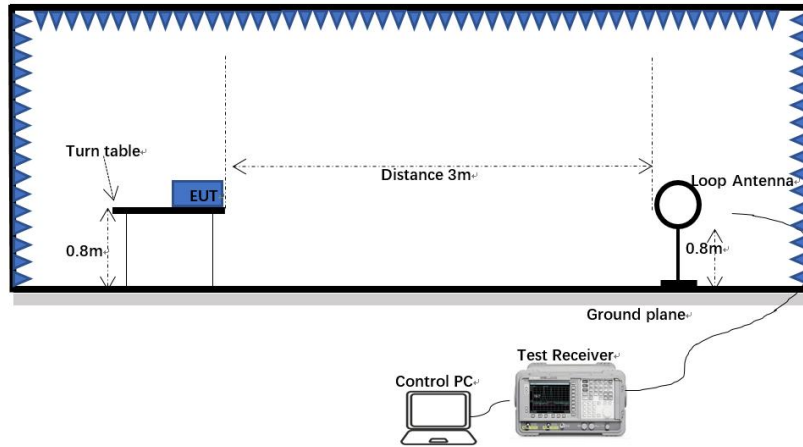
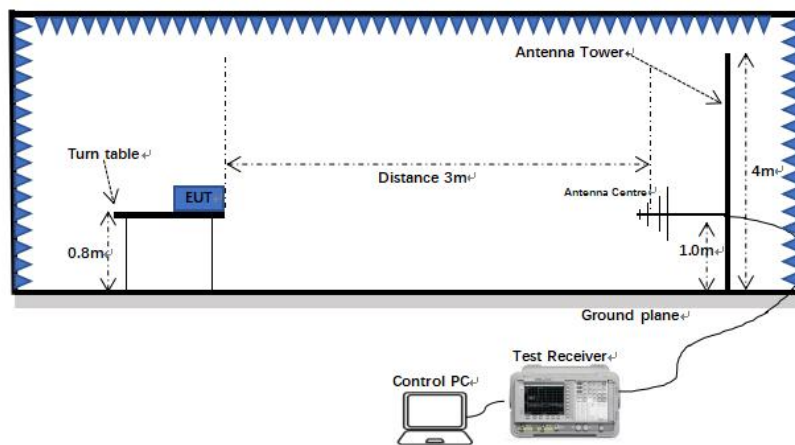


6.12.2 Test setup

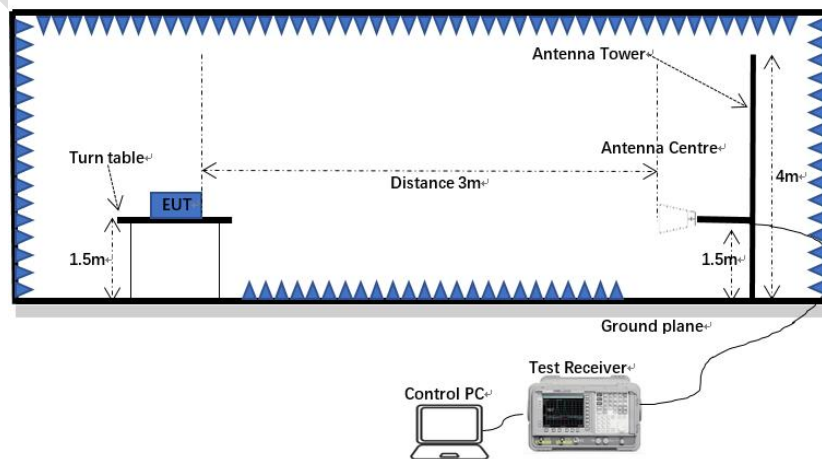
Below 1GHz:



30MHz-1GHz:



Above 1GHz:



6.12.3 Procedure

- a) For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b) For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c) The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h) Test the EUT in the lowest channel, the middle channel, the highest channel.
- i) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j) Repeat above procedures until all frequencies measured was complete.

Note 1: Scan from 9 kHz to 40GHz, the disturbance above 12.75GHz and below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported. Fundamental frequency is blocked by filter, and only spurious emission is shown.

Note 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

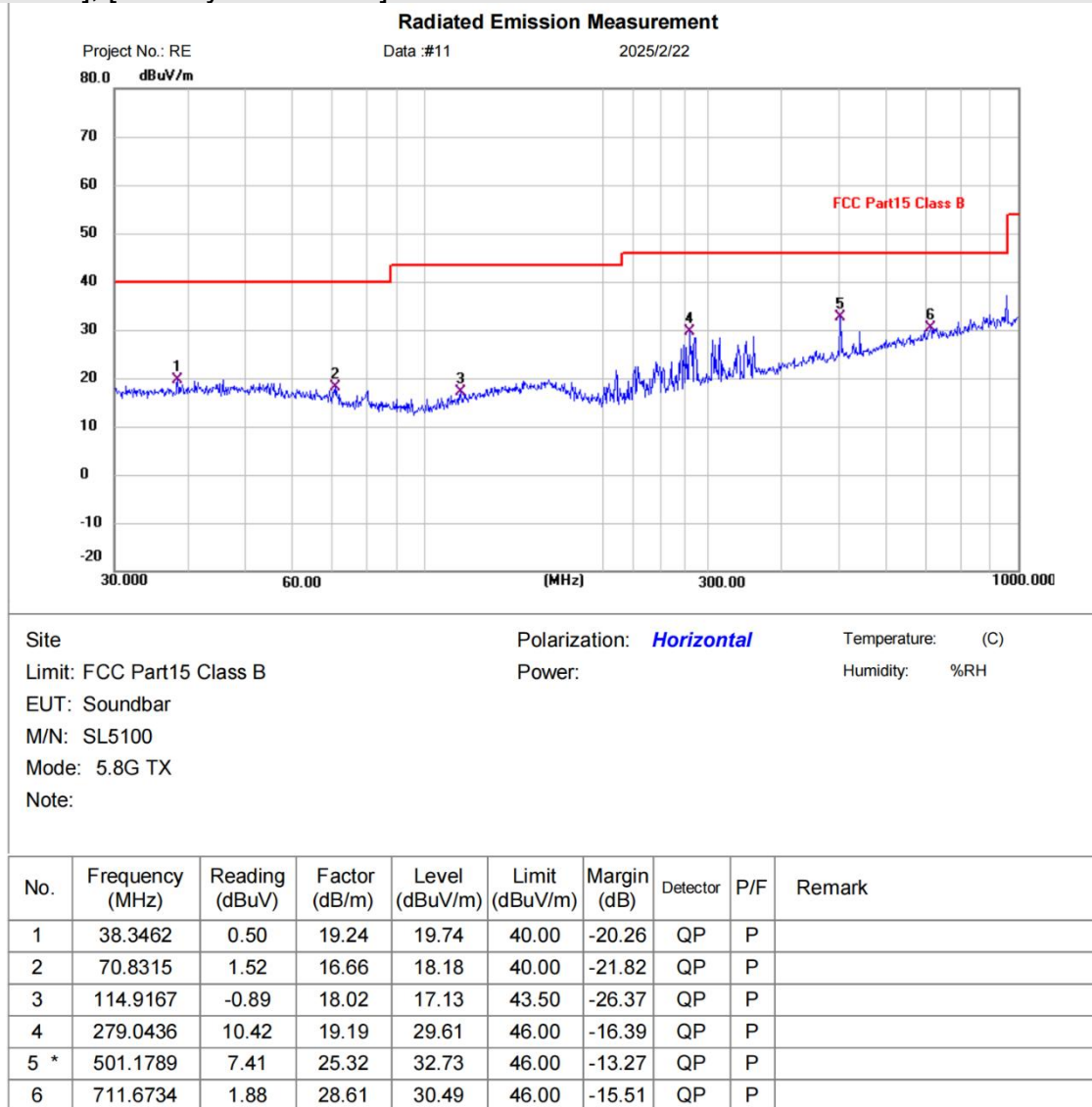
Note 3: The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

$$\text{Level (dBuV)} = \text{Reading (dBuV)} + \text{Factor (dB/m)}$$

6.12.4 Test data

Below 1GHz

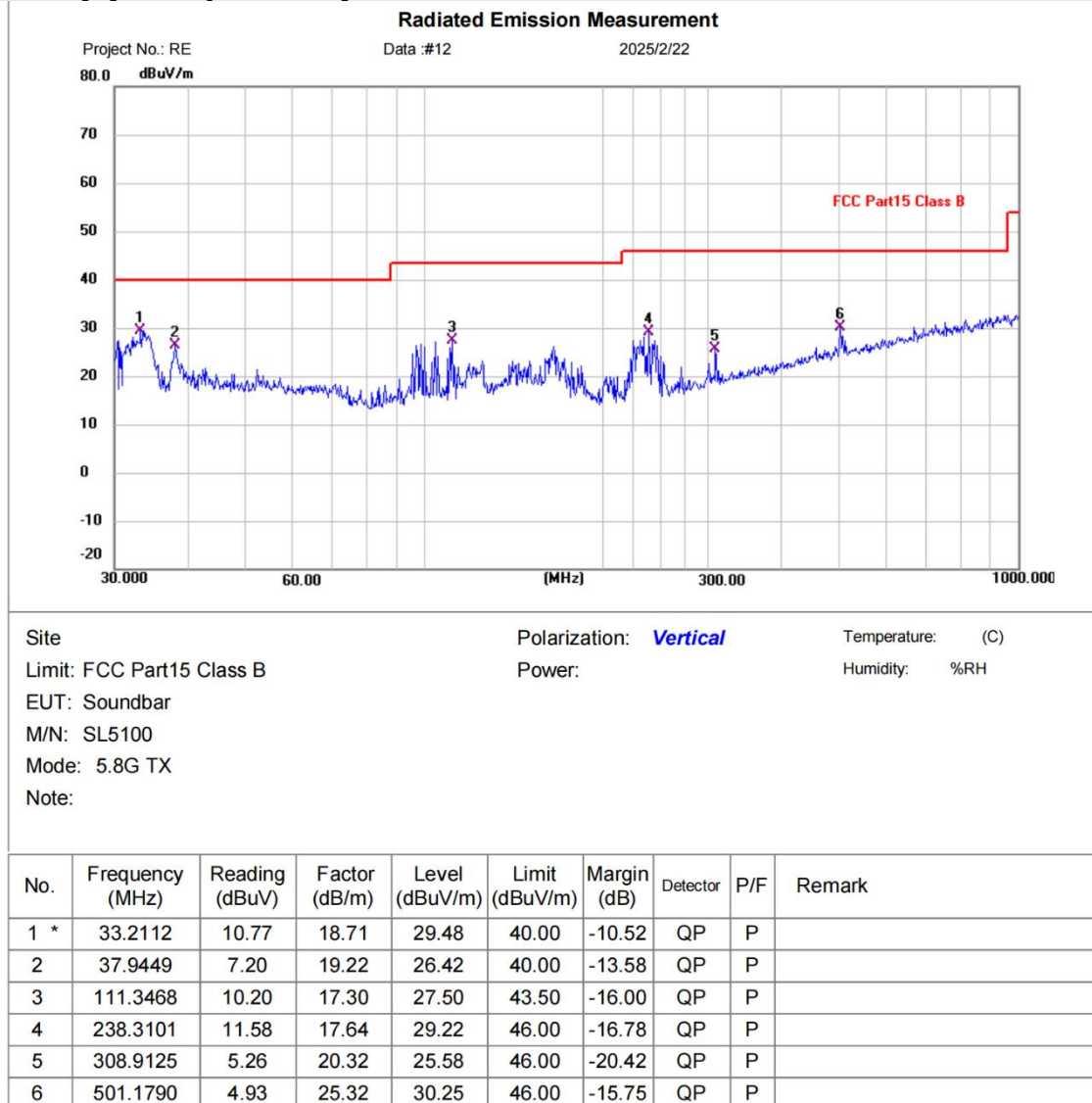
[Test mode: TX]; [Polarity: Horizontal]



