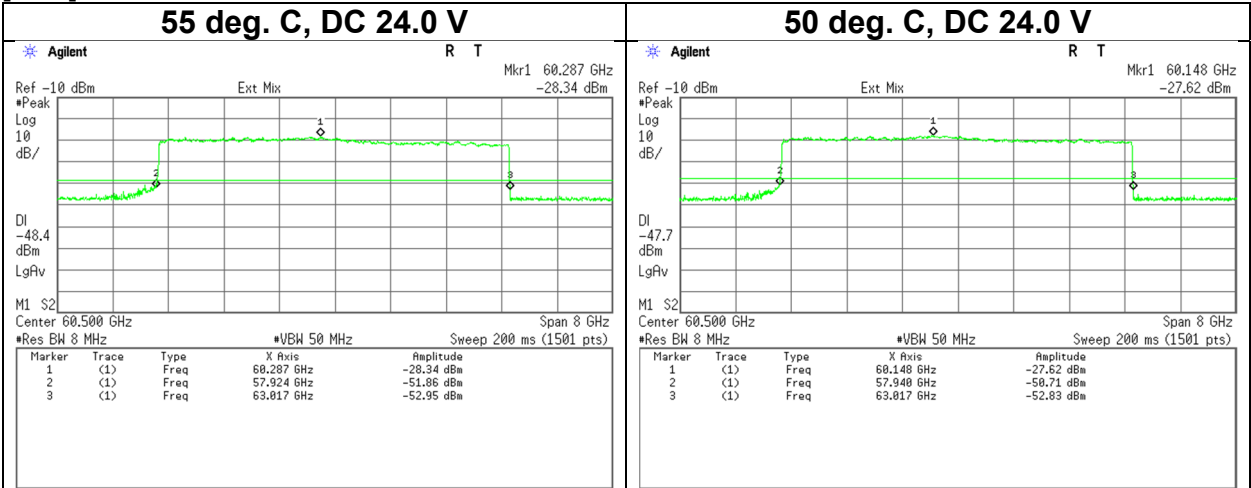


Frequency Stability

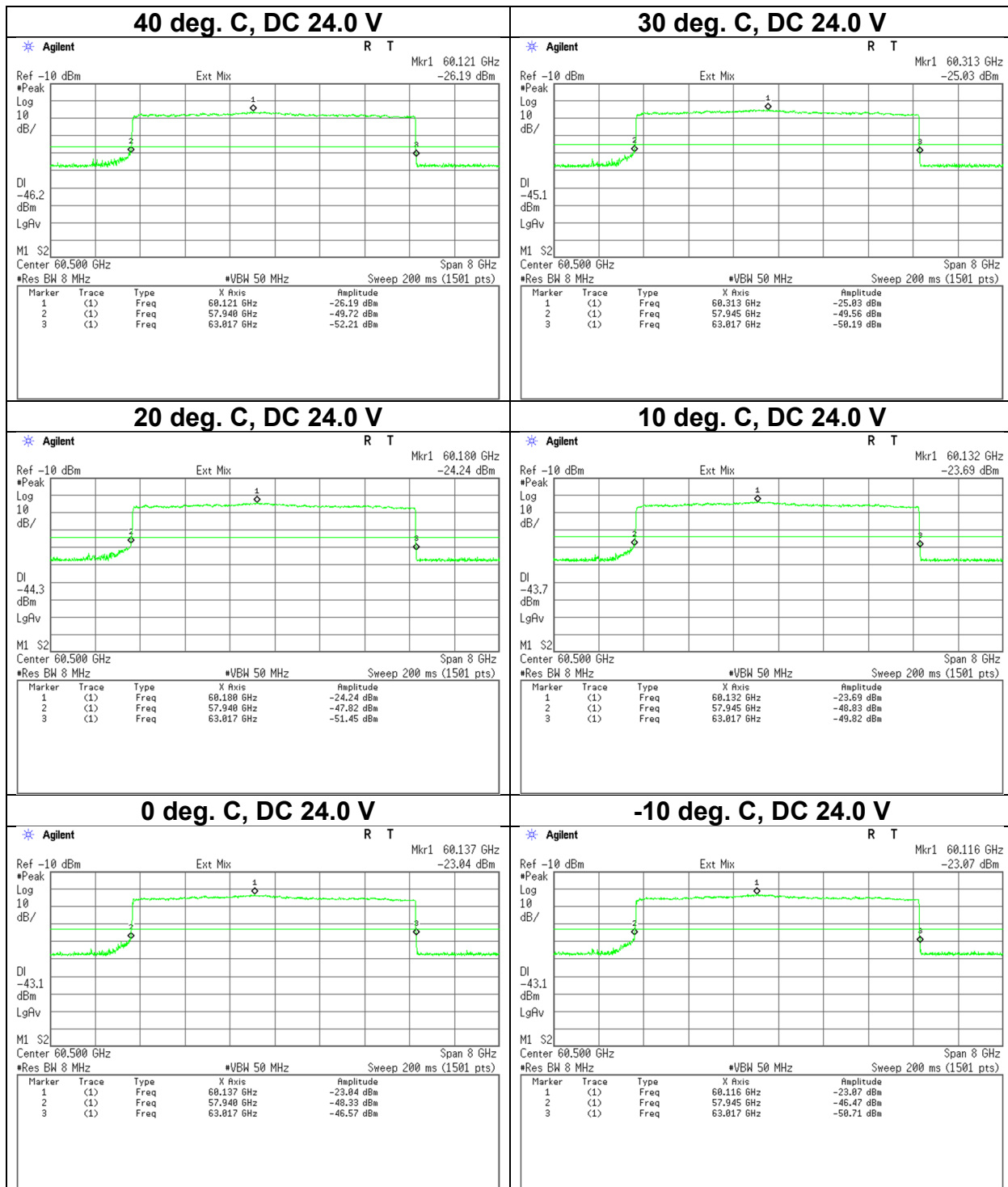
Test place	Ise EMC Lab. No. 6 Measurement Room
Date	July 21, 2023
Temperature / Humidity	23 deg. C / 48 % RH
Engineer	Sayaka Hara
Mode	Tx Symbol Pattern 1

Test Condition		Measured -20 dBc Frequency		Remarks
Temperature [deg. C]	Power Supply [V]	Lower Result [GHz]	Upper Result [GHz]	
55	24.0	57.924	63.017	Customer requested temperature
50	24.0	57.940	63.017	
40	24.0	57.940	63.017	
30	24.0	57.945	63.017	
20	24.0	57.940	63.017	
20	20.4	57.940	63.017	85 % of the rated voltage, DC 24 V * 0.85
20	27.6	57.945	63.017	115 % of the rated voltage, DC 24 V * 1.15
10	24.0	57.945	63.017	
0	24.0	57.940	63.017	
-10	24.0	57.945	63.017	
-20	24.0	57.940	63.017	

