TEST REPORT

of

FCC Part 15 Subpart C §15.209 / IC RSS-210 Issue 9, RSS-Gen Issue 4

FCC ID: TQ8-SMK-4E18
IC Certification: 5074A-SMK4E18

Equipment Under Test	:	SMART KEY ECU
Model Name	:	SMK-4E18
Applicant	:	Hyundai Mobis Co., Ltd.
Manufacturer	:	AUTONICS Co., Ltd.
Date of Receipt	:	2017.02.01
Date of Test(s)	:	2017.03.11~2017.03.14
Date of Issue	:	2017.03.22

In the configuration tested, the EUT complied with the standards specified above.

Tested By: **Patrick Kang** **Date:** **2017.03.22**

Technical Manager: **Logan Lee** **Date:** **2017.03.22**

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1. General information

1.1. Testing Laboratory

SGS Korea Co., Ltd. (Gunpo Laboratory)
- Wireless Div. 2FL, 10-2, LS-ro 182beon-gil, Gunpo-si, Gyeonggi-do, Korea, 15807

All SGS services are rendered in accordance with the applicable SGS conditions of service available on request and accessible at http://www.sgs.com/en/Terms-and-Conditions.aspx.

Phone No. : +82 31 688 0901
Fax No. : +82 31 688 0921

1.2. Details of Applicant

Applicant : Hyundai Mobis Co., Ltd.
Address : 203, Teheran-ro, Gangnam-gu, Seoul, 06141, Republic of Korea
Contact Person : Choi, Seung-hoon
Phone No. : +82 31 260 0098

1.3. Description of EUT

Kind of Product		SMART KEY ECU
Model Name		SMK-4E18
Power Supply		DC 12.0 V
Frequency Range		Tx: 125.00 ㎑, Rx: 433.92 ㎒
Antenna Type	**Tx**	External Type (Coil Antenna)
	Rx	Internal Type
Operating Temperature		-30 ℃ ~ 75 ℃

1.4. Declaration of manufacturer

- The EUT has 7 transmit antennas and one receive antenna.
- The transmit antennas can not operate at the same time.

1.5. Test Equipment List

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Interval	Cal. Due
Spectrum Analyzer	R&S	FSV30	103100	Jun. 24, 2016	Annual	Jun. 24, 2017
Signal Generator	R&S	SMBV100A	255834	Jun. 20, 2016	Annual	Jun. 20, 2017
DC Power Supply	R&S	HMP2020	020089489	May. 31, 2016	Annual	May 31, 2017
Test Receiver	R&S	ESU26	100109	Feb. 17, 2017	Annual	Feb. 17, 2018
Loop Antenna	Schwarzbeck Mess-Elektronik	FMZB 1519	1519-039	Aug. 19, 2015	Biennial	Aug. 19, 2017
Turn Table	INNCO systems	CONTROLLER CO3000	N/A	N. C. R.	N/A	N. C. R.
Anechoic Chamber	SY Corporation	L × W × H (9.6 m × 6.4 m × 6.6 m)	N/A	N. C. R.	N/A	N. C. R.

1.6. Sample calculation

Where relevant, the following sample calculation is provided:
Field strength level (dBμV/m) = Measured level (dBμV) + Antenna factor (dB) + Cable loss (dB)

1.7. Summary of Test Results

The EUT has been tested according to the following specifications:

APPLIED STANDARD			
Section in FCC Part 15	**Section in RSS-210, RSS-Gen**	**Test Item**	**Result**
15.209	RSS-210 Issue 9, 4.4, RSS-Gen Issue 4, 8.9	Radiated emission, Spurious Emission and Field Strength of Fundamental	Complied
2.1049	-	20 dB Bandwidth	Complied
-	RSS-Gen Issue 4, 6.6	Occupied Bandwidth	Complied

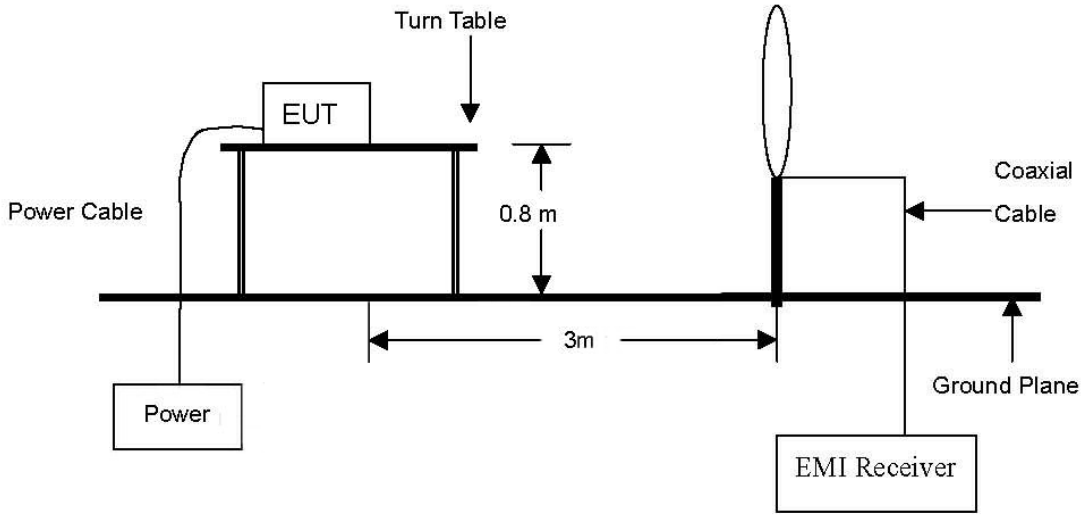
1.8. Test Report Revision

Revision	Report number	Date of Issue	Description
0	F690501/RF-RTL010945	2017.03.22	Initial

2. Field Strength of Fundamental and Spurious Emission

2.1. Test Setup

The diagram below shows the test setup that is utilized to make the measurements for emission from 9 ㎑ to 30 ㎒ Emissions.



2.2. Limits

2.2.1. FCC Limits

2.2.1.1. Radiated emission limits, general requirements

According to §15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (㎒)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2 400/F(㎑)	300
0.490 - 1.705	24 000/F(㎑)	30
1.705 - 30.0	30	30
30 - 88	100**	3
88 - 216	150**	3
216 - 960	200**	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 ㎒, 76-88 ㎒, 174-216 ㎒ or 470-806 ㎒. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections §15.231 and §15.241

2.2.2. IC Limits

2.2.2.1. Transmitter Emission Limits for Licence-Exempt Radio Apparatus

According to RSS-Gen Issue 4, Section 8.9, except when the requirements applicable to a given device state otherwise, the emissions from licence-exempt transmitters shall comply with the field strength limits shown in Table 4 or Table 5 below. Additionally, the level of any transmitter emission shall not exceed the level of the transmitter's fundamental emission.

Table 4- General Field Strength Limits for Licence-Exempt Transmitters at Frequencies Above 30 ㎒

Frequency (㎒)	Field Strength (㎶/m at 3 metres)
30-88	100
88-216	150
216-960	200
Above 960 *	500

* Unless otherwise specified, for all frequencies greater than 1 ㎓, the radiated emission limits for licence-exempt radio apparatus stated in applicable RSSs (including RSS-Gen) are based on measurements using a linear average detector function having a minimum resolution bandwidth of 1 ㎒. If an average limit is specified for the EUT, then the peak emission shall also be measured with instrumentation properly adjusted for such factors as pulse desensitization to ensure the peak emission is less than 20 ㏈ above the average limit.

Note: Transmitting devices are not permitted in restricted frequency bands unless stated otherwise in the specific RSS.

Table 5- General Field Strength Limits for Licence-Exempt Transmitters at Frequencies Below 30 ㎒

Frequency	Electric Field Strength (㎶/m)	Magnetic Field Strength (H-Field) (㎂/m)	Measurement Distance (metres)
9-490 ㎑	2,400/F (F in ㎑)	2,400/377F (F in ㎑)	300
490-1,705 ㎑	24,000/F (F in ㎑)	24,000/377F (F in ㎑)	30
1,705 - 30 ㎒	30	N/A	30

Note: The emission limits for the bands 9-90 ㎑ and 110-490 ㎑ are based on measurements employing a linear average detector. Transmitting devices are not permitted in restricted frequency bands unless stated otherwise in the relevant RSS.

2.3. Test Procedures

Radiated emissions from the EUT were measured according to the dictates of ANSI C63.10-2013.

2.3.1. Test Procedures for emission from 9 ㎑ to 30 ㎒

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter anechoic chamber test site. The table was rotated 360 degrees to determine the position of the highest radiation.
b. Then antenna is a loop antenna is fixed at one meter above the ground to determine the maximum value of the field strength. Both parallel and perpendicular of the antenna are set to make the measurement.
c. For each suspected emission, the EUT was arranged to its worst case and then the table was turned from 0 degrees to 360 degrees to find the maximum reading.
d. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
e. To get a maximum emission level from the EUT, the EUT is manipulated through three orthogonal planes (X, Y, Z). Worst orthogonal plan of EUT is **X – axis** during radiation test.

Note;

Although these tests were performed other than open field test site, adequate comparison measurements were confirmed against 30 meter open field test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 937606.

2.4. Field Strength of Fundamental Test Result

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

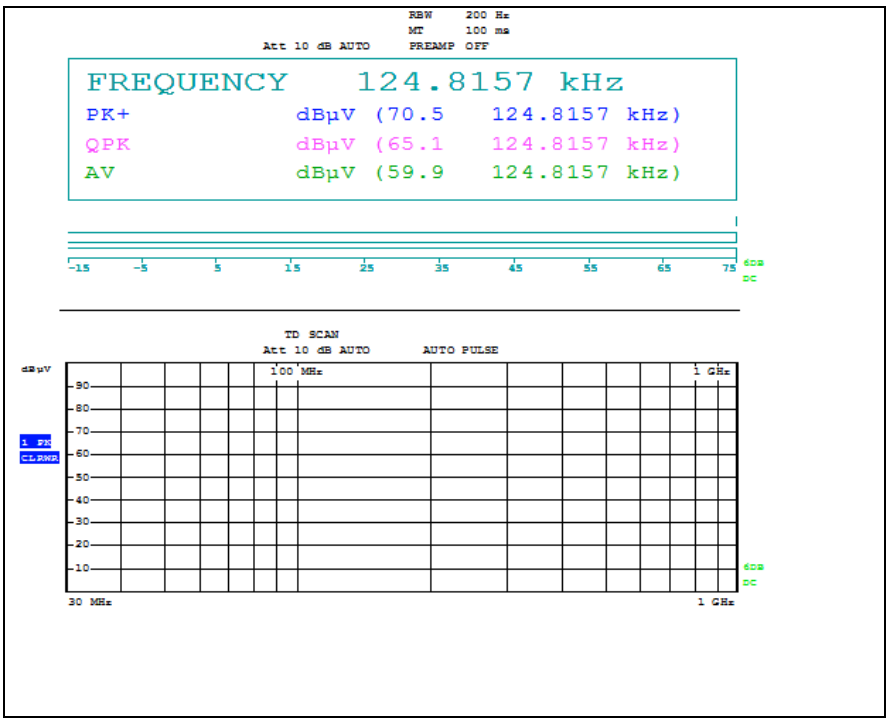
The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical. The field strength of spurious emission was measured in one orthogonal EUT position (x-axis). Definition of DUT for a orthogonal plane was described in the test setup photo.

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Limit (dB㎶/m) at 300 m	Margin (dB)
DRV Antenna									
0.125	59.90	Average	H	19.44	0.06	79.40	-0.60	25.65	26.25
AST Antenna									
0.125	59.80	Average	H	19.44	0.06	79.30	-0.70	25.65	26.35
INT1 Antenna									
0.125	58.60	Average	H	19.44	0.06	78.10	-1.90	25.65	27.55
INT2 Antenna									
0.125	62.30	Average	H	19.44	0.06	81.80	1.80	25.66	23.86
BMP Antenna									
0.125	60.90	Average	H	19.44	0.06	80.40	0.40	25.65	25.25
TRK Antenna									
0.125	61.60	Average	H	19.44	0.06	81.10	1.10	25.65	24.55
SSB Antenna									
0.125	63.40	Average	H	19.44	0.06	82.90	2.90	25.67	22.77

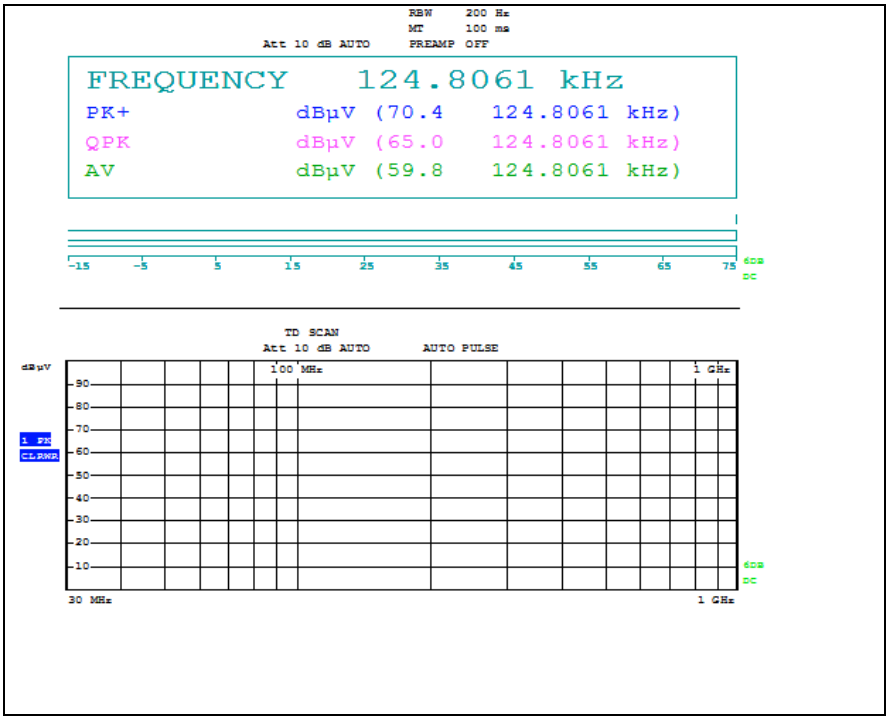
Note;
1. According to §15.31 (f)(2) 300 m Result(dB㎶/m) = 3 m Result(dB㎶/m) - 40log(300/3) (dB㎶/m).
2. According to §15.209 (d), the measurements were tested by using Quasi peak detector except for the frequency bands 9 – 90 ㎑, 110 – 490 ㎑ and above 1 ㎓ in these three bands on measurements employing an average detector.
3. The limit above was calculated based on table of §15.209 (a).