**Maximum data x: Over limit !: over margin

Test Result: Pass

[Test mode: TX]; [Polarity: Vertical]

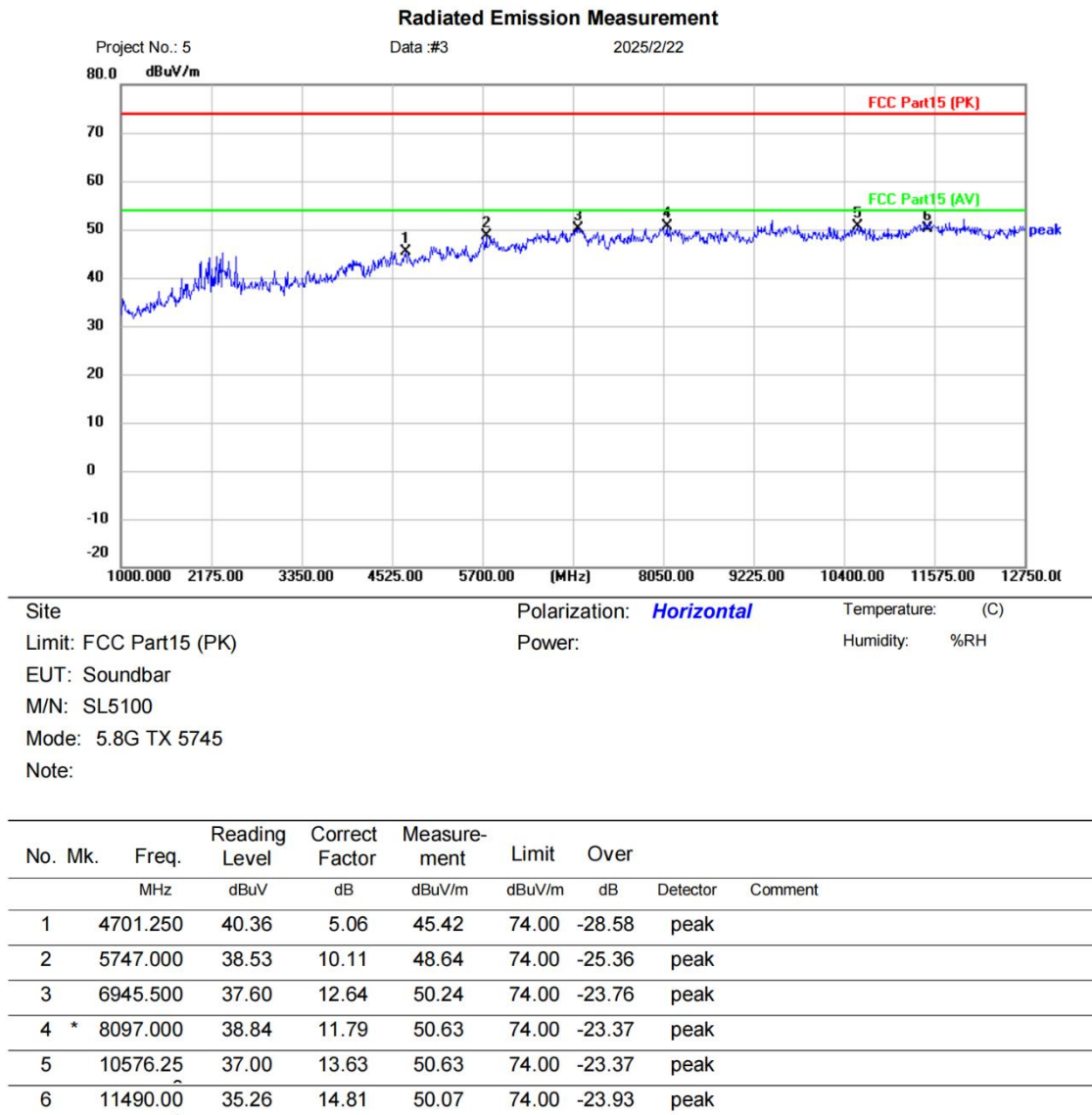


*Maximum data x:Over limit !:over margin

Test Result: Pass

Above 1GHz:

[Test mode: TX low channel]; [Polarity: Horizontal]



*:Maximum data x:Over limit !:over margin

<Reference Only

Receiver: ESR_1

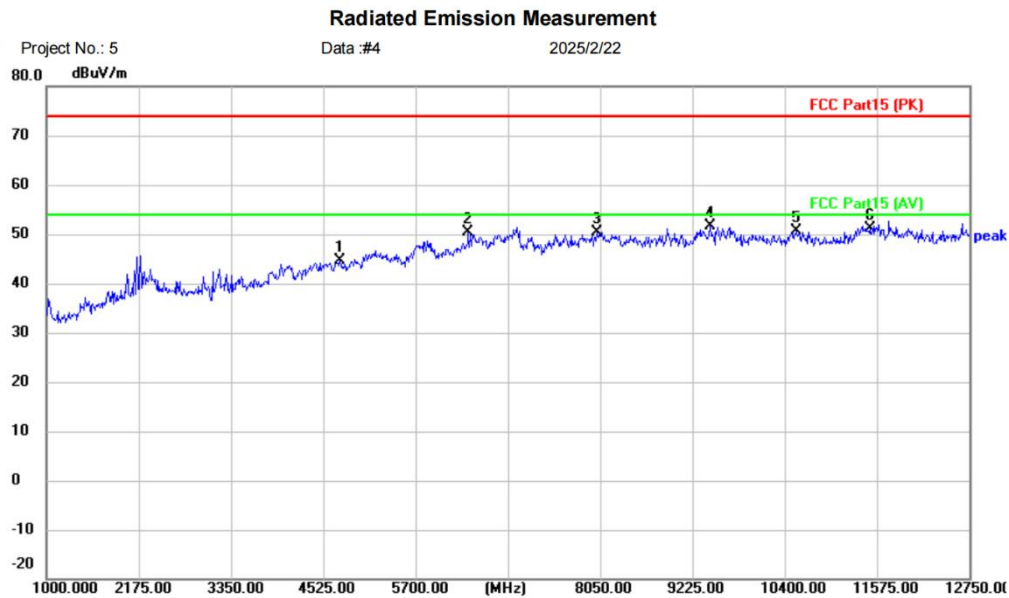
Spectrum Analyzer:

FSP40

Antenna: E3-61202-10-100-2004

Test Result: Pass

[Test mode: TX low channel]; [Polarity: Vertical]



Site: Polarization: **Vertical** Temperature: (C)
Limit: FCC Part15 (PK) Power: Humidity: %RH
EUT: Soundbar
M/N: SL5100
Mode: 5.8G TX 5745
Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4736.500	39.27	5.43	44.70	74.00	-29.30	peak	
2		6369.750	39.84	10.51	50.35	74.00	-23.65	peak	
3		8014.750	38.69	11.63	50.32	74.00	-23.68	peak	
4	*	9448.250	38.56	13.10	51.66	74.00	-22.34	peak	
5		10552.75	36.89	13.67	50.56	74.00	-23.44	peak	
6		11490.00	36.28	14.81	51.09	74.00	-22.91	peak	

*:Maximum data x:Over limit !:over margin

(Reference Only)

Receiver: ESR_1

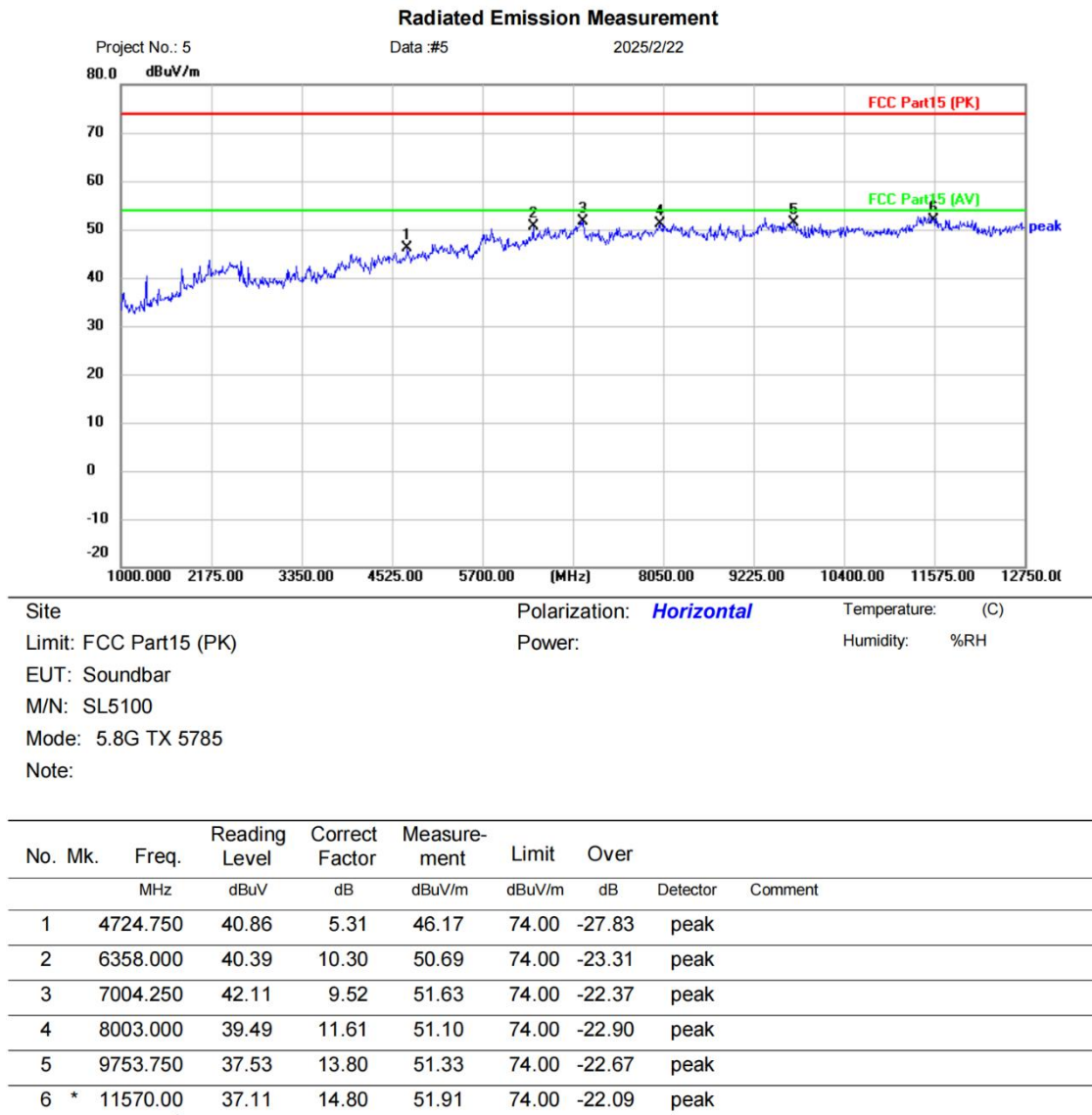
Spectrum Analyzer:

FSP40

Antenna: E3-61200-10-100-2004

Test Result: Pass

[Test mode: TX middle channel]; [Polarity: Horizontal]



*:Maximum data x:Over limit !:over margin

⟨Reference Only

Receiver: ESR_1

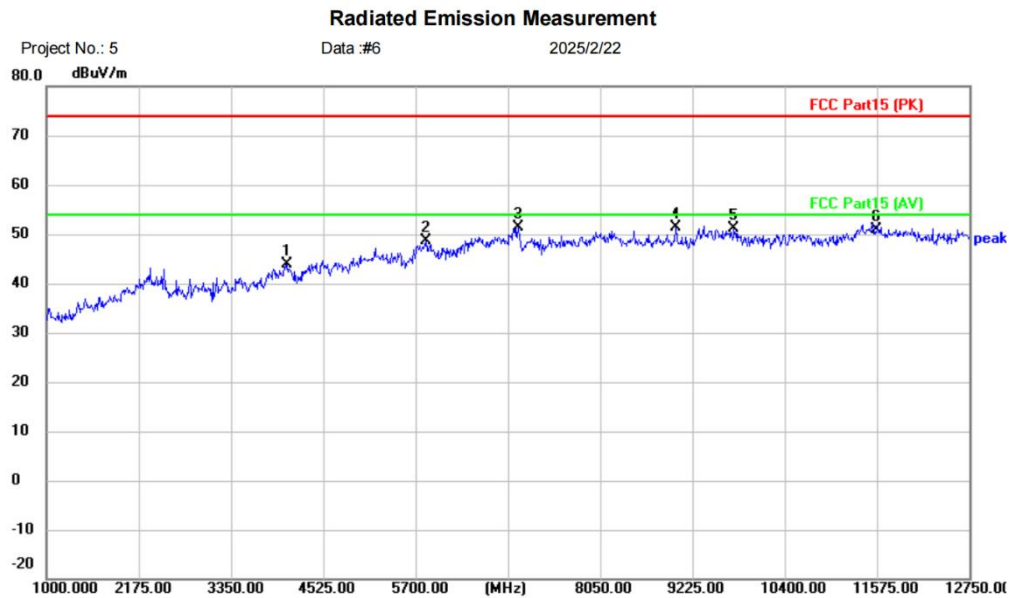
Spectrum Analyzer:

FSP40

Antenna: FZ-6100P-10-100-2004

Test Result: Pass

[Test mode: TX middle channel]; [Polarity: Vertical]



Site: Polarization: **Vertical** Temperature: (C)

Limit: FCC Part15 (PK) Power: Humidity: %RH

EUT: Soundbar

M/N: SL5100

Mode: 5.8G TX 5785

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		4066.750	40.54	3.32	43.86	74.00	-30.14	peak	
2		5829.250	38.69	9.97	48.66	74.00	-25.34	peak	
3	*	7004.250	41.83	9.52	51.35	74.00	-22.65	peak	
4		9013.500	39.16	12.15	51.31	74.00	-22.69	peak	
5		9753.750	37.45	13.80	51.25	74.00	-22.75	peak	
6		11570.00	36.19	14.80	50.99	74.00	-23.01	peak	

*:Maximum data x:Over limit !:over margin

(Reference Only)

Receiver: ESR_1

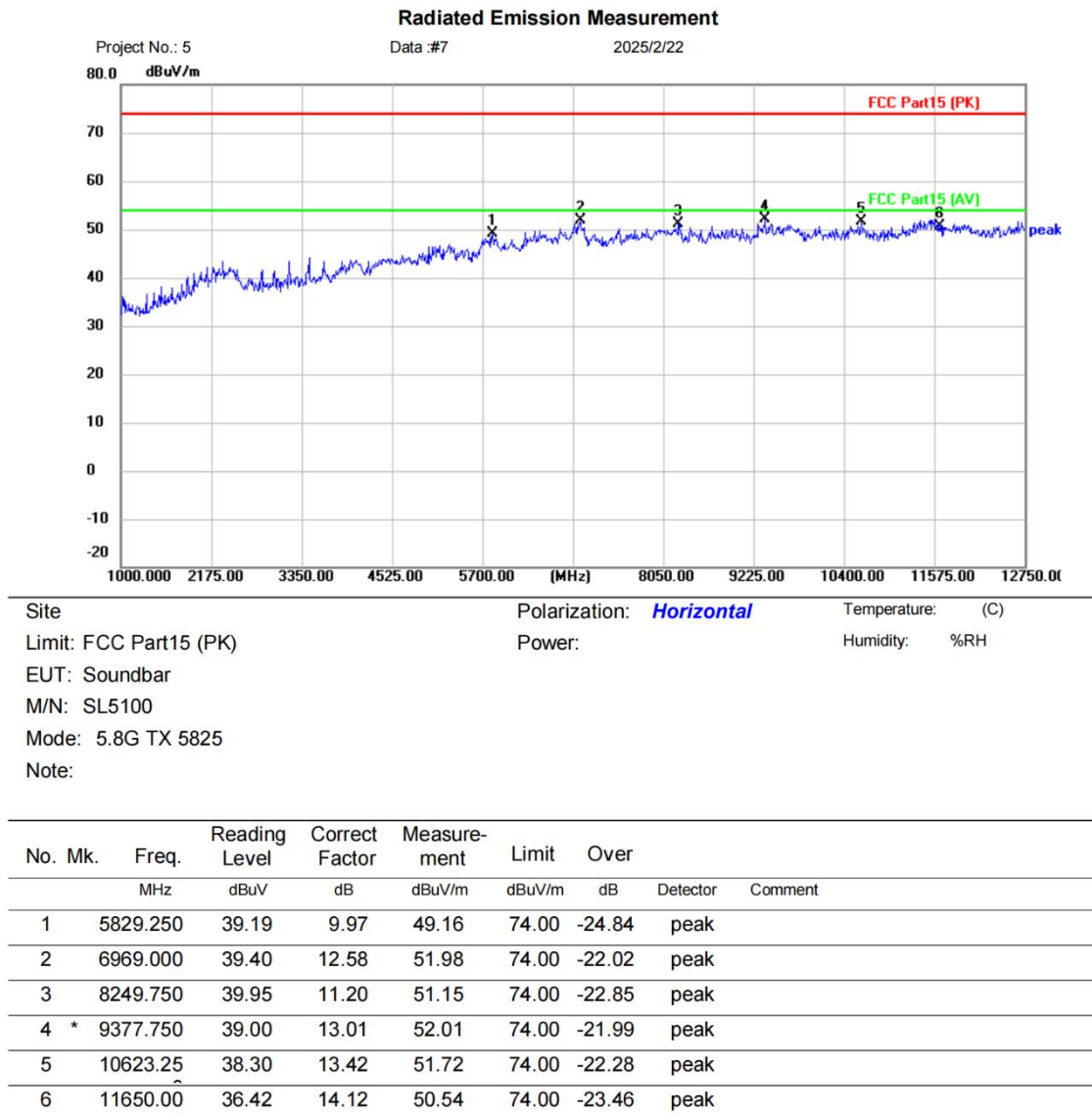
Spectrum Analyzer:

FSP40

Antenna: E7-61200-10-100-2004

Test Result: Pass

[Test mode: TX High channel]; [Polarity: Horizontal]



*:Maximum data x:Over limit !:over margin

⟨Reference Only

Receiver: ESR_1

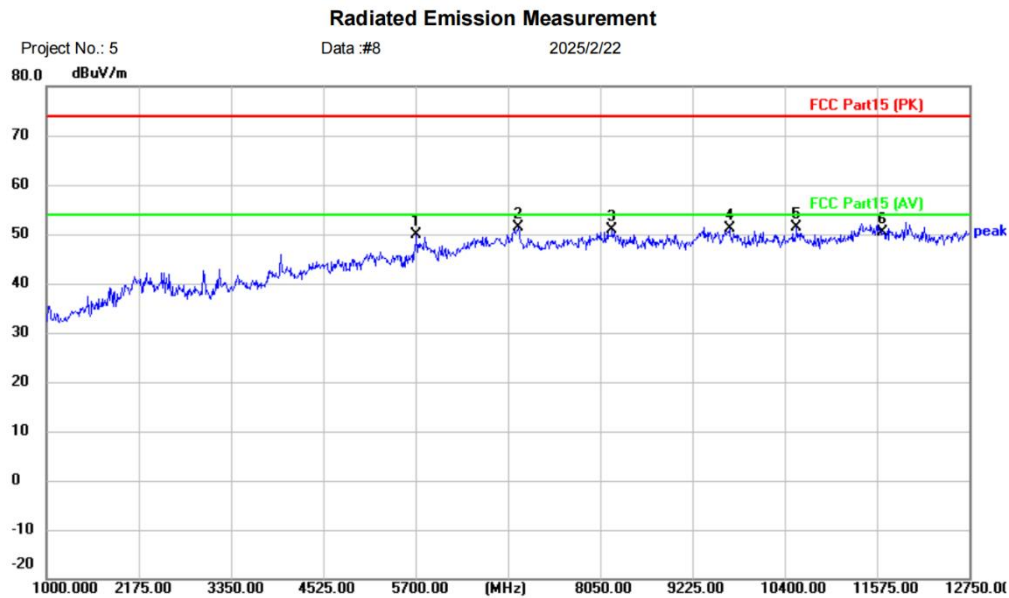
Spectrum Analyzer:

FSP40

Antenna: E3-61200-10-100-2004

Test Result: Pass

[Test mode: TX High channel]; [Polarity: Vertical]



Site: Polarization: **Vertical** Temperature: (C)
Limit: FCC Part15 (PK) Power: Humidity: %RH
EUT: Soundbar
M/N: SL5100
Mode: 5.8G TX 5825
Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Comment
1		5711.750	38.69	11.17	49.86	74.00	-24.14	peak	
2	*	7004.250	41.94	9.52	51.46	74.00	-22.54	peak	
3		8202.750	39.49	11.48	50.97	74.00	-23.03	peak	
4		9695.000	37.68	13.51	51.19	74.00	-22.81	peak	
5		10552.75	37.62	13.67	51.29	74.00	-22.71	peak	
6		11650.00	36.30	14.12	50.42	74.00	-23.58	peak	

*:Maximum data x:Over limit !:over margin

(Reference Only)

Receiver: ESR_1

Spectrum Analyzer:

FSP40

Antenna: E7-61200-10-100-2004

Test Result: Pass

6.13 Radiated emissions which fall in the restricted bands

Test Standard	47 CFR Part 15, Subpart E 15.407
Test Method	KDB 789033 D02 II G
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

