TEST REPORT

of

FCC Part 15 Subpart C

☒ New Application; ☐ Class I PC; ☐ Class II PC

Product :	**Tracking Watch**
Brand:	**GlobalSat**
Model:	**GW-110L**
Model Difference:	**N/A**
FCC ID:	**RID-GW110L-1**
FCC Rule Part:	**§15.249**
Applicant:	**GlobalSat WorldCom Corporation**
Address:	**16F., No.186, Jian 1st Rd., Zhonghe Dist., New Taipei City 235, Taiwan (R.O.C.)**

Test Performed by:

International Standards Laboratory

<LT Lab.>

*Site Registration No.

BSMI: SL2-IN-E-0013; MRA TW0997; TAF: 0997; IC: IC4067B-4;

*Address:

No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist., Tao Yuan City 325, Taiwan

*Tel : 886-3-407-1718; Fax: 886-3-407-1738

Report No.: **ISL-18LR259FCDXX-MB**

Issue Date : **2020/11/31**

Test results given in this report apply only to the specific sample(s) tested and are traceable to national or international standard through calibration of the equipment and evaluating measurement uncertainty herein.

The uncertainty of the measurement does not include in consideration of the test result unless the customer required the determination of uncertainty via the agreement, regulation or standard document specification.

VERIFICATION OF COMPLIANCE

Applicant:	GlobalSat WorldCom Corporation
Product Description:	Tracking Watch
Brand Name:	GlobalSat
Model No.:	GW-110L
Model Difference:	N/A
FCC ID:	RID-GW110L-1
Date of test:	2018/07/31 ~ 2018/08/22
Date of EUT Received:	2018/07/31

We hereby certify that:

All the tests in this report have been performed and recorded in accordance with the standards described above and performed by an independent electromagnetic compatibility consultant, International Standards Laboratory.

The test results contained in this report accurately represent the measurements of the characteristics and the energy generated by sample equipment under test at the time of the test. The sample equipment tested as described in this report is in compliance with the limits of above standards.

Test By:	Barry Lee	***Date:***	2020/11/30
	Barry Lee / Senior Engineer		
Prepared By:	Gigi yeh	***Date:***	2020/11/30
	Gigi Yeh / Senior Engineer		
Approved By:	Jerry Liu	***Date:***	2020/11/30
	Jerry Liu / Technical Manager		

Version

Version No.	Date	Description
00	2018/09/10	Initial creation of document
01	2020/11/30	Test data is referenced to report No.: ISL-18LR259FCDXX, with the identical HW.

Uncertainty of Measurement

Description Of Test	Uncertainty
Conducted Emission (AC power line)	2.586 dB
Field Strength of Spurious Radiation	≤30MHz: 2.96dB 30-1GHz: 4.22 dB 1-40 GHz: 4.08 dB
Conducted Power	2.412 GHz: 1.30 dB 5.805 GHz: 1.55 dB
Power Density	2.412 GHz:1.30 dB 5.805 GHz: 1.67 dB
Frequency	0.0032%
Time	0.01%
DC Voltage	1%

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1. GENERAL INFORMATION

1.1. Product Description

General:

Product Name:	Tracking Watch
Brand:	GlobalSat
Model:	GW-110L
Model different:	N/A
Power Supply:	5Vdc from USB or 3.8V recharge battery

Lora

Frequency Range(MHz)	902~928 MHz
Modulation type	LoRa
Measured Power	101.161 dBuV/m at 3m
Antenna Designation:	FPCB Antenna / 2dBi

Channel Number List:

25 channels are provided DTS Mode (500KHz Bandwidth):

	Frequency (MHz)		Frequency (MHz)		Frequency (MHz)		Frequency (MHz)		Frequency (MHz)
0	903.0	6	912.6	12	920.3	18	923.9	24	927.5
1	904.6	7	914.2	13	920.9	19	924.5		
2	906.2	8	915.8	14	921.5	20	925.1		
3	907.8	9	917.4	15	922.1	21	925.5		
4	909.4	10	919.0	16	922.7	22	926.3		
5	911.0	11	919.7	17	923.3	23	926.9		

1.2. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID**: **RID-GW110L-1** filing to comply with Section 15.249 of the FCC Part 15, Subpart C Rules.

1.3. Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.10: 2013 and RSS-Gen issue 4: 2014. Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4. Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of **International Standards Laboratory Corp.**<LT Lab.> No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist., Tao Yuan City 325, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.10: 2013. FCC Registration Number is: 487532; Designation Number is: TW0997, Canada Registration Number: 4067B-4.

1.5. Special Accessories

Not available for this EUT intended for grant.

1.6. Equipment Modifications

Not available for this EUT intended for grant.

2. System Test Configuration

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2. EUT Exercise

The Transmitter was operated in the engineering operating mode. the Tx frequency was fixed at 903, 920.9 and 927.5MHz which were for the purpose of the measurements.