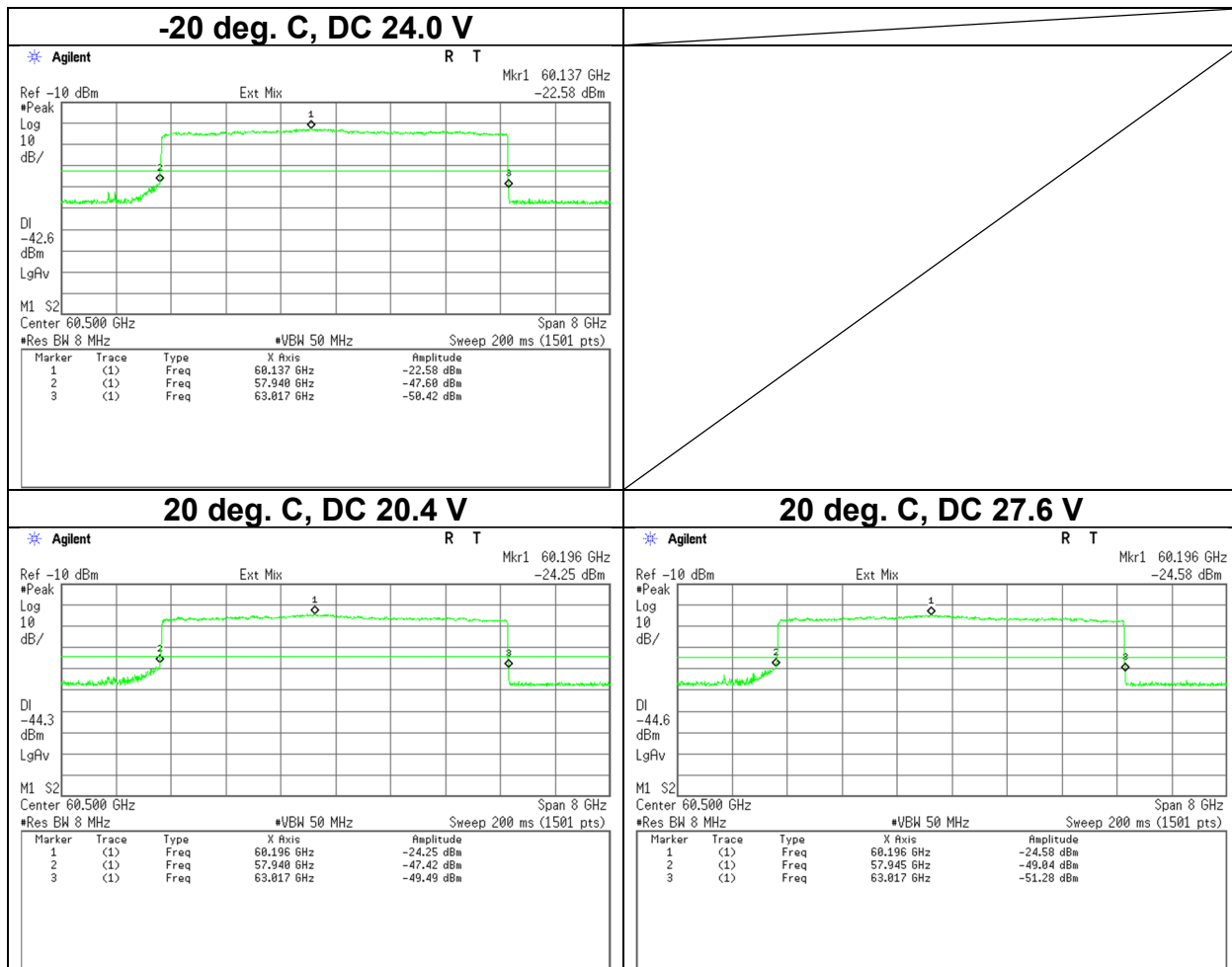
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Frequency Stability



Frequency Stability

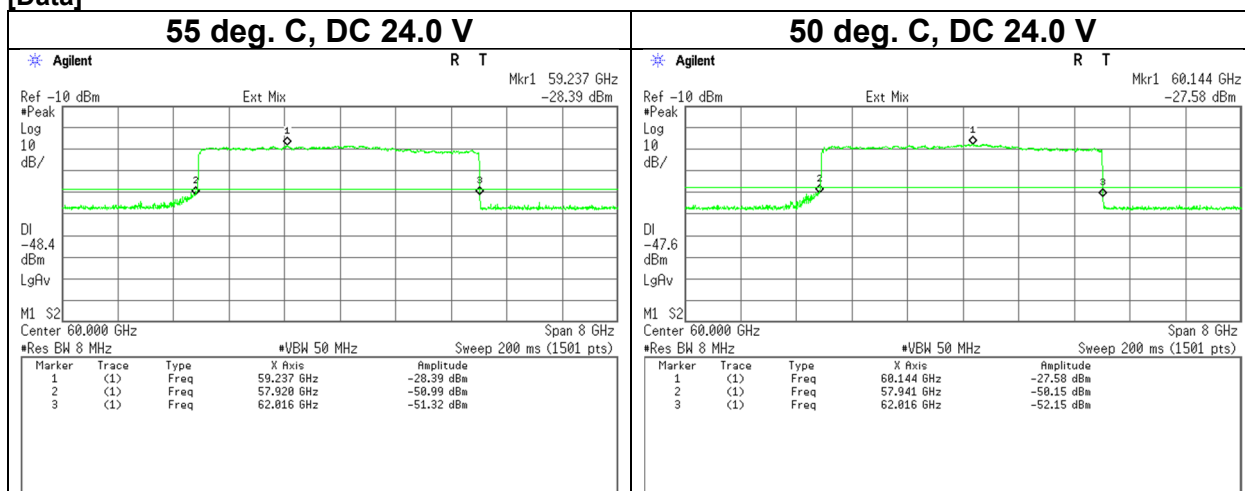


Frequency Stability

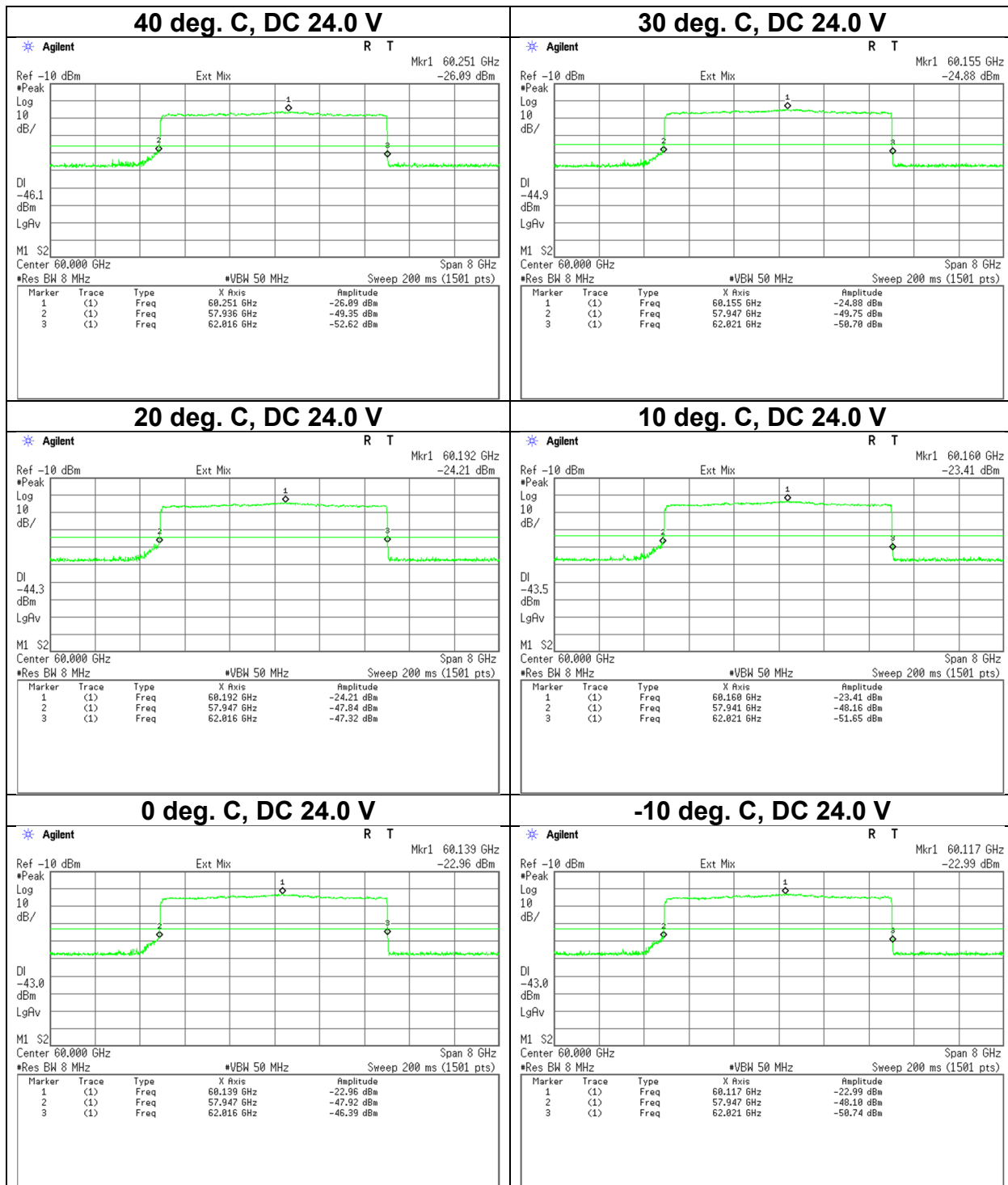
Test place	Ise EMC Lab. No. 6 Measurement Room
Date	July 21, 2023
Temperature / Humidity	23 deg. C / 48 % RH
Engineer	Sayaka Hara
Mode	Tx Symbol Pattern 2

