

Prüfbericht - Nr.: 50332845 001

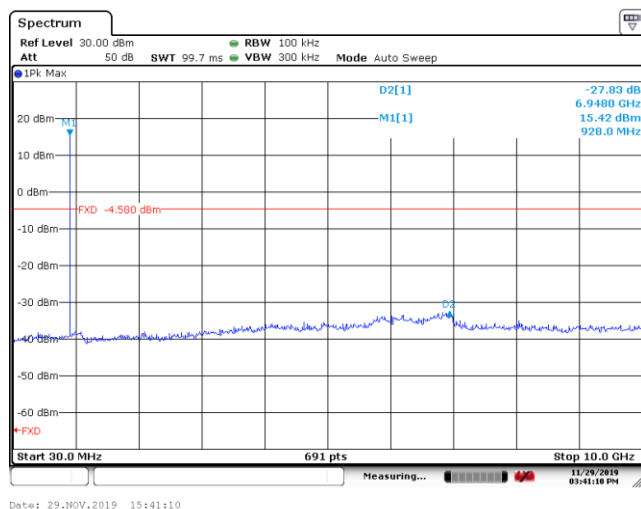
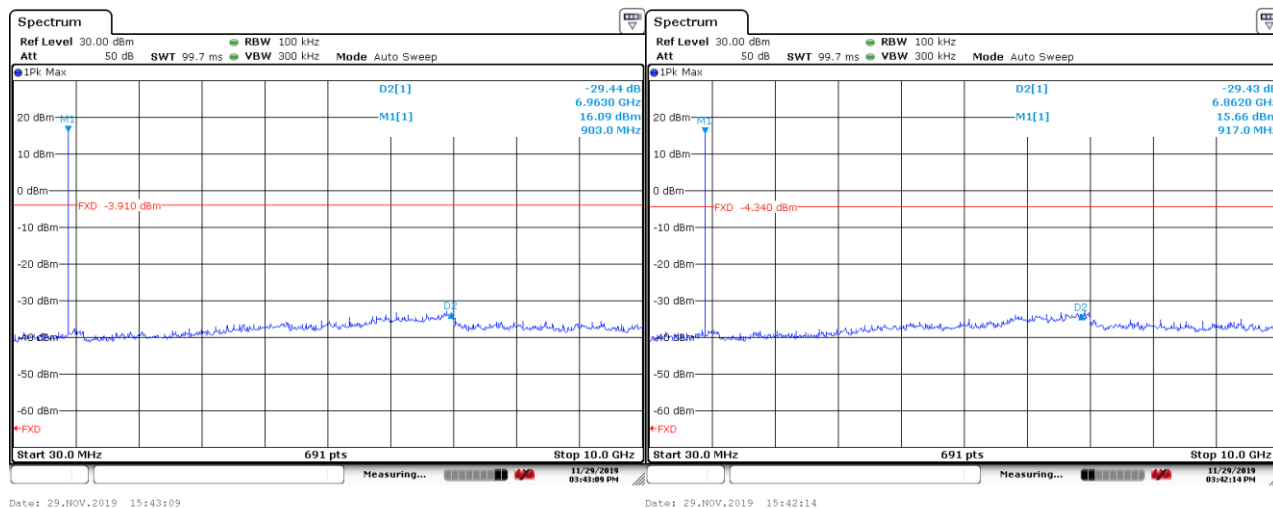
Test Report No.:

Seite 36 von 81

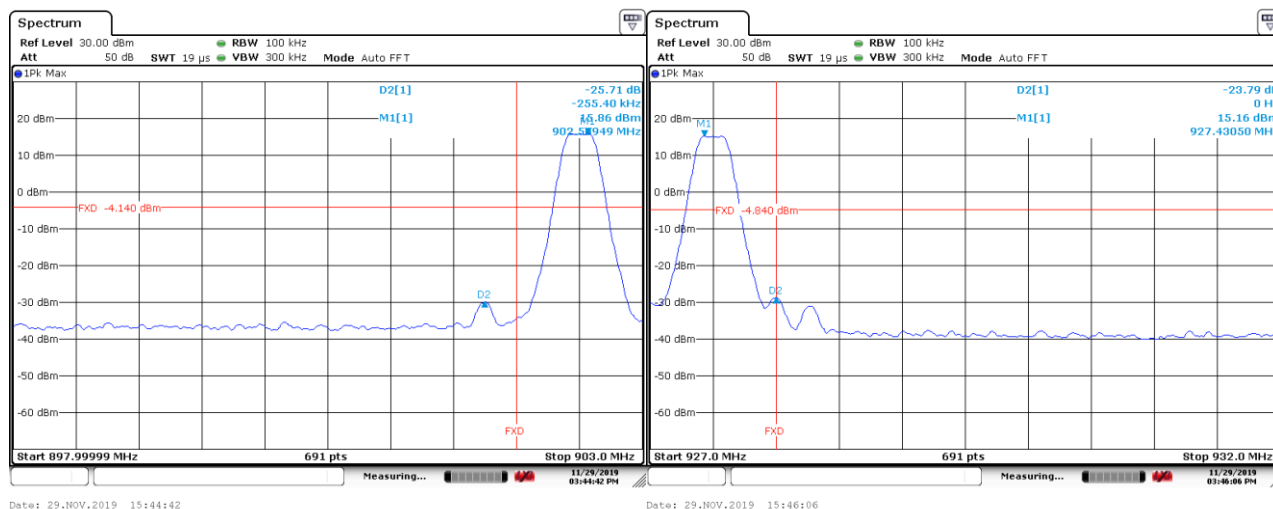
Page 36 of 81

6. FSK 250Kbps FHSS, Conducted Spurious Emission and Band edge, 902.5MHz~927.5MHz

Conducted Spurious Emission

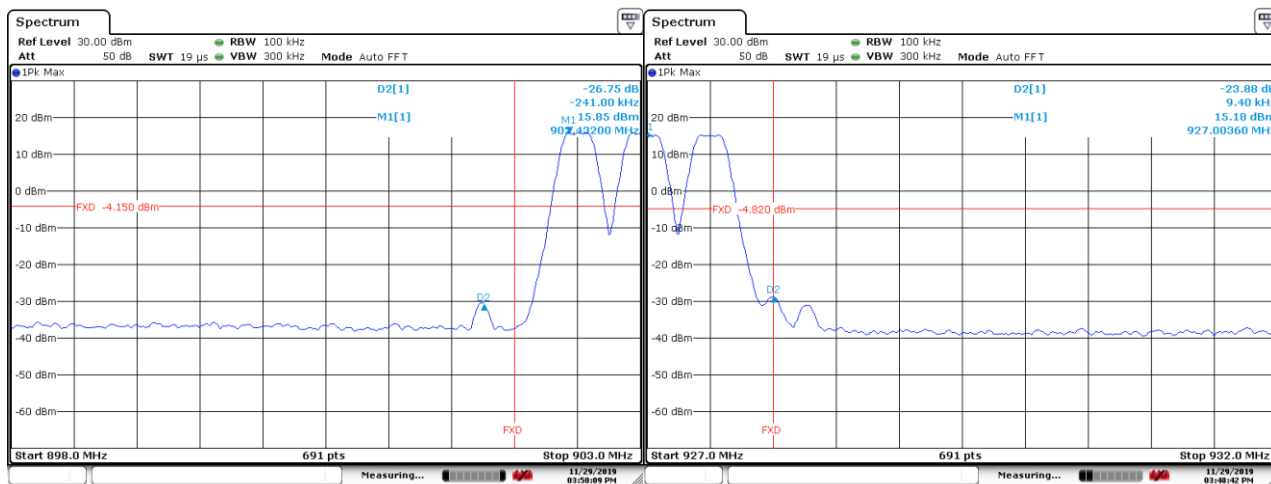


Band edge



Prüfbericht - Nr.: 50332845 001
Test Report No.:

Seite 37 von 81
Page 37 of 81



4.1.8 Carrier Separation Measurement

Result:

Pass

Test Specification

Test standard : FCC Part 15.247(a)(1)
RSS-247 Issue 2 February 2017 Clause 5.1(b)

Basic standard : ANSI C63.10: 2013

Limits : At least 20 dB bandwidth or 25kHz, whichever is greater.

Kind of test site : Shielded Room

Test Setup

Date of testing : 27.12.2019~29.12.2019

Input voltage : DC 3.65V

Operational mode : Test mode of LoRa FHSS, FSK FHSS

Temperature : 20°C

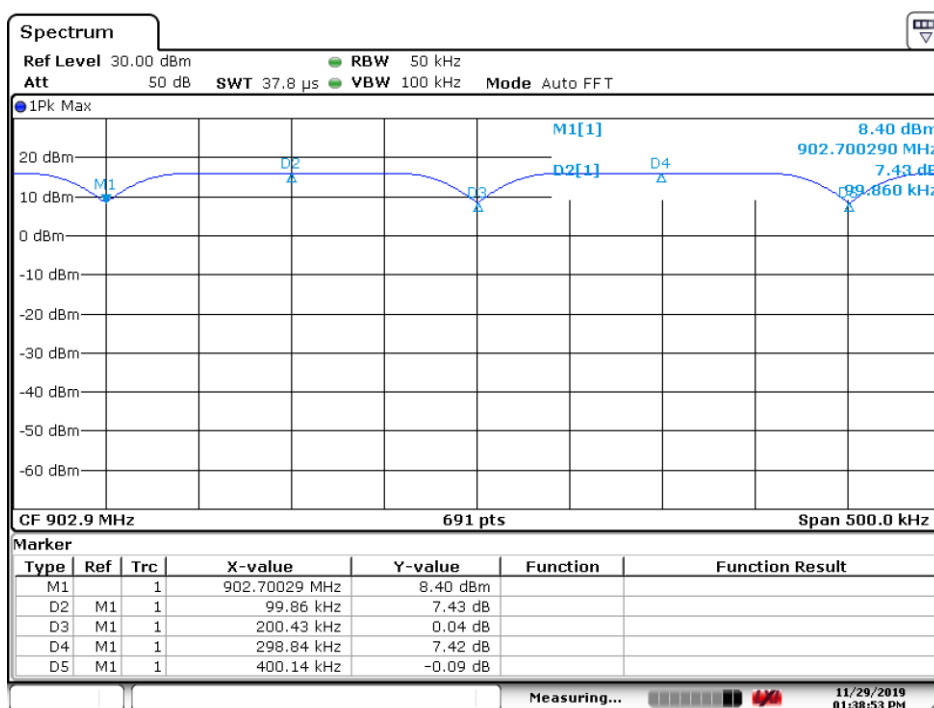
Relative humidity : 58%

Atmospheric pressure : 101 kPa

Figure 6: Carrier Separation

- 125KHz FHSS, Carrier Separation, 902.2MHz~927.8MHz

Carrier Separation: 198.98KHz > 20 dB bandwidth



Prüfbericht - Nr.: 50332845 001

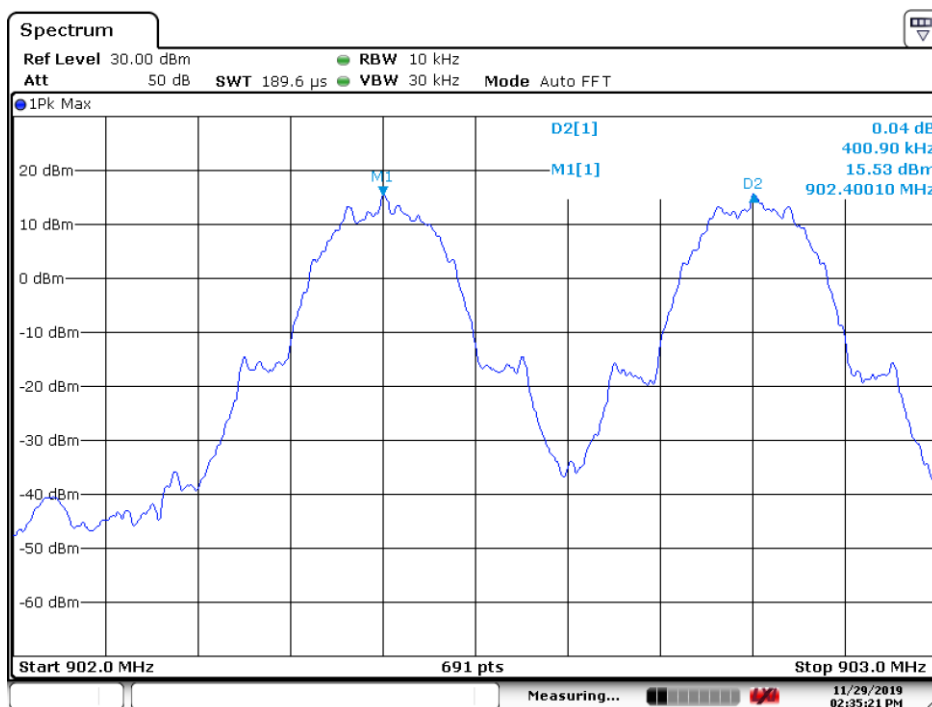
Test Report No.:

Seite 39 von 81

Page 39 of 81

2. FSK 150Kbps FHSS, Carrier Separation, 902.4MHz~927.6MHz

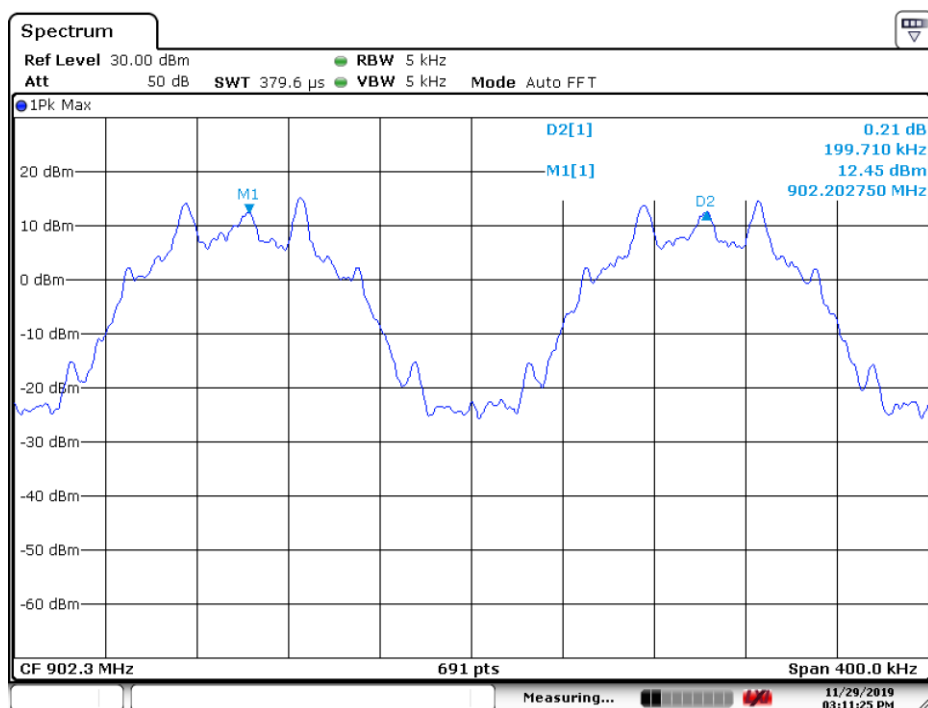
Carrier Separation: 400.90KHz > 20 dB bandwidth



Date: 29.NOV.2019 14:35:21

3. FSK 50Kbps FHSS, Carrier Separation, 902.2MHz~927.8MHz

Carrier Separation: 199.71KHz > 20 dB bandwidth



Date: 29.NOV.2019 15:11:25

Prüfbericht - Nr.: 50332845 001

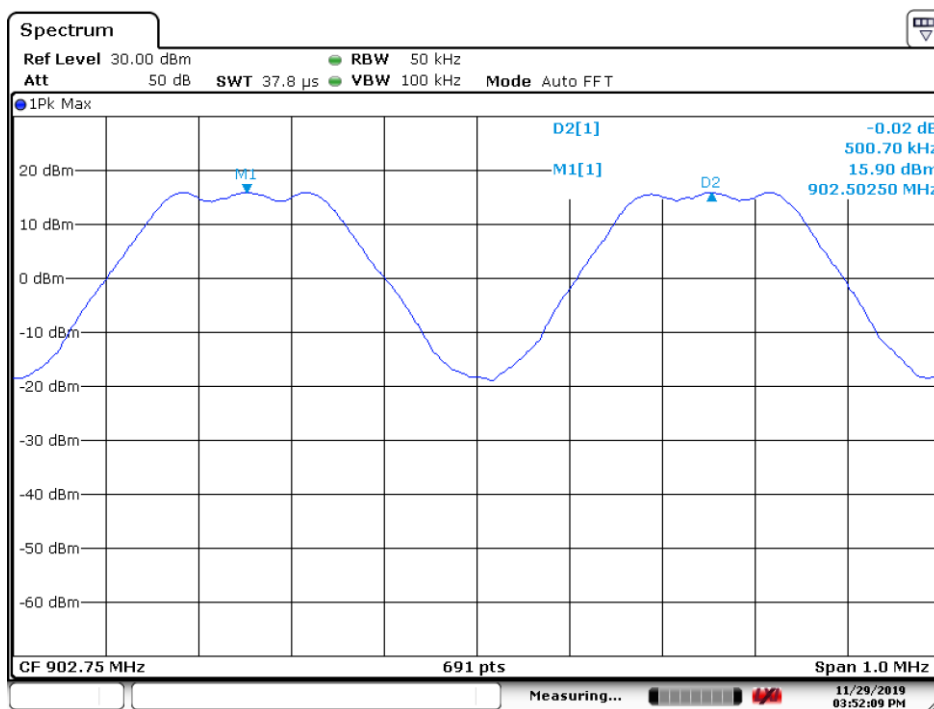
Test Report No.:

Seite 40 von 81

Page 40 of 81

4. FSK 250Kbps FHSS, Carrier Separation, 902.5MHz~927.5MHz

Carrier Separation: 500.70KHz > 20 dB bandwidth



Date: 29.NOV.2019 15:52:09

4.1.9 The number of hopping channels

Result:

Pass

Test Specification

Test standard : FCC Part 15.247(g)
RSS-247 Issue 2 February 2017 Clause 5.1(c)

Basic standard : ANSI C63.10: 2013

Limits : At least 50 (for LoRa 125KHz, FSK150, FSK50 FHSS)
At least 25 (for FSK250 FHSS)

Kind of test site : Shielded Room

Test Setup

Date of testing : 27.12.2019~29.12.2019

Input voltage : DC 3.65V

Operational mode : Test mode of LoRa FHSS, FSK FHSS

Temperature : 20°C

Relative humidity : 58%

Atmospheric pressure : 101 kPa

Table 7: Test result of hopping channel number for LoRa FHSS and FSK FHSS

Modulation Type and Operation band	20dB Bandwidth(KHz)	Channel Number	Limit	Result
LoRa 125KHz FHSS 902.2MHz~927.8MHz	20dB Bandwidth < 250	129	50	Pass
FSK 150Kbps FHSS 902.4MHz~927.6MHz	20dB Bandwidth < 250	64	50	Pass
FSK 50Kbps FHSS 902.2MHz~927.8MHz	20dB Bandwidth < 250	129	50	Pass
FSK 250Kbps FHSS 902.5MHz~927.5MHz	$250 \leq 20\text{dB Bandwidth} < 500$	51	25	Pass

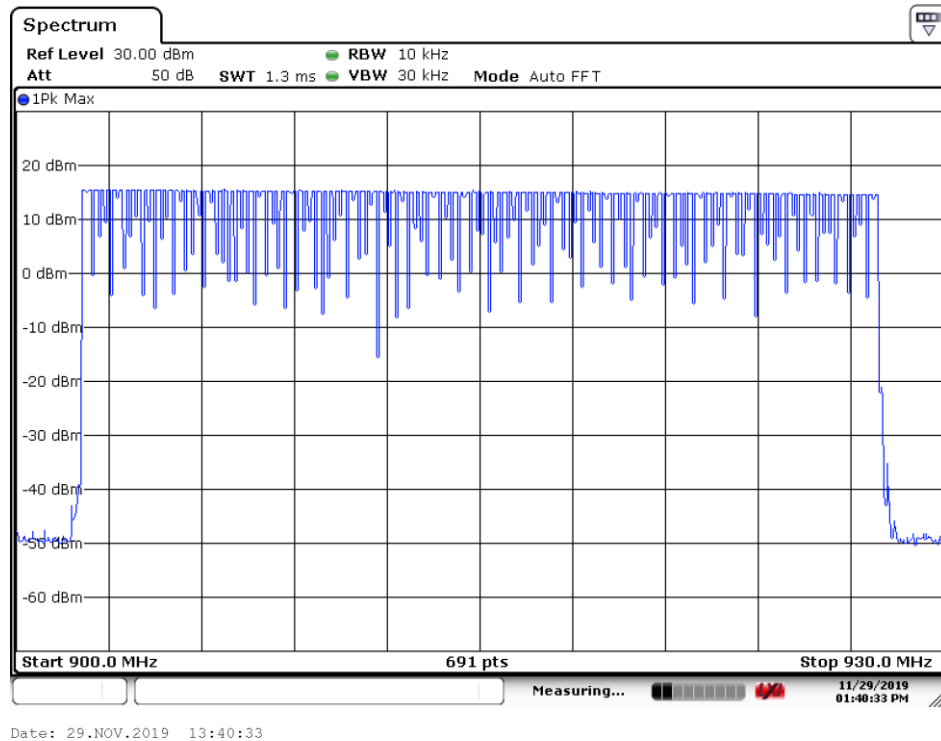
Prüfbericht - Nr.: 50332845 001
Test Report No.:

Seite 42 von 81
Page 42 of 81

Figure 7: The number of hopping channels

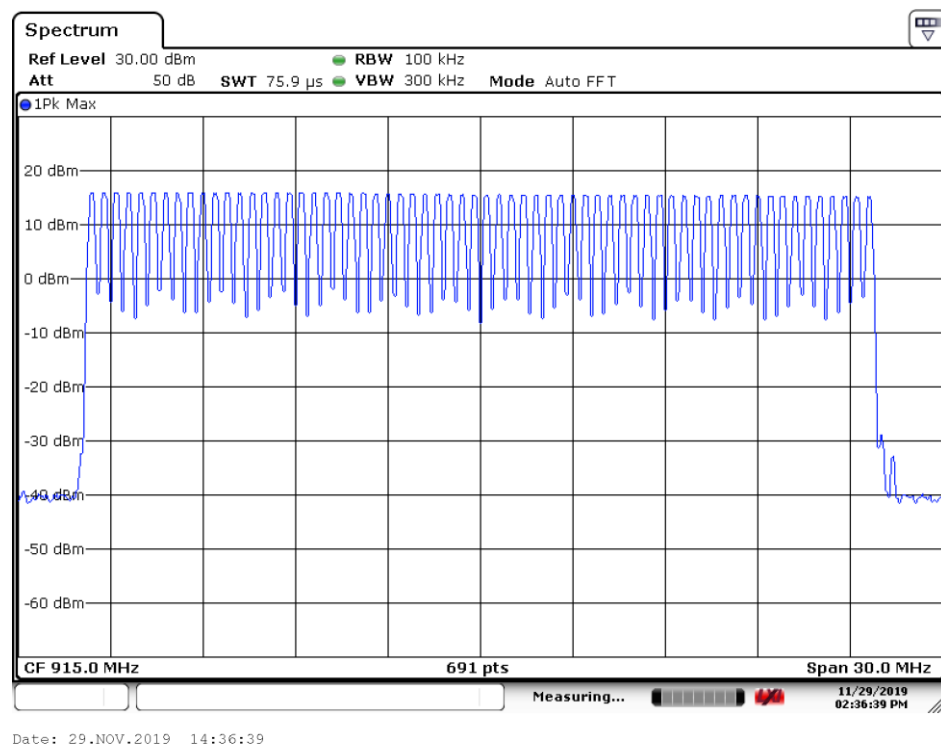
1. LoRa 125KHz FHSS, 902.2MHz~927.8MHz

Channel Number: 129



2. FSK 150Kbps FHSS, 902.4MHz~927.6MHz

Channel Number: 64



Prüfbericht - Nr.: 50332845 001

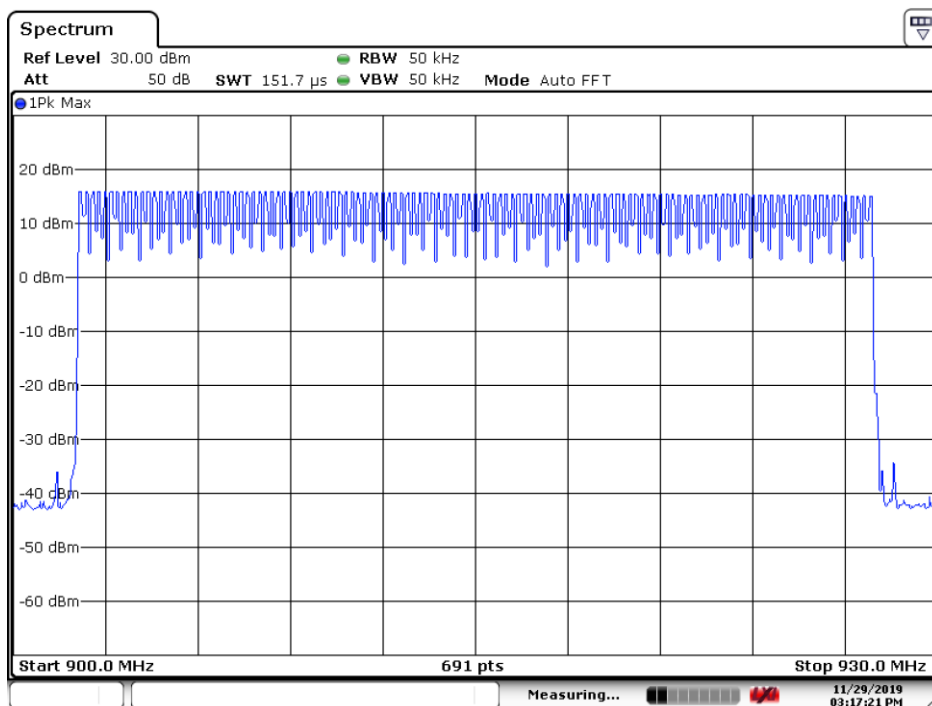
Test Report No.:

Seite 43 von 81

Page 43 of 81

3. FSK 50Kbps FHSS, 902.2MHz~927.8MHz

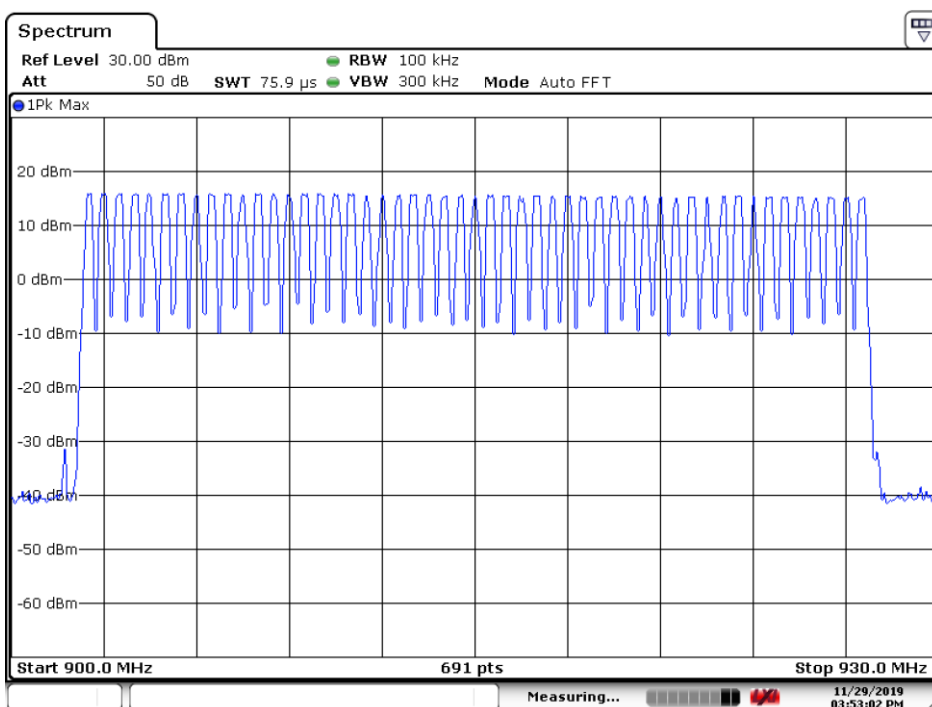
Channel Number: 129



Date: 29.NOV.2019 15:17:21

4. FSK 250Kbps FHSS, 902.5MHz~927.5MHz

Channel Number: 51



Date: 29.NOV.2019 15:53:01

Prüfbericht - Nr.: 50332845 001
Test Report No.:

Seite 44 von 81
Page 44 of 81

4.1.10 Dwell Time

Result:

Pass

Test Specification

Test standard : FCC Part 15.247(f)
RSS-247 Issue 2 February 2017 Clause 5.1(c)

Basic standard : ANSI C63.10: 2013

Limits : Not more than 0.4s

Kind of test site : Shielded Room

Test Setup

Date of testing : 21.11.2019~25.12.2019

Input voltage : AC 120V, 60Hz

Operational mode : Test mode of LoRa FHSS, FSK FHSS

Temperature : 20.1°C

Relative humidity : 57%

Atmospheric pressure : 101 kPa

Table 8: Test result of Dwell time for LoRa FHSS and FSK FHSS

Modulation Type and Operation band	20dB Bandwidth(KHz)	Period (s)	Dwell time(s)	Limit (s)	Result
LoRa 125KHz FHSS 902.2MHz~927.8MHz	20dB Bandwidth < 250	20	0.34493	0.4	Pass
FSK 150Kbps FHSS 902.4MHz~927.6MHz	20dB Bandwidth < 250	20	0.30725	0.4	Pass
FSK 50Kbps FHSS 902.2MHz~927.8MHz	20dB Bandwidth < 250	20	0.27971	0.4	Pass
FSK 250Kbps FHSS 902.5MHz~927.5MHz	250 ≤ 20dB Bandwidth < 500	10	0.31159	0.4	Pass

Prüfbericht - Nr.: 50332845 001

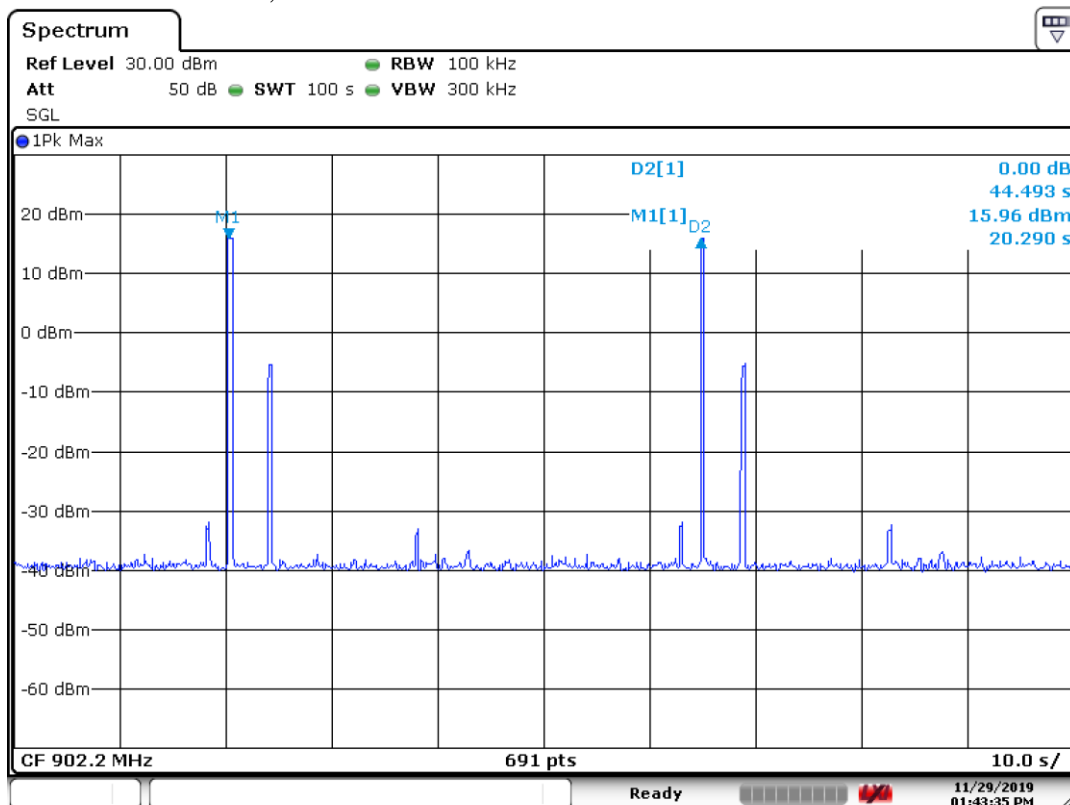
Test Report No.:

Seite 45 von 81

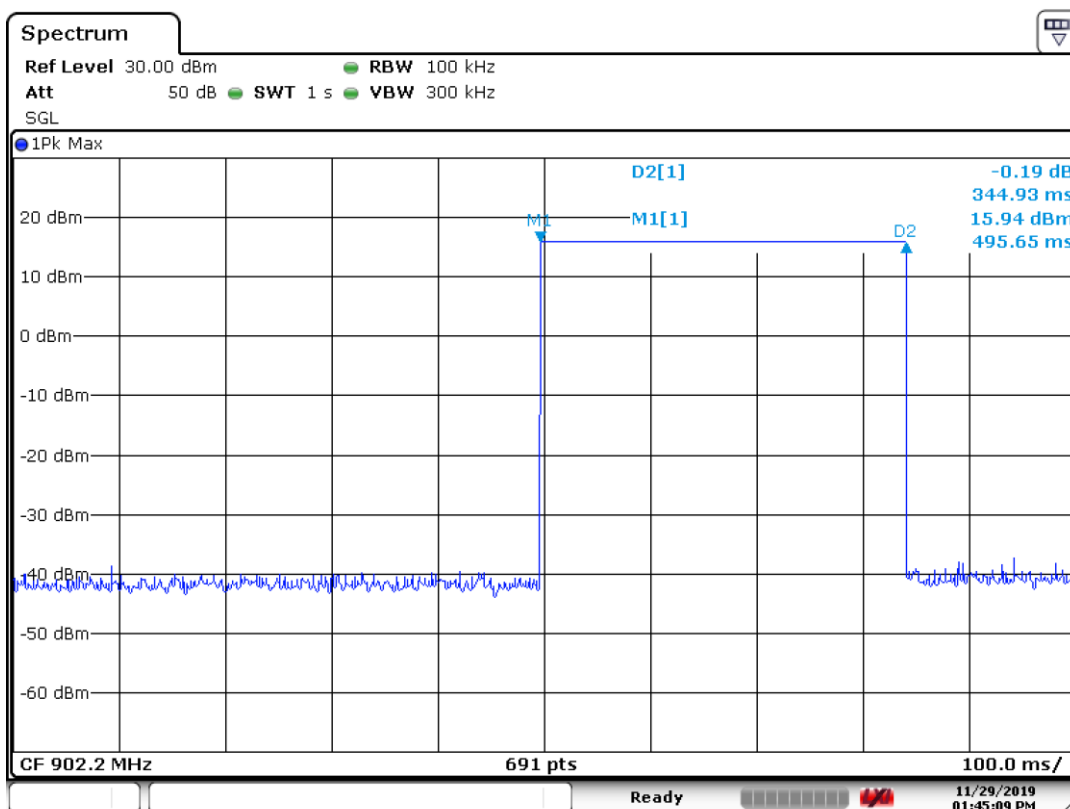
Page 45 of 81

Figure 8: Dwell time

1. LoRa 125KHz FHSS, 902.2MHz~927.8MHz



Date: 29.NOV.2019 13:43:36

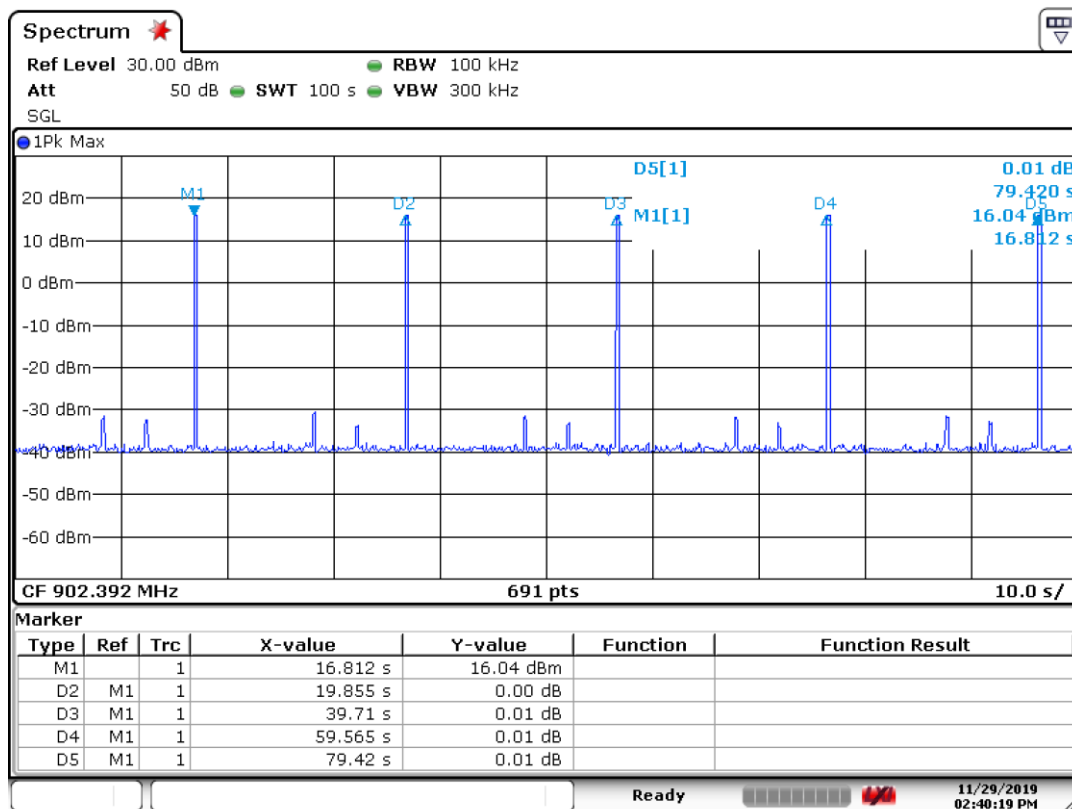


Date: 29.NOV.2019 13:45:10

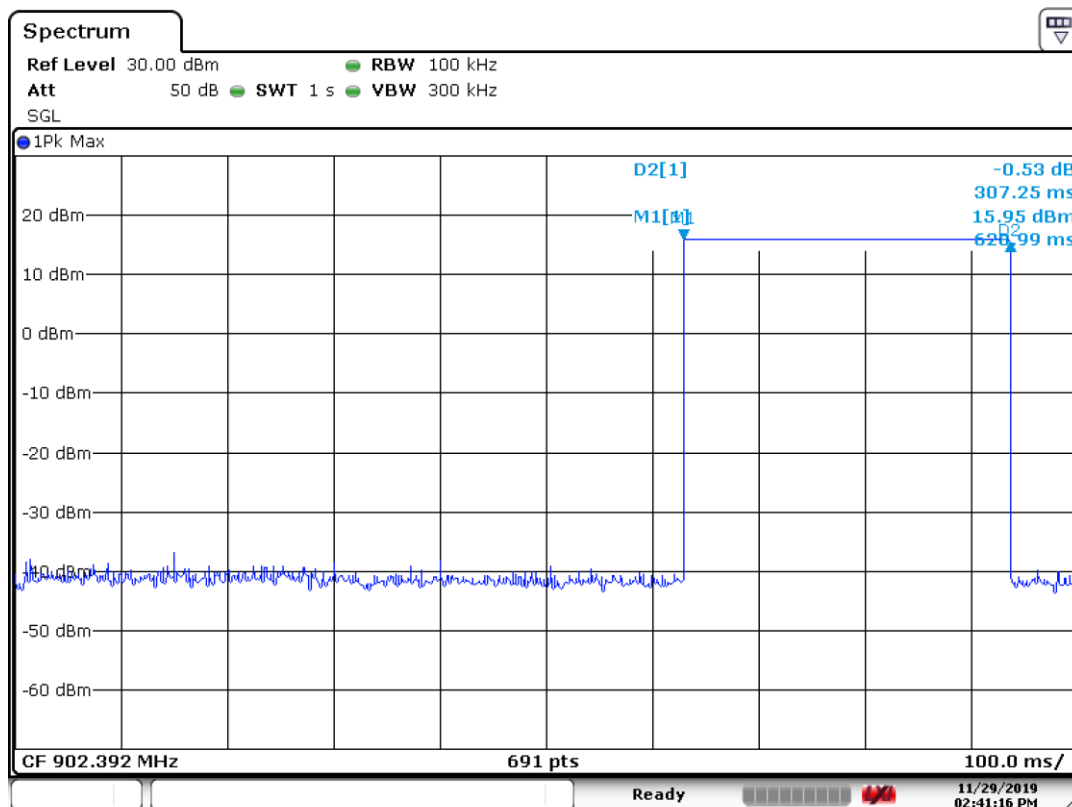
Prüfbericht - Nr.: 50332845 001
Test Report No.:

Seite 46 von 81
Page 46 of 81

2. FSK 150Kbps FHSS, 902.4MHz~927.6MHz



Date: 29.NOV.2019 14:40:19

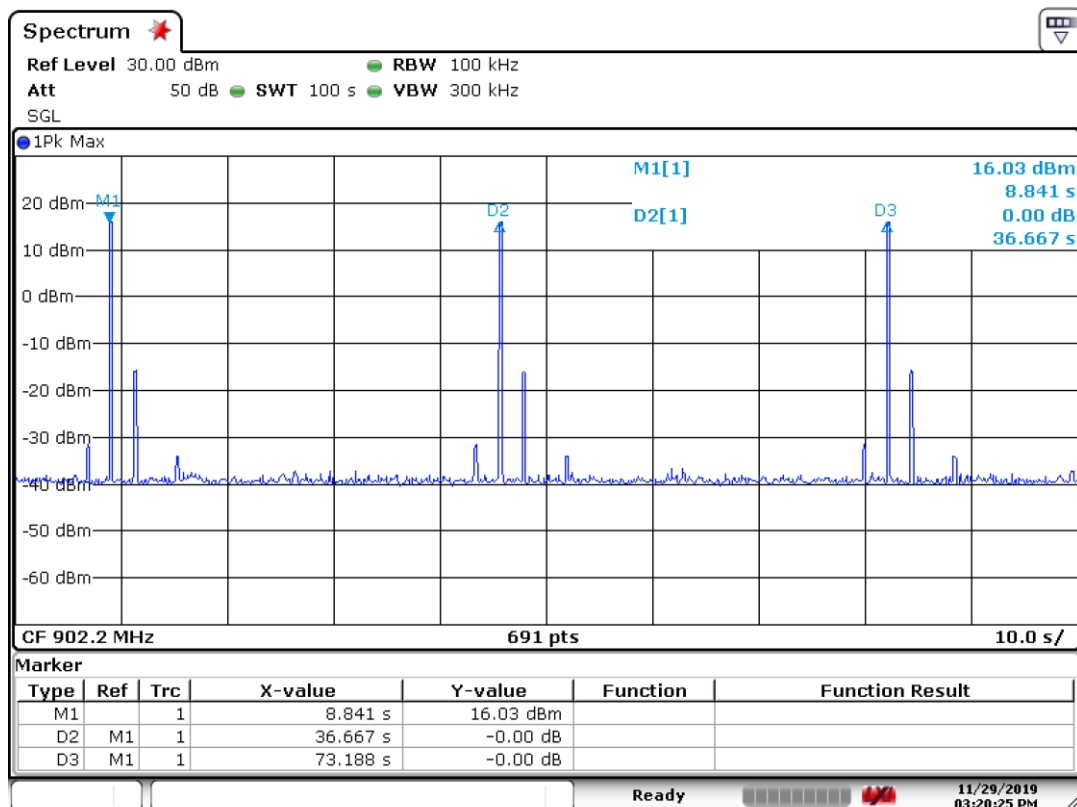


Date: 29.NOV.2019 14:41:16

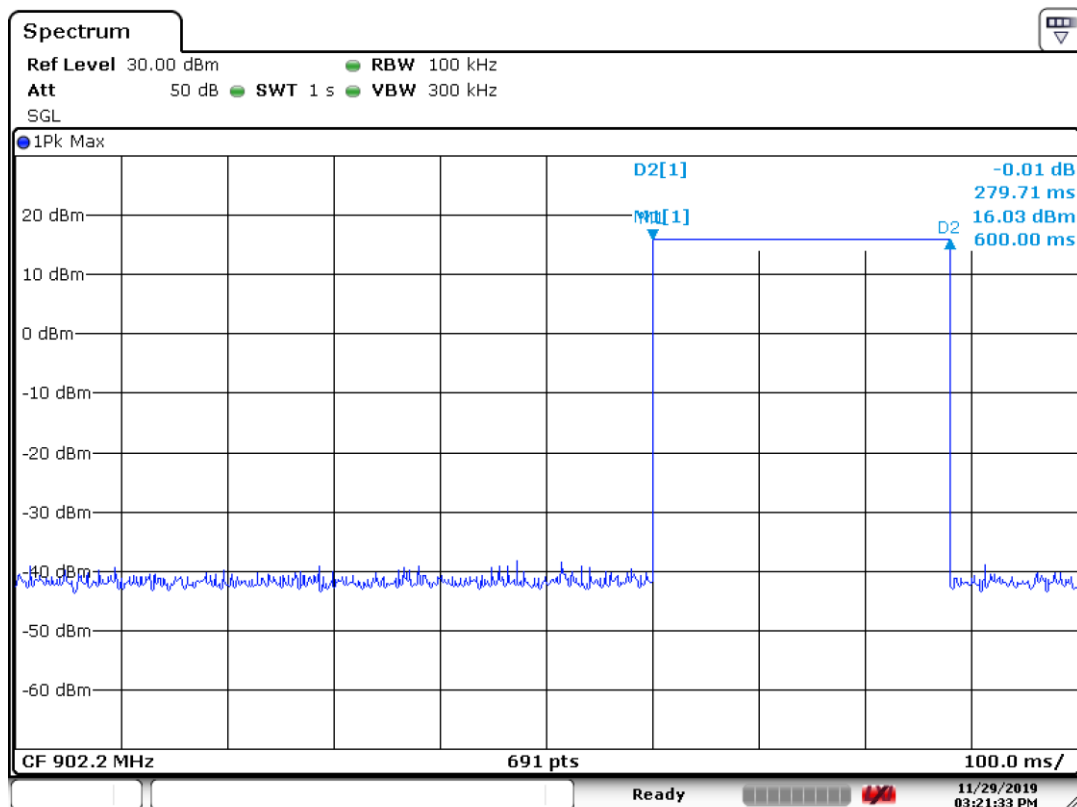
Prüfbericht - Nr.: 50332845 001
Test Report No.:

Seite 47 von 81
Page 47 of 81

3. FSK 50Kbps FHSS, 902.2MHz~927.8MHz



Date: 29.NOV.2019 15:20:25

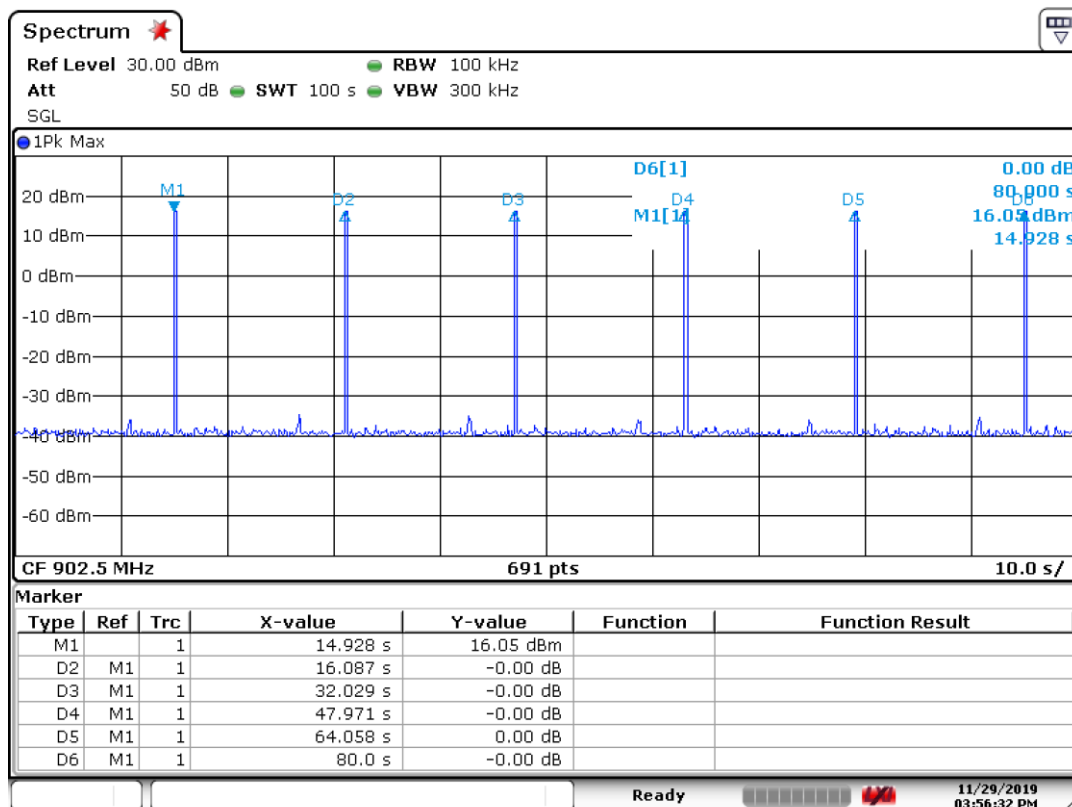


Date: 29.NOV.2019 15:21:33

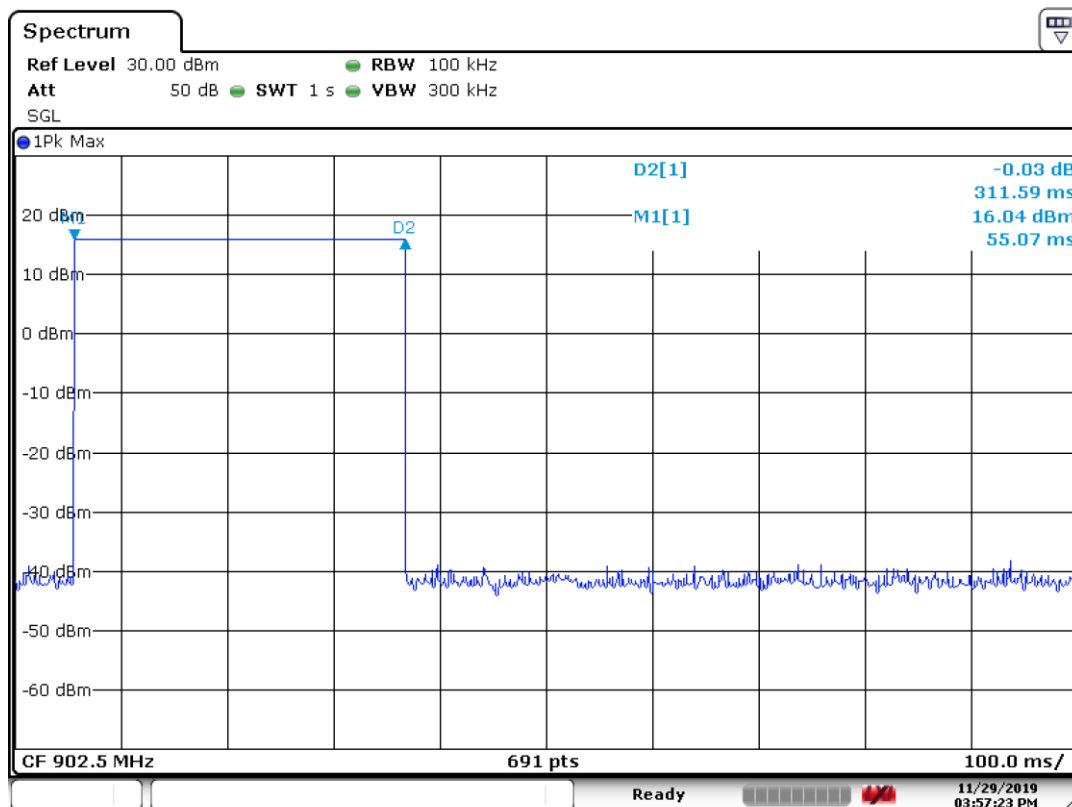
Prüfbericht - Nr.: 50332845 001
Test Report No.:

Seite 48 von 81
Page 48 of 81

4. FSK 250Kbps FHSS, 902.5MHz~927.5MHz



Date: 29.NOV.2019 15:56:32



Date: 29.NOV.2019 15:57:23

Prüfbericht - Nr.: 50332845 001

Test Report No.:

Seite 49 von 81

Page 49 of 81

4.1.11 Conducted Emission

Result:

Pass

Test Specification

Test standard

: FCC Part 15, Subpart B:2018
ICES-003:2016 Class B

Basic standard

: ANSI C63.4:2014 and CISPR 16-1 series standards

Limits

: FCC Part 15, Subpart B:2018; ICES-003:2016 Class
B

Kind of test site

: 3m Semi-anechoic Chamber

Test Setup

Date of testing

: 08.01.2020

Input voltage

: AC 120V, 60Hz

Operational mode

: Battery Charging

Temperature

: 21.5°C

Relative humidity

: 57.7%

Atmospheric pressure

: 101 kPa

The measurement result is calculated based on the following formula by the test software:

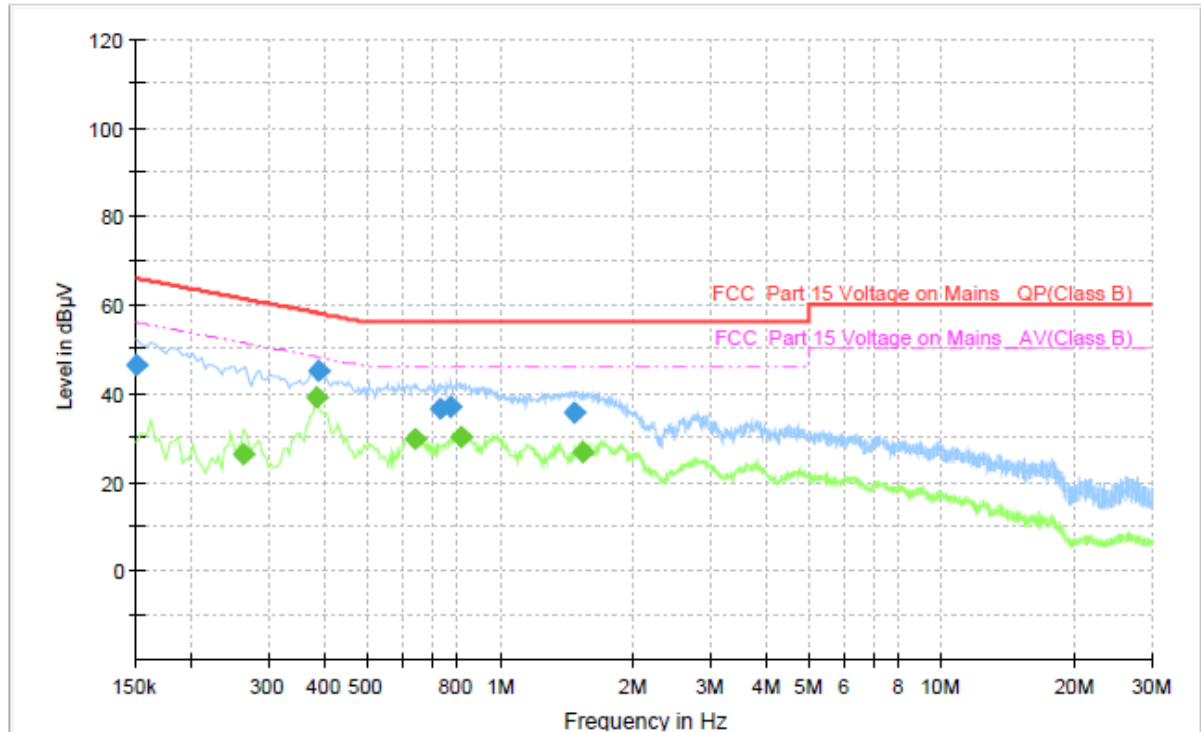
Emission Level = Reading level + Correction (LISN factor + cable loss).

Prüfbericht - Nr.: 50332845 001
Test Report No.:

Seite 50 von 81
Page 50 of 81

Figure 9: Spectral Diagrams, Conducted Emission, 150kHz - 30MHz, L, Charging mode

Full Spectrum



Final Result

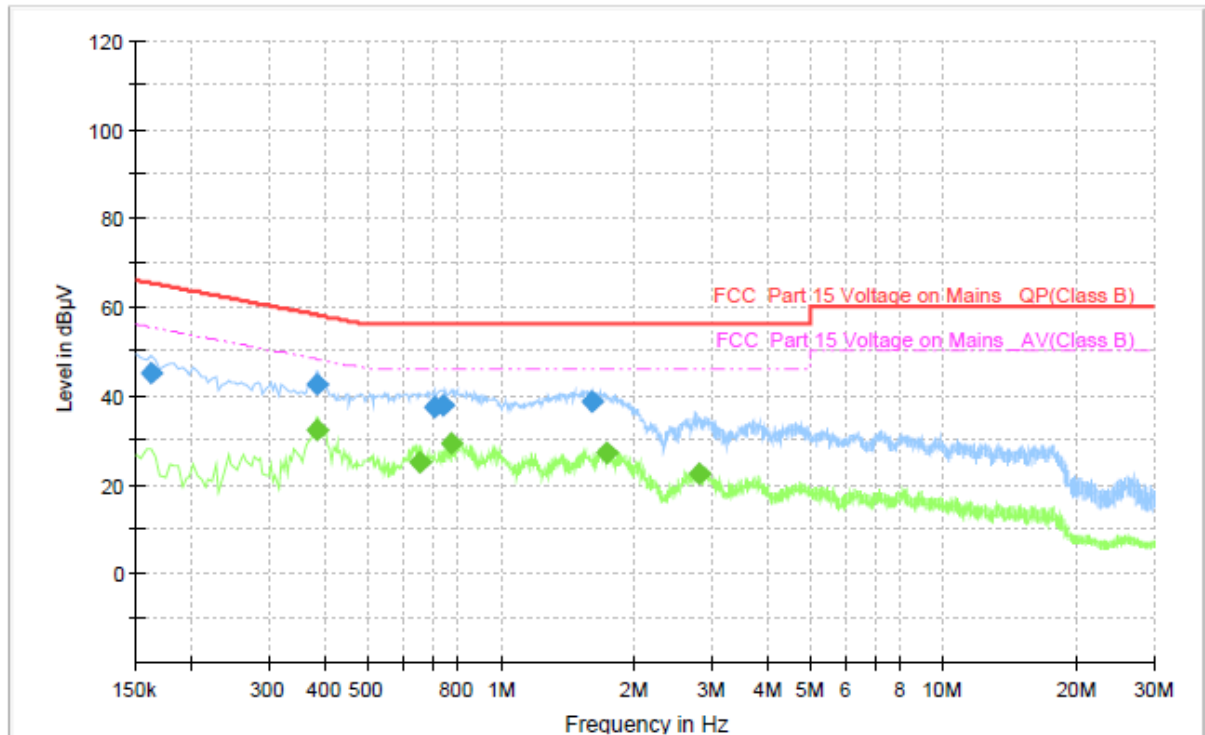
Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	46.53	---	66.00	19.47	1000.0	9.000	L1	ON	9.8
0.262000	---	26.20	51.37	25.16	1000.0	9.000	L1	ON	9.9
0.382000	---	39.10	48.24	9.14	1000.0	9.000	L1	ON	9.9
0.386000	45.04	---	58.15	13.11	1000.0	9.000	L1	ON	9.9
0.638000	---	29.55	46.00	16.45	1000.0	9.000	L1	ON	9.9
0.730000	36.72	---	56.00	19.28	1000.0	9.000	L1	ON	9.9
0.774000	37.14	---	56.00	18.86	1000.0	9.000	L1	ON	9.9
0.818000	---	30.23	46.00	15.77	1000.0	9.000	L1	ON	9.9
1.474000	35.64	---	56.00	20.36	1000.0	9.000	L1	ON	10.0
1.534000	---	26.65	46.00	19.35	1000.0	9.000	L1	ON	10.0

Prüfbericht - Nr.: 50332845 001
Test Report No.:

Seite 51 von 81
Page 51 of 81

Figure 10: Spectral Diagrams, Conducted Emission, 150kHz - 30MHz, N, Charging mode

Full Spectrum



Final Result

Frequency (MHz)	QuasiPeak (dBμV)	CAverage (dBμV)	Limit (dBμV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.162000	45.05	---	65.36	20.31	1000.0	9.000	N	ON	9.8
0.382000	---	32.14	48.24	16.10	1000.0	9.000	N	ON	9.9
0.382000	42.48	---	58.24	15.75	1000.0	9.000	N	ON	9.9
0.658000	---	24.85	46.00	21.15	1000.0	9.000	N	ON	10.0
0.706000	37.46	---	56.00	18.54	1000.0	9.000	N	ON	10.0
0.742000	37.79	---	56.00	18.21	1000.0	9.000	N	ON	10.0
0.774000	---	29.03	46.00	16.97	1000.0	9.000	N	ON	10.0
1.606000	38.72	---	56.00	17.28	1000.0	9.000	N	ON	10.0
1.730000	---	27.09	46.00	18.91	1000.0	9.000	N	ON	10.1
2.810000	---	22.31	46.00	23.69	1000.0	9.000	N	ON	10.1

Prüfbericht - Nr.: 50332845 001
Test Report No.:

Seite 52 von 81
Page 52 of 81

4.1.12 Radiated Emission

Result:

Pass

Test Specification

Test standard : FCC Part 15.209
RSS-Gen Issue 5 March 2019
FCC Part 15, Subpart B:2018
ICES-003:2016 Class B

Basic standard : ANSI C63.10: 2013, ANSI C63.4:2014, CISPR 16-1 series standards

Limits : Refer to 15.209(a) ; RSS Gen Issue 5 March 2019; FCC Part 15, Subpart B:2018; ICES-003:2016 Class B

Kind of test site : 3m Semi-anechoic Chamber

Test Setup

Date of testing : 06.01.2020~15.01.2020

Input voltage : DC 3.65V

Operational mode : Light On, Test mode of BLE, LoRa DTS, LoRa FHSS, FSK FHSS(Test mode: Receiver or Transmitter continuously operating, and the worst case recorded)

Test channel : Lo, Mi, Hi

Temperature : 19.5°C

Relative humidity : 58.1%

Atmospheric pressure : 101 kPa

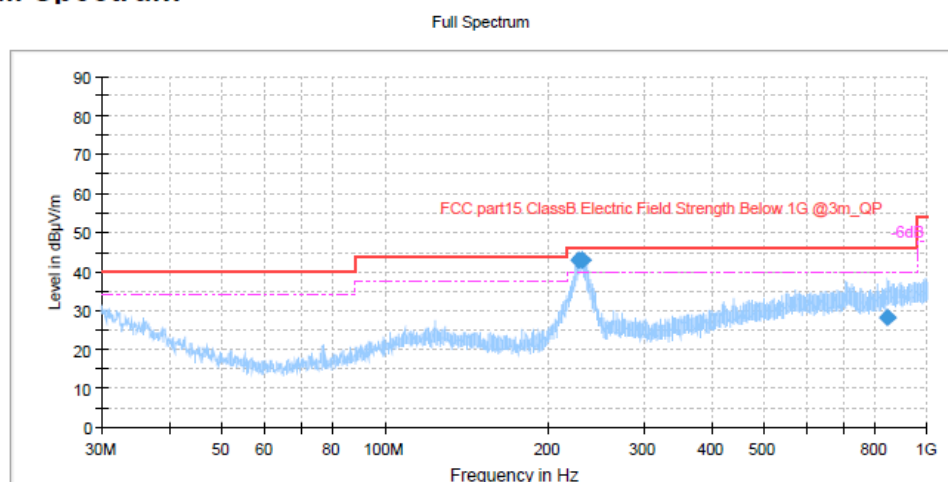
Remark:

Testing was carried out within frequency range 9kHz to the tenth harmonics. Only the worst case emissions configuration of the each mode were reported.

