

3 DTS CHANNELS

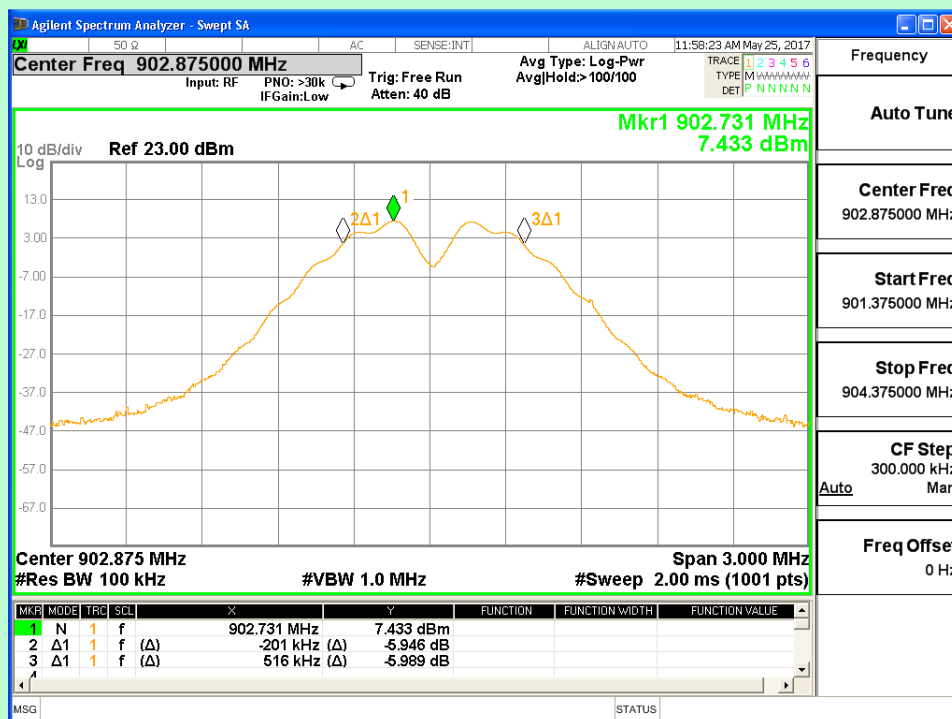
3.1 6dB BANDWIDTH

EUT Nomenclature	Wireless Sync Module	Test Request No.	EMC0210-1
Model No.	W-SYNC	Serial No.	SM-RF01
Test Start Date	25 - May - 2017	Temperature (°C)	24.6°C
Test End Date	25 - May - 2017	Humidity RH (%)	53.9%RH
Tested By	Sasikala	Pressure (mbar)	NR
Input Voltage / Freq.	24Vdc		
Operating Mode	Refer Page 5 for Operating Mode Table		
Test configuration	Refer Page 5 for Test Configuration Table		
Deviation from Std.	NA		
Applicable standard	FCC Part 15.247:2010		
Test Method	KDB 558074		
Comment	NA		
TEST DETAILS			
Method	Radiated ☐		Conducted ☒
TEST PARAMETERS			
Antenna Height	NA	Turntable Rotation	NA
Equipment Class	NA	Measurement Distance	NA

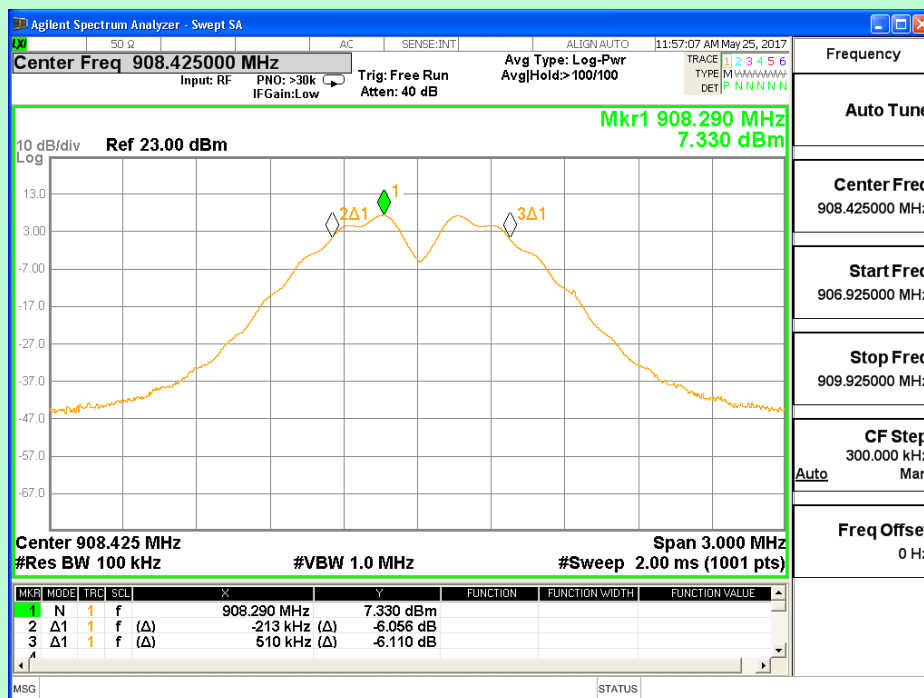
TEST EQUIPMENT

Y/N	Equipment	Make	Model	Serial Number	Cal Due Date
Y	Spectrum Analyzer	Agilent	N9010A	MY48031005	22-Feb-2018
Y	RF Cable	Huber- Suhner	SF104/2X11PC3542/500	NA	NA

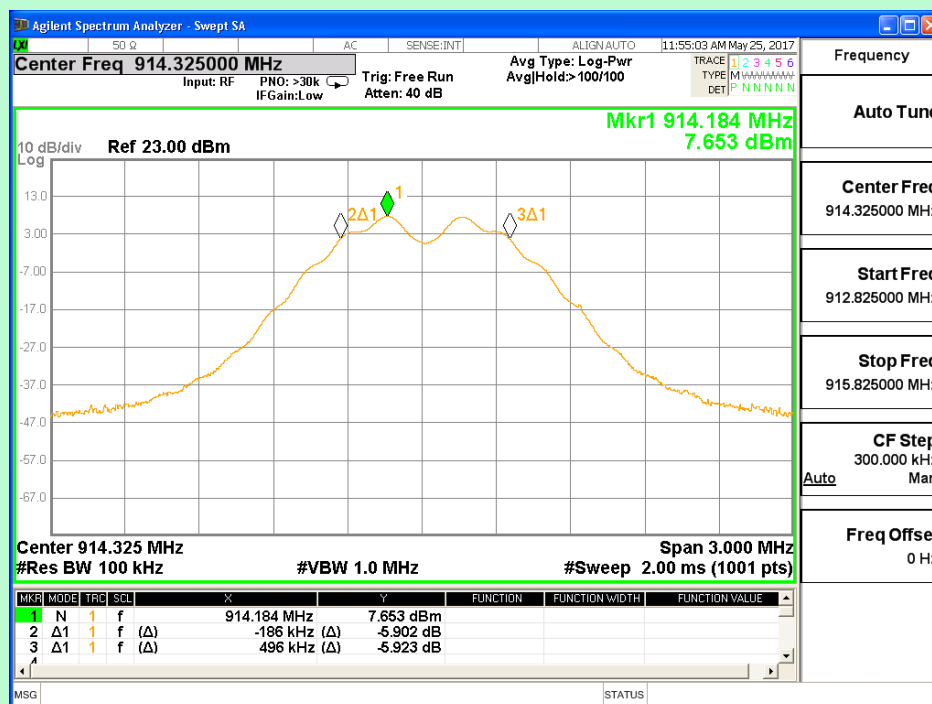
TEST GRAPHS



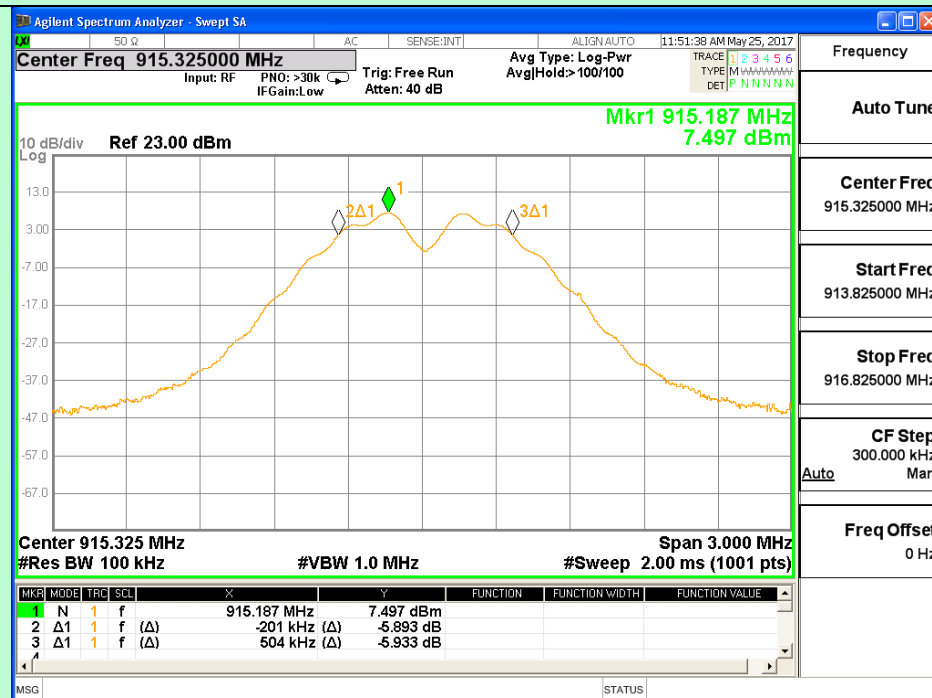
Channel 1 (902.875MHz)



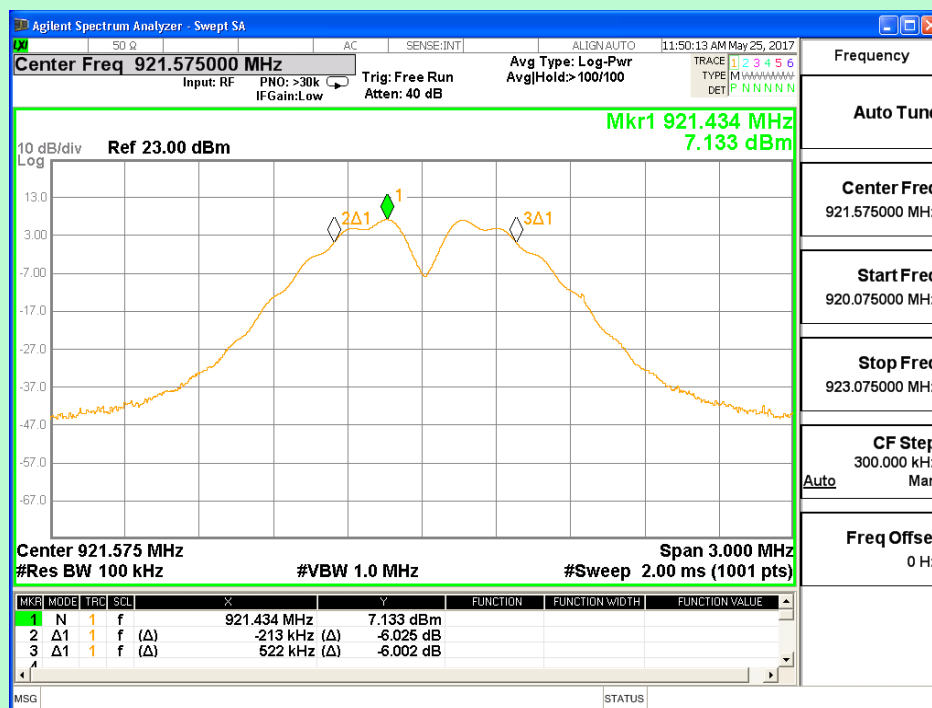
Channel 2 (908.425MHz)



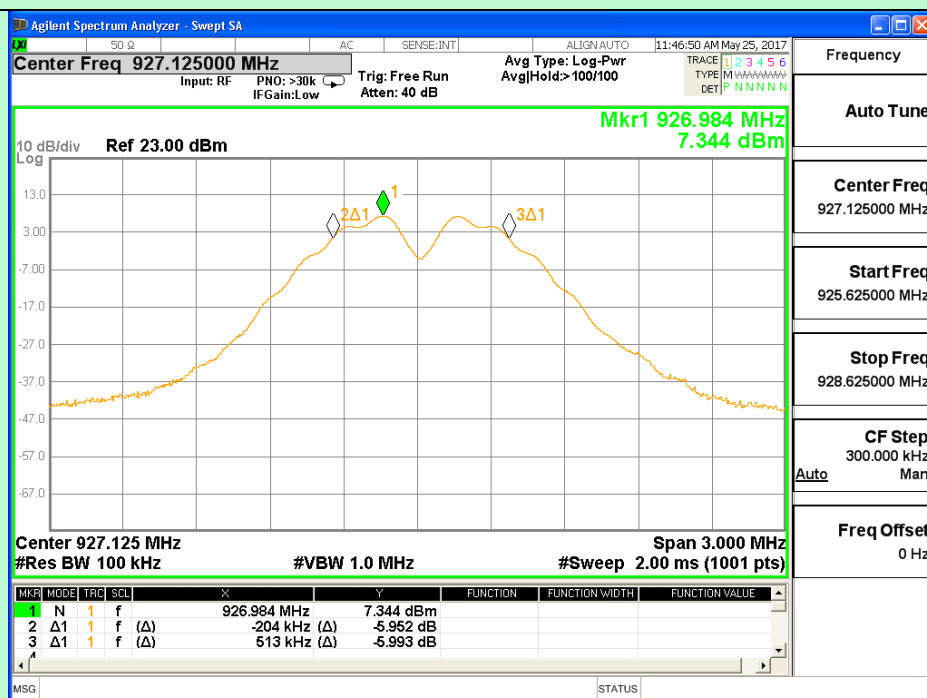
Channel 3 (914.325MHz)



Channel 4(915.325MHz)



Channel 5 (921.575MHz)



Channel 6 (927.125MHz)

TEST RESULT

Channel	Frequency	Measured Bandwidth	Limit	Result
#	MHz	KHz	KHz	
1	902.875	717	>500	PASS
2	908.425	723	>500	PASS
3	914.325	682	>500	PASS
4	915.325	705	>500	PASS
5	921.575	735	>500	PASS
6	927.125	717	>500	PASS

TEST SETUP PHOTOGRAPH

Refer Annexure -1

Conducted RF Test setup

3.2 PEAK OUTPUT POWER LEVEL

EUT Nomenclature	Wireless Sync Module	Test Request No.	EMC0210-1
Model No.	W-SYNC	Serial No.	SM-RF01
Test Start Date	25 - May- 2017	Temperature (°C)	23.6°C
Test End Date	25 - May - 2017	Humidity RH (%)	51.9%RH
Tested By	Sasikala	Pressure (mbar)	NR
Input Voltage / Freq.	24Vdc		
Operating Mode	Refer Page 5 for Operating Mode Table		
Test configuration	Refer Page 5 for Test Configuration Table		
Deviation from Std.	NA		
Applicable standard	FCC Part 15.247:2010		
Test Method	KDB 558074		
Comment	NA		

TEST DETAILS

Method	Radiated ☐	Conducted ☒
---------------	-----------------------------------	---

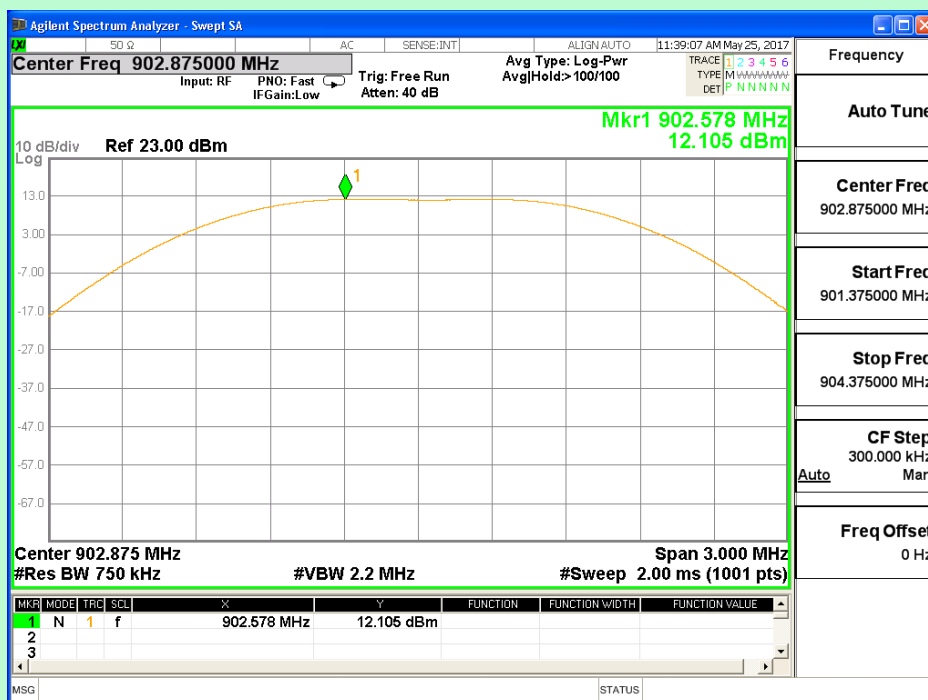
TEST PARAMETERS

Antenna Height	NA	Turntable Rotation	NA
Equipment Class	NA	Measurement Distance	NA

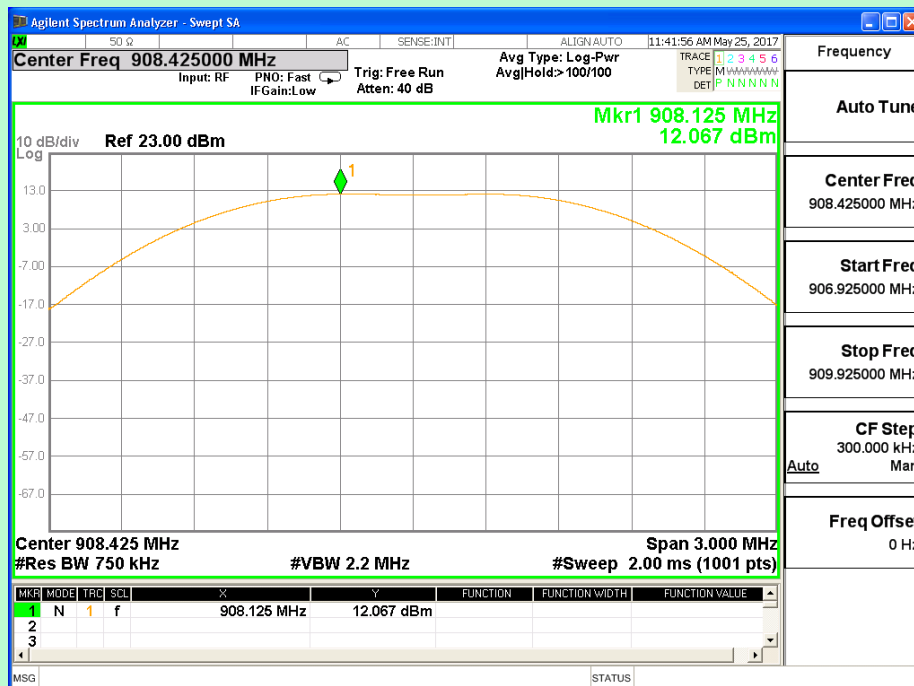
TEST EQUIPMENT

Y/N	Equipment	Make	Model	Serial Number	Cal Due Date
Y	Spectrum Analyzer	Agilent	N9010A	MY48031005	22-Feb-2018
Y	RF Cable	Huber- Suhner	SF104/2X11PC3542/500	NA	NA

