

## 10. Measurement of radiated disturbance

Above 30 MHz Electric Field strength was measured in accordance with FCC PART 15.205, 15.209 . The test setup was made according to ANSI C 63.10 (2013) & KDB 558074 D01v05r02 Semi-anechoic chamber, which allows a 3 m distance measurement. The EUT was placed in the center of styrofoam. turntable. The height of this table was 0.8 m. The measurement was conducted with both horizontal and vertical antenna polarization. The turntable has fully rotated. For further description of the configuration refer to the picture of the test setup.

### 10.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
TEST Receiver	ESCI7	ROHDE & SCHWARZ	100916	19-Jul-22
Logbicon Antenna	VULB 9168	SCHWARZBECK	193	9-Dec-23
Turn Table	DT3000-2t	Innco System GmbH	N/A	-
Antenna Mast	MA4000-EP	Innco System GmbH	N/A	-
PREAMPLIFIER	8449B	HP	3008A00581	20-Jul-22
Horn Antenna	BBHA9120D	SCHWARZBECK	469	3-Dec-22
TEST Receiver	ESU	ROHDE & SCHWARZ	100529	19-Jul-22
Turn Table	DT1500-S	Innco System GmbH	N/A	-
Antenna Mast	MA4000-EP	Innco System GmbH	N/A	-
Antenna Master & Turn table controller	C02000-P	Innco System GmbH	CO2000/642 /28051111/L	-

### 10.2 Environmental Condition

Below 1 GHz –Test Place : 10 m Semi-anechoic chamber

#### BT(BLE) MODE

Temperature (°C) : 21.4 °C

Humidity (% R.H.) : 43.2 % R.H.

Above 1 GHz–Test Place : 3 m Semi-anechoic chamber

#### BT(BLE) MODE

Temperature (°C) : 22.6 °C

Humidity (% R.H.) : 43.4 % R.H.

## 10.3 Measurement Instrument setting for Radiated Emission

### 10.3.1 Frequency range below 1 GHz

Detector : Quasi-Peak

### 10.3.2 Frequency range above 1 GHz

#### Peak Power Measurement Procedure (KDB 558074 section 12.2.4)

- a. RBW : 1 MHz , VBW : 3 MHz
- b. Trace mode = max hold
- c. Detector : Peak
- d. Sweep time = auto

#### Average Power Measurement Procedures (KDB 558074 section 12.2.5.2)

- a. Set analyzer center frequency to the frequency associated with the emission
- b. RBW : 1 MHz , VBW : 3 MHz
- c. Detector : RMS
- d. Sweep time = auto

Note

Band	Duty cycle(%)	Ton (ms)	Ton + Toff (ms)	DCF=10*log(1/Duty) (dB)
Left_LE 1M	85.60	2.14	2.50	0.68
Left_LE 2M	56.40	1.05	1.86	2.49
Right_LE 1M	83.90	2.09	2.49	0.76
Right_LE 2M	56.80	1.08	1.90	2.46

\* This was applied of duty cycle factor for average value because of measured with the EUT transmitting continuously less than 98 % duty cycle at its maximum power control level.

### 10.4 Test data(30 MHz ~ 1 000 MHz)

Left\_LE 1M

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB $\mu$ V)	Position (V/H)	Height (m)	Correction Factor		Result Value(Quasi-peak)		
				Ant Factor (dB)	Cable (dB)	Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Margin (dB)
31.40	6.47	V	1.6	12.49	0.83	40.00	19.79	20.21
73.50	5.53	V	1.5	11.33	1.28	40.00	18.14	21.86
100.20	14.06	V	1.5	8.78	1.50	43.50	24.35	19.15
224.10	15.49	H	1.4	10.91	2.30	46.00	28.70	17.30
607.20	5.16	H	1.3	19.89	3.95	46.00	29.01	16.99
841.60	4.01	H	1.0	22.93	4.76	46.00	31.71	14.29
Remark	<p>H : Horizontal, V : Vertical TEST MODE : BT BLE (CH : 19 - 2 440 MHz)</p> <p>*Checked in all 3 axis and the maximum measured data were reported.( Worst data is X axis of position)</p> <p>*CL = Cable Loss(In case of below 1 000 MHz)</p> <p>*Result Value = Reading + Ant Factor + Cable loss</p> <p>*The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1 GHz.</p>							

Left\_LE 2M

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB $\mu$ V)	Position (V/H)	Height (m)	Correction Factor		Result Value(Quasi-peak)		
				Ant Factor (dB)	Cable (dB)	Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Margin (dB)
30.90	6.86	V	1.6	12.43	0.82	40.00	20.11	19.89
73.40	6.40	V	1.5	11.34	1.28	40.00	19.03	20.97
101.40	15.65	V	1.5	8.93	1.51	43.50	26.09	17.41
165.10	3.46	H	1.4	13.00	1.94	43.50	18.41	25.09
249.30	6.64	H	1.3	11.91	2.45	46.00	20.99	25.01
619.30	5.77	H	1.0	20.19	4.00	46.00	29.95	16.05
Remark	H : Horizontal, V : Vertical TEST MODE : BT BLE (CH : 19 – 2 440 MHz)  *Checked in all 3 axis and the maximum measured data were reported.( Worst data is X axis of position) *CL = Cable Loss(In case of below 1 000 MHz) *Result Value = Reading + Ant Factor + Cable loss *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1 GHz.							

Right\_LE 1M

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB $\mu$ V)	Position (V/H)	Height (m)	Correction Factor		Result Value(Quasi-peak)		
				Ant Factor (dB)	Cable (dB)	Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Margin (dB)
32.00	5.85	H	1.6	12.56	0.83	40.00	19.24	20.76
73.20	8.46	V	1.5	11.37	1.28	40.00	21.11	18.89
101.70	15.18	V	1.5	8.96	1.51	43.50	25.66	17.84
145.30	2.99	H	1.4	13.06	1.81	43.50	17.87	25.63
240.00	9.09	H	1.3	11.44	2.39	46.00	22.93	23.07
656.90	2.96	H	1.0	20.61	4.12	46.00	27.69	18.31
Remark	H : Horizontal, V : Vertical TEST MODE : BT BLE (CH : 19 – 2 440 MHz) *Checked in all 3 axis and the maximum measured data were reported.( Worst data is X axis of position) *CL = Cable Loss(In case of below 1 000 MHz) *Result Value = Reading + Ant Factor + Cable loss *The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1 GHz.							



Right\_LE 2M

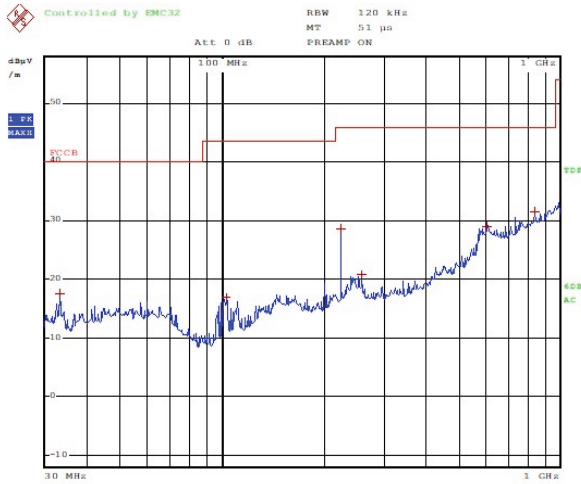
Measurement Distance : 3 m

Frequency (MHz)	Reading (dB $\mu$ V)	Position (V/H)	Height (m)	Correction Factor		Result Value(Quasi-peak)		
				Ant Factor (dB)	Cable (dB)	Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Margin (dB)
32.20	8.16	H	1.6	12.58	0.84	40.00	21.58	18.42
100.40	15.46	V	1.5	8.81	1.50	43.50	25.77	17.73
150.90	3.40	V	1.5	13.05	1.85	43.50	18.30	25.20
257.30	5.63	H	1.4	12.17	2.49	46.00	20.29	25.71
628.40	4.73	H	1.3	20.18	4.03	46.00	28.94	17.06
885.20	4.42	H	1.0	23.45	4.90	46.00	32.77	13.23
Remark	<p>H : Horizontal, V : Vertical TEST MODE : BT BLE (CH : 19 – 2 440 MHz)</p> <p>*Checked in all 3 axis and the maximum measured data were reported.( Worst data is X axis of position)</p> <p>*CL = Cable Loss(In case of below 1 000 MHz)</p> <p>*Result Value = Reading + Ant Factor + Cable loss</p> <p>*The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection at frequency below 1 GHz.</p>							

## Restricted Band Edges

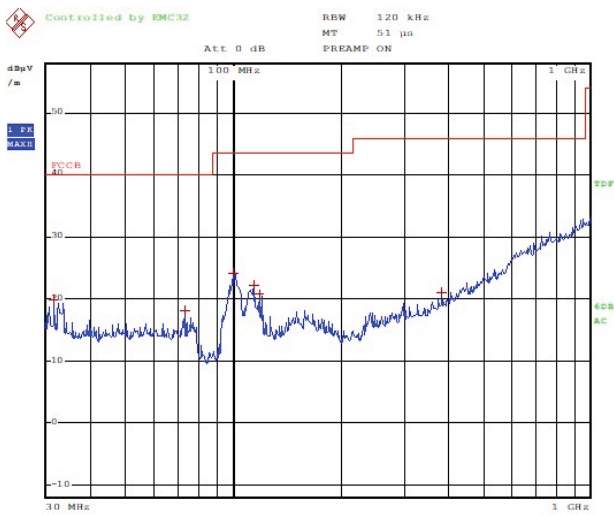
Left\_LE 1M

Polarity:Horizontal



ESTR-22-00164

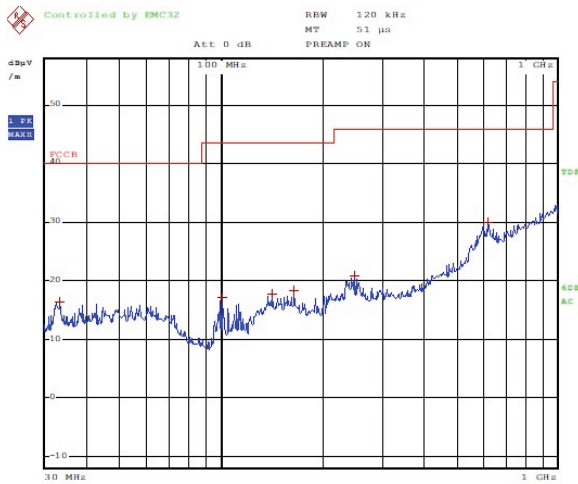
Polarity:Vertical



ESTR-22-00164

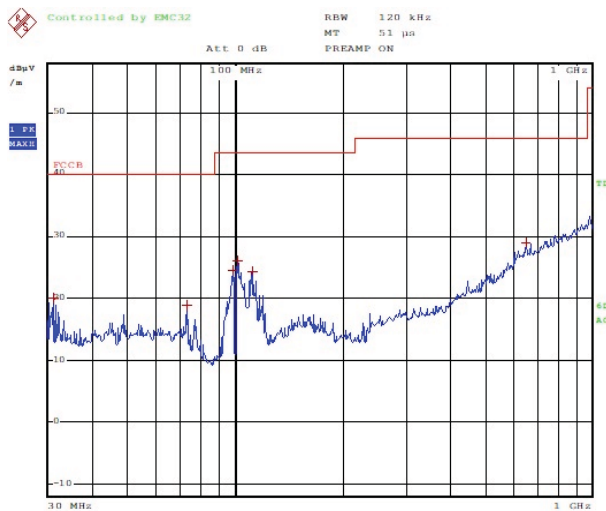
Left\_LE 2M

Polarity:Horizontal



ESTR-22-00164

Polarity:Vertical



ESTR-22-00164

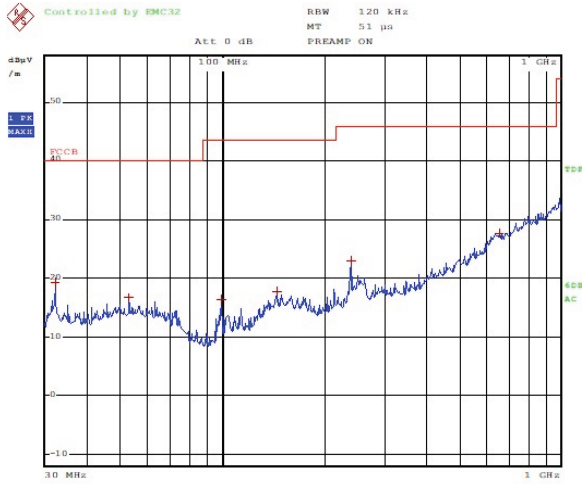




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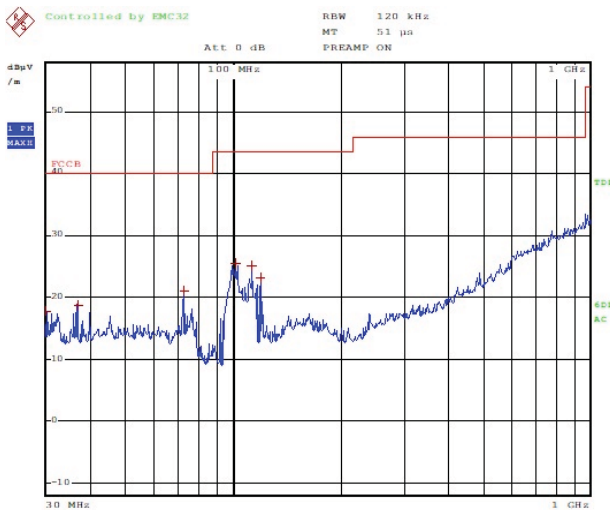
Right\_LE 1M