2.3. Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 6 of ANSI C63.10: 2013 and RSS-Gen issue 4: 2014. Con-ducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR 16-1-1 Quasi-Peak and Average detector mode.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m/1.5m(Frequency above 1GHz) above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 6 and 11 of ANSI C63.10: 2013.

2.4. Limitation

(1) Conducted Emission

According to section 15.207(a) Conducted Emission Limits is as following.

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 – 0.5	66 - 56	56 - 46
0.5 – 5	56	46
5 - 30	60	50

(2) Radiated Emission 15.249(a)

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following.

Frequency (MHz)	Field strength of Fundamental	Field strength of Harmonics	Distance (m)
902 - 928	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
2400 – 2483.5	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3
5725 – 5875	50 mV/m (94dBuV/m)	500 uV/m (54dBuV/m)	3

(3) Radiated Emission15.249 (d)

Emission Radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50dB below the level of the fundamental or to the general radiated emission limits in Section 15.209 as below, whichever is the lesser attenuation.

Frequency (MHz)	Field strength μV/m	Distance (m)	Field strength at 3m dBμV/m
1.705-30	30	30	69.54
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

(4) Radiated Emission 15.249(e)

For frequencies above 1000MHz, the above field strength limits are based on average limits. The peak filed strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20dB under any condition of modulation.

Remark:
1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of meters.
3. Only spurious frequency is permitted to locate within the Restricted Bands specified in provision of ξ 15.205
4. Emission spurious frequency which appearing within the Restricted Bands specified in provision of ξ15.205, then the general radiated emission limits in ξ 15.209 apply.

2.5. Configuration of Tested System

Fig. 1 Configuration of Tested System

Table 1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1	PSU	MRL	TH-3205	N/A	Non-shielded	Non-shielded

Note: All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.

3. Summary of Test Results

FCC Rules	Description Of Test	Result
§15.207/	Conducted Emission	Compliant
§15.249(a)(d)(e)	Field Strength Measurement	Compliant
§15.215(c)	20dB band width Measurement	Compliant

Description of test modes

The EUT has been tested under operating condition.

Test program used to control the EUT for staying in continuous transmitting and receive mode is programmed.

Channel low (903MHz)、mid (920.9MHz) and high (927.5MHz) with highest data rate are chosen for full testing.

4. Conducted Emissions Test

4.1 Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

4.2 Test SET-UP (Block Diagram of Configuration)

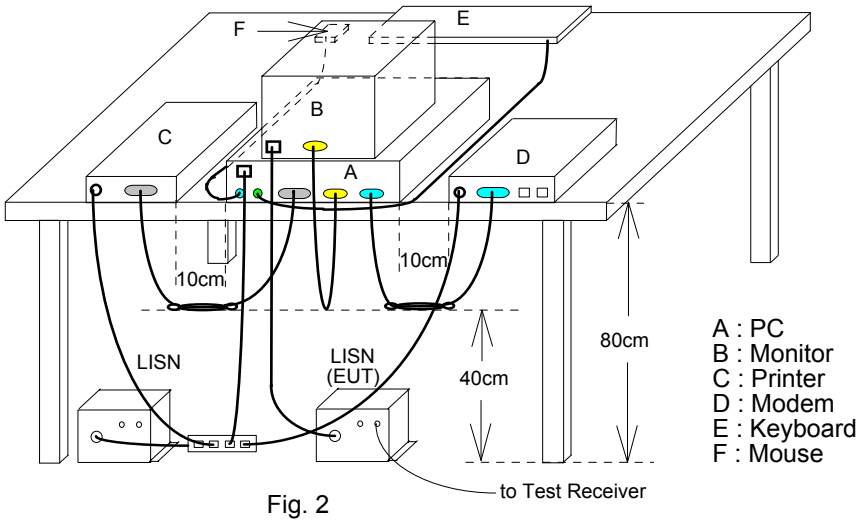


Fig. 2

4.3 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Conduction 04-3 Cable	WOKEN	CFD 300-NL	Conduction 04 -3	09/11/2017	09/10/2018
EMI Receiver 16	Rohde & Schwarz	ESCI	101221	10/23/2017	10/22/2018
LISN 18	ROHDE & SCHWARZ	ENV216	101424	02/04/2018	02/03/2019
LISN 19	ROHDE & SCHWARZ	ENV216	101425	03/06/2018	03/05/2019
Test Software	Farad	EZEMC Ver:ISL-03A2	N/A	N/A	N/A

