

11 EMISSION LIMITATIONS MEASUREMENT

11.1 Test Equipment

The following test equipment was used during the maximum peak output power measurement:

Item	Type	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Interval
1.	Spectrum Analyzer	Agilent	N9010A	MY52221182	2020.09.16	1 Year
2.	Coaxial Cable	WOKEN	SFL402-105F LEX	F02-150819-045	2021.03.08	1 Year
3.	10 dB Attenuator	Mini-Circuits	VAT-10W2+	001	2020.08.06	1 Year

11.2 Block Diagram of Test Setup

The Same as Section. 5.2

11.3 Specification Limits (§15.247(d))

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required.

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see§15.205(c)). (※This test result attaching to §3.6.3)

11.4 Operating Condition of EUT

The switch ON/OFF was used to enable the EUT to change the channel one by one.

11.5 Test Procedure

The transmitter output was connected to the spectrum analyzer.

Use the following spectrum analyzer settings:

- a) Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
- b) RBW = 100 kHz
- c) VBW $\geq$ RBW
- d) Sweep = auto
- e) Detector function = peak
- f) Trace = max hold

g) Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this Section. Submit these plots.

The test procedure is defined in FCC Public Notice DA 00-705, Mar.2000 (the Procedure “ Spurious RF Conducted Emissions” was used).

11.6 Test Results

PASSED.

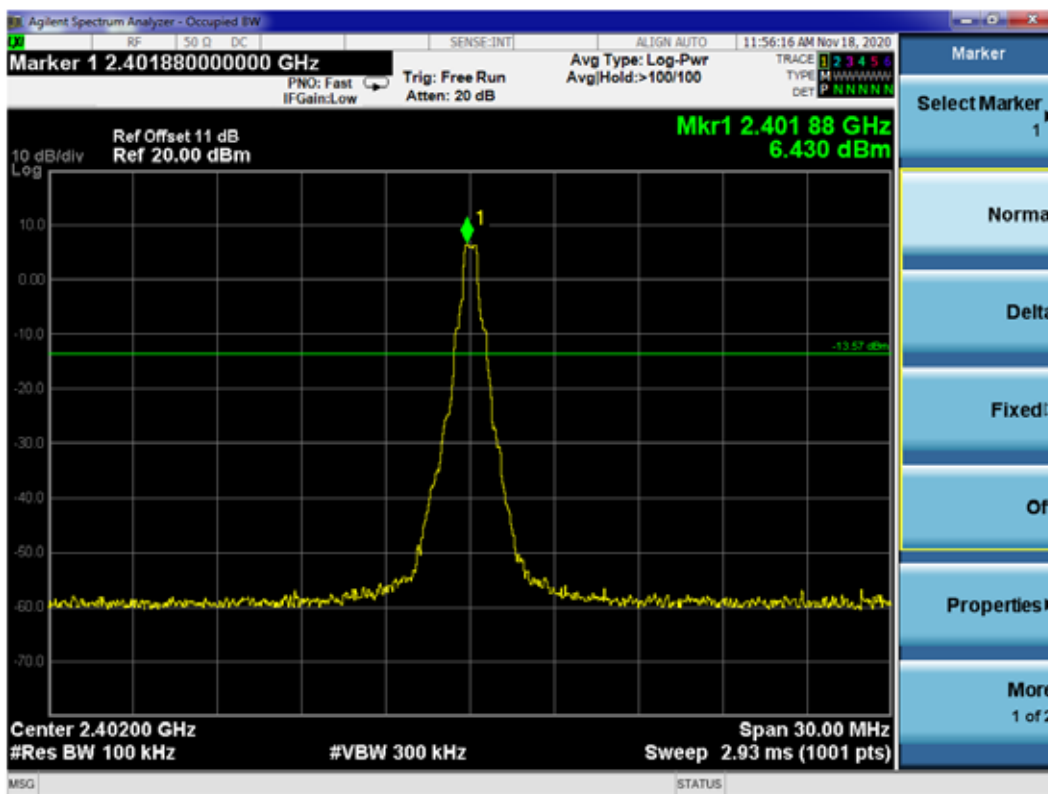
The test data was attached in the next pages.

(Test Date: 2020.11.19 Temperature: 23°C Humidity: 51 %)

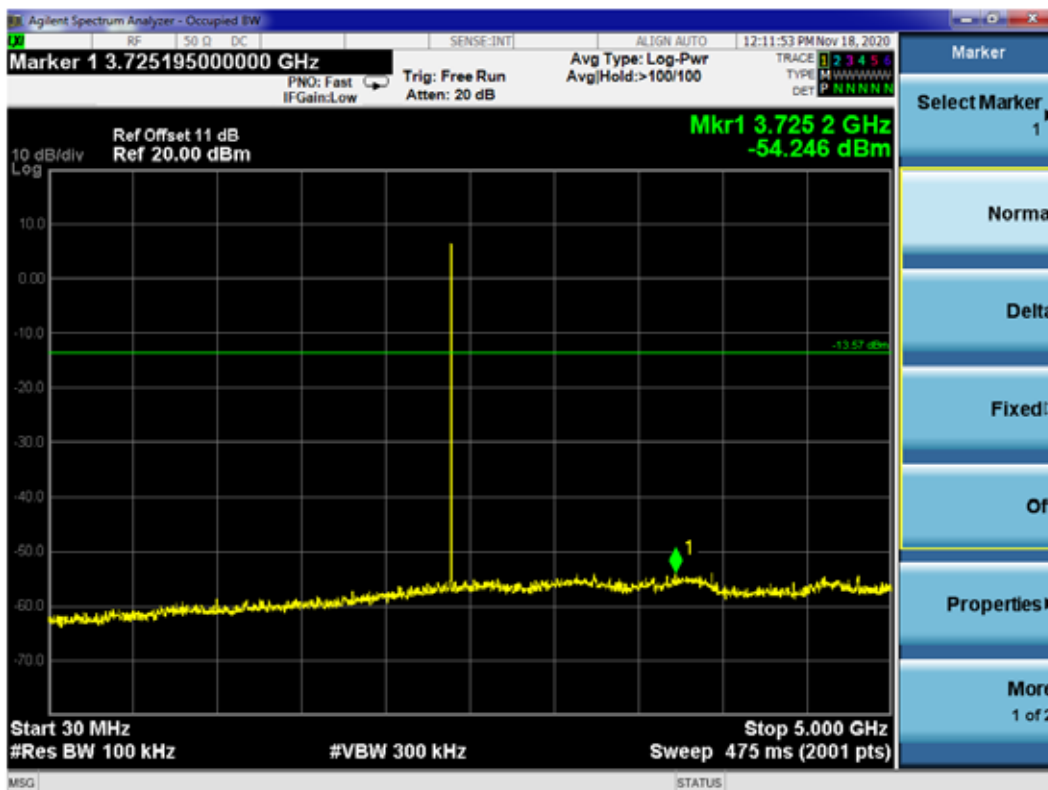
Modulation	Channel	Frequency (MHz)	Data Page
BT DH1	00	2402	P89-90
	39	2441	P91-92
	78	2480	P93-94
BT DH3	00	2402	P95-96
	39	2441	P97-98
	78	2480	P99-100
BT DH5	00	2402	P101-102
	39	2441	P103-104
	78	2480	P105-106
BT 3DH1	00	2402	P107-108
	39	2441	P109-110
	78	2480	P111-112
BT 3DH3	00	2402	P113-114
	39	2441	P115-116
	78	2480	P117-118
BT 3DH5	00	2402	P119-120
	39	2441	P121-122
	78	2480	P123-124

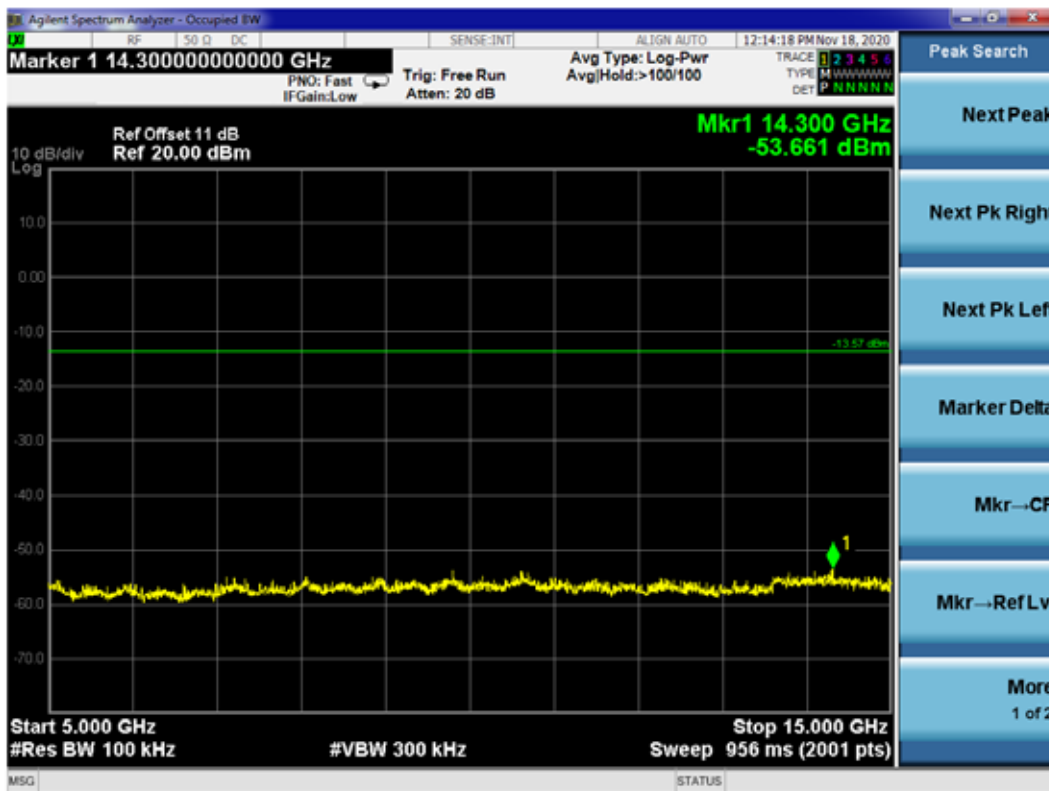
BT DH1: CH00 (2402 MHz)

Reference level



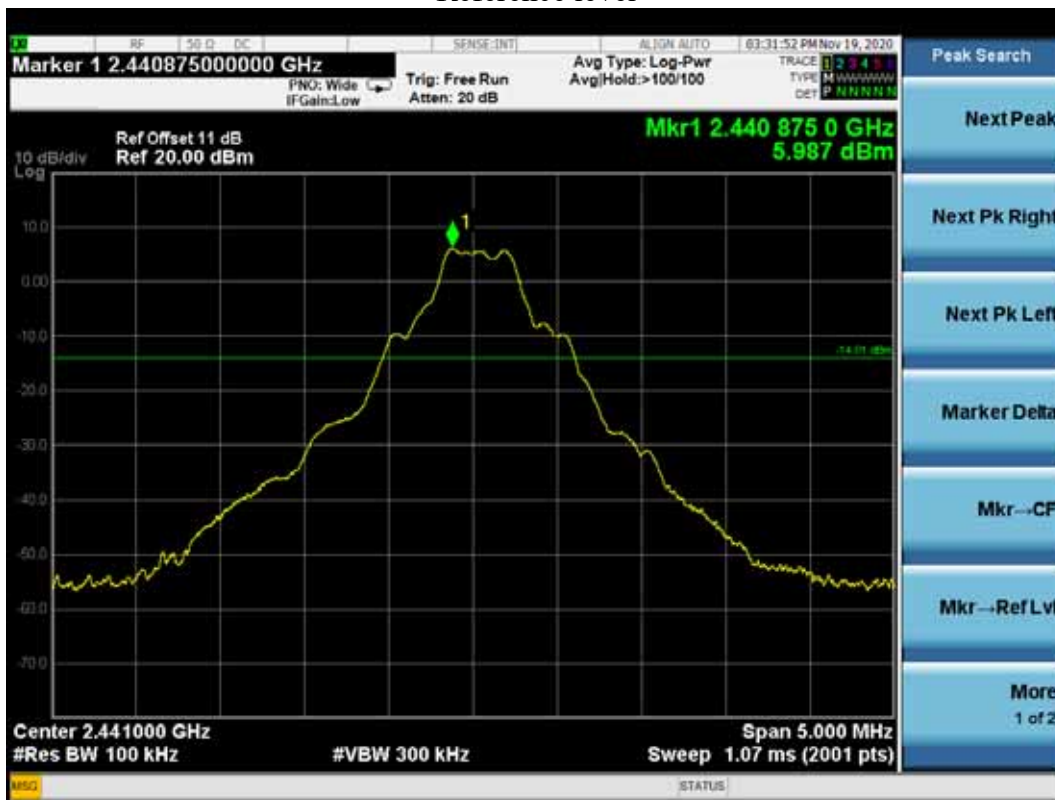
Emission level



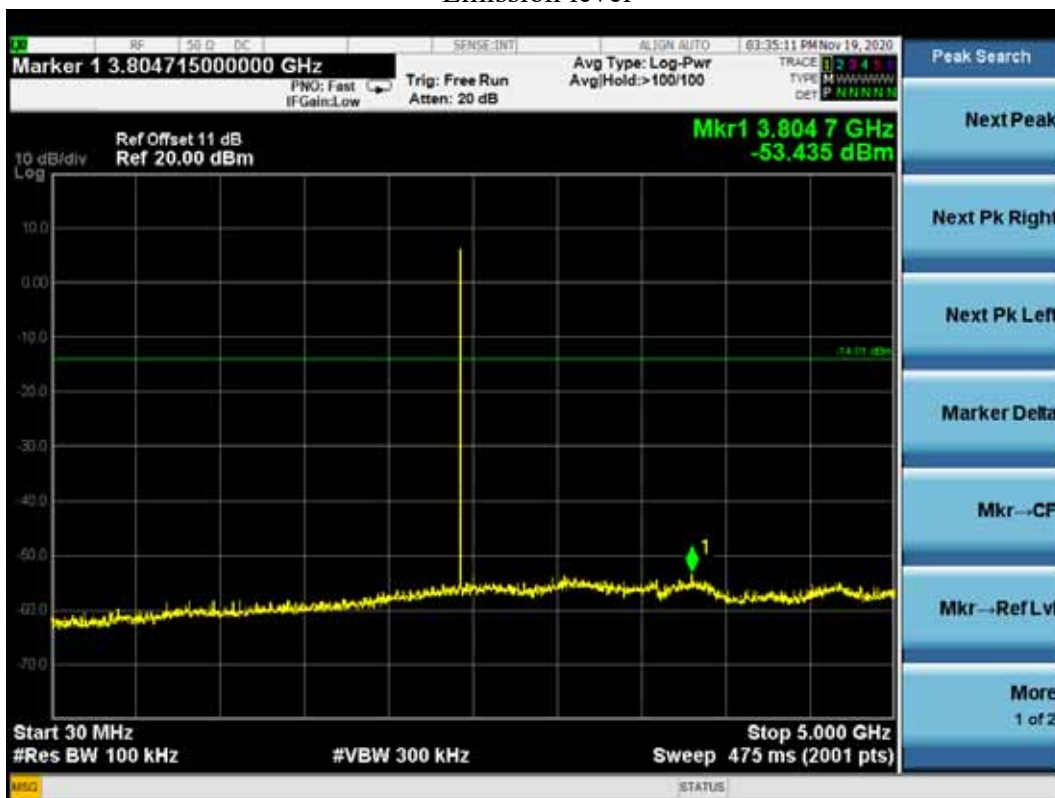


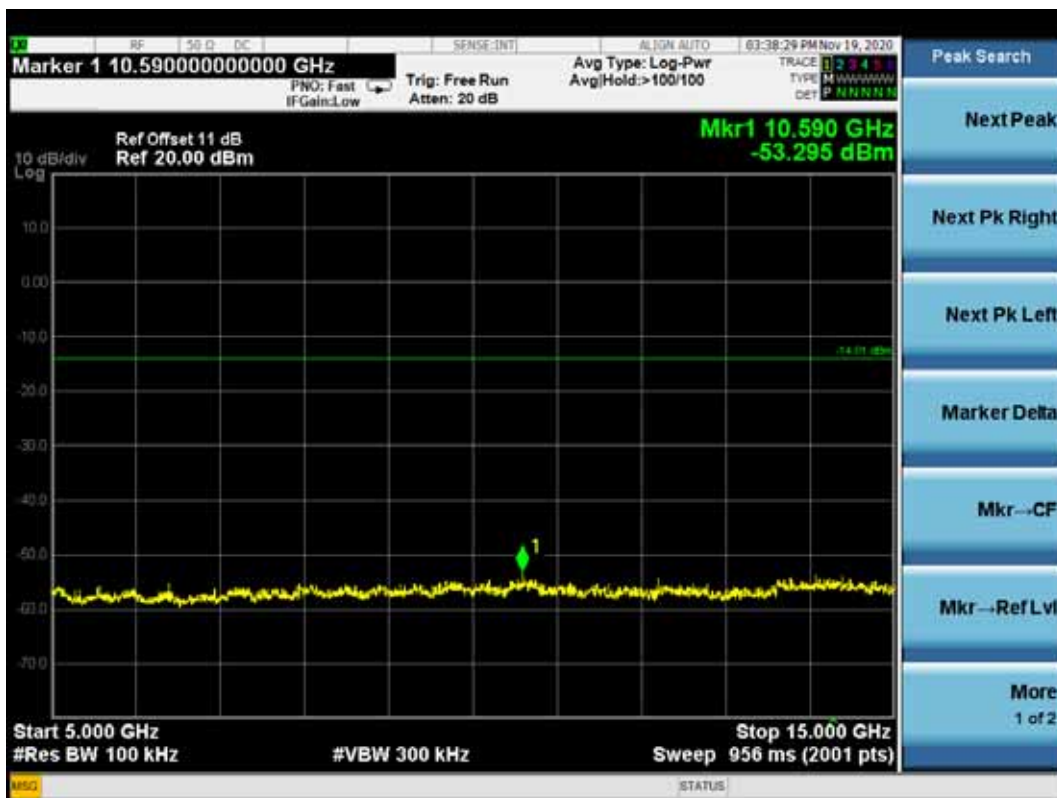
BT DH1: CH39 (2441 MHz)