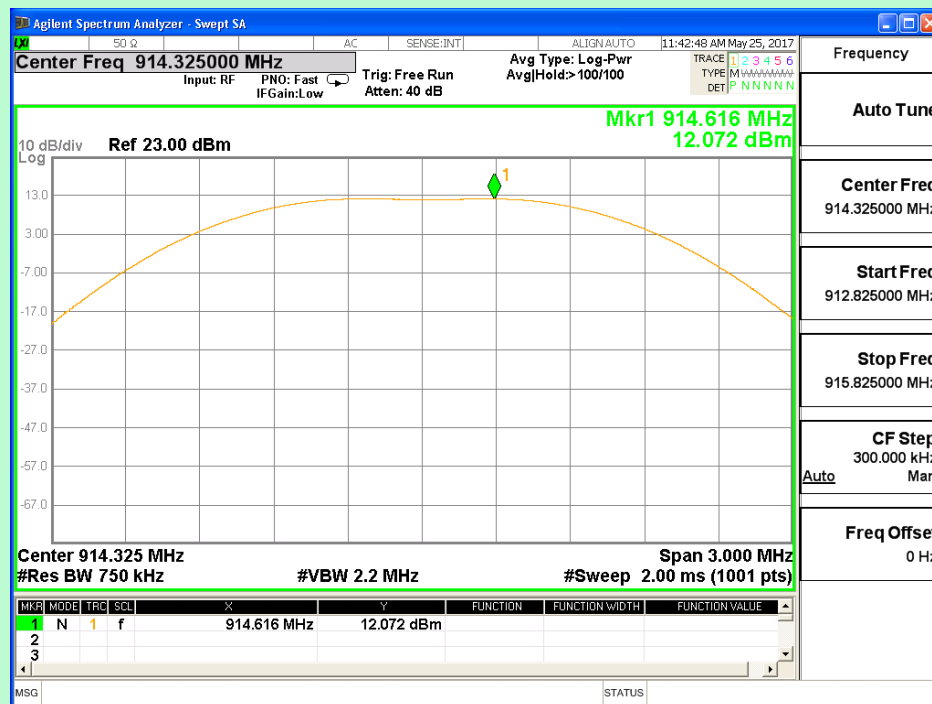
TEST GRAPHS



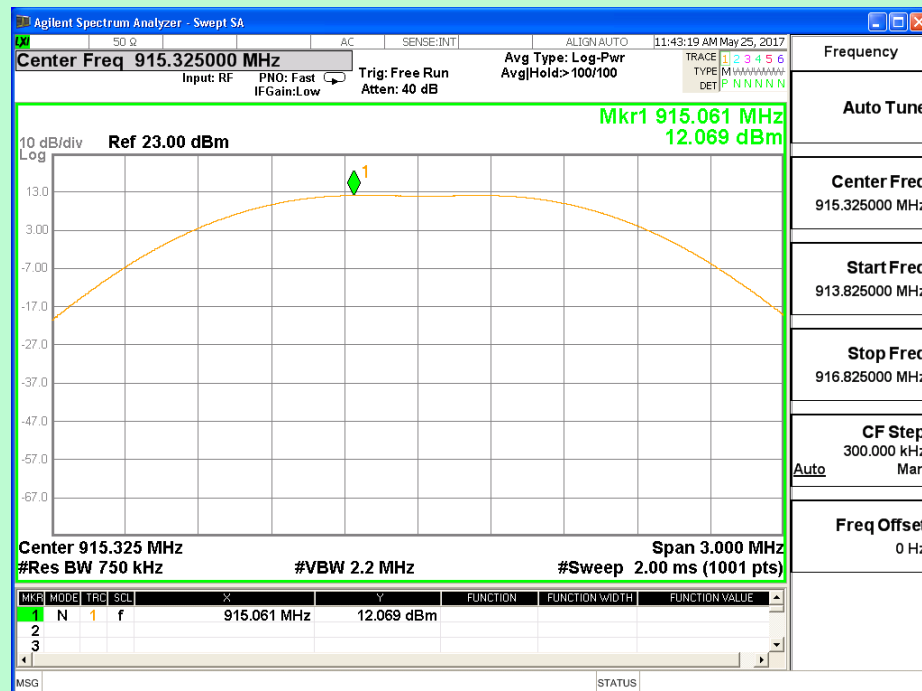
Antenna 1- Channel 1 (902.875MHz)



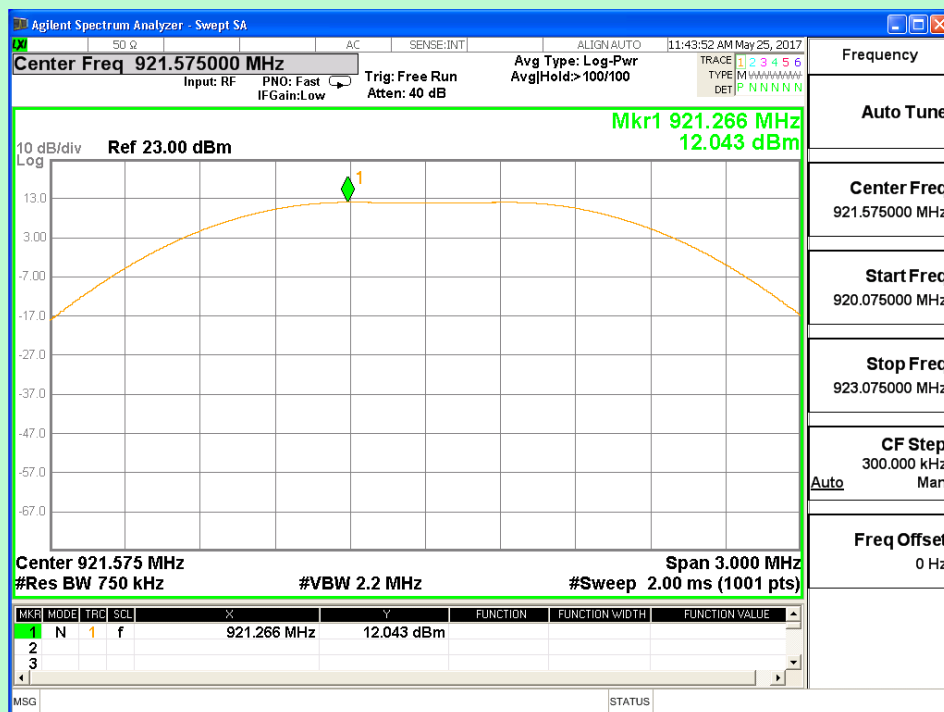
Antenna 1- Channel 2 (908.425MHz)



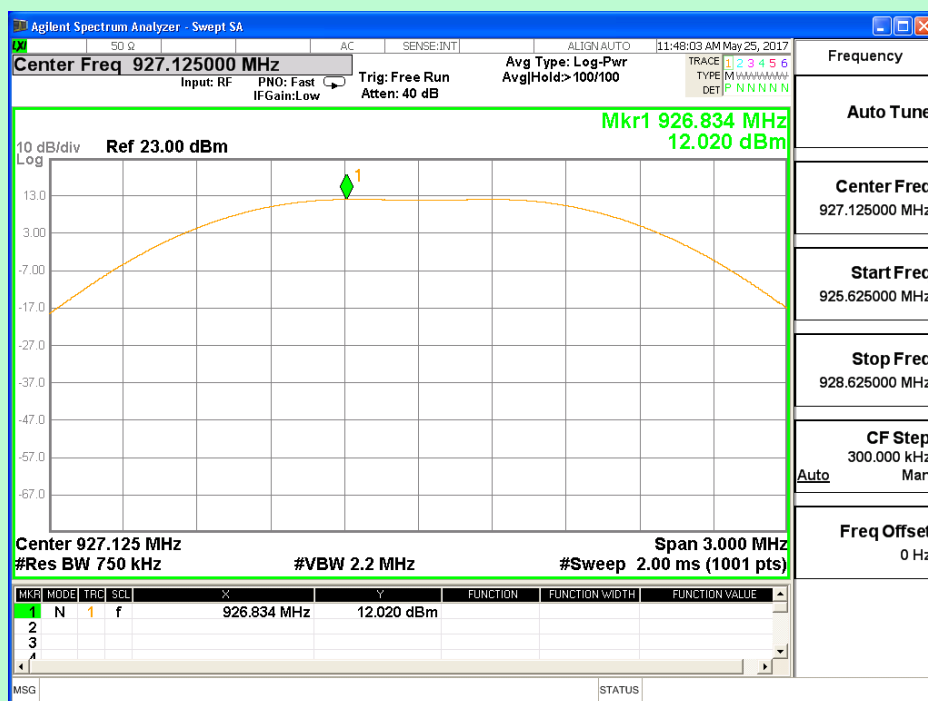
Antenna 1-Channel 3 (914.325MHz)



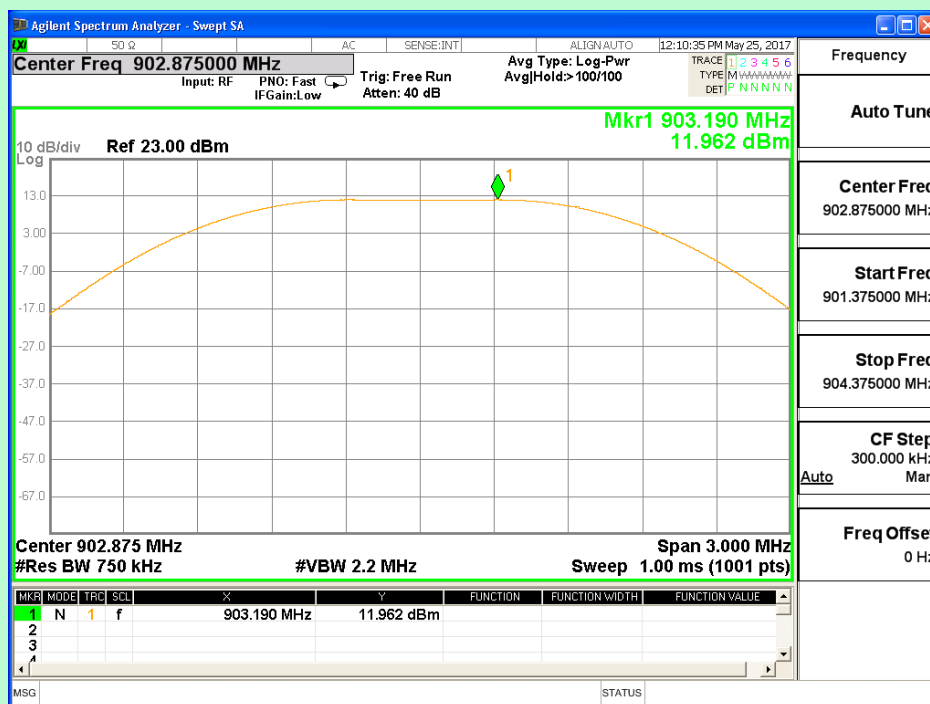
Antenna 1-Channel 4 (915.325MHz)



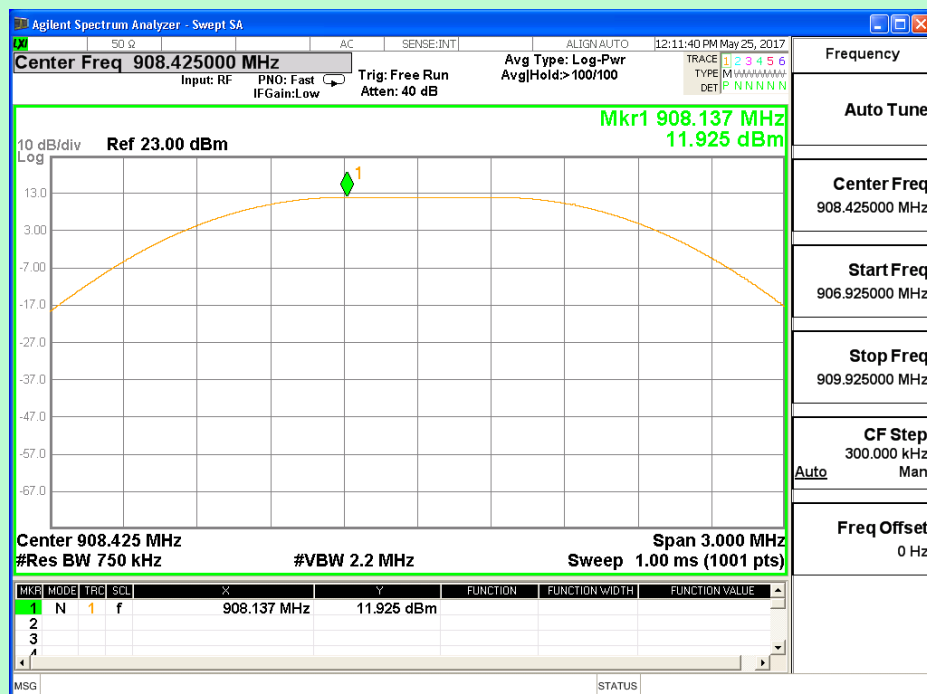
Antenna 1-Channel 5 (921.575MHz)



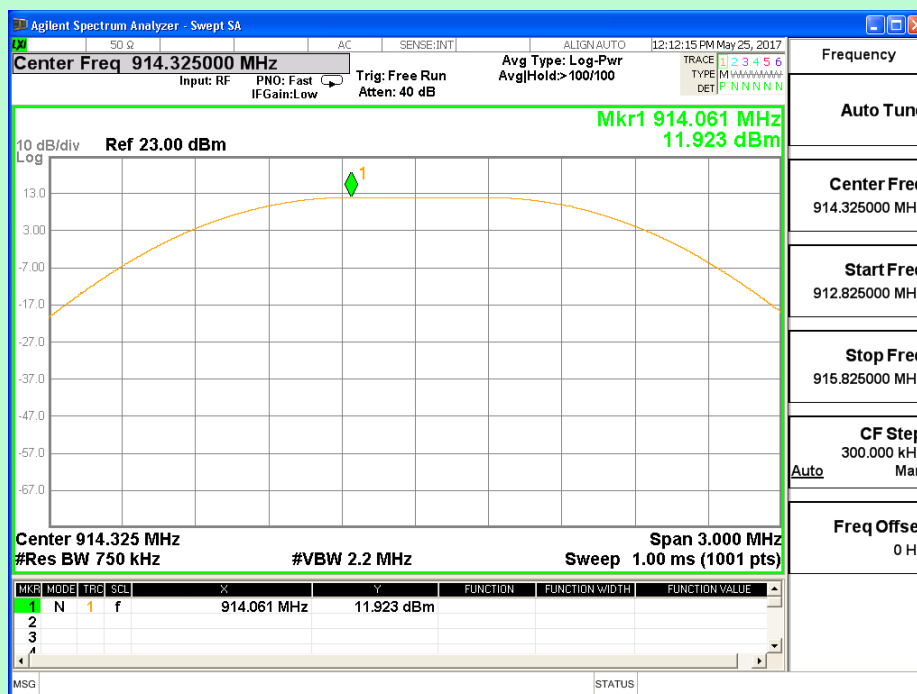
Antenna 1-Channel 6 (927.125MHz)



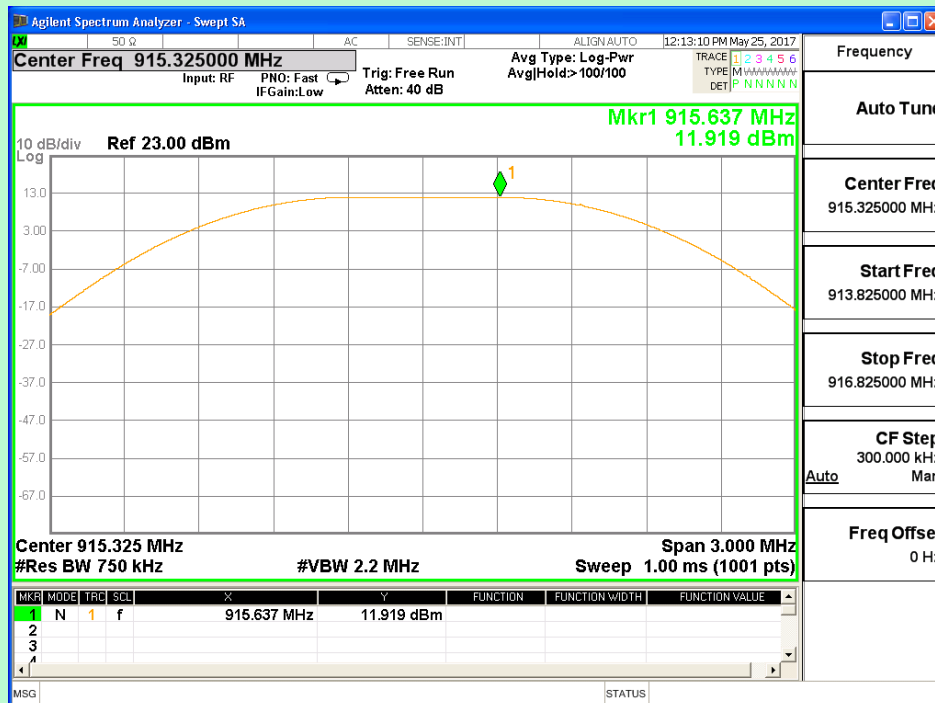
Antenna 2- Channel 1 (902.875MHz)



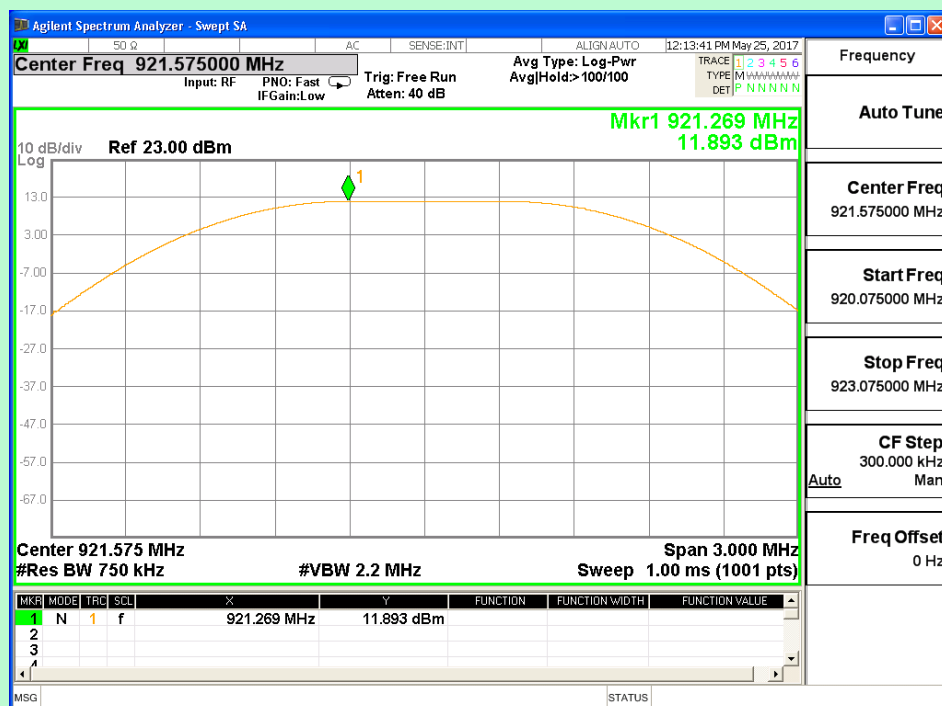
Antenna 2- Channel 2 (908.425MHz)



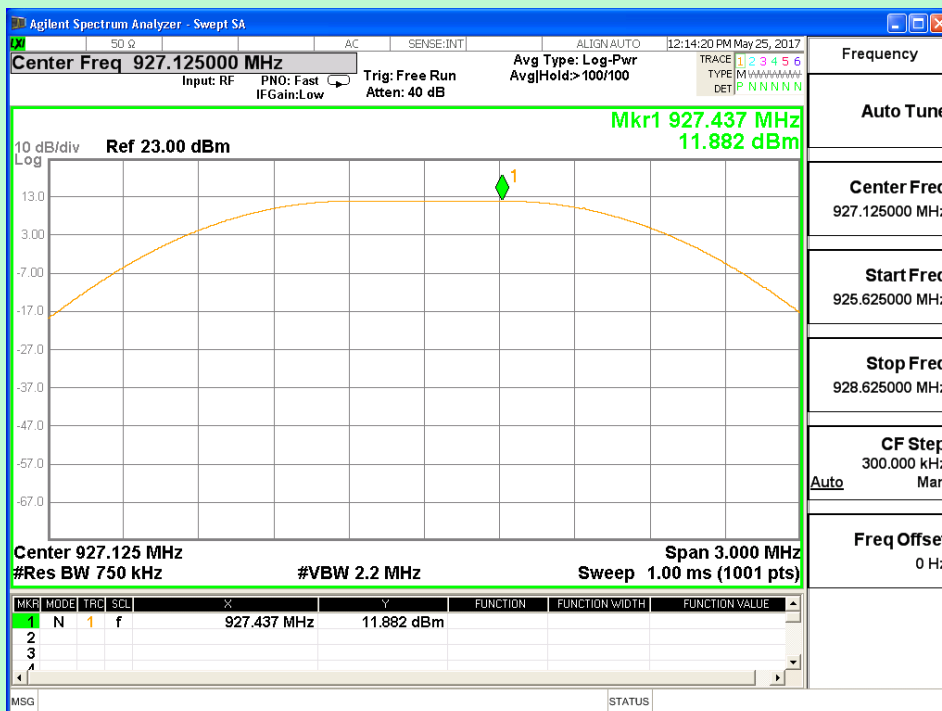
Antenna 2- Channel 3 (914.325MHz)



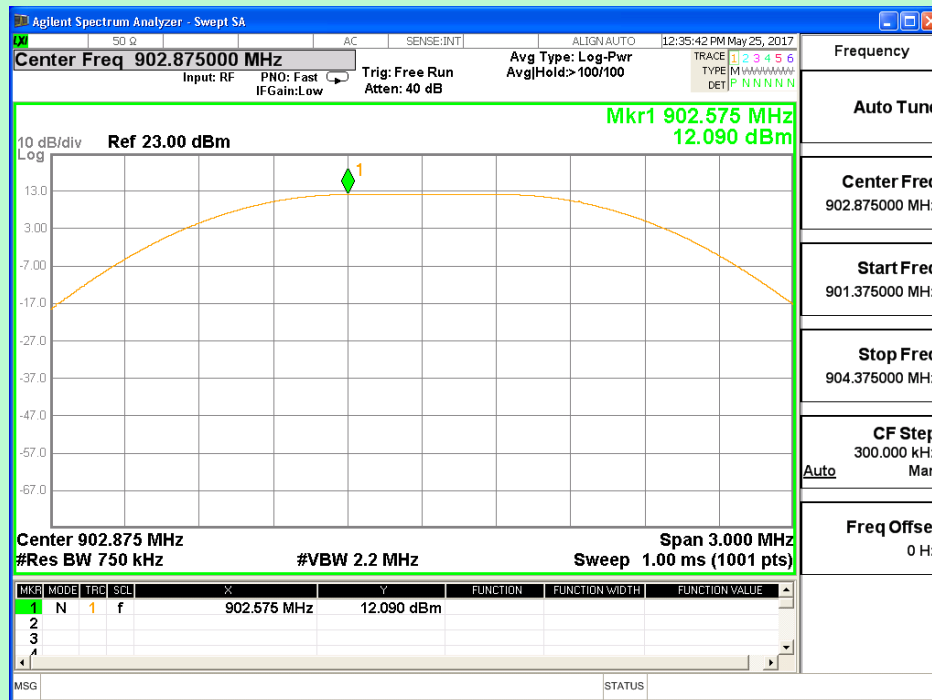
Antenna 2-Channel 4 (915.325MHz)