The measurement result is calculated based on the following formula by the test software:
Emission Level = Reading level + Correction (Antenna factor + Cable loss – Preamplifier)

Figure 11: Spectral Diagrams, Radiated Emission, 30MHz-1000MHz, Horizontal, for Light On mode

Full Spectrum

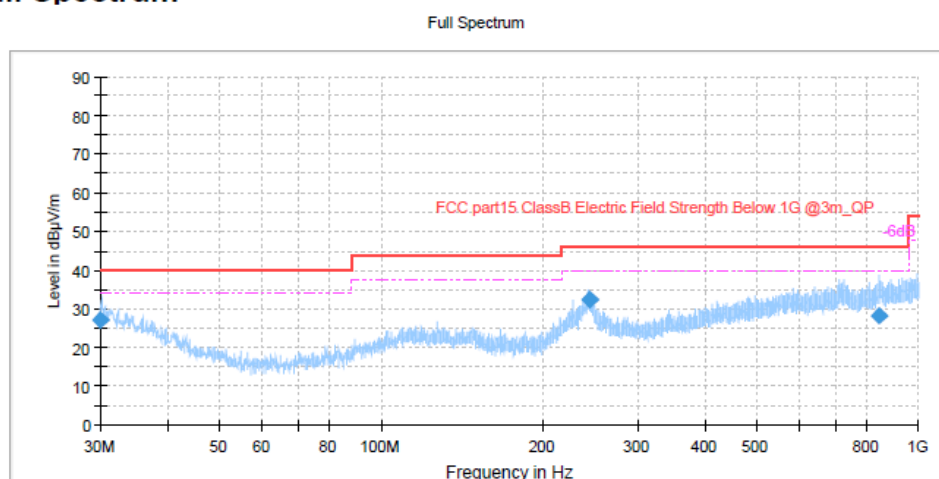


Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
228.157222	43.10	46.00	2.90	1000.0	120.000	104.0	H	4.0	17.5
230.328333	43.04	46.00	2.96	1000.0	120.000	111.0	H	9.0	17.7
845.265000	28.14	46.00	17.86	1000.0	120.000	120.0	H	34.0	29.4

Figure 12: Spectral Diagrams, Radiated Emission, 30MHz-1000MHz, Vertical, for Light ON mode

Full Spectrum

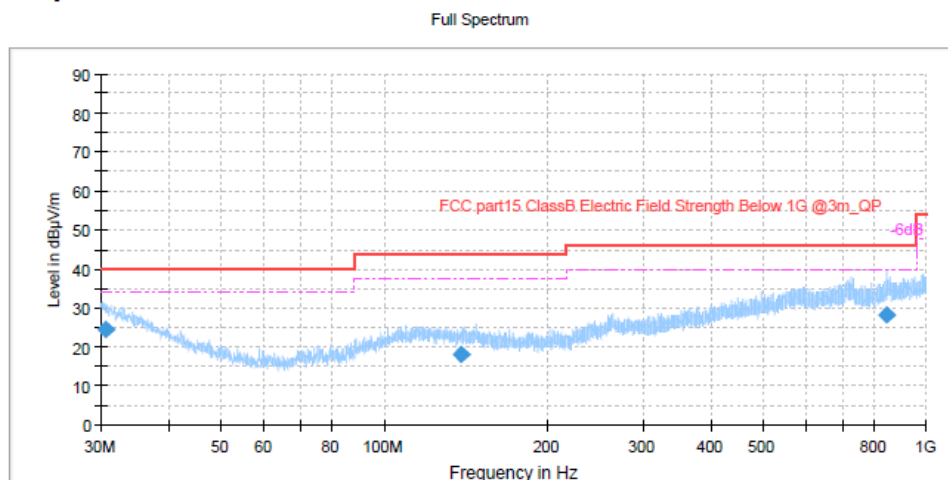


Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.000000	27.02	40.00	12.98	1000.0	120.000	115.0	V	122.0	25.3
243.352222	32.53	46.00	13.47	1000.0	120.000	150.0	V	87.0	19.0
845.939444	28.15	46.00	17.85	1000.0	120.000	129.0	V	302.0	29.4

Figure 13: Spectral Diagrams, Radiated Emission, 30MHz-1000MHz, Horizontal, for Battery Charging mode

Full Spectrum

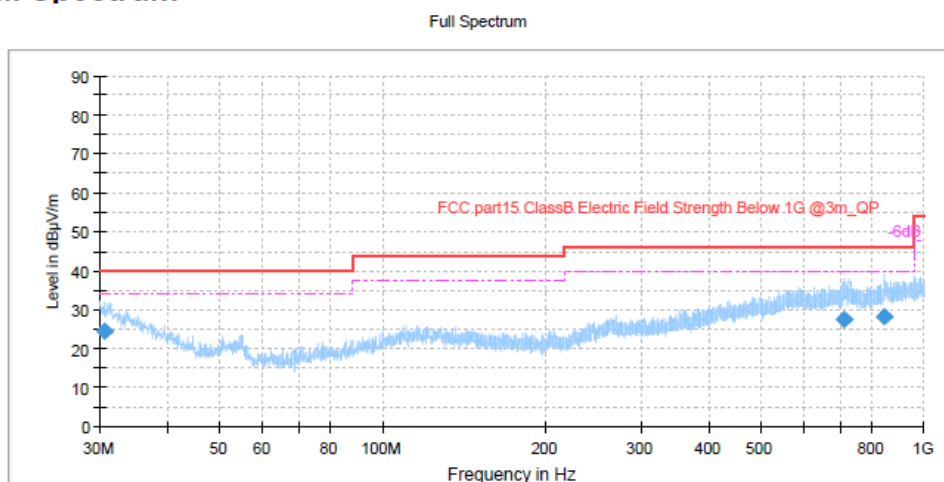


Final Result

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
30.625000	24.43	40.00	15.57	1000.0	120.000	240.0	H	323.0	25.0
138.932778	18.12	43.50	25.38	1000.0	120.000	231.0	H	328.0	18.5
845.113889	28.23	46.00	17.77	1000.0	120.000	224.0	H	240.0	29.4

Figure 14: Spectral Diagrams, Radiated Emission, 30MHz-1000MHz, Vertical, for Battery Charging mode

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)
30.652778	24.45	40.00	15.55	1000.0	120.000	158.0	V	-11.0	25.0
710.445556	27.52	46.00	18.48	1000.0	120.000	150.0	V	264.0	27.8
845.221667	28.28	46.00	17.72	1000.0	120.000	127.0	V	106.0	29.4

Table 9: BLE Test mode, Radiated Emission, below 1GHz, Horizontal, Channel 0

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
31.190000	24.96	40.00	15.04	1000.0	120.000	H	24.7
123.260000	18.65	43.50	24.85	1000.0	120.000	H	19.3
728.207778	27.18	46.00	18.82	1000.0	120.000	H	28.0

Table 10: BLE Test mode, Radiated Emission, below 1GHz, Vertical, Channel 0

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.400000	24.45	40.00	15.55	1000.0	120.000	V	25.1
127.745000	18.44	43.50	25.06	1000.0	120.000	V	19.0
716.093333	27.54	46.00	18.46	1000.0	120.000	V	27.8

Table 11: BLE Test mode, Radiated Emission, below 1GHz, Horizontal, Channel 19

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.412778	24.52	40.00	15.48	1000.0	120.000	H	25.1
132.693889	18.25	43.50	25.25	1000.0	120.000	H	18.8
844.985000	27.14	46.00	18.86	1000.0	120.000	H	29.4

Table 12: BLE Test mode, Radiated Emission, below 1GHz, Vertical, Channel 19

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.332778	24.23	40.00	15.77	1000.0	120.000	V	25.1
127.341667	18.24	43.50	25.26	1000.0	120.000	V	19.0
845.146667	28.53	46.00	17.47	1000.0	120.000	V	29.4

Table 13: BLE Test mode, Radiated Emission, below 1GHz, Horizontal, Channel 39

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.240000	24.61	40.00	15.39	1000.0	120.000	H	25.2
125.754444	18.52	43.50	24.98	1000.0	120.000	H	19.1
850.453889	27.87	46.00	18.13	1000.0	120.000	H	29.4

Table 14: BLE Test mode, Radiated Emission, below 1GHz, Vertical, Channel 39

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.332778	24.43	40.00	15.57	1000.0	120.000	V	25.1
127.341667	18.40	43.50	25.10	1000.0	120.000	V	19.0
845.146667	28.03	46.00	17.97	1000.0	120.000	V	29.4

Prüfbericht - Nr.: 50332845 001

Test Report No.:

Seite 56 von 81

Page 56 of 81

Table 15: LoRa 500KHz DTS, 902.5~926.5 MHz, Test mode Radiated Emission, Horizontal, CH 902.5

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.758889	24.92	40.00	15.08	1000.0	120.000	H	24.9
709.880556	27.28	46.00	18.72	1000.0	120.000	H	27.8
870.537222	39.97	46.00	6.03	1000.0	120.000	H	29.4

Limit and Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
1804.845000	51.7	1000.0	1000.000	H	-10.4	22.4	74.0
2707.435000	49.6	1000.0	1000.000	H	-5.5	24.4	74.0
8780.685000	48.7	1000.0	1000.000	H	6.3	25.3	74.0

Limit and Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
1804.845000	50.4	1000.0	1000.000	H	-10.4	3.6	54.0
2707.435000	46.4	1000.0	1000.000	H	-5.5	7.6	54.0
8780.685000	38.0	1000.0	1000.000	H	6.3	16.0	54.0

Table 16: LoRa 500KHz DTS, 902.5~926.5 MHz, Test mode, Radiated Emission, Vertical, CH 902.5

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.303333	24.32	40.00	15.68	1000.0	120.000	V	25.1
709.545000	27.30	46.00	18.70	1000.0	120.000	V	27.8
851.272778	28.66	46.00	17.34	1000.0	120.000	V	29.4

Limit and Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
1804.845000	50.2	1000.0	1000.000	V	-10.4	23.8	74.0
2707.435000	49.6	1000.0	1000.000	V	-5.5	24.4	74.0
8745.625000	49.5	1000.0	1000.000	V	6.2	24.5	74.0

Limit and Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
1804.845000	48.9	1000.0	1000.000	V	-10.4	5.1	54.0
2707.435000	46.6	1000.0	1000.000	V	-5.5	7.4	54.0
8745.625000	38.7	1000.0	1000.000	V	6.2	15.3	54.0

Prüfbericht - Nr.: 50332845 001

Test Report No.:

Seite 57 von 81

Page 57 of 81

Table 17: LoRa 500KHz DTS, 902.5~926.5 MHz, Test mode, Radiated Emission, Horizontal, CH 914.5

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.640556	24.16	40.00	15.84	1000.0	120.000	H	25.0
848.366111	32.82	46.00	13.18	1000.0	120.000	H	29.4
882.382222	40.10	46.00	5.90	1000.0	120.000	H	29.7

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1828.750000	52.5	1000.0	1000.000	H	-10.2	21.5	74.0
2744.095000	46.6	1000.0	1000.000	H	-5.5	27.4	74.0
8825.310000	48.9	1000.0	1000.000	H	6.3	25.1	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1828.750000	51.6	1000.0	1000.000	H	-10.2	2.4	54.0
2744.095000	42.2	1000.0	1000.000	H	-5.5	11.8	54.0
8825.310000	38.3	1000.0	1000.000	H	6.3	15.7	54.0

Table 18: LoRa 500KHz DTS, 902.5~926.5 MHz, Test mode, Radiated Emission, Vertical, CH 914.5