Reference level



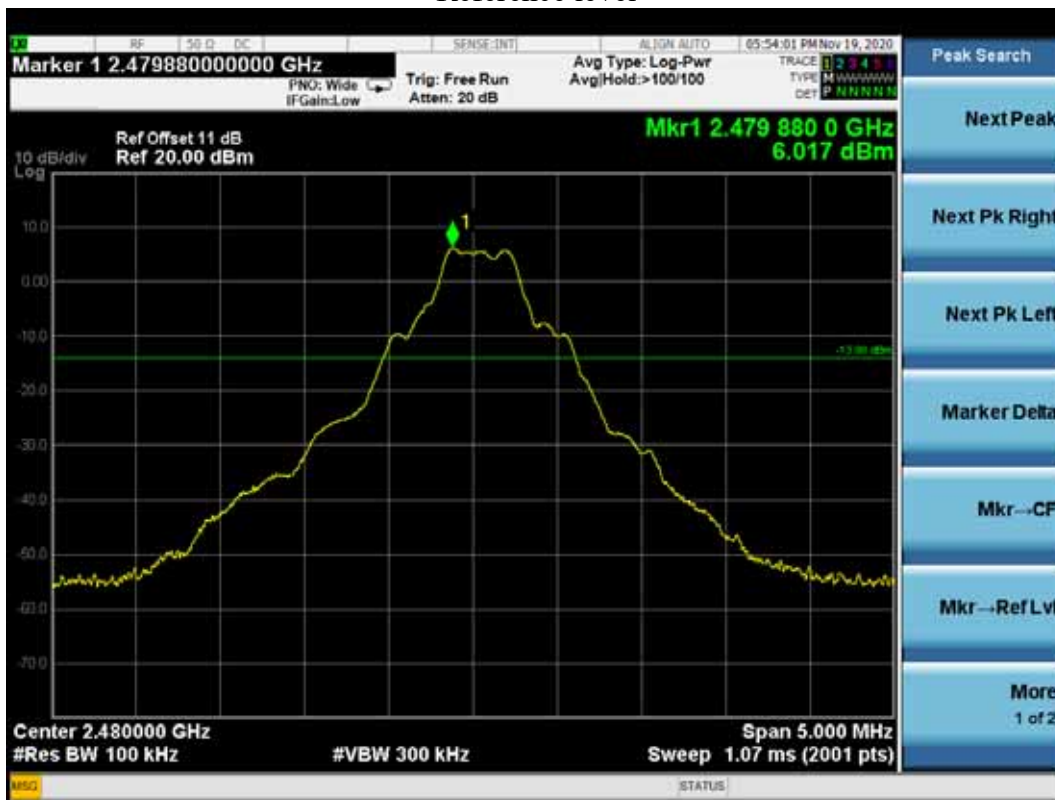
Emission level



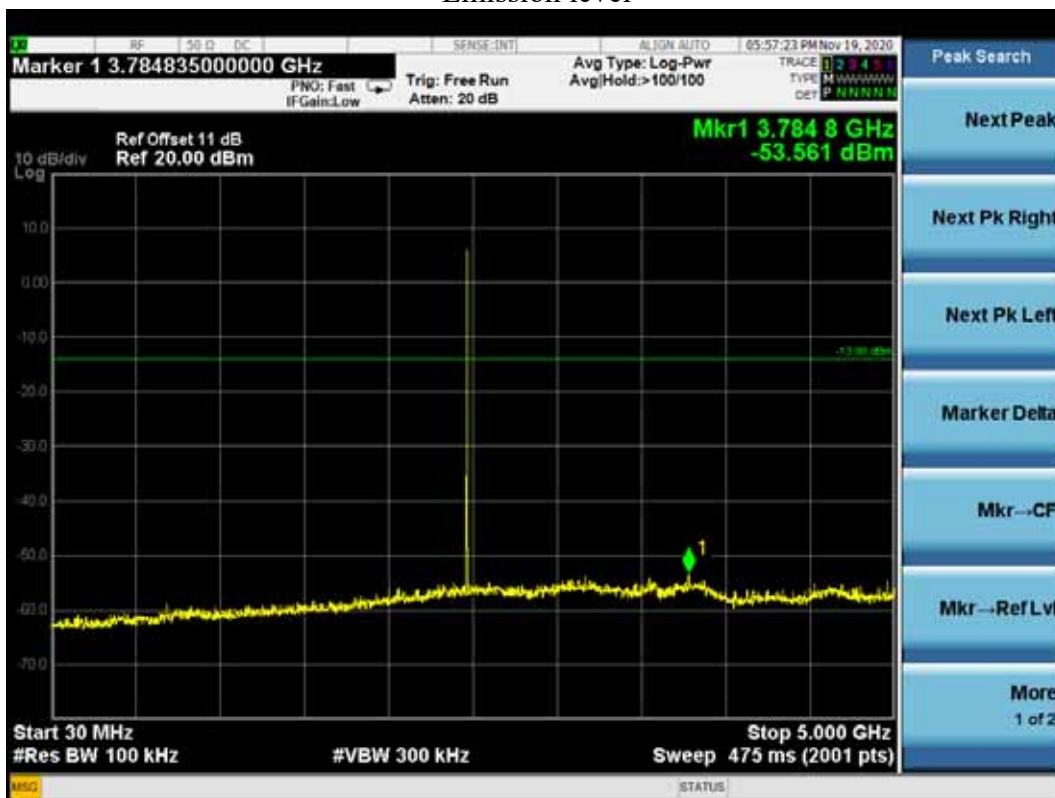


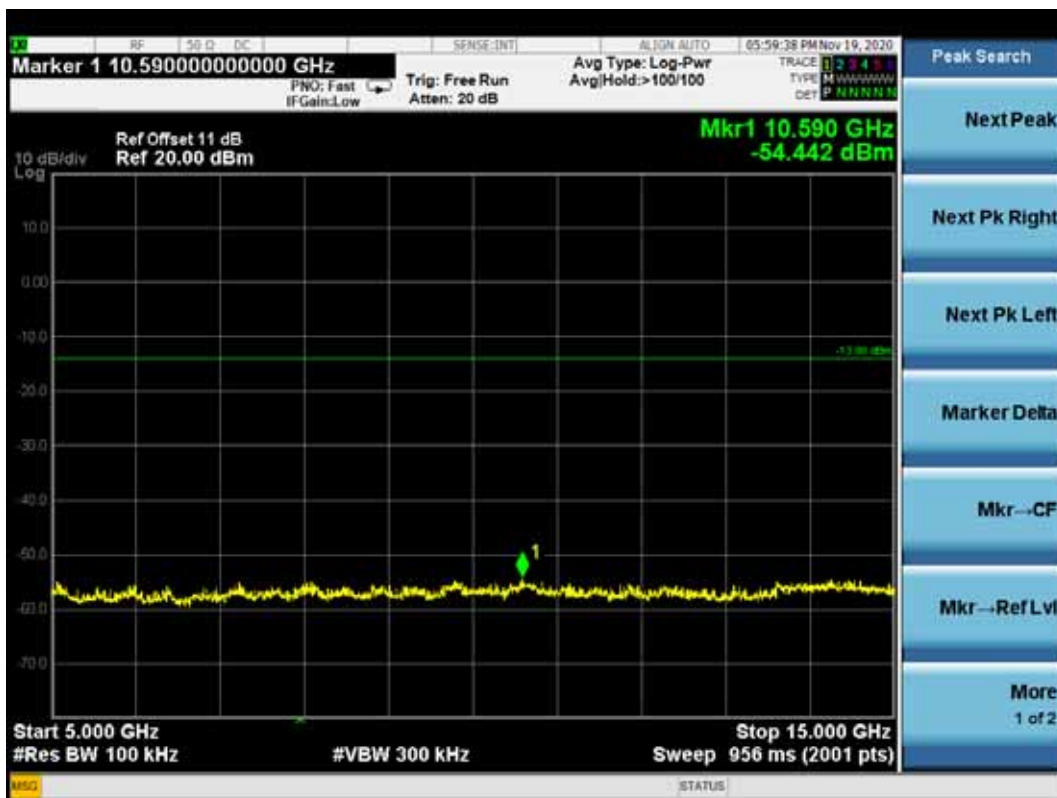
BT DH1: CH78 (2480 MHz)