Test plot

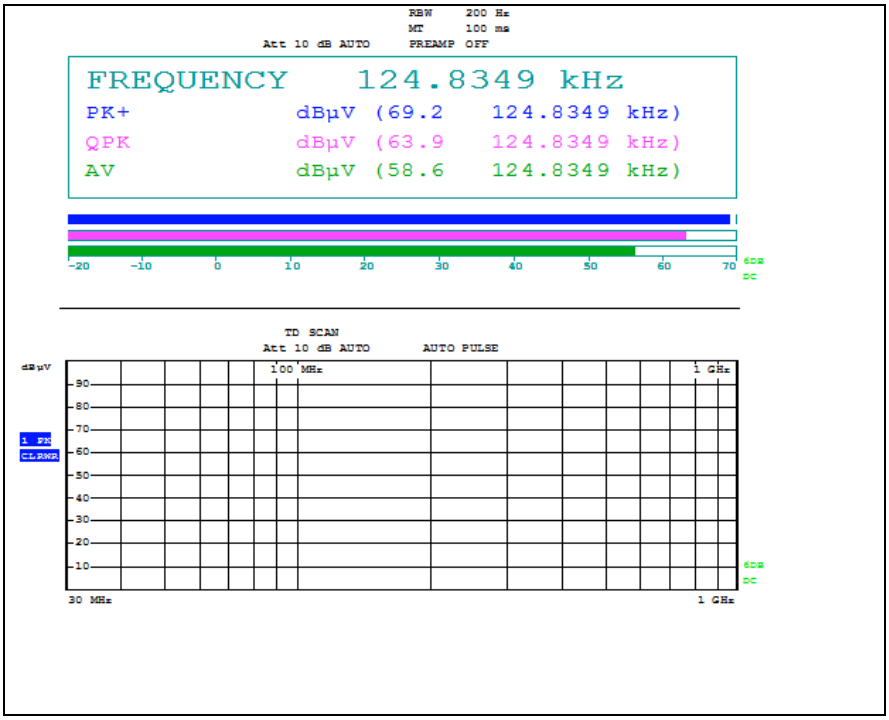
- DRV Antenna



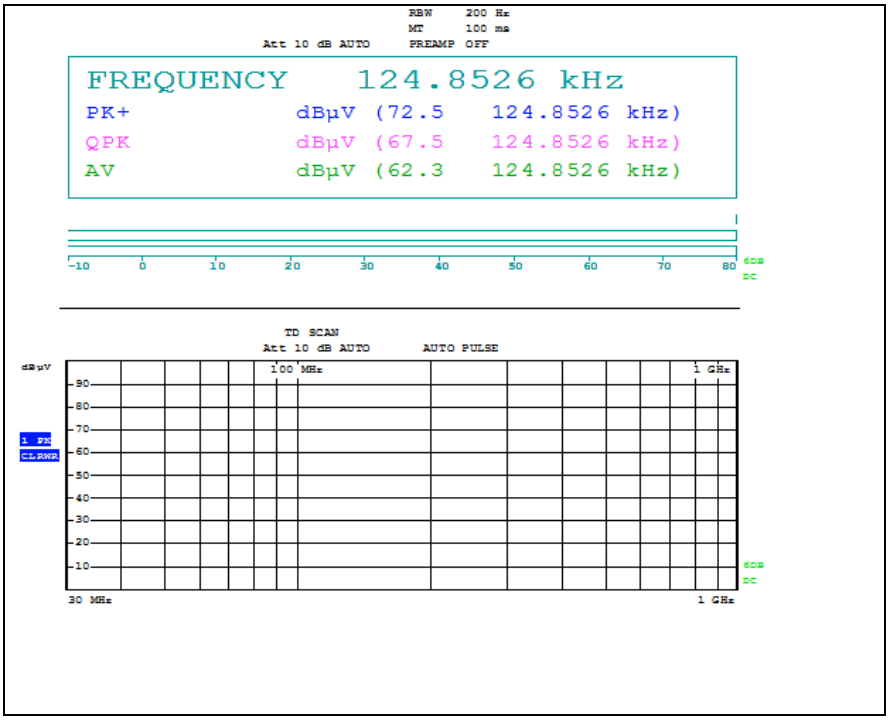
- AST Antenna



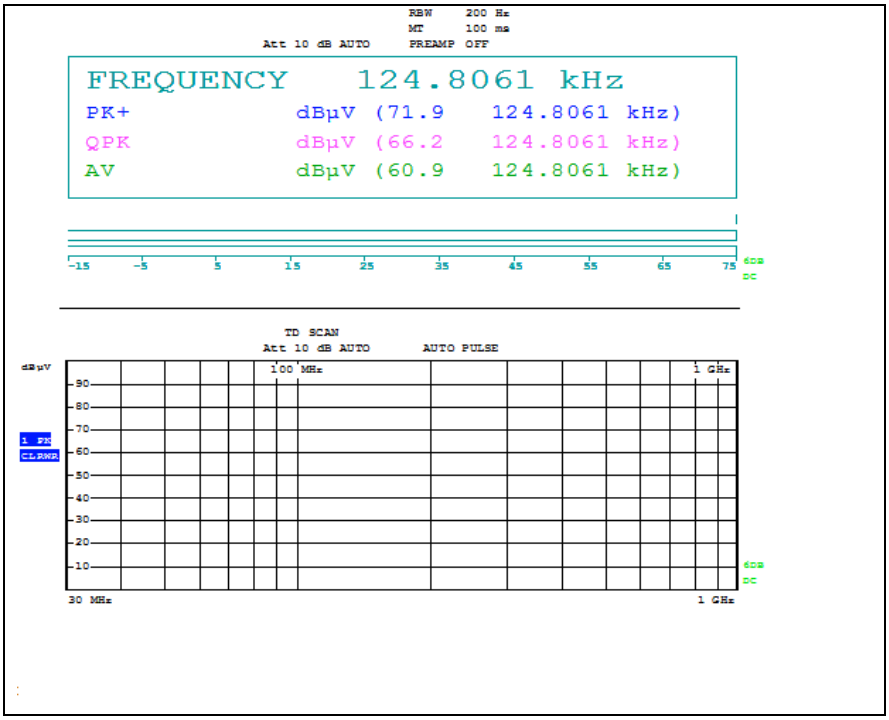
- INT1 Antenna



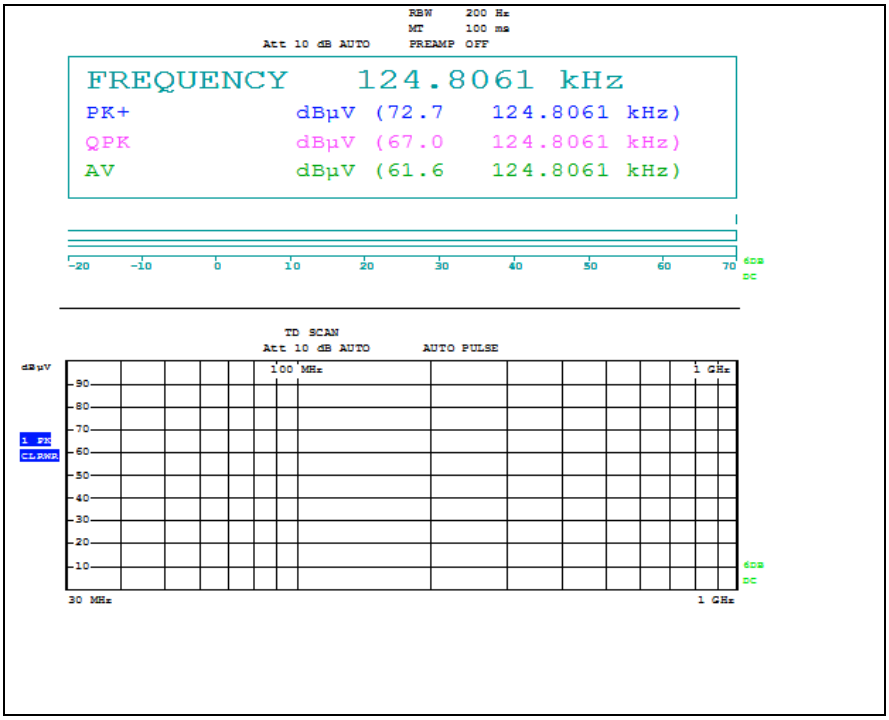
- INT2 Antenna



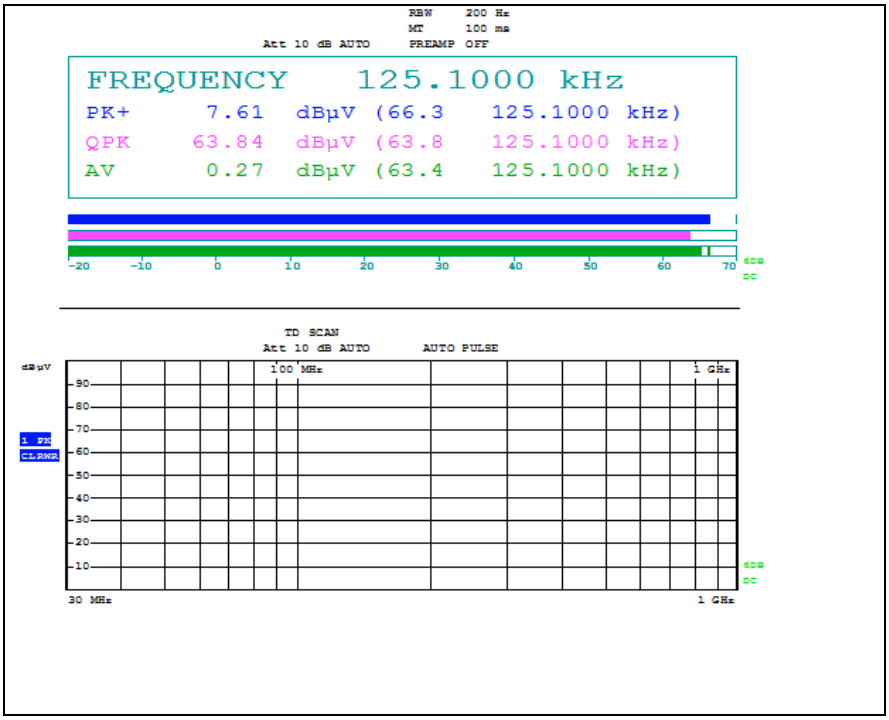
- BMP Antenna



- TRK Antenna



- SSB Antenna



2.5. Spurious Emission Test Result

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

The following table shows the highest levels of radiated emissions on both polarizations of horizontal and vertical.

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Limit (dB㎶/m) at 300 m	Margin (dB)
DRV Antenna									
0.022	35.30	Average	H	19.46	0.02	54.78	-25.22	40.76	65.98
0.068	29.50	Average	H	19.37	0.03	48.90	-31.10	30.95	62.05
0.113	29.60	Average	H	19.47	0.05	49.12	-30.88	26.54	57.42
0.130	28.50	Average	H	19.43	0.07	48.00	-32.00	25.33	57.33
Above 1.000	Not detected	-	-	-	-	-	-	-	-
AST Antenna									
0.022	35.30	Average	H	19.46	0.02	54.78	-25.22	40.76	65.98
0.068	29.50	Average	H	19.37	0.03	48.90	-31.10	30.95	62.05
0.113	33.00	Average	H	19.47	0.05	52.52	-27.48	26.54	54.02
0.137	15.50	Average	H	19.41	0.07	34.98	-45.02	24.87	69.89
Above 1.000	Not detected	-	-	-	-	-	-	-	-
INT1 Antenna									
0.022	34.80	Average	H	19.46	0.02	54.28	-25.72	40.76	66.48
0.097	23.70	Quasi-Peak	H	19.49	0.04	43.23	-36.77	27.87	64.64
0.119	28.90	Average	H	19.45	0.06	48.41	-31.59	26.09	57.68
0.137	21.30	Average	H	19.41	0.07	40.78	-39.22	24.87	64.09
Above 1.000	Not detected	-	-	-	-	-	-	-	-

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 300 m	Limit (dB㎶/m) at 300 m	Margin (dB)
INT2 Antenna									
0.021	34.80	Average	H	19.48	0.02	54.30	-25.70	41.16	66.86
0.068	29.50	Average	H	19.37	0.03	48.90	-31.10	30.95	62.05
0.113	29.60	Average	H	19.47	0.05	49.12	-30.88	26.54	57.42
0.129	38.10	Average	H	19.43	0.07	57.60	-22.40	25.39	47.79
Above 1.000	Not detected	-	-	-	-	-	-	-	-
BMP Antenna									
0.022	34.70	Average	H	19.46	0.02	54.18	-25.82	40.76	66.58
0.105	12.80	Average	H	19.49	0.04	32.33	-47.67	27.18	74.85
0.113	34.70	Quasi-Peak	H	19.47	0.05	54.22	-25.78	26.54	52.32
0.133	24.60	Average	H	19.42	0.07	44.09	-35.91	25.13	61.04
Above 1.000	Not detected	-	-	-	-	-	-	-	-
TRK Antenna									
0.022	33.40	Average	H	19.46	0.02	52.88	-27.12	40.76	67.88
0.068	29.50	Average	H	19.37	0.03	48.90	-31.10	30.95	62.05
0.117	29.60	Average	H	19.46	0.05	49.11	-30.89	26.24	57.13
0.136	29.00	Average	H	19.41	0.07	48.48	-31.52	24.93	56.45
Above 1.000	Not detected	-	-	-	-	-	-	-	-

Radiated Emissions			Ant.	Correction Factors		Total		Limit	
Frequency (㎒)	Reading (dB㎶)	Detect Mode	Pol.	Ant. (dB/m)	Cable (dB)	Actual (dB㎶/m) at 3 m	Actual (dB㎶/m) at 30 m or 300 m	Limit (dB㎶/m) at 30 m or 300 m	Margin (dB)
SSB Antenna									
0.068	29.60	Average	H	19.37	0.03	49.00	-31.00	30.95	61.95
0.107	16.80	Quasi-Peak	H	19.48	0.05	36.33	-43.67	27.02	70.69
0.118	25.60	Average	H	19.46	0.06	45.12	-34.88	26.17	61.05
0.134	17.10	Average	H	19.42	0.07	36.59	-43.41	25.06	68.47
0.341	13.10	Average	H	19.02	0.25	32.37	-47.63	16.95	64.58
0.628	16.40	Quasi-Peak	H	19.18	0.50	36.08	-3.92	31.65	35.57
Above 1.000	Not detected	-	-	-	-	-	-	-	-

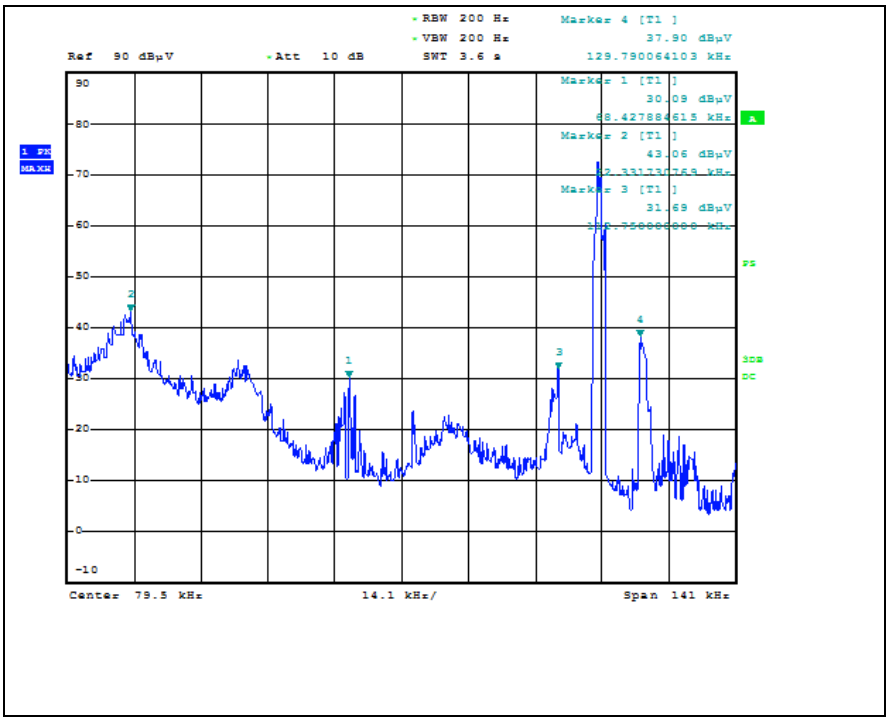
Note;

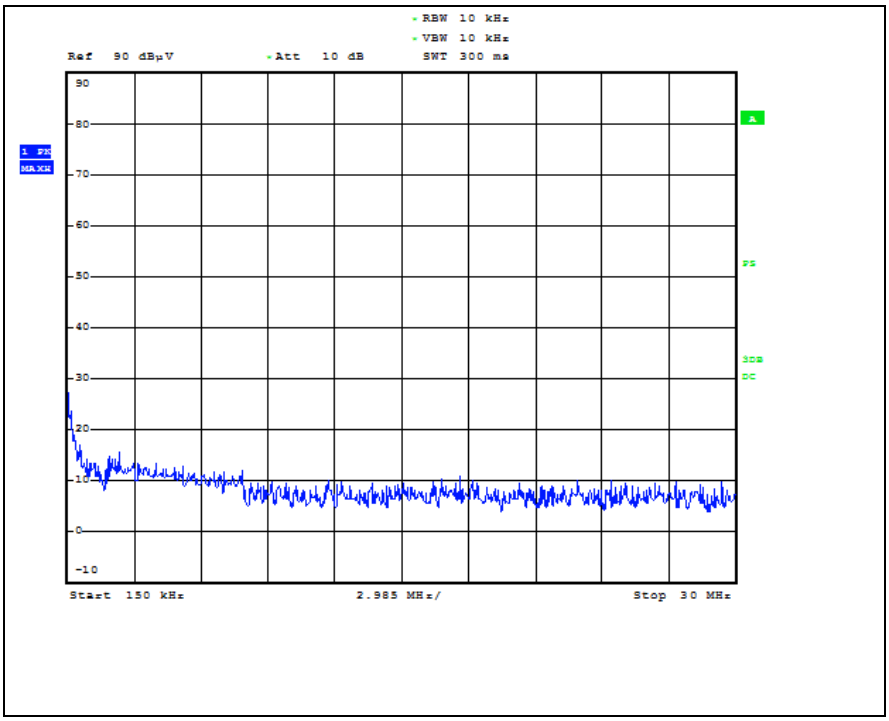
1. According to §15.31 (f)(2)
   - 300 m Result(dB㎶/m) = 3 m Result(dB㎶/m) - 40log(300/3) (dB㎶/m)
   - 30 m Result(dB㎶/m) = 3 m Result(dB㎶/m) - 40log(30/3) (dB㎶/m)
2. According to field strength table of general requirement in §15.209 (a), field strength limits below 1.705 ㎒ were calculated as below.
   - 9 ㎑ to 490 ㎑ : 20log(2 400 / F (㎑)) at 300 m (dB㎶/m)
   490 ㎑ to 1 705 ㎑ : 20log(2 400 / F (㎑)) at 30 m (dB㎶/m)
3. According to §15.209 (d), the measurements were tested by using Quasi peak detector except for the frequency bands 9 – 90 ㎑, 110 – 490 ㎑ and above 1 ㎓ in these three bands on measurements employing an average detector.

