100.0	1000.000	155.0	V	137.0	0.0
7205.600000	57.38	---	150.00	92.62	100.0	1000.000	155.0	H	-21.0	90.0
7205.600000	---	46.65	150.00	103.35	100.0	1000.000	155.0	H	-22.0	90.0
13349.200000	55.29	---	74.00	18.71	100.0	1000.000	155.0	V	344.0	90.0
17231.200000	61.44	---	150.00	88.56	100.0	1000.000	155.0	H	336.0	90.0
17605.200000	---	48.49	150.00	101.51	100.0	1000.000	155.0	V	91.0	90.0

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

Frequency (MHz)	Corr. (dB/m)	Comment
4804.000000	6	16:56:47 - 07.10.2020
4804.800000	6	16:49:34 - 07.10.2020
7205.600000	12	16:51:28 - 07.10.2020
7205.600000	12	16:58:07 - 07.10.2020
13349.200000	20	16:54:41 - 07.10.2020
17231.200000	31	16:53:06 - 07.10.2020
17605.200000	29	16:59:45 - 07.10.2020

4.02a_BT_LE_mid

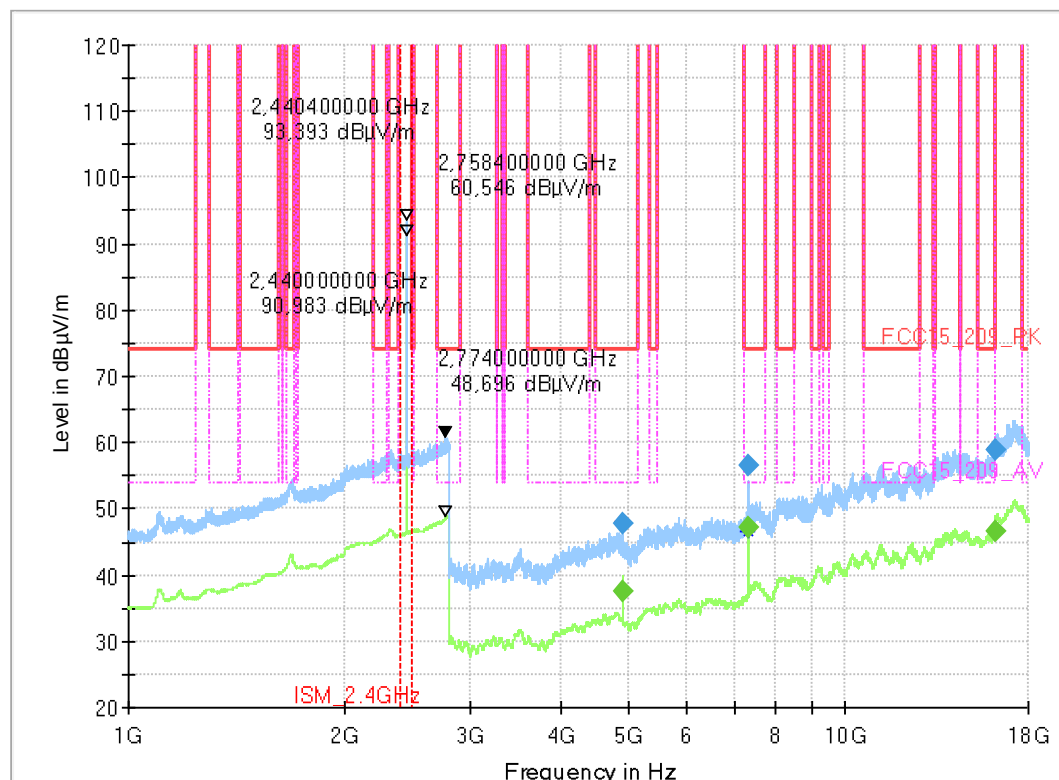
Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 4
Antenna polarisation:	horizontal/vertical
Operating Mode:	BT-LE PRBS9 Channel mid 37 bytes
Operator:	Mah
Comment:	Channel no. middle
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH

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)
4880.000000	47.67	---	74.00	26.33	100.0	1000.000	155.0	V	319.0	90.0
4880.000000	---	37.48	54.00	16.52	100.0	1000.000	155.0	V	317.0	90.0
7319.600000	---	47.22	54.00	6.78	100.0	1000.000	155.0	H	-9.0	90.0
7319.600000	56.67	---	74.00	17.33	100.0	1000.000	155.0	H	-10.0	90.0
16164.400000	58.83	---	74.00	15.17	100.0	1000.000	155.0	V	194.0	0.0
16194.400000	---	46.56	54.00	7.44	100.0	1000.000	155.0	V	230.0	90.0

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

Frequency (MHz)	Corr. (dB/m)	Comment
4880.000000	6	18:53:32 - 07.10.2020
4880.000000	6	18:58:47 - 07.10.2020
7319.600000	13	18:55:34 - 07.10.2020
7319.600000	13	18:51:38 - 07.10.2020
16164.400000	27	18:49:39 - 07.10.2020
16194.400000	28	18:57:28 - 07.10.2020

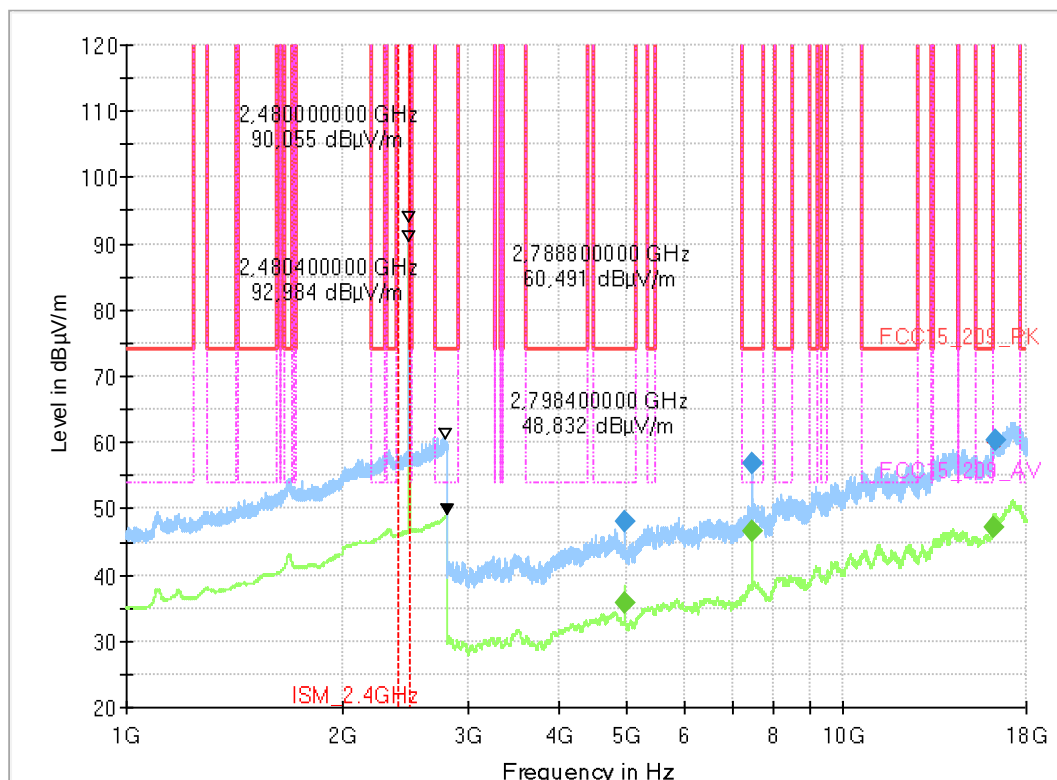
4.03a_BT_LE_high

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 4
Antenna polarisation:	horizontal/vertical
Operating Mode:	BT-LE PRBS9 Channel high 37 bytes
Operator:	Mah
Comment:	Channel no. high
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH
	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)
4960.000000	---	35.75	54.00	18.25	100.0	1000.000	155.0	V	316.0	0.0
4960.000000	47.95	---	74.00	26.05	100.0	1000.000	155.0	V	134.0	0.0
7439.600000	---	46.48	54.00	7.52	100.0	1000.000	155.0	H	-8.0	90.0
7439.600000	56.71	---	74.00	17.29	100.0	1000.000	155.0	H	-7.0	90.0
16240.800000	---	47.12	150.00	102.88	100.0	1000.000	155.0	V	214.0	90.0
16313.600000	60.29	---	150.00	89.71	100.0	1000.000	155.0	V	134.0	0.0

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

Frequency (MHz)	Corr. (dB/m)	Comment
4960.000000	5	20:24:01 - 07.10.2020
4960.000000	5	20:18:49 - 07.10.2020
7439.600000	13	20:26:11 - 07.10.2020
7439.600000	13	20:21:59 - 07.10.2020
16240.800000	28	20:27:51 - 07.10.2020
16313.600000	28	20:20:04 - 07.10.2020