Polarity:Horizontal



ESTR-22-00164

Polarity:Vertical



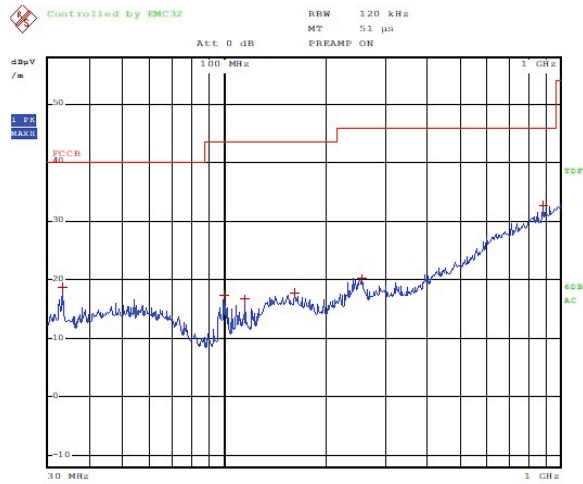
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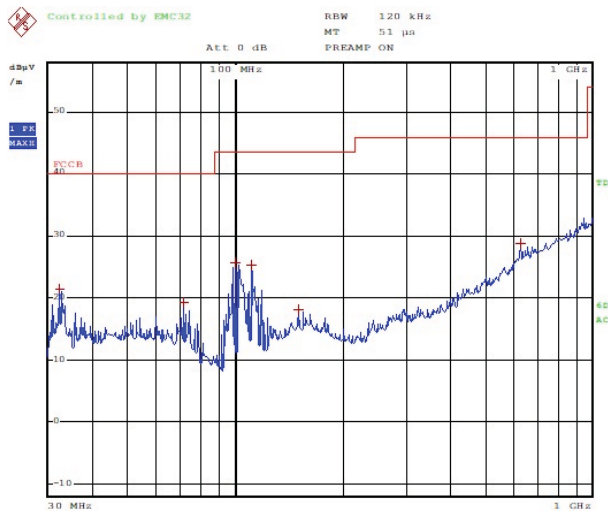
Right\_LE 2M

Polarity:Horizontal



ESTR-22-00164

Polarity:Vertical



ESTR-22-00164



### Test Data(Low)

Left\_LE 1M

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB $\mu$ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	AMP & Cable (dB)		Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2390.00	45.95	H	1.6	27.54	-28.39		74.00	45.10	28.90
2390.00	46.92	V	1.6	27.54	-28.39		74.00	46.07	27.93
4804.00	35.59	H	1.5	31.30	-25.75		74.00	41.14	32.86
4804.00	35.67	V	1.5	31.30	-25.75		74.00	41.22	32.78
AV(RBW: 1 MHz VBW: 3 MHz)									
2390.00	35.33	H	1.6	27.54	-28.39	0.68	54.00	35.16	18.84
2390.00	35.34	V	1.6	27.54	-28.39	0.68	54.00	35.17	18.83
4804.00	28.84	H	1.5	31.30	-25.75	0.68	54.00	35.07	18.93
4804.00	28.87	V	1.5	31.30	-25.75	0.68	54.00	35.10	18.90
Remark	<p>H : Horizontal, V : Vertical TEST MODE : CH : 0 - 2 402 MHz (x postion)</p> <p>*The TX signal wasn't detected from 3th harmonics.</p> <p>*Checked in all 3 axis and the maximum measured data were reported.( Worst data is X axis of position)</p> <p>*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction</p> <p>*This test was radiated up to 26.5 GHz but no noise was measured.</p>								



### Test Data(Middle)

Left\_LE 1M

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB $\mu$ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	AMP & Cable (dB)		Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
4880.00	34.62	H	1.5	31.30	-25.67	/	74.00	40.25	33.75
4880.00	35.05	V	1.6	31.30	-25.67		74.00	40.68	33.32
AV(RBW: 1 MHz VBW: 3 MHz)									
4880.00	28.62	H	1.5	31.30	-25.67	0.68	54.00	34.93	19.07
4880.00	28.74	V	1.6	31.30	-25.67	0.68	54.00	35.05	18.95
Remark	H : Horizontal, V : Vertical TEST MODE : CH : 19 – 2 440 MHz (x postion)  *The TX signal wasn't detected from 3th harmonics. *Checked in all 3 axis and the maximum measured data were reported.( Worst data is X axis of position) *Total = Reading Value + Antenna Factor + Cable Loss – Amp Gain + Duty Cycle Correction *This test was radiated up to 26.5 GHz but no noise was measured.								



## Test Data(High)

Left\_LE 1M

Measurement Distance : 3 m

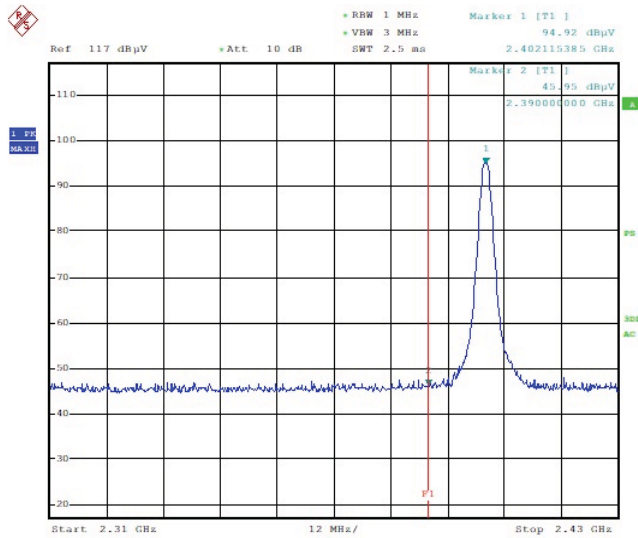
Frequency (MHz)	Reading (dB $\mu$ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction (dB)	Result Value		
				Ant Factor (dB)	AMP & Cable (dB)		Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2483.50	57.60	H	1.6	27.42	-28.28		74.00	56.74	17.26
2483.50	58.72	V	1.8	27.42	-28.28		74.00	57.86	16.14
4960.00	47.06	H	1.6	31.48	-25.59		74.00	52.95	21.05
4960.00	47.13	V	1.5	31.48	-25.59		74.00	53.02	20.98
AV(RBW: 1 MHz VBW: 3 MHz)									
2483.50	44.90	H	1.6	27.42	-28.28	0.68	54.00	44.72	9.28
2483.50	45.24	V	1.8	27.42	-28.28	0.68	54.00	45.06	8.94
4960.00	35.69	H	1.6	31.48	-25.59	0.68	54.00	42.26	11.74
4960.00	36.03	V	1.5	31.48	-25.59	0.68	54.00	42.60	11.40
Remark	<p>H : Horizontal, V : Vertical TEST MODE : CH : 39 - 2 480 MHz (x postion)</p> <p>*The TX signal wasn't detected from 3th harmonics.            *Checked in all 3 axis and the maximum measured data were reported.( Worst data is X axis of position)            *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction            *This test was radiated up to 26.5 GHz but no noise was measured.</p>								

## Restricted Band Edges

Band Edges(CH Low)

Detector mode:Peak

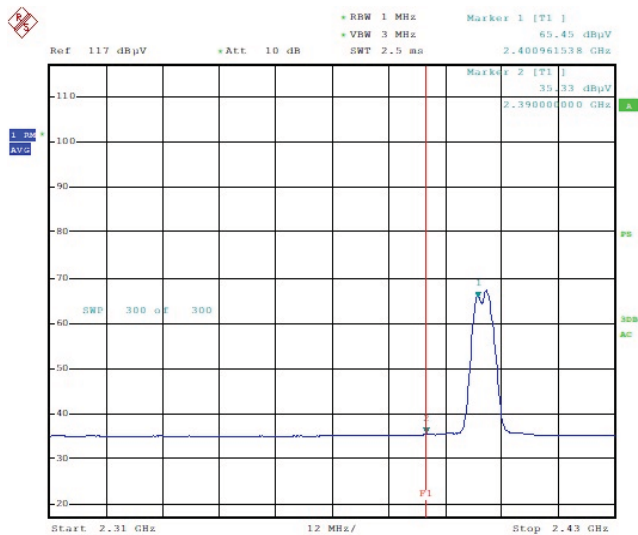
Polarity:Horizontal



ESTR-22-001e4

Detector mode:Average

Polarity:Horizontal

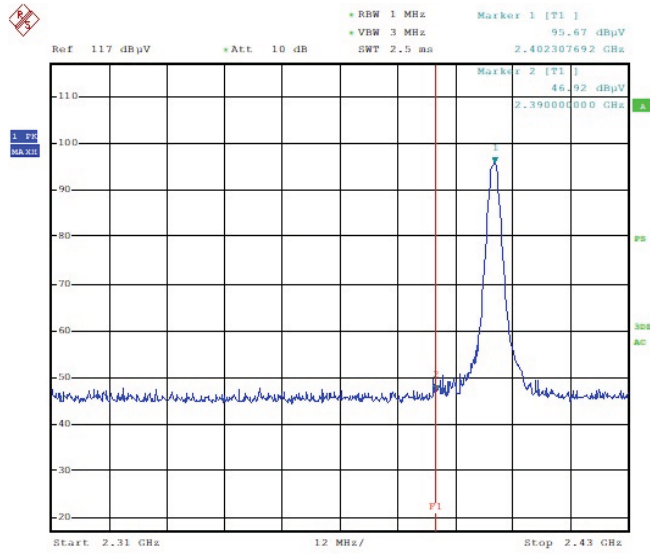


ESTR-22-001e4

Band Edges(CH Low)

Detector mode:Peak

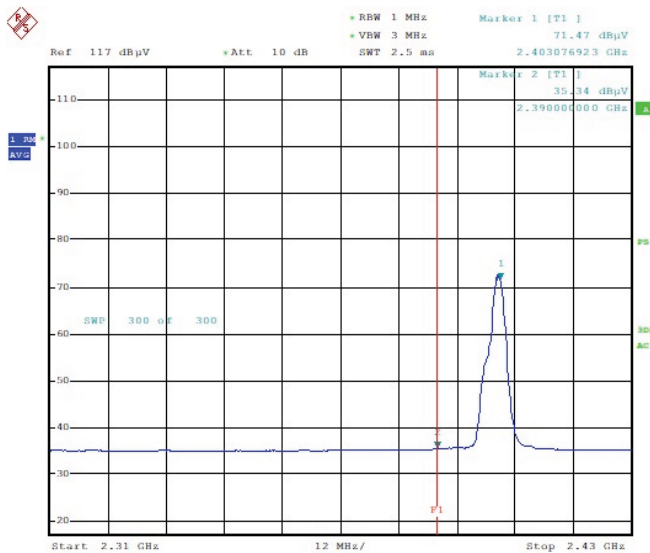
Polarity:Vertical



ESTR-22-00164

Detector mode:Average

Polarity:Vertical

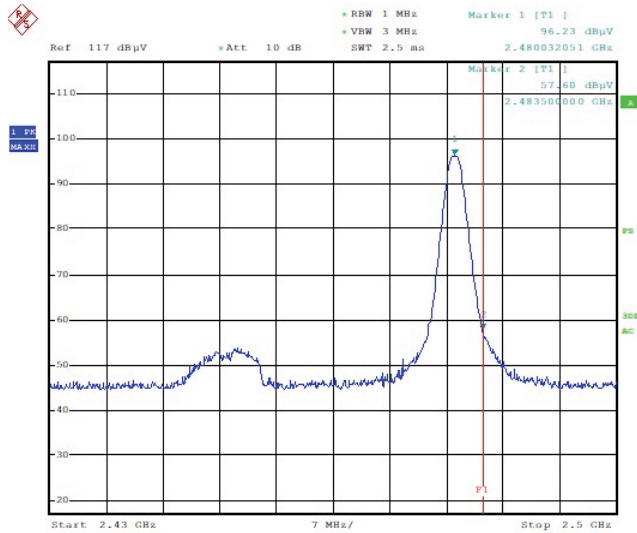


ESTR-22-00164

Band Edges(CH High)