Test plots

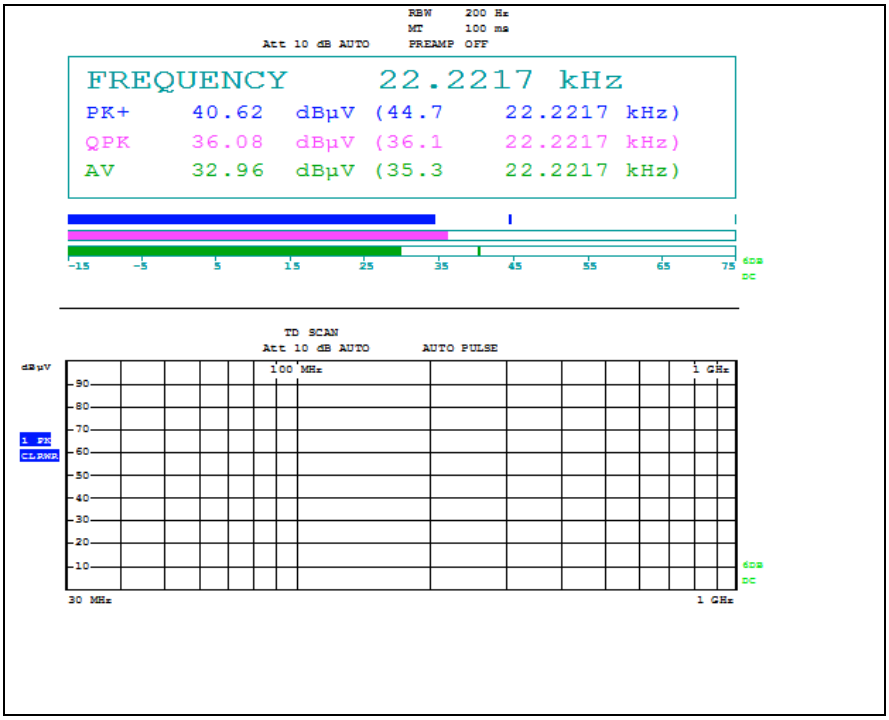
- DRV Antenna

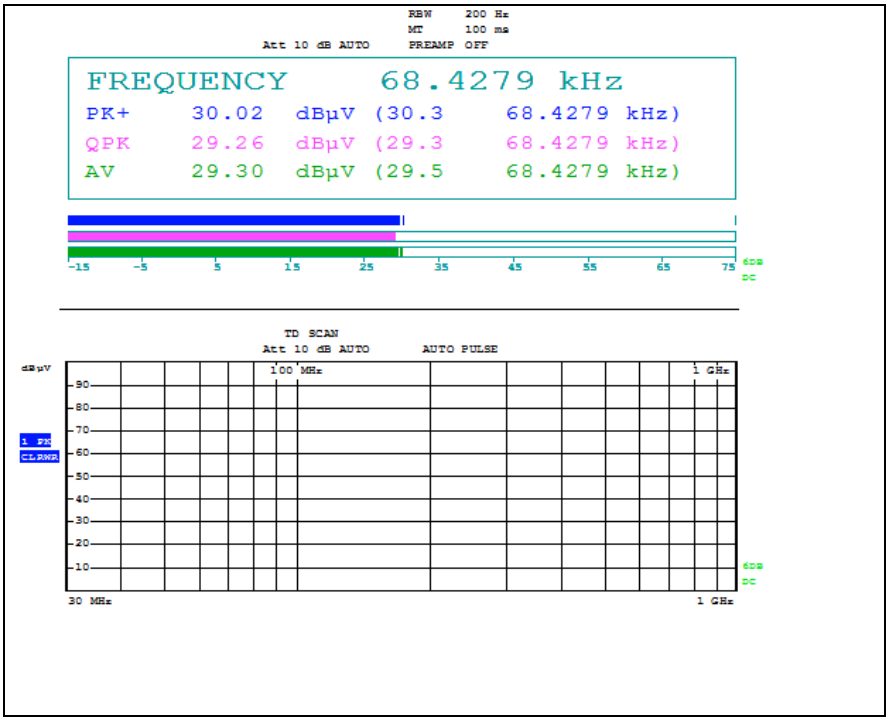
Scanning plots below 30 ㎒

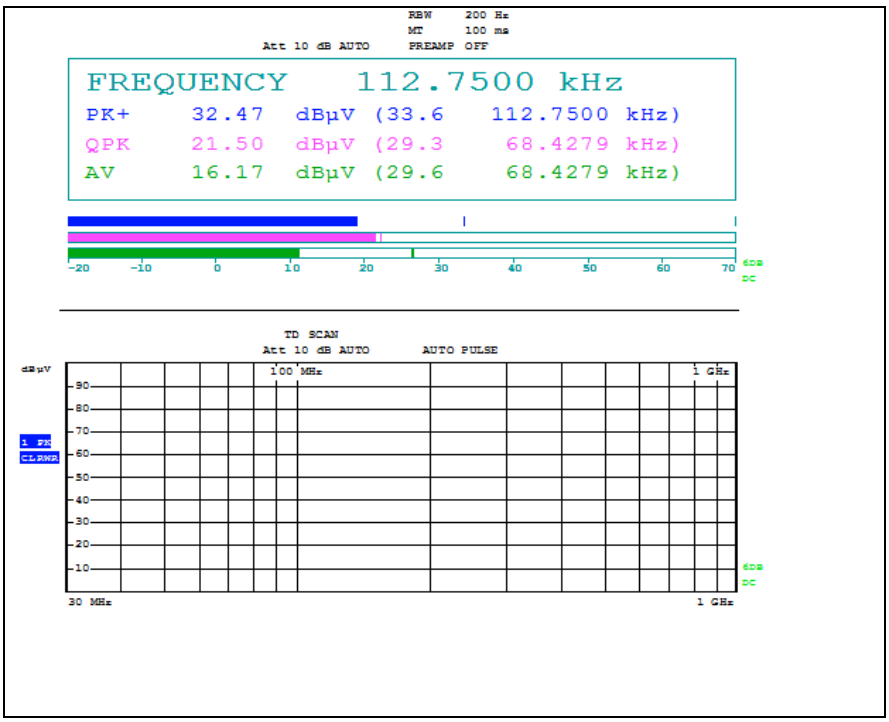


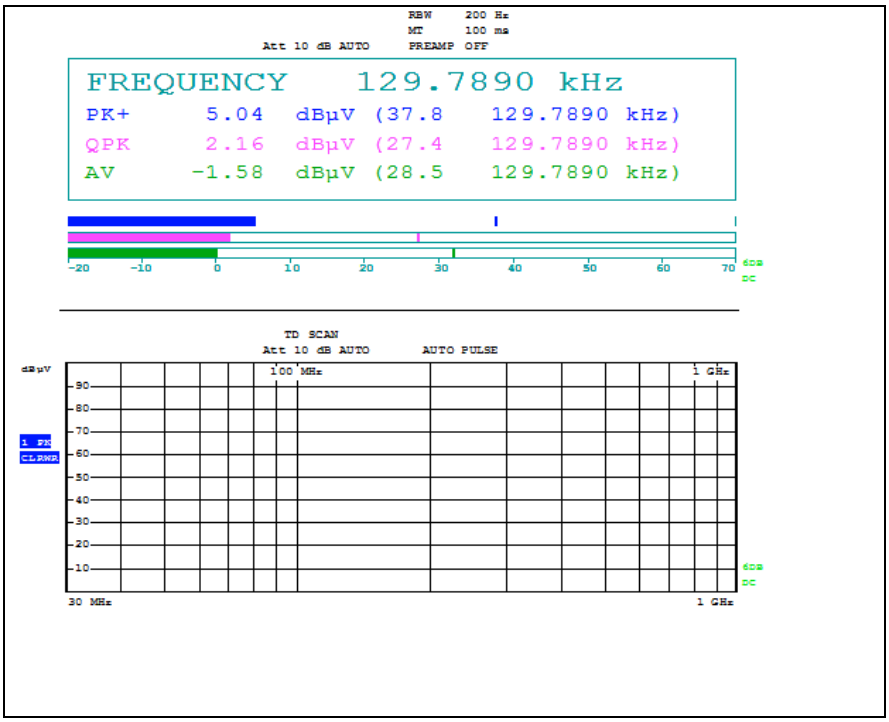


Measured plots below 30 ㎒



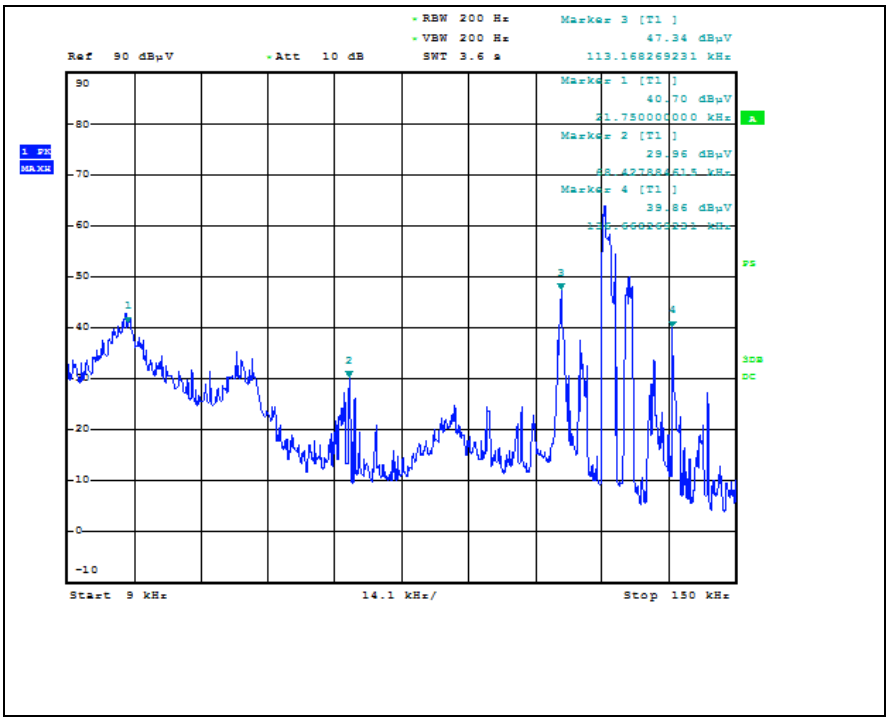


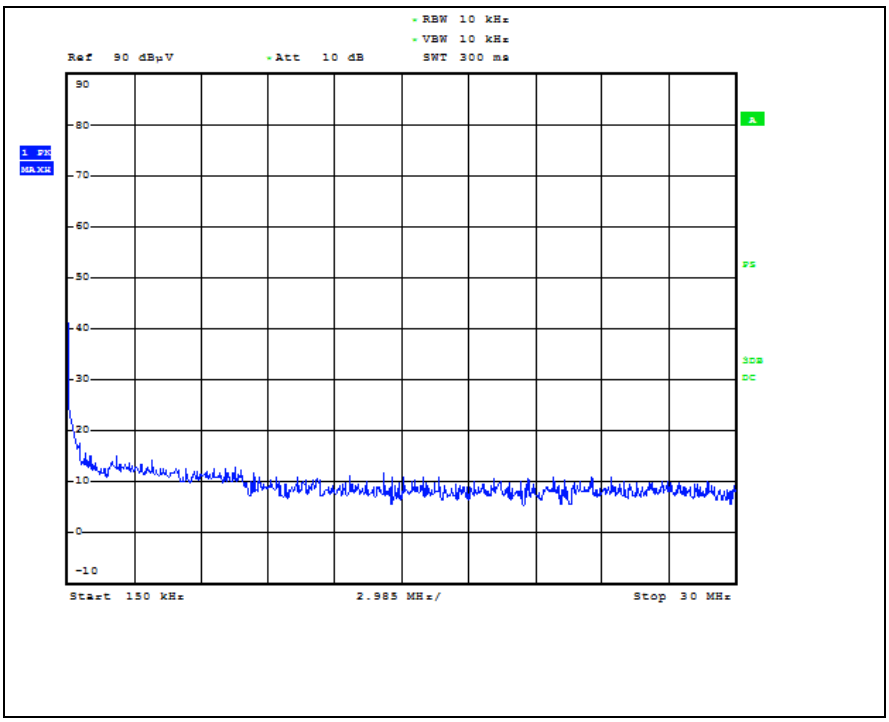

RBW 200 Hz
MT 100 ms
Att 10 dB AUTO PREAMP OFF
FREQUENCY 112.7500 kHz
PK+ 32.47 dBµV (33.6 112.7500 kHz)
QPK 21.50 dBµV (29.3 68.4279 kHz)
AV 16.17 dBµV (29.6 68.4279 kHz)
TD SCAN
Att 10 dB AUTO AUTO PULSE
100 MHz
1 GHz
30 MHz
1 GHz


RBW 200 Hz
MT 100 ms
Att 10 dB AUTO PREAMP OFF
FREQUENCY 129.7890 kHz
PK+ 5.04 dBµV (37.8 129.7890 kHz)
QPK 2.16 dBµV (27.4 129.7890 kHz)
AV -1.58 dBµV (28.5 129.7890 kHz)
TD SCAN
Att 10 dB AUTO AUTO PULSE
100 MHz
1 GHz
30 MHz
1 GHz