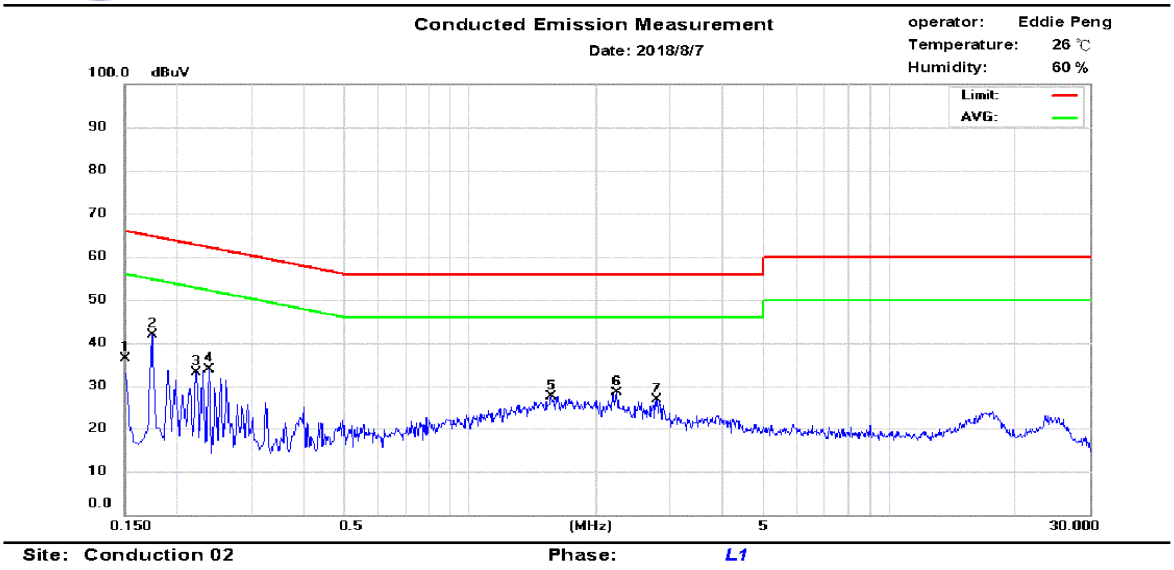
4.4 Measurement Result:

Note: Refer to next page for measurement data and plots.

AC POWER LINE CONDUCTED EMISSION TEST DATA

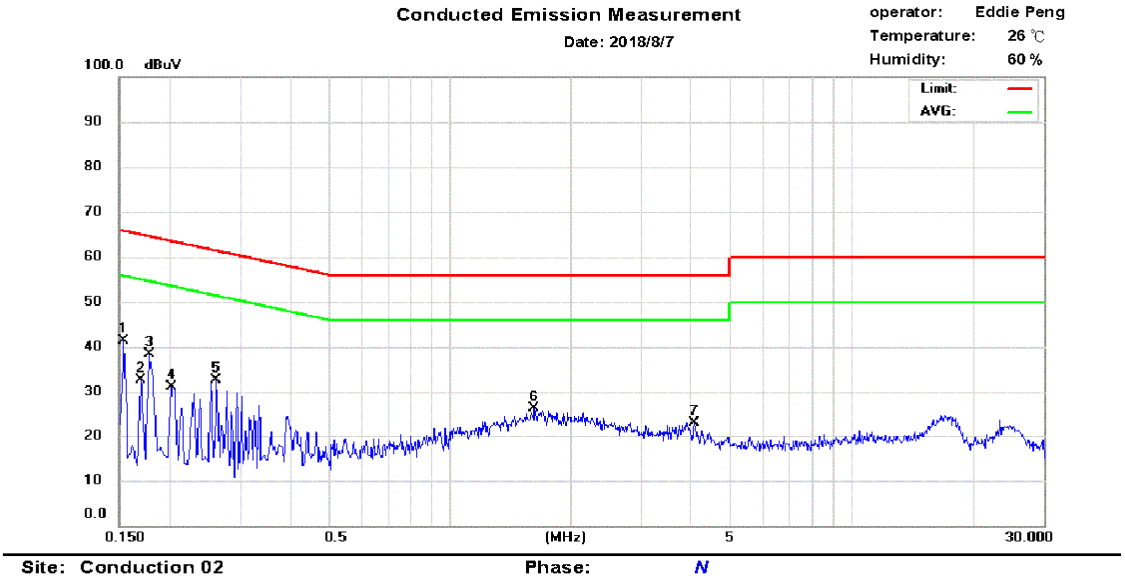
Operation Mode:	Normal Operation	Test Date:	2018/08/07

Address:No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist.,
Tao Yuan City 325, Taiwan.
Tel:03-4071718



No.	Frequency (MHz)	QP_R (dBuV)	AVG_R (dBuV)	Correct Factor (dB)	QP Emission (dBuV)	QP Limit (dBuV)	QP Margin (dB)	AVG Emission (dBuV)	AVG Limit (dBuV)	AVG Margin (dB)
1	0.150	26.90	4.56	9.66	36.56	66.00	-29.44	14.22	56.00	-41.78
2	0.174	22.92	4.58	9.67	32.59	64.77	-32.18	14.25	54.77	-40.52
3	0.222	17.47	1.83	9.67	27.14	62.74	-35.60	11.50	52.74	-41.24
4	0.238	15.44	0.82	9.67	25.11	62.17	-37.06	10.49	52.17	-41.68
5	1.562	13.82	9.65	9.72	23.54	56.00	-32.46	19.37	46.00	-26.63
6	2.238	12.40	8.06	9.73	22.13	56.00	-33.87	17.79	46.00	-28.21
7	2.794	10.36	5.66	9.75	20.11	56.00	-35.89	15.41	46.00	-30.59