Test Condition		Measured -20 dBc Frequency		Remarks
Temperature [deg. C]	Power Supply [V]	Lower Result [GHz]	Upper Result [GHz]	
55	24.0	57.920	62.016	Customer requested temperature
50	24.0	57.941	62.016	
40	24.0	57.936	62.016	
30	24.0	57.947	62.021	
20	24.0	57.947	62.016	
20	20.4	57.941	62.016	85 % of the rated voltage, DC 24 V * 0.85
20	27.6	57.941	62.016	115 % of the rated voltage, DC 24 V * 1.15
10	24.0	57.941	62.021	
0	24.0	57.947	62.016	
-10	24.0	57.947	62.021	
-20	24.0	57.941	62.016	

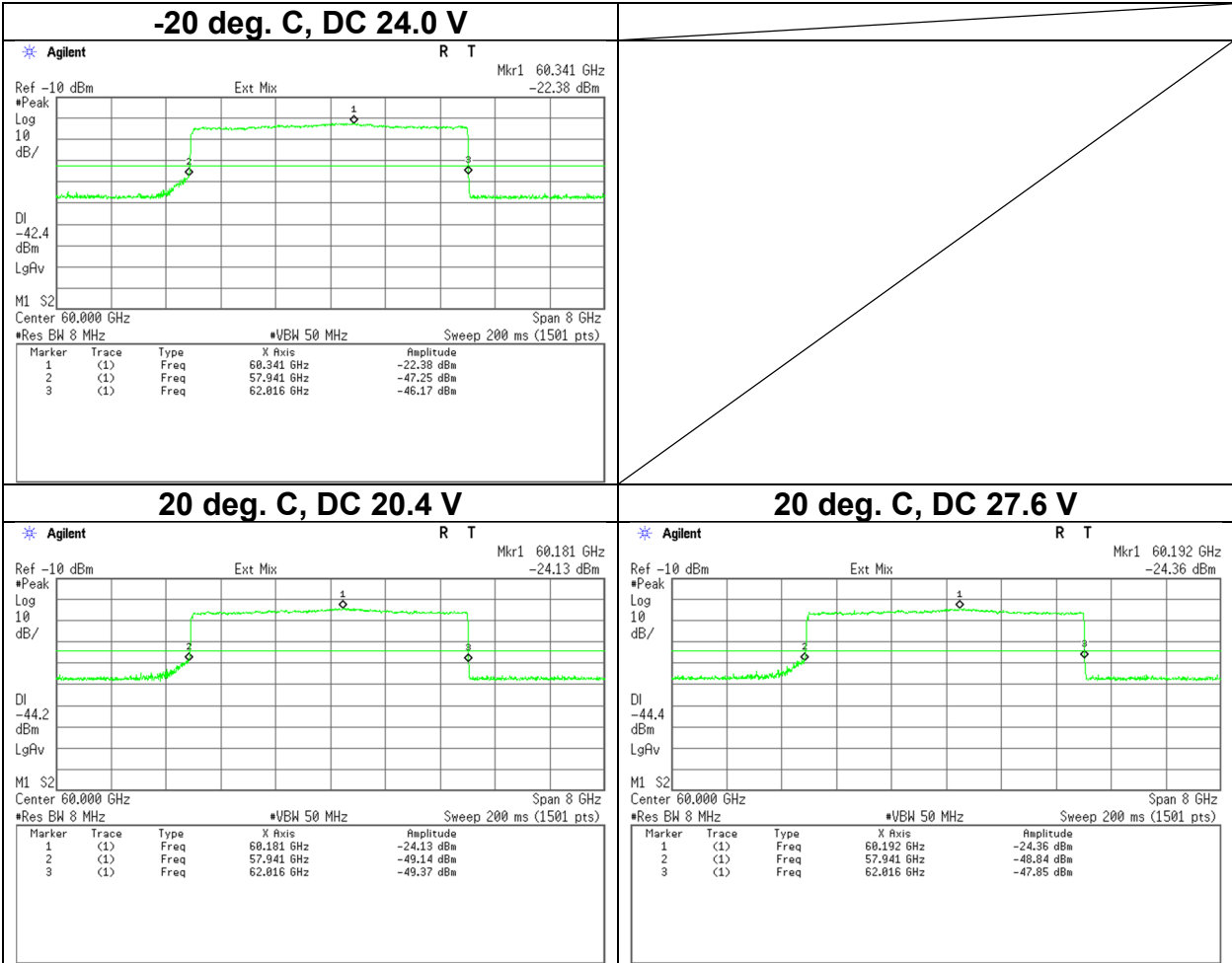
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Frequency Stability



