



TEST REPORT nr. R14045601

Electromagnetic Compatibility (EMC)

Test item

Description: USB DONGLE

Trademark: CHUBB

Model/Type: ME200WRFE

Test Specification

Standard: EN 62479:2010

Client's name: PITWAY TECNOLOGICA S.r.l.

Address: Via Caboto, 19/3 – 34147 Trieste (TS) – ITALY

Manufacturer's name : Same as client

Address: --

Report

Compiled by: S. Barbato

Approved by: R. Beghetto – Laboratory Manager

Date of issue: 26.05.14

Contents: 13 pages

This test report shall not be reproduced except in full without the written approval of CMC.
The test results presented in this report relate only to the item tested.



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ANNEX 1: component list



1. Summary

Test:

EN 62479:2010

Test specifications	Environmental Phenomena	Tests sequence	Result
EN 62479	Human exposure to electromagnetic fields (10 MHz – 300 GHz)	1	Complies (+)

- (+) As indicated in the test report nr. 12057193LHD-001m date 07.03.13, issue by Intertek House, the average total radiated power emitted by apparatus operating in the frequency range 10 MHz - 300 GHz is less than or equal to the applicable low-power exclusion level P_{max} (20mW – see Annex A.3 of the EN 62479).
In agreement with cl. 4.2 of the EN 62479 the apparatus is deemed to comply with the basic restrictions.



2. Description of Equipment under test (EUT)

Power supply : 5 Vdc from USB
Power cable : Unshielded
Serial Number : --
Components list : Annex 1

3. Testing and sampling

Date of receipt of test item : 10.03.14
Testing start date : 26.05.14
Testing end date : 26.05.14
Samples tested nr. : 1
Sampling procedure. : Equipment used for testing was picked up by the manufacturer, at the end of the production process with random criterion
Internal identification : adhesive label with the product number P140246

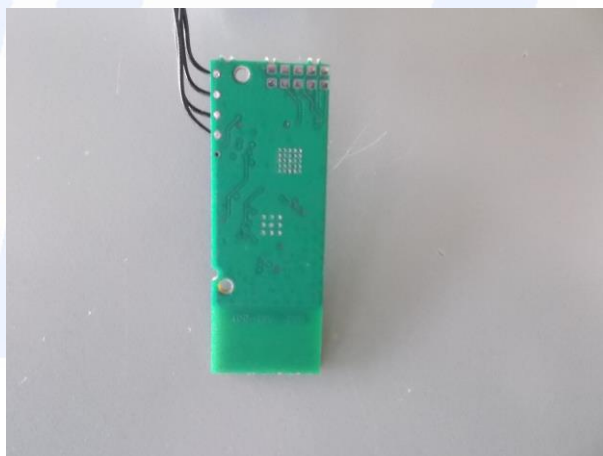
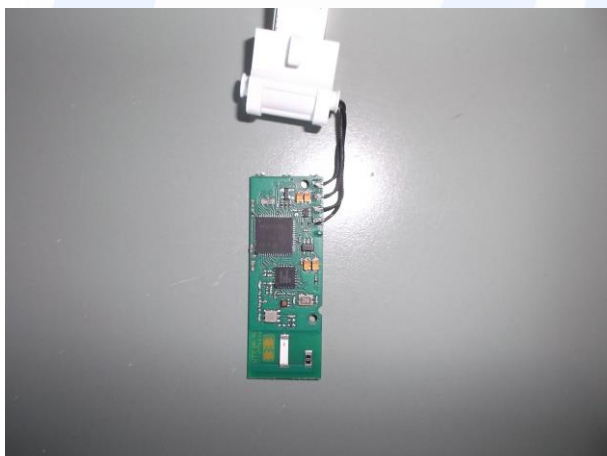
4. Operative conditions

EUT exercising : --
Auxiliary equipment : None
Test configuration : EUT classified as floor-standing equipment



