

FCC §15.249(a), RSS-210 Radiated Field Strength											
Frequency (MHz)	Mode	Modulation	Bit Rate (Mbps)	Detector	Antenna Polarization	Measured Field Strength [FS _{Meas}] (dBuV @ 3m)	Cable Loss(1) [L _C] (dBm)	Receive Antenna [ACF] (dB)	Corrected Field Strength [FS _{Corr}] (dBuV @3m)	Limit (dBuV)	Margin (dB)
2402.0	BLE2	GMSK	2	RMS	Horizontal	59.58	0	28.28	87.86	94.0	6.1
2440.0					Horizontal	62.35	0	28.28	90.63		3.4
2480.0					Horizontal	57.50	0	28.28	85.78		8.2
2402.0					Vertical	50.81	0	28.28	79.09		14.9
2440.0					Vertical	50.76	0	28.28	79.04		15.0
2480.0					Vertical	45.80	0	28.28	74.08		19.9
2402.0				Peak	Horizontal	62.94	0	28.28	91.22	114.0	22.8
2440.0					Horizontal	63.83	0	28.28	92.11		21.9
2480.0					Horizontal	59.34	0	28.28	87.62		26.4
2402.0					Vertical	50.66	0	28.28	78.94		35.1
2440.0					Vertical	52.28	0	28.28	80.56		33.4
2480.0					Vertical	47.70	0	28.28	75.98		38.0
Result:									Complies		

(1) Cable loss accounted for in instrument transducer factor

$$FS_{Corr} = FS_{Meas} + ACF + L_C$$

$$Margin = Limit - FS_{Corr}$$

Field Strength (Average)



*RBW 1 MHz Marker 1 [T1]
VBW 3 MHz 59.58 dBuV
SWT 5 ms 2.402480000 GHz

Ref 80 dBuV

*Att 0 dB

1 PK
VIEW



Center 2.402 GHz

1 MHz/

Span 10 MHz

Date: 3.NOV.2022 15:43:00

Channel Frequency (MHz): **2402**

Antenna Polarization: **H**

Channel Power (dBuV): **59.58**

Modulation: **GMSK**

Bit Rate (Mbps): **-**

Field Strength (Average)

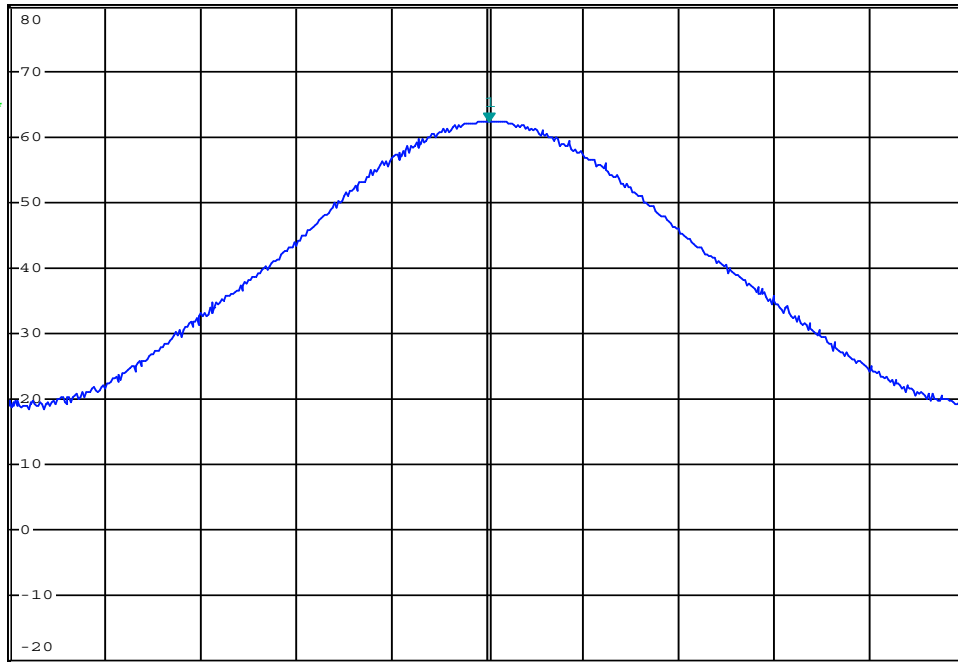


*RBW 1 MHz Marker 1 [T1]
VBW 10 MHz 62.35 dBuV
SWT 5 ms 2.440020000 GHz

Ref 80 dBuV

*Att 0 dB

1 RM
VIEW



Center 2.44 GHz

1 MHz/

Span 10 MHz

Date: 3.NOV.2022 15:36:17

Channel Frequency (MHz): **2440**

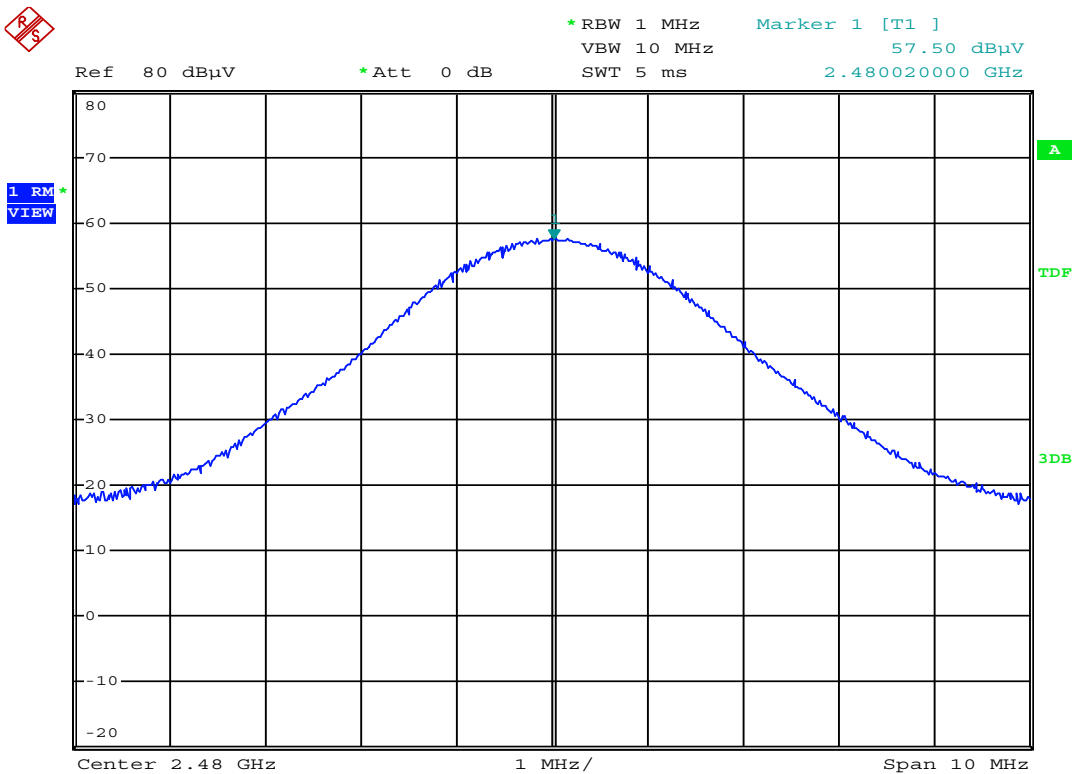
Antenna Polarization: **H**

Channel Power (dBuV): **62.35**

Modulation: **GMSK**

Bit Rate (Mbps): **-**

Field Strength (Average)



Date: 3.NOV.2022 15:45:04

Channel Frequency (MHz): **2480**

Antenna Polarization: **H**

Channel Power (dBuV): **57.50**

Modulation: **GMSK**

Bit Rate (Mbps): **-**

Field Strength (Average)

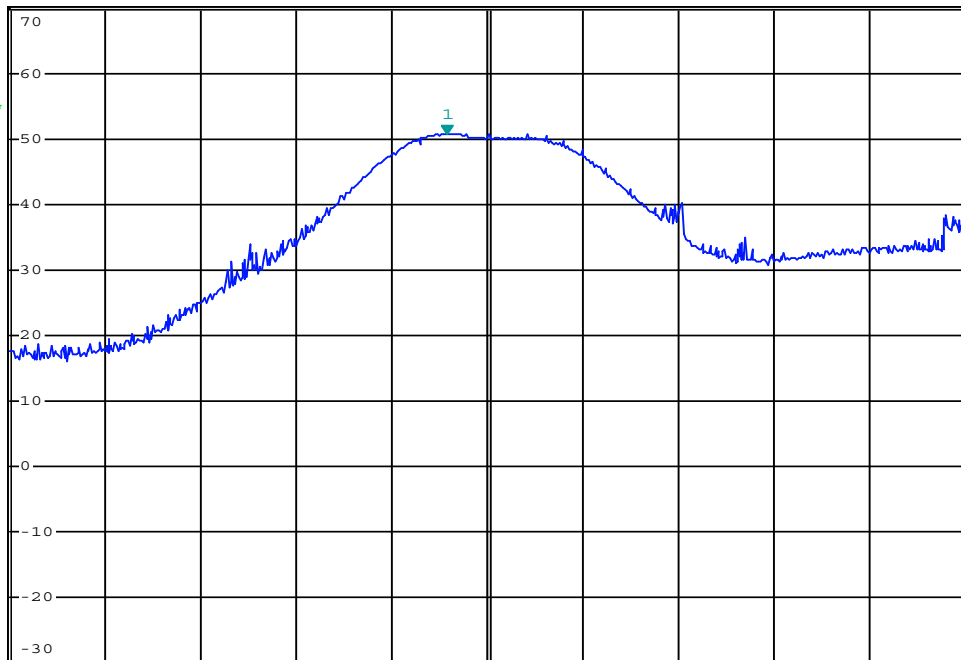


*RBW 1 MHz Marker 1 [T1]
 VBW 10 MHz 50.81 dBuV
 SWT 5 ms 2.403580000 GHz

Ref 70 dBuV

*Att 0 dB

1 RM
 VIEW



Center 2.404 GHz

1 MHz/

Span 10 MHz

A

TDF

3DB

Date: 3.NOV.2022 15:32:48

Channel Frequency (MHz): **2402**

Antenna Polarization: **V**

Channel Power (dBuV): **50.81**

Modulation: **GMSK**

Bit Rate (Mbps): **-**

Field Strength (Average)