Reference level

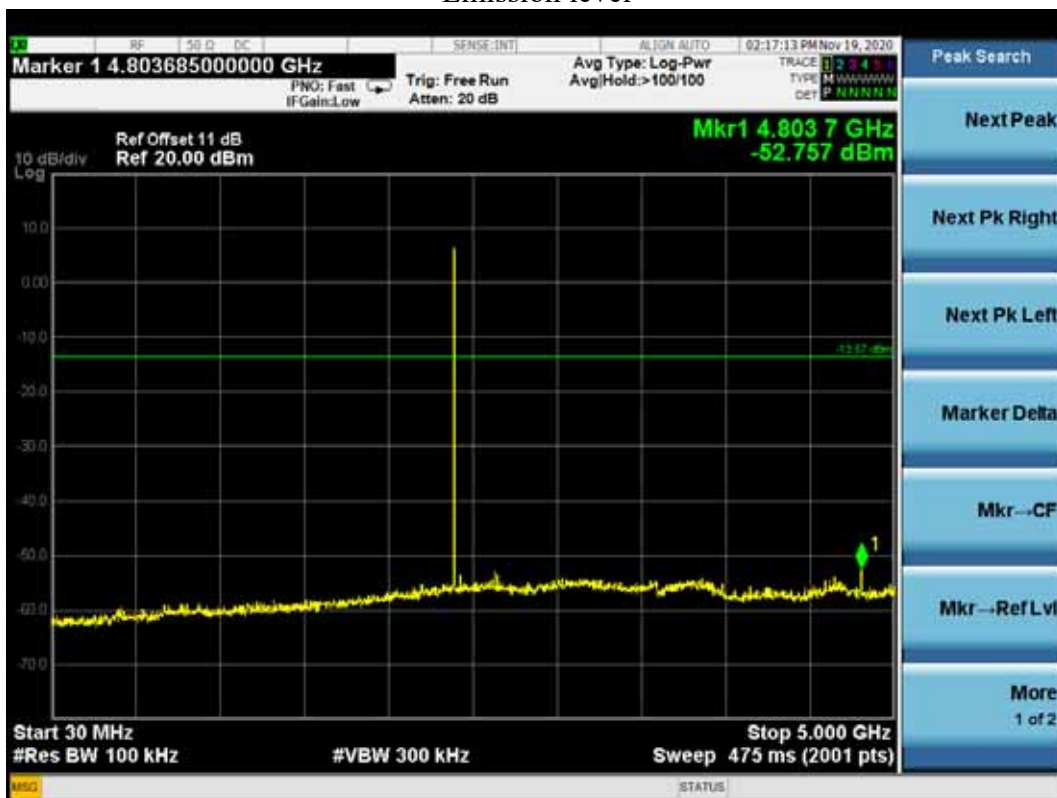


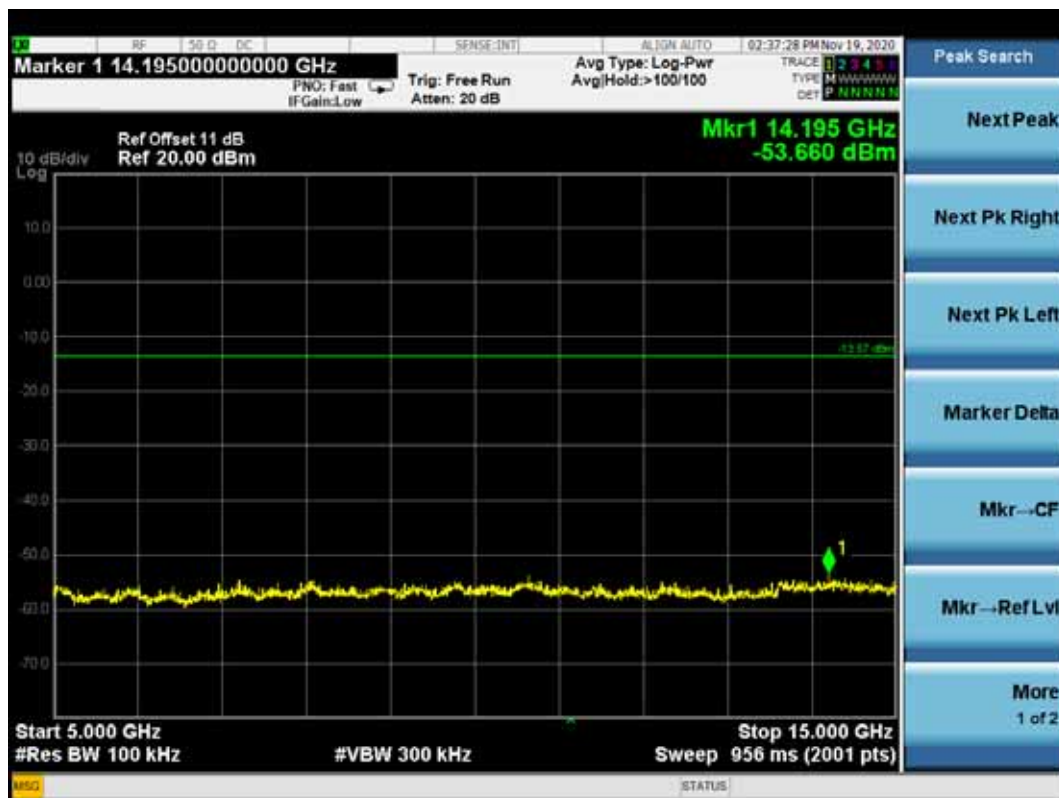
Emission level



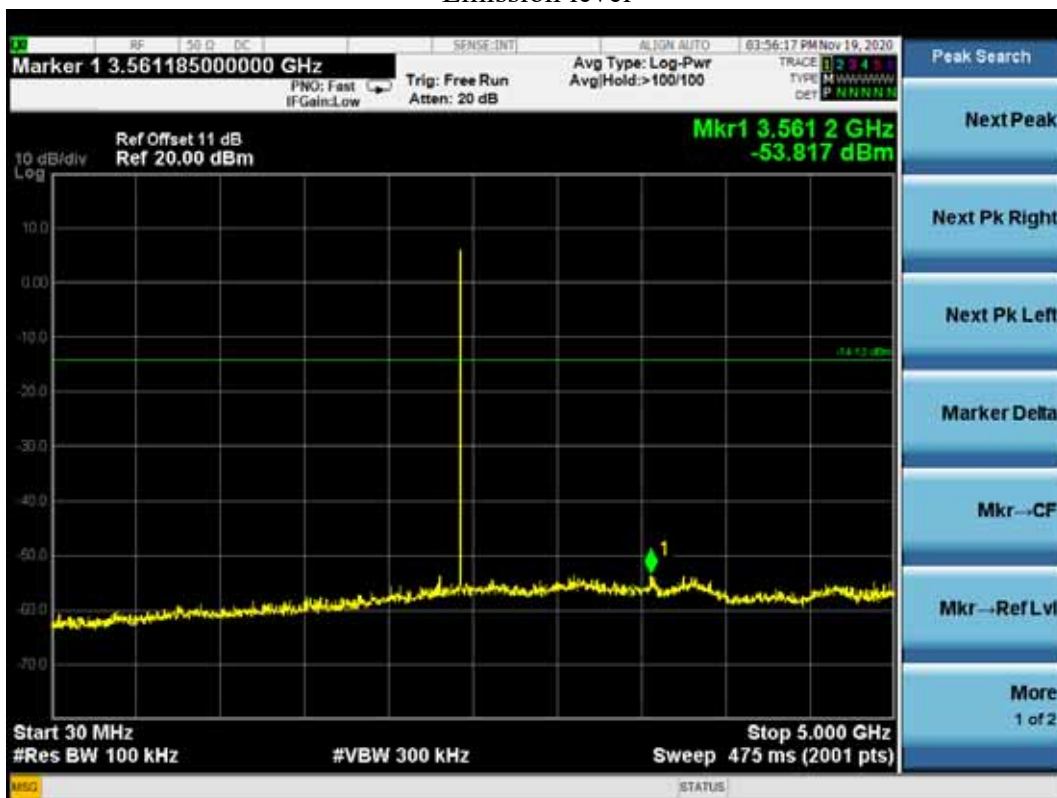


Reference level





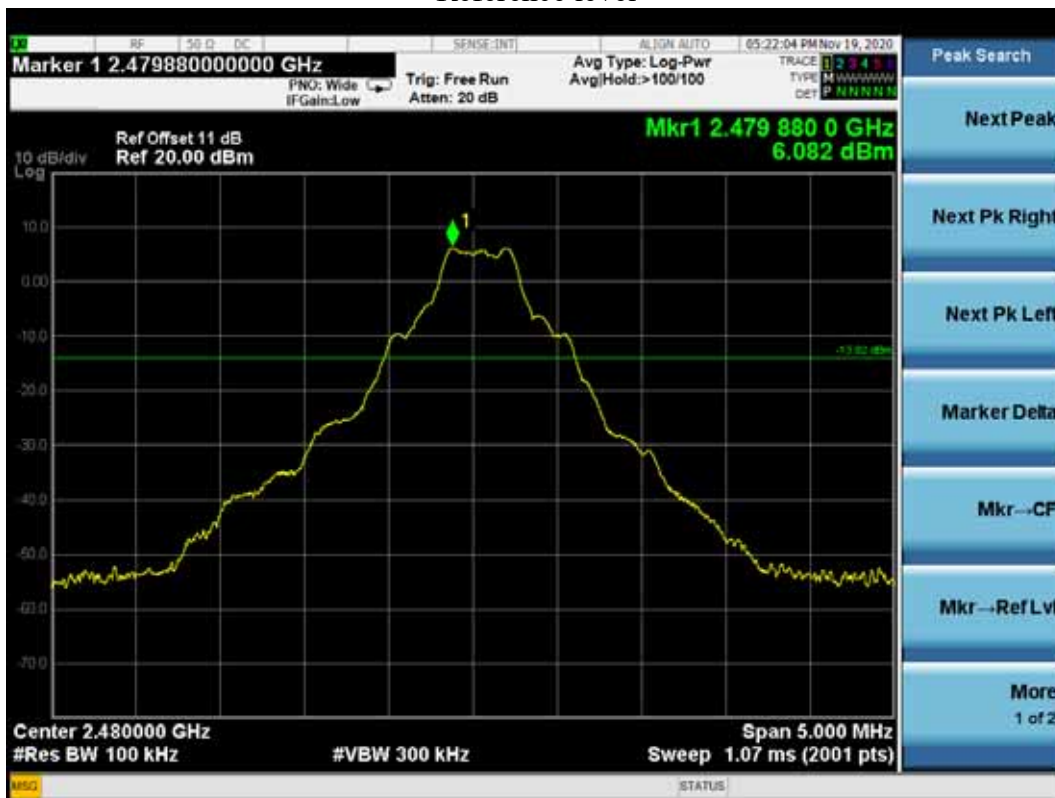
Reference level



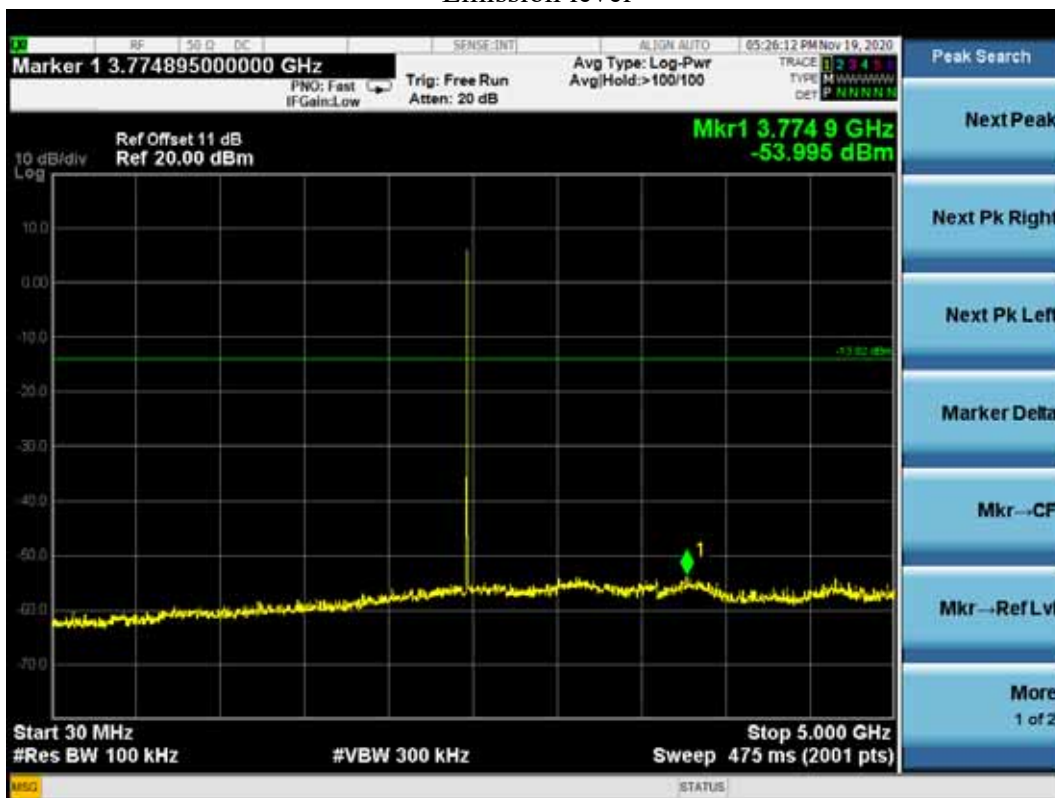


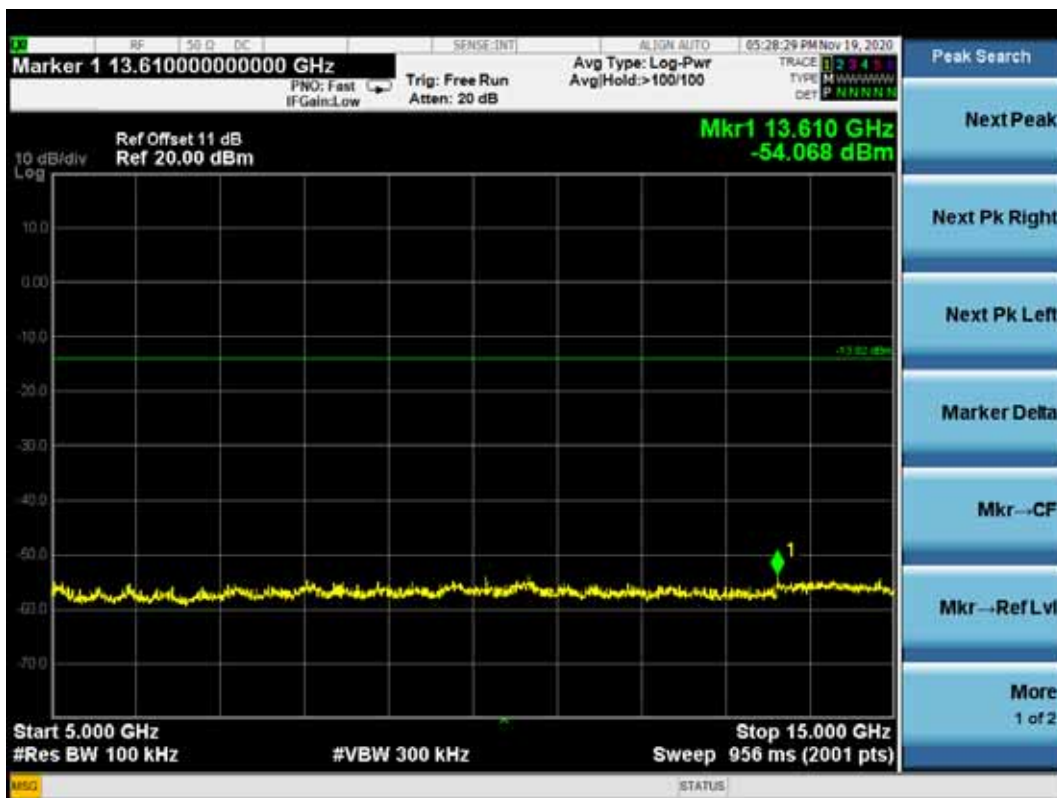
BT DH3: CH78 (2480 MHz)

Reference level



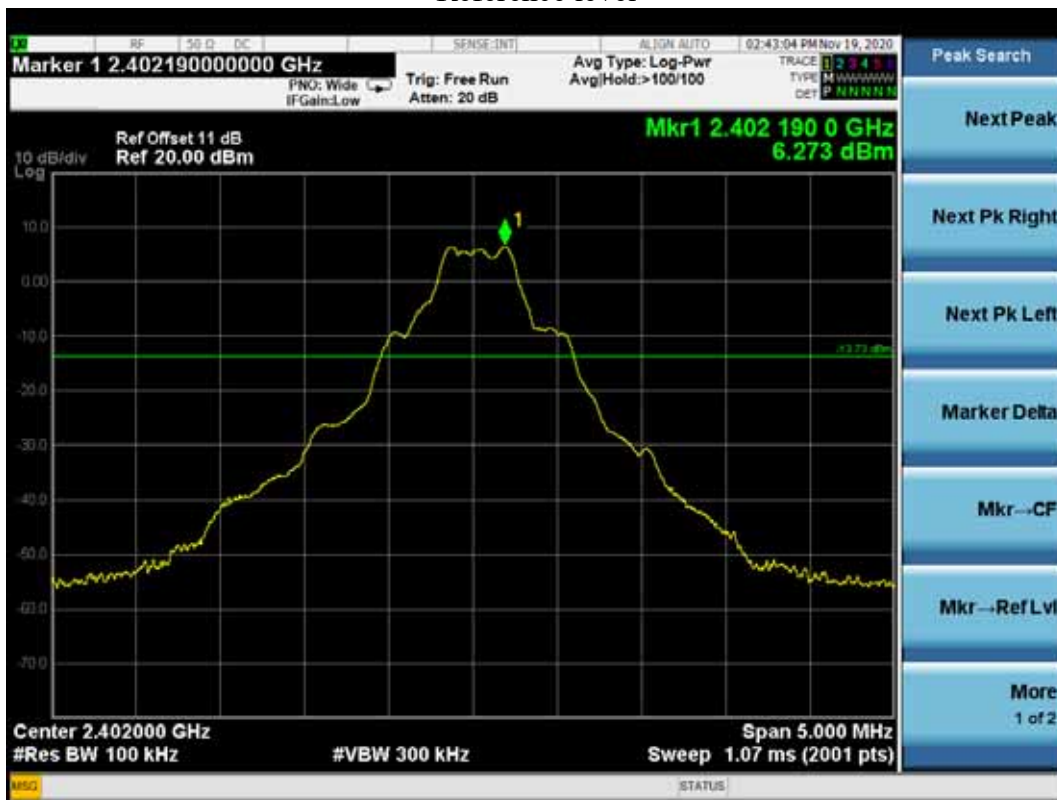
Emission level



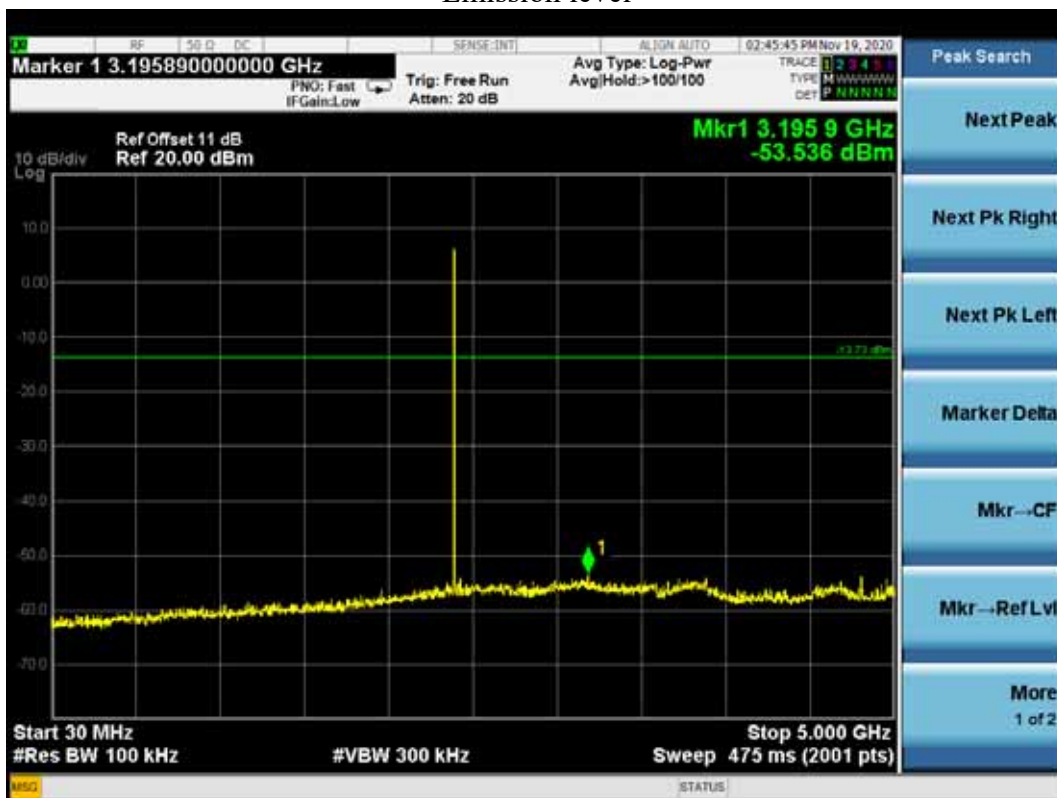


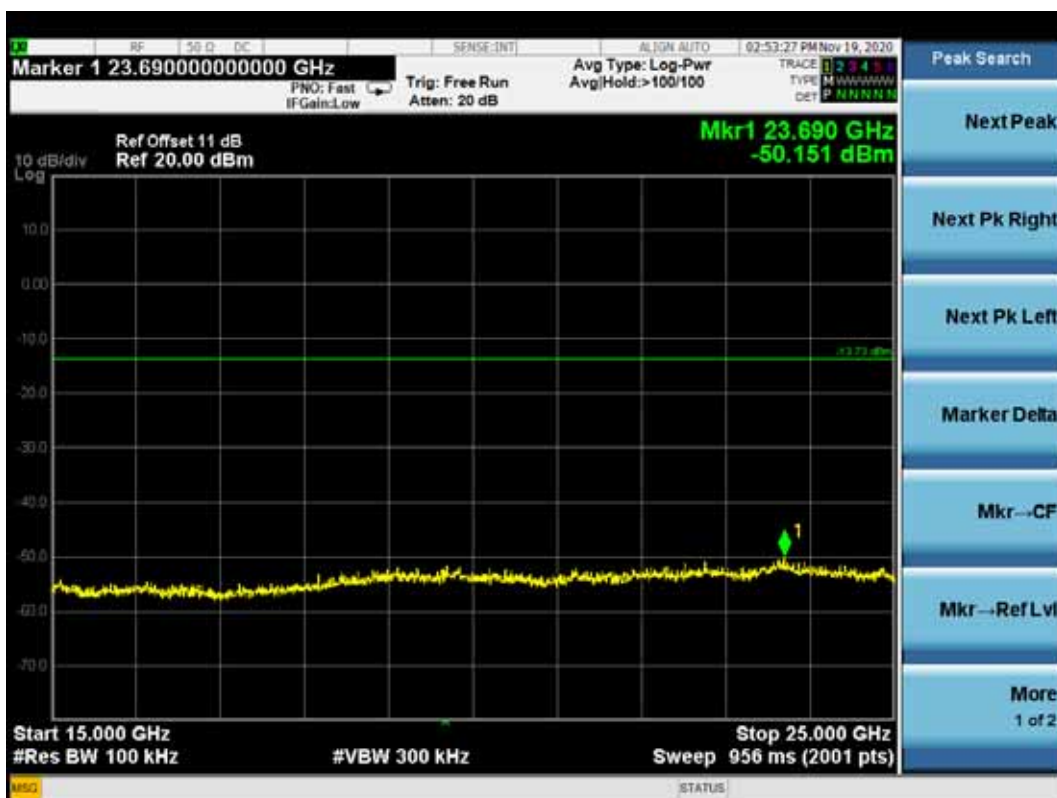
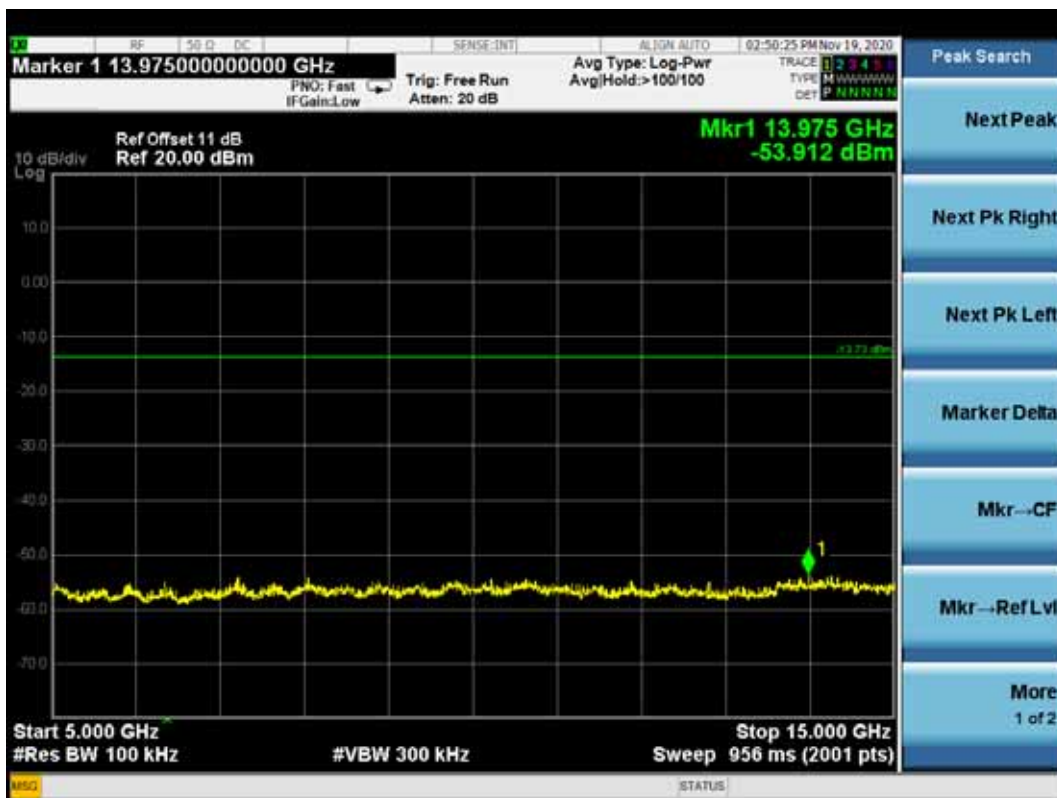
BT DH5: CH00 (2402 MHz)