Detector mode:Peak

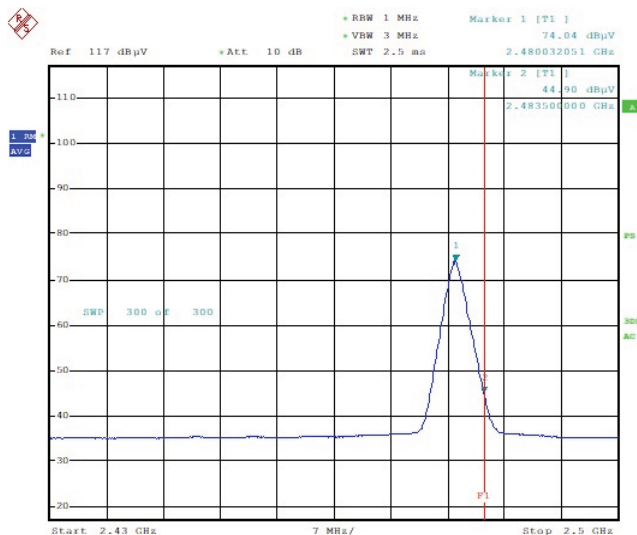
Polarity:Horizontal



ESTR-22-00164

Detector mode:Average

Polarity:Horizontal



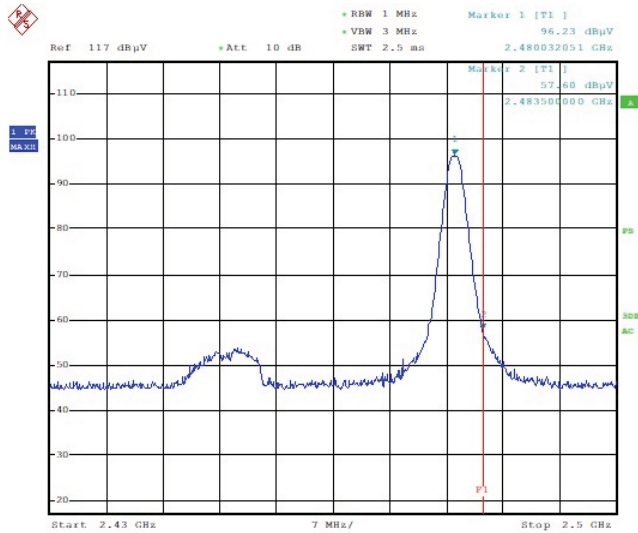
ESTR-22-00164



Band Edges(CH High)

Detector mode:Peak

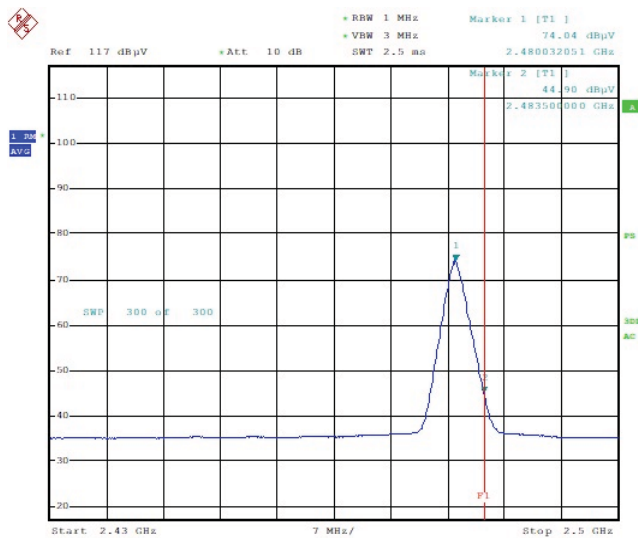
Polarity:Vertical



ESTR-22-00164

Detector mode:Average

Polarity:Vertical

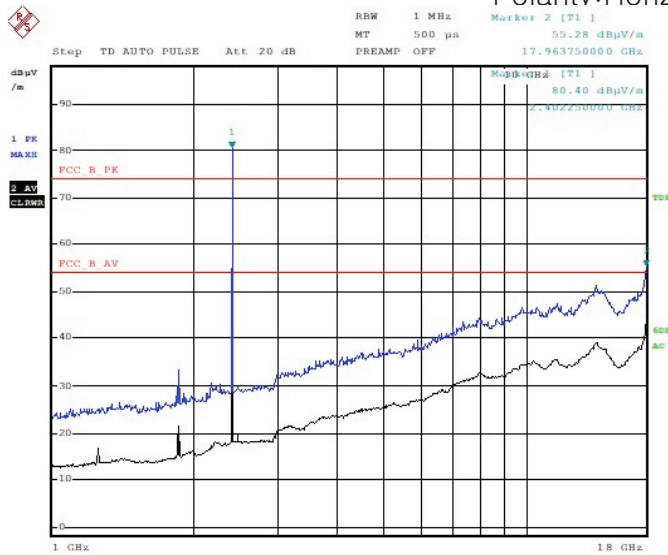


ESTR-22-00164

## Restricted Band Edges

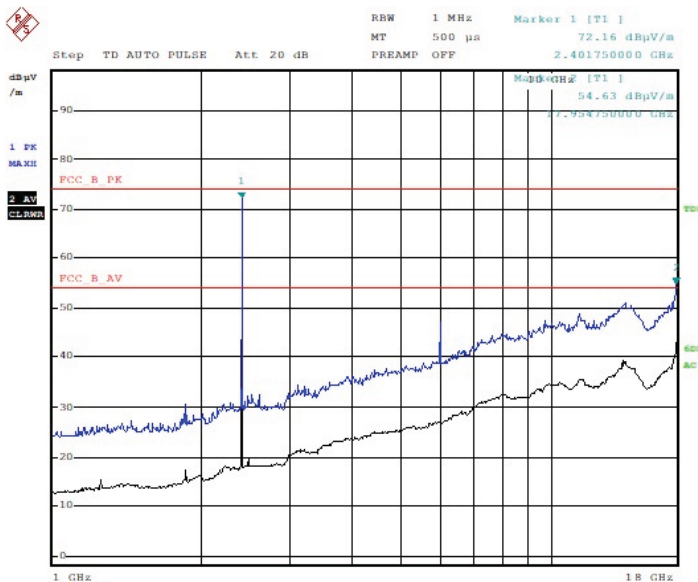
Band Edges(CH Low)

Polarity:Horizontal



ESTR-22-00164

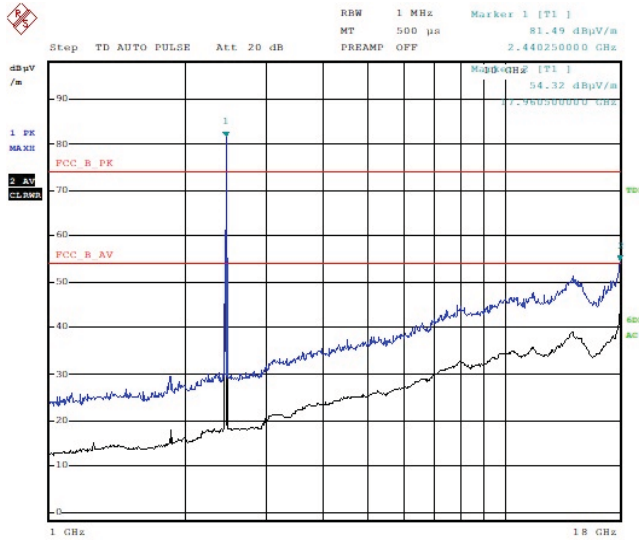
Polarity:Vertical



ESTR-22-00164

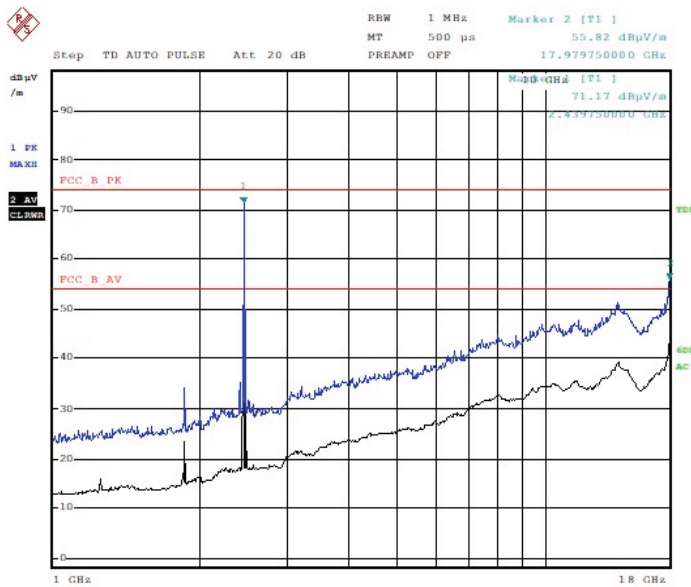
Band Edges(CH Middle)

Polarity:Horizontal



ESTR-22-00164

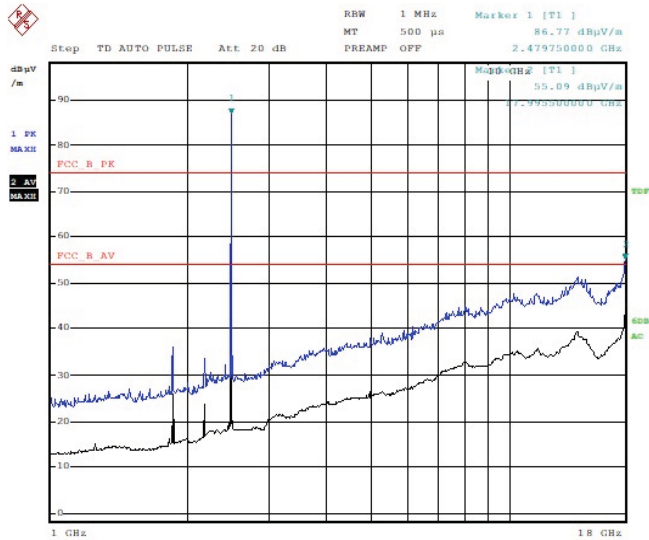
Polarity:Vertical



ESTR-22-00164

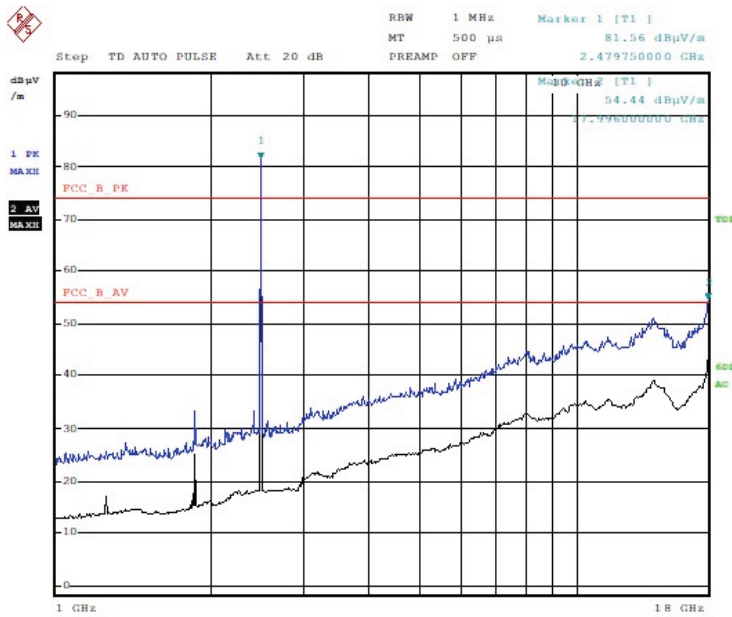
Band Edges(CH High)

Polarity:Horizontal



ESTR-22-00164

Polarity:Vertical



ESTR-22-00164



**Test Data(Low)**

Left\_LE 2M

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB $\mu$ W)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	AMP & Cable (dB)		Limit (dB $\mu$ W/m)	Result (dB $\mu$ W/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2390.00	48.52	H	1.6	27.54	-28.39		74.00	47.67	28.90
2390.00	51.47	V	1.6	27.54	-28.39		74.00	50.62	27.93
4804.00	41.59	H	1.5	31.30	-25.75		74.00	47.14	32.86
4804.00	43.67	V	1.5	31.30	-25.75		74.00	49.22	32.78
AV(RBW: 1 MHz VBW: 3 MHz)									
2390.00	35.73	H	1.6	27.54	-28.39	2.49	54.00	37.37	16.63
2390.00	35.95	V	1.6	27.54	-28.39	2.49	54.00	37.59	16.41
4804.00	27.93	H	1.5	31.30	-25.75	2.49	54.00	35.97	18.03
4804.00	27.98	V	1.5	31.30	-25.75	2.49	54.00	36.02	17.98
Remark	<p>H : Horizontal, V : Vertical TEST MODE : CH : 0 - 2 402 MHz (x postion)</p> <p>*The TX signal wasn't detected from 3th harmonics.</p> <p>*Checked in all 3 axis and the maximum measured data were reported.( Worst data is X axis of position)</p> <p>*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction</p> <p>*This test was radiated up to 26.5 GHz but no noise was measured.</p>								