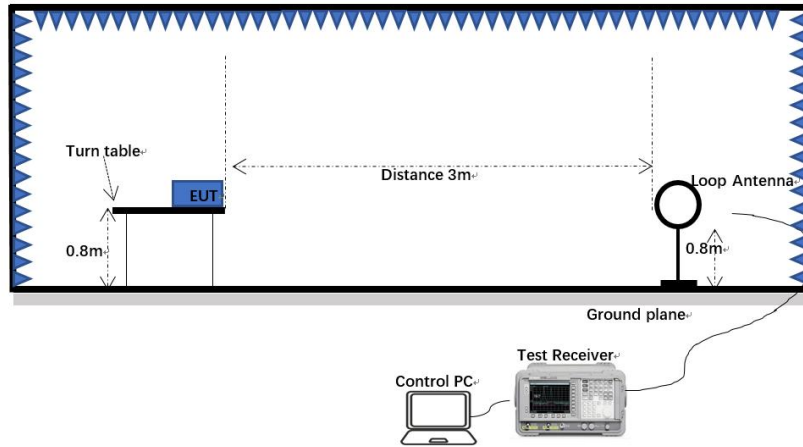
6.13.1 Limit

Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

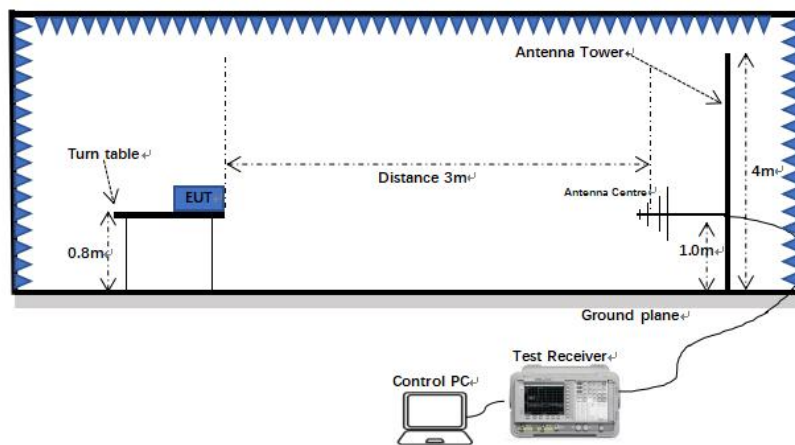
Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

6.13.2 Test setup

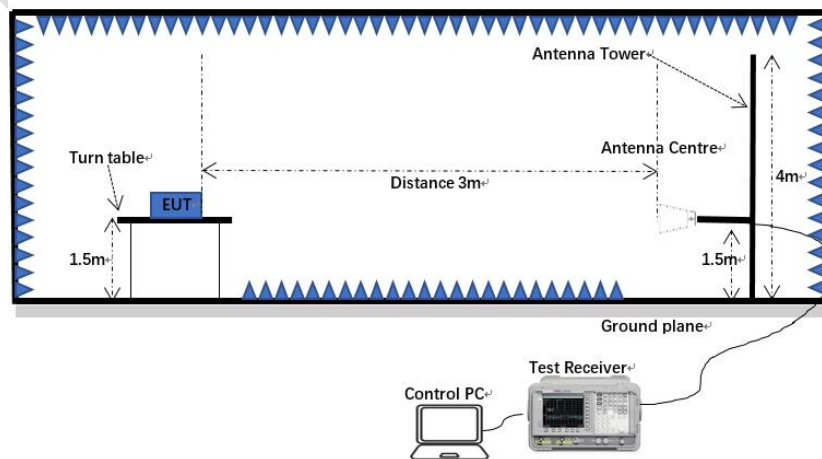
Below 1GHz:



30MHz-1GHz:



Above 1GHz:



6.13.3 Procedure

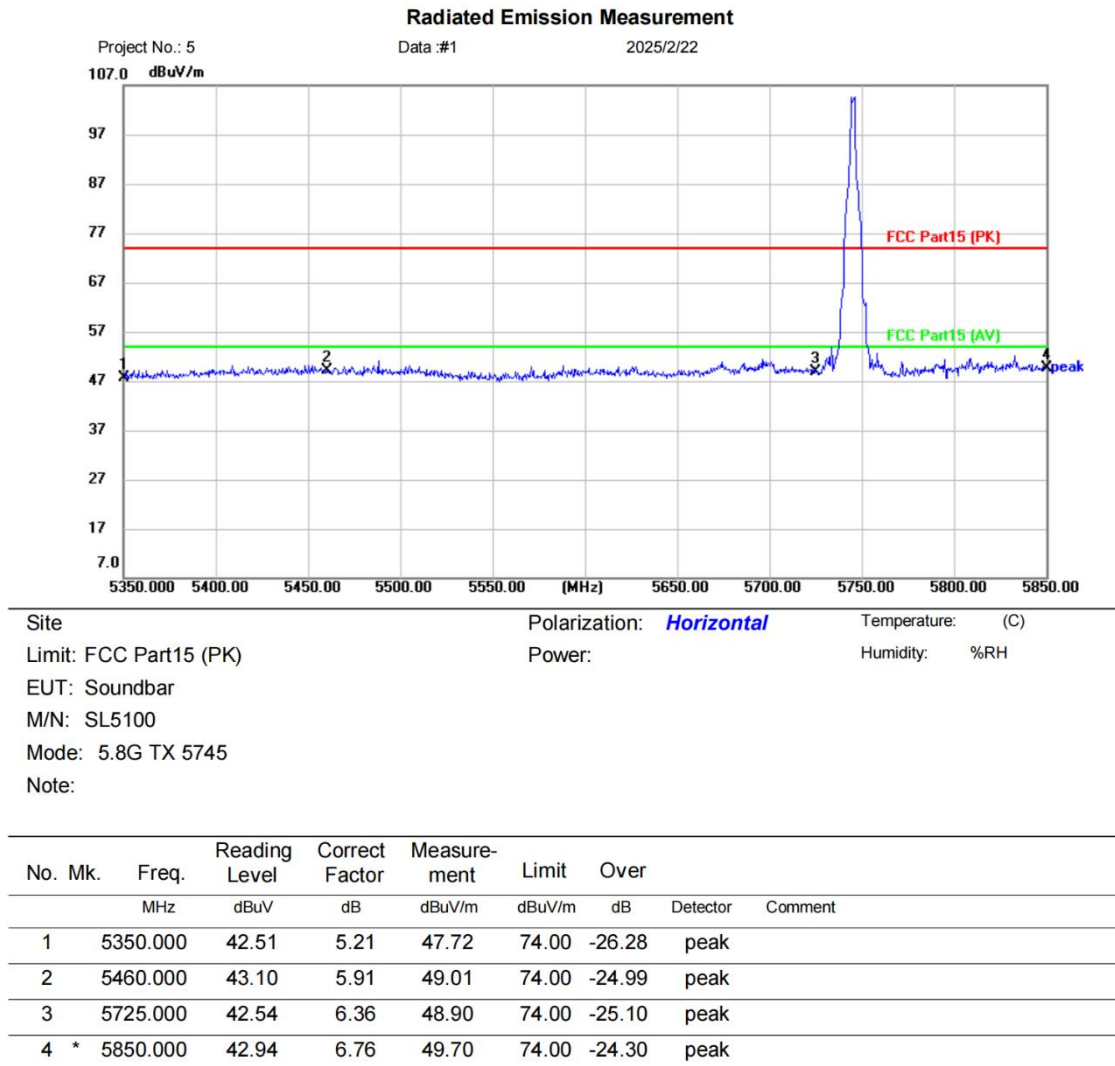
- a) For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b) For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c) The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d) The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e) For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f) The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g) If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h) Test the EUT in the lowest channel, the middle channel, the highest channel.
- i) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j) Repeat above procedures until all frequencies measured was complete.

Note 1: Level (dBuV) = Reading (dBuV) + Factor (dB/m)

Note 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

6.13.4 Test data

[Test mode: TX low channel]; [Polarity: Horizontal]



*:Maximum data x:Over limit !:over margin

<Reference Only

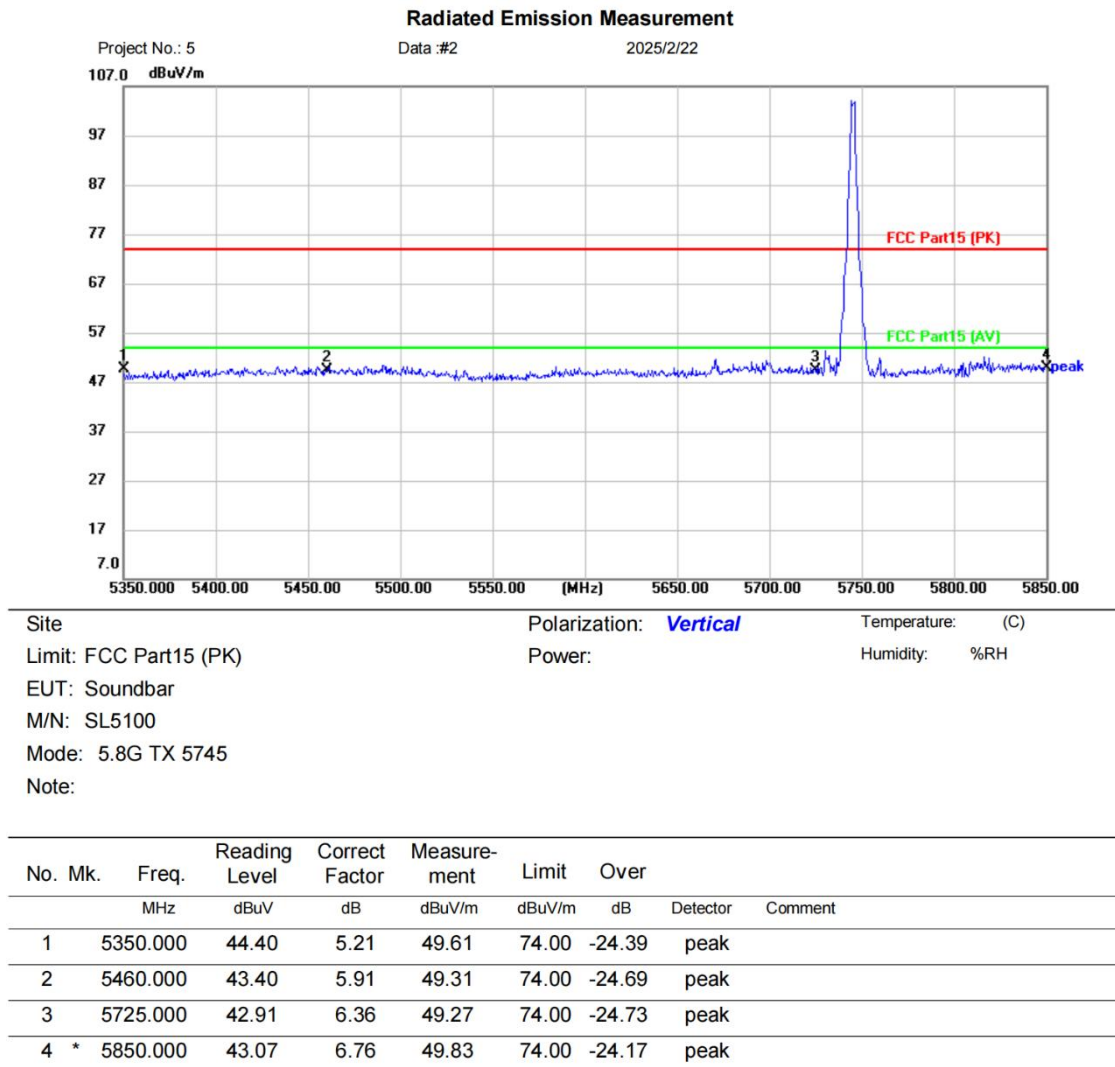
Receiver: ESR_1

Spectrum Analyzer:

FSP40

Test Result: Pass

[Test mode:TX low channel]; [Polarity: Vertical]



*:Maximum data x:Over limit !:over margin

⟨Reference Only

Receiver: ESR_1

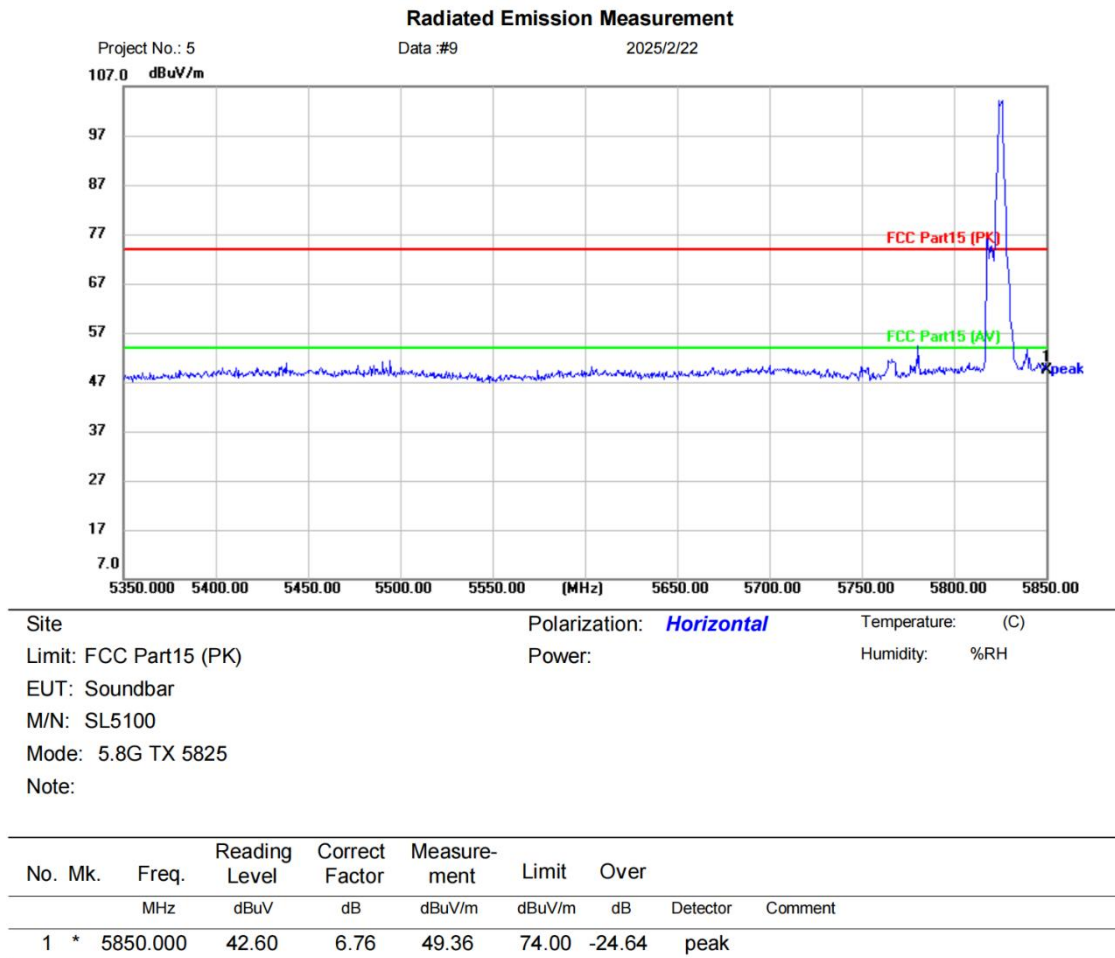
Spectrum Analyzer:

FSP40

Antenna: FZ-6100P-1G-100-2004

Test Result: Pass

[Test mode: TX High channel]; [Polarity: Horizontal]



*:Maximum data x:Over limit !:over margin

⟨Reference Only

Receiver: ESR_1

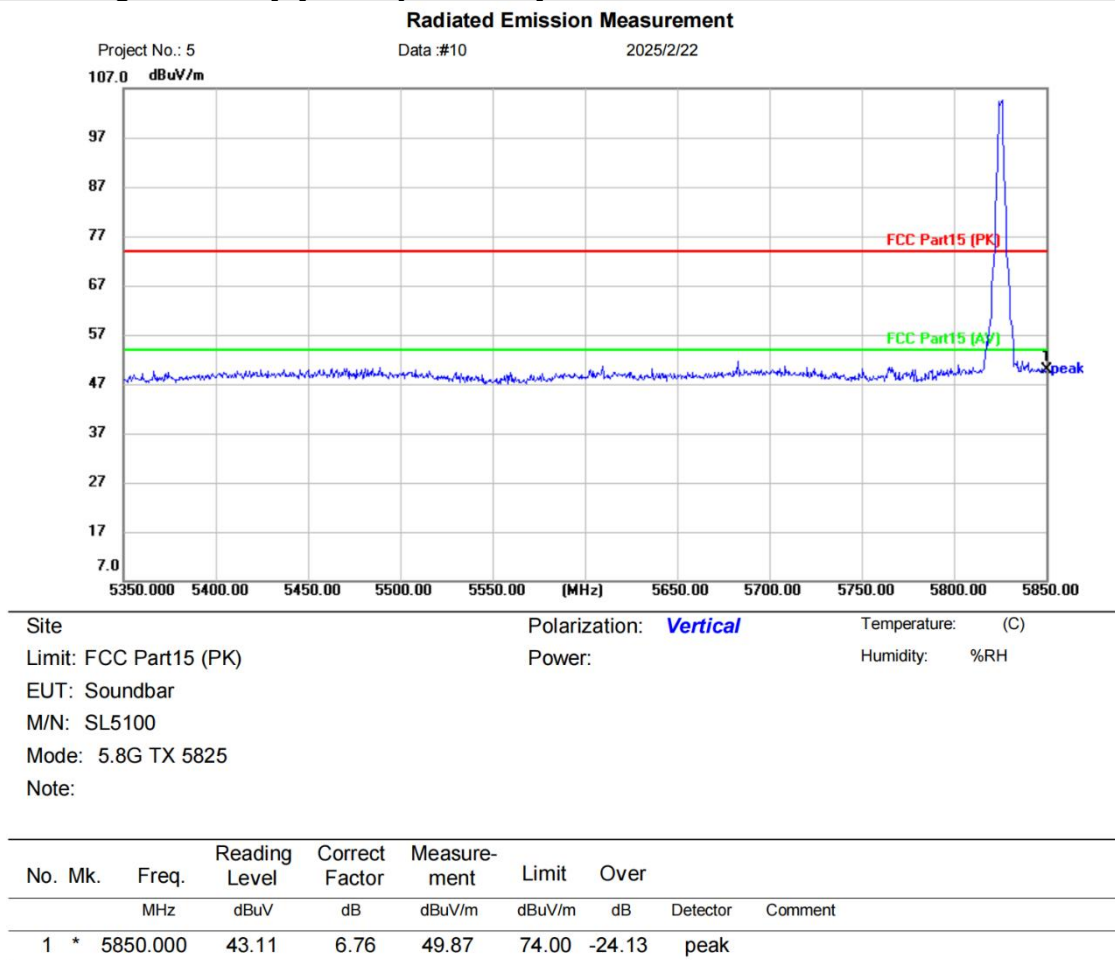
Spectrum Analyzer:

FSP40

Antenna: EZ 6120P 1G 100 2024

Test Result: Pass

[Test mode:TX High channel]; [Polarity: Vertical]



*:Maximum data x:Over limit !:over margin

⟨Reference Only

Receiver: ESR_1

Spectrum Analyzer:

FSP40

Antenna: FZ-6120P-1G-100-2024

Test Result: Pass

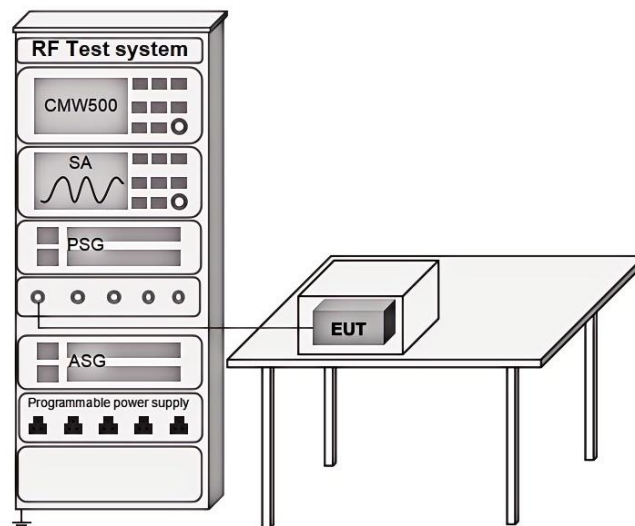
6.14 DFS: Channel Closing Transmission Time

Test Standard	47 CFR Part 15, Subpart E 15.407(h)(2)
Test Method	KDB 905462 D02 Section 7.8.3
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.14.1 Limit

200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period (should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst. It is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required facilitating a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions)

6.14.2 Test setup



6.14.3 Procedure

- 1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.
- 2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.

- 3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
- 4) EUT will associate with the master at channel. The file `iperf.exe` specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.
- 5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.
- 6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.
- 7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: $Dwell (0.3ms) = S (12000ms) / B (4000)$; where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: $C (ms) = N \times Dwell (0.3ms)$; where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.
- 8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

6.14.4 Test data

N/A

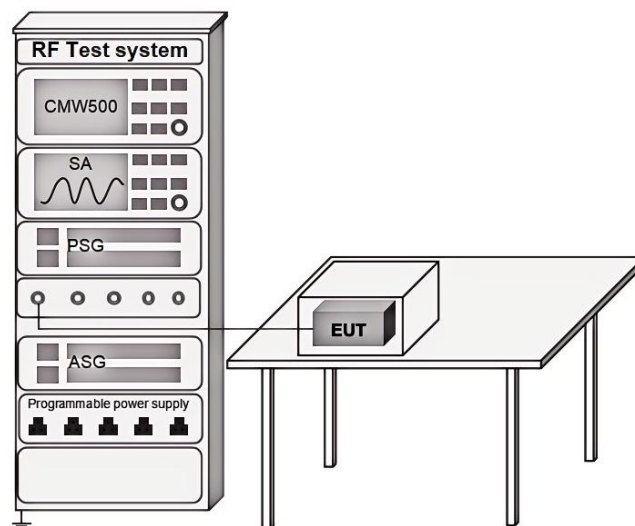
6.15 DFS: Non-occupancy period

Test Standard	47 CFR Part 15, Subpart E 15.407(h)(2)
Test Method	KDB 905462 D02 Section 7.8.3
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.15.1 Limit

Minimum 30 minutes

6.15.2 Test setup



6.15.3 Procedure

- 1) The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.
- 2) The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device.
- 3) A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
- 4) EUT will associate with the master at channel. The file `iperf.exe` specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.