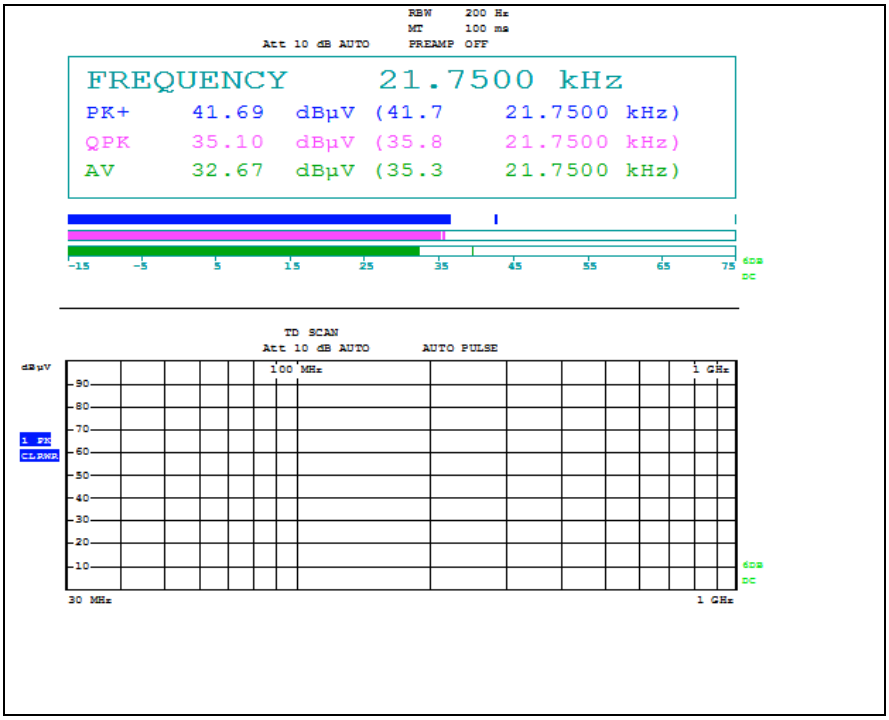
- AST Antenna

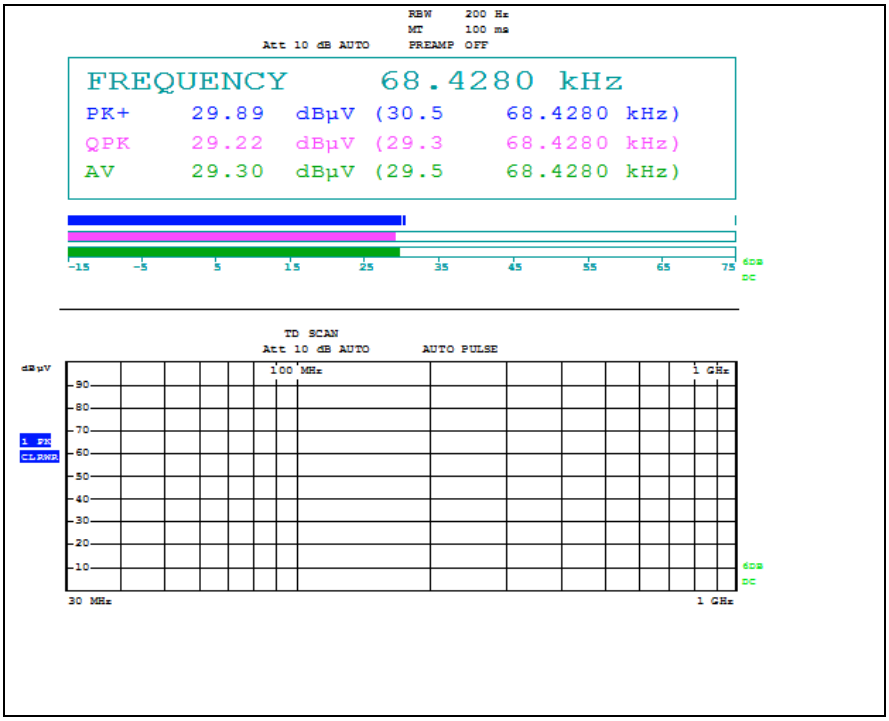
Scanning plots below 30 ㎒

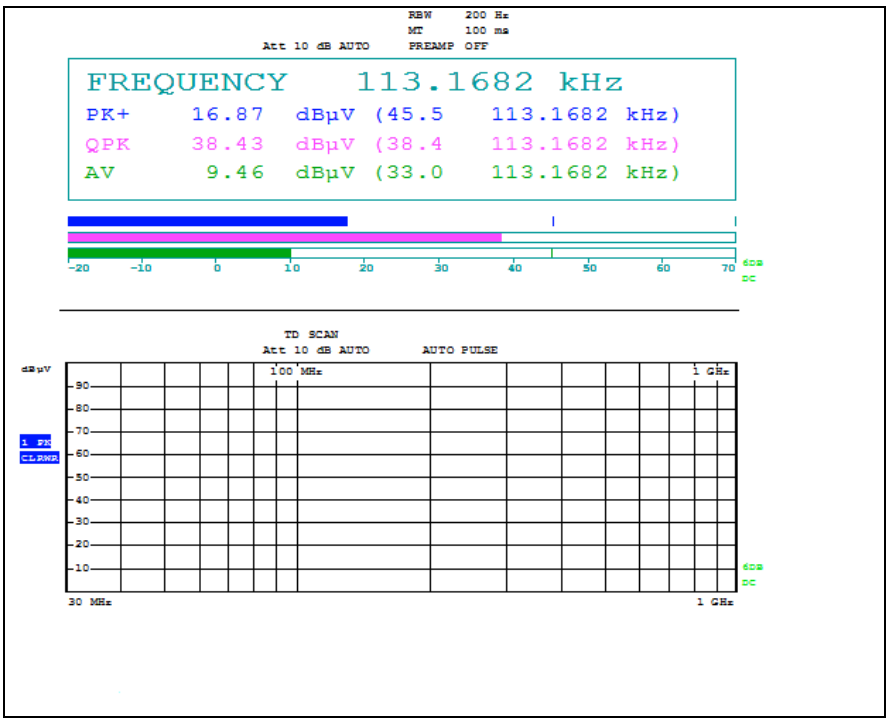


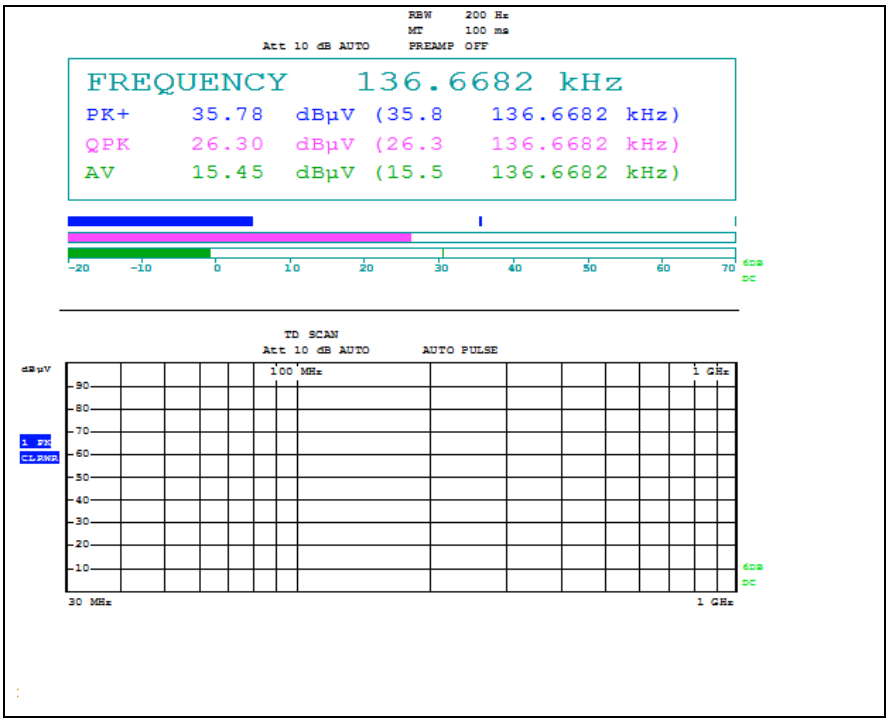


Measured plots below 30 ㎒



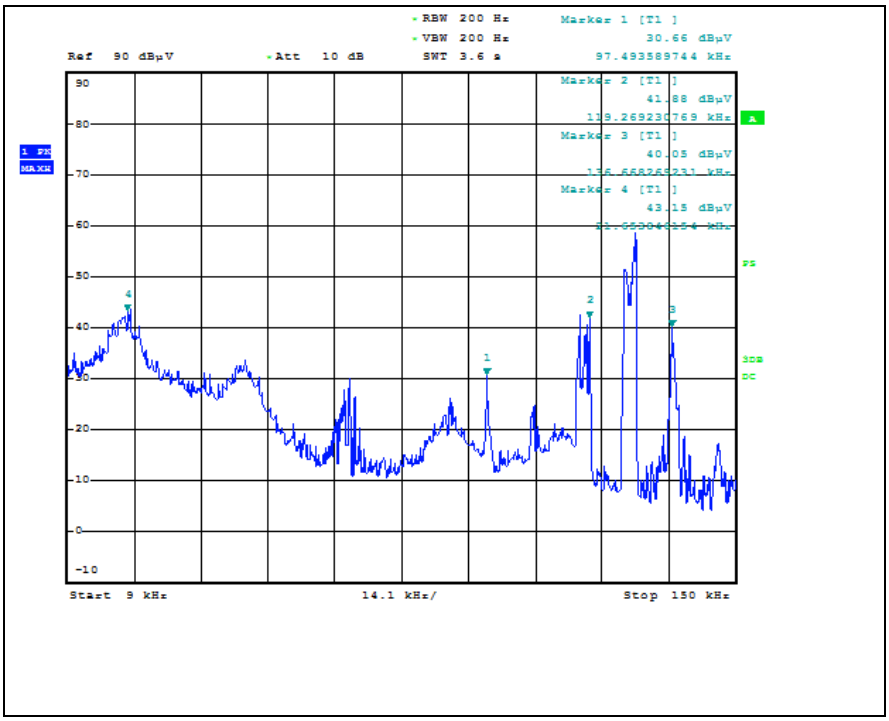


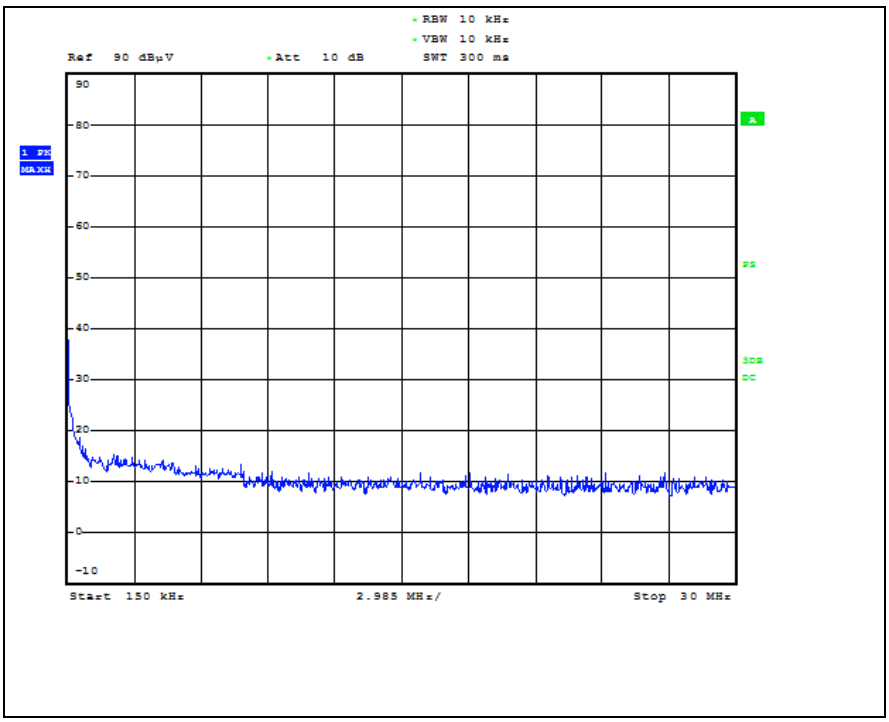




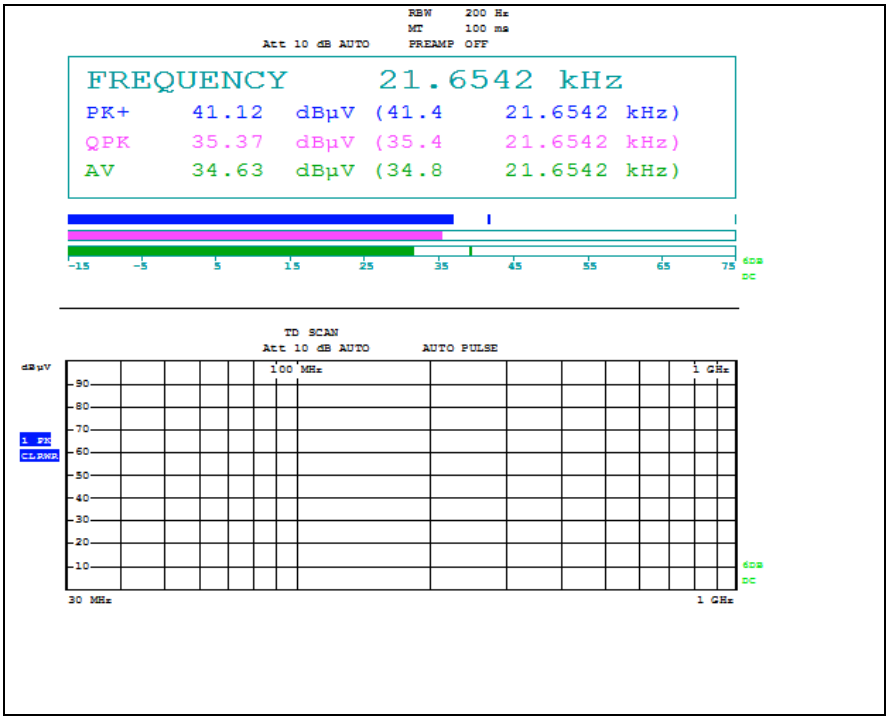
- INT1 Antenna

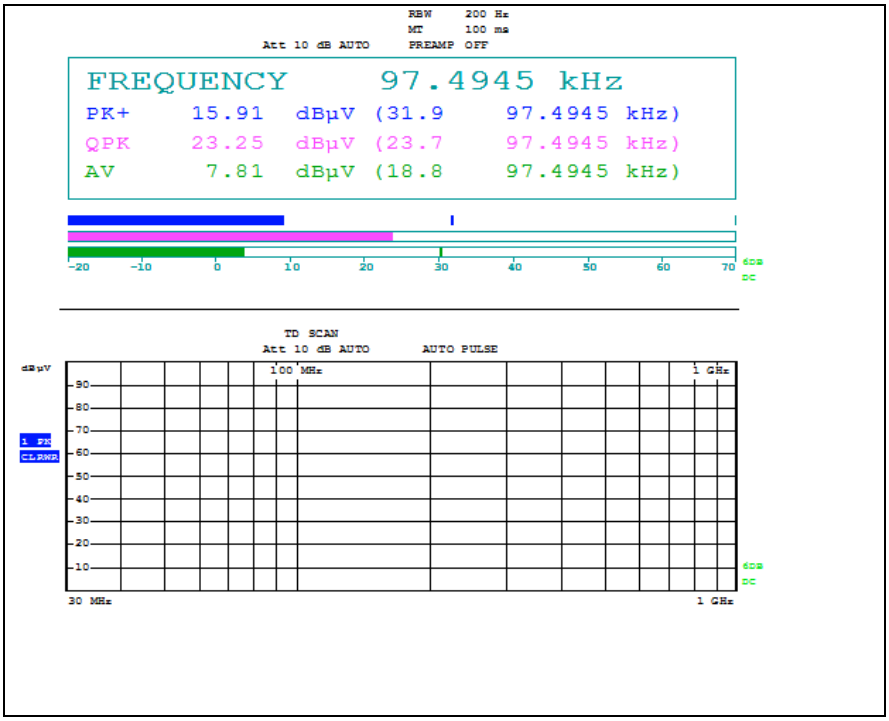
Scanning plots below 30 ㎒

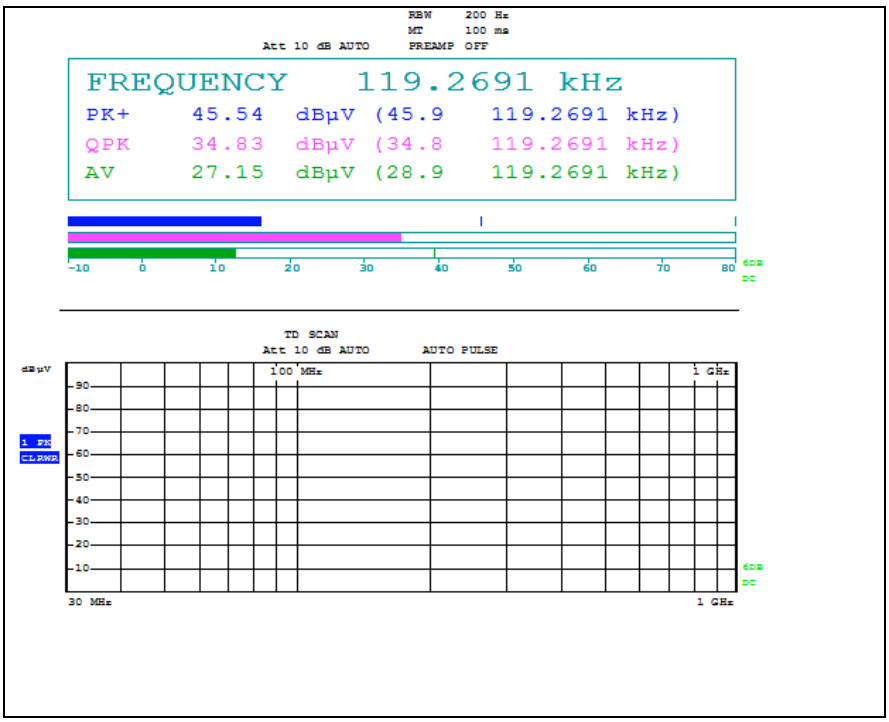


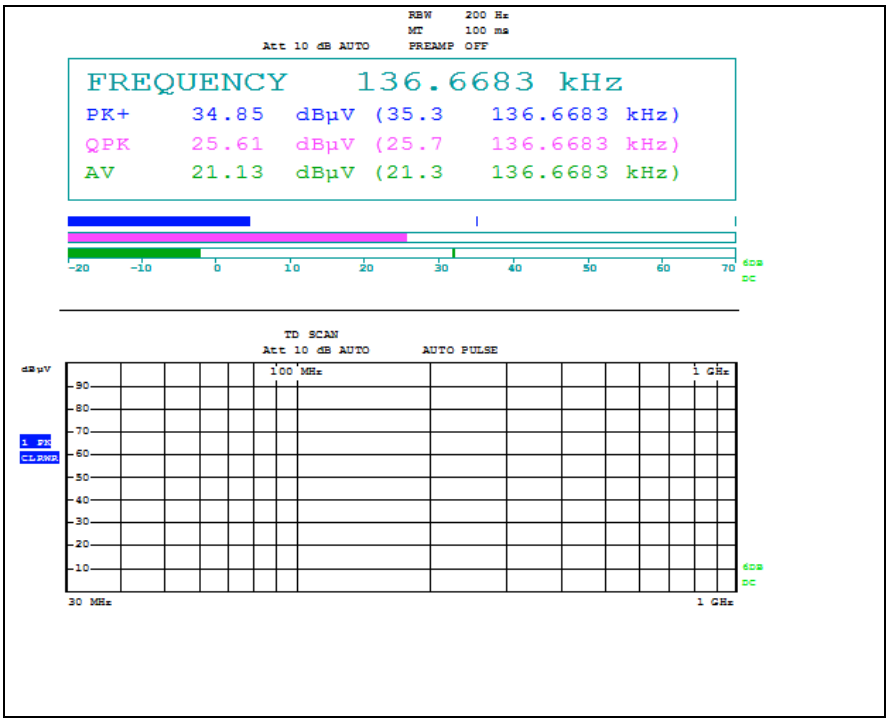


Measured plots below 30 ㎒



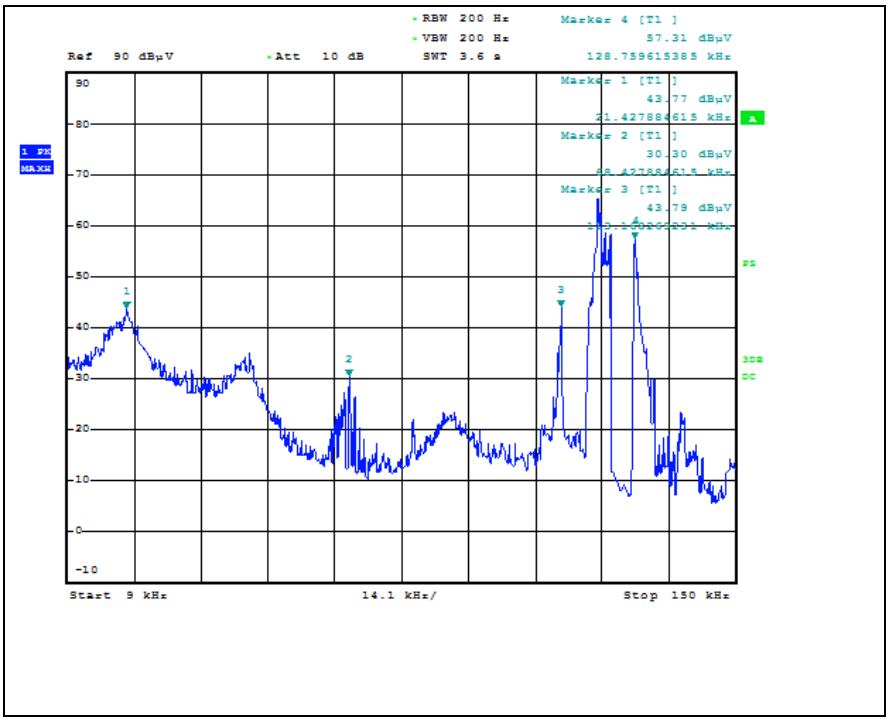


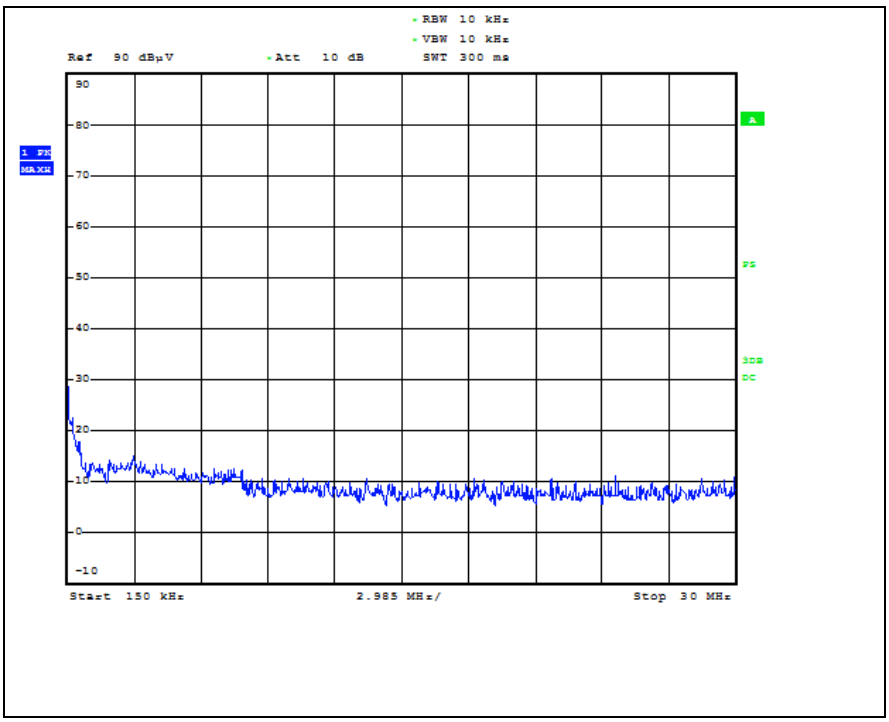

RBW 200 Hz
MT 100 ms
Att 10 dB AUTO PREAMP OFF
FREQUENCY 119.2691 kHz
PK+ 45.54 dBµV (45.9 119.2691 kHz)
QPK 34.83 dBµV (34.8 119.2691 kHz)
AV 27.15 dBµV (28.9 119.2691 kHz)
TD SCAN
Att 10 dB AUTO AUTO PULSE
100 MHz
1 GHz
30 MHz
1 GHz


RBW 200 Hz
MT 100 ms
Att 10 dB AUTO PREAMP OFF
FREQUENCY 136.6683 kHz
PK+ 34.85 dBµV (35.3 136.6683 kHz)
QPK 25.61 dBµV (25.7 136.6683 kHz)
AV 21.13 dBµV (21.3 136.6683 kHz)
TD SCAN
Att 10 dB AUTO AUTO PULSE
100 MHz
1 GHz
30 MHz
1 GHz