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
31.047222	24.77	40.00	15.23	1000.0	120.000	V	24.8
129.690000	18.22	43.50	25.28	1000.0	120.000	V	18.9
846.299444	30.43	46.00	15.57	1000.0	120.000	V	29.4

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1829.280000	50.9	1000.0	1000.000	V	-10.2	23.1	74.0
2743.030000	49.8	1000.0	1000.000	V	-5.5	24.2	74.0
7991.250000	49.8	1000.0	1000.000	V	5.6	24.2	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1829.280000	49.6	1000.0	1000.000	V	-10.2	4.4	54.0
2743.030000	47.8	1000.0	1000.000	V	-5.5	6.2	54.0
7991.250000	39.0	1000.0	1000.000	V	5.6	15.1	54.0

Prüfbericht - Nr.: 50332845 001

Test Report No.:

Seite 58 von 81

Page 58 of 81

Table 19: LoRa 500KHz DTS, 902.5~926.5 MHz, Test mode, Radiated Emission, Horizontal, CH 926.5

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
31.339444	24.80	40.00	15.20	1000.0	120.000	H	24.6
854.937222	35.61	46.00	10.39	1000.0	120.000	H	29.3
894.707222	39.94	46.00	6.06	1000.0	120.000	H	29.9

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1852.655000	50.3	1000.0	1000.000	H	-10.2	23.7	74.0
4385.125000	45.4	1000.0	1000.000	H	1.0	28.6	74.0
8410.935000	48.9	1000.0	1000.000	H	5.9	25.1	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1852.655000	49.1	1000.0	1000.000	H	-10.2	4.9	54.0
4385.125000	34.8	1000.0	1000.000	H	1.0	19.2	54.0
8410.935000	38.6	1000.0	1000.000	H	5.9	15.4	54.0

Table 20: LoRa 500KHz DTS, 902.5~926.5 MHz, Test mode, Radiated Emission, Vertical, CH 926.5

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.120000	24.49	40.00	15.51	1000.0	120.000	V	25.2
121.876111	18.50	43.50	25.00	1000.0	120.000	V	19.3
845.077222	30.92	46.00	15.08	1000.0	120.000	V	29.4

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1852.655000	52.3	1000.0	1000.000	V	-10.2	21.8	74.0
2779.155000	47.4	1000.0	1000.000	V	-5.4	26.6	74.0
8337.625000	50.4	1000.0	1000.000	V	6.0	23.6	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1852.655000	51.3	1000.0	1000.000	V	-10.2	2.7	54.0
2779.155000	44.1	1000.0	1000.000	V	-5.4	9.9	54.0
8337.625000	41.9	1000.0	1000.000	V	6.0	12.1	54.0

Prüfbericht - Nr.: 50332845 001

Test Report No.:

Seite 59 von 81

Page 59 of 81

Table 21: LoRa 125KHz FHSS, 902.2~927.8MHz, Test mode, Radiated Emission, Horizontal, CH 902.2

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.897778	24.08	40.00	15.92	1000.0	120.000	H	24.8
121.686667	18.55	43.50	24.95	1000.0	120.000	H	19.3
870.255556	39.22	46.00	6.78	1000.0	120.000	H	29.4

Limit and Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
1804.310000	52.0	1000.0	1000.000	H	-10.3	22.0	74.0
2706.375000	47.9	1000.0	1000.000	H	-5.5	26.2	74.0
8367.375000	148.8	1000.0	1000.000	H	5.9	25.2	74.0

Limit and Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
1804.310000	51.3	1000.0	1000.000	H	-10.3	2.7	54.0
2706.375000	45.4	1000.0	1000.000	H	-5.5	8.6	54.0
8367.375000	138.2	1000.0	1000.000	H	5.9	15.8	54.0

Table 22: LoRa 125KHz FHSS, 902.2~927.8MHz, Test mode, Radiated Emission, Vertical, CH 902.2

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
31.099444	24.90	40.00	15.10	1000.0	120.000	V	24.7
130.239444	18.29	43.50	25.21	1000.0	120.000	V	18.9
845.100000	31.39	46.00	14.61	1000.0	120.000	V	29.4

Limit and Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
1804.310000	51.1	1000.0	1000.000	V	-10.3	23.0	74.0
2706.375000	50.0	1000.0	1000.000	V	-5.5	24.0	74.0
8722.780000	50.4	1000.0	1000.000	V	6.2	23.6	74.0

Limit and Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
1804.310000	49.9	1000.0	1000.000	V	-10.3	4.1	54.0
2706.375000	48.1	1000.0	1000.000	V	-5.5	5.9	54.0
8722.780000	38.7	1000.0	1000.000	V	6.2	15.3	54.0

Prüfbericht - Nr.: 50332845 001

Test Report No.:

Seite 60 von 81

Page 60 of 81

Table 23: LoRa 125KHz FHSS, 902.2~927.8MHz, Test mode, Radiated Emission, Horizontal, CH 915

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.736111	24.16	40.00	15.84	1000.0	120.000	H	24.9
134.500000	18.15	43.50	25.35	1000.0	120.000	H	18.7
901.485000	32.68	46.00	13.32	1000.0	120.000	H	29.9

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1829.810000	52.5	1000.0	1000.000	H	-10.1	21.5	74.0
2744.625000	45.9	1000.0	1000.000	H	-5.5	28.1	74.0
8117.685000	49.6	1000.0	1000.000	H	5.8	24.4	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1829.810000	51.7	1000.0	1000.000	H	-10.1	2.3	54.0
2744.625000	42.4	1000.0	1000.000	H	-5.5	11.6	54.0
8117.685000	38.8	1000.0	1000.000	H	5.8	15.2	54.0

Table 24: LoRa 125KHz FHSS, 902.2~927.8MHz, Test mode, Radiated Emission, Vertical, CH 915

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.812778	24.12	40.00	15.88	1000.0	120.000	V	24.9
126.561111	18.41	43.50	25.09	1000.0	120.000	V	19.1
882.947222	33.36	46.00	12.64	1000.0	120.000	V	29.7

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1829.810000	51.1	1000.0	1000.000	V	-10.1	22.9	74.0
2745.155000	49.9	1000.0	1000.000	V	-5.5	24.2	74.0
8784.935000	49.3	1000.0	1000.000	V	6.3	24.7	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1829.810000	50.0	1000.0	1000.000	V	-10.1	4.0	54.0
2745.155000	47.6	1000.0	1000.000	V	-5.5	6.4	54.0
8784.935000	38.2	1000.0	1000.000	V	6.3	15.9	54.0

Prüfbericht - Nr.: 50332845 001

Test Report No.:

Seite 61 von 81

Page 61 of 81

Table 25: LoRa 125KHz FHSS, 902.2~927.8MHz, Test mode, Radiated Emission, Horizontal, CH 927.8

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.934444	24.07	40.00	15.93	1000.0	120.000	H	24.8
127.852778	18.30	43.50	25.20	1000.0	120.000	H	19.0
855.785556	35.43	46.00	10.57	1000.0	120.000	H	29.3

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1855.310000	52.4	1000.0	1000.000	H	-10.2	21.6	74.0
4366.000000	46.7	1000.0	1000.000	H	1.2	27.3	74.0
8660.625000	49.5	1000.0	1000.000	H	6.1	24.6	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1855.310000	51.5	1000.0	1000.000	H	-10.2	2.5	54.0
4366.000000	35.3	1000.0	1000.000	H	1.2	18.7	54.0
8660.625000	39.0	1000.0	1000.000	H	6.1	15.0	54.0

Table 26: LoRa 125KHz FHSS, 902.2~927.8MHz, Test mode, Radiated Emission, Vertical, CH 927.8

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.988333	24.97	40.00	15.03	1000.0	120.000	V	24.8
145.340556	17.73	43.50	25.77	1000.0	120.000	V	18.0
845.465000	31.56	46.00	14.44	1000.0	120.000	V	29.4

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1855.310000	52.0	1000.0	1000.000	V	-10.2	22.0	74.0
2783.405000	46.9	1000.0	1000.000	V	-5.5	27.1	74.0
8277.595000	48.8	1000.0	1000.000	V	6.0	25.2	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1855.310000	51.1	1000.0	1000.000	V	-10.2	3.0	54.0
2783.405000	43.8	1000.0	1000.000	V	-5.5	10.2	54.0
8277.595000	38.3	1000.0	1000.000	V	6.0	15.7	54.0

Prüfbericht - Nr.: 50332845 001

Test Report No.:

Seite 62 von 81

Page 62 of 81

Table 27: FSK 150Kbps FHSS, 902.4~927.6MHz, Test mode, Radiated Emission, Horizontal, CH 902.4

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.951667	24.04	40.00	15.96	1000.0	120.000	H	24.8
131.496111	18.31	43.50	25.19	1000.0	120.000	H	18.8
870.391111	40.23	46.00	5.77	1000.0	120.000	H	29.4

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1804.845000	52.0	1000.0	1000.000	H	-10.4	22.0	74.0
2706.905000	47.4	1000.0	1000.000	H	-5.5	26.7	74.0
8739.250000	49.5	1000.0	1000.000	H	6.2	24.5	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1804.845000	50.9	1000.0	1000.000	H	-10.4	3.1	54.0
2706.905000	44.3	1000.0	1000.000	H	-5.5	9.8	54.0
8739.250000	38.9	1000.0	1000.000	H	6.2	15.1	54.0

Table 28: FSK 150Kbps FHSS, 902.4~927.6MHz, Test mode, Radiated Emission, Vertical, CH 902.4

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
31.085556	24.93	40.00	15.07	1000.0	120.000	V	24.7
137.302222	18.02	43.50	25.48	1000.0	120.000	V	18.5
842.059444	29.09	46.00	16.91	1000.0	120.000	V	29.5

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1804.845000	50.7	1000.0	1000.000	V	-10.4	23.3	74.0
2706.905000	49.7	1000.0	1000.000	V	-5.5	24.3	74.0
8010.375000	49.3	1000.0	1000.000	V	5.6	24.7	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1804.845000	49.7	1000.0	1000.000	V	-10.4	4.3	54.0
2706.905000	47.3	1000.0	1000.000	V	-5.5	6.7	54.0
8010.375000	38.8	1000.0	1000.000	V	5.6	15.2	54.0

Prüfbericht - Nr.: 50332845 001

Test Report No.:

Seite 63 von 81

Page 63 of 81

Table 29: FSK 150Kbps FHSS, 902.4~927.6MHz, Test mode, Radiated Emission, Horizontal, CH 914.8

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.251111	24.56	40.00	15.44	1000.0	120.000	H	25.2
123.800556	18.54	43.50	24.96	1000.0	120.000	H	19.2
882.771667	39.24	46.00	6.76	1000.0	120.000	H	29.7

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1829.280000	51.5	1000.0	1000.000	H	-10.2	22.5	74.0
2744.095000	46.1	1000.0	1000.000	H	-5.5	27.9	74.0
8027.375000	50.1	1000.0	1000.000	H	5.6	23.9	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1829.280000	50.6	1000.0	1000.000	H	-10.2	3.4	54.0
2744.095000	42.0	1000.0	1000.000	H	-5.5	12.0	54.0
8027.375000	38.8	1000.0	1000.000	H	5.6	15.2	54.0

Table 30: FSK 150Kbps FHSS, 902.4~92.6MHz, Test mode, Radiated Emission, Vertical, CH 914.8

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.211111	24.47	40.00	15.53	1000.0	120.000	V	25.2
122.896667	18.64	43.50	24.86	1000.0	120.000	V	19.3
848.171667	29.96	46.00	16.04	1000.0	120.000	V	29.4

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1829.280000	50.8	1000.0	1000.000	V	-10.2	23.2	74.0
2744.095000	49.2	1000.0	1000.000	V	-5.5	24.8	74.0
8018.345000	49.7	1000.0	1000.000	V	5.6	24.3	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1829.280000	49.4	1000.0	1000.000	V	-10.2	4.6	54.0
2744.095000	46.5	1000.0	1000.000	V	-5.5	7.5	54.0
8018.345000	38.9	1000.0	1000.000	V	5.6	15.1	54.0

Prüfbericht - Nr.: 50332845 001

Test Report No.:

Seite 64 von 81

Page 64 of 81

Table 31: FSK 150Kbps FHSS, 902.4~927.6MHz, Test mode, Radiated Emission, Horizontal, CH 927.6

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.871667	24.17	40.00	15.83	1000.0	120.000	H	24.8
844.552222	36.33	46.00	9.67	1000.0	120.000	H	29.5
895.597222	39.02	46.00	6.98	1000.0	120.000	H	29.9

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1854.780000	51.7	1000.0	1000.000	H	-10.2	22.3	74.0
4302.250000	46.1	1000.0	1000.000	H	1.2	27.9	74.0
8814.685000	49.8	1000.0	1000.000	H	6.3	24.2	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1854.780000	50.2	1000.0	1000.000	H	-10.2	3.8	54.0
4302.250000	35.3	1000.0	1000.000	H	1.2	18.7	54.0
8814.685000	38.5	1000.0	1000.000	H	6.3	15.5	54.0