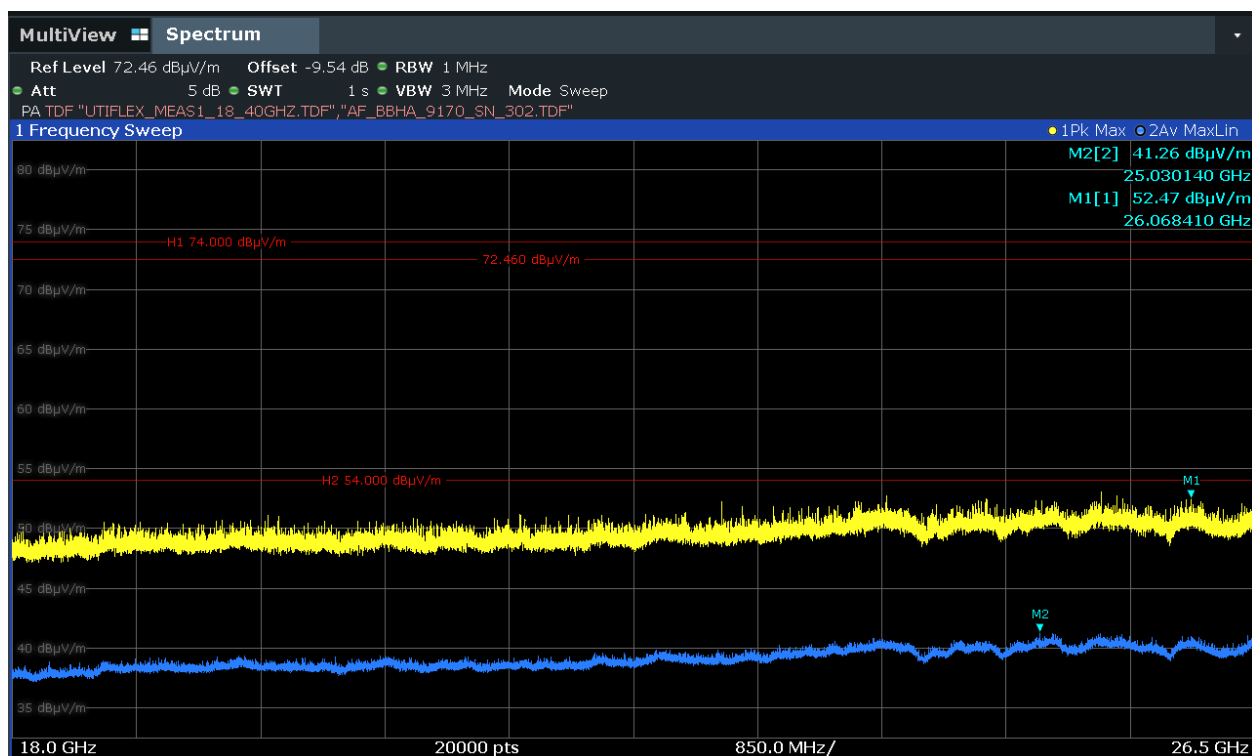
4.01b_BT_LE_low

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 4
Antenna polarisation:	horizontal/vertical
Operating Mode:	BT-LE PRBS9 Channel low 37 bytes
Operator:	Mah
Comment:	Channel no. middle
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH



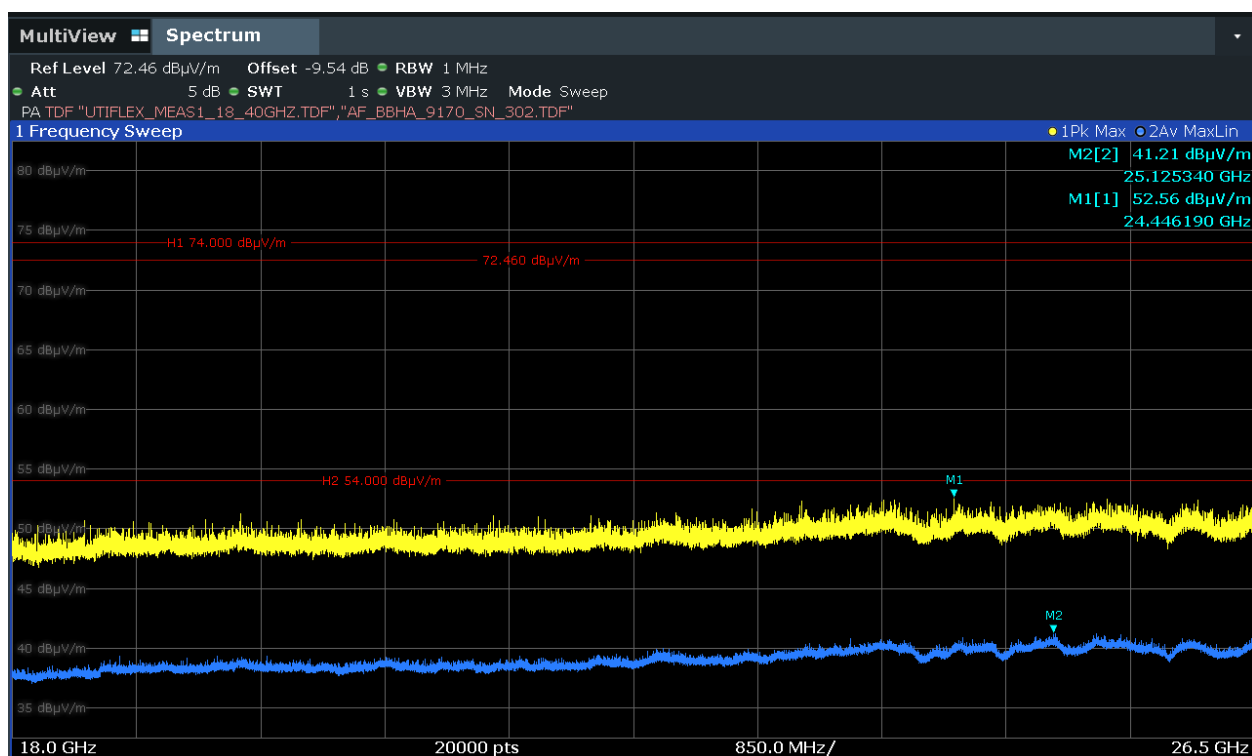
4.02b_BT_LE_mid

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 4
Antenna polarisation:	horizontal/vertical
Operating Mode:	BT-LE PRBS9 Channel mid 37 bytes
Operator:	Mah
Comment:	Channel no. middle
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH



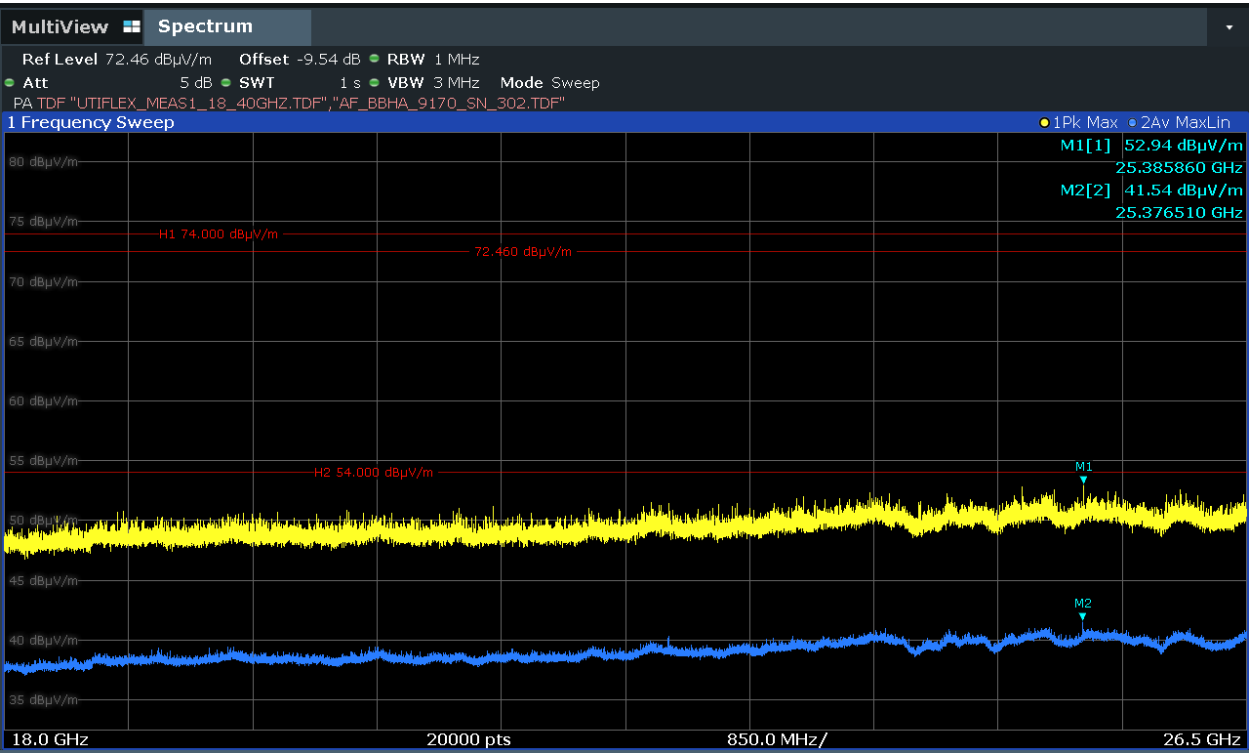
4.03b_BT_LE_high

Common Information

Test Description:	Radiated field strength emission in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 4
Antenna polarisation:	horizontal/vertical
Operating Mode:	BT-LE PRBS9 Channel high 37 bytes
Operator:	Mah
Comment:	Channel no. high
Environmental Conditions::	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH



9.01_BE_BT_LE_low

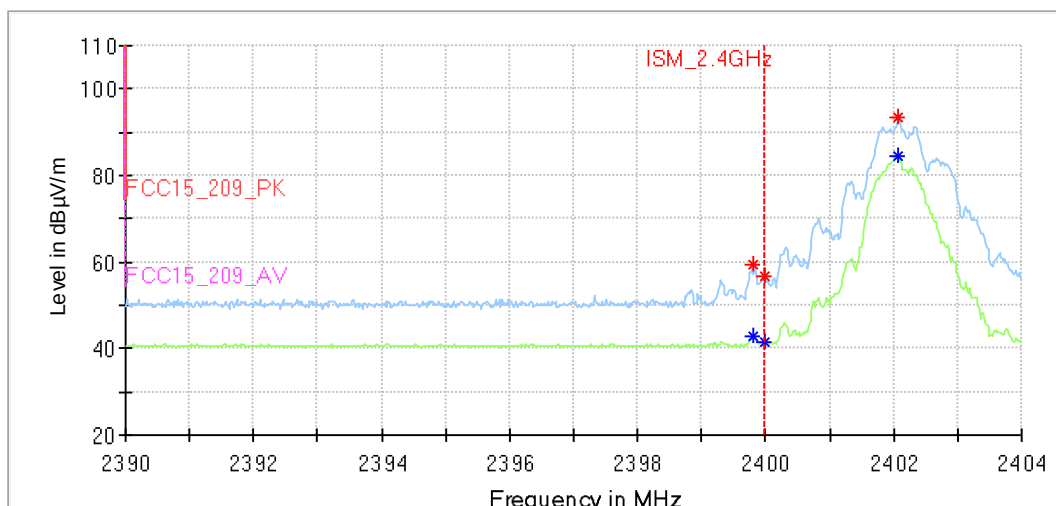
Common Information

Test Description:	Band-Edge: Radiated Field Strength Emissions Emissions in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 4
Antenna polarisation:	horizontal/vertical
Operating Mode:	BT-LE PRBS9 Channel low 37 bytes
Operator:	Mah
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH

Full Spectrum



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
2399.800000	---	42.74	150.00	107.26	---	---	155.0	H	52.0	90.0
2399.800000	59.18	---	150.00	90.82	---	---	155.0	H	52.0	90.0
2400.000000	56.67	---	150.00	93.33	---	---	155.0	H	52.0	90.0
2400.000000	---	41.34	150.00	108.66	---	---	155.0	H	52.0	90.0
2402.060000	---	84.69	150.00	65.31	---	---	155.0	H	52.0	90.0
2402.080000	93.37	---	150.00	56.63	---	---	155.0	H	52.0	90.0

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

Frequency (MHz)	Corr. (dB/m)	Comment
2399.800000	36	17:17:11 - 07.10.2020
2399.800000	36	17:17:09 - 07.10.2020
2400.000000	36	17:16:58 - 07.10.2020
2400.000000	36	17:17:13 - 07.10.2020
2402.060000	36	17:16:56 - 07.10.2020
2402.080000	36	17:16:55 - 07.10.2020

9.02_BE_BT_LE_high

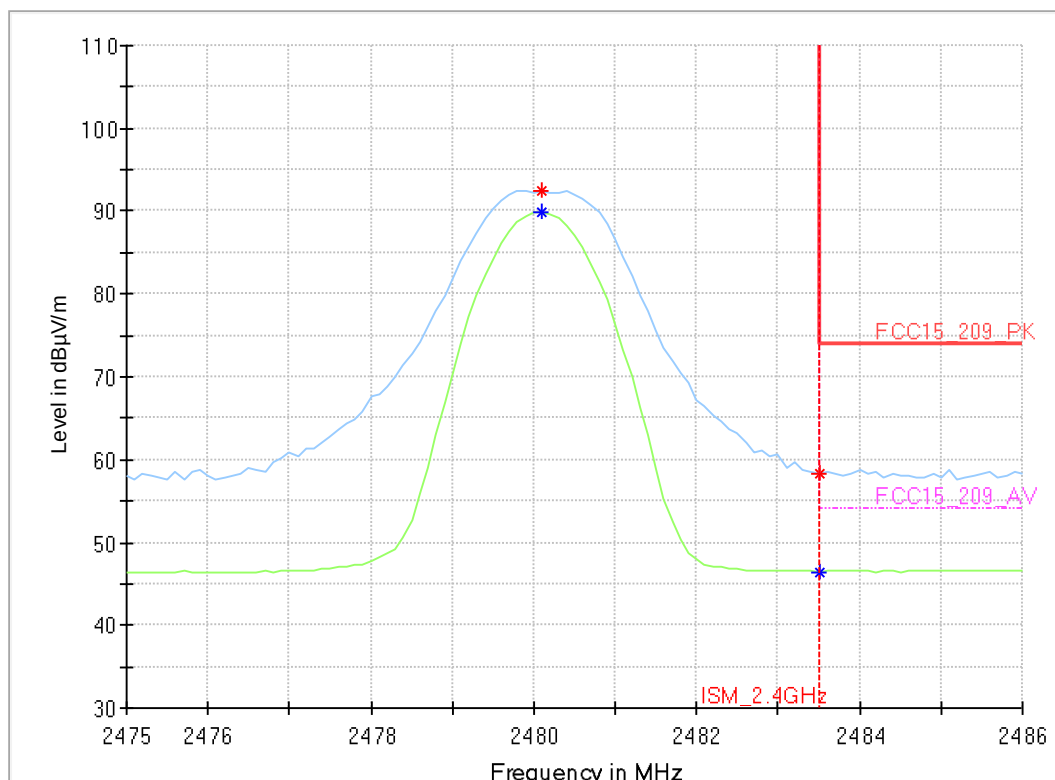
Common Information

Test Description:	Band-Edge: Radiated Field Strength Emissions Emissions in 3m distance
Test Site:	Fully Anechoic Chamber (FAC1) - EMC32 V10.50.0
Test Standard:	FCC 15.247&15.209 Intentional Radiator / RSS-Gen, Issue 4
Antenna polarisation:	horizontal/vertical
Operating Mode:	BT-LE PRBS9 Channel high 37 bytes
Operator:	Mah
Environmental Conditions:	Humidity : 60% rH; Temperature: 20 °C
EUT Setup:	1
Verdict:	Passed

EUT Information

PMT number:	20-1-00016S14_C01
Manufacturer:	WITTE Automotive GmbH

Full Spectrum



Critical_Freqs

Frequency (MHz)	MaxPeak (dBμV/m)	RMS (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Elevation (deg)
2480.100000	---	89.97	150.00	60.03	---	---	155.0	H	307.0	90.0
2480.100000	92.39	---	150.00	57.61	---	---	155.0	H	307.0	90.0
2483.500000	---	46.46	54.00	7.54	---	---	155.0	V	112.0	90.0
2483.500000	58.22	---	74.00	15.78	---	---	155.0	H	274.0	90.0

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

Frequency (MHz)	Corr. (dB/m)	Comment
2480.100000	36	20:46:55 - 07.10.2020
2480.100000	36	20:46:53 - 07.10.2020
2483.500000	36	20:47:03 - 07.10.2020
2483.500000	36	20:47:00 - 07.10.2020

1.3 Conducted measurements

Summary

Test	Frequency (MHz)	Nominal Power (dBm)	Nominal Bandwidth (MHz)	Result
Peak output power (Sweep)	2402.000	10.0	1.000000	PASS
Peak output power (Sweep)	2440.000	10.0	1.000000	PASS
Peak output power (Sweep)	2480.000	10.0	1.000000	PASS
Minimum Emission Bandwidth 6 dB	2402.000	10.0	1.000000	PASS
Minimum Emission Bandwidth 6 dB	2440.000	10.0	1.000000	PASS
Minimum Emission Bandwidth 6 dB	2480.000	10.0	1.000000	PASS
RF output power	2402.000	10.0	1.000000	PASS
RF output power	2440.000	10.0	1.000000	PASS
RF output power	2480.000	10.0	1.000000	PASS
Peak Power Spectral Density	2402.000	10.0	1.000000	PASS
Peak Power Spectral Density	2440.000	10.0	1.000000	PASS
Peak Power Spectral Density	2480.000	10.0	1.000000	PASS
Occupied Channel Bandwidth 99%	2402.000	10.0	1.000000	PASS
Occupied Channel Bandwidth 99%	2440.000	10.0	1.000000	PASS
Occupied Channel Bandwidth 99%	2480.000	10.0	1.000000	PASS
Tx Spurious Emission	2402.000	10.0	1.000000	PASS
Tx Spurious Emission	2440.000	10.0	1.000000	PASS
Tx Spurious Emission	2480.000	10.0	1.000000	PASS

Peak output power (Sweep)

Mode	DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
BT_LE[GFSK] (10; 2402 MHz)	2402.000000	-2.3	30.0	PASS
BT_LE[GFSK] (10; 2440 MHz)	2440.000000	-4.5	30.0	PASS
BT_LE[GFSK] (10; 2480 MHz)	2480.000000	-5.1	30.0	PASS

Minimum Emission Bandwidth 6 dB

Mode	DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
BT_LE[GFSK] (10; 2402 MHz)	2402.000000	0.752476	0.500000	---	2401.683168	2402.435644
BT_LE[GFSK] (10; 2440 MHz)	2440.000000	0.732674	0.500000	---	2439.722772	2440.455446
BT_LE[GFSK] (10; 2480 MHz)	2480.000000	0.693070	0.500000	---	2479.742574	2480.435644

RF output power

Mode	DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
BT_LE[GFSK] (10; 2402 MHz)	2402.000000	-2.4	30.0	-2.4	69.719	PASS
BT_LE[GFSK] (10; 2440 MHz)	2440.000000	-4.6	30.0	-4.6	69.725	PASS
BT_LE[GFSK] (10; 2480 MHz)	2480.000000	-5.3	30.0	-5.3	69.725	PASS