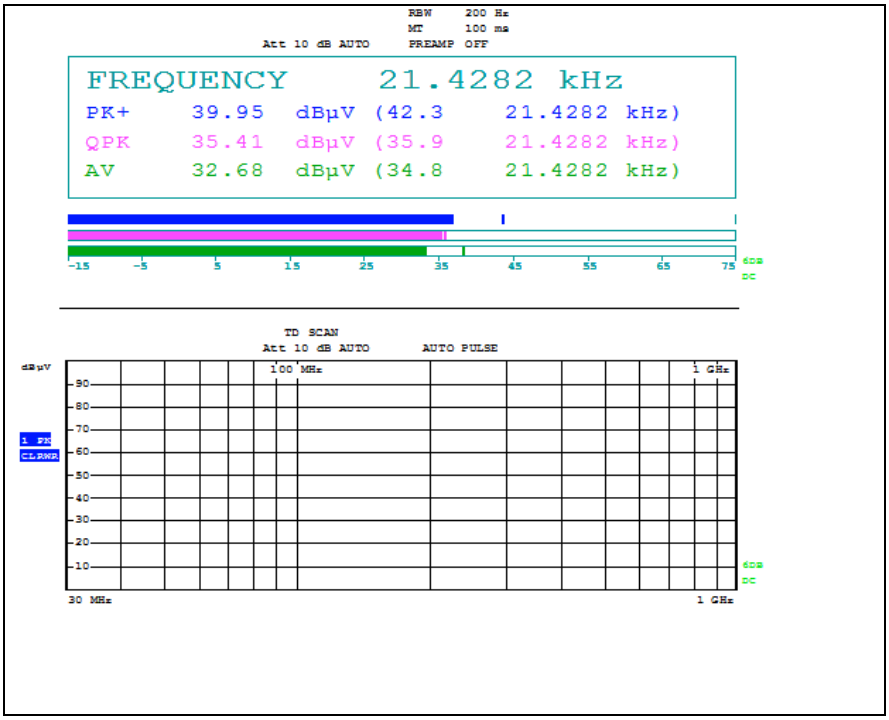
- INT2 Antenna

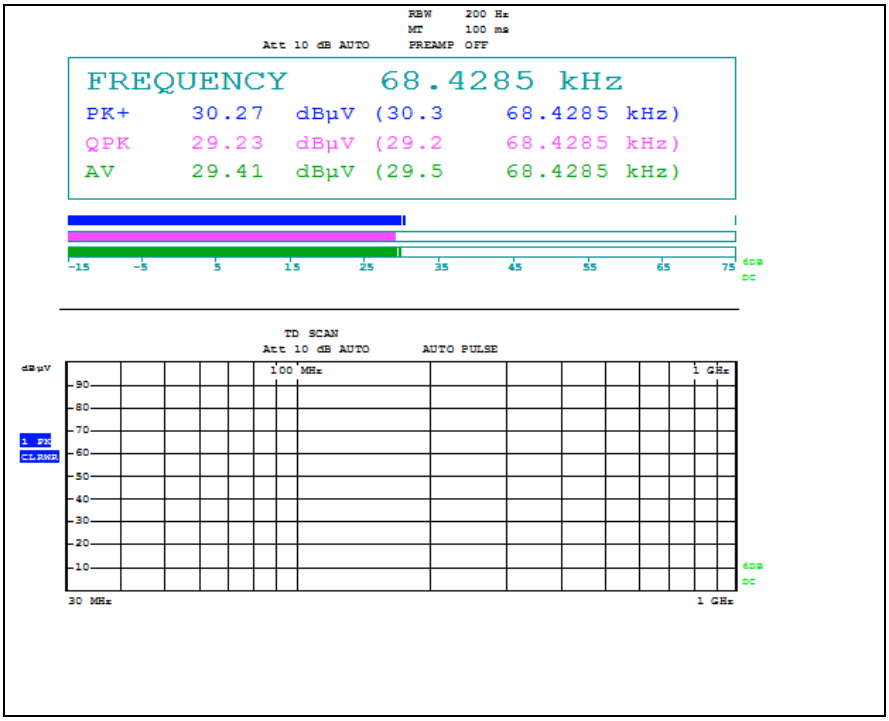
Scanning plots below 30 ㎒

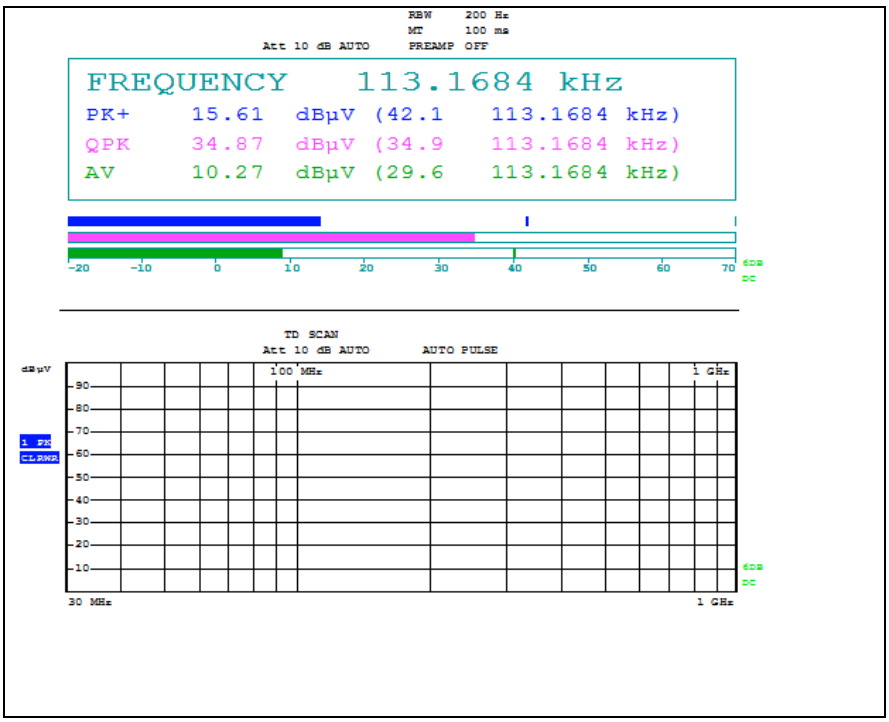


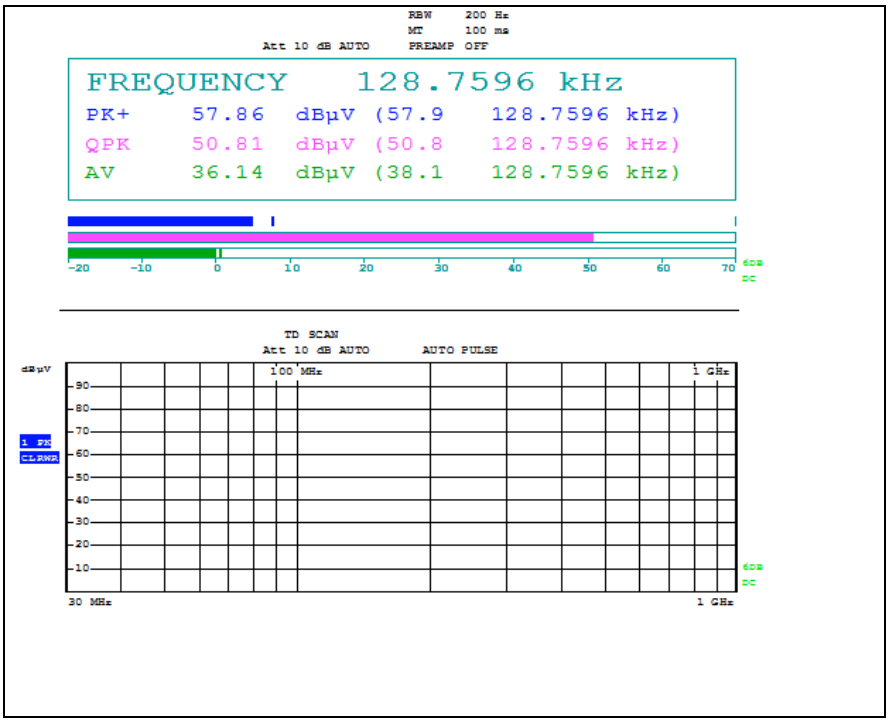


Measured plots below 30 ㎒



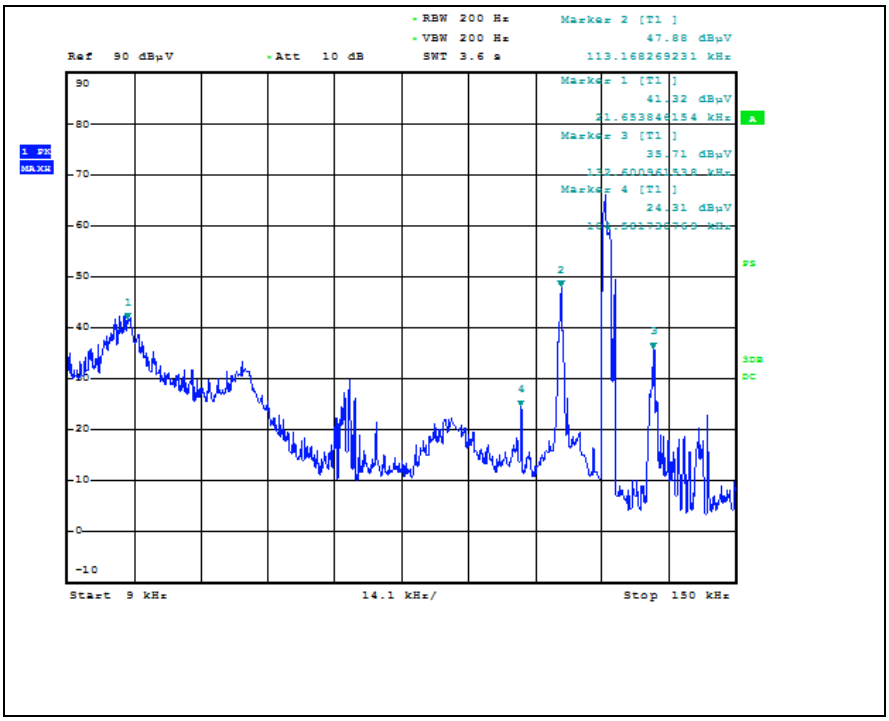


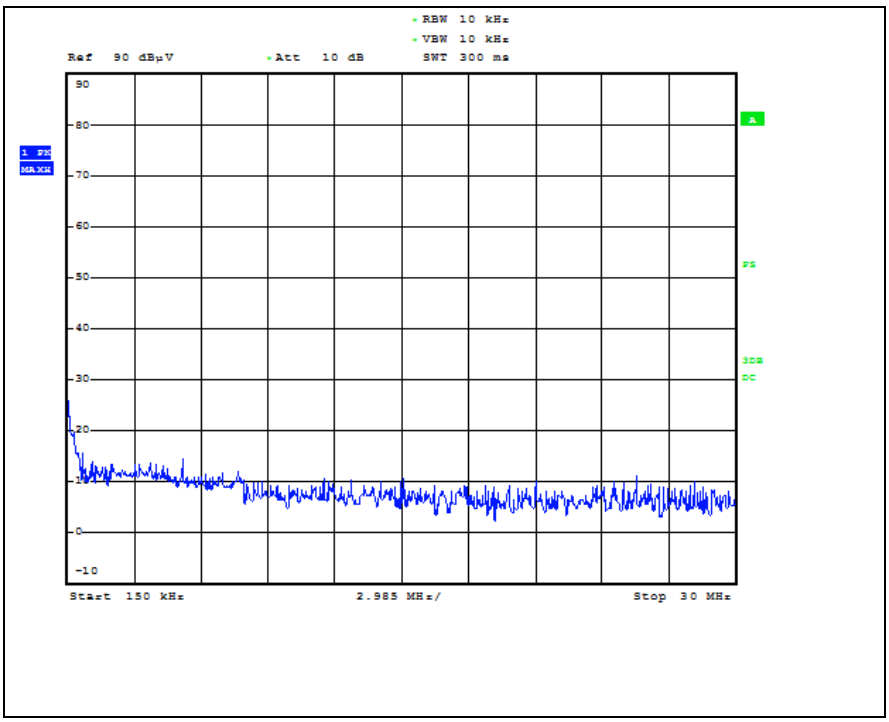




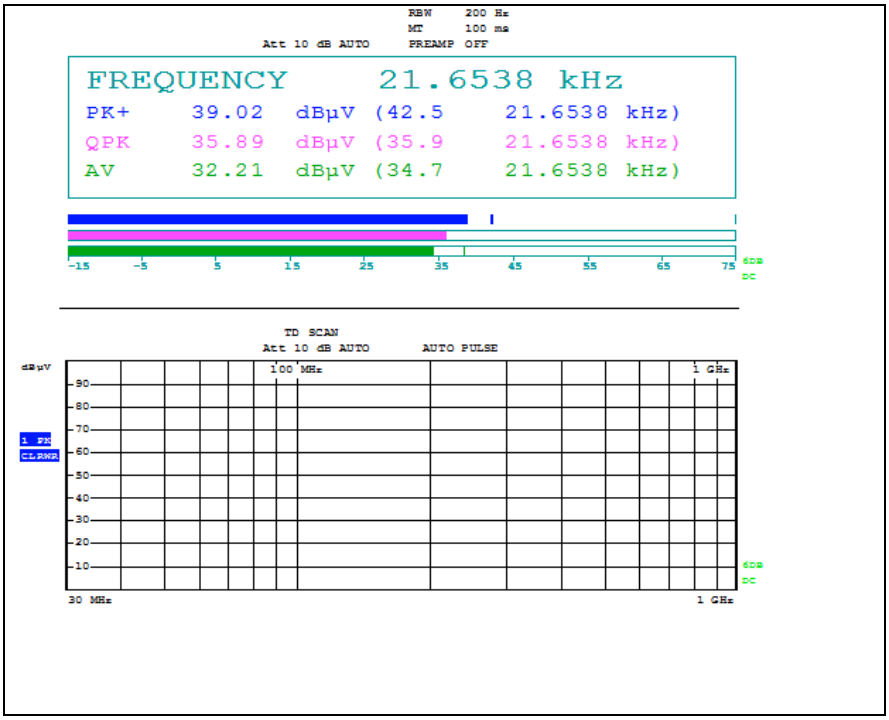
- BMP Antenna

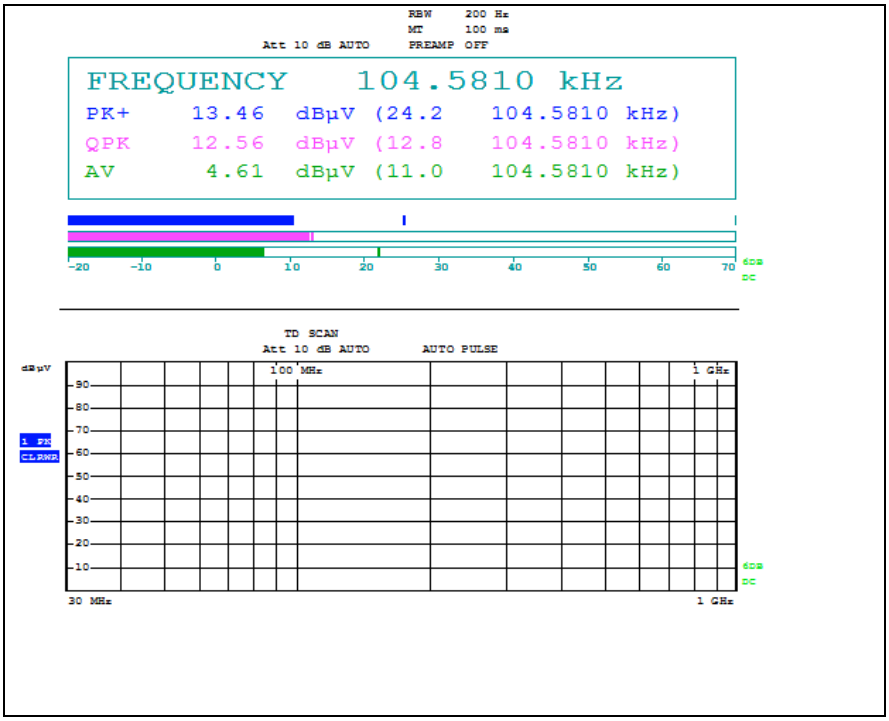
Scanning plots below 30 ㎒

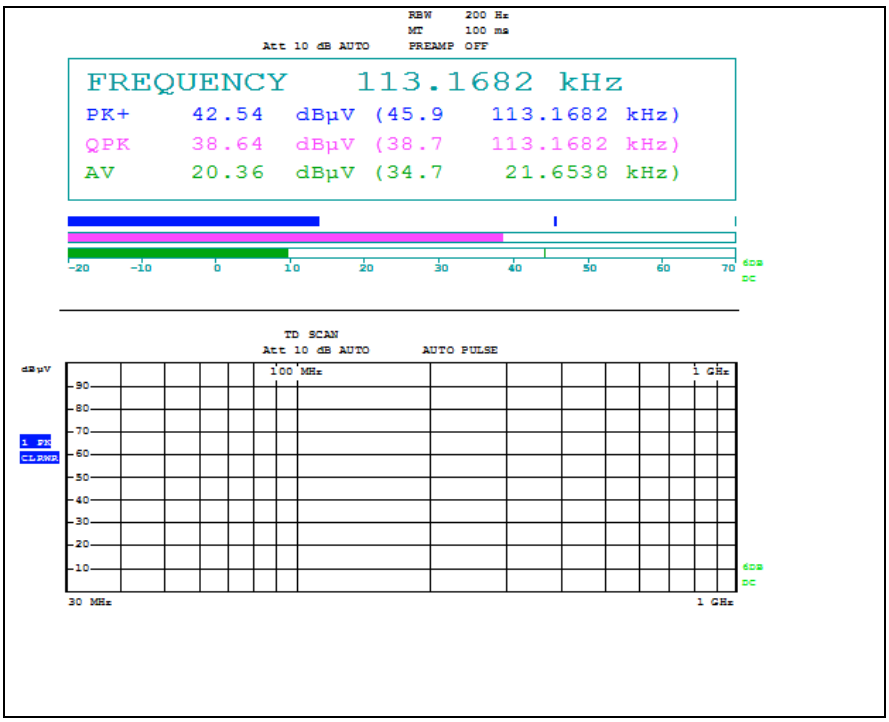


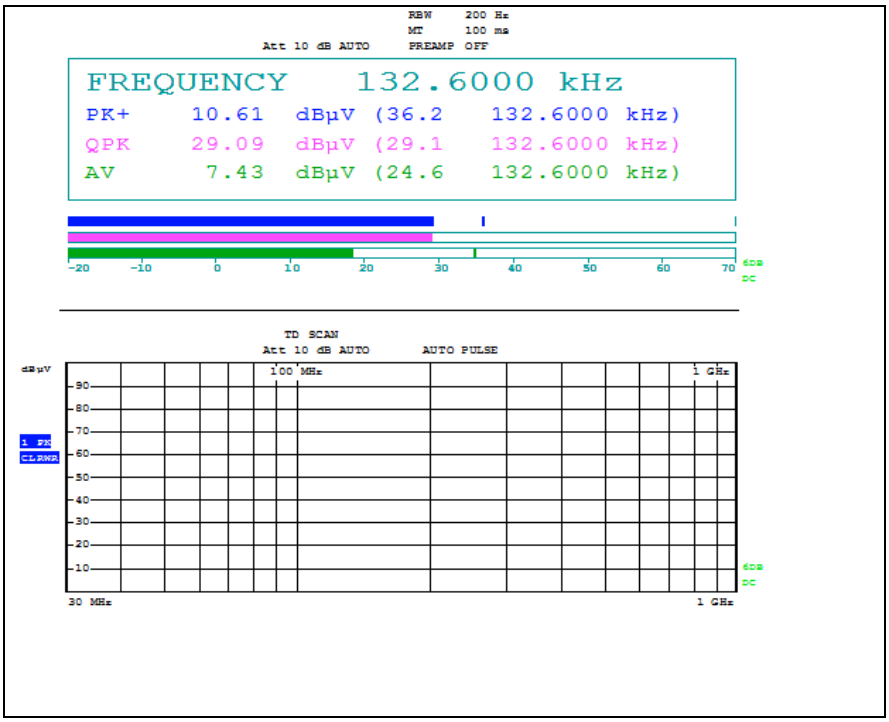


Measured plots below 30 ㎒



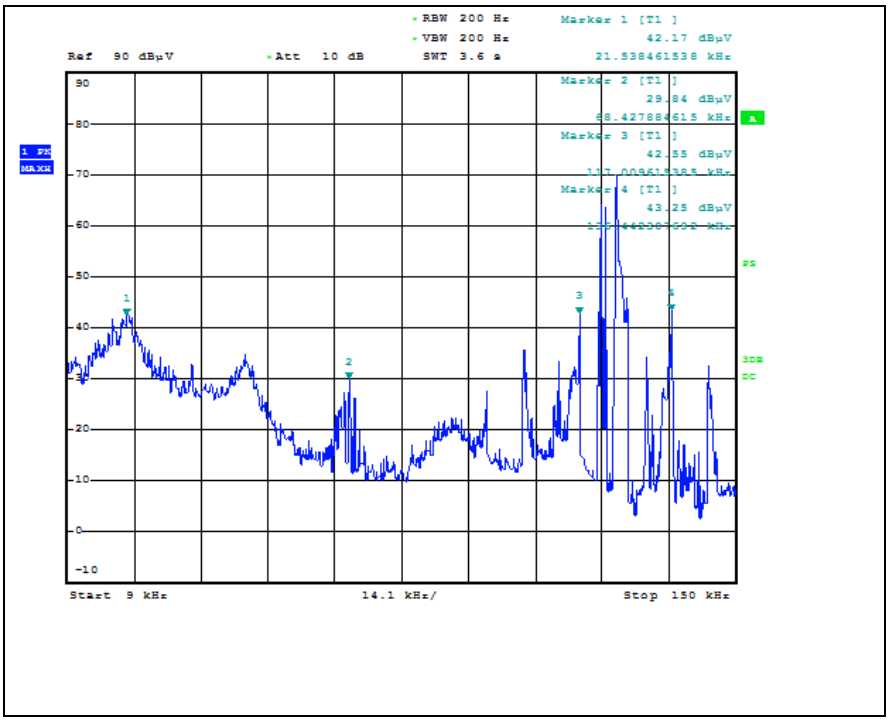


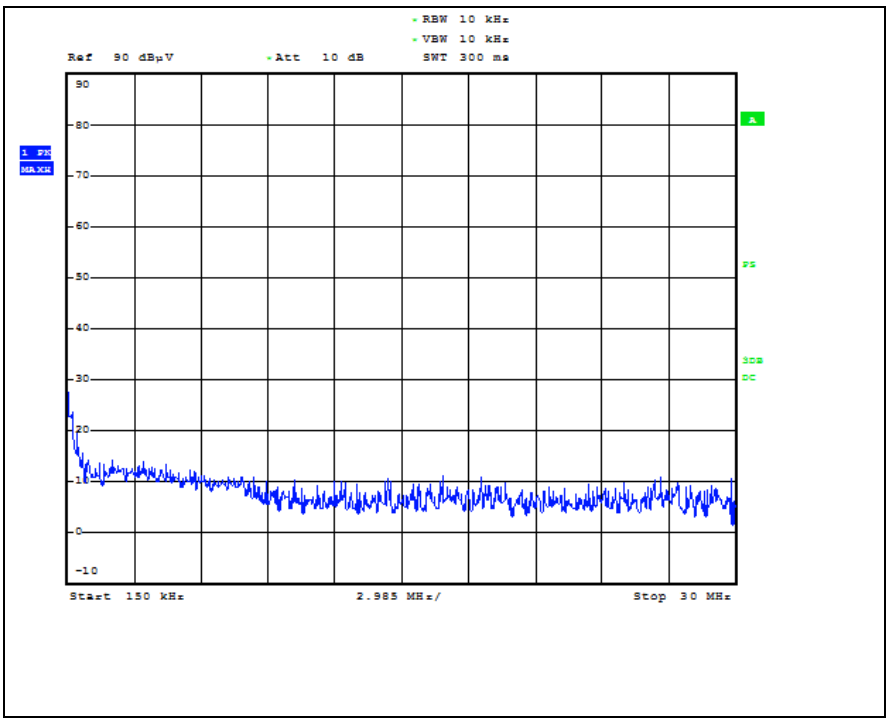

RBW 200 Hz
MT 100 ms
Att 10 dB AUTO PREAMP OFF
FREQUENCY 113.1682 kHz
PK+ 42.54 dBµV (45.9 113.1682 kHz)
QPK 38.64 dBµV (38.7 113.1682 kHz)
AV 20.36 dBµV (34.7 21.6538 kHz)
TD SCAN
Att 10 dB AUTO AUTO PULSE
100 MHz
1 GHz
30 MHz
1 GHz


RBW 200 Hz
MT 100 ms
Att 10 dB AUTO PREAMP OFF
FREQUENCY 132.6000 kHz
PK+ 10.61 dBµV (36.2 132.6000 kHz)
QPK 29.09 dBµV (29.1 132.6000 kHz)
AV 7.43 dBµV (24.6 132.6000 kHz)
TD SCAN
Att 10 dB AUTO AUTO PULSE
100 MHz
1 GHz
30 MHz
1 GHz