Address:No. 120, Lane 180, Hsin Ho Rd., Lung-Tan Dist.,
Tao Yuan City 325, Taiwan.
Tel:03-4071718



No.	Frequency (MHz)	QP_R (dBuV)	AVG_R (dBuV)	Correct Factor (dB)	QP Emission (dBuV)	QP Limit (dBuV)	QP Margin (dB)	AVG Emission (dBuV)	AVG Limit (dBuV)	AVG Margin (dB)
1	0.154	25.91	3.14	9.71	35.62	65.78	-30.16	12.85	55.78	-42.93
2	0.170	23.71	0.99	9.71	33.42	64.96	-31.54	10.70	54.96	-44.26
3	0.178	22.13	1.56	9.71	31.84	64.58	-32.74	11.27	54.58	-43.31
4	0.202	19.33	-0.17	9.71	29.04	63.53	-34.49	9.54	53.53	-43.99
5	0.262	13.45	-1.94	9.71	23.16	61.37	-38.21	7.77	51.37	-43.60
6	1.622	11.46	7.49	9.76	21.22	56.00	-34.78	17.25	46.00	-28.75
7	4.070	7.73	2.51	9.82	17.55	56.00	-38.45	12.33	46.00	-33.67

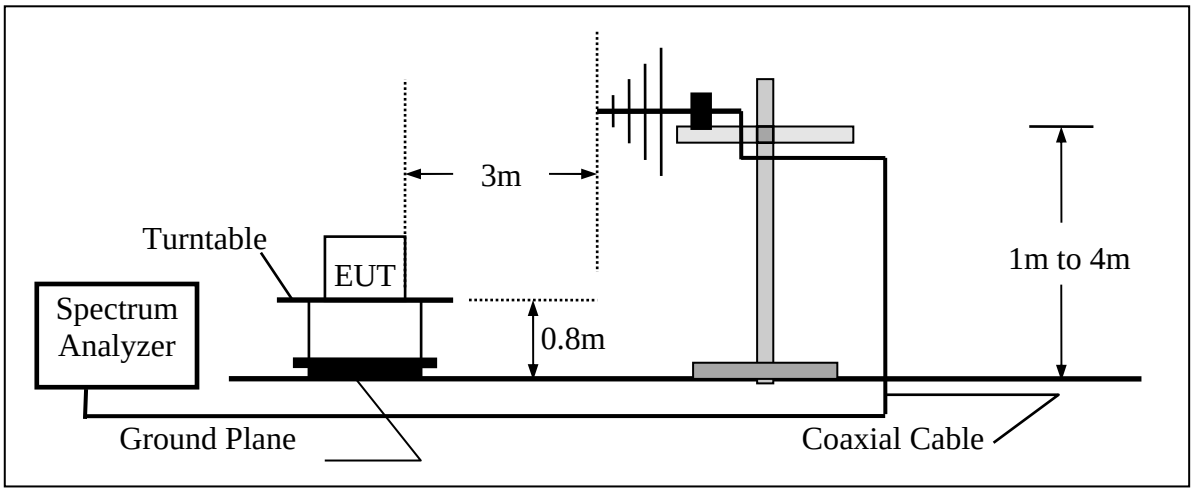
5. Radiated Emission Test

5.1 Measurement Procedure

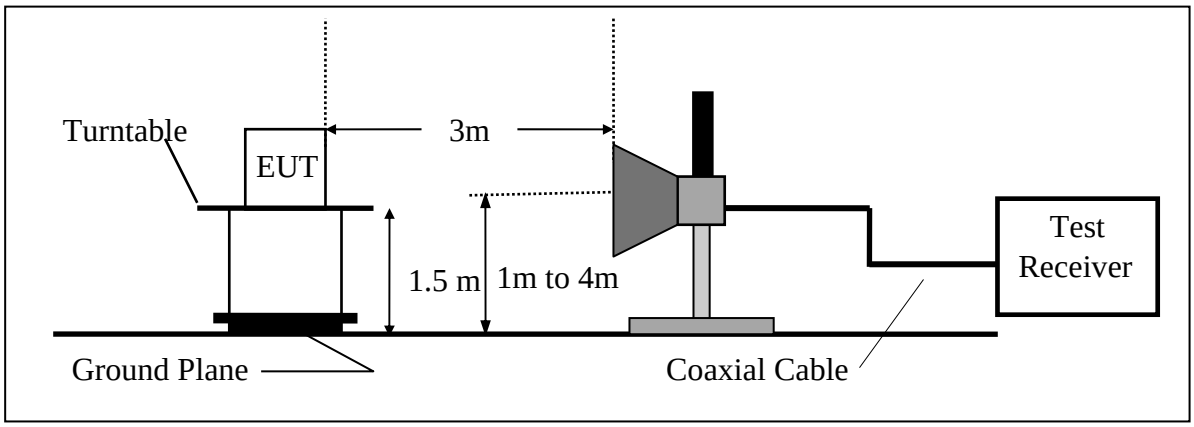
1. The EUT was placed on a turntable that is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