Frequency Stability

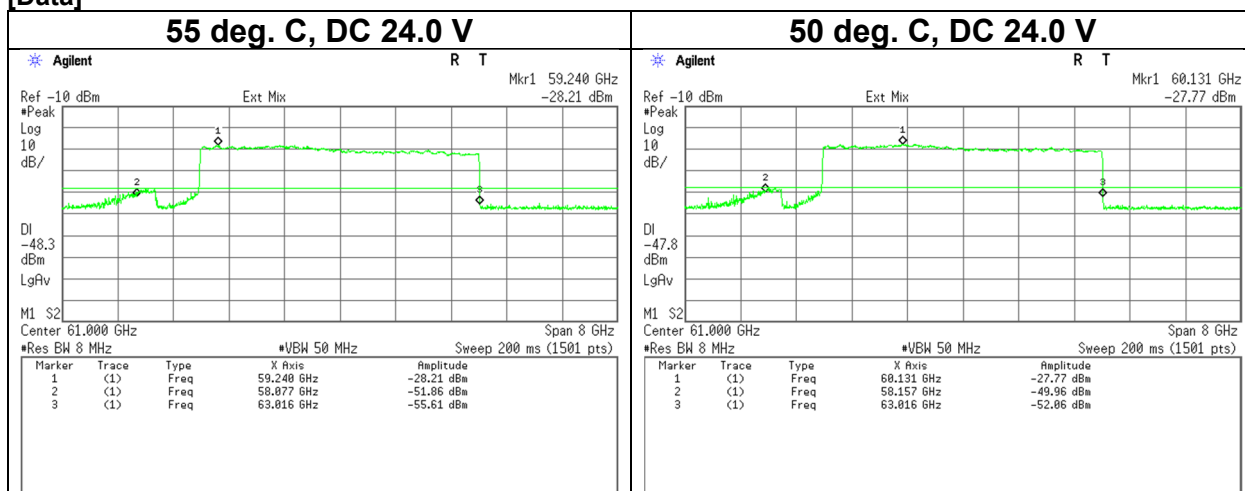


Frequency Stability

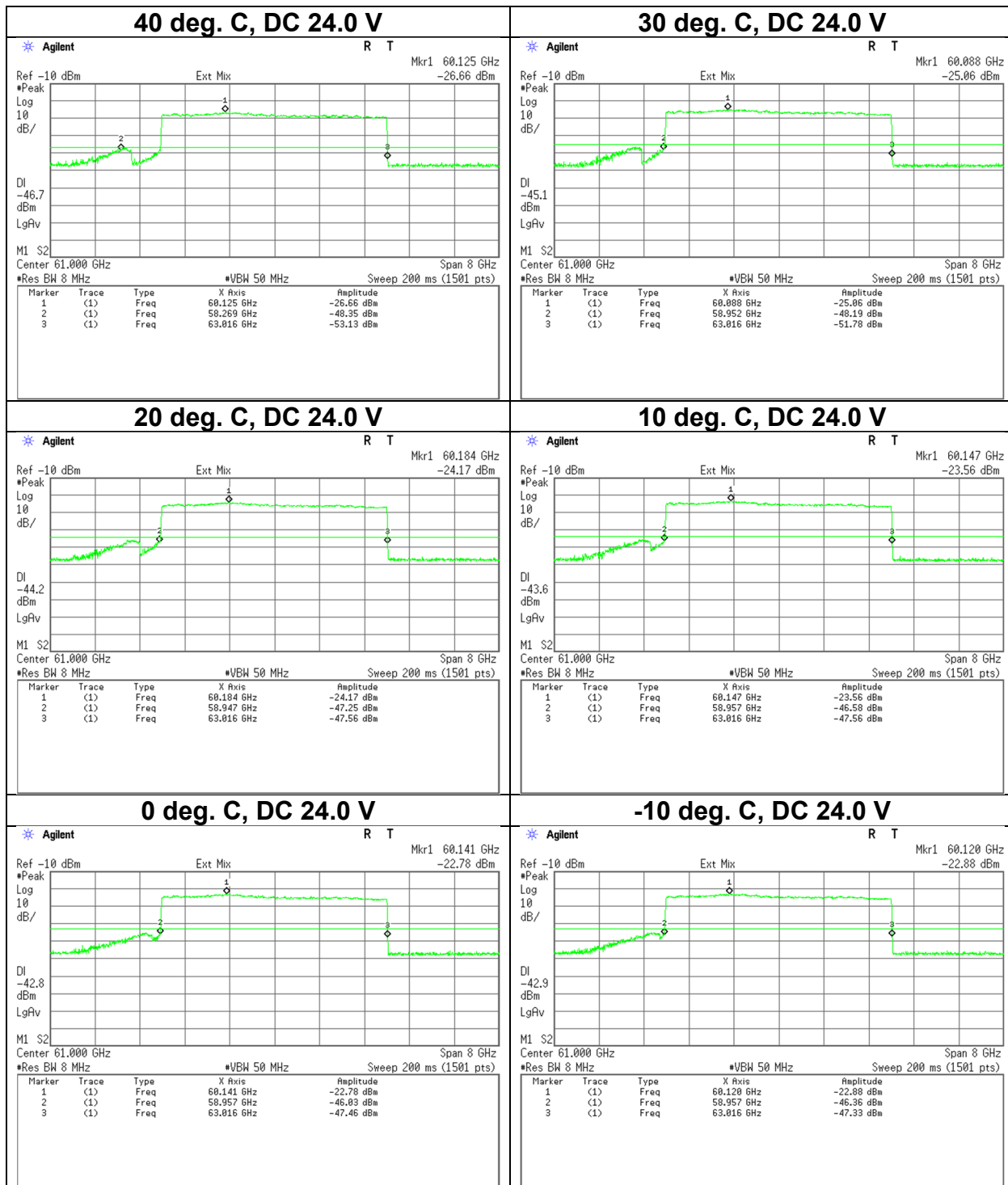
Test place	Ise EMC Lab. No. 6 Measurement Room
Date	July 21, 2023
Temperature / Humidity	23 deg. C / 48 % RH
Engineer	Sayaka Hara
Mode	Tx Symbol Pattern 3

Test Condition		Measured -20 dBc Frequency		Remarks
Temperature [deg. C]	Power Supply [V]	Lower Result [GHz]	Upper Result [GHz]	
55	24.0	58.077	63.016	Customer requested temperature
50	24.0	58.157	63.016	
40	24.0	58.269	63.016	
30	24.0	58.952	63.016	
20	24.0	58.947	63.016	
20	20.4	58.952	63.016	85 % of the rated voltage, DC 24 V * 0.85
20	27.6	58.947	63.016	115 % of the rated voltage, DC 24 V * 1.15
10	24.0	58.957	63.016	
0	24.0	58.957	63.016	
-10	24.0	58.957	63.016	
-20	24.0	58.952	63.016	

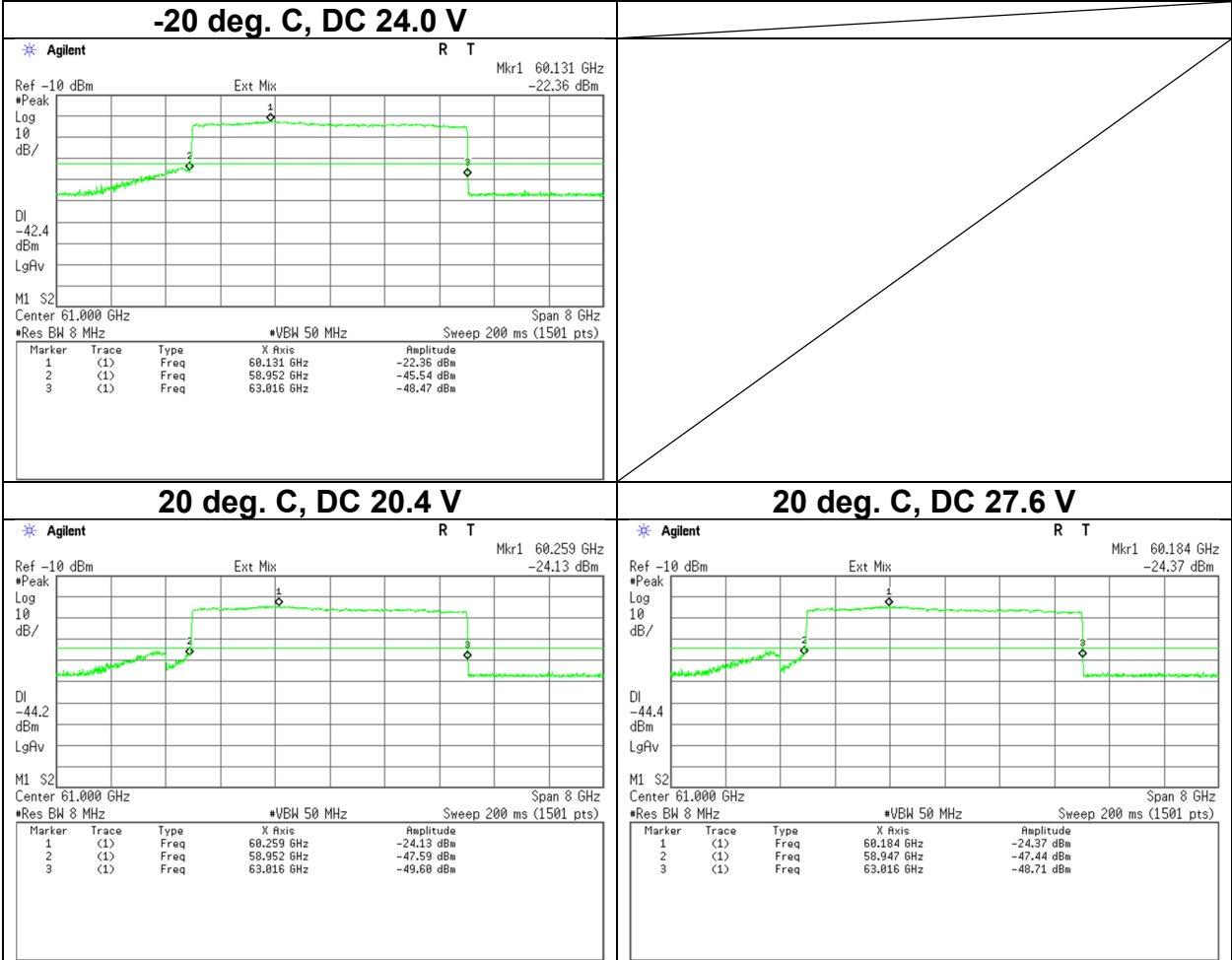
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Frequency Stability