Reference level



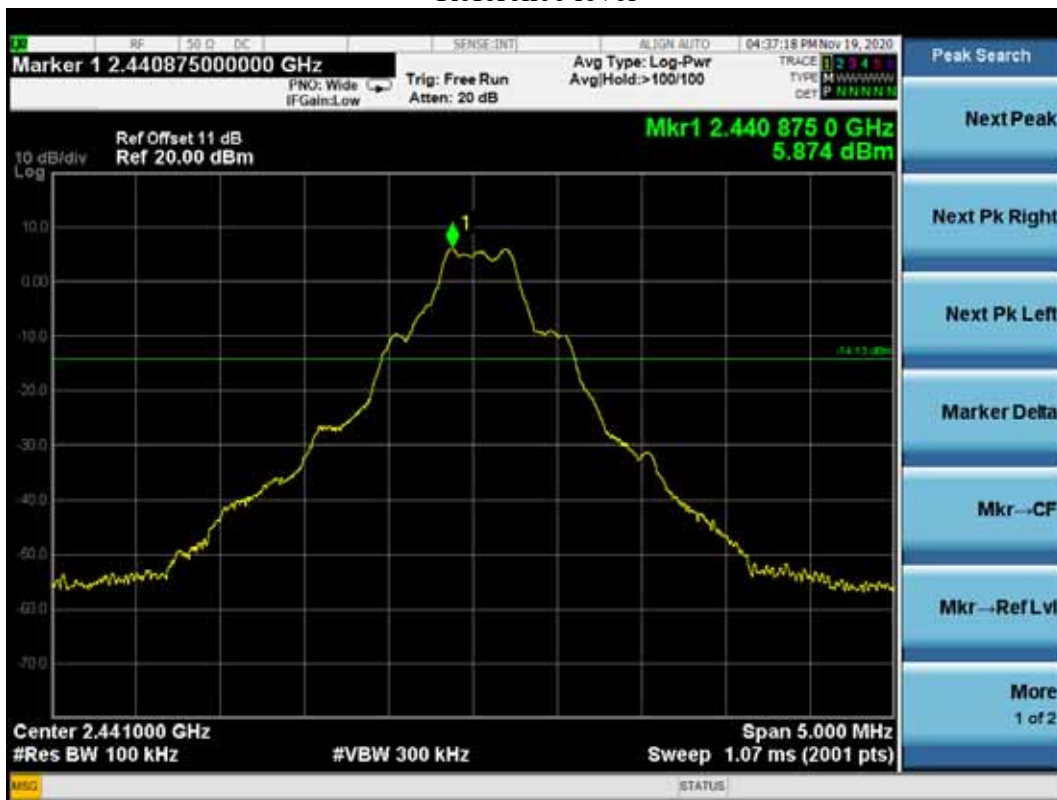
Emission level



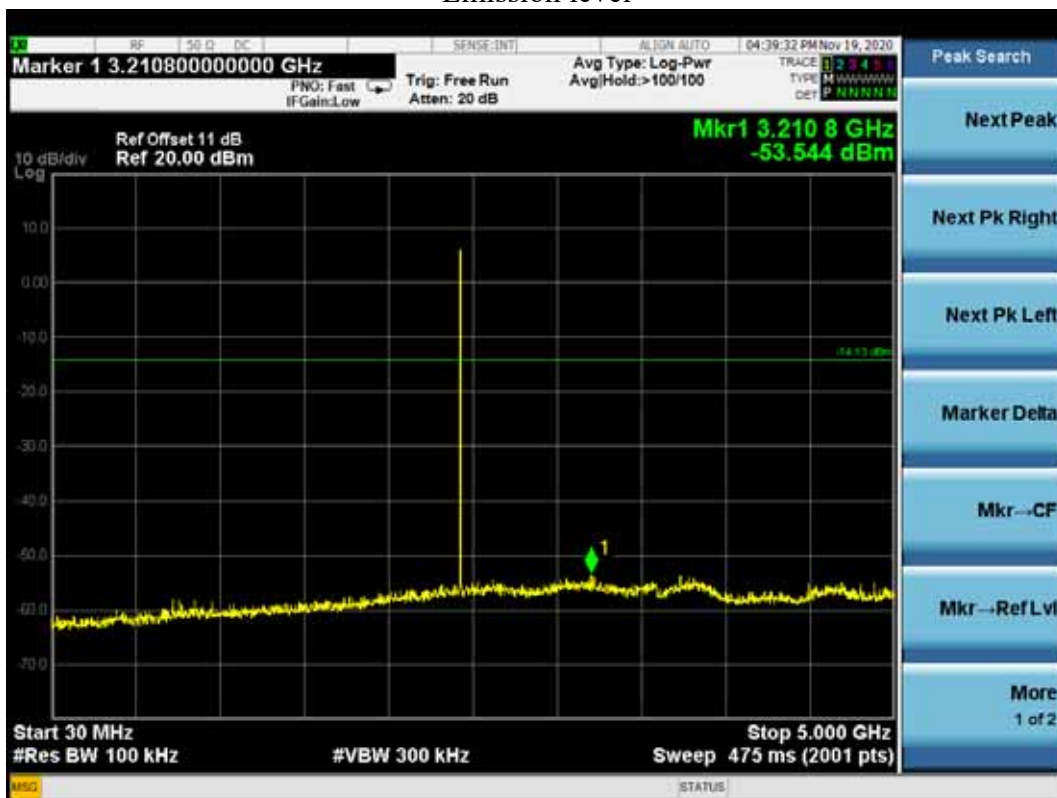


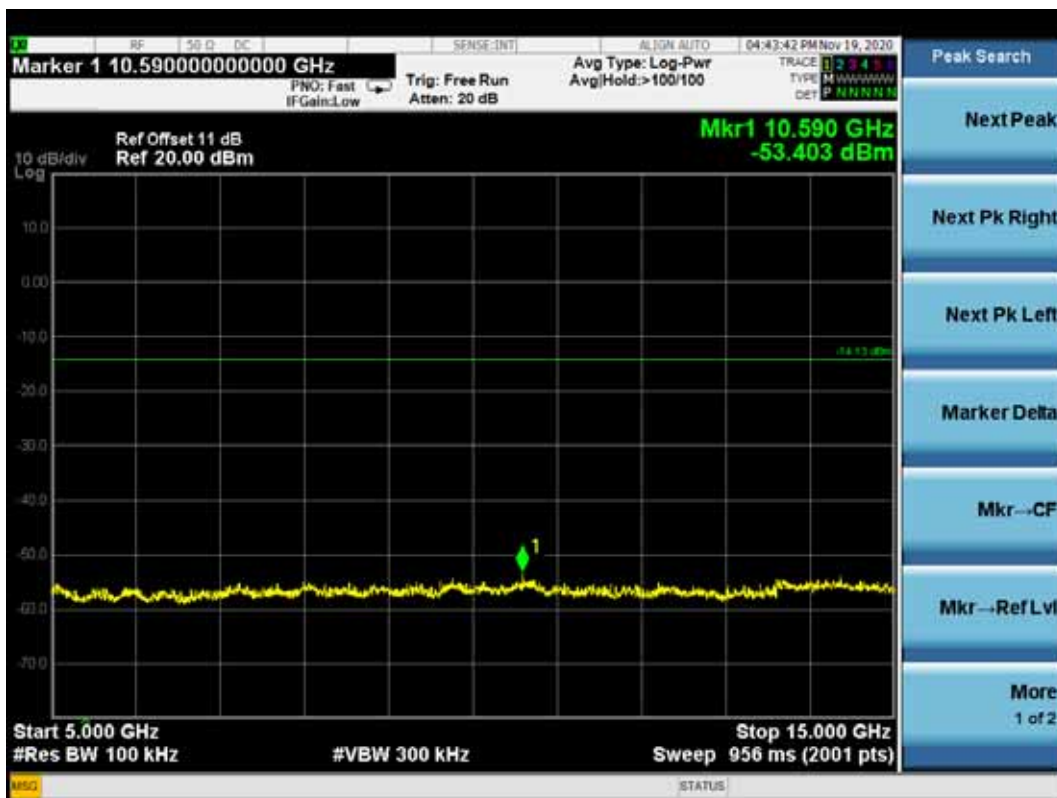
BT DH5: CH39 (2441 MHz)

Reference level

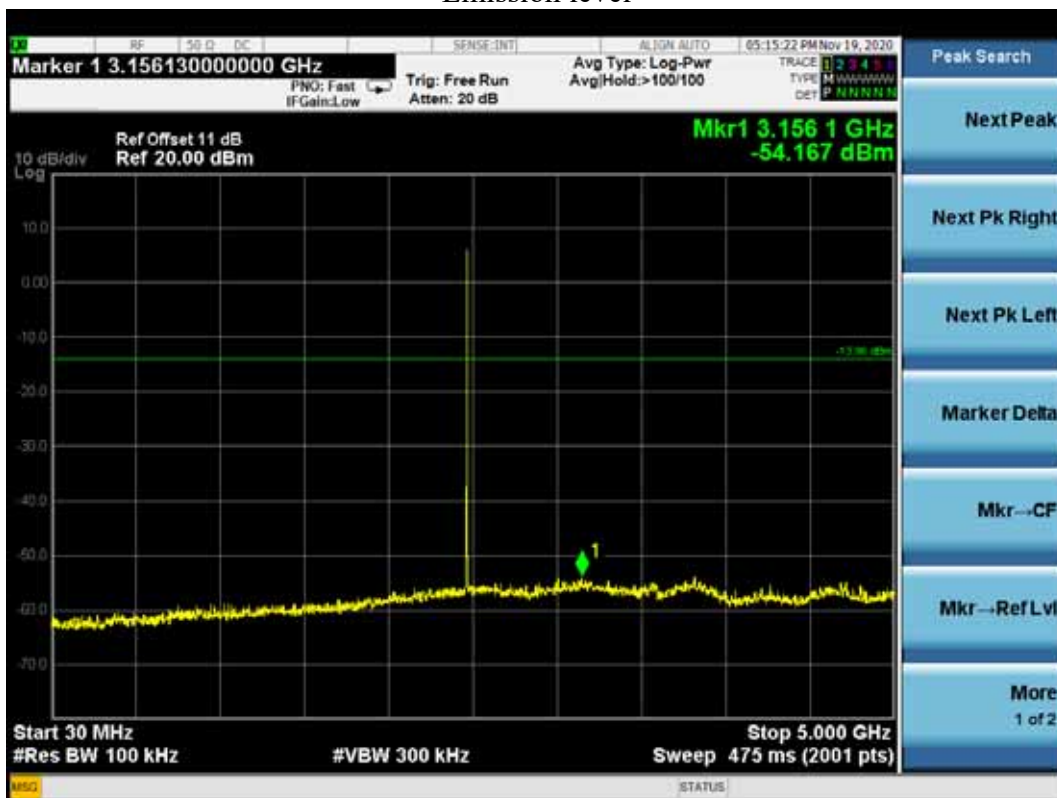


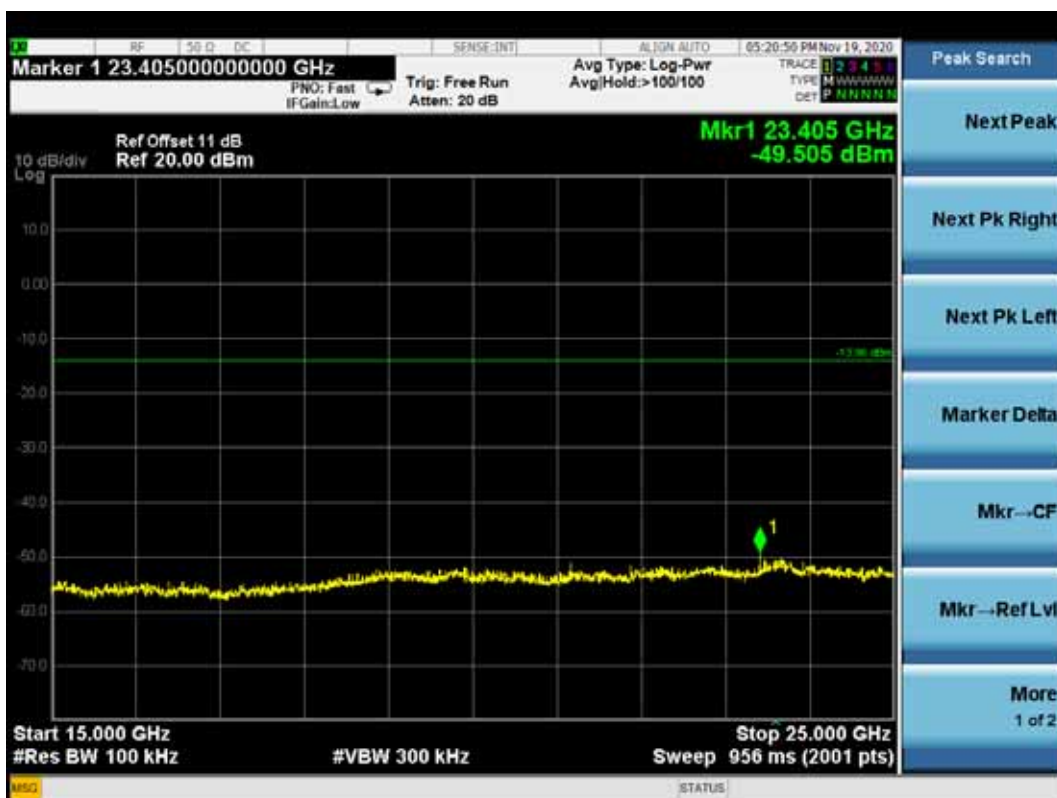
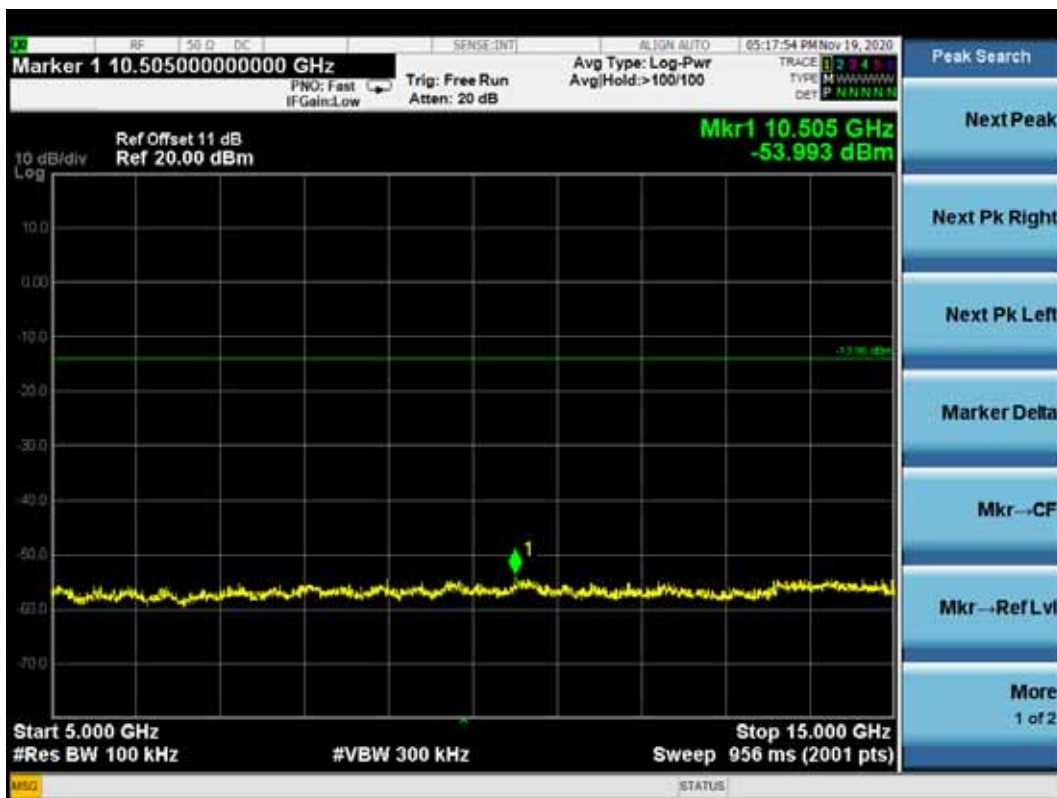
Emission level