Peak Power Spectral Density

Mode	DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
BT_LE[GFSK] (10; 2402 MHz)	2402.000000	2402.057500	-7.951	8.0	PASS
BT_LE[GFSK] (10; 2440 MHz)	2440.000000	2440.057500	-10.331	8.0	PASS
BT_LE[GFSK] (10; 2480 MHz)	2480.000000	2480.062500	-10.082	8.0	PASS

Occupied Channel Bandwidth 99%

Mode	DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left	Band Edge Right (MHz)
BT_LE[GFSK] (10; 2402 MHz)	2402.000000	1.245000	---	---	2401.537500	2402.782500
BT_LE[GFSK] (10; 2440 MHz)	2440.000000	1.085000	---	---	2439.572500	2440.657500
BT_LE[GFSK] (10; 2480 MHz)	2480.000000	1.020000	---	---	2479.592500	2480.612500

Tx Spurious Emission

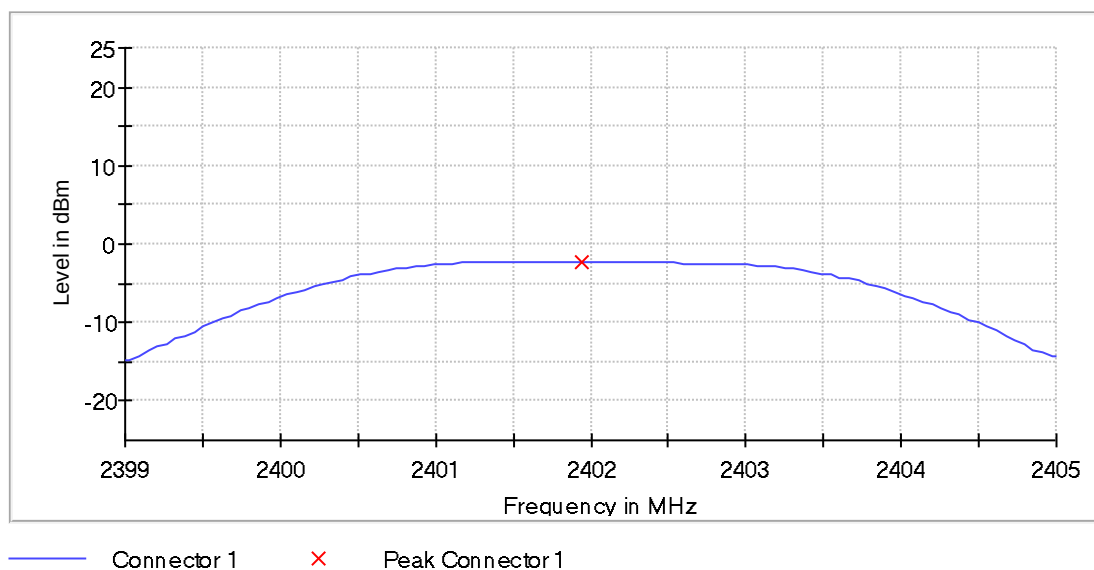
Mode	DUT Frequency (MHz)	Result
BT_LE[GFSK] (10; 2402 MHz	2402.000000	PASS
BT_LE[GFSK] (10; 2440 MHz	2440.000000	PASS
BT_LE[GFSK] (10; 2480 MHz	2480.000000	PASS

Peak output power (Sweep) (2402 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

Test according to FCC title 47 part 15 §15.247(b), KDB 558074 D01 DTS Meas Guidance v04 and ANSI C63.10-2013

Result

DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2402.000000	-2.3	30.0	PASS



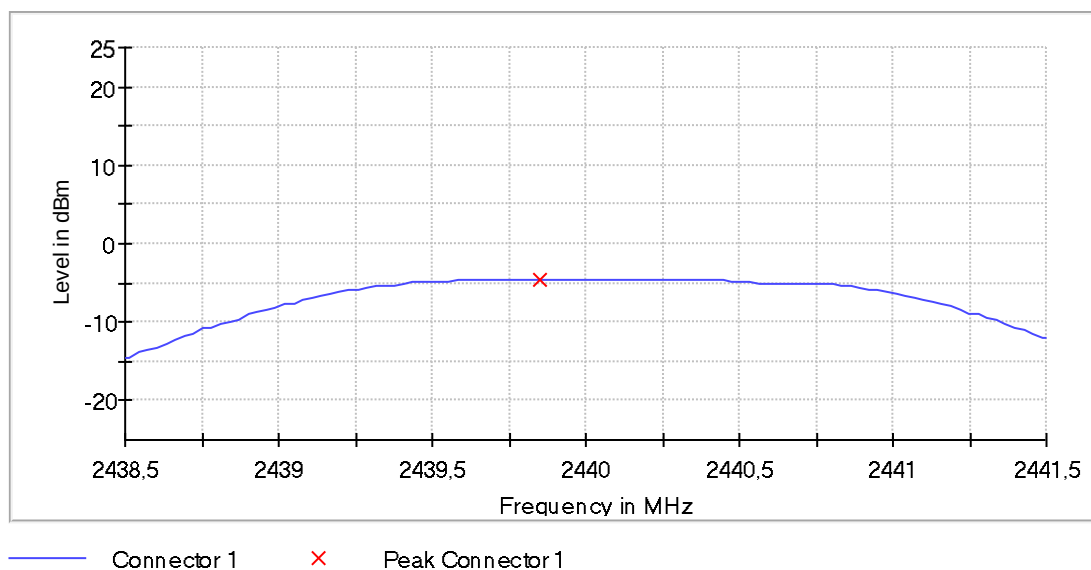
Measurement

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	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
Preamplifier	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) (2440 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

Result

DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2440.000000	-4.5	30.0	PASS



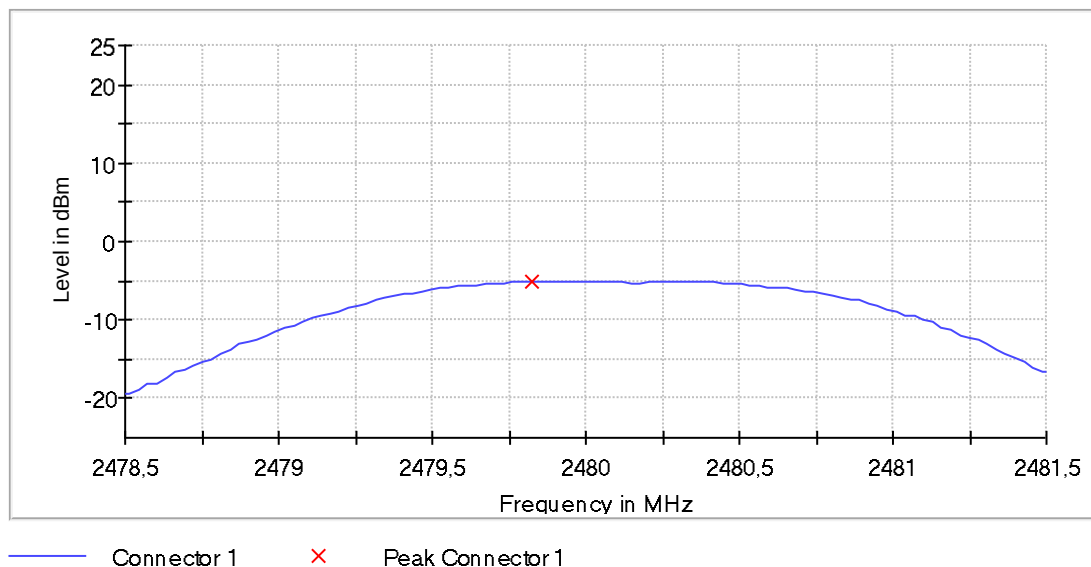
Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43850 GHz	2.43850 GHz
Stop Frequency	2.44150 GHz	2.44150 GHz
Span	3.000 MHz	3.000 MHz
RBW	1.000 MHz	>= 752.477 kHz
VBW	3.000 MHz	>= 3.000 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

Peak output power (Sweep) (2480 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

Result

DUT Frequency (MHz)	Peak Power (dBm)	Limit Max (dBm)	Result
2480.000000	-5.1	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	>= 752.477 kHz
VBW	3.000 MHz	>= 3.000 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	5 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

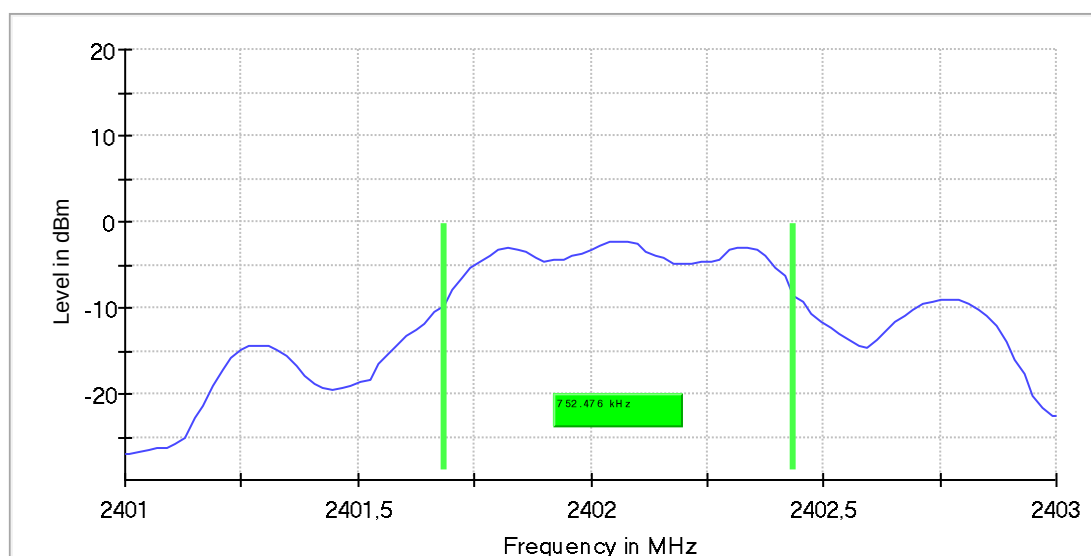
Minimum Emission Bandwidth 6 dB (2402 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	0.752476	0.500000	---	2401.683168	2402.435644

