Quarterly Report on Frequency Spectrum Monitoring

(January - March 2026)

Bhutan InfoComm and Media Authority

Royal Government of Bhutan

March 2026

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1. Background

Spectrum monitoring is the practice of maintaining and monitoring the network or devices that use Radio Frequency (RF) signals and frequencies. Due to the growing demands on the radio frequency spectrum, it is critical that spectrum monitoring is consistently carried out and also keep track with advanced techniques in radio communication technology. Spectrum monitoring is carried out mainly to ensure that technical parameters and standards or guidelines for radiocommunication systems are adhered to by the users. In addition spectrum monitoring assists in promoting the efficient utilization of the radio frequency spectrum.

Spectrum Monitoring is closely associated with inspection and compliance that enables the identification and measurement of spectrum usage, interference sources, the verification of proper technical and operation characteristics of radiated signals, and detection and identification of illegal transmitters. The Monitoring further supports the overall spectrum management effort by providing general measurement of channel and band usage, including the channel availability and measure of spectrum occupancy.

The Bhutan InfoComm and Media Authority conducts fixed and mobile spectrum monitoring to ensure that spectrum use complies with the National Radio Rules and Regulations. The monitoring can detect, identify and resolve the unauthorized transmission or interference, verify technical and operational parameters, and to monitor occupancy and field strength.

2. Monitoring

To ensure effective and proper utilization of spectrum, to control unauthorized transmission and to ensure compliance of equipment and stations with the the National Radio Rules and Regulation, the Authority has monitored the fixed and mobile spectrum from January to March, 2026 in following places;

Sl. No	Monitored Places	Monitored Frequency
1.	Thimphu (Fixed Spectrum Monitoring)	2G 900 GSM Transmitter Frequencies
2.	Thimphu (Fixed Spectrum Monitoring)	3G 850 Band Transmitter Frequencies
3.	Thimphu (Fixed Spectrum Monitoring)	5G Transmitter Frequencies
4.	Tsirang (Fixed Spectrum Monitoring remotely)	HF Frequencies 4-21 MHz and 2G Transmitter Frequencies in Tsirang

5.	Monitoring of canceled licenses and illegal users in Chhukha, SJ, Zhemgang, and Trashigang.	VHF and UHF Frequencies.

3. Objective of Spectrum Monitoring

The main objective of the Spectrum measurement monitoring is:

a. To ensure the authorized spectrum for proper application in conformity with the licensing terms and conditions.

b. To survey and inspect radio communication systems.

c. To ensure compliance of transmitters and stations with the National Radio Rules and Regulations.

d. To detect and identify unauthorized transmission.

e. To determine the spectrum occupancy, field strength and assessment of channel availability which will be useful for proper spectrum planning and management.

4. Details of the Equipment used for Fixed and Mobile Spectrum Monitoring

The details of existing Spectrum monitoring equipment of the Authority are as mentioned below:

a. Fixed Spectrum Monitoring

Equipment Make/Model: LS Telecom FMU308w

Type of the Antenna: HF/VHF/UHF/SHF omni-directional antenna

Monitoring Receiver: FMU supports frequency range from 9kHz to 8GHz

Calibration details: Calibrated on 15-02-2023 and valid up to 2 to 3 years

b. Mobile Spectrum Monitoring

Equipment Make/Model: Narda SignalShark 3310

Type of the Antenna: HF/VHF/UHF/SHF directional antennas

Spectrum Analyzer/Receiver: Frequency range for the receiver is from 8KHz to 8GHz

Calibration details: Calibrated on 23-01-2023 and valid up to 2 to 3 years

5. Methodology

The Spectrum measurement monitoring was carried out as mentioned below;

a. Fixed Spectrum Monitoring

The fixed spectrum monitoring was done with the Fixed Monitoring equipment and LS Observer software for the transmission frequency signals. The Fixed Monitoring equipment is fixed to a particular location and the monitoring is usually done through the scanning of the frequency and obtaining its transmission and reception characteristics.

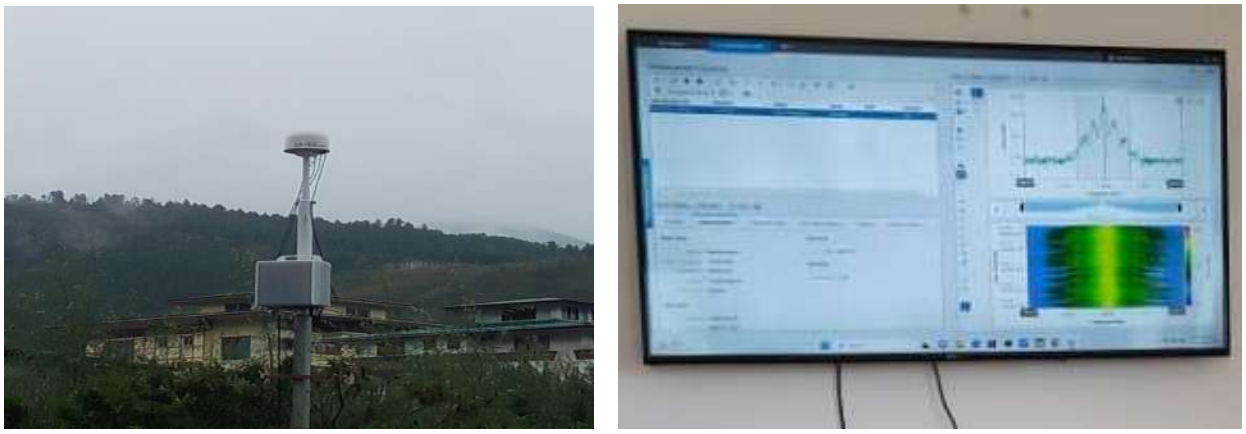


Figure 1: Fixed Spectrum Monitoring

b. Mobile Spectrum Monitoring

The Mobile Spectrum Monitoring was carried out using the DF monitoring equipment which was mounted in the roof of the car. These vehicles are passenger cars used to carry equipment and antennas. The antenna array used for DF and monitoring is mounted in an unobtrusive roof-top carrier mounted directly to the luggage rack on the roof of the car. The monitoring and DF equipment is mounted in the luggage area at the rear of the car.


Figure 2: Mobile Spectrum Monitoring

6. Findings

i. Fixed Spectrum Monitoring in Thimphu

A. Spectrum Occupancy Monitoring for 2G 900 band transmitters

a. The team have carried out the fixed Spectrum Monitoring for GSM band (2G) transmitter frequencies ranging from 900 MHz to 990 MHz.
b. During the monitoring in Thimphu, we have found out that following frequency are actively operating and occupied the band;

Sl.	Frequency Range	Spectrum Occupancy	Remark
1	900- 935 MHz	No occupancy	Channels are free
2.	**935.63-945 MHz**	**Occupied band is 11-100%**	**It is a down link Frequencies and actively operated by BTL.**
4.	**945.63-954.38 MHz**	**Occupied band is 1-100%**	**It is a down link Frequencies and actively operated by TIPL.**
5.	956.00-990.00 MHz	Not Occupied	Channel is free

c. The details of the spectrum occupancy result are attached in **annexure 1.**
d. No illegal operations were detected so far in GSM 900 band (2G).
e. There is no out of band transmission from the GSM 900 transmitters. The detailed findings are attached **annexure** 1.
f. The channels are free in 956-990 MHz.

B. Spectrum Occupancy Monitoring for 3G 850 band transmitters

a. The team has carried out the fixed Spectrum Monitoring for 3G transmitter frequencies ranging from 860MHz to 899 MHz.
b. During the monitoring in Thimphu, we have found out that following frequency are actively operating and occupied the band;

Sl.	Frequency Range	Spectrum Occupancy	Remark
1	866- 868 MHz	Not occupied	Channel is free
2.	**868.50 MHz**	**Occupied band is 98%**	**It is a down link Frequencies and actively operated by TIPL.**
3.	**873.50 MHz**	**Occupied band is 95%**	**It is a down link Frequencies and actively operated by TIPL.**
4.	**878.50 MHz**	**Occupied Band is 100%**	**It is a down link Frequencies and actively operated by TIPL.**
5.	**883.50 MHz**	**Occupied Band is 100%**	**It is a down link Frequencies and actively operated by BTL.**
6.	**888.50 MHz**	**Occupied Band is 100%**	**It is a down link Frequencies and actively operated by BTL.**
7.	890-899 MHz	Not Occupied	Channel is free

c. The details of the spectrum occupancy result are attached in **annexure 2.**
d. No illegal operations were detected so far in the 3G transmitter.
e. There is no out of band transmission from 3G transmitters. The detailed findings are attached **annexure 2**.
f. The channels are free in 866-868 MHz and 890 MHz-899 MHz

C. Spectrum Occupancy Monitoring for 5G transmitters

a. The team has carried out the fixed Spectrum Monitoring for 4G transmitter frequencies ranging from 3.3 GHz to 3.8 GHz.
b. During the monitoring in Thimphu, we have found out that following frequency are actively operating and occupied the band;

Sl.	Frequency Range	Spectrum Occupancy	Remark

1	3.35- 3.4 GHz	Not occupied	Channel is free
2.	**3.45 GHz**	**Occupied band is 28%**	**These frequencies are actively operated by TIPL.**
4.	**3.55 GHz**	**Occupied band is 4-8%**	**These Frequencies are actively operated by BTL.**
5.	3.6-3.65 GHz	Not Occupied	Channel is free

c. The details of the spectrum occupancy result are attached in **annexure 3.**
d. No illegal operations were detected so far in the 5G transmitter.
e. There is no out of band transmission from 5G transmitters. The detailed findings are attached **annexure 3**.
f. The channels are free in 3.35- 3.4 GHz and 3.6-3.65 GHz.

ii. Tsirang Fixed Spectrum Monitoring Remotely

A. HF Frequency from 4 MHz to 21 MHz

a. The team has carried out the Fixed Spectrum Monitoring for High frequencies ranging from 4 MHz to 22 MHz
b. During the monitoring, we have found out that following frequencies are actively operating and occupying the band but they all are external signals.
c. The details of the Spectrum Monitoring result is attached in **Annexure 4**

Sl.	**Frequency Range**	**Spectrum Occupancy**	**Remark**
1	**4.806 MHz**	**Active/Occupied**	**External Signal**
2.	**5.931 MHz**	**Active/Occupied**	**External Signal**
3.	**6.125 MHz**	**Active/Occupied**	**External Signal**
4.	**9.731 MHz**	**Active/Occupied**	**External Signal**
5.	**11.868 MHz**	**Active/Occupied**	**External Signal**
6.	**12.262 MHz**	**Active/Occupied**	**External Signal**
7	**13.737 MHz**	**Active/Occupied**	**External Signal**
8	**14.225 MHz**	**Active/Occupied**	**External Signal**
9	**15.562 MHz**	**Active/Occupied**	**External Signal**

10	**16.756 MHz**	**Active/Occupied**	**External Signal**
11	**17.162 MHz**	**Active/Occupied**	**External Signal**
12	**17.612 MHz**	**Active/Occupied**	**External Signal**
13	**18.875 MHz**	**Active/Occupied**	**External Signal**
14	**21.350 MHz**	**Active/Occupied**	**External Signal**

B. 2G Transmitters Frequency from 920 MHz to 960 MHz in Tsirang

a. The team has carried out the Fixed Spectrum Monitoring for Ultra High frequencies ranging from 920 MHz to 960MHz.

b. During the monitoring, we have found out that following frequencies are actively operating and occupying the band.

c. The details of the Spectrum Monitoring result is attached in **Annexure 5**

Sl.	**Frequency Range**	**Spectrum Occupancy**	**Remark**
1	**931.253MHz**	**Active/Occupied**	**External Signal**
2.	**931.825MHz**	**Active/Occupied**	**External Signal**
3.	**933.381MHz**	**Active/Occupied**	**External Signal**
4.	**934.800MHz**	**Active/Occupied**	**External Signal**
5.	**935.403MHz**	**Active/Occupied**	**BTL**
6.	**936.237MHz**	**Active/Occupied**	**BTL**
7	**936.575MHz**	**Active/Occupied**	**BTL**
8	**937.784MHz**	**Active/Occupied**	**BTL**
9	**939.912MHz**	**Active/Occupied**	**BTL**
10	**942.356MHz**	**Active/Occupied**	**BTL**
11	**945.356MHz**	**Active/Occupied**	**TICPL**
12	**947.196MHz**	**Active/Occupied**	**TICPL**
13	**951.893MHz**	**Active/Occupied**	**TICPL**

14	**956.156MHz**	**Active/Occupied**	**External Signal**
15	**959.212MHz**	**Active/Occupied**	**External Signal**

iii. Monitoring of Cancelled Radiocommunication Apparatus Licences

a. The team has carried out the Mobile Spectrum Monitoring for VHF(136 MHz-174 MHz) and UHF(300MHz-480 MHz) cancelled license frequencies in Phuentsholing, Samdrup Jongkhar, Pemagatshel, Trasigang and Zhemgang using the spectrum monitoring tools.

b. During the monitoring, we have found out that following frequencies are not operating and no illegal radio users were detected as shown below:

Sl. No.	Name of the License	Licence Number	Area of Operation	Issuance Date	Assigned frequency (MHz)	Findings
1	Regional Mithun Breeding Farm	502000040	Zhemgang	9-Nov-16	162.750	The frequencies were not in use
2	Zhemgang Central School	502000501	Zhemgang	22-Nov-21	139.05	The frequencies were not in use
3	Dzongkhag Administration	502000353	Pemagatshel	2-Mar-18	140.65	The frequencies were not in use
4	Divisional Forest Office	502000354	Pemagatshel	9-Mar-18	138.775,143.775	The frequencies were not in use
5	Chongshing Gewog Administration	502000363	Pema Gatshel	7-May-18	141.125	The frequencies were not in use
6	Dzongkhag Administration	502000393	Pemagatshel	11-Apr-19	143.2, 148.2	The frequencies were not in use
7	Nangkhor Central School	502000316	Pema Gatshel	31-Mar-17	142.475	The frequencies were not in use
8	Divisional Forest Office	502000359	Pema Gatshel	16-Apr-18	140.625, 145.625	The frequencies were not in use

9	Dungsam Cement Corporation Limited	502000377	Pema Gatshel	8-Aug-18	168.125, 168.250, 168.325, 168.375, 168.575, 168.825	The frequencies were not in use
10	Chimmi RD Construction Private Limited	502000004	Samdrup Jongkhar	18-Feb-22	157.225, 152.2	The frequencies were not in use
11	Samdrup Jongkhar Thromde	502000212	Samdrup Jongkhar	12-Aug-14	138.900, 143.900	The frequencies were not in use
12	Department of Roads	502000355	Samdrup Jongkhar	28-Mar-18	140.75	The frequencies were not in use
13	Jomo Tsangkha Dungkhag Administration	502000444	Samdrup Jongkhar	10-Mar-20	162.05	The frequencies were not in use
14	Samrang Geog Administration	502000453	Samdrup Jongkhar	15-Jun-20	155.05	The frequencies were not in use
15	Serthi Gewog Administration	502000457	Samdrup Jongkhar	2-Jul-20	165.6	The frequencies were not in use
16	S.D Bhutan Ferro Silicon Private Limited	502000087	Samdrup Jongkhar	22-Jun-16	143.400, 143.425	The frequencies were not in use
17	Department of Forest and Park Services	502000271	Samdrup Jongkhar	7-Jun-16	161.350, 165.350	The frequencies were not in use
18	Yangchenma Private Limited	502000342	Samdrup Jongkhar	26-Oct-17	400.025	The frequencies were not in use
19	Bhutan Livestock Development Corporation Limited	502000357	Samdrup Jongkhar	19-Mar-18	142.325	The frequencies were not in use
20	Regional Centre for Aquaculture	502000380	Samdrup Jongkhar	22-Aug-18	138.425	The frequencies were not in use
21	Regional Mithun Breeding Farm	502000386	Samdrup Jongkhar	15-Jan-19	138.825	The frequencies were not in use
22	Technical Training Institute	502000216	Trashigang	10-Sep-14	162.6	The frequencies were not in use

23	Trashigang Forest Division	502000286	Trashigang	12-Dec-16	160.95,165.95	The frequencies were not in use
24	Yonphula Centenary College	502000356	Trashigang	19-Mar-18	142.525	The frequencies were not in use
25	Tandin Wangchuk	502000361	Trashigang	26-Apr-18	142.05	The frequencies were not in use
26	Begogang Stone Quarry Private Limited	502000436	Phuentsholing	1-Jan-20	462.25	The frequencies were not in use
27	Lower Kay Dee Sawmill	502000034	Phuentsholing	8-Jul-22	160.525	The frequencies were not in use
28	Druk Mining Private Limited	502000046	Phuentsholing	24-May-08	171.05	The frequencies were not in use
29	M/s Transrail Lighting Limited	502000055	Phuentsholing	20-Feb-23	446.250	The frequencies were not in use
30	Food Corporation of Bhutan Limited	502000098	Phentsholing	2-Nov-11	164.525	The frequencies were not in use
31	Samdrupcholing Metals Private Limited	502000182	Phuntsholing	7-Mar-13	141.600	The frequencies were not in use
32	Gedu Forest Division	502000343	Gedu	22-Nov-17	141.375, 145.375	The frequencies were not in use
33	Association of Bhutanese Industries	502000468	Phuntsholing	3-Nov-20	138.125	The frequencies were not in use
34	Tshanglha Construction	502000484	Gedu	09-Apr-21	156.3	The frequencies were not in use

c. The detailed findings record are attached in **annexure 6.**

7. Follow up

a. The Authority has to maintain the database for any spectrum signal detected during the monitoring from the outside country.

b. The authority will continue monitoring the spectrum occupancy for 2G, 3G, 4G and 5G in different places.

c. The Authority will compare the fixed and mobile spectrum monitoring result with the frequency assigning database to see whether they are operating illegally or not.

d. The authority will continue monitoring the Fixed Spectrum Monitoring in Thimphu and Tsirang.

e. The authority will continue monitoring the canceled RadioCommunication license in different places although illegal users were not found in recent monitoring in Samdrup Jongkhar, Chhukha(Phuentsholing), Pemagatshel, Trashigang and Zhemgang.

Annexure 1

The following are the details of the system generated spectrum occupancy report monitoring for 2G 900 band (2G) transmitter frequencies ranging from 900 MHz to 990 MHz.