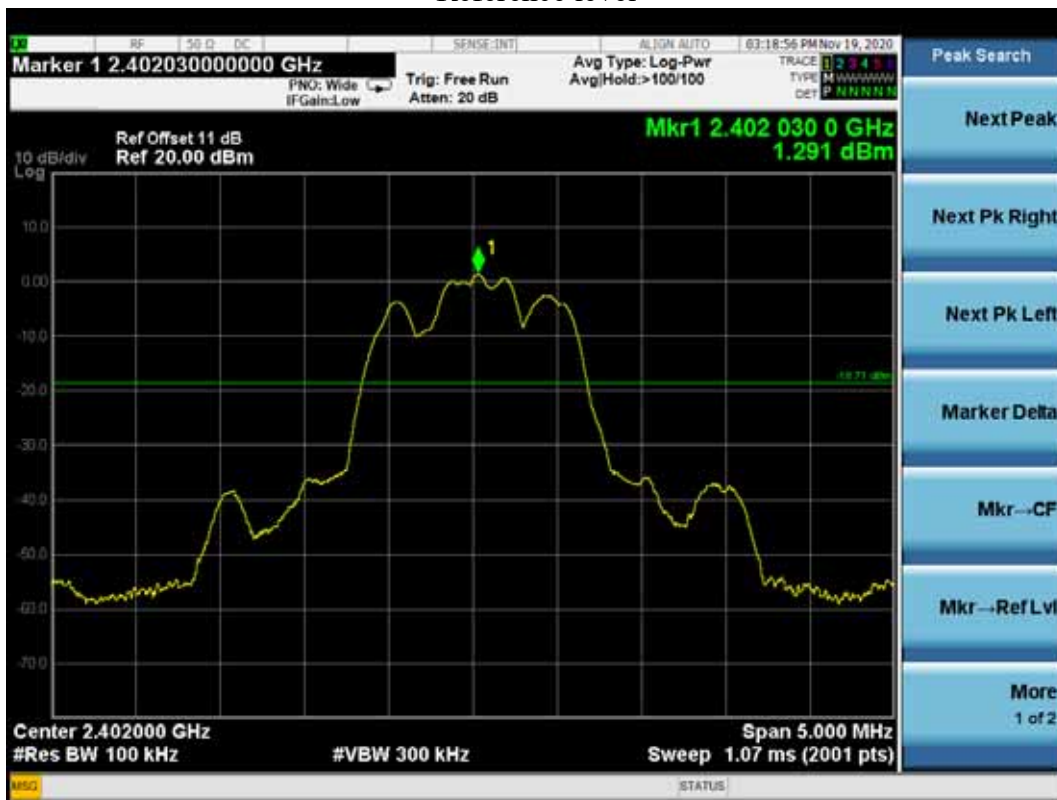
Reference level



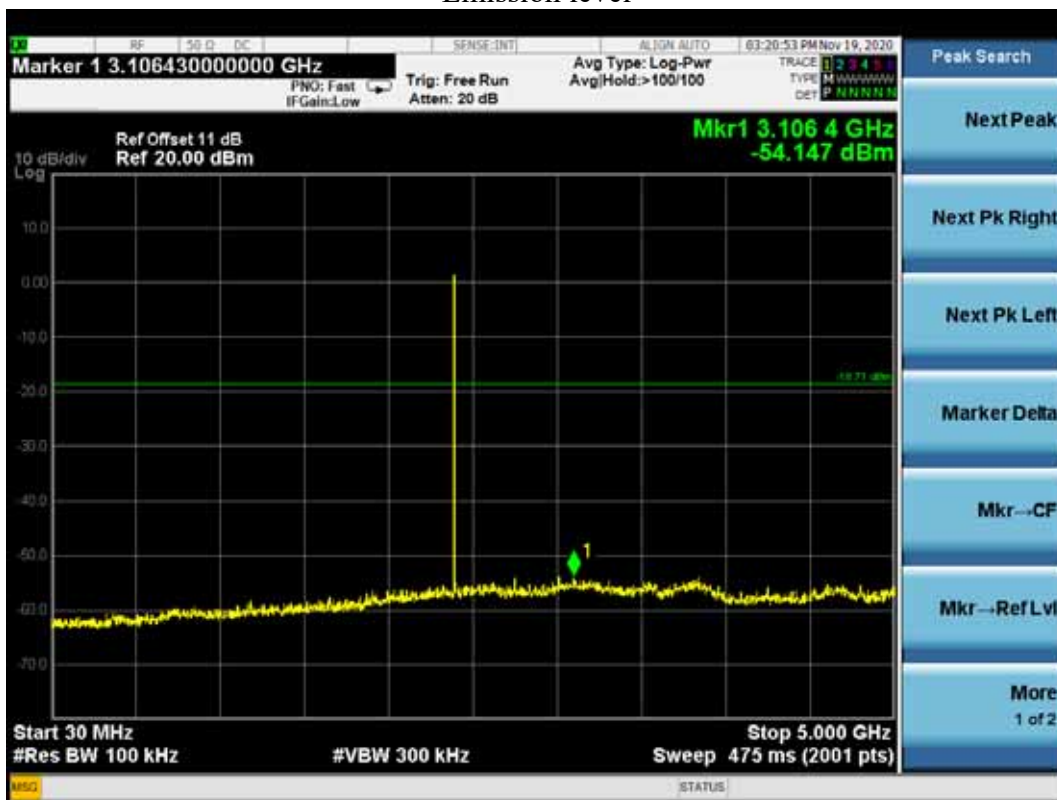


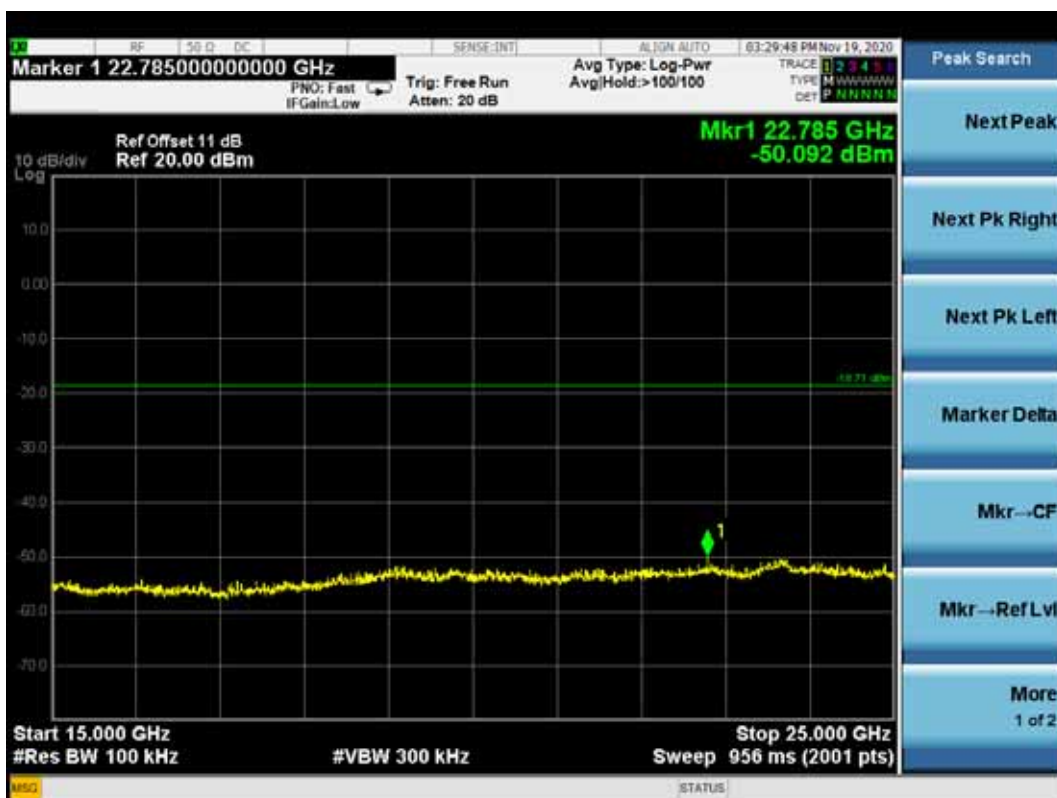
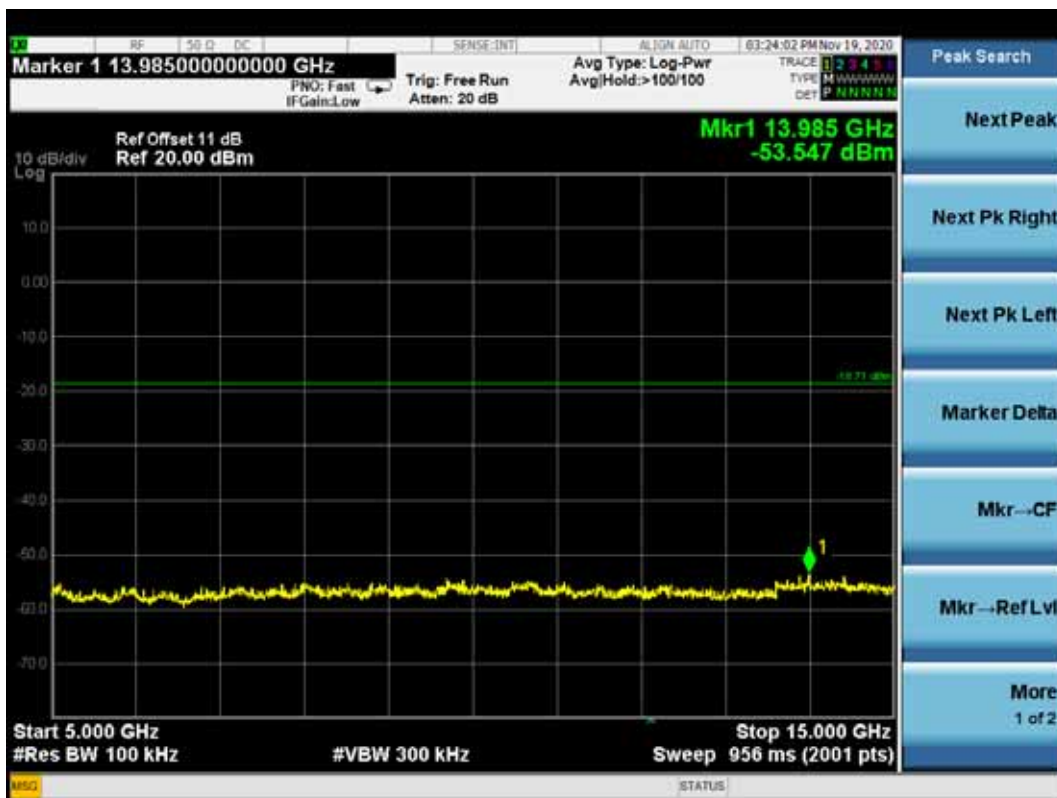
BT 3DH1: CH00 (2402 MHz)

Reference level



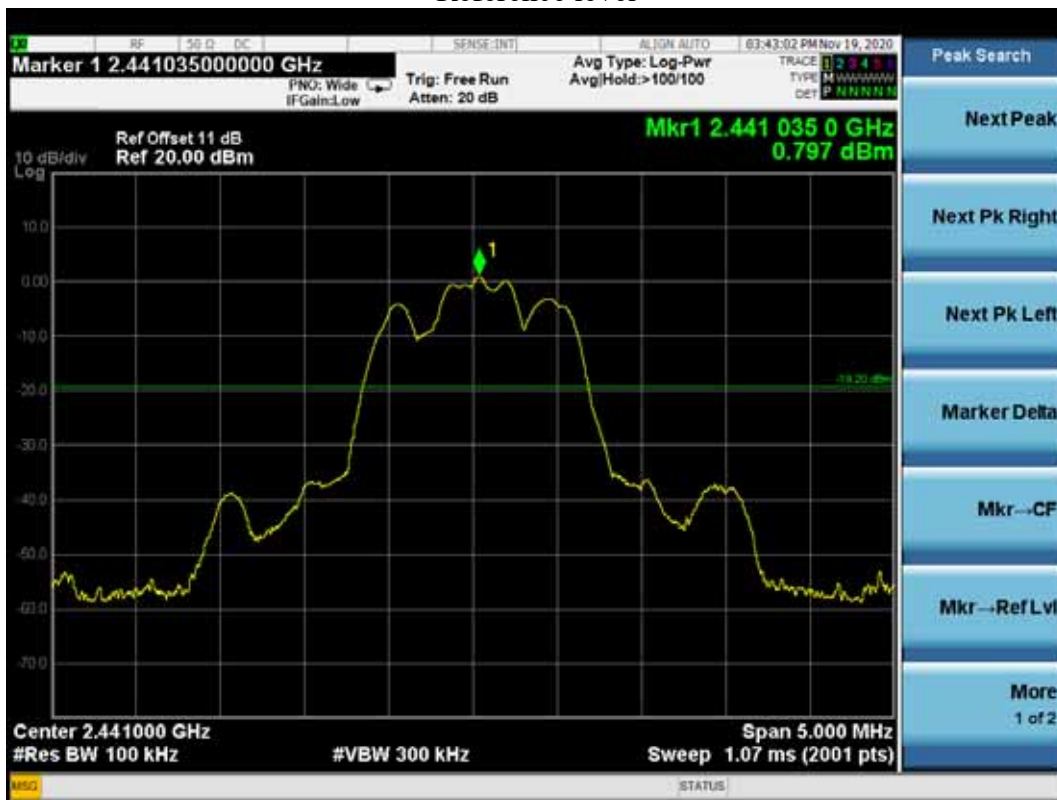
Emission level



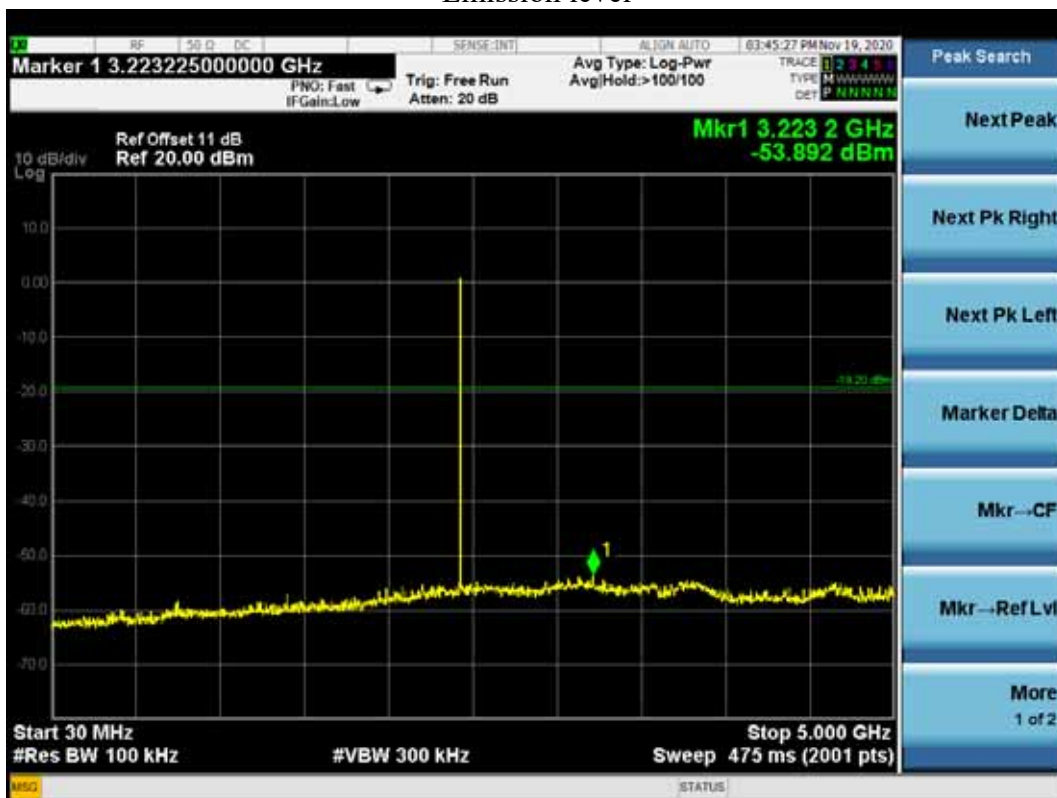


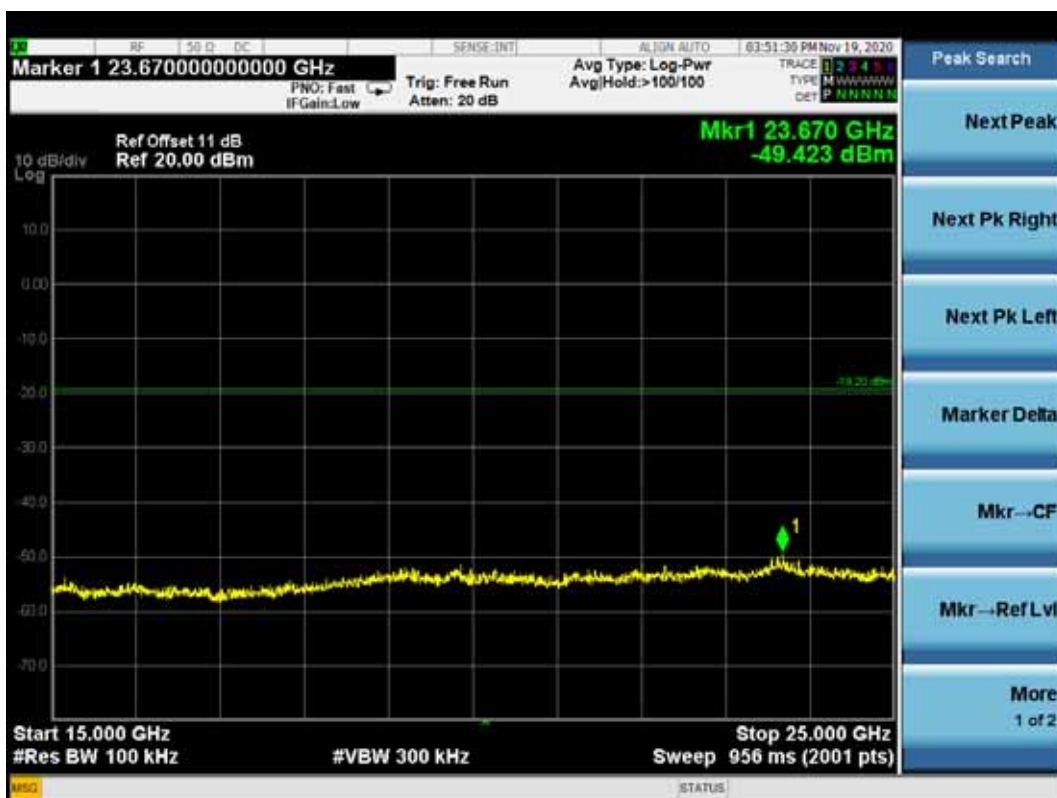
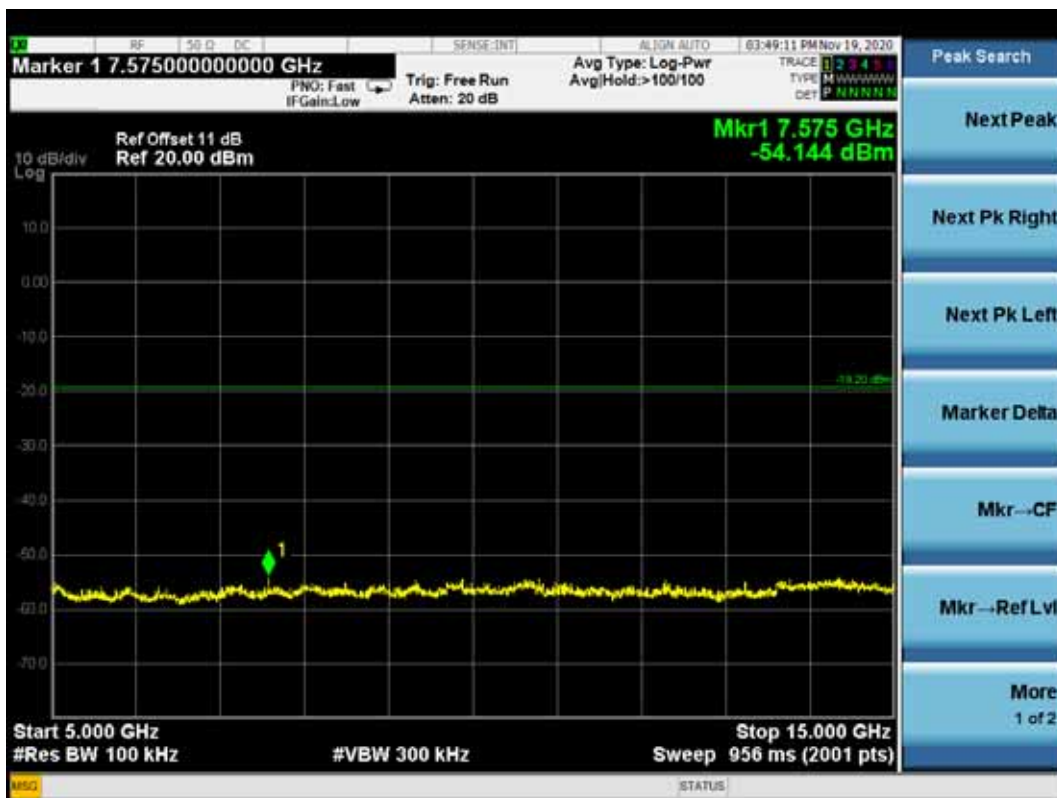
BT 3DH1: CH39 (2441 MHz)