5.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



5.3 Measurement Equipment Used:

Chamber 14(966)					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
966 Chamber	Chance Most	Chamber 19	N/A	08/14/2018	08/13/2019
Spectrum Analyzer 21(3Hz-44GHz)	Agilent	N9030A	MY51360021	11/20/2017	11/19/2018
Loop Antenna(9K-30M)	EM	EM-6879	271	11/01/2016	10/31/2018
Bilog Antenna (30M-1G)	SCHWARZBECK	VULB9168 w 5dB Att	736	11/16/2017	11/25/2018
Horn antenna (1G-18G)	SCHWARZBECK	9120D	9120D-1627	11/27/2017	11/26/2019
Horn antenna (18G-26G)	Com-power	AH-826	081001	11/21/2017	11/20/2019
Horn antenna (26G-40G)	Com-power	AH-640	100A	02/22/2017	02/21/2019
Preamplifier (9k-1000M)	HP	8447F	3113A06362	12/08/2017	12/07/2018
Preamplifier(1G-26G)	Agilent	8449B	3008A02471	08/24/2017	08/23/2018
RF Cable (9k-18G)	HUBER SUHNER	SUCOFLEX 104A	MY1397/4A	11/02/2017	11/01/2018
RF cable (18G~40G)	HUBER SUHNER	Sucoflex 102	27963/2&37421/2	11/02/2017	11/01/2018
2.4G Filter	Micro-Tronics	Brm50702	76	12/25/2017	12/24/2018
Test Software	Audix	E3 Ver:6.12023	N/A	N/A	N/A
Test Software	Farad	EZEMC Ver:ISL-03A2	N/A	N/A	N/A

5.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

5.5 Measurement Result

Fundamental Emission Measurement Result

Operation Mode	: TX mode	Test Date	: 2018/08/07
Fundamental Frequency	: 903 MHz, 920.9 MHz, 927.5MHz	Test By	: Barry
Temp	: 25 ℃	Hum.	: 60%

CH Low:

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	903.00	86.61	5.37	91.98	94.00	-2.02	Average	VERTICAL
2	903.00	92.27	5.37	97.64	114.00	-16.36	Peak	VERTICAL
1	902.99	87.16	5.37	92.53	94.00	-1.47	Average	HORIZONTAL
2	902.99	96.24	5.37	101.61	114.00	-12.39	Peak	HORIZONTAL

CH Mid:

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	920.66	83.19	5.73	88.92	94.00	-5.08	Average	VERTICAL
2	920.66	89.09	5.73	94.82	114.00	-19.18	Peak	VERTICAL
1	920.92	84.95	5.73	90.68	94.00	-3.32	Average	HORIZONTAL
2	920.92	91.54	5.73	97.27	114.00	-16.73	Peak	HORIZONTAL

CH High:

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	927.30	84.13	5.85	89.98	94.00	-4.02	Average	VERTICAL
2	927.30	90.89	5.85	96.74	114.00	-17.26	Peak	VERTICAL
1	927.28	85.32	5.85	91.17	94.00	-2.83	Average	HORIZONTAL
2	927.28	91.70	5.85	97.55	114.00	-16.45	Peak	HORIZONTAL

Remark:

1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency

2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.

3 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

4 Spectrum AV mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 10KHz.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	TX CH Low	Test Date	2018/08/07
Fundamental Frequency	903 MHz	Test By	Barry
Temperature	25 ℃	Humidity	60 %

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	396.66	30.51	-3.05	27.46	46.00	-18.54	Peak	VERTICAL
2	493.66	34.25	-1.70	32.55	46.00	-13.45	Peak	VERTICAL
3	499.48	33.94	-1.66	32.28	46.00	-13.72	Peak	VERTICAL
4	515.00	33.81	-1.40	32.41	46.00	-13.59	Peak	VERTICAL
5	613.94	30.99	0.58	31.57	46.00	-14.43	Peak	VERTICAL
6	764.29	29.81	3.24	33.05	46.00	-12.95	Peak	VERTICAL
1	154.16	30.13	-5.93	24.20	43.50	-19.30	Peak	HORIZONTAL
2	439.34	30.85	-2.26	28.59	46.00	-17.41	Peak	HORIZONTAL
3	497.54	39.96	-1.68	38.28	46.00	-7.72	Peak	HORIZONTAL
4	515.00	33.56	-1.40	32.16	46.00	-13.84	Peak	HORIZONTAL
5	662.44	30.42	1.22	31.64	46.00	-14.36	Peak	HORIZONTAL
6	710.94	31.65	2.15	33.80	46.00	-12.20	Peak	HORIZONTAL

Remark:

1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency

2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.