Measurement **Receiver Settings**

Name:	2 G January 26
Mode:	Frequency Range
Freq. Range:	900.00 MHz - 990.00 MHz
RBW:	12.50 kHz
Step Width:	12.44 kHz
Start Time:	1/22/2026 8:50:00 AM
Stop Time:	1/22/2026 9:20:00 AM
Duration:	30 Minutes 0 Second
Attenuation:	0 dB

Channel Name	Main Frequency	Bandwidth	Occupancy [%]		
			Max	Avg	Min
S1	900.63 MHz	1.25 MHz	0	0	0
S2	901.88 MHz	1.25 MHz	0	0	0
S3	903.13 MHz	1.25 MHz	0	0	0
S4	904.38 MHz	1.25 MHz	0	0	0
S5	905.63 MHz	1.25 MHz	0	0	0
S6	906.88 MHz	1.25 MHz	0	0	0
S7	908.13 MHz	1.25 MHz	0	0	0
S8	909.38 MHz	1.25 MHz	0	0	0
S9	910.63 MHz	1.25 MHz	0	0	0
S10	911.88 MHz	1.25 MHz	0	0	0
S11	913.13 MHz	1.25 MHz	0	0	0
S12	914.38 MHz	1.25 MHz	0	0	0
S13	915.63 MHz	1.25 MHz	0	0	0
S14	916.88 MHz	1.25 MHz	0	0	0
S15	918.13 MHz	1.25 MHz	0	0	0
S16	919.38 MHz	1.25 MHz	0	0	0
S17	920.63 MHz	1.25 MHz	0	0	0
S18	921.88 MHz	1.25 MHz	0	0	0

S19	923.13 MHz	1.25 MHz	0	0	0
S20	924.38 MHz	1.25 MHz	0	0	0
S21	925.63 MHz	1.25 MHz	0	0	0
S22	926.88 MHz	1.25 MHz	0	0	0
S23	928.13 MHz	1.25 MHz	0	0	0
S24	929.38 MHz	1.25 MHz	0	0	0
S25	930.63 MHz	1.25 MHz	0	0	0
S26	931.88 MHz	1.25 MHz	0	0	0
S27	933.13 MHz	1.25 MHz	0	0	0
S28	934.38 MHz	1.25 MHz	0	0	0
S29	935.63 MHz	1.25 MHz	100	100	100
S30	936.88 MHz	1.25 MHz	100	100	100
S31	938.13 MHz	1.25 MHz	86	83	81

Channel Name	**Main Frequency**	**Bandwidth**	**Occupancy [%]**		
			Max	Avg	Min
S32	939.38 MHz	1.25 MHz	9	8	6
S33	940.63 MHz	1.25 MHz	10	9	8
S34	941.88 MHz	1.25 MHz	12	11	10
S35	943.13 MHz	1.25 MHz	26	20	16
S36	944.38 MHz	1.25 MHz	60	53	44
S37	945.63 MHz	1.25 MHz	85	83	82
S38	946.88 MHz	1.25 MHz	99	98	98
S39	948.13 MHz	1.25 MHz	100	100	100
S40	949.38 MHz	1.25 MHz	100	100	100
S41	950.63 MHz	1.25 MHz	20	15	10
S42	951.88 MHz	1.25 MHz	1	0	0
S43	953.13 MHz	1.25 MHz	1	0	0
S44	954.38 MHz	1.25 MHz	1	0	0
S45	955.63 MHz	1.25 MHz	0	0	0
S46	956.88 MHz	1.25 MHz	0	0	0
S47	958.13 MHz	1.25 MHz	0	0	0
S48	959.38 MHz	1.25 MHz	0	0	0
S49	960.63 MHz	1.25 MHz	0	0	0
S50	961.88 MHz	1.25 MHz	0	0	0
S51	963.13 MHz	1.25 MHz	0	0	0
S52	964.38 MHz	1.25 MHz	0	0	0
S53	965.63 MHz	1.25 MHz	0	0	0
S54	966.88 MHz	1.25 MHz	0	0	0
S55	968.13 MHz	1.25 MHz	0	0	0
S56	969.38 MHz	1.25 MHz	0	0	0
S57	970.63 MHz	1.25 MHz	0	0	0
S58	971.88 MHz	1.25 MHz	0	0	0
S59	973.13 MHz	1.25 MHz	0	0	0
S60	974.38 MHz	1.25 MHz	0	0	0

S61	975.63 MHz	1.25 MHz	0	0	0
S62	976.88 MHz	1.25 MHz	0	0	0

Channel Name	Main Frequency	Bandwidth	Occupancy [%]		
			Max	Avg	Min
S63	978.13 MHz	1.25 MHz	0	0	0
S64	979.38 MHz	1.25 MHz	0	0	0
S65	980.63 MHz	1.25 MHz	0	0	0
S66	981.88 MHz	1.25 MHz	0	0	0
S67	983.13 MHz	1.25 MHz	0	0	0
S68	984.38 MHz	1.25 MHz	0	0	0
S69	985.63 MHz	1.25 MHz	0	0	0
S70	986.88 MHz	1.25 MHz	0	0	0
S71	988.13 MHz	1.25 MHz	0	0	0
S72	989.38 MHz	1.25 MHz	0	0	0

Annexure 2

The following are the details of the system generated spectrum occupancy report monitoring for 3G 850 band (3G) transmitter frequencies ranging from 866 MHz to 899 MHz.

Measurement **Receiver Settings**

Name:	3G Feb 2026
Mode:	Frequency Range
Freq. Range:	866.00 MHz - 899.00 MHz
RBW:	12.50 kHz
Step Width:	12.44 kHz
Start Time:	2/22/2026 9:35:00 AM
Stop Time:	2/22/2026 10:15:00 AM
Duration:	40 Minutes 0 Second
Attenuation:	0 dB

Channel Name	Main Frequency	Bandwidth	Occupancy [%]		
			Max	Avg	Min
S1	868.50 MHz	5.00 MHz	98	97	97
S2	873.50 MHz	5.00 MHz	97	95	94
S3	878.50 MHz	5.00 MHz	100	100	100
S4	883.50 MHz	5.00 MHz	100	100	100
S5	888.50 MHz	5.00 MHz	100	100	100
S6	893.50 MHz	5.00 MHz	0	0	0

Annexure 3

The following are the details of the system generated spectrum occupancy report monitoring for 5G transmitter frequencies ranging from 3.3 GHz to 3.8 GHz.

Measurement **Receiver Settings**

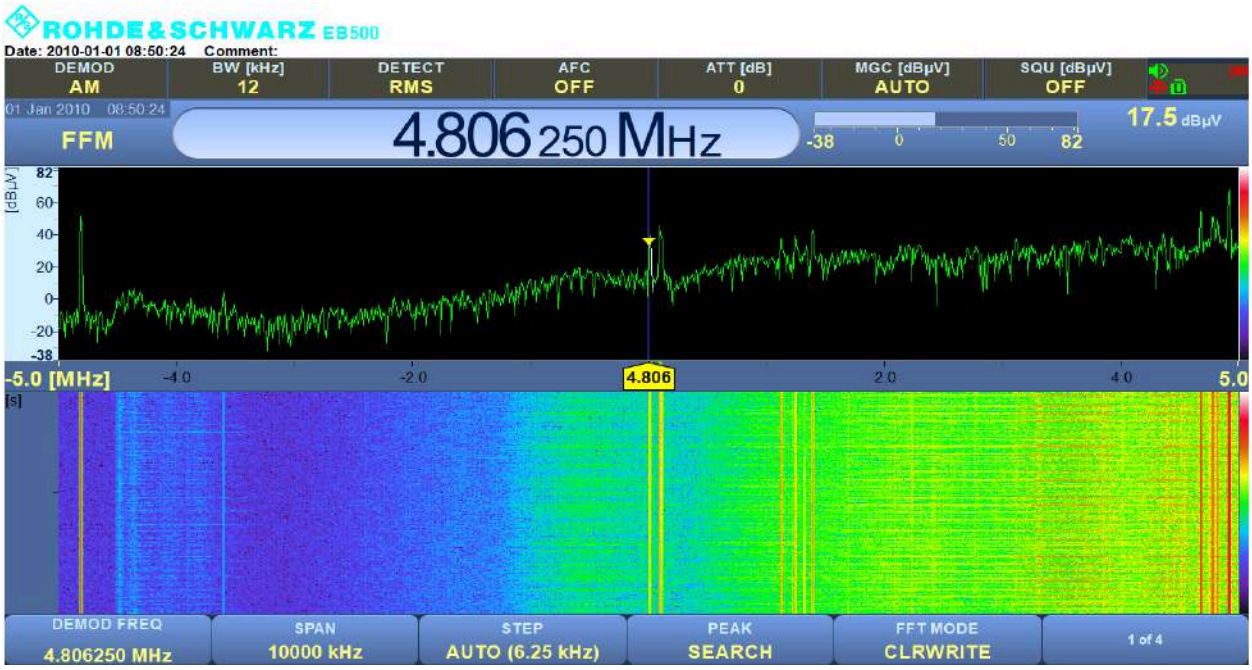
Name:	5 G March 26		
Mode:	Frequency Range Freq. Range:	3.00 GHz - 3.80 GHz RBW:	25.00 kHz
Step Width:	24.74 kHz		
Start Time:	3/22/2026 8:15:00 AM		
Stop Time:	3/22/2026 8:40:00 AM		
Duration:	25 Minutes 0 Second		
Attenuation:	0 dB		

Channel Name	Main Frequency	Bandwidth	Occupancy [%]		
			Max	Avg	Min
S1	3.05 GHz	100.00 MHz	0	0	0
S2	3.15 GHz	100.00 MHz	0	0	0
S3	3.25 GHz	100.00 MHz	0	0	0
S4	3.35 GHz	100.00 MHz	0	0	0
S5	3.45 GHz	100.00 MHz	30	28	26
S6	3.55 GHz	100.00 MHz	8	7	7
S7	3.65 GHz	100.00 MHz	0	0	0
S8	3.75 GHz	100.00 MHz	0	0	0

Annexures 4

The following shows the signal detected during the Fixed Spectrum Monitoring in Tsirang for HF Frequency from 4 MHz to 21 MHz

External signal



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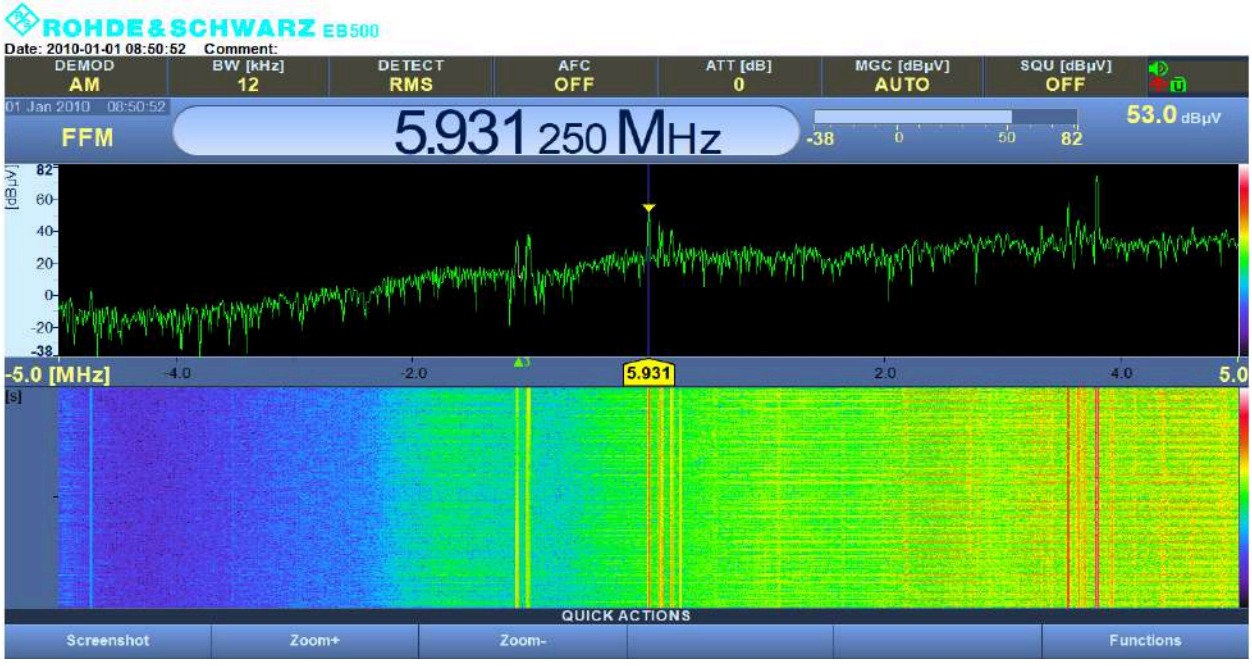

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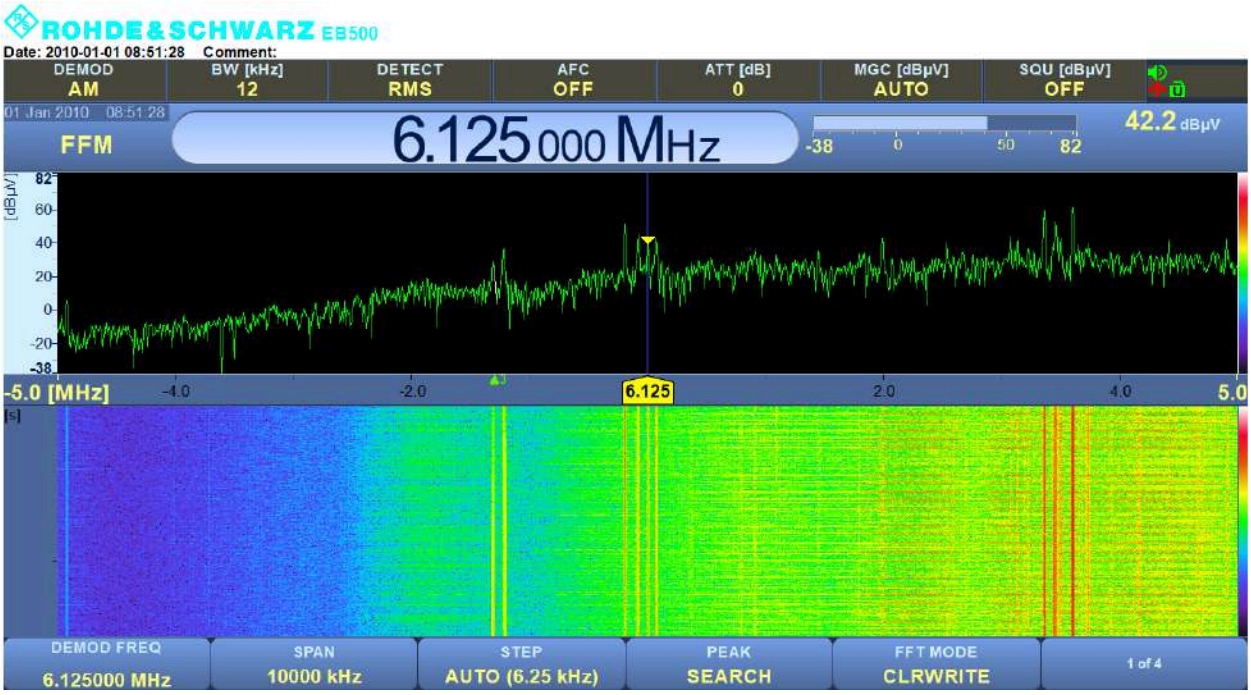

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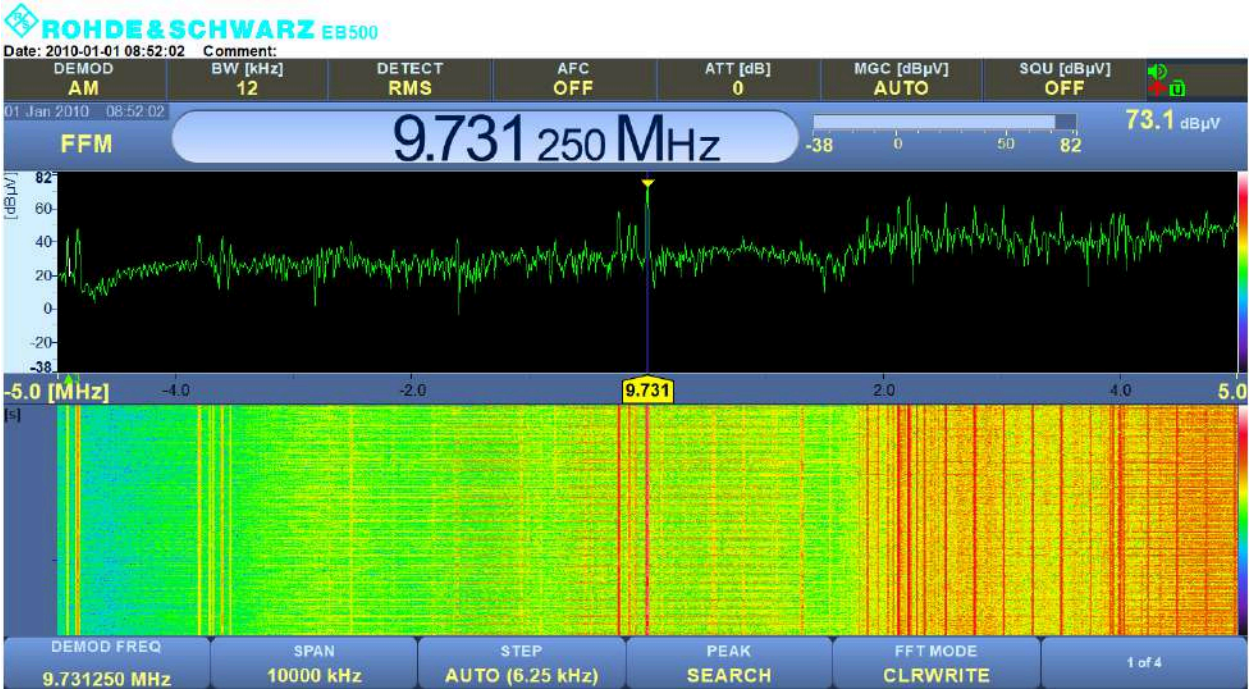

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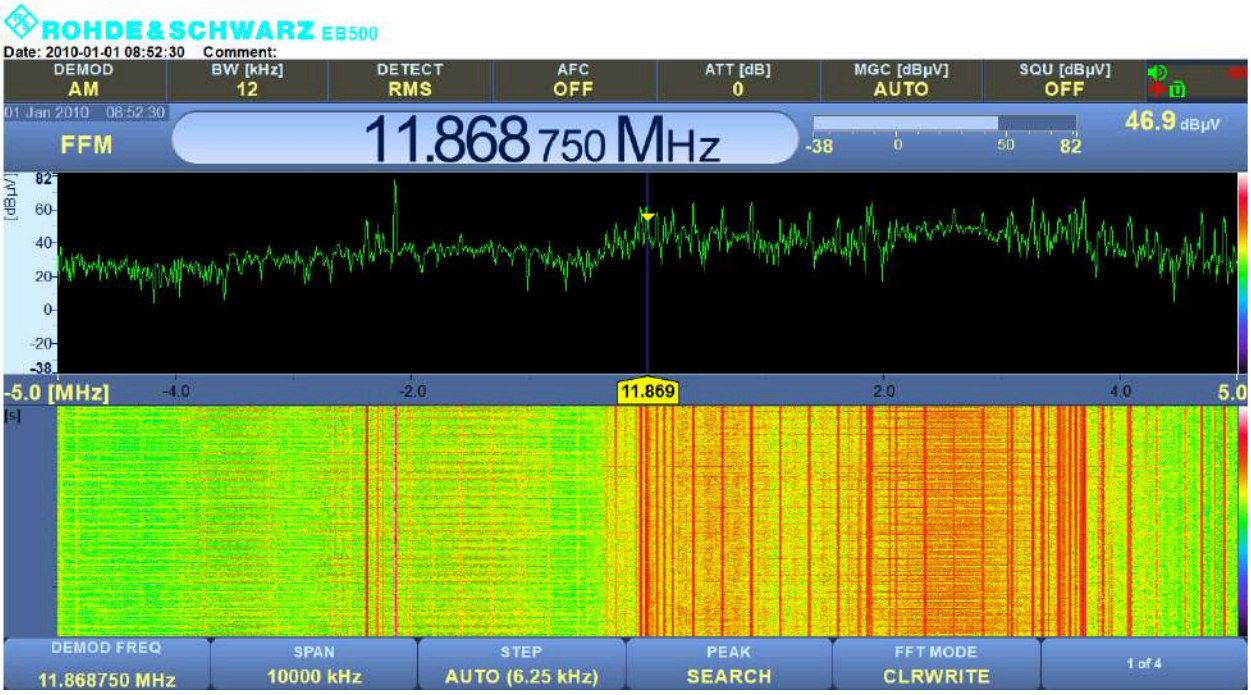