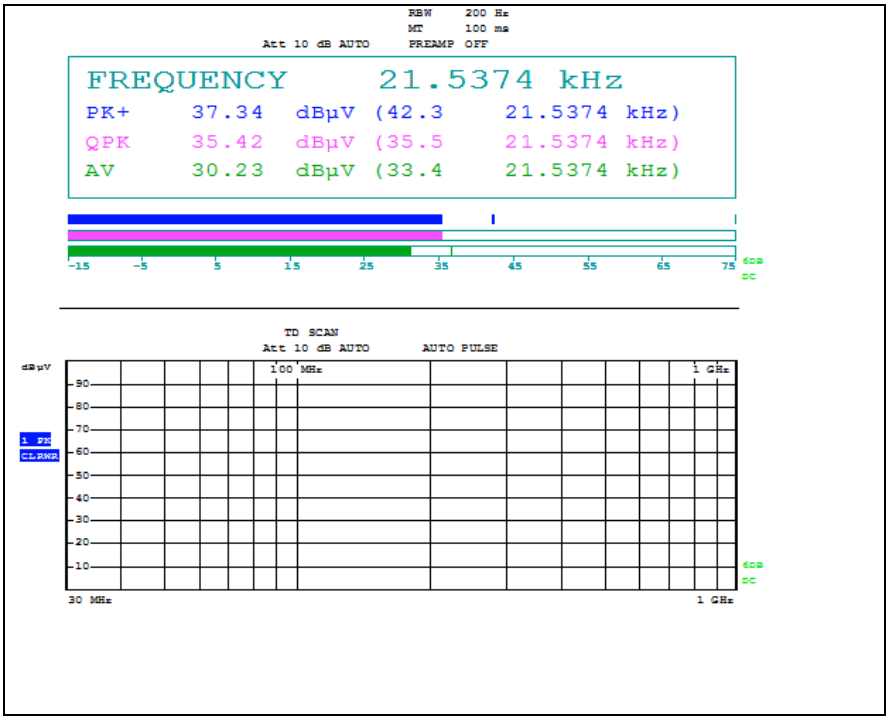
- TRK Antenna

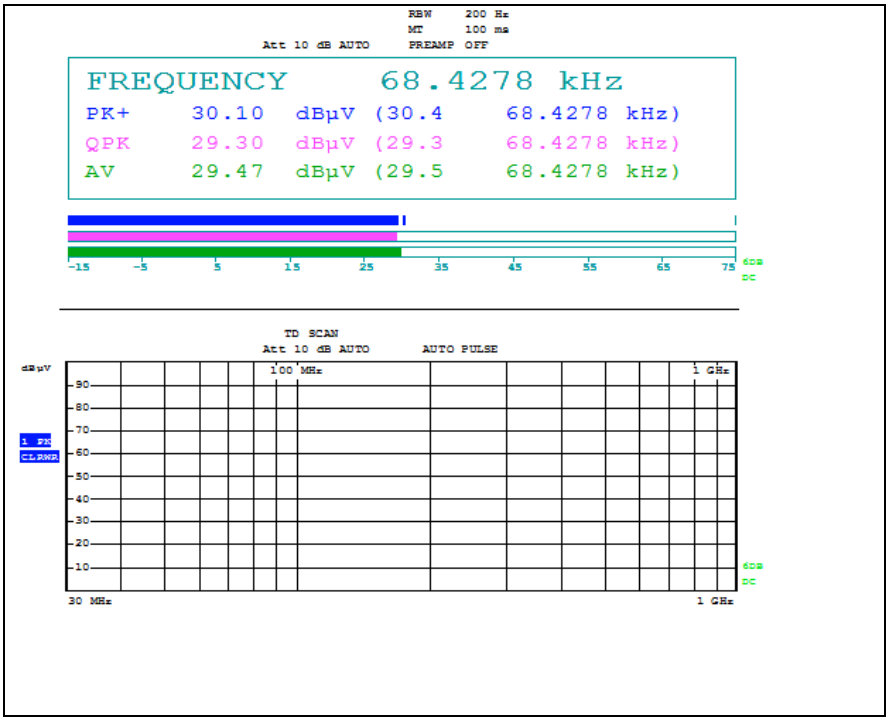
Scanning plots below 30 ㎒

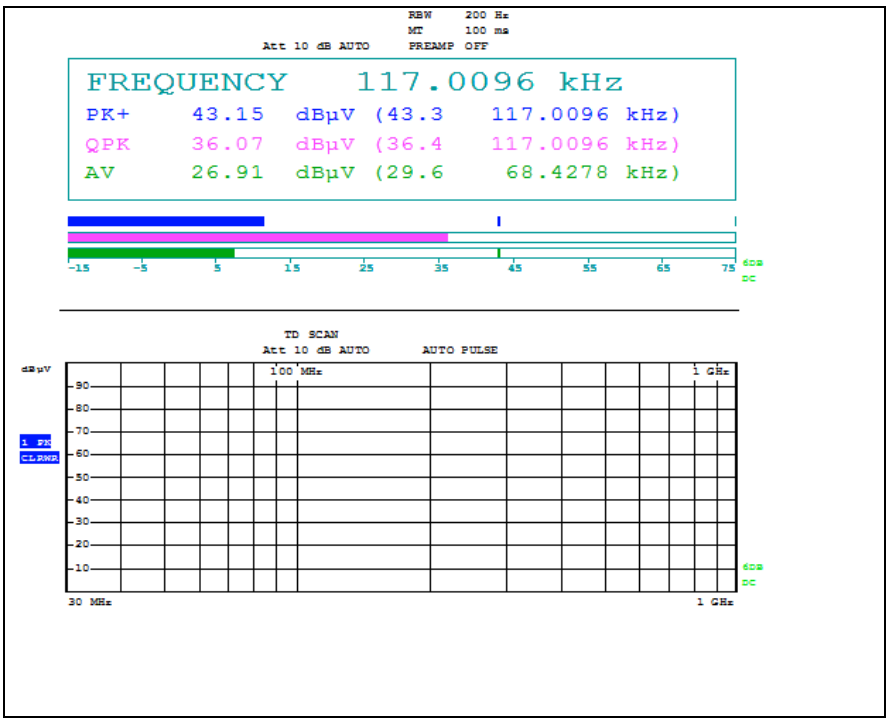


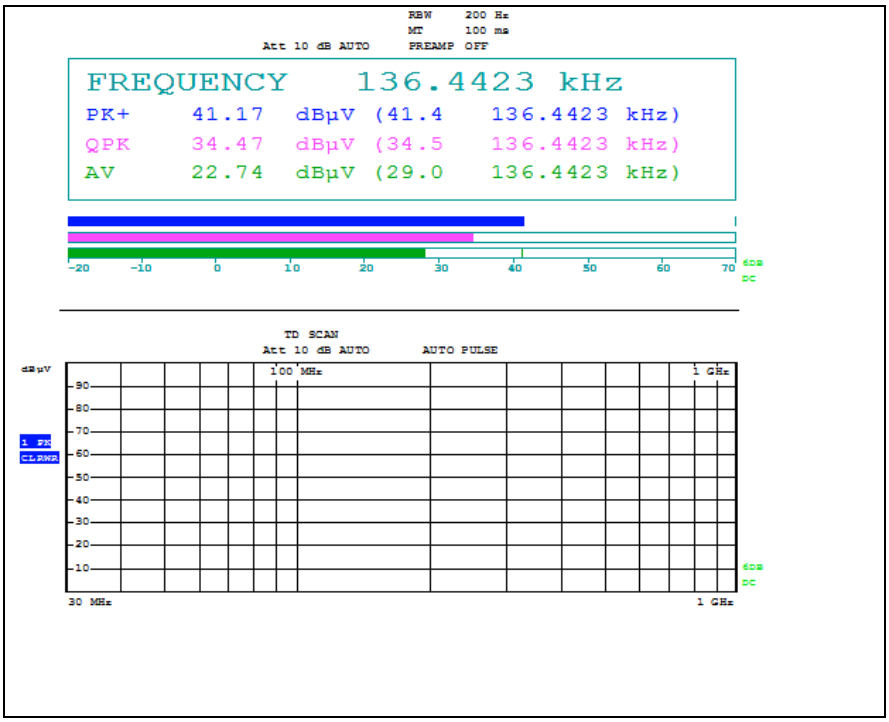


Measured plots below 30 ㎒



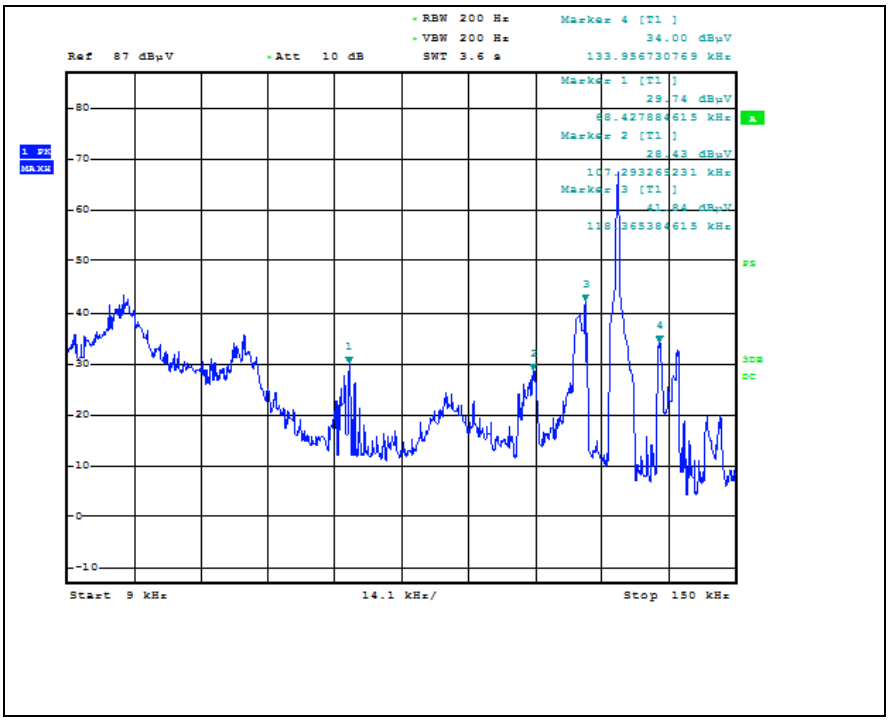


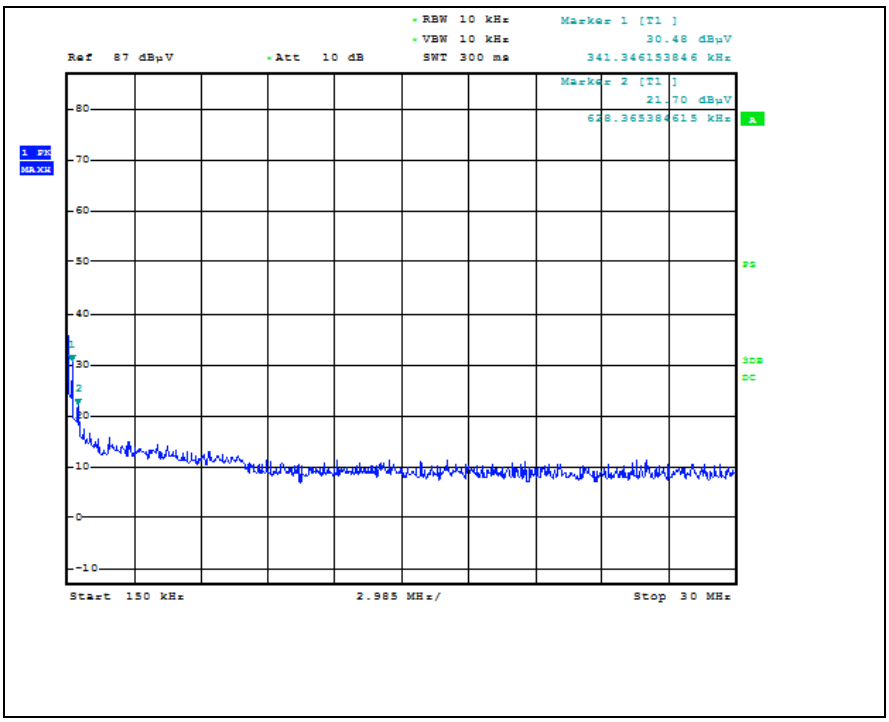

RBW 200 Hz
MT 100 ms
Att 10 dB AUTO PREAMP OFF
FREQUENCY 117.0096 kHz
PK+ 43.15 dBµV (43.3 117.0096 kHz)
QPK 36.07 dBµV (36.4 117.0096 kHz)
AV 26.91 dBµV (29.6 68.4278 kHz)
TD SCAN
Att 10 dB AUTO AUTO PULSE
100 MHz
1 GHz
30 MHz
1 GHz


RBW 200 Hz
MT 100 ms
Att 10 dB AUTO PREAMP OFF
FREQUENCY 136.4423 kHz
PK+ 41.17 dBµV (41.4 136.4423 kHz)
QPK 34.47 dBµV (34.5 136.4423 kHz)
AV 22.74 dBµV (29.0 136.4423 kHz)
TD SCAN
Att 10 dB AUTO AUTO PULSE
100 MHz
1 GHz
30 MHz
1 GHz