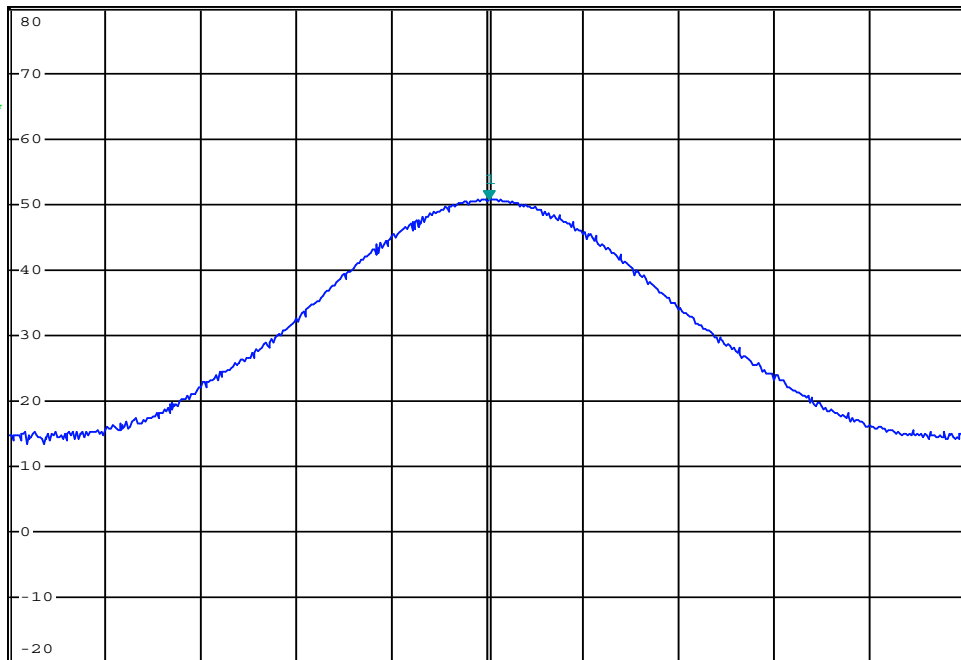


*RBW 1 MHz Marker 1 [T1]
 VBW 10 MHz 50.76 dBuV
 SWT 5 ms 2.440010000 GHz

Ref 80 dBuV

*Att 0 dB

1 RM
 VIEW



Center 2.44 GHz

1 MHz/

Span 10 MHz

Date: 3.NOV.2022 15:38:36

Channel Frequency (MHz): **2440**

Antenna Polarization: **V**

Channel Power (dBuV): **50.76**

Modulation: **GMSK**

Bit Rate (Mbps): **-**

Field Strength (Average)

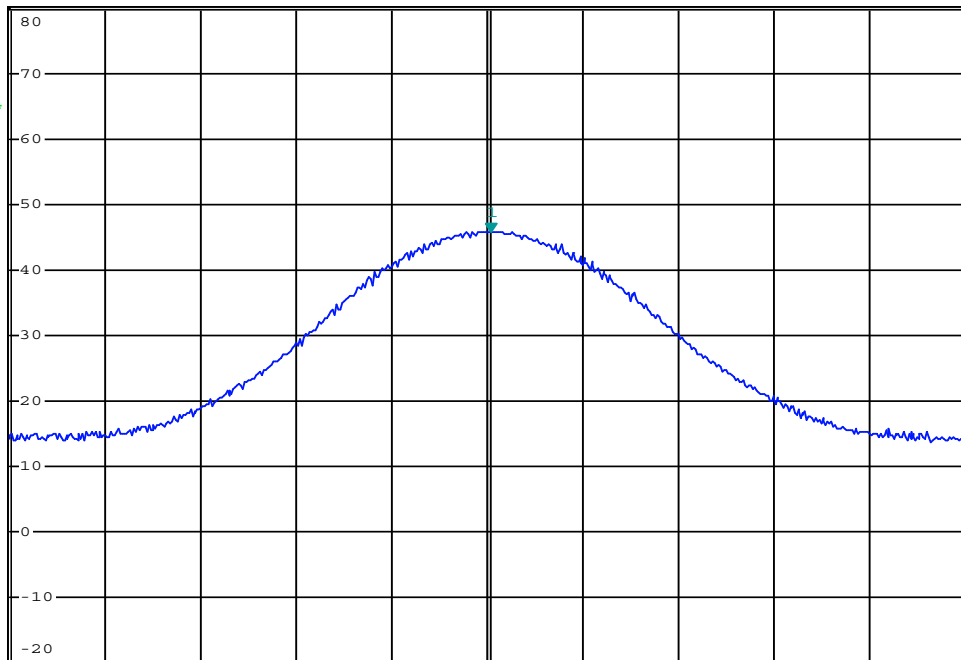


*RBW 1 MHz Marker 1 [T1]
 VBW 10 MHz 45.80 dBuV
 SWT 5 ms 2.480040000 GHz

Ref 80 dBuV

*Att 0 dB

1 RM
 VIEW



Center 2.48 GHz

1 MHz/

Span 10 MHz

Date: 3.NOV.2022 15:46:17

Channel Frequency (MHz): **2480**

Antenna Polarization: **V**

Channel Power (dBuV): **45.80**

Modulation: **GMSK**

Bit Rate (Mbps): **-**

Field Strength (Peak)



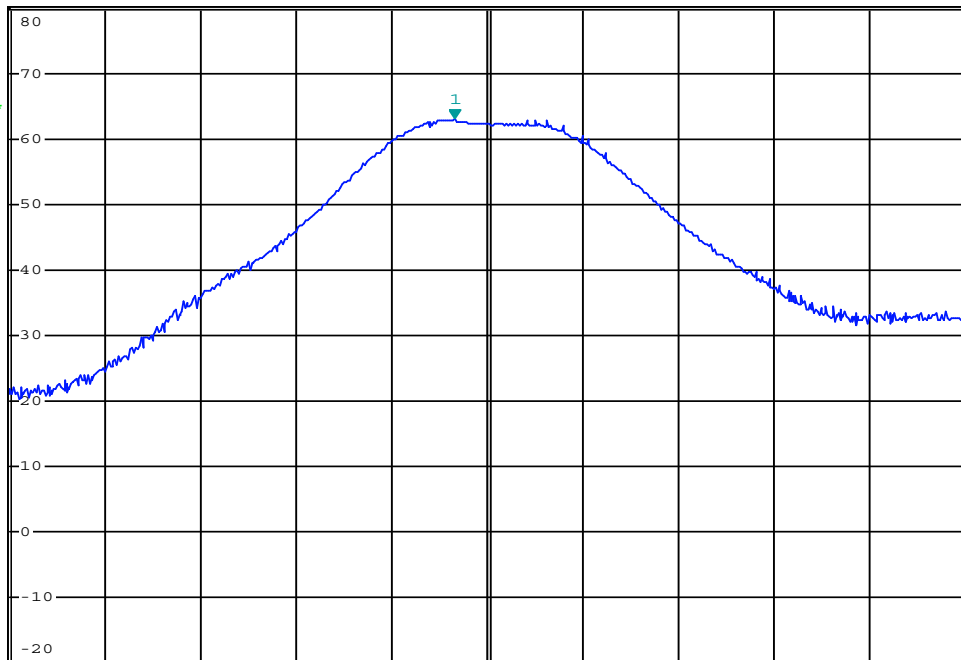
*RBW 1 MHz
VBW 10 MHz
SWT 5 ms

Marker 1 [T1]
62.94 dBuV
2.403660000 GHz

Ref 80 dBuV

*Att 0 dB

1 RM
VIEW



Center 2.404 GHz

1 MHz/

Span 10 MHz

Date: 3.NOV.2022 15:34:16

Channel Frequency (MHz): **2402**

Antenna Polarization: **H**

Channel Power (dBuV): **62.94**

Modulation: **GMSK**

Bit Rate (Mbps): **-**

Field Strength (Peak)