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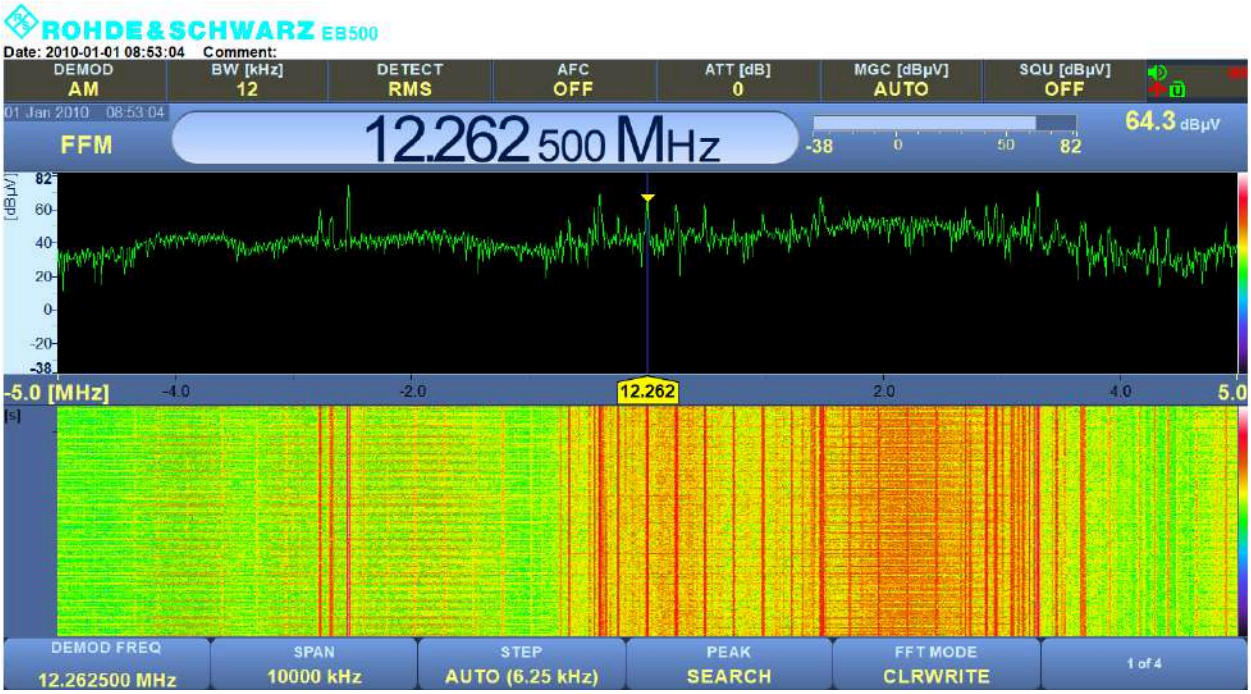
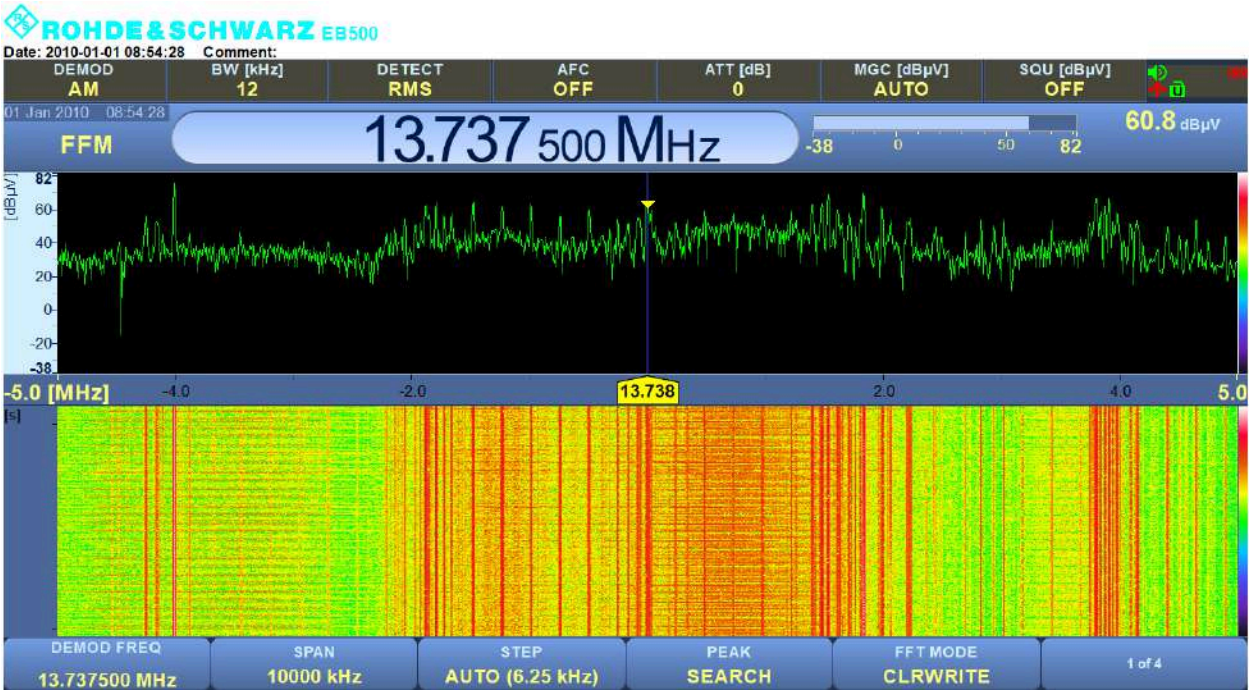
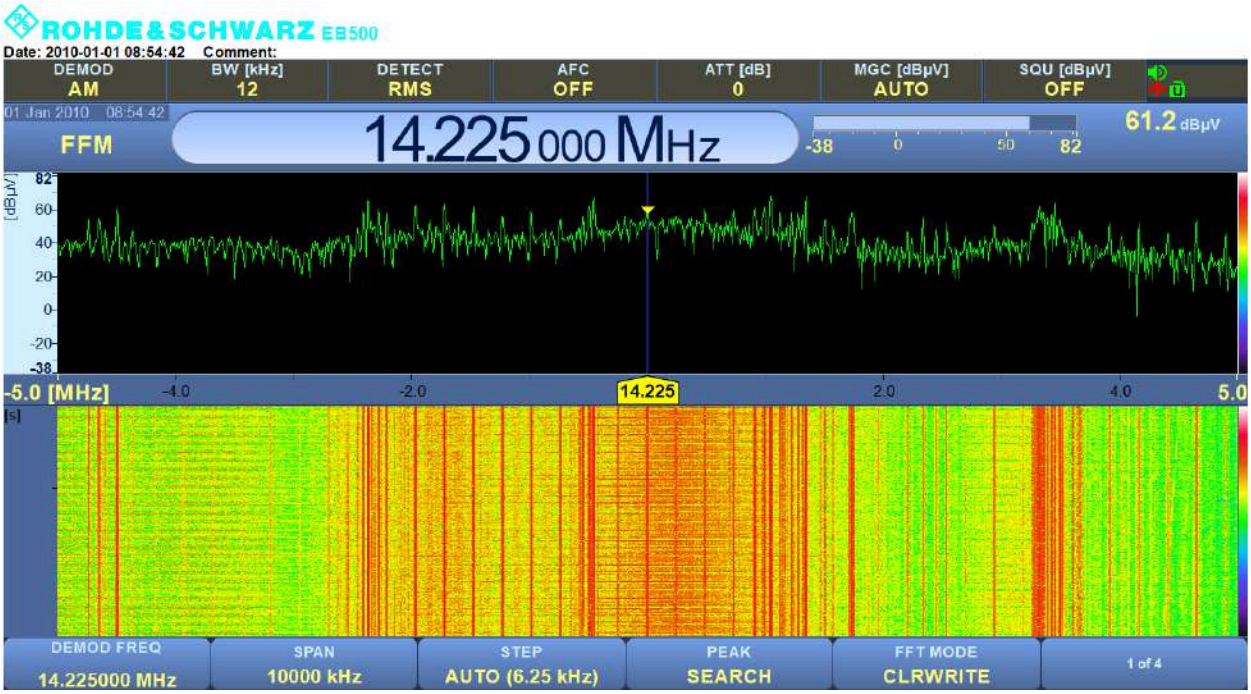