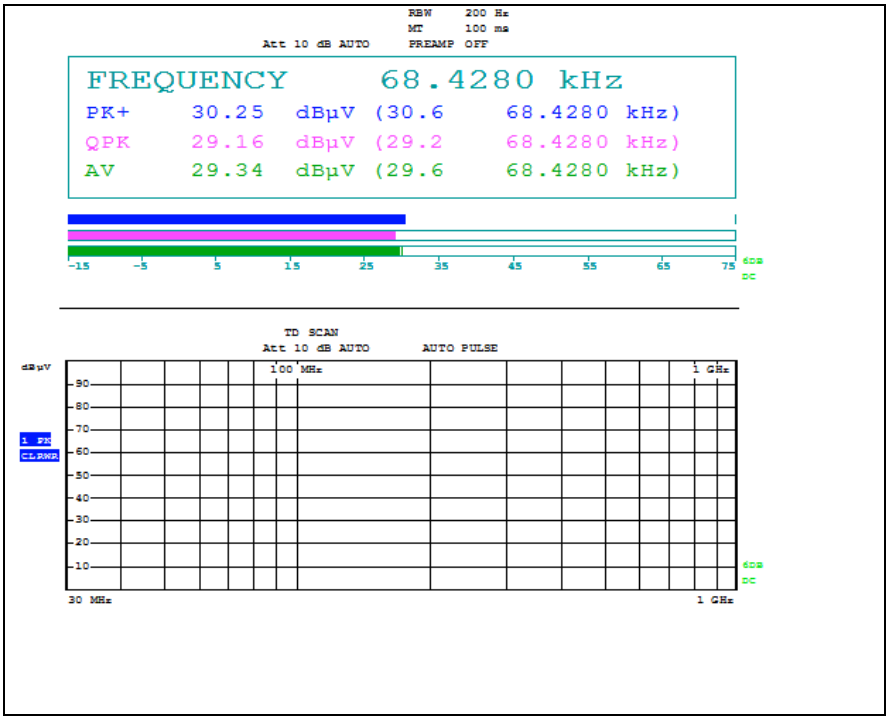
- SSB Antenna

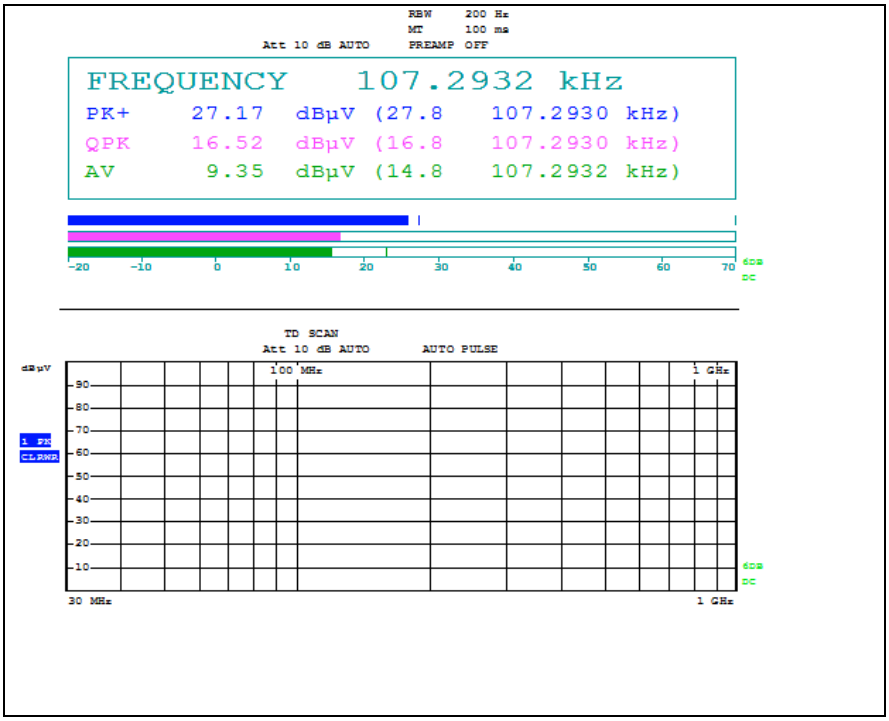
Scanning plots below 30 ㎒

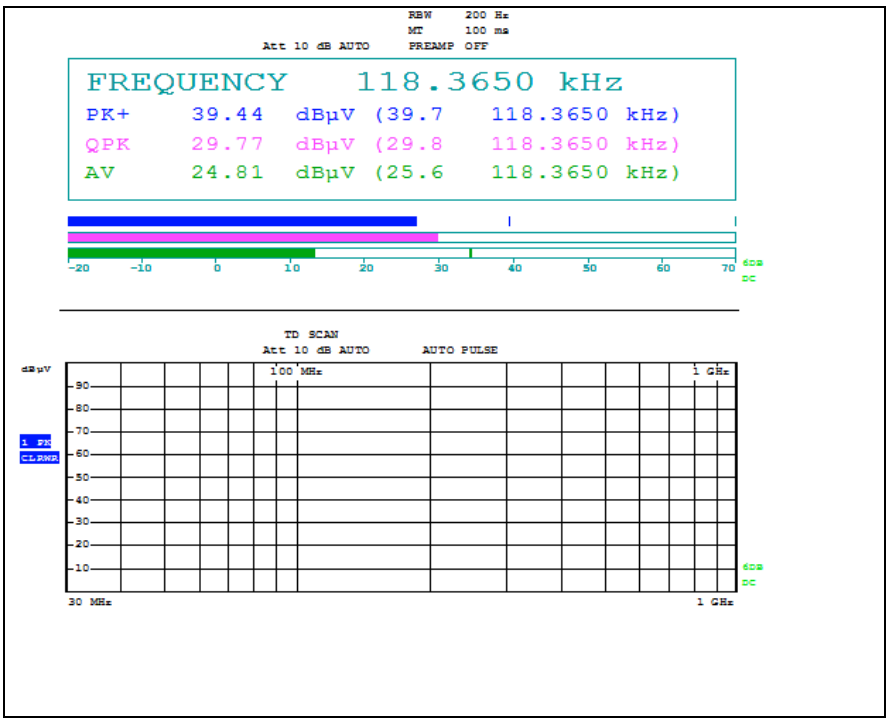


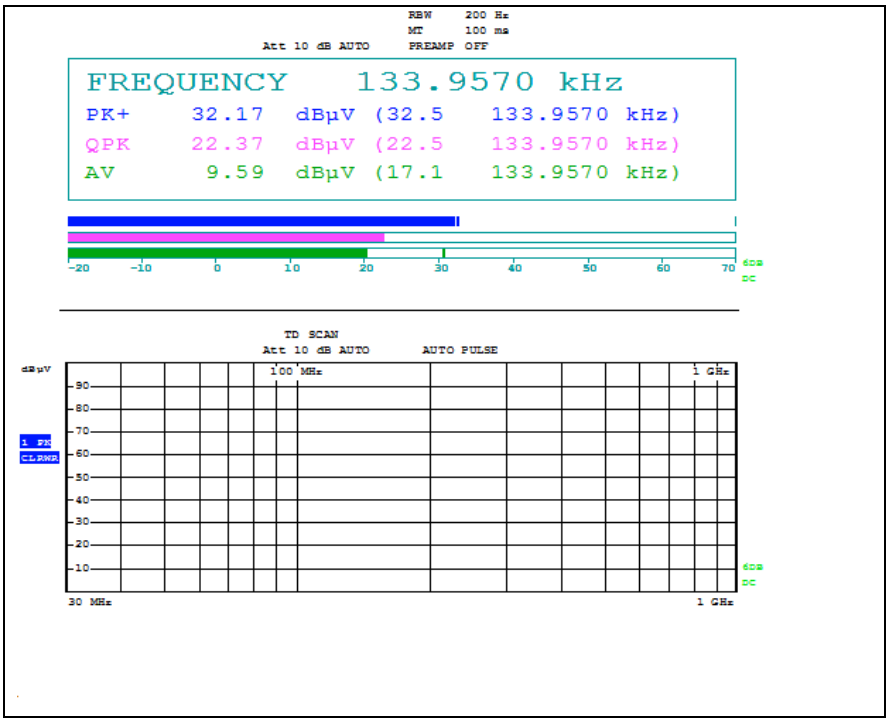


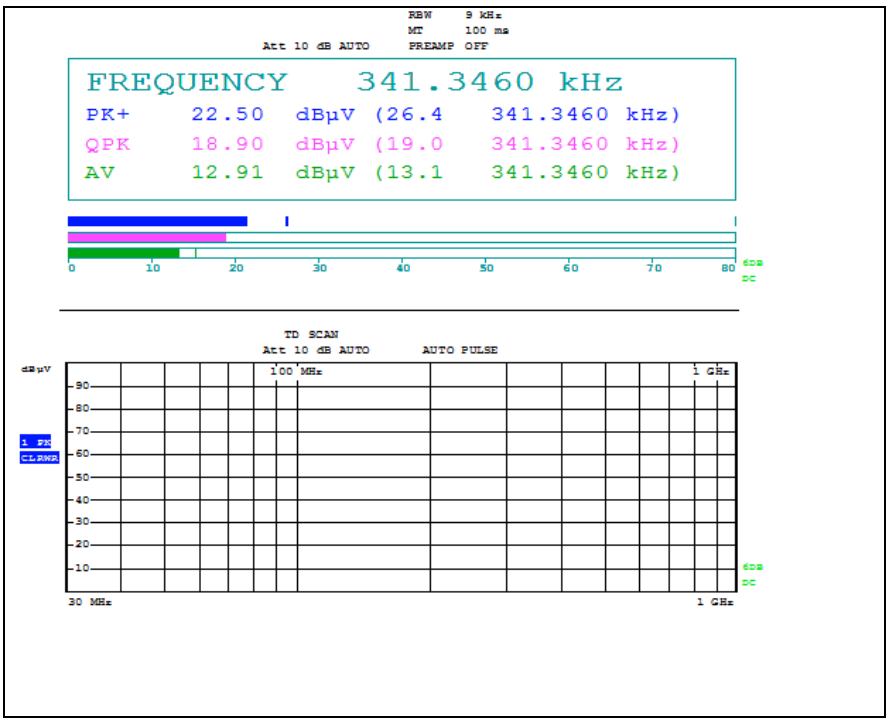
Measured plots below 30 ㎒

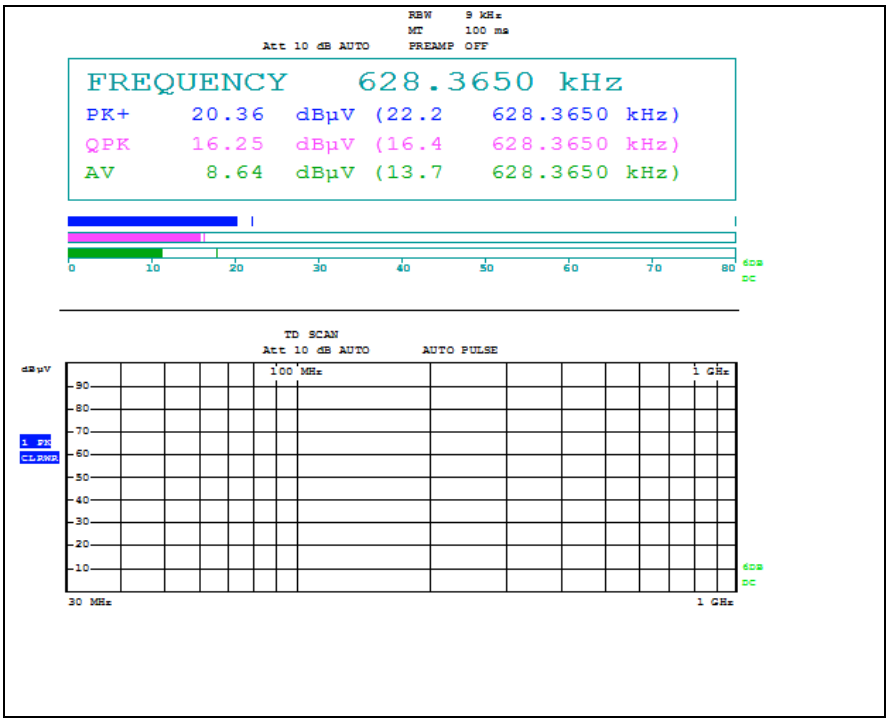





RBW 200 Hz
MT 100 ms
Att 10 dB AUTO PREAMP OFF
FREQUENCY 118.3650 kHz
PK+ 39.44 dBµV (39.7 118.3650 kHz)
QPK 29.77 dBµV (29.8 118.3650 kHz)
AV 24.81 dBµV (25.6 118.3650 kHz)
TD SCAN
Att 10 dB AUTO AUTO PULSE
100 MHz
1 GHz
30 MHz
1 GHz

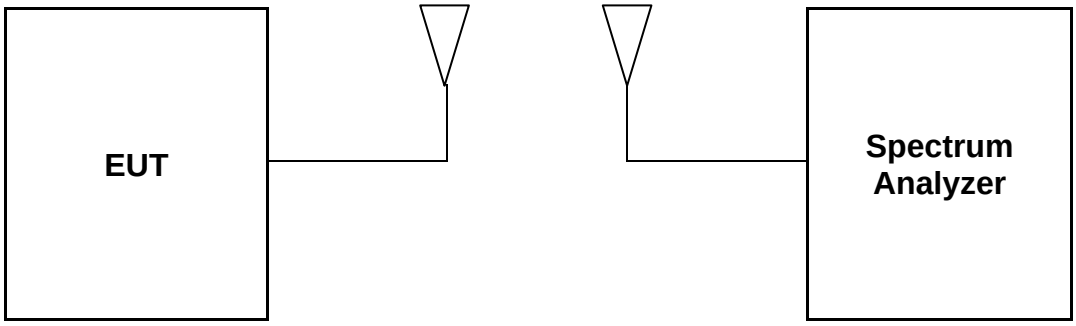

RBW 200 Hz
MT 100 ms
Att 10 dB AUTO PREAMP OFF
FREQUENCY 133.9570 kHz
PK+ 32.17 dBµV (32.5 133.9570 kHz)
QPK 22.37 dBµV (22.5 133.9570 kHz)
AV 9.59 dBµV (17.1 133.9570 kHz)
TD SCAN
Att 10 dB AUTO AUTO PULSE
100 MHz
1 GHz
30 MHz
1 GHz


RBW 9 kHz
MT 100 ms
Att 10 dB AUTO PREAMP OFF
FREQUENCY 341.3460 kHz
PK+ 22.50 dBµV (26.4 341.3460 kHz)
QPK 18.90 dBµV (19.0 341.3460 kHz)
AV 12.91 dBµV (13.1 341.3460 kHz)
TD SCAN
Att 10 dB AUTO AUTO PULSE
100 MHz
1 GHz
30 MHz
1 GHz


RBW 9 kHz
MT 100 ms
Att 10 dB AUTO PREAMP OFF
FREQUENCY 628.3650 kHz
PK+ 20.36 dBµV (22.2 628.3650 kHz)
QPK 16.25 dBµV (16.4 628.3650 kHz)
AV 8.64 dBµV (13.7 628.3650 kHz)
TD SCAN
Att 10 dB AUTO AUTO PULSE
100 MHz
1 GHz
30 MHz
1 GHz

3. 20 dB Bandwidth

3.1. Test Setup



3.2. Limits

None; for reporting purposed only

3.3. Test Procedure

20 dB Bandwidth

a. Span = approximately 2 to 3 times the 20 dB bandwidth, RBW = greater than 1 % of the 20 dB bandwidth, VBW = RBW, Sweep = auto, Detector = peak, Trace = max hold.

b. The marker-to-peak function to set the mark to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is 20 dB bandwidth of the emission.

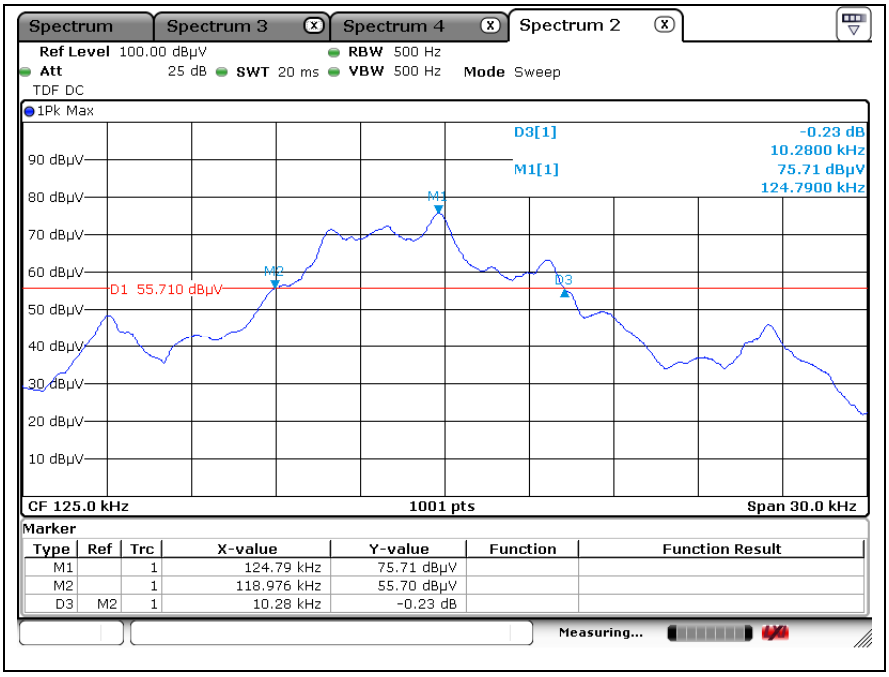
3.4. Test Result

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

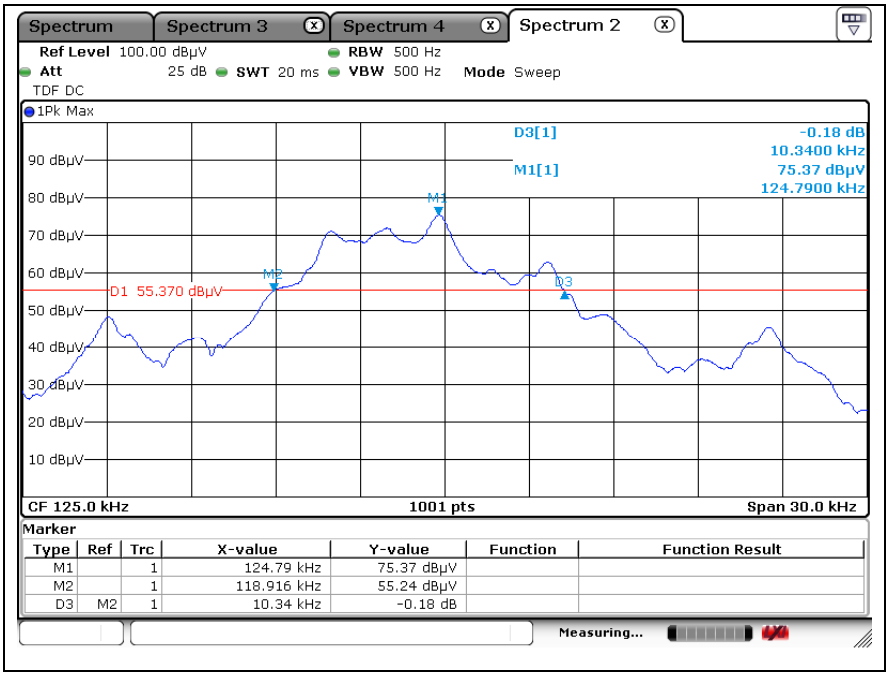
Test Antenna	Carrier Frequency (㎑)	20 dB Bandwidth (㎑)	Limit
DRV Antenna	124.79	10.28	Reporting proposed only
AST Antenna	124.79	10.34	
INT1 Antenna	124.79	10.19	
INT2 Antenna	124.82	9.77	
BMP Antenna	124.79	10.13	
TRK Antenna	124.79	9.92	
SSB Antenna	125.03	10.79	