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

DUT Frequency (MHz)	Max Level (dBm)	Result
2402.000000	-2.3	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	101	~ 40
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	12 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.11 dB	0.50 dB

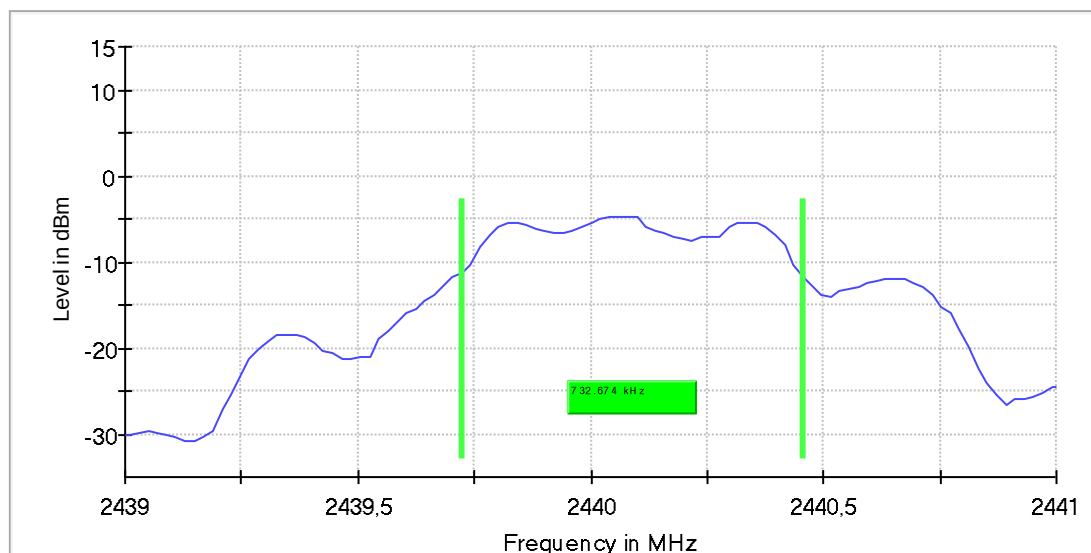
Minimum Emission Bandwidth 6 dB (2440 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	0.732674	0.500000	---	2439.722772	2440.455446

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

DUT Frequency (MHz)	Max Level (dBm)	Result
2440.000000	-4.7	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43900 GHz	2.43900 GHz
Stop Frequency	2.44100 GHz	2.44100 GHz
Span	2.000 MHz	2.000 MHz
RBW	100.000 kHz	~ 100.000 kHz
VBW	300.000 kHz	~ 300.000 kHz
SweepPoints	101	~ 40
SweepTime	1.000 ms	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 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	0.50 dB	0.50 dB
Run	9 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.19 dB	0.50 dB

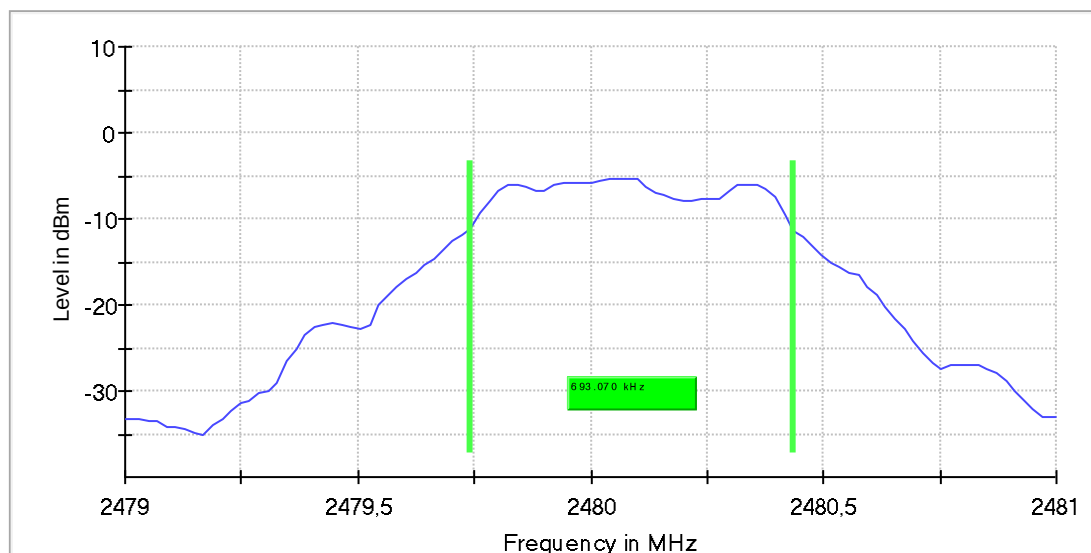
Minimum Emission Bandwidth 6 dB (2480 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

6 dB Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	0.693070	0.500000	---	2479.742574	2480.435644

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

DUT Frequency (MHz)	Max Level (dBm)	Result
2480.000000	-5.2	PASS



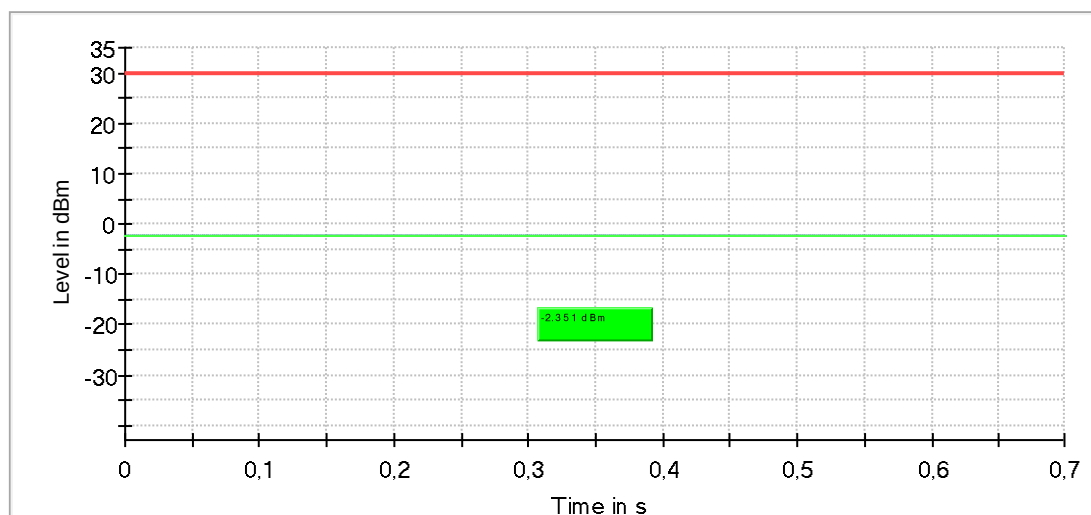
Measurement

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	101	~ 40
SweepTime	1.000 ms	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 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	0.50 dB	0.50 dB
Run	7 / max. 150	max. 150
Stable	5 / 5	5
Max Stable Difference	0.04 dB	0.50 dB

RF output power (2402 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2402.000000	-2.4	30.0	-2.4	69.719	PASS



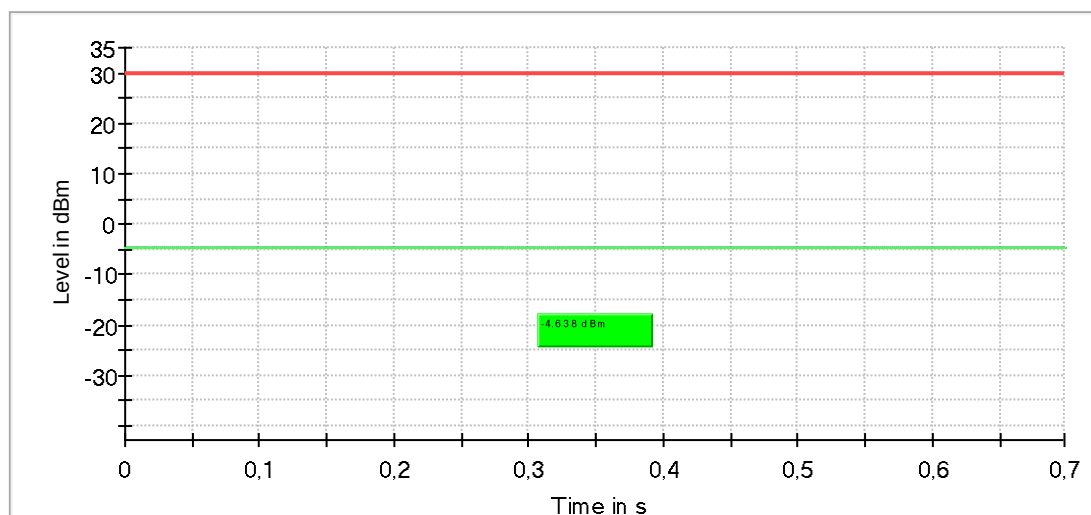
OSP PowerMeter settings

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

RF output power (2440 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2440.000000	-4.6	30.0	-4.6	69.725	PASS