Frequency Stability

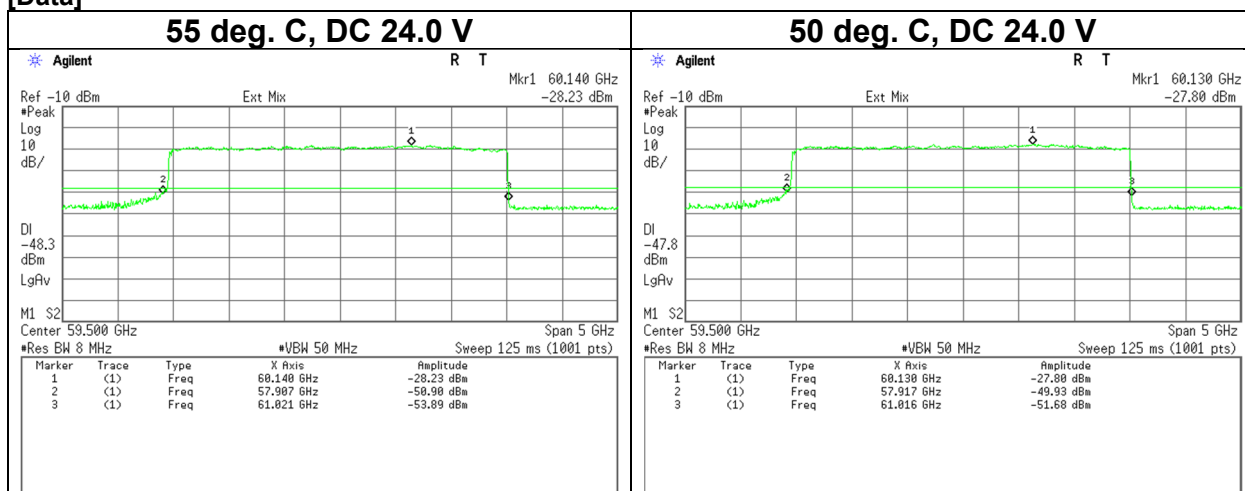


Frequency Stability

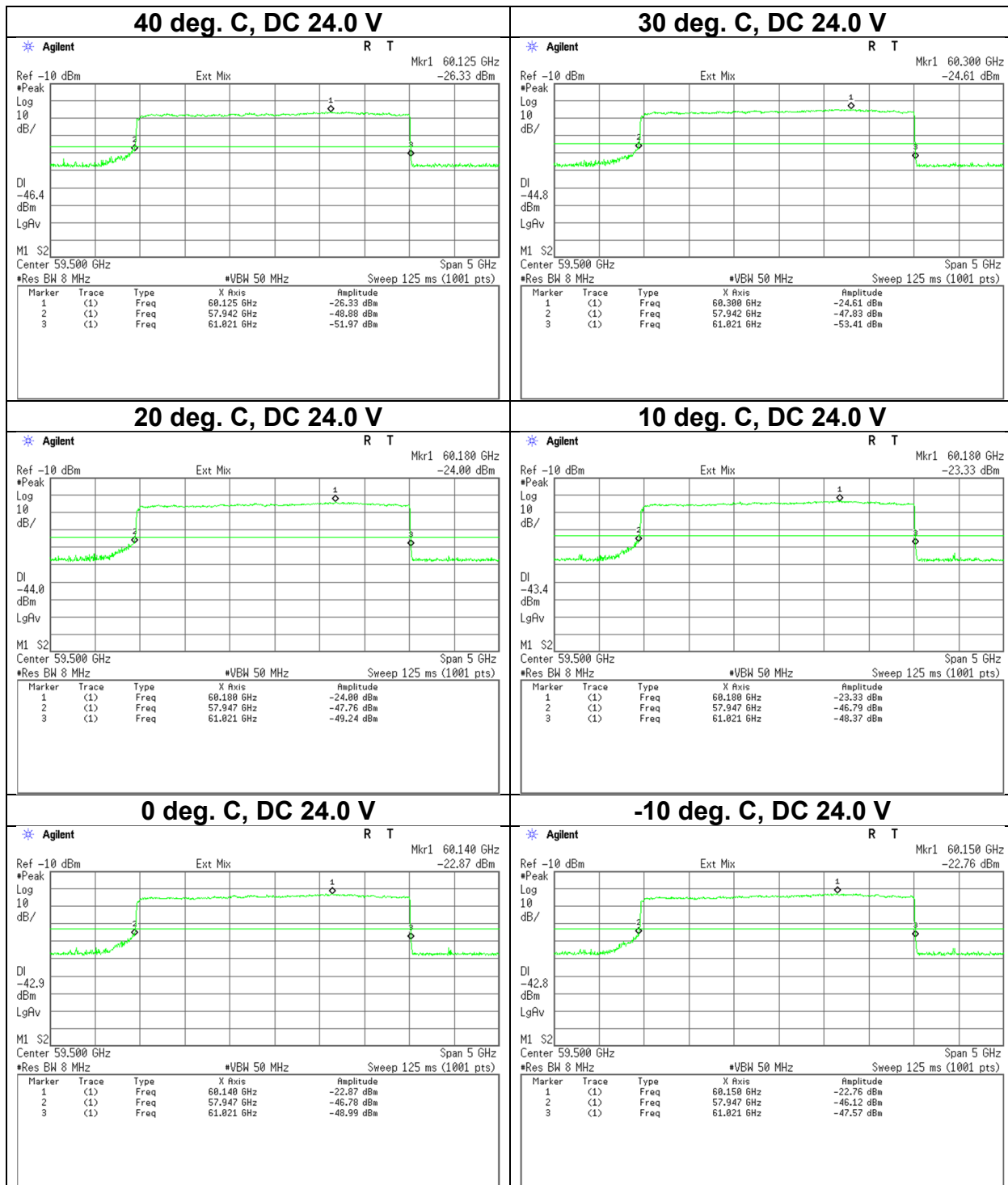
Test place	Ise EMC Lab. No. 6 Measurement Room
Date	July 21, 2023
Temperature / Humidity	23 deg. C / 48 % RH
Engineer	Sayaka Hara
Mode	Tx Symbol Pattern 4

Test Condition		Measured -20 dBc Frequency		Remarks
Temperature [deg. C]	Power Supply [V]	Lower Result [GHz]	Upper Result [GHz]	
55	24.0	57.907	61.021	Customer requested temperature
50	24.0	57.917	61.016	
40	24.0	57.942	61.021	
30	24.0	57.942	61.021	
20	24.0	57.947	61.021	
20	20.4	57.937	61.026	85 % of the rated voltage, DC 24 V * 0.85
20	27.6	57.947	61.021	115 % of the rated voltage, DC 24 V * 1.15
10	24.0	57.947	61.021	
0	24.0	57.947	61.021	
-10	24.0	57.947	61.021	
-20	24.0	57.942	61.021	