5. Photograph(s) of EUT

5.1 Photograph(s) of EUT





6. Equipment list

Id. number	Manufacturer	Model	Description	Serial number
CMC S001	Rohde & Schwarz	ESHS30	EMC Interference Receiver	862024/003
CMC S002	Rohde & Schwarz	ESVS30	EMC Interference Receiver	826638/011
CMC S003	SCHAFFNER	NSG 2025-4	Burst Source with CDN	1010
CMC S004	SCHAFFNER	NSG 435-01	ESD Simulator	1166
CMC S005	XITRON	2503	Harmonic & Flicker Analyser	2503592013
CMC S006	Chauvin Arnoux	CA43	Field Meter	218541RLV
CMC S007	Rohde & Schwarz	SMY01	RF Signal Generators	841403/038
CMC S009	Rohde & Schwarz	ESH2-Z5	Artificial Network	839497/007
CMC S010	Rohde & Schwarz	ESH3-Z2	Impulses Limiting Device	---
CMC S013	Rohde & Schwarz	EZ-17	Current Probe	840411/009
CMC S014	Rohde & Schwarz	ESH2-Z3	Passive Probe	---
CMC S015	RKB	LOG801000	Broadband Antenna	---
CMC S016	Rohde & Schwarz	HK116	Broadband Antenna	839472/001
CMC S017	Rohde & Schwarz	HL223	Broadband Antenna	825584/009
CMC S018	SCHAFFNER	CDN 126	Coupling Clamp	128
CMC S019	FCC	FCC 801-M5-25	CDN Power Line	06
CMC S021	CMC	TRBS 01	Balance-to-unbalance transformer	---
CMC S022	Teseo	LAS 1	Loop Antenna	3971
CMC S024	CMC	CTL-01	Voltage change for LISN	---
CMC S025	Salmoiraghi	1750-1	Hygro - Thermograph	323.601
CMC S026	Chroma	C6530	Power Supply Source	653000095
CMC S027	Amplifier Research	75A250	RF Amplifier	19349
CMC S028	FCC	FCC-203I	Injection Clamp	209
CMC S029	Keytek	Cemaster	Surge/Dip/Burst Generator	9609258
CMC S030	Rohde & Schwarz	ESPC	EMC Interference Receiver	844006/013
CMC S031	Tektronix	TDS 210	Digital Oscilloscope	B010552
CMC S032	SCHAFFNER	NSG 2050	Surge Source with CDN	200111-253AR
CMC S034	Schwarzbeck	UHA 9105	Dipole	UHA 91052234
CMC S037	Rohde & Schwarz	NRVS	Power Meter	845127/023
CMC S039	CMC	BI 01	Induction Coil	---
CMC S040	Walker Scientific	ELF 50-D	Magnetic Field Meter	K71484-290
CMC S042	Fluke	Fluke 73	Multimeter	67771510
CMC (S051-075)	CMC	LFXXX	Dummy Lamp	---
CMC S076	Altitude	25438	Barometer	---
CMC S078	Amplifier Research	100W1000M1	RF Amplifier	21849
CMC S079	AH System, Inc	SAS-200/542	Broadband Antenna	504
CMC S080	AH System; Inc	SAS-200/510	Broadband Antenna	807
CMC S081	AH System; Inc	SAS 200/550-1	Active Monopole Antenna	660
CMC S082	AH System; Inc	SAS-200/560	Loop Antenna	635
CMC S083	AH System; Inc	BCP-200/510	Current Probe	564
CMC S084	AH System; Inc	BCP-200/511	Current Probe	579
CMC S085	AH System; Inc	SAS-200/530	Broadband Dipole	504
CMC S086	CMC	RHCP01	Resistance 470Kohm	---
CMC S087	CMC	RHCP01	Resistance 470Kohm	---
CMC S088	CMC	LFAS20	Dummy Lamp	---
CMC S089	CMC	CSTARTER	Capacitor 5000pF	---
CMC S090	CMC	CSTARTER	Capacitor 5000pF	---
CMC S091	CMC	DIPLP	Dipole for Loop Antenna control	---
CMC S094	Schwarzbeck	NNBM 8126-A	LISN 5μH	8126A161
CMC S095	FCC	FCC 801-M3-16	CDN power line	9821
CMC S096	B & K	2260	Phonometer	1847463
CMC S105	Decca	PA-50	Broadband antenna	34/17977 - b
CMC S106	Gigatronix	900	RF Signal Generator	323001