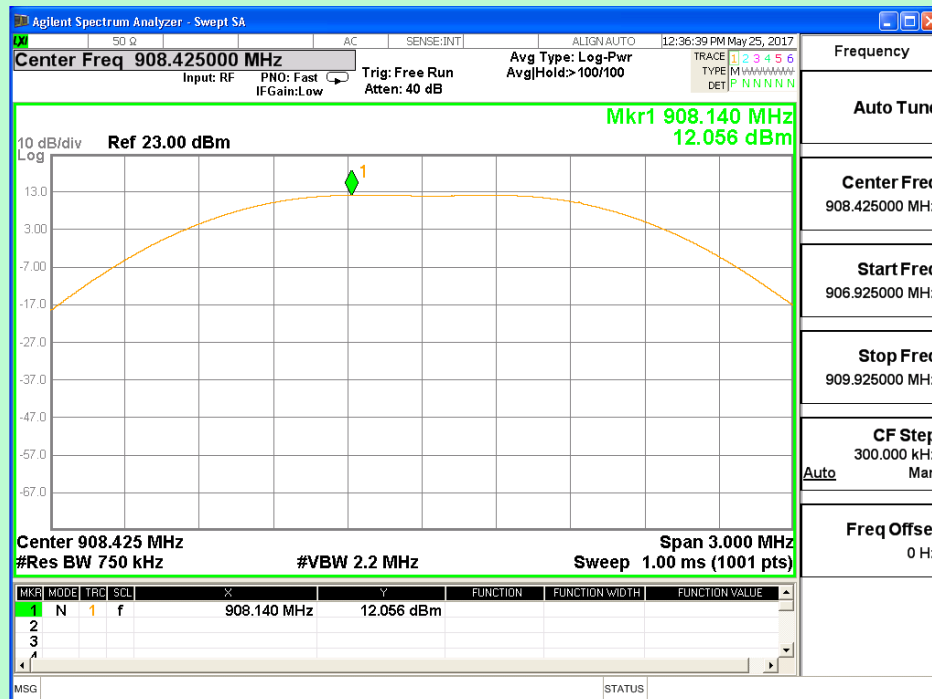
Antenna 2-Channel 5 (921.575MHz)



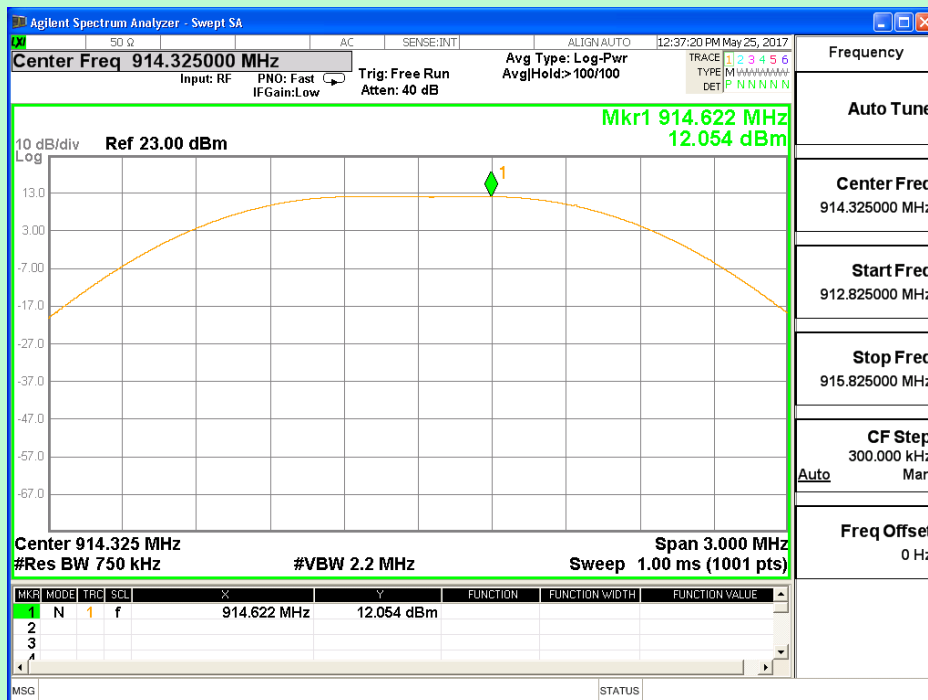
Antenna 2-Channel 6 (927.125MHz)



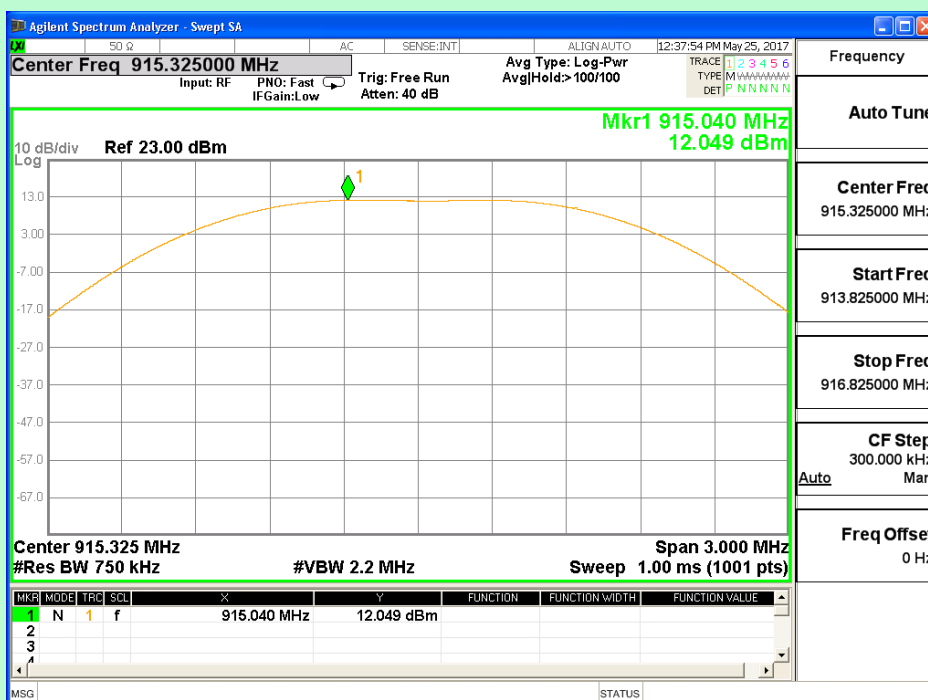
Antenna 3- Channel 1 (902.875MHz)



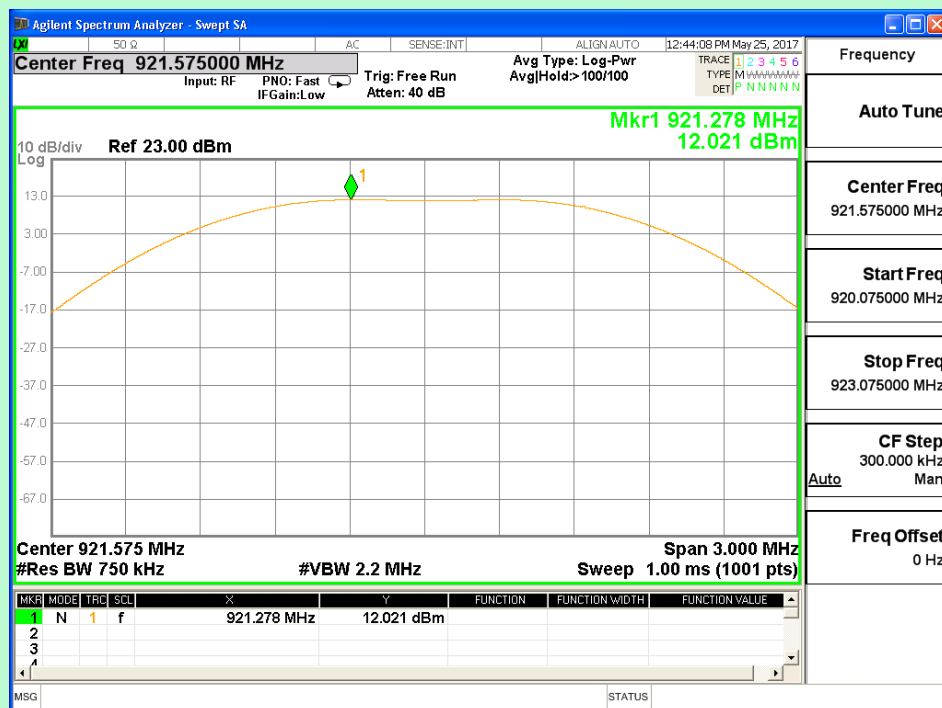
Antenna 3- Channel 2 (908.425MHz)



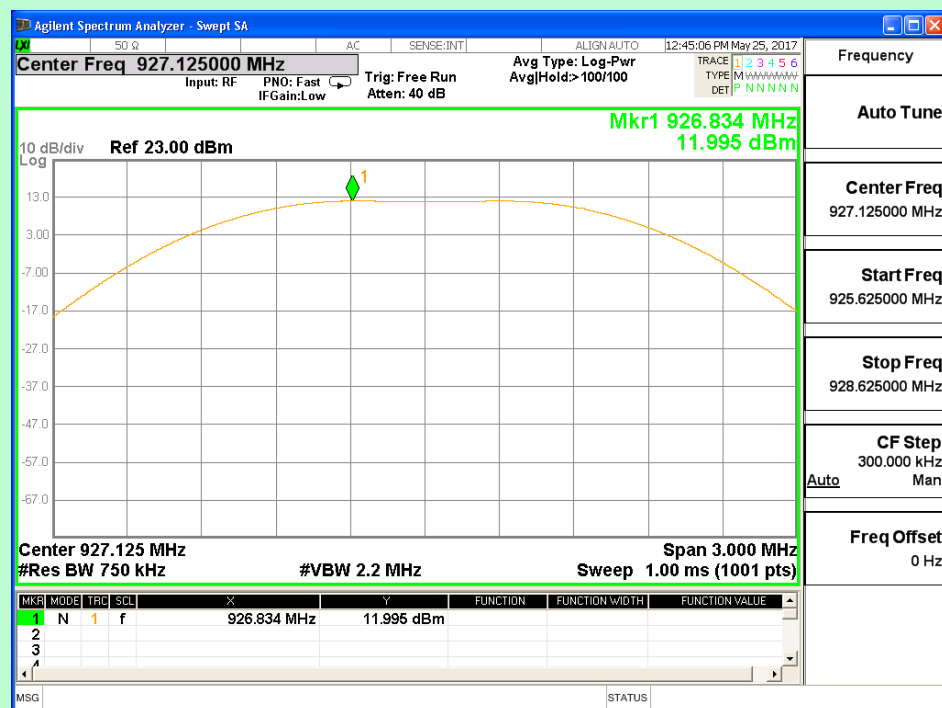
Antenna 3-Channel 3 (914.325MHz)



Antenna 3-Channel 4 (915.325MHz)



Antenna 3-Channel 5 (921.575MHz)



Antenna 3-Channel 6 (927.125MHz)

TEST RESULT

Channel	Frequency	Measured Power Level	Cable Loss	Transmitter Power Level	Limit	Result
#	MHz	dBm	dB	dBm	dBm	
Antenna 1						
1	902.875	12.1	0.6	12.7	≤30	PASS
2	908.425	12.06	0.6	12.66	≤30	PASS
3	914.325	12.07	0.6	12.67	≤30	PASS
4	915.325	12.06	0.6	12.66	≤30	PASS
5	921.575	12.04	0.6	12.64	≤30	PASS
6	927.125	12.02	0.6	12.62	≤30	PASS
Antenna 2						
1	902.875	11.96	0.6	12.56	≤30	PASS
2	908.425	11.92	0.6	12.52	≤30	PASS
3	914.325	11.92	0.6	12.52	≤30	PASS
4	915.325	11.91	0.6	12.51	≤30	PASS
5	921.575	11.89	0.6	12.49	≤30	PASS
6	927.125	11.88	0.6	12.48	≤30	PASS
Antenna 3						
1	902.875	12.09	0.6	12.69	≤30	PASS
2	908.425	12.05	0.6	12.65	≤30	PASS
3	914.325	12.05	0.6	12.65	≤30	PASS
4	915.325	12.04	0.6	12.64	≤30	PASS
5	921.575	12.02	0.6	12.62	≤30	PASS
6	927.125	11.9	0.6	12.5	≤30	PASS
Note: Transmitter Output Power = Measured Level (dBm) + Cable Loss (dB)						

TEST SETUP PHOTOGRAPH

Refer Annexure -1

Conducted RF Test setup

3.3 MAXIMUM POWER SPECTRAL DENSITY

EUT Nomenclature	Wireless Sync Module	Test Request No.	EMC0210-1
Model No.	W-SYNC	Serial No.	SM-RF01
Test Start Date	25 - May - 2017	Temperature (°C)	23.6°C
Test End Date	25 - May - 2017	Humidity RH (%)	51.9%RH
Tested By	Sasikala	Pressure (mbar)	NR
Input Voltage / Freq.	24Vdc		
Operating Mode	Refer Page 5 for Operating Mode Table		
Test configuration	Refer Page 5 for Test Configuration Table		
Deviation from Std.	NA		
Applicable standard	FCC Part 15.247:2010		
Test Method	KDB 558074		
Comment	NA		

TEST DETAILS

Method	Radiated ☐	Conducted ☒
---------------	-----------------------------------	---

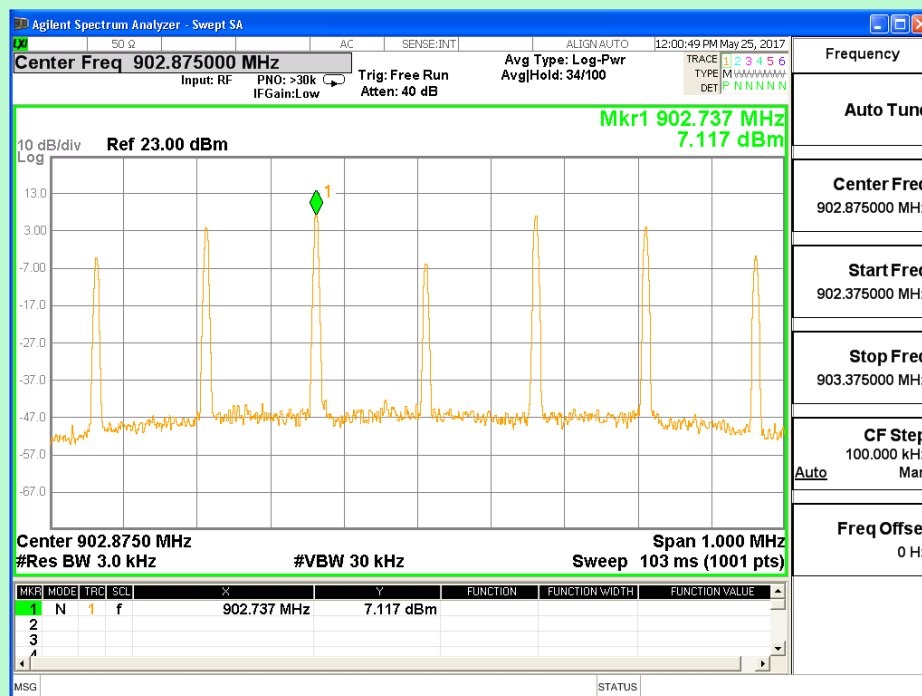
TEST PARAMETERS

Antenna Height	NA	Turntable Rotation	NA
Equipment Class	NA	Measurement Distance	NA

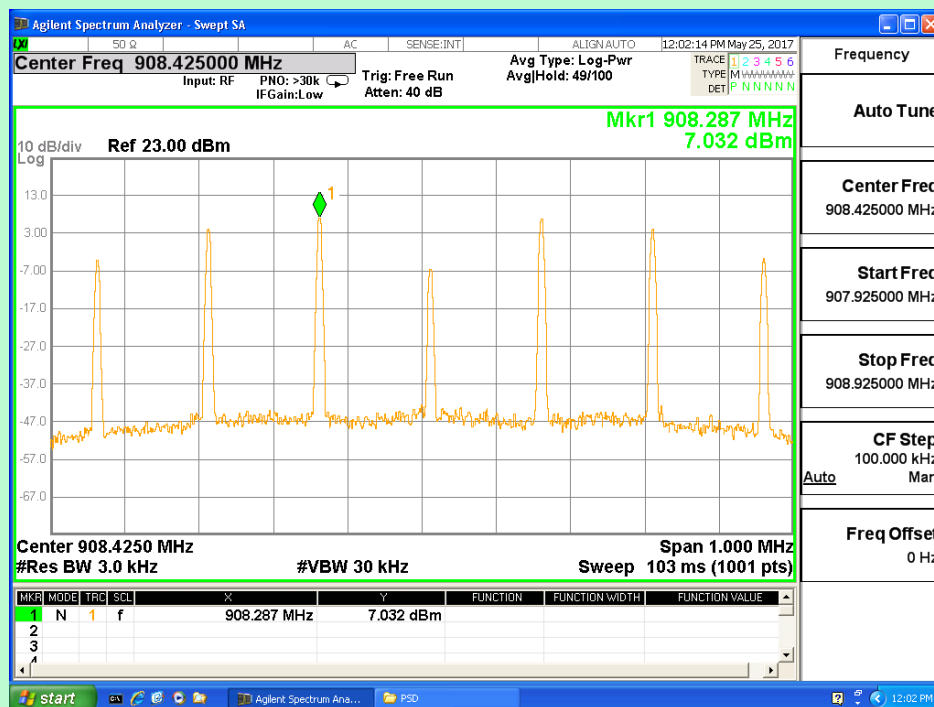
TEST EQUIPMENT

Y/N	Equipment	Make	Model	Serial Number	Cal Due Date
Y	Spectrum Analyzer	Agilent	N9010A	MY48031005	22-Feb-2018
Y	RF Cable	Huber- Suhner	SF104/2X11PC3542/500	NA	NA

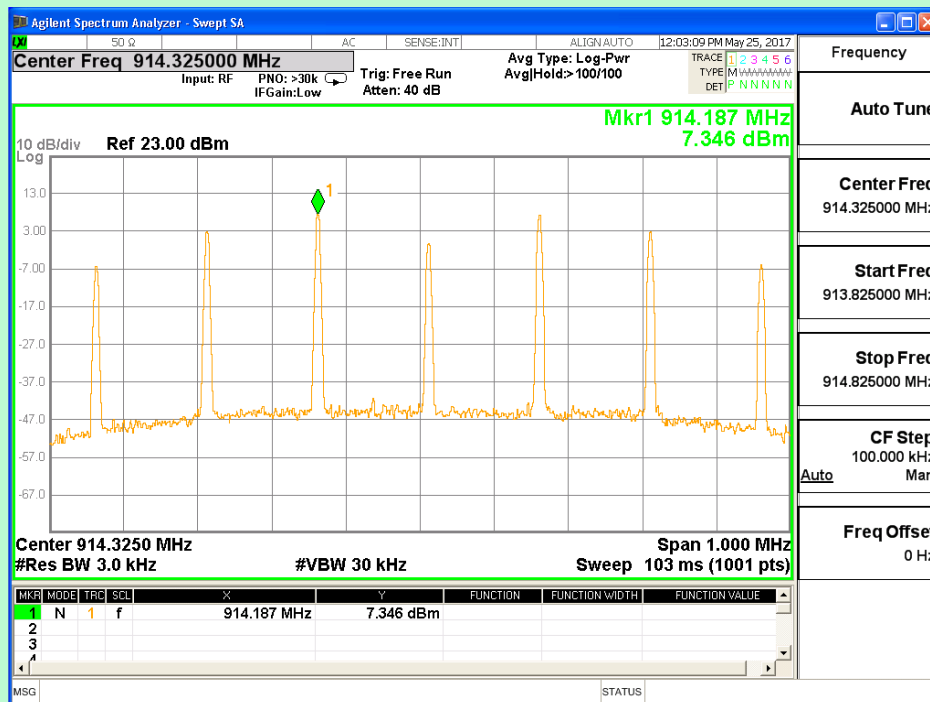
TEST GRAPHS



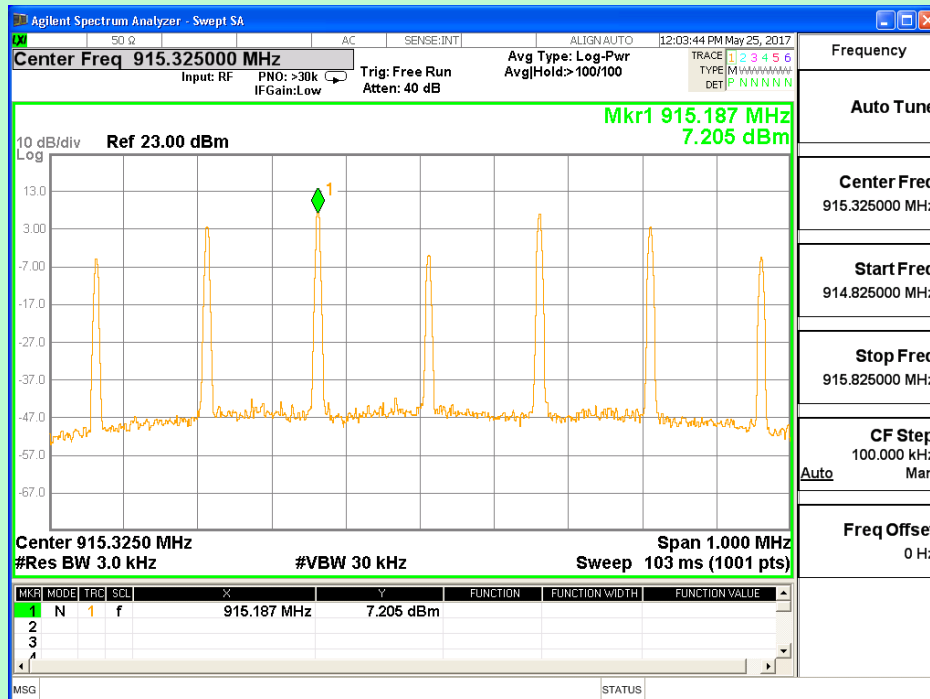
Channel 1 (902.875MHz)