Reference level



Emission level



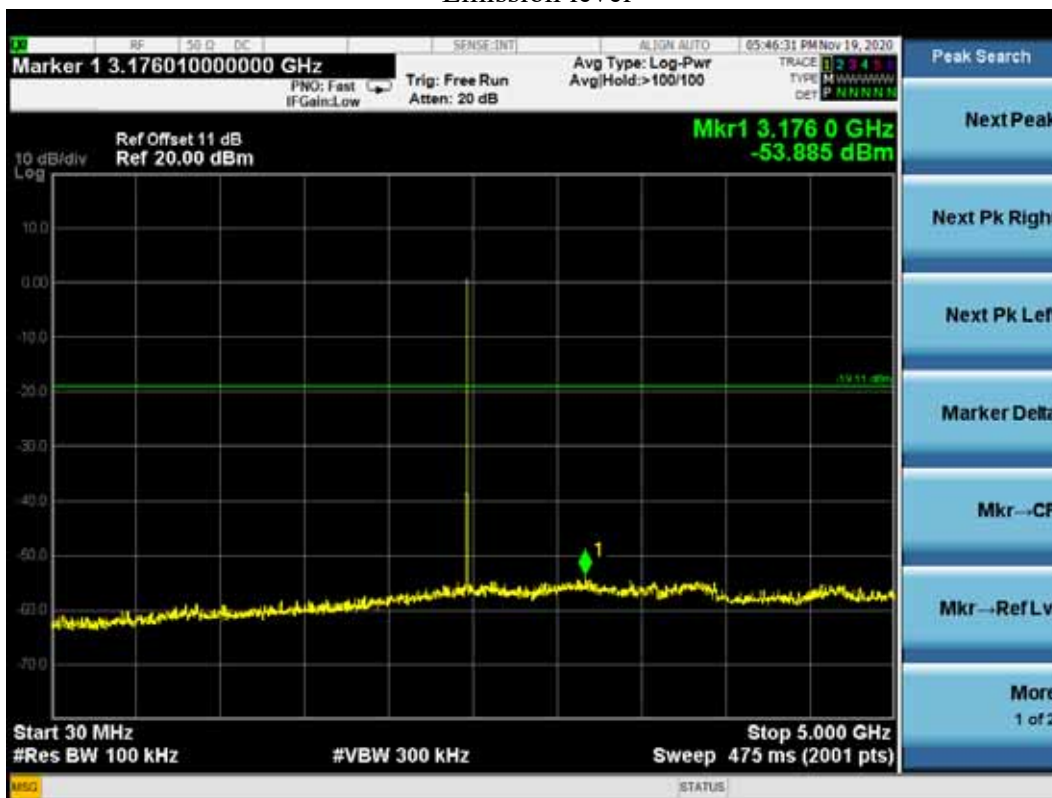


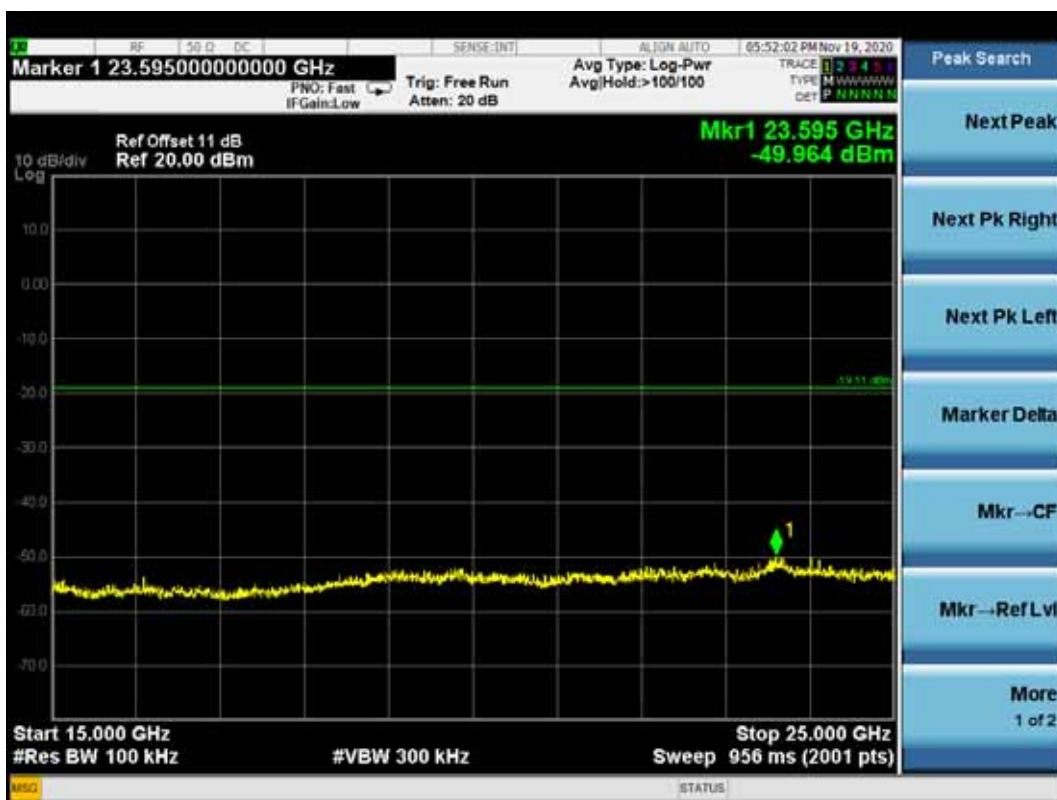
BT 3DH1: CH78 (2480 MHz)

Reference level



Emission level



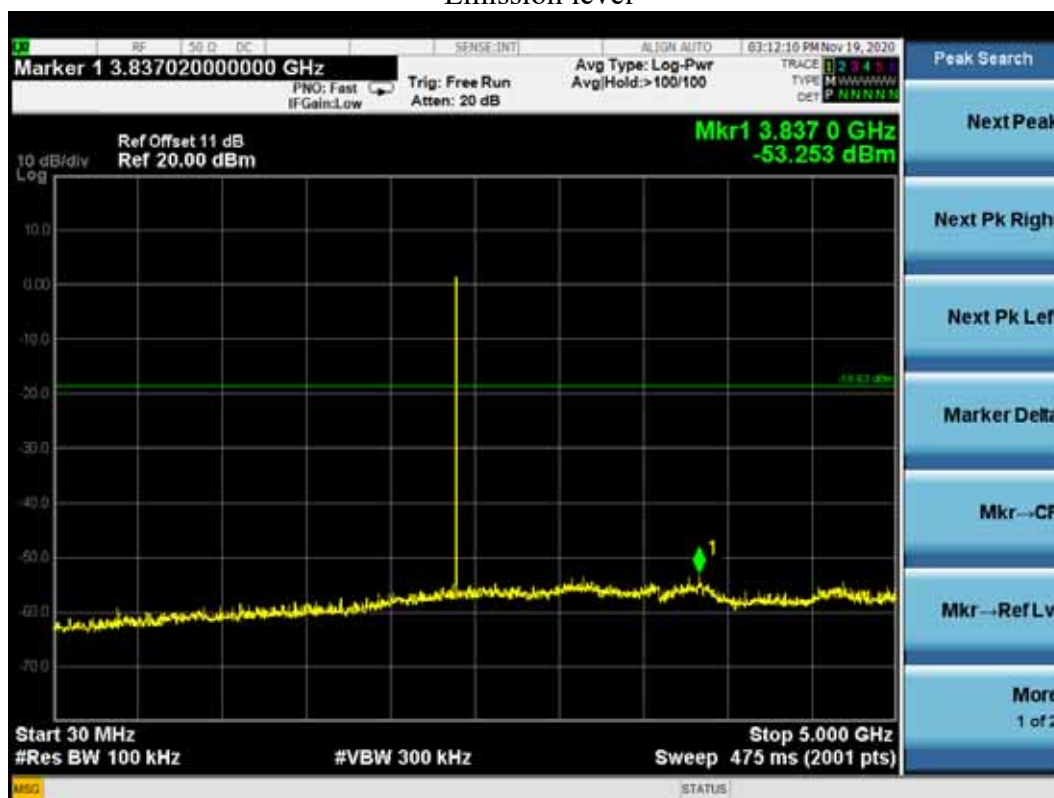


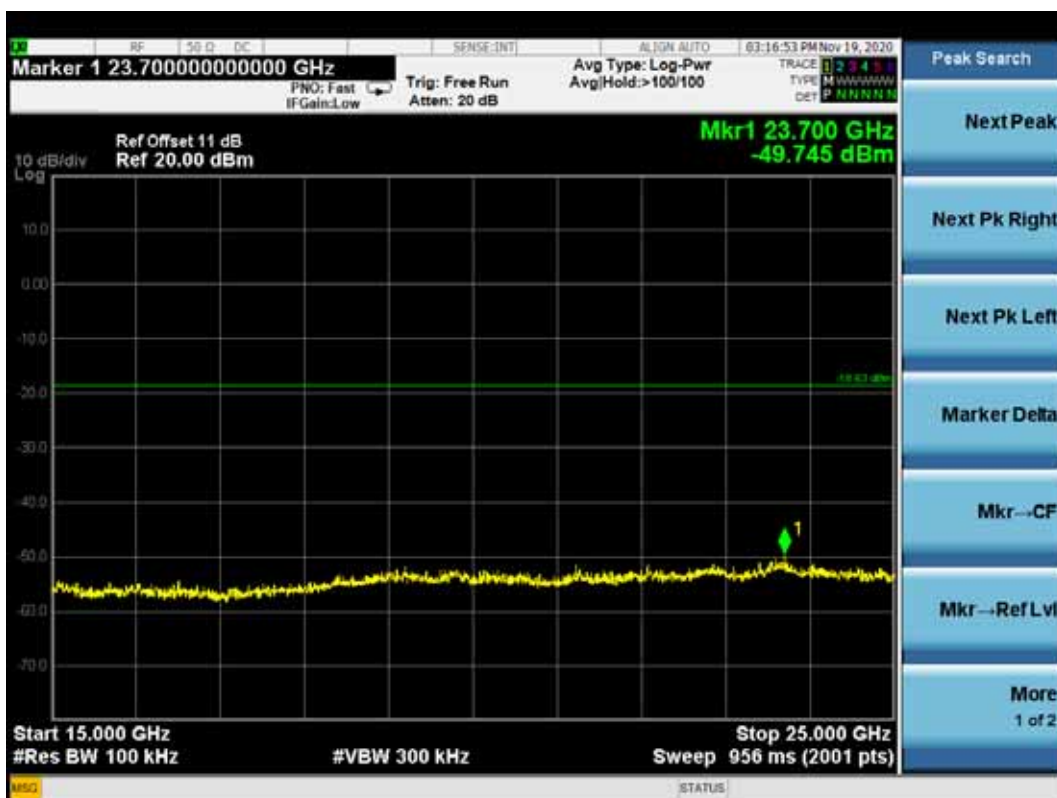
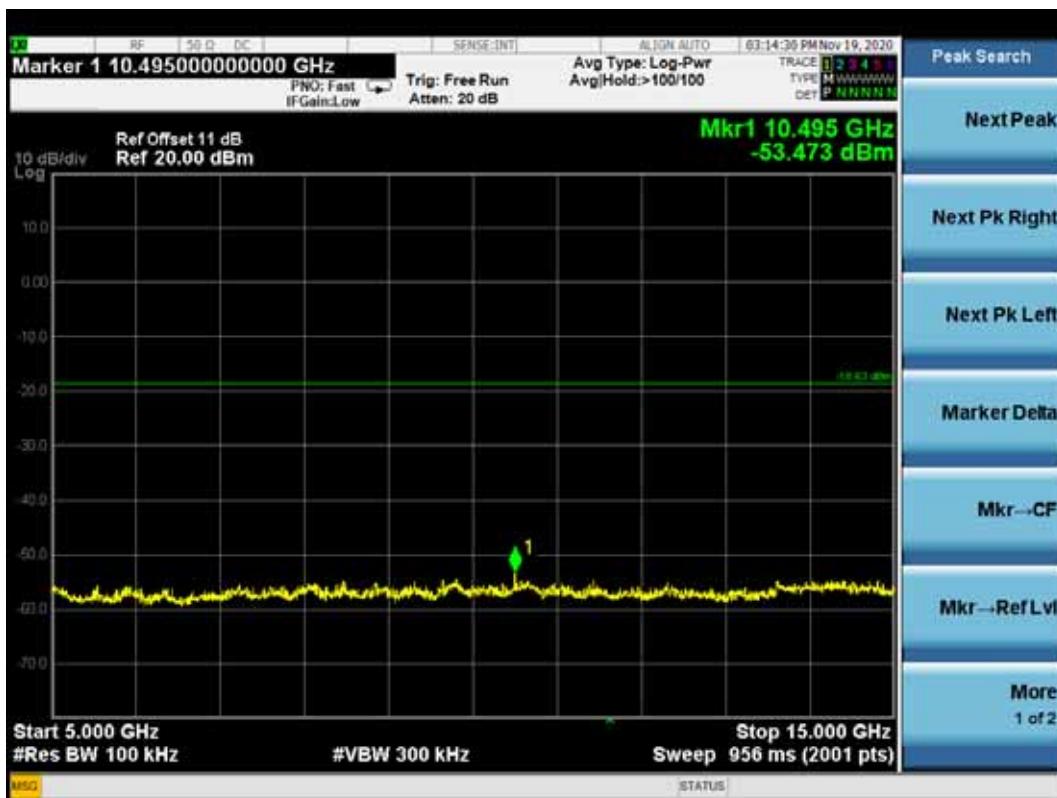
BT 3DH3: CH00 (2402 MHz)

Reference level



Emission level



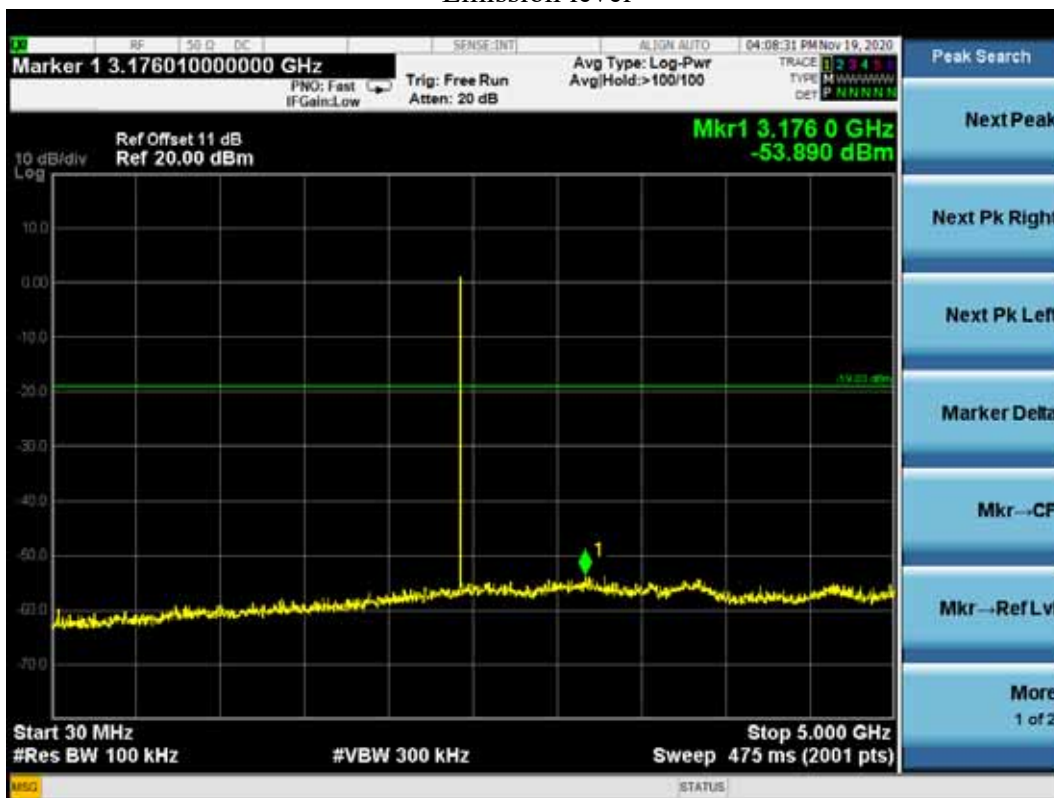


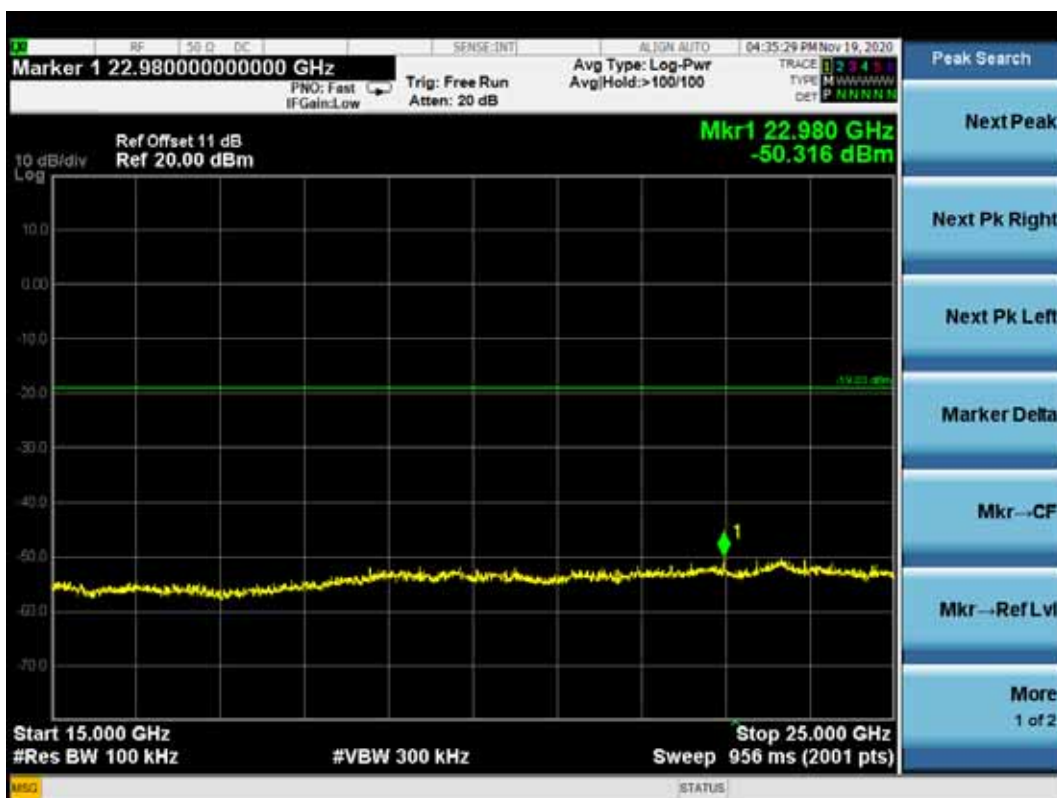
BT 3DH3: CH39 (2441 MHz)