3 “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

4 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	TX CH Mid	Test Date	2018/08/07
Fundamental Frequency	920.9 MHz	Test By	Barry
Temperature	25 ℃	Humidity	60 %

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	291.90	30.74	-5.10	25.64	46.00	-20.36	Peak	VERTICAL
2	442.25	29.99	-2.21	27.78	46.00	-18.22	Peak	VERTICAL
3	499.48	33.35	-1.66	31.69	46.00	-14.31	Peak	VERTICAL
4	718.70	30.68	2.34	33.02	46.00	-12.98	Peak	VERTICAL
5	754.59	30.86	3.14	34.00	46.00	-12.00	Peak	VERTICAL
6	947.62	30.17	6.27	36.44	46.00	-9.56	Peak	VERTICAL
1	159.01	30.48	-5.90	24.58	43.50	-18.92	Peak	HORIZONTAL
2	323.91	30.44	-4.44	26.00	46.00	-20.00	Peak	HORIZONTAL
3	448.07	30.46	-2.11	28.35	46.00	-17.65	Peak	HORIZONTAL
4	519.85	39.40	-1.32	38.08	46.00	-7.92	Peak	HORIZONTAL
5	614.91	31.21	0.60	31.81	46.00	-14.19	Peak	HORIZONTAL
6	781.75	30.43	3.41	33.84	46.00	-12.16	Peak	HORIZONTAL

Remark:

1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency

2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.

3 “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

4 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	TX CH High	Test Date	2018/08/07
Fundamental Frequency	927.5 MHz	Test By	Barry
Temperature	25 °C	Humidity	60 %

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	50.37	29.82	-6.18	23.64	40.00	-16.36	Peak	VERTICAL
2	154.16	29.75	-5.93	23.82	43.50	-19.68	Peak	VERTICAL
3	388.90	31.28	-3.21	28.07	46.00	-17.93	Peak	VERTICAL
4	517.91	35.96	-1.35	34.61	46.00	-11.39	Peak	VERTICAL
5	785.63	30.74	3.45	34.19	46.00	-11.81	Peak	VERTICAL
6	880.69	30.16	4.95	35.11	46.00	-10.89	Peak	VERTICAL
1	377.26	31.14	-3.44	27.70	46.00	-18.30	Peak	HORIZONTAL
2	419.94	31.48	-2.62	28.86	46.00	-17.14	Peak	HORIZONTAL
3	520.82	31.12	-1.30	29.82	46.00	-16.18	Peak	HORIZONTAL
4	625.58	30.75	0.71	31.46	46.00	-14.54	Peak	HORIZONTAL
5	721.61	30.85	2.40	33.25	46.00	-12.75	Peak	HORIZONTAL
6	828.31	30.65	4.02	34.67	46.00	-11.33	Peak	HORIZONTAL

Remark:

1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency

2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.

3 “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

4 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	: TX CH Low	Test Date	: 2018/08/07
Fundamental Frequency	: 903 MHz	Test By	: Barry
Temp	: 25 ℃	Hum.	: 60%

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	1805.00	59.02	-6.46	52.56	74.00	-21.44	Peak	VERTICAL
2	2708.00	51.23	-2.41	48.82	54.00	-5.18	Average	VERTICAL
3	2708.00	62.73	-2.41	60.32	74.00	-13.68	Peak	VERTICAL
4	3611.00	51.40	-0.38	51.02	74.00	-22.98	Peak	VERTICAL
1	1805.00	52.40	-6.46	45.94	74.00	-28.06	Peak	HORIZONTAL
2	2708.00	52.16	-2.41	49.75	54.00	-4.25	Average	HORIZONTAL
3	2708.00	64.47	-2.41	62.06	74.00	-11.94	Peak	HORIZONTAL
4	3611.00	48.92	-0.38	48.54	54.00	-5.46	Average	HORIZONTAL
5	3611.00	56.49	-0.38	56.11	74.00	-17.89	Peak	HORIZONTAL
6	5417.00	46.56	4.44	51.00	74.00	-23.00	Peak	HORIZONTAL

Remark:

1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency

2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.

3 “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

4 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	: TX CH Mid	Test Date	: 2018/08/07
Fundamental Frequency	: 920.9 MHz	Test By	: Barry
Temp	: 25 ℃	Hum.	: 60%

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	1840.00	53.67	-6.27	47.40	74.00	-26.60	Peak	VERTICAL
2	2757.00	49.83	-2.35	47.48	54.00	-6.52	Average	VERTICAL
3	2757.00	57.72	-2.35	55.37	74.00	-18.63	Peak	VERTICAL
4	3681.00	44.74	-0.21	44.53	74.00	-29.47	Peak	VERTICAL
1	1840.00	57.41	-6.27	51.14	74.00	-22.86	Peak	HORIZONTAL
2	2764.00	49.36	-2.34	47.02	54.00	-6.98	Average	HORIZONTAL
3	2764.00	56.39	-2.34	54.05	74.00	-19.95	Peak	HORIZONTAL
4	3681.00	46.87	-0.21	46.66	74.00	-27.34	Peak	HORIZONTAL

Remark:

1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency

2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.