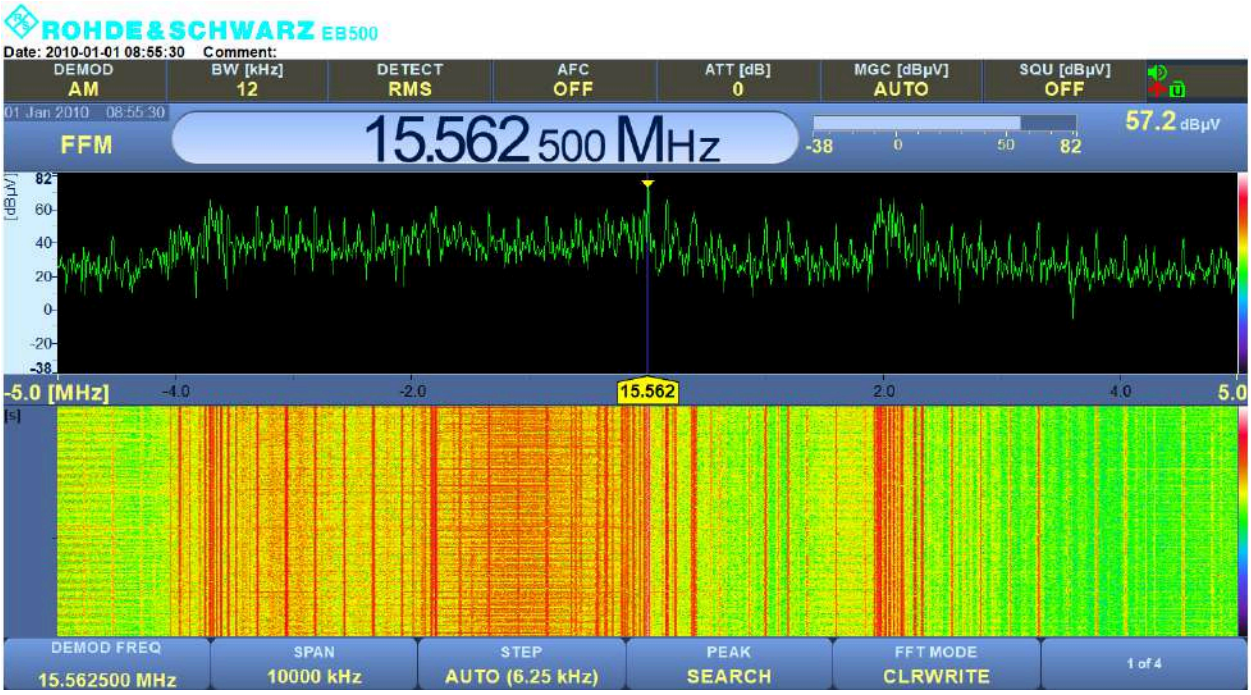
External Signal



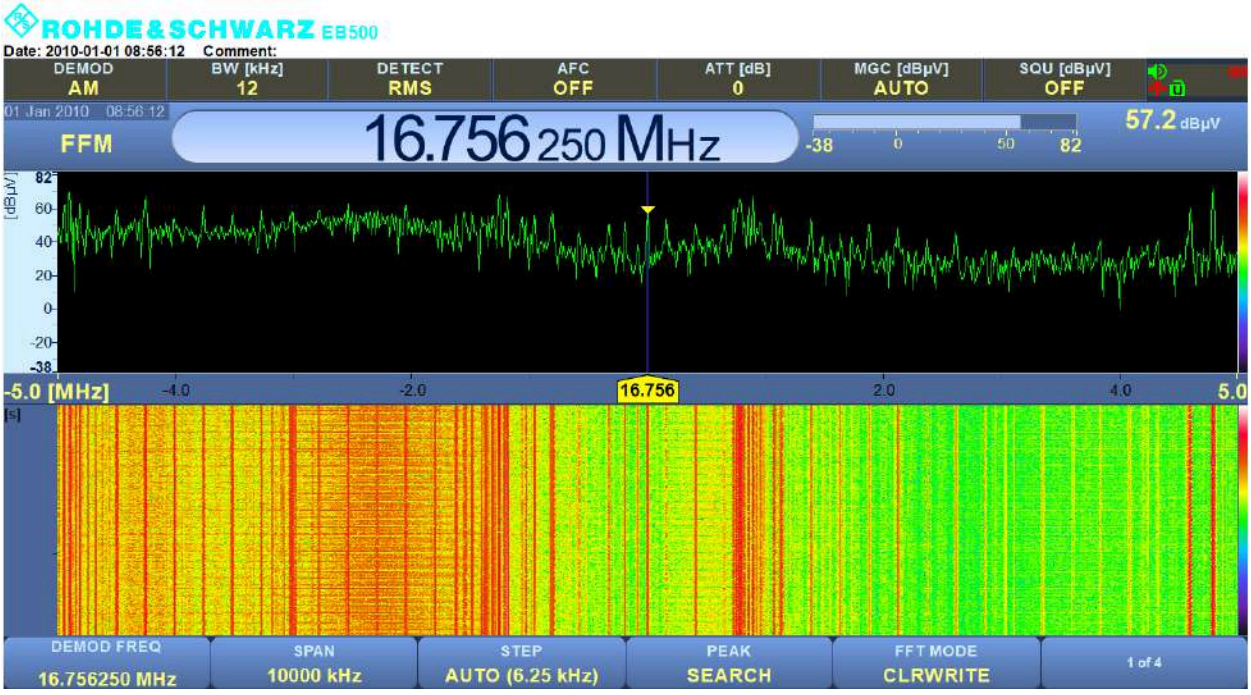
External Signal



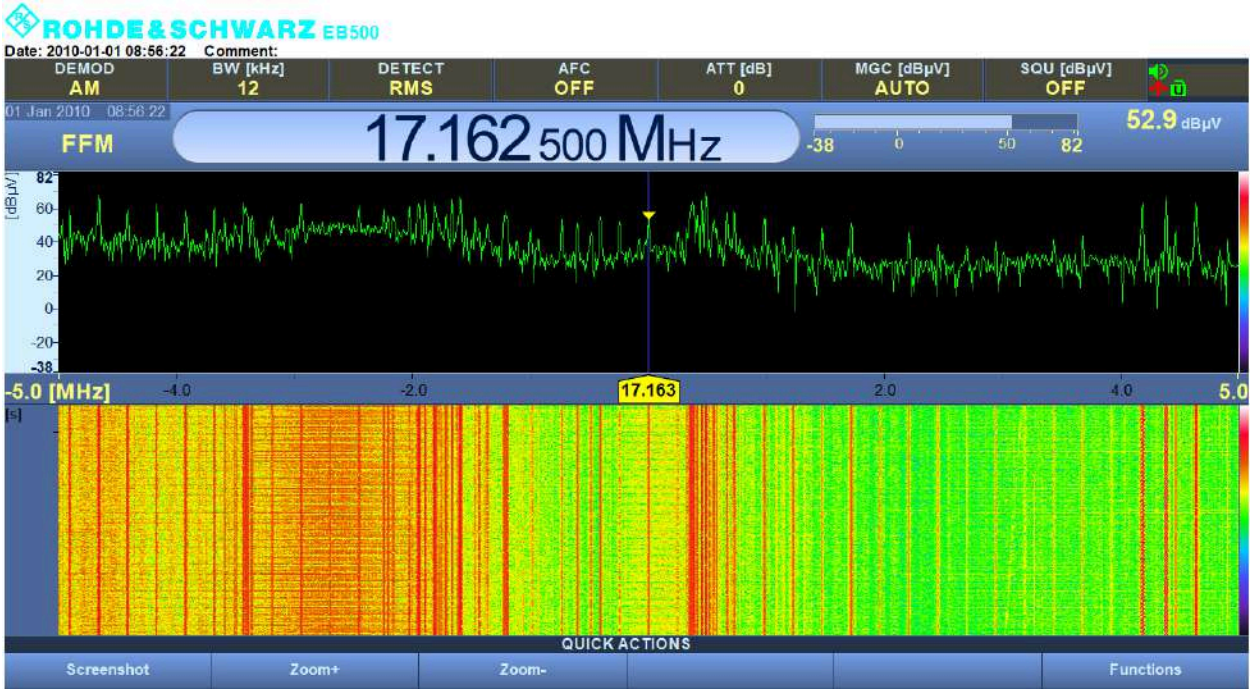
External Signal



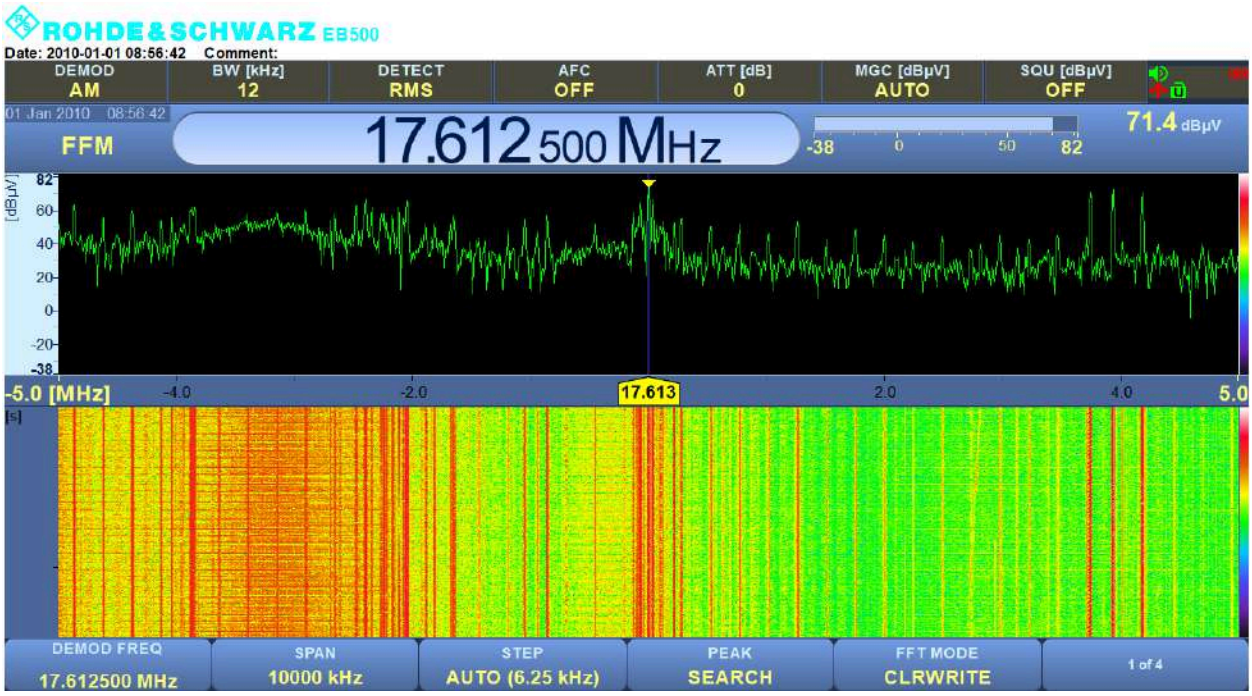
External Signal



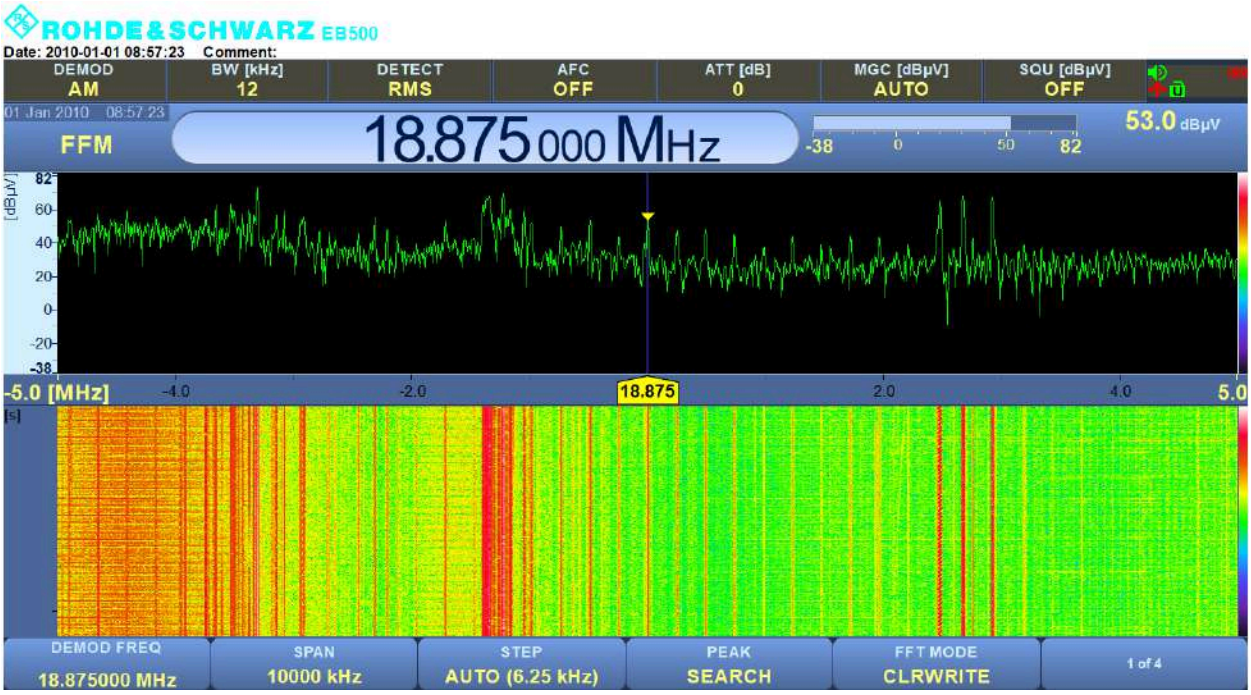
External Signal



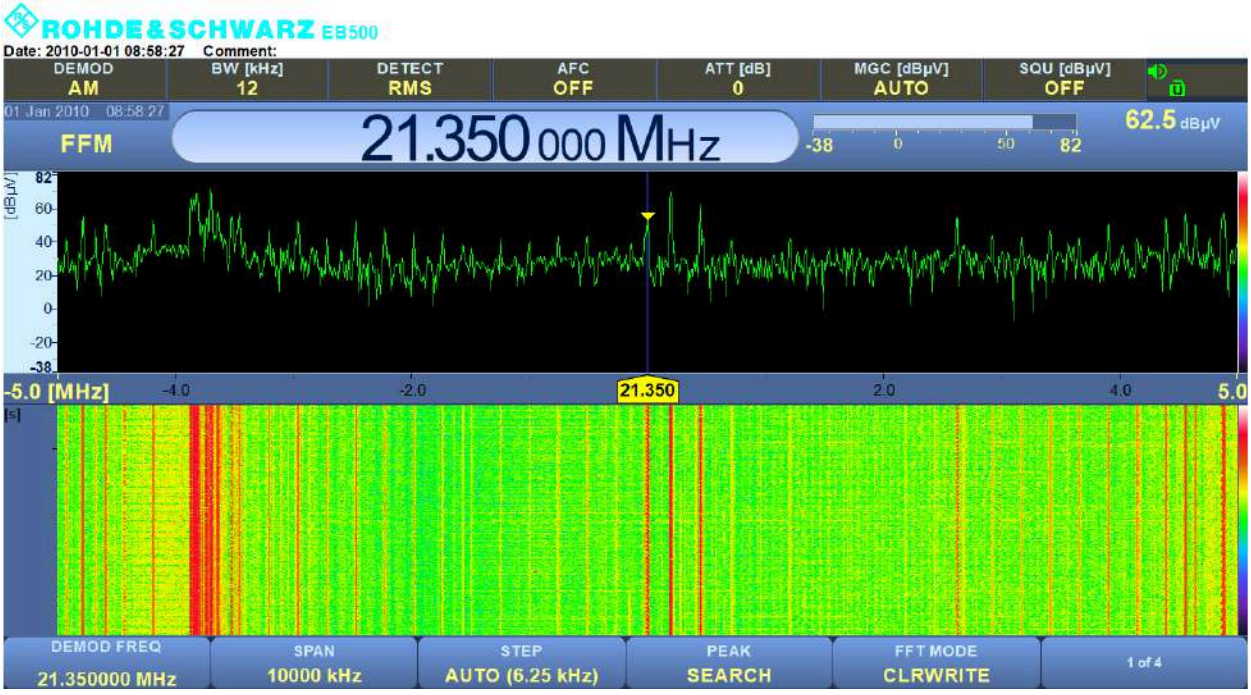
External Signal



External Signal



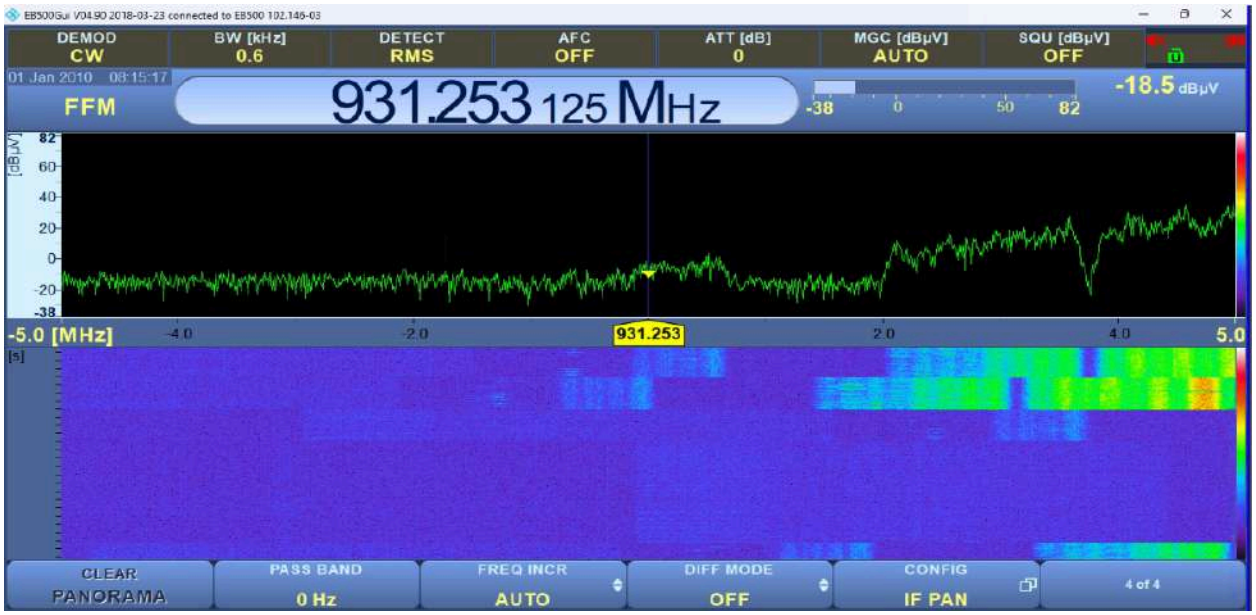
External signal



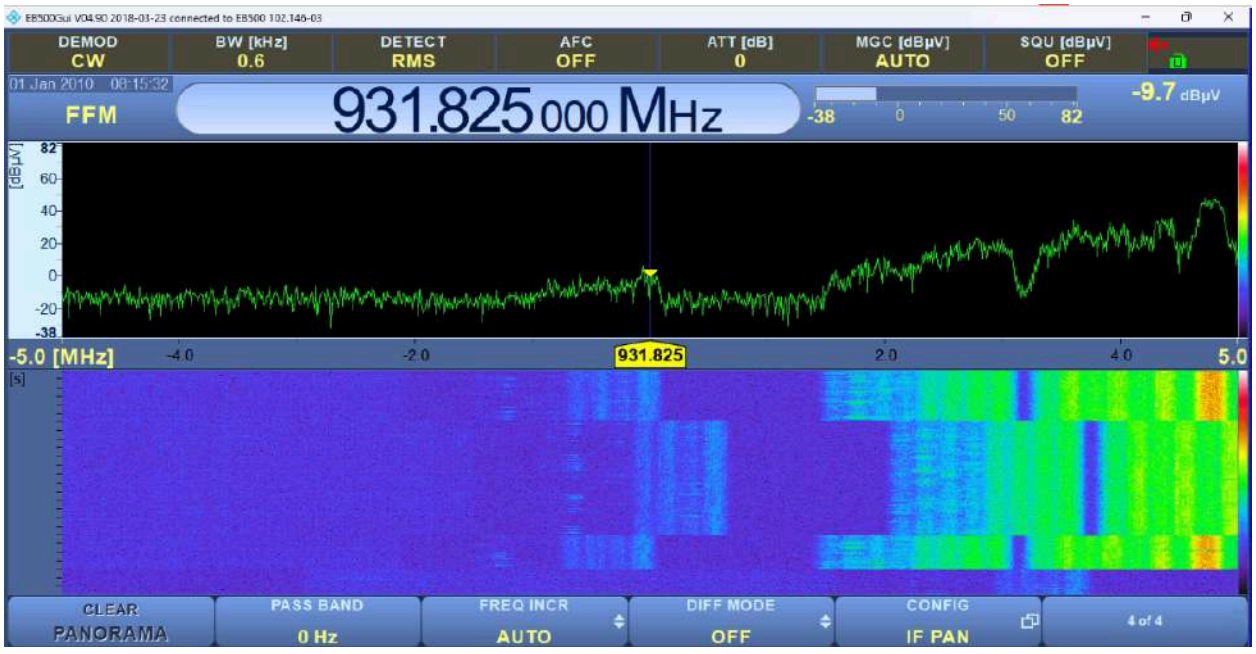
Annexures 5

The following shows the signal detected during the Fixed Spectrum Monitoring in Tsirang for 2G Transmitter Frequency from 920 MHz to 960 MHz