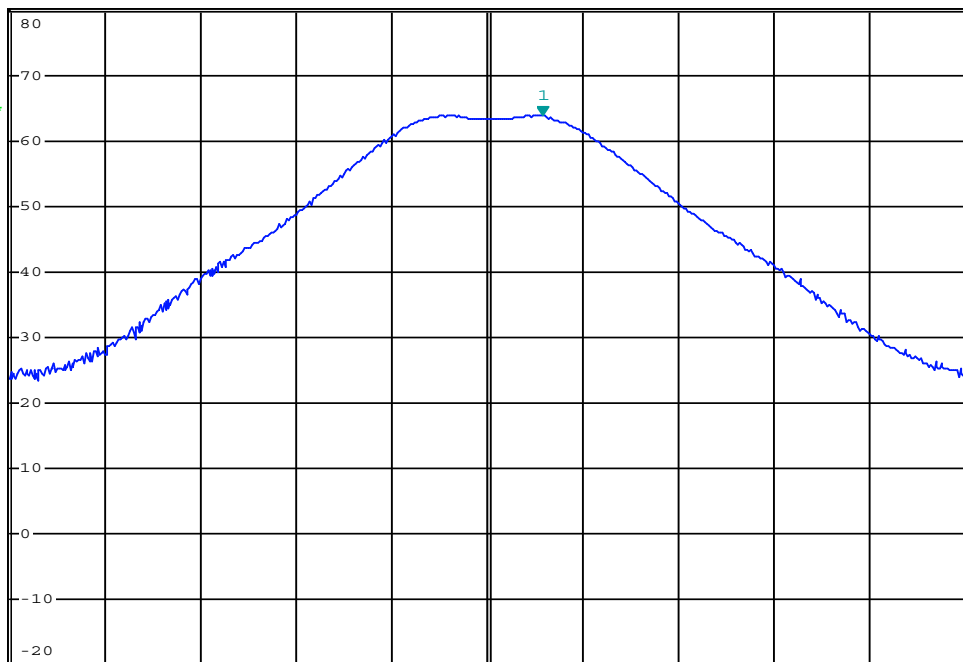


*RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 63.83 dBuV
 SWT 5 ms 2.440570000 GHz

Ref 80 dBuV

*Att 0 dB

1 PK
 VIEW



Center 2.44 GHz

1 MHz/

Span 10 MHz

Date: 3.NOV.2022 15:36:45

Channel Frequency (MHz): **2440**

Antenna Polarization: **H**

Channel Power (dBuV): **63.83**

Modulation: **GMSK**

Bit Rate (Mbps): **-**

Field Strength (Peak)

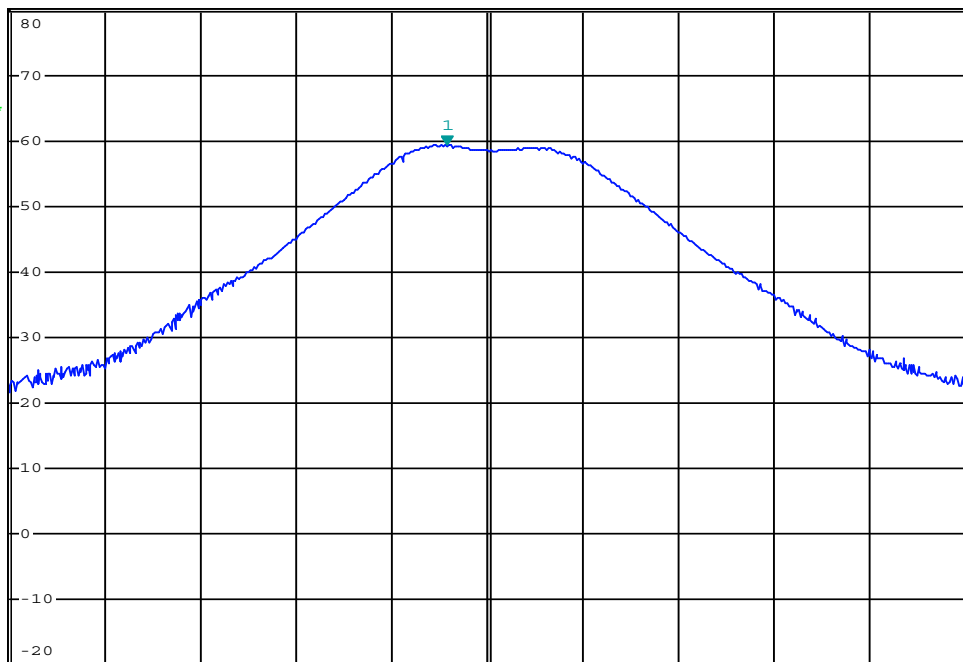


*RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 59.34 dBuV
 SWT 5 ms 2.479570000 GHz

Ref 80 dBuV

*Att 0 dB

1 PK
 VIEW



Center 2.48 GHz

1 MHz/

Span 10 MHz

Date: 3.NOV.2022 15:44:43

Channel Frequency (MHz): **2480**

Antenna Polarization: **H**

Channel Power (dBuV): **59.34**

Modulation: **GMSK**

Bit Rate (Mbps): **-**

Field Strength (Peak)



*RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 50.66 dBuV
 SWT 5 ms 2.402560000 GHz

Ref 80 dBuV

*Att 0 dB

1 PK
 VIEW



Center 2.402 GHz

1 MHz/

Span 10 MHz

Date: 3.NOV.2022 15:41:43

Channel Frequency (MHz): **2402**

Antenna Polarization: **V**

Channel Power (dBuV): **50.66**

Modulation: **GMSK**

Bit Rate (Mbps): **-**

Field Strength (Peak)

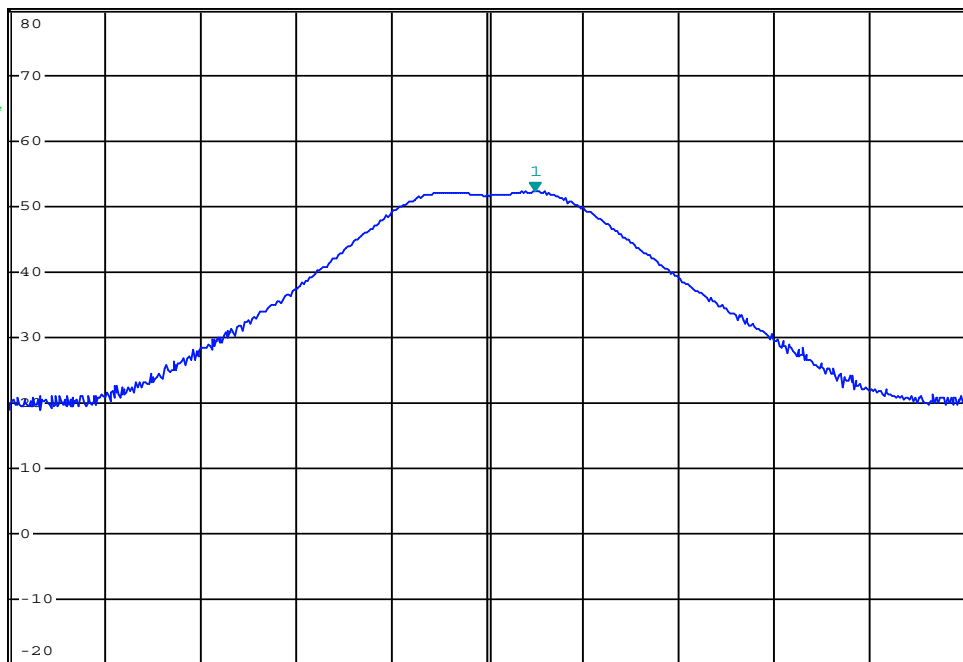


*RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 52.28 dBuV
 SWT 5 ms 2.440490000 GHz

Ref 80 dBuV

*Att 0 dB

1 PK*
 VIEW



Center 2.44 GHz

1 MHz/

Span 10 MHz

Date: 3.NOV.2022 15:38:11

Channel Frequency (MHz): **2440**

Antenna Polarization: **V**

Channel Power (dBuV): **52.28**

Modulation: **GMSK**

Bit Rate (Mbps): **-**

Field Strength (Peak)