### Test Data(Middle)

Left\_LE 2M

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB $\mu$ W)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	AMP & Cable (dB)		Limit (dB $\mu$ W/m)	Result (dB $\mu$ W/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
4880.00	41.62	H	1.5	31.30	-25.67	/	74.00	47.25	33.75
4880.00	42.05	V	1.6	31.30	-25.67		74.00	47.68	33.32
AV(RBW: 1 MHz VBW: 3 MHz)									
4880.00	27.62	H	1.5	31.30	-25.67	2.49	54.00	35.74	18.26
4880.00	27.74	V	1.6	31.30	-25.67	2.49	54.00	35.86	18.14
Remark	<p>H : Horizontal, V : Vertical TEST MODE : CH : 19 – 2 440 MHz (x postion)</p> <p>*The TX signal wasn't detected from 3th harmonics.</p> <p>*Checked in all 3 axis and the maximum measured data were reported.( Worst data is X axis of position)</p> <p>*Total = Reading Value + Antenna Factor + Cable Loss – Amp Gain + Duty Cycle Correction</p> <p>*This test was radiated up to 26.5 GHz but no noise was measured.</p>								



**Test Data(High)**

Left\_LE 2M

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB $\mu$ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction (dB)	Result Value		
				Ant Factor (dB)	AMP & Cable (dB)		Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2483.50	54.53	H	1.6	27.42	-28.28		74.00	53.67	17.26
2483.50	55.33	V	1.8	27.42	-28.28		74.00	54.47	16.14
4960.00	43.06	H	1.6	31.48	-25.59		74.00	48.95	21.05
4960.00	43.34	V	1.5	31.48	-25.59		74.00	49.23	20.98
AV(RBW: 1 MHz VBW: 3 MHz)									
2483.50	36.86	H	1.6	27.42	-28.28	2.49	54.00	38.49	15.51
2483.50	36.81	V	1.8	27.42	-28.28	2.49	54.00	38.44	15.56
4960.00	29.69	H	1.6	31.48	-25.59	2.49	54.00	38.07	15.93
4960.00	29.52	V	1.5	31.48	-25.59	2.49	54.00	37.90	16.10
Remark	<p>H : Horizontal, V : Vertical TEST MODE : CH : 39 - 2 480 MHz (x postion)</p> <p>*The TX signal wasn't detected from 3th harmonics.            *Checked in all 3 axis and the maximum measured data were reported.( Worst data is X axis of position)            *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction            *This test was radiated up to 26.5 GHz but no noise was measured.</p>								

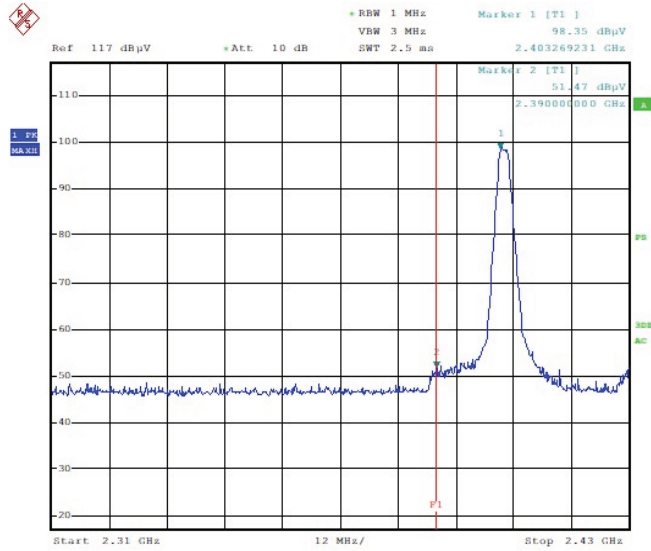




Band Edges(CH Low)

Detector mode:Peak

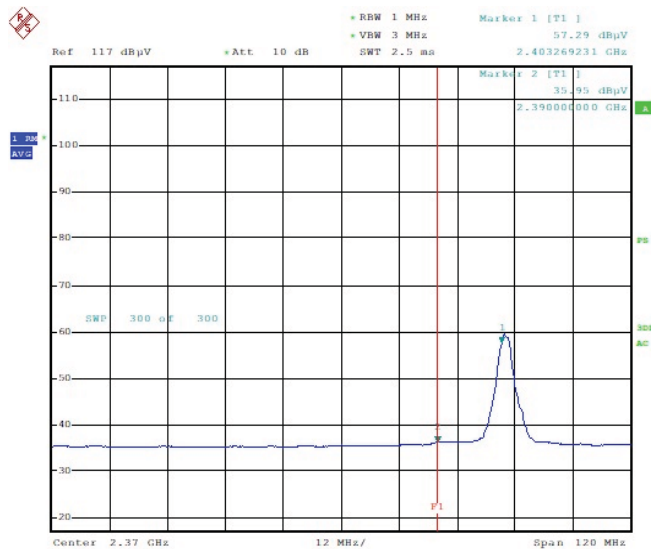
Polarity:Vertical



ESTR-22-00164

Detector mode:Average

Polarity:Vertical

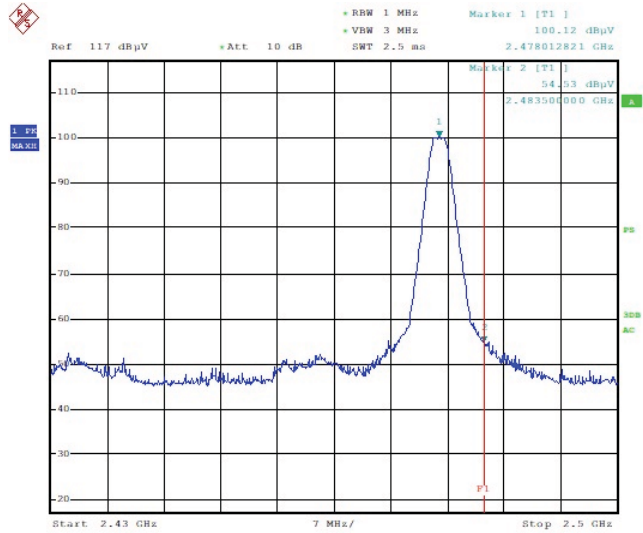


ESTR-22-00164

Band Edges(CH High)

Detector mode:Peak

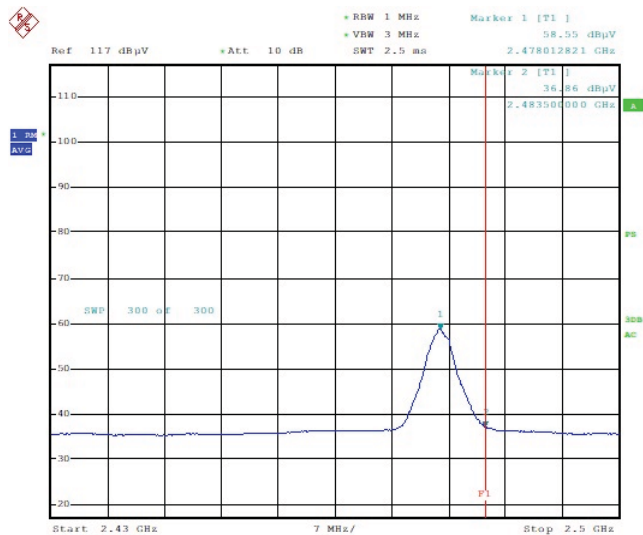
Polarity:Horizontal



ESTR-22-00164

Detector mode:Average

Polarity:Horizontal



ESTR-22-00164

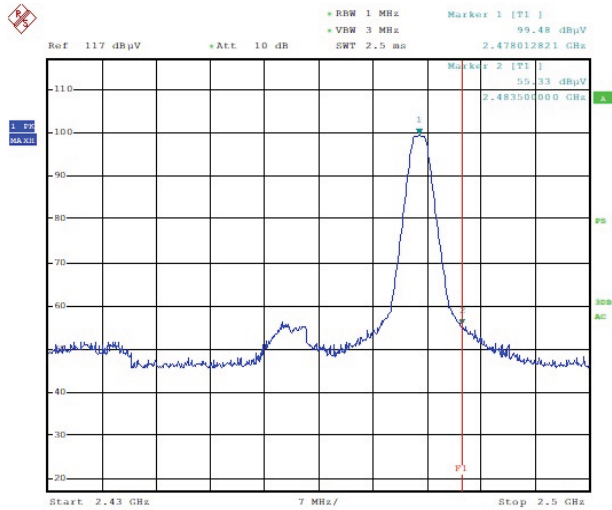


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Band Edges(CH High)

Detector mode:Peak

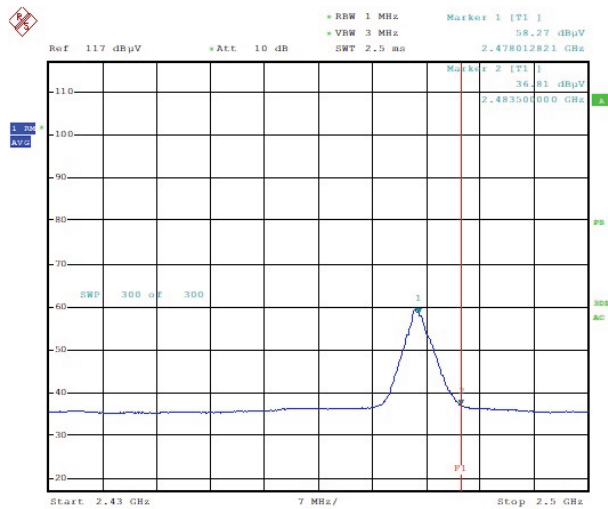
Polarity:Vertical



ESTR-22-00164

Detector mode:Average

Polarity:Vertical

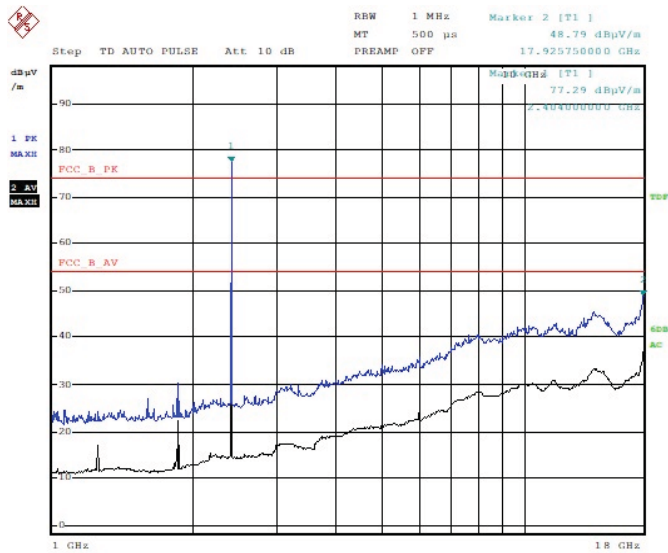


ESTR-22-00164

# Restricted Band Edges

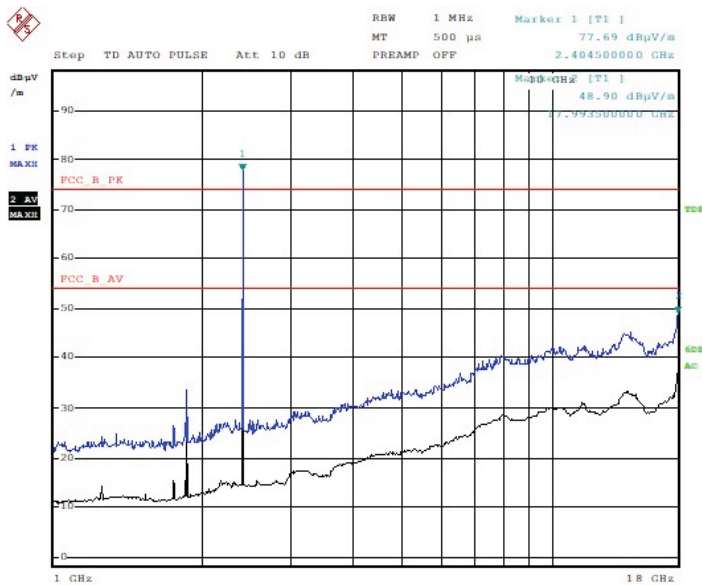
Band Edges(CH Low)