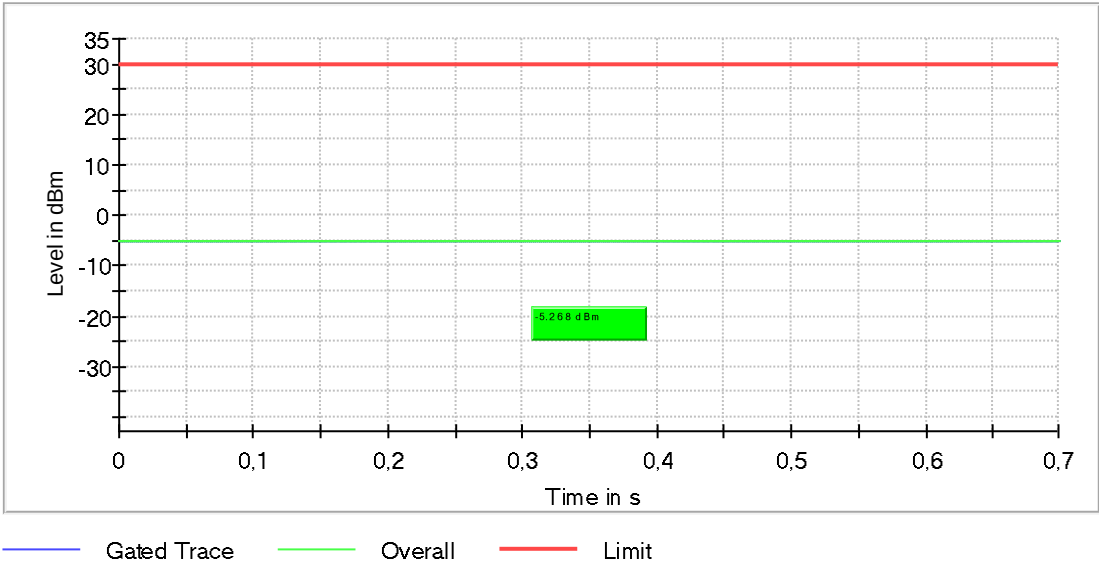
OSP PowerMeter settings

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

RF output power (2480 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

Result

DUT Frequency (MHz)	Gated RMS (dBm)	Limit Max (dBm)	Gated EIRP (dBm)	DutyCycle (%)	Result
2480.000000	-5.3	30.0	-5.3	69.725	PASS



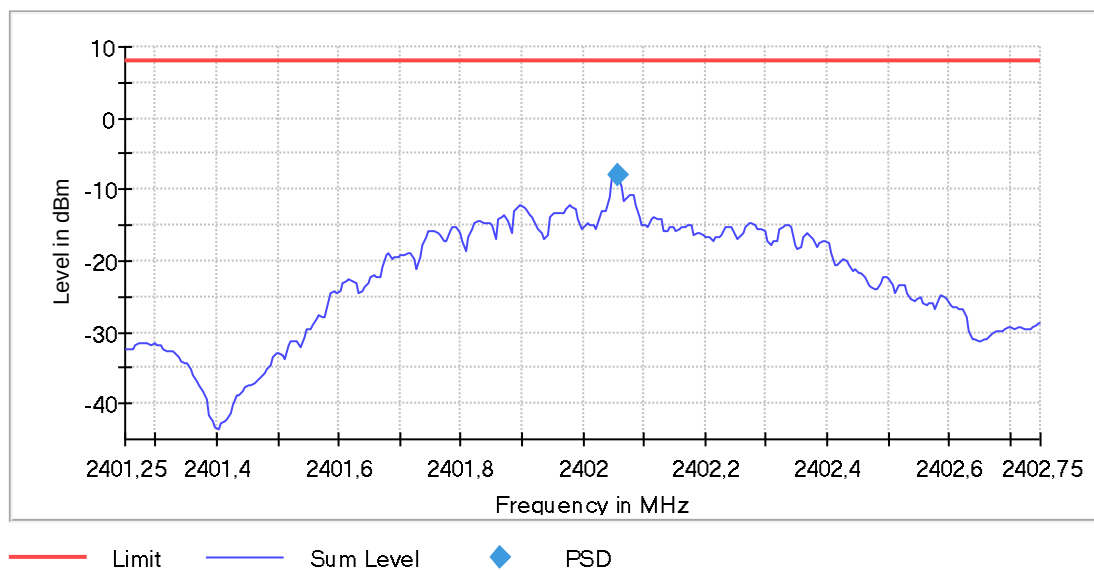
OSP PowerMeter settings

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

Peak Power Spectral Density (2402 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2402.000000	2402.057500	-7.951	8.0	PASS



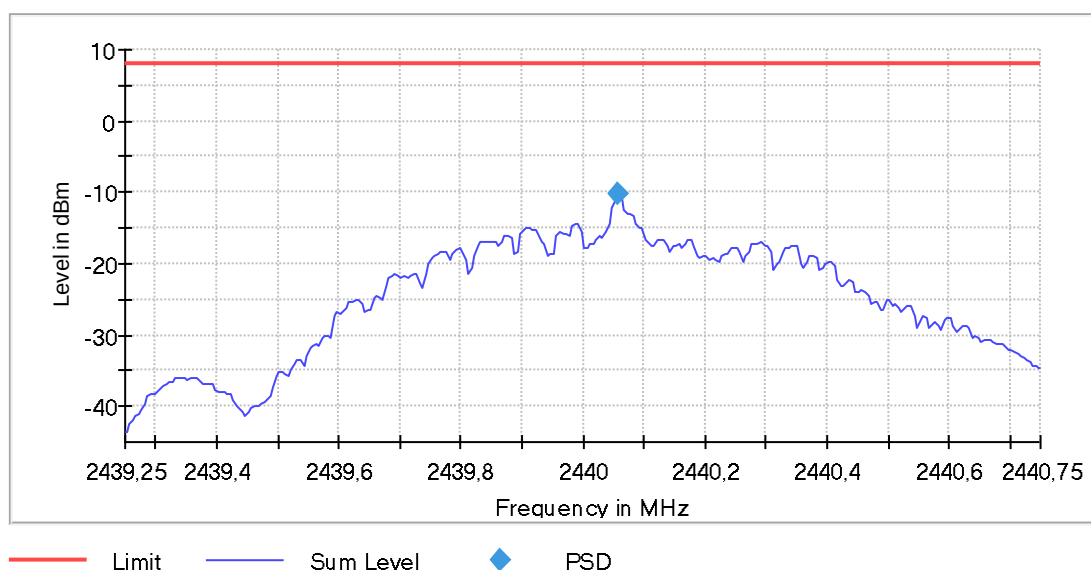
Measurement

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	300	~ 300
SweepTime	1.500 ms	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	Sweep	Sweep
Preamplifier	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	0.32 dB	0.50 dB

Peak Power Spectral Density (2440 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2440.000000	2440.057500	-10.331	8.0	PASS



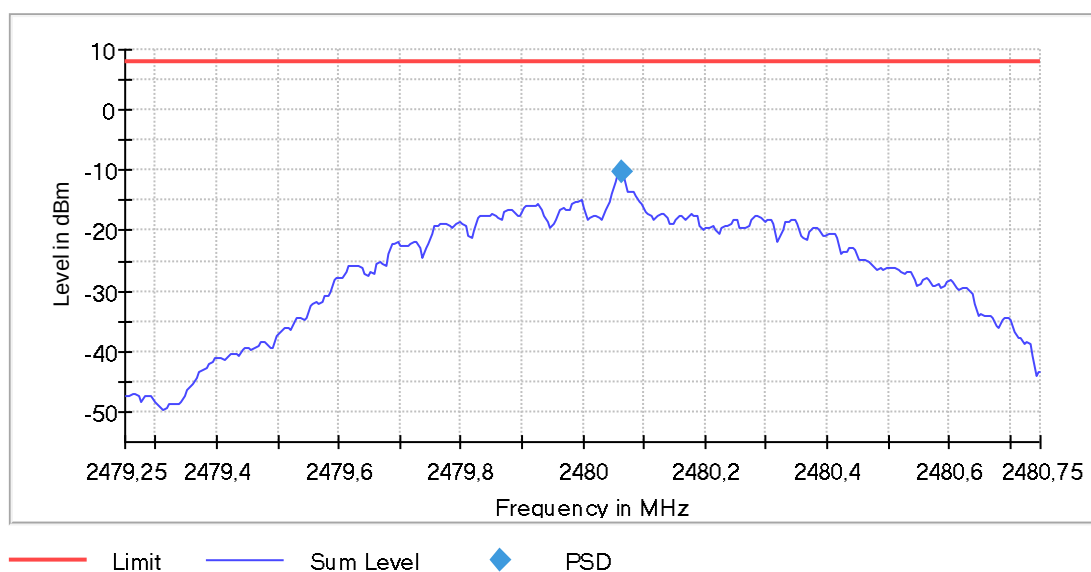
Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43925 GHz	2.43925 GHz
Stop Frequency	2.44075 GHz	2.44075 GHz
Span	1.500 MHz	1.500 MHz
RBW	10.000 kHz	<= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	300	~ 300
SweepTime	1.500 ms	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 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	0.28 dB	0.50 dB

Peak Power Spectral Density (2480 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

Result

DUT Frequency (MHz)	Frequency (MHz)	PSD (dBm)	Limit Max (dBm)	Result
2480.000000	2480.062500	-10.082	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	300	~ 300
SweepTime	1.500 ms	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 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	0.48 dB	0.50 dB