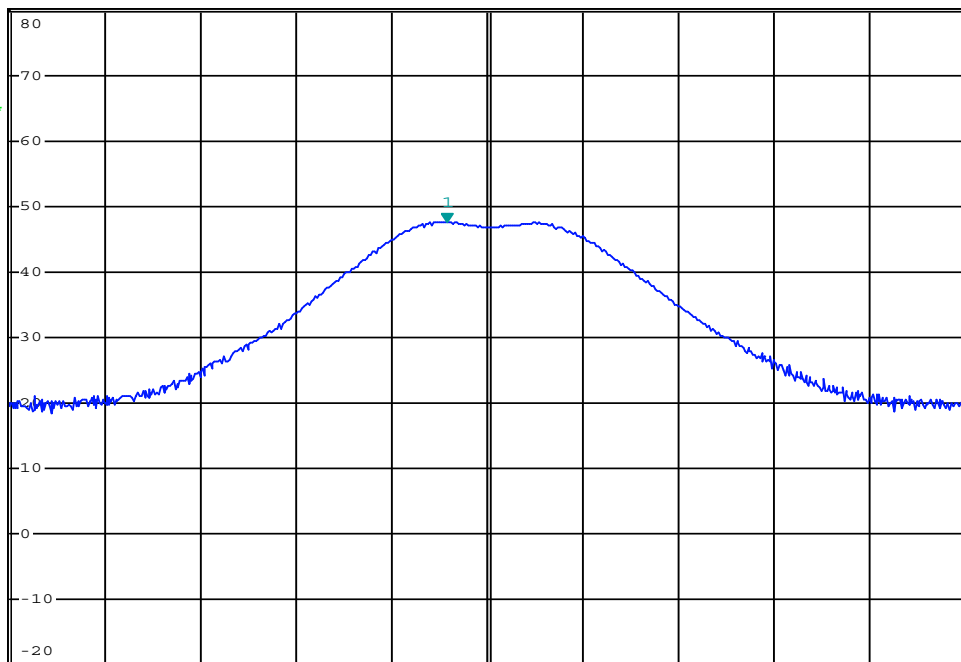
*RBW 1 MHz
VBW 3 MHz
SWT 5 ms

Marker 1 [T1]
47.70 dBuV
2.479570000 GHz

Ref 80 dBuV

*Att 0 dB

1 PK
VIEW



Center 2.48 GHz

1 MHz/

Span 10 MHz

Date: 3.NOV.2022 15:46:35

Channel Frequency (MHz): **2480**

Antenna Polarization: **V**

Channel Power (dBuV): **47.70**

Modulation: **GMSK**

Bit Rate (Mbps): **-**

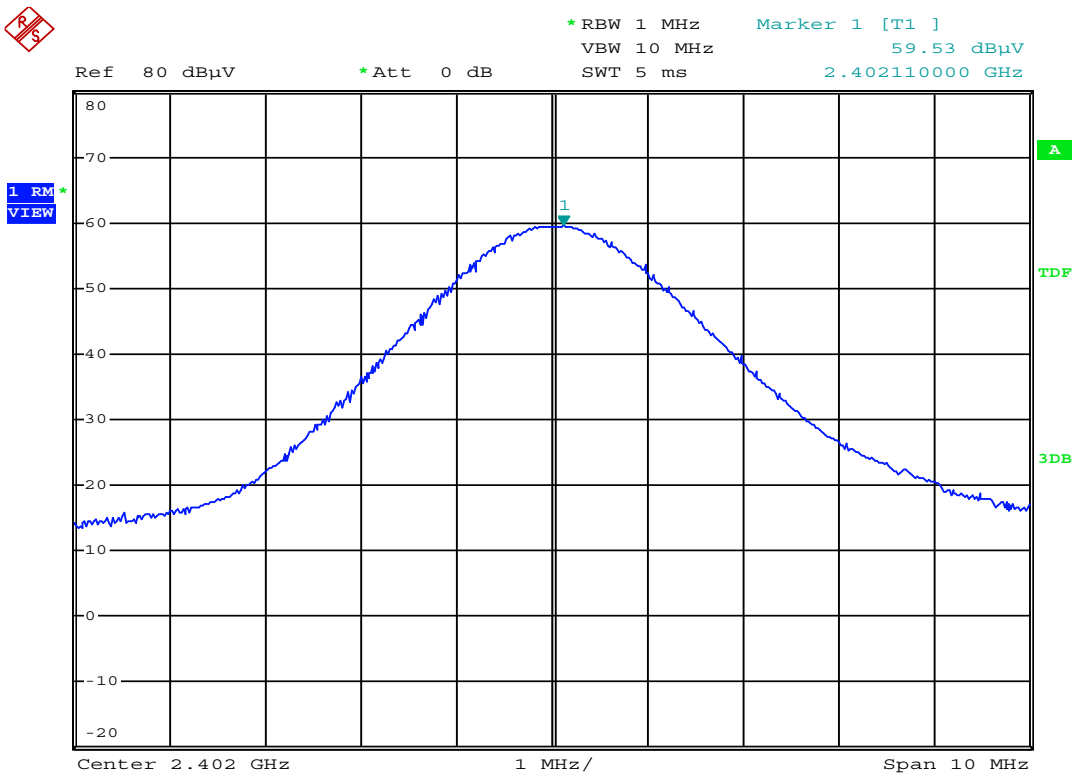
FCC §15.249(a), RSS-210 Radiated Field Strength											
Frequency (MHz)	Mode	Modulation	Bit Rate (Mbps)	Detector	Antenna Polarization	Measured Field Strength [FS _{Meas}] (dBuV @ 3m)	Cable Loss(1) [L _C] (dBm)	Receive Antenna [ACF] (dB)	Corrected Field Strength [FS _{Corr}] (dBuV @3m)	Limit (dBuV)	Margin (dB)
2402.0	ANT	GFSK	-	RMS	Horizontal	59.53	0	28.28	87.81	94.0	6.2
2440.0			-			63.59	0	28.28	91.87		2.1
2480.0			-			62.69	0	28.28	90.97		3.0
2402.0			-		Vertical	49.55	0	28.28	77.83		16.2
2440.0			-			50.24	0	28.28	78.52		15.5
2480.0			-			50.11	0	28.28	78.39		15.6
2402.0			-	Peak	Horizontal	60.25	0	28.28	88.53	114.0	25.5
2440.0			-			64.25	0	28.28	92.53		21.5
2480.0			-			63.51	0	28.28	91.79		22.2
2402.0			-		Vertical	50.14	0	28.28	78.42		35.6
2440.0			-			50.99	0	28.28	79.27		34.7
2480.0			-			50.91	0	28.28	79.19		34.8
Result:									Complies		

(1) Cable loss accounted for in instrument transducer factor

$$FS_{Corr} = FS_{Meas} + ACF + L_C$$

$$Margin = Limit - FS_{Corr}$$

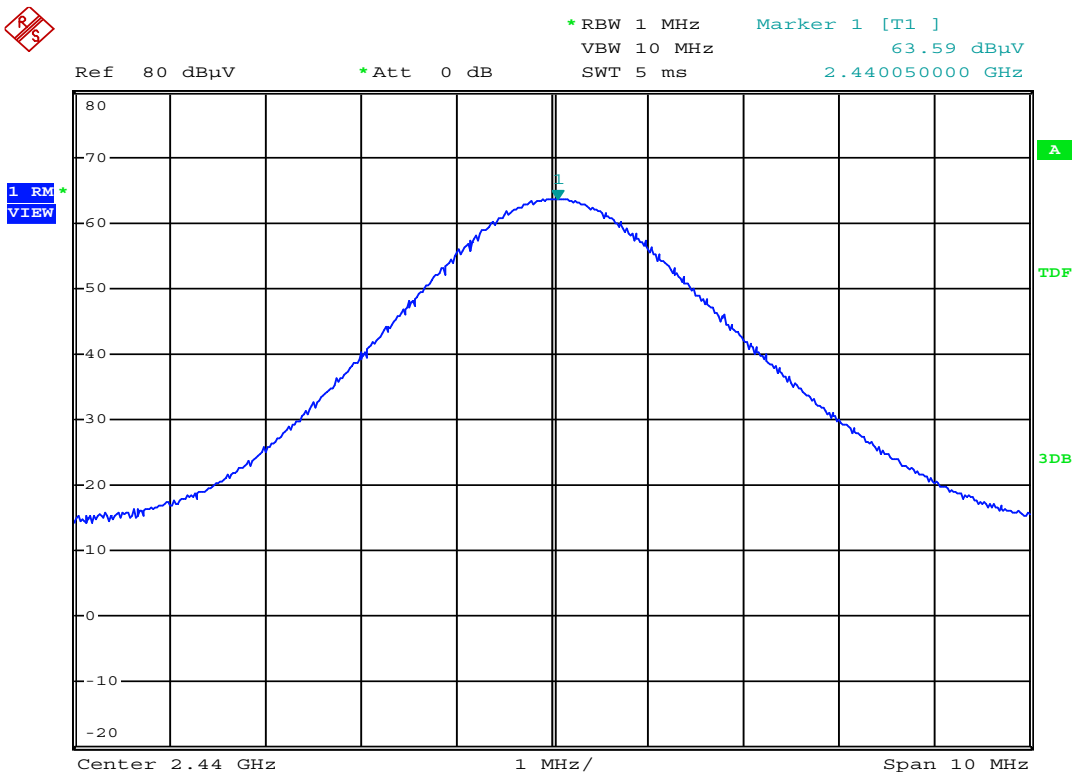
Field Strength (Average)



Date: 3.NOV.2022 15:52:26

Channel Frequency (MHz):	2402	Antenna Polarization:	H	Channel Power (dBμV):	59.53
Modulation:	GFSK	Bit Rate (Mbps):	-		

Field Strength (Average)



Date: 3.NOV.2022 15:57:13

Channel Frequency (MHz):	2440	Antenna Polarization:	H	Channel Power (dBuV):	63.59
Modulation:	GFSK	Bit Rate (Mbps):	-		

Field Strength (Average)

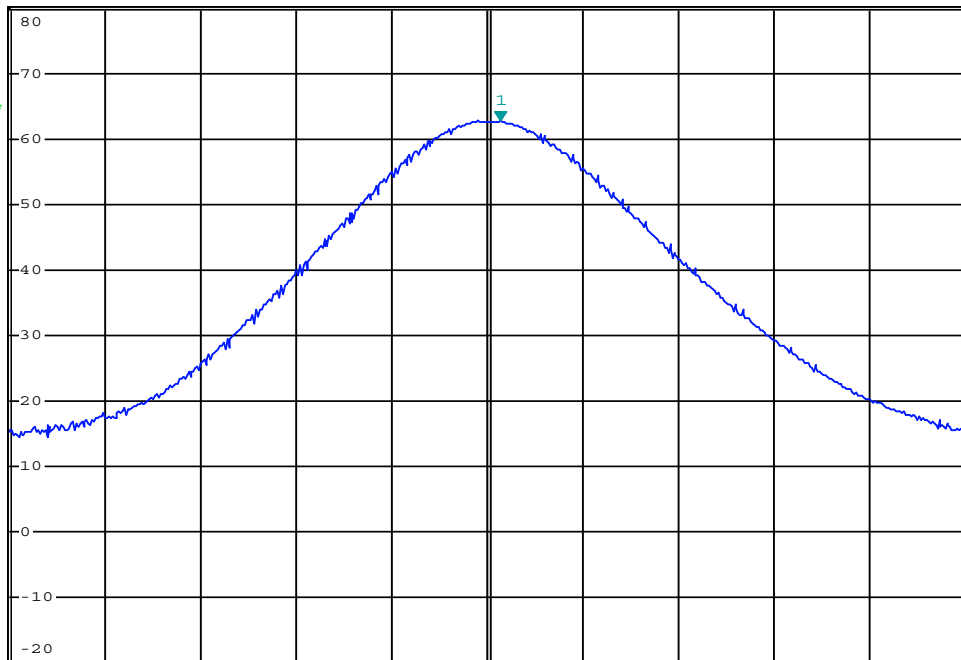


*RBW 1 MHz Marker 1 [T1]
 VBW 10 MHz 62.69 dBuV
 SWT 5 ms 2.480130000 GHz

Ref 80 dBuV

*Att 0 dB

1 RM
 VIEW



A

TDF

3DB

Center 2.48 GHz

1 MHz/

Span 10 MHz

Date: 3.NOV.2022 15:50:20

Channel Frequency (MHz): **2480**

Antenna Polarization: **H**

Channel Power (dBuV): **62.69**

Modulation: **GFSK**

Bit Rate (Mbps): **-**

Field Strength (Average)