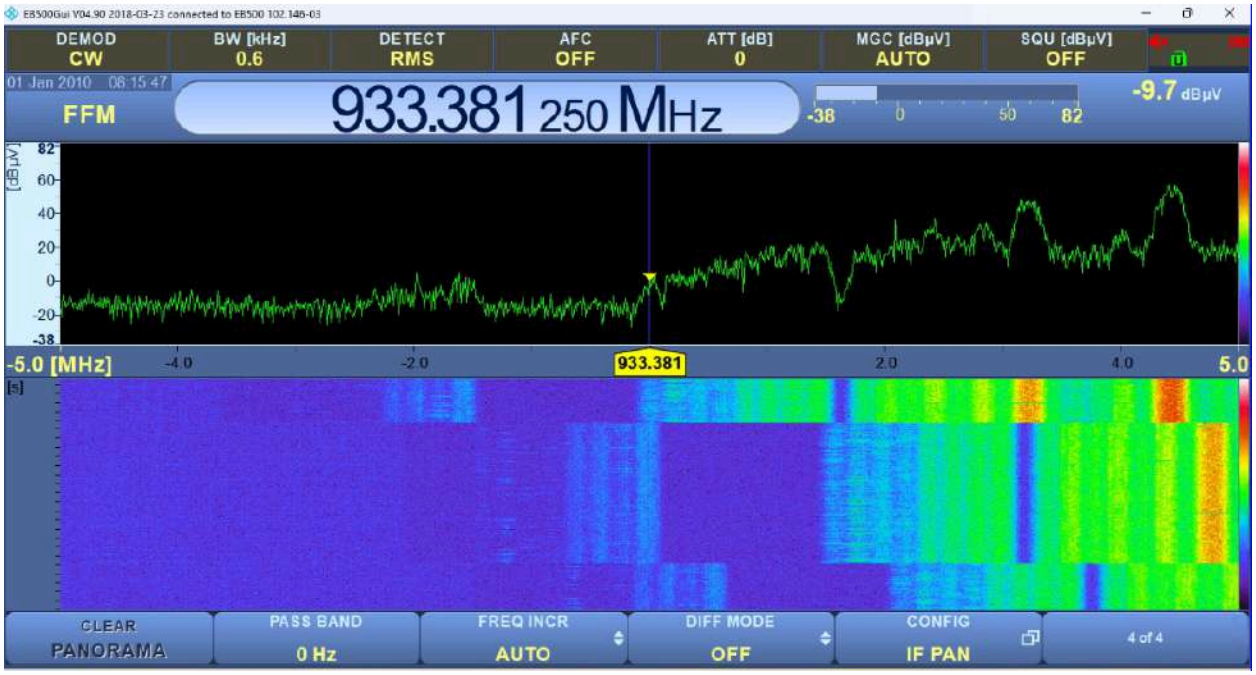
External signal



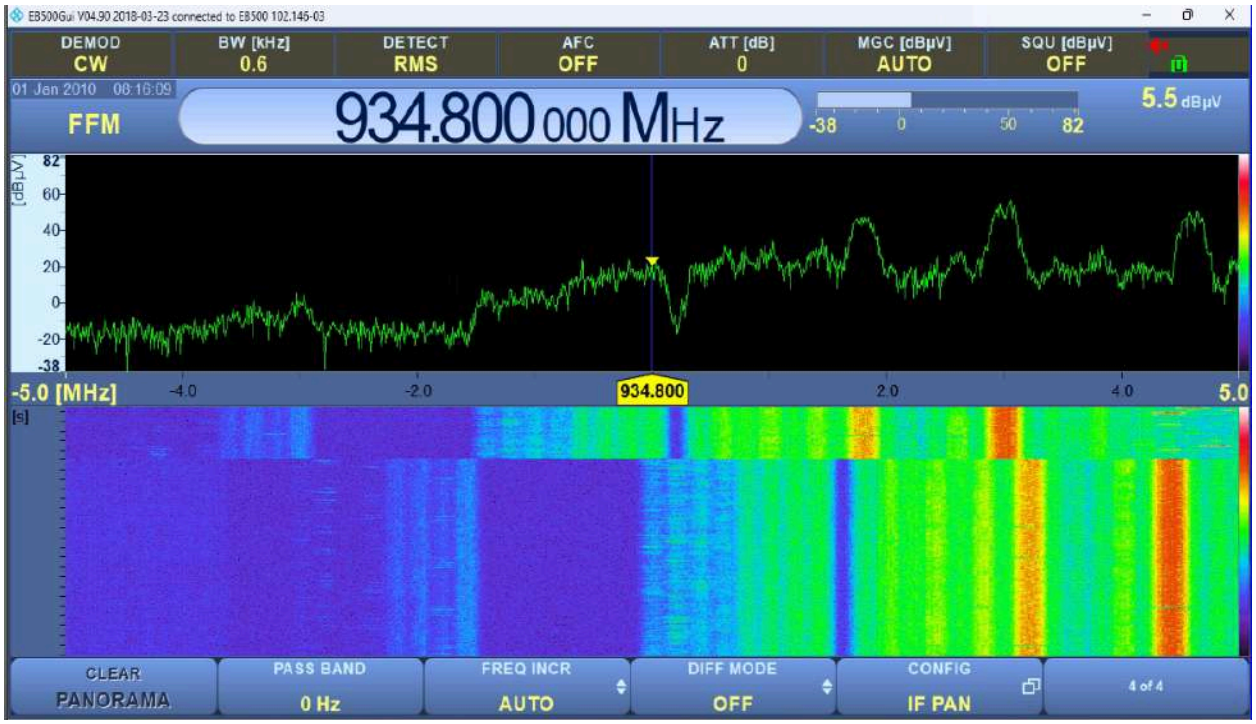
External signal



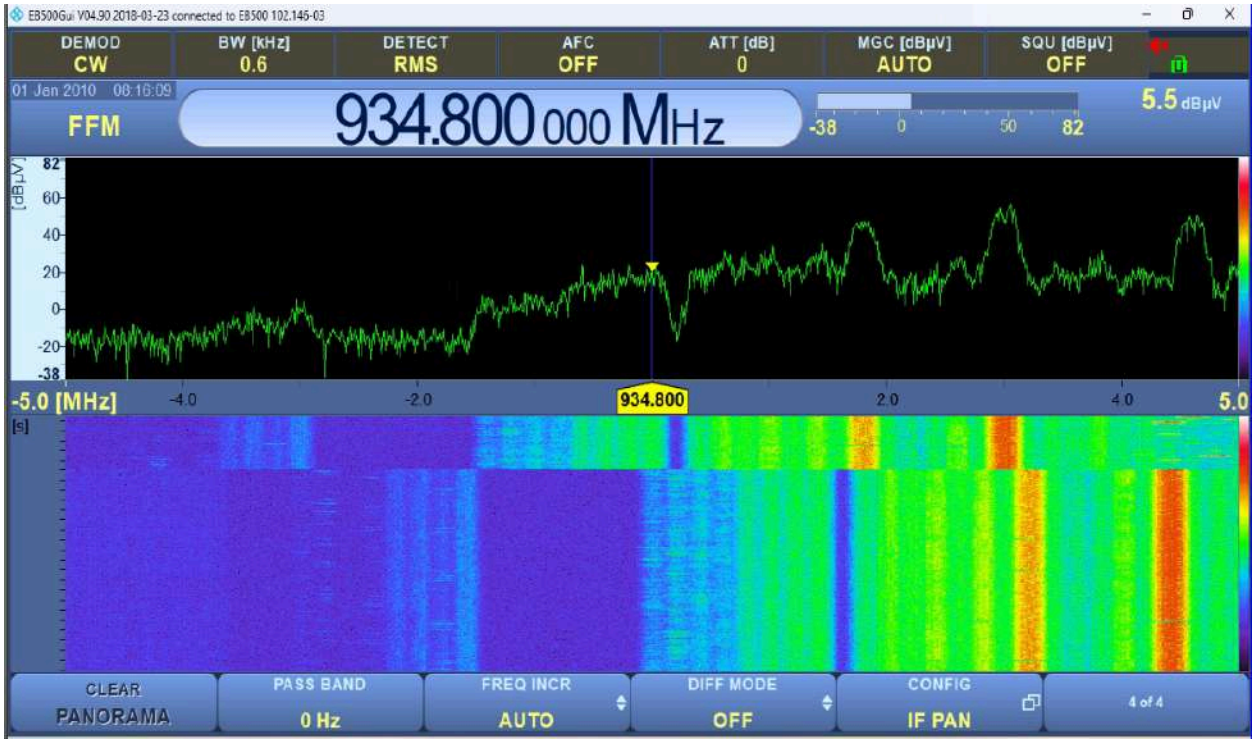
External signal



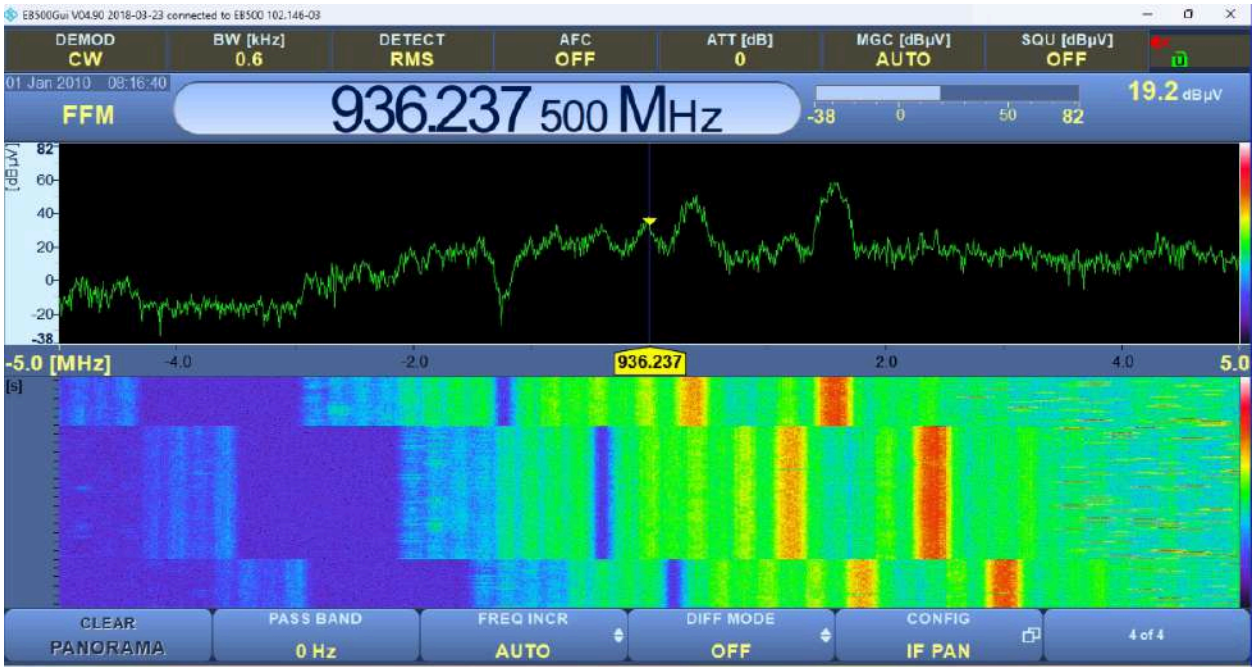
External signal



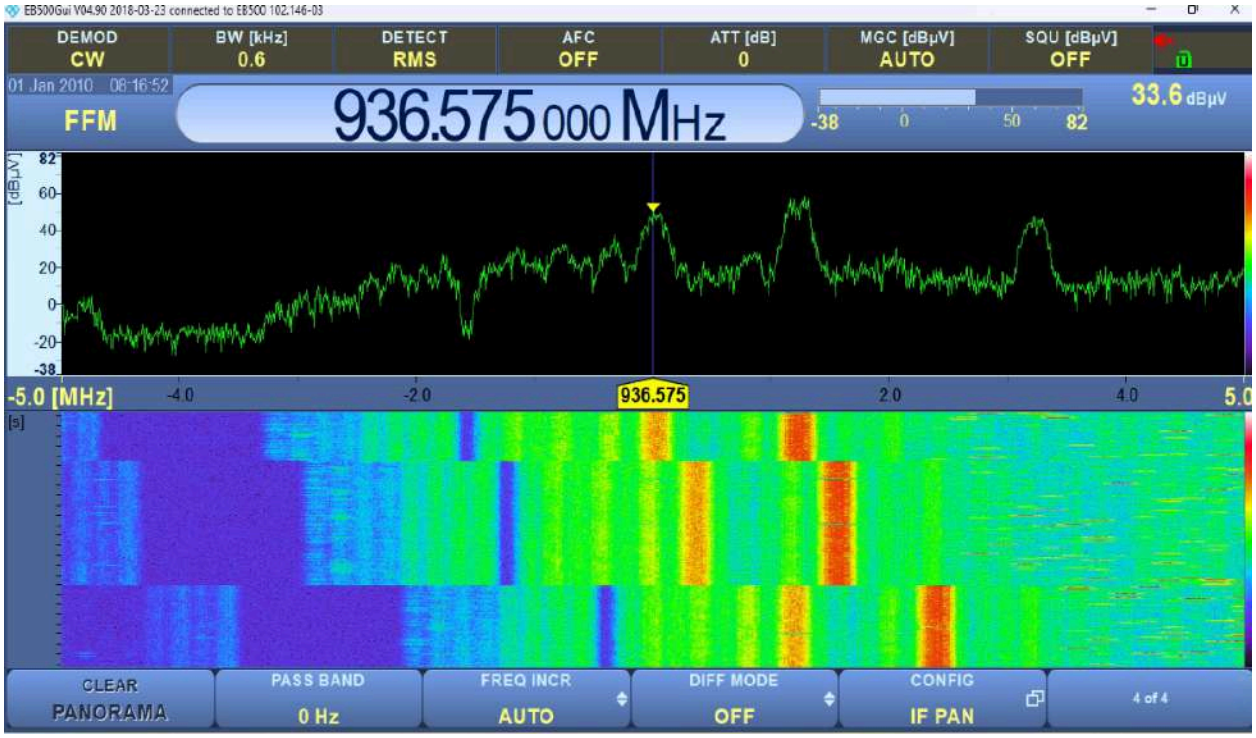
External signal



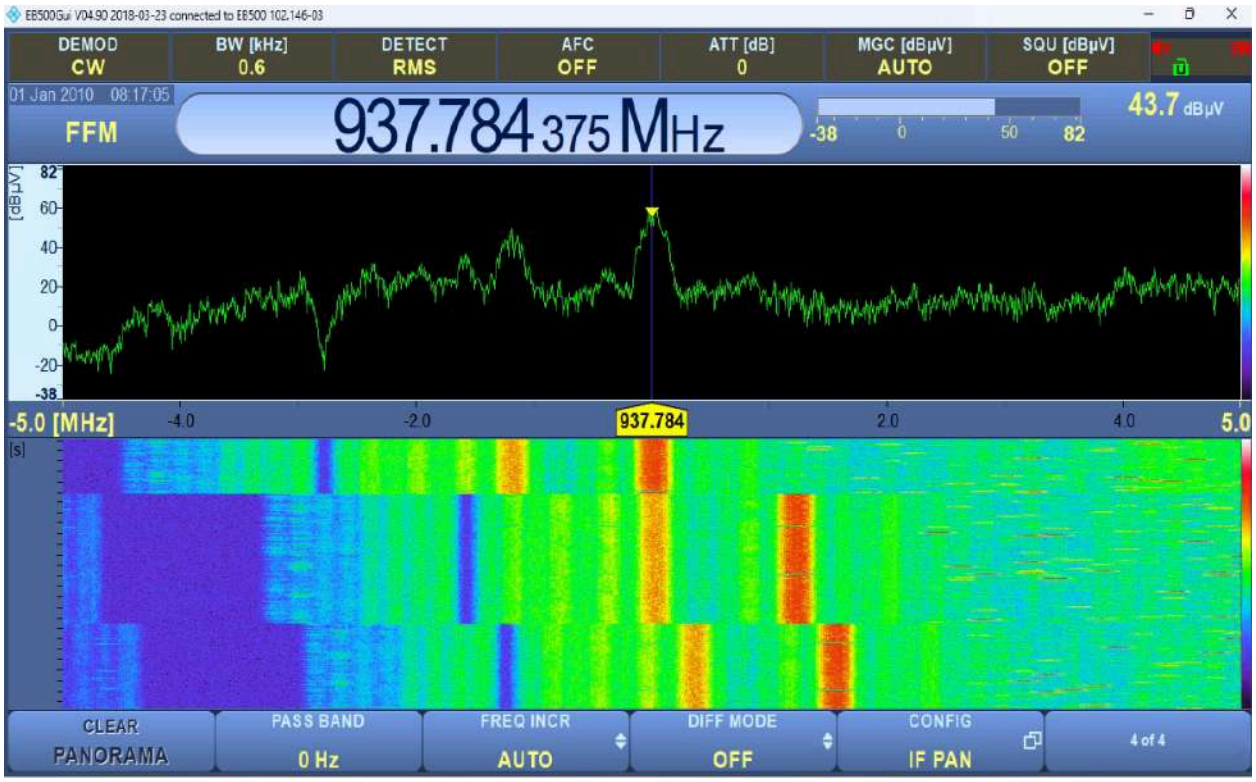
BTL



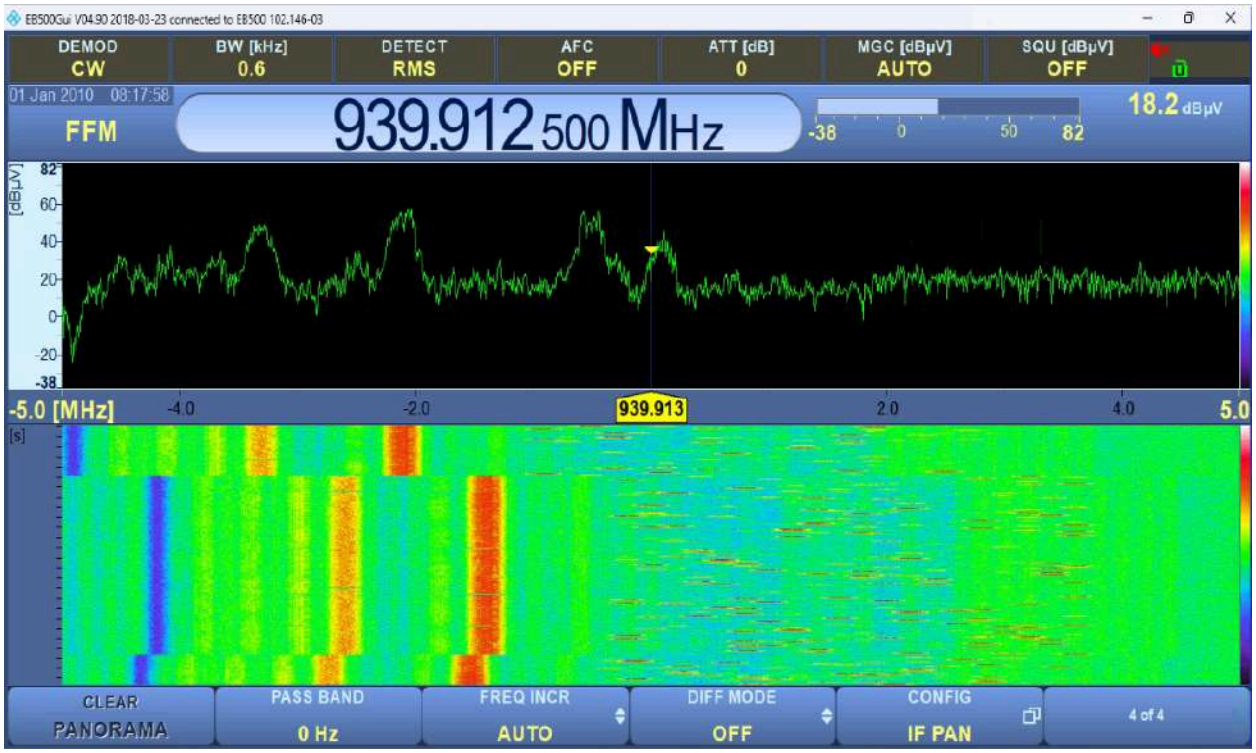
BTL


EB500Gui V04.90 2018-03-23 connected to EB500 102.146-03
DEMOD
CW
BW [kHz]
0.6
DETECT
RMS
AFC
OFF
ATT [dB]
0
MGC [dBµV]
AUTO
SQU [dBµV]
OFF
01 Jan 2010 08:16:52
FFM
936.575 000 MHz
-38
0
50
82
33.6 dBµV
[dBµV]
82
60
40
20
0
-20
-38
-5.0 [MHz]
-4.0
-2.0
936.575
2.0
4.0
5.0
[s]
CLEAR
PANORAMA
PASS BAND
0 Hz
FREQ INCR
AUTO
DIFF MODE
OFF
CONFIG
IF PAN
4 of 4

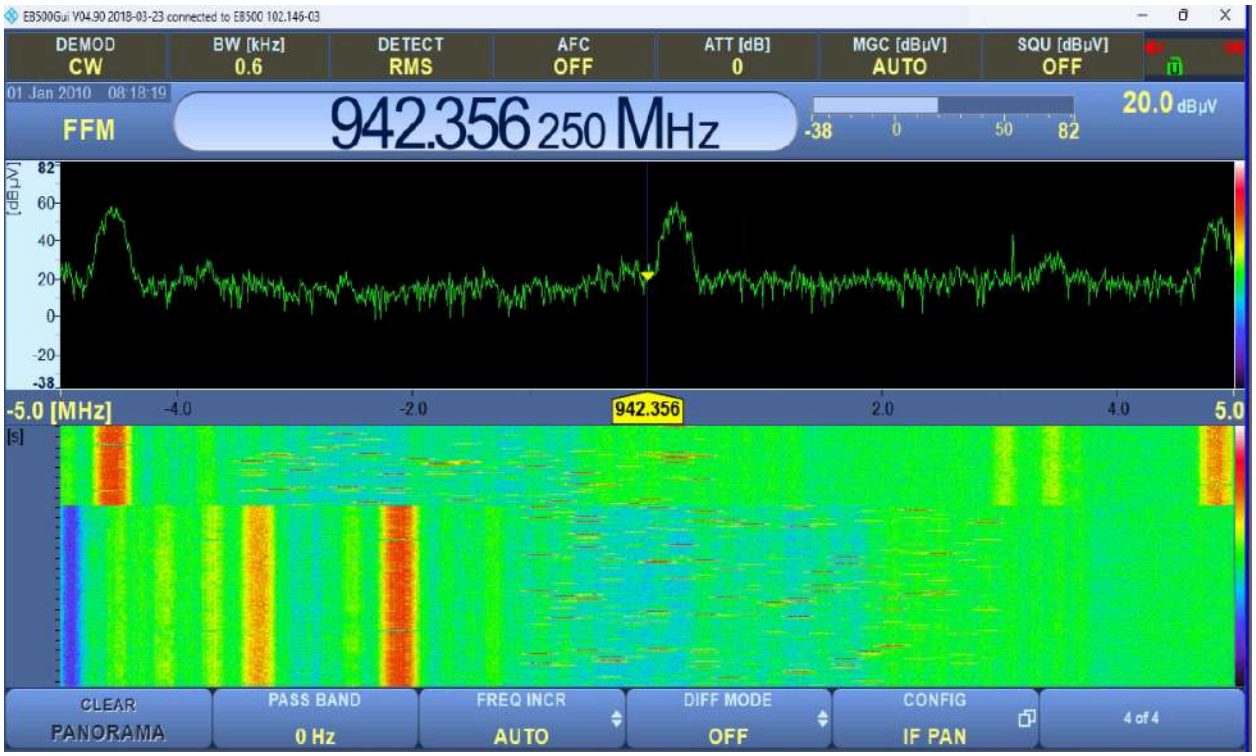
BTL


EB500Gui V04.90 2018-03-23 connected to EB500 102.146-03
DEMOD
CW
BW [kHz]
0.6
DETECT
RMS
AFC
OFF
ATT [dB]
0
MGC [dBµV]
AUTO
SQU [dBµV]
OFF
01 Jan 2010 08:17:05
FFM
937.784 375 MHz
-38
0
50
82
43.7 dBµV
[dBµV]
82
60
40
20
0
-20
-38
-5.0 [MHz]
-4.0
-2.0
937.784
2.0
4.0
5.0
[s]
CLEAR
PANORAMA
PASS BAND
0 Hz
FREQ INCR
AUTO
DIFF MODE
OFF
CONFIG
IF PAN
4 of 4

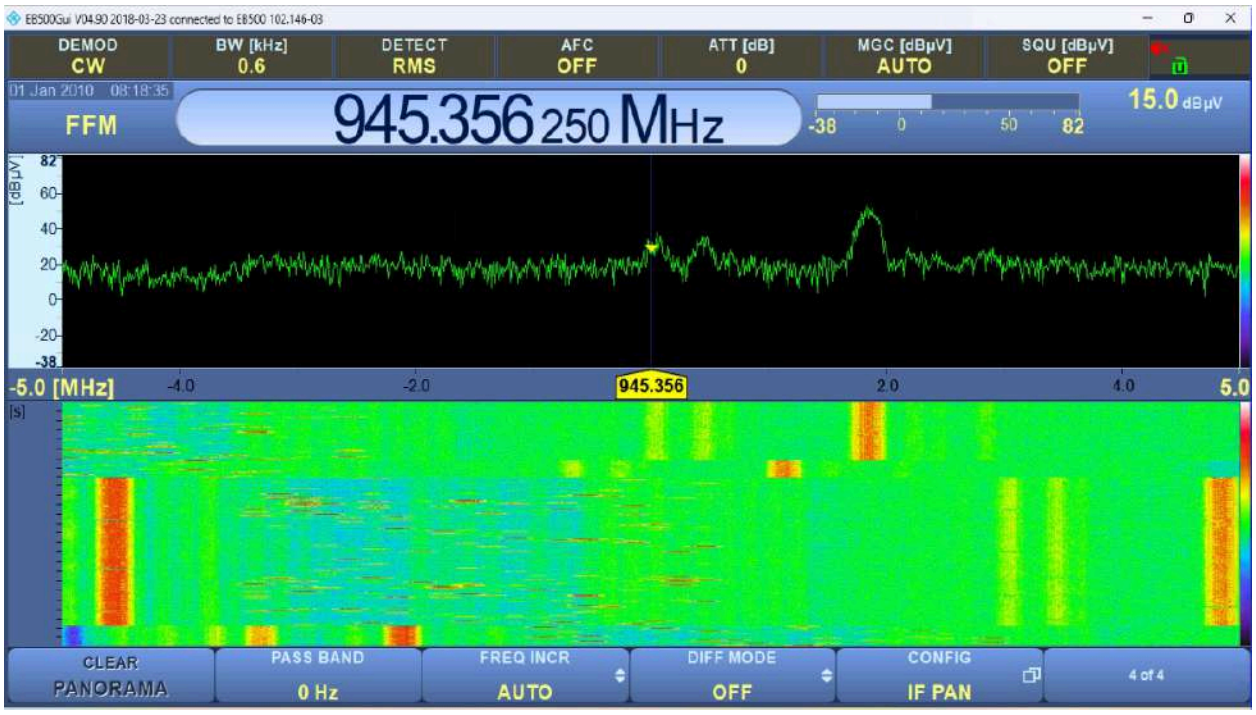
BTL


EB500Gui V04.90 2018-03-23 connected to EB500 102.146-03
DEMOD
CW
BW [kHz]
0.6
DETECT
RMS
AFC
OFF
ATT [dB]
0
MGC [dBµV]
AUTO
SQU [dBµV]
OFF
01 Jan 2010 08:17:58
FFM
939.912 500 MHz
-38
0
50
82
18.2 dBµV
[dBµV]
82
60
40
20
0
-20
-38
-5.0 [MHz]
-4.0
-2.0
939.913
2.0
4.0
5.0
[s]
CLEAR
PANORAMA
PASS BAND
0 Hz
FREQ INCR
AUTO
DIFF MODE
OFF
CONFIG
IF PAN
4 of 4