- 5) When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.
- 6) Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel. Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type.
- 7) Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: $Dwell (0.3ms) = S (12000ms) / B (4000)$; where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: $C (ms) = N \times Dwell (0.3ms)$; where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.
- 8) Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

6.15.4 Test data

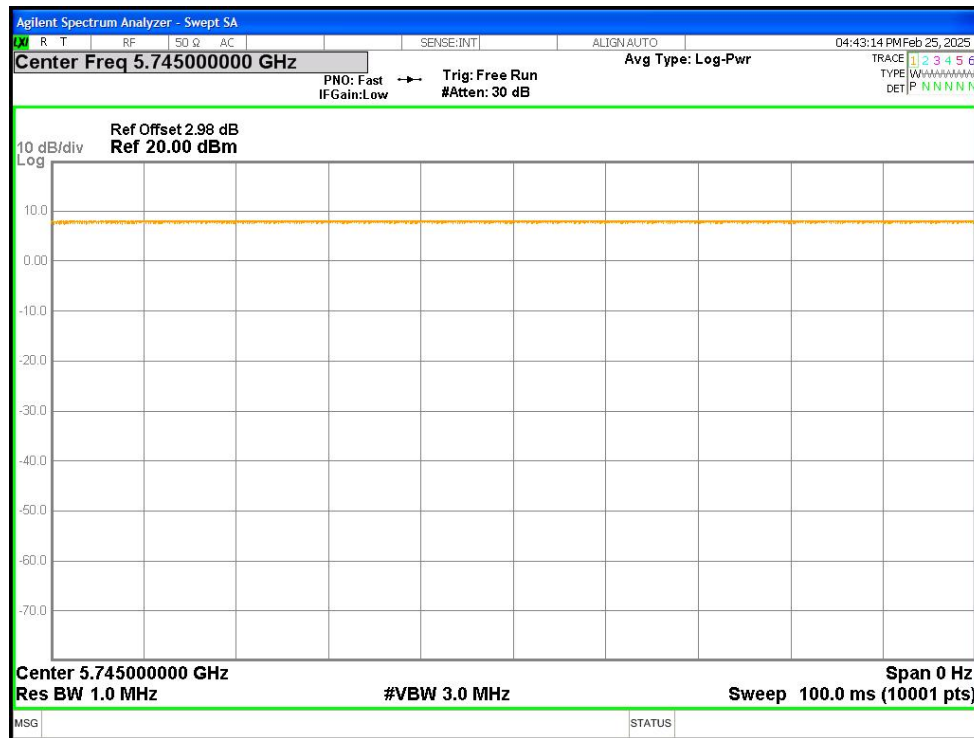
N/A

7 Appendix A

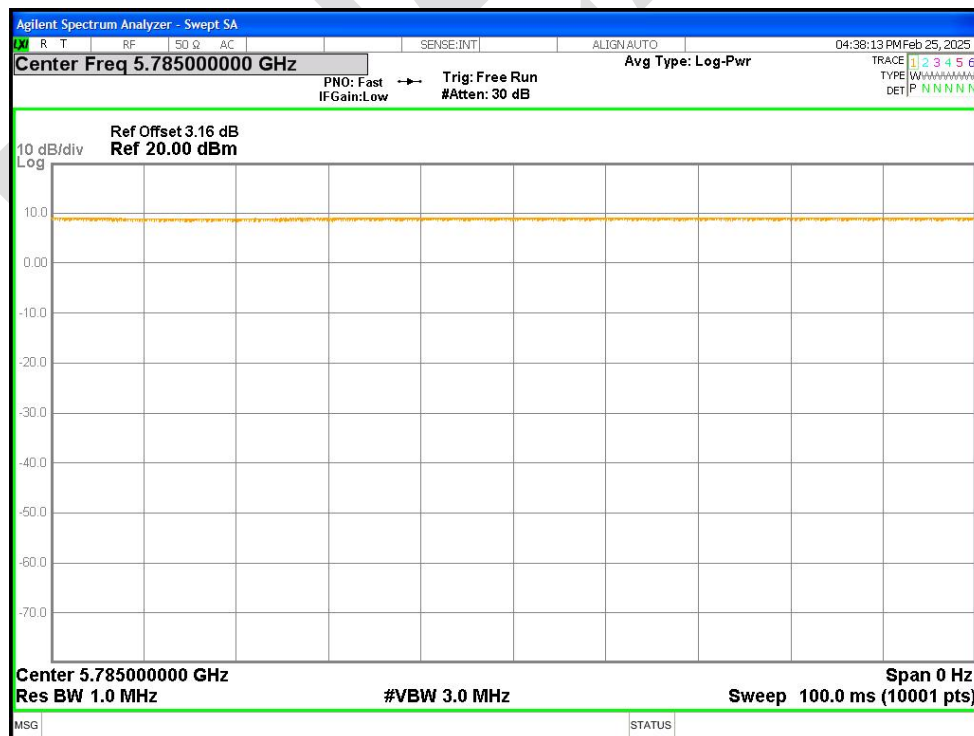
7.1 Duty Cycle

Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)
NVNT	GFSK	5745	Ant1	100	0
NVNT	GFSK	5785	Ant1	100	0
NVNT	GFSK	5825	Ant1	100	0
NVNT	GFSK	5745	Ant2	100	0
NVNT	GFSK	5785	Ant2	100	0
NVNT	GFSK	5825	Ant2	100	0
NVNT	GFSK	5745	Ant1	100	0
NVNT	GFSK	5785	Ant1	100	0
NVNT	GFSK	5825	Ant1	100	0
NVNT	GFSK	5745	Ant2	100	0
NVNT	GFSK	5785	Ant2	100	0
NVNT	GFSK	5825	Ant2	100	0