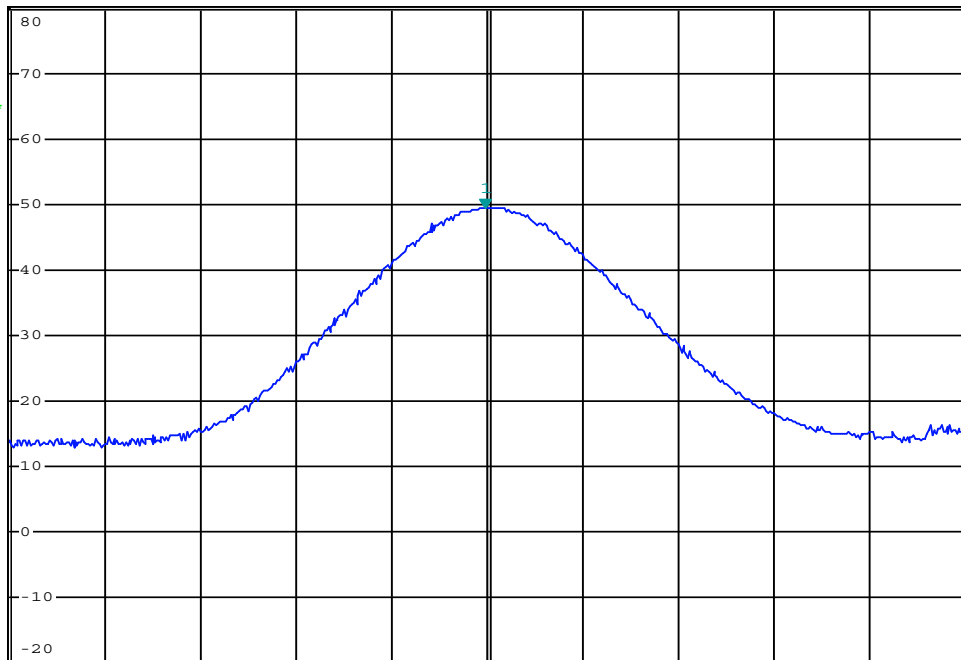


*RBW 1 MHz Marker 1 [T1]
 VBW 10 MHz 49.44 dBuV
 SWT 5 ms 2.401980000 GHz

Ref 80 dBuV

*Att 0 dB

1 RM
 VIEW



Center 2.402 GHz

1 MHz/

Span 10 MHz

A

TDF

3DB

Date: 3.NOV.2022 15:53:48

Channel Frequency (MHz): **2402**

Antenna Polarization: **V**

Channel Power (dBuV): **49.55**

Modulation: **GFSK**

Bit Rate (Mbps): **-**

Field Strength (Average)

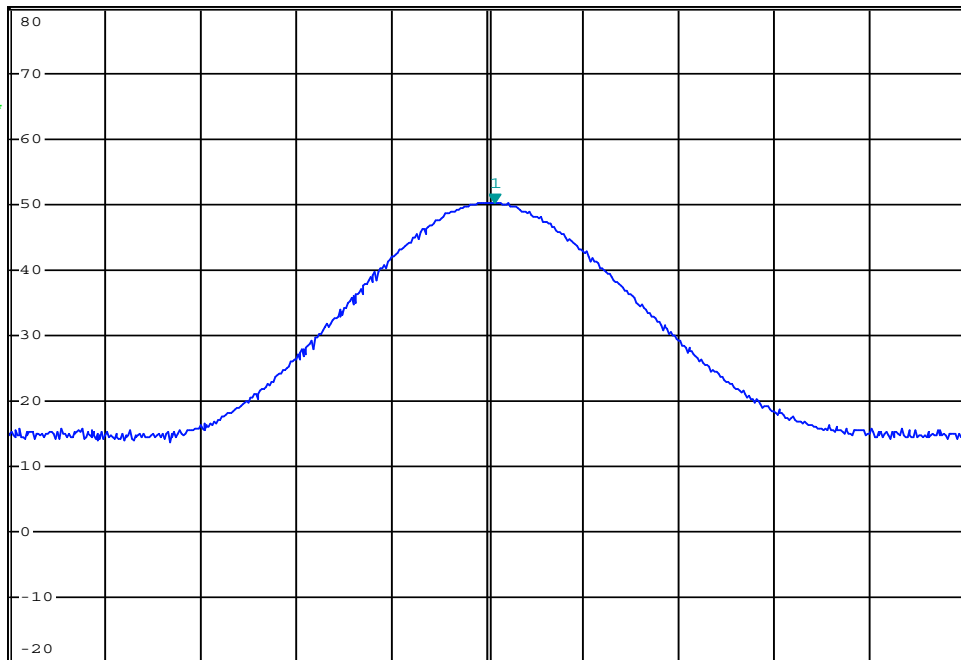


*RBW 1 MHz Marker 1 [T1]
 VBW 10 MHz 50.24 dBuV
 SWT 5 ms 2.440070000 GHz

Ref 80 dBuV

*Att 0 dB

1 RM
 VIEW



A

TDF

3DB

Center 2.44 GHz

1 MHz/

Span 10 MHz

Date: 3.NOV.2022 15:56:04

Channel Frequency (MHz): **2440**

Antenna Polarization: **V**

Channel Power (dBuV): **50.24**

Modulation: **GFSK**

Bit Rate (Mbps): **-**

Field Strength (Average)

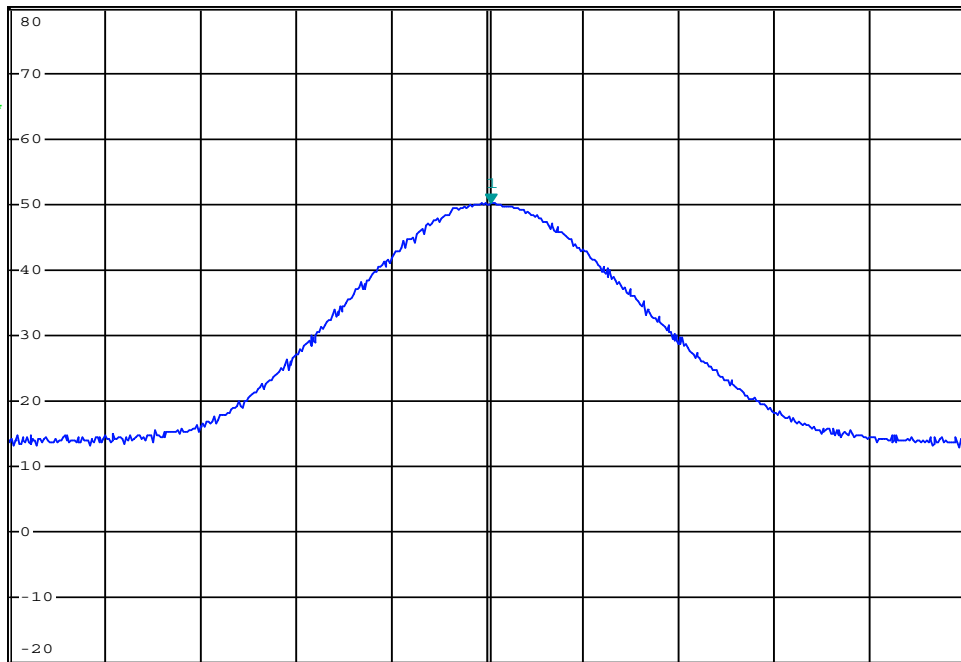


*RBW 1 MHz Marker 1 [T1]
 VBW 10 MHz 50.11 dBuV
 SWT 5 ms 2.480040000 GHz

Ref 80 dBuV

*Att 0 dB

1 RM
 VIEW



A

TDF

3DB

Center 2.48 GHz

1 MHz/

Span 10 MHz

Date: 3.NOV.2022 15:49:09

Channel Frequency (MHz): **2480**

Antenna Polarization: **V**

Channel Power (dBuV): **50.11**

Modulation: **GFSK**

Bit Rate (Mbps): **-**

Field Strength (Peak)