Polarity:Horizontal



ESTE-19-02241-HOR

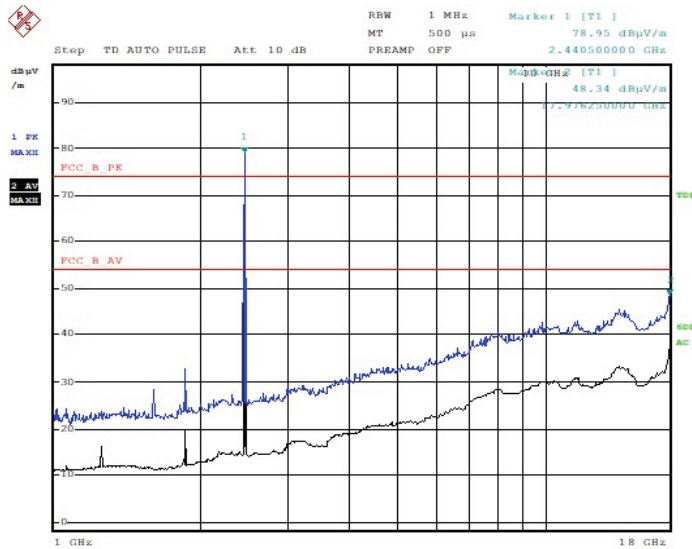
Polarity:Vertical



ESTE-19-02241-HOR

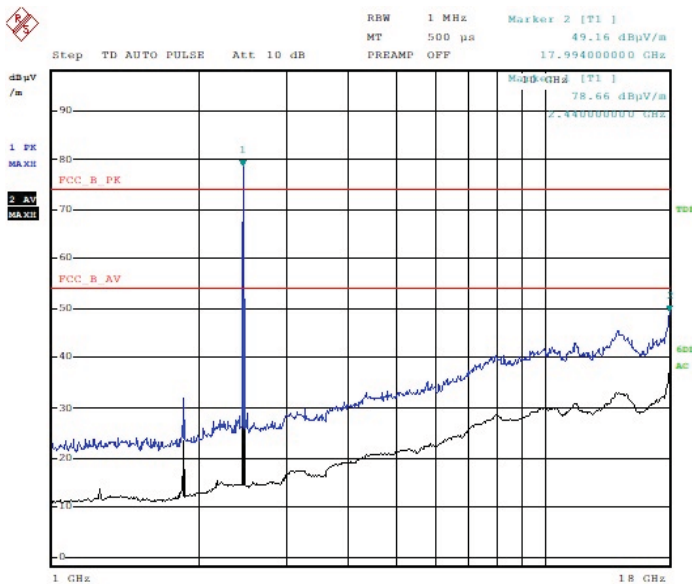
Band Edges(CH Middle)

Polarity:Horizontal



ESTE-19-02241-HOR

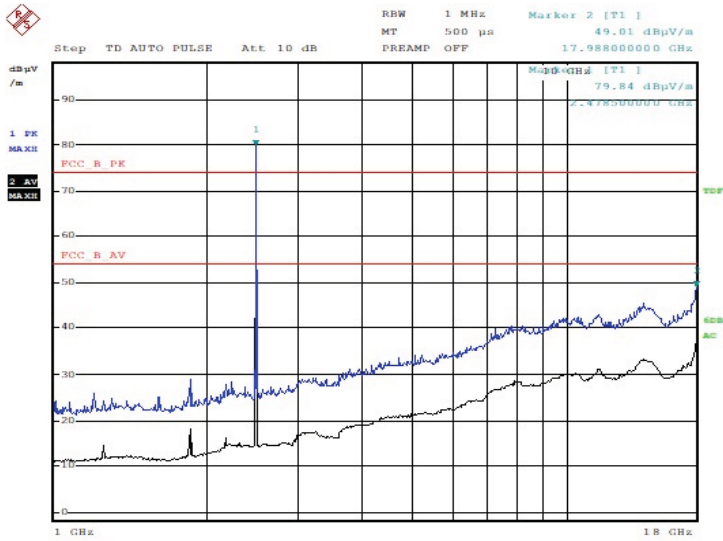
Polarity:Vertical



ESTE-19-02241-HOR

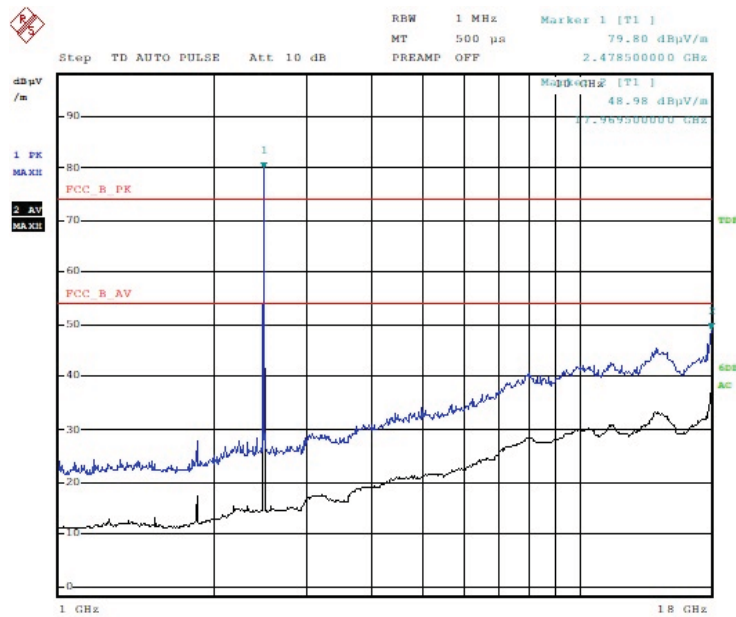
Band Edges(CH High)

Polarity:Horizontal



ESTE-19-02241-HOR

Polarity:Vertical



ESTE-19-02241-HOR



**Test Data(Low)**

Right\_LE 1M

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB $\mu$ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	AMP & Cable (dB)		Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2390.00	46.81	H	1.6	27.83	-29.82		74.00	44.82	28.90
2390.00	54.79	V	1.6	27.83	-29.82		74.00	52.80	27.93
4804.00	37.59	H	1.5	31.50	-27.28		74.00	41.81	32.86
4804.00	45.67	V	1.5	31.50	-27.28		74.00	49.89	32.78
AV(RBW: 1 MHz VBW: 3 MHz)									
2390.00	35.84	H	1.6	27.83	-29.82	0.76	54.00	34.61	19.39
2390.00	35.56	V	1.6	27.83	-29.82	0.76	54.00	34.33	19.67
4804.00	27.84	H	1.5	31.50	-27.28	0.76	54.00	32.82	21.18
4804.00	27.12	V	1.5	31.50	-27.28	0.76	54.00	32.10	21.90
Remark	<p>H : Horizontal, V : Vertical TEST MODE : CH : 0 - 2 402 MHz (x postion)</p> <p>*The TX signal wasn't detected from 3th harmonics.</p> <p>*Checked in all 3 axis and the maximum measured data were reported.( Worst data is X axis of position)</p> <p>*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction</p> <p>*This test was radiated up to 26.5 GHz but no noise was measured.</p>								



### Test Data(Middle)

Right\_LE 1

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB $\mu$ W)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	AMP & Cable (dB)		Limit (dB $\mu$ W/m)	Result (dB $\mu$ W/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
4880.00	37.62	H	1.5	31.58	-27.24	/	74.00	41.96	33.75
4880.00	44.29	V	1.6	31.58	-27.24		74.00	48.63	33.32
AV(RBW: 1 MHz VBW: 3 MHz)									
4880.00	27.62	H	1.5	31.58	-27.24	0.76	54.00	32.72	21.28
4880.00	26.74	V	1.6	31.58	-27.24	0.76	54.00	31.84	22.16
Remark	<p>H : Horizontal, V : Vertical TEST MODE : CH : 19 – 2 440 MHz (x postion)</p> <p>*The TX signal wasn't detected from 3th harmonics.            *Checked in all 3 axis and the maximum measured data were reported.( Worst data is X axis of position)            *Total = Reading Value + Antenna Factor + Cable Loss – Amp Gain + Duty Cycle Correction            *This test was radiated up to 26.5 GHz but no noise was measured.</p>								





**Test Data(High)**

Right\_LE 1↑

Measurement Distance : 3 m

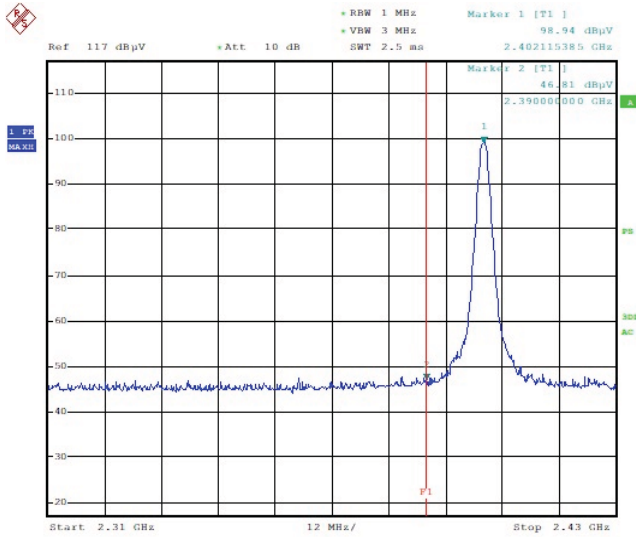
Frequency (MHz)	Reading (dB $\mu$ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction (dB)	Result Value		
				Ant Factor (dB)	AMP & Cable (dB)		Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2483.50	59.50	H	1.6	27.63	-29.75		74.00	57.38	17.26
2483.50	60.59	V	1.8	27.63	-29.75		74.00	58.47	16.14
4960.00	50.06	H	1.6	31.78	-27.17		74.00	54.67	21.05
4960.00	50.34	V	1.5	31.78	-27.17		74.00	54.95	20.98
AV(RBW: 1 MHz VBW: 3 MHz)									
2483.50	46.85	H	1.6	27.63	-29.75	0.76	54.00	45.49	8.51
2483.50	46.31	V	1.8	27.63	-29.75	0.76	54.00	44.95	9.05
4960.00	34.69	H	1.6	31.78	-27.17	0.76	54.00	40.06	13.94
4960.00	34.52	V	1.5	31.78	-27.17	0.76	54.00	39.89	14.11
Remark	<p>H : Horizontal, V : Vertical TEST MODE : CH : 39 - 2 480 MHz (x postion)</p> <p>*The TX signal wasn't detected from 3th harmonics.            *Checked in all 3 axis and the maximum measured data were reported.( Worst data is X axis of position)            *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction            *This test was radiated up to 26.5 GHz but no noise was measured.</p>								

## Restricted Band Edges

Band Edges(CH Low)

Detector mode:Peak

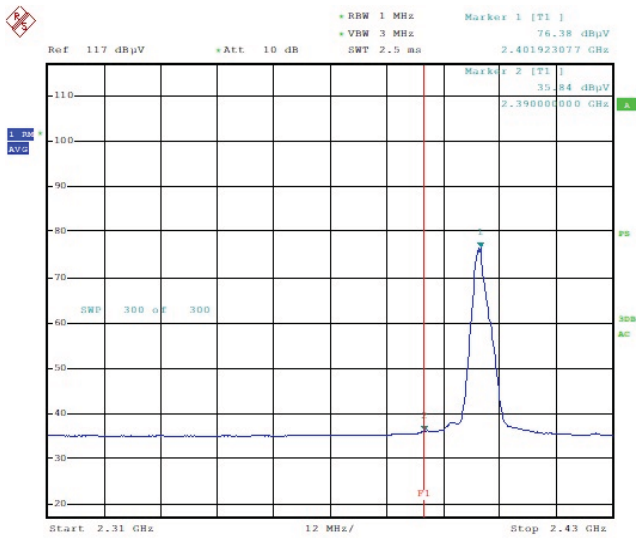
Polarity:Horizontal



ESTR-22-00164

Detector mode:Average

Polarity:Horizontal



ESTR-22-00164

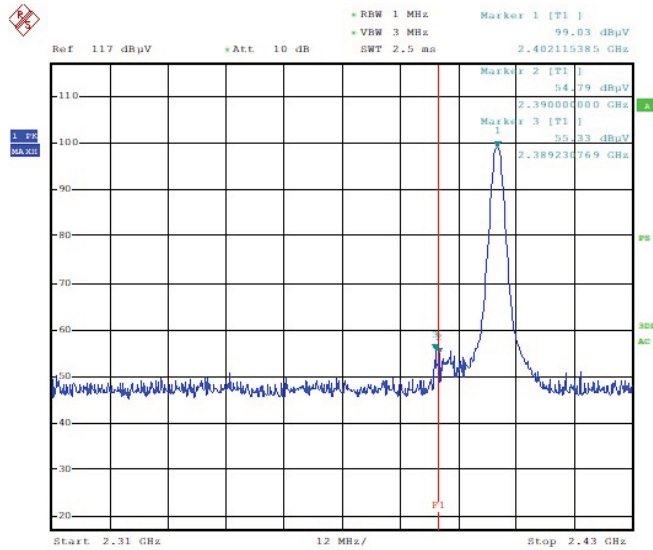


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Band Edges(CH Low)