Table 32: FSK 150Kbps FHSS, 902.4~927.6MHz, Test mode, Radiated Emission, Vertical, CH 927.6

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.602222	24.26	40.00	15.74	1000.0	120.000	V	25.0
127.046111	18.47	43.50	25.03	1000.0	120.000	V	19.1
845.167778	30.10	46.00	15.90	1000.0	120.000	V	29.4

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1855.310000	52.7	1000.0	1000.000	V	-10.2	21.3	74.0
2782.875000	46.8	1000.0	1000.000	V	-5.5	27.2	74.0
8057.655000	49.9	1000.0	1000.000	V	5.7	24.1	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1855.310000	51.5	1000.0	1000.000	V	-10.2	2.6	54.0
2782.875000	44.4	1000.0	1000.000	V	-5.5	9.6	54.0
8057.655000	39.0	1000.0	1000.000	V	5.7	15.0	54.0

Prüfbericht - Nr.: 50332845 001

Test Report No.:

Seite 65 von 81

Page 65 of 81

Table 33: FSK 50Kbps FHSS, 902.2~927.8MHz, Test mode, Radiated Emission, Horizontal, CH 902.2

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
31.003889	24.03	40.00	15.97	1000.0	120.000	H	24.8
844.900000	32.58	46.00	13.42	1000.0	120.000	H	29.5
870.161667	39.80	46.00	6.20	1000.0	120.000	H	29.4

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1804.310000	51.9	1000.0	1000.000	H	-10.3	22.1	74.0
2706.375000	47.9	1000.0	1000.000	H	-5.5	26.1	74.0
8682.935000	49.0	1000.0	1000.000	H	6.1	25.0	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1804.310000	51.0	1000.0	1000.000	H	-10.3	3.0	54.0
2706.375000	45.4	1000.0	1000.000	H	-5.5	8.6	54.0
8682.935000	38.2	1000.0	1000.000	H	6.1	15.8	54.0

Table 34: FSK 50Kbps FHSS, 902.2~927.8MHz, Test mode, Radiated Emission, Vertical, CH 902.2

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.611111	24.30	40.00	15.70	1000.0	120.000	V	25.0
728.541667	29.28	46.00	16.72	1000.0	120.000	V	28.0
845.249444	29.25	46.00	16.75	1000.0	120.000	V	29.4

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1804.845000	48.5	1000.0	1000.000	V	-10.4	25.5	74.0
2706.375000	49.1	1000.0	1000.000	V	-5.5	24.9	74.0
8659.560000	49.2	1000.0	1000.000	V	6.1	24.8	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1804.845000	47.1	1000.0	1000.000	V	-10.4	6.9	54.0
2706.375000	46.9	1000.0	1000.000	V	-5.5	7.2	54.0
8659.560000	38.4	1000.0	1000.000	V	6.1	15.6	54.0

Prüfbericht - Nr.: 50332845 001

Test Report No.:

Seite 66 von 81

Page 66 of 81

Table 35: FSK 50Kbps FHSS, 902.2~927.8MHz, Test mode, Radiated Emission, Horizontal, CH 915

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
31.083889	24.01	40.00	15.99	1000.0	120.000	H	24.7
127.223333	18.42	43.50	25.08	1000.0	120.000	H	19.1
882.987222	41.08	46.00	4.92	1000.0	120.000	H	29.7

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1829.810000	52.1	1000.0	1000.000	H	-10.1	21.9	74.0
2744.625000	45.7	1000.0	1000.000	H	-5.5	28.4	74.0
8345.060000	49.0	1000.0	1000.000	H	6.0	25.0	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1829.810000	51.2	1000.0	1000.000	H	-10.1	2.8	54.0
2744.625000	41.4	1000.0	1000.000	H	-5.5	12.6	54.0
8345.060000	37.8	1000.0	1000.000	H	6.0	16.2	54.0

Table 36: FSK 50Kbps FHSS, 902.2~927.8MHz, Test mode, Radiated Emission, Vertical, CH 915

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.732778	21.21	40.00	18.79	1000.0	120.000	V	24.9
133.175556	15.19	43.50	28.31	1000.0	120.000	V	18.7
854.991111	29.87	46.00	16.13	1000.0	120.000	V	29.3

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1829.810000	51.2	1000.0	1000.000	V	-10.1	22.8	74.0
2745.155000	49.4	1000.0	1000.000	V	-5.5	24.6	74.0
8075.185000	49.6	1000.0	1000.000	V	5.8	24.4	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1829.810000	50.2	1000.0	1000.000	V	-10.1	3.8	54.0
2745.155000	46.9	1000.0	1000.000	V	-5.5	7.1	54.0
8075.185000	38.6	1000.0	1000.000	V	5.8	15.4	54.0

Prüfbericht - Nr.: 50332845 001

Test Report No.:

Seite 67 von 81

Page 67 of 81

Table 37: FSK 50Kbps FHSS, 902.2~927.8MHz, Test mode, Radiated Emission, Horizontal, CH 927.8

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.732778	24.14	40.00	15.86	1000.0	120.000	H	24.9
127.249444	17.45	43.50	26.05	1000.0	120.000	H	19.1
846.775556	36.53	46.00	9.47	1000.0	120.000	H	29.4

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1855.310000	52.1	1000.0	1000.000	H	-10.2	21.9	74.0
7564.655000	48.3	1000.0	1000.000	H	5.3	25.7	74.0
8452.905000	48.9	1000.0	1000.000	H	5.9	25.1	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1855.310000	51.2	1000.0	1000.000	H	-10.2	2.8	54.0
7564.655000	37.5	1000.0	1000.000	H	5.3	16.5	54.0
8452.905000	38.2	1000.0	1000.000	H	5.9	15.8	54.0

Table 38: FSK 50Kbps FHSS, 902.2~927.8MHz, Test mode, Radiated Emission, Vertical, CH 927.8

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time	Bandwidth (kHz)	Pol	Corr. (dB)
30.965556	24.02	40.00	15.98	1000.0	120.000	V	24.8
126.510556	18.51	43.50	24.99	1000.0	120.000	V	19.1
853.308333	32.12	46.00	13.88	1000.0	120.000	V	29.4

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1855.310000	51.9	1000.0	1000.000	V	-10.2	22.1	74.0
2782.875000	45.3	1000.0	1000.000	V	-5.5	28.7	74.0
8663.810000	49.9	1000.0	1000.000	V	6.1	24.1	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1855.310000	50.8	1000.0	1000.000	V	-10.2	3.3	54.0
2782.875000	40.2	1000.0	1000.000	V	-5.5	13.8	54.0
8663.810000	38.4	1000.0	1000.000	V	6.1	15.6	54.0

Prüfbericht - Nr.: 50332845 001

Test Report No.:

Seite 68 von 81

Page 68 of 81

Table 39: FSK 250Kbps FHSS, 902.5~927.5MHz, Test mode, Radiated Emission, Horizontal, CH 902.5

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.988333	24.03	40.00	15.97	1000.0	120.000	H	24.8
129.121667	18.40	43.50	25.10	1000.0	120.000	H	19.0
870.511111	39.43	46.00	6.57	1000.0	120.000	H	29.4

Limit and Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
1804.845000	51.5	1000.0	1000.000	H	-10.4	22.5	74.0
2707.435000	49.2	1000.0	1000.000	H	-5.5	24.8	74.0
8040.125000	49.4	1000.0	1000.000	H	5.7	24.6	74.0

Limit and Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
1804.845000	50.6	1000.0	1000.000	H	-10.4	3.4	54.0
2707.435000	46.4	1000.0	1000.000	H	-5.5	7.6	54.0
8040.125000	38.5	1000.0	1000.000	H	5.7	15.5	54.0

Table 40: FSK 250Kbps FHSS, 902.5~927.5MHz, Test mode, Radiated Emission, Vertical, CH 902.5

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.360000	24.47	40.00	15.53	1000.0	120.000	V	25.1
123.720556	18.59	43.50	24.91	1000.0	120.000	V	19.2
845.425000	29.24	46.00	16.76	1000.0	120.000	V	29.4

Limit and Frequency (MHz)	MaxPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBµV/m)
1804.845000	50.5	1000.0	1000.000	V	-10.4	23.6	74.0
2707.435000	49.6	1000.0	1000.000	V	-5.5	24.4	74.0
8733.935000	49.3	1000.0	1000.000	V	6.2	24.7	74.0

Limit and Frequency (MHz)	Average (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBµV/m)
1804.845000	49.3	1000.0	1000.000	V	-10.4	4.7	54.0
2707.435000	47.5	1000.0	1000.000	V	-5.5	6.5	54.0
8733.935000	38.5	1000.0	1000.000	V	6.2	15.5	54.0

Prüfbericht - Nr.: 50332845 001

Test Report No.:

Seite 69 von 81

Page 69 of 81

Table 41: FSK 250Kbps FHSS, 902.5~927.5MHz, Test mode, Radiated Emission, Horizontal, CH 915

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.856111	24.12	40.00	15.88	1000.0	120.000	H	24.9
845.153889	34.19	46.00	11.81	1000.0	120.000	H	29.4
882.987222	41.35	46.00	4.65	1000.0	120.000	H	29.7

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1829.810000	52.5	1000.0	1000.000	H	-10.1	21.5	74.0
2744.625000	44.9	1000.0	1000.000	H	-5.5	29.1	74.0
8736.595000	49.5	1000.0	1000.000	H	6.2	24.5	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1829.810000	51.6	1000.0	1000.000	H	-10.1	2.4	54.0
2744.625000	39.5	1000.0	1000.000	H	-5.5	14.5	54.0
8736.595000	38.6	1000.0	1000.000	H	6.2	15.4	54.0

Table 42: FSK 250Kbps FHSS, 902.5~927.5MHz, Test mode, Radiated Emission, Vertical, CH 915

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.651111	24.33	40.00	15.67	1000.0	120.000	V	25.0
729.916667	27.29	46.00	18.71	1000.0	120.000	V	28.1
848.117778	27.31	46.00	18.69	1000.0	120.000	V	29.4

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1829.810000	51.6	1000.0	1000.000	V	-10.1	22.4	74.0
2745.155000	50.2	1000.0	1000.000	V	-5.5	23.8	74.0
8696.750000	49.1	1000.0	1000.000	V	6.2	24.9	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1829.810000	50.4	1000.0	1000.000	V	-10.1	3.6	54.0
2745.155000	47.8	1000.0	1000.000	V	-5.5	6.2	54.0
8696.750000	38.1	1000.0	1000.000	V	6.2	15.9	54.0

Prüfbericht - Nr.: 50332845 001

Test Report No.:

Seite 70 von 81

Page 70 of 81

Table 43: FSK 250Kbps FHSS, 902.5~927.5MHz, Test mode, Radiated Emission, Horizontal, CH 927.5

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
32.069444	24.51	40.00	15.49	1000.0	120.000	H	24.2
856.256667	34.51	46.00	11.49	1000.0	120.000	H	29.3
874.997778	35.24	46.00	10.76	1000.0	120.000	H	29.5

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1854.780000	53.2	1000.0	1000.000	H	-10.2	20.8	74.0
4291.625000	46.1	1000.0	1000.000	H	1.1	27.9	74.0
8109.185000	49.0	1000.0	1000.000	H	5.8	25.0	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1854.780000	52.0	1000.0	1000.000	H	-10.2	2.0	54.0
4291.625000	35.1	1000.0	1000.000	H	1.1	19.0	54.0
8109.185000	38.7	1000.0	1000.000	H	5.8	15.3	54.0

Table 44: FSK 250Kbps FHSS, 902.5~927.5MHz, Test mode, Radiated Emission, Vertical, CH 927.5

Frequency (MHz)	QuasiPeak (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)
30.117222	24.55	40.00	15.45	1000.0	120.000	V	25.2
140.669444	17.96	43.50	25.54	1000.0	120.000	V	18.3
848.042778	31.92	46.00	14.08	1000.0	120.000	V	29.4

Limit and Frequency (MHz)	MaxPeak (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - PK+ (dB)	Limit - PK+ (dBμV/m)
1854.780000	50.2	1000.0	1000.000	V	-10.2	23.8	74.0
2782.345000	47.2	1000.0	1000.000	V	-5.5	26.8	74.0
8736.595000	50.5	1000.0	1000.000	V	6.2	23.5	74.0

Limit and Frequency (MHz)	Average (dBμV/m)	Meas. Time (ms)	Bandwidth (kHz)	Pol	Corr. (dB)	Margin - AVG (dB)	Limit - AVG (dBμV/m)
1854.780000	48.5	1000.0	1000.000	V	-10.2	5.5	54.0
2782.345000	43.6	1000.0	1000.000	V	-5.5	10.4	54.0
8736.595000	38.9	1000.0	1000.000	V	6.2	15.2	54.0