Reference level



Emission level





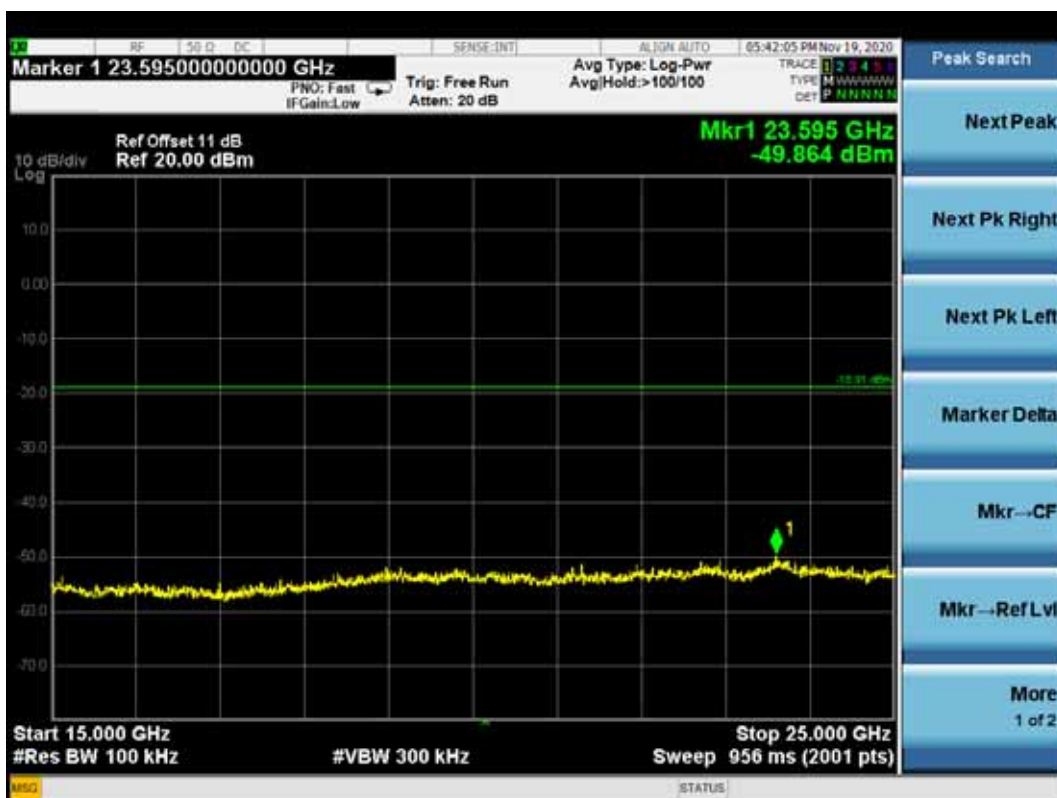
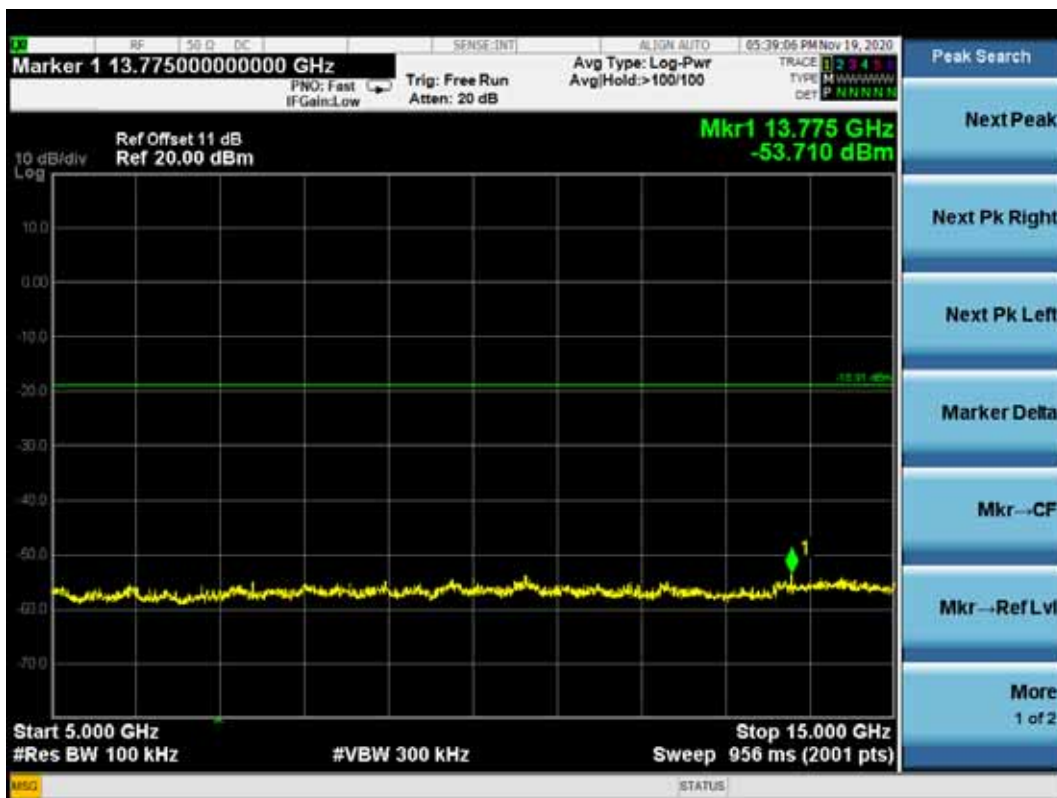
BT 3DH3: CH78 (2480 MHz)

Reference level



Emission level



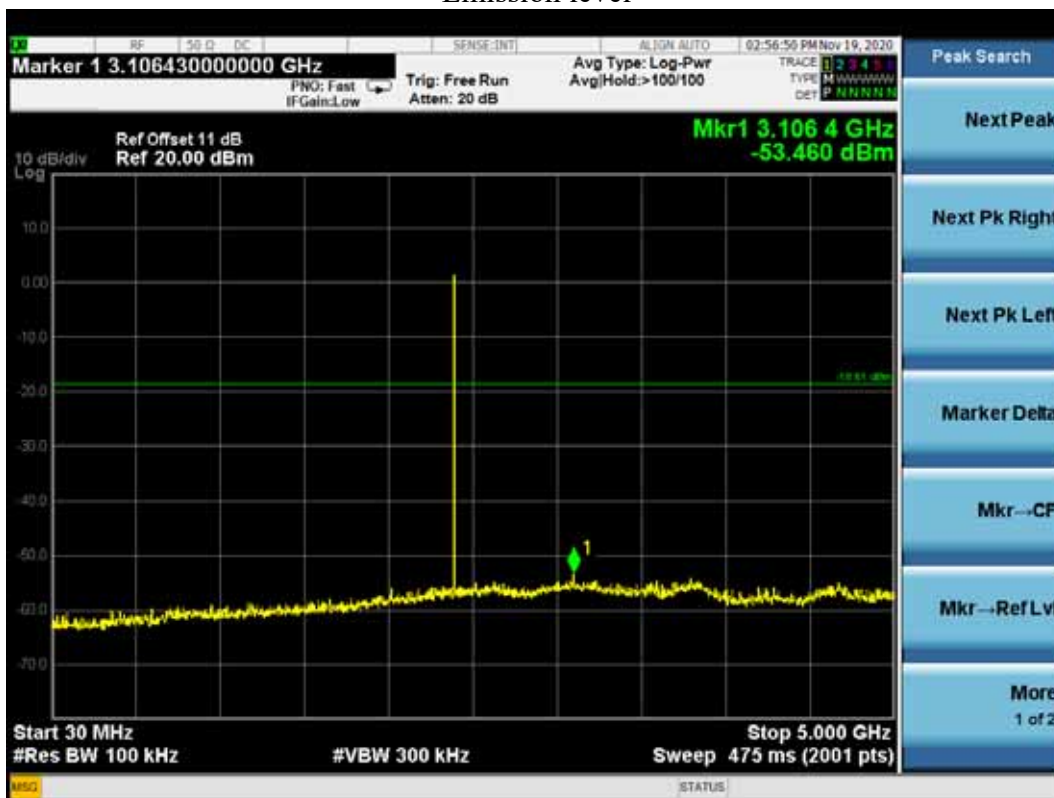


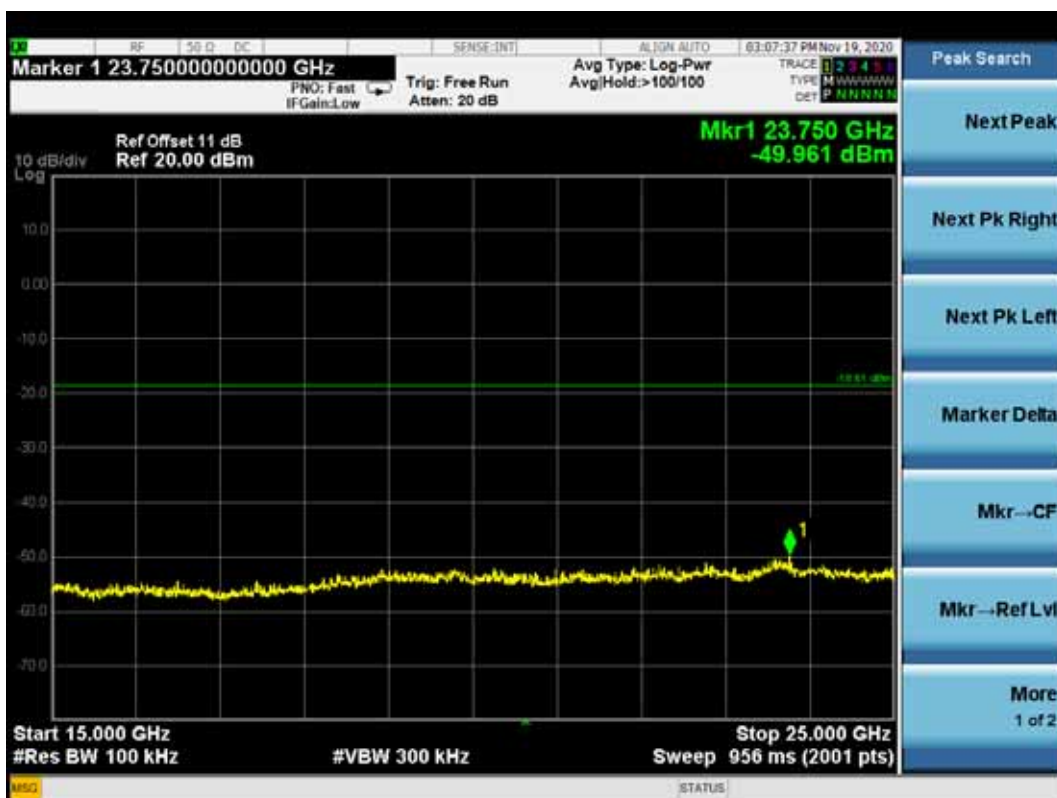
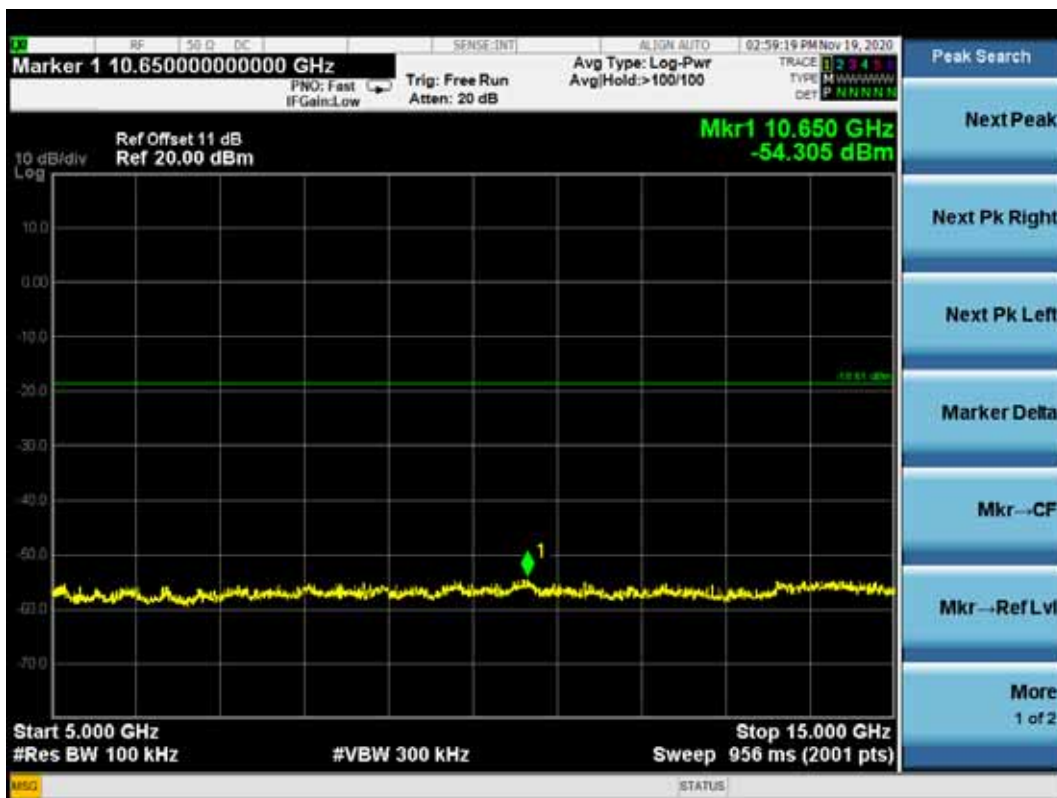
BT 3DH5: CH00 (2402 MHz)