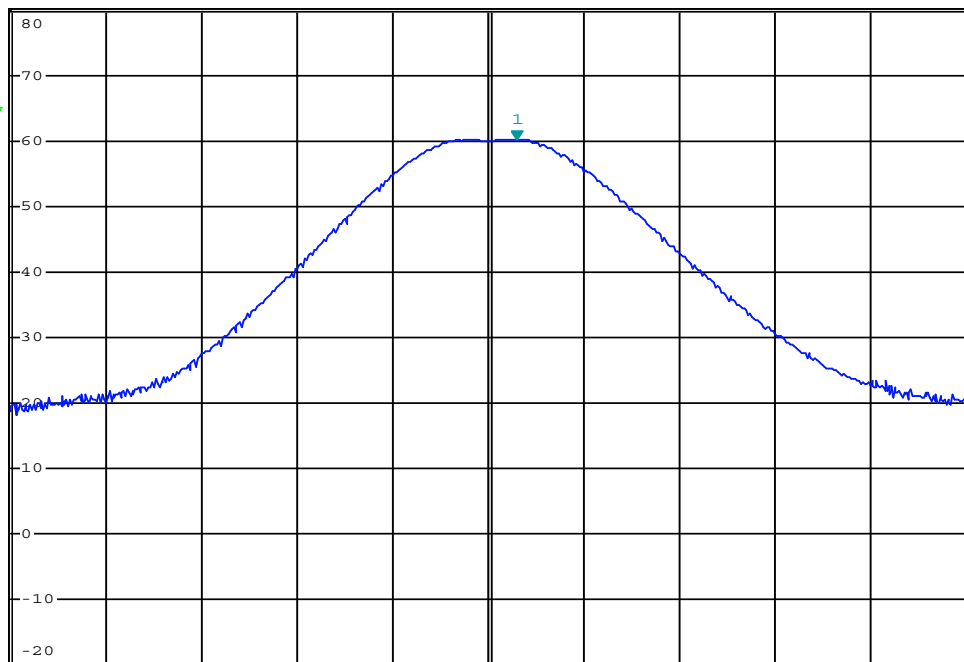


*RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 60.25 dBuV
 SWT 5 ms 2.402290000 GHz

Ref 80 dBuV

*Att 0 dB

1 PK
 VIEW



Center 2.402 GHz

1 MHz/

Span 10 MHz

Date: 3.NOV.2022 15:52:09

Channel Frequency (MHz): **2402**

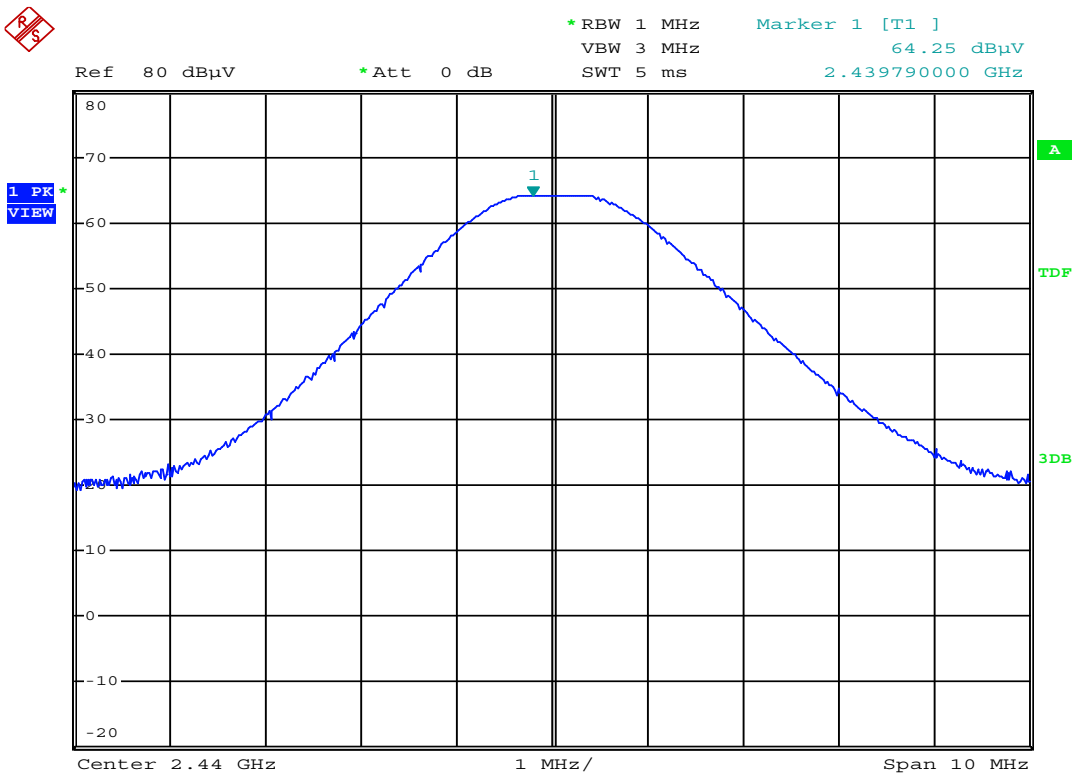
Antenna Polarization: **H**

Channel Power (dBuV): **60.25**

Modulation: **GFSK**

Bit Rate (Mbps): **-**

Field Strength (Peak)



Date: 3.NOV.2022 15:57:31

Channel Frequency (MHz): **2440**

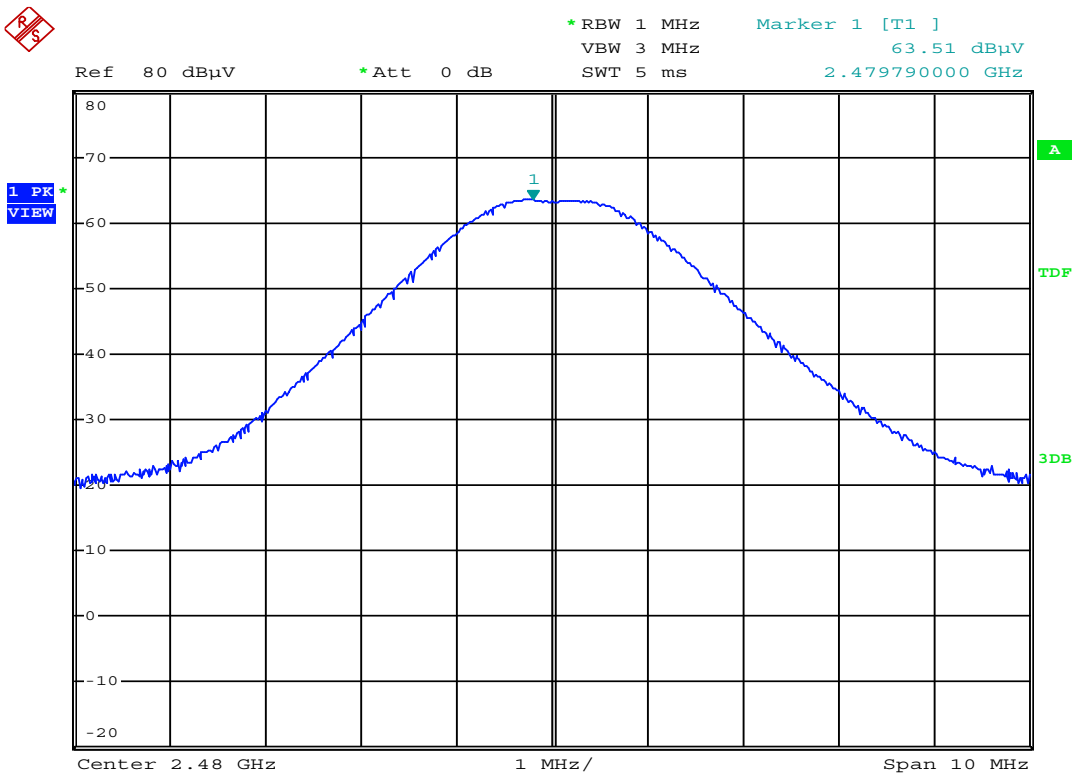
Antenna Polarization: **H**

Channel Power (dBuV): **64.25**

Modulation: **GFSK**

Bit Rate (Mbps): **-**

Field Strength (Peak)



Date: 3.NOV.2022 15:50:41

Channel Frequency (MHz):	2480	Antenna Polarization:	H	Channel Power (dBμV):	63.51
Modulation:	GFSK	Bit Rate (Mbps):	-		

Field Strength (Peak)

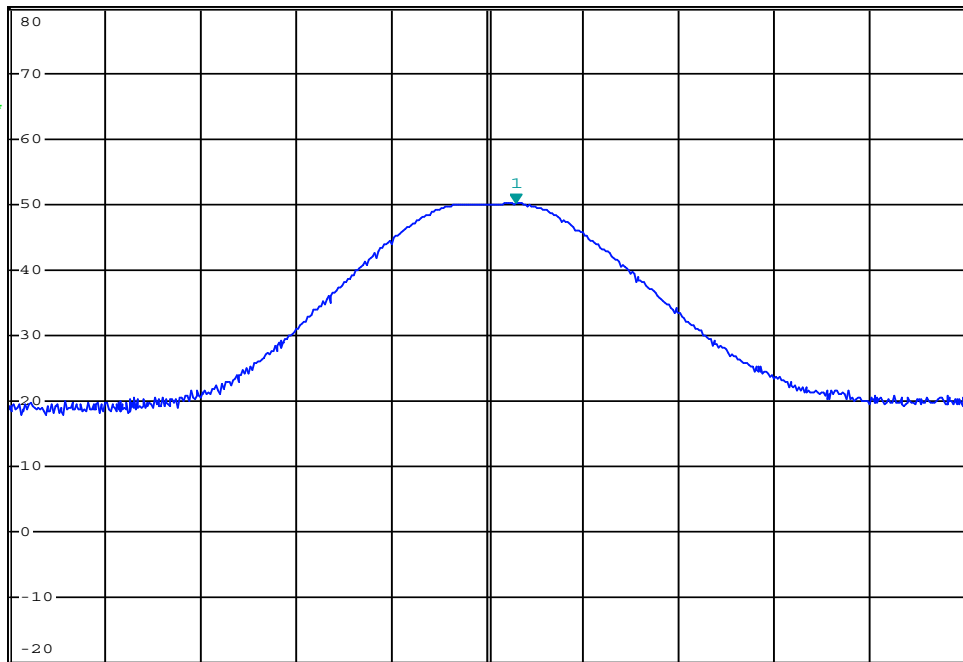


*RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 50.14 dBuV
 SWT 5 ms 2.402290000 GHz