Detector mode:Peak

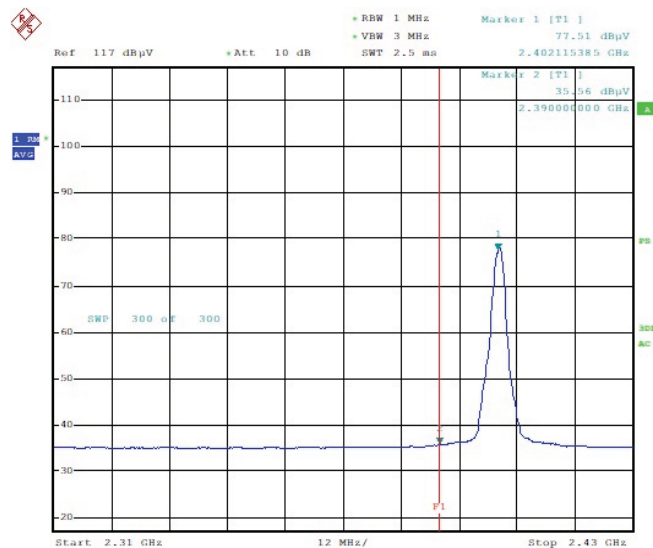
Polarity:Vertical



ESTR-22-00164

Detector mode:Average

Polarity:Vertical



ESTR-22-00164

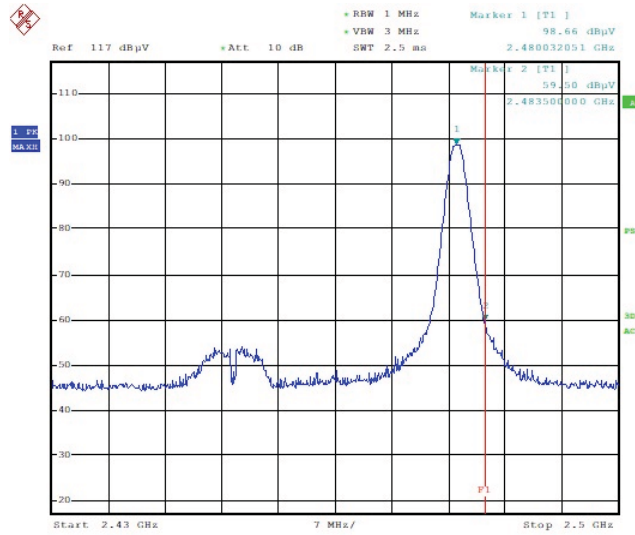


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Band Edges(CH High)

Detector mode:Peak

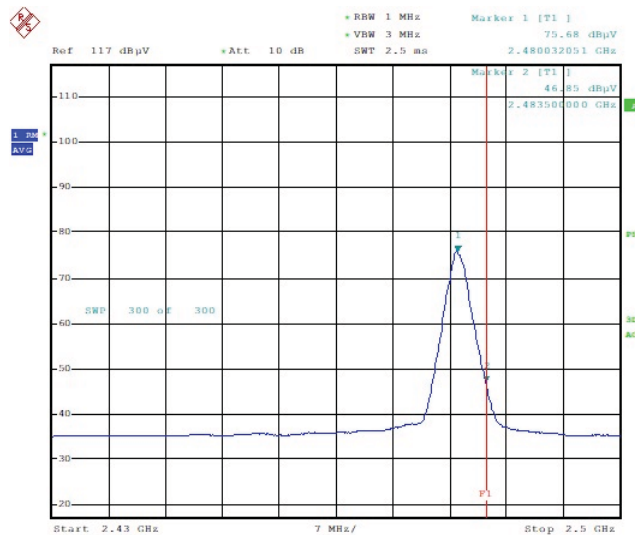
Polarity:Horizontal



ESTR-22-00164

Detector mode:Average

Polarity:Horizontal

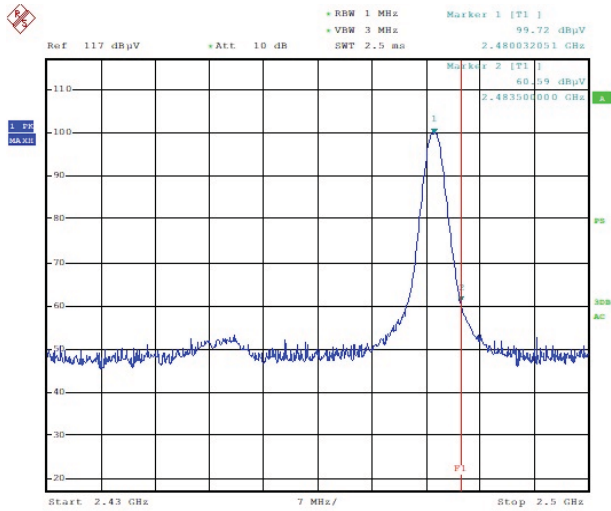


ESTR-22-00164

Band Edges(CH High)

Detector mode:Peak

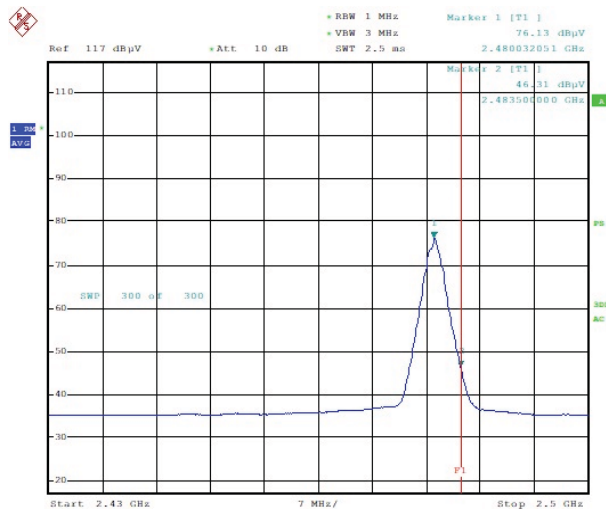
Polarity:Vertical



ESTR-22-00164

Detector mode:Average

Polarity:Vertical

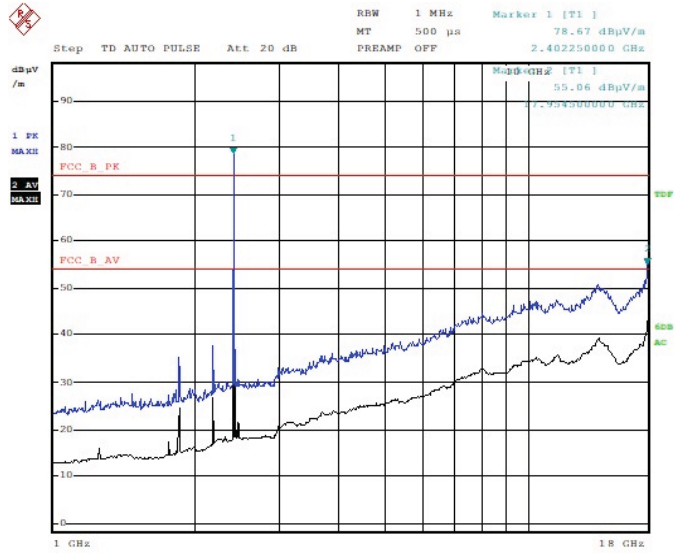


ESTR-22-00164

# Restricted Band Edges

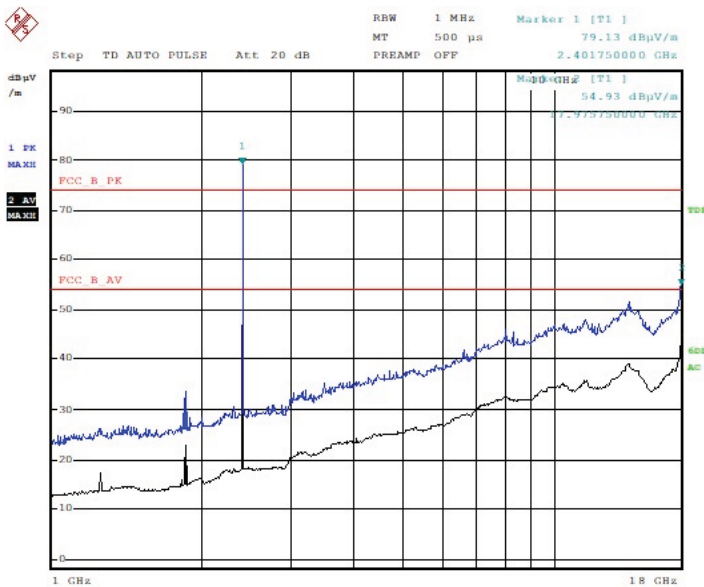
Band Edges(CH Low)

Polarity:Horizontal



ESTR-22-00164

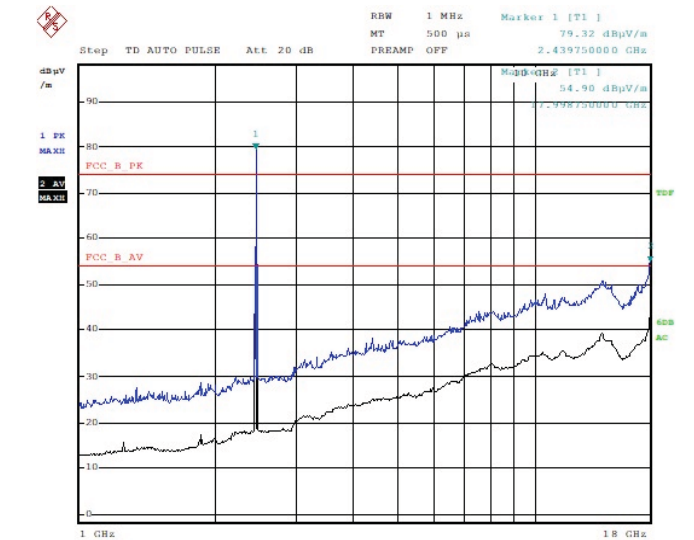
Polarity:Vertical



ESTR-22-00164

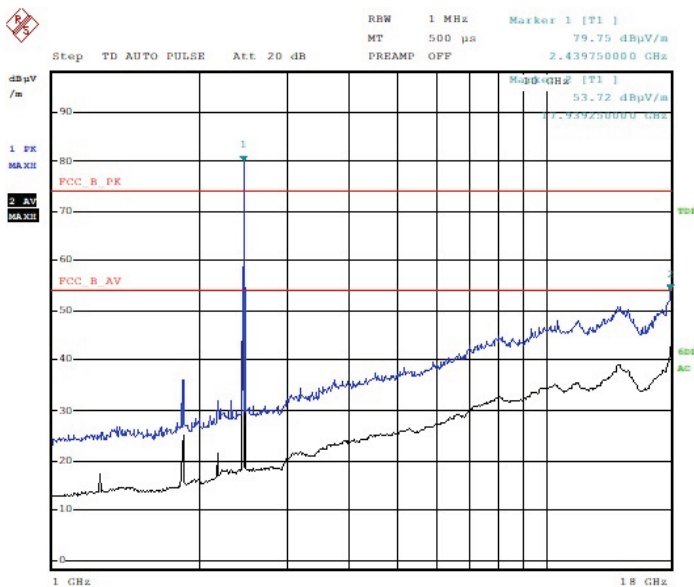
Band Edges(CH Middle)