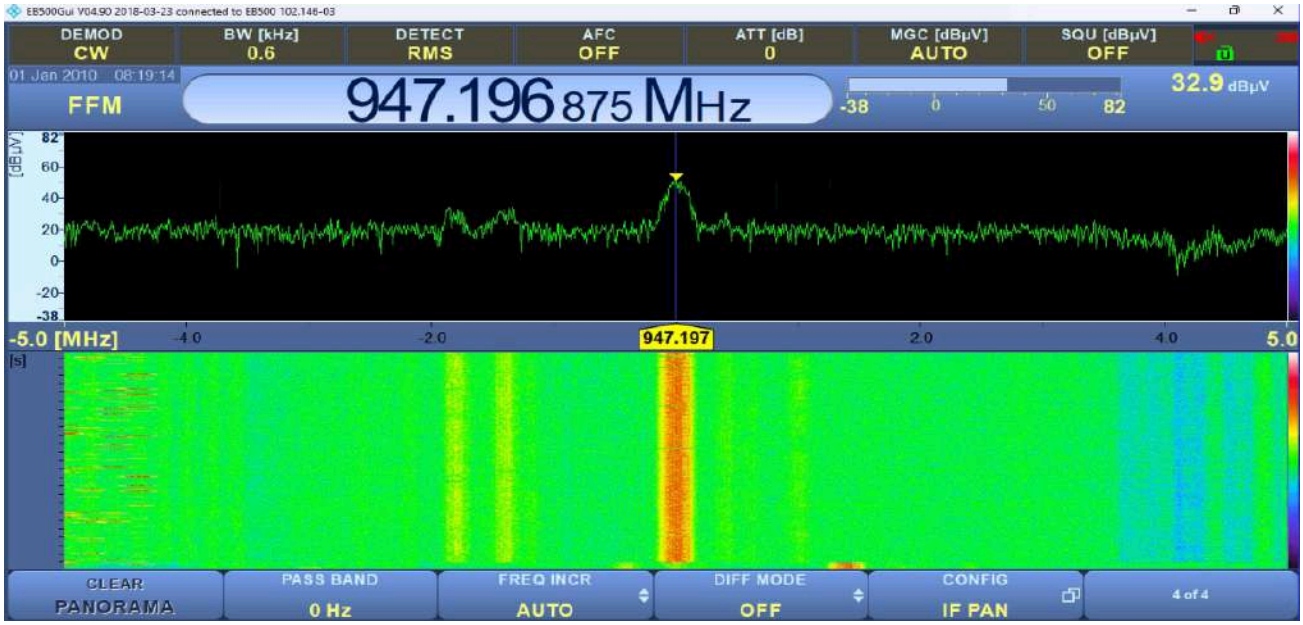
BTL


EB500Gui V04.90 2018-03-23 connected to EB500 102.146-03
DEMOD
CW
BW [kHz]
0.6
DETECT
RMS
AFC
OFF
ATT [dB]
0
MGC [dBµV]
AUTO
SQU [dBµV]
OFF
01 Jan 2010 08:18:19
FFM
942.356 250 MHz
-38
0
50
82
20.0 dBµV
[dBµV]
82
60
40
20
0
-20
-38
-5.0 [MHz]
-4.0
-2.0
942.356
2.0
4.0
5.0
[s]
CLEAR
PANORAMA
PASS BAND
0 Hz
FREQ INCR
AUTO
DIFF MODE
OFF
CONFIG
IF PAN
4 of 4

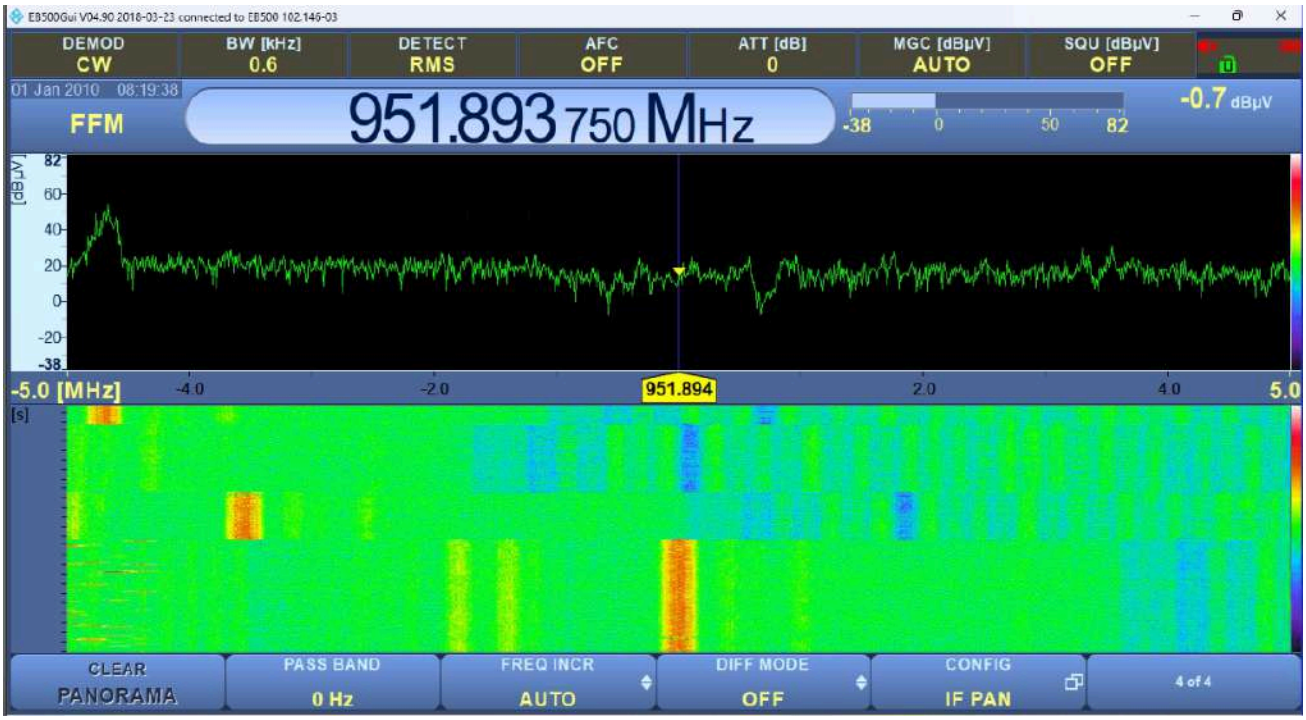
TICPL


EB500Gui V04.90 2018-03-23 connected to EB500 102.146-03
DEMOD
CW
BW [kHz]
0.6
DETECT
RMS
AFC
OFF
ATT [dB]
0
MGC [dBµV]
AUTO
SQU [dBµV]
OFF
01 Jan 2010 08:18:35
FFM
945.356 250 MHz
15.0 dBµV
-5.0 [MHz]
945.356
5.0
CLEAR
PANORAMA
PASS BAND
0 Hz
FREQ INCR
AUTO
DIFF MODE
OFF
CONFIG
IF PAN
4 of 4

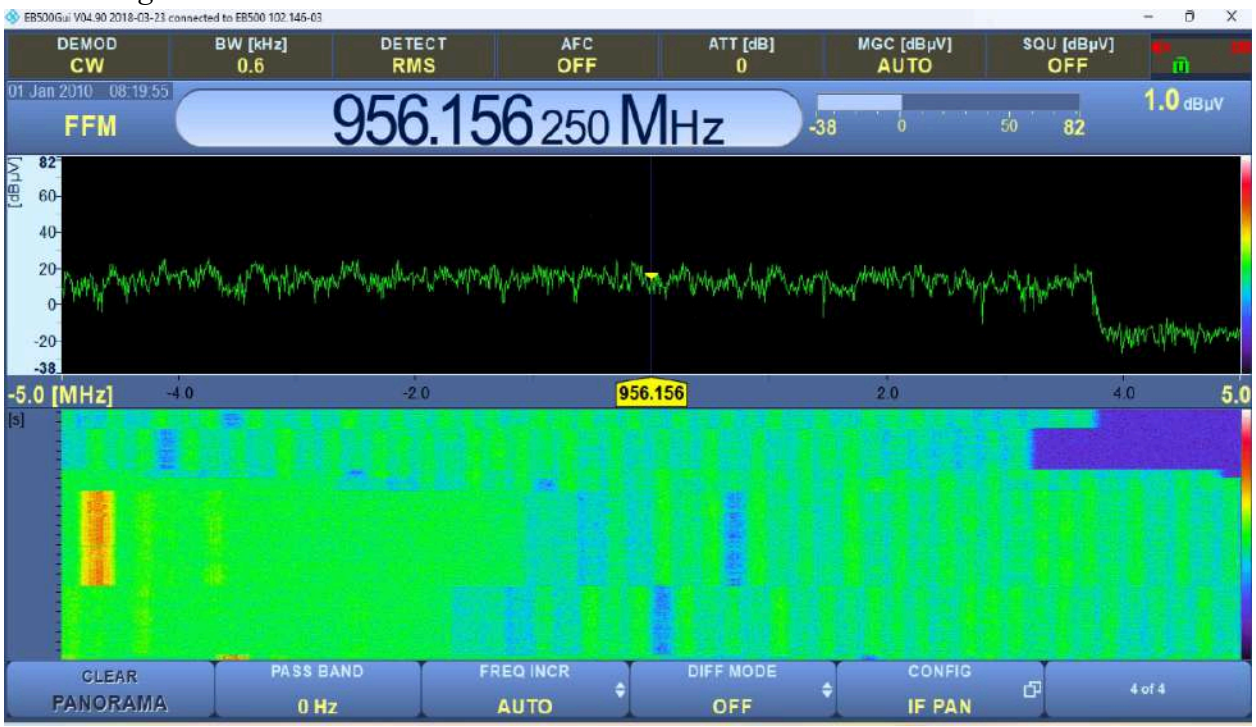
TICPL


EB500Gui V04.90 2018-03-23 connected to EB500 102.146-03
DEMOD
CW
BW [kHz]
0.6
DETECT
RMS
AFC
OFF
ATT [dB]
0
MGC [dBµV]
AUTO
SQU [dBµV]
OFF
01 Jan 2010 08:19:14
FFM
947.196 875 MHz
32.9 dBµV
-5.0 [MHz]
947.197
5.0
CLEAR
PANORAMA
PASS BAND
0 Hz
FREQ INCR
AUTO
DIFF MODE
OFF
CONFIG
IF PAN
4 of 4

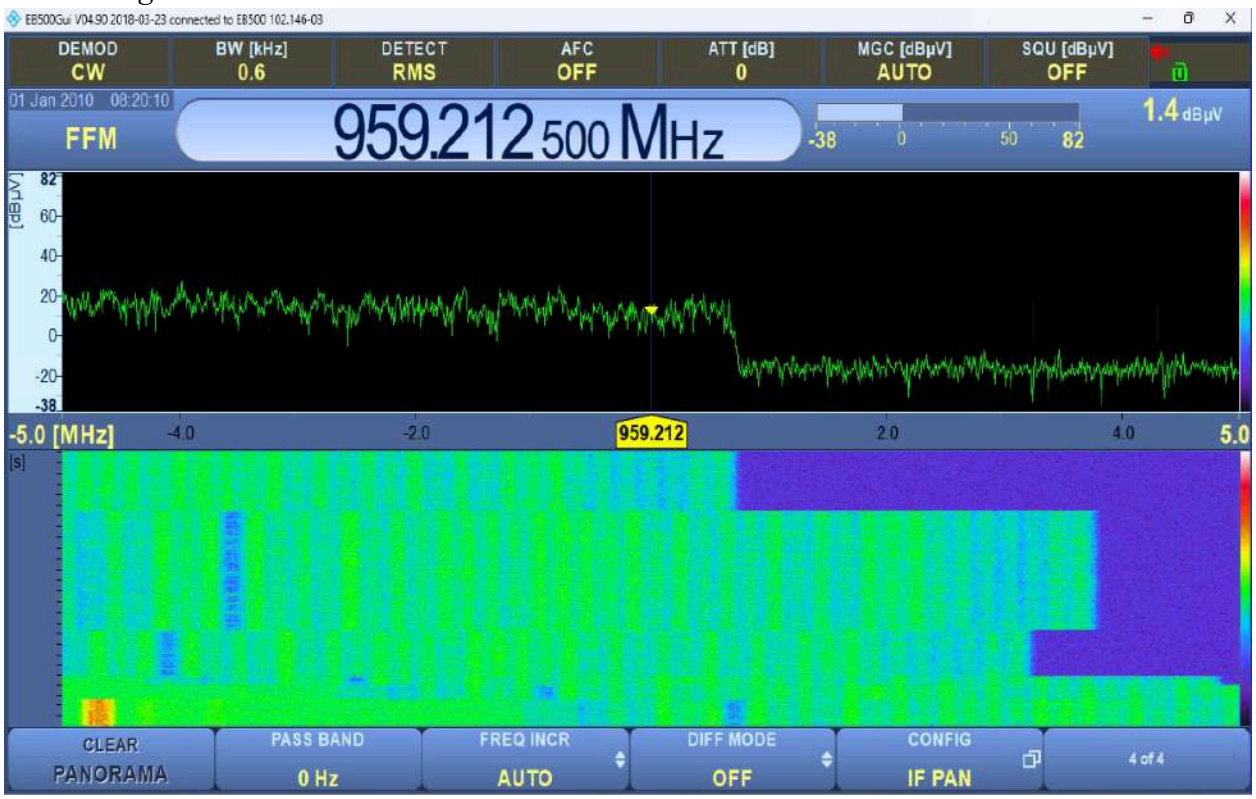
TICPL



External signal



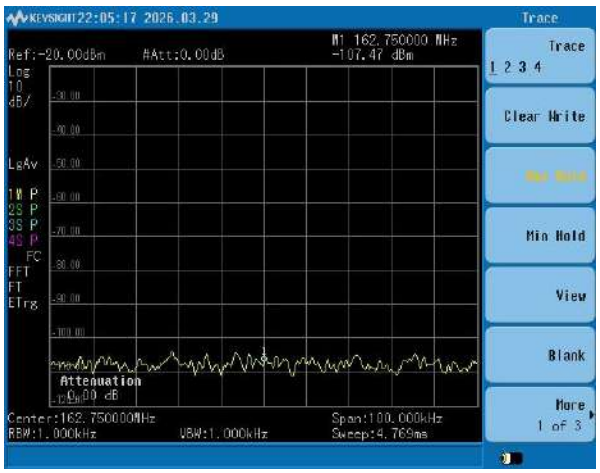
External signal



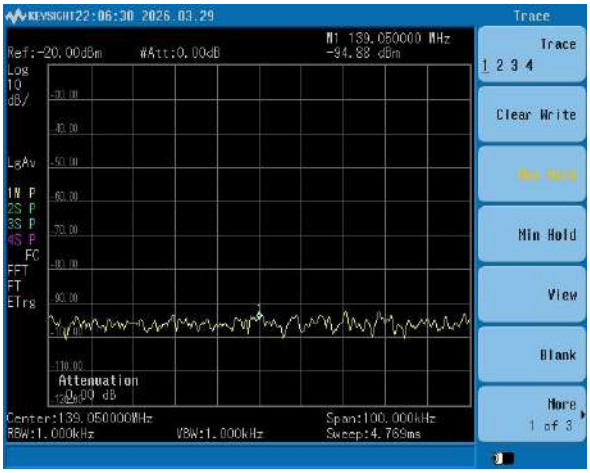
Annexures 6

The figures showing the monitoring records from the Spectrum Analyzer for Spectrum apparatus cancelled licence all with particular spectrum frequency and area of operation.