Id. number	Manufacturer	Model	Description	Serial number
CMC S107	Hewlett Packard	HP8563E	Spectrum Analyser	3846A09658
CMC S108	Emco	3115	Horn Antenna	9811-5622
CMC S109	Farnell	LFM4	LF Signal Generator	531
CMC S110	CMC	OPS800	Open Strip Line 800mm	---
CMC S111	LEM HEME	PR 1001	Current Probes	---
CMC S112	Amplifier Research	DC3010	Directional Coupler	15238
CMC S114	Schwarzbeck	VHA 9103	Dipole	VHA 91031801
CMC S116	CMC	BCIP01	Current Injection Probe	--
CMC S117	MARCONI	2019A	RF Signal Generator	118453/014
CMC S118	Hewlett Packard	E3632A	Programmable Power Supply	KR75301881
CMC S119	Hewlett Packard	HP8903B	Audio Analyzer	3011A09055
CMC S120	FCC	FC130-A	Current Injection Probe	118
CMC S121	Wavetek	LCR55	Bridge LCR	20104738
CMC S122	Fluke	336	Amperometric Clamp Meter	81754972
CMC S123	Rohde & Schwarz	SML03	RF Signal Generator	100625
CMC S124	Spin	AMTP42-20	Horn Antenna	103
CMC S125	SCHAFFNER	PNW 2003	Dips source	200234-014SC
CMC S126	LDS + Dactron	V730-335+LASER	Vibration testing system	132+133+4512698
CMC S127	SCHAFFNER	HLA6120	Loop Antenna	1191
CMC S128	SCHAFFNER	CBA9428	RF Amplifier	1006
CMC S129	Rohde & Schwarz	ESPI7	Receiver	836.914/004
CMC S130	SCHAFFNER	NSG 5000	Automotive Impulse Generator	02032579-1
CMC S131	SCHAFFNER	CDN 500	Capacitive Clamp	400-151/0128
CMC S132	CMC	OPS150	Open Strip Line 150mm	---
CMC S133	RKB	LOG8002500	Broadband Antenna	---
CMC S135	LEM HEME	PR 30	Current Probe	P04217832830
CMC S136	Schwarzbeck	VULB 9136	Broadband Antenna	9136-205
CMC S138	Agilent	33220A	Function/Arbitrary Waveform Gener.	MY44003979
CMC S139	Wilcoxon	736	Accelerometer	12245
CMC S140	Wilcoxon	732A	Accelerometer	1424
CMC S141	Dytran	3023A1	Accelerometer Triaxial	383
CMC S142	Narda	ELT-400+B-sensor	Exposure level tester	D-0034+D-0032
CMC S144	Rohde & Schwarz	URV5	Power Meter	881375/004
CMC S145	Hewlett Packard	778D	Directional Coupler	17237
CMC S146	Amplifier Research	10W1000B	RF Amplifier	18451
CMC S148	CMC	W1	Shielded Cable	---
CMC S149	CMC	W2	Shielded Cable	---
CMC S150	RKB	LOG3080	Broadband Antenna	---
CMC S155	Chroma	61705	Power supply source	000000088
CMC S156	Yokogawa	DL9040	Digital Oscilloscope	91F643771
CMC S159	Rohde & Schwarz	SM300	RF signal generator	1006114
CMC S161	EM TEST	EFT 500 M4 S1	Burst source with CDN	V0739102946
CMC S162	FCC	FCC 801-M2-16	CDN power line	07047
CMC S163	NOISEKEN	ESS-2002+TC-815R	ESD simulator	ESS0787336
CMC S164	Rohde & Schwarz	ESU26	EMC interference receiver	100052
CMC S170	Amplifier Research	FL7006	Field meter	0327425
CMC S171	Schwarzbeck	BBHA 9120 LF(A)	Broadband Antenna	284
CMC S172	Schwarzbeck	VHBD9134+BBAL9136	Broadband Antenna	9134-037
CMC S173	Luthi	CDN L-801 AF4	CDN I/O line	2481
CMC S174	Luthi	CDN L-801 AF8	CDN I/O line	2482
CMC S175	Luthi	CDN L-801 T2	CDN I/O line	2473
CMC S176	Luthi	CDN L-801 T4	CDN I/O line	2475
CMC S177	Luthi	CDN L-801 T8	CDN I/O line	2476
CMC S178	Schwarzbeck	STLP 9128 C	Broadband Antenna	086
CMC S179	Frankonia	FLL-250A	RF Amplifier	1023