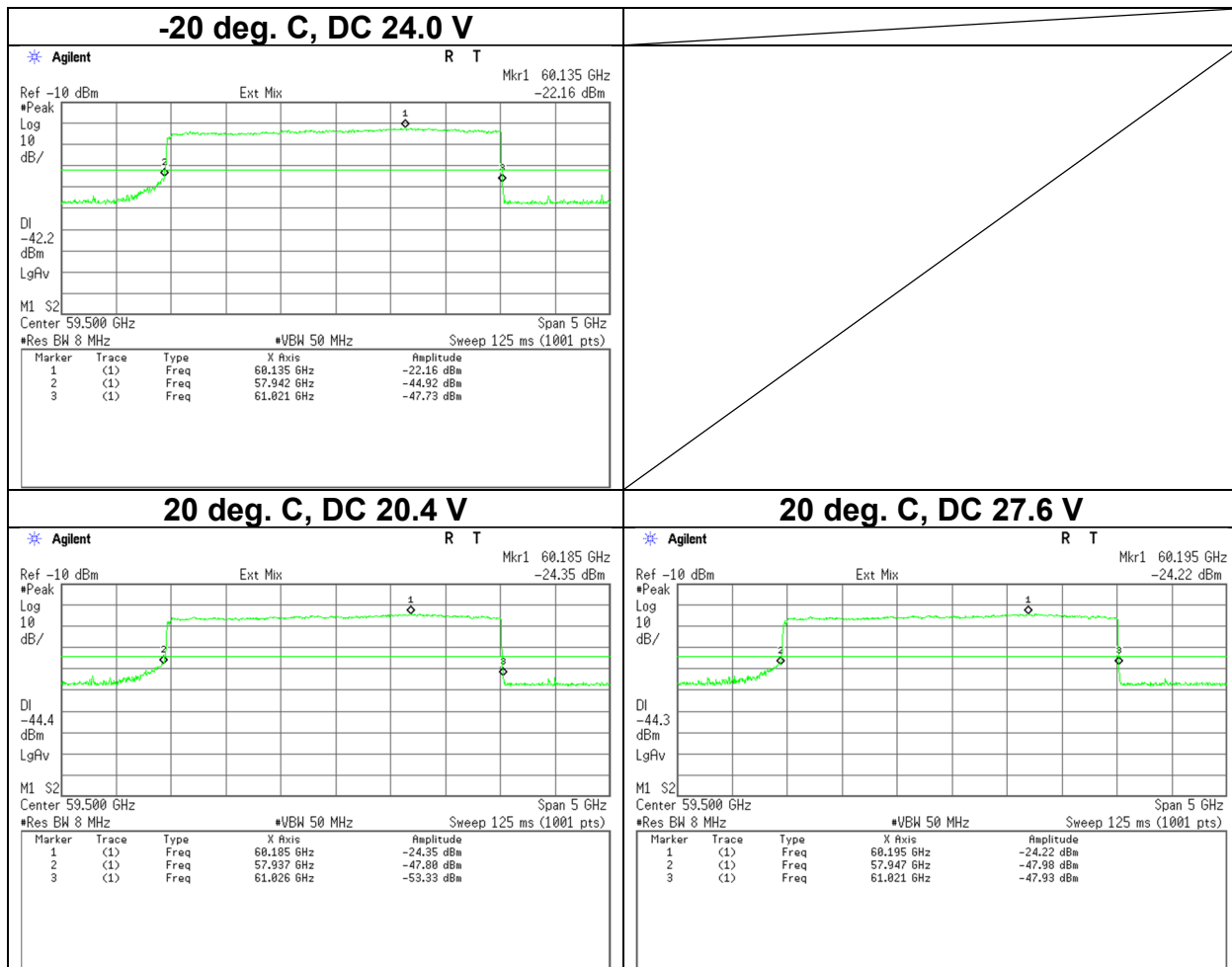
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Frequency Stability



Frequency Stability

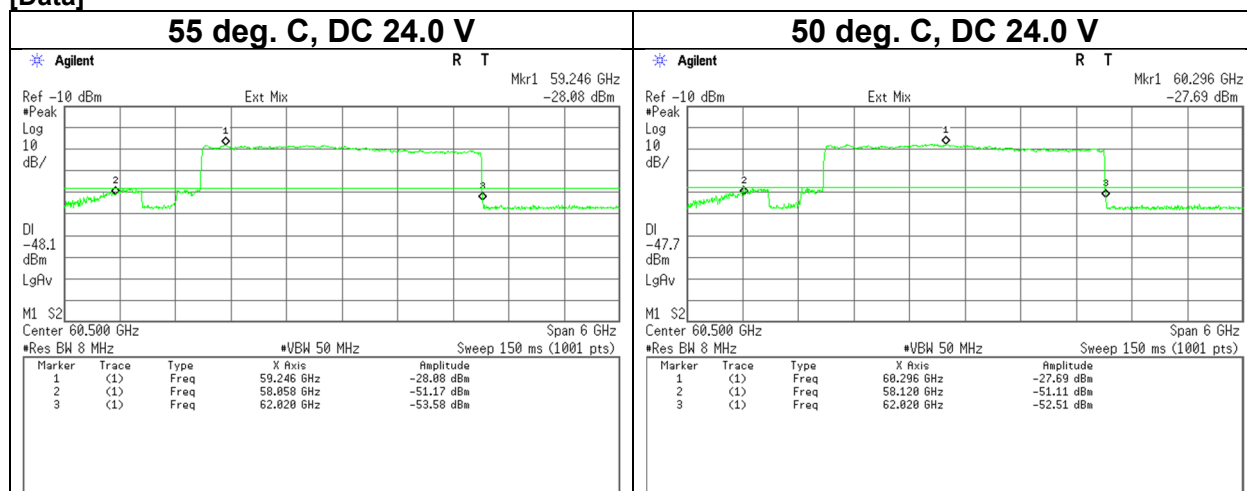


Frequency Stability

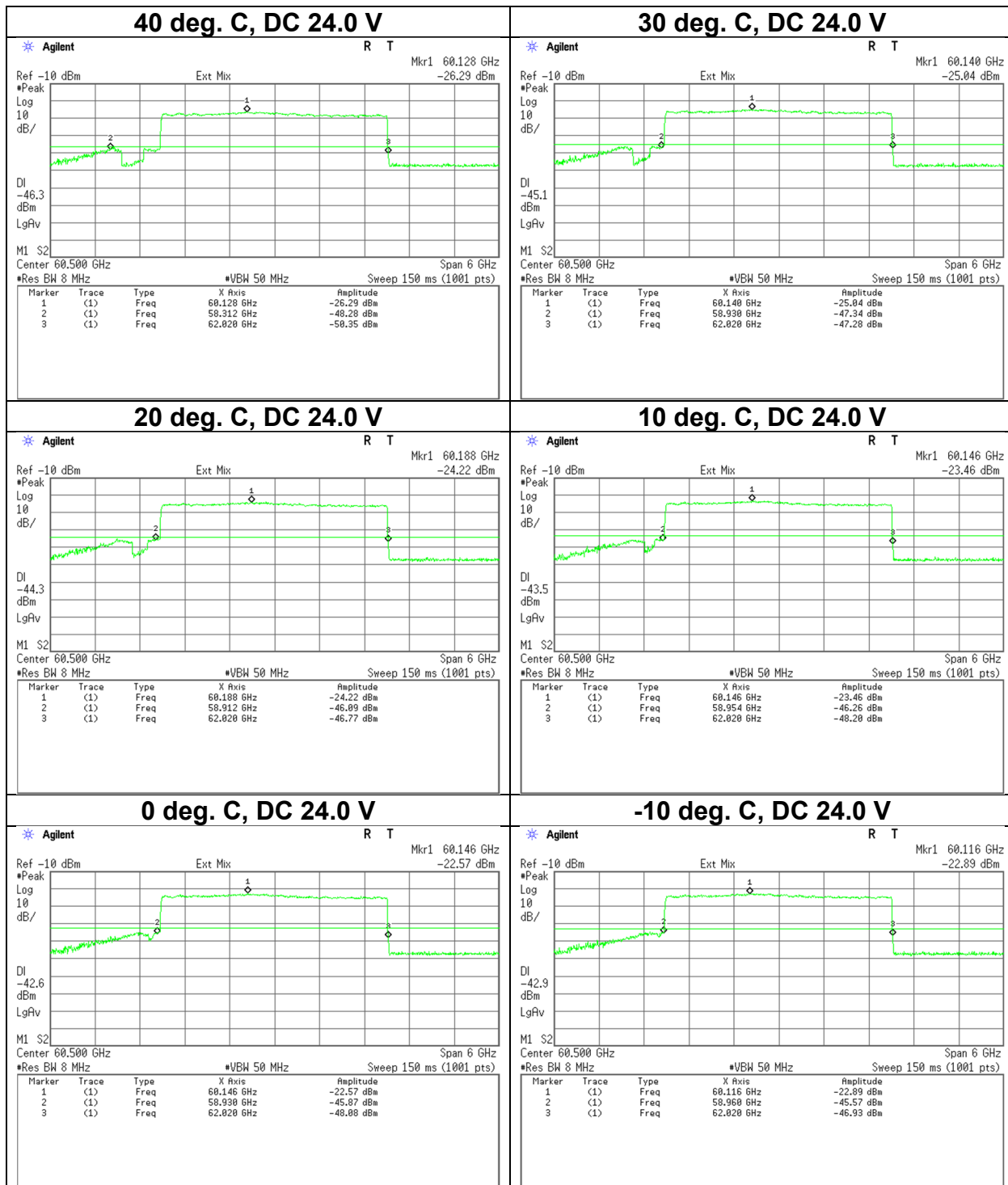
Test place	Ise EMC Lab. No. 6 Measurement Room
Date	July 21, 2023
Temperature / Humidity	23 deg. C / 48 % RH
Engineer	Sayaka Hara
Mode	Tx Symbol Pattern 5