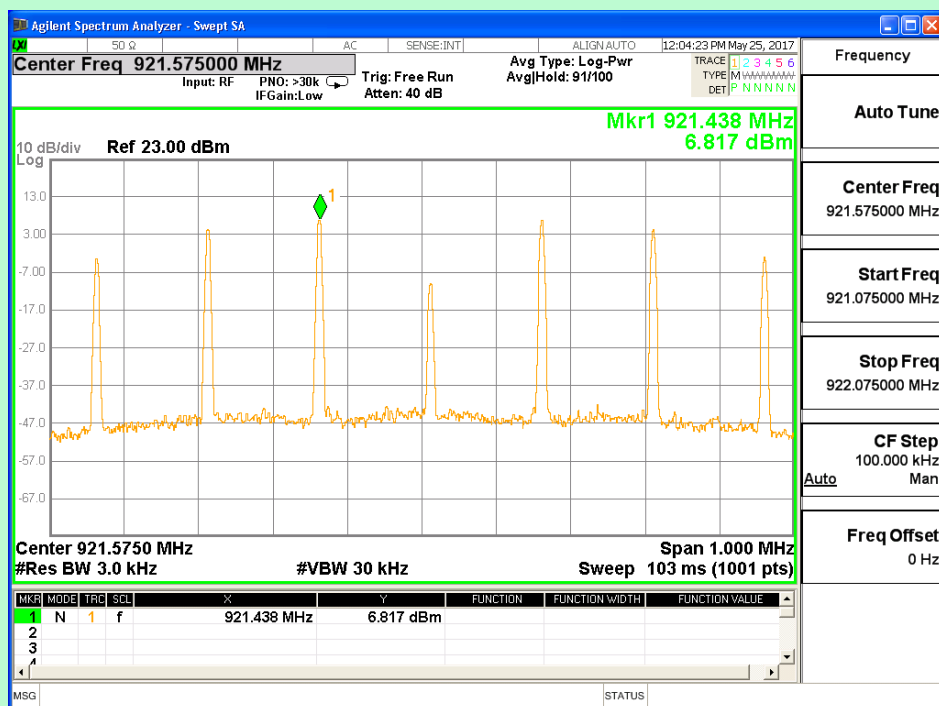
Channel 2 (908.425MHz)



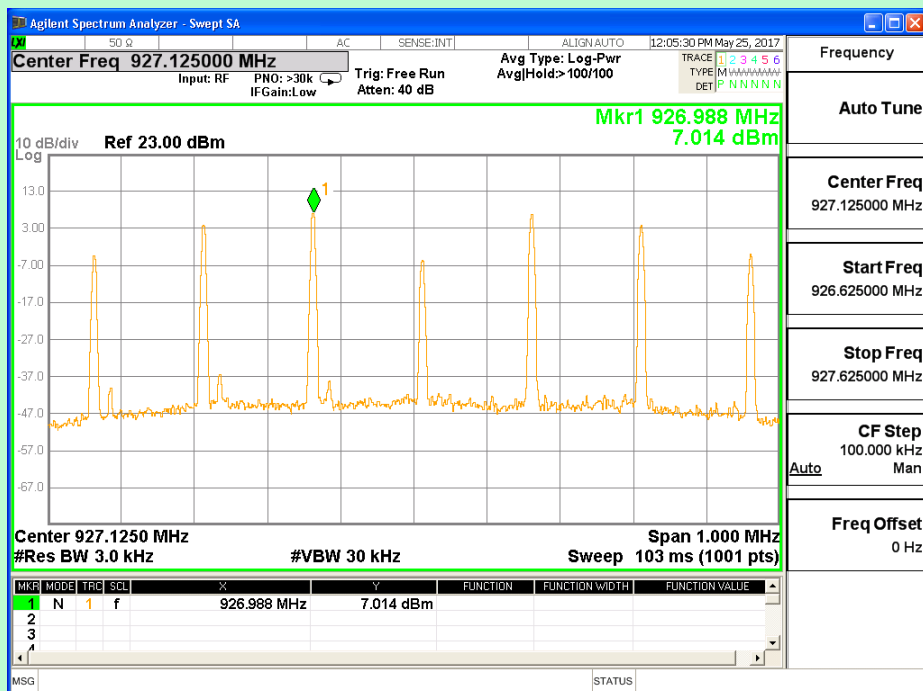
Channel 3 (914.325MHz)



Channel 4(915.325MHz)



Channel 5 (921.575MHz)



Channel 6 (927.125MHz)

TEST RESULT				
Channel	Frequency	Measured Level	Limit	Result
#	MHz	dBm/3KHz	dBm/3KHz	
1	902.875	7.1	<8	PASS
2	908.425	7	<8	PASS
3	914.325	7.3	<8	PASS
4	915.325	7.19	<8	PASS
5	921.575	6.8	<8	PASS
6	927.125	7	<8	PASS

TEST SETUP PHOTOGRAPH

Refer Annexure -1

Conducted RF Test setup

3.4 BAND EDGE COMPLIANCE

EUT Nomenclature	Wireless Sync Module	Test Request No.	EMC0210-1
Model No.	W-SYNC	Serial No.	SM-RF01
Test Start Date	25 - May - 2017	Temperature (°C)	24.5°C
Test End Date	25 -May - 2017	Humidity RH (%)	51.5%RH
Tested By	Sasikala	Pressure (mbar)	NR
Input Voltage / Freq.	24Vdc		
Operating Mode	Refer Page 5 for Operating Mode Table		
Test configuration	Refer Page 5 for Test Configuration Table		
Deviation from Std.	NA		
Applicable standard	FCC Part 15.247:2010		
Test Method	KDB 558074		
Comment	NA		

TEST DETAILS

Method	Radiated ☐	Conducted ☒
---------------	-----------------------------------	---

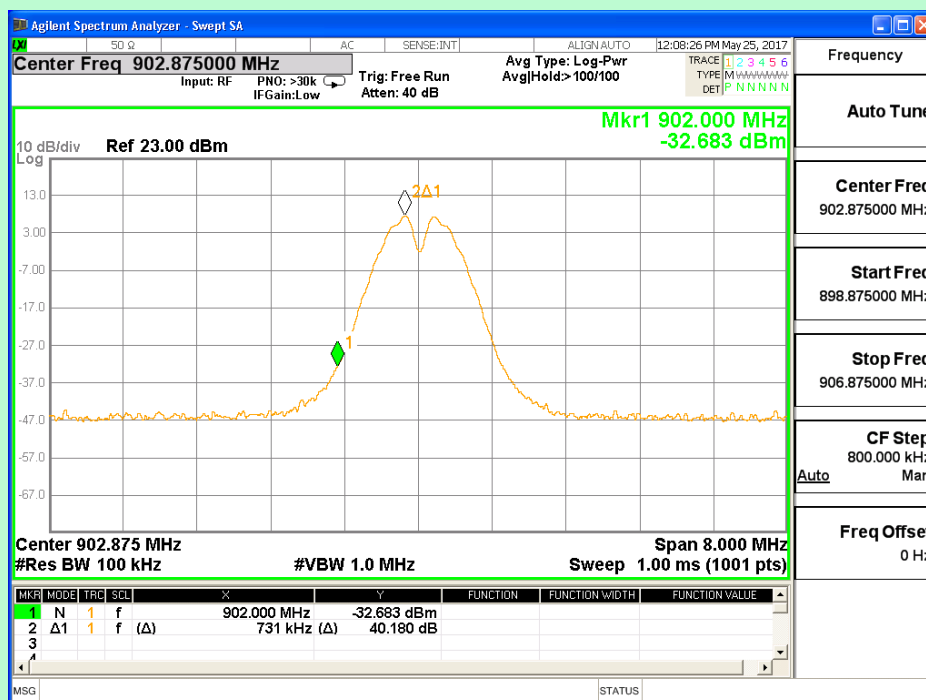
TEST PARAMETERS

Antenna Height	NA	Turntable Rotation	NA
Equipment Class	NA	Measurement Distance	NA

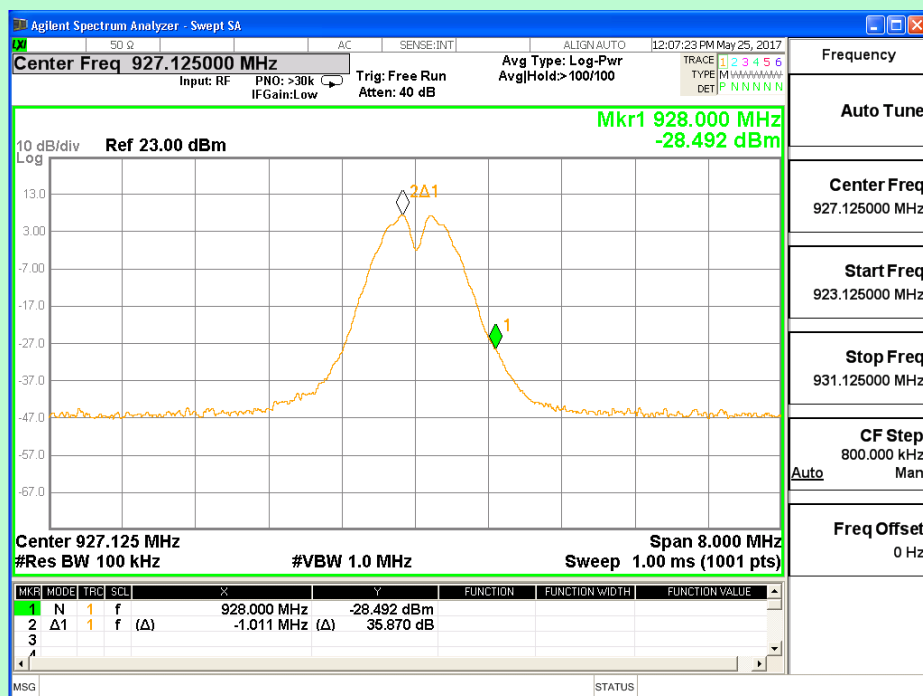
TEST EQUIPMENT

Y/N	Equipment	Make	Model	Serial Number	Cal Due Date
Y	Spectrum Analyzer	Agilent	N9010A	MY48031005	22-Feb-2018
Y	RF Cable	Huber- Suhner	SF104/2X11PC3542/500	NA	NA

TEST GRAPHS



Channel 1 (902.875MHz)



Channel 6 (927.125MHz)

TEST RESULT				
Channel	Frequency	Measured Level	Limit	Result
#	MHz	dBm/3KHz	dBm/3KHz	
1	902.875	39.9	>20	PASS
6	927.125	35.87	>20	PASS

TEST SETUP PHOTOGRAPH

Refer Annexure -1

Conducted RF Test setup

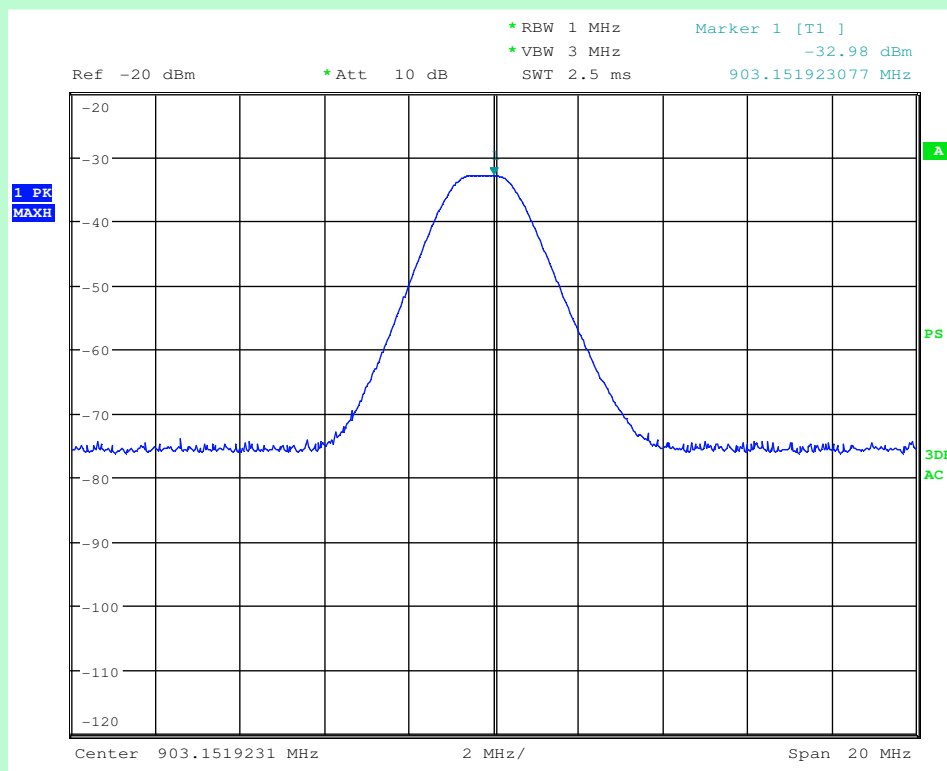
3.5 EFFECTIVE ISOTROPIC RADIATED POWER

EUT Nomenclature	Wireless Sync Module	Test Report No.	EMC0210-1
Model No.	W-SYNC	Serial No.	SM-RF01
Test Start Date	20-June-2017	Temperature (°C)	22.3±2
Test End Date	20-June-2017	Humidity RH (%)	54±2
Tested By	Magesh. S	Pressure (mbar)	
Input Voltage / Freq	24Vdc		
Operating Mode	Refer Page 5 Operating Modes Table		
Test configuration	Refer Page 5 Test Configuration Table		
Deviation from Std	NA		
Comment	Nil		
TEST FREQUENCY RANGE			
Start Frequency	902MHz	Stop Frequency	928MHz
MAXIMUM OPERATING FREQUENCY			
902MHz to 928MHz			
TEST PARAMETERS			
Antenna Height	1m to 4m	Turntable Rotation	0° to 360°
Applicable standard	ANSI 63.10 - 2013	Test Method	KDB 412172
Equipment Class	NA	Measurement Distance	3m

TEST EQUIPMENT

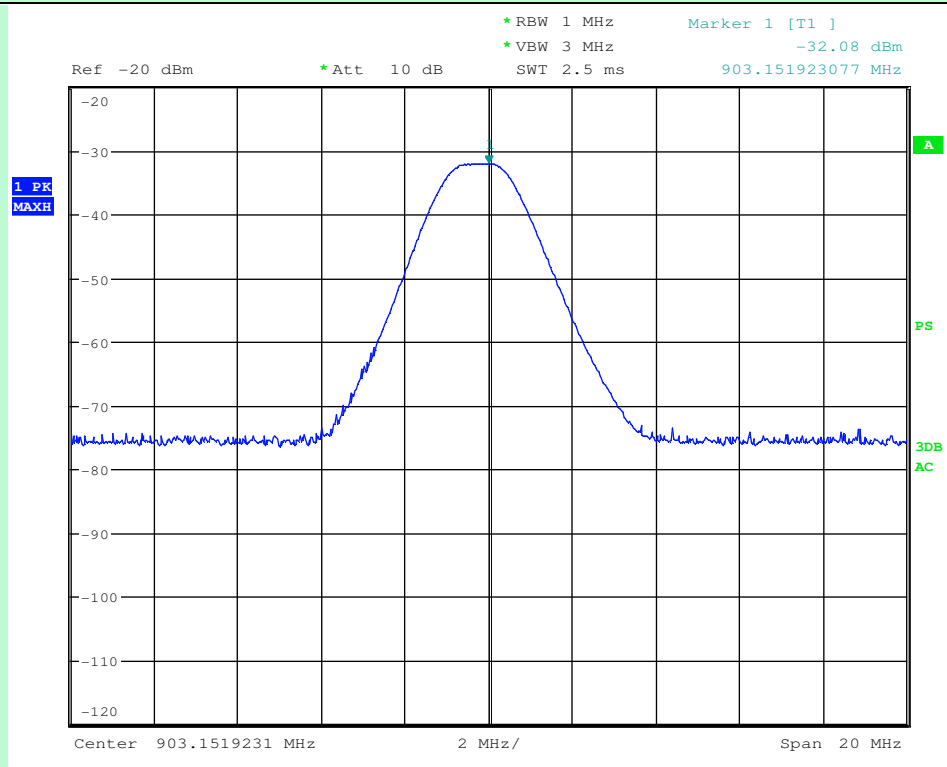
Y/N	Equipment	Make	Model	Sl. No.	Cal Due Date
Y	EMI Test Receiver	R&S	ESU26	100525	06-July-2017
Y	3m Semi Anechoic Chamber	ETS Lindgren	DKE 6X7 DBL.DR	1625	26-Jul-2018
Y	Bilog Antenna	ETS Lindgren	HLP3003C	130524	03-Jun-2017
Y	RF cable (9KHz to 1GHz)	ENS Microwave	MNS-MNS	11202012	22-Feb-2018
Y	RF cable (9KHz to 1GHz)	AH System	SAC-18G-06	RE-03	22-Feb-2018
Note: Switch ON /OFF the Internal Preamplifier based on carrier level and or noise floor without overloading the receiver					

TEST GRAPHS – EIRP



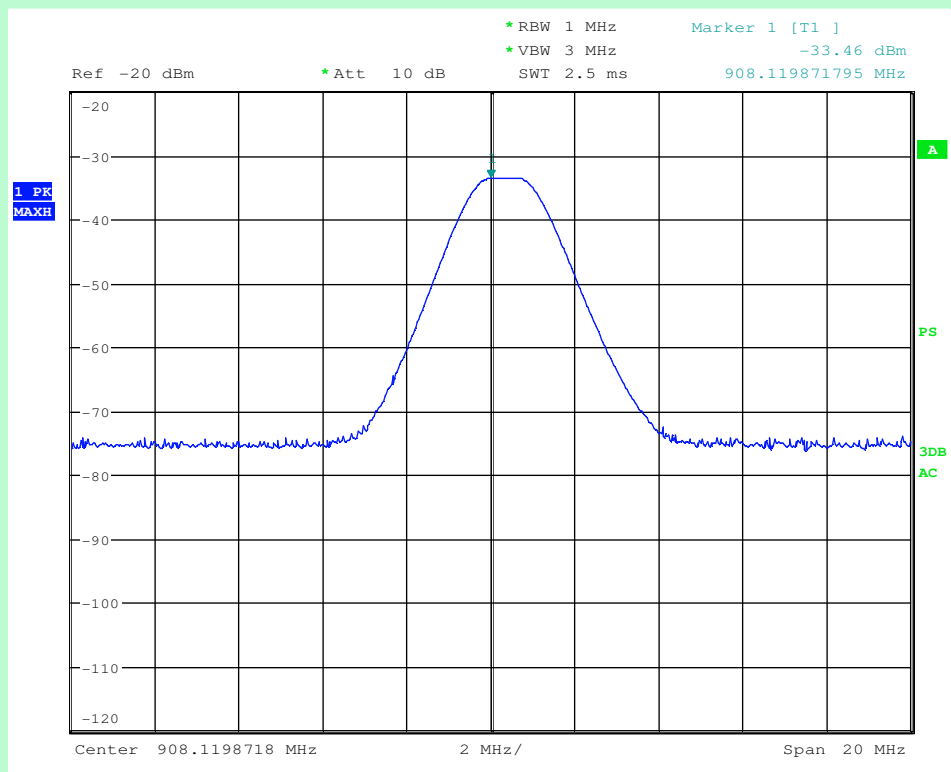
Antenna-1, Channel 1 (902.875 MHz)