Id. number	Manufacturer	Model	Description	Serial number
CMC S180	Milmega	RF350	RF Amplifier	1031422
CMC S181	Milmega	AS0822-200	RF Amplifier	1031424
CMC S182	Milmega	AS0206-50	RF Amplifier	1031425
CMC S183	Minicircuits	PWR-SEN-6G+	Power Sensor	0809070042
CMC S184	ARRAY	3400A	Arbitrary Waveform Generation	TW00009164
CMC S185	EM TEST	OCS 500 M6 S4	Oscillatory compact simulator	V0915104789
CMC S187	Rohde & Schwarz	SMB100A	RF signal generator	102572
CMC S190	Spin	AMDR-10180	Horn Antenna	01-309-09
CMC S191	EM TEST	UCS 500 N5	Burst/Surge/PFQ compact simulator	V0947105547
CMC S193	Solar	6552-1A	BF Amplifier	---
CMC S194	CMC	CDN 16 PL	CDN Power line	---
CMC S195	Schwarzbeck	VULB 9118 E sp.	Broadband Antenna	827
CMC S196	EM TEST	BS 200N	Electronic switch	V100510506
CMC S197	EM TEST	UCS 200N	Pulse generator	V0825103901
CMC S198	FCC	F - 55	RF Current Probe	100999
CMC S199	EM TEST	CNI 503	CDN for Burst and Surge	V1026106843
CMC S200	Schwarzbeck	NSLK 8128	V-LISN	8128-273
CMC S201	S.M. ELECTRONICS	SA3N150-06F	Attenuator	---
CMC S202	Rohde & Schwarz	CMU200	Universal radio communication tester	104099
CMC S203	CMC	VH	Van der Hoofden test-head	---
CMC S204	Amplifier Research	150L	RF Amplifier	10939
CMC S205	Schwarzbeck	NNBM 8124	LISN 5µH	065
CMC S206	Rohde & Schwarz	ESCI 7	EMC Receiver	100781
CMC S207	AlphaLab	ASMG	Milligauss meter	584
CMC S209	Elefrotest	TPS40K 30K60S	AC Source	002.11
CMC S210	EM TEST	PFS 200N30	Power Fail simulator	V1130110311
CMC S211	Luthi	CDN L-801 M1	CDN M line	2811
CMC S212	Luthi	CDN L-801 M2	CDN M line	2812
CMC S213	Luthi	CDN L-801 M3	CDN M line	2813
CMC S214	EM TEST	VDS200N10	Voltage drop simulator	V1150111222
CMC S215	FCC	F-130A-1	BCI Probe	112166
CMC S216	Luthi	MDS21	Absorbing Clamp	4101
CMC S217	Schwarzbeck	TK9420	Voltage Probe	458
CMC S218	RS	50WCW	50 ohm Load	---
CMC S219	EM TEST	CNV 504 N1.2	Box Surge	V1210112161
CMC S220	Minicircuits	PWR-SEN-6GHS	USB POWER SENSOR	110082250012
CMC S221	Minicircuits	BW-N20W5+	Attenuator	0612
CMC S222	A-INFOMW	ACB06-100SN	Attenuator	J308111111003
CMC S223	Minicircuits	BW-N20W20+	Attenuator	1217
CMC S224	Fairview microwave	SMC4037-20	Directional Coupler	J5DF568-081
CMC S225	Fairview microwave	SA3550N	Step Attenuator	201237026
CMC S226	Werlatone	C6021-10	Dual Directional Coupler	99019
CMC S227	Rohde & Schwarz	ESR7	EMI Test Receiver 7GHz	101121
CMC S228	Agilent	U3401A	Digital Multimeter	MY52270047
CMC S229	Schwarzbeck	CAT5 8158	ISN 8-Wire	CAT5-8158-0074
CMC S230	Werlatone	C1795-10	Dual Directional Coupler	100140
CMC S232	CMC	W3	Shielded Cable	---
CMC S233	CMC	W4	Shielded Cable	---
CMC S234	Schwarzbeck	VTSD 9561-F	Pulse Limiter/Attenuator	9561-F023
CMC S235	Schwarzbeck	VUSLP 9111B	Broadband Antenna	9111B-118
CMC S236	Schwarzbeck	BBA 9106 + VHBB 9124	Broadband Antenna	9124-672
CMC S237	EM TEST	DPA 503N	Harmonic & Flicker analyser	P1338124620
CMC S238	Minicircuits	PWR-SEN-6GHS	USB POWER SENSOR	11302250023
CMC S239	Schwarzbeck	UAH 9105	Dipole	9105-2599
CMC S240	CMC	ITF2	Three-phase Impedances cabinet	---
CMC S241	Schwarzbeck	BBV 9718	Broadband Preamplifier	9718-126
CMC S242	CMC	W-IM1	Shielded Cable	---
CMC S243	Minicircuits	ZX60-33LN-S+	Low Noise Amplifier	S F558500921