Polarity:Horizontal



ESTR-22-00164

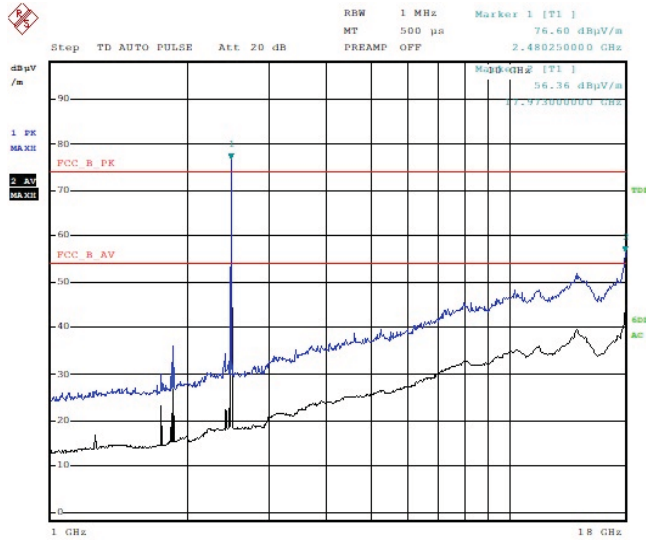
Polarity:Vertical



ESTR-22-00164

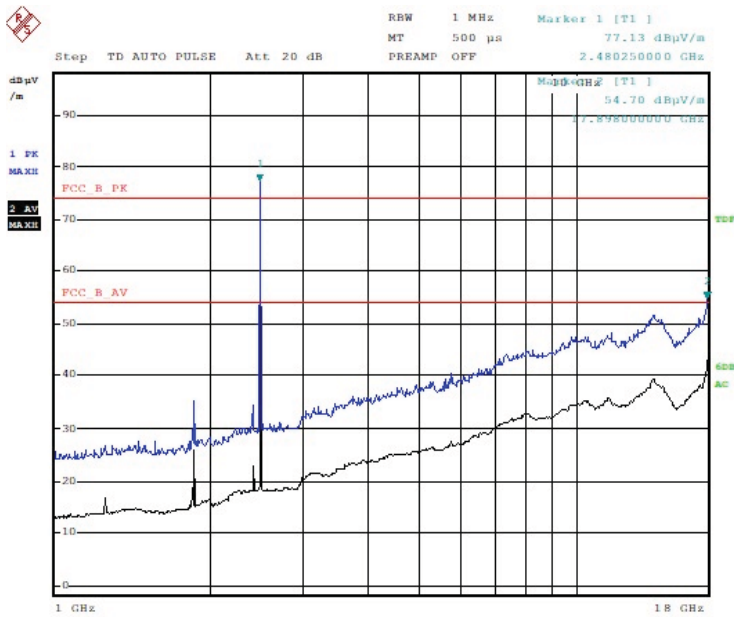
Band Edges(CH High)

Polarity:Horizontal



ESTR-22-00164

Polarity:Vertical



ESTR-22-00164





**Test Data(Low)**

Right\_LE 2

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB $\mu$ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	AMP & Cable (dB)		Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2390.00	51.05	H	1.6	27.83	-29.82		74.00	49.06	28.90
2390.00	51.25	V	1.6	27.83	-29.82		74.00	49.26	27.93
4804.00	49.56	H	1.5	31.50	-27.28		74.00	53.78	32.86
4804.00	49.64	V	1.5	31.50	-27.28		74.00	53.86	32.78
AV(RBW: 1 MHz VBW: 3 MHz)									
2390.00	35.59	H	1.6	27.83	-29.82	2.46	54.00	36.06	17.94
2390.00	35.66	V	1.6	27.83	-29.82	2.46	54.00	36.13	17.87
4804.00	26.83	H	1.5	31.50	-27.28	2.46	54.00	33.51	20.49
4804.00	26.13	V	1.5	31.50	-27.28	2.46	54.00	32.81	21.19
Remark	<p>H : Horizontal, V : Vertical TEST MODE : CH : 0 - 2 402 MHz (x postion)</p> <p>*The TX signal wasn't detected from 3th harmonics.</p> <p>*Checked in all 3 axis and the maximum measured data were reported.( Worst data is X axis of position)</p> <p>*Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction</p> <p>*This test was radiated up to 26.5 GHz but no noise was measured.</p>								



## Test Data(Middle)

Right\_LE 2

Measurement Distance : 3 m

Frequency (MHz)	Reading (dB $\mu$ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction(dB)	Result Value		
				Ant Factor (dB)	AMP & Cable (dB)		Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
4880.00	43.29	H	1.5	31.58	-27.24		74.00	47.63	33.75
4880.00	43.59	V	1.6	31.58	-27.24		74.00	47.93	33.32
AV(RBW: 1 MHz VBW: 3 MHz)									
4880.00	26.67	H	1.5	31.58	-27.24	2.46	54.00	33.47	20.53
4880.00	26.79	V	1.6	31.58	-27.24	2.46	54.00	33.59	20.41
Remark	<p>H : Horizontal, V : Vertical TEST MODE : CH : 19 – 2 440 MHz (x postion)</p> <p>*The TX signal wasn't detected from 3th harmonics.            *Checked in all 3 axis and the maximum measured data were reported.( Worst data is X axis of position)            *Total = Reading Value + Antenna Factor + Cable Loss – Amp Gain + Duty Cycle Correction            *This test was radiated up to 26.5 GHz but no noise was measured.</p>								



### Test Data(High)

Right\_LE 2M

Measurement Distance : 3 m

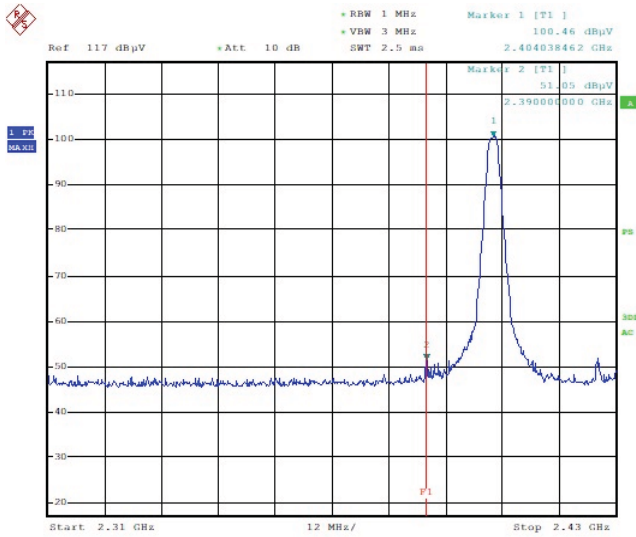
Frequency (MHz)	Reading (dB $\mu$ V)	Position (V/H)	Height (m)	Correction Factor		Duty Cycle Correction (dB)	Result Value		
				Ant Factor (dB)	AMP & Cable (dB)		Limit (dB $\mu$ V/m)	Result (dB $\mu$ V/m)	Margin (dB)
PEAK(RBW: 1 MHz VBW: 3 MHz)									
2483.50	54.57	H	1.6	27.63	-29.75		74.00	52.45	17.26
2483.50	56.85	V	1.8	27.63	-29.75		74.00	54.73	16.14
4960.00	44.39	H	1.6	31.78	-27.17		74.00	49.00	21.05
4960.00	45.32	V	1.5	31.78	-27.17		74.00	49.93	20.98
AV(RBW: 1 MHz VBW: 3 MHz)									
2483.50	36.80	H	1.6	27.63	-29.75	2.46	54.00	37.14	16.86
2483.50	37.29	V	1.8	27.63	-29.75	2.46	54.00	37.63	16.37
4960.00	22.69	H	1.6	31.78	-27.17	2.46	54.00	29.76	24.24
4960.00	23.19	V	1.5	31.78	-27.17	2.46	54.00	30.26	23.74
Remark	<p>H : Horizontal, V : Vertical TEST MODE : CH : 39 - 2 480 MHz (x postion)</p> <p>*The TX signal wasn't detected from 3th harmonics.            *Checked in all 3 axis and the maximum measured data were reported.( Worst data is X axis of position)            *Total = Reading Value + Antenna Factor + Cable Loss - Amp Gain + Duty Cycle Correction            *This test was radiated up to 26.5 GHz but no noise was measured.</p>								

## Restricted Band Edges

Band Edges(CH Low)

Detector mode:Peak

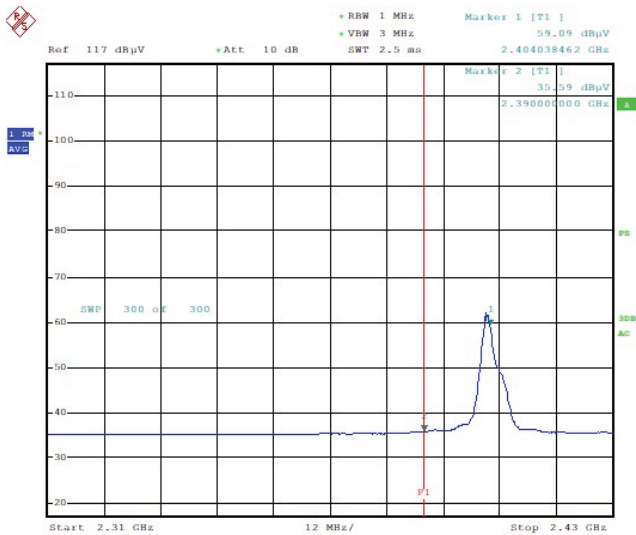
Polarity:Horizontal



ESTR-22-00164

Detector mode:Average

Polarity:Horizontal

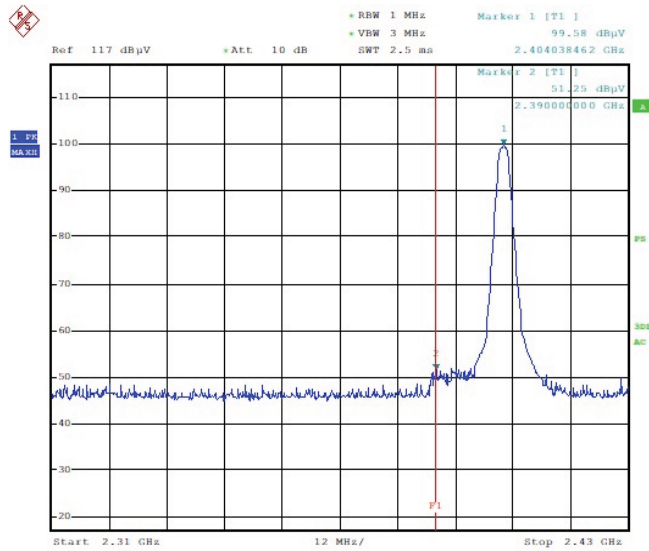


ESTR-22-00164

Band Edges(CH Low)

Detector mode:Peak

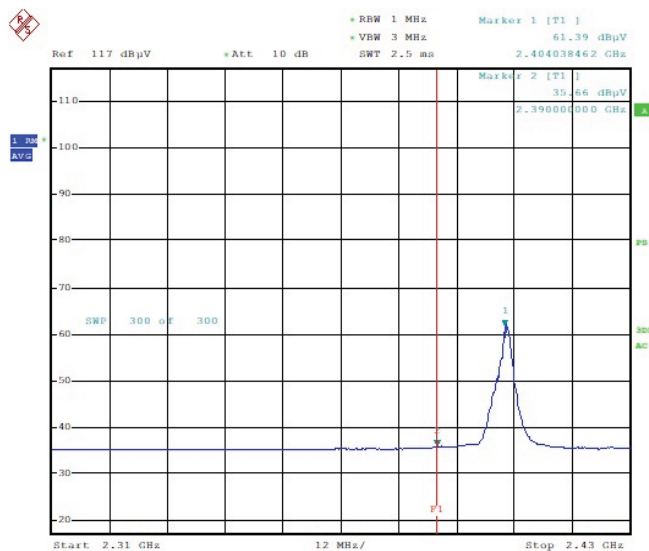
Polarity:Vertical



ESTR-22-00164

Detector mode:Average

Polarity:Vertical

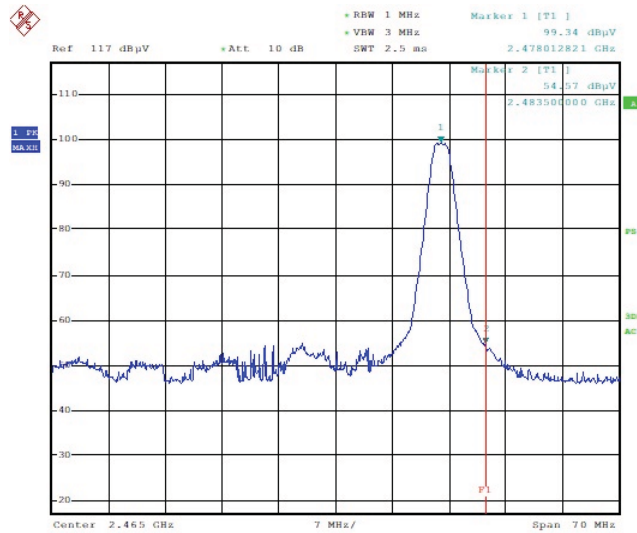


ESTR-22-00164

Band Edges(CH High)