Ref 80 dBuV

*Att 0 dB

1 PK
 VIEW



Center 2.402 GHz

1 MHz/

Span 10 MHz

Date: 3.NOV.2022 15:54:07

Channel Frequency (MHz): **2402**

Antenna Polarization: **V**

Channel Power (dBuV): **50.14**

Modulation: **GFSK**

Bit Rate (Mbps): **-**

Field Strength (Peak)

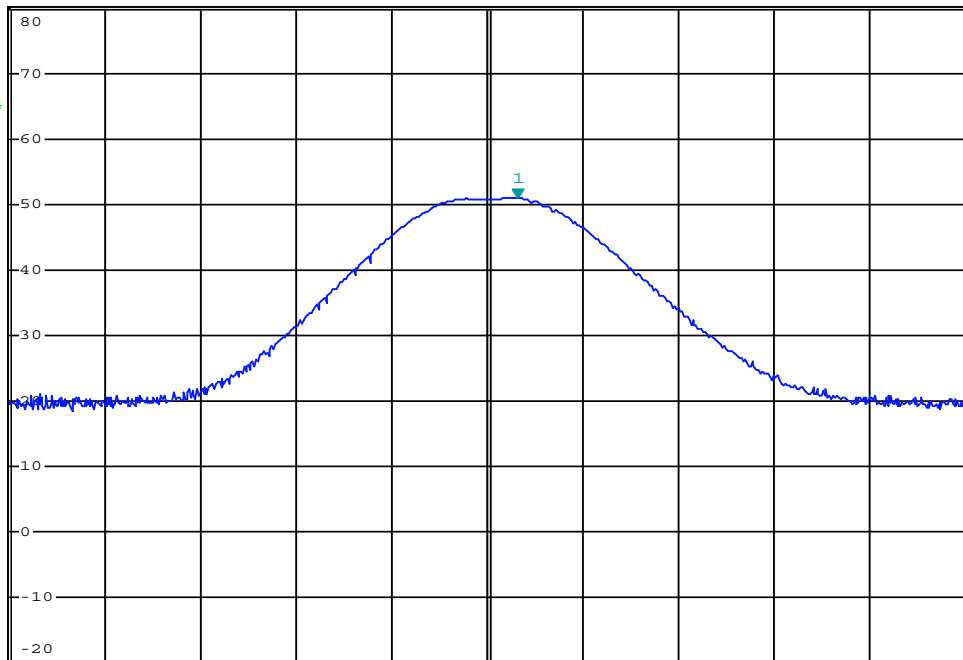


*RBW 1 MHz Marker 1 [T1]
 VBW 3 MHz 50.99 dBuV
 SWT 5 ms 2.440310000 GHz

Ref 80 dBuV

*Att 0 dB

1 PK*
 VIEW



Center 2.44 GHz

1 MHz/

Span 10 MHz

Date: 3.NOV.2022 15:55:41

Channel Frequency (MHz): **2440**

Antenna Polarization: **V**

Channel Power (dBuV): **50.99**

Modulation: **GFSK**

Bit Rate (Mbps): **-**

Field Strength (Peak)

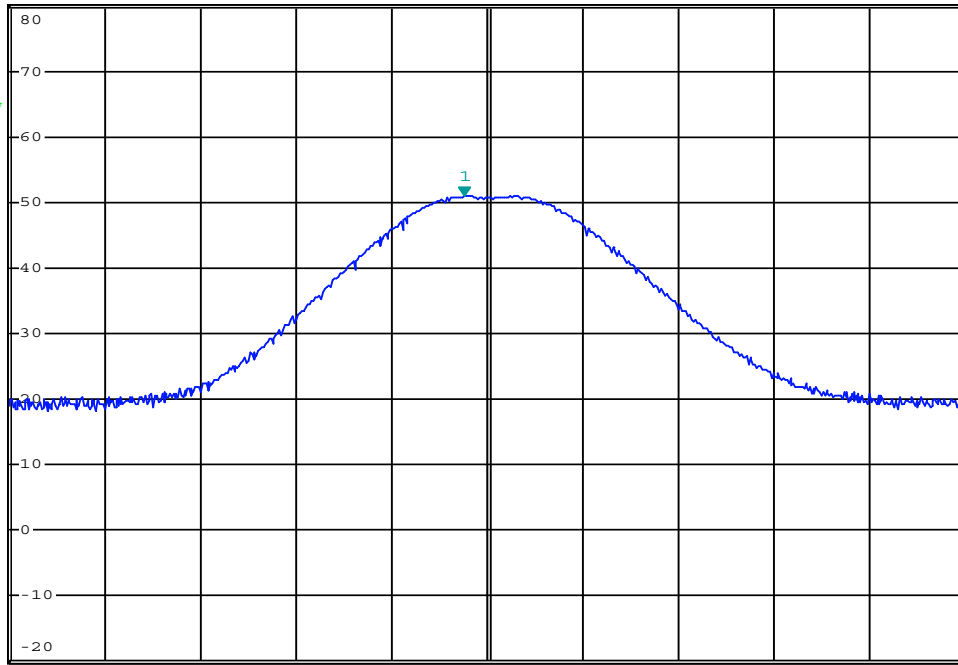


*RBW 1 MHz Marker 1 [T1]
VBW 3 MHz 50.91 dBuV
SWT 5 ms 2.479760000 GHz

Ref 80 dBuV

*Att 0 dB

1 PK
VIEW



A

TDF

3DB

Center 2.48 GHz

1 MHz/

Span 10 MHz

Date: 3.NOV.2022 15:48:44

Channel Frequency (MHz): **2480**

Antenna Polarization: **V**

Channel Power (dBuV): **50.91**

Modulation: **GFSK**

Bit Rate (Mbps): **-**

Radiated Field Strength											
Frequency (MHz)	Mode	Modulation	Detector	Antenna Polarization	Measured Field Strength [FS _{Meas}] (dBuV @ 3m)	Cable Loss [L _c] (dBm)	Receive Antenna [ACF] (dB)	Corrected Field Strength [FS _{Corr}] (dBuV/m @3m)	Limit @30m [Lim _{30m}] (dBuV/m)	Limit* @3m [Lim _{3m}] (dBuV/m)	Margin (dB)
13.56	NFC	ASK	RMS	Front	15.33	0.5	10.65	26.48	84.00	124.0	97.5
				Side	7.91			19.06			104.9
			Peak	Front	24.41			35.56	104.00	144.0	108.4
				Side	21.81			32.96			111.0
Result:									Complies		

* Limit @ 3m = Limit @ 30m + 40dB/decade = 84dBuV/m + 40dB = 124dBuV/m (Average)

* Limit @ 3m = Limit @ 30m + 40dB/decade = 104dBuV/m + 40dB = 144dBuV/m (Peak)

FS_{Corr} = FS_{Meas} + ACF + L_c

Margin = Limit_{3m} - FS_{Corr}

Radiated Field Strength											
Frequency (MHz)	Mode	Modulation	Detector	Antenna Polarization	Measured Field Strength [FS _{Meas}] (dBuV @ 3m)	Cable Loss [L _c] (dBm)	Receive Antenna [ACF ^H] (dBuA/m)	Corrected Field Strength [H _{Corr}] (dBuA/m @3m)	Limit @30m [Lim _{30m}] (dBuV/m)	Limit** @3m [Lim _{3m}] (dBuA/m)	Margin
13.56	NFC	ASK	RMS	Front	15.33	0.5	-40.85	-25.02	84.00	72.5	97.5
				Side	7.91			-32.44			104.9
			Peak	Front	24.41			-15.94	104.00	92.5	108.4
				Side	21.81			-18.54			111.0
Result:										Complies	

** Limit @ 3m = Limit @ 30m + 40dB/decade = 84dBuV/m + 40dB = 124dBuV/m (Average)

** Limit @ 3m = Limit @ 30m + 40dB/decade = 104dBuV/m + 40dB = 144dBuV/m (Peak)

In accordance with ISED Notice 2020 - DRS0023:

"Guidance on Magnetic Field Strength Radiated Emissions Measurements 9kHz - 30MHz"

Limit Correction

Limit^H (dBuA/m) = Limit^E (dBuV/m) - Z₀ (dBΩ)

Where Z₀ = Free-Space Impedance = 120πΩ = 377Ω => 20Log377Ω = 51.5dBΩ

Limit^H (dBuA/m) = Limit^E (dBuV/m) - Z₀ (dBΩ) = 124dBuV/m - 51.5dBΩ = 72.5dBuA/m @ 3m (Average)

Limit^H (dBuA/m) = Limit^E (dBuV/m) - Z₀ (dBΩ) = 144dBuV/m - 51.5dBΩ = 92.5dBuA/m @ 3m (Peak)

Measurement Correction

H_{Corr}(dBuA/m) = E_{Meas}(dBuV) + ACF^H(dB/Ωm) + L_c - G_A

Where ACF^H is the Magnetic Antenna Correction Factor, L_c is Cable Loss, G_A is Pre-Amplifier Gain