CMC
Centro Misure Compatibilità S.r.l.
Via dell'Elettronica, 12/C
36016 Thiene (VI)

<i>Id. number</i>	<i>Manufacturer</i>	<i>Model</i>	<i>Description</i>	<i>Serial number</i>
CMC S244	EM TEST	AutoWave	Automotive Waveforms Gen.	P1303110740
CMC S245	CMC	AEP1	Automotive ESD Plane	---
CMC S246	Minicircuits	ZFBT-6GW	Bias Tee	RF405100521
CMC S247	Minicircuits	ZFBT-6GW+	Bias Tee	RF476100846
CMC A001	Sispe	F5123	Shield chamber	---
CMC A002	SIDT	951130	Anechoic chamber	---
CMC A007	CMC	10707	Semi-anechoic chamber	---
CMC A008	CMC	BPA	Track for absorbing clamp	---
CMC A013	CMC	TR01	Rotary motorized table	---
CMC A014	CMC	PM01	Antenna positioning Mast	---
CMC B026	Angelantoni	UY 245 IU	Climatic chamber	1059.78
CMC B087	Yokogawa	WT3000	Precision Power analyzer	91JB15155



7. Measurement uncertainty

Test	Expanded Uncertainty	note
Conducted Emission		
(50 Ω /50 μ H AMN) - (9 kHz – 150 kHz)	± 3.8 dB	1
(50 Ω /50 μ H AMN) - (150 kHz – 30 MHz)	± 3.3 dB	1
(Voltage probe) - (150 kHz – 30 MHz)	± 3.3 dB	1
(50 Ω /5 μ H AMN) - (150 kHz – 108 MHz)	± 2.8 dB	1
Discontinuous Conducted Emission		
Conducted Emission (50 Ω /50 μ H AMN) - (150 kHz – 30 MHz)	± 3.3 dB	1
Disturbance Power (30 MHz – 300 MHz)		
	± 3.9 dB	1
Radiated Emission		
(0,150 MHz – 30 MHz)	± 4.3 dB	1
(30 MHz – 1000 MHz)	± 4.4 dB	1
(1 GHz – 6 GHz)	± 4.6 dB	1
Electromagnetic field EMF		
	± 15.0 %	1
Harmonic current emissions test		
	± 2.7 %	1
Voltage fluctuation and flicker test		
	± 2.9 %	1
Insertion loss test		
	± 2.7 dB	1
Radiated electromagnetic disturbance test (loop antenna)		
	± 2.7 dB	1
Radiated electromagnetic field immunity test		
	0.77 V/m at 3V/m	1
Pulse modulated radiated electromagnetic field immunity test		
	0.77 V/m at 3V/m	1
Injected currents immunity test		
	0.48 V at 3V	1
Bulk current		
	5.3 mA at 60 mA	1
Power frequency magnetic field immunity test		
	0.1 A/m at 10 A/m	1
Effective radiated power (F < 1GHz)		
	± 4.4 dB	1
Effective radiated power (F > 1GHz)		
	± 3.9 dB	1
Frequency error		
	$< 1 \times 10^{-7}$	1
Modulation bandwidth		
	$< 1 \times 10^{-7}$	1
Adjacent channel power		
	± 2.6 dB	1
Blocking		
	± 2.6 dB	1
Electrostatic discharge immunity test		
		2
Electrical fast transients / burst immunity test		
		2
Surge immunity test		
		2
Pulse magnetic field immunity test		
		2
Damped oscillatory magnetic field immunity test		
		2
Short interruption immunity test		
		2
Voltage transient emission test		
	± 2.2 %	1
Transient immunity test		
		2

Notes

Note 1:

The expanded uncertainty reported according to EN55016-4-2:2011 is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of $p = 95\%$

Note 2:

It has been demonstrated that the used test equipment meets the specified requirements in the standard with at least a 95% confidence, covering factor $k = 2$.



8. Reference documents

Reference no.	Description
EN 62479:2010	Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields(10 MHz - 300 GHz)
Internal Procedure PM001 rev. 2.0 (Quality Manual)	Measure procedure
Internal procedure INC_M rev. 8.2 (Quality Manual)	Measurement uncertainty calculation



9. Deviation from test specification

None

10. Test case verdicts

Test case does not apply to the test object : N.A.

Test item does meet the requirement : Complies

Test item does not meet the requirement : Does not comply

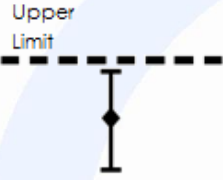
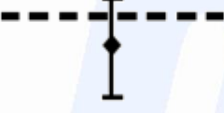
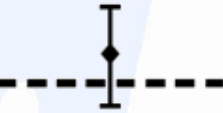

Test not performed : N.E.



11. Results

The evaluation of EUT performance during test has been performed by members of CMC staff.
Measurement uncertainty is in accordance with document CMC INC_M rev. 8.2.

Judgement of compliance:

Case 1	Case 2	Case 3	Case 4
			
The sample is Complies.	The sample is Complies.	The sample is Not Complies.	The sample is Not Complies.
The measurement results is within the specification limit when the measurement uncertainty is taken into account.	It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty although the measurement result is below the limit.	It is not possible to state compliance using a 95% coverage probability for the expanded uncertainty also the measurement result is upper the limit.	The measurement results is outside the specification limit when the measurement uncertainty is taken into account.

In agreement with ILAC-G8: 03/2009 Guidelines on the Reporting of Compliance with Specification.