Test Condition		Measured -20 dBc Frequency		Remarks
Temperature [deg. C]	Power Supply [V]	Lower Result [GHz]	Upper Result [GHz]	
55	24.0	58.058	62.020	Customer requested temperature
50	24.0	58.120	62.020	
40	24.0	58.312	62.020	
30	24.0	58.930	62.020	
20	24.0	58.912	62.020	
20	20.4	58.948	62.020	85 % of the rated voltage, DC 24 V * 0.85
20	27.6	58.906	62.020	115 % of the rated voltage, DC 24 V * 1.15
10	24.0	58.954	62.020	
0	24.0	58.930	62.020	
-10	24.0	58.960	62.020	
-20	24.0	58.942	62.020	

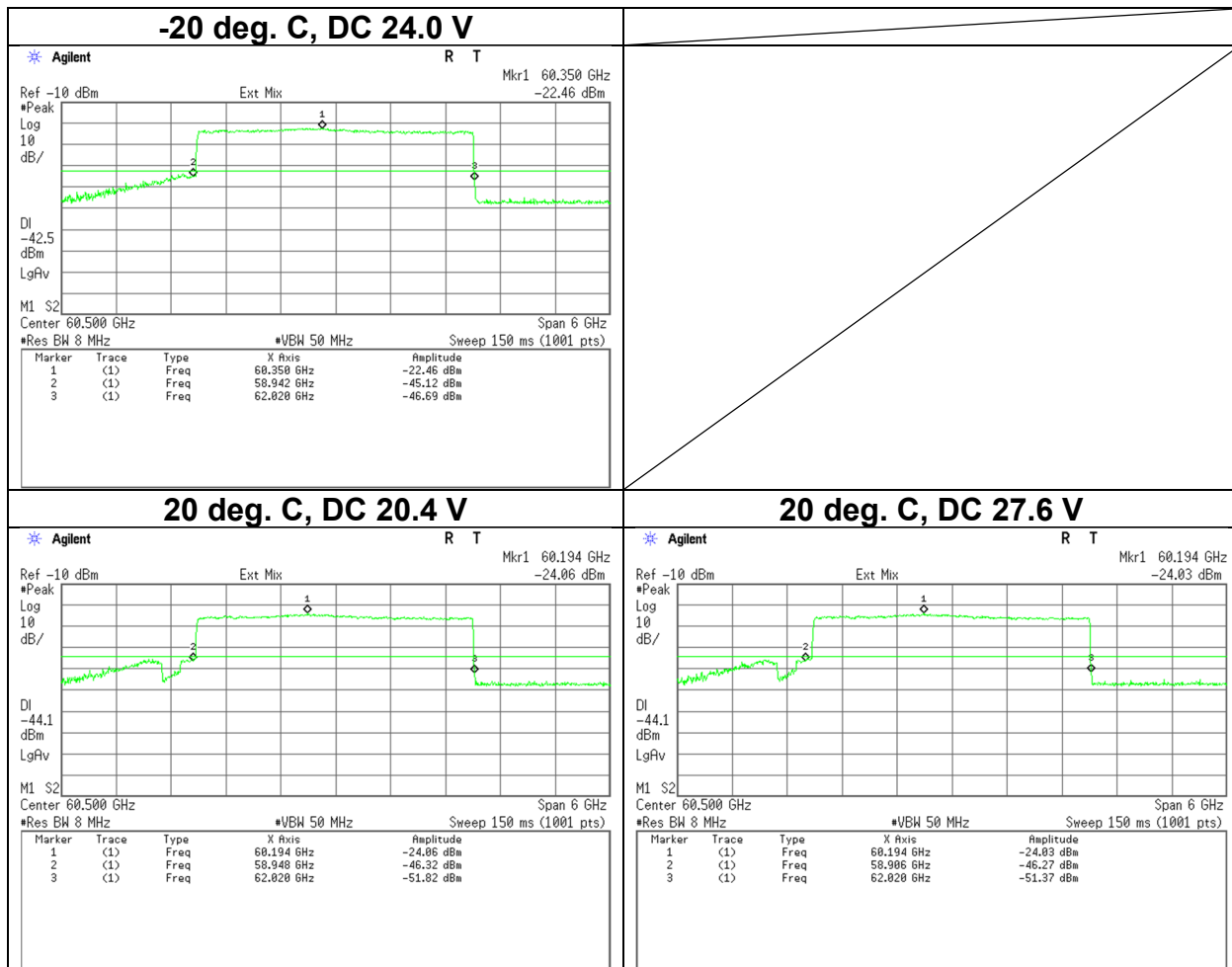
[Data]



Frequency Stability



Frequency Stability



Group Instllation

There are no external phase-locking inputs in this EUT.
Therefore, the EUT comply this requirement.

APPENDIX 2: Test instruments

Test equipment (1/2)