Note : Peak Graph - Horizontal polarization

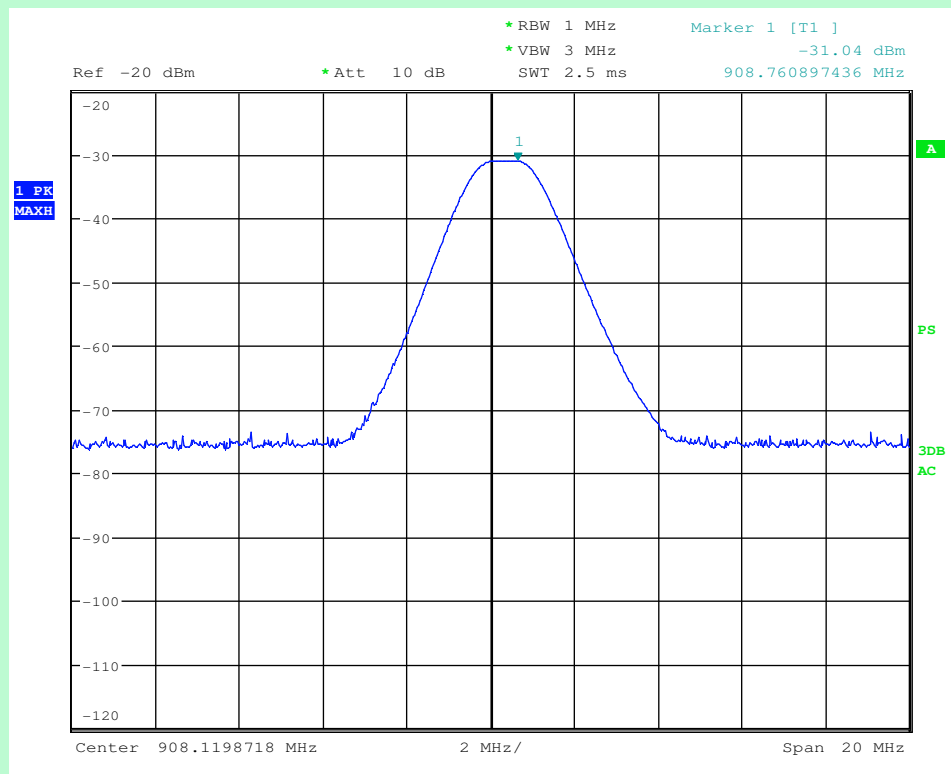


Antenna-1, Channel 1 (902.875 MHz)

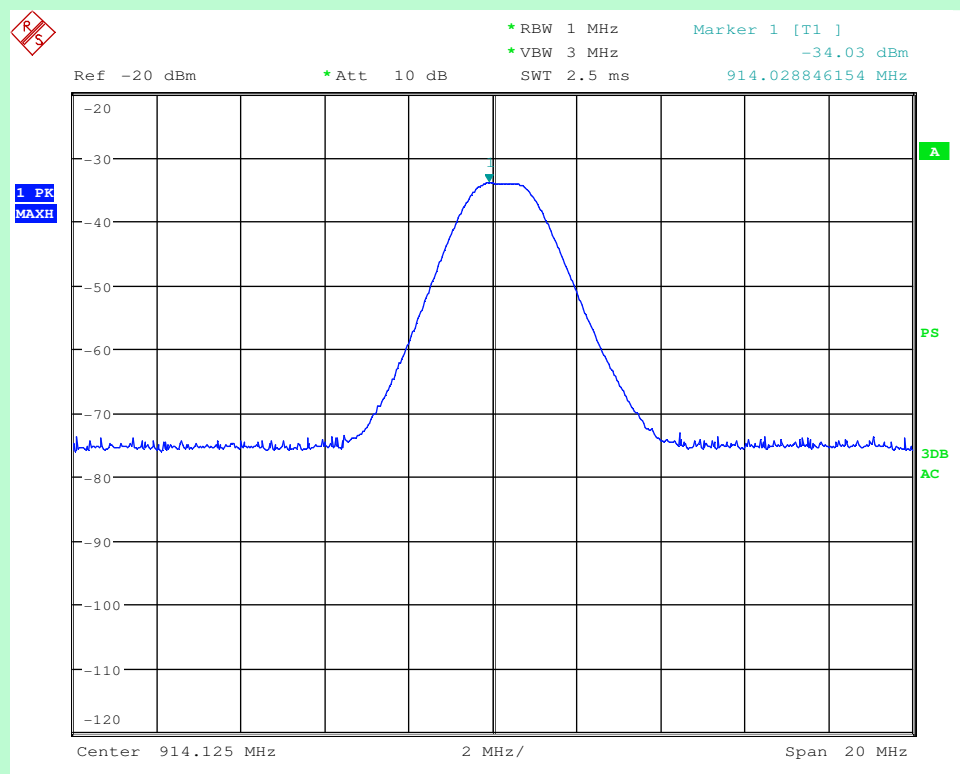
Note : Peak Graph - Vertical polarization

**Antenna-1, Channel 2 (908.425 MHz)**

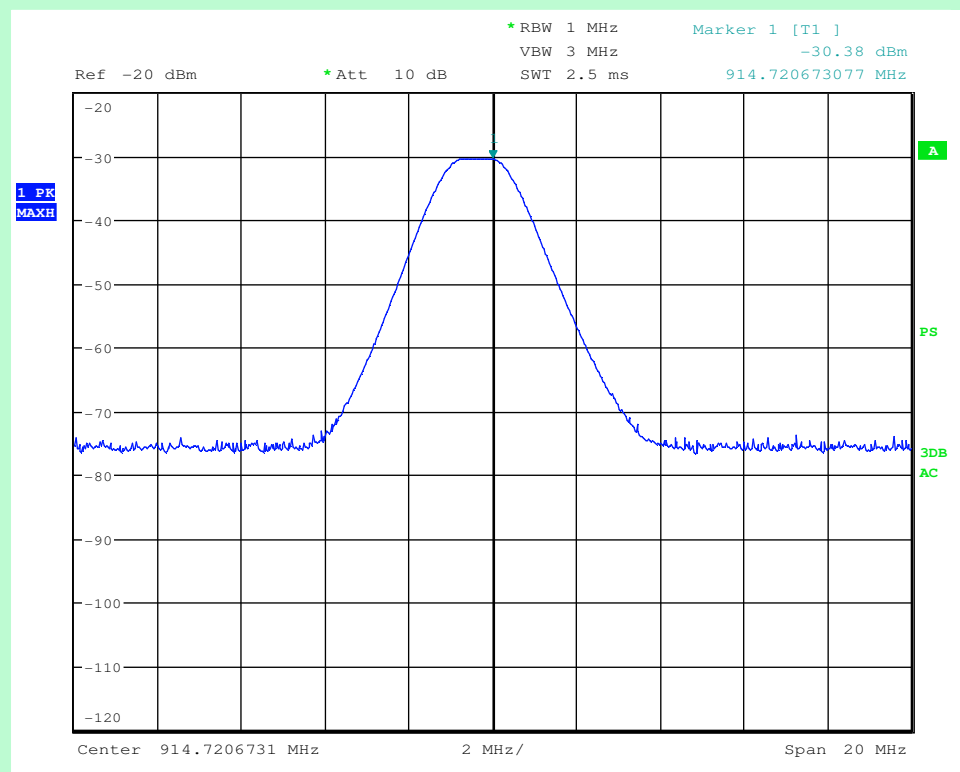
Note : Peak Graph - Horizontal polarization

**Antenna-1, Channel 2 (908.425 MHz)**

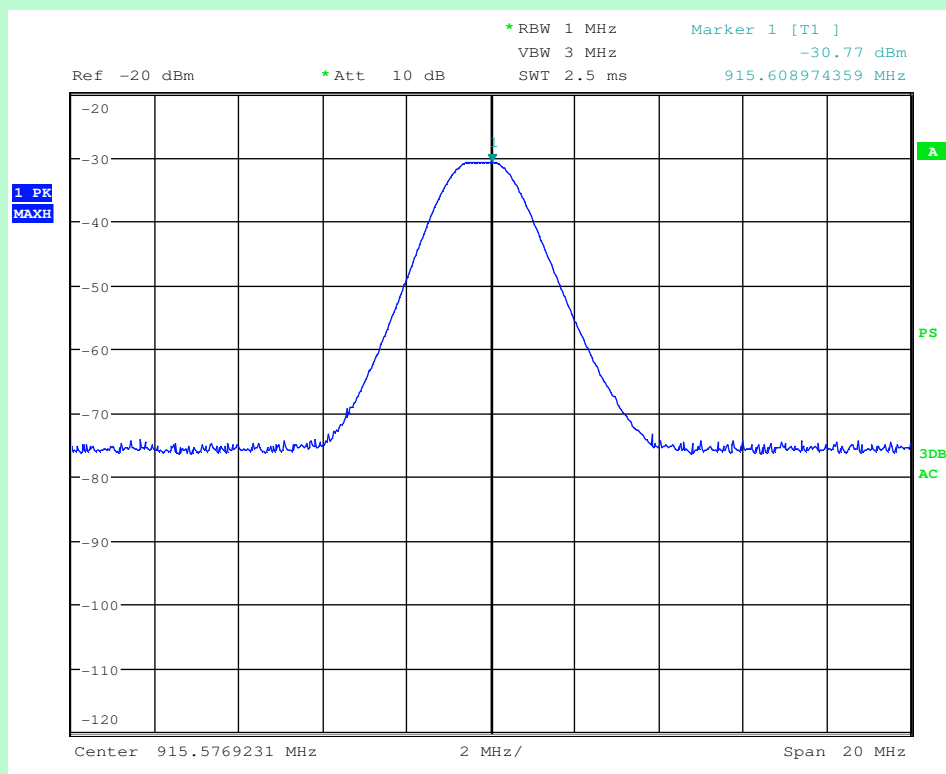
Note : Peak Graph - Vertical polarization

**Antenna-1, Channel 3 (914.325 MHz)**

Note : Peak Graph - Horizontal polarization

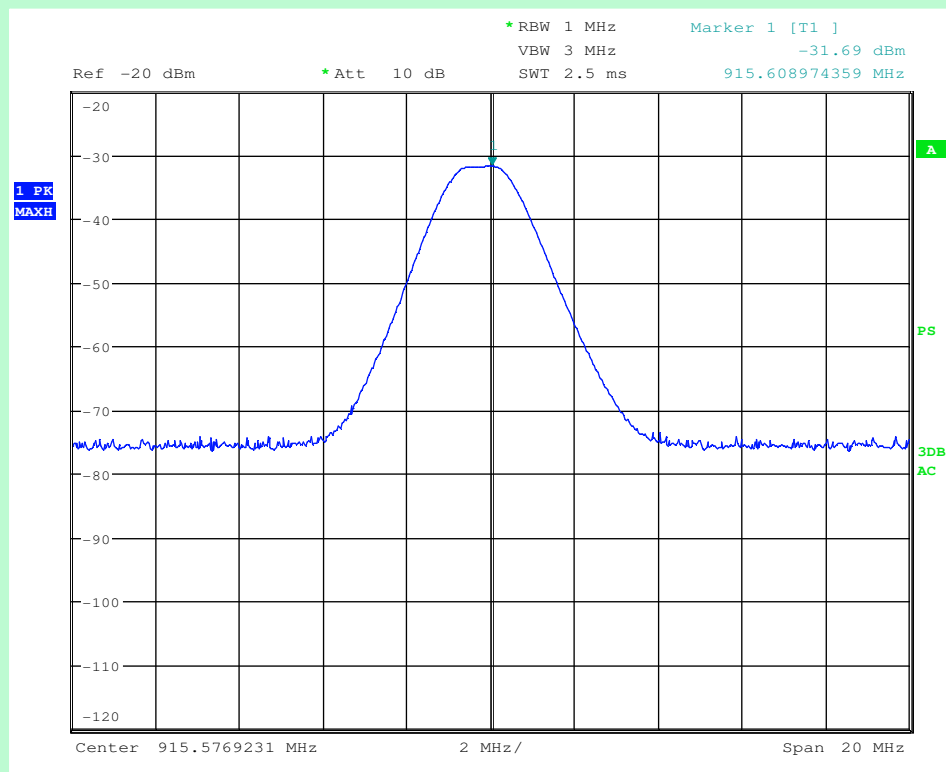
**Antenna-1, Channel 3 (914.325 MHz)**

Note : Peak Graph - Vertical polarization



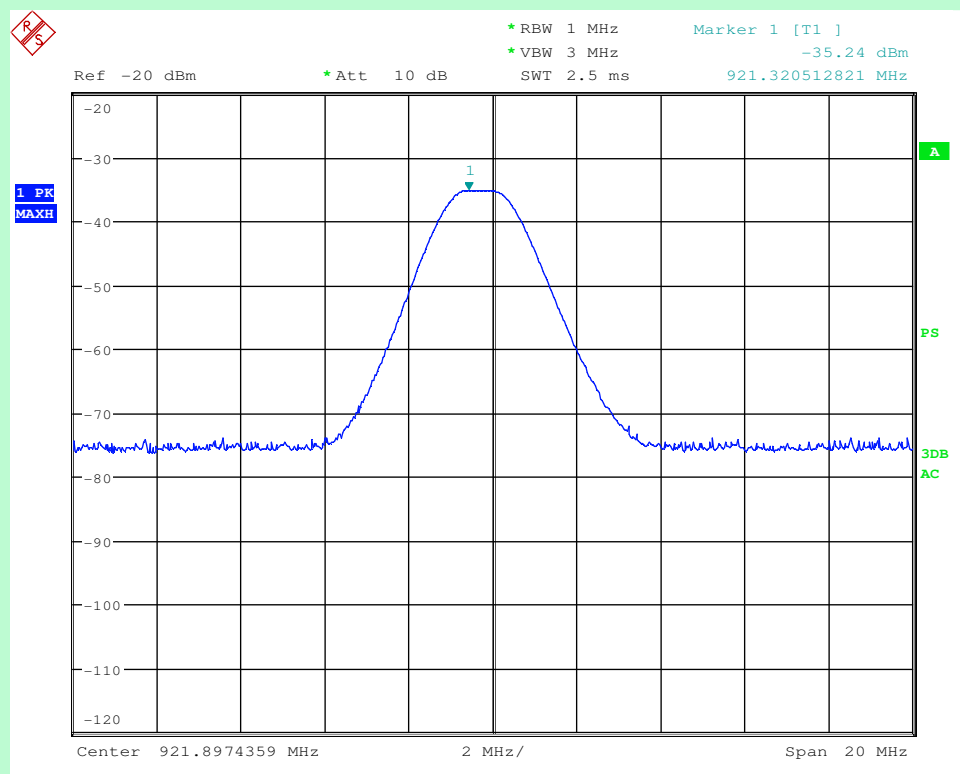
Antenna-1, Channel 4 (915.325 MHz)

Note : Peak Graph - Horizontal polarization



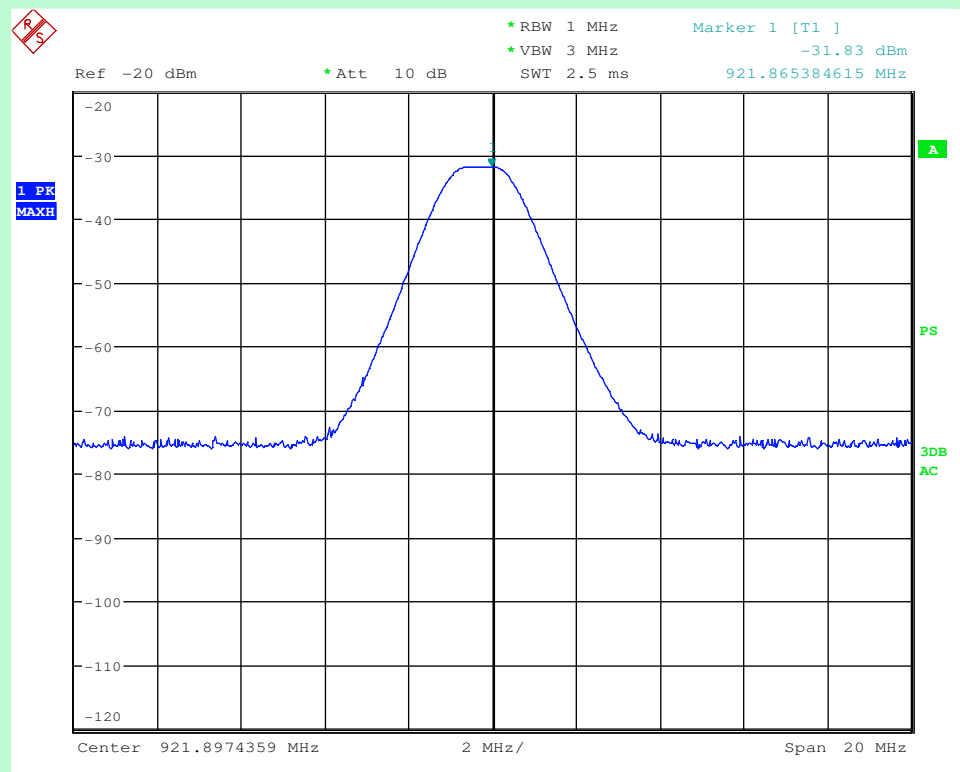
Antenna-1, Channel 4 (915.325 MHz)

Note : Peak Graph - Vertical polarization



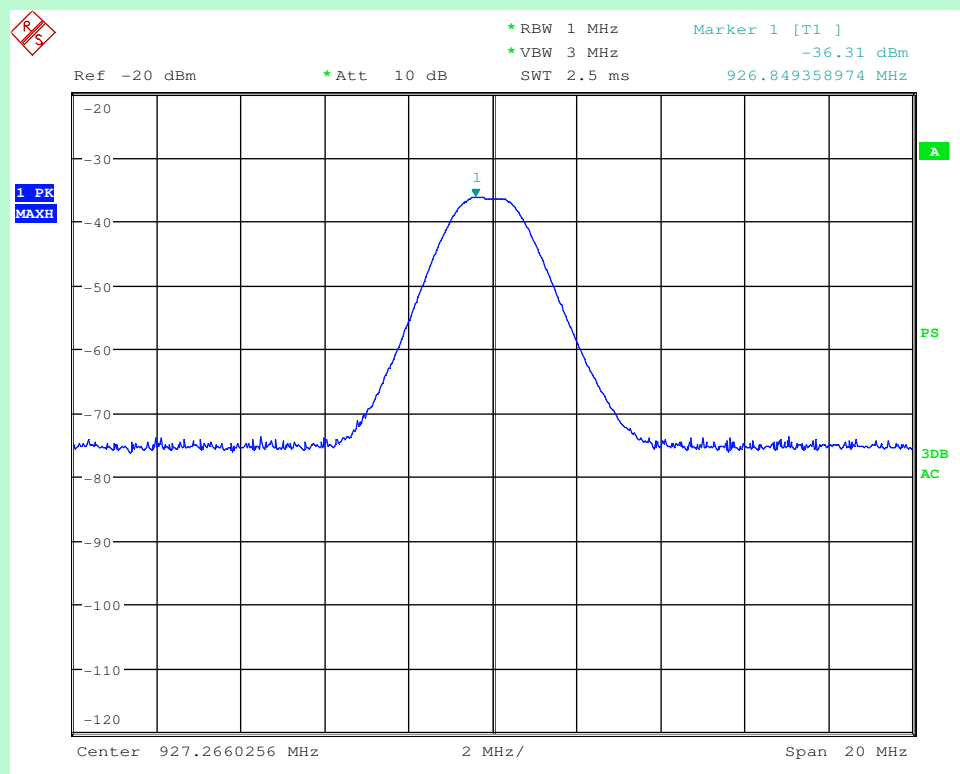
Antenna-1, Channel 5 (921.575 MHz)

Note : Peak Graph - Horizontal polarization



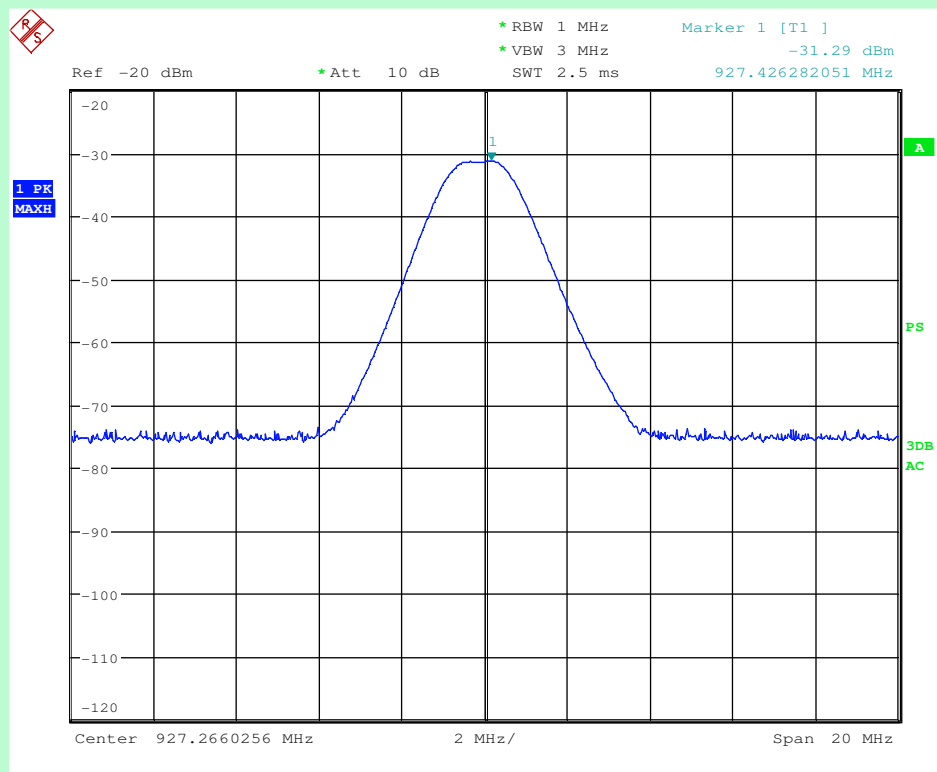
Antenna-1, Channel 5 (921.575 MHz)