Test plots

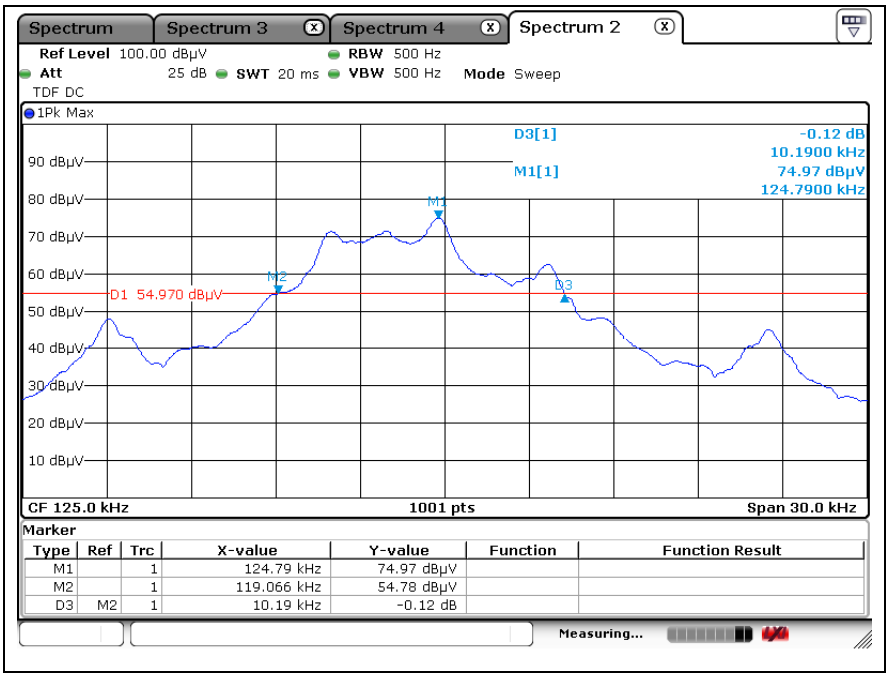
- DRV Antenna



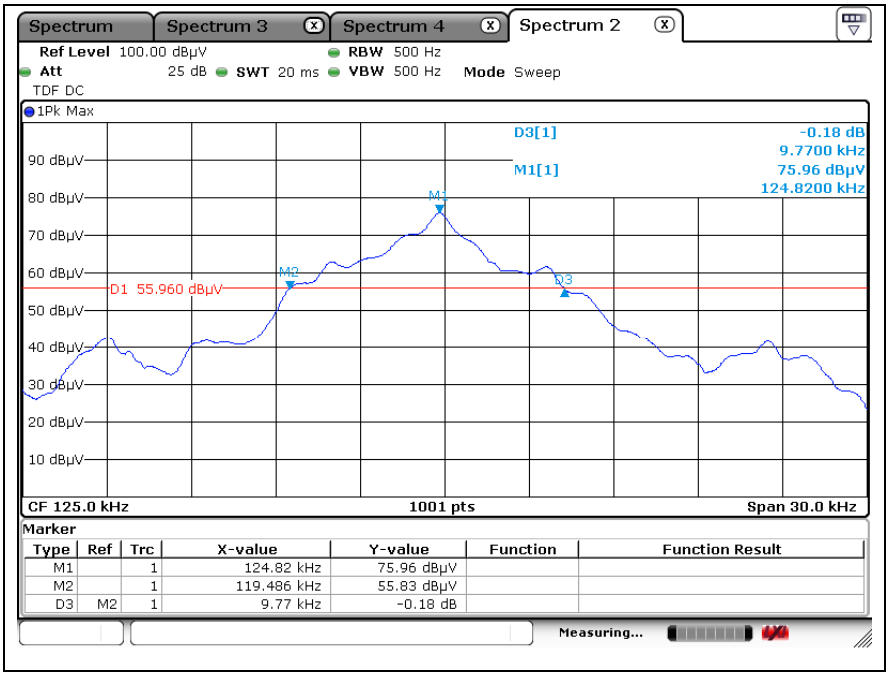
- AST Antenna



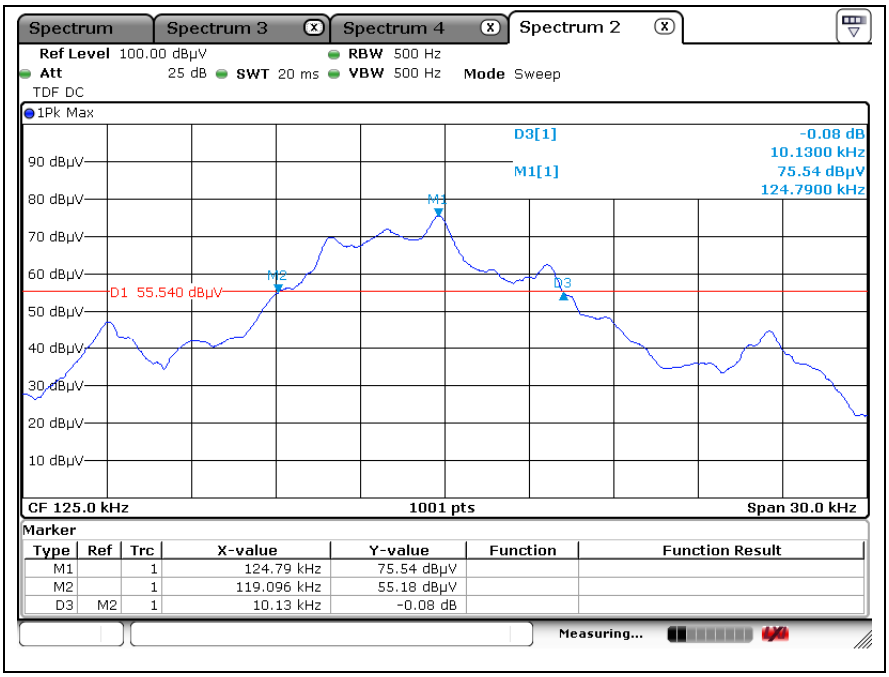
- INT1 Antenna



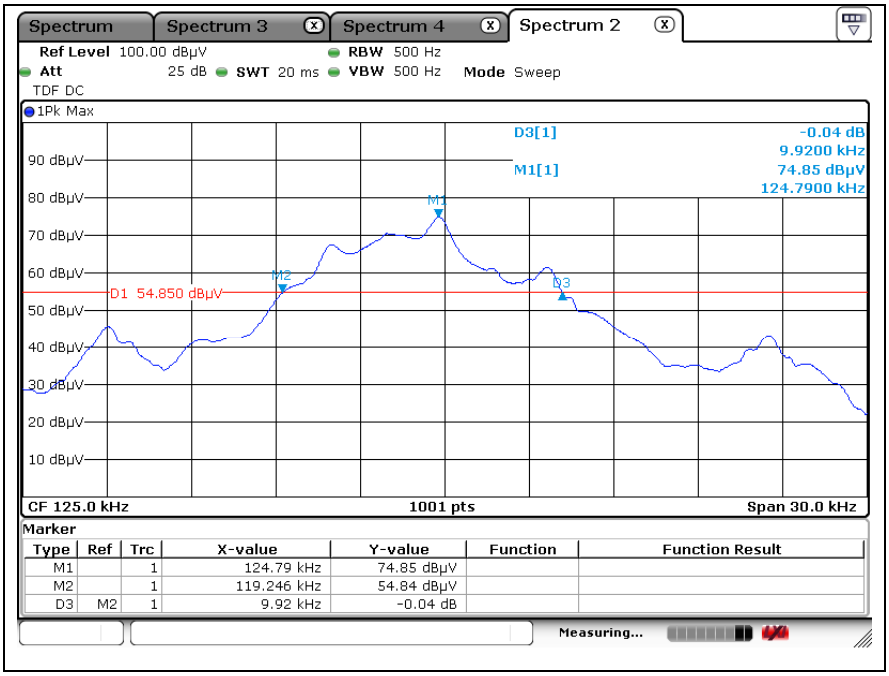
- INT2 Antenna



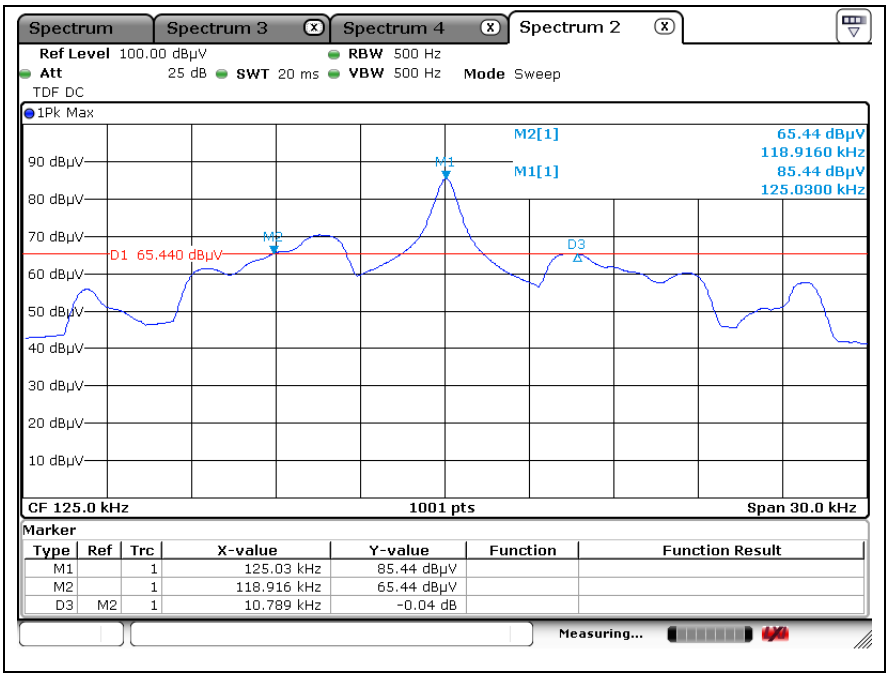
- BMP Antenna



- TRK Antenna

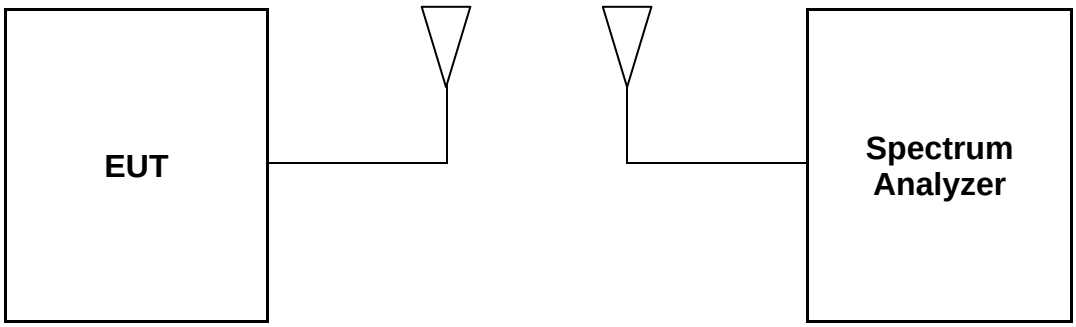


- SSB Antenna



4. Occupied Bandwidth

4.1. Test Setup



4.2. Limit

None; for reporting purposed only

4.3. Test Procedure

Occupied Bandwidth

a. Set the spectrum analyzer as SPAN = set to capture all products of the modulation process, including the emission skirts, RBW = set in the range of 1 % to 5 % of the occupied bandwidth (OBW), VBW = set approximately 3 x RBW, Detector = sampling, Trace mode = max hold.
b. Measure lowest and highest frequencies are placed in a running sum until 0.5 % and 99.5 % of the total is reached.
c. Record the SPAN between the lowest and the highest frequencies for the 99 % occupied bandwidth.

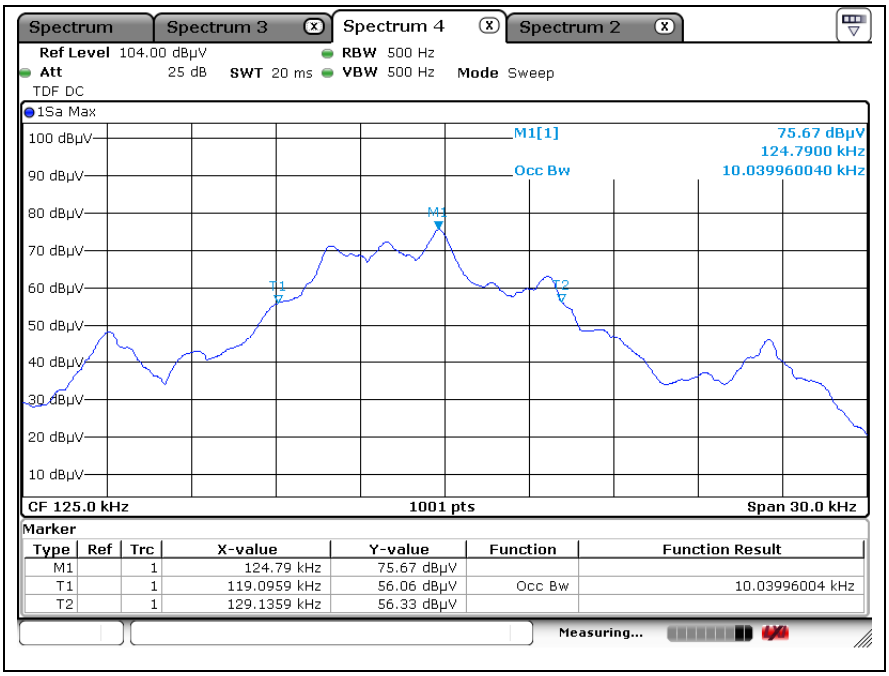
4.4. Test Result

Ambient temperature : (23 ± 1) ℃
Relative humidity : 47 % R.H.

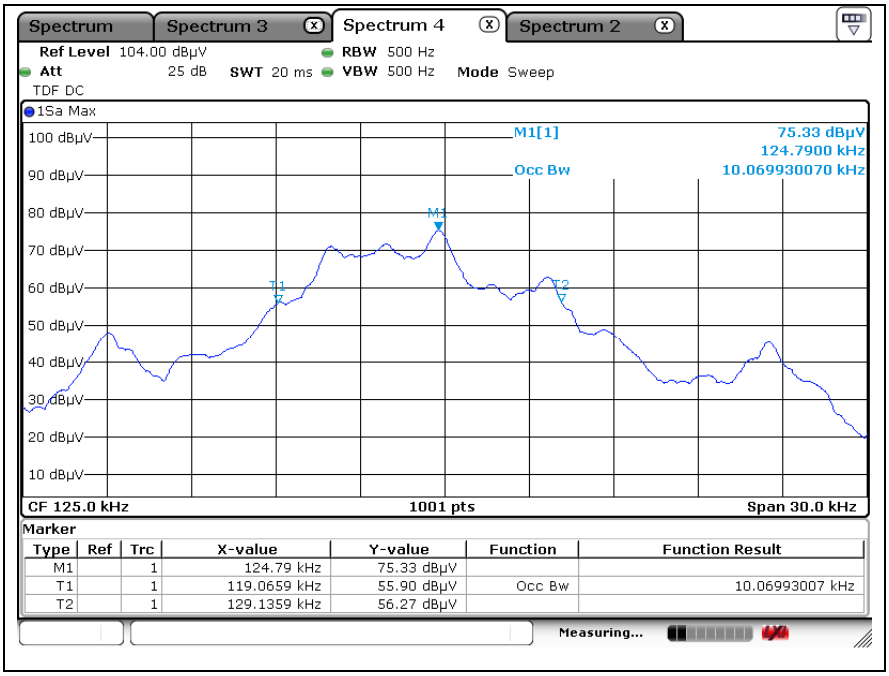
Test Antenna	Carrier Frequency (㎒)	Occupied Bandwidth (㎑)	Limit
DRV Antenna	124.79	10.04	Reporting proposed only
AST Antenna	124.79	10.07	
INT1 Antenna	124.79	9.95	
INT2 Antenna	124.79	9.47	
BMP Antenna	124.79	9.83	
TRK Antenna	124.79	9.77	
SSB Antenna	125.03	17.35	

Test plots

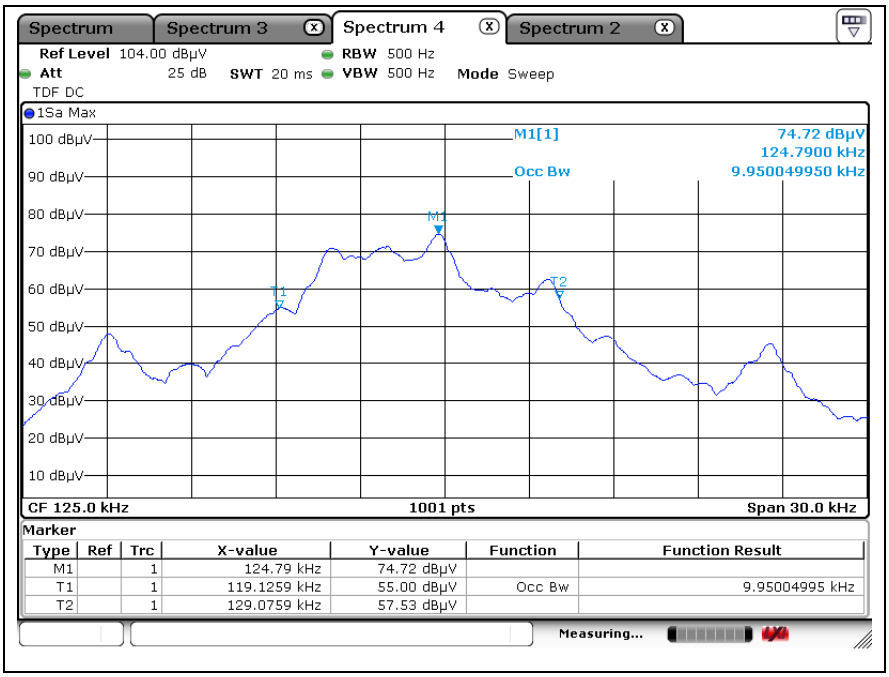
- DRV Antenna



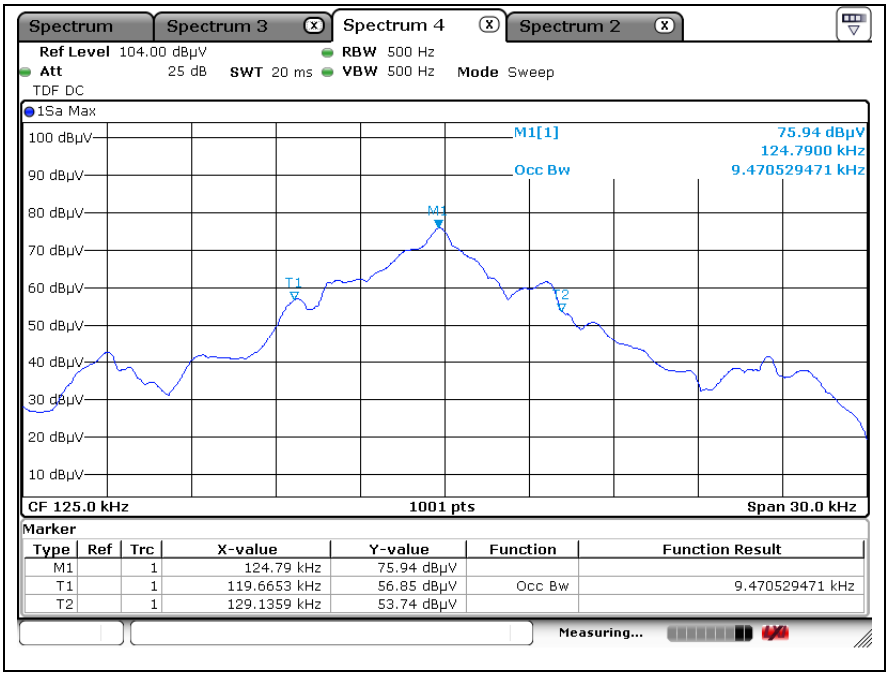
- AST Antenna



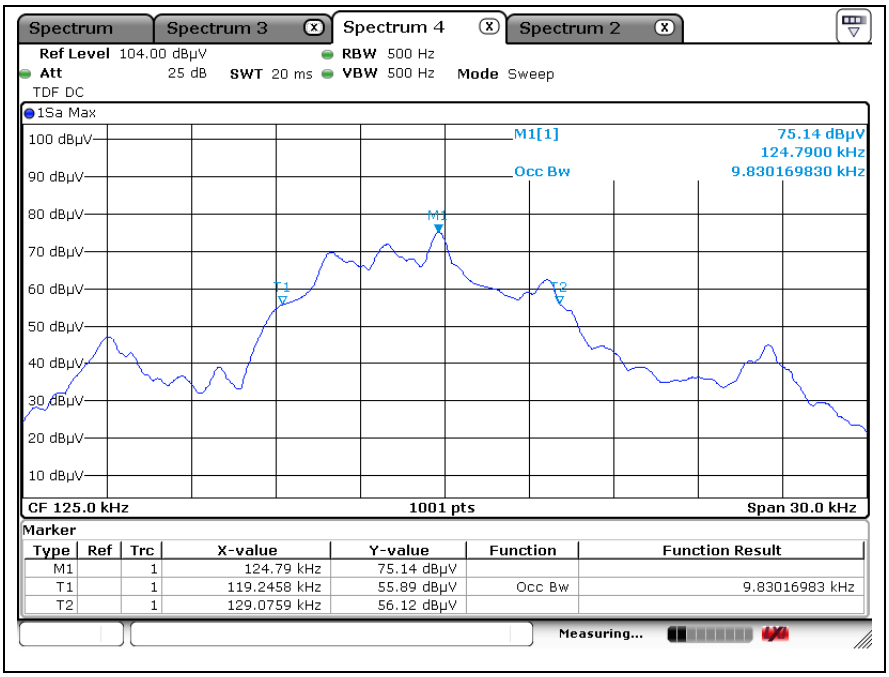
- INT1 Antenna



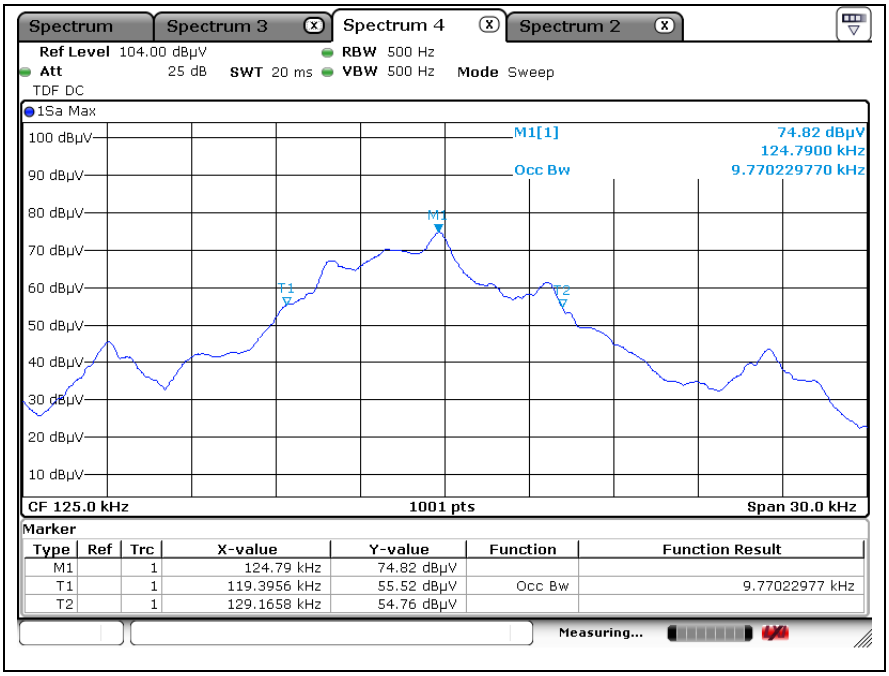
- INT2 Antenna



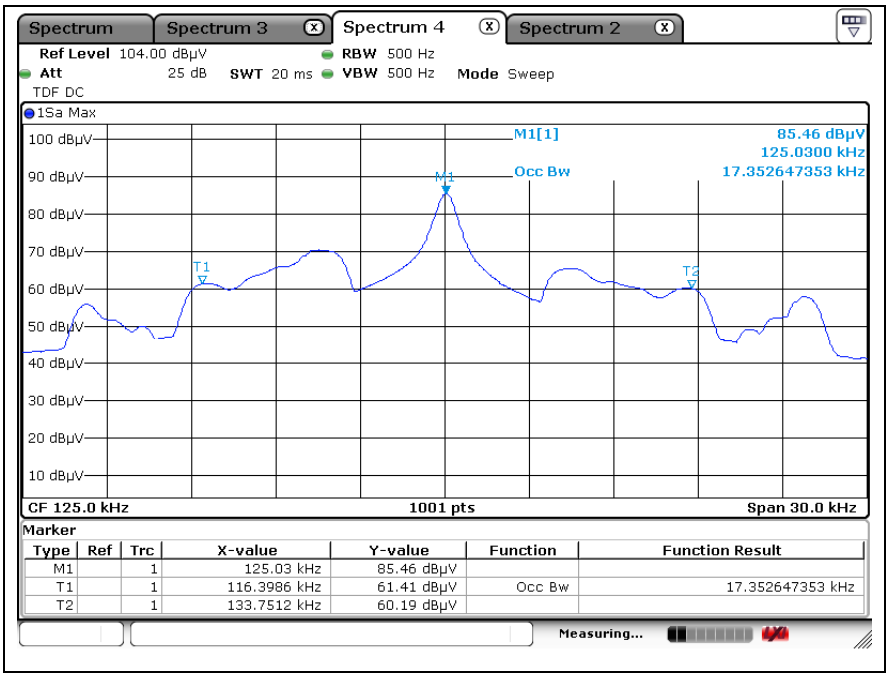
- BMP Antenna



- TRK Antenna



- SSB Antenna



- End of the Test Report -