ANNEX 1 of document nr. R14045601

Component number	Mfg Part Number	MFG Name	Object description	Comp. Qty (CUn)	Sub item name
C06-0051-172	GRM188R71C474KA88D	MURATA MANUFACTURING CO LTD	C.CER.SMD 470nF X7R 16V 0603	1.000	C16
C06-0051-178	GRM1555C1H5R6DA01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 5p6 COG 50V 0402	1.000	C116
C06-0051-179	GRM1555C1H100JA01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 10pF COG 50V 0402	4.000	C3
C06-0051-179	GRM1555C1H100JA01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 10pF COG 50V 0402	4.000	C4
C06-0051-179	GRM1555C1H100JA01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 10pF COG 50V 0402	4.000	C101
C06-0051-179	GRM1555C1H100JA01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 10pF COG 50V 0402	4.000	C102
C06-0051-182	04025A680JAT2A	AVX CORP	C.CER.SMD 68pF COG 50V 0402	1.000	C103
C06-0051-183	GRM1555C1H101JA01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 100pF COG 50V 0402	1.000	C15
C06-0051-184	GRM155R71H103KA88D	MURATA MANUFACTURING CO LTD	C.CER.SMD 10nF X7R 50V 0402	1.000	C104
C06-0051-185	GRM155R71A104KA01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 100nF X7R 10V 0402	8.000	C107
C06-0051-185	GRM155R71A104KA01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 100nF X7R 10V 0402	8.000	C106
C06-0051-185	GRM155R71A104KA01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 100nF X7R 10V 0402	8.000	C13
C06-0051-185	GRM155R71A104KA01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 100nF X7R 10V 0402	8.000	C8
C06-0051-185	GRM155R71A104KA01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 100nF X7R 10V 0402	8.000	C7
C06-0051-185	GRM155R71A104KA01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 100nF X7R 10V 0402	8.000	C6
C06-0051-185	GRM155R71A104KA01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 100nF X7R 10V 0402	8.000	C5
C06-0051-185	GRM155R71A104KA01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 100nF X7R 10V 0402	8.000	C1
C06-54-03	TAJR225K016RNJ	AVX CORP	C.TAN.SMD 2U2 16V 0805	4.000	C9
C06-54-03	TAJR225K016RNJ	AVX CORP	C.TAN.SMD 2U2 16V 0805	4.000	C10
C06-54-03	TAJR225K016RNJ	AVX CORP	C.TAN.SMD 2U2 16V 0805	4.000	C11