Note : Peak Graph - Vertical polarization



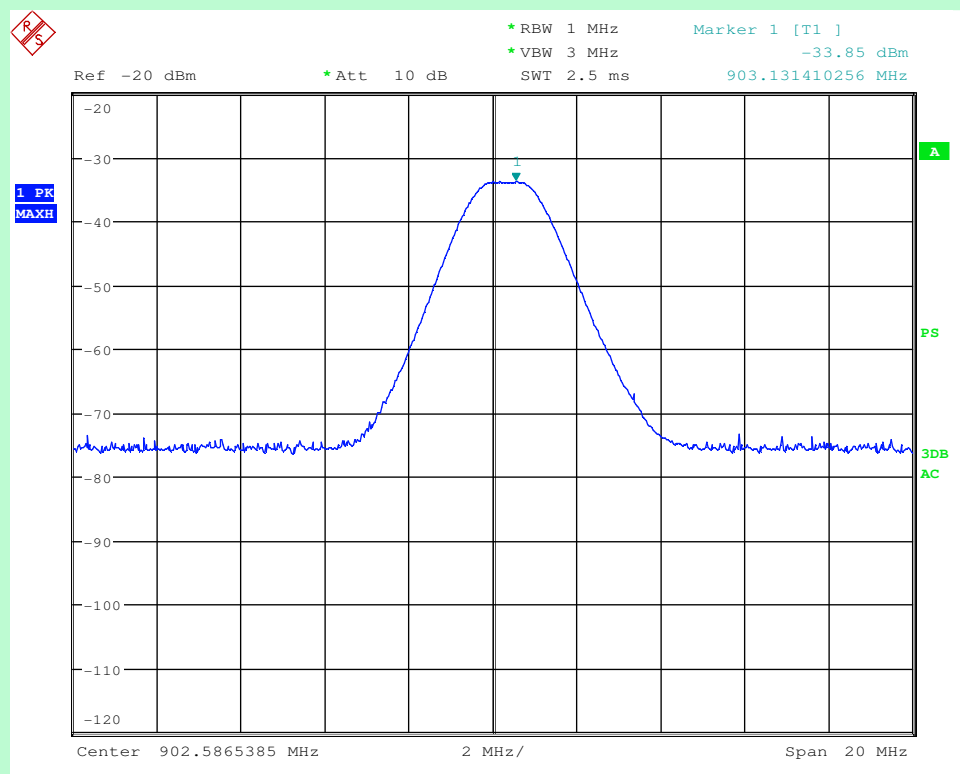
Antenna-1, Channel 6 (927.125 MHz)

Note : Peak Graph - Horizontal polarization



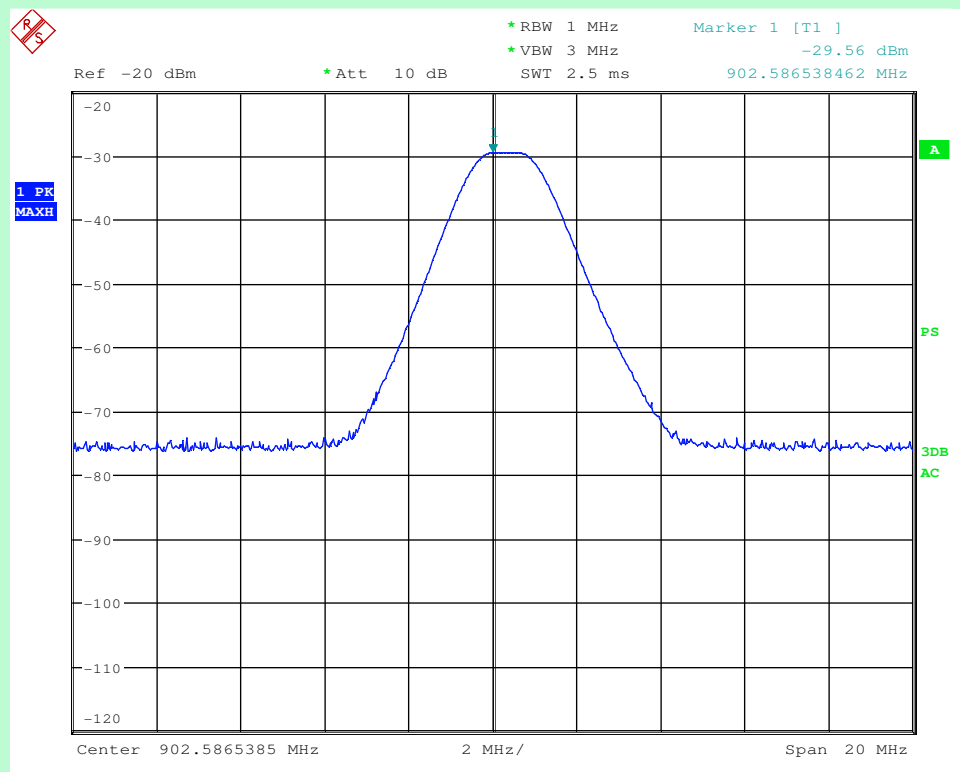
Antenna-1, Channel 6 (927.125 MHz)

Note : Peak Graph - Vertical polarization



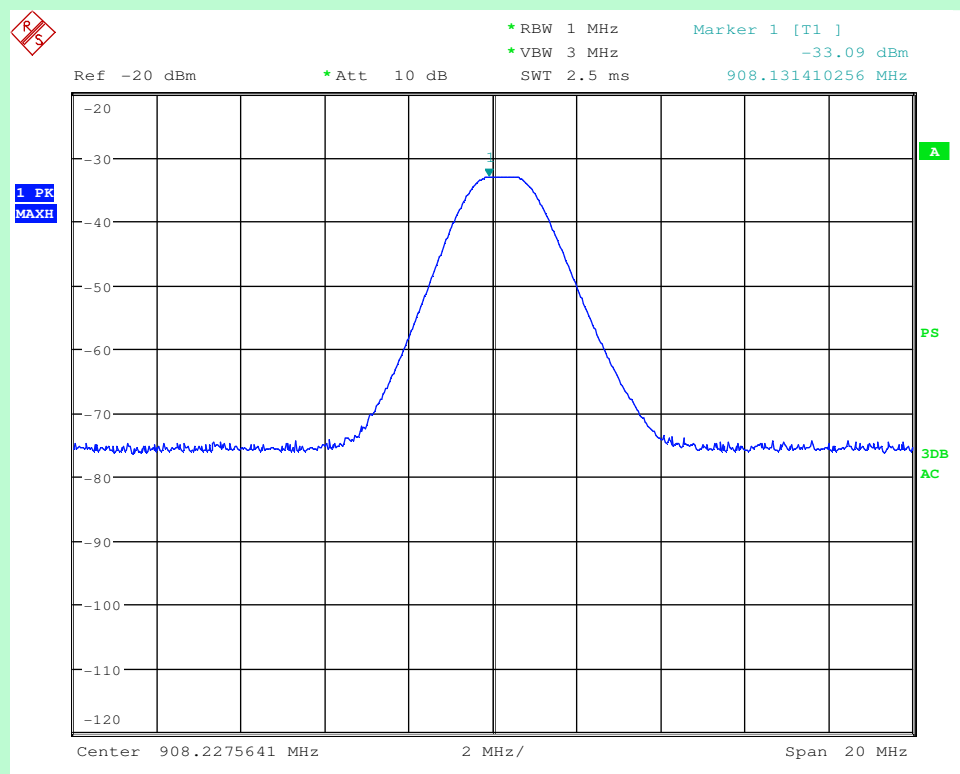
Antenna-2, Channel 1 (902.875 MHz)

Note : Peak Graph - Horizontal polarization



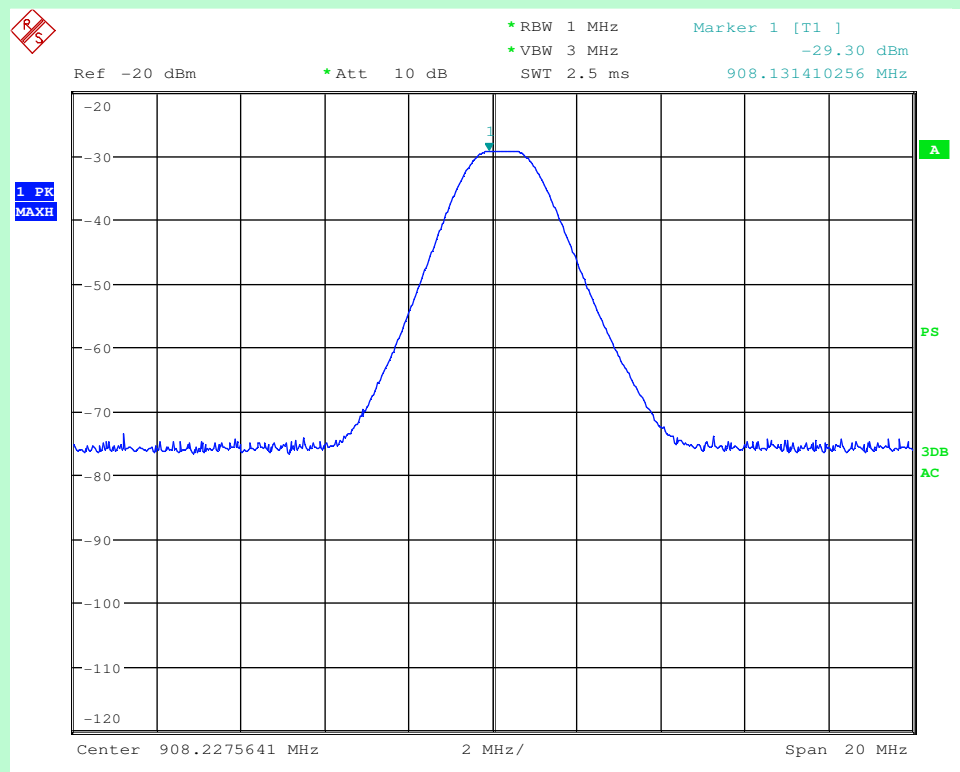
Antenna-2, Channel 1 (902.875 MHz)

Note : Peak Graph - Vertical polarization



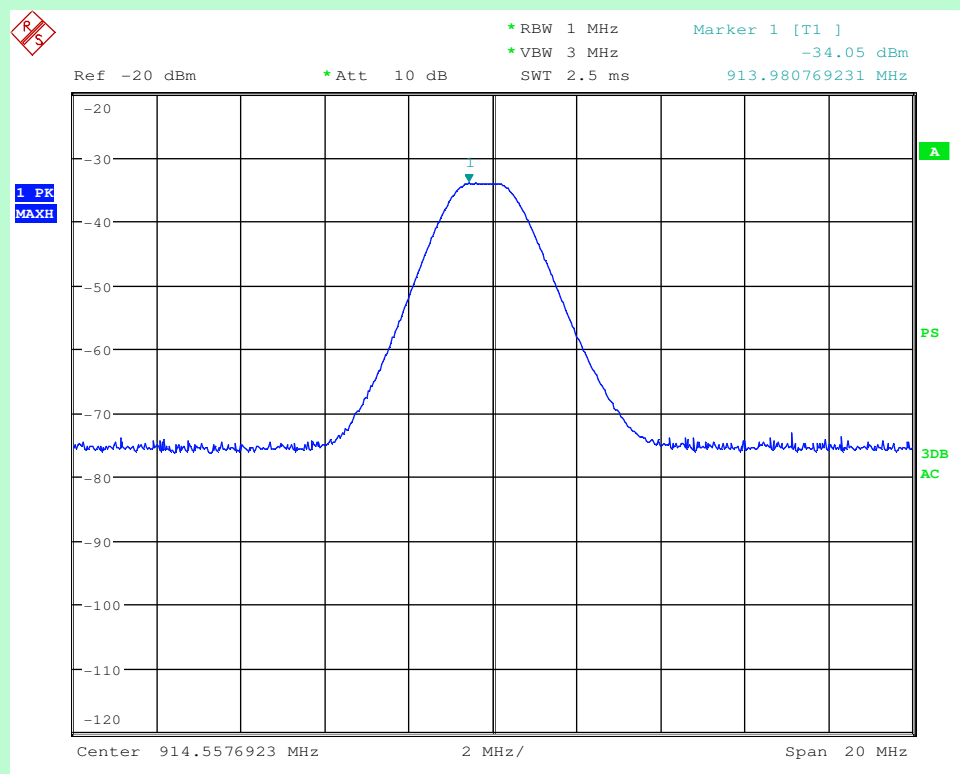
Antenna-2, Channel 2 (908.425 MHz)

Note : Peak Graph - Horizontal polarization



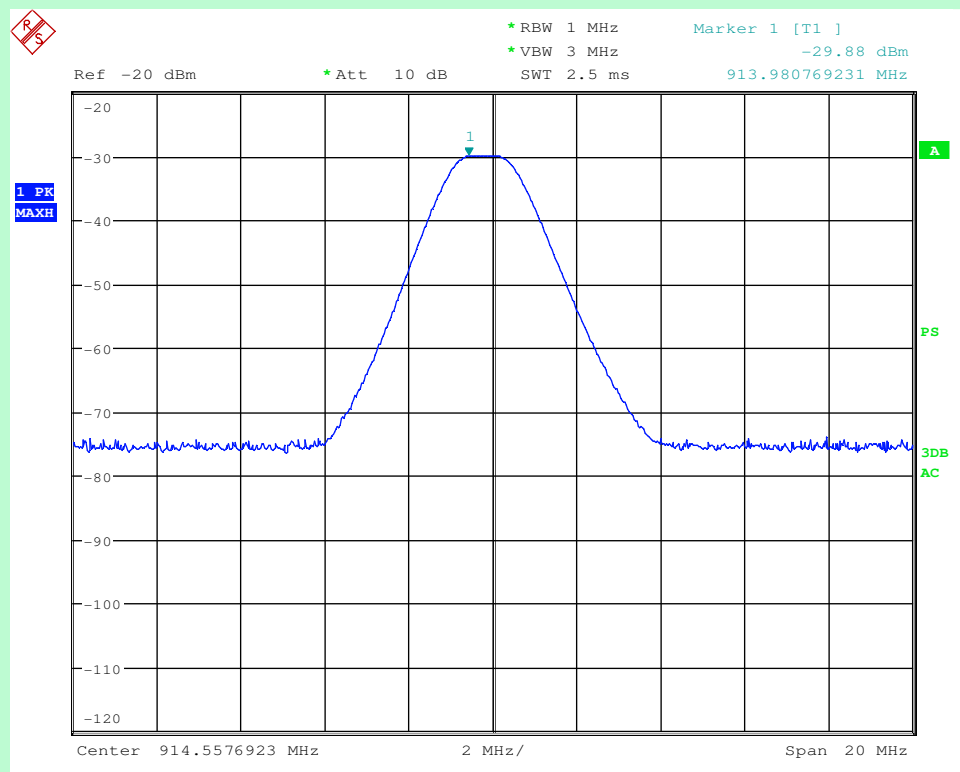
Antenna-2, Channel 2 (908.425 MHz)

Note : Peak Graph - Vertical polarization



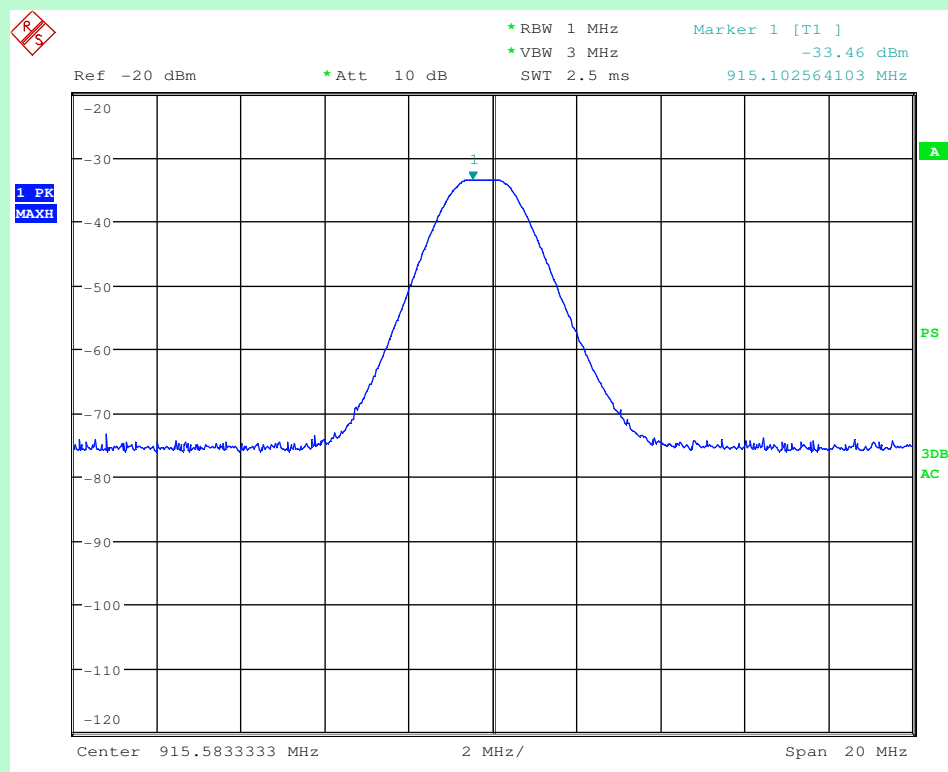
Antenna-2, Channel 3 (914.325 MHz)

Note : Peak Graph - Horizontal polarization

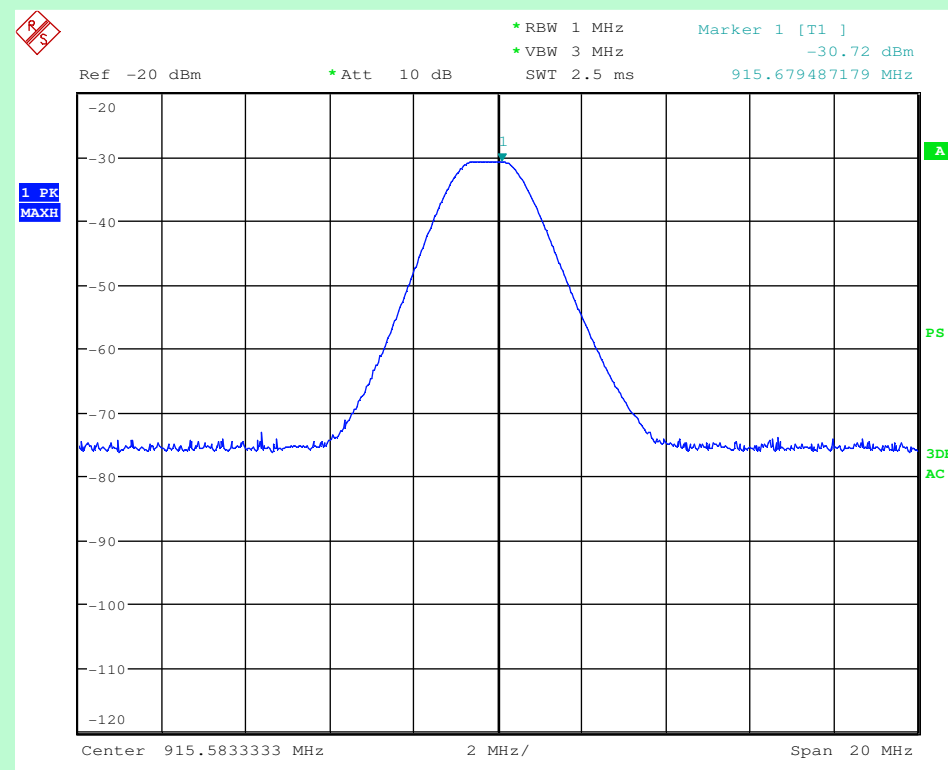


Antenna-2, Channel 3 (914.325 MHz)

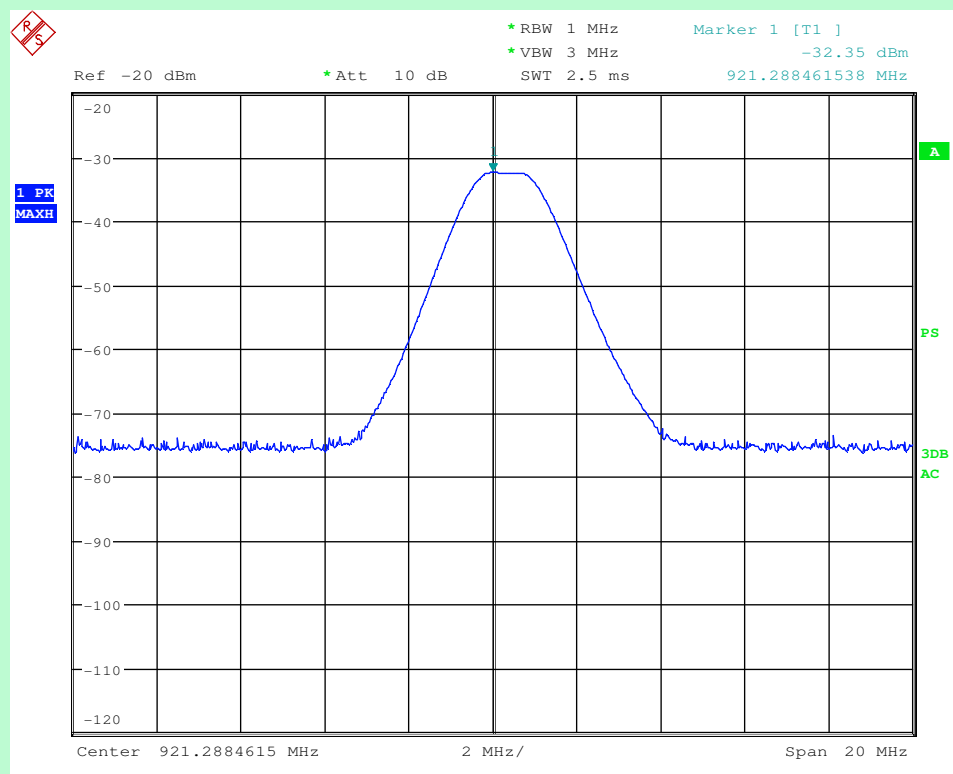
Note : Peak Graph - Vertical polarization