1. **Zhemgang:**

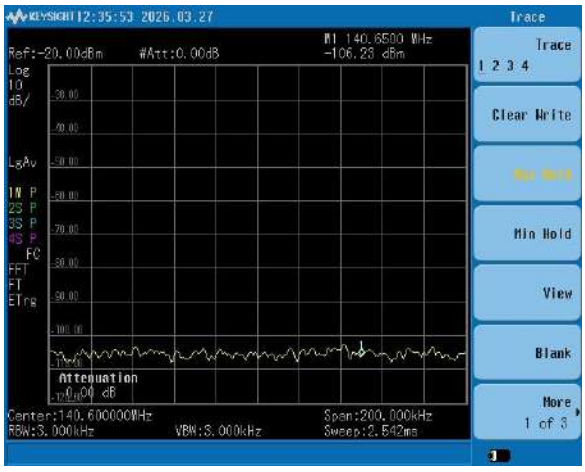


Regional Mithun Breeding Farm (162.750 MHz)

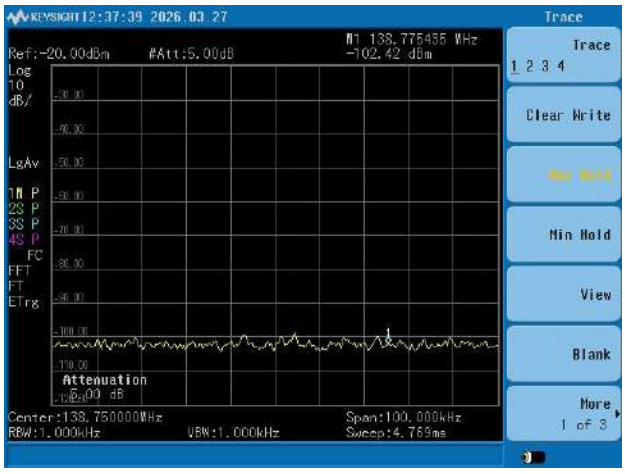


Zhemgang Central School (139.05 MHz)

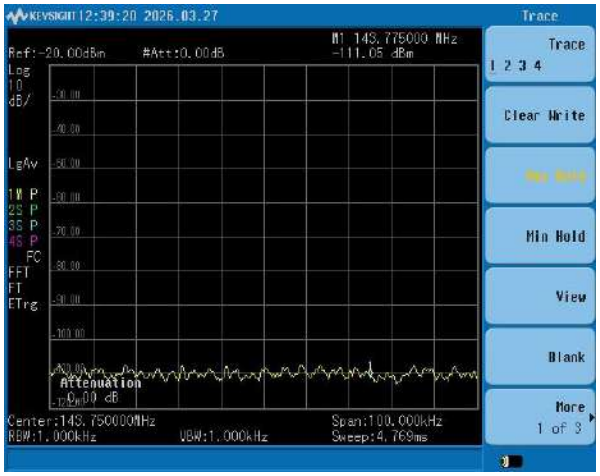
2. **Pema Gatshel:**



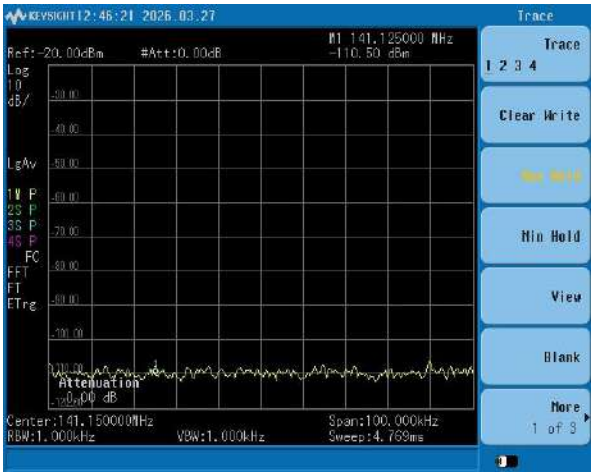
Dzongkhag Administration (140.65 MHz)



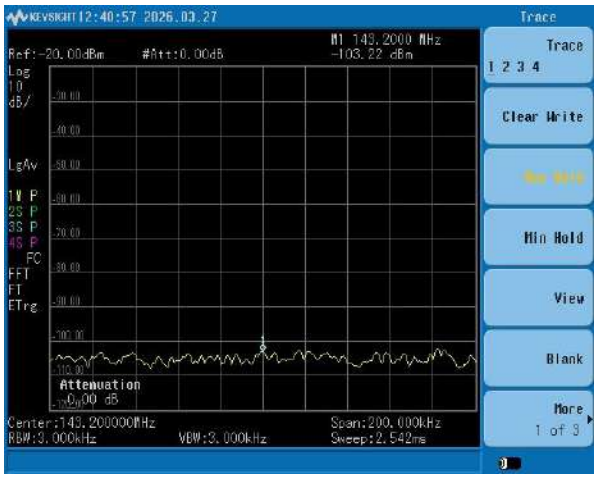
Divisional Forest Office (138.775 MHz)



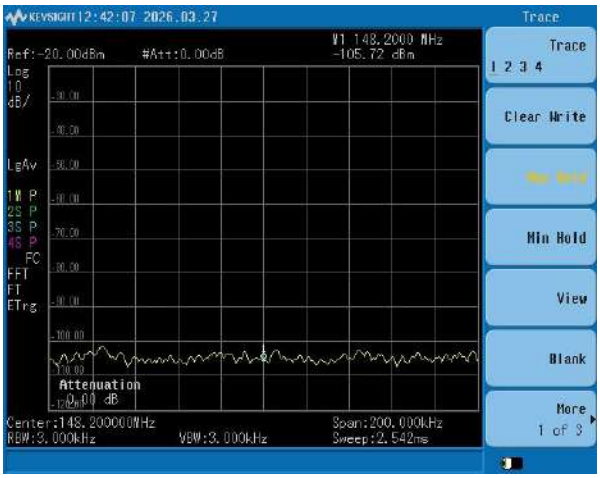
Divisional Forest Office (143.775 MHz)



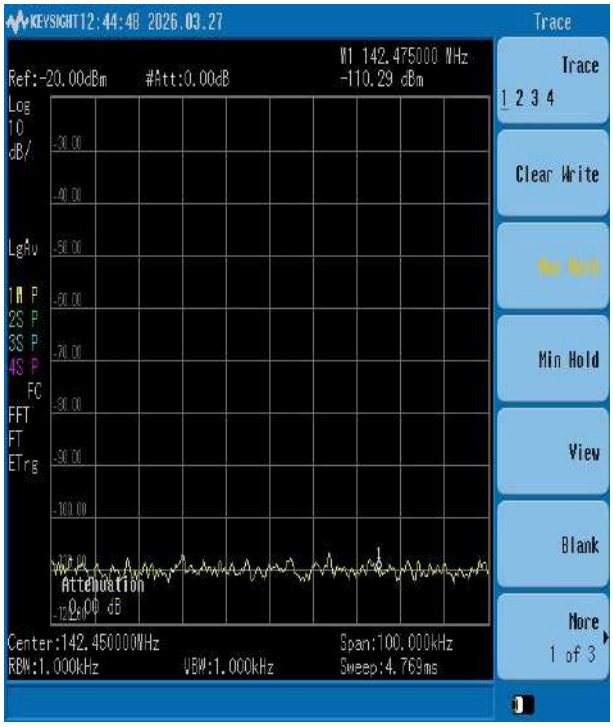
Chongshing Gewog Administration (141.125 MHz)



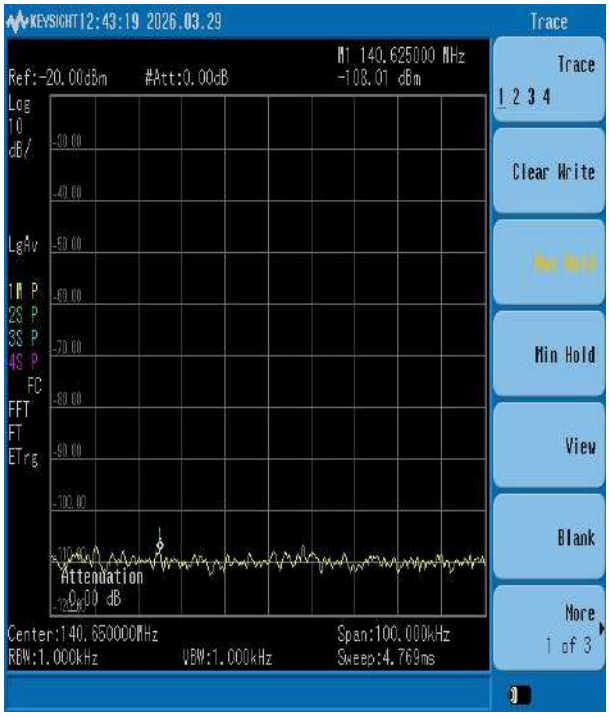
Dzongkhag Administration(143.2 MHz)



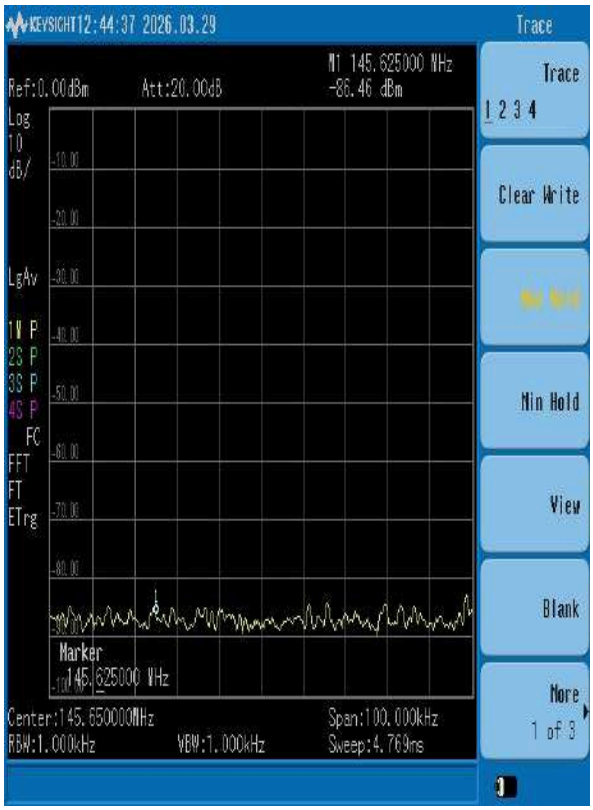
Dzongkhag Administration(148.2 MHz)



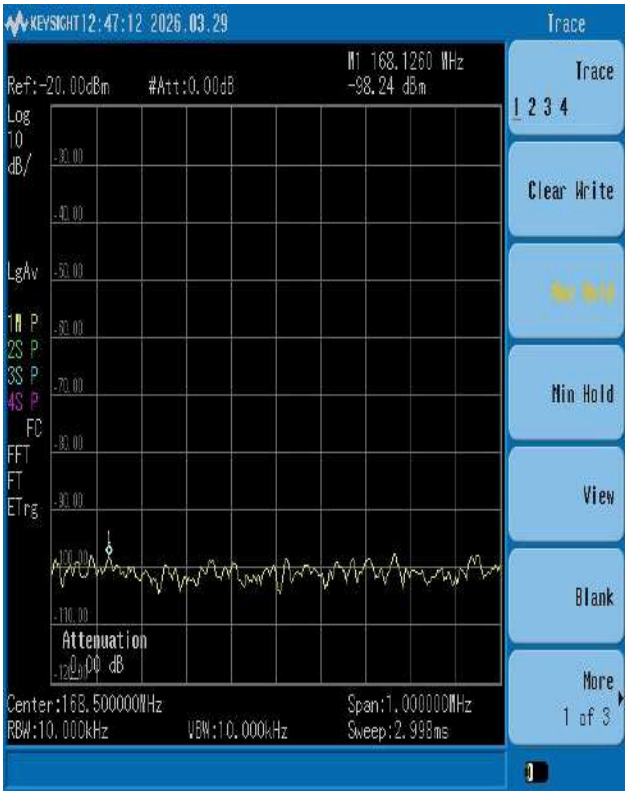
Nangkhor Central School(142.475 MHz)



Divisional Forest Office(140.625 MHz)

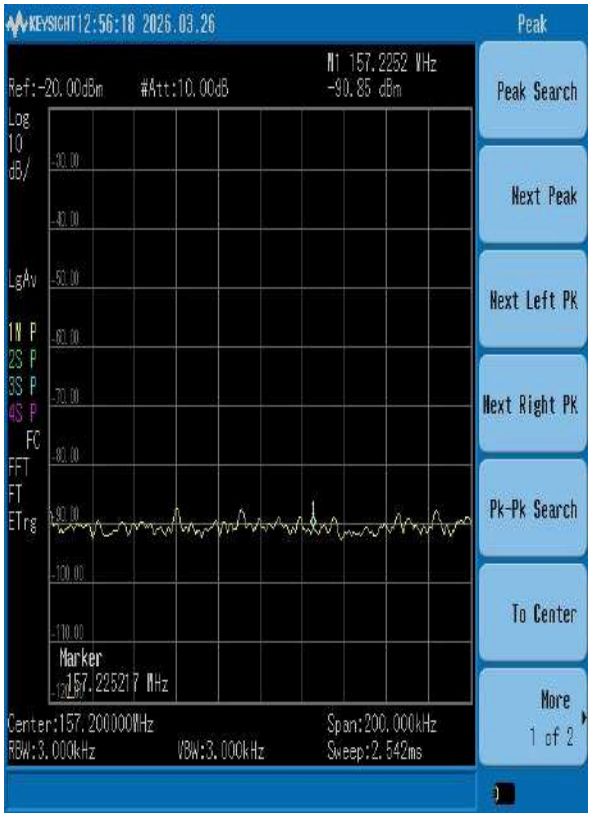


Divisional Forest Office(145.625 MHz)

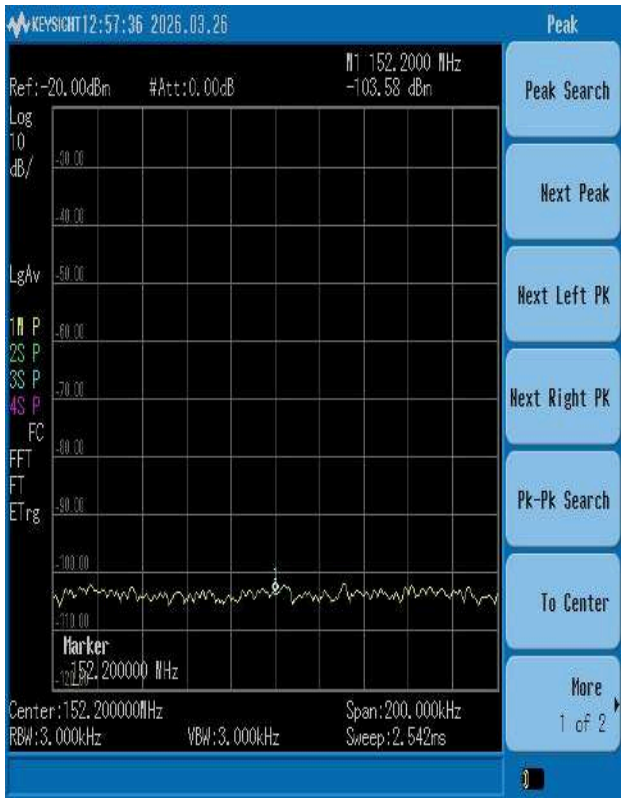


Dungsam Cement Corp. Ltd(168.125)

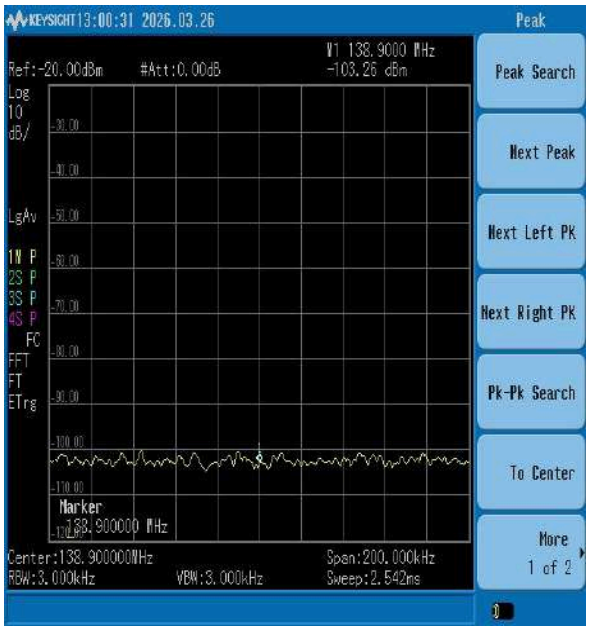
3. Samdrup Jongkhar:



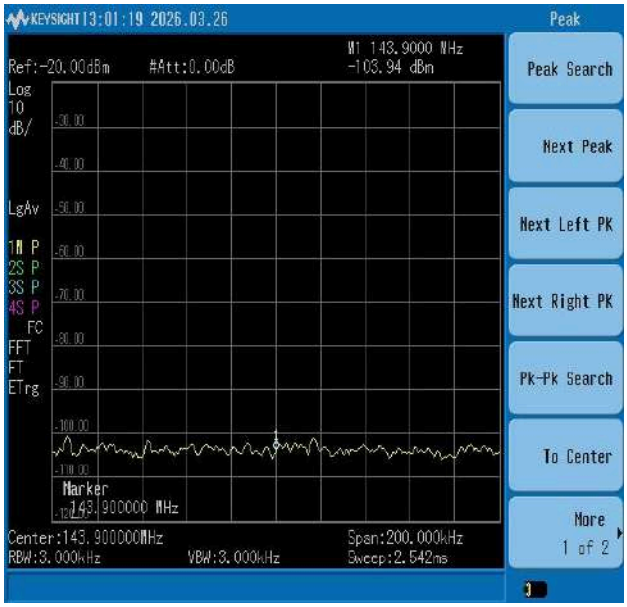
Chimmi RD Construction Pvt Ltd(157.225 MHz)



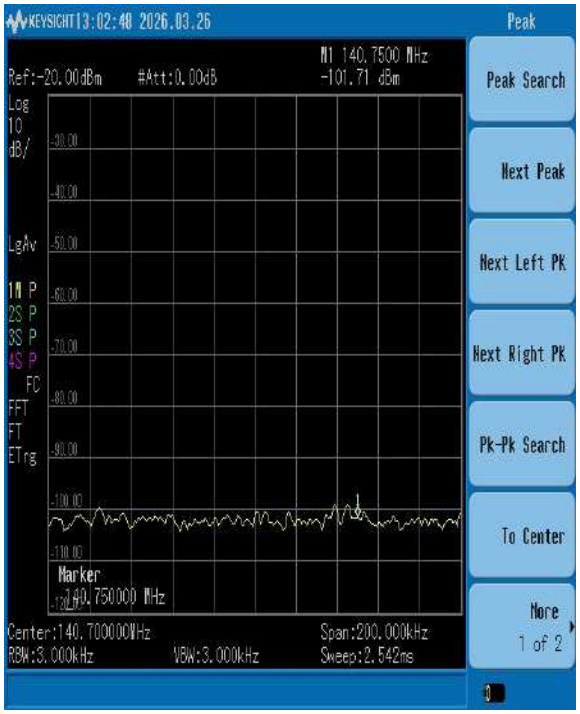
Chimmi RD Construction Pvt Ltd(152.2 MHz)



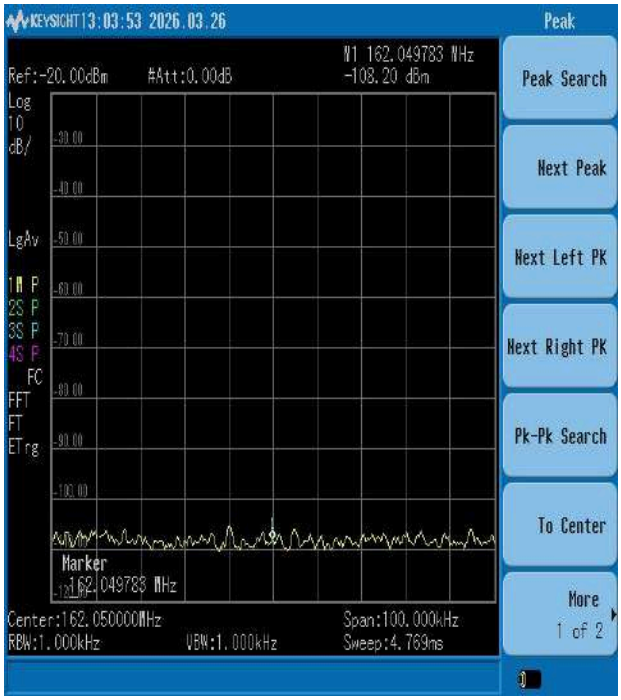
Samdrup Jongkhar Thromde(138.900 MHz)