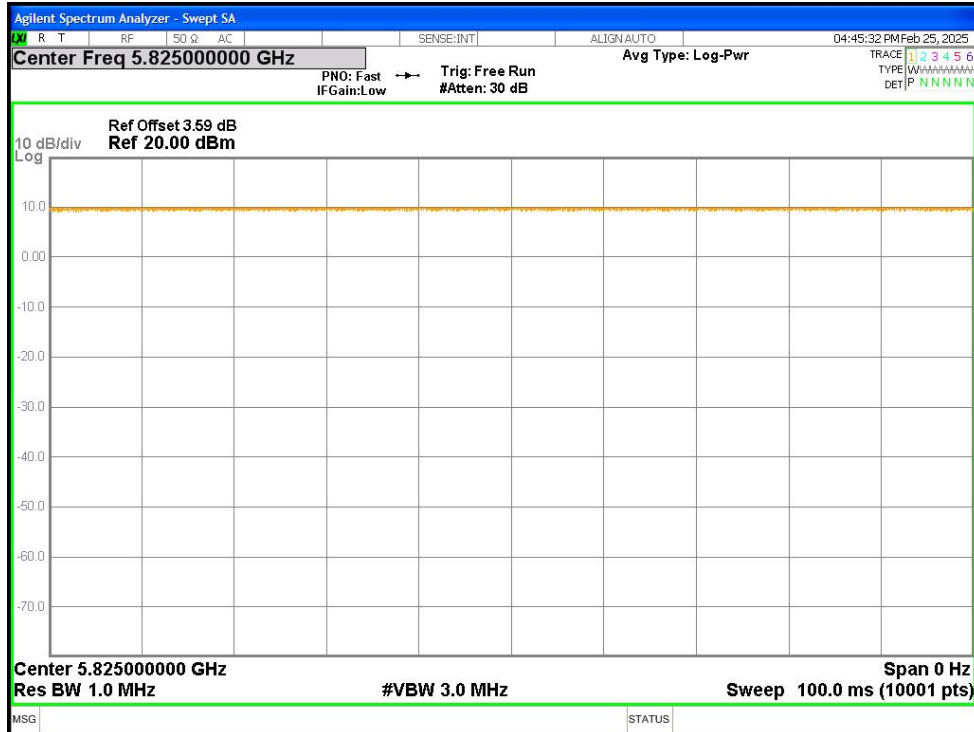
Duty Cycle NVNT GFSK 5745MHz Ant1



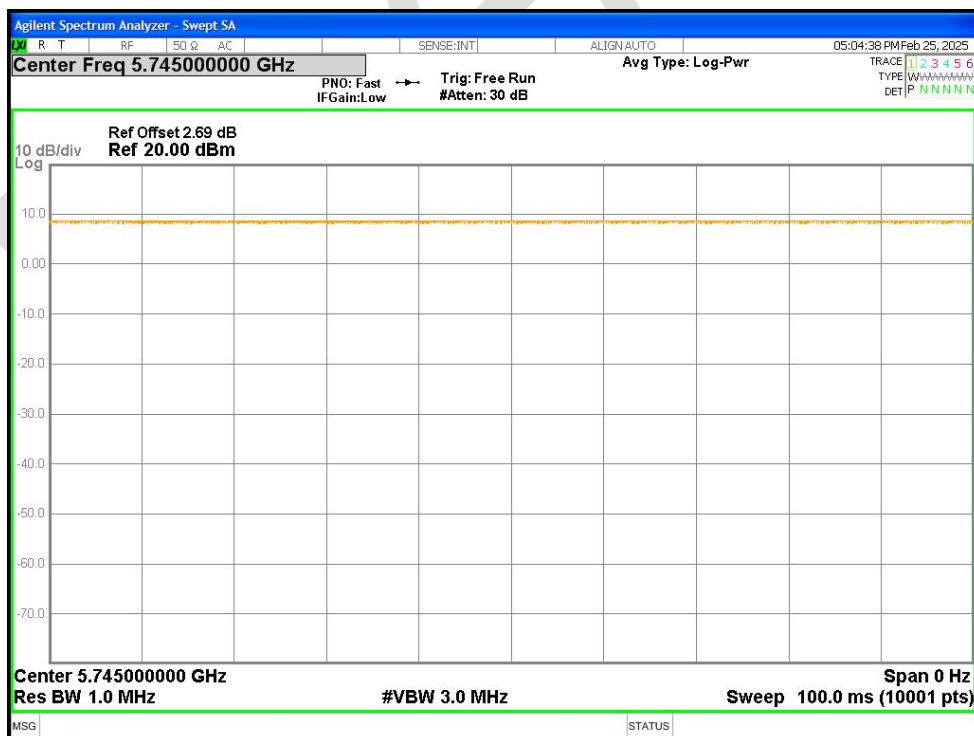
Duty Cycle NVNT GFSK 5785MHz Ant1



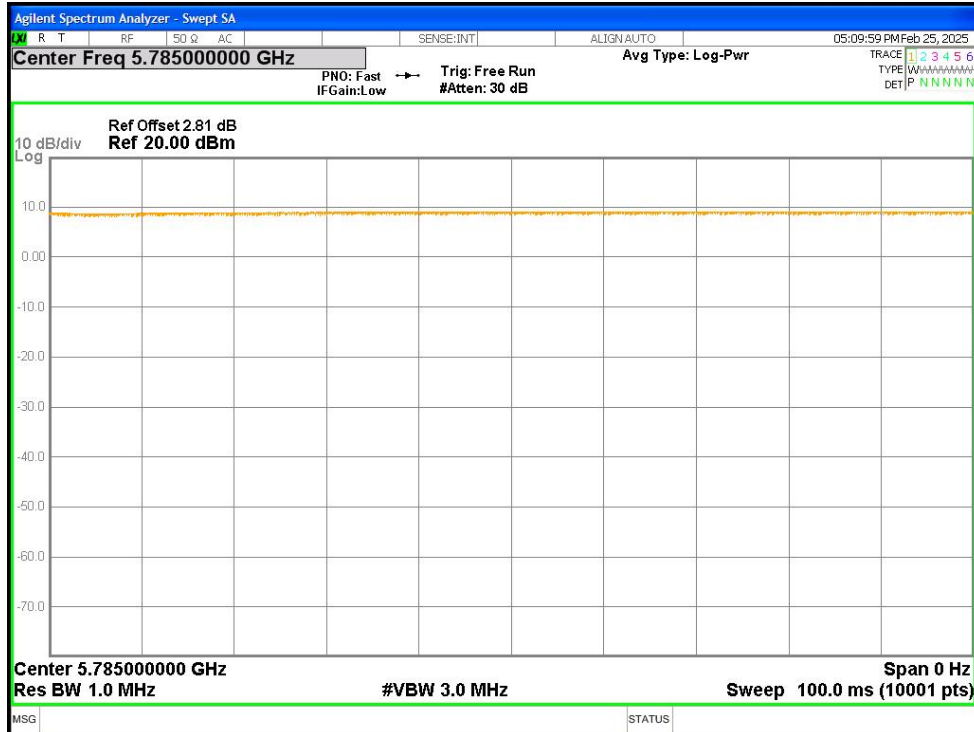
Duty Cycle NVNT GFSK 5825MHz Ant1



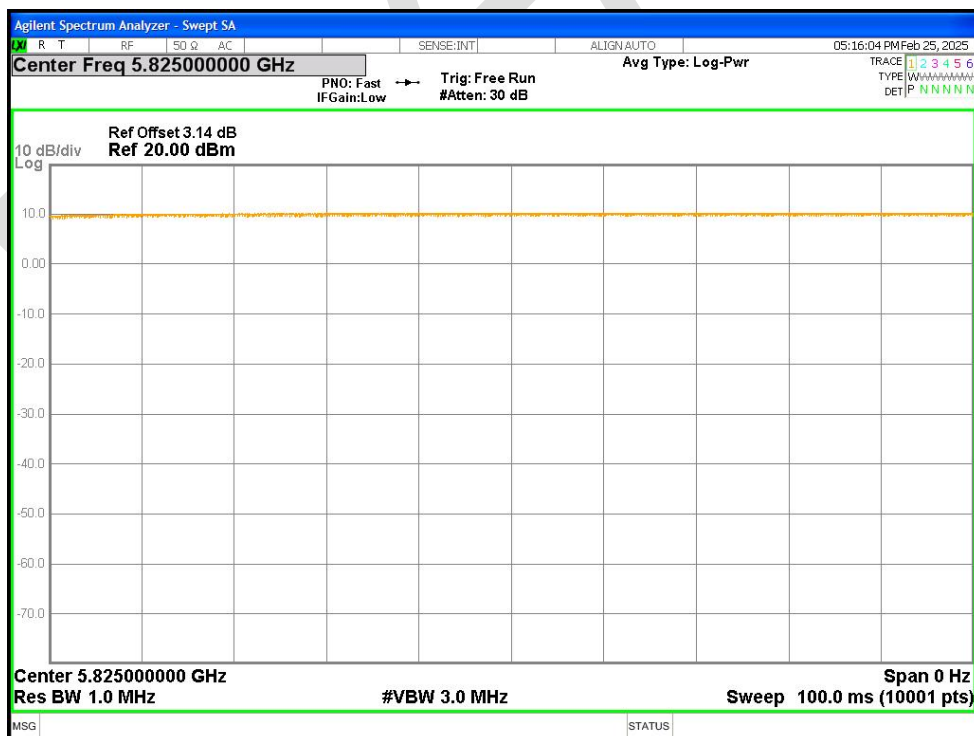
Duty Cycle NVNT GFSK 5745MHz Ant2



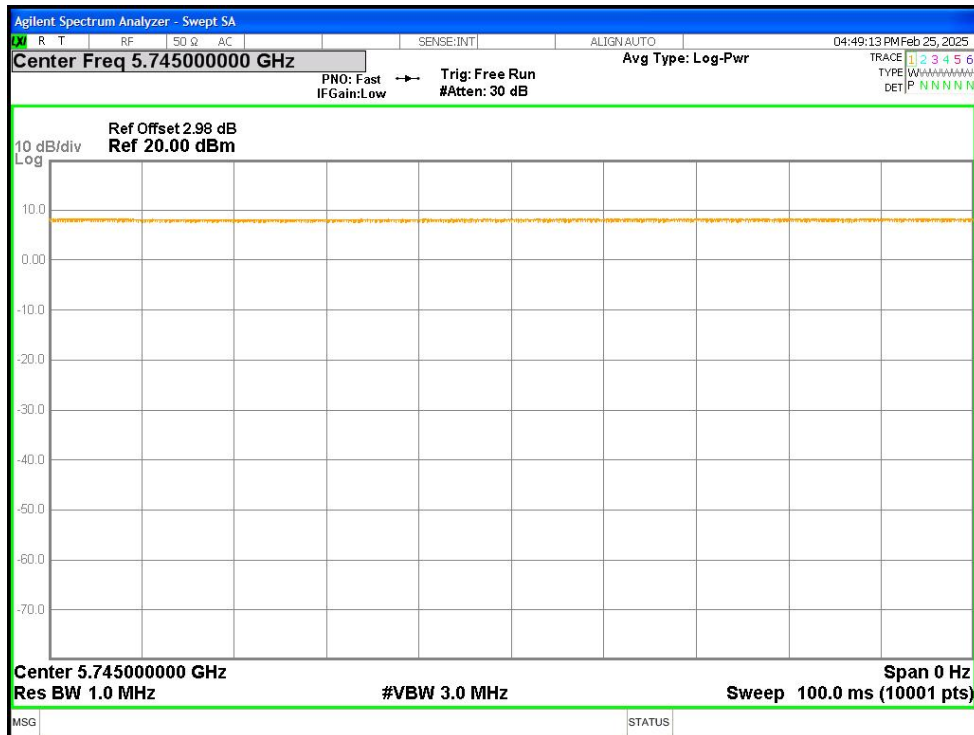
Duty Cycle NVNT GFSK 5785MHz Ant2



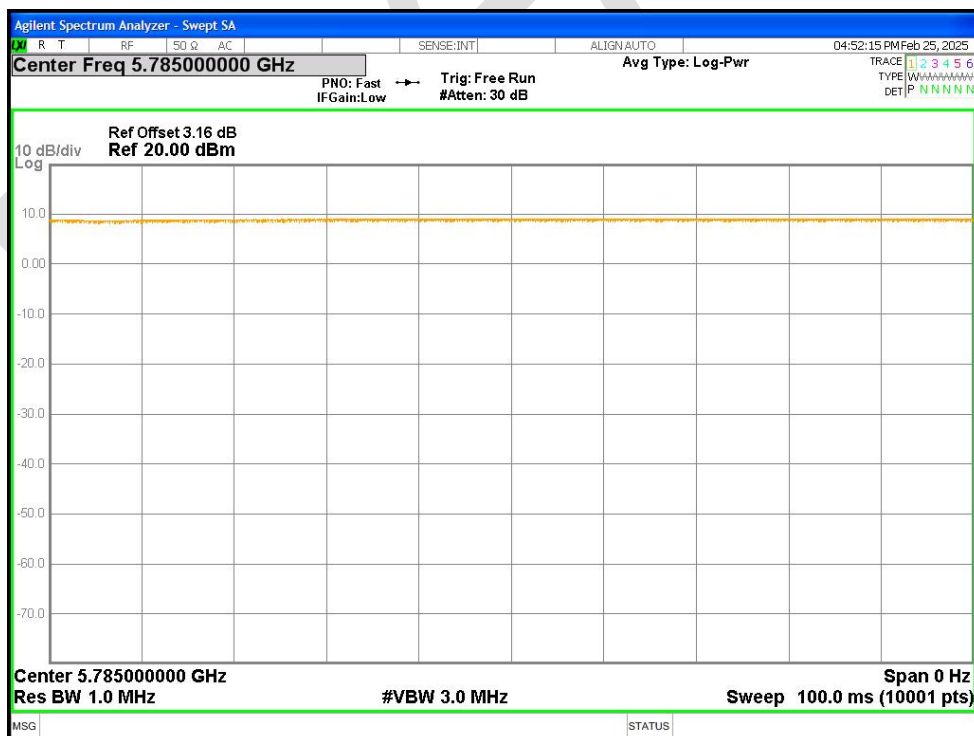
Duty Cycle NVNT GFSK 5825MHz Ant2



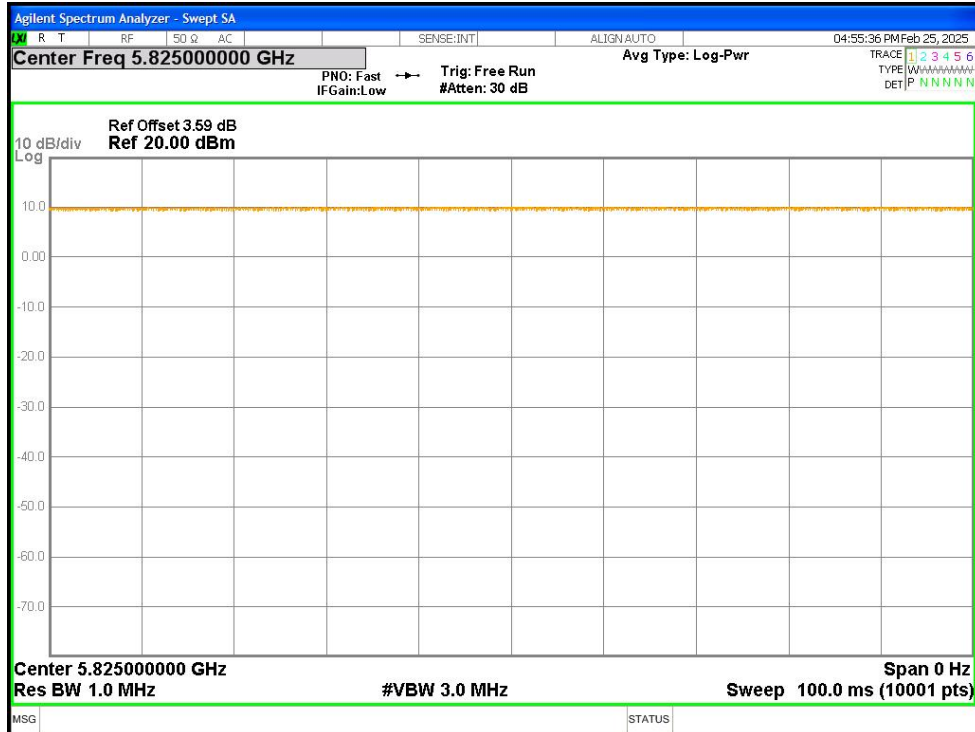
Duty Cycle NVNT GFSK 5745MHz Ant1



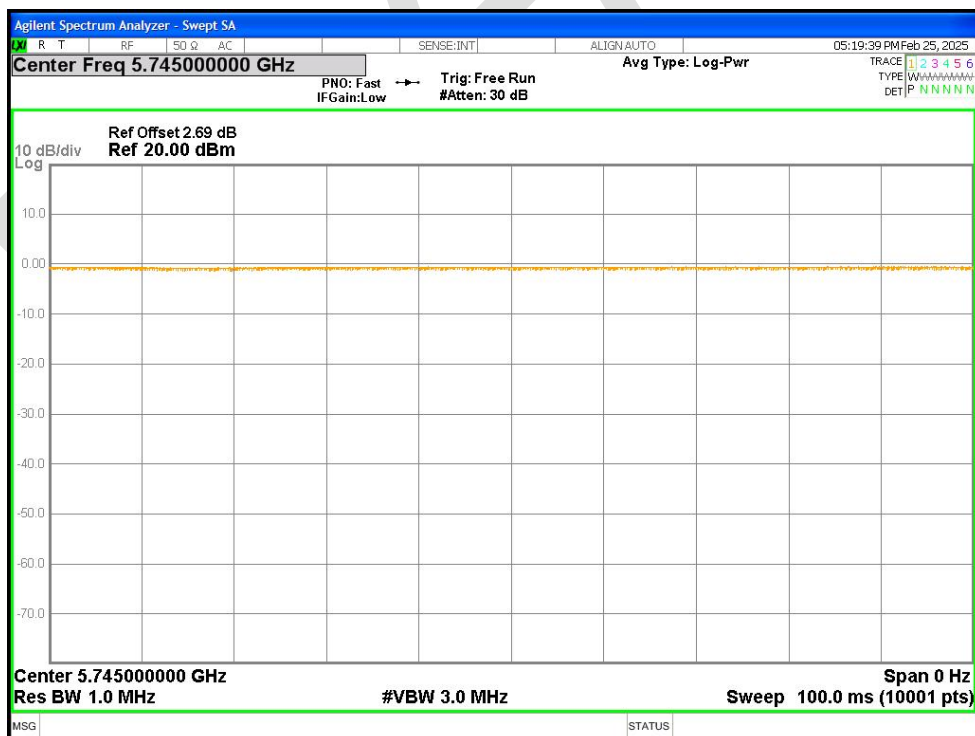
Duty Cycle NVNT GFSK 5785MHz Ant1



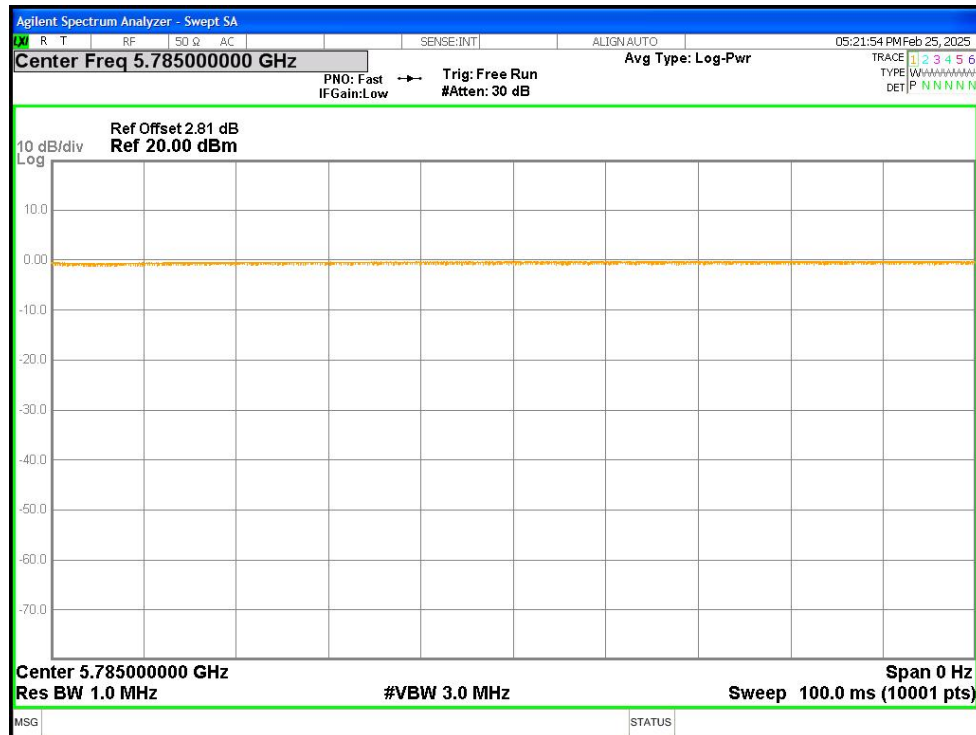
Duty Cycle NVNT GFSK 5825MHz Ant1