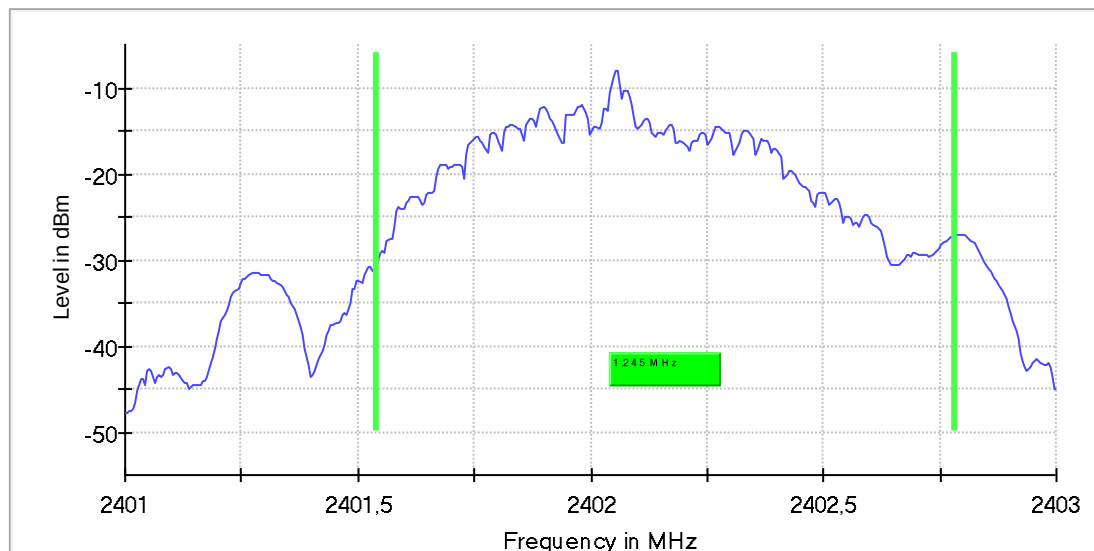
Occupied Channel Bandwidth 99% (2402 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2402.000000	1.245000	---	---	2401.537500	2402.782500

(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	400	~ 400
SweepTime	419.000 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	28 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.26 dB	0.30 dB

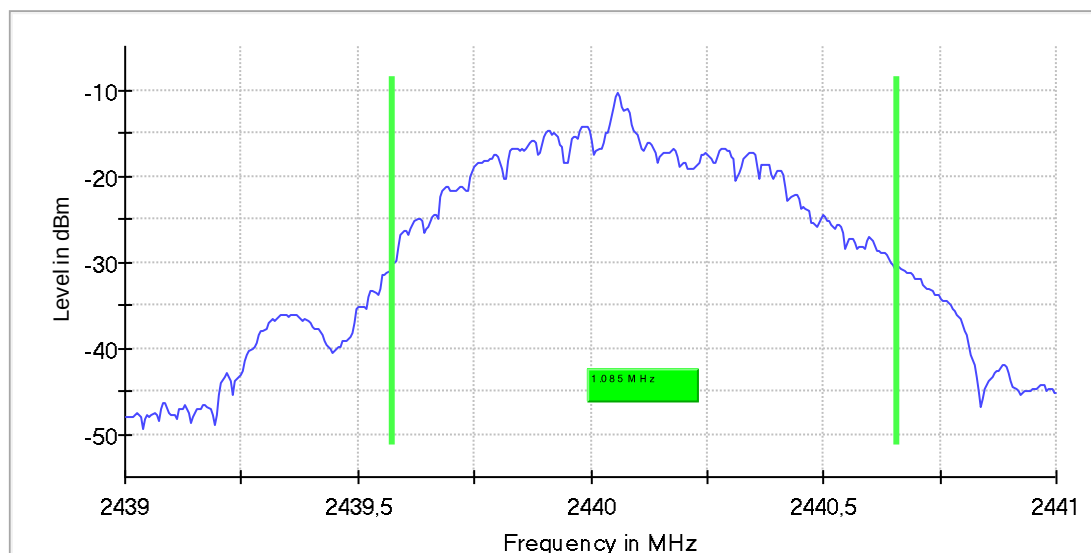
Occupied Channel Bandwidth 99% (2440 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2440.000000	1.085000	---	---	2439.572500	2440.657500

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

DUT Frequency (MHz)	Result
2440.000000	PASS



Measurement

Setting	Instrument Value	Target Value
Start Frequency	2.43900 GHz	2.43900 GHz
Stop Frequency	2.44100 GHz	2.44100 GHz
Span	2.000 MHz	2.000 MHz
RBW	10.000 kHz	>= 10.000 kHz
VBW	30.000 kHz	>= 30.000 kHz
SweepPoints	400	~ 400
SweepTime	419.000 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	27 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.30 dB

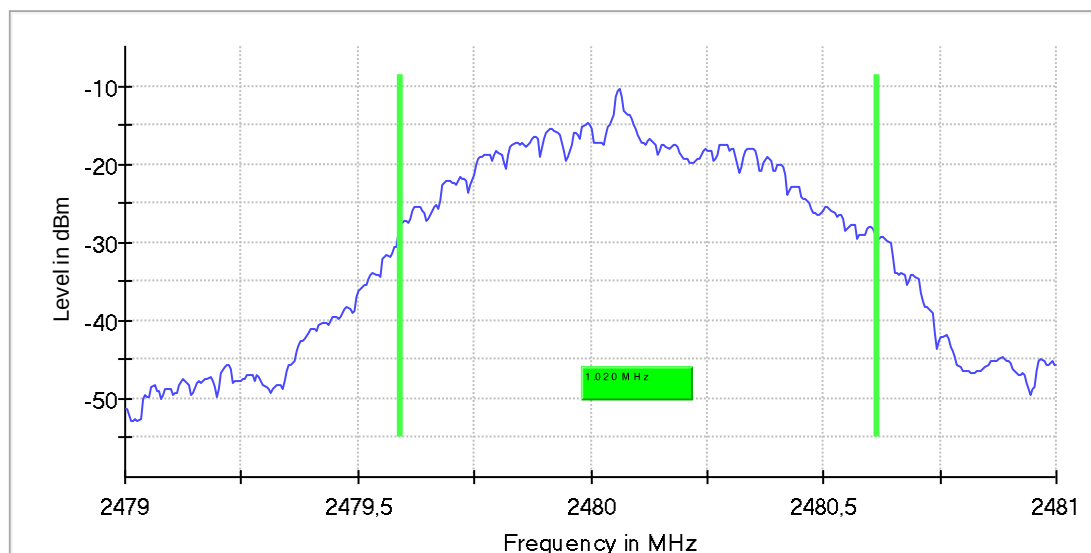
Occupied Channel Bandwidth 99% (2480 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

99 % Bandwidth

DUT Frequency (MHz)	Bandwidth (MHz)	Limit Min (MHz)	Limit Max (MHz)	Band Edge Left (MHz)	Band Edge Right (MHz)
2480.000000	1.020000	---	---	2479.592500	2480.612500

(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	400	~ 400
SweepTime	419.000 µs	AUTO
Reference Level	-10.000 dBm	-10.000 dBm
Attenuation	0.000 dB	AUTO
Detector	MaxPeak	MaxPeak
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Max Hold	Max Hold
SweepType	FFT	AUTO
Preamp	off	off
Stablemode	Trace	Trace
Stablevalue	0.30 dB	0.30 dB
Run	21 / max. 150	max. 150
Stable	3 / 3	3
Max Stable Difference	0.12 dB	0.30 dB

Tx Spurious Emission (2402 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

Result

DUT Frequency (MHz)	Result
2402.000000	PASS

Final measurements

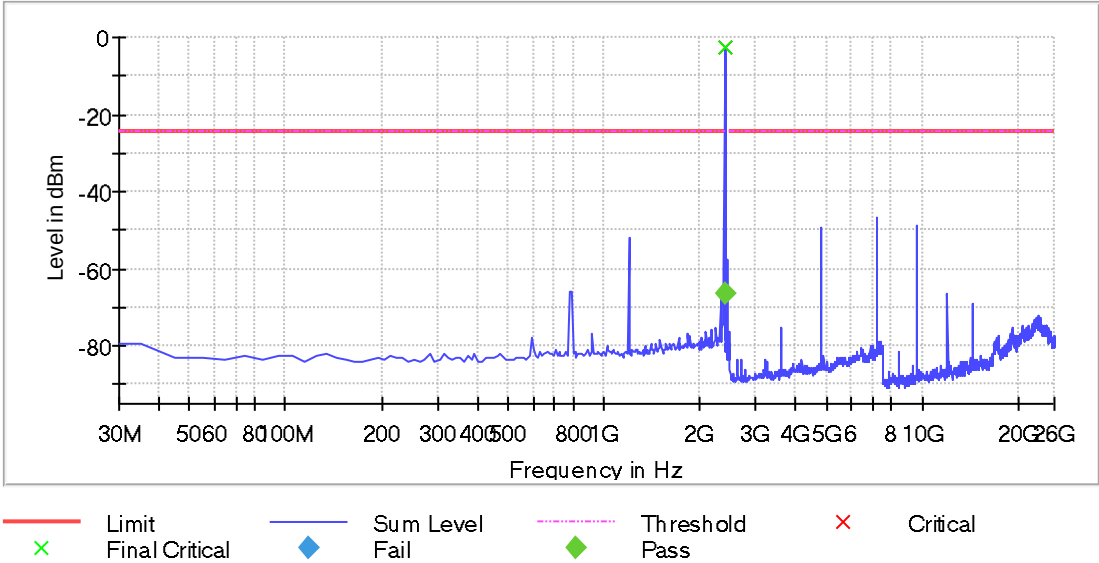
Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
2399.958664	-4.6	-66.7	-24.3	42.4	PASS