3 “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

4 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	: TX CH High	Test Date	: 2018/08/07
Fundamental Frequency	: 927.5 MHz	Test By	: Barry
Temp	: 25 ℃	Hum.	: 60%

No	Freq MHz	Reading dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Over L imit dB	Remark	Pol V/H
1	1854.00	51.23	-6.19	45.04	74.00	-28.96	Peak	VERTICAL
2	2778.00	53.33	-2.32	51.01	74.00	-22.99	Peak	VERTICAL
3	4640.00	44.93	2.90	47.83	74.00	-26.17	Peak	VERTICAL
1	1854.00	56.98	-6.19	50.79	74.00	-23.21	Peak	HORIZONTAL
2	2778.00	50.13	-2.32	47.81	54.00	-6.19	Average	HORIZONTAL
3	2778.00	56.49	-2.32	54.17	74.00	-19.83	Peak	HORIZONTAL
4	3709.00	46.15	-0.15	46.00	74.00	-28.00	Peak	HORIZONTAL

Remark:

1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency

2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.

3 “F” denotes fundamental frequency; “H” denotes harmonics frequency. “S” denotes spurious frequency.

4 Measurement of data within this frequency range shown “ - ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

5 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

6 Spectrum AV mode if bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (Band Edge)

Operation Mode : Band Edge Test Date :2018/08/07
Temp./Hum. : 25 ℃ / : 60% Test By : Barry

CH Low

No	Freq MHz	Reading dBuV	Factor dB	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	902.00	31.15	5.35	36.50	81.15	-44.65	Peak	VERTICAL
2	902.90	95.78	5.37	101.15	F	--	Peak	VERTICAL
1	902.00	34.03	5.35	39.38	84.92	-45.54	Peak	HORIZONTAL
2	902.94	99.55	5.37	104.92	F	--	Peak	HORIZONTAL

CH High

No	Freq MHz	Reading dBuV	Factor dB	Level dBuV/m	Limit dBuV/m	Over Limit dB	Remark	Pol V/H
1	927.58	92.43	5.86	98.29	46.00	--	Peak	VERTICAL
2	928.00	35.51	5.86	41.37	46.00	-4.63	Peak	VERTICAL
1	927.42	97.88	5.85	103.73	46.00	--	Peak	HORIZONTAL
2	928.00	37.88	5.86	43.74	46.00	-2.26	QP	HORIZONTAL
3	928.00	39.72	5.86	45.58	46.00	-0.42	Peak	HORIZONTAL

Remark:

1 Measuring frequencies from the lowest internal frequency to the 10th of fundamental frequency

2 Field strength limits for frequency above 1000MHz are based on average limits. However, Peak mode field strength shall not exceed the average limits specified plus 20dB.

3 Measurement of data within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

4 Spectrum Peak mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 3 MHz.

5 Spectrum AV mode IF bandwidth Setting : 1GHz- 26GHz, RBW= 1MHz, Sweep time= 200 ms., the VBW setting was 10MHz.

6. 20 dB Band Width Measurement

6.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set ETU normal operating mode.
3. Set SPA Center Frequency = fundamental frequency, RBW = 100kHz, VBW = 300kHz, Span =5MHz.
4. Set SPA Max hold. Mark peak, -20dB.

6.2 Test SET-UP (Block Diagram of Configuration)

Same as 4.2 Radiated Emission Measurement.

6.3 Measurement Equipment Used:

Same as 4.2 Radiated Emission Measurement.

6.4 Measurement Results:

903 Channel = 0.616MHz

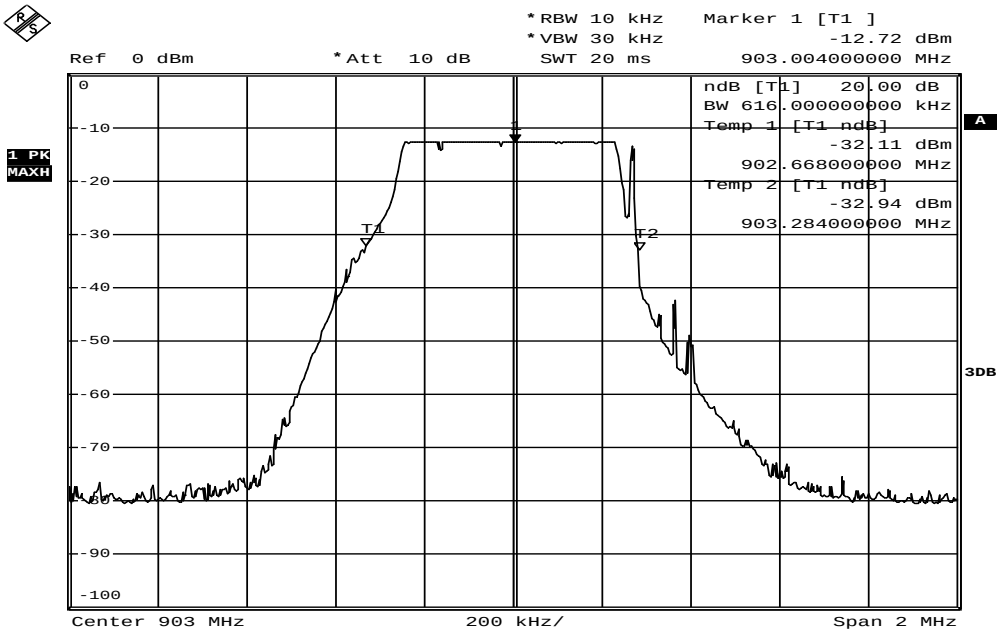
920.9 Channel = 0.648MHz

927.5 Channel = 0.616MHz

Refer to attached data chart.