**Antenna-2, Channel 4 (915.325 MHz)**

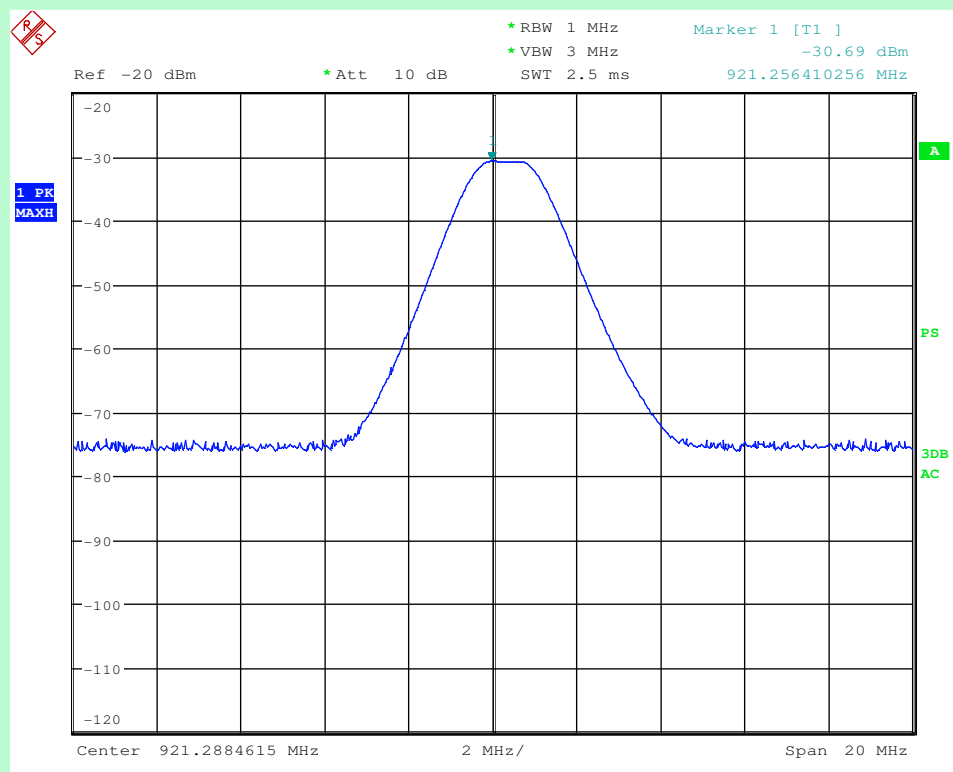
Note : Peak Graph - Horizontal polarization

**Antenna-2, Channel 4 (915.325 MHz)**

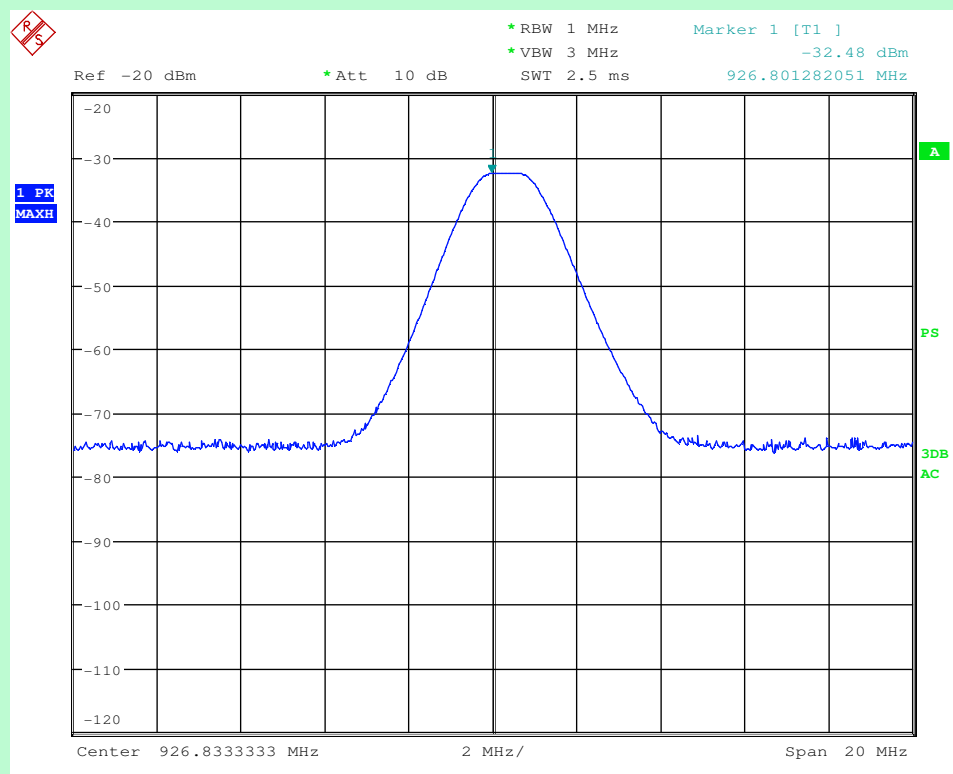
Note : Peak Graph - Vertical polarization

**Antenna-2, Channel 5 (921.575 MHz)**

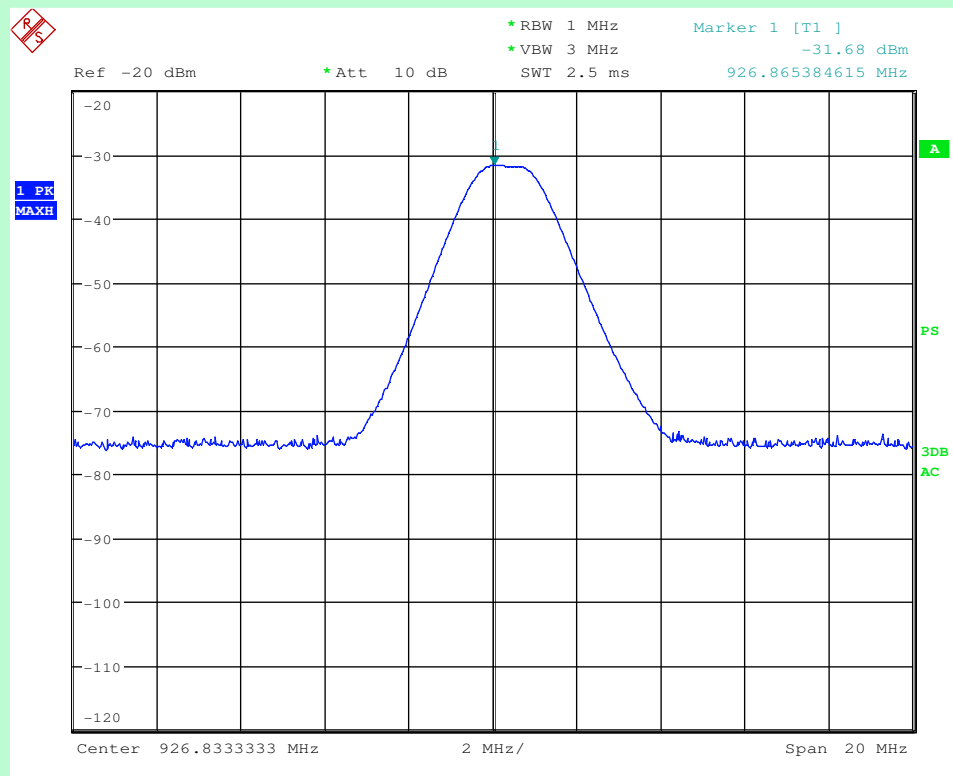
Note : Peak Graph - Horizontal polarization

**Antenna-2, Channel 5 (921.575 MHz)**

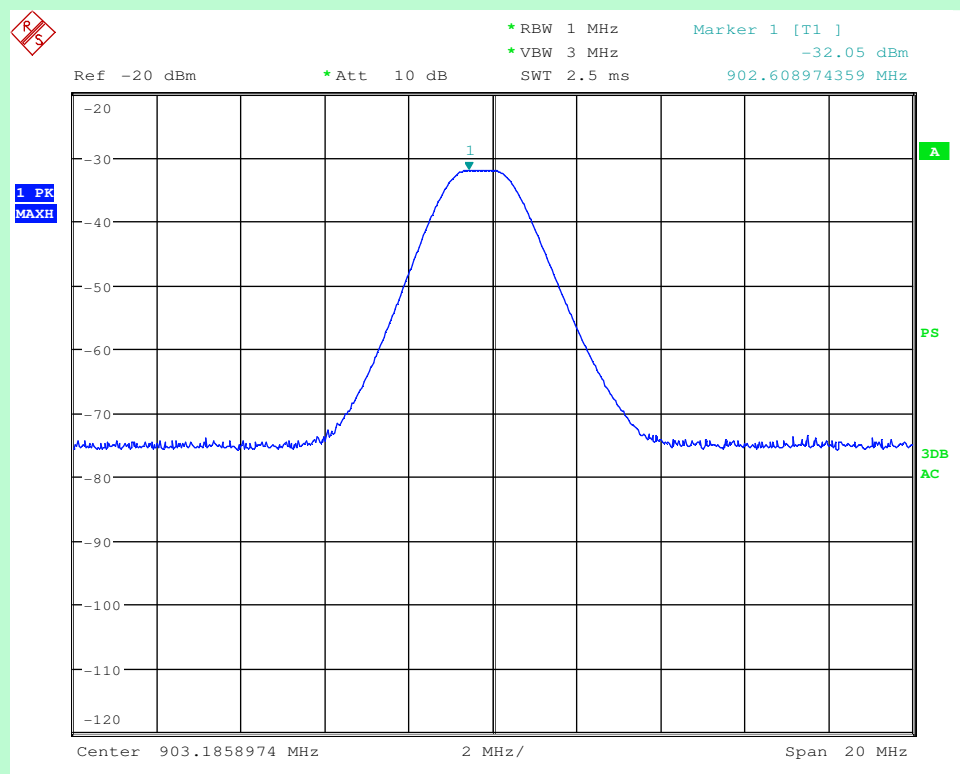
Note : Peak Graph - Vertical polarization

**Antenna-2, Channel 6 (927.125 MHz)**

Note : Peak Graph - Horizontal polarization

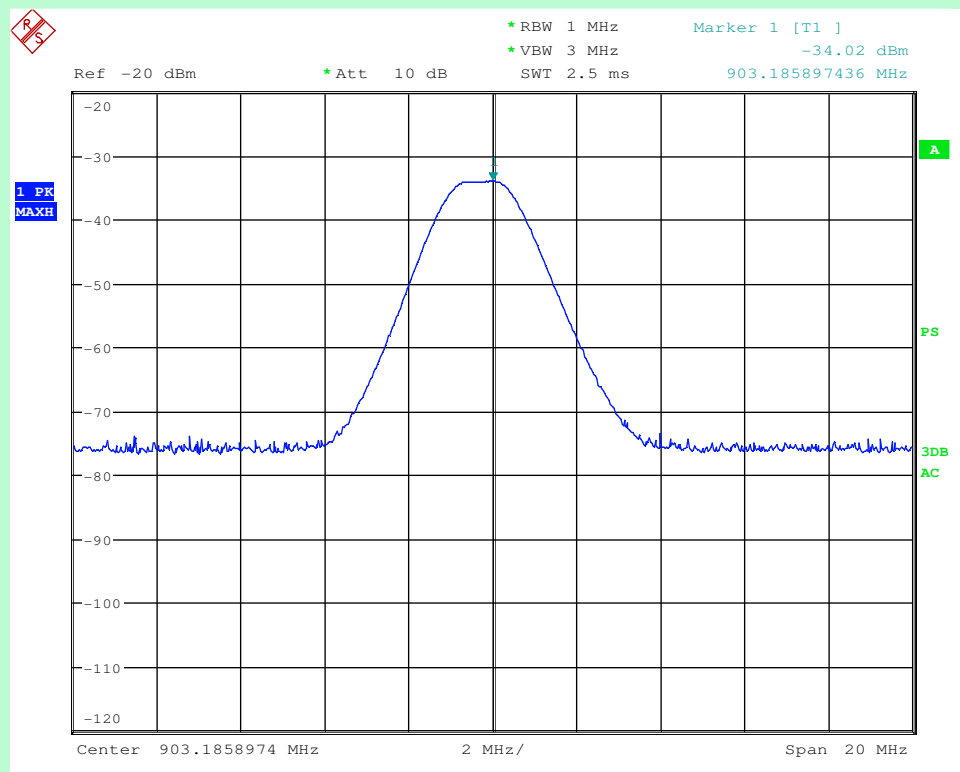
**Antenna-2, Channel 6 (927.125 MHz)**

Note : Peak Graph - Vertical polarization



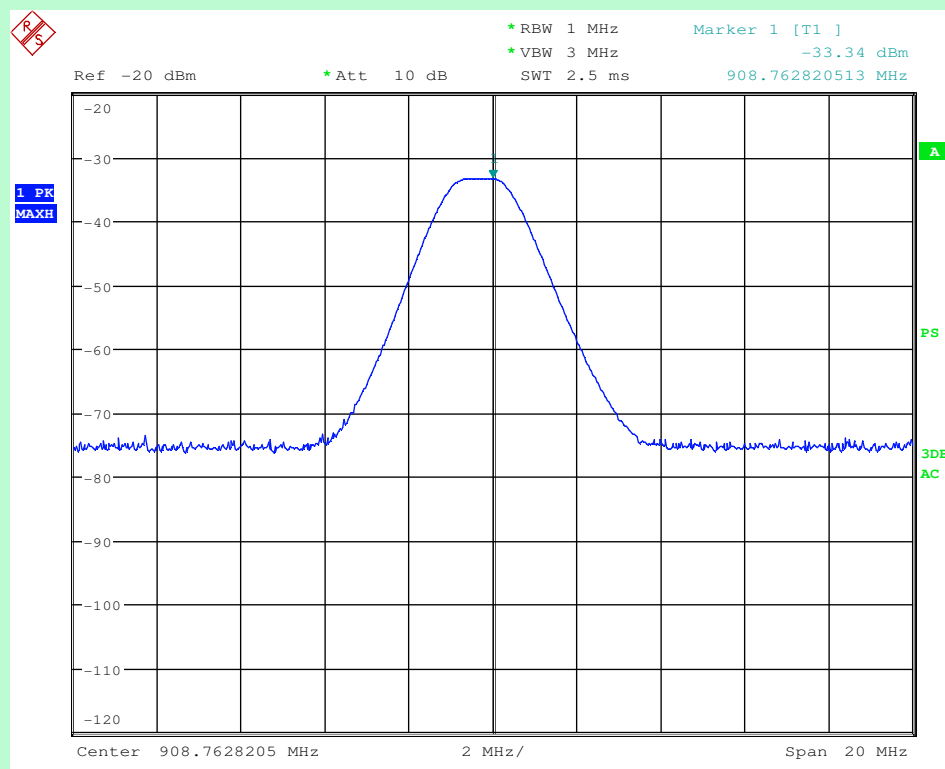
Antenna-3, Channel 1 (902.875 MHz)

Note : Peak Graph - Horizontal polarization



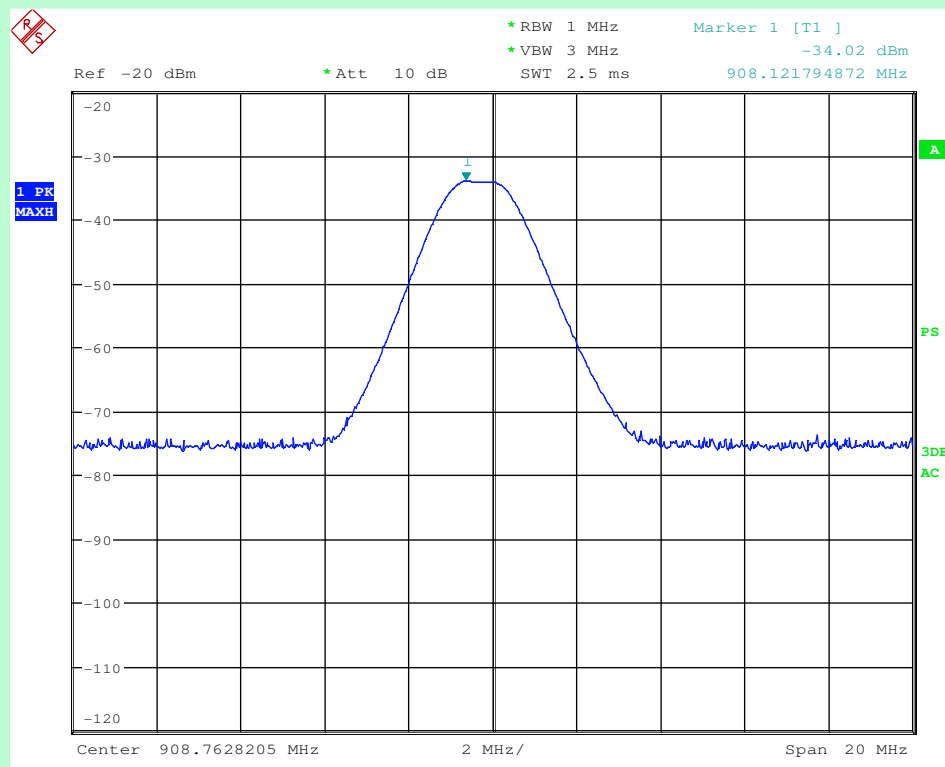
Antenna-3, Channel 1 (902.875 MHz)

Note : Peak Graph - Vertical polarization



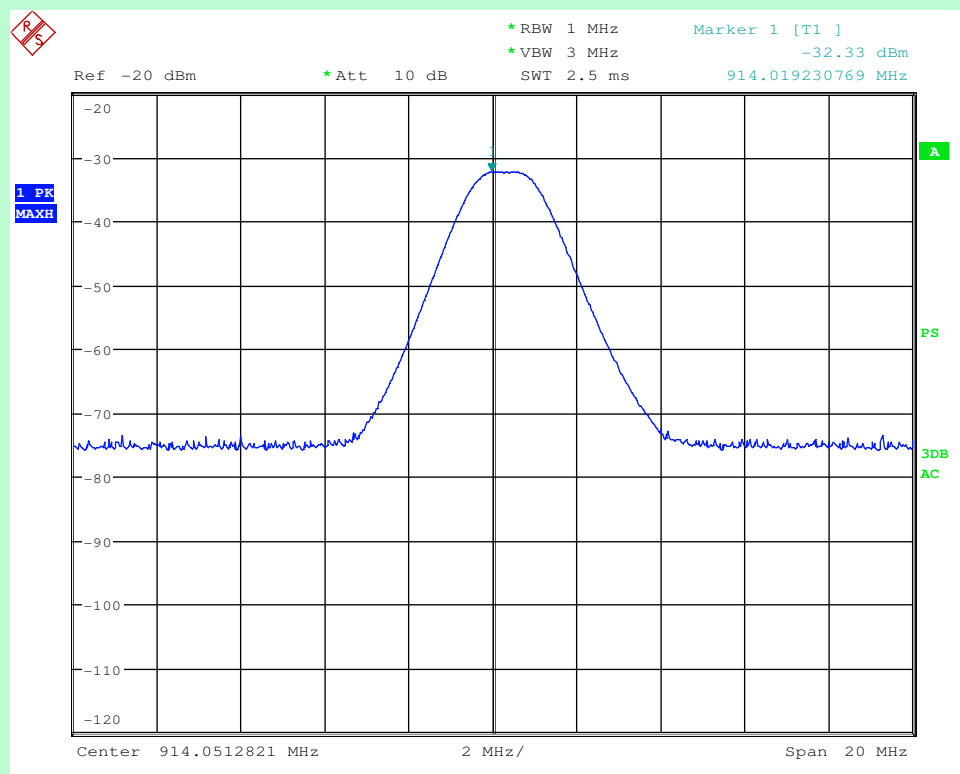
Antenna-3, Channel 2 (908.425 MHz)