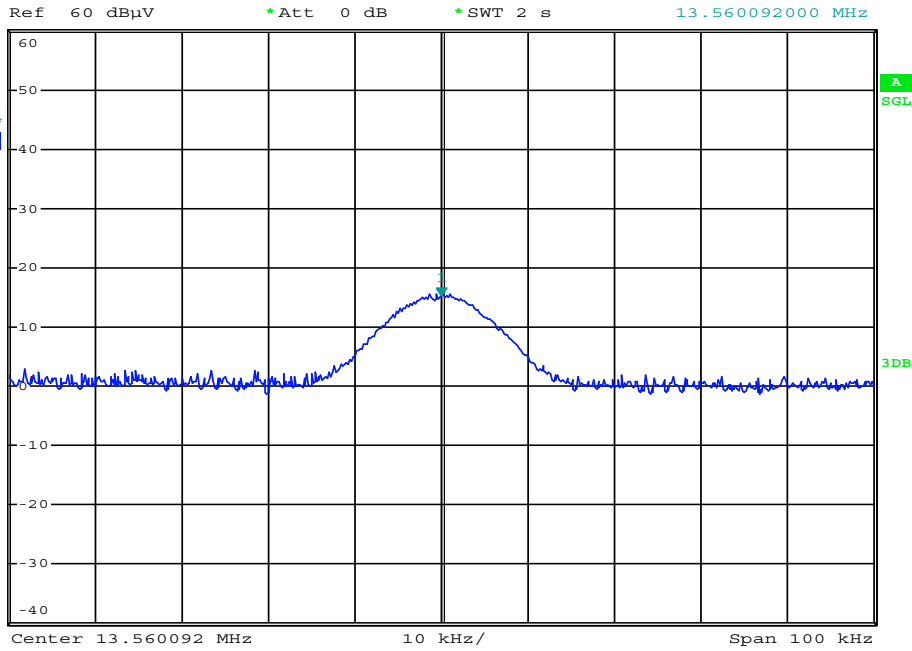
External Pre-Amplifier (G_A) not used

Margin = Limit_{3m} - H_{Corr}

Field Strength (Average)



*RBW 10 kHz Marker 1 [T1]
 VBW 100 kHz 15.33 dBuV
 *Att 0 dB 13.560092000 MHz
 *SWT 2 s



Date: 31.OCT.2022 14:16:06

Channel Frequency: 13.56 MHz	Detector: RMS	Antenna Polarization: Front
Modulation Setting: ASK	Protocol: NFC	Measured Field Strength: 15.33 dBuV

Field Strength (Average)

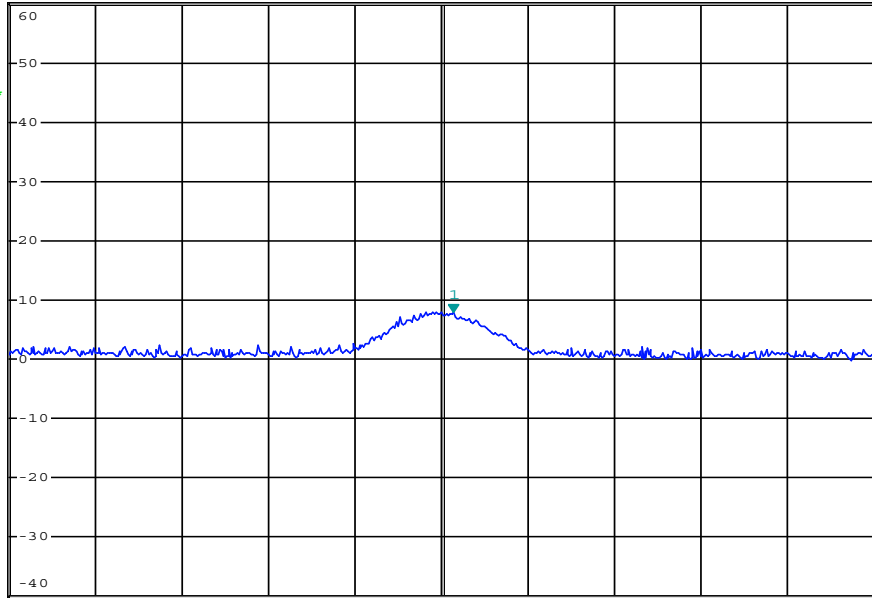


*RBW 10 kHz Marker 1 [T1]
VBW 100 kHz 7.91 dBuV
*SWT 2 s 13.561492000 MHz

Ref 60 dBuV

*Att 0 dB

1 RM
VIEW



Center 13.560092 MHz

10 kHz/

Span 100 kHz

Date: 31.OCT.2022 14:17:49

Channel Frequency:

13.56 MHz

Detector:

RMS

Antenna Polarization:

Side

Modulation Setting:

ASK

Protocol:

NFC

Measured Field Strength:

7.91 dBuV

Field Strength (Peak)



*RBW 10 kHz Marker 1 [T1]
 VBW 30 kHz 24.41 dBuV
 *Att 10 dB 13.56060000 MHz
 *SWT 100 ms

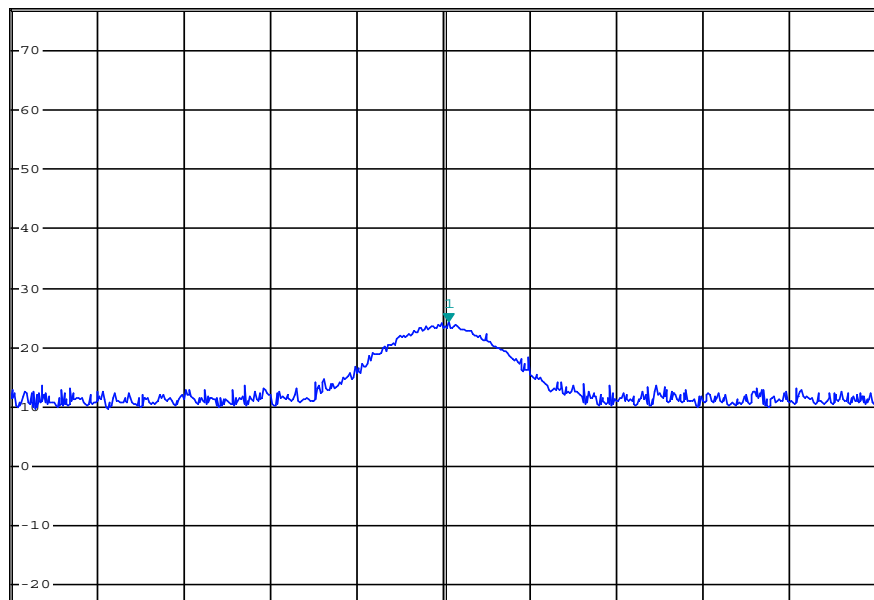
Ref 77 dBuV

*Att 10 dB

*SWT 100 ms

13.56060000 MHz

1 PK
VIEW



Date: 2.JUN.2021 13:04:53

Channel Frequency:

13.56 MHz

Detector:

Peak

Antenna Polarization:

Front

Modulation Setting:

ASK

Protocol:

NFC

Measured Field Strength:

24.41 dBuV

Field Strength (Peak)

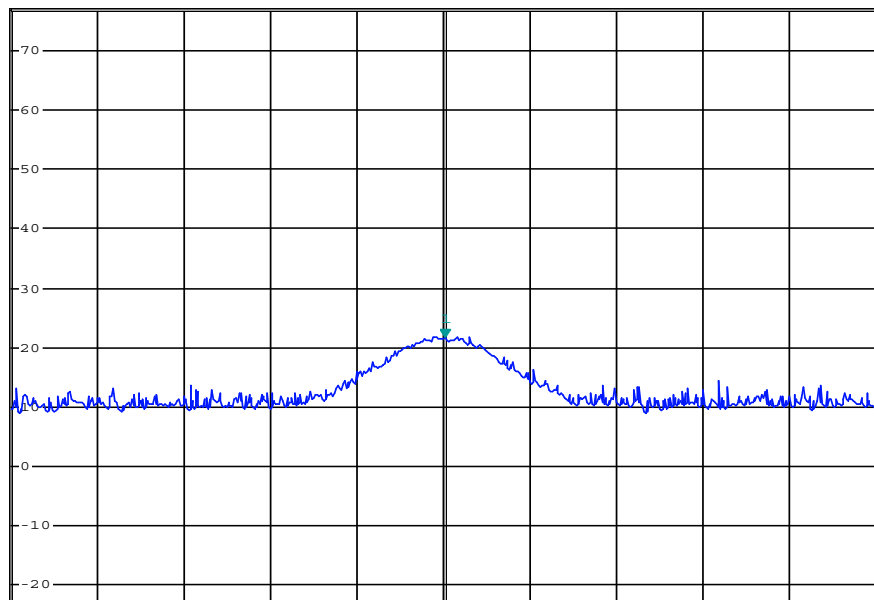


*RBW 10 kHz Marker 1 [T1]
 VBW 30 kHz 21.81 dBuV
 *SWT 100 ms 13.56020000 MHz

Ref 77 dBuV

*Att 10 dB

1 PK
VIEW



Center 13.56 MHz

10 kHz/

Span 100 kHz

Date: 2.JUN.2021 13:06:34

Channel Frequency:

13.56 MHz

Detector:

Peak

Antenna Polarization:

Side

Modulation Setting:

ASK

Protocol:

NFC

Measured Field Strength:

21.81 dBuV