C06-54-03	TAJR225K016RNJ	AVX CORP	C.TAN.SMD 2U2 16V 0805	4.000	C12

C06-FKND-6R8	GRM1555C1H6R8DZ01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 6P8 COG 50V 0402	1.000 C121
C06-FKND-6R8	GRM1555C1H6R8DA01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 6P8 COG 50V 0402	1.000 C121
C06-FKND-8R2	GRM1555C1H8R2DZ01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 8P2 COG 50V 0402	1.000 C120
C06-FKND-8R2	GRM1555C1H8R2DA01D	MURATA MANUFACTURING CO LTD	C.CER.SMD 8P2 COG 50V 0402	1.000 C120
C06-FKNJ-470	C0402C470J5GACTU	KEMET ELECTRONICS CORP	C.CER.SMD 47PF COG 50V 0402	1.000 C117
C53-0083-000	LQG15HN4N7S02D	MURATA MANUFACTURING CO LTD	INDUCTOR 4n7 SMD 0402	1.000 L2
C53-0084-000	LQG15HN6N8J02D	MURATA MANUFACTURING CO LTD	INDUCTOR 6n8 SMD 0402	2.000 L106
C53-0084-000	LQG15HN6N8J02D	MURATA MANUFACTURING CO LTD	INDUCTOR 6n8 SMD 0402	2.000 L107
C53-0086-000	LQG15HN33NJ02D	MURATA MANUFACTURING CO LTD	INDUCTOR 33nH SMD 0402	1.000 L101
C79-0051-000	CSTCE12M0G15L99-RO	MURATA MANUFACTURING CO LTD	RESONATOR CER.SMD 12MHZ 0.1%	1.000 X1
C79-0052-000	403I11A32M00000	CTS	CRYSTAL UNIT 32.000 MHz SMD	1.000 X100
C79-0053-000	B39871B3717U410	EPCOS AG	RESONATOR SAW SMD 866.50 MHz	1.000 X101
I87-0437-000	SX1231IMLTRT	SEMTECH	I.C. SMD TRANSCEIVER UHF QFN24	1.000 IC100
I87-0441-000	MSP430F5528IRGCT	Texas Instruments Inc	I.C. SMD MICROCONTR.QFN64 USB MOD.	1.000 IC4
I87-0444-000	TPS76933DBVTG4	Texas Instruments Inc	I.C. SMD ULTRALOW- POW.LDO REG.3V3 SOT- 23	1.000 IC1
I87-0444-000	TPS76933DBVT	Texas Instruments Inc	I.C. SMD ULTRALOW- POW.LDO REG.3V3 SOT- 23	1.000 IC1
I87-0469-000	TPD2E001DZDR	Texas Instruments Inc	I.C.SMD 2-CHANNEL ESD PROTECTION ARRAY	1.000 IC2
L06-0136-000	LRTBR98G	Osram GMBH	LED SMD BGI	1.000 L3
L06-0136-000	LRTBR98G-R5T-1S7T7- 35PQ-47	Osram GMBH	LED SMD BGI	1.000 L3
R21-045-00X0	RC0402JR-070RL	YAGEO CORP	RESISTOR SMD 0 OHM 1/16W 5% 0402	1.000 R102
R21-045-00X0	RK73Z1ETTPL	Koa Speer Electronics Inc	RESISTOR SMD 0 OHM 1/16W 5% 0402	1.000 R102
R21-045-15X2	RC0402JR-071K5L	YAGEO CORP	R.SMD 1K5 1/16W 5% 0402	1.000 R6
R21-045-15X2	RK73B1ETTPL152J	Koa Speer Electronics Inc	R.SMD 1K5 1/16W 5% 0402	1.000 R6