Detector mode:Peak

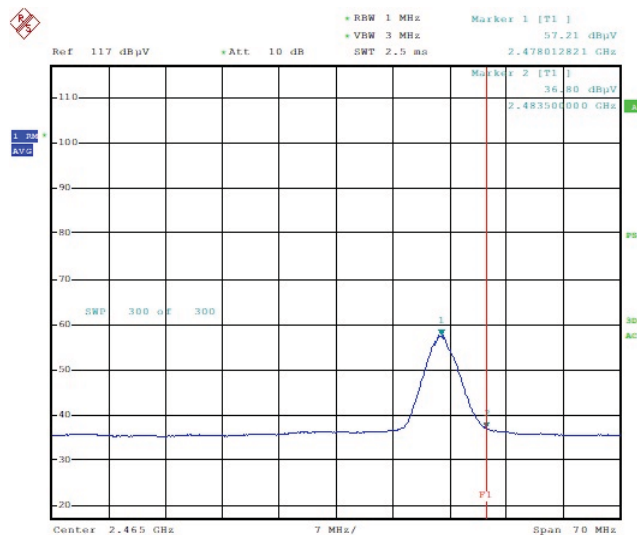
Polarity:Horizontal



ESTR-22-00164

Detector mode:Average

Polarity:Horizontal



ESTR-22-00164

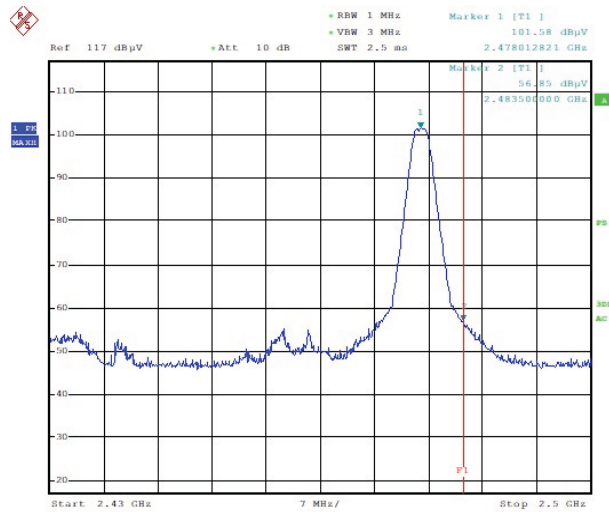


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Band Edges(CH High)

Detector mode:Peak

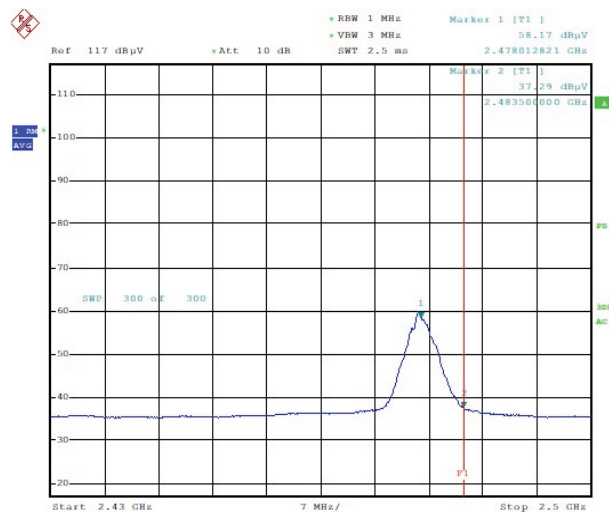
Polarity:Vertical



ESTR-22-00164

Detector mode:Average

Polarity:Vertical

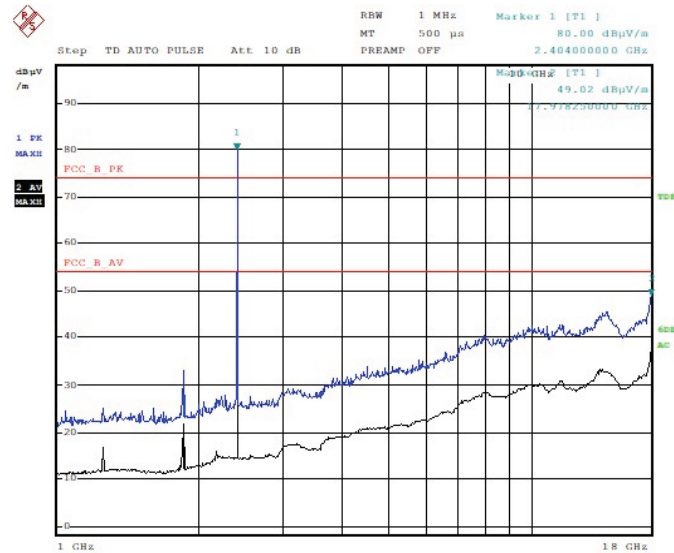


ESTR-22-00164

# Restricted Band Edges

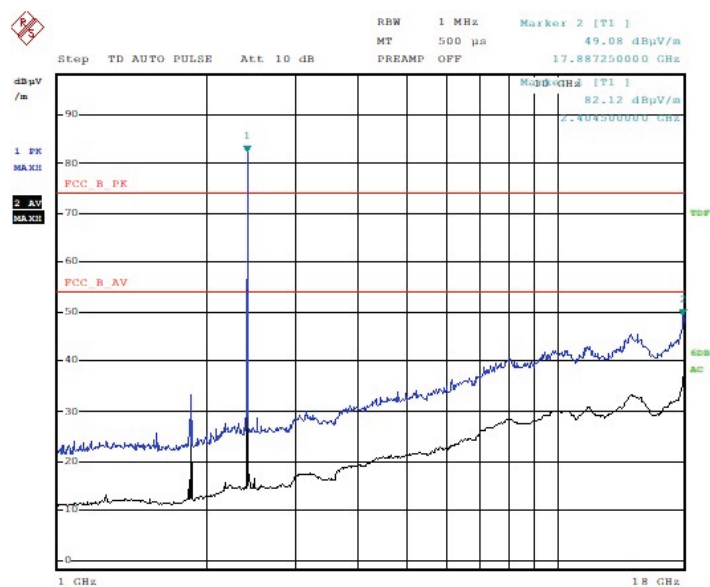
Band Edges(CH Low)

Polarity:Horizontal



ESTE-19-02241-HOR

Polarity:Vertical



ESTE-19-02241-HOR

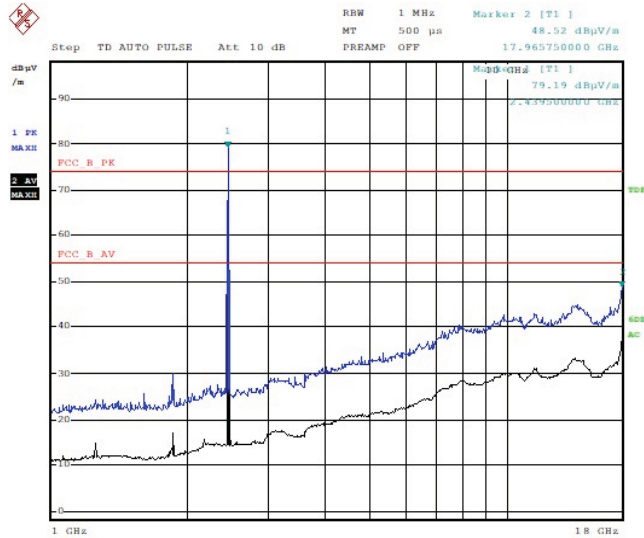




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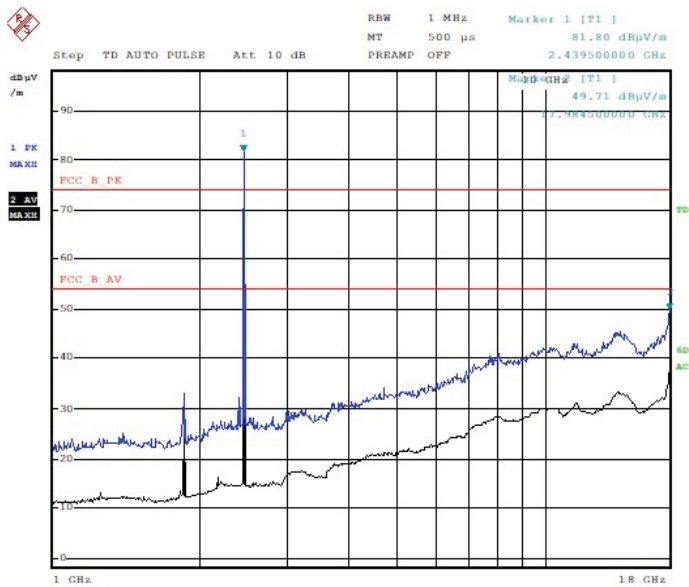
Band Edges(CH Middle)

Polarity:Horizontal



ESTE-19-02241-HOR

Polarity:Vertical



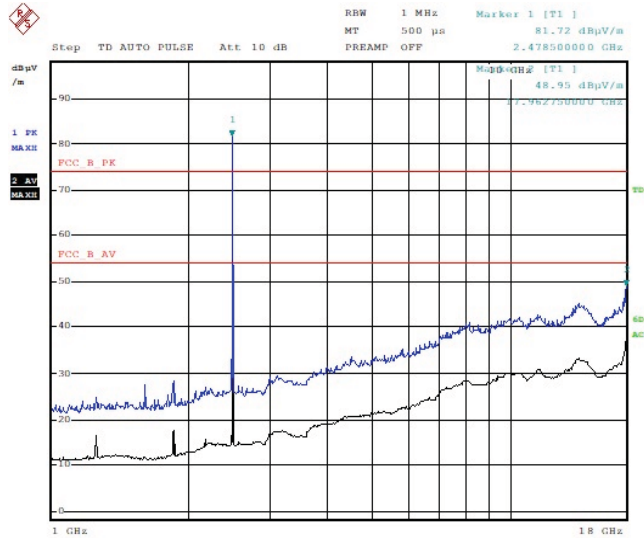
ESTE-19-02241-HOR



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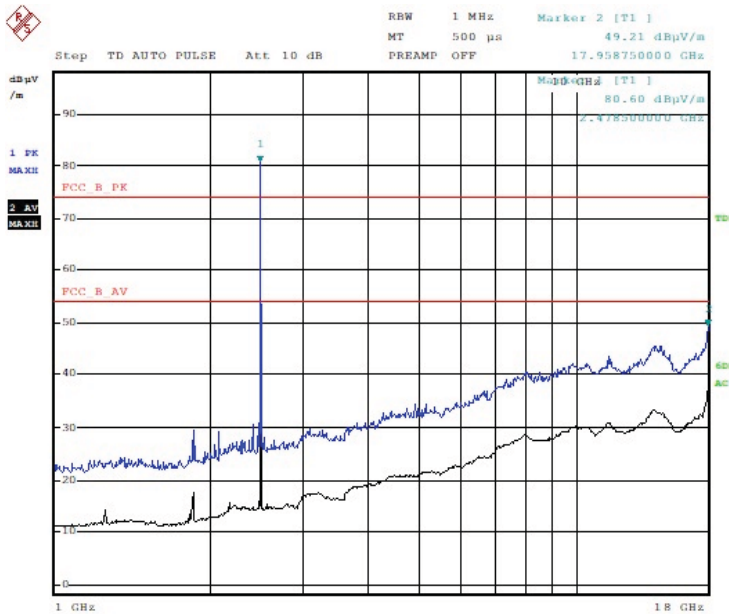
Band Edges(CH High)

Polarity:Horizontal



ESTE-19-02241-HOR

Polarity:Vertical



ESTE-19-02241-HOR

## 11. Measurement of conducted disturbance

The continuous disturbance voltage of AC Mains in the frequency from 0.15 MHz to 30 MHz was measured in accordance to FCC PART 15.207. The test setup was made according to ANSI C 63.10 (2009) in a shielded room. The EUT was placed on a non-conductive table at least 0.8 m above the ground plan. A grounded vertical reference plane was positioned in a distance of 0.4 m from the EUT. The distance from the EUT to other metal surfaces was at least 0.8 m. The EUT was only earthen by its power cord through the line impedance stabilizing network. The power cord has been bundled to a length of 1.0 m. The test receiver with Quasi Peak detector complies with CISPR 16.

### 11.1 Measurement equipments

Equipment Name	Type	Manufacturer	Serial No.	Next Calibration date
TEST RECEIVER	ESPI	Rohde & Schwarz	100005	19-Jul-22
LISN	ESH3-Z5	Rohde & Schwarz	836679/025	19-Jul-22
Pulse Limiter	ESH3Z2	Rohde & Schwarz	NONE	19-Jul-22

### 11.2 Environmental Condition

Test Place : Shielded Room

Temperature (°C) : 23.5 °C

Humidity (% R.H.) : 44.4 % R.H.



### 11.3 Test Data

Frequency (MHz)	Correction Factor		Line (H/N)	Quasi-peak Value			Average Value		
	Lisn (dB)	Cable (dB)		Limit (dB $\mu$ V)	Reading (dB $\mu$ V)	Result (dB $\mu$ V)	Limit (dB $\mu$ V)	Reading (dB $\mu$ V)	Result (dB)
<h1>N/A</h1>									
Remark	H : Hot Line, N : Neutral Line *Correction Factor = Lisn + Cable *Result = Correction Factor + Reading								