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
2395.021008	-2.6	-21.7	-24.3
7205.789099	-46.7	22.4	-24.3
9604.412133	-48.6	24.2	-24.3
4807.166065	-49.3	24.9	-24.3
1200.063025	-51.8	27.4	-24.3
9614.406396	-53.8	29.4	-24.3
2385.063025	-60.9	36.5	-24.3
791.785714	-65.8	41.5	-24.3
781.827731	-66.0	41.7	-24.3
12013.029431	-66.5	42.2	-24.3
2325.315126	-67.5	43.1	-24.3
14411.652465	-69.0	44.6	-24.3
2375.105042	-69.8	45.5	-24.3
23116.655227	-72.0	47.6	-24.3
2365.147059	-72.4	48.0	-24.3

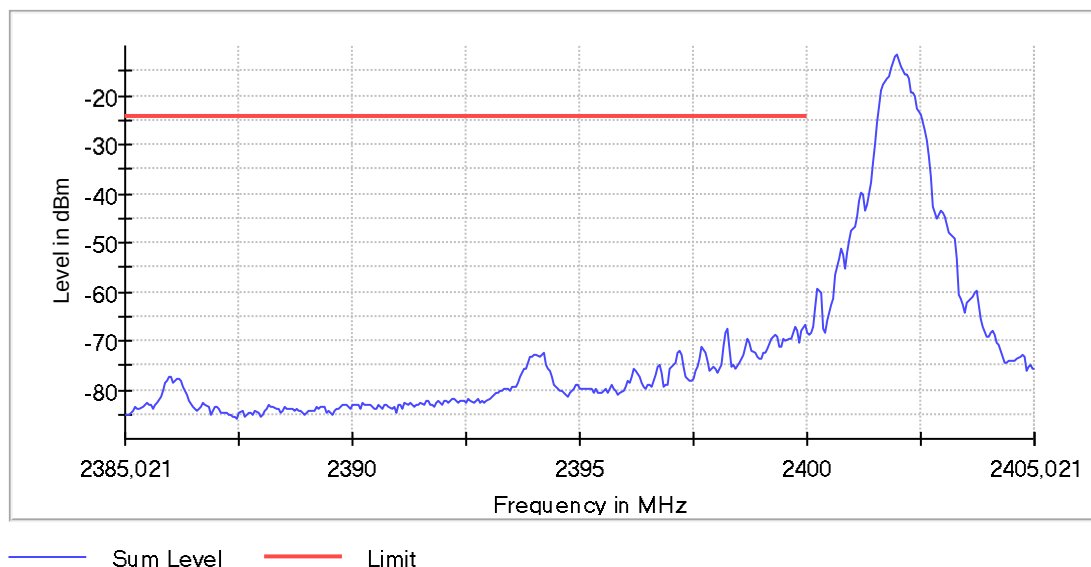
Measurement Settings

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



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	-20.000 dBm	-30.000 dBm
Attenuation	10.000 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	6 / max. 40	max. 40
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB



Final Measurement 1

Setting	Instrument Value	Target Value
RBW	100.000 kHz	≤ 100.000 kHz
VBW	300.000 kHz	≥ 300.000 kHz
SweepPoints	401	~ 401
SweepTime	1.010 ms	AUTO
Reference Level	0.000 dBm	0.000 dBm
Attenuation	10.000 dB	AUTO
Detector	Sample	Sample
SweepCount	100	100
Filter	3 dB	3 dB
Trace Mode	Average Linear	Average Linear
SweepType	Sweep	AUTO
Preamplifier	off	off

Tx Spurious Emission (2440 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

Result

DUT Frequency (MHz)	Result
2440.000000	PASS

Final measurements

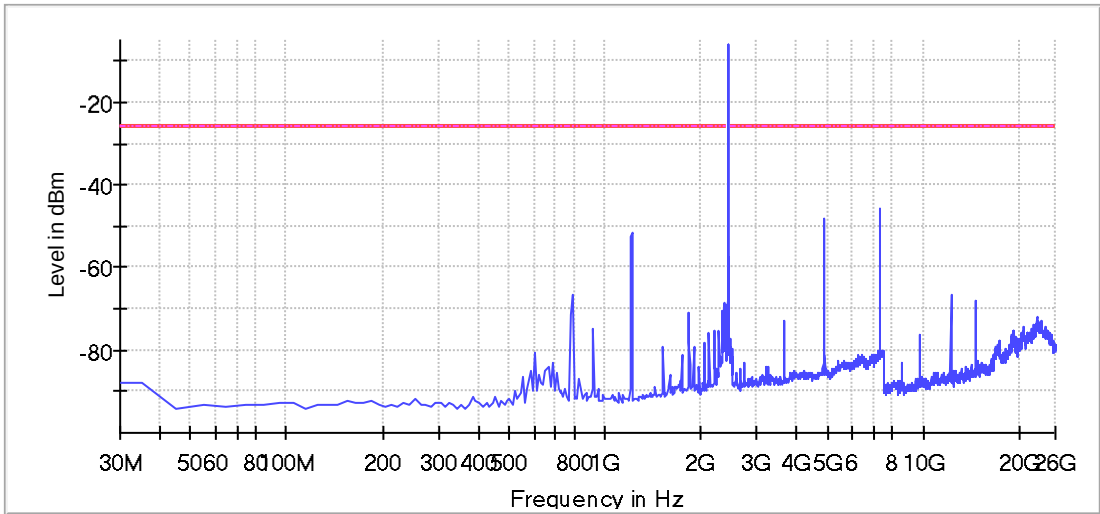
Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
7315.725988	-46.0	20.1	-25.8
7325.720251	-48.0	22.2	-25.8
4877.125903	-48.2	22.4	-25.8
1219.978992	-51.5	25.7	-25.8
1210.021008	-52.3	26.4	-25.8
12202.920421	-66.6	40.7	-25.8
791.785714	-66.7	40.8	-25.8
14641.520506	-68.1	42.3	-25.8
2355.189076	-68.3	42.5	-25.8
2335.273109	-70.5	44.7	-25.8
1827.415966	-70.9	45.1	-25.8
781.827731	-71.4	45.5	-25.8
22676.907671	-72.1	46.2	-25.8
22806.833085	-72.7	46.8	-25.8
3657.825861	-72.8	47.0	-25.8

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



— Limit — Sum Level Threshold × Critical × Final Critical

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
Preamplifier	off	off
Stablemode	Trace	Trace
Stablevalue	0.50 dB	0.50 dB
Run	6 / max. 40	max. 40
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

Tx Spurious Emission (2480 MHz; BT_LE[GFSK] (10 dBm); 1 MHz)

Result

DUT Frequency (MHz)	Result
2480.000000	PASS

Final measurements

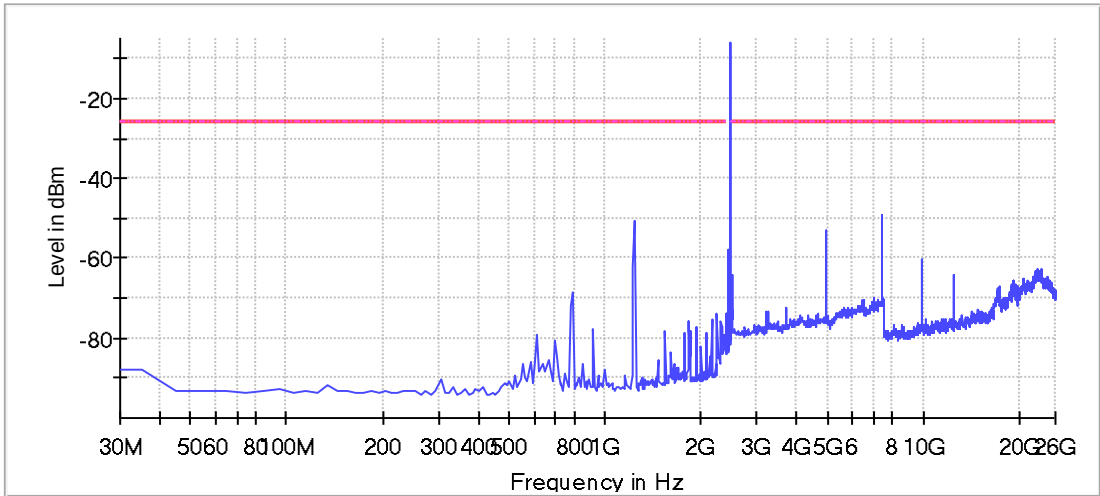
Frequency (MHz)	Level Pre Measurement (dBm)	level (dBm)	Limit (dBm)	Margin (dB)	Result
---	---	---	---	---	---

Pre Measurements

Frequency (MHz)	Level (dBm)	Margin (dB)	Limit (dBm)
7445.651402	-48.9	23.2	-25.8
7435.657140	-49.3	23.6	-25.8
1239.894958	-50.5	24.7	-25.8
4957.080004	-53.2	27.5	-25.8
9924.228538	-60.3	34.6	-25.8
1229.936975	-62.1	36.4	-25.8
22966.741288	-62.5	36.8	-25.8
23576.391309	-62.9	37.1	-25.8
22836.815873	-62.9	37.2	-25.8
23366.511793	-63.1	37.3	-25.8
23076.678177	-63.1	37.4	-25.8
23556.402784	-63.3	37.5	-25.8
22536.987994	-63.3	37.6	-25.8
23026.706864	-63.4	37.6	-25.8
22766.856035	-63.4	37.6	-25.8

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



— Limit — Sum Level — Threshold × Critical × Final Critical

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	4 / max. 40	max. 40
Stable	3 / 3	3
Max Stable Difference	0.00 dB	0.50 dB

End Of Annex 1