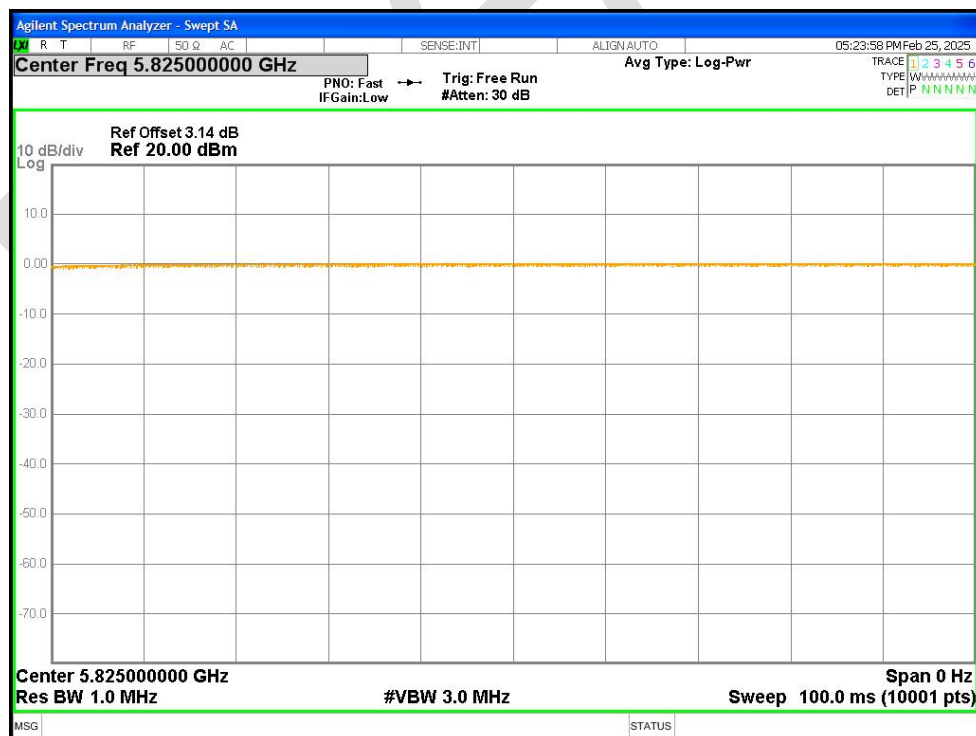
Duty Cycle NVNT GFSK 5745MHz Ant2



Duty Cycle NVNT GFSK 5785MHz Ant2



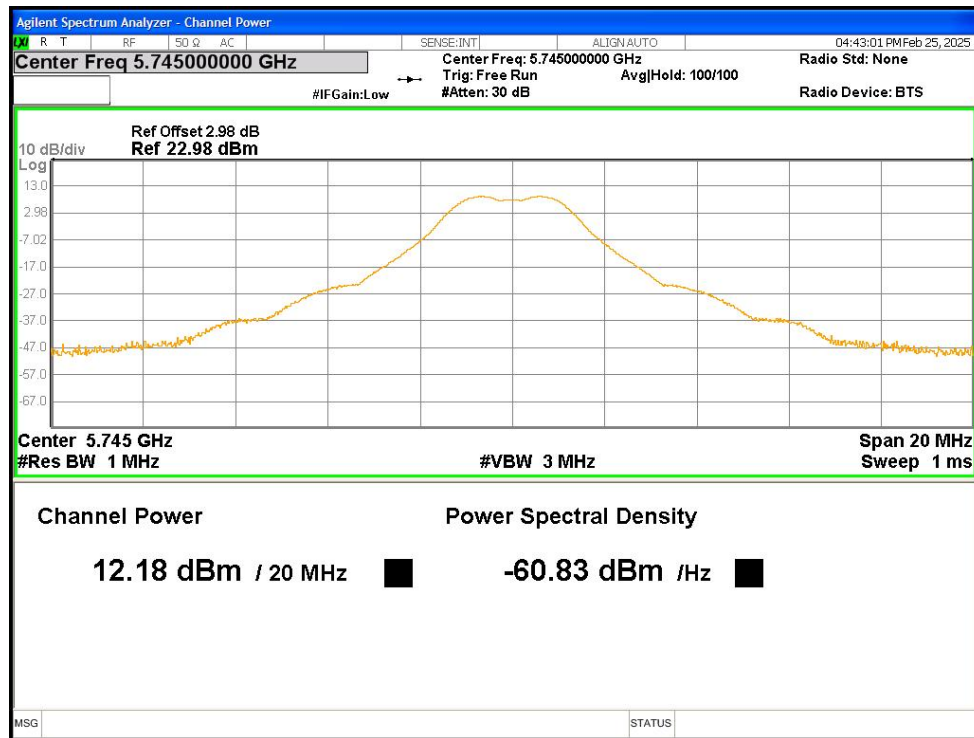
Duty Cycle NVNT GFSK 5825MHz Ant2



7.2 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	GFSK	5745	Ant1	12.178	30	Pass
NVNT	GFSK	5785	Ant1	13.267	30	Pass
NVNT	GFSK	5825	Ant1	13.502	30	Pass
NVNT	GFSK	5745	Ant2	12.699	30	Pass
NVNT	GFSK	5785	Ant2	12.915	30	Pass
NVNT	GFSK	5825	Ant2	13.762	30	Pass
NVNT	GFSK	5745	Ant1	12.31	30	Pass
NVNT	GFSK	5785	Ant1	12.947	30	Pass
NVNT	GFSK	5825	Ant1	13.574	30	Pass
NVNT	GFSK	5745	Ant2	12.429	30	Pass
NVNT	GFSK	5785	Ant2	12.95	30	Pass
NVNT	GFSK	5825	Ant2	13.745	30	Pass

Power NVNT GFSK 5745MHz Ant1



Power NVNT GFSK 5785MHz Ant1