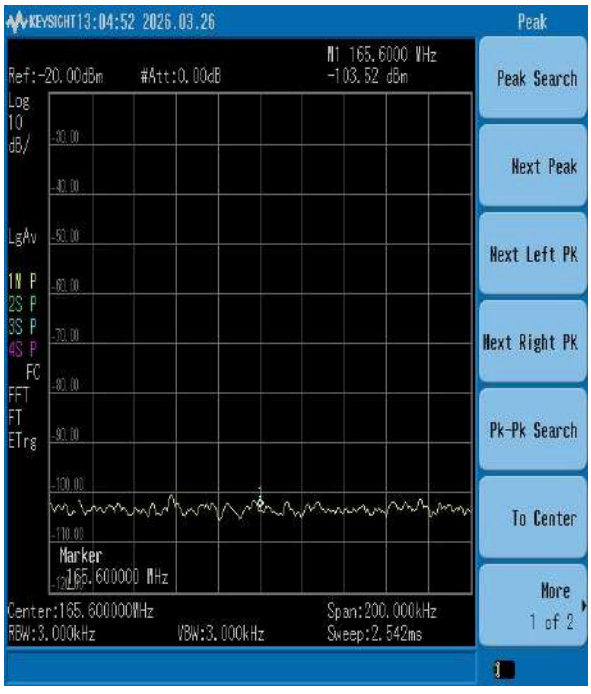
Samdrup Jongkhar Thromde(1143.900 MHz)



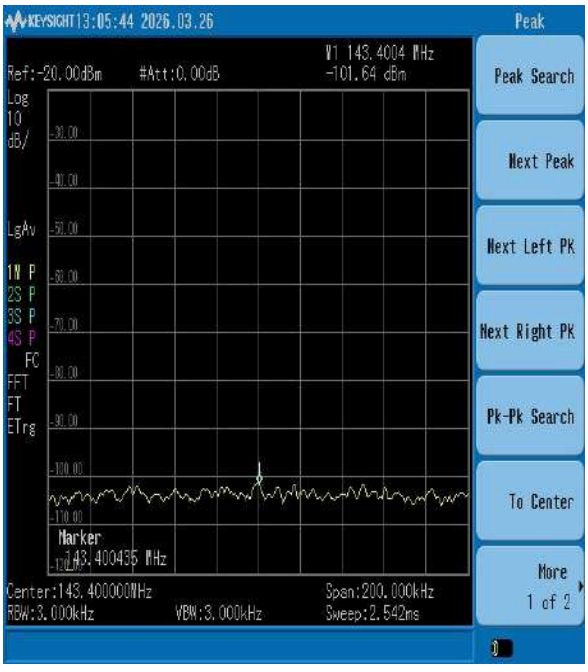
Department of Roads(140.75 MHz)



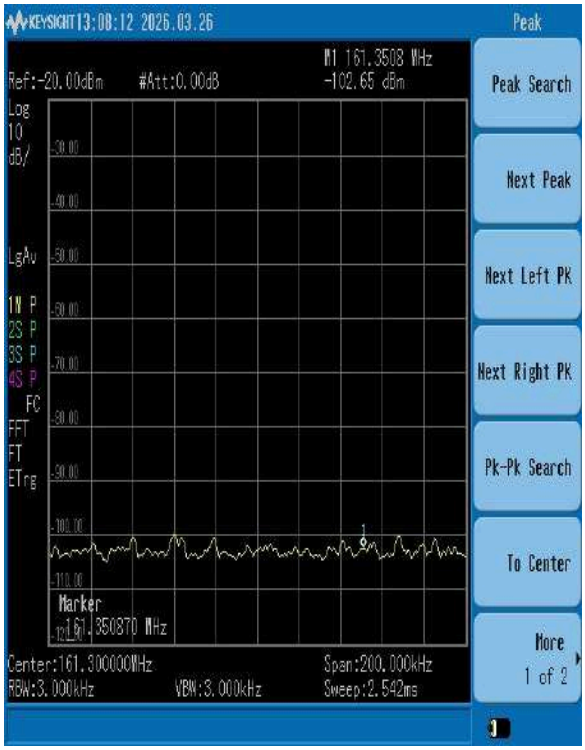
Jomo Tsangkha Dungkhag Administration (162.05 MHz)



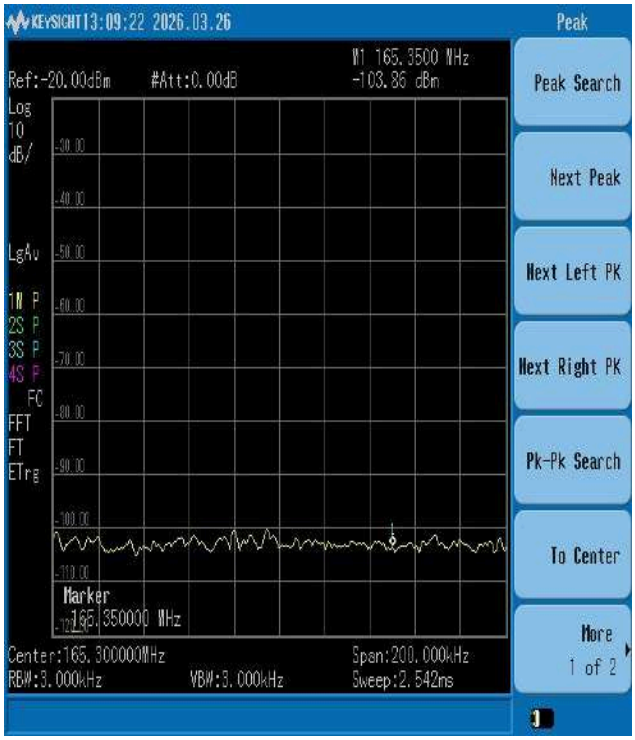
Serthi Gewog Administration(165.6 MHz)



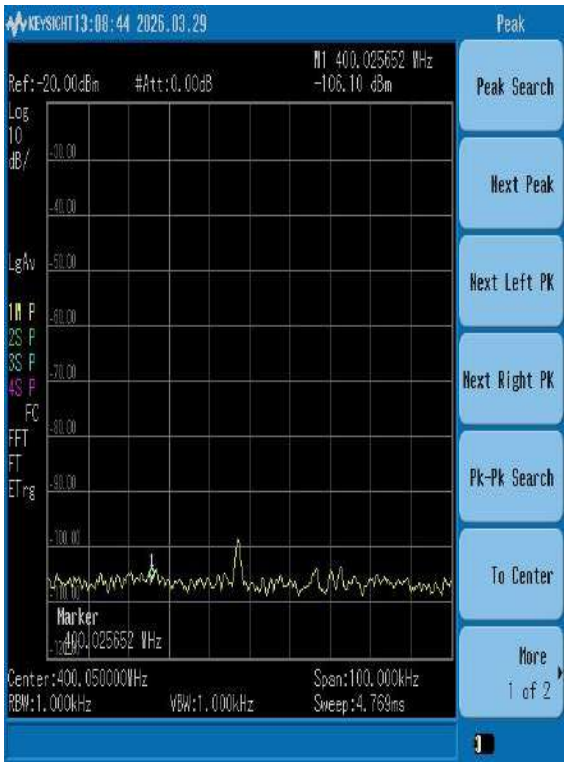
S.D Bhutan Ferro Silicon Pvt Limited (143.400, 143.425 MHz)



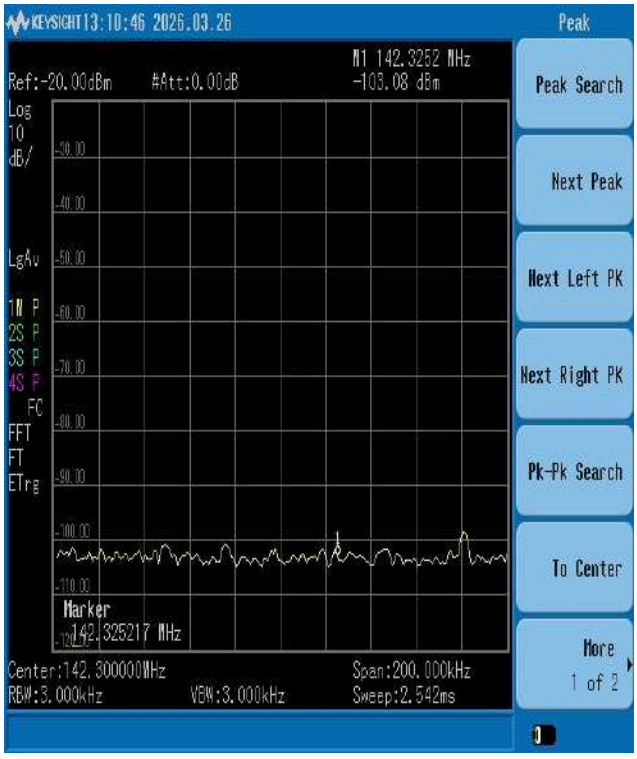
Department of Forest and Park Services (161.350 MHz)



Department of Forest and Park Services (165.350 MHz)

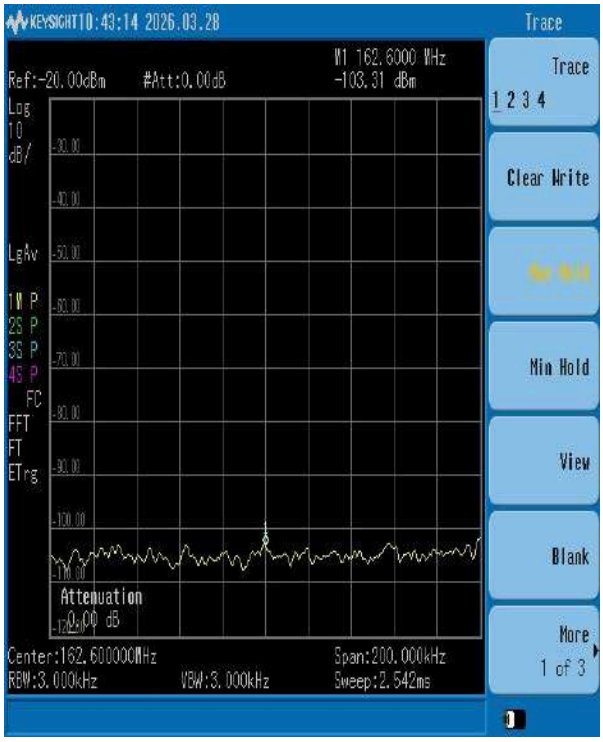


Yangchenma Private Limited(400.025 MHz)

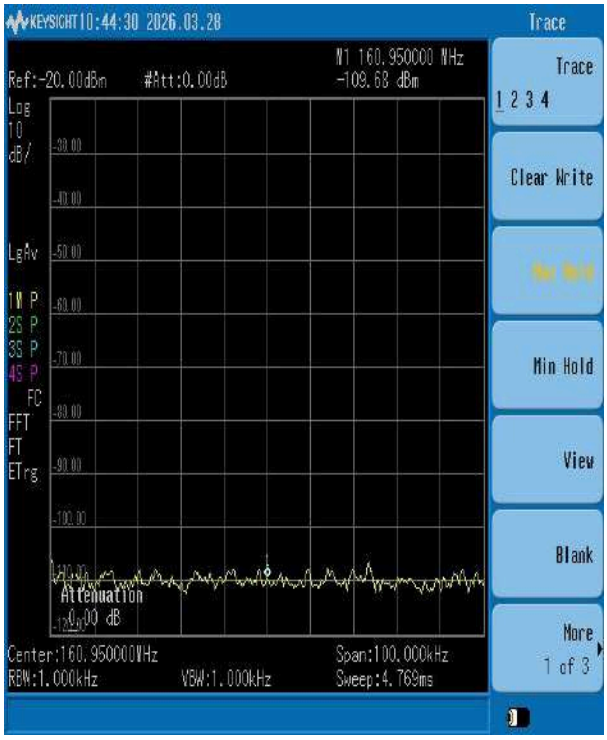


Bhutan Livestock Development Corporation Limited(142.325 MHz)

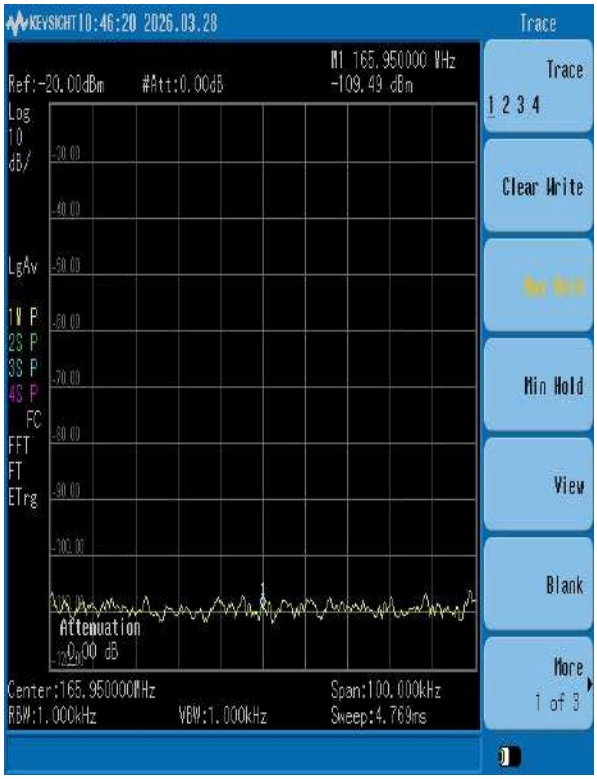
4. Trashigang:



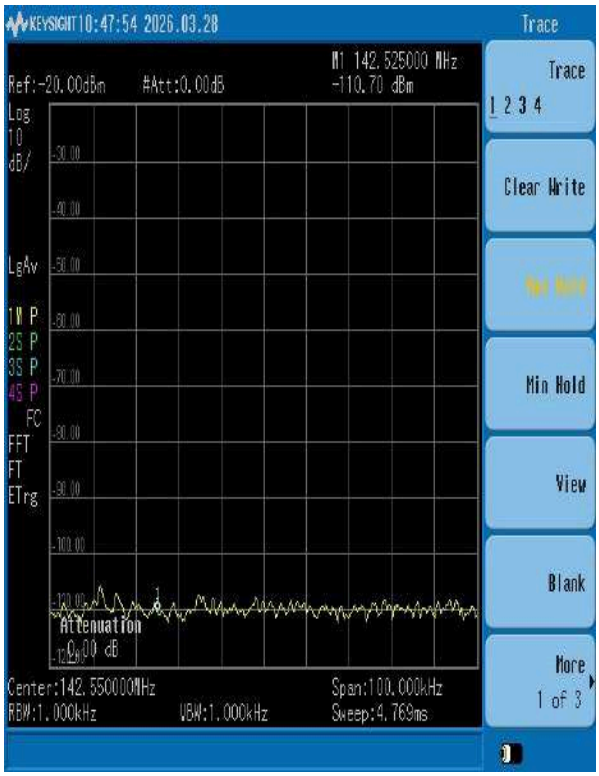
Technical Training Institute(162.6 MHz)



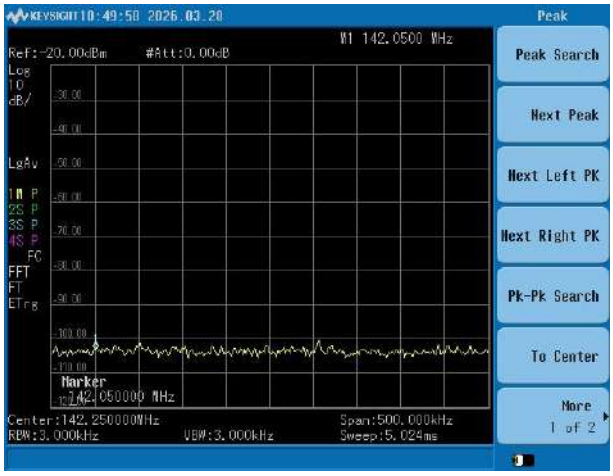
Trashigang Forest Division(160.95 MHz)



Trashigang Forest Division(165.95 MHz)

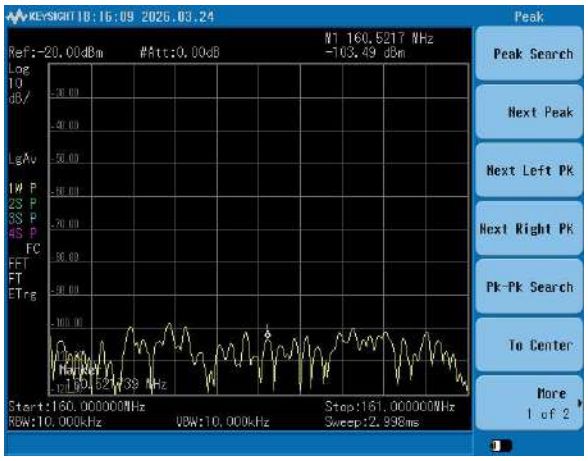


Yonphula Centenary College(142.525 MHz)

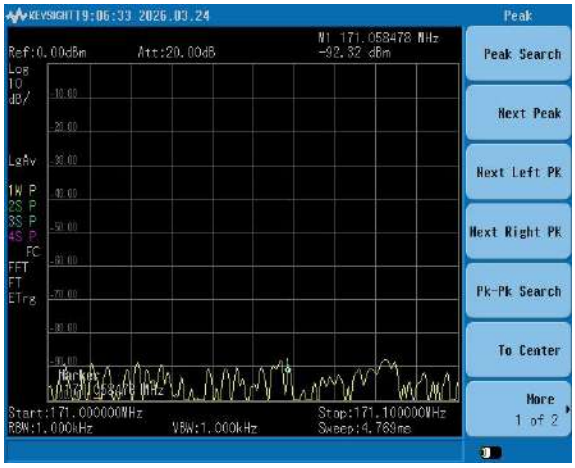


Tandin Wangchuk(142.05 MHz)

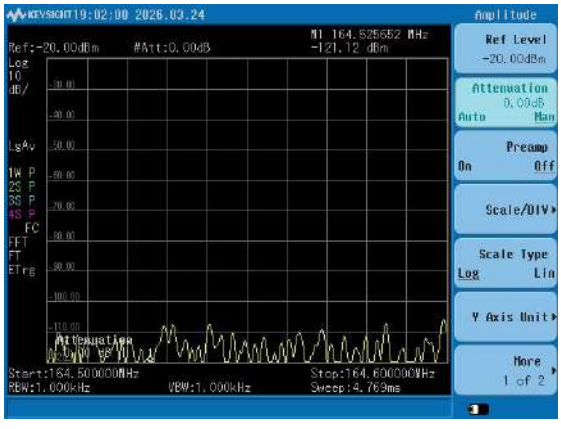
5. Phuentsholing:



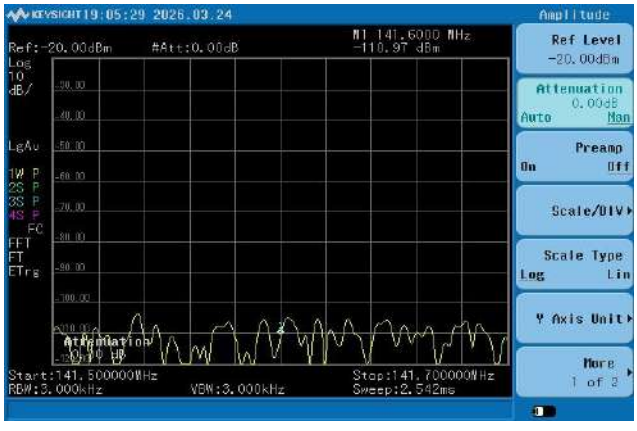
Lower Kay Dee Sawmill(160.525 MHz)



Druk Mining Pvt Ltd(171.05 MHz)



Food Corporation of Bhutan Ltd(164.525 MHz)



Samdrupcholing Metals Private Limited(141.600 MHz