Test Item	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
CE	COTS-MEMI-02	178648	EMI measurement program	TSJ (Techno Science Japan)	TEPTO-DV	-	-	-
CE	MAEC-04	142011	AC4_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	05/22/2022	24
CE	MAT-64	141290	Attenuator(13dB)	JFW Industries, Inc.	50FP-013H2 N	-	12/22/2022	12
CE	MCC-113	141217	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W/SFM141/421-010/sucoform141-PE/RFM-E121(SW)	-/04178	06/27/2023	12
CE	MJM-29	142230	Measure, Tape, Steel	KOMELON	KMC-36	-	-	-
CE	MLS-23	141357	LISN(AMN)	Schwarzbeck Mess-Elektronik OHG	NSLK8127	8127-729	07/05/2023	12
CE	MMM-10	141545	DIGITAL HITESTER	HIOKI E.E. CORPORATION	3805	51201148	01/18/2023	12
CE	MOS-15	141562	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	0010	01/13/2023	12
CE	MTR-10	141951	EMI Test Receiver	Rohde & Schwarz	ESR26	101408	04/10/2023	12
RE	COTS-MEMI-02	178648	EMI measurement program	TSJ (Techno Science Japan)	TEPTO-DV	-	-	-
RE	MAEC-03	142008	AC3_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	05/23/2022	24
RE	MAEC-04	142011	AC4_Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 3m	DA-10005	05/22/2022	24
RE	MAEC-04-SVSWR	142017	AC4_Semi Anechoic Chamber(SVSWR)	TDK	Semi Anechoic Chamber 3m	DA-10005	04/14/2023	24
RE	MAT-95	142314	Attenuator	Pasternack Enterprises	PE7390-6	D/C 1504	06/23/2023	12
RE	MBA-05	141425	Biconical Antenna	Schwarzbeck Mess-Elektronik OHG	VHA9103+ BBA9106	VHA 91031302	08/26/2022	12
RE	MCC-112	141216	Coaxial cable	Fujikura/Suhner/TSJ	5D-2W/SFM141/sucoform141-PE/421-010/RFM-E321(SW)	-/00640	07/25/2023	12
RE	MCC-135	142032	Microwave Cable	Huber+Suhner	SUCOFLEX102	37511/2	09/28/2022	12
RE	MCC-136	142033	Microwave Cable	Huber+Suhner	SUCOFLEX102	37512/2	09/28/2022	12
RE	MCC-178	141227	Microwave Cable	Junkosha	MMX221-00500DMSDMS	1502S305	03/03/2023	12
RE	MCC-217	141393	Microwave Cable	Junkosha	MWX221	1604S254(1 m) / 1608S088(5 m)	08/02/2022	12
RE	MCC-219	159670	Coaxial Cable	UL Japan	-	-	11/18/2022	12
RE	MCC-220	151897	Microwave Cable	Huber+Suhner	SF101EA/11PC24/11PC24/2.5M	SN MY1726/1EA	04/11/2023	12
RE	MCC-224	160324	Coaxial Cable	Huber+Suhner	SUCOFLEX 102A	MY009/2A	10/19/2022	12
RE	MCC-51	141323	Coaxial cable	UL Japan	-	-	09/27/2022	12
RE	MCC-55	141326	Microwave Cable	Suhner	SUCOFLEX101	2874(1m) / 2877(5m)	03/07/2023	12
RE	MCC-67	141329	Microwave Cable 1G-40GHz	Suhner	SUCOFLEX102	28635/2	04/10/2023	12
RE	MCH-04	141429	Temperature and Humidity Chamber	Espec	PL-2KP	14015723	08/09/2023	12
RE	MDO-10	211944	Digital Storage Oscilloscope	Keysight Technologies Inc	DSOX6002A	MY59380318	11/07/2022	12
RE	MDPLX-01	142026	Diplexer	OML INC.	DPL26	-	11/25/2022	12
RE	MDT-04	142528	Detector	Millitech	DET-15-RPFW0	34	-	-
RE	MFT-02	142545	Fullband Tripler	Millitech	MUT-15-LF000	19	-	-
RE	MHA-02	141503	Horn Antenna 18-26.5GHz	EMCO	3160-09	1265	06/23/2023	12
RE	MHA-06	141512	Horn Antenna 1-18GHz	Schwarzbeck Mess-Elektronik OHG	BBHA9120D	254	10/20/2022	12
RE	MHA-24	142036	Horn Antenna	Custom Microwave Inc.	HO6R	-	09/01/2022	12

Test equipment (2/2)

Test Item	Local ID	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	MHA-29	141517	Horn Antenna 26.5-40GHz	ETS-Lindgren	3160-10	152399	11/14/2022	12
RE	MHA-31	142041	Horn Antenna	Oshima Prototype Engineering Co.	A16-187	1	09/01/2022	12
RE	MHA-33	180634	Horn Antenna	SAGE Millimeter, Inc.	SAZ-2410-15-S1	17343-01	06/20/2023	12
RE	MHA-35	180544	Horn Antenna	SAGE Millimeter, Inc.	SAZ-2410-10-S1	17343-01	06/21/2023	12
RE	MHF-31	199856	WR-10 HighPass Filter	Oshima Prototype Engineering Co.	A20-110-A01	001	04/13/2023	12
RE	MISO-01	142590	Waveguide Isolator	Keysight Technologies Inc	V365A	60004	-	-
RE	MISO-03	142592	Waveguide Isolator	Millitech	FBI-15-RSES0	1858	-	-
RE	MJM-16	142183	Measure	KOMELON	KMC-36	-	10/03/2022	12
RE	MJM-24	142225	Tape Measure	ASKUL	-	-	-	-
RE	MJM-29	142230	Measure, Tape, Steel	KOMELON	KMC-36	-	-	-
RE	MLA-22	141266	Logperiodic Antenna(200- 1000MHz)	Schwarzbeck Mess- Elektronik OHG	VUSLP9111B	9111B-191	08/26/2022	12
RE	MLPA-02	142152	Loop Antenna	Rohde & Schwarz	HFH2-Z2	836553/009	10/11/2022	12
RE	MMM-08	141532	DIGITAL HITESTER	HIOKI E.E. CORPORATION	3805	51201197	01/17/2023	12
RE	MMM-10	141545	DIGITAL HITESTER	HIOKI E.E. CORPORATION	3805	51201148	01/18/2023	12
RE	MMM-18	141558	Digital Tester(TRUE RMS MULTIMETER)	Fluke Corporation	115	17930030	05/29/2023	12
RE	MMX-01	142047	Preselected Millimeter Mixer	Keysight Technologies Inc	11974V-E01	3001A00412	11/25/2022	12
RE	MMX-02	142048	Harmonic Mixer	Keysight Technologies Inc	11970W	2521 A01909	10/06/2022	12
RE	MMX-03	142049	Harmonic Mixer	OML INC.	M06HWD	D100709-1	11/25/2022	12
RE	MOS-13	141554	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	1301	01/13/2023	12
RE	MOS-14	141561	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	1401	01/13/2023	12
RE	MOS-15	141562	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	0010	01/13/2023	12
RE	MPA-12	141581	MicroWave System Amplifier	Keysight Technologies Inc	83017A	00650	10/05/2022	12
RE	MPA-13	141582	Pre Amplifier	SONOMA INSTRUMENT	310	260834	02/07/2023	12
RE	MPA-14	141583	Pre Amplifier	SONOMA INSTRUMENT	310	260833	04/05/2023	12
RE	MPA-22	141588	Pre Amplifier	L3 Narda-MITEQ	AMF-6F-2600400- 33-8P / AMF-4F- 2600400-33-8P	1871355 / 1871328	01/24/2023	12
RE	MPA-23	142055	Power Amplifier	SAGE Millimeter, Inc.	SBP-5037532015- 1515-N1	11599-01	03/22/2023	12
RE	MPA-25	159919	Power Amplifier	SAGE Millimeter, Inc.	SBP-4035033018- 2F2F-S1	12559-01	06/19/2023	12
RE	MPA-29	176027	D-Band Low Noise Amplifier	SAGE Millimeter, Inc.	SBL-1141741860- 0606-EI	15235-01	07/11/2023	12
RE	MPA-31	180607	Power Amplifier	SAGE Millimeter, Inc.	SBP-7531142515- 1010-E1	17343-01	10/07/2022	12
RE	MPM-01	141801	Power Meter	Keysight Technologies Inc	E4417A	GB41290639	04/11/2023	12
RE	MPSE-07	142238	Power sensor	Keysight Technologies Inc	V8486A	MY44420112	06/16/2023	12
RE	MSA-10	141899	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY46180655	02/20/2023	12
RE	MSA-22	141978	Spectrum Analyzer	Keysight Technologies Inc	E4448A	MY46180899	03/06/2023	12
RE	MSG-12	141892	Signal Generator	Keysight Technologies Inc	E8257D	US49280311	11/24/2022	12
RE	MTR-08	141949	Test Receiver	Rohde & Schwarz	ESCI	100767	05/17/2023	12
RE	MTR-10	141951	EMI Test Receiver	Rohde & Schwarz	ESR26	101408	04/10/2023	12

*Hyphens for Last Calibration Date and Cal Int (month) are instruments that Calibration is not required (e.g. software), or instruments checked in advance before use.

The expiration date of the calibration is the end of the expired month.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

Test item:

CE: Conducted Emission

RE: Radiated Emission