Reference level



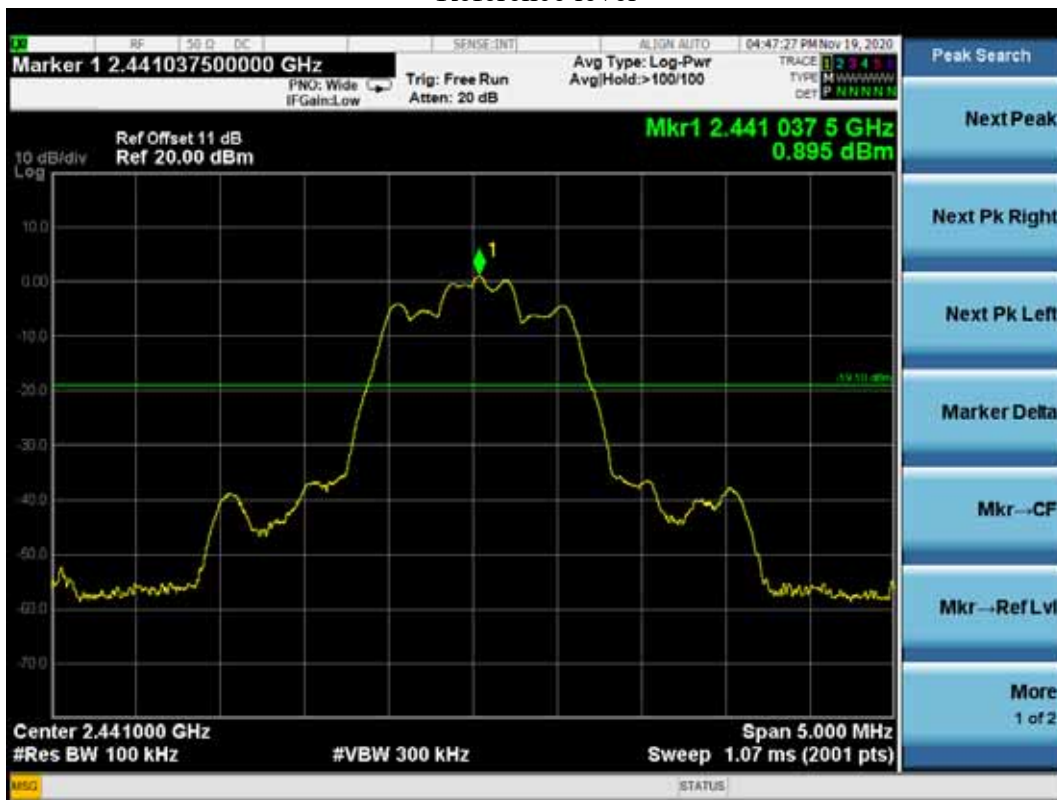
Emission level



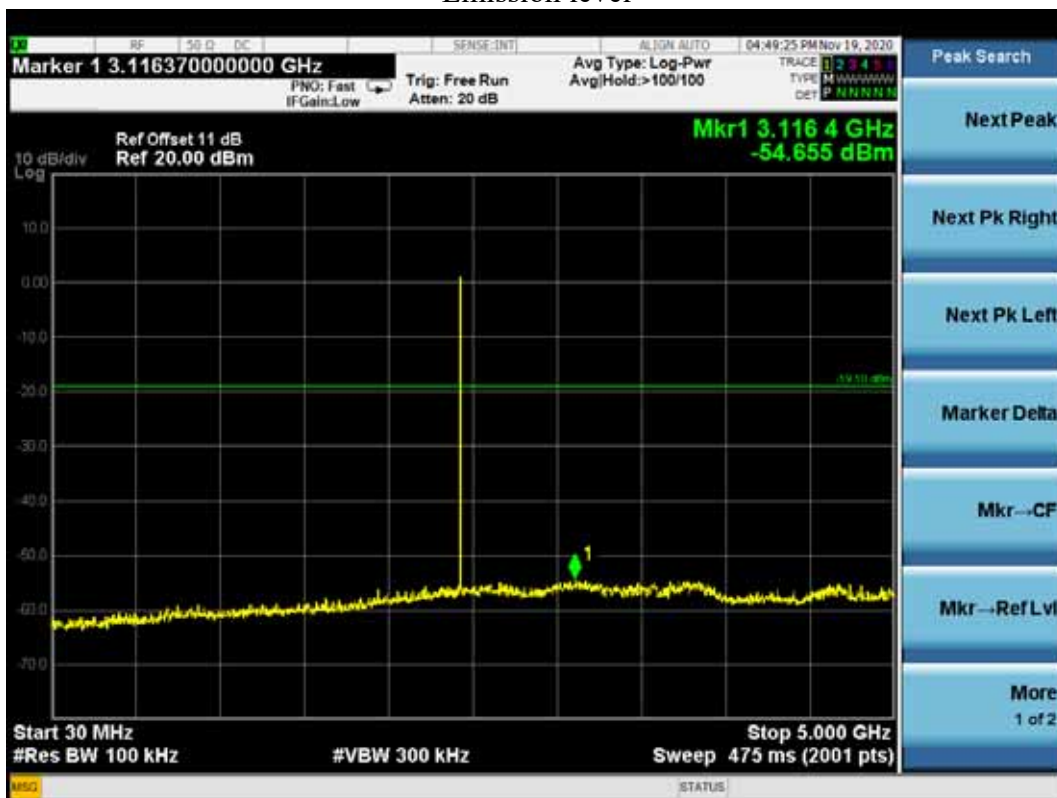


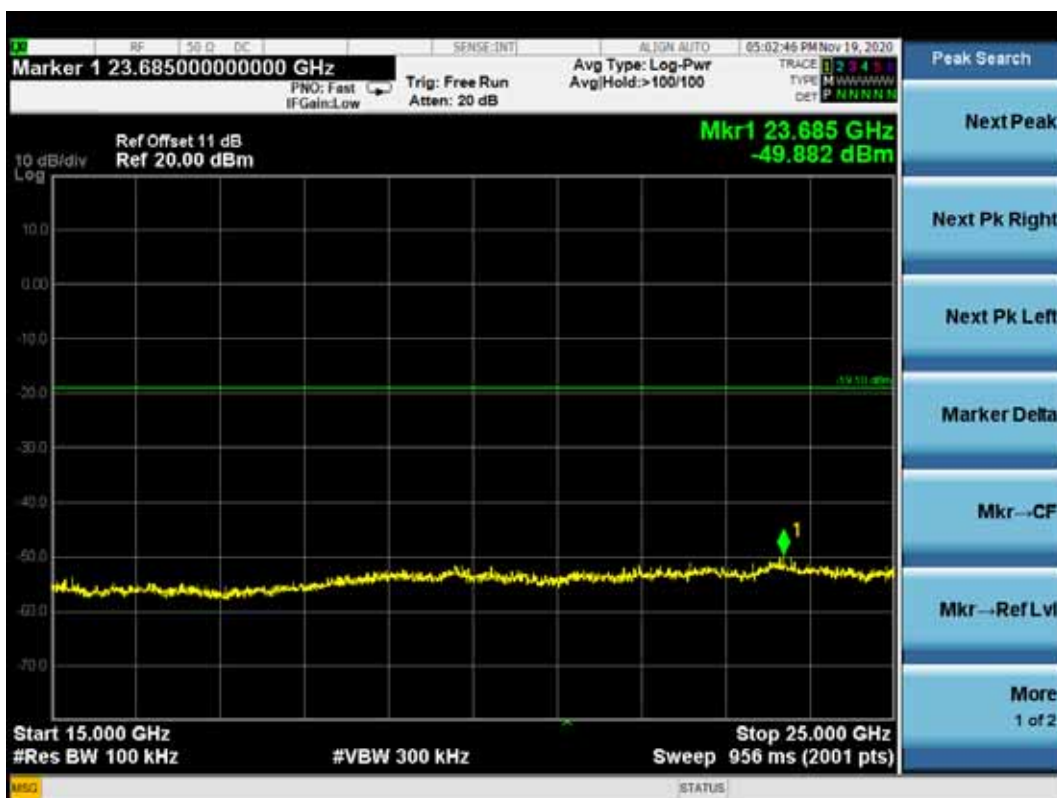
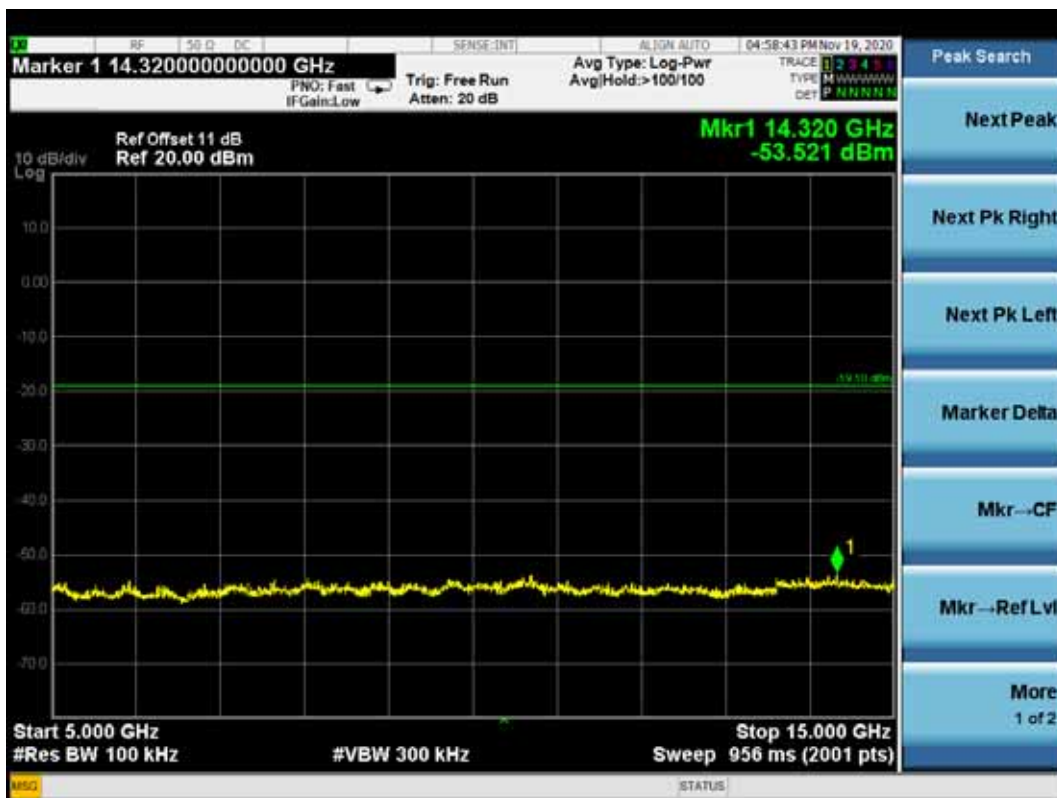
BT 3DH5: CH39 (2441 MHz)

Reference level



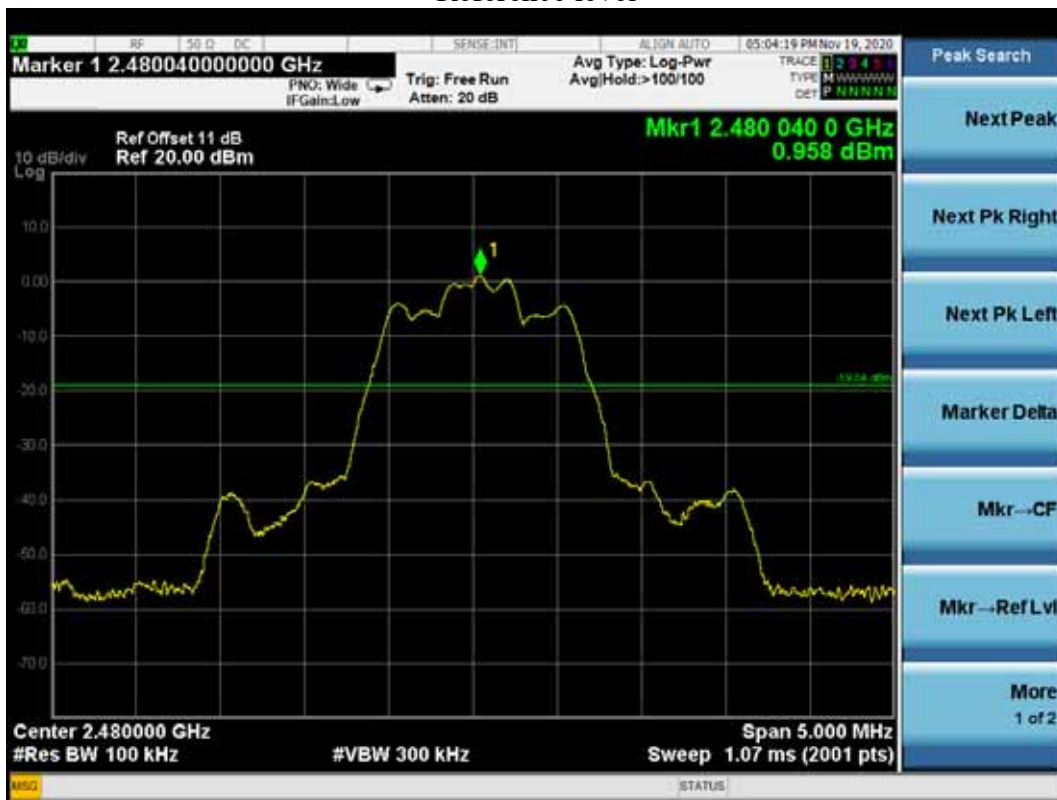
Emission level



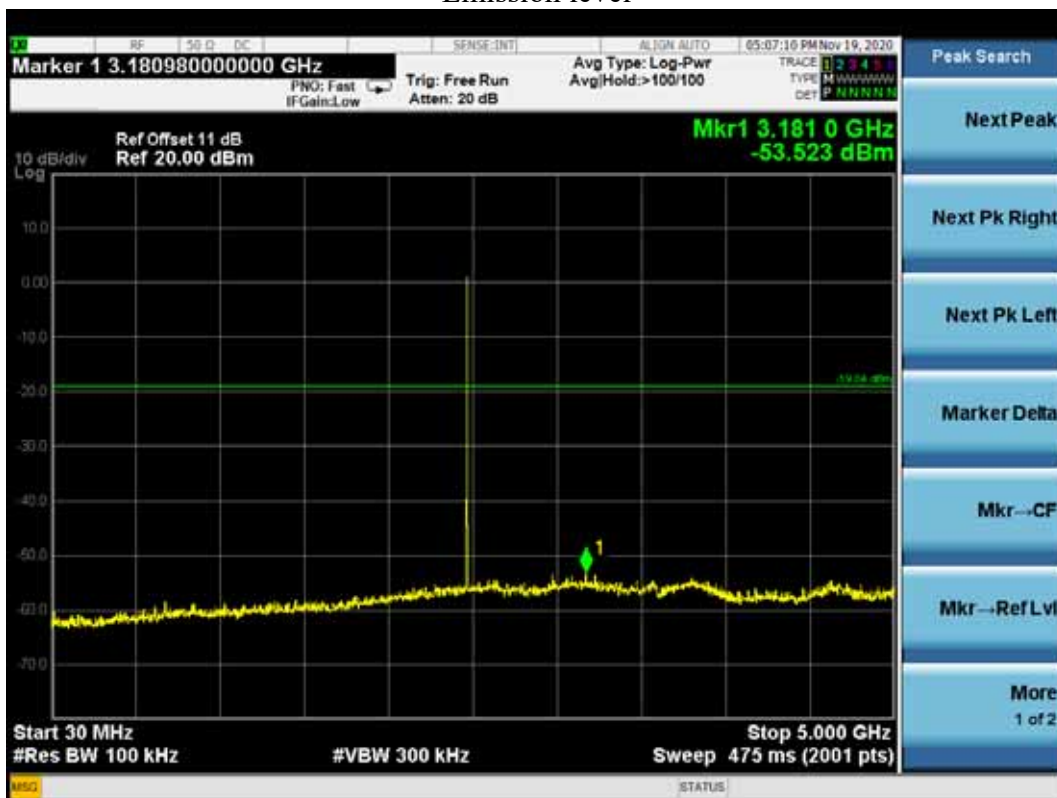


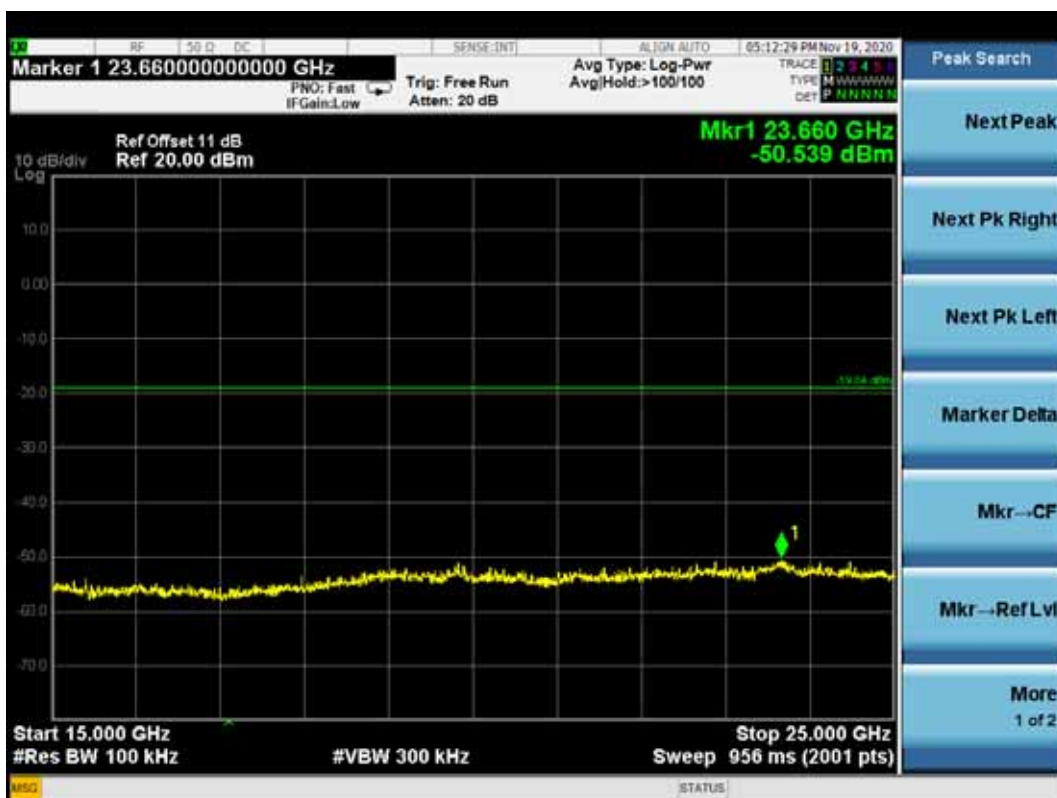
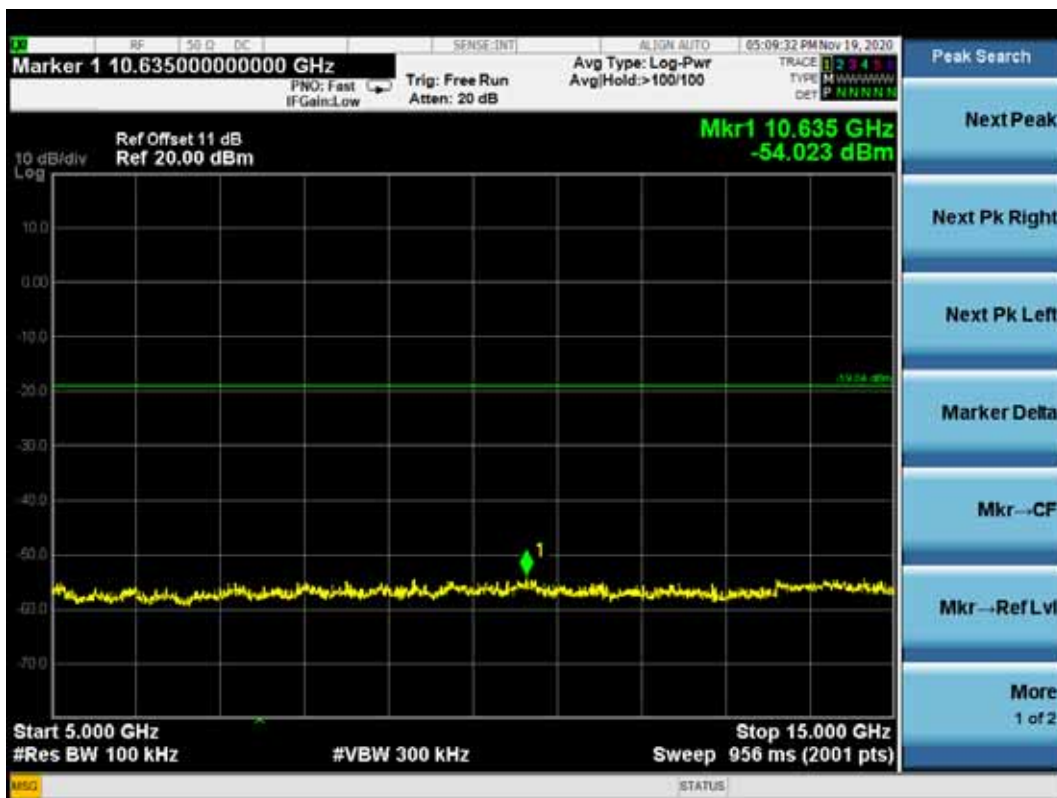
BT 3DH5: CH78 (2480 MHz)

Reference level



Emission level





12 DEVIATION TO TEST SPECIFICATIONS

None.

13 MEASUREMENT UNCERTAINTY LIST

The measurement uncertainty was estimated for test on the EUT according to CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage of K=2.

The uncertainties value is not used in determining the PASS/FAIL results.

Test Items/Facilities	Frequency/Equipment/Unit	Uncertainty
Conducted Emission No.1 Shielded Room	9kHz~150kHz	±3.2 dB
	150kHz~30MHz	±3.1 dB
Conducted Emission No.3 Shielded Room	150kHz~30MHz	±3.1 dB
Radiated Emission	30MHz~200MHz, Horizontal	±3.4 dB
	30MHz~200MHz, Vertical	±4.0 dB
	200MHz~1000MHz, Horizontal	±3.7 dB
	200MHz~1000MHz, Vertical	±5.1 dB
	1GHz~6GHz	±5.7 dB
	6GHz~18GHz	±4.7 dB
Output Power Test	50MHz~18GHz	0.77 dB
Power Density Test	9kHz~6GHz	1.08 dB
RF Frequency Test	9kHz~40GHz	6×10^{-4}
Bandwidth Test	9kHz~6GHz	1.5×10^{-3}
RF Radiated Power Test	30MHz~1000MHz	3.06 dB
Conducted Output Power Test	50MHz~18GHz	0.83 dB
AC Voltage(<10kHz) Test	120V~230V	0.04 %
DC Power Test	0V~30V	0.4 %
Temperature	-40°C~+100°C	0.52 °C
Humidity	30%~95%	2.6 %