20dB Band Width test Plot

CH Low



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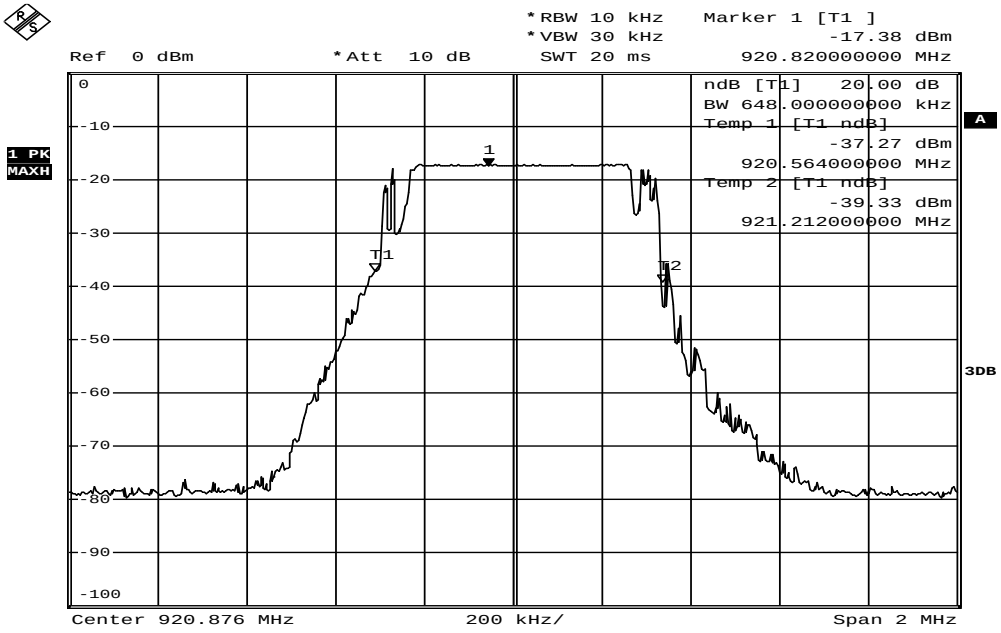
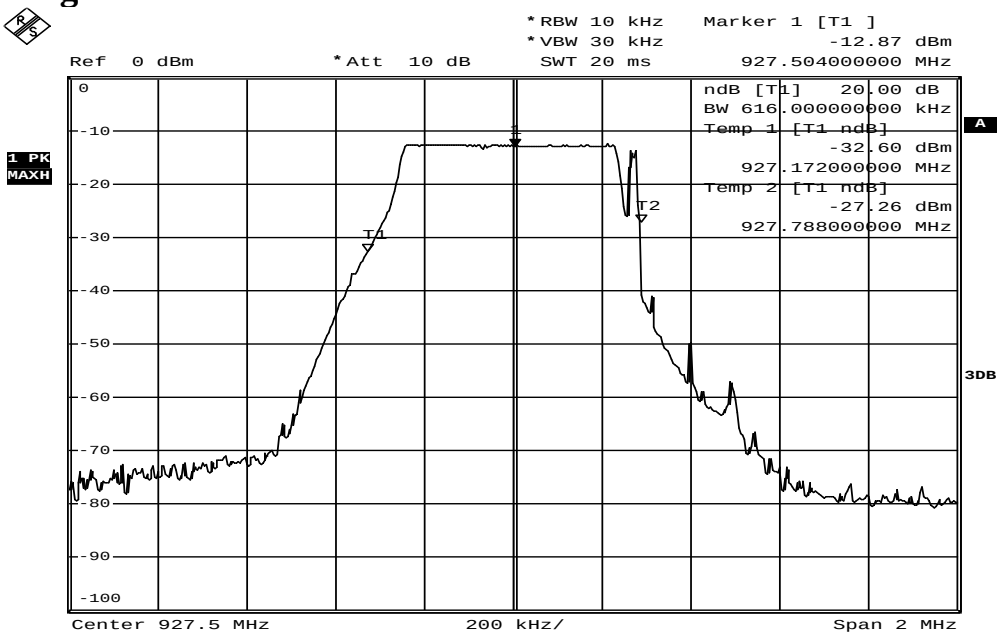
CH Mid



Date: 6.AUG.2018 16:39:35

CH High



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