Note : Peak Graph - Horizontal polarization



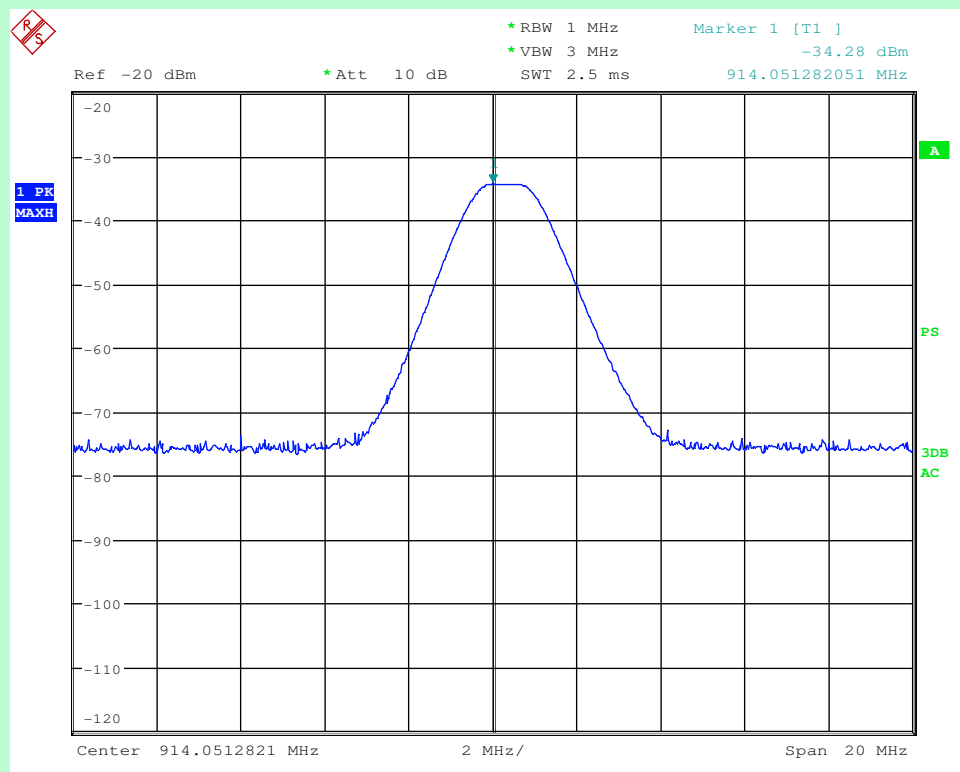
Antenna-3, Channel 2 (908.425 MHz)

Note : Peak Graph - Vertical polarization



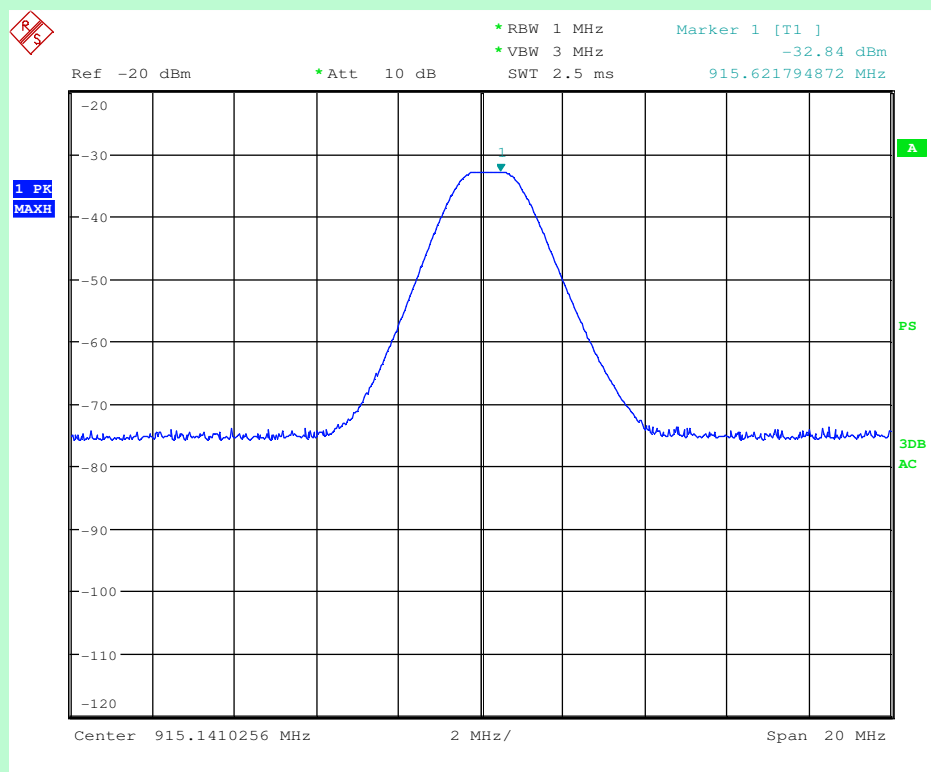
Antenna-3, Channel 3 (914.325 MHz)

Note : Peak Graph - Horizontal polarization



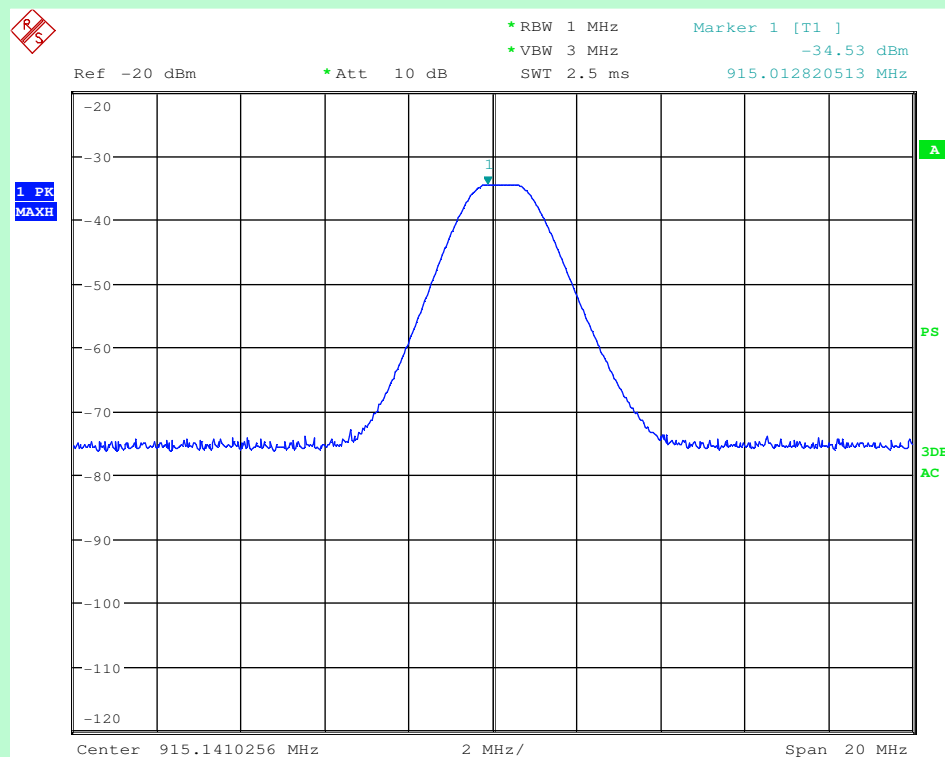
Antenna-3, Channel 3 (914.325 MHz)

Note : Peak Graph - Vertical polarization



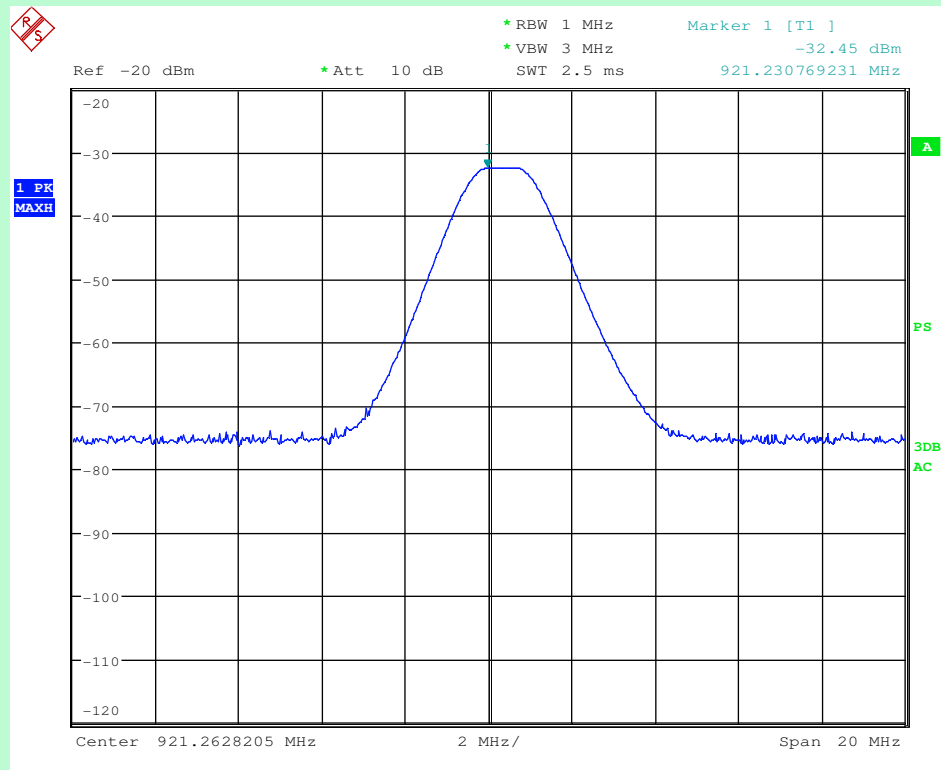
Antenna-3, Channel 4 (915.325 MHz)

Note : Peak Graph - Horizontal polarization



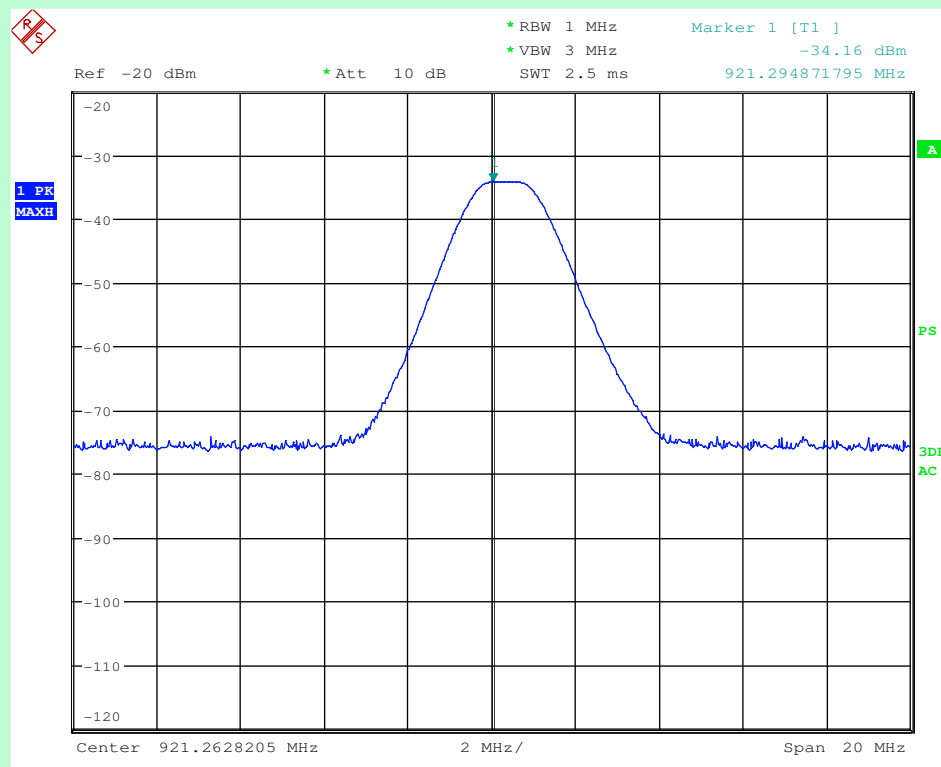
Antenna-3, Channel 4 (915.325 MHz)

Note : Peak Graph - Vertical polarization



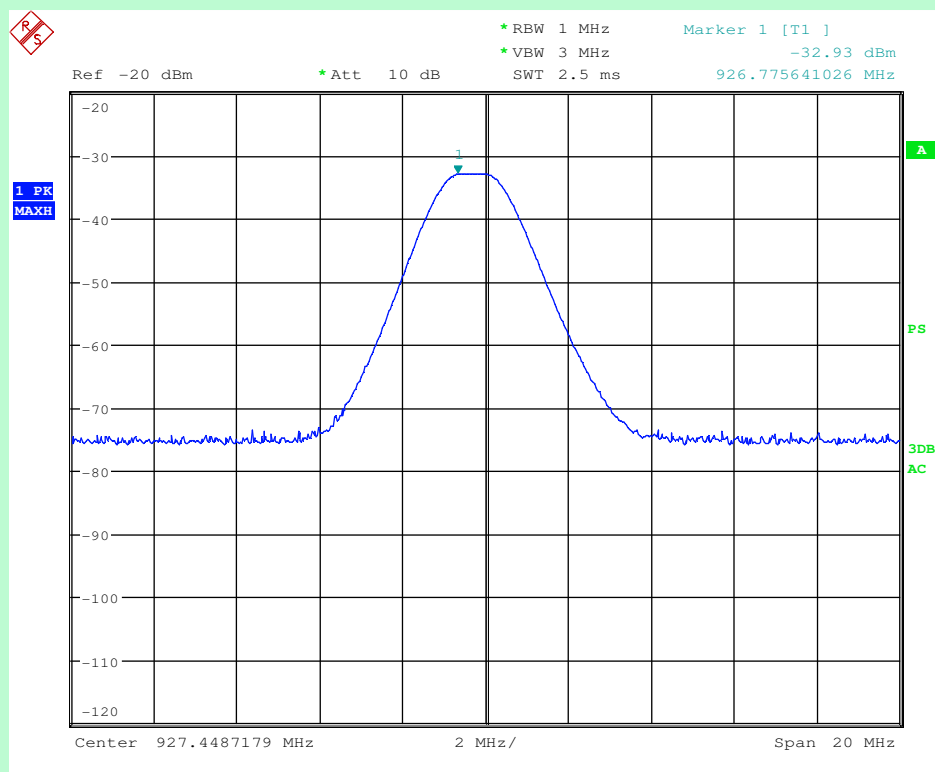
Antenna-3, Channel 5 (921.575 MHz)

Note : Peak Graph - Horizontal polarization



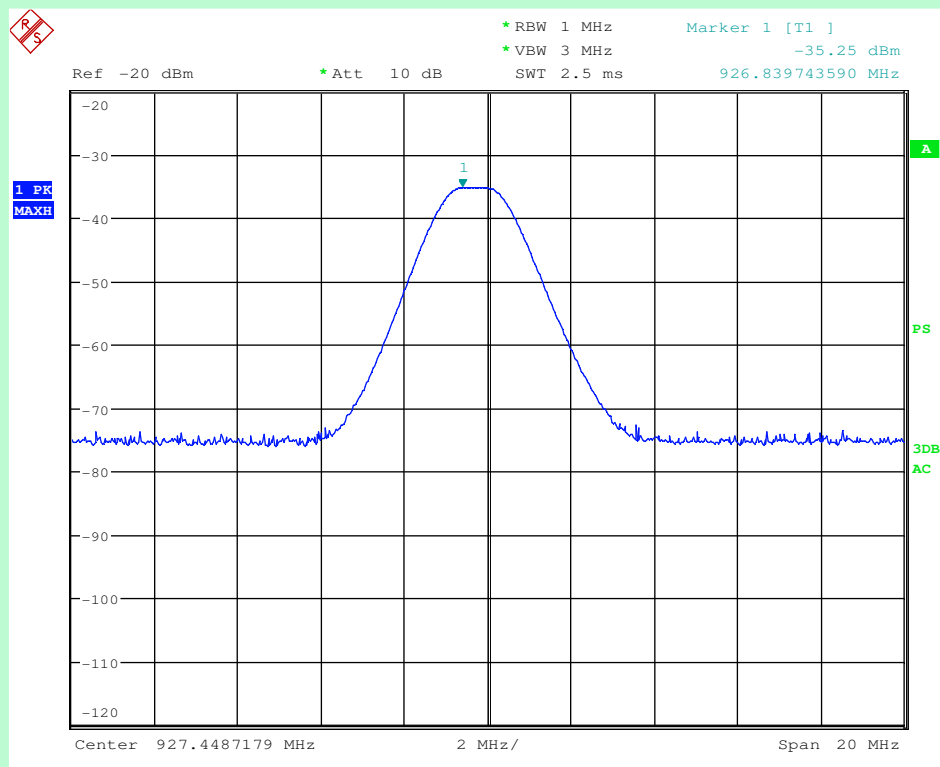
Antenna-3, Channel 5 (921.575 MHz)

Note : Peak Graph - Vertical polarization



Antenna-3, Channel 6 (927.125 MHz)

Note : Peak Graph - Horizontal polarization



Antenna-3, Channel 6 (927.125 MHz)

Note : Peak Graph - Vertical polarization

TEST RESULT – EIRP											
Channel	Freq	Rx Ant Height	Rx Ant Pol	Azimuth	Measured Level	Cable Loss	Ext Att	Path loss @ 3m	Rx Ant Gain	Calculated Rx Power Level	Calculated EIRP
#	MHz	cm	H/V	deg	dBm	dB	dB	dB	dB	dBm	dBm
Antenna – 1											
CH-1	902.875	150	H	345	-32.98	2.4	6	41.21	6.3	-30.88	10.33
CH-1	902.875	100	V	120	-32.08	2.4	6	41.21	6.3	-29.98	11.23
CH-2	908.425	150	H	0	-33.46	2.4	6	41.21	6.3	-31.36	9.85
CH-2	908.425	100	V	90	-31.04	2.4	6	41.21	6.3	-28.94	12.27
CH-3	914.325	150	H	360	-34.03	2.4	6	41.21	6.3	-31.93	9.28
CH-3	914.325	100	V	100	-30.38	2.4	6	41.21	6.3	-28.28	12.93
CH-4	915.325	150	H	0	-30.77	2.4	6	41.21	6.3	-28.67	12.54
CH-4	915.325	100	V	60	-31.69	2.4	6	41.21	6.3	-29.59	11.62
CH-5	921.575	150	H	10	-35.24	2.4	6	41.21	6.3	-33.14	8.07
CH-5	921.575	100	V	100	-31.83	2.4	6	41.21	6.3	-29.73	11.48
CH-6	927.125	150	H	0	-36.31	2.4	6	41.21	6.3	-34.21	7.00
CH-6	927.125	150	V	120	-31.29	2.4	6	41.21	6.3	-29.19	12.02
Antenna – 2											
CH-1	902.875	150	H	355	-33.85	2.4	6	41.21	6.3	-31.75	9.46
CH-1	902.875	100	V	0	-29.56	2.4	6	41.21	6.3	-27.46	13.75
CH-2	908.425	150	H	10	-33.09	2.4	6	41.21	6.3	-30.99	10.22
CH-2	908.425	150	V	0	-29.3	2.4	6	41.21	6.3	-27.20	14.01
CH-3	914.325	150	H	10	-34.05	2.4	6	41.21	6.3	-31.95	9.26
CH-3	914.325	150	V	0	-29.88	2.4	6	41.21	6.3	-27.78	13.43
CH-4	915.325	150	H	10	-33.46	2.4	6	41.21	6.3	-31.36	9.85
CH-4	915.325	100	V	0	-30.72	2.4	6	41.21	6.3	-28.62	12.59
CH-5	921.575	150	H	10	-32.35	2.4	6	41.21	6.3	-30.25	10.96
CH-5	921.575	100	V	0	-30.69	2.4	6	41.21	6.3	-28.59	12.62
CH-6	927.125	15	H	20	-32.48	2.4	6	41.21	6.3	-30.38	10.83
CH-6	927.125	100	V	0	-31.68	2.4	6	41.21	6.3	-29.58	11.63
Antenna - 3											
CH-1	902.875	150	H	0	-32.05	2.4	6	41.21	6.3	-29.95	11.26
CH-1	902.875	100	V	0	-34.02	2.4	6	41.21	6.3	-31.92	9.29
CH-2	908.425	200	H	0	-33.34	2.4	6	41.21	6.3	-31.24	9.97
CH-2	908.425	100	V	310	-34.02	2.4	6	41.21	6.3	-31.92	9.29
CH-3	914.325	150	H	170	-32.33	2.4	6	41.21	6.3	-30.23	10.98
CH-3	914.325	100	V	310	-34.28	2.4	6	41.21	6.3	-32.18	9.03
CH-4	915.325	100	H	300	-32.84	2.4	6	41.21	6.3	-30.74	10.47
CH-4	915.325	150	V	310	-34.53	2.4	6	41.21	6.3	-32.43	8.78
CH-5	921.575	150	H	170	-32.45	2.4	6	41.21	6.3	-30.35	10.86
CH-5	921.575	100	V	240	-34.16	2.4	6	41.21	6.3	-32.06	9.15
CH-6	927.125	150	H	0	-32.93	2.4	6	41.21	6.3	-30.83	10.38
CH-6	927.125	100	V	240	-35.25	2.4	6	41.21	6.3	-33.15	8.06

Note : Effective Isotropic Radiated Power (dBm)= Pr(dBm) +Lp(dB)

$$Pr = P_{meas}(dBm) - Gr(dBi) + Lc(dB) + Latt(dB)$$

$$Lp = 20 \log F + 20 \log D - 27.5$$

Where:

Pr = Calculated Received Power Level(dBm)

Lp= Free Space Path Loss(dB)

Pmeas= Measured Power Level(dBm)

Gr = Receiver Antenna Gain(dBi)

Lc = Cable Loss (dB)

Latt= External Attenuator(dB)

F = Frequency (MHz)

D= Distance (m)