R21-045-18X1	RC0402JR-07180RL	YAGEO CORP	R.SMD 180R 1/16W 5% 0402	1.000 R7
R21-045-18X1	RK73B1ETTPL181J	Koa Speer Electronics Inc	R.SMD 180R 1/16W 5% 0402	1.000 R7
R21-045-27X0	RC0402JR-0727RL	YAGEO CORP	R.SMD 27R 1/16W 5% 0402	2.000 R1
R21-045-27X0	RC0402JR-0727RL	YAGEO CORP	R.SMD 27R 1/16W 5% 0402	2.000 R2
R21-045-27X0	RK73B1ETTPL270J	Koa Speer Electronics Inc	R.SMD 27R 1/16W 5% 0402	2.000 R1
R21-045-27X0	RK73B1ETTPL270J	Koa Speer Electronics Inc	R.SMD 27R 1/16W 5% 0402	2.000 R2
R21-045-27X1	RC0402JR-07270RL	YAGEO CORP	RESISTOR SMD 270 OHM 5% 0402	2.000 R3
R21-045-27X1	RC0402JR-07270RL	YAGEO CORP	RESISTOR SMD 270 OHM 5% 0402	2.000 R4
R21-045-27X1	RK73B1ETTPL271J	Koa Speer Electronics Inc	RESISTOR SMD 270 OHM 5% 0402	2.000 R3
R21-045-27X1	RK73B1ETTPL271J	Koa Speer Electronics Inc	RESISTOR SMD 270 OHM 5% 0402	2.000 R4
R21-045-47X2	RC0402JR-074K7L	YAGEO CORP	RESISTOR SMD 4.7K OHM 5% 0402	1.000 R5
R21-045-47X2	RK73B1ETTPL472J	Koa Speer Electronics Inc	RESISTOR SMD 4.7K OHM 5% 0402	1.000 R5
R21-1B5-00X0	RC1206JR-070RL	YAGEO CORP	RESISTOR SMD 0 OHM 1206	1.000 ANT2
R21-1B5-00X0	RK73Z2BTDD	Koa Speer Electronics Inc	RESISTOR SMD 0 OHM 1206	1.000 ANT2
T70-0227-000	PMGD290XN	Nxp Semiconductors	TR.SMD N-MOSFET DUALE	1.000 Q1
T70-0227-000	FDG6317NZ	FAIRCHILD SEMICONDUCTOR CORP	TR.SMD N-MOSFET DUALE	1.000 Q1
W38-0086-000	0868AT43A0020E	JOHANSON TECHNOLOGY	ANTENNA SMD CHIP 868 MHZ	1.000 ANT1
B60-0861-001			P.C.B. S200 RF USB DONGLE	1.000